

## Communications Options

**US Drives offers many different Communication Cards to interface our AC Drives to a wide variety of industrial networks.**

**Modbus RTU RS-232** - All Phoenix DX and Phoenix EX AC Drives include a built in RS-232 serial communications port. Modbus RTU protocol is employed at data rates of 4,800 baud, 9,600 baud, and 19,200 baud. A Removable RS-232 Communications Cable with Isolator (P/N 3000-4225-D9) is available to allow the direct connection of a laptop or other PC to the drive. All drive parameters are accessible via Modbus RTU protocol.

**Modbus RTU RS-232/422/485** - Modbus RTU is a simple, easy to use serial communications protocol. This plug-in Communications Card (P/N 3000-4135-1) mounts directly on the drive and connects to the customer's network via a removable screw terminal connector. The hardware can be configured for RS-232, RS-422, or RS-485 communications at data rates of 4,800 baud, 9,600 baud, and 19,200 baud. When configured for RS-485 multi-drop, up to 32 devices can be connected on the network. All drive parameters, are accessible via Modbus RTU protocol.

**Metasys N2** - Metasys N2 is a communications protocol supported by Johnson Controls and commonly used in Building Automation applications. This plug in Communications Card (P/N 3000-4135-2) mounts directly on the drive and connects to the customer's network via a removable screw terminal connector. Each Metasys N2 communications link can handle up to 32 devices at a data rate of 9,600 baud. Operational commands and selected drive parameters can be accessed via Metasys N2 protocol.

**Ethernet/Modbus TCP** - Ethernet/Modbus TCP extends commercial off-the-shelf Ethernet to the factory floor while making use of the popular Modbus protocol. Modbus TCP is the most commonly used protocol for Industrial Ethernet applications. This Communications Card (P/N 3000-4235) allows one or more drives to be connected to any Ethernet network using standard Ethernet cables and an RJ45 type Ethernet connector. Up to 32 drives can be connected to an Ethernet network using one Ethernet/Modbus TCP Communications Card. A Modbus RTU RS-232/422/485 Communications Card (P/N 3000-4135-1) is also required for each drive. All drive parameters, are accessible via the Ethernet using Modbus TCP protocol.

**Ethernet/IP** - Ethernet/IP extends commercial off-the-shelf Ethernet to the factory floor using the same upper-layer protocol and object model found in DeviceNet and ControlNet. This Communications Module allows one or more drives to be connected to any Ethernet network using standard Ethernet cables and an RJ45 type Ethernet connector. Up to 32 drives can be connected to an Ethernet network using one Ethernet/IP Communications Module. A Modbus RTU RS-232/422/485 Communications Card (P/N 3000-4135-1) is also required for each drive. All drive parameters, are accessible via the Ethernet using Ethernet/IP protocol. This Communications Module complies with the Ethernet/IP specification.

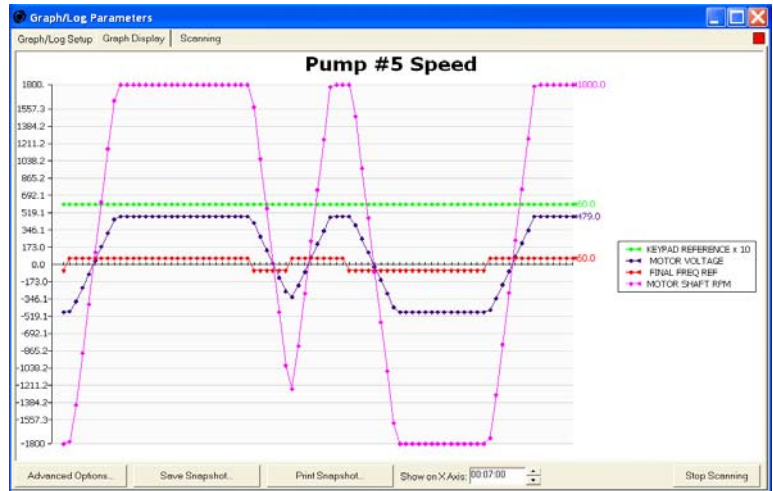
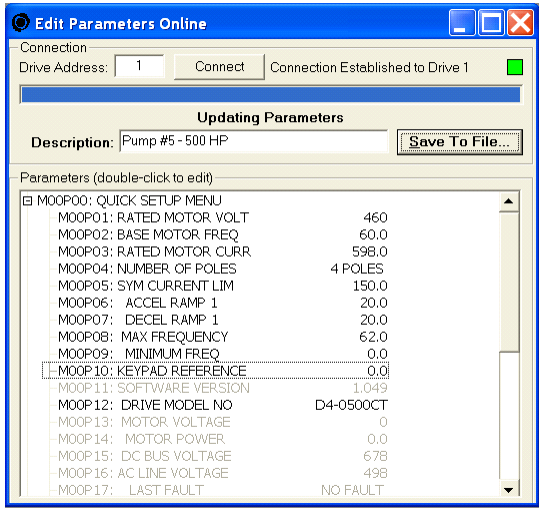
**DeviceNet** - DeviceNet serves as a communications link between industrial controllers and I/O devices including drives. This Communications Module allows one or more drives to be connected to any DeviceNet network using a standard DeviceNet connector. Up to 32 drives can be connected to a DeviceNet network using one DeviceNet Communications Module. A Modbus RTU RS-232/422/485 Communications Card (P/N 3000-4135-1) is also required for each drive. All drive parameters, can be accessed via the DeviceNet network. This module complies with the ODVA DeviceNet specification.

**Profibus DP** - Profibus is the leading industrial communication network for manufacturing automation in Europe. This Communications Module allows one or more drives to be connected to any Profibus network through a Phoenix-type connector using twisted-pair wiring. Up to 32 drives can be connected to a Profibus network using one Profibus Communications Module. A Modbus RTU RS-232/422/485 Communications Card (P/N 3000-4135-1) is also required for each drive. All drive parameters, can be accessed via the Profibus network using Profibus DP protocol. This module complies with standards developed by the Profibus User Organization (PNO).

**Other Networks** - Communications Interface Modules are also available for Modbus Plus, CANopen, Interbus, ControlNet, ProfiNet, and selected other networks. Consult your US Drives' Sales Representative for details.

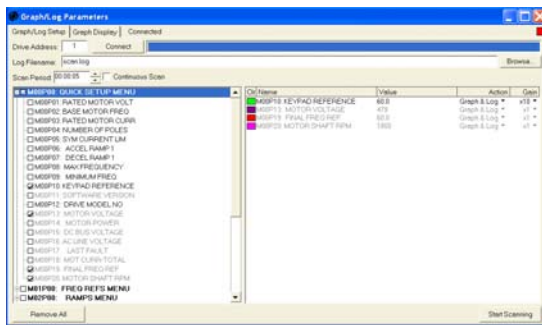
## Drivemaster

Drivemaster is a Windows based program designed to make drive set-up, record keeping, and trouble-shooting easy. Drive parameters can be extracted from a drive, reviewed, modified, printed, stored on disk, reloaded back into the same drive, or copied to another drive. Data Logging and Graphing of drive parameters is also possible. Offline and Online Editing is supported. Drivemaster supports both Modbus Serial Communications and Ethernet / Modbus TCP Communications.



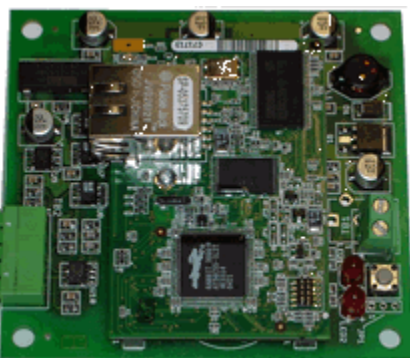
Edit and Save Drive Parameters

Graph

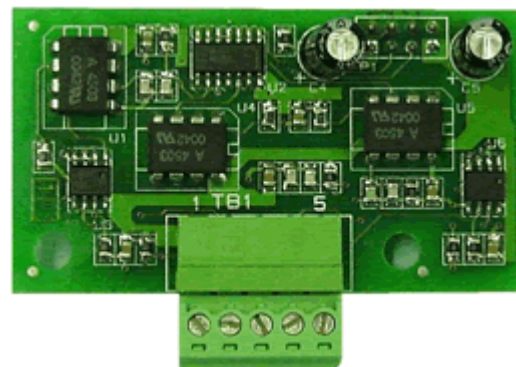


Date	Time	MOOP14	MOOP15	MOOP16	MOOP18	MOOP19	MOOP20
*** Log Opened: 13:38:20 01-27-2006							
01-27-2006	13:38:52	0.5	635	457	6.5	60.0	1800
01-27-2006	13:39:26	0.5	632	457	6.5	60.0	1800
01-27-2006	13:40:00	0.6	633	457	6.5	-60.0	-1800
01-27-2006	13:40:34	0.6	633	457	6.5	-60.0	-1800
01-27-2006	13:41:08	0.6	632	457	6.4	-60.0	-1800
01-27-2006	13:41:41	0.3	631	457	9.7	60.0	837
01-27-2006	13:42:15	0.5	634	457	6.5	60.0	1800
01-27-2006	13:42:49	0.5	631	457	6.4	60.0	1800
01-27-2006	13:43:22	0.6	633	457	7.7	-60.0	-804
01-27-2006	13:43:56	0.5	628	456	6.4	-60.0	-1800
*** Log Closed: 13:44:27 01-27-2006							
*** Log Opened: 13:29:18 02-02-2006							

Data Logging



Ethernet Communications Card



Serial Communications Card