Laboratory Automation Products

Automated Liquid Handling Systems

SOLO™ Liquid Handler
page 2

Magnetic Bead Station
page 3

Rapid Wash™ Microplate Washer
page 3

Micro10x™ Reagent Dispenser
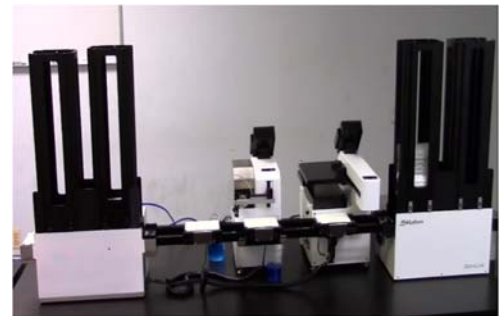page 4

FilterPress™ Extraction System
page 5

Microplate Handling

Robotic Arms
page 6

PA1000 Barcode Labeler
page 7

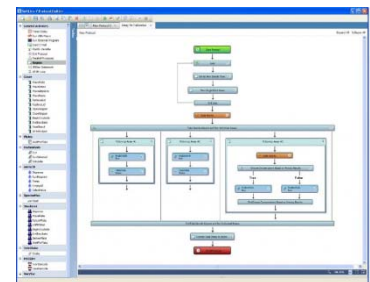**LabLinx™ Microplate Stacking System**
page 7

Colony picking

RapidPick™ Colony Pickers
page 8

pH Meters

Rapid_pH™ Automated pH Meters
page 9

Software

SoftLinx™ Laboratory Automation Software
page 10

➔ **Automating Synthetic Biology:** see page 11

➔ **ARI** Art Robbins Instruments **Art Robbins Instruments product overview:** see page 12

SOLO™ Liquid Handler

SOLO™ features:

- Can do everything a hand-held pipettor can do.
- Ideal for Serial Dilutions, ELISA Assays, Next Generation Sequencing Prep, Gene Assembly, DNA Extraction and Normalization, and Kinase Assays Hit Picking.
- Single, eight or twelve channel pipetting head.
- Pipette head can be changed during a protocol to allow maximum flexibility.
- Multi-channel pipette heads can also dispense with a single tip.
- Single tip device dispenses 1 µl to 10 ml with a CV better than 3 %, multi-channel systems dispense 1 µl to 1000 µl.
- Volumes larger than 200 µl are dispensed with a CV better than 0.5 %.
- Dispenses contact free above the well, by tip touch-off, or can mix samples.
- Equipped with 4 to 12 deck positions – standard configuration is 6 positions.
- Left or right rail extension possible to enable the pipetting arm to interact with other instruments such as the FilterPress™ (see page 5).
- Compatible with 8-, 24-, 96-, 384- and 1536-well plates in SLAS/ANSI format
- Accommodates tubes and vials in nearly any format.
- Compact footprint allows to place the SOLO into most biological safety cabinets, anaerobic chambers and fume hoods (all cabinets also available through Dunn Labortechnik).
- Easy to use SOLOSoft control software for programming pipette steps.
- Optional use of SoftLinx™ laboratory automation software offers integration of over 200 instruments from different manufacturers (see page 10).
- Easily adjustable for special and customized applications.
- Can be operated manually, but is also compatible with robotic arms such as PlateCrane™ EX or SciClops™ (see page 6).
- Plate stacker upgrade possible at any time.
- Integration of a wide range of accessories and instruments possible, such as with Magnetic Bead Station (see next page), heating and cooling systems, shakers, incubators and automated centrifuges.
- Size for 6 position standard system: (w x d x h): 53.34 x 53.34 x 55.88 cm, 27 kg
- RS-232 computer interface.
- CE-certified.

Magnetic Bead Station
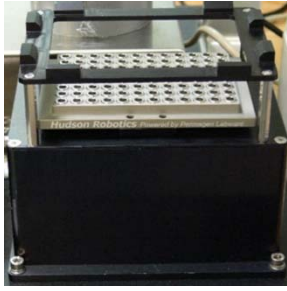
**Magnetic Bead Station
loaded with plate**
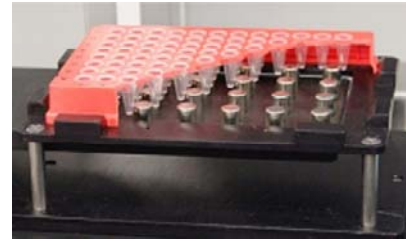
**Magnetic Bead Station
loaded with tubes, cross-section**

Magnetic Bead Station features:

- Automating magnetic bead separation by raising or lowering a strong built-in magnet against the bottom of a standard or deep-well plate.
- The station can be used with the SOLO™ Liquid Handler (see page 2),
  but is also compatible with instruments from other manufacturers such as Hamilton or Tecan.
- Raising the magnet immobilizes the magnetic beads around the circumference of the wells,
  leaving a clear zone in the centre of the wells to allow the SOLO™ Liquid Handler
  to aspirate and dispense.
- Lowering the magnet allows the magnetic particles to be mixed by re-pipetting with the SOLO™.
- Compatible with commercially available protocols for magnetic bead separation.
- Separation can be done as semi- or fully automated process in 24-, 96- or 384-well plates.
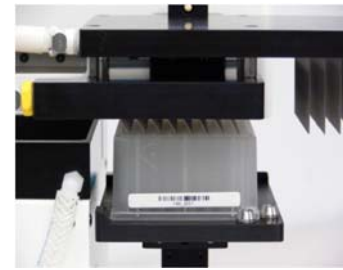- CE-certified.

RapidWash™ Microplate Washer

**RapidWash™ Microplate Washer
(side)**

**RapidWash™ Microplate Washer
(front)**

**RapidWash™ Microplate Washer
(detailed view of needle head)**

RapidWash™ features:

- High-speed microplate washer for 96- and 384-well plates (low, standard and deep-well).
- Available with 96 or 192 needle head, Needle heads are exchangeable.
- Functions as stand-alone device or can be integrated into automation processes with other instruments.
- Ideal for ELISA, FIA, LIA, Cytotoxicity or Agglutination Assays.
- Low residual volume of < 2 µl per well.
- Dispensing and aspiration rates are programmable.
- Up to two wash buffer sources, which are selectable automatically.
- High dispense precision with CV better than 2 % for 100 µl/well (below 5 µl CV is better than 5 %).
- High speed with less than 9 seconds to fill or aspirate a 96-well plate.
- Easy software integration with other instruments.
- CE-certified.
- Specifications:
  - Size (w x d x h): 28,19 x 38.1 x 31.24 cm
  - Air supply: 40 to 80 psi (2.76 to 5.52 bar)
  - Vacuum: -25 in Hg (minimum); 1.2 SCFM

Micro10x™ Robotic Reagent Dispenser

Typical dispense times for an entire plate*:

- 96 well plate with 100 µl per well in 15 seconds
- 96 well plate with 25 µl per well in 9 seconds
- 384 well plate with 25 µl per well in 24 seconds
- 384 well plate with 10 µl per well in 18 seconds
- 1536 well plate with 5 µl per well in 63 seconds

* = Using 12-nozzle manifold, 50 % pump speed]

Micro10x™ features:

- Accurately dispenses liquids in volumes down to microliter range.
- Available with 8 or 12 needles to quickly fill microplates.
- Tip touch-off ensures a clean dispense of high surface-tension fluids.
- Fills 96-, 384- and 1536-well plates in SLAS/ANSI format up to 55 mm in height.
- Positive displacement pump head is adjustable in increments of 10 nl and requires no calibration.
- Dispenses an entire 96-well plate in 15 seconds (100 µl/well) or a 384-well plate in 24 seconds (25 µl/well).
- Dispenses volumes 3 - 5 µl below 5 % CV, 5 µl and up below 3 % CV.
- Autoclavable fluid path assures sterility.
- Pump is available in two different sizes (29 or 44 litres) to maximize accuracy at low and high volumes.
- Reversible pump for emptying the fluid paths.
- Optionally upgradeable valving for up to 10 bottles of reagents, buffers, culture media or solvents.
- Compatible with LabLinx™ high-performance track-based microplate handling (see page 7) and with over 200 lab instruments made by other manufacturers.
- Touch-Screen programming with graphical image row selection to control dispense pattern.
- Up to 20 dispense programmes and 10 priming programmes stored internally.
- Priming is needed to prefill the pump and tubing with liquid.
- Full RS-232 external control capability for easy integration into robotic systems.
- Dimensions (w x d x h): 17.8 x 25.7 x 40.1 cm

Applications:

- Ideal to use for ELISA applications adding conjugate and stop solutions.
- Rapidly dispenses fresh growth media into culture plates for cell-based assays.
- Can dispense live cells into culture plates.
- Handles difficult-to-dispense substances such as silicon oil to preserve PCR reaction mixes.

FilterPress™ DNA and RNA Extraction

**FilterPress™ combined with
Micro10x™ Robotic Reagent Dispenser**

FilterPress™ features:

- Alternative tool to vacuum manifolds, magnetic beads and centrifuges
  for the separation of a variety of materials.
- Main applications are DNA, RNA, plasmid and protein extraction and
  solid-phase extractions.
- Upper position supports wide range of filter or spin plates and SPE columns
  (height from 2.54 up to 8.89 cm).
- Lower position is compatible with any plate in SLAS/ANSI format or can be left empty
  as a waste station (height from 1 cm up to 5.08 cm if not left empty).
- Both positions of the FilterPress™ are accessible to the SOLO™ Liquid Handler (see page 2)
  or a robotic arm such as the *PlateCrane EX™* (see page 6), but can also be loaded manually.
- Temperature and air pressure are controlled automatically by the software.
- Combination with the Micro10x™ reagent dispenser (see page 4)
  to fill the upper position is possible.
- Available with optional heated air source (20 °C to 100 °C)
  → Please enquire for further information.
- Operating temperature: Ambient to 100 °C (only with heater option).
- Optional use of SoftLinx™ laboratory automation software (see page 10) to programme protocols.
- RS-232 computer interface.

- Size (FilterPress™ only): (w x d x h) 30.48 x 41.91 x 46.99 cm
- Size (FilterPress™ with Micro10x™): (w x d x h) 52.07 x 41.91 x 50.8 cm
- Air Supply: 60 to 120 psi (4.12 to 8.27 bar)
- CE-certified.
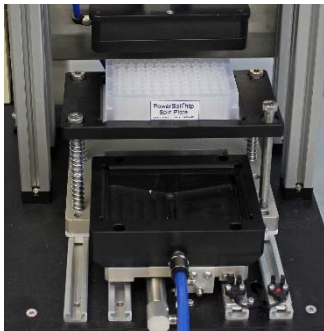
Filter plate in upper position with lower
position used as a waste.
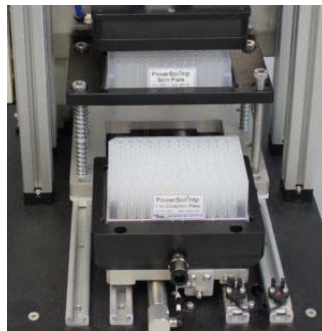
Filter plate in upper position and
collection plate in lower position.

Both positions retracted and
air is pushed through.

PlateCrane EX™ and SciClops™
Robotic Arm Microplate Handler

PlateCrane EX™ with two plate racks

**SciClops™ with standard
and temperature controlled racks**

Robotic Arm features:

- Ideal for applications in assay development, cell biology, bioassay validation, DNA quantification, PCR set-up and clean-up, and high-throughput drug screening.
- Loading and unloading of automated lab instruments such as microplate readers, washers, centrifuges and dispensers.
- Standard gripper or side gripper for random access applications. Both grippers are rotary for maximum flexibility.
- Interfaces for more than 150 different instruments available.
- Configuration to serve one instrument or several instruments in an automated process.
- Capacity of up to 450 plates without lids or up to 275 plates with lids.
- Compatible with all 96-, 384- and 1536-well standard or deep-well blocks in SLAS/ANSI format, and tip boxes.
- Two removable racks with a capacity of 25 lidded, or 30 unlidded or 9 deep-well blocks with the possibility to expand up to 15 racks. Alternatively, up to three carrousels with 10 racks each can be used.

  →Optional temperature-controlled racks are available – please enquire for further information.

- Available in standard configuration, with 345° rotation and in advanced SciClops™ format which offers an unlimited rotation.
- *PlateCrane EX™* is controlled by SoftLinx™ laboratory automation software (see page 10).
- SciClops™ includes integrated vision teaching to manually teach positions.
- Computer interface via RS-232 serial cable or USB (only SciClops™).
- Combination possible with LabLinx™ (see page 7) microplate track based delivery system to create larger microplate transportation systems.
- Compact footprint allows to place the instruments (depending on configuration) in a standard laboratory hood (also available from Dunn Labortechnik).
- Dimensions (without stacks): Size: 48.26 x 68.58 x 68.58 cm (w x d x h) Weight: approx. 20 kg
- Operating temperature: 15 °C to 40 °C
- CE-certified

**SciClops™ with plate rack
delivering plates to an instrument**

PA1000 Microplate Barcode-Labeler

PA1000 Microplate Barcode-Labeler

PA1000 features:

- Reliable, fast, industry-standard printer.
- Compatible with all barcode formats.
- Standard labels are 0.64 x 6.35 cm
- Requires compressed air with 4.1 bar.
- Compatible with all plates in SLAS/ANSI format.
- Prints on all four sides of a plate.
- 1D, 2D, or human-readable codes possible.
- Manual loading or with optional microplate stackers.
- Labels up to 100 plates/hour and up to 420 plates/run.
- PA1000 is controlled by SoftLinx™ laboratory automation software (see page 10).
- Automated loading and unloading of plates with *PlateCrane EX™* (see page 6) possible.
- Specifications:
  - Size (w x d x h): 48.26 x 81.28 x 40.64 cm
  - Weight: approx. 36 kg
  - Air supply: 80 psi (5.5 bar)
- CE-certified.
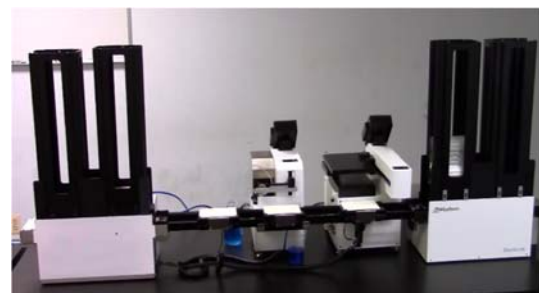
LabLinx™ Microplate Stacker

StopLink™

TrackLink™

StackLink™

LabLinx™ features:

- Unique microplate delivery system to automatically store and deliver plates to different laboratory instruments.
- Plates can be stacked with StackLink™ and delivered to other instruments with TrackLink™ and StopLink™.
- Modular expandable stacker and track system.
- Compatible with a wide range of labware such as microplates, deep-well plates, tip and tube racks.
- Links together any robotics-compatible lab instrument for a continuous production line flow.
- Easy reconfiguration to include new equipment and assays.
- Can be installed within laboratory hoods (which are also available from Dunn Labortechnik).
- Can use existing or customized bench space.
- Does not require external control modules.
- Mechanically robust and simple design.
- All LabLinx™ systems come with SoftLinx™ laboratory automation software (see page 10).
- Operating temperature: 15 °C to 40 °C
- Humidity: 0 to 85 %, non-condensing.
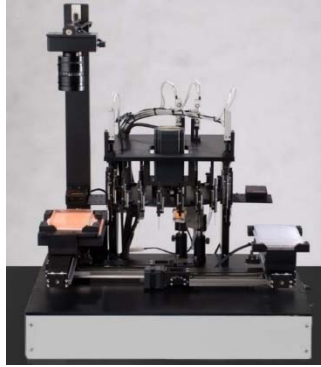- RS-232 Computer interface
- CE-certified

**LabLinx™ Microplate Stacker System
with Micro10x™ Robotic Reagent Dispenser
and RapidWash™ Microplate Washer**

RapidPick™ Colony Counter

RapidPick™ Single Pin

RapidPick™ Multi Pin

RapidPick™ Complete Colony Picker

RapidPick™ features:

- RapidPick™ **S**ingle **P**in (SP) or **M**ulti **P**in (MP) Colony Picker.
- Ideal for colony picking of Bacteria, Yeast, GFP, Halo-forming organisms and to perform Blue/White Selection.
- SP: Medium-throughput colony picking with approx. 250 colonies/hour.
- MP: High-throughput with more than 2,400 colonies/hour.
- Average inoculation rate is over 99 % for the SP system and over 96 % for the MP system.
- SP system has a fully enclosed picking area.
- Space for one source and one destination plate.
- Built-in camera takes an image of the entire plate in a single image.
- Fits easily most lab benchtops and anaerobic chambers.
- Ideal for microbiome research picking inside anaerobic chambers (choice of anaerobic chambers also available from Dunn Labortechnik).
- Manual loading of colony plate and media-filled destination plate.
- Computer and control software included.
- Designed to pick from petri dishes, Nunc™ Omnitray™ or any plate in SLAS/ANSI format.
- Inoculation of standard and deep-well plates in SLAS/ANSI format (maximum well depth 30 mm).
- Includes a barcode scanner to identify barcodes on the source and destination plates.
- Imaging part of the system allows to select visual parameters such as radius, amplitude, elongation, conformity, separation and colony colour to automatically identify colonies.
- There is no restriction to the number of parameter files that can be created.
- Easy operation with following steps: scan image, analyze image, edit image and start picking.
- Can pick through agar without damaging the pin(s).
- Pins are cleaned by vacuum and a brush, and sterilization is done with direct heat applied to the pins.
- Continuous cycling of the pins from picking to destination to vacuum wash bath to heater coil.
- Pins are made from robust tungsten.
- Fully compatible with robotic arms such as *PlateCrane EX™* to automatically deliver plates to the device (see page 6).
- Advanced integration with other instruments can easily be done (plug-ins for over 200 instruments already available) assisted by SoftLinx™ laboratory automation software (see page 10).
- SP dimensions: (w x d x h) 48.1 x 29.18 x 23.62 cm
- MP dimensions: (w x d x h) 53.34 x 43.18 x 68.58 cm
- CE-certified.

    Also available **RapidPick™ Lite**, **Rapid Pick™ Complete** and **RapidPick™ Harvester** for more automated workflows and complete application processes. Please enquire for further information.

Rapid_pH™ Automated pH Meter

Rapid_pH™ Automated pH Meter

Rapid_pH™ features:

- Automates measurement of pH in a wide variety of sample types.
- Ideal for measuring biological, water and pharmaceutical samples, cosmetics and personal care products.
- Any plate or tube rack in SLAS/ANSI format with a maximum height of 50 mm can be placed in the Rapid_pH™.
- Automatically measures pH, rinses the pH probe in deionized water, air dries the probe, and repeats the cycle with the next sample.
- Accuracy of ±0.05 pH.
- Measurement ranges from 0.0 to 14.0 pH.
- Fast calibration.
- Completely automated protocols which do not require any user intervention during the operation of the instrument.
- Export sample data and calibration information.
- Captures user name, date, time and other data for sample plates and calibrations.
- Scan barcode (scanner not included) to store with sample data.
- Easily integrated into automated systems.

- Specifications:
    - Size (w x d x h): 38.1 x 38.1 x 33.02 cm
    - Weight: 10.89 kg
    - Air Pressure: 40 to 60 Psi (2.76 to 4.14 bar) clean air or nitrogen
- Computer Interface: USB or Ethernet.
- CE-certified.

Choice of different versions:

With Temperature compensation and heating nest
- Optional heating block available to heat pH samples up to 50 °C.
- Heating block can accommodate 96 samples.

For viscous pH samples
- Mettler Toledo pH probe designed to measure viscous pH samples.
- Power wash spray instead of deionized water.

For CFR 21 Part 11 Compliance
- Software compliance package includes security functions such as calibration, data collection, management review and data archiving.
- Tracks audit trails, electronic signatures and user roles.
- Appropriate user access for different kind of authorities.

SoftLinx™ Lab Automation Software
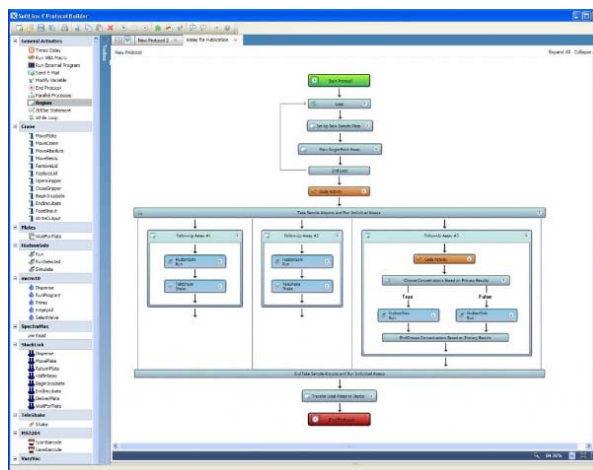
SoftLinx™ Lab Automation Software

SoftLinx™ features:

- Powerful multitasking software package for planning and running automated laboratory processes.
- Designed to control all instruments in an automated process.
- Includes software plug-ins for over 200 instruments (see below).
- Individual icons for each instrument connected.
- Real-time display of all actions of every instrument during operation of the system.
- User interface is drag-and-drop based making it easy to create a protocol.
- Individual steps of a protocol can be added, customized or removed, and series of independent or interdependent methods can be defined.
- Programming control can be added.
- Optional software interfaces are written in Visual Basic for Applications (VBA) script.
- Allows users to start and run additional methods, even while others are already running.
- Different stages of a process can be run simultaneously.
- Graphical display of plate movement timing for each device in the process.
- Most instruments can be run in "simulate" mode to enable users to create and edit protocols without requiring the equipment to be physically available.
- Supports full recovery from unscheduled shutdowns or interruptions.
- Multi-level user access and permissions.
- Data Audit trail to log all user permitted actions.
- Allows users to add plates to a run already in progress.

Software includes:

- ➢ Protocol Editor
- ➢ Plug-In Manager
- ➢ Run Module
- ➢ Data Tracking and Handling
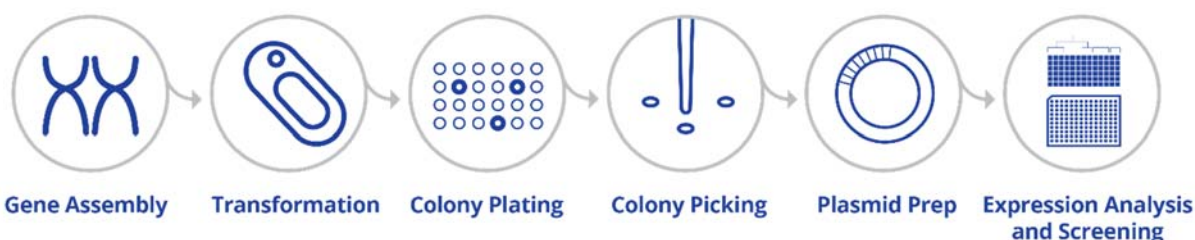- ➢ Instrument Device Drivers (Plug-Ins)

Plug-Ins available for liquid handling systems, bar code readers and printers, balances, centrifuges, anaerobic chambers, flow cytometers, high content screening, QPCR/thermocyclers, incubators/freezers, microplate washers, plate readers and sealers, scintillation and luminescence counters.

If you have a specific system which should be integrated in your automation process, customized plug-ins can be created. Please contact us for further information.

Automating Synthetic Biology

Workcell for Synthetic Biology

Gene Assembly → Transformation → Colony Plating → Colony Picking → Plasmid Prep → Expression Analysis and Screening

Workflow for Synthetic Biology

1. **Gene Assembly**: Oligo synthesis, deprotection, purification, pooling and Gene construction. All steps can be automated by Hudson Robotics` systems using the SOLO™ Liquid Handler (see page 2), robotic arms (see page 6) and the powerful lab automation software SoftLinx™ (see page 10).

2. **Transformation**: Heat shocked-based protocols can be automated. A suitable heater is available for the SOLO™ Liquid handler.

3. **Colony Plating**: The SOLO™ Liquid Handler can be used to dispense cultures on petri dishes to evaluate if transformation protocols were successful.

4. **Colony Picking**: The RapidPick™ Colony Pickers from Hudson Robotics are designed to pick colonies from different plate sources (see page 8).

5. **Plasmid Prep**: Standard Miniprep protocols are carried out by a SOLO™ Liquid Handler with shaker option and a FilterPress™ (see page 5).

6. **Expression Analysis and Screening**: The LabLinx™ stacking system and robotic arms from Hudson Robotics can serve screening systems which can also be integrated into the complete process with SoftLinx™ lab automation software.
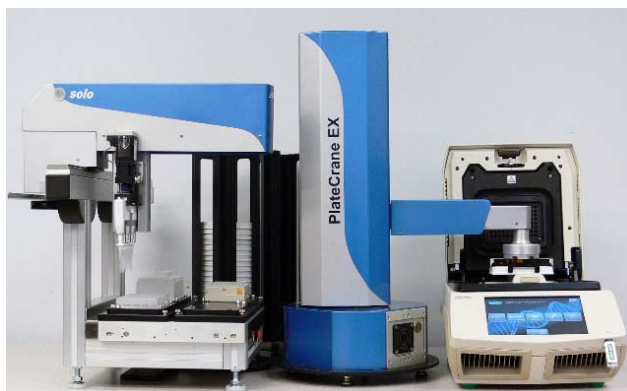
PCR and Gene Assembly Workstation

Equipment for General Liquid Handling, Chemistry, Protein Crystallography and HLA

Protein Crystallography

Gryphon

Protein Crystallography
Lipidic Cubic Phase Option
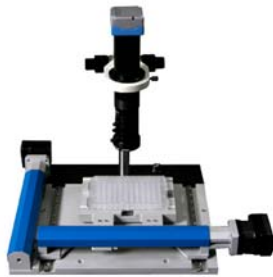
Crystal Phoenix

Protein Crystallography
HTS / Genomics

Scorpion

General Liquid Handling

CrysCam™

Protein Crystal Observation

CrysCam*plus*

Protein Crystal Observation
with visible and UV-light

CrysCamUV

Protein Crystal Imaging
with visible & UV-light and
fluorophore option

Chemistry and general Liquid Handling

Phoenix/Chemistry

Organic Solvent Transfers
Enzyme Optimization

Scorpion/Chemistry

Synthetic Chemistry
HTS / Kinetics / LC-MS

Cobra 1- or 4-Channel

Biochemical Assays
PCR Master Mix

For the HLA (Tissue Typing) Laboratory

Serum Dispenser

Syringe Dispensers

Serum Tubes

Automatic Oiler

➔ Wide choice of HLA syringes and general accessories.

Please ask for our separate brochures about the systems from Art Robbins Instruments.

01/2023