

# Fan Controller Communications Protocol

Geoff Graham (<http://geoffg.net>)

The Fan Controller implements a serial interface over USB and sends and receives data in strings of ASCII data. The serial characteristics are 9600 baud, 8 bits data, 1 stop bit and no parity.

Each string consists of a leading three letter signature (uppercase only) followed by a number of comma separated numeric values. The complete string is terminated with a Carriage Return and Line Feed combination.

## One second status update:

FCD,01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16<CR><LF>

This is automatically sent by the controller to the computer every second without prompting by the computer. Receiving this string indicates that there is a working Fan Controller on the other end of the serial interface.

The data string consists of the following:

- 01 = Sensor A measured temperature (in °C)
- 02 = Sensor B measured temperature (in °C)
- 03 = Sensor C measured temperature (in °C)
- 04 = Sensor D measured temperature (in °C)
- 05 = Buck converter output for Fans 1A, 1B (in the range of 0 to 100)
- 06 = Buck converter output for Fans 2A, 2B (in the range of 0 to 100)
- 07 = Buck converter output for Fans 3A, 3B (in the range of 0 to 100)
- 08 = Buck converter output for Fans 4A, 4B (in the range of 0 to 100)
- 09 = Fan 1A tachometer output in RPM
- 10 = Fan 1B tachometer output in RPM
- 11 = Fan 2A tachometer output in RPM
- 12 = Fan 2B tachometer output in RPM
- 13 = Fan 3A tachometer output in RPM
- 14 = Fan 3B tachometer output in RPM
- 15 = Fan 4A tachometer output in RPM
- 16 = Fan 4B tachometer output in RPM

## Request current configuration:

FCQ<CR><LF>

This is a command from the computer to the controller. The controller will respond with the current configuration (see below for the response)

## Listing of the current configuration:

FCR,01,02,03,04,05,06, ... ,30,31,32<CR><LF>

This is a response from the controller to the computer to a FCQ command. The data is a listing the current configuration (stored in eeprom).

The data string consists of the following:

- 01 = Temperature sensor A type (0 = not connected, 1 = use °C, 2 = use °F)
- 02 = Temperature sensor B type (0 = not connected, 1 = use °C, 2 = use °F)
- 03 = Temperature sensor C type (0 = not connected, 1 = use °C, 2 = use °F)
- 04 = Temperature sensor D type (0 = not connected, 1 = use °C, 2 = use °F)

05 = Fan 1: Minimum power (zero to 100) required to keep the fan spinning  
06 = Fan 1: Temperature sensor controlling the fan (see below).  
07 = Fan 1: Temperature for minimum speed (in °C)  
08 = Fan 1: Temperature for maximum speed (in °C)  
09 = Fan 1: Allow fan to be completely stopped. YES = 1, NO = 0  
10 = Fan 1: Type of fan A (0 = not connected, 1 = 2 wire, 2 = 3 wire x1 tacho, ..., 5 = 4 wire)  
11 = Fan 1: Type of fan B (0 = not connected, 1 = 2 wire, 2 = 3 wire x1 tacho, ..., 5 = 4 wire)

The last 7 entries are repeated for Fan 2 (entries 12 to 18), Fan 3 (entries 19 to 25) and Fan 4 (entries 26 to 32).

The values for the temperature sensor controlling the fan are:

1 = Sensor A  
2 = Sensor B  
3 = Sensor C  
4 = Sensor D  
5 = Sensor A - Sensor D  
6 = Sensor B - Sensor D  
7 = Sensor C - Sensor D  
8 = Manual control (in that case the minimum power entry controls the speed of the fan)

### **Set configuration:**

FCS,01,02,03,04,05,06, ... ,30,31,32<CR><LF>

This is a command from the computer to the controller that sets the current configuration. The controller will store this data in eeprom and immediately start using it as the current configuration. The data string is exactly the same as that used in the FCR response listed above.

Minimal checking is done by the controller. The controller will respond with:

ERR: <string received><CR><LF>

or

FCA<CR><LF>

The last indicates that the data was received OK.