Short User Manual

Radar Level Transmitter SP-10

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Symbols used

Symbol	Description
	Warning to proceed strictly in accordance with the information contained in the documentation in order to ensure the safety and full functionality of the device.
	Information particularly useful during installation and operation of the device.
	Information on disposal of used equipment.

BASIC REQUIREMENTS AND SAFE USE

The manufacturer will not be liable for damage resulting from incorrect installation, failure to maintain a suitable technical condition of the device or use of the device other than for its intended purpose.

Installation should be carried out by qualified staff. The installer is responsible for performing the installation in accordance with manual as well as with the electromagnetic compatibility and safety regulations and standards applicable to the type of installation.

In systems with I&C equipment, in case of leakage, there is a danger to staff due to the medium under pressure. All safety and protection requirements must be observed during installation, operation and inspections.

If a malfunction occurs, the device should be disconnected and handed over to the manufacturer for repair.

In order to minimize the risk of malfunction and associated risks to staff, the device is not to be installed or used in particularly unfavourable conditions, where the following hazards occur:

possible mechanical impacts, excessive shocks and vibration;

excessive temperature fluctuation;

water vapour condensation, dusting, icing.

Changes made to the manufacturing of products may be introduced before the paper version of the manual is updated. The up-to-date manuals are available on the manufacturer's website: www.aplisens.com.

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1. Purpose of the document

The subject of this guide are pressure transmitters for the Radar Level Transmitter SP-10. Refer to the Radar Level Transmitter SP-10 reference manual for more instructions. The manual and this guide are also available electronically on aplisens.pl/sp-10.

2. SAFETY

Failure to follow safe installation and servicing guidelines could result in death or serious injury.

Ensure the transmitter is installed by qualified personnel and in accordance with applicable code of practice.
Use the equipment only as specified in this user manual and the Reference Manual. Failure to do so may impair the protection provided by the equipment.
Repair, e.g. substitution of components, etc. may jeopardize safety and is under no circumstances allowed.

Process leaks could result in death or serious injury.

Handle the transmitter carefully.
Install and tighten process connectors before applying pressure. Do not attempt to loosen or remove process connectors while the transmitter is in service.

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.
Physical security is an important part of any security program and fundamental in protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

Hot surfaces

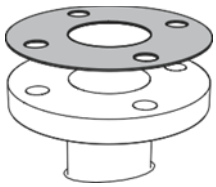
The transmitter and process seal may be hot at high process temperatures. Allow to cool before servicing.

3. Installing on a tank

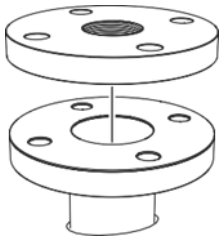
3.1. Mount the flange

Procedure

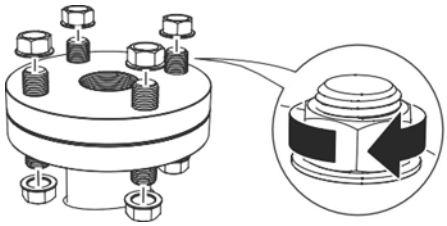
1. Place a suitable gasket on the flange.



2. Place the flange over the gasket.

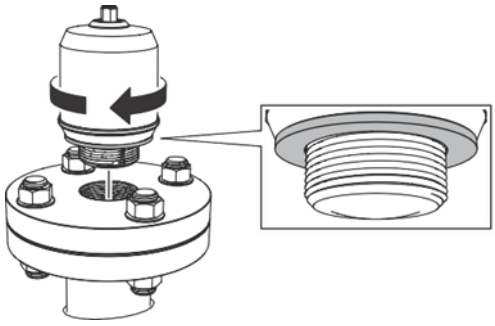


3. Tighten the bolts and nuts with sufficient torque for the flange and gasket choice.



4. Install and tighten the transmitter.

   The gasket is necessary for the G threaded.



4. Prepare the electrical connections

4.1. Connector type

M12 male (A-coded)

4.2. Power supply

The transmitter operates on 18-30 V DC at the transmitter terminals.

4.3. Outputs

The transmitter provides two configurable outputs:
Output 1 Digital output
Output 2 Digital output or active 4-20 mA analog output

4.4. Internal power consumption

< 2 W (normal operation at 24 VDC, no outputs)
< 3.6 W (normal operation at 24 V DC, digital and analog outputs active)

4.5. Wiring diagram

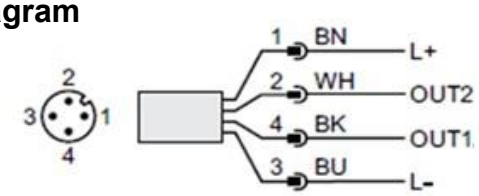
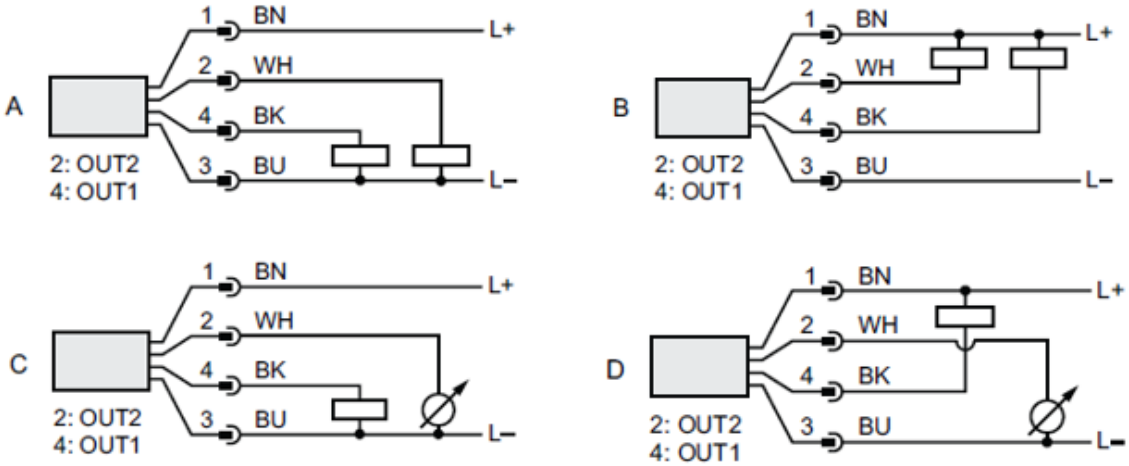


Figure 4.1 Connection

Table 4.1 Pin Assignment

Pin	Wire color		Signal	
1	BN	Brown	L+	24 V
2	WH	White	OUT2	Digital output or active 4-20 mA analog output
3	BU	Blue	L-	0 V
4	BK	Black	OUT1	Digital output



A. 2x Digital output PnP
B. 2x Digital output NpN
C. 1x Digital output Pnp / 1x Analog output
D. 1x Digital output Npn / 1x Analog output

Figure 4.2 Example circuit

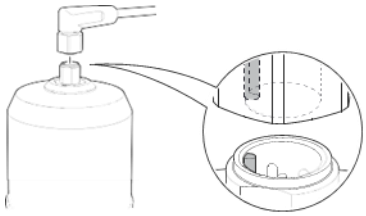
5. Power up transmitter

Procedure

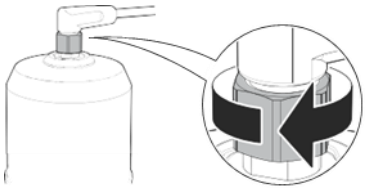
1. Verify the power supply is disconnected

2. Insert the M12 connector gently.

   Do not force the connector into place. Check that it is aligned property.



3. Once fully inserted, turn the screw ring until tight.
   See the manufacturer`s instruction manual for recommended torque.



4. Connect the power supply.

5.1. Configuration Bluetooth wireless technology

5.1.1. Download AMS Device Configurator

Procedure

Download and install the mobile desktop version.
Software available on Google Play.

5.1.2. Configure Bluetooth wireless technology

Prerequisites

Bluetooth wireless connectivity is available for devices with option code BLE.

Procedure:

1. Start AMS Device Configurator

2. The Communication Type dialog opens on the desktop version.
   If using the desktop version, select Bluetooth as the communication type.

   This can also be changed want to connect to.

3. Click on the device you want to connect to.

4. On first connection, enter the key for this device.

5. If using the mobile version, select the menu icon at the top left to navigate the desired device menu.

5.1.3. UID and key

You can find UID and key on the paper tag attached to the device.
Keep the paper tag in a safe place as it cannot be retrieved if lost.

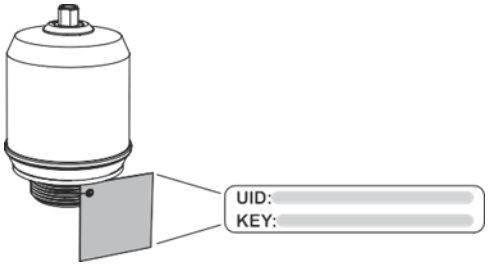


Figure 5.1 Bluetooth wireless security information

6. Perform the basic setup

6.1. Set the engineering units

Procedure

1. Under Menu, select Parameter → Basic Setup.
2. In the Engineering Units list, select Metric or Imperial.
3. Select Write to device.

6.2. Enter the reference height

Procedure

1. Under Menu, select Parameter → Basic Setup.
2. Enter the Reference Height.
3. Select Write to device.

6.2.1. Reference height

Distance between the Device Reference Point and Zero Level.

A – Device Reference Point
B – Reference Height
C – Zero Level
D – 0.79 in. (20 mm)

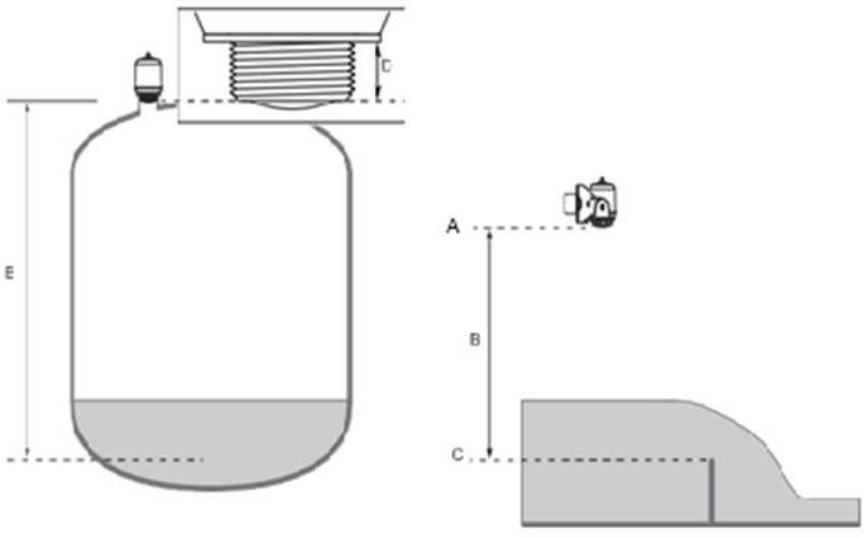


Figure 6.1 Reference Height

6.3. Configure the analog output

The transmitter can be set to output the level or volume flow as a 4-20 mA signal.

Procedure

1. Under Menu, select Parameter → OUT2 Analog Output.
2. In the OUT2 Configuration list, select Analog Output 4-20 mA.
3. In the Analog Control Variable list, select Level or Volume Flow.
4. In the Alarm Mode list, select Low Alarm or High Alarm.
5. Select Analog Range Values, and then enter the desired Upper Range Value (20 mA) and Lower Range Value (4 mA).
6. Select Write to device.

6.4. Configure the digital output

The transmitter can be set to output a switching signal for high and low limits (using the same pin).

Procedure

1. Under Menu, select Parameter → Basic Setup.
2. In the Digital Outputs P-n list, select PnP or nPn.
3. Select OUT1 Digital Output or OUT2 Digital Output.
4. In the OUT1 Configuration or OUT2 Configuration list, select Digital Output Normally Open.
5. In the DO Control Variable list, select Level or Volume Flow.
6. Select Set Point Configuration, and then set the alarm parameters as desired.
7. Select Write to device.

6.5. Set up the volume flow measurement

Procedure

1. Under Menu, select Parameter → Volume Flow.
2. In the Volume Flow Calculation Method list, select the preferred method. Choose from:
   - Linearization table
   - Parshall flume
   - Khafagi-Venturi flume
3. Select Volume Flow Table/Formula, and then set the parameters as desired.
4. Select Write to device.

7. Advanced setup

7.1. Sweep mode

The device has two sweep modes:

- Mode 1 (77-81 GHz)
- Mode 2 (76-77 GHz)

Sweep mode impacts metrological properties. Use mode 2 only if required by local radio spectrum regulations in your country. The default setting is mode 1.

7.2. Change the sweep mode

Contact your local Aplisens representative for further instructions. You need to provide the manufacturing date and serial number.

Figure 7.1 Main Label

A – Serial number
B – Manufacturing date