

## Standalone Global Positioning System

### FEATURES

- Precise GPS time synchronization
- Accurate position Information
- Interface with Graphical Interface in Windows
- External active antenna
- Easy to integrate
- Low cost

### APPLICATIONS

- Real time clock
- Server time synchronization
- Personal navigation device
- Vehicle tracking
- PLC time synchronization
- Digital Clocks
- Platform clocks
- Factory clocks
- Drum clocks
- Tower clocks



### DESCRIPTION

Aeron's standalone GPS is a ready to integrate product with configurable output. It can be used for GPS clock synchronization, position indication and as a navigation device. In applications such as server time synchronization, PLC time synchronization, train time/platform/station time synchronization, real-time clock, ARN-SGPS is an ideal choice. ARN-SGPS can be used as a tracking or security device to monitor location of an object/vehicle from a remote location.

ARN-SGPS-M can be used as a personal navigation device using a PC or a laptop. The unit comes with a cable to integrate it directly with PC via serial port. It gives out NMEA sentences in order to extract maximum information, it can also be factory configured for time or location information only.

ARN-SGPS is small in size and low cost making them ideal for OEM applications. This device can tolerate hostile environments such as railway platforms, trucks and heavy equipments and render outstanding performance even in low satellite visibility.

The device is available in multitude of interfaces for varying application demands. Also the data is available in different formats specific to application. It is just the device you need!

**GENERAL SPECIFICATIONS**

	<b>SGPS100</b>	<b>SGPS500</b>
Receiver Type		
No. of Channels	65	50
GPS	L1 frequency, C/A Code	L1 frequency, C/A Code
GALILEO	-	Open service L1 frequency
Time To First Fix <sup>1</sup>		
Cold Start	35 s	29 s
Warm Start	30 s	29 s
Hot Start	2 s	< 1 s
Aided Start	< 1 s	< 1 s
Sensitivity		
Tracking & Navigation	-160 dBm	-160 dBm
Reacquisition	-160 dBm	-160 dBm
Cold Start	-140 dBm	-144 dBm
Horizontal Position Accuracy	< 3.5 m (CEP)	< 2.5 m (CEP)
Time Pulse Signal Accuracy	< 300 ns (99%)	< 60 ns (99%)
Output Rate		1 Hz
Antenna Gain	30 dB	30 dB
Electrical		
Power Supply		8-12 VDC (5V for TTL output)
Current		< 100 mA
Output		
Format		RS232 or RS485 or TTL
Baud rate		9600
Data bits		8
Parity		None
Stop bits		1
Mechanical		
Dimension	48 (L) x 33 (B) x 15 (H) mm	
Weight	< 50gm	
Operating Temperature	-10 to +70 °C	
Storage Temperature	-20 to + 85°C	

<sup>1</sup> All satellites at -130 dBm

Note: Specifications are subject to change without notice due to continuous development.

## COMMUNICATION PROTOCOL

Format: RS485 or RS232 or TTL  
Baud rate: 9600  
Data bits: 8  
Parity: None  
Stop bits: 1

## DATA FORMAT

The device is available with following data options.

### NMEA SENTENCES

NMEA-0183 Messages: **GPGGA, GPGLL, GPGSA, GPGSV, GPRMC, GPVTG**

### TIME FORMAT

The time data transmitted on the RS485 differential lines or RS232 in ASCII format is as follows:

**“ARN-SGPS>hh:mm:ss\r\n”**

Where, ARN-SGPS> is header, followed by hh - hours, mm - minutes, ss - seconds and carriage return and line feed characters.

### DATE & TIME FORMAT

The Date & Time data transmitted on the RS485 differential lines or RS232 in ASCII format is as follows:

**“ARN-SGPS>DD:MM:YYYY:hh:mm:ss\r\n”**

Where, ARN-SGPS> is header, followed by DD - day, MM - month, YYYY - year, hh - hours, mm - minutes, ss - seconds and carriage return and line feed characters.

### POSITION & TIME FORMAT

**“ARN-SGPS>DDD,MM.SSSS,N,DDD,MM.SSSS,E,AAA,hh:mm:ss/r/n”**

Where, ARN-SGPS> is header, followed by DDD - latitude in degrees, MM - minutes, SSSS - fraction of minutes, N - North (or S - South), DDD - longitude in degrees, MM - minutes, SSSS - fraction of minutes, E - East (W - West), AAA - altitude, hh - hours, mm - minutes, ss - seconds and carriage return and line feed characters.

A packet of one of the above formats can be received from the device once every second.

The above formats are factory selectable. User must choose from one of these formats before ordering. Customized formats are also possible as per user requirement. Call us to know more.

**ORDERING INFORMATION**

The ARN-SGPS100 and ARN-SGPS500 modes are available with different communication protocols and data formats. Select type and data output format from following options.

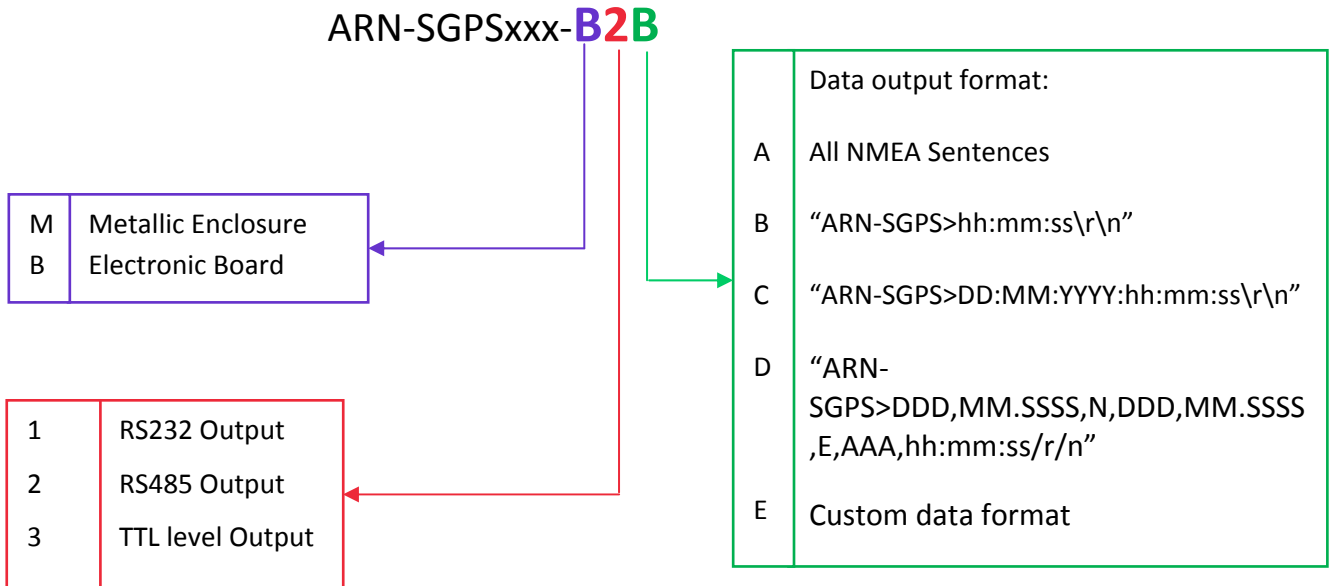


Figure 1: ARN-SGPS-Mxx with metallic enclosure



Figure 2: ARN-SGPS-Bxx electronic board with RS232 or RS485 output



Figure 3: ARN-SGPS-Bxx electronic board with TTL output

**ORDERING PROCEDURE**

Very simple, Just Call us at +91- 20- 4009 7127 / 5 or write us an email [sales@aeronsystems.com](mailto:sales@aeronsystems.com)

**FREQUENTLY ASKED QUESTIONS**

**Q:** Can this device be used inside a building?

**A:** The device can be installed inside the building, however antenna should be placed at such a place that it has clear view of sky. In some cases, ARN-SGPS has been found working indoor when antenna is close to a window or door. Therefore, it is possible to install ARN-SGPS and antenna indoor, however the testing need to be done at site.

**Q:** What happens if because of cloud cover satellite signal is lost? Does the device give time or not?

**A:** In case satellite signal is lost ARN-SGPS gives time data output continuously with the help of an onboard Real Time Clock (RTC). As soon as the satellite signal is restored, GPS takes over the time.

**Q:** Does the device has onboard backup battery?

**A:** No, ARN-SGPS does not have backup battery. It needs external power supply.

**Q:** I want to send data to long distance, what configuration should I choose?

**A:** For long distance data transmission, ARN-SGPS with RS485 data output should be selected.

**Q:** Can I transmit data using your ARN-SGPS product.

**A:** No, ARN-SGPS can not transmit user data. It receives signal from satellite to calculate its position and time. Please look at our wireless data acquisition line of products.

**Q:** How can I interface ARN-SGPS?

**A:** The ARN-SGPS can be easily interfaced with micro-controllers for digital clock application. The communication protocols available are RS232, RS485 or TTL. It can also be interfaced directly with serial port of PC for quick operation. The data can be seen on *Hyper Terminal* program. The connection with PC is preferred for server time synchronization application.

**APPLICATIONS**

Figure 4: GPS synchronized Digital (LED) Clocks



Figure 5: GPS synchronized Analog Clocks



Figure 6: GPS synchronized Server



Figure 7: Delivery vehicle with GPS tracker

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