

Datalogic traceability solutions for lab automation and medical device manufacturing





Introduction

The COVID-19 outbreak has forced companies to go above and beyond their normal efforts to respond to market requests and customer needs. Healthcare is one clear example of this situation, where market pressures have become demanding and customer needs have risen to new heights. Specifically, these effects are being felt at healthcare laboratories and Personal Protective Equipment (PPE) manufacturers.

Clinical and life science laboratories perform pathology tests on clinical specimens. Researching information about a patient's health to aid in diagnosis, treatment, and prevention of has never been such a crucial function as it is now in the fight against the pandemic. The exact identification of vials, bottles, pipettes containing samples throughout the lab process flow is essential.

Errors such as vial mismatch, wrong assignments, wrong labeling or erroneous positioning can have severe consequences and must be avoided at all costs. Precise traceability must be assured in every analysis phase – sample reception, sample preparation, enrichment, media preparation, sample processing, incubation, counting and screening, results collection, reporting, archiving. Now, as the volume of samples to be processed and the internal pressure increase, the risk of making serious mistakes rises significantly.

Companies that manufacture PPE products including disposable medical devices, face masks, gloves, protective clothing and goggles are also under extreme stress. These enterprises are working to maximize productivity while keeping cost under control. Simultaneously they strive to avoid errors that could slow down production.

Datalogic has an extensive line of products that can support both healthcare categories with automatic data capture devices such as handheld scanners, mobile computers and industrial scanners. These devices specifically help companies increase process efficiency, streamline task execution, and reduce the risk of critical errors. This document will focus on analysis laboratories and companies that product disposable medical equipment.



ANALYSIS LABORATORIES



According to Kiestra Lab Automation¹, the error reduction estimate using barcoding in place of manually written labels is amazingly high. Written labels on average have one error per 300 characters/digits; barcoding on average has one error per 36 trillion characters/digits.

The reliability and error prevention of barcoding technology make it the obvious choice for application everywhere in laboratories for identification and tracking of samples, petri-dishes, enrichment tubes, Ready-To-Use (RTU) plates, Agar pots, and disposable items.

Barcoding should also be used for technician identification: logging in or out, when entering or leaving the facility; access to higher security areas and warehouse; identification during special tasks execution; recording media-fill and more.

There are three main areas where barcode tracking technology is particularly effective:

1. Lab sample analysis phases
2. Inside analysis machines
3. Warehouse management

1. Lab sample analysis phases

Datalogic has several products families, including some specifically designed for healthcare, that target applications for data capture and traceability throughout the entire lab analysis process.



- **Handheld scanners for healthcare**

Handheld barcode scanners can be used by staff to read barcodes throughout lab sample. There are distinctive features of these products that specifically increase the safety of patients and staff members:

Disinfectant-ready plastic enclosure that is resistant to harsh chemical cleaning to kill germs on the surface of the device.

¹ <http://www.aoceurope.com/2005/tres.pdf>



Anti-microbial plastic treated with biocide additives inhibiting germs and bacteria growth, with reduced risk of contamination spreading (Gryphon™ and RIDA™ HC handheld scanners).

Wireless charging technology eliminating the main failure point of cordless devices: oxidized charging contacts. Moreover, having no contacts means no receptacles for dust accumulation and microbial growth, greater reliability, longer device lifetime, and lower total cost of ownership due to fewer failures.

- **Mobile PDAs**

PDAs are essential devices for the proper execution of the numerous mobile computing activities in the daily medical activities like data acquisition, processing and transmission to the hospital EMR system. The Datalogic family of mobile computers offer specific characteristics that simplify medical operations.

All Memor™ series are **Android™ based, sealed devices, gloves operable, with wireless charging and warm-swap removable battery**. These devices have world class scanning performance and include the same great advantages of handheld scanners. The healthcare PDA models feature **disinfectant-ready enclosure** resistant to harsh chemical cleaning.

Another very useful feature is the **2nd top display** for hands free message reading. This is a great advantage for operators with gloves, in laminar flow hoods, and other difficult environments.



2. Inside analysis machines

In machines for automated analysis of specimens, fixed readers are used to identify vials automatically. Analysis machines are usually compact, making the available space inside very limited. In these machines, the first need is **compactness**. Barcode readers must be compact in order to fit the mechanical mounting requirements.

Another important requirement is a **wide Field-of-View (FoV) at close reading distance**: linear bar codes on vials are usually quite long as they need to contain a large amount of information. It is essential to have readers covering a wide FoV even when installed in proximity of the vials.



Datalogic meets all these needs offering a value product line with DSM Fixed Scan Module, and premium product line with Matrix™ 120. Both the product lines are available with Wide Angle optical for Wide FoV coverage at close reading distance.



3. In warehouse management

Traceability for laboratories goes beyond sample tracking. Every laboratory includes a warehouse where reagents, chemicals and consumable materials are stored. Each of these items must be properly identified, stored, retrieved, and tracked. Traceability of these consumable items is fundamental in the laboratory warehouse to ensure the correct use of these products for specific tests and to ensure efficient operation. Usually, 1D or 2D barcodes are applied on consumable materials to speed up item identification and avoid potential errors. Operators can choose either traditional handheld barcode readers such as the Gryphon™ series connected to the lab PC or an industrial mobile computer like Memorex™ 10 or Memorex 20 running the laboratory software application directly on the device.

PRODUCTION OF DISPOSABLE MEDICAL EQUIPMENT

Disposable medical items such as hypodermic needles, syringes, applicators, bandages, wraps, drug tests, exam gowns, face masks, gloves, suction catheters, surgical sponges and other do not need individual item level traceability. These items are normally tracked at the batch level by manufacturers and their customers. Tracking barcodes are added in secondary packaging and the goal for manufacturers is maximizing productivity and minimizing costs.

Datalogic offers products in two areas:

1. Secondary packaging/end-of-line
2. Intralogistics

1. Secondary packaging/end-of-line

Once produced, items are usually bundled and packaged together. On the secondary package, barcodes are usually applied for traceability purposes.

The Datalogic devices that fit this process perfectly:



- **Matrix™ 120**

Ideal for Print & Apply applications, since it can be mounted directly on the label applicator. Unlike laser based readers, the Matrix™ 120 does not have any moving parts. Therefore, it is intrinsically more robust, especially when mounted on moving arm as in the case of label applicators.



- **Matrix™ 300N**

When it is not possible to mount the reader directly onto the label applicator, the Matrix™ 300N is the ideal solution for barcode reading on conveyors delivering 360° label reading over a wide area at a very affordable price.

2. Intralogistics

Stocking goods and order fulfillment are crucial phases which are usually managed by people. Workers are requested to handle finished goods and prepare shipping orders in an extremely efficient way to maximize the number of daily shipments and minimize potential delays that could affect the efficiency of the entire supply chain. For intralogistics Datalogic offers a wide range of products to support operators in their daily activities including:



- **Handheld scanners**

The PowerScan™ series is the best answer for quick and reliable handling and shipping. Particularly useful is the auto-range model that allows operators to scan bar codes at far distances such as when pallets are stored on the upper deck of shelves.

- **Mobile computers**

Datalogic has a complete portfolio of solutions ranging that include portable mobile computers with or without physical keyboards and vehicle mounted computers which can be integrated directly onto forklifts to support the activities of operators.

- ***Stationary industrial scanners***

These devices enable hands-free scanning allowing operators to handle boxes with both hands and to present the barcode to the scanner. In this way, the item identification is carried out with no need to touch any scanning device at all.

Conclusions

The benefits of sample tracking with barcode technology in laboratories operations with Laboratory Information Management Systems (LIMS) include: automated activities of process data, reduced manual labor, significant error reduction, full traceability in every phase, easier documentation and certification.

Clearly there are many excellent reasons to adopt barcode technology for laboratory applications. If sample testing volumes increase considerably due to the pandemic, it will be vital to update and improve lab traceability systems with the latest high-quality products and solutions.

Regarding production of disposable medical equipment, automatic data capture enhancements assist in maximizing personnel productivity, improving efficiency in intralogistics processes, reducing order fulfillment and handling errors, while keeping cost under control.

To learn more about the products mentioned in this document, please click and consult the relative pages on our website.

[Gryphon™ 4500](#)

[RIDA™ Healthcare](#)

[Memor™ 10](#)

[Memor™ 20](#)

[Matrix™ 120](#)

[Matrix™ 300N](#)

[DSM04XX™ Fixed Scan](#)

[PowerScan™ 95X1 Auto Range Series](#)





About Datalogic

Datalogic is a global technology leader in the automatic data capture and factory automation markets. We offer manufacturers in the automotive industry identification devices, vision systems and sensors. Our technology detects object presence, safeguards workers with light curtains, assures product quality with vision sensors, and identifies items using laser marking. Process and product traceability are assured by fixed industrial and handheld bar code readers, scanners, and mobile computers that track items through the manufacturing process and on to distribution.

Datalogic and the Datalogic logo are registered trademarks of Datalogic S.p.A. in many countries, including the U.S.A. and the E.U. All other trademarks are the property of their respective owners

For more information visit www.datalogic.com.

©2020 Datalogic. All rights reserved.