

C O N T R O L L E R I N F O R M A T I O N S H E E T

Maple Model(s)	PLC or Controller
HMI5000 Series	Applied Motion Products Q Series



Summary

Maple Systems' **HMI5000 Series** Human/Machine Interface Terminals (Maple HMIs) communicate with Applied Motion Products Q Series controllers using the **Q-command protocol**. When configured with EZware-5000, the Maple HMI is the master in a point-to-point single master, multiple-slave format. Please refer to the *HMI5000 Series Programming Manual* (Maple p/n 1010-1007) for information on connecting multiple Maple HMIs to a single PLC port.

Compatible PLCs

PLC Family	PLC Model
Q Series	All

Communications Cable

The Maple HMI should be connected to the controllers PC/HMI (RS232) or RS485/422 port. A list of communications cables offered by Maple Systems as well as cable assembly instructions to assist you in assembling your own communications cable are available on our website at www.maplesystems.com.

WARNING *If your communications cable is not wired exactly as shown in our cable assembly instructions, damage to the HMI or loss of communications can result.*

PLC Settings

The Q-Series controller must be set up for use with the Maple HMI. Use the controller's PR command as follows:

PR37

This must be part of the controller program, or otherwise made a non-volatile setting.

Accessible PLC Memory

Register Memory

The following table lists the PLC's register memory ranges that the Maple HMIs are able to access. Please note that your PLC's memory range may be *smaller* or *larger* than that supported by these HMIs. The following register memory can be displayed in 16, 32, or 64-bit format on the Maple HMI.

(Note: d=decimal)

PLC Register Type	Address Range	Format	PLC Register Description
RRegister	0-25	dd	Read-only registers, a-z
RWRegister	0-25	dd	Read-Write registers, A-Z
U Register	0-999	ddd	User-defined registers, addressed by the 3 digit address
QLoadExecute	N/A	N/A	Queue Load and Execute ¹
AlarmCode	N/A	N/A	Returns alarm status integer
ImmediateTemperatureC	N/A	N/A	Returns Controller Temperature in Celsius
ImmediateTemperatureF	N/A	N/A	Returns Controller Temperature in Fahrenheit

Discrete Memory

The following table lists the PLC's discrete memory ranges that the Maple HMIs are able to access. Please note that your PLC's memory range may be *smaller* or *larger* than that supported by these HMIs. The following discrete memory is displayable in single-bit format on the Maple HMI.

(Note: d=decimal, b=bit)

PLC Bit Type	Address Range	Format	PLC Bit Description
Alarm Set	N/A	N/A	Initiate an Alarm Reset
MotorEnable	N/A)	N/A	Toggle the enable/disable status of the motor
ImmediateOutput	0.00-0.03	dddd.bb	Read/Write the specified Output bit
ImmediateInput	0.00-0.07	dddd.bb	Read/Write the specified Input bit
StopExecution	N/A	N/A	Stops Execution
Motor Status	0.00-0.11	0.bb (b=bit)	Reads the 11 status flags ²
AlarmBit	0.00-0.11	0.bb (b=bit)	Reads the 16 alarm bits ³

1 Use a Set Word object and use the Set Value field to specify the Program Segment. The Device Address field is ignored.

2 Status flags are assigned as follows (leading 0 required):

- Bit 00: Flag A
- Bit 01: Flag D
- Bit 02: Flag E
- Bit 03: Flag H
- Bit 04: Flag J
- Bit 05: Flag M
- Bit 06: Flag P
- Bit 07: Flag R
- Bit 08: Flag S
- Bit 09: Flag T
- Bit 10: Flag W

3 Alarm bits are assigned as follows (leading 0 is required):

- Bit 00: Position Limit
- Bit 01: CCW Limit
- Bit 02: CW Limit
- Bit 03: Over Temperature
- Bit 04: Regen Failed (BLuAC and STAC only)
- Bit 05: Over Voltage
- Bit 06: Under Voltage
- Bit 07: Over Current
- Bit 08: Hall Sensor Bad
- Bit 09: Encoder Bad
- Bit 10: Comm Error
- Bit 11: Data Save Failed
- Bit 12: Wizard Failed
- Bit 13: Current Limit
- Bit 14: No Segment (Q only)
- Bit 15: No Move

Important Memory Considerations

If your PLC's memory range is smaller than the range supported by the Maple HMIs, it is possible to configure the HMI to monitor a PLC memory address which does not exist. Since this can cause unpredictable results, when you configure the HMI please ensure that all selected PLC memory addresses are valid for your PLC model.

Do not configure the HMI to write to any PLC memory address which should only be written to by the PLC.

EZware Settings

The following table lists the communications settings that must be configured in EZware. These settings can be found in the *Edit-System Parameters* menu under the *Device* tab. Please note:

- The **Recommended Settings** column provides the recommended setting based upon the default settings most commonly used in Applied Motion devices.
- The **Options** column lists EZware's options; your PLC may not support every option.

Name	Recommended Settings	Options	Important Notes
Name:	Applied Motion Q		Description label
HMI or PLC	PLC		
Location	Local	Local, Remote	Select <i>Local</i> if PLC directly connected to HMI, <i>Remote</i> if PLC connected thru another HMI.
PLC type	Applied Motion Q		
PLC I/F:	RS-232	RS-232, RS-485 2W, RS-485 4W, Ethernet	Must match the PLC port setting.
PLC default station no.:	1	0-255	Must match the default station no. assigned to the PLC.
Settings: COM:	COM 1	COM1-COM3	Serial port of HMI connected to PLC.
Settings: Baud rate:	9600	9600, 19200, 38400, 57600, 115200	Must match the PLC's port setting. Use the fastest baud rate supported by the PLC.
Settings: Data bits:	8	7 or 8	Must match the PLC's port setting.
Settings: Stop bits:	1	1 or 2	Must match the PLC's port setting.

Name	Recommended Settings	Options	Important Notes
Settings: Parity:	None	Even, Odd, None	Must match the PLC's port setting.
Settings: Timeout (sec)	3.0	0.1 to 25.5	Adjust if longer timeout is required.
Settings: Turn around delay (ms)	0	0-1000	Timeout period between HMI polls.
Settings: Send ACK Delay:	0		Not Applicable
Settings: Parameter 1:	0		Not Applicable
Settings: Parameter 2:	0		Not Applicable
Settings: Parameter 3:	0		Not Applicable
Interval of block pack words	0	0-512	See <i>HMI5000 Series Programming Manual</i> (Maple p/n 1010-1007)
Max. read-command size (words):	2		Not Adjustable
Max. write-command size (words):	2		Not Adjustable