PULEO
ELECTRONICS
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INSTRUCTION MANUAL
PE 102-16

S/N: _____ ***PWR:*** _____

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ALARM MONITOR/ANNUNCIATOR MODEL PE102-16

GENERAL DESCRIPTION

The Model PE102-16 Alarm Annunciator monitors the status and status change of isolated alarm contacts. Changes are annunciated by an audible alarm and flashing red LEDs.

Instead of alarm contacts, the presence or absence of d.c. voltages 12, 24 or 48 can also be monitored.

The number of alarm points moitored is 16.

The sequence of operation is No. 3 as indicated by the Table on the right.

As an option, the legend windows can also be used as switches, either momentary or alternate action. These switches do not control any function within the annunciator; the wiring from the switches is brought out to an AMP CHAMP 50-pin connector on the back panel.

The wire list on the right indicates the wiring to this connector.

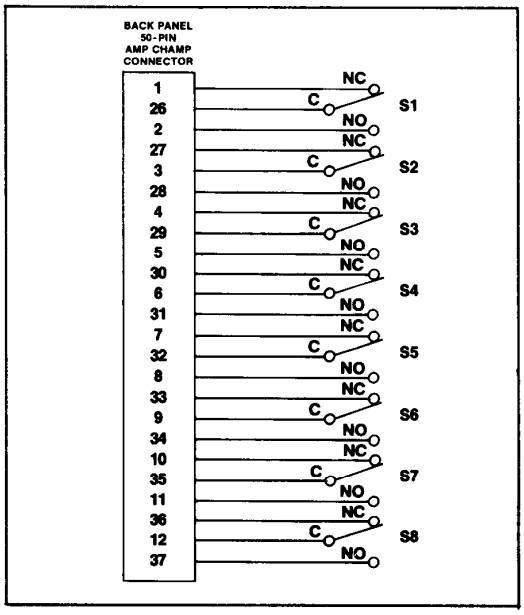
The annunciator can be rack, panel, or desk mounted.

Auxiliary relay contacts that repeat the alarm inputs are provided.

Power input options are as follows: 12-24-48 Vdc or 115-220 Vac if power input is 12 Vdc. No power supply is required. Other models require either a dc-dc converter or an ac-dc power supply to convert input power supplied by user to 12 Vdc.

SEQUENCE OF OPERATION TABLE

SEQUENCE OF OPERATION NO. 3		
Condition	**Status Lamps**	**Audible Alarm**
Normal	Red Lamp Off	Off
Alarm	Red Lamp Flashing	On
OPERATE ACKNOWLEDGE BUTTON		
Alarm	Red Lamp On Steady	Off
Return to Normal	Red Lamp Off	Off



GENERAL SPECIFICATIONS

Weight: 12 pounds

Chassis Size: 17" W x 1.75" H x 13" D (without mounting ears)

Operating Temperature: -25 C to +70 C

Power Requirements:
To operate annunciator: 10 W
To operate interface relays: 8 W

COMMON ALARM

Screw terminals on the back of the unit provide the user with a set of relay contacts which transfer whenever any of the LEDs go into the flashing mode. They will transfer back into the normal position after the ACK pushbutton is depressed and the flashing stops.

This function can be used to perform emergency shutdown of other equipment whenever one or more points being monitored goes into an alarm state. It can also be used as a grouping function that will operate some other device if any alarm point goes into an alarm state.

The relay contacts are rated at 30 Vdc @ 2 amps.

POWER FAIL

The power fail function is an isolated form C relay. The contacts transfer whenever power to the annunciator fails. These relay contacts are rated at 30 Vdc @ 2 amps and are available to the user through screw terminals on the back panel.

AUXILIARY OUTPUTS

The auxiliary outputs are isolated relay contacts that follow the alarm inputs. These contacts may be used to repeat the monitored inputs to some other equipment. The contacts are rated at 30 Vdc @ 2 amps and are strappable for normally open or normally closed operation. They are available to the user through a 50-pin connector located on the back panel.

CONTROL OPTION

The control option includes a momentary or alternate action single pole double throw switch as part of the legend window. The switch contacts are rated at 30 Vdc @ 3 amps and are available to the user through a 50 pin connector located on the back panel.

These switches do not control any function within the annunciator.

INSTALLATION

The annunciator is normally mounted on a 19" rack. Accessory options are available for mounting on a 23" rack, or desktop mounting, or panel mounting. A bezel hood is also available.

In connecting to the alarm input cable, note that not all the wires in the 25-pair cable are used.

If the remote lamp test and the remote ACK are to be used, jumpers must be put in place on the main p.c. board in the unit.

Connectors used for the alarm input J1 and aux. output J2 are industry standard, 50-pin connectors. To mate to them use 180 degree amp champ male connectors part number 552020-1 with bail lock plug. Equivalents of this connector are also available from 3M, TRW, and Amphenol.

For connections to the common alarm, power fail and power terminals (if dc power input is used) use ring or spade wire terminals to connect to the No. 6-32 screw terminals.

MAINTENANCE

No routine maintenance is required other than checking the LEDs by operating the lamp test pushbutton on a routine basis.

FUSES

The F1 and F2 fuses on the large P.C. Board are both 2 amps.

LED REPLACEMENT

When replacing LEDs, the polarity which is marked on the LED must be observed. The + marking on the top LED must face up; and the + marking on the bottom LED must face down.

ALARM INPUT CIRCUIT INTERFACE

A relay is used as an isolation device which interfaces with the user's alarm inputs. This provides extremely good isolation between the solid state circuitry and the user's input circuits which may be subjected to a harsh electrical noise environment. If the user's input is an isolated contact or open collector, the instrument may supply the sensing voltage, otherwise, the user will supply the energy to operate the interface relay coils. See relay specifications in this manual.

Jumpers are used to configure the input circuit to accommodate a number of alarm input schemes. In all cases, a minimum of 4 alarm points must be grouped to form a particular alarm input configuration.

Maximum allowable alarm input loop resistance can be determined by the use of the resistance table and the relay specification which gives the "must operate" voltage required at the interface relay coil; keeping in mind that the voltage drop along the common return will increase as the number of alarm relays are activated.

ALARM INPUT OPTIONS

1. User provides isolated alarm contacts. Power to operate the interface relays supplied from the power on the P.C. board in the instrument.

   Place jumpers E5-E10 in the B & C or A & D position for the desired polarity + or - on the relay coil buses. See Figure 1.

2. User provides isolated alarm contacts **AND** power to operate the interface relays. (Voltage can be 12, 24, or 48 Vdc).

   Place jumpers E5-E10 in E positions. This will bring out the relay buses (4 relays to a bus) through pins 37, 41, 42, 45, 49 of the Alarm Input Connector J1. See Figure 2.

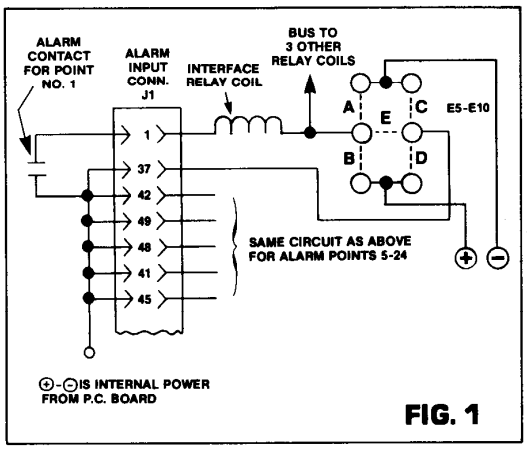


FIG. 1

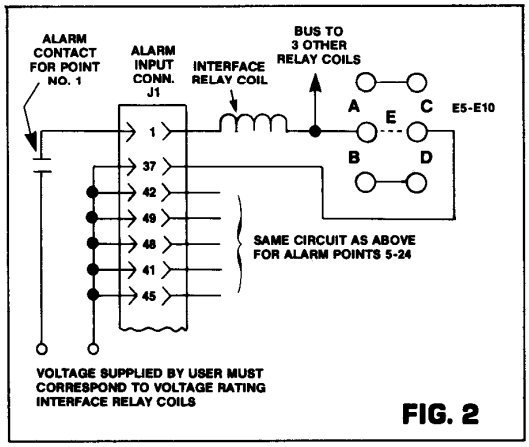


FIG. 2

Solid, Bare, Copper Wire

AWG Size	Ohms/1000'
10	.9989
11	1.260
12	1.588
13	2.003
14	2.525
15	3.184
16	4.016
17	5.064
18	6.385
19	8.051
20	10.15
21	12.80
22	16.14
23	20.36
24	25.67
25	32.37
26	40.81
27	51.47
28	64.90
29	81.83
30	103.2
31	130.1
32	164.1
33	206.9
34	260.9
35	331.0
36	414.8
37	512.1
38	648.6
39	847.8
40	1080.0

RESISTANCE TABLES:

RESISTANCE PER LENGTH OF STRANDED AND SOLID WIRE

Stranded, Tinned, Copper Wire

AWG Size	Ohms/1000'
36	371.0
34	237.0
32	164.0
32	136.4
30	103.2
30	87.3
28	64.9
28	56.7
27	51.47
26	37.3
26	41.48
26	34.43
24	23.3
24	26.09
24	21.08
24	25.59
22	14.74
22	13.73
22	15.94
20	10.32
20	8.63
20	10.05
20	10.02
18	5.86
18	6.48
18	5.46
18	6.37
18	6.39
16	3.67
16	4.27
16	4.00
16	4.02
16	3.99
14	2.31
14	2.70
14	2.53
14	2.49
12	1.45
12	1.70
12	1.75
12	1.58
10	1.11
10	1.09
10	.98

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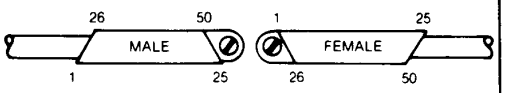
25-PAIR INSIDE TELEPHONE CABLE

PAIR NO.	BODY COLOR	BAND COLOR	50-PIN CONNECTOR PIN NO.
1	Blue	White	1
	White	Blue	26
2	Orange	White	2
	White	Orange	27
3	Green	White	3
	White	Green	28
4	Brown	White	4
	White	Brown	29
5	Slate	White	5
	White	Slate	30
6	Blue	Red	6
	Red	Blue	31
7	Orange	Red	7
	Red	Orange	32
8	Green	Red	8
	Red	Green	33
9	Brown	Red	9
	Red	Brown	34
10	Slate	Red	10
	Red	Slate	35
11	Blue	Black	11
	Black	Blue	36
12	Orange	Black	12
	Black	Orange	37
13	Green	Black	13
	Black	Green	38
14	Brown	Black	14
	Black	Brown	39
15	Slate	Black	15
	Black	Slate	40
16	Blue	Yellow	16
	Yellow	Blue	41
17	Orange	Yellow	17
	Yellow	Orange	42
18	Green	Yellow	18
	Yellow	Green	43
19	Brown	Yellow	19
	Yellow	Brown	44
20	Slate	Yellow	20
	Yellow	Slate	45
21	Blue	Violet	21
	Violet	Blue	46
22	Orange	Violet	22
	Violet	Orange	47
23	Green	Violet	23
	Violet	Green	48
24	Brown	Violet	24
	Violet	Brown	49
25	Slate	Violet	25
	Violet	Slate	50

CONDUCTORS: 24 AWG Solid Bare Copper
INSULATION: .008 Wall Semi-Rigid PVC
CABLE ASSEMBLY: Paired
JACKET: Olive Grey
RESISTIVITY AT 20°C: 26 Ohms per 1000'

CABLES



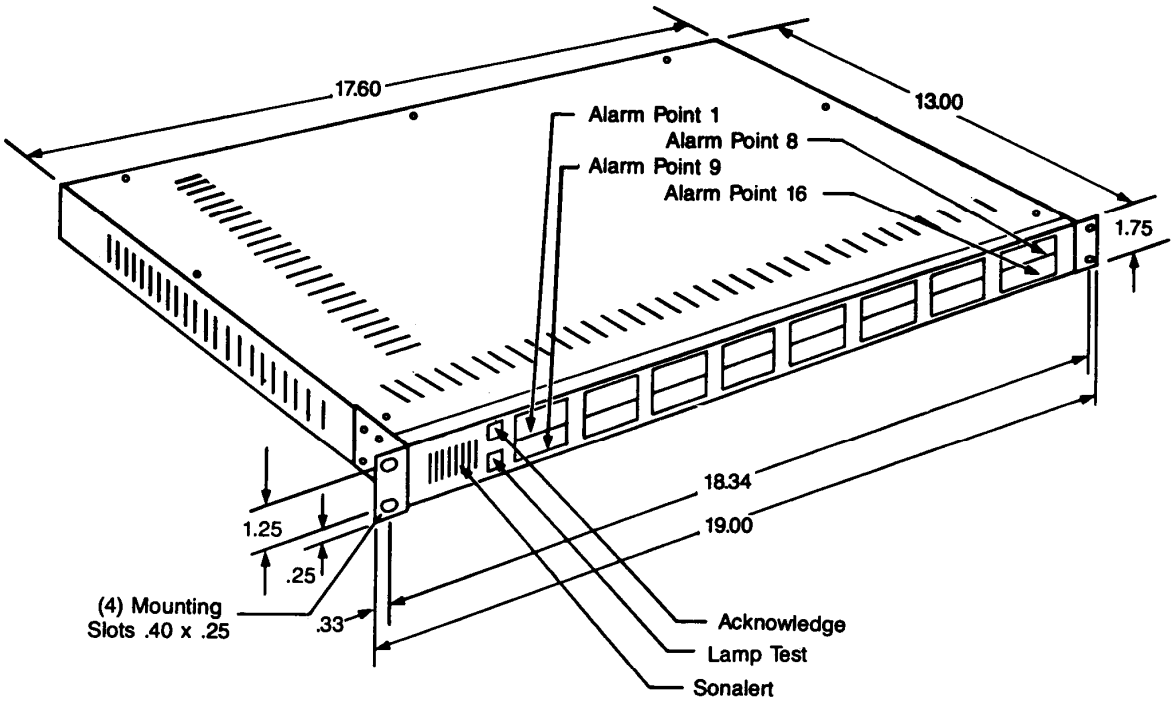
PANEL

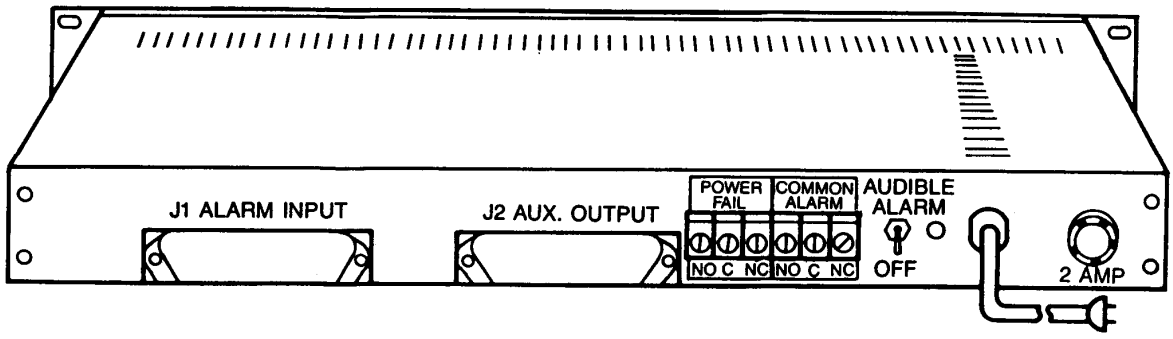
BINDER COLOR CODE

Group No.	Binder Colors
1	Blue-White
2	Orange-White
3	Green-White
4	Brown-White

PAIRED WIRES

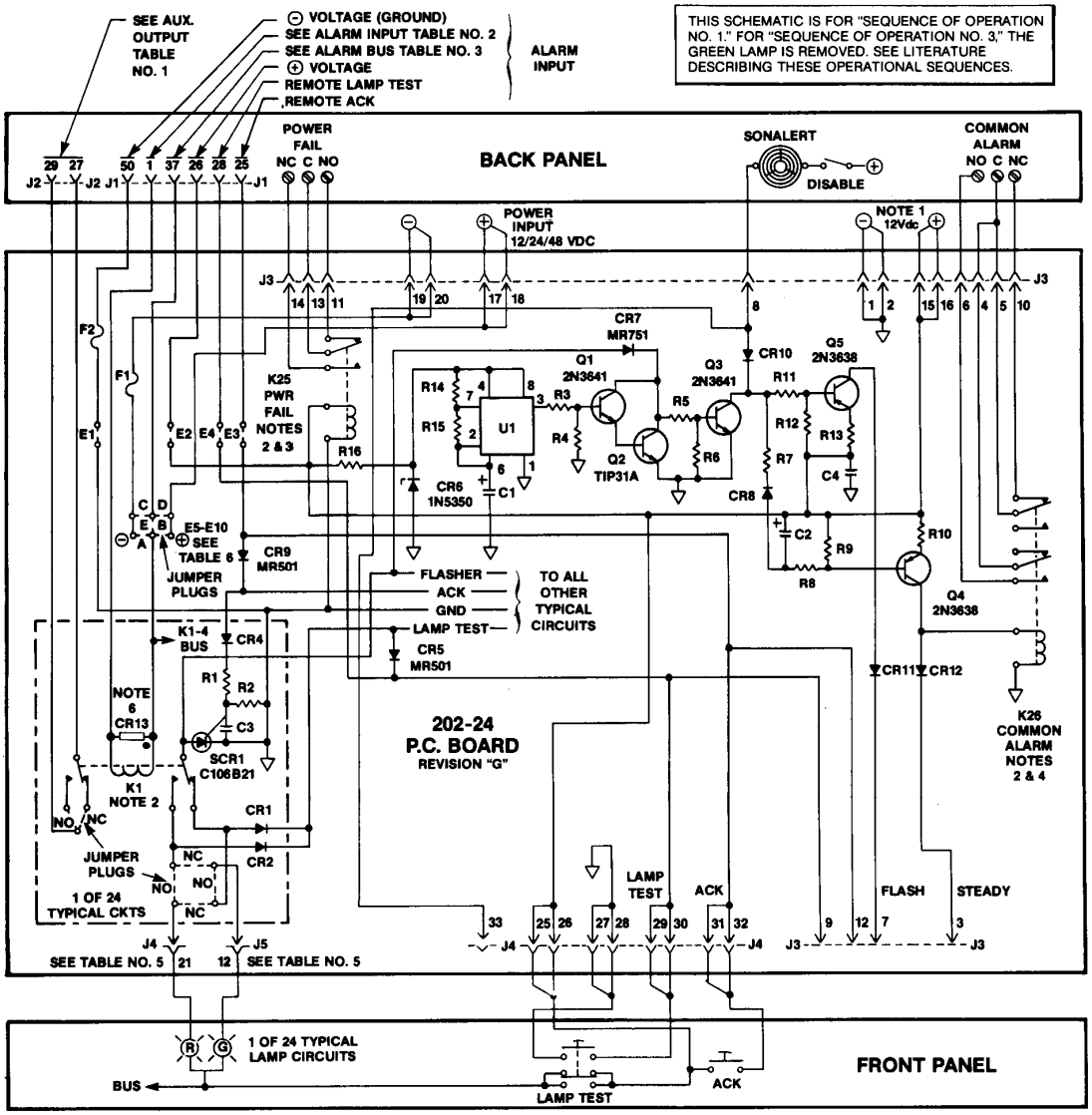
1-26	15-40
2-27	16-41
3-28	17-42
4-29	18-43
5-30	19-44
6-31	20-45
7-32	21-46
8-33	22-47
9-34	23-48
10-35	24-49
11-36	25-50
12-37	
13-38	
14-39	





NOTE:
115 VAC POWER INPUT MODEL SHOWN. SCREW TERMINALS ARE USED IF POWER INPUT IS 12, 24, OR 48 Vdc

PE102-16 CHASSIS OUTLINE



AUXILIARY OUTPUT TABLE NO. 1

ALARM POINT NO.	J2 PIN NO.	ALARM POINT NO.	J2 PIN NO.
1	27-29	13	20-22
2	31-33	14	16-18
3	35-37	15	12-14
4	39-41	16	8-10
5	43-45	17	4-6
6	47-49	18	2-50
7	1-3	19	46-48
8	5-7	20	42-44
9	9-11	21	38-40
10	13-15	22	34-36
11	17-19	23	30-32
12	21-23	24	26-28

ALARM INPUT TABLE NO. 2

ALARM POINT NO.	J1 PIN NO.	ALARM POINT NO.	J1 PIN NO.
1	1	13	13
2	2	14	14
3	3	15	15
4	4	16	16
5	5	17	17
6	6	18	18
7	7	19	19
8	8	20	20
9	9	21	21
10	10	22	22
11	11	23	23
12	12	24	24

ALARM INPUT BUS TABLE NO. 3

ALARM POINT NO.	J1 PIN NO.	ALARM POINT NO.	J1 PIN NO.
1-2-3-4	37	13-14-15-16	48
5-6-7-8	42	17-18-19-20	41
9-10-11-12	49	21-22-23-24	45

CONNECTOR TABLE NO. 4

J1	50 pin	AMP Champ 552130-1
J2	50 pin	AMP Champ 552130-1
J3	20 pin	3M 3428-1302
J4	34 pin	3M 3431-1302
J5	26 pin	3M 3429-1302

LAMP TABLE NO. 5

ALARM POINT NO.	PIN NO. RED J4	PIN NO. GRN J5	ALARM POINT NO.	PIN NO. RED J4	PIN NO. GRN J5
1	21	12	13	22	4
2	17	14	14	18	1
3	11	16	15	14	5
4	9	18	16	2	11
5	3	9	17	15	13
6	6	10	18	8	20
7	10	23	19	4	8
8	1	15	20	5	17
9	12	7	21	7	22
10	16	3	22	13	19
11	20	2	23	19	21
12	24	6	24	23	24

"E" JUMPER TABLE NO. 6

E1	BRINGS OUT GROUND TO PIN 50 OF J1	
E2	BRINGS OUT + VOLTAGE TO PIN 26 OF J1	
E3	BRINGS OUT "ACK" TO PIN 25 OF J1	
E4	BRINGS OUT "LAMP TEST" TO PIN 28 OF J1	
E5	SELECTS POWER FOR ALARM INPUT RELAYS	1-4
E6	SELECTS POWER FOR ALARM INPUT RELAYS	5-8
E7	SELECTS POWER FOR ALARM INPUT RELAYS	9-12
E8	SELECTS POWER FOR ALARM INPUT RELAYS	13-16
E9	SELECTS POWER FOR ALARM INPUT RELAYS	17-20
E10	SELECTS POWER FOR ALARM INPUT RELAYS	21-24

NOTES;

1. 12 Vdc from internal power supply or from screw terminals on the back panel.
2. Relay shown in de-energized position.
3. Relay shown in "power off" position.
4. Relay shown in "after ack" position.
5. Resistors R10, R13, & R16 are jumped & diode CR6 is omitted for 12Vdc power input.
6. Diode across relay coil in accordance with polarity selected at jumpers E5-10.

ALARM ANNUNCIATOR PE202-16 SCHEMATIC

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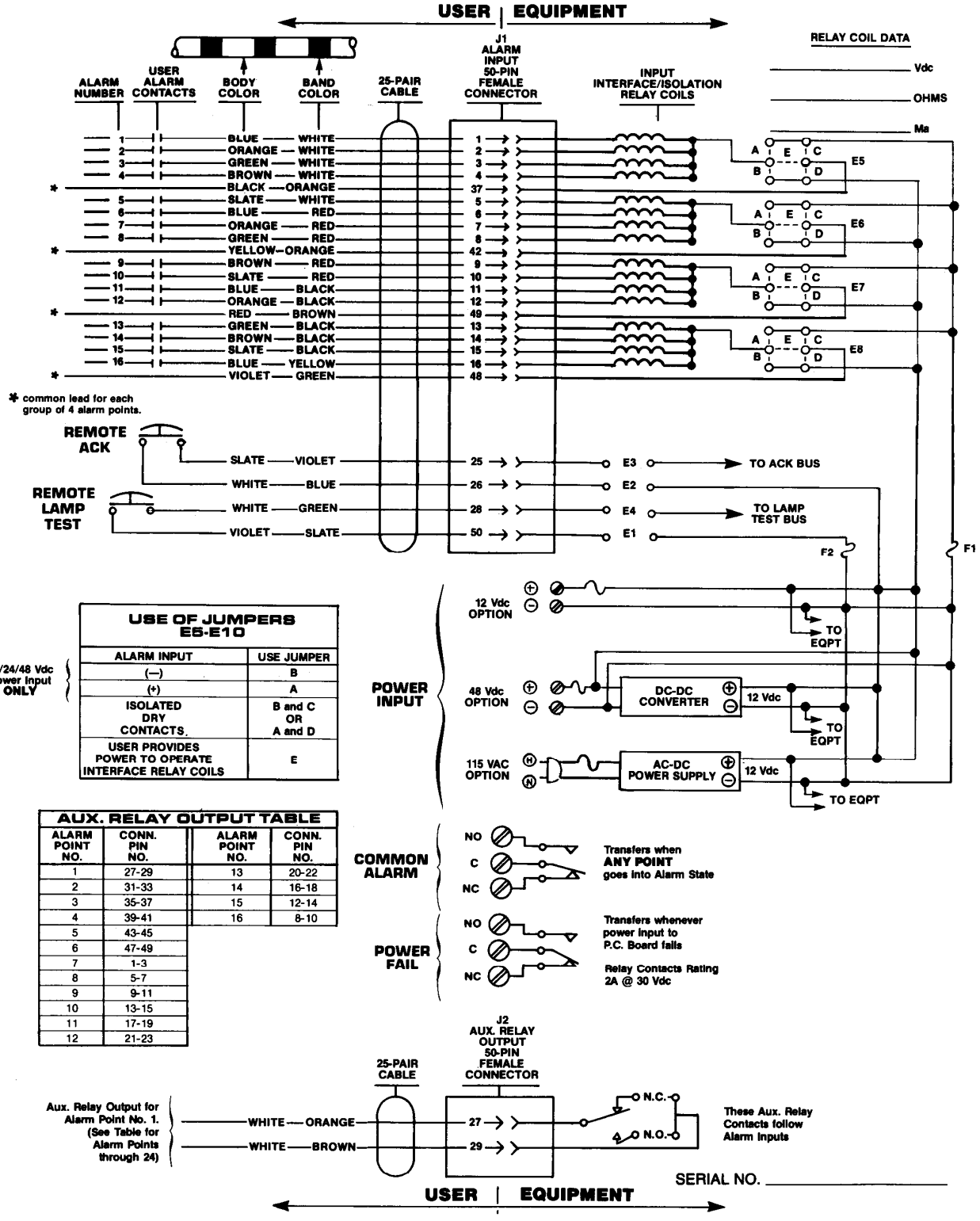


USE OF JUMPERS E5-E10

12/24/48 Vdc Power Input ONLY

ALARM INPUT	USE JUMPER
(—)	B
(+)	A
ISOLATED DRY CONTACTS	B and C OR A and D
USER PROVIDES POWER TO OPERATE INTERFACE RELAY COILS	E

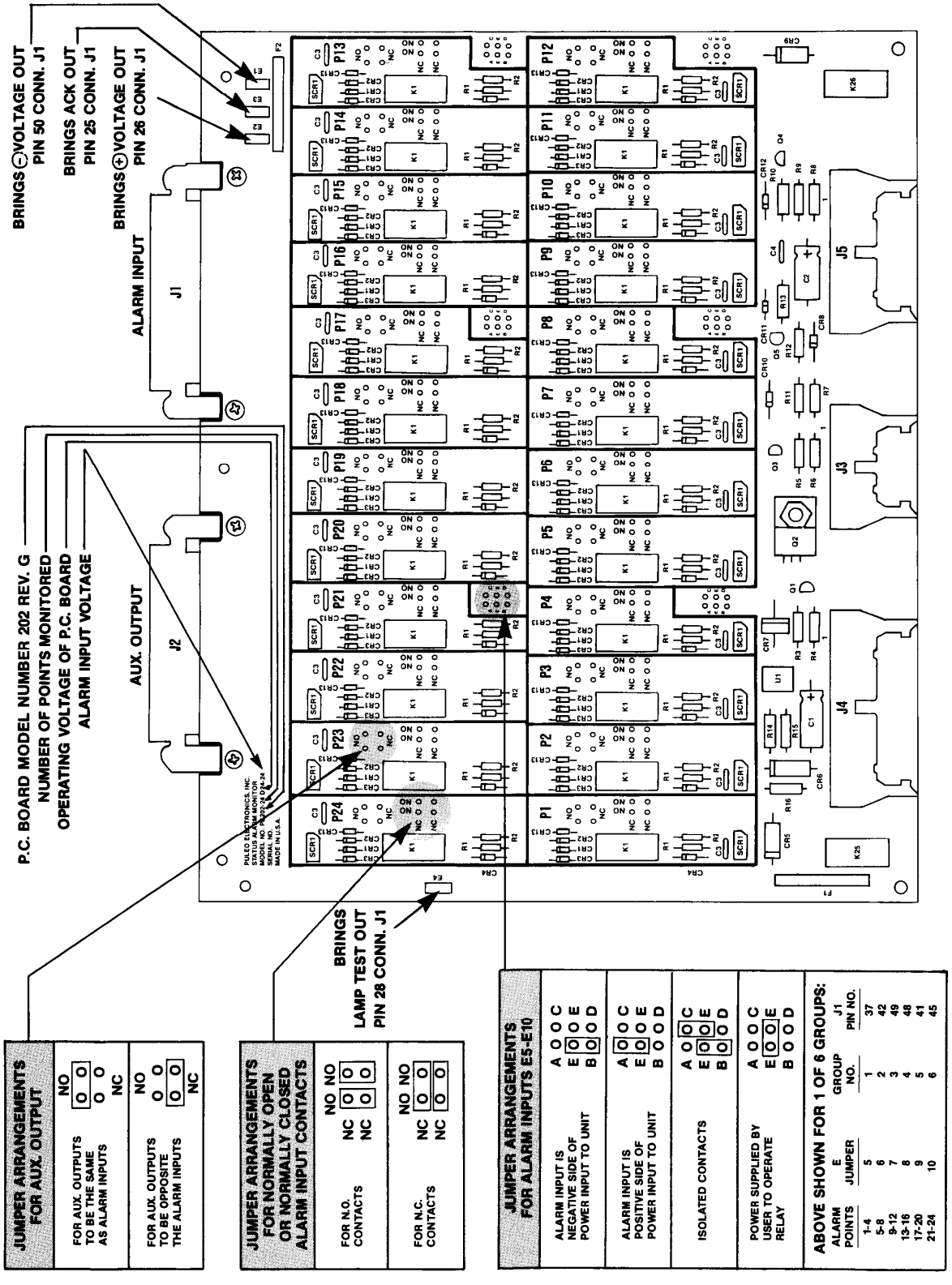
AUX. RELAY OUTPUT TABLE

ALARM POINT NO.	CONN. PIN NO.	ALARM POINT NO.	CONN. PIN NO.
1	27-29	13	20-22
2	31-33	14	16-18
3	35-37	15	12-14
4	39-41	16	8-10
5	43-45		
6	47-49		
7	1-3		
8	5-7		
9	9-11		
10	13-15		
11	17-19		
12	21-23		

NOTES:
1. The PE 202 P.C. Board can be configured in a number of ways using the E Jumper Plugs E 1 through E 10. The configuration selected when the unit leaves the factory is indicated by RED markings on the sheet.
2. Cross-Connect Panel PE 302-001 is available for special wiring arrangements to unit.
3. Mating Connector AMP Champ P.N. 552020-1 Plug 180°.

INTERFACE ALARM MONITOR/ANNUNCIATOR PE202 P.C. BOARD

1-16 ALARM POINTS



PE 202 P.C. BOARD

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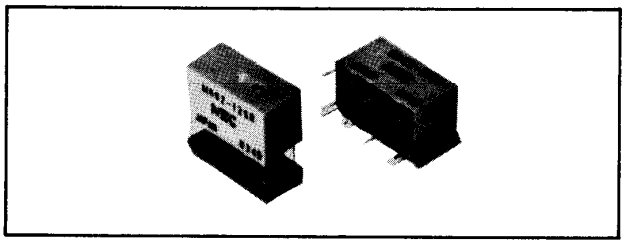
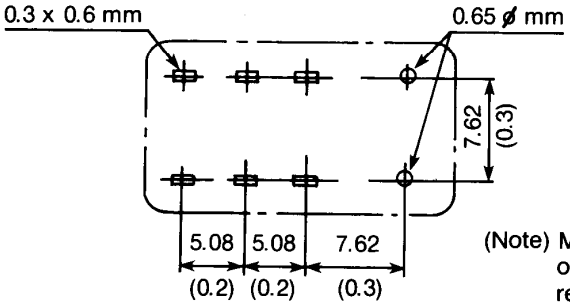
RELAY SPECIFICATIONS



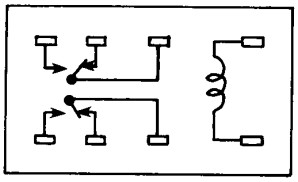
FEATURES

- **2 Form C Bifurcated-Crossbar Contacts**
- **Plastic Sealed Package for Flow-Soldering Process**
- **Super Reliability for Wide Applications**
- **UL recognized (E73266)**
- **1500V FCC surge between open contacts**
- **Industry Standard, World Wide**

SCHEMATIC mm (inch)



(Bottom View)



Weight Approx. 5g (0.17 oz.)

(Note) Mounting direction: When the relay is mounted on a PC board vertically, the contact side of relay should be set in upper direction.

SPECIFICATIONS

		MR62-SR	MR62-SRY	MR62-SRX
Contact Form		2 Form C		
Contact Rating	Max. Switching Power	30 W 50 VA		
	Max. Switching Voltage	150 VDC 125 VAC		
	Max. Switching Current	1.25A 1.25A		
	Max. Carrying Current	2A 2A		
Initial Contact Resistance		100mΩMax.		
Contact Material		Silver alloy with gold overlay		
Nominal Operating Power		Approx. 500 mW (at 25 °C. 77°F)*	400 mW	
Operate time (Excluding Bounce)		6 ms max.	7 ms max.	
Release Time (Excluding Bounce)		3 ms max.		
Insulation Resistance		1,000 MΩ at 500 VDC		
Breakdown Voltage		Between Open Contacts 500 VAC (for 1 minute) Between Coil and Contracts 1,000 VAC (for 1 minute)		1,000 VAC 1,000 VAC
Coil Temperature Rise at nominal coil voltage		40 °C	35 °C	
Shock Resistance		30 G (misoperating)		
Vibration Resistance		10 G (misoperating)		
Electro-static Capacitance		Between open contacts : Approx. 2 pF Between adjacent contacts : Approx. 2 pF Between coil and contacts : Approx. 3 pF		
Ambient Temperature		-40 °C to 70 °C (-40°F to + 158°F)		
Life Expectancy	Mechanical	1 x 10^7 operations		
	Electrical	1 x 10^6 operations (24 VDC 1 A) 3 x 10^6 operations (24 VDC 0.5 A)		

STANDARD PART NUMBERS

at 25 °C (77°F)

PART NUMBER	NOMINAL VOLTAGE (VDC)	CURRENT (mA)	COIL RESISTANCE (Ω) ± 10%	MUST OPERATE VOLTAGE (VDC)	MUST RELEASE VOLTAGE (VDC)
MR62- 5SR	5	120	42	3.1	0.25
MR62- 6SR	6	90	66	3.9	0.33
MR62- 9SR	9	65	140	5.7	0.45
MR62-12SR	12	43	280	8.1	0.68
MR62-24SR	24	23	1,050	15.8	1.3
MR62-48SR	48	12	4,200	34.4	2.6

PE102-16 PARTS LIST

Description	Puleo Part Number	Total No. Used In Unit	Recommended Spares
Rectangular Indicator Housing	018-049	8	1
Rectangular P.B. Sw. Housing Alt. Action*	018-050	8	1
Rectangular P.B. Sw. Housing Mom. Action*	018-051	8	1
Rectangular Full White Lens Cap	018-052	8	1
Red LED	006-026	32	2
Power Supply (If 115 Vac Power Input)	014-001	1	1
Power Supply (If 48 Vdc Power Input)	014-016	1	1
Pushbutton Switch	018-031	1	1
Test Button Cap	018-034	1	1
ACK Button Cap	018-032	1	1
Fuse (If AC Power Input)	020-002	1	2
Fuse (If DC Power Input)	020-004	1	2
Fuse (All Units)	020-008	2	2
Fuse Holder	020-001	1	1

*If Legend Window Used as Pushbutton