FreeEMS Serial Protocol – IFreeEMS Vanilla

Version 0.0.2 - 22th December 2008. (Draft proposal)
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WARNING THIS DOCUMENT IS NOT UP TO DATE!!

Foreword

This document is based on and assumes knowledge of the FreeEMS Serial Protocol – Core document.

The purpose of this document is to define the application functionality and payload data formats for communicating with FreeEMS Vanilla. Not all devices will support all functions, either because they have limited functionality (a display device for example), or because the software versions may differ. Where logging/debug facilities are available, the payload type of unrecognised packets should be noted before discarding them.

Payload Type Definitions

Payload ID functions and descriptions :

ID	Name	Type	Size	Description And Format
4	Get Ram Block	Request	2	Payload is 16 bit location ID
5	Ram Block	Response	Any	Payload is block of ram. If the block is a main table it is preceded by 3 16 bit maximum values RPM, Load, Main.
6	Get Flash Block	Request	2	Payload is 16 bit location ID
7	Flash Block	Response	Any	Payload is block of flash. If the block is a main table it is preceded by 3 16 bit maximum values RPM, Load, Main.
8	Test Flash Burn	Command	0	Causes a block of flash at 0x7C00 to be replaced with the code from 0xC000 for testing.
*	Acknowledgement	Response	9	Flash burn currently sends a protocol debug packet saying "Burn Ran!"
100	Test Cell Change	Command	0	This should replace the 0x0 cell with 32768
*	Error Packet	Response	2	Unimplemented function error
102	Test RPM Change	Command	0	This should replace the 0th rpm axis value with zero
*	Error Packet	Response	2	Unimplemented function error
104	Test Load Change	Command	0	This should replace the 0th load axis value with zero
*	Error Packet	Response	2	Unimplemented function error

NOTE, all unlisted Ids produce undefined behaviour. Although this should be fairly accurate for the current release (0.0.17) and associated interface version 0.0.1 IfreeEMS Vanilla, it is 100% certainly going to change and evolve in the next version and others there after.

Main table structure is as follows :
```
unsigned short RPMLength
unsigned short LoadLength
unsigned short RPM[MAINTABLE_MAX_RPM_LENGTH]
unsigned short Load[MAINTABLE_MAX_LOAD_LENGTH]
unsigned short Table[MAINTABLE_MAX_MAIN_LENGTH]
```

Where the maximums are taken from the fields preceding the table itself as described in the definition above.

ID : Payload ID number which uniquely identifies the purpose and format of the data contained in the payload.

Type Key :

- Request – A message sent from a tuning device or similar to an embedded device or similar. Typically PC > EMS
- Response – The reply to a request from an embedded device or similar to a tuning device or similar. Typically EMS > PC
- Command - A message sent from a tuning device or similar to an embedded device or similar. Typically PC > EMS
- Assertion - A message sent from an embedded device or similar to a tuning device or similar. Typically EMS > PC

Size : Payload size is in bytes from end of header to beginning of checksum.