MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ALLEN-BRADLEY

1764-MM2

SIXTEEN KILOBYTE PROGRAM MEMORY MODULE

Used with the applicable MicroLogix 1500 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Allen-Bradley MicroLogix 1500 User Manual 1764-UM001B-EN-P; memory-module pages 1-4, 2-20/21 and 6-3/5



Allen-Bradley

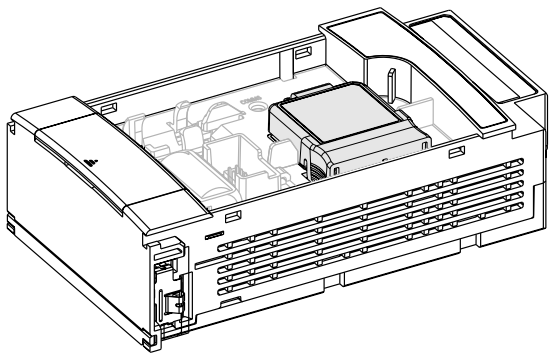
MicroLogix™ 1500 Programmable Controllers

Bulletin 1764

User Manual

Rockwell Automation

Memory Modules/Real-Time Clock



Memory module mounted on 1764-LSP processor.

The following memory modules and real-time clock modules are available:

Catalog Number	Function	Memory Size
1764-RTC	Real-Time Clock	not applicable
1764-MM1	Memory Module	8K
1764-MM1RTC	Memory Module and Real-Time Clock	8K
1764-MM2(1)	Memory Module	16K
1764-MM2RTC(1)	Memory Module and Real-Time Clock	16K

(1) For 1764-LRP programs greater than 8k, use the 1764-MM2 or 1764-MM2RTC.

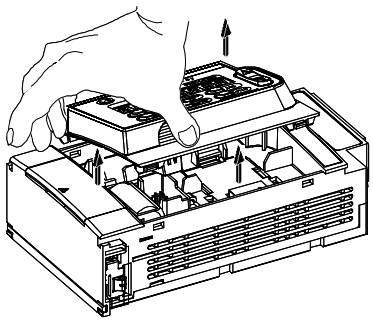
Cables

Use only the following communication cables in Class I, Division 2 hazardous locations.

Table 1.1 Cables for Use in Class I, Division 2 Hazardous Environment

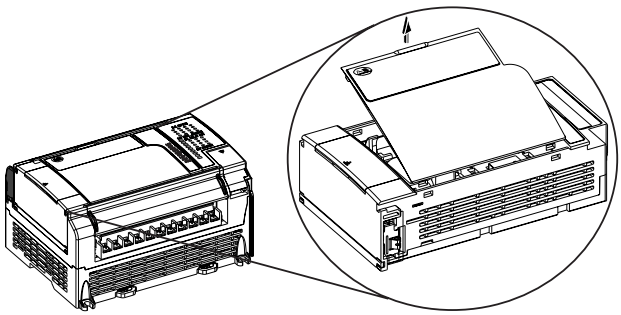
1761-CBL-PM02 Series C or later	2707-NC8 Series B or later
1761-CBL-HM02 Series C or later	2707-NC9 Series B or later
1761-CBL-AM00 Series C or later	2707-NC10 Series B or later
1761-CBL-AP00 Series C or later	2707-NC11 Series B or later

4. To remove DAT, grasp using finger areas and pull upward.



Memory Module/Real-Time Clock

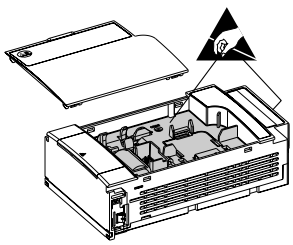
1. Remove the cover (or DAT if installed) from the processor as shown below.

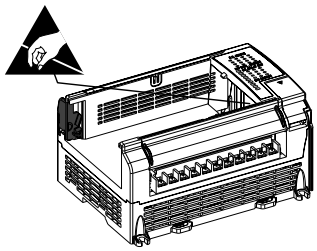


ATTENTION

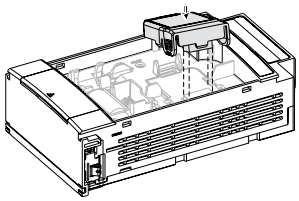


Electrostatic discharge can damage semiconductor devices inside the base and processor units. Do not touch the connector pins or other sensitive areas.

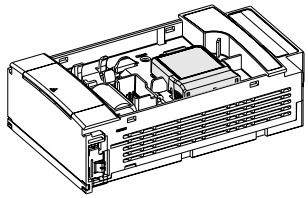




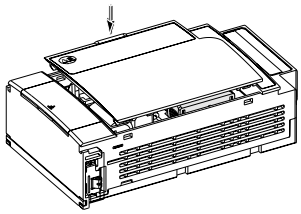
2. Align connector on the memory module with the connector pins on the processor.



3. Firmly seat the memory module in the processor making sure the locking tabs click into place.



4. Replace the cover (or DAT if used).



Using Real-Time Clock and Memory Modules

Five modules with different levels of functionality are available for use with the MicroLogix 1500 controller.

Catalog Number	Function	Memory Size
1764-RTC	Real-Time Clock	not applicable
1764-MM1	Memory Module	8K
1764-MM1RTC	Memory Module and Real-Time Clock	8K
1764-MM2(1)	Memory Module	16K
1764-MM2RTC(1)	Memory Module and Real-Time Clock	16K

(1) For 1764-LRP programs greater than 8k, use the 1764-MM2 or 1764-MM2RTC.

Real-Time Clock Operation

Removal/Insertion Under Power

The real-time clock module can be installed or removed at any time without risk of damage to either the module or the controller. If a module is installed while the MicroLogix 1500 is in an executing mode (Run or Remote Run), the module is not recognized until either a power cycle occurs, or until the controller is placed in a non-executing mode (program mode or fault condition).

Removal of the memory module is detected within one program scan. Removal of the real-time clock under power causes the controller to write zeros to the (RTC) Function File.

Real-Time Clock Function File

The real-time clock provides year, month, day of month, day of week, hour, minute, and second information to the Real-Time Clock (RTC) Function File in the controller. Refer to the *MicroLogix 1200 and MicroLogix 1500 Instruction Set Reference Manual*, publication 1762-RM001 for information about the RTC function file.

Use the *Disable Clock* button in your programming device to disable the real-time clock before storing a module. This decreases the drain on the battery during storage.

Table 6.1 RTC Battery Life Expectancy

Battery State	Temperature	Time Duration
Operating	0°C to +40°C (+32°F to +104°F)	5 years(1)
Storage	-40°C to +25°C (-40°F to +77°F)	5 years minimum
	+26°C to +60°C (+79°F to +140°F)	3 years minimum

(1) The operating life of the battery is based on 6 months of storage time before the real-time clock is used.

ATTENTION



Operating with a low battery indication for more than 14 days may result in invalid RTC data if controller power is lost.

Memory Module Operation

The memory module supports program back-up as well as the following features:

- User Program and Data Back-Up
- Program Compare
- Data File Download Protection
- Memory Module Write Protection
- Removal/Insertion Under Power

User Program and Data Back-Up

The memory module provides a simple and flexible program/data transport mechanism, allowing the user to transfer the program and data to the controller without the use of a personal computer and programming software.

The memory module can store one user program at a time.

During transfers from a memory module, the controller's RUN LED flashes.

Program Compare

The memory module can also provide application security, allowing you to specify that if the program stored in the memory module does not match the program in the controller, the controller will not enter an executing (run or remote run) mode. To enable this feature, set the S:2/9 bit in the system status file. Refer to the *MicroLogix 1200 and MicroLogix 1500 Instruction Set Reference Manual,* publication 1762-RM001, for more information.

Data File Download Protection

The memory module allows the user to specify individual data files in the controller that are protected from the download procedure. This allows user data to be saved (not overwritten) during a download.

TIP



Data file download protection is only functional if the processor does not have a fault and if all protected data files in the memory module exactly match the protected data file structure within the controller. Refer to the *MicroLogix 1200 and MicroLogix 1500 Instruction Set Reference Manual,* publication 1762-RM001, for information on protecting data files during download.

Memory Module Write Protection

The memory module supports write-once, read-many behavior. Write protection is enabled using your programming software.

IMPORTANT Once set, write protection cannot be removed. A change cannot be made to the control program or data stored in a write-protected memory module. If a change is required, you must use a different memory module.

Removal/Insertion Under Power

The memory module can be installed or removed at any time without risk of damage to either the memory module or the controller. If a memory module is installed while the MicroLogix 1500 is executing, the memory module will not be recognized until either a power cycle occurs, or until the controller is placed in a non-executing mode (program mode or fault condition).

Memory Module Information File

The controller has a Memory Module Information (MMI) File which provides status from the attached memory module. At power-up or on detection of a memory module being inserted, the catalog number, series, revision, and type (memory module and/or real-time clock) are identified and written to the MMI file. If a memory module and/or real-time clock is not attached, zeros are written to the MMI file. Refer to the *MicroLogix 1200 and MicroLogix 1500 Instruction Set Reference Manual*, publication 1762-RM001, for more information.