**Ibis Communication Protocol**

**Packet Structure**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Start Byte (0xA5) | Protocol Version (0x00) | Length | Command | Payload | Checksum |
| 1 Byte | 1 Byte | 1 Byte | 1 Byte | Variable | 1 Byte |

**Protocol Version**

Currently only version 0x00 is supported.

**Length**

The length of the payload portion of the packet.

**Checksum**

The 8-bit sum of the bytes, not including the start bytes nor the checksum itself.

**Commands**

**Read Settings**

Command: 0x01

**Write Settings**

Command: 0x02

**Sample Data (low-speed)**

Command: 0x10

Packet Payload:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Timestamp  (ms) | Time between samples (ms) | Channel Bitmask | Number of Samples | Channel 1  Sample 1 | Channel X  Sample 1 | … | Channel 1  Sample Y | Channel X Sample Y |
| 4 Bytes | 2 bytes | 1 Byte | 1 Byte | 4 Bytes | 4Bytes | … | 4 Bytes | 4 Bytes |

Description:

This packet is sent periodically as samples are read.

|  |  |
| --- | --- |
| **Field** | **Description** |
| Timestamp (ms) | The time in milliseconds of the first sample in this packet, relative to processor bootup. This number will wrap in around 50 days. |
| Time between samples (ms) | The time in milliseconds between each sample. |
| Channel Bitmask | Indicates which analog channels are being sent:  Bit 0: Analog channel 0  …  Bit 7: Analog channel 7  For descriptive purposes, the total number of channels will be called X |
| Number of samples | The number of samples per channel.  For descriptive purposes, the number of samples per channel will be called Y |
| Channel 1 Sample 1 | The first sample of channel 1 for this packet |
| Channel X Sample 1 | Subsequent channels (2 through X) will be located here, for the first sample |
| Channel 1 Sample 2 | The second sample of channel 1 for this packet |
| Channel X Sample 2 | Subsequent channels (2 through X) will be located here, for the second sample |
| Channel 1 Sample Y | The Yth sample of channel 1 for this packet |
| Channel X Sample Y | Subsequent channels (2 through X) will be located here, for the Yth sample |