

SMARTbox cubelO

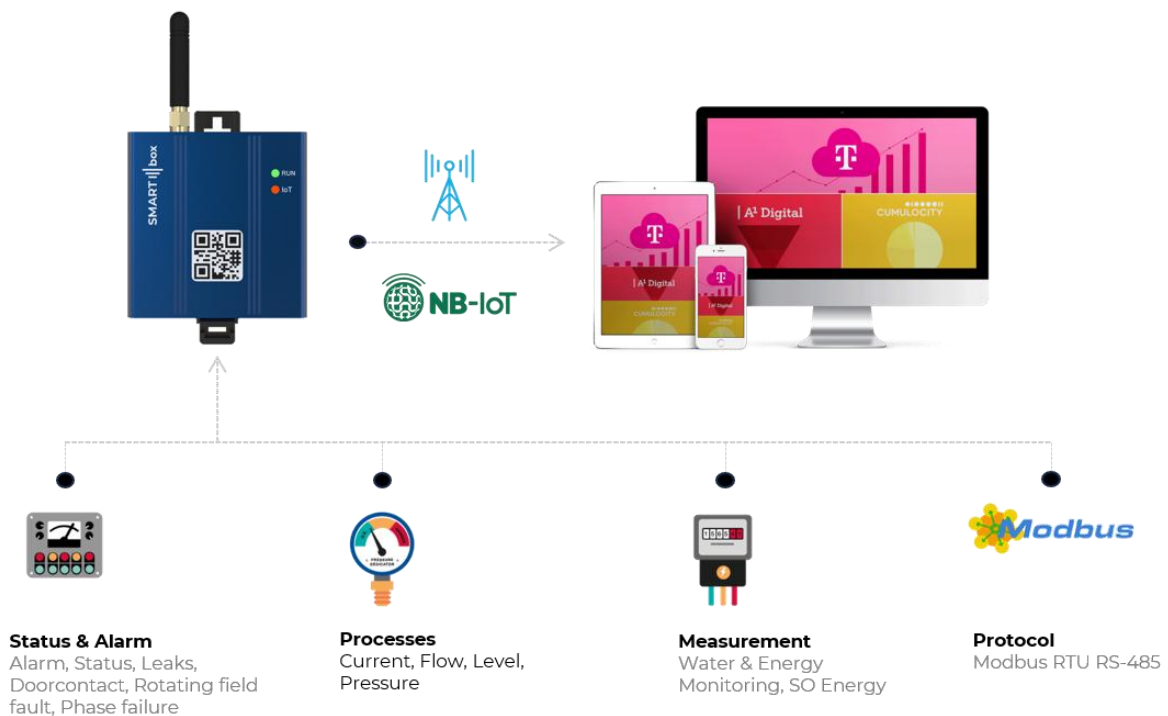
10 universal IOs for connecting analog and digital sensors

SMARTbox cubelO is a fully integrated cellular gateway with I/O for connection to a wide range of external sensors. Designed to work in industrial environments, it is the ideal solution for companies looking to add remote monitoring. Local protocol support allows the cubelO to communicate with Modbus sensors and capture sensor diagnostics along with data. SMARTbox cubelO leverages the IoT Cloud of Cumulocity enabling customers who need to monitor large numbers of sensors to easily integrate that data.



Keyfeatures

- 10 Flex inputs
(4...20mA, 0...10V, PT1000, Alarm Circuit)
- Modbus-Sensors / devices
- DIN Rail Switchboard installation
- Universal cloud platform for easy use
- Cellular Technology
- Can be extended up to 40 Flex inputs





RADIO

2G	B2 B3 B5 B8
NB-IoT / LTE - M	B1 B2 B3 B4 B5 B8 B12 B13 B18 B19 B20 B25 B28 B66 B71 B85 B103
Regions	Worldwide
4G LTE (Optional)	optional LTE Cat 1 B1(2100) B3(1800) B7(2600) B8(900) B20(800)
Bluetooth (Optional)	v5.0 (Bluetooth low energy) -94 dBm (1 Mbit/s)

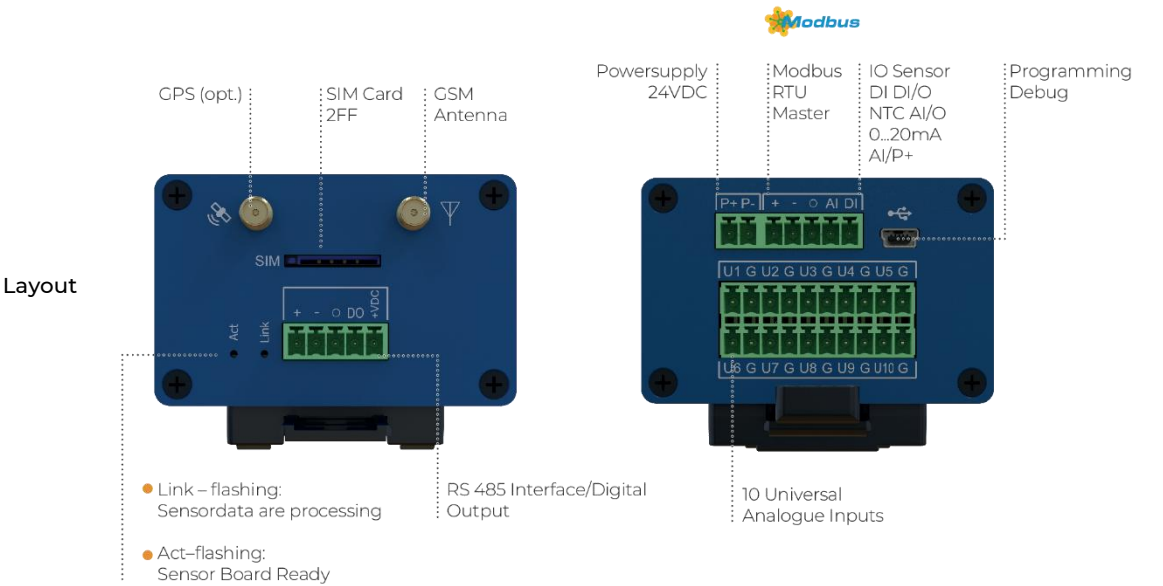


LOCATION SERVICE

GNSS (Optional)	GPS, GLONASS, Beidou, Galileo
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SENSORS - FIELDBUS



Modbus

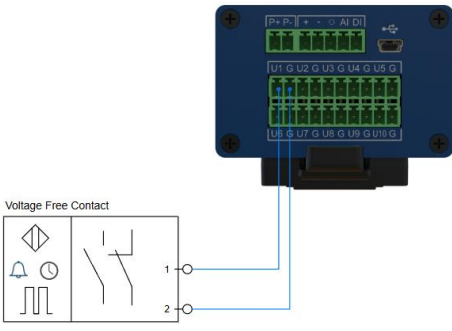
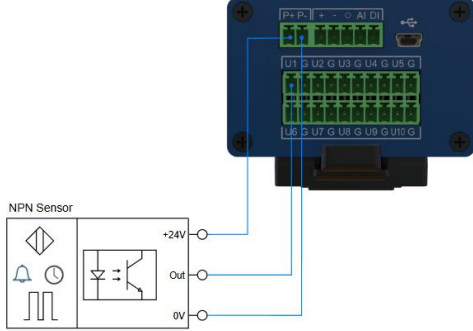
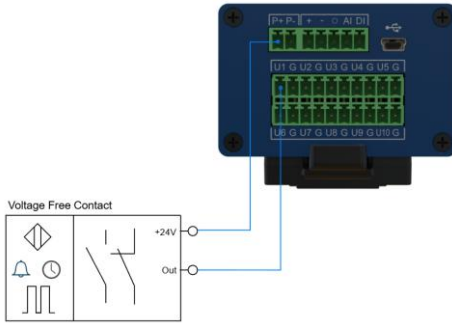
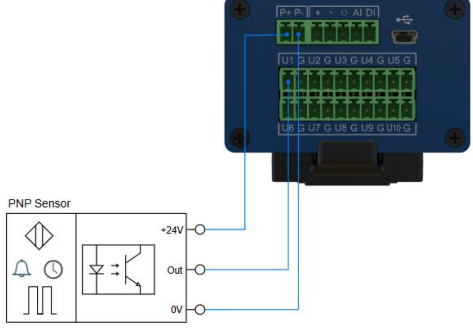


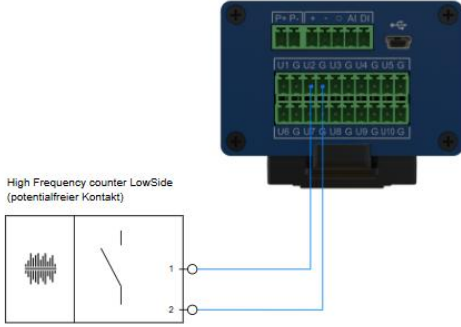
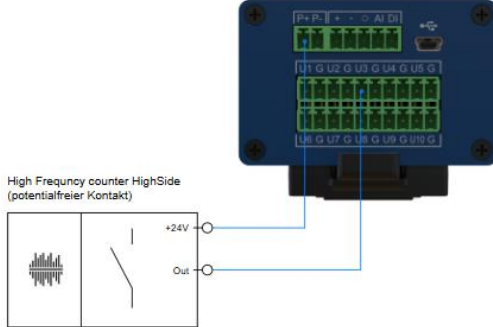
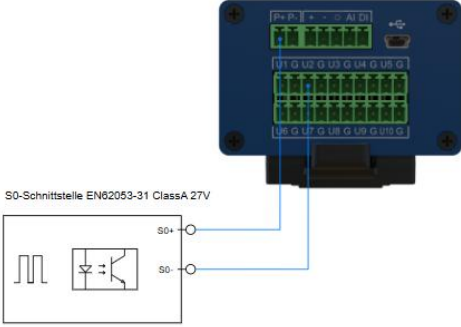
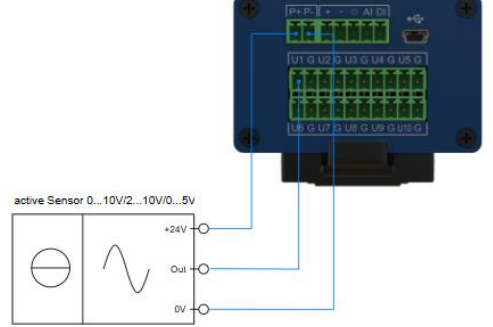
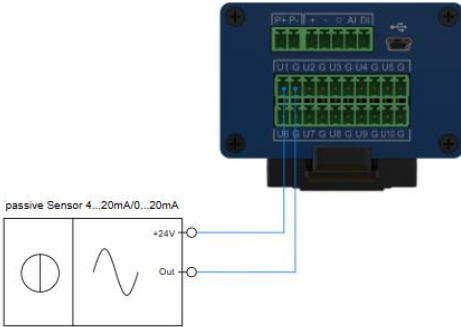
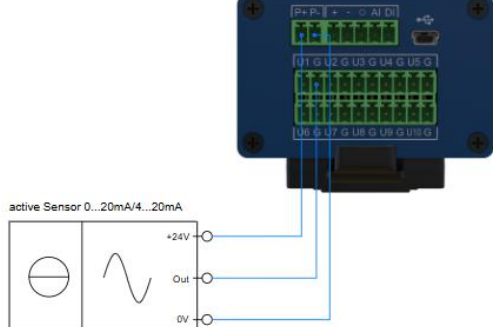
Typ: Modbus RTU Master RS485 / RS232 (optional)
Baudrate: 4800, 9600, 19200, 38400, 57600, 115200
Parity: EVEN, ODD, NONE
Stopbits: 2,1
Functions: - Funct. 1 (Read Single Coils)
- Funct 2 (Read Input Status)
- Funct 3 (Read Holding Registers)
- Funct 4 (Read Input Registers)
- Funct 5 (Write Coil)
- Funct 6 (Write Holding Register)
Datapoints: Max. 10 Modbus Slaves, with max. 40 data-points per device or 400 datapoints with 1 device

Sensors

12 Flex IOs – 10 universal inputs + 1 NTC temperature sensor
+ 1 digital input + 1 output

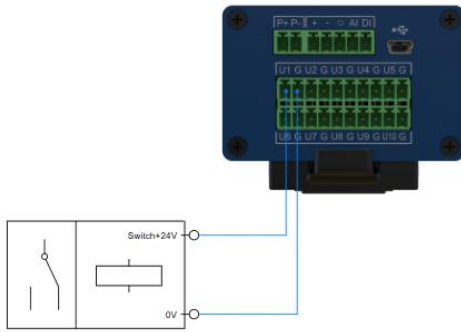
Digital Input LOSI	•	•	•	•	•	•	•	•	•	•	•		
(Low-Side Input) Potential-Free Contact	•	•	•	•	•	•	•	•	•	•	•		
Digital Input LOSI	•	•	•	•	•	•							
(Low-Side Input) NPN Output 3-wire	•	•	•	•	•	•							
Digital Input HISI		•											
(High-Side Input) Potential-Free Contact		•	•										
Digital Input HISI	•	•											
(High-Side Input) PNP Output 3-wire	•	•											
Pulse Counter High Frequency	•	•	•	•	•	•							
(LOSI Input) Potential-Free Contact / NPN Sensor (3-wire)	•	•	•	•	•	•							
Pulse Counter High Frequency	•	•	•	•	•	•							
(HISI Input) Potential-Free Contact / PNP Sensor (3-wire)							•	•	•	•			
S0 Interface													•
Voltage Measurement Input (0...5V/2...10V/0...10 V)													•
Current Loop Passive												•	

Sensor Type	Digital input LOSI (Low-Side input) potential-free contact	Digital input LOSI (Low-Side input) NPN output 3- wire
Connection		
Specification	· (NO / NC) (between Un and G, n=1...10) · U01–U06: Refresh rate fast 10 ms (U01, U02) / 100 ms (U02–U06) · U07–U10: Slow 540 ms refresh rate · Functions: alarms, operating hours, counters, switching states	· (NO / NC) (between Un and G, n=1...10) · U01–U06: Refresh rate fast 10 ms (U01, U02) / 100 ms (U02–U06) · Requirement for contact/NPN output · Voltage rating $\geq 24V$ Current rating $\geq 30mA$ · U07–U10: Slow 540 ms refresh rate · Requirement for contact/NPN output · Voltage rating $\geq 3.6V$ · Current rating $\geq 1mA$ · Functions: alarms, operating hours, counters, switching states
Sensor Type	Digitaler input HISI (High-Side input) potential-free contact	Digitaler input HISI (High-Side input) PNP output 3- wire
Connection		
Specification	· (NO / NC) (between Un and G, n=1...6) · Vin_low_max = 5V / Vin_high_min = 12V · U01–U06: Refresh rate fast 100 ms · Functions: alarms, operating hours, counters, switching states	· (NO / NC) (between Un and G, n=1...6) · Vin_low_max = 5V / Vin_high_min = 12V · U01–U06: Refresh rate fast 100 ms · Requirement for contact/PNP output · Voltage rating $\geq 24V$ Current rating $\geq 30mA$ · Functions: alarms, operating hours, counters, switching states

Sensor Type	Pulse Counter High Frequency (LOSI input) potential-free contact / NPN sensor (3-wire)	Pulse Counter High Frequency (HISI Input) potential-free contact / PNP Sensor (3-wire)
Connection	 High Frequency counter LowSide (potentialfreier Kontakt)	 High Frequency counter HighSide (potentialfreier Kontakt)
Specification	• U02 • 2000ms gate time, max. 32kHz, min. 1Hz	• U02/U03 • 2000ms gate time, max. 32kHz, min. 1Hz
Sensor Type	S0-Interface	Voltage Measurement Input (0...5V/2...10V/0...10V)
Connection	 S0-Schnittstelle EN62053-31 ClassA 27V	 active Sensor 0...10V/2...10V/0...5V
Specification	• U01/U02 • S0-Interface EN62053-31 • Class A 27V	• U01/U02 • Input impedance: 100kΩ • HW measurement range is 0...10V: • Resolution: 3mV • Accuracy: +/-0,5%
Sensor Type	Current Loop passive sensor	Current Loop passive sensor
Connection	 passive Sensor 4...20mA/0...20mA	 active Sensor 0...20mA/4...20mA
Specification	• U01...U06 • Typical accuracy +/- 0,5% • 0...20mA/4...20mA	• U01...U06 • Typical accuracy +/- 0,5% • 0...20mA/4...20mA

Sensor Type Digital output

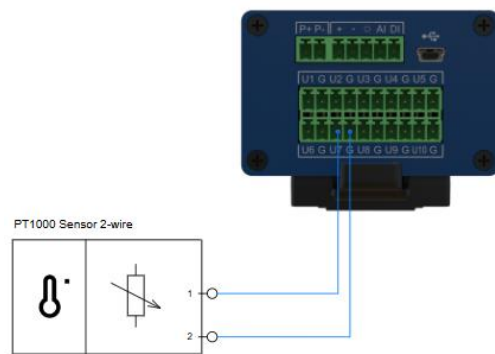
Connection



Specification

- U01...U06
- + 24V/max. 20mA
- Control of small signal relays with coil current less than 20mA (with flyback diode)
- Digital input of a PLC

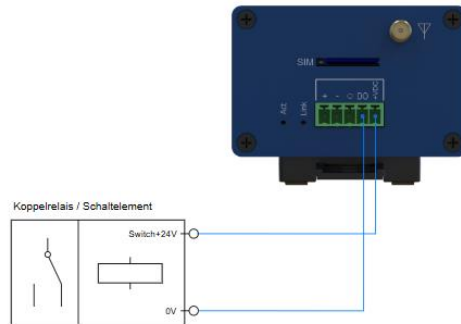
PT1000 – Temperature Sensor



- U07...U10
- 2- Wire PT1000
- -120°C...160°C, Res.: 0,1K, Acc.: ±0,5K f.s

Sensor Type Digital Switching output – 300mA

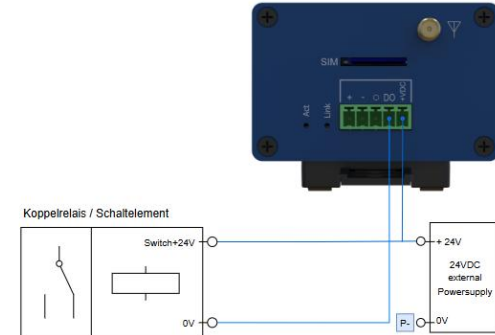
Connection



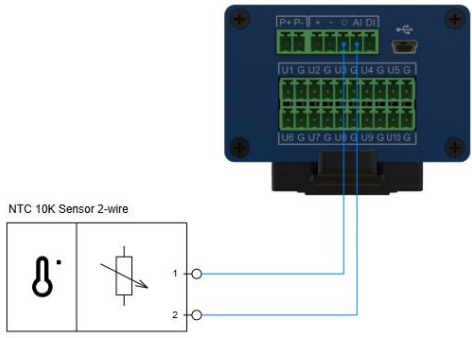
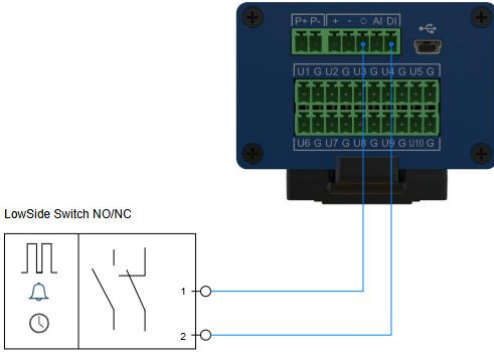
Specification

- Output type: sinking output
- +VDO: +24V / 100mA cont. / 300mA max.
- DO: digital output (load 0V / MOSFET drain)
- Internal flyback diode between +VDO terminal and DO

Digitaler Switching output – 800mA



- Output type: sinking output
- +VDO: +24V / 800mA cont. / 1000mA max.
- DO: digital output (Last 0V / MOSFET Drain)
- Internal flyback diode between +VDO terminal and DO

Sensor Type	NTC10K Temperature Sensor	Digitaler input LOSI (Low-Side input) potential-free contact
Connection	 NTC 10K Sensor 2-wire	 LowSide Switch NO/NC
Specification	· Linearization for B = 3988K · Measurement range: · 40°C ... 105°C · Resolution:. · 0,6K @ -40°C · 0,1K @ 20°C · 0,7K @ 100°C · Accuracy of input: · -20°C ... 60°C: +/-0,5K · -40°C ... 105°C +/- 2K	· NO / NC · Refresh rate fast 10ms · Functions: alarms, operating hours, counters, switching states
2nd Fieldbus	· RS485	Connection of up to · 3 IO Extension Modulen Art.Nr. 70838.10
LED	Run / Net IoT/GSM Act Link	Sensor processing data state Cloud connection state Flashing: Sensor Board Power Flashing: Sensor Board process data

MANAGEMENT PLATFORM



Supported Platforms	Telekom Cloud, Cumolocity IoT, AI, Mindsphere, ooredoo, Telia, ...and more
Communication	MQTT, LWM2M OMA, https, TLS, TCP, UDP, HTTP
Access	Bi-directional Communication
OTA	yes
FOTA	yes



GENERAL PART

Dimensions	70 x 70 x 45 mm
Weight	228g without accessories
Antenna	SMA connector female
Power Supply	Nominal voltage range: 12-30 VDC, + / -10% Maximum (average) continuous supply current: 300 mA at 12V, 150 mA at 24V
Mounting	Via DIN rail adapter
SIM Card	4FF
Operating T / H	-40°C... 85°C / Max. 85%
Storage T	-40°C... 85°C / Max. 85%
IP Class	IP20
Approval	 
Conformity	2014 / 53 / EU (Radio Equipment Directive) Radio EN301511 v12.5.1 EN301908 v13.1.1 EMC (Electromagnetic Compatibility) EN301489-1 v2.2.0 General Part EN 301489-52 v1.1.0 DIN EN 61326-1 – 2018-09 Safety DIN EN 61010-1: 2020-03, VDE 0411-1:2020-03 Cybersecurity EN 18031:2024
Warranty	1 year

Remote Manager

Fleet Management:

Activate, monitor, and diagnose your devices from a single point — your desktop or mobile app.

Monitor the condition of your connected system by analyzing charts from various widgets.

A wide range of evaluation options is available to you.

Cockpit:

Create threshold monitoring, events, critical alarms, warnings, and reports.

Open API:

Generate notifications or simply use the REST API from the cloud platform to supply all data to your third-party systems.

Third-Party IoT Platforms



Telia | A¹ Digital ...and more

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