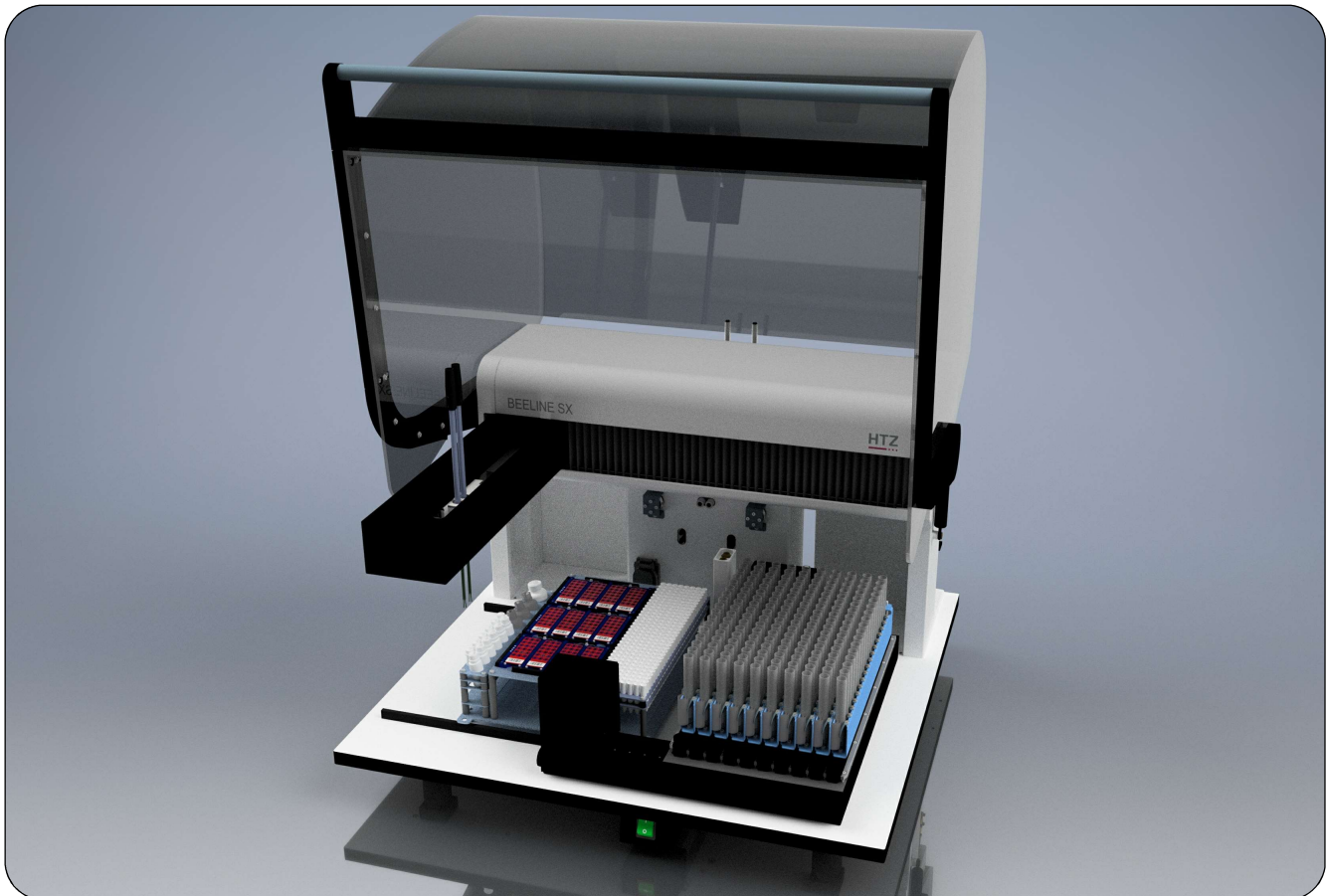


BEELINE 320_{SX}



High-throughput, medium-capacity automated IFA system



- 160 sample capacity
- 12 slide capacity
- 250 dilution tube capacity
- Automated ID for samples and slides (1D or 2D)
- Twin-probe, twin-syringe option for high-speed processing
- Comprehensive data logging
- Proven liquid handling technology
- Flexible LIS interface options
- Interfaces to automated microscopes
- Robust and reliable

* Such as Image Navigator® from Immunoconcepts

INTRODUCTION

The Beeline 320 sx is a highly flexible instrument designed specifically for the automation of IFA and ELISA assays.

It extends the already comprehensive range of IFA automated systems from HTZ and caters for the laboratory needing to process small to medium batch sizes.



Linear barcode reader acquiring barcodes from slides

The main tasks automated are:

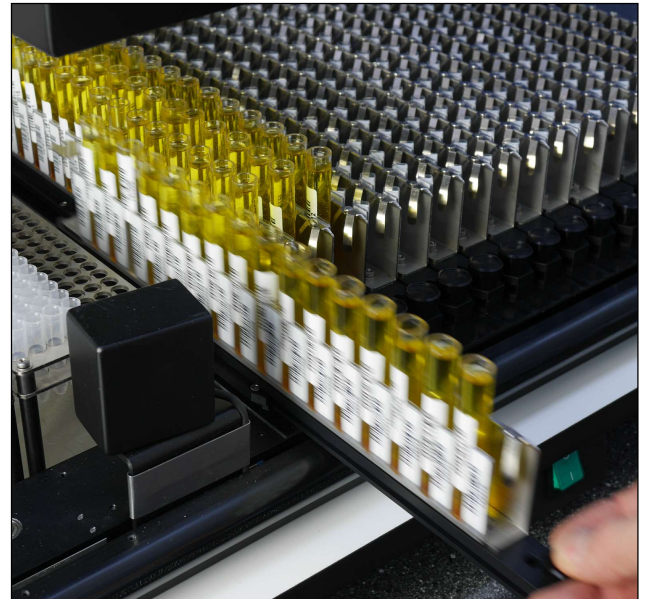
- Sample and slide barcode identification (1D/2D)
- Sample dilution and pipetting
- Timed incubation
- Slide washing
- Reagent addition

The Beeline 320sx provides the highest levels of performance and consistency of results. These features, combined with its integrated positive ID and two-way interfacing capability, make the instrument indispensable for any laboratory wishing to take its IFA automation to the next level.

TWIN PROBE TWIN PUMP OPTION

The Beeline 320sx can incorporate up to two independent, dual-nozzle probes. This configuration provides all the speed required to process the sample capacity of the instrument yet keeps the hardware complexity and running costs to a

** Depends on the rack layout used*



Barcode reader acquiring 1D barcodes from sample tubes minimum.

Pipetting needles can be internally coated* with ceramic to help minimise the possibility of cross contamination and avoids the need for disposable tips.

TOTAL SECURITY

The Beeline 320sx reads barcodes on both sample tubes and slides, providing a secure link between the sample and the corresponding wells on the prepared slides. The acquired IDs can then be readily output in electronic or printed reports.

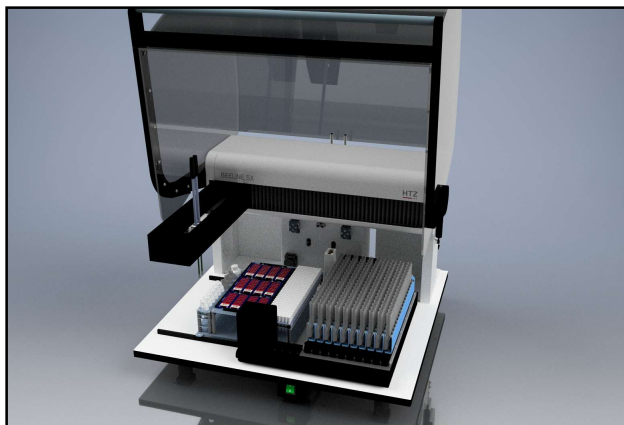
The integrated arm-mounted barcode reader makes the identification process of slides fully automatic and independent of the sample loading process. The reader is capable of reading both one dimensional and two-dimensional barcodes.



Dual nozzle probe aspirating sample

PRECISION PIPETTING AND WASHING

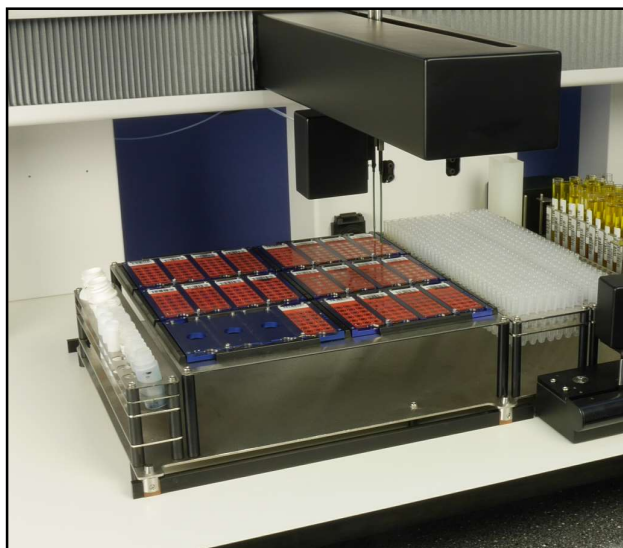
The Beeline 320 sx incorporates HTZ's precision liquid-handling technology. At the heart of this system are two high-resolution syringe pumps designed to give years of trouble-free pipetting performance.



Beeline 320sx with Security Shield raised

Washing of slides or microplates, is performed using a pulse-free and rapid vacuum-based aspiration system. As well as providing high-throughput this helps to provide effective aspiration of liquid from the substrate.

A number of different washing modes are available to suit either slides or microplate wells depending on the type of assay being processed. Washing is performed on a well-by-well basis to minimise the risk of cross contamination and to maximise the level of control.



Example of rack types (from left to right) : Reagent/Control, Slide and Dilution tube racks. Note that Beeline 500 shown in this picture

PROCESSING SPEED

As an example of the typical throughput achieved on the Beeline 320 sx a batch of 150 samples (100 HEp-2 and 50 ANCA samples) can be processed in around 130 minutes

ADAPTABLE DECK

The Beeline 320sx comes supplied with a set of precision-engineered racks designed to accommodate the most commonly used consumables in your lab. Manufactured from stainless steel and aluminium, the racks supplied are selected to match your current requirements. However, the deck layout can be readily adapted to meet any new requirements that might arise in the future.

Racks are all removable but readily and positively relocated on sturdy rack-locating pins.

VERSATILITY IN DILUTIONS

The Beeline 320sx offers unsurpassed flexibility and accuracy in the preparation of dilutions. This critical step is probably one of the most important reasons why labs choose to automate IFA and autoimmune ELISAs.

Primary and serial dilutions are prepared in either 1.2ml dilution tubes, or microplates, or both depending on the rack layout supplied. An intelligent algorithm is used to prepare dilutions accurately and with the minimum number of tubes required for the dilutions selected in the Worklist.

FLEXIBLE APPLICATIONS SOFTWARE

CCX, our dedicated IFA applications software, is at the heart of all Beeline IFA platforms and makes setting up and performing IFA and ELISA tests easier than ever before.

CCX, which has now been enhanced to cater for Twin probe processing, gives improved ease of use, greater flexibility and incorporates HTZ's vast experience and knowledge gained from being a leading supplier of IFA automation for over 15 years.

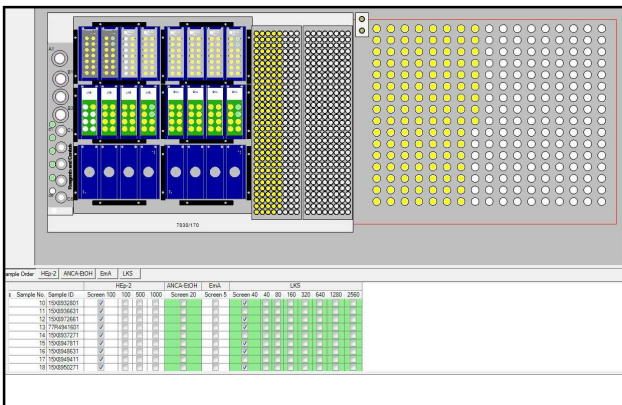
GRAPHICAL WORKLIST ENTRY

The CCX Worklist generator display shows the user the slides and wells required as the test requests are entered (or imported) into a worklist, making it easy to make optimal use of slides. Other key features include:

- Multiple test profiles easy to set up
- Automatic allocation of reagent and control positions
- Flexible Worklist Import and Export facility
- Up to 8 tests can be combined within a Profile

FLEXIBLE CONTROL DISPENSING

Controls can be presented either ready diluted or undiluted. A variety of processing options allows you to dispense them at fixed positions on every slide or just the first slide in a batch. Furthermore, when creating a Worklist, additional controls can be inserted wherever you want them.



Worklist entry (Beeline 500 shown) showing slide locations

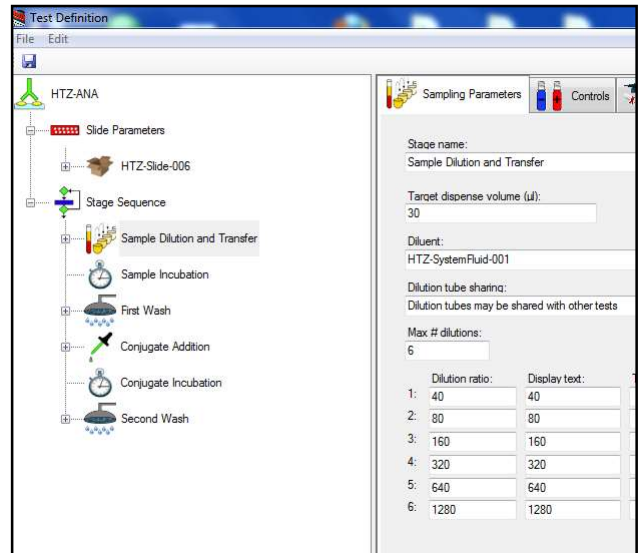
REAL TIME PROCESSING INFORMATION

Enhanced graphics now make running a batch on a Beeline even easier than before. An accurate on-screen representation of the deck shows the operator, step by step, what reagents and consumables to load and where to place them. During processing, the display shows the progress of the batch during all stages of the test, and any errors encountered, such as insufficient sample, are both displayed and recorded in log files for subsequent reporting.

EASY TEST DEFINITION SET-UP

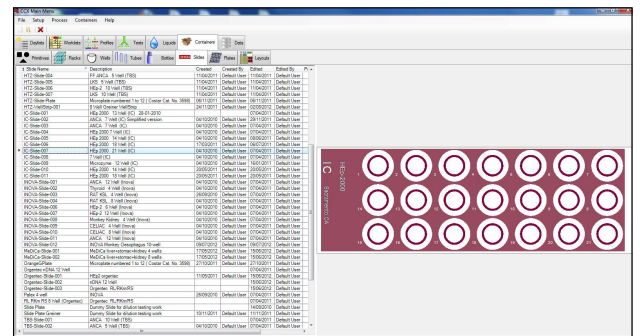
Setting up new Tests and combining Tests into “Test Profiles” can now be performed very easily and with a minimum of data entry. Some of the new features available during CCX Test Definition include:

- Dilution volumes calculated automatically from specified dilution ratio
- “Intelligent” dilution algorithm calculates the most efficient way of performing selected dilutions
- Full on-line help description available for all parameters
- “Stage Sequencer” allows flexible ordering of Test steps



Screen display from Test Definition process showing Stage

Test profiles can be based on either single or multiple tests.



Screen showing list of predefined slides

SLIDES, TUBES AND BOTTLES PREDEFINED

A library of the most commonly used consumable “definitions” is provided. The majority of slides, racks, tubes, bottles and slides are pre-defined and supplied in the CCX databases. This enables a rapid instrument setup and makes it easy to add tests in the future with a minimum of calibration.

Any new slides or containers not catered for can be readily programmed within the CCX software, thus ensuring all of your future requirements can also be accommodated.

BI-DIRECTIONAL INTERFACING

CCX incorporates a flexible import/export module which facilitates interfacing the Beeline 320 sx to LIS systems, image acquisition systems, and ELISA readers. Standard file formats supported include XML and CSV.

An interface for Image Navigator[®] is available.

RANDOM SAMPLE LOADING OPTION

The use of barcodes allows samples to be loaded in a random sequence that is independent of that in the Worklist. This is particularly useful when Worklist data has been downloaded from an external source and where the sequence of samples in the racks is not guaranteed to be the same.

CUSTOMISABLE PRINTED REPORTS

For those who need to have paper documents CCX incorporates a very flexible and programmable report generator that allows you to create customised printed reports.

Reports can include graphics eg the laboratory logo and can be printed or saved as electronic versions.

INTEGRATED SELF-TEST DIAGNOSTICS

The Beeline 320sx incorporates both diagnostics and performance-checking applications to monitor the performance of the most critical instrument functions. A record of the results

is created to enable any changes to be monitored easily.

OPTIONAL MODULES

A number of additional options are available to enhance the flexibility of the instrument further, including:

- Two-way system fluid/diluent selector valve for automatic switching of diluents
- Self-emptying waste system
- Peristaltic Waste pump
- Twin Probe/Twin Syringe option
- Internally coated ceramic probes

RELIABLE AND COST-EFFECTIVE

Over 600 Beeline IFA platforms have been placed worldwide and have a proven track record of being both reliable and extremely cost-effective.

The 320sx now offers the same true “workhorse “ approach in a configuration suitable for the busiest of laboratories so if you are in the market to take your automation capacity to the next level then why not take a closer look and contact your local HTZ representative for a demonstration.



Twin Probe Processing (showing Beeline 500sx)

BEELINE 320 sx SPECIFICATIONS

Software requirements

Operating System: Windows 7 or 10
English Language version recommended

Minimum computer requirements

Dual-Core Processor >2Ghz, 4GB RAM, Sound Card
Monitor (>1280 x1024 resolution)

Instrument external dimensions (allowing for cover opening)

735mm(W) x 773mm(D) x 673 (H) cover down
968mm(H) cover up

Dimensions packed

Size of crate 100cm x 96cm x 93cm
Weight (packed) 160 Kg

Weight unpacked and on bench

65Kg

Probe working area

X= 520mm Y=320mm

Pumping system

HTZ high-resolution syringe pump
Full stroke of syringe = 20,000 steps
Syringe volume 1000µl

Precision

< 5% C.V. @ 5µl
<1% C.V @ 100µl

Chemical compatibility of fluid path

All valves, syringes and tubing are manufactured from glass or PTFE-based materials or fluorinated polymers for total chemical resistance (except HF and HF compounds).

Power requirement

110 to 240 volts, AC single phase 50 or 60 Hz

Power consumption

500 Watts max (average consumption 100-200 Watts)

Sample capacity

160 (18 x16 position racks) with automated read on load
Diameter (10mm to 16mm)

Minimum Detectable Sample Volume

50µl (depends on tube size)

Dilution tube capacity

250 (1.4ml) dilution tubes

Slide capacity

12 Slides

ELISA microplate capacity

3 Microplates

1D barcode reader (Sample ID Rack)

Symbologies - All common types catered for including,
Interleaved 2 of 5, Code 128 etc.

Minimum bar width = 0.15mm

Minimum white space either side of code = 2mm

2D barcode reader (Arm mounted)

Symbologies - All common types catered for including
Code39, Interleaved 2 of 5, Code 128 etc.

Minimum bar width = 0.15mm

Minimum white space either side of code = 2mm

Bidirectional Communications

ASCII or XML

ORDER CODES

BEELINE 320sx with 10 x16 sample tube racks

Combination rack

(Reagents, Controls, Plate/Slide carriers and
dilution tubes) compatible 7030/202

CCX3 Software for IFA and ELISA

SFT 1202D

Dilution tubes (strips of 8 - pack of 1000 tubes) 2685/013

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