

SMARTebox IO

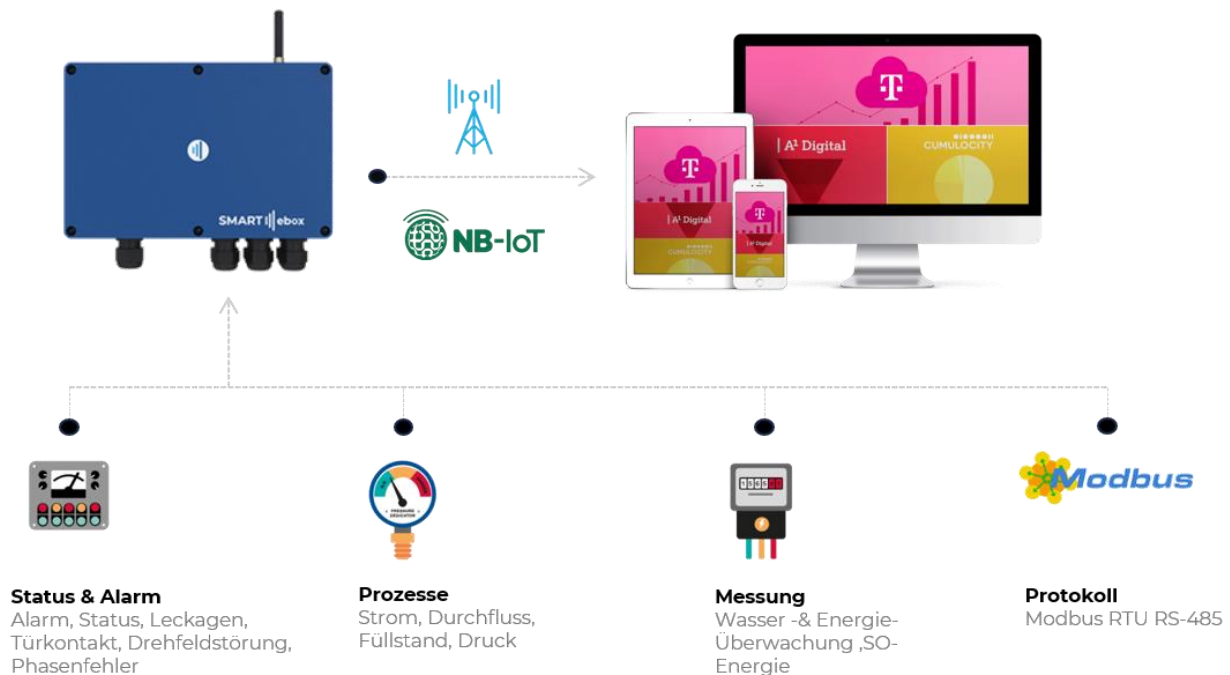
10 Universal IO's for connecting analog and digital sensors

SMARTebox is an integrated cellular IoTGateway with up to 20 Universal I/O's to connect a wide range of external sensors. Developed for use in an industrial environment, it offers the ideal solution for retrofitting or new system development. By supporting local protocols, the SMARTebox can communicate with another 10 Modbus subscribers in addition to the external sensors. The SMARTebox leverages Cumulocity's IoT cloud and enables customers to quickly and easily digitize a large number of analog and digital signals.



Key features

- 10 Flex Inputs
(4... 20mA, 0... 10V, PT1000, Alarm Circuit)
- Modbus Sensors / Devices
- IP Class: 67
- Telekom Cloud for easy handling
- Mobile Technology





FUNK

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 LTE Cat 1 B1(2100) B3(1800) B7(2600) B8(900) B20(800)
Bluetooth (Optional)	v5.0 (Bluetooth low energy) -94 dBm (1 Mbps)



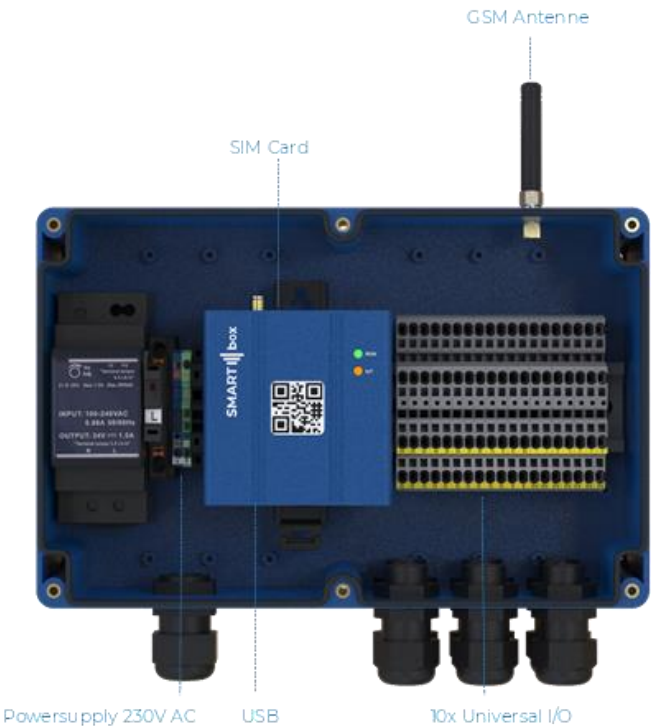
LOCATION SERVICES

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

Layout



Modbus

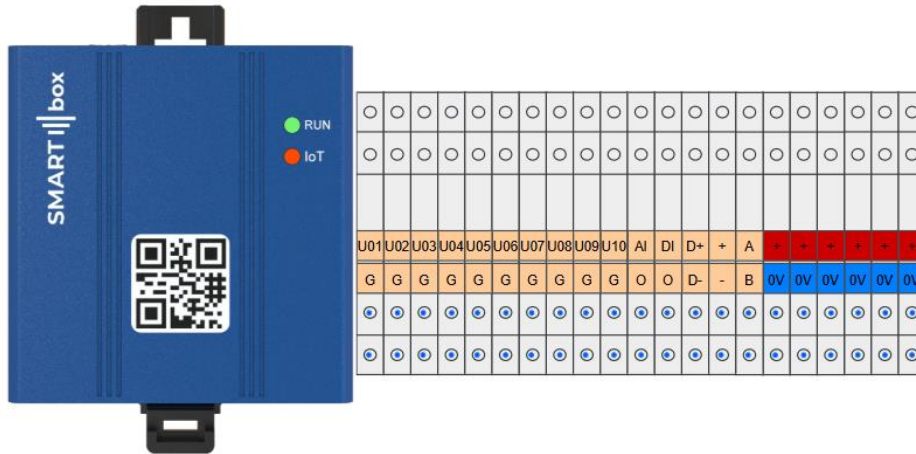


Type: Modbus RTU Master RS485 / RS232 (optional)
Transfer Rate: 4800, 9600, 19200, 38400, 57600, 115200 Parity Even, ODD, NONE
Stop bits: 2.1
Features: - Works. 1 (Read Single Coil)
 - Funkt 2 (read input status)
 - Funkt 3 (read stop stop)
 - Funkt 4 (read input register)
 - Funkt 5 (Write Coil)
 - Funkt 6 (describe stop register)

Datapoints: Max. 10 Modbus slaves at 40 data points per device or 400 data points with 1 device

Sensors

12 Flex IOs – 10 Universal Inputs + 1 NTC Temperature Sensor
+ 1 digital input + 1 output



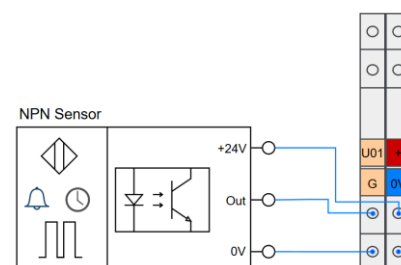
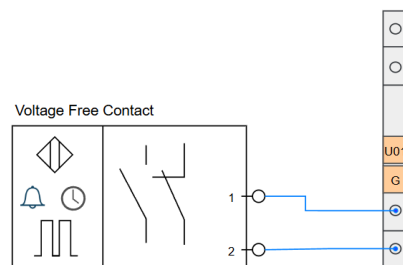
Default	U01	U02	U03	U04	U05	U06	U07	U08	U09	U10	DI	AI	THU
Digital entrance LOSI (Low-Side Input) Potential-Free Contact	•	•	•	•	•	•	•	•	•	•	•		
Digital entrance LOSI (Low-Side Input) NPN output 3- wire	•	•	•	•	•	•	•	•	•	•	•		
HISI digital input (High-Side Input) potential-free contact	•	•	•	•	•	•							
HISI digital input (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... 10V)	•	•											
Current Loop passive Sensor 0... 20mA/4... 20mA	•	•	•	•	•	•							

Current Loop passive Sensor 0... 20mA/4... 20mA	●	●	●	●	●	●							
Digital Output	●	●	●	●	●	●							
PT1000 - Temperature Sensor							●	●	●	●			
NTC10K Temperature Sensor											●		
Digital switching output – 300mA												●	

Type Sensor

Digital entrance LOSI
(Low-Side Input) Potential-Free ContactDigital entrance LOSI
(Low-Side Input) NPN output 3- wire

Connection



Specification

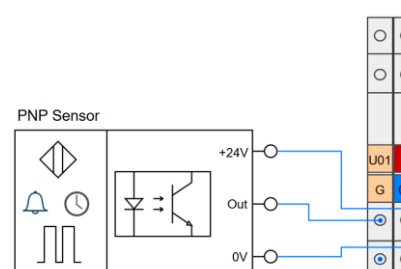
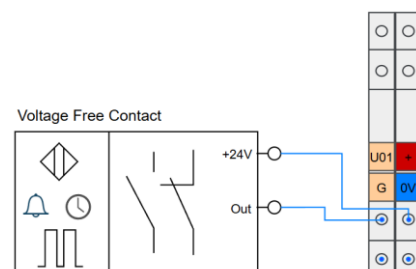
- (NO / NC) (between Un and G n=1...10)
- U01-U06: Refresh Rate Fast 10ms (U01, U02) /100ms (U02-U06)
- U07-U10: Slow 540ms Refresh Rate
- Functions: Alarms, operating hours, counters, switching states

- (NO / NC) (between Un and G n=1...10)
- U01-U06: Refresh Rate Fast 10ms (U01, U02) /100ms (U02-U06)
- Contact/NPN Output Request
- Voltage Rating >=24V | Current Rating >=30mA
- U07-U10: Slow 540ms Refresh Rate
- Contact/NPN Output Request
- Voltage Rating >= 3.6V
- Current Rating >=1mA
- Functions: Alarms, operating hours, counters, switching states

Type Sensor

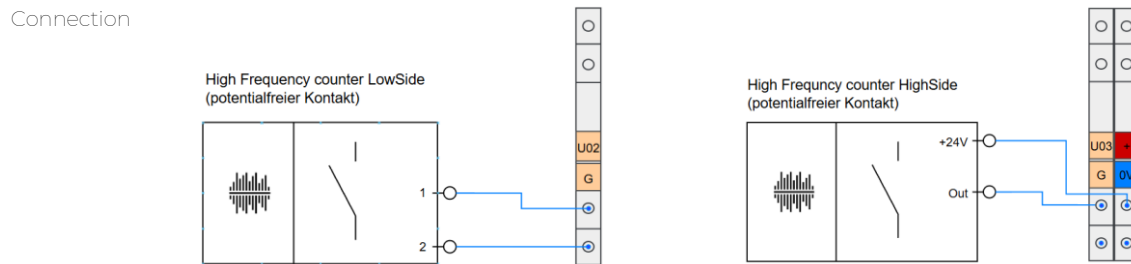
HISI digital input
(High-Side Input) Potential-free contactHISI digital input
(High-Side Input) PNP output 3- wire

Connection



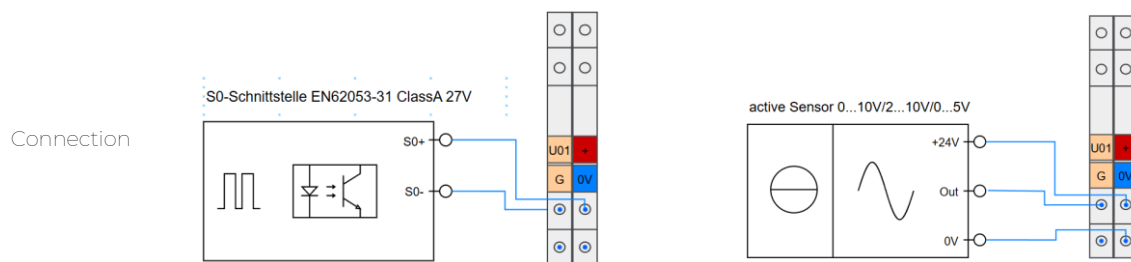
Specification	• (NO / NC) (between Un and G n=1...6) • Vin_low_max = 5V / Vin_high_min = 12V • U01-U06: Refresh Rate Fast 100ms • Functions: Alarms, operating hours, counters, switching states	• (NO / NC) (between Un and G n=1...6) • Vin_low_max = 5V / Vin_high_min = 12V • U01-U06: Refresh Rate Fast 100ms • Contact/PNP Output Request • Voltage Rating >=24V Current Rating >=30mA • Functions: Alarms, operating hours, counters, switching states
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Type Sensor	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)
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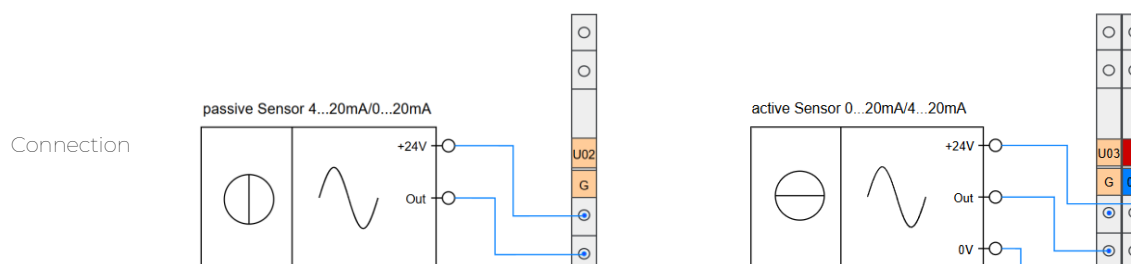
Specification	• U02 • 2000ms gate time, max. 32kHz, min. 1Hz	• U02/U03 • 2000ms gate time, max. 32kHz, min. 1Hz
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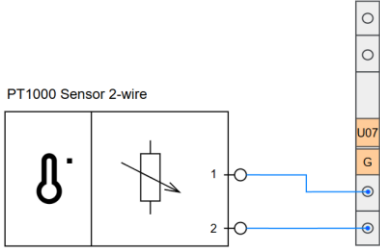
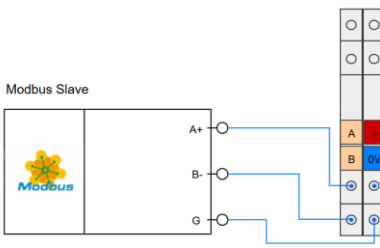
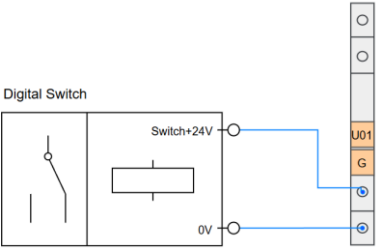
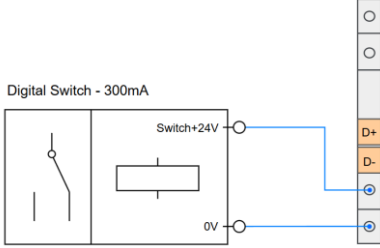
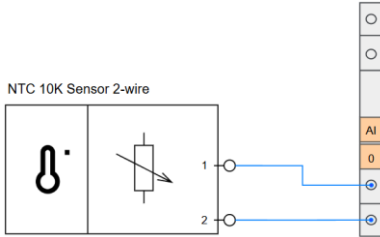
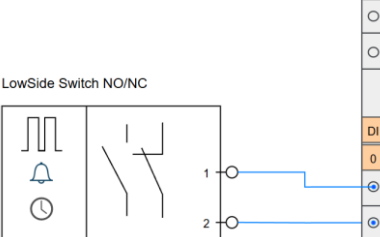
Type sensor	S0 interface	Voltage Measurement Input (0... 5V/2... 10V/0... 10V)
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Specification	• U01/U02 • S0 Interface EN62053-31 • ClassA 27V	• U01/U02 • Input Impedance: 100kΩ • HW measuring range is 0...10V: • Resolution: 3mV • Accuracy: +/-0.5%
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Type sensor	Current Loop passive sensor	Current Loop passive sensor
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Specification	• U01... U06 • Accuracy typ. +/- 0,5% • 0... 20mA/4... 20mA	• U01... U06 • Accuracy typ. +/- 0,5% • 0... 20mA/4... 20mA
Type Sensor	PT1000 - Temperature Sensor	Modbus
Connection	PT1000 Sensor 2-wire 	Modbus Slave 
Specification	• U07... U10 • 2- Wire PT1000 • -120°C... 160°C, Res.: 0,1K, Acc.: ±0,5K f.s	• Modbus RTU • RS485 (A, B) • Cabling: See: AN_PS2504.0-ModbusWiring
Type Sensor	Digital Output	Digital output – 300mA
Connection	Digital Switch 	Digital Switch - 300mA 
Specification	• U01... U06 • + 24V/max. 20mA • Control of small signal relays with coil current less than 20mA (with freewheeling diode) • Digital input of a PLC	• Output Type: Sink Outlet • +VDO: +24V/100mA cont. /300mA max. • DO: Digital Output (Load 0V/MOSFET Drain) • Internal freewheeling diode between +VDO connector & DO
Type Sensor	NTC10K Temperature Sensor	Digital entrance LOSI (Low-Side Input) Potential-Free Contact
Connection	NTC 10K Sensor 2-wire 	LowSide Switch NO/NC 
Specification	• Linearization for B = 3988K • Measuring 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 Almost 10ms • Functions: Alarms, operating hours, counters, switching states

LED	Run/Net IoT/GSM	Cloud connection state Sensor processing data state
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SUPPLY

General	This type of SMARTebox is powered by 85V-265V AC. Through continuous monitoring, the SMARTebox can constantly check for alarms. This allows Connect sensors to detect alarms more quickly and never miss an event that may have occurred between scheduled sensor measurements.
Further reading	Supply: • 230 V AC ±20%, 50 Hz ±5% (EU/UK) • 120 V AC ±20%, 60 Hz ±5% (US) • Max. 300mA



MANAGEMENT PLATFORM

Supported Platforms	Telekom Cloud, Cumolocity IoT, A1, Mindsphere, ooredoo, Telia, ... and more
Communication	MQTT, LWM2M OMA, https, TLS, TCP, UDP, HTTP
Access	Bi-directional communication
OTA	yes
FOTA	yes



GENERAL

Dimensions	231 x 125 x 90 mm
Weight	849g
Antenna	SMA Female Connector
Fortification	Wall bracket or pole mounting, stainless steel V2A, uncoated
SIM card	4FF
Operation T/H	-40°C. 85°C / Max. 85%
Warehouse T	-40°C. 85°C / Max. 85%
IP Class	IP 66/IP 68 (1.2 m – 2 h) DIN EN 60529
Color	Graphite grey, similar to RAL 7024
Case	PC V-0 material is flame retardant, self-extinguishing and suitable for outdoor use; (fl UL 746C Listing), PU Gasket, Foamed
Approval	 

Conformance	2014 / 53 / EU (Radio Equipment Directive) Funk 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

(Remote Management) Third-Party

IoT Platforms

Fleet management:

Activate, monitor and diagnose

Your devices from a single point of view –
your desktop or mobile app.

Monitor the health of your networked
by creating diagrams of various

Evaluate widgets. Here you will find a large
selection of evaluation options available.

Cockpit:

Creating a threshold monitor,

Events, critical alarms, alerts, and reports.

Open API:

Generate notifications or use

simply use the REST API from the cloud platform to

Provide your third-party systems with all the data.



Telia | A¹ Digital ... and more

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