Point Green

IP68 rated, low powered Remote Telemetry Unit with digital, counter and serial connectivity

DATASHEET

sensor collection storage processing interaction

Point Green is a compact Logger/RTU device with integrated battery, a 3G modem with GPRS fallback, internal and/or external antenna, digital and counter inputs, Modbus and SDI-12 master capability and a submersion sensor.

Key Functionality:

- Real-time remote monitoring of up to 3 sensors including digital, counter and serial inputs
- IP68 enclosure suitable for submersion to 4m for 4 days, with a range of mounting options for in-field deployment
- Patented integrated submersion sensor, able to detect when the Logger/RTU is submerged
- Communicates with Medina or DNP3 Telemetry Masters
- Tri-band 3G modem, with quad band GSM/GPRS fallback
- Internal antenna and optional external antenna, with automatic switching
- Internal lithium battery with an expected life of 5+ years based on site configuration and operation
- Flexible integrated installation bracket
- External power source support with automatic power source detection
- Local diagnostic points, such as Comms signal strength, Temperature, Battery Voltage
- Capable of communicating with Modbus and SDI-12 slave devices
- Easy to configure and re-configure using free Poco+ software

EXTERNAL I/O

Point Green provides Real-time remote monitoring of up to 3 sensors. It has software programmable I/O functionality and includes support for digital, counter and serial inputs.

The following table lists the available I/O:

Type	Max No.	Range	Notes
Digital input	2	0-1	Volt-free interrupt driven, with debounce filter
Counter input	2	32-bit	Volt-free interrupt driven, up to 100 Hz, with debounce filter
Serial	1	N/A	Supports connection to various serial slave devices via interfaces such as SDI-12, RS232 and RS485 (full and half duplex)

The serial channel can supply power to the external sensor if required using the appropriate cable.

COMMS

The Point Green supports 3G network technology, falling back to GSM/GPRS when 3G isn't available. The modem on the Point Green is paired with a software switchable antenna offering internal and external options to facilitate communication with the Telemetry Master. The Point Green provides the following communication functionality:

- Tri-band 3G modem with quad band GSM/GPRS fallback
- High gain hexa-band customised internal cellular antenna

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- Support for a third party external antenna
- Automatic selection between the internal and external antenna
- Configurable periodic scheduled dialback (useful to minimise battery usage)
- Adaptive dial back schedule based on user configurable measurement limits
- Global RF band selection (software configurable)
- Support for TCP/IP over 3G/GPRS or v110 over GSM CSD
- Trigger dial in using magnetic reed switch

INTERNAL MONITORING

In addition to external sensor reading the Point Green can monitor and report information about itself. Some of the parameters monitored include:

- Internal battery voltage
- External supply voltage
- Temperature
- External sensor supply voltage (for use with serial sensors)
- Cellular signal strength (for the external and internal antenna)
- Modem error code
- No. of successful and unsuccessful calls to the Master
- Cell information including, Mobile Country Code and Mobile Network Code
- Submersion sensor
- Datalogger/RTU device serial number and SIM card number

All of these internal values can be accessed remotely as points on the Master Station and can be configured with trends and events.

MEDINA PROTOCOL

The Point Green can be configured as a Medina slave device, capable of the following:

- Monitoring of inputs
- Eventing and Alarming
- Logging sensor measurements (Trending)
- File transfer
- Time synchronisation with Master Station

DNP3 PROTOCOL

The Point Green can be configured as a DNP3 slave device, capable of the following:

- DNP Level 2 + parts of level 3 and level 4
- Class 1, 2 and 3 Events
- Two event models for analogue values read from serial sensors (value change and level change)
- Contactable events (Alarms)
- Periodic events (Trends)
- Adaptive event frequency based on user configurable measurement limit
- Object Group 0 device attributes
- File transfer and activation
- Time synchronisation with Master Station
- Object 20 (Counter) writes
- Object 110 (string) points
- Supports unsolicited reporting
- Frozen counters

MEMORY

Volatile Memory

The Point Green has low power static RAM that is used for storing measurement data (trend) and event data. With a common trend configuration (see example below), the Point Green can store Medina trend data for up to 45 days (Medina Telemetry Master configuration dependent). For DNP3, 15,000 events can be stored, which equates to ~120 days.

- Counter -15 mins
- Internal battery voltage - 60 mins
- Cellular signal strength - 24 hours
- Modem error code – 24 hours
- Dial back success -24 hours
- Dial back failure - 24 hours

Non-Volatile Memory

The Point Green also has 16 MB of non-volatile memory which is used to store diagnostic, firmware and configuration files.

CONFIGURATION

The Point Green configuration is stored in non-volatile memory, meaning that it is retained after a power reset.

The Point Green can be configured locally by connecting over USB to a Microsoft Windows PC running the Metasphere application, Poco+. The RTU can also be configured remotely via Medina or DNP3.

FIRMWARE UPGRADE

Point Green supports firmware upgrades, either over-the-air via the Medina protocol, DNP3 file transfer or locally via the USB cable from Poco+.

ACCESSORIES

A number of standard Point Green accessories are available:

- USB configuration cable
- Test box
- Connector cap (To maintain the IP68 rating of the RTU when no external sensors are used)
- Antenna cap (cap should always be used unless an external antenna is fitted)
- Off-the-shelf I/O cables (these cables are pre-wired for some common applications)

POWER

The Point Green can be powered by an internal battery or by a suitable external DC source. If the external source fails, the Point Green automatically switches to the internal battery without any interruption to the operation of the unit.

- Internal Lithium Thionyl Chloride (LTC) battery pack (tested to UN38.3 safe transportation standards)
- Internal battery has a life of 5+ years for many applications
- Support for external DC source (7.5V DC to 15V DC, minimum 7.5W)
- Automatic switching with no supply interruption between internal and external DC sources

SPECIFICATIONS

Counter inputs	Up to 2 channels Volt free, Impedance: 50kΩ 32-bit counter support up to 100Hz
Digital inputs	Up to 2 channels Volt free, Impedance: 50kΩ
Power	Internal lithium battery pack Optional external battery pack DC power input (7.5-15V DC)
Protocols	Medina DNP3 (Level 2+ elements of level 3 and 4) Modbus master (RS232, RS485 full and half duplex) SDI-12 master (single sensor)
Memory	16MB flash memory and 512kB static RAM
Comms	Internal Tri-band 3G modem (850, 900, 2100 MHz) with quad band GPRS fallback (850, 900, 1800, 1900 MHz) Auto switching internal and external antenna
Local monitoring	Ambient temperature sensor (± 1˚C) Integrated submersion sensor Battery, sensor, and external supply voltages (± 2%) Automatic external power source detection and switching Antenna selection and performance
Remote management	Remote firmware upgrade Remote configuration
Dimensions	156mm × 110mm × 112mm (excluding mating cables) 0.6 Kg (fully assembled)
Environmental	Operating temperature -20˚C to +80˚C Relative Humidity up to 95% non-condensing Protection classification: IP68 4m for 4 days

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Metasphere provides robust asset monitoring of time critical remote operations for operators to gain competitive advantage and meet regulatory compliance.

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