

EcoPhi

EMPOWERING CLEAN TECHNOLOGIES



Product Catalog 2025



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Basic Controller

Compact Control and Monitoring for PV and battery systems

The EcoPhi Basic Controller is a powerful and flexible solution for monitoring and remote control of different types of systems. Acting as a central unit, it enables detailed data collection and analysis, ensuring reliable and efficient system operation.

Key Features:

- ✓ **High-Resolution Data Logging** – real-time monitoring of inverters and other system components for precise performance tracking.
- ✓ **Remote Control** – seamless control of connected devices from anywhere.
- ✓ **Expandable Sensor Integration** – up to three additional sensors for comprehensive system analysis.
- ✓ **Seamless Integration** – compatible with Modbus (RTU/TCP), MQTT, and other protocols for smooth communication
- ✓ **Flexible Design** – available with or without casing

With the EcoPhi Basic Controller, you maintain complete oversight of your systems - efficient, reliable, and easy to use.



Benefits

- ✓ Simple and complex logic circuits on site
- ✓ Local storage and smart data transfer after blackouts
- ✓ Easy to install, Up and running in 3 minutes
- ✓ Remote and On-Site control
- ✓ Zero feed-in regulation
- ✓ Individual functions and logics

Ideal for

- ☛ PV systems with advanced requirements up to 250kW e.g. systems of commercial/industrial sizes or minigrids.
- ☛ Multiple distributed systems, hybrid or solar water systems.
- ☛ On-site and remote control functions for devices such as batteries, gensets, and other system components



Basic Controller

Technical Specifications

Interfaces and connections

RS232 interface	1
RS485 interface	1
No. of inverter, controller, genset connections	32
No. of different inverter, controller, genset types	2
Sensor connections	3
Analog sensors	✓
Digital sensors	✓
Pulse sensors	✓

Data transfer

WiFi	2.4 GHz Antenna
GSM	✓(2G, 3G,4G) 5dBi
LAN	✓
Data transfer after connection losses	✓

Control and logic

On-site logic circuits	✓
Remote control of inverters	✓
No. of relays	3
Remote control of relays	✓
Edge calculations	✓

Data storage

SD card	✓ up to 32 GB
Local data storage	✓ 8 Days (4MB)

Power Supply

External power supply	12 - 30V DC, 100-250V AC
Power supply directly from inverter connection	✓
Backup power	2 Ah

Box setup

Setup software	✓
Change EcoPhi Box setting via Platform	✓
Change EcoPhi Box setting via SMS	✓

More

On-site Alarms	✓
SMS Alarms	✓
Dimensions (Height, width, depth)	200 x 300 x 130 mm
Weight	1.8 kg

Plant Controller / Plant Monitor

The **Plant Controller and Plant Monitor** offer a powerful and flexible solution for monitoring and managing different types of energy systems. Both devices share the same robust and reliable hardware, designed for long-term performance in demanding environments.

The **Plant Controller** is our top-tier product, enabling **advanced control** of on-site devices, seamless integration of multiple inverters, and support for a wide range of sensors and actuators. With our cutting-edge EcoPhi Energy Management System (EMS), it allows for intelligent energy optimization, peak load reduction, and dynamic tariff integration—ensuring maximum efficiency.

The **Plant Monitor** provides the same high-quality monitoring capabilities but **without active control functions**. It is ideal for real-time data insights and comprehensive system analysis without direct intervention.

Both solutions offer unlimited system scalability and full compatibility with various inverters, batteries, generators, EV chargers, and additional sensors. By selecting the right combination of components, nearly all energy management use cases can be covered.



Benefits

- ✓ Easy to install box
- ✓ Interactive digital display
- ✓ Wide range of sensors
- ✓ Complex on site control (only with Plant Controller)
- ✓ Remote and On-Site control
- ✓ Local data storage
- ✓ Individual functions and logics

Ideal for

- 🌿 PV systems above 250kW or when several components and sensors need to be integrated.
- 🌿 Large scale water systems. Complex system with many components, multiple distributed systems.
- 🌿 On-site and remote control functions for devices such as batteries, gensets, EV chargers etc.



Plant Controller / Plant Monitor

Technical Specifications

Interfaces and connections

RS232 interface	1
RS485 interface	2
Ethernet interface	1
No. of inverter, controller, genset connections	128
No. of different inverter, controller, genset types	3
Sensor connections	✓
Analog sensors	4
Digital sensors	8 (Total Digital + Pulse)
Pulse sensors	8 (Total Digital + Pulse)
Sensor extension box connection	✓
Bluetooth connection	✓

Data transfer

WiFi	2.4 GHz Antenna
GSM	✓(2G, 3G,4G) 5dBi
LAN	✓
Data transfer after connection losses	✓

Control and logic

On-site logic circuits	✓
Remote control of inverters	✓
No. of relays	6
Remote control of relays	✓
Edge calculations	✓

Data storage

SD card	✓ up to 32 GB
Local data storage	✓ 8 Days (4MB)

Power Supply

External power supply	12 - 30V DC, 100-250V AC
Power supply directly from inverter connection	✓
Backup power	2 Ah

Box setup

Setup software	✓
Change EcoPhi Box setting via Platform	✓
Change EcoPhi Box setting via SMS	✓

More

On-site Alarms	✓
SMS Alarms	✓
On-site Display	✓
Camera connection	✓
Dimensions (Height, width, depth)	250 x 350 x 150 mm
Weight	2.75 kg

AC Current Clamp



- Split core current sensor enables tracking of current flow of systems.
- AC Current Clamps can simply be clipped around wires and cables.
- Simple to use and assembly can be carried out by non technicians.



Benefits

- ✓ Split core current sensor
- ✓ Easy installation
- ✓ Low power consumption <35 mA
- ✓ Good anti-interference characteristics

Ideal for

- Optimization of consumption
- Determination of loads
- Billing calculation
- Analysis of usage behavior

Technical Specifications

Measurement range	0 - 300A	0 - 500A	0 - 1500A	0 - 2500A	0 - 5000A
Dimensions (Height, width, depth) mm					
Clamp	185 x 144 x 48	20 x 80 x 30	140 x 180 x 30	170 x 240 x 30	170 x 240 x 30
Inside	25mm diam.	35mm diam.	80 / 120mm	80 / 165mm	80 / 165mm
Weight	0.3 kg	0.4 kg	1.16 kg	3 kg	3 kg
Operating temperature	- 15°C to +60°C				
Outdoor / indoor operation	indoor				
Accuracy	0.5%				
Supply voltage	-				
Sensor type	Current transformer				



- Split core current sensor enables tracking of current flow of systems.
- AC Current Clamps can simply be clipped around wires and cables and is able to perform without being directly connected to the system power circuit.
- Simple to use and assembly can be carried out by non technicians.



Benefits

- ✓ Split core current sensor
- ✓ Easy installation
- ✓ Quick response time <200 ms
- ✓ Low power consumption <35 mA
- ✓ Good anti-interference characteristics

Ideal for

- Optimization of consumption
- Determination of loads
- Billing calculation
- Analysis of usage behavior

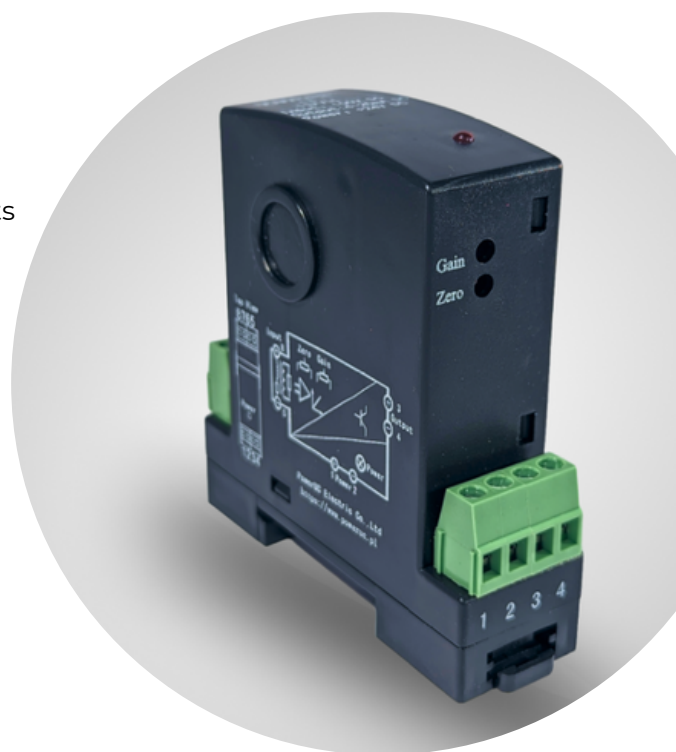
Technical Specifications

Dimensions (Height, width, depth) mm	30 x 30 x 55 mm
Weight	75g
Operating temperature	- 10°C to +70°C
Outdoor / indoor operation	Indoor
Accuracy	0.5%
Supply voltage	+ 12V DC
Measured value(s)	Ampere (A)
Measuring range	0-100A
Sensor type	Current transformer



- Detects the presence of voltage, offering crucial insights into the readiness and functionality of technical subsystems.
- Rapid Fault Localization:** Strategically placed, this sensor significantly speeds up fault detection and diagnosis,
- ensuring quicker resolutions.

Records electrical voltage curves, not only revealing subsystem performance but also serving as an early warning system for potential issues.



Benefits

- ✓ Enables early and easier error detection
- ✓ System performance information availability
- ✓ Use intensity information availability

Ideal for

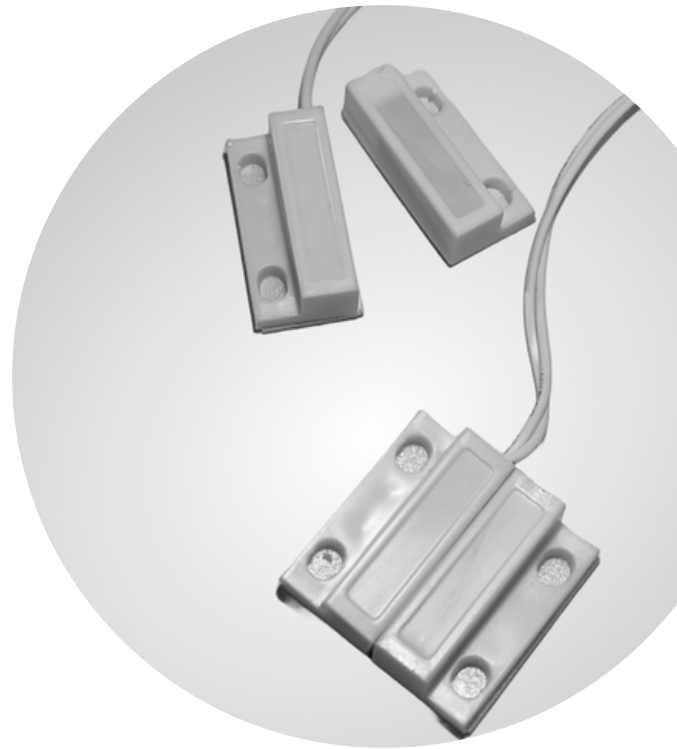
- Battery systems
- Photovoltaic applications of loads

Technical Specifications

Weight	62 g
Operating temperature	- 10°C to +70°C
Outdoor / indoor operation	Indoor
Accuracy	0.5 %
Supply voltage	+ 24V DC
Measured value(s)	Voltage(V)
Measuring range	0-500V
Sensor type	Analog (4 -20mA)



-  **Critical System Insights:** Understand the status of doors and casings – open or closed – to gain valuable insights into system operations.
-  **Accurate Monitoring:** This sensor reliably detects and reports the open or closed state of doors, offering real-time information.



Benefits

- ✓ **Operational Insights:** understand door usage patterns and operational timings, aiding in system optimization
- ✓ **Enhanced Security:** Provides alerts for doors or windows left open accidentally
- ✓ **Effortless Installation:** Quick, plug & play setup

Ideal for

-  Frequently used doors, windows, and control cabinets, especially in security-sensitive areas
-  Air conditioning systems for automatic activation or deactivation, based on door status

Technical Specifications

Dimensions (Height, width, depth) mm	7 x 20 x 7 mm
Weight	19g
Operating temperature	- 50 C to +90 C
Outdoor / indoor operation	Indoor/ outdoor
Supply voltage	1 - 24V
Measured value(s)	Open / Closed
Measuring range	0-1
Sensor type	Digital

Energy Meter SPM91

1 Phase



- 🌿 **In-Depth Energy Insights:** Delivers essential data on various system components.

From assessing your refrigerator's energy consumption to monitoring the operational of your water pump, this device offers comprehensive solutions for energy-related questions.



Benefits

- ✓ **System Optimization:** Identifies weak points in the system, offering significant benefits to the customer
- ✓ **Strategic Prioritization:** Facilitates the identification and addressing of critical energy usage areas, streamlining system efficiency
- ✓ **Battery Efficiency:** Aids in enhancing the performance and lifespan of batteries by optimizing their usage and energy allocation

Ideal for

- 🌿 Perfectly suited for off-grid, solar, and research projects
- 🌿 Targeted energy management. Efficiently tracks and records the energy demand of individual customers

Technical Specifications

Dimensions (Height, width, depth) mm		100 x 36 x 65 mm				
Weight		355g				
Operating temperature		- 20 C to +55 C				
Outdoor / indoor operation		Indoor				
Accuracy		kWh Class 1.0				
Supply voltage		220V/3x5 (63) A				
Measuring value	Voltage	Current	Power	Power Factor	Frequency	Energy
Measured range	176 - 276V AC	63A	0 - 14.4kWh	-1.00 - +1.00	45 - 65Hz	0 - 9999999.9kWh
Sensor type		Modbus				

Energy Meter SPM93

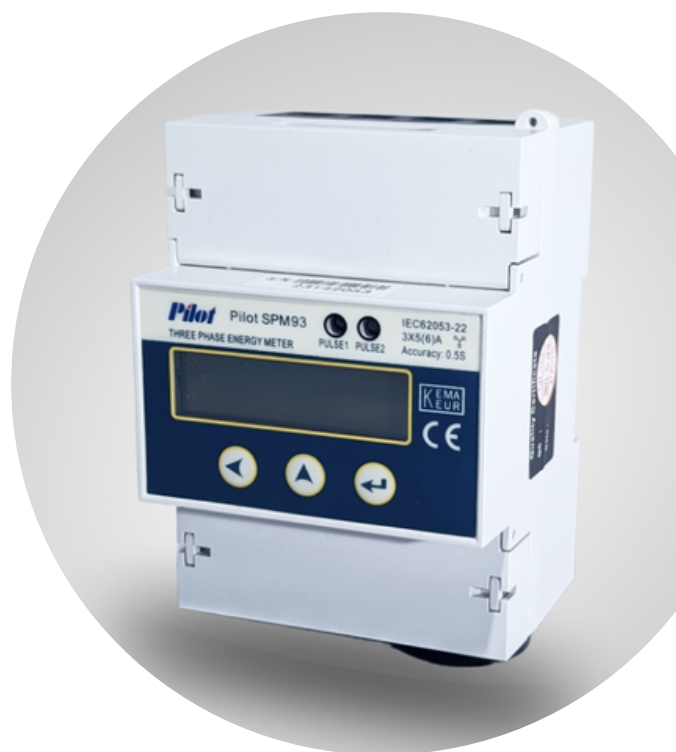
3 Phase



- 🌿 In-Depth Energy Insights: Delivers essential data on various system components.

From assessing your refrigerator's energy consumption to monitoring the operational schedule of your water pump, this device offers comprehensive solutions for energy-related questions.

- 🌿 For 3 phase applications.



Benefits

- ✓ System Optimization: Identifies weak points in the system, offering significant benefits to the customer
- ✓ Strategic Prioritization: Facilitates the identification and addressing of critical energy usage areas, streamlining system efficiency
- ✓ Battery Efficiency: Aids in enhancing the performance and lifespan of batteries by optimizing their usage and energy allocation

Ideal for

- 🌿 C and I projects
- 🌿 Perfectly suited for off-grid, solar, and research projects
- 🌿 Targeted energy management. Efficiently tracks and records the energy demand of individual customers

Technical Specifications

Dimensions (Height, width, depth) mm 100 x 72 x 65 mm

Weight 355g

Operating temperature - 20 C to +55 C

Outdoor / indoor operation Indoor

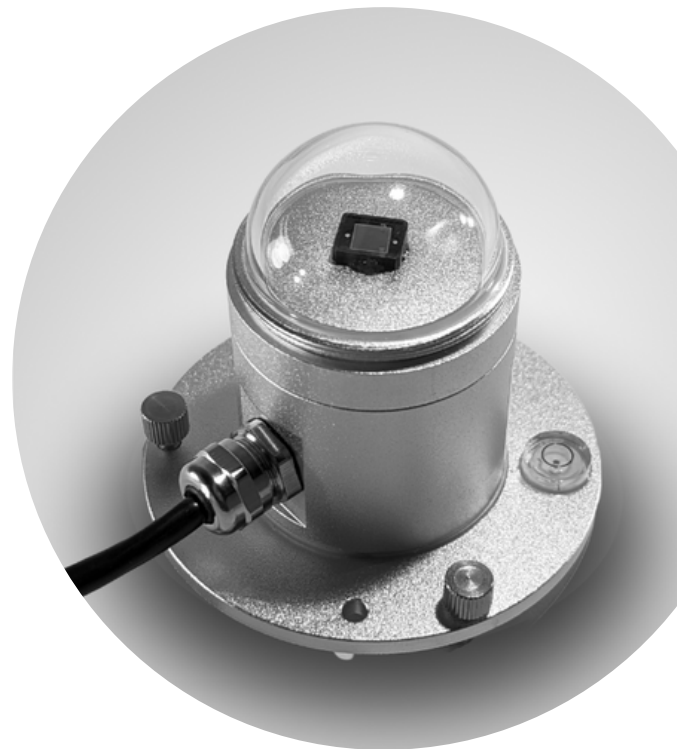
Supply voltage 3 x 220V/3x5 (6) A

Measuring value	Voltage	Current	Power	Power Factor	Frequency	Energy
Measured range	176 - 276V AC	63A	0 - 14.4kWh	-1.00 - +1.00	45 - 65Hz	0 - 9999999.9kWh
Accuracy	0.5%	0.5%	0.5%	0.5%	0.01	kWh Class 0.5s for 5(6)A kWh Class 1 for 5(63)A

Sensor type Modbus



-  The solar radiation sensor is mainly used to measure solar short wave radiation in the wavelength range of 400 - 1100nm.
-  Simple and cost effective, can be used all day and all night, can be reversed or tilted.
-  Widely used in plant growth, heat conversion box and solar energy monitoring of soil moisture evapotranspiration loss.



Benefits

- ✓ Comparability of different systems at the same sun position
- ✓ Comparability of own system with previous year's values
- ✓ Detection of efficiency changes
- ✓ Simple structure and easy to use

Ideal for

-  Photovoltaic systems
-  Projects with dependence on weather variables

Technical Specifications

Dimensions (Height, width, depth) mm	39 x 155 x 85 mm
Weight	~ 400g
Operating temperature	- 40 up to +90 C
Outdoor / indoor operation	Outdoor
Accuracy	+ 5 W/m ²
Supply voltage	12 - 28 V DC
Measured value(s)	Watt/m ²
Measuring range	0 - 1.500 W/m ²
Sensor type	Analog (0 - 10V)



- Almost every water system has a water storage and it can be crucial to know the water level of the storage.
- With a Level Sensor, fill levels can be precisely recorded.
- Information from the sensor allows for early reactions to problems and the behaviour of the system is more easily understood.



Benefits

- ✓ Detection of bottlenecks
- ✓ Early warning of groundwater drawdown
- ✓ Optimization of own consumption
- ✓ Information about existing reserves and understanding system characteristics Level Sensor

Ideal for

- Monitoring of groundwater level
- Monitoring of filling levels of individual water reservoirs

Technical Specifications

Dimensions (diameter,length) mm	18 x 135mm
Weight	500g
Operating temperature	-40 up to +80 C
Outdoor / indoor operation	Outdoor/indoor
Accuracy	0,1% FS
Supply voltage	12 - 26 V DC
Measured value(s)	m
Measuring range	0 -500m (in different stages)
Sensor type	Analog (4 - 20mA)



-  In water pipes, water is transported from one point to another and the pressure depends on the speed and the head of the water.
-  Pipe leakages or clogged pipes have influence on the pressure.
-  This is recorded by the Pressure Sensor.



Benefits

- ✓ Early detection of holes or blockages in the pipes
- ✓ Safety element for emergency shutdown
- ✓ System performance understanding

Ideal for

-  Monitoring of long distribution networks
-  Localization of leakages/clogs
-  Safety shutdown in case of over pressure

Technical Specifications

Dimensions (diameter,length) mm	25 x 85 mm, 1/4 inch thread
Weight	90g
Operating temperature	- 20 C to + 125 C
Outdoor / indoor operation	Indoor/Outdoor
Accuracy	+ - 0.02bar
Supply voltage	4 - 20mA
Measured value(s)	bar
Measuring range	0 - 40bar
Sensor type	General: Analog (4 - 20mA) High temperature: Analog (0 - 10V)

Temperature and Humidity Sensor



- Temperature and humidity have an influence on almost every system and can reduce the performance of applications.
- User behaviour changes depending on temperature and humidity as for example air conditioners are switched on or water demand increases.
- This sensor detects exactly these variables.



Benefits

- ✓ Protection of technical devices
- ✓ Information about the influencing variables temperature and humidity
- ✓ Observation of user behaviour as a result of these influencing variables

Ideal for

- Collection of inside and outside temperature and humidity
- Monitoring of Cold rooms or technical rooms
- Automated control of air condition

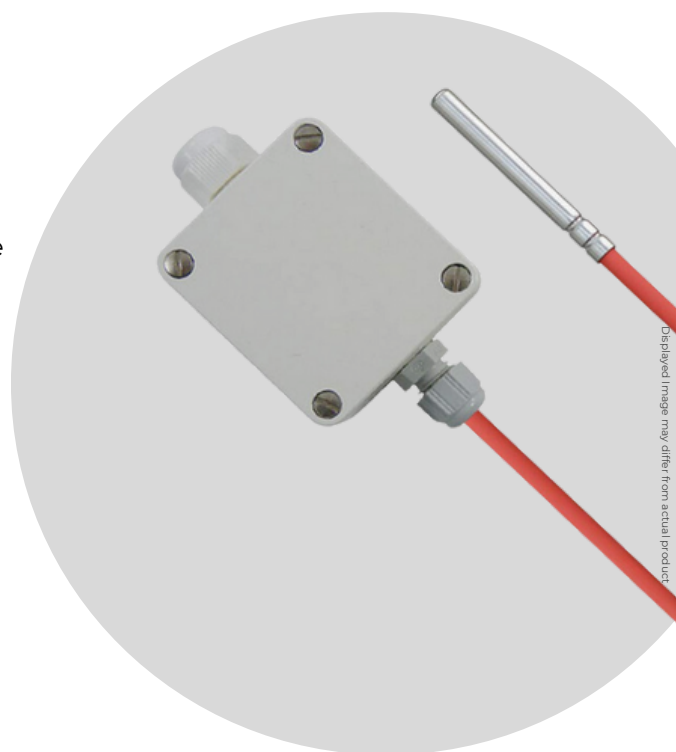
Technical Specifications

Dimensions (diameter,length) mm	18 x 150 mm	
Weight	136g	
Operating temperature	- 40 C to +60 C	
Outdoor / indoor operation	Indoor	
Supply voltage	9 - 24 V DC	
Measured value(s)	Temperature C	Humidity RH
Measuring range	- 40 C to +60 C	0 -100% RH
Accuracy	< +-0.3 °C(at 25°C)	< +- 3%RH (at 25°C, 20% - 80% RH)
Sensor type	Modbus	

Temperature Sensor



- Heat is generated in almost all electrical systems, an undetected excess can have fatal consequences for the performance of the system.
- The Temperature Sensor measures temperature also in liquids or parts that are difficult to access.
- Comes in different sizes and threads for flexible usage.



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Benefits

- ✓ Protection of systems against overheating
- ✓ Early detection of problems within the system
- ✓ Detection of behavior and performance dependencies due to temperature differences

Ideal for

- Temperature measurement of technical devices
- Temperature measurements of liquid and places that are difficult to access

Technical Specifications

Dimensions (Height, width, depth) mm	Depending on use case	
Weight	Depending on use case	
Operating temperature	Depending on use case	
Outdoor / indoor operation	Indoor/Outdoor (water/ steam/ air)	
Accuracy	0.5% FS	
Supply voltage	15 - 30VDC	
Measured value(s)	Temperature C	
Measuring range	- 50C to +400 C	
Sensor type	Regular: Analog (4 - 20mA)	High temperature: Analog (0 - 10V)

Water Meter (¾ Inch)



- Often water is the reason why a project is initiated, it represents the basis of life.
- It is important to have continuous information about the pumped quantity of this resource.
- With a Water Meter, the flow rate through a pipe can be determined.



Benefits

- ✓ Possibility of intelligent control & understanding about system characteristics
- ✓ Overview of actual use of a system (in terms of time and quantity)
- ✓ Learning effect for future projects

Ideal for

- Information on drinking water supply systems
- Automatic control systems for field irrigation
- Tracking of end user consumption

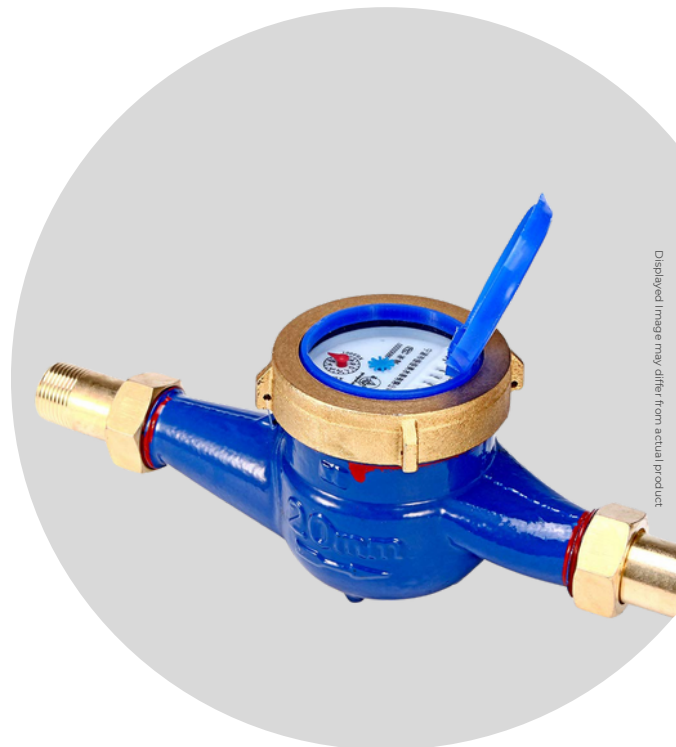
Technical Specifications

Dimensions (Diameter,length) mm	90 x 90 x 35 mm
Weight	470g
Operating temperature	1 C - 90 C
Outdoor / indoor operation	Indoor/Outdoor
Accuracy	2%
Supply voltage	1 - 24V
Measured value(s)	Liters, m ³
Measuring range	1 liter steps
Sensor type	Digital

Water Meter standard (2 Inch)



- Often water is the reason why a project is initiated, it represents the basis of life.
- It is important to have continuous information about the pumped quantity of this resource.
- With a Water Meter, the flow rate through a pipe can be determined to within the range of a few litres.



Benefits

- ✓ Overview of actual use of a system (in terms of time and quantity)
- ✓ Possibility of intelligent control & understanding about system characteristics
- ✓ Learning effect for future projects

Ideal for

- Information on water supply systems
- Automatic control systems for field irrigation
- Plausibility check for larger pipe systems

Technical Specifications

Dimensions (Height, width, depth) mm	Depending on use case
Weight	Depending on use case
Operating temperature	Depending on use case
Outdoor / indoor operation	Indoor/Outdoor (water/ steam/ air)
Accuracy	0.5% FS
Supply voltage	15 - 30VDC
Measured value(s)	Temperature C
Measuring range	- 50C to +400 C
Sensor type	Regular: Analog (4 - 20mA) High temperature: Analog (0 - 10V)

Water Meter (Woltman)



- Often water is the reason why a project is initiated, it represents the basis of life.
- It is important to have continuous information about the pumped quantity of this resource.
- With a Water Meter, the flow rate through a pipe can be determined to within the range of a few litres.



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Benefits

- ✓ Overview of actual use of a system (in terms of time and quantity)
- ✓ Possibility of intelligent control & understanding about system characteristics
- ✓ For cold and hot water applications

Ideal for

- Information on drinking water supply systems
- Automatic control systems for field irrigation
- Plausibility check for larger pipe systems

Technical Specifications

Dimensions (Height, width, depth) mm	Depending on use case
Weight	Depending on use case
Operating temperature	Depending on use case
Outdoor / indoor operation	Indoor/Outdoor (water/ steam/ air)
Accuracy	0.5% FS
Supply voltage	15 - 30VDC
Measured value(s)	Temperature C
Measuring range	- 50C to +400 C
Sensor type	Regular: Analog (4 - 20mA) High temperature: Analog (0 - 10V)