Manual
BlueSense Module

Version of the manual: 1.3 en

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Changes

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Manufacturer's declaration

In setting up the device it is important amongst other things to note the correct electrical connections, protection against connections to foreign bodies, humidity, protection against excessive moisture due to condensation and to the overheating of the device in proper and improper use.
The implementation of these measures is the responsibility of the installers who setup this device.

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Table of content

1 Overview

This user manual describes a BlueSense Module.

In contrast to the BlueSense Transducer the BlueSense Module can only operate together with a BlueBox. The retrieving of the data and the configuration is done on a BlueBox or with the BlueBox PC Software.

The BlueSense Module

- receives the signals of the connected sensors,
- generates there from measurement values,
- transmits the measurement values via CAN-bus[1] to a BlueBox,
- switches relays by overrun or underrun of settable alarm values[2],

Connectable sensors and measurement inputs:

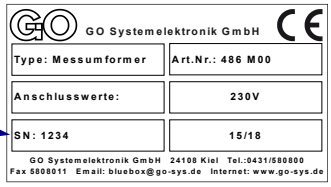
• Conductivity: measuring principle: inductive	0 to 4000 µS/cm
with integrated temperature sensor: measuring principle: NTC	0 to 80 °C
• Temperature: measuring principle: NTC	-5 to +80 °C
Standard temperature sensor SEMI 833	25°C ≙ 83 kΩ
• Dissolved oxygen: measuring principle: galvanic cell	0 – 20 mg/l
• Dissolved oxygen: measuring principle: fluorescence	0 – 25 ppm
• pH glass electrode	pH3 – pH13
• Ion-selective electrode	
• Turbidity submersible: scattered light 90°, wave length 860 nm	0 – 3000 FNU
• Turbidity flow through: scattered light 90°, wave length 860 nm	0 – 100 FNU
• ORP	-2000 to +2000 mV
• Current input, resistance 50 Ohm	4 – 20 mA
• Voltage input	0 – 50 V and other

- All established sensors with current or voltage outputs, e.g.: Cl, ClO_2, NH_4, etc.

The number of sensors that can be connected is determined by the delivered configuration.
There are two configurations:

- **1 Control parameter = 1 analogue input**
  One sensor is connected. One control parameter is measured and where applicable the temperature as an associated parameter.
- **2 Control parameters = 2 analogue inputs**
  Two sensors are connected. Two control parameters are measured and where applicable the temperature for each sensor as associated parameters.

To determine if your BlueSense Module has 1 or two 2 control parameters please refer to the shipping note, the serial number of the BlueSense Module is on the right hand side of the housing.



The BlueSense Module has 4 relays:

- 2 relays with a switching capacity of 24 V / 0.5 A (only low-voltage)
- 2 relays with a switching capacity of 230 VAC / 2 A or 24 VDC / 6 A

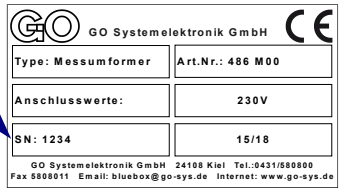
[1] CAN-bus speed is 50 kbit/s
[2] Adjustable with the AMS software as part of the BlueBox PC Software from GO Systemelektronik.

2 Technical Data and Connection Diagrams

2.1 Technical Data

Article-Nr. 486 M00-

Inputs:



- 1 or 2 analogue inputs (1 Control parameter or 2 Control parameters) The particular configuration is on the shipping note, the serial number of the BlueSense Module is written on the type plate at the right hand side of the housing.
- 2 digital inputs (static), potential-free contacts, switching current approx. 6 mA
- 2 pulse inputs selectable to PNP/NPN (optional: static), switching current approx. 6 mA, measurement range 0.05 Hz – 1000 Hz

Outputs:

- 2 relays with a low-voltage (only) switching capacity of 24 V / 0.5 A
- 2 relays with a switching capacity of 230 VAC / 2 A or 24 VDC / 6 A

Interfaces:

- CAN-bus connector for connection to the BlueBox System, 50 Kbit/s

Voltage feed: *

- 12 VDC (9 V – 18 V), received power max. 7 W
  or
- 24 VDC (18 V – 36 V), received power max. 7 W
  or
- 230 VAC (90 V – 260 V), received power max. 7 W

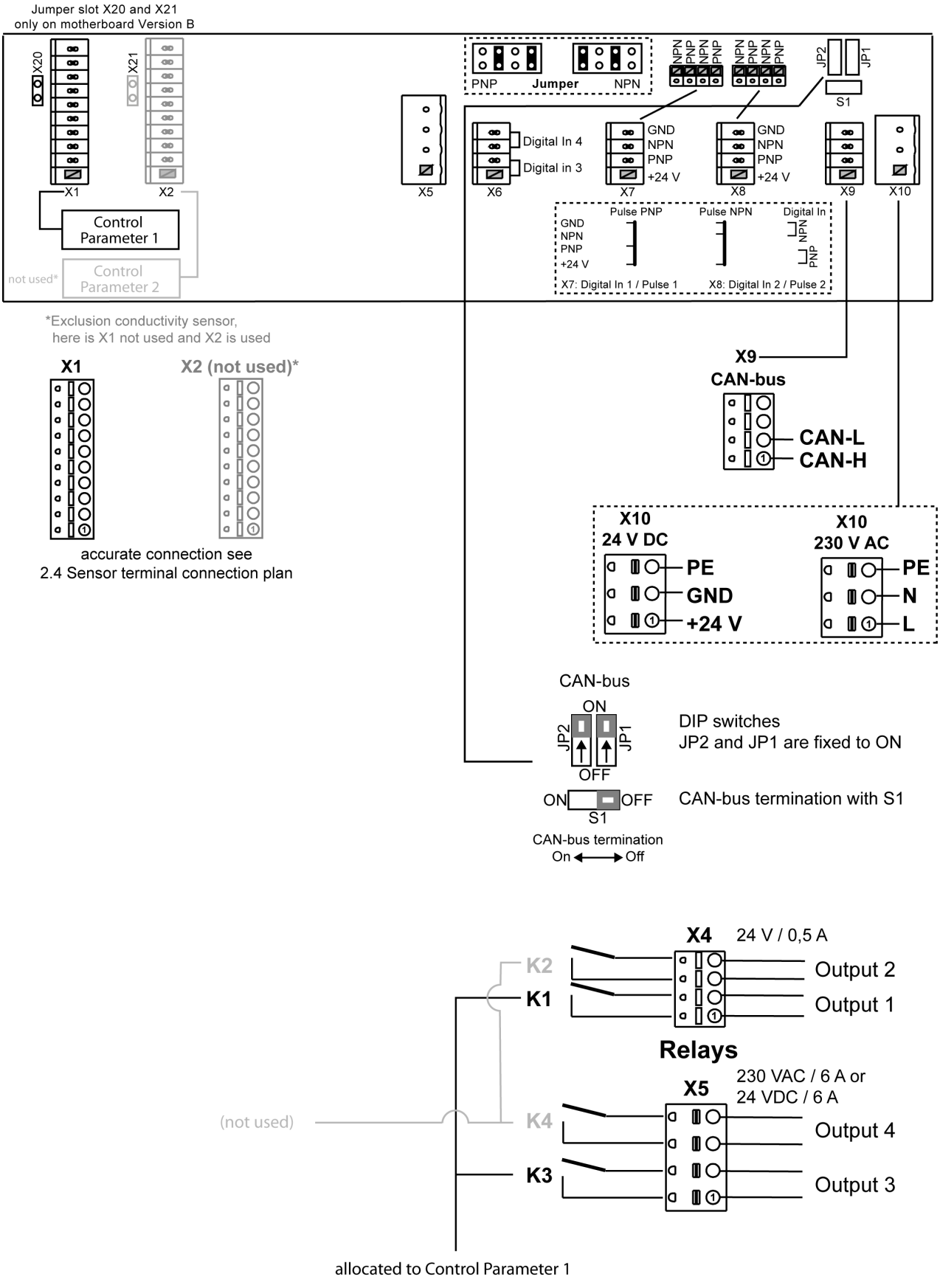
Housing: Polycarbonate, 235 mm x 185 mm x 119 mm; protection code IP65;

Weight: approx. 1.2 kg

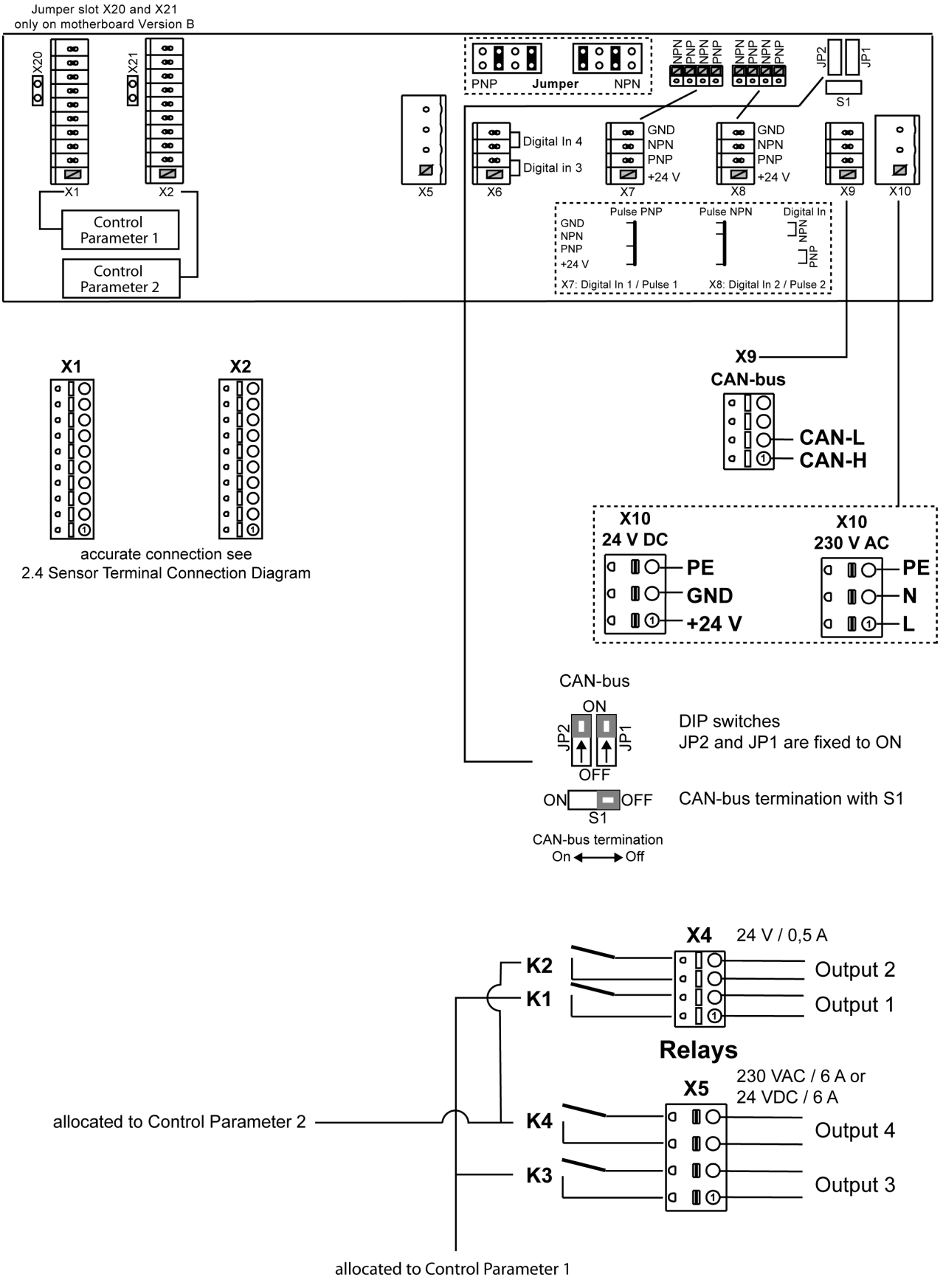
Ambient temperature: -10 °C to +45 °C

* The type of your BlueSense Module is documented on the label on the inside of the cover lid of the cable connections.

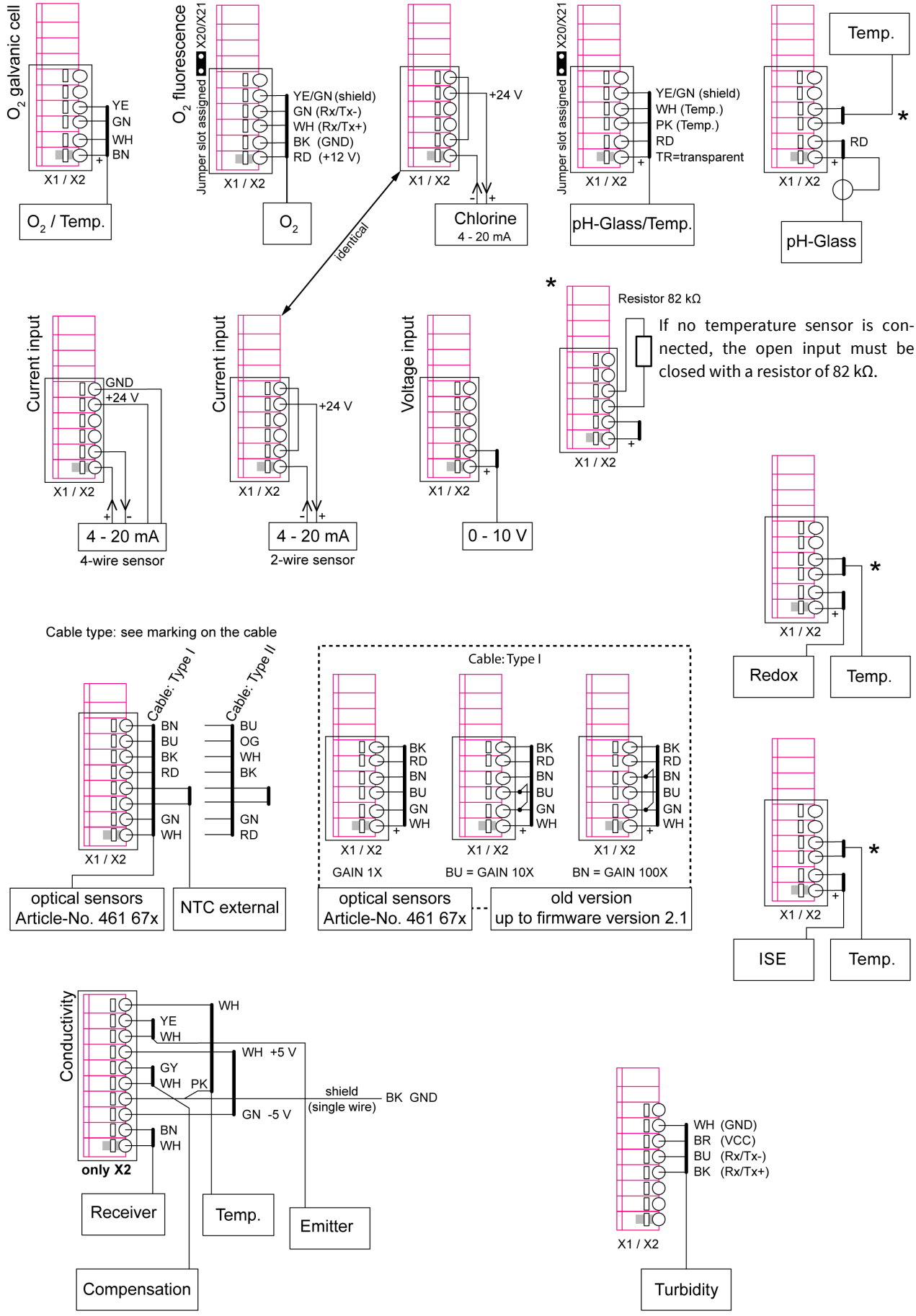
2.2 Connection Diagram 1 Control Parameter



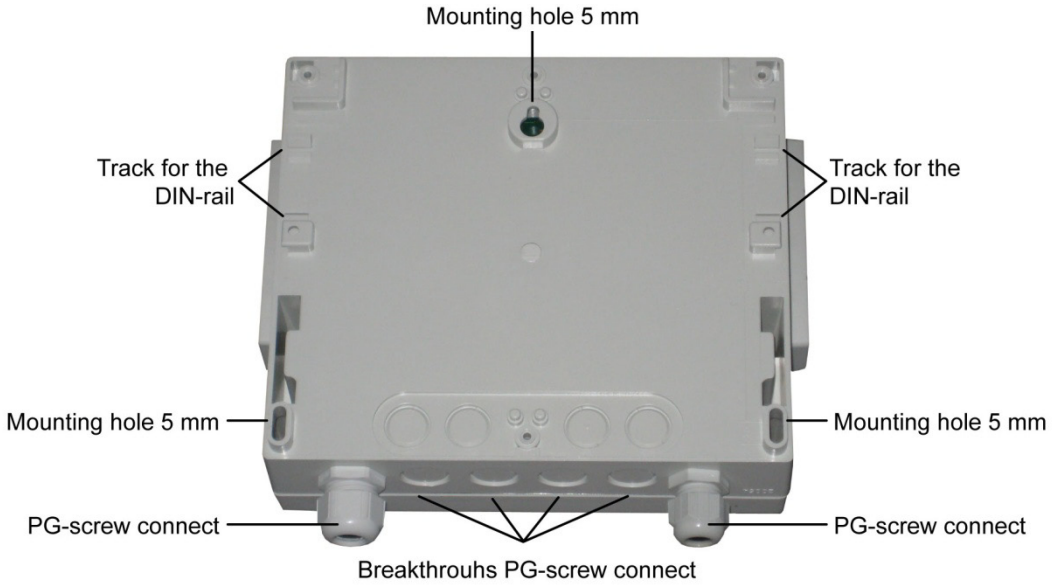
2.3 Connection Diagram 2 Control Parameter

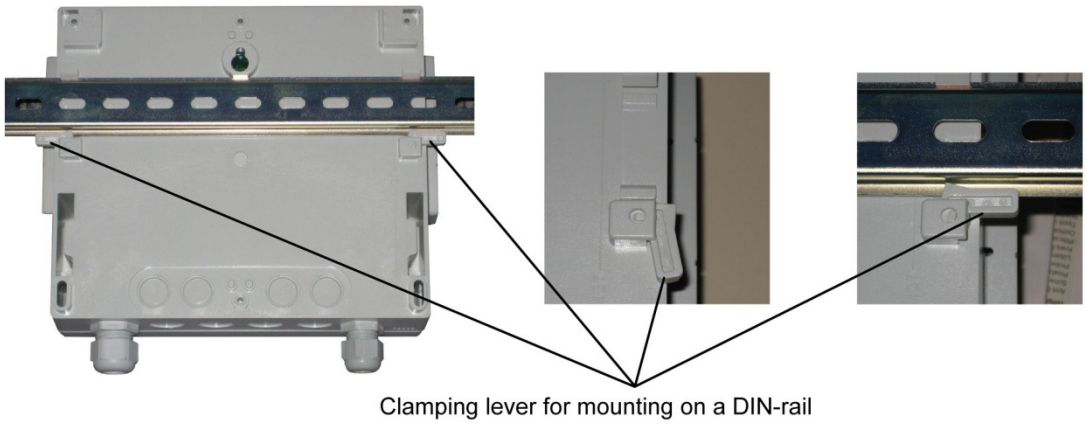


2.4 Sensor Terminal Connection Diagram



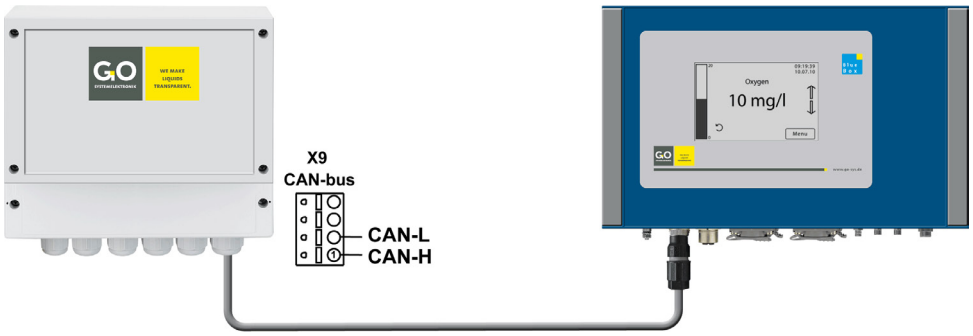
3 Commissioning





Connect the designated sensors, supply voltage and, if applicable, the relays via the crimp sockets. The crimp sockets are marked (see connection diagrams on pages 6 – 8). The cable entry is via the PG-glands.

4 Connection to a BlueBox



Connect the cable with CAN-H and CAN-L at the BlueSense Module (see connection diagram page 6 or 7). Connect the BlueBox with a fitting M12-connector.
The BlueBox identifies the BlueSense Module automatically and displays the measurement and input values.

The serial number of the BlueSense Module (bbm + 5 digits) is also the CAN-ID* of the BlueSense Module for a connected BlueBox.

Sensor-ID = CAN-ID* + Sensor number

Sensor numbers of the BlueSense Module in order:

- max. 4 connected sensors
- 2 pulse inputs
- 2 digital Inputs
- 4 relay outputs

Depending on the number of connected sensors the Sensor numbers of the following sensors respectively inputs and outputs increase or decrease.

* In other contexts also called DAM-ID.

5 Procedure after Initial Start

- if applicable sensor calibration (sensor specific)

6 Installation Notes

The BlueSense Module should only be installed by skilled or instructed persons with the suitable tools. In the case of incorrect assembly serious malfunctions and errors can occur which can destroy the device.

Before connecting the device to electricity it is important to check the power supply network connection data (voltage and frequency) of your utility provider. This data must correspond. If in doubt, ask your electrician.

Open the BlueSense Module only when the power supply is turned off, never if it is turned on!

Only use the BlueSense Module when the housing is closed, so that no electrical components can be touched.

The electrical safety of the device and optimal RFI protection are only guaranteed if the device is connected to a properly installed protective conductor system. In case of doubt, call a professional to check the installation. The manufacturer cannot be held responsible for any damage or malfunctions caused by a missing or broken ground wire.

During installation the device must not be connected to the power supply mains!

The connection of the device to mains power shall not be via extension cables because these do not guarantee the necessary protection.

7 Maintenance Instructions

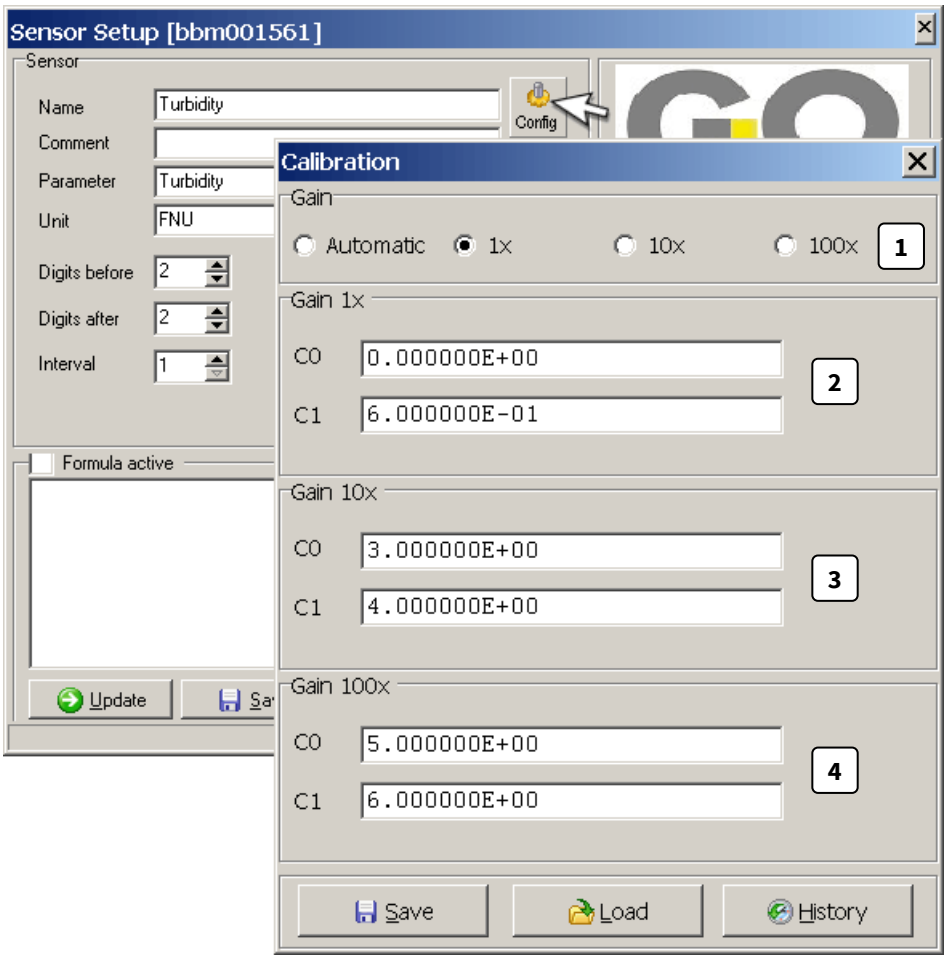
The BlueSense Module itself is maintenance free. The sensors, however, should be periodically cleaned and calibrated. The timeframes for cleaning and calibration depends on the circumstances of the operation and the used sensors.

Appendix – Calibration Optical Sensors

Sensor Article-No.: 461 6724 – 461 6750 – 461 6751/6752 – 461 6753 – 461 6754 – 461 6756 – 461 6757

1 Direct Input of Calibration Coefficients

Click the Config button in the Sensor Setup window of the particular sensor.
Example Turbidity:



[1] Radio buttons for selecting the gain factor
At ⊙ Automatic there is an automatic range switching.

[2] Coefficient at gain factor 1

[3] Coefficient at gain factor 10

[4] Coefficient at gain factor 100

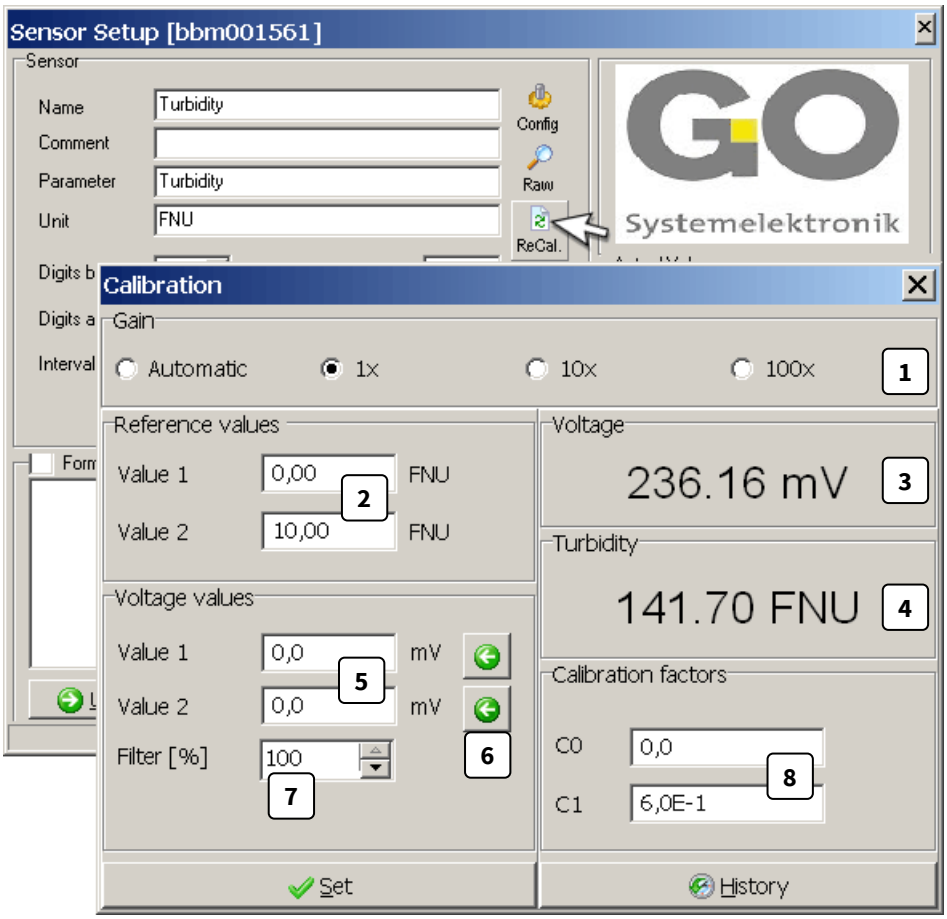
Opens a window for choosing the file storage path.
Saves the calibration settings as .cal-file on the PC.

Opens a window for choosing the file storage path.
Already stored calibration settings are loaded from the PC.

Opens the calibration history.

2 Recalibration

Click the ReCal. button in the Sensor Setup window of the particular sensor.
Example Turbidity:



[1] Radio buttons for selecting the gain factor
The recalibration is performed * at ⊙ 1x and ⊙ 10x and ⊙ 100x

[2] Input fields for the reference values of the two reference fluids

[3] Display of the raw value of the current measurement in mV

[4] Display of the actual measured value

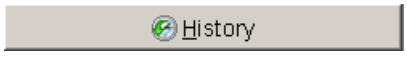
[5] Input fields of the measured raw values of the two reference fluids, the values can automatically be transferred into the fields by clicking the buttons [6].

[6] Clicking a button transmits the measured raw value into the assigned field. Once values are entered in both fields, the calibration coefficients are calculated.

[7] Setting of the digital filter (100% = no filter; 1% max filter) If the measured value is noisy, the filter can improve the calibration.

[8] Display of the calibration coefficients (here named as „calibration factors“).

Transmits the calibration on to the sensor.



Opens the window of the calibration history.

* On operation with automatic range switching (⊙ Automatic) you have to calibrate in all three areas.

Work flow:

a. Select a gain factor [1].

b. Enter the reference value of the first reference fluid in the appropriate input field [2].

c. Dunk the sensor in the first reference fluid, wait until the values shown in [3] and [4] are stable.

d. If the displayed values do not stabilize, then set the digital filter [7] on e.g. 20 %.

e. Click on the button [6] that is assigned to the first reference value to transfer the raw value.

f. Repeat steps b. to e. with the second reference fluid.

g. Click button <Set>. ⇒ The calibration for the selected gain factor is completed.

h. If necessary calibrate again with a different gain factor.*

i. Select the intended gain factor or ⊙ Automatic [1], before closing the window.

* On operation with automatic range switching (⊙ Automatic) you have to calibrate at all three ranges.