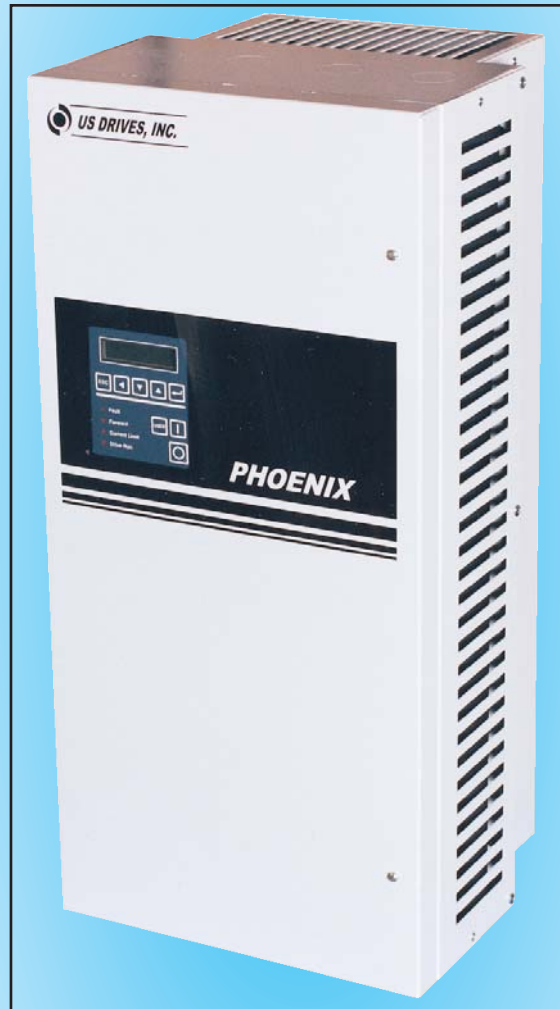


# SERIAL PROTOCOL

**PHOENIX AC DRIVE  
DX & EX**

**3 TO 3500 HP**

**METASYS N2 PROTOCOL**



## Introduction:

Metasys N2 is a Johnson Controls system communications link. This is a RS-485 two-wire network with Metasys N2 protocol. Each communication link can handle 32 devices with address range from 1 to 255. Data rate of 9600 baud with no parity is the one supported. For easy networking, a removable screw terminal connector is provided. Operation command and selected drive parameters are accessible via Metasys N2 protocol.

## SAFETY

### WARNING

Only personnel familiar with motor drives and the associated machinery should plan or implement the installation, start-up, and subsequent maintenance of the Phoenix AC drive. Failure to comply may result in personnel injury and/or equipment damage.

### WARNING

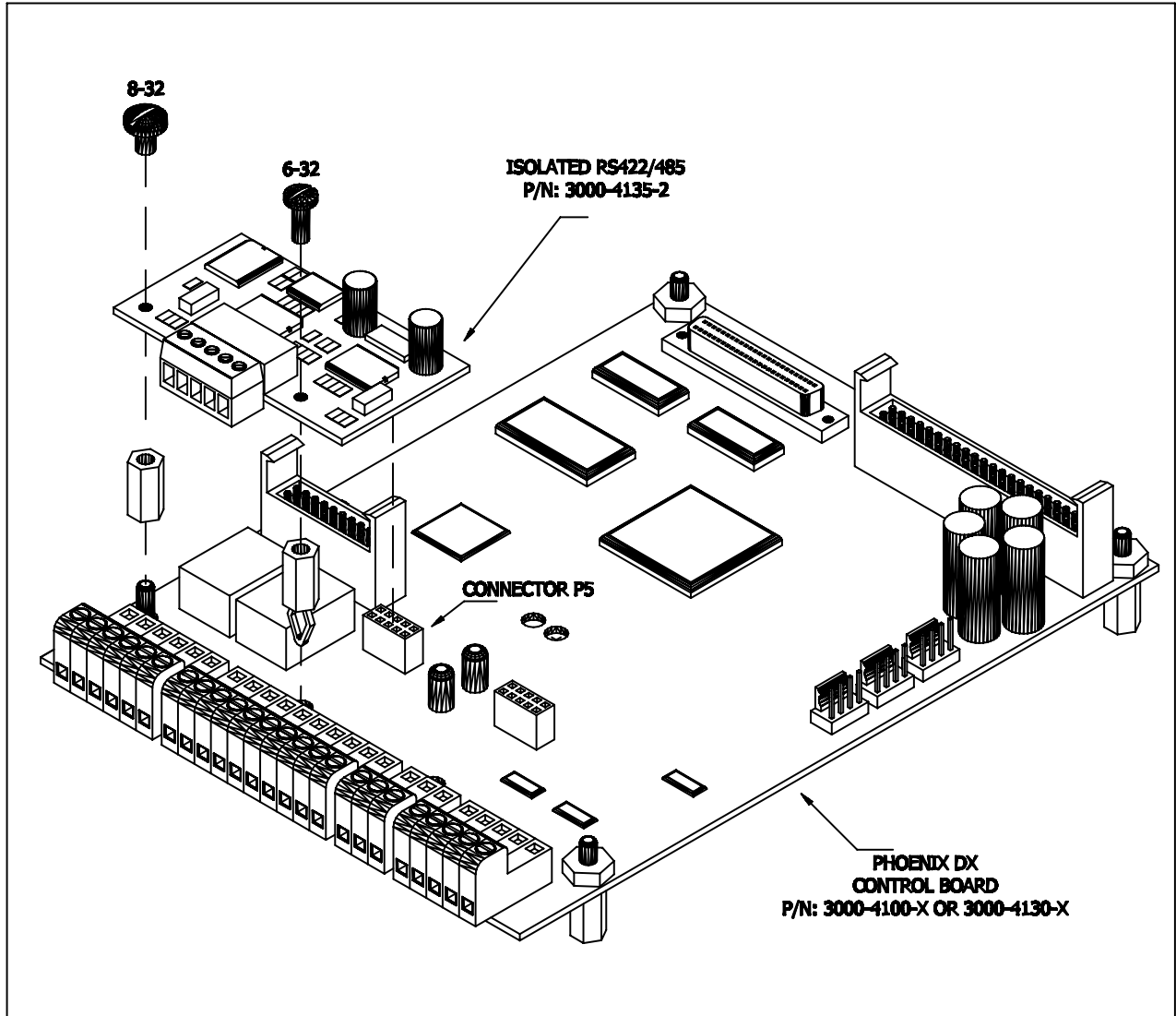
An incorrectly applied or installed Option Board can result in component damage or a reduction in product life. Wiring or application errors such as under-sizing the motor, incorrect or inadequate AC supply or excessive ambient temperatures may result in damage to the Drive or motor.

### WARNING

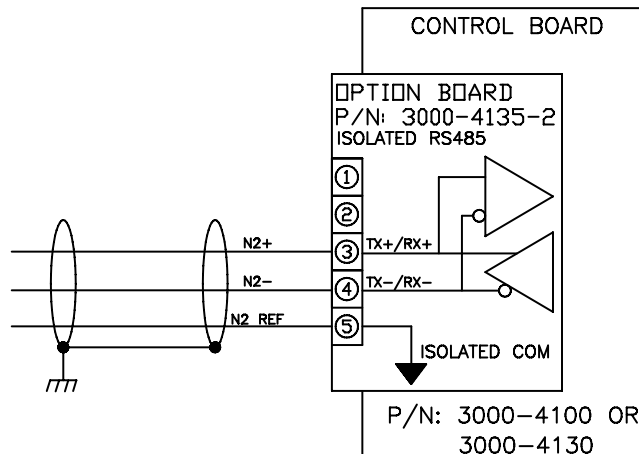
This Option board contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when servicing or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, please consult with the factory.

### WARNING

**TO AVOID A HAZARD OF ELECTRIC SHOCK, AFTER THE INPUT POWER IS REMOVED FROM THE DRIVE, WAIT FIVE (5) MINUTES FOR BUS CAPACITORS TO FULLY DISCHARGE AND VERIFY THAT THE VOLTAGE ON THE DC BUS CAPACITORS HAS DISCHARGED BY MEASURING AT THE +DC & -DC TERMINALS OF THE DRIVE. THE VOLTAGE MUST BE ZERO.**



NETWORK CONNECTION



I/O POINT MAP

ANALOG INPUT (AI)

Point Type	Point Address	Point Description	Data Range
AI	1	M11P27 - SOFTWARE VERSION	0 to 9999
AI	2	M05P02 - MOTOR SHAFT RPM	0 to 10000
AI	3	M04P01 - MOTOR CURRENT	(0.0 to 2000.0 A) x 10 for drive size 0,1,2,&3 (0 to 6000 A) for drive size 4
AI	4	M05P03 - MOTOR VOLTAGE	100 to 600 Vrms
AI	5	M05P05 - MOTOR POWER	(0.0 to 3276.7 Kw)x10 for drive size 0,1,2,&3 (0 to 32767 Kw) for drive size 4
AI	6	M05P34 - AC LINE VOLTAGE	0 to 1000 Vrms
AI	7	M05P04 - DC BUS VOLTAGE	0 to 1000 Vrms
AI	8	M01P03 - FINAL FREQUENCY REFERENCE	(± 660.0 Hz) x 10
AI	9	M14P17 - PID REFERENCE	(± 100.0%) x 10
AI	10	M14P18 - PID FEEDBACK	(± 100.0%) x 10
AI	11	M13P03 - ENERGY IN MWH	0 to 10000 Mwh
AI	12	M13P04 - ENERGY IN KWH	(0.0 to 1000.0 Kwh)x10 for drive size 0,1,2,&3 0 to 10000 Kwh for drive size 4
AI	13	M13P01 - RUN TIME LOG YEARS-DAYS	(0.000 to 9.364 y.ddd) x1000
AI	14	M13P02 - RUN TIME LOG HOURS-MINUTES	(00.00 to 23.59 hh.mm) x 100
AI	15	M10P32 - DRIVE STATUS	0 to 6 see drive instruction manual
AI	16	M10P14 - LAST FAULT	1 to 46 see drive instruction manual
AI	17	M10P15 - RECORDED FAULT #1	1 to 46 see drive instruction manual
AI	18	M10P16 - RECORDED FAULT #2	1 to 46 see drive instruction manual
AI	19	M10P17 - RECORDED FAULT #3	1 to 46 see drive instruction manual
AI	20	M10P18 - RECORDED FAULT #4	1 to 46 see drive instruction manual
AI	21	M10P19 - RECORDED FAULT #5	1 to 46 see drive instruction manual
AI	22	M10P20 - RECORDED FAULT #6	1 to 46 see drive instruction manual
AI	23	M10P21 - RECORDED FAULT #7	1 to 46 see drive instruction manual
AI	24	M10P22 - RECORDED FAULT #8	1 to 46 see drive instruction manual
AI	25	M10P23 - RECORDED FAULT #9	1 to 46 see drive instruction manual

BINARY INPUTS (BI)

Point Type	Point Address	Point Description	Data Range: 0 or 1
BI	1	M01B12 - REVERSE	1 = Reverse
BI	2	M01B39 - IN REJECTION ZONE	1 = In rejection zone
BI	3	M08B01 - F1 INPUT STATUS	1 = F1 input activated
BI	4	M08B02 - F2 INPUT STATUS	1 = F2 input activated
BI	5	M08B03 - F3 INPUT STATUS	1 = F3 input activated
BI	6	M08B04 - F4 INPUT STATUS	1 = F4 input activated
BI	7	M08B05 - F5 INPUT STATUS	1 = F5 input activated
BI	8	M08B06 - F6 INPUT STATUS	1 = F6 input activated
BI	9	M08B07 - F7 INPUT STATUS	1 = F7 input activated
BI	10	M08B08 - F8 INPUT STATUS	1 = F8 input activated
BI	11	M10B01 - DRIVE NORMAL	1 = Drive normal
BI	12	M10B02 - DRIVE RUNNING	1 = Drive running
BI	13	M10B03 - DRIVE AT ZERO SPEED	1 = Drive at zero speed
BI	14	M10B04 - BELOW MIN SPEED	1 = Below minimum speed
BI	15	M10B05 - DRIVE AT SPEED	1 = Drive at speed
BI	16	M10B06 - LOAD REACHED	1 = Load reached
BI	17	M10B07 - IxT ALARM	1 = IxT Fault trip
BI	18	M10B08 - AT CURRENT LIMIT	1 = At current limit

ANALOG OUTPUTS (AO)

Point Type	Point Address	Point Description	Data Range	Default
AO	1	M04P11 - SYMMETRICAL CURRENT LIMIT	(0.0 to 3276.7 %) x 10	Note 1
AO	2	M02P03 - ACCEL RAMP1	(0.1 to 3276.0 sec) x10	Note 1
AO	3	M02P04 - DECEL RAMP1	(0.1 to 3276.0 sec) x10	Note 1
AO	4	M01P05 - MINIMUM FREQUENCY	(± 660.0 Hz) x 10	0
AO	5	M01P04 - KEYPAD REFERENCE	(± 660.0 Hz) x 10	0
AO	6	M01P17 – PRECISION FREQUENCY REF	(0.0 to 1000.0 Hz) x10	0
AO	7	M01P18 – PRECISION FREQUENCY TRIM	(0.000 to 0.099 Hz) x1000	0
AO	8	M01P25 - PRESET FREQUENCY 1	(0.0 to 1000.0 Hz) x10	0
AO	9	M01P26 - PRESET FREQUENCY 2	(0.0 to 1000.0 Hz) x10	0
AO	10	M01P27 - PRESET FREQUENCY 3	(0.0 to 1000.0 Hz) x10	0
AO	11	M01P28 - PRESET FREQUENCY 4	(0.0 to 1000.0 Hz) x10	0
AO	12	M01P29 - PRESET FREQUENCY 5	(0.0 to 1000.0 Hz) x10	0
AO	13	M01P30 - PRESET FREQUENCY 6	(0.0 to 1000.0 Hz) x10	0
AO	14	M01P31 - PRESET FREQUENCY 7	(0.0 to 1000.0 Hz) x10	0
AO	15	M01P32 - PRESET FREQUENCY 8	(0.0 to 1000.0 Hz) x10	0
AO	16	M14P07 - PID REF SLEWRATE	(0.1 to 3276.0 sec) x10	0.1
AO	17	M14P10 - PID PROPORTIONAL GAIN	(0.000 to 10.000) x 1000	1.000
AO	18	M14P11 - PID INTEGRAL GAIN	(0.000 to 10.000) x 1000	.500

**BINARY OUTPUTS (BO)**

Point Type	Point Address	Point Description	Data Range: 0 or 1	Default
BO	1	M01B07 - SELECT PRESET SPEEDS	1 = Select preset speed	0
BO	2	M01B08 – KEYPAD CONTROL	1 = Keypad control	0
BO	3	M01B21 - ANALOG REFERENCE 2 SELECT	1 = Analog reference 2 select	0
BO	4	M01B22 - PRESET FREQUENCY BIT 0	1 = Preset frequency bit 0	0
BO	5	M01B23 - PRESET FREQUENCY BIT 1	1 = Preset frequency bit 1	0
BO	6	M01B24 - PRESET FREQUENCY BIT 2	1 = Preset frequency bit 2	0
BO	7	M06B08 - SEQUENCING BIT 0	1 = Sequencing bit 0 (Run)	0
BO	8	M06B09 - SEQUENCING BIT 1	1 = Sequencing bit 1 (Jog)	0
BO	9	M06B10 - SEQUENCING BIT 2	1 = Sequencing bit 2 (Reverse)	0
BO	10	M06B11 - SEQUENCING BIT 3	1 = Sequencing bit 3 (see drive manual)	0
BO	11	M10B24 - DRIVE RESET	1 = Drive reset	0

**Note 1:** Value Dependent on drive model. Refer to Instruction Manual.

**N2 Serial Communication Startup Parameter Setting:**

Use The Phoenix DX/EX keypad, mounted on the drive to access and set the following parameters:

Parameter #	Parameter Name	Setting
M11P23	SERIAL ADDRESS	1 to 255
M11P26	SERIAL PROTOCOL	METASYSN2

**Typical Parameter Setting for Serial Start/Stop**

To Run/Stop the drive serially disable the programmable F2 input at TB2. The enable input TB2-5 must be wired to TB2-1 to enable the drive. Use The Phoenix DX/EX keypad, mounted on the drive to set the following parameter:

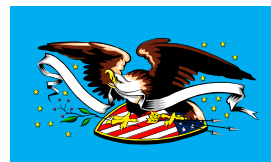
Parameter #	Parameter Name	Setting	Description
M08P09	F2 INPUT DESTINATION	M00P00	Disable RUN at F2 input TB2-2
M06P07	SEQUENCING MODE	2-WIRE	Enable 2-wire only run/stop logic

***"THE HIGH HORSEPOWER DESIGN EXPERTS"***

---

**US Drives Inc.  
2221 Niagara Falls Boulevard  
P.O. Box 281  
Niagara Falls, NY 14304-0281  
Tel: (716) 731-1606 Fax: (716) 731-1524  
Visit us at [www.usdrivesinc.com](http://www.usdrivesinc.com)**

Products Designed And Manufactured  
In The United States Of America



Rev. 04/23/03 Printed in U.S.A.

---