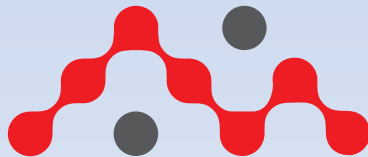


Advanced
i-Series

High Performance Liquid Chromatograph



ANALYTICAL INTELLIGENCE

- Automated support functions utilizing digital technologies, such as M2M, IoT, and Artificial Intelligence (AI), that enable higher productivity and maximum reliability.
- Allows a system to monitor and diagnose itself, handle any issues during data acquisition without user input, and automatically behave as if it were operated by an expert.
- Supports the acquisition of high quality, reproducible data regardless of an operator's skill level for both routine and demanding applications.

Living in The New Normal

With significant change in the work arrangement; easy and remote access of instrument is highly demanded, regardless of the time and place.

Ai-Series enables a flexible workplace incorporating below capabilities:

- Analytical Intelligence™
- Remote operation and monitoring of instrument
- Network for data security
- Work from anywhere



Living LC

Living technology is an emerging wave of innovation that incorporates principles, activities and dynamics of life in technology.

Autonomous technology with adaptive intelligence will be the norm for all technologies of the future.

Immerse yourself in an emerging wave of innovations with an UHPLC-ready LC as dynamic and intelligent as life itself





The World's First Living LC

Advanced

i-Series

innovative

Remote instrument operation and monitoring allow analyses to be performed remotely, thereby reducing the time spent in the laboratory.

intelligent

Software integration ensures both data reliability and improved work efficiency.

intuitive

Intuitive operation ensures an efficient workflow.

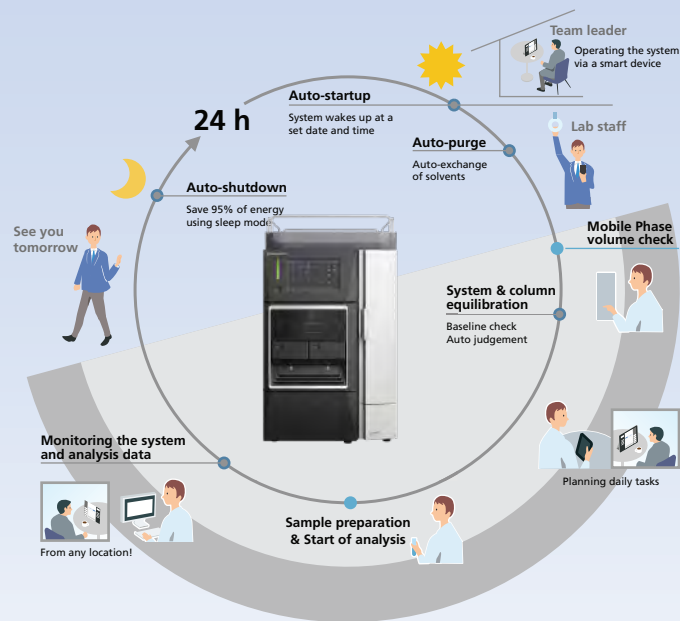
innovative

Work From Anywhere (WFA)

The 360° Automated System Preparation (ASP) combined with WFA kit enables remote operation from startup-to-shutdown.

LabSolutions advanced algorithms automate remote data analysis and report generation securely into centralized database with ER/ES capabilities.

The WFA workflow minimizes user intervention and also addresses attrition challenges.

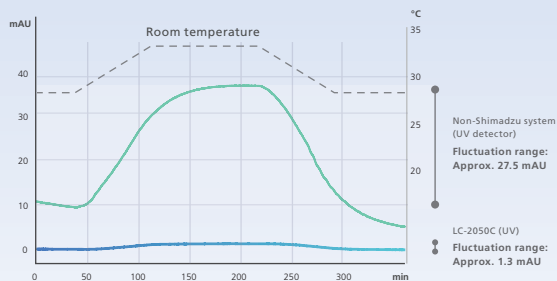
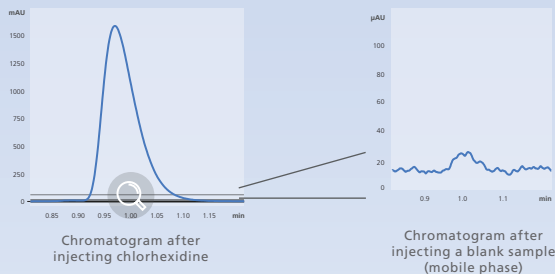


Work From Anywhere (WFA) Workflow

innovative

Advanced Fluidics Design

Shimadzu's proprietary fluidic channel design, parts and materials minimize carryover effects of sample residues to almost zero. This advanced engineering design ensures excellent reproducibility even with low injection volume < 1 μ L. The ultra-low carryover and wide linearity performance provides highly precise quantitative performance when analysing complex samples.



Advanced Optics Design

The dual-temperature control with TC-Optics and flow cell promises stable baseline that is less susceptible to room temperature variation and increased precision during verification testing and quantitative testing of trace components.



WFA Work-week illustration with week-end automation

innovative

Work From Anywhere Kit

The Advanced i-Series WFA kit consists of Live Mobile Phase Monitoring (MPM) device with performing auto-tracking of the mobile phase volume, using both large (5L) and small (1L) reservoir bottles.

The IoT-MPM setup enables Real-time monitoring of reservoir mobile phase utilizing a gravimetric sensor and the information can be easily accessible from any location via smart devices. This ensures highest productivity as the system operation can be performed round-the-clock through weekend automation.

Additionally, the mode of operation is highly secure and compliant as all operations are audit trail recorded.

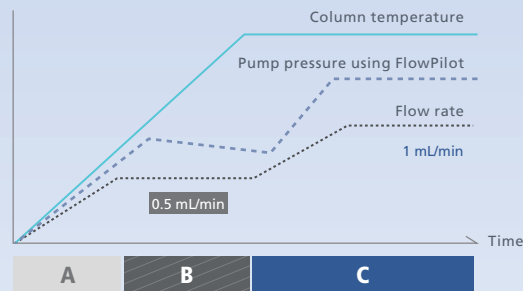
innovative

FlowPilot Protects Columns Automatically

Proper handling of the delicate HPLC columns is not only for the prolonged lifespan of the consumables, but to ensure the quality of the result produced as well. The Advanced i-Series delivers both results with its new approach in regulating the mobile phase flow control to obtain the best result.

The automated FlowPilot function increases the flowrate gradually to the set point to prevent any sudden pressure surge applied on the column.

In addition, if column heating is necessary, the system further regulates the mobile phase flowrate following the heating rate of the column oven. This provides dual protection on the column.



FlowPilot
(Patent pending)

- A** Gradually increasing the flow rate
- B** Maintaining the flowrate at half the method flow rate
- C** When the oven temperature reaches the configured temperature, the flowrate is gradually increased up to the configured flow rate

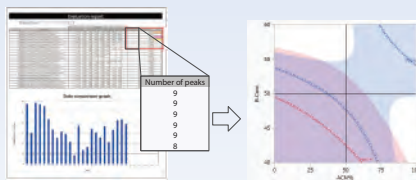
innovative

Smart Analytical QbD (SA-QbD) Kit

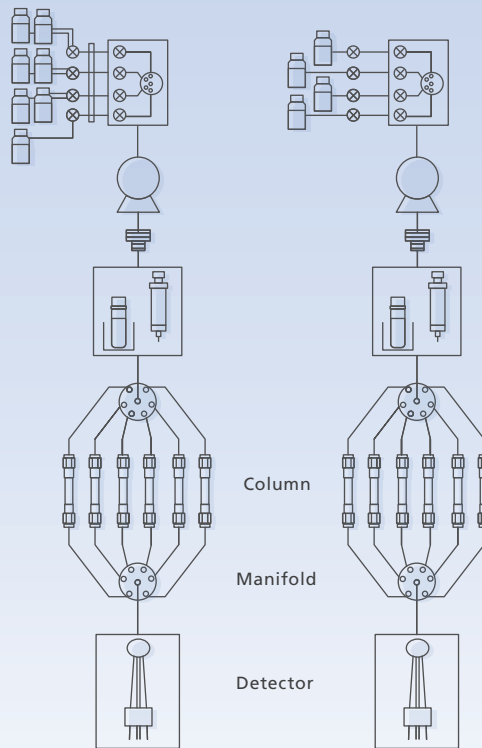
The latest AQbD (ICH Q14, Sep 2020) guidance is incorporated in Ai-Series for accelerated development of robust and reliable analytical methods.

Combination of 'Smart AQbD' kits, Method Scouting Solution and advanced solvent blending significantly reduces time for optimization and robustness evaluation. It supports "Design of Experiments (DoE) to Design Space (DS)" based on AQbD approach.

This SA kit greatly enhances productivity in QC & Testing labs by automating multi-batch and multi-method analysis.

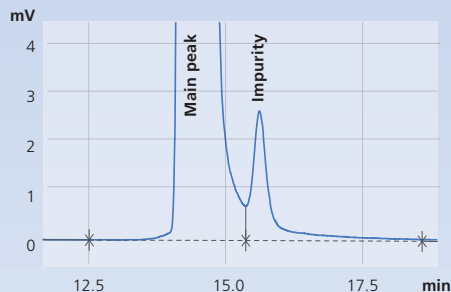


Smart AQbD DoE - DS Approach

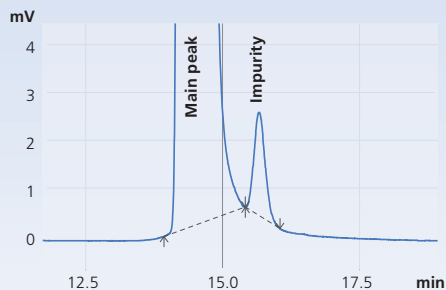


7 Mobile Phase QbD Kit

4 Mobile Phase QbD Kit



Baseline processing with no
parameters specified



Baseline processing with
complete separation

intelligent

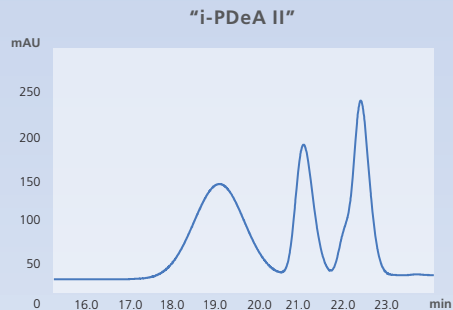
Advanced Algorithms i-PeakFinder™

Shimadzu's i-PeakFinder™ is an AI based algorithm which simplifies integration of un-resolved peaks in a single step on wide range of complex chromatograms.

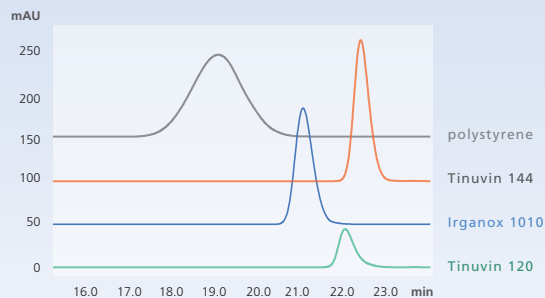
i-PeakFinder™ is capable of detecting and integrating peaks with high level of accuracy without requiring special parameter adjustment.

Its features include:

- Accurate detection of shoulder peaks
- Simplified peak-baseline processing with improved reproducibility
- Precise peak integration despite of variabilities caused by baseline drift
- Highly reliable results independent of operator's skill level



Deconvolution
into individual
peak elements



i-PDeA II chromatogram

intelligent

Advanced Algorithms

i-PDeA II Deconvolution

(intelligent Peak Deconvolution Algorithm)

The AI based i-PDeA II™ utilizes Multivariate Curve Resolution Alternating Least Square (MCR-ALS) method to separate and understand co-eluting peaks which are not separated by the column.

i-PDeA II™ enables PDA users to visualize and detect a minor single impurity even when the impurity is co-eluted with an analyte.

It facilitates separation and quantitation of hard-to-separate peaks on the column which reduces the effort required to investigate separation parameters.

intuitive

Advanced 'Report Set'

Automated Report Creation wizard smartly compiles instrument method, processing method and analytical results into single report set leveraging pre-configured customizable templates.

This prevents errors and data manipulation associated with manual entry and creates audit-ready reports. Under network environment reports can be created, checked and approved online from any location.

LabSolutions ensures total compliance with FDA 21 CFR Part 11 on electronic records (ER) and electronic signatures (ES) with Data Integrity. It provides centralized management of data and user information.

Additionally, data security is fully protected with operation logs recording and audit trail functionality.

STEP 1
Analytical results



+

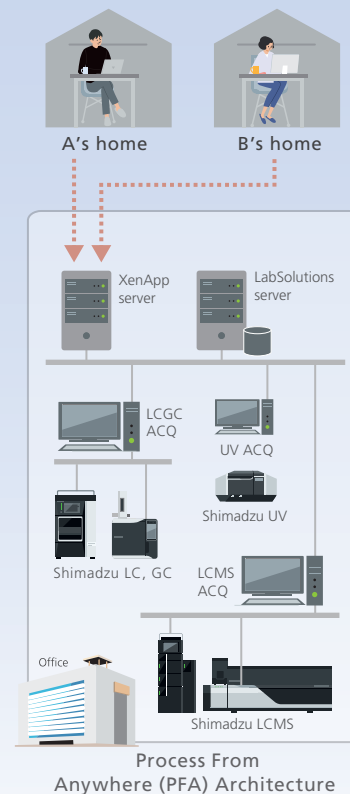
STEP 2
Template selection



STEP 3
Completed reports automatically saved to a database



Report
creation wizard



intelligent

Analytics From Anywhere

LabSolutions BiX

LabSolutions BiX Business Analytics Platform provides accurate lab insights with in-depth dashboards of user activities & asset utilization.

BiX connects with LabSolutions software and displays analytics for HPLC, GC, LCMS, UV, FTIR. etc.

All information can be easily accessible through the user dashboard, providing better management of laboratory resources.

This Analytics From Anywhere capability provides centralized business intelligence information for effective decision-making, minimizing operational costs and significantly increasing lab productivity.

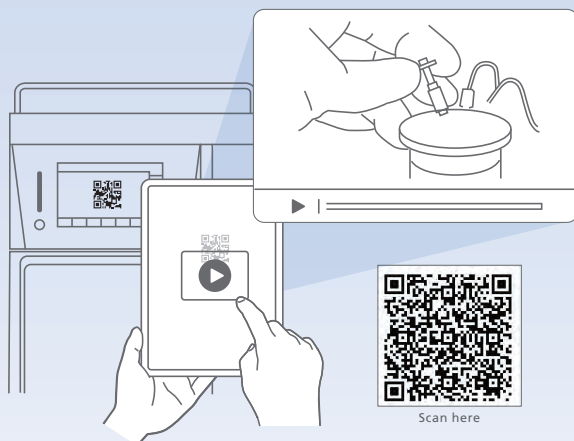


Analytically Intelligent

LabSolutions BiX
Brilliant | illume | expanse

intuitive

Interactive System Maintenance



QR guided maintenance videos

The touch screen color LCD GUI animates the 4-channels of instrument solvent flow depicting live status.

Chromatography conditions can be monitored at-a-glance and even novice users can navigate controls easily.

QR codes guide the user to Shimadzu's Global Support site where step-by-step intuitive maintenance information and videos guide the analyst to perform onsite system maintenance.

This ensures the system is always at the best condition and data produced is of best quality.



Shimadzu (Asia Pacific) Pte Ltd.

www.shimadzu.com.sg/an

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