ANALYT MESSTECHNIK



QUICK START GUIDE

358 Series M Mass Flow Meters

From the box to the first reading: power, taring, gas and units, pressure limits, and connecting the 358 Series M mass flow meter to your process.

AMTC-QG-0005

Read this first

The full safety information is in the Safety chapter of the operating manual (AMTC-MN-0004); read that chapter and the safety messages below before you connect the meter to your process. Not following the safety messages can damage the meter or cause injury. You can download the operating manual from its product page at analyt-mtc.com.

This guide takes you from the box to your first reading with a 358 Series M mass flow meter: what is in the box, connecting the power, taring, choosing the gas and the units, and connecting the meter to your process within its pressure limits. It applies to the models M, MS, MLW and MQ.

Read Safety (p. 2) below first, then work through Supplied items (p. 5) and First use (p. 7) in that order.

This guide does not replace the operating manual. The wiring of the signals, the display options and troubleshooting are described in the *358 Series M, MB, MLW and MLWB Mass Flow Meters — Operating manual* (AMTC-MN-0004). The serial command set is in the *358 Series serial interface (RS-232/RS-485) — Communication guide* (AMTC-CG-0002).

Keep this guide for the lifetime of the product. The current revision is on the product page at analyt-mtc.com.

Safety notices in this guide

WARNING

A hazardous situation which, if not avoided, could result in death or serious injury.

NOTICE

Practices not related to personal injury — damage to the product, the process or the sample.

Note

Information that helps understanding; never a hazard.

Safety

Read this section before you connect the meter to your process. Each point is repeated, with its context, in the section where it applies.

Intended use

The M measures the mass flow, volumetric flow, pressure and temperature of clean, dry gases within the limits on its calibration certificate and in Pressure limits (p. 9). Selecting a gas only changes how the meter calculates its readings; it does not change the gas.

Rules that protect the meter

⚠ WARNING

Pressure. Never exceed the pressure limits of the meter (see Pressure limits (p. 9)). Operating the meter above its specifications can damage it or cause injury.

NOTICE

Power wiring. Power on pins 1 to 6 of the 8-pin Mini-DIN connector causes permanent damage. Pin 2 carries a constant 5.12 V DC and is easily mistaken for the 0–5 V DC analogue output. Do not connect power to pins 1 to 6, and switch the supply on only after you have checked that all the necessary pins are connected correctly.

NOTICE

Sealants. Pipe dope and liquid sealants on the process connections can get into the flow stream. There they damage the meter permanently. Do not use pipe dope or liquid sealants on the process connections.

NOTICE

Flow body. Do not take the flow body apart to clean it. Taking the flow body apart can damage the meter further and may void the warranty. If you suspect debris inside, contact Analyt-MTC for cleaning.

⚠ WARNING

Depressurise first. Gas that escapes from a line that is still under pressure can injure you, and a hazardous gas left in the system can harm your health. Before you disconnect the meter from a system that has been pressurised, confirm independently that all pressure has been released safely and that any hazardous gas left in the system has been purged.

Document information

Title	358 Series M Mass Flow Meters — Quick start guide
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Applies to	358 Series M Mass Flow Meters, models M, MS, MLW and MQ
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Revision history

Rev.	Date	Change
1	October 2026	First issue.

Related documents: data sheet for your flow range; calibration certificate

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CHAPTER 1

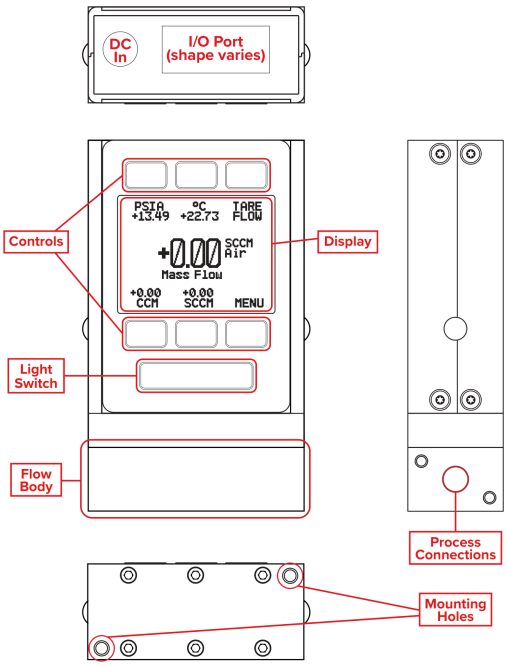
Supplied items

Check the contents

The box contains:

- the M mass flow meter;
- the calibration certificate;
- any accessories you ordered, such as cables, power adapters or filters.

Know the meter



Label on the drawing	Part
I/O Port (shape varies)	Multi-pin connector for power and signals, on top; its shape depends on the connector option
DC In	Power jack, on top
Controls	Control buttons, three above and three below the display
Display	Display
Light Switch	Backlight button, below the display
Flow Body	Flow body, with the flow arrow
Process Connections	Process connections, inlet and outlet
Mounting Holes	Mounting holes, underneath the flow body

Figure 1. The M from the top, the front, the side and the bottom. The labels on the drawing are in English; the table next to it explains each one.

The main display

The main display shows all live readings at once: the meter measures 1000 times per second and refreshes the display 10 times per second. Each button above and below the display belongs to the label next to it. Pressing the button of a reading moves that reading to the centre of the display. Some buttons have no function on your meter; pressing an unused button does nothing.

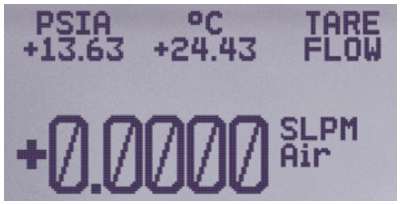


Figure 2. Main display: the button labels of the top row and the reading in the centre.

Button	Function
Pressure (top left)	Shows the pressure in the centre
Temperature (top centre)	Shows the temperature in the centre
TARE FLOW (top right)	Tares the flow reading (Tare (p. 7))
Volumetric flow (bottom left)	Shows the volumetric flow in the centre
Mass flow (bottom centre)	Shows the mass flow in the centre
MENU (bottom right)	Opens the main menu or moves to the next screen
Light button (below the display)	Switches the backlight on or off (see Connect the power (p. 7))

CHAPTER 2

First use

Connect the power

The power input is on top of the meter: either the power jack (**DC In** in Figure 1 (p. 5)) or the multi-pin connector (**I/O Port**). Most meters need 12–24 V DC and 40 mA. The exact power requirement depends on the analogue output option; it is on the data sheet.

NOTICE

Power on pins 1 to 6 of the 8-pin Mini-DIN connector causes permanent damage. Pin 2 carries a constant 5.12 V DC and is easily mistaken for the 0–5 V DC analogue output. Do not connect power to pins 1 to 6, and switch the supply on only after you have checked that all the necessary pins are connected correctly.

1. Connect the cables to the power and signal connectors.
2. Switch on the power supply. The meter switches on by itself as soon as it receives power.

The monochrome display has a backlight. To switch it on or off, press the light button below the display (**Light Switch** in Figure 1 (p. 5)). On the optional colour display, the same button switches the display off to save power.

Set-up and connection

Three settings decide whether the first reading is right: the zero point (tare), the gas and the units. Make them before you connect the meter to your process. Then check the pressures and plumb the meter in, with the gas flowing in the direction of the arrow.

Tare

A tare gives the meter a zero reference; every reading is measured from it. Tare the meter before you install it in your process, and again:

- after installation;
- when you change its orientation;
- after it has been hit by any significant impact;
- after any significant change of temperature or pressure.

1. Make sure that no gas flows through the meter.
2. Bring the meter to the pressure you expect in the process.
3. If the meter is already installed, keep the line at its normal operating pressure.
4. Press **TARE FLOW** on the main display, or go to **MENU** › **TARES** › **TARE FLOW**.
5. If the screen asks you to make sure that there is no flow, press **TARE** to confirm. The flow reading returns to zero.

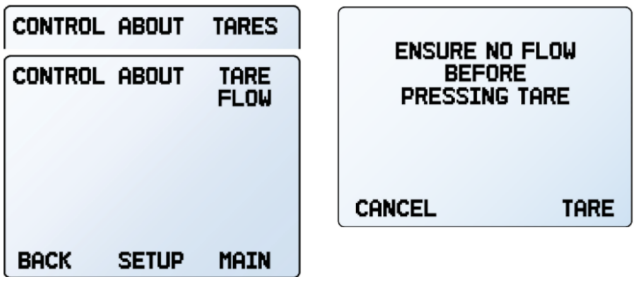


Figure 3. Taring from the menu. Left: the main menu, with the tare entry as **TARES** (top, on a meter with a barometer) or as **TARE FLOW**. Right: the flow tare confirmation.

If your meter has the optional barometer, **MENU** › **TARES** also offers a pressure tare, **TARE PRESS**. The meter must be open to the atmosphere when you tare the pressure; the screen asks you to press **TARE** when the meter is vented to ambient with no flow. An absolute pressure tare needs the barometer, which is installed at production.

> **Note**
> A negative flow reading with no flow means a poor tare. Make sure that nothing flows, then tare again.

Select the gas

Most meters are calibrated on air at the factory. The gas selection lets you configure the meter for a different gas without sending it back for a physical recalibration. It holds up to 130 preloaded gases and gas mixes. Not all gases are available on all meters: corrosive gases and refrigerants are available only on the corrosion-resistant versions. The change takes effect as soon as you press **SET**; there is no need to restart the meter.

1. Press **MENU** › **SETUP**.
2. With the cursor on **Active Gas**, press **SELECT**.
3. In the category list, press **PAGE** until the page with your category appears.
4. Open the category with **SELECT**.
5. In the gas list, highlight your gas.
6. Press **SET**. The meter loads the gas properties and returns to the set-up menu. The selected gas now appears under the unit on the main display.

The category list holds your recent selections and your own gas mixes (up to twenty can be saved at a time), besides the categories of gases and pre-configured mixtures.

First page of the category list	What it holds
Recent	The gases you selected last
Standard	The standard gases, for example air, argon, methane, carbon monoxide, carbon dioxide and ethane
Gas mixes	Your own gas mixes
Bioreactor, **Breathing**, **Chromatography**	The gases and pre-configured mixtures of each category
More	The next page of categories

Figure 4. The gas categories. The two screens below show the set-up menu with **Active Gas** and the first page of the standard gases.

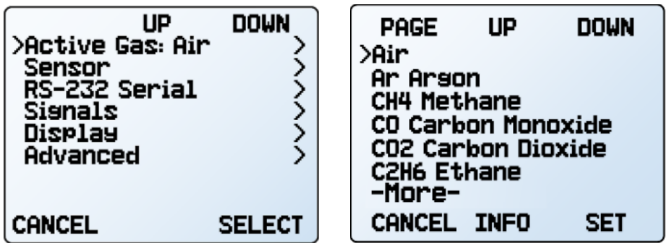


Figure 5. Left: the set-up menu. Right: the first page of the standard gases, with **PAGE**, **INFO** and **SET**.

The full gas list and how to define your own gas mixes are in the operating manual.

Choose the units

1. Press **MENU** › **SETUP** › **Sensor** › **Engineering Units**.
2. Select the reading whose unit you want to change: mass flow, volumetric flow, pressure or temperature.
3. Select the new unit.

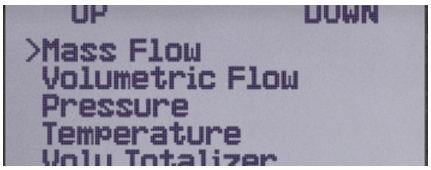


Figure 6. The engineering units menu.

Standard conditions

Mass flow is shown as a volume flow at fixed reference conditions. Units that begin with **S** (**SLPM**, standard litres per minute, sL/min; **SCCM**, standard cubic centimetres per minute, smL/min…) refer to standard conditions (STP); units that begin with **N** (**NLPM**, normal litres per minute, nL/min…) refer to normal conditions (NTP). Unless you ordered otherwise, the meter ships with:

STP (units starting with S)	21.11 °C, 1013.25 mbar
NTP (units starting with N)	0 °C, 1013.25 mbar

> **Note**
> Changing the STP or NTP reference changes your mass flow readings. When you check a flow against another instrument, set both instruments to the same gas and the same reference conditions first.

To change them, go to **MENU** › **SETUP** › **Sensor** › **STP Flow Ref** or **NTP Flow Ref**; which one is offered depends on the selected flow unit.

Pressure limits

Two limits protect the meter: the maximum line pressure in the flow body and the maximum *differential* pressure across the meter. Make sure your process stays below both before you connect the meter.

Table 2-1 Pressure limits

Version	Max. operating line pressure	Max. differential pressure
M, MS	10 bar g (145 psig)	5 bar (75 psid)
MLW	3 bar g (45 psig)	675 mbar (10 psid)
MQ	21 bar g (305 psig)	5 bar (75 psid)

⚠ WARNING

Operating the meter above its pressure limits can damage it or cause injury. Keep the pressure within the limits.

Mounting and filters

The meter needs no straight pipe runs upstream or downstream, and it works in any orientation, including upside down. The size and position of the mounting holes underneath the meter are in the dimensions on the data sheet.

Where the extra pressure drop is acceptable, protect the meter with an in-line sintered filter upstream, so that large particles cannot enter the flow body. Choose the pore size from the full-scale range:

Full-scale range	Largest particle size
up to 1 smL/min (21.11 °C, 1013.25 mbar)	5 µm
above 1 smL/min and below 1 sL/min	20 µm
1 sL/min and above	50 µm

Connect the meter

NOTICE

Pipe dope and liquid sealants on the process connections can get into the flow stream. There they damage the meter permanently. Do not use pipe dope or liquid sealants on the process connections.

NOTICE

Do not wrap the first two threads that enter the meter. This keeps thread tape out of the flow stream, where it can clog or damage the meter.

1. Note the flow arrow on the flow body. The gas must flow in the direction of the arrow — usually from left to right.
2. Remove any plastic plugs from the ports.
3. On threaded fittings without a face seal, wrap PTFE (polytetrafluoroethylene) thread tape around the thread, leaving the first two threads that enter the meter bare. Face-seal fittings need no tape.
4. Connect the meter to your process.
5. Check once more that your pressures stay within the Pressure limits (p. 9).
6. Let the gas flow. The main display shows the flow.

If the screen shows a code such as **MOV**, **VOV**, **POV** or **TOV** next to the reading, see If something looks wrong (p. 11) in Care and service.

CHAPTER 3

Care and service

If something looks wrong

What you see	What to do
The buttons do not respond and the display shows **LCK**	The front panel was locked by a serial command. Press and hold the four outer buttons together to unlock it.
MOV, **VOV**, **POV** or **TOV** next to the reading	Mass flow, volumetric flow, pressure or temperature is above the range of the meter. Bring it back within the range.
ADC, **COM**, **OVR** or **TMF** next to the reading	ADC: analogue-to-digital converter error. COM: the digital connection has been idle too long. OVR: the totaliser rolled over to zero. TMF: the totaliser missed out-of-range flow. The totaliser is described in the operating manual.
The display is hard to read	Increase the contrast or the brightness, as described in the operating manual. On a monochrome display in low light, switch on the backlight with the button below the display.
The analogue output shows lower values than the display	The analogue voltage drops over long cables. Use wires with a larger cross-section, especially for the ground wire.
Negative flow with no flow	Poor tare. Make sure that nothing flows, then tare again (see Tare (p. 7)).
The flow reading never settles	The meter is fast enough to see small variations in flow that slower instruments miss; this can reveal problems with pumps or controllers.
The flow reading does not change when the flow changes	The flow sensor may be damaged. Contact Analyt-MTC.
The M disagrees with another flow instrument in the same line	Check that both use the same gas and the same standard conditions (p. 9).
The pressure reading is negative	If a negative reading is not expected, the pressure may need a tare (see Tare (p. 7)). On an instrument with the barometer option, open it to the ambient atmosphere first.
Low pressure readings jump to zero	The zero band, preset at the factory, shows small readings as zero. Reduce it under **MENU** › **SETUP** › **Sensor** › **Zero Band**.
The meter was dropped	If it switches on and responds normally, it is probably fine. It may or may not need a recalibration. Tare it and compare it with a known-good flow standard. If it agrees, keep using it, and tell Analyt-MTC about the drop at the next calibration.
No communication with the computer	Check that the software, the COM port and the meter use the same baud rate, that your commands use the unit ID of the meter, that the software uses the right COM number, and the flow control (handshaking) settings. The settings are in the 358 Series serial interface (RS-232/RS-485) — Communication guide (AMTC-CG-0002).

Further status messages and fault-finding steps are in the operating manual.

Device information

MENU › **ABOUT** shows what the meter is and when it was last calibrated. Have this screen open when you call Analyt-MTC.

Screen › field	Content
ABOUT DEVICE	
MODEL	Model of the instrument (the part number may be truncated)
SERIAL NO	Serial number
DATE MFG	Date of manufacture
DATE CAL	Date of the most recent calibration
CAL BY	Initials of the technician who calibrated it
SW	Firmware version
FULL SCALE RANGES	
The maximum calibrated range of the mass flow, volumetric flow and pressure readings	
ABOUT MANUFACTURER	
Analyt-MTC name and contact details (web, phone, e-mail)	

Table 3-1. The **ABOUT** screens of the instrument.

Cleaning

A meter that works with clean, dry gas needs no internal cleaning. Wipe the outside with a soft, dry cloth.

NOTICE

If you suspect that dirt or debris has entered the meter, do not take the flow body apart to clean it. Taking the flow body apart can damage the meter further and may void the warranty. Contact Analyt-MTC for cleaning.

Calibration

Have the meter calibrated once a year. The date of the last calibration is on the label on the back of the meter and under **MENU** › **ABOUT** › **About Device**.

⚠ WARNING

Depressurise first. Gas that escapes from a line that is still under pressure can injure you, and a hazardous gas left in the system can harm your health. Before you disconnect the meter from a system that has been pressurised, confirm independently that all pressure has been released safely and that any hazardous gas left in the system has been purged.

Service and support

Calibration, repair, cleaning and technical support for your M are provided by Analyt-MTC. Only personnel authorised by Analyt-MTC may service the meter; dismantling or repairing it yourself may void the warranty and cause further failure. Get in touch before you send the meter in, with its model and serial number at hand; many questions are settled on the phone. The contact details of Analyt-MTC are in Where to find more (p. 13) and on the back cover.

CHAPTER 4

Where to find more

This guide covers the first use of the meter. The documents below go further; you can download them from the product page at analyt-mtc.com, or ask Analyt-MTC.

Related documents

Document	Number	What it covers
358 Series M, MB, MLW and MLWB Mass Flow Meters — Operating manual	AMTC-MN-0004	The full safety information, the wiring of the signals, the display options and troubleshooting.
358 Series M Mass Flow Meters — Technical data sheets, one per flow range (low, mid, high)	AMTC-SS-0046 AMTC-SS-0047 AMTC-SS-0048	The technical data, including the pressure limits, the power requirement and the dimensions.
358 Series MLW Mass Flow Meters — Technical data sheets, one per flow range (low, mid, high)	AMTC-SS-0052 AMTC-SS-0053 AMTC-SS-0054	The technical data, including the pressure limits, the power requirement and the dimensions.
358 Series MS and MBS Mass Flow Meters — Technical data sheet	AMTC-SS-0065	The technical data, including the pressure limits, the power requirement and the dimensions.
358 Series MQ Mass Flow Meters — Technical data sheet (mid)	AMTC-SS-0084	The technical data, including the pressure limits, the power requirement and the dimensions.
358 Series MQ and MBQ Mass Flow Meters — Technical data sheet (high)	AMTC-SS-0064	The technical data, including the pressure limits, the power requirement and the dimensions.
358 Series serial interface (RS-232/RS-485) — Communication guide	AMTC-CG-0002	The serial command set.

Contact and support

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Before you call

Have the following at hand so that Analyt-MTC can help you quickly:

- the model and serial number (label on the meter, or **`MENU`** › **`ABOUT`** › **`About Device`**);
- the firmware version (SW line on the same screen);
- the gas, the flow and the line pressure, and any status message on the display.

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