Altronic MOD+ Module
Downloading an EtherNet/IP Personality profile to the MOD+

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MOD+ General

The Altronic MOD+ Ethernet Interface Module is designed to communicate to Modbus RTU enabled products. It acts as a Modbus Master and converts the Modbus RTU register data from the connected product into either Ethernet/IP or Modbus/ TCP formats. Ethernet/IP is intended to talk to Allen Bradley RS-5000 ControlLogix and CompactLogix PLC's or equivalent. Modbus/TCP is intended to communicate to other PLC's and PC's that talk Modbus over Ethernet. The protocol can be selected by the on-board web page. The MOD+ has one RS485 Modbus Master port to allow it to be connected to one Modbus RTU slave device on the connected Altronic Product. It has an integral Ethernet communications port.

When the MOD+ is used in the Modbus/TCP mode it acts as a protocol converter. It converts Modbus RTU data to Modbus/TCP/IP. When used in this mode it acts strictly as a converter; it does not require a specific Personality profile.

In Ethernet/IP mode the MOD+ uses a specific personality configuration file that is specific to the Altronic Product that it will communicate with to convert the data into the Ethernet/IP protocol. The personality profile consists of a file (a CIP.lib file) that is loaded into the MOD+ via the Ethernet port. The personality is responsible for reporting the device identity, IO tables, and objects (Vendor specific, key command, etc.) that can be exercised in a SCADA environment.

All MOD+ modules ship with a profile from the factory. Depending on how it was ordered, the profile will either match the Altronic Product that it has been paired with, or have a generic profile. If the MOD+ has a specific profile loaded matching an ALtronic Product it will be labeled as such on the outside of the MOD+. If the MOD+ has a generic profile loaded from the factory it defines no objects, has a single INT in both the Input and Output assemblies, and has no Configuration assembly. This profile identifies itself as "PLCPlus" with a device product code of 00001. The MOD+ can be "field" programmed. Following is the procedure for "field" programming the personality profile.

Procedure to load a specific personality profile (CIP.lib) file to the MOD+ Module

I. **This process uses Telnet and TFTP to download the CIP.lib file.**

    Note: Windows does not enable Telnet and TFTP Clients by default during installation. If they are not enabled see Appendix A below for information on how to enable Telnet and TFTP services.

II. **Locate the desired CIP.lib personality file.**
    The file can be found on the Altronic website.

    Note: For simplification each of the different personality profile files have the same file name, CIP.lib. Each CIP.lib file will be available as a different zipped file. The zipped file will be named appropriately with the product name and product code in the file name according to

the specific application. For example the MOD+/MTB personality zipped file will be named MOD+_MTB_201101.zip.   When unzipping the personality profile to your computer save it to a separate folder, otherwise the current CIP.lib file will be overwritten.

III. Connect and Power the MOD+ Module:

Connect the MOD+ to the network. Power the MOD+ Module with a nominal 24 Vdc.

Note: See Appendix B below for help with establishing an Ethernet connection from the MOD+ to the PC.

IV. Disable Write Protection:

The MOD+ ships from the factory in a "write protected" state to prevent unintentional or accidental corruption to the internal file structure. Write protection must be disabled before the CIP file can be loaded. Use telnet to disable write protection. To disable the write protection:

1. From the Windows desktop, click *Start* and then select *RUN*.
2. Establish the connection by typing: *telnet 10.1.100.100* (see note below)
3. Log into the device by typing the username and password
   a. Login: *330*
   b. Password: *Altr0n1c*   note: the A is uppercase, the 0 is a zero, and the 1 is a one
4. Once logged in enter the following command: *write enable*
5. Do not close the session, it will be used again below to turn write protect back on.

Note: The MOD+ comes from the factory with a default IP Address of 10.1.100.100. Use the current IP address if it has been changed or reset the IP address to the default.

V. Download the new Personality File via TFTP:

The personality file is called "cip.lib". When write protection is disabled the local file system becomes accessible via TFTP.

1. From the Windows desktop, click *Start* and then select *RUN* and type *cmd* and lick OK to proceed.
2. Change the directory to the one that contains the cip.lib to be downloaded.
3. Download the file using the following command: *tftp -i 10.1.100.100 PUT cip.lib* (the ip address of MOD+)
4. Close the TFTP session.

VI. Re-enable the Write Protection and Reboot the Unit:

Once the file has been downloaded, write protection must be re-enabled.

1. Use the telnet session opened above and enter the command: *write protect*
2. Reboot the unit by entering the command: *reset*

The system will reboot and the session will close. At this point, close the telnet window. The unit will complete its boot-up cycle and the status LED will begin its normal blink pattern.

Appendix A

How to enable Telnet and TFTP services on your PC.

1. Windows does not enable Telnet and TFTP Clients during installation.
2. To enable them, open Control Panel >
3. Programs and Features >
4. Click Turn Windows features On or Off in left side >
5. Enable Client Telnet and Client TFTP then click in OK.

Appendix B

How to establish an Ethernet connection to the MOD+ Module.

These instructions summarize the basic steps to allow you to connect an Altronic MOD+ module to your Personal Computer (PC) or laptop.

To connect a PLC+ Module to your PC, either temporarily change the TCP/IP configuration of your existing network adapter or create a separate private network using a second network adapter to build a private network. The necessary steps to accomplish this will vary with your operating system, but are outlined below for Windows based computers.

You must have a PC with at least one Network Interface Card (NIC) installed.

•   IP Address 10.1.100.100 is the default factory IP address setting of all PLC+ Modules. It is also the address that the PLC+ Modules go to when the network settings are reset.

•   You must set the IP address of your network interface to an address of 10.1.100.x, where x is any integer from 1 to 254, except 100, in order to initially communicate with any PLC+ Module.

The IP address of your PC may be assigned dynamically and you will usually have no control over its address. To **Connect the MOD+ directly to the host PC** You must change the IP address on your PC to static, and to the same 10.1.100 address prefix as the MOD+ Module (see note B below). The MOD+ has a fixed IP address assigned to it from the factory. Its fixed IP address is 10.1.100.100. Follow the procedure below for Windows 7 Operating System:

1. From the Windows 7 desktop, click on the **windows** button in the lower left-hand corner, and then click on **Control Panel**.
2. Click on **View network status and tasks**.
3. Click on the **Local Area Connections** icon.
4. Click on the **properties** button.
5. Click on the **Internet Protocol Version 4 (TCP/IPv4)** item and click on the **properties** button.

6. Click on the **Use the following IP address** option.
7. Change the IP address to 10.1.100.XXX (for example **10.1.100.115** see note A below)
8. Change the **Subnet Mask** to **255.255.255.0.**
9. Click **OK** on the Internet Protocol Properties screen.
10. Click **OK** on the Local Area Connection Properties screen.
11. Click **Close** on the Local Area Connection Status screen.

Follow the procedure below for Windows XP Operating System:

1. From the Windows XP desktop, click on the **Start** button in the lower left-hand corner, and then click on **Control Panel**.
2. Double-click on the **Network Connections** icon.
3. Click on the network adapter and select **Change settings of the connection**.
4. Double-click on the **Internet Protocol (TCP/IP)** item.
5. Click on the **Use the following IP address** option.
6. Change the IP address to 10.1.100.XXX (for example **10.1.100.115** see note A below)
7. Change the **Subnet Mask** to **255.255.255.0**.
8. Click **OK** on the Internet Protocol Properties screen.
9. Click **OK** on the Local Area Connection Properties screen.
10. Click **Close** on the Local Area Connection Status screen.

Notes:
A. The leading portion of the IP address (10.1.100.XXX) represents the sub-network that we are creating for the MOD+ Module. The trailing portion (.XXX) represents the host/node number that you select. The default of the MOD+ module is 10.1.100.100, the PC's address can be between 1 and 253 exclusive of 100.

B. Follow this procedure for changing the IP address of your primary NIC card in the PC. Please be aware that you will have to change its IP address back to its original settings to connect to your existing network. You can preserve your existing network connection by adding a second NIC card to your PC and setting it to the static address for the MOD+.