

SMARTstation Lite

The SMARTstation controller unit is based around the Raspberry Pi Single Board Computer (SBC) and comprises a custom motherboard that expands upon the RPi's built in USB and RJ45 capabilities by utilising the 40 pin expansion header.

With 4 digital I/Os, 5 analogue inputs, 2 analogue outputs and 1 power relay, plus wireless sensor, Modbus, TCP/IP, SNMP and BACnet, the SMARTstation is ideal for low cost monitoring and managing anything in your technical estate. Plug-n-play for USB devices (3G modems, enOcean gateways etc.) makes the SMARTstation a fully flexible solution to meet any low cost requirement.

In addition, SMARTstation comes with the 4NG flagship software platform SMARTset. This combination of software and hardware provides a uniquely powerful and versatile platform for even the most demanding control/monitoring applications.



TECHNICAL SPECIFICATION

Hardware

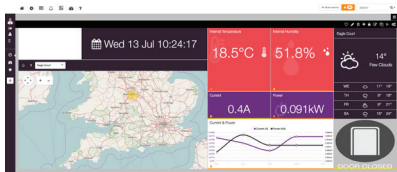
I/O Type	Number	Description	Protection
USB	4	Various – any RPi compatible device	As built in to RPi
RJ45	1	10 or 100BASE-T Ethernet	As built in to RPi
WiFi	1	2.4GHz 802.11n	As built in to RPi 3
Digital IO	4	Software programmable between pull up, pull down and tri-state. 5V max tolerant 3.3V, 25mA max supply	4.7V Zener Diodes ESD protection Integral de-bouncing hardware (7Hz)
I2C protocol channel	1	Any 2-wire synchronous serial interface e.g. Digital Humidity sensors	Buffer chip with ESD protection 5V tolerant
RS485 communications port	1	Asynchronous differential serial port e.g. Modbus RTU	13.3V TVS diodes 30A max surge current
10bit \pm 360V AC transducer inputs	1	Single-phase mains voltage monitoring Greater than 0.01Hz frequency accuracy	6500VRMS ISO voltage 45kV/ μ s transient immunity (typ.)
0 – 2.048V or 0 – 20mA inputs	1	Software programmable for low voltage, analogue signal devices	12V Zener diode 12k Ω resistor
12bit 0 – 10.24V \pm 1.024V inputs	2	Software programmable, with automatic power calculations on both channels Greater than 0.01Hz frequency accuracy	12V Zener diodes
12bit 0-2.048V or 0-100V	1	Software programmable Greater than 0.01Hz frequency accuracy	110V Zener diodes
12bit Analogue 0-10V outputs	2	Programmable 0 – 10V, 10mA max supply with 2mV resolution e.g. Fans, actuators	12V Zener diodes 100 Ω resistor 2kV ESD
Relay outputs	1 x 16A (250V AC)	Software programmable device control 250VAC switching rated e.g. heaters, lighting	Obeys creepages and clearances for mains 240V AC

All connections are integral – no DIN rails or external connections required.

MISCELLANEOUS FEATURES

- On-board RTC – synchronised to off-air standards automatically
- 4 x status LEDs
 - Power supply status
 - Battery status
 - 2 x programmable
- Rechargeable 2200mAh battery with integral charging circuit
- Internal temperature sensor ($\pm 1.0^{\circ}\text{C}$ accuracy)
- Internal humidity sensor ($\pm 5\%$ accuracy)
- Internal battery level

TYPICAL APPLICATIONS



Demand Side Response

Either as part of a remotely controlled network terminal or as an independent Frequency Response (FR) instrument, SMARTStation provides single phase power/energy sub-metering on up to 2 input circuits with $>1\%$ accuracy and a frequency discrimination of $>0.01\text{Hz}$.



Mini-Building Management System (miniBMS)

The SMARTstation makes an ideal platform for a sophisticated and comprehensive SME BMS controller. The abundance of I/O, direct & networked, allows the controller to fit in with existing systems as well as extending control and monitoring to hard to reach small commercial and educational premises.



Internet of Things (IoT)/Technical Estate

The harnessing of SMARTset with the I/O capabilities of SMARTStation allows local intelligence with centralized control – large numbers of SMARTstations communicating with each other and with SMARTsets based in the Cloud, all using commodity sensors and actuators.

GENERAL SPECIFICATION

Physical properties	
Length	180 mm
Width	100 mm
Height/depth	70 mm
Processing unit	Off-board Raspberry Pi model 2 or 3
Power supply	9-36V DC through external power brick (1.5A)
Rechargeable battery	Charging circuit; 1 hour back up on mains failure
Operating conditions	
Temperature range	0 – 70°C
Humidity	Up to 85%
Max. power consumption	10 W



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