

Apollo

> real-time
fleet management
and security



Apollo

the Ruler of the Sun, believed to be the "All-Seeing"
- according to early Greek mythology.

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General Specification

CPU	Type Memory:	NXP ARM Cortex-M3 Static RAM: 128kb ROM: 34kb Flash: 2048kb
Power	Voltage Range Consumption	8V – 28V (supported in same unit) 3mA in low power mode up to 120mA in working mode can reach up to 300mA if battery is charged
* Backup Battery (optional)	Type Power	Lithium-ion Polymer 3.75V, Apollo Advanced Plus: 950 mAh / Apollo TT: 550 mAh
GPRS - Cellular Modem Satellite Modem (external device) Data Messages	GSM Antenna type Network Channels Connection SMS GPRS	Quad Band (850, 900, 1800, 1900). Built in (concealed) GSM, CDMA, HSDPA, SMS, 3G (optional) RS232 Encrypted Protocol TCP/IP
Location	Type Time to First Fix (TTFF) Positioning Accuracy Antenna type	GPS, GLONASS (optional) 2 sec (hot start) 10m CEP (50%) Velocity: 0.2m/s (50%) Built in (concealed)
COMM Port	Type Speed	RS232 115,200bps (default)
I/Os (check per model)	Digital Inputs Digital Outputs Analog Inputs Pulses Counter CANBus	Apollo Advanced Plus: Max 8/ Apollo TT: Max 2 Apollo Advanced Plus: Max 4/ Apollo TT: Max 1 Apollo Advanced Plus: Max 3/ Apollo TT: Max 1 Max 1 (Apollo Advanced Plus only) Included (Apollo Advanced Plus only)
Accelerometer	Type Purpose	3-Axis, 20 mg accuracy, up to 8g Identify and report events of impact and accident
Alarm System	Immobilizer Disarming Options	External – Gradual Stop Key Pad, Dallas Key, Remote Control, RF Keypad
Dimensions	Size Weight	Apollo Advanced Plus: 21H x 60W x 107L (mm) 0.82H x 2.36W x 4.21L (inch) Apollo TT: 21H x 60W x 57L (mm) 0.82H x 2.36W x 2.24L (inch) Apollo Advanced Plus: 150 (grams) 5.29 (Oz) Apollo TT: 120 (grams) 4.23 (Oz)
Environmental	Operating Temp Storage Temp Humidity	-40°C (-40°F) to +60°C (140°F) -40°C (-40°F) to +85°C (185°F) Max 90%



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The most sophisticated unit for real-time Fleet Management and security Applications

The comedian Sid Caesar once said: "The guy who invented the first wheel was a fool. The guy who invented the other three, he was a genius!"

We at Starcom Systems didn't invent the vehicle location system. We invented the "other three wheels" that totally changed the world of vehicle location and raised it to perfection.

Our products are fully adjusted to every need:

They are fully customized to alert any type and combination of events, they enable automatic operation, and maintain stability and continuity. It is the only system that provides solutions to every conceivable need. The advanced wisdom of Apollo enables us to offer you the useful information in a very practical and user-friendly way, that even the most complicated analysis automatically becomes simple and easy to use.

By using Apollo products:

You enjoy the easy and convenient use

of the system, due to its all-in-one solution base; its easy and simple installation; its integration with the local surroundings of the car or motorcycle; its flexibility to local needs; its compact size that includes built in antennas; its infinite applications; and its opportunities to broaden its future applications.

You maintain stability

due to the state of the art OTA (over the air) ability to remotely upgrade the unit with new features and change settings within the existing firmware of the unit. Thereby, there is constant communication with the car or motorcycle even in the event of a malfunction.

You save

time and money because of the possibility to define different frequencies of transmission according to the local broadcast or Roaming.

You can take advantage

of the high quality of the system which complies with the Automotive industry standards.

You are in control

of every possible circumstance or situation. The open system and its platform allow integration of every situation, both simple and complicated.

For example:

You can define a request to change the broadcasting frequency automatically once the car enters a specific area and the door is opened.

You are confident

that in the event of an unusual situation the system will automatically be activated.

For example:

At the time of an accident, the system will automatically unlock the doors and beep every pre-set amount of minutes to identify the location of the car or motorcycle.

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Key Features

Fleet

- **Programmable Events:** Events can be defined to both transmit and act on complex events. For example – activating the horn and transmitting when a tanker truck activates its engine while unloading fuel at the fuel depot.
- **Speed restrictions:** Programmable alerts whenever the vehicle goes above/ below a pre-defined speed, to detect over hastiness and unauthorized stops.
- **Mileage:** Ability to alert every specific number of kilometers.
- **Curve detection:** Support for transmitting at every turn, for better route visualization.
- **Motor is running while stationary:** Alert when the motor is running and the vehicle is left stationary at a specified time range.
- **Perimeter based alerts:** Geo-fencing alerts when a vehicle is entering/ leaving a specified area at a specified time.
- **Fuel Measuring:** Reduce your fuel costs by monitoring and measuring your driver usage of fuel. Connect your Apollo unit directly to the vehicle's fuel gauge or to an external accessory for measuring fuel level. This connection will enable you to compare fuel consumption with distance travelled, minimizing the risk of fuel theft or excessive consumption.
- **Values Monitoring:** Monitoring of analog inputs to alert when voltage/ temperature are exceeding.
- **Driver Identification:** By using different Dallas iButton, Remote Controls, Keypad or RF Keypad Codes, the unit sends the code of the current vehicle driver to the center.
- **Mileage Transmissions:** Periodic mileage transmissions for the needed vehicle's maintenance.
- **Automated Tracking:** Automatic support for vehicle tracking at specified times, without sending additional commands to the vehicle.
- **Times Programming:** Complete control over the alarm system timing (the intervals at which the unit stays at each of the alarm system logic modes).
- **Wakeup from accelerometer:** the unit can wake up from an event triggered by the accelerometer.
- **Towing Detection:** GPS-based detection of movement while the system is armed, produces a towing alert to the center.
- **Apollo TT** can also detect a tow alert by recording the cellular antennas in its vicinity.
- **Low Power Warning:** Warning transmission whenever the vehicle's main power goes below a predefined threshold.
- **4 Disarming Devices:** Four disarming devices are available, including keypad and RF Keypad, remote control, and Dallas iButton.
- **Gradual Stop:** Option to gradually stop the vehicle by sending pulses to the immobilizer or fuel pump.

Vehicle and Driver Protection

- **Emergency Button:** Support for emergency button to invoke an immediate high-priority transmission to the center.
- **Accident and Harsh Braking Detector:** Built-in accelerometer serves as both accident and a harsh braking detector.
- **Auto Lock:** Support for locking/unlocking the doors whenever the motor is starting/stopping.

Inputs/Outputs

- **Digital Inputs:** Apollo Advanced Plus: Eight digital inputs, usually used for Ignition, Emergency, Doors, Arming, and Disarming / Apollo TT: Two digital inputs
- **1 Pulse Counter Input:** To measure odometer pulses, or any sort of pulses generated by external devices. (Apollo Advanced Plus only)
- **Analog Inputs:** Apollo Advanced Plus: Three analog inputs, each can be set to work in two different measurement scales. Example: usages are external temperature sensors or fuel measurement without a need for external sensor
- **Apollo TT:** One analog input is optional (one digital input can be used as an analog input).

Alarm System

- **Complete Security System:** Complete operational security system with different logic states to detect break-ins and report to the center.

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- **Inputs programming:** Each input can be programmed to be used in order to trigger transmissions under any condition, and to arm or disarm the security system.
- **Main power indication:** A main power measurement to indicate the vehicle's battery voltage.
- **Canbus connection:** Direct connection to the vehicle's computer using the CANBus protocol. (Apollo Advanced Plus only)
- **Odometer Support:** Support for digital odometer to read its pulses and calculate the vehicle's mileage. (Apollo Advanced Plus only)
- **Digital Outputs:** Apollo Advanced Plus: Four digital outputs, usually used for Lock, Unlock, Siren, and Immobilizer / Apollo TT: One digital output
- **Pulses Width Modification:** Ability to set the width and number of the lock and unlock pulses.
- **Navigation Support:** Support for external devices for navigation, such as handheld or laptop computers.
- **Anti-jamming:** Support for a gradual stop of the vehicle if a theft transmission has failed due to communication frequencies jamming.
- **Compact Protocol:** Less than 70 bytes per message enables very small bandwidth usage and saved communication costs.
- **Voice Calls:** Hands-free kit to support voice call from and to the vehicle. Ability to initiate a voice call from the unit without the knowledge of the driver.

Over-The-Air commands

Communication

- **Cellular Connectivity:** Support for GSM networks (GPRS or optional 3G), while using both the SMS channel and the data channel. Supported bands are 850/900/1800/1900 MHz. Optional support for CDMA, HSDPA networks.
- **Satellite Connectivity:** Using an external device, an Iridium connection may be used when out of cellular coverage.
- **TCP Connectivity:** Support for the GPRS/1x TCP/IP networks by either staying online at all times, or coming online when a transmission is initiated.
- **DNS Support:** Connection to a server by its host name.
- **Backup Server:** Backup host name support in case of main server has gone offline.
- **Encryption:** Protocol encryption to provide maximum security between the vehicle and the center.
- **External Protocol Support:** Support for external devices for 3rd party protocols, such as text terminal or RFID readers.
- **Firmware Upgrade:** Over the air firmware upgrade to apply new features to already-installed units.
- **Status Requests:** Ability to request the latest status of the vehicle, and receive the entire information about all the inputs, outputs, and location information.
- **Tracking:** Option to remotely engage periodic transmissions from the unit at intervals of 10 seconds to 5 days.
- **Tracking Interval By Channel:** Different transmissions intervals can be set to each communication channel used –SMS/GPRS/Roaming.
- **Parameters Programming:** Complete programming of each and every one of the unit's parameters over the air. Remote Arm/Disarm: Option to arm or disarm the vehicle from the center.
- **Output State Changing:** Option to remotely activate/deactivate different outputs, such as locking/unlocking the doors, starting/ stopping the siren, activating/deactivating the immobilizer.
- **Learn Dallas/Remote Control:** Remote activation of extra Dallas iButton and Remote Control.
- **Mileage setting:** Remote update to synchronize the unit and the vehicle internal mileage counter

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Voice Call Request: Request the unit to call a specific number for a voice call to communicate with the driver and/or hear the activity inside the vehicle.

Text Messaging: Send a text message to the vehicle's text terminal.

Miscellaneous

Garage Mode: Special condition in which the alarm system is turned off and no emergency transmissions are sent. This condition is time-limited.

Internal Logging: Whenever a transmission has failed to be sent, the entire message is saved to the memory for later transmission. 15 thousand complete messages, including statuses, can be recorded this way.

Low Power Mode: Option to switch to a low power mode (up to 3mA) whenever the alarm system is armed. Best used for motorcycles.

Fully Certified: Fully certified and complies with the highest standards of the automotive industry.

Waterproof (IP65): A silicon case that gives maximum protection from water and extreme weather conditions is available (Apollo TT only).

Location

GPS Receiver: Built in GPS receiver allows real-time tracking and on-board location-based analysis.

Mileage by GPS: Advanced algorithm to calculate the vehicle's mileage based on the GPS, without the need for any external connections to the vehicle's odometer.

Last Location Saving: Saving of the vehicle's last position, in case of going out of GPS coverage.

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Choose the Apollo's that suits your needs:

	Apollo Advanced Plus	Apollo Hybrid	Apollo TT
GPS	+	+	+
GSM	+(optional 3G, HSDPA and CDMA)	+(optional 3G, HSDPA and CDMA)	+
Satellite Connectivity	-	+	-
Connector	24 pins Molex	24 pins Molex	10 pins Molex
Accelerometer	+	+	+
Canbus	+	+	-
Usage	Full fleet and security features. Can be used as standalone alarm system	Full fleet and security features. Can be used as standalone alarm system	Track & Trace
Advantage	- Additional inputs/outputs - Built-in accident and harsh braking detection	- Constant communication around the world, even when out of cellular coverage - Additional inputs/outputs - Built-in accident and harsh braking detection	- Low cost - Waterproof IP65 (optional) - Allows a tow detection with very low power consumption
I/O	8 Digital inputs 3 Analog inputs 4 Digital outputs 1 pulses counter RS232 Canbus *Hands free input iButton/Keypad/RF Keypad/remote control input	8 Digital inputs 3 Analog inputs 4 Digital outputs 1 pulses counter RS232 Canbus *Hands free input iButton/Keypad/RF Keypad/remote control input	2 Digital Inputs (one digital input can be used as an Analog input). 1 Digital output 1 Comm Port

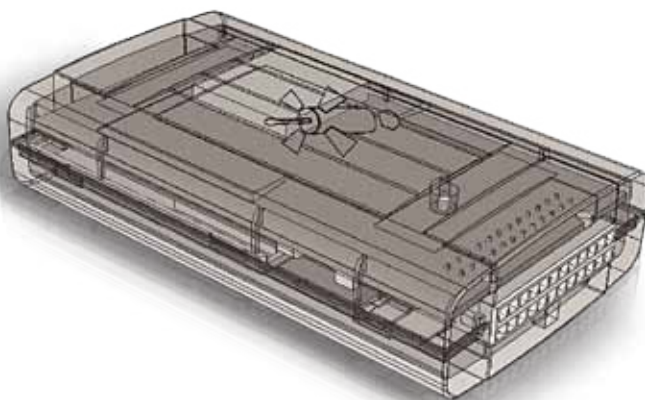
When hands free Kit is used, the unit has 5 digital inputs and 2 analog inputs only.

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