

# Instruction Sheet for All Series 96 and 97 Controllers

## Field-Expandable Output Modules



0600-0002-0000 Rev A  
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CE 97

ISO 9001



TOTAL CUSTOMER SATISFACTION

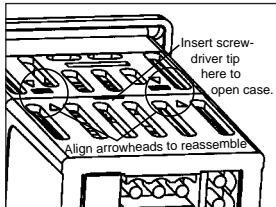


Figure 1 — Screwdriver slot and assembly alignment arrows

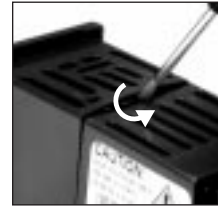


Figure 2 — Screwdriver twist action on top and bottom



Figure 3 — Main boards and numbered output slots

**CAUTION:** Except for identical module replacement in the same slot, this procedure will change all controller programming to default values. Document all controller parameters before beginning. Failure to do so could result in damage to equipment and product.

**CAUTION:** Use MIL-STD-1686B / EN10015-1 ESD (electrostatic discharge) procedures when handling output modules. Failure to follow these procedures could result in damage to equipment and product.

ESD Grounding Strap available;  
order p/n: 0830-0494-0000

**NOTE:** The module procedure must be performed by a qualified technician.

**CAUTION:** Verify output connector wiring after changing a module for a different one, and before re-installing the controller. Refer to the product user manual "Wiring," Chapter 3. Failure to do so could result in damage to equipment and product.

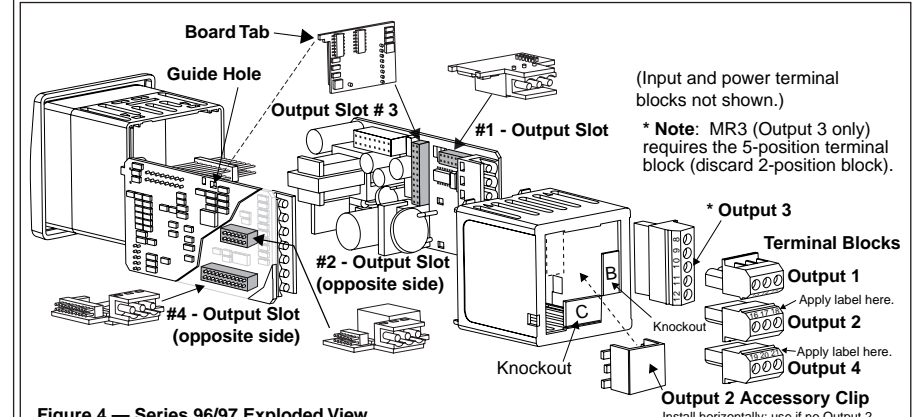
Table 1 — Output modules with four-letter identity codes (located on the back of each board) and model number codes

Output Slot location is based on model number:  
9 X X X - - - - - 0 0 X X  
Output Slot 1 2 3 4

	<b>C - DCSW; Open Collector</b> 9 6 X X - ★ X X X - 0 0 X X (Slot 1 or 2) 9 7 X X - D X X X - 0 0 X X (Slot 2) Specification: 42V <sub>DC</sub> @ 200mA max. ext. supply; 22 to 28V <sub>DC</sub> @ 30mA internal supply Watlow P/N: Z100-0739-0001
	<b>D - MRLY; Mechanical Relay</b> 9 6 X X - ★ X X X - 0 0 X X (Slot 1,2,4) 9 7 X X - D X X X - 0 0 X X (Slot 1,2,4) <b>Note:</b> Series 97 requires MRLY in Output #1. Specification: Form C, 2A, w/o RC suppression Watlow P/N: Z100-0739-0002
	<b>D - MR3; Mechanical Relay</b> 9 6 X X - X X X X - 0 0 X X (Slot 3 only) 9 7 X X - D X X X - 0 0 X X (Slot 3 only) <b>Note:</b> MR3 requires the 5-pin terminal block. Specification: Form C, 2A, w/o RC suppression Watlow P/N: Z100-0739-0003
	<b>F - PROC; Process</b> 9 6 X X - ★ X X X - 0 0 X X (Slot 1 or 2) 9 7 X X - D X X X - 0 0 X X (None) <b>Note:</b> PROC prohibited in Series 97 Specification: Universal process Watlow P/N: Z100-0739-0004
	<b>K - SSR; Solid-state Relay</b> 9 6 X X - ★ X X X - 0 0 X X (Slot 1 or 2) 9 7 X X - D X X X - 0 0 X X (Slot 2) Specification: 0.5A, w/o RC suppression Watlow P/N: Z100-0739-0005
	<b>M - PROC; Retransmit</b> 9 6 X X - X X X X - 0 0 X X (Slot 4 only) 9 7 X X - D X X X - 0 0 X X (Slot 4 only) <b>Note:</b> Use the rear half of the Output 4 slot Specification: Universal process Watlow P/N: Z100-0739-0006
	<b>R - RS232; EIA-232 Communications</b> 9 6 X X - X X X X - 0 0 X X (Slot 4 only) 9 7 X X - D X X X - 0 0 X X (Slot 4 only) Specification: 1200 to 19200 baud Watlow P/N: Z100-0739-0007
	<b>U - COMM; EIA-485 Communications</b> 9 6 X X - X X X X - 0 0 X X (Slot 4 only) 9 7 X X - D X X X - 0 0 X X (Slot 4 only) Specification: 1200 to 19200 baud Watlow P/N: Z100-0739-0008

**Steps to install or replace a Series 96/97 module:**

- Step 1 Determine the controller's present model number and new model number, and proposed module locations**
- Plan for the number of output modules you will add, change, or relocate. See Table 1 to identify your modules.
  - Fill in the blanks below with your unit's present model number and new model number from the unit wiring label. Notice the correlation between the model number and the output slot numbers. See Table 1
  - Present Model Number:**  
9 X X X - - - - - 0 0 X X  
Output Slot 1 2 3 4
  - New Model Number:**  
9 X X X - - - - - 0 0 X X  
Output Slot 1 2 3 4
- Step 2 Record programming for a controller already in service, or with factory-loaded parameters.**
- If you are creating a new module number for a controller currently in service, or for one preprogrammed at the factory, document all parameter settings and values. Unless you are replacing a module with an identical one in the same slot, all user-programmed information will return to default values when power is restored (see **CAUTION** on the left). Use a photocopy of the fold-out back cover of the Series 96 or 97 User's Manual to record the parameters.
- Step 3 Remove the controller from the application.**
- Remove power from the unit, then remove the terminal blocks from the back of the controller. Then, remove the controller from the panel. Follow the instructions in the Series 96 or 97 User's Manual, Chapter 2.
- Step 4 Disassemble the case and circuit boards.**
- Ground yourself and your work area with proper ESD protection (see **CAUTION** on the left).
  - Insert a small screwdriver into the slot on the top of the case (see Figures 1 and 2). Gently twist the screwdriver blade to separate the case halves. Repeat on the bottom of the case; then separate the case halves, and pull the circuit boards out.
  - Note the small circuit board tabs and guide holes, as you gently pull the two large circuit boards apart.
- Step 5 Install the field module.**



- Figure 4 — Series 96/97 Exploded View**
- Remove the terminal block from the module and set it aside; you may or may not need it.
  - Identify the module type and its slot (see Table 1, and Figures 3 and 4). The slot numbers appear on the large circuit boards, next to each slot. The module identifier appears on the back of the module board.
  - Insert the module into its slot. Make sure all pins seat properly. **Note:** Use the rear half of the Output 4 slot for M - PROC.

- Step 6 Reassemble the printed circuit boards and the case.**
- Match the module tabs and the main board guide holes as you reassemble the unit. Look at the boards and unit from the back to make certain that all the output boards are straight and perpendicular to the main boards.
  - If applicable, remove Knockout B or C (see Figure 4) for the output pins at the back of the case, and... install the five-pin terminal block for MR3 in Output 3; discard the two-pin terminal block. (See the Power and Output 3 wiring instructions in the Series 96 or 97 User's Manual, Chapter 3.)
  - Insert the circuit board assembly into the back half of the case. The long pins connecting the two main boards together should be on top; the unit labels should read upright. Insert the whole assembly into the front half of the case, making certain that the shaded arrows on the top of each half of the case align. (See Figure 1.)
  - Reassemble the case; wiggle the back half assembly to seat it in the front. (The 10 small pins on the front of the assembled circuit boards must seat in the display board socket on the inside front of the case.) Case halves should snap together cleanly.
  - Verify that all output module connectors are flush with the case back.
  - If empty, the Output 2 slot requires the Accessory Clip. (See Fig. 4.) Seat the clip legs on the left first, then seat the right legs with a small screw-driver; the clip will snap flush.

- Step 7 Update the labels.**
- Update the unit's model number and wiring information label (on the left side of the unit as you face it) by covering the old wiring information and model number with the small labels supplied in the module kit. (See Figure 5.) Position the labels with a small screwdriver. Apply labels to the new terminal blocks also. (See Figure 4.)

- Step 8 Verify output wiring and install the controller.**
- Verify output connector wiring, especially after changing a module for a different one, and before installing the controller. Refer to the Series 96 or 97 User's Manual, Chapter 3 (see **CAUTION** above).
  - Install the controller by following the instructions in the Series 96 or 97 User's Manual, Chapter 2.
  - Connect the terminal blocks; make sure the numbers on the block match those on the back of the case.

- Step 9 Test the controller.**
- Upon first power up, an error message, ERR 10, will appear. Turn the power off.
  - Power up the controller again to clear the error. If necessary, reprogram the controller to its former settings
  - The module installation is complete. For troubleshooting information, see the index of the Series 96/97 User's Manual.