DS-CB2107.0

SMARTbox cubeIO

20 Universal IO's for digital signals and analogue sensors

SMARTbox cubeIO 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 cubeIO to communicate with Modbus sensors and capture sensor diagnostics along with data. SMARTbox cubeIO 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, Leackage, Doorswitch, Rotating field failure, Phase failure

Process
Current, Flow, Tanklevel, Pressure

Metering
Water & Energy Monitoring, SO-Energy

Protocol
Modbus RTU RS485

RADIO

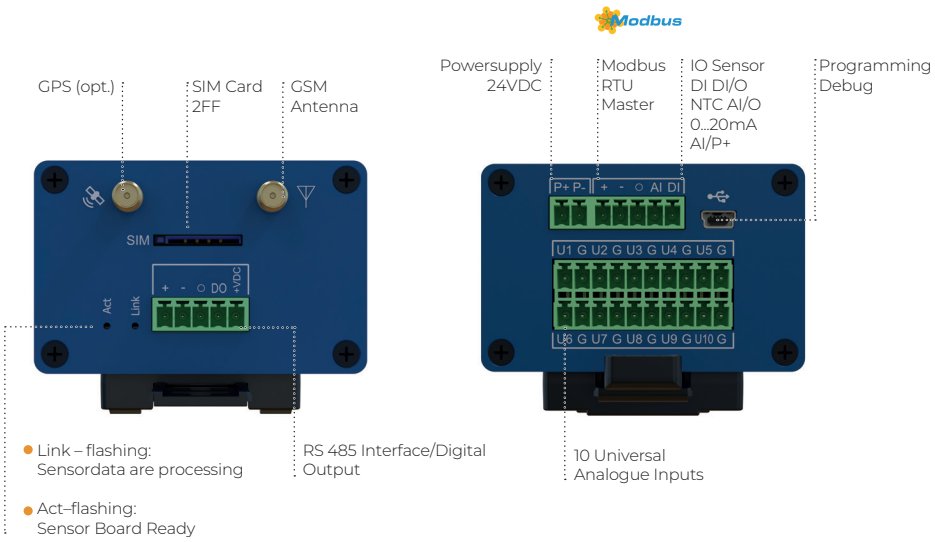
4G LTE	optional LTE Cat 1 B1(2100) B3(1800) B7(2600) B8(900) B20(800)
2G	B2 B3 B5 B8
NBIOT / LTE-M	B1 B2 B3 B4 B5 B8 B12 B13 B18 B19 B20 B25 B28 B66 B71 B85 B103
Regions	WorldWide

LOCATION SERVICE

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

SENSORS - FIELDBUS

Layout

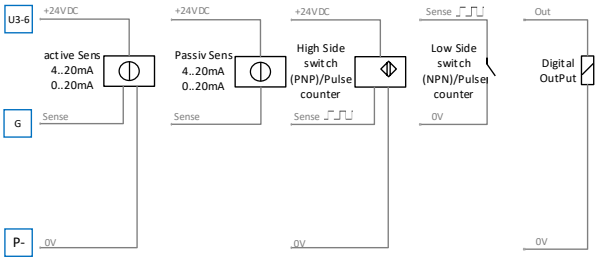
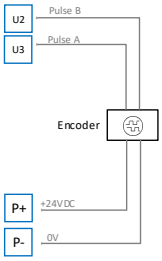
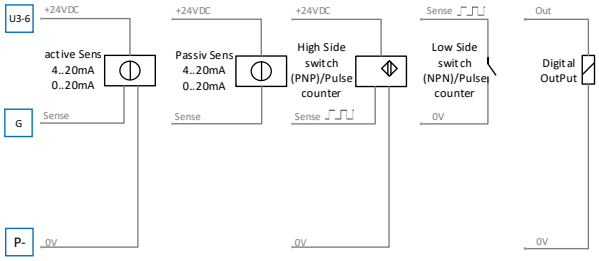


Modbus

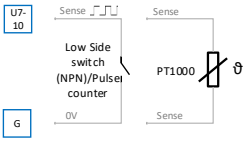
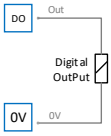
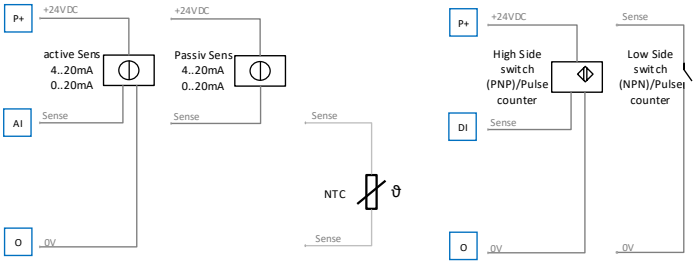
Type: Modbus RTU Master RS485 / RS232 (optional)
Baudrate: 4800, 9600, 19200, 38400, 57600, 115200
Parity: Even, ODD, NONE
Stoppbits: 2,1
Functions:
- Funct. 1 (Read Single Coils)
- Funct. 2 (Read Input Status)
- Funct. 3 (Read Holding Registers)
- Funct. 4 (Read Input Registers)
- Funct. 5 (Write Coil)
- 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 = Uin/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 = Uin/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 = Uin / max. 500mA (Low-Side-Switch)
	Wire Output	
	DIN	Selectable by hardware jumper (either Low-Side or High-Side): · Digital Input (Low-Side = NPN, GND): DIN NO / DIN NC · Digital Input (High-Side = PNP, 24VDC): DIN NO / DIN NC · Digital Input: Push-Pull
	AI	Selectable by hardware jumper (either NTC or 0...20mA) · Temperature: NTC10K (-40°C ... 105°C, Res.: 0,1K) · Current Input: 0...20mA / 4...20mA (Res.: 0,1mA) · Note: On AIN Input there is alimitation – the measurment cycle is min 60sec
	Wire DI / AI	
	Sensorsupply	U1/2/3/4/5/6 - 24VDC, max. 200 mA
2nd Fieldbus	RS485	Customized Interface for Modbus RTU Master / Slave
LED	Net / Run Iot/GSM Act Link	Cloud connection state Sensor processing data state Flashing: Sensor Board Power Flashing: Sensor Board is ready to process data
USB		USB 2.0 HS - programming, Logging and Trace the device

MANAGEMENT PLATFORM

Supported Platforms	Telekom Coud der Dinge, Cumulocity 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

Dimension	70 x 70 x 45 mm
Weight	228g without accessoires
Antenna	SMA Connector female
Supply	Nominal voltage range: 12-30 VDC, +/-10% Maximum continuous (average) supply current: 300 mA at 12V, 150mA at 24V
Mounting	Via DIN Rail Adapter
SIM Card	2FF
Operate T / H	-40°C....85°C / Max. 85%
Storage T	-40°C....85°C / Max. 85%
IP Class	IP20
Approvals	CE
Conformity	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
Warranty	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
cubeIO RS485	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
cubeIO RS485 GPS	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
cubeIO+ RS485	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 / PT100 0 / 100 1x In: NTC Temp. 1x In: 1 x DI 1x DO: 24V
cubeIO+ RS485 GPS	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 1 x In: NTC Temp. 1 x In: 1 x DI 1x DO: 24V

ACCESSOIRES

	ORDERCODE	DESCRIPTION
PowerSupply 24VCTypC	70400	Powersupply 24VDC / 1A for mini and cube series, with 2pole 3,81 connector
GSM HQ SMA	70624	Adjustable Antenna, Covering Worldwide LTE Bands, 3G / 2G Fallback, SMA
GSM HQ SMA 5m cable	70622	Magnetic Mount Antenna, Covering Worldwide LTE Bands, 3G / 2G Fallback, 5m, SMA
IOextension 10ch	EB200000P00	Power input: 12-36VDC; IP30; 2x In: 0...10V / 4...20mA / DI / 4x In: 4...20mA / DI / 4x Int: 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)