Automated liquid handlers employ motorized pipettes or syringes to accurately distribute liquids into sample vessels. Using these instruments can increase the reproducibility and throughput of your experiments while freeing up your lab workers to perform other laboratory tasks.

1. What sample volumes is the instrument capable of pipetting and how many channels can be pipetted at once?

2. Do you need to purchase specific pipette tips from the manufacturer or is the instrument compatible with generic pipette tips?

3. What safety features are available to protect your workers? (e.g. shields, automatic stopping)

4. What downstream analyses will you be performing? Will the instrument be able to prepare your samples for these analyses?

5. Will you be using the automated liquid handler for more than one application? Do you require an independent handler, or can it be integrated into a workstation?

6. What software is available with the instrument and how configurable are the protocols?

**Purchasing Tip**

If you are using your automated liquid handler to pipette extremely small volumes in the nanoliter range, consider purchasing an instrument that uses acoustic liquid dispensing. This method of liquid handling employs pulses of ultrasound to eject droplets of liquid and is more accurate than air displacement at small volumes.

**List of Manufacturers**

Agnisys  
www.agnisys.com

Analytik Jena  
www.analytik-jena.com

Andrew Alliance  
www.andrewalliance.com

Apricot Designs  
www.apricotdesigns.com

Art Robbins Instruments  
www.artrobbins.com

Aurora Biomed  
www.aurorabiomed.com

Beckman Coulter  
www.beckmancoulter.com

BioNex Solutions  
www.bionexsolutions.com

BioTek Instruments  
www.biotek.com

Brockman Scientific  
www.brockmanscientific.com

Dynamic Devices  
www.dynamicdevices.com

Eppendorf  
www.eppendorf.com

Furnutrix  
www.furnutrix.com

Gardner Denver  
www.gardnerdenver.com

Gilson  
www.gilson.com

Hamilton Robotics  
www.hamiltoncompany.com

HighLite Biosciences  
www.highlitebio.com

Hudson Robotics  
www.hudsonrobotics.com

INTEGRA Biosciences  
www.integrobiosciences.com

Lifecode  
www.lifecode.com

MDZ Automation  
www.mdzautomation.com

NETTLER TOLEDO  
www.net.com

Opentrons  
www.opentrons.com

PerkinElmer  
www.perkinelmer.com

ProGroup Instrument  
www.progroupinstrument.com

Promega  
www.promega.com

Questan Technologies  
www.questan.com

Sartorius  
www.sartorius.com

SCP Science  
www.scpscience.com

TECAN  
www.tecan.com

Thermo-Fisher Scientific  
www.thermofisher.com

TP LabTech  
www.tplabtech.com
Autosamplers automatically draw from a predetermined set of samples and inject these samples into analytical instruments. The reproducibility and accuracy of these instruments, especially at low volumes, have eliminated persistent sources of error when performing analytical assays.

5 Questions to Ask When Buying an Autosampler

What type of autosampler do you need? (e.g. liquid, headspace, SPME)

Which application will you be using the autosampler for? Will the instrument be compatible with your analytical instruments?

How many samples can the instrument accommodate? What types of sample vessels are compatible with the instrument?

What range of sample volumes can be injected using the instrument?

How long is the instrument’s cycle time? (e.g. how long it takes to perform a single injection)

Purchasing Tip

Carryover results when sample left over from the previous injection is injected with the sample and can result in ghost peaks when performing chromatography. Insufficient rinsing of needles when using an autosampler can result in carryover. One way to minimize this issue is to purchase an autosampler that allows for multiple rinse solutions, both internally and externally, so that even samples with different physical or chemical properties are properly removed before the next injection cycle.

List of Manufacturers

Agilent www.agilent.com
Analytik Jena www.analytik-jena.com
Anton-Paar www.anton-paar.com
Avantium www.avantium.com
Costech www.costechanalytical.com
Ditaek www.ditaek.com
Elemental Scientific www.elementalscience.com
Elutix www.elutix.com
EST Analytical www.esterlytical.com
Fritsch International www.fritschinternational.com
GBS Scientific Equipment www.gbsci.com
GE Healthcare Life Sciences www.gehealthcare.com
Gerstel www.gerstel.com
Glanz www.glanz.com
Hitachi www.hitachi.us
iChrom www.ichrom.com
Hanna Instruments www.hannainst.com
Jasco www.jascoinc.com
KNAUER www.knauer-net.com
Lumexcyte www.lumexcyte.com
Mettler Toledo www.mt.com
Ol Analytical www.ol.com
PekinElmer www.pekinelmer.com
Pike Technologies www.piketech.com
PS Analytical www.psanalytical.com
Rheinz Instruments Life Sciences www.rheinz.de
Seal Analytical www.sealanalytical.com
Shimadzu Scientific www.shimadzu.com
Spark Holland www.spark holland.com
Teddyne Corac www.teddyne.com
Thermo Fisher Scientific www.thermofisher.com
Waters www.waters.com
BENCTOP AUTOMATION

Benchtop automation can include a variety of instruments used for applications such as sample preparation, cell-based assays, ELISA, liquid handling, and next-generation sequencing. These instruments have a small footprint, making them practical for most labs, and are more accurate and consistent than lab workers.

1. How much space is available on your lab bench for benchtop automation?
2. Can the instrument be integrated with current automation or workflows used within your lab?
3. Is the instrument modular or is it a complete workstation? If it’s modular, how many instruments will you need to purchase to accomplish your task?
4. Can the instrument be expanded as your sample throughput needs increase?
5. What software is available with the instrument? How user-friendly is the instrument and how easy are the protocols to configure?

Purchasing Tip
When selecting benchtop automation, the best instrument will be one that replaces a task performed frequently in your lab. Evaluate the protocols completed by your lab workers on a daily basis and identify which ones take the longest. Automating these time-consuming tasks will increase your throughput and your lab workers’ productivity.

List of Manufacturers
AB Controls www.abcontrols.com
Agilent www.agilent.com
Anton Paar www.anton-paar.com
BioMicroLab www.biomicrolab.com
Biotage www.biotage.com
BrandTech Instruments www.brandtech.com
BroadTech Scientific www.broadtech.com
Fluidigm www.fluidigm.com
Gilson www.gilson.com
Hach Company www.hach.com
Hanna Instruments www.hannainst.com
LCN www.lcnc.com
Mettler Toledo USA www.mt.com
Methrom USA www.methromusa.com
METTLER TOLEDO www.mt.com
Molecular Devices www.moleculardevices.com
Qiagen www.qiagen.com
Rudolph Research Analytical www.rudolphresearch.com
Sartorius www.sartorius.com
SI Analytics USA www.sianalytics.com
SOTAX www.sotax.com
Teknokrat www.teknokrat.com
Thermo Fisher Scientific www.thermofisher.com
Unchained Labs www.unchainedlabs.com
Instrument and laboratory monitoring tools allow for the detection of equipment failures as well as changes to the laboratory environment and can notify users when these incidents occur. They can be used to monitor equipment including fridges and freezers, incubators, and ovens, as well as laboratory environmental conditions such as temperature, energy use, and humidity. Using instrument and laboratory monitoring tools help keep your samples and experiments secure while providing you with peace of mind.

5 Questions to Ask When Buying Monitoring Equipment

What instrument manufacturers is the monitoring system compatible with? Will it work with the instruments in your lab?

Can the system monitor more than one instrument at a time?

What action is taken when an issue is detected? How will you be notified? What is the maximum number of individuals who can receive notifications?

Can the monitoring system be integrated with your laboratory information management system (LIMS)?

What support is offered by the monitoring system service provider? Are they familiar with your instruments and can they help set up the system?

Purchasing Tip

Some instruments come with integrated instrument monitoring. Before purchasing such instruments, decide whether you want a single monitoring system from a third-party manufacturer for all your lab instruments or if you would like to rely on independent monitoring systems included with specific equipment. If you plan on using integrated instrument monitoring, speak to the manufacturer about whether this monitoring can be added to your LIMS so the status of all your instruments is located in one place.

List of Manufacturers

BioRAFT www.bioRAFT.com
CAS www.dataloggerinc.com
Elemental Machines www.elementalmachines.ie
ELPRO www.elpro.com
Eppendorf www.eppendorf.com
Eco www.escoglobal.com
Grant Instruments www.grantsinstrument.com
MilliporeSigma www.millipore.com
Monnit www.monnit.com
Online LIMS www.onlims.com
PHC Corporation of North America www.phchd.com/us/biomedical
PerkinElmer www.perkinelmer.com
Rees Scientific www.reesscientific.com
Sensoscientific www.sensoscientific.com
Smart Sense www.smartsense.ca
Tetrascience www.tetrascience.com
Thermo Fisher Scientific www.thermofisher.com
Vertere www.vertere.com
Microplate automation includes instruments such as handlers, stackers, washers, live-imagers, and dispensers. Using microplate automation in the lab, especially for liquid handling, can help overcome the human error often experienced when microplates are handled by lab workers while increasing your sample throughput.

5 Questions to Ask When Buying Microplate Automation

1. Can the instrument be integrated with other equipment or workflows already in place in your lab?
2. Is the instrument expandable? Can you add on to the instrument as your required sample throughput increases?
3. What sample volumes and number of wells will the system accommodate? How easy is it to switch between microplate types?
4. How easy is the instrument to calibrate? Is calibration by your service provider included with your purchase?
5. Does the instrument come with pre-programmed protocols? How easy is it to create new protocols using the available software?

Purchasing Tip

Microplate automation is available as integrated workstations or as modular components that can be used to build a system. Workstations are typically designed to complete a specific task such as nucleic acid or protein extraction/purification or cell-based assays. Before purchasing, consider what you will be using your microplate automation for and whether this application will change in the future. If you anticipate that future needs will change, a modular system might be a better fit.
ROBOTIC WORKSTATIONS

Robotic workstations automate multi-step procedures and can complete entire protocols without human intervention. These workstations are designed for specific applications such as ELISA, hematology, protein and DNA extraction or purification, next-generation sequencing library preparation, and PCR. The walk-away processing performed by these instruments increases lab throughput and worker productivity.

1. Can the workstation be used for more than one application?
2. What safety features are available to protect your workers? (e.g. shields, automatic stopping)
3. Does the instrument require specific tips, sample vessels, or consumables? How will this affect your purchasing?
4. What protocols come pre-built into the instrument’s software and how easy is it to modify these protocols?
5. Can you work with the manufacturer to build a workstation that exactly fits your experimental needs?

Purchasing Tip

Robotic workstations have many moving parts that could break. When purchasing a robotic workstation, make sure to include a service contract. This will save you money in the long run when it comes to instrument repairs, and a regular service schedule will help keep your instrument calibrated and accurate.

5 Questions to Ask When Buying Robotic Workstations

List of Manufacturers

- Agilent
- Analytik Jena
- Beckman Coulter
- Biosearch Technologies
- BioTek Instruments
- BrandTech Scientific
- Eppendorf
- Hamilton
- HighRes Biosolutions
- Hudson Robotics
- Labcyte
- Labman Automation
- Molecular Devices
- ProAnalytical & Automation (PAA)
- PerkinElmer
- ProGroup Instrument
- SEAL Analytical
- Sirius Automation
- Tecan
- Thermo Fisher Scientific
- Tomtec

Agilent www.agilent.com
Analytik Jena www.analytik-jena.com
Beckman Coulter www.beckmancoulter.com
Biosearch Technologies www.douglasscientific.com
BioTek Instruments www.biotek.com
BrandTech Scientific www.brandtech.com
Eppendorf www.eppendorf.com
Hamilton www.hamiltoncompany.com
HighRes Biosolutions www.highresbio.com
Hudson Robotics www.hudsonrobotics.com
Labcyte www.labcyte.com
Labman Automation www.labmanautomation.com
Molecular Devices www.moleculardevices.com
ProAnalytical & Automation (PAA) www.proautomation.com
PerkinElmer www.perkinelmer.com
ProGroup Instrument www.progroupinstrument.com
SEAL Analytical www.sealanalytical.com
Sirius Automation www.siriusautomation.com
Tecan www.tecan.com
Thermo Fisher Scientific www.thermofisher.com
Tomtec www.tomtec.com
Your laboratory samples are invaluable. Automated sample management systems use barcoding to track your samples and robotics efficiently store your samples. Software makes it easy to access any sample at any time. These instruments can increase your lab's throughput by decreasing the time it takes for your lab workers to store and retrieve samples.

**Questions to Ask When Buying a Sample Management System**

1. What temperature do you need to store your samples at? (e.g. ambient temperature, 4°C, -20°C, -80°C)
2. How many samples can the system accommodate? Can it be expanded if you need to store more samples?
3. What types of sample vessels are compatible with the system?
4. Can the sample management system be integrated with other automated workflows? (e.g. decapping, automated liquid handling)
5. What software is available with the system? How easy is it to find samples using the software?
6. Does the system have integrated instrument monitoring? Are there alarms or alerts to inform you of system failures?

**Purchasing Tip**

Are you working with sensitive samples? When purchasing, look for automated sample management systems that have been designed to keep samples at consistent temperatures, even during sample processing. Temperature fluctuations can put your samples at risk by increasing the potential for sample degradation.

**List of Manufacturers**

- BioMicroLab [www.biomicrolab.com](http://www.biomicrolab.com)
- BioNex Solutions [www.bionexsolutions.com](http://www.bionexsolutions.com)
- Brooks Life Sciences [www.brookslifesciences.com](http://www.brookslifesciences.com)
- Hamilton [www.hamiltoncompany.com](http://www.hamiltoncompany.com)
- HighRes Biosolutions [www.highresbio.com](http://www.highresbio.com)
- LICONIC [www.liconic.com](http://www.liconic.com)
- NBS Scientific [www.nbscientific.com](http://www.nbscientific.com)
- Scinomix [www.scinomix.com](http://www.scinomix.com)
- Sirius Automation [www.siriusautomation.com](http://www.siriusautomation.com)
- TTP Labtech [wwwttplabtech.com](http://wwwttplabtech.com)
- Vertére [www.vertere.com](http://www.vertere.com)