WIRELESS SENSORS TECHNOLOGY

PRODUCT CATALOGUE

2023 / 2024

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Temperature and Humidity Probe

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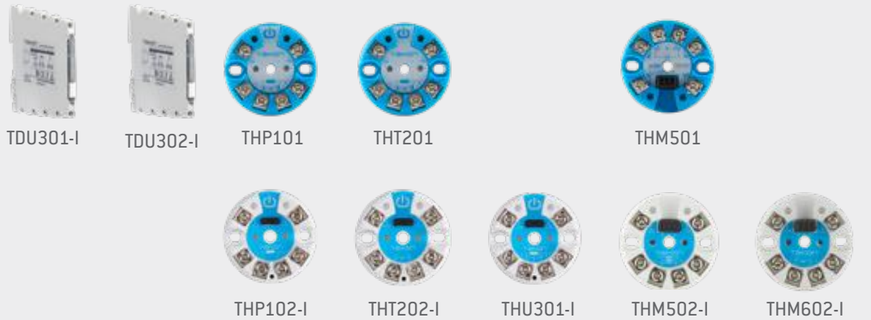

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TEKON IOT PLATFORM

ABOUT TEKON ELECTRONICS

Tekon Electronics is a European brand based in Portugal, specialized in the development and manufacture of innovative wireless sensor technology. It is a business unit of Bresimar Automação, S.A., a company with more than 40 years of experience in automation, industrial control solutions, and engineering.

Bresimar Automação began its activity in 1982 focusing on equipment distribution and systems for industrial automation. Throughout the years, Bresimar Automação leveraged the knowledge by providing high-quality products and automation solutions, representing several valued brands. Specialized teams and dedicated professionals provide services in several fields of industrial automation and engineering projects.

Tekon Electronics develops and manufactures wireless solutions for measurement and monitoring applications, focusing on trending topics such as the Internet of Things and Industry 4.0. A skilled R&D team and a planned manufacturing process are cornerstones of a full product development strategy.

PEOPLE

118
EMPLOYEES

35,1 YEARS
AVERAGE AGE

6,4 YEARS
AVERAGE EMPLOYEE TIME

75%
HIGHER EDUCATION

90%
SATISFACTION RATE

TOP 5
EXCELLENCE INDEX 2021

TOP 50
BEST PORTUGUESE
COMPANIES TO WORK FOR 2021

CERTIFICATIONS

SERVICES AND PRODUCTS

HOW TEKON ELECTRONICS **CAN HELP YOUR BUSINESS**

COMMERCIAL SUPPORT

We provide sales support with reduced response time

TECHNICAL SUPPORT

Permanent technical assistance, performed by skilled professionals

R&D OEM

We develop solutions tailored to your needs

MKT SUPPORT

Access to the Partner Portal with all contents available and support for Marketing activities

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UNIVERSAL GATEWAY

With the progress of technology and need for remote automation and monitoring of industrial processes, the use of industrial gateways and connectivity between equipment has become increasingly important. These devices allow communication between different equipment, systems, and automation devices, providing greater efficiency and agility in decision-making.

In addition, industrial gateways provide greater security and reliability in the communication of sensitive data and information, which are vital to the proper functioning of an industry. Connectivity between equipment also allows for the integration of systems from different vendors, optimizing process control and resource management.

uGateway

Smart Industrial IoT Gateway

UNIVERSAL GATEWAY

IIoT MADE SIMPLE!

KEY FEATURES

Wi-Fi and 3G/4G (optional)

Data integration via MQTT/REST

Modbus RTU and Modbus TCP/IP

Cloud connectivity for third-party devices

Local datalogging with data visualization and exportation

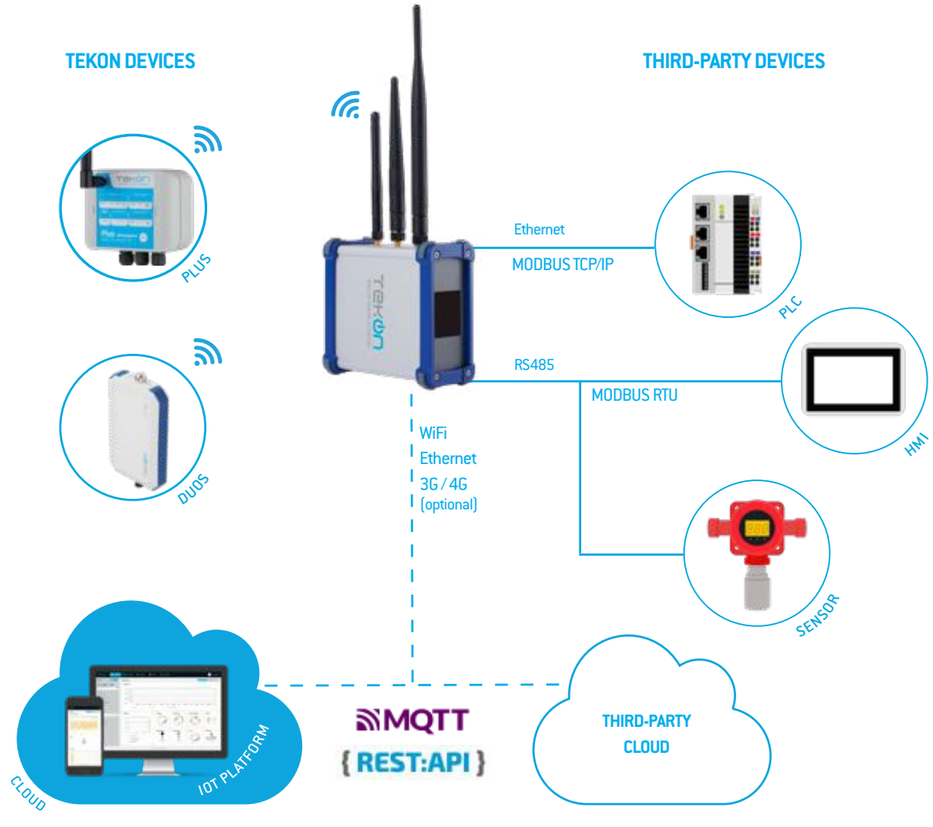
Universal Gateway connects sensors and other devices to the cloud. Allows users to view applications and devices status in an IoT platform to get real-time insights and notifications. Accelerate your business digitalization and quick access to data without complexity and high technical expertise. The right solution to speed up industrial iot applications.

VERSION REFERENCE			
868 MHz	TK-UGW	PA222410100
	TK-UGW-GSM	PA222410200
915 MHz	TK-UGW	PA222410101
	TK-UGW-GSM	PA222410201

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Number of channels	16	50
	Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Transmission power	25 to 27 dBm	8 to 27 dBm
	Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)

COMMUNICATION	Wireless	3G/4G, Wi-Fi
	Ethernet	100/1000 Mbits
	Protocols	Modbus RTU, Modbus TCP/IP, MQTT, REST
HARDWARE	Processor	Arm Quad Core Cortex-A72 64-bit SoC
	I/Os	RS485, Ethernet, USB, Power Supply
	Memory	8 GB
	Display	128 x 160 color pixels
	Power supply	12 to 32 V DC



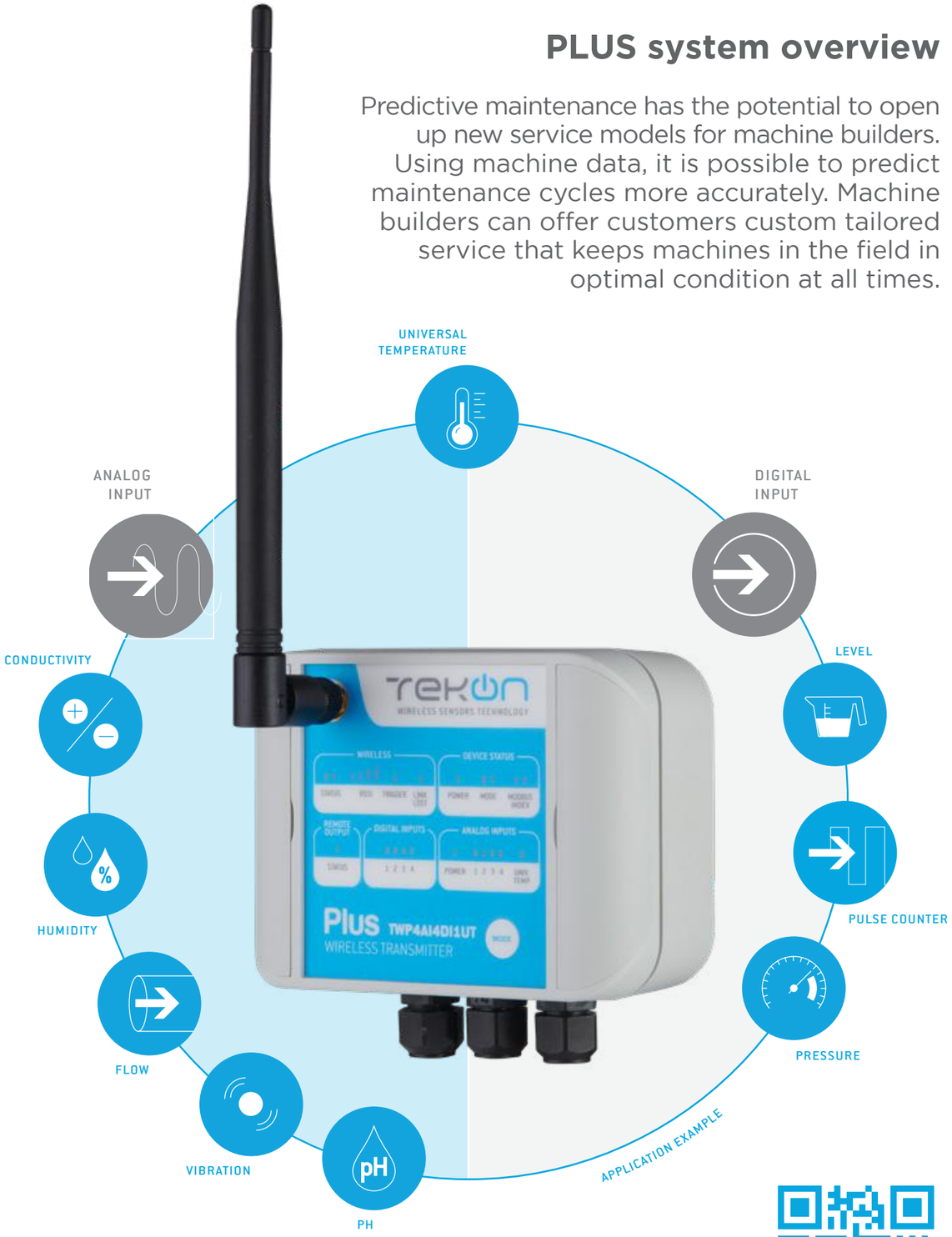
SMART TRANSMITTERS

Special features include extremely easy assignment of inputs and outputs. Tekon's Wireless Smart Transmitters are the ideal choice for reliable use in industrial environments, collecting data from multiple sensors and multiple variables. With a comprehensive range, it merges sensors and devices that transmit real-time data to the cloud, transforming monitoring and control of multiple parameters and locations, an easy task.

The key to Industry 4.0 is not just collecting data, but taking this abundance of data and converting it into useful and understandable information that can be used to control the process and business properly.

PLUS system overview

Predictive maintenance has the potential to open up new service models for machine builders. Using machine data, it is possible to predict maintenance cycles more accurately. Machine builders can offer customers custom tailored service that keeps machines in the field in optimal condition at all times.



Know more about PLUS smart transmitters system.

Nowadays, the term “Industrial Internet of Things” (IIoT) has become progressively more widespread in the context of industry as digitalization has become a business priority for many organizations. Industrial Internet of Things, also known as the Industrial Internet, brings together brilliant machines, advanced analytics, and people at work. It’s the network of a plethora of industrial devices connected by multiple communication technologies that results in systems that can monitor, collect, exchange, analyze, and deliver valuable new data-based insights like never before. These insights can foster to drive smarter, faster business decisions for industrial organizations. IIoT is shifting the industry, changing the way that industrial companies operate their daily basis. Whether allowing analytics to prevent non-conformities in production infrastructure, providing real-time data to unfold additional capacity in a factory, or accelerating new product development by powering the product design cycle, IIoT is helping to achieve unprecedented levels of efficiency, productivity, and performance leading companies to produce ground-breaking products, quickly available due to optimized production process.

Application cases

Temperature monitoring in transport cars at a scientific station in Antarctica

Transportation of supplies and scientific material for research stations located in Antarctica are carried out under negative temperatures. Even if some of the transport sections allow temperature control, there is a need to centralize temperature monitoring to ensure the integrity of all assets. PLUS wireless monitoring solutions with temperature input have been applied in several transport sectors.

Biodegadrable waste monitoring

Inside of a waste management facility, the process of composting biodegradable elements must be constantly monitored, in order to control the ideal stage of raw materials and accelerate the turnover of resources. The development of a wireless monitoring system, composed by a PLUS transmitter, powered by batteries, together with the Tekon Electronics cloud solution, Tekon IoT Platform, certified the process of placing probes and real-time monitoring of all phases.

Monitoring temperature from lava cooling process

PLUS product family monitored the cooling process of lava expelled from Cumbe Vieja Volcano in La Palma Island. Valuable insights were provided to geologists and aiding authorities through the use of the PLUS wireless system and Tekon IoT Platform, since there was a need to monitor temperature in multiple places, as well as scientific interest in the collection and analysis of data, to help understanding these natural phenomena.

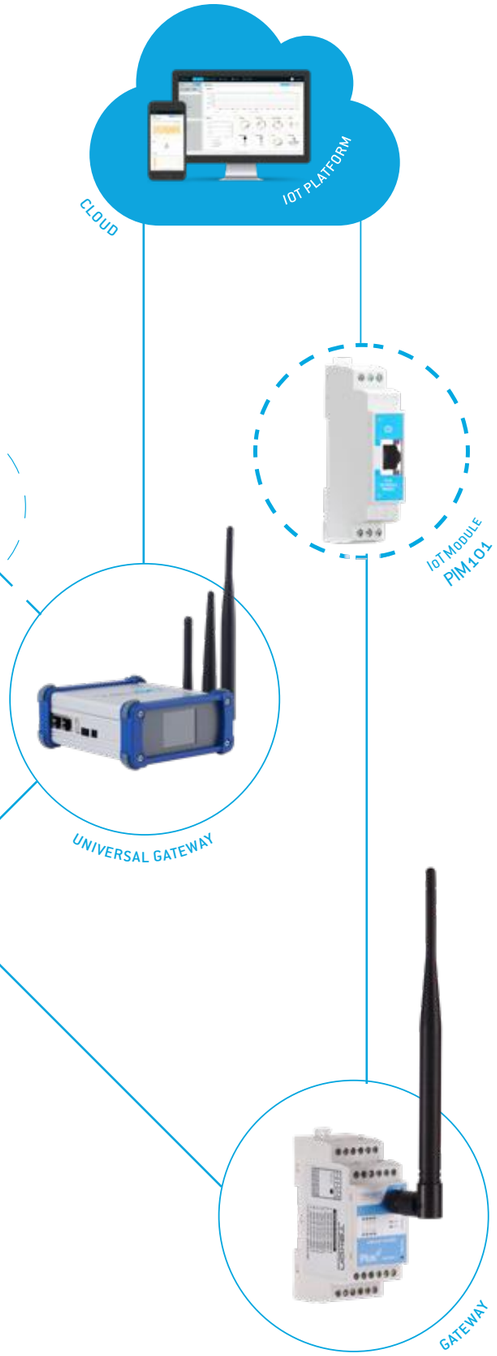
System overview

Machine condition monitoring drives the product quality, improves OEE and prevents downtimes.

Wireless solutions can be easily adapted to work in different environments.

Production lines can provide data with added value for the optimization of maintenance and production indicators.

Many industrial sectors have long used data from monitoring systems to help direct their strategy to maximize profits. Enabling the connectivity with cloud-based solutions, has become a priority to the companies, in order to streamline the access to the condition monitoring systems of their equipment. The multiplicity of secure protocols and communication architectures are making the use of cloud-based solutions essential.



PLUS

Smart Transmitters

TWP-1AI/TWP-2AI

WIRELESS TRANSMITTERS

TWP-1AI TWP-2AI

KEY FEATURES

1 or 2 configurable analog input

1 remote switch output

Dual operating mode

Transmitter or transmitter and repeater

Configurable communication period

Up to 4 Km communication distance (LoS)

PLUS TWP-1AI Wireless Transmitter was designed to monitor 4..20 mA / 0..10V signals from sensors with the same analog output span. Variables like conductivity, flow, level, vibration, humidity, pressure, and temperature can be clustered in a single transmitter. When embedded in a PLUS devices network, it can work as transmitter and repeater simultaneously, a feature provided by the dual operational mode.

VERSION REFERENCE

TWP-1AI	868 MHz	PA202320310
	915 MHz	PA202320320
TWP-2AI	868 MHz	PA202320410
	915 MHz	PA202320420

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Number of channels	16	50
	Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Transmission power	25 to 27 dBm	8 to 27 dBm
	Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)

WIRELESS NETWORK	Maximum devices	55
	Maximum hops	13
	Communication period	1 second to 12 hours (configurable)

		VOLTAGE	CURRENT
ANALOG INPUT	Range	0 to 12V DC	0 to 24mA
	Resolution	0.38mV (15bit)	0.96uA (15bit)
	Accuracy	<5mV (<0.05% FS)	<100uA (<0.5% FS)

SUPPLY VOLTAGE	Range	5 to 24V DC
	Maximum current	500mA DC @ 5V DC / 100mA DC @ 24V DC

Operating temperature	-30 to 80ºC

ACCESSORIES

	**PLUS INTERNAL RECHARGEABLE BATTERIES KIT** Battery pack with rechargeable batteries directly connected to a solar panel. Installed inside PLUS transmitters with 18650 type batteries.
	**PLUS INTERNAL PRIMARY BATTERIES KIT** Battery pack for PLUS wireless transmitters. Installed inside PLUS transmitters with AA type batteries.
	**SOLAR PANEL 1W** Solar panel for rechargeable battery kit and power box.
	**PLUS PRIMARY BATTERIES POWER BOX** External battery pack for PLUS transmitters without internal battery case.
	**PLUS RECHARGEABLE BATTERIES POWER BOX** External battery pack with rechargeable batteries for PLUS transmitters without internal battery case.

PLUS

Smart Transmitters

TWP-1DI/TWP-2DI

WIRELESS TRANSMITTERS

TWP-1DI TWP-2DI

KEY FEATURES

1 or 2 configurable digital inputs

1 remote switch output

Absolute pulse counter

Dual operating mode
Transmitter or transmitter and repeater

Configurable communication period

Up to 4 Km communication distance (LoS)

PLUS TWP-1DI is a wireless transmitter with one digital input designed to monitor digital signals and pulses, working as a pulse counter, providing a secure communication, without cable requirements of a complex wired solution. When embedded in a PLUS devices network, it can work as transmitter and repeater simultaneously, a feature provided by the dual operational mode.

VERSION REFERENCE

TWP-1DI	868 MHz	PA202320510
	915 MHz	PA202320520
TWP-2DI	868 MHz	PA202320610
	915 MHz	PA202320620

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Number of channels	16	50
	Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Transmit power	25 to 27 dBm	8 to 27 dBm
	Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)

DIGITAL INPUTS	Range	0 to 24V DC
	On detection level	3,0 V
	Off detection level	2,5 V
	Input current	10 mA
	Galvanic isolation	Yes
	Activation detection	Falling Edge / Rising Edge / Both

PULSE COUNTER	Type	PNP or NPN
	On detection level	± 100 mV
	Frequency range	10 kHz
	Minimum pulse width	15 µs
	Absolute counter	

WIRELESS NETWORK	Maximum devices	55
	Maximum hops	13
	Communication period	1 second to 12 hours (configurable)

SUPPLY VOLTAGE	Range	5 to 24V DC
	Maximum current	500mA DC @ 5V DC / 100mA DC @ 24V DC

Operating temperature	-30 to 80ºC

ACCESSORIES

	**PLUS INTERNAL RECHARGEABLE BATTERIES KIT** Battery pack with rechargeable batteries directly connected to a solar panel. Installed inside PLUS transmitters with 18650 type batteries.
	**PLUS INTERNAL PRIMARY BATTERIES KIT** Battery pack for PLUS wireless transmitters. Installed inside PLUS transmitters with AA type batteries.
	**SOLAR PANEL 1W** Solar panel for rechargeable battery kit and power box.
	**PLUS PRIMARY BATTERIES POWER BOX** External battery pack for PLUS transmitters without internal battery case.
	**PLUS RECHARGEABLE BATTERIES POWER BOX** External battery pack with rechargeable batteries for PLUS transmitters without internal battery case.

PLUS

Smart Transmitters

TWP-1UT/TWP-2UT

WIRELESS TRANSMITTERS

TWP-1UT TWP-2UT

KEY FEATURES

1 or 2 universal temperature input

1 remote switch output

Dual operating mode

Transmitter or transmitter and repeater

Configurable communication period

Up to 4 Km communication distance (LoS)

PLUS TWP-1UT and PLUS TWP-2UT are wireless transmitters with one and temperature inputs, fully dedicated to collect and transmit temperatures from PT100 and thermocouples sensors. When embedded in a PLUS devices network, it can work as transmitters and repeaters simultaneously, a feature provided by the dual operational mode.

VERSION REFERENCE			BUILT-IN ANTENNA
TWP-1UT	868 MHz	PA202320110	PA202320111
	915 MHz	PA202320120	PA202320121
TWP-2UT	868 MHz	PA202320210	PA202320211
	915 MHz	PA202320220	PA202320221

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Number of channels	16	50
	Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Transmission power	25 to 27 dBm	8 to 27 dBm
	Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)

		RTD	THERMOCOUPLE
TEMPERATURE MEASUREMENT	Sensor type	PT100 (2, 3 and 4 wires)	C, J, K, N, R, S and T
	Short-circuit monitoring	Always active (cannot be disable)	Not available
	Open-circuit monitoring	Always active (cannot be disable)	Always active (cannot be disable)

WIRELESS NETWORK	Maximum devices	55
	Maximum hops	13
	Communication period	1 second to 12 hours (configurable)

SUPPLY VOLTAGE	Range	5 to 24V DC
	Maximum current	500mA DC @ 5V DC / 100mA DC @ 24V DC

Operating temperature	-30 to 80ºC

Versions with built-in antenna available!

PLUS TWP-1UT and PLUS TWP-2UT transmitters were developed with built-in antennas to simplify installation and commissioning of remote and outdoor applications like compost temperature monitoring.

ACCESSORIES

	**PLUS INTERNAL RECHARGEABLE BATTERIES KIT** Battery pack with rechargeable batteries directly connected to a solar panel. Installed inside PLUS transmitters with 18650 type batteries.
	**PLUS INTERNAL PRIMARY BATTERIES KIT** Battery pack for PLUS wireless transmitters. Installed inside PLUS transmitters with AA type batteries.
	**SOLAR PANEL 1W** Solar panel for rechargeable battery kit and power box.
	**PLUS PRIMARY BATTERIES POWER BOX** External battery pack for PLUS transmitters without internal battery case.
	**PLUS RECHARGEABLE BATTERIES POWER BOX** External battery pack with rechargeable batteries for PLUS transmitters without internal battery case.

PLUS

Smart Transmitters

TWP-4AI4DI1UT

WIRELESS TRANSMITTER

KEY FEATURES

4 configurable analog inputs

4 configurable digital inputs

1 universal temperature input

3 configurable digital outputs

Up to 4 Km communication distance (LoS)

PLUS TWP-4AI4DI1UT Wireless Transmitter was designed to monitor 4..20 mA / 0..10V signals, digital inputs, and universal temperature inputs, providing a secure communication, without cable requirements of a complex wired solution.

VERSION REFERENCE

868 MHz	PA164510610
915 MHz	PA164510620

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS (2.5mi)	Up to 4 Km LoS (2.5mi)
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Number of channels	16	50
	Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Transmission power	25 to 27 dBm	8 to 27 dBm
	Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)

		VOLTAGE	CURRENT
ANALOG INPUT	Range	0 to 12V DC	0 to 24mA
	Resolution	0.38mV (15bit)	0.96uA (15bit)
	Accuracy	<5mV (<0.05% FS)	<100uA (<0.5% FS)

		INPUT TRIGGER	4 DIGITAL INPUTS
DIGITAL INPUTS	Range	0 to 24 V DC	
	ON detection level	> 4.5V	> 12V
	OFF detection level	< 2.5V	< 9V
	Input current	4.5mA @ 12V DC /6mA @ 24V DC	2.47mA for Type 3
	Galvanic Isolation	No	Yes
	Activation detection	Raising Edge/ Falling Edge/ Both	

DIGITAL OUTPUTS	Communication loss
	Remote output
	External power supply

SUPPLY VOLTAGE	Range	5 to 24V DC ± 5% / USB
	Maximum current	500mA DC @ 5V DC / 100mA DC @ 24V DC

WIRELESS NETWORK	Maximum devices	55
	Maximum hops	13
	Communication period	1 second to 12 hours (configurable)

Operating temperature	-30 to 80ºC

ACCESSORIES

	**SOLAR PANEL 1W** Solar panel for rechargeable battery kit and power box.
	**PLUS PRIMARY BATTERIES POWER BOX** External battery pack for PLUS transmitters without internal battery case.
	**PLUS RECHARGEABLE BATTERIES POWER BOX** External battery pack with rechargeable batteries for PLUS transmitters without internal battery case.

PLUS

Smart Transmitters

TWP4AI

WIRELESS TRANSMITTER

KEY FEATURES

4 configurable analog inputs

3 configurable digital outputs

Configurable communication period

Multi-hop mesh network

Up to 4 Km communication distance (LoS)

PLUS TWP4AI Wireless Transmitter was designed to monitor 4..20 mA / 0..10V signals from sensors with the same analog output span. Variables like conductivity, flow, level, vibration, humidity, pressure and temperature can be clustered in a single transmitter.

VERSION REFERENCE	
868 MHz	PA164510110
915 MHz	PA164510120

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Number of channels	16	50
	Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Transmission power	25 to 27 dBm	8 to 27 dBm
	Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)

WIRELESS NETWORK	Maximum devices	55
	Maximum hops	13
	Communication period	1 second to 12 hours (configurable)

		VOLTAGE	CURRENT
ANALOG INPUT	Range	0 to 12V DC	0 to 24mA
	Resolution	0.38mV (15bit)	0.96uA (15bit)
	Accuracy	<5mV (<0.05% FS)	<100uA (<0.5% FS)

DIGITAL INPUT - TRIGGER	Range	0V DC to Supply Voltage
	Type	Sinking
	Activation detection	Falling Edge / Rising Edge / Both

DIGITAL OUTPUTS	Communication loss
	Remote output
	External power supply

SUPPLY VOLTAGE	Range	5 to 24V DC ± 5% / USB
	Maximum current	500mA DC @ 5V DC / 100mA DC @ 24V DC

Operating temperature	-30 to 80ºC

ACCESSORIES

	**SOLAR PANEL 1W** Solar panel for rechargeable battery kit and power box.
	**PLUS PRIMARY BATTERIES POWER BOX** External battery pack for PLUS transmitters without internal battery case.
	**PLUS RECHARGEABLE BATTERIES POWER BOX** External battery pack with rechargeable batteries for PLUS transmitters without internal battery case.

PLUS

Smart Transmitters

TWPH-1UT

WIRELESS TRANSMITTER

KEY FEATURES

Universal Sensor Input (PT100, Thermocouples: C, J, K, N, R, S, T)

Up to 4km communication distance (LoS)

Dual operating mode: Transmitter or transmitter and repeater

Ultra low power mode

6 Status Leds

TWPH-1UT is a wireless transmitter fully dedicated to collect and transmit temperatures from PT100 and thermocouples sensors. When embedded in a PLUS devices network, it can work as transmitter and repeater simultaneously, a feature provided by the dual operational mode.

VERSION REFERENCE	
868 MHz	PA164510510
915 MHz	PA164510520

Connection Head sold separately

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Frequency band	868 to 869 MHz	902 a 928 MHz
	Number of channels	16	50
	Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Transmission power	25 to 27 dBm	8 to 27 dBm
	Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)

		RTD	TC
INPUT	Sensor type	PT100 (2,3 or 4 wire)	C, J, K, N, R, S, T
	Short-circuit monitoring	Always active (cannot be disabled)	Not available
	Open-circuit monitoring	Always active (cannot be disabled)	

WIRELESS NETWORK	Maximum devices	55
	Maximum hops	13
	Communication period	1 second to 12 hours (configurable)

SUPPLY VOLTAGE	Range	5 to 24V DC
	Accuracy	±50mV

	Operating temperature	-40 to 80ºC

ACCESSORIES

CONNECTION HEAD

Buz Connection Head for transmitters with battery holder

PLUS

Smart Transmitters

WGW420

WIRELESS GATEWAY

KEY FEATURES

Modbus RTU via RS-485 interface

8 analog outputs (4..20 mA current loop)

Scalable network up to 55 PLUS transmitters

Multiple networks with extra gateways and extra long range with several repeaters

Multi-hop Mesh Network with Self-Forming, Self-Healing and Self-Optimizing features

WGW420 gateway is equipped with 8 analog outputs configurable for several application scenarios such as integration of variable display systems with local displays, configuring analog charts, digital input dataloggers and 4..20mA signal replication. RS-485 port enables the connection to automation systems, using Modbus RTU protocol to communicate the data from the PLUS transmitters.

VERSION REFERENCE

868 MHz	PA164510210
915 MHz	PA164510220

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

RADIO SPECIFICATIONS	868MHz	915MHz
Range	Up to 4 Km LoS	Up to 4 Km LoS
Frequency band	868 to 869 MHz	902 to 928 MHz
Number of channels	16	50
Reception sensitivity	-97 to -110 dBm	-97 to -110 dBm
Transmission power	25 to 27 dBm	8 to 27 dBm
Transmission rate	19 to 76.8kbit/s	19 to 76,8kbit/s
Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)
Modulation	GFSK	GFSK
Antenna	Articulated dipole antenna	Articulated dipole antenna
Antenna gain	SMA	SMA
Antenna impedance	50Ω	50Ω

WIRELESS NETWORK	
Maximum devices	55
Maximum hops	13

RS-485 COMMUNICATION	
Protocol	MODBUS RTU (Slave)
Galvanic isolation	1kV AC

ANALOG OUTPUT	
Output range	4 to 20mA
Out of range indication	[3.2;4.0]mA and [20.0;20.2]mA
Error indication	3.1mA and 20.4mA

Power supply	12 to 24V DC ± 5%
Operating temperature	0 to 80ºC

RELATED PRODUCT

PIM101 IOT MODULE
Cloud connectivity for PLUS wireless system to Tekon IoT Platform or third-party applications.

ACCESSORIES

RS485 TO USB CONVERTER CABLE
Cable to connect WGW420 Gateway to an USB port

PLUS

Smart Transmitters

PIM 101

IOT CONNECTIVITY MODULE

KEY FEATURES

Modbus TCP/IP communication

Ethernet TCP/IP communication

Native integration of PLUS product family with Tekon IoT Platform

Integration with third-party applications through REST API

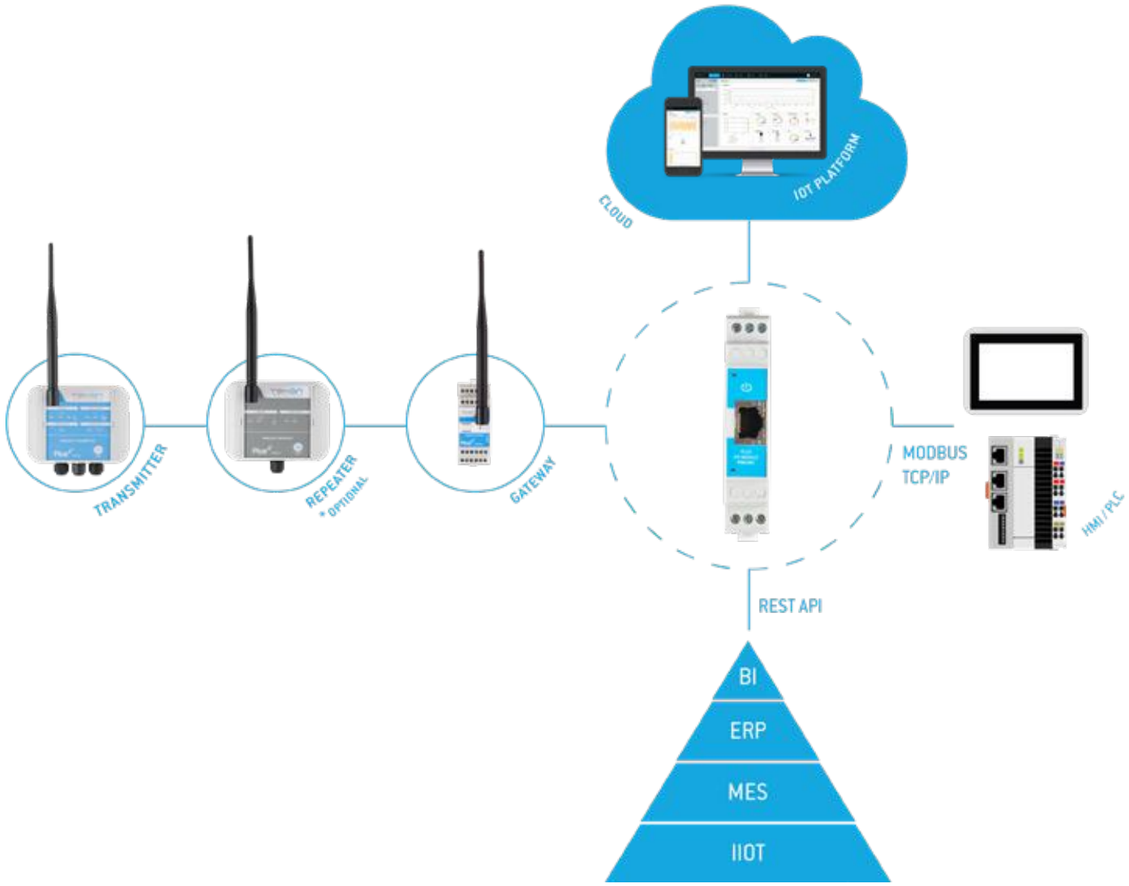
Works exclusively with WGW420 PLUS Gateway

PIM101 IoT module adds IoT connectivity to all products in the PLUS family, necessary for a fast, simple, and transparent integration of the data of each sensor with the Tekon IoT Platform. Acting as middleware between WGW420 Gateway and Tekon IoT Platform, it provides all operating configurations as well as it sends and collects data, via Ethernet connection, from transmitters installed in the field. In addition to IoT connectivity, it adds the Modbus TCP/IP interface, useful for industrial integrations with PLC, HMI, or local networks. Through PIM101, the data from the PLUS wireless family can be integrated with other applications via REST API.

VERSION REFERENCE	PA201620110

TECHNICAL SPECIFICATIONS Data applicable at 23°C

RS485 COMMUNICATION	Protocol	Modbus RTU (master)
	Baud rate	4,8 to 115,2 kbit/s (configurable)
	Parity	none/even/odd
	Stop bits	1 (even/odd) or 2 (none)
	Addresses	1 to 247
ETHERNET COMMUNICATION	Interface	Ethernet port
	Speed	100 Mbps
	IP address	Dynamic or Static
	Protocol	Modbus TCP/IP (server/slave) / HTTPS / REST API
	Modbus TCP/IP port	1502
	Proxy	Configurable
	Integration with Tekon IoT Platform	
	REST API	
POWER SUPPLY	Range	12 to 24V DC
	Maximum current	100mA DC @ 24V DC / 200mA DC @ 12V DC
	Operating temperature	0 to 80°C



PLUS

Smart Transmitters

WRP001

WIRELESS REPEATER

KEY FEATURES

Network redundancy and robustness

Up to 12 repeaters in series for extra-long range

Up to 4 Km communication distance (LoS)

Multi-hop mesh network

Simple and intuitive USB configuration

PLUS devices network redundancy can be increased with multiple PLUS WRP001 repeaters, benefiting from the mesh network topology, providing the best wireless signal and ensuring the reliability on data transmission.

VERSION REFERENCE

868 MHz	PA164510310
915 MHz	PA164510320

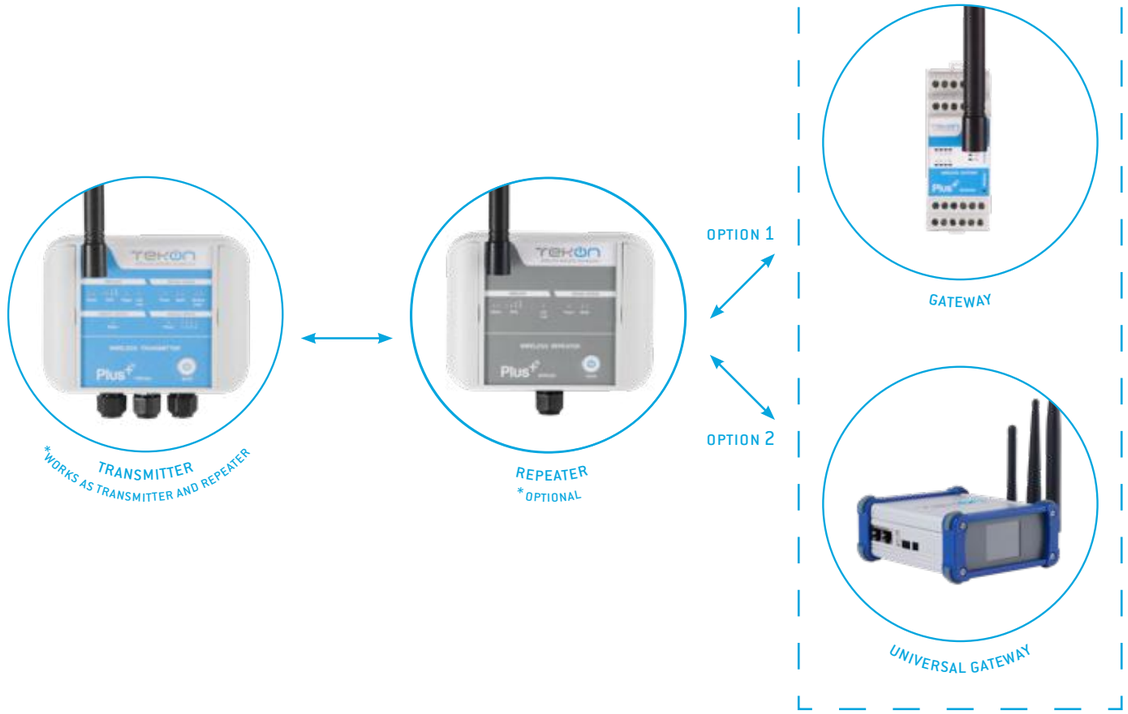
TECHNICAL SPECIFICATIONS Data applicable at 23ºC

RADIO SPECIFICATIONS

	868MHz	915MHz
Range	4 Km LoS (2.5mi)	4 Km LoS (2.5mi)
Frequency Band	868 to 869 MHz	902 a 928 MHz
Number of Channels	16	50
Reception Sensitivity	-99 to -104 dBm	-97 to -110 dBm
Transmit Power	0 to 27 dBm	8 to 27 dBm
Transmission Rate	19 to 76.8kbit/s	19 to 76.8kbit/s
Encryption method	AES 128 (Advanced Encryption Standard)	AES 128 (Advanced Encryption Standard)
Modulation	GFSK	GFSK
Antenna	Articulated dipole antenna	Articulated dipole antenna
Antenna impedance	50Ω	50Ω

Maximum Repeaters	12
Power Supply	5 to 24V DC ± 5%
Operating Temperature	-30 to 80ºC

NETWORK REDUNDANCY AND ROBUSTNESS



POWER SUPPLY

PA123791200		**PLUS INTERNAL PRIMARY BATTERIES KIT**[1] Battery pack for PLUS wireless transmitters. Installed inside PLUS transmitters with AA type batteries.
PA123791300		**PLUS INTERNAL RECHARGEABLE BATTERIES KIT**[1] Battery pack with rechargeable batteries directly connected to a solar panel. Installed inside PLUS transmitters with 18650 type batteries.
PA123791201		**PLUS PRIMARY BATTERIES POWER BOX**[2] External battery pack for PLUS transmitters without internal battery case.
PA123791301		**PLUS RECHARGEABLE BATTERIES POWER BOX**[2] External battery pack with rechargeable batteries for PLUS transmitters without internal battery case.
PA123791700		**PLUS MOUNTING BRACKET**[2] Stainless steel bracket for PLUS transmitters and repeater.
PA123791601		**SOLAR PANEL MOUNTING BRACKET** Mounting bracket to install solar panel.
PA123791600		**SOLAR PANEL 1W** Solar panel for rechargeable battery kit and power box.

[1] Only available for PLUS TWP-1AI, PLUS TWP-2AI, PLUS TWP-1DI, PLUS TWP-2DI, PLUS TWP-1UT and PLUS TWP-2UT transmitters.

[2] Available for all transmitters.

ACCESSORIES

PA123772100		**ANTENNA CABLE EXTENSION 2MT** Cable extension to connect PLUS transmitters with an antenna.
PA123790200		**BUZ CONNECTION HEAD FOR WIRELESS TRANSMITTERS** Metallic buz head to protect TWPH-1UT transmitters. Temperature probe not included.
PA123790400		**RS485 TO USB CONVERTER CABLE** Cable to connect WGW410 Gateway to an USB port.
PA123791400 PA123791401		**WALL MOUNT ANTENNA WITH 3M CABLE 868MHZ / 915MHZ** Set of antenna with 3 meter cable supported by a wall mount fixing base.
PA123792200		**ANTENNA BASE** Magnetic base for antenna with SMA(f) RG174/U cabel with SMA(m) connector
PA123791500		**POLE MOUNT DIRECTIONAL ANTENNA W/ 5M CABLE 868/915MHZ** Antenna for outdoor applications with 5 meter cable and fixing accessories.

STARTER KITS

Configure your PLUS starter kit to try our PLUS wireless solutions and kickstart your journey on the digitalization path.

1. Transmitters

Pick one transmitter from PLUS product family and a power supply option.

2. Gateway

PLUS WGW420 gateway will be automatically included in the starter kit.

3. IoT Module

If you would like to connect your PLUS starter kit to our Tekon IoT Platform for data analysis, choose our PIM101 IoT Module.

4. Tekon IoT Platform

If you choose PIM101 IoT Module you will have 1 month free-access to Tekon IoT Platform with tools for data analysis and visualization.

5. Accessories

Depending on your previous configuration, accessories will be automatically added.

For more configurations, please contact us.

QUEST FOR FACTORY FLOOR DIGITALIZATION

Digitalization is the first step towards Industry 4.0. If you want to be competitive, digitalization is mandatory, and the tools are available. Some questions may arise: Where to start? Is this affordable? Which type of technologies should be used? Having a feedback of your process it's easier than you may think. Collect, gather and analyse your application data is no longer a hard and costly task. Tekon Electronics provides solutions to build a digitalization process from sensor to cloud, where you can view your data, from anyplace, anywhere, anytime.

Our IoT Platform will be the interface to your processes regardless of the scale or relevance.

MAIN GOALS OF DIGITALIZATION

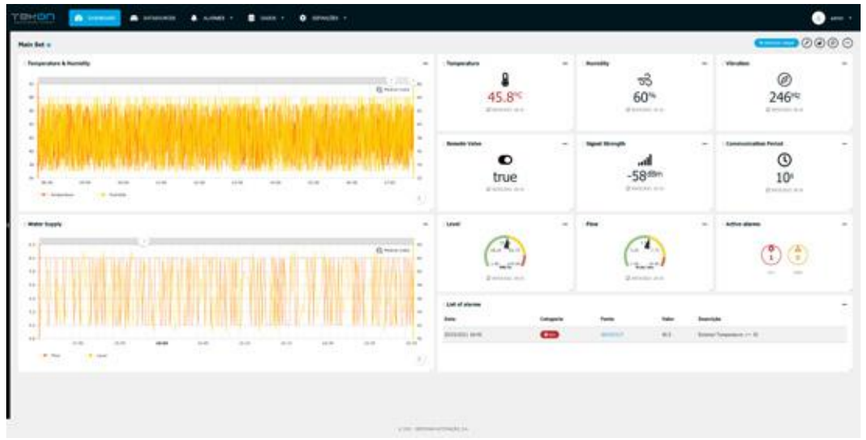
Operational
- Collect data from running machines and systems
- View and analyze data in real-time
- Real-time notifications and alarms

Economic
- Increase OEE (Overall Equipment Effectiveness)
- Reduce waste and non-conforming products
- Predict maintenance and reduce downtime

Insights provided by data

Organize data to get new insights that will help you make data driven decisions. Simplify data processing and adjust it to your application. Real-time monitoring provides real-time feedback that keeps you updated about operation status.

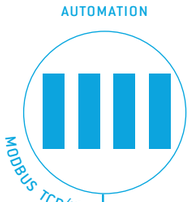
Discover more about Tekon IoT Platform on page 78.



TEMPERATURE
RTD AND THERMOCOUPLES

ANALOG SIGNALS
4..20 MA
0..10 V

DIGITAL SIGNALS
DISCRETE INPUT
NPN/PNP



WIRELESS SERIAL MODULES

Transformation of physical connections to wireless communication systems has driven the evolution of communications between control and monitoring processes in different industrial contexts.

Transparent communication ensures the data transmission of several widely used industrial protocols, such as Modbus. The versatility of the wireless serial module makes it possible to implement networks with multiple structures, ranging from point-to-point communication to complex mesh networks.

WSM

Wireless Serial Module

WSM101

WIRELESS MODBUS
MADE POSSIBLE

KEY FEATURES

Up to 256 devices in RS485 driver

Operation as gateway or repeater

9 status LED

RS485 interface

Configurable baud rate

Transparent data transmission

WSM101 Wireless Serial Module is a wireless solution to ensure the reformulation of connections in applications with communication through serial protocols. Transform wired serial communications in wireless serial communications, eliminating long wires across your plant. Reduce installation and maintenance costs, and ease serial data transmission on point-to-point or master-to-slave architectures.

Modbus

VERSION REFERENCE	
868 MHz	PA202310110
915 MHz	PA202310120

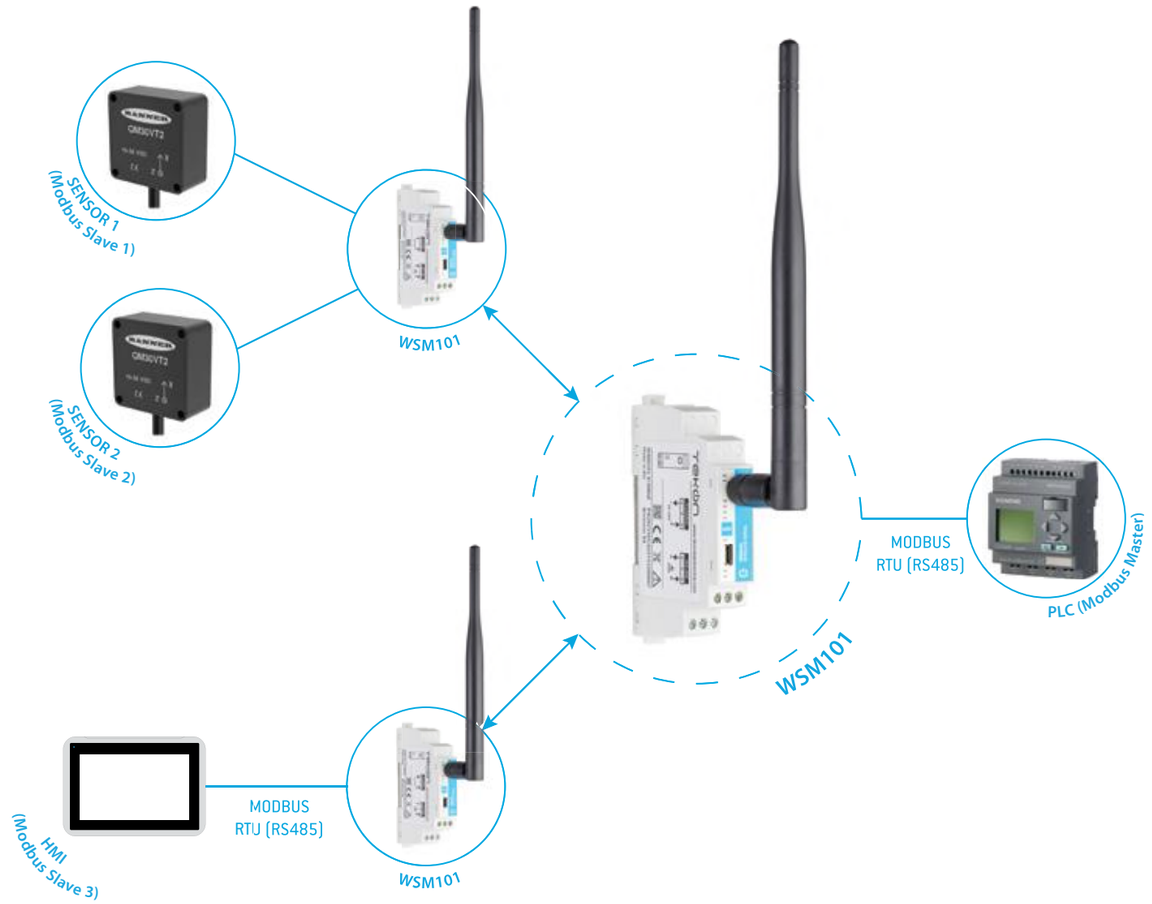
TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Transmit Power	25 to 27 dBm	27 dBm
	Receiver Sensitivity	-99 to -104 dBm	-99 to -104 dBm
	Frequency Band	868 to 869 MHz	902 a 928MHz
	Number of Channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	

SERIAL INTERFACE	Type of serial port	RS485
	Baudrate	4800, 9600, 14400, 19200, 38400, 57600, 115200
	Stop Bits	One, Two
	Parity	None, Even, Odd
	Driver RS485	1/8 unit load, up to 256 devices

SUPPLY VOLTAGE	Range	5 to 24V DC ± 5% USB
	Maximum current	500mA DC @ 5V DC / 100mA DC @ 24V DC

Operating Temperature	-20 to 80ºC
Relative humidity	≤ 95%, without condensation



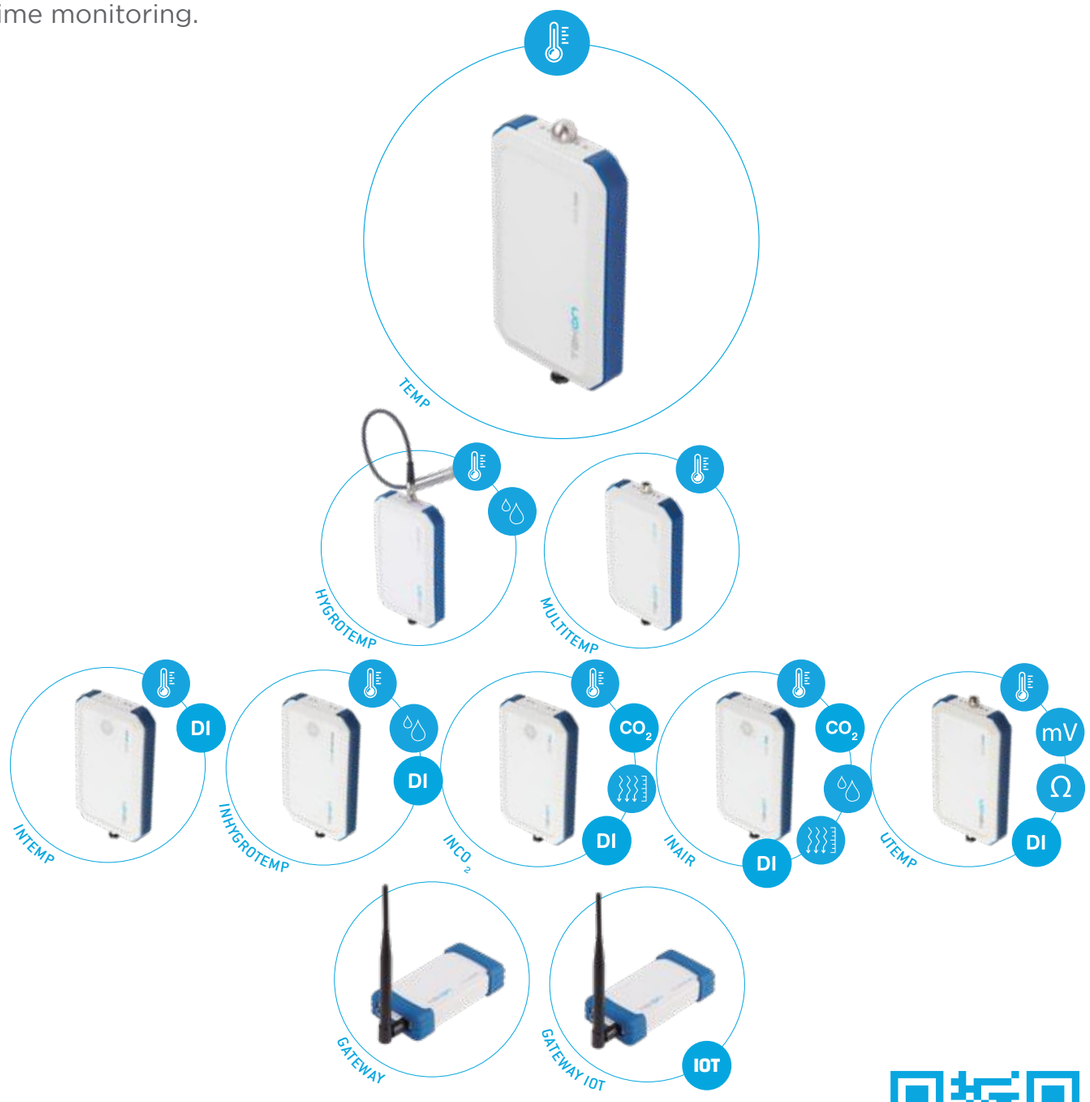
Digitalization is shifting towards the sensor in the era of Industry 4.0 process automation. Implementation of smart sensors that can be integrated anywhere in a complex network allows them to pass on the digital form of recorded physical quantities over the network, versus digitalizing analog signals transmitted to a controller.

Smart Sensors generate and receive data and information which goes beyond traditional switching signals or measured process parameters. Therefore they enable substantial increases in efficiency, more flexibility, and better planning security for predictive maintenance.

SMART SENSORS

System overview

The implementation of smart sensors has been a reliable IoT solution to promote the digitalization of operations, more quickly and promptly. Smart sensors offer essential features such as rapid deployment, secure connectivity and real-time monitoring.



Temperature · Humidity · CO_2 CO_2 · Barometric Pressure
DI Digital Input · mV Milivolts · Ω Ohms · IOT Internet of Things

Know more about DUOS smart sensors system.

Application cases

Temperature and Humidity Monitoring in Museums

Environmental conditions in museum spaces are largely responsible for promoting the acceleration of cultural assets deterioration. The opportunity to access data in real time offers a generic and up-to-date view of the conditions of the museum space and thus understand its environment, identifying temperature and relative humidity fluctuations and intensifying the rate of attention paid to the safety of the environmental conditions surrounding the collections.

Temperature monitoring in mineral insulated inconel storage

The vulnerability of elements related to the production of temperature probes with mineral insulated inconel, implies the use of storage equipment in a controlled environment, where temperature and humidity influence the final product.
Real-time monitoring of the storage environment, with alarms set for operational limit values, fosters a continuous process of observation and quality control.

Temperature monitoring in freezing and processed food storage

Food processing is characterized by several steps until reaching the final product. The cold chain starts in the production phase. In this application, it was essential to monitor the deep-freezing food process and the subsequent transition to storage equipment, which anticipates the availability of the final product, for the distribution chain.

Humidity and temperature in wine cellars

The level of humidity and temperature at which wines are kept have a significant effect on their longevity. Without ideal humidity, wine quality may be affected in a number of ways, since wine cork closures can only keep their elasticity after bottling if they're kept at a controlled humidity at all times and when humidity is higher than 75%, it will likely cause mold and degradation of the bottle labels. Also, if an optimal temperature cannot be maintained, bottles will keep expanding or contracting with the fluctuating temperature levels.

System overview

1 second to 12 hours communication period

Smart sensors are advanced devices with embedded resources such as diagnostics, and connectivity tools that transform traditional feedback signals into true digital insights. The ability to provide relevant, timely data regarding both products and conditions can be used to generate a more holistic, accurate perception of the operating environment.

Solutions with cloud connectivity boost the availability and security of information, effectively distributing it across management and analysis platforms. Products and services connected to this ecosystem strengthen the presence and performance of organizations, with renewed sights of the surrounding chains.

DUOS

Smart Sensors

TEMP

WIRELESS SENSOR

KEY FEATURES

-40 °C to 60 °C Temperature Range

Dual temperature probe

Internal and External probes

Up to 4 Km communication distance (LoS)

Low power and long battery life

Water resistant with IP67 protection

DUOS TEMP has a unique function - to record temperatures. The external probe records the ambient temperature and the internal probe enables to simulate the temperature of the product that is in the same physical space.

VERSION REFERENCE

BUILT-IN PROBE	868 MHz	BLACK HOUSING	PA160411710
		WHITE HOUSING	PA160411720
	915 MHz	BLACK HOUSING	PA160411730
		WHITE HOUSING	PA160411740
EXTERNAL PROBE	868 MHz	BLACK HOUSING	PA160410110
		WHITE HOUSING	PA160410120
	915 MHz	BLACK HOUSING	PA160410130
		WHITE HOUSING	PA160410140

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHZ	915MHZ
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	

			868MHZ	915MHZ
TEMPERATURE MEASUREMENT	Range	EXT -40 to 125ºC / INT	-40 to 60 ºC	
	Resolution	0.1 ºC		
	Accuracy	Typical: ± 0.25 ºC / Maximum: ± 0.5 ºC		
	Sensor type	I2C digital sensor		

SUPPLY VOLTAGE	3x 1,5V AA lithium/alkaline/Ni-MH batteries
	External power supply with 12 VDC ± 5%

OPERATING ENVIRONMENT	Temperature range: -40 ºC to 60 ºC

ACCESSORIES

	**DUOS DIGITAL TEMPERATURE PROBE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor
	**DUOS DIGITAL TEMPERATURE PROBE WITH 2M CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor
	**DUOS DIGITAL TEMPERATURE PROBE WITH 5M CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor
	**DUOS DIGITAL HIGH TEMPERATURE PROBE WITH 2M CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor
	**DUOS DIGITAL HIGH TEMPERATURE PROBE WITH 5M CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply

DUOS

Smart Sensors

HYGROTEMP

WIRELESS SENSOR

KEY FEATURES

0% to 100% Humidity Range

-40 °C to 60 °C Temperature Range

Dual Temperature and Humidity Probe

Up to 4 Km communication distance (LoS)

Low power and long battery life

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP67 protection

DUOS Hygrotemp is the right solution to monitor temperature and humidity. The external probe is designed to provide reliable temperature and humidity measurements, even when exposed to harsh, wet and polluted environments.

VERSION REFERENCE

868 MHz	BLACK HOUSING	PA164520110
	WHITE HOUSING	PA164520120
915 MHz	BLACK HOUSING	PA164520130
	WHITE HOUSING	PA164520140

External probe sold separately with calibration certificate from manufacturer

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	

TEMPERATURE MEASUREMENT	Range	-40 to 80 ºC
	Resolution	0.01 ºC
	Response time	1 second
	Sensor type	I2C digital sensor

INTERNAL TEMPERATURE MEASUREMENT	Range	-40 to 60ºC
	Resolution	0,1 ºC
	Accuracy	Typical: ± 0.25 ºC / Maximum: ± 0.5 ºC
	Sensor type	I2C dgital sensor
	Response time	1 second

HUMIDITY	Range	0 to 100%
	Resolution	0,01%
	Accuracy	±2% (0 to 90%); ±3% (90 to 100%)
	Sensor type	I2C digital sensor
	Response time	1 second

SUPPLY VOLTAGE	3x 1,5V AA lithium/alkaline/Ni-MH batteries
	External power supply with 12 VDC ± 5%

OPERATING ENVIRONMENT	Temperature range	-40 °C to 60 °C

ACCESSORIES

	**DUOS T+RH EXTERNAL PROBE 0.5M TK-TRH-05** 0..100 % RH and -40..80 ºC measurement ranges. Cable length: 0,5 meters.
	**DUOS T+RH EXTERNAL PROBE 2M TK-TRH-20** 0..100 % RH and -40..80 ºC measurement ranges. Cable length: 2 meters.
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply

DUOS

Smart Sensors

DI+TEMP

WIRELESS SENSOR

KEY FEATURES

-40 °C to 60 °C Temperature Range

Dual temperature probe

External digital input

Up to 4 Km communication distance (LoS)

Low power and long battery life

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP67 protection

DUOS DI+TEMP is the right device to monitor temperature in equipment and spaces with doors. The digital input allows you to monitor the two possible status of the doors, and thus be able to relate the temperature fluctuation to the status of the doors.

VERSION REFERENCE

868 MHz	BLACK HOUSING	PA160411210
	WHITE HOUSING	PA160411220
915 MHz	BLACK HOUSING	PA160411230
	WHITE HOUSING	PA160411240

External probe sold separately

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	

		EXT	INT
TEMPERATURE MEASUREMENT	Range	-40 to 125ºC	-40 to 60 ºC
	Resolution	0.1 ºC	0.1 ºC
	Accuracy	Typical: ± 0.25 ºC / Maximum: ± 0.5 ºC	Typical: ± 0.25 ºC / Maximum: ± 0.5 ºC
	Sensor type	I2C digital sensor	
	Response time	1 second	

DIGITAL INPUT	Contact type	Dry contact
	Standby state	Open / OFF
	Current consumption	DI ON: 28uA / DI OFF: 0uA
	Communication time after DI activation	< 1.1 seconds
	DI debounce time	60ms
	Edge trigger	Open Close

SUPPLY VOLTAGE	3x 1,5V AA lithium/alkaline/Ni-MH batteries
	External power supply with 12 VDC ± 5%

OPERATING ENVIRONMENT	Temperature range	-40 °C to 60 °C

ACCESSORIES

	**DUOS MAGNETIC SENSOR 0.5M CABLE TK-MS-05** Magnetic switch for door opening detection. Cable length: 0,5 meters
	**DUOS MAGNETIC SENSOR 2M CABLE TK-MS-20** Magnetic switch for door opening detection. Cable length: 2 meters
	**DUOS DI+TEMP EXTERNAL CABLE** DUOS DI+TEMP digital input cable
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply

DUOS
Smart Sensors

inTEMP
WIRELESS SENSOR

KEY FEATURES

-40ºC to 60ºC Temperature Range

Built-in sensor

Discrete digital input

Up to 4 Km communication distance (LoS)

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP67 protection

DUOS InTEMP is a wireless solution fully optimized to monitor ambient temperature. This transmitter is equipped with a built-in sensor that can collect data from surrounding temperature. A wireless solution for applications where this environmental variable has a critical impact. The discrete digital input allows to monitor open/close state events.

VERSION REFERENCE

868 MHz	PA160411120
915 MHz	PA160411140

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-99 to -110 dBm	-99 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	
TEMPERATURE MEASUREMENT	Operating temperature	-40ºC to 60ºC	
	Resolution	0,1º C	
	Accuracy	Typical: ± 0.25º C / Maximum: ± 0.5º C	
	Sensor type	I2C digital sensor	
DIGITAL INPUT	Contact type	Dry contact	
	Standby state	500mA DC @ 5V DC / 100mA DC @ 24V DC	
	Current consumption	DI ON: 28uA / DI OFF: 0uA	
	Communication time after DI activation	< 1,1 seconds	
	DI debounce time	60ms	
	Edge trigger	Open -> Close	
POWER SUPPLY	3x 1,5V AA lithium/alkaline/Ni-MH batteries		
	External power supply with 5 VDC ± 5%		

ACCESSORIES

	**DUOS MAGNETIC SENSOR 0.5M CABLE TK-MS-05** Magnetic switch for door opening detection. Cable length: 0,5 meters
	**DUOS MAGNETIC SENSOR 2M CABLE TK-MS-20** Magnetic switch for door opening detection. Cable length: 2 meters
	**DUOS DI+TEMP EXTERNAL CABLE** DUOS DI+TEMP digital input cable
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply
	**DUOS EXTERNAL POWER CABLE** DUOS transmitter power supply cable

DUOS
Smart Sensors

inHYGROTEMP
WIRELESS SENSOR

KEY FEATURES

-40ºC to 60ºC Temperature Range

0% to 100% Humidity Range

Built-in sensor

Discrete digital input

Up to 4 Km communication distance (LoS)

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP67 protection

DUOS inHYGROTEMP is suitable to monitor environmental variables such as temperature and relative humidity. This wireless solution is indicated for applications like greenhouses, storage and exhibition areas in which temperature and humidity need to be monitored for quality control. The discrete digital input allows to monitor open/close state events.

VERSION REFERENCE	
868 MHz	PA210310210
915 MHz	PA210310220

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-99 to -110 dBm	-99 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	

TEMPERATURE MEASUREMENT	Operating temperature	-40ºC to 60ºC
	Resolution	0,1º C
	Accuracy	Typical: ± 0.25º C / Maximum: ± 0.5º C
	Sensor type	I2C digital sensor
HUMIDITY MEASUREMENT	Range	0% to 100%
	Resolution	0,01 %
	Accuracy (at 25ºC)	± 3%
	Response time	8 seconds
DIGITAL INPUT	Contact type	Dry contact
	Standby state	500mA DC @ 5V DC / 100mA DC @ 24V DC
	Current consumption	DI ON: 28uA / DI OFF: 0uA
	Communication time after DI activation	< 1,1 seconds
	DI debounce time	60ms
	Edge trigger	Open -> Close
POWER SUPPLY	3x 1,5V AA lithium/alkaline/Ni-MH batteries	
	External power supply with 5 VDC ± 5%	

ACCESSORIES

	**DUOS MAGNETIC SENSOR 0.5M CABLE TK-MS-05** Magnetic switch for door opening detection. Cable length: 0,5 meters
	**DUOS MAGNETIC SENSOR 2M CABLE TK-MS-20** Magnetic switch for door opening detection. Cable length: 2 meters
	**DUOS DI+TEMP EXTERNAL CABLE** DUOS DI+TEMP digital input cable
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply
	**DUOS EXTERNAL POWER CABLE** DUOS transmitter power supply cable

DUOS

Smart Sensors

$inCO_2$

WIRELESS SENSOR

KEY FEATURES

-40ºC to 60ºC Temperature Range

0 to 5000 PPM CO_2 Range

700 to 1100 mbar Barom. Pressure Range

Built-in sensor

Discrete digital input

Up to 4 Km communication distance (LoS)

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP67 protection

DUOS $inCO_2$ is suitable to monitor environmental variables such as temperature, CO_2 and barometric pressure. This wireless solution is indicated for applications like HVAC, smart agriculture, indoor and outdoor air quality. The discrete digital input allows to monitor open/close state events.

VERSION REFERENCE

868 MHz	PA210310310
915 MHz	PA210310320

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-99 to -110 dBm	-99 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	

TEMPERATURE MEASUREMENT	Operating temperature	-40ºC to 60ºC
	Resolution	0,1º C
	Accuracy	Typical: ± 0.25º C / Maximum: ± 0.5º C

CO_2 MEASUREMENT	Range	0 to 5000 ppm
	Sampling time	5 to 3600 seconds (configurable)
	Accuracy (at 25ºC)	0 ... 5000 ppm < ± (50 ppm + 3% of measured value)
	Response time	75 seconds

BAROM.PRESS. MEASUREMENT	Range	700 to 1100 mbar
	Resolution	± 2 mbar (20 to 80% RH)
	Accuracy (at 25ºC)	± 0,015 mbar/K

DIGITAL INPUT	Contact type	Dry contact
	Standby state	500mA DC @ 5V DC / 100mA DC @ 24V DC
	Current consumption	DI ON: 28uA / DI OFF: 0uA
	Communication time after DI activation	< 1,1 seconds
	DI debounce time	60ms
	Edge trigger	Open -> Close

POWER SUPPLY	3x 1,5V AA lithium/alkaline/Ni-MH batteries
	External power supply with 5 VDC ± 5%

ACCESSORIES

	**DUOS MAGNETIC SENSOR 0.5M CABLE TK-MS-05** Magnetic switch for door opening detection. Cable length: 0,5 meters
	**DUOS MAGNETIC SENSOR 2M CABLE TK-MS-20** Magnetic switch for door opening detection. Cable length: 2 meters
	**DUOS DI+TEMP EXTERNAL CABLE** DUOS DI+TEMP digital input cable
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply
	**DUOS EXTERNAL POWER CABLE** DUOS transmitter power supply cable

DUOS

Smart Sensors

inAIR

WIRELESS SENSOR

DUOS inAIR is suitable to monitor environmental variables such as temperature, CO2, relative humidity and barometric pressure. This wireless solution is indicated for applications like HVAC, smart agriculture, and indoor/outdoor air quality. The discrete digital input allows to monitor open/close state events.

KEY FEATURES

-40ºC to 60ºC Temperature Range

0% to 100% Humidity Range

0 to 5000 PPM CO2 Range

700 to 1100 mbar Barom. Pressure Range

Built-in sensor

Up to 4 Km communication distance (LoS)

Discrete digital input

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP65 protection

VERSION REFERENCE

868 MHz	PA210310410
915 MHz	PA210310420

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio Transmit Power	0 to 27 dBm	8 to 27 dBm
	Radio Receiver Sensitivity	-99 to -110 dBm	-99 to -110 dBm
	Frequency Band	868 to 869 MHz	902 to 928 MHz
	Radio Channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	
TEMPERATURE MEASUREMENT	Operating Temperature	-40ºC to 60ºC	
	Resolution	0,1º C	
	Accuracy	Typical: ± 0.25º C / Maximum: ± 0.5º C	
HUMIDITY MEASUREMENT	Range	0% to 100%	
	Resolution	0,01 %	
	Accuracy (at 25ºC)	± 3%	
	Response time	8 seconds	
CO_2 MEASUREMENT	Range	0 to 5000 ppm	
	Sampling time	5 to 3600 seconds (configurable)	
	Accuracy (at 25ºC)	0 ... 5000 ppm < ± (50 ppm + 3% of measured value)	
	Response time	75 seconds	
BAROM.PRESS. MEASUREMENT	Range	700 to 1100 mbar	
	Resolution	± 2 mbar (20 to 80% RH)	
	Accuracy (at 25ºC)	± 0,015 mbar/K	
DIGITAL INPUT	Contacte type	Dry contact	
	Standby state	500mA DC @ 5V DC / 100mA DC @ 24V DC	
	Current consumption	DI ON: 28uA / DI OFF: 0uA	
	Communication Time after DI activation	< 1,1 seconds	
	DI debounce time	60ms	
	Edge trigger	Open -> Close	
POWER SUPPLY	3x 1,5V AA lithium/alkaline/Ni-MH batteries		
	External power supply with 5 VDC ± 5%		

ACCESSORIES

	**DUOS MAGNETIC SENSOR 0.5M CABLE TK-MS-05** Magnetic switch for door opening detection. Cable length: 0,5 meters
	**DUOS MAGNETIC SENSOR 2M CABLE TK-MS-20** Magnetic switch for door opening detection. Cable length: 2 meters
	**DUOS DI+TEMP EXTERNAL CABLE** DUOS DI+TEMP digital input cable
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply
	**DUOS EXTERNAL POWER CABLE** DUOS transmitter power supply cable

DUOS

Smart Sensors

uTEMP

WIRELESS SENSOR

KEY FEATURES

Multiple temperature inputs

RTD, Thermocouples, linear Ohm and linear mV

Discrete digital input

Up to 4 Km communication distance (LoS)

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP65 protection

DUOS uTemp is the perfect temperature wireless solution for monitoring applications, automation and centralization of temperature measurements throughout the production substances, distribution and storage of refrigerated foods, frozen and deep-frozen, HVAC and other industry processes. The universal temperature inputs allow to connect a large range of temperature probes like RTD's and thermocouples. It is also possible to measure linear mV and linear ohms.

VERSION REFERENCE

868 MHz	PA210310410
915 MHz	PA210310420

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-99 to -110 dBm	-99 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	

TEMPERATURE SENSORS	RTD	PT100, PT500, PT1000
	Thermocouples	C, J, K, N, R, S, T
	Measuring range	Not configurable
RESISTANCE SENSORS	Sensor type	Resistance, Potentiometer
	Units	Ω
	Measuring range	Not configurable
	Sensor type	8 seconds
MILIVOLT SENSOR	Sensor type	DC voltage source
	Units	mV
	Measuring range	Not configurable
DIGITAL INPUT	Contact type	Dry contact
	Standby state	Open / OFF
	Current consumption	DI ON: 28uA / DI OFF: 0uA
	Communication time after DI activation	< 1,1 seconds
	DI debounce time	60ms
	Edge trigger	Open -> Close

POWER SUPPLY	3x 1,5V AA lithium/alkaline/Ni-MH batteries
	External power supply with 5 VDC ± 5%

ACCESSORIES

	**DUOS MAGNETIC SENSOR 0.5M CABLE TK-MS-05** Magnetic switch for door opening detection. Cable length: 0,5 meters
	**DUOS MAGNETIC SENSOR 2M CABLE TK-MS-20** Magnetic switch for door opening detection. Cable length: 2 meters
	**DUOS DI+TEMP EXTERNAL CABLE** DUOS DI+TEMP digital input cable
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply
	**DUOS EXTERNAL POWER CABLE** DUOS transmitter power supply cable
	**DUOS M8 MALE CONNECTOR WITH NTC** M8 male connector for NTC cold-junction compensation

NEW

DUOS

Smart Sensors

MULTITEMP

WIRELESS SENSOR

KEY FEATURES

Up to 5 temperature sensors per device

-40ºC to 90ºC temperature range

Up to 4 Km communication distance (LoS)

Battery voltage and wireless link quality (RSSI) monitoring

Water resistant with IP65 protection

DUOS Multitemp is the perfect wireless solution to monitor up to 5 temperature sensors with one transmitter. It allows to monitor applications, automation and centralization of temperature measurements throughout the production substances, distribution and storage of refrigerated foods, frozen and deep-frozen, HVAC and other industries processes.

VERSION REFERENCE

868 MHz	BLACK HOUSING	PA210310510
	WHITE HOUSING	PA210310520
915 MHz	BLACK HOUSING	PA210310530
	WHITE HOUSING	PA210310540

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

RADIO SPECIFICATIONS

	868MHz	915MHz
Range	Up to 4 Km LoS	Up to 4 Km LoS
Radio transmit power	0 to 27 dBm	8 to 27 dBm
Radio receiver sensitivity	-97 to -110 dBm	-99 to -110 dBm
Frequency band	868 to 869 MHz	902 to 928 MHz
Radio channels	16	50
Encryption method	AES 128 (Advanced Encryption Standard)	

INTERNAL TEMPERATURE MEASUREMENT

Range	-40ºC to 60ºC
Resolution	0,1º C
Accuracy	Typical: ± 0.25º C / Maximum: ± 0.5º C
Sensor type	I2C digital sensor
Response time	1 second

EXTERNAL TEMPERATURE MEASUREMENT

Range	-40ºC to 90ºC
Resolution	0,1º C
Accuracy	Typical: ± 0.25º C / Maximum: ± 0.5º C
Sensor type	I2C digital sensor
Response time	1 second
Connector	M8 female socket, 4 poles

POWER SUPPLY

3x 1,5V AA lithium/alkaline/Ni-MH batteries
External power supply with 5 VDC ± 5%

ACCESSORIES

	**DUOS MULTITEMP PROBE SPLITTER BOX TK-PSB-015** Junction box for digital temperature probes
	**DUOS MULTITEMP DOUBLE PROBE 5M TK-DP-50** Double digital temperature probes. Temperature range: -40 to +90ºC. Cable length: 5 meters
	**DUOS MULTITEMP DOUBLE PROBE 2M TK-DP-20** Double digital temperature probes. Temperature range: -40 to +90ºC. Cable length: 2 meters
	**DUOS MULTITEMP SINGLE PROBE 0.5M TK-SP-05** External digital temperature probe. Temperature range: -40 to +90ºC. Cable length: 0,5 meters
	**DUOS MULTITEMP SINGLE PROBE 2M TK-SP-20** External digital temperature probes. Temperature range: -40 to +90ºC. Cable length: 2 meters
	**DUOS MULTITEMP SINGLE PROBE 5M TK-SP-50** External digital temperature probes. Temperature range: -40 to +90ºC. Cable length: 5 meters
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply
	**DUOS EXTERNAL POWER CABLE** DUOS transmitter power supply cable

DUOS

Smart Sensors

DUOS

WIRELESS IOT
GATEWAY

KEY FEATURES

Ethernet TCP/IP Modbus Communication

Integration with Tekon IoT Platform

Scalable Network

Multiple Networks Simultaneously

Up to 4 Km communication distance (LoS)

Automatic Mesh Network Management

DUOS IoT Gateway offers IoT connectivity, through the Ethernet port, with Modbus TCP/IP and system integration with REST API. DUOS IoT Gateway is natively integrated with Tekon IoT Platform.

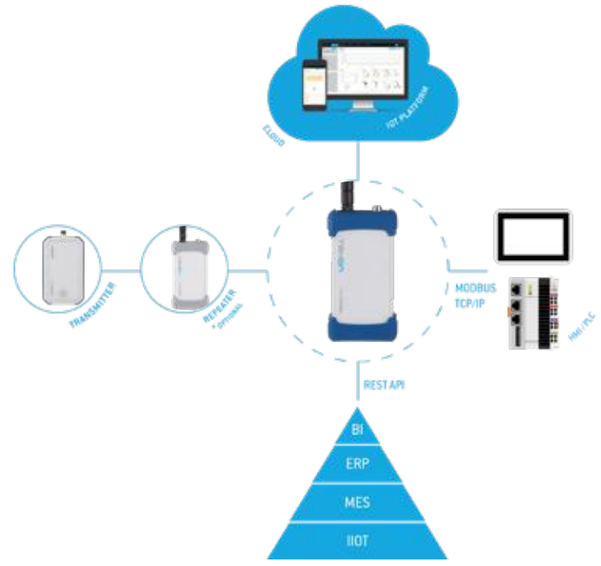
VERSION REFERENCE

868 MHz	BLACK HOUSING	PA160410220
	WHITE HOUSING	PA160410240
915 MHz	BLACK HOUSING	PA160410260
	WHITE HOUSING	PA160410280

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	
WIRELESS NETWORK	Maximum Devices	55	
	Maximum Hops	13	
OPERATING ENVIRONMENT	Temperature range	–10 °C to +60 °C	
	Relative humidity	95% maximum relative humidity (non-condensing)	
SUPPLY VOLTAGE	External power supply with 12 VDC ± 5%		
	Maximum current draw of 250 mA		

		RS-485	ETHERNET
INTERFACES	Protocol	Modbus RTU (Slave)	TCP / IP Modbus
	Physical connection	2-wire RS-485	Ethernet
IOT CONNECTIVITY	Native integration with Tekon IoT Platform		
	REST API		



ACCESSORIES

	**DUOS POWER SUPPLY** DUOS repeater and transmitter 110-230 V AC / 50-60 Hz
	**DUOS GATEWAY EXTERNAL CABLE** DUOS gateway communication (via RS-485) and power supply cable
	**DUOS GATEWAY/REPEATER MOUNTING CLIP** Stainless steel wall mounting clip
	**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply

DUOS
Smart Sensors

DUOS
WIRELESS GATEWAY

KEY FEATURES

Scalable network up to 55 DUOS transmitters

Up to 4 Km communication distance (LoS)

Multiple networks simultaneously with extra gateways

Multi-hop mesh network

Modbus RTU communication protocol via RS-485 interface

With the DUOS Gateway you can connect your DUOS wireless system to automation equipments like SCADA, PLC, HMI or a computer and access data using Modbus RTU protocol through RS485 port.

VERSION REFERENCE

868 MHz	BLACK HOUSING	PA160410210
	WHITE HOUSING	PA160410230
915 MHz	BLACK HOUSING	PA160410250
	WHITE HOUSING	PA160410270

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	
WIRELESS NETWORK	Maximum devices	55	
	Maximum hops	13	
OPERATING ENVIRONMENT	Temperature range	–10 °C to +60 °C	
	Relative humidity	95% maximum relative humidity (non-condensing)	
SUPPLY VOLTAGE	External power supply from 5 to 24 VDC ± 5%		
	Maximum current draw of 250 mA		

ACCESSORIES

	**DUOS RS485-USB CONVERTER** DUOS gateway configuration cable (to use with Tekon Configurator)
	**DUOS GATEWAY EXTERNAL CABLE** DUOS gateway communication (via RS-485) and power supply cable
	**DUOS GATEWAY MOUNTING CLIP** Stainless steel wall mounting clip

DUOS

Smart Sensors

DUOS

WIRELESS REPEATER

KEY FEATURES

Up to 4 Km communication distance (LoS)

Auto discovery for the best wireless link

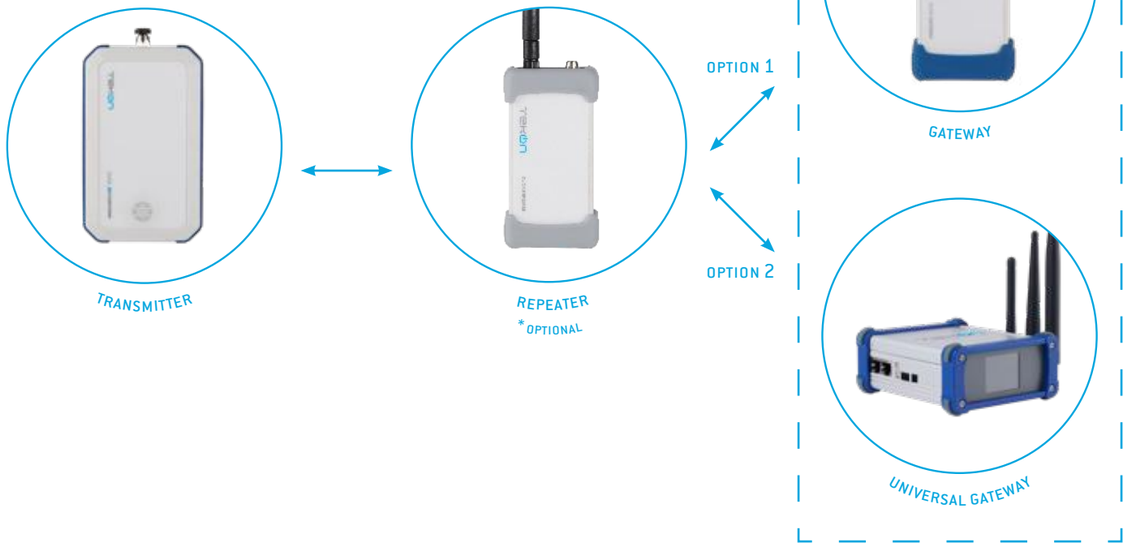
Mesh Network

Improvement of network coverage

Due to its self-optimizing mesh network features, this equipment has the capacity to auto discover the best wireless link, create alternative paths in a mesh network.

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		868MHz	915MHz
RADIO SPECIFICATIONS	Range	Up to 4 Km LoS	Up to 4 Km LoS
	Radio transmit power	0 to 27 dBm	8 to 27 dBm
	Radio receiver sensitivity	-97 to -110 dBm	-97 to -110 dBm
	Frequency band	868 to 869 MHz	902 to 928 MHz
	Radio channels	16	50
	Encryption method	AES 128 (Advanced Encryption Standard)	
WIRELESS NETWORK	Maximum devices	55	
	Maximum hops	13	
SUPPLY VOLTAGE	External power supply with 12 VDC ± 5%		
	Maximum current draw of 250 mA		
OPERATING ENVIRONMENT	Temperature range	–10 °C to 60 °C	



VERSION REFERENCE		
868 MHz	BLACK HOUSING	PA160410310
	WHITE HOUSING	PA160410320
915 MHz	BLACK HOUSING	PA160410330
	WHITE HOUSING	PA160410340

ACCESSORIES

	**DUOS POWER SUPPLY** DUOS repeater and transmitter 110-230 V AC / 50-60 Hz
	**DUOS EXTERNAL POWER CABLE** DUOS repeater and DUOS transmitter power supply cable
	**DUOS GATEWAY/REPEATER MOUNTING CLIP** Stainless steel wall mounting clip

ACCESSORIES

PA160410005		**TRANSMITTER SARC** DUOS transmitter configuration cable (to use with Tekon Configurator)
PA160410004		**RS485-USB CONVERTER** DUOS gateway configuration cable (to use with Tekon Configurator)
PA160412810		**DUOS POWER SUPPLY 230 V AC TYPE A** DUOS repeater and transmitter 110-230 V AC / 50-60 Hz type A plug power supply Length: 2 meters
PA160412710		**DUOS POWER SUPPLY 230 V AC TYPE G** DUOS repeater and transmitter 110-230 V AC / 50-60 Hz type G plug power supply Length: 2 meters
PA160410006		**DUOS POWER SUPPLY 230 V AC TYPE C** DUOS repeater and transmitter 110-230 V AC / 50-60 Hz EU plug power supply Length: 2 meters
PA160413610		**DUOS POWER SUPPLY 230 V AC/5 V DC TYPE C** DUOS transmitter 110-230 V AC / 50-60 Hz (5 V DC output) EU plug power supply Length: 2 meters
PA160410007		**GATEWAY EXTERNAL CABLE** DUOS gateway communication (via RS-485) and power supply cable Length: 2 meters. Connector: Industrial M8
PA160410008		**EXTERNAL POWER CABLE** DUOS repeater and DUOS transmitter power supply cable. Length: 2 meters Connector: Industrial M8
PA160410910		**TRANSMITTER MOUNTING CLIP** Stainless steel wall mounting clip
PA160410810		**TRANSMITTER MOUNTING BRACKET** Stainless steel wall mounting bracket
PA160411010		**GATEWAY/REPEATER MOUNTING CLIP** Stainless steel wall mounting clip
PA160410001		**DIGITAL TEMPERATURE PROBE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor Stainless steel probe with M8 industrial connector
PA160410002		**DIGITAL TEMPERATURE PROBE WITH 2MT CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor Cable length: 2 meters
PA160410003		**DIGITAL TEMPERATURE PROBE WITH 5MT CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor Cable length: 5 meters
PA160413710		**DUOS M8 MALE CONNECTOR WITH NTC** M8 male connector with NTC cold-junction compensation suitable for thermocouples

ACCESSORIES

PA160413410		**DIGITAL HIGH TEMPERATURE PROBE WITH 2MT CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor Cable length: 2 meters
PA160413510		**DIGITAL HIGH TEMPERATURE PROBE WITH 5MT CABLE** ±0.25ºC typical accuracy with 0.1ºC resolution digital sensor Cable length: 5 meters
PA164520007		**DUOS T+RH EXTERNAL PROBE 0.5M TK-TRH-05** 0..100 % RH and -40..80 ºC measurement ranges Cable length: 0,5 meters
PA164520008		**DUOS T+RH EXTERNAL PROBE 2M TK-TRH-20** 0..100 % RH and -40..80 ºC measurement ranges Cable length: 2 meters
PA160410009		**DI+TEMP EXTERNAL CABLE** DUOS DI+TEMP digital input cable Cable length: 2 meters
PA160414510		**DUOS MAGNETIC SENSOR 0.5M CABLE TK-MS-05** Magnetic switch for door opening detection. Cable length: 0,5 meters
PA160414610		**DUOS MAGNETIC SENSOR 2M CABLE TK-MS-20** Magnetic switch for door opening detection. Cable length: 2 meters
PA160413910		**DUOS MULTITEMP PROBE SPLITTER BOX TK-PSB-015** Junction box for digital temperature probes. Up to 5 probes simultaneously.
PA160414110	IMAGE COMING SOON	**DUOS MULTITEMP DOUBLE PROBE 5M TK-DP-50** Double digital temperature probes. Temperature range: -40 to +90ºC. Cable length: 5 meters
PA160414010	IMAGE COMING SOON	**DUOS MULTITEMP DOUBLE PROBE 2M TK-DP-20** Double digital temperature probes. Temperature range: -40 to +90ºC. Cable length: 2 meters
PA160414210	IMAGE COMING SOON	**DUOS MULTITEMP SINGLE PROBE 0.5M TK-SP-05** External digital temperature probe. Temperature range: -40 to +90ºC. Cable length: 0,5 meters
PA160414310	IMAGE COMING SOON	**DUOS MULTITEMP SINGLE PROBE 2M TK-SP-20** External digital temperature probe. Temperature range: -40 to +90ºC. Cable length: 2 meters
PA160414410	IMAGE COMING SOON	**DUOS MULTITEMP SINGLE PROBE 5M TK-SP-50** External digital temperature probe. Temperature range: -40 to +90ºC. Cable length: 5 meters

SOFTWARE

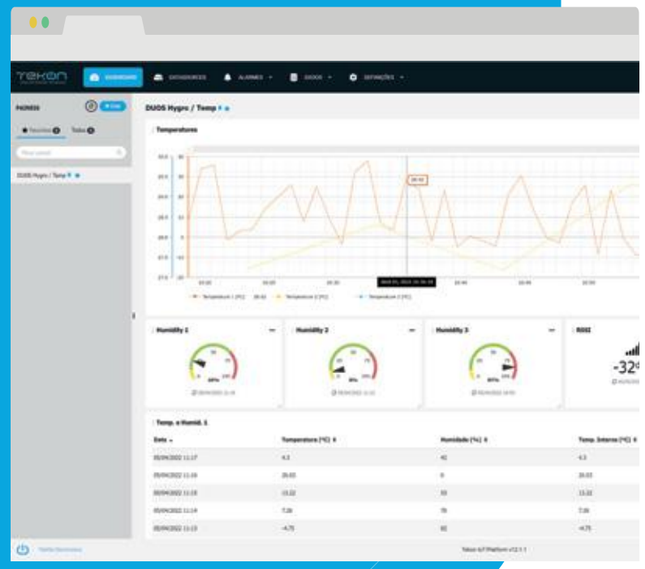
Tekon IoT Platform has been developed to improve real-time monitoring of multiple applications. With data collection, analysis and visualization tools, Tekon IoT Platform allows users to understand and organize raw data to transform information into business insights.

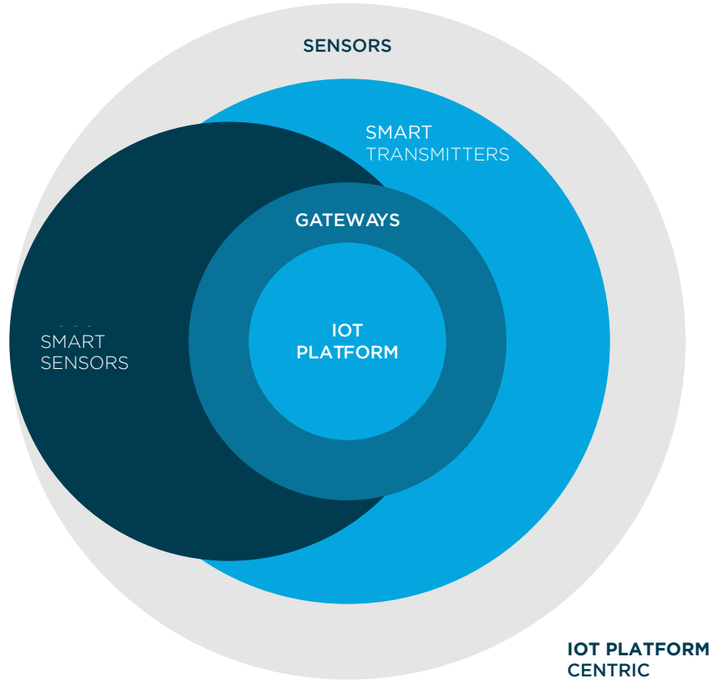
Digitalization offers new possibilities for optimizing manufacturing processes by leveraging data analytics through cloud-based systems. New communication methods for automation systems via standard protocols like MQTT are helping users to fully integrate components regardless the manufacturer.

Your Online Datalogger

Connect, optimize, and scale your digital industrial applications

TEKON IOT PLATFORM





KEY FEATURES

Real-time data visualization

Advanced data analysis

Periodic reports

Alarms and Notifications

IoT Data Encryption

Third-party integration

Web-based platform

Asset monitoring and event management is the cornerstone of industrial digital transformation and the first step that most companies will take in harnessing the power of cloud-based IIoT. Centralizing assets and data, visualizing, applying analytics and acting on the results opens the door to reduced downtime, lower maintenance costs, and many other concrete benefits.

The implementation of cloud-based IoT solutions will bring a clear overview of the operations, with direct improvements in the production processes and with the profitability of the collected IoT data.

Data Storage for more than 2 years *

*** Contact us for customized options**

Capabilities delivered by Tekon IoT Platform

- Reliable devices, sensors and gateways connection
- Secure access management
- Data visualization from multiple sources within one dashboard
- Management and analysis of IoT data

TEKON IOT PLATFORM - Access Plans

Tekon IoT Platform is available with several access plans that better suit your application. Contact us to know more about the available plans.

CLOUD	5 SENSORS	10 SENSORS	25 SENSORS	50 SENSORS	100 SENSORS
LOCAL	ON PREMISES (UNLIMITED SENSORS)				

SMS SERVICE

Tekon IoT Platform integrates an external SMS notification service. Contact us to know more about the available SMS plans.

100 SMS	500 SMS	1000 SMS	> 1000 SMS Under Request

ALARMS

Real-time monitoring is supported by an alarmistic system that provides a security layer to your process. Tekon IoT Platform allows users to set alarms with notifications to signal process deviations.

- Dashboard notifications
- Alarms active by days or hours
- Email and SMS notifications
- Custom message notifications

REPORTING

With Tekon IoT Platform, you can create a report file that gathers relevant data about a specific or a generic process. This report is automatically sent to any email address. You can choose a time range over which the data should be exported. Periodic reports can be divided by sections in order to organize data by relevance.

- Easy-to-set reporting parameters
- PDF file sent to all recipients
- Selectable data
- Analyze raw data, charts or alarms

THIRD-PARTY CONNECTIVITY

Tekon IoT Platform ensures the devices integration from other manufacturers, enabled by off web-based protocol solutions.

- Integration through MQTT or REST API
- Process agnostic
- Quick deployment
- Low complexity

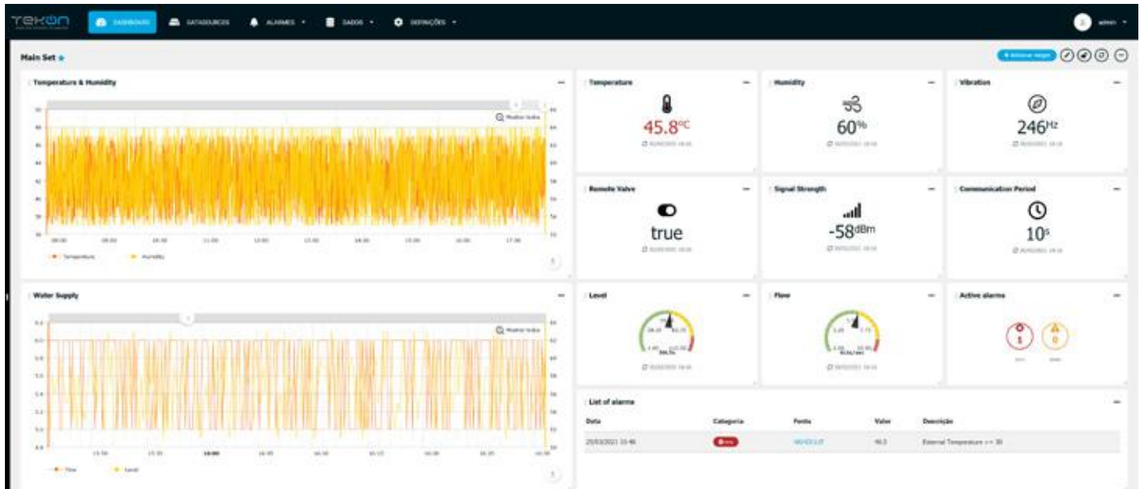
{ REST:API } MQTT

DATA ANALYSIS

Tekon IoT Platform provides a tool to customize your data analysis to gather the most relevant data about your application or a specific process.

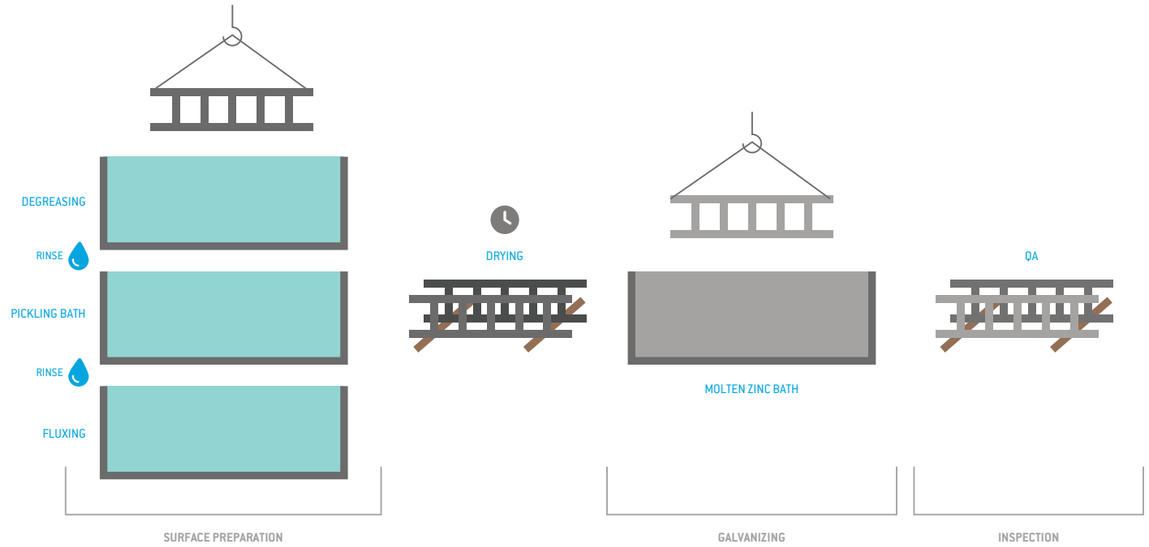
- Customized time range and scales
- Analysis with aggregation methods
- Granularity levels
- Export data in PDF, CSV or XLSX

In this section, the user can set parameters that are traditionally associated with data analysis - type of aggregation, time gap, granularity, etc.
All the performed analyses can be printed or exported to files with formats such as PDF, JSON, CSV, XSLX, among others.



Sensor-to-cloud
Monitoring Solutions

Turnkey systems for process monitoring and data analysis



Hot dip galvanizing process

Tekon Electronics is prepared to design and implement complete monitoring solutions capable of ensuring the collection, communication and processing of data from an equipment or process. The development of sensor monitoring architectures up to the cloud allows for greater adaptation to the customer's application and to the technological ecosystem already installed.

One of the sensor-to-cloud projects that was carried out by Tekon Electronics was aimed to the hot dip galvanizing industry of steel and iron. The customer centralizes information from all stages of the process in a single system, capable of ensuring real-time data analysis and storage of records to comply with legal obligations.

The galvanizing process consists of coating metals in hot baths of molten zinc and drying between bath stations. The aim of the project would be to implement temperature measurement points in immersion tanks and drying stations for quality control and process safety. Tekon Electronics developed temperature probes with customized features that ease their integration into the infrastructure and prepared a setup that would transmit data through wireless transmitters to avoid installing a wired solution in a hazardous industrial environment.

Data is quickly available on Tekon IoT Platform for analysis by engineers and plant technicians. Storage of the solution in the cloud ensures data security and remote access to facility data.

Use Cases

Temperature and humidity monitoring in surgical masks production

Implemented solution to meet compliance requirements and obtain certification by the regulatory authority.

Temperature monitoring in retail food storage

Integrated monitoring solution to comply with the legal obligation to automatically record temperatures in storage equipment.

Temperature and humidity monitoring in raw material storage

Wireless solution implemented to ensure ideal storage conditions for raw materials used in the production of non-food products, intended for human consumption.

Coal plant production capacity monitoring

Sensor-to-cloud solution to monitor the production process status with HMI to consult operational data.

SOFTWARE

TEKON IOT PLATFORM TRIAL

Take a look to our trial and see how easy and intuitive is to set an end-to-end IoT solution.

WIRED TRANSMITTERS

Tekon Electronics is a global, customer-oriented partner for reliable monitoring solutions.
Our product range covers Wireless Sensors, Wireless Transmitters, Wired Transmitters, Software, Probes and Accessories.
We are committed with the development of innovative solutions, delivering the highest quality products that fulfill the needs of each customer.

Along with our quality products and solutions, our brand is one of our most valuable assets. We also work with customized products and application solutions, frequently in close collaboration with our customers.

DIN RAIL

Wired Sensors

TDU301-I

UNIVERSAL ISOLATED DIN RAIL TRANSMITTER

KEY FEATURES

Universal Temperature Input
Thermocouples J, K, N, R, S and T
PT100, PT500 and PT100 RTD

4 to 20 mA analog output

2 status LED

Galvanic isolation 1,5kV AC

High accuracy measurement

High EMC Performance

Ultra-low profile

TDU301-I is an ultra-flexible universal temperature transmitter which accepts the most used temperature sensors (resistance thermometers with 2, 3 or 4-wire system and thermocouples) and generates a linear 4 to 20 mA output current signal with high stability as output.

VERSION REFERENCE: PA201610100

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		RTD	TC
INPUT	Measured variable	Temperature	Temperature
	Sensor type	PT100, PT500, PT1000	J, K, N, R, S, T
	Connection	1 Resistance thermometer*	1 Thermocouple (TC)
	Units	ºC	ºC
	Sensor current	200 µA	<11 nA
	Minimum measured span	50ºC	50ºC

*RTD in 2-wire, 3-wire or 4-wire.

OUTPUT	Output signal	4 to 20 mA
	Power supply (Uaux)	12 to 24V DC
	Max. load	(Uaux - 12) / 0.021 A
	Error signal (e.g. following sensor fault) (conforming to NE43)	Software configurable 3,2mA or 21mA
	Sample cycle	< 200ms
	Protection	Against reversed polarity - Surge protection

OPERATING ENVIRONMENT	Temperature range	-40 to 80ºC
	Relative humidity	≤95%, without condensation

COMMON SPECIFICATIONS	Isolation voltage (test | operation)	1,5 kV AC | 48 V AC
	Internal power dissipation	40 mW to 0,5W
	Voltade drop	12 V DC
	Power-up time (TC)	< 600 ms
	Power-up time (RTD)	< 1 s

DIN RAIL

Wired Sensors

TDU302-I

VOLTAGE OUTPUT ISOLATED DIN RAIL TRANSMITTER

KEY FEATURES

Universal Temperature Input
Thermocouples J, K, N, R, S and T
PT100, PT500 and PT100 RTD

0 to 10 V analog output

2 status LED

Galvanic isolation 1,5kV AC

High accuracy measurement

High EMC Performance

Ultra-low profile

TDU302-I is an ultra-flexible universal temperature transmitter which accepts the most used temperature sensors (resistance thermometers with 2, 3 or 4-wire system and thermocouples) and generates a 0 to 10 V output current signal with high stability as output.

VERSION REFERENCE: PA201610200

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

	RTD	TC
Measured variable	Temperature	Temperature
Sensor type	PT100, PT500, PT1000	J, K, N, R, S, T
Connection	1 Resistance thermometer*	1 Thermocouple (TC)
Units	ºC	ºC
Sensor current	200 µA	<11 nA
Minimum measured span	50ºC	50ºC

INPUT

*RTD in 2-wire, 3-wire or 4-wire.

OUTPUT	
Output signal	0 to 10 V
Power supply (Uaux)	12 to 24V DC
Load (@ voltage output)	≥ 5 kOhm
Error signal (e.g. following sensor fault) (conforming to NE43)	Software configurable 3,2mA or 21mA
Sample cycle	< 200ms
Protection	Against reversed polarity - Surge protection

OPERATING ENVIRONMENT	
Temperature range	-40 to 80ºC
Relative humidity	≤95%, without condensation

COMMON SPECIFICATIONS	
Isolation voltage (test | operation)	1,5 kV AC | 48 V AC
Internal power dissipation	100 mW to 300 mW
Voltade drop	12 V DC
Power-up time (TC)	< 600 ms
Power-up time (RTD)	< 1 s

INHEAD

Wired Sensors

THM501

PT100 TEMPERATURE
HEAD TRANSMITTER

KEY FEATURES

RS-485 Output

PT100 sensor input

High precision and accuracy

Type DIN B connection head compatible

THM501 is a temperature transmitter which accepts exclusively PT100 temperature sensors (with 2, 3 or 4-wire configuration), and makes it available in a Modbus RTU slave register.

VERSION REFERENCE

PA151700100

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

INPUT	Measured variable	Temperature
	Sensor type	PT100
	Connection	2 wires, 3 wires or 4 wires
	Units	ºC
	Sensor current	600uA (2 or 4 wires); 300uA (3 wires)
	Response time	<100 ms
	Measuring range	-200ºC to 850ºC
OUTPUT - MODBUS	Physical layer	RS-485
	Slave address range	1 to 100
	Support baud rates	4800, 9600, 19200, 38400, 56000, 57600, 115200
	Supported parity	Odd/Even/None
	Response time	<100ms
	Comunication start up time (after power ON)	10s
OPERATING ENVIRONMENT	Temperature range	-20 to 80ºC
	Relative humidity	≤95%, without condensation

ACCESSORIES

RS485 TO USB CONVERTER CABLE
Cable to connect THM501 Transmitter to an USB port

INHEAD

Wired Sensors

THM502-I

RTD ISOLATED MODBUS HEAD TRANSMITTER

KEY FEATURES

PT100, PT500 and PT100 RTD sensor input

Ohm sensor input

RS-485 Output

2 status LED

Galvanic isolation 1,5kV AC

High accuracy measurement

THM502-I is a temperature transmitter with RTD (PT100, PT500 and PT100) and ohm sensors input improved with galvanic isolation and providing data through a RS-485 port over Modbus RTU protocol.

VERSION REFERENCE

PA212710100

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

INPUT	Measured variable	TEMPERATURE	Temperature	RESISTANCE Resistance
	Sensor type		PT100, PT500, PT1000	Resistance, Potentiometers
	Connection		2 wires, 3 wires or 4 wires	3 wires
	Units		ºC	Ω
	Range		-200ºC to 850ºC	0 to 6000 ohm
	Sensor current		200 µA	200 µA

OUTPUT MODBUS	Physical layer	RS-485
	Slave address range	1 to 100
	Support baud rates	4800, 9600, 19200, 38400, 56000, 57600, 115200
	Supported parity	Odd/Even/None
	Response time	<100ms
	Communication start up time (after power ON)	5 s

COMMON SPECIFICATIONS	Isolation voltage (test | operation)	1,5 kV AC | 48 V AC
	Internal power dissipation	40 mW to 0,5 W
	Voltage drop	12 V DC
	Response time 90%	< 1 s
	Power-up time (TC)	< 600 ms

OPERATING ENVIRONMENT	Temperature range	-20ºC to 80ºC
	Relative humidity	≤95%, without condensation

ACCESSORIES

RS485 TO USB CONVERTER CABLE
Cable to connect THM502-I Transmitter to an USB port

INHEAD

Wired Sensors

THM602-I

RTD ISOLATED MODBUS HEAD TRANSMITTER

KEY FEATURES

Thermocouples C, J, K, N, R, S and T sensor input

mV sensor input

RS-485 Output

2 status LED

Galvanic isolation 1,5kV AC

High accuracy measurement

THM602-I is a temperature transmitter with thermocouples (C, J, K, N, R, S and T) and mv sensors input improved with galvanic isolation and providing data through a RS-485 port over Modbus RTU protocol.

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

INPUT	Measured variable	TEMPERATURE	Temperature	RESISTANCE	DC Voltage
	Sensor type		C, J, K, N, R and T		DC voltage source
	Connection		2 wires		2 wires
	Units		ºC		mV
	Range		Not configurable		-2000 to 2000 mV

OUTPUT MODBUS	Physical layer	RS-485
	Slave address range	1 to 100
	Support baud rates	4800, 9600, 19200, 38400, 56000, 57600, 115200
	Supported parity	Odd/Even/None
	Response time	<100ms
	Communication start up time (after power ON)	5 s

COMMON SPECIFICATIONS	Isolation voltage (test | operation)	1,5 kV AC | 48 V AC
	Internal power dissipation	40 mW to 0,5 W
	Voltage drop	12 V DC
	Response time 90%	< 1 s
	Power-up time (TC)	< 600 ms

OPERATING ENVIRONMENT	Temperature range	-20ºC to 80ºC
	Relative humidity	≤95%, without condensation

VERSION REFERENCE: PA212710200

ACCESSORIES

RS485 TO USB CONVERTER CABLE
Cable to connect THM602-I Transmitter to an USB port

INHEAD

Wired Sensors

THP101

PT100 TEMPERATURE
HEAD TRANSMITTER

KEY FEATURES

4 to 20 mA Output

PT100 sensor input

High precision and accuracy

Status LED's and test pads

NAMUR NE43 compliant

Sensor cable resistance and current output compensation

Type DIN B connection head compatible

THP101 is a PT100 temperature head transmitter to comply with the most simple applications. Supporting a current output and a sensor cable resistance compensation, it is a highly used commodity in multi-faceted scenarios.

VERSION REFERENCE: PA132720110

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

INPUT RESISTANCE THERMOMETHER	Sensor type	PT100
	Connection	1 Resistance thermometer (RTD) in 2-wire, 3-wire or 4-wire system
	Units	ºC
	Sensor current	600uA (2 or 4 wires); 300uA (3 wires)
	Response time	<500 ms
OUTPUT	Output signal	4 to 20 mA
	Power supply (Uaux)	9 to 30 V DC
	Max. load	(Uaux - 9)/0.022A
	Over range	3 to 22 mA
	Error signal (e.g. Following sensor fault) (conforming to NE43)	Software configurable ≤ 3,6mA or ≥ 21mA
	Sample cycle	<1s
	Protection	Against reversed polarity - Surge protection
OPERATING ENVIRONMENT	Temperature range	-20 ºC to 80 ºC

ACCESSORIES

SARC2 - USB CONFIGURATOR
Connection between a PC USB port and THP101/THT201 universal temperature head transmitters

INHEAD

Wired Sensors

THT201

THERMOCOUPLE TEMPERATURE HEAD TRANSMITTER

KEY FEATURES

4 to 20 mA Output

Universal thermocouple sensor input E, J, K, N, R, S and T

High precision and accuracy

Status LED's and test pads

NAMUR NE43 compliant

Cold-junction and output current compensation

Type DIN B connection head compatible

THT201 is a thermocouple temperature head transmitter to comply with the most simple applications. It is a highly used commodity in multi-faceted scenarios.

VERSION REFERENCE: PA132720210

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

INPUT THERMOCOUPLE	Sensor type	Thermocouples: E, J, K, N, R, S, T
	Open-circuit monitoring	Always active (cannot be disabled)
	Short-circuit monitoring	Not available
	Cold junction compensation (CJC)	Integrated resistance thermometer
	Measuring range	Configurable
OUTPUT	Output signal	4 to 20 mA
	Power supply (Uaux)	9 to 30 V DC
	Max. load	(Uaux - 9)/0.022A
	Over range	3 to 22 mA
	Error signal (e.g. Following sensor fault) (conforming to NE43)	Software configurable ≤ 3,6mA or ≥ 21mA
	Sample cycle	<1s
	Protection	Against reversed polarity - Surge protection
OPERATING ENVIRONMENT	Temperature range	-20 ºC to 80 ºC

ACCESSORIES

SARC2 - USB CONFIGURATOR

Connection between a PC USB port and THP101/THT201 universal temperature head transmitters

INHEAD

Wired Sensors

THP102-I

PT100 ISOLATED TEMPERATURE HEAD TRANSMITTER

KEY FEATURES

Galvanic Isolation 1,5kV AC

PT100 Sensor Input

2 Status LEDs

High Measurement Accuracy

High EMC Performance

NAMUR NE 43 Compliant

Galvanic isolation grant an improved EMC performance and eradicate major measurement errors, turning THP102-I into a reliable head transmitter to comply with several applications where PT100 probes are being used.

VERSION REFERENCE: PA183120110

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

INPUT RESISTANCETHERMOMETHER	Sensor type	PT100
	Connection	1 Resistance thermometer (RTD) in 3-wire system
	Units	ºC
	Sensor current	200 µA
OUTPUT	Output signal	4 to 20 mA
	Power supply (Uaux)	12 to 24V DC
	Max. load	(Uaux - 9)/0.021A
	Error signal (e.g. Following sensor fault) (conforming to NE43)	Software configurable 3,2 mA or 21mA
	Sample cycle	< 200ms
	Protection	Against reversed polarity - Surge protection
COMMON SPECIFICATIONS	Isolation voltage (test | operation)	1,5 kV AC | 48 V AC
	Internal power dissipation	40 mW to 0,5 W
	Voltage drop	12V DC
	Effect of supply voltage variation	< 0,003% of span/ V DC
	Response time 90%	< 1s
	Power-up time	< 1s
OPERATING ENVIRONMENT	Temperature range	-40 ºC to 80 ºC
	Relative humidity	≤95%, without condensation

INHEAD

Wired Sensors

THT202-I

THERMOCOUPLE ISOLATED TEMPERATURE HEAD TRANSMITTER

KEY FEATURES

4 to 20 mA Output

Galvanic Isolation 1,5kV AC

Thermocouple Sensor Input (J,K,N,R,S,T)

Wide Measurement Range

2 Status LEDs

High Measurement Accuracy

High EMC Performance

NAMUR NE 43 Compliant

Galvanic isolation grant an improved EMC performance and eradicate major measurement errors, turning THT202-I into a reliable head transmitter to comply with several applications where thermocouple probes are being used.

VERSION REFERENCE: PA183120210

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

INPUT THERMOCOUPLES	Sensor type	Thermocouples: J, K, N, R, S, T
	Connection	1 Thermocouple (TC)
	Units	ºC
	Sensor current	<11 nA
	Cold junction compensation (CJC)	Integrated resistance thermometer
OUTPUT	Output signal	4 to 20 mA
	Power supply (Uaux)	12 to 24V DC
	Max. load	(Uaux - 12)/0.021A
	Error signal (e.g. Following sensor fault) (conforming to NE43)	Software configurable 3,2 mA or 21 mA
	Sample cycle	< 200ms
	Protection	Against reversed polarity - Surge protection
COMMON SPECIFICATIONS	Isolation voltage (test | operation)	1,5 kV AC | 48 V AC
	Internal power dissipation	40 mW to 0,5 W
	Voltage drop	12V DC
	Effect of supply voltage variation	< 0,003% of span/ V DC
	Response time 90%	< 1s
	Power-up time	< 600ms
OPERATING ENVIRONMENT	Temperature range	-40 ºC to 80 ºC
	Relative humidity	≤95%, without condensation

INHEAD

Wired Sensors

THU301-I

UNIVERSAL TEMPERATURE
ISOLATED HEAD TRANSMITTER

KEY FEATURES

4 to 20 mA Output

Galvanic Isolation 1,5kV AC

Universal Sensor Input Thermocouple J,K,N,R,S,T; PT100, PT500 and PT1000 RTD

Wide Measurement Range

2 Status LEDs

High Measurement Accuracy

High EMC Performance

NAMUR NE 43 Compliant

Galvanic isolation grant an improved EMC performance and eradicate major measurement errors, turning THU301-I in a reliable head transmitter to comply with several applications where thermocouple probes are being used.

VERSION REFERENCE: PA183120010

TECHNICAL SPECIFICATIONS Applicable data at 23ºC

		RTD	TC
INPUT	Measured variable	Temperature	Temperature
	Sensor type	PT100, PT500, PT1000	J, K, N, R, S, T
	Connection	1 Resistance thermometer*	1 Thermocouple (TC)
	Units	ºC	ºC
	Sensor current	200 µA	<11 nA
	Minimum measured span	50ºC	50ºC

*RTD in 2-wire, 3-wire or 4-wire.

OUTPUT	Output signal	4 to 20 mA
	Power supply (Uaux)	12 to 24V DC
	Max. load	(Uaux - 12) / 0.021 A
	Error signal (e.g. following sensor fault) (conforming to NE43)	Software configurable 3,2 mA or 21 mA
	Sample cycle	< 200ms
	Protection	Against reversed polarity - Surge protection

OPERATING ENVIRONMENT	Temperature range	-40 ºC to 80ºC
	Relative humidity	≤95%, without condensation

PROBES

Tekon Electronics has a specialized department in the production of temperature probes for a wide range of industries.
For reliable measurements, even in the harshest of conditions, we produce a wide variety of industrial temperature sensors, both resistance thermometers and thermocouples.
General proposed, corrosion resistant, surface probes, flanged thermocouple, protection head design, industrial, precious metal sheathed.

Competence and professionalism ensure the production of reliable solutions and increased quality.

Customer requests are answered with the major promptness and are always followed by advice from a team with extensive experience in producing temperature and level measurement solutions.

Temperature and level probes

KEY FEATURES

OEM

Production according to customized specifications

Fast assembly and delivery

Digital Temperature Probes

Tekon has a specialized department in the production of temperature probes for a wide range of industries. Competence and professionalism ensure the production of reliable solutions and increased quality. Customer requests are answered with major promptness and are always followed by advice from a team with extensive experience in producing temperature and level measurement solutions.

Contact us for more information on probes completely produced according to the specific requirements of your process.

DIGITAL PROBES

Our digital probes offer an I2C/SPI digital interface or other to be specified, adding to the probes the advantages inherent to the digital universe, from traceability, customized configurations to customer data. We manufacture custom-made digital temperature probes suitable for several applications:

- **Cooling and industrial freezing;**
- **Food processing;**
- **Wireless monitoring systems;**
- **Portable devices for temperature measurement**

RTD

Resistance Temperature Detector (RTD) temperature probes, are featured by the acquisition of temperature through thermoresistors made of metals with fluctuation of electrical resistance. The stability guaranteed by this type of sensors, makes them widely used in various applications. The most common types of RTD's on the market - PT100 and PT1000 - and specially - PT120, PT500 and PT10000 - can be divided into several accuracy classes: B, A, 1/3 and 1/10. Tekon Electronics produces single RTD temperature probes with 2, 3 or 4 wire connections and double probes with 4 or 6 wire connections.

THERMOCOUPLES

Thermocouple sensors consists on two wires made of different types of materials, fused at a single point, creating a thermal junction. When this junction experiences a temperature change, a voltage that is proportional to the temperature difference between the connection terminals and the junction is created. The most frequent thermocouple types are J, K, N, S, R, T and E. The special thermocouple types B, G, C and D are used in environments with temperatures that can reach 2600ºC. The choice of the thermocouple must consider the following specifications:

- **Temperature range;**
- **Accuracy;**
- **Work conditions.**

MINERAL INSULATED INCONEL

Our experienced production team is able to build thermocouple probes with an inconel coating, ensuring that all the necessary requirements from storage to the production process are protected in order to obtain a final product with high quality.

THERMISTOR

Thermistors are temperature sensors that vary the resistance of the semiconductor element according to the temperature to which they are exposed. There are two types of thermistors:

- **NTC** (Negative Temperature Coefficient) - thermistors whose coefficient of resistance variation with temperature is negative: resistance decreases with increasing temperature.

- **PTC** (Positive Temperature Coefficient) - thermistors whose coefficient of resistance variation with temperature is positive: resistance increases with increasing temperature.

Thermistors have a high thermal coefficient which gives them a high sensitivity, causing great resistance variations for small temperature variations.

LEVEL

Tekon Electronics is also dedicated to the production of magnetic level probes which are easy to install and oriented to vertical assemblies. The level probes can contain up to 5 detection points, operating in applications with temperatures up to 125ºC and 10 bar pressure.

REFERENCE TABLE

	PRODUCT DESIGNATION	HOUSING COLOR	REFERENCE 868 MHz	REFERENCE 915 MHz
PLUS	PLUS TWP4AI Wireless Transmitter	WHITE	PA164510110	PA164510120
	PLUS TWP-1AI Wireless Transmitter	WHITE	PA202320310	PA202320320
	PLUS TWP-2AI Wireless Transmitter	WHITE	PA202320410	PA202320420
	PLUS TWP-1DI Wireless Transmitter	WHITE	PA202320510	PA202320520
	PLUS TWP-2DI Wireless Transmitter	WHITE	PA202320610	PA202320620
	PLUS TWP-1UT Wireless Transmitter	WHITE	PA202320110	PA202320120
	PLUS TWP-2UT Wireless Transmitter	WHITE	PA202320210	PA202320220
	PLUS TWP-1UT-IN Wireless Transmitter	WHITE	PA202320111	PA202320121
	PLUS TWP-2UT-IN Wireless Transmitter	WHITE	PA202320211	PA202320221
	PLUS TWP-4AI4DI1UT Wireless Transmitter	WHITE	PA164510610	PA164510620
	PLUS TWPH-1UT Wireless Transmitter	WHITE	PA164510510	PA164510520
	PLUS WGW420 Wireless Gateway	WHITE	PA164510210	PA164510220
	PLUS WRP001 Wireless Repeater	WHITE	PA164510310	PA164510320
	PLUS PIM101 IoT Module	WHITE	PA201620110	
DUOS	DUOS TEMP Wireless Transmitter Built-in Probe	BLACK	PA160411710	PA160411730
		WHITE	PA160411720	PA160411740
	DUOS TEMP Wireless Transmitter	BLACK	PA160410110	PA160410130
		WHITE	PA160410120	PA160410140
	DUOS HYGROTEMP Wireless Transmitter	BLACK	PA164520110	PA164520130
		WHITE	PA164520120	PA164520140
	DUOS DI+Temp Wireless Transmitter	BLACK	PA160411210	PA160411230
		WHITE	PA160411220	PA160411240
	DUOS inTemp Wireless Transmitter	WHITE	PA210310110	PA210310120
	DUOS inCO2 Wireless Transmitter	WHITE	PA210310210	PA210310220
	DUOS inHygrotemp Wireless Transmitter	WHITE	PA210310310	PA210310320
	DUOS inAir Wireless Transmitter	WHITE	PA210310410	PA210310420
	DUOS uTemp Wireless Transmitter	WHITE	PA210320120	PA210320140
	DUOS MultiTemp Wireless Transmitter	BLACK	PA210310510	PA210310530
		WHITE	PA210310520	PA210310540
	DUOS Gateway	BLACK	PA160410210	PA160410250
		WHITE	PA160410230	PA160410270
	DUOS IoT Gateway	BLACK	PA160410220	PA160410260
		WHITE	PA160410240	PA160410280
	DUOS Repeater	BLACK	PA160410310	PA160410330
		WHITE	PA160410320	PA160410340

REFERENCE TABLE

	PRODUCT DESIGNATION	HOUSING COLOR	REFERENCE 868 MHz	REFERENCE 915 MHz
UNIVERSAL GATEWAY	Universal IoT Gateway TK-UGW	GREY	PA222410100	PA222410101
	Universal IoT Gateway TK-UGW-GSM	GREY	PA222410200	PA222410201
WSM	WSM101 Wireless Serial Module	WHITE	PA202310110	PA202310120
DIN RAIL	TDU301-I - Universal Isolated Transmitter	WHITE	PA201610100	
	TDU302-I - Voltage Output Isolated Transmitter	WHITE	PA201610200	
INHEAD	THP101 PT100 Temperature Transmitter	BLUE	PA132720110	
	THT201 Thermocouple Temperature Transmitter	BLUE	PA132720210	
	THP102-I PT100 Isolated Head Transmitter	WHITE	PA183120110	
	THT202-I Thermocouple Isolated Head Transmitter	WHITE	PA183120210	
	THU301-I Universal Isolated Head Transmitter	WHITE	PA183120010	
	THM501 PT100 Temperature Transmitter With Modbus output	BLUE	PA151700100	
	THM502-I RTD Isolated Modbus Transmitter	WHITE	PA202710100	
	THM602-I Thermocouple Isolated Modbus Transmitter	WHITE	PA202710200	

ACCESSORIES

	PRODUCT DESIGNATION	REFERENCE
PLUS	Antenna Cable Extension 2MT	PA123772100
	Buz Connection Head For Wireless Transmitters	PA123790200
	Buz Connection Head For Wireless Transmitters with probe	PA123791100
	RS485 To USB Converter Cable	PA123790400
	Internal Primary Batteries Kit	PA123791200
	Internal Rechargeable Batteries Kit	PA123791300
	Wall Mount Antenna with 3MT cable 868MHZ	PA123791400
	Pole Mount Directional Antenna with 5M Cable 868/915MHZ	PA123791500
	Antenna Base	PA123792200
	Primary Batteries Power Box	PA123791201
	Rechargeable Batteries Power Box	PA123791301
	Solar Panel 1W	PA123791600
	Solar Panel Mounting Bracket	PA123791601
	Mounting Bracket	PA123791700

DUOS	Transmitter SARC	PA160410005
	Power Supply Type A	PA160412810
	Power Supply Type G	PA160412710
	Power Supply Type C	PA160410006
	Power Supply Type C 5 V DC	PA160413610
	Gateway External Cable	PA160410007
	External Power Cable	PA160410008
	Transmitter Mounting Clip	PA160410910
	Transmitter Mounting Bracket	PA160410810
	Gateway/Repeater Mounting Clip	PA160411010
	Digital Temperature Probe	PA160410001
	Digital Temperature Probe with 2MT Cable	PA160410002
	Digital Temperature Probe with 5MT Cable	PA160410003
	DUOS T+RH External Probe TK-TRH-05	PA164520007
	DUOS T+RH External Probe TK-TRH-20	PA164520008
	Di+TEMP External Cable	PA160410009
	Digital Temperature Probe with 2MT Cable for High Temperature	PA160413410
	Digital Temperature Probe with 5MT Cable for High Temperature	PA160413510
	M8 Male Connector with NTC	PA160413710
	DUOS Magnetic Sensor 2M Cable TK-MS-20	PA160414610
	DUOS Magnetic Sensor 0,5M Cable TK-MS-05	PA160414510
	DUOS Multitemp Probe Splitter Box TK-PSB-015	PA160413910
	DUOS Multitemp Double Probe 2M TK-DP-20	PA160414010
	DUOS Multitemp Double Probe 5M TK-DP-50	PA160414110

ACCESSORIES

	DUOS Multitemp Single Probe 0,5M TK-SP-05	PA160414210
	DUOS Multitemp Single Probe 2M TK-SP-20	PA160414310
	DUOS Multitemp Single Probe 5M TK-SP-20	PA160414410

IN-HEAD	SARC1105 – USB Configurator	PA110050100
	SARC2 – USB Configurator	PA132720310

COMPOSTING

Wireless Temperature Monitoring

Sensor-to-cloud solution
to monitor composting process and
remote applications with temperature

Tekon Electronics developed a combined transmitter and probe solution with 1 or 2 measuring points. Measuring probes are powered by internal batteries, rechargeable via a solar panel. Therefore, a continuous and sustainable remote monitoring is ensured.

Temperature measurements are sent to the solution's gateway which, via a module with an internet connection, will send data to the cloud where it can be viewed and analyzed in real time, on the Tekon IoT Platform, a visualization platform and advanced data analysis from Tekon Electronics.

Note: data can be available to local automation systems. Contact our team to learn more about this option.

SOLUTION ANATOMY

Each measuring point consists of a temperature probe and a wireless transmitter. The temperature probe can be composed by 1 or 2 measuring points, according to the customer's requirements. The wireless transmitter, installed on top of the probe, can be powered in two ways:

Solar panel: powered by solar energy that charges rechargeable batteries, existing inside the transmitter. The batteries can also be rechargeable via a mini USB port inside the transmitter.

Primary batteries: lithium/alkaline battery pack for direct supply, inside the transmitter. It can be used with rechargeable batteries externally.

QUICK, RELIABLE AND SECURE

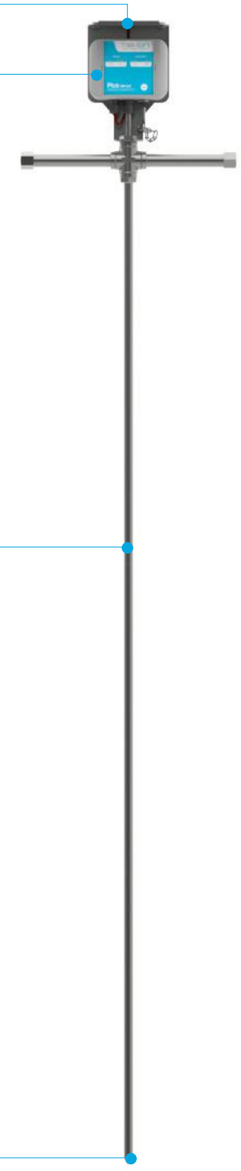
Exclude the manual process of measuring and recording temperatures from the composting process. With Tekon IoT Platform data analysis tool, you can quickly access data from any device and place. Reduce the risk of accidents at work, avoiding contact with the fermentation atmosphere. Monitoring is done remotely and continuously.

WIRELESS MONITORING

Our composting solutions work under a dedicated network to secure the collected data. All the processes can be monitored in our Tekon IoT Platform, working locally or on the cloud.

TEKON IOT PLATFORM

Tekon IoT Platform is a data visualization and analysis solution, fully developed by Tekon Electronics. Through this tool, you can consult the data from your probes and processes, at any time, from any device. You can configure alerts that focus on temperatures and other variables in the monitoring process, which will send you notifications by email or SMS, whenever the process reaches or exceeds the defined values.



*** UPCOMING UPDATES ***

Following customer inputs, we are working in new measuring possibilities for our composting solutions. In a near future it will be possible to measure more variables with our probes:

- Oxigen
- Moisture

BENEFITS OF COMPOSTING

MONITOR SOLUTION

QUICK INSTALLATION

Suitable design to allow a quick and secure field installation.

PROCESS KNOWLEDGE

Real-time and continuous monitoring provides a complete overview of all composting process phases – mesophilic, thermophilic and maturation.

REPORTING

Export data from monitoring process or create periodic reports automatically sent to managers and operators.

SUSTAINABILITY

A solar powered solution that promotes the sustainability of your application and reduces operational costs. It includes a magnetic on/off switch to save energy when the probe is not in use. Also available without solar panel and with battery pack, for indoor applications.

SCALABILITY

Each wireless network supports up to 55 measurement points with 1 or 2 temperature sensors.

IMPROVE WORK SAFETY

Automatic recording of temperatures eliminates the need of having a worker constantly moving to the compost pile to perform manual temperature records, reducing the occurrence of work accidents.

WORLDWIDE DISTRIBUTION

Simon Fisher
Managing Director
Electroserv, United Kingdom

In a time where cutting cost, risk and resource is paramount, the Tekon range of products is a fantastic solution.

The varying range of products gives our customers an extremely flexible approach to adding measurement points to their process. Measurement points that sometimes just aren't practicable by using cables.

When then using the IOT platform in conjunction with the hardware, our customers have a complete solution. The IOT platform allows our customers to store their data in a secure way whilst have a n array of tools to manage their plant.

Using the IOT platform reports and alarms, management can often reduce cost in energy usage and in maintenance activities

Tekon's product line, IoT platform, service and support all contribute to excellence. The design of the products reflects a great knowledge of industrial processes, automation and engineering.

Thus with the DUOS range, which has been developed over the years, thanks to the great work of the R&D team, you can monitor the environment of your storage, production and office areas. The commissioning of Smart Sensors is very simple and intuitive.

On the other hand, the Smart Transmitters of the PLUS series fulfil two functions. Eliminate cables and at the same time make installations more flexible and connect industrial process. The aim is brilliantly fulfilled because whatever you are measuring on your process, temperature, pressure, flow, level, vibration, you can now upload these measurements on the cloud. Other manufacturers also offer similar solutions but not the degree of freedom that you have with PLUS Smart Transmitters. The same goes for the Tekon IoT Platform, which allows you to aggregate all your measurement data, view it as a curve, counter and make analyses. The automatic reports allow for an undeniable gain in productivity and the alarms by e-mail, SMS and programmable phone calls give you peace of mind. Data is a very important resource, so Tekon understands customers who want to have this valuable data within their organization. A local version of the Tekon IoT Platform with similar functions is available.

The attention to detail in the designing of the products and the continuously improving IoT Platform make Tekon solutions excellent and worth of trust.

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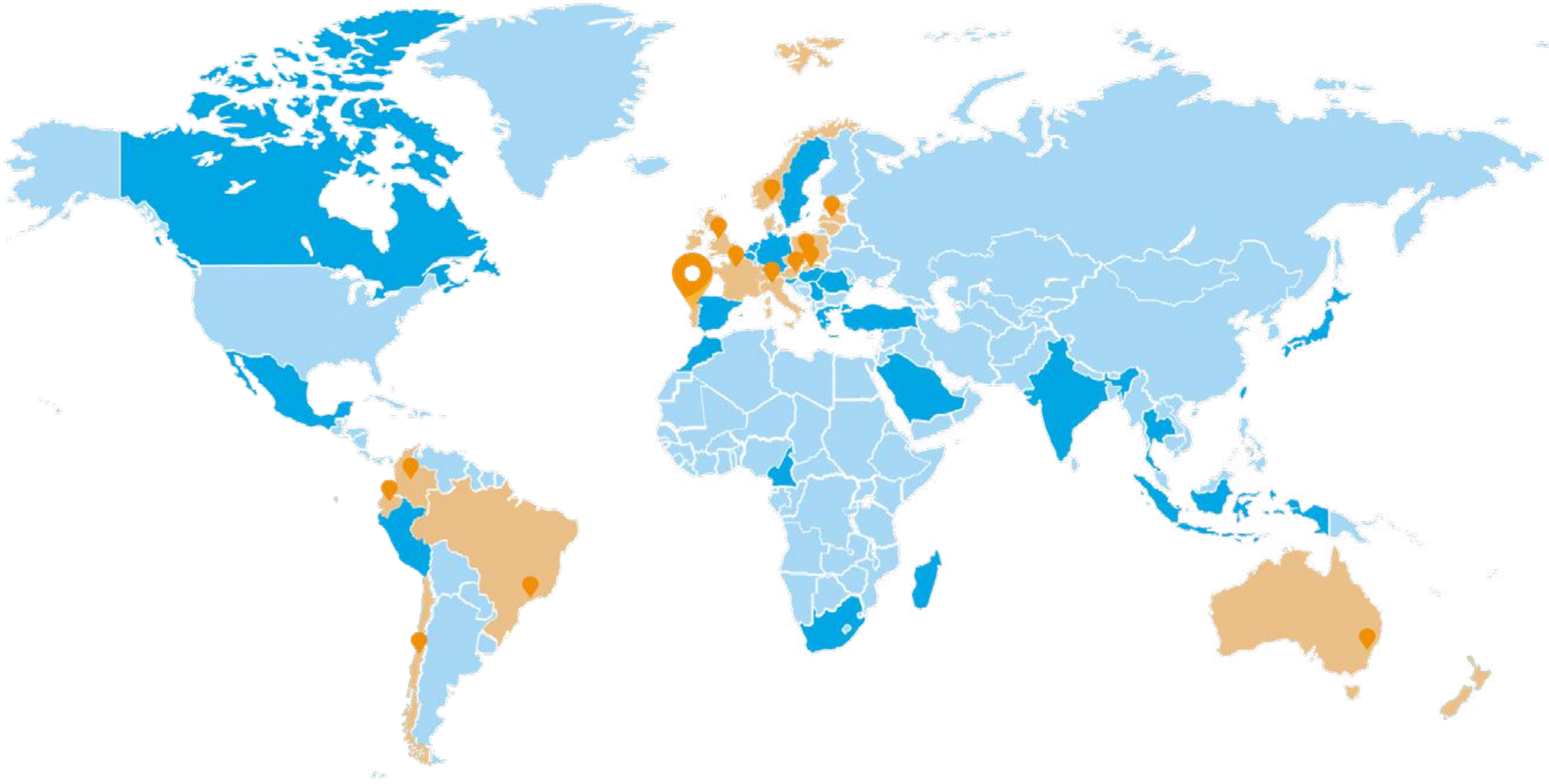
TEKON ELECTRONICS WORLDWIDE



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CAT.2023.V01

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