

Trace elemental analysis

Thermo Scientific iCAP MX Series ICP-MS

Fully automatic start up and performance verification

The Thermo Scientific™ iCAP™ MX Series ICP-MS instruments provide sensitive, accurate, and robust analysis of a wide variety of sample matrices. Designed with ease of use and intelligent solutions to time-consuming steps in the daily laboratory in mind, the Get Ready process allows for automatic and unattended instrument initialization and performance verification.

Inductively coupled plasma-mass spectrometry (ICP-MS) is a powerful technology for trace and ultra-trace determination of elemental impurities in various markets, including environmental and food safety testing, industrial applications, clinical analysis, and research. In recent years, ICP-MS has become not only more sensitive to improve detection of lower concentrations, but also more robust to replace analyses previously run on ICP-optical emission spectroscopy (ICP-OES) instruments.

Another emerging trend is an increase in automation of labor-intensive and time-consuming steps in sample preparation and analysis. With increased demands on flexibility, both from clients demanding results with short turnover time as well as laboratory personnel looking for more flexible work arrangements, automated and timed start of the analytical system is an area to improve on efficiency and productivity in the laboratory.

The Get Ready process, available in Thermo Scientific™ Qtegra™ Intelligent Scientific Data Solution™ (ISDS) Software simplifies instrument set up by automating a series of routine tasks. After assessing results from an initial performance check, Get Ready automatically triggers any required corrective actions until the instrument is ready to perform analysis. An overview of how Get Ready replaces manual actions to allow LabBook-based analyses to be more quickly processed is displayed in Figure 1.

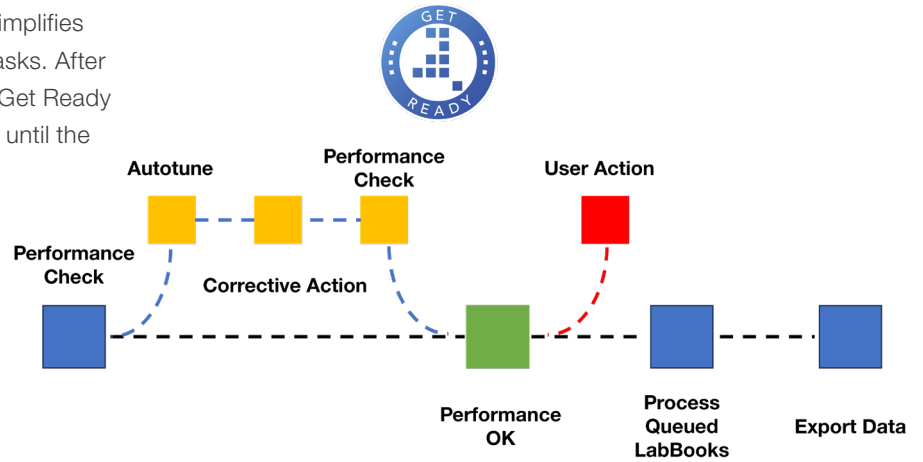


Figure 1. Overview of the Get Ready process within the analysis workflow

The Get Ready process can be started directly in the Dashboard view of the Qtegra ISDS Software and provides a comprehensive overview of the instrument status, as well as all connected peripheral devices used in the configuration.

Sample	Position Kind	Rack	Vial
> Interface autotune solution	Vial	Standards	1
Blank solution	Vial	Standards	2
Performance check solution	Vial	Standards	1
Warm-up solution	Vial	Standards	2
After completion solution	Vial	Standards	2

Figure 2. Get Ready process dialog box with details of advanced options for Autotunes, performance checks, and Mode selection

The following options are available:

- Start Get Ready: The plasma is started and allowed to warm up; user-specified performance reports are executed (with an option to run an autotune prior to the performance report).
- Repeat Get Ready: If the plasma is already on, a performance report can be generated before subsequent analysis are started.
- Schedule Get Ready: Set the instrument to start the plasma and perform applicable performance checks at a user-specified time in the future; the system will be ready to analyze when needed (Figure 3).

Upon completion of the Get Ready process, the instrument can be set to switch to the intended mode of operation while aspirating a suitable solution (i.e., blank solution to ensure the lowest backgrounds in the analysis). It is also possible to start the data acquisition for already scheduled LabBooks. In particular, the option to schedule the Get Ready process allows laboratory staff to make more efficient use of their time, as they can continue to prepare samples for analysis while the instrument is starting and getting ready for analysis.

The Get Ready process, available for the iCAP MX Series ICP-MS automates currently manual processes in the lab and reduces overhead times by automating the steps to prepare the system for operation. The Get Ready process can be used in combination with a compatible autosampler, for example the Thermo Scientific iSC-65 Autosampler.

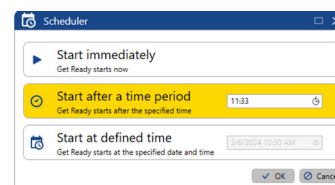


Figure 3. Schedule the Get Ready process as an option to have the instrument ready for analysis at a given time

- PROVIDES: Fully automated execution of system performance verification including corrective actions, if required. The Get Ready process can be started with a single click.
- IS: Fully customizable to support method or workflow specific SOPs.
- PROVIDES: Scheduling of automated instrument initialization, so that the instrument is ready for analysis when needed.

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