

RMS8120i Microbial Analyzer



Operation Manual RMS8120i Microbial Analyzer

©METTLER TOLEDO Thornton, Inc. 2026

No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying (other than where specifically noted), for any purpose without the express written permission of METTLER TOLEDO, Inc. U.S. Government Restricted Rights: This documentation is furnished with Restricted Rights.

METTLER TOLEDO THORNTON RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.

This document contains proprietary information, which is protected by copyright. All rights are reserved. No part of this document may be photocopied (other than where specifically noted), reproduced or translated, into another language without the prior written consent of METTLER TOLEDO Thornton, Inc.

Table of Contents

1	Safety Instruction	4
1.1	Definition of Equipment and Documentation Symbols and Designations.....	4
1.2	Laser Safety	4
1.3	Electrical Safety Warnings.....	5
1.4	Safe Chemical Handling	5
1.5	Correct Disposal of the Unit.....	5
1.6	Environmental Protection	5
2	Introduction	6
2.1	Overview	6
2.2	Principle of Operation	6
2.3	Specifications	6
2.3.1	Installation Requirements	6
2.3.2	Power Requirement	7
2.3.3	Analyzer Specifications	7
2.4	Inspection of RMS8102i Analyzer	8
2.5	Package Contents.....	8
2.6	Dimensional Drawings	8
2.7	Main Parts	9
2.8	Internal Components of the Analyzer	10
3	Installation	11
3.1	Wall Mounting the Analyzer	11
3.2	Connecting Power to the Analyzer	13
3.3	Connecting Water to the Analyzer	15
3.4	Connecting the M800 Transmitter to the Analyzer	16
4	Startup	19
4.1	Start the M800 Transmitter.....	19
4.2	Start the RMS8120i.....	19
4.3	Startup Flow Adjustment	19
5	Maintenance	20
5.1	By Vendor.....	20
5.2	By User	20
5.3	Shut Down of the Analyzer	21
5.4	Auto Restart	21
6	Configuration of the User Interface in the M800 Transmitter	21
6.1	Operating Elements	21
6.2	Display Screen	22
6.2.1	Configuration of Display Screen	22
7	RMS8120i's M800 Menu Functionality	23
7.1	CONFIG menus.....	23
7.2	ISM menus	31
8	Faults	34
9	Errors	35
10	Appendix 1 – Troubleshooting Guide	36

1 Safety Instruction

This manual includes safety information with the following designations and formats.

1.1 Definition of Equipment and Documentation Symbols and Designations



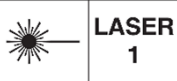
WARNING

RISK OF ELECTRICAL SHOCK.



WARNING

The RMS8120i is an Overall Class 1 laser product as specified by IEC 60825-1:2014, EN 60825-1:2014/A11:2021, and contains a Class 3B laser as specified by IEC 60825-1 3rd ED (2014).

Symbol	Laser Information	Consequence	Warning Instruction
	The internal Class 3B laser in the RMS8120i laser assembly module.	Severe injury to eyes and skin if exposed to the Class 3B laser.	Do not open or attempt to service the laser module.
	The overall Device is Class 1 Laser Product		Do not open or attempt to service the laser module.

1.2 Laser Safety



WARNING

CLASS 3B LASER INSIDE WITH A MAX RADIATION CAPABILITY OF 300mW WHEN OPEN. AVOID EXPOSURE TO THE BEAM.

Laser Safety for service personnel opening the Laser Module:



CAUTION

Safety glasses must be worn by service personnel if opening the Laser Module of Wavelength range: 180 - 532 nm, Optical density 7+.



CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



NOTICE

Important operating information.

Symbol	Instruction on a device	Attention
	Power On Symbol	This symbol on the toggle switch indicates that the control places the equipment into a fully powered state.
	Power Off Symbol	This symbol on the toggle switch indicates that using the control will disconnect power to the device.

The following is a list of general safety instructions and warnings. Failure to adhere to these instructions can result in damage to the equipment and/or personal injury to the operator.

- Follow all warnings, cautions, and instructions indicated on and supplied with this product.
- Install equipment as specified in this instruction manual. Follow appropriate safety codes.
- Use only factory-documented components for repair. Tampering or unauthorized substitution of parts and procedures can affect the performance and cause unsafe operation of your process, as well as void factory warranties.
- If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment against hazards may be compromised.
- The analyzer should be opened by qualified personnel only.
- Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.
- DO NOT run the analyzer in On-line Mode with the RMS8120i online shutoff valve in the closed position.
- DO NOT run the RMS8120i when no liquid is flowing through the analyzer.
- The RMS8120i weighs approximately 36.28 kg (80 pounds). If, for any reason, it must be lifted or relocated, take the necessary precautions prior to and during the movement of the analyzer. Incorrect lifting could cause serious injury.

1.3 Electrical Safety Warnings



WARNING

Installation of cable connections and servicing of this product require access to shock hazard voltage levels.

Switch or circuit breaker shall be in close proximity to the equipment and within easy reach of the OPERATOR; it shall be marked as the disconnecting device for the equipment.

Electrical installation must be in accordance with the National Electric Code and/or any other applicable national or local codes.

Safety and performance require that this instrument be connected and properly grounded through a three-wire power source.

1.4 Safe Chemical Handling

Consult the Material Safety Data Sheet for each material and the precautions listed in this manual where the materials are used.

1.5 Correct Disposal of the Unit

When the analyzer is finally removed from service, observe all local environmental regulations. Please note the UV lamp supplied with the unit contains mercury.

1.6 Environmental Protection

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this device. Should this device be passed on to other parties, the content of this regulation must also be related.



2 Introduction

2.1 Overview

The RMS8120i Real-time Microbial Analyzer is an at-line sensor designed to detect microorganisms in pure and ultrapure water applications. The RMS8120i analyzer has continuous flow and measurement, allowing detection of any microbial changes regardless of the duration. The continuous design of the RMS8120i analyzer also allows for rapid detection of microorganisms, with results every 4 seconds.

The M800 Transmitter is a multiparameter, multi-channel instrument featuring a large, color touchscreen display that provides measurement and setup information for the RMS8120i analyzer. The M800 Transmitter can control and monitor the operation of the RMS8120i analyzer and other analyzer connected to it (PN 82121825). Refer to the M800 Transmitter manual for setup and operation.

2.2 Principle of Operation

The RMS8120i Real-time Microbial Analyzer (PN 31013101) is an at-line sensor designed to detect microorganisms in pure and ultrapure water applications. The RMS8120i is installed at-line, where the water flow is maintained at 50 ml/min, of which 15 ml/min passes through the main optical detection chamber of the sensor. The main detection chamber consists of 2 parts: The BioSure™ (US Patent: US12553075B2) and Laser-Induced Fluorescence (LIF) modules. The water sample enters the BioSure, where UV light optimizes microbial fluorescence response for better detection, including hard-to-detect viable but non-culturable (VBNC) microorganisms. Water subsequently passes through the flow cell and is illuminated by a 405 nm laser, causing fluorescence of two metabolites, NADH and riboflavin. These metabolites are present in all living microorganisms, and fluorescence is detected by a photomultiplier. Simultaneously, Mie scattering occurs and is detected on the particle-detecting photodiode. When these two events occur simultaneously, from the same object floating in the water that meets specific criteria for wavelength, duration, intensity, and signal, it is determined that a microorganism is present. The microorganisms are then reported as an Auto-Fluorescence Unit (AFU) per unit volume. The RMS8120i sensor provides continuous flow and measurement, enabling detection of any microbial changes regardless of duration. Real-time optical interrogation and detection enable rapid detection of microorganisms, with results delivered every 4 seconds. Particles that do not fluoresce are reported as inert particles. The M800 Transmitter is a multiparameter, multi-channel instrument featuring a large, color touchscreen display that provides measurement and setup information for the RMS8120i analyzer. The M800 Transmitter can control and monitor the operation of the RMS8120i analyzer and other analyzer connected to it.

2.3 Specifications

2.3.1 Installation Requirements

Ensure that the installation site meets or exceeds the following requirements:

- The RMS8120i weighs approximately 36.2 kg (80 lbs). The mounting structure must properly support the analyzer and related operational activities, such as the placement of calibration solutions on the side tray and routine maintenance. It is recommended that the mounting structure be rated for a minimum of 90 kg (200 lbs).
- For bench or surface installation, the RMS8120i analyzer should be installed on a clean, stable, dry, level, flat surface, preferably out of the way of other activities. The surface space required is 127 cm x 38.1 cm (50" x 15") (W-D).
- A distance of 76.2 cm (30") from the rear mounting surface should be provided in front of the analyzer for enclosure door clearance. Distances of 7.6 - 12.6 cm (3 - 5") should be maintained around the rest of the analyzer for air flow and operational clearance.
- Electrical power outlets and the water to be analyzed should be in close proximity.
- A drain or catchment vessel, which is open to atmosphere, needs to be available for the discharge of waste.
- The M800 Transmitter should be placed in proximity to the analyzer. Ensure the location and position of the M800 Transmitter allows for easy access to the connectivity ports of the analyzer, as the M800 is the user interface for the RMS8120i analyzer.
- Prior to installing the instrument, ensure that the location and position of the instrument allow for easy access to the connectivity ports on the side of the RMS8120i analyzer.
- Isolate the RMS8120i from vibration during operation. Ensure that the mounting structure or workbench is free from vibration. Also, be aware of vibrations transmitted or coupled by other equipment in adjacent locations.
- Particulate Matters: Ensure that the installation site's air does not contain excessive dust, smoke, or other particulate matter. This debris can clog air filters, causing a reduction in airflow around electronic components. Dust also forms a layer on electronic components, which reduces their ability to dissipate heat, which can cause overheating and damage.

2.3.2 Power Requirement

Analyzer **AC/DC Power Supply** System Power: Converts 120/240VAC at a frequency of 50/60 Hz to 24VDC.

AC Fuse Requirements: Glass, 3A, 250VAC, 5×20mm slow-blow fuse.

Use only the METTLER TOLEDO Thornton specified fuse.

2.3.3 Analyzer Specifications

RMS8120i analyzer requires a source of water connected to the analyzer as well as a drain for wastewater.

Technical Data of the RMS8120i

Flow rate	≥ 65 mL/min
Detection limit	1 AFU (Auto-Fluorescent Unit)
Minimum detection size	≥ 0.3 µm
Measurement range	0 - 10,000 AFU/mL
Analysis time	Continuous
Response time	~4 seconds
Data communication	4 - 20mA/Ethernet/IP/ Profinet/Profibus DP via the selected M800 Transmitter

Water Requirements

Temperature	5 - 70°C (41 - 158°F) 70 - 90°C* (158 - 194°F) with provided cooling coil
Inlet pressure	5 - 100 PSIG ¹ (0.34 - 6.89 barg)
Type / Quality	Water for Injection (WFI), Purified Water (PW), Ultrapure Water (UPW)

Power/Installation/Enclosure

Power requirements	100 - 240 VAC 50 - 60 Hz 3A
Monitoring location	At-line to drain
Inlet connection	0.125" (3 mm) O.D. compression fitting
Sample Outlet connection	0.125" (3 mm) O.D. 1/4 - 28 UNF flat bottom fittings
Waste Outlet connection	10 mm O.D. x 8 mm I.D. compression fitting
IP Ratings for Enclosure	IP 55
Enclosure material	Painted aluminum
Physical dimensions (WxHxD)	470 mm (W) x 705 mm (H) x 325 mm (D) 18.5" (W) x 27.75" (H) x 12.78" (D)
Weight	~80 lbs. (36.28 kg)

Environmental Conditions

Use	Indoor
Altitude	Up to 6,562' (2,000 m)
Environmental Temperature	5 - 45°C (41 - 113°F)
Environment	Pollution degree 2
Humidity (non-condensing)	80% maximum relative humidity up to 31°C (87.8°F), decreasing linearly to 33% relative humidity at 45°C (113°F)
Voltage	Mains supply voltage fluctuations up to ±10% of the nominal voltage of 100 - 240 VAC, 50 - 60 Hz Transient overvoltages: up to levels of overvoltage category II Temporary overvoltages occurring on the main supply

*Second cooling coil required for temperatures above 80°C

¹Calibration, cleaning and grab sample requires sample pressure of 0 psig (0 barg)

¹For installations with process pressure above 85 psig (5.9 bar(g)), the High-Pressure Regulator (P/N 58091552) is required. Refer to Sample Tubing Connections for additional information. Detailed installation instructions are supplied with the High-Pressure Regulator.

2.4 Inspection of RMS8102i Analyzer

On receipt of the package containing your RMS8120i, inspect the shipping box for visible signs of damage. Notify the shipping company if damage is evident. While unpacking, inspect the contents thoroughly and contrast them with the details in [section 2.5 ▶ Page 8] Contents. If there is any doubt concerning the integrity of the components, contact METTLER TOLEDO Thornton immediately.

2.5 Package Contents

Please verify that your shipment contains the items listed on your sales order. If any parts are missing, contact METTLER TOLEDO.

- Quick Start Guide with QR code
- RMS8120i analyzer
- Back wall panel mount kit
- 12" x 12" sterile dry wipes
- Analyzer key kit
- Sample cooling coil
- Outlet tubing kit
- Inlet tubing kit with clear PFA tube, 15 micron filter, elbow connectors, extra fittings, and ferrules
- Sampling bottle kit
- M800 Grounded shield (lever nut) Wago 5 kit

2.6 Dimensional Drawings

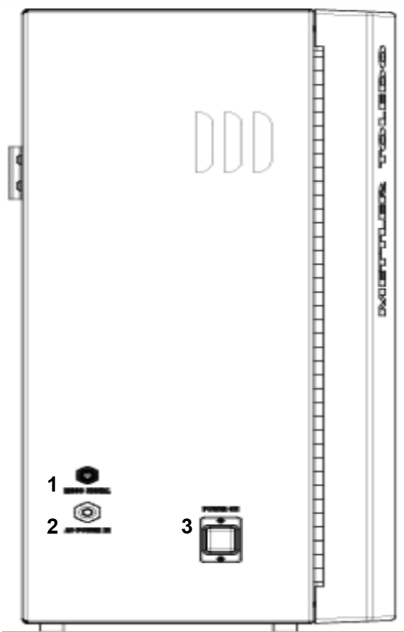


Figure 1: Analyzer Left Side View

Label	Description
1	M800 connectivity
2	AC power input
3	Power switch

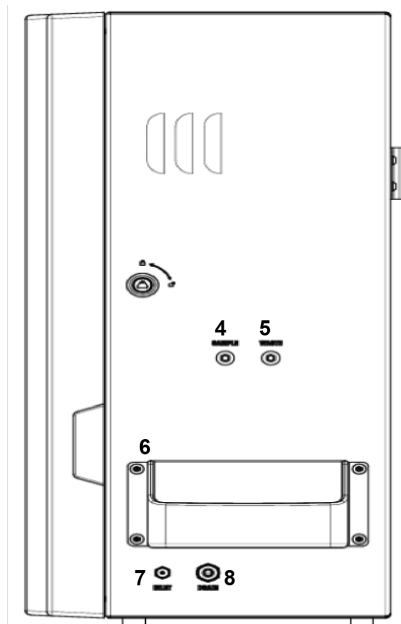


Figure 2: Analyzer Right Side View

Label	Description
4	Sample input
5	Waste output
6	Side tray
7	Online water inlet
8	Drain port

2.7 Main Parts

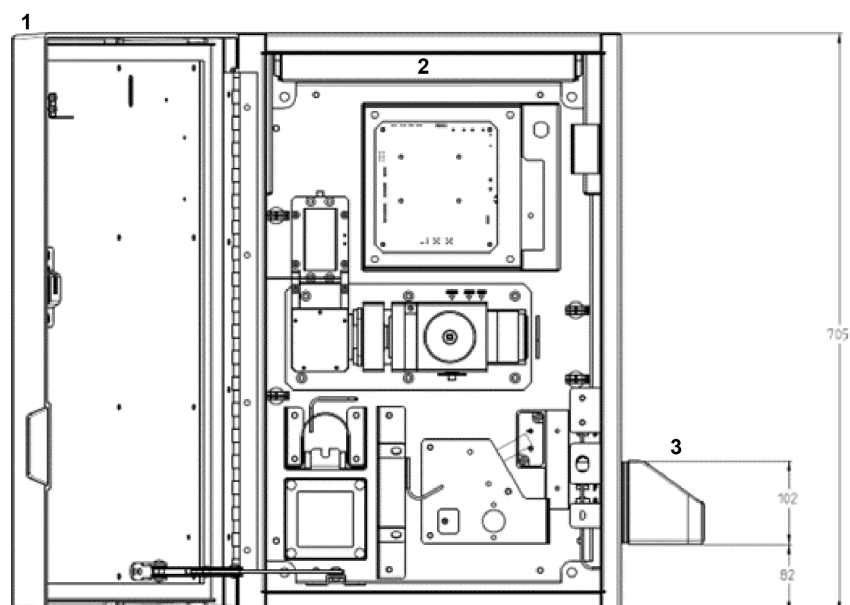


Figure 3: Main Parts

Label	Description
1	Door (open)
2	Main body of the analyzer
3	Side tray

2.8 Internal Components of the Analyzer

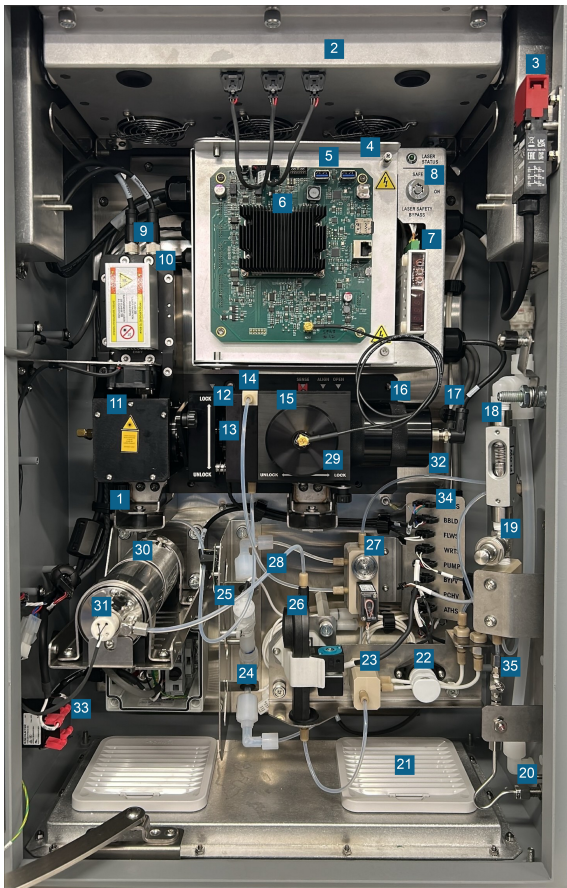


Figure 4: Internal Components of the Analyzer

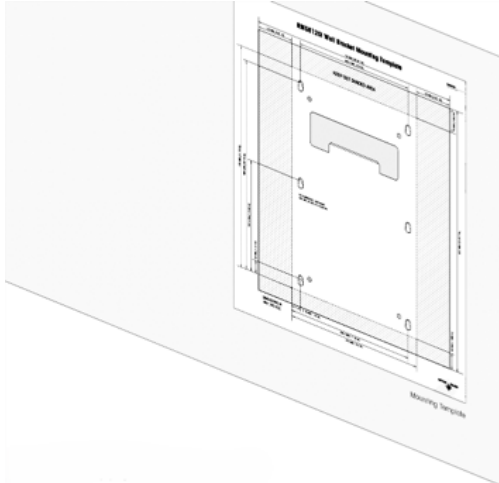
Label	Description	Label	Description	Label	Description	Label	Description
1	Antivibration mount	10	Laser and laser heat sink	19	Flow valve connectors and flow switch	28	Ambient humidity sensor (hidden behind pump)
2	Top fans	11	Optical chamber	20	Online water inlet	29	LOM bottom lever
3	Door interlock	12	LOM top lever	21	Air vent and filters	30	UV chamber
4	UV ballast inside	13	Parabolic mirror	22	Pinch valve	31	UV bulb
5	Carrier board	14	Flow cell chamber	23	Pinch valve connector	32	Terminal block
6	SOM and SOM heatsink	15	Scattering detector (PD)	24	Flow meter connector	33	Power switch connectors
7	Flow meter converter	16	Fluorescent detector	25	Flow meter	34	Manifold
8	Ballast interlock	17	Fluorescent Detector Connectors	26	Pump	35	Ball valve
9	Laser comm and laser power connections	18	Inlet flow analyzer	27	Pressure regulator		

3 Installation

Prior to installing the instruments, ensure the location and position of the instruments allow for easy access and meet the specifications described in [section 2.3 ▶ Page 6]. Refer to the M800 Transmitter Operation Manual (PN 52121825) for more details of the M800 Transmitter.

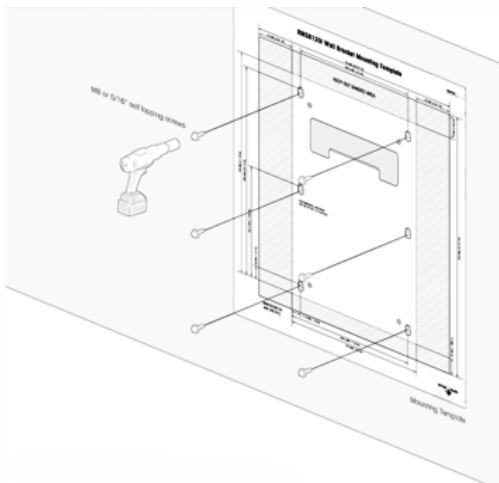
3.1 Wall Mounting the Analyzer

The analyzer can be mounted on the wall with the wall mounting bracket provided. Follow Steps a-h:



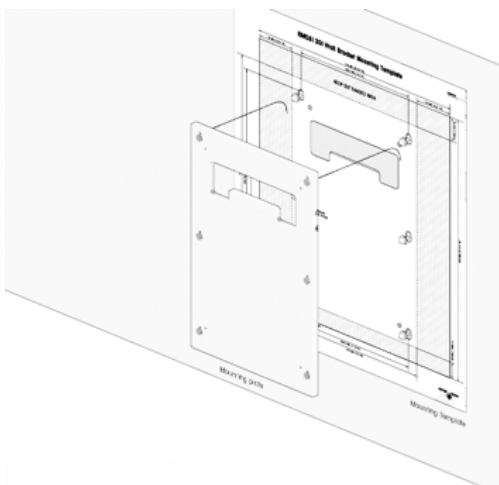
a) Apply the provided wall-mount template (wall decal) as a guide. Tape the template to the wall using painters tape.

Applying Wall Decal



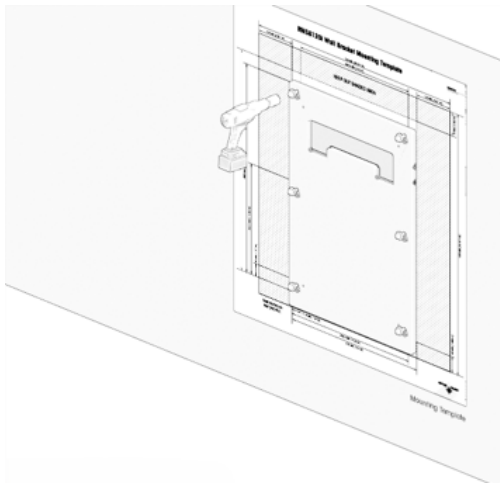
b) Drill 6 holes using 6 size M8 or 5/16" self-tapping wall screws halfway into the wall. Please consider the specified length to ensure the screw can accommodate the drywall thickness.

Drilling Screws Halfway



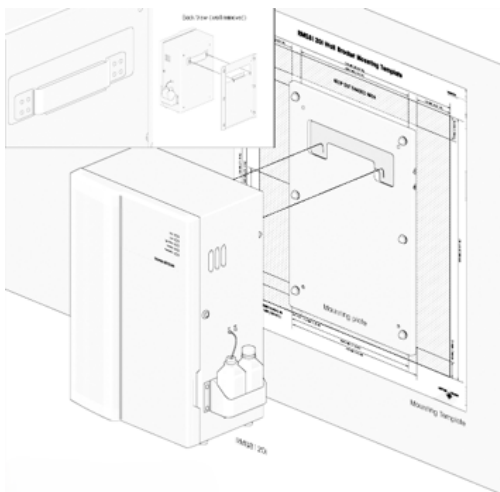
c) Hang the wall mount bracket on the screws.

Hanging Plate



d) Finish attaching the screws to mount it to the wall.

Securing Plate



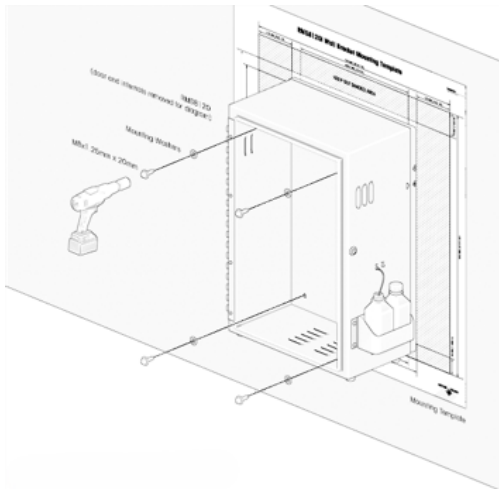
e) Hang the instrument on the wall mount bracket. This step may require 2 persons.

Hanging Plate



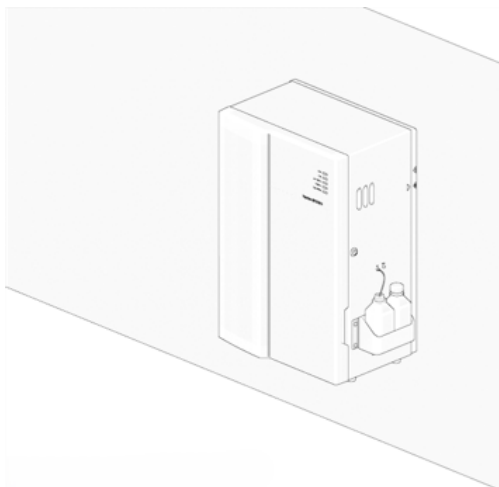
f) Align the arrows and position the instrument to Position 1 on the wall-mount bracket. Finish installing the instrument by aligning the arrow with Position 2 on the wall-mount bracket. This step may require 2 persons.

Aligning Arrows



g) Secure the instrument by screwing 4 size M8 or 5/16" with mounting washers through the holes inside the instrument.

Securing Unit



h) Remove the wall-mount template (wall decal).

Removing Wall Decal

3.2 Connecting Power to the Analyzer

- Make sure the unit is Turned Off before opening the door.

To connect the power line to the analyzer, open the door using the key provided. Ensure that the wiring being connected is disconnected from all power sources and follow proper safety guidelines.



NOTICE

Door Interlock for safety: Once the door is open, the interlock on the door will turn off the laser and UV lamp in case the unit was not turned off. This is a safety feature for users.

- Open the Main Power box as shown in Figure 5 and follow the instructions:

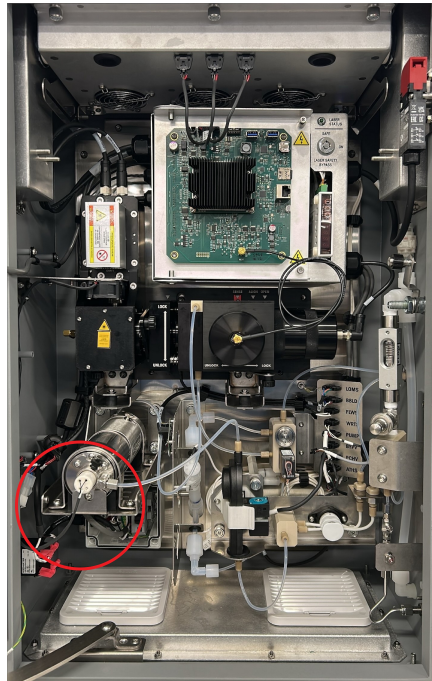


Figure 5: Main Power Box

- As shown in the left side view provided in the installation diagram and Figure 5 there is a bulkhead cable gland located on the left-hand side of the analyzer enclosure labeled “AC POWER IN” to allow for the passage of the AC power cable (not provided with analyzer).
- The RMS8120i analyzer is equipped with an AC power terminal for connecting the AC power cables (Figure 6).

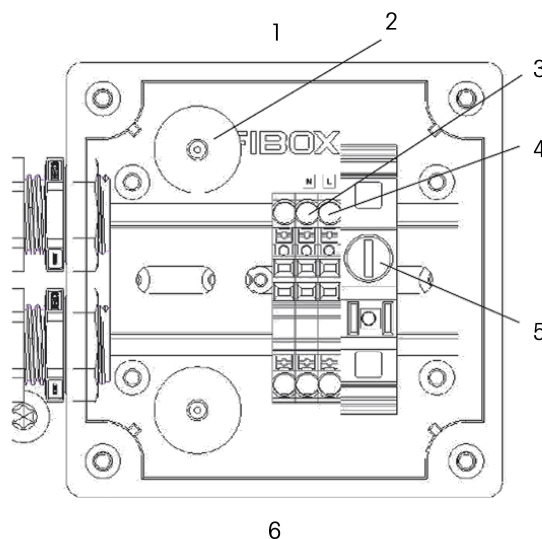


Figure 6: Main Power Box Schematic

Label	Description
1	TOP
2	10-32 GND Stud
3	Neutral (white)
4	Live (black)
5	Fuse 3A, 5 × 20mm
6	BOTTOM

- The circuit breaker shall have a maximum 20-amp rating.
- For safe operation, the AC power cable used should meet the following minimum specifications: VW-1/FT-1; min 300V; 105°C, Minimum 18 AWG (0.823 mm²). Cord diameter shall be Min/Max 0.23" (5.8 mm) to 0.40" (10.2 mm).
- The live and neutral connections are spring terminals in their respective terminal blocks, identified in Figure 6.
- The earth/ground connection is a 10-32 UNF threaded stud on the back plate, accessed from inside the terminal box and identified in Figure 6.
- The recommended free length of the live, neutral, and earth/ground wires is 2.5" (63.5mm). The recommended strip length is 0.25" (6.35mm).
- The live and neutral wires should terminate in a crimped ferrule, and the earth/ground wire should terminate in a crimped ring lug.
- Keep AC power separated from all other internal wiring.
- Use the fasteners provided as part of the AC terminal and grounding plate to secure the power leads.

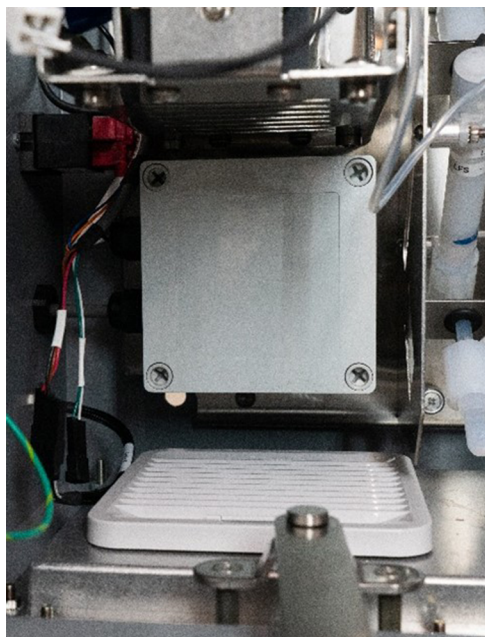


Figure 7: Main Power Box

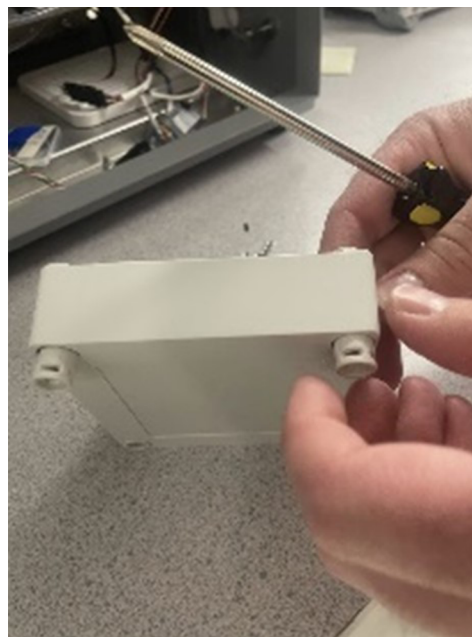


Figure 8: Close up of Main Power Box

- Close the door with the screws provided (Figure 8).
- Then close the main door with the key provided.

3.3 Connecting Water to the Analyzer

Connect the fluidic filter (PN: 31055540) and the conditioning coil (PN: 31013047) to the inlet from the online water supply line in that specific order.

Water Tubing Connection Set up:

- There are 4 different Fluidics connections on the side of the analyzer (Figure 9). It is recommended to use 1/8" (3,175 mm) tubing for all the inlet connections.
- Flush the source connection assembly for a minimum of 30 minutes before connecting the RMS8120i to the online source, to remove debris.

On-line (At-Line) Continuous Water Connections: On-line Port Connections: Two below the tray:

- The two connections at the bottom of the side tray are meant for the continuous water supply and drain to the exterior of the analyzer.
- Before connecting to the user's online water supply, connect INLET to the fluidic filter (PN: 31055540) and the conditioning coil (PN: 31013047) (if required) provided. Then, connect the coil with the flushed online water supply.
- DRAIN connects with the drain tube to the analyzer.

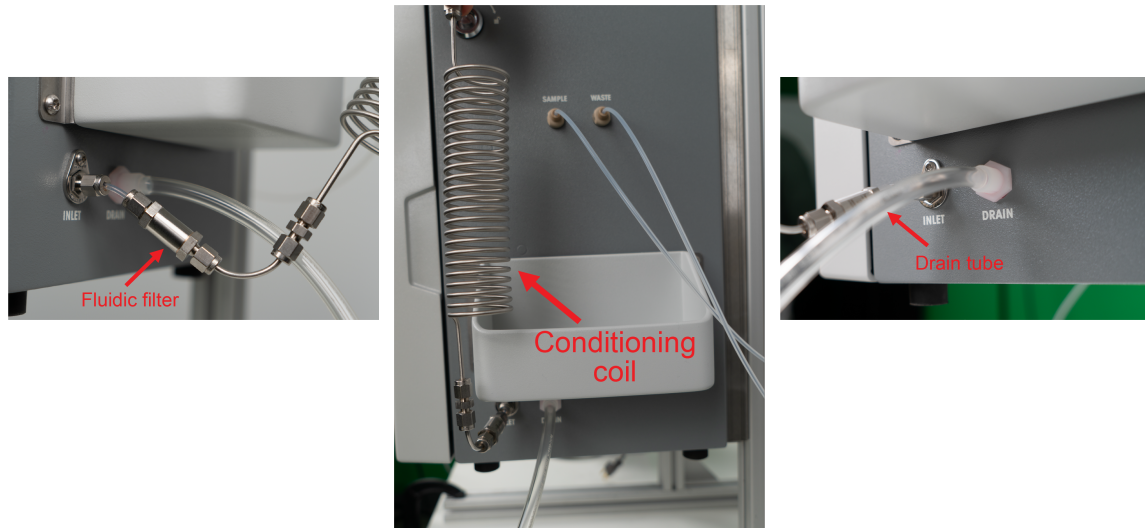


Figure 9: Fluid filter and inlet connection, Conditioning coil, and Drain connection on the bottom ports

Sample Fluidics Connections: Sample Port Connections: Two on top of the tray:

- These two connections are meant to connect the sample bottles to the analyzer.
- To operate the unit in sample mode connect the sample input with the 1/8" – 1/4" (3.175 – 6.35 mm) flat bottom bulkhead fitting to the sample port (above the side tray, Figure 10).
- Connect the waste tubing to the WASTE port (above the side tray).

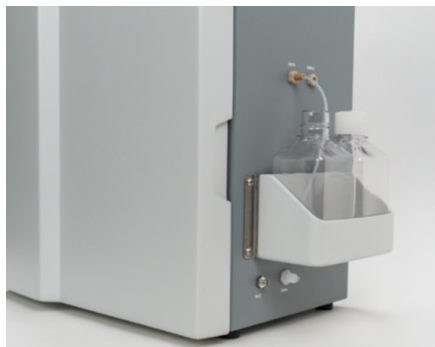


Figure 10: Side of Analyzer



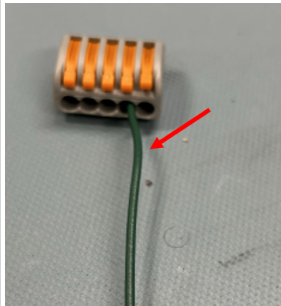
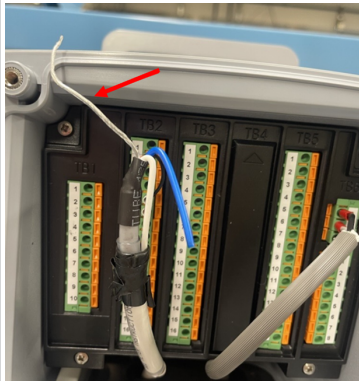
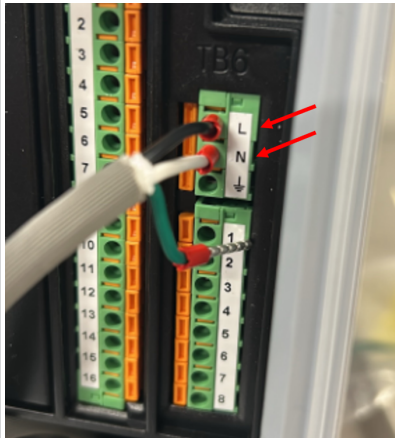
Figure 11: Sample Port Connections

3.4 Connecting the M800 Transmitter to the Analyzer

Locate the left-hand side of the analyzer enclosure to connect the M800 Transmitter, labeled "Transmitter Connection". The M800 patch cables, listed in the accessory section, attach directly to this connector. To secure the patch cable, align the keys of the two connectors and thread the cable mating connector until finger-tight.

Refer to the table below for details on connecting the patch cable to the M800 Transmitter. Once the transmitter and AC power connections are secured and AC power is applied to the RMS8120i, the sample isolation valve can be opened and the analyzer flushed with sample water.

Connecting M800 Grounded Shield (lever nut) Wago 5 kit

Steps	Instructions	Image
1	Open the cover of the Grounded shield (lever nut)	
2	Connect the greenlead wire provided in the lever nut, close it, and make sure it is tight	
3	At the transmitter end of the patch cord, carefully remove the cover over the shield conductor which is folded back on the outside of the cable itself	
4	Connect the black wire from the M800 power cable to TB6 labeled "L" and white wire from the power cable to TB6 labeled "N".	

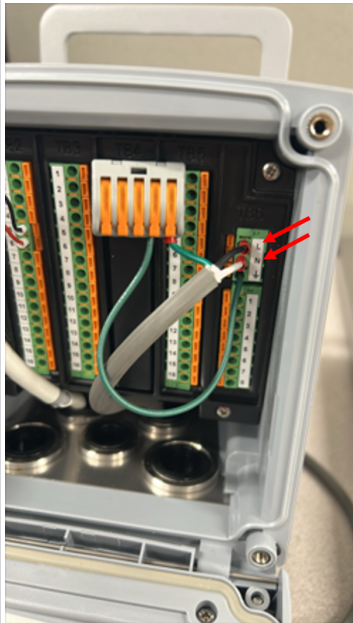
Steps	Instructions	Image
5	Connect the green cable from the M800 power cable to the Grounded shield and the green leadwire from the Grounded shield to the TB6's ground.	
6	Connect the shield conductor to one of the terminal on the Grounded shield, close it, and make sure it is tight.	

Table 1: TB2 and TB4 – Terminal Assignment for RMS8120i

	TB2 (ISM Ch1, 2)	TB4 (ISM Ch3, 4)	RMS8120i
Term.	Function	Function	Analyzer wire color
1	D12+	D16+	-
2	D12-	D16-	-
3	1-Wire_Ch1	1-Wire_Ch3	-
4	GND5V_Ch1	GND5V_Ch3	-
5	RS485B_Ch1	RS485B_Ch3	Black
6	RS485A_Ch1	RS485A_Ch3	Red
7	GND5V_Ch1	GND5V_Ch3	White
8	5V_Ch1	5V_Ch3	Blue
9	24V_Ch2	24V_Ch2	-
10	GND24V_Ch2	GND24V_Ch4	-
11	1-Wire_Ch2	1-Wire_Ch4	-
12	GND5V_Ch2	GND5V_Ch4	-
13	RS485B_Ch2	RS485B_Ch4	Black
14	RS485A_Ch2	RS485A_Ch4	Red
15	GND5V_Ch2	GND5V_Ch4	White
16	5V_Ch2	5V_Ch4	Blue

4 Startup

4.1 Start the M800 Transmitter

1. Connect the Power connection of the M800 Transmitter to a power source. The M800 Transmitter will start automatically once it is correctly powered.
2. For Analog output, connect the M800 Transmitter's analog output with the analog output cable to connect to the user's analyzer.
3. The M800 Transmitter can also be connected to the user's analyzer using Ethernet IP.
4. Refer to the M800 Transmitter manual for detailed steps.

4.2 Start the RMS8120i

1. Flip the power switch on the left panel to the ON position.
2. Insert the sampling needle into a clean water source (sample mode) or turn ON the RMS8120i online shutoff valve to the analyzer (on-line mode) prior to initializing the software.

4.3 Startup Flow Adjustment

Use caution while adjusting the water flow rate inside the analyzer during startup.

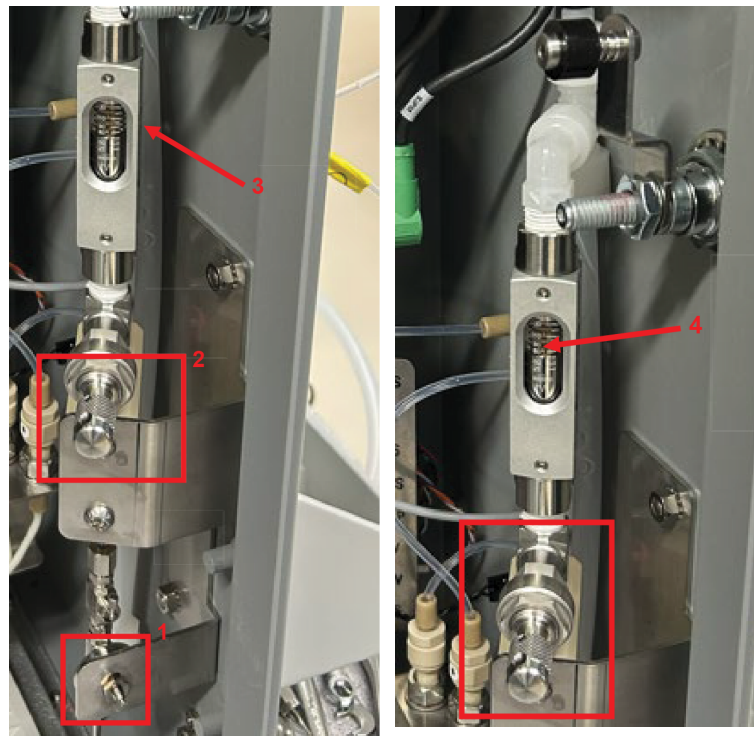


Figure 12

1. Turn on the online water supply and open the ball valve labeled (1).
2. Open the Flow Switch labeled (2) and adjust the flow rate to 130 mL/min labeled (3).
3. Close the door and inspect the M800 to confirm that the flow rate stabilizes at 15 mL/min $\pm$ 1 mL/min.
4. Once the flow rate on the M800 is stable, open the door again and adjust the Flow Switch to a flow rate between 50 and 80 mL/min labeled (4).
5. Close the door after adjusting the flow rate.

5 Maintenance

METTLER TOLEDO provides support for optimal performance, calibration and maintenance services for all RMS8120i analyzer.

5.1 By Vendor

Table 2

Services Part Number	Description	Replacement Frequency
31013102	RMS8120i Calibration Solution Kit	Annually
31013104	RMS8120i PM Kit	Annually
31013105	UV Lamp, RMS8120i Kit	Annually
31013106	Laser RMS8120i Kit	Every 3 years
31013107	Flowcell RMS8120i Kit	If required
31053459	Pump RMS8120i Kit	Every 3 years
31055539	Air Filters RMS8120i Kit	Annually
31055540	RMS8120i Fluidic Filters 15-micron Kit	Annually
31013097	Pinch Valve Tubing RMS8120i Kit	Annually

5.2 By User

Table 3

Maintenance	Frequency	Procedure
Routine cleaning	Quarterly	1. Prepare 1% v/v pH 7, low residue, and ultra-low particle cleaning agent (e.g. Micro-90®, Alconox®, or equivalent) 2. Prepare Ultra-Pure Water (UPW) or autoclaved PW 3. On the M800, navigate to RMS cleaning (PATH: H\ CONFIG\ Measurement\ RMS cleaning) to clean the instrument in the order of: i. 150mL 6% hydrogen peroxide or 70% IPA ii. 300mL 1% v/v cleaning agent iii. 500mL UPW or autoclaved PW
Isolation from online flow	1. Before a maintenance event or intervention that affects the continuous flow for longer than 24 hours 2. Before plant, system, or sensor shutdown longer than 24 hours 3. Before a power cut longer than 24 hours	1. Turn off the power switch located on the side of the RMS8120i. 2. If in online mode, close the RMS8120i online shutoff valve. 3. Disconnect inlet connection (see Figure 9). 4. If clean compressed air (e.g. oil free dried air, inert gases, or nitrogen gas) is accessible on site, purge the instrument to remove residual water through inlet (see Figure 9) and sample connection (see Figure 11).
Restart RMS8120i after plant or system resumes operation	1. After a maintenance event or intervention that affects the continuous flow for longer than 24 hours 2. After plant, system, or sensor shutdown longer than 24 hours 3. After a power cut longer than 24 hours	1. Prepare 6% hydrogen peroxide or 70% IPA 2. Prepare 1% v/v pH 7, low residue, and ultra-low particle cleaning agent 3. Prepare UPW or autoclaved PW 4. Navigate M800 to RMS cleaning to clean the instrument in the order of: i. 150mL 6% hydrogen peroxide or 70% IPA ii. 300mL 1% cleaning agent iii. 500mL UPW or autoclaved PW

5.3 Shut Down of the Analyzer

To properly shut down the analyzer, please follow the following procedure:

1. Run a minimum of 150 mL of a sanitizing solution (6% hydrogen peroxide or 70% IPA), then run a minimum of 300mL 1% v/v pH 7, low residue, and ultra-low particle cleaning agent (e.g. Micro-90®, Alconox®, or equivalent) through the RMS8120i to properly remove sample residuals.
2. Follow the cleaning operation with a thorough flush of the Sensor with pure or ultrapure water. A minimum of 300 mL is recommended to sufficiently flush the cleaning solution from the Sensor.
3. Turn off the power switch located on the side of the RMS8120i.
4. Disconnect power if desired.
5. If in online mode, close the RMS8120i online shutoff valve. The closed position is when the valve actuator handle (red) is perpendicular (90 degrees) to the fluidic flow path.
6. If clean compressed air (e.g. oil free dried air, inert gases, or nitrogen gas) is accessible on site, purge the instrument to remove residual water through inlet (see Figure 9) and sample connection (see Figure 11).

5.4 Auto Restart

The RMS8120i automatically restarts after an unexpected or out-of-scope environmental event if the analyzer has not been damaged by the event. This includes power failure, loss of flow, and ambient temperature and humidity factors that are outside the scope detailed in Ambient Requirements.

6 Configuration of the User Interface in the M800 Transmitter

This section discusses the M800 Transmitter interface needed for the configuration of features unique to the RMS8120i. Refer to the M800 Transmitter Operating Manual for information on using general interface associated with M800 Transmitter setup.

6.1 Operating Elements

Table 4

Operating element	Description
	Enter Menu screen
	Enter Start screen
ISM	Enter ISM menu
	Enter Favorite menu
	Enter Calibration menu
	Enter Configuration menu
	Return to Menu screen (see chapter 3.2.2. "Activation Menu Screen")
	Enter next-lower menu level, here e.g. iMonitor, Messages or ISM Diagnostics
	Return to next-higher menu level
	Change between pages within one menu level Change between the channels
	Confirm values and selected options. Press ESC and the changes are not stored.

6.2 Display Screen

When starting the M800 Transmitter, the following Display screen is shown automatically and AFU is recognized as the first parameter after connection. After 240 seconds of inactivity the M800 Transmitter will return automatically to the Display screen. To return from any screen to the Display screen press the “lock icon”.

This screen will display the selected parameters continuously.

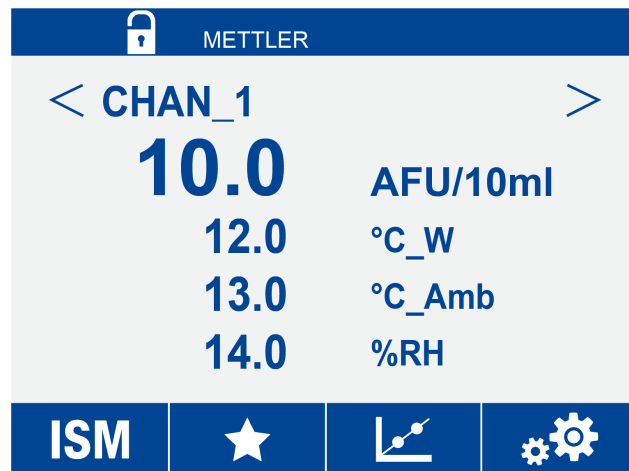


Figure 13: Display screen M800 Transmitter

Once the M800 Transmitter is turned on and the analyzer is turned on, the RMS8120i is detected as Channel 1 automatically. Otherwise, select the analyzer from drop-down menu as Channel 1.

In the event of an alarm or other error, the M800 Transmitter will display a flashing bar on the display. This bar will remain until the condition that caused it has been cleared (see [Sections 7 ▶ Page 23] and [8 ▶ Page 34]).

6.2.1 Configuration of Display Screen

- Measurement options in Channel Setup
CONFIG/Measurement/Channel Setup
- The Channel Setup function allows configuration of the individual measurements visible on the M800 Transmitter display area associated with the selected analyzer channel. For the RMS8120i, the following measurement options may be selected:

Table 5

Measurements	Descriptions
AFU	Displays Auto Fluorescent (AFU) Unit per Interval Volume selected
Inert	Displays number of inert particles counted
Water °C	Displays the temperature of water flowing through the analyzer in Celsius
Water F	Displays the temperature of water flowing through the analyzer in Fahrenheit
Amb °C	Displays the ambient temperature for the analyzer that is recorded inside the analyzer in Celsius
Amb F	Displays the ambient temperature for the analyzer that is recorded inside the analyzer in Fahrenheit
% RH	Displays the % relative humidity recorded in the analyzer
Laser Diode °C	Displays the laser Diode temperature recorded in the analyzer in Celsius
Laser Diode F	Displays the laser Diode temperature recorded in the analyzer in Fahrenheit
RMS Flow mL/min	Displays the water Flow rate inside the optical chamber of the analyzer in mL/min

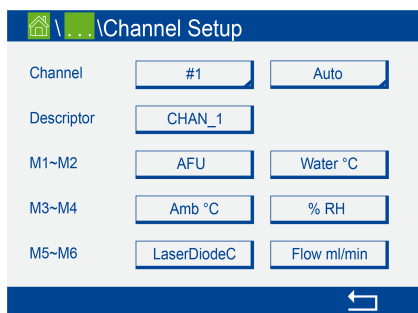


Figure 14: Channel Setup

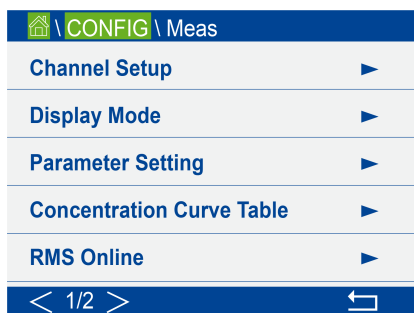


Figure 15: Measurement Page

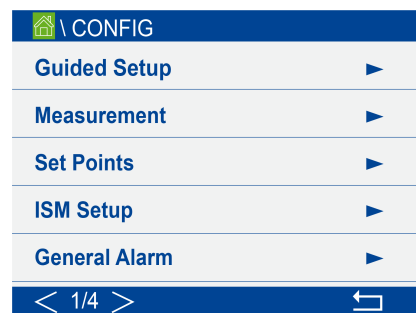


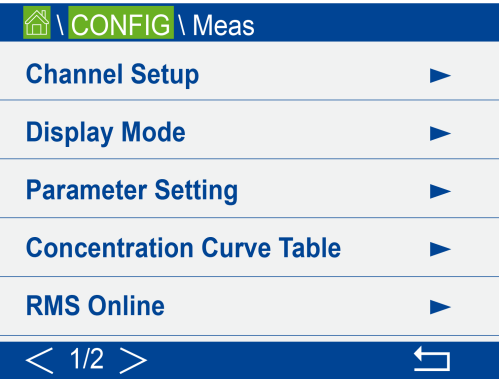
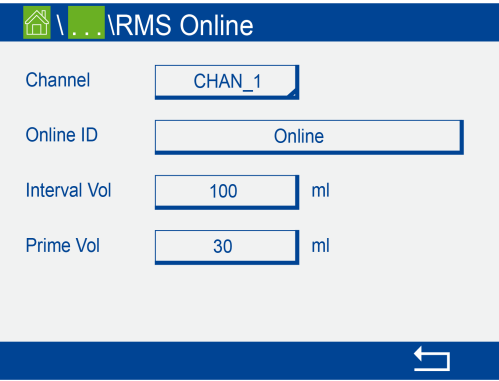
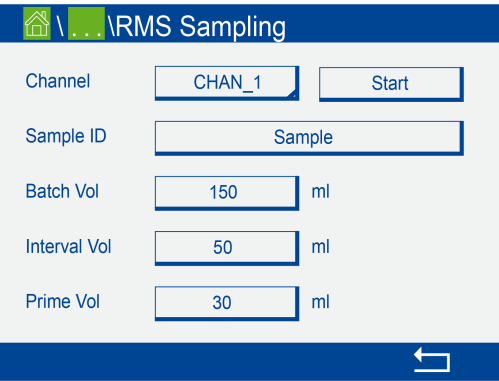
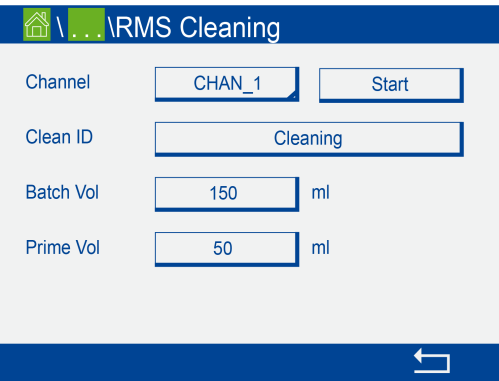
Figure 16: Configure Page

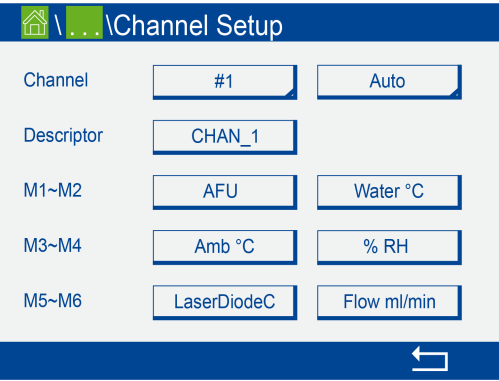
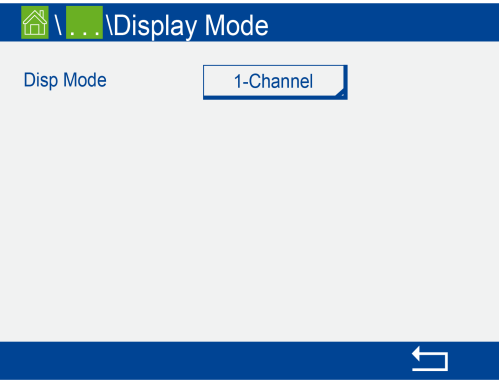
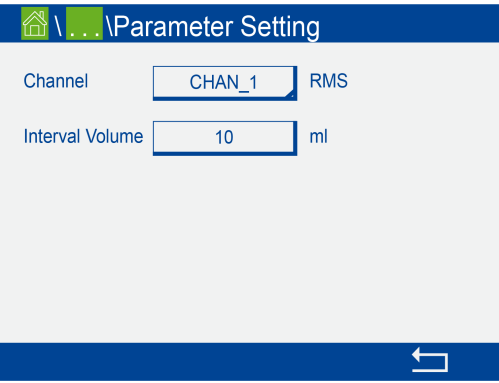
- Descriptor: Touch the name to open the keypad and type in the name for the unit.
- M1: AFU is locked as measurement 1.
- M2: M6 Select any one of the available 10 options (refer to Table 3).

7 RMS8120i's M800 Menu Functionality

7.1 CONFIG menus

RMS8120i's M800	Main Screen	
M800 Configuration Menu PATH: H \ CONFIG	CONFIG allows the user to configure the RMS8120i menu on M800.	
Guided Setup PATH: H \ CONFIG \ Guided Setup	Guided Setup guides users through device configuration.	

Measurement PATH: H \ CONFIG \ Meas	Measurement allows users to configure channel setup, display mode, parameter setting, and other variables using connected analyzer.	
RMS Online PATH: H \ CONFIG \ Meas \ RMS Online	Allows users to change ID of the data log, interval and prime volumes before starting online and continuous measurement. Press Interval Volume option and write the desired volume. Then save changes to save the Volume interval in the analyzer.	
RMS Sampling PATH: H \ CONFIG \ Meas \ RMS Sampling	RMS Sampling allows users to set a sampling sequence for grab sampling method. Sample ID: name sample Batch Vol: Specify the volume of the total batch of sample to test Interval Vol: Specify the reading Intervals Prime Vol: Volume the analyzer needs to prime before measuring, default setting at 30 mL	
RMS Cleaning PATH: H \ CONFIG \ Meas \ RMS Cleaning	RMS Cleaning allows users to set cleaning sequences to clean the fluidic path of the RMS8120i. Clean ID: Enter the ID of the cleaning protocol Batch Vol: Enter the volume of cleaning agent to be used Prime Vol: Volume the analyzer needs to prime before initiating the protocol	

Channel Setup PATH: H \ CONFIG \ Meas \ Channel Setup	Channel Setup involves configuring each input by selecting analyzer types, setting measurement ranges, defining outputs, and calibrating channels to ensure accurate analyzer signal readings.	
Display Mode PATH: H \ CONFIG \ Meas \ Display Mode	Display Mode configuration determines how measurement and device information appear on the main screen.	
Parameter Setting PATH: H \ CONFIG \ Meas \ Parameter Setting	Parameter setting allows users to adjust channel types and interval volume to display on the main screen.	

Set Points

PATH: H \ CONFIG \ Set Points

Set Points are present transmitter values that trigger alarms or actions upon reaching.

Set up **High** or **Low** Between Outside set points.

This site's final display in the graphic mode where you can see the set points.

\ CONFIG \ Set Points

Set Points

Chan M1

Type

\ CONFIG \ Set Points

Set Points

Chan M1

Type

High

1/2

\ CONFIG \ Set Points

Set Points

Chan M1

Type

High AFU/10ml

1/2

\ CONFIG \ Set Points

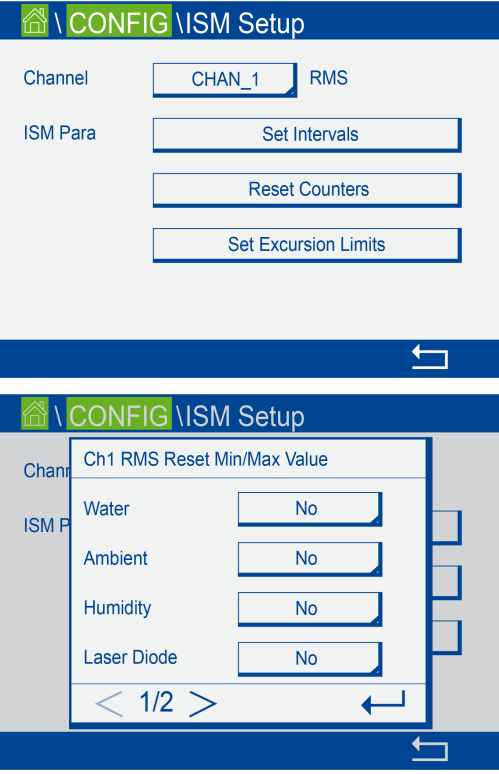
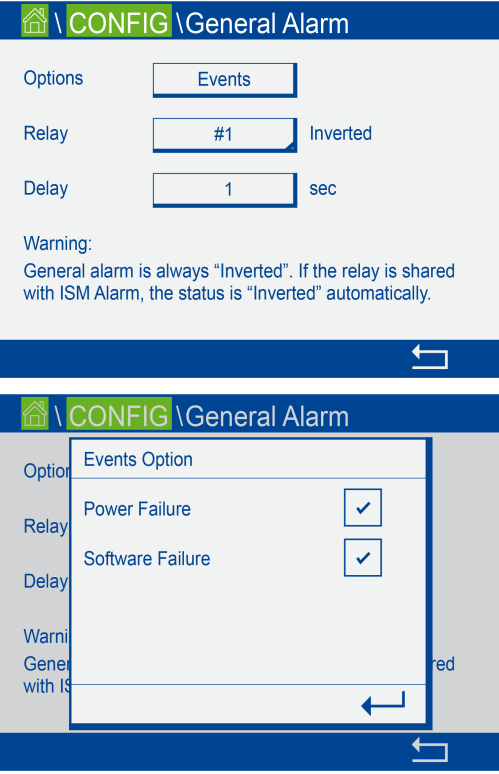
Out Range

Relay

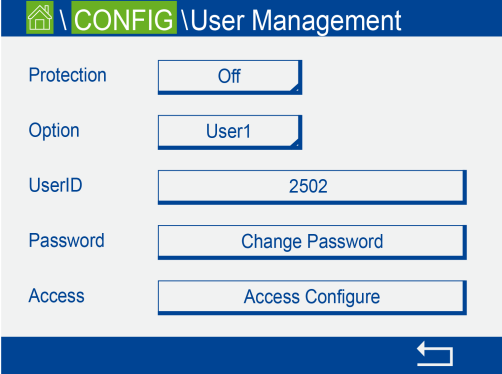
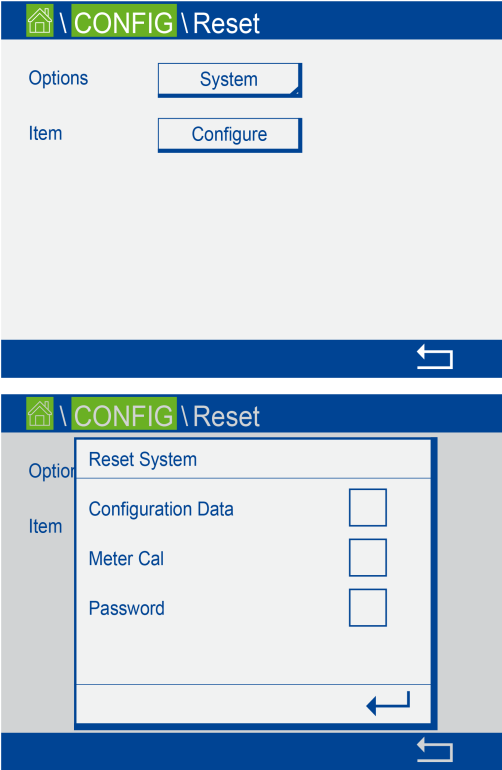
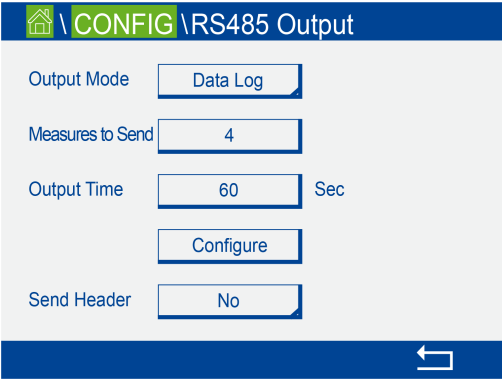
2/2

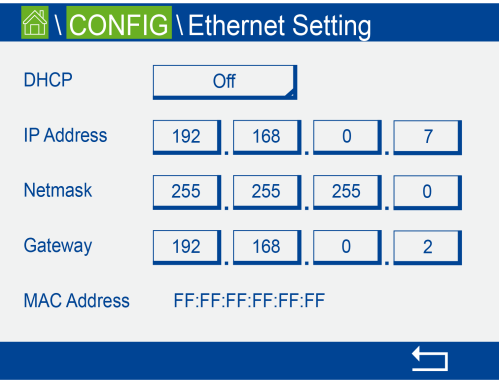
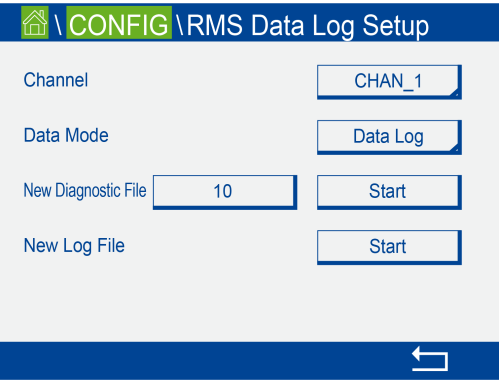
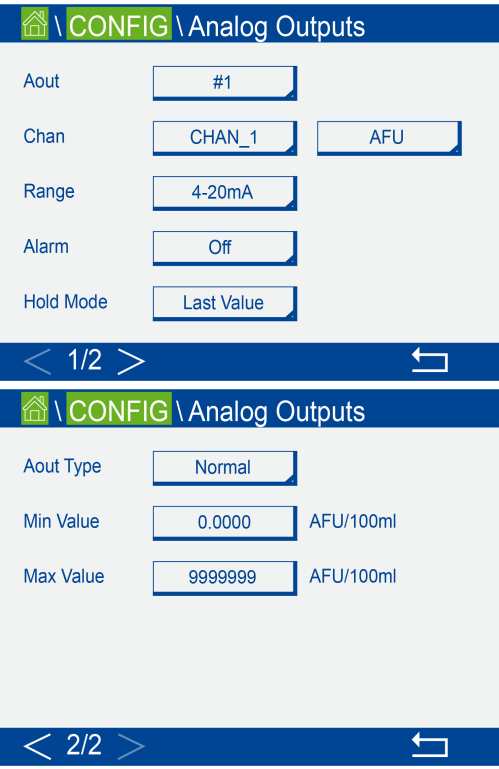
METTLER EIP

AFU Ch1_M1 10 AFU/10ml

ISM Setup PATH: H \ CONFIG \ ISM \ Setup	ISM (Intelligent Sensor Management) Setup allows users to set or reset service intervals, countdowns for main consumables, and excursion limits for ISM parameters relevant to the RMS8120i's key components and parts. The ISM parameters are RMS calibration, clean RMS, fluidics replacement, and replacement of main consumables. The ISM Setup also allows setting of minimum/maximum values for water temperature, ambient temperature, humidity, and laser diode temperature to alert users during the operation of the RMS8120i.	
General Alarm PATH: H \ CONFIG \ General Alarm	General Alarm alerts users when measurements exceed set limits or device issues occur, helping users promptly identify and resolve problems to maintain system safety and performance.	

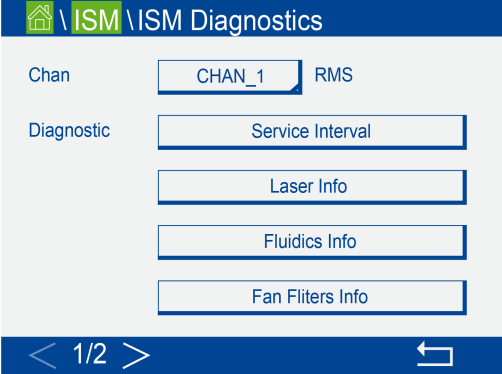
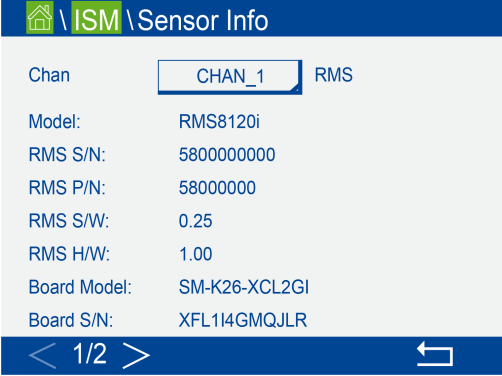
ISM/Sensor Alarm PATH: H \ CONFIG \ ISM \ Sensor Alarm	ISM/Sensor Alarm displays alerts from the RMS8120i when it detects sensor faults or preventive maintenance needs. Configure alarm and hold relay to send alarm to PLC.	
Display Setup PATH: H \ CONFIG \ Display Setup	Display Setup configures how display appears on the screen, including light time, tag name, and dimness.	
Digital Inputs PATH: H \ CONFIG \ Digital Inputs	Digital Inputs enable on/off signals from external devices or switches, enabling the transmitter to trigger actions for "Hold" , "Start" , "Stop" , and "Restart" , as well as inputs required.	
System PATH: H \ CONFIG \ System	System allows users to configure language, local date and time.	

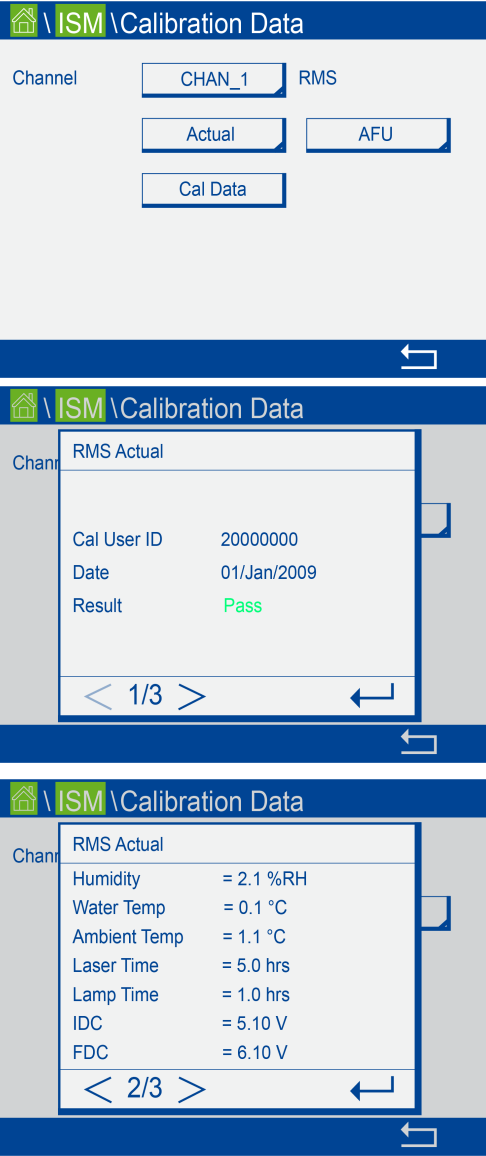
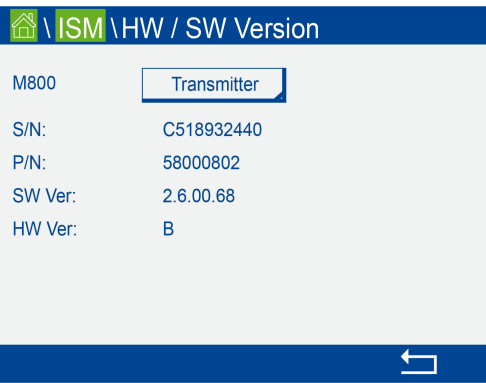
User Management PATH: H \ CONFIG \ User Management	User Management allows administrators to set up user roles and permissions, passwords, and restrict access to prevent unauthorized changes.	
Reset PATH: H \ CONFIG \ Reset	Reset restores the device to factory settings, clearing customizations and errors for troubleshooting, or preparing the device for new use.	
RS485 Output PATH: H \ CONFIG \ RS485 Output	RS485 Output configures data communication via the RS485 protocol.	

Ethernet Setting PATH: H \ CONFIG \ Ethernet Setting	Ethernet setting configures local network parameters for data transfer from the RMS8120i, remote monitoring, and device integration.	
RMS Data Log Setup PATH: H \ CONFIG \ RMS Data Log Setup	RMS Data Log Setup configures how RMS measurement data is recorded and the type of log used.	
Analog Outputs PATH: H \ CONFIG \ Analog Outputs	Analog Outputs allow users to configure the measurements through 4-20 mA signals output for AFU and inert measurements.	

7.2 ISM menus

M800 ISM PATH: H \ ISM	ISM (Intelligent Sensor Management)	 \ ISM iMonitor ▶ Messages ▶ ISM Diagnostics ▶ Calibration Data ▶ SST Info ▶ < 1/2 > ↩
iMonitor PATH: H \ ISM \ iMonitor	iMonitor shows the countdown timer for services provided by Mettler Toledo: • Calibration (TTCal) • Cleaning (TTClean) • UV lamp (UV DLI) • Fluidics • Fan Filters • Laser (Laser DLI) • Pump • Flow cell	 \ ISM \ iMonitor TTCal  0 days TTClean  0 days UVDLI  0days Fluidics  0days Fan Filters  0days LaserDLI  0days Pump  0days Flow Cell  0days Ch1 - RMS ↩
Messages PATH: H \ ISM \ Messages	Messages provide real-time status and notifications on analyzer performance, alarms, diagnostics, and operational events.	 \ ISM \ Messages Ch2Change Sensor  Info Clear All ↩

ISM Diagnostics PATH: H \ ISM \ Diagnostics	ISM Diagnostics tracks service intervals and health details for components: Laser, Fluidics, Fan Filters, UV Lamp, Flow Cell, and the overall analyzer.	
Sensor Info PATH: H \ ISM \ Sensor Info	Sensor Info shows detailed data on the connected RMS8120i: serial number, hardware and software versions.	

Calibration Data PATH: H \ ISM \ Calibration Data	Calibration Data stores information and calibration parameters for the RMS8120i, including Cal factor, date of calibration, calibration results, and system information for tracking and documentation.	
HW/SW Version PATH: H \ ISM \ HW/SW Version	HW/SW version shows the software version details of the transmitter and boards in the RMS8120i.	

Logbook PATH: H \ ISM \ Logbook	Logbook records key events such as alarms, system changes, and activities, enabling users to review historical logs for maintenance.	 \ ISM \ Log Book 06/Apr/2026 15:49 Log Book 06/Apr/2026 15:47 Log Book 06/Apr/2026 15:46 HW / SW Version 06/Apr/2026 15:45 Sensor Info 06/Apr/2026 15:44 ISM 06/Apr/2026 15:39 Calibration Data < 1/3 > 
---	---	---

8 Faults

"Fault" on the analyzer occurs when critical error in hardware or software component was detected, the measurement is not reliable when "Fault" occurs. When the analyzer encounters these errors, the "Fault" LED on the analyzer will turn red. Below is a table of "Fault" that may occur.

Table 6: Fault

Fault	Display	Cause	Corrective Action
F	UV Lamp Failure	UV lamp not working	Contact METTLER TOLEDO Technical support.
F	Laser Failure	Laser lamp not working	Contact METTLER TOLEDO Technical support.
F	Analyzer Fan Failure	Analyzer fans not working	Contact METTLER TOLEDO Technical support.
F	No flow detected	No flow detected at the Flowmeter (device)	Look at the incoming flow at the needle valve and adjust it based on the startup flow adjustment instructions in [Section 6.1. ▶ Page 21] Contact METTLER TOLEDO Technical support for further assistance.
F	Overflow Chamber Failure	Inadequate flow of water coming into the analyzer and into the needle flow valve	Increase the incoming water flow rate.
F	NO analyzer detected	Transmitter communication to the RMS sensor/analyzer failed	Check the Transmitter connection.
F	Ambient Temperature too high	Analyzers are too hot	Turn off the analyzer and allow it to cool down. Contact METTLER TOLEDO Technical support for further assistance.
F	Flow Control Failed	Flow control is not able to set the flow to the required 15 mL/min $\pm$ 1.5 mL/min within the Fluidics system	Inspect the incoming flow at the needle valve and adjust it according to the startup flow adjustment instructions in [Section 6.1. ▶ Page 21] Contact METTLER TOLEDO Technical support for further assistance.
F	Bad measurement	Measurement-related software fault	Call METTLER TOLEDO Technical support and tell them the fault message.
F	Sample Valve Failure	The Sample (Pinch) Valve fails	Call METTLER TOLEDO Technical support and tell them the fault message.
F	Humidity/Temp Analyzer Failure	The humidity/temperature analyzer cannot communicate	Call Mettler Toledo Technical support and tell them the fault message.
F	Laser Diode Temperature High	The laser needs to be cooled down	Call METTLER TOLEDO Technical support and tell them the fault message.
F	Pump Failure	The pump inside the unit is not working	Contact METTLER TOLEDO Technical support.
F	Unexpected fault	An unknown fault	Contact METTLER TOLEDO Technical support with the message displayed.

9 Errors

“Error” on the analyzer occurs when something out of normal within hardware or software component was detected, the measurement is still reliable when “Error” occurs. When the analyzer encounters “Error”, the “Error” LED on the analyzer will turn yellow.

Below is a table of Errors that may occur.

Table 7: Error

Error	Display	Cause	Corrective Action
E	UV lamp Life over time	365 days	Contact METTLER TOLEDO Technical support.
E	Laser Life over time	1095 days	Contact METTLER TOLEDO Technical support.
E	Inert Detector Overload	Particles overload due to stagnant water	Contact METTLER TOLEDO Technical support.
E	Fluorescence Detector Overload	Microbial overload due to stagnant water	Contact METTLER TOLEDO Technical support.
E	Analyzer Memory Error	Analyzer Memory error detected	Contact METTLER TOLEDO Technical support.
E	Flow low	Water flow low when the flow that is at 13.5-16.5 mL/min	Look at the incoming flow at the needle valve and adjust it based on startup flow adjustment instructions in [Section 6.1 ▶ Page 21]. Contact METTLER TOLEDO Technical support for further assistance.
E	Flow high	Water flow high	Look at the incoming flow at the needle valve and adjust it based on startup flow adjustment instructions in [Section 6.1 ▶ Page 21]. Contact METTLER TOLEDO Technical support for further assistance.
E	AFU Count Reading High	> 10,000 AFU/mL	Contact METTLER TOLEDO Technical support for further assistance.
E	Inert Count Reading High	> 10,000 inert/mL	Contact METTLER TOLEDO Technical support for further assistance.
E	Water Temperature High	60°C	Ensure the conditioning coil is installed properly. Contact Mettler Toledo Technical support for further assistance.
E	Water Temp Low (Needs to be added to the Protocol)	5°C	Ensure the conditioning coil is installed properly. Contact METTLER TOLEDO Technical support for further assistance.
E	Ambient Temperature High	50°C	Turn off the analyzer and allow it to cool down. Contact METTLER TOLEDO Technical support for further assistance.
E	Ambient Temperature Low	10°C	Contact METTLER TOLEDO Technical support for further assistance.
E	Low RTC (Real Time Clock on analyzer) battery	The battery needs to be changed for the RTC inside the analyzer	Contact METTLER TOLEDO Technical support.
E	Humidity High	Ambient humidity too high	Check the fan filters and system fan. Contact METTLER TOLEDO Technical support for further assistance.
E	Laser Diode Temperature High	> 37°C	Turn off the analyzer and allow it to cool down. Contact METTLER TOLEDO Technical support for further assistance.

Error	Display	Cause	Corrective Action
E	Bubble Detected	There are bubbles in the system, or the flow is too low	Check the flow rate of the online water supply, increase the flow rate to the appropriate value. Adjust flow switch based on startup flow adjustment instructions in [Section 6.1 ▶ Page 21]. Contact METTLER TOLEDO Technical support for further assistance.
E	Laser Enclosure Temperature High	> 37°C	Turn off the analyzer and allow it to cool down. Contact METTLER TOLEDO Technical support for further assistance.
E	Sample Valve Position Error	Sample valve position error	Contact METTLER TOLEDO Technical support.

10 Appendix 1 – Troubleshooting Guide

If...	Do	Refer to
The analyzer does not power on	- Verify that the power cord is fully inserted and locked into the jack located on the side of the analyzer. - Verify that the power cord is plugged in to an appropriate power supply.	- Installation - Startup / warm-up sequence
The analyzer does not respond to touch input	- Make sure to press intently on the screen with a stylus or fingernail, as light presses with pads of fingers may not register on the resistive touchscreen. - Clean the touchscreen with an appropriate microfiber cloth. - If cleaning is unsuccessful, power cycle the analyzer.	
The analyzer leaks	- Verify that luer and / or compression fittings are snug and secure. - Verify that external fluidic plumbing is secure and not damaged. - Verify that the sample input port is not being used for pressurized source input.	- Installation - On-line Connection Setup - Activating On-line Mode Operations - Appendix: Sample Processing
ON-LINE MODE: The analyzer does not pass initialization and / or exhibits persistent pump flow errors	- Verify that the online shutoff valve is in the open position. - Verify that the source shutoff valve is in the open position. - Verify that tubing and external fluidic connections are connected securely and free from occlusions, debris, and / or kinks. - Avoid using excessively long sample, online and waste tubing. - Verify that the pressurized source is properly connected to the ON-LINE INPUT. - Make note of the flow rate.	- Installation - On-line/ Sample Connection Setup - Activating On-line Mode Operations - Appendix: Sample Processing

If...	Do	Refer to
The analog output equipped analyzer does not send current	Verify that the analog output cable is securely attached to the analog output port on the side of the analyzer.	Installation: Analog Output
The main screen trending chart does not display data	- Verify that initialization has completed and the main screen banner indicates the analyzer is in continuous monitoring. - Data points will be displayed immediately after entering continuous monitoring ONLY if the analyzer is configured for Real-time display mode. In the Logged display mode, data points are displayed on the trending chart ONLY after the entire volume of the log file write interval defined in Volume interval is processed.	
The analyzer is making atypical audible noises	Verify that tubing and external fluidic connections are connected securely and free from occlusions, debris, and / or kinks.	

To protect your product's future:

METTLER TOLEDO Service assures the quality, measuring accuracy and preservation of value of this product for years to come.

Please request full details about our attractive terms of service.

► www.mt.com/service

www.mt.com

For more information

Mettler-Toledo Thornton, Inc.

Billerica, MA 01821
United States of America
www.mt.com/contact

Subject to technical changes.
© 09/2026 METTLER TOLEDO. All rights reserved.
31171890A



31171890A