

SIEMENS

Installation Instructions

Model MMB-3

Main Control Board

OPERATION

The Model MMB-3 board from Siemens Industry, Inc., in each MXL System controls operations and monitors input device identity, network communication, and operator commands that are entered through the MKB Annunciator/ Keyboard. The MMB-3 also provides two analog loop driver circuits. Each ALD-2I loop can be used as Class B or Class A and can monitor and control up to 60 intelligent devices as well as programmable device relays. The MMB-3 module can be programmed and upgraded in the field. It is equipped with two programmable Class B (Style Y) or Class A (Style Z) notification appliance circuits. Each circuit can activate up to 1.5 amps of audible or visual notification appliances. The MMB-3 has a user-defined Style 4 or Style 7 MNET communication port.

The module also has auxiliary relays for the external monitoring of Common System Alarm, Common System Trouble, and Common Supervisory conditions. The Common Supervisory relay is user programmable.

The MMB-3 includes a built-in battery charger and transfer circuit. The charger is microprocessor controlled and incorporates a brownout circuit that switches the System to standby batteries during the loss or reduction of the primary source AC.

The System can display the real time battery voltage, the AC voltage, and the charger current on the MKB display. It also has a 1 amp, 24 VDC output that powers CZM-1/-1B6 modules.

For additional information on the MXL/MXLV System, refer to the *MXL/MXLV Manual*, P/N 315-092036.

INSTALLATION

Remove all system power before installation, first battery and then AC. (To power up, connect the AC first, then the battery.)

Installing the MMB-3 Board

Unpack the MMB-3. Inspect the module, looking for such things as integrated circuits (ICs) not firmly seated in their sockets, bent IC pins, connectors not properly installed, dirt, packing material on the board, etc.

The MMB-3 includes the following installation kits:

MMB-3 Cable Kit (P/N 545-649035)
Four #10 nuts Three resistor assemblies Battery cable with wire

MMB-3 Hardware Kit (P/N 545-649036)	
Contents	Used For
One 3-position removable screw terminal block	TB 9
Six 4-position removable screw terminal blocks	TB 1, 2, 3, 5, 6, 7
One 9-position removable screw terminal block	TB 4

To install the MMB-3:

1. Place the MMB-3 with the mounting bracket over the four standoffs on the MBR-MP mounting plate in the upper left portion of the backbox (See Figure 1).

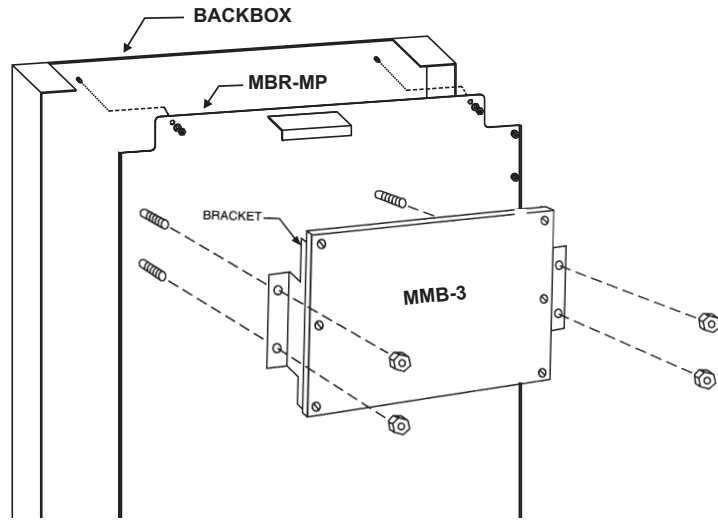


Figure 1
Installing the MMB-3

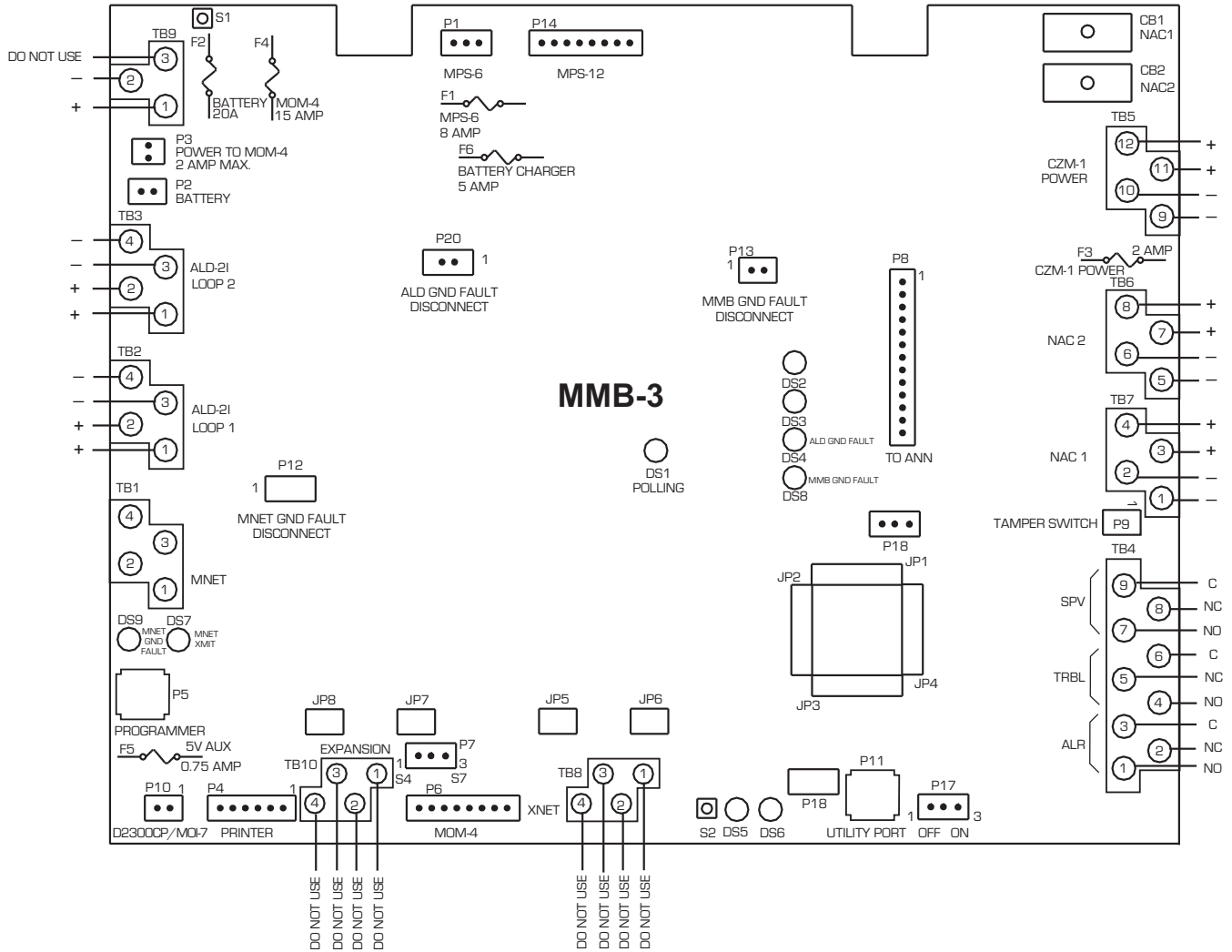


Figure 2
MMB-3 Main Board

- Secure in place using the hardware provided. Be sure the screws and nuts are tight, as they provide the earth ground connection for the MMB-3.
- Place the removable terminal blocks from Hardware kit P/N 545-649036 on the appropriate terminals and secure in place.

CONFIGURATION

The MMB-3 has two jumpers—jumper P7 for MNET and jumper P17 for Real Time clock—which must be set for proper operation. Refer to Figure 2 for the location of the jumpers.

MNET

To configure the MNET port (TB1) for either Style 4 or Style 7 operation, set jumper P7 on the MMB-3 to one of the four settings listed below that is applicable to your system configuration.

- If the MNET port (TB1) is not being used on the MMB-3 and there is no NET-7/7M in the system configuration, then set the jumper to positions 1 and 2.
- If the MNET port (TB1) is configured as Style 4, then set the jumper to positions 1 and 2.
- If the MNET port is (TB1) configured as Style 7, then set the jumper to positions 1 and 2. Remember to update *MMB-3 MNET STYLE 7* in the CSGM to display *YES*. Configurations 1, 2, and 4 should be set to *NO*.

NOTE: In settings 1-3, the user can upload a CSG-M configuration in the customary method through P5 (To Programmer).

- If you are not using the MNET port, but are using a NET-7/7M in your MMB-3 configuration, then set the jumper to positions 2 and 3.

NOTE: If setting 4 is used, the CSG-M configuration **MUST** be uploaded through P1 on any NET-7/7M that is on the Style 7 MNET. You cannot upload a CSG-M configuration through P5 on the MMB-3 in this configuration.

IMPORTANT NOTE

An MXL panel cannot have a NET-7/7M in the system and use the MNET Port (TB1) on the MMB-3.

Real Time Clock

The second jumper on the MMB-3 is P17 which must be set for the real time clock to operate properly.

- Move the jumper to the *on* position (position 2 and 3) to provide backup battery power to the real time clock.

Internal Wiring

To complete the MMB-3 internal wiring connections, follow the steps below, skipping those that do not apply to your MXL System.

1. Main Power Connections

Primary power for the MMB-3 is provided by the MPS-6 or MPS-12. Both of these mount in the lower right-hand corner of the MXL enclosure. Follow the instructions below for the appropriate power supply.

MPS-6 — Install the MPS-6 (See MPS-6 Instructions, P/N 315-090334). With the AC mains disconnected, connect the MPS-6 power cable to P1 of the MMB-3. **Be sure that the jumper assembly is installed in P14 of the MMB-3. If this jumper is not installed, the MMB-3 will detect a permanent AC fail or indicate auxiliary power voltage is low.**

MPS-12 — Install the MPS-12 (See MPS-12 Instructions, P/N 315-092030). Remove and discard the jumper assembly installed in P14 of the MMB-3. Disconnect the AC mains. Connect the MPS-12 power cable to P14 of MMB-3.

2. Battery Power Connection

The MMB-3 kit includes a battery cable (wiring harness). Use the harness to connect the 24V backup batteries to P2 of MMB-3.

3. MOM-4 Optional Module Card Cage

There are two connections between the MMB-3 and the MOM-4 board.

- The first is the 24V power connection. P3 provides backward compatibility with the MMB-1 and should only be used when replacing an MMB-1. P3 is limited to 2 amps. The MMB-3 allows the use of either

an MPS-6 or an MPS-12. TB9 terminals 1 and 2 supply 24V to the MOM-4 with a maximum of 6 amps (MPS-6) or 12 amps (MPS-12) available. This output must be derated by the total current drawn from NAC1 (1.5A max), NAC2 (1.5A max) and the CZM-1/-1B6, power (1A max) on the MMB-3. Connect TB9, 1 and 2 on the MMB-3 to TB6, 1 and 2 on the MOM 4. Refer to Figure 3 for the wiring diagram.

- b. The second connection provides 5V power and the communication interface. Connect the 8-wire ribbon cable from P7 on the MOM-4 to P6 on the MMB-3.

Field Wiring (Refer to Figure 2)

The screw terminals for the field wiring circuits are located on the left, right and bottom edges of the MMB-3. They are labeled TB1 through TB9.

The field wiring circuits available are:

- CZM-1/-1B6 power
- Analog device loop 1
- Analog device loop 2
- Notification appliance circuit 1 (Styles Y and Z)
- Notification appliance circuit 2 (Styles Y and Z)
- Common alarm relay
- Common supervisory relay
- Common trouble relay
- Style 4 RS-485 Network (MNET)

The following sections describe each circuit type and give the related instructions. Refer also to the wiring diagrams.

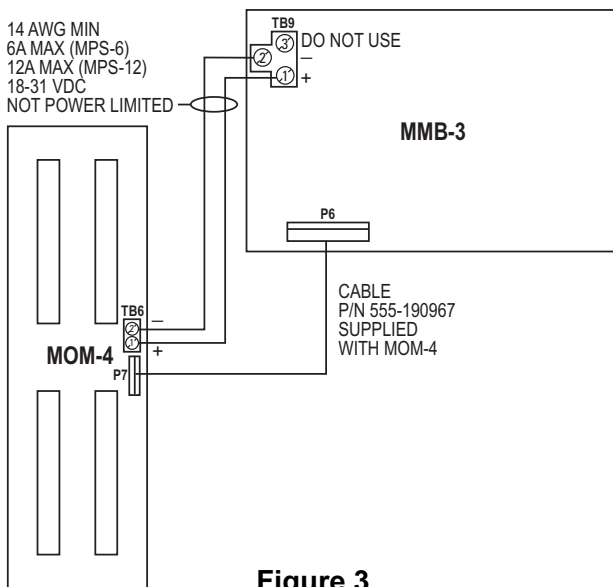


Figure 3
MOM-4 24V Connection

Auxiliary 24V Power (Special Application)

Auxiliary power is available on TB5, terminals 9 through 12. The circuit is power limited per NEC Article 760 and is rated at 1 amp, 18-31 VDC.

This power supply is for use with the CZM-1/-1B6 Remote Conventional Zone module. Figure 4 shows Class B wiring; Figure 5 shows Class A wiring. The jumpers shown in Figure 4 are optional. They are not required if the proper settings are made in CSG-M Rev. 17.01 or higher.

Class B wiring can be used to obtain the maximum of 20 CZM-1B6s. Each Class B wire run can support a maximum of 10 CZM-1B6s, 4 ohms max. Multiple Class B power connections can be used provided you do not exceed the rating above (20 CZM-1B6s max and 4 ohms per run max). For example, you could have four individual Class B power runs, for a total of 20 devices (6, 4, 3, and 7 CZM-1B6s), each of the four runs not exceeding 4 ohms resistance.

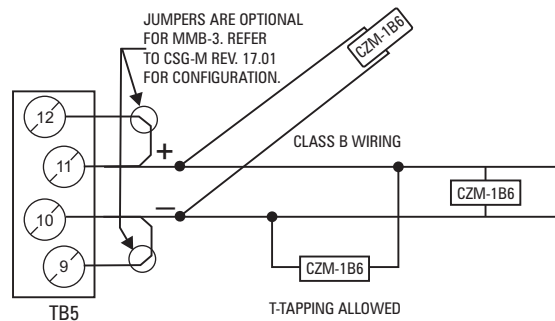


Figure 4
CZM-1B6 Supervised Auxiliary Power – Class B Wiring

Special Application

Positive and negative ground fault detected at <30K ohms for TB5 (9-12).

Refer to Wiring Specification for MXL, MXL-IQ and MXLV Systems, P/N 315-091772 revision 6 or higher, for additional wiring information.

*The terms Class A and Class B do not apply to 24V power, but are used for illustrative purposes only.

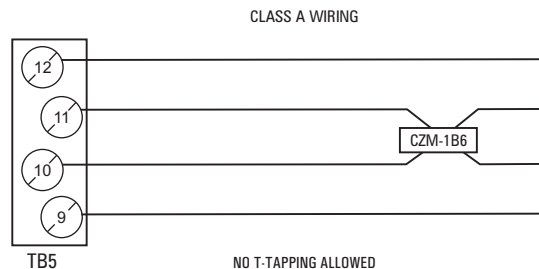


Figure 5
CZM-1B6 Supervised Auxiliary Power – Class A Wiring

**AUXILIARY 24V POWER
COMPATIBLE DEVICES**

Compatible Devices	Installation Instructions
CZM-1B6	P/N 315-095355-7
ICP-B6	P/N 315-095306-8
MOD-16	P/N 315-090830-7
MOI-7	P/N 315-092799-7
PS-5A	P/N 315-092367-8
PS-5N7	P/N 315-092729-12
MKB-5/-5C	P/N 315-048727-3
MKB-6/-6C	P/N 315-048722-4
RCC-3/-3F/-C/-3FC	P/N 315-048665-6
Silent Knight 5128/5129	P/N 315-093294-5
SR-35	P/N 315-087691-8
SDH-2D/-3D/-4D /-5D/-6D/-7D/-8D	P/N 315-049481-3
NS-1§	P/N 315-085409-3

§Listed per UL864 8th Edition

**Analog Device Loops 1 and 2
(TB2 and TB3)**

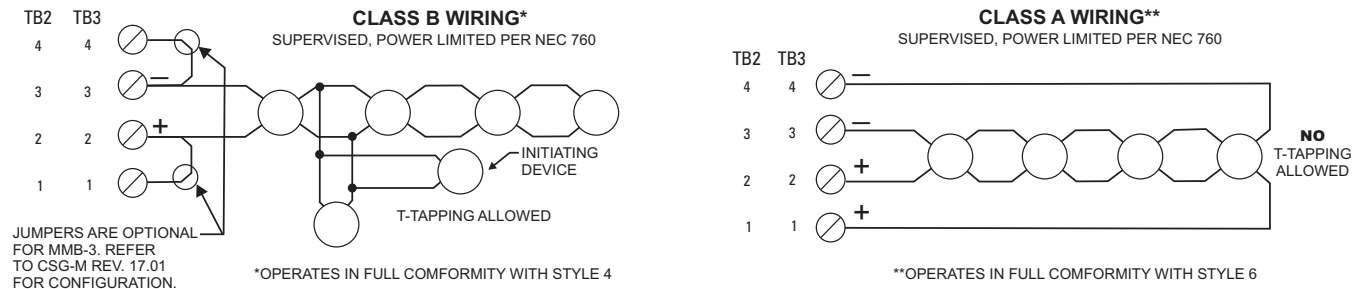
These two ALD-2I loops each support up to 60 analog type devices.

To install a device for Class B, refer to Figure 6 and the electrical specifications.

To install a device for Class A, refer to Figure 6 and the electrical specifications.

**Electrical Specifications for the Analog
Device Loops**

- Electrical ratings:
SUPERVISORY: 30 V unfiltered full wave (peak), 30mA max
ALARM: 30 V unfiltered full wave (peak), 30mA max (60 devices in alarm)
- All wiring must be in accordance with Article 760 of NEC or the local building codes. Refer to Figure 6.
- Only the list of devices in the *Analog Device Loops - Compatible Devices* table may be used. A maximum of 60 devices may be connected to a single loop.
- No end of line device is required.
- Both circuits are power limited per NFPA 70, NEC. Each detector, or group of detectors, requires a two-wire circuit of 18 AWG minimum. For additional wiring information, refer to the Wiring Specification for MXL, MXL-IQ and MXLV Systems, P/N 315-092772.
- Total circuit resistance must not exceed 100 ohms.
Maximum capacitance:
0.4µF line to line
0.8µF line to ground
- T-tapping is NOT allowed on Class A loops.
- The jumpers shown in Figure 6 for Class B wiring are optional. They are not required if the proper settings are made in CSG-M Rev. 17.01 or higher.



Positive and negative ground fault detected at <40K ohms for TB2 (1-4) and TB3 (1-4).

**Figure 6
Wiring the ALD-2I Analog Loops**

**ANALOG DEVICE LOOPS
COMPATIBLE DEVICES**

Compatible Devices	Base	Installation Instructions
CZM-1 [§]	—	P/N 315-090725-9
CZM-1B6	—	P/N 315-095355-7
FP-11/FPT-11*	DB-3S with DB-ADPT DB-11	P/N 315-095921-10 P/N 315-095921-10
ID-60I/60IH	DB-3S, DB-X3RS	P/N 315-090287-2
ID-60IA/60IAH	DB-3S, DB-X3RS	P/N 315-090287-2
ID-60IB/60IBH	AD-3I AD-3XRI	P/N 315-093234-6 P/N 315-093235-5
ILI-1/1H	DB-3S, DB-X3RS	P/N 315-095387-4
ILI-1A/1AH	DB-3S, DB-X3RS	P/N 315-095387-4
ILI-1B/1BH	AD-3I AD-3XRI	P/N 315-093234-6 P/N 315-093235-5
ILP-1/ILPT-1	DB-3S, DB-X3RS	P/N 315-092594-8
ILP-1(d)	AD-3ILP AD-3XRILP	P/N 315-093234-6 P/N 315-093235-5
ILP-2**	DB-3S, DB-X3RS	P/N 315-095028-5
ILP-2**(d)†	AD-3ILP AD-3XRILP	P/N 315-093234-6 P/N 315-093235-5
ILT-1	DB-3S	P/N 315-093336-1
MSI-10/20	—	P/N 315-090903-3
MSI-10B/20B	—	P/N 315-093329-7
MSI-B6F	—	P/N 315-095302-5
MSI-MB6	—	P/N 315-093613-1
TRI-B6/B6D/B6R [§]	—	P/N 315-093315-3
TRI-B6M [§]	—	P/N 315-049485-2
TRI-MMS [§]	—	P/N 315-699547-1
TRI-MTD [§]	—	P/N 315-699548-1
TRI-S/D/R	—	P/N 315-049481-4

* The FP/FPT-11 is only compatible with MXL/MXLV Rev. 10.0 or greater firmware.

**The ILP-2 is only compatible with MXL/MXLV Rev. 8.0 or greater firmware.

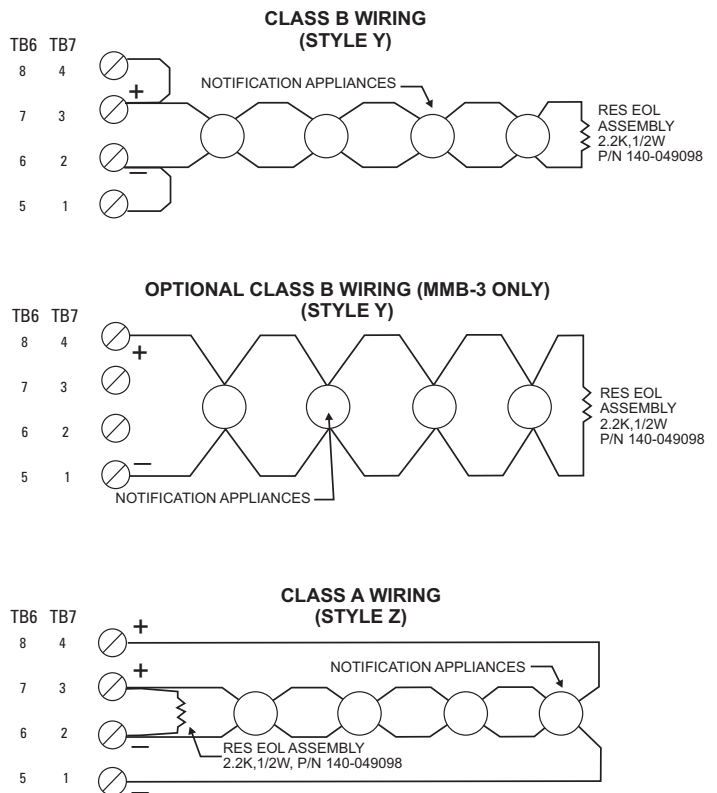
† When the CSG-M is configured, the DUCT application must be selected when the device is used in an air duct housing or in a spot duct application.

§ Listed per UL864 8th Edition.

**Notification Appliance Circuits (TB7, 1-4 and TB6, 5-8)
(Refer to Figure 7)**

1. These circuits are for notification appliances only, NFPA 72 Local. For NFPA 72 Municipal Tie or NFPA 72 Leased Line, use the Model CSM-4.
2. All wiring must be in accordance with Article 760 of NEC or local building codes.

3. Both notification appliance circuits are power limited to NFPA 70 and NEC.
4. Electrical ratings:
 - Supervisory: 16 to 32 V unfiltered full wave, 12mA max
 - Alarm: 16 to 32 V unfiltered full wave, 1.5A max
5. Resistor end of line assembly:
P/N 140-049098
6. Maximum loop resistance: 3 ohms max
7. For a list of Compatible Notification Appliances, refer to P/N 315-096363.
8. The jumpers for Class B NAC circuits can be removed if the resistor assembly is placed on terminals 1 and 4 and/or 5 and 8.
9. For synchronized notification appliances, use of either a DSC, DSC-W, or PAD-3 is required.



Positive and negative ground fault detected at <30K ohms for TB6 (5-8) and TB7 (1-4).

**Figure 7
Wiring Notification Appliance Circuits
(Polarity Shown In Supervisory)**

Common Alarm Relay

The common alarm relay changes state whenever a fire alarm is detected. The relay is rated 2A, 30 VDC/120 VAC resistive. See Figure 8 for the wiring connections. Use only with power limited/Class 2 circuits.

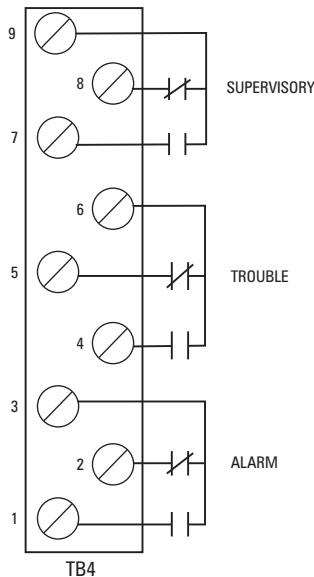
Common Supervisory Relay

The supervisory relay changes state whenever a supervisory trouble is detected. It may be used for alternate functions if programmed by CSG-M for them. The relay is rated 2A, 30 VDC/120 VAC resistive. Refer to Figure 8 for wiring connections. Use only with power limited/Class 2 circuits.

Common Trouble Relay

The trouble relay changes state whenever a System trouble is detected. The relay is rated for 2A, 30 VDC/120 VAC resistive. Refer to Figure 8 for the wiring connections. Use only with power limited/Class 2 circuits.

NOTE: This relay is normally energized.



RATINGS
2A, 30 VDC/120 VAC RESISTIVE
CONTACTS ARE SHOWN IN NORMAL STATE

Figure 8
MMB-3 Relay Connections

Style 4 Network (MNET)

The MMB-3 provides a Style 4 MNET network for connection to remote power supplies (PSR-1) and annunciators (MOI-1/7, RCC). See Figure 9 for wiring instructions.

Style 7 Network (MNET)

The MMB-3 provides a Style 7 MNET network for connection to remote power supplies (PSR-1) and annunciators (MOI-7, RCC). See Figure 10 for wiring instructions.

FUSE REPLACEMENT IN THE MXL SYSTEM

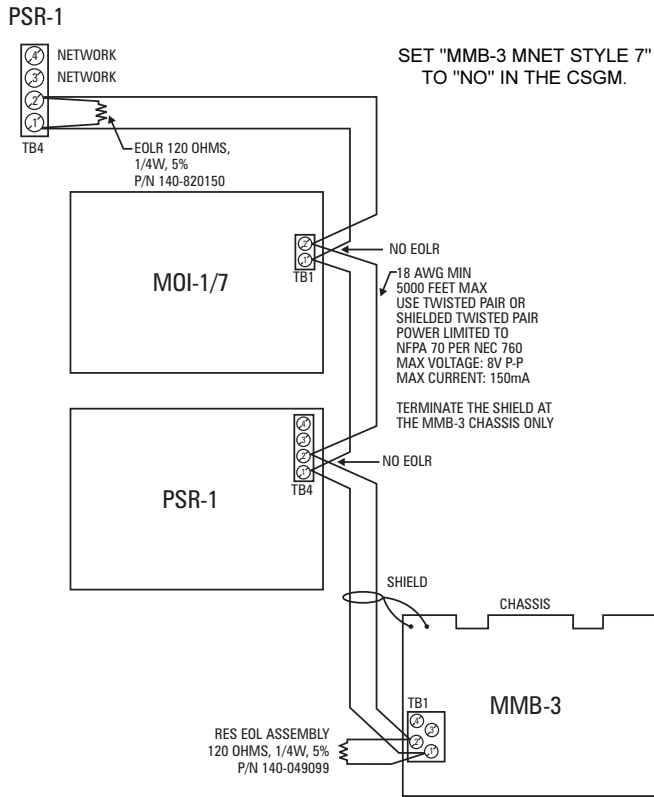
FUSE RATINGS		
F1	MPS-6 Input	8A, 3 AG, Normal Blow
F2	Battery Reversal	20A, 3 AG, Normal Blow
F3	CZM-1B6 Power	2A, 3 AG, Normal Blow
F4	24V Output (TB9, terminals 1 and 2)	15A, 3 AG, Normal Blow
F5	5V Aux	1A, 3 AG, Normal Blow
F6	Battery Charger	5A, 3 AG Normal Blow

For additional wiring information, refer to the Wiring Specification for MXL, MXL-IQ and MXLV Systems, P/N 315-092772.

ELECTRICAL RATINGS

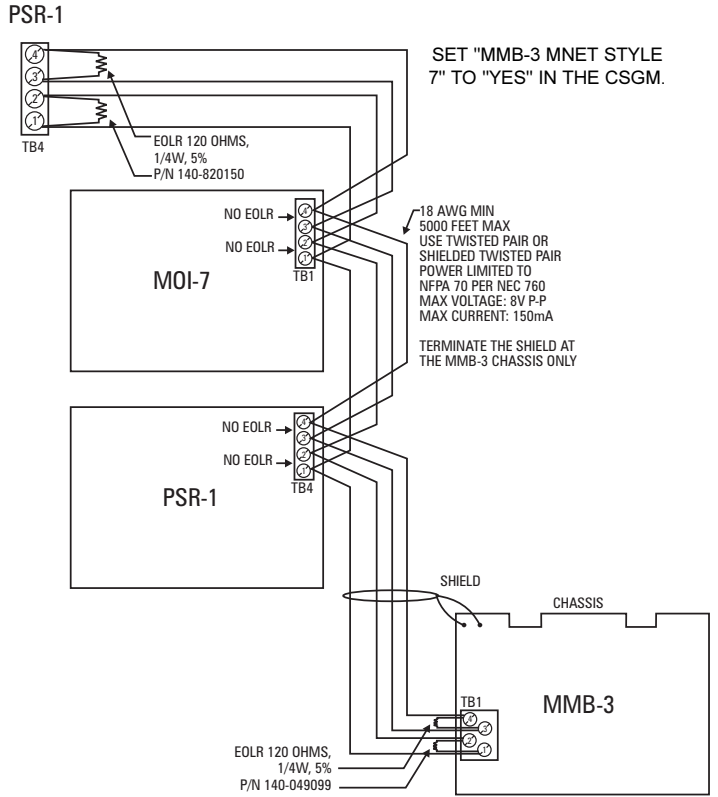
Active 5VDC Module Current	0mA
Active 24VDC Module Current*	455mA
Standby 24VDC Module Current	360mA (includes NAC end of line devices)

*Does not include any current drawn by modules or devices powered by the MMB-3.



Positive and negative ground fault detected at <20K ohms for TB1(1-4).

Figure 9
Style 4 Network (MNET)



Positive and negative ground fault detected at <20K ohms for TB1(1-4).

Figure 10
Style 7 Network (MNET)