

# TK-UGW-ALU

## UNIVERSAL IoT GATEWAY



Universal IoT Gateway connects sensors and other devices to the cloud. This allows you to view applications and devices status in an IoT platform to get real-time insights and notifications.

Accelerate your business digitalization and quick access to data without complexity and high technical expertise. This versatile gateway is your go-to solution to speed up Industrial IoT applications.

### Product References

	with GSM	without GSM
868MHz	PA222410202	PA222410200
915MHz	PA222410203	PA222410201

## KEY FEATURES

### WIRELESS COMMUNICATION

WI-FI AND 3G/4G

### INDUSTRIAL COMMUNICATION

MODBUS RS485 AND MODBUS TCP/IP

### TEKON WIRELESS SOLUTIONS

NETWORKS WITH DUOS AND PLUS TRANSMITTERS

### IOT PLATFORMS

NATIVE INTEGRATION WITH TEKON IOT PLATFORM AND THIRD-PARTY SOLUTIONS

### DATA INTEGRATION

MQTT AND NODE-RED

### DATA LOGGING

MEMORY FOR DATA STORAGE

### ALUMINIUM CASE

READY FOR INDUSTRIAL ENVIRONMENTS

### REMOTE UPDATE

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## TECHNICAL SPECIFICATIONS

RADIO SPECIFICATIONS	868MHZ	915MHZ
Range <sup>1</sup>	Up to 4 Km LoS	
Minimum communication distance	3 m @ 27 dBm	3 m @ 27 dBm
Radio transmit power <sup>2</sup>	0 to 27 dBm	8 to 27 dBm
Radio receiver sensitivity <sup>2</sup>	-97 to -110 dBm	
Frequency band <sup>2</sup>	868 to 869 MHz	902 to 928 MHz <sup>3</sup>
Radio channels	16	50 <sup>4</sup>
Radio transmission rate <sup>2</sup>	1,2 to 76,8 kbit/s	
Modulation	GFSK	
Encryption method	AES 128 (Advanced Encryption Standard)	

## WIRELESS NETWORK

Maximum devices	55 for DUOS family + 55 for PLUS family
Maximum hops	13

## ANTENNA

	868MHZ	915MHZ
Range	$\frac{1}{4} \lambda$ dipole with SMA connector, 50 Ohms and +3 dBi gain	

## SUPPLY VOLTAGE

External power supply from 12 to 30 V DC
Minimum current draw of 300 mA at 12V / Maximum current draw of 600 mA at 12V <sup>2</sup>

## INTERFACE

Serial Port	1x 3-input RS485 terminal block
Ethernet Communication	2x RJ45 ports
Display	1x 1.8" TFT LCD 128 x 160 color pixels
Power Supply	1x 2-input terminal block
Wireless Connection	1x WiFi Access Point
Reset button	hold during 3 seconds
Cellular Connection	1x Nano SIM Card for 3G/4G

## USER INTERFACE

Device configuration
Network settings
Cloud settings
Cellular settings
Modbus (RTU and TCP/IP) settings
Data visualization and analysis
Alarms and notifications
FW and SW updates

## SYSTEM

CPU	Arm Quad Core Cortex-A72 64-bit SoC
Memory	16 GB eMMC flash
Mobile	3G/4G cellular Modem (optional)

## SERIAL COMMUNICATION (RS-485)

Protocol	Modbus RTU: master (optional) and slave modes
Interface	2-wire RS-485
Baud rates	4,8k to 115,2k
Data format	8 data bits, no parity/even/odd, 1/2 stop bit
Available modbus addresses	1 to 247

## ETHERNET PORT 0

Interface	RJ45
Speed	1 Gbps
IP address	Dynamic (provided by network DHCP server)
HTTP/HTTPS Proxy	Configurable
NTP	Configurable
DNS	Configurable

## ETHERNET PORT 1

Protocol	Modbus TCP/IP: client (optional) and server modes
Interface	RJ45
Speed	100 Mbps
IP address	Dynamic (provided by network DHCP server)

## CELLULAR COMMUNICATION (OPTIONAL)

Nano SIM card port available
APN, username and password configurable in the user interface
3G and 4G available
Worldwide compatible

## WI-FI COMMUNICATION

SSID and password configurable in the user interface
AP and client modes available and configurable in the user interface

## IOT CONNECTIVITY

Integration with Tekon IoT Platform via REST API
Integration with third-party IoT platforms via MQTT broker and Node-Red (optional)
Data sent by Ethernet, Wi-Fi or GSM

## DEVICE STORAGE

Integrated memory for data storage
Data from Tekon DUOS and PLUS wireless systems
Generic data from third-party equipment (via Modbus)

## CASING

Dimensions	151 x 150 x 61 mm
Weight	695 g
Material	Extruded Aluminium A6063S-T5
Protection index	IP40

**OPERATING ENVIRONMENT**

-10°C to 50 °C

95% maximum relative humidity (non-condensing)

FACTORY DEFAULT SETTINGS	868MHZ	915MHZ
Frequency	869,525 MHz	915,000 MHz
Radio Transmit Power	27 dBm	
Radio Transmission Rate	76,8 kbit/s	
Wireless Channel	13	26
Wireless Network ID	Device serial number	
Serial Communication	RS-485 / Modbus	
Modbus RTU over RS485 (slave mode)		
PLUS slave address	2	
DUOS slave address	1	
Baudrate(config) Bits Parity Stop bits	19200   8   None   2	
Modbus TCP/IP (server mode)		
IP address	192.168.100.1	
PLUS port	503	
DUOS port	502	

**ETH0**

IP Address	DHCP
HTTP/HTTPS proxy	none
NTP server	time3.google.com

**WEB INTERFACE ACCESS**

Login	admin
Password	tekon

**WI-FI ACCESS POINT**

IP	192.168.128.1
SSID	TekonGTW_<serialNumber>
DHCP	Enabled

**CERTIFICATIONS AND APPROVALS**

2014/53/EU (RED Directive)

2011/65/EU (RoHS2 Directive)

2014/30/EU (EMC Directive)

Validation standards:

EN 61000-4-2:2012

EN 61000-4-3:2012

EN 61000-4-4:2012

EN 61000-4-5:2012

EN 61000-4-6:2012

## MODBUS REGISTER CONFIGURATION - DUOS WIRELESS SOLUTION

The following table presents the MODBUS register configuration and the presented values can be changed in accordance with the transmitter model in use.

	DESCRIPTION	ADDRESS	NUMBER OF WORDS	DATA TYPE	DATA
TRANSMITTER 0	Transmitter model	0	1	UINT16	868MHz: 03 - DUOS Temp   11 - DUOS Hygrotemp   12 - DUOS DI+Temp   13 - DUOS CO <sub>2</sub> 868MHz: 59 - DUOS inHygrotemp   60 - DUOS inCO <sub>2</sub>   61 - DUOS inAir   62 - DUOS inTemp   67 - DUOS uTemp 915MHz: 29 - DUOS Temp   30 - DUOS Hygrotemp   31 - DUOS DI+Temp   32 - DUOS CO <sub>2</sub> 915MHz: 63 - DUOS inHygrotemp   64 - DUOS inCO <sub>2</sub>   65 - DUOS inAir   66 - DUOS inTemp   68 - DUOS uTemp
	Probe sensor model	1	1	UINT16	01 - TK9808   02 - TK07   03 - TK939   04 - TK871   255 - UNKNOWN 8 - TK280   9 - TK895   10 - PT100 2W   11 - PT100 3W   12 - PT100 4W   13 - PT500 2W   14 - PT500 3W   15 - PT500 4W   16 - PT1000 2W   17 - PT1000 3W   18 - PT1000 4W   19 - TC J   20 - TC K   21 - TC R   22 - TC S   23 - TC T   24 - TC N   25 - TC C   26 - Ohm   27 - mV   28 - TK8095   29 - TK30   255 - UNKNOWN
	RSSI	2	1	UINT16	RSSI   RSSI in dBm = RSSI/-2
	Communication period	3	1	UINT16	Transmitter' communication period in seconds
	Elapsed time	4	1	UINT16	Transmitter' time without communicating (in seconds)
	Power supply voltage	5	1	UINT16	Power supply voltage   Volts = Power supply voltage/10
	FW version Major   Minor	6	1	UINT8   UINT8	Firmware version Major   Minor
	FW Version Revision	7	1	UINT16	Firmware version Revision (LSB)
	HW Version Major   Minor	8	1	UINT8   UINT8	MAJOR   MINOR
Data 0	9	2	DOUBLE 32	Internal temperature [°C]	
TRANSMITTER 0	Data 1	11	2	DOUBLE 32	DUOS Temp, DUOS Hygrotemp, DUOS DI+Temp - External temperature [°C] DUOS CO <sub>2</sub> , DUOS inCO <sub>2</sub> - CO <sub>2</sub> [ppm] DUOS uTemp - External temperature [°C] (if sensor model ID between 10 and 25); Ohm [Ω] (if sensor model ID = 26); mV [mV] (if sensor model ID = 27) DUOS inHygrotemp, DUOS inAir - Relative humidity [%] DUOS inTemp - Digital Input [0 1 2 3 4 5]  Little endian byte swap format
	Data 2	13	2	DOUBLE 32	DUOS Hygrotemp - Relative humidity [%] DUOS DI+Temp, DUOS uTemp, DUOS inHygrotemp - Digital Input [0 1 2 3 4 5] DUOS CO <sub>2</sub> , DUOS inCO <sub>2</sub> - Average CO <sub>2</sub> [ppm] DUOS inAir - CO <sub>2</sub> [ppm]  Little endian byte swap format
	Data 3	15	2	DOUBLE 32	DUOS inCO <sub>2</sub> - Barometric pressure [mbar] DUOS inAir - Average CO <sub>2</sub> [ppm]
	Data 4	17	2	DOUBLE 32	DUOS inCO <sub>2</sub> - Digital Input [0 1 2 3 4 5] DUOS inAir - Barometric pressure [mbar]
	Data 5	19	2	DOUBLE 32	DUOS inAir - Digital Input [0 1 2 3 4 5]

**MODBUS ADDRESSING CONVENTION - DUOS WIRELESS SOLUTION**

MEASUREMENTS	FORMULA
Transmitter model	$(\text{Transmitter Device ID} - 1) \times 21$
Probe sensor model	$(\text{Transmitter Device ID} - 1) \times 21 + 1$
RSSI	$(\text{Transmitter Device ID} - 1) \times 21 + 2$
Communication period	$(\text{Transmitter Device ID} - 1) \times 21 + 3$
Elapsed time	$(\text{Transmitter Device ID} - 1) \times 21 + 4$
Supply voltage	$(\text{Transmitter Device ID} - 1) \times 21 + 5$
Firmware Major   Minor	$(\text{Transmitter Device ID} - 1) \times 21 + 6$
Firmware Revision	$(\text{Transmitter Device ID} - 1) \times 21 + 7$
Hardware version Major   Minor	$(\text{Transmitter Device ID} - 1) \times 21 + 8$
Data 0	$(\text{Transmitter Device ID} - 1) \times 21 + 9$
Data 1	$(\text{Transmitter Device ID} - 1) \times 21 + 11$
Data 2	$(\text{Transmitter Device ID} - 1) \times 21 + 13$
Data 3	$(\text{Transmitter Device ID} - 1) \times 21 + 15$
Data 4	$(\text{Transmitter Device ID} - 1) \times 21 + 17$
Data 5	$(\text{Transmitter Device ID} - 1) \times 21 + 19$

\*Transmitter Device ID [1-55]

**MODBUS REGISTER CONFIGURATION - PLUS WIRELESS SOLUTION**

HOLDING REGISTERS - TWP4AI TRANSMITTER DATA				
DESCRIPTION	ADDRESS $(\text{Transmitter Modbus Index} - 1) \times 20 + x$	NUMBER OF WORDS	DATA TYPE	DATA
Serial Number	0	2	UINT32 <sup>5</sup>	Transmitter serial number
Transmitter Model	2	1	UINT16	<b>868 MHZ</b> - 09 - TWP4AI <sup>6</sup> <b>915 MHZ</b> - 26 - TWP4AI <sup>6</sup>
RSSI	3	1	UINT16	RSSI in dBm = RSSI / -2
Communication Period	4	1	UINT16	Communication Period (seconds)
Elapsed Time	5	1	UINT16	Elapsed Time since last communication (seconds)
Power Voltage	6	1	UINT16	Volts = Power Voltage / 10
Data 0	7	2	FLOAT32 <sup>5</sup>	Internal temperature [°C] <sup>7</sup>
Data 1	9	2	FLOAT32 <sup>5</sup>	Analog Input value 1 <sup>8</sup>
Data 2	11	2	FLOAT32 <sup>5</sup>	Analog Input value 2 <sup>8</sup>
Data 3	13	2	FLOAT32 <sup>5</sup>	Analog Input value 3 <sup>8</sup>
Data 4	15	2	FLOAT32 <sup>5</sup>	Analog Input value 4 <sup>8</sup>
FW Version Major   Minor	17	1	UINT16	Transmitter Firmware Version <sup>9</sup>
FW Version Revision	18	1	UINT16	Transmitter Firmware Version <sup>9</sup>
HW Version Major   Minor	19	1	UINT16	Transmitter Hardware Version <sup>10</sup>

HOLDING REGISTERS - TWP-1AI   TWP-2AI TRANSMITTERS DATA				
DESCRIPTION	ADDRESS $(\text{Transmitter Modbus Index} - 1) \times 20 + x$	NUMBER OF WORDS	DATA TYPE	DATA
Serial Number	0	2	UINT32 <sup>1</sup>	Transmitter serial number

Transmitter Model	2	1	UINT16	<b>868 MHZ</b> - 47 - TWP-1AI   48 - TWP-2AI <sup>6</sup> <b>915 MHZ</b> - 53 - TWP-1AI   54 - TWP-2AI <sup>6</sup>
RSSI	3	1	UINT16	RSSI in dBm = RSSI / -2
Communication Period	4	1	UINT16	Communication Period (seconds)
Elapsed Time	5	1	UINT16	Elapsed Time since last communication (seconds)
Power Voltage	6	1	UINT16	Volts = Power Voltage / 10
Data 0	7	2	FLOAT32 <sup>5</sup>	Internal temperature [°C] <sup>7</sup>
Data 1	9	2	FLOAT32 <sup>5</sup>	Analog Input value 1 <sup>8</sup>
Data 2	11	2	FLOAT32 <sup>5</sup>	Analog Input value 2 (*) <sup>8</sup>
Data 3	13	2	FLOAT32 <sup>5</sup>	-
Data 4	15	2	FLOAT32 <sup>5</sup>	-
FW Version Major   Minor	17	1	UINT16	Transmitter Firmware Version <sup>9</sup>
FW Version Revision	18	1	UINT16	Transmitter Firmware Version <sup>9</sup>
HW Version Major   Minor	19	1	UINT16	Transmitter Hardware Version <sup>10</sup>

(\*) Only available on TWP-2AI

## HOLDING REGISTERS - TWP-4AI/4DI/1UT TRANSMITTER DATA

DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 20+x	NUMBER OF WORDS	DATA TYPE	DATA
Serial Number	0	2	UINT32 <sup>5</sup>	Transmitter serial number
Transmitter Model	2	1	UINT16	<b>868 MHZ</b> - 37 - TWP4AI/4DI/1UT <sup>6</sup> <b>915 MHZ</b> - 38 - TWP4AI/4DI/1UT <sup>6</sup>
RSSI	3	1	UINT16	RSSI in dBm = RSSI / -2
Communication Period	4	1	UINT16	Communication Period (seconds)
Elapsed Time	5	1	UINT16	Elapsed Time since last communication (seconds)
Power Voltage	6	1	UINT16	Volts = Power Voltage / 10
Data 0	7	2	FLOAT32 <sup>5</sup>	External temperature [°C]
Data 1	9	2	FLOAT32 <sup>5</sup>	Analog Input value 1 <sup>8</sup>
Data 2	11	2	FLOAT32 <sup>5</sup>	Analog Input value 2 <sup>8</sup>
Data 3	13	2	FLOAT32 <sup>5</sup>	Analog Input value 3 <sup>8</sup>
Data 4	15	2	FLOAT32 <sup>5</sup>	Analog Input value 4 <sup>8</sup>
FW Version Major   Minor	17	1	UINT16	Transmitter Firmware Version <sup>9</sup>
FW Version Revision	18	1	UINT16	Transmitter Firmware Version <sup>9</sup>
HW Version Major   Minor	19	1	UINT16	Transmitter Hardware Version <sup>10</sup>

## HOLDING REGISTERS - TWP-1DI | TWP-2DI TRANSMITTERS DATA

DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 20+x	NUMBER OF WORDS	DATA TYPE	DATA
Serial Number	0	2	UINT32 <sup>5</sup>	Transmitter serial number
Transmitter Model	2	1	UINT16	<b>868 MHZ</b> - 49 - TWP-1DI   50 - TWP-2DI <sup>6</sup> <b>915 MHZ</b> - 55 - TWP-1DI   56 - TWP-2DI <sup>6</sup>
RSSI	3	1	UINT16	RSSI in dBm = RSSI / -2
Communication Period	4	1	UINT16	Communication Period (seconds)
Elapsed Time	5	1	UINT16	Elapsed Time since last communication (seconds)
Power Voltage	6	1	UINT16	Volts = Power Voltage / 10
Data 0	7	2	FLOAT32 <sup>5</sup>	Internal temperature [°C] <sup>7</sup>
Data 1	9	2	FLOAT32 <sup>5</sup>	Pulse counter 1
Data 2	11	2	FLOAT32 <sup>5</sup>	Pulse counter 2 (*)

Data 3	13	2	FLOAT32 <sup>5</sup>	-
Data 4	15	2	FLOAT32 <sup>5</sup>	-
FW Version Major   Minor	17	1	UINT16	Transmitter Firmware Version <sup>9</sup>
FW Version Revision	18	1	UINT16	Transmitter Firmware Version <sup>9</sup>
HW Version Major   Minor	19	1	UINT16	Transmitter Hardware Version <sup>10</sup>

(\*) Only available on TWP-2DI

HOLDING REGISTERS - TWP-1UT TRANSMITTER DATA				
DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 20+x	NUMBER OF WORDS	DATA TYPE	DATA
Serial Number	0	2	UINT32 <sup>5</sup>	Transmitter serial number
Transmitter Model	2	1	UINT16	<b>868 MHZ - 24 - TWP-1UT<sup>6</sup></b> <b>915 MHZ - 28 - TWP-1UT<sup>6</sup></b>
RSSI	3	1	UINT16	RSSI in dBm = RSSI / -2
Communication Period	4	1	UINT16	Communication Period (seconds)
Elapsed Time	5	1	UINT16	Elapsed Time since last communication (seconds)
Power Voltage	6	1	UINT16	Volts = Power Voltage / 10
Data 0	7	2	FLOAT32 <sup>5</sup>	Internal temperature [°C] <sup>7</sup>
Data 1	9	2	FLOAT32 <sup>5</sup>	External temperature 1 [°C]
Data 2	11	2	FLOAT32 <sup>5</sup>	-
Data 3	13	2	FLOAT32 <sup>5</sup>	-
Data 4	15	2	FLOAT32 <sup>5</sup>	-
FW Version Major   Minor	17	1	UINT16	Transmitter Firmware Version <sup>9</sup>
FW Version Revision	18	1	UINT16	Transmitter Firmware Version <sup>9</sup>
HW Version Major   Minor	19	1	UINT16	Transmitter Hardware Version <sup>10</sup>

HOLDING REGISTERS - TWP-1UT   TWP-2UT TRANSMITTERS DATA				
DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 20+x	NUMBER OF WORDS	DATA TYPE	DATA
Serial Number	0	2	UINT32 <sup>5</sup>	Transmitter serial number
Transmitter Model	2	1	UINT16	<b>868 MHZ - 45 - TWP-1UT   46 - TWP-2UT<sup>6</sup></b> <b>915 MHZ - 51 - TWP-1UT   52 - TWP-2UT<sup>6</sup></b>
RSSI	3	1	UINT16	RSSI in dBm = RSSI / -2
Communication Period	4	1	UINT16	Communication Period (seconds)
Elapsed Time	5	1	UINT16	Elapsed Time since last communication (seconds)
Power Voltage	6	1	UINT16	Volts = Power Voltage / 10
Data 0	7	2	FLOAT32 <sup>5</sup>	Internal temperature [°C] <sup>7</sup>
Data 1	9	2	FLOAT32 <sup>5</sup>	External temperature 1 [°C]
Data 2	11	2	FLOAT32 <sup>5</sup>	External temperature 2 [°C] (*)
Data 3	13	2	FLOAT32 <sup>5</sup>	-
Data 4	15	2	FLOAT32 <sup>5</sup>	-
FW Version Major   Minor	17	1	UINT16	Transmitter Firmware Version <sup>9</sup>
FW Version Revision	18	1	UINT16	Transmitter Firmware Version <sup>9</sup>
HW Version Major   Minor	19	1	UINT16	Transmitter Hardware Version <sup>10</sup>

(\*) Only available on TWP-2UT



## COILS REGISTERS - PLUS WIRELESS SOLUTIONS

## TWP4AI

DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 16+x	DATA
Coil 0	0	Transmitter Remote control output controlled through Gateway
Coil 1	1	State of External Power Activation output to enable power-on of external devices
Coil 2	2	State of Trigger Input
Coil 3	3	-
Coil 4	4	-
Coil 5	5	-
Coil 6	6	-
Coil 7	7	-
Coil 8	8	-
Coil 9	9	-
Coil 10	10	-
Coil 11	11	-
Coil 12	12	-
Coil 13	13	-
Coil 14	14	-
Coil 15	15	-

## TWP-1AI | TWP-2AI

DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 16+x	DATA
Coil 0	0	Transmitter Remote control output controlled through Gateway
Coil 1	1	-
Coil 2	2	-
Coil 3	3	-
Coil 4	4	-
Coil 5	5	-
Coil 6	6	-
Coil 7	7	-
Coil 8	8	-
Coil 9	9	-
Coil 10	10	-
Coil 11	11	-
Coil 12	12	-
Coil 13	13	-
Coil 14	14	-
Coil 15	15	-

## TWP-4AI/4DI/1UT

DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 16+x	DATA
Coil 0	0	Transmitter Remote control output controlled through Gateway

Coil 1	1	State of External Power Activation output to enable power-on of external devices
Coil 2	2	State of Trigger Input
Coil 3	3	Digital Input 1 state
Coil 4	4	Digital Input 2 state
Coil 5	5	Digital Input 3 state
Coil 6	6	Digital Input 4 state
Coil 7	7	-
Coil 8	8	-
Coil 9	9	-
Coil 10	10	-
Coil 11	11	-
Coil 12	12	-
Coil 13	13	-
Coil 14	14	-
Coil 15	15	-

TWP-1DI | TWP-2DI

DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 16+x	DATA
Coil 0	0	Transmitter Remote control output controlled through Gateway
Coil 1	1	Reset Pulse Counter 1
Coil 2	2	Reset Pulse Counter 2
Coil 3	3	Digital Input 1 state
Coil 4	4	Digital Input 2 state
Coil 5	5	-
Coil 6	6	-
Coil 7	7	-
Coil 8	8	-
Coil 9	9	-
Coil 10	10	-
Coil 11	11	-
Coil 12	12	-
Coil 13	13	-
Coil 14	14	-
Coil 15	15	-

TWP-1UT | TWP-2UT

DESCRIPTION	ADDRESS (Transmitter Modbus Index-1) x 16+x	DATA
Coil 0	0	Transmitter Remote control output controlled through Gateway
Coil 1	1	-
Coil 2	2	-
Coil 3	3	-
Coil 4	4	-
Coil 5	5	-
Coil 6	6	-

Coil 7	7	-
Coil 8	8	-
Coil 9	9	-
Coil 10	10	-
Coil 11	11	-
Coil 12	12	-
Coil 13	13	-
Coil 14	14	-
Coil 15	15	-

<sup>1</sup> Range depends on the RF propagation environment by performing a Site Survey.

<sup>2</sup> According to the radio channel selection

<sup>3</sup> In some countries, the frequency band admitted is not so extended as the default range.

<sup>4</sup> The radio frequencies admitted in Australia are available from channel 26 to channel 50.

<sup>5</sup> The data types UNIT32 and FLOAT32 have the Mid-Little Endian (CDAB) format.

<sup>6</sup> Each transmitter model is codified with a unique ID number. Consult specified mapping tables for every transmitter model.

<sup>7</sup> Transmitter internal temperature in degrees Celsius.

<sup>8</sup> Current in  $\mu\text{A}$ ; Voltage in mV.

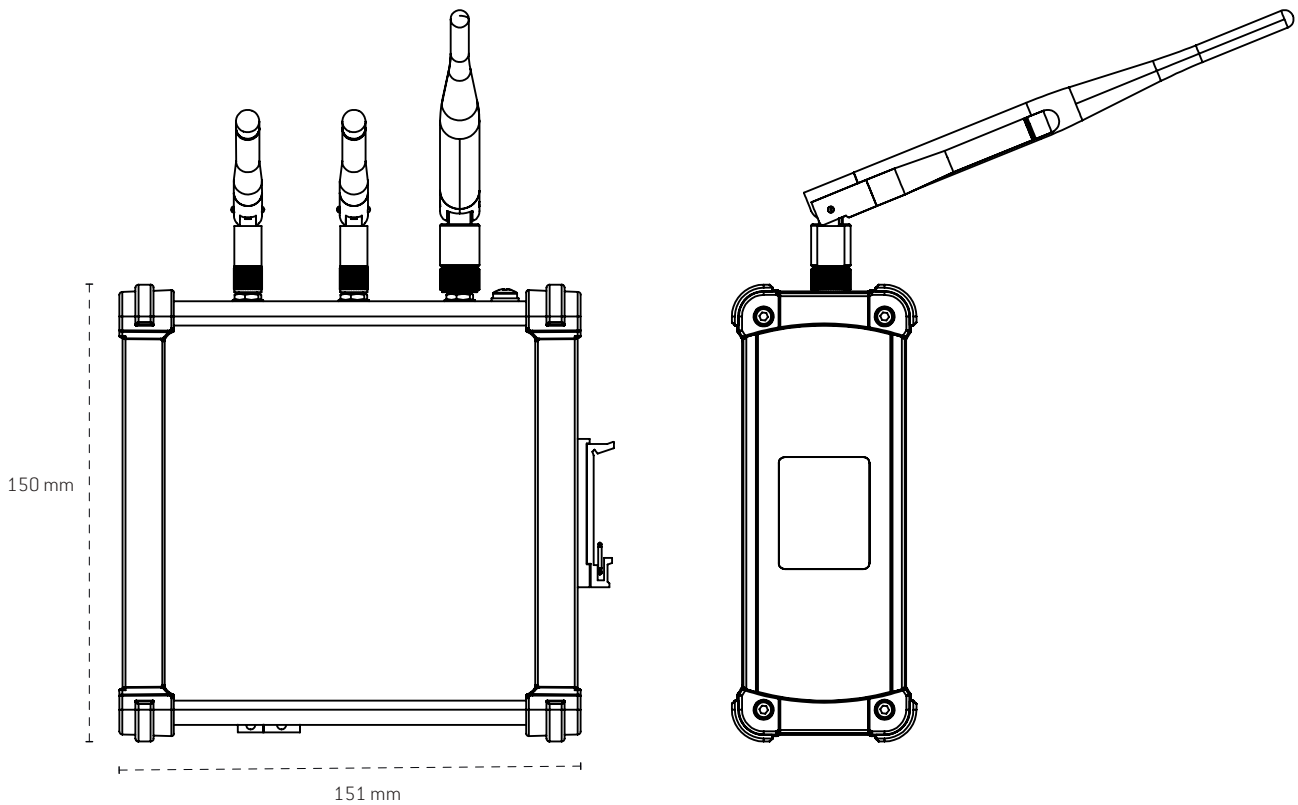
<sup>9</sup> Firmware version: Major.Minor.Revision = 8 MSB.8 LSB.8 LSB

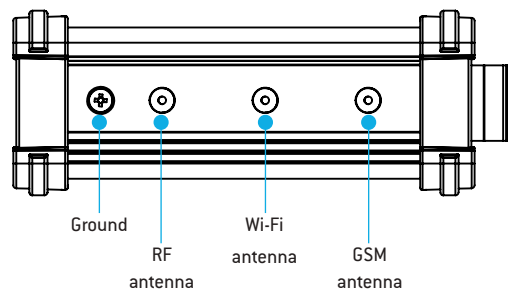
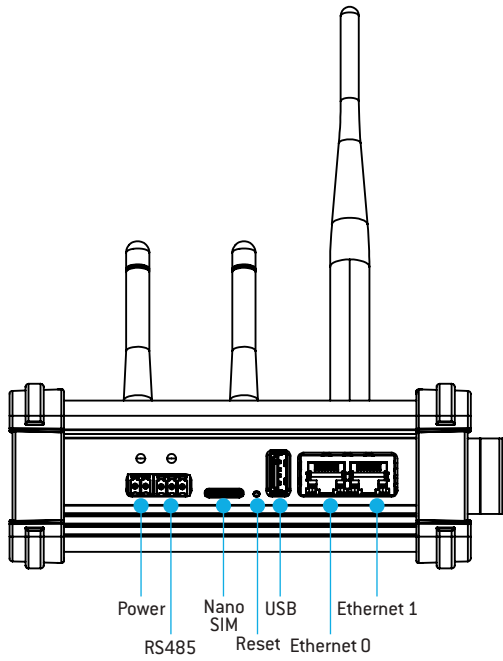
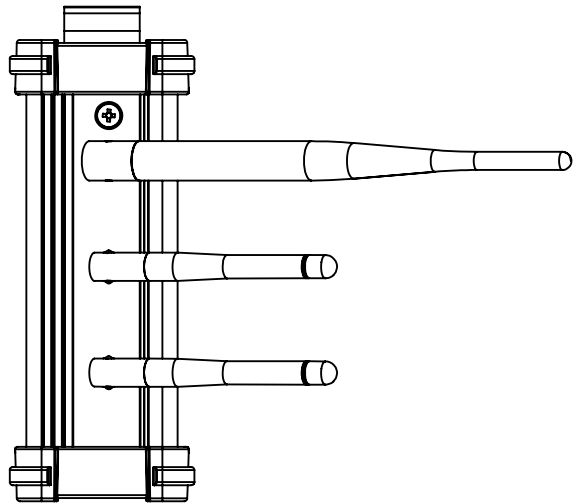
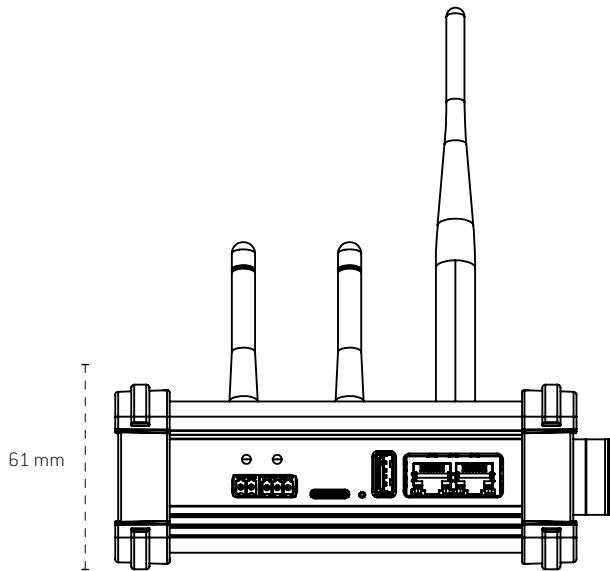
<sup>10</sup> Hardware version: Major.Minor = 8 MSB.8 LSB

## TECHNICAL DRAWINGS

### DIMENSIONAL DRAWINGS, INTERFACE DESIGN

### POWER SUPPLY AND COMMUNICATIONS CONNECTOR

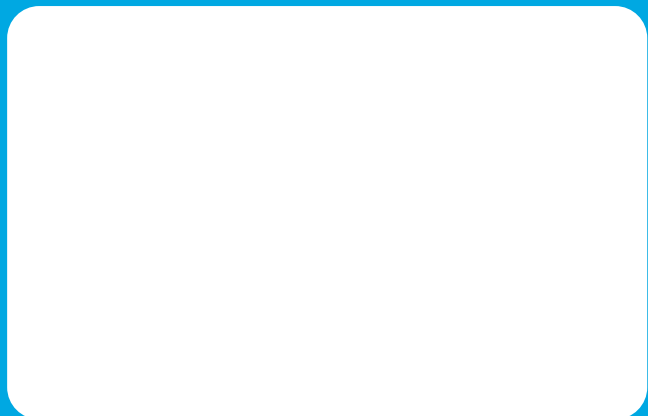




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