



PRODUCTS CATALOGUE





About Us

Arnova is an Australian-born Smart technology innovator. We excel in the design and implementation of IoT and Artificial Intelligence based solutions to simplify processes, spark business efficiency and promote sustainability. Our ecosystems acquire your undiscovered data in real-time and apply our diagnostic and predictive analytics. It's how we enable informed planning and management to produce true value, regardless of industry and size. Businesses who partner with Arnova proprietary ecosystems are Smarter, more efficient and more effective.

We are proud to have created Australia's first Multi-protocol Edge-computing Device (MED). The MED integrates with existing infrastructure to wirelessly connect the unconnected. It is a one-of-a-kind product with unparalleled flexibility and agility. The MED's applications are wide-ranging and encompass areas that traditional technologies simply cannot address.

We combine the power of IoT, Big-Data and Artificial Intelligence with Carbon - our highly customisable data visualisation, control, and analytics platform. Backed by Arnova's Real Intelligence, our clients implement efficiency opportunities with surgical precision and continually improve their operations. That's how we redefine the concept of successful and sustainable management.

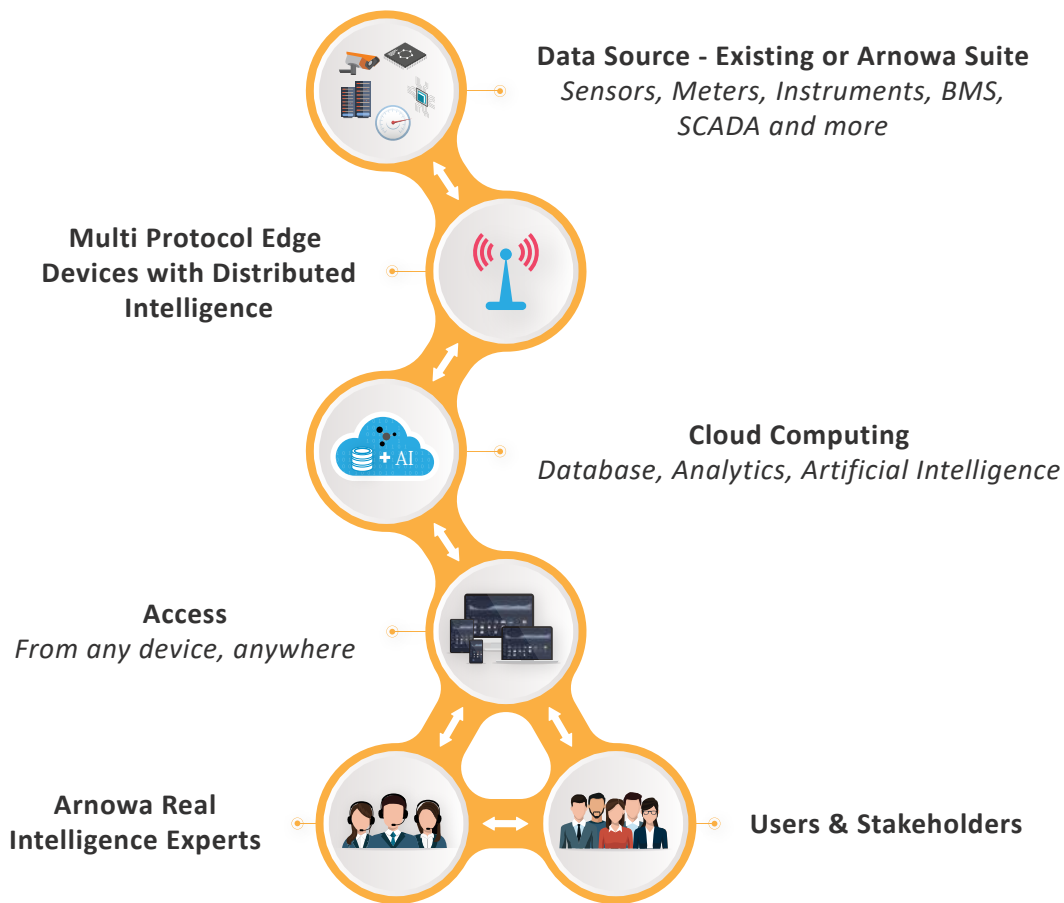
Are your processes lean and automated enough? Can you predict your facility's performance and address issues before they occur? Do you want insight for better management and decision-making? Arnova technologies uncover the true value of your data and provide these answers.

Operate like you never have before with Arnova's ecosystem. It is the end-to-end solution to navigate your business's Industry 4.0 revolution.

Smart Technology Solutions

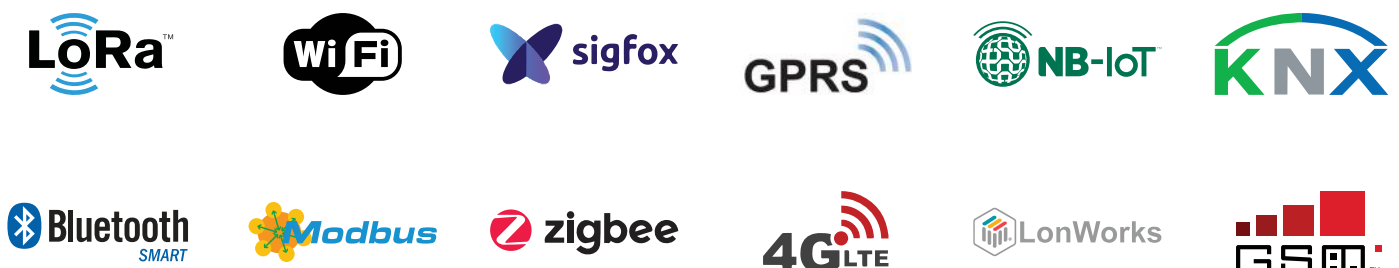
Established in 2013, Arnowa is an Australian Smart technology developer excelling in the design, manufacture, and implementation of Smart City and Industry 4.0 infrastructure. We provide solutions that simplify processes, spark efficiency, enable collaborative engagement, and promote sustainability.

Arnowa's Multi-Utility Spatial Intelligence and Control (MUSIC) ecosystems integrate with existing infrastructure to wirelessly connect the unconnected. Our Multi-Protocol Edge Device is a unique product with unparalleled flexibility and agility. It combines the power of IoT, Big Data, and Artificial Intelligence technologies in one powerful package. Paired with Carbon (our highly customisable data visualisation, control, and analytics application) previously inconceivable opportunities are now within reach. Arnowa's technologies are a one-stop, agile solution that unites a range of value-added functions and services. The result is enhanced management, lowered risk, and well-informed business decisions.



The Arnowa ecosystem acquires your undiscovered data in real-time and applies our diagnostic and predictive analytics. It's how we enable informed planning and management to produce true value, regardless of industry and size. Businesses who partner with Arnowa proprietary ecosystems are smarter, more efficient and more effective.

Communication Protocols



Unique Features



High frequency real time data and live alerts

Real-time data and alerts allow proactive monitoring and management.



Multi - protocol

Multi-protocol wireless communication between sensor, controllers and central MED.



Completely wireless

Completely wireless makes it agile and easy to install and upgrade.



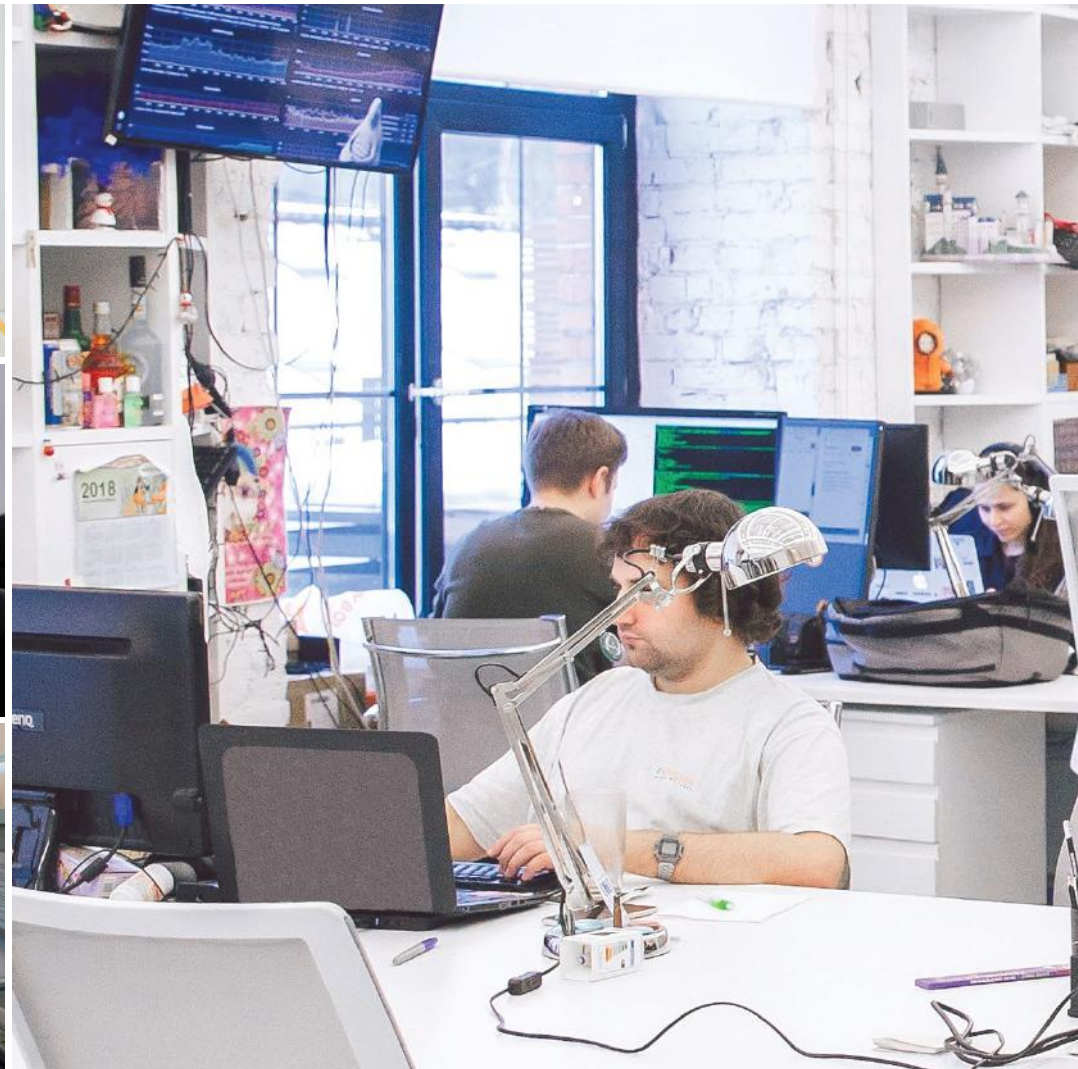
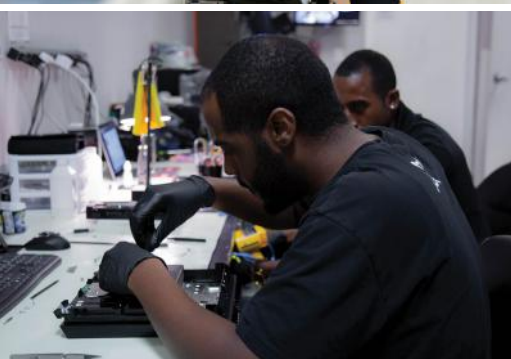
Versatile, smart & futuristic

Unprecedented ease and low cost monitoring of many parameters that can provide correlation and analytics of using our advanced analytics platform providing deep and holistic information and AI based predictions which could have never been achieved before.



Low power – long life

Completely wireless makes it agile and easy to install and upgrade.



Environmental Sensors

Smart Environmental sensors check air / water quality and other environmental conditions, providing the capability to correlate various parameters to understand the aspects and manage environmental pollution and response in closed or open spaces.



Air quality / pollution Sensors

- Carbon Monoxide (CO₂)
- Carbon Dioxide (CO₂)
- Molecular Oxygen (O₂)
- Ozone (O₃)
- Nitrogen Dioxide (NO₂)
- Sulfur Dioxide (SO₂)
- Ammonia (NH₃)
- Methane (CH₄)
- Hydrogen Sulfide (H₂S)
- Dust Sensor: PM2.5 / PM10
- VOC
- Temperature
- Humidity



Water quality / pollution sensors

- pH
- Oxidation-Reduction Potential (ORP)
- Dissolved oxygen (DO)
- Temperature
- Conductivity and salinity
- Turbidity and temperature (NTU)
- Calibration Kits for the sensor probes



Soil pollution sensors



Luminosity (luxes accuracy) for light pollution levels



Smart Agriculture Sensors

Smart Agriculture is an evolution of our Irrigation line with a selection of high-end professional sensors. It allows monitoring of multiple environmental parameters involving a wide range of applications, from plant growing analysis to weather observation. There are sensors for atmospheric and soil monitoring and plants health. It is customizable depending on requirements, property size, soil quality and climate conditions.



Soil moisture:

- Soil Moisture sensors help estimate the moisture content in the soil to alert the farmer of the water contained in the soil and whether or not irrigation is required.
- Use of our Wireless sensors help in efficient monitoring across multiple locations in a field providing better water management and conservation and coupled with our fertilizer monitoring (NPK) it improves harvest by allowing the crop to be irrigated with the right amount of water and fertiliser.



Soil temperature



Solar radiation (shortwave, PAR and UV)



Air temperature, humidity and pressure



Weather stations :

- Smart weather stations help monitor all weather conditions such as temperature, humidity, barometric pressure, global radiation, soil humidity and wind direction.
- Arnowa's Smart Weather Stations allow all-round monitoring and management of the farm with real time-data and alerts being delivered to the farmer.



Surface temperature measurement



Canopy measurement





Nitrogen phosphorus and potassium (NPK)

- This sensor gives the growers an insight into their soil's Nitrogen, Phosphorus and Potassium content to help optimize crop production and allow them to proactively manage their farms
- Manages soil quality, from the top soil to below roots with precise control
- Provides soil comparison between different zones
- Helps in monitoring soil contamination and prevents over or under fertigation
- Optimises fertigation costs



Conductivity, water content and soil temperature



Virtual fence:

- It enables the user to control and confine or move their livestock without actually having to put up a fence. It also alarms of pest movement in real time such that an adequate response can be deployed in time.
- Wireless, lightweight and easy to commission and use
- Proactive animal health management



Temperature, and atmospheric pressure in soil and air



Luminosity ultrasound (distance measurement)



Smart City Sensors

The main applications for Arnova's model are noise maps (monitor in real time the acoustic levels in the streets of a city), air quality, waste management, smart lighting, smart traffic management, smart parking, etc.



Noise / sound level sensor



Dust sensor



Air quality monitoring



Atmospheric pressure



Weather monitor



Water quality sensors



CCTV camera / IR human sensor



Flow sensor:

- Ultrasonic Volumetric Flow Meter and Sensor
- Water Meter Pulse flow Sensor



Level sensors:
Bin level management



Radar and magnetic field



Luminosity (luxes accuracy) for smart lighting



Water tank level sensors



Smart Irrigation Sensors



Smart BBQ Sensors



Camera as a sensor using Video Analytics and Thermal Imaging



Smart Industry Sensors

Smart Industry sensors are vital for the whole operation of the plant as they measure process variable such as temperature, pressure, level, flow, pH, turbidity, electrical variables such as voltage, current and frequency, to mechanical variables such as vibration, rotation, pressure, proximity and environmental variables such as humidity, wind speed and direction.



Equipment temperature Sensor



Luminosity



Ambient air quality and temperature sensors



Noise / sound level sensor



Dust sensor



Flow sensor



Proximity switches



Level sensors



Vibration sensors



Power quality metering



Water level sensors



Camera as a sensor using video analytics and thermal imaging



Solar stations:



Pressure:

- Atmospheric Pressure
- Line Pressure



Smart Store And Franchise Sensors

The Smart Store sensors obtain data about customers' tastes, needs, and habits in real time and this enables retailers to predict customers' behavior and provide them with the products or services they want and need. It also helps in track inventory levels on the shelves. And predictive maintenance is enhanced by these sensors which further helps to optimize the maintenance team's work and save money.



Temperature sensors



Flow sensors



Door open-close sensor



Shelf sensors



Air quality sensor



Heat mapping sensor/camera as a sensor to track customers' habits, such as popular store areas, products, and times for shopping.



GPS sensor to track delivery vehicles

Smart Power Sector - Smart Grids Sensors

Smart sensor provide various opportunities for smart grid applications including power monitoring, demand-side energy management, coordination of distributed storage, and integration of renewable energy generators. These sensors assists in managing the data efficiently and extracting the most useful information.



Temperature sensors



Current and voltage sensors



Humidity sensor



Weather station



Smart water meter



Gas sensors



Thermostats



IR sensor/occupancy sensor



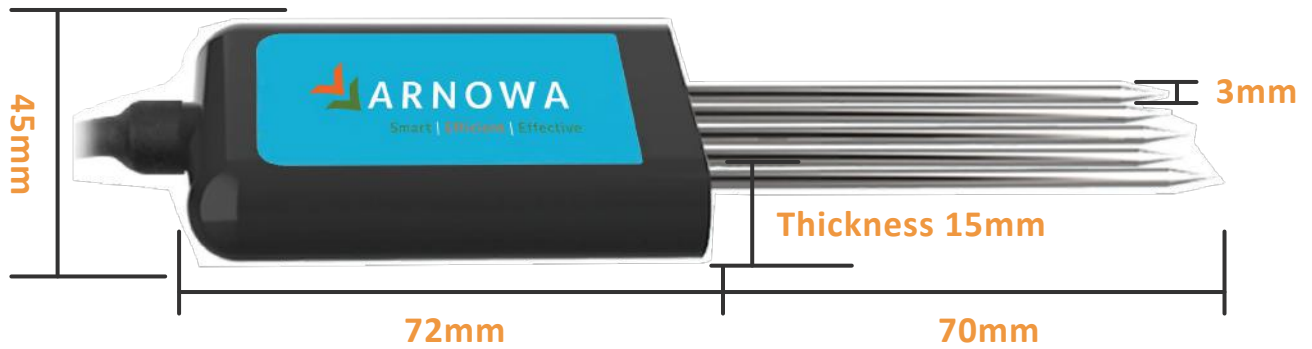


SPECIFICATIONS



Soil Sensors

Soil integrated sensor



Product size:

Width 45mm, sensor body length 72mm thickness 15mm, needle length 70mm, needle width 3mm.

Installation method	Embed all or insert all probes into the measured medium
Protection level	IP68
Response time	<1s
Moisture measuring range	0~100%
Moisture measuring accuracy	±3% of reading (within the range of 0~53%) ±5% of reading (within the range of 53~100%)
Conductivity measuring range	0-10000us/cm
Conductivity resolution	10us/cm
PH measuring range	3-9PH
PH measuring accuracy	±0.3PH
NPK measuring range	0-1999mg/kg
NPK measuring accuracy	±2%F.s
Storage environment	-20°C-60°C
Working pressure range	0.9-1.1atm

*The probe is fragile, please do not bend or hit hard objects forcefully.



Water Quality Sensors

Water quality conductivity sensor

Responding speed	≤15s
Relay alarm	Two normally open and normally closed alarm relays
Measuring range	0-2000us/cm
Temperature compensation	-20-80°C (Manual/Automatic)
Resolution	0.1us/cm (When the value is ≥1000).01us/cm (When the value is less than 1000)



Electrode model	EC-T001	EC-T010	EC-T100	EC-T1000	EC-F1000
Electrode picture					
Cell constant	K=0.01	K=0.01	K=1	K=10	K=10
Electrode material	316Lstainless steel	316Lstainless steel	316Lstainless steel	316Lstainless steel	Polysulfone material
Conductivity range	0-20us/cm	0-20us/cm	0-2000us/cm	0-20000us/cm	0-20us/cm
Resistivity range	0.001mΩ.cm	0.001mΩ.cm	0.01maΩ.cm	0.1mΩ.cm	0.001mΩ.cm
Scope of application	Pure water detection	Pure water, dinking water testing	Tap water, river water	Sewage testing	Sewage and wastewater testing
Installation thread	3/4, 1/2 thread optional	3/4, 1/2 thread optional	3/4, 1/2 thread optional	3/4, 1/2 thread optional	3/4, 1/2 thread optional

* About the installation thread specifications, please consult customer service before placing an order.

Water quality COD sensor






Measuring range	0-200/0-1000mg/L
Resolution	1mg/L
Measurement accuracy	±5%F.S
Protection level	IP68
User calibration	5 Point calibration
Product power consumption	≤300mW
Under pressure	1bar
Installation method	Immersion installation
Product shell	POM material
Temperature range	0-45°C
Measuring principle	Spectrophotometry









Water quality parameter sensors




Temperature range	Continuous 0-80°C / Intermittent 81-100°C
Measurement accuracy	5% F.S
Resolution	0.1ppm
Repeatability	±4%







Parameter:	pH	Dissolved Oxygen-Fluorescence	Dissolved Oxygen-Polarography	BOD parameter	Chlorophyll
Sensor					
Power consumption	≤0.15W (12V DC, 25°C)	≤0.15W (12V DC, 25°C)	≤0.15W (12V DC, 25°C)	<300mW	<1W
Responding speed	≤15s	≤15s	≤15s	-	-
Relay alarm	Two normally open and normally closed alarm relays	Two normally open and normally closed alarm relays	Two normally open and normally closed alarm relays	-	-
Measurement accuracy	±0.5PH	-	0.01mg/l	+5% F.S	-
Measuring range	0-14PH	0~20MG/L (-200% Saturation)	0~20mg/l	0-200/0-1000mg/L	0-400ug/Lor0-100RFU
Resolution	0.01PH	0.01MG/l, 0.1°C	-	1mg/L	0.1ug/L
Temperature compensation	-20°C-80°C (Manual / Automatic)	-	-	-	-
Measuring principle	-	Fluorescence method	Polarography	Spectrophotometry	-
Operating temperature	-	-	0-35°C	0-35°C	-
Protection level	-	-	-	IP68	IP68
User calibration	-	-	-	5 Point calibration	-
Under pressure	-	-	-	1bar	-
Installation method	-	-	-	Immersion installation	Submerged installation
Product shell	-	-	-	POM material	-
Work pressure	-	-	-	-	<0.1 MPa
Temperature range	-	-	-	-	0-50°C
Deepest depth	-	-	-	-	20 Meters underwater

Parameter:	Cadmium ion	Potassium ion	Lead ion
Sensor			
Temperature range	Continuous 0-80°C / Intermittent 81-100°C	0-50°C	Continuous 0-80°C / Intermittent 81-100°C
Range	0-1000 (Default) / 0-5000 / 0-10000ppm	1X10 ⁻⁶ M-1M (0.04ppm - 39000ppm)	0-1000ppm(Default) / 0-5000ppm / 0-10000ppm
Measurement accuracy	5% F.S	5% F.S	5% F.S
Resolution	0.1ppm	0.1ppm	0.1ppm
Repeatability	±4%	±2%	±4%
Interfering ion	Ag ⁺ /S ²⁻ /Cu ⁺² /Fe ⁺² /Fe ⁺³ /Hg ⁺² /Pb ⁺²	-	Ag ⁺ /S ²⁻ /Cd ⁺² /Cu ⁺² /Fe ⁺³ /Hg ⁺²
Default range	-	0-1000ppm	-

Parameter:	Residual Chlorine	Turbidity	Ammonia Nitrogen
Sensor			
DC power supply	12-24V DC	12-24V DC	12-24V DC
Power consumption	≤0.15W (12V DC, 25°C)	≤0.15W (12V DC, 25°C)	≤0.15W (12V DC, 25°C)
Output signal	RS485 (Modbus protocol) / 4-20mA (Optional)	RS485 (Modbus protocol) / 4-20mA (Optional)	RS485 (Modbus protocol) / 4-20mA (Optional)
Responding speed	≤15s	≤15s	≤15s
Relay alarm	Two normally open and normally closed alarm relays	Two normally open and normally closed alarm relays	Two normally open and normally closed alarm relays
Measurement accuracy	±5% or 0.05mg/L	Turbidity: ±5% or ±3NTU (0~1000NTU) ±3% or ±2NTU(0~4000NTU)	5% F.S
Range	0.001mg/L	-	0-100ppm
Residual chlorine resolution	4-8.2 Residual chloride ion	-	-
Turbidity range	-	0-100NTU/0-1000NTU/0-4000ntu	-
Working environment	-	0~50°C	-
Resolution	-	-	0.01ppm
Temperature range	-	-	0~40°C

Parameter:	Nitrate ion	Chloride ion	Calcium ion
Sensor			
Temperature range	Continuous0-80°C / Intermittent81-100°C	-	-
Range	0-1000ppm(Default) / 0-5000ppm/0-10000ppm	0-1000ppm(Default) / 0-5000ppm/0-10000ppm	-
Interfering ion	BF ⁴⁻ /Cl ⁻ /ClO ⁴⁻ /Cn ⁻ /I ⁻ /NO ²⁺ /HCO ³⁻	-	-
Measurement accuracy	5% F.S	5% F.S	-
Resolution	0.1ppm	0.1ppm	-
Repeatability	±4%	±4%	±4%
Responding speed	-	≤15s	≤15s
Relay alarm	-	Two normally open and normally closed alarm relays	Two normally open and normally closed alarm relays

Parameter:	Sodium ion	Iodide ion	Fluoride ion
Sensor			
Temperature range	-	Continuous0-80°C / Intermittent81-100°C	Continuous0-80°C / Intermittent81-100°C
Range	0-1000 (Default) / 0-5000 / 0-10000ppm	0-1000ppm(Default) / 0-5000ppm/0-10000ppm	1X10 ⁻⁶ M-1M (0.02ppm - Saturated)
Measurement accuracy	5% F.S	5% F.S	5% F.S
Resolution	0.1ppm	0.1ppm (Default)	0.1ppm (Default)
Repeatability	±4%	±4%	±2%
Responding speed	≤15s	-	-
Relay alarm	Two normally open and normally closed alarm relays	-	-
Lower limit of monitoring	1X10 ⁻⁶ M (0.02ppm)	-	-

Parameter:	Cyanide ion	Copper ion	Bromide ion
Sensor			
Temperature range	Continuous 0-80°C / Intermittent 81-100°C	Continuous 0-80°C / Intermittent 81-100°C	Continuous 0-80°C / Intermittent 81-100°C
Range	0.2ppm-260ppm	0-1000ppm (Default) / 1-5000ppm / 1-3-6354ppm	0-1000ppm (Default) / 1-5000ppm / 1-3-6354ppm
Measurement accuracy	5% F.S	5% F.S	5% F.S
Resolution	0.1ppm	0.1ppm	0.1ppm
Repeatability	-	±4%	±4%
Interfering ion	Br-/Cl-/S ²⁻ /Ag ⁺	Br-/Cd ²⁺ /Cl-/S-/Ag ⁺ /Fe ²⁺ /Hg ²⁺	-

Wireless liquid level sensor

Overflowing of tanks and containers can cause a lot of wastage. The wireless liquid level sensor senses the depth of the liquid in real-time and sends alerts when the level exceeds the required level.

Input power	12V, 220V & Solar
Liquid level sensor measurement range	10 m (other range customizable)
Liquid level sensor accuracy	0.25%FS (Typical)
Liquid level sensor length	12m (other lengths customizable)
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless seawater sensor

The wireless seawater sensor senses the parameters of the sea to provide data on salinity, dissolved oxygen saturation and water temperature. Transmitting data wirelessly in real-time, the sensors help monitor sea water quality with great efficiency.

Input power	5V, 12V, 220V & Solar
Dissolved oxygen range	0-20mg/L
Water temperature range	0°C ~ 50°C
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Air / Gas Sensors

Wireless outdoor CO sensor

The wireless CO sensor detects and measures the level of Carbon monoxide in the air and transfers data wirelessly in real-time.

Input power	Battery 3.6V, 220V & Solar
CO Measurement range	0-1000 ppm
CO Measurement method	Electrochemical sensors
CO Measurement accuracy	< ± reading 3% (@25°C)
Response time	≤50s
CO Sensor lifetime	In the air ~ 2 years
Working pressure range	Standard atmospheric pressure ± 10%
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless NO sensor

The wireless NO sensor detects and measures the level of Nitric Oxide in the air and transfers data wirelessly in real-time.

Input power	Battery 3.6V, 220V & Solar
NO Measurement range	0-2000 ppm
NO Measurement method	Electrochemical sensors
NO Measurement accuracy	< ± reading 2% (@25°C)
NO Measurement resolution	< 1 ppm
Response time	≤60s
NO Sensor lifetime	In the air ~ 2 years
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless O₃ sensor

The wireless O₃ sensor detects and measures the level of Ozone gas in the air and transfers data wirelessly in real-time.

Input power	Battery 3.6V, 220V & Solar
O ₃ Measurement range	0-20 ppm
O ₃ Measurement method	Electrochemical sensors
O ₃ Measurement accuracy	< ± reading 3% (@25°C)
O ₃ Measurement resolution	< 20 ppb
Response time	<15s
O ₃ Sensor lifetime	1 year
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless H₂S sensor

The wireless H₂S sensor detects and measures the level of Hydrogen Sulfide in the air and transfers data wirelessly in real-time.

Input power	Battery 3.6V, 220V & Solar
H ₂ S Measurement range	0-100 ppm
H ₂ S Measurement method	Electrochemical sensors
H ₂ S Measurement accuracy	< ± reading 2% (@25°C)
H ₂ S Measurement resolution	< 0.1 ppm
Response time	<30s
H ₂ S Sensor lifetime	In the air>2 years
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless NO₂ sensor

The wireless NO₂ sensor detects and measures the level of Nitrogen dioxide in the air and transfers data wirelessly in real-time.

Input power	Battery 5V, 12V, 3.6V, 220V & Solar
NO ₂ Measurement range	0-20 ppm
NO ₂ Measurement method	Electrochemical sensors
NO ₂ Measurement accuracy	< ± reading 3% (@25°C)
Response time	≤15s
NO ₂ Sensor lifetime	2 years
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless SO₂ sensor

The wireless SO₂ sensor detects and measures the level of Sulphur dioxide in the air and transfers data wirelessly in real-time.

Input power	Battery 3.6V, 220V & Solar
SO ₂ Measurement range	0-20 ppm
SO ₂ Measurement method	Electrochemical sensors
SO ₂ Measurement accuracy	< ± reading 3% (@25°C)
Response time	≤15s
SO ₂ Sensor lifetime	2 years
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless noise sensor

The wireless noise sensor detects the decibel level of sound with high precision and accuracy and transfers the data wirelessly to connected devices in real-time.

Input power	Battery 3.6V, 220V & Solar
Noise measurement range	30dB ~ 130dB
Noise measurement accuracy	0.1 dB
Noise measurement error	3% F.S.
Response time	≤2 s
Frequency response	35 Hz- 20Khz
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless waterproof weather station

The wireless waterproof weather station provides accurate outdoor ambient temperature and humidity, PM2.5, PM 10 and Noise level values in real-time.

Input power	Battery 3.6V, 220V & Solar
Temperature measurement range	-20°C ~ 55°C
Temperature measurement accuracy	± 1.5° @25°C
Humidity detecting range	0% RH ~ 100% RH
Humidity measurement accuracy	± 10% RH @25°C
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless outdoor liquid level sensor

The wireless outdoor liquid level sensor helps detect the depth of the liquid in outdoor spaces. With a tough body and variable battery options, this versatile powered sensor provides quick and accurate readings

Input power	220V & Solar
Liquid level sensor measurement range	10 m (Other Range Customizable)
Liquid level sensor accuracy	0.25%FS (Typical)
Liquid level sensor length	12m (Other Lengths Customizable)
Mask lifetime in outdoor	3 years (Material: ABS)
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless outdoor weather station with multi-operability

Taking the weather station to the next level, this smart station enables monitoring of not only the temperature and humidity but also allows monitoring of CO₂ levels

Input Power	220V & Solar
CO ₂ Accuracy	±100ppm + 6% read value
CO ₂ Range	0-5000 ppm
Temperature measurement range	-20°C ~ 55°C
Temperature measurement accuracy	±0.5°C @ 25 °C ; ±1°C @ 25 °C
Humidity detecting range	0% RH – 100% RH
Humidity measurement accuracy	±4%RH @25°C
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless outdoor PM 2.5 / PM10 / noise / temperature / humidity sensor with a solar panel

This wireless outdoor station provides accurate readings to pollution levels, noise, temperature and humidity. Having the ability to detect concentrations PM 2.5 as well as PM 10, it provides complete information in real-time.

Input power	220V & Solar
Particle measurement range	0.3 ~ 1.0 ; 1.0 2.5 μm
Counting efficiency	50% @ 0.3μm 98% @ ≥ 0.5 μm
Effective range (pm 2.5 and 10 standard)	0 ~ 500 μg/m3
Resolution	1 μg/m3
Maximum consistency error	±10% @ 100-500 μg/m3 ±10 μg/m3 @ 0-100 μg/m3
Noise measuring range	30 dB – 130 dB
Noise measurement error	3% F.S
Noise resolution	0.1 dB
Temperature measurement range	-20°C ~ 55°C
Temperature measurement accuracy	±1°C
Humidity detecting range	0%RH-100%RH
Humidity measurement accuracy	±4%RH @25°C



Wireless outdoor wind speed detector

Wind speed can be an important factor to many. With no traditional systems to give proper and precise data on wind speed in real-time, Arnowa has designed a smart-technology based solution. This wireless outdoor wind speed detector helps detect wind speed with high precision and in real-time.

Input power	Battery 5V, 12V, 3.6V, 220V & Solar
Wind speed measurement range	0-30 m/s
Absolute measurement range	10-1200 mbar
Resolution (Air pressure)	0.012mbar
Accuracy (Air pressure)	±1.5 mbar (@25°C 1035 mbar)
Environment temperature range	-20°C ~ 55°C
Environment humidity	< 90% RH (No condensation)



Miscellaneous Sensors

Wireless people counter

This wireless people counter is a wifi device counting based people counting device that provides data to the number of people present at a place at a particular time. The device is a great tool for understanding pedestrian counts, crowd sizes, peak timings and much more.

Detecting the count by means of establishing a “silent” Wi-Fi hot-spot, the smart device provides precise data. The device is fully secure and does not store any data or personal information at any time. It pulses the number of devices in its range trying to access its network and provides the count as indication of number of devices referring to number of people in its coverage .



Parking sensor

The smart wireless parking sensor uses the best smart technologies to provide efficient parking solutions. Improving traffic flow, detailed parking analytics, detecting unauthorized parking, identifying overstays, sending alerts when parked illegally and much more, the sensor is a one stop solution to all parking issues. Operating on long lasting battery and communicating through protocols such as LoRaWAN and NB-IoT, the sensors are a robust and versatile addition to any parking space.



Wireless emergency button

The wireless emergency button is a necessity in every hazardous environment. This smart button sends alarms and alerts in real-time when someone pushes the emergency button.

Input power	Battery 3.6V, 220V & Solar
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless open / close detection sensor

Keeping a track of all doors and windows in big spaces can become difficult and tiring. The wireless open/close detection sensor is equipped with a reed switch sensor which senses whether the door or window is open or closed.

Input power	Battery 3.6V, 220V & Solar
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless light sensor

The wireless light sensor reads environmental illuminance through its built-in light sensor and thus detects the presence of any light.

Input power	Battery 3.6V, 220V & Solar
Illuminance accuracy	± 1° @25°C
Illuminance range	3- 220K; 1 3000 lux
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless occupancy & temperature & light sensor

The wireless occupancy and temperature and light sensor combines PIR, temperature, light sensor and tamper switch to provide a state-of-the-art sensor that provides precise and accurate readings in real-time.

Input power	Battery 3.6V, 220V & Solar
Mounting height	2 to 2.2 meters above ground level
Sensing angle	Horizontal 110°, vertical 60°
Sensing distance	2m to 12m
Temperature measurement accuracy	± 2°C
Light sensor measurement accuracy	≤15%
Detection speed	≥0.2 Meters / Second
Light sensor measurement range	2-1100 Lux
Environment temperature range	-20°C ~ 55°C
Storage temperature	-40°C ~ 85°C



Wireless smoke detector

The wireless smoke detector is a three-in-one device with a built-in photoelectric smoke detector, piezo buzzer and thermistor. It showcases smart abilities to detect smoke and unusually high temperatures in real-time.

Input power	Battery 3.6V, 220V & Solar
Alarming decibel	85dBm@3m
Alarming concentration	0.65 ~ 15.5%FT
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage temperature	-40°C ~ 85°C



Wireless CO detector

The wireless CO detector is a three-in-one device with a built-in CO sensor, piezo buzzer and thermistor. It showcases smart abilities to detect CO and unusually high temperatures in real-time.

Input power	Battery 3.6V, 220V & Solar
Alarming decibel	85dBm@3m
CO detection concentration range	0 ~ 1000ppm
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage temperature	-40°C ~ 85°C



Wireless siren

The wireless sensor instills in itself four kinds of alarms – fire, doorbell, emergency and doorbell and boasts of an alarm flasher to provide complete safety and security.

Input power	Battery 3.6V, 220V & Solar
Alarming sound level (At three meters)	85dBm@3m
CO Detection concentration range	≥80dB
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)



Wireless vibration sensor

The wireless vibration sensor helps measure vibrations and helps in triggers alarm for predictive maintenance.

Input power	Battery 3.6V, 220V & Solar
External cable length	1 meter
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless tilt sensor

Tilting of surfaces can cause serious obstructions in processes and can also result in hazards. The wireless tilt sensor detects tilts greater than or equal to 45° and reports it in real-time.

Input power	Battery 3.6V, 220V & Solar
Conversion angle	45° ±5°
Contact resistance	Less than 10Ω
Insulation resistance	More than 100 megohms
Installation type	Suitable at vertical state
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless window sensor with glass break detector

The wireless window sensor with glass break detector has a built-in reed switch. It has the ability to detect the open/close status of the door and windows and can even detect breaking of glass if connected to a glass break detector.

Input power	Battery 3.6V, 220V & Solar
Reed switch sensing range	2 cm
External cable length	1 meter
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless proximity sensor

The wireless proximity sensor utilizes magnetic actuation to detect objects in its proximal range.

Input power	Battery 3.6V, 220V & Solar
Reed switch sensing range	2 cm
Sensing distance	Approx. 10 cm
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless short-range occupancy sensor

The sensor boasts of an in-built PIR sensor and detects the presence of any living being within its range.

Input power	Battery 3.6V, 220V & Solar
Measuring distance	3.8 M (from the main unit)
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless toilet occupancy sensor

The wireless toilet occupancy sensor updates the toilet occupancy status as someone enters and locks the washroom door.

Input power	Battery 3.6V, 220V & Solar
Measuring distance	3.8 M (from the main unit)
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless ultrasonic distance sensor / bin level sensor

The wireless ultrasonic distance sensor detects distance from it to the object using ultrasound and also has the ability to measure tilt angle and temperature as well.

Input power	Battery 3.6V, 220V & Solar
Raging sensor- angle of detection	≤ 20 (Non-metal: glass, plastic etc.)
Raging sensor- distance of detection	0.20 ~ 3.6 m
Raging sensor- accuracy	$S \pm 0.12m$ (The test object is cardboard)
Raging sensor- blind zone	0 ~ 0.20m
Temperature sensor-detecting range	-40°C to 125°C $\pm 3^\circ C$
Temperature sensor- resistance @ 25 °c	100k (typical value)
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless capacitive proximity sensor

The wireless capacitive proximity sensor connects with a non-contacting capacitive sensor to detect objects as well as water levels and the full/vacancy level of liquid soaps and tissues.

Input power	Battery 3.6V, 220V & Solar
Sensing container thickness	≤20 (Non-metal: glass, plastic etc.)
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless temperature humidity sensor

The wireless temperature humidity sensor monitors and measures indoor ambient temperature and humidity to provide accurate and precise data in real-time.

Input power	Battery 3.6V, 220V & Solar
Temperature measurement range	-20°C ~ 55°C
Temperature measurement accuracy	± 1° @25°C
Humidity detecting range	0% RH ~ 100% RH
Humidity measurement accuracy	± 10% RH @25°C
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless temperature & humidity sensor- for low temperature environments

The wireless temperature and humidity sensor enables effortless monitoring of temperature and humidity in cold spaces such as dep freeze, refrigerators and other such environments.

Input power	Battery 3.6V, 220V & Solar
Temperature measurement range	-40°C ~ 55°C
Temperature measurement accuracy	± 0.5° @25°C
Humidity detecting range	0% RH ~ 100% RH
Humidity measurement accuracy	± 3% RH @25°C
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless temperature sensor for surface temperatures

The wireless temperature sensor is used to measure surface temperatures in moderate settings. Easy to deploy with high accuracy, these sensors enable effortless temperature monitoring and measurement.

Input power	Battery 3.6V, 220V & Solar
Temperature measurement range	-40°C ~ 125°C
Temperature measurement accuracy	± 1° @25°C
Cable length	1 meter
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless top-mounted ultrasonic level sensor

The wireless top-mounted ultrasonic level sensor detects any horizontally flat surface, whether liquid or solid and measures the distance to it through air medium using ultrasounds.

Input power	Battery 5V, 12V, 3.6V, 220V & Solar
Battery voltage measurement accuracy	±0.1V
Measuring range	0.25-8m
Blind zone	0-0.25m
Detection angle	15°
Measurement accuracy	±(1+S*0.3%)cm
Environment temperature range	-15°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless water leak detector with rope sensor

Equipped with a rope sensor, the smart wireless water leak detector detects any leaks through its external dual-core-non- positioning rope and sends alerts in real-time.

Input power	Battery 5V, 12V, 3.6V, 220V & solar
Leakage rope material	Conductive polyethylene + Alloy wire
Max working temperature	75°C
Breaking strength	60 kg
Detect core resistance	Less than 5 ohms/100 meters
Environment temperature range	-20°C ~ 55°C
Environment humidity	<90% RH (No condensation)
Storage environment	-40°C ~ 85°C



Wireless BLE blaster

The device connects Bluetooth low energy (BLE) beacons and sensors to multiple protocols and connects wirelessly to the gateway. This device helps in developing a BLE mesh for indoor environment monitoring.

Input power	220V
-------------	------



Wireless valve controller

Wireless valve controller enables remote access to the valves such that they can be controlled without actually having to manually be near them. The smart technology combined with a strong exterior make these sensors ideal for use in any kind of environment.

Input power	12V, 220V & Solar
Actuating arm maximum torque	± 7.5 kgf
Rotation angle	90 degrees
Applicable pipe diameter	6 British inch (3/4 US inch)
Environment temperature range	-20°C ~ 55°C
Environment humidity	< 90% RH (no condensation)
Storage temperature range	-40°C ~ 85°C



LoRa (NEMA) Node Smart Street Light and DALI Controller.

Arnova's LoRa (NEMA) IoT hub controller is the terminal control device of the intelligent lighting framework. It is a NEMA-standard twist-lock single-light controller that gets control signals from the incorporated controller through LoRa remote correspondence, and performs turning lights and splendor change on the road lights.

Get the order, and screen the working status of the street light continuously, and execute the anomalous state, dynamic caution task.

It is a remote control device used to control HID or LED luminaires. The luminaire is controlled through DALI or 0.10V analog control interfaces, while providing a reliable power interconnect with three robust twist lock contacts.

Product name	LoRa controller with NEMA standard
Material	UV Proof engineering plastic
Power	≤1.5W
Voltage	220VAC ±20%
Maximum transmission distance	2km
Working frequency	868 to 965 Mhz
Antenna interface	U.FL
Operating temperature	-30°C ~ 70°C



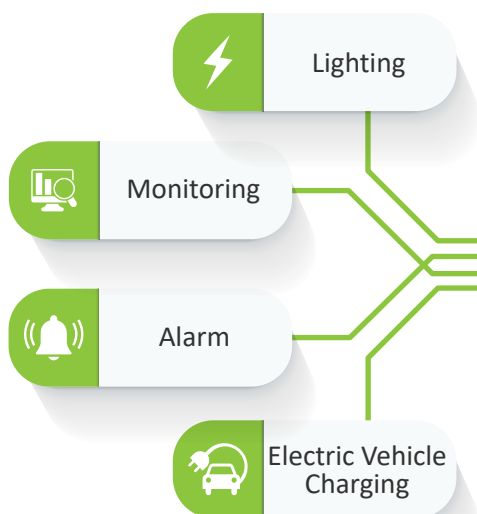
Features

- Luminaire intensity control
- Customizable dimming profiles
- Configurable ON/OFF switching
- Current, voltage, power, electricity, frequency, temperature detection

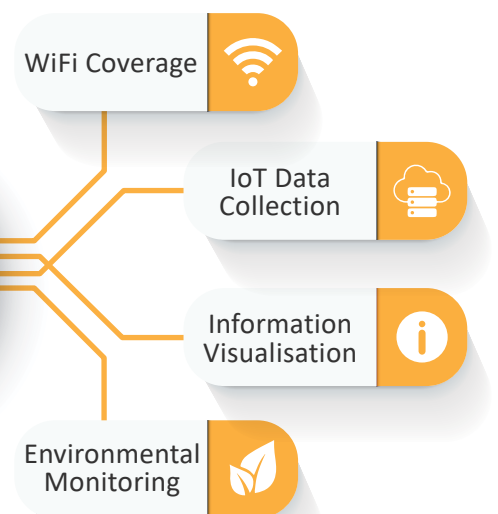
Benefits

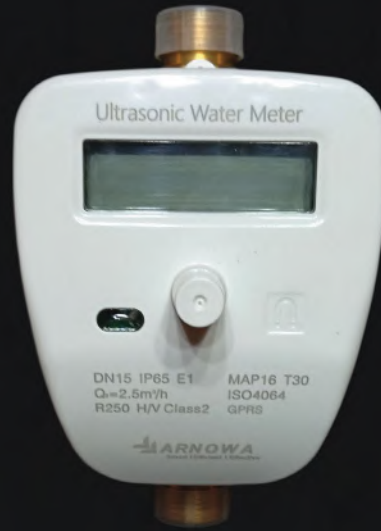
- Smart grid optimized
- Overload protection
- Power metering
- Real-time monitoring

Essential Infrastructure Construction






Smart City Development





Smart Water Metering Solution

Challenges with conventional water meter:

-  Incapable of Leak Detection and reporting in real-time
-  Manual Consumption Data Management
-  Human Intervention Requirement for Manual Readings

Unique features



Remote
Valve Control



Automatic
Monthly Bills



Leakage Alerts



Interactive User
Dashboard

Specifications of Water Meter

- Battery Life 10-12 Years
- Calibration Life- 6 Years
- Standard- ISO- 4064
- Nominal Diameter of the valve- 15mm
- Pressure class- MAP16
- Temperature Class- T30-T30/90
- Waterproof standard/Protection Class: IP 65
- Electromagnetic Class- E1
- Permanent flow rate Q3- 2.5 m3/h
- Dynamic range- R 250
- Installation Position- H/V
- Accuracy Class- Class2
- Communication Protocols- Multiple
- (GPRS/LoRa/Modbus)

Benefits of Choosing ARNOWA smart water meter

- Ensure a safe and steady water supply
- Enable flexible billing cycle
- Fight Non-Revenue Water with data
- Save money by saving on unnecessary distribution
- Deal with leakages the intelligent way
- Match demand-supply via demand forecasting
- Eliminate the need for manual readings
- Provides Weekly Report & Demand Forecast for End-users and Admin
- Control Water Supply Remotely with IoT Valves

Features:

– End-to-End Smart Solution:

ARNOWA Smart Water Metering Solution is an end-to-end IoT solution consisting of hardware, software, and connectivity. The consumption data is delivered to the consumers in real-time as well as the monthly water bills.

– All-Inclusive Cost:

ARNOWA advanced water metering solution is not just a software product; it is a complete solution from hardware to maintenance and billing. The cost of the solution comprises of software, smartphone app, billing services, water meter, smart valves, and installation.

– Interactive User Dashboard:

ARNOWA dashboard is simple, and non-tech users can also access the information through any connected device. We provide project-specific and personalized dashboards according to the need of our customers.

– Wide Area Coverage:

ARNOWA uses multiple communication protocols, so the solution is highly scalable, and implementation is citywide.

– Advanced-Data Analytics:

ARNOWA provides an Advanced Analytics feature powered by CARBON cloud allowing users and service providers to understand water consumption patterns, compare historical data, and predict future demands. This allows users and service providers to optimize the demand-supply of water.

– Low-Cost Solution:

The cost of implementation is meagre as compared to the solution provided by other brands, giving you a high return on investment soon after the implementation.

– High Scalability:

ARNOWA smart meters allow to flawlessly add new meters into the system by simply plugging new end-devices without the need for mess infrastructure cost.

– Interactive User Reports:

The solution allows you to monitor the real-time inflow, outflow & water level at buildings, plants, and reservoirs. The users get real-time Alerts/notifications, E-mail, and SMS in case of any conspicuous consumption.

Cyble Water Meter Module

Size	76 mm X 127 mm X 60 mm
Operating temperature	-20°C ... +65°C
Communication range	up to 1km*
Body material	Polycarbonate
IP Rating	IP68



Water Meter Probe Pulse Counter

Dimension (Main part, LxWxH)	112mm x 65mm x 32mm
Weight	150g
Environment temperature range	-20 to 55
Environment humidity range	<90% RH (No Condensation)
Storage temperature	-40 to 85 °C



Water Quality Parameters Measurement

Measurement Parameters	Measuring Method	Range	Measurement Accuracy
Water Temperature	Resistance method	(-20-80)°C	0.15°C
pH	Electrode method	0-14	0.1
ORP	Electrode method	(-1999-1999)mV	20mV
Conductivity	Electrode method	(10-100,000)µS/cm	±1%
Salinity	Calculated by conductivity and temperature	(0-70)PSS	±1%
Total dissolved solids	Calculated by conductivity and temperature	(0-65)g/L	±1%
Dissolved oxygen	Fluorimetry	(0-50)mg/L	±0.3mg/L
Turbidity	90° scattering method	(0-3000)NTU	±3%
Chlorophyll a	Fluorimetry	(0-100)ug/L	±5%
Blue-green algae	Fluorimetry	(100-20,000)cells/mL	±5%
Jordan ming	Fluorimetry	(0-1000)ppb	±5%
Oil in water	Fluorimetry	(0-1500)ppb	±5%
Ammonia nitrogen	Ion selective electrode method	(0-100)mg/L	±5%
COD / TOC	Spectroscopin method	(0-500)mg/L	1mg/L
Wind Speed	Ultrasonic time difference method	(0.5-60)m/s	0.1m/s
Wind direction	Ultrasonic time difference method	0°-360	±3°
Air pressure	Piezoresistive	(600-100)hPa	±0.5hPa
Air temperature	Platinum resistance method	(-40-80)°C	0.1°C
Humidity	Capacitive type	0%-100%RH	±3%RH
Current speed	Propeller type	(0-3.5)m/s	±0.05m/s
Flow	Propeller type	0°-360	±10°
Depth of water	Pressure sensor	(0-10)m	3mm
		(0-25)m	10mm
		(0-50)m	10mm
		(0-100)m	20mm



Smart | Efficient | Effective

ELECTRICITY METERING



PMAC 211AC Multi-Channel Energy Meter



Application

- Sub Metering in Commercial Building
- Branch Circuit Monitoring
- Utility Application

Features

- Suit for 3 phase 4 wires with connection mode
- Used for 4x3 phase AC measuring, 12x1 phase AC measuring
- Max. measure current up to 600A
- 33.3mA & 100mA rated current input (Optional)
- LCD display U, I, P, Q, S, PF, F, kWh, kvarh
- Over & Under limit alarm, up to 500 alarm records
- LED light indicates alarm & communication status
- Standard 35mm DIN Rail Mount

Main Function



Real-time Measurement

Voltage, Current, Active power, Reactive power, Apparent power, Power Factor, Frequency, Active Energy, Reactive Energy



Over & Under Limit Alarm & Record Function

Over voltage, Under voltage, Over current



Data Logging Every 15 Minutes

Total active energy, total active power, current



Communication

1 RS485 port, MODBUS-RTU protocol

Technical Specification

Connection Mode	3 phase 4 wires
Rated Current Input	10mA & 33.3 mA (optional)
Rated voltage Input	3*220/380V, 45Hz~65Hz
Power Supply	AC 85~265V, DC 100~300V
Power Loss	≤2W
Communication	RS485 serial, support MODBUS-RTU Baud rate: 4800, 9600 bps Address: 1~247
IP Index	IP52 (front panel), IP20 (whole device)
Dimension (L*W*H)	94*75*62mm
Environment	Operating temperature: -10°C~+55°C Storage temperature: -40 °C~+70°C Humidity: 5%~95% non-condensing

Standard (EMC)	
Electrostatic discharge immunity test	IEC 61000-4-2: 2001
Radiated immunity test	IEC 61000-4-3: 2002
Electrical fast transient/burst immunity test	IEC 61000-4-4: 2006
Surge immunity test (1,2/50μs~8/20μs)	IEC 61000-4-5, 2005
Radio frequency immunity	IEC 61000-4-6, 2006
Electromagnetic emission limits	CISPR22: 2006 pass

Parameter	Accuracy	Resolution	Measuring Range
Voltage	0.5%	0.1V	AC 0~300V
Current	0.5%	0.1A	AC 0~600A
Active Power	1.0%	0.1W	Each phase: 0~216k/W
Reactive Power	2.0%	0.1var	Each phase: 0~216kVar
Power Factor	1.0%	0.001	-1.000~+1.000
Frequency	0.5%	0.01Hz	45~65 Hz
Active Energy	1.0%	--	0~99.999.999.9 kWh
Reactive Energy	2.0%	--	0~99.999.999.9 kWh

Options Available

	Order Code	Description	
Main Module	PMAC211	-A	For 100mA Secondary
		-B	For 33.3mA Secondary
CT Accessory	CT for -A (100mA secondary)	LACT-100C1	Solid Core CT: Φ12 mm, 100A/100mA, Class 0.5
		CTSA016	Solid Core CT: Φ16 mm, 100A/100mA, Class 0.5
		CTSA024	Solid Core CT: Φ24 mm, 200A/100mA, Class 0.5
		CTSB0203	Solid Core CT: 20*30 mm, 400A/100mA, Class 0.5
		CTSB0508	Solid Core CT: 50*80 mm, 600A/100mA, Class 0.5
	CT for -B (100mA secondary)	LACT-100K1	Solid Core CT: Φ16.2 mm, 100A/33.3mA, Class 0.5

PMAC 770/ 770-DR Multifunction Power Meter



➤ **PMAC770: Panel Mount**

➤ **PMAC770-DR: 35mm DIN Rail Mount**

Features



Suit for LV/ HV voltage system

- For low voltage system, direct connect up to 690 V (L-L) AC
- For high voltage system, support connect up to 65kV



*** TOU (Multi-tariff billing), historical data of 31 days and 12 months**

TOU, 4 tariffs, 8 time period in 24 hours



True-RMS measuring parameter

True-RMS measuring parameters includes: U, I, P, Q, S, PF, F, kWh, kvarh, kVAh



Power quality analysis

31st Harmonic analysis, K factor, unbalance etc.



Multiple Communication

- BACnet MS/TP Protocol (RS485 port)
- MODBUS-RTU Protocol (RS485 Port)
- MODBUS-TCP/IP Protocol (Ethernet port)



64M bit Memory, Build-in Web

Real-time data inquiry by Web Save monitoring data (Time interval settable 1min, 5 min, 10min,15min, 30min) Support FTP for download memory data



Under/ over limit alarm



DI/DO



Max./ Min. Record (U, I, P, Q*)



CO₂ (carbon dioxide) calculation for kWh



High accuracy

- Active energy: according to IEC62053-22, class 0.5s
- Reactive energy: according to IEC62053-23, class 2



Demand calculation

2 kinds of demand modes: fixed block and rolling block

Basic Function		
Real time metering	Voltage	Ua, Ub, Uc, Uab, Ubc, Uca, UL-L avg, UL-N avg
	Current	Ia, Ib, Ic, In, Iavg
	Power	Pa, Pb, Pc, ΣP, Qa, Qb, Qc, ΣQ, Sa, Sb,Sc, ΣS
	Power factor	PFa, PFb, PFC, ΣPF
	Energy	kWh, kvarh, kVAh *
	CO2 (Carbon dioxide)	kWh(import/export)
	Frequency	F
	Demand & Max. demand	Dmd_I, Dmd_P, Dmd_Q, Dmd_S
	Max./ min. value	Max./ min. (U, I, P, Q*, S*)
	Multi-tariff energy *	
	Phase angle *	
Power quality analysis	Unbalance	U_unbl *, I_unbl *
	Harmonic (31st)	THDu, THDi, TOHdu, TOHdi, TEHdu, TEHdi, HRU *, RHI *
	Harmonic RMS (0-31st)	Harmonic RMS-U *, Harmonic RMS-I *, Harmonic RMS-P *
	Harmonic energy (1st -13th)	
	Voltage crest factor, current K factor, Load rate, Voltage deviation, Frequency deviation Running time record for power-on period and qualified voltage & current *	
Setpoint alarm	Over/ under limit alarm	
3DI +2 DO	3 status input + 2 relay output	
RS485	Modbus-RTU protocol	
Record function	SOE (event log), Real-time clock (yyyy-mm-dd hh:mm:ss) *	
	Voltage/ frequency deviation, Voltage unbalance record	

Parameter	Accuracy	Resolution	Measuring Range
Voltage	0.2%	0.01V	Direct: 690Vph-ph
			PT primary: 0.001kV~65kV (settable) PT secondary: 1~398V (settable)
Current	0.2%	0.001A	CT primary: 1~9,999A CT secondary: 1 A or 5A
Power	0.5%	0.1W / var / VA	each phase: 0~649.9MW/ Mvar/ MVA
			Total: 0~1949.8MW/ Mvar/ MVA
Power factor	0.5%	0.001	-1.000~+1.000
Frequency	0.01	0.01Hz	45~65 Hz
Active energy	0.5%	0.1kWh	0~99,999,999.9 kWh
Reactive energy	2.0%	0.1kvarh	0~99,999,999.9 kvarh
Apparent energy	1.0%	0.1kVAh	0~ 99,999,999.9 kVAh
THD	1.0%	0.001	0~100.0%
Individual harmonic	1.0%	0.001	0~100.0%
Un-balance	1.0%	0.001	0~100.0%

Technical Specification

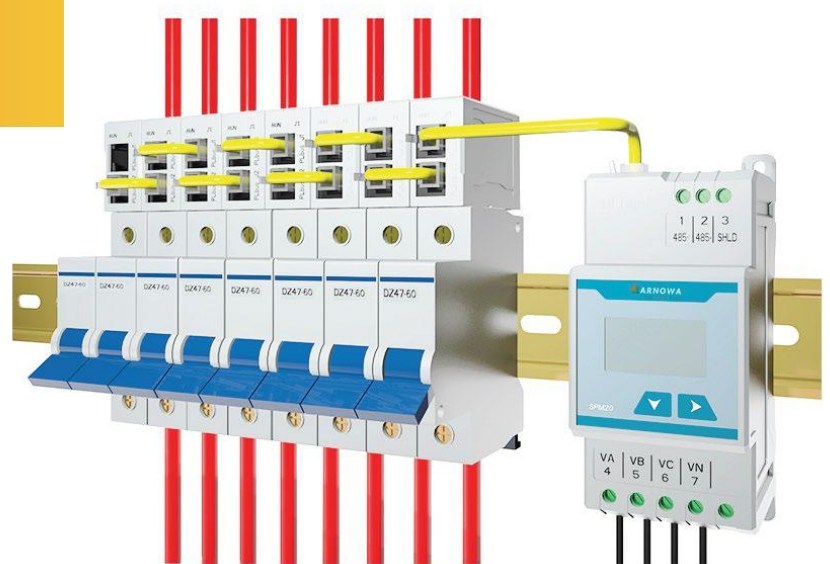
Connection mode	3-phase 3-wire, 3-phase 4-wire, 1-phase 2-wire
Metering	True RMS, 1 sec refresh time
Input	Rate current: 1A or 5A Rate voltage: Direct 120, 220V, 240V, 277V, 398Vph-N (optional) PT secondary: 1~398V (settable) Frequency: 50/ 60Hz
Overload	120% of rated, continuously Instantaneous current: 10 times/ sec Instantaneous voltage: 2 times/ sec
Status input	Wet contact, external power supply
Relay output	Node capacity: 250VAC/5A
Pulse output	Pulse constant: 1000~9999 programmable Pulse width: 60~100ms programmable Formula: 1 pulse = (1÷ pulse constant ×PT ×CT) kWh
Power supply	85 ~ 265VAC, 85 ~ 265VDC (When select P1) 100 ~ 420VAC, 100 ~ 400VDC (When select P2)
Power loss	< 5VA
IP index	IP52 (front panel) and IP30 (case)
Power frequency withstand voltage	AC 2KV/minute
Insulation resistance	≥50MΩ
Impulse withstand voltage	4kV (peak), 1.2/50uS

Communication	Modbus- RTU Protocol	RS485 serial Baud rate: 2400, 4800, 9600, 19200, 38400bps Address: 1~247
	Modbus- TCP/ IP	Ethernet communication port Support connect 10M/100M ethernet, Modbus TCP/IP, Web, FTP
	BACnet MS/TP protocol	RS485 serial Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 76800bps Address: 1...127, excluding 99
Dimension (L x W x H)	PMAC770: Panel: 96 x 96 x 13.5 mm Cut-out: 90 x 90 x 58.6 mm (basic) 90 x 90 x 80.1 mm (optional module) PMAC770-DR: Panel: 96 x 96 x 12 mm Cut-out: 90 x 90 x 58.6 mm (basic)	
Weight	Basic unit: approx 550gr. Optional module: 50gr.	
Environment	Main Module & and other	Operating temperature: -10°C ~ +55°C Storage temperature: -40°C ~ +70°C
	BACnet Module	Operating temperature: 0°C ~ +50°C Storage temperature: -5°C ~ +75°C Humidity: 10% ~ 95% non-condensing

Standard (EMC)

Electrostatic discharge immunity test	IEC 61000-4-2,Level 4
Radiated immunity test	IEC 61000-4-3,Level 3
Electrical fast transient/burst immunity test	IEC 61000-4-4,Level 4
Surge immunity test (1, 2/50µs~8/20µs)	IEC 61000-4-5,Level 3
Conducted emissions	EN 55022,Class B
Radiated emissions	EN 55022,Class B

SPM20AC Multi-Channel Energy Meter



Applications

- Hotel, Hospital, Dormitory
- Commercial, Building, Office
- Residential Building
- Reconstruction Project

Features

- **Small Size** – Can be installed at the closest point, integrate in existing spaces-constrained installations.
- **Ultra-compact Design** – Consists of control unit and current sensors (with RJ12 port, optional solid core or split core)
- **Wide Measurement Range** – Max. Support 63A
- **Multi Circuit** – Support 30 single phase circuit or 10 three phase circuit AC meaning
- **High Accuracy** – Voltage & Current class 0.5 kWh classv1.0
- **Multi Network Type** – 1 phase 2 wires, 3 phase 4 wire

Main Function



Real-time Measurement

Voltage, Current, Active power, Reactive power, Apparent power, Power Factor, Frequency



Alarm Function

Overload, Under load, Over current, Sensor fault



Energy Consumption

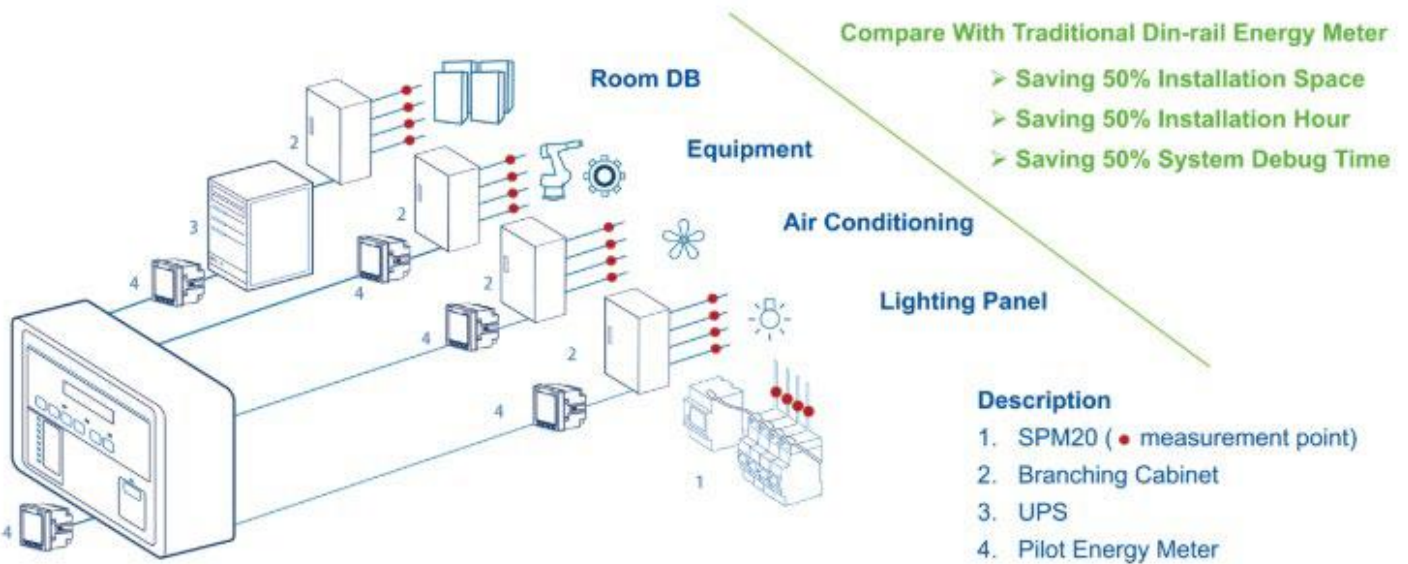
Active energy, Reactive energy



Communication

1 RS485 port, MODBUS-RTU protocol

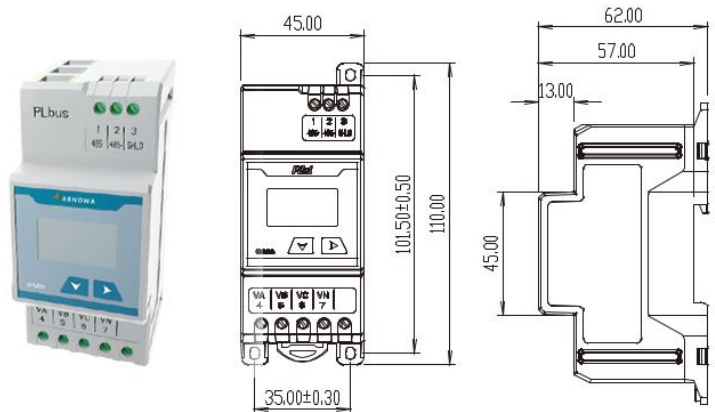
Typical Connection



SPM 20 & Accessories

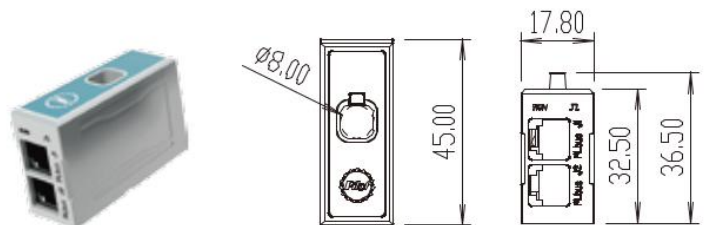
• SPM 20M Main Module

Connection Mode	1 phase 2 wires, 3 phase 4 wires	
Power Supply	Self-supply, by a phase	
Voltage Input	1 phase 2 wires	220V Range: 40%-150%
	3 phase 4 wires	3 × 220/380V Range: 40%-150%
Frequency	45 ~ 65 Hz	
Power Loss	Power supply circuit: ≤ 10W	
Communication	RS485 serial, support Modbus-RTU Baudrate: 4800, 9600, 19200 bps Address: 1 ~ 247	



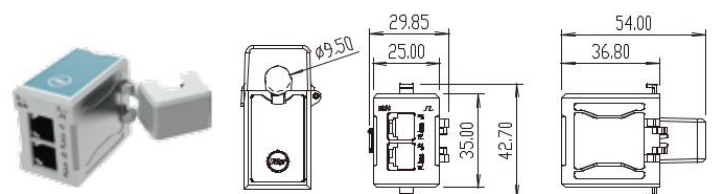
• SPM 20C Solid Core

Connection Mode	Bus connection (2 × RJ12 Port)
Rated Current Input	5(63) A
Installation	Solid core
Open hole	Φ8 mm
Sampling Rate	28k Hz



• SPM 20-O Split Core Sensor

Connection Mode	Bus connection (2 × RJ12 Port)
Rated Current Input	10(50) A
Installation	Solid core
Open hole	Φ9.5 mm
Sampling Rate	28k Hz



Parameter		Accuracy	Measuring Range
Voltage		0.55	40%~120%
Current	Solid Core Sensor (C)	0.5%	0-63A, 1%~120%
	Split Core Sensor (O)	1.0%	0-50A, 1%~120%
Power factor		1.0%	-1~1
Active power		1.0%	Single phase: 0~ ± 14kW/var/VA Total: 0~ ± 42kW/var/VA
Reactive power		2.0%	
Apparent power		2.0%	
Active energy	Solid Core Sensor (C)	1.0%	0~99,999,999.9 kWh
	Split Core Sensor (O)	2.0%	0~99,999,999.9 kWh
Reactive energy		2.0%	0~99,999,999.9 kVarh
Frequency		0.01	45~65Hz

Environment & Standard

Power frequency withstand voltage	2000V AC
Insulation resistance	≥100MΩ
Impulse withstand voltage	6kV (peak)
IP index	IP52 (front panel)

Environment	Normal operating temperature: -20°C~+55°C
	Operating temperature: -20°C~+50°C
	Storage temperature: -30°C~+80°C
	Humidity: <95% non-condensing

Standard (EMC)

Electrostatic discharge immunity test	IEC 61000-4-2, Level 4
Radiated radio-frequency electromagnetic field immunity (RFEMS)	IEC 61000-4-3, Level 4
Electrical fast transient test	IEC 61000-4-4, Level 4
Surge immunity test (1,2/50μs~8/20μs)	IEC 61000-4-5, Level 4
Conduction disturbance rejection of radio frequency field induction	IEC61000-4-6, Level 4
Electromagnetic emission limits	CISPR22: 2006, Pass
Voltage sag and short time interrupt immunity	IEC61000-4-11, Pass
Power frequency withstand voltage	IEC62052-11 2003

Options Available

Module	Order code		Description
Main Module	SPM20	-M	Suitable for 1 phase 2 wire & 3 phase 4 wire
Measure Sensor	SPM20	-C	Solid Core Sensor: 5 (63) A, 8.0mm, Class 1.0
		-O	Solid Core Sensor: 11 (50) A, 9.5mm, Class 2.0

SPM32 Multi-Function Power Meter

Features

- Suit for Panel mount and DIN Rail Mount installation
- Suit for distribution system under 650kV (PT value settable)
- True RMS measuring parameters
- Setpoint alarm for over / under limit
- 31st Harmonic analysis, THD
- Status input & relay output function (optional) High accuracy, class 0.5 for kWh
- Small size: 72*72mm
- One RS485, support MODBUS-RTU protocol

Basic Function

SPM32 measures and display real-time parameters:

- Voltage-Ua, Ub, Uc, Uab, Ubc, Uca, UL-L avg. UL-N avg.
- Current-Ia, Ib, Ic, In, I avg.
- Current Unbalance Rate- I unbal.
- Active Power – Pa, Pb, Pc, ΣP
- Reactive Power–Qa, Qb, Qc, ΣQ
- Apparent Power– Sa, Sb, Sc, ΣS
- Power Factor –PFa, PFb, PFC, ΣPF
- Frequency –F
- Active Energy– Total kWh (import / export)
- Reactive Energy– Total kWh (import / export)
- Apparent Energy– Total kVAh
- Demand (IP) and Max. Demand Record for I,p
- 31st harmonic, THD, THDu, THDi,
- Setpoint Alarm– over voltage, under voltage, overt current, under current, frequency too high, frequency too low, over load, over demand, phase loss, status input OFF

Optional Function

For SPM32 (Panel Mount)	R	2 relay outputs
	S	2 status inputs (Wet contact)



SPM32 Panel Mount



SPM32-DR: DIN Rail Mount (without display)



For SPM32-DR (DIN Rail Mount)	S	4 status inputs (wet contact)
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Technical Specification

Connection mode	3 phase 3 wires, 3 phase 4 wires
Metering	True RMS, 1 sec refresh time
Input	Rated current: 5A or 1A Rated voltage: 57V~300V (ph-N), 35Hz~65Hz
Status Input (Optional)	Rated voltage 220V, 2 channel active status input, Lower than 60V is open, higher than 178V is closed. Max, input is 300V
Relay Output (Optional)	Rated contact capacity: 250VAC/5A or 30VDC/5A
Power Supply	85~265VAC or 100~300VDC
Power Loss	<4VA
Power Frequency Withstand Voltage	AC 2KV/minute
Insulation Resistance	≥100M
Impulse Withstand Voltage	6KV
Communication	RS485 serial, Modbus-RTU, Address: 1~247 Baudrate: 4800, 9600, 19200bps
Dimension (L*W*D)	Panel Mount: 72*72*70 mm Din-rail Mount: 72*72*77.2 mm
IP Index	IP52 (front panel) and IP20 (case)
Environment	Operating temperature:- 10 °C~+55°C Limit Operating temperature: 25 +55°C Storage temperature: -40°C~+70°C Humidity: 5%~95% RH, non-condensing
Standard (EMC)	Electrostatic discharge immunity test IEC61000-4-2, Level 4 Radiated immunity test IEC61000-4-3, Level 4 Electrical fast transient/burst immunity test IEC61000-4-4, Level 4 Surge immunity test (1, 2/50μs~8/20μs) IEC61000-4-5, Level 4 RF field immunity induced mass IEC61000-4-6, Level 3

Measurement Parameter	Accuracy	Measuring Range
Voltage	0.2%	10V~500V (PT secondary side)
Current	0.2%	5A or 1A (5%~120% of rating) (CT secondary side)
Power factor	0.5%	-1.000~1.000
Active power	0.5%	Per phase:0~± 26MW Total: 0~± 78MW
Reactive power	1.0%	Per phase:0~± 26Mvar/VA Total: 0~± 78Mvar/VA
Apparent power	1.0%	
Active energy	0.5%	0~99,999,999.9 kWh
Reactive energy	2.0%	0~99,999,999.9 kvarh
Apparent energy	2.0%	0~99,999,999.9 kVah
Three-phase current unbalance	1.0%	0%~100%
Harmonic	Class B	0%~100%

Options Available

SPM32	R	2 relay outputs
	S	2 status inputs (Wet contact)
	V1	5A
	V2	1A

SPM32-DR	S	4 status inputs
	V1	5A
	V2	1A

Example:

SPM32-RS-V1, it means the device provides basic measuring function, one RS485 port, 2 digital inputs, 2 relay outputs. Rated input current 5A, CT ratio and PT ratio settable.

SPM33 Multifunction Power Meter



Features

- Economical multifunction power meter
- Suit for voltage distribution system up to 650kV
- Dual Source kWh phase trac record separately grid & generator supply
- 31st Harmonic analysis, THD
- One RS485, support MODBUS-RTU protocol
- Phase sequence adjustment
- 2 status input (standard)
- Alarm setpoint (optional)
- Bar chart display for harmonic

Basic Function

SPM33 measure and display real-time parameters:

- Voltage— $U_a, U_b, U_c, U_{ab}, U_{bc}, U_{ca}$,
- Voltage unbalance rate — $U_{L-L} \text{ unbal}, U_{L-N} \text{ unbal}$
- Current— I_a, I_b, I_c, I_n
- Current unbalance rate — $I \text{ unbal}$
- Active power — $P_a, P_b, P_c, \sum P$
- Reactive power — $Q_a, Q_b, Q_c, \sum Q$
- Apparent power— $S_a, S_b, S_c, \sum S$
- Power factor— $PF_a, PF_b, PF_c, \sum PF$
- Frequency— F
- Active energy—kWh
- Reactive energy— kvarh
- Apparent energy - kVAh
- Dual source kWh records separately grid & generator supply (Import & export kWh)
- Demand and Max. record for I, P, Q, S
- 31st harmonic, THD
- 2 DI, One RS485,

Optional Function

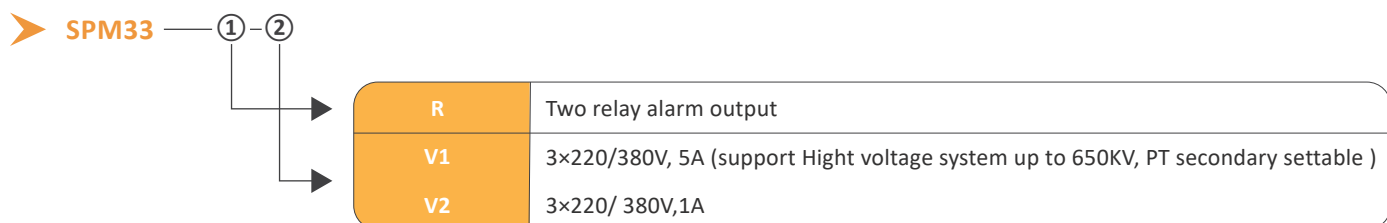
- 2 Relay output

Technical Specification

Connection mode	3 phase 3 wires, 3 phase 4 wires	
Metering	True RMS, 1 sec refresh time	
Input	Rated current: 5A or 1A Rated voltage: 220/380V, 35Hz~65Hz	
Overload	Current: 120% of rated, continuously Instantaneous current: 10 times/	
Overload	Low voltage system: Up to 400V(L-N) / 650V (L-L) High voltage system: Up to 650kV	
Status input voltage	2 channel active status input, less than 60V is open, more than 140V is closed, the maximum input is 300V	
Relay output (optional)	2 channels, Node capacity: 250Vac/5A	
Power frequency withstand voltage	AC 2KV/minute	
Insulation resistance	≥ 100MΩ	
Impulse withstand voltage	5kV (peak), 1.2/50uS	
Power Supply	AC 85~265V or DC 100~300V	
Power loss	<5VA	
Communication	RS485 serial, support Modbus-RTU Baudrate: 4800, 9600, 19200bps Address: 1~247	
Dimension (L x W x H)	Panel: 96 x 96 x 18 mm Cut-out: 89.5 x 89.5 x 69.8 mm (+0.5mm)	
IP index	IP54 (front panel) and IP20 (case)	
Weight	Approx. 500gr.	
Environment	Normal operating temperature: -10°C~+55°C Operating temperature: -25°C~+55°C Storage temperature: -40°C~+70°C Humidity: 5%~95% non-condensing	
Standard (EMC)	Electrostatic discharge immunity test	IEC 61000-4-2, Level 4
	Radiated immunity test	IEC 61000-4-3, Level 4
	Electrical fast transient/burst immunity test	IEC 61000-4-4, Level 4
	Surge immunity test (1, 2/50μs~8/20μs)	IEC 61000-4-5, Level 4

Parameter	Accuracy	Measuring Range
Voltage	0.5%	Line - line : 0 ~ 650V Line - Neutral : 0 ~ 400V
		PT primary side: up to 650KV PT secondary side: 100 - 400V (L-N) (Settable)
Current	0.5%	Each phase : 0 ~ 65,000A Zero sequence : 0 ~ 65,000A
Power factor	0.5%	-1~1
Active power	0.5%	0~ 99,999,999.9 W
Reactive power	1.0%	0~ 99,999,999.9W
Active energy	0.5% for 5A input	0~ 99,999,999.9 kWh
	1.0% for 1A input	
Reactive energy	2.0%	0~ 99,999,999.9 kVarh
Apparent energy	1.0%	0~ 99,999,999.9 kVAh
Three-phase voltage unbalance	class B	0%~100%
Three-phase current unbalance	class B	0%~100%
THD	class B	0%~100%

Options Available



Example:

Model No. SPM33-R-V1 indicates the device provides basic functions, two relay alarm output, rated input 220/380V, 5A

SPM91 Single Phase Din-Rail Energy Meter



Basic Function

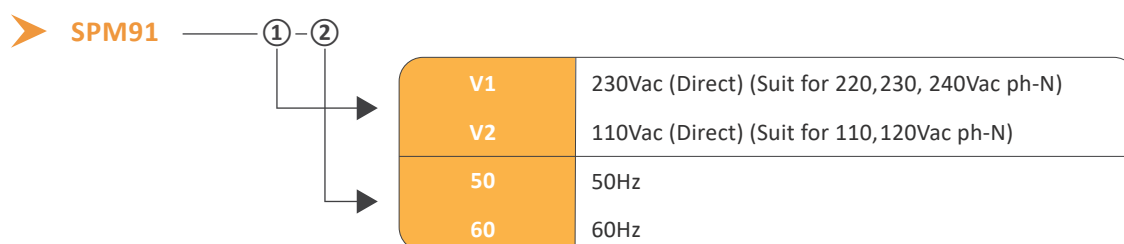
- Suit for 110V, 120V, 220V, 230V, 240V AC low voltage system
- Measure U, I, P, Q, S, PF, kWh, kvarh, LCD display U, I, P, kWh
- 6 +1 digits LCD display (999999.9 kWh)
- LED indicates pulse output
- Password protection
- One key for up/down page, one key for programming
- Small size: 100*36*65mm
- RS485 port , MODBUS-RTU or DTL645 protocol (Optional)
- 35mm DIN rail installing, standard DIN ED5002
- Standard: IEC62053-21

Technical Specification

Display	6 +1 digits LCD display (999999.9 kWh)
Accuracy	kWh Class 1.0
Rated voltage	AC 220Vph-N or 120Vph-N (Optional)
	Range: 0.8Un~1.2Un
Rated(Max.) current	5 (63)A
Start current	0.4%Ib
Power	<2W
Consumption	50Hz/ 60Hz (Optional)
Frequency	7mm x 7mm (16mm ²)

Pulse output	1 channels
Communication	RS485 port, MODBUS-RTU and DTL645 communication protocol
	Address: 1~247
	Baud rate: 2400, 4800, 9600bps (Default)
Creeping	Anti-creeping logic design
Dimension (L*W*H)	100*36*65mm
Weight	190g
Environment	Operating temperature: -20°C ~ +55°C
	Storage temperature: -25°C ~ +70°C
	Humidity: 5%~95% non-condensing

Options Available



Example:

Model No. SPM91-V1-50, which indicate the device provides one RS485, one pulse output, rated input voltage 230Vac, frequency 50Hz, rated current 5(63A).

SPM93 Three Phase Din Rail Energy Meter

Basic Function

- Suit for 110V, 120V, 220V, 230V, 240V AC low voltage system
- Measure V, I, P, Q, S, PF, kWh, kvarh, Multi-tarif energy value
- 7 +1 digits LCD display (9999999.9 kWh)
- Record historical energy for latest 31 days (per 15min.), latest 12 months and latest 10 years
- kWh accuracy class 0.5s or 1.0
- Support over-voltage timing, under-voltage timing, over-current timing function
- 2 LED indicates pulse output (Settable for kWh or kvarh)
- LCD display prompt for phase sequence error
- 3 keys for programming, 35mm DIN rail installing, standard DIN ED5002
- RS485 port, MODBUS-RTU or DTL645 protocol (selectable)
- Standard: IEC62053-21/ 23

Technical Specification

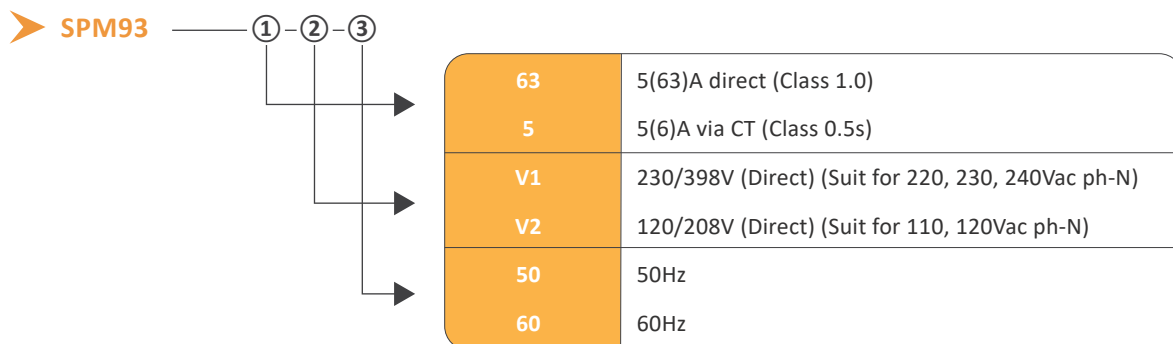
Rated current	Direct: 5(63)A Or 5(6)A via CT
Rated voltage	AC 220V ph-N or 120V ph-N (Optional)
Frequency	50/60Hz (Optional)
Burdenv	<2W
Power supply	Self supply (Note: RS485 won't work, when connect 1 phase) For 220Vac (L-N), range: 176~276Vac For 120Vac (L-N), range: 96~144V
Communication	RS485 serial, Modbus-RTU and DTL645 Baud rate: 2400, 4800, 9600, 1200 (option) Address: 1~247
Environment	Operating temperature: -20°C~ +55°C Storage temperature: -40°C~ +70°C Humidity: 5%~95% non-condensing



Connection mode	3-phase 4-wire	
Pulse output	2 channels (Settable for kWh or kvarh)	
Starting Current	0.4%Ib (direct connect), 0.2%Ib (via CT)	
Power Frequency withstand voltage	4kV	
Accuracy	kWh Accuracy: Class 1 for 3×5(63)A direct kWh Accuracy: Class 0.5s for 3×5(6)A via CT	
Pulse constant	1000 imp	
Dimension	72*100*65mm	
Wire Diameters	7mm * 7mm (16mm ²)	
Standard (EMC)	Electrostatic discharge immunity test	IEC 61000-4-2, Level 4
	Radiated immunity test	IEC 61000-4-3, Level 3
	Electrical fast transient/burst immunity test	IEC 61000-4-4, Level 4
	Surge immunity test (1, 2/50μs~8/20μs)	IEC 61000-4-5, Level 4
	Conducted emission	EN55022, Class B
	Radiated emission	EN55022, Class B

Parameter		Accuracy	Resolution	Measuring Range
Display data, can also be read via MODBUS	Voltage	0.2%	0.01V	For 220Vac (L-N), range: 176~276Vac For 120Vac (L-N), range: 96~144V
	Current	0.2%	0.001A	Direct: 5(63)A Via CT: 5(6)A
	Active power	0.5%	0.1W	0~1MW
	Power factor	0.5%	0.001	-1.000~+1.000
	Frequency	0.01	0.01Hz	45~65Hz
	Active energy	Class 1 for 5(63)A Class 0.5s for 5(6)A	0.01V	0~9999999.9 kWh
only can be read via MODBUS	Reactive power	1.0%	0.1Var	0~1Mvar
	Apparent power	0.5%	0.1VA	0~1MVA

Options Available



Example 1:

Model No. SPM93-63-V1-50, which indicates the device provides basic function, accuracy class 1, rated current is 5(63)A, provides TOU (Multi-tariff) function and rated voltage input is 220/380V, 50Hz.

ARNOWA Flexible Rogowski Coils CT AMK Series

Description

SPM9511-M / SPM9513-M are DIN Rail Relay Control Energy Meter can accurately and directly measure energy consumption and billing. The meters have Relay function, support to control the switch (on/off) remotely. It can Max. support Max. 80A direct input. With Modbus-RTU protocol and RS485 port, the meter also supports connect into 3rd party system.

Features

- Suit for 120V, 220V, 230V, 240VAC Power System
- 7+1 digits LCD display (9999999.9kWh)
- High accuracy: Class 0.5s for 5A via CT, Class 1.0 for 80A direct input
- High accuracy: Class 0.5s for 5A via CT, Class 1.0 for 80A direct input
- 3 keys for programming, 35mm DIN Rail installation, standard DIN ED5002
- 1 LED indicates pulses output, standard DIN 43864
- Support reading and inquiry data when power off
- Standard: IEC62053-21/22

Functions

- Measure - U, I, P, Q, S, PF, F, kWh, kvarh, multi-tariff energy (kWh, kvarh)
- Relay Control - for remote control circuit switch on/off
- TOU (Multi-tariff) - 4 tariffs and 8 time periods in 24 hours Historical Record - kWh, kvarh, Max. P for last 31 days (Per 15min) and last 12 months data; last 200 alarms and last 20 times power off Alarm -- temper alarm, switch on/off alarm, over-voltage alarm, under-voltage alarm, reversed connection alarm etc.
- Communication - one RS485 port, MODBUS-RTU Protocol



SPM9511-M Single Phase



SPM9513-M Three Phase

Technical Specification

Accuracy	Class 0.5s: 5 (6) A Class 1.0: 10 (80)A	
Rated Current	SPM9511-M/SPM9513-M: Class 1.0: 10 (80)A SPM9513-M: 5 (6) A via CT	
Rated Voltage (Optional)	SPM9511-M: 120V, 220V, 240V SPM9511-M: 120/208V, 220/380V, 240/415V	
Power Supply	Self Supply (Note: for SPM9513-M, RS485 won't work if only connect 1 phase voltage) Overload: 1.2 times	
Relay Control	Support control circuit switch on/off For SPM9511-M: Build-in relay module For SPM9513-M (80A): Build-in Relay module For SPM9513-M (5A): Need to add AC contactor Need to add AC Contactor and Relay Switch	
Pulse Output	1 Channel (Settable for kWh or kvarh) constant: 1600imp/kWh/kvarh Wet contact, power supply range: 5~30VDC	
Frequency	50/60Hz	
Power Consumption	<2W/10VA each phase	
Wire Diameters	7mm*7mm (16mm ²)	
Starting Current	0.4% Ib	
Communication	RS485 port, MODBUS-RTU Baud rate: 2400、4800、9600 Address: 1~247	
Insulation	Withstand voltage: 2kV, Impulse voltage:6kV	
Historical Record	<ul style="list-style-type: none"> • kWh, kvarh, Max. P for last 31 days (Per 15min.) and last 12 months data • last 200 alarms records • last 20 times power off 	
Alarm	<ul style="list-style-type: none"> • Temper alarm • Switch on/off alarm • Over-voltage alarm • Under-voltage alarm • Reversed connection alarm 	
EMC Standard	Electrostatic discharge immunity test	IEC61000-4-2, Level 4
	Radiated immunity test	IEC61000-4-3, Level 3
	Electrical fast transient/burst immunity test	IEC61000-4-4, Level 4
	Surge immunity test (1, 2/50μs ~ 8/20 μs)	IEC61000-4-5, Level 4
	Conducted emission	EN55022, Class B
	Radiated emission	EN55022, Class B
Environment	Operating temperature: -20°C ~ +55°C Storage temperature: -40°C ~ +70°C Humidity: 5% ~ 95% non-condensing	

ARNOWA Hinged Core Current Transformers

ARNOWA hinged split core CTs are compact and low-cost current transformers with high accuracy. Designed with a single-click installation mechanism, the hinged CTs are ideal for quick and easy installation without disconnecting cables. The compact size is perfect for limited-space panels.

Features

- Low cost
- 4 standard sizes
- Split core design, safer, easier installation, and portable



Applications

- Measures AC current flow to electric motors, lighting, air condition equipment, etc. Compatible with HVAC temperature control, power management, building automation systems.

TECHNICAL DATASHEET

Model	T10	T10	T10	T10
Rated Input	5/20/30/40/50/80A AC	5/20/30/40/50/80A AC	5/20/30/40/50/80A AC	5/20/30/40/50/80A AC
Rated Output	333mV/0-50mA	333mV/0-50mA	333mV/0-50mA	333mV/0-50mA
Accuracy	0.5%			
Frequency Range	50-1KHz			
Window Size	0.4 Inch			
Case Material	Black Nylon			
Rated Voltage	600 Vac, Category III			
Note: Do not use 600V class CT in application with voltage greater than 600V L-L				
Operating Temperature	-15°C - 60°C			
Certifications	CE approved, RoHS compliant			

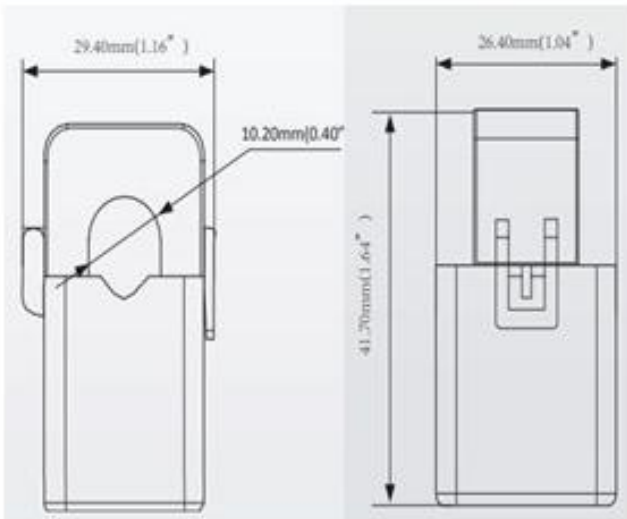
OPTIONS AVAILABLE

Rated Input

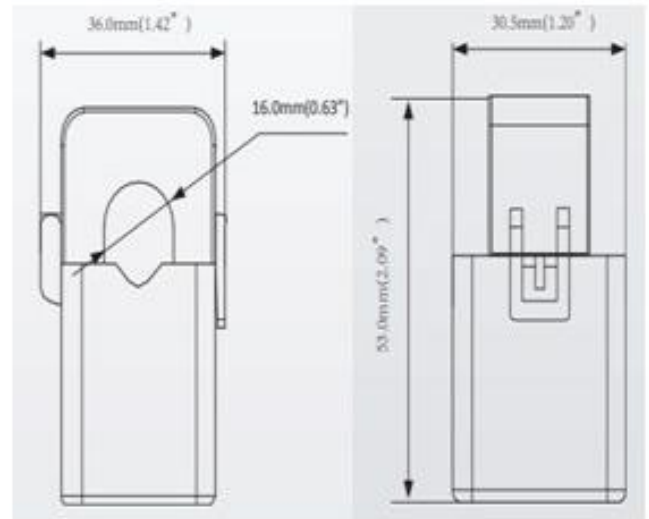
Ordering No.:	CT- T10- 333			
Ordering Example:	CT- T10- 20 333	CT- T10- 100 333	CT- T10- 200 333	CT- T10- 200 333
	5: 5A	5: 5A	100: 100A	100: 100A
	20: 20A	40: 40A	150: 150A	250: 250A
	30: 30A	100: 100A	200: 200A	400: 400A
	40: 40A	150: 150A	250: 250A	600: 600A
	50: 50A			
	60: 60A			

Dimensions

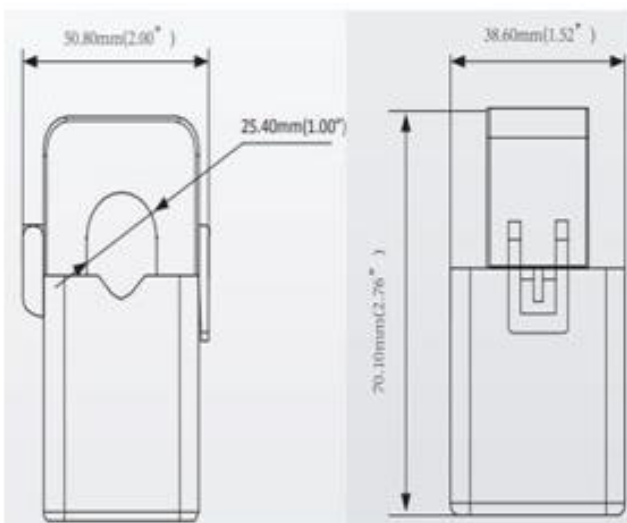
Drawings represent standard design and all dimensions are in millimeters (mm).



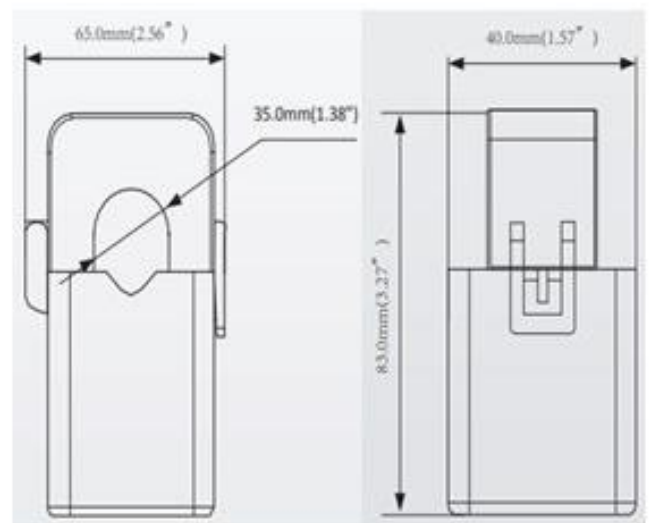
ARNOWA CT- T10



ARNOWA CT- T16



ARNOWA CT- T24



ARNOWA CT- T36

ARNOWA Split Core Current Transformers

ARNOWA CTS series of split core current transformers are designed for fast and easy installation. The split core design permits non-contact current measurements through magnetic field induction without requiring that the primary wire be taken offline and disconnected for CT installation. This method permits a safer, easy and portable current measurement. An internal precision burden resistor across the secondary winding of the CT provides a safe low voltage output and permits safe opening of the secondary



Features

- Low cost
- 4 standard sizes
- Split core design, safer, easier installation, and portable

Applications

- Measures AC current flow to electric motors, lighting, air condition equipment, etc. Compatible with HVAC temperature control, power management, building automation systems.

TECHNICAL DATASHEET

Model	0750	1250	2000	3050
Rated Input	100/200A	300/400/600A	600/800/1000/1200/1500A	400/600/1000/1500/2000/3000/5000A
Rated Output	333mV	333mV	333mV	333mV
Accuracy	0.5%			
Frequency Range	50/60Hz			
Withstand Voltage	3000 Vac			
Case Material	Black Nylon			
Rated Voltage	600 Vac, Category III			
Note: Do not use 600V class CT in application with voltage greater than 600V L-L				
Operating Temperature	-15°C - 60°C			
Certifications	CE approved, RoHS compliant			
Leads	8'(2.5m), twisted pair, 22AWG			

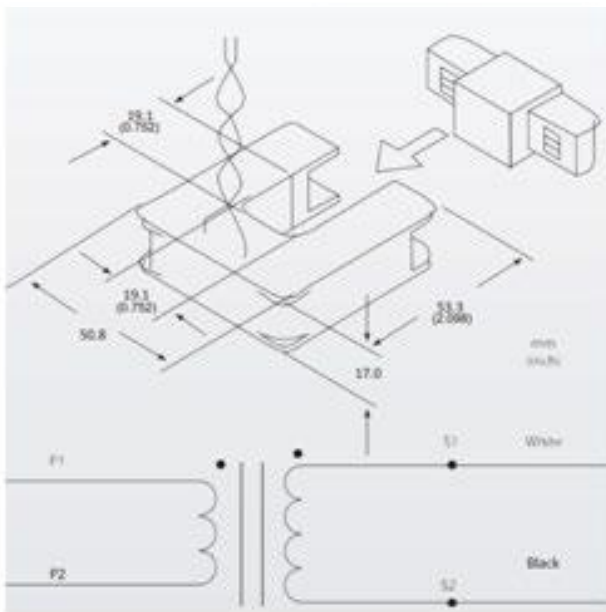
OPTIONS AVAILABLE

Rated Input

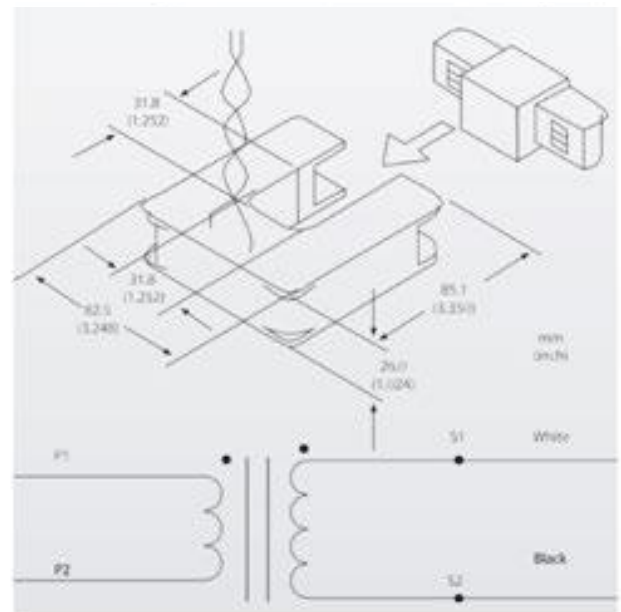
Ordering No.:	CT-0750 333			
Ordering Example:	CT-0750- 200 333	CT-1250- 300 333	CT-2000- 1000 333	CT-3050- 2000 333
	100: 100A	300: 300A	600: 600A	2000: 2000A
	200:200A	400:400A	1200:1200A	3000: 3000A
			1500: 1500A	5000: 5000A

Dimensions

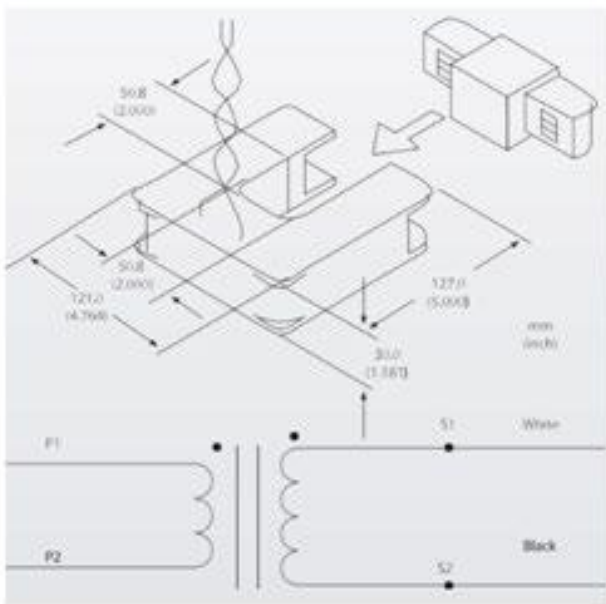
Drawings represent standard design and all dimensions are in millimeters (mm).



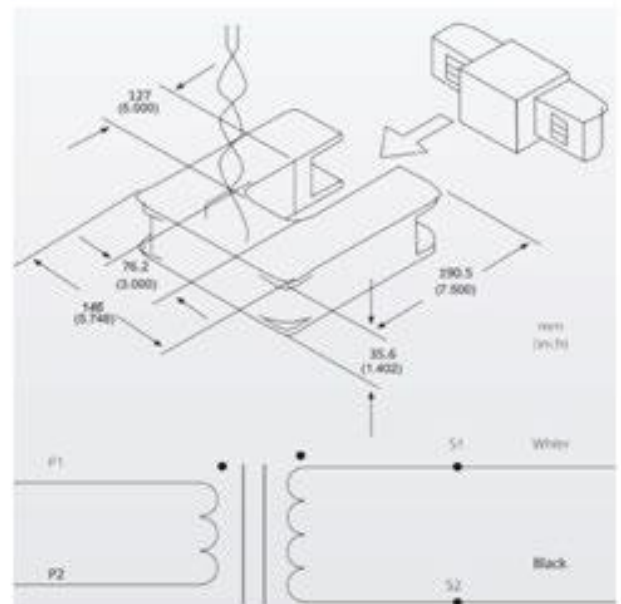
ARNOWA Split Core CT- 0750



ARNOWA Split Core CT- 1250



ARNOWA Split Core CT- 2000



ARNOWA Split Core CT- 3050

ARNOWA Flexible Rogowski Coils CT AMK Series

Rogowski Integrator Kit

ARNOWA AMK Series can be combined with any model and size of RCZ RCN or RCY Rogowski coils. The available values are: 0-1A AC, 333mV 3phase/1phase, 4-20mA, 0-5V, 0-10V AC/DC. On request the input value can be customized according to the application.

AMK Rogowski coil kit is a very flexible system, suitable for high power load analysis, impulsive current monitoring, DC ripple measurement, etc. Due to its specific features, flexible Rogowski coil is an extremely comfortable solution for current measurement and can be used in a number of cases where traditional current transducer is not the adequate solution.



AMK Series Models

Model No.	Order Code	Output
AMK-xxxA	AMK-5A	Three Channel 5A Output Kit
	AMK-333mV-1P	Single Channel 333mV Output Kit
AMK-xxxmV	AMK-333mV-3P	Three Channel 333mV Output Kit
	AMK-mA-1P	Single Channel 4-20mA or 0-20mA Output Kit
AMK-xxxA	AMK-mA-3P	Three Channel 4-20mA or 0-20mA Output Kit
	AMK-5V	Single/Three Channel 0-5V Kit AC/DC
	AMK-10V	Single/Three Channel 0-10V Kit AC/DC
	AMK-1A-3P	Three Channel 1A Output Kit
	AMK-1A-1P	Single Channel 1A Output Kit

Note:

The Rogowski Integrator Kit comes with a choice of optional current transformer sizes.

Flexible Rogowski Coils CT RNC Series

Ø8mm Flexible Rogowski coil

ARNOWA Flex Series is a flexible current transducer based on Rogowski principle, particularly suitable for measurement in combination with portable devices. RNC coils are available in different sizes and can be supplied according to customer's design; therefore they can be used in all those applications, in which traditional transducers are not fitting due to its size and/or weight. Due to its specific features, flexible Rogowski coil is an extremely comfortable solution for current measurement and can be used in a number of cases where traditional current transducer is not the adequate solution.

RNC coil is provided with a shield against the influence of external magnetic fields, therefore it grants a stable measurement from low currents to hundreds of kA. The Rogowski coils must be connected to an electronic integrator for 90° phase shift compensation and frequency equalization. Our DIN-RAIL and panel meters can interface Rogowski coils directly without the need of the external integrators. This is an advantage because there are no external boxes or any power supply with consequent ease of use. The particular features of the Rogowski coils combined with the extremely flexible input programming of our portable meters, allow to carry out measurement by all applications.



CE RoHS

Features

- High linearity from 1A to 100kA
- Wide dynamic range
- Very useful with large size or awkward shaped conductors or in places with limited access
- No danger from open-circuited secondary
- Not damaged by large overloads
- Non-intrusive, no power drawn from the main
- Measurement uniformity at any position of the conductor inside the coil
- Excellent degree of rejection to the external current conductor

Advantage

- Calibrated to 0.5%
- 8mm section easy to install
- Lower zero drift down to 0.1mV

Applications

- Measuring devices, lab instrumentation
- Power monitoring & control systems
- DC ripple measurement
- Harmonics and transients monitoring
- Power meter, Power analyzer sensor

Transducer

Coil length	from 30 to 300 cm
Coil diameter	8 ±0.2 mm
Fastening	bayonet holder
Material	thermoplastic UL94-V0

Environmental conditions

Operating temperature:	from -30°C to +80°C
Storage temperature:	from -40°C to +80°C
Protection degree:	IP67
Safety Standards:	EN61010-1, EN61010-031, EN61010-2-031, EN61010-2-032

Electrical Characteristics

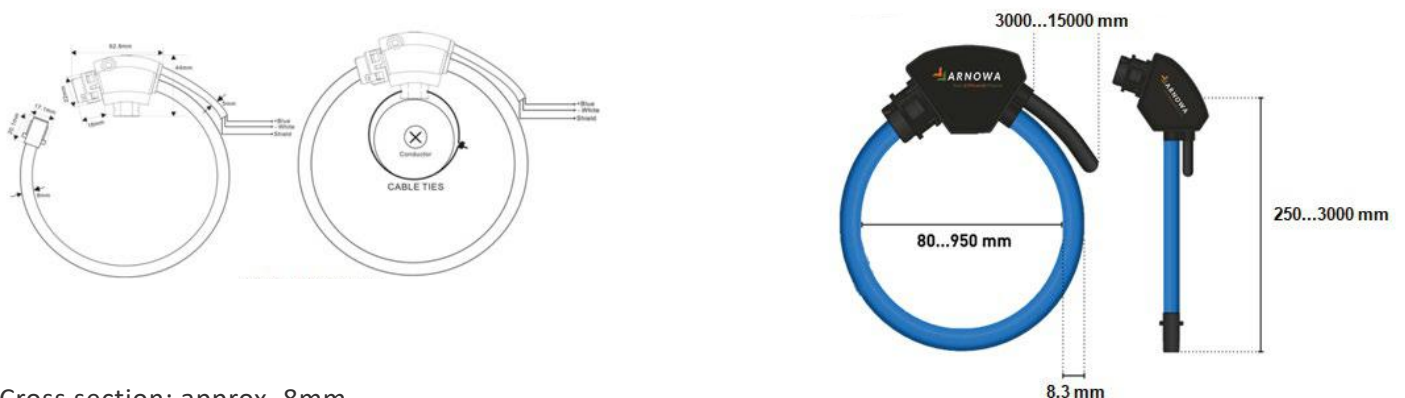
Output level (RMS)	85mV/1 kA,100mV/kA@50Hz Calibrated
Coil resistance:	from 300 to 2000 Ω
Positioning error:	better than $\pm 1\%$ of reading
Working voltage:	1000 VRMS CAT III 600 VRMS CAT IV pollution degree 2
Test voltage:	7400 VRMS / 1 min
Connection cable Type:	2 x 0.15 mm + shield
Length:	on request

Standard Model	RCN16	RCN24	RCN36	RCN47
Input Range	5A-50000A	5A-50000A	5A-50000A	5A-50000A
Typical Input	1000A, 2500A, 5000A, 10000A, 50000A	1000A, 2500A, 5000A, 10000A, 50000A	1000A, 2500A, 5000A, 10000A, 50000A	1000A, 2500A, 5000A, 10000A, 50000A
Output Standard	85mV/kA@50Hz /100mV/kA@50Hz Calibrated			
Output Option	Output specified for RCN Input			
Window Diameter Size (in)	4.17	7.01	10.67	14.53
Window Diameter Size (mm)	106	178	271	369
Length (in)	15.75	23.62	35.43	47.24
Length (mm)	400	600	900	1200
Accuracy	0.50%	0.50%	0.50%	0.50%
Standard/Certifications	CE	CE	CE	CE
Weight	90g	180g	270g	453g

Options available only on request, to be indicated together with the selected order code from the list above:

- Different output value: 50mV/1kA@50Hz or 85mV/1kA@50Hz
- Other coil length than those listed above, up to 300cm
- Other cable length longer than standard (3m), up to 15m
- Calibrated for customer device (input impedance value of device to be specified)
- FRB connector
- Different coil colour (MOQ required)

Dimensions



Cross section: approx. 8mm

Coil length: from 25cm to 300cm (up to 500cm for special applications)

EDGE DEVICES AND GATEWAYS



Power Manager

Power Manager enables wireless advanced metering and controlling infrastructure with multiple protocols to be used across residential, commercial, industrial, and utility use cases.

Power Manager is a compact wireless power metering and control device with multiple communication protocol IoT gateway. The device can be installed with any electrical distribution panel either with three phase, single phase, multichannel or controller. Power Manager is capable of circuit level electricity monitoring and provides reliable electricity monitoring solution for residential and commercial applications using the Carbon cloud application and dashboard platform.



Power Manager's common applications include:

- Power Manager's common applications include:
- Power Utility Metering
- Solar PV monitoring and DER Portfolio Management
- Sub-metering and performance monitoring
- Housing Portfolio Management
- Building Management
- Billing Management
- Management of Embedded Networks
- Energy Efficiency Programs

Options:

Single Phase Meter, Three Phase Meter, Power Quality Meter, Multi Channel Meter and Controlling Options are available.

Installation Options:

With Arnowa MED:

When it is installed with MED it adds on additional features of local data processing and storage on MED which may be useful for many specific requirements.

Without Arnowa MED:

It can directly communicate with the cloud using one of the available wireless protocols.

Wireless Protocols



Rhino Edge

Mid-range edge computing device

The Arnowa Rhino Edge is an on-site IoT Multi-protocol Edge Computing device and gateway that communicates with the Arnowa Carbon cloud. No static IP address or firewall configuration is required for the device to function. The device only requires simple outbound Internet access to connect to the cloud or the optional 4G built in connectivity may be opted.

The device has 32GB of solid state storage and can retain up to one month of data if Internet connectivity fails, given typical polling rates with 30 meters and 100 Sensors. The saved data transmits to the cloud once connectivity is restored. Any meter or sensor from the Arnowa Ecosystem can be connected to the device via-compatible protocols available or best suited for the application.

Each device is ready as an edge device to measure electric, gas, water, tank levels, fuel usage, temperature, humidity, air quality, noise levels, light levels, solar irradiation, water quality or as a gateway for an automation system using sensors and controls from Arnowa Ecosystem and the Arnowa Carbon Data Analytics platform. You can connect thousands of monitored data streams to an account on the Arnowa Carbon and can correlate them with other data streams from logged or legacy data sets.

This system provides advanced analytic and reporting service to authorized personnel via their Internet-connected PC, laptop, tablet, or smart phone. The Arnowa Ecosystem is capable of measurement and verification, performance and tracking, fault-detection, analytics and sharing data and analytics to the wider community as required.



Specifications

Processor:

CPU- Quad Core ARM Cortex@1.4GHz 64-bit
GPU- VideoCore-IV@250Mhz

Storage :

Solid state storage- Min. 1 month storage

Connectivity :

- IEEE 802.11.b/g/n/ac Wireless wifi
- Bluetooth 4.2 Ble
- LoRa WAN 915 Mhz (Optional)
- Isolated RS-485 serial (Optional)
- 4G & LTE Cellular module (Optional)
- BACNET-MS/TP Adapter (Optional)

Features

Ease of installation -

No static IP, no port forwarding required.

Security -

256-Bit encryption protocols & TLS(SSL)1.2

Bandwidth compression

Modular

Beast Edge

High range edge computing device

The Arnowa Beast Edge is an on-site advanced video processing IoT Multiprotocol Edge Computing device and gateway that communicates with the Arnowa Carbon cloud. This is used mainly on high end high performance Video Processing Applications. No static IP address or firewall configuration is required for the device to function. The device only requires simple outbound Internet access to connect to the cloud or the optional 4G built in connectivity may be opted.

The device has the capability to connect with multiple sensors and CCTVs for Artificial Intelligence processing on the edge that generates data for further analytics. Any other meter or sensor from the Arnowa Ecosystem can also be connected to device via-compatible protocols available or best suited for the application.

This device is also ready as an edge device to measure electric, gas, water, tank levels, fuel usage, temperature, humidity, air quality, noise levels, light levels, solar irradiation, water quality or as a gateway for an automation system using sensors and controls from Arnowa Ecosystem and the Arnowa Carbon Data Analytics platform. You can connect thousands of monitored data streams to an account on the Arnowa Carbon and can correlate them with other data streams from logged or legacy data sets.

This system provides advanced analytic and reporting service to authorized personnel via their Internet-connected PC, laptop, tablet, or smart phone. The Arnowa Ecosystem is capable of measurement and verification, performance and tracking, fault-detection, analytics and sharing data and analytics to the wider community as required.

Specifications

Processor:

CPU- Quad core ARM Cortex@1.43GHz 64-bit
GPU- Nvidia 128-core Maxwell

Storage :

Solid state storage- Min. 1 month storage

Connectivity :

- Gigabit Ethernet
- LoRa WAN 915 Mhz (Optional)
- Isolated RS-485 serial (Optional)
- 4G & LTE Cellular module (Optional)
- BACNET-MS/TP Adapter (Optional)
- IEEE 802.11.b/g/n/ac Wireless wifi (Optional)
- Bluetooth 5.0 Ble (Optional)



Features

Ease of installation -

No static IP, no port forwarding required.

Security -

256-Bit encryption protocols & TLS(SSL)1.2

Bandwidth compression

Modular

Unicorn Edge

Low-range edge computing device

The Arnowa Unicorn Edge is an on-site IoT Multi-protocol Edge Computing device and gateway that communicates with the Arnowa Carbon cloud. No static IP address or firewall configuration is required for the device to function. The device only requires simple outbound Internet access to connect to the cloud or the optional 4G built in connectivity may be opted.

The device has 32GB of solid state storage and can retain up to one month of data if Internet connectivity fails, given typical polling rates with 20 meters and 100 Sensors. The saved data transmits to the cloud once connectivity is restored. Any meter or sensor from the Arnowa Ecosystem can be connected to the device via-compatible protocols available or best suited for the application.

Each device is ready as an edge device to measure electric, gas, water, tank levels, fuel usage, temperature, humidity, air quality, noise levels, light levels, solar irradiation, water quality or as a gateway for an automation system using sensors and controls from Arnowa Ecosystem and the Arnowa Carbon Data Analytics platform. You can connect thousands of monitored data streams to an account on the Arnowa Carbon and can correlate them with other data streams from logged or legacy data sets.

This system provides advanced analytic and reporting service to authorized personnel via their Internet-connected PC, laptop, tablet, or smart phone. The Arnowa Ecosystem is capable of measurement and verification, performance and tracking, fault-detection, analytics and sharing data and analytics to the wider community as required.



Specifications

Processor:

CPU- Quad core intel Atom x5 1.92Ghz 64-bit
GPU- Intel hd graphics 500Mhz

Storage :

Solid state storage- Min. 1 month storage

Connectivity :

- IEEE 802.11.b/g/n/ac Wireless wifi
- Bluetooth 4.0 Ble
- LoRa WAN 915 Mhz (Optional)
- Isolated RS-485 serial (Optional)
- 4G & LTE Cellular module (Optional)
- BACNET-MS/TP Adapter (Optional)

Features

Ease of installation -

No static IP, no port forwarding required.

Security -

256-Bit encryption protocols & TLS(SSL)1.2

Bandwidth compression

Modular

Multi-Channel Outdoor LoRaWAN Gateway

Arnova Outdoor industrial LoRaWAN gateway has an IP67 enclosure and is an intelligent, versatile, multiprotocol, edge integrated LoRaWAN gateway for smart IoT applications.

The Semtech SX1301 8 channel + 2 x 1257 chipset, allows to operate on multiple channels at the same time keeping the cost lower as compared to higher channel gateways. The hardware mainboard completely integrates the WiFi, 4G, and ethernet interface for connectivity. With its embedded integrated edge capability, it is capable to store data locally encrypted in case of network outage, it is very suitable for Outdoor City wide use, Industrial use or small business or private area use cases, also perfect for providing network coverage for indoor/outdoor blind spots.

The Gateway brings more flexibility to create an enterprise-grade solution with a flexible development support structure, allowing for faster development and time to market.

The product complies with standard LoRaWAN protocol and can widely used in the M2M industry of the IoT industrial chain, such as smart grid, intelligent transportation, smart home, finance, mobile POS gateways, supply chain automation, industrial automation, intelligent building, fire protection, public safety, environmental protection, meteorology, digital medical, telemetry, agriculture, forestry, water, coal, petrochemical and other related fields.

FEATURES:

- 10 programmable parallel demodulation paths
- Compact and rugged metal enclosure
- Connectivity via Ethernet, Cellular or Wi-Fi (alternative)
- Over 10 km radio range, line of sight, Urban communication range: 3-6km
- IP67/NEMA-6 industrial-grade enclosure with cable glands
- Offers digital input/output and serial interface
- Integrated GPS on board
- Pole Mounting kit (optional) for quick and easy deployment
- Solar + Battery Options also available



Notes



About Arnowa

Established in 2013, Arnowa is an Australian based smart technology development company which excels in designing, manufacturing and implementing smart city and industry 4.0 infrastructure. We provide solutions that simplify processes, spark efficiency, enable collaborative engagement and promote sustainability.

Our untiring experience in the industry helps us understand your requirements swiftly and formulate an action plan with smart technology. Our focus is on addressing your efficiency and effectiveness needs. It is our ability to analyze local and international markets that create the centre of our successful business.

Arnowa's Multi-Utility Spatial Intelligence and Control Ecosystem i.e MUSIC integrates with existing infrastructure to wirelessly connect the unconnected. Arnowa's Multi-Protocol Edge Device is a one-of-a-kind product with unparalleled flexibility and agility. It combines the power of IoT, Big-Data, Artificial Intelligence and Subject Matter Expertise. This technology is supported by Arnowa's highly customisable data visualisation, control, and analytics application 'Carbon' to develop a digital twin.

Our ecosystems acquire your undiscovered data in real-time and apply our diagnostic and predictive analytics. It's how we enable informed planning and management to produce true value, regardless of industry and size.

Businesses who partner with Arnowa proprietary ecosystems are smarter, more efficient and more effective.

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