ASP Lab Automation
Automated Sample Processing

SortPro

Specimen Tube Sorter

Automatic registration and sorting of blood specimens

The fully automated SortPro registers and sorts blood specimens. During the entire process each specimen is handled individually and sorted into its corresponding bin. The unit is compatible with all standard lab hardware and software and may be customized in size for any operating conditions.

- Identify blood specimens
- Register in LIS
- Sort into target bins

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SortPro in preanalytics

Features

- Bulk processing of loose tubes
- Handles more than 2,000 specimens/hour
- Fully customizable sorting rules
- Scalable number of target bins
- Gentle specimen handling
- Immediate processing of STAT specimens
- Extensive documentation of all sorting processes

Rapid detection and sorting

SortPro registers and sorts more than 2,000 blood specimens* per hour. The unit processes all standard bar codes and tubes from various suppliers. Once poured loosely into the hopper, the specimen tubes are sorted into target bins. Each tube is photographed in high-resolution. The barcode, cap color and tube type can be determined from the image. Based on this information, the tube is distributed according to stored sorting rules.

Questionable specimens are rejected. Duplicates are recognized and can be handled separately.

Optimized specimen input

Since the number of target bins is fully customizable and the number of units freely scalable, SortPro ensures optimum preanalytic workflow in all settings. In tandem with the high processing speed this minimizes process costs permanently.

Lab operation with SortPro helps prevent bottlenecks in preanalytics and supports the continuum of optimized specimen supply for subsequent steps in the processing chain. SortPro can also supply QM documentation, if needed.

To best utilize this automated processing step in the lab, ASP offers potential customers workflow optimization prior to order.

Simple operation

The integrated touch screen makes SortPro operation quite simple. After selecting the sorting rule, the unit starts automatically by Loading tubes into the hopper and continues to run on its own until all tubes have been processed. The unit stops for unloading and whenever a target bin is full; it then restarts on its own once this bin has been emptied.

Continuous Flow and FIFO and priority for STAT specimens

SortPro operates almost non-stop (continuous flow) with only short breaks for unloading. Specimens may be loaded into

* Impacts due to LIS communication, workflow, barcode readability, sorting criteria and tube mix can reduce processing speed.

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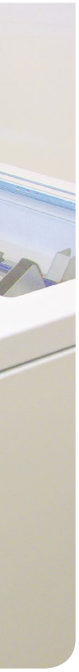


the hopper without having to stop the unit. Specimens loaded first are primarily processed first (FIFO principle). The innovative individualization of the specimens prevents mixing of newly loaded specimens with those already present in the unit. At any time STAT specimens can be placed directly into the priority input area and therefore processed immediately.

Speeded up specimen entry

SortPro handles routine presorting and LIS registration much faster as in manual sorting or with large automated sorters. Thus, SortPro processes peak load workflow in the lab significantly faster and speeds up handling of sustained large specimen volumes.

All specimens are processed as quickly as possible. STAT specimens can be processed by SortPro as soon as they arrive in the lab and are then routed to the special treatment which they require..

Efficient reduction in staff and equipment workload

In the long run specimen handling with SortPro is much less expensive than with staff or large-scale sorters and reduces their workload. This way SortPro releases additional work capacity in qualified staff and large scale automated sorters, thus avoiding the need for substantial investments in employees and expensive equipment.

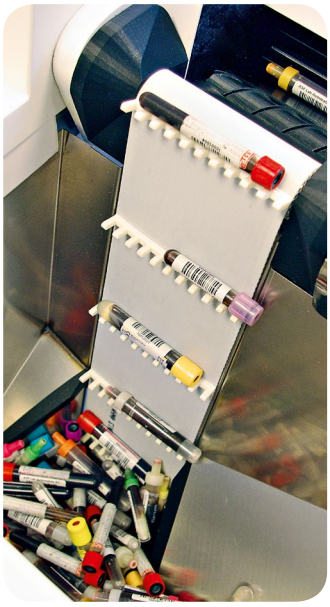
SortPro binds few staff, works basically unattended and informs the users, e.g. by text message, if manual interventions are necessary or output bins are full.

When combined with the faster processing speeds achieved, the reduction in specimen processing costs and staff and/or equipment workload improves efficiency to such an extent that the ROI for SortPro is quickly reached.

Quality assurance and documentation

Even under full load SortPro excels with an accuracy and flawlessness only possible with automated sorters. If so desired, each specimen is registered with a time stamp right after arrival. Full documentation of all process workflows including images of every specimen processed, together with the details of its target assignment is saved by SortPro.

With its minimized error rate, quickest incoming time stamp and extensive documentation SortPro offers real-time quality assurance at the highest level without compromising costs and workflows in the lab. The extensive statistical functions of the device enable analysis of work processes and laboratory utilization.



Lab utility

- Promptly records incoming specimens
- Detects faulty specimens
- Workflow-optimizes specimen sorting
- Reduces staff workload
- Reduces mistakes
- Speeds up turn-around time
- Increases process safety
- Optimizes equipment utilization

SortPro summary

HD-Camera:

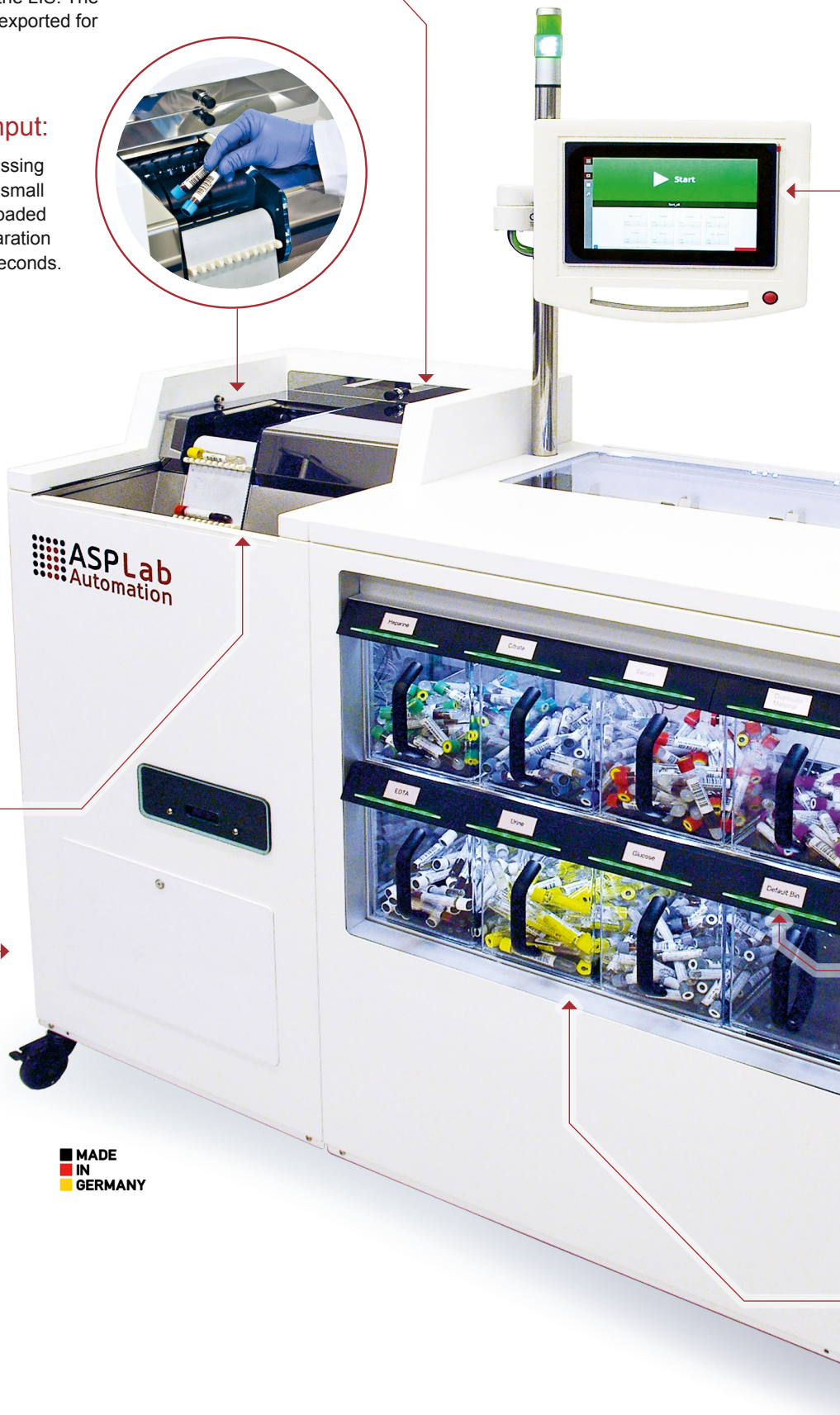
By means of high-speed image processing, each tube is identified with its barcode and optionally also by cap color and tube shape and is registered in the LIS. The image is saved on the device and can be exported for documentation purposes.

Priority Input:

By bypassing the automated processing in the input hopper (see below), small amounts of STAT specimens are loaded directly into the device for rapid separation and processed within seconds.

Specimen hopper:

The funnel-shaped hopper for incoming specimens holds several hundred specimen tubes. It may be loaded on-the run. Each specimen is picked up individually and moved to the identification unit.



Connection panel (back):

The connections for power supply and data communication are sunk. This saves space and reduces the risk of accidents and disruptions.

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Status display:

The information column which is integrated in the device carries the control panel and the status display. Status changes can be indicated by an acoustic alarm signal.

Control panel:

Integrated computer with large touchscreen, ergonomic user interface, database and USB interface for a handheld barcode scanner.

Tube distribution:

The tubes are transported vibration-free to the ejectors and move gentle into the target bins.

Output:

The sorting track may terminate in an optional external default bin or extension module.

Target bin display:

Depending on the sorting rule an e-ink display below each target bin shows which specimens are collected. Red and green LEDs indicate the fililng level of each bin.

Target bins:

In each transparent illuminated bin box its filling level is easily visible and is continuously monitored by the device. Depending on the tube size each bin holds about 150 to 200 tubes.

SortPro is adaptable and easy to implement in any laboratory environment.

▶ Individual configuration

SortPro is available with 6, 8 or 10 target bins inside. With the optional external default bin this allows variable configurations from 6 to 11 target bins.

Prior to order our experts help customers identify the exact number of target bins needed while also considering those factors which could impact the routine lab work only after the unit has been put into service.

The sorting rules are set in advance of the installation of the device and can be edited in the control panel by authorized employees at any time.

▶ Universal and future-proof detector unit

By capturing the tubes with a camera and through innovative image processing, SortPro can safely detect barcodes of any kind, tube shapes and distinguish arbitrarily complex tube spectra. This also allows implementing additional functions through software updates later on.

▶ Small footprint and low power consumption

With a width of 1.17 m (SortPro 6) and depth of 0.6 m (23.6”) the basic unit SortPro is rather compact. Each additional module with two target bins requires an additional width of 0.17 m. Weighing just 120 kg and consuming only 250 VA the unit can be operated without difficulty under any lab conditions.

Software for preanalytic process management

The operation is controlled via the large touchscreen and numerous additional functions are available. Overall, this provides an extremely powerful function package for the lab entrance area.

Graphic user interface

During ongoing operation not only is the central start/stop button displayed, but also all relevant parameters in plain words. The bin allocation is displayed in plain text directly at the target bin. The text depends on the selected sorting rule. The customizable text for sorting rules and bin mapping may be freely edited. If so desired, additional information for controlling the ongoing operation is displayed:

- Number of specimens processed
- Current processing speed
- Materials code and bar code of last specimen

When the sorting routine is interrupted, the unit is stopped, and the screen displays in plain words what to do. Once the intervention has been completed and acknowledged, the unit will continue operation automatically.

Relevant parameters in plain words

- Sorting rule selected
- Bin mapping
- Status of LIS communication
- Current status messages

Administering and editing sorting rules

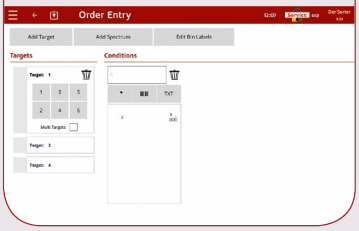
Saved rules may be changed or deleted with the sorting rules editor. New rules may be created from scratch or from copies of already existing rules. The rules may incorporate the following parameters:

- Bar code, full code or any sequence thereof
- materials code (only with TubeIdent option)
- LIS data and target bin mapping

The parameters can be logically linked at will. No programming experience is required because the editor guides the user step by step.

It is possible to create customized terminology for the sorting rules and target bins. The sorting rule to be applied is easily selected immediately before sorting is started.

Instead of materials codes - recognized through the bar code or by cap color identification - the system may display the designation of the materials. These designations are freely customizable.



Create sorting rules based on

- Bar code, full code
- Barcode sequence thereof
- Materials code (optional)
- LIS data
- Target bin mapping

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Documentation and statistics

For each specimen the data identified for sorting and the image of the tube is saved. The comprehensive, yet simple to use search function can filter the data base for individual specimens or entire groups. All events and any malfunction of the unit are also archived. This information can be displayed and filtered according to various criteria at any time.

Comprehensive statistics are kept for the processed specimens. For the counters for each target bin, the default bin and the total of the specimens processed during the current day their programming is set. The user is free to program additional counters for bar code, materials and shorter retrospective observation periods than the entire day. Results are output not only as alphanumeric sums but also displayed as a bar diagram graph by hour intervals.

All data collected are optionally available for backup requirements and external processing.

Data saved for each specimen

- Time stamp
- Target bin
- Bar code
- Sorting rule
- Material

Process management and customer service

Doublet detection and handling

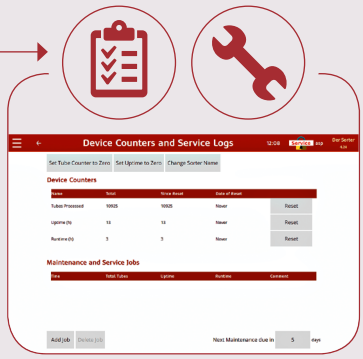
The SortPro benefits package detects and counts the presence of redundant specimens. It can handle these in various ways and shunt redundant specimens to a default bin. If necessary, the second, third and nth specimen can be sorted into different bins.

Access authorization administration

There is a three-tiered access level. Without password users may access standard functions. Those responsible for the equipment will be assigned personal access authorization and may use the functions for configuring designations and rules. All specific settings of the unit and maintenance tools are the exclusively reserved for service personnel.

Maintenance management

Only service personnel may access data on equipment details for service purposes, test routines and service documentation. This data may be used by authorized personnel to view information on the status and history of the unit over its entire life cycle without having to refer to separate documents.



Additional features

- Doublet detection
- Access authorization
- SMS messaging
- Emergency stop
- Maintenance tools

Device models and options

SortPro with 6, 8 or 10 target bins

SortPro is available in three standard versions which only differ in their number of target bins. The unit may be ordered with 6, 8 or 10 target bins inside. With the optional external default bin this allows variable configurations from 5 to 10 target bins.

Basic unit

- 5 – 10 sorting targets
- 1 default bin
- Simple operation
- Compact design
- Sorting based on:
  - Bar code
  - LIS data

Prior to order our experts help customers identify the exact number of target bins needed while also considering those factors which impact on routine lab work only after the unit has been put into service.

The HD camera detector picks up all conventional 1-D barcodes and documents the sample in its condition upon arrival with a high-resolution picture. SortPro can prepare them for further processing and external backup.

The sophisticated new separation mechanism and the recording with the HD camera enables SortPro to process samples much faster than its predecessors while maintaining the same speed of the individual motion sequences. More than 2,000 samples per hour can be sorted without exposing them to greater mechanical stress. This speed puts high demands to the entire laboratory environment. Our technicians will check whether the necessary conditions are fulfilled before finalizing the decision for SortPro.

TubeIdent tube type recognition

An addon-on for the detector unit enables SortPro to distinguish samples by cap color and tube shape. It recognizes 16 million shades of colors, as well as color combinations (tiger caps). The length, thickness and shape of all common types of tubes can be distinguished. This enables even the most complex sorting criteria to be set up and implemented in the device's sorting rules.

External default bin

The external default bin is mounted at the right output of the device which makes an additional target bin to be used for sorting in the device. It holds approx. 100 samples and is easy to empty without interrupting the sorting process in the device.

Handheld scanner

The handheld scanner can be used to inspect or record individual samples quickly without running them to through SortPro's sorting process. The handheld scanner on the SortPro is the quickest connection between a manual sample and the LIS.

PhotoIdent

This software plug-in allows the automated transfer of the tube images from SortPro to the LIS in order to documente the processed samples in the laboratory centrally in the LIS and to archive them.

Stainless steel target bin boxes

The target bin boxes are available also in a stainless steel version heavy mechanical demands. The function of the filling level monitor in the device with status display is also ensured with the stainless steel boxes. Please note the heavier weight of the stainless steel boxes in comparison with the standard plexiglas boxes.

SortPro Message

With the optional cellular phone module (SIM card not included), the unit can send text messages of its current status to alert users who are away from the device. You can set up several phone numbers and select a period of time and content of messages to be sent for each number.

The options

- Sorting based on
  - Tube type
  - Cap color
- Additional target bin
- Manual scanning
- Export images

Services

Workflow analysis parameters

- Machine park
- Space conditions
- Staff structure
- Tube types
- LIS and other IT systems
- Specimen hopper
- Objectives

Workflow consulting by ASP

Fulfilling individual requirements with time-tested strategies

The use of automation devices to optimize the preanalytics is one of many parameters. Consulting ensures that all influences are ideally coordinated ahead of time and the objectives can be met with maximum efficiency. The consulting primarily serves definition and achievement of goals for the automation, selecting the ideal configuration of the devices to be procured, seamless implementation of the new devices in the workflow, and hence ensures the economic success of the change measure.

Consulting services

Workflow analysis

Current and planned workflows are captured and the laboratory is monitored. All workflow-related parameters (question catalog) are documented together with the employees in charge.

Target definition

Optimization targets are developed and defined in cooperation with the employees in charge.

Workflow optimization

Intensive consultation is done during the process for target-oriented optimization of the existing and planned workflows in cooperation with the laboratory workers in charge. Various realization options are discussed. Intense involvement of the employees in the measure achieves success quicker and better.

Sorting target definition

Consultation is done in a targeted manner to meet the needs of each specific laboratory by factoring in the tube spectrum to be processed, including the LIS, other IT solutions connected, special IT or lab routine features, as well as the downstream machine park.

Device and process planning

Requirement-oriented planning of the use of the device (size and quantity depending on throughput, configuration, location, etc.) is adjusted with the resulting changes in the workflows (spatial and/or temporal).

Documentation

The targets and results are summarized in detail and the defined workflows as well as the sorting rules are described. These sorting rules can also be provided to external users, such as LIS providers. If necessary, intensive coordination with the external project participants is carried out also in advance.

The scope of consulting is individually adjusted to the laboratory

Expenses for consulting services depend on laboratory-specific factors and are set in binding terms ahead of time.

Service and maintenance by ASP*

Installation and training

The laboratory-specific sorting rules are programmed during the installation of the new SortPro and, if applicable, the color and shape models for TubeIdent are created. Integration in the laboratory IT (LIS or other systems) is supported and the routine start is accompanied. Finally the laboratory personnel is trained in the use of SortPro and the daily maintenance tasks.

Maintenance

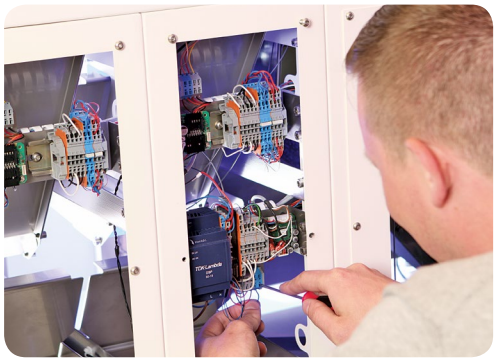
Inspection of all parts and components, adjustment of any device-specific settings if necessary, performance of software updates and replacement on wear parts. The costs of maintenance include travel, time of work in the laboratory as well as the wear parts.

Telephone support

Our technical support will also be glad to help you by telephone over our service hotline.

Adding new tubes for detection (for devices with TubeIdent only)

Creation of additional color and shape models. The samples' color values are determined by the lab personnel (device function) and transmitted to ASP. ASP creates the new color and shape models which are entered by the lab personnel.



Commissioning

- Installation
- Create material codes
- Program sorting rules
- Laboratory IT connection
- Test run
- User training

Service contract

The full-service contract guarantees high availability for the SortPro at plannable conditions. It includes preventive maintenance at least once per year as well as all repairs necessary during the term of contract and updates for color and shape models for TubeIdent on-site in the lab.

The maintenance agreement includes telephone support as well as travel expenses, wear parts and replacement parts. No further expenses will be incurred over the device's entire service life, other than cosmetic repairs, damages caused by operating errors and potentially the creation of additional color and shape models for TubeIdent.

Service contract

- Annual maintenance
- All repairs
- Replacement parts
- Wear parts
- Telephone support
- Travel expenses
- Labor

* The description of technical services is based on ASP offering in Germany. Please check with your distributor for local service offerings.

Technical data

Function

Number of sorting targets	6, 8 or 10 sorting bins + 1 extra bin, depending on configuration
Capacity input hopper	Approx. 600 tubes
Target bins	Capacity 150 to 200 tubes, dependent on sample size Filling level monitoring and display (green / red) E-Ink Display, text freely programmable, individual for each sorting rule
Processing speed	More than 2,000 tubes per hour, dependent on IT environment
Priority Input	Urgent samples are processed immediately without interrupting ongoing operations
Operating unit	10” touchscreen with color display
Sorting criteria	Barcode Patient request (LIS) Cap color (optional) Tube type (optional)
Permitted tube sizes	All common cylindrical tubes typically used in clinical labs Length (incl. cap): 70 – 120 mm Diameter: 8 mm – 19 mm (with cap)
Barcode	1D up to 16 digits (2D upon request) Code 128, Codabar, Code 39/93, UPC A, Interleaved 2 of 5, EAN-13, Code 2 of 5, GS 1 DataBar Omnidirectional/ Expanded/ Limited
Documentation and statistics	Saving complete sorting logs incl. image of each sample, statistical evaluations, maintenance management and service protocols

Specification

Dimensions W x H x D	1,117 x 1,852 x 601 mm for 6 sorting bins For each 2 extra sorting bins + 170 mm, external bin + 159 mm
Weight	Ca. 120 kg for a 6 bin instrument
Noise level (ISO 6081)	< 54 dB(A)
Supply voltage	100 – 230 V / 50 – 60 Hz
Power consumption	250 VA
Sorting rule interface	USB memory interface, e.g. USB flash drive
LIS interface	Ethernet / RJ45; ASTM protocol

Optional equipment

TubeIdent	Sorting via cap color and tube type identification
Handheld scanner	Easy detection and testing of manually processed specimen
External default bin	1 additional bin to collect non-sorted specimen, attached to the right side of the instrument, width: 130 mm
PhotoIdent	Software plug-in for exporting tube images to the LIS

The illustrations in this data sheet may show optional equipment and pre-production devices.

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Efficient Lab Solutions

ASP is your professional partner for efficient specimen handling in the Pre- and Post-Analytical stages in clinical labs. We deliver the automation and expertise to improve our clients’ processes and throughput in the most cost efficient way.

SortPro 4.1 (en)