PRODUCT INFORMATION
Technical product sheet

Input module with 2 analogue inputs (INA02)

1 INA02

1. Product description

With this input module, which is equipped with 2 analogue inputs, you can connect all kinds of sensors with a 0-10V or 4-20mA output signal to the Qbus system. Within HVAC applications, for example, there are valves that measure humidity, CO2 and the like and that provide a 0-10V or 4-20mA signal. The feedback from valves or heating systems can also be read in this way. This input module can also be used in horticulture, green wall systems, garden irrigation, for measuring liquid levels and other purposes. The measured values can be translated into a 0-100% value (dimmer mode), thermostat mode (temperature sensors). Alternatively, the universal mode can also be applied when fine-grained data is required.

No sensors are included in the package with this input module. Check the properties of the sensor you want to connect in advance.

The INA02 is an interface that connects the Qbus bus to all kinds of sensors and has a unique serial number that is entered in the System Manager III configuration software during configuration. All programmed data remains stored internally in a permanent memory.

2. Safety rules

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 avoid irreparable damage.

3. Installation and cabling

Mounting INA02
Mount the device in a dry location. When used in humid environments or outdoors, it should be mounted in a watertight junction box. The module must always be protected against condensation and water.

Qbus bus cabling:
Use the green shielded EIB cable for this, of which you take the conductors per 2 to obtain a section of at least 2 x 1mm². The shielding of the bus cable must and may only be connected to one end to the general grounding of the building.

Connecting Qbus to INA02: Connect this module to the 2-wire bus using two wires. Do not use the internal terminals as the connecting terminal for incoming and outgoing bus. Remove approximately 7mm of insulation from the cable and insert it into the terminal. Both fixed and flexible cables between 0.22 – 1mm2 can be used.

Inputs: Remove approximately 7mm of insulation from the cable and insert it into the terminal. Both fixed and flexible cables between 0.22 – 1mm2 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 for the sensor to be used. This information can be found on the technical data sheet of the relevant sensor. The LEDPWS/24.015 is usually sufficient for such sensors in combination with an INA02.
It is best to opt for 4-20mA when using sensors for which you can choose to apply 4-20mA or 0-10V. All analogue signals are susceptible to electrical interference, and a 0-10V signal control is certainly no exception. 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.
In contrast, a 4-20mA or 0-20mA signal provides increased immunity to both electrical interference and signal loss over long cables. An added benefit with 4-20mA signal is the inherent detection of fault conditions. Since the 4-20mA signal is still active, even at the lowest value, when a sensor sends a minimum or "zero" position, the sensor still outputs a 4mA signal. If the value ever goes to 0mA, it could indicate that something is wrong. With a 0-10V sensor, zero volts can mean a zero position, or it can mean the sensor has stopped working.

0-10V system: The wiring between the INA02 and the connected sensors depends on the specifications described in the technical data sheet of the sensor. It is strongly recommended to use a grounded and shielded cable. If the distance between the sensors and the INA02 is longer than allowed, it is best to use a 4-20mA sensor. The INA02 is factory set for a 0-10V input signal. Connecting a 4-20mA sensor will not cause any damage or malfunction. When using 0-10V as the signal, alarms at 0V cannot be generated when 0V can be a normal value. In that case, the INA02 cannot tell the difference between a faulty sensor or a sensor that gives 0V.

Configuration: You can assign an address with Dimmer, Thermostat or Universal mode to each input using the SystemManager III configuration software. In the configuration screen of the INA02 provided there, you can also trigger up to 8 Toggle outputs based on the measured values on the inputs.

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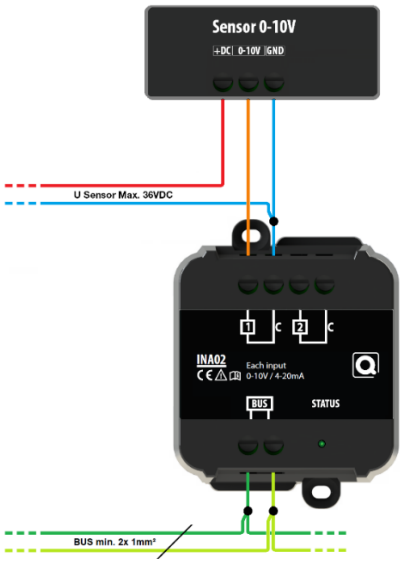
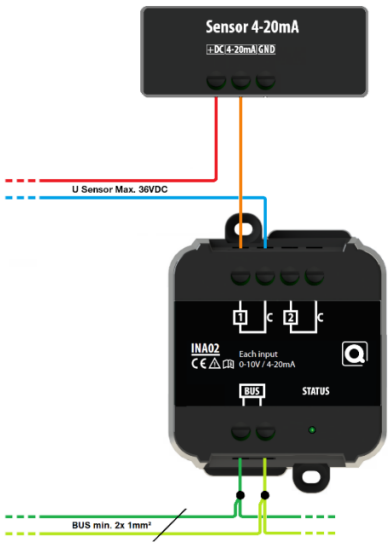
Connecting a 0-10V sensor:
Most sensors can be powered with a standard 24Vdc power supply. The voltage of the external dc power supply is connected to the + terminal of the sensor. The 0V is connected to the terminal of the sensor as well as to input terminal C of the INA02. The 0-10V output of the sensor is connected to the input of the INA02.



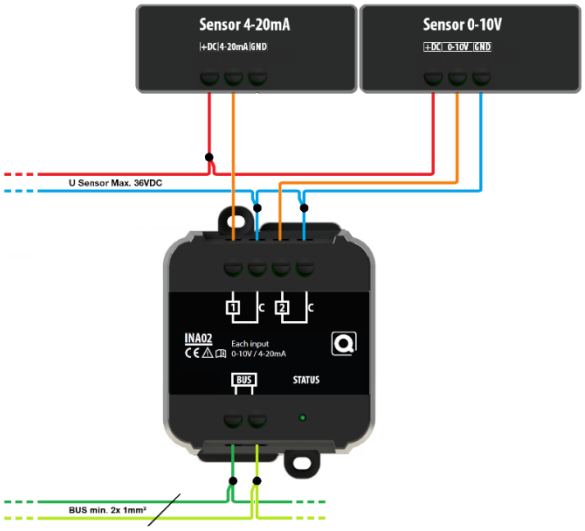
2 INA02 + 0-10V Sensor

Connecting 4-20mA:
Most sensors can be powered with a standard 24Vdc power supply. The voltage of the external DC power supply is connected to the + terminal of the sensor. The 0V is connected to input terminal C of the INA02. The 4-20mA output of the sensor is connected to the input of the INA02. For example, the sensor and the INA02 are connected in series to the external power supply.



3 INA02 + 4-20mA Sensor

Connection diagram combination 4-20mA & 0-10V:



4. Technical specifications

General specifications INA02

- Breakdown voltage: tested at 2,5kV
- Galvanic isolation between Qbus bus and inputs
- Usage: 0.15VA / 13.8V
- Bus load: 10mA (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 meters above sea level

Inputs INA02:

- 2x input for 0-10V or 4-20mA
- Maximum input voltage: 20Vdc
- Impedance 1,2MOhms per input

Physical Specifications INA02:

- Housing: Black self-extinguishing plastic according to UL94-V0
- Protection grade: IP20, EN 60529
- Installation: mounting with 2 screws
- Dimensions: .+/- 57 x 45 x 19 (W × H × L, mm)
- Dimensions: (l x h x w) +/- 19mm x 45mm x 57mm
- Weight +/- 25g

Electrical protection INA02:

- Bus: 13.8 Vdc Safety Extra Low Voltage (SELV)
- Non-toxic, in accordance with WEEE/RoHS
- Complies 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)

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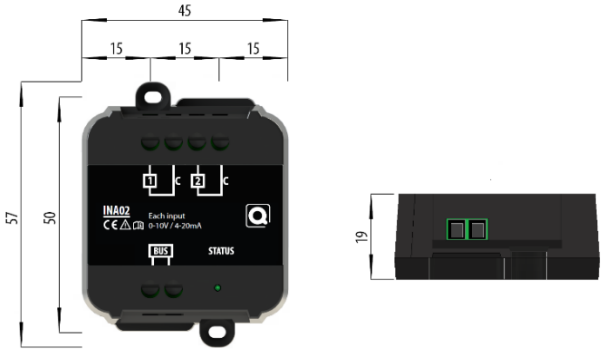
Dimensioning INA02:



5. Guarantee provisions

Warranty period: 2 years from delivery date. The warranty is no longer valid if the module has been opened! The warranty period is extended by 2 years if it was installed by a recognized Qbus installer.
In the event of defects, Qbus support must be contacted by a recognized installer. After registration with Qbus support, the defective module can be sent postage free to our Qbus support:

Qbus NV
Joseph Cardijnstraat 19
B-9420 Erpe-Mere
Tel: +32 (0)53 60 72 10
Fax: +32 (0)53 60 72 19
E-mail: support@qbus.be