



USER'S GUIDE

FOR MODEL

OMX-3

Input Expansion Module



000-0278 Rev. B

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INTRODUCTION

The Model OMX-3 Input Expansion Module is designed as an accessory to the INCON OPTImizer+ Circuit Breaker Monitor. By expanding the OPTImizer's single Aux A input to three inputs, the OMX-3 enables the OPTImizer+ to monitor circuit breakers that have redundant trip circuits or independent pole operation.

Under these circumstances, the OPTImizer+ can not tell which circuit tripped the circuit breaker, but it will maintain a log of the accumulated I^2T , relating to main contact wear. It will also log the trip and clearing times. Arc time will be accurately logged, which affects I^2T .

The OMX-3 has two input logic options that are selected by an internal switch (S1). In the "short" position, the input channel that first receives the trip signal (starting the output pulse) will be the channel that ends the output pulse, when that same trip signal has ended. In the "long" position, the output pulse will be started by the first channel that receives a trip signal, but it will not end until ALL trip signals have ended.

There are five types of circuit breakers that the OMX-3 can be used with:

- 1) Single Mechanism, with Redundant Trip Circuits
- 2) Individual Pole Mechanisms, Series-Ganged, with Redundant Trip Circuits
- 3) Individual Pole Mechanisms, with Separate, Single Trip Circuits
- 4) Individual Pole Mechanisms, with Parallel-Ganged, Single Trip Circuits
- 5) Individual Pole Mechanisms, Parallel-Ganged, with Redundant Trip Circuits (two methods)

This Users Guide will explain each of these applications.

1.0 INSTALLATION

- The OMX-3-115 is designed for use with 50/60 Hz, 115VAC power.
- The OMX-3-230 is designed for use with 50/60 Hz, 230VAC power.
- Wiring should be made with 16 or 18AWG wire.
- Use the Figure 1.1 Mounting Template to locate the mounting holes.
- Field wiring diagrams are shown on pages 6 – 9
- Setting S1 Position: see page 11
- The OPTImizer+ must programmed with AV = 1 and AUXMODE = 4.

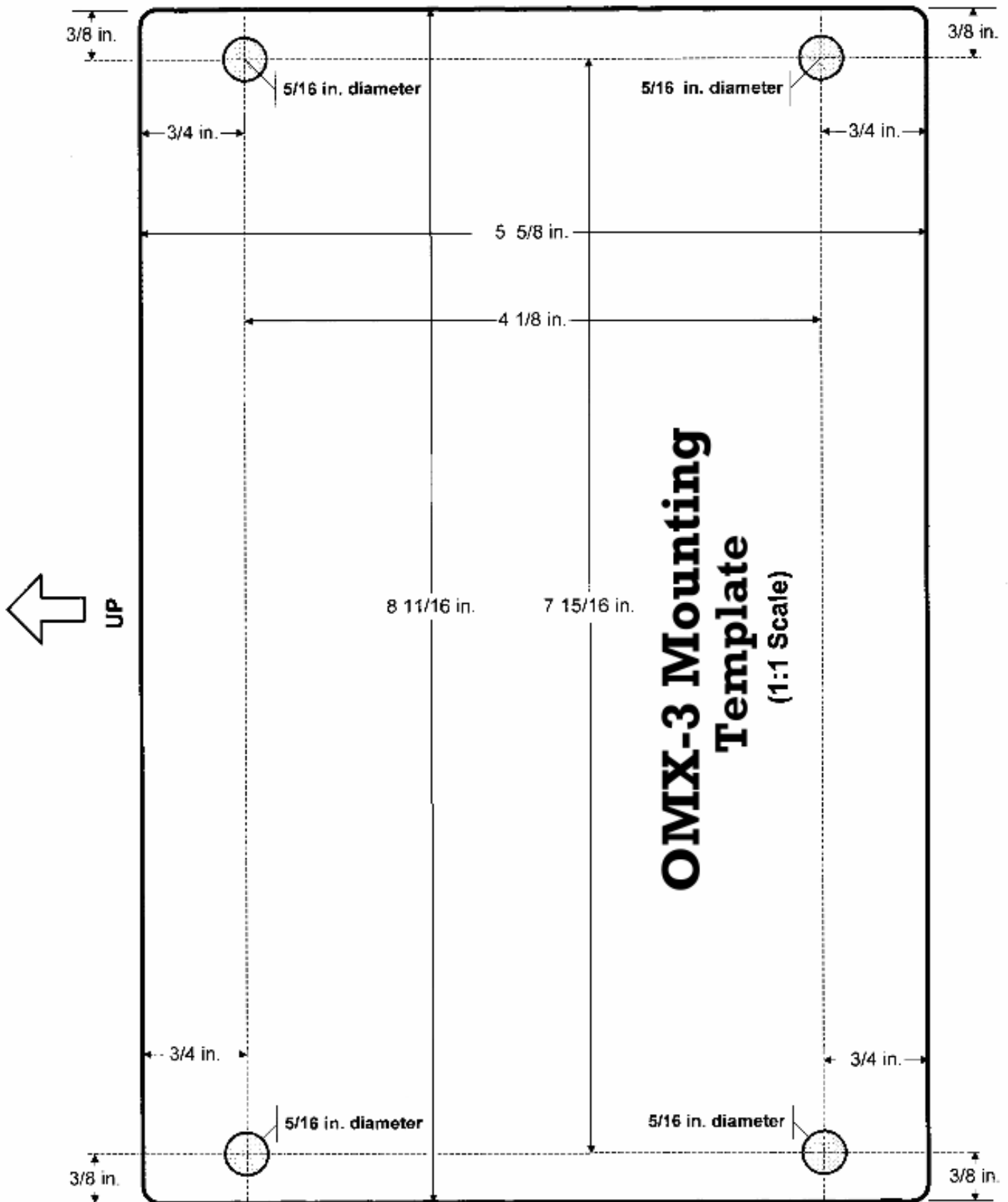


Figure 1.1 Mounting Template

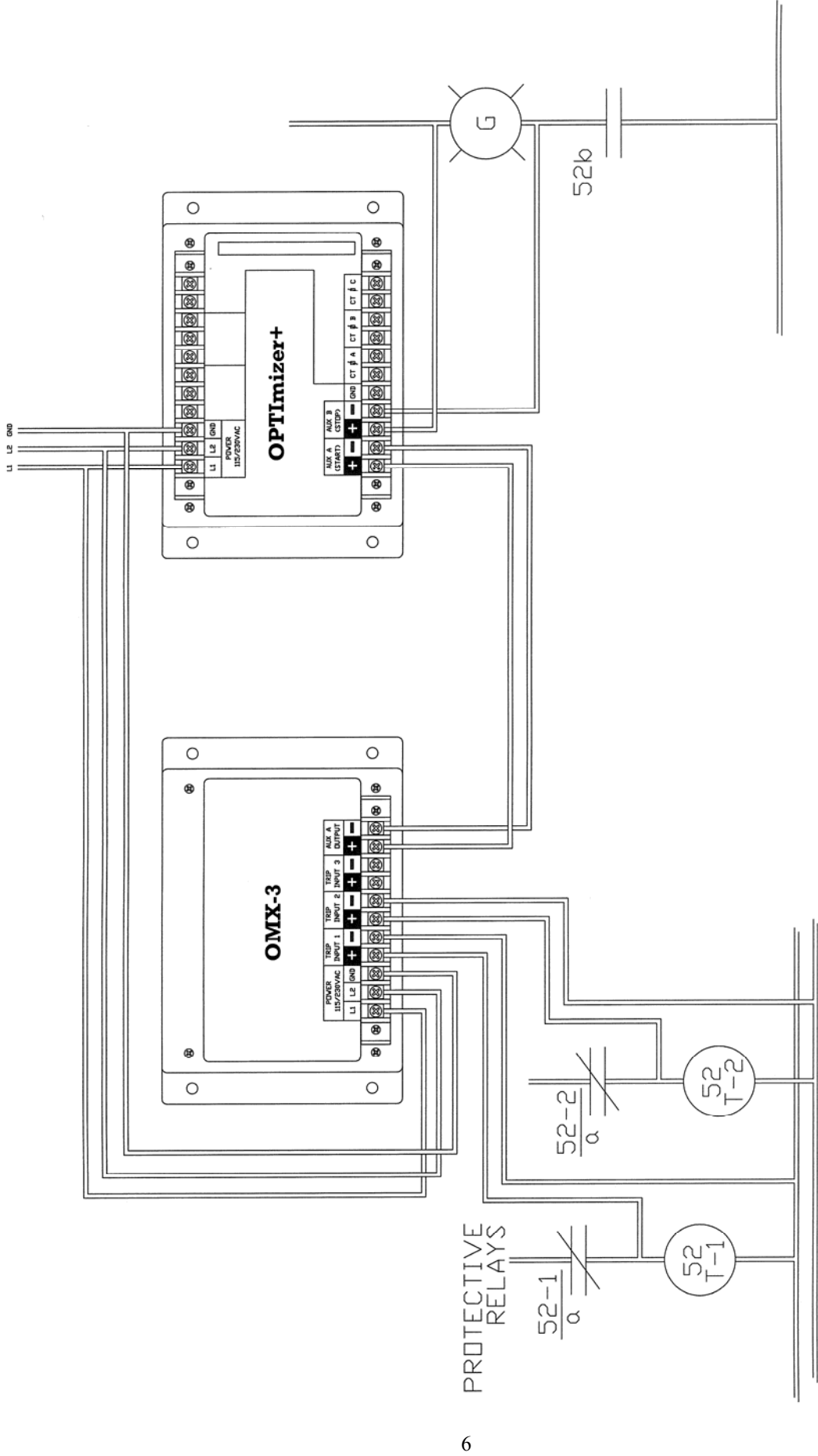


Figure 1.2 Field Wiring Diagram: Single Mechanism with Redundant Trip Circuits

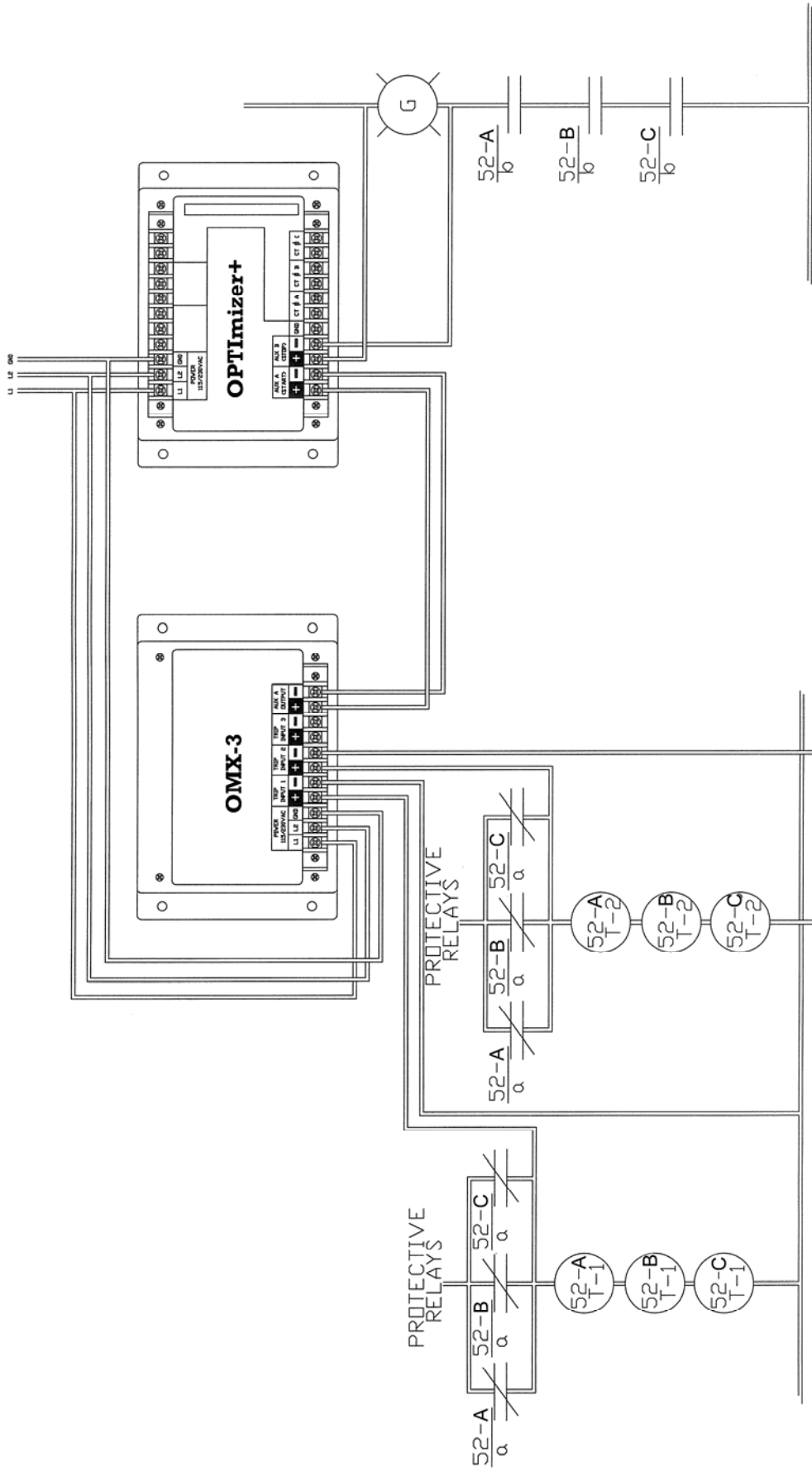


Figure 1.3 Field Wiring Diagram: Individual Pole Mechanisms, Series-Ganged, with Redundant Trip Circuits

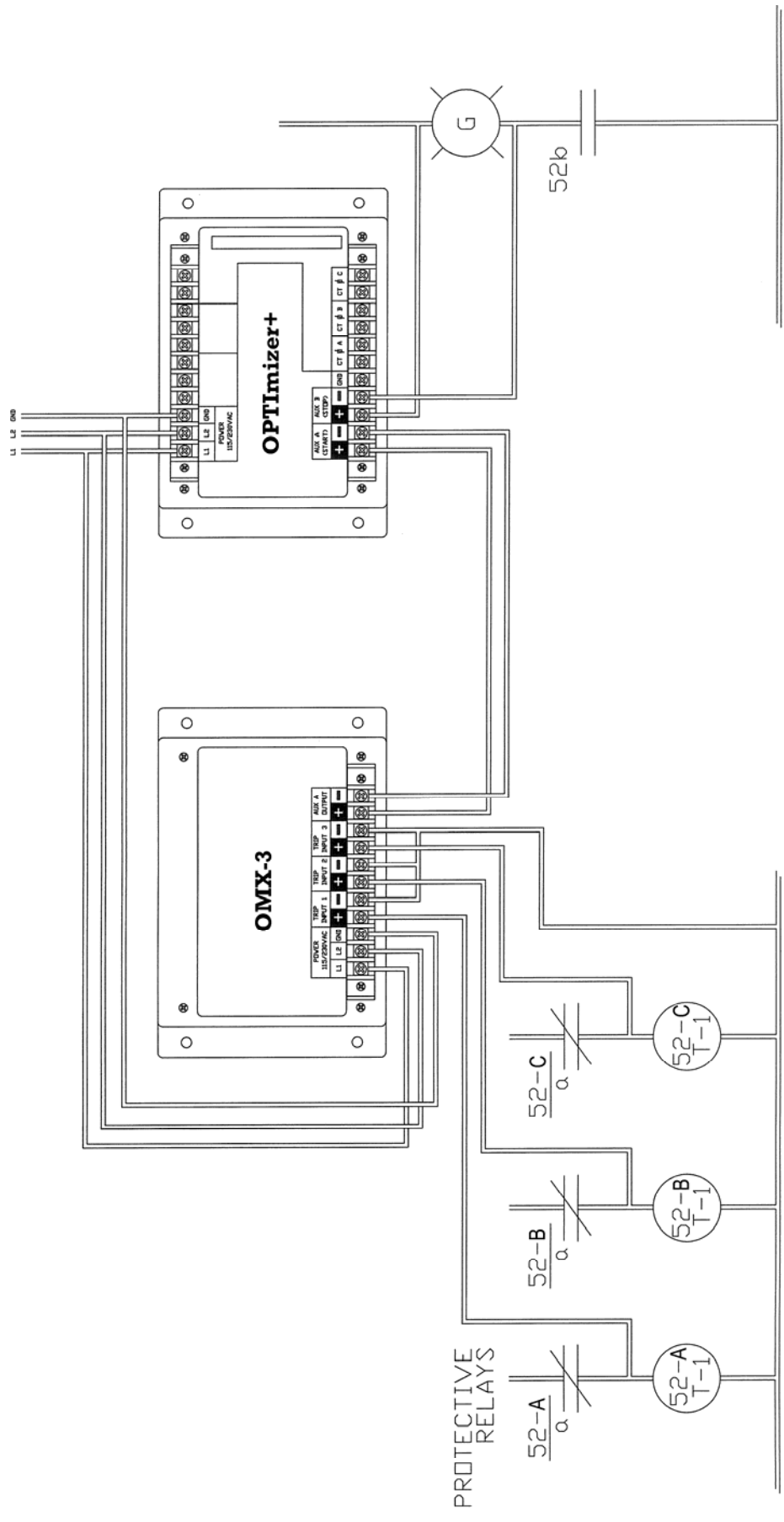


Figure 1.4 Field Wiring Diagram: Individual Pole Mechanisms with Separate, Single Trip Circuits

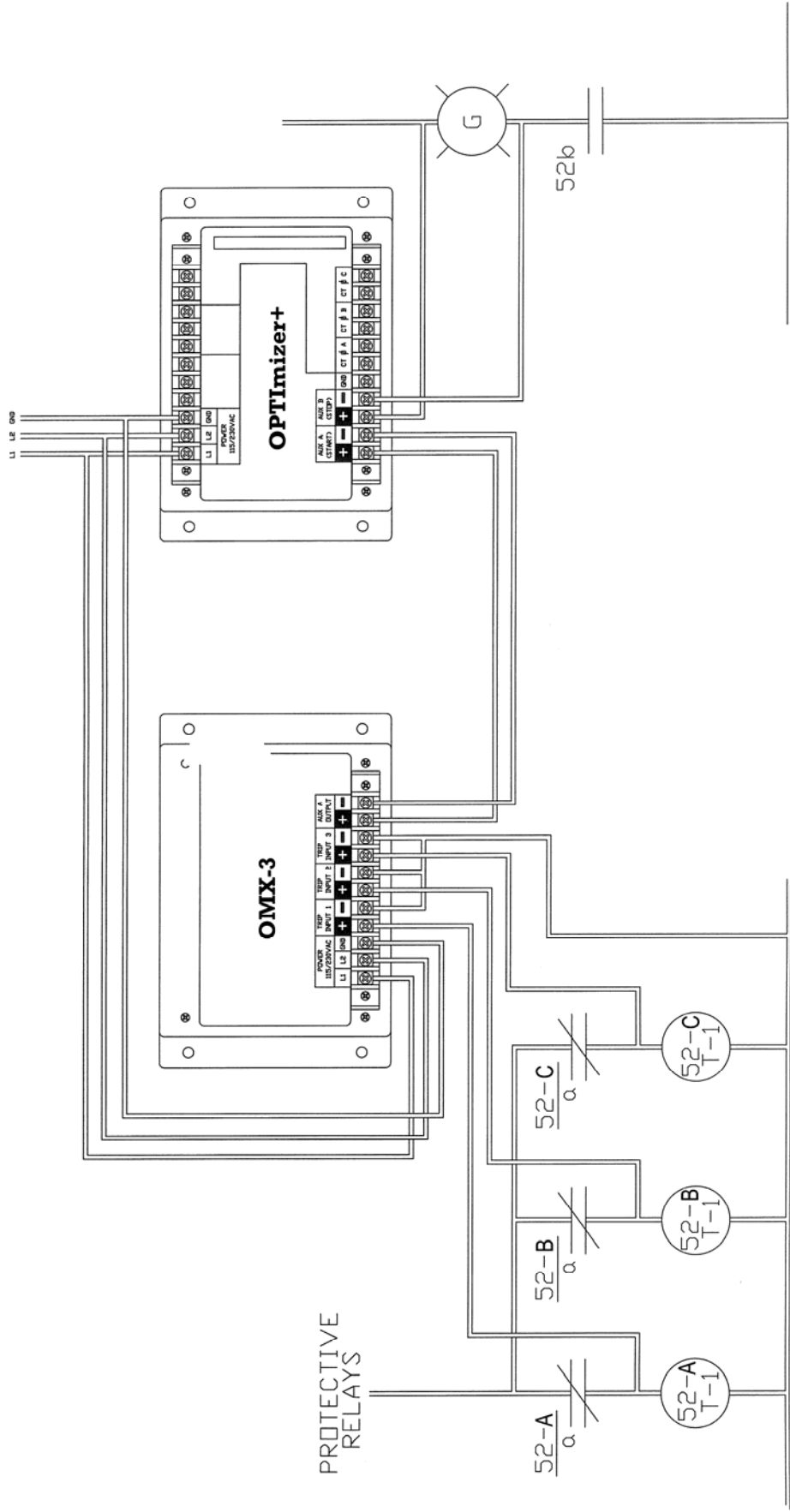


Figure 1.5 Field Wiring Diagram: Individual Pole Mechanisms with Parallel-Ganged, Single Trip Circuits

INDIVIDUAL POLE MECHANISMS
REDUNDANT TRIP CIRCUITS

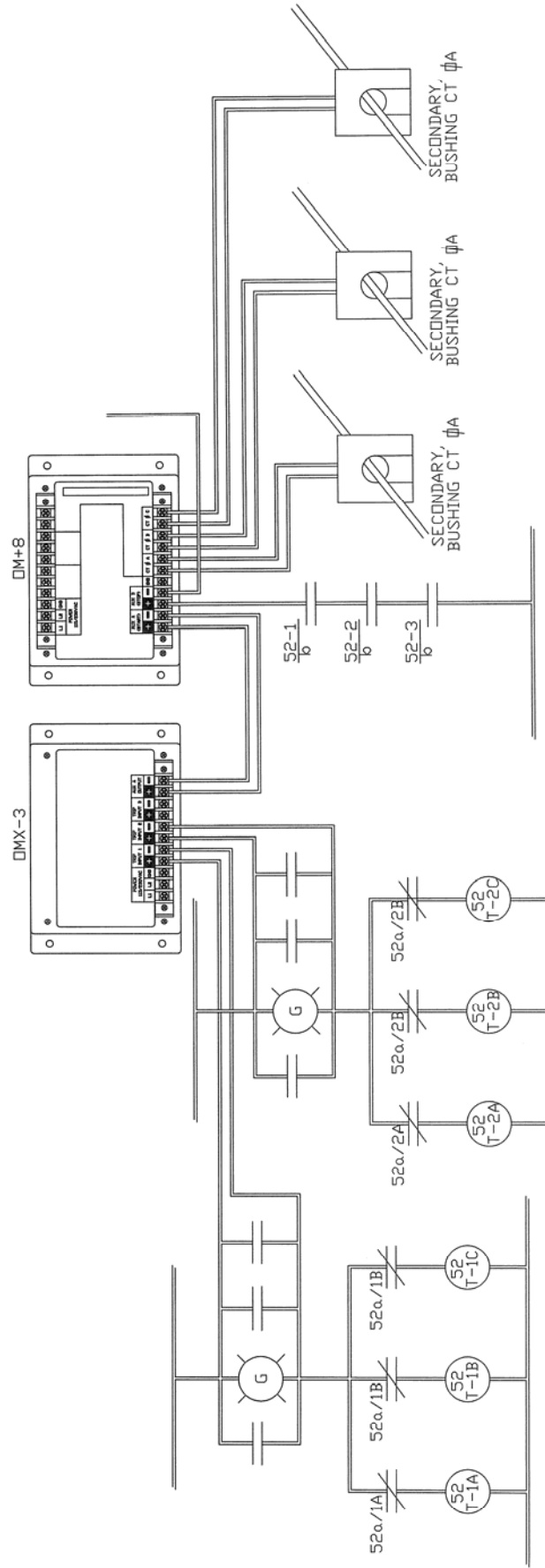


Figure 1.6 Field Wiring Diagram: Individual Pole Mechanisms, Parallel-Ganged, with Redundant Trip Circuits – Single OPTImizer+

INDIVIDUAL POLE MECHANISMS
REDUNDANT TRIP CIRCUITS

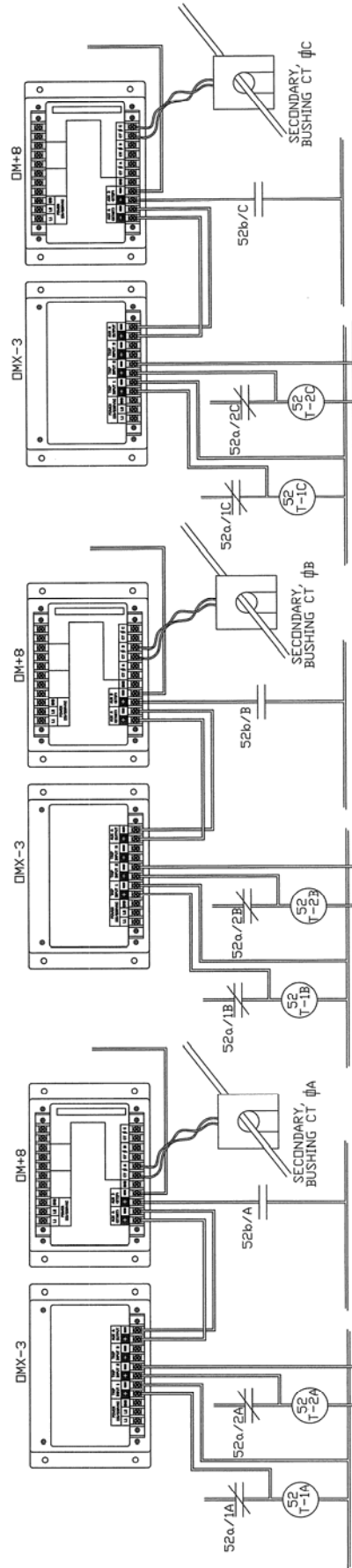


Figure 1.7 Field Wiring Diagram: Individual Pole Mechanisms, Parallel-Ganged, with Redundant Trip Circuits – 3 OPTImizers

Terminal	Function	Connect to:
1	Line L1	AC Power Source
2	Line L2	AC Power Source
3	Chassis Ground	Earth Ground
4	Input 1 +	Trip Coil #1
5	Input 1 -	Trip Ground #1
6	Input 2 +	Trip Coil #2
7	Input 2 -	Trip Ground #2
8	Input 3 +	Trip Coil #3
9	Input 3 -	Trip Ground #3
10	Aux A Output +	OPTImizer+ Aux A Input +
11	Aux A Output -	OPTImizer+ Aux A Input -

Table 1.1 Terminal Functions

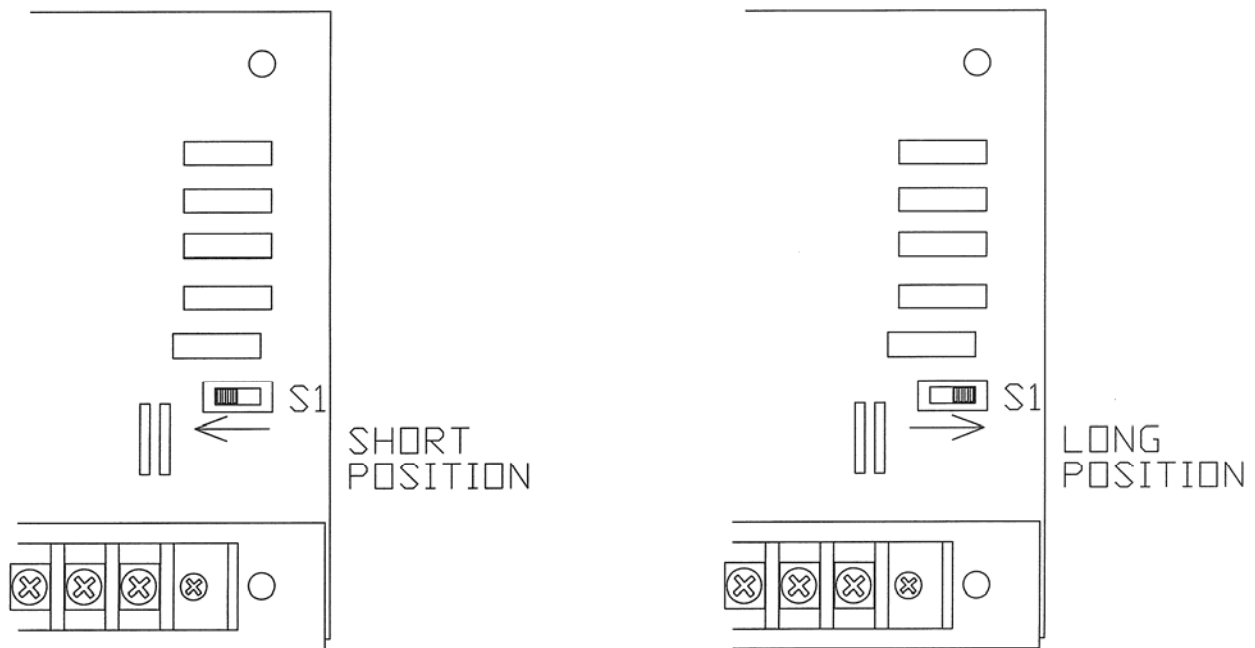


Figure 1.8 S1 Switch Positions

Recommended S1 Position:

1. **Single Mechanism, with Redundant Trip Circuits (Figure 1.2) – Short**
As the main contacts move, the redundant 52a switches will open together, ending energization of the trip coils, and ending the output pulse.
2. **Individual Pole Mechanisms, Series-Ganged, with Redundant Trip Circuits (Figure 1.3) – Short**
As the individual main contacts move, their redundant 52a switches will open together. The last main contact to move will open its redundant 52a switches together, ending energization of all trip coils, and ending the output pulse. Since all poles are tripped at the same time, by the same signal (from either trip circuit), the ending of the output pulse will reflect the longest trip time.
3. **Individual Pole Mechanisms with Separate, Single Trip Circuits (Figure 1.4) – Short** Since each pole can be individually tripped, and tripping of more than one pole is not guaranteed to happen at the same time, the ending of the output pulse would be meaningless unless it is related to the beginning of the first pole to trip. The longest trip time can not be detected by this method.
4. **Individual Pole Mechanisms, with Parallel-Ganged Trip Circuits (Figure 1.5) – Long**
As the individual main contacts move, their 52a switches will open relative to the speed of their individual trip latch mechanisms. Since all poles are tripped at the same time, by the same signal, the ending of the output pulse will reflect the longest trip time.
5. **Individual Pole Mechanisms, with Parallel-Ganged, Redundant Trip Circuits (Figure 1.6) – Single OPTImizer+ – Short**
Since the OMX-3 inputs are wired across the Green Lights, as soon as a Trip is initiated, the light goes out and the OPTImizer+ begins its timing logs. The single OPTImizer+ is programmed for “AUXMODE 1” and no Trip time will be measured in this configuration.
6. **Individual Pole Mechanisms, with Parallel-Ganged, Redundant Trip Circuits (Figure 1.7) – Single OPTImizer+ – Short**
This method is the same as #1 above, applied separately to each pole. Each pole can be independently operated. As the main contacts of each pole move, the redundant 52a switches of that pole will open together, ending energization of the trip coils, and ending the output pulse. The OPTImizer+ and OMX-3 wired to each individual pole will log the performance and contact wear of just that pole.

The OMX-3 is shipped with S1 in the SHORT position.

If the LONG position is required, remove the four screws in the cover and lift the cover. Locate S1 (see Figure 1.8) and slide it toward the edge of the circuit board. Replace the cover and install the four screws.

2.0 Specifications

(All values are typical, unless otherwise specified)

ENCLOSURE:	RECTANGULAR, SURFACE MOUNTED
MATERIAL	STEEL, PAINTED
SIZE	184 mm (7.25 in.) W X 146 mm (5.75 in.) H X 76.2 mm (3.0 in.) D
MOUNTING	INTEGRAL FLANGES, 4 HOLES
MOUNTING WEIGHT	1.6 kg (3.5 Lbs.)
POWER INPUT:	
CONNECTOR	SCREW TERMINALS L1, L2, GND
VOLTAGE	115 VAC +/- 10%
OPTIONAL	230 VAC +/- 10%
FREQUENCY	47 TO 63 Hz
POWER CONSUMPTION	8 VA MAX
FUSE	INTERNAL (1/2 AMP)
ISOLATION	TRANSFORMER (1000 VAC)
TEMPERATURE RANGE	
OPERATING	-28 TO +65 DEG. C
DISPLAY	NONE
ELECTRICAL INPUTS	
SIGNAL INPUT	3 EACH, 0 TO 250 VDC (EXTERNALLY WETTED)
RESISTANCE	16K OHMS
ISOLATION	1500 VOLTS TO ENCLOSURE 2500 VOLTS TO OTHER INPUTS & OUTPUT
ELECTRICAL OUTOUTS	
ISOLATION	1 EACH, BINARY, 0 / 24 VDC 1000 VAC TO ENCLOSURE 2500 VOLTS TO INPUTS
SHIPPING WEIGHT	2.26 kg (5 Lbs.)