Flush diaphragm pressure/DP transmitter/Quick Installation Guide

Safety Precautions

⚠ **Pressure sensor/ transmitter shall be installed by professional engineers, technicians and other qualified personnel, please read carefully the content and important information provided by this installation guide and label before installation.**

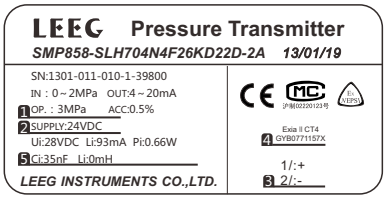
⚠ **Pressure sensor / transmitter is powered by an external power supply, the power supply should be in accordance with relevant standards stipulated by energy limitation circuit, and pay attention to the high-voltage that may exist in the circuit.**

⚠ **The static over pressure has been marked on the label, the maximum pressure value should be no more than the span of transmitter.**

⚠ **Using pressure sensor/transmitter in dangerous situations, product installation, using and maintenance should comply with installation guide and relevant provisions of national standards.**

⚠ **Measuring diaphragm is located in the forefront of the process connection, touch or squeeze with hard objects may cause damage to the diaphragm.**

Label



i Important information

1. Static overpressure
2. Power supply
3. Signal outline type
4. Explosion proof mark
5. Intrinsic safety equipment parameters

Product Usage

Pipe pressure measurement

Mounted directly on the pipe fittings, a cooling element should be used with pressure transmitter for high temperature medium.

Container pressure measurement

Pressure transmitter mounted on top of the container, to avoid the errors caused by contacting with the medium static pressure.

Differential pressure measurement system

With two pressure transmitters to make up a DP measurement system, can measure the pressure value and calculate the differential pressure value.

Container level measurement

⚠ **When using DP diaphragm system measurement, the static pressure is near to vacuum, differential pressure transmitters should be installed lower 1m than the high-pressure side pressure port.**

Install pressure transmitter

Direct installation

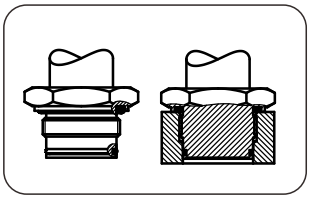
Integrated pressure transmitter, installed directly with process connections.

Brackets installation

DP diaphragm systems, membrane systems directly installed with process connections, differential pressure transmitter optional brackets.

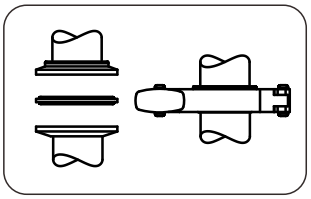
Process connection

Thread connection



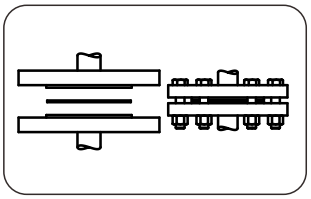
⚠ **Forbid welding base together with pressure transmitter! Note threaded screw length to avoid glitches scratch the diaphragm.**

Tri-clamp connection



Choose gaskets which meet the health standards, to avoid the measurement errors caused by excessive locking clamp gasket and diaphragm compression.

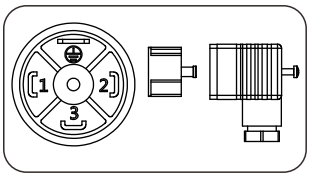
Flange connection



Select gaskets according to medium characters and temperature range, pay attention to balance each bolt lock.

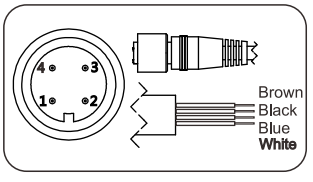
Electrical connection

DIN43650



Label	Two wires	Three wires	Four wires ires
1	Power+	Power+	
2	Power-	Power-	
3		Signal+	
⏚			

M12X1(4-pin)



Label	Two wires	Three wires	Four wires
1/Brown	Power+	Power+	Power+
2/White			Signal-
3/Blue		Signal+	Signal+
4/Black	Power-	Power-	Power-

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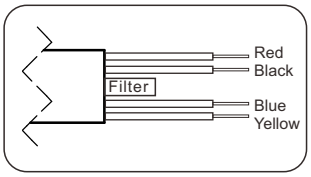
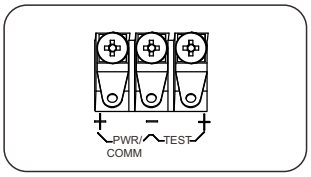
Cable outlet



Label	Two wires	Three wires	Four wires
Red	Power+	Power+	Power+
Black	Power-	Power-	Power-
Blue		Signal+	Signal+
Yellow			Signal-

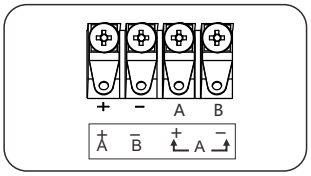
⚠ **The reference pressure is the current atmospheric pressure for gauge pressure transmitter.Be careful, avoid the filter dropping off, and kept dry.**

Module terminals- three terminals



Label	Two wires	Three wires	Four wires
PWR+	Power+	Power+	
PWR-	Power-	Power-	
TEST+		Signal+	

Module terminals- Four terminals

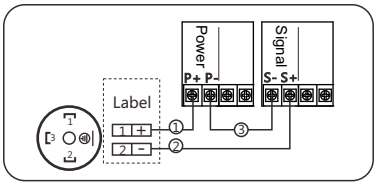


Label	Two wires	Three wires	Four wires wires
+	Power+	Power+	Power+
-	Power-	Power-	Power-
A		Signal+	Signal+
B			Signal-

⚠ **Please refer to the label for specific signal outline type.**

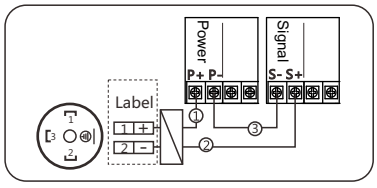
Signal connection

4-20mA Two wire



For example choose DIN43650
❶Connect the positive power supply （P+）to the terminals 1 of pressure transmitter;
❷Connect the positive signal module (S+) to the terminals 2 of pressure transmitter;
❸Connect the negative signal module (S-) to the negative power supply (P-).

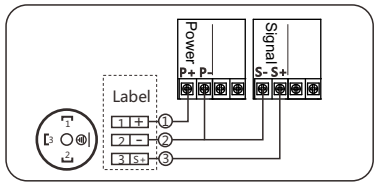
Intrinsic safety 4-20mA Two wire



For example choose DIN43650
❶Connect the positive power supply （P+）to the terminals 1 of pressure transmitter;
❷Connect the positive signal module (S+) to the terminals 2 of pressure transmitter;
❸Connect the negative signal module (S-) to the negative power supply (P-).

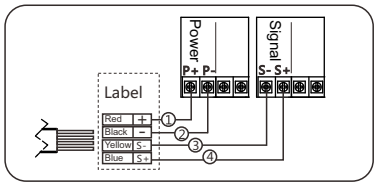
⚠ **Please note! The signal connection of intrinsic safety instruments needs to refer to isolation safety barrier factory instructions.**

Three wire Current /voltage signal



For example choose DIN43650
❶ Connect the positive power supply （P+）to the terminals 1 of pressure transmitter;
❷ Connect the negative power supply（P-）to the terminals 2 of pressure transmitter, connect the negative signal module (s-) to the negative power supply（P-）;
❸Connect the positive signal module (S+) to the terminals 3 of pressure transmitter;

Four wire Current /voltage/digital signal



For example choose cable connect directly
❶Connect the positive power supply（P+）to red wire of pressure transmitter;
❷Connect the negative power suppl（P-）to black wire of pressure transmitter,;
❸Connect the positive signal module (S+) to blue wire of pressure transmitter;
❹Connect the negative signal module (S-) to yellow wire of pressure transmitter;

Cable protection system

Standard protection system

In order to avoid the liquid flowing along the cable, which will cause waterproof joint effusion or flow into terminal box, an U-shaped ring needs to configured between pull box and pressure transmitter as in the picture, and make the U-shaped bottom under the pressure transmitter. Considering the needs of maintenance and replace, enough cable length needs to reserve.

Flexible explosion-proof tube protection system

⚠ **Using flame proof pressure transmitter in dangerous situations, need to use metal flexible explosion-proof tube to connect the signal cable into pull box and lead to the safety zone.**

Power supply

Independent liner direct power supply is suggested to adopt for the power supply of pressure transmitter, over large resistive load will result in a large pressure drop, so it requires to calculate the all-in resistance of signal cable, display meter and other record and display equipment, to ensure the voltage provided to the pressure transmitter accord with normal operating requirements.

Grounding

Using cable with shielded twisted-pair signal has the best effect, to avoid ground loop, shielded layer adopts single-end grounded.
Transient resistance built-in module only effect in the case of good grounding, metal shell and internal grounding terminals is used to the nearest grounded directly.

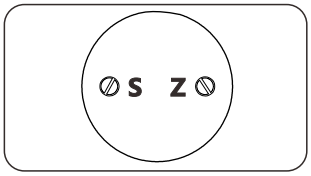
Intrinsic safety type

⚠ **The signal connection of intrinsic safety instruments needs to refer to isolation safety barrier factory instructions.**

Field adjustment

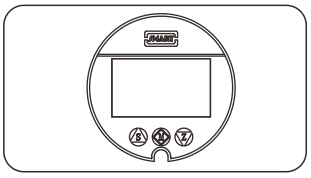
⚠ **Adjustment needs caution. Not all types of pressure transmitters have adjustment function.**

Analog type adjustment



Reference standard pressure source, adjust the potentiometer to calibrate the pressure transmitter, maximum adjustable range is + / - 5%. Using a straight screwdriver, forward or reverse rotate to increase or decrease the range. The potentiometer belongs to precision device, which needs fine-tuning.

Intelligent type adjustment



Through LCD buttons, terminal box external buttons or software as HART protocol, it is convenient for range adjustment. For detailed operation, please reference instructions of display meter, HART protocol and so on.

Exception handling

Measurement signal is abnormal which should judge the process pressure is abnormal, measuring system error or influence of installation environment or abnormal in the pressure transmitter, then analyze the reason and take corresponding measures.
No signal output, process pressure changes but no measurement corresponding change, or change does not correspond, it may be an abnormal pressure transmitter, it needs to check the power supply voltage, wiring, power consumption and load resistance whether they meet normal operating requirements. Also need to check if there is leaks and pressure impulse line blockage, shut-off valve not turned on, etc.
Signal output error is too big or it exceeds the normal range, need to check the power supply voltage, power consumption and load resistance whether they meet normal operating requirements, the measuring range setting, if adjustment is correct. Also need to check if there is leaks and pressure impulse line blockage, shut-off valve not turned on, rapid temperature fluctuations, etc.

If there is any question, please contact Shanghai LEEG Instruments Co.,Ltd. Tel: 86-21-31261976 Fax: 86-21-31261975 Email: info@leeg.cn, sales@leeg.cn