INSTALLATION INSTRUCTIONS

Flush & Surface-Mount Remote Annunciators PA-256471, PA-256484, PA-256471-SD & PA-256484-SD

(for Microprocessor Controllers)

The remote annunciator enables the operator to monitor the condition of the generator at a location remote from the generator set. If a generator alarm condition arises, the remote annunciator alerts the operator through visual and audible signals. The remote annunciator kit includes a ten-relay dry contact box to isolate the annunciator from the controller and protect the controller from lightning and stray voltage. If a generator alarm condition occurs, the appropriate relay contacts open or close to activate the horn and corresponding lamp on the remote annunciator. Specific features of the remote annunciator are shown in Figure 1 and described in the following paragraphs.

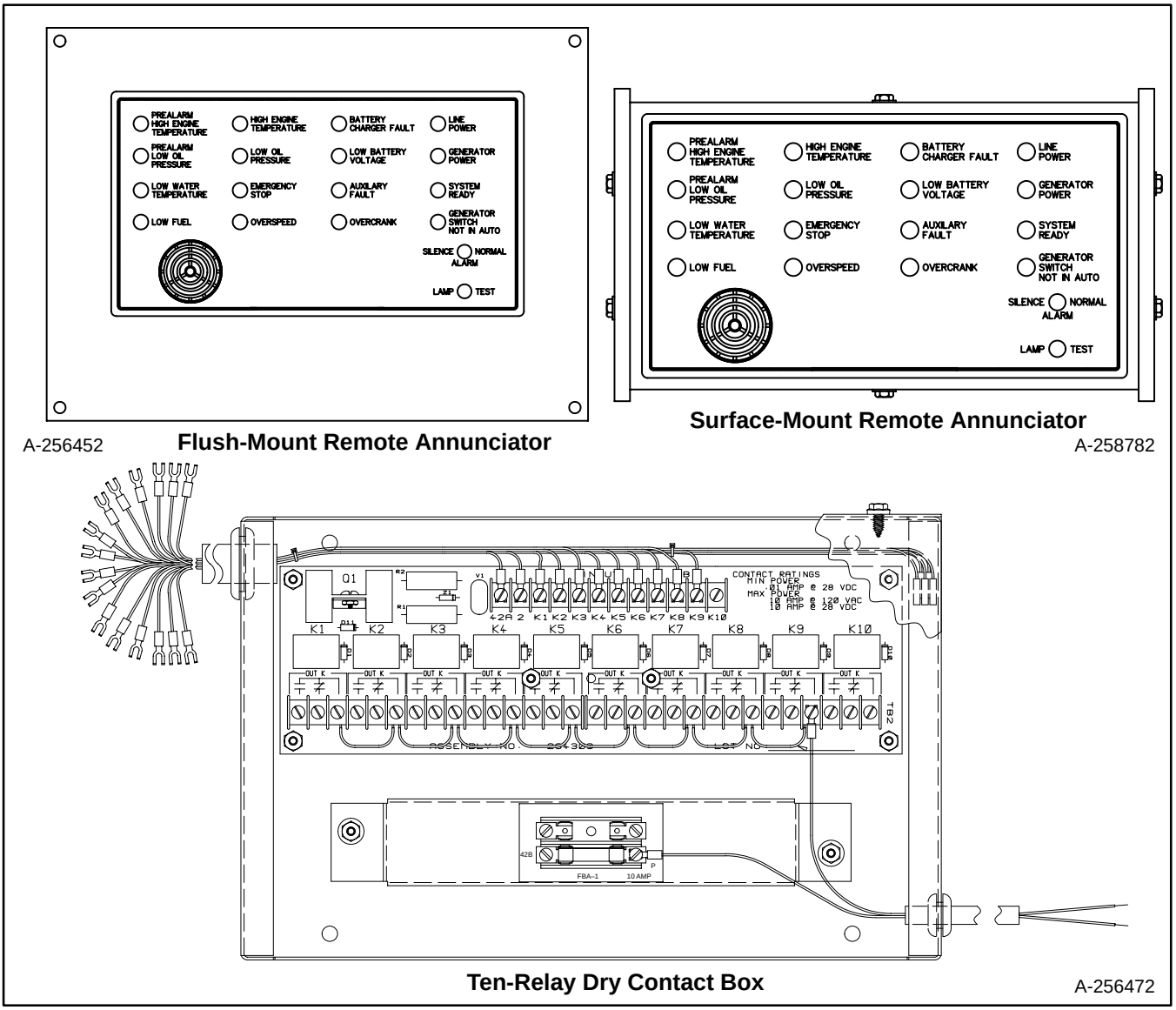


Figure 1. Remote Annunciator Kit Components

FEATURES

Line Power lamp lights when power is being supplied by a source other than the generator set. When the lamp is on the SYSTEM READY lamp should also be lit.

Generator Power lamp lights when power is being supplied by the generator set.

System Ready lamp lights to indicate the generator is ready for start-up if the electrical load is transferred to the set. The SYSTEM READY lamp will light only when the generator master switch is in the AUTO position.

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

Battery Charger Fault lamp lights if the generator set battery charger malfunctions.

Auxiliary lamp will flash or will be continuously on to indicate a fault has occured.

Flashing Lamp Condition:

- The auxiliary lamp will flash immediately if the controller senses no AC output while the unit is running (except during first 10 seconds after startup). When AC output is sensed, the flashing will stop and the lamp will be off. No manual reset is required.
- The auxiliary lamp will flash if the battery power was reconnected or was low and then came back up again while the generator master switch was in the RUN or AUTO position. This may be caused by a temporarily low battery condition where the battery is weak or undersize for the application. To clear this condition, place master switch to OFF/RESET position.

“Continuous On” Lamp Condition:

- The auxiliary lamp lights if the optional emergency stop switch is reset while the generator master switch is in the AUTO or RUN position. To clear this condition, place master switch to OFF/RESET position.
- The auxiliary lamp lights and 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 so equipped). These conditions are inhibited during first 30 seconds after crank disconnect.
- The auxiliary lamp lights and engine shuts down immediately if an overvoltage condition occurs (if equipped with voltage shutdown kit).
- The auxiliary lamp lights and engine shuts down immediately if activated by any customer-supplied sensing devices connected to the auxiliary immediate shutdown ports (P1-17 and (P1-18).

Overcrank lamp lights after 15 seconds if starter or engine will not turn (locked rotor). Lamp will also light if generator does not start after 45 seconds of continuous cranking or 75 seconds of cyclic cranking.

Low Battery Voltage lamp lights if battery or charging voltage drops below a preset level (on charger). Lamp will also light if undervoltage condition occurs due to battery or charger malfunction when the generator is running.

High Engine Temperature lamp lights if generator has shut down due to high engine coolant temperature.

Low Oil Pressure lamp lights if generator has shut down due to low engine oil pressure.

Emergency Stop lamp lights if generator has been stopped by emergency stop switch (if equipped).

Overspeed lamp lights if generator shuts down due to an overspeed condition (above 70 Hz).

Prealarm High Engine Temperature lamp lights if engine coolant temperature approaches shutdown range (if generator equipped).

Prealarm Low Oil Pressure lamp lights if engine oil pressure approaches shutdown range (if generator equipped)

Low Water Temperature lamp lights if optional engine block heater malfunctions and/or temperature is too low (below 70° F, 21° C) for ten second start-up.

Low Fuel lamp lights if fuel level in tank approaches empty (if equipped).

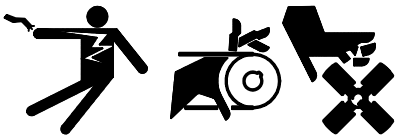
Alarm Silence switch disconnects alarm during servicing. Generator master switch must be in the AUTO position to reset. See “Resetting” section following.

Lamp Test switch is used to test the remote annunciator indicator lamps.

Alarm Horn sounds if any fault or prealarm condition exists (except emergency stop, battery charger fault, or low battery volts). The alarm horn can only be silenced with the generator master switch in the AUTO position. See “Resetting” section following.

INSTALLATION

⚠ WARNING



Accidental starting.
Can cause severe injury or death.
Disconnect battery cables before working on generator set (negative lead first and reconnect it last).

Accidental starting can cause severe injury or death. Turn generator master switch to OFF position, disconnect power to battery charger, and remove battery cables (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to generator. The generator set can be started by automatic transfer switch or remote start/stop switch unless these precautions are followed.

NOTE

Any combination of remote annunciators and audio-visual alarms totalling three may be connected to the microprocessor controller.

NOTE

It is highly recommended that a controller connection kit is used between the generator set controller and the ten-relay dry contact kit to provide easy access to controller terminal connections.

NOTE

Observe all applicable national, state, and local electrical codes during installation of the remote annunciator.

1. Move generator master switch to OFF/RESET position. Disconnect generator set battery, negative lead first.

2. Determine a mounting location for the ten-relay dry contact kit. This decision may be limited by the length of the supplied wiring harness. If the most suitable location requires a longer harness, fabricate a new harness using the supplied harness as a guide.

   NOTE

   The supplied wiring harness will allow a maximum distance of approximately 5 ft. (1.5 m) between the ten-relay dry contact kit and the generator set controller or controller connection kit (if used).

   The selections for location of the ten-relay dry contact kit (in order of acceptability) are as follows:

   - Inside the junction box. This location may be limited due to other accessories.
   - On top of the junction box. This location may be limited by the size of the controller and the size of the junction box.
   - On top of the generator skid. This location may be limited by the clearance and housing options.
   - In an area as near to the generator set controller as practical.

   Mount ten-relay dry contact kit in location selected. Due to numerous mounting possibilities, no mounting hardware is supplied with the kit.

3. Connect the ten-relay dry contact kit to the controller terminal strip of controller connection kit (if used). Use of a controller connection box is recommended to allow easy connection and disconnection of generator accessories. See Figures 2 and 3 for connection of ten-relay dry contact kit of 6-light and 16-light controllers. See Figures 4 and 5 for connection of ten-relay dry contact kit to 5-light controllers.

   Connect lead “P” of wiring harness from ten-relay dry contact kit to battery positive at starter solenoid. Lead “N” of wiring harness connects to battery negative at engine ground. Do not use terminals 42A and N of ten-relay dry contact kit terminal strip to supply voltage to relay contacts. These must be separate leads direct from battery.

   If additional load (lights or alarms) are connected to the ten-relay dry contact kit, resize these two leads accordingly.

   Controller terminals 2 (ground) and 42A (battery voltage) must be connected to the ten-relay dry contact kit terminal strip to provide an electrical source to operate the K1-K10 relays. When a generator fault condition occurs, the ten-relay dry contact kit relay (K1-K10) tied to that function is energized and the corresponding lamp on the remote annunciator lights.

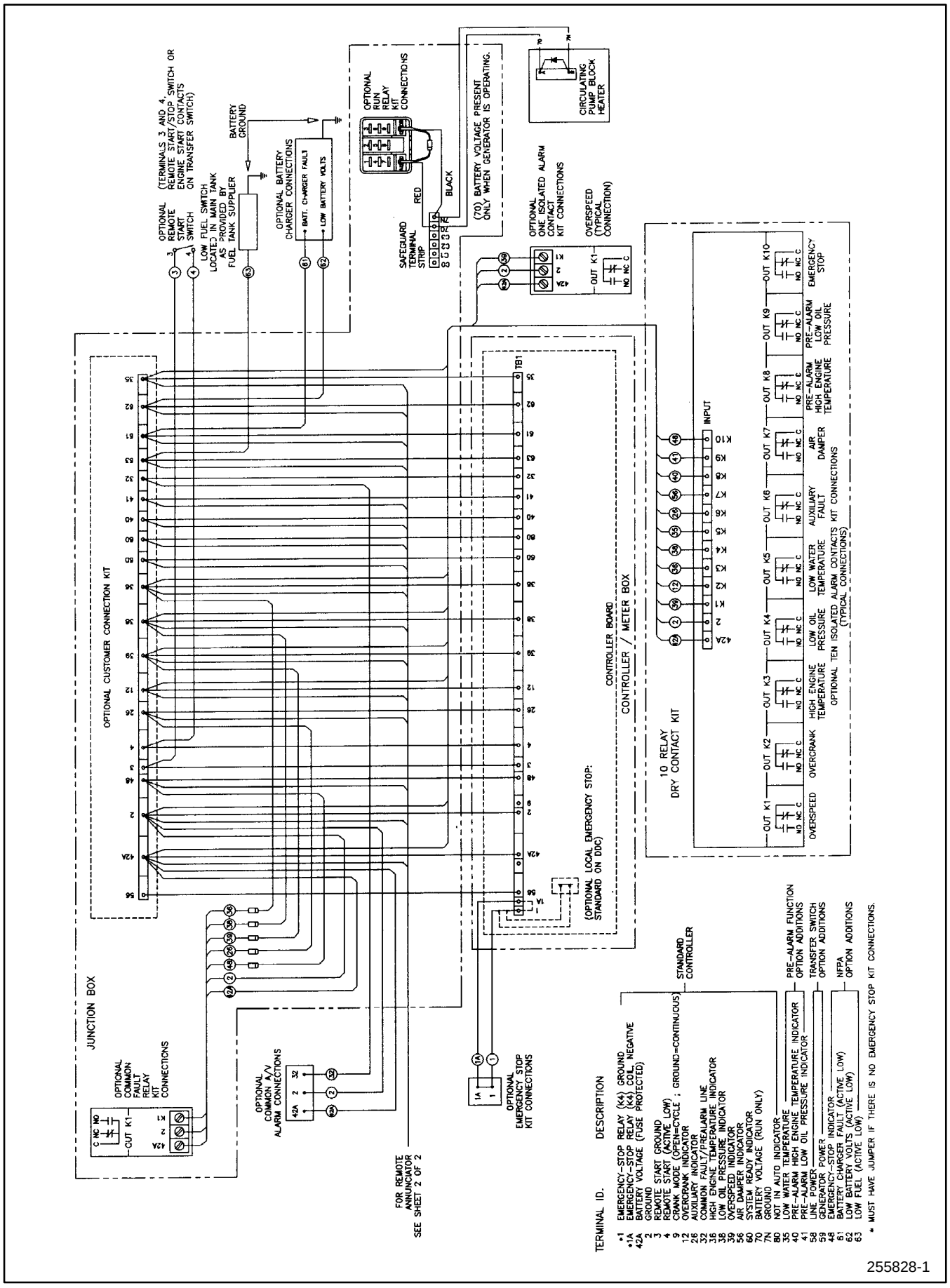


Figure 2. Accessory Connection for 6-Light and 16-Light Controllers

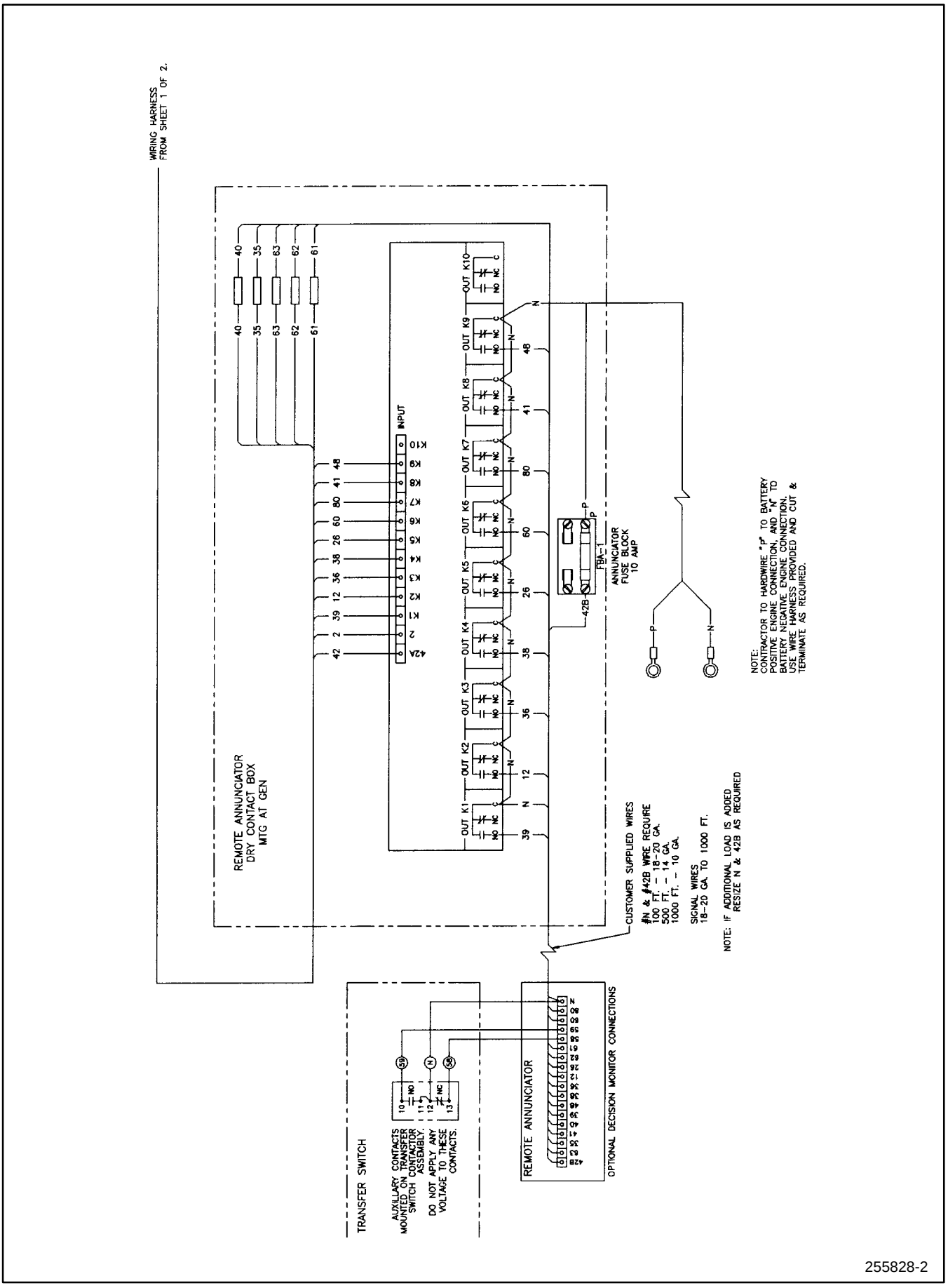


Figure 3. Accessory Connection for 6-Light and 16-Light Controllers

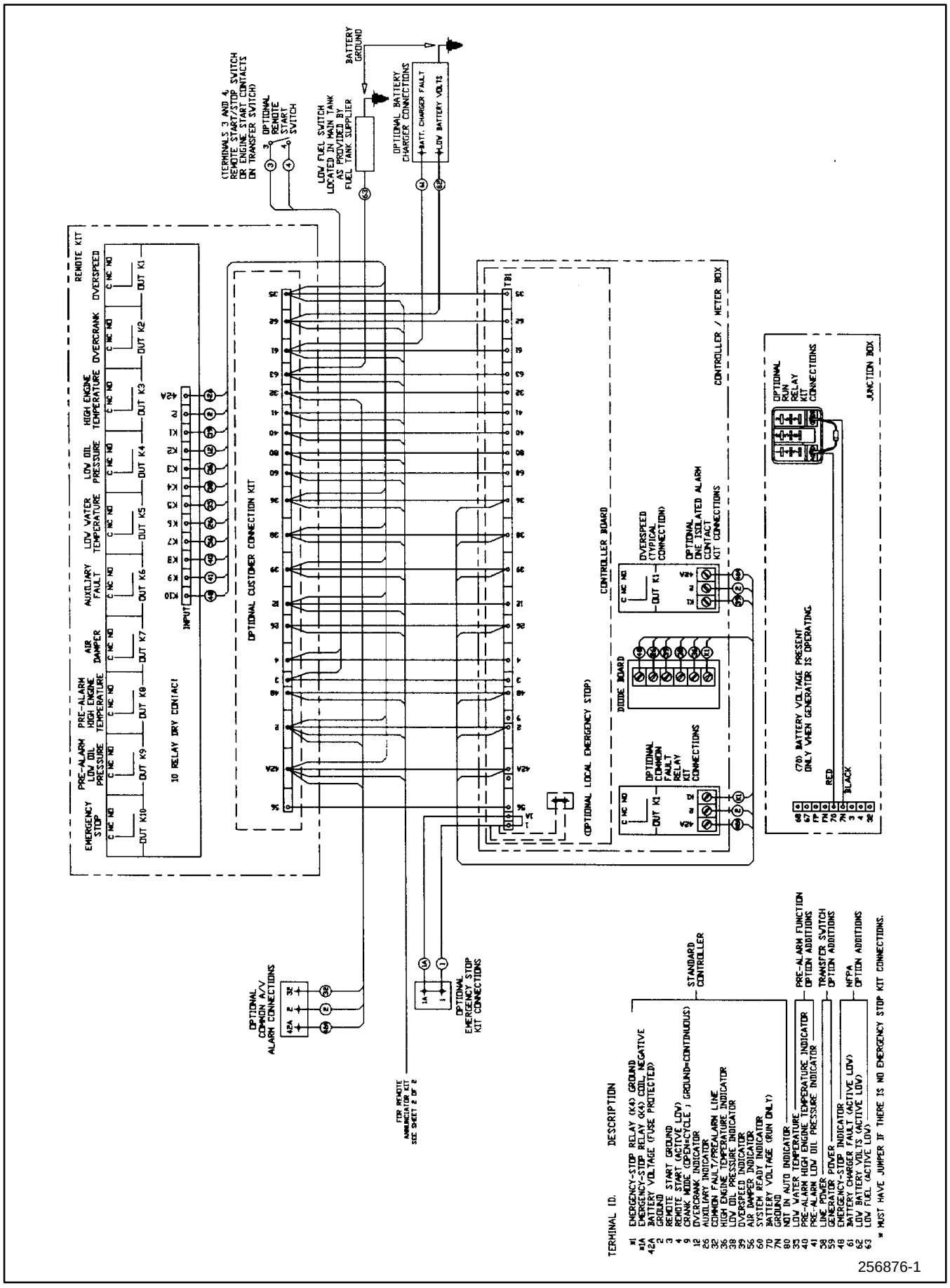


Figure 4. Accessory Connection for 5-Light Controllers

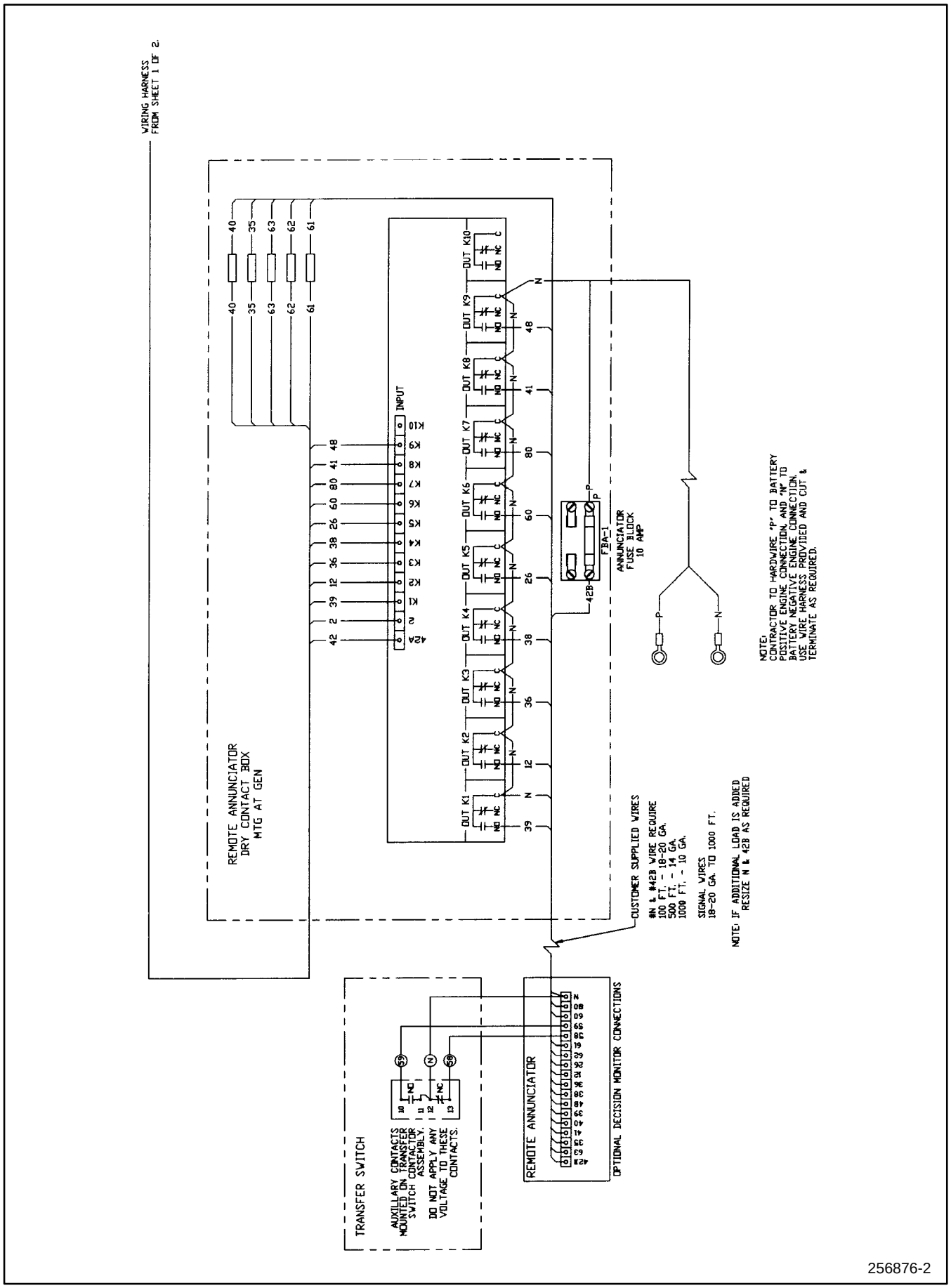


Figure 5. Accessory Connection for 5-Light Controllers

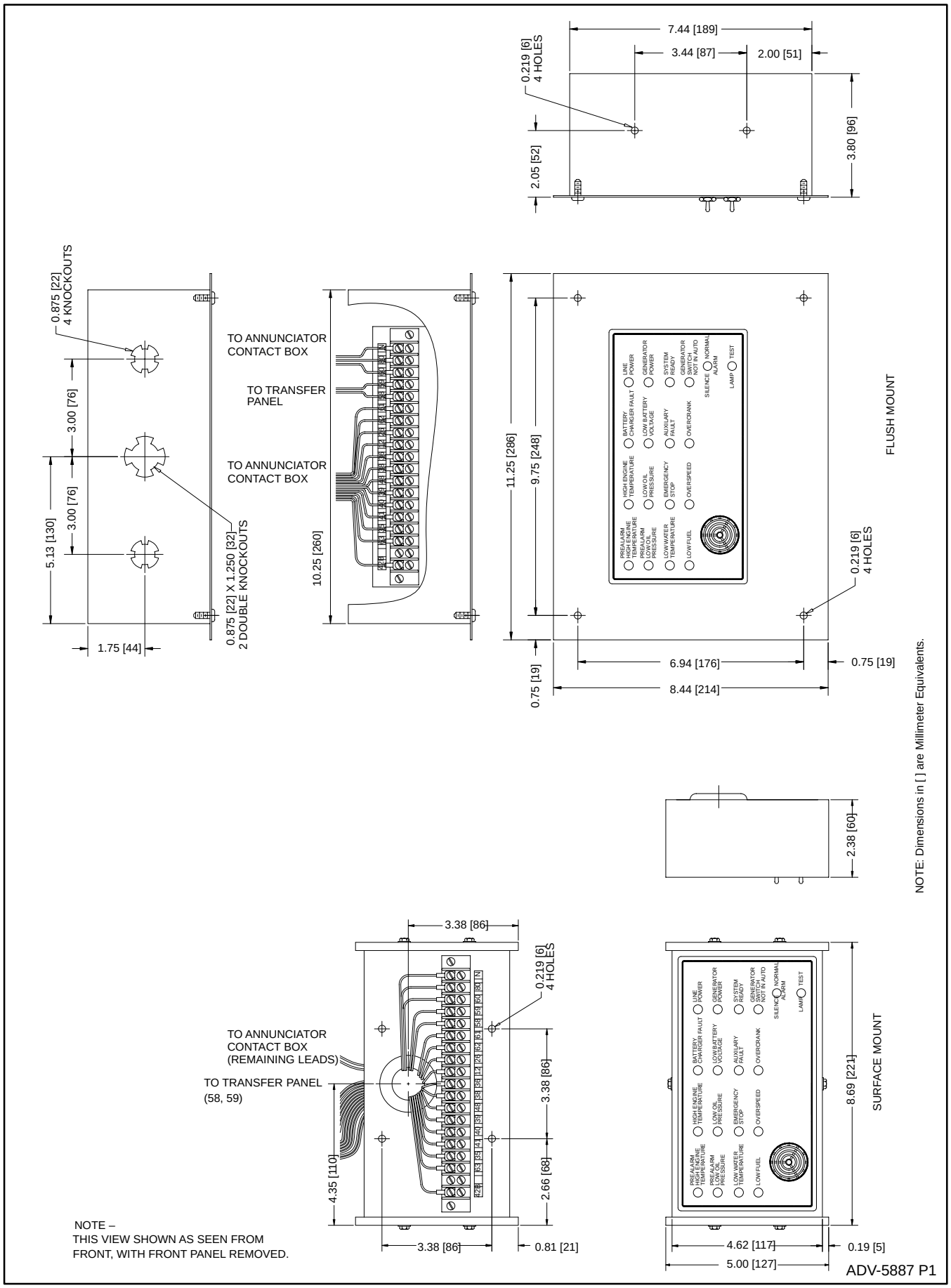


Figure 6. Component Dimensions

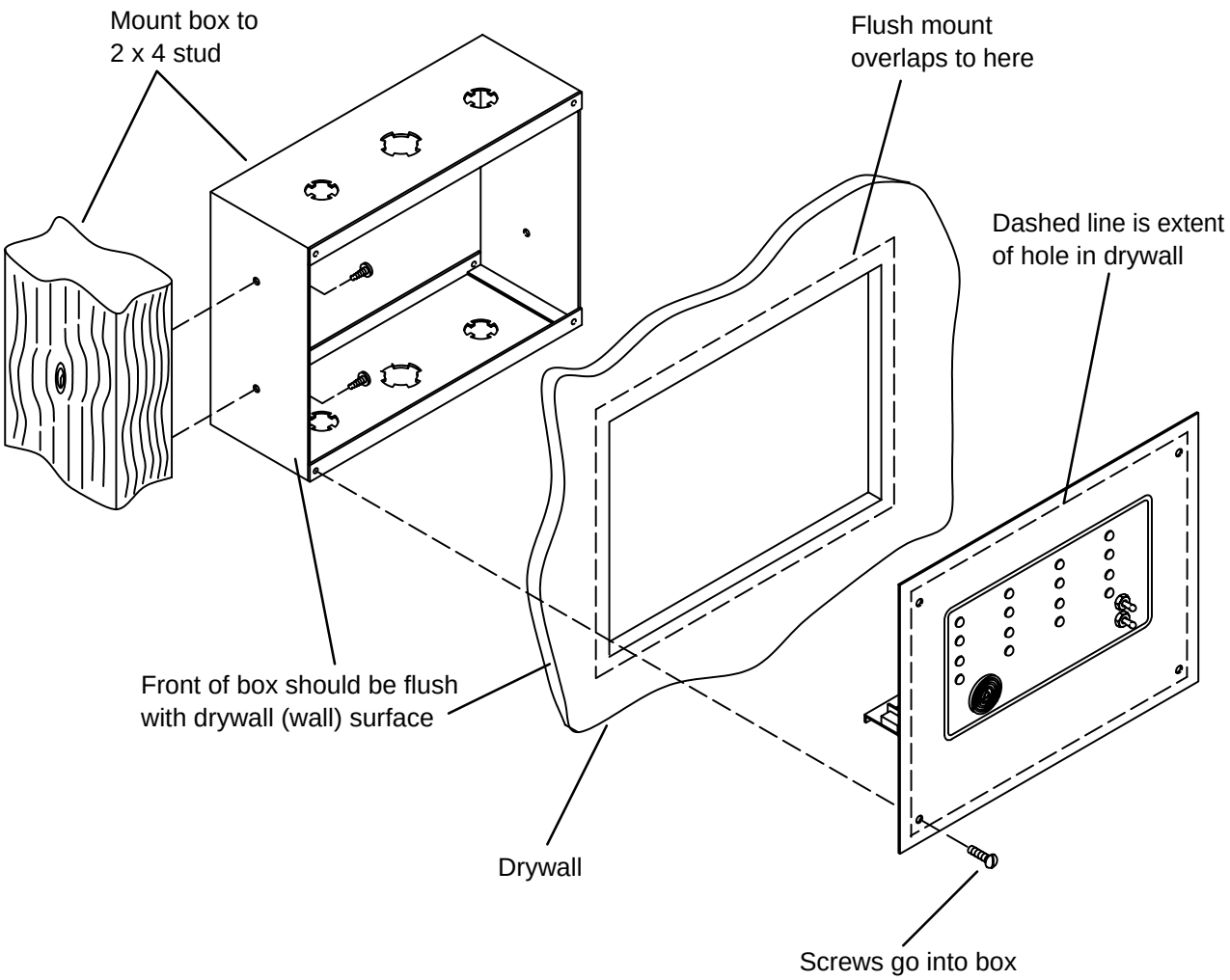


Figure 7. Installation of Flush-Mount Remote Annunciator

4. Select a visible location to mount the remote annunciator. The remote annunciator panel can be either surface- or flush-mounted, but should be installed in a location easily observed by operating personnel at their normal work station. See Figure 6 for remote annunciator dimensions and mounting hole dimensions. See Figure 7 for additional flush-mount instructions.

5. The leads between the ten-relay dry contact kit and the remote annunciator must be free of all other voltages. It is recommended that the following guidelines be observed during installation:

   - Always use separate conduit for remote annunciator leads.
   - Use grounded metallic conduit for leads or use shielded cable in non-metallic conduit.
   - Use dry contact kits located at the generator set for all signal leads and a separate power source for the remote annunciator.

   To determine what gauge wire (stranded or solid) to use for leads N and 42A, total the distance between the ten-relay dry contact kit and the remote annunciator. For example, the ten-relay dry contact kit is mounted on the generator set and the remote annunciator is mounted 400 ft. (122 m) from the dry contact box. The total wire length is 400 ft. (122 m), which, according to the chart in Figure 8, requires 14-gauge wire for leads N and 42A only.

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

Figure 8. Wire Specifications Between Remote Annunciator and Dry Contact Box

Stranded or solid 18- or 20-gauge wire is acceptable for signal leads (39, 12, 36, etc.) at lengths up to 1000 ft. (305 m). Never mount the remote annunciator more than 1000 ft. (305 m) from the ten-relay dry contact box. Be sure the ten-relay dry contact box leads are tied to the corresponding terminals in the remote annunciator. See Figure 9. See Figures 2, 3, 4 and 5 for more connection information.

6. Connect transfer switch terminals 10, 12, and 13 to remote annunciator terminals 59, N, and 58 respectively (if transfer switch equipped).

7. Reconnect generator set battery, negative lead last. Move generator master switch to AUTO for start-up by remote transfer switch or remote start/stop switch. Move remote annunciator alarm horn switch to NORMAL. If the horn sounds or lamp(s) light, see “Resetting” section following.

Controller Terminal	Connects To:	Dry Contact Box Terminal
42A		42A
2		2
TB1-39		K1 Input
TB1-12		K2 Input
TB1-36		K3 Input
TB1-38		K4 Input
TB1-26		K5 Input
TB1-60		K6 Input
TB1-80		K7 Input
TB1-41		K8 Input
TB1-48		K9 Input
--		K10 Input

Dry Contact Box Terminal	Connects To:	Remote Annunciator Terminal
42A		42A
N	(C terminal of K1-K9 relays)	N
K1		39
K2		12
K3		36
K4		38
K5		26
K6		60
K7		80
K8		41
K9		48
35		35
62		62
61	Harness Leads	61
63		63
40		40

NOTE: Connect dry contact box “N” terminal to battery negative on engine and “P” to battery positive on engine.

Figure 9. Remote Annunciator Kit Wiring Connections

RESETTING

Use the following procedure to reset the controller and remote annunciator after a fault alarm.

1. Move controller alarm horn switch to the SILENCE position. Move remote annunciator alarm switch to SILENCE to stop alarm horn. Remote annunciator lamp remains lit.

2. Disconnect generator set from load with line circuit breaker or automatic transfer switch.

3. Correct cause of fault alarm. See generator service manual.
4. Move generator master switch to OFF/RESET and then to the RUN position for start-up. Remote annunciator alarm horn sounds and lamp goes out.
5. Verify that cause of alarm has been corrected.
6. Reconnect generator to load via line circuit breaker or automatic transfer switch.
7. Move generator master switch to AUTO position for start-up by remote transfer switch or remote start/stop switch. Move remote annunciator alarm switch to NORMAL.
8. Move controller alarm horn switch to NORMAL.

Parts List

	Flush Mount Kits	Part Number	
Qty.	**Description**	**PA-256484**	**PA-256484-SD**
1	Panel Assembly, annunciator (includes *)	A-256452	A-256452-SD
1	*Circuit Board Assembly, 16-Light	A-292885	A-292885
6	*Washer, lock, #6	X-22-6	X-22-6
2	*Washer, lock, #8	X-22-7	X-22-7
2	*Screw, 8-32 x 0.625 in.	X-51-9	X-51-9
4	*Spacer	X-712-8	X-712-8
1	*Panel, front	256453-BLK	256453-SD
1	*Decal, marker	258832	258832
1	*Nameplate	258834	325376
1	*Harness, wiring	258890	258890
1	*Block, terminal	258891	258891
1	Panel Assembly, dry contact box (includes *)	A-256472	A-256472-SD
1	*Circuit Board Assembly, 10-relay dry contact	D-294303	D-294303
8	*Lead	LW-1803	LW-1803
1	*Grommet	X-284-7	X-284-7
2	*Tie, Cable	X-468-5	X-468-5
2	*Screw, 6-32 x 0.50 in.	X-49-26	X-49-26
4	*Screw, 10-24 x 0.50 in.	X-6216-1	X-6216-1
6	*Nut, hex, 8-32	X-70-12	X-70-12
6	*Spacer	X-712-9	X-712-9
1	*Fuse, 10 amp	223316	223316
1	*Grommet	243488	243488
1	*Harness, wiring	256473	256473
1	*Bracket, fuse holder	256492	256492
1	*Block, fuse	256493	256493
1	*Marker, strip	256494	256494
1	*Harness, annunciator	256495	256495
1	*Box, dry contact	256878-KCB	256878-SD
1	*Cover	256880-KCB	256880-SD
1	Terminal, 16-14 wire	X-283-32	X-283-32
1	Terminal	X-283-4	X-283-4
1	Terminal	X-283-5	X-283-5
4	Screw,	X-6286-1	X-6286-1
1	Box, annunciator	256491	256491

Parts List

	Surface Mount Kits	Part Number	
Qty.	**Description**	**PA-256471**	**PA-256471-SD**
1	Panel Assembly, annunciator (includes *)	A-258782	A-258782-SD
1	*Circuit Board Assembly, 16-Light	A-292885	A-292885
1	*Grommet	X-284-3	X-284-3
2	*Screw, 6-32 x 0.50 in.	X-49-26	X-49-26
4	*Screw, hex, slotted, 8-32 x 0.375 in.	X-67-43	X-67-43
6	*Screw, drill 8-18 x 0.50 in.	X-794-2	X-794-2
1	*Bracket, wall mount	253346-BLK	253346-SD
1	*Panel, front	253350-BLK	253350-SD
1	*Decal, marker	258832	258832
1	*Nameplate	258834	325376
1	*Harness, wiring	258890	258890
1	*Block, terminal	258891	258891
1	*Panel, side	287798	287798
1	Panel Assembly, dry contact box (includes *)	A-256472	A-256472-SD
1	*Circuit Board Assembly, 10-relay dry contact	D-294303	D-294303
8	*Lead	LW-1803	LW-1803
1	*Grommet	X-284-7	X-284-7
2	*Tie, Cable	X-468-5	X-468-5
2	*Screw, 6-32 x 0.50 in.	X-49-26	X-49-26
4	*Screw, 10-24 x 0.50 in.	X-6216-1	X-6216-1
6	*Nut, hex, 8-32	X-70-12	X-70-12
6	*Spacer	X-712-9	X-712-9
1	*Fuse, 10 amp	223316	223316
1	*Grommet	243488	243488
1	*Harness, wiring	256473	256473
1	*Bracket, fuse holder	256492	256492
1	*Block, fuse	256493	256493
1	*Marker, strip	256494	256494
1	*Harness, annunciator	256495	256495
1	*Box, dry contact	256878-KCB	256878-SD
1	*Cover	256880-KCB	256880-SD
1	Terminal, 16-14 wire	X-283-32	X-283-32
1	Terminal	X-283-4	X-283-4
1	Terminal	X-283-5	X-283-5