GO SYSTEMELEKTRONIK

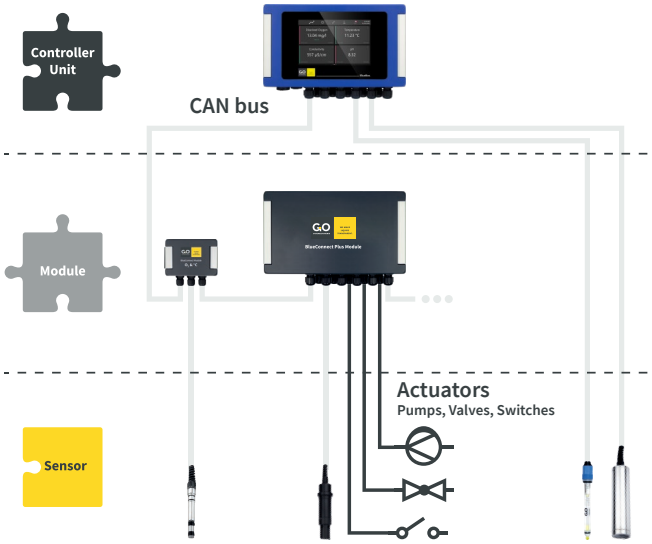
WE MAKE LIQUIDS TRANSPARENT.

BlueBox R1 Controller

The **BlueBox R1 Controller** is a modular and expandable base for monitoring and control tasks of all dimensions. It allows the management of extensive sensor and actuator networks.
With the help of the BlueBox as a central interface, the integration and connection of further systems can easily be accomplished. A connection via internet or mobile networks facilitates the transmission of measurement data and results at any time and allows for remote access and control of the system.

The BlueBox System

The compatibility of the BlueBox System allows to easily set up complex measurement networks. Individual components can easily be linked via a fieldbus connection and allow for the expansion of the system. So, whether you have only one measurement point or a whole grid of measurement points - the BlueBox is the solution!



Functions & Features

- Monitoring Function
- Control Function (PLC)
- Plug & Play [Smart Sensor]
- Remote Access & Control
- Intelligent Event Handling
- Cloud Data Service
- Modular & Expandable
- CAN bus & Modbus

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Technical data

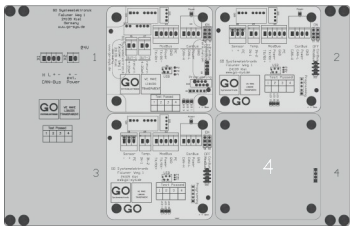
Power supply	24 V DC
Power consumption (typical)	5 W
Dimensions (wxhxd)	330 x 220 x 93 mm
Weight	approx. 3 kg
IP protection class	IP 65
Memory	8 GB
Colour Touch Display	7 inch
Ambient temperature	-20 to +45 °C
Art. no.	486 00R1

Interfaces

- 1x RS-232/RS-485 (with power supply 12V, 6W) as interface or connection of sensors with RS-232/RS-485 port
- 1x CAN bus for connection of additional modules
- 1x Ethernet [TCP/IP], Modbus [TCP/IP]
- 1x USB
- 4x Slots for a freely selectable **BlueConnect Sensor or I/O Cards**(e.g. analouge pH or 2x 4-20 mA Output) [optional]
- GPRS / UMTS / LTE / 4G modem [optional]
- WLAN [optional]

Modular Design

The modular design of the BlueBox R1 Controller offers the option to integrate up to four freely selectable **BlueConnect Sensor or I/O cards**. The controller can thus be individually configured for your specific requirements or can subsequently be upgraded.



Example configuration with three BlueConnect cards.

BlueConnect Sensor Cards for the connection of the following sensors

Variants	Art. no.	Sensor Art. no.
Galvanic Oxygen [GO]	410 CS00-4	461 400X
Analogue pH with/without Temperature (PT1000)	410 CS00-5	461 5XXX*
Analogue ISE (e.g. NH4 or NO3)	410 CS00-7	461 7XXX*
Analogue Redox (ORP)	410 CS00-9	461 9XXX*
Modbus [GO]	410 CS00-MOD	461 6200 / 461 6780 / 461 2092 / 461 4610

BlueConnect I/O Cards for the following in- & outputs

Variants	Art. no.
2x 4-20 mA Output	410 CI00-AO2
2x Relay Output (24 VDC; 2 A)	410 CI00-REL
2x 4-20 mA Input	410 CI00-AI2
2x Pulse Input (PNP/NPN selectable)	410 CI00-PI2
2x Digital Input	410 CI00-DI2
Modbus RS232 (12 VDC; 6 W)	410 CI00-S12

* or analogue sensors of other manufacturers

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3 Device Information

3.1 Connectable Modules, Sensors and Repeater

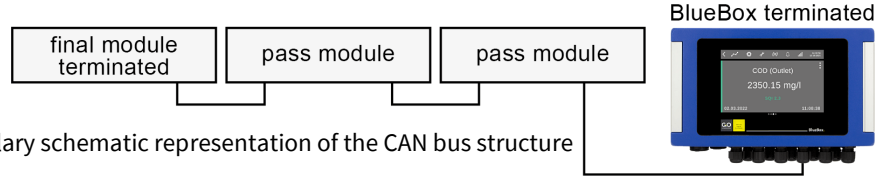
The following modules and sensors can be connected to the BlueBox:

- **External CAN bus modules**
  CAN bus modules of GO Systemelektronik are available in various forms as sensor modules and as actuator modules. The connection is made via the CAN bus clamp sockets on the BlueBox mainboard.
- **Internal CAN bus boards – BlueBox R1 only**
  At the completion of this manual, the following types of design were available:
  BlueConnect Plus board – can be fitted with up to four sensor and input/output boards
  Spectrometer board – ISA spectrometer sensor unit
  The connection is made via the CAN bus clamp sockets on the BlueBox mainboard.
- **BlueConnect Modules**
  The BlueConnect Modules of GO Systemelektronik are also CAN bus modules. So, they can be connected via the CAN bus clamp sockets on the BlueBox mainboard.
- **Modbus sensors**
  Modbus sensors can be connected directly via the RS485 clamp sockets on the BlueBox mainboard. For Modbus sensors virtual sensors must be set up.
  Modbus sensors of GO Systemelektronik are recognised automatically in most cases, the BlueBox then requests the necessary settings and sets up the Modbus sensor automatically.
- **RS485 devices***
  The connection is made via the RS485 clamp sockets on the BlueBox mainboard. You can connect up to 10 Modbus sensors from GO Systemelektronik directly here. With other RS485 devices, only one device can be connected at a time.
- **RS232 devices* – BlueBox R1 only**
  The connection is made via the CAN bus clamp sockets on the BlueBox R1 mainboard.
- **Active CAN Repeater** see *3.7 Active CAN Repeater*
  The connection is made via the CAN bus clamp sockets on the BlueBox R1 mainboard.

> There are many instructions on how to connect the BlueBox to various devices. For further information, please contact GO Systemelektronik.

3.2 CAN Bus Termination of the BlueBox

For a CAN-bus, it is important that the single elements of the CAN bus chain are correctly terminated. Physically, this means that the two elements at the end of the CAN-bus chain (final elements) must have a terminating resistor of 120 Ω each. This prevents signal reflections and interference.
Elements within a CAN bus line (pass elements) must therefore not have a terminating resistor.



Exemplary schematic representation of the CAN bus structure

The terminating resistor is switched on and off with a slide switch on the mainboard.
Termination BlueBox see *R1Com 5.2.3 Mainboard PIN Assignment and Termination* and *PCom 5.3 Connections and Termination BlueBox Panel*

* Only either the RS485 connection or the RS232 connection can be active; switching is carried out with the AMS program. see *Manual BlueBox PC Software* there *5.3.3.2 Custom Protocol Setup*