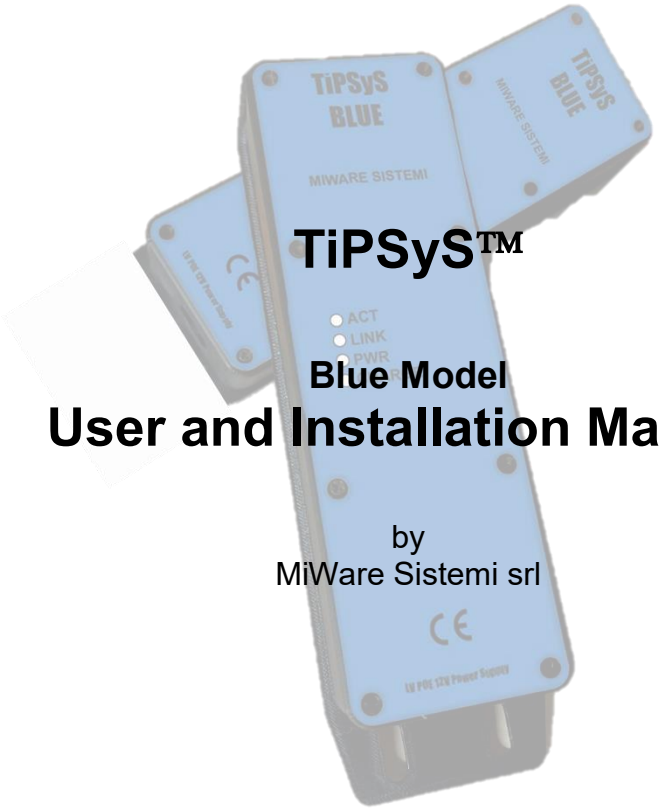

TiPSyS™

Blue Model

User and Installation Manual

by
MiWare Sistemi srl

Rev. 06

MIWARE SISTEMI S.r.l. . Via Pontina Km 47,015 - 04011 Aprilia (LT) - ITALY – Tel/Fax +39 06.92732439
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GENERAL INFORMATION

This manual is intended to provide the final User with relevant information how to use and operate the device properly, in order to avoid risks or damages coming from an improper use.

This manual may contain text or pictures which may not refer explicitly to the purchased device model.
The Manufacturer holds the right to modify the manual without further notification.

Keep this manual always available for future reference.

WARRANTY

A 12 months warranty period is valid starting from the date shown on the delivery note. Inspections and/or repair can only be carried out at the Manufacturer's premises at MiWare Sistemi srl, Via Pontina km 47015, 04011 Aprilia (LT), Italy.

According to the warranty conditions, only defects due to faulty components, manufacturing or assembly faults are taken into account.
According to the warranty condition, either repair or replacement of the component will be carried, labor costs included, depending on the problem found.

No warranty for misuse will be considered. Furthermore, the warranty will be automatically void in case of:

- **tampering, erasing, or removal of the identification label and/or serial number of the device;**

- **improper use, modifications, alterations, repairs of the device carried out by non-authorized personnel.**

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SYMBOLS

The below list contains most important symbols used in this manual:

Caution! Risk of electric shock.

Caution! This operation must be carried out by specialized personnel.

Further information.

DISPOSAL INSTRUCTIONS

This above symbol on the device or its packaging has the following meaning:

- **it is an electrical/electronic device and cannot be disposed of as household waste. It must be delivered to a collection point for a proper recycling process;**
- **improper use or disposal can cause environmental pollution and/or can be harmful to human health;**
- **not complying with these guidelines will result in a fine according to the regulations in force in each Country;**
- **it is recommended to also dispose of the packaging and wrapping materials in compliance with local regulations.**

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PRODUCT DESCRIPTION

TiPSyS™ is the new cutting edge solution for tire pressure monitoring and control into industrial applications.

TiPSyS™ consists of:

- **capped pressure sensors which can fit any standard tire's valve, with built-in bluetooth capability;**
- **a POE communication board, or the "box".**

Each box receives the pressure data from the sensors via long range Bluetooth and allows an easy integration into any industrial application though a standard ethernet connection.

In addition, the POE built-in capability makes any installation clean and affordable (all-in-one cable!).

The pressure sensors rely on BLE = Bluetooth low energy technology, which allows for an enhanced battery life.

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USER WARNINGS

GENERAL RULES FOR A PROPER USE OF THE DEVICE

- Keep away from any heat sources and from direct UV sunlight;

- Protect from rain (except for specific IP versions);

- Do not wash with water jets (except for specific IP versions);

- Do not immerse in water (except for specific IP versions);

- Do not pour liquids onto the device (except for specific IP versions);

- Do not use solvents for cleaning;

- Do not install in explosive application (except for specific Atex versions).

- If the working temperature overcome the allowed limits, install the device in order to allow an adequate airflow and prevent malfunctions.

RULES FOR A PROPER INSTALLATION OF THE DEVICE

ELECTRICAL INSTALLATION

Routing of the Ethernet cable into the control panel shall not be in common to other cables; as a general rule, connect it directly to the RJ45's terminal block.

Avoid installing the device in a panel containing inverters; if unavoidable, equip the inverters with appropriate filters and separate them with shielded plates.

Any electrical protections for the device (including fuses, interlock switches, etc.) are under the installer's responsibility and will depend on the final use of the device.

In the event of condensation inside the device, it is recommended to keep them always powered.

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RECOMMENDED CABLE SPECIFICATIONS

RJ45: recommended maximum length: 95 m (twisted couples).
Shielded cables, cat.5 or higher are recommended.

ETHERNET CABLE PROTECTION

Use sheaths and waterproof fittings to protect the ethernet cable.

POWER SUPPLY SCHEME

TiPSyS™ box has different power supply requirements, depending on the model:

- **TiPSyS™ model BLUE is powered by Low Voltage POE 24Vdc.**

Therefore, in case of BLUE model, the 24Vdc must be supplied at the specific RJ45 pins, while Modbus/TCP data are transferred through the remaining pins (refer to the diagram at pg.8).

However, specific terminal blocks (not in scope of supply) can be used to achieve the same purpose and facilitating the installation. Contact the Manufacturer for further information.

MECHANICAL INSTALLATION

The TiPSyS™ box has two mounting bracket slots at each end, to allow wall mounting or into a dedicated cover. A bolt with nut or threaded holes is enough for mounting purposes.

PRESENCE OF WIND - IMPACTS - VIBRATIONS

Into the TiPSyS™ box, suitable mounting bracket slots are available at each end of the box, to compensate for the non-planarity of the support holes. Providing additional countermeasures against lateral displacement, anti-tip etc. is under the plant designer and/or the installer's responsibility, depending on final use and considering:

- **impacts and vibrations;**
- **wind thrust;**
- **seismic classification of the installation area;**
- **mechanical resistance of the supporting frame.**

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MAIN SPECIFICATIONS OF THE DEVICE

- **Tire Pressure Monitoring System (TiPSyS™) suitable for wall mount;**
- **Dimenions: 225 x 60 x 39 mm**
- **RJ45 Port: allows connecting the TiPSyS™ to the main equipment infrastructure, for POE power and data transfer purposes;**
- **4x status LED indicators:**

ACT	**MODBUS/TCP activity (Blinking Yellow)**
LINK	**Ethernet Connection Status (Static Green)**
PWR	**Power Status (Static Red)**
CHARGE	**Battery status charge (for model with additional battery. In case of no external battery model, the LED indicator will be Static Orange)**

MAIN FEATURES OF THE DEVICE

POWER SUPPLY	**BLUE model: 24Vdc ±10% POE**
POWER CONSUMPTION	**5W**
HUMIDITY (non-condensing)	**85%**
STORAGE TEMPERATURE	**-30 °C ÷ +80 °C**
OPERATING TEMPERATURE	**-20 °C ÷ +60 °C**
CONNECTIVITY	**Wi-Fi 802.11 b/g/n, Bluetooth 4.2 BR/EDR and BLE.**
ETHERNET INTERFACE	**100Mb with IEEE 802.3 PoE Support**
GALVANIC ISOLATION	**3000 Vdc between the POE Ethernet part and board's power supply circuit.**

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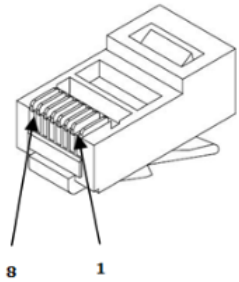
ELECTRICAL CONNECTIONS

RJ45 POE standard pinout applies:

RJ-45			
	Nr. de pin	Identif.	Color
	1	Tx+	
	2	Tx –	
	3	Rx+	
	4	PoE –	
	5	PoE –	
	6	Rx –	
	7	PoE +	
	8	PoE +	

The above diagram shows the standard pinout configuration for any RJ-45 connector, commonly used in Ethernet networking. It specifies the pin numbering from 1 to 8, detailing their respective functions and associated wire colors.

The diagram is crucial for accurately terminating Ethernet cables, ensuring compliance with both T568A and T568B wiring standards.

Each pin has its own specific task:

- **Pins 1 and 2 are typically used for transmitting data;**
- **Pins 3 and 6 are used for receiving data;**
- **Pins 4, 5, 7, and 8 are often utilized for power delivery in PoE applications, with appropriate voltage and current ratings to meet IEEE 802.3 standards.**

The above technical guideline is essential for network engineers and technicians to ensure proper installation and maintenance of Ethernet connections.

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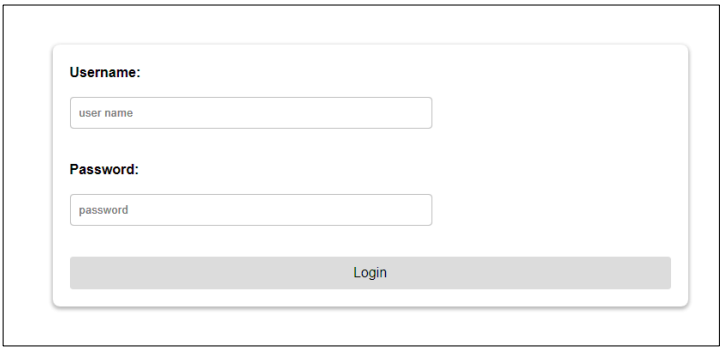
WEBPAGE CONFIGURATION

Once the User will reach the default IP Address (192.168.1.100) from any web browser, the User will land into the Login page.

Default credentials for login are "admin":



After logged in, the User will be prompted to the Settings Page, which contains the following fields:

IP ADDRESS: the physical TiPSyS™ box IP Address

NETMASK & GATEWAY: User's choice

BLE ID 1: the Bluetooth NAME of the pressure sensor (ex: TPMS1_22DA70)

IP MODBUS: the physical ModBus server IP address

NODE MODBUS: the ModBus node to reach

OFFSET MODBUS: the offset Modbus address (4 registers from the offset will be published).

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Once typed in, the system will check the filled fields:

KO means incorrect information have been provided and the User is not allowed to save any parameters.

OK means all required field are correct. The User can save the parameters to the system.

The User can then log off by clicking on the up-left corner in the Configuration Webpage.

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COMMUNICATION PROTOCOL AND DATA

TECHINCAL DATA PROTOCOL INFORMATIONS

PORT	**RJ45**
ETHERNET CONNECTION LED	**LINK LED – STATIC GREEN**
MODBUS ACTIVITY LED	**ACT LED – BLINKING YELLOW**

The TiPSyS™ box is equipped with a Modbus/TCP RJ45 port which allows transmitting BLE pressure sensor data through a Modbus/TCP master.

Modbus/TCP parameters (node and offset) can be setup manually in the webpage configuration section.

PRESSURE SENSOR DATA PROTOCOL INFORMATION

The BLE pressure sensors included in the TiPSyS™ kit send data via bluetooth to the TiPSyS™ box. Each sensor will update pressure data after a change in the pressure is detected, while the inquiry communication from the TiPSyS™ box to the sensors is continuous.

In details, each pressure sensor sends 3 data information via ModBus/TCP:

- **real time contained air pressure [bar];**
- **real time contained air temperature [°C];**
- **battery life [%].**

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DECLARATION OF CONFORMITY - EU

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declares that under the sole responsibility the devices named below conform to the attached User and Installation Manual:

Device Name: TiPSyS™

Device Model: Blue

are in compliance with the provisions of the following EC Directives, including all amendments, and with national legislation implementing these directives:

1. **Low Voltage Directive (LVD) (2014/35/EU)**
2. **Electromagnetic Compatibility (EMC) Directive (2014/35/EU)**
3. **Machinery Safety (2006/42/EC)**

Manufacturer

MiWare Sistemi srl
Via Pontina km 47015
04011 Aprilia (LT), Italy

Aprilia (LT), 07 January 2025 **Ivano Monticelli**

REMARKS

The User shall note that TiPSyS™ box has been tested only with the tire pressure sensors in scope of supply:

However, different sensors might be implemented.
Contact the Manufacturer for further information.

CONTACTS

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