# Do-more H2 Series PLC System Specifications

## General Specifications

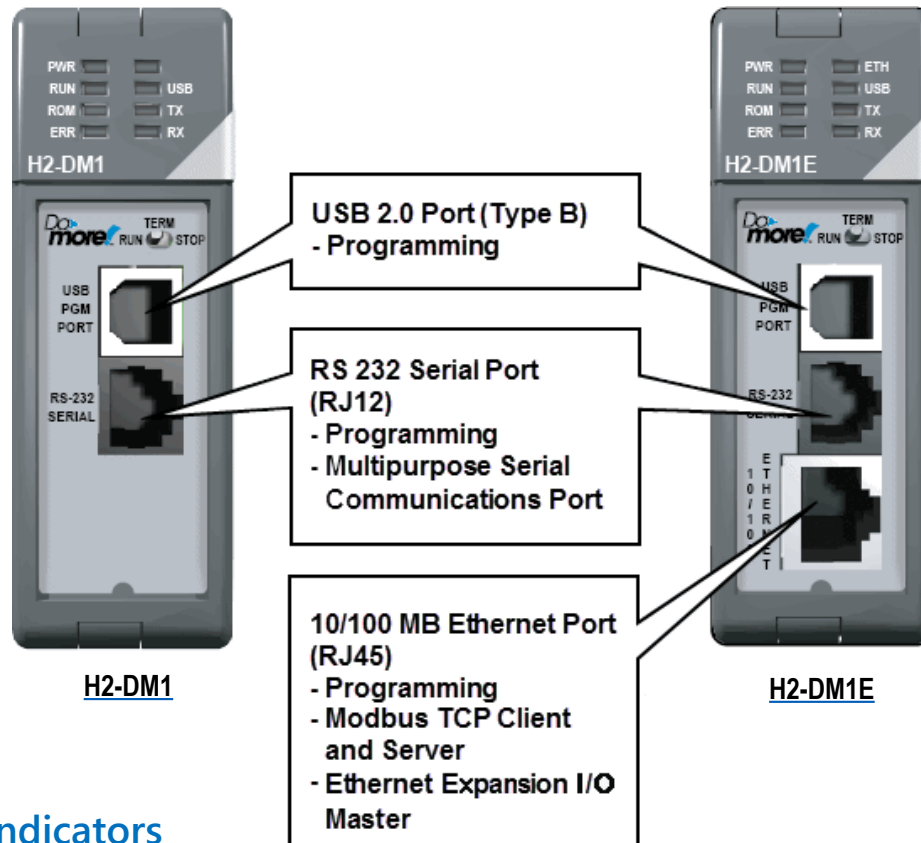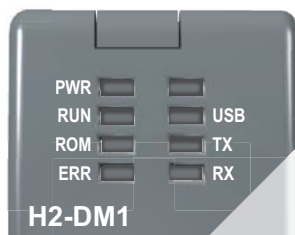| General Specifications | |
|---|---|
| Operating Temperature | 32°F to 131°F (0°C to 55°C) |
| Storage Temperature | –4°F to 158°F (–20°C to 70°C) |
| Ambient Humidity | 30% to 95% relative humidity (non–condensing) |
| Environmental Air | No corrosive gases |
| Vibration | MIL STD 810C, Method 514.2<br>IEC60068-2-6<br>JIS C60068-2-6 (Sine wave vibration test) |
| Shock | MIL STD 810C, Method 516.2<br>IEC60068-2-27<br>JIS C60068-2-27 |
| Noise Immunity | NEMA ICS3-304 |
| Agency Approvals | UL508 (File No. E157382, E316037)<br>CE (EN61131-2) |

# CPU Modules

## Specifications

**H2-DM1**
**$437.00**

**H2-DM1E**
**$584.00**

| Feature | H2-DM1 | H2-DM1E |
|---|---|---|
| **Total Memory (bytes)** | 262144 bytes | |
| **Ladder Memory (instruction words)** | 65536 instruction words | |
| **V-Memory (words)** | Configurable up to 65536 (4096 default) | |
| **Non-volatile V Memory (words)** | Configurable up to 65536 (4096 default) | |
| **D-memory (DWORDS)** | Configurable up to 65536 (4096 default) | |
| **Non-volatile D Memory (DWORDs)** | Configurable up to 65536 (4096 default) | |
| **R-memory (REAL DWORDs)** | Configurable up to 65536 (4096 default) | |
| **Non-volatile R Memory (REAL DWORDs)** | Configurable up to 65536 (4096 default) | |
| **Boolean execution/K** | 50us | |
| **Stage Programming** | Yes | |
| **Number of Stages** | 128 per Program code-block; number of code-blocks configurable to memory limit | |
| **Handheld Programmer** | No | |
| **Programming Software for Windows** | FREE Do-more Designer | |
| **Built-In communications ports** | USB, RS-232 | USB, RS-232, Ethernet (10/100 Base-T) |
| **Program Memory** | Flash ROM | |
| **Total I/O points available** | X, Y, each configurable up to 65536 (2048 default); WX, WY (analog in/out) each configurable up to 65536 (256 default) | |
| **Local I/O points available** | 256 | |
| **Ethernet Remote I/O Discrete points** | 131072 | |
| **Ethernet Remote I/O Analog I/O Channels** | 32768 | |
| **Max Number of Ethernet slaves per Channel** | 16 | |
| **I/O points per Remote Channel** | 32768 | |
| **Discrete I/O Module Point Density** | 4/8/12/16/32 | |
| **Slots per Base** | 3/4/6/9 | |
| **Number of instructions available** | >160 | >170 |
| **Control relays** | Configurable up to 65536 (2048 default) | |
| **Special relays (system defined)** | 1024 | |
| **Special registers (system defined)** | 512 | |
| **Timers** | Configurable up to 65536 (256 default) | |
| **Counters** | Configurable up to 65536 (256 default) | |
| **System Date/Time structures** | 8 | |
| **User Date/Time structures** | Configurable up to 65536 (32 default) | |
| **ASCII String/Byte buffer structures** | Configurable up to memory limit (192 default) | |
| **Modbus Client memory** | Yes, configurable up to memory limit, default 1024 input bits, 1024 coil bits, 2048 input registers, 2048 holding registers | |
| **DL Classic Client memory** | Up to memory limit, default 512 X, 512 Y, 512 C, 2048 V | |
| **Immediate I/O** | No | |
| **Interrupt input (hardware / timed)** | No | |
| **Subroutines** | Program and Task code-blocks, up to memory limit | |
| **Drum Timers** | Yes, up to memory limit | |
| **Table Instructions** | Yes | |
| **Loops** | FOR/NEXT, WHILE/WEND, REPEAT/UNTIL loops | |
| **Math** | >60 operators and functions: Integer, Floating Point, Trigonometric, Statistical, Logical, Bitwise, Timing | |
| **ASCII** | Yes, IN/OUT, Serial, Ethernet TCP and UDP; 11 output script commands | |
| **PID Loop Control, Built In** | Yes, configurable to memory limit (over 2000) | |
| **Time of Day Clock/Calendar** | Yes | |
| **Run Time Edits** | Yes | |
| **Supports True Force** | Yes | |
| **Internal Diagnostics** | Yes | |
| **Password security** | Multi-user, credentialed, session-based security | |
| **System error log** | Yes | |
| **User error log** | Yes | |
| **Battery backup** | Yes (Battery included) | |

# CPU Modules

USB 2.0 Port (Type B)
- Programming

RS 232 Serial Port (RJ12)
- Programming
- Multipurpose Serial Communications Port

10/100 MB Ethernet Port (RJ45)
- Programming
- Modbus TCP Client and Server
- Ethernet Expansion I/O Master

**H2-DM1**

**H2-DM1E**

## LED Status Indicators

**H2-DM1**
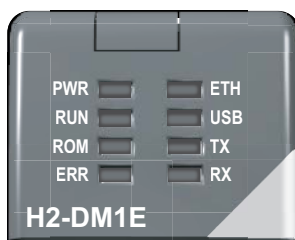
**H2-DM1E**

| LED Indicators | | |
|---|---|---|
| **Indicator** | **Status** | **Description** |
| PWR | Green | Base Power ON |
| | Yellow | Low Battery |
| RUN | Green | CPU is in RUN Mode |
| | Yellow | Forces are Active |
| ROM | Yellow | CPU is updating Non-volatile Memory |
| ERR | Red | CPU Fatal Error |
| ETH | Green | Ethernet Link Good |
| | Yellow | Ethernet Activity |
| USB | Green | USB Receive Activity |
| | Yellow | USB Transmit Activity |
| TX | Green | RS-232 Transmit Activity |
| RX | Green | RS-232 Receive Activity |

## PLC Mode Switch

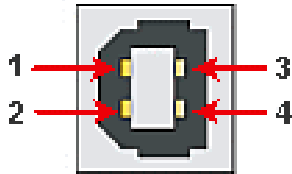| Mode Switch Functions | |
|---|---|
| **Mode Switch Position** | **CPU Action** |
| RUN (Run Program) | CPU is forced into RUN Mode if no errors are encountered. |
| TERM (Terminal) | RUN, PROGRAM and DEBUG modes are available. In this mode, the mode of operation can be changed through the Programming Software. |
| STOP (Stop Program) | CPU is forced into STOP Mode. |

# CPU Modules

## Communication Ports

### USB Port

Used exclusively for programming and monitoring via a PC running Do-more Designer.

| USB Port Specifications | |
|---|---|
| **Description** | Standard USB 2.0 Slave input for programming and online monitoring, with built-in surge protection. Not compatible with older full speed USB devices. |
| **Cables (ADC part #)** | USB Type A to USB Type B: USB-CBL-AB3 (3ft) USB-CBL-AB6 (6ft) USB-CBL-AB10 (10ft) USB-CBL-AB15 (15ft) |

| Pin | | Description |
|---|---|---|
| 1 | 5V | Bus Voltage Sense |
| 2 | D- | Data - |
| 3 | D+ | Data + |
| 4 | 0V | Ground |

### RS-232 Port

RJ-12 style connector used for:

• Connection to a PC running Do-more Designer
• Modbus RTU Master connections
• Modbus RTU Slave connections
• ASCII Incoming and Outgoing communications
• Custom Protocol Incoming and Outgoing communications

| RS-232 Port Specifications | |
|---|---|
| **Description** | Non-isolated, full duplex RS-232 DTE port used for programming, online monitoring or can connect the CPU as a Modbus RTU or ASCII master or slave to a peripheral device. Includes ESD and built-in surge protection. |
| **Baud Rates** | 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 |
| **+5V Cable Power Source** | 220mA maximum at 5V, ±5%. Reverse polarity and overload protected. |
| **Maximum Output Load (TXD/RTS)** | 3kV, 1000pf |
| **Minimum Output Voltage Swing** | ±5V |
| **Output Short Circuit Protection** | ±15mA |
| **Cable Options (ADC part #)** | D2-DSCBL FA-CABKIT FA-ISOCON for converting RS-232 to isolated RS-422/485 |

6-pin RJ12 Female Modular Connector
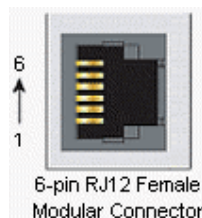
| Pin | | Description |
|---|---|---|
| 1 | 0V | Power (-) connection (GND) |
| 2 | 5V | Power (+) connection (220mA max.) |
| 3 | RXD | Receive Data (RS-232) |
| 4 | TXD | Transmit Data (RS-232) |
| 5 | RTS | Request to Send (RS-232) |
| 6 | CTS | Clear to Send (RS-232) |

*For a list of protocols supported by each port, please refer to the Communications topic of the Do-more H2 Series PLC Overview in this section.*
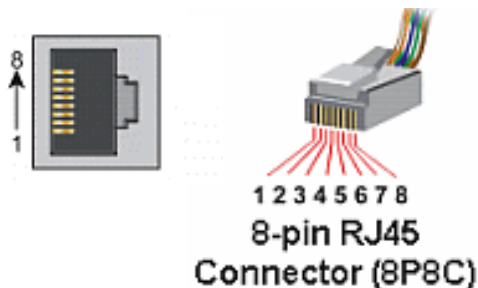
# CPU Modules

### Ethernet Port
RJ-45 style connector used for:

- Connection to a PC running Do-more Designer
- Modbus TCP Client connections (Modbus requests sent from the CPU)
- Modbus TCP Server connections (Modbus requests received by the CPU)
- Ethernet Expansion I/O Master

| Ethernet Port Specifications | |
| --- | --- |
| **Description** | Standard transformer isolated Ethernet port with built-in surge protection for programming, online monitoring, Modbus/TCP client/server connections (fixed IP or DHCP) and Ethernet Expansion I/O capabilities. |
| **Transfer Rate** | 10/100 Mbps; Auto-MDX (Crossover) |



8-pin RJ45 Connector (8P8C)
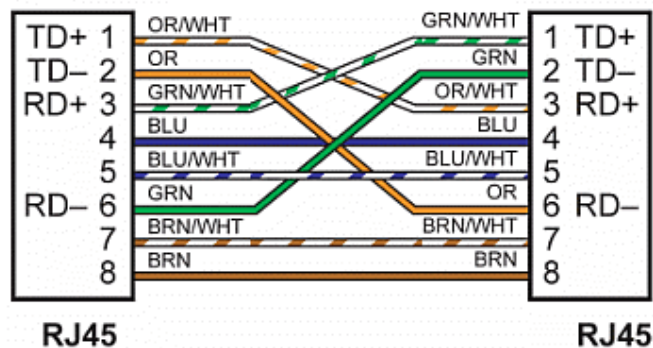


Patch (Straight-through) Cable
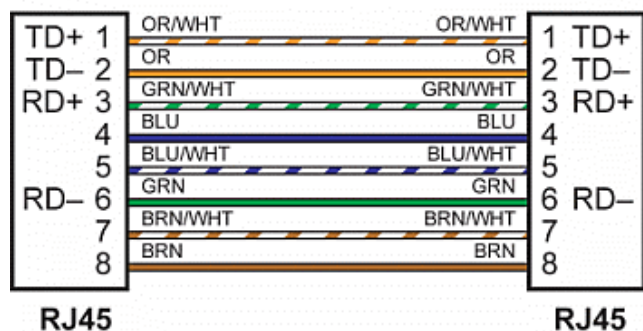


Crossover Cable
10/BASE-T/100BASE-TX

*For a list of protocols supported by each port, please refer to the Communications topic of the Do-more H2 Series PLC Overview in this section.*
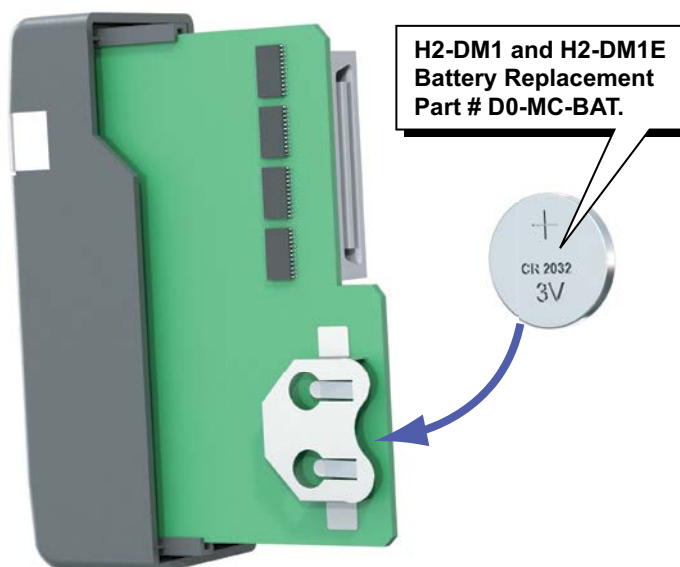
# CPU Modules

## Battery Specifications

A battery is included with the Do-more CPU and is used to retain the Time and Date along with any Tagname values that are set up as retentive. It is recommended that the battery be replaced once every five years or when one year of cumulative OFF time has been exceeded.

Up to two hours is allowed to change out a battery without loss of data.

*D0-MC-BAT* is $3.25.

| Battery | |
|---|---|
| *D0-MC-BAT* | Coin type, 3.0 V Lithium battery, number CR2032 |

**H2-DM1 and H2-DM1E Battery Replacement Part # D0-MC-BAT.**

CR 2032
3V

# CPU Modules

## Ethernet Expansion I/O

With Do-more Designer Software version V1.1 and newer, the H2-DM1E CPU's built-in Ethernet port can be configured as an Ethernet Expansion I/O master. Much like the H2-ERM100 module, the Ethernet Expansion I/O feature allows expansion beyond the local chassis to slave I/O using the onboard high-speed Ethernet link.

The onboard Ethernet port can support up to 16 slave devices. The slave I/O modules supported are:

• H2-EBC100
• T1H-EBC100 (Terminator I/O)
• GS-EDRV100 (GS Drives)

The Ethernet Expansion I/O network uses Category 5 UTP cables for cable runs up to 100 meters (328 ft.) with extended distances achieved through Ethernet switches.

It is highly recommended that a dedicated network be used with the Ethernet Expansion I/O feature. Ethernet Expansion I/O networks and ECOM/office networks should be isolated from one another to prevent network delays.

Stride Ethernet Switch

Do-more H2-DM1E CPU

DirectLOGIC DL205 I/O with H2-EBC100 Module

C-more Operator Interface

GS-EDRV100

Terminator I/O with T1H-EBC100 Module

GS Drive