



AOD Amplifier Software Programming Guide

Overview:

The AOD Amplifier allows remote control and monitoring via either an Ethernet or USB connection. Once a connection is made to the amplifier using one of these interfaces, all command and control is the same regardless of which interface is used.

USB Interface:

In order for Windows to recognize the AOD Amplifier USB port the USB driver must first be installed, after which the AOD Amplifier appears as an additional COM port on the computer. Currently Windows XP, Vista, 7, and 8 are supported. Windows 7 requires the extra step listed below; Windows 8 requires additional steps which can be found in the following application note:

<http://www.spectronixinc.com/Downloads/Installing%20Under%20Windows%208.pdf>

1. Copy the file "cdc_NTXPV764.inf" from the supplied CD to the hard drive.
2. Plug the AOD Driver into a free USB port. When the hardware installation wizard asks for the driver location, browse to the "cdc_NTXPVista.inf" file on the hard drive.
3. After the driver has been installed right click "my computer" and select "properties". In the properties window select the "hardware" tab. Click on "device manager" and expand the "Ports (COM & LPT)" item. Locate the "Spectronix, Inc." entry and note the assigned COM number, (ie "COM4"). This is the COM port that the software will use to communicate with the AOD Amplifier.

Note, on some operating systems such as Window 7, manual USB driver installation may be necessary. If the hardware installation wizard fails, go to "My Computer" > "Properties" > "Hardware" > "Device Manager", and find the "Spectronix" or "SERIAL DEMO" entry under "Other Devices" and select "Update Driver". At this point you will be able to browse to the location of the driver.

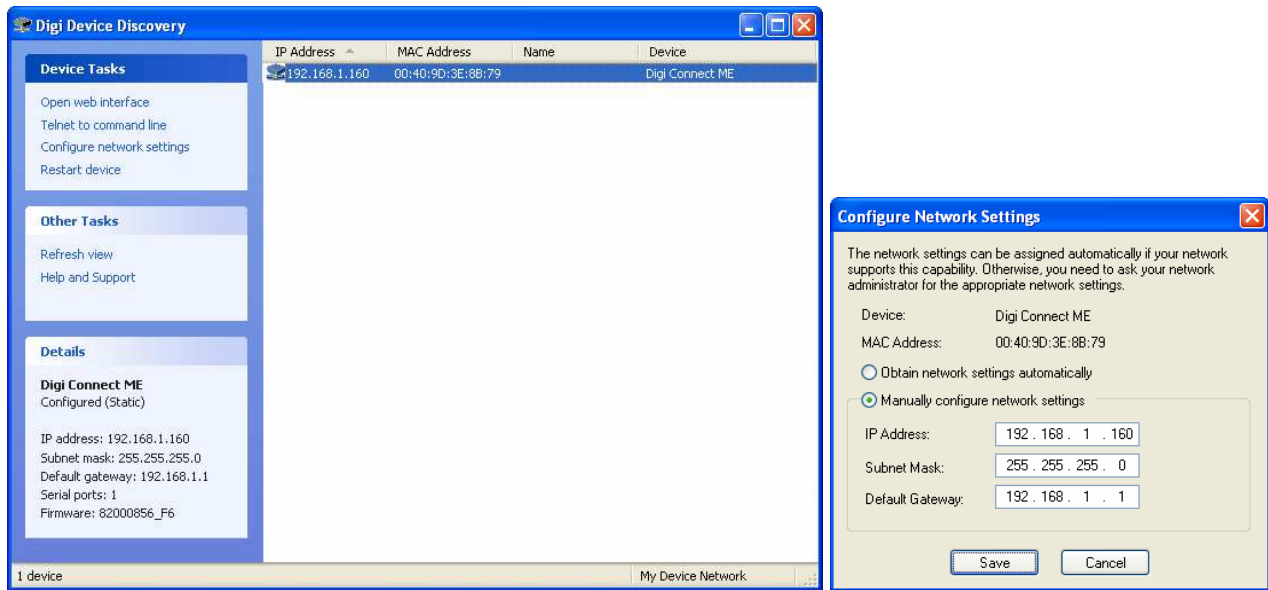
Ethernet Interface:

The AOD Amplifier communicates using TCP/IP on port number 2101 and is shipped with a default IP address of 192.168.1.162.

Changing the IP Address

The Digi Device Discovery utility allows the user to retrieve and change the AOD Amplifier IP address. The installation program "40002265_G.exe" can be found on the Spectronix or Digi web sites.

After installing the utility, disable Windows Firewall and any other virus or firewall programs and start the program. The program will report the IP and MAC addresses of all compatible devices on the network. Right click on the device and select "Configure Network Settings" to change the network settings.



Updating the Firmware:

It is possible for the user to update the AOD Driver firmware over the Ethernet port using the Spectronix Bootloader application which can be found on the included CD or downloaded from the Spectronix web site. With the unit powered off press and hold the recessed programming button while turning on the main power switch, the LED will turn solid red. Follow the bootloader user's manual for instructions on loading the firmware. During programming the LED will rapidly flash.

Commands:

The AOD Amplifier uses ASCII data to communicate with a host computer; the tables below list the individual commands, parameters, and responses from the AOD.

Notes:

1. All communication is initiated by the host.
2. Commands are not case sensitive.
3. A space or equal sign should be inserted between the command and any parameters.
4. All commands should be terminated with a <CR> <LF>.
5. Responses from the AOD Driver are initiated with >0x00> and terminated with <CR> <LF> <0xFF>.

| Get Unit Information and driver status | |
|--|--|
| Command: | Example / Parameters: |
| "?" | (none) |
| Response: | Example / Parameters: |
| Start of message | <0x00> |
| Command echo | ?, |
| Unit name | 100435A , (<i>100449A for firmware rev 0.2 and below, 100473A for lower power 1U model</i>) |

| | |
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| Firmware Rev | 000.000, |
| Termination | CR / LF <0xFF> |
| Notes: | |

| Get the chassis status and settings | |
|-------------------------------------|---|
| Command: | Example / Parameters: |
| "Status" | (none) |
| Response: | Example / Parameters: |
| Start of message | <0x00> |
| Command echo | Status, |
| Over Power Limit | 040, (0:100 W*10: each output) |
| Cell Over Temp Limit | 060, (0:255°C) |
| Driver Over Temp Limit | 060, (0:255°C) |
| RF On | 1, (0= RF off, 1= RF on) |
| Linearity Setting | 050, (0:100%) Higher setting = more power dissipation |
| CHA Gain | 040, (0:63: 0.5dB steps) |
| CHB Gain | 041, (0:63: 0.5dB steps) |
| CHC Gain | 040, (0:63: 0.5dB steps) |
| Termination | CR / LF <0xFF> |
| Notes: | |

| Read the current measurements | |
|-------------------------------|------------------------|
| Command: | Example / Parameters: |
| "Meas" | (none) |
| Response: | Example / Parameters: |
| Start of message | <0x00> |
| Command echo | Meas, |
| Alarm | 0, (0=normal, 1=fault) |
| Cell Temp A | 0553, (°C*10: 0:9999) |
| Cell Temp B | 0519, (0:255°C) |
| Driver Temp | 0462, (0:255°C) |
| RF Power CHA | 036, (0:255 W*10) |
| RF Power CHB | 037, (0: 255 W*10) |

| | |
|--------------|--|
| RF Power CHC | 037 , (0: 255 W*10) |
| Termination | CR / LF <0xFF> |
| Notes: | If the Cell temperature is equal to 255, the thermistor is either open, shorted, or the temperature is negative. |

| Set the maximum output power | |
|------------------------------|--|
| Command: | Example / Parameters: |
| "SetMaxP" | 040 , (0:100 W*10: each output) |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | Setting this to zero temporarily disables the overpower limit protection. The overpower protection is always enabled after a power up. |

| Set the maximum cell temperature | |
|----------------------------------|------------------------|
| Command: | Example / Parameters: |
| "SetMaxCellT" | 060 , (0:255°C) |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | |

| Set the maximum driver temperature | |
|------------------------------------|------------------------|
| Command: | Example / Parameters: |
| "SetMaxDrvT" | 060 , (0:255°C) |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | |

| Set the gain of each channel | |
|------------------------------|--------------------------------------|
| Command: | Example / Parameters: |
| "SetGain" | "0" (channel 0:2) |
| | "40" (gain 0-63, 0.5dB steps) |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | |

| Turn the RF amplifiers on/off | |
|-------------------------------|----------------------------|
| Command: | Example / Parameters: |
| "SetRF" | "1" (0= off, 1= on) |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | |

| Set the RF power amplifier linearity | |
|--------------------------------------|---|
| Command: | Example / Parameters: |
| "SetLin" | "85" (1:100%) |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | Linearity settings are 1:100%, the higher the setting the better the driver linearity and the higher the power dissipation. |

| Calibrate the RF output power reading | |
|---------------------------------------|--------------------------------------|
| Command: | Example / Parameters: |
| "Calibrate" | "0" (channel 0:2) |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | Assumes a current output power of 2W |

| Reset faults | |
|-------------------|-----------------------|
| Command: | Example / Parameters: |
| "Reset" | |
| Response: | Example / Parameters: |
| Termination / ACK | <0xFF> |
| Notes: | |

Revision Log:

| Revision | Date | Comments |
|----------|-----------|--|
| 0.0 | 1/5/2017 | <ul style="list-style-type: none">• Initial release |
| 0.1 | 3/15/2017 | <ul style="list-style-type: none">• Added 0xFF response to all commands• Added the ability to disable over temperature fault• Added auto-port finder |
| 0.2 | 5/25/2017 | <ul style="list-style-type: none">• Increased temperature resolution to 1 decimal point |
| 0.3 | | <ul style="list-style-type: none">• Not released |
| 0.4 | 8/10/2018 | <ul style="list-style-type: none">• Support for lower power 1U model (100473A) |