PRODUCT INFORMATION
Technical specifications

Pack with an analogue input module with 1 or 2 sensor(s) for fluid level measuring (SENPACK/1LEVEL; SENPACK/2LEVEL)

1 SENPACK/1LEVEL

1. Product description

This package can be used in combination with a Qbus system with a CTD (Qbus Controller). The input module INA02 in this package is combined with the Qbus 4-20mA liquid level sensor used to detect the level of water or fuel between 5cm and 300cm. The INA02 is provided with 2 analogue inputs for sensors with a 0-10V or 4-20mA output signal. The values measured can be translated to a 0-100% value (dimmer mode), thermostat mode (temperature sensors), or – if other, more precise data is needed – the universal mode.

There are packs with one sensor (SENPACK/1LEVEL) and packs with two sensors (SENPACK/2LEVEL). Each pack only contains one INA02.

The INA02 is an interface that connects the Qbus bus to various sensors. It has a unique serial number, which is entered in the SystemManager III configuration software during configuration. All programmed data will be stored internally in a permanent memory.

2. Safety rules

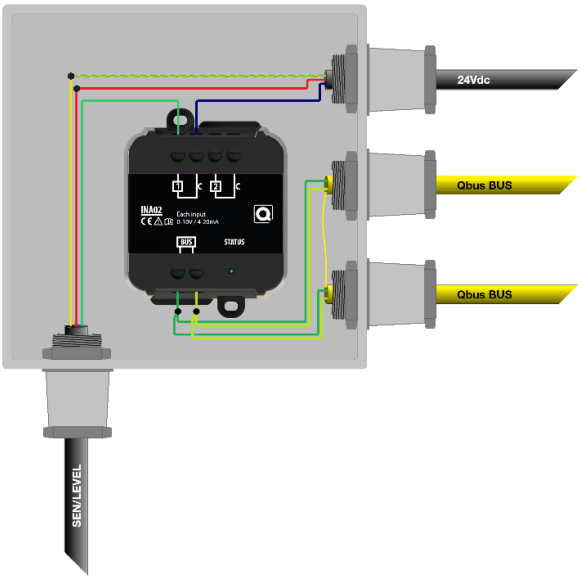
Please read the entire manual before installing and activating the module.

NOTE

- The module must be installed, started and maintained by a qualified electrician in accordance with the applicable national legal regulations.
- Do not connect a voltage higher than 20Vdc to the inputs of the INA02 to avoid defects!
- Carefully read the wiring instructions.
- Make sure the vessel into which the sensor will be inserted is not pressurized when inserting the sensor
- Vibrations should be avoided during installation and use.
- For outdoor installations, the necessary lightning protection must be provided to avoid damage from lightning to the sensor and the rest of the installation.
- The sensor must be equipotentially connected to the fuel tank before it is inserted in the fuel tank.
- Do not press the diaphragm of the sensor! This will damage the sensor and possibly make it unusable.
- Make sure that the sensor cable cannot be damaged. Liquid can enter through a break in the cable and damage the sensor.
- Place the sensor a few centimeters above the bottom so that sediment remains under the sensor.

3. Installation and cables

INA02 installation
Install the device in a dry location. When used in humid environments or outdoors, it should be installed in a weatherproof junction box. The module must in all cases be protected from condensation and water.



Qbus bus cabling:
Any shielded cable with conductors of at least 2 x 1 mm² can be used as a bus cable. Use green shielded EIB cable for this, combining two conductors at a time to achieve a cross-section of at least 2 x 1 mm². The shielding of the bus cable must be connected to one end to the building's general earthing system at one end, and only at one end.

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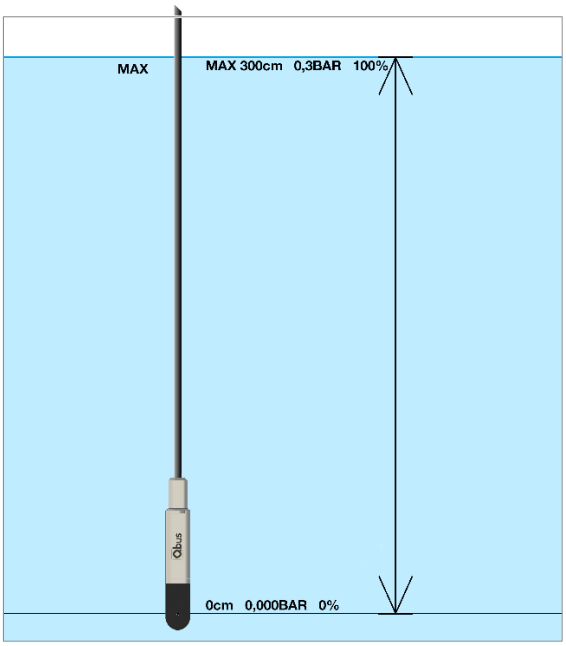
Connecting Qbus to INA02: Connect this module to the 2-wire bus using two wires. Do not use the internal clamps as connecting clamps for the incoming and outgoing bus. Remove approximately 7mm of insulation from the cable and insert it into the clamp. Both fixed and flexible wires between 0.22 and 1 mm2 can be used.
The Green “Status”-LED indicates that the module is powered via the bus.

Inputs: Remove approximately 7mm of insulation from the cable and insert it into the clamp. Both fixed and flexible wires between 0.22 and 1 mm2 can be used.

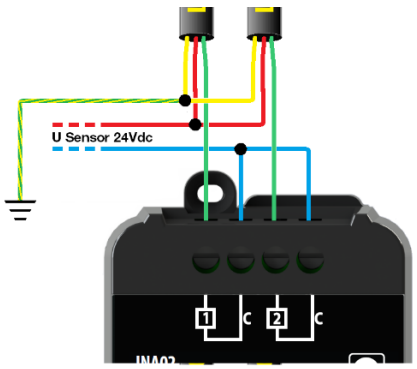
External sensor 0-10V or 4-20mA: Most 0-10V / 4-20mA sensors work perfectly with a safety extra-low voltage of 24Vdc. Almost all sensors are designed to operate with voltages ranging between approximately 9Vdc and 36Vdc. Choose a power supply based on the power required by the sensor to be used. This information can be found on the technical data sheet for the relevant sensor. The LEDPWS/24.015 is usually sufficient for such sensors in combination with an INA02.
When using sensors for which you can choose to apply 4-20mA or 0-10V, it is best to opt for 4-20mA. All analogue signals are susceptible to electrical interference, and a 0-10V signal control is no exception to this rule. Devices such as motors, relays and power supplies can induce voltages on signal lines and thus affect the 0-10V sensor signal. A 0-10V signal is also sensitive to voltage drop caused by wire resistance.
A 4-20mA or 0-20mA signal, on the other hand, offers increased immunity to both electrical interference and signal loss in long cables. An added benefit with 4-20mA signal is the inherent detection of fault conditions. Since the 4-20mA signal remains active when a sensor sends a minimum or "zero" position, even at the lowest value, the sensor will still output a 4mA signal. If the value ever becomes 0mA, this would indicate that something is wrong with the sensor. With a 0-10V sensor, a value of zero Volt could mean either a zero position or that the sensor has stopped working.

0-10V system: As the liquid level meters operate via 4-20mA, there is no need for further discussion of the 0-10V system in this document. See Technical product sheet INA02 for more information.

Fluid level sensor:
The Qbus liquid level meter is mounted vertically and can determine the liquid level by measuring the pressure. The sensor thus indicates the depth at which it is immersed in the liquid. The sensor is suitable for use with water, heating oil or diesel and is not suitable for use with heavily polluted liquids. Small openings are provided in the sensor head to enable the liquid to enter the pressure chamber and the measurement to be taken.



Installing the sensor:
The sensor is mounted vertically in the tank, with or without the help of a tool, and immersed in the liquid (max. 300 cm liquid height) and will indicate the extent to which the tank is filled based on the pressure thus measured. The sensor has a 5-metre cable fitted with PUR sheathing. The PUR sheathing is resistant to many chemicals, greases, lubricants and corrosive substances, and is therefore particularly suitable for use in greasy and chemical environments.
The sensor is powered by a standard 24Vdc power supply (not included). The voltage of the external 24Vdc power supply is connected to the red wire (Vcc+) of the sensor. The 0V is connected to input clamp C of theINA02. The green wire (Si+) of the sensor provides a 4-20mA signal current at the input of the INA02. This way, the sensor and the INA02 are connected to the external power supply in series. Connect grounding to the yellow wire (Shield) of the sensor (equipotential with fuel tank!)



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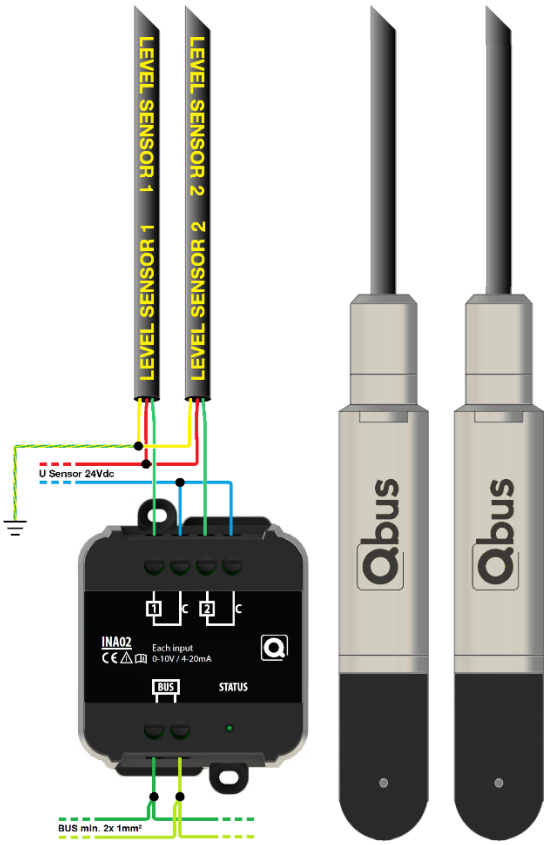
If the sensor cable needs to be extended, the connection must be suitably shielded. Use a shielded cable such as LIYCY or PYCYM.



2. INA02 + 4-20mA Sensor

4. Technical specifications

General specifications INA02

- Input voltage: Max. 20Vdc
- Surcharge voltage: tested at 2.5kV
- Galvanic separation between Qbus BUS and inputs
- Usage: 0.28VA / 13.8V
- Bus load: 25mA (peak) at nominal 13.8 V
- Ambient temperature:
  Operating temperature: 10°C to 50°C
  Storage temperature: -10°C to 60°C
- Maximum humidity: 93 %, no condensation
- Max. installation height: 2,000 metres above sea level

Inputs INA02:

- 2x input for 0-10V or 4-20mA
- Impedance 1.2MOhm per input

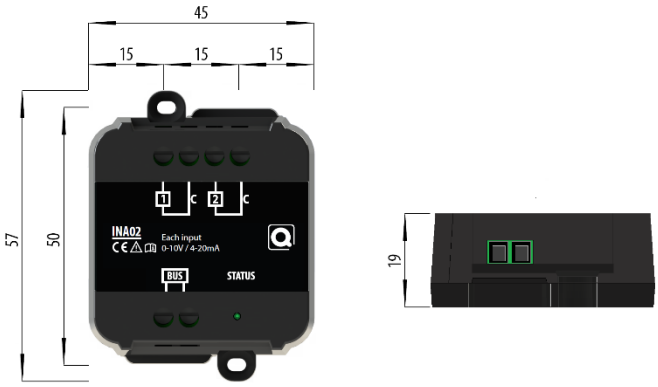
Physical specifications INA02:

- Housing: Black self-extinguishing plastic pursuant to UL94-VO
- Ingress protection rating: IP20, EN 60529
- Installation: can be mounted using 2 screws
- Dimensions: Approx. 19 x 45 x 57 (WxHxL in mm)
- Weight: Approx. 25g

Electrical security INA02:

- BUS: 13.8Vdc – 18Vdc Safety Extra-Low Voltage (ZLVS / SELV)
- Non-toxic, in accordance with WEEE/RoHS
- In accordance with EMC and low voltage regulations. The module complies with HBES – EN50090-2-2 and EN60950-1:2006 +A11:2009 +A:2010 +A12:2011 +A2:2013
- The product complies with the provisions of the EU Directives (CE)

Dimensions INA02:



2 INA02 Dimensions

Specifications SEN/LVL420

- Range: 0- 300cm (0,001 Bar to 0,3 Bar)
- 24VDC power supply (not included)
- Accuracy: up to a level of 1 metre this is approx. 1%, between 1 and 3 metres this is approx. 0.5%.
- Ambient temperature:
  - Operating temperature: -30°C to 70°C
  - Storage temperature: -40°C to 85°C
- Dimensions sensor: Diameter 27mm x l53,7mm)
- Sensor cable: +/- 500cm
- Weight sensor with cable +/- 640g
- Output: 4-20mA
- PUR cable for use in fuels
- IP68
- Response speed: ≤ 10ms
- CE: EN61326-1:2013, EN61326-2-3:2013, EN61000-6-2:2005, EN61000-6-4 :2007+A1

Dimensions of the sensor

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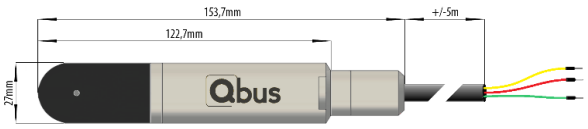

Dimensions in mm.

5. Warranty provisions

Warranty period: 2 years from date of delivery. The warranty will no longer be valid in the event of improper use!
In case of defects, Qbus support should be contacted by an authorised installer. Following registration with Qbus support, the defective module can be sent to our Qbus support department free of charge.

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