SYSTEM FUNCTIONS

INPUTS

Digital

- Dry Contact — Normally Open/Normally Closed
- Logic Level — Transistor/Silicon Controlled Rectifier/Integrated Circuit
- Voltage — AC/DC, Opto-Isolated

Analog

- Resistance Temperature Devices (RTD) — Cu, Pt, Ni
- Thermocouple (TC) — E, J, K, R, S, T
- Voltage — 0-5 VDC, 1-5 VDC, 0-10 VDC, 0-10 mV, 0-25 mV, 0-50 mV
- Current — 0-1 mA, 4-20 mA, 10-50 mA

Pulse

- Motion Detector

Intrinsically Safe

SEQUENCES

All, per ISA Standard S18.1

Special Custom Designs

Multiple Sequences on a Logic Module

Multiple Sequences in One Chassis

Multiple Input/Reflash

Selectable per Window

OUTPUT FUNCTIONS

Time Delay

Auxiliary Contacts

- Single Pole, Selectable NO/NC
- Double Pole, Selectable NO/NC
- Normally De-Energized
- Normally Energized — Fail Safe
- Follows Field Contact
- Follows Lamp Logic

Common Trouble Alarm (CTA)

Multiple/Selectable Audible

Ground Fault Detection

Loss of Power Alarm

Auxiliary Lamp Drive (Mimic)

FEATURES

Design Technology — CMOS

- High Noise Immunity
- Field Proven
- Available Off-the-Shelf, World-Wide
- No Custom Integrated Circuits

Individual Channel Philosophy

- No Multi-Channel Circuit Functions
- Stand-Alone Alarm Modules — No Shared Circuitry

Expandability

- Up to 300%

Quality Construction

- All Aluminum Extrusions
- Excellent Heatsinking
- Modular Assembly
- Maximum Flexibility in System Sizing
- Easy Panel Mounting
- Rugged Construction

Color Coding

- Eight Bezel Colors
- Color Lenses
- Sandwich Lenses

APPROVALS

CSA — Canadian Standard Association

BASEEFA — British Approvals Service for Electrical Equipment in Flammable Atmospheres

UL — Underwriters Laboratory

SERVICES

Custom Designed Systems

Custom Designed Logic

Customer Training

Complete System Documentation

Field Service and Start-Up

WARRANTY

Three (3) Years

FIELD SERVICE

World-Wide Sales and Service Offices

MANUFACTURING

Complete Facilities in:

- USA: Woodland Hills, California
- Canada: Toronto
- United Kingdom: Washington, Tyne and Wear
- Australia: Sydney

SYSTEMS ENCLOSURES

The Ronan enclosures for Annunciators with integral electronics are assembled from basic 3.5 inch (89 mm) by 3.5 inch (89 mm) mechanical modules to overall size requirements specified. This allows the greatest flexibility to adapt to the customer's control panel dimensions. The aluminum extrusion modules provide excellent heat dissipation for a continuously lit annunciator system and feature structural strength required on industrial applications. The enclosures are painted with a black, baked semigloss enamel; custom colors may be supplied optionally.

The flush-mounting NEMA 1 type enclosure, for control panel applications, feeds through a rectangular cutout and attaches to the panel with a number of simple clamping devices supplied with each system. The rear accessible terminals are enclosed within protective side and rear panels. The side panels feature pre-stamped conduit knockout entries for field wiring and power input.

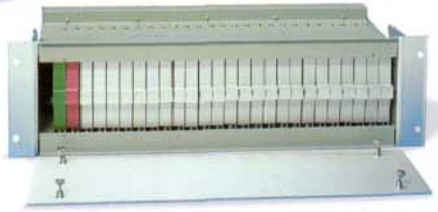
The panel mount enclosure may be enhanced with a NEMA 4 or NEMA 12 door assembly to seal the front of the alarm system against the control panel where it is subject to moisture or a corrosive atmosphere. The door is a clear acrylic window, sealed with a neoprene gasket. Gasketing is supplied for sealing between door frame and control panel.

Note: The panel cutout is the same as specified in the standard flush-mounted alarm systems.

The Ronan alarm systems of various window sizes are available for standard 19 inch (483 mm) or 24 inch (610 mm) relay rack mounting. The five mechanical modules wide unit is suitable for 19 inch (483 mm), and the six modules wide unit for 24 inch (610 mm) rack spacing.

For applications requiring wall mounted annunciators, Ronan provides NEMA 4 and NEMA 12 front accessible enclosures. The integral surface mounted annunciator is available for use in General Purpose or Class I, Division 2 Hazardous Location. The Monalarm, Binalarm, Trialarm and/or Quadalarm displays show through a shatter-proof glass window and the pushbuttons and horn are mounted on the hinged door. All plug-in modules and field terminals are front accessible for installation and ease of service. The cabinet finish is gray, baked semigloss enamel.

Series X165M Surface Mounted

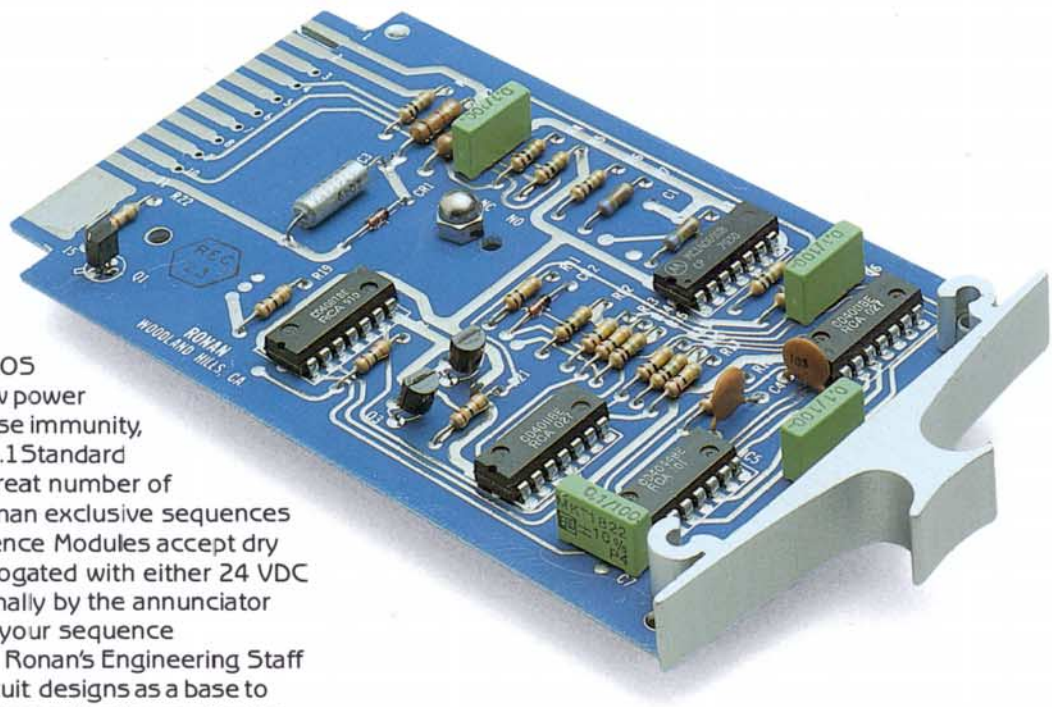


Series X16RR Relay Rack Mounted

For applications where remote mounted alarm indicators such as Lamp Cabinets, Graphics, Bull's-eye or other Lamp Displays are used, the logic modules are housed in rack or surface mounted enclosures. Multiconductor cables or custom wiring provide connection between logic and display.

ALARM MODULES

The Ronan Series X12 Annunciators may be configured to allow the monitoring of a great variety of input functions by simple selection of the proper signal conditioning/logic modules from the extensive collection available. The availability of these integral Annunciator modules eliminates the requirement for remote mounted signal conditioning modules to convert signals such as analog, frequency, pulse, etc. to contact inputs for the Ronan System. Now, one module can provide functions such as thermocouple, RTD or engineering input conditioning; reference junction compensation; input curve linearization; trip point setting; choice of alarm sequences; output contacts for computer, sequence of events recorder or shutdown circuitries; analog outputs totally isolated from the system's input for control purposes, etc. The special function modules, systems integrally mounted in the system, may optionally be provided for interface requirements not related to the alarm system.



Alarm Sequence Module

The Alarm Sequence Modules, designed with proven state of the art CMOS circuit technology with low power consumption and high noise immunity, are available in all ISA-S18.1 Standard Sequences, as well as a great number of industry standard and Ronan exclusive sequences (see page 28). The Sequence Modules accept dry field contact inputs, interrogated with either 24 VDC or 125 VDC supplied normally by the annunciator system's power supply. If your sequence requirements are unique, Ronan's Engineering Staff can utilize our proven circuit designs as a base to provide a reliable custom design for the application.

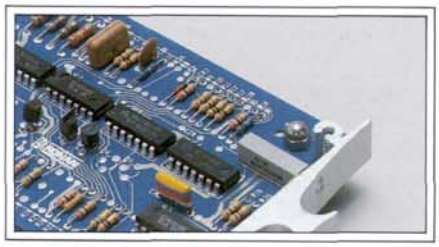
Options

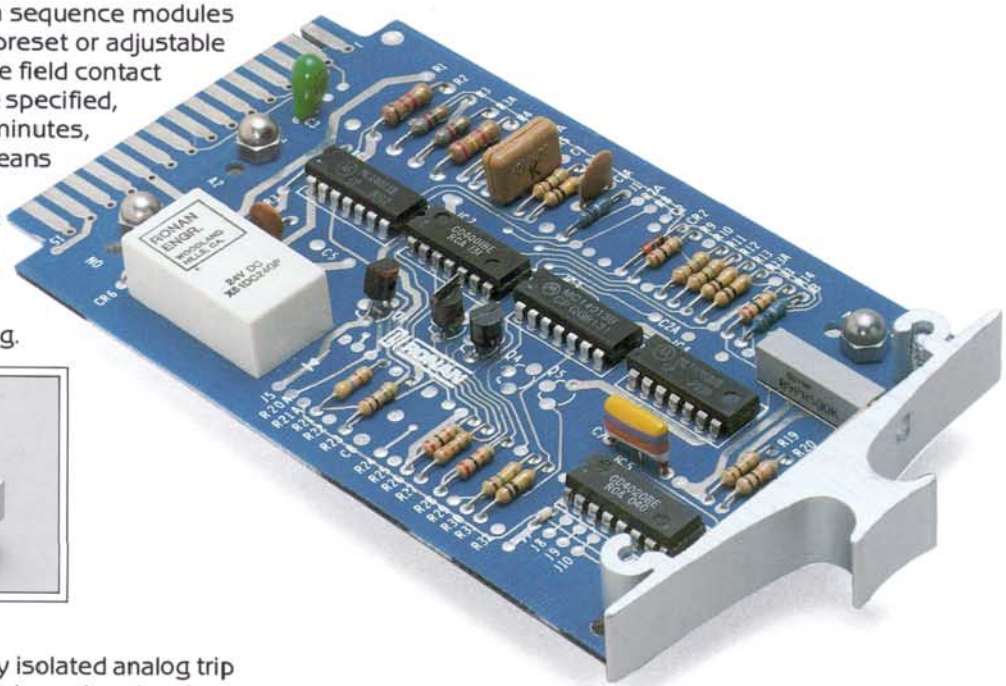
The standard alarm sequence modules may be combined with a great number of special functions incorporated into a single logic module as shown below. By combining the various options shown, the individual module becomes uniquely customized to your specific requirement. For input variations choose from standard contact, analog interface for voltage or current loops, thermocouples or RTD's with input isolation such as opto-coupling or transformer isolation and with or without time delay. For output functions choose Common Trouble Alarm, auxiliary relay contacts, opto-isolated outputs and mimic lamp drivers with or without short circuit proof capability. Whatever your requirements, the Ronan X12 Series alarm logic modules provide the proven high quality performance solution to your requirement.

1. Optical Isolation – Optically coupled input circuitry is available for applications requiring total isolation from outside voltage sources. Thus, existing shared field contacts with interrogation voltages of 5 to 240 VAC or DC may be interfaced with our alarm systems, providing 2500 volt isolation, with highest reliability, without interference with the existing systems. This option is available in the ranges of 10 to 30 volts, 40 to 140 volts and 180 to 250 volts.

ALARM MODULES

2. Time Delay — The alarm sequence modules are available with either fixed, preset or adjustable time delay for acceptance of the field contact status transfer. The delays to be specified, in ranges from 10 msec to 30 minutes, are adjustable in the field by means of a precision 20-turn potentiometer for highly accurate time setting. The time delay circuits utilize CMOS oscillator, counter techniques for maximum repeatability and ease of setting.





3. Analog Inputs — The fully isolated analog trip circuit, provided on the same logic card as the alarm circuitry, allows direct connection of analog inputs to the window annunciator. You may order alarm modules which interface to 10, 100 or 120 ohm RTD's, all types of thermocouples, and 4-20 mA, 10-50 mA or 1-5 volts, etc., with no extraneous wiring or additional equipment. Where required, the analog circuitry provides total isolation from the 24 VDC system's supply voltage and the sensor input such as thermocouples, etc. The analog circuit utilizes multi-turn precision potentiometers for setpoint and hysteresis and LED indication for ease of setting when the lamp display module is removed from the system.

4. Common Alarm Output — The logic modules may be specified with a common trouble alarm output (CTA), where any one point in the system going into alarm will energize a system relay, optionally installed within the system, or externally provided. This output is generally used to indicate the existence of an alarm condition in a remote annunciator on a window in the main control room annunciator.

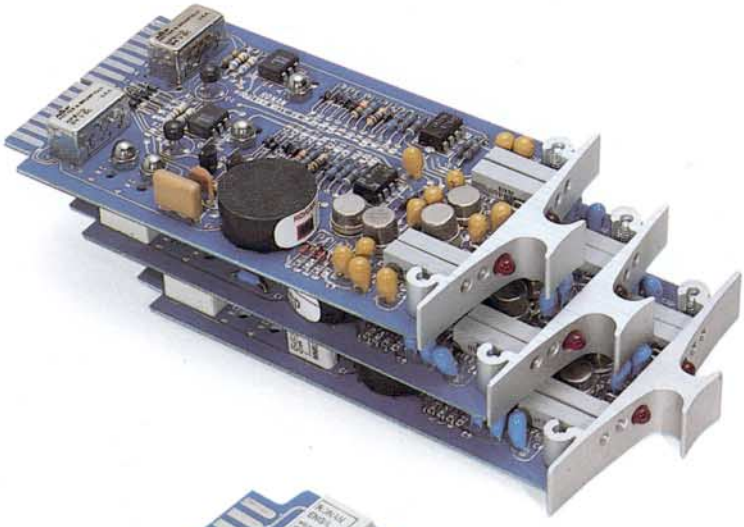
5. Auxiliary Contact — Auxiliary contacts from either general purpose (GP) or hermetically sealed (HS) relays, meeting Class I Division 2 requirements, may be specified as on-board options to the standard logic modules. Each relay contact output is selectable, Form "A" (normally open), or Form "B" (normally closed), and is available either as Normally De-Energized (NDE) (standard) or Normally Energized (NE) (specify at time of order). The auxiliary contacts are used typically for shutdown, repeating of alarms or critical alarm application and may be provided to follow the field contact explicitly, or follow the alarm logic function, where, if the lamps are illuminated, the contact is in the abnormal state.

6. Dual Horn — The alarm logic may be specified to allow selective actuation of two different audible devices. The selection is made by means of a selector switch located on each alarm module. Typical applications are low/high priority, alarm/shutdown, or critical/non-critical alarm indications.

7. Mimic Output — The mimic option provides an output in parallel with the integral window display which drives external lamp indicators, graphic displays, etc. The output drive capability is 6 watts, switching to the minus voltage bus of the system's power supply. Current for the external lamps may be provided by the annunciator power supply or from a remote source.

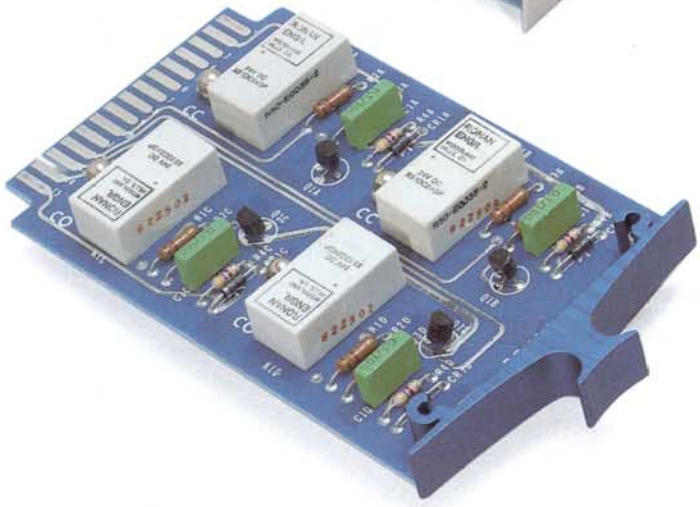
SPECIAL FUNCTION MODULES

For applications with special input/output requirements directly related to the window annunciator, or for non-related remote functions, these special modules may be mounted integral to the system. This will greatly reduce the external wiring and remote mechanical housing needs and provide a completely tested, functional system, avoiding costly interface problems.



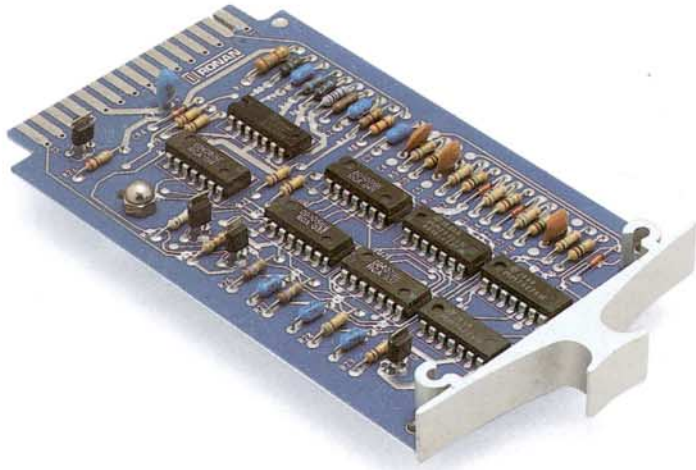
Analog Trip Modules

The Series X50 Analog Trip Modules are available in single or dual setpoint and dual input, single setpoint configurations. The modules provide continuous monitoring of current loop connections, voltage and temperature inputs from RTD's or thermocouples, which are compared against the setpoint, settable by means of precision multi-turn potentiometers. In addition, each module contains hysteresis (dead band) adjust and LED trip indication for each setpoint to allow calibration. If the setpoint is reached, an auxiliary contact and an opto-isolated transistor switch output are activated. All modules provide isolation from the 24 VDC supply voltage for channel integrity via a DC to DC inverter.



Auxiliary Contact Modules

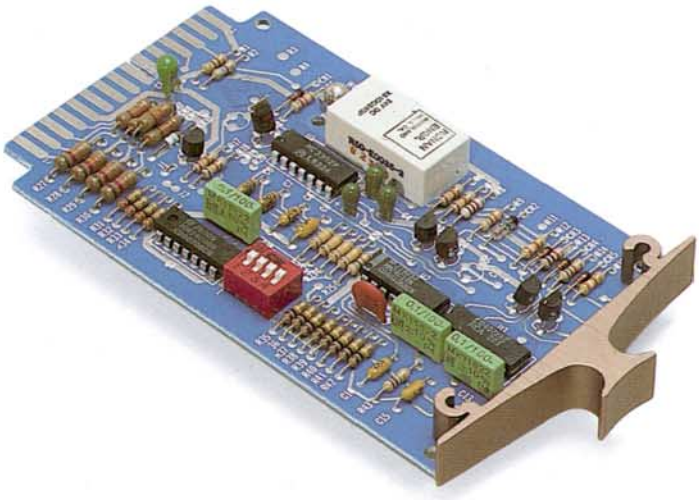
The auxiliary contact modules provide independent single or multiple auxiliary contact outputs following the field contact status without consideration of alarm logic status. Each input circuit will accept either 24 VDC or 125 VDC, operating either a general purpose or hermetically sealed relay approved for Class I Division 2 areas. The contact is selectable Form "A" (normally open), or Form "B" (normally closed).



Line Supervisory Module

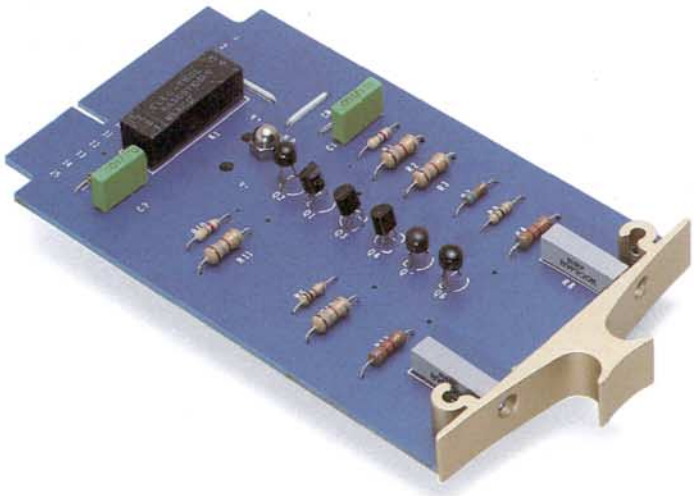
The Supervisory Module SUPR-800A continuously monitors the status of a process contact and its wiring integrity. The module is designed to distinguish between five possible conditions — Field Contact Normal; Alarm; Open Wiring; Shorted Wiring; and Grounded Wiring. These conditions are annunciated on the associated window by different flash rates and steady light. Typical applications are Entry Protection, Fire Alarms and Critical Process Monitoring Systems, providing, in many cases, insurance cost savings of great significance.

SPECIAL FUNCTION MODULES



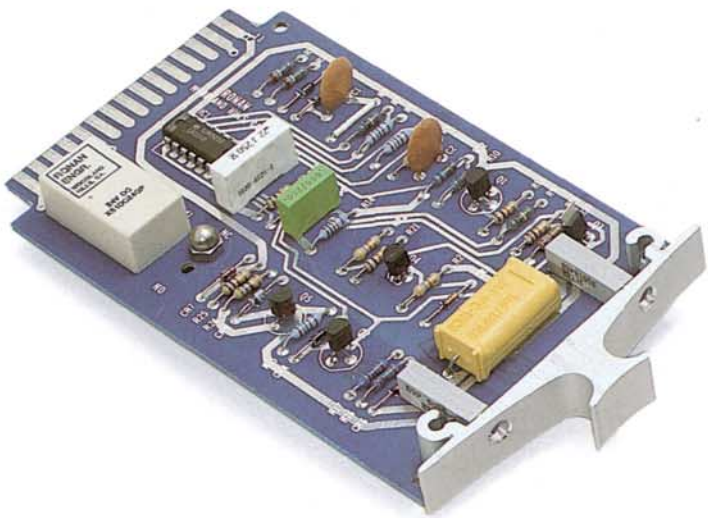
Reflash Module

The Reflash Module, RFL-4, is a multi-contact input monitor, capable to display the alarm condition of a number of inputs on a single window. The Reflash Module recognizes each contact individually and provides a new alarm alert, whenever one of the input contacts enters an abnormal state. Each Reflash Module accepts up to four normally open or normally closed contacts and may be linked with other modules into a group of up to 100 inputs by simple jumper connections on rear panel mounted terminals. The standard module's auxiliary contact output is utilized as the field contact input to the window alarm logic module. An additional open collector transistor output may be provided to actuate the alarm logic, allowing the use of the dry auxiliary contact output for remote annunciation. To allow the alarm window to return to normal, all input contacts assigned to the group are required to return to their normal state.



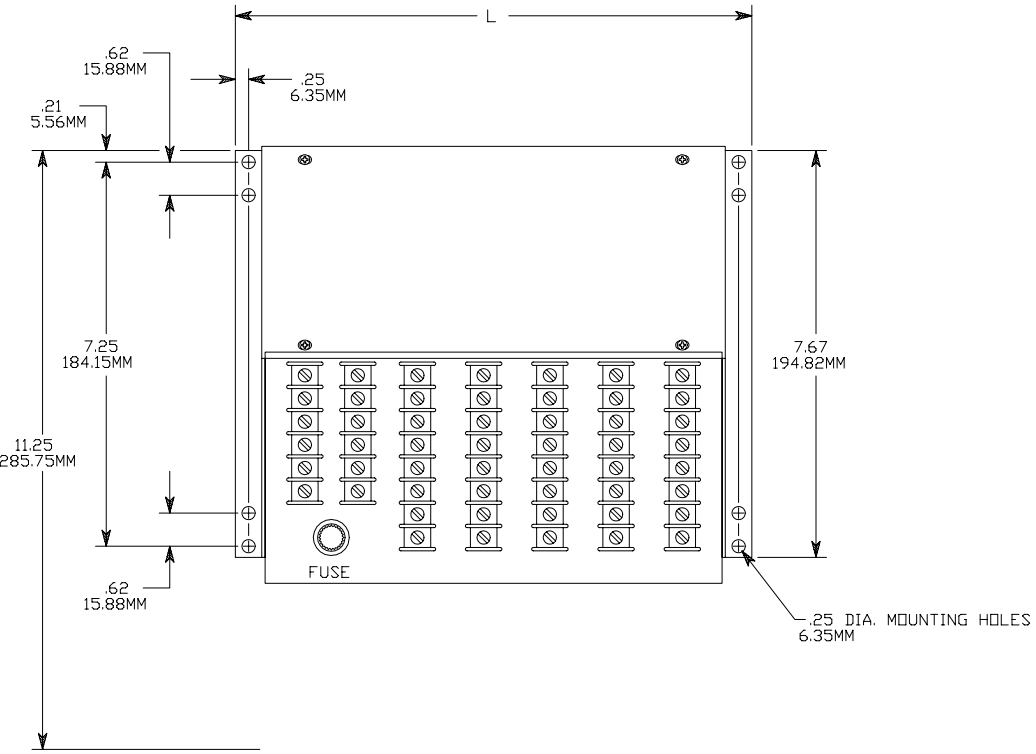
Ground Fault Detector Module

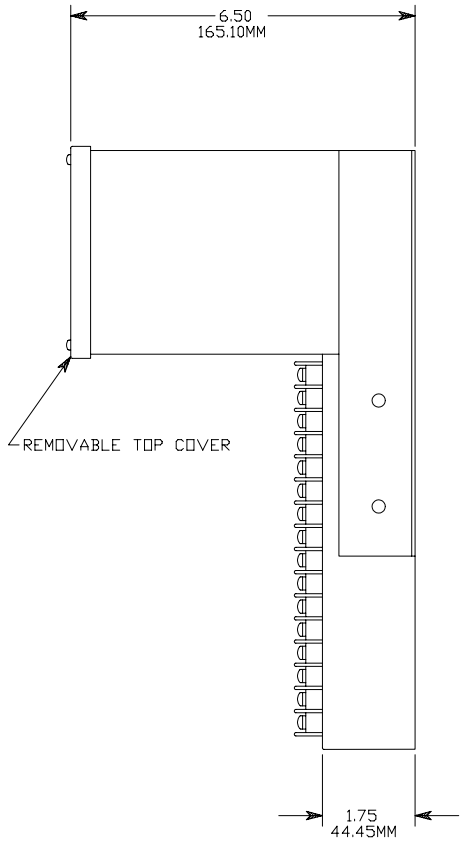
The Ronan Alarm Systems and their power supplies are isolated from ground, allowing the use of a Ground Fault Detection Module to sense field wiring faults. The Ground Fault Detectors are available for both 24 VDC and 125 VDC field contact voltage sensing. If the impedance measured to the system's ground is lower than the fixed or adjustable preset value of 10,000 ohms to 100,000 ohms, a dry contact output transfer may be used to annunciate on a window, or feed an external monitoring instrument.



Motion Detector Module

For loss of motion detection in applications such as conveyor belts, vibrating screens, bucket elevators, etc., the Motion Detector Module mounted integral to the alarm system is used to indicate alarm condition, or the shutdown of the process. The module derives its input from the remote, eddy current type sensor head, detecting the loss of motion in critical vibration, or rotating equipment applications. The detector, typically located up to 500 feet from the annunciator, provides pulse inputs to the module where circuitry utilizes multi-turn precision potentiometers to set sensitivity and adjust time delay for recognition of an off-normal condition.





MODEL NUMBER	"L" DIM.	
	IN	MM
X16SM-10 (10 POINTS)	9.75	274.65
X16SM-20 (20 POINTS)	16.00	406.40
X16SM-30 (30 POINTS)	22.25	565.15

NOTES:

1. ALARM CHASSIS WITH OVER 30 POINTS AVAILABLE ON SPECIAL ORDER.
2. CHASSIS MAY BE MOUNTED IN ANY POSITION.
3. STANDARD FINISH IS BAKED ENAMEL GREY.

CUSTOMER

P.O. NUMBER

TITLE

SERIES X16 SOLID STATE ANNUNCIATORS
REMOTE SURFACE MOUNTING CHASSIS
STANDARD SEQUENCES WITH DUAL AUX
DIMENSIONAL INFORMATION

T. TSCHAPPAT 8/19/91

TRANSMITTAL STANDARD SS2006-DAK 0