



## Jupiter 32 / 30

### Application Note

Saving and retrieving configuration data to Flash

Selectable User Profiles

#### Related documents

- SiRF Binary Protocol reference manual MN000314
- NMEA reference manual MN000315

## Saving and Retrieving Configuration Data to Flash

### Overview

The current settings of the Jupiter 32/30 will be stored in Flash memory upon a command from the user. All Jupiter 32 modules support this feature. This feature is available on Jupiter 30 if it contains Flash software version 2.0 or later. On Jupiter 30 receivers that do not have the Write to Flash feature, the configuration will revert to default values on powerup unless the battery backup feature is energised. The Jupiter 30 Flash software can be upgraded to the current version using SiRFFlash.

All parameters are written as a set. The Write to Flash command needs to be issued each time a parameter changes or the changes will not become permanent.

The following parameters can be stored and retrieved:

- Port A and B protocols
- Port A and B baud rates and frame formats
- NMEA per-message output rates and checksums
- SiRF Binary debug and raw tracker data output
- Datum
- Altitude hold mode, source and default
- Degraded mode and timeout
- DR timeout
- DOP mode and GDOP/PDOP/HDOP thresholds
- Elevation navigation mask
- Power navigation mask
- Static navigation mode
- Track smoothing mode
- TricklePower™ mode, on time and interval
- Push-to-Fix™ mode, period, maximum off and acquisition times
- DGPS source
- SBAS default PRN

### Writing to Flash

The module accepts NMEA or SiRF Binary messages. The protocols are defined in the *Navman NMEA Reference Manual* and the *SiRF Binary Protocol Reference Manual*. These documents describe the structure of the general commands.

#### NMEA Store to Flash Memory command

All relevant parameters are stored to Flash whenever the following NMEA sentence is received:

**\$PSRF198[\*CS] <cr><lf>**

#### SiRF Binary Store to Flash Memory command

All relevant parameters are stored to Flash whenever the SiRF Binary message with Message ID 198 is received. The payload has a length of 1 byte.

**A0 A2 00 01 C6 00 C6 B0 B3**

### Retrieving from Flash

At power-up, the unit will retrieve any configuration parameters stored in Flash and restore them as a set. Individual parameters can not be restored. Settings stored in battery backed memory are not over written.

To prevent parameters from being restored, drive the defaults pin a logic low.

Product	Defaults Pin
Jupiter 30	GPIO4 - Pin 25
Jupiter 32	GPIO15 Pad A5

**Table 1 - Power-up action**



Alternatively, select Poll then Software Version from the main menu.

In the example below, the version for Jupiter 30 is 2.0.

**Figure 2 - Verify Flash software version**

If the data streams by too quickly you can use the disconnect icon or the pause icon next to it to stop the output. The scroll bar in the Debug View window is also available to review the data history.

### Changing Configuration Parameters

Changing configuration parameters is accomplished by using the appropriate SiRFDemo menu and entering the new value. Table 1 lists all the parameters that can be written to Flash with a description of where they can be found in SiRFDemo. All parameters except Datum can be set SiRF Binary mode and SiRFDemo.

Parameter	SiRFDemo Location	Sub Menu Location
Port A and B protocols, baud rates and frame formats	Action	Set UART Configuration
NMEA per-message output rates and checksums	Action	Switch to NMEA Protocol (Alternatively NMEA msg. 103)
SiRF Binary debug and raw tracker data output	Action	Initialize data source, select Snap start, select both Messages types
Datum	can be set only with NMEA command Select Datum (106). See Navman NMEA manual.	NA
Altitude hold mode, source and default	Navigation	Mode Mask (Altitude hold mode)
Degraded mode and timeout	Navigation	Mode Mask (Degraded mode)
DR timeout	Navigation	Mode Mask (Dead Reckoning)
DOP mode and GDOP/PDOP/HDOP thresholds	Navigation	DOP mask
Elevation navigation mask	Navigation	Elevation mask
Power navigation mask	Navigation	Power mask
Static navigation mode	Navigation	Static navigation
Track smoothing mode	Navigation	Mode Mask
TricklePower mode, on time and interval	Action	Set Low Power
Push-to-Fix mode, period, maximum off and acquisition times	Action	Set Low Power
DGPS source	Navigation	DGPS source
SBAS default PRN	Navigation	SBAS control

**Table 3 - Setting Parameters Using SiRFDemo**

## Saving the Configuration Parameters to Flash

The changes to the parameters can be made permanent by writing them to Flash.

The parameters are written to Flash by selecting Transmit Serial Message from the Action menu.

The Write-to-Flash command is performed by using the appropriate NMEA or SiRF Binary command. The protocol wrapper determines the type of command that is sent.

The NMEA command written in the below example is *PSRF198*.

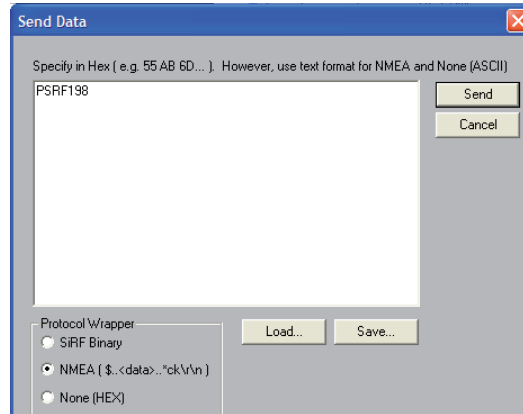


Figure 3 - Writing changes to Flash

## Reading the Configuration Parameters from Flash

The parameters that are stored in the GPS receiver are read by SiRFDemo and displayed as the actual parameters in Flash. No other intervention is required. The Poll menu contains commands for viewing some of the parameters. Default parameters are shown in the table below.

Parameter	Default Values
Port A and B protocols	NMEA - Press set defaults
Port A and B baud rates and frame formats	9600 baud
NMEA per-message output rates and checksums	Switch to NMEA - Press set defaults
SiRF Binary debug and raw tracker data output	Factory Reset, Initialize data in battery backup RAM
Datum	WGS84
Altitude hold mode, source and default	automatic, last computed altitude
Degraded mode and timeout	disabled; timeout: 30
DR timeout	5 seconds
DOP mode and GDOP/PDOP/HDOP thresholds	'Do not use'
Elevation navigation mask	5 degrees
Power navigation mask	12 CNO
Static navigation mode	Disabled
Track smoothing mode	Disabled
TricklePower mode, on time and interval	Update rate=1s, On time=200 ms, maximum on time=30 000, maximum search=300 000
Push-to-Fix mode, period, maximum off and acquisition times	Max acq time= 120000 ms Max off time= 30 000 ms
DGPS source, mode, timeout	None, Auto, 0 seconds
SBAS default PRN	SBAS PRN= enabled

Table 4 - Default Values

## Selectable User Profiles

### Overview

The purpose of this feature is to provide some typical application profiles which users can select through a simple NMEA message. These profiles are macro-like commands that modify parameters used for common applications. These profiles produce optimal navigation settings which conform specifically to an application's requirements. They can be then be saved using the Write to Flash feature. The new profile will not be written to flash automatically.

Available Profiles and the parameters modified:

**Default - A general profile that balances the needs of most applications. (see Note on restoring)**

- Static Nav Off
- Track Smoothing Off
- DR Timeout 5s
- Degraded modes Off
- All other parameters as per existing defaults

**Automotive - Takes into consideration higher velocities with occasional stopping.**

- Static Nav On
- Track Smoothing Off
- DR Timeout 0s
- Degraded modes Off
- All other parameters remain unchanged

**Pedestrian - Takes into consideration slower velocities.**

- Static Nav Off
- Track Smoothing On
- DR Timeout 0s
- Degraded Modes Off
- All other parameters remain unchanged

**TricklePower - Power saving mode for battery applications. See Low Power Operating Modes Application Note LA000513**

- Adaptive Trickle Power On, with 200ms On time, 20% Duty cycle (1Hz update)
- RMC and GGA messages every second, GSV one every 5s, all other NMEA messages off
- Static Nav On
- DR Timeout 0s
- Degraded Modes Off
- All other parameters remain unchanged

**NOTE:** If the application requires extra NMEA messages, the baud rate should be increased to at least 38400 to keep power consumption low.

**Push to Fix - Only performs a fix when requested. For use in special applications. See Low Power Operating Modes Application Note LA000513**

- Push to Fix enabled with default settings
- Static Nav On
- DR Timeout 0s
- Degraded Modes Off
- RMC, GGA and GSV messages every second, all other NMEA messages off
- All other parameters remain unchanged

## Command

The profiles will be selected by an NMEA command `$PSRF197,n`, where *n* is the profile number:

1. Automotive
2. Pedestrian
3. TricklePower
4. Push to Fix

**NOTE:** The Default profile can only be selected through the Master Factory Reset command. This will restore ALL configurable parameters to their factory defaults as shown in Table 2.

After setting the profile, the receiver will respond on success with the message:

`$PTTK,CONFIG,SET,n`

or `$PTTK,CONFIG,SET,ERROR` on failure.

If the requested configuration does not exist, the receiver will respond with the message:

`$PTTK,NACK`

**NOTE:** It is up to the user to configure the settings they want and write them to flash if the profile is to be saved.

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