LEEG

Compact pressure transmitter / Quick installation manual

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.

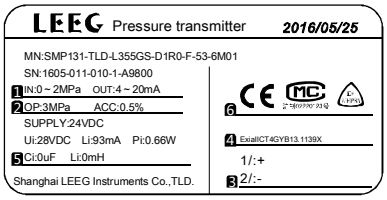
⚠ Pressure sensor / transmitter is powered by an external power supply, the power supply should be in accordance with relevant standards stipulated by energy limitation circuit, and pay attention to the high-voltage that may exist in the circuit.

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

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

⚠ Attention please! Disassemble the instruments under the condition of normal atmospheric pressure only.

Label



i Important information

1. Static pressure overload
2. Power supply
3. Signal outline type
4. Explosion proof mark
5. Intrinsic safety equipment parameters
6. Certificate

⚠ Please note! Exceeding static pressure overload will cause damage to the instruments, even lead to burst and casualties.

Product Usage

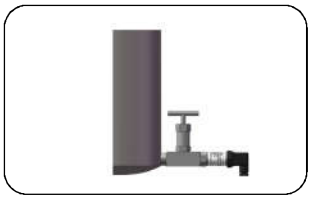
Pipe pressure measurement

For high-temperature steam measuring, more than half-tube cooling water should be pre-injected in the condenser. After the steam pipes are stable, slowly open the shut-off valve to start measuring.

Container pressure measurement

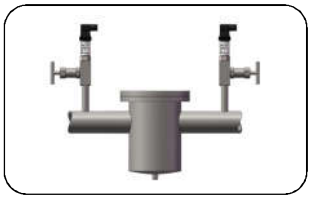
Can be used for gauge and absolute pressure measurement. After the pressure vessel is stable, slowly open the shut-off valve to start measuring.

Container level measurement



Can be used for liquid level measurement in open container and mounted on a level and temperature changes smoothly position. It will help to improve the measurement accuracy. Media compatibility should be considered.

Differential pressure measurement system



Two pressure transmitters can be composed of DP measurement systems, commonly used in the filter control or closed container level measurement.

Install pressure transmitter

Direct installation

Light-weight pressure transmitter can be mounted directly on the pressure leading tube. Bracket is not needed. When using a spanner to screw hexagon bolt, the maximum torque force can not exceed 50Nm.

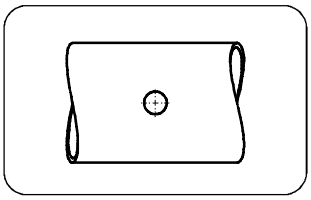
⚠ ■Do not install the instruments in medium flow area or the position of pressure impact.

■Install the instruments in the downstream of the globe valve, easy for calibration and function test..

■The installation position of pressure transmitter may lead to measuring deviation. For example: the measured value does not show zero under the condition of normal atmospheric pressure. Please revise zero shift and refer to the chapter of "Zero point adjustment".

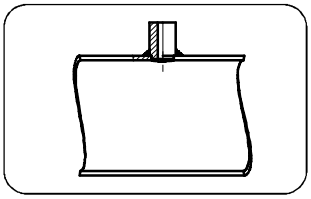
Process connection

Tapping



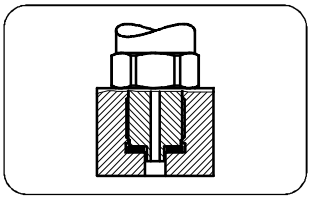
The tapping location is selected according to measuring media, situated at the top for gas, on the side or bottom for liquid and steam.

Base welding



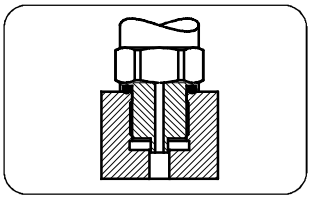
⚠ Forbid base welding with pressure transmitter and avoid base deformation caused by welding. And please pay attention to clean up waste residue to avoid scratching the measuring diaphragm.

Straight thread end seal



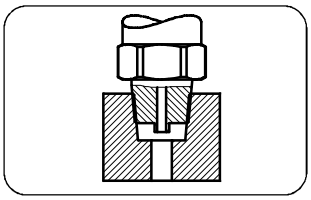
The thread length must be more than the base thread depth, to ensure end gasket seal Is effective.

Straight thread root seal



The thread length must be less than the base thread depth, to ensure root gasket seal Is effective.

Taper thread seal



Using raw material belts or sealant sealing, when thread lock hard, there is a small part of space.

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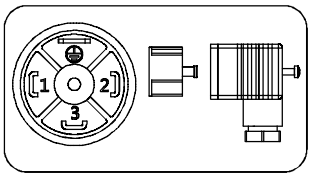
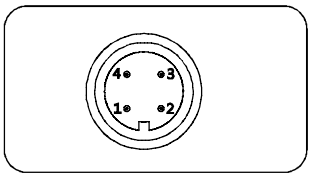
Electrical connection

DIN43650



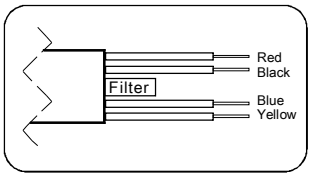
Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2	Power-	Power-	Power-	Power-
3	Key-z	Signal+	Signal+	A+
⏚			Signal-	B-

Aviation plug,(M12*1-4pin)



Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2			Signal-	B-
3	Key-z	Signal+	Signal+	A+
4	Power-	Power-	Power-	Power-

Cable outlet

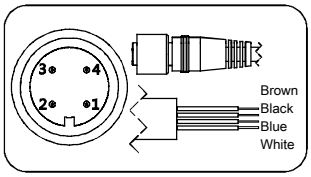


Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
Red	Power+	Power+	Power+	Power+
Black	Power-	Power-	Power-	Power-
Blue		Signal+	Signal+	A+
Yellow			Signal-	B-

⚠ The reference pressure is the current atmospheric pressure for gauge pressure transmitter. Please be careful to avoid the filter dropping off and keep it dry.

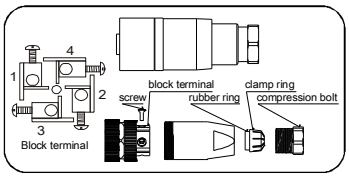
Electrical connection accessories

Aviation plug (with cable)



Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1/Brown	Power+	Power+	Power+	Power+
2/White			Signal-	B-
3/Blue	Kye-z	Signal+	Power-	A+
4/Black	Power-	Power-	Power-	Power-

Electrical connection accessories



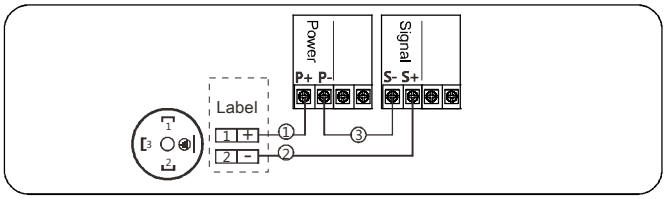
Lable	Two wires	Three wires	Four wires	Modbus-TRU/RS485
1	Power+	Power+	Power+	Power+
2			Signal-	B-
3	Key-z	Signal+	Signal+	A+
4	Power-	Power-	Power-	Power-

⚠ Key-z for correcting zero pressure, suitable for DIN43650 connector(D)aviation plug(H) products

⚠ Please note that specific circumstances refer to signal outline way on product lable

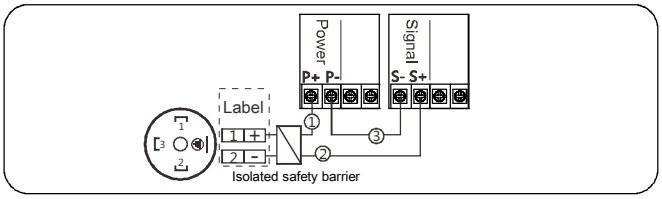
Signal connection

4-20mA two wire (DIN43650)



① Connect the positive power supply (P+)to the terminals 1 of pressure transmitter;
② Connect the positive signal module (S+) to the terminals 2 of pressure transmitter;
③ Connect the negative signal module (S-) to the negative power supply (P-).

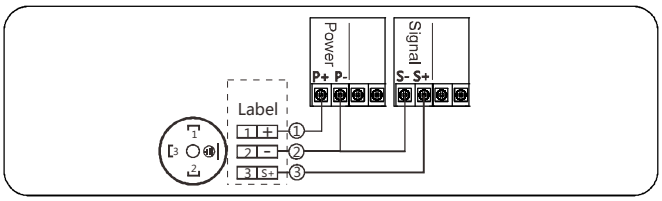
Intrinsic safety 4-20mA (DIN43650)



① Connect the positive power supply (P+) to the terminals 1 of pressure transmitter;
② Connect the positive signal module (S+) to the terminals 2 of pressure transmitter;
③ Connect the negative signal module (S-) to the negative power supply (P-).

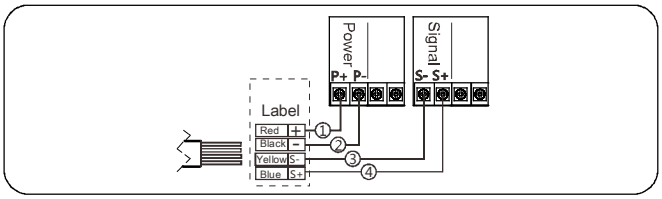
⚠ Please note! The signal connection of intrinsic safety instruments needs to refer to isolated safety barrier factory instructions.

Three wire current/voltage signal(DIN43650)



① Connect the positive power supply (P+) to the terminals 1 of pressure transmitter;
② Connect the negative power supply (P-) to the terminals 2 of pressure transmitter, and then connect the negative signal module (S-) to the negative power supply (P-);
③ Connect the positive signal module (S+) to the terminals 3 of pressure transmitter;

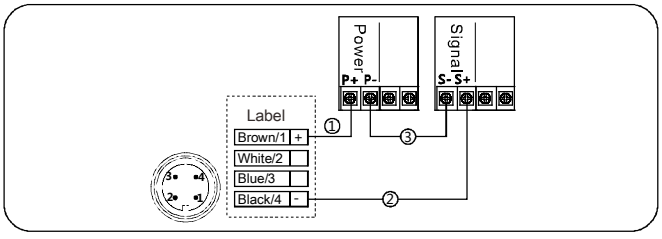
Four wire current/voltage/digital signal (Cable)



① Connect the positive power supply (P+)to red wire of pressure transmitter;
② Connect the negative power supply (P-) to black wire of pressure transmitter,;
③ Connect the positive signal module (S+) to blue wire of pressure transmitter;
④ Connect the negative signal module (S-) to yellow wire of pressure transmitter;

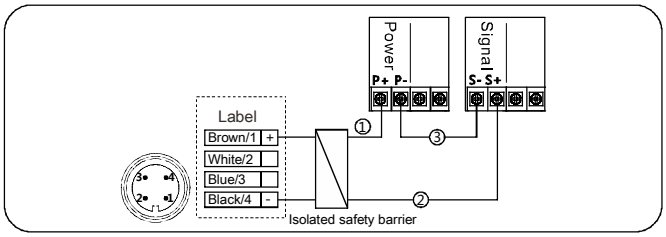
⚠ For Modbus-RTU/RS485 output signal, positive and negative power supply is same. Connect A+ and transmitter blue electron wire, connect B-and transmitter yellow electron wire.

Two wires 4-20mA (Aviation plug with cable)



①Connect the positive power supply (P+) to the terminal 1/brown wire of pressure transmitter;
②Connect the positive power supply (P+) to the terminal 4/black wire of pressure transmitter;
③Connect the negative signal module (S-) to the negative power supply (P-)

Intrinsic safety 4-20mA (Aviation plug with cable)



① Connect the positive power supply (P+) to the terminal 1/brown wire of pressure transmitter;
② Connect the positive power supply (P+) to the terminal 4/black wire of pressure transmitter;
③ Connect the negative signal module (S-) to the negative power supply (P-)

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

Power supply

Independent linear direct-current power supply is suggest to be adopted 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.

- Standard current signal output: 12-30VDC,
- HART current signal output: 16.5~55VDC,
- Intrinsic safety current signal output: 12~30VDC,
- Modbus-RTU/RS485 output: 5VDC/9-30VDC,
- 0.5~4.5VDC voltage output: 5VDC/6-15VDC.

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 are used to the nearest grounded directly.

Cable protection system

Standard protection system

In order to avoid the liquid flowing along with the cable to flow into the terminal box or result in waterproof joint effusion, an U-shaped ring needs to be configured between pull box and pressure transmitter as the picture shows, and please ensure the U-shaped bottom is under the pressure transmitter. Considering the maintenance and replacement, enough cable length needs to be reserved.

Flexible explosion-proof tube protection system

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

Intrinsic safety type

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

Field adjustment

It is convenient for range adjustment with HART protocol software. For detailed operation, please refer to the instructions of display meter.

⚠ Please make adjustment with caution. Not all types of pressure transmitters have adjustment function.

Zero point adjustment

- Please make an adjustment after installation because the mounting position will affect zero setting.
- The vessel is absolutely empty (No pressure or medium on the measuring diaphragm, the vessel connect to the atmospheric air)
- Power connection. Please connect Key-z ("3"pin/blue wire) terminal/ its lead wire with power negative terminal/ its lead wire, and disconnect after 5 seconds.
- Please set PV=0 after three weeks of installation to ensure the best accuracy
- Set PV=0 each year.

⚠ Zero point adjustment is only avaible for gauge pressure transmitter

Factory resets

- Restore the factory settings with Key-z terminal ("3"pin/ blue wire). Connect Key-z terminal/ its lead wire to power negative terminal/ its leadwire before power-on and disconnect after 10 seconds.

Maintenance

Requires no maintenance

External cleaning

Please notice the following when cleaning:

- Use washing agent which will not damage to the instruments
- Prevent the process diaphragm from mechanical damage, eg: the mechanical damage caused by sharp objects.
- Mechanical cleaning of metal diaphragm(technical and teference) is prohibited.
- Do not point the nozzles to the diaphragm directly when doing internal cleaning by pressure washer.

Transportation/ storage

- Do not store at outside
- Keep dry and dust-free
- Do not expose to the corrosive medium
- Avoid solar radiation
- Avoid mechanical shock and vibration
- Storage temperature: -40~85℃
- Maximum relative humidity: 95%

EMC statement

- EMC equipment instructions 2014/30/EU.
- CE mark suggests the instruments are in line with EU standards
- Users need to ensure the whole equipment conform to all the applicable standards.

Retransport

- Keep clean of the pressure transmitter. Stay away from any dangerous medium!
- Please adopt proper package to avoid damage in transportation.

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Exception handing

- 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.

Depot repair

Please finish the following steps before the depot repair:

- Removal of all the residues which would be harmful to human health, such as inflammable, poisonous, cancerigenic and radioactive substances.

⚠ Do not return the instruments if can not ensure the dangerous residues are removed, eg: the dangerous residues permeate into cracks or spread to the plastic.

Discard disposal

- The instrument is not restrained of WEEE instruction 2002/96/EG and laws of relevant countries.
- Please pass the instrument to specialized recycling companies other than local recycling points.

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