Technical data
MTL process alarm equipment

February 2024
EPS RTK 725B Rev 6

CROUSE-HINDS
SERIES

RTK 725B
Alarm Annunciator/Event Recorder

- **Modular construction with 2 to 256 alarm ways**
- **Multi-redundant design so there is no single point of failure**
- **Interchangeable, white LED illumination as standard**
- **1ms Event Recording functionality up to 256 points**
- **Isolated RS485 serial communications**
- **Fully software configurable through USB port for each individual alarm point using the intuitive, setup utility**
- **Optional integral PSU for direct connection to 85-264VAC or 88-300VDC**

Enhanced design with event recording and communication features

The RTK 725B brings together many years of development in Alarm Annunciator technology and represents the best available investment in protection for your industrial plant.

Using advanced communication techniques, coupled with Eaton's unique multi-redundant design, the RTK 725B Annunciator gives the best combination of flexibility, usability, reliability and cost of ownership.

The modular multi-redundant design instantly provides the user with a more powerful and more reliable system without the possibility of a single component causing system failure. Systems can be constructed in almost any shape and size from a single channel to a maximum of 256 channels.

RS485 serial communications and time-stamping to a resolution of 1ms can be provided as an option for all system sizes up to 256 channels.

As a world leading supplier of process alarm equipment, Eaton can provide a solution for all safe and hazardous area industrial applications. Used for monitoring critical alarms, our range of Alarm Annunciators are designed as modular products, manufactured to meet customer requirements, with a range of options that can be incorporated as required.

Powering Business Worldwide

RTK 725B

February 2024

FEATURES & BENEFITS

Modular Construction
The modular design of the RTK 725B range allows units to be assembled in almost any size and shape to suit the individual customer's requirements. Units can be constructed from a single channel to a maximum of 256 channels with a choice of three window sizes.

LED Illumination as standard
The days of costly maintenance and the risk of missing alarms due to blown bulbs are now behind us. This latest range of Alarm Annunciators uses ultra-bright, white LEDs as standard to back-light different coloured filters. LEDs are considered as reliable as any solid-state electronics but failures can still occur so these LEDs are designed to be easily interchangeable for on-site maintenance.

Proven CANBUS® Technology
In order to provide the greatest flexibility and programmability in this enhanced Annunciator at the lowest possible cost of ownership, the design utilises the highly successful CANBUS® technology to provide internal communications. This is a robust and fast method of communicating used to ensure the highest combination of speed and security.

Multi-Redundant Design
As Annunciators are often used to monitor critical plant alarms it is essential the unit provides the highest reliability possible. With this design there is no Common CPU or Common Services Modules, failure of which would cause complete system failure. All Alarms Cards in the RTK 725B range can act as the master controller, so if a card does fail then only four alarm points are affected. This design combined with the huge reduction in component count gives a far higher Mean Time Between Failures.

Fully Software Configurable
Each Annunciator has a programming port positioned behind the Pushbutton Module. This is a standard USB connection to connect directly to your laptop or PC using the cable provided with the unit, although any standard USB cable will suffice. Each individual channel can be configured to operate exactly as required with the user selecting from a huge range of functions, features and alarm sequences. All the standard sequences are available as defined in the ISA publication "Alarm Sequences and Specifications S18.1". The programmed information is safely stored in EEPROM without the need for any battery backup and can also be archived on the PC.

Advanced Diagnostics
The RTK 725B Annunciator is designed with comprehensive diagnostics to monitor all aspects of the systems operation. Any fault found will be indicated on the front LEDs and can also drive a diagnostic relay for external indication. The system will monitor the field contact voltage and also provide an early warning of wiring problems and ground faults. The internal supplies are checked for tolerance and also all aspects of the internal and external communications, clock pulses, memory and configuration data and many more features.

Sequence of Events
In many applications it is often useful to know the exact sequence of events following a plant breakdown. In order to cater for these applications the RTK 725B range can be supplied with an integral 1ms Event Recorder for all system sizes up to 256 channels. As the design uses a distributed architecture, it is possible to maintain the 1ms resolution and accuracy on all system sizes. Larger systems should use the 9000TS Sequence of Events Recorder.

Communications Options
Various protocols are available including entry level comms, RTK/AMS time stamping protocol and Modbus RTU. Standard level comms will provide RTK/AMS, Modbus RTU & ASCII. The communications card also supports a GPS serial clock signal to synchronize to an external time source with a real time battery backed internal clock in order to ensure data retention in the event of power loss.

Inputs and Outputs

Inputs
All inputs are opto-coupled and comply to the stringent requirements of the European Directive in Electromagnetic Compatibility and the Low Voltage Directive. This ensures there is no possibility of false alarms. The standard unit has a selectable input voltage of 24V or 125V and a further version provides 48V. All versions are capable of accepting AC or DC voltages.

Common Relay Outputs
The RTK 725B Annunciator gives the most flexible range of relay outputs available today. As well as having options of one or two individual repeat relays per channel, it is possible to have up to 32 common relays which are user configurable as watchdog relays, group relays, horn relays, ring-back relay or diagnostic relays. The standard unit has four configurable common relays. Additional relay cards are added when required to suit each application.
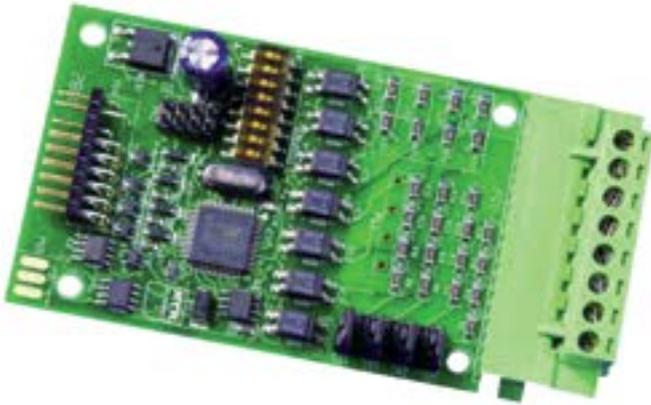
Auxiliary Relays

Each alarm way can be supplied with one or two individual repeat relays. Each relay can be configured to be energised or de-energised on alarm and both normally open and normally closed contacts can be used. The repeat relays can be set to follow the alarm logic, follow the field contact or follow the display.

Re-flash

All the programmable group relays can be set to have the re-flash facility. The means the first alarm to alarm in the group will change the state of the relay and any subsequent alarms within the same group will cause the relay to pulse for approximately 0.5 seconds.

Audible Outputs

The standard unit has two integral audibles which can be configured as a critical and non-critical audible. In addition four standard relays can be programmed to drive external audibles. In total up to sixteen different audible groups can be programmed.

Connections

All connections are made to the rear of the unit, using two part screw terminals capable of taking 2.5mm² cable. For additional security these terminals are also fitted with retaining screws at each end.

DISPLAY

Window Sizes

The flexible unit is designed to be fully modular using a cell based structure.

Each cell can house:

• One large window (60 x 60mm)

• Two medium windows (60 x 30mm)

• Four small windows (30 x 30mm)

Window sizes can be mixed as required

Backlit illumination

Each window is backlit using the latest ultra-bright, white LEDs. These provide a true "fit and forget" solution and improve the reliability without compromising the display brightness or clarity. Window colours available are red, amber, yellow, white, green and blue.

GENERAL

Complete Alarm System

Everything is contained within the standard RTK 725B Annunciator to provide a complete alarm monitoring system. This includes power supply, all pushbuttons and local audibles.

First-Up Alarms

In alarm annunciation applications it is often essential to know which alarm occurred first in a particular group. To this end, four different first-up sequences and 16 different first-up groups are available, all user programmable through the configuration software.

Power Supplies

The RTK 725B can be powered from remote 24VDC power supplies or alternatively can be fitted with integral power conversion modules making it possible to connect directly to higher AC or DC supplies.

CE Marked

Designed to meet the requirements of European EMC and LVD Directives.

Wall, Panel and Rack Mounted

The standard unit is supplied as a panel mounted version ready for customers to drop into a single cut-out. The rear of the annunciator must be protected by an enclosure which is at least IP30 and secured by a tool or key. If required Eaton can supply the RTK 725B Annunciator fully integrated into wall mounting or floor standing enclosures or mounted in standard 19" plates.
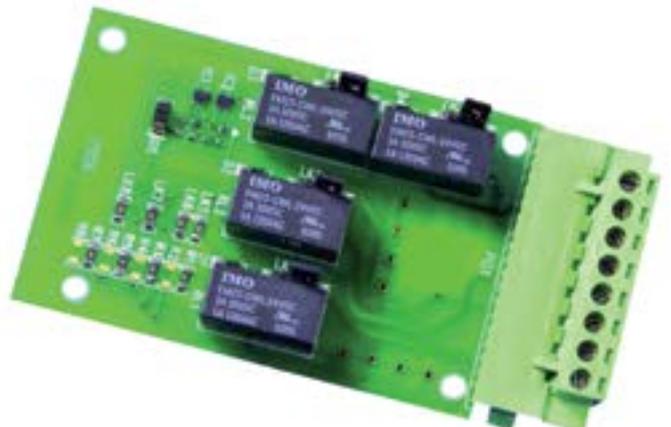
TECHNICAL SPECIFICATION

INPUTS

The inputs are all bipolar so can accept AC or DC voltages.

Alarm Contacts

The standard unit is suitable for volt-free contacts, 24 or 125VDC powered inputs. Each input can be easily set to operate from either a Normally Open or Normally Closed field contact.

Isolation

All customer inputs are optically coupled as standard and are capable of withstanding a 1000V Megger® test to ground.

Field Contact Voltage

This voltage is distributed through the annunciator to field contacts. As standard, this is selectable between 24 and 125V. As an option, a different version is available for 48V. The inputs are all bipolar so can accept AC or DC voltages.

Response Time

The response time is software configurable on each channel from 1ms to 65s. As a default the system is supplied at 10ms for all channels.

First-up Discrimination

Better than 10ms

Pushbuttons

Both integral and terminals for remote fitting

- Lamp Test
- System Test
- Acknowledge
- Mute
- Reset
- First-up Reset

It is not necessary to use the standard integral Pushbutton Module. If required, the position normally used for this module can be fitted with additional alarm windows and external pushbuttons wired to terminals.

OUTPUTS

Common Relays

The RTK 725B system is totally flexible in terms of common relay outputs. Up to 32 relays can be fitted which can be configured as group relays, horn relays, ring-back relays, diagnostic relays etc. All systems come with a standard four relays. one of which will be configured as "watchdog" relay which will trip if any card fails or there is any internal system fault.

Repeat Relays

Each alarm way can have up to two individual repeat relays. Changeover contact available.

Relay ratings

Relay contacts rated at:
125VDC @ 0.5A,
24VDC @ 2A, resistive.

Audible

Two integral audibles are included which can be programmed as critical or non-critical horns.

Audible 1: 3kHz piezoelectric buzzer at 90dB 30cm.

Audible 2: 2.5kHz piezoelectric buzzer at 80dB 30cm.

Communications

RS485 2 or 4 wire. Master and Slave configurations. Supports bi-directional communications.

Entry Level: Isolated RS485 port - RTK/AMS or Modbus RTU

Standard: 2 off Isolated RS485 ports. Many protocols available.

TIME STAMPING

Resolution

1 ms across the whole system up to 256 channels.

Accuracy

± 0.5 ms

Synchronisation

Via Real Time Clock (RTC) Battery Backed Optional GPS Master Clock

Buffer size on each System:
- 900 events on each alarm card
- 500 events on rear port comms card
- 700 events in sort buffer on comms card

DISPLAY

Window Sizes

Small: 30 x 30mm
Medium: 60 x 30mm (W x H)
Large: 60 x 60mm

Window Colours

Red, Amber, Yellow, White, Green and Blue

Illumination

Small window: Single white LED
Medium window: Dual white LED
Large window: Four white LEDs

Each LED is plugged into a base to allow easy serviceability in case of LED failure.

Legends

Laser printed onto standard acetate sheet, using templates provided by Eaton.

GENERAL

Supply Voltage

24VDC Nominal (19-28VDC)

Integral Power Supplies

Universal AC or DC supply
85-264VAC
88-300VDC

Each Power Supply Card can power up to 40 small, 20 medium or 10 large windows. Additional power supplies will be required for systems larger than the above.

Supply Current Per Alarm Card (at 24VDC supply)

Quiescent: 25mA

Window illumination current

Small window: 20mA
Medium window: 40mA
Large window: 80mA
Relays: All window sizes
10mA per relay

Additional current for pushbutton module, common relay and audible is nominally 200mA.

Standard External Power Supplies and DC/DC Converters can be supplied on request.

Compliance

Immunity to EN61000-6-2:2005
Emissions to EN61000-6-4:2007
LVD to EN61010-1:2010 &
IEC61010-2-201

Surge Immunity

To ANSI/IEEE C37.90:1989

Environment

All Variants Op temp: -20 to 60°C
Other options Op Temp: -20 to 65°C
Storage temperature: -20 to 80°C
Humidity: 0-95% RH, non condensing

Protection

Front of panel: IP41
Rear of enclosure: IP20

Optional covers and enclosures to protect to IP54

Connections

All connections are two-part rising clamp type terminals, for conductors up to 2.5mm^2 with retaining screws to ensure connectors cannot fall out.

Weight

Approximately 0.3kg per module

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