

Instructions and Operating Manual

SERIES X11SN

WINDOW ANNUNCIATOR SYSTEMS

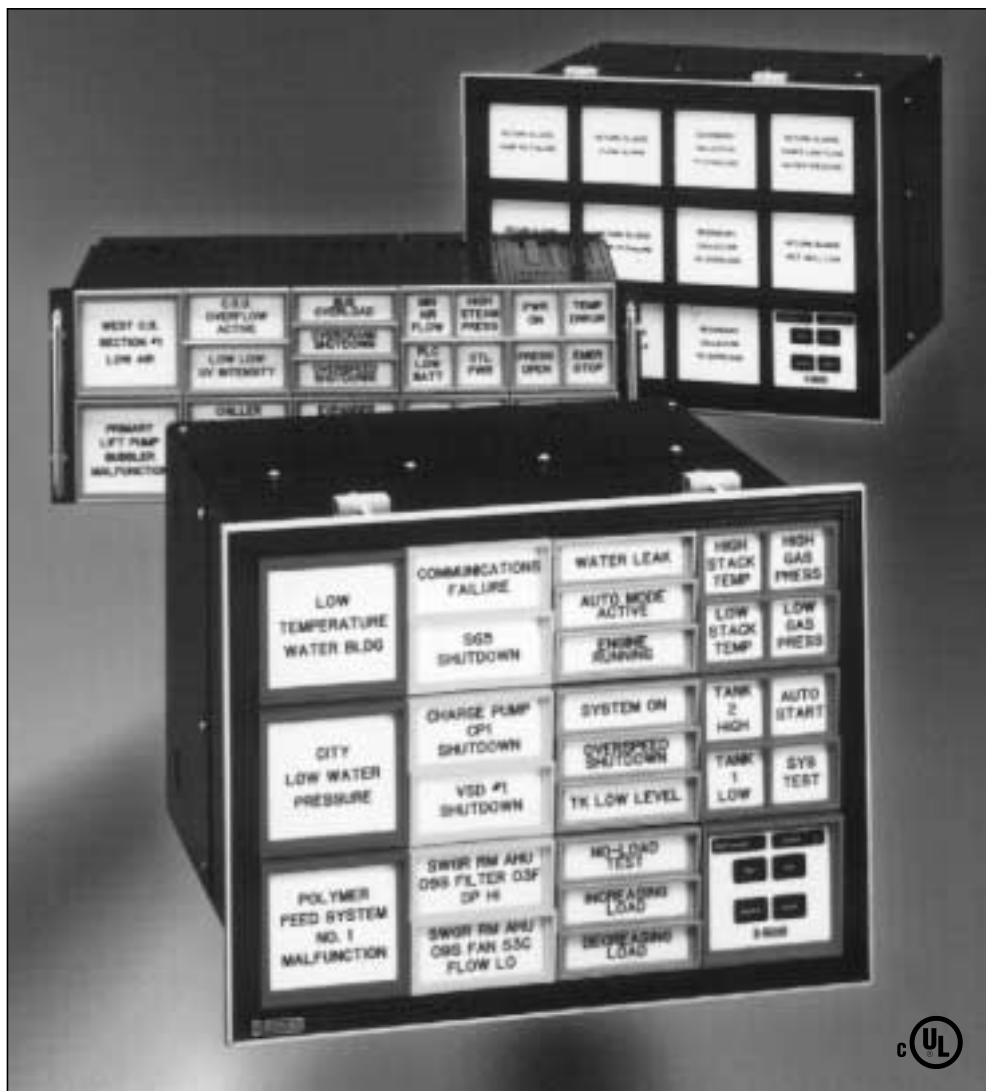


TABLE OF CONTENTS

1.0 General Description	2
2.0 Specifications	2
3.0 Expansion	2
4.0 Auxiliary Contacts	2
5.0 Mounting	3
6.0 Power Up and Test Procedure	4
6.1 Wiring Inspection	4
7.0 Troubleshooting	5
7.1 General	5
7.2 Nonoperating Alarm System	5
7.3 Step-by-step Procedures	6
8.0 Alarm Modules	6
8.1 Integral/Push-button Flasher Modules	6
8.2 Alarm Sequence/Display Module	7
8.3 Output Features	9
9.0 Standard Sequences	10
9.1 A, Automatic Reset	10
9.2 M, Manual Reset	10
9.3 F3A, Automatic Reset First Out with First Out Flashing and Reset Push Button	11
9.4 R, Ringback (Ronan ID RD)	11
9.5 F2A, Automatic Reset First Out with No Subsequent Alarm Flashing (Ronan ID FS)	12
9.6 F2M, Manual Reset First Out with No Subsequent Alarm Flashing (Ronan ID FSM)	12
10.0 Dimension and Wiring Drawings	13
10.1 Monalarm Dimensional Drawings	13
10.2 Binalarm Dimensional Drawings	14
10.3 Trialarm Dimensional Drawings	15
10.4 Quadalarm Dimensional Drawings	16
10.5 Standard Rear Terminal Arrangements and Wiring	17
10.6 Rear Terminal Arrangements and Wiring for 125 Vdc Field Contact	18
10.7 Rear Terminal Arrangements and Wiring for Transistor Input	19
10.8 Rear Terminal Arrangements and Wiring for Opto-coupled Input	20

THREE-YEAR WARRANTY: Ronan warrants equipment of its own manufacture to be free from defects in material and workmanship, under normal conditions of use and service, and will repair or replace any component found to be defective, on its return, transportation charges prepaid, within three (3) years of its original purchase. This warranty carries no liability, either expressed or implied, beyond our obligations to replace the unit which carries the warranty.

1.0 GENERAL DESCRIPTION

The Ronan Series X11SN Window Annunciator Systems feature Monalarm, Binalarm, Trialarm and Quadalarm displays within Ronan's standard 3.5 inch (89 mm) by 3.5 inch (89 mm) mechanical cabinet modules. The single plug-in module construction contains single or multipoint alarm circuitry with maximum noise immunity and reliability. The most popular ISA sequences, A, M, F2A, F2M, F3A, and R are readily available. **For other special sequences, consult factory.** For higher noise immunity and specific field contact time applications, a programmable field contact time delay board is an available option. Normally open/normally closed field contact logic for each individual channel is jumper switch-selectable on the single-board design. A system common trouble alarm (CTA) may be utilized for remote group alarms. The system's CTA and re-flash transistor outputs may be connected directly or via interface relays to provide inputs to remote annunciators.

2.0 SPECIFICATIONS

System Voltage:

Logic, Lamps: 24 Vdc \pm 20%.

Field Contact Options: 24 Vdc Dry Contact, 48, 125, 250 Vdc \pm 20% live input or opto-isolated 115, 240 Vac two-wire input (H and N).

Temperature Range:

Storage: -40 to 85°C (-40 to +185°F).

Operating: -40 to +60°C (-40 to +140°F).

Consult factory for extended ranges.

Power Sources:

External Power Supplies or Inverters Available for: 120 Vac \pm 20%, 60 Hz; 240 Vac \pm 20%, 50/60 Hz; Converter 24, 48 or 125 Vdc \pm 20%.

Power Requirements: To specify the correct power supply, count the number of alarm modules to be powered from the supply. Calculate the total requirements with the following equation:

Total Watts = No. of Modules x (Display Factor F + F Aux.)

Model	F Lamps	F LEDs	F Aux. Relay Adder
X11SN (1000 Series)	5.3 W	7.1 W	1 W
X11SN (2000 Series)	9.3 W	7.1 W	2 W
X11SN (3000 Series)	13.3 W	5.6 W	3 W
X11SN (4000 Series)	9.3 W	7.1 W	4 W

Inputs: 24 Vdc dry contact, 48, 125, 250 Vdc \pm 20% live input or opto-isolated 115, 240 Vac two-wire input (H and N).

Outputs:

Lamp Outputs: Fast flash, slow flash, steady on, intermittent fast flash.

Alarm: Single audible.

Auxiliary Relay: Field selectable Form A or B.

Contact Rating: 2A @ 28 Vdc, General Purpose or Hermetically Sealed.

Common Trouble Alarm: Output follows FC NDE.

Reflash Option: Output on rear terminal block point F4.

Response Time: 20 msec nominal.

Surge Withstand Capability (SWC):

All Logic Tested to: ANSI/IEEE C37.90-1989.

Controls: Integral or Remote Silence, Acknowledge, Reset, and Test: Momentary push button, single pole, normally open.

System Size:

Multiple of Cabinet Module: 3.5 inch (89 mm) x 3.5 inch (89 mm). See dimensional information drawings for detailed dimensions.

System Weight Per Cabinet Module: 2 lbs. (909 grams) not including power supply.

3.0 EXPANSION

The Series X11SN Window Annunciator Systems are built for expandability. This allows field expansion of the Monalarm System to either Binalarm, Trialarm or Quadalarm, and the Binalarm to Trialarm or Quadalarm, by simply replacing the alarm/lamp modules and the appropriate bezels.

CAUTION: The last position of each chassis can not be more than two alarm positions due to the flasher, so it will only expand to Binalarm.

4.0 AUXILIARY CONTACTS

The auxiliary contact outputs may be purchased initially or added later in the field. The single, dual, triple or quad relay circuit module plugs in from the front of the system. The receiving multipin printed circuit connector and the terminals for the contact outputs are furnished with the system. Each relay follows the selected alarm board auxiliary behavior and provides a selectable Form A or B type contact. The relays are available in General Purpose or Hermetically Sealed models.

5.0 MOUNTING

- A. The annunciator is shipped with all of the alarm/lamp modules, auxiliary contact module(s) and flasher module(s) installed in the cabinet, as specified by purchase order.
- B. External horn relay(s), reflash relay, common alarm relay, relay sockets, horns, bells, push buttons and power supply are packed separately.
- C. Install the alarm cabinet from the front of the panel.
 1. Position the cabinet in the cutout so that the cabinet rests on the front extruded trim, see detail A, Figure 1. Make sure that the front rim is firmly against the panel, both top and bottom.
 2. From the rear view of the panel, insert the two halves of the clamp assembly (one half threaded and the other half unthreaded) in the groove of the front trim, see detail C below.
 3. Slide the clamps together until both holes align, see detail B below.
 4. Insert the jack screw and tighten to secure the cabinet in the panel. Install all the clamps the same way and be sure to tighten evenly.
 5. Tighten up the lock nuts on each jack screw.

- D. Systems purchased with NEMA 12 or NEMA 4 Doors require mounting of the door before Step C1. After removal of the mounting clamp assemblies, the system can be inserted through the open door, sandwiching the door between the panel and the system's extruded trim (gasket is furnished with door). Continue with Steps C1 through C5. **Note:** The panel cutout is the same as specified in standard flush mounted alarm systems.
- E. Mount all external relays, horns and/or bells, push buttons and power supply on the panel or in the rear of the annunciator cabinet, where possible.
- F. Wire system's inputs and support equipment as shown under System's Support Wiring.

CAUTION

Before turning on power read Power Up and Test Procedure.

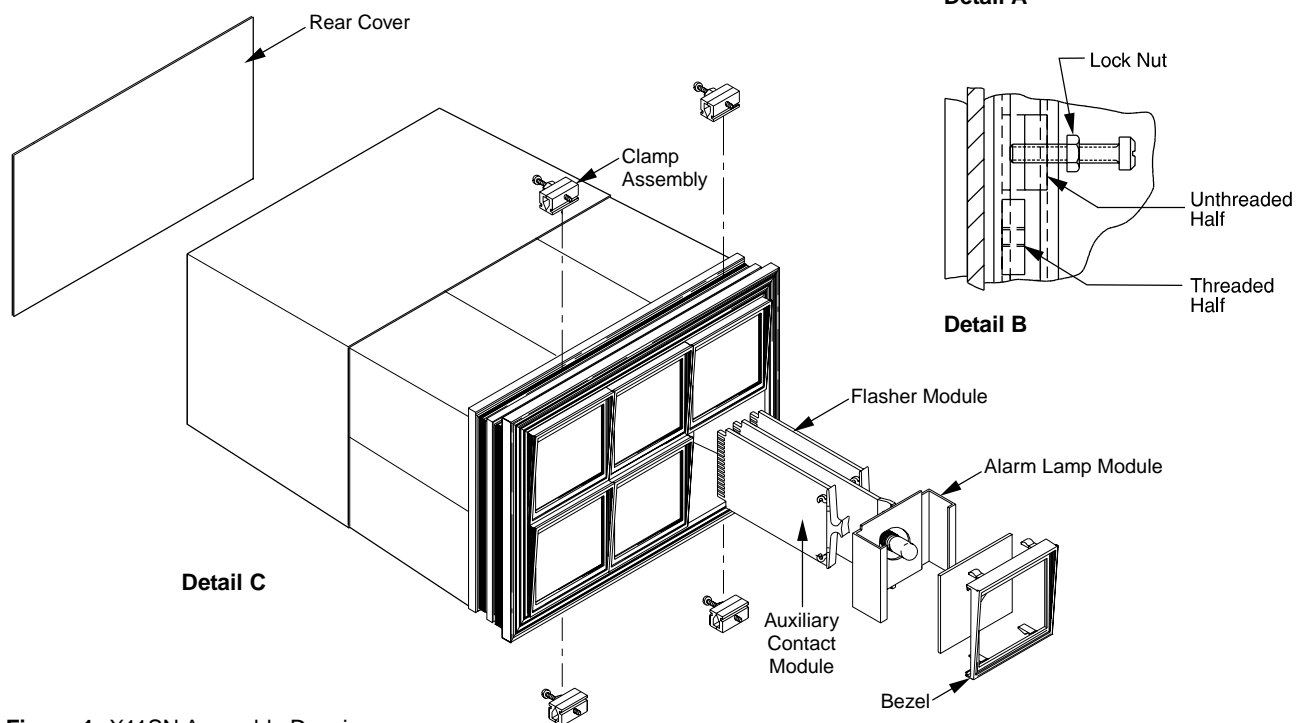


Figure 1: X11SN Assembly Drawing

6.0 POWER UP AND TEST PROCEDURE

CAUTION

It is important to review all external equipment, including the alarm system, before turning on power and proceeding with testing. Before installing, verify that each component meets the area and environment standard required by the National Electrical Code. Particular attention must be paid to reviewing push buttons, horn relays, horns and bells, to see that they meet the right classification of the electrical code.

6.1 Wiring Inspection

6.1.1 Alarm Inputs. Each active alarm input must be wired to customer's sensing device that provides an opening or closing on alarm condition. The terminals on the alarm system for each alarm input are marked 1 and are supplied via a pull-up resistor on each alarm module point. This resistor is used in the V+ source to each field contact to reduce the effect of large transients entering the alarm chassis. Each alarm input module is provided with a separate terminal 1. However, it is common practice to run one common wire from terminal 1 to many field contacts to reduce the number of field wires required. When using common wiring, it is important to jumper together terminal 1 of the respective alarm cabinet modules to provide the correct amount of current source to the field contact.

The return wire from the field contact is wired to terminal 2 for each respective alarm module. Since the alarm system provides the power to the field contacts, it is important to verify that no other voltage source appears on either terminal 1 or terminal 2.

Note: On alarm systems where the alarm inputs are supplied from transistor switch outputs, the V- of both systems has to be common. If the system under test has this feature, it must be verified by reviewing the electrical drawing, particularly the alarm module schematic.

In general, the solid state alarm system is a floating system. The V+ and V- should be verified as ungrounded.

6.1.2 Push-button Wiring. Verify that the push-button wires are correctly wired to all of the push buttons, including the push-button contacts. Refer to pages 13 through 20 for outlined dimensions and rear terminal

arrangements. Insure that normally open contacts are used. For example, if the wrong contacts (normally closed) are used, this is the same as having the operator pushing the push button continuously, which obviously will drastically affect the operation of the alarm system. Alarm systems using multiple alarm cabinets may use a common set of push buttons to control the total system. A detailed check for proper installation is recommended, including diode type isolation, if specified on the electrical drawings.

6.1.3 Horn and Bell Wiring. Terminals H1, H2, and CA use short circuit protected drivers to drive associated relays and horns. The suggested minimum turn-on current of connected elements should be greater than 10 mA. The maximum horn current should not exceed 500 mA. If electronic horns are used, the horns can be directly connected to the audible output terminals (H1, H2). Systems using the conventional AC or DC horns and bells, must use a horn relay with suitable contact rating. On multiple alarm cabinet systems where individual power input is preferred, a horn relay must be used with each cabinet to maintain electrical isolation.

6.1.4 Power Supply. Verify the correct polarity of connection to the alarm systems. In the larger system, it is important to verify the wire sizes of the power leads to the alarm cabinets. To protect the larger alarm chassis, it is common to provide more than one input to the cabinet in which each section is provided with a separate filter, fuse and supply input terminals. In systems with multiple supply input, it is necessary for the customer to make V- connections common.

6.1.5 Normally Open/Normally Closed Field Contacts. All alarm modules are equipped for operation with normally open or normally closed field contacts. This is accomplished by using a jumper switch on each alarm module, identified as NO and NC for the normally open and normally closed position respectively. When the complete system is in operation, the field contact that opens with an alarm condition is termed a "normally closed" alarm input; conversely, the field contact that closes with an alarm condition is termed a "normally open" alarm input.

6.1.6 Power Up. Carefully inspect the hookup wiring to insure conformity with the furnished schematic. Pay particular attention to power source polarity and verify that terminal 3 is

connected common for first alert sequence groups. Now remove the alarm modules one at a time and determine whether or not the normally closed/normally open switch is in the proper position and reinsert the card firmly, seating it in the connector. Power may now be applied to the system.

Upon power application, the flasher module within the system will automatically initiate a reset cycle. The system should then be in a quiescent state with the horn(s) off and no lamps flashing. Some lamps may, however, be on if their associated field contacts are in an abnormal condition.

Depression of TEST should cause all extinguished lamps to come on flashing and the audible alarm to sound. From this point, refer to the particular Sequence Charts to obtain normal system operation. When testing an installed system, be alert to the possibility that an actual alarm may initiate during the test procedure and appear to give conflicting results.

check polarity and reconnect. If fuse still blows, remove all alarm modules and flasher and try again. If the fuse blows at this point, the problem has been isolated to a short in the internal wiring.

C. If power remains on, but any or all push buttons (SILENCE, TEST, RESET, ACKNOWLEDGE) do not appear to function:

1. Verify proper wiring by measuring the voltage at terminal T, A, S and/or R as applicable. Voltage measurements are taken with respect to the V- terminal and should in all cases be zero volts with the button released and V+ (20-28 Vdc) with the button depressed.
2. If the problem persists, the Flasher Module is suspect. Replace the Flasher Module and try again.
3. Be alert to the possibility that a single board can, under unique conditions, cause what appears to be a system malfunction. The following is a typical example:

- a) If a large group of F3A points comes on fast flashing rather than intermittent flashing during TEST, one board can be sending a signal to all of the others. A failure of the flasher or the test circuit is not necessarily indicated.
- b) In the above case, remove Alarm Modules sequentially and repeat testing until the trouble clears.
- c) As a general rule, common sense in isolating the trouble will prevail. If one or more alarm boards appear to be malfunctioning, remove them from the system entirely before continuing. Fill their positions with boards from the upper left or lower right of the system so as to concentrate known good modules, and then proceed with diagnostic and analysis of the remainder. Working with several scattered diverse problems simultaneously is nearly always self-defeating.
- d) Refer to the section on Step-by-step Procedures for further information.

7.0 TROUBLESHOOTING

7.1 General

Simple attention to the obvious can often solve what appears to be a problem in the system.

- A. Burned out, broken, or improperly seated bulbs will not light.
- B. Alarm modules not properly seated in their connector will prevent alarm point(s) from functioning.
- C. Alarm point pull-up resistors could be burned providing no voltage at terminal 1.

7.2 Nonoperating Alarm System

- A. Verify that the power source is operating and that the V+ to V- voltage on the rear terminals is in the range of 18 V to 28 V. (Below 18 V, operation may prove erratic.) Be sure to verify polarity.
- B. If the power supply fuse blows each time power is applied:
 1. Check the Power Supply Parts List for proper fuse size.
 2. Remove Alarm System from the supply and try again. If fuse holds, double

7.3 Step-by-step Procedures

- A. Check the system voltage and verify polarity of supply input voltage and that the system voltage lines are not grounded.
- B. Isolate all external devices except the input power connections.
- C. Unseat all alarm/lamp modules except the No. 1 alarm module. At this point the only items plugged into the alarm chassis are one alarm module and flasher horn driver module. Jumper the push-button input terminals on the master module to simulate the correct connections for operations of the alarm system (since only normally open push-button contacts are used for all push-button functions, no connections will be made for normal operation).
- D. Connect a simulating set of devices to replace the field contact as shown on the electrical schematics on terminals 1 and 2.
- E. Using the simulated field contacts and following the test procedure instructions, check the sequence operation of the annunciator.
- F. If the first alarm module does not operate correctly, replace the flasher module to eliminate the possibility of a faulty flasher module. Once established that the flasher is functional, the fault will probably lie in one of the following areas:
 1. A faulty alarm/lamp module.
 2. No +24 Vdc at terminal 1.
 3. Chassis wiring fault such as a short or cold solder joint.
- G. After checking for proper operation of terminal 1 output, remove the No. 1 alarm module and insert the No. 2 alarm module in the No. 1 chassis position. If the No. 2 alarm module operates correctly, this indicates that the No. 1 alarm module is faulty. Should the No. 2 alarm module not function in the No. 1 chassis position, the fault lies in the chassis wiring.
- H. If the failure is isolated in the chassis wiring, remove each alarm input terminal wiring, remove each alarm input terminal plate and inspect for foreign objects which might cause a short. Review for any damaged wiring or broken connections to the printed circuit board connector. Finally, if the above procedure does not produce a solution to the fault, a thorough review of all solder joints is recommended.

- I. Should No. 1 alarm function correctly, continue with the same procedure for checking all alarm/lamps modules by seating each module and using a simulating field contact switch at each alarm point. After the testing, should all the alarm/lamp modules function correctly, it must be assumed that the entire alarm system and modules are not faulty.

At this point, the error is now confined to the external wiring, possible push button or external equipment miswiring, or a short in the field contact wiring.
- J. To avoid further damage to new alarm modules, do not place another alarm module into an alarm position that has produced circuit board trace failures. A detailed review of the trace failure will determine the reason for the failure. In most cases, damage can be the result of high voltage inputs or shorting in the chassis.

8.0 ALARM MODULES

8.1 Integral/Push-button Flasher Modules

The X11SN System can operate with either an integral flasher or push-button flasher module. These flasher modules function to provide slow and fast flashing signals and filter the push-button signals to a V- active mode for the alarm cards. The integral flasher is identified by a red handle. The push-button flasher module is identified by the membrane switch and MAINTENANCE and POWER LED indication. The flasher module has the following specific field selectable options:

- A. Slave or master flashing module control.
- B. ISA options 2 and/or 3.
- C. Normally energized/deenergized common trouble alarm output.
- D. Time selectable auto-silence on Horn 1.
- E. Normally open/closed contact on maintenance required relay.
- F. Normally open/closed contacts on alarm point auxiliary relays (integral modules only).

Slave (S) or Master (M) Flashing module is controlled by slide switch SW1. In the M position, the flasher will provide slow and fast flashing rates for all synchronized chassis. Chassis flashing is synchronized by connecting similar rear terminals F1, F2, and V-

These terminals are located in the rear, lower left corner of the chassis. There can only be one master flasher in any synchronized chain. All other system flashers must be placed in the S position. Single system flashers must be placed in the M position for proper alarm sequence operation.

ISA option 2 provides an interlock to require operation of the silence push button before alarms can be acknowledged. This control is located at the selectable header location ISA2. In position 2, ISA option 2 is enabled. Otherwise, the system can be acknowledged at any time with ISA2 in the nonlabeled position. Push-button flasher modules that do not have a silence push button are permanently configured in the nonlabeled position.

ISA option 3 provides an interlock to require operation of the acknowledge push button before alarms can be reset by the reset push button. This interlock control is located at the selectable header location ISA3. In position 3, ISA option 3 is enabled. The nonlabeled position will allow system reset at anytime.

Common Trouble Alarm operation is determined by the group alarm bus/CTA. This bus feeds the flasher as an input and is available to the user as an active low output at rear terminal CA. This terminal is located in the rear, lower left corner of the chassis. This output can be controlled as normally energized/deenergized at header location CTA.

In the NO position, the CA output will follow the alarm card CTA designation. For example, an alarm that follows the the field contacts NDE (normally deenergized) will provide an active V- output at CA when any field contact is abnormal and the flasher CTA selection is NO. The user could configure this particular system as normally energized CA following field contacts by putting the CTA switch in the NC position.

Users who elect to have the automatic horn silence option on Horn 1 configure the horn time at header locations TADJ (time adjustment) and TRNG (time range). The available horn time ranges are 1 and 10 minutes. These ranges are selected at the TRNG header in the respective 1 and 10 positions. Half-time and full time is selected at header location TADJ in the respective L (low) and H(high) positions. For example; 30 second Horn 1 auto-silence is selected by placing TRNG in position 1 and TADJ in position L.

The other available configurations are shown in the table below.

TRNG	TADJ	Horn 1 Auto Silence
1	L	30 sec.
1	H	1 min.
10	L	5 min.
10	H	10 min.

All flashers have a maintenance required relay that energizes on flasher failure or when 24 volts is applied at terminal block F3 in the rear, lower left corner of the chassis. Flasher failure occurs when either the fast or slow flash signals are not available to the alarm card bus. The relay contact is available to the user on terminals F5 and F6. The Normally open or closed status can be selected on the flasher card at the header selector switch MAIN as NO and NC respectively. Push-button flashers have an additional red MAINTENANCE front panel LED that can additionally follow the CTA or AL2 bus. This LED behavior is permanently selected during initial ordering. The green POWER LED indicates when 24 volts is applied to system power.

Systems that occupy the flasher cabinet with alarm points can specify up to two auxiliary relays on the integral flasher card. Header selector switches (RLYA, RLYB) are also on the flasher card to determine the normally open or closed status.

8.2 Alarm Sequence/Display Module

The module X11SN is offered in two separate sequences as described in ANSI/ISAS18.1-1979 (R1985). On PCB X11-1013C and X11-1020, the operating sequence is selected as labeled at respective headers SEQA-SEQD. On the programmable version (PCB X11-1019B), the sequence selection is made at slide switch SEQ. Switches 1-4 are connected for field contacts FCA-FCD respectively.

J5 and J6 of PCB X11-1019B are used when the field contact selectable time delay board is ordered. The time delay selects 1 of 32 different time responses using switch TIME. Each field contact can bypass this selection using switch BYPASS. BYPASS switch positions 1-4 correspond to field contacts FCA-FCD respectively and will have the nominal 20 ms. response when selected. Otherwise,

the field contact response will be the time selected by switch TIME. See Figure 2, Detail A for a time board operation example.

Dual horn selection is offered as an option to choose the active horn bus HORN1 and HORN2. This option should be used when the user needs to separate module groups by activating different horns. On PCBs X11-1013C and X11-1020, the horn selection is made at headers HORNA-HORND. These refer to associated field contacts FCA-FCD. The programmable version uses a slide switch labeled HORN. The OFF position selects HORN1 and the ON position selects HORN2. Switches 1-4 are connected for field contacts FCA-FCD respectively.

Although ordering auxiliary relay boards is not mandatory, the X11SN system is designed so that auxiliary relay behavior must be selected. The basic options available choose between Normally Energized/Deenergized following the field contact or alarm cycle behavior. The specific options available can be consulted in the X11SN sales brochure. When selectable auxiliary behavior is chosen, an on board selector switch is located at SW1 on PCBs X11-1013C and X11-1020. PCB X11-1019B uses selector switch AUX. See specific sequence charts for specific auxiliary relay behavior. **NOTE:** Unless otherwise specified, the standard auxiliary relay option is normally non-energized follow field contact.

PCB X11-1019B (programmable) has an additional header J7 and slideswitch GEN. The header J7 is used for parallel port programming of the device located at U6. This header should remain unconnected and without any additional connected shunts during normal circuit operation. The slideswitch GEN is provided when unusual or non-standard circuit performance or configuration is necessary. Normally, most assemblies do not populate slideswitch GEN. See Figure 3 (see page 9), Details B and C for header and switch locations of PCB X11-1019B.

The combination display/alarm module contains a single, dual, triple, or quad alarm channel circuit with the appropriate lamp display constructed as a single plug-in module. The modules are removable from the front of the system without the interference to the remaining channels of the

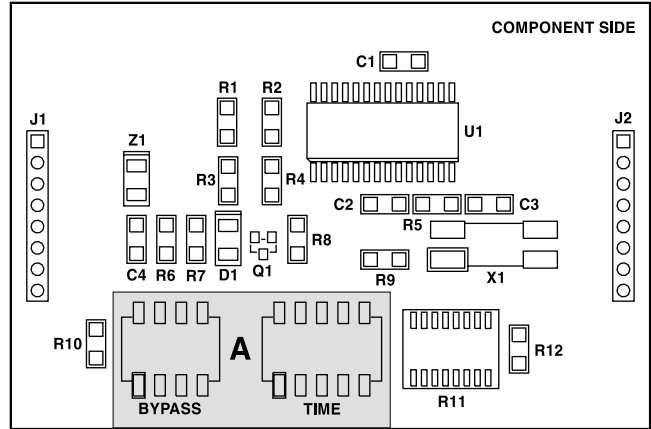


Figure 2: X11-1024 PCB Switch Locations.

BYPASS

TIME

Bypass Switch Selection
 Channel A(1) and Channel C(3) in ON position bypasses the time selected by TIME. The FC response for Channel A and Channel C will be 20 ms. nominal. Channel B(2) and Channel D(4) in off position selects the field contact response selected by TIME, in this case, 3.0 seconds.

Time Switch Selection
 The table below shows that with switches 2 and 3 in the ON position and 1, 4, and 5 in the OFF position, 3.0 seconds is selected for field contact response.

Switch Time	Time Delay	Switch Time	Time Delay
12345		12345	
00000	50 msec.	00001	45 sec.
10000	100 msec.	10001	1 min.
01000	300 msec.	01001	90 sec.
11000	0.5 sec.	11001	2 min.
00100	1.0 sec.	00101	3 min.
10100	2.0 sec.	10101	4 min.
01100	3.0 sec.	01101	5 min.
11100	4.0 sec.	11101	6 min.
00010	5.0 sec.	00011	7 min.
10010	6.0 sec.	10011	8 min.
01010	7.0 sec.	01011	9 min.
11010	8.0 sec.	11011	10 min.
00110	9.0 sec.	00111	15 min.
10110	10.0 sec.	10111	30 min.
01110	15.0 sec.	01111	45 min.
11110	30.0 sec.	11111	60 min.

Detail A: Time Board Operation Example.

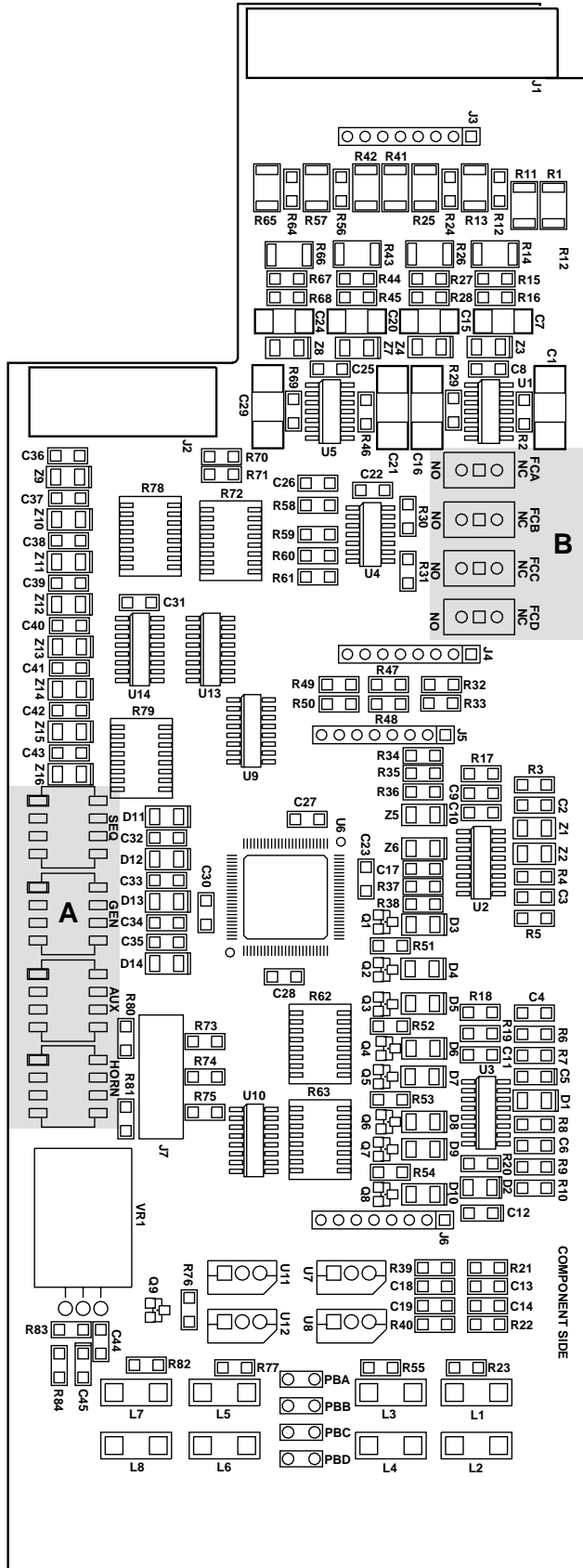
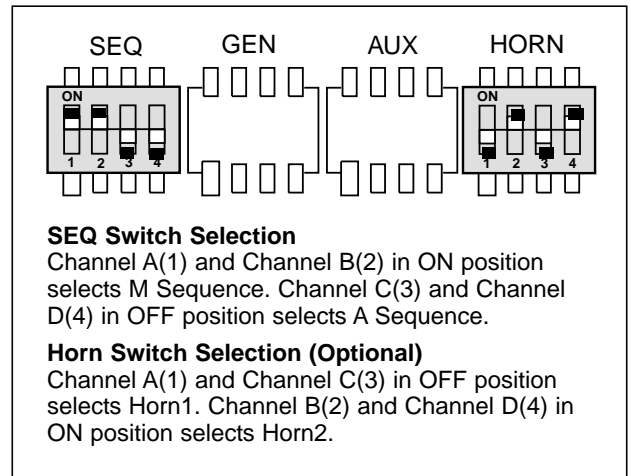
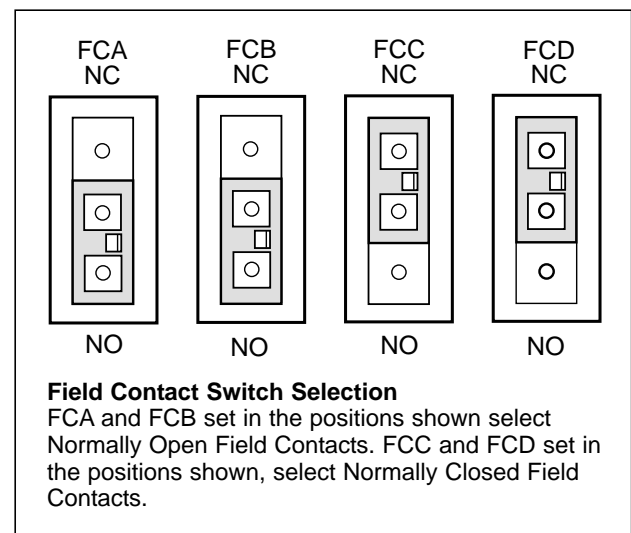


Figure 3: X11-1019B PCB Switch Locations.

system. The window display areas are contained within Ronan's standard colored-bezels, allowing multiline engraving on single or sandwich lenses. The alarm logic may interface with a normally open or normally closed field contact. The field contacts are interrogated by the system's 24 Vdc logic supply, or optionally, with 125 Vdc from a dual output power supply, if so specified. In addition, the module's input circuit is designed to accept a logic voltage without external components.



Detail B: Example X11SN4MA0122* Card Switch Selection. Sequence "M" Manual Reset or "A" Automatic Reset.



Detail C: Field Contact Switch Selection Example.

* See X11SN Window Annunciator Systems sales brochure for alarm card assembly numbers.

8.3 Output Features

The X11SN System provides the following features on the terminal located in the lower, left, rear terminal plate.

8.3.1 Common Trouble Alarm. This output is at terminal CA and follows the field contacts A 24 Vdc relay wired between CA and V+ will energize whenever a point is abnormal (in alarm) and the relay will stay energized until all points in the system return to normal.

8.3.2 Reflash. This output is at terminal F4 and follows the field contacts. A 24 Vdc relay wired between F4 and V+ will energize whenever a point is abnormal (in alarm). If a second point goes abnormal (in alarm) while the first point is still abnormal, the reflash module briefly returns to normal then goes abnormal until all points return to normal.

8.3.3 Auxiliary Contact Module. The auxiliary contact module is available with a single, dual, triple or quad relay circuit, accommodating the

window density selected. The modules plug in from the front of the system and may be purchased initially or added later in the field. The terminals for the contact outputs are furnished as part of the system. Each relay provides a selectable Form A or B type contact with a rating of 2 A at 28 Vdc. Relays are available in either Hermetically Sealed or General Purpose types. Normally open (Type A) or normally closed (Type B) contact is available for each alarm point at their respective rear terminal block terminals 5 and 6. The normal operation (NO/ NC) can be changed on the auxiliary contact module at headers marked AUX1, AUX2, AUX3, or AUX4.

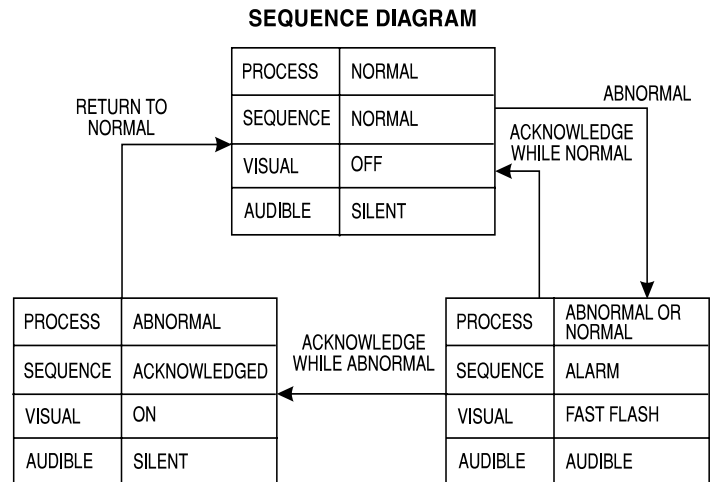
8.3.4 Transistor Output

Terminal 4 (TO) of each alarm I/O terminal strip provides an open collector output (pulling to -V) programmable for various system functions. A typical application is to drive an auxiliary relay following the field contact or lamp logic.

9.0 STANDARD SEQUENCES (For other special sequences consult factory)

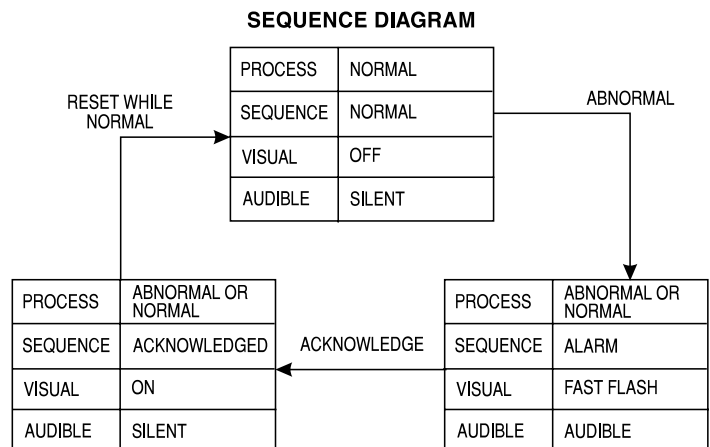
9.1 A, Automatic Reset

1. Acknowledge and test push buttons.
2. Alarm audible device.
3. Lock-in of momentary alarms until acknowledged.
4. The audible device is silenced and flashing stops when acknowledged.
5. Automatic reset of acknowledged alarm indications when process conditions return to normal.
6. Operational test.



9.2 M, Manual Reset

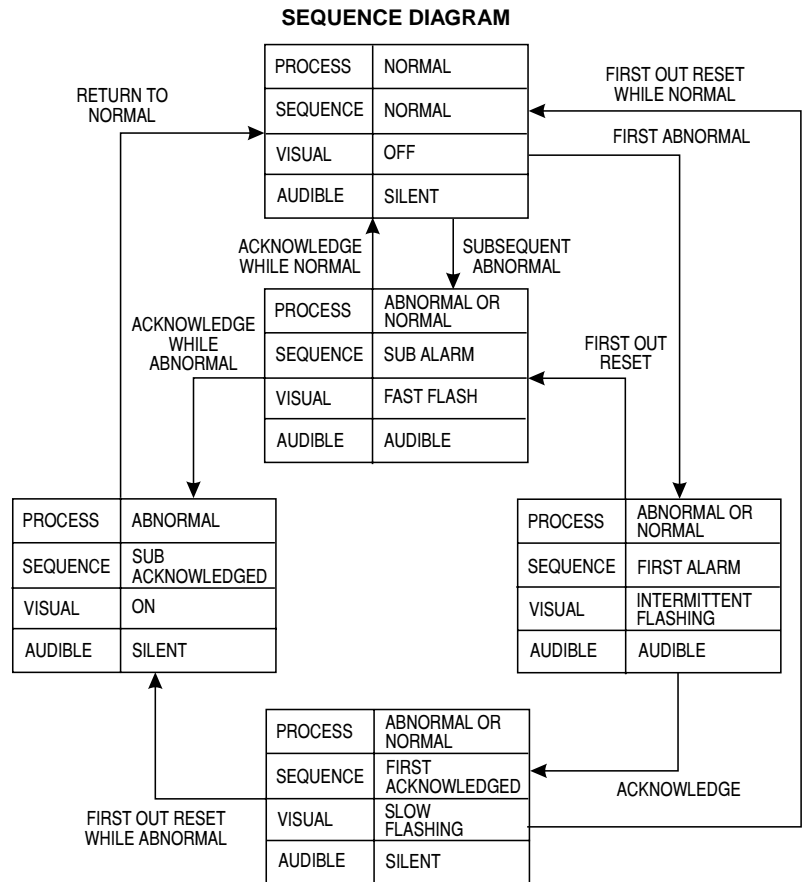
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2. Alarm audible device.
3. Lock-in momentary alarms until acknowledged.
4. The audible device is silenced and flashing stops when acknowledged.
5. Manual reset of acknowledged alarm indications after process conditions return to normal.
6. Operational test.



9.0 SEQUENCES (CONT.)

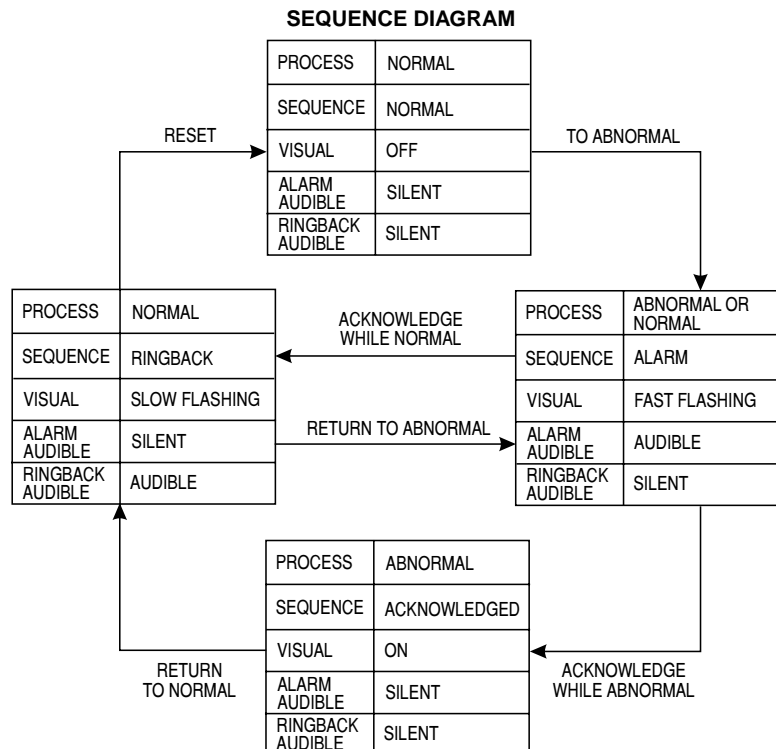
9.3 F3A, Automatic Reset First Out with First Out Flashing and Reset Push Button

1. Acknowledge, first-out reset and test push buttons.
2. Alarm audible device.
3. Lock-in of momentary alarms until acknowledged.
4. First-out flashing different from subsequent flashing.
5. First-out reset push button to change the first out visual indication to be the same as subsequent visual indications.
6. Automatic reset of acknowledge alarm indications when process conditions return to normal.
7. Operational test.



9.4 R, Ringback (Ronan ID RD)

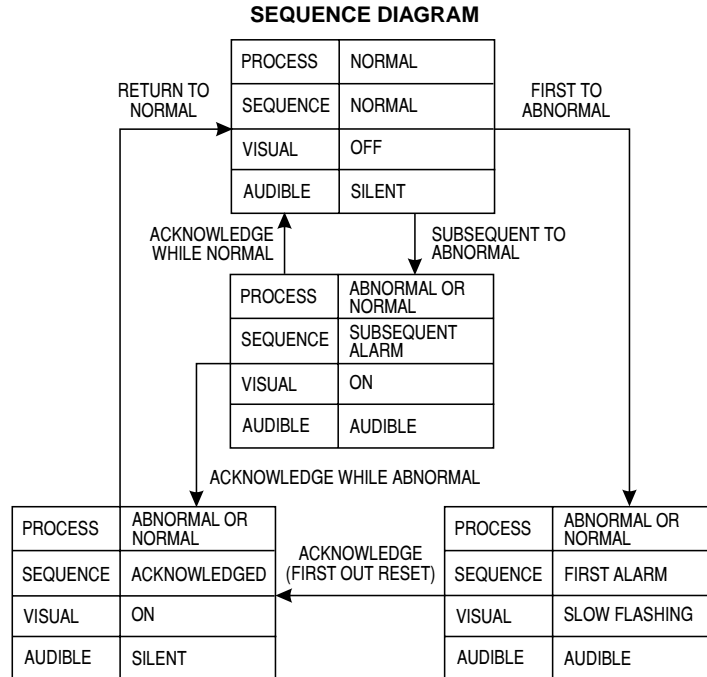
1. Acknowledge, reset, and test push buttons.
2. Alarm and ringback audible devices.
3. Lock-in of momentary alarms until acknowledged.
4. The audible device is silenced and fast flashing stops when acknowledged.
5. Ringback visual and audible indications when process conditions return to normal.
6. Manual reset of ringback indications.
7. Operational test.



9.0 SEQUENCES (CONT.)

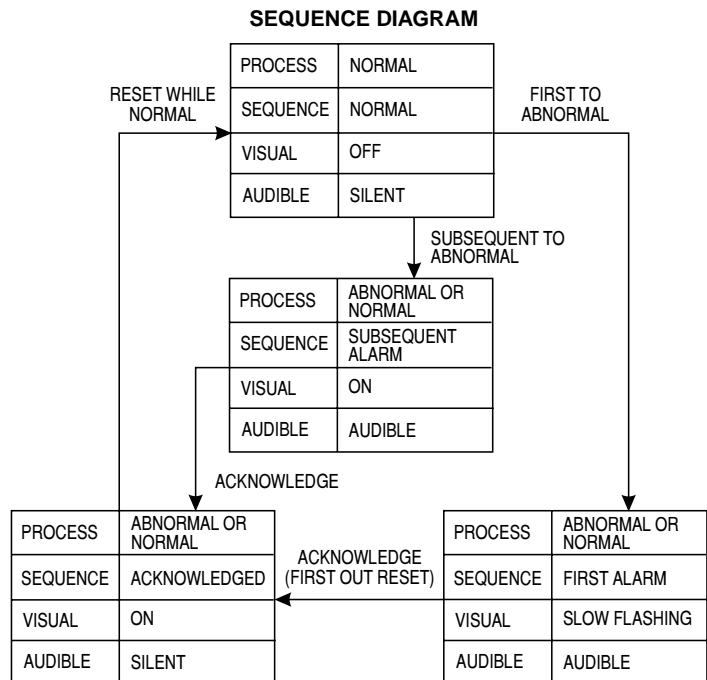
9.5 F2A, Automatic Reset First Out with No Subsequent Alarm Flashing (Ronan ID FS)

1. Acknowledge, reset, and test push buttons.
2. Alarm audible device.
3. Lock-in of momentary alarms until acknowledged.
4. Flashing indication for first alarm only. New subsequent alarms have the same visual indication as acknowledged alarms.
5. First out indication is reset when acknowledged.
6. Automatic reset of acknowledged alarm indications when process conditions return to normal.
7. Operational test.



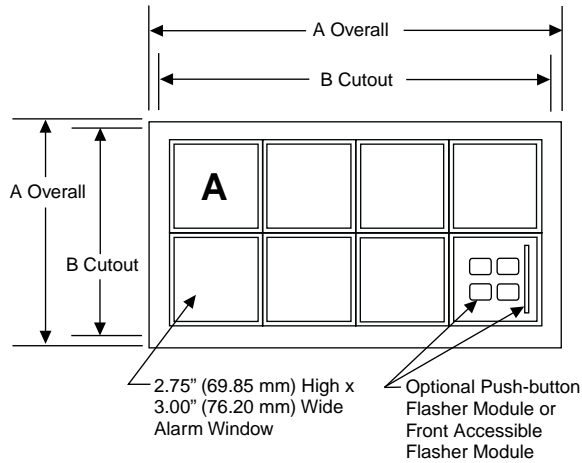
9.6 F2M, Manual Reset First Out with No Subsequent Alarm Flashing (Ronan ID FSM)

1. Acknowledge, reset, and test push buttons.
2. Alarm audible device.
3. Lock-in of momentary alarms until acknowledged.
4. Flashing indication for first alarm only. New subsequent alarms have the same visual indication as acknowledged alarms.
5. First out indication is reset when acknowledged.
6. Manual reset of acknowledged alarm indications after process conditions return to normal.
7. Operational test.



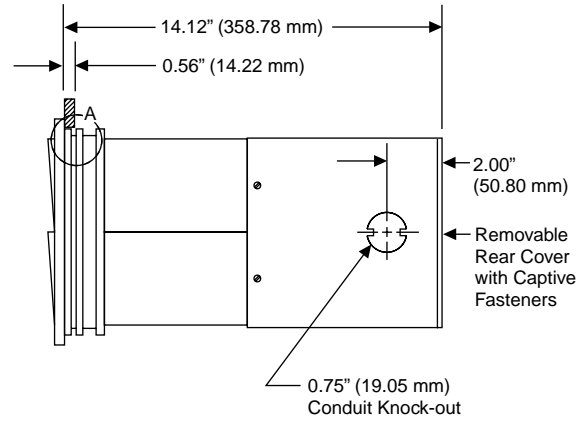
10.1 Monalarm Dimensional Drawings

Flush-mount - Front View X11SN-1000 & X11SNLR-1000

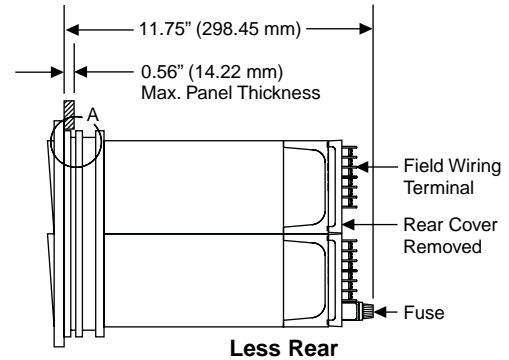


No. of Windows High or Wide	A Overall Inches	A Overall mm	B Cutout Inches	B Cutout mm
1	5.00	127.00	4.38	111.25
2	8.50	215.90	7.88	200.15
3	12.00	304.80	11.38	289.05
4	15.50	393.70	14.88	377.95
5	19.00	482.60	18.38	466.85
6	22.50	571.50	21.88	555.75
7	26.00	660.40	25.38	644.65
8	29.50	749.30	28.88	733.55
9	33.00	838.20	32.50	825.50
10	36.50	927.10	36.00	914.40
11	40.00	1016.00	39.50	1003.30
12	43.50	1104.90	43.00	1092.20

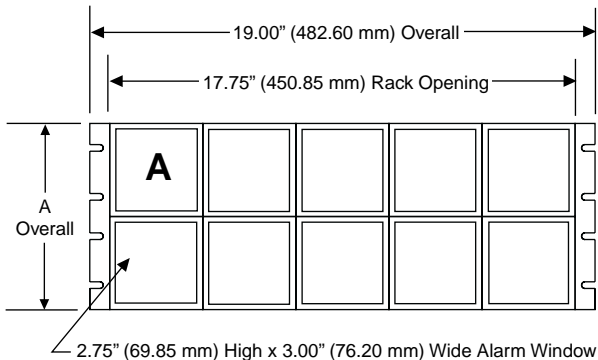
Flush-mount - Side View X11SN-1000



Flush-mount - Side View X11SNLR-1000

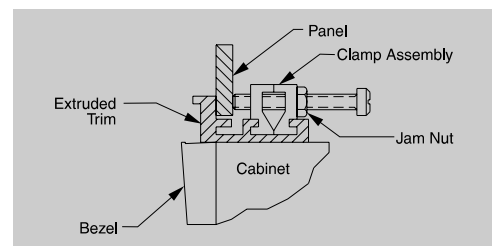
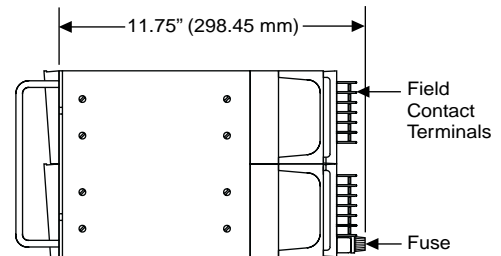


Relay Rack-mount - Front and Side View X11SNRR-1000



Number of Windows High	Number of Windows Wide	A Overall Inches	A Overall mm
1	5**	3.50	88.90
2	5	7.00	177.80
3	5	10.50	266.70
4*	5	14.00	355.60

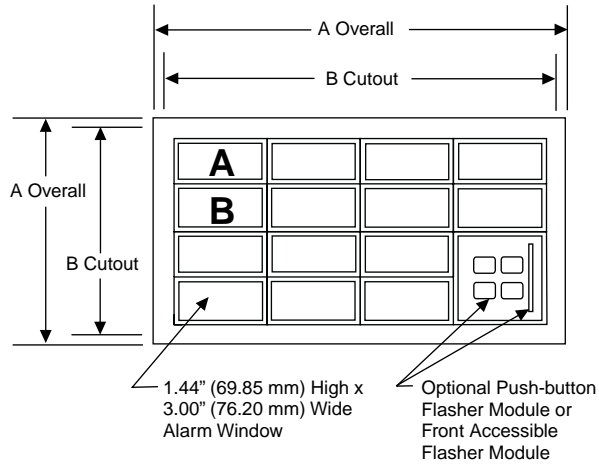
*Not limited to 2 high.
 **Limited to 5 wide only. 19.00" (482.60) mm rack.
 Also available 6 wide. 24.00" (609.60) mm rack.



Detail A

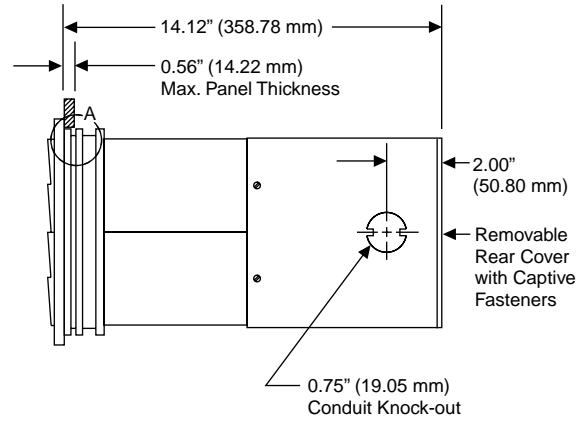
10.2 Dualarm Dimensional Drawings

Flush-mount - Front View X11SN-2000 & X11SNLR-2000

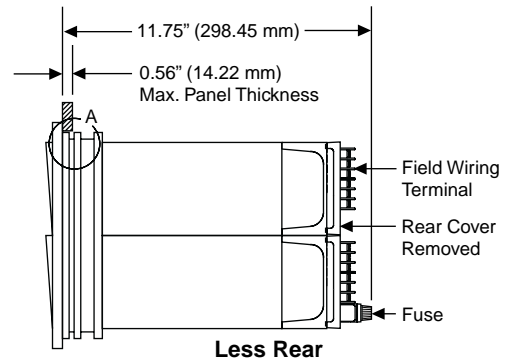


No. of Windows High	Wide	A Overall		B Cutout	
		Inches	mm	Inches	mm
2	6	5.00	127.00	4.38	111.25
4	2	8.50	215.90	7.88	200.15
6	3	12.00	304.80	11.38	289.05
8	4	15.50	393.70	14.88	377.95
10	5	19.00	482.60	18.38	466.85
12	6	22.50	571.50	21.88	555.75
14	7	26.00	660.40	25.38	644.65
16	8	29.50	749.30	28.88	733.55
18	9	33.00	838.20	32.50	825.50
20	10	36.50	927.10	36.00	914.40
22	11	40.00	1016.00	39.50	1003.30
24	12	43.50	1104.90	43.00	1092.20

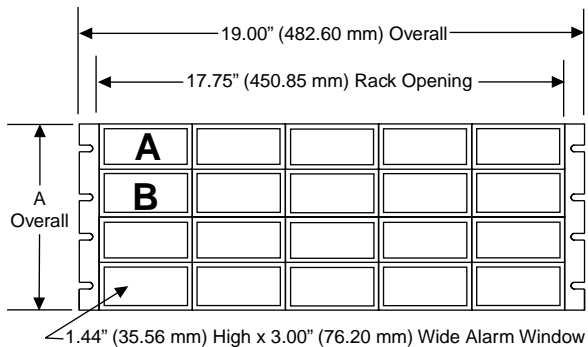
Flush-mount - Side View X11SN-2000



Flush-mount - Side View X11SNLR-2000

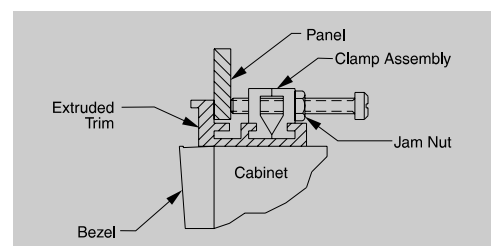
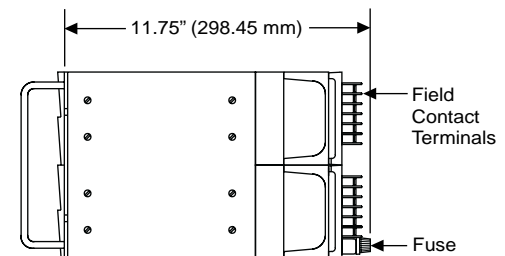


Relay Rack-mount - Front and Side View X11SNRR-2000



Number of Windows High	Number of Windows Wide	A Overall	
		Inches	mm
1	5**	3.50	88.90
2	5	7.00	177.80
3	5	10.50	266.70
4*	5	14.00	355.60

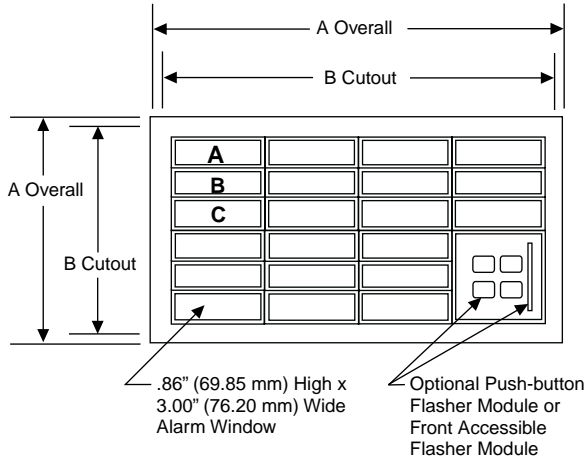
*Not limited to 2 high.
 **Limited to 5 wide only. 19.00" (482.60) mm rack.
 Also available 6 wide. 24.00" (609.60) mm rack.



Detail A

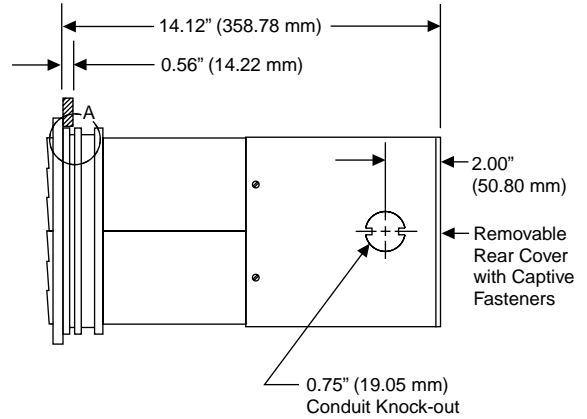
10.3 Trilarm Dimensional Drawings

Flush-mount - Front View X11SN-3000 & X11SNLR-3000

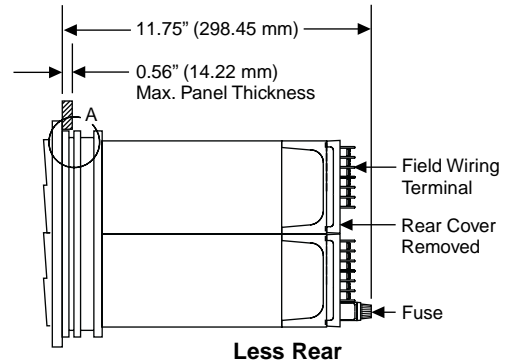


No. of Windows High	Wide	A Overall Inches	mm	B Cutout Inches	mm
3	1	5.00	127.00	4.38	111.25
6	2	8.50	215.90	7.88	200.15
9	3	12.00	304.80	11.38	289.05
12	4	15.50	393.70	14.88	377.95
15	5	19.00	482.60	18.38	466.85
18	6	22.50	571.50	21.88	555.75
21	7	26.00	660.40	25.38	644.65
24	8	29.50	749.30	28.88	733.55
27	9	33.00	838.20	32.50	825.50
30	10	36.50	927.10	36.00	914.40
33	11	40.00	1016.00	39.50	1003.30
36	12	43.50	1104.90	43.00	1092.20

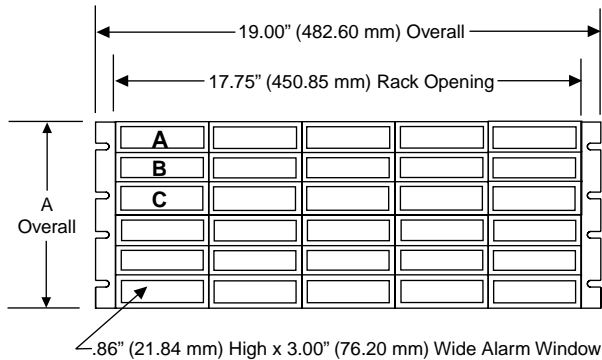
Flush-mount - Side View X11SN-3000



Flush-mount - Side View X11SNLR-3000

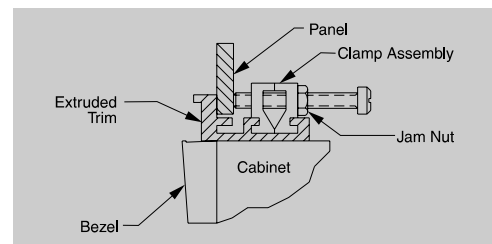
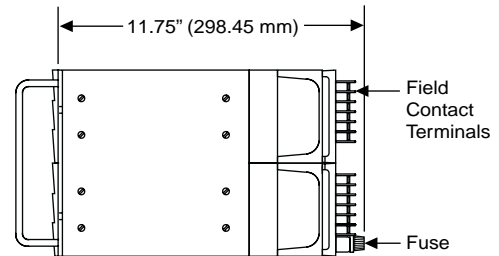


Relay Rack-mount - Front and Side View X11SNRR-3000



Number of Windows High	Number of Windows Wide	A Overall Inches	mm
1	5**	3.50	88.90
2	5	7.00	177.80
3	5	10.50	266.70
4*	5	14.00	355.60

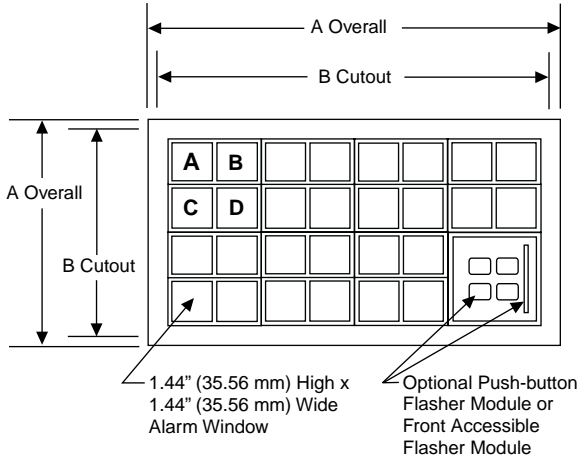
*Not limited to 2 high.
 **Limited to 5 wide only. 19.00" (482.60) mm rack.
 Also available 6 wide. 24.00" (609.60) mm rack.



Detail A

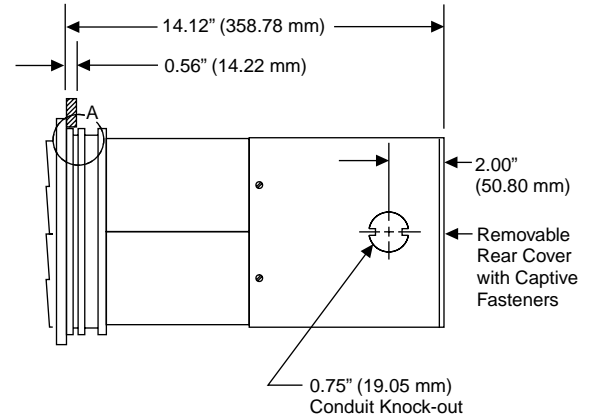
10.4 Quadalarm Dimensional Drawings

Flush-mount - Front View X11SN-4000 & X11SNLR-4000

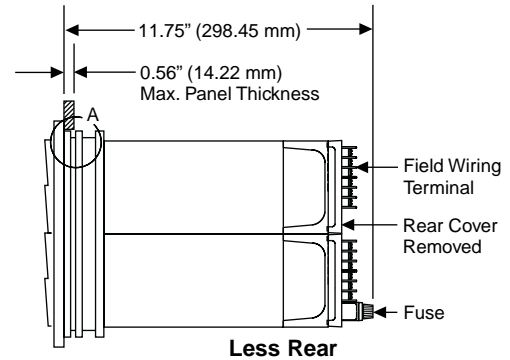


No. of Windows High or Wide	A Overall Inches	A Overall mm	B Cutout Inches	B Cutout mm
2	5.00	127.00	4.38	111.25
4	8.50	215.90	7.88	200.15
6	12.00	304.80	11.38	289.05
8	15.50	393.70	14.88	377.95
10	19.00	482.60	18.38	466.85
12	22.50	571.50	21.88	555.75
14	26.00	660.40	25.38	644.65
16	29.50	749.30	28.88	733.55
18	33.00	838.20	32.50	825.50
20	36.50	927.10	36.00	914.40
22	40.00	1016.00	39.50	1003.30
24	43.50	1104.90	43.00	1092.20

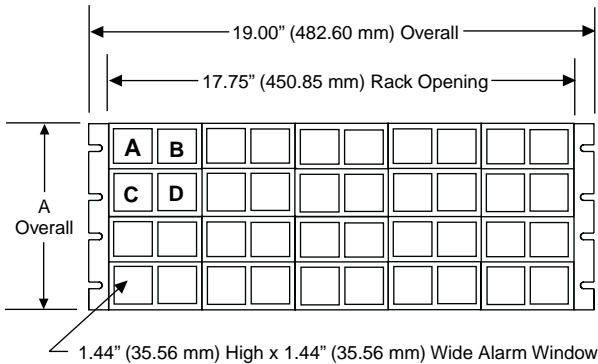
Flush-mount - Side View X11SN-4000



Flush-mount - Side View X11SNLR-4000

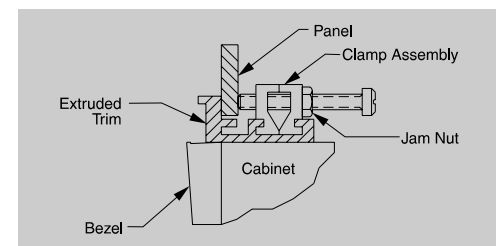
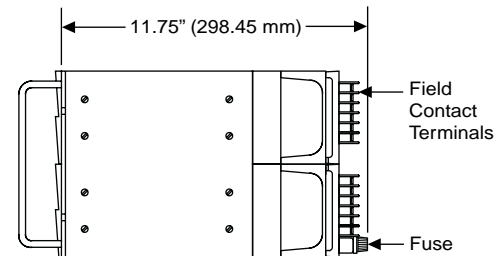


Relay Rack-mount - Front and Side View X11SNRR-4000



Number of Windows High	Number of Windows Wide	A Overall Inches	A Overall mm
1	5**	3.50	88.90
2	5	7.00	177.80
3	5	10.50	266.70
4*	5	14.00	355.60

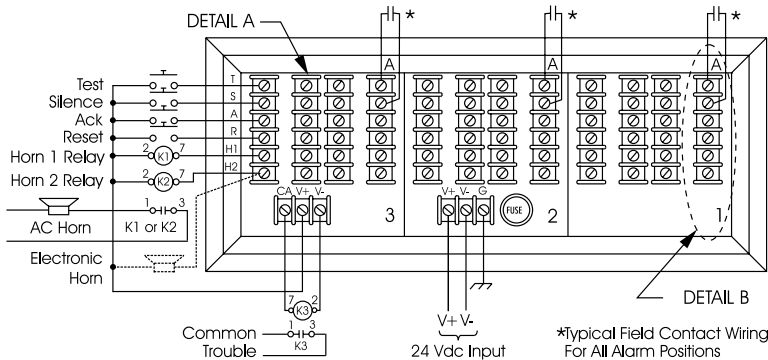
*Not limited to 2 high.
 **Limited to 5 wide only. 19.00" (482.60) mm rack.
 Also available 6 wide. 24.00" (609.60) mm rack.



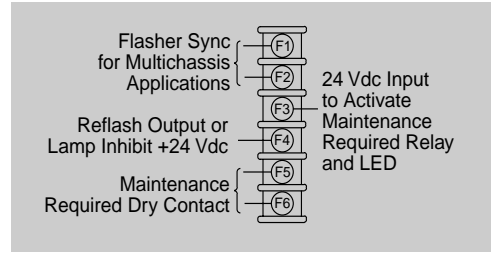
Detail A

10.5 Standard Rear Terminal Arrangements and Wiring - 24 Vdc

Monalarm X11SN-1000



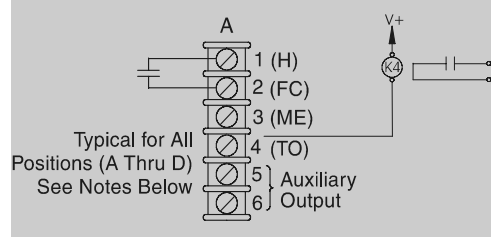
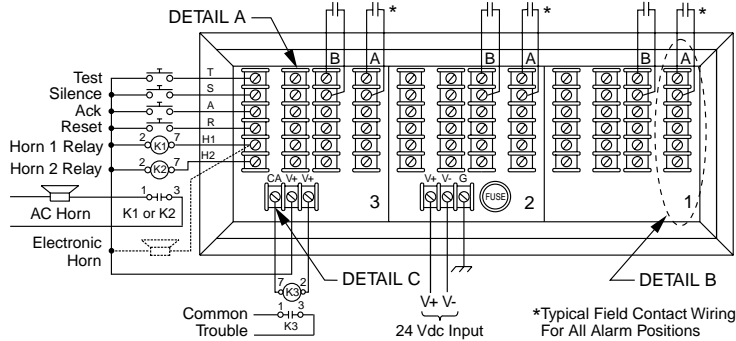
Notes:



Detail A

- (F1, F2) flasher sync. connect for multi chassis applications.
- (F3) apply +24 Vdc to activate maintenance required LED and relay.
- (F5/F6) maintenance required relay contact output.
- In last position (3) of Trialarm and Quadalarm units, the flasher occupies positions "C" and "D", therefore, only positions "A" and "B" are available.

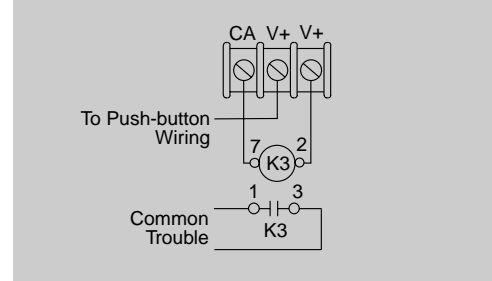
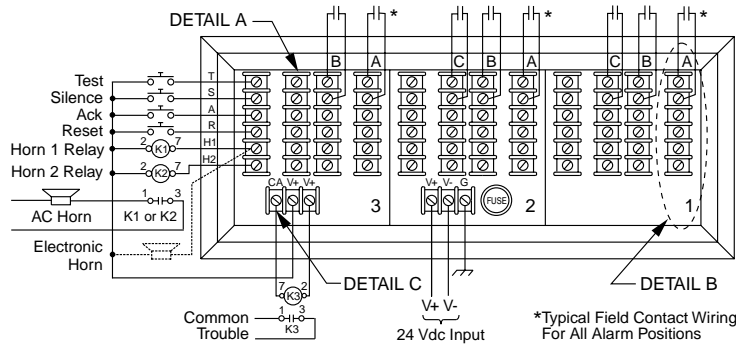
Binalarm X11SN-2000



Detail B

- (ME) Used to form first alert groups.
- Auxiliary output NO/NC selectable.
- (TO) Transistor Output.

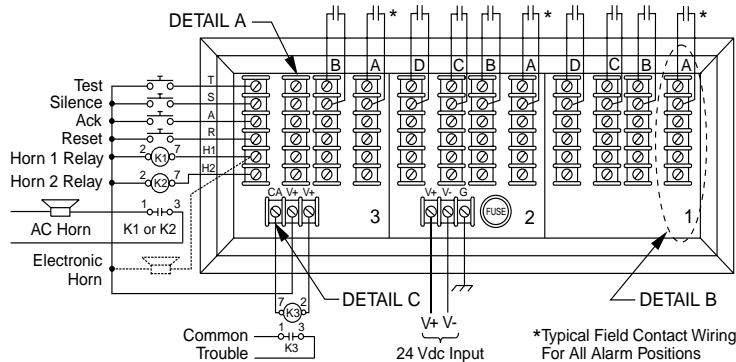
Trialarm X11SN-3000



Detail C

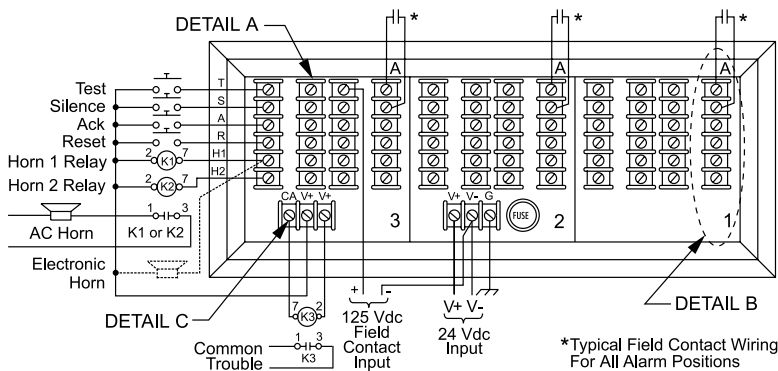
- (CA) common trouble alarm transistor driver output.

Quadalarm X11SN-4000

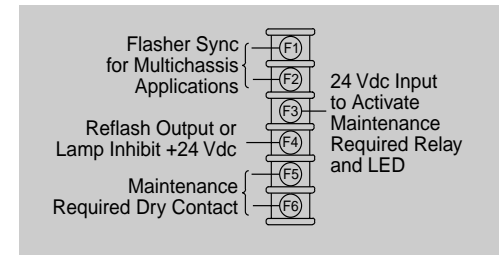


10.6 Rear Terminal Arrangements and Wiring for 125 Vdc Field Contact

Monalarm X11SN-1000



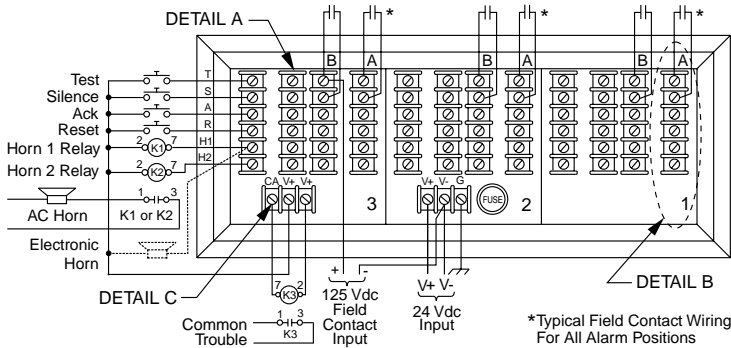
Notes:



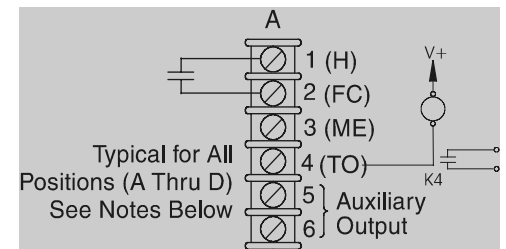
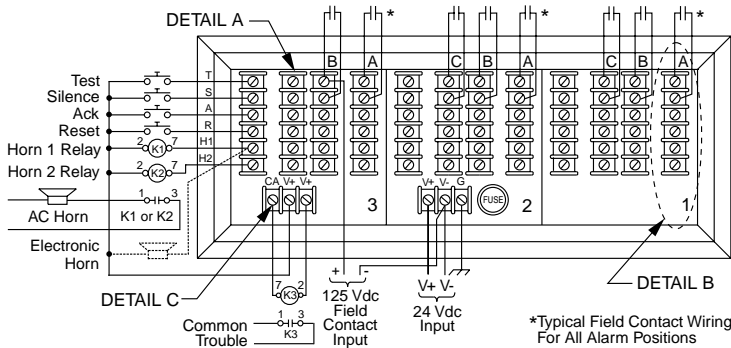
Detail A

- (F1, F2) flasher sync. connect for multi chassis applications.
- (F3) apply +24 Vdc to activate maintenance required LED and relay.
- (F5/F6) maintenance required relay contact output.
- In last position (3) of Trialarm and Quadalarm units, the flasher occupies positions "C" and "D", therefore, only positions "A" and "B" are available.

Binalarm X11SN-2000



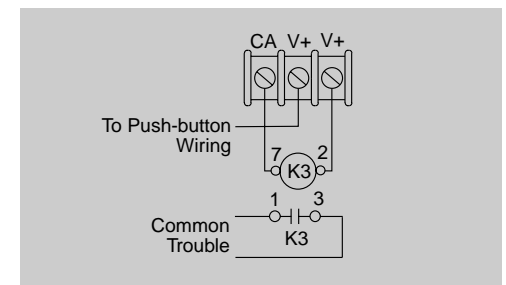
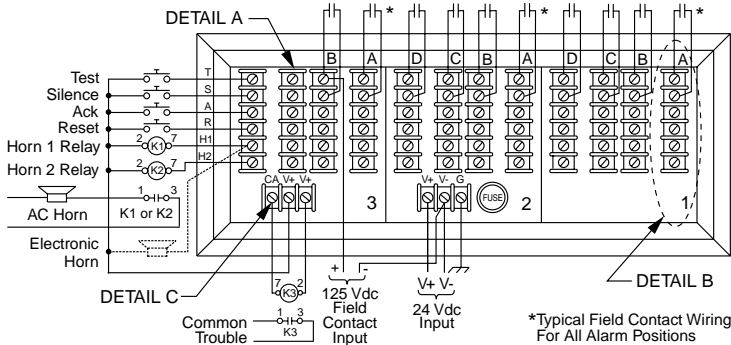
Trialarm X11SN-3000



Detail B

- (ME) Used to form first alert groups.
- Auxiliary output NO/NC selectable.
- (TO) Transistor Output.

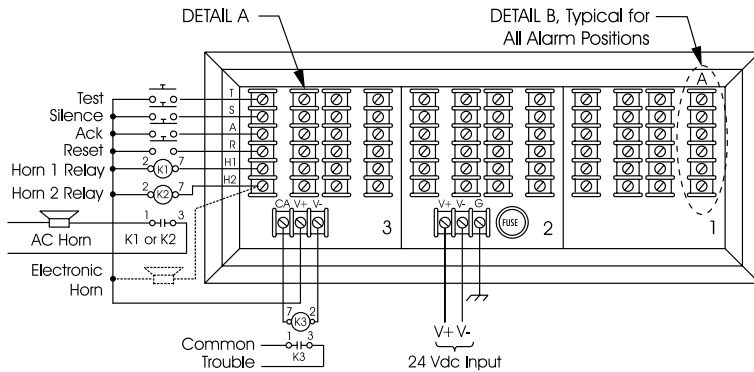
Quadalarm X11SN-4000



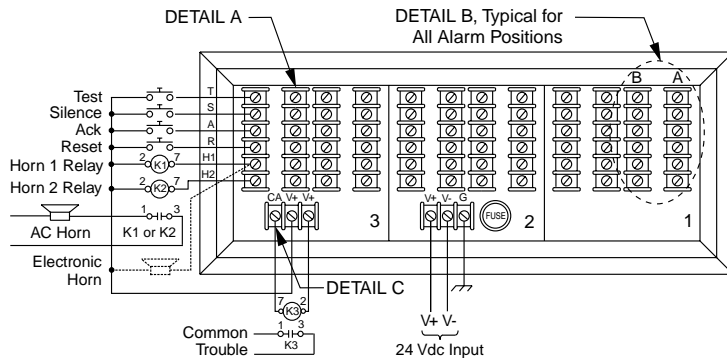
Detail C

- (CA) common trouble alarm transistor driver output.

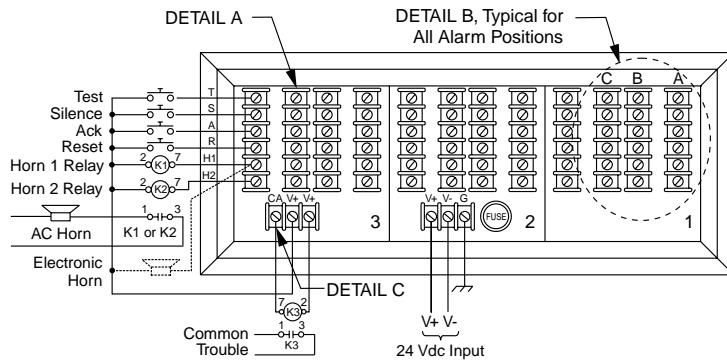
10.7 Rear Terminal Arrangements and Wiring for Transistor Input



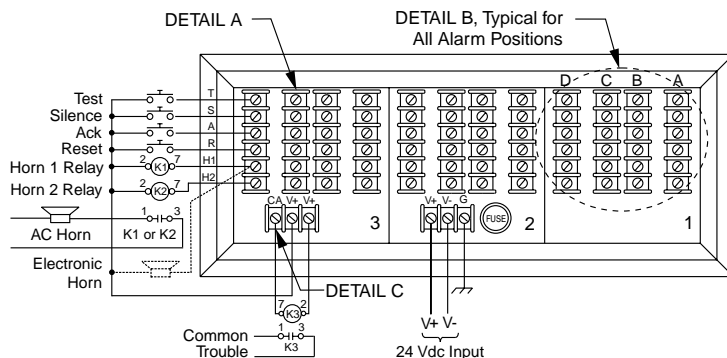
Binalarm X11SN-2000



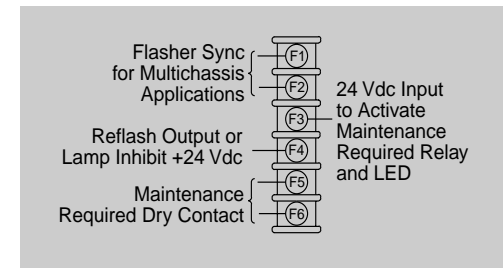
Trialarm X11SN-3000



Quadalarm X11SN-4000

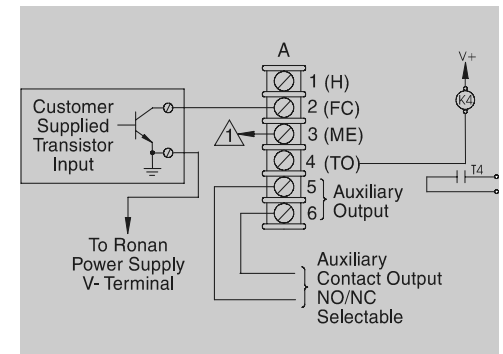


Notes:



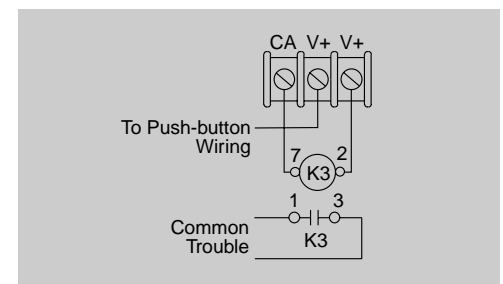
Detail A

1. (F1, F2) flasher sync. connect for multi chassis applications.
2. (F3) apply +24 Vdc to activate maintenance required LED and relay.
3. (F5/F6) maintenance required relay contact output.
4. In last position (3) of Trialarm and Quadalarm units, the flasher occupies positions "C" and "D", therefore, only positions "A" and "B" are available.



Detail B

5. (ME) Used to form first alert groups.
6. Auxiliary output NO/NC selectable.
7. (TO) Transistor Output.



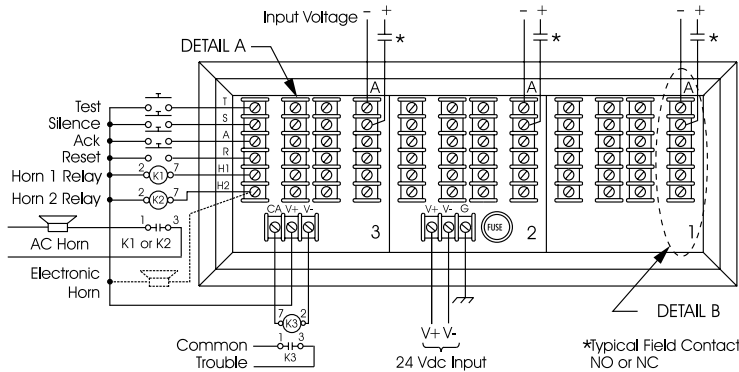
Detail C

8. (CA) common trouble alarm transistor driver output.

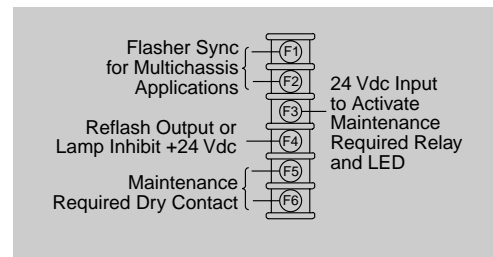
10.8 Rear Terminal Arrangements and Wiring for Opto-coupled Input

115 Vac, 24 Vdc, 48 Vdc, 125 Vdc

Monalarm X11SN-1000



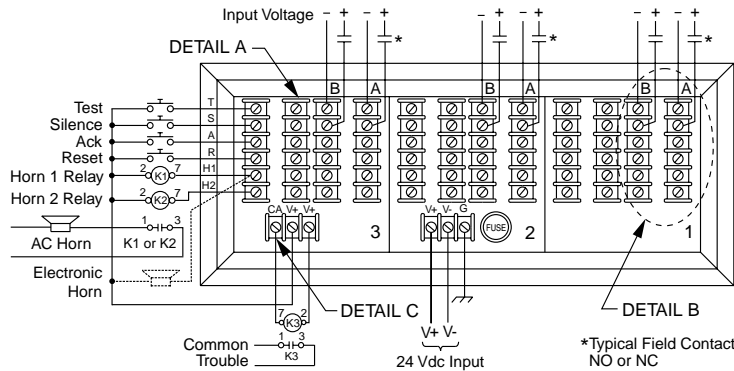
Notes:



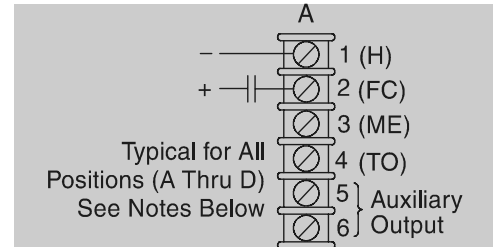
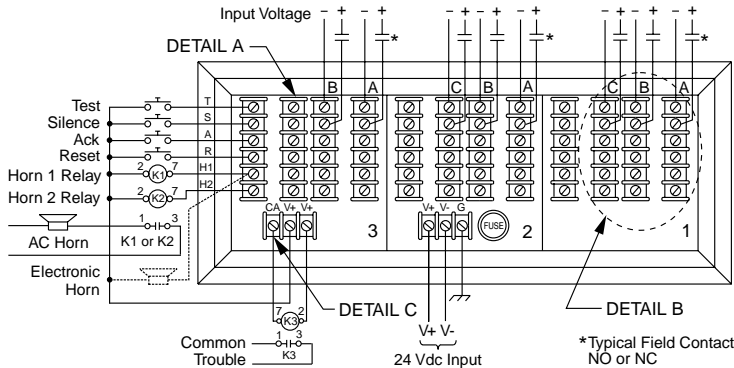
Detail A

- (F1, F2) flasher sync. connect for multi chassis applications.
- (F3) apply +24 Vdc to activate maintenance required LED and relay.
- (F5/F6) maintenance required relay contact output.
- In last position (3) of Trialarm and Quadalarm units, the flasher occupies positions "C" and "D", therefore, only positions "A" and "B" are available.

Binalarm X11SN-2000



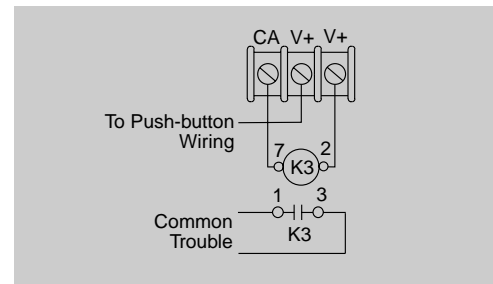
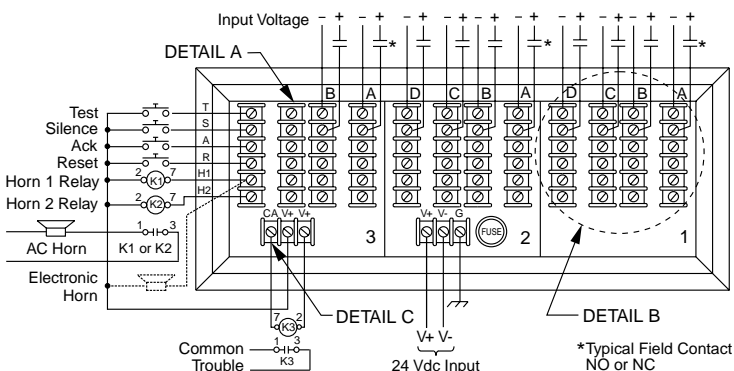
Trialarm X11SN-3000



Detail B

- (ME) Used to form first alert groups.
- Auxiliary output NO/NC selectable.
- (TO) Transistor Output

Quadalarm X11SN-4000



Detail C

- (CA) common trouble alarm transistor driver output.

NOTES:

1. SW1 (FLASHER SYNC.)

A. FOR SINGLE SYSTEM THIS SWITCH IS SET IN THE "M" POSITION.
 B. FOR MULTIPLE SYSTEMS ONE SYSTEM IS SET IN THE "M" POSITION, ALL OTHERS SET IN THE "S" POSITION AND "F1", "F2" ON MASTER TERMINALS ARE WIRED BETWEEN SYSTEMS.

2. CTA JUMPER

WHEN A RELAY COIL IS WIRED BETWEEN CA & V+ THE RELAY IS NORMALLY ENERGIZED WITH JUMPER SET IN "NC" POSITION AND NORMALLY NON ENERGIZED IN "NO" POSITION.

3. ISA2 JUMPER

WHEN A HORN SILENCE SWITCH IS USED THIS JUMPER SET IN POSITION (2) INTERLOCKS THE HORN SILENCE. HORN SILENCE MUST BE ACTUATED BEFORE ACKNOWLEDGE SWITCH.

4. ISA3 JUMPER

IN POSITION (3) RESET IS INTERLOCKED. HORN SILENCE (WHEN USED) AND ACKNOWLEDGE MUST BE ACTUATED BEFORE RESET.

5. MAIN JUMPER (MAINTENANCE REQUIRED)

SET IN "NO" POSITION WHEN YOU HAVE A FAULTY FLASHER MODULE A DRY CONTACT OUTPUT AT F5 & F6 ON MASTER MODULE WILL CLOSE. SET IN "NC" POSITION THE SAME CONTACT WILL OPEN.

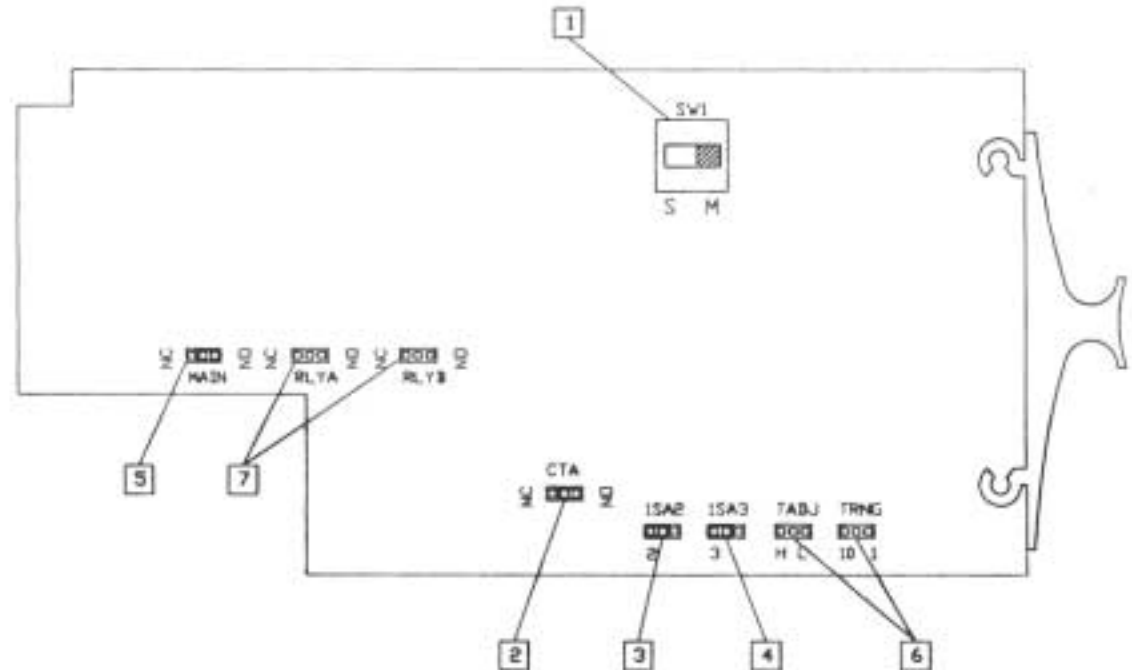
6. TADJ & TRNG JUMPERS (HORN SILENCE TIME DELAY)


SEE PARA 8.1 IN THE INSTRUCTION AND OPERATING MANUAL WHEN THIS OPTION IS INCLUDED.

7. RLYA & RLYB JUMPERS (AUXILIARY CONTACT OUTPUTS)

WHEN POSITION A & B (IN THE SAME MODULE POSITION AS FLASHER) ARE USED FOR ALARM POSITIONS AND AUXILIARY CONTACTS ARE PROVIDED THESE RELAYS AND JUMPERS WILL BE INSTALLED.

POSITION "NC" IS NORMALLY CLOSED OUTPUT
 POSITION "NO" IS NORMALLY OPEN OUTPUT.



X11SN FLASHER SWITCH/JUMPER OPTIONS		
	DRAWING NUMBER X11C387	REV 0



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