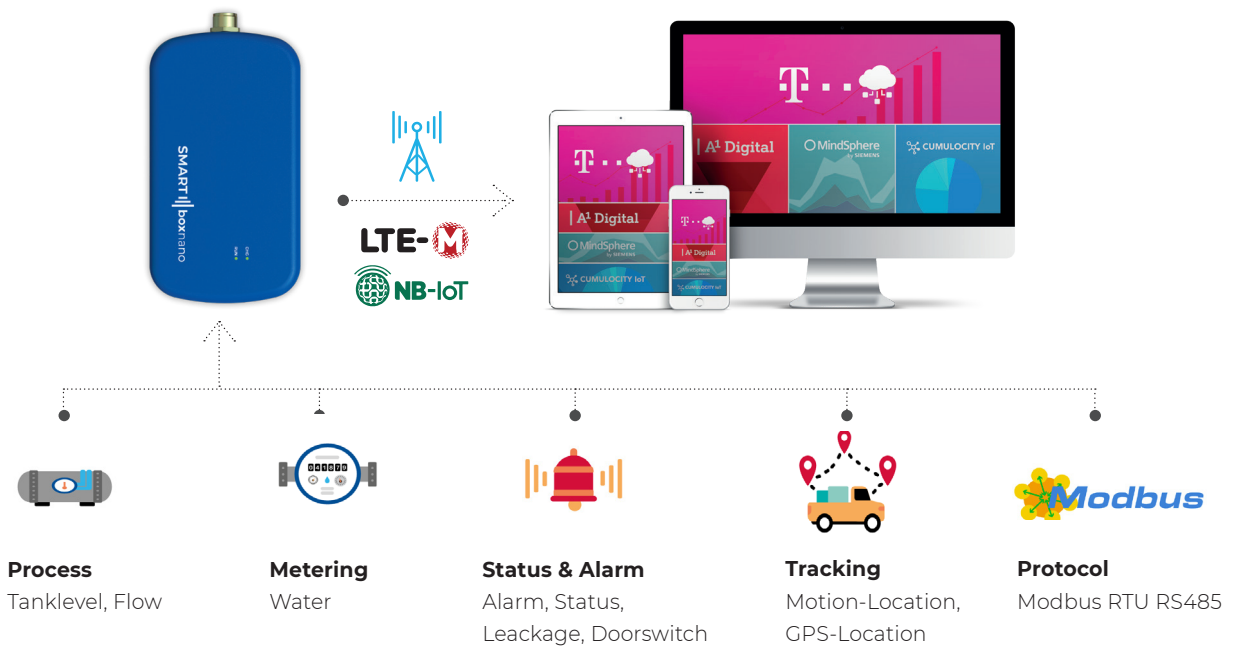**ps‖systec**

SMARTbox nano IO
LongLife NBIOT device for connection external Sensors

SMARTbox nano IO is a battery powered IoT Gateway to connect external sensors, with minimum energy consumption for long, self-sufficient operating times of many years. With the external sensor input you can measure temperature, humidity, levels, alarm contacts and count frequency input signals to send this data via NBIOT to the IoT platform. In this way, extensive sensor networks can be formed to manage for example goods, facility equipment and containers.

Remote Management

CUMULOCITY IoT

Key features

• GPS Location
• Wlan location assistance
• External Sensor: Modbus, Water meter, Tanklevel

• Telekom Cloud of Things for easy management
• LTE-M cellular technology
• SIM-free selection

LTE-M
NB-IoT

Process
Tanklevel, Flow

Metering
Water

Status & Alarm
Alarm, Status, Leackage, Doorswitch

Tracking
Motion-Location, GPS-Location

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
LTE Cat1	B1 B2 B3 B4 B5 B8 B12 B13 B18 B19 B20 B25 B28 B66 B71 B85 B103
Regions	WorldWide
Bluetooth	Protocol: Bluetooth v4.2 BR/EDR and BLE specification NZIF receiver with -97 dBm sensitivity class-1, class-2 and class-3 transmitter
Wi-Fi	Protocol: 802.11 b/g/n (802.11n up to 150 Mbps) Frequency Range: 2.4 GHz ~ 2.5 GHz

LOCATION SERVICE

GNSS	GPS, GLONASS, BeiDou, Galileo, and QZSS
Wi-Fi	WlanLocation by Google API (<10m)
Cell	Celllocation service by Google API (<200m)
Tracking	Location Services: · Selectable Options (GNSS-WiFi-Cell, WiFi-GNSS-Cell, WiFi, GNSS) Tracking by: · Start (selectable accelleration threshold and Delaytime – max 127s) · Stop (selectable accelleration threshold and Delaytime – max 2048s) · Motion (selectable accelleration threshold and Delaytime – max.12s)

SENSORS: ONBOARD

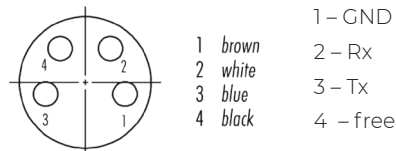|	
Motion	3-axis accelerometer, ±2g/±4g/±8g/±16g · Continuous Mode · Data Rate 1hz (up to 5300 Hz possible) · Shock detection
Batterylevel	Battery level · 2.8% Accuracy of RSOC
Beacon	Beacon-support: · Temp/Humidity/Light: iB004N Plus SHT LT · Temp/Humidity: iB003N-SHT · Distance: 0..2m ACN_Range · Max. 20 Beacons in parallel · For more beacons to be integrated ask Pssystec

SENSORS: ONBOARD

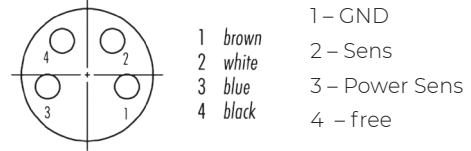|	
LED	Signal LED: · Off – the device is in sleep Mode · Slow flashing – The device is waked up and in low Power mode
USB	· USB 2.0 HS - programming, Logging and Trace the device

SENSORS: EXTERNAL

General	· 1 analogue or digital interface supported · The external interface sensor / interface is accessible by 4 pole female M8 connector

Modbus Interface

1	brown	1 – GND
2	white	2 – Rx
3	blue	3 – Tx
4	black	4 – free

Analogue sensor

1	brown	1 – GND
2	white	2 – Sens
3	blue	3 – Power Sens
4	black	4 – free

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
Pressure 4...20mA	Pressure gauge (e.g Tanklevel, Process sensor) · Powering of Sensor 12...16V max. 25mA · The 4...20mA sensor is readout · The logging interval of the sensor Readout is selectable from 10sec to 3hours, max. 96 logs for intermediate buffering, until sending to Cloud
Meter	Meter (e.g Water Meter) · The Pulses of the digital input or Reedswitch are counted · The logging interval of the summed pulses is selectable from 10sec to 3hours, max. 96 logs for intermediate buffering, until sending to Cloud

BATTERY / LIFECYCLE

Consumpt.	Sleep: 50µA Idle mode: 12mA Operative Mode: 150mA Operative Mode + GNSS / Wlan: 190mA
Accu	· Rechargable Lipo 5500 / 6000mAh · >7months@1message per Day · Charching the device by QI standard or by USB Interface The USB must support a current of min. 500mAh
Primary cell	· 16500mAh LiMNO2 Primary Battery · >5years@1message per Day · The device can be switched On / Off by using the Mounting magnet. Hold the magnet for at least 3 seconds to the side bar of the device. The device will switch by giving 2 short sound impulses. To switch off, put the magnet for 5 seconds to the device. A long sound will appear. The device will switch off.

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	Accu: 99,7 x 55,2 x 28 Primary Battery: 99,7 x 55,2 x 38,

Sensor	Environmental Access for Temperature, Humidity, CO_2

GENERAL

Weight	89g – Accu / 112g – Primary Cell
Mounting	Via magnetic foot or wall mounted by M4 screws and 16kg
LTE Ant.	OnBoard
WiFi Ant.	OnBoard
BLE Ant.	OnBoard
GPS Ant.	OnBoard
SIM Card	microSim / eSim option
Operate T / H	-40..85°C / Max. 85%
Storage T	-40..85°C / Max. 85%
IP Class	IP67
Approvals	CE FC
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

Third Party IoT-Platforms

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

... and more

Ordering Codes

GATEWAYS

	ORDERCODE	BATTERY	EXT. SENSORS	FIELDBUS	RADIO	LOCATION SERVICE	INT. SENSORS
nano IO	NB0905150XX	Rechargable Lipo 5500 mAh, Recharge by USB	Fuelgauge, Acellerometer		LTE CatM, 2G Fallback (opt. NBIOT)	GPS, Glonass, Beidou, Galileo / Cell	PT1000 Sensor - 60°C..+180°C (see accessoires)
nano IO	NB0905450XX	Rechargable Lipo 5500 mAh, Recharge by USB	Fuelgauge, Acellerometer, BLE 4.2		LTE CatM, 2G Fallback (opt. NBIOT)	GPS, Glonass, Beidou, Galileo / Wlan Location / Cell	PT1000 Sensor - 60°C..+180°C (see accessoires) BLE 4.2, 1..30 Beacons
nano IO	NB060510RX0	Rechargable Lipo 5500 mAh, Recharge by USB	Fuelgauge, Acellerometer		LTE CatM, 2G Fallback (opt. NBIOT)	GPS, Glonass, Beidou, Galileo / Cell	Digital Input for Water metering, Reed, Alarm switch
nano IO	NB060540RX0	Rechargable Lipo 5500 mAh, Recharge by USB	Fuelgauge, Acellerometer, BLE 4.2		LTE CatM, 2G Fallback (opt. NBIOT)	GPS, Glonass, Beidou, Galileo / Wlan Location / Cell	Digital Input for Water metering, Reed, Alarm switch BLE 4.2, 1...30 Beacons
nano IO	NB0905100X0	Rechargable Lipo 5500 mAh, Recharge by USB	Fuelgauge, Acellerometer	Modbus RTU Master	LTE CatM, 2G Fallback (opt. NBIOT)	GPS, Glonass, Beidou, Galileo / Cell	
nano IO	NB0905400X0	Rechargable Lipo 5500 mAh, Recharge by USB	Fuelgauge, Acellerometer, BLE 4.2	Modbus RTU Master	LTE CatM, 2G Fallback (opt. NBIOT)	GPS, Glonass, Beidou, Galileo / Wlan Location / Cell	BLE 4.2, 1..30 Beacons

ACCESSOIRES

	ORDERCODE	DESCRIPTION
Primary Cell 16,5Ah	70411	LiMNO2 Primary Battery 16000mAh for SMARTbox nano
SET nano magnet	70777	Magnetholder 2 pcs with each 8kg holding force
iB003N-TH	70518	BLE Beacon Temperature / Humidity Temperature Range: -40°C to 60°C Relative Humidity Range: 0% - 100% RH Power: CR2477 coin battery
PT1000 cable M8	70588	PT1000 Temp. Sensor - 60°C..+180°C, 3m, 2L, Metalhülse6x50mm, M8 4pol connector