POW TECHNOLOGY
IIoT | Sensors | Connected

Metron4

Temperature
Level
Pressure
Meter readings
Vibration
Flow
Wind speed
Wind direction
Humidity
CO_2
Distance
Hours run
Fault
Intruder
Collision
State
Weight
pH
Conductivity
Salinity
TOC

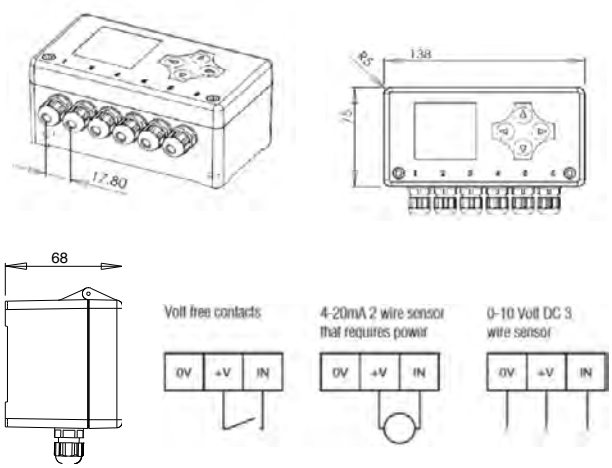
Connecting Sensors to the Internet Of Things

MADE IN BRITAIN
UK CA
ISO 9001
UKAS MANAGEMENT SYSTEMS
ISO/IEC 27001
UKAS MANAGEMENT SYSTEMS

Getting to Know...

The Metron4 makes remote monitoring simple and affordable, interfacing with sensors, taking periodic readings and transmitting them over the mobile phone networks.

- Compatible with 1000s of sensors
- Remotely programmable
- Self-contained, weatherproof
- Proven and reliable



Technical Specifications

Parameter	Details	
Inputs	4 (4 – 20 mA, 0 – 10 V DC sensors or volt free contacts). Expansion cards: 5 channel pulse (volt free, 10 Hz max.) & RS232 / R S485 (contact PowTechnology regarding protocols).	
Outputs	Optional 2 relay outputs controlled either remotely or when threshold breached.	
Communications	GSM (4G (CatM1 / NB1) with 2G fallback – worldwide frequencies).	
Data Logging	80 per channel, first in first out.	
Power Supply	Battery, 6 – 24 Vdc, 110/230 Vac, internal battery and solar options.	
Sensor Excitation	Will provide power to sensors (5 V or 21.6 V, 31 mA max.) for a programmable length of time.	
Environmental	IP67, -20 to +65°C.	
Programming	Normally remotely from MetronVIEW or locally via USB (Windows software free of charge from PowTechnology. Mini USB-cable not provided by PowTechnology).	
Configurable Parameters	**System**	**Inputs**
	Wake up interval (min: 1 min, max: 24 hr)	Type (analogue or digital)
	Transmit interval (min: 5 min, max: 24 hr)	Tag name
	Modem state (including idle, transmit on power up, pollable)	Units of measure
		Zero & span (scaling) and linearisation
	Antenna selection (internal or external)	Alarm thresholds (10 high (rising) and 10 low (falling))
	Synchronisation time	Call out delay
	Transmission window	Sensor excitation time and settling voltage
Display	The built-in back lit 40x40mm LCD display acts as a local gauge to help test the device and ensure it is communicating well. It is also used to check sensors and wiring. Can be used as a local display to show measured values on wake up.	

The Metron4

Metron4/SSM runs from an internal battery.

Battery life depends on regime. The Metron4 is designed to maximise battery life. More frequent readings, weak signal and cold temperatures will shorten battery life. Battery duration also dependent on the type of sensor used. Typical life is 4 years if powering a 2 wire, 4-20 mA sensor for 2 seconds and transmitting once per day. Only use PowTechnology approved batteries.

Metron4/S runs on 6-24Vdc. Allow 0.5 A. Ensure supply is well regulated. For mains power 110/230 Vac, options are:

/MPSU Mains (110 / 230 Vac) power supply with backup battery and regulator, housed in a weatherproof enclosure and a Metron4 fixed on base plate (185 x 371 mm). Provides 6 Vdc to Metron4

UPS 12 V Uninterruptable power supply is a separate box (262 x 188 mm). Mains 110 / 230 Vac in 12 Vdc maintained output via battery backup. Battery can typically support 50 transmissions. IP54 protection rating. Run cable from UPS 12 V to Metron4.

Metron4/S/SOL SYS runs from a 10 Watt solar power and lead acid battery via an intelligent charge regulator.

Intelligent solar regulator maximises battery life and solar charging potential and includes pre charge conditioning if battery is in poor condition. There is also temperature com pensation, meaning charge rate is adjusted according to battery temperature, maximizing battery life.

Solar capability depends on orientation, sight of sun and location (ie the further from the equator the less power from the sun). In England, 10 minute transmissions possible, in Scotland need a 2nd solar cell to achieve this.

Dimensions
185 x 337 mm base plate

External Antennas

The Metron4 has an integral antenna and has been designed to achieve optimal signal strength to the mobile phone networks. However, consider connecting an external antenna too, if mounting in an area of poor signal strength improve the signal or inside a metal enclosure.

The SMA connector present on the board usually requires a mating connector that is too large to fit through the standard M12 cable glands that are supplied.

A fitting kit is provided but if sourcing own antenna, an M12 – M16 cable gland adapter will be required. Also consider the need to bore out centre to get the connector through.

Select external antenna via menu or set in the configuration.

Metron4 Optional Additions

Pulse Expansion Cards

The Metron4 can have expansion cards fitted such as a 5 channel pulse counting card, providing a system that has 4 analogue inputs and 5 pulse inputs in total. Pulse inputs can be used for a variety of applications, including flow and electricity meter reading.

The expansion cards fit neatly inside the Metron4 and present the terminals for easy connection of the pulse signals. The pulses need to be slower than 10 Hz (10 pulses per second) and must be volt free contacts.

The count can be configured to either reset when successfully transmitted to the server, or rollover (can count to 4,294,967,295).

1

Insert card into Ex socket.

2

Wire in to green connector plug and tighten screw.

3

Insert connector into plug in terminal connector.

You will see the corresponding LED quickly flash when a pulse is seen, if fitted correctly.
Also available: serial port RS232 & RS485. (Contact PowTechnology regarding protocols).

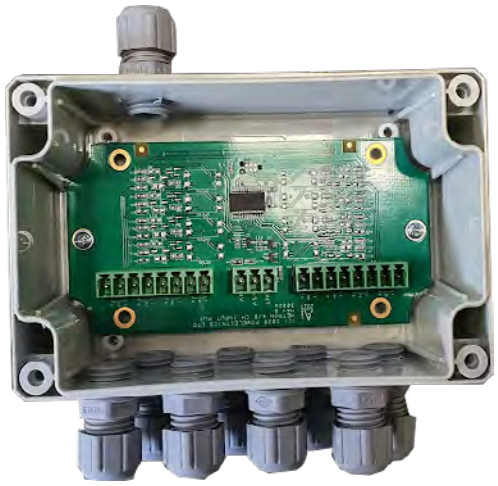
Multiplexer (MUX) Expansion Cards

These enable the four Metron4 input channels to interact with more sensors. e.g. The 8:1 MUX card enables 8 digital (ON/OFF) signals to be connected into one channel. Input combinations include: 4 analogue, 3 analogue/ 8 digital, 2 analogue/16 digital, 1 analogue/24 digitals or 32 digital.

MUX cards are external to Metron4. Supplied in 120 x 80 x 56mm polycarbonate, weatherproof enclosure, 4 glands for incoming signals (more on request), 1 gland for output to Metron4. Powered from the Metron4 via 5v excitation voltage. Do not connect unless sure the Metron4 has been correctly programmed.

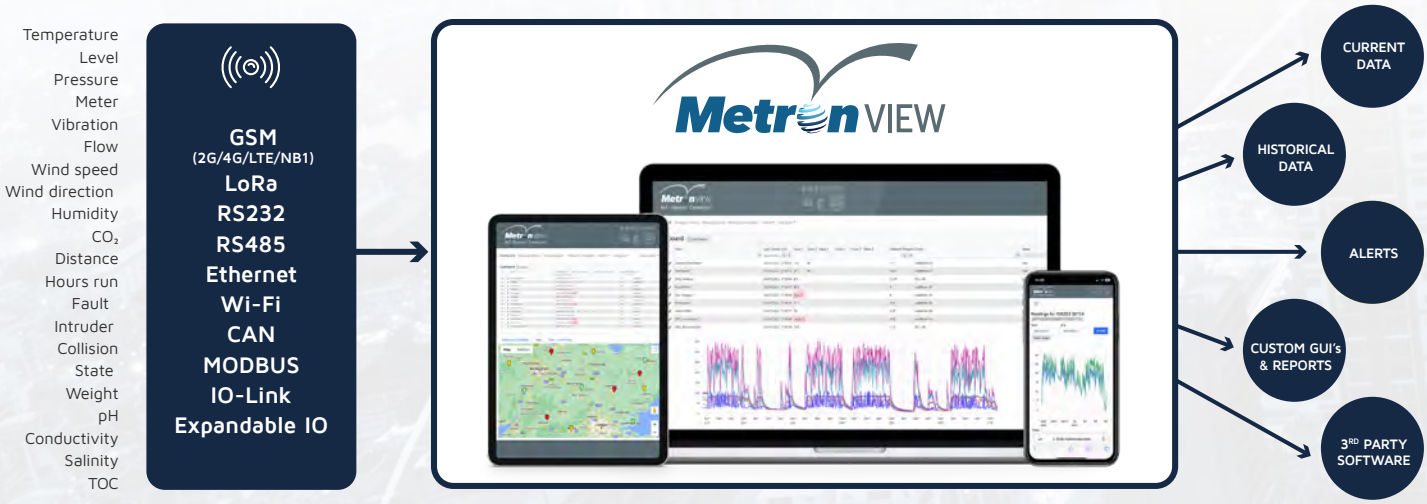
MUX expansion cards communicate with the Metron4 at each wake up interval via a proprietary low speed serial protocol. MetronView decodes the message and presents the additional channels.

PowTechnology are developing further MUX cards and can consider customer specific requirements, which could involve 'on the edge' processing.



MetronView

MetronView is PowTechnology's 'universal' IIoT platform, agile and responsive, collecting data from a vast array of sensors, machines and other devices. It securely records and displays current and historic data via customisable dashboards, sends alarms, remotely manages and controls devices and performs mathematical and logical operations.



- Hosted software platform
- Receives data from the Metron4 and other remote IoT devices
- Allows for viewing of data via internet connected devices in any browser
- Remote Metron configuration
- Alarms sent by email
- Pull data via API
- Secure to ISO27001

Metron4 Quick Start Guide

How Metron4 Works

- **Unit asleep; screen and GSM off**
- **Wake up interval – powers the sensors and takes readings**
- **Transmit interval (or upon alarm) it powers up the GSM engine**
- **Readings & alarms are sent via GSM**

The system is usually set up so unit powers down between readings.

The real time clock counts time and wakes the device up depending on how it is programmed.

10 high and 10 low alarm thresholds for each of the 4 channels – if threshold is breached then Metron4 transmits immediately. The unit can log 80 readings per channel.

Metron4 Quick Install Guide

1 Unpack & Open Up the Metron4

Place the unit on a flat surface and loosen the 2 nylon screws in the bottom corners to open. Allen key required.

Open the Metron. The interior will vary depending on unit. The image shows the /SSM model with a battery.

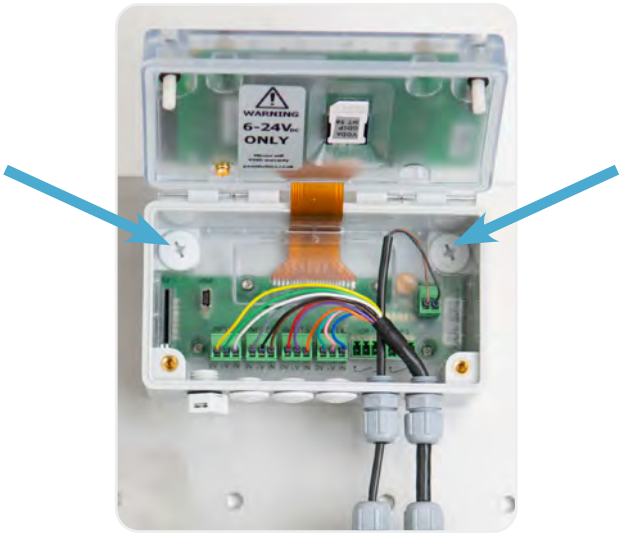
Ensure the SIM card is installed.

2 Mount the Metron4

Use the 2 mounting holes used to fasten the Metron4 down to a baseplate, wall or other surface.

The unit needs a mobile phone signal to operate, so try to avoid mounting inside metal cabinets or underground. The unit is weatherproof, but ensure:

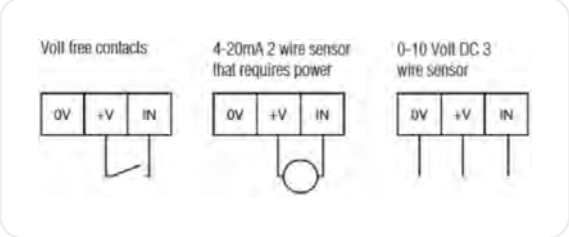
- All cable glands and breather glands on the unit have an 'O' ring fitted and are sufficiently tightened.
- If no cable is going through the gland, that blanking plugs are fitted. Blanking plugs also need fitting over the fixings inside the device.
- Both screws on the top are tightened, but not over tightened.
- The seal around the lid is correctly in place.



Metron4 Quick Start Guide

3 Connect the Sensors & Power

Run the sensor's cable through the gland.

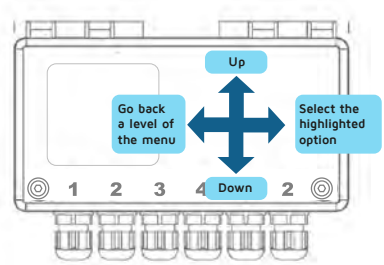


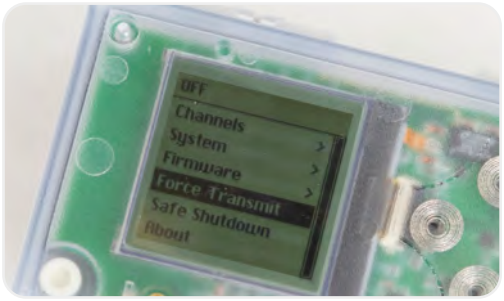
Unplug the green connector and wire in as required.

Plug the connector into the correct input channel and tighten the gland. Ensure cable is through the gland. Plug in the power source.

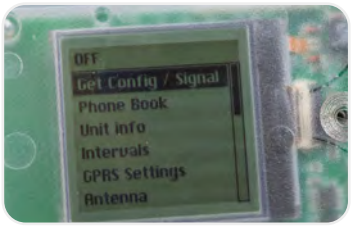
4 Navigate the Metron4

Press any button to wake up the Metron4 and enter PIN (default = 1234). Press right after 4th digit to enter.





Force transmit. Move down to Force Transmit, and right to select. Watch the progress bar and wait for the unit to transmit. Once complete, the data will be available for viewing on MetronView. The unit will countdown for 40 seconds then enter Run Mode. The screen will turn off.



Check signal. Enter PIN, select System, select Get Config / Signal. Signal is scaled between 0 -31 (31 = best) and at least 10 recommended for GSM connection.

Immediate reading. Touch device to wake and left for live reading. Keep pressing left to swap between channels and read different sensors.

5 View Data

Login details will normally be sent by email. If not, contact PowTechnology support. Once logged in, a summary of your units will be visible. Click on view to the left of the device's name to see the historical data. PowTechnology support can change the name of units and inputs if required.

6 Programming

Units can be remotely programmed from MetronView. It is possible to change how often readings are taken & sent, alter scaling and alarm thresholds for each of the input channels and much more (see Configurable Parameters earlier). To make changes please contact PowTechnology support. The configuration will be held on the server and be downloaded to the device when it next communicates, and then use the new settings in the future. Select 'Force transmit' rather than waiting for the next time the device transmits in order to reconfigure sooner.

Metron4

PowTechnology offers over 30 years' experience delivering data to drive business decisions. We connect sensors to the cloud to generate efficiencies and inform management strategy. Our proprietary IIoT technology is, robust and intuitive, proven and constantly evolving. We can integrate with third party instrumentation and software to develop bespoke solutions for any size of organisation, across a huge range of sectors, anywhere in the world.

Connecting assets to the cloud is now essential for businesses to remain competitive.

PowTechnology's innovative Metron4 IoT telemetry device (or sensor gateway) makes remote monitoring simple.

Metron4 gets sensor data reliably and affordably into the cloud via 4G (2G backup).

- 4 analogue inputs,
- Expansion cards for pulse counting, digital inputs + options for RS232, RS485 and CANBUS
- Compact IP67 enclosure
- Solar, battery and external power options
- Operational temperatures -25 to +65°C

Compatible with thousands of sensors, Metron4 is ideal in a vast range of global environments and applications.

In conjunction with our MetronView cloud, Metron4 helps customers improve margin, achieve competitive advantage and develop new revenue streams.

Monitor. Control. Maintain. Alert.

Remote Condition Monitoring

Lower Operational & Maintenance Costs

Extend Asset Life

Improve Safety

Enhance Sales Propositions

Introduce New Revenue Streams

Improve Service

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MADE IN BRITAIN

UK CA

PowTechnology, 12 Ninian Park, Tamworth, B77 5ES
sales@PowTechnology.com +44(0) 1827 310 666
www.PowTechnology.com

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