

4^{NG}

SMARTset SENSORS

LOW COST WIRED AND WIRELESS SENSOR NETWORKS

SMARTset integrates with various off-the-shelf sensor systems such as RFCODE, BACnet, Modbus, MQTT, EnOcean and SNMP devices. It also supports the 4NG range of low cost sensor components that can be used interchangeably with third party products.

SMARTset SENSORS FEATURES:

- At the centre of the sensor family is the SMARTset Micro-Controller Unit (MCU). This is an IP connected device that acts as a gateway between sensors and monitoring systems.
- Most sensors, analogue/digital and I2C can be wired to the MCU and it can also be used as the central hub in an ultra-low power 802.15.4 wireless sensor network. This enables up to 125 sensors to be attached to a single hub.
- All administration functions are accessed through a secure built-in web interface and data can be gathered using a RESTful API.
- All sensors are automatically negotiated requiring minimal effort to install and commission a network of mixed wired and wireless sensors.
- The MCU is extendible and has options to expand the number of sensors it can handle by simply plugging in expansion boxes.
- SMARTset Power Loggers provide a very low cost alternative to third party products. These units support 3 phase, single phase with no dependency on voltage or current. External Current Transformers (CT) delivers most power measurements.
- SMARTset is capable of being polled but it can also send its gathered data on a periodic basis to a server. This feature is also used when the optional GPRS module is installed and allows the deployment of sensor networks in geographically remote sites.



MICROCONTROLLERS ARE THE INTERFACE BETWEEN SMARTset AND SENSORS

- 4NG micro-controllers (MCUs) support any sensor with an I2C interface. Simply use any existing compatible sensors or source your own to monitor a specific variable secure in the knowledge that the information you are capturing can be displayed in SMARTset Monitor.
- An MCU has 8 ports, each of which can either be connected directly to sensors or to a hub, with the maximum total distance between MCU and sensor being 100 m.
- When wired sensors are impractical, an MCU can support up to 100 wireless sensors (maximum distance between sensor and MCU of 30 m).
- 4NG micro-controllers can be fitted optionally with a GPRS unit, which works with any data-enabled SIM card and enables data to be transmitted from remote locations without expensive cabling.

POWER LOGGERS

- To determine exact energy usage, our power loggers capture information required to calculate the true RMS current, voltage, power, apparent power and power factor in real time. Each unit has 3 voltage and 3 current inputs, one for each phase of a 3-phase supply, but can also be used for a single-phase supply. Accurate to 1% out of the box, if required the 4energy power logger can be calibrated to obtain 0.1% accuracy.

OTHER COMMONLY USED 4NG SENSORS

Temperature sensor (wired) – is rugged and waterproof and suitable for indoor or outdoor use. Measuring 9mm at its widest point, this sensor can be positioned in areas where space is tight. It is capable of measuring temperatures from -40°C to 140°C, with an accuracy of $\pm 0.1\%$ when the temperature is between 10°C to 90°C.

Temperature sensor (wireless) – used whenever wired sensors are difficult or impossible to install, and can be up to 30m from the micro-controller. No calibration required. Plug and play installation. Meets European and US regulatory requirements.

Temperature and humidity sensor (wireless) – too much humidity and your equipment can suffer from condensation causing electrical problems. Too little humidity (a common side-effect of artificial cooling) and equipment may discharge static electricity. As well as monitoring temperature, this sensor monitors from 0% to 100% relative humidity.

Air flow sensor – helps to identify problem areas, where blockages exist and where simple redirection can help eliminate hotspots. Measures airflow from 0–50 m/s, at a resolution of 0.01 m/s and an accuracy of less than 3%.

TECHNICAL DETAILS

Configuration	Internal web server with DHCP
Power supply (alternative to PoE)	Regulated internal 5V 5A switched mode supply External power supply connector: 12V to 57V DC, fully isolated internally
Connectors/ports	1 x 10/100 FD Ethernet (supports PoE) USB 'On The GO' (master or slave) – optional 8 configurable I/O ports (RJ45) – expandable to 64 ports by connecting 8-port hubs, each having: <ul style="list-style-type: none">• A buffered I2C channel• A 16-bit analogue to digital convertor (ADC) A single general purpose digital I/O line
Expansion options	1 x GSM / GPRS WAN 1 x Zigbee / 802.15.4 wireless 2 x RS232/RS485 comprising: <ul style="list-style-type: none">• 1 x CAN• 1 x LIN bus channel 1 x SPI device connection



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