Discrete Output Module

IC697MDL340

GFK-0082J
February 2001

120 VAC 2-Amp, 16-Point Output Module

Features

- 16 Points – Four isolated groups of four points each.
- 2 Amps capacity per point
- High inrush capacity (10x rated current)

Functions

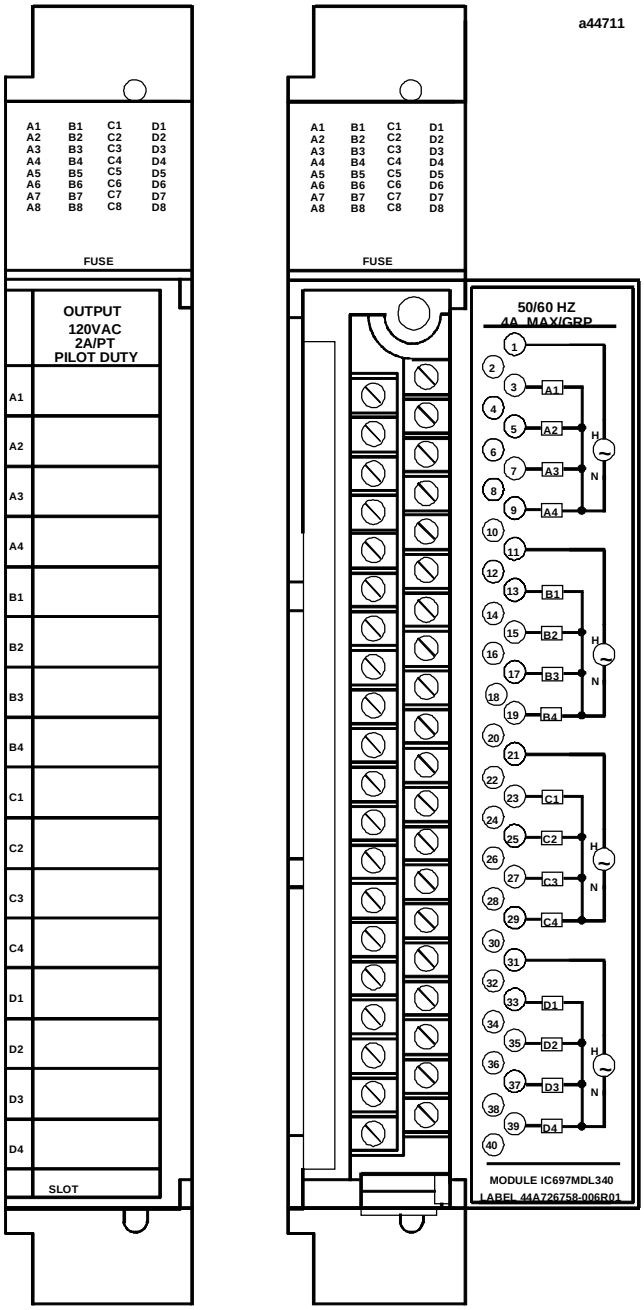
The **120 Volt AC 2 Amp Output Module** provides 16 output points in four isolated groups of four points each. This allows each group of four points to be used on different phases of the AC supply. Each group of four outputs is individually fused with a 10-amp fuse.

The module provides a high degree of inrush current capacity, which makes the outputs suitable for a wide range of inductive and incandescent loads. The module will pick up most size-4 contactors.

LED indicators at the top of the module provide the ON/OFF status of each point on the logic side of the circuit. The LED labeling (e.g. A1, B1, C1, D1, etc.) corresponds to the circuit labeling on the back of the hinged door, seen in the adjacent figure. Only the top four rows of LEDs are used on this module since it is a 16-point module. An additional LED indicator, labeled "FUSE," illuminates if an internal fuse opens.

The module is mechanically keyed to ensure correct replacement with a similar type in the field.

I/O references are user-configurable without the use of DIP switches or jumpers on the module. Configuration is performed using the configuration function of the PLC programming software.



Operation of the 120 Volt AC 2 AMP Output Module

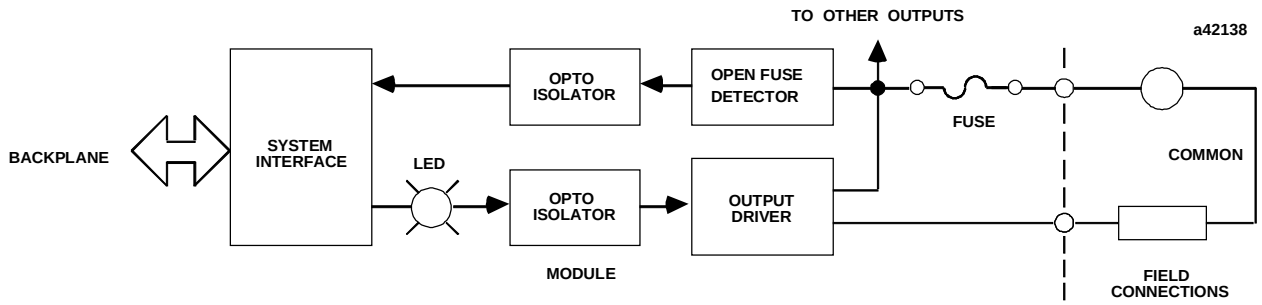


Figure 1. Block Diagram of the IC697MDL340

Output Characteristics

The 120 Volt AC 2 Amp Output Module is compatible with a wide variety of load devices, such as:

- Solenoids
- Relays and motor starters
- Indicator lights

The rating of 2 amps per point applies to the long–term capacity of each point. Because of overall heat dissipation within the module, the maximum current capacity for each group of four outputs is limited to 4 amperes.

Each output on this module is capable of transiently conducting a surge current that is much greater than its long–term current rating.

The rate at which such surges can be repeated depends on the current rating of the device and the duty cycle (percent of time the device is ON). For typical incandescent devices operating at a 50% duty cycle, the following repetition rates apply:

Steady-State Current (mA)	Repetition Rate (Hz)
0.5	5
1	1
2	0.1

Fault Mode Selection

The module can be configured from the programmer so that output points assume one of two states in response to certain operating or default conditions.

- Maintain existing output state
- Turn outputs OFF

This is explained in more detail in the programming manual.

Fusing

Each group of 4 outputs is fused with a 10-amp slow-acting fuse (see Note below). Replace with either of the following slow-acting types:

- Bussman MDA-10
- Littelfuse 326010

Note

Previous versions of this data sheet specified fast-acting fuses; however, use of the slow-acting fuses listed above will give the best overall results.

Module Mechanical Keying

This module includes a mechanical key that prevents inadvertent substitution of one module type for another in a given slot. The key fits a uniquely shaped area on the board below the connector. The key is included with each module.

When the module is first installed, the key latches onto the backplane center rail. When the module is extracted, the key remains in the center rail, configuring the slot to accept only identical module types.

If it is necessary to change the module location in the rack after the key has been latched onto the center rail of the rack, the key can be removed by pushing it upward to unhook the latch while pulling it off the rail. It may then be reinserted onto the module and the module inserted into the rack in the desired location. Note: only the power supply can be placed in the leftmost rack position.

Field Wiring

The module is wired as shown. Since each group of four outputs is isolated from the others, a wire from the power source to the power input terminals for each group is required (power input terminals for each group are not connected inside the module).

The detachable field wiring terminal board will accept wire sizes from AWG #22 (0.36 mm2) through AWG #14 (2.10 mm2). Two wires may be terminated on a given lug if both wires are the same size. There is room for a bundle of forty AWG #14 (2.10 mm2) wires to be routed out through the terminal board cavity.

The wire bundle can be secured to the terminal board by passing a cable tie through a cleat located at the lower corner of the terminal board.

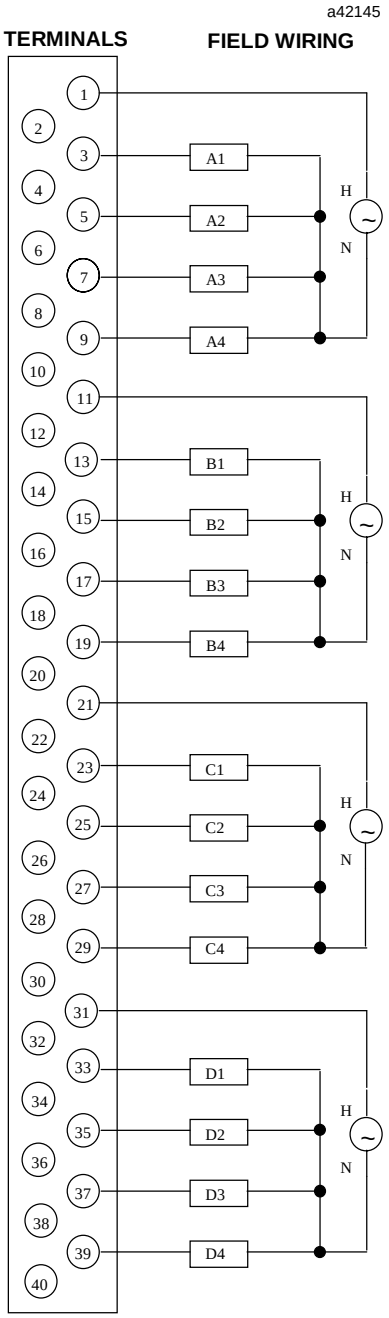


Figure 2. Field Wiring Connections

Recommended Field Wiring Procedures

The following procedures are recommended when connecting field wiring to the detachable terminal board on this input module. Module features referenced in the following procedures that are common to all IC697 I/O modules are illustrated in the following figure.

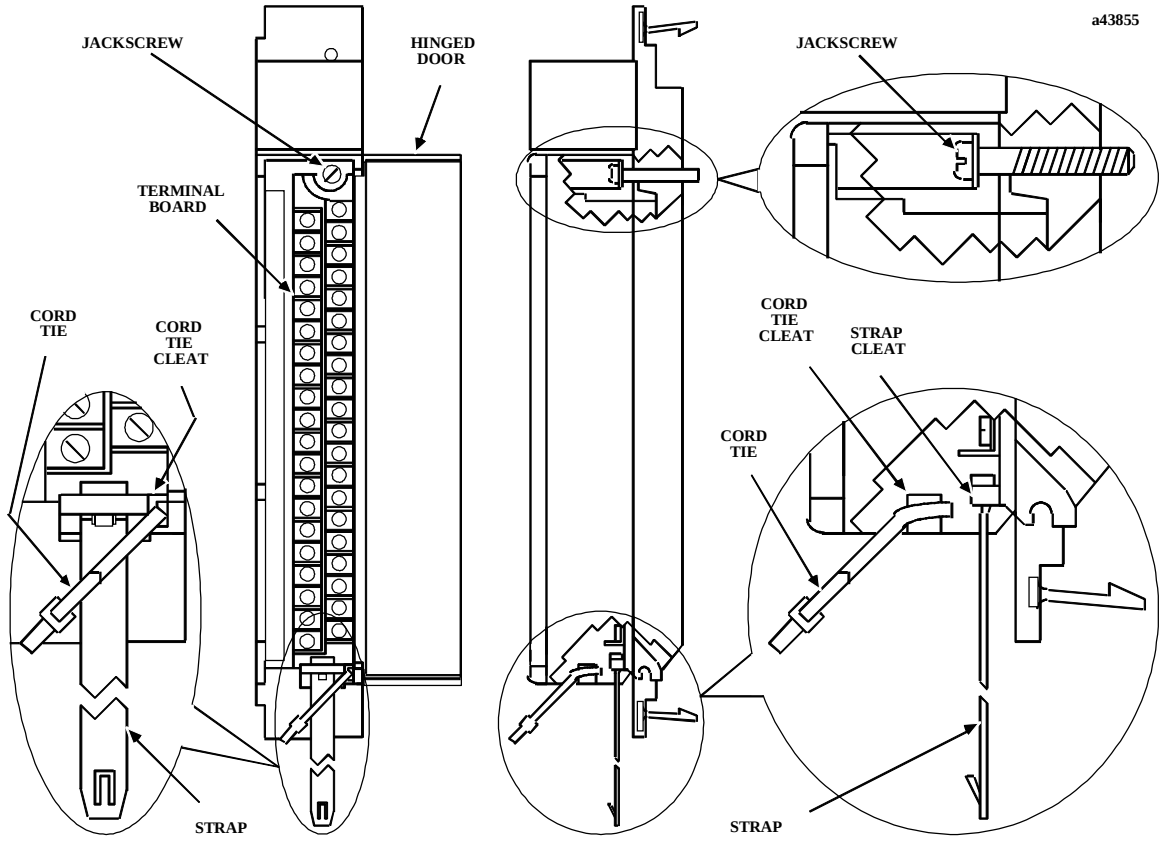


Figure 3. Field Wiring Procedures

1. **<u>Turn off power</u> before removing or installing terminal boards.** Open the hinged door on the module to access a jackscrew that holds the terminal board securely in place. The detachable field wiring terminal board can now be removed from the module by turning the jackscrew counter–clockwise until it is fully disengaged.
2. To remove the terminal board, grasp the top of the terminal board and swing it outward. See Figure 4.

Caution

To avoid damaging the hinged door, do not pull on it to remove the terminal board.

3. The terminal board is designed to accept wire sizes from AWG #22 (0.36 mm) through AWG #14 (2.10 mm). It is important when using size AWG #14 (2.10 mm2) wire for wiring all points, that a maximum insulation diameter of .135 inch (3.43mm) not be exceeded. To ensure proper connection, two wires may be terminated on any one terminal only if both wires are the same size.
4. The terminal board can accept a maximum of 40 AWG #14 (2.10 mm^2) wires. If AWG #14 (2.10 mm^2) wires are used, wire markers should be placed at least 8 inches (203 mm) from termination end to provide sufficient space for the hinged door to close.

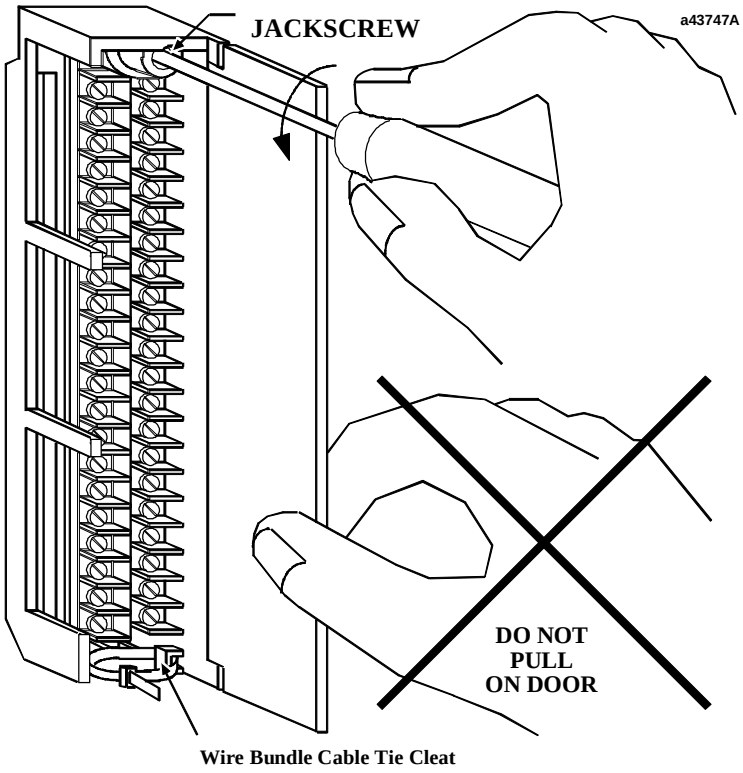


Figure 4. Removal of I/O Terminal Board

5. After completing connections to all modules in a rack, the wire bundle must be secured. To ensure that the wire bundle is secured properly, it is recommended that a cable tie be wrapped around the wire bundle and tightly secured through the cable tie cleat located at the lower right corner of the terminal board. For extremely large wire bundles, additional cable ties should be used.
6. A door label insert is included with each module to indicate circuit wiring information and provide space to record user circuit wiring identification. A slot is provided on the hinged door to allow for insertion of this label. If the label is difficult to insert, crease the scored edge before insertion. The outside label has a color-coded stripe to allow quick identification of the module voltage type (blue = low voltage, red = high voltage).
7. After field wiring is completed, the terminal board should be securely fastened to the rack by inserting the terminal board strap (attached to each module) into the small rectangular slots in the bottom card guide grill on the rack. This strap not only secures the terminal board to the rack, but it also provides a way of identifying the wired terminal board with its correct mating rack slot location.
8. For adequate module ventilation, it is recommended that at least a 6 inch (152mm) clearance be allowed above and below the rack grill. Wire bundles should not obstruct the rack grillwork.

Removing an I/O Module

The instructions below should be followed when removing an I/O module from its slot in a rack.

1. **Turn off power to the rack.**
2. Remove the terminal board (see procedure).
3. Loosen the two module holding screws.
4. Grasp the module firmly at the top and bottom of the cover with your thumbs on the front of the cover and your fingers on the plastic clips on the back of the cover.
5. Squeeze the rack clips on the back of the cover with your fingers to disengage the clip from the rack rail and pull the board firmly to remove it from the backplane connector.
6. Slide the board along the card guide and remove it from the rack.

Table 1. Specifications for IC697MDL340*

Rated Voltage:	120 volts AC
Outputs per Module:	16 (four groups of four outputs each)
Isolation:	1500 volts – any output to backplane
	500 volts between groups
Output Voltage Range:	85 to 132 volts, 47 to 63 Hz
Output Current:	2 amps maximum per point
	4 amps maximum per group
Output Characteristics –	
Inrush Current:	20 amps maximum for one cycle (20 ms)
Output Voltage Drop:	3 volts maximum
Response Time–On:	1 ms maximum
Response Time–Off:	1/2 cycle
Output Leakage:	1.5 mA maximum
Current Required from 5V Bus:	0.25 amp
VME	System designed to support the VME standard C.1

* Refer to the latest version of GFK– 0867B for product standards and general specifications. For installations requiring conformance to more stringent requirements (for example, FCC or European Union Directives), refer to *Installation Requirements for Conformance to Standards.*

Table 2. Ordering Information

Description	Catalog Number
Output Module – 120 VAC, 2 Amp, 16-point	IC697MDL340

Note: For Conformal Coat option or Low Temperature Testing option, please consult the factory for price and availability.