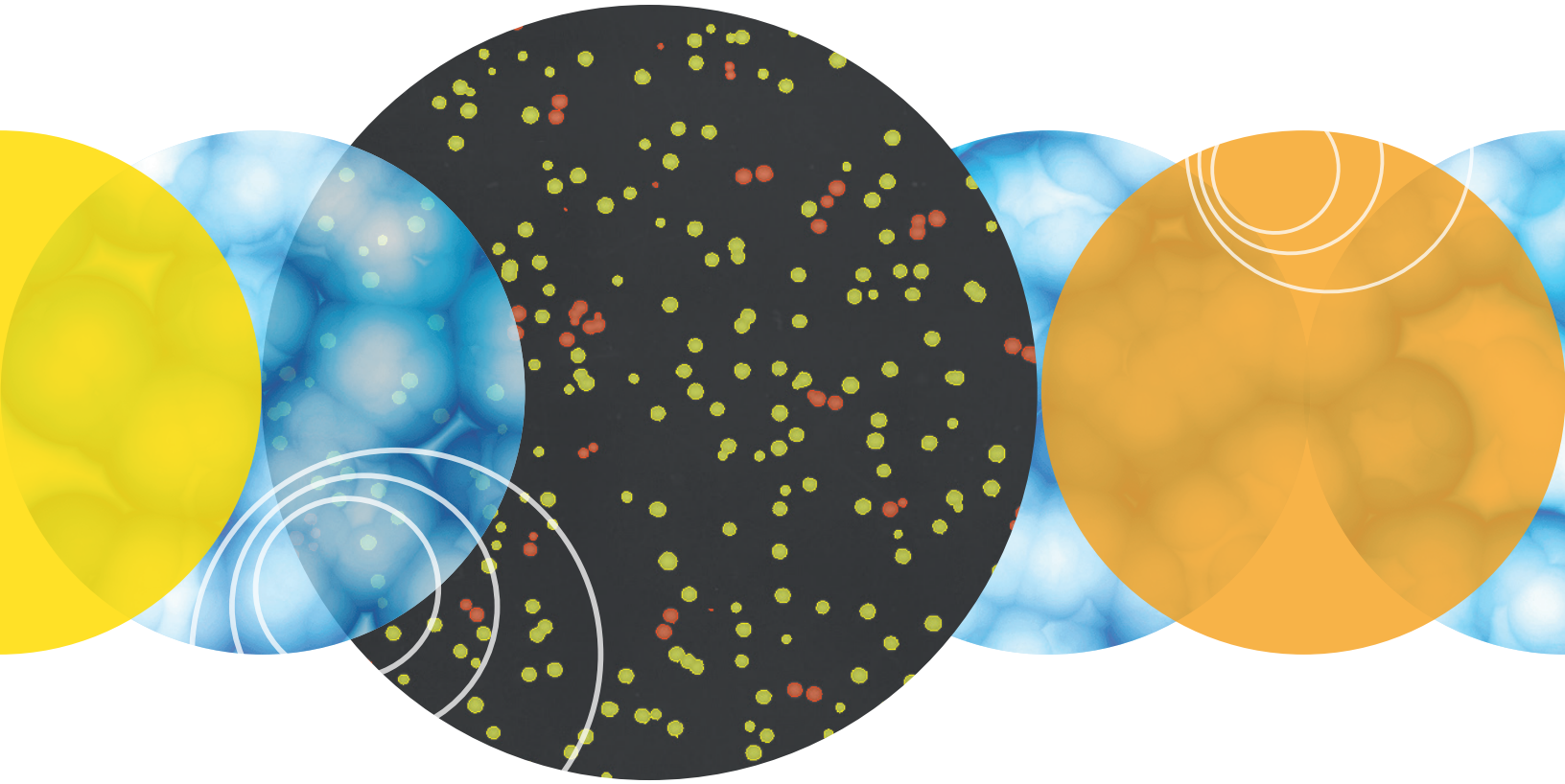
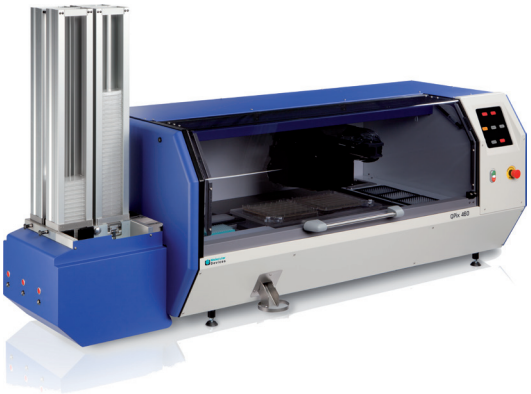
QPix™ 400 Systems



Empowering you to select the best colonies faster

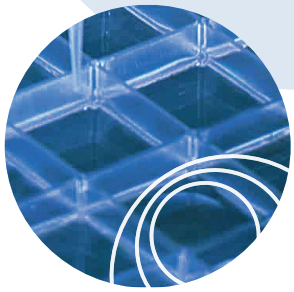


MOLECULAR DEVICES

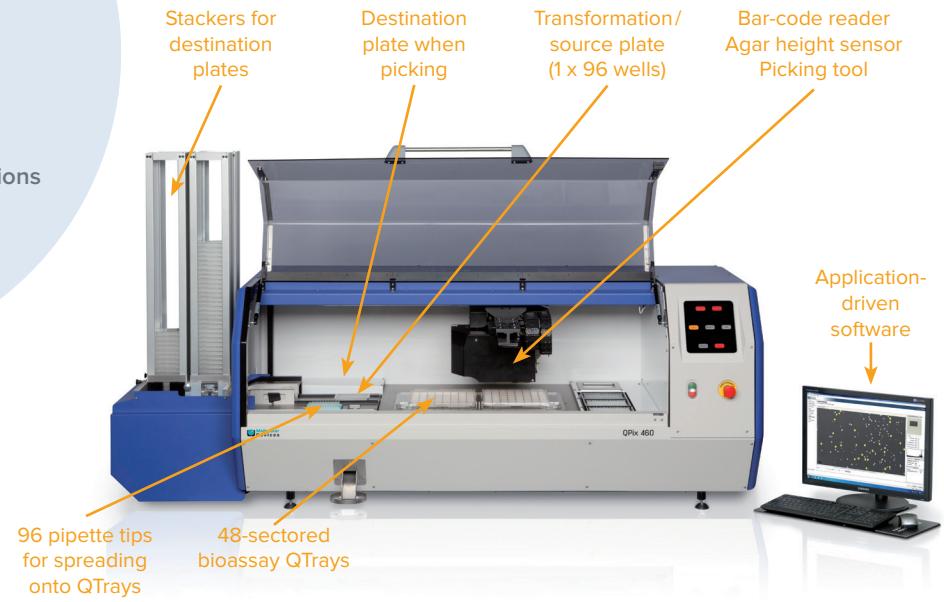
SCALE UP COLONY PICKING WITH AUTOMATION SOLUTIONS TAILORED TO YOUR UNIQUE WORKFLOW!

KEY BENEFITS

- Scalable automation to suit your throughput needs
- True walk-away operation with easy setup
- Electronic data tracking for well-documented data control
- Sterile environment with customizable HEPA filtration options



QPix 460 System prepares up to 48 samples per QTray. Incubate overnight and pick your colonies the next day.



Get the highest level of flexibility in application and experimental design with the QPix 460 System.

Colony pickers that do more

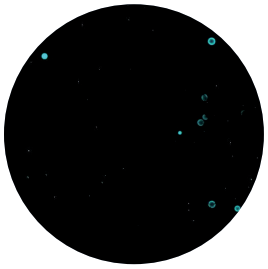
QPix™ systems earned a well-deserved reputation for performance and reliability at major sequencing centers throughout the Human Genome Project. Get ready to discover why research institutes, sequencing facilities, biotech and pharmaceutical companies worldwide use over 600 QPix 400 systems every day.

Tailored solutions for every application and workflow

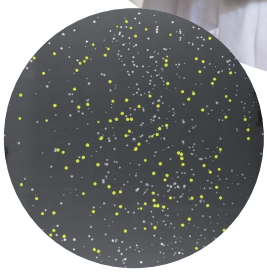
Imagine picking exactly the right colonies every time. The QPix 400 series gets you there with the unique ability to simultaneously detect colonies and quantify fluorescent markers in a pre-screening step before picking. Just select the system that suits your application, workflow and throughput needs.

Select high value colonies faster

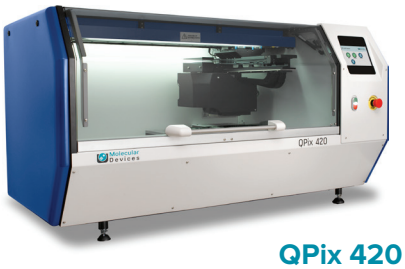
Objective, quantitative analysis using fluorescent imaging lets you efficiently select colonies using multiple fluorescent filters compatible with a broad range of fluorescent cloning vectors. Track fluorescently-labeled proteins to reveal unique information about individual colonies when studying protein folding, secretion or localization. Monitor enzyme evolution, or screen for transformation markers or mutations.



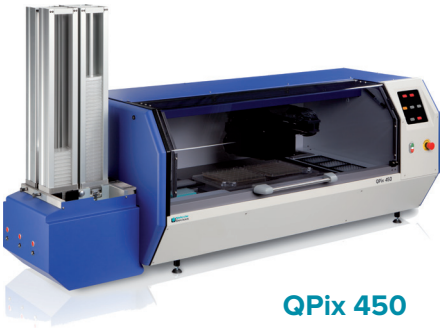
Raw image shows differences in expression (fluorescence) levels



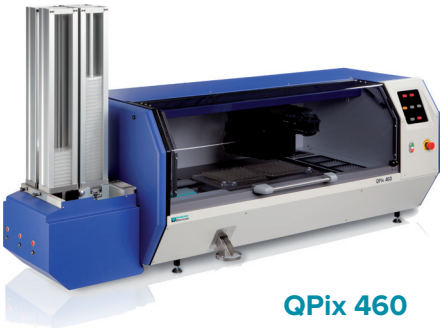
Processed image of an entire plate in a bioassay QTray highlights fluorescent colonies



QPix 420



QPix 450



QPix 460

Benchtop design for maximum flexibility. QPix 420 Systems provide all the application and performance benefits of the QPix 400 Series in a smaller, benchtop format. The system is ideal if you want to replace manual picking with automation, or need maximum flexibility in plate positioning on the deck.

Imaging to picking. Satisfy your capacity needs with the QPix 450 System, which handles up to 210 destination plates in three stacker lanes. This is your choice for applications such as enzyme evolution, clone management, library screening and biofuel development.

Spreading to picking. With a fully automated workflow, the QPix 460 System gives you the greatest flexibility in application and experimental design, including sample spreading. Choose the QPix 460 System for applications such as protein engineering, protein evolution, directed or enzyme evolution, protein expression, transformation and sub-clone management.

"THE QPIX 450 SYSTEM OUTCLASSES RIVAL SYSTEMS, HANDLING FLUORESCENT PICKING WITH AN UNRIVALLED LEVEL OF EASE AND ACCURACY."

Marc McCarthy, High Throughput Robotics Specialist,
Alimentary Pharmabiotic Centre, University College Cork, Ireland

Pick the right colony every time

Transform your whole colony picking process by eliminating the risk of double picks or blank wells, reducing manual picking errors and avoiding cross-contamination. With a QPix system, you can rely on advanced imaging and analysis combined with high precision robotics to pick the right colony every time. Highly robust performance ensures data quality and high viability of picked colonies.

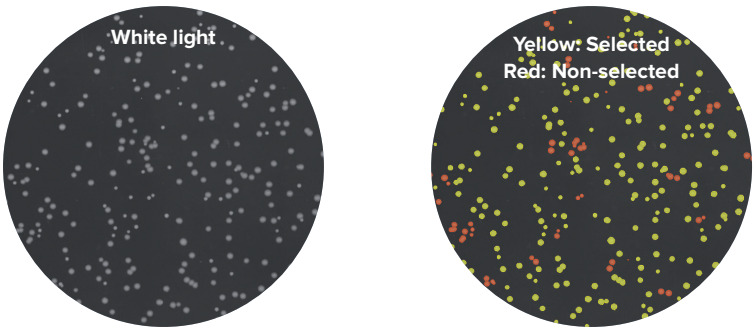
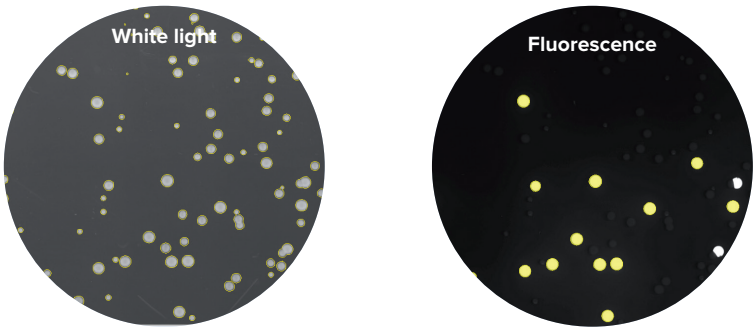
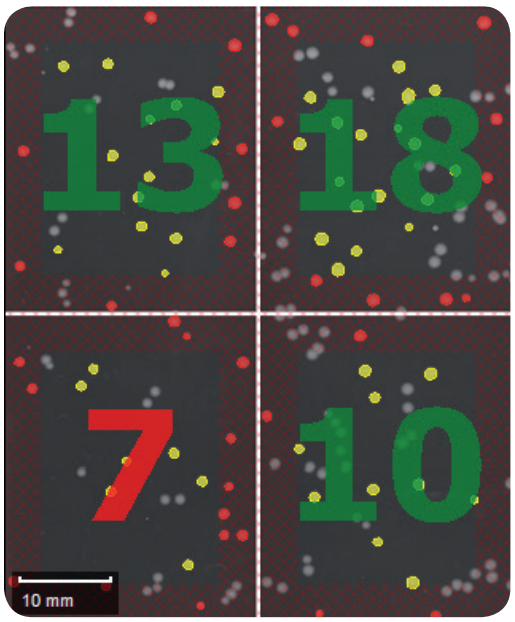


Image analysis software identifies individual colonies in white light. Colonies selected according to user-defined parameters: compactness, axis ratio, size, and proximity.



Optional pre-screening provides unique information to identify the best colonies. Colonies selected according to user-defined parameters: compactness, axis ratio, size, proximity, and fluorescent level.



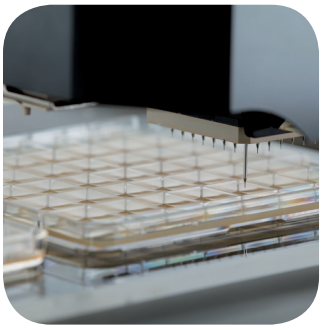
Pre-defined number of colonies selected per region for picking. Yellow: Colonies to be picked based on selection criteria. **Green:** Desired number of colonies met. **Red:** Desired number of colonies not met.

Key features and benefits

Feature	Benefit
Superior picking speed and accuracy	Pick up to 3,000 colonies/hour in white light and up to 2,000 colonies/hour in fluorescent light with > 98% picking efficiency
Ultrasonic agar height sensor	Ensure maximum picking efficiency with auto-calibration of picking height
Large range of organism-specific pins	Successfully pick various organisms other than *E. Coli* and maintain integrity of picked colonies
Fully pneumatic pin picking tools (96-, and 384-pin picking tool options available)	Enables one colony picker to simultaneously supply up to 10 sequencing units
Proprietary halogen pin drying process	Eliminate contamination with a proven pin sterilization process
Liquid handling capabilities (QPix 460 System only)	Fully automate workflow from plating to spreading and picking
Exclusive, application-specific software algorithms for colony selection	Easy to use software ensures the right colony is picked every time and meets your desired experimental criteria
Complete data tracking software	Keep records and track sample histories from sample spreading to picking, replication and re-arraying

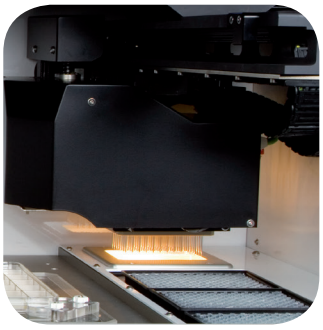
Get results faster

Pick colonies with a typical efficiency of >98%



Sensors detect agar height, helping high precision robotics to pick single colonies gently and accurately.

Organism-specific pin heads are tailor-made to ensure maximum transfer of material.

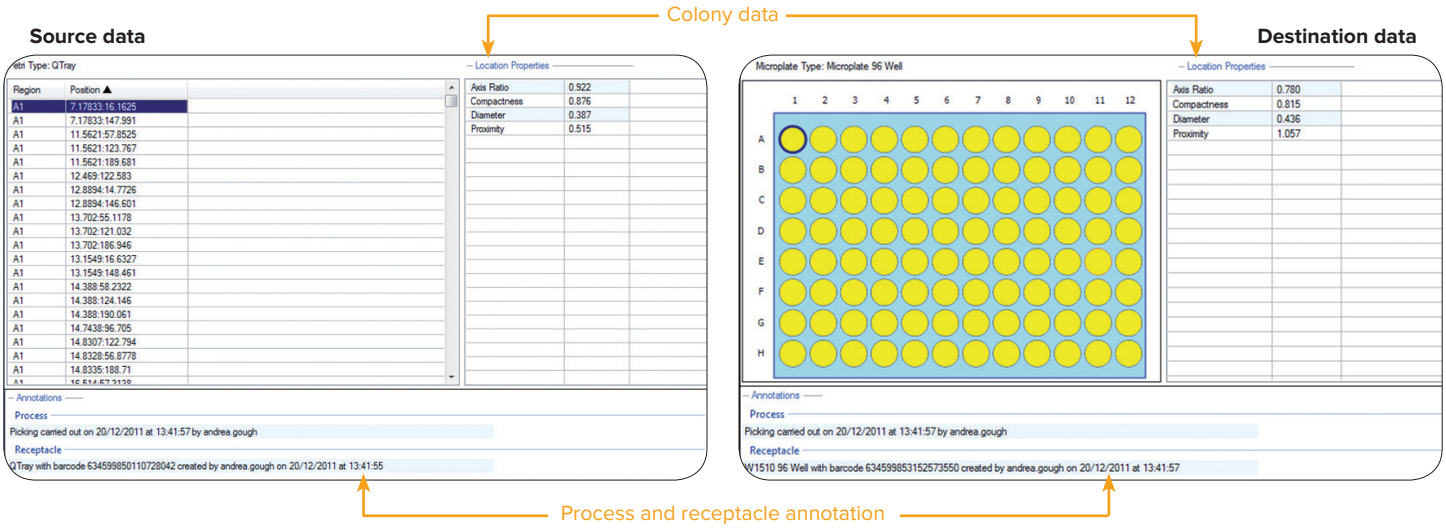


Proven pin sterilization process is suitable for any organism.

Bar-code reader tracks sample plates, wells and picked clones for perfect record keeping.

Track your entire sample history

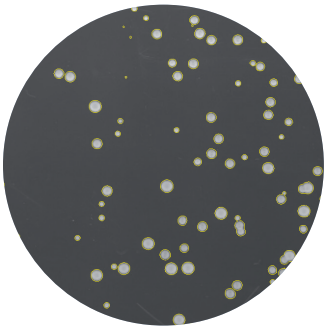
Track the entire history of your clones from sample spreading (QPix 460 System only) to picking, replication and re-arraying. Tag your most important clones for enhanced visibility and optionally add sample-specific data.



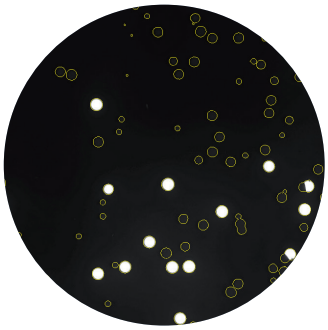
Accelerate objective, quantitative colony selection

Develop constructs or target proteins during protein expression faster

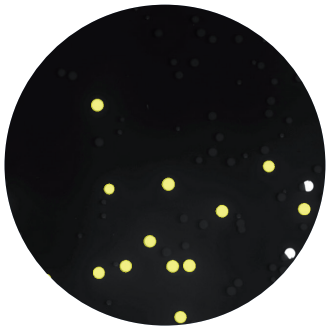
- Pre-screen to pick the right colonies
- Identify colonies that fluoresce at specific intensities of interest
- Automate and track entire workflow from spreading of transformed cells (QPix System 460 only) to colony picking



All colonies detected in white light



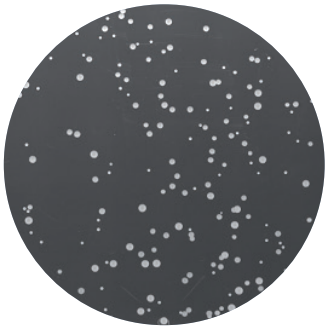
Colonies expressing required level of target protein identified in fluorescent channel



Selected colonies ready for picking

Select candidate clones in synthetic biology with confidence

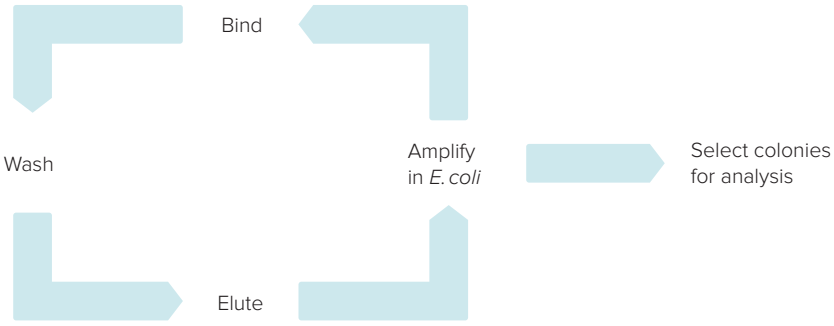
- Automatically image and select clones of engineered micro-organisms
- Pick with high accuracy
- Track all experimental data



White light imaging of an entire plate

Screen phage display libraries to identify antibody candidates efficiently

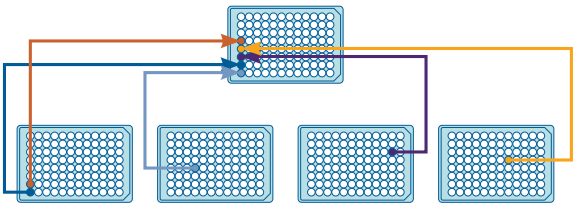
Automatically select and pick phage-containing *E. coli* colonies



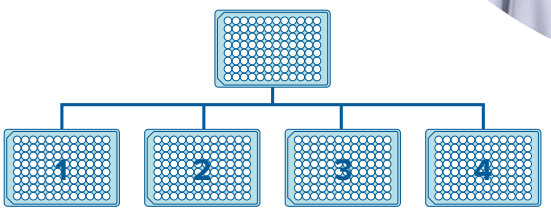
Phage display cycle

Efficient and cost-effective DNA library generation and clone management

Replicate, grid and re-array with application-specific software modules



Cherry-pick wells of interest into new plates



Replicate plates

Identical replicates (96 or 384 well), Compression (4 x 96 into 1x 384), Expansion (1x 384 into 4x96)

Imaging	
Camera (white light only system)	CCD Camera, image resolution: 22 pixels /mm. Field of view: 62 x 46 mm
Camera (white light and fluorescence system)	CCD Camera, image resolution 22 pixels /mm. Field of view: 32 x 24 mm
White light imaging	Trans-illumination
Fluorescent imaging (optional)	Epifluorescence illumination, five standard wavelengths included: Ex /Em: 377 /447 nm for DAPI /Hoechst Ex /Em: 457 /536 nm for FITC /GFP Ex /Em: 531 /593 nm for Cy3 /DS Red Ex /Em: 628 /692 nm for Cy5 Ex /Em: 531 /624 nm for Rhodamine /Texas Red
Colony statistics	Colonies selectable based on size, proximity, roundness. Selection performed on whole tray image
Tracking	1 x barcode reader for tracking of source and destination plates. Data tracked through all applications for plates with same I.D.

Software	
Plate replication	Software license and additional head
Re-arraying	Software license and additional head
Gridding	Software license and additional head
Zone of inhibition detection	Software license
Colorimetric colony selection	Software license and filters
Low contrast colony detection (plaque picking)	Included with Software 2.0 and newer

Instrumentation	
Spreading capability (QPix 460 System only)	Sampling and spreading source plate: 1 x 96-well (30 minutes for 96 samples). Aspiration volume 10-130 µL. Destination plate: 2 x 22 cm 48 region QTrays. Samples spread from pre-set or customizable pattern.
Destination plate capacity	• QPix 420 System: Picking: 12 plates; replicating and re-arraying, maximum of 20 plate positions • QPix 450 System: Up to 210 low profile plates, 70 per stacker lane, maximum 3 stackers • QPix 460 System: Up to 140 low profile plates, 70 per stacker lane, maximum 2 stackers
Source plate capacity	• QPix 420 System: Without manual intervention: 1 x 15 cm petri dish; 5 x 9 cm petri dishes; 2 x OmniTrays; 1 x 22 cm QTrays • QPix 450/460 System: Without manual intervention: 2 x 15 cm petri dish; 10 x 9 cm petri dishes; 4 x OmniTrays; 2 x 22 cm QTrays
Picking destination plate type	Various, 24-, 48-, 96-, or 384-well, including deep well
Picking height	Integrated ultrasonic agar height sensor to set agar height per plate for accurate picking
Picking head	Fully pneumatic, 96 pin picking head. Interchangeable heads for other applications
Picking pin types	Range of organism-specific pins
Picking capacity	3000 colonies per hour in white light, 2000 colonies per hour in fluorescent light
Fluorescent picking	Colonies imaged in white light for location identification and fluorescence for data analysis. WL and FL image multiplexed.
Fluorescence data	Multiple parameters available e.g. interior mean. Fluorescent intensity recorded for picked colonies.
Wash bath	3 x static wash baths
Pin drying	Proprietary halogen pin drying station
Dimensions	• QPix 420 System (without table): 1460 mm (width) x 770 mm (depth) x 750 mm (height) • QPix 450/460 System: 2200 mm (width, excluding monitor arm) x 800 mm (depth) x 2140 mm (height on table)
Compressed air specifications	
Air	Clean, oil-free with sub-micron filtration
Minimum operating pressure	6 bar (~90psi)
Minimum operating volume	80L/min
Optional compressor specifications	
Compressor unit	Clean, oil-free compressor with sub-micron filtration
Dimensions	250 mm (width) x 600 mm (depth) x 750 mm (height)
Weight	60 kg
Minimum operating pressure	6 bar
Minimum operating volume	80 L/min
Noise level	61 dB(A)
Regulatory approval	
Compliance	CE
Quality	ISO9001:2008 certified

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