MLGPS®

Overview

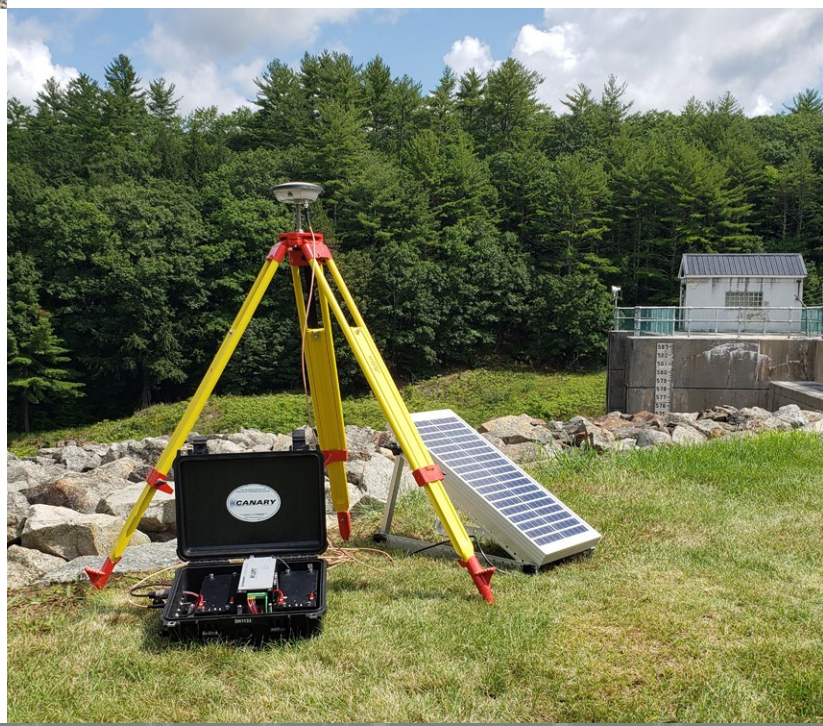
The **Canary Systems® MLGPS®** integrates a multi-function GPS module into a turnkey power control, battery charging and communications platform, specifically designed for geotechnical and structural monitoring applications. It is available in several cost-effective variants including a **portable** version for quick deployments, and a **fixed** version for permanent deployments. All MLGPS units feature a NEMA rated enclosure, battery, and solar panel.

MLGPS uses **differential GPS** to achieve its high precision. The GPS receiver is able to track **GPS L1 and GLONASS L1** signals. An optional upgrade allows for additional constellations such as Galileo, BeiDou-3, QZSS, and IRNSS, as well as expansion up to 555 channels. Precisions range from 2.5 mm (0.1 in) to 25 mm (1 in).

System Details

MLGPS units ship with a 32GB microSD card already inserted into the MLGPS module. The SD card allows the unit to collect and store raw data and utilize **Offline Mode** for more than 1200 days of offline storage. This is ideal for units in remote locations with unreliable Wi-Fi connectivity.

MLGPS is capable of reading its own panel temperature, humidity, and recording the status of a switch closure input. Several status LEDs are used for reporting basic system operations including power, charge, GPS status, LAN link, and LAN active. The system integrates a smart lead-acid battery charge controller for the 12V battery. MLGPS can also perform **firmware updates** over a network, making system updates very simple to manage.



MULTI-FUNCTION DIFFERENTIAL GPS

SUPPORTS MULTIPLE BASES

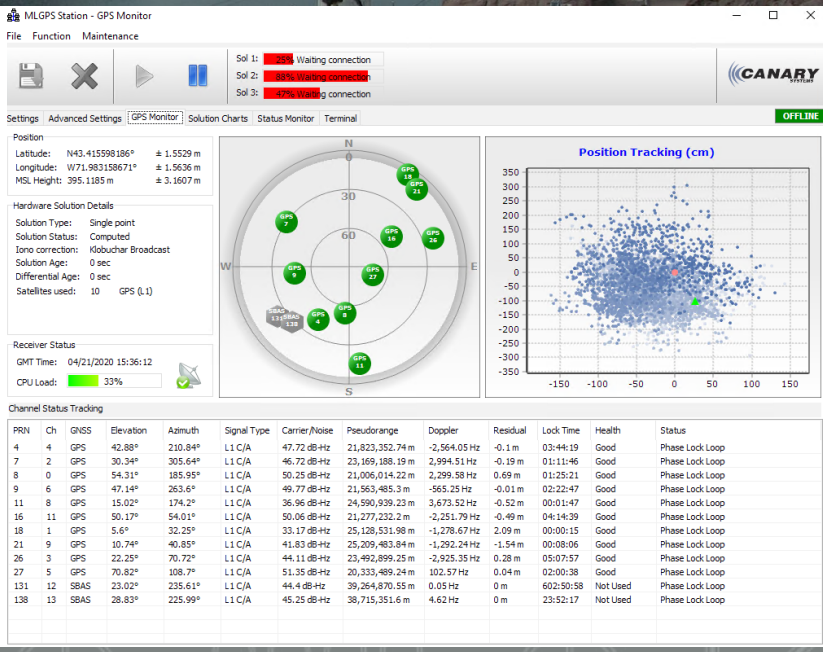
OFFLINE MODE SD CARD STORAGE

MLSuite® Integration

MultiLogger® Suite software includes a configuration and control interface for connecting MLGPS nodes, so no additional software is necessary. Unlimited **post-processing solutions** can be configured in MLSuite®. The average precision of data depends on the configured averaging time, typically ranging from 15 minutes to 24 hours.

The achievable accuracy in the field depends on a number of variables, including unobstructed sky views and the availability and location of reference stations (need a fixed platform).

Note: precision is given for the horizontal plane, measurements in the vertical axis are typically less accurate.



PRN	Ch	GNSS	Elevation	Azimuth	Signal Type	Carrier/Noise	Pseudorange	Doppler	Residual	Lock Time	Health	Status
4	4	GPS	42.88°	210.84°	L1 C/A	47.72 dB-Hz	21,823,352.74 m	-2,564.05 Hz	-0.1 m	03:44:19	Good	Phase Lock Loop
7	2	GPS	30.34°	305.64°	L1 C/A	46.72 dB-Hz	23,169,188.19 m	2,994.51 Hz	-0.19 m	01:11:46	Good	Phase Lock Loop
8	0	GPS	54.31°	185.95°	L1 C/A	50.25 dB-Hz	21,006,014.22 m	2,299.58 Hz	0.69 m	01:25:21	Good	Phase Lock Loop
9	6	GPS	47.14°	263.6°	L1 C/A	49.77 dB-Hz	21,563,485.3 m	-565.25 Hz	-0.01 m	02:22:47	Good	Phase Lock Loop
11	8	GPS	15.02°	174.2°	L1 C/A	36.96 dB-Hz	24,590,939.23 m	3,673.52 Hz	-0.52 m	00:01:47	Good	Phase Lock Loop
16	11	GPS	50.17°	54.01°	L1 C/A	50.06 dB-Hz	21,277,232.2 m	-2,251.79 Hz	-0.49 m	04:14:39	Good	Phase Lock Loop
18	1	GPS	5.6°	32.25°	L1 C/A	33.17 dB-Hz	25,128,531.98 m	-1,278.67 Hz	2.09 m	00:00:15	Good	Phase Lock Loop
21	9	GPS	10.74°	40.85°	L1 C/A	41.83 dB-Hz	25,209,483.84 m	-1,292.24 Hz	-1.54 m	00:08:06	Good	Phase Lock Loop
26	3	GPS	22.25°	70.72°	L1 C/A	44.11 dB-Hz	23,492,899.25 m	-2,925.35 Hz	0.28 m	05:07:57	Good	Phase Lock Loop
27	5	GPS	70.82°	108.7°	L1 C/A	51.35 dB-Hz	20,333,489.24 m	102.57 Hz	0.04 m	02:00:38	Good	Phase Lock Loop
131	12	SBAS	23.02°	235.61°	L1 C/A	44.4 dB-Hz	39,264,870.55 m	0.05 Hz	0 m	602:50:58	Not Used	Phase Lock Loop
138	13	SBAS	28.83°	225.99°	L1 C/A	45.25 dB-Hz	38,715,351.6 m	4.62 Hz	0 m	23:52:17	Not Used	Phase Lock Loop

Specifications

GPS

- Receiver: GPS L1, GLONASS L1
- Channels: 14
- Solutions: Unlimited post-processing solutions
- Average Precisions:
  2.5 mm, 0.1 in (24 hr solution)
  10 mm, 0.4 in (6 hr solution)
  20 mm, 0.8 in (1 hr solution)
  25 mm, 1 in (15 min solution)

GPS - Optional Upgrade

- Receiver: GPS L1, GLONASS L1, Galileo, BeiDou-3, QZSS, and IRNSS
- Channels: 555

Physical

- Module Dimensions: 19 x 7.6 x 3.8 cm (7.5 x 3.5 x 1.5 in)
- Operating Temperature: -40 to +60 °C
- Operating Humidity: 95% non-condensing

Memory

- Storage Capacity: 32GB microSD card (more than 1200 days of raw GPS data)

XPico Wired/Wireless Ethernet

- Ports: RS-232 (DE-9), Ethernet (RJ-45)
- Speed: 300–921.6kbps
- Interface: Ethernet 10Base-T or 100Base-TX (auto-sensing)
- Standards: WPA, WEP, ARP, UDP/IP, TCP/IP, ICMP, SNMP, AutoIP, DHCP, TFTP, Telenet, HTTP
- Security: 256-bit AES encryption
- Range (line-of-sight): 1.31km (1 mile) with directional antenna

System Power

- Voltage: 12VDC @ 750mA max, nominal 70mA–180mA (depending on offline mode configuration)
- Battery: Up to 65AHr
- Pass Currents: Up to 2A
- Input Voltage Maximum: 40V
- Charge Voltages: 13.8V and 6.9V

Status LEDs

- Power: Status of battery voltage
- Charge: Status of charger output voltage
- GPS Status: GPS link status
- LAN Link: Network link status
- LAN Active: Network activity

System Measurements

- Internal Temp Measurement Range: -40 to +85 °C (-40 to +185 °F) at an accuracy of 0.5 °C (1 °F)
- Temperature Output: °C or °F
- Internal Humidity Measurements Range: 0-100% RH, at an accuracy of +/- 4.5%
- Internal Voltage Measurement: 0-20VDC solar panel 0–16VDC battery input/output at +/- 0.1VDC accuracy (over temperature range)

Model	MCU	Enclosure Type	Size (L x W x H)	Assembled Weight	Battery	Solar	Receiving	Transmitting
MLGPS-P-24S	MLGPS	Polypropylene	41.7 x 33 x 17.3 cm 16.4 x 13 x 6.8 in	12.7 kg 28 lbs	24AHr	30W	RS-232	MLGPS
MLGPS-24S	MLGPS	Polycarbonate	35.3 x 30.5 x 15 cm 13.9 x 12 x 5.9 in	13.1 kg 29 lbs	24AHr	30W	RS-232	MLGPS
MLGPS-65S	MLGPS	Steel	61 x 50.8 x 25.4 cm 24 x 20 x 10 in	28.1 kg 62 lbs	65AHr	65W	RS-232	MLGPS