

4 Installation Instruction

4.1 Unpacking and Inspection of Equipment

Inspect the shipping container. If it is damaged, contact the shipper immediately for instructions. Do not discard the box.

If there is no apparent damage, unpack the container. Be sure all items shown on the packing list are present.

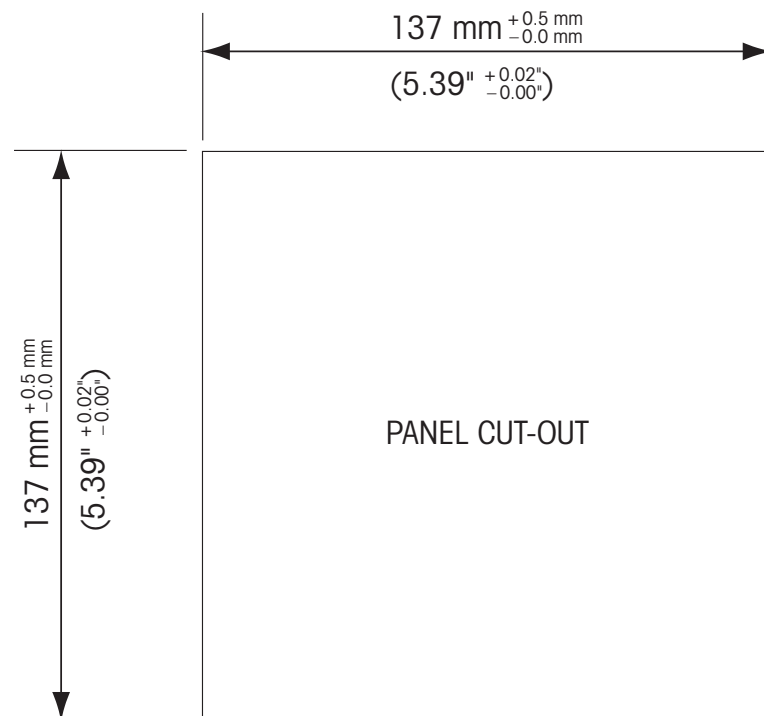
If items are missing, notify METTLER TOLEDO immediately.

4.1.1 Panel Cutout Dimensional Information – ½ DIN Models

½ DIN Model transmitters are designed with an integral rear cover for stand-alone wall mount installation.

The unit may also be wall mounted using the integral rear cover. See installation instructions in section 4.1.2.

Below are cut-out dimensions required by the ½ DIN models when mounted within a flat panel or on a flat enclosure door. This surface must be flat and smooth. Textured or rough surfaces are not recommended and may limit the effectiveness of the gasket seal provided.



Optional hardware accessories are available that allow for panel- or pipe-mount. Refer to section 15 for ordering information.

4.1.2 Installation Procedure

General:

- Orient the transmitter so that the cable grips face downward.
- Wiring routed through the cable grips shall be suitable for use in wet locations.
- In order provide IP66 enclosure ratings, all cable glands must be in place. Each cable gland must be filled using a cable, or suitable Cable Gland Hole Seal.

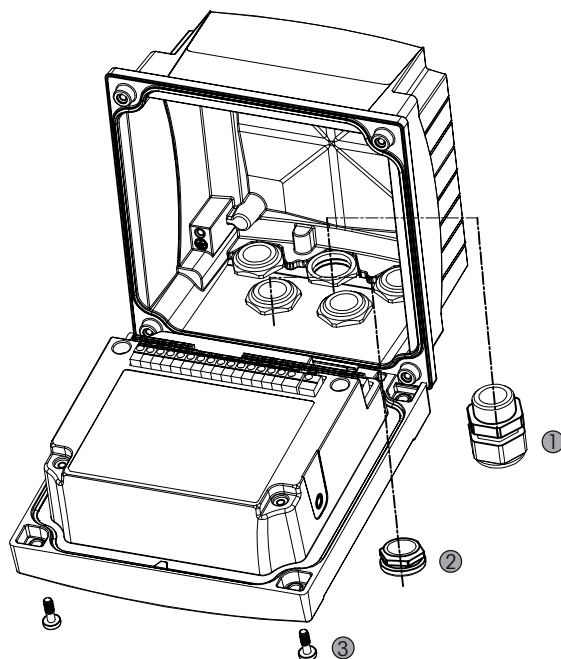
For Wall Mount:

- Remove rear cover from front housing.
- Start by unscrewing the four screws located on the face of the transmitter, in each corner. This allows the front cover to swing away from the rear housing.
- Remove the hinge-pin by squeezing the pin from each end. This allows the front housing to be removed from the rear housing.
- Mount rear housing to wall. Secure mounting kit to the M400 according to the supplied instructions. Attach to wall using appropriate mounting hardware for wall surface. Be sure it is level and securely fastened and the installation adheres to any and all clearance dimensions required for transmitter service and maintenance. Orient the transmitter so that the cable grips are facing downward.
- Replace the front housing to the rear housing. Securely tighten the rear-cover screws to ensure that IP66/NEMA4X enclosure environmental rating is maintained. The unit is ready to be wired.

For Pipe Mount:

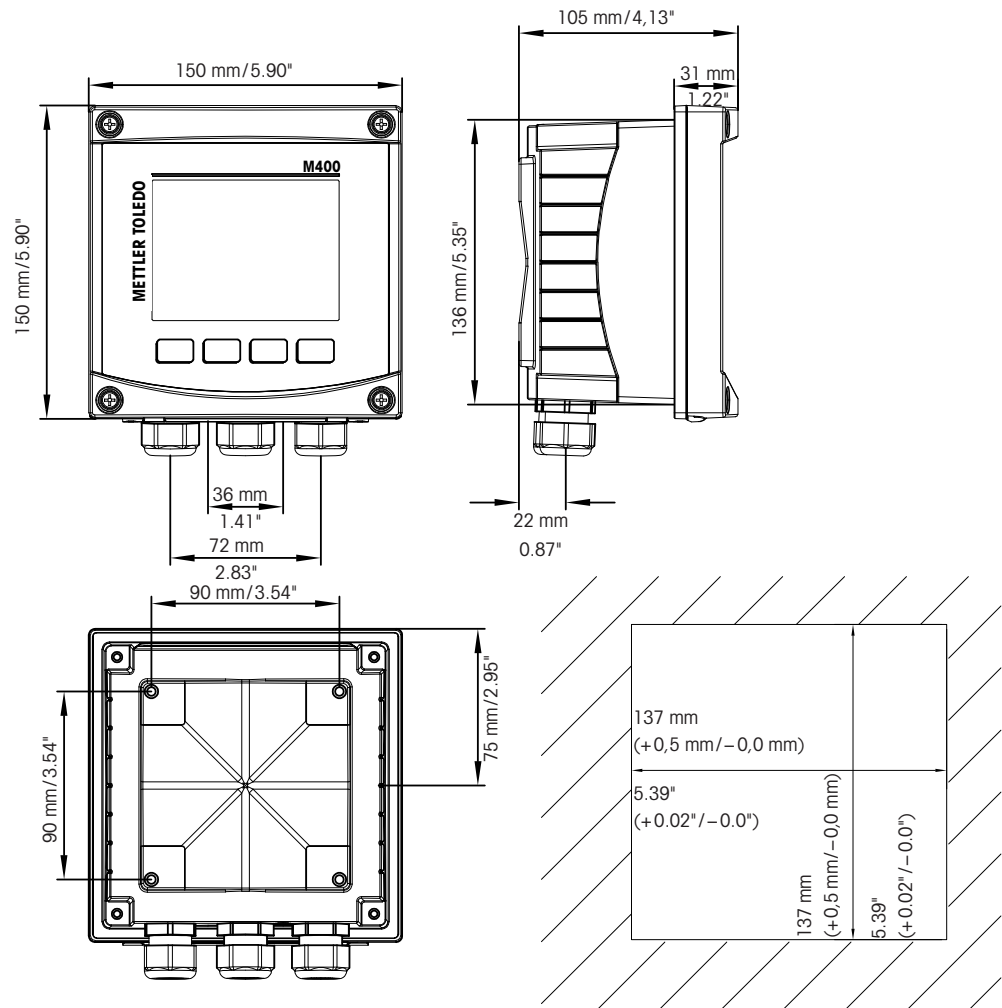
- Use only manufacturer-supplied components for pipe-mounting the M400 transmitter and install per the supplied instructions. See section 15 for ordering information.

4.1.3 Assembly – ½ DIN Version

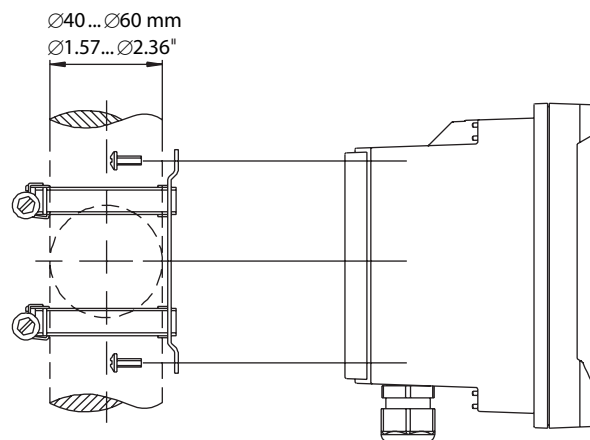


1. 3 M20X1.5 cable glands
2. Plastics plugs
3. 4 screws

4.1.4 1/2 DIN Version – Dimension Drawings



4.1.5 1/2 DIN Version – Pipe Mounting



4.2 Connection of Power Supply

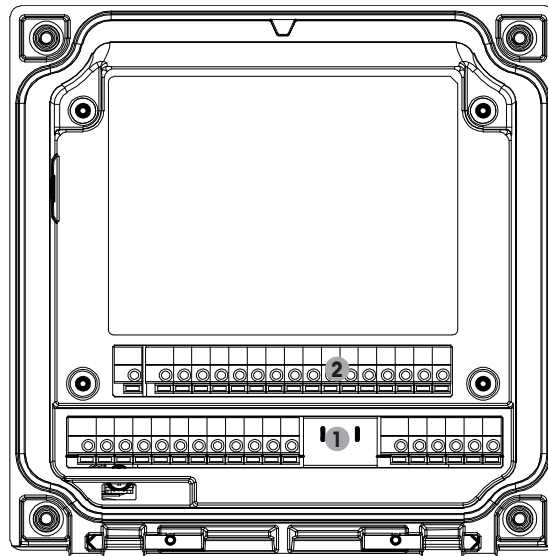
All connections to the transmitter are made on the rear panel of all models.



Be sure power to all wires is turned off before proceeding with the installation.

A two-terminal connector on the rear panel of all M400 models is provided for power connection. All M400 models are designed to operate from a 14–30 VDC power source. Refer to specifications for power requirements and ratings and size power wiring accordingly (AWG 16 – 24, wire cross-section 0.2 mm² to 1.5 mm²).

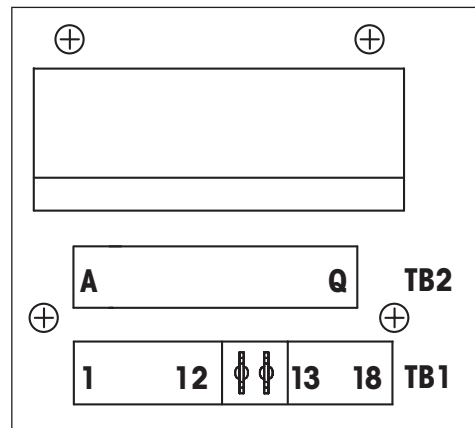
4.2.1 Housing (Wall Mount)



1: TB1 – Input and Output Analog Signal


2: TB2 – Sensor Signal

4.3 Terminal Block (TB) Definitions



Power connections are labeled **A01+ /HART** and **A01- /HART** resp. **A02+** and **A02-** for 14 to 30 VDC.

4.4 Terminal Block TB1

Terminal	Designation	Description
1	V_EC	
2	GND_EC	
3	485A_EC	Easy clean
4	485B_EC	
5	DI1+	
6	DI1-	Digital input1
7	DI2+	
8	DI2-	Digital input2
9	OC1+	
10	OC1-	Open collector output1 (switch)
11	OC2+	
12	OC2-	Open collector output2 (switch)
13	A01+ /HART	<ul style="list-style-type: none"> Power connection 14 to 30 V DC
14	A01- /HART	<ul style="list-style-type: none"> Analog output signal 1 HART signal
15	A02+	<ul style="list-style-type: none"> Power connection 14 to 30 V DC
16	A02-	<ul style="list-style-type: none"> Analog output signal 2
17	Not used	-
18		

4.5 Terminal Block TB2: Analog Sensors

4.5.1 Conductivity (2-e/4-e) Analog Sensors

Terminal	Function	Color
A	Cnd inner1 ¹⁾	White
B	Cnd outer1 ¹⁾	White/blue
C	Cnd outer1	–
D	Not used	–
E	Cnd outer2	–
F	Cnd inner2 ²⁾	Blue
G	Cnd outer2 (GND) ²⁾	Black
H	Not used	–
I	RTD ref/GND	Bare shield
J	RTD sense	Red
K	RTD	Green
L	Not used	–
M	Not used	–
N	Not used	–
O	Not used	–
P	Not used	–
Q	Not used	–

1) For third party Conductivity 2-e sensors a jumper between A and B may be required.

2) For third party Conductivity 2-e sensors a jumper between F and G may be required.

4.5.2 pH and Redox (ORP) Analog Sensors

Terminal	pH		Redox (ORP)	
	Function	Color ¹⁾	Function	Color
A	Glass	Transparent	Platinum	Transparent
B	Not used	–	–	–
C	Not used	–	–	–
D	Not used	–	–	–
E	Reference	Red	Reference	Red
F	Reference ²⁾	–	Reference ²⁾	–
G	Solution GND ²⁾	Blue ³⁾	Solution GND ²⁾	–
H	Not used	–	–	–
I	RTD ref/GND	White	–	–
J	RTD sense	–	–	–
K	RTD	Green	–	–
L	Not used	–	–	–
M	Shield (GND)	Green/yellow	Shield (GND)	Green/yellow
N	Not used	–	–	–
O	Not used	–	–	–
P	Not used	–	–	–
Q	Not used	–	–	–

1) Grey wire not used.

2) Install jumper between F and G for ORP sensors and pH electrodes without SG.

3) Blue wire for electrode with SG.

4.5.3 Amperometric Oxygen Analog Sensors

Terminal	Function	InPro 6800(G)	InPro 6900	InPro 6950
		Color	Color	Color
A	Not used	–	–	–
B	Anode	Red	Red	Red
C	Anode	– ¹⁾	– ¹⁾	–
D	Reference	– ¹⁾	– ¹⁾	Blue
E	Not used	–	–	–
F	Not used	–	–	–
G	Guard	–	Grey	Grey
H	Cathode	Transparent	Transparent	Transparent
I	NTC ref (GND)	White	White	White
J	Not used	–	–	–
K	NTC	Green	Green	Green
L	Not used	–	–	–
M	Shield (GND)	Green/yellow	Green/yellow	Green/yellow
N	Not used	–	–	–
O	Not used	–	–	–
P	+Ain ²⁾	–	–	–
Q	–Ain ²⁾	–	–	–

1) Install jumper between C and D for InPro 6800(G) and InPro 6900.

2) 4 to 20 mA signal for pressure compensation

4.6 Terminal Block TB2: ISM Sensors

4.6.1 pH, Amperometric Oxygen, Conductivity (4-e) and Dissolved Carbon Dioxide ISM Sensors

Terminal	Function	Color
A	Not used	–
B	Not used	–
C	Not used	–
D	Not used	–
E	Not used	–
F	Not used	–
G	Not used	–
H	Not used	–
I	Not used	–
J	Not used	–
K	Not used	–
L	1-wire	Transparent (cable core)
M	GND	Red (shield)
N	RS485-B	–
O	RS485-A	–
P	+Ain ¹⁾	–
Q	–Ain ¹⁾	–

1) Only for Oxygen sensors: 4 to 20 mA signal for pressure compensation

4.6.2 Optical Oxygen ISM Sensors

Terminal	Optical Oxygen with VP8 Cable ¹⁾		Optical Oxygen with other Cables ²⁾	
	Function	Color	Function	Color
A	Not used	–	Not used	–
B	Not used	–	Not used	–
C	Not used	–	Not used	–
D	Not used	–	Not used	–
E	Not used	–	Not used	–
F	Not used	–	Not used	–
G	Not used	–	Not used	–
H	Not used	–	Not used	–
I	Not used	–	D_GND (shield)	Yellow
J	Not used	–	Not used	–
K	Not used	–	Not used	–
L	Not used	–	Not used	–
M	D_GND (shield)	Green/yellow	D_GND (shield)	Grey
N	RS485-B	Brown	RS485-B	Blue
O	RS485-A	Pink	RS485-A	White
P	+Ain ³⁾	–	+Ain ³⁾	–
Q	–Ain ³⁾	–	–Ain ³⁾	–

1) Connect the grey +24 DC wire and the blue GND_24 V wire of the sensor separately to an external power supply.

2) Connect the brown +24 DC wire and the black GND_24 V wire of the sensor separately.

3) 4 to 20 mA signal for pressure compensation