


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

<b>Maple Model(s)</b>	<b>PLC or Controller</b>
HMI5000 Series	Allen-Bradley PLC-5 Family (DF1)



## Summary

Maple Systems' **HMI5000 Series** Human/Machine Interface Terminals (Maple HMIs) communicate with the Allen-Bradley PLC-5 Family PLCs using the DF1 Full Duplex protocol. When configured with EZware-5000, the Maple HMI is the master in a point-to-point single master, single 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 DF1 port.

## Compatible PLCs

Family	PLC Model
PLC-5 Family	PLC-5/10, PLC-5/11, PLC-5/15, PLC-5/20, PLC-5/25, PLC-5/30, PLC-5/40

## Communications Cable

For the PLC-5/10, PLC-5/15 and PLC-5/25, the Maple HMI should be connected to the DF1 port on the 1785-KE module.

For the PLC-5/11, PLC-5/20, PLC-5/30 and PLC-5/40, the Maple HMI should be connected to the Channel 0 Port on the PLC.

The Maple HMI can be connected directly to any PLC-5 Family processor that contains a serial port that supports the DF1 protocol. 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).

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**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.*

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## PLC Settings

Full Duplex Operation must be set.
No Hardware Handshaking must be set.
The Checksum must be set to CRC (this is the Default).

## 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, f=file)

PLC Register Type	Address Range	Format	PLC Register Description
S	0-254	ddd	Status
T4SV	0-254	ddd	Timer Preset Values
TfnSV	0-254254	fffddd	Timer Preset Values
T4PV	0-254	ddd	Timer Accumulated Values
TfnPV	0-254254	fffddd	Timer Accumulated Values
C5SV	0-254	ddd	Counter Preset Values
CfnSV	0-254254	fffddd	Counter Preset Values
C5PV	0-254	ddd	Counter Accumulated Value
CfnPV	0-254254	fffddd	Counter Accumulated Value
N7	0-254	ddd	Integer Data
N10-N15	0-254	ddd	Integer Data
F8	0-254	ddd	Floating Point Data
Nfn	0-254254	fffddd <sup>1</sup>	Integer Data
Ffn	0-254254	fffddd	Floating Point Data

<sup>1</sup> The device type "Nfn" allows access to any data file (fff) and address (nnn) in the Integer (N) memory area. In the format column, fff specifies the data file 000-254, and nnn specifies the data address 000-254. For example, to specify data file 97, address 45 (N97:45), enter 097045 into the device address field. Ensure that the data file and the data address are entered using leading zeroes 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, f=file)

PLC Bit Type	Address Range	Format	PLC Bit Description
I1	0 to 254 (ddd) 0 to 15 (bb)	ddd (dd) bb	Input
O0	0 to 254 (ddd) 0 to 15 (bb)	ddd (dd)	Output
S_Bit	0 to 254 (ddd) 0 to 15 (bb)	ddd (dd)	Status bit level
B3	0 to 254 (ddd) 0 to 15 (bb)	ddd (dd)	Bit Data
B10-B13	0 to 254 (ddd) 0 to 15 (bb)	ddd (dd)	Bit Data
Bfn	0 to 254254	fffddd	Bit Data
NfnBit	0 to 254254	fffddd	Integer data file bit level

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:

508

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**NOTE** Although the tables list data files 10 - 13 as both Bit (B) and Integer (N), a PLC Data File can exist only as one data type.

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## Memory Not Supported

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

- Data File 9 (of any type)
- Control Files (Type R)

## 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 list the communications setting that must be configured in EZware-5000. These settings are found in the *Edit-Systems 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 PLC-5 PLC.
- The **Options** column lists EZware options; your PLC may not support every option.

Name	Recommended Settings	Options	Important Notes
Name:	Allen-Bradley PLC5 (DF1)		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	Allen-Bradley PLC5 (DF1)		
PLC I/F:	RS232	RS-232	Must match the DF1 port setting.
PLC default station no.:	1	1-31	Must match the default station no. assigned to the DF1.
Settings:	COM 1	COM1-COM3	Serial port of HMI connected to PLC.
Settings: Baud rate:	19200	4800, 9600, 19200, 38400, 57600, 115200	Must match the DF1's port setting. Use the fastest baud rate supported by the PLC.
Settings: Data bits:	8	7 or 8	Must match the DF1's port setting.
Settings: Stop bits:	1	1 or 2	Must match the DF1's port setting.

Name	Recommended Settings	Options	Important Notes
Settings: Parity:	Even	Even, Odd, None	Must match the DF1's port setting.
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: 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	5 <sup>1</sup>	0-512	See <i>HMI5000 Series Programming Manual</i> (Maple p/n 1010-1007)
Max. read-command size (words):	32		Not Adjustable
Max. write-command size (words):	32		Not Adjustable

<sup>1</sup>The Interval of block pack setting determines how much data is collected by the HMI from the PLC per information packet. If you are experiencing sporadic loss of communications to your PLC, try adjusting this to 0.