Manual
Part #
7-9619-1

Installation Instructions for the Model 6150-ALM-01 NFPA Alarm Panel

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DESCRIPTION

The Bird NFPA Alarm Panel is a signal booster alarm status annunciator that provides a convenient means of monitoring your signal booster alarms from a reasonably nearby location such as a security desk or main lobby desk located in the same building as the signal booster. The alarm panel is capable of monitoring the five required NFPA alarms including; Signal Booster Failure, Loss of AC Power, Antenna Malfunction, Low Battery Condition, and Charger Failure.

The NFPA Alarm Panel can be used with any Bird Signal Booster that uses Form-C relay contacts to announce NFPA alarm conditions. The connection between the signal booster and the alarm panel box consists of a twisted pair of wires for each monitored alarm function. In addition, the alarm panel requires a DC operating voltage of +12 VDC to +24 VDC.

INSTALLATION

The following sub-sections of the manual discuss general considerations for installing the alarm panel. All work should be performed by qualified personnel. Bird provides the alarm panel only, the customer is responsible for supplying cabling as well as the alarm panels DC operating voltage.

Installing the Alarm Panel

The alarm panel is designed to be wall mounted and has a built-in mounting flange on the top-rear and bottom-rear of the box. Each flange has two screw holes and all four holes should be used during installation to insure the box is fastened firmly. Place the panel in a convenient viewable location. There is no audio indication from the panel so the panel needs to be placed such that a change in the color of the LED's can be easily noticed. **Figure 1** shows the mechanical mounting details of the alarm panel enclosure.

Signal Lines

With the panel box installed run a twisted pair for each monitored alarm function from the inside of the alarm panel box to the inside of the signal booster. The terminal connectors in the alarm panel can accommodate wire gauge between 16 and 28. For ease of installation it is recommended that CAT 6 STP (shielded twisted pair) or even CAT 7 cable be used to carry the alarm information from the signal booster to the alarm panel box.

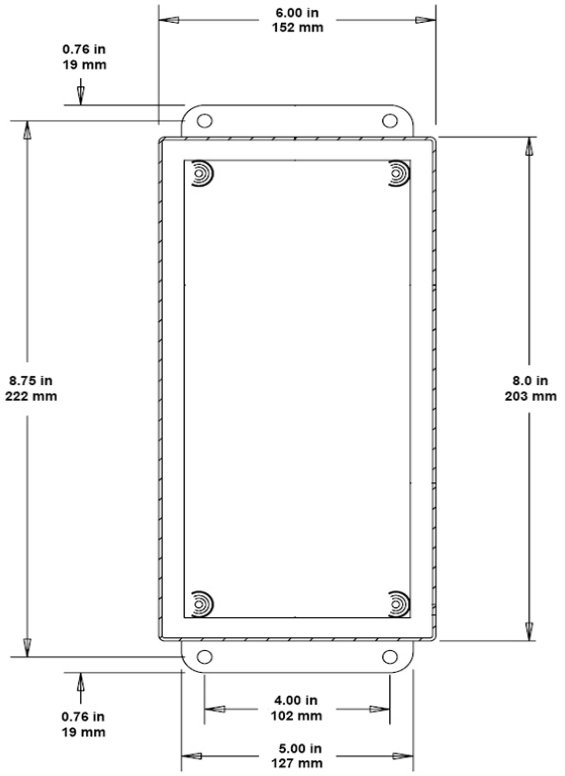


Figure 1: Alarm Panel mounting dimensions.

One of the important considerations when installing the twisted pairs for signal lines is noise on the lines which may cause false alarm indications at the alarm panel. Using good quality cable with sufficient shielding is important. Also, when laying the cable run avoid running it next to the buildings AC wiring or near strong noise sources like motors.

Because the alarm panel signal inputs are MOSFET the twisted pairs do not carry current and the physical distance between the signal booster and the alarm panel can be considerable, several thousand feet comfortably when using Cat 6 or 7 cable. If your installation requires the distance between the signal booster and the alarm panel to be greater than several thousand feet consult with the factory before running the signal cable. The wire gauge and shielding used for the signal lines will determine the workable distance, thicker wire gives greater distance but can be cost prohibitive.

Inside the alarm panel enclosure the twisted pairs must be connected to the appropriate terminals at

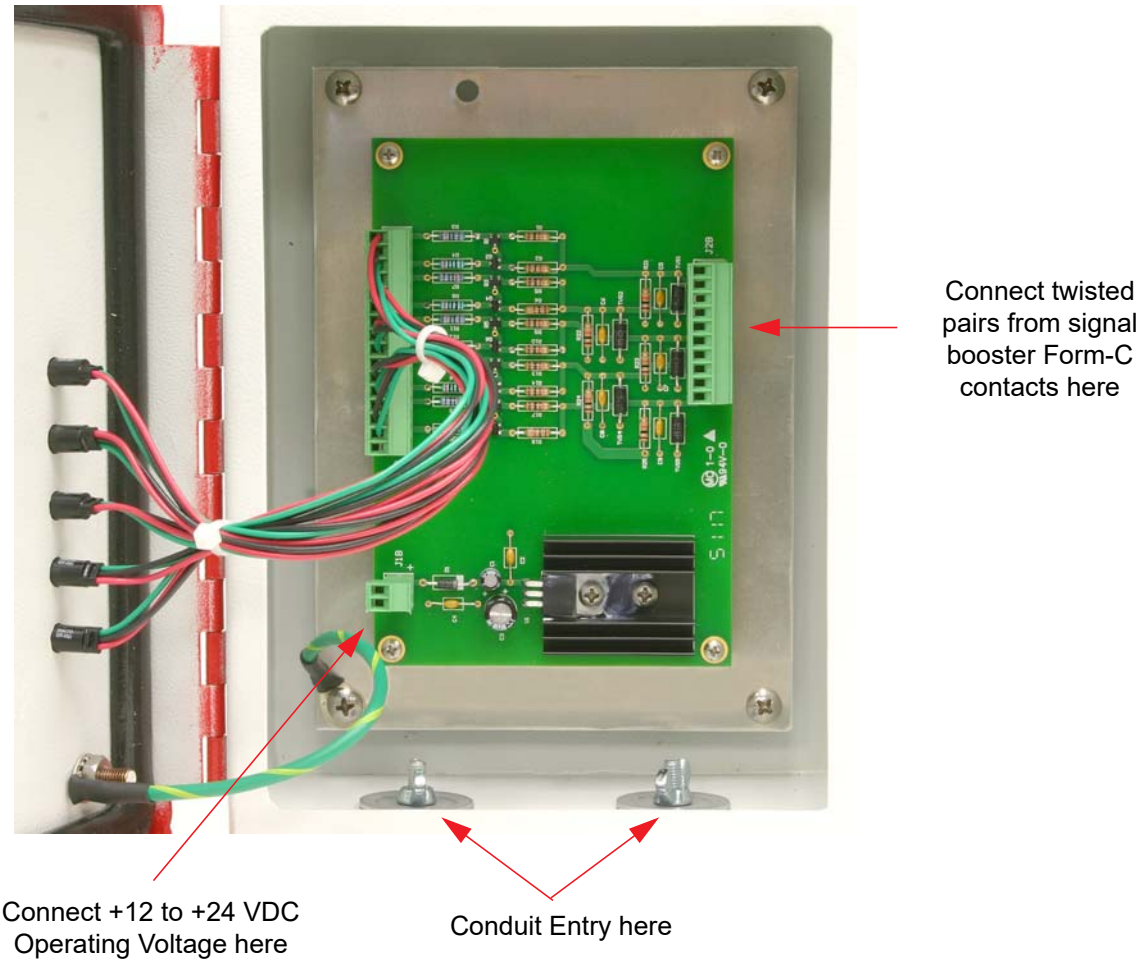
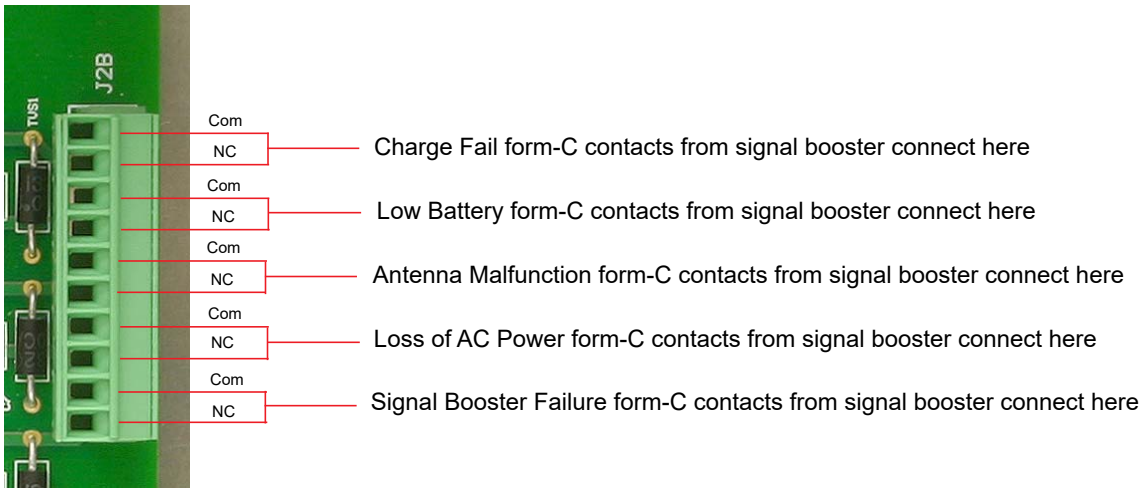


Figure 2: Inside the Alarm Panel Enclosure.

the J2B connector as shown in **Figure 2**. A close-up view of the J2B connector is shown in **Figure 3** where each of the connection points for the 5 alarm signals are identified. The signal lines entering the alarm panel need to come from the normally closed form-C contacts inside of the signal booster cabinet. Where the normally closed form-C contacts are located within the signal booster cabinet will be discussed and illustrated in the Installation and Operation manual for the particular booster. The locations within the booster will vary somewhat from model to model. Normally closed is defined as a contact pair that is normally closed when the booster is powered-up, operating normally, with no alarm conditions.

Bring the twisted pairs from the booster into the alarm panel box through one of the conduit openings at the bottom of the box. Use one of the conduit openings for signal lines and the other conduit opening for operating voltage. The top portion of the J2B connector can be removed from the circuit board by pulling up on the top portion of the connector. This will make it much easier to attach the twisted wire pairs to the connector. Once the twisted pairs are properly attached to the connector head and tightened down the connector head can be re-attached to the circuit board at the J2B location.



Note: The form-C contacts brought into the alarm panel from the signal booster must be normally closed. Normally closed is defined as a contact pair that is normally closed when the booster is powered-up, operating normally, with no alarm conditions.

Figure 3: Connection of alarm lines in the alarm panel.

Operating Voltage

The DC operating voltage required by the alarm panel is +12 VDC min @ 100 mA to +24 VDC max @ 100 mA. It is the customers responsibility to supply this voltage. Inside the alarm panel enclosure the operating voltage wires must be connected to the appropriate terminals at the J1B connector as shown in figure 2. A close-up view of the J1B connector is shown in **Figure 4** where each of the connection points for the operating voltage wires are identified. The J1B connector can accommodate wire gauge between 16 and 28.

Bring the operating voltage into the alarm panel box through one of the conduit openings at the bottom of the box. Use one of the conduit openings for signal lines and the other conduit opening for operating voltage. The top portion of the J1B connector can be removed from the circuit board by pulling up on the top portion of the connector. This will make it much easier to attach the operating voltage wires to the connector. Once the twisted pairs are properly attached to the connector head and tightened down the connector head can be re-attached to the circuit board at the J1B location.

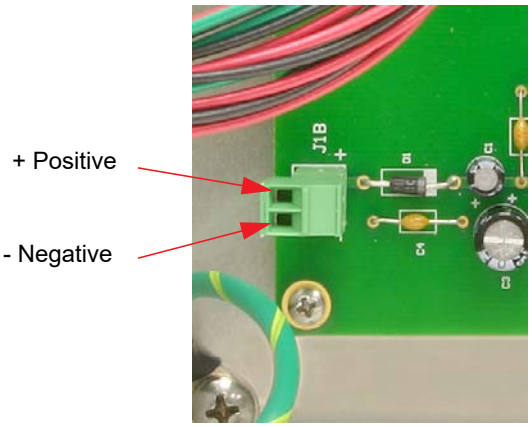


Figure 4: Connection of Operating Voltage wires in the alarm panel.

The DC operating voltage should be supplied by an uninterrupted source so that the alarm panel remains functional in a power outage situation. The customer supplied uninterrupted source can be located locally in the same general area as the panel installation. Another possibility is to use the signal booster systems battery backup unit to pro-

vide the operating voltage for the alarm panel. Because the alarm panel is designed for use in an NFPA compliant system it is assumed that a battery backup unit is available. The Bird battery backup unit is a 24 VDC unit. But is typically located some distance away from the alarm panel installation location.

Assuming the operating voltage connection between the Bird battery backup unit and the Bird alarm panel is made with a 24 gauge wire the maximum workable distance will be about 2200 feet. This is determined by calculation using the maximum allowable voltage drop across the length of the operating voltage cable (about 14 VDC) and the expected loss of 24 gauge wire (about 0.02567 ohms per foot). If you are planning on using alarm panel operating voltage from a Bird battery backup unit that is close to this maximum workable distance contact the factory for guidance.

To complete the installation of the alarm panel make sure the wire connections inside the box do not pinch when the door is closed. Close the door and turn the two front panel locking screws.

Operation

Operation of the alarm panel is very straight forward. When the alarm panel is powered-up the status lights will be green for any of the 5 monitored parameters that have their alarm input terminals connected to normally closed contacts. That means back at the signal booster the twisted pair must be connected between the NC and COM terminals of the form-C contacts for the parameter being monitored and the signal booster must be in the non-alarming state.

When the signal booster decides that the monitored parameter is in alarm it will open the connection between the NC and COM form-C contacts. This action will be seen by the alarm panel as a loss of bias voltage (0.5 volts) at its MOSFET input and the green segment of the front panel LED will turn off and the red segment will turn on. This switching logic means that a break in the signal line between the booster and the alarm panel will also show up as a red LED.

As an aid in troubleshooting signal wiring issues that might arise between the booster and the alarm panel, field engineers can temporarily disconnect a signal line pair at the alarm panel and the red LED segment should illuminate. With the twisted pair temporarily disconnected place a wire loop between the two terminals at the alarm panel input and the green segment of the front panel LED should illuminate.

Celsius to Fahrenheit Conversion Table

CELCIUS	FAHRENHEIT
105	221.0
104	219.2
103	217.4
102	215.6
101	213.8
100	212.0
99	210.2
98	208.4
97	206.6
96	204.8
95	203.0
94	201.2
93	199.4
92	197.6
91	195.8
90	194.0
89	192.2
88	190.4
87	188.6
86	186.8
85	185.0
84	183.2
83	181.4
82	179.6
81	177.8
80	176.0
79	174.2
78	172.4
77	170.6
76	168.8
75	167.0
74	165.2
73	163.4
72	161.6
71	159.8
70	158.0
69	156.2
68	154.4
67	152.6

CELCIUS	FAHRENHEIT
66	150.8
65	149.0
64	147.2
63	145.4
62	143.6
61	141.8
60	140.0
59	138.2
58	136.4
57	134.6
56	132.8
55	131.0
54	129.2
53	127.4
52	125.6
51	123.8
50	122.0
49	120.2
48	118.4
47	116.6
46	114.8
45	113.0
44	111.2
43	109.4
42	107.6
41	105.8
40	104.0
39	102.2
38	100.4
37	98.6
36	96.8
35	95.0
34	93.2
33	91.4
32	89.6
31	87.8
30	86.0
29	84.2
28	82.4

CELCIUS	FAHRENHEIT
27	80.6
26	78.8
25	77.0
24	75.2
23	73.4
22	71.6
21	69.8
20	68.0
19	66.2
18	64.4
17	62.6
16	60.8
15	59.0
14	57.2
13	55.4
12	53.6
11	51.8
10	50.0
9	48.2
8	46.4
7	44.6
6	42.8
5	41.0
4	39.2
3	37.4
2	35.6
1	33.8
0	**32.0**
-1	30.2
-2	28.4
-3	26.6
-4	24.8
-5	23.0
-6	21.2
-7	19.4
-8	17.6
-9	15.8
-10	14.0
-11	12.2

CELCIUS	FAHRENHEIT
-12	10.4
-13	8.6
-14	6.8
-15	5.0
-16	3.2
-17	1.4
-18	-0.4
-19	-2.2
-20	-4.0
-21	-5.8
-22	-7.6
-23	-9.4
-24	-11.2
-25	-13.0
-26	-14.8
-27	-16.6
-28	-18.4
-29	-20.2
-30	-22.0
-31	-23.8
-32	-25.6
-33	-27.4
-34	-29.2
-35	-31.0
-36	-32.8
-37	-34.6
-38	-36.4
-39	-38.2
-40	-40.0
-41	-41.8
-42	-43.6
-43	-45.4
-44	-47.2
-45	-49.0
-46	-50.8
-47	-52.6
-48	-54.4
-49	-56.2
-50	-58.0

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