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Mini Product Resource Guide

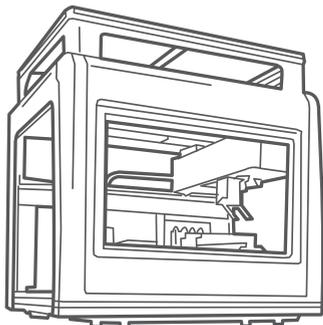
Run Your Lab Like a Business

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MINI PPOC AUTOMATION

PRODUCT RESOURCE GUIDE

AUTOMATED LIQUID HANDLING



Automated liquid handling systems in their simplest form are designed to dispense an allotted volume of liquid from a motorized pipette or syringe. Automated liquid handling instruments can dramatically reduce the amount of time spent performing manual liquid transfers while significantly increasing both accuracy and repeatability.



Safety Tip

Automated liquid handling instruments offer safety advantages to operators by helping them prevent repetitive stress injury from repeated pipetting. However, they also pose risks should an operator try to adjust their samples while the instrument is in use. Many automated liquid handling instruments come with safety features designed to protect the operator while the instrument is running. When considering instruments, look for shields that will prevent the operator from putting their hands in the instrument while it is running. Additionally, look for sensors that will stop the instrument should any foreign objects enter the work area.

6 Questions to Ask When Buying an Automated Liquid Handling System

1. What range of volumes can the instrument pipette and how many channels can be pipetted at once?
2. What vessel types can be used with the instrument (e.g. tubes or microplates)?
3. How much operator intervention does the instrument require? How many deck positions does it accommodate and does it have a gripping tool to move samples?
4. Is the instrument customizable? Can it be adapted to meet your future needs?
5. Does the instrument have thermal control, UV/HEPA filters, or other features to help protect your samples?
6. How user-friendly is the software? Does it allow for both custom and pre-programmed protocols?



Maintenance Tip

Are you noticing variations in your experimental results? It may be time to call your service provider to re-calibrate your automated liquid handling instrument. Because of the sensitivity of these instruments, calibration should always be conducted by a trained professional to ensure accurate pipetting.



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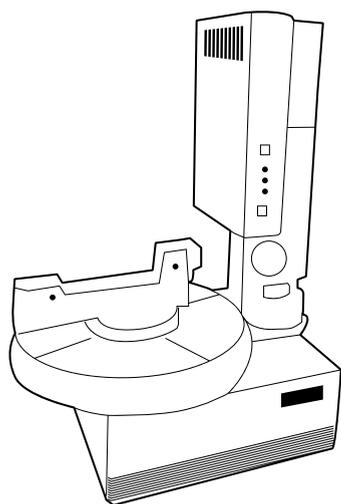
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If you are using your instrument for a specific application, you may want to request that calibration be conducted with your specific assay parameters to ensure reproducible results every time you run the assay.

AUTOSAMPLERS



Autosamplers are commonly coupled to analytical devices to quickly and accurately load samples for analysis. Autosamplers can be equipped to perform simple liquid, solid, headspace, or solid phase microextraction (SPME) injections.



Safety Tip

A common issue with autosamplers is leaks. Problems such as usage of the incorrect needle or blockage of the waste line can result in samples and waste leaking from the autosampler. Uncontained leaks may expose the operator to hazardous materials without their knowledge. Autosamplers are available that can detect leaks and handle them safely, keeping the users safe. This is done by siphoning leaks into a single tray and triggering an alarm when the instrument detects liquid in the tray.

6 Questions to Ask When Purchasing Autosamplers

1. Is the autosampler compatible with your current analytical instruments?
2. How many samples can the instrument accommodate? Can you expand this number?
3. What is the injection volume range of the autosampler?
4. Which injection method does the instrument use?
5. What range of speeds are available for injection? What is the maximum back pressure during injection?
6. Which samples is your instrument capable of analyzing? Is the instrument designed for liquid or headspace injection?



Maintenance Tip

Autosamplers come with comprehensive maintenance schedules and instructions. By following the instructions and timeline for your instrument, lab members can perform weekly, monthly, and annual maintenance without a service provider. This will help your lab save money on a service plan. Service providers can be contacted for more complex issues or if you are not comfortable replacing parts on the instrument.



Manufacturers

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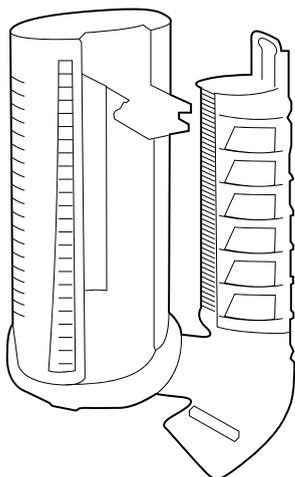
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BENCHTOP AUTOMATION



Automated benchtop instruments often extend a lab's capacity by performing routine tasks while freeing their operators to focus on other elements of their research. Automated titrators, incubators and imaging systems are all becoming increasingly common in labs where accuracy and consistency are paramount.



Safety Tip

If the instrument you decide to purchase does not have a safety shield separating the work area from the operator, make sure other measures are in place to protect the user. The instrument should have a sensor to make sure it stops if any foreign objects enter the work area, preventing mechanical injuries. You should also place the instrument in an area that is easily decontaminated in case any splashes happen while the instrument is running a protocol.

6 Questions to Ask When Purchasing Benchtop Automation Instruments

1. How much bench space do you have available for an automated instrument?

2. Will the instrument work with other equipment currently in your lab?

3. Is the instrument modular? Can it perform more than one task, or will you need separate instruments for each task?

4. Will the instrument be able to meet your needs? What is its capacity?

5. How well will the instrument fit into your lab's current workflow?

6. Is there flexibility within the instrument's protocols? Can the protocols be customized to your needs?



Maintenance Tip

An advantage of benchtop automation is that these instruments have pre-programmed protocols that allow for consistency when running experiments. These protocols extend


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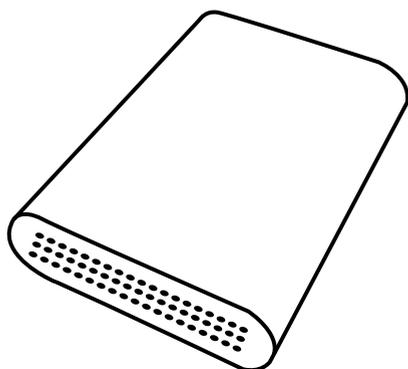
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beyond experiments and also include cleaning and maintenance programs. Use these programs regularly to keep your instrument functioning like new.

INSTRUMENT / LABORATORY MONITORING



Laboratory and instrument monitoring solutions have evolved well beyond simple alarms and now offer the user advanced analytics regarding instrument usage and allows users to seamlessly integrate their lab's technology with their LIMS or ELN. Additionally, remote monitoring of lab equipment lets lab managers respond quickly to possible problems or equipment failures.



Safety Tip

Monitoring systems can allow you to run many experiments at once and to even run equipment remotely. Before leaving any laboratory equipment unattended, make sure your monitoring system is working correctly and will provide you with notifications in case anything goes wrong. If you are going to be leaving equipment unattended for long periods of time, look for monitoring systems that will automatically shut down the instrument in case of an equipment malfunction.

6 Questions to Ask When Purchasing Monitoring Equipment

1. How many instruments can be monitored on the network? Can the network be expanded to include more instruments as the needs of your lab grow?
2. Are the manufacturers and models of your current instruments compatible with the monitoring platform?
3. Can all instruments be accommodated on a single network and can they be monitored with a single computer program?
4. Is the system cloud-based? Will you be able to receive notifications when you're not in the lab?
5. Does the monitoring system have backup cellular in case the wi-fi fails?
6. How user-friendly is the monitoring software?



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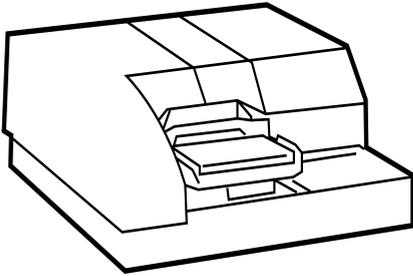


Maintenance Tip

Instrument and laboratory monitoring allows you to identify equipment malfunctions within your lab as soon as they happen. With this knowledge, you can call a service technician as soon as the malfunction occurs, limiting the downtime of your instrument. Monitoring can also be used

for more routine equipment maintenance. For some monitoring systems, you can use the software provided to record when maintenance was last conducted on an instrument and set up a reminder for the next scheduled service appointment.

MICROPLATE AUTOMATION



Microplate automation can greatly increase throughput while reducing human error often introduced by manually transferring microplates. Microplate automation includes stackers, washers, lidding/de-lidding, and transfer devices, among others. These instruments can be integrated with other instruments, like liquid handling devices or microplate readers.



Safety Tip

Microplate washers are able to increase the speed and accuracy of wash procedures. However, these instruments can produce aerosols during washes that may be harmful to the instrument operator. When considering microplate washers, look for models that have aerosol covers that will contain any aerosols produced during wash procedures within the instrument.

6 Questions to Ask When Purchasing Microplate Automation Instruments

1. Will the instrument address any bottlenecks in your microplate preparation process?
2. Is the equipment modular? Can you add additional instruments as your needs grow?
3. What is the capacity of the instrument? How many plates can it hold at once?
4. Is the instrument compatible with other microplate automation equipment already in your lab?
5. Which microplates are compatible with the system? Which volumes and number of wells will the system accommodate?
6. Can the protocols be configured to meet your specific needs?



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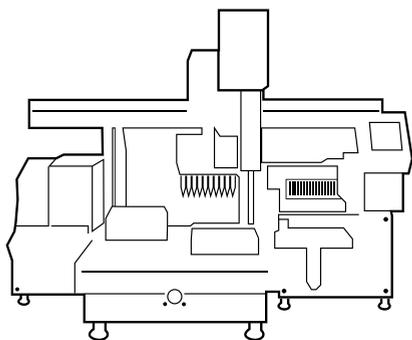


Maintenance Tip

Like any lab equipment, your automated microplate instruments should be serviced regularly. In addition to this service schedule, many microplate washers come with automated cleaning protocols that will help you

maintain your instrument between experiments. Look for this feature when considering microplate washers to help extend the life of your instrument.

ROBOTIC WORKSTATIONS



Automated laboratory workstations allow for high throughput, and walk-away processing of specific applications such as cell-based assays, ELISA, PCR, cell culture, and NGS. Automation of these multi-step processes allows for greater precision and consistency while freeing laboratory staff from repetitive procedures.



Safety Tip

Robotic workstations are able to complete repetitive tasks usually performed by humans. The benefit of robotic workstations is that they are able to work around the clock, even during your lab's down time when your workers have gone home. Using robotic workstations can also decrease the amount of time your workers need to spend pipetting in the lab, letting them go home earlier and allowing them to better prepare themselves mentally and physically for the next day of experiments.

6 Questions to Ask When Buying a Robotic Workstation

1. How long can the instrument run before a human needs to intervene?
2. Can the parts of the workstation be upgraded and adapted as the needs of your lab change?
3. How much space do you have available in your lab for a robotic workstation?
4. What is the capacity of the instrument? How many samples can it prepare?
5. How costly will parts be to repair or replace if they break?
6. How easy is the workstation to program? Are the protocols flexible and can they be changed to fit your experimental needs?



Maintenance Tip

Any instrument that performs repetitive tasks needs to be monitored for inconsistencies in experimental results. To avoid any discrepancies between experiments, make sure you are regularly maintaining your robotic workstation and have a certified technician make any necessary repairs as they arise.



Manufacturers

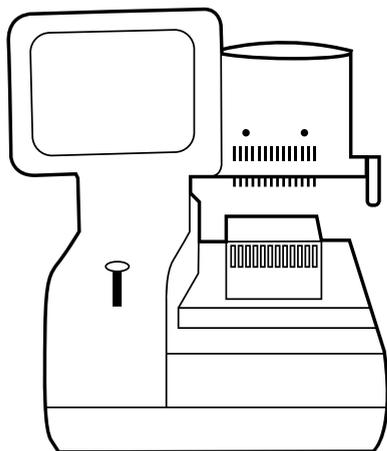
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SAMPLE MANAGEMENT



Accurate sample storage and retrieval is critical for many labs. Automated sample management tools range from benchtop tools such as automated decapping devices and barcoders to room-sized robotic storage and retrieval systems.



Safety Tip

Clear labeling of tubes and plates is important in any lab to keep track of precious samples. This practice is especially important if the samples you are storing are hazardous. Labeling should provide enough information so that your lab members know the correct precautions to take when handling the sample. This information can be difficult to convey with handwriting on tubes and the solution may be to incorporate barcoding into your sample management protocols.

6 Questions to Ask When Buying a Sample Management System

1. How easy is it to find samples using the software? Can the program be modified to incorporate other sample information?
2. Will the instrument help address the sample storage concerns of your lab?
3. What storage vessels (tubes, plates) are compatible with the system? Can it accommodate more than one type of storage vessel?
4. What type of barcoding does the system use? Will the barcode be able to withstand physical and chemical changes and can it be read through frost and ice?
5. Is the technology scalable? Can its capacity grow as your needs expand?
6. How easy is it to find samples using the software? Can the program be modified to incorporate other sample information?



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Maintenance Tip

Never skip a maintenance appointment for your sample management instruments. Samples are precious and usually irreplaceable. Malfunction of sample management equipment could result in improper storage, sealing/capping, or labelling that may lead to the loss of your samples.

solutions FOR LABORATORY AUTOMATION

Laboratory automation technologies offer the ability to extend a lab's capacity while at the same time elevating experimental data quality and reproducibility. Laboratories focused on activities such as high-throughput screening, combinatorial chemistry, automated diagnostics, or large-scale sample storage could simply not function without the benefit of advanced automated instruments and technologies.



INTEGRA: ASSIST PLUS PIPETTING ROBOT

INTEGRA's ASSIST PLUS pipetting robot is designed to offer exceptional flexibility, without the need for dedicated personnel or complex programming. Using any VOYAGER adjustable tip spacing pipette or VIAFLO electronic multichannel pipette, this compact system offers laboratory automation at an affordable price, providing reproducible and error-free processing while eliminating repetitive manual pipetting tasks.

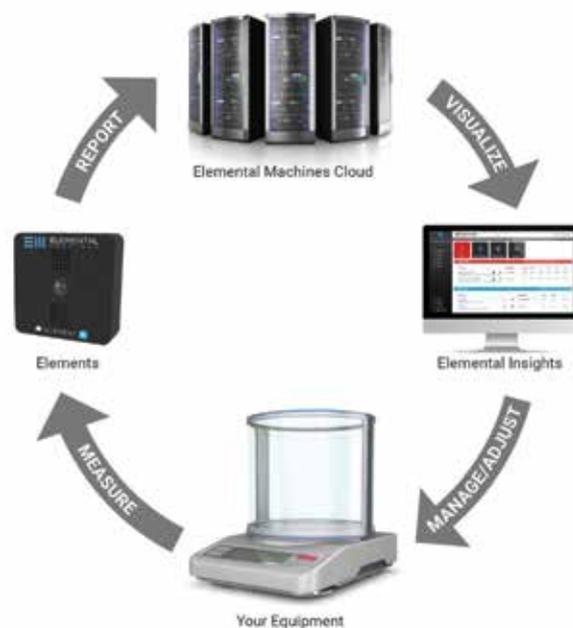
Visit www.integra-biosciences.com to watch the product video.

TECAN: FLUENT® GX LABORATORY AUTOMATION WORKSTATION

FLUENT® GX was designed to meet the needs of various life science workflows, such as high throughput genomics, by combining high precision liquid handling – down to 200 nL – with straightforward set-up of normalization, sample transfer, and reagent distribution using Smart Commands.

Its freely configurable architecture allows rapid integration of devices for DNA quantification and processing and offers exceptional storage capacity for plates and tips.

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Echo® 650 Series Liquid Handlers represent the most versatile instruments for acoustic liquid handling. Transfer from acoustic sample tubes with high- and medium-throughput processing speeds with the Echo 655T and 650T, respectively, or from Echo® Qualified Microplates and upgrade to transfer from acoustic sample tubes with Echo 655 and 650.

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AUTOMATING NITROGEN DETERMINATION



Is there a universal, fast, and safe method for nitrogen determination using the smallest sample size while ensuring maximum precision and repeatability?

The need to perform nitrogen determination in a series of different commodity products, such as drugs, organic compounds, perfumes, extracts from various sources, detergents, research products (for example, seeds under development, the quantity of which is very limited), precious materials, etc. requires a universal method that is simple, safe, quick, precise, and uses the least possible sample quantity, especially when this is precious or scarce. The most used and most traditional method in this field is surely Kjeldahl, but for these types of samples, Kjeldahl presents a series of drawbacks that make its use complicated or not suitable.



The VELP combustion analyzers offer the operator a cloud-enabled solution to precisely determine the nitrogen content of small sample quantities easily and in a few minutes.

A common situation for many lab operators is to have limited sample quantities, and a series of analyses have to be performed to obtain accurate results. Another possible and frequent situation—the sample to be analyzed is precious, so it is important to minimize the sample consumption and associated costs.

VELP's elemental analyzers (NDA 701/702 and CN 802) are versatile solutions that will help laboratories to obtain results from precious or scarce samples. The nitrogen determination is carried out through a combustion of the sample producing elemental compounds that with reduction and separation processes allow only nitrogen to be detected by a Thermal Conductivity Detector (TCD).

The automatic autosampler has the possibility to be loaded with four discs with 30 positions, each are able to address any throughput requirement. The operator is just required to prepare the samples in practical tin foils and load into the autosampler. Any kind of sample can be loaded, be it solid or liquid, and the VELP analyzer guarantees no memory effect or cross contamination.

The TCD of VELP NDA 702 and CN 802 (Carbon & Nitrogen analyzer) has the lowest LOD of just 0.001 mgN. Thanks to this exclusive detector, it is possible to reduce the sample size to a minimum, optimizing the cost per analysis while retrieving the most accurate and precise results. Maximum reproducibility is guaranteed by the possibility to enable the analyzers for cloud connectivity to benefit from the exclusive features of VELP Ermes platform, such as the remote collection and storage of the data facilitating traceability and reproducibility.



VELP ELEMENTAL ANALYZERS work with helium and argon as carrier gas and are enabled to connection to the cloud-based platform VELP Ermes.



For more information, visit www.velp.com