

**AFE4400 and AFE4490
SPO2 Front End Demonstration Kit**

Message Communication Protocol



Message Communication Protocol for AFE44x0SPO2EVM

This document describes the message communication protocol for AFE4400 / AFE4490 EVM.

Command Format

1. Write Register Command

PC to EVM: 0x02 <2 bytes of ASCII addr with MSB first> <6 bytes of ASCII data with MSB first> 0x0D
e.g, to write a value of 0x456789 to address 0x12, message format is
"0x02 0x31 0x32 0x34 0x35 0x36 0x37 0x38 0x39 0x0D"

2. Read Register Command:

PC to EVM: 0x03 <2 bytes of ASCII addr with MSB first> 0x0D
EVM to PC: 0x03 0x02 <3 bytes of raw data with LSB first> 0x03 0x0D

3. Start Read ADC Register Command:

PC to EVM: 0x01 0x2A <2 ASCII bytes of N packets expressed as log base 2 with MSB first> 0x0D
Example: to capture 1024 packets (log base 2 of 1024 is 0x0A), PC sends: "0x01 0x2A 0x30 0x61 0x0D"

EVM sends N packets with each packet having the following format:

EVM to PC: 0x01 0x02 <18 bytes of 6 channel data with LSB first> 0x03 0x0D

4. Stop Read ADC Register Command:

PC to EVM: 0x06 0x0D

Note: Clear the USB/ COM port buffer before a Start Read ADC Register command is issued.

5. Device Identification Command:

PC to EVM: 0x04 0x0D
AFE4400SPO2EVM to PC: 0x04 0x02 0x34 0x34 0x30 0x30 0x03 0x0D
AFE4490SPO2EVM to PC: 0x04 0x02 0x34 0x34 0x39 0x30 0x03 0x0D

6. Firmware Upgrade Command:

PC to EVM: 0x05 0x0D

After the GUI issues the command, the PC invokes user interactive executable to upgrade the firmware.

7. Firmware Revision Command:

PC to EVM: 0x07 0x0D
EVM to PC: 0x07 0x02 FW_MAJOR FW_MINOR 0x03 0x0D
E.g., for rev 1.2,
FW_MAJOR 1
FW_MINOR 2