

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	Allen-Bradley MicroLogix Series (Ethernet/IP)



## Summary

Maple Systems' **HMI5000 Series** Human/Machine Interface Terminals (Maple HMIs) communicate with Allen-Bradley MicroLogix 1000 PLCs using the DF1 over Ethernet protocol. When configured with EZware, the Maple HMI is the master in an Ethernet/IP network.

## Communications Cable

The Maple HMI can be connected directly to the Ethernet port (channel 1) on the PLC. 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](http://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 IP Address must be set
Auto Negotiate must be set

## 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 or 32 bit format on the Maple HMI.

(Note: d=decimal)

PLC Register Type	Address Range	Format	PLC Register Description
T4SV	0-254	ddd	Timer Preset Values
T4PV	0-254	ddd	Timer Accumulated Values
C5SV	0-254	ddd	Counter Preset Values

PLC Register Type	Address Range	Format	PLC Register Description
C5PV	0-254	ddd	Counter Accumulated Values
N7	0-254	ddd	Integer Data
Nfn	0-254254	fffnnn <sup>1</sup>	Integer Data
F8	0-254	ddd	Floating Point Data
Ffn	0-254254	fffnnn <sup>1</sup>	Floating Point Data
TfnSV	0-254254	fffnn <sup>1</sup>	Timer Present Values
TFnPV	0-254254	fffnn <sup>1</sup>	Timer Accumulated Values
TfnSV	0-254254	fffnn <sup>1</sup>	Counter Accumulates Values
S	0-254	ddd	Status Registers

**NOTE<sup>1</sup>:** The device type of Ffn allows access to any data file (fff) and address (nnn) in the Floating Point (F) memory area. Likewise, the device type of Nfn allows access to any data file (fff) and address (nnn) in the Integer (N) memory area. fff specifies the data file 000-254. For example, to specify Integer data file 95, address 45 (N95:45), select device type as Nfn and enter 095045 in to the device address field. Ensure that the data file and data addresses are entered using leading zeros when necessary.

### 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
I1*	0.0 to 254.15	ddd.bb <sup>2</sup>	Discrete Inputs
O0*	0.0 to 254.15	ddd.bb <sup>2</sup>	Discrete Outputs
B3	0.0 to 254.15	ddd.bb <sup>2</sup>	Bit Data
Bfn <sup>3</sup>	00300000-25425415	fffnnnbb <sup>3</sup>	Bit Data
Nfn Bit <sup>3</sup>	00700000-25425415	fffnnnbb <sup>3</sup>	Bit Data
S-Bit	0.0 to 25425415	fffnnnbb <sup>3</sup>	Status Bits

**NOTE<sup>2</sup>:** When accessing bit data, use the following syntax in the Device Address field:

<word>.<bit>

The bit value must contain the leading 0. For example, to address bit 8 in word 5, the Device Address field would contain:

5.08

**NOTE<sup>3</sup>:** The Bfn and Nfn Bit devices allow access to bits in any bit data file and any word data file respectively. In the former, fff refers to the data file (000-254), nnn refers to the data address (000-254), and bb refers to the bit number (00-15).

For example, Nfn bit 01110702 refers to N11:107.2. Note that the leading zeroes are required in all three fields.

\*Only base I/O is addressable. For units with more than 16 base inputs or outputs, bits above address x:0/15 (x:1/15, x:2/15, etc.) are not accessible. To use data from non-accessible addresses, map data to accessible addresses such as B3 bits.

## Memory Not Supported

The following PLC memory areas are not currently supported by the Maple HMIs:

- Control Files (Type *R*)
- Slot Addressing
- Long Word Files (Type *L*)
- Message Control (Type *MG*)
- PID Control (Type *PD*)

## 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-Set 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 the Allen-Bradley MicroLogix PLCs
- The **Options** column lists EZware's options; your PLC may not support every option

Name	Recommended Settings	Options	Important Notes
Name:	Allen-Bradley MicroLogix Series Ethernet/IP (DF1)		
HMI or PLC:	PLC		

Name	Recommended Settings	Options	Important Notes
Location:	Local	Local, Remote	Select <i>Local</i> if the PLC is directly connected to the HMI; <i>Remote</i> if the PLC is connected thru another OIT.
PLC type:	Allen-Bradley MicroLogix Series Ethernet/IP (DF1)		
PLC I/F:	Ethernet	RS-232, RS-485 2W, RS-485 4W, Ethernet	
PLC default station no.:	1	0-255	
Settings: IP Address:	XXX.XXX.XXX. XXX	XXX.XXX.XXX .XXX	Enter the IP Address of the PLC.
Settings: Port No:	44818	None	This is the TCP/IP port used by the Ethernet IP protocol.
Settings: Timeout (sec)	1.0	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: Reserved 1:	0		Not Applicable
Settings: Reserved 2:	0		Not Applicable
Settings: Reserved 3:	0		Not Applicable
Settings: Reserved 4:	0		Not Applicable
Interval of block pack (words):	5	0-512	See <i>HMI5000 Series Programming Manual</i> (Maple p/n 1010-1007)
Max. read-command size (words):	120		Not Adjustable
Max. write command size (words):	120		Not Adjustable