The Remote alarm Panel, TYPE RAP-D or RAP-E

1. Introduction

The microprocessor based remote alarm panel from Metron Inc. features state-of-the art micro-controller devices, designed around the latest EEC EMC directives. The unit offers a compact, robust and reliable product, offering a great deal more flexibility than its predecessors.

It features 16 channel monitoring, designed primarily for use with the Metron Inc. line of fire pump control panels, providing remote supervision of complete installations from any manned point, (for example; gate houses and reception points).

It will accept either 120VAC, 50/60Hz or 240VAC, 50/60Hz single phase input power.

The unit may be tailored to individual requirements both quickly and easily by our team of dedicated software engineers using our unique software-based control system. Component choice has been heavily influenced by the need to meet tough EMC requirements, providing both excellent immunity and reduced emissions.

New features in this model include four DIP switches enabling banks of four inputs to be configured on site for normally closed or normally open operation, smaller footprint, and more attractively packaged in a style that will blend into most environments without being intrusive, yet impossible to ignore when an alarm state is triggered.

Experience has also shown the need for flexibility. Achieving this is aided by the fact that the control system is entirely software dependent, a complete change in system behaviour is merely a case of programming a non volatile memory device, a matter of seconds in most cases, ensuring that down-time is kept to an absolute minimum, essential in fire control applications.

As part of this flexibility, it was also realised that there may be a need for rapid re-allocation of channels, normally a lengthy process, requiring both a rewire, and then producing the correct front panel legend. As most good ideas are both flexible and simple we needed to adopt an approach whereby the customer could complete this task with ease. It was decided to utilise a removable channel allocation label. The label may be re-printed to order; alternatively the customer may decide to legend the panel themselves on site.

2. Basic Operation

Operation of the RAPv2 is relatively straight forward and all functions are accessed via the three push buttons on the front panel. When power is first applied two indicators should immediately come on regardless of the state of the inputs. The green 'power on' indicator located on the front panel shows that the +5v logic supply is healthy, and an internal green indicator located on the main board type PC264 shows that the +12v 'dirty supply' is available.

When an alarm state is registered, the corresponding indicator will flash, and an alarm will sound. Further alarm states will also cause the corresponding indicator to flash in addition.

MUTE push button; Silences any alarm, flashing indicators become steady. Further alarm states will re-trigger the audible alarm, and while the muted channels remain steady, the new alarm state will cause only the corresponding indicator to flash.

RESET push button; All channels which are no longer in the alarm state will reset, i.e the indicator will extinguish. Providing there are no channels in the alarm state, the audible alarm will remain silent. Any channel which remains in the alarm state will re-trigger the audible alarm, and return to a flashing state.

LAMP TEST; Pressing this push-button will cause the unit to perform a lamp test function.

General Arrangement:
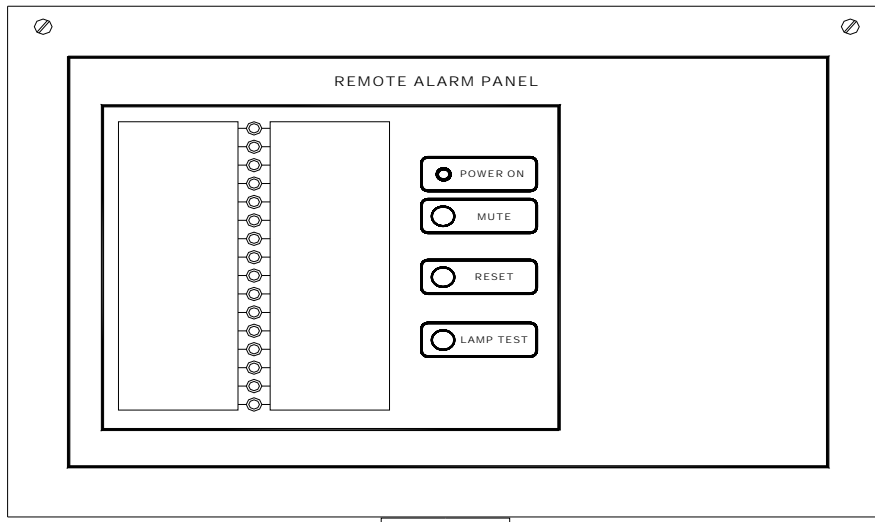
3. Installation Guide

The RAPv2 has been designed primarily for simplicity of installation and ease of use. The unit fully complies with the EMC criteria as specified in the European Directive. Compliance does not, however, cover the final installation of the product. Installation in itself is a reasonably straight forward task, capable of being carried out by relatively inexperienced staff, but it must be stressed that it is the responsibility of the installing engineer to follow E.M.C guidelines as laid down in the E.E.C Directive.

First, remove the two screws securing the front panel to the enclosure, and carefully allow the front plate to swing downwards using the piano hinge. With the front panel down, the main connections are on the P.C.B via screw terminals. (These are push-in plugs, to facilitate easy removal / replacement of the main board). The mains connector is designated PL3, and is a four way plug. Two connections are for earth, the other two are live and neutral. Fuse F3 is the mains protection

fuse, and should only be replaced by the same rated part.

All inputs are set as default to normally closed, and should any conductor become disconnected, will fault to the alarm state. (Banks of 4 may be switched to normally open via dip switch settings - see section 4, set up). All input circuits are rated at 12V d.c maximum. All unused channels should be loomed together along with the GND connection, or alternatively switched to normally open inputs.

If option A is fitted, then ensure that the isolation switch is turned to the 'ON' position when ready to initialise.

The cabinet should be specifically earthed, using the external earth bolt provided.

NOTE: It is highly recommended, although not essential, that the following recommendations are considered.

All signal wiring should be separated from power feeds and supplies. Where the two must be in close proximity, it is advisable that they located at right angles to each other, minimising the effect of cross-talk and pick-up.

Signal wiring will be less prone to disturbances if contained within grounded conductive conduit or trunking. Avoid passing signal cables in close proximity to known interference sources, or high power electrical equipment where possible.

Ensure good clean areas of contact at either end of the installation, and use the largest practical gauge of wire to improve signal quality, (maximum 2.5mm diameter cable recommended).

Loop areas of all conductors should be kept to a minimum, as each loop will act as an antenna for radio-interference, and will significantly reduce the immunity of the whole installation.

The enclosure should be earthed with good quality earthing bonds. Avoid earth loops.

3.1   Remote Common Fault Output

This control panel is equipped with a dedicated common fault volt free output. This is intended to be used as a single common repeat output which changes over if ANY channel is in the fault state. The relay contacts are rated at 1Amp maximum. This output is available on PL19, see schematic diagram for pin outs.

4.   Set Up

The DIP switches are located on the main P.C.B type PC264) inside the enclosure. These allow the installing engineer to change the polarity of the alarm signals from N/O to N/C or vice-versa. Each setting controls a bank of four channels at a time.

The following table shows the various combinations;

SW1   SW2   CHANNEL No.

1	2	1	2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
OFF	OFF	OFF	OFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OFF	OFF	OFF	ON	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
OFF	OFF	ON	ON	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
OFF	ON	ON	ON	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
ON	ON	ON	ON	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

0= Normally closed   1= Normally open

Dip switch Diagram:
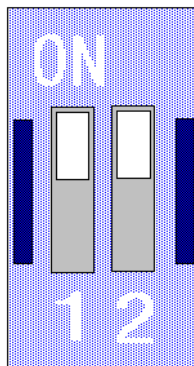
The DIP switch in the ON position, means normally open inputs