

INSTALLATION INSTRUCTIONS

Original Issue Date: 6/04

Model: 20-2000 kW Generator Sets with 550 and 16-Light Controllers

Market: Industrial

Subject: Remote Annunciator Kits GM28619-KP1 and GM28619-KP1S

Introduction

The remote annunciator monitors the condition of the generator set from a location up to 1000 ft. away from the generator set. If a generator alarm condition occurs, the remote annunciator alerts the operator through visual and audible signals.

Use this kit when the 14-relay dry contact kit is ordered factory-installed. The 14-relay dry contact assembly isolates the annunciator from the controller and protects the controller from voltage surges and stray voltage.

If a generator alarm condition occurs, the appropriate relay contacts close to activate the horn and corresponding lamp on the remote annunciator. The following paragraphs describe specific features of the remote annunciator.

Features

Horn

Alarm Horn. The alarm horn sounds when a fault or prealarm condition exists, except emergency stop, battery charger fault, or low battery volts. Silence the alarm horn with the generator set master switch in the AUTO position. See step 7, Resetting the generator set controller and remote annunciator.

Lamps

Auxiliary Fault (16-light controller only). The lamp flashes or remains on to indicate that a fault occurred.

Flashing Lamp Condition:

- The auxiliary lamp flashes when the controller senses no AC output while the generator set is running, except during the first 10 seconds after startup. When AC output is sensed, the lamp stops flashing and turns off. No manual reset is required.
- The auxiliary lamp flashes when the battery power is reconnected or low and then regains full power while the generator set master switch is in the RUN or

AUTO position. A temporary low battery condition may result from a weak battery or from an undersized battery for the application. Place the generator set master switch in the OFF/RESET position to clear this condition.

Continuous On Lamp Condition:

- The auxiliary lamp illuminates when the optional emergency stop switch is reset while the generator set master switch is in the AUTO or RUN position. Place the generator set master switch in the OFF/RESET position to clear this condition.
- The auxiliary lamp illuminates and the engine shuts down 5 seconds after high oil temperature (P1-13), low coolant level (P1-14), or auxiliary delay shutdown (P1-15) faults occur, if the generator set controller main circuit board is so equipped. These conditions are inhibited during the first 30 seconds after a crank disconnect.
- The auxiliary lamp illuminates and the engine shuts down immediately when an overvoltage condition occurs.
- The auxiliary lamp illuminates and the engine shuts down immediately when activated by a customer-supplied sensing device connected to the auxiliary immediate shutdown ports (P1-17 and P1-18) on the generator set controller main circuit board.

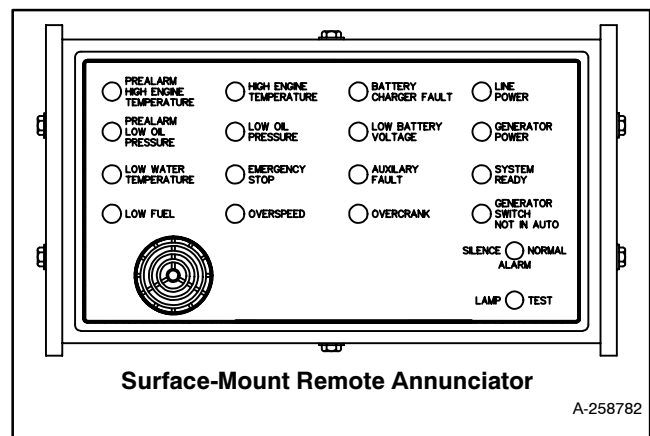


Figure 1 Remote Annunciator Kit

Battery Charger Fault, if battery charger equipped.

The lamp illuminates when the generator set battery charger malfunctions.

Emergency Stop. The lamp illuminates when the generator set stops by local or optional emergency stop switch, if the generator set is equipped with an emergency stop switch.

Generator Power. The lamp illuminates when the generator set supplies the power.

Generator Switch Not In Auto. The lamp illuminates when the generator set master switch is not in the AUTO position.

High Engine Temperature. The lamp illuminates when the high engine coolant temperature shuts down the generator set.

Line Power. The lamp illuminates when a power supply other than the generator set supplies the power.

Low Battery Voltage. Lamp illuminates when the battery or charging voltage drops below a preset level on the charger. The lamp also illuminates when an undervoltage condition occurs from a battery or charger malfunction while the generator set is running. The 16-light controller requires the optional battery charger with alarms for the lamp to function.

Low Fuel. The lamp illuminates when the fuel tank level approaches empty. The annunciator requires a fuel tank low-fuel sensor for the lamp to function.

Low Oil Pressure. The lamp illuminates when the generator set shuts down because of low engine oil pressure.

Low Water Temperature. The lamp illuminates when the optional engine block heater malfunctions and/or the block temperature is too low for ten- second startup. The 16-light controller requires the optional prealarm sender kit for the lamp to function.

Overcrank. The lamp illuminates and the cranking stops when the generator set does not start within the defined cranking period.

Overspeed. The lamp illuminates when the generator set shuts down because of an overspeed condition.

Prealarm High Engine Temperature. The lamp illuminates when the engine coolant temperature approaches the shutdown range. The 16-light controller requires the optional prealarm sender kit for the lamp to function.

Prealarm Low Oil Pressure. The lamp illuminates when the engine oil pressure approaches the shutdown range. The 16-light controller requires the optional prealarm sender kit for the lamp to function.

System Ready. The lamp illuminates when the generator set master switch is in the AUTO position and the system has no fault conditions.

Switches

Alarm Silence. The switch disconnects the alarm during servicing. Place the generator set master switch in the AUTO position to reset. See step 7, Resetting the generator set controller and remote annunciator.

Lamp Test. The switch tests the remote annunciator indicator lamps.

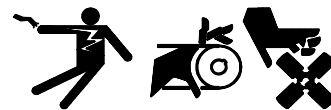
Mounting

Flush- or Surface-Mounting Capability. This instruction includes installation information for both flush- and surface-mounting.

Safety Precautions

Observe the following safety precautions while installing the kit.

⚠ WARNING



Accidental starting. Can cause severe injury or death.

Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

Read the entire installation procedure and compare the kit parts with the parts list in this publication before beginning installation. Perform the steps in the order shown. Observe applicable local and national electrical codes when installing the wiring system.

Installation Procedure

1. Remove the generator set from service.

- 1.1 Place the generator set master switch in the OFF/RESET position.
- 1.2 Disconnect the power to the battery charger, if equipped.
- 1.3 Disconnect the generator set engine starting battery(ies), negative (-) lead first.

2. Locate the 14-relay dry contact kit.

The 14-relay dry contact kit is factory-installed on the generator set. Depending upon model, the kit is located

either inside the junction box, outside the junction box, or mounted to the junction box inner panel.

- 2.1 Remove the necessary junction box panels to access the 14-relay dry contact kit.

- 2.2 Open the 14-relay dry contact assembly cover by removing the four cover screws, if so equipped.

- 2.3 Use Figure 3 or Figure 4, as needed, for connecting the 14-relay dry contact assembly to the remote annunciator panel.

3. Select a mounting location for the remote annunciator panel.

- 3.1 Select a visible location for mounting the remote annunciator panel up to 305 m (1000 ft.) from the controller. Install the remote annunciator panel, either surface- or flush-mounted, in a location easily observable by operating personnel at their work stations. See Figure 2 for remote annunciator dimensions and mounting hole dimensions.

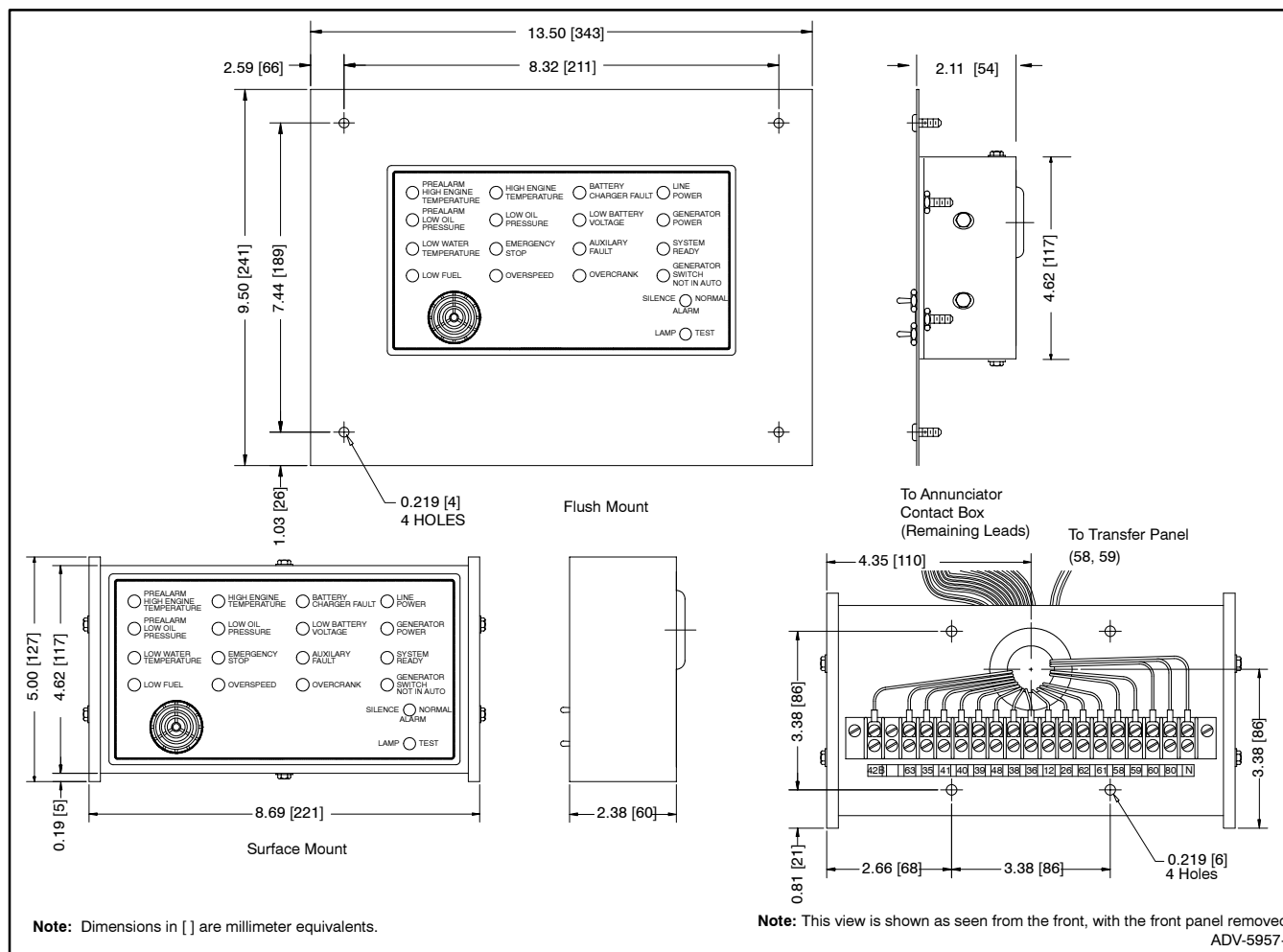


Figure 2 Component Dimensions

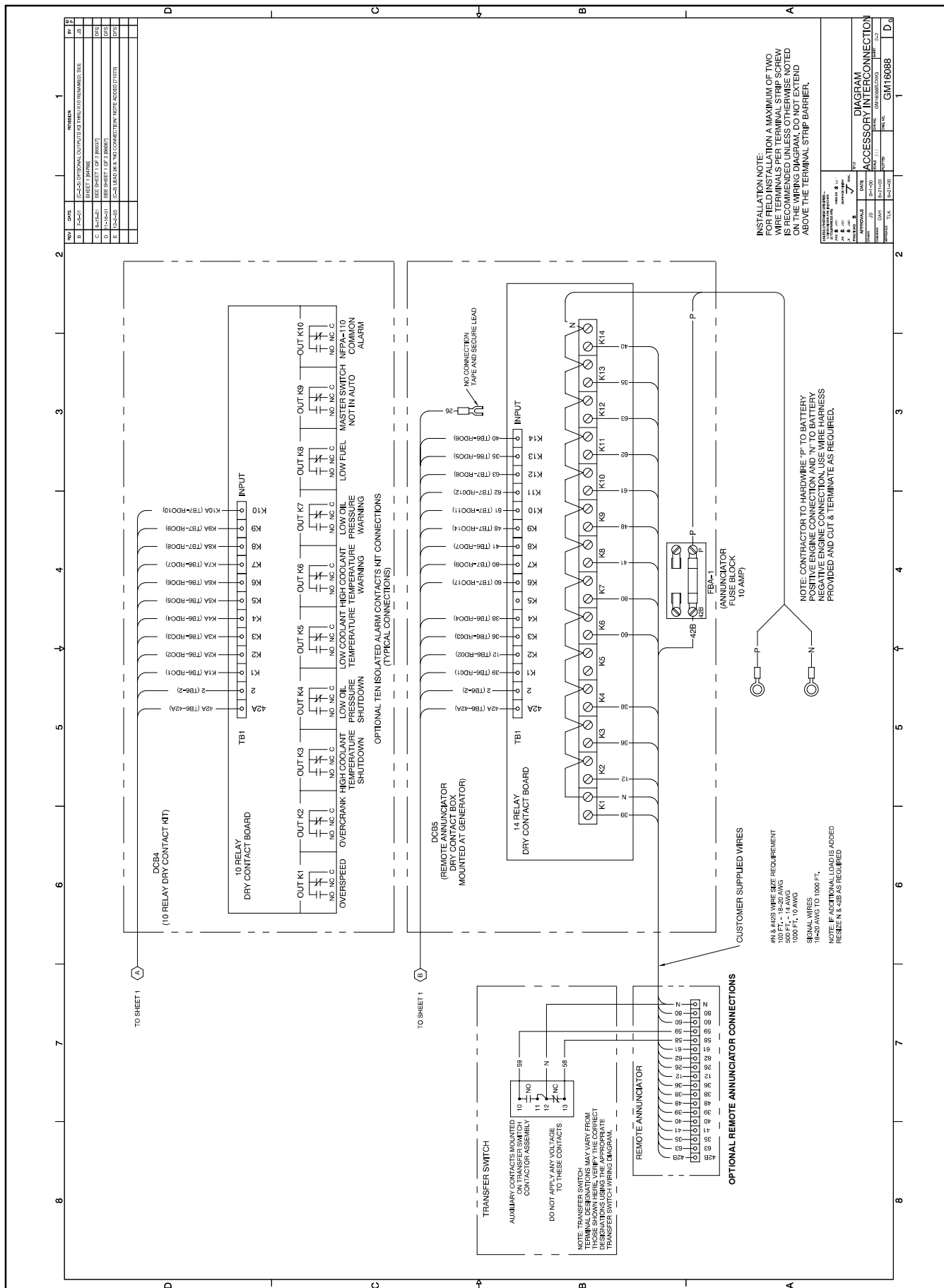


Figure 3 14-Relay Dry Contact Assembly Connections with 550 Controller

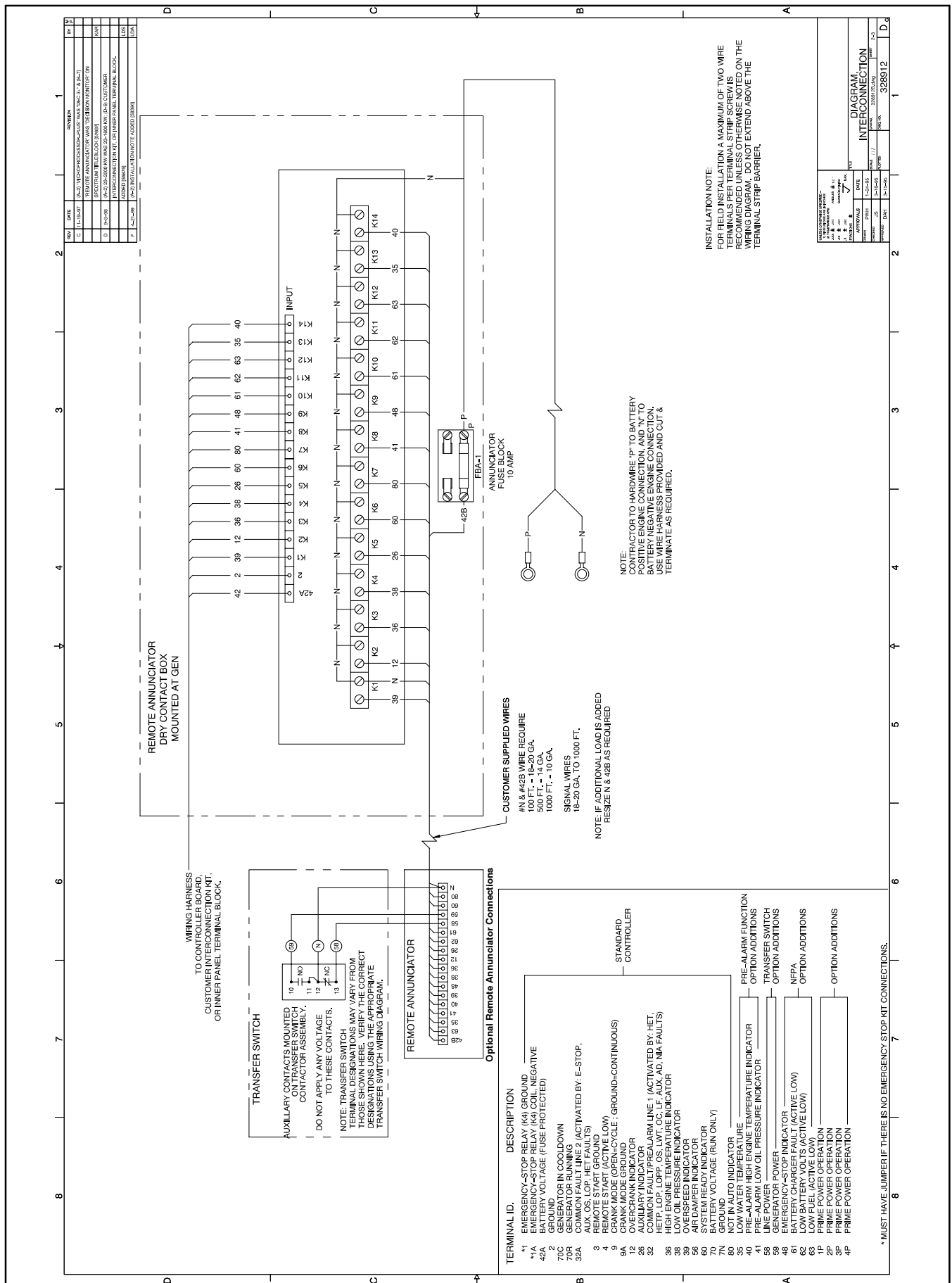


Figure 4 14-Relay Dry Contact Assembly Connections with 16-Light Controller

3.2 Surface-mount remote annunciator initial installation.

- 3.2.1 Prepare the mounting site by drilling pilot holes for anchors, if used.

Note: Mount the remote annunciator kit to a standard 10 cm (4 in.) square electrical box installed in the wall.

- 3.2.2 Create an opening in the wall for the electrical wiring from the 14-relay dry contact assembly, P and N battery connections, and transfer switch.

- 3.2.3 Disassemble the remote annunciator assembly. Remove six drill screws to disassemble the side panels and separate the front and back remote annunciator panels. Retain the side panels (287798) and the drill screws (X-794-2) for reassembly.

- 3.2.4 Mount the remote annunciator back panel to the wall or to the electrical box in the wall. See Figure 2 for the mounting hole dimensions. Protect the remote annunciator from dust and debris when drilling the holes.

Note: Use mounting hardware suitable for the wall composition and thickness.

- 3.2.5 Proceed to step 4, Wire the remote annunciator.

3.3 Flush-mount the remote annunciator initial installation.

- 3.3.1 Prepare the mounting site by creating an opening in the wall for flush mounting the remote annunciator.

Note: Mount the remote annunciator inside a standard 30 x 20 x 10 cm (12 x 8 x 4 in.) pull box installed in the wall.

- 3.3.2 Disassemble the remote annunciator assembly. Remove six drill screws to disassemble the side panels and separate the front and back remote annunciator panels. Retain the drill screws (X-794-2) for reassembly. Discard the side panels.

- 3.3.3 Proceed to step 4, Wire the remote annunciator.

4. Wire the remote annunciator.

- 4.1 The installer must supply all leads between the 14-relay dry contact assembly (factory-installed) and the remote annunciator (A-258782). Isolate the leads from all other voltages. Observe the following guidelines during installation:

- Use separate conduit for the remote annunciator leads.
- Use grounded metallic conduit for leads or use shielded cable in nonmetallic conduit.
- Use the 14-relay dry contact kit located at the generator set for all signal leads and a separate 12-volt or 24-volt DC power source for the remote annunciator.

To determine the voltage supply wire gauge for leads N and 42B, measure the cable distance between the 14-relay dry contact assembly and the remote annunciator. For example, if the cable distance between the remote annunciator and the 14-relay dry-contact assembly is 122 m (400 ft.), then the total wire length for each conductor is 122 m (400 ft.). According to the chart in Figure 5, this example requires 14-gauge wire for leads N and 42B only.

Use stranded or solid 18- or 20-gauge wire for signal leads (39, 12, 36, etc.) at lengths up to 305 m (1000 ft.). Never mount the remote annunciator more than 305 m (1000 ft.) from the 14-relay dry contact assembly.

- 4.2 Attach wiring of the correct length and gauge to the 14-relay dry contact assembly. See Figure 5.

- 4.3 Route the wiring from the 14-relay dry contact assembly through the opening in the annunciator back panel.

Leads	Length, m (ft.)	Wire Gauge
N, 42B	0-21 (0-100)	18-20
	31-152 (100-500)	14
	152-305 (500-1000)	10
39, 12, 36, etc.	0-305 (0-1000)	18-20

Figure 5 Wire Specifications Between Remote Annunciator and Dry Contact assembly

4.4 Attach the leads to the terminal strip. Be sure to connect the 14-relay dry contact assembly leads to the corresponding terminals in the remote annunciator. See Figure 6 or Figure 7.

4.5 Connect transfer switch auxiliary contact terminals 10, 12, and 13 to the remote annunciator terminals 59, N, and 58, respectively, if the electrical system has a transfer switch.

4.6 Replace the 14-relay dry contact assembly cover and install the four cover screws, if so equipped.

Description	Controller Connection Kit Terminal	14-Relay Dry Contact Kit Terminal (Relay Signal)	14-Relay Dry Contact Kit Terminal (Relay Contacts)	Remote Annunciator Terminal (factory wire designations)
Battery (+)	42A	42A Input	—	—
Ground/Battery (-)	2	2 Input	—	—
Battery (+)	—	P (from battery)	42B	42B
Ground/Battery (-)	—	N (from battery)	K1, C terminal	N
Overspeed	RDO1	K1 Input	K1, NO terminal	39
Overcrank	RDO2	K2 Input	K2, NO terminal	12
High Engine Temperature Shutdown	RDO3	K3 Input	K3, NO terminal	36
Low Oil Pressure Shutdown	RDO4	K4 Input	K4, NO terminal	38
Aux. (not used)	—	—	—	26
System Ready	RDO17	K6 Input	K6, NO terminal	60
Master Switch Not in Auto	RDO9	K7 Input	K7, NO terminal	80
Low Oil Pressure Warning	RDO7	K8 Input	K8, NO terminal	41
Emergency Stop	RDO14	K9 Input	K9, NO terminal	48
Battery Charger Fault	RDO11	K10 Input	K10, NO terminal	61
Low Battery Voltage (Aux.)	RDO12	K11 Input	K11, NO terminal	62
Low Fuel (Level or Pressure)	RDO8	K12 Input	K12, NO terminal	63
Low Water Temperature	RDO5	K13 Input	K13, NO terminal	35
High Engine Temperature Warning	RDO6	K14 Input	K14, NO terminal	40

Figure 6 Remote Annunciator Kit Wiring Connections for 550 Controllers

Description	Controller Connection Kit Terminal	14-Relay Dry Contact Kit Terminal (Relay Signal)	14-Relay Dry Contact Kit Terminal (Relay Contacts)	Remote Annunciator Terminal (factory wire designations)
Battery (+)	42A	42A Input	—	—
Ground/Battery (-)	2	2 Input	—	—
Battery (+)	—	P (from battery)	42B	42B
Ground/Battery (-)	—	N (from battery)	K1, C terminal	N
Overspeed	39	K1 Input	K1, NO terminal	39
Overcrank	12	K2 Input	K2, NO terminal	12
High Engine Temperature Shutdown	36	K3 Input	K3, NO terminal	36
Low Oil Pressure Shutdown	38	K4 Input	K4, NO terminal	38
Overvoltage (Aux.)	26	K5 Input	K5, NO terminal	26
System Ready	60	K6 Input	K6, NO terminal	60
Master Switch Not in Auto	80	K7 Input	K7, NO terminal	80
Low Oil Pressure Warning	41	K8 Input	K8, NO terminal	41
Emergency Stop	48	K9 Input	K9, NO terminal	48
Battery Charger Fault	61	K10 Input	K10, NO terminal	61
Low Battery Voltage (Aux.)	62	K11 Input	K11, NO terminal	62
Low Fuel (Level or Pressure)	63	K12 Input	K12, NO terminal	63
Low Water Temperature	35	K13 Input	K13, NO terminal	35
High Engine Temperature Warning	40	K14 Input	K14, NO terminal	40

Figure 7 Remote Annunciator Kit Wiring Connections for 16-Light Controllers

5. Complete the remote annunciator final installation.

5.1 Proceed to either Step 5.2, Surface-mount the remote annunciator, final installation or Step 5.3, Flush-mount the remote annunciator, final installation.

5.2 Surface-mount the remote annunciator, final installation.

5.2.1 Reassemble the front panel to the remote annunciator assembly back panel with two drill screws (X-794-2).

5.2.2 Reattach the side panels with four drill screws (X-794-2).

5.2.3 Proceed to step 6.

5.3 Flush-mount the remote annunciator, final installation.

5.3.1 Reassemble the front panel to the back panel using two drill screws (X-794-2).

5.3.2 Attach the L-shaped side mounting brackets (293993) to the back panel using four drill screws (X-794-2). Do not tighten the screws. See Figure 8.

5.3.3 Attach the front adapter panel (293992-BLK or 293992-SD) studs to the L-shaped side mounting brackets using four 6-32 hex nuts (X-71-2). Do not tighten the nuts.

5.3.4 Center the remote annunciator in the adapter panel opening and tighten the hardware.

5.3.5 Mount the kit inside the pull box using four screws (X-50-72). Use mounting hardware suitable for the wall composition and thickness for installations without a pull box.

5.3.6 Proceed to step 6.

6. Restore the generator set to service.

6.1 Check that the generator set master switch is in the OFF position.

6.2 Reconnect the generator set engine starting battery, negative (-) lead last.

6.3 Reconnect power to the battery charger, if equipped.

6.4 Move the generator set master switch to the AUTO position for startup by a remote transfer switch or remote start/stop switch. Move the remote annunciator alarm horn switch to the NORMAL position. If the horn sounds or a lamp illuminates, see step 7 for the resetting instructions.

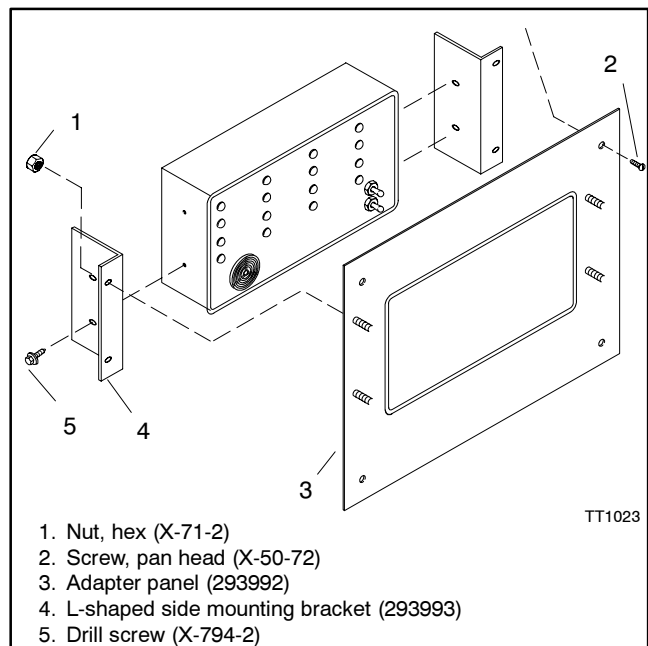


Figure 8 Flush-Mount Remote Annunciator Installation

7. Resetting the generator set controller and remote annunciator.

7.1 **550 Controller.** Press the ALARM OFF key on the controller keypad to silence the controller alarm horn.

16-Light Controller. Move the alarm silence switch on the controller to the SILENCE position to silence the controller alarm horn. The respective remote controller lamp remains lit.

7.2 Move the ALARM SILENCE switch on the remote annunciator to the SILENCE position to silence the remote annunciator alarm horn. The respective remote annunciator lamp remains lit.

7.3 Disconnect the generator set from the system load with the line circuit breaker or the automatic transfer switch.

7.4 Correct the cause of the fault alarm (refer to the generator set service manual).

7.5 Move the generator set master switch to the OFF/RESET position and then to the RUN position for startup. The remote annunciator alarm horn and the controller alarm horn sound because the unit is not in the AUTO position. The remote annunciator Generator Switch Not in Auto lamp lights.

7.6 Verify that the cause of the alarm has been corrected.

7.7 Reconnect the generator set to the system load via the line circuit breaker or automatic transfer switch.

7.8 Move the generator set master switch to the AUTO position for startup by the remote transfer switch or the remote start/stop switch.

7.9 **16-Light Controller only.** Move the controller alarm silence switch to the NORMAL position.

7.10 Move the remote annunciator alarm horn switch to the NORMAL position.

Test Dry Contact Relay

Verify that the dry contact relay functions by using the following procedure when troubleshooting.

Test Procedure

Use a jumper wire to ground the selected fault terminal on the controller connection terminal strip. The relay contacts should close and the corresponding remote annunciator lamp should light.

Parts List

Remote Annunciator Kits GM28619-KP1, -KP1S

Qty.	Description	Common Parts	GM28619-KP1	GM28619-KP1S
2	Bracket, mounting	293993		
1	Panel, front annunciator		293992-BLK	293992-SD
1	Panel assembly, annunciator includes:	A-258782		
2	Panel, side	287798		
6	Screw, drill	X-794-2		
4	Screw, slotted pan head	X-50-72		
4	Nut, 6-32	X-71-2		

