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ALLEN-BRADLEY

Enhanced PLC-5 and Ethernet PLC-5 Programmable Controller Memory Module

(Cat. No. 1785-ME16, -ME32, -ME64, and -M100)

Installation Data

To the Installer

This document provides you with the following information.

For information about:	Go to page:
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Terminology

These processors are referred to as enhanced PLC-5 programmable controllers:

- PLC-5/11
- PLC-5/20
- PLC-5/30
- PLC-5/40, -5/40L
- PLC-5/60, -5/60L
- PLC-5/80

These processors are referred to as Ethernet PLC-5 programmable controllers:

- PLC-5/20E
- PLC-5/40E
- PLC-5/80E

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European Union Directive Compliance

If this product is installed within the European Union or EEA regions and the product has a CE mark, the following regulations apply.

EMC Directive

This apparatus is tested to meet Council Directive 89/336 Electromagnetic Compatibility (EMC):

- EN 50081-2 EMC – Generic Emission Standard, Part 2 – Industrial Environment
- EN 50082-2 EMC – Generic Immunity Standard, Part 2 – Industrial Environment

According to these Standards, the factor which determines, for EMC purposes, whether an apparatus is deemed to be “Industrial” or “Residential, commercial and light industrial“, is given in Clause 1 of EN50081-2 as follows:

> Apparatus covered by this standard is not intended for connection to a public mains network but is intended to be connected to a power network supplied from a high- or medium-voltage transformer dedicated for the supply of an installation feeding a manufacturing or similar plant.

The product described in this manual is intended for use solely in an industrial environment as defined above. When installed in Europe, any other application is in contravention of European Union Directives, and a breach of those laws.

Low Voltage Directive

This apparatus is also designed to meet Council Directive 73/23 Low Voltage, by applying the safety requirements of EN 61131–2 Programmable Controllers, Part 2 – Equipment Requirements and Tests.

For specific information that the above norm requires, see the appropriate sections in this manual, as well as the following Allen-Bradley publications:

- Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1
- Guidelines for Handling Lithium Batteries, publication AG-5.4
- Automation Systems Catalog, publication B111

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Choosing Compatible Processors and Software for the Memory Module

Table 1 shows the the programmable controllers and the software that are compatible with the 1785-ME16, -ME32, -ME64, -M100 memory modules.

Table 1
1785-ME16, -ME32, -ME64, -M100 Compatibility

Memory Module:	Compatible Programmable Controllers:		Compatible Software:
	Catalog Number:	Series and Revision:	
1785-ME16, 1785-ME32 and 1785-M100	1785-L11B, -L20B, -L30B, -L40B, -L40L, -L60B, -L60L, 1785-L11B, -L20B 1785-L20E, 1785-L40E 1785-L30B 1785-L40B, -L40L, -L60B, -L60L 1785-L40B, -L40L, -L60B, -L60L 1785-L80B	series C, revision C and later series A, revision E and later series C, revision D and later series A revision F and later series B revision F and later series A, revision J and later series C, revision C and later	6200 PLC-5 Programming Software release 4.4 or later
1785-ME64	1785-L11B, -L20B, -L30B 1785-L20E, 1785-L40E 1785-L40B, -L60B 1785-L40L, -L60L 1785-L80B	all series, all revisions series C, revision D and later series A, revision C and later series A, revision C and later series C, revision C and later	6200 PLC-5 Programming Software release 4.1 or later

Handling the Memory Module

The memory module is shipped in a static-shielded bag to guard against electrostatic damage.



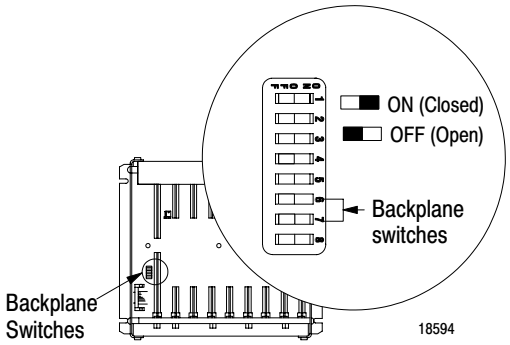
ATTENTION: Under some conditions, electrostatic discharge can degrade performance or damage the memory module. Observe the following precautions to guard against electrostatic damage:

- Touch a grounded object to rid yourself of static charge before handling the module.
- When not in use, keep the module in its static-shielded bag.

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Setting Backplane Switches

Set the I/O chassis backplane switches before you install the PLC-5 processor. Use a ballpoint pen to set each switch (do not use a pencil because the tip can break off and short the switch).



Use Table 2 to select the mode of memory transfer at power-up.

Table 2
Selecting Mode of Memory Transfer and Switch Settings

If you want the contents of the memory module:	Then set switch 6:	And set switch 7:
to transfer to processor memory at every power-up	OFF	OFF
to transfer to processor memory when a defect is detected in existing processor memory	ON	ON
not to transfer to processor memory at power-up; if the processor memory is not valid, a processor fault occurs.	ON	OFF

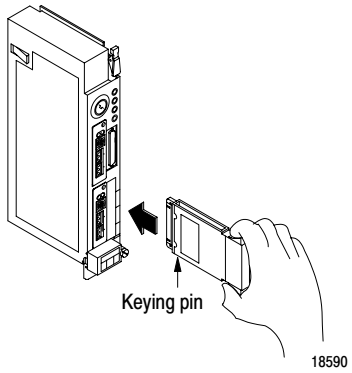
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Installing the Memory Module

Insert the memory module into the front of the PLC-5 processor by following these steps:

1. Turn off power to the I/O chassis and processor.

ATTENTION: Do not insert or remove the memory module under power. Insertion or removal under power can result in loss of program memory and a processor fault.



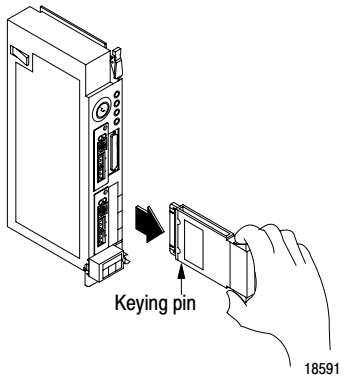
2. Insert the memory module firmly but gently into the processor with the keying pin in the down position. When the memory module is inserted correctly you will hear the connector pins on the back of the memory module snap together with the mating connector in the processor.

Removing the Memory Module

Remove the memory module by following these steps:

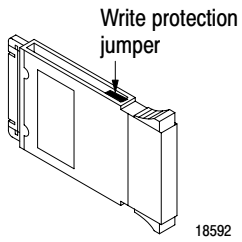
1. Turn off power to the I/O chassis and processor.

ATTENTION: Do not insert or remove the memory module under power. Insertion or removal under power can result in loss of program memory and a processor fault.



2. Grasp the finger grip tabs and firmly pull the memory module out of the processor.

Using the Write Protection Jumper



The write protection jumper allows you to program the memory module. The memory module is packaged with the jumper in the correct position to write to the memory module.

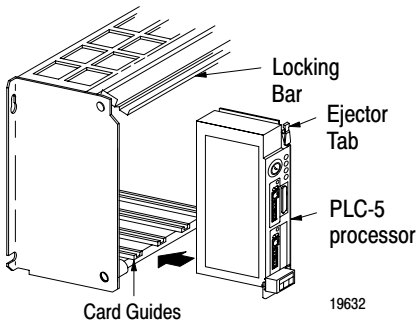
After writing to the memory module, remove the write protection jumper using a pair of needle nose pliers. Store the jumper in a safe place for future use. Once you remove the jumper, you cannot write to the memory module.

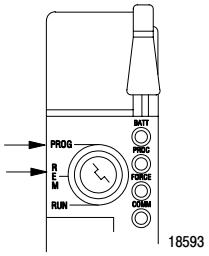
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Writing to the Memory Module

Use the following steps to store a program on your memory module.

Important: If you are using a 1785-L40B series A, revision B or a 1785-L60B series A, revision B processor, you must have the Global Status Flag file set to zero. Access this file through the channel configuration screen for channels configured for DH+ communications. If the Global Status Flag file is set to any number except zero and you try to write to a memory module, you will lose processor memory and a processor fault occurs.



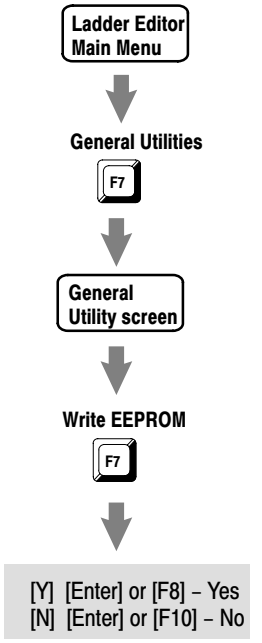


1. Insert the memory module into the processor using the installation procedure in this document (see page 5).
2. On the I/O chassis backplane, set backplane switch 6 to the ON position and switch 7 to the OFF position (see page 4).
3. Install the processor into the I/O chassis.
4. Turn on power to the processor and I/O chassis.
5. Put the processor in Program or Rem Program mode.

   If you try to write to a memory module when the processor is in any other mode, you receive a `NO ACCESS OR PRIVILEGE VIOLATION` message.
6. Develop or download your program online (make sure you initialize your data table values).

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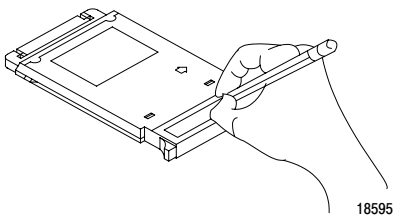
7. Transfer a duplicate of your program to the memory module. You must be programming online to write to a memory module (use the figure below).




```
| I:001                                                                 O:005 |
+--]/[-----------------------------------------------------------------(  )--+
|    14                                                                  10 |
|                                                  +TON----------------+     |
+--------------------------------------------------+TIMER ON DELAY    +-(EN)-+
|                                                  |Timer         T4:0|      |
|                                                  |Time base     0.01+-(DN) |
|                                                  |Preset          12|      |
|                                                  |Accum            0|      |
|                                                  +------------------+      |
|                                               +MSG--------------------+    |
+-----------------------------------------------+SEND/REC MESSAGE       +-(EN)-+
|                                               |Control Block     N7:10+-(DN) |
|                                               |                       +-(ER) |
|                                               +-----------------------+
+------------------------------[END OF FILE]-----------------------------------+
Press a function key.
(file 2, rung 3)
Rem Prog   Forces:None      Edits:None                   5/40  Addr 25  LIMIT
Change  Config  Return  Program Documnt Search  General  Data    Force   Edit
 Mode   Display to Menu Dirctry                 Utility Monitor
  F1      F2      F3      F4      F5      F6      F7      F8      F9      F10
```

If you confirm the procedure, the memory module write begins. During this procedure, the “PROC” LED on the processor flashes green and the programming terminal beeps until the write procedure is completed.

If no error occurs during the write to the memory module, you see the following message displayed: `EEPROM SUCCESSFULLY BURNED`



8. Remove the memory module from the processor using the removal procedure in this document (see page 5).

9. Label the memory module with a ballpoint pen. Use the space provided to label the program transferred to the memory module.

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Handling an Error while Writing to the Memory Module

If an error occurs during a write to the memory module, you see this message displayed: `EEPROM NOT BURNED`

If you get this message, do the following:

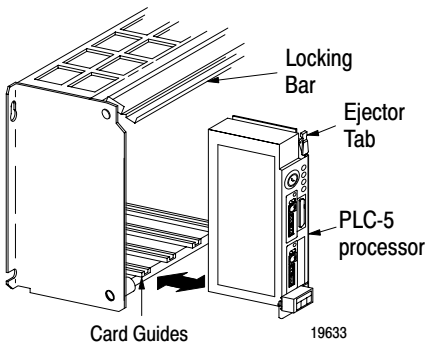
- check that you inserted the write protect jumper
- check minor fault bit (S:10/8) in the status file. If this bit is set, then there is not enough memory on your memory module to upload the program from the processor.
- review the "Writing to the Memory Module" procedure (see page 6) and repeat it from the beginning

Restoring a Program from a Memory Module

You can restore a program from a memory module to the processor memory using the following procedure.

If the restore fails, the old program remains in memory and the EEPROM transfer bit (minor fault bit S:10/3) is cleared.

Important: When restoring a program from a memory module using a 1785-L40B series A, revision B or a 1785-L60B series A, revision B processor, the memory module overwrites the DH+ station address for channel 1A.

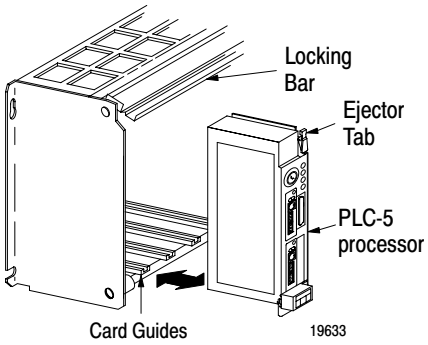


1. Turn off power to I/O chassis and processor.
2. Remove the processor from the I/O chassis.
3. Set backplane switch 6 and 7 of the switch assembly group to the OFF position (see page 4). This allows the memory module memory to transfer to processor memory at power-up.
4. Install the processor into the I/O chassis.
5. Install the memory module containing the program to be restored into the processor using the installation procedure in this document (see page 5).
6. Turn on power to the processor. Program transfer and execution begin immediately with the processor keyswitch in Run or Rem position.

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Important: You can have continuous processor memory backup after restoring a program from a memory module to a processor by following these instructions:

1. Turn off power to the processor and I/O chassis.
2. Remove the memory module by following the removal procedure in this document (see page 5).
3. Remove the write protection jumper with needle nose pliers to guard against unauthorized changes. Store the jumper in a safe place for future use.
4. Re-install the memory module into the processor by following the installation procedure in this document (see page 5).
5. Remove the processor from the I/O chassis.
6. Set switch 6 and 7 of the assembly backplane switches to the ON position (see page 4).
7. Re-install the processor into the I/O chassis.



Specifications

The following table shows the specifications for the memory modules.

Memory Module		1785-ME16	1785-ME32	1785-ME64	1785-M100
Capacity		16K words	32K words	64K words	100K words
Type		Nonvolatile			
Write Protection		By removing the jumper			
Weight		85.05 g 3 oz	70.875 g 2.5 oz	70.875 g 2.5 oz	70.875 g 2.5 oz
Environment	Operating Temperature	0° to 60° C (32° to 140° F)			
	Storage Temperature	-40° to 85° C (-40° to 185° F)			
	Relative Humidity	5 to 95% (without condensation)			
Shock Testing	Operating	15 g peak acceleration at 11 ms duration			
	Non-operating	3 g peak acceleration at 11 ms duration			
Vibration Testing		2 g peak acceleration at 10-500 Hz			
Agency Certification (when product or package is marked)		• CSA certified • CSA Class I, Division 2 Groups A, B, C, D • UL listed • CE marked for all applicable directives			

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Installation Data
Enhanced PLC-5 and Ethernet PLC-5
Programmable Controller Memory Module

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Allen-Bradley Headquarters, 1201 South Second Street, Milwaukee, WI 53204 USA, Tel: (1) 414 382-2000 Fax: (1) 414 382-4444

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