



M-2600 Instruction Manual



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Handling Precautions

Inspections

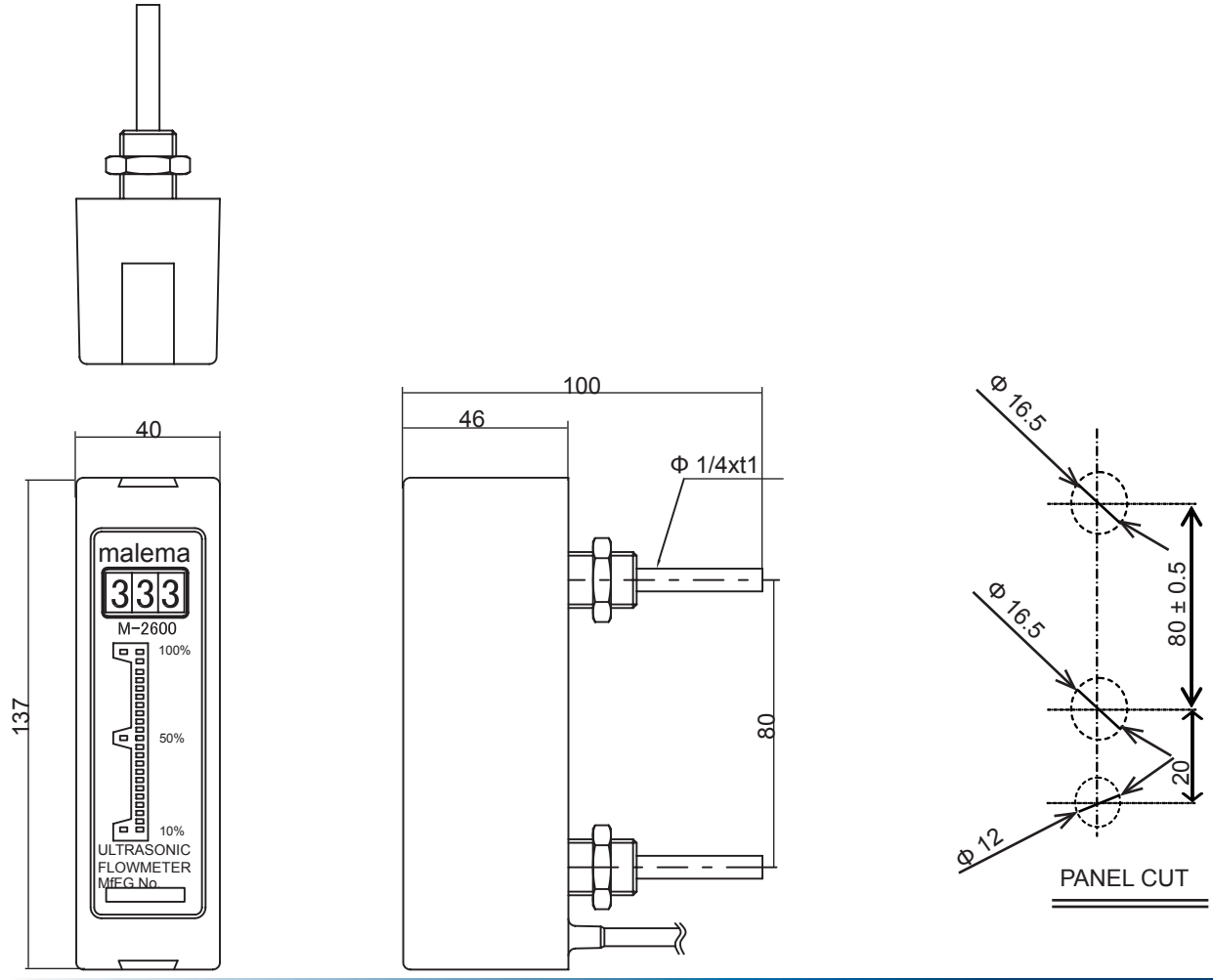
On delivery, check the product for damage, possibly due to improper shipping conditions. Confirm that the model code on the Tag plate matches the specification in your purchase order.

Storage Conditions

Unpack the product, if possible, before storing it.
The storage place should be free from rain, shock or vibration.
The ambient temperature should be within 10 to 60°C (50 to 140°F) and the humidity 5 to 80 % R.H. without condensation.

Outside Dimensions and Model code

Outside Dimensions



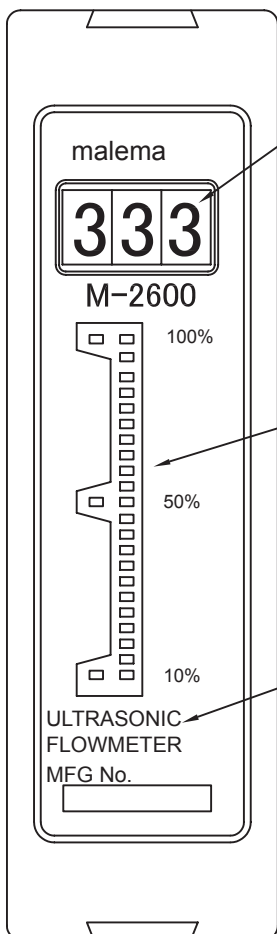
Ultrasonic Flow Sensor

Model Code

Model Code												Description	
M-2600	-												
Tube Material	T												PFA
Tube Size	2												1/4"
Connection	1												Tube ends
Range Code	04												4 mm ID tube (4 lpm max)
Converter Model	0												Standard
Analog Output Type	1												0 to 10 VDC
	2												4 to 20 mA
	3												1 to 5 VDC
Valve	0												without valve
	V												with valve
Cover Material	0												ABS
	1												ULTEM
												XXX	unique PN identifier

External View

Front Panel



Digital Display of Flow Rate:

Red LED (3 digits)

Bar-graph Display of Flow Rate:

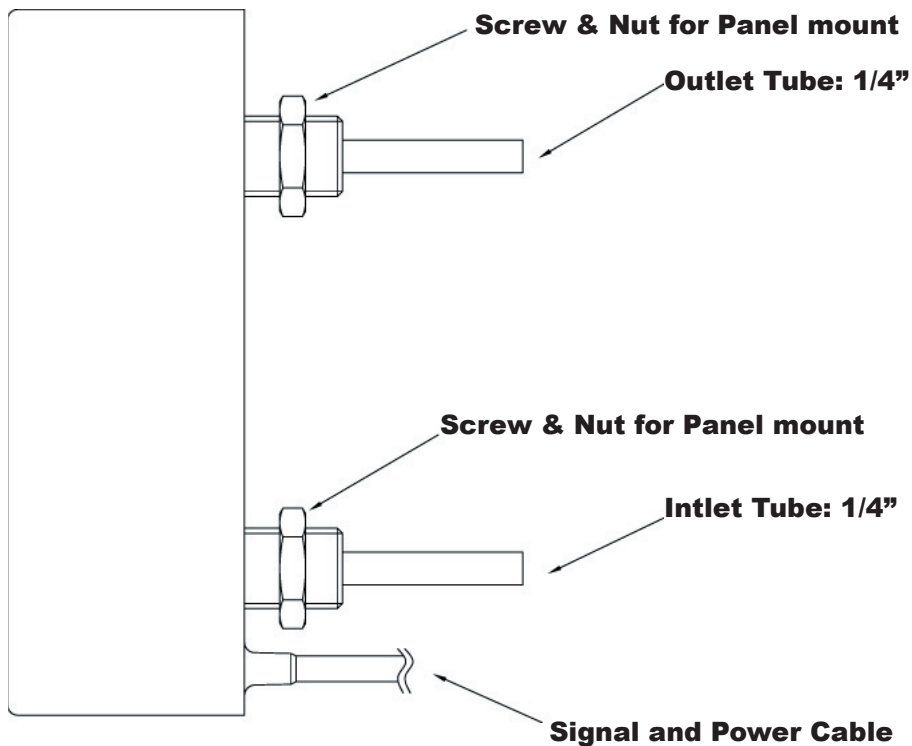
Green LED (21 segments)

Zero Adjust Switch:

Use magnet Bar for Zero Adjustment

Note: The hall-effect-sensor for Zero Adjust., is located behind the front panel.

Side View



Installation

Selecting location

Consider the following when selecting installation location for the Flow Detector:

1. Ambient temperature: 10 to 60°C (50 to 140°F) away from direct sunshine.
2. Ambient humidity: less than 85 % R.H. and free from condensation.
3. Free from rain and water drops.
4. Free from electromagnetic interference. Keep away from heavy electrical devices such as motors, pumps, power-relays and solenoid valves.
5. No air or gas bubbles in the flow, since they disturb the propagation of ultrasonic waves.
6. Install in a vertical direction to maximize the air escape.
7. The location must be with no water splashes or corrosive gases.
8. The location should have ease of access for maintenance.

Confirm that the maximum possible pressure is below the allowable pressure of the Flow Detector.

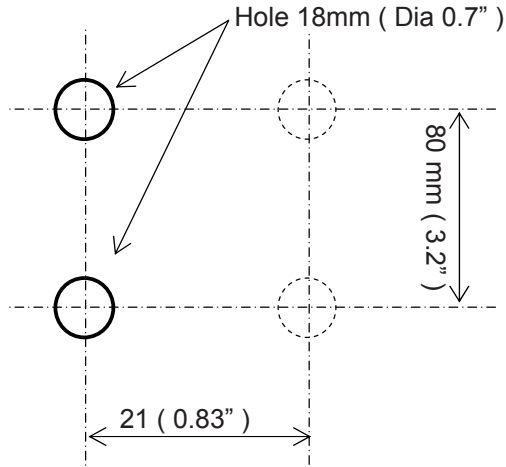
No leaks are observed at the Flow Detector joints to the pipe.

All possible electric noise sources in the vicinity of the flowmeter, such as motors, pumps, power relays or solenoid valves, should be fitted with suitable surge suppressor.

Ultrasonic Flow Sensor

Panel Cut out

Mounting pitches of neighboring converter in case of multiple mounting are, Min. 21mm (0.83").



Wiring

Connection of the power supply

Connect the power source to terminals 1(+) and 2 (common). Confirm that the voltage of power supply is within the tolerance of acceptable voltage, range for the converter.

The power source should be isolated from heavy electric devices.

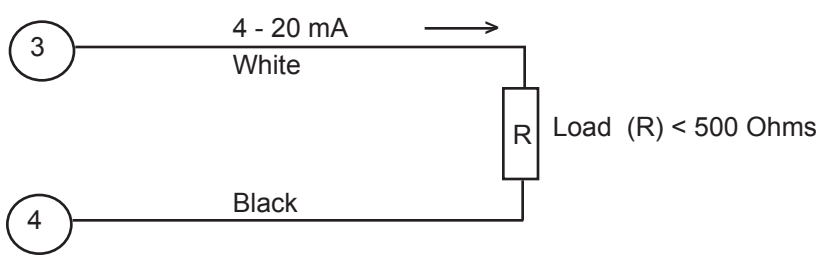
To avoid induction noise, do not run signal cables together with high voltage or high current power cables.

Electrical Connection

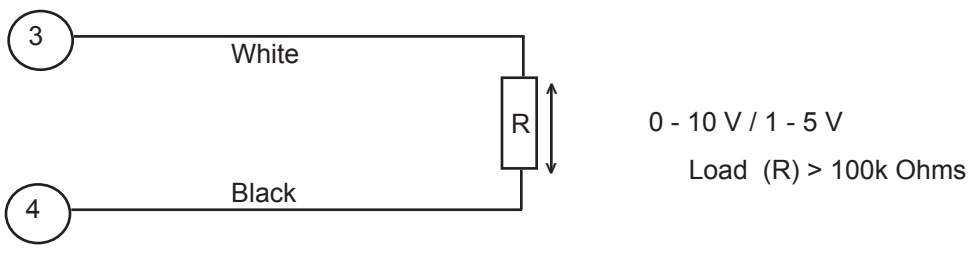
No.	Color	Name	Description
1	Red	Power Supply	24 VDC +
2	Black		24 VDC -
3	White	Analog Out	Analog +
4	Black		Analog -
5	Green	Alarm Output	Open collector +
6	Black		Open collector -
7	Yellow	Communication (For Configuration via PC)	RS485 +
8	Black		RS485 -

Analog Output

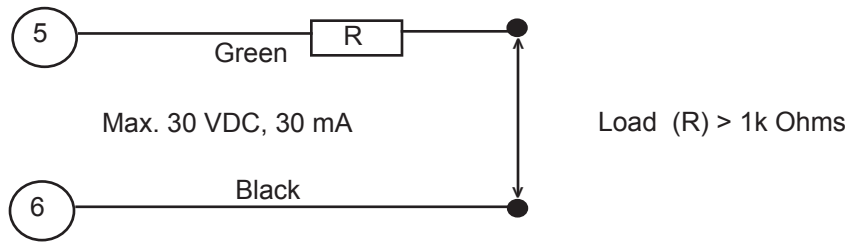
Current Output



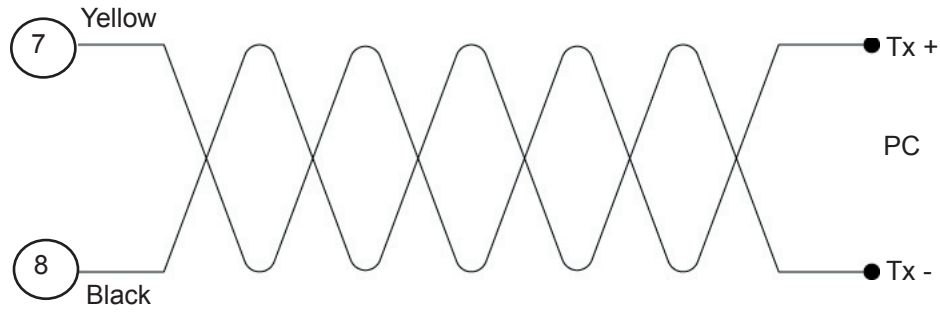
Voltage Output



Alarm Output



RS485 Output



Ultrasonic Flow Sensor

Operation Procedures

Inspection before Startup

Confirm the following before turning power on.

1. Power supply voltage at terminal is DC24 V \pm 10%.
2. Flow direction corresponds with arrow mark on the Flow Detector.
3. Flowmeter should be completely filled with liquid. Confirm there is no leakage, no bubbles and no deposits are observed. If there are bubbles, purge the flowmeter and eliminate the bubbles.

Zero Adjustment

Perform the zero adjustment before start of the measurement.

Zero adjustment can be performed by bringing a bar magnet piece momentarily close to the front panel; where the zero adjust switch is located. Keep power on for approximately 15 minutes to stabilize the converter, then perform "Zero adjust" by the following procedure.

1. Stop the flow completely.
2. Confirm the liquid is free of no bubbles.
3. Momentarily bring the magnet piece near the "Zero Adjust Switch" for one second. Zero adjustment starts and will be finished approximately in ten seconds.
4. During the Zero Adjustment, the seven segment display indicates "ADJ".

It is not necessary to repeat Zero Adjustment, every time the power is turned on.

Trigger Level Adjustment

If you bring the magnet close to the "Zero Set Point" location for more than 3 seconds, the flowmeter will adjust the signal level of ultrasonic signal to measure the flowrate (Trigger Level Adjustment).

In case you have changed the fluid to measure, it is recommended to do this trigger level adjustment.

When the trigger level adjustment starts, the seven segment display indicates "AUS".

If the trigger level is incorrect, flow signal fluctuations will take place.

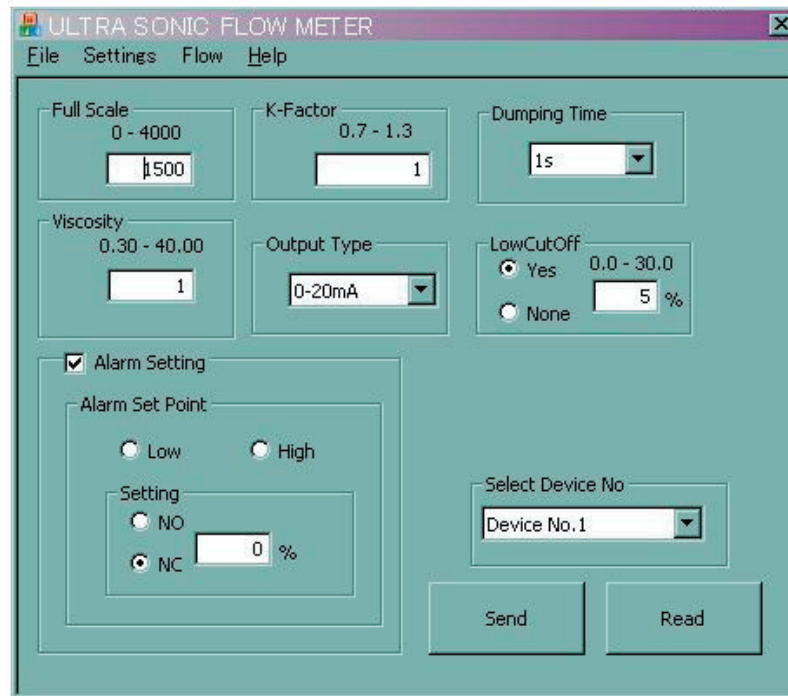
Parameter Configuration

Configuration via PC software

The parameters of the M-2600 are factory set.

The configuration parameters such as flow-range, low cut off, or damping time, configuration can be change via RS485 terminals.

Software configuration parameter screen



No.	Items	Data
1	Full Scale	200 to 4000
2	K-factor	0.7 to 1.3
3	Damping time	0.2 to 10s
4	Viscosity	0.3 to 40
5	Output type	4 -20 mA / 0 - 20 mA
6	Low Cut off	Yes / No 0 to 30
7	Alarm Set Point	High / Low
8	Alarm Setting	No / Nc
9	Device No	Device No. 1 to Device No. 31

Refer to the above Software configuration parameter screen

There are two buttons on the right side bottom which downloads / uploads the data from / to the M-2600 to / from the PC configurator.

Send: When you press "Send", the data entered on the above screen is sent to the M-2600.

Without pressing this "Send" button, the data will not be configured to the M-2600.

Read: When you press "Read", the configuration data from the M-2600 is downloaded (displayed) on the above screen.