Do-more H2 Series PLC Overview

Do-more H2 Series PLC Modules
The Do-more H2 Series PLC is the new technology that makes control applications easier to implement. It uses proven DirectLOGIC hardware as a platform for a powerful, flexible instruction set, with a user-friendly programming environment. The Do-more H2 Series PLC utilizes most of the modules that are part of the DL205 PLC family. You simply install a Do-more H2 Series CPU module into a DL205 base unit. However, the specifications of the Do-more H2 Series PLC are very different from the DL205 PLC. This overview covers the key features of the Do-more H2 Series PLC.

CPU modules
The Do-more H2 Series PLC offers two CPU modules, H2-DM1 and H2-DM1E, both of which must be programmed using the Do-more Designer programming software. You cannot use the existing DL205 CPU modules (D2-250-1, D2-260, or D2-262) with Do-more Designer.

Base units
The Do-more H2 Series PLC supports all of the base units available for the DL205 PLC.
Do-more H2 Series PLC Overview

Discrete I/O modules
The Do-more H2 Series PLC supports all of the discrete I/O modules available for the DL205 PLC.

Analog I/O modules
The Do-more H2 Series PLC supports all of the analog I/O modules available for the DL205 PLC.

For the latest prices, please check AutomationDirect.com.
Do-more H2 Series PLC Overview

**Specialty modules**
The Do-more H2 Series PLC supports many of the specialty modules available for the DL205 PLC. The following modules are supported:

- H2-ECOM100
- H2-SERIO
- H2-SERIO-4
- H2-ERM100
- H2-CTRIQ2
- F2-08SIM

**Specialty modules NOT supported**
The following modules are NOT supported by the Do-more H2 Series PLC.

- D2-DCM
- D2-RMSM
- D2-CTRIINT
- F2-CP128
- D2-EM
- D2-CM
- D2-HPP

**Programming Software**
The Do-more H2 Series PLC can only be programmed by Do-more Designer. (DirectSOFT programming software is not compatible with Do-more PLCs)
## Module Compatibility

The following table shows which DL205 components are supported by the H2-DM1 and H2-DM1E Do-more CPUs.

<table>
<thead>
<tr>
<th>Module</th>
<th>Part Number</th>
<th>Status</th>
<th>Module</th>
<th>Part Number</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Units</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog I/O Modules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-03B-1</td>
<td>✔</td>
<td></td>
<td>02-04AD-1</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-04B-1</td>
<td>✔</td>
<td></td>
<td>02-04AD-2</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-06B-1</td>
<td>✔</td>
<td></td>
<td>02-06AD-1</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-09B-1</td>
<td>✔</td>
<td></td>
<td>02-08AD-2</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-03BDC1-1</td>
<td>✔</td>
<td></td>
<td>02-04RTD</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-04BDC1-1</td>
<td>✔</td>
<td></td>
<td>02-04THM</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-06BDC1-1</td>
<td>✔</td>
<td></td>
<td>02-02DA-2(L)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-09BDC1-1</td>
<td>✔</td>
<td></td>
<td>02-02DAS-1</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-06BDC2-1</td>
<td>✔</td>
<td></td>
<td>02-02DAS-2</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-09BDC2-1</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discrete I/O Modules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-08ND3</td>
<td>✔</td>
<td></td>
<td>02-08DA-1</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-16ND3-2</td>
<td>✔</td>
<td></td>
<td>02-08DA-2</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-32ND3</td>
<td>✔</td>
<td></td>
<td>02-4AD2DA</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-32ND3-2</td>
<td>✔</td>
<td></td>
<td>02-8AD4DA-1</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08NA-1</td>
<td>✔</td>
<td></td>
<td>02-8AD4DA-2</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08NA-2</td>
<td>✔</td>
<td></td>
<td>D2-02DA</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-16NA</td>
<td>✔</td>
<td></td>
<td>D2-08DA</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-04TD1</td>
<td>✔</td>
<td></td>
<td>H2-ERM100</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08TD1</td>
<td>✔</td>
<td></td>
<td>D2-RMSM</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08TD2</td>
<td>✔</td>
<td></td>
<td>H2-ECOM100</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-16TD1-2</td>
<td>✔</td>
<td></td>
<td>D2-DCM</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-16TD2-2</td>
<td>✔</td>
<td></td>
<td>D2-DCM</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-32TD1</td>
<td>✔</td>
<td></td>
<td>H2-EB100</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-32TD2</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty Modules</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>02-08TA</td>
<td>✔</td>
<td></td>
<td>H2-SERIO</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08TA</td>
<td>✔</td>
<td></td>
<td>H2-SERIO-4</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-12TA</td>
<td>✔</td>
<td></td>
<td>F2-CP128</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-04TRS</td>
<td>✔</td>
<td></td>
<td>H2-CTRIO2</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08TR</td>
<td>✔</td>
<td></td>
<td>D2-CTRINT</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08TRS</td>
<td>✔</td>
<td></td>
<td>F2-08SIM</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-12TR</td>
<td>✔</td>
<td></td>
<td>D2-HPP</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>02-08CDR</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

= Supported  No = Not Supported
## Communications

The Do-more H2 Series PLC supports many communication protocols. The following table shows which CPU module communications port or specialty module supports each protocol.

<table>
<thead>
<tr>
<th>Protocols</th>
<th>CPU Modules</th>
<th>Specialty Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H2-DM1 / H2-DM1E</td>
<td>H2-DM1E</td>
</tr>
<tr>
<td></td>
<td>USB Port</td>
<td>H2-ECOM100</td>
</tr>
<tr>
<td></td>
<td>RS-232 Serial Port</td>
<td>H2-SERIO-H2-SERIO-4</td>
</tr>
<tr>
<td></td>
<td>Ethernet Port</td>
<td>H2-ERM100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do-more Designer Programming</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modbus/RTU Client (Master)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modbus/RTU Server (Slave)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modbus/TCP Client (Master)</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modbus/TCP Server (Slave)</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DirectLOGIC RX/WX Client (Master)</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DirectLOGIC RX/WX Server (Slave)</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K-Sequence Server (Slave)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DirectNET Server (Slave)</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEI Ethernet Remote I/O Master</td>
<td></td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>SMTP (EMail) Client w/Authentication</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Network Time Protocol (SNTP) Client</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do-more/PEERLINK</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do-more Time Synchronization Protocol (Client, Server, Alternate Client)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do-more Logger/UDP</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serial ad-hoc ASCI/Binary Programmatic Control</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UDP ad-hoc Programmatic Control</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCP Client Programmatic Control</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCP Server Programmatic Control</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Blank = Not Supported
Do-more H2 Series PLC Overview

Do-more Designer (Part No. DM-PGMSW)
Do-more Designer is the full-featured programming software for the Do-more PLC series. Do-more Designer is a free download from Automationdirect.com. A CD-ROM version is also available for purchase for $10.50.

Start Page
When the software is started, the Start Page is displayed. This page contains a Launchpad with Projects, Applications and Links windows. It also contains shortcuts to important help file topics and the Do-more Simulator.

Main Programming Window
The Main Programming Window is displayed when a new program is started or an existing program is opened. It is divided into Menus, Toolbars, and Windows that work together to make project development as simple as possible.
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Do-more Designer Features
Do-more Designer has the following main features:

- Supports the Do-more PLC instruction set
- Project Browser (Window to organize the user project)
- Data View (Interface to monitor PLC data in a list)
- Trend View (Interface to monitor PLC data with trend graphs)
- PID View (Interface to monitor and tune the individual PID control loop)
- PID Overview (Interface to monitor multiple PID control loops)
- Debug View (Interface to debug the ladder programs)

When Do-more Designer is installed on your PC, the following tools are also installed:

- Do-more Simulator (Offline simulator of ladder program execution and PID control)
- Do-more Logger (Software tool to log PLC data)
- ERM Workbench (Configuration tool for the ERM modules)
- NetEdit 3 (Configuration tool for the ECOM/EBC Ethernet modules)

PC Requirements
The Do-more Designer Windows-based programming software works with Windows® XP (Home or Professional, 32-bit), Vista (Home, Basic, Premium, 32 or 64-bit), Windows 7 (Home, Professional, Ultimate, 32 or 64-bit) or Windows 8 (Home, Professional, Enterprise 32 or 64-bit; Windows 8 RT edition is NOT supported).

Please check the following requirements when choosing your PC configuration:

- Minimum PC to PLC Connectivity, at least one of the following:
  - USB Port: connects to the CPU with USB-A connector (USB-A to USB-B cable)
  - RS-232 Serial Port: connects to the CPU with RJ-12 connector (RJ-12 to DB9 or RJ-12 to USB-B serial converter cable)
  - Ethernet Port: connects to the CPU (H2-DM1E) with RJ-45 10Base-T or 100Base-T (Cat5 Patch Cable)
- Hard Disk: 100MB free disk space
- Video Display: 1024x768, 256 colors resolution (1280x720, true color recommended)
- Windows XP, 32-bit:
  - 800MHz, single core CPU (2GHz, multi-core or hyperthreaded recommended)
  - 512MB RAM (2GB recommended)
- Vista or Windows 7 or Windows 8, 32 or 64-bit:
  - 1GHz, single core CPU (2GHz, multi-core recommended)
  - 1GB RAM (3GB recommended)

Programming Cables
The Do-more H2 Series CPU module H2-DM1 has two communication ports (USB and RS-232 serial) and the H2-DM1E has three communication ports (USB, RS-232 serial and Ethernet). You can use any of those ports for programming and monitoring. Needed cables for these ports are listed below and can be purchased at Automationdirect.com.

USB Cables (USB 2.0, Type A-B connectors) available:

- USB-CBL-AB3 (3 ft.)
- USB-CBL-AB6 (6 ft.)
- USB-CBL-AB10 (10 ft.)
- USB-CBL-AB15 (15 ft.)

RS232 Serial Cable

- D2-DSCBL (12 ft. 9-pin D-sub to RJ12 connector)

Ethernet Cables (Cat5e)

Automationdirect.com sells many Ethernet patch cables in various colors and lengths. Please check the Cables section in this catalog for further details.
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Do-more PLC Instruction Set

This Instruction Set was developed specifically for the new Do-more PLC; the ‘Instruction Palette’ displays all available instructions.

You may see some similarities to the DirectLOGIC PLC instruction set. However, the instruction set for the Do-more PLC is more advanced and intuitive. A good example is the MATH instruction. Now, just one MATH instruction covers all math operations and also allows you to mix different data types in one expression.

There are over 60 operators and functions available with the MATH instruction.

Note: To learn more about the MATH instruction, please refer to the Do-more Designer help topic ‘MATH – Math Expression’.
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Data Types
The Do-more PLC supports the following seven primary data types:

- Bit (0 or 1)
- Unsigned Byte (0 to 255)
- Signed Byte (-128 to 127)
- Unsigned Word (0 to 65,535)
- Signed Word (-32,768 to 32,767)
- Signed DWord (-2,147,483,648 to 2,147,483,647)
- Real (-3.4028235E+038 to 3.4028235E+038)

Note: As you can see, the BCD data type that is popular for the DirectLOGIC PLC is not included in this list. However, you can use the BCDTO and TOBCD instructions if you need to use the BCD data type with your application. Those instructions convert the data between the BCD data type and the integer/real data types.

Data Structure
The Do-more PLC supports data structures as additional data types. Structures use the familiar PC programming organization of “dot notation”. All available elements of a structure are shown in this format. The following data structures are currently available:

- Timer Structure
- Counter Structure
- String Structure
- PID Structure
- Date/Time Structure
- Task Structure
- Rampsoak Structure
- Program Structure
- DeviceRef Structure
- Drum Structure

The data structure is a set of data. For instance, a Timer structure (Timer Struct) has the following set of data:

- Acc (Accumulated Time, Signed DWord)
- Done (Bit)
- Zero (Bit)
- Timing (Bit)
- Reset (Bit)

When you use a timer instruction (TMR), a Timer structure is assigned to the instruction. If you select ‘T0’, you can access the above data with dot notation. For instance, to access the accumulated time (Acc), enter ‘T0.Acc’. To access the Done bit, enter ‘T0.Done’.

Memory Addressing
With the Do-more PLC, each memory address type has its own specific data type. Here are some examples:

- V (Unsigned Word)
- N (Signed Word)
- D (Signed DWord)
- R (Real)

If you see address ‘V123’ in the ladder program, the memory address always stores an Unsigned Word value. With this memory addressing method, it becomes easier to read and write the ladder programs.

Although most of the memory addressing is decimal, the memory addresses DLX, DLY, DLC and DLV use octal. These four memory addresses can be used to exchange data with DirectLOGIC PLCs, which use octal memory addressing.

www.automationdirect.com/do-more-plcs
Array Addressing
The Do-more PLC supports array addressing with all memory addresses. V-memory address must be used as the index for an array. With the Do-more PLC, the following ladder program is valid.

Note: In this example, V0, V100, V101, V102 and V200 are indices.

Code-block, Program and Task
One Do-more project can consist of more than one ladder program. Each ladder program is called a ‘Code-block’. The Do-more PLC supports two types of code-blocks, Program and Task. Here are their definitions.

Program
Programs are code-blocks that run based on an event using the RUN instruction. They can be self-terminating or never terminate. Stage programming is only supported inside Program code-blocks.

Task
Tasks are code-blocks that are enabled and disabled using the ENTASK instruction. The ENTASK instruction allows you to specify an interval to execute the task’s logic with a millisecond resolution or to execute a single time on a leading edge input.

Stages
The Do-more PLC supports Stages. You can use Stages only in the Program code-blocks. (They are not available in the Task code-blocks.) The Do-more PLC supports the following instructions for Stage Programming:

1. SG (SG)
2. JMP (Jump To Stage)
3. JMP1 (Index Jump)
4. SGSET (Enable Stage)
5. SGRST (Disable Stage)
6. SGRSTR (Disable Range of Stages)
7. SGCONV (Converge Multiple Stages to SG)
8. SGDIV (Jump to Multiple Stages)

1 There is no ISG (Initial Stage) instruction for the Do-more PLC; the first stage in the Program code-block becomes the initial stage automatically.
2 Many asynchronous instructions can directly initiate a Jump to Stage.
# Do-more H2 Series PLC Overview

## Comparison with the DL205 PLC

The following spec table shows the major differences between the Do-more H2 Series PLC and the DL205 PLC.

<table>
<thead>
<tr>
<th></th>
<th>Do-more H2 Series PLC</th>
<th>DL205 PLC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instruction Set</strong></td>
<td>Do-more PLC instruction set</td>
<td>DirectLOGIC PLC instruction set</td>
</tr>
<tr>
<td><strong>Total Memory Bytes</strong></td>
<td>262.1K</td>
<td>30.4K</td>
</tr>
<tr>
<td><strong>Default Data Type</strong></td>
<td>Decimal and Real (Data can be referred in different data types with the Casting feature.)</td>
<td>BCD, HEX and Real</td>
</tr>
<tr>
<td><strong>Memory Addressing</strong></td>
<td>Decimal mainly (There are some octal memory addresses to exchange data with DirectLOGIC PLCs easily.)</td>
<td>Octal</td>
</tr>
<tr>
<td><strong>User-defined Memory Addresses</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Bit of Memory</strong></td>
<td>Available for all memory addresses (e.g. V100.2, D200.3)</td>
<td>Yes, D2-250-1 and D2-262 only</td>
</tr>
<tr>
<td><strong>Array Addressing</strong></td>
<td>Available for all memory addresses (e.g. X[V100], D[V200])</td>
<td>Available only for V-memory addresses (e.g. P200)</td>
</tr>
<tr>
<td><strong>Math Calculation</strong></td>
<td>No accumulator, the MATH instruction can support a mix of different data types.</td>
<td>Using accumulator or using the MATHBCD, MATHBIN or MATHR instruction for each data type.</td>
</tr>
<tr>
<td><strong>Number of Code Blocks</strong></td>
<td>1 system program 6 system tasks  Up to 256 user programs  Up to 266 user tasks</td>
<td>1</td>
</tr>
<tr>
<td><strong>Looping</strong></td>
<td>FOR-NEXT, WHILE-WEND, REPEAT-UNTIL</td>
<td>FOR-NEXT</td>
</tr>
<tr>
<td><strong>Subroutines</strong></td>
<td>No (Use Code-blocks)</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>User Document (Nicknames, Rung Comments…) Storing</strong></td>
<td>Stored in the CPU module</td>
<td>No (Stored on PC only)</td>
</tr>
<tr>
<td><strong>Password Protection</strong></td>
<td>Multiple passwords</td>
<td>Single password</td>
</tr>
<tr>
<td><strong>Run-time Editing</strong></td>
<td>Bumpless</td>
<td>Ladder program execution is paused during the ladder program transfer in RUN mode.</td>
</tr>
<tr>
<td><strong>Analog I/O Configuration</strong></td>
<td>The X, WX and WY addresses are assigned to analog I/O channels automatically. (Manual addressing is available also.)</td>
<td>Configured by ladder program</td>
</tr>
<tr>
<td><strong>Local Base Expansion</strong></td>
<td>No</td>
<td>Yes (with D2-EM and D2-CM)</td>
</tr>
<tr>
<td><strong>Number of PID Loops</strong></td>
<td>Over 2000</td>
<td>4 (D2-250-1), 16 (D2-262)</td>
</tr>
<tr>
<td><strong>Memory Back-up Battery</strong></td>
<td>Included</td>
<td>Optional</td>
</tr>
<tr>
<td><strong>Firmware Update</strong></td>
<td>CPU module firmware can be updated from Do-more Designer.</td>
<td>Use firmware update tool</td>
</tr>
<tr>
<td><strong>Built-in RS-232 Port</strong></td>
<td>Yes, Full duplex</td>
<td>Yes, Half duplex</td>
</tr>
<tr>
<td><strong>Built-in USB Port</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Built-in Ethernet Port</strong></td>
<td>Yes (H2-DM1E)</td>
<td>No</td>
</tr>
<tr>
<td><strong>Programming Software</strong></td>
<td>Do-more Designer</td>
<td>DirectSOFT</td>
</tr>
</tbody>
</table>

For the latest prices, please check AutomationDirect.com.
Dimensions and Installation

Understanding the installation requirements for your Do-more H2 Series PLC system will help ensure that the components operate within their environmental and electrical limits.

Plan for safety
This catalog should never be used as a replacement for the user manual. The user manual, H2-DM-M (sold separately or downloadable online), contains important safety information that must be followed. The system installation should comply with all appropriate electrical codes and standards.

Environmental specifications
The Environmental Specifications table at the right lists specifications that apply globally to the Do-more H2 Series PLC system (CPUs, bases, and I/O modules). Be sure that the system is operated within these environmental specifications.

Base dimensions and mounting
Use the diagrams below to make sure the Do-more H2 Series PLC system can be installed in your application. To ensure proper airflow for cooling purposes, bases must be mounted horizontally. It is important to check these dimensions against the conditions required for your application. For example, it is recommended that approximately 3” of space is left in front PLC surface for ease of access and cable clearances. Also, check the installation guidelines for recommended cabinet clearances.

<table>
<thead>
<tr>
<th>Environmental Specification</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature</td>
<td>-4°F - 159°F (-20°C to 70°C)</td>
</tr>
<tr>
<td>Ambient Operating Temperature</td>
<td>32°F - 131°F (0°C to 55°C)</td>
</tr>
<tr>
<td>Ambient Humidity</td>
<td>30%-95% relative humidity (non-condensing)</td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>MIL STD 810C, Method 514.2</td>
</tr>
<tr>
<td>Shock Resistance</td>
<td>MIL STD 810C, Method 516.2</td>
</tr>
<tr>
<td>Noise Immunity</td>
<td>NEMA (ICS3-304)</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>No corrosive gases</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base</th>
<th>A (Base Total Width)</th>
<th>B (Mounting Hole)</th>
<th>C (Component Width)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inches</td>
<td>Millimeters</td>
<td>Inches</td>
</tr>
<tr>
<td>3-slot</td>
<td>6.77”</td>
<td>172mm</td>
<td>163mm</td>
</tr>
<tr>
<td>4-slot</td>
<td>7.99”</td>
<td>203mm</td>
<td>194mm</td>
</tr>
<tr>
<td>6-slot</td>
<td>10.43”</td>
<td>265mm</td>
<td>256mm</td>
</tr>
<tr>
<td>9-slot</td>
<td>14.09”</td>
<td>358mm</td>
<td>349mm</td>
</tr>
</tbody>
</table>

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