

## SMARTbox cubelO

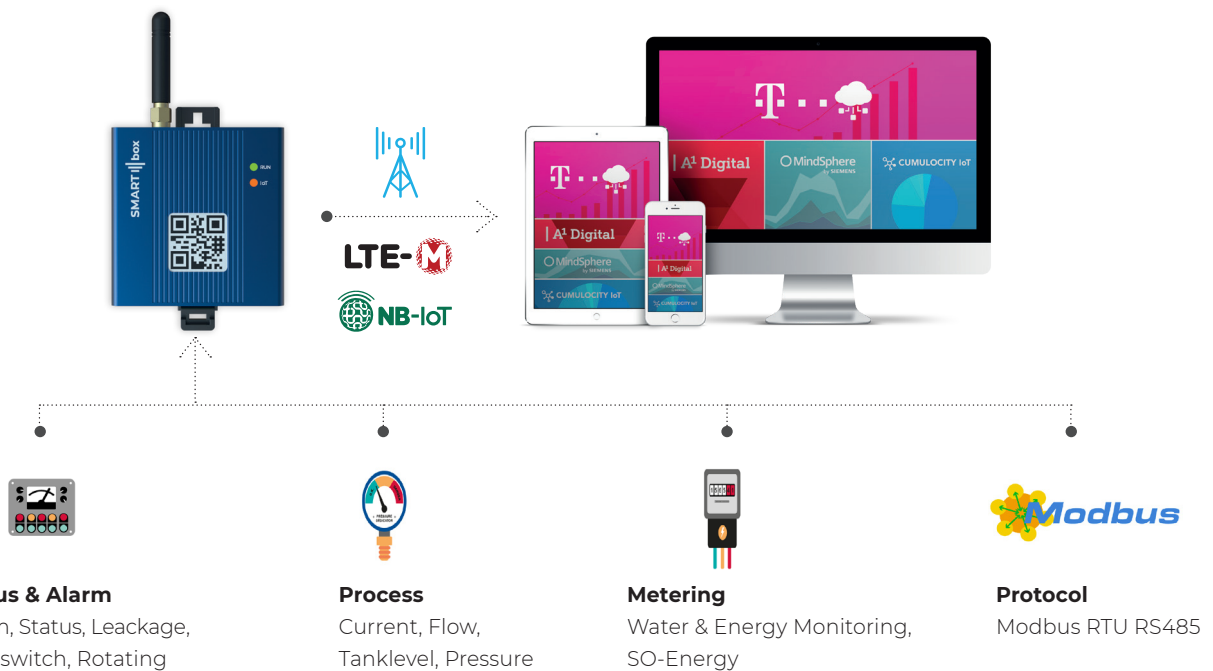
### 20 Universal IO's for digital signals and analogue sensors

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.



#### Key features

- 10 Flex Inputs (4...20mA, 0...10V, PT1000, Alarm switch)
- 10 Modbus sensors / Machines
- DIN Rail Switchboard installation
- Telekom Cloud of Things for easy management
- LTE-M cellular technology
- SIM-free selection



**Status & Alarm**  
Alarm, Status, Leakage, Doorswitch, Rotating field failure, Phase failure

**Process**  
Current, Flow, Tanklevel, Pressure

**Metering**  
Water & Energy Monitoring, SO-Energy

**Protocol**  
Modbus RTU RS485





**RADIO**

<b>4G LTE</b>	optional LTE Cat 1 B1(2100) B3(1800) B7(2600) B8(900) B20(800)
<b>2G</b>	B2 B3 B5 B8
<b>NBIOT /LTE-M</b>	B1 B2 B3 B4 B5 B8 B12 B13 B18 B19 B20 B25 B28 B66 B71 B85 B103
<b>Regions</b>	WorldWide



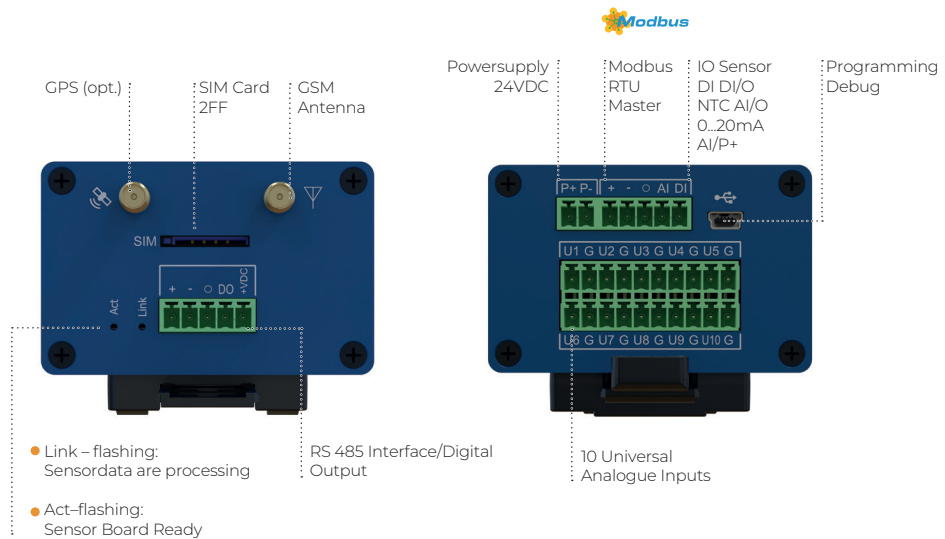
**LOCATION SERVICE**

<b>GNSS</b>	optional 72-channel u-blox M8 engine GPS/QZSS L1C/A, GLONASS L1OF, BeiDou B1I, Galileo E1B/C, SBAS L1C/A: WAAS, EG-NOS, MSAS,GAGAN
<b>Tracking</b>	Tracking by · By PowerUp device · selectable time cycle



**SENSORS - FIELDBUS**

**Layout**



**Modbus**



Type: 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 100 datapoints per device or 1000 datapoints with 1 device

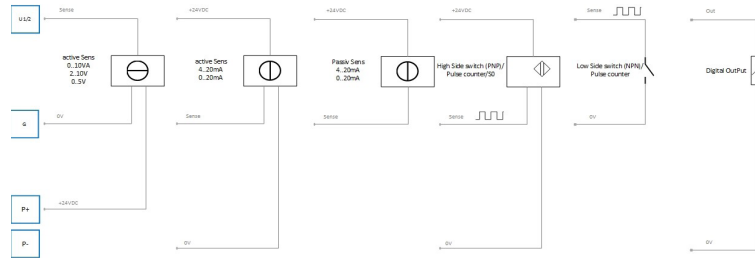
**SENSORS & FIELDBUS**



**Sensors** 12 I/O's 12 Flex IOs -10 Universal Inputs + 1 fix selectable analog Input + 1 fix selectable digital Input + 1 Output-including powering of sensors 1 Output (up to 7 Outputs)

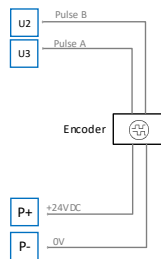
- U1/2
- Digital Input, Fast (Low-Side = NPN, GND): NO/NC
  - Digital Input, Fast (High-Side = PNP, 10...24VDC): NO/NC
  - Current Input, Slow, Fast: 0...20mA/4...20mA (Res.: 0,01mA)
  - Voltage Input, Slow, Fast: 0...10V/2...10V/0...5V (Res.: 0,01V)
  - Energy Meter (S0 Interface): EN 62053-31, only Class A
  - Digital Output: 24VDC =  $U_{in} / \max. 20mA$  (High-Side-Switch)

Wire U1/U2



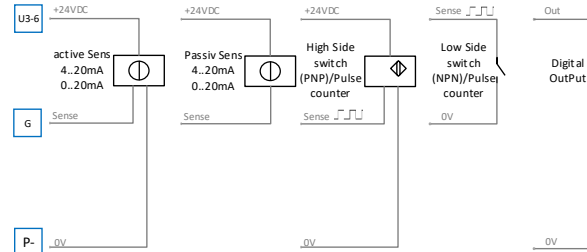
- U2/U3
- Encoder: max. 1 unit @ input U2 + U3 (max. 5kHz each Line A/B)
  - In case of Encoder is set: U2 and U3 is unavailable for other sensor types

Wire Encoder U2/U3



- U3/4/5/6
- Digital Input, Fast (Low-Side = NPN, GND): DIN NO/DIN NC
  - Digital Input, Fast (High-Side = PNP, 10...24VDC): DIN NO/DIN NC
  - Current Input, Slow: 0...20mA/4...20mA (Res.: 0,01mA)
  - Digital Output: 24VDC =  $U_{in} / \max. 20mA$  (High-Side-Switch)

Wire U3-U6



- U7/8/9/10
- Temperature: PT1000 (-120°C...160°C, Res.: 0,01K, Acc.: ±0,5K f.s.)
  - Digital Input, Slow (Low-Side = NPN, GND): DIN NO/DIN NC

**SENSORS & FIELDBUS**



Wire U7-U10	
Output	Digital Output: 24VDC = U <sub>in</sub> / max. 500mA (Low-Side-Switch)
Wire Output	
DIN	Selectable by hardware jumper (either Low-Side or High-Side): <ul style="list-style-type: none"> <li>· Digital Input (Low-Side = NPN, GND): DIN NO/DIN NC</li> <li>· Digital Input (High-Side = PNP, 24VDC): DIN NO/DIN NC</li> <li>· Digital Input: Push-Pull</li> </ul>
AI	Selectable by hardware jumper (either NTC or 0...20mA) <ul style="list-style-type: none"> <li>· Temperature: NTC10K (-40°C ... 105°C, Res.: 0,1K)</li> <li>· Current Input: 0...20mA/4...20mA (Res.: 0,1mA)</li> <li>· Note: On AIN Input there is a limitation – the measurement cycle is min 60sec</li> </ul>
Wire DI/AI	
Sensorsupply	U1/2/3/4/5/6 - 24VDC, max. 200 mA
<b>2nd Fieldbus</b>	RS485 Customized Interface for Modbus RTU Master/Slave
<b>LED</b>	<p>Net/Run Cloud connection state</p> <p>lot/GSM Sensor processing data state</p> <p>Act Flashing: Sensor Board Power</p> <p>Link Flashing: Sensor Board is ready to process data</p>
<b>USB</b>	USB 2.0 HS - programming, Logging and Trace the device

**MANAGEMENT PLATFORM**



<b>Supported Platforms</b>	Telekom Cloud der Dinge, Cumulocity IoT, AI, Mindsphere, ooredoo, Telia, ...and more
<b>Communication</b>	MQTT, LWM2M OMA, https, TLS, TCP, UDP, HTTP
<b>Access</b>	Bi-directional communication
<b>OTA</b>	yes
<b>FOTA</b>	yes



## GENERAL

<b>Dimension</b>	70 x 70 x 45 mm
<b>Weight</b>	228g without accessoires
<b>Antenna</b>	SMA Connector female
<b>Supply</b>	Nominal voltage range: 12-30 VDC, +/-10% Maximum continuous (average) supply current: 300 mA at 12V, 150mA at 24V
<b>Mounting</b>	Via DIN Rail Adapter
<b>SIM Card</b>	2FF
<b>Operate T/H</b>	-40°C...85°C / Max. 85%
<b>Storage T</b>	-40°C...85°C / Max. 85%
<b>IP Class</b>	IP20
<b>Approvals</b>	
<b>Conformity</b>	2014/53/EU (Radio Equipment Directive-RED)  Radio EN301511 v12.5.1 EN301908 v13.1.1  EMC EN 301489-1 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
<b>Warranty</b>	2 years

## Remote Manager

### Fleetmanagement:

- Activate, monitor and diagnose your devices from a single point – on your desktop or mobile app
- Monitor the health of your connected facility by taking graphs from different widgets. A large selection of evaluation and diagram types are available.

### Cockpit:

- Creating threshold monitoring, events, critical alarms, warnings and reports

### Open API:

- Create Notifications or simply use the REST API from the Cloud platform to feed your third party system with all the data

### Third Party IoT-Platforms



... and more

## Ordering Codes

### GATEWAYS

	ORDERCODE	BATTERY	EXT. SENSORS	FIELDBUS	RADIO	LOCATION SERVICE	INT. SENSORS
<b>cubeIO RS485</b>	CB201301PXX	12-36VDC, IP30	onRequest	2 x RS485, Modbus RTU Master / RS485 Modbus Slave	LTE Cat1, 2G Fallback	-	2x In: 0..10V / 4..20mA / DI 4x In: 4..20mA / DI 4x In: PT1000 / DI 1x In: NTC Temp. 1x In: 1 x DI 1x DO: 24V
<b>cubeIO RS485 GPS</b>	CB201321PXX	12-36VDC, IP30	onRequest	2 x RS485, Modbus RTU Master / RS485 Modbus Slave	LTE Cat1, 2G Fallback	GPS, Glonass	2x In: 0..10V / 4..20mA / DI 4x In: 4..20mA / DI 4x In: PT1000 / DI 1x In: NTC Temp. 1x In: 1 x DI 1x DO: 24V
<b>cubeIO+ RS485</b>	IB201301OXX	12-36VDC, IP30	onRequest	2 x RS485, Modbus RTU Master / RS485 Modbus Slave	LTE Cat1, 2G Fallback	-	6x In: 0..10V / DI / NTC / PT1000 / 100 4x In: 4..20mA / DI / NTC / PT1000 / 100 1x In: NTC Temp. 1x In: 1 x DI 1x DO: 24V
<b>cubeIO+ RS485 GPS</b>	IB201321OXX	12-36VDC, IP30	onRequest	2 x RS485, Modbus RTU Master / RS485 Modbus Slave	LTE Cat1, 2G Fallback	GPS, Glonass	6x In: 0..10V / DI / NTC / PT1000 / 100 4x In: 4..20mA / DI / NTC / PT1000 / 100 1x In: NTC Temp. 1x In: 1 x DI 1x DO: 24V

### ACCESSOIRES

	ORDERCODE	DESCRIPTION
<b>PowerSupply 24VCTypC</b>	70400	Powersupply 24VDC / 1A for mini and cube series, with 2pole 3,81 connector
<b>GSM HQ SMA</b>	70624	Adjustable Antenna, Covering Worldwide LTE Bands, 3G / 2G Fallback, SMA
<b>GSM HQ SMA 5m cable</b>	70622	Magnetic Mount Antenna, Covering Worldwide LTE Bands, 3G / 2G Fallback, 5m, SMA
<b>IOextension 10ch</b>	EB200000P00	Power input: 12-36VDC; IP30; 2x In: 0..10V / 4..20mA / DI / 4x In: 4..20mA / DI / 4x In: PT1000 / DI / 1x In: NTC Temp. / 1x In: 1 x DI / 1x DO: 24V IO Extension for CubeIO device (up to 10 can be connected)