GENERAC®

POWER SYSTEMS, INC.

D/E Remote Relay Panel User Guide

This manual should remain with the unit.

DETAILED SPECIFICATIONS

◆ ENVIRONMENTAL SPECS

Temperature	-20°C to +50°C
Humidity	0 to 95% Non Condensing

◆ POWER SUPPLY REQUIREMENTS

Power Supply Source	Generator Battery/External DC supply.
Nominal Supply	+12V to +24VDC
Transient protection	Spikes clamped to 40V
Power Usage	600mA maximum.
Battery Supply cable	2 wire - DC resistance less than 6 Ohms per conductor.
Fuse on front panel	2 Amp

◆ RELAY OUTPUTS (8)

Contact per channel	1 pair NO/NC (1xSPDT) Volt-free contacts
Maximum contact rating	30VDC/1A or 120VAC/0.5A

◆ COMMUNICATION WITH D/E PANEL

Communication link	2 wire RS485 fully isolated.
Cable	2 wire - twisted pair with overall screen
Overall Cable spec.	Cable is 4 conductor, 2 for Power and Ground, 2 for RS485 Communications.

◆ PACKAGING AND MOUNTING

Enclosure type	Sheet metal box.
Base Panel	Wall/flush mount #A6985/#A7437
Front Panel	Wall/flush mount #A6987/#A9698
Mounting	Wall or flush.
Weight requirements	None
Manuals	Yes - Operator guide

◆ TRANSPORTATION AND STORAGE

Temperature	-20°C to +80°C
Humidity	0-95% Non Condensing

SYSTEM SPECIFICATION

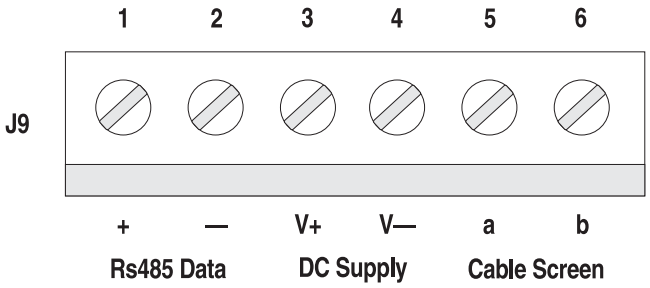
The D/E Panel Remote Relay Panel (RRP) provides remote monitoring and activation of up to 8 generator parameters.

It is functionally similar to the existing 20 Light Remote Annunciator (model 09845-0) which interfaces with the 'D/E' Panel display, the main difference being that it provides relay outputs for each channel rather than a visual display.

Each RRP can monitor up to 8 channels, but multiple units may be used to obtain all 18 parameters.

Power to the RRP is supplied from the generator battery or external DC supply (+12V to +24V) via a 2 wire link. Communication with the D/E Panel is via a 2 wire RS485 serial data link. See Figure 1.

Figure 1



◆ HARDWARE FUNCTIONAL DESCRIPTION

The RRP normally polls the D/E panel every 10 seconds and receives the 18 generator status parameters. It then activates/deactivates the relay outputs to reflect the status of up to 8 selected parameters.

The relay outputs match exactly the status of the indicators on the D/E panel. There is no facility to override or accept alarms locally either by the operator or automatically at the RRP.

Relay Outputs

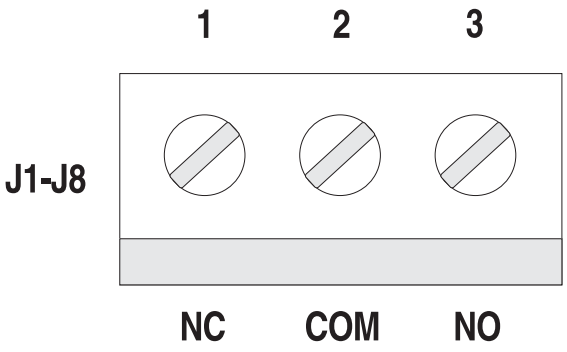
Each channel will provide one pair of Normally Open/Normally Closed contacts. See Figure 2.

The relay status is fail-safe when using the NC contacts as the alarm output i.e.:

Alarm OFF = Relay ON = NC contact OPEN

Alarm ON = Relay OFF = NC contact CLOSED

Figure 2



So a DC supply failure will reset the relay to Off = alarm ON - N/C Closed.

Selected Parameters

The user can select up to 8 of the following 18 parameters using the 10/8 way dip switches S1/S2 on the PCB.

S1	Parameter	S2	Parameter
1	RPM Sensor Loss	1	Battery Charger AC Failure
2	Overcrank	2	Low Battery Voltage
3	Overspeed	3	High Battery voltage
4	Low Oil Pressure	4	Generator Run
5	High Water Temp.	5	Generator Power
6	Emergency Stop	6	Not In Auto
7	Pre-Low Oil Pressure	7	Line Power
8	Pre-High Water Temp.	8	Spare Channel
9	Pre-Low Water Temp.		
10	Pre-Low Fuel		

The relay outputs are assigned to the selected parameters in sequential order. I.e. if DIP1-1..8 are selected, these are assigned to relay's 1..8 respectively as shown in Figures 3 and 4.

Figure 3 — S1

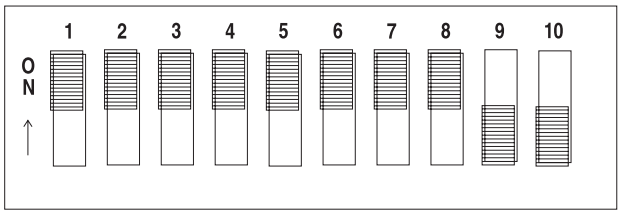
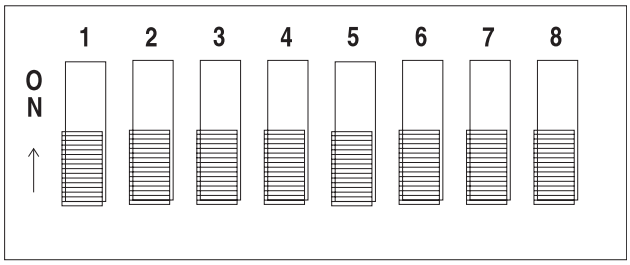


Figure 4 — S2



NOTE:

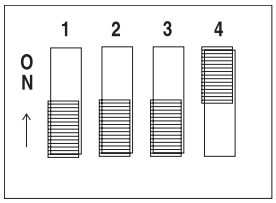
If a unit is wired up and then subsequently an additional DIP is selected or deselected all the relay outputs will be re-assigned sequentially and therefore may require re-wiring.

RRP Address

Each RRP has a user selectable address (0-3) which is used during the communication process. It must be set to a unique value for each RRP using DIP switch S3.1 & S3.2 as shown in Figure 5.

Figure 5 — RRP Value

Address	S3.1	S3.2
0	0	0
1	0	1
2	1	0
3	1	1



The default address is 0 as shown and should be used for a single RRP.

NOTE:

S3.3 is unused and should be set to OFF.

RS485 Line Termination

An RS485 terminating resistor is switched in (ON) or out (OFF) using DIP switch S3.4. Normally, for a single RRP configuration the DIP switch should be ON (default as shown in Figure 5).

If however the configuration includes more than 1 RRP or also includes a RAP then either of the next two options should be used:

a. If more than 1 RRP is present on the same RS485 line this switch must be re-positioned to OFF on every additional RRP.
b. Or a Remote Annunciator Panel (RAP) is present on the same RS485 line, this switch must be re-positioned to OFF on every RRP.

RS485 Communication

There are no options available, the jumpers J1 & J2 must both be set to positions 1-2.

Communication	Jumper	Position
RS485	J1	1-2
(default)	J2	1-2

◆ SOFTWARE SPECIFICATION

Serial Interface

Default 4800, n, 8, 1

Auto-detect 2400, 9600 bd.

Request Frequency

Nominally once every 10 seconds

To enable more than 1 RRP to co-exist with other RRP's or with a Remote Annunciator Panel (RAP), the individual communication process of each RRP dynamically adapts to the overall user configuration.

This means that when a new RRP or RAP is powered up onto an existing RS485 network, there may be a period of time, during which any or all of the units may report "Communication failure". The system will settle to normal operation automatically without user intervention.

Error Detection

The D/E panel should respond to a data request within 1 second for each transaction.

The RRP will continuously try 3 times at each of 3 baud rates (4800, 9600, 2400 bd) before reporting a communication error by **switching all the relays off**.

Limits of Operation

The following communication restrictions apply for multiple units on a common RS485 line:

- Up to 4 RRPs may be used together.
- Only 1 RAP may be used with multiple RRPs.
- An RRP/RAP can only communicate with 1 D/E panel.
- Each RRP should be set to a different "address".
- Only 1 RRP should have the RS485 termination resistor selected.

CONFIGURATION EXAMPLES

◆ EXAMPLE 1

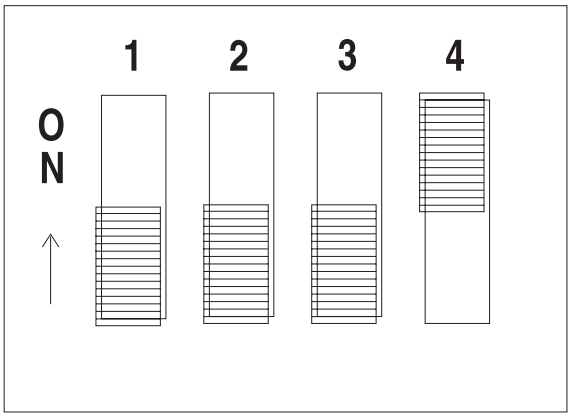
A single RRP is connected to a D panel (Figure 6).

S3.1, 3.2 Address 0, S3.1 and S3.2 OFF

S3.2 Unused is OFF

S3.4 RS485 termination resistor is ON

Figure 6 — Single RRP Connected to D Panel



DIP S1-1, 3, 5, 10 are initially selected, these are assigned to relays 1, 2, 3, 4 (Figures 7 and 8).

DIP	Parameter	Relay
1, 1	RPM Sensor Loss	1
1, 3	Overspeed	2
1, 5	High Water Temp	3
1, 10	Pre-Low Fuel	4

Figure 7 — S1

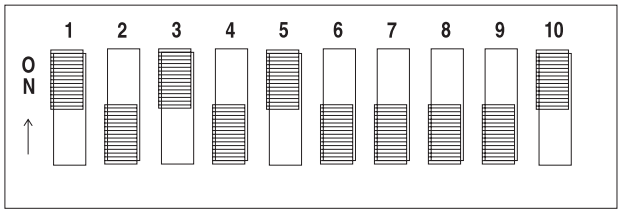
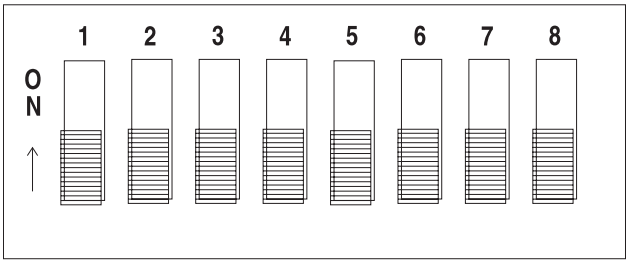


Figure 8 — S2



◆ EXAMPLE 2

If subsequently DIP1-3 is removed, and DIP2-5 is added, then relays will be re-assigned as (Figures 9 and 10).

DIP	Parameter	Relay
1, 1	RPM Sensor Loss	1
1, 5	High Water Temp	2
1, 10	Pre-Low Fuel	3
2, 5	Generator Power	4

Figure 9 — S1

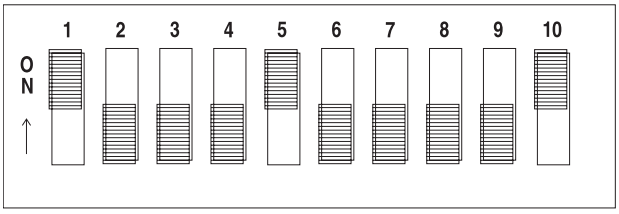
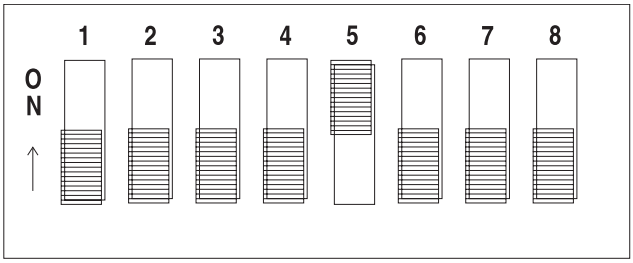
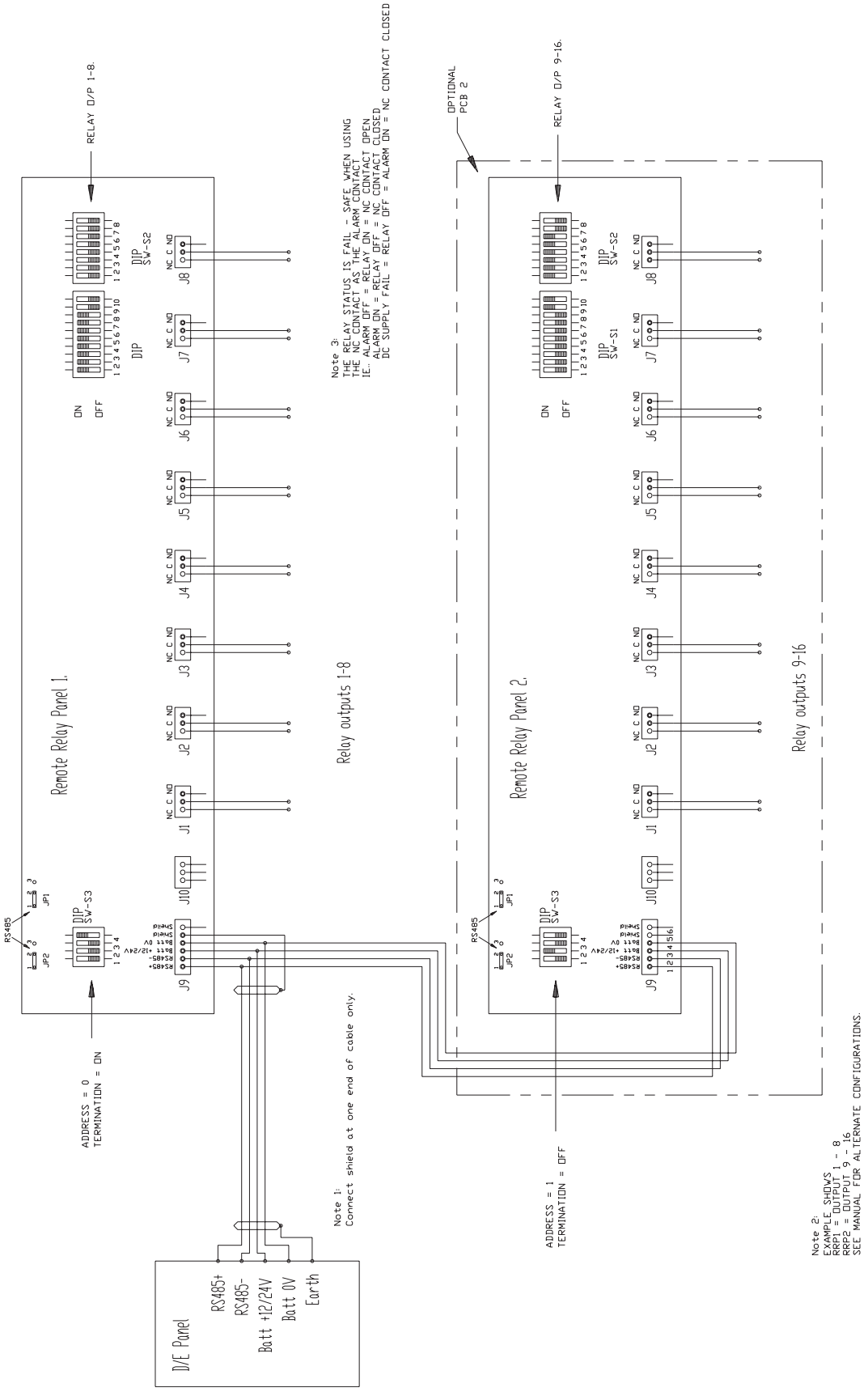


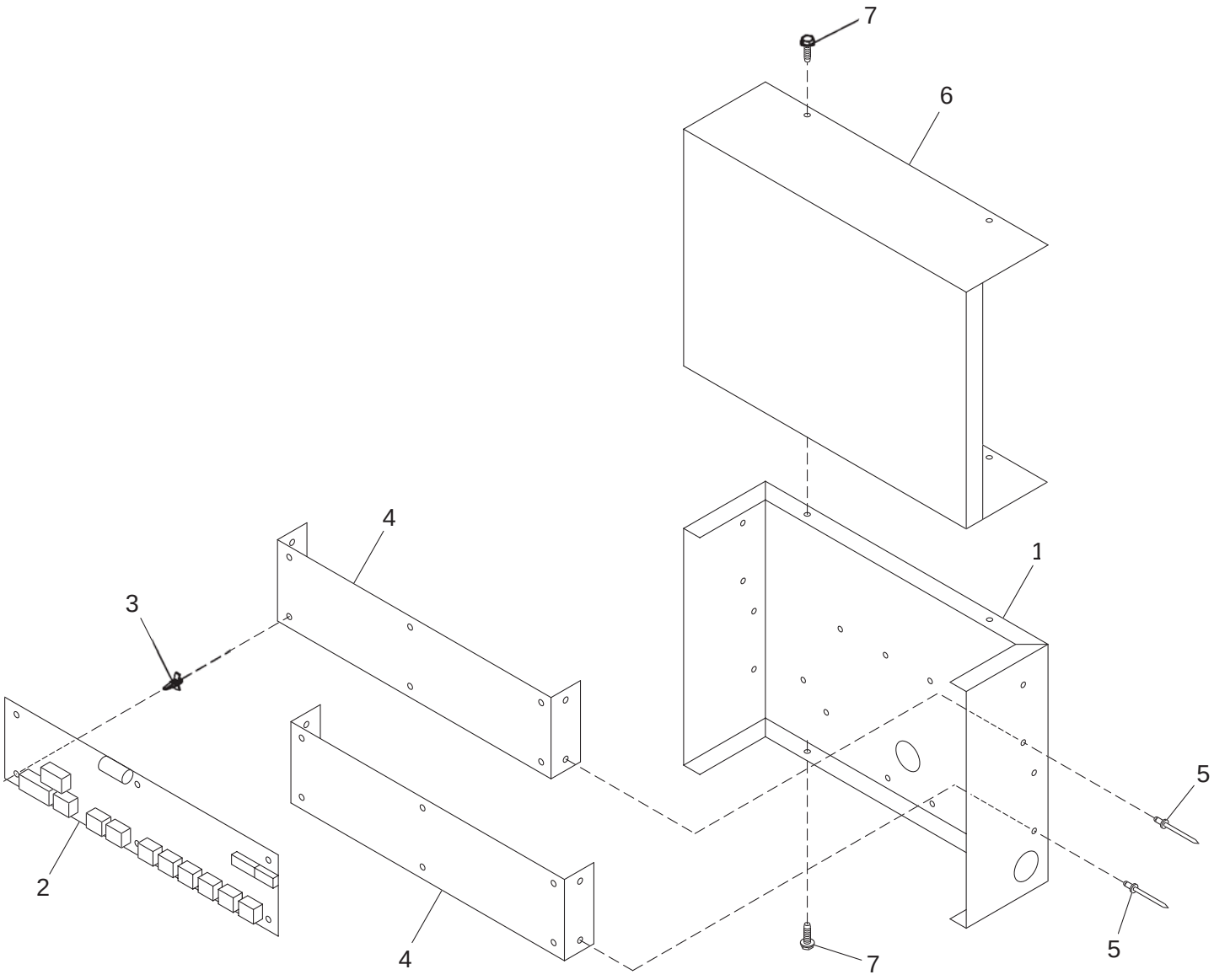
Figure 10 — S2



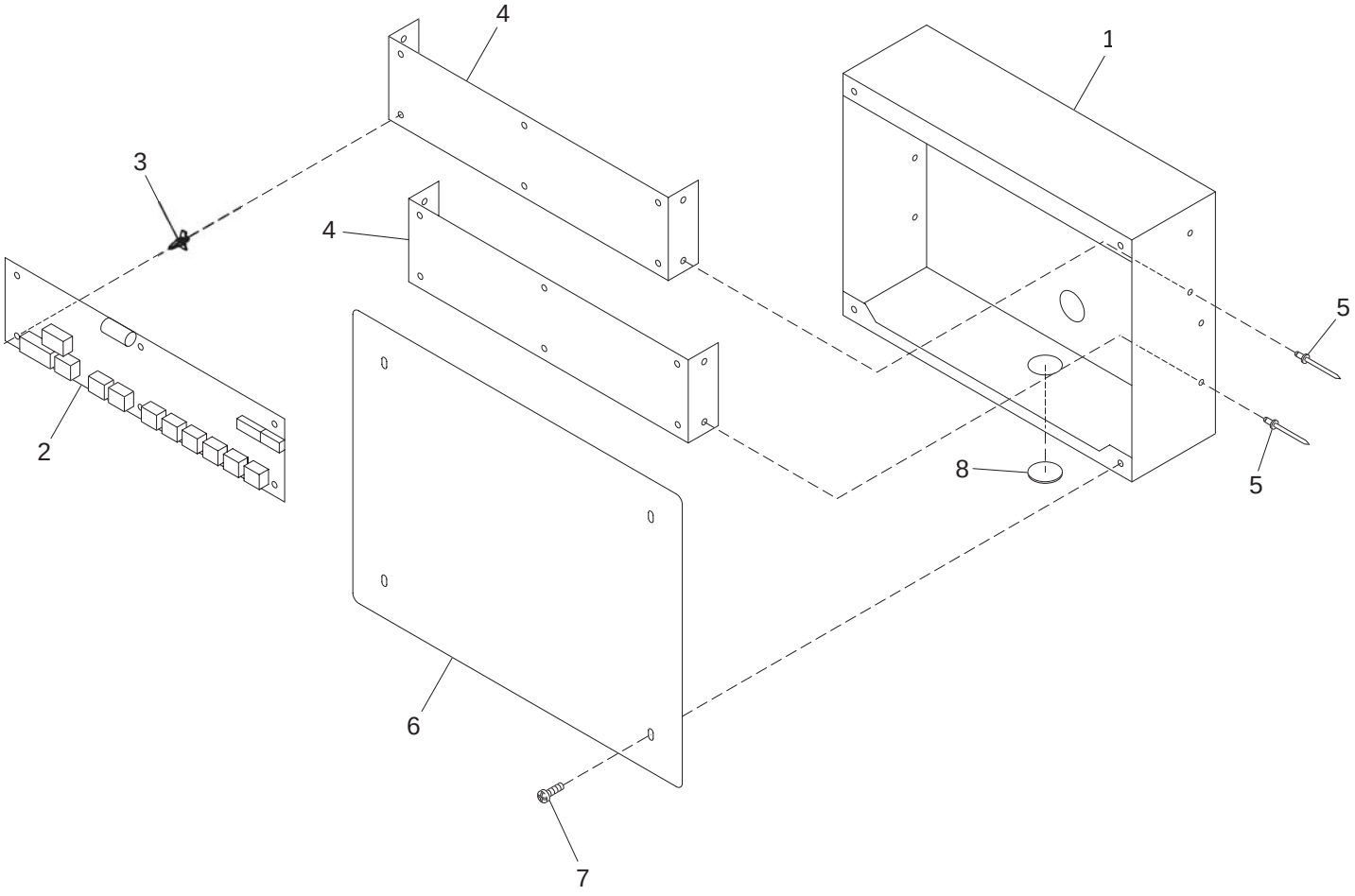
Electrical Data

Electrical Schematic – Drawing No. 0A9893





ITEM	PART NO.	QTY.	DESCRIPTION
1	0A6985	1	PANEL ANUNCIATR REAR
2	0A9036	2	ASSEMBLY 8-CHAN REM RLY STAND RRP
3	040213	12	PCB SUPPORT SNAP-IN 1/4"
4	0A6990	2	SUPPORT PC BOARD
5	036261	8	RIVET POP .125 X .275 AL
6	0A9697	1	PANEL ANUNCIATOR FRONT
7	056892	4	SCREW CRIMPTITE 10-24 X 3/8
8	025034	2	PLUG STEEL 1.0625 (NOT SHOWN)



ITEM	PART NO.	QTY.	DESCRIPTION
1	0A7437	1	PANEL ANUNCIATOR REAR
2	0A9036	2	ASSEMBLY 8-CHAN REM RLY STAND RRP
3	040213	12	PCB SUPPORT SNAP-IN 1/4"
4	0A6990	2	SUPPORT PC BOARD
5	036261	8	RIVET POP .125 X .275 AL
6	0A9698	1	PANEL ANUNCIATOR FRONT
7	056892	4	SCREW CRIMPTITE 10-24 X 3/8
8	025034	1	PLUG STEEL 1.0625