

CPU Meteo Mod Datalogger

IN-0056-CF

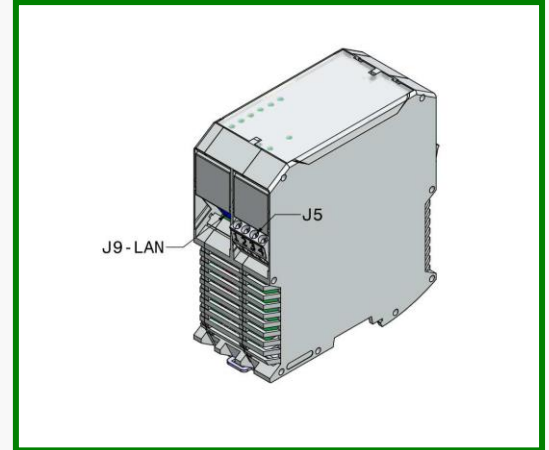
CPU MeteoMod Datalogger

CPU for data acquisition, processing and transmission for meteorological and climatic sensors.

Based on the Linux operating system, it allows the automatic acquisition of data (via RS485 serial or through additional A / D modules), their presentation and transmission in the Control Room.

APPLICATIONS:

Professional meteorology
Road meteorology
Marine and ports
Industrial environmental monitoring



General description

The CPU Meteo Mod is based on an electronic microprocessor unit based on a highly integrated embedded architecture. The unit is supplied with a pre-installed Linux operating system, equipped with all the software drivers necessary for the optimal functioning of the hardware peripherals present.

The module is made in DIN rail compatible format, and the low power consumption makes it possible to easily integrate it into existing electrical panels.

The system is based on an integrated embedded architecture, without resorting to existing system integrations, ensuring reduced installation and maintenance costs and availability of spare parts and accessories over time.

The unit has 4 independent RS485 serial interfaces, and can support up to 16 additional analog / I / O modules (with resolution up to 24 bits) or digital.

The unit has a programming interface for managing programmable warning / alarm thresholds (relay output activation / sending messages via TCP / IP or SMS) and has internal logics for filtering / validating data, specific for each type of sensor connected.

The configuration of the device, including the network parameters, takes place via an integrated webserver, both locally and on the intranet (internet).

Netsens can supply and install on request all the software necessary for data communication with the central server, as well as modules for insertion on a database (SQL or Oracle) and data presentation through an advanced graphical user interface.

Electrical specification:

- Power supply: 12 – 24 VDC
- Power consumption: 1.5 W
- RAM memory: 64 MB DDR
- Mass memory: Solid state 4 GB + external on request
- OS Flash memory: 64 MB NAND + 4 MB SPI NOR Flash
- EEPROM: 32 KB

General specification:

- Operating temperature range: -30 °C +60°C
- Assembly: DIN rail

Operative system: Linux

user interface presentation with the following functions:

- Station master data
- Network settings
- Re-reading of the values acquired by the sensors
- Acquisition interval 10-3600 seconds

Permanent data storage even in the absence of transmission.

Network interface 1xRJ45

I/O: 4xRS485, additional A/D 16 or 24 bits (on request), additional SDI-12 (on request), USB, RS232
Outputs: 2 x NC/NO relay

Optional modules:

16 x Analog inputs (voltage / current)

8 x pulse inputs

LCD touch-screen display unit

Other modules and configurations available on request.

CPU Meteo Mod Datalogger

IN-0056-CF

Installation:

The unit must be housed inside an electrical panel that offers suitable protection (at least IP55) and can be housed via a DIN Rail type support. Electrical and data connections are made via an integrated terminal block, while the LAN network interface and RJ45 connector.

By removing the front panel, you can access the RS232 serial interface (via a special connection cable available on request), the micro SD-Card slot and the USB connector.

NOTE: all connection and / or access operations from the front panel must be carried out in the absence of power supply

NOTE: it is recommended to put the device in HALT condition before removing the power supply, in order not to damage the file system.

Refer to the user manual for further information.

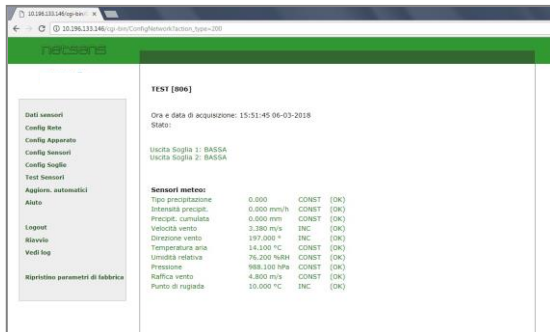


Figure 1 – Data visualization interface via integrated web server

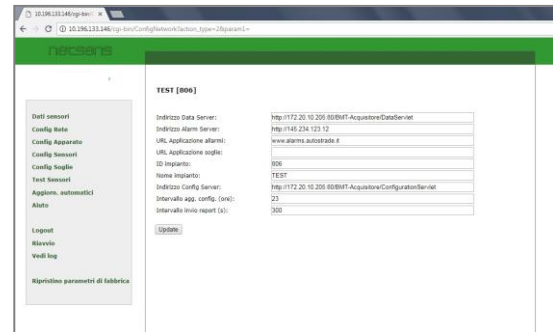


Figura 2 – CPU Configuration

Traceability, packaging and shipping:

Each sensor is individually tested and a unique serial number identification is assigned, which allows tracking over time; this code can be printed on the shipping carton, on the sensor itself or alternatively on the appropriate section of the user manual. Please keep this code carefully, to be communicated to the technician in case of failure or replacement. The sensors are sold individually equipped with its own package, which will protect the sensor during transport. If the box is open or visibly damaged, don't accept delivery by courier. Do not open the box with knives, cutter blades, which could damage the sensor or its cable.

Ordering codes

Code	CPU MeteoMod Datalogger
IN-0056-CF	Unità di acquisizione CPU MeteoMod

CPU Meteo Mod Dataloger

IN-0056-CF

Warranty:

Netsens s.r.l. warrants that the above described components will be free from defects in material and workmanship for the following time period from the purchasing:

- Two years for items purchased by final users for non professional use;
- One year for items purchased by companies and organizations for professional use.

This warranty is valid only if all the components are used accordingly to the Manufacturer's indication and to the recommendations included in this User Manual.

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This warranty covers the original purchaser and it is not transferable.

If one or more components are supposed to be defective, contact Netsens s.r.l. or your local reseller in order to obtain a valid return authorization.

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Disposal of Waste Electrical & Electronic Equipment:



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Revisions:

Date	Version	Page(s)	Notes
12/10/2015	1.0	1-3	First release

MeteoSense 4.0 main unit

MN-0129-LL / MN-0130-LL / MN-0131-LL

MeteoSense 4.0 main unit

Reliable data acquisition unit and datalogger.

Data transmission:

- GPRS/LTE CAT M-1 e NB-IoT with custom TCP/IP protocol and FTP
- LAN Ethernet with custom TCP/IP protocol
- MODBUS RTU over RS485

Alphanumeric display for data visualization, connection and diagnostics.

Additional storage on MicroSD Card.

USB configuration interface.

Integrated charger for solar panel power supply (up to 60 W), or mains with optional back-up battery.

Acquisition of meteorological and agronomic sensors.

Outdoor case in UV resistant ABS plastic.

Optional IoT wireless units expansion.

APPLICATIONS:

Professional Meteorology

Agro-meteorology

Airfields / Heliports

Real-time environmental monitoring



Description

The MeteoSense 4.0 main unit represents the evolution of the best-selling MeteoSense 2.0 station, and offers a number of advanced features.

The unit is able to interface different types of sensors, both analog and digital output, and transfer data to a remote server via LTE connectivity in CAT M-1 and NarrowBand IoT modes (where present) and in "fallback" mode on the traditional 2G (GPRS) network (MN-0129-LL). Ethernet LAN connectivity is always available with RJ45 connector (MN-0130-LL) or via ModBus interface on RS485 (MN-0131-LL); it is designed for solar or mains power supply (in this case an optional back-up battery can be provided).

The unit provides also for internal diagnostic data, and complete remote management to minimize interventions in the field.

All sensor connections are made via an easy terminal block, which eliminates the need for cable glands, and

makes installation operations much easier and faster. The unit is designed to withstand the elements over time, and the ABS case guarantees reliability over time.

The alphanumeric LCD display, together with the rotary encoder, allows to display unit status (connection parameters, sensor measurements, etc.) in any condition and the setting of the basic parameters, thus facilitating installation and maintenance.

The unit also has a MicroSD card slot, for permanent storage of all data regardless of their transmission, and a USB port for configuration in the field.

Electrical specification:

Power supply: 12 Vdc, embedded electronic charger for solar panel operation. Optional external adapter for fixed power supply.

Reverse polarity protection.

Remote monitoring of battery voltage, charge status, panel voltage.

Average power consumption: <1W

Mechanical specification:

Operating temperature: -30 °C +70°C

Environmental protection: IP 56

Housing: ABS, UV resistant for outdoor operation

Size: 240x240x80 mm

Supported sensors:

THSense: air temperature/humidity sensor with solar shield;

E-Leaf: Two channel-output leaf wetness sensor;

TerraSense: soil moisture and temperature sensor (up to 3 unit on each station);

EC Sense: soil conductivity sensor;

Rain collector, tipping bucket;

Wind speed and direction sensor;

Visible and UV solar radiation sensors;

Barometer and internal case temperature.

PT1000 temperature sensor.

Up to 4 contact-closure inputs

Up to 12 analog input channels

2xRS485 interfaces

MeteoSense 4.0 main unit

MN-0129-LL / MN-0130-LL / MN-0131-LL

Additional features:

Mounting accessories included.
Real-time data transmission.
40 days of continuous operation with battery, even without solar panel charging **.
USB port for configuration and data downloading.
SD card slot.
16x2 LCD Display Alphanumeric Characters.
Rotary encoder for LCD screen selection.
2x Optional Logic Inputs (NPN Logic).
2x Optional configurable outputs (NO / NC dry contacts).
MicroSIM card available on request.

Installation:

MeteoSense 4.0 is very easy to be installed, since the equipment is supplied from Netsens already configured, with a "turnkey" approach, including all mounting accessories.
If solar panel power supply option is required, please check that the panel is oriented toward South (in Northern Hemisphere) and free from surrounding obstacles.

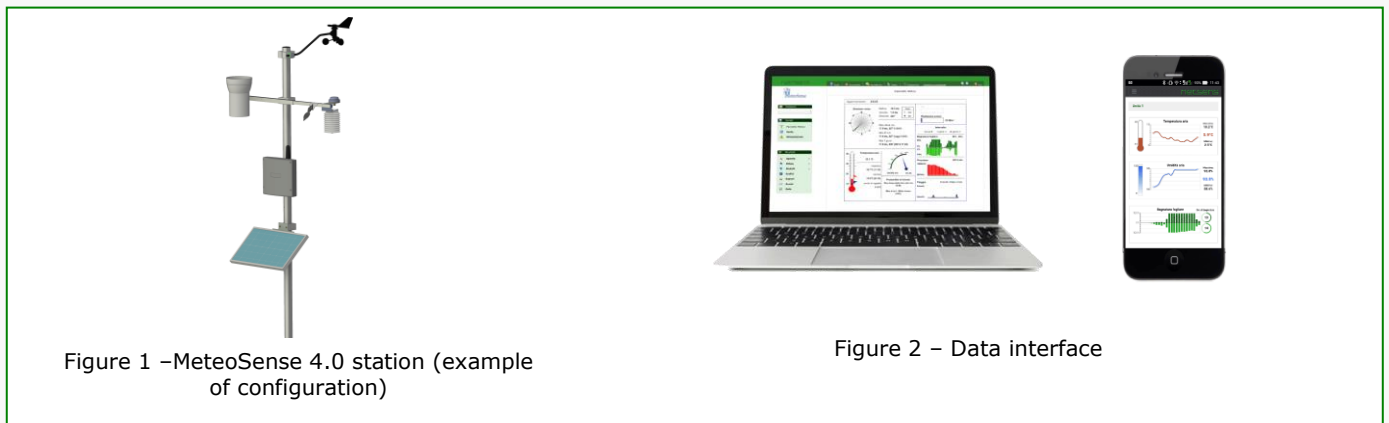


Figure 1 –MeteoSense 4.0 station (example of configuration)

Figure 2 – Data interface

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Units are sold individually equipped with its own package, which will protect the sensor during transport.
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Ordering Codes:

MN-0129-LL	MeteoSense 4.0 2G/LTE main unit
MN-0130-LL	MeteoSense 4.0 LAN main unit
MN-0131-LL	MeteoSense 4.0 ModBus version

MeteoSense 4.0 main unit

MN-0129-LL / MN-0130-LL / MN-0131-LL

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Revisions:

Date	Version	Page(s)	Revisions
10-12-2019	1.0	1-4	First release

MeteoSense PRO 2.0 Data Acquisition unit

MeteoSense PRO 2.0

Data acquisition unit for MeteoSense PRO and IceSense RWIS systems.

Embedded 4G (LTE-NB-IoT), 2G (GPRS) and LAN interfaces with micro-SD card mass memory.

Internal LCD display for local diagnostic and real time data (optionally backlit), with knob for menu selection and configuration.

Local USB interface for datalogger configuration and firmware upgrade.

Several analog and digital inputs available, with expansion option up to 256 channel I/O.

RS232 and 2xRS485 interface.

Available with solar panel supply or 220VAC power input, with embedded intelligent charge regulator.

Metal IP66 enclosure with optional IP68 connectors.

Internal ON/OFF switch

Certification: CE, IEC, EN 60950, EN 50021, IEC 60947.

APPLICATIONS:

Automatic Weather Station (AWS)

Road Weather Information System (RWIS)

Professional meteorological equipment for harbors and airports

Industrial environmental monitoring



General description

MeteoSense PRO 2.0 data acquisition unit is manufactured in Italy by Netsens s.r.l. It supports several external sensors, both analog and digital, and it is designed for real-time operation with embedded 4G/2G and LAN interface, featuring "Always On" IP connectivity. MeteoSense PRO 2.0 is available with solar panel power supply option; in this configuration, diagnostic data message related with battery status, panel current and charge status are sent long with sensor data.

MeteoSense PRO 2.0 features enhanced remote management features, and local autonomous recovery strategies: this results in top level uptime performance, with minimal maintenance.

MeteoSense PRO 2.0 is designed for operate in severe environments: housing and mechanics are manufactured in steel and aluminum, providing also a smart design.

An SD card socket is available for data storage, independently from 4G/2G or LAN transmission. Also, a LCD display allows for easier maintenance operations.

System architecture is oriented to a modular approach, thus resulting in further expansions and/or simpler part replacements; on request, a number of additional external sensors can be integrated, thanks to large number of analog/digital input channels. Spare parts can be guaranteed for many years, on request.

Netsens can also provide for all server-side software package, including data communication modules, databases (SQL or Oracle) and advanced, graphical user interface.

Electrical specification:

- Power supply: 230VAC and 12 VDC (solar panel option).
- Average power consumption: <1 W (w/o sensors)
- Fixed power protection: overcurrent, overvoltage, DC polarity inversion.
- Remote diagnostic: battery charge, instant and average current consumption, solar panel voltage/current, energy, charge status.
- Optional back-up batteries available (fixed power supply).

Environmental specification:

Operating range: -30 °C +70°C (opt. -50°C + 70 °C with internal heater)

Environmental rate (housing): IP 66

Weight: Kg. 5 (w/o sensors and clamping parts)

Housing: steel, with lock. Optionally stainless steel.

Dimension (standard version): 600x400x250 mm

Other specification:

- Software package available for supporting data communication, database insertion (SQL, Oracle), and user interface, including advanced data analysis tools.
- Optional service for smartphone interface and automatic SMS alert configuration.
- I/O: 12 A/D channels, 8 digital, 1xRS232, 4xRS485 and serial digital
- Output relay for logical activation (i.e. pumps, actuators) based on user-selectable (local/remote) sensor thresholds.
- Expansion up to 256 channels (mixed)

MeteoSense PRO 2.0 Data Acquisition unit

Other specification:

- Communication 4G (LTE-NB-IoT), 2G (GPRS) with micro-SIM standard, and LAN (RJ45) for external device connection (i.e. satellite, wifi etc.)
- Clamping parts included (mounting pole diameter to be specified at ordering time)
- Real time data communication with central server using TCP-IP and/or FTP protocol
- Optional SIM card pre-configured (not available in all countries)
- USD card socket with CSV format data file saving
- USB port for local configuration and data download
- Optional specific sensor interface expansion port
- Remote control and configuration of several system parameters

Installation:

MeteoSense PRO 2.0 can be quickly installed on a specific pole or other supports. Sensors can be mounted on a tilting bracket, designed for easy maintenance and calibration. Bottom panel features optional panel-mount IP68 connectors for fast installation and configuration of external equipments (sensors, solar panels, batteries etc.).



Fig. 1a/1b – MeteoSense PRO 2.0
Example of installed configuration for AWS

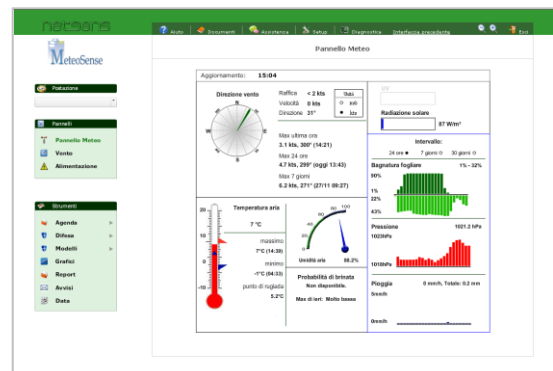


Fig. 2 – Example of user interface main page with optional LiveData® software

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MeteoSense PRO 2.0 Data Acquisition unit

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Ordering codes

IN-0053-GE	MeteoSense PRO 2.0 4G/2G//LAN
IN-0053-GE-CB	MeteoSense PRO 2.0 with optional IP68 panel connectors
MA-0097-IF	Internal 220VAC-12VDC power supply adapter
MA-0053-KB	External 220VAC-12VDC power supply adapter
MA-0082-GD	Solar panel Kit (20W / 44 Ah)
IA-0040-AB-40W	Solar panel Kit (40W / 60 Ah)
IA-0040-AB-80W	Solar panel Kit (80W / 60 Ah)
MM-0075-LB	Stainless steel housing and hardware

Revisions:

Date	Version	Page(s)	Notes
22-05-2012	1.0	1-3	First release
18-06-2016	1.1	1-3	Updated version
18-11-2018	1.2	1	Minor updates
09-07-2020	1.3	1-3	Update of UI and modem specification

WiSense 2.0

Irrigation control unit

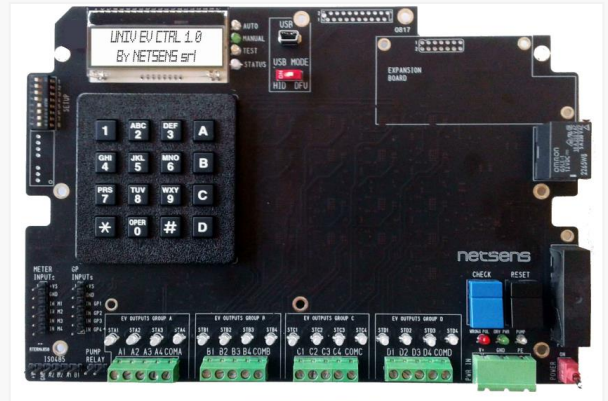
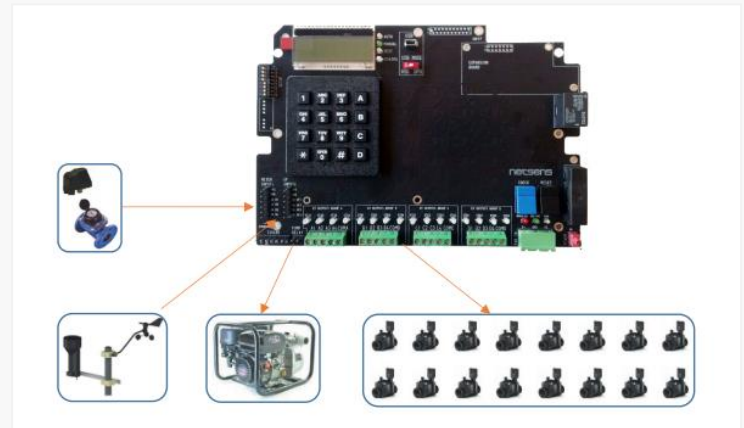
SN-0011-KI

WiSense 2.0 irrigation control unit

- o Controls up to 16 bistable (Pulse) and monostable (Latch) solenoid valves
- o Dedicated output for pump control
- o Up to 4 channels configurable for fertigation or 4 inputs for pressure switches and 4 inputs for liter-counter
- o Local control and programming keyboard and display
- o Can be integrated with MeteoSense stations and AgriSense wireless systems for remote and intelligent management of irrigation cycles
- o Operation with an electric network and with solar power supply
- o Expandable up to 64 channels
- o On-board clock in local time with automatic change to standard time / daylight saving time

APPLICATIONS:

- o crops and greenhouses
- o Irrigation automation for parks and gardens



Description

The new WiSense 2.0 control unit is the result of continuous evolution, to combine advanced and intelligent remote irrigation management with the simplicity of field operations.

Thanks to the wide range of control outputs and inputs, and to the totally electronic management of the implementation, it can manage up to 16 sectors, controlling the solenoid valves of all the main models (9-24V pulsed, bistable and 12-24 V AC / DC monostable type), also of a different type on board the same card; the integrated diagnostic system allows you to promptly identify any electrical tastes on wiring or solenoids.

The integration with MeteoSense® stations and AgriSense® systems allows remote management of all irrigation programs, via the internet, dynamically matching them to the sensor values, and thus allowing the irrigation cycles to be linked to the following sensors:

- Soil moisture in each sector
- Rain
- Evapotranspiration
- Air temperature

The reading of the inputs for pressure switches and flow meters can also be used to manage any alarm situations, both at system level (e.g. stop irrigation due to overpressure) or remotely (e.g. sending Email or SMS for flows higher or lower than expected).

Technical specification

Electrical characteristics:

- Power supply: 12 ÷ 28 Vdc
- Maximum input current: 10 A
- Absorbed Power (Stand-By): 1 ÷ 2 W
- General fuse of protection on board: Max T8A (6.3x32mm)

Local Operator Interface:

- 4x4 matrix keyboard (16 buttons).
- Main command buttons.
- LED indicators of the channel status.
- LED indicators of system status.
- Alphanumeric LCD display 16 characters x 2 lines with LED backlighting.
- Event buzzer.

Communication Interfaces:

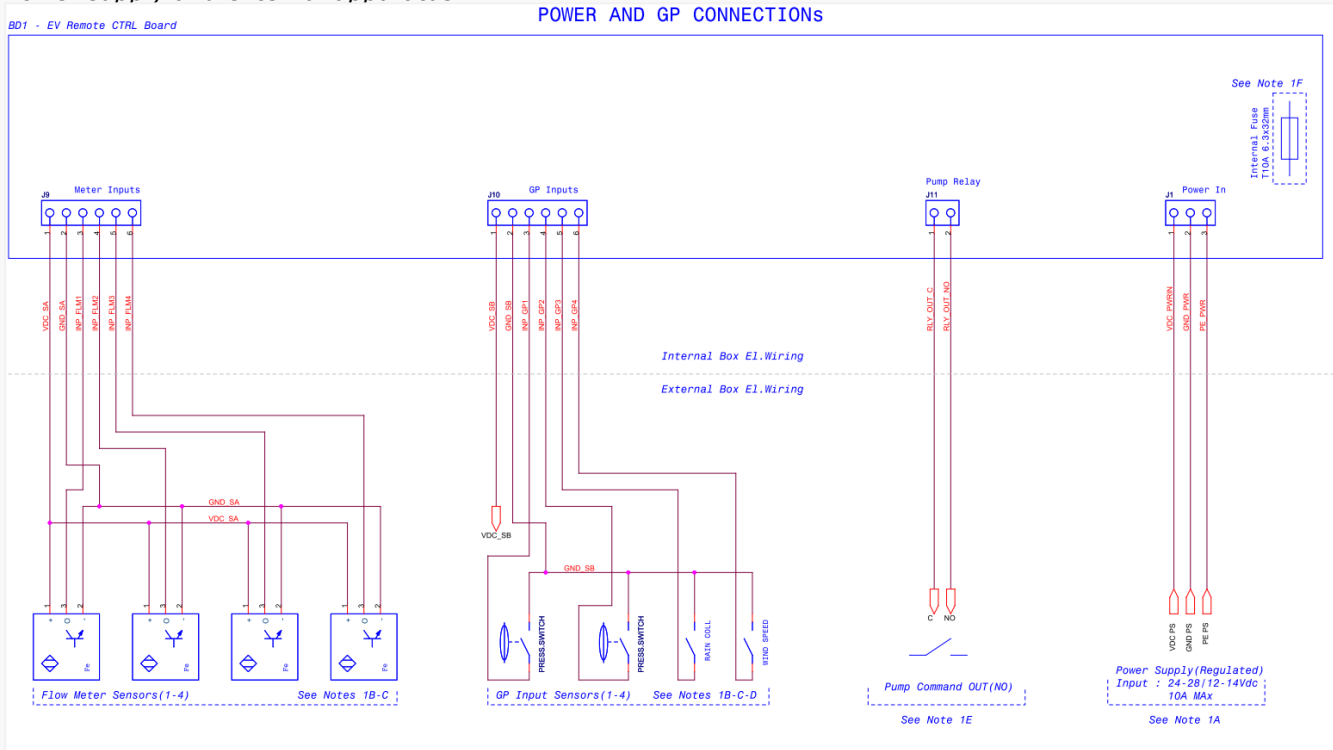
- RS485 serial interface to MeteoSense2.0, Master / Repeater (galvanically isolated option) with additional connector for through connection.
- USB interface for programming and system configuration (HID) and Firmware update (DFU).

Functional characteristics

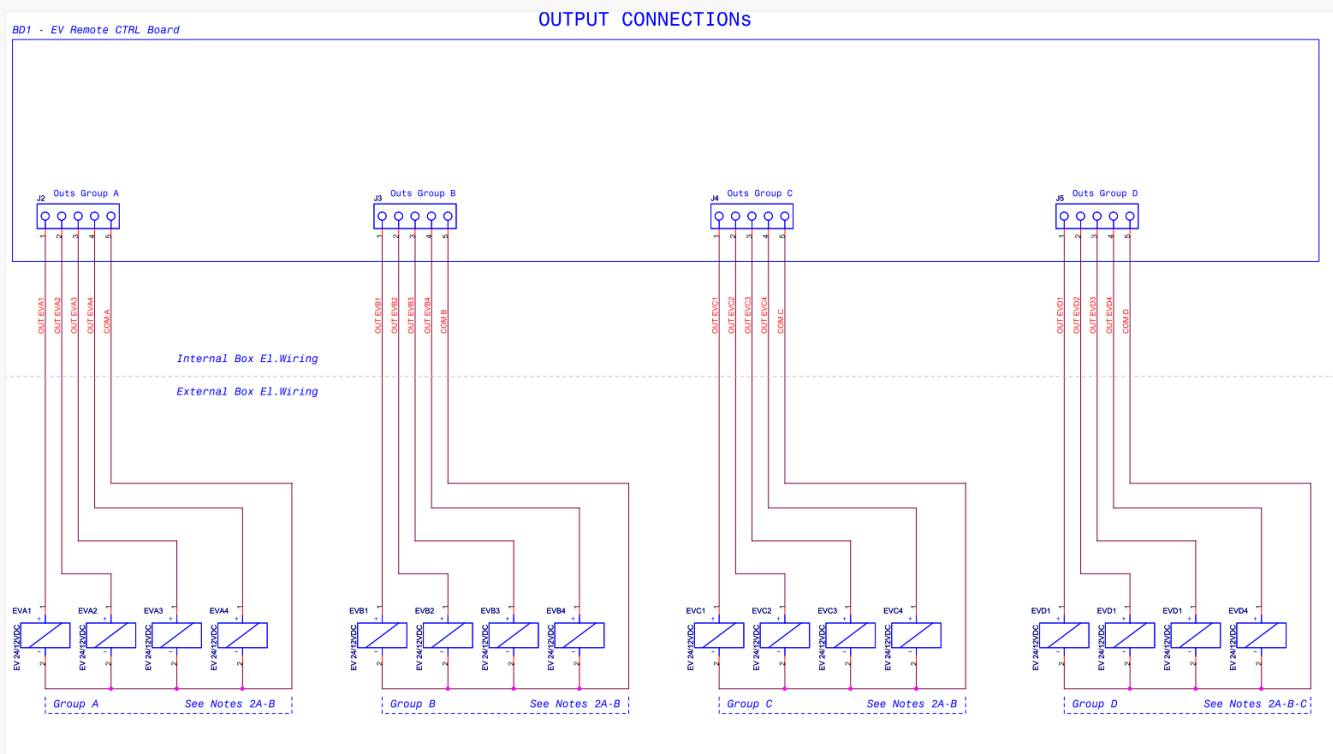
- Types of solenoids supported:
Monostable 24/12 VDC, Monostable 24 AC, Bistable 9 ÷ 12 V.
- Max driving current of the solenoids (single channel):
Monostable = 5 A
Bistables = 2.5 A
- Number of output channels: 16 total channels, configurable via software such as "valve", "fertirrigation", "pump", "filter".
- Power Save mode for low power consumption of solenoids.
- Expansion: up to 4 units (total 64 channels).
- Max solenoid valve connection length: up to 100 m (monostable).
- Maximum connection length to MeteoSense2.0: Up to 100 m.
- Digital inputs for liter-counter: 4 opto-insulated.
- Configurable logic inputs: 4 opto-insulated (NC, NO, Over Pressure, Under Pressure, Rain, Wind speed).
- Output for activation of external pumps: NO clean contact (max 28Vdc 3A).
- On board permanent memory: EEPROM for storing programs and settings.
- Internal Clock / Calendar (RTC) with buffer capacitor (up to 4 days), manually synchronized with local interface, via RS485 or USB.
- Liter counter reading with backup buffer storage.
- Internal electronic protection for over-current and over-voltage.

Electrical wiring

Power supply and external apparatus:



Electro-valves solenoid wiring:



Installation:

The installation must be carried out by qualified technical personnel. Refer to the installation instructions and safety instructions.

Ordering codes:

SN-0011-KI	WiSense 2.0 irrigation control unit – 16 zones
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Revision:

Data	Version	Page(s)	Notes
31-05-2017	1.0	1-4	V.1.0

IoT Wireless Unit

MN-0072-LK – MN-0073-LK

IoT Wireless Unit

- Wireless data transmission with LoRa™ technology
- Up to three years battery life
- Wireless range (from main unit): up to 8000 m.
- Up to 11 analog and digital inputs
- ABS UV-stabilized outdoor case
- Integrated PCB antenna
- Small size and compatible with on-field operations

APPLICATIONS:

Internet of things compliant wireless distributed monitoring
Precision agriculture
Real time environmental monitoring



Description

The MN-0072-LK wireless unit is a product designed and developed by Netsens s.r.l. and made in Italy.

The product is based on a communication system based on LoRa modulation scheme, and according to Internet Of Things (IoT) technology. It achieves extremely advanced communications performance, even compared to previous versions.

The low power consumption and energy optimization algorithms allow the wireless unit to run continuously for years (depending on the number and type of sensors) with a single lithium battery, that can be easily replaced.

The integrated antenna and the sturdy and small box do not interfere with the most common mechanical operations in the field, making installation easy and reducing maintenance costs.

The unit has an internal display and a selector for setup and configuration, and a unique radio coverage test system.

Among the many applications where these IoT devices can be successfully implemented, precision agriculture and environmental monitoring for "Early Warning" can be remarked, as well as all applications where it is necessary to have a reliable and robust wireless sensor network.

Electrical specification

Power supply: 3.6 V lithium C size Battery Reverse polarity protection.

Remotely measurement of battery level and replacement warning.

Communication: 868 MHz, spread spectrum

Input channels

- 4 x RS485
- 1 x I2C
- 3 x 0-3 V
- 2 x 0-3 V o 4-20 mA
- 1 x digital pulse (N/O)

Mechanical Characteristics:

Operating temperature: -20 ° C +60 ° C

Protection: IP 56

Weight: g. 330 (excluding sensors)

Plastic, ABS

Sizes: 170x120x50 mm

Additional features:

- Integrated Antenna
- LCD display for setup and configuration
- USB port for local configuration
- Radio coverage check utility
- Compliant with SRD (Short Range Devices) regulation, for unlicensed operation in EU Countries

Available Sensor:

THSense: air temperature and humidity sensor, with passive solar screen;

E-Leaf: leaf wetness sensor (2 channels);

TerraSense: soil moisture sensor (up to 2 sensors in parallel, at different depths);

EsSense: diameter growth sensor (up to two sensors per unit, or 1 EsSense sensor and 1 E-Leaf);

EC Sense: soil conductivity sensor (instead of one TerraSense sensor)

RainSense: digital pulse output rain collector

IoT Wireless Unit

MN-0072-LK – MN-0073-LK

Installation:

The wireless unit installation is very easy thanks to an effective system for verifying the wireless coverage. The box can be secured to a support provided with the appropriate brackets, or (on request) with a pole clamp (diameter 50 mm).



Figure 1 – Rear View

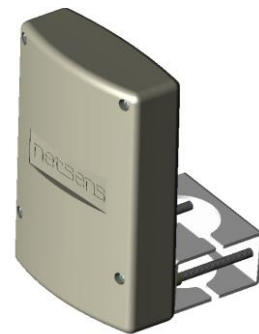


Figure 2 – Unit with hanging stirrup

Traceability, packaging and shipping:

Each wireless unit is individually tested and a unique identifying serial number is assigned, which allows tracking over time; this code can be printed on the shipping carton, on the unit itself or alternatively on the appropriate section of the user manual. Please keep this code carefully, to be communicated to the technician in case of failure or replacement.

Units are sold individually equipped with its own package, which will protect the sensor during transport. If the box is open or visibly damaged, don't accept delivery by courier. Do not open the box with knives, cutter blades, which could damage the sensor or its cable.

Ordering Codes:

MN-0072-LK	IoT Wireless unit, 868 MHz
MN-0073-LK	IoT Receiver unit, 868 MHz

NOTE: all technical information contained in this document may change without notice

IoT Wireless Unit

MN-0072-LK – MN-0073-LK

Warranty:

Netsens s.r.l. warrants that the above described components will be free from defects in material and workmanship for the following time period from the purchasing:

- Two years for items purchased by final users for non professional use;
- One year for items purchased by companies and organizations for professional use.

This warranty is valid only if all the components are used accordingly to the Manufacturer's indication and to the recommendations included in this User Manual.

This warranty does not cover: batteries, fuses, lights and any other consumable equipment. Also this warranty does not apply for damages due to neglect, misuse, contamination, alteration, accident or abnormal conditions of operation or handling, including failures caused by use outside Manufacturer specifications.

This warranty covers the original purchaser and it is not transferable.

If one or more components are supposed to be defective, contact Netsens s.r.l. or your local reseller in order to obtain a valid return authorization.

Netsens s.r.l. shall not be liable for any special, indirect, incidental or consequential damages or losses, arising from any cause.

Please contact Netsens s.r.l. for any additional information concerning warranty.

Disposal of Waste Electrical & Electronic Equipment:



Disposal of Waste Electrical & Electronic Equipment:

The symbol (crossed out wheeled-bin) on your product indicates that the product shall not be mixed or disposed with your household waste at their end of use.

The product shall be handed over to your local community waste collection point for recycling of the product.

For more information, please contact your Government Waste Disposal department in your country.

Inappropriate waste handling could possibly have a negative effect on the environment and human

health due to potential hazardous substances.

With your cooperation in the correct disposal of this product, you contribute to reuse, recycle and recover the product and our environment will be protected.

Revisions:

Date	Version	Page(s)	Modifications
12/03/2019	1.0	1-4	First release



netsens

**SMART
AGRICULTURE
2023**

netsens

TECHNOLOGY

AT YOUR SIDE

Netsens, one of the first companies in the world to create wireless systems for digital agriculture, is a leader in the field of IoT systems for sustainable crop management.



International distribution of Netsens smart farming products



Irritec® and Netsens has signed a strategic and commercial agreement, upon which Irritec will be the exclusive distributor in international markets. This partnership is part of a program for the development and international dissemination of a model of interconnected and sustainable agriculture. Relying on Netsens' technological assets and products, Irritec extend its commercial offer to the entire agriculture IoT sector, for end-to-end turnkey solutions.

This alliance grounded in years of collaboration and shared values, strengthens Irritec presence in the smart farming sector, offering an even more integrated service to farmers around the world.

irritec
don't wait for rain

Through its direct presence and widespread international sales network, Irritec follows retailers and fitters around the world, assisting them in the choice, design, installation and use of the most appropriate irrigation systems.

1974
A global brand established in Sicily

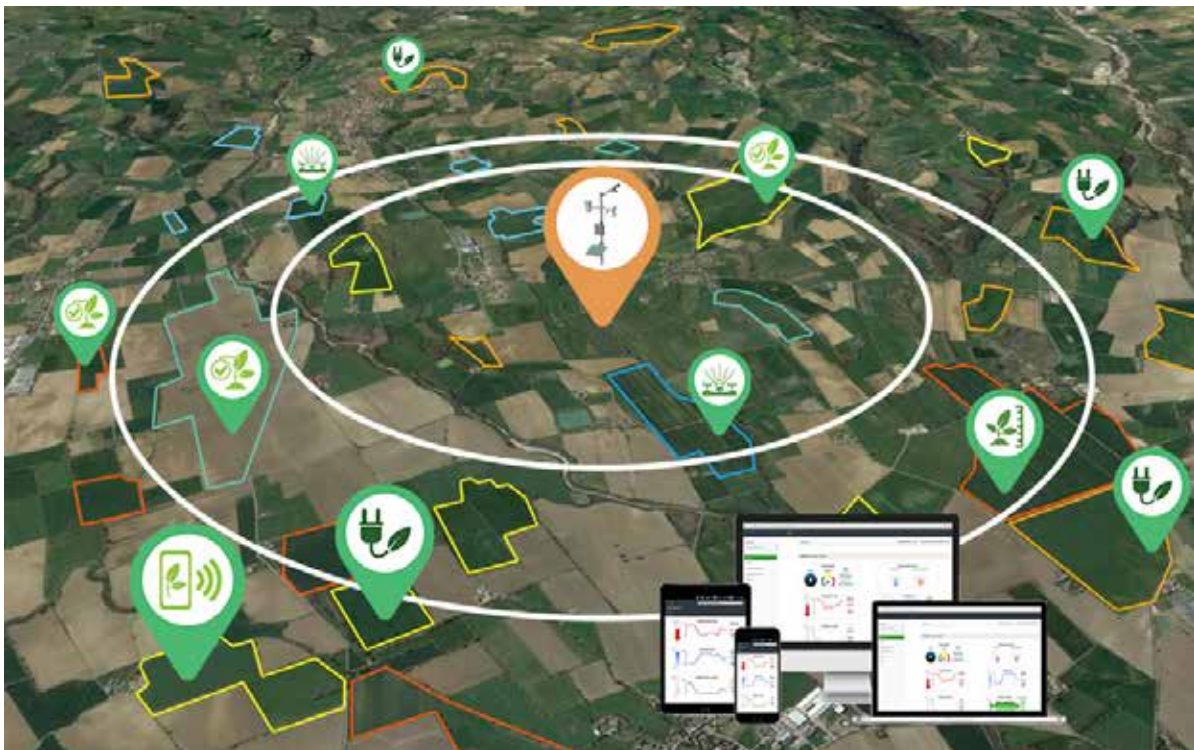
16
Production and commercial sites

+100
Countries in the world

>900
Professionals worldwide

An unique system for smart farming

Netsens IoT is the complete system for digital agriculture, perfect for farms, consortia and producer organisations that want to control production costs and increase the yield of their crops, covering thousands of hectares.



Crop monitoring

With Netsens, you have the weather, climate and soil data of your plots always at hand, with an unlimited historical archive

Phytosanitary Defence

With Netsens, you can save up to 30% less on processes, to the benefit of the environment and quality

Water saving

With Netsens, you can measure the water available to your plants and conveniently manage irrigation schedules remotely



Savings

With our sensors and agronomic models, you can easily save money by cutting out unnecessary irrigation and plant protection products.



Sustainability

Less intervention also means less waste of resources and less environmental impact, with benefits for quality and for our health.



Simplicity

Netsens has always been committed to making sure that its systems are a real help in the field and not a further complication.



Integration

Digital agriculture is constantly evolving, and we believe it is important to integrate our products with the most modern platforms and the best services on the market, to the benefit of our customers.

Around a main station, with the main weather-climate sensors, more IoT wireless units with micro-climate sensors are positioned **up to 8 km (5 miles) away**.

With the same technology, it is also possible **to automate the irrigation system**, and automatically adjust the duration of irrigation shifts based on the sensors in the field, so as to use the water actually needed.

All collected data are available on our **LiveData cloud platform, via APP or PC**, to keep all data always at your fingertips, and to manage the main needs of the field: **pest management, water requirements, frost alerts, forecasts**, as well as a complete history of all acquired data.

Sustainable Irrigation

WiSense IoT is the most advanced system for irrigation automation: it combines field monitoring with remote management of the irrigation system, all via radio.

The WiSense2.0 control unit manages up to 64 sectors via cable and 64 sectors via radio; it controls the pump start and reads up to 4 litre counters, also via radio. On request, it can also automatically manage the backwashing of filters based on time or differential pressure. Complete remote control from PC or via app: single, sequential or automatic programming; flow reading; anomaly management.



WiSense IoT field units can be completely autonomous, thanks to the solar panel, and can manage up to 4 or 15 sectors, in addition to the meter reading and pump control output. They can also read all major weather sensors, including soil probes (up to 4) and many other climate sensors. The distance by radio can reach 8 km (5 miles) depending on the characteristics of the territory.





HOW IT WORKS

Adjust irrigation shifts based on sensors

Water is not an unlimited resource, and its use is valuable: for this reason, it is important to know how much water is actually needed for your crops, and in many cases, experience may not be enough.

Using the soil moisture sensors, at different depths, and the weather sensors, which calculate the water requirements for each phase of the crop, it is possible to automatically manage the irrigation shifts, and manage the entire system remotely.

In addition, in case of anomalies (such as failure to open or close the valves, leaks, etc.), you can receive a report and avoid further problems.



01

Observe the trend of the soil probes, and evaluate the water balance calculated for your crop



02

Set the irrigation shifts for each sector, adjusting the duration and start also based on the data of the sensors in the field



03

In the event of an anomaly (programming failure or flow rate different from that expected) you can be notified automatically.

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Sustainable Pest management

Your farm will be able to manage phytosanitary processes in an intelligent and sustainable way, with obvious economic and environmental advantages.



From a single farm to wide areas

Netsens IoT allows you to monitor the plots of individual farms, up to covering thousands of hectares, and meet the needs of **consortia, wineries and producer associations**, with data sharing and central agronomic supervision.



HOW IT WORKS

The optimal support for your decisions

Unlike old-generation systems, Netsens sensors are **positioned in the field**, and measure the parameters actually perceived by the crops, without hindering mechanised activities.

Available pest management prediction models:



Grape: Downy Mildew, Powdery Mildew, Grey Mould, Moth



Corn: Corn Leaf Blight, Fusarium, Septoria



Solanaceae (Tomato, Potato): Powdery Mildew, Alternaria, Grey Mould



Apple, pear: Scab, apple mildew, fire blight, sooty blotch, cherry leaf spot, rosy aphid, pear psylla, codling moth, sawfly



01

Observe the data continuously collected in the field on the Netsens LiveData cloud, with unlimited storage



02

Set the phenological phases by plot and by variety, and enter the processes carried out



03

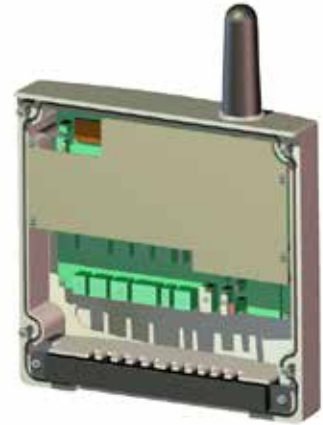
The LiveData DSS provides predictions for up to 7 days on the development of adversity, including through daily email reports

MeteoSense 4.0 Weather Station

The MeteoSense 4.0 unit is the core unit of Netsens systems. It is the acquisition and communication unit between the sensors in the field and the LiveData cloud platform, and is therefore present both in the MeteoSense stations and in the AgriSense and VineSense IoT systems. Produced in thousands of units, it is a robust and reliable product, suitable for any professional use.

Technical specification

Communication interface: 4G NB IoT / CAT-M1 / 2G / LAN Ethernet / MODBUS RTU
 Connection mode: "Always on", TCP / IP protocol (4G, 2G and LAN)
 On-board memory: micro SD Card slot
 Local configuration interface: USB
 Display: 2x20-character LCD
 Power supply: 12 VDC or 220 VAC with external power supply
 Integrated electronic battery charger for solar panel
 Power consumption: <1W with active connection
 Autonomy on battery: up to 50 days stand alone
 Case: IP55 ABS UV resistant, with front door opening



Netsens IoT Wireless Unit

The product is based on an Internet of Things (IoT) communication system and achieves extremely advanced communication range performance, even compared to previous versions. Its low power consumption and energy optimisation algorithms allow it to operate continuously for years (depending on the number and type of sensors) with a lithium battery supplied as standard, which can, however, be easily replaced in the field.

The integrated antenna and the robust and small box do not create clutter for the most common mechanical operations in the field, making installation easy and reducing maintenance.

The unit has a display and a selector for field configuration, and a particularly advanced radio coverage verification system.

Technical specification

Power supply: 3.6 V lithium C battery, reverse polarity protection
 Up to 3 years of battery operation
 Communication: 868 and 915 MHz spread spectrum (LoRa™)
 Maximum range (from base unit or repeater): 10000 meters
 Inputs: up to 11 digital and analog sensors
 Case: IP55 ABS UV resistant
 Antenna: integrated on printed circuit
 Small size and compatible with mechanical field operations





WiSense irrigation control unit

La centralina WiSense 2.0 è la base per l'**automazione dell'irrigazione**. Consente il controllo di elettrovalvole cablate o via radio (con le unità WiSense IoT) e la lettura di sensori, contaltri e pressostati. Consente quindi di realizzare sistemi integrati e flessibili, adatti alle diverse tecnologie di impianto di irrigazione, anche intervenendo su impianti esistenti, gestiti manualmente o con sistemi di vecchia generazione.

Technical specification

Communication interface: 4G NB IoT / CAT-M1 / 2G, or serial RS485 to a MeteoSense unit
Local user interface: keyboard and display
Power supply: 12 VDC (with optional solar panel and back-up battery) or 220 VAC with external power supply
Case: IP55 ABS UV resistant, with front door opening, optionally IP66 steel cabinet
Outputs: 16 up to 64, with 24V or 9-12VDC solenoids. Additional relay output for pump control
Inputs: 4 water counters + 4 pressure switches
Compatible sensors: most of the standard weather sensors, cabled or wireless
Optional wireless communication: LoRa™ communication with Netsens IoT units



WiSense IoT Wireless Irrigation Unit

The Netsens IoT technology allows groups of 4 or 15 solenoid valves to be connected via radio, at distances of up to about 8 km (5 miles). The WiSense IoT unit can be powered by mains power or with a solar kit, with a backup battery. All sensors compatible with Netsens IoT wireless units can also be connected. An NC/NO output is also available for the logical activation of external equipment (e.g. pumps, dispensers, etc.)

Technical specification

Communication: 868 and 915 MHz spread spectrum (LoRa™)
Power supply: 12 VDC (with optional solar panel and back-up battery) or 220 VAC with external power supply
Case: IP55 ABS UV resistant, with front door opening,
Outputs: 4 x 9-12VDC (latch), or 15 x 9-12VDC or AC 24V (mains supply version only)
Compatible latching solenoids: pulse length 20 ms, current 3A, charging capacitor 4700 uF, minimum impedance 6 ohm
Additional output: NC/NO logic relay output
Compatible sensors: all the sensors available on Netsens IoT unit



Netsens agro-meteorological sensors

The agro-meteorological sensors are designed and manufactured in Italy by Netsens, which therefore ensures the wide availability of spare parts and the updating of systems that were installed many years ago. Many sensors are individually calibrated to ensure high accuracy and reliability over time.

<p>Wind sensor Wind speed: 1-67 m/s, accuracy 5% Direction: 0-360°, accuracy 7°</p> 	<p>Barometric pressure Measuring range: 500 - 1100 hPa Accuracy: 0.4 hPa (-10 to +70°C)</p> 
<p>Rain collector Resolution: 0.2 mm Principle: tipping bucket</p> 	<p>Soil conductivity (EC): Measuring range: 0 to 15 dS/m Operating temperature: 0 to +50 °C</p> 
<p>Thermo-hygrometer Temperature: -25 +85 °C, accur. 0.5°C Humidity: 0-100 %RH, accuracy 3% Dew point calculation Solar shield included</p> 	<p>Leaf wetness sensor Two output channels (upper and lower leaf side) Measuring range: 0 – 100 % Operating range: - 40 + 60 °C</p> 
<p>Soil moisture and temperature Accuracy: 2% Measuring range: from 0% to saturation Operating range: - 40 + 60 °C Up to 4 sensors on the same station</p> 	<p>Solar radiation sensor Visible radiation: 0-1800 W/m2 Accuracy: 5% FS Operating range: -40 +65 °C</p> 
	<p>Other compatible sensors First class and Second class pyranometers, PAR, UVA/UVB; diametric growth; tensiometers.</p>

	MeteoSense	IoT Unit	WiSense
Anemometer	Y	Y	Y (wind speed only)
Rain collector	Y	Y	Y
Thermo-Hygrometer	Y (Max 2)	Y (Max 2)	Y (Max 2)
Barometric pressure	Y	N	N
Soil temp. and humidity	Y (Max 4)	Y (Max 4)	Y (Max 4)
Soil conductivity	Y (Max 2)	Y (Max 2)	Y (Max 2)
Leaf wetness	Y	Y	N
Solar radiation	Y	Y	N
Other sensors	ON REQUEST	ON REQUEST	ON REQUEST

LiveData Cloud Platform



Netsens manages **nearly 500,000 data records sent every hour** from our systems in the field through LiveData platform. Each record is acquired, validated and stored according to advanced safety standards, which ensure continuity of operation: this is also thanks to an advanced **automatic diagnostic system**, which allows its technicians to be warned in the event of individual failures or malfunctions, or to organise technical interventions in collaboration with local partners.



All weather stations and IoT units that you have access to are represented on **satellite cartography**, for intuitive and immediate use, even in the case of large and articulated networks, or farm units located in the territory.

From each page, you can always access the service request menu, with which you can activate **Netsens technical support**.

The graphic presentation is simple and intuitive, thanks to the experience of Netsens, which for over 15 years has used the most advanced IT tools for consulting the data of its systems. Each page is made in such a way that it can be consulted on **both PC and smartphone**, with dedicated apps for both Android and iOS devices. LiveData is **continuously updated**, and all Customers can have the latest version without having to make any updates.



There are numerous functions dedicated to agriculture that can be activated: **DSS forecasts** for phytosanitary management; evapotranspiration and water balance; field agenda with crop indices; frost forecast; agro-meteorological forecast located on your farm. All **agronomic models** make the most of IoT technology: in fact, the indices and forecasts are calculated **on each IoT unit** in the field, and not as a result of a general average value.



Access to the platform is via web or app, with user profiles that can be differentiated according to needs (e.g. supervisor, external consultant, operational, etc.), even in the case of sharing the IoT system through a network between multiple farms. Netsens systems are also seamlessly integrated with many of the major Precision Agriculture platforms, automatically exchanging data via specially crafted data interfaces (APIs).

Our story



Since 2004, Netsens s.r.l. (www.netsens.it) has been producing monitoring systems for agriculture, meteorology and the environment. Netsens has its headquarters in Calenzano (Florence), and has been operating since 2015 with a quality system certified according to ISO 9001:2015 and environmental certification ISO 14001:2015; it is also notified for the production of equipment according to ATEX regulations.

Mission

Netsens manufactures and sells systems for the acquisition and wireless transmission of data, offering the related installation, maintenance, and IT services for the processing and presentation of data in the Cloud environment. The products offered are mainly based on proprietary technologies and projects, integrating qualified and selected third-party components, where necessary to complete the technical and commercial proposal.

Technologies

The company has an internal technical staff that covers all phases of electronic and industrial design. In addition, through agreements with research institutions, it is able to make use of specialist advice in the field of radio frequency systems and in the basic technologies for the construction of physical and chemical sensors. Netsens products are the result of constant R&D investments, also supported by participation in important national and international research programmes.

Support and Service

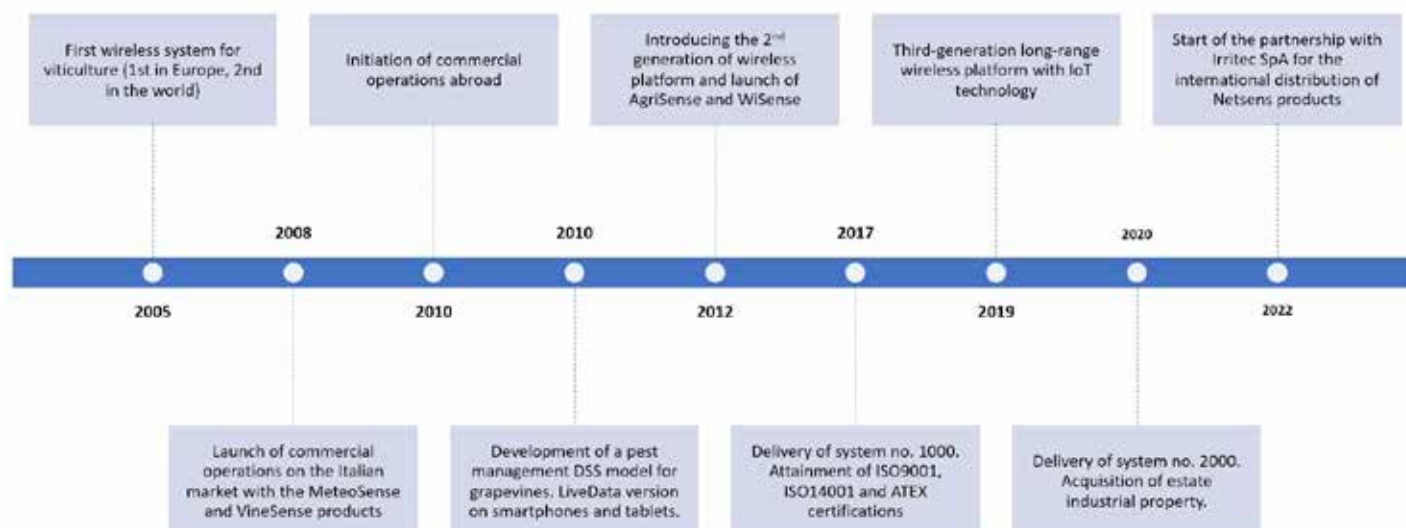
Netsens distinguishes itself from its competitors by paying particular attention to customer support, even after many years of purchase: thanks to the internal design of all the main components, we can guarantee original spare parts and offer scheduled and specialised assistance services to keep your systems in perfect working order, without unnecessary replacements.

Netsens, one of the first companies in the world to create wireless systems for digital agriculture, is a leader in Italy in the field of IoT systems for agriculture, with a technical and commercial network that is constantly expanding, both in Italy and abroad, thanks also to prestigious partnerships with global players.



Other business sectors

In addition to the digital agriculture sector, Netsens has carried out over 15 years of important work in the field of professional meteorology and weather and environmental monitoring networks for the main Italian industrial groups and many public and research bodies. Netsens also manufactures access control track-side equipment in Telepass® standards for toll applications, and highway traffic control systems.





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