

IONIC system

Requirements for operating the IONIC system

System requirements – Technical White Paper

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Metrohm AG
Ionenstrasse
CH-9100 Herisau
Switzerland
+41 71 353 85 85
info@metrohm.com
www.metrohm.com

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Technical Communication
Metrohm AG
CH-9100 Herisau

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Table of contents

1	Technical White Paper – Overview	1
1.1	IONIC system – Overview graphic	1
1.2	System design	2
2	Licenses	3
2.1	Activating licenses	3
2.2	Data storage during Metrohm licensing process	3
3	Interfaces	4
3.1	Network	4
3.2	USB	5
4	Backup	6
5	User management	7
6	Audit Trail	9
7	Metrohm Data Service	10
8	Metrohm Notify app	11

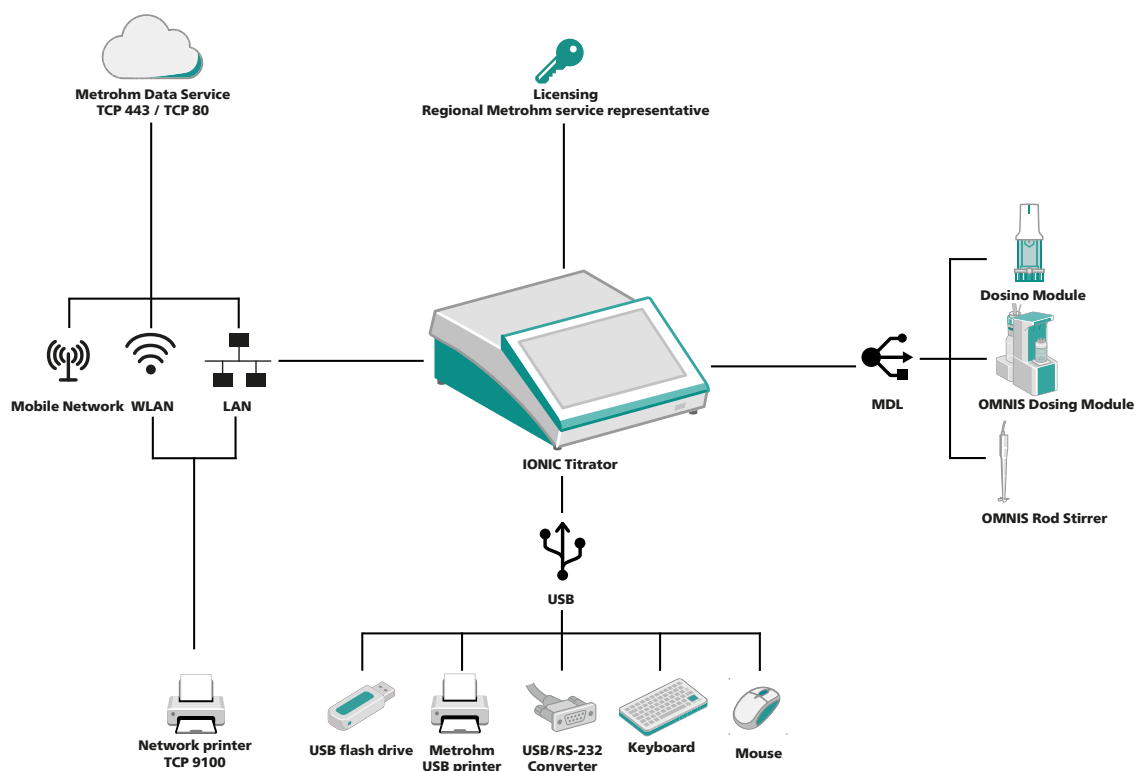
1 Technical White Paper – Overview

The Technical White Paper describes the system requirements and general information needed regarding licenses, interfaces, backup, user management, Metrohm Data Service, and Metrohm Notify for a successful application of an IONIC system.

The entire IONIC help is available on the device or as a [PDF for downloading](#) from the website.

The manual of the IONIC Titrator is available on the website as a [PDF for downloading](#).

1.1 IONIC system – Overview graphic



1.2 System design

Operating system

The IONIC app is based on an embedded Linux operating system with reduced range of functions. This contains selected open source software components that are used as part of the operating system.

 An SBOM (**S**oftware **B**ill **o**f **M**aterials) is available and can be requested if required.

IONIC system update

The existing system of the IONIC Titrator can be updated to a newer version with the **Update system** function. Metrohm International Headquarters supplies new IONIC app versions to the regional Metrohm representatives. They pass on the IONIC App version to customers promptly.

A system update updates the IONIC Titrator on the instrument level on the one hand and the IONIC app on the software level on the other. A firmware package with all associated instrument components is loaded onto the IONIC Titrator during the system update. The system updates all internal instrument components and uses the firmware package to check the firmware of all instruments that are connected to the IONIC Titrator via MDL interface. The **Update firmware** function can be used to update connected instruments with outdated firmware to the latest version.

 The instructions for updating the system and the firmware are available for download in the IONIC help on the device or as a [PDF for downloading](#).

2 Licenses

2.1 Activating licenses

The range of functions of the IONIC Titrator can be extended by additional licenses. The licenses must be activated by the regional Metrohm service representative. Contact the regional Metrohm service representative for matters concerning licenses.

2.2 Data storage during Metrohm licensing process

Licenses are activated by the regional Metrohm service representative. When licensing, the following data is transmitted to Metrohm AG and stored on the Metrohm Activation Platform:

- General data on the IONIC titration system used:
 - Reason and time of data transmission (e.g., licensing)
 - Data collection time
 - Names, types and serial numbers of the IONIC Titrator and the integrated functional units (e.g., Measuring Interface Analog, Measuring Interface Digital)
 - IONIC app version (at the time of licensing)
 - Various identifiers for unambiguous assignment of the system
 - Serial number of the license container
 - Data integrity
- Data on the connected instruments and functional units:
 - Names, types, and serial numbers of the instruments and functional units (e.g., OMNIS Dosing Module, Dosino Module, OMNIS Rod Stirrer)
 - Firmware version (at the time of licensing)

In addition to this data, Metrohm AG saves the customer name at the time of licensing. The data mentioned above is transmitted in encrypted form.

There is no automatic remote access to the IONIC Titrator or the data saved on it.

3 Interfaces

 The specifications for the network connections and USB interfaces are documented in the "Technical specifications" chapter in the *IONIC Titrator manual (8.1040.8101)*.

3.1 Network

The IONIC Titrator can be connected to the network to use the Metrohm Data Service and network printers. In the network settings, the IONIC Titrator can be connected to the network via LAN, WLAN or mobile communications.

If multiple connections are available, then the software uses a priority list to decide which network connection is to be used first. LAN has the highest priority, WLAN the medium priority, and mobile communications the lowest priority.

 The network connection is optional.

LAN

The IONIC Titrator can be connected to the network via LAN connector. The **DHCP** network protocol (**D**ynamic **H**ost **C**onfiguration **P**rotocol) can be activated and deactivated manually in the LAN settings.

When the **DHCP** is activated, the IP address, the subnet mask, the gateway address, and the DNS server are all obtained automatically.

The LAN cable can be plugged into the LAN connection socket on the rear of the instrument.

WLAN

The IONIC Titrator can be connected wirelessly to the network via WLAN. Available WLAN networks that can be connected to the IONIC Titrator are displayed in the WLAN settings. The WLAN can be activated and deactivated manually.

Mobile communications

The IONIC Titrator can connect to the Metrohm Data Service wirelessly via mobile communications. Due to the network infrastructure, the IONIC Titrator cannot be reached directly from the public network. The mobile data can be activated and deactivated in the mobile communications settings.

Ports

Communication takes place via TCP/IP. The following ports are required for network communication:

 In addition to the ports listed here, dynamically assigned ports can also be used for outgoing client connections.

Use	Standard
Metrohm Data Service	TCP 443, TCP 80
Network printer	TCP 9100
DHCP (automatic network configuration)	UDP 67, UDP 68
DNS name resolution	UDP 53
Time synchronization (NTP)	UDP 123

 For network communication, the DNS name resolution must be available and activated.

3.2 USB

The IONIC main instrument has a USB connector on the front of the instrument (USB-C) and 2 USB connectors on the rear of the instrument (USB-A).

Applications for the USB connector:

Object	Use
USB flash drive	▪ Importing and exporting (e.g., samples, methods) ▪ Saving reports (e.g., results, calibration) ▪ Updating a system ▪ Exporting log files
USB/RS-232 Converter	Connecting serial instruments or balances for various applications.
Printer	Connecting CUSTOM printers and EPSON printers.
Mouse and keyboard	Control of the user interface.

5 User management

The user management can be used in the IONIC app to control which user accounts have access to which functions and data. The use of user accounts and user group rights enables a user-friendly setup and simple management in the system. In addition, security in the system is ensured and compliance is maintained via user management.

A distinction is made in the IONIC app between limited user management and extended user management.

Limited user management

The limited user management is available in the IONIC app without the **User management** license.

The subsections with the predefined user accounts and user groups are visible in the **User management** work area.

The **Admin**, **LabManager**, **RoutineUser**, and **ServiceEngineer** predefined user accounts are visible in the **User accounts** subsection. The **Administrators**, **Laboratory managers**, **Routine users**, and **Service engineers** user groups are predefined with different user group rights in the **User groups** subsection.

The password of the user accounts can be changed; all other settings cannot be edited. The access data of the respective user account enables login with the IONIC app.

Extended user management

Extended user management is available in the IONIC app only with the **User management** license.

The subsections are visible in the **User management** work area and can be edited. The predefined user accounts and user groups are visible and the password of the predefined user accounts can be changed. In addition, new user accounts and user groups can be created and defined.

6 Audit Trail

In the Audit Trail, all entries and actions undertaken for creating, modifying, and deleting electronic documents (**Samples** and **Processes** work areas) are recorded with a time stamp. In addition, entries and actions are also recorded in the **Equipment**, **User management**, and **Settings** work areas. Audit Trail entries can be neither deleted nor overwritten.

The Audit Trail is available in the IONIC app only with the **Audit Trail** license and must be activated under **Settings ► Security ► Electronic records**. If the **ERES compliance** was activated under **Settings ► Security ► Login and compliance**, then the Audit Trail will be activated automatically.

All actions that are relevant for a determination are documented in the determination overview in the **Chronology** paragraph, even without a license.

 Additional information on the Audit Trail is available in the IONIC help on the device or as a [PDF for downloading](#).

8 Metrohm Notify app

The Metrohm Notify app can be used to display messages from the IONIC Titrator on mobile devices.

Depending on the urgency level set in the IONIC app, messages from certain message types are sent to the Metrohm Notify app and displayed as notifications on the mobile device. E.g., this means that important messages and required user actions can also be tracked outside the IONIC Titrator.

 Additional information on the Metrohm Notify app can be found in the IONIC help on the device or as a [PDF for downloading](#).