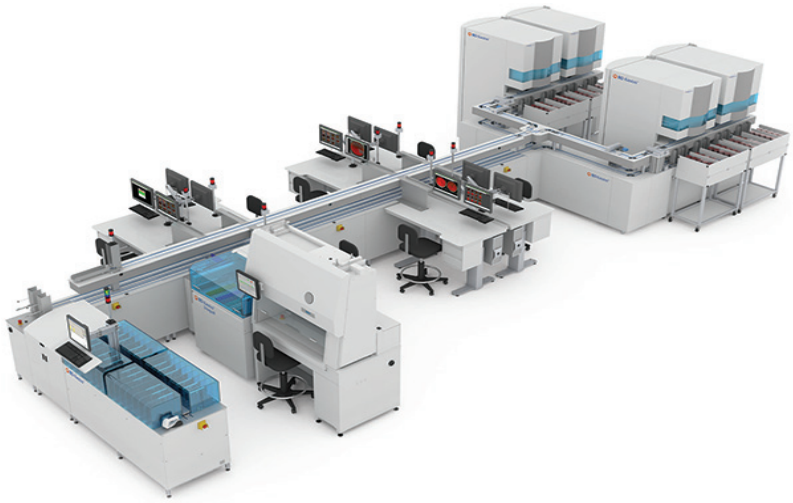
BD Kiestra™ Total Lab Automation

User's Manual



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bd.com/e-labeling

Change History

Revision	Date	Change Summary
03	2021-02	Added BD Kiestra™ IdentifA workflows. Deleted Reference Plate references.
04	2021-06	Revised intended use. Updated IEC standard number under Environmental Requirements. Added instructions to perform manual inoculation of external media for specimens processed in FA mode. Added description of special discard stacker workflow.
05	2022-03	Updated formatting. Updated to meet requirements of Regulation (EU) 2017/746. Added information about incubator rack tags. Added Communication with Spreader Cards cannot be established to InoqulA+™ malfunctions section.

Table of Contents

1 Introduction

This section covers the following topics:

1.1 Instructions for use guidance

Before using the product, it is recommended that all users become thoroughly familiar with the contents of the instructions for use as well as the *BD Kiestra™ Safety User's Manual*. The Safety User's Manual includes important instructions and directions to prevent physical injury and damage to the product.

The instructions for use assumes that all options have been installed. Your product may not have these options.

These instructions for use are a reference tool for trained laboratory personnel who operate and maintain the product on a regular basis. Every attempt has been made to include all information which would be required during normal use and maintenance.

EU Only: Users shall report any serious incident related to the device to the Manufacturer and National Competent Authority.

Outside EU: Contact your local BD representative for any incident or inquiry related to this device.

Technical Service and Support: In the United States contact BD at 1.800.638.8663 or bd.com.

For regions outside of the United States, contact your local BD representative or bd.com.

Refer to the Eudamed website: https://ec.europa.eu/tools/eudamed for Summary of Safety and Performance.

Should a question arise that is not answered in these instructions, please contact BD.
See **30 Contacts**.

1.2 Limited warranty

This warranty gives you specific legal rights. Additionally, you may have other rights that vary by region.

The BD Kiestra™ solution is warranted to the original purchaser to be free from defects in materials and workmanship for a period of one year following installation. BD's sole responsibility under this warranty shall be to repair or replace any module or its components (except for expendable supplies) which under normal operating conditions, prove to be defective within one year of delivery.

BD will furnish new or remanufactured components upon its option. All replacements shall meet new part specifications and shall be warranted as above for the remainder of the one year period. Replaced modules or components become the property of BD.

It is understood that the equipment covered by this Agreement has been installed in accordance with installation instructions approved by BD. Any damage to a BD Kiestra™ solution resulting from the insertion or removal of cables that connect a module to systems other than those approved or supplied by BD or the failure of the owner to maintain reasonable care and precautions in the operation and maintenance of the module will void this warranty and terminate the obligations of the manufacturer as stated herein.

This warranty is in lieu of all other warranties, whether expressed or implied, including but not limited to, warranties of merchantability or fitness for a particular use. In no event will BD be liable for indirect, incidental, special or consequential damages regardless of whether BD has been advised of such.

1.3 Conventions

The following conventions are used in this guide:

Convention	Example
Bold type is used for software button labels and hardware buttons if action is required.	Select **Save** , then select **OK**. Press the **Enter** key.
Bold type is used for software options and to indicate a path.	Select **File** > **Save As**. **Z:\KLATools\ProceedA**
Italics type is used for names of documents.	For more information, refer to the *Example Instrument User's Manual*.

1.4 Notes, cautions, and warnings

Throughout the instructions for use, important information is presented in boxes offset from the regular text that are labeled as a NOTE, CAUTION, or WARNING. These messages are formatted as follows:

NOTE

Information worthy of special attention is presented as a NOTE.

CAUTION

Information on an activity which potentially could cause a product to malfunction is presented as a CAUTION.

WARNING

INFORMATION ON AN ACTIVITY WHICH POTENTIALLY COULD CAUSE INJURY TO THE USER IS PRESENTED AS A WARNING.

1.5 Symbols glossary

Some symbols listed below may not apply to this product.

US Customers only: For symbols glossary, refer to bd.com/symbols-glossary.

Symbol	Meaning
CE	CE marking; Signifies European technical conformity
IVD	In vitro diagnostic medical device
R_x Only	This only applies to US: “Caution: Federal Law restricts this device to sale by or on the order of a licensed practitioner.”
	Manufacturer
EC REP	Authorized representative in the European Community
CH REP	Authorised representative in Switzerland
REF	Catalogue Number
	Consult instructions for use or consult electronic instructions for use.
	Biohazard
	Collect separately. Indicates separate collection for waste of electrical and electronic equipment required.
	Cut or sever hazard
	Danger of crushing
	Do not step
	Earth terminal to ground
	Electrical shock
	Frame/chassis
	Hot surface

Symbol	Meaning
	Class 2 laser
	Low clearance
	Moving parts - pinch point
	Pinch point
	Refer to accompanying documentation
	Sharp point
	UV lamp
	Indicates internal high voltage cables that remain powered after the power switch is turned off

2 Solution description

A variety of configurations can be created.

> NOTE
>
> The optional components may not be currently cleared for sale, registered, or available in your country.

For information on optional components to the solution, refer to the specific component instructions for use.

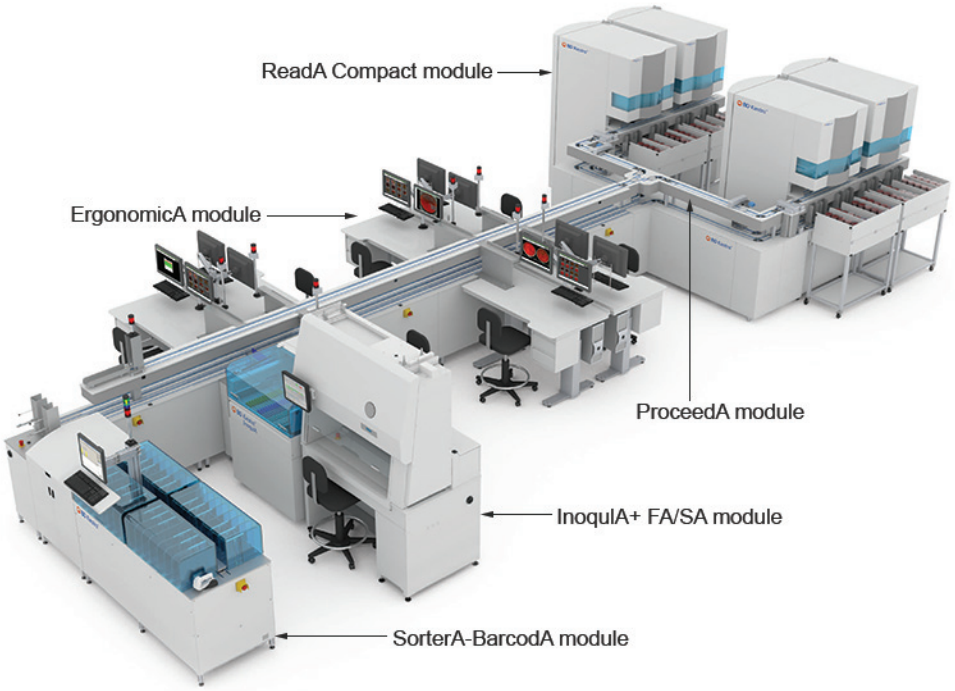
Contact your local BD representative for information on the optional components used for automated ID preparation and imaging.

2.1 Intended use

The BD Kiestra™ Total Lab Automation (TLA) solution which contains in vitro diagnostic medical devices, automates specimen processing as well as transport, incubation, and digital imaging of plates. The TLA solution is indicated for use in the clinical laboratory.

A TLA solution is configurable and includes:

- a System Control Unit (SCU)
- a SorterA-BarcodA module
- an InoqulA+™ FA/SA module
- a ProceedA module
- one or more ReadA™ Compact modules
- one or more ErgonomicA modules
- the BD Synapsys™ Informatics Solution



2.2 System Control Unit

The System Control Unit (SCU) is a local repository for software required to operate the solution, and for data generated by the modules.

The SCU should be placed close to the solution to minimize delay in communication between the SCU and the modules. It should be connected to the internet to allow remote access to the SCU by BD.

The SCU is installed during installation of the solution, and does not require user intervention. Contact BD in case of problems relating to the SCU.

CAUTION

Please observe the following precautions to ensure proper operation of the SCU:

Do not place any objects on the SCU.

Do not obstruct the ventilation grid.

Do not move or relocate the SCU.

2.3 SorterA-BarcodA

The SorterA consists of boxes where prepared media are stored until specimen processing is initiated. The SorterA is available in multiple sizes and configurations, and the total number of plates that can be stored depends on the number of installed boxes. After the user loads the plate stacks, the SorterA submodule controls the conveyor belts and destackers, so that the correct plates are transported to the BarcodA.

The BarcodA applies barcode labels to the plates. Placement of the barcode is always on the side of the plate base.

2.4 InoqulA+™ FA/SA

The InoqulA+™ is an in vitro diagnostic medical device which is intended to automate specimen processing according to user-defined procedures and protocols. In fully automated (FA) mode, this includes opening and closing specimen containers, barcoding, inoculating and streaking plated media, and inoculating tubes and slides. In semi-automated (SA) mode, plates are automatically selected, barcoded, streaked in a pre-configured pattern while the user manually inoculates plates, tubes and slides. The InoqulA+™ is indicated for use in the clinical laboratory.

After the barcode label is applied, the plate is ready for processing.

During FA processing, plates are automatically supplied by the SorterA-BarcodA depending on the required analysis. The InoqulA+™ agitates the specimen, uncaps the specimen,

aspirates specimen material from the container, and inoculates plates, broth tubes, and slides. Following inoculation, plates are transported to the spreader where the inoculum is spread over the agar surface, using a magnetically controlled bead.

During SA processing, inoculation is performed manually and inoculum spreading onto plates is automated. After the user scans a specimen's barcode, plates are automatically selected and barcoded by the SorterA-BarcodA, the InoqulA+™ adds a bead (or two beads if using bi-plates) to all plates and transports them to the inoculation position. The user inoculates the plates, broth tubes, or slides, then the InoqulA+™ spreads the inoculum on the plates using the magnetically controlled bead.

Up to five plates can be spread simultaneously according to preset streaking patterns. Following inoculation and spreading, plates are sorted and transported to the correct incubators.

2.5 ReadA™ Compact

The ReadA™ Compact is an in vitro diagnostic medical device which consists of an incubator and a camera. The ReadA™ Compact is used to incubate plates and to create images of plates. Plates are automatically removed from the incubator, photographed, and returned to the incubator or transported to another specified destination. The ReadA™ Compact is indicated for use in the clinical laboratory.

2.6 ProceedA

The ProceedA connects the various modules of the solution. It automates the transport of plates to and from the ReadA™ Compact incubators.

2.7 ErgonomicA

The ErgonomicA is an ergonomically designed and height-adjustable desk. It can be adjusted between a fixed maximum and minimum height. Four different fixed heights may be saved.

2.8 BD Synapsys™ Informatics Solution

The BD Synapsys™ Informatics Solution is a browser-based software platform operating in the microbiology lab setting, offering secure connectivity and data storage, integrated workflows, and analytics tools.

When connected to a BD Kiestra™ Lab Automation Solution, the BD Synapsys™ Informatics Solution enables staff to read plate images remotely, mark colonies for workup, and order reflex tests from anywhere at any time. The BD Synapsys™ Informatics Solution supports an interface with Laboratory Information Systems, providing additional data to support decision making, and improving sample traceability and documentation efficiency. The BD Synapsys™ Informatics Solution can scale with a BD Kiestra™ Lab Automation Solution to support multiple lines from a single BD Synapsys™ Informatics Solution. The BD Synapsys™ Informatics Solution also provides on- demand analytics and lean reports from the BD Kiestra™ Lab Automation Solution.

Refer to the BD Synapsys™ Informatics Solution instructions for use.

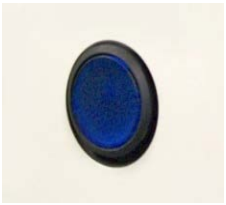
2.9 Components

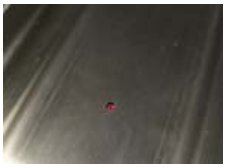
WARNING

ELECTRIC SHOCK HAZARD

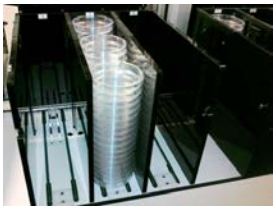
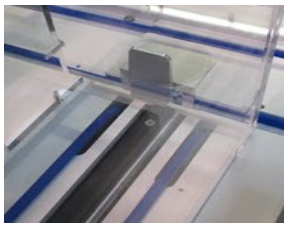
AN INTERNAL BATTERY-OPERATED HIGH VOLTAGE POWER SUPPLY REMAINS ACTIVE WHEN THE POWER SWITCH IS TURNED OFF. ALL HIGH VOLTAGE CABLES THAT REMAIN POWERED AFTER THE POWER SWITCH IS TURNED OFF ARE INDICATED WITH ORANGE MARKING. ONLY BD SERVICE PERSONNEL MAY OPEN THE ACCESS PANELS.

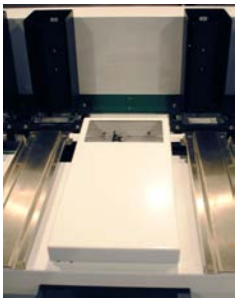
2.9.1 Common components

	**Power switch** Turns on the power and air pressure The solution is equipped with an uninterruptible power supply (UPS) which allows some parts and cables to remain energized when the power is turned off.
	**Emergency stop button** • near SorterA boxes • on the InoqulA+™ SA • next to the ProceedA monitor Immediately stops the solution (except the computers and UPS-connected components)
	**Blue reset button** • three buttons on the right side of the SA submodule for the SorterA-BarcodA, InoqulA+™ FA, and InoqulA+™ SA • next to the ProceedA monitor • under the ReadA™ Compact camera **PC reset button** Resets the computer inside the TLA connection component

	**Signal column and beeper** • near SorterA boxes • between the InoqulA+™ FA and SA submodules • next to the ProceedA monitor Green, blue, and red lights indicate the status of the solution or any of the modules: • green = normal operation • blue = warning that requires user attention • red = error/malfunction, or a ReadA™ Compact is not in operation mode **Signal column at workstations** Red lights on the signal column at the ErgonomicA or end stacker indicate that the plate buffer is full.
	**Round conveyor belts and transition belts** Transport plates through the solution 
	**Sensor (red light)** Detects the presence of a plate

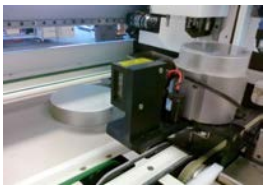
2.9.2 SorterA-BarcodA components

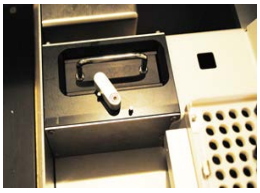
	**SorterA boxes** Store and deliver plates
	**Destacker** Removes individual plates from the bottom of a stack to be processed

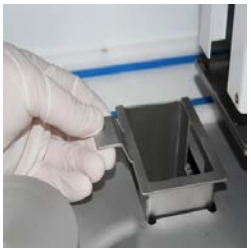
	**Central conveyor belt** Transports plates from the SorterA boxes to the BarcodA
	**BarcodA printer** Prints information on the barcode label; the applicator applies the printed label to the side of the plate base.
	**Stackers** Sort and store plates according to pre-defined conditions; pushes the stack onto the stacker buffer
	**Hand scanner** Reads plate barcode labels
	**BarcodA hood** Protects the barcode label applicator

2.9.3 InoqulA+™ FA components

	**Hood and front cover** Protects the user from moving parts when the solution is in operation
	**Specimen container racks and broth tube racks** **Rack holders** Secure specimen container racks and broth tube racks

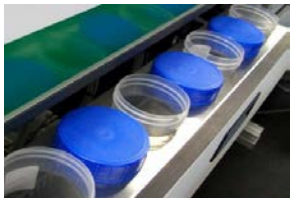
	**Rack sensors** A sensor under each rack position detects the presence of a rack.
	**Plate barcode scanner** Reads the barcode label applied to the plate by the BarcodA 
	**Specimen barcode scanner** Scans barcode labels on specimen containers and broth tubes
	**Left arm** **Left arm gripper** The left arm moves the left arm gripper. The left arm gripper moves specimen containers and broth tubes from the rack to the barcode scanner, to the shaker, then back to the rack.
	**Right arm** **Right arm gripper** The right arm moves the right arm gripper. The right arm gripper moves the specimen container from the shaker to the clamp for aspiration, caps and uncaps the specimen container or broth tube while they are held in the clamp.

	**Pipet** After picking up a pipet tip from the pipet tip rack, the pipet aspirates the liquid from the specimen container in the clamp, and dispenses the liquid onto plates, broth tubes, and/or slides. It discards the used pipet tip into the pipet tip waste container.
	**Pipet tip rack holder** Holds the disposable pipet tip racks
	**Pipet tip waste container** Used pipet tips are discarded into the pipet tip waste container.
	**Slide rack holder** Stores slides for fully automated inoculation. Pre-labeled slides are moved to the slide scanner, to the slide inoculation position, then back into the slide rack.
	**Shaker** Agitates the specimen material in the specimen container
	**Clamp** Holds specimen containers and broth tubes during capping and decapping, and during specimen aspiration/inoculation

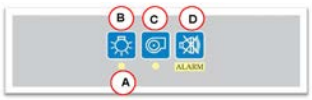
	**Drip trays** Catch excess specimen material The rear drip tray contains the shaker. The front drip tray contains the clamp.
	**Exhaust unit with HEPA filter** Extracts aerosols from the inoculation area
	**Bead dispenser** Dispenses a bead (or two beads when using bi-plates) onto the plate prior to inoculation
	**Lifting and rotating cylinder** Lifts and rotates plates to enable barcode reading, and to allow a bead to be dropped into each compartment of bi-plates

2.9.4 InoqulA+™ SA components

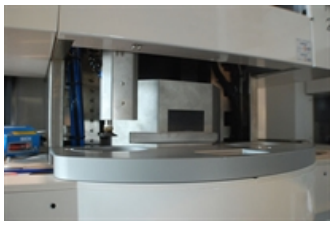
	**Desktop printer** Prints barcode labels for slides, broth tubes, and test specimens

	**Foot pedal** Tapping the pedal allows the user to continue SA inoculation and spreading.
	**Slide dispenser** Dispenses slides for manual inoculation; the dispenser is heated for fixation of the inoculum
	**Shifter** Moves plates from the front of the SA submodule to the back, for spreading and bead removal. Then plates are shifted again to the rear conveyor belt for transport to the stackers or to the ProceedA.
	**Lid manipulator with suction cups** The front row of suction cups lifts plate lids for inoculation. After plates have been shifted back to the spreading position, the rear row of suction cups uses a magnet to lift the beads with the lids. Beads are discarded and the lids are replaced onto the plates.
	**Bead disposal containers** Used beads are discarded into bead disposal containers located in a drawer that is accessed from the back of the SA submodule.
	**Hand scanner** Scans rack barcodes and specimen barcodes

2.9.5 Biological Containment Cabinet components

	**Power switch** Located on the right rear of the cabinet
	**Operation control buttons** A: LED indicator lights B: Fluorescent light on / off C: Blower on / off D: Alarm mute / reset
	**BCC pressure monitor** A: Red LCD digital display indicates cabinet differential pressure B: SP1 (static pressure) high pressure alarm C: Blue LED arc displays ratio of reading to full scale (1" water column) D: SP2 low pressure alarm E: Green display indicates units of measurement

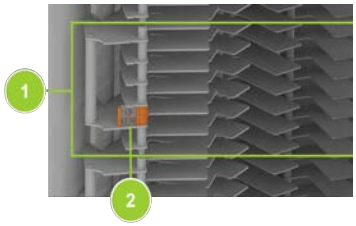
2.9.6 ReadA™ Compact components

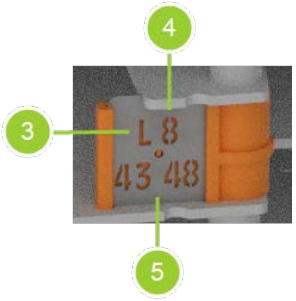
	**Camera of ReadA™ Compact version 1.1 (hood open)** Photographs plates. The bottom cover plate is gray.
	**Temperature controller and CO_2 controller** Used to set incubation conditions

Incubator

Incubates inoculated plates under controlled conditions.

The following notice on the incubator door indicates that your ReadA™ Compact has the CO_2 control option:





Incubator racks

House the plates inside of the incubator (1). Rack positions are not interchangeable.

Rack identification tags (2) identify the rack positions inside of the incubator.

The tag colors identify the general position of the racks:

- Racks with a blue tag are placed in the door of the incubator
- Racks with an orange tag are placed on the left side of the incubator
- Racks with a white tag are placed on the right side of the incubator

Rack tags provide the following information:

- D, L, R (3) are indicators for the Door, Left, or Right rack
- The number (4) next to the letter indicates the rack level counted from the bottom of the incubator
- The numbers on the bottom of the tag (5) indicate the rows included in the rack

Contact BD to request incubator rack identification tags if necessary.

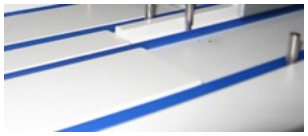
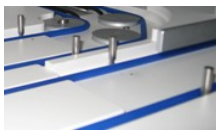
Manipulator

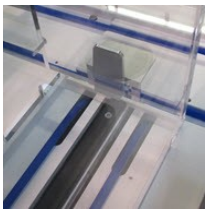
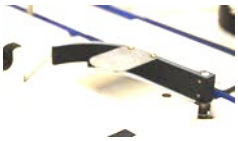
Transports plates to and from rack positions

HEPA filter

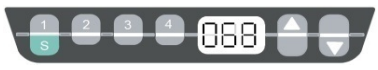
Filters air around the camera

2.9.7 ProceedA components

	**Output stacker** Collects stacks of plates that have been processed; collects defective or unreadable plates; may also be set as a stacker for plates to be read at a reading station that is not connected to the TLA solution 
	**Upper ProceedA** Transports stacks of inoculated plates from the ReadA™ Compacts to the ErgonomicA **DividerA (two outside conveyor belts)** Transports plates from the SorterA-BarcodA to the InoqulA+™ or ErgonomicA **Lower ProceedA (middle conveyor belt)** Transports the stacks of inoculated plates from the InoqulA+™ or ErgonomicA to the ReadA™ Compact
	**Return lift** Connects the lower and upper tracks
	**Laser scanner** Scans each plate en route to the lift and to the ReadA™ Compact
	**Lifting cylinder** Lifts and rotates plates to ensure that barcodes can be read by the scanner, and lifts plates into a stacker
	**Buffer location** Stopper cylinders ascend to pause plate movement

	**Destacker** Unstacks plates en route to the ReadA™ Compact from the InoqulA+™ or ErgonomicA
	**ProceedA catcher(s)** Located on the Upper ProceedA to guide plates horizontally from the conveyor belts
	**DividerA catcher(s)** Located on the DividerA (outside tracks) to guide stacks of plates horizontally from the conveyor belts toward the ErgonomicA
	**Output scanner (Upper ProceedA)** Scans plates en route to the ErgonomicA **Input scanner (Lower ProceedA)** Scans plates en route to the ReadA™ Compact 

2.9.8 ErgonomicA components

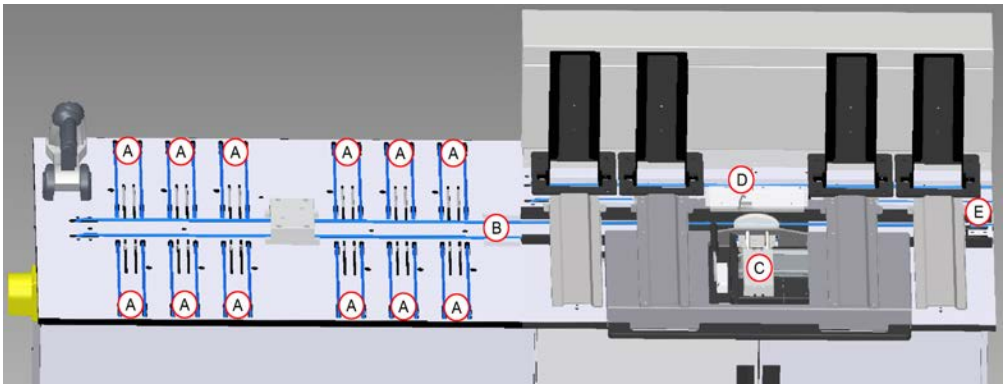
	**Control unit** Under the desktop; controls height adjustable legs
	**Table switch** Used to adjust the desktop height and save positions in memory
	**Barcode scanner** Used to scan plate barcodes; after scanning, the plate information is displayed on the screen.

	**Desktop label printer** Used when plates cannot be requested from the SorterA, and for processing of other carriers; after plates have been requested, the printer automatically prints labels for the carriers that cannot be delivered to the reading station by the DividerA.

2.10 Plate Path

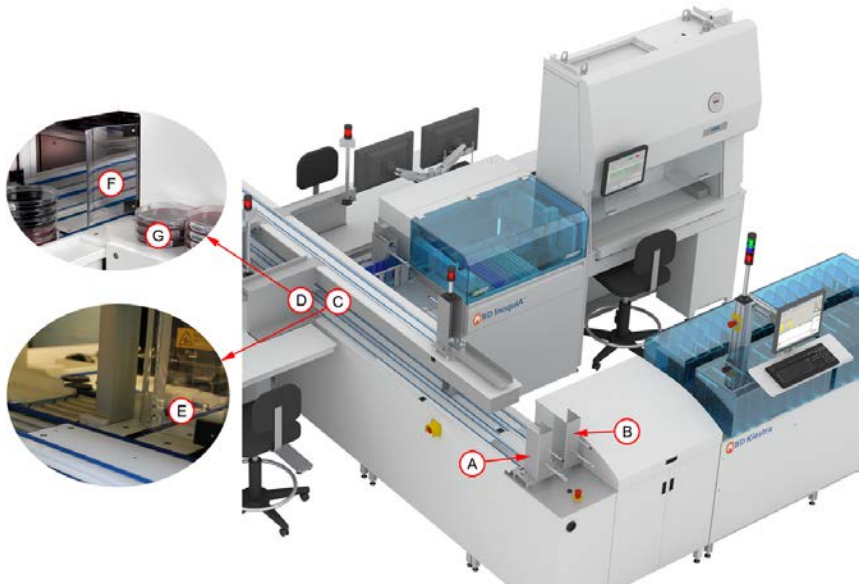
This section describes the path that plates take through the solution.

2.10.1 SorterA-BarcodA plate path



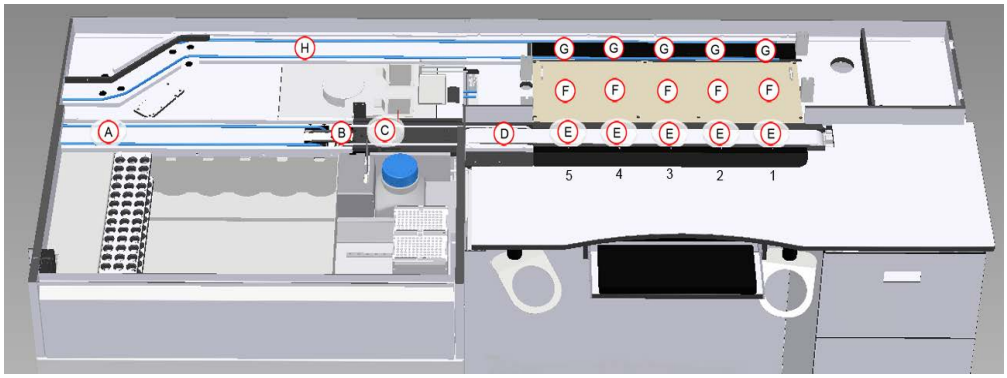
- Plated media are stacked and placed on conveyor belts (A) that transport the stacks of plates toward the central conveyor belt (B).
- When a plate is requested, the SorterA determines which box contains the corresponding media.
- The destacker moves a plate from the bottom of the stack onto the central SorterA-BarcodA conveyor belt.
- The central conveyor belt (B) transports the plate to the BarcodA.
- The BarcodA prints a label with the plate ID number (C). The plate lid is lifted (D) and the barcode label is applied to the side of the plate base. After applying the label, the lid is replaced on the plate. Older solutions may have a Dish Tap (D) that may be used to label plates with sticky lids.
- The central conveyor belt transports the plate to the stackers at the beginning of the DividerA (E). Labeled plates are stacked either per specimen or per maximum height stack, before being transported by the DividerA.

2.10.2 DividerA plate path



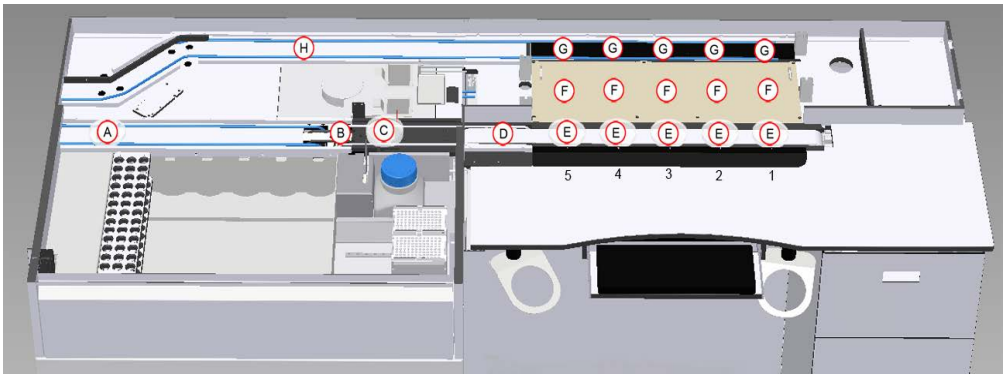
- If the FA/SA module or the ErgonomicA that requested the plate is located on the left side of the TLA solution, the plate is transported to the left DividerA stacker (A).
- If the FA/SA module or the ErgonomicA that requested the plate is located on the right side of the TLA solution, the plate is transported to the right DividerA stacker (B).
- The stacker stacks the plates and shifts them onto the left or the right DividerA lane.
- The DividerA transports the stack of plates to the input lane of the FA/SA module (C) or to the ErgonomicA that requested the plates (D).
- The Lower ProceedA catcher of the FA/SA module (E) removes the stack of plates from the DividerA conveyor belt and transports the plates to a destacker. After destacking (E), the plates follow the plate path through the FA/SA module.
- Alternatively, the Lower ProceedA catcher of the ErgonomicA that requested the plates (F) removes the stack of plates from the DividerA conveyor belt and shifts them onto the ErgonomicA buffer (G).

2.10.3 InoqulA+™ FA plate path



- The plate arrives at position (A), where the plate is lifted and rotated. The barcode scanner reads the plate barcode label and identifies the plate being transported.
- When the plate is identified, it travels along the front conveyor to the left buffer position (B), where it is queued for bead insertion and inoculation.
- When the inoculation position is free, the plate is transported to the bead dispenser and plate partition detector / FA inoculation position (C).
- A bead (or two beads if using bi-plates) is dispensed onto the plate. When inoculating bi-plates, the plate is positioned using the plate partition detector prior to bead dispense.
- After bead insertion, liquid specimen material aspirated from the specimen container is applied to the plate and broth tube or slide, if necessary.
- After inoculation, the plate stops at the right buffer position (D), where it is queued for automatic spreading.
- The plate is transported to one of the SA processing inoculation positions (E); however, no processing activity occurs here.
- The plate is transported to the spreader position (F) by the shifter and the beads automatically spread the specimen material over the culture medium according to a selected pattern.
- The plate exits the spreader position (G), where the beads are removed from the plate.
- The plate is transported to the translator stacker via the rear conveyor belt (H).
- The translator stacker stacks the plates and transports the stack of plates to the middle lane of the Lower ProceedA for transport to a ReadA™ Compact for incubation, or to a ReadA™ Compact output stacker for further off-line processing.

2.10.4 InoqulA+™ SA plate path

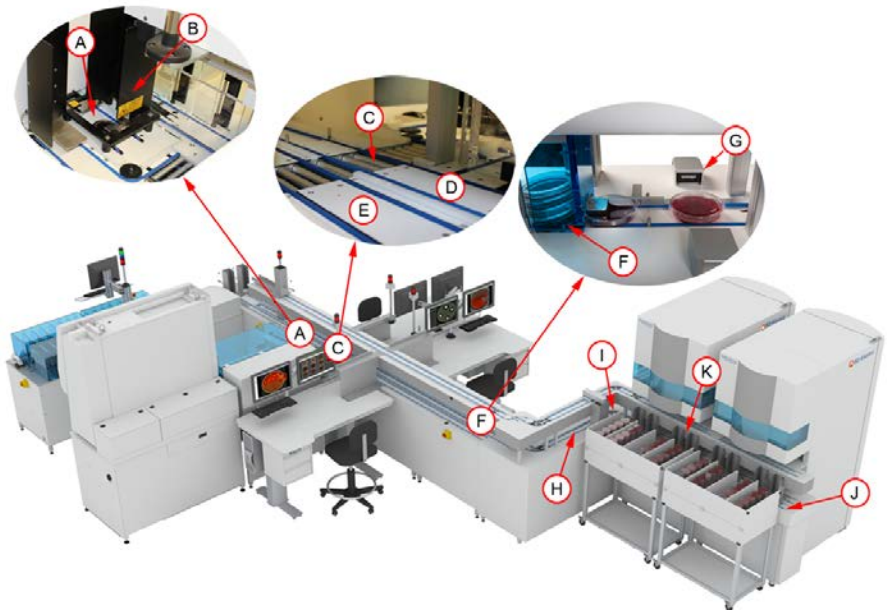


- The plate arrives at the plate barcode scanner (A) from the SorterA-BarcodA. The scanner reads the plate barcode label and identifies the plate being transported.
- The plate travels along the front transport submodule to the left buffer position (B), where it is queued for bead insertion.
- When released from the left buffer position, the plate is transported to the bead dispenser and plate partition detector position (C).
- A bead (or two beads if using bi-plates) is dispensed onto the plate. When inoculating bi-plates, the plate is positioned using the plate partition detector prior to bead dispense.

- After bead insertion, the plate stops at the right buffer position (D), where it is queued for manual inoculation.
- The plate is transported to the SA processing inoculation position (E) for manual inoculation.
- After manual inoculation by the user, the plate is transported to the spreader position (F) by the shifter, and the beads automatically spread the specimen material over the culture medium according to a selected pattern.
- The plate exits the spreader position (G), where the beads are removed from the plate.
- The plate is transported to the translator stacker via the rear conveyor belt (H).
- The translator stacker stacks the plates and transports the stack of plates to the middle lane of the Lower ProceedA for transport to a ReadA™ Compact for incubation, or to a ReadA™ Compact output stacker for further offline processing.

2.10.5 ProceedA plate path

Lower ProceedA



- The rear conveyor belt of the FA/SA module (A) transports the plate to a stacker (B).
- The stacks of plates are transported to the translator (C).
- The translator transports the stack of plates past the left/right DividerA lane (D) to the Lower ProceedA (E).
- The Lower ProceedA transports the stack to the destacker (F).
- The scanner (G) scans each plate to determine the destination.

Transport to an output stacker

- The Lower ProceedA (H) transports the plate to the lane shifter (I, lower lane).
- The lane shifter shifts the plate to the output stacker conveyor (J).

- The conveyor moves the plate to the appropriate output stacker (K).
- The stacker stacks the plates and pushes them onto the buffer table.

Storage in an incubator

- The plate is transported by the Lower ProceedA (A) to the input lane of the ReadA™ Compact (B).
- The ReadA™ Compact scans the plate barcode to assign a storage location.
- The manipulator (C) places the plate in a storage location (D).

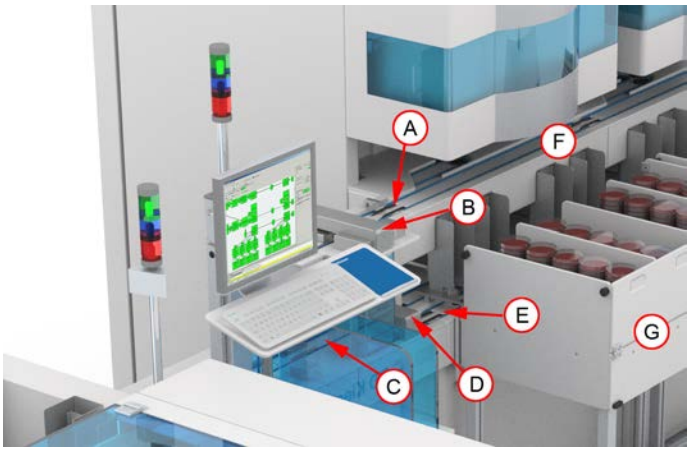
Photographing plates

- The manipulator (C) retrieves the plate.
- The plate is transported to the camera infeed (E).
- The plate barcode is scanned and the plate is transported to the image position (F).
- The plate is photographed.
- The plate is transported from the camera to the camera outfeed (G). The manipulator places the plate into its designated storage location.

Relocation of a stored plate

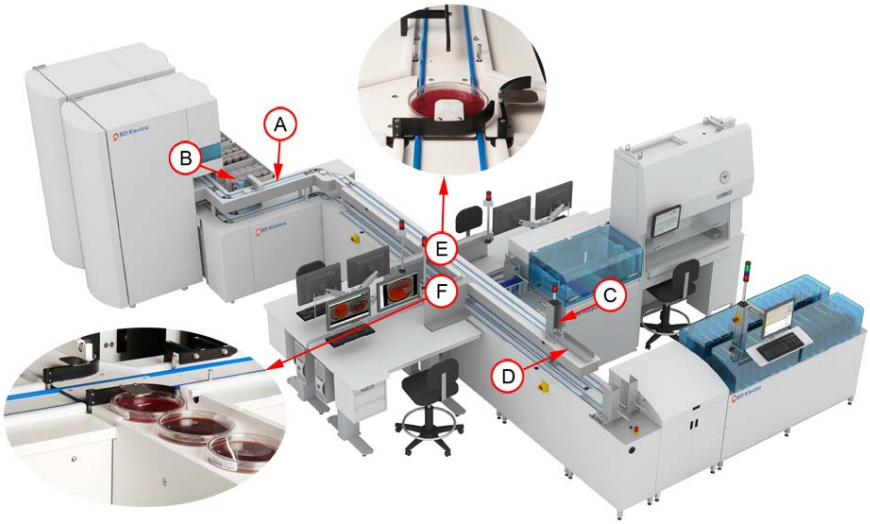
- The plate is retrieved by the manipulator and transported to the Upper ProceedA output lane (H).
- The output lane transports the plate to the Upper ProceedA (I).
- The Upper ProceedA transports the plate to the scanner to determine the destination.

From incubator to output stacker



- The plate is transported by the Upper ProceedA (A) to the return lift (B).
- The return lift transports the plate to the Lower ProceedA (C, rear conveyor).
- The Lower ProceedA transports the plate to the lane shifter (D).
- The lane shifter shifts the plate to the output stacker conveyor (E, front conveyor).
- The conveyor transports the plate to the appropriate output stacker (F).
- The stacker stacks the plates and pushes them onto the buffer table (G).

From incubator to the output stacker at the end of the Upper ProceedA or to an ErgonomicA



- The plate is transported by the Upper ProceedA (A) to the scanner (B) to determine the destination.
- The Upper ProceedA transports the plate to the stacker at the end of the Upper ProceedA (C). The plates are stacked and transported on the output stacker (D).
- Alternatively the plate is transported to the catcher of the ErgonomicA that requested the plate (E). The catcher transports the plate onto the ErgonomicA buffer (F).

3 Specifications of the solution

This section covers the following topics:

3.1 TLA solution specifications

Utility requirements	
Voltage	100–240 VAC ± 10%
Current	max. 16 A
Frequency	50–60 Hz
Air pressure	Minimum of 8 bar, 250 L/min Constant capacity, free of moisture and oil, minimum of class 4 (ISO 8573-1)
Heat production	
SorterA-BarcodA / InoqulA+™	800 W
ProceedA	400 W
Lift	110 W
ReadA™ Compact connection	210 W
ReadA™ Compact incubator	200 W
Power consumption	
SorterA-BarcodA / InoqulA+™	800 W
ProceedA	400 W
Lift	110 W
ReadA™ Compact connection	210 W
ReadA™ Compact incubator	520 W

Physical dimensions		
InoqulA+™ (including BCC)	Weight	1,350 kg (2,975 lb)
	Height	2,234 mm (88.0 in)
	Width	4,503 mm (177.3 in)
	Depth	978 mm (38.5 in)
	Clearance	800 mm (31.5 in) on all sides
ProceedA	Weight	700 kg (1,543 lb)
	Height	1,975 mm (77.8 in)
	Width	900 mm (35.4 in)
	Depth	4,200 mm (165.4 in)
ReadA™ Compact	Weight	690 kg (1,521 lb)
	Height	2,300 mm (90.55 in)
	Width	1,000 mm (39.27 in)
	Depth	1,640 mm (64.57 in)
	Clearance	800 mm (31.5 in) on all sides 1,200 mm (47.3 in) on door side
ErgonomicA	Weight	150 kg (331 lb)
	Minimum height	670 mm (26.4 in)
	Maximum height	935 mm (36.8 in)
	Maximum load	100 kg (220 lb)

Environmental requirements (storage and operating)	
Ambient temperature	18–27 °C (64.4–80.6 °F)
Relative humidity	20–80% RH, non-condensing
Locations	Level surface, no direct heat
Altitude	To 1,000 m (3,281 ft) above sea level
Installation Category II and Pollution Degree 2 as per IEC 60664	
NOTE: • This solution has been designed and tested to CISPR 11 Class A. In the domestic environment it may cause radio interference, in which case you may need to take measures to mitigate the interference. • An advisory that the electromagnetic environment should be evaluated prior to installation. • Do not use this solution in close proximity to sources of strong electromagnetic radiation (e.g., unshielded intentional RF sources), as these may interfere with the proper operation.	

Incubation specifications	
Incubation atmosphere	O_2 or CO_2
Temperature range	30–40 °C, ± 1 °C
CO_2 consumption	<50 L/hr (for 5% CO_2 (± 1%) at 35 °C (95 °F)

Camera specifications ReadA™ Compact v1.1	
Camera type	High quality industrial camera
Sensor type	Progressive scan CCD (low noise), monochrome and color
Image quality	≤4 megapixels
Image size	2–3.5 MB, 2,000 x 2,000 pixels
Light position	Bottom, side/ring, top; each designed in six different segments for both target and diluted light
Light sources	Long life daylight LED, strobe light for minimum energy and long life
Background settings	Black or white

3.2 Disposables specifications

The following tables list examples of specimen containers, carriers, and specimen types that may be used with the InoqulA+™.

Additionally, BD maintains a separate, complete list of all specimen containers, carriers, and specimen types that can be used. Only items from these lists may be used on the InoqulA+™.

Contact BD for an updated list or for information regarding the use of other specimen containers.

For product availability, consult our product catalog (online) or contact your local distributor or BD representative.

Plate specifications	
Height, including lid	13.0–16.2 mm
Diameter of bottom	85–91 mm
Diameter of lid	89–93 mm (when using two or more different kinds of plates, the difference between lid diameters should not exceed 2 mm)
Top rim	Shape: parallelogram with rounded corners
Bottom rim	Shape: parallelogram with rounded corners Maximum one opening in the rim No “fin” (when using bi-plates) inside the rim
Lid vents	Preferably three or more
Weight	Minimum (empty): 14 g / Maximum (full): 40 g
Agar thickness	3–7 mm
Plates must be tested in the solution and in combination with other types of plates. For optimum performance, use the same type of plates.	

Fully automated processing specimen container specifications	
Specimen container length	60–125 mm
Specimen container diameter	10–50 mm
Cap	diameter 10–54 mm height 11–30 mm

Slide specifications	
Thickness	1 mm
Size	25–25.8 x 76 mm
Material	Glass without a frosted portion
Ordering information	Epredia™ Shandon™ Single Cytoslides™, Catalog # 5991059

3.3 Specimen processing requirements

In order to ensure the accuracy of the InoqulA+™ dispense, the following procedures and dispense volumes should be used when inoculating plates or tubed media.

Specimen types	Examples	Processing requirements
Urine	clean caught, catheter	Full automation
Liquid based specimens	BD ESwab™ collection kit, Copan ESwab™	Full automation
Thin body fluids†	CSF, pleural, pericardial dialysates	Full automation
Thick body fluids†	synovial, emulsified tissue specimen, bloody or clotted specimens	Process in semi-automated mode
Non-liquid specimens	respiratory, stool, swabs	Process in semi-automated mode

†NOTES

Body fluids that are very viscous must be processed in semi-automated mode

Body fluids that are less viscous can be processed in fully automated mode.

Failure to follow this guideline can result in a failure to dispense.

3.4 Computer and software connection requirements

- 2 TCP/IP network cables to the network (≥ CAT5, ≥ 1 Gbps)
- RSS and Bomgar connection
- SMTP mail server

4 InoqulA+™

This section covers the following topics:

4.1 Module startup

- Prepare an empty, clean work area and place all required plates within reach.
- Ensure that the SorterA-BarcodA and InoqulA+™ hand scanner are present.
- Ensure that the InoqulA touchscreen stylus is present.
- Ensure that the BarcodA cover is closed.

CAUTION

Before turning on the InoqulA+™, check for any obstructions in or around the solution that might prevent the module from functioning properly.

1. Turn on the InoqulA+™.
2. Press the reset buttons. When the module is powered, the blue light turns off. If the light does not turn off, the BarcodA hood or the FA front cover is likely not closed.
3. If your InoqulA+™ is equipped with an optional Biological Containment Cabinet (BCC), the BCC should be turned on and should remain closed while the module is in operation.
4. Turn on the BCC.
5. Press the blower button. The indicator below the button illuminates and an audible alarm sounds. When the proper blower speed is reached, the alarm shuts off.
6. Press the fluorescent light button to illuminate the work area.
7. Turn on the SorterA-BarcodA computer (and the monitor, if it does not turn on automatically with the computer).
8. Wait for the computer to complete mapping the drives.
9. Turn on the InoqulA computer. The touchscreen monitor starts up automatically.
10. Turn on the associated computers of the components installed with your solution.
11. On the SorterA-BarcodA monitor, double-click the **BarcodA** icon. The SorterA-BarcodA monitor is not a touchscreen; make selections using the keyboard or mouse.
12. Log in with your username and password and select **OK**.
13. On the InoqulA touchscreen, double-click the **InoqulA** icon using the stylus.
14. Log in with your username and password and select **OK**. There are two methods for logging in:

- Use either the virtual or physical keyboard to enter your username and password.
- Use the handheld barcode scanner to scan your personal barcode (if the solution has been configured for scanning personal barcodes).

When running in SA mode, the InoqulA+™ is started after pressing Add specimens to batch in the Batch Prepare tab.

When start conditions are not met, this is shown in a yellow panel on the lower right of the screen.

When all start conditions are met, the Start FA [F2] button in the upper left of the screen is enabled.

4.2 User log in or log out

Operation of the InoqulA+™ is tracked with the user; therefore, when you are finished processing specimens, or when you are away and not processing specimens, you must log out of the InoqulA software. However, if your laboratory operates with a generic username, you do not need to log out when away from the InoqulA+™.

To continue processing specimens, or to start operation as a new user, log in with your username and password.

- Log in: Enter your username and password in the login window, or use the handheld barcode scanner to scan your personal barcode.

> NOTE
>
> Only log out when a batch is complete.

- Log out: Select **System Menu**. Select **Log off** from the drop-down menu.

4.3 Module shutdown

When all specimens have been processed, and there are no more plates in the InoqulA+™ (except for inoculated plates in stackers), the BarcodA software, the InoqulA software and InoqulA+™ module can be shut down.

Only shut down the BarcodA software when the worklist is empty and there are no unprocessed requests.

Never shut down the InoqulA software during batch processing because the batch data and the analytical information will be lost.

4.3.1 InoqulA software shutdown

1. Select **x** at the upper right of the display. A pop-up window appears, asking you to confirm shutting down the application. Select **OK** to continue.
2. Depending on your settings, a pop-up window might appear, asking you to push the stacks before closing the software. When you select **Yes**, all stackers with plates on them will push the plates onto the buffers as long as they are not full.
3. After pushing the stacks, the software can be closed. The software immediately stops and the user is logged out.
4. Shut down the computer from the Start menu.

4.3.2 SorterA-BarcodA software shutdown

1. Select **Stop [F4]** from the main menu. All destacked plates will be completed. When the last plate has been delivered, the SorterA-BarcodA stops.
2. Select **x** at the upper right of the display. A pop-up window appears, asking you to confirm shutting down the application. Select **OK** to continue.
3. Shut down the computer from the Start menu.
4. Turn off the associated computers of the components installed with your solution.

4.3.3 Power down

1. Turn off the power.
2. Turn off the power of the components installed with your solution.
3. Place the SorterA-BarcodA and InoqulA+™ hand scanners on their chargers.

4.4 Emergency stop

1. Press the red emergency stop button. The electricity and air pressure to all connected modules is deactivated, except for the ReadA™ Compact. The computer system continues to operate.
2. The solution must be restarted after an emergency stop.

Restarting after an emergency stop

1. Determine the cause of the emergency stop.
2. Resolve the cause of the emergency stop and ensure that any other hazardous conditions or blockages that may prevent the solution from functioning properly have been eliminated.
3. Ensure that all FA processing specimen containers and broth tubes have been capped and replaced into the appropriate racks. If applicable, replace slides in the appropriate slide rack positions.
4. Release the emergency stop by turning the button clockwise. The button pops out and a green ring becomes visible.
5. Press the reset button; the light turns off.
6. Remove and discard any plates between the destackers and the stackers.
7. Select **Reset Error** from the InoqulA main menu, and then select **Start FA [F2]** to restart operation.

8. Select **Reset error(s) [F5]** from the BarcodA main menu, and then select **Start [F2]** to restart operation.

4.5 Uninterruptible power supply

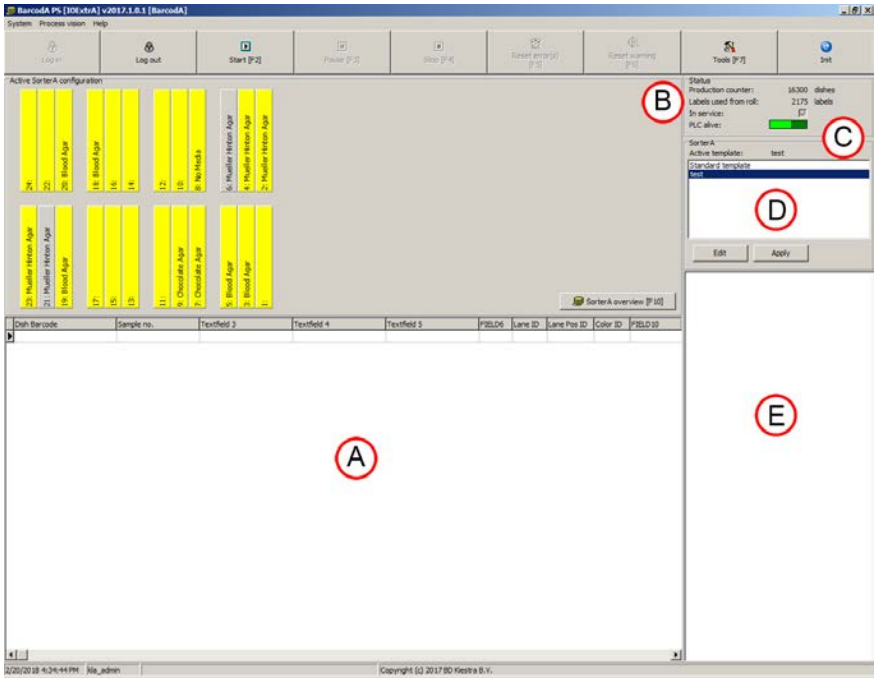
Both the InoqulA PC and the BarcodA (server) PC are connected to an uninterruptible power supply (UPS). In case of a power failure:

- The UPS will automatically shut off the BarcodA (server) PC after five minutes.
- The InoqulA PC must be shut off manually.

5 SorterA-BarcodA

This section covers the following topics:

5.1 BarcodA main menu



- The field in the middle of the display (A) shows the BarcodA worklist. It lists all plates to be processed.
- The Status window on the right (B) shows the production counters for BarcodA performance.
- Area (C) indicates whether there is communication between the computer and the Programmable Logic Controller (PLC) for control of the conveyor belts. Communication is active when the green bar moves and the BarcodA is able to operate. If an error has occurred during startup or logging in, the green bar will not be active and the BarcodA cannot operate.
- The configuration templates that are used for filling the SorterA boxes are displayed in the SorterA field (D).
- The field on the bottom right (E) displays LI(M)S files. If LI(M)S files have to be selected manually, double-click the required file to import.

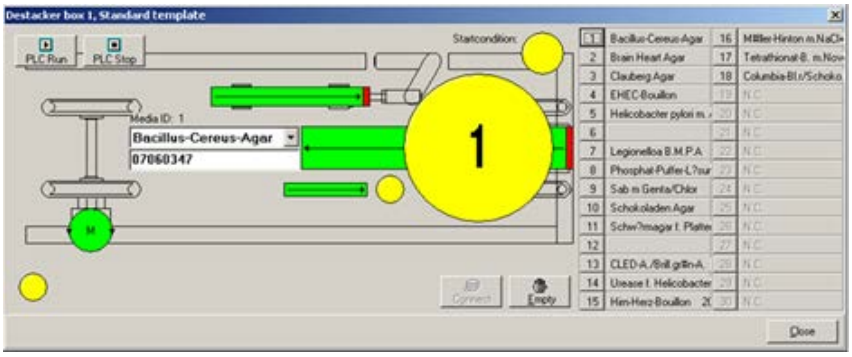
5.2 Status overviews

To access the process status overviews for the destackers, BarcodA, and the stackers:

1. Select **Process Vision** from the menu bar at the top of the display, then select the desired overview.
2. Press the appropriate function key: **[F10]** for the Destacker Overview, **[F11]** for the BarcodA Overview, or **[F12]** for the Stackers Overview.

5.2.1 Destacker overview

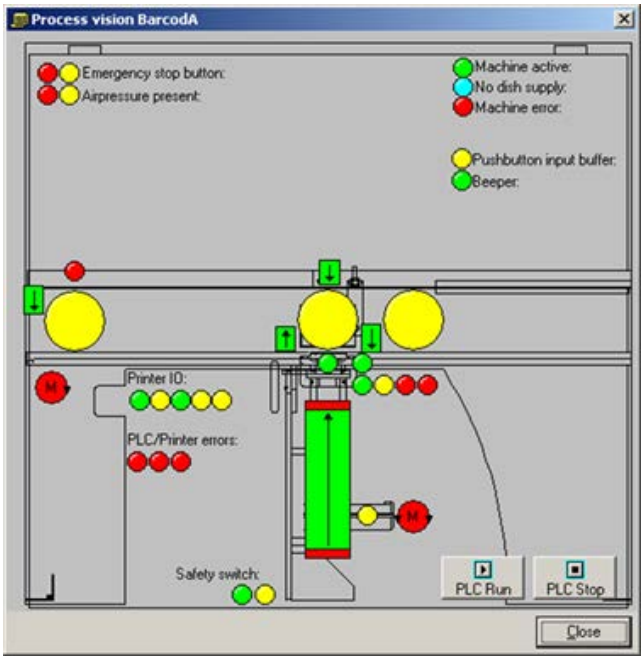
This window shows an overview of plate processing by the destacker. You can view the position of moving parts and the status of the sensors.



5.2.2 BarcodA overview

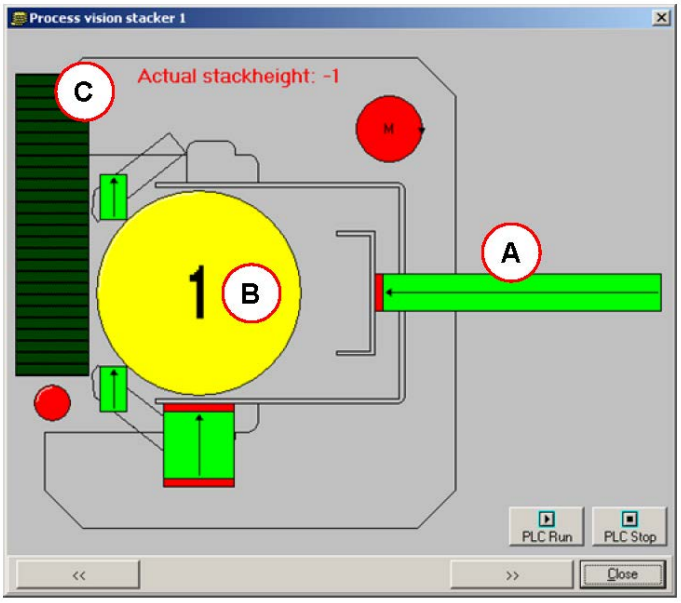
This window shows an overview of the BarcodA plate processing. The yellow circles in the middle of the display indicate when a plate is detected in this position.

Signal functions at the top of the window are colored to indicate when a sensor is active or when an error is detected at that point.



5.2.3 Stackers overview

This window shows an overview of plate processing by the stackers.



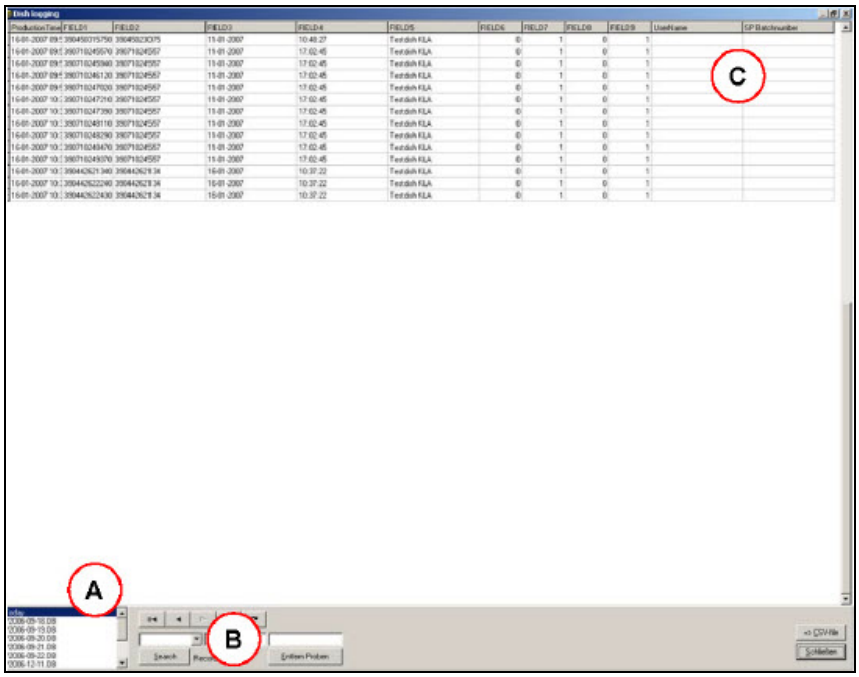
- When a plate is received at the stacker, the field on the right side of the display is green (A).
- When the plate is lifted and added to the stack, the circle on the left side is yellow (B).
- Additionally, you may view the number of plates that have been added to the stack (C).

5.2.4 Accessing plate logs

Labeled plates can be traced in the BarcodA database. Every labeled plate is recorded in the plate logging window.

In this window you can search for processed plates as well as other information (e.g., barcode, user), using the search functions.

In the main menu, select **View** in the menu bar, then select **Dishes**.



- The current day's production is shown first. If you need plate logging data from a different day, select the date on the bottom left side of the window (A).
- To initiate a search, select **Search** (B). Enter a selection from a column and fill in a value in the next field. The requested information appears in the window.
- Re-sort the list by selecting a column header (C). Selecting a column header a second time re-sorts the information in the opposite orientation.

5.3 Preparation for processing

Obtain a sufficient number of plates from your laboratory's storage location.

Allow any plates that are stored refrigerated to come to room temperature before use. Once removed from their storage location, BD recommends maintaining plates with the lids upright so that moisture does not form on the lids.

5.3.1 Select the SorterA template

Before starting operation, select the appropriate SorterA configuration template. The templates identify which media are needed in each SorterA box. The template that is currently active is highlighted in blue in the SorterA field.

To switch to a new configuration template:

1. Select the desired configuration template in the SorterA field.
2. Select **Apply**. The SorterA configuration template is activated.
3. Select **[F10]** to open the Destacker overview for the active template. The right side of the window displays the medium assignments for each box. The left side of the window displays the details for the selected SorterA box.

5.3.2 Fill the SorterA boxes with plates

1. View the active SorterA configuration field to identify which medium is needed for each box.

   NOTE

   BD recommends labeling the SorterA boxes with the media names when possible, to ensure correct media usage.

2. Place a stack of plates on the sensor in the SorterA box.

   In the configuration field, the corresponding box changes from gray to yellow, indicating the sensor recognized that plates were added.

   Ensure that the height of the plate stack is just under the cover of the box, so the cover does not rest on the stacks.

3. If batch or lot numbers need to be scanned, follow the steps described in the following section.
4. Place additional stacks until the box is full (no space is required between stacks).
5. Repeat steps 2–4 for all required SorterA boxes.
6. Close the protective covers over the boxes.

5.3.3 Scan media batch or lot numbers

By scanning media batch or lot numbers, the BarcodA software can verify that the correct media are entered in a SorterA box and that the expiry date is still valid.

BD recommends allowing the SorterA box to run empty before adding new media and scanning the batch and/or lot codes.

1. Ensure that a stack of plates is on the sensor.
2. In the main menu, select **View > Media > SorterA Overview**.
3. Select the box with the same medium as the one you are going to scan by selecting the number in the list at the right side of the display. The box has been selected when the number of the box appears in the large circle.
4. Select **Empty** to remove the previous batch or lot number.
5. Use the hand scanner to scan the batch or lot number for the new medium. All information is entered in the box under the media list. The color of the box changes from yellow to green.

5.4 Verifying the SorterA-BarcodA settings

This section covers the following topics:

5.4.1 Verifying the maximum stack height

After the BarcodA has applied a barcode label, the plate is transported to the stacker. This stacker can either stack the plates for one specimen and push out the stack, or the stacker can continue stacking until the maximum number of plates has been stacked.

Only operators trained and certified by BD as Key Users can change these parameters.

1. In the main menu task bar, select **Max. height** to have the BarcodA stack plates until the maximum stack height has been reached.
2. When operation is started, a stack is only removed when the maximum number of plates in the stacker is reached.

5.4.2 Verifying the carbon and label rolls

Before starting operation, check the supply of labels in the BarcodA printer. The number of labels used is shown on the right side of the BarcodA main window, in the Labels used from roll field. Once the counter approaches 6,500, change the label and carbon rolls.

WARNING

ALWAYS TURN OFF THE PRINTER BEFORE PERFORMING OPERATIONS ON THIS PART OF THE SOLUTION.

NOTE

Check the date on the labels and only use labels that are still within the “use before” date. If you use older labels, proper functioning of the printer cannot be guaranteed.

NOTE

The label roll and carbon roll should always be replaced at the same time.

1. Select **Help** from the main menu and then **Printer Wizard**.
   - Follow the steps described in the Printer Wizard to change the label and carbon rolls and for cleaning instructions.
   - Select **[►]** at the bottom of the window to advance to the next step.
   - Select **[◄]** at the bottom of the window to return to the previous step.
2. Select **Close**.

3. Select **OK**. The label counter resets to zero.
4. Close the BarcodA cover.

5.5 Operation

1. Press the blue reset button if necessary.
2. Select **Start [F2]**.
3. Select **OK** in the Machine will be initialized field.

   The SorterA-BarcodA starts transporting plates after it receives requests. Plates are requested by scanning specimen barcodes at digital reading workstations or the InoqulA+™ module. Plate requests are chronologically stored in a worklist until the plate has been delivered.

4. During operation, the status of the requests is continually updated and presented on the display:
   - True – indicates that the plates have been transported to the next component.
   - False – indicates that the request has been recreated.

5.5.1 Adding plates during operation

When a SorterA box is low on plates, but not yet empty, you may add more stacks of plates to that box. No action is required in the BarcodA software.

If you need to add plates to a box, if the box has run empty, or if you need to change the medium for a particular box:

1. Select **Stop [F4]**.
2. Load plates.
3. Select **Start [F2]**.

5.5.2 Pausing operation

Select **Pause [F3]** from the main menu at the top of the display.

The SorterA-BarcodA finishes the last plate it was processing. When this plate is delivered to the next module, the SorterA-BarcodA stops and other requests remain in the worklist.

To resume operation, select **Start [F2]**.

5.5.3 Completing operation

SorterA-BarcodA processing is complete when all plates from the worklist are delivered and no plate requests remain in the BarcodA software worklist.

Store any plates remaining in the SorterA boxes per your laboratory's standard protocols.

6 Fully automated specimen processing procedure

This section covers the following topics:

6.1 Preparing for fully automated operation

An overview of the setup for fully automated processing (FA processing) is presented below. Detailed setup procedures are found in the following sections.

1. Turn on the BCC.
2. Ensure that the SorterA-BarcodA contains enough plates with the required culture media.
3. The number of labels used is shown on the right side of the BarcodA software window in the Labels Used From Roll field. When the counter approaches 6,500, replace the BarcodA printer label and carbon rolls.
4. Replace the InoqulA desktop printer label and carbon rolls if necessary.
5. Obtain all liquid specimen containers for processing, and place them into specimen container racks.
6. Place the specimen container racks in the rack holder, and enter the rack codes into the InoqulA software.
7. Obtain broth tubes required for inoculation and place into broth tube racks.
8. Place the broth tube racks in the rack holder, and enter the rack codes into the InoqulA software.
9. Fill the pipet tip racks if necessary, and reset the tip counter in the InoqulA software.
10. Empty the pipet tip waste container if necessary. Ensure that the cap has been removed from the container before starting operation.
11. Obtain slides if required. Label the slides with labels from the desktop printer.
12. Place slides in a slide rack with the specimen ring and barcode label facing up. Place the slide rack in the slide preparation component, and enter the slide identification codes into the InoqulA software.
13. Fill the beads in the bead dispenser if necessary.

14. Empty the bead disposal containers if necessary.
15. The shifter cover is connected to the printer cover and the bead disposal drawer. To enable changing the printer label roll or emptying the bead disposal containers during processing, select **Unlock printer cover and bead disposal drawer** under System Menu.

WARNING

AFTER UNLOCKING THE COVERS, ONLY OPEN THE PRINTER COVER OR BEAD DISPOSAL DRAWER. DO NOT OPEN THE SHIFTER COVER, AS THE SHIFTER CONTAINS MOVABLE PARTS.

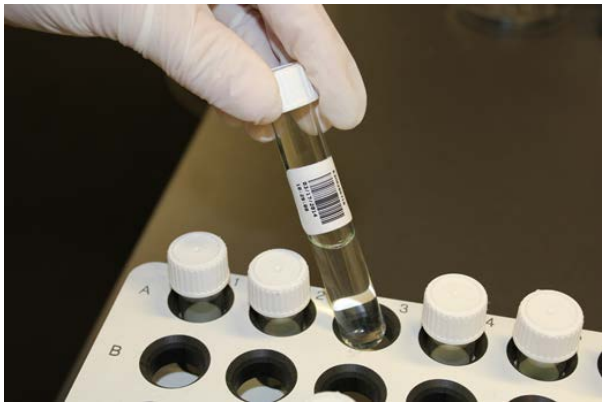
6.2 Use of specimen containers and specimen racks

NOTE

Perform SA processing if containers contain only a small amount of specimen material.

6.2.1 Placing specimen containers in specimen container racks

1. Place the specimen container barcode label lengthwise, so that when holding the container in a vertical position, the barcode lines are horizontal.



2. Place the labeled specimen containers in the specimen racks appropriate for the specimen containers' diameter.

   Specimen container racks are barcoded to identify the type of rack. Be sure to use the appropriate rack, as the InoqulA software processes the rack according to the barcode information.

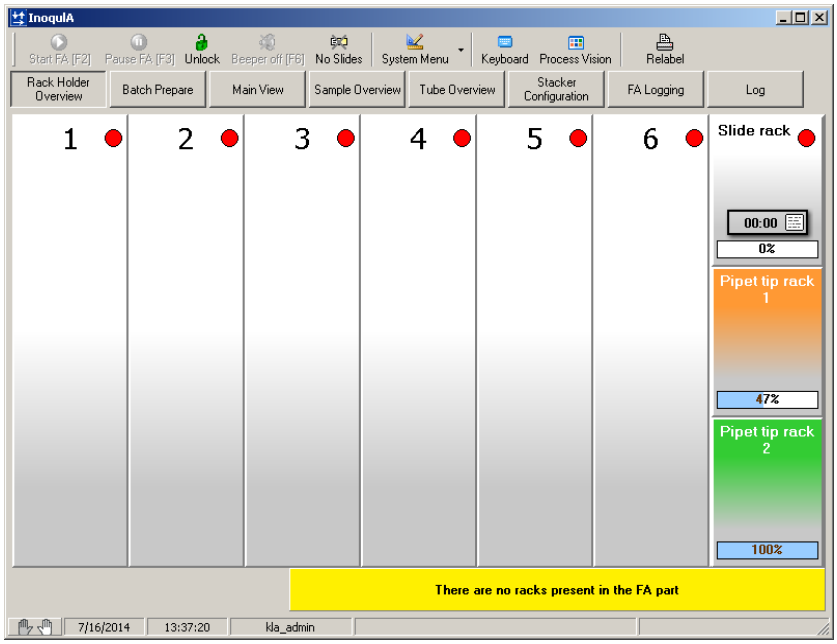
NOTE

Most specimens are adequately mixed using the shaker on the InoqulA+™. However, specimens that are extremely viscous should be vortexed before loading.

3. Fill racks starting with row A, number 1. After completely filling row A, continue with row B, number 1, etc.
4. Do not leave any spaces between specimen containers.

6.2.2 Placing specimen container racks in the rack holder

1. Select **Rack Holder Overview** from the main menu.

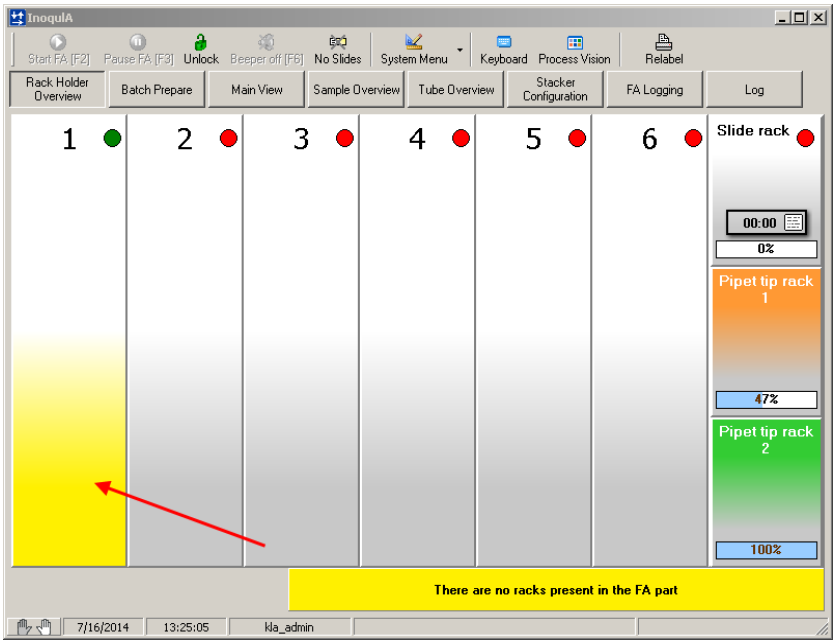


2. If no specimen container racks have been placed in the rack holder:
   - The display does not show any information in the rack positions, and a red dot (indicating “empty”) is present for each rack.
   - The message “There are no racks present in the FA part” appears on the bottom of the display.
3. Open the hood and front cover of the rack holder.
4. Place the specimen racks in the rack holder. Specimen racks may be placed in any rack holder position; however, racks containing specimen containers are typically placed on the left side. If only one rack is being processed, place the rack in position 5 for optimal operation.
5. Ensure that the rack legs are positioned on the blue sensor in the rack holder. Click the rack firmly into position.
6. On the InoqulA display, a green dot indicates where a rack has been placed, and the rack position has a yellow background.

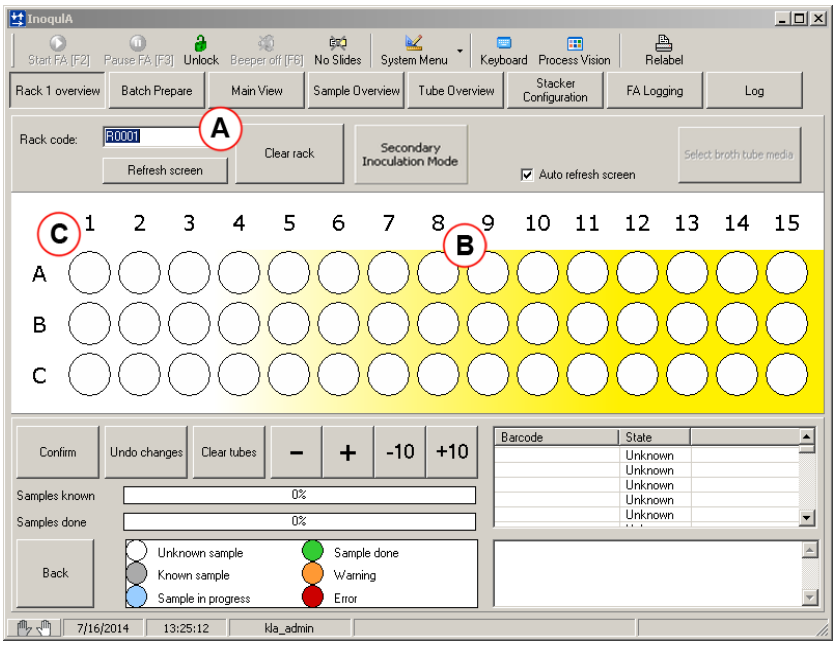
> NOTE
>
> After loading specimen container racks, you must define the racks in the InoqulA software before starting fully automated processing.

6.2.3 Defining specimen container racks in the InoqulA software

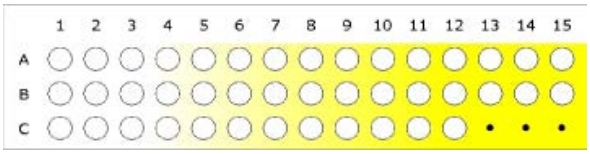
1. Select **Rack Holder Overview** from the main menu.
2. Select the rack to be identified. Rack holders that contain a rack have a green dot and a yellow background.



3. The Rack Overview detail display shows the rack status. Changes to the rack are entered using this display.



4. If any existing rack information needs to be deleted, select **Clear rack**. The information in the Rack code field (A) resets.
5. Use the hand scanner to scan the barcode of the specimen container rack placed in the selected rack holder, or type the rack barcode number in the field and press **Enter**.
6. The barcode appears in the Rack code field (A). A specimen rack graphic is displayed (B). The letters and numbers correspond to the specimen container rack rows and columns (C). For new racks, all locations are indicated with a white circle to represent a full rack of specimen containers.
7. Compare the display to the specimen rack and verify that the number of specimen containers match. White circles indicate a specimen container is present in that location, small black dots indicate no specimen container is present in that location.
   - Select **–** or **+** to change the number of specimen containers.
   - Select **–10** or **+10** to change the number of specimen containers in units of ten.



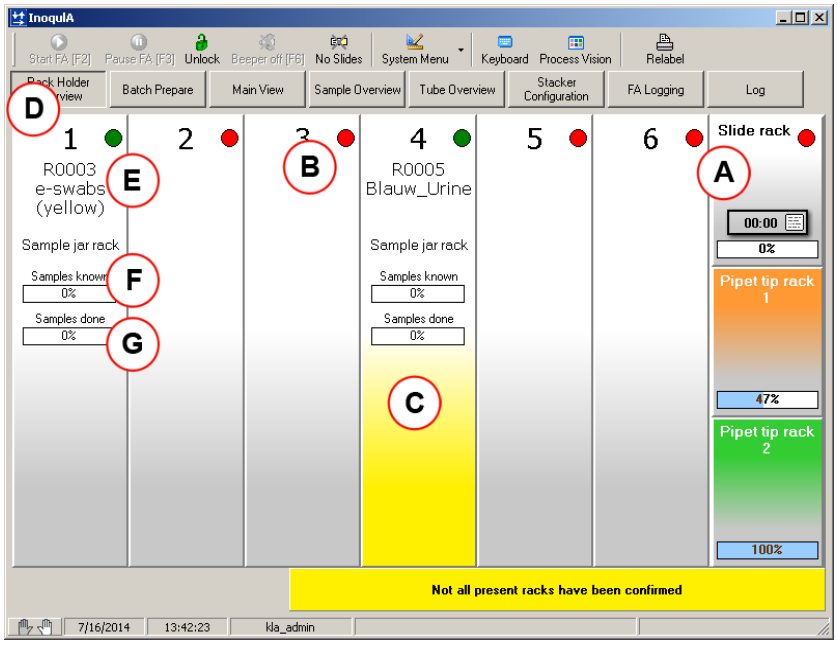
8. If necessary, select **Undo changes** to undo any changes that are made. The settings are deleted, and you exit the Rack Overview display.
9. If you need to edit the rack after selecting Undo changes, select **Edit rack** and enter changes.
10. If necessary, select **Clear tubes** to reuse a specimen rack with new specimen containers.

    Specimen rack barcodes are linked to the diameter of the specimen containers. When a particular specimen rack and barcode are reused, the InoqulA software must be updated with data for the new specimen containers.
11. When you are finished, select **Confirm**. The rack data is stored and the Rack Holder Overview is displayed. Or, select **Back** to return to the Rack Holder Overview display without confirming.
12. Repeat steps 2–11 for each specimen container rack until the display matches the racks.

6.2.4 Verifying the status of specimen containers and specimen container racks

After all specimen container racks have been entered into the InoqulA software, verify the status of the racks using the procedure below. Once specimen processing begins, status information is displayed.

1. Select **Rack Holder Overview** from the main menu.



The six rack holder positions are presented across the display (A).

- Rack holder positions with no rack have a red dot (B).
- Rack holder positions with a rack have a green dot.
- Rack holder positions with a rack that has not yet been entered or confirmed in the InoqulA software have a yellow background (C).
- Rack holder positions with a rack that has been entered and confirmed in the InoqulA software have a green dot along with information about processing status (D).
- The code for each rack is shown as well as the rack type (specimen container rack or broth tube rack) (E).
- The Samples known field (F) displays the percentage of specimens that have been automatically scanned. When this field is at 0%, only the rack has been identified in the InoqulA software. The InoqulA+™ has not yet started scanning any of the specimen containers.
- The Samples done field (G) displays the percentage of specimens that have been processed.

2. From the Rack Holder Overview display, select the desired specimen container rack to view detailed information about processing status and individual specimen containers. The Rack Overview detail for that specimen container rack is displayed.

The display shows the specimen containers in the rack and their status. Each specimen container is represented by a circle.

- Green indicates that the specimen container has been processed (A).
- Red indicates that an error has occurred for that specimen (B). Select the red circle to view the cause of the error, shown on the right side of the display (F).
- A small orange dot indicates that the specimen container was not picked up (C).
- A small black dot indicates that the rack does not contain a specimen container in that location (D).
- A blue outline appears around the circle for the specimen container when it is selected, and detailed information appears on the right side of the display (E). This information includes specimen barcode and status.
- When a specific barcode is selected, the position of the specimen container in the rack is displayed with a blue outline.
- Circular arrows appear inside the indicator when at least one analysis set requires manual inoculation. Select the specimen container to view a message on the right side of the display indicating that a label was printed for external media (F).

6.3 Use of broth tubes

Material from specimen containers can be inoculated into broth tubes. This section describes the setup and software entry procedures for broth tubes.

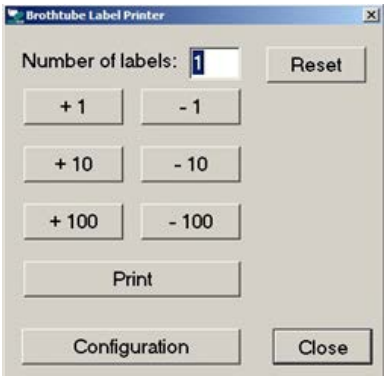
6.3.1 Labeling broth tubes

Broth tubes must be labeled with a unique barcode before being placed in a rack. After inoculating the tubes, the barcode is linked to the corresponding specimen.

Generate and print barcodes with the Brothtube Label Printer application.

1. Minimize the InoqulA application by selecting the **–** button on the upper right of the display.
2. Double-click the **Brothtube Label Printer** icon.

3. In the **Number of labels** field, enter the number of barcode labels needed for broth tubes. Select **+1**, **−1**, **+10**, **−10**, **+100**, and **−100** to increase or decrease the number of labels to the correct amount.



4. When the correct number of labels has been selected, select **Print**.

   The desktop printer prints the requested number of barcode labels. Tear off the labels from the roll. For printers with a cutting option, the printer can also be set to automatically cut each label.

5. Select **Close** to close the Brothtube Label Printer window. Maximize the InoqulA application.

6.3.2 Placing broth tubes in broth tube racks

1. Place the broth tube barcode label lengthwise so that when holding the tube in a vertical position, the barcode lines are horizontal.
2. Place the labeled broth tubes into the racks appropriate for the tubes' diameter.

   Broth tube racks are barcoded to identify the type of rack and the type of broth tube. Be sure to use the appropriate rack, as the InoqulA software processes the rack according to the barcode information.

   Do not place broth tubes with different diameters or different heights in the same rack.

3. Fill racks with the same types of media in the same row.

   Fill racks starting with row A. If you do not start with row A, the InoqulA+™ takes extra time to find the first broth tube.

   Do not mix different media in one row; start a new row for each new medium. A row or rack does not need to be full.

6.3.3 Placing broth tube racks in the rack holder

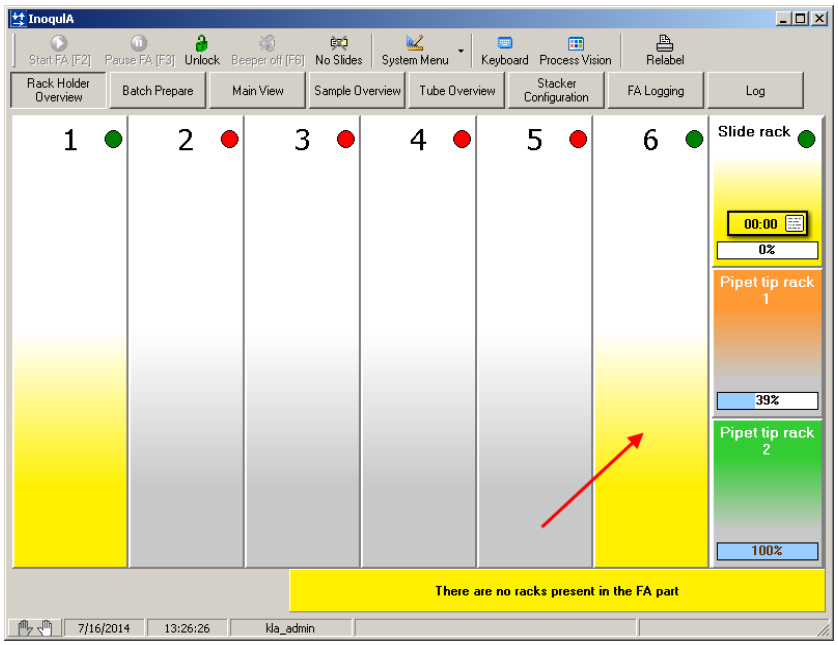
1. Select **Rack Holder Overview** from the main menu.
2. If no broth tube racks have been placed in the rack holder, the display does not show any information in the rack positions, and a red dot (indicating "empty") is present for each rack.
3. Carefully place the broth tube racks in the rack holder. Broth tube racks may be placed in any rack holder position; however, racks containing broth tubes are typically placed on the right side.

4. Ensure that the rack legs are positioned on the blue sensor in the rack holder. Click the rack firmly into position.
5. On the InoqulA display, a green dot indicates where racks have been placed, and the rack position has a yellow background.

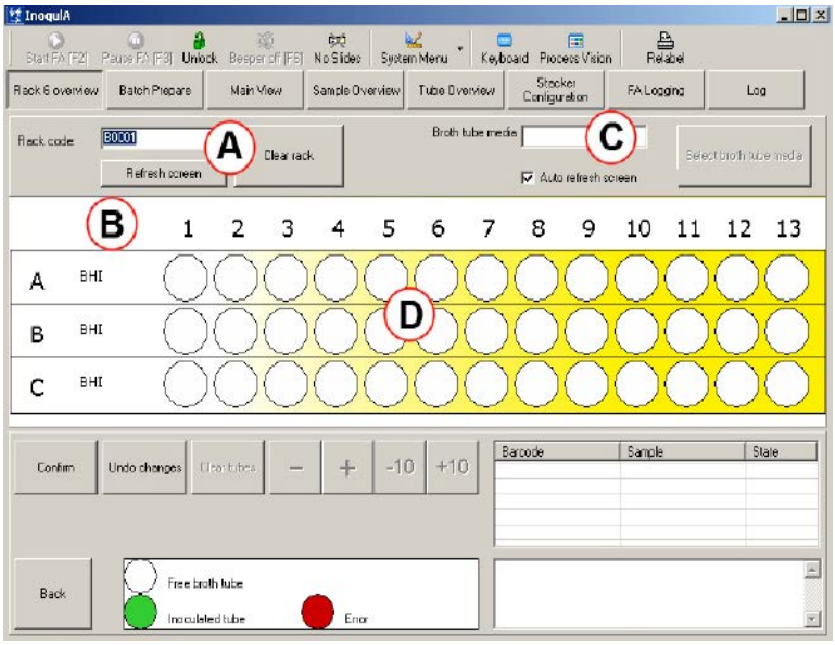
> NOTE
>
> After loading broth tube racks, you must define the racks in the InoqulA software before starting fully automated processing.

6.3.4 Identifying broth tubes in the InoqulA software

1. Select **Rack Holder Overview** from the main menu.
2. Select the desired rack. Racks holders that contain a rack have a green dot and yellow background on the display.



3. The detailed display shows the rack status. Changes to the rack are entered using this display.



4. If any existing rack information needs to be deleted, select **Clear rack**. The information in the Rack code field (A) resets.
5. Use the hand scanner to scan the barcode of the broth tube rack placed in the selected rack holder, or type the rack barcode in the field and press **Enter**.
6. The barcode appears in the Rack code field (A). The rack graphic is displayed (B). The letters and numbers correspond to the broth tube rack rows and columns.

   New racks default to a full rack of broth tubes. All locations are represented by a white circle (D).
7. Compare the display to the broth tube rack. If changes are needed to the medium or the number of broth tubes, follow the steps below.
8. To assign or change a medium to a row of broth tubes:
   a. Select the desired row.
   b. Select **Select broth tube media**. The media list is displayed.
   c. Select the correct medium for this row and select **OK**. The medium name appears to the left of each row and in the Broth tube media field (C).
   d. If the row does not contain any broth tubes, select **No Media** followed by **OK**.
9. To enter the correct number of broth tubes in a given row:
   a. Select the desired row if it is not already selected.
   b. Select **–** or **+** to change the number of broth tubes.
   c. Select **−10** or **+10** to change the number of broth tubes in units of ten.
10. If necessary, select **Undo changes** to undo any changes that are made. The settings are deleted, and you exit the Rack Overview display.
11. If necessary, select **Clear tubes** to reuse a broth tube rack with new broth tubes or to replace a single row of inoculated tubes with new broth tubes.

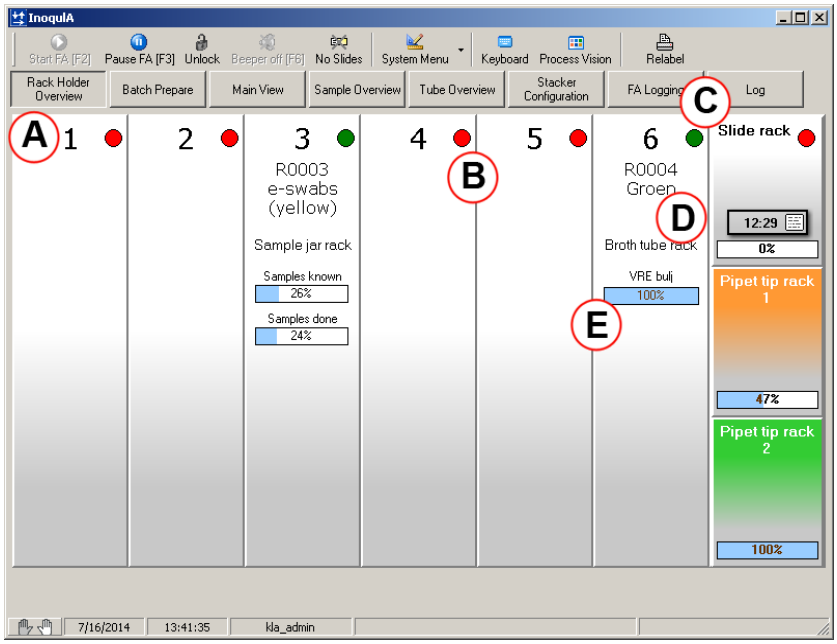
The broth tube rack barcodes are linked to the diameter of the broth tubes. When a particular broth tube rack and barcode are reused, the InoqulA software must be updated with data for new tubes.

12. When you are finished, select **Confirm**. The rack data is stored and the Rack Holder Overview is displayed. Or, select **Back** to return to the Rack Holder Overview display without confirming.
13. Repeat steps 2–12 for each broth tube rack until the display matches the racks.

6.3.5 Verifying the status of broth tubes and broth tube racks

After all broth tube racks have been entered into the InoqulA software, verify the status of the racks using the procedure below. Once specimen processing begins, status information is displayed.

1. Select **Rack Holder Overview** from the main menu.



The six rack holder positions are presented across the display (A).

- Rack holder positions with no rack have a red dot (B).
- Rack holder positions with a rack have a green dot.
- Rack holder positions with a rack that has not yet been entered or confirmed in the InoqulA software have a yellow background.
- Rack holder positions with a rack that has been entered and confirmed in the InoqulA software have a green dot along with information about processing status (C).
- The rack barcode for each rack is shown as well as the rack type (specimen container rack or broth tube rack) (D).
- The percentage of unused tubes is presented (E). In the example shown above, 100% of the broth tubes are unused (no broth tubes have been inoculated).

2. From the Rack Holder Overview display, select the desired broth tube rack to view detailed information about processing status and individual broth tubes.
3. The detailed display shows the broth tubes in the rack and their status. Each broth tube is represented by a circle:
   - White indicates an unused broth tube.
   - Green indicates an inoculated broth tube.
   - Red indicates an error.

6.3.6 Prioritization of broth tube racks

Racks are processed in the order they are scanned. If rack 1 is scanned later than rack 2 and 3, then rack 2 and 3 are processed completely before rack 1 is processed.

If you scan three racks from right to left, the InoqulA+™ will start with the right-most (first scanned) rack.

For example, rack numbers 1, 2, and 3 have been scanned, and the module has started with rack 1. If you would like to continue with rack 4 after rack 1 is processed, the module has to pause.

1. Place rack 4 and scan it. Adjust settings and select **Confirm**.
2. In Rack Holder Overview, select rack 3.
3. Select **Clear** and repeat scanning procedure. Adjust settings and select **Confirm**.
4. In Rack Holder Overview, select rack 2.
5. Select **Clear** and repeat scanning procedure. Adjust settings and select **Confirm**.
6. Select **Start**. The InoqulA+™ will continue with rack 1, and then 4, 3, and 2.

6.4 Use of pipet tips

The InoqulA+™ uses disposable pipet tips during inoculation. Several pipet tips may be required for processing one specimen. This section describes the setup and software entry procedures for pipet tips.

If the module already contains full racks of pipet tips or partial racks with enough tips to process the specimens, skip this section.

6.4.1 Refilling pipet tip racks

Normally two or three spare pipet tip racks are delivered with the InoqulA+™. When not in use, spare racks should be autoclaved and ready to replace empty racks.

1. Remove empty pipet tip racks, and place new pipet tip racks in the notches of the pipet tip rack holders.
2. Metal tabs hold the pipet tip racks in the holder. When removing empty racks, pull the rack gently until the metal tabs release. When placing new racks in the holder, press the rack down until the tab snaps into place. The racks have a slot which allow them to be only oriented one way.

3. The pipet tip rack holder can hold up to three pipet tip racks:
   - If your InoqulA+™ is configured with a slide preparation module, that module takes the place of one of the pipet tip racks, and the other two spaces are used for the pipet tips.
   - If your InoqulA+™ is not configured with a slide preparation module, you may have either two or three pipet tip racks, depending on your setup.
   - The pipet tip rack toward the back (furthest from the user) is number 1. Moving toward the front, the rack numbers are 2 and 3.

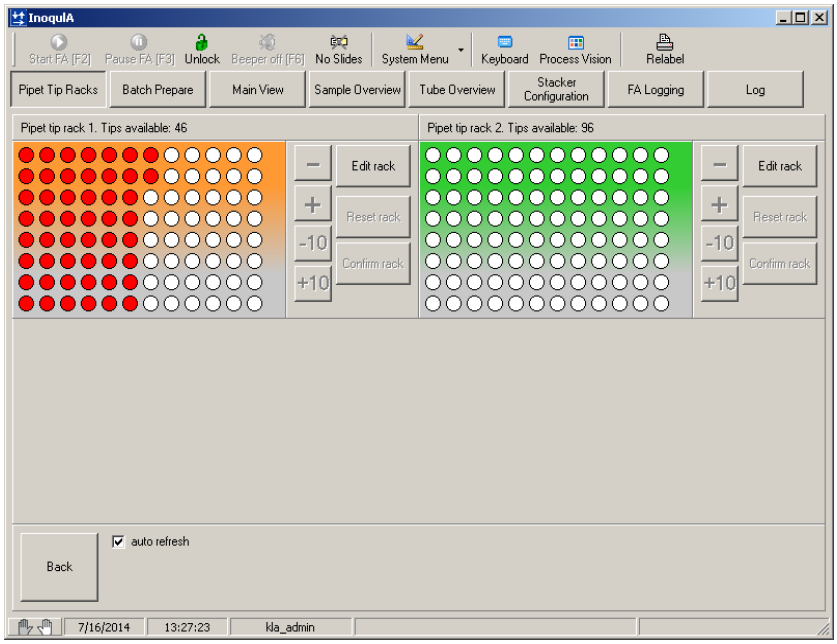
   The screen shots in this section are shown for an InoqulA+™ configured with two pipet tip racks. If your InoqulA+™ has three pipet tip racks, follow instructions with all racks.

4. If the pipet tip waste container is full, remove it and empty tips into an approved waste disposal location. Replace the empty pipet tip waste container, and ensure that the cap is removed. If you use single-use containers, discard the entire container and replace with a new pipet tip waste container.

> NOTE
>
> After loading pipet tip racks, you must define the racks in the InoqulA software before starting fully automated processing.

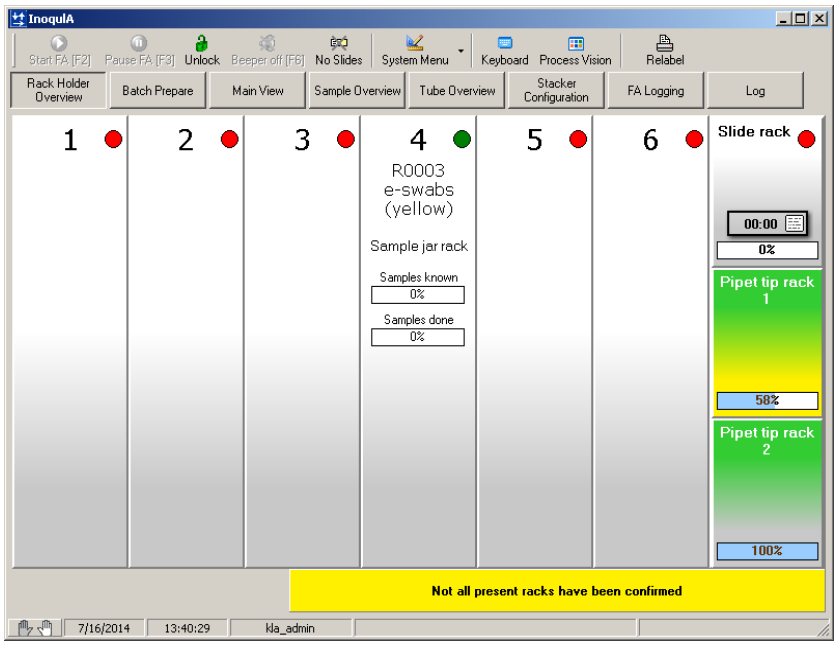
6.4.2 Defining pipet tip racks in the InoqulA software

1. Select **Rack Holder Overview** from the main menu.
2. Select the desired pipet tip rack at the bottom right of the display. The detailed display shows the status of the pipet tip supply.
   - Red dots indicate empty tip locations
   - White dots indicate unused tips



3. Select **Edit rack**. A yellow background appears on the graphic.
4. Select **Reset rack**. The InoqulA software resets the rack to the number of pipets indicated. The number of tips in the rack can be adjusted by selecting **+10** / **−10** / **+1** / **−1**.
5. Select **Confirm rack** to confirm the changes. A green background appears on the graphic. All racks must be confirmed before the module starts processing specimens.
6. Repeat steps 3–5 for all new pipet tip racks.
7. Select **Back** to return to the Rack Holder Overview display.

   If you select Edit rack, but do not select Confirm rack (step 5 above) before selecting Back, the following is displayed:

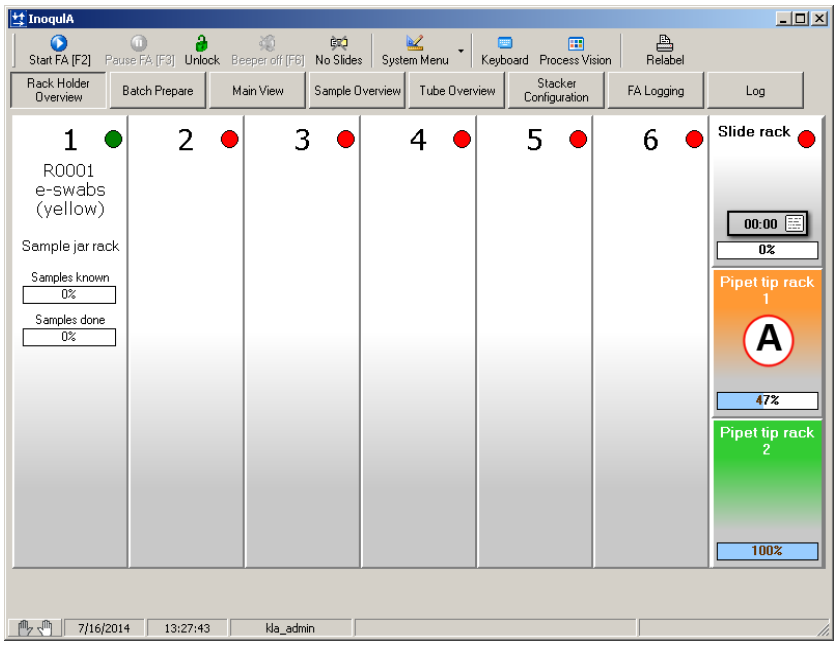


   The message “Not all present racks have been confirmed” is displayed if one of the pipet tip racks has not yet been confirmed. Additionally, the pipet tip rack graphic has a yellow background on the bottom, indicating that an action is still required.

6.4.3 Verifying the pipet tip supply status

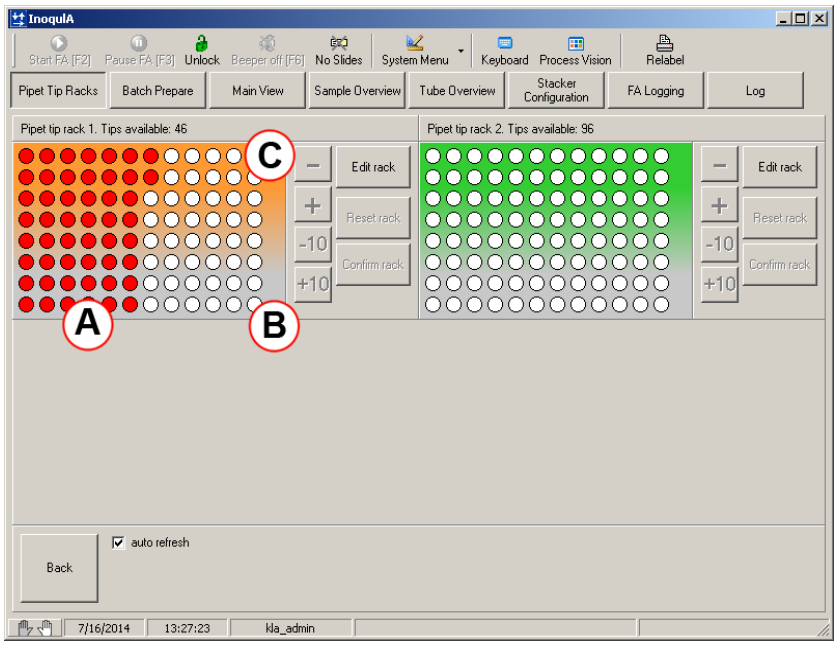
After all pipet tip racks have been entered into the InoqulA software, verify the status of the racks using the procedure below. Once specimen processing begins, status information is displayed.

1. Select **Rack Holder Overview** from the main menu. The pipet tip rack holder positions are displayed on the right side (A).



- A green background indicates a rack is completely filled with unused pipet tips.
- An orange background (A) with no yellow, indicates a rack in which most of the pipet tips have been used.
- A red background indicates an empty rack.
- A yellow background at the bottom of the graphic indicates the rack needs to be confirmed by the user.
- The percentage of tips remaining is also shown for each rack.

2. Select the desired pipet tip rack on the right side of the display to view the status of the pipet tips. The Pipet Tip Racks detail is displayed.



3. Detailed information on the status of the pipet tip supply is shown.
   - A green background indicates a rack that is completely filled with unused pipet tips.
   - An orange background indicates a rack in which most of the pipet tips have been used.
   - A red background indicates an empty rack.
   - Red circles indicate used pipet tips. Tips are no longer present in those locations (A).
   - White circles indicate unused pipet tips (B).
   - The number of the pipet tips remaining is displayed above the pipet tip rack graphic (C).

6.5 Using the slide preparation submodule

Material from specimen containers can be inoculated onto slides. This section describes the setup and software entry procedures for slides in the slide preparation submodule.

If your InoqulA+™ is not configured for automatic inoculation of slides using the slide preparation submodule or you are not inoculating onto slides, skip this section.

6.5.1 Labeling slides

Slides must be labeled with a unique barcode before being placed in a rack. After inoculating the slides, the barcode is linked to the corresponding specimen.

Generate and print barcodes with the Brothtube Label Printer application.

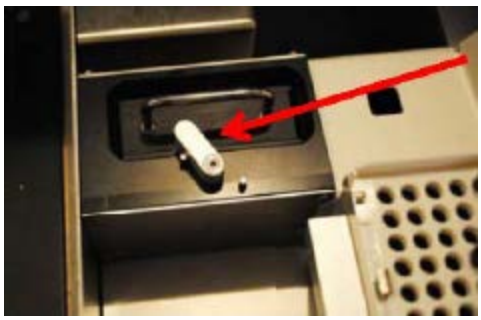
1. Minimize the InoqulA application by selecting the **–** button on the upper right of the display.
2. Double-click **Brothtube Label Printer**. The Brothtube Label Printer main window opens.
3. In the **Number of labels** field, enter the number of barcode labels needed for slides. Select **+1**, **−1**, **+10**, **−10**, **+100**, and **−100** to increase or decrease the number of labels to the correct amount.

4. When the correct number is selected, select **Print**. The desktop printer prints the requested number of barcode labels. Tear off the labels from the roll. The printer can also be set to automatically cut each label.
5. Select **Close** to close the Brothtube Label Printer window. Maximize the InoqulA application.

6.5.2 Placing slides in the slide rack

1. Place the slide label on the right side of the slide so that the barcode lines are parallel to the long side of the slide.

2. Turn the slide rack tab clockwise, and remove the rack from the slide preparation submodule.



3. Fill the rack with slides.

   Slides fit into the slots horizontally on the slide rack. Load slides with the barcode label on the right side of the rack and facing up (where numbers are printed).

4. Carefully replace the rack into the slide preparation submodule.

   Insert the rack so that the printed numbers are facing you and are on the right side. The rack can only be oriented in this way.

5. Turn the slide rack tab counter-clockwise to lock the slide rack in place.

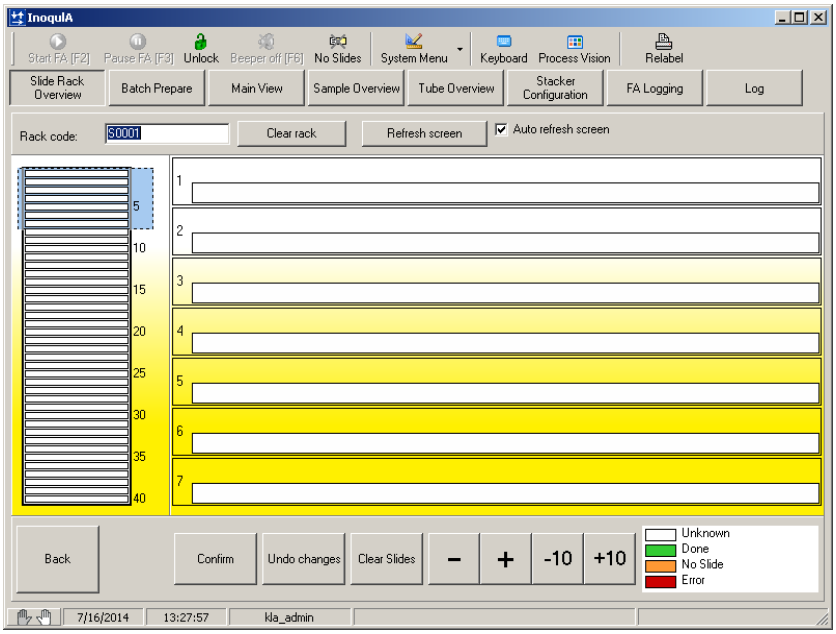
   On the InoqulA display, a green dot (indicating “filled”) and yellow background (indicating that the rack needs to be confirmed in the software) appears on the graphic of the slide rack.

> NOTE
>
> After loading the slide rack, define the rack in the InoqulA software before starting fully automated processing.

6.5.3 Defining slides in the InoqulA software

1. Select **Rack Holder Overview** from the main menu.
2. Select the slide rack graphic on the right side of the display.

   The Slide Rack Overview detail is displayed. Changes to the rack are entered using this display.



   The left side provides a graphical overview of the slide rack and the right side displays information about selected slides as well as the status of the slide supply.

   Slides:

   - White indicates an unprocessed slide.
   - Green indicates dispensed slides.
   - Red indicates that an error has occurred with the slide (for example, the slide barcode is in use for another specimen or the expected slide was not present after the barcode scan).
   - Orange indicates that a slide was not found at the expected position.

   Slide Border:

   - Black indicates that a slide is expected in that position.
   - Light gray indicates that no slide is expected or the slide has been removed by the user.
3. Use the hand scanner to scan the barcode of the slide rack. The barcode appears in the Rack code field.

   If you need to clear any existing rack information, select **Clear Rack**.
4. Compare the display to the slide preparation component and ensure that the number of slides match.

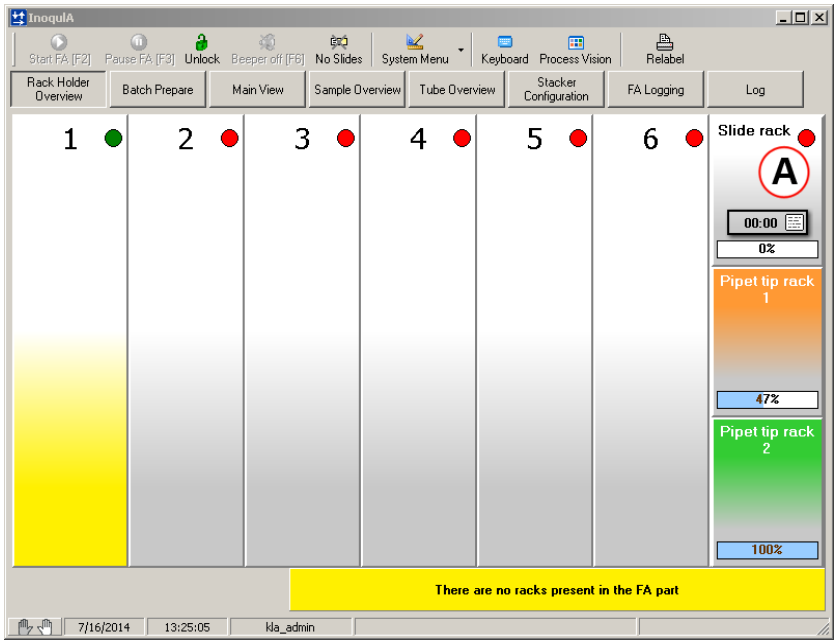
5. Select **–** or **+** to change the number of slides.
6. Select **–10** or **+10** to change the number of slides in units of ten.
7. Select **Undo changes** to undo any incorrect changes that have been made. The incorrect settings are deleted and you exit the Slide Rack Overview.
8. Select **Clear slides** to reuse a slide rack with new slides.

   The slide racks are barcoded, so when a particular slide rack and barcode are reused, the InoqulA software must be updated with data for the new slides.
9. When you are finished, select **Confirm**. The rack data is stored and the Rack Holder Overview is displayed. Or, select **Back** to return to the Rack Holder Overview display without confirming.

6.5.4 Verifying the status of slides and the slide preparation submodule

After all slides have been defined in the InoqulA software, verify the status of the racks using the procedure below. Once specimen processing begins, status information is displayed.

1. Select **Rack Holder Overview** from the main menu.



2. The slide rack graphic is shown on the right side of the display (A).
   - A green dot indicates that a slide rack is present in the slide preparation submodule.
   - A red dot indicates that no slide rack is present in the slide preparation submodule.
   - A yellow background indicates the rack is in edit mode and that slides can be added or removed, and have yet to be confirmed.
   - Gray indicates the rack is in normal operation mode.
   - The percentage of unused slides remaining is shown.

6.6 Using beads

The InoqulA+™ inserts disposable magnetic beads into plates prior to inoculation. Several beads may be required for processing a specimen. Used beads are discarded into containers in the back of the module. This section describes the setup and software entry procedures for magnetic beads.

If the InoqulA+™ already contains a full dispenser of beads or enough beads to process the specimens, and the bead disposal containers are empty, skip this section.

6.6.1 Refilling the bead dispenser and emptying the bead disposal containers

Normally a spare bead dispenser is delivered with the module. When not in use, the spare should be autoclaved and ready to replace the empty bead dispenser.

1. Remove the bead dispenser from the bead dispenser holder. Remove the lid.
2. Refill the bead dispenser in a location away from the InoqulA+™ to prevent dropping or losing any beads inside the module.

> NOTE
>
> Autoclave (sterilize) the bead dispenser when it is empty. Use only new beads when refilling the bead dispenser. Do not reuse beads.

3. Replace the lid and place the bead dispenser back into the bead dispenser holder. Two legs on the bottom of the dispenser line up with notches on the holder. Ensure that the legs fit into the notches and the bead dispenser is straight.
4. Ensure the BCC is closed. Select **System Menu** from the main menu. Then select **Unlock printer cover and bead disposal drawer**.
5. Open the drawer for the bead disposal containers on the back of the SA submodule.
6. Discard the beads in biohazardous waste.
7. Disinfect the bead disposal containers.
8. If your bead disposal containers are disposable, cap the containers and discard in biohazardous waste.
9. Place emptied or new bead disposal containers back into the drawer.

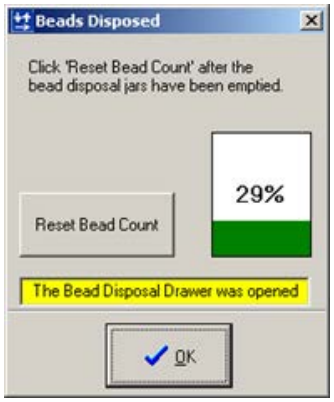
> NOTE
>
> Remove the caps from the bead disposal containers when placing into the drawer. Place the cap in the space next to each container.

> NOTE
>
> Only place clean, dry bead disposal containers in the drawer. Do not add alcohol to the containers.

10. Close the drawer.

> NOTE
>
> The bead disposal drawer cannot be closed if one of the bead disposal containers is missing. A special locking mechanism detects missing containers to prevent dropping contaminated beads into the InoqulA+™.

The following message is displayed, indicating that the bead disposal drawer has been opened.



11. Select **Reset Bead Count** after the bead disposal containers have been emptied. The bead count resets to 0%. Or, select **OK** to continue without resetting the bead count (if the bead disposal containers were not emptied).

6.7 Starting fully automated processing

1. Close the hood and front cover of the rack holder.
2. Press any reset buttons that are lit.
3. Select **Rack Holder Overview** from the main menu.
4. Select **Start FA [F2]** from the main menu.

> NOTE
>
> Any time you need to start the InoqulA+™, select **Start FA [F2]**. As the module checks if all start conditions are met, it may take a while before the Start button is enabled.

6.7.1 Pausing operation

During operation, it is not possible to open the hood and front cover. If you need to open the hood and front cover or want to pause the InoqulA+™ for another reason, select **Pause FA [F3]** on the Rack Holder Overview display.

After selecting Pause FA [F3], the module finishes the last plate or specimen it was processing. If the module is in the middle of an inoculation, it discards the pipet tip and returns all tubes and/or slides to their original rack position. Then the module stops and the hood and front cover can be opened.

To resume operation, select **Start FA [F2]**.

> NOTE
>
> If plates are manually removed from the solution other than being collected from output stackers, BD Synapsys™ Informatics receives no confirmation of the final destination of these plates.

6.8 Completing fully automated processing

This section covers the following topics:

6.8.1 Viewing a completed batch

Once processing is complete:

- No new carriers are being transported.
- There are no plates along any point of the ProceedA.
- All inoculated plates are stored in a ReadA™ Compact, or are sorted into one of the ReadA™ Compact output stackers.
- The InoqulA software pauses.

1. Select **Rack Holder Overview** from the main menu.

   The specimens counter shows 100% complete for all specimen container racks. Additionally, the rack graphics change color.

   - Green indicates that the entire rack has been processed without errors.
   - Red indicates that an error has occurred with one or more specimen containers in the rack.
2. View the detailed information displays for specimen containers, broth tubes, and slides. Any specimen containers that were not successfully completed must be reprocessed.
3. Discard any broth tubes marked with an error.
4. For specimens that require external media, a label is printed on the desktop printer.
   a. Apply the label to the corresponding plate.
   b. Inoculate the specimen onto the plate.

   > NOTE
   >
   > Your solution must be configured to enable manual inoculation of external media in FA mode.

5. Discard any slides marked with an error.
6. If necessary, you can retrieve a list of the steps performed by the InoqulA+™ . See **6.9 Status overview**.

NOTE

During automated specimen processing with dispense verification activated, the module actively monitors whether plate inoculation has been successfully performed. If inoculation was not detected for a certain plate, that plate, and all other plates for the specimen being processed, are sent to the waste stacker.

6.8.2 End of run cleanup

1. Open the hood and front cover of the rack holder.
2. Remove all racks.
3. Store or discard specimen containers according to your laboratory's standard operating procedures.
4. Incubate or process broth tubes according to your laboratory's standard operating procedures.
5. Process slides according to your laboratory's standard operating procedures.
6. Leave the pipet tip racks in the rack holder unless they are empty. Replace if necessary.
7. If there are no more specimens to be processed, place the cap on the pipet tip waste container, but do not tighten it completely. If the pipet tip waste container is full, empty or replace it.
8. Empty bead disposal containers if necessary.
9. Remove all waste from the work area.

6.9 Status overview

At any point during batch processing, you can view the status of all entered specimens and all completed inoculations. The list contains operations from the time the InoqulA software was started.

1. Select **Sample Overview** from the main menu. The Sample Overview is displayed.
2. Scan the plate barcode to display additional information for a specimen.

6.10 Reprinting labels

If no labels are dispensed from the InoqulA desktop printer, the roll of labels may have run out. In addition, if the carbon roll for the desktop printer is empty, the printer will generate blank labels. Follow the steps below to reprint labels.

1. Replace the label or carbon roll according to the instructions in **19.6 Replacing the label and carbon roll**.
2. Print the required labels for broth tubes or slides.

7 Semi-automated specimen processing procedure

This section covers the following topics:

7.1 Preparing for semi-automated specimen processing

1. Turn on the BCC.
2. Ensure that the SorterA-BarcodA contains enough plates with the required culture medium.
3. The number of labels used is shown on the right side of the BarcodA software window, in the Labels Used From Roll field. When the counter approaches 6,500, change the BarcodA printer label and carbon rolls.
4. Replace the InoqulA+™ desktop printer label/carbon rolls if necessary.
5. Obtain the specimen containers for processing.
6. Obtain broth tubes required for inoculation.
7. Add slides to the slide dispenser if necessary. Replace the cover over the slides.
8. Fill the beads in the bead dispenser if necessary.
9. Empty the bead disposal containers if necessary.

7.2 Setting left- and right-handedness

During semi-automated processing (SA processing), the InoqulA+™ considers the position (left-handed or right-handed) from which to inoculate a specimen, and uses LED lights under the plate to indicate where to inoculate. If the user is right-handed, the left LED indicators will be lit; if the user is left-handed, the right LED indicators will be lit.

Left- or right-handedness can be saved in the user's profile. When a user logs in to the InoqulA software, the InoqulA+™ settings are shown at the bottom of the display. The hand icon that is colored white indicates which handedness is applied.

If you need to change the hand for inoculation, select the **hand** icon.

NOTE

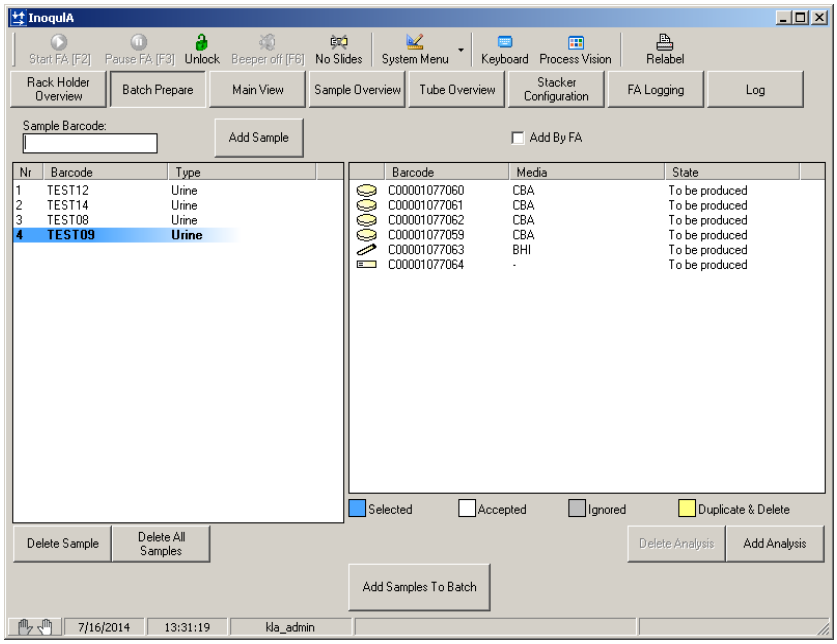
The LED indicators for inoculation also depend on a specimen's spreading pattern and analysis. These conditions always take precedence over the user's handedness.

7.3 Defining a specimen batch in the InoqulA software

NOTE

Emergency specimens may be processed by performing manual inoculation in the SA submodule and then adding the specimens to a batch.

1. Select **Batch Prepare** from the main menu.



2. Using the hand scanner, start scanning the barcodes of the specimens to be processed.

NOTE

Using a hand scanner is the preferred method of entering specimen IDs.

The software tracks which analyses and carriers are needed for each specimen. Unique barcodes are generated for each carrier analysis and displayed on the right side of the window. These barcodes are different from the specimen's LI(M)S barcode.

7.3.1 Deleting a specimen during batch creation

While creating a batch, a scanned specimen may be deleted.

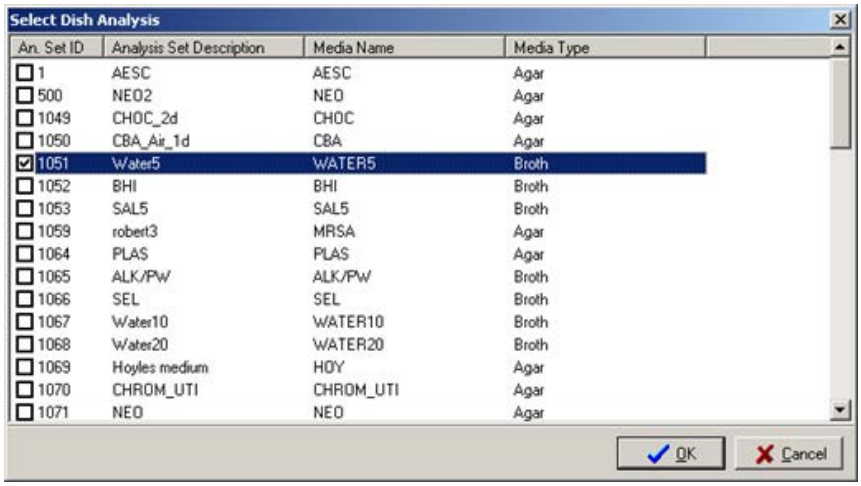
1. On the left side of the window, select the specimen to be deleted.
2. Select **Delete Sample**.
3. Alternatively, select **Delete All Samples** to delete the entire list of specimens.

> NOTE
>
> BD recommends only adding the number of specimens to a batch that you can complete at one time.

7.3.2 Adding an analysis during batch creation

While creating a batch, you may add analyses to a specimen.

1. On the left side of the display, select the specimen for which the analysis is being added.
2. Select **Add Analysis**.
3. Select the desired analysis, then select **OK**.



7.3.3 Deleting an analysis during batch creation

While creating a batch, you may delete a requested analysis for a specimen.

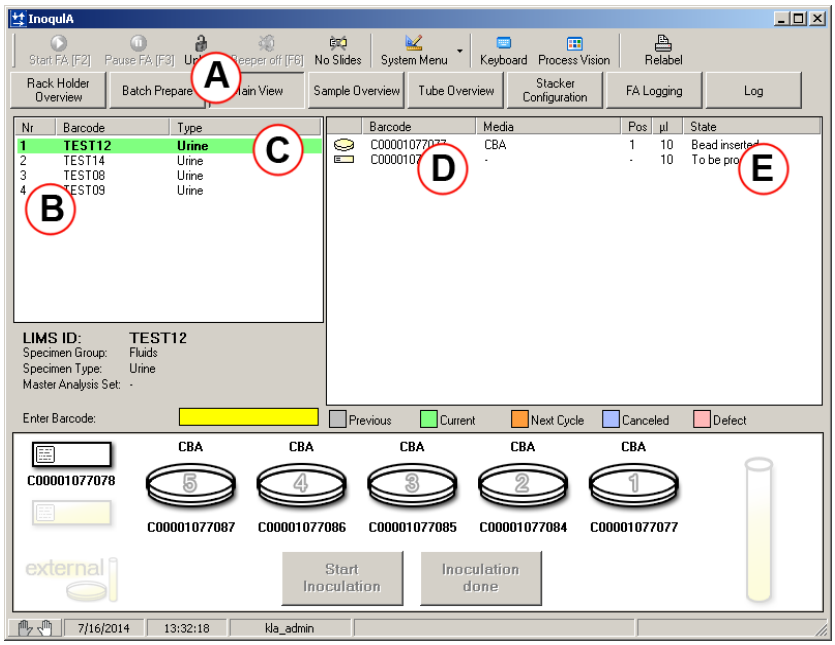
1. On the right side of the display, select the analysis to be deleted.
2. Select **Delete Analysis**.

> NOTE
>
> Once Add Samples to Batch has been selected and inoculation has started, specimens and analyses can no longer be added to or deleted from the batch.

7.4 Starting semi-automated processing

1. Select **Add Samples to Batch**. If a plate is requested, it is sent from the SorterA-BarcodA with a unique barcode label. After the beads have been added, the plate is transported to the buffer position to await the request for inoculation.
2. Select **Main View** from the main menu if it is not already selected.

   The Main View (A) shows the created batch (B) with an overview of all analyses to be performed on the current specimen (C). The analyses for the current specimen are categorized by slides, plates, and broth tubes as shown by the graphics to the left of the barcode (D).



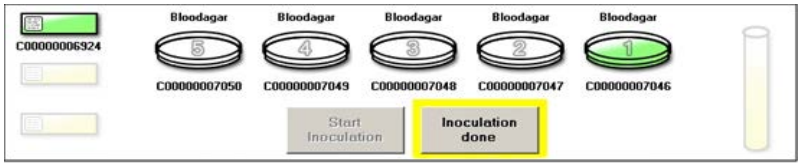
   Check the status (E) of each analysis.

   - Gray indicates that the analysis has been completed.
   - Green indicates that the carrier is currently being processed.
   - White indicates that the carrier is ready for future processing.
   - Blue indicates that the analysis has been canceled by the user.
   - Pink indicates a defective plate or that the plate was contaminated, as determined by the user.
   - Orange indicates the plates in the next set to be transported into the inoculation position.

The software displays the LI(M)S ID code of the specimen for which carriers are ready for inoculation.

3. Scan the barcode of the specimen with the corresponding LI(M)S ID.
4. Plates are transported in sets of up to five from the buffer position to the inoculation position. The five plates may not all be required for the current specimen.
5. Inspect the agar in the plates. A plate might be unsuitable for inoculation if it is dried out, contains an air bubble, or is contaminated. This plate can be rejected and the InoqulA+™ will automatically request and transport a new one.
6. The carrier status is displayed in the bottom window. Slides are on the left, plates are in the center, and broth tubes are on the right.
   - White indicates carriers for future specimens.
   - Green indicates carriers to be inoculated for the current specimen.
   - Gray indicates carriers that have already been inoculated or processed.

   The barcode for each specimen is shown on the display.



7. Only plates intended for the current specimen are opened automatically. This ensures that other plates cannot be inoculated.
8. Inoculate the specimen onto the plates where indicated by the LED light. When using bi-plates, there are two lights.

> NOTE
>
> If an analysis is no longer needed, it can be removed from the list.

9. If a slide is required, it is automatically transported to the slide dispenser. The desktop printer prints a label with the correct barcode. Place the label on the side of the slide and apply specimen to the slide. Allow the specimen material on the slide to dry, then process it in accordance with your laboratory procedures.

> **WARNING**
>
> **THE SLIDE DISPENSER MAY BE HOT.**

10. If a broth tube is required, the desktop printer prints a label with the correct barcode. Place the label on the broth tube and inoculate the tube. Process the tube in accordance with your laboratory procedures.
11. When inoculation of all carriers is complete, select **Inoculation done** or press the foot pedal once. The InoqulA+™ closes the inoculated plates for that specimen.

    If more than five plates are needed for a given specimen, inoculate the first five at the inoculation position, then select Inoculation done or press the foot pedal once. The remaining plates needed for that specimen will be provided with the next transport.
12. Repeat the necessary steps 3–11 above for all specimens.

    Once five plates have been inoculated, they are moved to the spreader position for automatic spreading according to the preset pattern. Once spreading is complete, the bead is removed from the plate, and the plates exit via the conveyor belt.

    The translator stacker stacks the plates and pushes the stack onto the lower ProceedA for transport to a ReadA™ Compact for incubation, or to a ReadA™ Compact output stacker.

> NOTE
>
> If plates are manually removed from the solution other than being collected from output stackers, BD Synapsys™ Informatics receives no confirmation of the final destination of these plates.

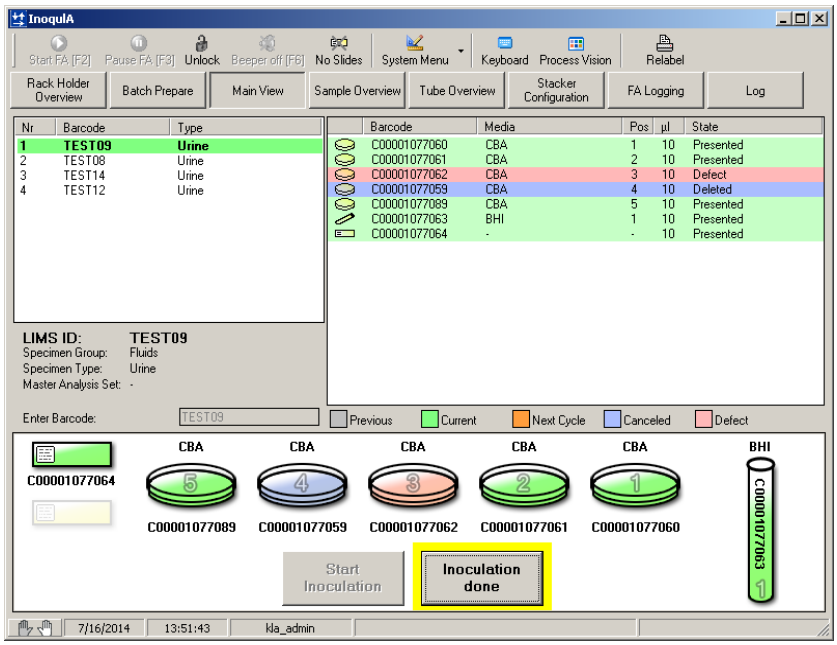
7.4.1 Rejecting a plate during inoculation

During inoculation, a plate may be unsuitable for inoculation. For example, the medium may be dried out, contain an air bubble, or be contaminated. You may reject this plate immediately. A new plate will be automatically requested and provided after the rest of the batch is complete. If the next batch has already been created, it will be postponed until the current batch is completed.

1. Select the plate to be rejected, so that it is highlighted by a blue box. Ensure that the barcode on the display matches the one on the plate.

   Two options are displayed on a pop-up menu: Defect Media and Cancel Analysis.

2. Select **Defect Media**. The plate turns pink on the display.



3. Leave the unused plate with the current group of inoculated plates. The unused plate will automatically be sent to the error stacker and can be removed after the batch is complete.

   In order to complete analysis for this specimen with a new plate, the InoqulA software recreates the same analysis with a new barcode.

   This analysis, along with the corresponding plate, is added after the rest of the batch is complete. Verify if the new analysis has been created by selecting **Sample Overview** from the main menu.

4. Set aside enough specimen material to inoculate the recreated analysis on the new plate, then continue processing the rest of the specimens from the batch.
5. Once the rest of the batch is complete, the new plate will be transported automatically. The LI(M)S ID is displayed again.

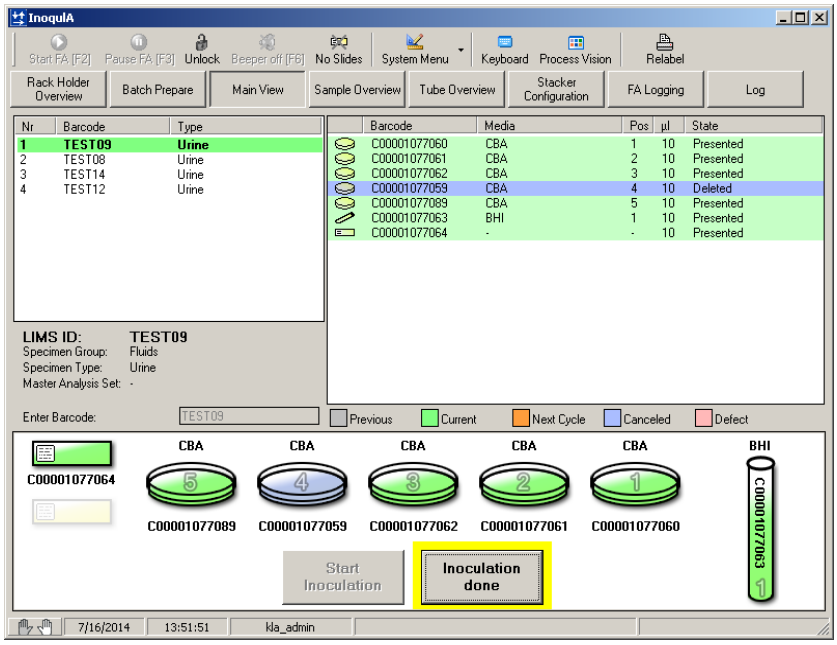
7.4.2 Canceling a plate analysis during inoculation

During inoculation, you may cancel an analysis (plates only) for a given specimen if it is no longer needed.

1. Select the plate to be canceled, so that it is highlighted by a blue box.

   Two options are displayed on a pop-up menu: Defect Media and Cancel Analysis.

2. Select **Cancel Analysis**. The plate turns blue on the display.



3. Leave the unused plate with the current group of inoculated plates. The unused plate will be sent to the error stacker and can be removed after the batch is complete.

7.4.3 Undoing defect media or cancel analysis

If you accidentally select Cancel Analysis or Defect Media incorrectly, follow these steps to undo the setting.

1. Select the rejected or deleted plate (highlighted in pink or blue).
2. On the pop-up menu, select **Restore Analysis** (if Cancel Analysis was selected incorrectly) or **Restore Media** (if Defect Media was selected incorrectly).
3. The plate turns green and can then either be inoculated or rejected using the appropriate Cancel Analysis or Defect Media procedure.

7.5 Completing semi-automated processing

This section covers the following topics:

7.5.1 Viewing a completed batch

1. Select **Main View** from the main menu if it is not already selected.
2. You can monitor specimen processing by retrieving a list of steps performed.

   The batch is complete when the Main View shows that all scanned specimens have been inoculated on all requested carriers.

Once processing is complete:

- No new carriers are being transported.
- There are no plates along any point of the ProceedA.
- All inoculated plates are stored in a ReadA™ Compact, or are sorted into one of the ReadA™ Compact output stackers.
- The InoqulA software pauses.

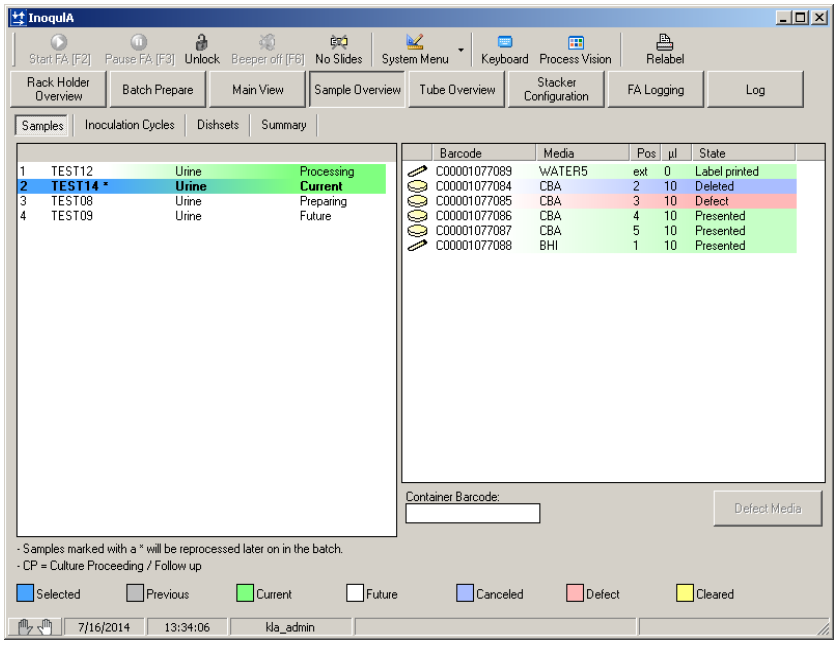
7.5.2 End of run cleanup

1. Store or discard specimen containers according to your laboratory's standard operating procedures.
2. Incubate or process broth tubes according to your laboratory's standard operating procedures.
3. Process slides according to your laboratory's standard operating procedures.
4. Empty bead disposal containers if necessary.
5. Remove all waste from the work area.

7.6 Status overview

At any point of batch processing, you can view the status of all entered specimens and all completed inoculations.

1. Select **Sample Overview** from the main menu.



2. To request information for a specimen, scan the plate's barcode.

7.7 Reprinting labels

If no labels are dispensed from the desktop printer, the roll of labels may have run out during inoculation. In addition, if the carbon roll for the desktop printer is empty, the printer will generate blank labels. Follow the steps below to reprint labels.

1. Replace the label or carbon roll according to the instructions in **19.6 Replacing the label and carbon roll**.
2. Select **Main View** from the main menu.
3. Select the broth tube or slide icon.
4. Select **Reprint Label** (this must be done before Inoculation done is selected). The label reprints.

8 Secondary inoculation

The previous chapters describe fully automated and semi-automated specimen inoculation. During this process, the original specimen may have been inoculated onto one or more plates, or into one or more broth tubes.

After the incubation period, the original specimen may be further investigated by inoculating distinct colonies selected from plates, or aliquots from broth tubes, onto new plates or into new broth tubes. This activity is called secondary inoculation.

- Aliquots from broth tubes may be inoculated into new broth tubes or onto new plates. This can be done in FA mode. The rack with broth tubes is re-defined as a specimen rack.
- A selected colony may be picked from a plate and inoculated onto new plates or into new broth tubes. This must be done in SA mode.

Refer to Ordering tests in Culture Reading in the BD Synapsys™ Informatics Solution instructions for use for information about ordering follow-up analyses.

8.1 Secondary inoculation from broth tubes

> NOTE
>
> Your solution must be configured such that an analysis set with a shaking step is assigned to broth tubes intended for secondary inoculation.

1. Identify the broth tube rack with the broth tubes for which follow-up analyses are needed.
2. Place the broth tube rack in an empty rack holder.
3. Select **Secondary Inoculation Mode** from the Rack Overview display. The button turns green. When secondary inoculation mode is enabled, the broth tubes are treated as specimen tubes. Selecting the button again returns to normal inoculation mode.
4. Start the FA run. Each broth tube is scanned and the follow-up analyses are retrieved from BD Synapsys™ Informatics and are linked to this media type. The required plates and broth tubes for secondary inoculation are automatically made available.

8.2 Secondary inoculation from plates or BD BACTEC™ bottles

1. Identify a plate or a BD BACTEC™ bottle for which follow-up analyses are needed.
2. Scan the plate or bottle barcode at the SA submodule. The ID is used to retrieve the follow-up analyses from BD Synapsys™ Informatics. The required plates for secondary inoculation are automatically made available.
3. Pick the colony selected for follow-up work from the plate, or collect a sample from the BD BACTEC™ bottle.
4. Perform a manual inoculation of the new plates or broth tubes.
5. Proceed with SA processing.

9 InoqulA+™ troubleshooting

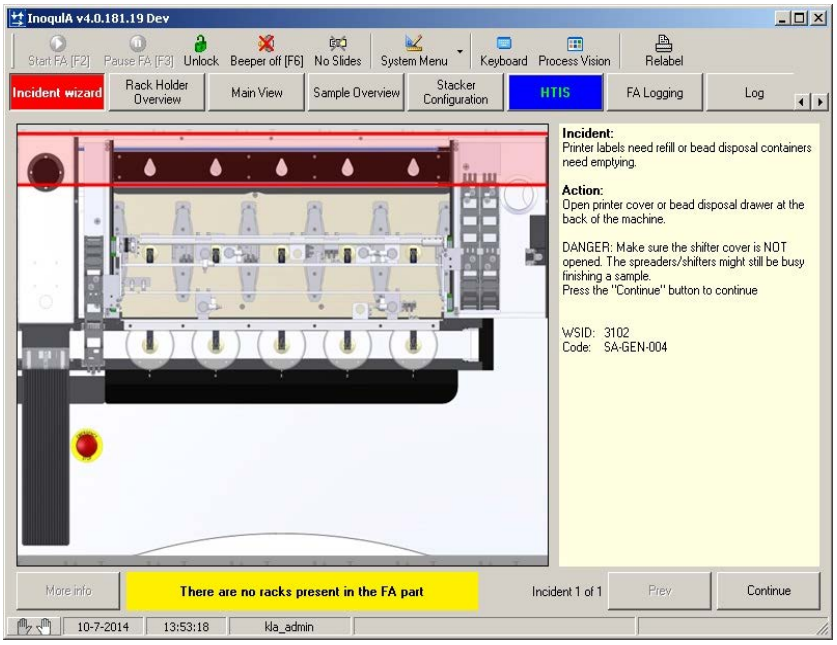
This section covers the following topics:

9.1 Protocol for resolving errors

1. Troubleshoot the error.
2. If the error is unresolved within five minutes, request assistance from an advanced user.

9.2 Responding to warnings and errors

All errors and warnings are handled through an interface called the Incident wizard. Each error or warning is displayed with a resolution description and a unique number. If contact with BD Technical Service and Support is required, this information will be requested.



The left panel highlights the location of the incident.

The right panel shows:

- A short description of the incident.
- The action that the user must take to resolve the problem. If multiple incidents occur at the same time, the action field will show the action or resolution to the most serious problem.
- The code or ID of the module, submodule, component or workstation (WSID, for BD Technical Service and Support use).
- The Incident code (for BD Technical Service and Support use).

The bottom panel has the following buttons:

- More Info displays additional information about the problem.
- Prev (and Next) steps through all of the incidents one by one.

CAUTION

When you are notified of warnings or errors, you should immediately respond to the condition.

To respond to a warning or error:

1. Review the message.
2. After the message is acknowledged, silence the audible alarm by selecting **Reset warning [F6]** or **Reset error(s) [F5]** in the BarcodA software; or select **Beeper off [F6]** in the InoqulA software.
3. Follow the procedures in the right panel.
4. After the instructions on the right panel have been followed, continue by selecting a button that may appear in another window:
   - Continue: The InoqulA+™ will continue with the process after the problem has been resolved.
   - Retry: The InoqulA+™ will retry a failed action.
   - Clear and Sync: The clearing and synchronizing process will start.
   - Close application: The application will be closed.

9.3 InoqulA+™ warnings

The module issues warnings whenever user attention is required to continue operation (e.g., the SorterA box is empty, the pipet tip racks are empty).

When a warning is issued:

- Despite the warning, the module will continue to be operational. However, if the warning remains unresolved, the module may stop.
- The signal column flashes a blue light.
- An audible alarm sounds.
- A warning message is displayed.

9.3.1 Dishes not present

This warning occurs when a SorterA box runs out of plates during operation.

1. Read the message in the BarcodA software. Note which box is empty.
2. Select **Reset warning [F6]** to stop the audible alarm.
3. Refill the SorterA box (place plates on the sensor). Once filled, the box is highlighted yellow in the active SorterA configuration field.
4. Select **Start [F2]** to continue operation.

9.3.2 Label present on applicator

This warning occurs when the SorterA-BarcodA is started after an error and a label is already present on the applicator.

1. Read the message in the BarcodA software.
2. Select **Reset warning [F6]** to stop the audible alarm.
3. Open the BarcodA cover.
4. Remove the label from the applicator.
5. Close the BarcodA cover.
6. Press the blue reset button.
7. Select **Start [F2]** to continue operation.

9.3.3 Label roll running out of labels

If a warning appears stating that the label roll is running out of labels, follow the procedure below:

1. Select **Help** from the main menu, and then **Printer wizard**.
2. Follow the steps described in the Printer wizard to change a label roll and a carbon roll, and also how and where to clean.
3. Select ► at the bottom of the window to advance to the next step.
4. Select ◄ at the bottom of the window to return to the previous step.
5. Select **Close** to close the Printer wizard.
6. When finished, select **OK**. The label counter resets to zero.
7. Close the BarcodA cover.

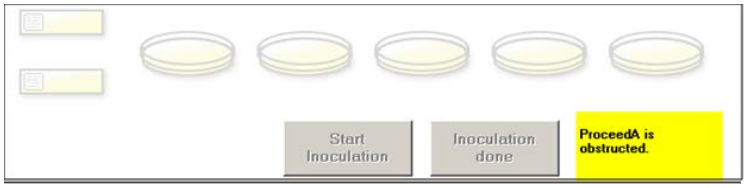
9.3.4 Stacker buffer full

When a stacker buffer is full, the module will stop delivering plates into that stacker buffer, and will finish the current stack.

1. Read the warning message. Determine which stacker has a warning.
2. Remove the plates from the affected stacker buffer. The module continues automatically.

The InoqulA+™ pushes its stacks toward the ProceedA. If the ProceedA cannot accept these stacks, the InoqulA+™ comes to a halt. If this situation lasts longer than a minute, the InoqulA GUI displays a yellow warning in the Main View tab, combined with a yellow flashing Main View tab button. The blue light will also flash.

When the ProceedA accepts the stack, the warning disappears and the blue light stops flashing.



9.3.5 Slide buffer full

If the slide buffer is full, the InoqulA+™ will stop dispensing slides.

1. Read the warning message.
2. Remove the slides from the sensor at the end of the slide buffer. The module continues automatically.

9.3.6 HEPA filter is clogged

This warning indicates that the HEPA filter must be replaced. Follow your laboratory's standard operating procedures to replace the filters or contact the organization responsible for replacement of the HEPA filters in your laboratory.

You may continue using the module until the filter is completely clogged. When the filter is completely clogged, the module will pause operation.

9.3.7 Shifter cover messages

When a BCC has been configured for working in SA mode, the BCC must be closed before the shifter cover can be unlocked. If the user attempts to unlock the shifter cover while the BCC is opened, the following message is displayed:

The Unlock button changes color, from gray (the shifter cover cannot be unlocked) to green (it can be unlocked). If it is gray and the button is pressed, a message is displayed to inform the user of the reason the cover cannot be unlocked.

The shifter cover is connected to the printer cover and the bead disposal drawer, so these will also be locked. To enable changing the printer label roll or emptying the bead disposal containers during processing, select **System Menu**, then select **Unlock printer cover and bead disposal drawer**.

If the BCC is closed, the Incident wizard will generate a message informing the user that the covers can be opened.

If the BCC is not closed, the message below is shown.

After selecting **OK**, select **Continue** in the Incident wizard to proceed with SA processing.

9.4 InoqulA+™ errors

The module issues errors whenever it cannot properly complete operation, due to a mechanical, electronic, or software related issue.

When an error is issued:

- Operation stops.
- An entry is added to a log file.
- The signal column flashes a red light.
- An audible alarm sounds.
- An error message is displayed.

9.4.1 BCC malfunction

If the BCC is not turned on, or not functioning properly, the user will be informed after selecting Add samples to batch.

When the BCC stops working during SA processing, the process will stop, the Incident wizard will show an incident (error), the beeper will sound, and the red light will flash.

9.4.2 Timeout dish transport to applicator from SorterA box

This error occurs when a plate is supposed to have left the SorterA box but has not arrived within the expected time at the BarcodA applicator.

The most common causes for this error are a dirty sensor in the SorterA box or upside down plates in the SorterA box.

1. Read the message in the BarcodA software. Note the SorterA box number with the error.
2. Select **Reset error(s) [F5]** to stop the audible alarm.
3. Remove all plates from the SorterA-BarcodA (all plates found on the central conveyor belt). These requests will be reproduced once the InoqulA+™ restarts.
4. Ensure that the plates in the SorterA box are oriented correctly.

5. If the SorterA box is empty, but the BarcodA software indicates a filled (yellow) SorterA box, then the SorterA box sensor must be cleaned. After cleaning, the software should indicate that the SorterA box is empty (gray).
6. Place a stack of plates on the sensor.
7. Open the BarcodA cover.
8. Remove the label from the BarcodA applicator.
9. Close the BarcodA cover.
10. Press the blue reset button.
11. Select **Start [F2]**.

9.4.3 Deleting specimens or plates from the BarcodA worklist

Deleting all specimens from the worklist

If the Incident wizard instructs you to delete all specimens due to an error:

1. Right-click in the BarcodA application, and select **Delete LIMS (LIS) Data**.
2. Shut down the InoqulA application.
3. Remove and discard all plates from the InoqulA+™.
4. Restart the InoqulA application.
5. Rescan the specimens you were working on to reorder the plates.

It is also possible to delete specific specimens, or a single plate from the BarcodA worklist; for instance, if too many plates were selected for a certain specimen. This should only be done when absolutely necessary, because modifying the worklist will affect other modules. In that case, follow the procedure below.

Deleting specimens from the worklist

1. Select **Tools [F7]** in the BarcodA main menu.
2. Select **Delete sample(s) from the worklist**.
3. Enter the specimen numbers to be deleted in the **From** and **To** fields.
4. Select **Apply**, **OK**, and **Close**.

Deleting plates from the worklist

1. Select **Tools [F7]** in the BarcodA main menu.
2. Select **Delete dish(es) from the worklist**.
3. Enter the plate barcodes to be deleted in the **From** and **To** fields.
4. Select **Apply**, **OK**, and **Close**.

Deleting all specimens of a specific InoqulA from the worklist

With this option, all requests from any workstation are deleted.

1. Select **Tools [F7]** in the BarcodA main menu.
2. Select **Delete all sample(s) from the worklist for Workstation**.
3. Select the arrow button and then select the appropriate workstation.

4. Select **Apply**, **OK**, and **Close**.
5. Select **Tools** in the ProceedA application.
6. Select **Free InoqulA stacks** of the appropriate InoqulA+™.
7. Select **OK**.

All specimens will be removed from the list and the plates delivered by the BarcodA will be sent to the error stacker.

9.5 InoqulA+™ malfunctions

Some conditions may not result in an error or warning but can prevent proper functioning of the module.

Contact BD for assistance to perform the following procedures.

9.5.1 Inoperable SorterA box

1. Select **Stop [F4]** in the BarcodA software.
2. Select **SorterA Overview**.
3. Select the inoperable box by selecting the number in front of the description.
4. Select **No Media** from the media list (this name may be different depending on your setup), or select a medium that is rarely requested/used. That box will no longer receive requests.
5. Close the SorterA Overview display.
6. Select **Start FA [F2]** to restart operation.

9.5.2 InoqulA+™ component not in position

Contact BD.

9.5.3 Unable to dispense plate from SorterA box

Utilize the Lift Stack option.

9.5.4 Release stuck plate

If a plate becomes stuck in the SorterA-BarcodA, perform the following procedure:

1. Select **Pause [F3]** from the main menu at the top of the display.
2. Wait for the InoqulA+™ to finish processing the last plate.

WARNING

NEVER ATTEMPT TO REMOVE A STUCK PLATE WHILE COMPONENTS ARE STILL MOVING. ALWAYS WAIT UNTIL THE OPERATION STOPS.

3. Remove the plate. If the plate cannot be removed while the module is paused, shut down the module and remove the plate.

9.5.5 Lost beads

If the InoqulA+™ processes a plate without a lid, or if there was a problem with the location of the plates near the bead dispenser or the shifter, a bead can potentially get lost in the module.

Lost bead at the bead dispenser

Normally, when the bead dispenser drops a bead, the bead falls into an opened plate. Beneath the plate is a magnet that holds the bead in the correct position after it drops.

It is possible that a bead will bounce out of the plate or will drop into the module. These beads can stick to the magnet.

An error message may not be issued when this happens, but the situation can result in other errors because subsequent plates are likely to be obstructed by these beads.

1. Select **Pause FA [F3]**.
2. Close the InoqulA software by selecting the **x** at the upper right of the display. If you do not close the software, a sensor will trigger and create an error.
3. Open the hood and front cover of the rack holder.
4. Remove the bead from the magnet under the bead dispenser using the telescopic magnet provided at installation.
5. Close the hood and front cover of the rack holder.
6. Press the reset button.
7. Restart the InoqulA software.
8. Recreate the batch for any specimens that have not been completed.

Lost bead at the shifter

Magnets are used in the shifter to remove beads from the plates after inoculation. In rare cases, a bead may remain on one of these magnets or on the conveyor belt, instead of in the bead disposal containers. An error message may not be issued when this happens, but the situation may result in other errors because subsequent plates are likely to be obstructed by these beads.

1. Select **Pause FA [F3]**.
2. Open the shifter cover.
3. Remove any beads from the magnets in the shifter.
4. Check if there are any beads on the conveyor belt or in the bead catch hole on the left side of the shifter (at the end of the conveyor belt in the shifter).
5. Close the shifter cover.
6. Select **Start FA [F2]** to continue processing specimens.

9.5.6 HEPA filter not active

The HEPA filter may not be functional due to a defect or because of a complete clog. The module cannot start operation and the Start FA [F2] button is grayed out.

Contact the organization responsible for replacement of HEPA filters in your laboratory.

Operation cannot be resumed until the filter has been replaced.

9.5.7 Communication with Spreader Cards cannot be established

The InoqulA+™ cannot interpret the spreading pattern selection. The module cannot start operation and the Start FA [F2] button is grayed out.

Contact BD for assistance.

Operation cannot be resumed until the communication with the Spreader Cards is restored.

9.6 Recurring errors

If you are unable to clear an error (the same message continuously reappears), or if there is a follow-up error in the same area as the previous error, perform the following steps:

1. Select **Pause FA [F3]** so that all specimen containers, broth tubes, and slides are replaced in their original position.
2. Close the InoqulA software by selecting the **x** at the upper right of the display.
3. Turn off the InoqulA+™.
4. Remove all plates from the InoqulA+™.
5. Wait 20 seconds.
6. Turn on the InoqulA+™.
7. Press the reset buttons.
8. Restart the InoqulA software.
9. Recreate the batch for any specimens that have not been completed.

If the BarcodA does not release plates, perform the following steps:

1. Close the BarcodA software.
2. Restart the BarcodA software.
3. Clear the BarcodA. See **9.4.2 Timeout dish transport to applicator from SorterA box**

If the InoqulA+™ still presents errors, shut down the module in the following manner:

1. Close the InoqulA software.
2. Turn off the InoqulA+™.
3. Turn off the SorterA-BarcodA.
4. Shut down the InoqulA computer.
5. Close the BarcodA software.
6. Shut down the SorterA-BarcodA computer.
7. Wait one minute.
8. Restart the SorterA-BarcodA computer.
9. Wait until the SorterA-BarcodA computer has completely started.
10. Turn on the SorterA-BarcodA.
11. Press the SorterA-BarcodA reset button.
12. Start the BarcodA software.
13. Start the InoqulA computer.

14. Wait until the InoqulA computer has completely started.
15. Turn on the InoqulA+™.
16. Press the reset button.
17. Start the InoqulA software.
18. Recreate the batch for any specimens that have not been completed.

9.7 Clearing and synchronizing

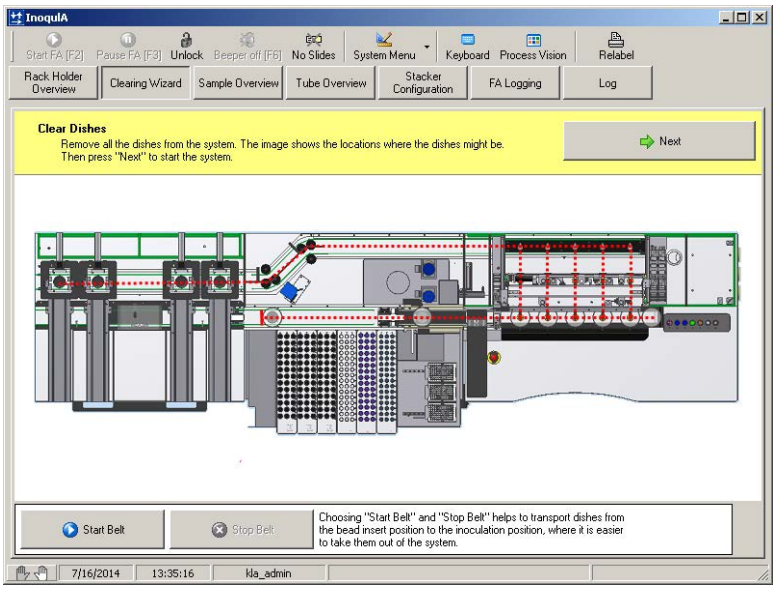
If the InoqulA+™ is jammed or an error message appears, you may have to clear and synchronize the module.

Clearing: plates are removed manually from the module.

Synchronizing: the InoqulA software synchronizes with the clearing steps that have been performed.

9.7.1 Clearing

Select **Clear&Sync** in the Incident wizard. The Clearing Wizard is displayed.



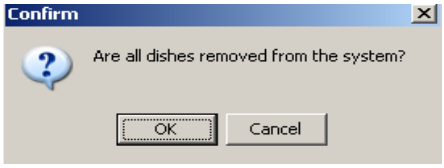
A module diagram is shown with red dotted lines that represent the plate path (the SorterA-BarcodA is not included).

1. Remove any plates that are present along the red dotted line paths.

> NOTE
>
> For easy removal of plates inside the hood, select **Start Belt**. Plates are transported to the inoculation position. When finished, select **Stop Belt** to stop the belts.

2. Select **Next** at the top of the display.

   The following dialog box displays.



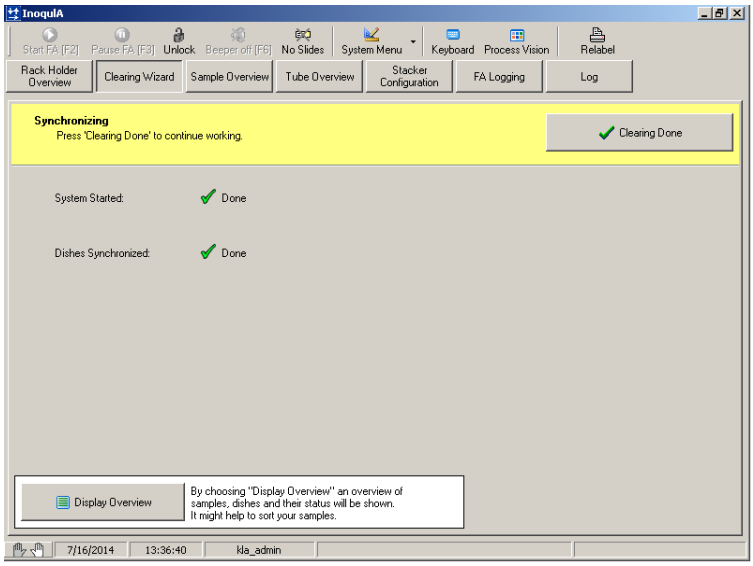
CAUTION

Ensure that all plates have been removed along the dotted line path shown in the Clearing Wizard before selecting OK to confirm plate removal.

3. Select **OK**.

9.7.2 Synchronizing

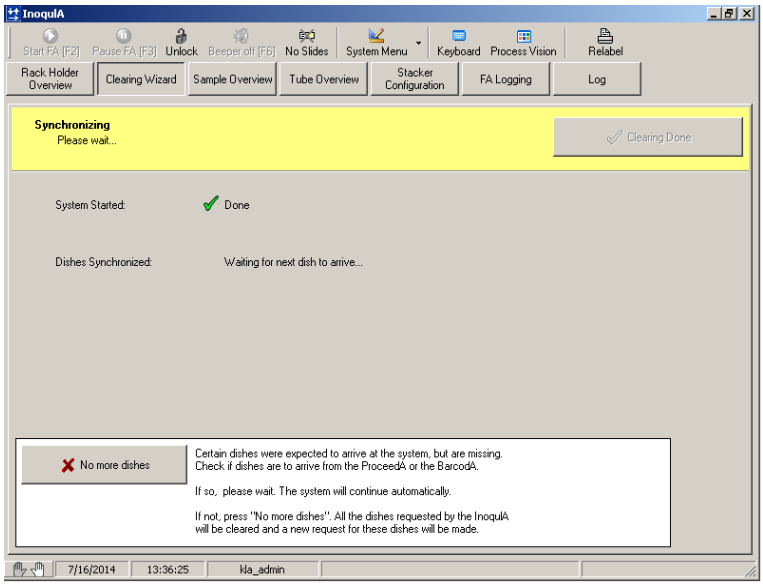
At the end of the clearing procedure, the InoqulA+™ initializes all components, then asks the user to complete the Clearing Wizard.



1. Select **Display Overview** at the bottom of the display for a status overview of all specimens and plates.
2. After reviewing the display, select **Clearing Done**. The module resumes operation. All components are synchronized. The module restarts and synchronizes the plates that are expected from the SorterA-BarcodA.
3. Following a clearing and synchronizing event, ensure that all plates, broth tubes and/or slides for the specimen containers have been prepared.

9.7.3 Synchronizing errors

Under normal conditions, when the correct plates reach the first barcode scanner during plate synchronization, the InoqulA+™ automatically resumes inoculation. However, if synchronization takes longer than two minutes, additional steps are needed.



1. Select **No more dishes** at the bottom of the Clearing Wizard.

   A pop-up window displays a warning that a certain number of plates have not passed the plate scanner and provides a list of the barcodes for those plates.

2. Select **OK** in the pop-up window to continue.

   The plates noted in the warning box will be re-transported (these plates must not be present on the BarcodA conveyor belts or in the BarcodA worklist). A new media request is sent to the SorterA-BarcodA. The plates will receive a new unique barcode.

CAUTION

Ensure that all plates have been removed along the dotted line path shown in the Clearing Wizard before selecting OK to confirm plate removal.

9.8 Viewing error logs

Use the ReadA Overview workstation log and select the BarcodA workstation to display a list of errors pertaining to the BarcodA software.

10 ReadA™ Compact

This section covers the following topics:

10.1 The ReadA™ Compact incubator

The ReadA™ Compact incubator should remain turned on at all times to ensure specimen integrity. The ReadA™ Compact may only be turned on by a user of supervisor level.

The bottom plate inside the incubator houses a humidification pan. In general, the humidification pan should only be used when the following four conditions are met:

- The relative humidity inside the incubator is lower than 60%.
- The ambient relative humidity is lower than 30%.
- There are less than 300 fresh plates stored per day.
- Plates require more than three days incubation.

In addition, it is best to locate the incubator away from the direct flow of air conditioning vents or outlets. If during the course of testing, media shows signs of drying, including cracks in the agar surface and the agar pulling away from the plate at the edge, start to use the humidification pan.

10.2 Starting the ReadA Compact application

1. On the ProceedA monitor, double-click the **ReadA Compact Ultra VNC Viewer**.
2. Double-click **ReadA Compact** on the ReadA Compact desktop.
3. In the main screen login dialog, enter your username and your password.
4. Select **OK**.
5. Select **Start [F2]** in the main screen or press **[F2]** to start operation.

10.3 User log in and log out

To log in:

1. Select **Log on** in the main screen.
2. Enter your username and your password.
3. Select **OK**.

To log out:

Select **Log off**. The logged-out user can no longer control the ReadA™ Compact.

10.4 Using the Stop [F4] button

In all instances, other than an acute emergency, select **Stop [F4]** to stop operation. This will stop the ReadA™ Compact in a controlled way. The plates in the camera compartment are stored in the proper incubation atmosphere. The transport and imaging of plates will stop, but the incubator will remain operational at all times.

To restart operation, select **Start [F2]**.

10.5 Emergency stop

If the ReadA™ Compact must be stopped immediately, press the red emergency button next to the ProceedA monitor.

The electricity and air pressure to all connected components of the solution are deactivated. However, the computer system and the incubator will remain turned on to safeguard incubation conditions.

WARNING

THE SOLUTION STILL CONTAINS LIVE ELECTRICAL COMPONENTS!

- For ReadA™ Compact modules with CO_2 control: the emergency stop will also stop CO_2 control in the incubator. If the emergency stop lasts up to 10 minutes, the recovery time will be less than 10 minutes. For stops that last between 10 minutes and 2 hours, the time to CO_2 recovery will be slightly increased. However, if an emergency stop lasts longer than 2 hours, this may significantly affect incubation results.
- After restart of the solution, all plates on the ProceedA will resume their programmed course. The plates on the camera layer will first be returned to the incubator to ensure they reach the correct temperature before being processed further.

10.6 Restart after an emergency stop

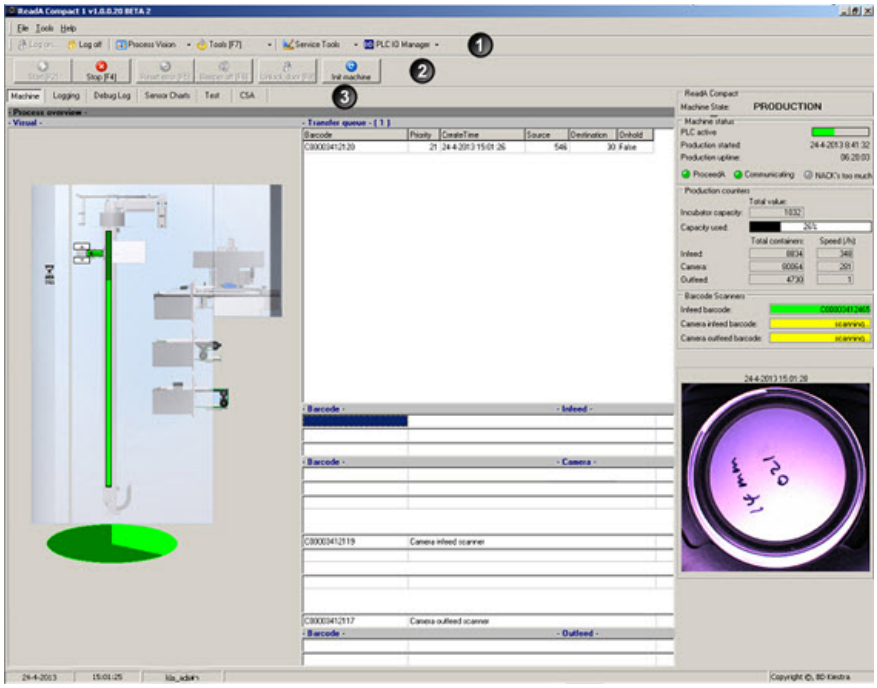
1. Determine the cause of the emergency stop.
2. Eliminate the cause of the stop and ensure that any dangerous situation has been resolved.
3. Remove items that may block normal operation.
4. Release the emergency stop button by turning it clockwise. The button will pop out and a green ring at the rear becomes visible.
5. Press the blue reset button (next to the monitor).
6. Select **Reset Error [F5]**. The error log appears.
7. Complete the error log and select **OK**.

8. Select **Start [F2]** to start operation. Any plates that were still on the camera layer when you pressed the emergency stop are transported back into the incubator to safeguard specimen integrity.
9. Restart the other modules in the solution.

11 Using the ReadA Compact application

This section covers the following topics:

11.1 The ReadA Compact application main window



1. Toolbar (A): access to a number of tools and commands
2. Button bar (B): quick access to commonly used options
3. Tabs (C): the number of available tabs depends on user authorization

11.2 Main window toolbar options

- **Log on**: Select to log in. When the login dialog appears, enter username and password and select **OK**.
- **Log off**: Select to log out.
- **Process Vision**: Select for overviews of current processes in the ReadA™ Compact.
- **Tools**: Select to activate the Tools menu

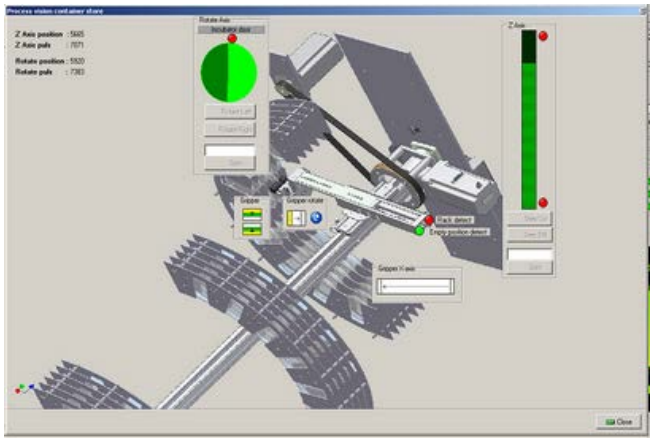
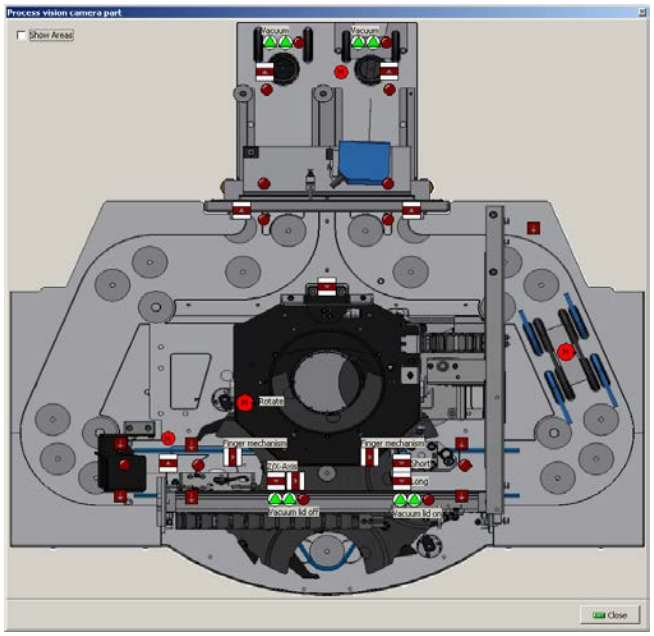
A toolbar option can only be selected when enabled (i.e., text is clearly visible and icon is colored).

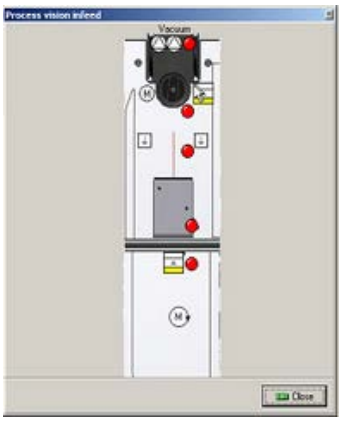
The following options may appear in images used in this manual; however, these options are only accessible for BD staff:

- Service Tools
- PLC IO Manager

11.2.1 Process Vision overviews

Process Vision provides four different overviews of the current processes in the ReadA Compact:

Container store overview	
Camera layer overview	

Infeed overview	
Outfeed overview	

11.2.2 Process Vision tools menu options

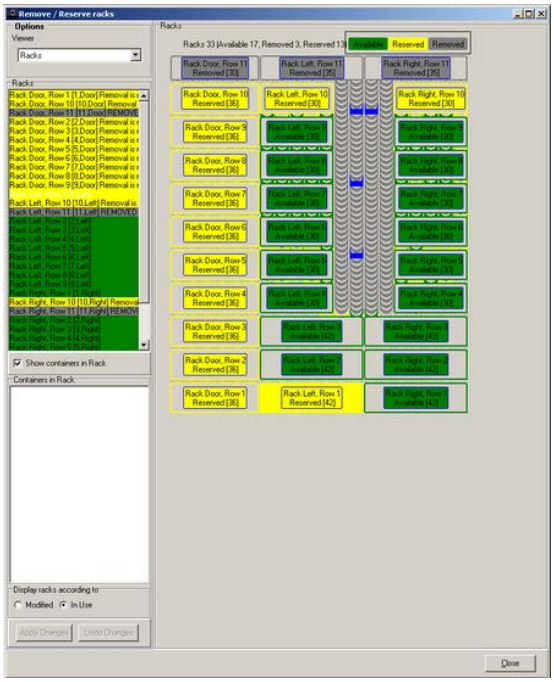
Select **Tools [F7]**.

- Deregister container from machine: Select to deregister a single plate from the database. If you deregister a container, the incubation time is interrupted. The following dialog appears:

Enter the barcode and select **Search container**. The plate data appears in the lower part of the dialog. Select **Remove container** to deregister the plate. Remove the plate manually.

- Reset disk space warning & error: Select to modify at what point a warning and/or an error must be generated if available disk space (used for storage of images) approaches a critical level.
- Force empty reserved racks: Select to automatically empty the reserved racks. The plates are transported to other, non-reserved, rack locations. If no rack locations are available, the plates are transported to the error stacker.
- Force empty container store (cleaning): This is the recommended option to automatically empty the ReadA™ Compact if maintenance or cleaning is required. The plates are transported via the outfeed to the stackers. Input from the ProceedA is blocked. Select **OK** to confirm, or select **Cancel** to abort.
- Deregister all containers (empty ReadA Compact): Select to deregister all plates currently in the incubator. This is an alternate option if maintenance or cleaning is required.

  When you select this option, a pop-up dialog appears asking “Are you sure to deregister all containers?”. Select **OK** to confirm, or select **Cancel** to abort. If you select OK, all plates will be deregistered. The plates remain in the incubator and must be removed manually.
- Disable ProceedA input: select to block input from the ProceedA. Select **OK** to confirm, or select **Cancel** to abort.
- Disable ProceedA communication: select to disable communication with the ProceedA. Select **OK** to confirm, or select **Cancel** to abort.
- Single manual infeed: select to manually enter one plate into the ProceedA infeed.
- Rack reservation & removal: select to view and modify which rack space has been reserved and which racks have been or have to be removed. The Remove/Reserve racks dialog appears.



The racks are represented in blocks. Right-click a rack to toggle the status to:

- green: available
- yellow: reserved
- gray: removed

After the rack status has been changed, select **Apply changes** to save, or select **Undo changes** to abort.

A rack status can only be changed to Removed if the rack is empty. A rack status can be changed to Reserved and yet still contain a plate. When the plate is later moved from its rack position and returned to the incubator, the ReadA™ Compact will not be able to find the plate position in the reserved rack.

11.3 Main window button bar options

- **Start [F2]**: Select the button or press **[F2]** to start operation.
- **Stop [F4]**: Select the button or press **[F4]** to stop the ReadA™ Compact. This will not stop the incubator or the PC. The camera is emptied to ensure that all plates are moved into the incubation atmosphere.
- **Reset error [F5]**: If an error has occurred and has been resolved, select the button or press **[F5]** to reset the error. An Error log dialog will appear.
- **Beeper off [F6]**: If an error occurs, an audible alarm will be activated. While resolving the error, select the button or press **[F6]** to turn off the alarm.
- **Unlock door [F8]**: Select the button or press **[F8]** to unlock the incubator door and the hood over the camera unit. Select the button again or press **[F8]** to lock the door and the hood.
- **Init machine**: If the ReadA™ Compact does not start up after selecting Start [F2] and no error is indicated, select this button to initialize the ReadA™ Compact. A pop-up dialog appears, asking if you really want to do this. Select **OK** to confirm, or select **Cancel** to abort.

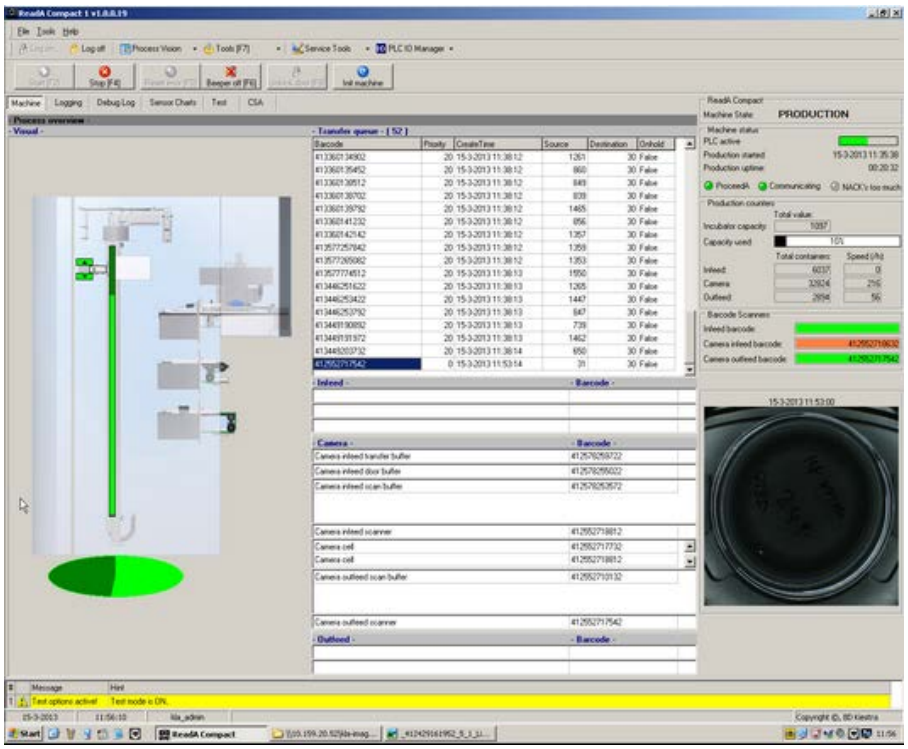
A button can only be selected when enabled (i.e., text is clearly visible and icon is colored).

11.4 Main window tabs

The HMI settings determine which tabs are available to an operator.

11.4.1 Machine tab

This tab appears when the application is started. It displays the status of the ReadA™ Compact, plates being processed, and performance indicators.



The left side of the window shows the Process overview, a visual representation of the current processes.

The middle of the window lists the plates (barcodes) in the transfer queue, at the infeed, at the camera, and at the outfeed.

The right side of the window displays the following information:

- Machine State: e.g., Production, Stopped, Initializing
- Machine status: shows the PLC activity, the production start time, length of the current production run, and communication with other devices
- Production counters: shows incubator capacity and the number of plates processed at the various transit points
- Barcode Scanners: displays the most recently scanned barcodes at the various transfer points
- Image: displays the most recent plate image

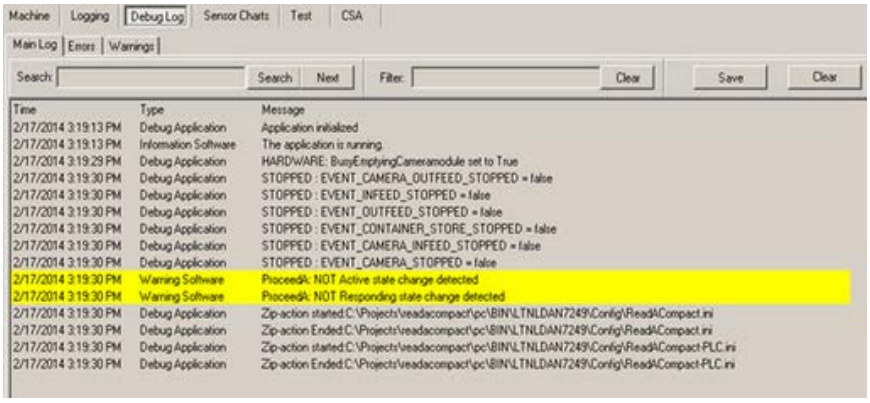
11.4.2 Logging tab

This tab displays a complete log of tasks and actions performed during the current run.

The Logging tab automatically appears when an error occurs. The log provides an overview of the location where the error occurred, information on the cause of the error, and suggestions for resolving the error.

11.4.3 Debug Log tab

This tab displays a detailed production log. Use the search fields to enter a search query of the log.



11.4.4 Sensor Charts tab

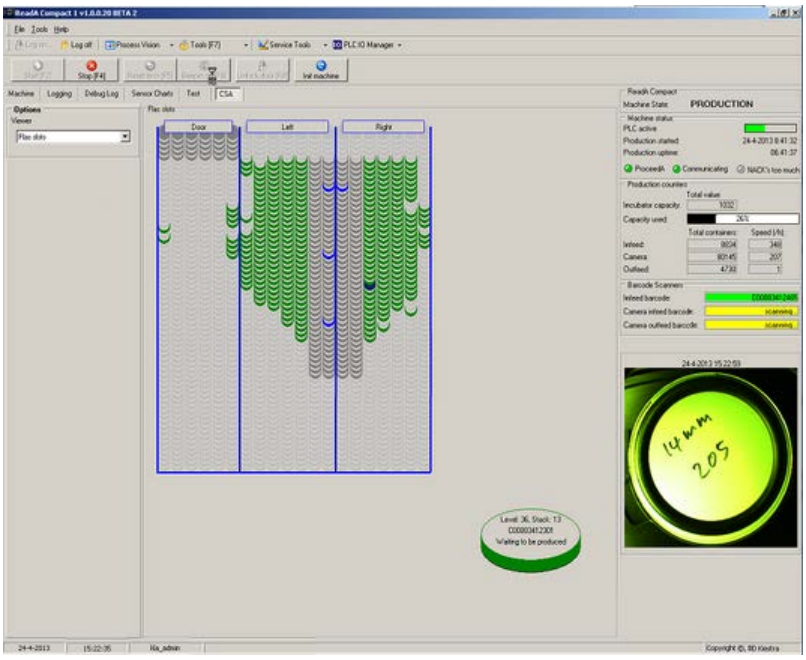
This tab is only available at supervisor level or above.

The tab displays an overview of sensor readings. The progress of the measured temperature and CO_2 (if applicable) are graphically presented.

The legend to the right of the graphics indicates which information is provided. Filter the information to be displayed by selecting or clearing the boxes below the graphics. Select **Paging** to page through the graphics.

11.4.5 CSA tab

This tab displays container store availability – which rack positions are occupied and which are available.



The graphic shows all occupied slots of the three rack sections (door/left/right). The left side of the screen allows you to change the view (Flat slots, Rack use overview, Rack with slots). Select a plate in the graphic to display plate information:

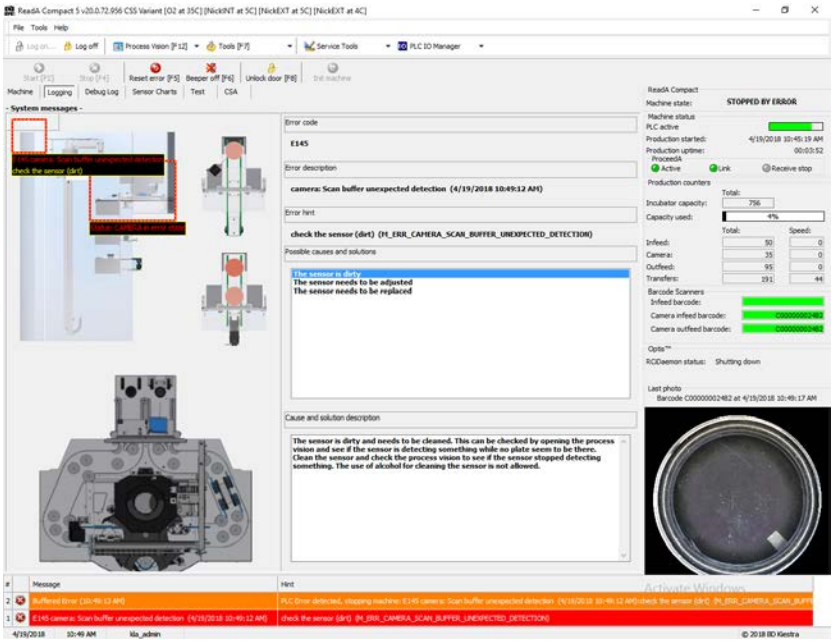
- Green: plate is incubating
- Light green: incubation time is near expiration
- Yellow: incubation time has expired; plate should leave the incubator soon
- Red: incubation has long expired; plate should leave the incubator immediately

12 ReadA™ Compact troubleshooting

This section covers the following topics:

12.1 Errors

Errors are issued whenever the ReadA™ Compact cannot properly complete operation due to mechanical, electronic, or software-related problems.



When an error is issued, the graphical overview shows the error location. The error message at the bottom of the screen describes where the error has occurred (e.g., camera infeed or container store). A hint on how to resolve the error is provided.

1. Select **Reset Error [F5]**. The Error Report screen appears.
2. In the Error Report screen, log the error resolution, select an error type from the Error Type list and identify the user who resolved the error.
3. Select **OK**.

Refer to 12.5 Error messages for more information.

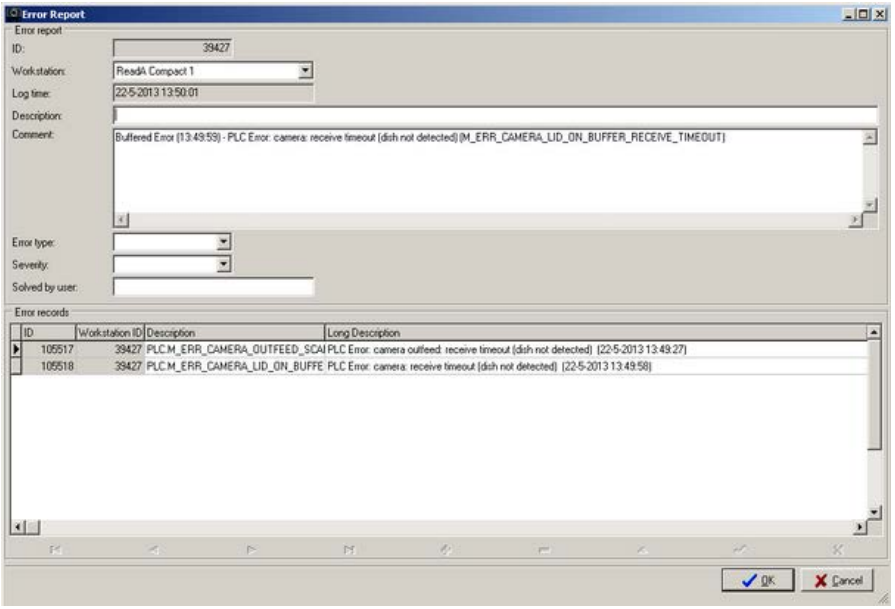
12.2 Protocol for resolving errors

When an error message appears, the status bar also displays a suggested resolution. If the error cannot be resolved, request assistance from an advanced user.

Select **Beeper off [F6]** to turn off the audible alarm.

12.3 Error report

When an error occurs, the ReadA™ Compact creates an error report. This is a log file that contains an error ID, a description of the type of error, and the date of occurrence. Select **Reset Error [F5]** and the Error Report dialog is displayed.



Add information to the error report about the error (type and severity) and the resolution. To help improve the ReadA™ Compact, this information may be sent to BD.

Select **OK** to save any changes you made in the error report.

12.4 Restarting after an error

> NOTE
>
> Make absolutely sure that the cause of the error has been solved. The ReadA™ Compact can only be reset when the error has been resolved.

1. Select **Reset Error [F5]** to reset the error. The Error Report dialog appears. If desired, you can add information to this report.
2. Select **OK** to save changes to the Error Report.
3. Select **Start [F2]** to restart operation.

12.5 Error messages

If a problem occurs with the ReadA™ Compact, use the following list to resolve the error.

> NOTE
>
> The following list offers a concise overview of error messages, possible causes, and suggestions for resolution.
>
> Contact BD in case of an error that cannot be resolved with the help of this information.
>
> When resolving an error, always adhere to the safety precautions and guidelines.

Error message	Possible cause	Recommended action
Emergency stop detected	The emergency stop button has been pressed.	1. Resolve the cause of the emergency stop. 2. Release the emergency stop and press the blue reset button. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.
There is not enough air pressure	The pressure is below the minimum required pressure.	Check the air supply.
Watchdog error occurred	The PLC and PC no longer communicate.	Check the connection between PC and PLC and restart the application.
Possible broken fuse detected	Possible broken fuse	Check the fuse box in the control cabinet.
Container store: cylinder not in position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: cylinder not in rest position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor z- or rotation-axis positioning error	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor z-axis positioning timeout error	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.

Error message	Possible cause	Recommended action
Container store: motor z-axis positioning error, position not reached	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor z-axis movement error, no movement detected	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor z-axis driver thermal/short-circuit error	A thermal error or short-circuit error has occurred.	1. Turn off the ReadA™ Compact. 2. Check for electrical or thermal problems. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.
Container store: motor rotate-axis positioning error, position not reached	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor rotate-axis movement error, no movement detected	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor rotate-axis driver thermal/short-circuit error	A thermal error or short-circuit error has occurred.	1. Turn off the ReadA™ Compact. 2. Check for electrical or thermal problems. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.
Container store: invalid location ID request error.	Location ID cannot be converted to a position in the ReadA™ Compact.	1. Select **Reset Error [F5]**. 2. Select **Start [F2]** to restart the module.
Container store: motor z-axis invalid position request error	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor rotate-axis invalid position request error	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Container store: motor z-axis position limit reached	Maximum position exceeded	1. Select **Reset Error [F5]**. 2. Select **Start [F2]** to restart the module.

Error message	Possible cause	Recommended action
Container store: motor rotate-axis position limit reached	Maximum position exceeded	1. Select **Reset Error [F5]**. 2. Select **Start [F2]** to restart the module.
Container store: no source location dish detected for transfer	The location does not contain a plate.	1. Select **Reset Error [F5]**. 2. Validate the container store (**Tools [F7]** – Start container store validation). See **11.2.2 Process Vision tools menu options**. 3. Select **Start [F2]** to restart the module.
Container store: destination location not empty detected for transfer	The specified location already contains a plate.	1. Select **Reset Error [F5]**. 2. Validate the container store (**Tools [F7]** – Start container store validation). See **11.2.2 Process Vision tools menu options**. 3. Select **Start [F2]** to restart the module.
Container store: destination location still empty after transfer	The location should contain a plate but it is empty.	1. Select **Reset Error [F5]**. 2. Validate the container store (**Tools [F7]** – Start container store validation). See **11.2.2 Process Vision tools menu options**. 3. Select **Start [F2]** to restart the module.
Camera infeed: receive timeout (dish not detected)	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera infeed: cylinder not in position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera infeed: cylinder not in rest position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera infeed: possible sticky dish at stopper door	A plate may have become stuck at the stopper door.	1. Remove the plate from the camera infeed stopper. 2. Place the plate onto the middle lane of the ProceedA. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.

Error message	Possible cause	Recommended action
Camera infeed: rotation motor current limit overload	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera: cylinder not in position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera: cylinder not in rest position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera: no dish lid vacuum detected	Possible obstruction between suction cup and plate lid	1. Check and clean the suction cup. 2. Check for broken or missing lid and replace it with a new one. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.
Camera: dish lid vacuum loss detected	Possible obstruction between suction cup and plate lid	1. Check and clean the suction cup. 2. Check for broken or missing lid and replace it with a new one. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.
Camera: no rotate disc detected	Various causes	1. Check the rotate disc. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera: receive timeout (dish not detected)	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera: possible sticky dish at stopper door	A plate may have become stuck at the stopper door.	1. Remove the plate from the camera stopper. 2. Place the plate onto the middle lane of the ProceedA. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.

Error message	Possible cause	Recommended action
Camera: camera ready to image, event timeout	Various causes	Restart the ReadA Compact application.
Camera outfeed: possible sticky dish at stopper door	A plate may have become stuck at the stopper door.	1. Remove the plate from the camera outfeed stopper. 2. Place the plate onto the middle lane of the ProceedA. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.
Camera outfeed: receive timeout (dish not detected)	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera outfeed: cylinder not in position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera outfeed: cylinder not in rest position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera outfeed: rotation motor current limit overload	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera outfeed: vacuum not detected on scanner	The scanner lifting cylinder may be dirty.	1. Check and clean the scanner lifting cylinder. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Camera outfeed: conveyor motor current limit overload	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Infeed: possible sticky dish at stopper	A plate may have become stuck at the infeed stopper.	1. Remove the plate from the infeed stopper. 2. Place the plate onto the middle lane of the ProceedA. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.

Error message	Possible cause	Recommended action
Infeed: receive timeout (dish not detected)	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Infeed: cylinder not in position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Infeed: cylinder not in rest position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Infeed: rotation motor current limit overload	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Infeed: vacuum not detected on scanner	The scanner lifting cylinder may be dirty.	1. Check and clean the scanner lifting cylinder. 2. Select **Reset Error [F5].** 3. Select **Start [F2]** to restart the module.
Infeed: conveyor motor current limit overload	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Outfeed: receive timeout (dish not detected)	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Outfeed: cylinder not in position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
Outfeed: cylinder not in rest position	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.

Error message	Possible cause	Recommended action
Outfeed: possible sticky dish at stopper	A plate may have become stuck at the outfeed stopper.	1. Remove the plate from the outfeed stopper. 2. Place the plate onto the middle lane of the ProceedA. 3. Select **Reset Error [F5]**. 4. Select **Start [F2]** to restart the module.
Outfeed: conveyor motor current limit overload	Possible obstruction	1. Remove obstruction. 2. Select **Reset Error [F5]**. 3. Select **Start [F2]** to restart the module.
HEPA filter warning	HEPA filters must be replaced within 2 months.	1. Contact the company responsible for replacement of HEPA filters in your lab. If the HEPA filter unit is not replaced in time, the complete solution will shut down. 2. Contact BD.
HEPA filter error	HEPA filter can no longer be used.	1. The complete solution has shut down. Contact the company responsible for replacement of HEPA filters in your lab. 2. Contact BD.

13 BD Kiestra™ Optis™ error messages

Error messages	Recommended action
801: Camera device is not connected 865: Exception while storing container information 900: Fast integrity failed 970: General device error: Camera and or lights are not available 980: Unknown imaging error	Contact BD.
806: Missing camera definition & settings files	Contact BD.
807: Camera requires calibration	Recalibrate using RC application.
802: Lights controls are not connected	Contact BD.
814: SHQIAcq.dll missing	Contact BD.
824: Lights control plugin is not loaded! Is it missing?	Contact BD.
805: Missing required plugin for communicating with the database	Contact BD.
804: No connection to database 860: General database read error 861: General database write error 864: Container data (id:...) is not available	Contact BD.
810: Network path is not reachable or not authenticated for writing 811: Not authorized to access image destination folder 812: Not authorized to access destination folder:... 831: Missing some SHQI destination setting fields 869: Failed perform Rollback action	Contact BD.
854: Images destination is low on space	Contact BD.

Error messages	Recommended action
200: For unknown reason failed to process client request 800: Unexpected error 866: Exception updating SHQI dish information 867: Error generating JPEG images 868: General error while validating and saving generated images 974: Requested dish ... is being processed now! 888: Unable save generated JPEG image (unable validate if the data was actualy saved to storage) 986: Exception while storing SHQI data 991: Dish was not removed in time 999: General network communication error	Restart the ReadA Compact application.
862: No container\dish information available	Notify lab manager that a plate with no specimen information has been detected. Manually remove the plate and deregister it from the ReadA™ Compact.

NOTES

When an error message is displayed, first perform the recommended action. Contact BD if you experience difficulties in performing the recommended action.

If this does not resolve the issue, then restart the computer and check the configuration settings of the ReadA Compact application.

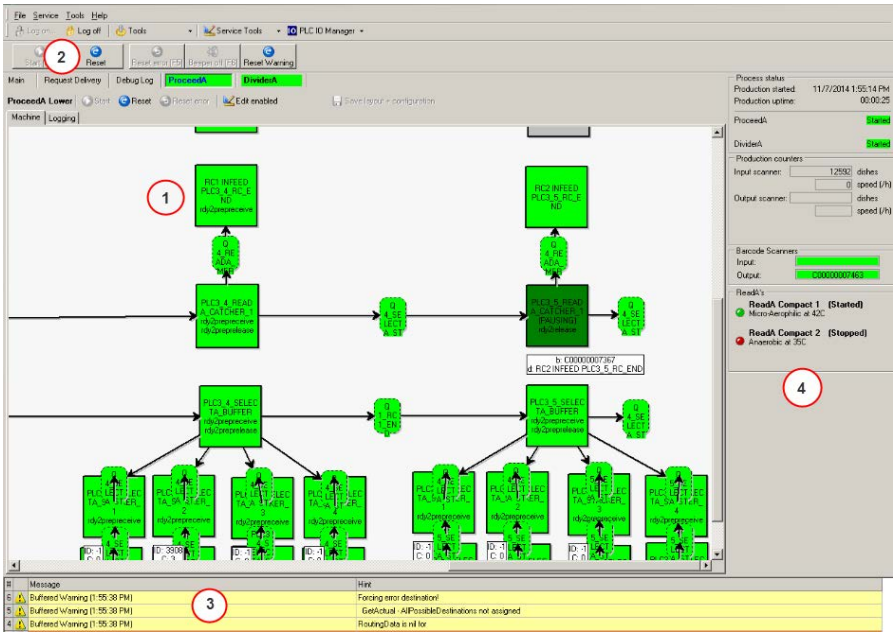
If the issue is still not resolved, then contact BD.

14 ProceedA software

This section covers the following topics:

14.1 Displaying a graphic representation of the ProceedA

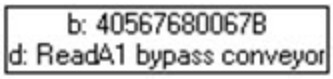
The Machine tab in the main window provides a graphic overview of the module.



1. A graphic representation of each component is displayed. The diagram consists of module nodes, transport nodes, and containers. The colors indicate the status of each component.
2. The Reset button may be used to stop the ProceedA.
3. Messages (warnings and/or errors) are listed at the bottom of the screen.
4. The right side of the screen displays performance indicators (e.g., status of the ReadA™ Compact, the number of plates that have passed the input or output scanner, and the speed).

Explanation of symbols

The Machine tab depicts the various module and transport nodes. This tab continuously reflects the current status.

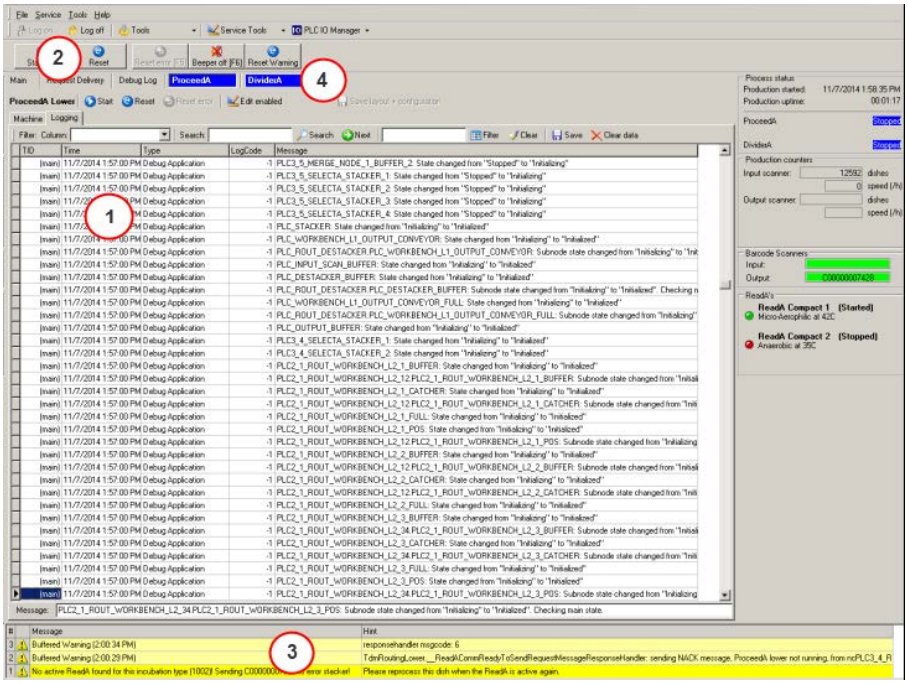
	**module node** A square indicates a module node. The name (Returnlift) and the current status of the component (Preparing) are displayed.
	**Transport node** A rectangle with rounded corners indicates a transport section (e.g., a conveyor belt). This is called a transport node. The name (Q2 Input Scanner) of the transport section is displayed.
	**Container** A white rectangle indicates a plate. If a single plate is displayed, the barcode and destination are shown (‘b:’ is barcode and ‘d:’ is destination). For a stack of plates, the identification number of the stack and the number of plates in the stack are shown (‘id:’ is identification number and ‘c:’ is count or number of plates).

Color coding of module and transport nodes

The module uses various colors to indicate the status of the module and transport nodes.

XXXXXX	Red background with black text: error, the ProceedA has stopped.
XXXXXX	Blue background with white text: the ProceedA has stopped.
XXXXXX	Yellow background with blue text: the ProceedA is initializing.
XXXXXX	Yellow background with black text: the ProceedA has initialized and is ready for start-up.
XXXXXX	Dark green background with black text: the ProceedA is busy performing an Empty check.
XXXXXX	Bright green background with black text: the ProceedA is operating (normal status).
XXXXXX	Gray background with black text: no signal received from this component, the component is inactive.

14.2 Monitoring the ProceedA activities



1. The main window displays the tasks being performed by the ProceedA. Yellow highlighted messages indicate warnings and red highlighted messages indicate errors.
2. The Reset button may be used to stop the ProceedA.
3. Warnings or errors are displayed at the bottom of the screen.
4. The component buttons indicate the module status; blue = stopped, green = operating.

15 Using the ProceedA

This section covers the following topics:

15.1 Startup

1. Turn on the ProceedA.
2. Press the blue reset button.
3. Turn on the monitor.
4. Turn on the other modules (SorterA-BarcodA, InoqulA+™, ReadA™ Compact).
5. Double-click ProceedA on the desktop.
6. Log in with your username and password.
7. Select **Start [F2]** to start the module.
8. The component buttons display in bright green.

15.2 Log in and log out

Permissions are linked to login details in the ProceedA software.

A lab technician has permission to perform all tasks related to routine operation. The main menu only displays the allowed options.

A supervisor has additional capabilities such as the ability to modify settings. If a user logs on as a supervisor, additional capabilities are displayed in the main menu.

- To log in: select **Log on**, then enter your username and password.
- To log out: select **Log off** in the main menu. The ProceedA continues to operate, but the logged off user can no longer control the ProceedA.

15.3 Shutdown

The ProceedA software may be shut down at the end of the workday, after all plates have been transported.

- Ensure that no plates are on the lower or upper track.
- Check the BarcodA software to ensure that there are no outstanding plate requests.

1. Select **Reset**. When the component buttons display in blue, the ProceedA has stopped.

2. Select the **x** in the upper right corner of the screen to close the software, or select **File** in the main menu and **Exit**.
3. Shut down Windows in the usual manner.
4. If required, turn off the monitor.

Once a week, the ProceedA computer should be restarted as a maintenance procedure.

1. Select **Reset**.
2. Select the **x** in the upper right corner of the screen to close the ProceedA software.
3. Restart Windows in the usual manner. Do not turn off.
4. Double-select **ProceedA** on the desktop.
5. Log in with your username and password.
6. Select **Start [F2]**. The component buttons display in bright green.

15.4 Temporary stop and restart

- To stop: select **Reset** in the main menu.
- To restart: select **Start [F2]** in the main menu.
- To start an individual component: select the component to be displayed, then select the small **Start** button associated with the component. The button for the individual component is displayed in bright green.

15.5 Emergency stop

The emergency stop button is mounted next to the monitor.

15.5.1 Using the emergency stop

Press the red emergency stop button. The electricity and air pressure to all connected modules in the solution are deactivated, except for ReadA™ Compact. The computer system continues to operate.

15.5.2 Restarting after an emergency stop

1. Eliminate the cause of the emergency stop.
2. Remove items that may block normal operation.
3. Release the emergency stop button by turning the button clockwise. The button pops out and a green ring at the rear becomes visible.
4. Press the blue reset button on the ProceedA.
5. Press the blue reset buttons for the SorterA-BarcodA and InoqulA+™.
6. Reset software errors in the SorterA-BarcodA, InoqulA, and ReadA Compact applications, and restart.

7. Select **Reset Error [F5]** on the ProceedA main window.
8. Select **Start [F2]**. The component buttons display in bright green.

16 ProceedA troubleshooting

This section covers the following topics:

16.1 Protocol for resolving errors

1. Troubleshoot the error.
2. If the error is unresolved within five minutes, request assistance from an advanced user.

16.2 ProceedA warnings

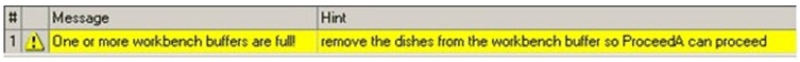
The ProceedA software generates warning messages. The messages contain a description and a hint about how the situation can be resolved.

The blue light in the signal column will continuously blink until the warning has been resolved.

Despite the warning, the module will continue to be operational. However, if the warning remains unresolved, the module may stop.

- The pale yellow warnings at the bottom of the screen are ‘Buffered Warnings’. They are displayed for about 10 seconds and provide additional technical information about the module. A response to these warnings is not necessary.

- The bright yellow warnings remain at the bottom of the screen. You must respond to these warnings. Refer to the hint for instructions.



16.3 ProceedA warning examples

One or more workbench buffers are full!

The maximum number of plates transported to the digital reading station has been reached. This may eventually cause the solution to stop, because plates for other destinations may have to be transported past this queue.

To resolve this message:

1. Remove all plates from the buffer.
2. Ensure that the sensor at the end of the buffer is no longer obstructed.

There is no buffer table detected!

The ReadA™ Compact buffer table has been removed or is not correctly placed. The ProceedA will continue transporting plates. If no buffer table is present, the output stacker will stop accepting new plates. This may block the plate flow.

or

The buffer table is not correctly placed against the ProceedA. The ProceedA cannot supply plates via the output stackers.

To resolve this message:

Correctly place the buffer table against the sensor on the ReadA™ Compact.

16.4 ProceedA errors

Errors are displayed in red on the Machine tab. A red label is displayed at the top of the window, the node turns red and a red highlighted message is displayed in the bottom of the window with a hint for error resolution.

In addition, an audible alarm sounds and the red light in the signal column starts blinking. Normal operation cannot continue.

Depending on the error location, the complete solution may stop. If the error occurs in a specific location such as the transport node, then the error is reported for that location and the ProceedA will continue to function elsewhere.

16.5 ProceedA error examples

Module errors

Error example:

‘11 cylinder not in position’ with the hint ‘remove obstruction and press Reset’

Cause:

There may also be a motor overcurrent protection device error, due to a conveyor belt that no longer moves properly.

Action:

In most cases the normal procedure for resolving errors can be followed. In the case of worn, jammed or broken parts, contact BD for assistance.

Receive timeout errors

Error example:

‘ProceedA Upper: Output scanner buffer, receive timeout’ with the hint ‘dish or stack not received at node within time’

Cause:

A plate is not delivered to the correct location within the expected time. This is usually caused by an obstruction such as a blocking lid or a jammed plate.

Action:

Follow the normal procedure for resolving errors.

Plate errors

Error example:

'sticky dish at stopper' with the hint ‘remove the dish from the stopper’

Cause

The sensor next to the stopper may be soiled.

Action:

1. Remove the plate from the stopper location.
2. Clean the sensor next to the stopper.
3. Follow the normal procedure for resolving errors.
4. Replace the plate at the stopper location.

Error example:

'unknown dish detected' with the hint ‘please remove this dish and reset’

Cause:

The sensor may be soiled or blocked.

Action:

1. Check the sensor.
   - If the sensor is blocked, remove the obstruction.
   - If the sensor is soiled, clean the sensor.
2. Follow the normal procedure for resolving errors.

16.6 Resolving ProceedA errors

1. Select **Beeper off [F6]** in the main menu to silence the audible alarm.
2. Read the description of the error and the hint.
3. Determine which module or transport node caused the error.
4. Resolve the error. Remove any blockages and plates that may have been damaged or broken.
5. Select **Reset error [F5]**.
6. Select **Start [F2]**.
7. The status of each node will be updated. When all nodes are displayed in bright green, the ProceedA is operational.
8. If all nodes do not turn bright green, the module has most likely paused (see **16.6.1 Empty check**).

16.6.1 Empty check

The empty check is initiated during start-up or if the ProceedA is restarted after a stop or an error.

During the empty check, the ProceedA verifies if the data in the software matches the actual situation on the module. While nodes are being verified, the nodes are displayed in dark green on the Machine tab.

If the data matches, the ProceedA becomes operational and nodes are displayed in bright green.

If the data does not match, the ProceedA will try to resolve this automatically. Plates for which there appears to be a problem are sent to the designated error stacker.

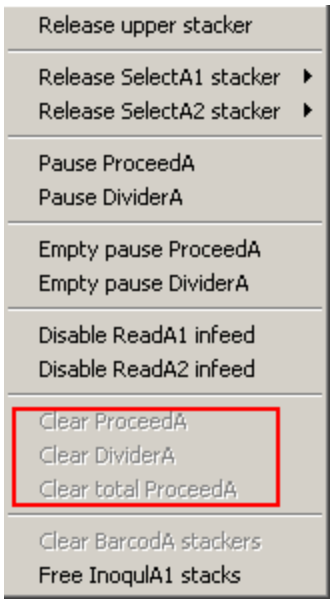
If the data still does not match, the ProceedA will remain stalled in empty check. In that case, a clear module is required.

16.6.2 Clear module

Use the clear module function when:

- the ProceedA cannot proceed beyond the empty check status;
- the ProceedA is not functioning correctly (e.g., if plates are delivered to an incorrect location);
- a component or the entire ProceedA has stopped or shut down.

1. Select **Reset**.
2. Select **Tools** to open the drop-down menu.
3. Select the module, submodule, or component to be cleared.



4. Select **OK**.
5. Manually remove all plates from the ProceedA.
6. Select **Start [F2]**.
7. Reintroduce the plates into the ProceedA:
   - Plates removed from the DividerA must be transported to the correct destination by hand.

- Plates removed from the Lower ProceedA can be placed back onto the Lower ProceedA. Plates removed from the Upper ProceedA must be taken to the correct destination by hand, or be reintroduced to the ProceedA via the Lower ProceedA.

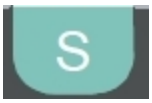
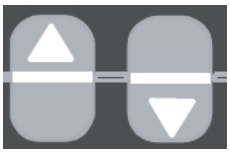
16.7 Viewing error logs

Use the ReadA Overview workstation log and select the **ProceedA** workstation to display a list of errors pertaining to the ProceedA software.

17 ErgonomicA

This section covers the following topics:

17.1 Control switch

	Memory position keys
	Memory key
	Display showing desktop height
	Desktop up/down keys

17.2 Desktop movement

This function enables you to adjust the desktop upward/downward. To change its position, proceed as follows:

1. Press the **desktop up** key to move the desktop upward, or press the **desktop down** key to move the desktop downward. The display will show the desktop height.
2. Keep pressing until the required desktop height is reached.

> NOTE
>
> The desktop will continue moving upward until you release the key or the maximum height is reached.

17.3 Saving a desktop position to a memory position key

This function allows you to save a defined desktop height. One desktop height can be saved per memory position key. To save a position, proceed as follows:

1. Adjust the desktop to the position you want to save. The display will show the desktop height.
2. Press the **memory** key. The display will read S -.
3. Press the required **memory position** key (e.g., 2). The display will read S 2.

The set desktop position will be saved to the selected memory position key. You will hear two clicks, and after about two seconds the saved desktop position will be displayed.

> NOTE
>
> The design of the memory position keys may vary.

17.4 Adjusting the desktop to a saved position

With double-click function

1. Double-click the **memory position** key (e.g., 2). After the double-click, the desktop will automatically adjust to the saved position. The display will show the current (saved) desktop position.

> NOTE
>
> The double-click function depends on the software configuration of the ErgonomicA control unit.
>
> If you press another key while the desktop is moving to a saved position, it will stop automatically. You then have to reactivate automatic desktop adjustment to a preset position.

Without double-click function

1. Press the required **memory position** key (e.g., 2) and hold it down.The desktop will move until it reaches the saved position. If you release the key before the saved position is reached, the desktop will stop and the saved position will not be reached.
2. Release the **memory position** key when the desktop has reached the saved position. The display will read the current (saved) desktop position.

17.5 Errors

In case of a fault or malfunction, pull the power plug out of the control unit immediately (attached underneath the desktop, at the back). Then contact BD.

18 Cleaning and disinfection

Cleaning/disinfection of the solution helps prevent malfunction and reduces the likelihood of contamination with microorganisms. Possible consequences of improper cleaning are:

- Error messages resulting from failure to perform or complete movements due to foreign material on the sensors
- Accelerated wear and tear of modules, submodules, and components
- Contamination of modules, submodules, and components
- Contamination and/or cross-contamination of specimens
- Contamination of the laboratory area

18.1 Frequency of routine cleaning

The frequency of routine cleaning activities depends on several factors including:

- the number of specimens/plates run on a solution per day
- the environment in which the solution operates (temperature, humidity, overall laboratory cleanliness)

NOTE

This manual describes a cleaning scheme considered to be suitable for most users. Each laboratory must assess the cleaning needs of their individual solution and develop cleaning protocols/cleaning schedules that ensure appropriate cleanliness.

The cleaning scheme presented in this manual consists of the following activities:

- Daily cleaning activities
- Weekly cleaning activities
- Monthly cleaning activities
- Incidental cleaning

The **20.3 Cleaning Table** lists cleaning activities and the recommended cleaning frequency.

18.2 Cleaning methods

CAUTION

Use only the recommended cleaner/disinfectants.

Follow the manufacturer's instructions for proper preparation (if necessary) and use of the cleaner/disinfectants used in your laboratory.

There are three approaches to cleaning, all of which are acceptable in specific situations:

- Dry cleaning only
- Wet cleaning/disinfection only
- Combined dry and wet cleaning/disinfection. The proper sequence when dry cleaning prior to wet cleaning/disinfection is:
    1. Dry-clean using a vacuum cleaner with a HEPA filter and/or a brush to remove dust and any particulate matter.
    2. Wet clean/disinfect to remove substances adhering to surfaces, as well as any surface microorganisms.

The **20.3 Cleaning Table** lists cleaning activities and the recommended cleaning method.

WARNING

TO PREVENT INJURY FROM MOVING PARTS, TURN ALL POWER SWITCHES TO THE OFF POSITION BEFORE CLEANING (UNLESS STATED OTHERWISE).

NOTE THAT THE SOLUTION STILL CONTAINS LIVE ELECTRICAL COMPONENTS. PCs AND MONITORS SHOULD BE SHUT OFF IF WET CLEANING IS REQUIRED.

WARNING

WEAR PERSONAL PROTECTIVE EQUIPMENT (LAB COAT, GLOVES, SAFETY GLASSES) DURING CLEANING OF THE SOLUTION.

18.2.1 Dry cleaning

In order to remove dust and small particles from modules and work surfaces, use:

- A small brush or microfiber wipe to clean sensors
- Microfiber wipes to scanner windows
- A vacuum cleaner with a HEPA filter (supplemented by a brush if necessary) for most areas of SorterA, BarcodA, FA/SA module of InoqulA+™, ProceedA, and any dusty areas of ReadA™ Compact

When using a brush, be careful not to move dirt to a clean location.

18.2.2 Cleaners and disinfectants

BD recommends the use of a single agent that combines functions to facilitate fast and effective cleaning and disinfection. Any exceptions to that recommendation are specified in this protocol.

Regulatory requirements limit the use of many cleaner/disinfectants to specific countries. Consequently, certain agents cannot be recommended for use in all countries.

BD recommends using Accelerated Hydrogen Peroxide® (AHP®) where available. A 0.5% stabilized H_2O_2 compound is available under different brand names. No rinsing step is required when using this compound.

Laboratories that choose to utilize a cleaning/disinfectant other than the compounds recommended by BD should validate efficacy as well as compatibility with all BD Kiestra™ modules, submodules, and components.

18.2.3 Wet cleaning/disinfecting

Wet cleaning is performed as follows:

1. For routine cleaning/disinfection, spray the cleaner/disinfectant onto a microfiber wipe. Use the microfiber wipe to spread the cleaner/disinfectant over all components and surfaces to be cleaned, especially conveyor belts, stackers and destackers.
2. Thoroughly dry sensors and scanner windows with a lint-free microfiber wipe.

18.2.4 Incidental cleaning

In the event of a spill, wipe up the spill with a microfiber wipe soaked with a cleaner/disinfectant.

CAUTION

Never spray cleaner/disinfectant on or into a module or any part of a module. Always spray onto a microfiber wipe and then wipe the cleaner/disinfectant onto the module or component.

Do not use cleaning agent on computer screens, except when microbial contamination on the monitor surface occurs or is suspected.

18.3 Cleaning of components

This section covers the following topics:

18.3.1 General components

Work surfaces

Clean all work surfaces with the recommended cleaner/disinfectant at the end of each work shift and any time that a spill occurs.

Mouse and keyboard

1. Carefully remove any dirt on the surface by hand, using a brush or vacuum cleaner if needed.
2. Wipe with a slightly moist microfiber wipe with the recommended cleaner/disinfectant.

LCD monitors

1. Turn off the monitor.
2. Clean with a microfiber wipe, moistened with water if needed.
3. If microbial contamination occurs or is suspected on the monitor surface, disinfect with the recommended cleaning/disinfecting agent sprayed on a microfiber wipe. Wipe dry with a microfiber wipe.

> NOTE
>
> Use a minimal amount of cleaning agent on the monitor surface to avoid damaging the coating.

Touch-screens

1. Turn off the monitor.
2. Clean with a microfiber wipe, moistened with water if needed.
3. If microbial contamination occurs or is suspected on the monitor surface, disinfect with the recommended cleaning/disinfecting agent sprayed on a microfiber wipe. Wipe dry with a microfiber wipe.

Sensors

Routinely clean using a dry brush (preferred method) or a dry, lint-free microfiber wipe.

If necessary, sensors may be cleaned with an approved cleaner/disinfectant. Follow with a microfiber wipe moistened with water to remove cleaner/disinfectant residue. Dry with lint-free microfiber wipes.

Scanner windows

Clean using only a dry microfiber wipe.

When required, scanner windows may be cleaned with a recommended cleaner/disinfectant. Follow with a microfiber, wipe moistened with water to remove cleaning agent residue. Dry with a dry microfiber wipe.

> NOTE
>
> When cleaning scanner windows, be careful not to move the scanners out of position.

Conveyor belts

When dry cleaning only, vacuum belts thoroughly.

When dry and wet cleaning, vacuum thoroughly and follow with the recommended cleaning/disinfecting agent.

Lifting and rotating cylinders

Clean with water. If water is insufficient for adequate cleaning, use the recommended cleaning agent/disinfectant sprayed onto a clean microfiber wipe. If it is necessary to remove the cylinders for cleaning, they must be very carefully placed back onto the module.

Lift components

Vacuum to remove loose material.

Buffer tables

Clean with water. If water is insufficient for adequate cleaning or disinfection, use the recommended disinfectant sprayed onto a clean microfiber wipe.

Stackers

Clean with water. If water is insufficient for adequate cleaning or disinfection, use the recommended disinfectant sprayed onto a clean microfiber wipe.

Suction cups

Clean with the recommended cleaner/disinfectant. Follow with a microfiber wipe moistened with water to remove cleaning agent residue. Dry with a dry microfiber wipe. The suction cups can be removed for cleaning. Carefully place them back after cleaning.

18.3.2 InoqulA+™ components

BarcodA metal bridge (guide and the recess underneath).

Vacuum to remove loose material, then clean/disinfect with recommended cleaner/disinfectant. Clean the suction cup area at the applicator position.

Drip collection and leak trays

Clean with a microfiber wipe moistened with recommended cleaner/disinfectant.

Racks and rack holders

1. Racks: Spray each rack with recommended cleaning agent and either wipe dry or air dry before placing back into rack holder.
2. Rack holder: Spray a microfiber wipe with the recommended cleaner/disinfectant and wipe down entire rack holder. Wipe dry before replacing racks.

Plexiglass FA cover

Routinely clean with water.

Plexiglass SorterA racks

Routinely clean with water.

Inside of InoqulA+™ BCC

Clean/disinfect following instructions in BCC manual. The BCC manual is available by scanning the RF barcode on the label on the back of the BCC or at the following website:

http://BAKERPARTS.NET/QRCODENETWORKACCESS/00000000/2014082713043340834600642/INDEX.HTML

Used bead disposal containers

For bead disposal, place the blue caps on the containers, and discard containers in biohazard waste following the standard biohazard protocol used in your laboratory.

Bead dispenser

Empty the bead dispenser and discard the beads. Disinfect the used bead dispenser utilizing one of the following protocols. Record the sterilization date on the dispenser.

- Autoclave for 15 min. at 121 °C (not trash cycle).

  or

- Clean with cleaner/disinfectant:
  1. Place the bead dispenser into a solution of cleaner/disinfectant and wash thoroughly.
  2. Rinse thoroughly with sterile water.
  3. Allow the dispenser to air dry keeping the container covered with a clean paper towel.
  4. Store in a sealed, clean container until use.

Tube clamp and gripper pads

Wipe with a microfiber wipe slightly moistened with a recommended cleaner/disinfectant.

Slide preparation rack on FA unit

Wipe with a microfiber wipe slightly moistened with a recommended cleaner/disinfectant.

SA slide dispenser

Wipe with a microfiber wipe slightly moistened with a recommended cleaner/disinfectant.

Clamps at spreader area

Remove the clamps from the spreading area, clean them with the recommended cleaning agent and wipe dry before placing back into position.

WARNING

THE GRIPPERS ON THE CLAMPS ARE SHARP.

18.3.3 ReadA™ Compact components

Humidification pan

The bottom plate inside the ReadA™ Compact houses a humidification pan.

To empty the humidification pan for cleaning:

1. If applicable, turn off the CO_2 supply.
2. Select **Stop [F4]** in the ReadA Compact application.
3. Select **Unlock door [F8]** to release the door lock.
4. Open the door and place the door guard.
5. Remove the bottom plate at the back of the manipulator pillar.
6. Slide the bottom plate and the humidification pan toward you (approximately 30 cm).
7. Place a shallow plastic bowl underneath the opening at the front.
8. Use a microfiber wipe to carefully wipe any remaining water from the pan into the shallow plastic bowl.
9. Remove the bottom plate and the pan from the incubator.
10. Clean the pan with the recommended cleaner/disinfectant.
11. Remove any residual cleaning agent with a microfiber wipe moistened with clean water.
12. Place the humidification pan and bottom plate into the incubator.

> NOTE
>
> Refer to **10.1 The ReadA™ Compact incubator** for instructions to fill the humidification pan with water.

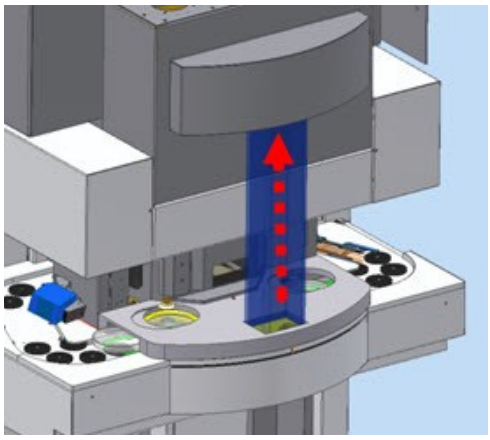
13. Close the door.
14. If applicable, turn on the CO_2 supply .
15. Select **Lock Door [F8]** and then **Start [F2]** to start the module.

Door Seals

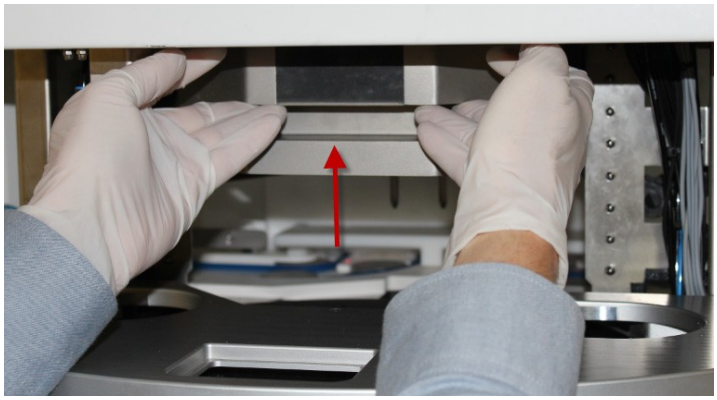
Spray recommended cleaner/disinfectant on a microfiber wipe and thoroughly wipe down the rubber door seal.

ReadA™ Compact v1.1 camera parts

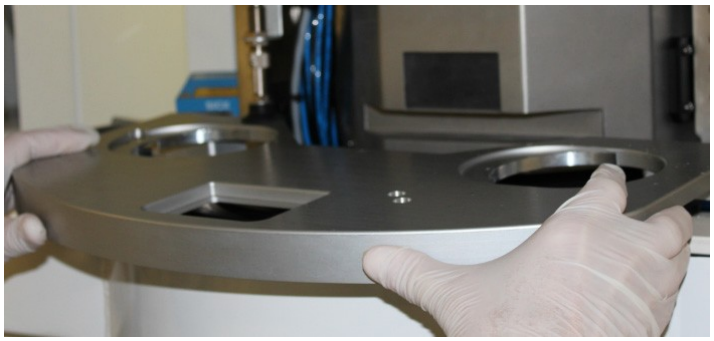
1. Select **Stop [F4]**.
2. Select **Unlock door [F8]** to release the door lock.
3. Move any plates left in the stackers onto the buffer table by pushing the stacks.
4. Move the buffer table aside.
5. Open the cover.
6. Raise the square tube that is connected to the HEPA filter slightly upward, then pull forward and remove.



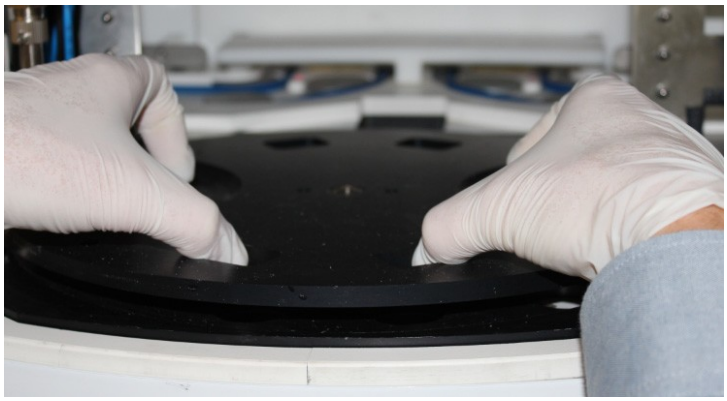
7. Raise the camera unit, making sure the camera is firmly locked into place (push until you hear a click).



8. Remove the gray cover of the camera layer and clean the cover with a microfiber wipe moistened with water.



9. Remove the black indexing disc and clean the disc with a microfiber wipe moistened with water.



10. If microbial contamination occurs or is suspected in the camera area, disinfect with the recommended cleaner/disinfectant sprayed on a microfiber wipe. Wipe dry with a microfiber wipe.
11. Clean all the components with the recommended cleaning products.
12. Re-assemble the camera unit.
13. Close the cover.
14. Place the buffer table back.
15. Select **Lock Door [F8]**.
16. Select **Start [F2]**.

NOTE

After cleaning the camera needs to be re-calibrated. Refer to **25.3 Camera calibration procedure** for calibration instructions.

External Surfaces

1. Vacuum the top of the ReadA™ Compact. If sides are noticeably dirty, vacuum these surfaces as well.
2. Clean all external surfaces with recommended cleaner/disinfectant.

18.3.4 ReadA™ Compact cleaning strategies

The optimal strategy to clean the interior of the ReadA™ Compact is determined by:

- the number of plates present in the ReadA™ Compact at the time cleaning is being performed
- the availability of storage space in other ReadA™ Compact incubators with identical storage conditions
- the preference to unload plates automatically or manually

The cleaning options are:

1. Cleaning a whole ReadA™ Compact at one time. This approach can be used if a lab has sufficient capacity of a specific atmosphere (CO_2 or O_2) such that a ReadA™ Compact can be completely emptied for cleaning.

   There are two unloading options for complete cleaning:

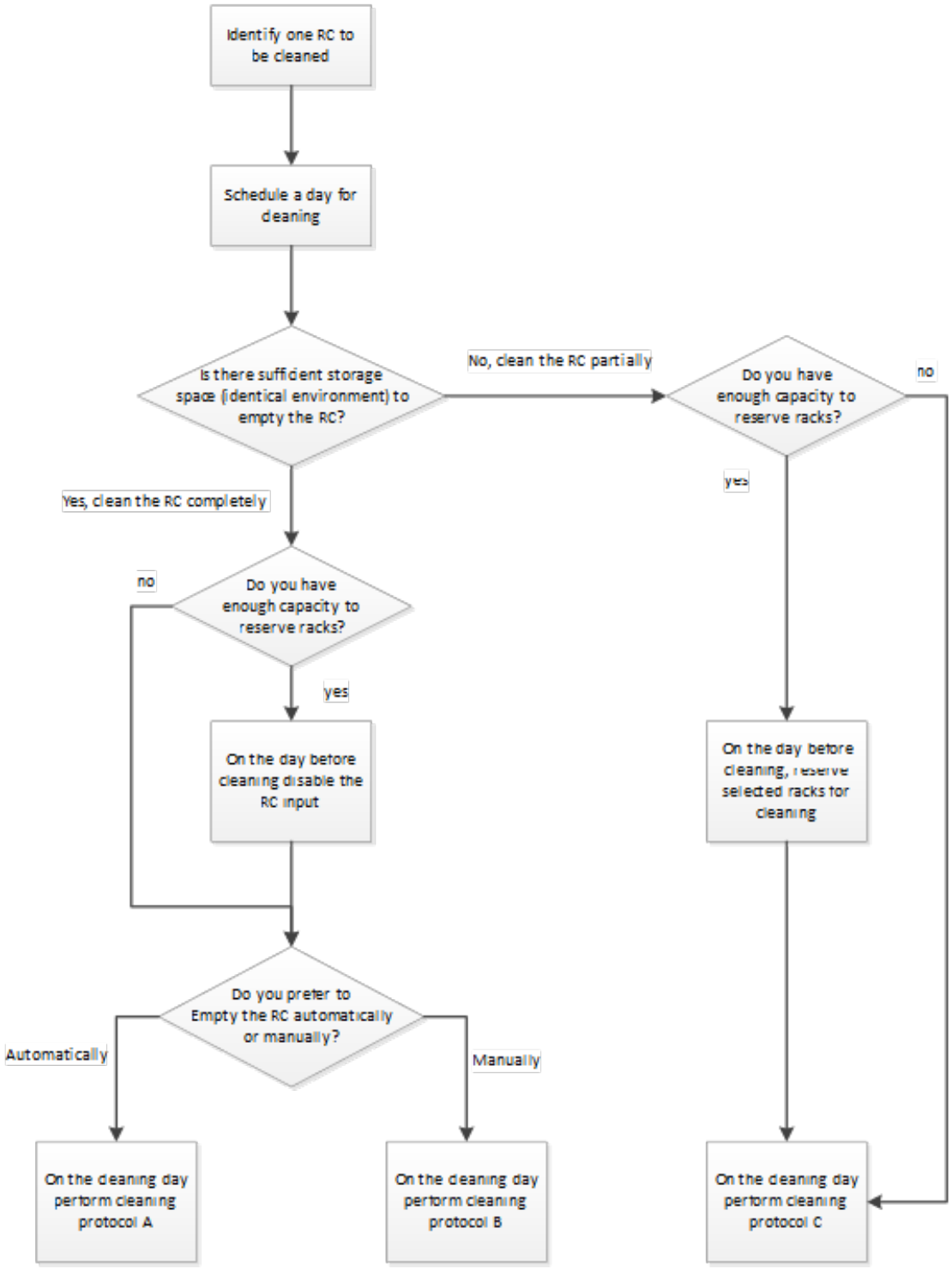
   a. Automatic unloading of plates (Protocol A). In this case the plates are automatically transferred from the ReadA™ Compact to the buffer tables. A buffer table can contain a maximum of 300 plates.

   b. Manual unloading of plates (Protocol B). For manual unloading, the back door is opened and plates are collected manually from the racks.

> NOTE
>
> If plates are unloaded from a ReadA™ Compact, the time between removal of plates and the relocation into another ReadA™ Compact is not registered as incubation time.

2. Cleaning part of a ReadA™ Compact at one time (Protocol C). If there is insufficient incubator capacity (CO_2, O_2, or both), a lab may choose to clean only part of a ReadA™ Compact at one time. This method involves cleaning the left, right, and door sections sequentially (usually on different days) by transferring plates from the section to be cleaned to a section that will be cleaned or has already been cleaned.

The following flowchart can be used to help decide your optimal cleaning strategy.



Explanatory notes:

1. One ReadA™ Compact can hold 1,152 plates. There is sufficient storage space to completely empty a ReadA™ Compact if there are 1,152 free storage locations with

suitable environmental conditions at the time of cleaning (this includes the free storage locations in the ReadA™ Compact to be cleaned).

2. There is sufficient capacity to reserve racks if there is enough storage space to store the plates in the racks selected for cleaning and the plates that need to be stored until after cleaning has been completed.
3. Disabling the ReadA Compact input is equivalent to selecting all racks for cleaning.

The table below presents the advantages and disadvantages of each cleaning strategy

Strategy	Advantages	Disadvantages
Protocol A: cleaning all racks with automated unloading	• No manual activities required	• Up to 3 hours before ReadA™ Compact is empty • May not be enough space on buffer table and stackers for all plates • Unregistered incubation time
Protocol B: cleaning all racks with manual unloading	• Less time than automated unloading	• More labor intensive • Unregistered incubation time
Protocol C: cleaning selected racks	• Continuous operation (no unregistered incubation time)	• Only possible when enough space is left in incubator for relocation of plates

18.4 Cleaning protocols

This section covers the following topics:

18.4.1 Protocol A: cleaning all racks with automated unloading

1. Disable the ReadA Compact input on the day prior to cleaning by selecting **Tools [F7]** and selecting **Disable ProceedA Input** for the specific ReadA™ Compact to be cleaned.
2. Continue with step 7 when the ReadA™ Compact is completely empty.
3. Select **Tools [F7]** and select **Force empty container store (cleaning)**.
4. Select **OK** to confirm this action. All plates are automatically removed and sent to the designated output stacker. If another ReadA™ Compact is available, place the plates back onto the ProceedA. If no ReadA™ Compact is available, place the plates back onto the ProceedA after step 20.

CAUTION

The buffer table can only accommodate 120 stacks (30 stacks per stacker).

5. Wait for all the plates to be removed. It can take up to three hours before a ReadA™ Compact is completely empty.
6. Place the plates on the Lower ProceedA or the manual infeed to have them stored in another ReadA™ Compact.
7. Select **Stop [F4]**.
8. Select **Unlock door [F8]** to release the door lock.
9. If applicable, turn off the CO_2 supply.
10. Open the door.
11. Place the door guard over the door seals.
12. Remove all the racks.
13. Spray the recommended cleaner/disinfectant onto a microfiber wipe and wipe down the inside (top, walls, and bottom).
14. When cleaning has been completed, replace the racks. Make sure the flat side is up.

> **CAUTION**
>
> **Rack positions are not interchangeable. Placing the racks in incorrect positions can cause plate placement errors resulting in crushed plates.**

15. Push the door guard back to its original position.
16. Close the door.
17. If applicable, turn on the CO_2 supply.
18. Select **Lock Door [F8]**.
19. Select **Start [F2]** to start the application and continue operation.
20. In the **Tools [F7]** menu, clear **Force empty container store (cleaning)** and **Disable ProceedA Input**.
21. Place any plates removed in step 4 back onto the ProceedA.

18.4.2 Protocol B: cleaning all racks with manual unloading

1. Disable the ReadA Compact input on the day prior to cleaning by selecting **Tools [F7]** and selecting **Disable ProceedA Input** for the specific ReadA™ Compact to be cleaned.
2. Continue with step 5 when the ReadA™ Compact is completely empty.
3. Select **Tools [F7]** and select **D-register all dishes (empty ReadA)**.
4. Select **OK** to confirm this action.
5. Select **Stop [F4]**.
6. Select **Unlock door [F8]** to release the door lock.
7. If applicable, turn off the CO_2 supply. Open the door and place the door guard over the door seals.
8. Remove all plates from the incubator and from the stacker, and place them on the ProceedA to have them stored in another ReadA™ Compact. If no other

ReadA™ Compact is available, store the plates on a trolley and place them back onto the ProceedA after step 19.

9. Remove all racks from the ReadA™ Compact.
10. Spray the recommended cleaner/disinfectant onto a microfiber wipe and wipe down the inside (top, walls, and bottom).
11. Clean the racks.
12. When cleaning is completed, replace the racks. Make sure the flat side is up.

> **CAUTION**
>
> **Rack positions are not interchangeable. Placing the racks in incorrect positions can cause plate placement errors resulting in crushed plates.**

13. Push the door guard back to its original position.
14. Close the door.
15. If applicable, turn on the CO_2 supply.
16. Select **Lock door [F8].**
17. Select **Start [F2]** to start the application.
18. Place any plates removed in step 10 back onto the ProceedA.

18.4.3 Protocol C: cleaning selected racks

Reserving racks

The day/night before cleaning, reserve the racks that will be cleaned (door, left or right side):

1. Select **Stop [F4]**.
2. Select **Tools [F7]** and select **Rack reservation & removal**. The Remove/Reserve rack window appears.
3. Right-click to select the rack you want to remove/reserve.
4. Select **Set state of Rack door** to change the status of the desired racks to **Reserved**.
5. Select **Apply changes** to save the new status for the block concerned.

Empty a reserved rack for cleaning (not required when reserved racks are empty)

1. Select **Start [F2]**.
2. Select **Tools [F7]** and select **Force empty reserved racks**. Plates will be allocated to a different position.

To remove racks from the incubator to be cleaned:

1. Select **Stop [F4]** to stop the ReadA Compact application.
2. Select **Unlock door [F8]** to release the door lock.
3. If applicable, turn off the CO_2 supply.
4. Open the door.

5. Place the door guard over the door seals.
6. In the CSA tab, identify the racks with status **Reserved** and remove these racks .
7. Spray the recommended cleaner/disinfectant onto a microfiber wipe and wipe down the inside (top, walls, and bottom).
8. Clean the racks.
9. Push the door guard back to its original position.
10. Close the door.
11. If applicable, turn on the CO_2 supply.
12. Select **Lock Door [F8]**.
13. Select **Start [F2]** to start the application and continue operation. You can now clean the racks.

To replace a cleaned rack:

1. Select **Stop [F4]**.
2. Select **Unlock door [F8]** to release the door lock.
3. If applicable, turn off the CO_2 supply.
4. Open the door and place the door guard over the door seals.
5. Place the rack in the correct position. Make sure the flat side is on top.

> **CAUTION**
>
> **Rack positions are not interchangeable. Placing the racks in incorrect positions can cause plate placement errors resulting in crushed plates.**

6. Push the door guard back to its original position.
7. Close the door.
8. If applicable, turn on the CO_2 supply.
9. Select **Lock Door [F8]**.
10. To make the rack available again: select **Tools [F7]** and select **Rack reservation & removal**. The Remove/Reserve rack window appears.
11. Right-click to select the rack you want to make available.
12. Select **Set state of Rack door** to change the status of the desired racks to **available**.
13. Select **Apply changes** to save the new status.
14. Select **Start [F2]** to start the application and continue operation.

Cleaning of the racks

Once the racks have been removed, they are ready for cleaning. For proper cleaning/disinfection, the racks should be both cleaned and wiped dry. There are several equally effective cleaning methods that can be used. Select the method that works best in your laboratory.

- Use a dishwasher: Clean the racks in a laboratory dishwasher that includes cleaning and rinsing cycles. If the racks are not completely dry when removed from the dishwasher, dry with a clean paper towel or place on a cart to drain.
- Use separate containers for washing and rinsing: Using a sink or large tub, wash the racks in cleaner/disinfectant. Rinse with water in a separate container. Set aside to drain. Thoroughly wipe dry, making sure to wipe all surfaces to remove any residual dirt or particulate matter.

- Use a container only for rinsing: Spray cleaner/disinfectant onto all surfaces of a rack. Rinse with water in a large container. Set aside to drain. Thoroughly wipe dry, making sure to wipe all surfaces to remove any residual dirt or particulate matter.
- Autoclave the racks using qualified equipment.

18.5 Decontamination

Decontaminate after spills, splashes, or obvious contamination, and before transporting the equipment out of the laboratory.

WARNING

CONSIDER ALL ORGANISMS AS POTENTIALLY INFECTIOUS AND HANDLE ACCORDING TO STANDARD MICROBIOLOGICAL PRACTICES, SPECIAL PRACTICES, AND SAFETY EQUIPMENT RECOMMENDED FOR BIOSAFETY LEVEL 2 (BSL-2) CONTAINMENT.*

BSL-2 PRACTICES INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- **WEAR GLOVES AND LAB COAT WHEN HANDLING POTENTIALLY INFECTIOUS MATERIAL OR CONTAMINATED EQUIPMENT. WEAR ANY OTHER PERSONAL PROTECTIVE EQUIPMENT ACCORDING TO LOCAL POLICY.**
- **DECONTAMINATE WORK SURFACES AFTER COMPLETION OF WORK AND AFTER ANY SPILL OR SPLASH OF POTENTIALLY INFECTIOUS MATERIAL WITH APPROPRIATE DISINFECTANT.**
- **DECONTAMINATE ALL CULTURES, STOCKS, AND OTHER POTENTIALLY INFECTIOUS MATERIALS BEFORE DISPOSAL USING AN EFFECTIVE METHOD.**
- **PERFORM ALL PROCEDURES TO MINIMIZE THE CREATION OF SPLASHES AND/OR AEROSOLS.**
- **LABORATORY EQUIPMENT SHOULD BE ROUTINELY DECONTAMINATED, AS WELL AS, AFTER SPILLS, SPLASHES, OR OTHER POTENTIAL CONTAMINATION. SPILLS INVOLVING INFECTIOUS MATERIALS MUST BE CONTAINED, DECONTAMINATED, AND CLEANED UP BY STAFF PROPERLY TRAINED AND EQUIPPED TO WORK WITH INFECTIOUS MATERIAL.**
- **EQUIPMENT MUST BE DECONTAMINATED BEFORE REPAIR, MAINTENANCE, OR REMOVAL FROM THE LABORATORY.**
- **DISPOSE OF ALL USED REAGENTS AND ANY OTHER CONTAMINATED DISPOSABLE MATERIALS FOLLOWING PROCEDURES FOR INFECTIOUS OR POTENTIALLY INFECTIOUS WASTE. IT IS THE RESPONSIBILITY OF EACH LABORATORY TO HANDLE SOLID AND LIQUID WASTE ACCORDING TO THEIR NATURE AND DEGREE OF HAZARDOUSNESS AND TO TREAT AND DISPOSE OF THEM (OR HAVE THEM TREATED AND DISPOSED OF) IN ACCORDANCE WITH ANY APPLICABLE REGULATIONS.**

* **Biosafety in Microbiological and Biomedical Laboratories, 6th Edition. 2020. U.S. Department of Health and Human Service, Centers for Disease Control and Prevention and National Institutes of Health. Refer to Biosafety in Microbiological and Biomedical Laboratories on cdc.gov.**

CAUTION

Do not use abrasive or corrosive cleaners (including bleach) inside the equipment.

Do not spray or pour liquid directly on surfaces.

Exposure to vaporized decontamination methods is not advised, as this may cause damage to the equipment.

19 Maintenance

The information in this section describes the various maintenance procedures required by the user and those provided by BD.

19.1 Maintenance activities

During the installation process, BD personnel work with laboratory staff to assign maintenance roles. The maintenance roles and associated activities are described below.

Lab Technician Activities:

- Removing small obstructions that prevent proper functioning
- Resolving minor function issues

Support Technician Activities:

- Resolving semi-complex malfunctions to ensure minimal downtime
- Providing the lab technician with work materials
- Emptying the stackers, and ensuring the proper processing and disposal of those materials
- Managing the disposables inventory

Frontline Support Specialist Activities:

- Resolving complex malfunctions to ensure minimal downtime
- Replacing minor components
- Managing spare parts in the EnsurA cabinet

19.2 SorterA-BarcodA Tools manager

The SorterA-BarcodA Tools manager contains a number of functions that may be performed for maintenance.

1. Select **Tools [F7]**.
2. Select the function you wish to perform. Descriptions of each function are provided below. An “S” (Supervisor) after the description indicates that function can only be performed by an advanced user.
    - Initialize machine: initializes the module
    - Empty destacker(s): the destacker is emptied manually, therefore this option will be grayed out and inactive (S).
    - Empty stacker(s): removes a stack from the stacker (S).
    - Empty worklist (with option copy to redundant BarcodA): empties the BarcodA worklist so that the BarcodA can be cleaned, and transfers it to a different BarcodA in order to continue the work (S).

- Empty DividerA queue: everything in the software that is destined for the DividerA is cleared. Plates must be removed manually (S).
- Delete specimens from the worklist: removes one plate from the worklist (S).
- Delete plates from the worklist: removes several items from the worklist (S).

3. Select **Apply** and then **Close** to close the Tools manager.

19.3 Simple maintenance

WARNING

TURN ALL POWER SWITCHES TO THE OFF POSITION (EXCEPT THE READA™ COMPACT) DURING MAINTENANCE TO PREVENT INJURY FROM MOVING PARTS AND EXPOSURE TO LIVE ELECTRICAL COMPONENTS.

WARNING

DURING MAINTENANCE OF THE READA™ COMPACT, USE THE DOOR GUARD TO PREVENT THE DOOR FROM CLOSING AND ACCIDENTALLY LOCKING YOURSELF IN.

Simple maintenance tasks are as follows:

- Clean the solution regularly according to recommendations.
- Refill printers with labels and carbon rolls as needed.
- Check functioning of the safety lock in the ReadA™ Compact door at least once a month.
  - Press **[F8]** to lock the door.
  - Ensure that the door cannot be opened.
- Regularly check the fluid level in the ReadA™ Compact humidification pan. Refill if necessary.

19.4 Preventive maintenance

Once every three months, preventive maintenance is required to be performed by BD authorized service personnel. Service includes readjustment of electronics and pressure, and replacement of worn parts.

If a service contract is in place, BD will contact your laboratory when preventive maintenance is due. If there is no service contract, contact BD to schedule preventive maintenance.

To prepare for preventive maintenance, BD may retrieve and analyze data about your solution remotely. This allows service associates to prepare for their visit and generate recommendations for continued efficient use of the solution.

If a HEPA filter unit is installed, it must be replaced when the solution generates the warning “HEPA Filter is clogged”.

NOTE

You are not permitted to replace filters! Instead, contact the company that is responsible for replacement of HEPA filters in your lab and inform BD.

19.5 Corrective maintenance

Corrective maintenance is performed by BD if a malfunction occurs that cannot be resolved by the laboratory staff.

Contact BD if you cannot resolve an error. Resolution may require remote access data analysis or dispatching a service associate.

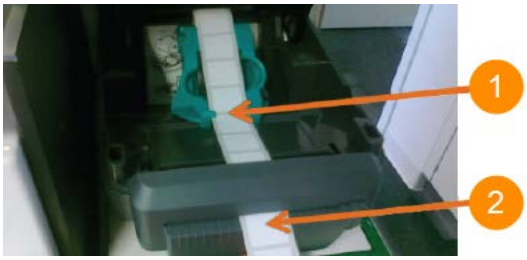
19.6 Replacing the label and carbon roll

Follow the instructions below for replacing the label and carbon rolls in the desktop printer. In addition to these, instructions are presented graphically underneath the printer's cover.

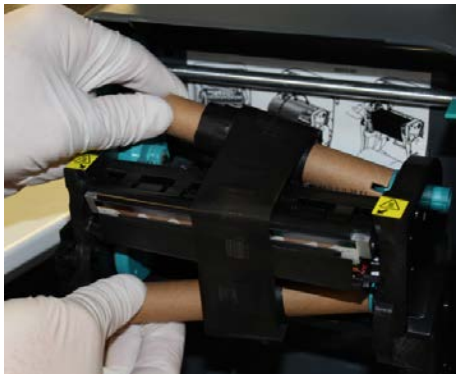
NOTE

Be sure to select the correct replacement label roll or carbon roll catalog number for either an InoqulA+™ desktop printer or an ErgonomicA desktop printer.

1. If your solution is equipped with a BCC, ensure the BCC is closed. Select **System Menu** from the main menu. Then select **Unlock printer cover and bead disposal drawer.**
2. Lift the desktop printer's housing from the rear of the SA submodule. Pull the printer toward you, flip it to a horizontal position, and rotate it 90° counterclockwise.
3. Open the desktop printer cover by sliding the two green buttons on both sides toward the front.
4. Lift up the cover. If it is difficult to lift, the whole printer can be moved forward about 5 cm. The cover can then be lifted.
5. Remove the old label roll by pulling apart the green clamps holding the roll.
6. Use wet cleaning wipes or a moist cloth with cleaning agent to clean the insides of printers, especially around the carbon roll and the carbon ribbon.
7. Place the new label roll between the clamps.
   - Pull the label ribbon through the two guides (1).
   - Slide the ribbon through the slot on the front of the printer (2). Pull the ribbon far enough to leave several labels extending through the front of the slot.



8. Remove the two carbon rolls.
   - The bottom roll is the new roll, the top roll is the used roll.
   - Push both rolls to the right so the spring compresses and allows the rolls to be removed on the left.



9. Place the new carbon roll on the bottom holder (push the spring to the right). Place the shiny, working side of the material face down. The roll runs from the bottom to top.
10. Take the old, empty cardboard carbon roll and use it to wind the used carbon ribbon from the new roll. Attach the adhesive strip to the roll. (If there is no adhesive strip, use a sticker from the label roll to fasten the carbon roll.) Make sure that the ribbon runs over the top of the roll from front to back.

11. Press the empty roll into the top position by pressing the spring to the right. Rotate the roll a little to make sure the carbon ribbon between the two rolls is tightened.

12. Close the printer cover, pressing until there is an audible click.

13. The printer needs to be calibrated for the correct position of space between the two labels so it knows where to print the barcodes.

    Select the feed button on the lid.

    The printer will automatically calibrate.

14. Replace the printer with the legs in the notches. If your printer is installed on its side, flip the printer back into a vertical position.
15. Close the white housing or cover. The printer is ready for use.
16. The used carbon roll is considered chemical waste. Dispose of the roll according to your laboratory's procedures.

20 Appendices

This section covers the following topics:

20.1 Hotkeys

BarcodA hotkeys

Hotkey	Function
[F1]	Start the Printer wizard function
[F2]	Start the module
[F3]	Pause the module
[F4]	Stop the module
[F5]	Reset errors
[F6]	Reset warning
[F7]	Open the Tools menu
[F8]	Open the plate logging window
[F9]	Open the error logging window
[F10]	Open the Process Vision destackers
[F11]	Open the Process Vision BarcodA
[F12]	Open the Process Vision stackers

InoqulA hotkeys

Hotkey	Function
[F2]	Start the module
[F5]	Reset error
[F6]	Alarm beeper off

20.2 Ordering information

Below is a list of disposables, customer replacement, and spare parts for use with the modules. For product availability, consult the BD product catalog (online) or contact your local distributor or BD representative.

Catalog number	Name
447262	Pipet Tip Rack Holder

Catalog number	Name
447265	BarcodA Printer Label Roll
447266	BarcodA Printer Carbon Roll
447267	BarcodA Printer Cleaning Cloth
447268	ErgonomicA Desktop Printer Label Roll
447269	ErgonomicA Desktop Printer Carbon Roll
447270	InoqulA Desktop Printer Label Roll
447271	InoqulA Desktop Printer Carbon Roll
447272	BD Kiestra™ InoqulA+™ Magnetic Beads
447273	Magnetic Bead Waste Container
447274	1,000 µL Pipet Tips
447321	Pipet Tip Waste Container
447605	Bead Dispenser
496016	Incubator Rack Identification Tags

Fully Automated Processing Specimen Containers

Catalog number	Container
221812	BD BBL™ Brain Heart Infusion
221729	BD BBL™ GN Broth
292209	BD BBL™ Lim Broth
221020	BD BBL™ Selenite-F Broth
221199	BD BBL™ Thioglycollate Medium without Indicator
220245	BD ESwab™ collection kit
364951 364980	BD Vacutainer®
364958	BD Vacutainer® C&S Boric Acid
364938 368500	BD Vacutainer® Z
04207 CMM	bioMerieux 04207 CMM
04281 SEL	bioMerieux 04281 SEL
480 CE 482 CE	BD ESwab™
493CE02	Copan ESwab™ / MRSA
470 CE	Copan Fecal Swab

Catalog number	Container
476 CE	Copan Lim Broth
409502	DeltaLab
456007	Greiner Vacuette®
50004	i2a Eau Physiologique
CS6006	ISS™ Plastic Container
PBT 255	ISS™ Urine Container
3131-345-008	Labcom Centrifuge Tube Conical
MW168S	MWE Fecal Transwab
MW177S	MWE NRS II
MW176S MW177S	MWE Sigma® Transwab
SN 8760	PARA-PAK Zn-PVA Fixative
EB1230E	Oxoid™ Heart Infusion Broth
EB0210E	Oxoid™ Universal Bottle
10.252	Sarstedt™ Monovette Urine
60.541.500 PP 60.541.929 PP 62.554.502 PP 62.9924.284 PP	Sarstedt™ Reagent & Centrifuge Tube
11.2453.001	Sarstedt™ V-Monovette® Urine w/ Boric Acid
B602-10 B902-10	Starplex™ LeakBuster™ Specimen Container
B902L	Starplex™ - NCS
128B 128BBAC/P	Sterilin™ Universal Container
P5744	Techno Plas Specimen Container
538318	ThermoScientific™ Nunc™
BUIS SV 25 107 PP GRAD.SV	VWR™ Urine Container

20.3 Cleaning Table

	Cleaning method			Cleaning frequency			
Location	**Dry**	**Wet**	**Dry followed by wet**	**Daily**	**Weekly**	**Monthly**	**Quarterly**
FA – drip collection trays		X		X[1]			
FA – leak trays		X		X[1]			
FA – Stainless steel surface next to the pipet tip waste container		X		X[1]			
FA – racks + slide preparation rack		X		X[1]			
FA – rack holder		X		X[1]			
FA – plexiglass cover		X		X[1]			
FA – tube clamp and gripper pads		X		X[1]			
SA – clean the touchscreen(s)		X		X[1]			
SA – slide dispenser		X		X[1]			
SA – work surface		X		X[1]			
SA – inside of BCC(including safety shield)		X		X[1]			
Mice, keyboards, LCD monitors, touchscreens	X	if needed		X[1]			
SorterA BarcodA – conveyer belts	Vacuum				X		
SorterA – plexiglass components		X			X		
SorterA – sensors	Brush				X		

Location	Cleaning method			Cleaning frequency			
	Dry	Wet	Dry followed by wet	Daily	Weekly	Monthly	Quarterly
BarcodA – metal bridge (guide) and the recess underneath, suction cup area.	Brush, microfiber wipe		X		X		
BarcodA – sensors	Brush				X		
InoqulA+™ – white and blue conveyer belts	Vacuum				X		
InoqulA+™ – stackers		X			X		
InoqulA+™ – lifting and rotating cylinder		X			X		
InoqulA+™ – scanner + scanner windows	Microfiber wipe				X		
InoqulA+™ – sensors	Brush				X		
InoqulA+™ – suction cups (all)		X			X		
SA – clamps at spreader area		X			X		
FA – bead dispenser		X (or autoclave)				X	
FA – pipet tips racks		X				X	
ProceedA – scanners + scanner windows	Microfiber wipe				X		
ProceedA – sensors	Brush				X		
ProceedA – stackers		X			X		
ProceedA – buffer tables		X			X		
ProceedA – lift component	Vacuum				X		
ProceedA – conveyer belts			X			X	

Cleaning method				Cleaning frequency			
Location	**Dry**	**Wet**	**Dry followed by wet**	**Daily**	**Weekly**	**Monthly**	**Quarterly**
ReadA™ Compact – infeed conveyer	Vacuum				X		
ReadA™ Compact – outfeed conveyer	Vacuum				X		
ReadA™ Compact – camera in- and outfeed conveyer	Vacuum				X		
ReadA™ Compact – sensors on in-, out-, and camera conveyer	Brush				X		
ReadA™ Compact – scanners	Microfiber wipe				X		
ReadA™ Compact – seals		X			X		
ReadA™ Compact – humidification pan		X				X	
ReadA™ Compact – outside and top	Vacuum	X				X	
ReadA™ Compact – camera layer – plexiglass component HEPA filter		X				X	
ReadA™ Compact – camera layer – indexing disk cover		X				X	
ReadA™ Compact – camera layer – indexing disk (black)		X				X	
ReadA™ Compact – camera layer – glass plate		X				X	
ReadA™ Compact – camera layer – background plate + carrier		X				X	
ReadA™ Compact – camera layer – suction cups		X				X	

	Cleaning method			Cleaning frequency			
Location	**Dry**	**Wet**	**Dry followed by wet**	**Daily**	**Weekly**	**Monthly**	**Quarterly**
ReadA™ Compact – racks		X					X
ReadA™ Compact – inside panels		X					X

Comments:

1. It is recommended to clean at the end of a shift/day.

21 Configuring the main database

The initial configuration of the solution is performed by a team of BD associates during the installation of the solution. In this section, instructions are provided for configuration changes that can be performed by trained key users. It is essential for proper operation to correctly configure the data in the BDK database according to your laboratory standards. This can be done using the DB Manager application.

CAUTION

For proper operation, the data in the BDK database must match the data in the BD Synapsys™ Informatics database.

Normally, data is synchronized automatically every night. Data can also be synchronized with BD Synapsys™ Informatics using a synchronization step. See File synchronization in the BD Synapsys™ Informatics Solution instructions for use.

If synchronization steps are omitted, proper operation of the BD Kiestra™ solution cannot be guaranteed.

The following table lists the tabs in DB Manager where changes can be made by key users. Tabs not listed in the table should not be used.

DB Manager tab	Comments
Media	Add, edit, or delete media. Media identified in DB Manager is added to the BD Synapsys™ Informatics database during synchronization.
Incubation Types	Add, edit, or delete incubation types.
Analysis Set	Add, edit, or delete analysis sets. Information in analysis sets is added to the BD Synapsys™ Informatics database during synchronization. In BD Synapsys™ Informatics, analysis sets are used to define media protocols and some test protocols. Changes made to settings in analysis sets or programs may affect settings in the corresponding media protocol.
Programs	Add, edit, or delete programs. Only BD Kiestra™ Optis™ images should be used. Images created using the classic (pre-Optis) imaging program steps are not supported by BD Synapsys™ Informatics. Images associated with BD Kiestra™ Imaging Apps can be set to system images, which do not trigger Ready for Reading but are visible in BD Synapsys™ Informatics.

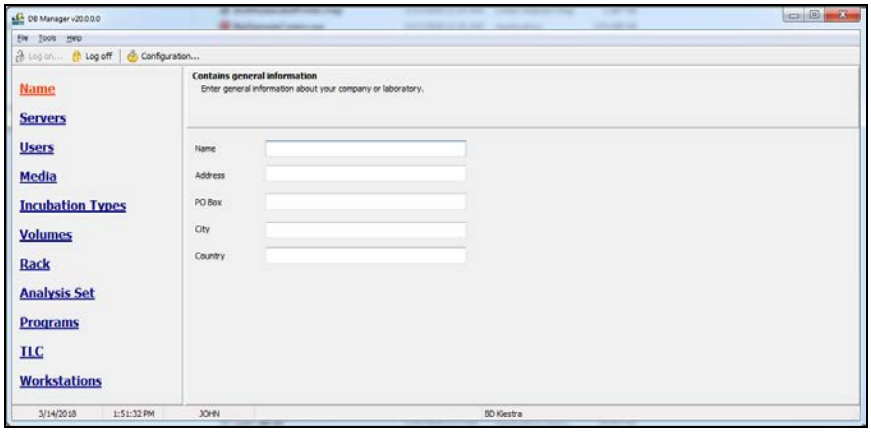
CAUTION

Only key users may change the settings described in this users manual.

21.1 Starting and closing DB Manager

1. Double-click **DB Manager** on the desktop or find and open DB Manager.exe on the Z drive.
2. Enter username and password, then select **OK**.

   The main menu of the DB Manager is displayed in the left panel of the main screen.



3. Select **Log off** to allow another user to access DB Manager.
4. Select **File > Exit** or select **x** in the upper right corner to close DB Manager.

> NOTE
>
> In all tables, records may be edited by selecting a record and selecting **Edit** or double-clicking on a record.

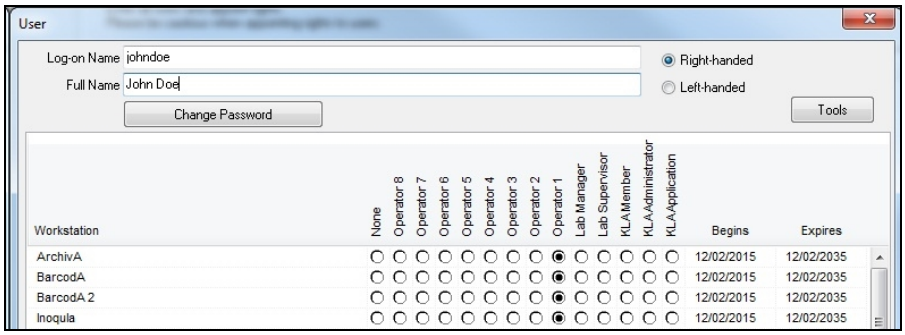
> NOTE
>
> In all tables, the sort order of the records can be changed by selecting on the column name.

21.2 Configuring users

To configure users and set initial access rights, see User configuration in the BD Synapsys™ Informatics Solution instructions for use.

21.2.1 Edit user rights

1. From the main menu, select **Users**. A list of all users is displayed.
2. Select a user from the list and select **Edit**.



3. Select the radio button to select the default setting of user right- or left-handedness.
4. Grant normal user access to the software listed under Workstation by selecting the appropriate radio buttons in the **Operator 8** column. Grant advanced user access by selecting the appropriate radio buttons in the **Lab Supervisor** column. For all other software, select **None**. The software applications that are displayed in this list are defined during the configuration of workstations.
5. Enter the dates for the period this user requires access to the solution.
6. Select **OK** to save.

> NOTE
>
> If you want to use the Windows login password, the solution can be configured to use LDAP functionality to log in.

21.2.2 Copy rights and dates from existing users

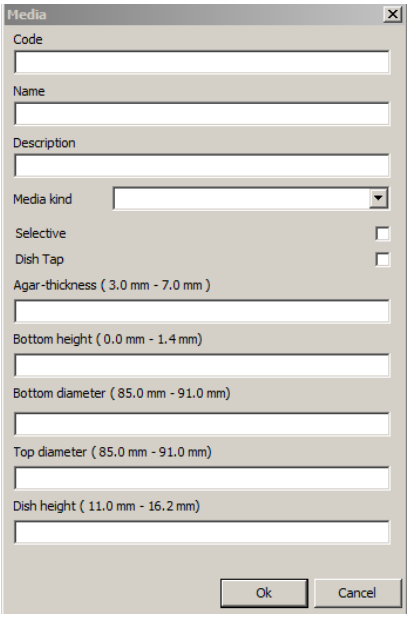
1. Select **Tools > Copy rights from**.
2. From the user list, select the user that has the rights and dates to copy.
3. Select **OK** to copy the rights and dates to the new user.

21.3 Configuring media

From the main menu, select **Media**. The Media tab displays a list of all plated media and broth tubes.

21.3.1 Add or edit media

1. Select **Add** or select from the list and select **Edit**.



2. Enter the media code. After initial creation it is not possible to change the code. The field will be grayed out.
3. Enter or change the name.
4. Enter or change the description.
5. Select the medium from the drop-down menu.
6. Select **Selective** if appropriate.
7. Select **Dish Tap** to use the dish tap.
8. Enter or change the plate parameters.
9. Select **OK**. A new medium is defined and a medium ID is automatically assigned.
10. Synchronize with BD Synapsys™ Informatics using the manual refresh option. After synchronization, the media code will display as the media name in BD Synapsys™ Informatics.

21.3.2 Delete media

1. Select a medium from the list.
2. Select **Delete**. Deleted media can no longer be selected. Previous use remains visible in overviews.

21.3.3 Media production order tab

The media production order defines the order from right to left in which plates are presented to the technician for manual inoculation. This order may be relevant when antibiotics are used and cross contamination between plates needs to be prevented. When multiple plates for multiple specimens have been requested, the plates will be grouped by specimen, and not by medium.

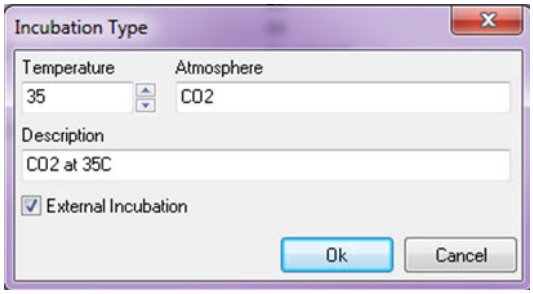
To change the order, select a medium type and then select **Move Up** or **Move Down**.

21.4 Configuring incubation types

From the main menu, select **Incubation Types**.

21.4.1 Add or edit incubation types

1. Select **Add** or select an incubation type from the list and select **Edit**.



2. Enter or change the temperature in degrees Celsius.
3. Enter or change the atmosphere.
4. Enter a description. The description is automatically populated when entering temperature and atmosphere, but you may edit the description.
5. Select **External Incubation** if a ReadA™ Compact is not used for the specified incubation type.
6. Select **OK**.

21.4.2 Delete incubation types

1. Select an incubation type from the list.
2. Select **Delete**.

> NOTE
>
> A warning will display if you attempt to delete an incubation type that is linked to a program. First edit the program to include a different incubation step, then delete the incubation type.

21.5 Configuring an analysis set

From the main menu, select **Analysis Set**.

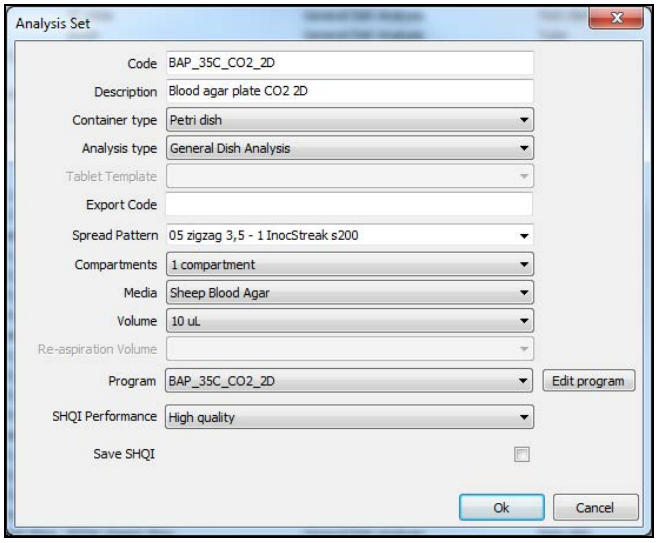
> NOTE
>
> Additional analysis sets, or changes made to analysis sets are automatically synchronized with BD Synapsys™ Informatics.
> See File synchronization in the BD Synapsys™ Informatics Solution instructions for use.

Analysis sets exported to BD Synapsys™ Informatics are assigned an Order Type in BD Synapsys™ Informatics as described in the following table:

Container	Specimen type	Analysis type	BD Synapsys order type
Plate	Petri dish	General dish analysis	Media protocol
Broth tube	Tube	Quick test	Media protocol
AST dish	Petri dish	Sensitivity	AST zone
Slide	Slide	Quick test	Other

21.5.1 Add or edit analysis set

1. Select **Add** or select an analysis set from the list and select **Edit**.



2. When adding a new analysis set, enter the code. The code should be unique, and should contain the media type, incubation type, and incubation time for easy recognition; e.g., BAP_35C_CO2_2D. A maximum of 20 characters is allowed. The analysis set code is not linked to the LI(M)S, but is linked to BD Synapsys™ Informatics. The code field is used to populate the LIS code field in BD Synapsys™ Informatics.

   When editing an analysis set, the code cannot be changed. The code field will be grayed out.

3. Enter or change the description.
4. Select a container type from the drop-down menu. Container type options are pre-defined during the database installation and may vary depending on your database. If container type Slide is selected, the Re-aspiration Volume field becomes active. Use this field to select the required volume to re-aspirate after inoculation of a slide.
5. Select the analysis type. Analysis type options are pre-defined during the database installation and may vary depending on your database. If analysis type Sensitivity is selected, the Tablet Template field becomes active. Use this field to identify the tablet template to be used.

   When editing an analysis set, the analysis type cannot be changed. The analysis type field will be grayed out.

6. The tablet template field is deprecated.

7. Enter or change the export code. The export code is sent from the BD Kiestra™ solution to the LI(M)S, so the LI(M)S recognizes test results. Contact BD for assistance.
8. Select a spreading pattern. Spreading patterns are pre-defined during the database installation. See **24 Spreading patterns**.
9. Select the number of plate compartments ('1' for single compartment plate or '2' for bi-plate)
10. Select the media.
11. Select the inoculum volume.
12. Select the required quality of BD Kiestra™ Optis™ images from the SHQI Performance drop-down menu (High speed or High quality).

> NOTE
>
> The High speed option is designed for optimal throughput as each plate is in front of the camera for a reduced amount of time. The High quality option uses more time to capture a wider range of the illumination spectrum and add more detail to the images.

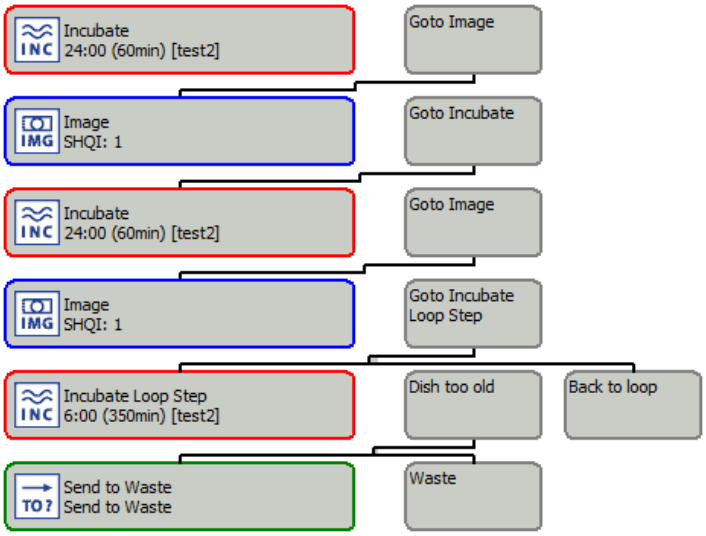
13. Select the **Save SHQI** checkbox if you want to preserve the raw BD Kiestra™ Optis™ files.
14. Select or create a program. Select the **Program** button to create or edit programs.
15. Select **OK**.
16. Synchronize with BD Synapsys™ Informatics using the manual refresh option. After synchronization, the Analysis Set Code will display as the Media Protocol name in BD Synapsys™ Informatics.

21.5.2 Delete analysis set

1. Select an analysis set from the list.
2. Select **Delete**.

21.6 Configuring programs

A program is a scheme of process steps and workflow conditions. Contact BD for assistance to standardize and properly configure programs.



Process steps are pre-defined and are displayed on the left side of the window.

- Incubation steps are outlined in red.
- Imaging steps are outlined in blue.
- Destination (skill or workstation) steps are outlined in green.
- Vortex steps are displayed in light-blue.

Workflow conditions are also pre-defined and are displayed on the right side of the program window.

21.6.1 Program execution

The first program step is executed when it is scanned for the first time after inoculation. When the first program step is completed, the workflow conditions to the right of the process step are evaluated starting from left to right.

- When a condition is evaluated as false, then the workflow condition to the right is evaluated.
- When a condition is evaluated as true, then there are two options:
  - One of the next process steps is initiated.
  - The process step that was completed is repeated.

The links between workflow conditions and process steps are represented by black lines. When a process step or workflow condition is selected, the outgoing links turn red.

> NOTE
>
> After program changes, the analysis set must be synchronized with BD Synapsys™ Informatics.

21.6.2 Program templates

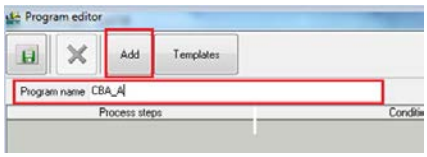
The BD Kiestra™ solution has program templates that have been optimized to work with BD Synapsys™ Informatics. Users are encouraged to modify pre-defined templates to suit their needs.

1. From the program editor window, select **Templates**.
2. Select **Load** to load an existing program template.
3. Select **Save** to save the selected program as a program template.

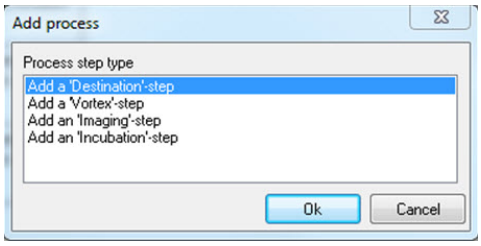
21.6.3 Create a new program

If no pre-defined templates meet the users' needs, then new programs can be created.

1. From the main menu, select **Programs**.
2. From the program window, select **Add.**
3. Enter a program name.

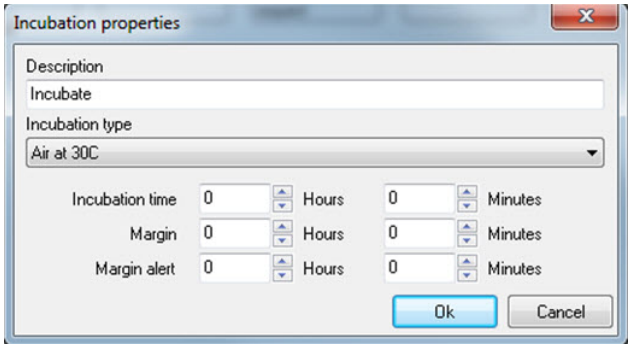


4. Select **Add** > **Add Process**.



5. Select the process steps to include in the program.
6. Select **OK**.

21.6.4 Edit incubation step



1. Enter a description.
2. Select an incubation type from the drop-down menu.
3. Enter the incubation time. Use the arrows to increase or decrease the values.
4. Enter the margin. This is the time allowed to elapse between the end of plate incubation and the photograph. The recommended value is 1 hour.
5. Enter the margin alert. The recommended value is 30 minutes.
6. Select **OK**.

> NOTE
>
> The ReadA™ Compact can be configured to ignore the margin. When the margin is ignored, the ReadA™ Compact will make an image of the plate as soon as possible after the incubation time has expired.

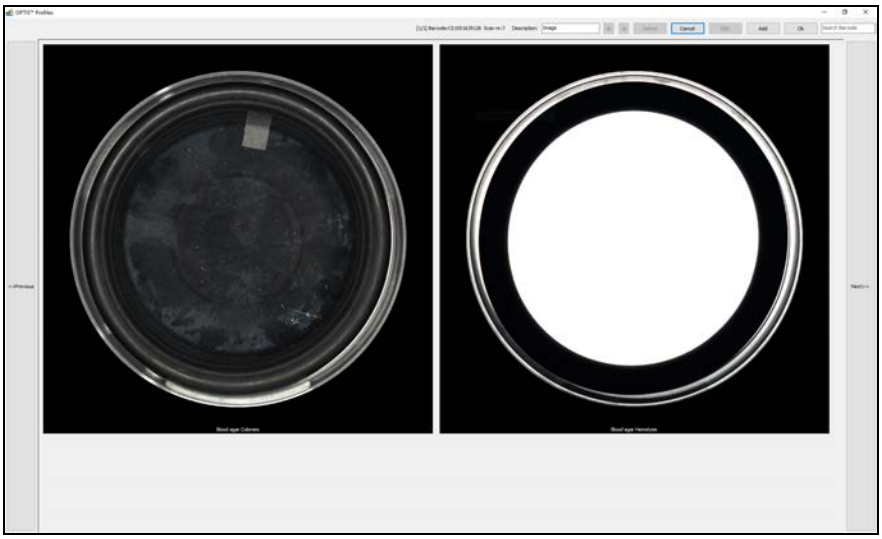
The incubation time, margin time, and the alert time settings are used to determine the plate status. This is done according to the following algorithm:

- The amount of time (T) expired since the start of the inoculation is calculated.
- If T is less than {incubation time – margin time – alert time}, then the plate status is set to Incubating.
- If T is between {incubation time – 2 * margin time} and {incubation time – margin time}, then the plate status is set to Almost ready.
- If T is between {incubation time – margin time} and {incubation time}, then the plate status is set to Output allowed.
- If T is between {incubation time} and {incubation time + alert time}, then the plate status is set to Ready.
- If T is between {incubation time + alert time} and {incubation time + margin time}, then the plate status is set to Almost too long.
- If T is more than {incubation time + margin time}, then the plate status is set to Too long.

The plate status is used in algorithms that calculate the priority of imaging plates.

21.6.5 Edit imaging step: BD Kiestra™ Optis™ images

When the imaging step is edited, the following screen displays:



- When the software locates an image linked to the imaging step, this image is displayed.
- When no BD Kiestra™ Optis™ images are linked to the imaging step, the text No Optis available is displayed. In this case, collect one or more images before proceeding:
  1. Make sure the program contains at least an incubation step followed by an imaging step with classic settings.
  2. Save the program.
  3. Select the program in an analysis set, and select the **save Optis** checkbox.
  4. Create a test specimen, link one or more plates to the test specimen, and request one or more images. This will result in BD Kiestra™ Optis™ images being taken. The plates should represent the images you want to routinely evaluate in BD Synapsys™ Informatics.
  5. Return to the Program Editor, load the program, and open the imaging step. The plate images will be displayed.

When at least one image of a plate is displayed, use these images to verify that the currently loaded image profile renders a useful image.

If the image does not meet the user's needs, then pre-defined image profiles may be selected.

1. To start, select **Edit**. A new screen opens showing the same image.
2. Select **Show Presets**. The image will be displayed using all pre-defined image profiles.
3. Select a preset from the Preset Catalog by selecting the image, and then selecting **OK**. This profile will be used to display the image.

In case none of the preset image profiles results in a suitable image, then a customized image profile can be created.

1. Select **Edit** to open a screen in which the image profile settings can be modified.
2. Adjust the values listed to the left of the image to alter the image profile.

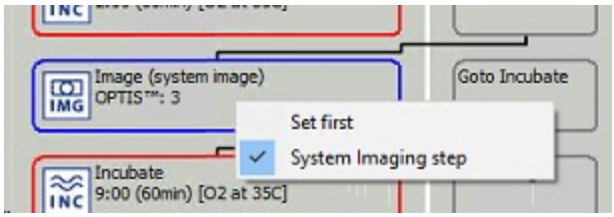
3. Use the **Previous** and **Next** arrows to switch to other images using the same program. Verify the images of all plates rendered with the selected image profile settings.
4. Select **OK**.

Optionally, select **Add** to create multiple renderings of a BD Kiestra™ Optis™ image using different image profiles. The order of the renderings can be changed using the small left- and right arrows in the top of the screen after selecting a rendered image.

Images can be set to system images in programs created for use with BD Kiestra™ Imaging Apps. System images will not be set to Ready for Reading, but are read automatically by the BD Kiestra™ Imaging Apps. The images are visible in BD Synapsys™ Informatics.

> NOTE
>
> The BD Kiestra™ Imaging Apps require additional configuration in order to set up media protocols for use with the BD Kiestra™ Imaging Apps. Contact BD for assistance.

1. Right-click the Image step in the program and select **System Image**. The imaging step will indicate that the image has been set to System Image.



> NOTE
>
> The order in which images are displayed routinely in BD Synapsys™ Informatics will match the order in which images are displayed when you evaluate the image profiles.

The BD Kiestra™ Imaging Apps evaluate plates for the presence of bacterial growth. A plate must be imaged at least three times to provide a time series for the algorithm to evaluate.

Imaging timepoints

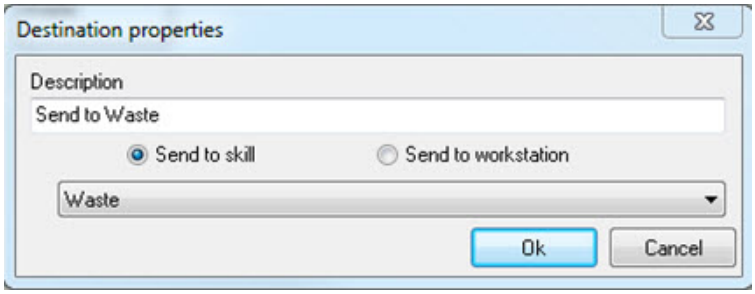
1. An initial image is obtained to evaluate the appearance of the plate prior to the presence of observable bacterial growth. This image is processed by the algorithm, and is not visible to the user.
2. An intermediate image is obtained halfway through the incubation cycle. This image can be used to flag early growth of bacterial colonies.
3. A final image is taken at the normal evaluation time (end of incubation). The algorithm can determine what has grown on the plate between the first and the final image.

System images

Initial images and intermediate images are marked as system images. These images are not typically viewed by the user, will not be set to Ready for Reading, and therefore will not appear in Culture Reading worklists. Marking these images as system images helps to prevent a user from mistaking a culture with non-significant growth as final.

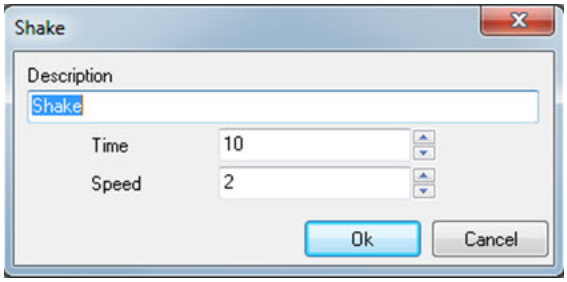
In some cases, the technologist may deem it necessary to evaluate an intermediate image. Although system images do not appear in reading worklists, it is possible to view system images by searching for the culture and viewing the plate image in Culture Reading.

21.6.6 Edit destination step



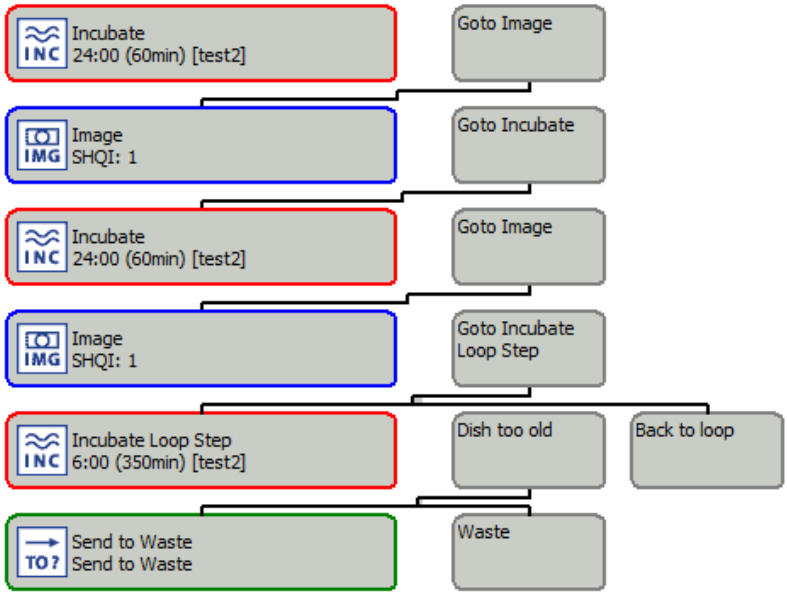
1. Enter a description that indicates the destination.
2. Select **Send to skill**.
3. Select the appropriate skill or destination from the drop-down menu.
4. Select **OK**.

21.6.7 Edit vortex step



1. Enter a description of the vortex (shake) step.
2. Select the arrow keys to set the duration of specimen shaking to the desired number of seconds.
3. Select the arrow keys to set the speed value to 2.
4. Select **OK**.

After defining all program steps, the program editor window will look similar to the example.



The program consists of a number of process steps with empty workflow conditions.

21.6.8 Add workflow condition

1. Select the process step.
2. Select **Add** > **Add workflow**.
3. Select the appropriate workflow condition or Ctrl-click to select multiple conditions at once.
4. Select **OK**. The selected workflow conditions will be displayed to the right of the process step.

21.6.9 Edit workflow condition

1. Double-click the workflow condition icon you wish to edit. The Edit workflow window displays.
2. Change the description.
3. Select a template from the drop-down menu.
4. Select **OK**.
5. Select on the edited workflow condition and drag it to the process step it needs to be linked to when the condition is true.
6. Repeat the steps to edit all workflow conditions.

21.6.10 Delete process steps and workflow conditions

1. From the Program editor window, select the process step or workflow condition to be deleted.
2. Select the red **X** in the menu bar.

21.6.11 Edit an existing program

1. From the main menu, select **Programs**.
2. Select a program from the list and select **Edit** to open the Program editor window.
3. Edit program steps and/or workflow conditions by double-clicking the icons.
4. Make the desired changes to the program.

21.6.12 Delete a program

1. Select a program from the list.
2. Select **Delete**.

21.7 Configuring the sample jar TLC

The sample jar TLC is a mechanism that can be used to link an analysis set that contains a shaking step to a specimen group. The processing of a sample jar from the selected specimen group will then start with this shaking step.

21.7.1 Link a sample jar TLC to a specimen

1. From the main menu, select **TLC**.
2. In the TLC window, select the **Sample Jar TLC** tab.
3. Double-click the appropriate specimen jar.
4. Select the appropriate specimen group.
5. Select the analysis set that contains the shaking step.

21.7.2 Delete a sample jar TLC

1. From the main menu, select **TLC**.
2. In the TLC window, select the **Sample Jar TLC** tab.
3. Select a sample jar TLC from the list.
4. Select **Delete**.

21.8 Example programs

The example programs described in the following paragraphs are available as templates, and should be used as a basis for programs that suit user needs:

1. Start with one of the example program templates.
2. Add additional steps as necessary.
3. Modify the imaging steps to suit user needs.

Do not change the structure of the template program. Do not modify the conditions of the template program.

21.8.1 Internal incubation

The internal incubation example program is used for normal incubation of plates in a ReadA™ Compact. An image is taken after one and two days of incubation.

Plate path for the internal incubation example program

1. The plate is stored in a ReadA™ Compact for incubation for 24 hours at 35 °C in an O_2 atmosphere.
2. After 23 hours of incubation (24 hours - 60 minutes margin) the plate is marked as ready for imaging. The actual time of imaging depends on the other tasks to be performed by the ReadA™ Compact, and the plate prioritization settings.
3. During the imaging step, four images are taken.
4. The plate is returned to the incubator for an additional 24 hours incubation.
5. A second imaging step is performed after 47 hours (48 hours - 60 minutes margin) incubation.
6. After the second imaging step, an incubate loop step is initiated. The plate is incubated for 6 hours, with a margin of 350 minutes (5 hours and 50 minutes). The conditions of this step are evaluated every 10 minutes.
7. When the Dish too old condition is true, the plate is sent to the waste stacker. A plate is considered too old after seven days. This value cannot be modified.

21.8.2 External incubation

The external incubation example program is used for incubation of plates in an external incubator.

Plate path for the external incubation example program

1. The plate is transported to the output stacker that is assigned to the appropriate incubation type for this program.
2. The technician takes the plate from the stacker and incubates the plate in an external incubator.

> NOTE
>
> The technician is responsible for ensuring that plates are placed into the external incubator as soon as possible after the plates are transported to the external incubation stacker.

3. After the incubation period, the technician places the plate on the ProceedA track.
4. The plate is scanned. If the incubation has not yet finished, the ProceedA displays a warning and the plate is routed to the output stacker.
5. If the incubation is finished, the plate is transported to the camera compartment of the appropriate ReadA™ Compact.
6. During the imaging step, one SHQI image is taken.
7. The plate is returned to the output stacker, and then manually returned to the external incubator.
8. Every time the plate is manually placed on the ProceedA track, the conditions of the incubate loop step are evaluated.
9. When the Dish too old condition is true, the plate is sent to the waste stacker. A plate is considered too old after seven days. This value cannot be modified.

Processing externally incubated plates on the automated ID processing module

In a solution with an integrated automated ID processing module:

1. When the workup is destined for automated ID processing, plates will be transported to the automated ID processing module if there is available buffer space.
2. If there is insufficient buffer space, the plate will remain in the ReadA™ Compact.

In a solution with a standalone automated ID processing module:

1. When the workup is destined for automated ID processing, plates will be transported to a designated automated ID processing stacker.
2. The technician takes the plates to the automated ID processing module.

If an error plate is identified on the automated ID preparation module:

1. Take the plate to a BD Synapsys™ Informatics workstation.
2. Scan the plate barcode.
3. Re-order the tests or mark new colonies.
4. Place the plate on the ProceedA track to be returned to the automated ID preparation module.

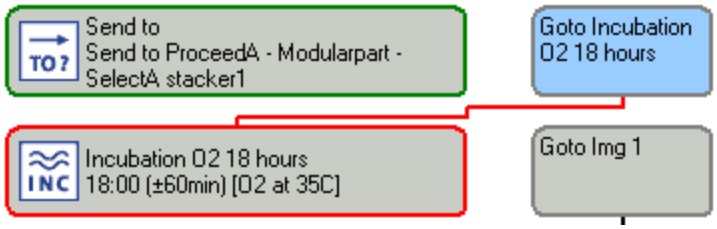
21.8.3 External incubation with loop internally incubated program

The external incubation with loop internally incubated example program is similar to the external incubation program except after the imaging step, the plate is stored in a ReadA™ Compact until the plate is too old or is sent to waste. This program can be used to store plates in a ReadA™ Compact incubator pending follow-up work.

21.8.4 Internal incubation with loop externally incubated program

The internal incubation with loop externally incubated example program is similar to the internal incubation program except after the first imaging step, the plate is stored in an external incubator until the plate is too old. This program can be used to store plates in an off-line incubator when there is insufficient space in the available ReadA™ Compact incubators.

21.8.5 Destination step



A program may start with a destination step to enable the user to perform a manual action on the plate before the plate is incubated, for example adding antibiotic discs to the plate. A destination step can also be added directly after an image step.

Plate path for the destination step

1. The plate is inoculated and the barcode is scanned immediately after inoculation. This initiates the program.
2. The plate is transported to the stacker identified as stacker1, and retrieved by the technician.
3. The technician performs the required actions, and places the plate on the Lower ProceedA track.
4. The plate is scanned, and transported to a ReadA™ Compact for 18 hours incubation.

21.8.6 Program structure considerations

- An incubation step followed by an image step can be repeated multiple times.
- The minimal incubation time is one hour and depends on the maximum throughput of the ReadA™ Compact.
- Each loop step should use the template created for that specific condition.

- Use of the SQL query option is not allowed.
- For solutions with two branches, consider that the Upper ProceedA cannot move plates from one branch to the other. When creating programs for external incubation ensure that the stacker linked to the external incubation type resides on the same branch as the ReadA™ Compact where the image is to be taken.

21.9 Frequently used workflows

This section covers the following topics:

21.9.1 Adding a new specimen type and specimen group

Adding a new specimen type and specimen group to the solution requires the key user to make changes to the KLA database using the DB Manager application, and also to make changes to BD Synapsys™ Informatics.

Perform the following steps in order:

Step 1: Identify the media to use in the solution.

1. In DB Manager, add any new media to be used to the list of media.
2. For each added media, create an analysis set with a program to process the plate.
3. In the SorterA-BarcodA application, assign a media box to each new media.
4. Restart the SorterA-BarcodA application.

Step 2: Add the information of the specimen type to BD Synapsys™ Informatics.

1. Perform a manual synchronization in BD Synapsys™ Informatics:
   a. Select **Media, Tests, and Protocols** from the Configuration menu.
   b. Select **Refresh**.

      BD Synapsys™ Informatics will create a new media protocol for each newly defined analysis set.
2. Optional: create a new barcode label for each new media protocol.
3. Link each media protocol to a barcode label.
4. Create a new culture protocol:
   a. Select **Media, Tests, and Protocols** from the Configuration menu.
   b. Select **Create New Definition**.

c. Select the **Order Type - Culture Protocol**.
d. Link the culture protocol to the new media protocol, if applicable.
e. Enter the culture protocol LIS code in the LIS Code field.

5. Either use an existing tag or create a new tag to group specimens of the new specimen type in worklists or result lists. To create a new tag:
   a. Select **Data Lists** from the Configuration menu.
   b. Select **Specimen Demographic**.
   c. Select **Specimen Type**.
   d. Select **Add Tag**.
   e. Enter the tag name.
6. Create a new specimen type:
   a. Select **Data Lists** from the Configuration menu.
   b. Select **Specimen Demographic**.
   c. Select **Specimen Type**.
   d. Select **Add New Item**.
   e. Enter the specimen type LIS code in the LIS code field.
7. Assign the tag to the specimen type.

Step 3: Create a test specimen in BD Synapsys™ Informatics.

1. In BD Synapsys™ Informatics, open Specimen Management.
2. Create a new specimen for testing. Enter a unique accession code in the Accession number field.
3. Edit the specimen demographics to add the new specimen type to the specimen.
4. Add the new culture protocol to the specimen.
5. Navigate to the Manual Inoculation page, and manually enter the accession code of the test specimen. In DB Manager, the new specimen type will be added and a new specimen group will be created for newly defined tags.

Step 4: Add a shaking step to new specimen groups in DB Manager.

1. In DB Manager, create a new analysis set with an appropriate vortex step for the new specimen group.
2. In the sample jar TLC configuration tab, link the analysis set to the new specimen group.

Step 5: Update workflows in BD Synapsys™ Informatics.

1. In BD Synapsys™ Informatics, create or update as needed:
   - Guided test ordering, e.g., to add new media protocols.
   - Reading worklists, e.g., to add a new Reading Worklist for the new specimen type.
   - Workup worklists, e.g., to add a new Workup Worklist for the new specimen type.
   - Micro Workcard worklists, e.g., to add a new Micro Workcard Worklist for the new specimen type.
   - Dashboards, e.g., to add the new specimen type to workflow overviews.

21.9.2 Synchronization with BD Synapsys™ Informatics

To export new information from DB Manager to BD Synapsys™ Informatics, perform a manual synchronization in BD Synapsys™ Informatics. See File synchronization in the BD Synapsys™ Informatics Solution instructions for use.

To import new information added to BD Synapsys™ Informatics into DB Manager, navigate to the Manual Inoculation page of BD Synapsys™ Informatics and enter the accession code of a specimen linked to the new information.

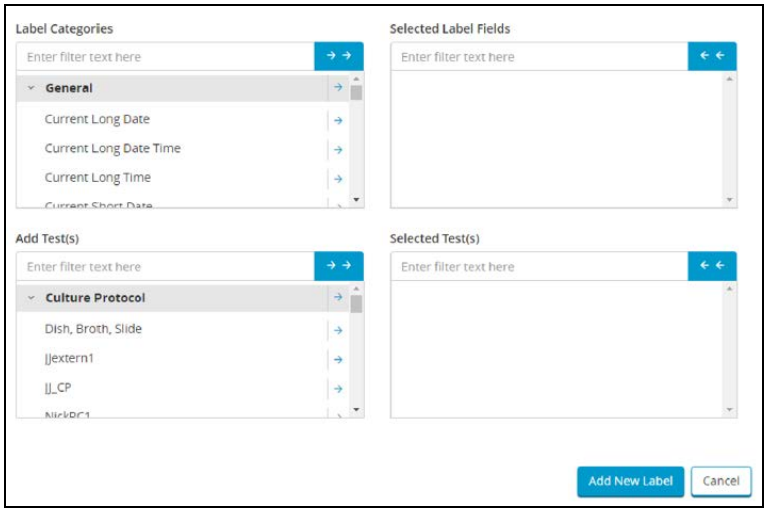
- Specimen type names in BD Synapsys™ Informatics will be copied to DB Manager during synchronization.
- Tag names in BD Synapsys™ Informatics will translate to specimen group names in DB Manager during synchronization.

21.9.3 Creating a new barcode label in BD Synapsys™ Informatics

For barcode labels to be printed on plates, a barcode label profile must be defined in BD Synapsys™ Informatics. The barcode label profile must be linked to a media protocol in BD Synapsys™ Informatics in order to print the labels. A single label profile can be used in multiple media protocols.

1. Select **Barcode Labels** from the Configuration menu.
2. Select **Add New Label**.
3. Enter the following values or select from drop-downs:
   - Barcode Number: container ID
   - Barcode Format: code 128
   - Label Name: The label name must be unique. A label profile can be used for multiple media protocols.
   - Label Template: 10 mm by 40 mm with 4 fields

   The Add New Label screen displays additional configuration options.



4. Enter text to filter or click the arrow icon to select the following information:
   - Label Categories: information to be printed on the label. Only four fields can be printed. The selected categories are displayed in the Selected Label Fields list.
   - Add Test(s): media protocols to be assigned to the label profile. Only media protocols should be selected. The selected media protocols are displayed in the Selected Test(s) list.
5. Select **Add New Label** to save the settings. The new label is displayed in the list of configured labels.
6. Select the pencil icon to edit a label profile.
7. Select the waste bin icon to delete a label profile.

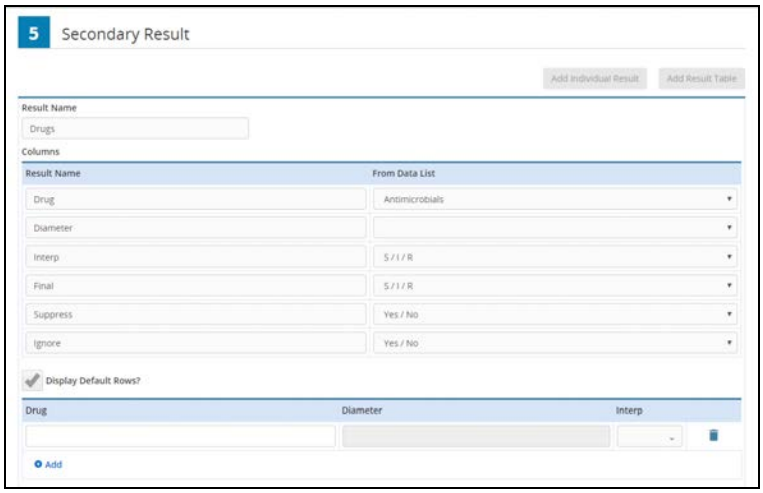
The sample can now be processed in manual inoculation mode in BD Synapsys™ Informatics.

NOTE

During configuration of tests, it is important to add these tests to a barcode label. If necessary, create a new barcode profile and attach the created tests to the profile. See Barcode label configuration in the BD Synapsys™ Informatics Solution instructions for use.

21.9.4 Creating a protocol for AST disk diffusion

1. In DB Manager, create an analysis set for a sensitivity plate. Select **Sensitivity** from the Analysis Type drop-down menu.
2. In BD Synapsys™ Informatics, select **Media, Tests, and Protocols** from the Configuration menu.
3. Select **Refresh**. BD Synapsys™ Informatics will synchronize with the newly created AST Zone analysis set.
4. Select **AST Zone** from the Media, Tests, and Protocols list.
5. Select the pencil icon.
6. In the Basic Definition section, enter the LIS code for the AST Zone.
7. In the Secondary Result > Drug section, select an antibiotic from the drop-down menu or type to search for the antibiotic name or code. Data cannot be entered in the Diameter and Interp(retation) fields.



8. Select **Add** to add antibiotics to the protocol.

21.9.5 Creating a protocol for other tests

1. In BD Synapsys™ Informatics, select **Media, Tests, and Protocols** from the Configuration menu.
2. Select **Create New Definition**.
3. In the Definition Type section, select **Other** from the Order Type drop-down menu.
4. In the Basic Definition section, enter a definition name, LIS code, and display name.
5. Check **Enabled**.
6. In the Detailed Definition section, the BDK code will be populated in the Main field if the test was created in DB Manager as an analysis set.
7. Optional: In the Primary Result section, select **Has Primary Result** to define primary result fields.
    a. Enter a label, the Result Name, that describes the primary result.
    b. Select the data list that will provide the possible result options or leave the field blank to allow text entry.
8. Optional: In the Secondary Result section, select **Add Individual Result** or **Add Result Table** to define secondary result fields.

21.9.6 Generating configuration notes

During configuration of the database, culture protocols must be created. Growth quantity must be defined for each culture protocol. See Media, tests, and protocols and Definitions of order type culture protocol in the BD Synapsys™ Informatics Solution instructions for use.

After tests have been created, they may be attached to an organism name or organism group to create a quick list for selecting tests during reading. In addition, a test group can be created and then attached to an organism name or organism group. See Definitions of order type test group and Guided test ordering in the BD Synapsys™ Informatics Solution instructions for use.

21.9.7 Processing plates on a standalone IdentifA

1. Assign the IdentifA skill to a ReadA™ Compact stacker (see **23.1 Assigning output stackers**). Plates with IdentifA tests ordered will be sent to this stacker if the IdentifA module is started.
2. The plates must be manually transported from the stacker to the standalone IdentifA infeed module destacker. See the BD Kiestra™ IdentifA instructions for use for more information.
3. After the plate has been processed, it will be sent to the IdentifA output stacker. The plates should be manually transported and placed on the ProceedA.

21.9.8 Load balancing with multiple IdentifA modules

- In a solution containing two integrated IdentifA modules, the system will balance the load of plates between the two modules. This balancing only occurs if both modules are started; otherwise the plates are sent only to the started IdentifA.
- In a solution containing an integrated IdentifA and a standalone IdentifA, plates will be sent to the integrated IdentifA until the plate buffer is full, and then plates will be sent to the IdentifA output stacker for processing on the standalone IdentifA . As positions in the integrated plate buffer become available, plates will be sent to the integrated IdentifA. This balancing only occurs if both IdentifA modules are started; otherwise the plates are sent only to the started IdentifA.
- In a solution containing two standalone IdentifA modules, all plates will be sent to the IdentifA output stacker. The user is responsible for manually load balancing between the standalone IdentifA modules.

21.10 Other workflows

This section covers the following topics:

21.10.1 Special discard stacker to allow resuming work on a discarded plate

To enable the possibility of placing a discarded plate back onto the solution, the plate should be discarded to the General Output skill, not to Waste. See **23.1 Assigning output stackers** for instructions on assigning this skill to a ReadA™ Compact stacker. See the BD Synapsys™ Informatics Solution instructions for use for information on configuring this stacker in the Discard Stackers configuration screen.

1. In the BD Synapsys™ Informatics Culture Reading detail view, select the appropriate **Discard to** destination that will send the plate to the General Output skill.
2. When the plate has been discarded to the General Output skill, the plate can be placed on the ProceedA infeed and it will continue its program.
3. If a plate has been discarded to Waste, it will return to the Waste stacker if it is placed back on the ProceedA. Tests may be ordered as children (e.g., subculture) to this plate, but the discarded plate will not re-enter the ReadA™ Compact.

22 Configuring the SorterA-BarcodA

This section covers the following topics:

22.1 Configuring media

Assigning media to a SorterA box

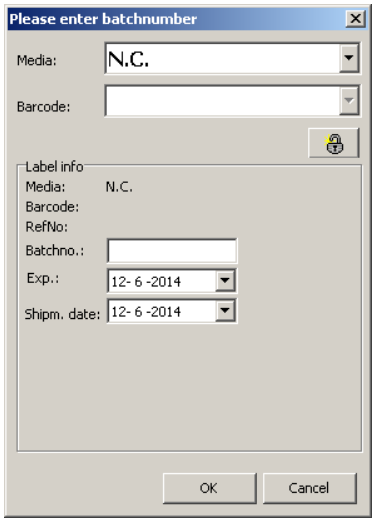
Follow the steps below to assign an existing medium to a SorterA box.

1. Open the BarcodA software. If the software is already running, select **Stop [F4]** and verify that the worklist is empty.
2. Select **SorterA Overview [F10]**.
3. Select the SorterA box for this medium by selecting the appropriate number in the list on the right side of the display.
   - The box has been selected when the box number appears in the large circle.
   - The box's current medium is shown beside the circled number.
4. Select the drop-down menu to view the list of media.
5. Select the name of the new medium to select it. The selected medium is assigned to that SorterA box.
6. Select **Close** to close the SorterA Overview display.

Modify media expiration date

If the barcode for a medium cannot be scanned or the barcode is unavailable, the expiration date can be set manually.

1. Select **Media Overview**, then select **Connect**.



2. Select the **unlock** icon.
3. Enter the batch number in the **Batchno.** field.
4. Enter the expiration date in the **Exp.** field.
5. Select **OK**.

22.2 Configuring for scanning media batch or lot barcodes

In order to scan media batch or lot numbers, the BarcodA software must be properly configured.

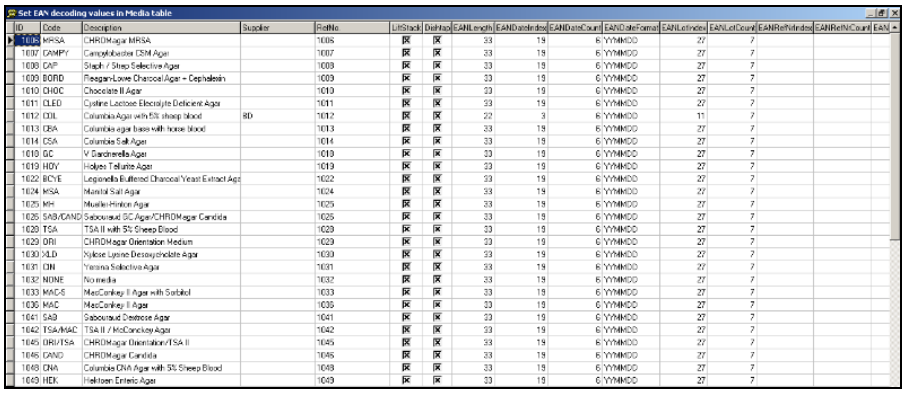
1. Open the BarcodA software. If the software is already running, select **Stop [F4]** and verify that the worklist is empty.
2. Right-click in the BarcodA software window. Select **Machine settings**.
3. Select the **External connectors** tab.
4. Select the appropriate media types in the EAN codes connected box (when selected, the box contains an x).
5. Select **OK**.
6. Select **View** from the main menu and then **Media**.
7. To set up the correct barcode length, where the expiry date starts, how the expiry date is built, etc., see **22.3 Media list configuration**.

22.3 Media list configuration

This section describes the process for configuring the media list. The media list is used when adding or deleting media types and when configuring for scanning of media batch and lot numbers.

1. Open the BarcodA software. If the software is already running, select **Stop [F4]** and verify that the worklist is empty.

2. Select **View** from the main menu at the top of the display, and then **Media**.



ID	Code	Description	Supplier	RefNo	LiftStack	DishTap	EANLength	EANDateIndex	EANDateCount	EANDateFormat	EANLotIndex	EANLotCount	EANRefNrIndex	EANRefNrCount	EAN
1005	MRSA	CHROMagar MRSA		1005	☑	☑	33	19	6	YYMMDD	27	7			
1007	CAMPY	Campylobacter CSM Agar		1007	☑	☑	33	19	6	YYMMDD	27	7			
1008	CAP	Staph / Strep Selective Agar		1008	☑	☑	33	19	6	YYMMDD	27	7			
1009	BORD	Reagan-Lowe Charcoal Agar + Cephalexin		1009	☑	☑	33	19	6	YYMMDD	27	7			
1010	CHOC	Chocolate II Agar		1010	☑	☑	33	19	6	YYMMDD	27	7			
1011	CLED	Cystine Lactose Electrolyte Deficient Agar		1011	☑	☑	33	19	6	YYMMDD	27	7			
1012	COL	Columbia Agar with 5% sheep blood	BD	1012	☑	☑	22	3	6	YYMMDD	11	7			
1013	CBA	Columbia agar base with horse blood		1013	☑	☑	33	19	6	YYMMDD	27	7			
1014	CSA	Columbia Salt Agar		1014	☑	☑	33	19	6	YYMMDD	27	7			
1018	GC	V Gardnerella Agar		1018	☑	☑	33	19	6	YYMMDD	27	7			
1019	HDY	Hotjes Tellurite Agar		1019	☑	☑	33	19	6	YYMMDD	27	7			
1022	BCYE	Legionella Buffered Charcoal Yeast Extract Agar		1022	☑	☑	33	19	6	YYMMDD	27	7			
1024	MSA	Mantol Salt Agar		1024	☑	☑	33	19	6	YYMMDD	27	7			
1025	MH	Mueller-Hinton Agar		1025	☑	☑	33	19	6	YYMMDD	27	7			
1026	SAB/CAND	Sabouraud SC Agar/CHROMagar Candida		1026	☑	☑	33	19	6	YYMMDD	27	7			
1028	TSA	TSA II with 5% Sheep Blood		1028	☑	☑	33	19	6	YYMMDD	27	7			
1029	ORI	CHROMagar Orientation Medium		1029	☑	☑	33	19	6	YYMMDD	27	7			
1030	XLD	Xylose Lysine Desoxycholate Agar		1030	☑	☑	33	19	6	YYMMDD	27	7			
1031	CIN	Yersinia Selective Agar		1031	☑	☑	33	19	6	YYMMDD	27	7			
1032	NONE	No media		1032	☑	☑	33	19	6	YYMMDD	27	7			
1033	MAC-S	MacConkey II Agar with Sorbitol		1033	☑	☑	33	19	6	YYMMDD	27	7			
1035	MAC	MacConkey II Agar		1035	☑	☑	33	19	6	YYMMDD	27	7			
1041	SAB	Sabouraud Dextrose Agar		1041	☑	☑	33	19	6	YYMMDD	27	7			
1042	TSA/MAC	TSA II / MacConkey Agar		1042	☑	☑	33	19	6	YYMMDD	27	7			
1045	ORI/TSA	CHROMagar Orientation/TSA II		1045	☑	☑	33	19	6	YYMMDD	27	7			
1046	CAND	CHROMagar Candida		1046	☑	☑	33	19	6	YYMMDD	27	7			
1048	CNA	Columbia CNA Agar with 5% Sheep Blood		1048	☑	☑	33	19	6	YYMMDD	27	7			
1049	HEK	Hektoen Enteric Agar		1049	☑	☑	33	19	6	YYMMDD	27	7			

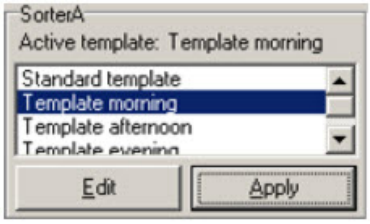
- The **ID** column displays the medium ID number.
- The **Code** column displays media codes.
- The **Description** column displays media names.
- The **Supplier** column displays the name of the media supplier. This information is optional.
- The **RefNr** column displays the media numbers created in DB Manager.
- The **checkbox** in the LiftStack column is always selected.
- The **Dish Tap** checkbox is deprecated.

22.3.1 Media list options for scanning batch or lot numbers

- EANLength: The total length of the barcode
- EANDateIndex: The position at which the expiry date starts
- EANDateCount: The number of digits in the expiry date
- EANDateFormat: The format of the expiry date (e.g., YYMMDD)
- EANLotIndex: The position at which the lot number/batch number (assigned by the supplier) starts
- EANLotCount: The number of digits in the lot number
- EANRefnrIndex: The position at which the medium reference number starts
- EANRefnrCount: The number of digits in the reference number
- EANShipmDateIndex: The position at which the shipment date starts
- EANShipmDateCount: The number of digits in the shipment date
- EANShipmDateFormat: The format of the shipment date (e.g., YYMMDD)

22.4 SorterA configuration templates

The media configuration of all SorterA boxes can be saved to a SorterA configuration template, shown in the SorterA field on the right side of the window. The active template is highlighted in blue.



Users may switch between templates to change the configuration of the SorterA boxes. Working with templates saves time when the configuration regularly changes (e.g., a morning shift configuration and an evening shift configuration).

Templates for the SorterA configuration may be edited or applied. If a template has been edited, you must restart the InoqulA software.

22.4.1 Default SorterA configuration template

A default SorterA configuration, named Standard Template, is set up when the module is installed.

Configuration templates can be changed by assigning different media to the SorterA boxes using the SorterA Overview display.

All changes made to an active SorterA configuration template are automatically saved to the template.

22.4.2 Creating a new SorterA configuration template

1. Open the BarcodA software. If the software is already running, select **Stop [F4]** and verify that the worklist is empty.
2. Select **Edit** in the SorterA field. The Edit Templates window opens with a list of all SorterA configuration templates.
3. Select **New**.
4. Enter a description.
5. Select **OK**.
6. Select the **x** in the upper right corner to close the window. The new SorterA configuration template is added to the SorterA field.
7. Assign media to the SorterA boxes.

22.4.3 Deleting a SorterA configuration template

CAUTION

Never delete the Standard Template as startup errors will occur.

1. Open the BarcodA software. If the software is already running, select **Stop [F4]** and verify that the worklist is empty.
2. Select **Edit** in the SorterA field. The Edit Templates window opens with a list of all SorterA configuration templates.
3. Select on a template to select it.

4. Select **Delete**.
5. Select **OK**.
6. Select the **x** in the upper right corner to close the window.

22.4.4 Renaming a SorterA configuration template

CAUTION

Never rename the Standard Template as startup errors will occur.

1. Open the BarcodA software. If the software is already running, select **Stop [F4]** and verify that the worklist is empty.
2. Select **Edit** in the SorterA field. The Edit Templates window opens with a list of all SorterA configuration templates.
3. Select on a template to select it.
4. Select **Rename**.
5. Enter a new description.
6. Select **OK**.
7. Select the **x** in the upper right corner to close the window.

22.4.5 Applying a SorterA configuration template

1. Open the BarcodA software. If the software is already running, select **Stop [F4]** and verify that the worklist is empty.
2. Select on the desired SorterA configuration template in the SorterA field so that it is highlighted.
3. Select **Apply**.
4. Fill SorterA boxes according to this template. See **5.5.1 Adding plates during operation**.

23 Stacker sorting

Plates that need further processing outside the solution, or plates that can be disposed, are normally directed to an output stacker so that they can be conveniently collected by a technician.

Output stackers can be configured to collect:

- plates with identical skill for further processing by a specialized technician
- plates with identical incubation type for incubation in an incubator not connected to the track
- plates with identical external workbench for further processing on a workbench not connected to the track
- plates that can be disposed
- plates that have generated an error

A TLA solution has four output stackers in front of each ReadA™ Compact. These output stackers are configured in the ProceedA application. In addition, there is an output stacker at the end of the Upper ProceedA that is configured as an error stacker by default.

23.1 Assigning output stackers

To configure a ReadA™ Compact stacker:

1. On the ProceedA workstation, open the DB Manager application.
2. In the left menu, select **Workstations**.
3. In the left pane, select the + to the left of **ProceedA** to display the ProceedA modules.
4. In the left pane, select the + to the left of **ModularPart** to display the submodules.
5. In the left pane, select the stacker to configure. The first ReadA™ Compact connected to the TLA track is identified as SelectA, the second ReadA™ Compact as SelectA2, etc. The stackers are identified as stacker1, stacker2, etc. For example, to configure the first stacker of the first ReadA™ Compact, select **SelectAstacker1**.
6. In the right pane,
   - select the **Skills** tab to assign a skill to the stacker, then select the desired skill, or
   - select the **Skills** tab to identify the stacker as an error stacker, a waste stacker, a pre-defined external workbench stacker, an IdentifA stacker, a general output stacker (see **21.10.1 Special discard stacker to allow resuming work on a discarded plate** for information on using the General Output skill for a custom discard stacker), or
   - select the **Incubation Type** tab to assign an incubation type to the stacker, then select the desired incubation type.
7. Close DB Manager.

24 Spreading patterns

The purpose of this chapter is to familiarize users with the available magnetic bead spreading patterns and to provide support for selecting the correct patterns for specific applications.

The InoqulA+™ has a standard set of five primary spreading patterns and ten secondary spreading patterns.

The specimen volume and the spreading patterns are configured in the DB Manager software.

24.1 Description of spreading patterns

When compared to loop-based streaking techniques, the InoqulA+™ spreading method can produce more isolated colonies, particularly for specimens with high microbial loads. Moreover, the beads can inoculate a larger surface area with more streaks than loop-based methods. An InoqulA+™ spreading pattern is very reproducible, producing more consistent patterns and colony counts than manual loop streaking. [1-6]

A spreading pattern encompasses several important variables. These include the path of the bead on the agar surface, the starting and ending position of the bead, and the speed of the bead. The combination of bead path and speed determine the time required to complete the spreading pattern.

24.2 Spreading pattern selection

A spreading pattern should be chosen according to the specimen type, the desired spreading outcome (quadrant vs. zigzag), and the anticipated microbial load of the specimen (low, medium, or high). Altering the application method (e.g., changing the inoculation volume or changing the spreading pattern) can produce different spreading results for the same specimen.

The selected pattern should facilitate organism recovery and produce sufficient isolated colonies for the culture workup. Multiple factors, including specimen collection methods, transport temperature, and transport time can influence the spreading pattern result. Consequently, users should test and validate different spreading patterns to determine which patterns produce the best results for their needs.

Spreading patterns are divided into two groups: primary patterns and secondary patterns. Primary patterns are recommended for routine use and should satisfy the needs of most users. The secondary patterns are available to meet specific user requirements. Secondary patterns may be used to develop custom applications and these applications should be validated by the user.

24.3 Manipulating the amount of growth on a plate

The overall amount of growth on a plate as well as the number of isolated colonies depends on the specimen material, specimen volume, and spreading pattern. By selecting a specific spreading pattern, the number of discrete, isolated colonies or the semi-quantitative growth distribution can be optimized per specimen type. For liquid specimens, the volume of specimen inoculated influences the total amount of growth as well as the number of isolated colonies.

24.4 Selecting a spreading pattern based on specimen type

By selecting a specific spreading pattern, the distribution of the colonies on the plate, and the number of isolated colonies can be optimized for each specimen type. The selection of a spreading pattern is a balance between the expected microbial load (CFU/mL) in the specimen and the time required to complete the pattern.

24.4.1 Non-urine specimens

Below are general guidelines for selecting the patterns for non-urine specimens.

The following are quadrant patterns:

- Quadrant pattern 18 is appropriate for presumably sterile specimens or specimens with an expected low microbial load. Examples are CSF, joint fluid, and sterile tissue specimens. Do not use this pattern for high microbial load specimens such as stool and enrichment broth subculture with non-selective media.
- Quadrant pattern 19 is appropriate for sterile specimens and non-sterile specimens with low to high microbial load. Examples are respiratory, wound, and stool specimens.
- Quadrant pattern 20 is used with specimens that have high microbial load when obtaining isolated colonies is difficult. Examples are stool specimens and enrichment broth subculture.

The following are zigzag patterns:

- Zigzag pattern 4 is used for single compartment plates. This pattern will produce satisfactory results for specimens with low to moderate microbial load, and for specimens with high microbial load when selective media is used. Examples of high microbial load specimens are stool and enrichment broth subculture.
- Zigzag pattern 6 is used with bi-plates. This pattern will produce satisfactory results for specimens with low to moderate microbial load, and for specimens with high microbial load when selective media is used. Examples of high microbial load specimens are stool and enrichment broth subculture.

24.4.2 Urine specimens

The two zigzag patterns are appropriate for the quantitation of urine specimens.

- Zigzag pattern 4 is used for single compartment plates.
- Zigzag pattern 6 is used for bi-plates.

24.5 Method of specimen application

The method of specimen application will vary by specimen type.

24.5.1 Liquid specimens and enrichment broths

Liquid specimens such as urine and thin body fluids can be processed using the FA mode when suitable containers are used. Swab transport devices should have the swabs removed before use. Specimens with particulates should not be processed as these can clog the pipet tip and interfere with inoculation.

Fully automated (FA) mode, single compartment plates

Urine specimens should be inoculated with 10 µL using the FA mode. For other liquid specimens, 30 µL is recommended. When processing specimens with high microbial load (e.g., subculture of broth media) it may be necessary to inoculate the plate with 10 µL in order to achieve isolated colonies.

Fully automated (FA) mode, bi-plates

For urine specimens, 10 µL should be inoculated onto each half of the bi-plate using the FA mode. For other liquid specimens, an inoculation volume of 30 µL is recommended. When processing specimens with high microbial load (e.g., subculture of broth media) it may be necessary to inoculate the bi-plate with 10 µL in order to achieve isolated colonies.

Semi-automated (SA) mode

NOTE

Use of the FA mode is recommended for liquid based specimens to ensure optimal isolation and growth consistency.

Body fluids which are thicker than normal serum, or contain blood clots or mucus should be processed using the SA mode. The specimen should be thoroughly mixed prior to inoculation. Approximately 30 µL of the specimen should be applied using a pipet or other suitable transfer device. When inoculating bi-plates, specimens with a high microbial load may require the lower inoculum volume of 10 µL.

24.5.2 Traditional transport swabs and non-liquid based specimens

Traditional wound, throat, and other miscellaneous non-liquid based swab specimens can only be processed using the SA mode. Touch the swab tip on the indicator light. Roll the swab on a circular area about 1 cm in diameter, turning to expose all sides of the swab to the agar surface. Repeat for each required plate.

24.5.3 Other specimen types

Sputum, tissue, feces, and aspirates can only be processed using the SA mode. Use a transfer swab, pipet, or other transfer device to inoculate the agar surface on the indicator light. The inoculated specimen should cover an area about 1 cm in diameter. Repeat for each required plate. Use of single compartment plates is recommended for optimal colony isolation for these specimen types. Use of bi-plates for specimens with high microbial load may result in poor colony isolation unless using appropriate selective media.

24.6 Primary patterns

NOTE

These are visual representations of the different available streaking patterns. These visuals indicate the exact route of the magnetic drivers. Small deviations in the actual bead movement, such as rolling and shaking, are part of the design and are intended to achieve optimal streaking results.

24.6.1 Zigzag pattern 4

Use

Pattern 4 can be used for urine and non-urine specimens when semi-quantitation of the specimen is desired.

Description

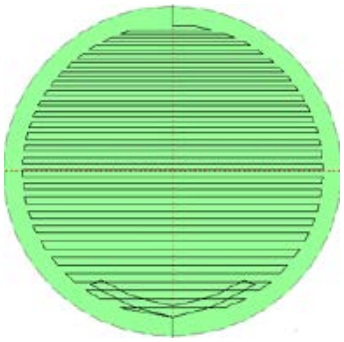
Starts on the left side, makes a few streaks left and right, then zigzags with 2.5 mm separation, and ends with 1 mm separation.

Duration of spreading

18 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.6.2 Zigzag pattern 6

Use

Pattern 6 will produce satisfactory results for specimens with low to moderate microbial load and for specimens with high microbial load when selective media is used.

Description

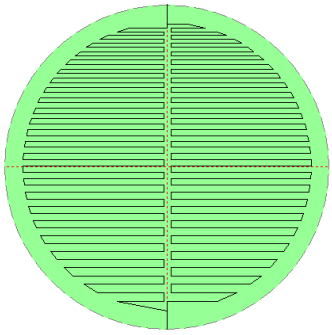
Starting at the bottom of the first quadrant on the left side, the bead moves in a zigzag manner from the bottom to the top of the plate.

Duration of spreading

18 seconds

Plate options

Intended for use only with bi-plates.



24.6.3 Quadrant pattern 18

Use

This is an alternative to the manual 4-Quadrant streaking pattern, intended for presumably sterile specimens or specimens with expected low microbial load.

Description

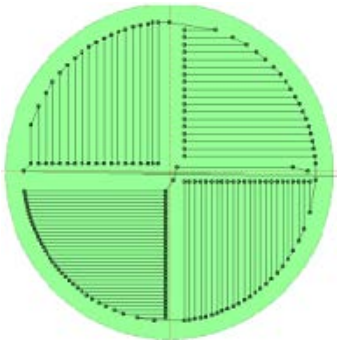
Starting at the bottom of the first quadrant on the left side, the bead moves in a clockwise direction and sequentially streaks the entire agar surface.

Duration of spreading

19 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.6.4 Quadrant pattern 19

Use

This is an alternative to the manual 4-Quadrant streaking pattern, intended for sterile specimens and for non-sterile specimens with low to moderate microbial load.

Description

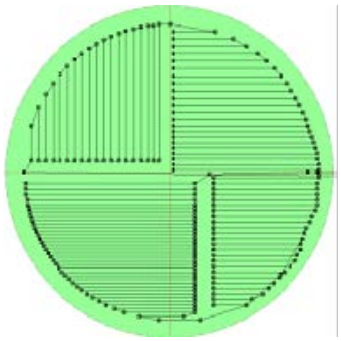
Starting at the bottom of the first quadrant on the left side, the bead moves in a clockwise direction and sequentially streaks the entire agar surface.

Duration of spreading

30 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.6.5 Quadrant pattern 20

Use

This is an alternative to the manual 4-Quadrant streaking pattern, intended for specimens with high microbial load. This pattern requires a significantly longer duration and will reduce throughput on the InoqulA+™.

Description

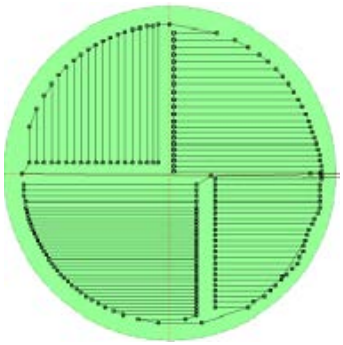
Starting at the bottom of the first quadrant on the left side, the bead moves in a clockwise direction and sequentially streaks the entire agar surface.

Duration of spreading

38 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.7 Secondary patterns

> NOTE
>
> These are visual representations of the different available streaking patterns. These visuals indicate the exact route of the magnetic drivers. Small deviations in the actual bead movement, such as rolling and shaking, are part of the design and are intended to achieve optimal streaking results.

24.7.1 Pattern 1: Lawn pattern

Use

This pattern creates a lawn of bacteria.

Description

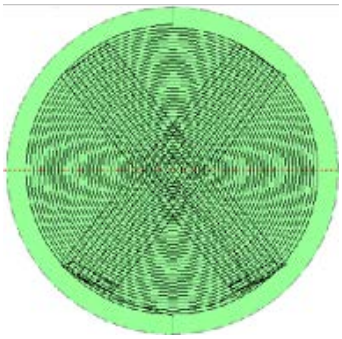
Starting on the left, a few streaks are made to spread the inoculum from the left inoculation position. The bead then moves to the right and the inoculum is spread from the right position. This is followed by multiple streaks from the right bottom to the top left position. Finally, a spiral is made from the center to the top position to create confluent growth.

Duration of spreading

60 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.7.2 Pattern 5: zigzag 3,5 - 1 InocStreak s200

Use

This pattern is typically used for urine specimens, but can be used for any fluid.

Description

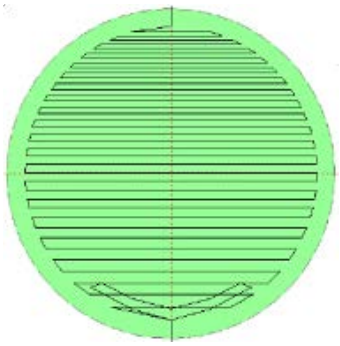
Starts on the left side, makes a few streaks left and right, then zigzags with 3.5 mm separation, and ends with 1 mm separation.

Duration of spreading

15 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.7.3 Pattern 7: zigzag 3,5 - s200

Use

This pattern produces a semi-quantitative zigzag pattern typically used for urine cultures.

Description

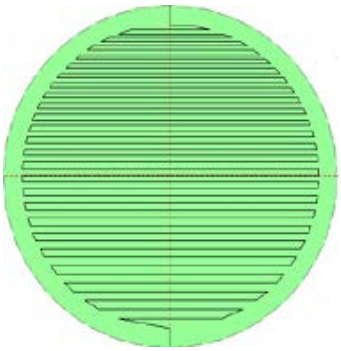
Starting at the top, the bead moves in a zigzag manner to the bottom and sequentially streaks the entire agar surface.

Duration of spreading

15 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.7.4 Pattern 8: 3,5 - 1 s200 more growth

Use

Pattern 8 is useful when more precise quantitative counts are desired.

Description

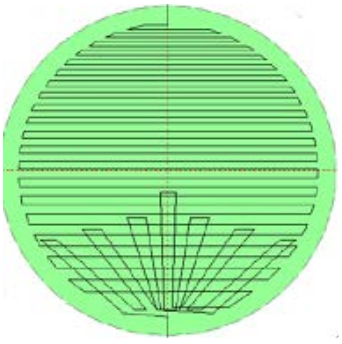
Starting at the bottom of the first quadrant on the left side, the bead moves in a fan-like pattern to spread the inoculum and then in a zigzag manner to the top of the plate.

Duration of spreading

17 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.7.5 Pattern 13: Defect media pattern

Use

This pattern is used in the SA mode process when the user has marked a plate as ‘defect’. Defect can imply that the plate is contaminated.

Description

This pattern will prevent automatic removal of the bead and sends the plate to the waste location with the bead remaining inside.

Duration of spreading

8 seconds

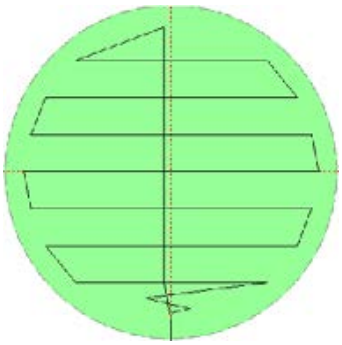
Plate options

Can be used with single compartment plates and bi-plates.

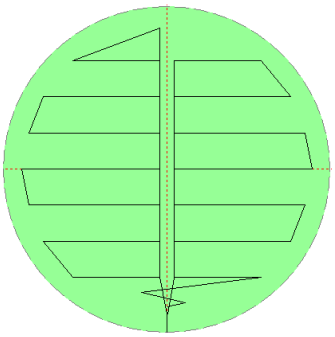
Inoculation

No inoculum should be placed on plates.

Pattern for single compartment plates



Pattern for bi-plates



24.7.6 Pattern 2: 4-Quadrant uniform s200

Use

This is an alternative to the manual 4-Quadrant streaking pattern.

Description

Starting at the bottom, the bead makes a 4 quadrant pattern: 1st quadrant - 2 mm separation; 2nd quadrant - 2 mm separation; 3rd quadrant - 1.5 mm separation; 4th quadrant - 1 mm separation

Duration of spreading

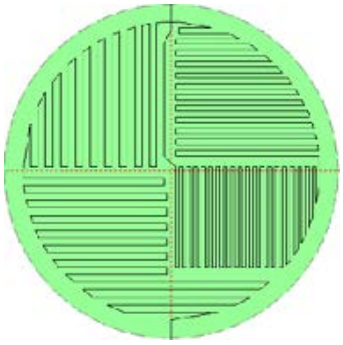
20 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.

Inoculation

Can be inoculated on the left or right indicator light.



24.7.7 Pattern 3: 4-Quadrant s200

Use

This is an alternative to the manual 4-Quadrant streaking pattern. This pattern is identical to pattern 2 but can only be inoculated on the left side of the plate.

Description

Starting at the bottom, the bead makes a 4 quadrant pattern: 1st quadrant - 2 mm separation; 2nd quadrant - 2 mm separation; 3rd quadrant - 1.5 mm separation; 4th quadrant - 1 mm separation.

Duration of spreading

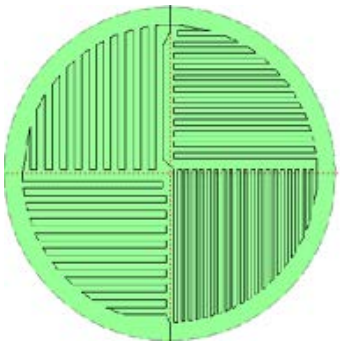
21 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.

Inoculation

Plates can be inoculated on the left indicator light only.



24.7.8 Pattern 9: zigzag 3,5 - 1 s200 more growth

Use

This pattern is typically used for urine specimens, but can be used for any fluid.

Description

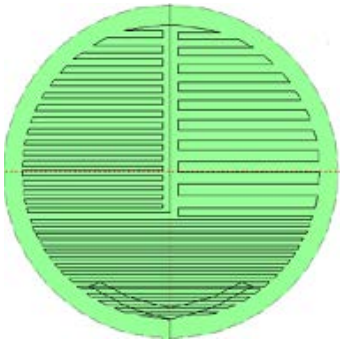
Starts on the left with a few streaks left and right, then begins a zigzag pattern with 1 mm separation. Continues on the left side with 3.5 mm to 2 mm separation, and ends on the right side with 2 mm to 1 mm separation.

Duration of spreading

21 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.7.9 Pattern 10: zigzag 5mm + 2,5 - 1 s200

Use

This pattern can be used when a specimen is smeared onto the plate in a heavy concentration. The bead only spreads a small amount of the specimen material due to the wide separation of the primary spreading.

Description

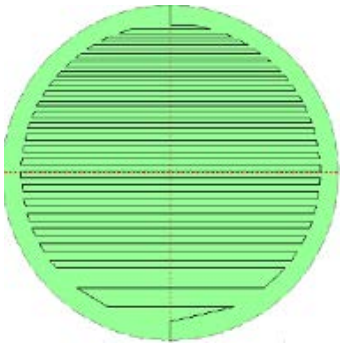
A zigzag pattern starts with 5 mm separation, then 2.5 mm separation, and ends with 1 mm separation.

Duration of spreading

17 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



24.7.10 Pattern 11: zigzag 2,5mm - 1 inoc s200

Use

This pattern is typically used for urine specimens, but can be used for any fluid.

Description

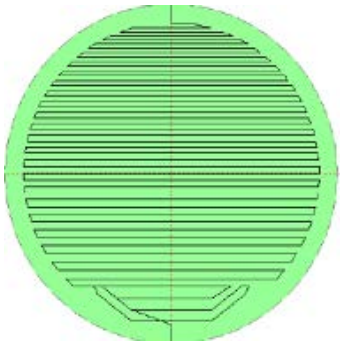
Starts with a short streak to pick up specimen material, followed by a zigzag with 2.5 mm separation, and ends with 1 mm separation.

Duration of spreading

21 seconds

Plate options

Intended for use only with single compartment plates; bi-plates should never be used with this pattern.



1. Croxatto, A., Dijkstra, K., Prod'hom, G. & Greub, G. (2015). *Comparison of Inoculation with the InoqulA and WASP Automated Systems with Manual Inoculation.* Journal of Clinical Microbiology, vol. 53 (7), 2298 - 2307.

2. Froment, P., Marchandin, H., Vande Perre, P. and Lamy, B. (2014). *Automated versus Manual Sample Inoculations in Routine Clinical Microbiology: a Performance Evaluation of the Fully Automated InoqulA Instrument.*
Journal of Clinical Microbiology, vol. 53 (3), 796.

3. Kleefstra, M.[1], Visser, C.[2], Kaap, van der, M.[1], (2011). *Reproducibility and quality of the InoqulA.*
1. Kiestra Lab Automation, Drachten & 2. Department of Medical Microbiology, Academic Medical Centre, Amsterdam, the Netherlands.

4. Ullberg, M., Wrzalik, A., Özenci, V. (2015). *Evaluation of Newly Optimized Streaking Patterns Produced by the BD InoqulA™.* Division of Clinical Microbiology, Karolinska University Hospital, Huddinge, Stockholm, Sweden.

5. Eigner, U.[1], Schäfer, J.[1], Winter, S.[1], Schwarz, R.[1], Bourbeau P.[2] (2015). *Evaluation of Two Different Streaking Patterns Produced by the BD Kiestra™. InoqulA™ Instrument in Comparison to Manual Streaking of Selenite-F Broths.* 1. Lab. Limbach, Heidelberg, Germany, 2. BD Diagnostics, Sparks, MD, USA. Poster # 2980 ASM.

6. Brivio, A.[1], Arena F.[2], Babini, G.[1], Casari, E.[3], Ferrari, L.[4], Giuliani, G.[5], Maria Rossolini, G.[2,6,7] and Participants to the Italian BD Kiestra Workshop Tour. (2013) *Multicenter evaluation of the rolling-bead automated Inoculation Technology (BD Kiestra InoqulA BT™) For isolation of bacterial cultures.* 1. BD Italia, Milano, Italy 2. University of Siena, Siena, Italy 3. Microbiology Laboratory, Humanitas Research Hospital, Rozzano, Italy 4. Laboratory Medicine and Microbiology, Istituti Ospitalieri Hospital, Cremona, Italy 5. Laboratory Medicine and Microbiology, G. Salvini Hospital, Garbagnate Milanese, Italy 6. University of Florence, Florence, Italy 7. Laboratory of Microbiology and Virology, Careggi University Hospital, Florence, Italy. ECCMID 2013.

25 Supervisor authorizations for ReadA™ Compact

Apart from the operator functions, a supervisor is authorized to:

- turn on the ReadA™ Compact
- modify the configuration settings in the ReadA Compact application
- modify camera settings

25.1 Turning on the ReadA™ Compact

The ReadA™ Compact normally will be turned on at all times. If the ReadA™ Compact is turned off, only a supervisor level user is authorized to turn it on again.

> NOTE
>
> For correct functioning, it is imperative that no plate is present between the scan position and the camera before turning on the ReadA™ Compact.
>
> Feed plates into the ReadA™ Compact via the ProceedA input lane.
>
> Only remove plates from the ReadA™ Compact during a stop; only remove plates manually after they have been deregistered in the ReadA Compact application.

1. Turn on the ReadA™ Compact.
2. Press the blue reset button next to the ProceedA monitor.
3. Double-click the **ReadA Compact** icon on the ProceedA monitor to start the ReadA Compact application.
4. Select **Log on**.
5. Enter your username and password.
6. Select **Start [F2]**.

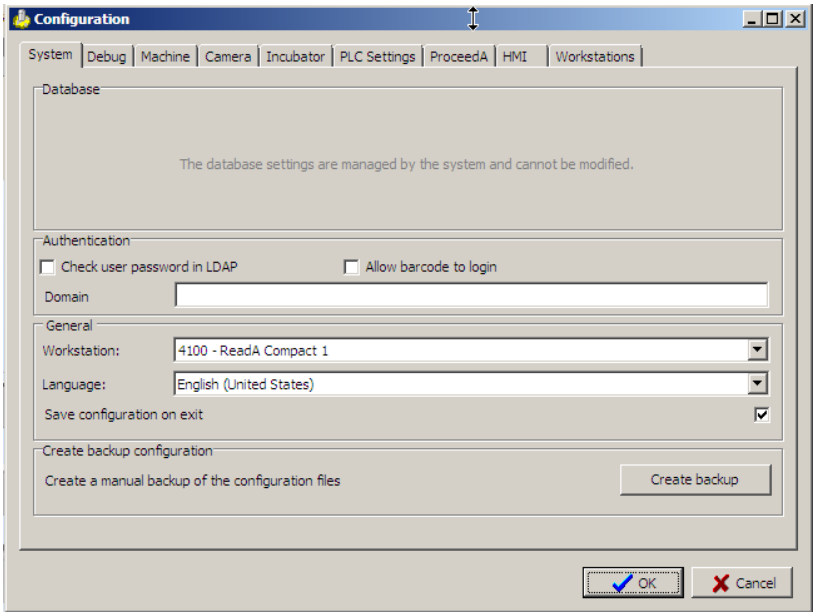
25.2 Starting the ReadA Compact configuration tool

A supervisor is allowed to modify the configuration settings of the ReadA Compact application.

To start the configuration tool:

1. Start the ReadA Compact application.
2. Log in as supervisor.
3. Press **[Ctrl]+[F12]** or select **Tools**.
4. Select **Configuration** in the menu. The Configuration dialog is displayed; the System tab is active.

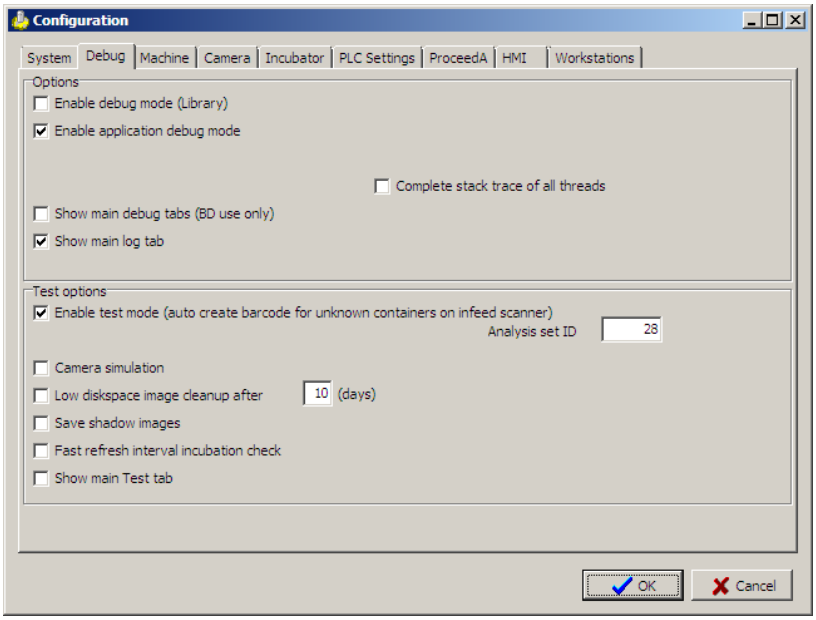
25.2.1 System tab: configuration of general settings



Authentication	Description	Default setting
Check user password in LDAP	Select if the password must be checked in LDAP.	OFF
Domain	Fill in the LDAP Internet domain (only if password must be checked in LDAP).	OFF

General	Description	Default setting
Workstation	Select the workstation for which configuration settings are entered. Select one of a maximum of six ReadA Compacts.	ReadA Compact 1
Log location	Select a location for the log file.	File
Language	Select the interface language.	English
Save configuration on exit	Select to save all changes when you exit the configuration window.	ON

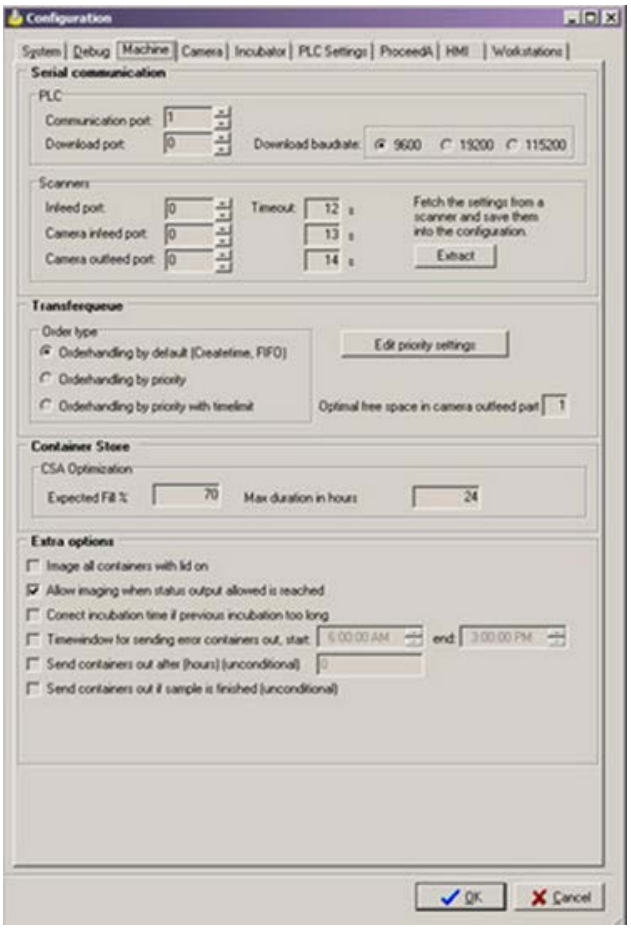
25.2.2 Debug tab: configuration of debugging settings



Options	Description	Default setting
Enable debug mode	Select to find the cause of errors in the module.	OFF
Enable application debug mode	Select to find error recovery information from a remote location.	ON
Show main debug tabs (BD use only)	Select to display the main debug tab for more intensive monitoring of the module.	OFF
Show main log tab	Select to show the log list on the tab.	ON

Test options	Description	Default setting
Enable test mode (auto create barcode for unknown containers on infeed scanner)	Select to automatically create barcodes, for testing only (when no database has been created yet).	OFF
Camera simulation	Select to test the module when no camera is present.	OFF
Low disk space image cleanup after .... (days)	Select to automatically remove test mode photographs when disk space is limited.	OFF
Save Shadow Images	Select to immediately save files in a parallel process during testing.	OFF
Fast refresh interval incubation check	Select to monitor all plates for expired incubation time every 10 seconds.	OFF
Show Main Test Tab	Select to add a test tab to the main user interface (for testing purposes only).	OFF

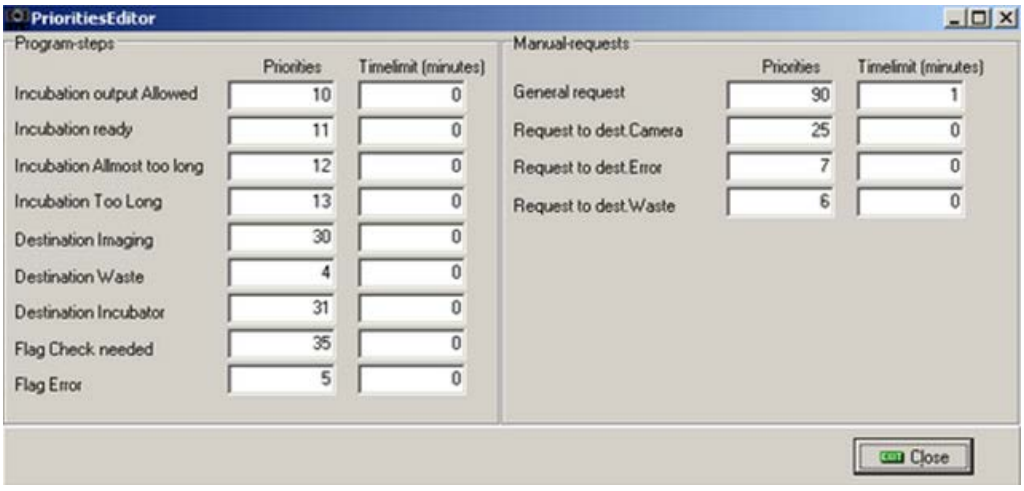
25.2.3 Machine tab: configuration of communications settings



Serial communication	Description	Default setting
PLC port	Define the communication port (COM port) to which the devices are connected. 0 = no communication will take place with the device.	2
PLC port download	To define a communication port for downloading software to PLC.	10
Baudrate (radio button)	Select the baudrate for communication.	115,200
Infeed scanner port + TimeOut	To define the communication port for the scanner at the infeed.	Com6, Timeout 30 sec
Camera infeed scanner port + TimeOut	To define the communication port for the camera infeed.	Com4, Timeout 30 sec

Serial communication	Description	Default setting
Camera outfeed scanner port + TimeOut	To define the communication port for the camera outfeed.	Com5, Timeout 30 sec
Fetch configuration – Extract button	Select **Extract** to fetch settings from a scanner port and save them to the ReadA Compact configuration file.	Config.ini (rename and load)

Transfer queue	Description	Default setting
Order type radio button	Indicate how order handling is processed: order handling by default (Createtime, FIFO); order handling by priority; order handling by priority with time limit.	By priority with time limit
Edit priority settings	Priority settings should only be edited by a BD project engineer or by a person authorized by BD. Select the button to open the Priorities Editor.	Customer-specific. Priority settings affect general process flow.



The Priorities Editor allows you to assign a priority to a status, to determine the order of the first in-first out (FIFO) queue for the gripper. If the time limit is exceeded, the item is automatically given first priority. If you enter a priority number in the Priorities text box, the ReadA™ Compact will process steps in the indicated order of priorities. The higher the number, the higher the priority. Add a time limit if you want the ReadA™ Compact to skip an expired, timed step that has yet to be processed. Select **Close** to exit this window.

Transfer queue	Description	Default setting
Optimal free space in camera outfeed part	Indicate the space that must be kept free for optimization of the process. 1 = all full except 1	2

Container Store	Description	Default setting
CSA optimization	Container store availability, set to optimize plate storage.	Expected fill - 70% Maximum duration in hours - 24

Extra options	Description	Default setting
Image all containers with lid on	Select to photograph all containers with the lid on.	OFF
Allow imaging when status output allowed is reached	Select to create an image after e.g., 15 hours (of the total 16-hour incubation time).	OFF
Correct incubation time if previous incubation too long	Select to shorten the second incubation if the first incubation was longer than planned due to a module error.	ON
Time window for sending error containers out	Select and indicate a start time and an end time to send error containers out in case of malfunction.	Customer-specific; ‘off’ in case of 24/7 lab operation
Send containers out after (hours) (unconditional)	Select to set a maximum incubation term to prevent fungal growth.	OFF
Send containers out if sample is finished (unconditional)	Select to send containers out at the end of the incubation time. This setting overrules other settings.	OFF

25.2.4 Camera tab: configuration of camera settings

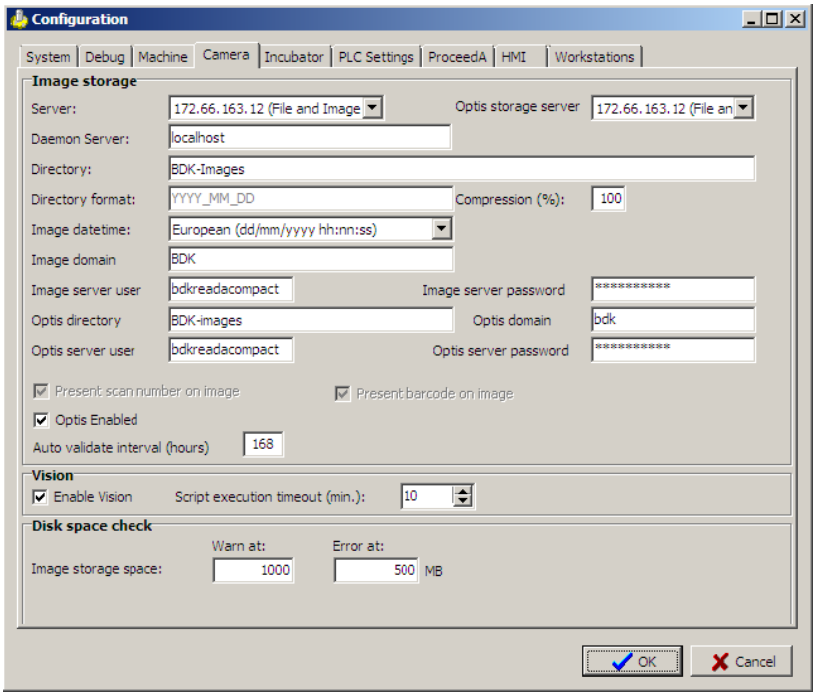


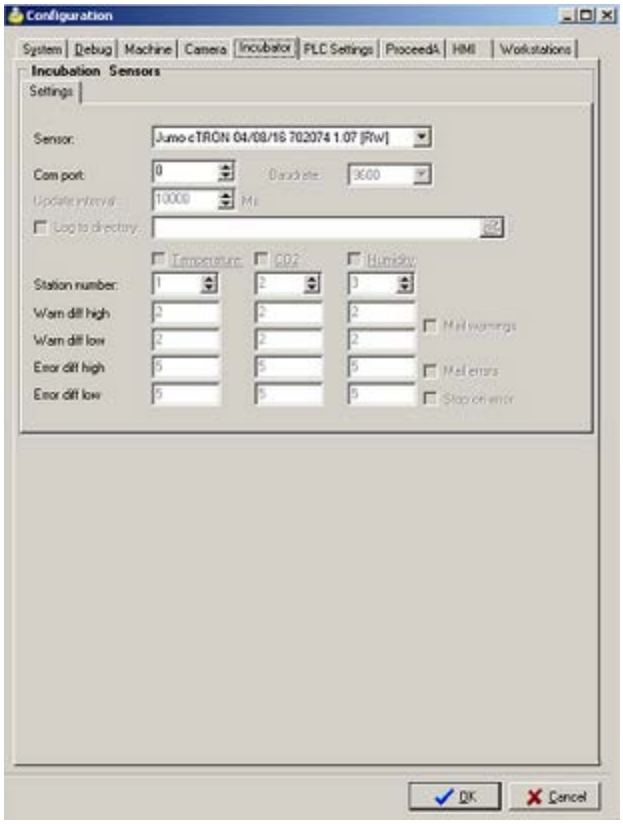
Image storage	Description	Default setting
Server	Enter the IP address of the images server. (This is configured in the database).	Customer-specific
Optis storage server	Optionally select a different location for the SHQI raw data files to be stored.	Customer-specific
Daemon server	Enter the IP address of the Daemon server.	localhost
Directory	Enter the directory name.	BDK-Images
Directory format	Indicate directory format.	YYYY_MM_DD
Compression	Indicate % JPEG compression rate.	100%
Image datetime	Indicate how date and time are displayed in the image.	Customer-specific
Image domain	Set the domain name used in the network for the RCiDaemon to access the image file server.	BDK
Image server user	Set the domain user name with read and write access for the Optis file server.	Customer-specific

Image storage	Description	Default setting
Image server password	Set the password for the domain user with read and write access for the image file server.	Customer-specific
Optis directory	Set the path location.	BDK-images
Optis domain	Set the domain name; if no Domain user is available for BD, use the Computer name and a local admin account.	Customer-specific
Optis server user	Set the domain user name with read and write access for the Optis file server.	Customer-specific
Optis server password	Set the password for the domain user with read and write access for the Optis file server.	Customer-specific
Optis enabled	Select to enable Optis.	Selected
Auto validate interval (hours)	Not available	N/A

Vision	Description	Default setting
Enable Vision	Not available	N/A
Script execution timeout	Not available	N/A

Disk space check	Description	Default setting
Image storage space Warn at:	Enter the minimum disk space for space too low warning message.	1,000 MB
Image storage space Error at:	Enter the minimum disk space for space too low error message.	500 MB

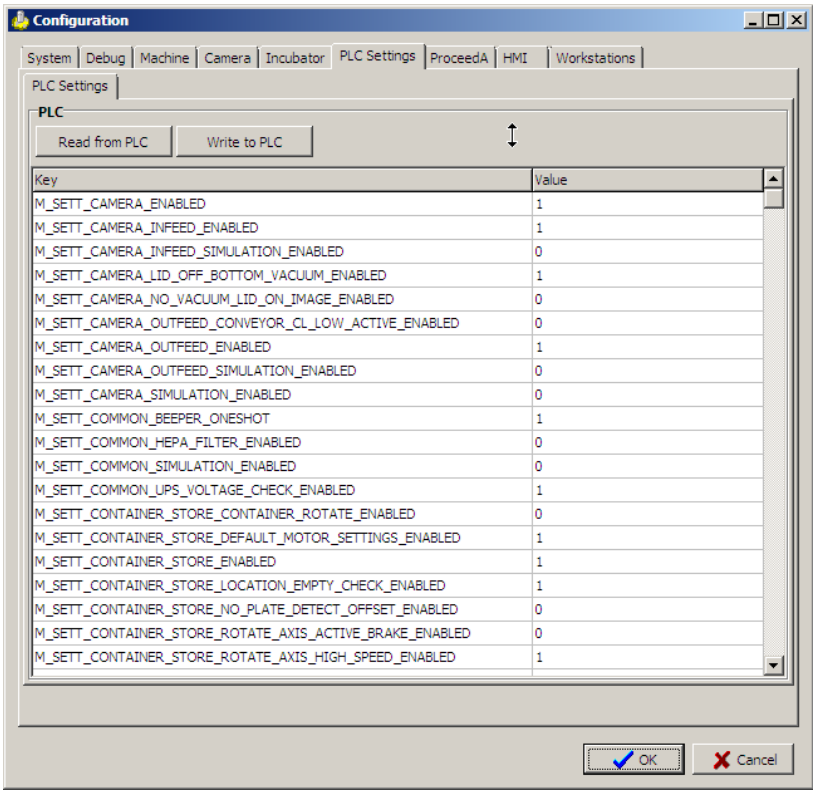
25.2.5 Incubator tab: configuration of incubator settings



Incubation sensor settings	Description	Default setting
Sensor	Select the sensor for which you wish to enter settings.	dTRON
Com port	Enter the Com port for the sensor concerned. 0 = no communication	7
Baud rate	Select the communication baud rate.	9,600
Update interval	Indicate a communication update interval.	20,000 ms
Station number	Select the station number of the sensor, depends on number of controllers.	Must be three different values
Warn diff high	Enter a value for the allowed deviation upward. A warning is generated if this value is exceeded.	Customer-specific
Warn diff low	Enter a value for the allowed deviation downward. A warning will be generated if the reading drops below this value.	Customer-specific

Incubation sensor settings	Description	Default setting
Error diff high	Enter a value for the allowed deviation upward. An error message will appear if this value is exceeded.	Customer-specific
Error diff low	Enter a value for the allowed deviation downward. An error message will appear if the reading drops below this value.	Customer-specific

25.2.6 PLC Settings tab: configuration of PLC settings

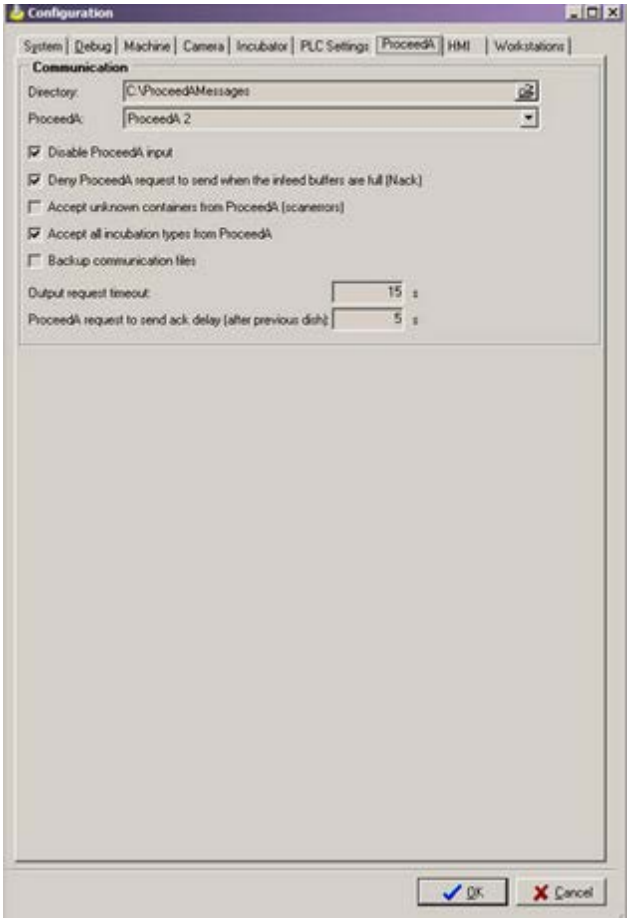


NOTE

The values in the screen shot and in the list below serve as examples; actual values will be customer-specific.

PLC settings	Description	Default setting
Read from PLC	Select to load the current settings from the PLC.	List is automatically filled; customer-specific. 'M' stands for marker.
Write to PLC	Select and press **Enter** to confirm changed values and send them to the PLC. ReadACompact.ini ReadACompact+PLC.ini	Customer-specific

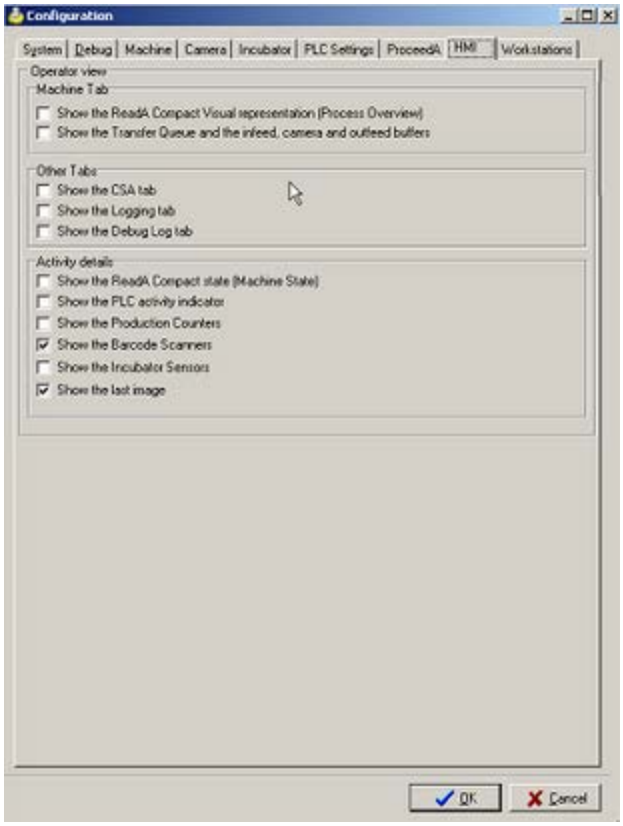
25.2.7 ProceedA tab: configuration of ProceedA settings



Communication	Description	Default setting
Directory	Enter the directory used for communication with the ProceedA.	Y:\ProceedA_Comm
ProceedA	Select the ProceedA for which you wish to enter settings.	2

Communication	Description	Default setting
Disable ProceedA input	Select to operate the ReadA™ Compact standalone.	OFF
Deny ProceedA request to send when the infeed buffers are full	Select to block the infeed when the infeed buffer is full. The ProceedA will try a different ReadA™ Compact.	OFF
Accept unknown containers from ProceedA (scan errors)	Select to accept containers even if there was a scan error.	OFF
Accept all incubation types from ProceedA	Select to accept all plate types from ProceedA for incubation.	OFF
Backup communication files	For research purposes	OFF
Output request timeout	Enter the number of seconds that the outfeed to the ProceedA must wait before retry in case of a negative response to the output request.	15 seconds
ProceedA request to send back delay (after previous plate)	Enter the number of seconds that infeed from the ProceedA must be delayed in case of a negative response to the input request.	0 seconds

25.2.8 HMI tab: configuration of human interface settings

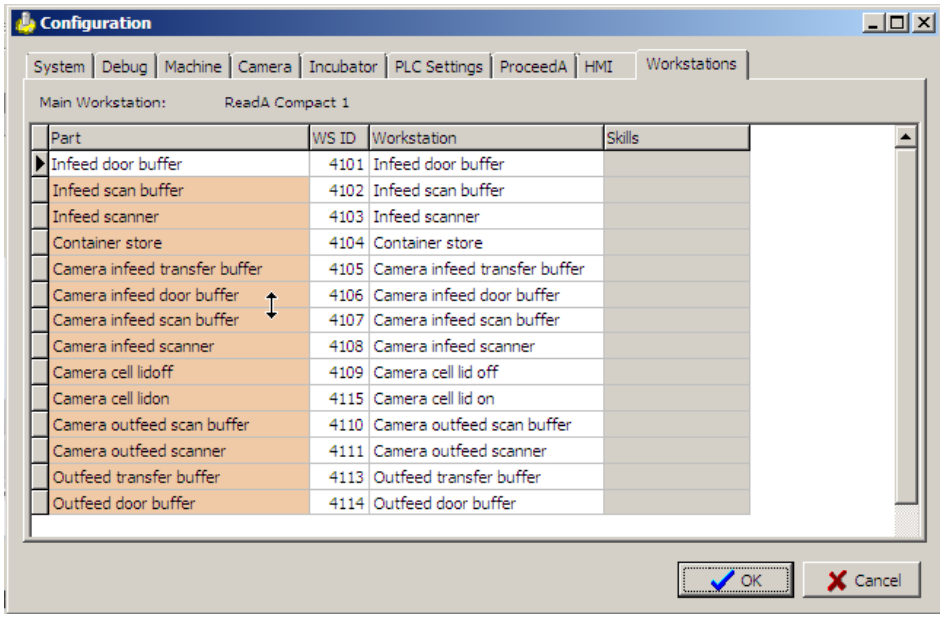


Machine tab	Description	Default setting
Show the ReadA Compact visual representation (Process overview)	Select to include the Process Overview in the interface.	Customer-specific
Show the Transfer queue and the infeed, camera and outfeed buffers	Select to include these items in the interface.	Customer-specific

Other tabs	Description	Default setting
Show the CSA tab	Select to make the CSA tab available for the operator.	Customer-specific
Show the Logging tab	Select to make the Logging tab available for the operator.	Customer-specific
Show the Debug log tab	Select to make the Debug Log tab available for the operator.	Customer-specific

Activity details	Description	Default setting
Show the ReadA Compact state (module state)	Select to include the ReadA™ Compact state in the right side of the screen.	Customer-specific
Show the PLC activity indicator	Select to include the PLC activity indicator in the right side of the screen.	Customer-specific
Show the Production counters	Select to include the production counters in the right side of the screen.	Customer-specific
Show the Barcode scanners	Select to include the barcode scanners in the right side of the screen.	Customer-specific
Show the Incubator sensors	Select to include the incubator sensors in the right side of the screen.	Customer-specific
Show the last image	Select to include the last image in the right side of the screen.	Customer-specific

25.2.9 Workstations tab: configuration of workstation settings



Use this tab to link a skill to a plate destination (location where the skill will be performed).

25.3 Camera calibration procedure

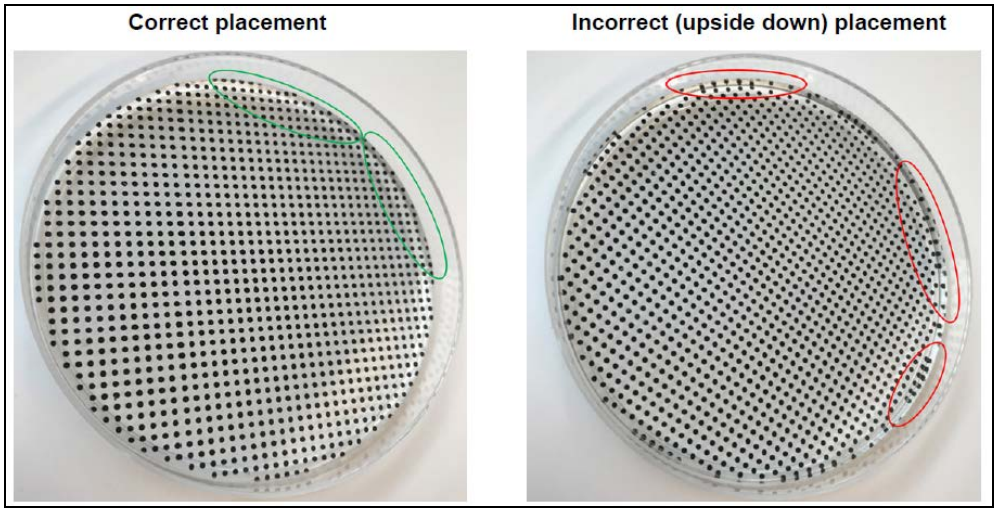
The pixel calibration plate is used for BD Kiestra™ Optis™ camera calibration of a ReadA™ Compact version 1.1.

25.3.1 Plate required for calibrating the ReadA™ Compact v1.1

> NOTE
>
> Improper placement of the calibration disk negatively influences the camera calibration and pick accuracy when processing samples on the automated ID processing module.

Ensure proper placement of the calibration disk with the dots facing up, toward the plate lid:

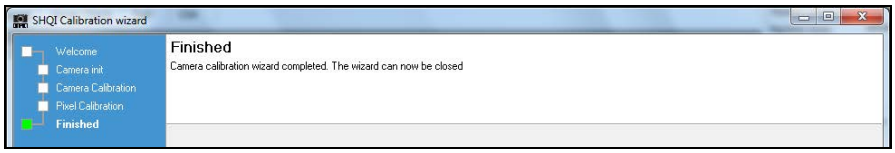
1. Touch the surface of the disk. If the texture of the printed dots can be felt, then the disk has been properly placed.
2. If the surface feels smooth, then the disk has been placed upside down. Flip the disk for proper placement.
3. If reflections of the dots are observed on the side of the disk as seen in the image on the right, then the disk has been placed upside down. Flip the disk for proper placement.



25.3.2 Procedure

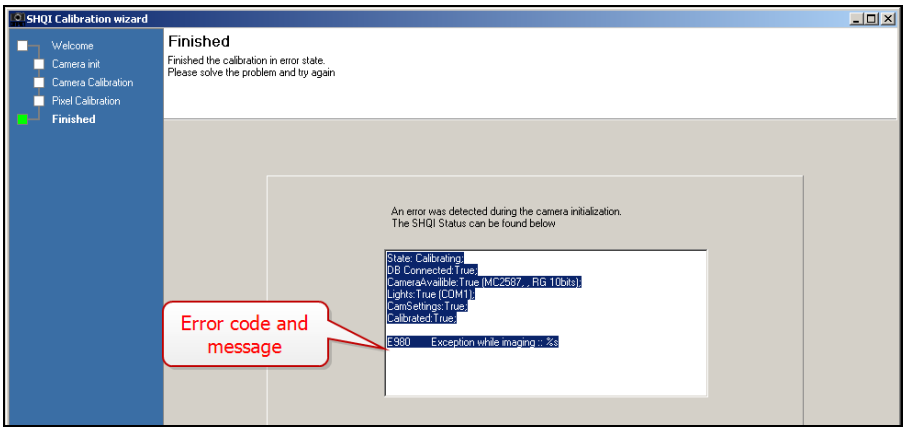
1. Select **Tools [F7]** in the ReadA Compact application main window.
2. Select **SHQI Calibration**.

Follow the instructions in the wizard to complete the calibration. When the camera calibration procedure is completed successfully, the following message is displayed:

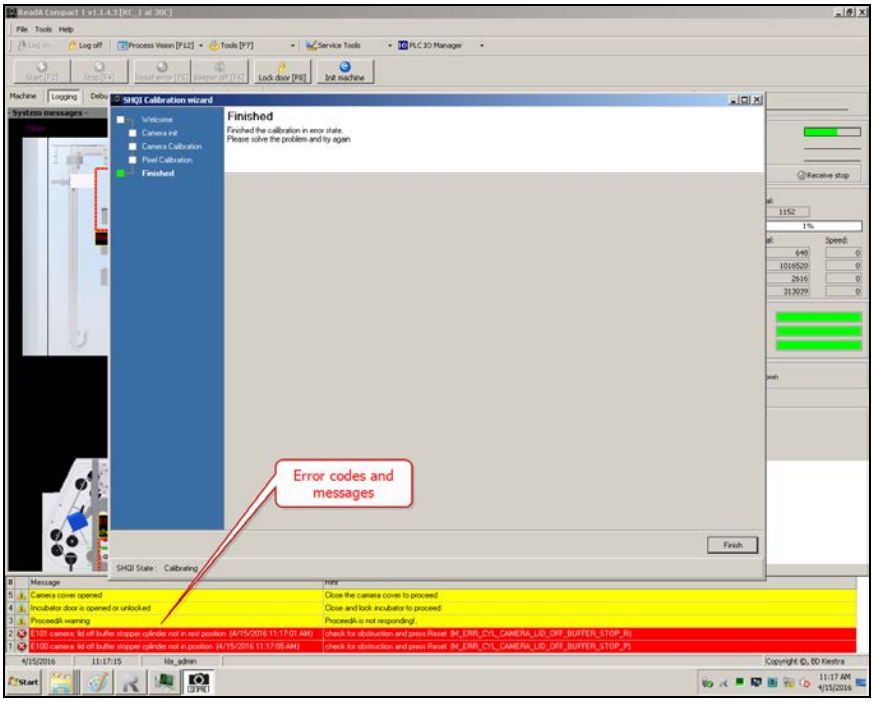


Close the wizard as instructed.

If the calibration procedure cannot be completed successfully, an error message will be displayed. The error can either be displayed by the wizard:



or in the ReadA Compact status screen:



If an error is preventing successful completion of the camera calibration procedure, contact BD.

> NOTE
>
> Calibration must be performed each time the camera is cleaned, or when the camera housing is opened or closed.

26 Overview of supporting applications

The software applications required to operate your solution are protected from unauthorized access using login procedures. During the login procedure, the user access level is determined. The applications for users can be roughly divided into the following user access categories:

Access level	Application	Workstation
Normal user	SorterA-BarcodA	SorterA-BarcodA
	InoqulA	InoqulA
	ReadA Compact	ProceedA
	ProceedA	ProceedA
Advanced user	ArchivA Viewer	All workstations
	ReadA Overview	All workstations
	DB Manager	SorterA-BarcodA
	Broth tube label printer	InoqulA

Depending on the configuration of your solution, approximately 30 to 60 additional applications are installed to guarantee proper operation. These other applications are only accessible by BD associates.

26.1 ReadA Overview

The ReadA Overview displays specimen information and allows carrier tracking and tracing. If a problem or error occurs, ReadA Overview can be used for further information.

Quick specimen/container info

1. Open **ReadA Overview**.
2. Select **Quick sample/container info**. The Quick sample/container info window opens.
3. Scan or type the LI(M)S ID (specimen ID) or the carrier barcode (Barcode).
4. Select **Search**.
5. View error information in the right field of the window, beneath **Errors**.
6. Select **Close** to exit.

Specimen log

The specimen log displays information pertaining to a specimen or carrier. It also shows all changes in the status of a specimen (e.g., “Done”).

1. Open **ReadA Overview**.
2. Select **Sample Log**. The Sample Log window opens.
3. Enter the specimen ID. If needed, enter a start and end date to narrow the search.
4. Select **Search**.

5. A list is shown with all statuses.
6. Select **Close** to exit.

Container Log

The container log displays all information pertaining to a carrier such as workstations, status, users, which program steps were executed, errors, etc.

1. Open **ReadA Overview**.
2. Select **Container Log**. The Container Log window opens.
3. Enter the carrier barcode (Barcode). If necessary, enter a start and end date to narrow the search.
4. Select **Search**. All carrier information is displayed.
5. Select **Close** to exit.

Workstation Log

The workstation log displays all information pertaining to a selected workstation.

1. Open **ReadA Overview**.
2. Select **Workstation Log**. The Workstation Log window opens.
3. To display a list of errors, select the desired workstation, start date, and end date.
4. Select **Close** to exit.

26.1.1 Testing and checking programs

Edit Analysisset Program Settings can be configured to check analysis set programs (configured in DB Manager). It checks if all steps are completed or if items are still open or missing. After the check, open DB Manager to make changes to the analysis sets that were reported as an error.

1. Open **ReadA Overview**.
2. Select **Edit Analysisset Program Settings** .
3. The field on the right shows all analysis sets.
4. Select **Check programs**. All analysis sets are automatically checked.
5. View the program errors. Reports on ‘Export_Code on the analysis_set is empty’ can be ignored, because these are always empty. You don’t have to take action on this reported error.
6. Carefully read or copy other error reports.
7. Select **Close** to exit.
8. Change the analysis set program in DB Manager.

26.2 Management Information System

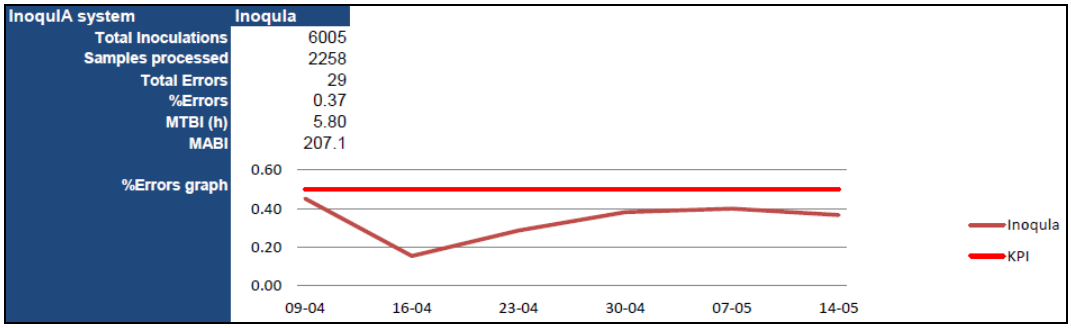
The Management Information System (MIS) tool generates a report with information about the performance of the solution, for both BD and the customer. The MIS report is a summary generated on a weekly basis (for the previous week’s data) and sent to the customer.

The MIS report can contain the following data:

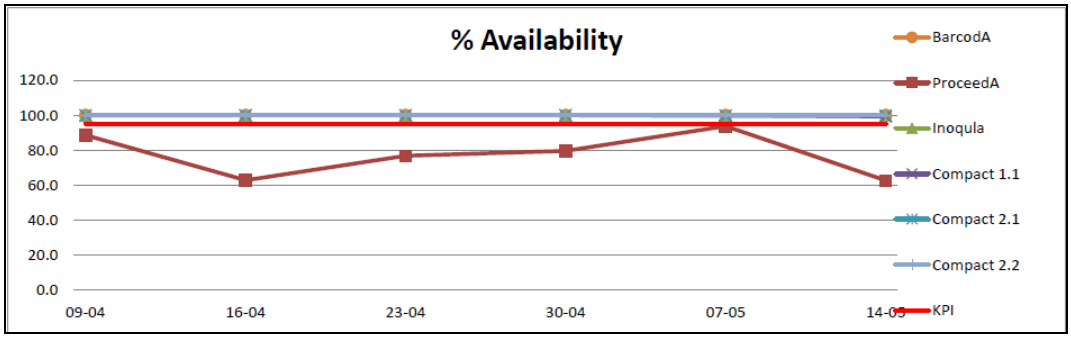
- Number of specimens processed
- Number of plates labeled
- Number of plates incubated in a ReadA™ Compact
- Number of plates incubated externally
- Number of errors divided into three categories:
  - module-related errors
  - User errors
  - LI(M)S errors (or other external errors)
- Solution availability (percentage)
- Mean time to repair the solution
- Mean time between module failures
- Average user response time to solution failures

Examples of charts in MIS reports:

Statistical charts for each individual module



Statistical charts for comparing modules



26.3 Reporting errors to BD

To report errors, contact BD using the phone numbers and email addresses are below.

- **Outside North America:** BD Kiestra, +31 (0)512 540 623, Lab_Automation_phone_support@bd.com
- **In North America:** BD Technical Service and Support, 1-800-638-8663, Technical.Services@bd.com

It is strongly advised to maintain an error log in which you document the following data:

- date and time of occurrence of errors
- screen prints of error messages
- possible resolutions
- comments

27 ArchivA

This section covers the following topics:

27.1 Backing up files

The ArchivA application is used to clean up the database on a regular basis so that the solution can continue functioning efficiently. To achieve this, a number of images can be written to a hard disk, both automatically and manually. This can be programmed in advance for the desired frequency. Links to the images are also saved in the database so that they can be retrieved again.

During the archiving process, a check is made to ensure the data comply with the features of the data to be archived. A list is made of specimens which have the status ‘Finished’ and are older than the configured number of days. Then all information of these specimens is collected and written. Next, all associated images are saved. Only then are all the data and associated images removed from the regular database.

The data that will be archived by means of ArchivA are saved in a file with the extension ‘.kab’.

CAUTION

ArchivA may only be configured by BD. Changing the configuration of ArchivA may cause inconveniences in archiving and database usage.

27.2 Deleting archived files

To avoid reaching the storage capacity of the hard disk of the server, it is recommended that archive files be saved on a CD or DVD. Label the CD or DVD with the name of the archive folder. Then the archives for which a back-up has been made can be deleted.

The data that will be archived by means of the ArchivA application are saved in a file with the extension ‘.kab’.

NOTE

A back-up can be made of all archive files and they can all be deleted with the exception of the most recent (archive folder with the highest number). ArchivA will continue to save data in the most recent folder.

27.3 Restoring archived files

If you require data which are stored in archive files, contact contact BD.

28 ArchivA Viewer

ArchivA Viewer is a software application for viewing archived files. Depending on the configuration, you can view:

- archived images of specimens (if these were archived with the other specimen information);
- archived comments on specimens and information about container markings.

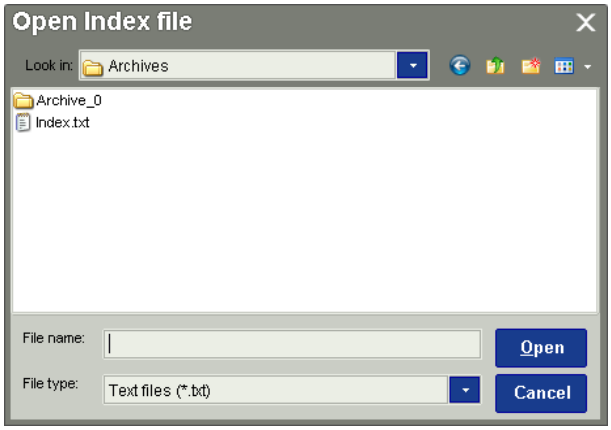
ArchivA Viewer allows you to open the index file that contains references to all saved ArchivA files. You can then search the database of archived files by using search criteria.

28.1 Starting the ArchivA Viewer

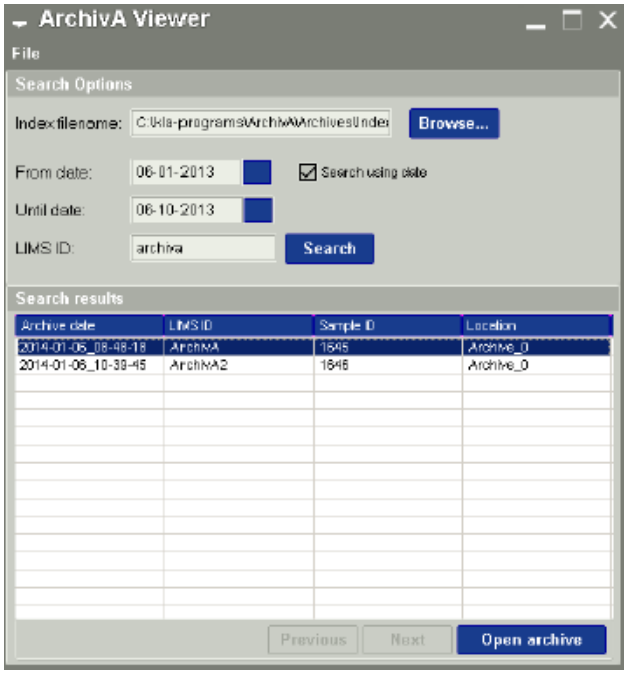
1. Browse to the kla-programs directory on a workstation of the solution.
2. Double-click **ArchivA Viewer.exe**. The ArchivA Viewer application starts.

28.2 Opening the index file

1. Select **Browse** in the startup dialog of the ArchivA Viewer. The following window displays.



2. Select **Index.txt** and select **Open**. The index file name displays.



Once the index file has been selected, you can search and select an archive file using a date or using the LI(M)S ID.

> NOTE
>
> Once the index file has been found and opened, the location is saved by ArchivA Viewer; the following steps have to be executed only once.

28.3 Searching for an archive file

Search for an archive file by date

1. Select the box for **Search using date**. Indicate a range.
2. Select a date in the From date (select the **calendar** icon).
3. Select a date in the Until date (select the **calendar** icon).
4. Select **Search**. A list of archive files appears.

Search for an archive file by LI(M)S ID

1. Enter the LI(M)S ID, or a number of characters from the LI(M)S ID, in the LIS ID text box.
2. Select **Search**. The list shows all archive files containing the characters you entered in the LIS ID text box.

> NOTE
>
> It is also possible to search on a combination of date and LI(M)S ID.

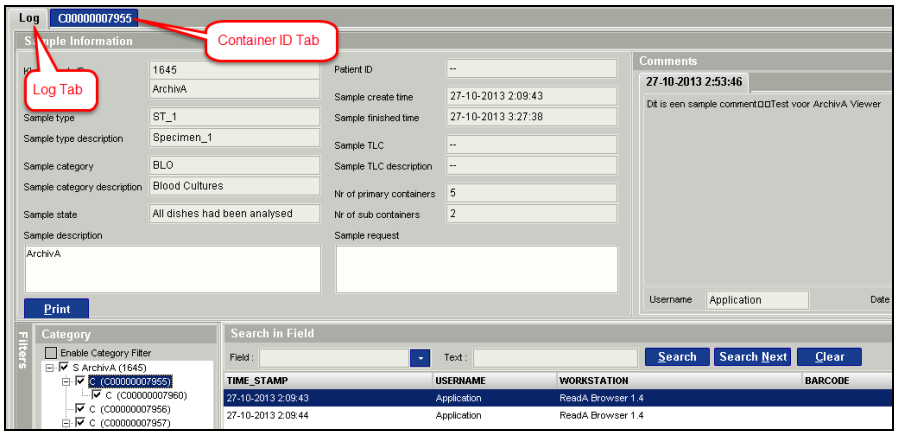
If the search result contains more than 100 items, the following warning appears:

You may narrow down your search by entering more LI(M)S ID characters.

28.4 Selecting an archive file

The main window of ArchivA Viewer displays:

- A Log tab to select individual specimens.
- A container ID tab that displays images or comments that were archived for the container selected on the Log tab.



Controls (buttons, tabs, arrow keys) displayed in blue are active.

28.4.1 Log tab

Section	Explanation
Sample Information	Shows specimen information and comments Select **Print** to display output options.
Category	Lists the plates available for the selected specimen
Filters • Sub filters • Skill filters	Use filters if you need specific information: • Sub filter by Log Detail, User or Workstation. • Filter by specific user tasks (e.g., Inoculate Specimen, Read Dishes).

Section	Explanation
Search in Field	Allows you to search for a specific line in the displayed log. Search in the Field drop-down menu for the text specified in the Text field; enter text in the **Text** field and select **Search**. Select **Search Next** to go to the next search result. Select **Clear** to start a new search.
Log	Lists all actions performed on the selected specimen

The Log tab offers view-only information; no changes can be made. However, you can use filters and the search fields to narrow down the number of items displayed.

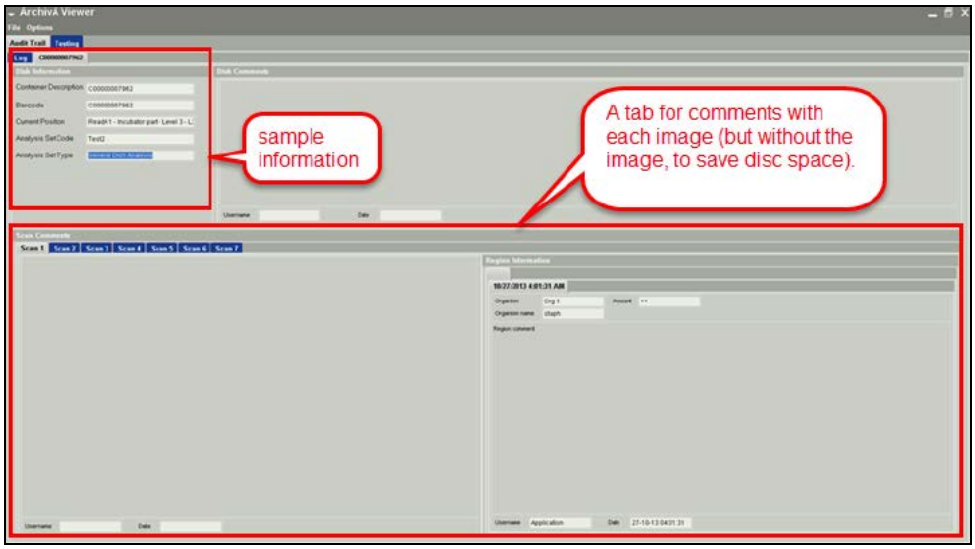
NOTE

The Sample information and Filters bars are toggles. Select the bar to hide information; select the bar again to display the information.

28.4.2 Container tab

The label in the container tab is the barcode of the selected container. Depending on settings in ArchivA, the tab displays either the archived images for the container:

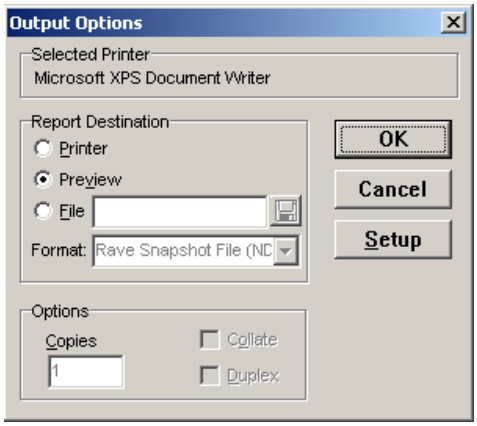
or the archived image comments and markings information:



28.5 Output options

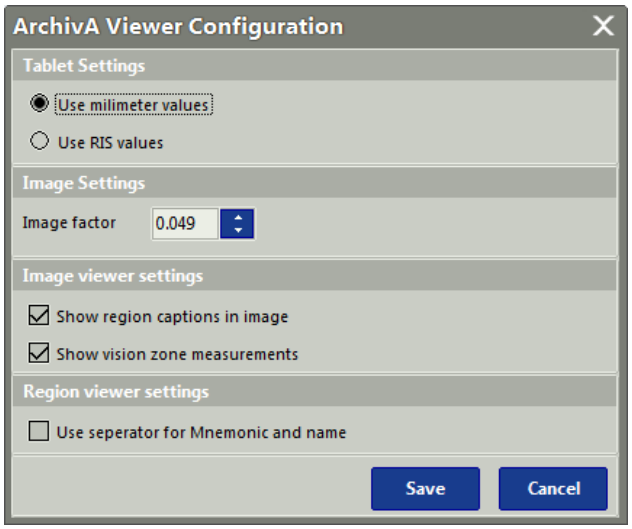
From Log tab in the main window you may print a complete log of a specimen.

1. Select **Print** to open the Output Options dialog box. This dialog box allows you to send a report to the standard selected printer, display the report on screen, or save the report to file in the indicated file format. Options indicate number of copies and collate or duplex.



2. Select **Setup** to define other printer settings.
3. Select **OK** to start printing; select **Cancel** to abort the action.

28.6 Configuration options



Section	Description
Tablet settings • Use millimeter values • Use RIS values	Select a radio button to either highlight tablet region in millimeters or on the basis of RIS values.
Image settings - image factor	Determine the size of 1 pixel, in centimeters. Select the arrow buttons to adjust the value. This setting must be equal to the image factor setting within BD Synapsys™ Informatics.
Viewer settings • Show region caption in image • Show vision zone measurements	Obsolete
Region viewer settings Use separator for Mnemonic and name	Select if you wish to use mnemonics. Ensure the setting is identical to that in BD Synapsys™ Informatics.

29 Desktop printer

This section covers the following topics:

NOTE

The instructions in this chapter pertain to configuration of the desktop label printer on the InoqulA FA/SA workbench.

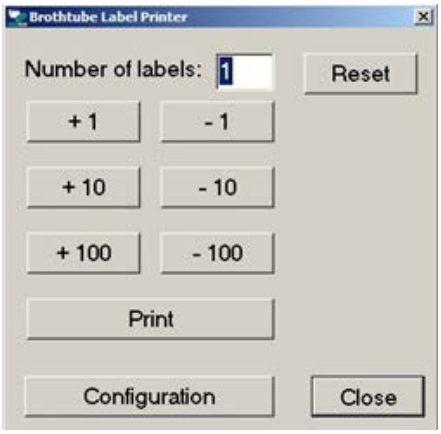
Refer to the BD Synapsys™ Informatics Solution instructions for use for configuration instructions pertaining to the desktop label printer located on the ErgonomicA.

29.1 Software startup and shutdown

1. To open the software, select the **Brothtube Label Printer** icon on the InoqulA PC. The Brothtube Label Printer main window opens.
2. Select **Close** in the software or select the **x** at the upper right corner of the display to exit the Brothtube Label Printer software.

29.1.1 Operation

The main window is where you select the number of labels to print and enter the configuration options.



Main window buttons and fields

Options	Description
Empty square	Button for printing rack barcodes. Located in the upper left corner of the window, below the blue header

Options	Description
Number of labels	Field for entering the number of labels to print. When using a keyboard, enter the number of labels in the open field. When using a touchscreen, select the buttons below the Number of labels field until you reach the correct number. This field can also be used to enter a rack barcode when printing rack barcode labels.
Reset	Button to reset the counter in the Number of labels field to 1
+1 and −1	Buttons to add or remove 1 label at a time from the counter in the Number of labels field
+10 and −10	Buttons to add or remove 10 labels at a time from the counter in the Number of labels field
+100 and −100	Buttons to add or remove 100 labels at a time from the counter in the Number of labels field
Print	Button to print the amount of labels entered in the Number of labels field
Configuration	Button to open the Printer Configurations window
Close	Button to close the Brothtube Label Printer software

29.1.2 Generating and printing barcode labels

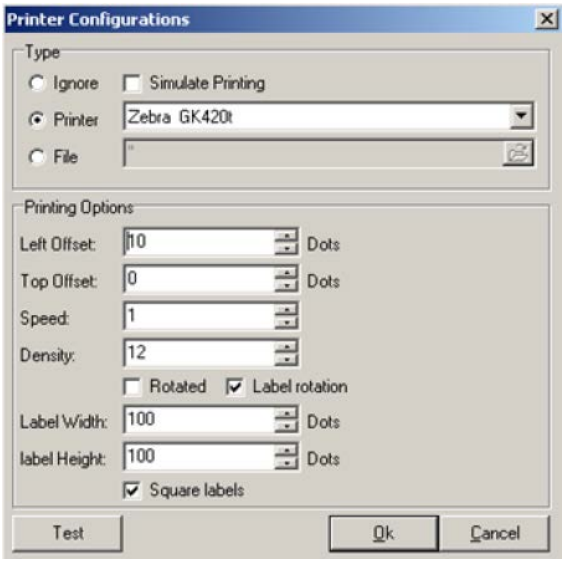
Labels are printed using the options on the main window in the Brothtube Label Printer software.

1. Select **Brothtube Label Printer** on the InoqulA PC, if the software is not already open.
2. In the **Number of labels** field, enter the number of barcode labels needed for broth tubes. When using a touchscreen, use the **+1**, **−1**, **+10**, **−10**, **+100**, and **−100** buttons to increase or decrease the number of labels to the correct amount.
3. When the correct number of labels is selected, select **Print**. The desktop printer prints the requested number of barcode labels.

29.2 Printer configuration

Printer settings are configured by BD personnel during installation and are adjusted to your solution and type of label printer. Only supervisors or Frontline Support Specialists can change these settings after installation. Always consult BD when altering any printer configurations.

Printer settings are configured in the Printer Configurations window. Select **Configuration** in the main window.



29.2.1 Printer Configurations window buttons and fields

Options	Description
Ignore	Only used for testing, when no printer is attached
Simulate Printing	Only used for testing, when no printer is attached
Left Offset	Field to enter the left margin (in dots) for print placement on the label. The value that you can enter in this field depends what is entered for the Label Width field.
Top Offset	Field to enter the top margin (in dots) for print placement on the label. The value you can enter in this field depends on what is entered in the Label Height field.
Speed	Field to enter the printing speed (minimum: 1, maximum: 4). NOTE: Printing too fast can result in scanning errors due to low print quality.
Density	Field to enter the printing density (minimum: 1, maximum: 15) A lower number yields fine, grayish lines and a higher number yields thick, black lines. NOTE: Printing with too high a density can result in scanning errors.
Rotated	Checkbox that causes the print to rotate. This works in conjunction with the Label Rotation checkbox.
Label rotation	Checkbox that causes the print to rotate. This works in conjunction with the Rotated checkbox.
Label Width	Field to enter the width of the label (in dots)
Label Height	Field to enter the height of the label (in dots)

Options	Description
Square labels	Checkbox for identifying printing on square labels This box must be selected for square labels, even if you already entered the correct dimensions of the label in the Label Width and Label Height fields.
Test	Button to generate a test print label

If you make printer configuration changes, select **OK** to save or select **Cancel** to undo changes.

29.2.2 Rotated and Label rotation checkboxes

The **Rotated** and **Label rotation** checkboxes work in conjunction with each other to set up the orientation of the barcode on the broth tube label.

Open the Printer Configurations window by selecting **Configuration** from the main window.

These settings also depend on the label positioning setup in the InoqulA Labels Profile Editor. To open this editor, select **System menu > Configuration > Barcode > Edit Profiles**.

Four barcode orientations are possible with the combination of the **Rotated** and **Label rotation** checkboxes:

Neither option is selected

Choose this option for normal printing.

Both options are selected

Prints everything upside down; printing is turned 180° around the label center point.

Choose this option if you want to rotate the print.

Only Rotation is selected

The text and barcode are printed upside down in the original location (are not rotated around the label center point).

Only Label rotation is selected

The barcode is printed normally (the label looks the same as when neither option is selected).

29.3 Custom configurations

This section describes various custom configurations for printing broth tube labels with the Brothtube Label Printer software.

29.3.1 Configuring 22 x 22 mm labels

1. Select **Brothtube Label Printer** on the InoqulA PC, if software is not already open.
2. Select **Configuration** in the main window.
3. Enter the following settings:
   - Left Offset: 10
   - Top Offset: 0

   For Zebra Printers with a “label taken” sensor, enter a Top Offset of 30 when the top of the print is not on the label.

   - Speed: 1
   - Density: 12
   - Rotated: you may or may not select, depending on your preference.
   - Label rotation: you may or may not select, depending on your preference.
   - Label Width: 100
   - Label Height: 100
   - Square labels: select
4. Select **Test** to print a test label.
5. If the test label is satisfactory, select **OK**.

29.3.2 Configuring 10 x 40 mm labels

1. Select **Brothtube Label Printer** on the InoqulA PC, if the software is not already open.
2. Select **Configuration** in the main window.
3. Enter the following settings:
   - Left Offset: 10
   - Top Offset: 0

   For Zebra Printers with a “label taken” sensor, enter a Top Offset of 30 when the top of the print is not on the label.

- Speed: 1
- Density: 12
- Rotated: you may or may not select, depending on your preference.
- Label rotation: you may or may not select, depending on your preference.
- Label Width: 300
- Label Height: 60
- Square labels: **clear**

4. Select **Test** to print a test label.
5. If the test label is satisfactory, select **OK**.

29.3.3 Adjusting print placement

Before making adjustments to the print placement, check the printer configurations.

If the print placement for a particular label is not satisfactory, adjust the left offset setting until you get the desired result. BD does not recommend changing the top offset setting.

It is important to correctly configure labels, because a proper label layout contributes to fewer scan errors in the solution.

Adjusting the print position and designing the labels

To adjust the print position and design the label layout:

- Ensure a desktop label printer has been properly connected and installed.
- Set the printer's default settings.
- Set the printer configuration.
- Adjust the label design with the InoqulA Labels Profile Editor.

If a printer needs to be re-installed, contact BD.

The default settings for density, width, height, and placement of the cutting need to be set before making any other adjustments to the label layout. These settings are set by BD and adjusted to your solution and type of label printer.

Only advanced users or Frontline Support Specialists are allowed to change these settings after installation.

Setting a default density, width and height

On the desktop printer, perform the following steps in order:

1. To set or restore the default settings (four blinks):
   a. Press the green feed button on top until four short blinks occur.
   b. Release the button. It will blink once, then two short times, then three short times and then four short times.
   c. After a short period of time, several labels will be dispensed. Default settings are restored.

2. To set the density (six blinks):
   a. Press the green feed button on top until six short blinks occur.
   b. Release the button.
   c. After a short period of time, several labels will be dispensed and the default density is set.


3. To set the width (five blinks):

   The width is printed in inches and in millimeters on the label, ranging from 24 to 40 mm in 4-mm increments.

   - For a label width of 22 x 22 mm:
     a. Press the green feed button on top until five short blinks occur.
     b. Immediately after releasing the feed button, press the feed button again to choose the first width option. The printer is set to 22 mm width.

> NOTE
>
> If you wait until the first 24 mm label is already dispensed, you have missed the opportunity to set the printer to 22 mm.

   - For a label width of 10 x 40 mm:
     a. Press the green feed button on top until five short blinks occur.
     b. Press the feed button once when you see a printed label with 40 mm. The printer is set to 40 mm width.

4. To calibrate the height (seven blinks):
   a. Press the green feed button on top until seven short blinks occur.
   b. Release the button.
   c. After a short period of time, several labels will be dispensed.

29.3.4 Setting the cutting parameters

These instructions pertain to printers with a cutting option.

1. Select the Y drive.
2. Open the **KLA Tools** folder.
3. Open the **Printer App** folder.

4. Open the **PrintingTest.exe** program. On the InoqulA touchscreen, the window of this program is too large and you must change the screen resolution:
   a. Select **Windows**.
   b. Select **Start** (left bottom corner of the screen).
   c. Select **Control Panel** .
   d. Select **Display**.
   e. Select the **Settings** tab.
   f. Drag the slider to the highest resolution (1,024 x 768 resolution).
5. When finished, restore the original resolution: drag the slider to the lowest resolution (800 x 600 resolution).

Step 1

a. Check if printer configurations are set.
b. Select **TestConfig**.
c. Place the cursor in the field under the testPrint button.
d. Delete any text in the field.
e. Type ‘OC1’ in the empty field.
f. Press **Tab**.
g. Press **Enter**.
h. A pop-up message ‘Printed’ is displayed.
i. On the desktop printer, press the green feed button once. A label is dispensed with the cut just at the bottom of the label (a small portion is cut off).
j. Close the pop-up message.

Step 2

a. Place the cursor in the field under the testPrint button.
b. Delete previous text in the field.
c. Type ‘f085’ (lower case ‘f’) in the empty field.
d. Press **Tab**.
e. Press **Enter**.
f. A pop-up message ‘Printed’ is displayed.
g. On the desktop printer, press the green feed button once. Again, a label is dispensed with the cut just at the bottom of the label (a small portion is cut off). It appears as if nothing changed, however, the cutting parameters have been set for all programs.
h. Close the pop-up message.

29.3.5 Printer configurations

Opening the Printer Configurations window – InoqulA

1. Open the InoqulA software.
2. Select **System Menu > Configuration**.
3. Select the **Barcoding** tab.

4. Select **Config** in the Table Printer section of the window.
5. The Printer Configurations window opens.
6. Enter data as needed.

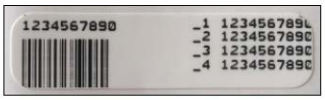
Printer configurations, test label

InoquIA > System Menu > Configuration > Barcoding > Config

Select **Test** to print a test label. When using a printer with cutter, also press the green feed button on top of the printer after selecting Test.

A standard label is printed, as shown in the following example.

> NOTE
>
> The test label barcode is relatively narrow, because it consists of numbers. This results in a small barcode compared to barcodes consisting of letters. Most LI(M)S systems work with numbers and letters, so the final barcodes are wider.



29.3.6 Design the label layout with Label Profiles Editor

When designing the label layout with the Label Profiles Editor, the printer's default settings always need to be configured.

Opening Label Profiles Editor - InoquIA

1. Open the InoquIA software.
2. Select **System Menu > Configuration**.
3. Select the **Barcoding** tab.
4. Configure settings as needed.

Label Profiles Editor, test label

InoquIA > System Menu > Configuration > Barcoding

Select **Print** to print a test label. When using a printer with cutter, also press the green feed button on top of the printer after selecting Print.

The test label is printed with the designed layout; as shown in the following example.

> NOTE
>
> The test label barcode is relatively wide, because it consists of letters. This results in a larger barcode, compared to barcodes consisting of numbers. Most LI(M)S systems work with numbers and letters, so the final barcodes are narrower.

Checking the left margin

InoqulA > System Menu > Configuration > Barcoding

The left margin should measure at least 2.5 mm to prevent scan errors. If the left margin is smaller than this, adjust the printer configuration.

Some information may be too close to the edge or over the right edge of the label. This can be adjusted using the Label Profiles Editor and must be checked with an actual LI(M)S or specimen barcode.

Good: A left margin of at least 2.5 mm.

Not good: A left margin of less than 2.5 mm.

Default label layout: information

InoqulA > System Menu > Configuration > Barcoding

Create a default label layout that can be used for the majority of labels.

> NOTE
>
> The height of the label print should be kept small (8 mm). Otherwise a second label will print to accommodate the entire label content.

The width of the print should result in a right margin of 2.5 mm.

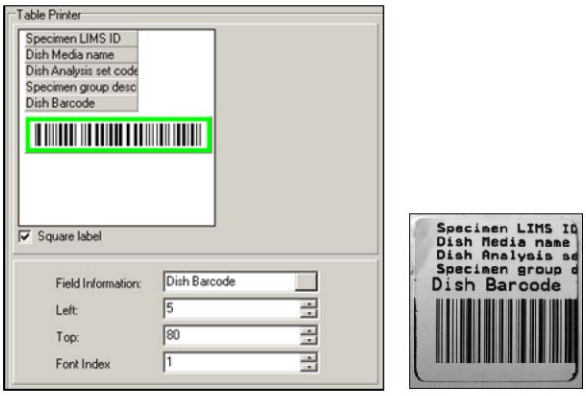
1. Select the **default profile** template in the Profiles List.
2. Select a field to adjust settings. Green indicates selected.
3. Adjust the settings at **Field Information**. The chosen information is presented in the field.
4. Position the fields as described below.
5. Select **Close** to save settings.

Default label layout: positioning fields

InoqulA > System Menu > Configuration > Barcoding

1. Select the template of the label layout that needs to be adjusted in the Profiles List.
2. Select a field to adjust settings. Green indicates selected.
3. Enter the settings as specified in the following tables.

22 x 22 mm label, field positions



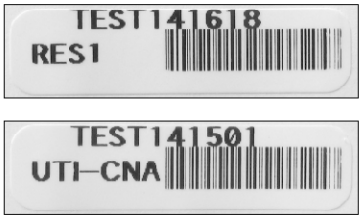
Field	Left	Top	(Font)
1	5	0	(1)
2	5	15	(1)
3	5	30	(1)
4	5	45	(1)
5	5	60	(1 or 2)
Barcode	5	80 (85)	(1)

10 x 40 mm label, field positions

Field	Left	Top	(Font)
1	20	0	(1)
Barcode	0	25	(1)
2	250	0	(1)
3	250	25	(1)
4	250	50	(1)
5	250	75	(1)

Specialty label layout

InoqulA > System Menu > Configuration > Barcoding



One or more specialty labels can be assigned to a certain analysis set or skill (e.g., for quick tests).

> NOTE
>
> The height of the label print should be kept small (8 mm). Otherwise a second label will print to accommodate the entire label content.

The width of the print should result in a right margin of 2.5 mm.

1. Select **Add** to make a new label layout template for the Profiles List.
2. Assign the label layout to an analysis set or skill, using the options under **Dependency**.
3. Select a field to adjust settings. Green indicates selected.
4. Adjust the label, using **Field Information**.

5. To use the predefined options, select from the drop-down menu.
6. To leave a field empty, select **Custom value** and type a space.
7. Adjust the positioning at **Left** and **Top**.
8. Adjust the font size at **Font index**.
9. Select **Close** to save settings.

Removing a field from the label

InoqulA > System Menu > Configuration > Barcoding

1. Select a label layout template from the Profiles List (DO NOT alter the Default profile).
2. Select a field to adjust settings. Green indicates selected.
3. To remove a field, drag the field outside the borders of the labels or enter values at **Left** and **Top** that position the field outside the borders of the label.
4. Select **Close** to save settings.

Skip printing a label (for certain analysis sets or skills)

InoqulA > System Menu > Configuration > Barcoding

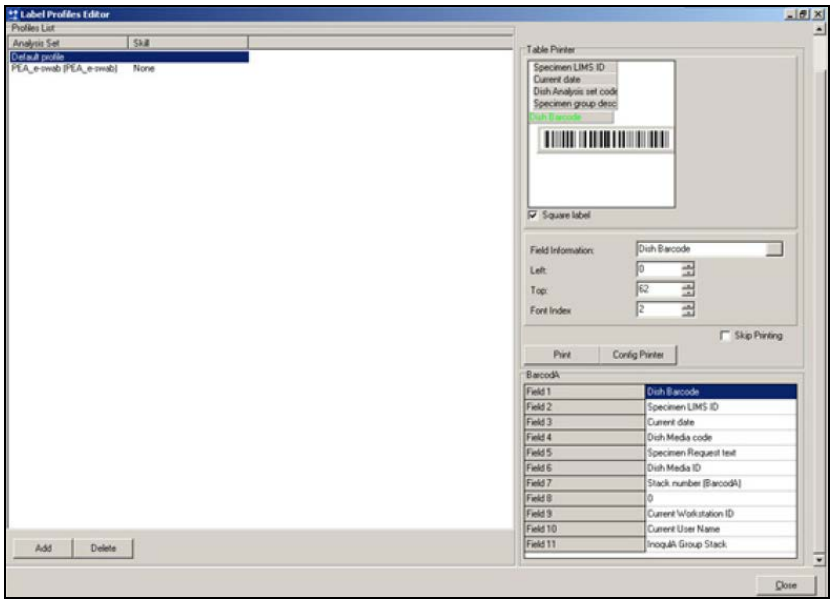
Some analysis sets or skills do not need a printed label. Create a specialty label layout for these analysis sets or skill types.

1. Select **Add** to create a new label layout template for the Profiles List, and assign the label layout to an analysis set or skill, using the options under **Dependency**.
2. Alternatively, you may select a label layout template from the **Profiles List**.
3. Select **Skip printing**.
4. Select **Close** to save settings.

Label Profiles Editor: overview

InoqulA > System Menu > Configuration > Barcoding > Edit Profiles

Example: default label layout



The solution always uses the Default profile for printing labels, unless other profiles are added. Select **Default profile** to see options.

Options	Description
Profiles List	Shows all label profiles (designed layouts). Standard with ‘Default profile’
Add	Button to add a new label profile
Delete	Button to delete a label profile
Copy	Button to copy a label profile
Paste	Button to paste a copied label profile
Dependency	To link a label profile to be used for a certain analysis set or skill
Analysis Set	Shows list of analysis sets to link the label profile to. Options depend on the laboratory’s database. Also see Analysis Set options below.
Skill	Shows list of skills to link the label profile to. Options depend on the laboratory’s database. Also see Skill options below.
Table printer	Shows all desktop label options
(Field 1) Dish barcode text	Field 1. Field of the plate barcode. To select and adjust settings, select once. Actual information to present is chosen at **Field Information**. Positioning is adjusted at **Left** and **Top**. Font size can be adjusted at **Font index.**
Dish barcode image	Field of image of plate barcode. To select and adjust settings, select once.
Field 2	To select and adjust settings, select once. Actual information to present is chosen at **Field Information**. Positioning is adjusted at **Left** and **Top**. Font size can be adjusted at **Font index.**

Options	Description
Field 3	To select and adjust settings, select once. Actual information to present is chosen at **Field Information**. Positioning is adjusted at **Left** and **Top**. Font size can be adjusted at **Font index.**
Field 4	To select and adjust settings, select once. Actual information to present is chosen at **Field Information**. Positioning is adjusted at **Left** and **Top**. Font size can be adjusted at **Font index.**
Field 5	To select and adjust settings, select once. Actual information to present is chosen at **Field Information**. Positioning is adjusted at **Left** and **Top**. Font size can be adjusted at **Font index.**
Square label	Select for 22 x 22 mm label and clear for 10 x 40 mm label.
Barcode type	Always select **Code 128 Auto A, B, C modes** (option not available on InoqulA).
Field Information	To appoint the type of information to a field. Also see Field Information options below.
Left and Top	To change the positioning of the information on the label, measured in points
Font index	To change the size of the font (scale 1 to 3, small to large letters)
Skip printing	Select if certain analysis sets or skills do not need a label. (Only for specialty labels, not for Default profile!)
Print	Dispenses a test label. (When using a printer with cutter, also press the green feed button on top of the printer after selecting Test.)
Config Printer	Leads to Printer Configurations.
BarcodA	Do not alter without consulting BD. Shows all BarcodA label options.

Label Profiles Editor: Analysis set options

InoqulA > System Menu > Configuration > Barcoding

Specialty labels can be assigned to a certain analysis set. Available options depend on the laboratory's database.

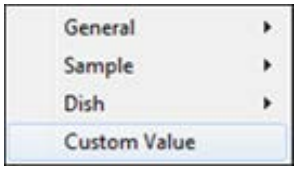
Label Profiles Editor: Skill options

InoqulA > System Menu > Configuration > Barcoding

Specialty labels can be assigned to a certain skill. Available options depend on the laboratory's database.

Label Profiles Editor: Field Information options

InoqulA > System Menu > Configuration > Barcoding



- General: select from a list of options
- Sample: select from a list of options
- Dish: select from a list of options
- Custom Value: type to enter custom information

30 Contacts

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31 Glossary

B

BCC
Biological Containment Cabinet: provides HEPA-filtered air flow within the work area and HEPA-filtered exhaust

BD Synapsys™ Informatics Solution
Laboratory software solution providing data and workflow management functionality across locations where clinical diagnostic activities take place

C

CO2
Carbon dioxide

G

GUI
Graphical User Interface. A type of software display screen that allows users to interact with electronic devices through icons and visual indicators.

H

HEPA
High Efficiency Particulate Air filter

I

InoqulA FA
Submodule for fully automated specimen processing

InoqulA SA
Submodule for semi-automated specimen processing

Instructions for use
Refers to product instructions in printable form (e.g., user's manual PDF) or digital (e.g., online help).

L

LIS
Laboratory Information System. Software that tracks patient and associated test order and result data for clinical laboratories. Depending on its configuration, the LIS can query and be queried, and data can be downloaded from it and uploaded to it.

M

MA
Microaerophile

O

O2
Oxygen, aerobic

Ø2
Without oxygen, anaerobic

P

PLC
Programmable Logic Controller

S

Sample
A specimen that has been prepared for diagnostic testing

Specimen
Biological material obtained from a patient for the purposes of a diagnostic test

U

UPS
Uninterruptible Power Supply

USB
Universal Serial Bus

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