

1. IP67 RATED, RUGGED AND RELIABLE GPS TRACKING

The G60 is a compact 2G or 3G (NextG) GPS tracking device with a variety of inputs and outputs to cater for the most demanding applications. Its rugged housing is IP67 rated to withstand the harshest environments, without sacrificing tracking and communications performance. With the internal GPS and cellular antennae installation is a breeze. The internal backup battery provides alerts and tracking operations even when external power is removed.



1.1. Applications

Ideal for tracking assets where a compact and rugged device is required with simple installation

- Equipment tracking and monitoring of run hours
- Mining equipment, lighting towers, pumps and generators
- Concealed installation in vehicles or assets for stolen asset recovery
- Monitoring temperatures and compressors in refrigerated trucks, freezers and cold chain applications
- Installation in engine bays, or areas cleaned by spraying
- Under the dashboard in vehicles
- Boats and jet-skis
- Motorbikes, quadbikes and golf carts
- Plus many other applications



1.2. G60 Hardware Features

Hardware Features

Compact rugged IP67 rated housing Made of sturdy Nylon/Glass composite plastic the housing is extremely tough and UV resistant, is resistant to oils and can easily handle high temperatures

The housing is sealed using 4 screw and has 2 convenient mounting tabs.

Dimensions: 125mm x 80mm x 25mm

Weight: 250 grams

Harness Options The G60 is manufactured with various harness options. Because of the nature of the housing the wire harness is soldered to the PCB at production

3 wire (power, ground, ignition)

12 wire harness

Automotive power

Voltage 8V to 45V DC (max)

Operating Current 10mA average (battery fully charged)
145mA average (battery charging)

Sleep Current <1mA

The G60 passes stringent automotive power “load dump” tests to ensure that it will continue to operate in the harshest electrical systems. A built-in self-resetting fuse makes installation easy and safe.

Operating Temperature

-20°C to +75°C ¹

1) On external power.

Below 0°C the standard internal backup battery's ability to deliver sufficient power to operate the cellular modem is reduced. Below 0°C and above +45°C the internal backup battery will not be charged as a safety precaution due to dangers associated with charging batteries at extreme temperatures.

For battery powered tracking in extreme temperatures enquire about our Remora tracker with extended temperature range battery options.

High sensitivity GPS

UBLOX MAX7 GPS module

Supports GLONASS and other GNSS systems

72 channel high sensitivity receiver

-167dBm industry leading tracking performance

Battery backed up for optimal hot-start performance

AssistNow Offline aiding data for extremely fast time-to-first-fix and performance in urban canyon environments

Low noise GPS amplifier

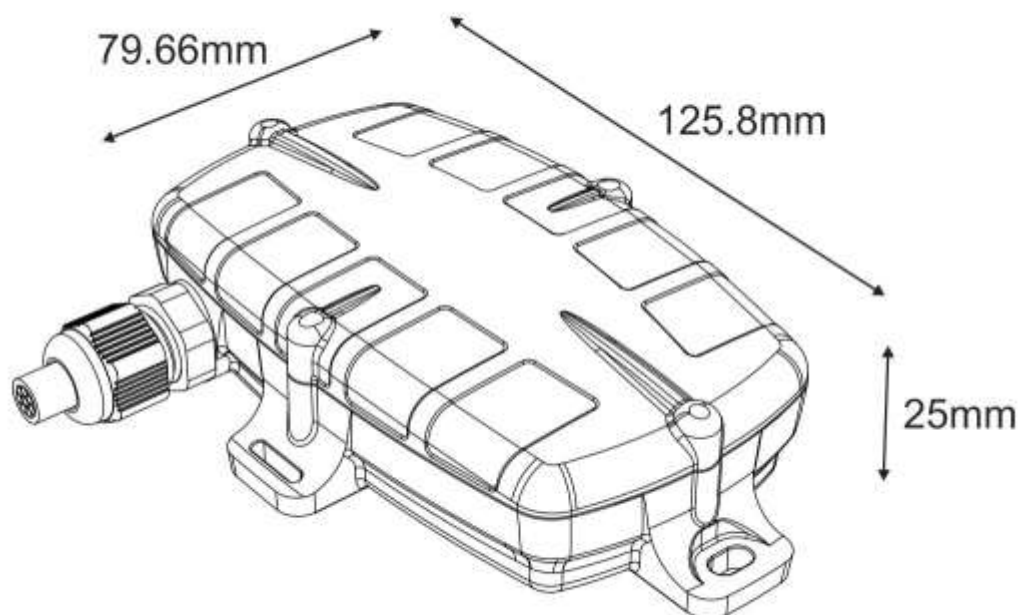
GPS signals are boosted by a special low-noise amplifier (LNA)
This allows the G60 to operate where normal units will fail to receive GPS signal

2G or 3G (NextG)

The G60 can be manufactured for specific markets around the world with cellular modem modules approved by all the major networks

	2G Modem Quad Band GSM/GPRS Class 10 850 / 900 / 1800 / 1900 MHz
	3G Modem – EU 850 / 900 / 2100 EMEA / APAC / Latin America
	3G Modem - NA 850 / 1900 / AWS North America
	3G Modem (Global Option) 800 / 850 / 900 / AWS / 1900 / 2100 Global coverage at a higher cost
	*enquire for other bands and LTE / 4G options
Certifications	CE, C-TICK, ICASA, ACMA, ISO 7637-2
Internal Antennae	Internal GPS and cellular antennae Having the antennae inside the housing makes for very simple and quick installation. The G60 has had its antennae tuned by the top laboratories to ensure optimal performance.
Backup battery	The standard 850mAh LiPo backup battery allows the G60 to operate when external power is removed for up to 7 days, depending on the amount of movement
4 x Digital Inputs	1 x Ignition line 3 x digital inputs with configurable pull-up / pull-down Numerous configuration options including switches, duress/panic alerts, pulse counting
3 x Digital Outputs	3 x switched ground digital outputs, easily wired up to switch external lights, relays, buzzers, sirens, motors and other devices Can be used to immobilise a vehicle
Sensor Interface	The G60 has an I2C interface which can be used to power and communicate with external sensors including temperature probes, humidity sensors and other sensors.
3 axis accelerometer	The 3 axis accelerometer allows the G60 to detect harsh driving events (harsh acceleration, braking and cornering) and this information can be used to monitor driver behaviour and unsafe driving. It also allows the G60 to go to 'sleep' when not moving, resulting in extremely low standby current.
iButton	Communicate with common one-wire iButton devices
RS232	RS232 receive and transmit allow the G60 to communicate with external RS232 devices. These can include fuel monitoring, Garmin FMI, tyre pressure monitoring The RS232 interface can also be used to configure the device and to test and debug.
Switched 3.3V out	The G60 can provide power to external sensors via this 3.3V power line, allowing for easy installation and doing away with the need for additional external power supplies.

	Maximum current: 200mA
Switched 5V out	<p>The G60 can provide power to external peripherals via this 5V power line, allowing for easy installation and doing away with the need for additional external power supplies.</p> <p>Maximum current: 300mA</p>
DMCAN peripheral port	Digital Matter has a range of peripherals that connect to the G60 via the DMCAN peripheral port. Peripherals such as the RFID Driver ID reader, 5 digit keypad, data console and RF gateway use the DMCAN port.
Flash memory	<p>The G60 has sufficient memory to store over 50,000 records in its flash memory. Normally the data will be sent to the server immediately but if the device is out of range then there is sufficient space to ensure that no data is lost – for many weeks of driving!</p> <p>The flash memory is also used to store parameters, GPS aiding data, accident data, driver lists and other important information that needs to be securely stored.</p>
Garmin FMI	Coming soon
Warranty	One year manufacturer's warranty



1.3. G60 Firmware Features

Firmware Smarts

Auto-APN	Auto-APN allows the G60 to analyse the SIM card and select the correct APN details from a list that is pre-loaded in the device's
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	firmware. This means that the G60 can be shipped world-wide without requiring specialist setup for SIMs.
Text Message Setup	The G60 can also be sent text messages to setup the APN, server and other details
Multi-APN	The G60 can be configured to roam across multiple networks and to automatically use the different APN details for the roaming networks.
AssistNow Offline	<p>The G60 will track successfully where other devices just give up.</p> <p>This fantastic technology allows the GPS to predict which satellites are in orbit above it and to dramatically reduce the time-to-first-fix of the GPS, and the overall performance of the GPS, especially in 'urban canyon' or forested environments.</p>
Flexible Logging Parameters	<p>The G60 trip logging is flexible and can be configured to log based on a variety of parameters including:</p> <ul style="list-style-type: none"> • Elapsed time • Distance travelled • Change in heading • Change in speed • On Stationary • Accelerometer events (harsh driving)
Accident and Rollover Detection	The G60 uses the built-in accelerometer to detect high G impacts such as accidents and rollovers and reports these events to the server for emergency alerting.
Harsh Driving	<p>The G60 automatically calibrates its built-in 3 axis accelerometer and uses this to detect harsh driving events:</p> <ul style="list-style-type: none"> • Excessive acceleration • Harsh braking • Cornering at speed <p>These events are logged in the G60 along with additional event statistics that allow back-end server platforms to perform sophisticated driver profiling and scoring.</p>
Accident Data	The G60 keeps a second-by-second "black box" recording of valuable GPS and accelerometer data for a two hour window. This data can be automatically uploaded to the server when an accident is detected, or it can be requested manually.
Driver Identification	<p>The G60 supports a number of ways to identify a driver:</p> <ul style="list-style-type: none"> • RFID reader and a card or keyfob • 5 digit keypad to enter a PIN code • Console with built-in RFID reader • iButton 1-wire reader
Driver Lists	The G60 can be updated from the server with lists of Drivers that are allowed to drive the vehicle that it is installed in. When a driver or operator registers on the G60 it will check the Driver List to see if that person is authorised to drive the vehicle. The list also includes information about the driver such as whether they can perform supervisor functions.

	The G60 can be installed to immobilise a vehicle and only allow authorised drivers / operators to drive it, or to annoy an unauthorised driver with a loud buzzer.
Emulated Ignition	<p>This setting allows the G60 to determine that a trip has started based on accelerometer and GPS data and to automatically set the 'ignition' input on the device to emulate the ignition line.</p> <p>This means that the G60 can be installed with the option of not wiring in the ignition line and 'emulating' the ignition based on movement.</p>
Run Detect	This setting allows the G60 to monitor the system voltage and to detect changes in the voltage that indicate if the engine is running or not.

1.4. DMCAN Peripheral Expansion

The G60 interfaces to a range of peripherals that further extend its capabilities.

Peripheral Options

RFID Driver ID Reader



Compact 125kHz RFID Reader reads cards and keyfobs
 5cm typical read range (can read through plastic / dashboard)
 Plugs into the DMCAN peripheral plug on the G60 harness for easy installation
 Includes a LED and buzzer for reminding drivers to swipe their card
 Compatible with the EM4001 RFID standard
 Optional 125kHz HID reader option

5 digit keypad



Compact 5 digit keypad (keys 1 through 5)
 Includes a LED, backlight for night-time input and buzzer
 Use for

- Driver Identification (using a PIN code)
- Select the trip type (business versus private)
- Map to digital inputs for other functions like panic button, logging point of interest, changing driver state (on / off duty) etc.
- Long-press option for alternate functions

Plugs into the DMCAN peripheral plug on the G60 harness for easy installation

Console

Rugged data entry console

- 4 x 20 character display with backlight
- 12 key sealed keypad
- RFID reader under the keypad
- Built-in buzzer
- Application examples:
 - Operator login with machine pre-check questions



- Work allocation to project codes and cost codes
- Login with OH&S questions
- Time and attendance recording
- Driver fatigue management
- Firmware can be customised

Plugs into the DMCAN peripheral plug on the G60 harness for easy installation

RF Gateway

Provides the interface to allow the G60 to receive data from Digital Matter's low cost range of RF asset tags and wireless sensors

868MHz and 900-928MHz options

Transmit and Receive

Plugs into the DMCAN peripheral plug on the G60 harness for easy installation

1.5. Device Management – OEM Server

All Digital Matter devices are fully managed Over-The-Air (OTA) via our OEM Server web interface. The OEM Server seamlessly manages:

- Device firmware – firmware updates can be done remotely
- Network (administrator) parameters relating to critical communications
- System parameters, including GPS parameters, IO configuration, logging options and general device behaviour settings
- GPS AssistNow Offline aiding data files
- Remote debugging of devices, including being able to trace data, view detailed debug message logs, and view a live trace of the server debug messages
- Remote disconnect and reboot of devices
- Driver list downloads to devices – this allows for the Driver Identification on the device to check if the RFID tag / username / PIN is valid, and for specific drivers to be allowed to drive / operate particular vehicles, for example based on licences or permits.
- Geo-fence syncing with the devices – this allows the device to do advanced in-cab alerting and monitoring such as geo-fence arrival and departure, speed limit alerting, dangerous intersection warnings, turn on warning lights inside a geo-fence, and disable communications inside intrinsically safe zones such as gas plants.
- Provides a command and message queueing platform to the devices and is incorporated into the remote management and debugging applications

Data Connectors

The OEM Server provides Data Connectors that forward data records on to the software platform of your choice, including Digital Matter's own Telematics Guru and GPS Log Book platforms.

More information on the OEM Server can be found at <http://www.digitalmatter.com.au>

If you would like to integrate the G60 into a software system then please contact Digital Matter for more information on our integration protocols.

1.6. Committed to Quality

We take pride in designing each of our products with the goal of providing the best performance and reliability possible in the price range of that product. "Engineered to outperform".

Not all GPS tracking devices operate with the same level of performance or reliability, especially when exposed to extreme conditions in the field. In addition we only use the highest quality parts and the latest assembly and quality control techniques to ensure the reliability and long life of our products.

Every device is individually tested at production, and our batteries are individually tested with full charge / discharge cycle tests before being fitted into our devices.

All Digital Matter devices are covered by a one year manufacturer's warranty.

1.7. Contact Information

For the latest version of this document plus other product information please visit our website at www.digitalmatter.com.au