

Quick Start Guide

HMC7-MIO-01



Description:

HMC7-MIO-01 I/O expansion module with 8 digital bidirectional inputs and 8 NPN-type sinking digital outputs.

Contents:

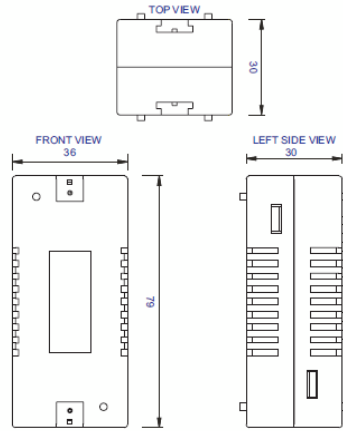
- 1 HMC7-MIO-01 (in plastic bag)
- Quick Start Guide

Programming software (MAPware-7000), cables, and power supply purchased separately.

Specifications:

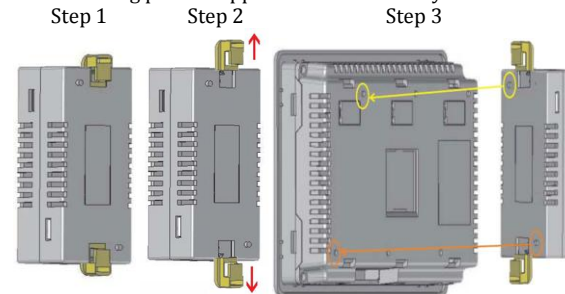
Power:	3.9VDC from HMC7000 base
Isolation:	I/O optically isolated from internal circuit
Digital Inputs:	8 bidirectional inputs
Rated Input Voltage:	24VDC
Rated Input Current:	up to 5mA
Input Impedance:	4.9KΩ
Minimum ON voltage:	15 VDC
Maximum OFF voltage:	5 VDC
Turn ON/OFF time:	10 msec
Special Input Functions:	
High Speed Channels:	2 inputs, X0 and X5
Maximum Input Frequency:	25KHz
Maximum Input Count:	4,294,967,295 (32-bit)
Digital Outputs:	8 sinking outputs (NPN-type)
Output Current:	0.5A maximum (per contact)
Total Current:	4A maximum
Rated Load:	500mA@24VDC
Resistive:	48Ω / 12W
Inductive:	12VA (1.2H, 50Ω)
Input Power Supply:	
Input Voltage:	24VDC
Input Current:	4A maximum
Connection Method:	Removable terminals (3.81 mm pitch)
Operating Temp:	0 to 55° C
Humidity:	10% to 90% (non-condensing)
Dimensions:	3.11 x 1.18 x 1.42 inches [79x30x36mm]

Dimensional Details:



Mounting Module to HMC7000:

The HMC7 I/O module must be mounted onto the back of a HMC7000 Series unit using one of the HMC expansion ports. When locating equipment behind the HMC7000 ensure that AC power wiring, PLC output modules, contactors, starters, relay and any other source of electrical interference are located away from the HMC7000. Make sure that variable speed drives and switching power supplies are located away from the unit.



Step 1: Pull the two white lock connectors out from the center of the module.

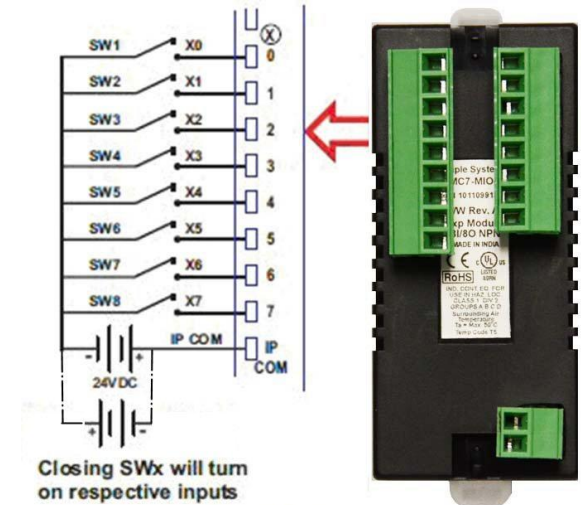
Step 2: Place the module onto the HMC7000 expansion port so that the I/O module interconnect plug can attach to the HMC7000 socket. *Note: remove the protective tab on the HMC7000 expansion port to expose the socket.*

Step 3: Push down the lock connectors to safely secure the I/O Expansion module.

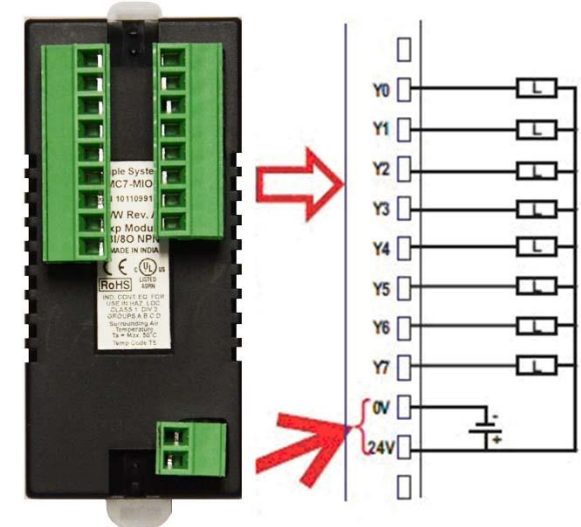
Wiring I/O Expansion Modules:

The HMC7 I/O module has green block terminals that are used to wire the module to the digital input devices (i.e. switches, contacts, etc). The block terminals can be physically removed from the module to facilitate connection (18-gauge wire recommended). *Note: A 3/32" flat blade screwdriver should be used to tighten the screws of the terminal block.*

Connecting to bidirectional inputs:



Connecting to NPN-type sinking outputs:



Configuration:

Use MAPware-7000 to configure the expansion port, in which the module is installed, using the module’s model number.

The input (X and XW), output (Y and YW), and configuration (M and MW) memory addresses are used to interact with the module. These addresses are created according to the slot location of the module, where **nn** refers to the slot number (ex. 01...05):

Function	Register		Access
X0-X7 Inputs	Xnn000-007 (XWnn00)		Rd Only
Y0-Y7 Outputs	Ynn000-007 (YWnn00)		Rd/Write
High Speed Counter Option	HSC Channel 1	HSC Channel 2	
HSC Input	X0 (terminal) Xnn000 (reg)	X5 (terminal) Xnn005 (reg)	Rd Only
HSC Reset Input	X1 (terminal) Xnn001 (reg)	X6 (terminal) Xnn006 (reg)	Rd Only
HSC Output Flag	Y1 (terminal) Ynn001 (reg)	Y6 (terminal) Ynn006 (reg)	Rd/Write
HSC Configuration Register	MWnn00	MWnn06	Rd/Write
HSC Counter Register (Current Value)	MWnn01 MWnn02	MWnn07 MWnn08	Rd/Write
HSC Preset Register	MWnn03 MWnn04	MWnn09 MWnn10	Rd/Write
HSC Enable Bit	Mnn080	Mnn176	Rd/Write
HSC Reset Bit	Mnn081	Mnn177	Rd/Write

Reference the table below when configuring each HSC Configuration Register (MWnn00 and MWnn06):

Bits	Function
15-4	Not used
3	0 : Falling Edge 1 : Rising Edge
2, 1, 0	Module Operating Mode : 000 : Normal Operation 010 : Up Counter HSC

To implement High Speed Counter Operation:

1. Connect a device to X0 (Channel 1) or X5 (Channel 2) that will provide the high speed pulses to the expansion module.
2. Configure for HSC mode using the configuration register MWnn00 (Channel 1) or MWnn06 (Channel 2).
3. Write the HSC preset count value in MWnn03 (Channel 1) or MWnn09 (Channel 2).
4. Enable the HSC by setting the HSC Enable Bit Mnn080 (Channel 1) or Mnn176 (Channel 2).
5. HSC increments (starting from 0) the current value register in MWnn01 (Channel 1) or MWnn07 (Channel 2) until the preset value is reached. Then HSC sets Y1 (Channel 1) or Y6 (Channel 2).
6. Enable the HSC Reset Bit by setting Mnn081 (Channel 1) or Mnn177 (Channel 2). Or by setting Reset Pin X1 (Channel 1) or Reset Pin X6 (Channel 2). This will cause the HSC current value to reset back to 0 and the output Y1 (Channel 1) or output Y6 (Channel 2) will reset (clear) to 0.
7. To start the process again, simply reset (clear) the HSC Reset Bit and set the HSC Enable Bit. Note: if the HSC Enable Bit is still ON, you must reset (clear) this bit, and then set it again.

Additional Resources:

Detailed instructions on the operation and installation of the HMC7000 Series are available in the HMC7000 Programming Manual that is included with the MAPware-7000 configuration software. MAPware-7000 also includes help files that provide detailed information on using the configuration software.

⚠️ WARNING: DO NOT REMOVE OR REPLACE WHILE CIRCUIT IS LIVE UNLESS THE AREA IS KNOWN TO BE FREE OF IGNITIBLE CONCENTRATIONS OF FLAMMABLE SUBSTANCES. This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only.

⚠️ WARNING – EXPLOSION HAZARD – Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous.

⚠️ WARNING – EXPLOSION HAZARD - Substitution of components may impair suitability for Class I, Division 2.

It is recommended that the user periodically inspect the sealed devices used, check for any degradation of properties, and replace as necessary.

For Technical Support:

Please contact Maple Systems if you have any questions regarding this product. We ask that you provide us with the unit serial number and firmware revision number written on the product label of the unit.

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