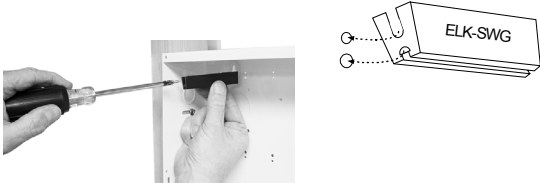


## Installation

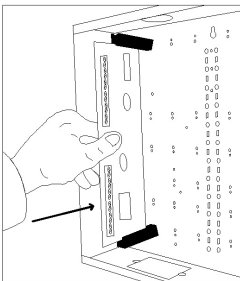
1. A single M1XOVR Expander can be mounted inside the M1 enclosure on the left hand side of the M1 board using the supplied ELK-SWG Circuit Board Glides. If any additional expanders are required, they can be mounted in either an SWB14 or SWB28 enclosure. Up to 8 expanders can be mounted in an SWB14 while up to 16 expanders can be mounted in an SWB28.

The ELK-SWG Circuit Board Glides attach to the enclosure at strategically placed 2-hole punch patterns. Note that one hole in each pattern is slightly larger than the other. The small hole is for a 6/32 type "F" mounting screw and the large hole is for a half-moon shape locator tab on the bottom of each glide.



2. Starting at the top left corner, loosely start a 6/32" mounting screw in the small hole of the first 2-hole pattern. Place the slotted edge of a board glide under this screw, making sure that the half-moon tab fits into the larger hole and the grooved edge is facing down. Tighten the screw using a long shafted screwdriver. Install a second board glide in the 2-hole pattern located 152mm below. Attach the second board glide using the same procedures. The grooved edge of this glide should face up.

3. Slide the expander board into the grooves provided by the glides. The circuit board should slide freely. If the board is loose or too tight, simply loosen one of the mounting screws and adjust the glide to assure a good fit.



## Wiring Connections

1. Turn Control Panel Master Power Switch Off.
2. Use a 4 wire cable to connect terminals +VKP, Data A, Data B, and Neg from Control to terminals 12V, A, B, and Neg on the M1XOVR. **IMPORTANT NOTE:** If the expander is remotely mounted, refer to information in the M1 Installation Manual for important information about data bus devices connected to multiple homerun cables.
4. Set Address Switches according to Table 1.
5. Turn the M1 Master Power Switch On.
6. Enroll the M1XOVR to the M1 Control using the following procedure: Enter Installer level programming and select Menu 01-Bus Module Enrollment. Press the right arrow key to start enrollment. To view the results, press the right arrow "edit" key.
6. After enrollment, use the Ness-RP Rules programming to assign the new outputs.

**NOTE:** If it becomes necessary to replace an enrolled device, set the new unit to the same address and repeat the enrollment. If permanently removing a device, un-enroll it to prevent a trouble condition.

# Output Expander 8 Voltage / 8 Relays M1XOVR

## APPLICATION:

The **M1XOVR** adds 8 Voltage outputs and 8 Relay outputs to the M1 Control. It operates on the 4-wire data bus and features flash memory for field updating of the operating firmware. The M1G (Gold) Control can expand to 208 outputs while the M1 Std can expand to 32 outputs.



## Output Expander 8 Voltage / 8 Relays M1XOVR

# 101-212

## FEATURES:

- 8 Voltage Outputs
- 8 Single-Pole, Double-Pole Relay Outputs
- Operates on the 4-Wire Data Bus
- DIP Switch Address Settings
- Flash Memory for Firmware Updating
- One (1) - Twelve (12) Conductor "Flying Lead" Wire Harness
- Voltage Outputs may be converted to Relays using M1RB Relay Boards (Ness Part # 101-213)
- Status LED with Diagnostic Display
- Mounts in Enclosure using SWG Glides, SWP or SWP3 Structured Wire Plates, or Double Sided Foam Tape

## SPECIFICATIONS:

- Voltage Outputs: 12 VDC @ 50 mA each
- Relay Outputs: SPDT rated for 5A @ 28VDC
- Wire Harness Length: 300mm
- Operating Power Range: 9 to 14 VDC
- Current Draw: 65 mA Nom., 330 mA Max.
- Size: 152mm x 82.5mm x 19mm H

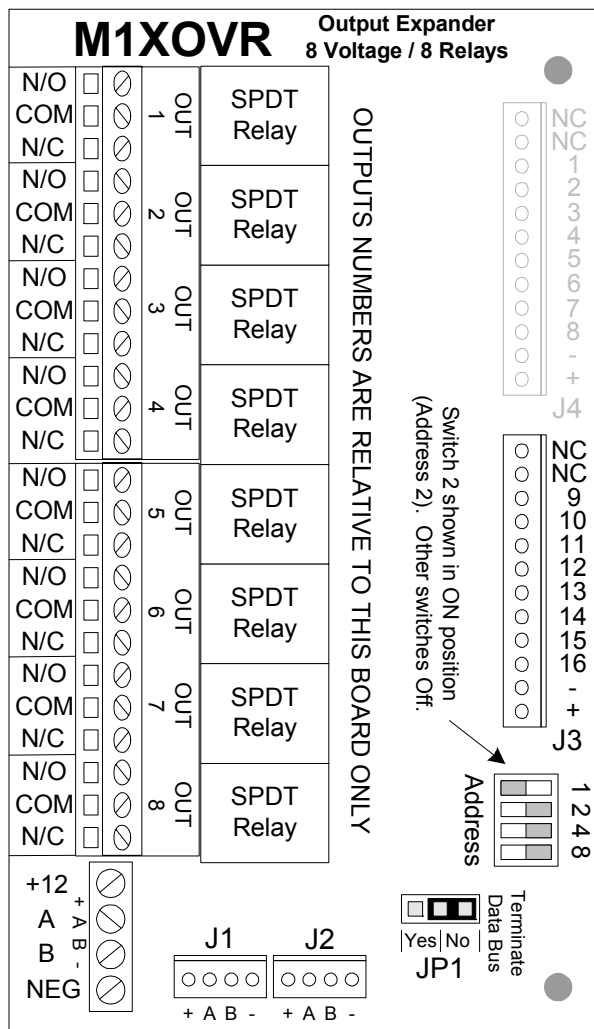


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**Instructions Printed On Inside**



**ADDRESS SETTING:** Locate the four "Address" switches. Each has a position of OFF or ON (binary 0 or 1) with a decimal equivalent of (1, 2, 4, or 8). The total decimal value for the "ON" switches sets the bus address. This determines which outputs (banks of 16) are assigned to the expander. E.G. Address 5 would be set with switches 1 and 4 ON (1+4=5) and switches 2 and 3 OFF. Outputs Expanders are factory pre-set to address 2 (Outputs 17 to 32).

Addr	Output Expander	Addr	Output Expander
1	Outputs 1-16	8	Outputs 113-128*
2	Outputs 17-32	9	Outputs 129-144*
3	Outputs 33-48*	10	Outputs 145-160*
4	Outputs 49-64*	11	Outputs 161-176*
5	Outputs 65-80*	12	Outputs 177-192*
6	Outputs 81-96*	13	Outputs 193-208*
7	Outputs 97-112*		* M1G Only

**TABLE 1**

### Utilizing an M1DBH Data Bus Hub (Ness Part # 101-207)

Since the M1XOVR connects to the M1's RS-485 Data Bus, it can be installed inside the Control or virtually anywhere along the data bus. The Data Bus requires only 4 wires, 2 for power + 2 for data. However, due to the relatively high speed of the data bus, special wiring connections are necessary to avoid data reflection errors on long cables OR multiple cable "homeruns". **See the M1 Installation Manual for important information about Data Bus termination, including methods and recommendations for avoiding data bus problems.** The primary goal is to have no more than 2 data bus branches (cables) running from the control, with each being terminated at its end using a 120 Ohm end of line resistor. There are two ways to accomplish this goal. 1) Using 4-wire cable, run no more than 2 cables and connect all devices paralleled (daisy chained) along this cable path. OR 2) Using 6 or 8 wire cables (CAT5 or CAT6 is ideal), run as many cables as you want so long as the data A & B wires are connected to a spare pair of wires so that they double back (return) to the control and are connected in series to the outgoing data A & B lines of the next cable. By keeping the data lines in a series circuit it will appear to be one long cable. This virtually eliminates data reflection errors. This is easily done using an ELK-M1DBH Data Bus Hub.

