**FanBus Protocol Revision 2.0**

FanBus is a half-duplex serial protocol for low-speed communication to addressable devices inside a computer case. The protocol is designed to operate PC fan controllers, light controllers, front panel units, and other case mod devices. It is designed to be compatible with RS-232 serial port standards and can use a simple adapter to connect to the PC's serial port.

Electrical Characteristics

FanBus is a half-duplex, one wire serial interface that can connect multiple slave devices to one master device. Typically, the master device is the PC. The one serial interface line idles at +5 volts and is pulled low for transmission. The master device is responsible for pulling the serial interface line high, generally through a 1K ohm resistor. The transmission is done by using a diode on the Tx pin to pull the line low. A simple serial-to-FanBus adapter may be built using a MAX232 (or equivalent) RS-232 level shifter, a diode, and a 1K resistor.

Software and Protocol Specifications

The protocol is designed to reliably control multiple devices over a single line. To do this, each device must be programmed with an address. The global call address (0x80) may be used to address all devices at once. When in global call mode, devices will not send a reply to any commands. This prevents interference from multiple devices trying to communicate at once. To program an address into a device, all other devices must be disconnected from the bus. The baud rate is 38400. There is no parity, 8 data bits, and one stop bit.

The 7th bit of each byte (the MSB) is the address flag bit. When set, the byte is considered an address, otherwise it is considered a data byte. Each message must start with an address. This address byte is used to select which device to send the message to. If the address byte is 0x80 (0x00 with the 7th bit set), the message is a global call and will be acted upon by all devices on the bus.

The second byte of each packet is the opcode, or operation byte. This byte contains the instruction for the device to perform. A list of opcodes is provided in this document. The 5th and 6th bits of the opcode represent frame size, or the number of data bytes in the message. These are shown in the table below.

|  |  |
| --- | --- |
| 00 | 1 Data Byte |
| 01 | 1 Data Byte |
| 10 | 2 Data Bytes |
| 11 | 4 Data Bytes |

The FanBus protocol may be used differently by different types of devices. However, there are a set of common commands that all FanBus devices must support. These commands are used for identification, addressing, and setup purposes. They are shown on the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Opcode | Command | Global? | Arguments | Description |
| 0x00 | No Operation | Yes | None | Nothing happens |
| 0x01 | Ping | No | None | Returns Device Address |
| 0x02 | Device ID | No | None | Returns Device ID |
| 0x03 | Device Type | No | None | Returns Device Type |
| 0x04 | Device Name | No | None | Device returns its name string |
| 0x05 | Software Reset | No | None | Device resets itself |
| 0x40 | Set Address | Yes | <New Address> | Device sets its address to <New Address> |