REB-12R & REB 2000 Series FAQ

1. How to switch from NMEA protocol to SiRF protocol for REB-12R and get the ID 2 message?
2. How to switch from NMEA protocol to SiRF protocol for REB-2000 series and get the ID 2 message?
3. How many parameters can be customized for REB-12R, REB-2000 series?
4. Is there any tools and test program for REB-12R and REB-2000 series GPS engine board?
5. How to configure and test TricklePower performance of REB-2000 series GPS engine boards?
6. What are the differences among REB-12R series?
7. What are the differences among REB-2000 series?
8. What kind of antenna can adapt to REB-12R and REB-2000 series?
9. Is there any technical specification of the REB-12R and REB-2000 series?
10. Is there any technical specification of the REB-12R and REB-2000 series?
11. Is there any GPS mouse, smart antenna provided with an antenna for portable device use?
12. How to update software of REB-12R series GPS engine board?
13. How to update software of REB-2000 series?
14. How to update software of Sapphire?

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1. How do I switch from NMEA protocol to SiRF protocol for REB-12R and get the ID 2 message?

Ans:

1. Please refer the "Set Serial Port Command" on page 16 of REB-12R operational manual (http://www.royaltek.com/eng/products/REB-12R.pdf) for switching from NMEA to SiRF protocol. For example, if want to change to SiRF binary 9600, 8, N, 1. The command is: $PSRF100,0,9600,8,1,0*0C
2. Please refer page 19 for "Calculating checksums for NMEA input".
3. After it switches to SiRF protocol, it will continuously output ID 2 message.

2. How do I switch from NMEA protocol to SiRF protocol for REB-2000 series and get the ID 2 message?

Ans:

1. Please refer the "Set Serial Port Command" on page 14 of REB-2000 series operational manual (http://www.royaltek.com/eng/products/REB-2000.pdf) for switching from NMEA to SiRF protocol. For example, if want to change to SiRF binary 9600, 8, N, 1. The command is: $PSRF100,0,9600,8,1,0*0C
2. Please refer page 17 for "Calculating checksums for NMEA input".
3. After it switches to SiRF protocol, it will continuously output ID 2 message.

3. How many parameters can be customized for REB-12R, REB-2000 series?

Ans:

RoyalTek provides tailor-made GPS engine boards for different requirements with the following optional parameters:

- Baud Rate: 4800, 9600, 19200,38400 bps
- SiRF protocol or NMEA output
- NMEA sentences and update rate: GPGGA, GPGSA, GPGSV, GPRMC, GPGLL, GPVTG. Output period is from 0 to 255 seconds respectively.
- DOPMask type: PDOP, HDOP, GDOP, None
- DOPMask: 0 ~ 255. Default 40.
- Power Mask: Default of REB-12R series is 30 dB. The default of REB-2000 series is 28dB.
- Elevation Mask: Default 7.5°
- Degrade mode: Default disabled.
- Trickle power: Default of REB-2000 series is 30% duty cycle, update rate 1Hz. REB-12R doesn't support trickle power mode. The trickle power limitation please refer to "REB-2000 series operation manual". http://www.tri-m.com/products/royaltek/manual/reb2000.pdf

4. Is there any tools and test program for REB-12R and REB-2000 series GPS engine board?

Ans:

Yes. It is evaluation kit: REV-2000. REV-2000 is the evaluation kit for Reb-12R1/2/6/8 and REB-2000/2100. And the evaluation kit for REB-12R7 and REB-2200 is still under building. Customer can use SiRFDemo.exe directly in PC to test REB-12R and REB-2000 with REV-2000.

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5. How to configure and test TricklePower performance of REB-2000 series GPS engine boards?

Ans:

Please refer to "REB-2000 series operational manual".
http://www.tri-m.com/products/royaltek/manual/reb2000.pdf

6. What are the differences among REB-12R series?

Ans:

The following is the comparison table of REB-12R series:

	REB-12R1	REB-12R2	REB-12R5	REB-12R6	REB-12R7	REB-12R30
Connector	20 pin header /Down	20 pin header /Down	20 pin header /Down	20 pin header /Down	20 pin header /Up	20 pin header /Down
RF Connector	Female MCX / Up	Female MCX /Up	Female MCX /Up	Female MCX /Up	Female MCX /Right	Female MCX /Right
Data Retention Power	Lithium	N/A	N/A	N/A	Super Cap.	Super Cap.
Voltage	5V±5%	5V±5%	5V±5%	5V±5%	5V±5%	3.3V±10%
Channels	12					
Frequency	L1, 1575.42MHz					
Protocol	NMEA 0183, GPGGA, GPRMC, GPGSA, GPGSV, GPGLL, GPVTG, 9600,8,N,1					
Maximum current	180mA					
Reacquisition time	0.1 sec.					
Hot start (average)	8 sec.					
Warm start (average)	38 sec.					
Cold start (average)	48 sec.					
Accuracy	25m CEP w/o S.A.					
Differential input	RTCM 104 DGPS					
Interface	TTL,9600,8,N,1					
Update Rate	1Hz					
Trickle power	N/A					
Operation Temperature	-40 ~ +85℃					
Storage Temperature	-55 ~ +100℃					
Operating Humidity	≦95% Non-condensing					
Maximum Altitude	18000m					
Maximum Velocity	515m/s					
Maximum Acceleration	4G					
Weight (g)	19.3					
Dimension (LxWxH)	71 x 41 x 7mm					

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7. What are the differences among REB-2000 series?

Ans:

	REB-2000	REB-2100
Dimension (LxWxH)	30 x 30 x 8 mm	40 x 31.5 x 6.5 mm
Connector	12 pin header /Down	
RF Connector	Female MMCX / UP	
Weight (g)	8.6	
Channels	12	
Frequency	L1, 1575.42MHz	
Protocol	NMEA 0183 GPGGA, GPRMC, GPGSA, GPGSV, GPGLL, GPVTG, 9600,8,N,1	
Voltage	3.3V±10%	
Maximum current	170mA	
Average current in trickle power mode	65mA	
Reaquisition time	0.1sec.	
Hot start (average)	8sec.	
Warm start (average)	38 sec.	
Cold start (average)	48 sec.	
Accuracy	25m CEP w/o S.A.	
Differential input	RTCM 104 DGPS	
WASS Demodulator	Yes	
Interface	TTL,9600,8,N,1	
Update Rate	1Hz	
Trickle power	30% duty cycle	
Operation Temperature	-40 ~ +85℃	
Storage Temperature	-40 ~ +85℃	
Operating Humidity	≦95% Non-condensing	
Maximum Altitude	18000m	
Maximum Velocity	515m/s	
Maximum Acceleration	4G	

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8. What kind of antenna can adapt to REB-12R and Reb-2000 series?

Ans:

The follows is the active antenna for Reb-12R series.

Part no.	Connector type	Cable	Cable Length	Cable color	Gain	Current
Mighty Mouse	FME	RG-174	5m	Black	25dB min.	12mA max.
Mighty Mouse II	FME	RG-174	5m	Black	28dB min.	12mA max.
Big Brother	FME	RG-174	5m	Black	30dB min.	28mA max.
Micro Skymaster	FME	RG-174	3m	Black	24dB min.	12mA max.
Skymaster	FME	RG-174	5m	Black	27dB min.	28mA max.

Note: The FME connector is a universal connector that has adaptors for almost all plugs.

9. Is there any technical specification of the REB-12R?

Ans:

Please refer to "REB-12R series operational manual" (Download from http://www.tri-m.com/products/royaltek/manual/reb12r.pdf).

10. Is there any technical specification of REB-2000 series?

Ans:

Please refer to "REB-2000 series operational manual"(Download from http://www.tri-m.com/products/royaltek/manual/reb2000.pdf).

11. Is there any GPS mouse, smart antenna provided with an antenna for portable device use?

Ans:

RGM-2100 is a GPS mouse or smart antenna that is combined with GPS engine board and patch antenna.

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12. How to update software of REB-12R series GPS engine board?

Ans:

1. Turn off the power.
2. Keep the **Select** pin high.
3. Turn on the power.
4. Run the SiRFProg.exe.
5. Select the Target Loader File. Select dltarget.s for REB-12R series.
6. Select the Target file that need to be programmed into flash memory. For example: Royaltek.s
7. Select the COM port. Keep the Baud rate at 9600 for REB-12R series.
8. Leave "Valid Current Target S/W (SiRF Protocol), Update Boot S/W, GPS2, Load Target Only" check box unasserted for Reb-12R series.
9. Click Upload to begin programming flash memory.
10. After finish uploading, turn off the power. Keep the **Select** pin open and turn on power. It will run the new program uploaded into flash memory.

13. How to update software of REB-2000 series?

Ans:

1. Turn off the power.
2. Keep the **Boot** pin high.
3. Turn on the power.
4. Run the SiRFProg.exe.
5. Select the Target Loader File. Select dlgsp2.bin for REB-2100.
6. Select the Target file that need to be programmed into flash memory. For example: Royaltek.s
7. Select the COM port. Keep the Baud rate at 19200 for REB-2000 series.
8. Please assert the GPS2 check box.
9. Click Upload to begin programming flash memory.
10. After finish uploading, turn off the power. Keep the **Boot pin** open and turn on power. It will run the new program uploaded into flash memory.

14. How to update software of Sapphire?

Ans:

1. Run SiRFDemo.exe.
2. Select "Action/Synchronize protocol and Baud rate" from menu. Wait for SiRFDemo.exe receives messages.
3. Select "Poll/Clock status" from menu. Sapphire will stop output messages and wait for new program.
4. Close SiRFDemo.exe
5. Run SiRFProg.exe
6. Select the Target Loader File. Select dlgsp2.bin for REB-2100.
7. Select the Target file that need to be programmed into flash memory. For example: Royaltek.s
8. Select the correct COM port. Keep the Baud rate at 19200 for REB-2000 series.
9. Please assert the GPS2 check box.
10. Click "Upload" to begin programming flash memory.
11. After finish uploading, turn off the power. It will run the new program uploaded into flash memory.

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