



- **3G Modem Data Logger**
- **Battery & Solar Powered**
- **Analogue & Digital Inputs**
- **Counter Inputs**
- **RS232, RS485 & SDI-12**
- **ASCII, MODBUS & NMEA**
- **TCP, FTP, email & SMS**
- **Optional Camera**
- **Optional GPS & Satellite**

Applications

- **Environmental monitoring**
- **Pressure & Flow Monitoring**
- **Security**
- **Flood Detection**
- **Moisture Monitoring**
- **Level Detection**
- **Energy Monitoring**
- **Crop Monitoring**

The ML-315 data logger is a small, ultra-low power, cost effective data logger with built-in 3G-modem available for the EMEA, APAC and NA regions. This small data logger, is further provided with an internal temperature sensor, 2 GB micro SD card and a 2FF SIM card slot. The logger can be powered by an internal 3.6 Volt Lithium battery that will last for years (please use our online calculator for calculating accurate battery life) when the logger is configured in a low power mode. It is also possible to power the data logger using an optional integrated 3xAA NiMH PV-panel or 8-30V external DC source.

The data logger can acquire physical signals by 2 current loop inputs, 2 voltage inputs, 1 potentiometer input and 3 digital inputs. The data logger is provided with one serial port to capture measurements from ASCII, MODBUS/RTU, NMEA or SDI-12 compatible sensors.

External sensors can be powered by the data logger itself, to prevent them to consume power while the data logger is a sleep.

Up to 8 mathematical channels are available to calculate meaningful engineering values derived from sensor input values (e.g. a polynomial to calculate a flow from a stream level).

Logged data can be pushed to a central host by TCP, FTP, SMTP (e-mail) at configurable intervals.

The ML-315 is available in several editions and as ML-215 (2G) with GPRS instead of 3G MODEM.

.When equipped with the integrated solar panel this provides a complete standalone remote monitoring station, all you need are the applicable sensor(s). This complete 3G logger is costs effective, because you don't need: a) solar panels, b) big batteries, c) cellular modem and d) encapsulating cabinet

Data logging

1 second to 1 day intervals

Regular, alarm and independent intervals

Daily operation time bracket (e.g. 07:00AM to 20:00PM or 21:00PM – 06:00AM)

I/O

5 x analogue inputs

2 x current loop inputs (0/4-.20mA, 12bit resolution)

2 x voltage inputs (0-10V, 12bit resolution)

1 x potentiometer input (max. 10M, 12bit resolution) a/o to connect a wind direction sensor

3 x digital inputs (status, event or pulse counter) a/o to connect a flow meter, rain gauge or reed relay based wind speed sensor

1 x digital open collector alarm output to switch on a relay in case a parameter value is outside its limits (e.g. a high water level)

Internal sensors (a/o battery, processor temperature, signal strength)

8 x calculation channels, to derive engineering values from sensed values using mathematical operators and functions (a/o cos, sin, atan2, ln, sqrt)

Communication

1 x Serial port for connecting external sensors (RS-232, RS-485 or SDI-12)

Serial port drivers

ASCII: Sensors autonomously outputting readable lines of numeric values

MODBUS/RTU: Read-out value registers from MODBUS/RTU slave devices

NMEA-0183: GGA (GPS) , DBT (Depth), HDG(Heading) en MWV (Wind)

SDI-12: Read-out of up to 16 devices with up to 20 parameters per device using aC!, aM!, aCx! or aMx! commands

SBD: To output data by Iridium satellite modems (960x)

Modem

Built-in 3G-MODEM with GPRS fallback.

2FF (Class B) SIM-CARD slot

Data Storage

2GB SD-CARD

Power

100mA@3.6V average operating¹⁾ current during a duty cycle of less than 1 sec²⁾ per log interval.

250mA@3.6V average operating current during 20-.60 sec. 3G data transfer

100uA@3.6V sleep current

12V@100mA switchable power outlet to power external sensors

Power supply

3.6V DC input for internal Lithium battery³⁾

Optional 3xAA NiMH³⁾ solar charger integrated in cover

Optional 8-30V DC-Adapter integrated in cover

Data push

1 minute to 1 day intervals

Regular and alarm intervals (direct push on alarm raise or fall)

Daily operation time bracket (e.g. 07:00AM to 20:00PM or 21:00PM – 06:00AM)

Native log files by TCP, FTP and e-Mail (SMTP)

JPG pictures by TCP, FTP and e-Mail (SMTP)

CSV log files by FTP and e-Mail (SMTP)

Alerts by SMS

Configuration by:

USB (local)

TCP (remote, in cooperation with the central data collector)

Web-browser (remote, in combination with the yDocInsights webserver)

Enclosure

Rugged and waterproof IP67 enclosure (130x120x75mm) – IP54 for TFT version

Optional pole mounting bracket

Integrated GSM antenna, external GSM antenna optional

Temperature

Wide temperature operating range –30°C +75°C

- 1) 100mA if no external sensors to be powered.
- 2) 1 sec. if external sensors are responsive and don't require time to warm up
- 3) Lithium batteries not included

Use our online Data logger power consumption calculator to estimate the battery life of your application or to determine settings fitting local solar power yield.

Logger Variants

A ML-315ADS or ML-315TFT is equipped with (A)nalog, (D)igital and (S)erial inputs. For cost reduction an ML-315DS lacks the analog inputs and an ML-x15AD the serial inputs. The ML-315 cost effective 3G data logger is available in several editions. All editions below are sharing about the same ML-315 main PCB, but differ depending on the chosen enclosure cover option. The cover can be a blind cover, a cover with integrated solar panel or a cover with integrated touch color TFT display.



ML-315DS-LI, ML-315AD-LI, ML-315ADS-LI A D-Size 3.6V Lithium battery powered ML-315 with blind cover (Using a SAFT-LSH20 battery is recommended)



ML-315DS-PV, ML-315AD-PV, ML-315ADS-PV A ML-315 with cover with integrated 1Wp tiny solar panel charging 3x AA 2100mAh NiMH batteries (Using LSD NiMH batteries like GP Recyko+ is recommended)



ML-315DS-DC, ML-315AD-DC, ML-315ADS-DC An externally 8-30V DC powered ML-315 with blind cover and charging circuit for 3x AA NiMH (backup) batteries. This edition is very suitable to connect to a non continues external DC source



ML-315-TFT A ML-315 with TFT screen

Options



CAM-D13M



CAM-SO3M

Optional **low power JPEG camera** solar powered remote JPEG camera CAM-D13M (1.3M) or remote JPG camera CAM-SO3M (0.3M)

CMOS image sensor

IP66 Weatherproof enclosure

Satellite Communication



ITAS-5SP

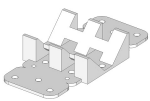
The Iridium ITAS-5SP with embedded antenna has global data coverage and is a very suitable satellite transceiver for low power data logging applications.



GPS-E3329

The GPS-E3329 with embedded GPS antenna is very suitable GPS receiver for low power data logging applications.

The GPS-E3329 is based on the high performance features of the MediaTek 3329 single-chip architecture and has a 'Fast time to first fix', which is obviously a very important property in low power data logging applications. The GPS-E3329 has an excellent -148dBm acquisition sensitivity, it can track 22 channels with a -165 dBm sensitivity, it supports common GPS as well as AAS/EGNOS/MSAS and GAGAN.



PMB

The PMB is a pole mounting bracket made of tough UV-resistant polycarbonate, which is better than using a metal bracket as the metal can have a negative impact on the performance of integrated antennas (poor antenna performance causes more power consumption).



PMK

The PMK is a pole mounting kit existing out of a polycarbonate bracket (PMB), two 12mm width stainless steel (A2/W4/304) worm gear clamps to fix the bracket to a pole with a diameter ranging from 40 (1 5/8") to 60mm (2 3/8"). The kit is including 4x M4 bolts (16mm), nuts and washers of stainless steel as well. The bracket can be used to mount an ML-315, ML-2013, CAM-D13M & CAM-SO3M

The bracket is excluding mounting accessories like clamps, nuts, bolts and washers.