k-con®

KS8-RAD

Installation Manual

Instructions for :-

KS8-RAD Multiple Digital Monitoring Alarm Display

For safe and correct use please read the installation manuals supplied with the equipment.

Manufactured on behalf of
MITSUBISHI ELECTRIC UK

**MITSUBISHI
ELECTRIC**

Contents

Safety precautions

Before installation and electric work

Before installing the unit, make sure you read all the "Safety precautions".

Symbols used in the text

⚠ Warning: Describes precautions that should be observed to prevent danger of injury or death to the user.
⚠ Caution: Describes precautions that should be observed to prevent damage to the unit.

⚠ Warning: Carefully read the labels affixed to the main unit.

⚠ Warning:
- Ask the dealer or an authorised technician to install the unit.
  Improper installation by the user may result in water leakage, electric shock, or fire.
- Use the specified cables for wiring. Make the connections securely so that any outside forces acting on the cables are not applied to the terminals. Inadequate connection and fastening may generate heat and cause a fire.
- Never repair the unit. If the controller must be repaired, consult the dealer.
  If the unit is repaired improperly, electric shock, or fire may result.
- When handling this product, always wear protective equipment. EG: Gloves, full arm protection namely boiler suit, and safety glasses.
  Improper handling may result in injury.
- If refrigerant gas leaks during installation work, ventilate the room.
  If the refrigerant gas comes into contact with a flame, poisonous gases will be released.
- Install the controller according to this Installation Manual.
  If the unit is installed improperly, electric shock, or fire may result.
  Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard", "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit.
- If the power source capacity is inadequate or electric work is performed im-properly, electric shock and fire may result.
  Keep the electric parts away from any water - washing water etc…
  Contact may result in electric shock, fire or smoke.
- After completing installation work, make sure that refrigerant gas is not leaking.
  If the refrigerant gas leaks and is exposed to a fan heater, stove, oven, or other heat source, it may generate noxious gases.
- Do not reconstruct or change the settings of the protection devices.
  If the pressure switch, thermal switch, or other protection device is shorted or operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.

To dispose of this product, consult your dealer. Do not use a leak detection additive.

Safety precautions

Before installation

⚠ Caution:
- Do not install the unit where combustible gas may leak.
  If the gas leaks and accumulates around the unit, an explosion may result.

⚠ Caution:
- Ground the unit.
  Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock.
- Install the power cable so that tension is not applied to the cable.
  Tension may cause the cable to break and generate heat which may, in turn, cause fire.
- Install a leak circuit breaker, as required.
  If a leak circuit breaker is not installed, electric shock may result.
- Use power line cables of sufficient current carrying capacity and rating.
  Cables that are too small may leak, generate heat, and cause a fire.
- Use only a circuit breaker and fuse of the specified capacity.
  A fuse or circuit breaker of a larger capacity or a steel or copper wire may result in a general unit failure or fire.
- Be very careful regarding product transportation.
  Two people should be used to carry products of 20kg or more.
- Some products use PP bands for packaging. Do not use any PP bands for a means of transportation.
- Safely dispose of the packing materials.
  Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
  Tear apart and throw away plastic packaging bags so that children will not play with them - If children play with a plastic bag which has not been torn apart, they face the risk of suffocation.

Before starting the test run

⚠ Caution:
- Do not touch the switches with wet fingers.
  Touching a switch with wet fingers can cause electric shock.
- Do not touch the refrigerant pipes during and immediately after operation.
  During and immediately after operation, the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.
- Do not operate the air conditioner with the panels and guards removed.
  Rotating, hot, or high-voltage parts can cause injuries.
- Do not turn off the power immediately after stopping operation.
  Always wait at least five minutes before turning off the power. Otherwise, water leakage and other problems may occur.

Disclaimer

Warranty:

All products manufactured on behalf of Mitsubishi Electric UK are warranted against defective materials for a period of three years from the date of delivery to the original purchaser.

⚠ Warning:

Mitsubishi Electric UK assumes no liability for damages consequent to the user of this product. We reserve the right to change this manual at any time without notice. The information furnished by us is believed to be accurate and reliable. However, no responsibility is assumed by us for its use, nor for any infringements of patents or other rights of third parties resulting from its use.
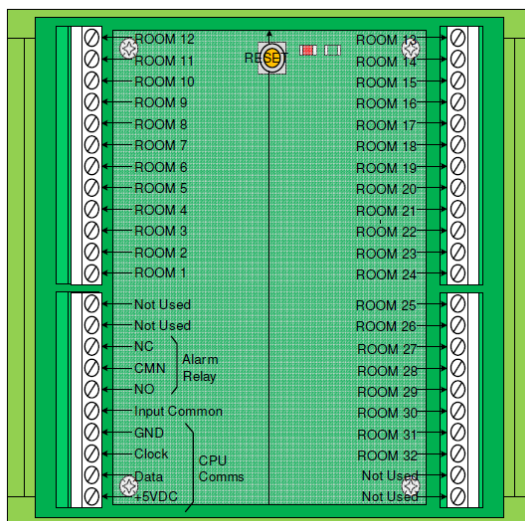
Introduction

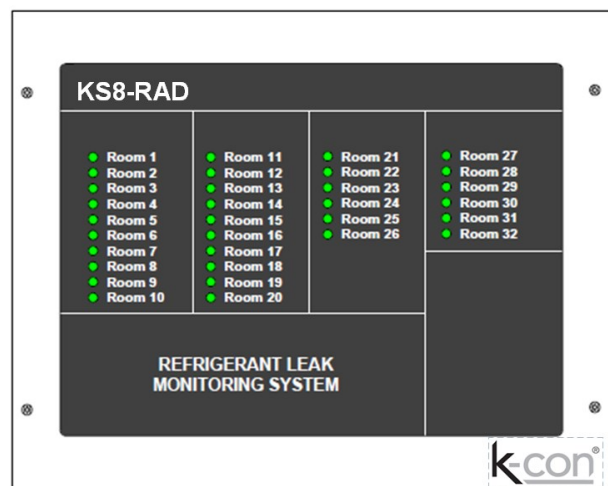This manual outlines the features and specifications for the KS8-RAD

The KS8-RAD unit is capable of monitoring and logging multiple digital signals (alarms) from a refrigerant leak detection unit K-Con KSGD.

The MDMA unit comprises of 4 main components + KSGD Leak detector.
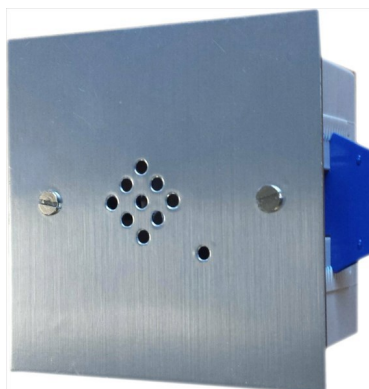
1. The inputs to module are digital input signals, which are from the KSGD detectors connected.

2. The display indicates the status of all the monitored inputs, and the Alarm status.

3. Power supply for KSGD detector.

4. KSGD leak detectors (supplied separately).

KS8-RAD Input Module

KS8-RAD Visual Display

KSGD Leak Detector

System Overview

In a typical installation the display will be mounted on the door of the KS8-RAD panel in an easily accessible and visible location.

There will be communication / power connection cable between the input module and the display. The display will be connected to an incoming mains supply.
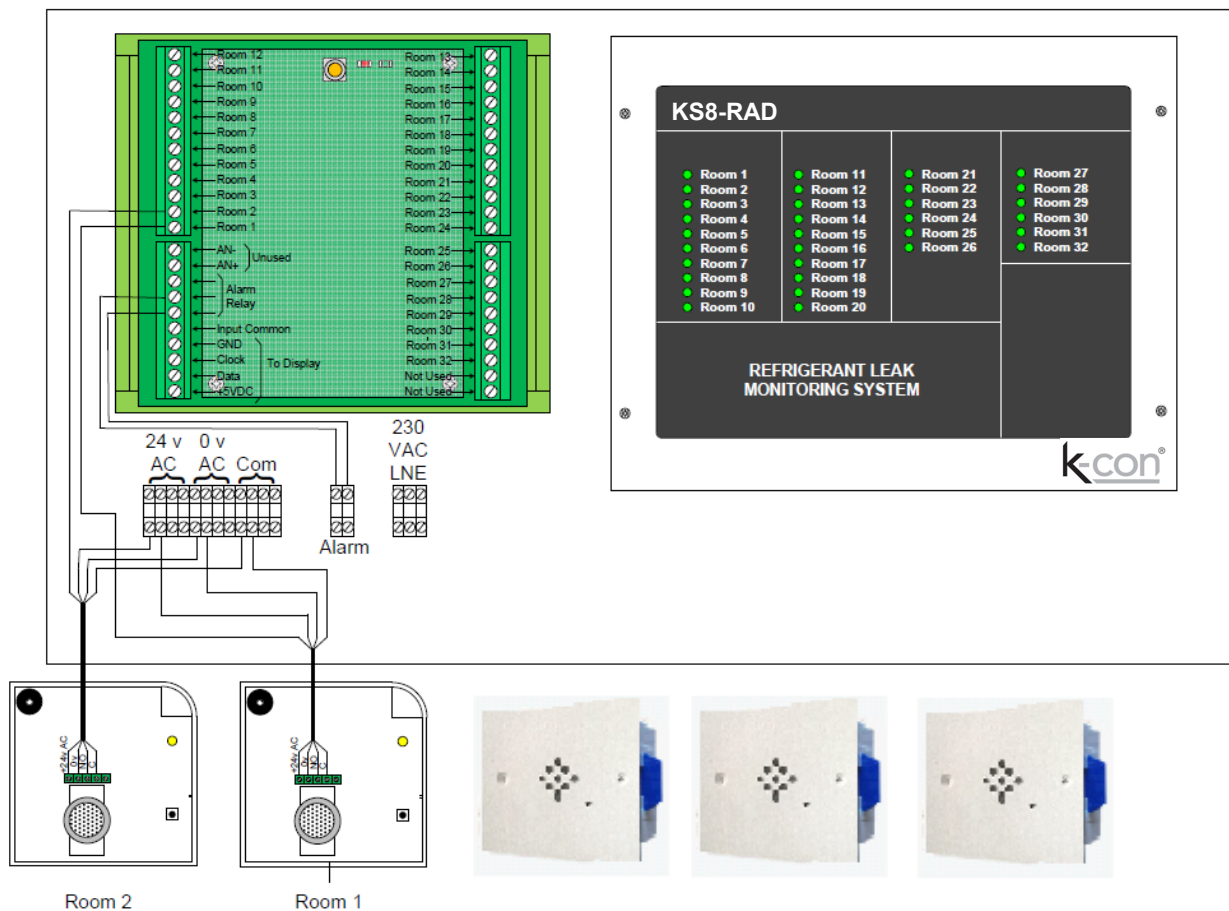
The input module will be housed inside the KS8-RAD panel, power for the input module will come from the display. Digital fault signals, will be connected into the input module. The input module also provides a single alarm relay output.

Each digital input can be configured to alarm on a normally open or a normally closed signal All units configuration is undertaken from a PC Connected to the Ethernet port on the KS8-RAD Display.

Each digital input can be configured individually to energise the common alarm relay.

Depending on configuration, the system may latch certain alarms, latched alarms are reset by pressing a reset button on the input module, or via the HTML web pages, when connected the panel via Ethernet port.

The input module mounted within the control panel, deterring users from resetting alarm frequently and without investigating the cause of the alarm further.
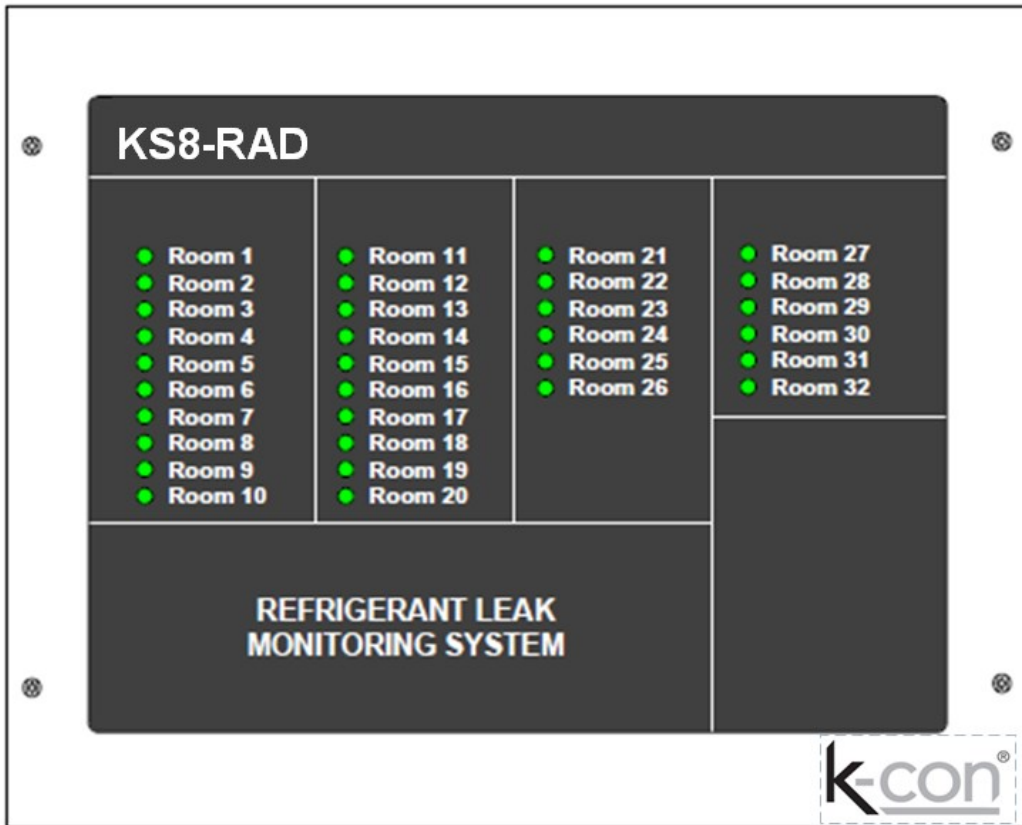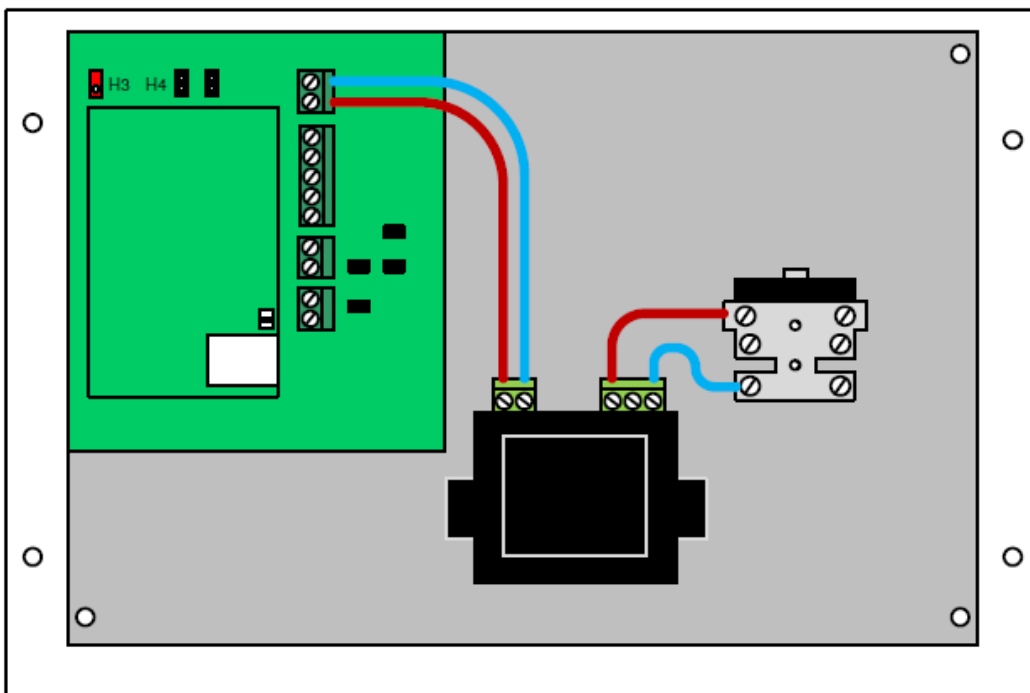
Display

The display incorporates the main processor.

The front of display indicates the status of each room where the leak detection fitted.
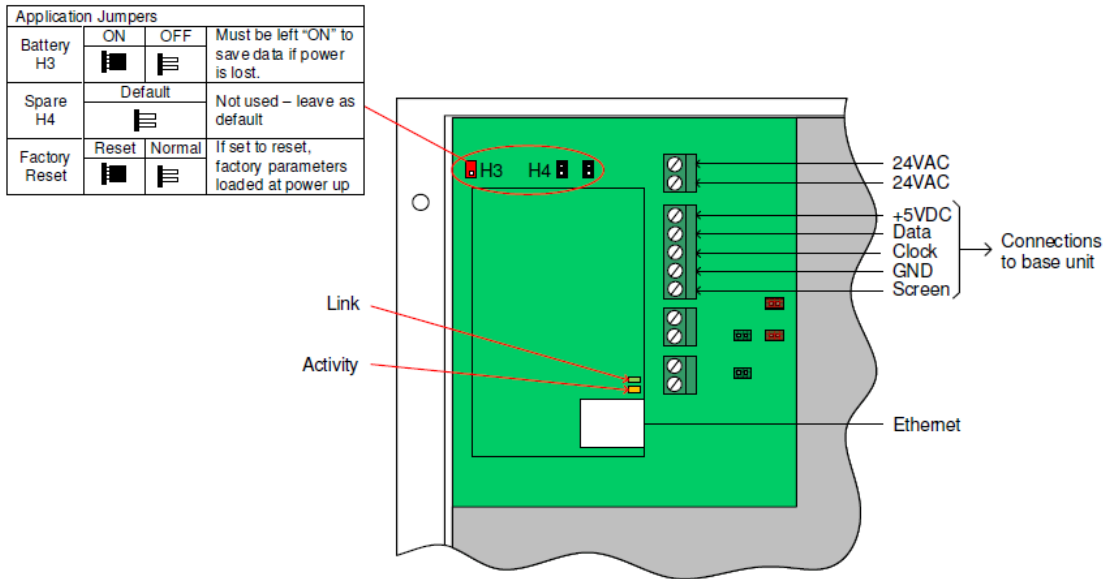
The LED's on unused channels are switched off.

KS8-RAD Visual Display

KS8-RAD Back of Unit

Installation Instructions - Display - Connections and Jumpers

---

Note: Connection between the display unit and base unit should be made in screened, beldan type cable. The screen should be connected at the display unit end only.

Factory Reset Jumper

The factory reset jumper enables the user to reload all the default software settings.

Battery Jumper H3

The battery jumper connects the battery to the CPU. It should be fitted to retain configuration.

IMPORTANT: If the unit is to be stored for long periods, the battery link maybe removed to extend battery life. However removing the battery link will cause the unit to lose its configuration.

Display – Input LED Operation

The exact operation of the Input LED indicators will depend on the unit setup, the following states are possible,
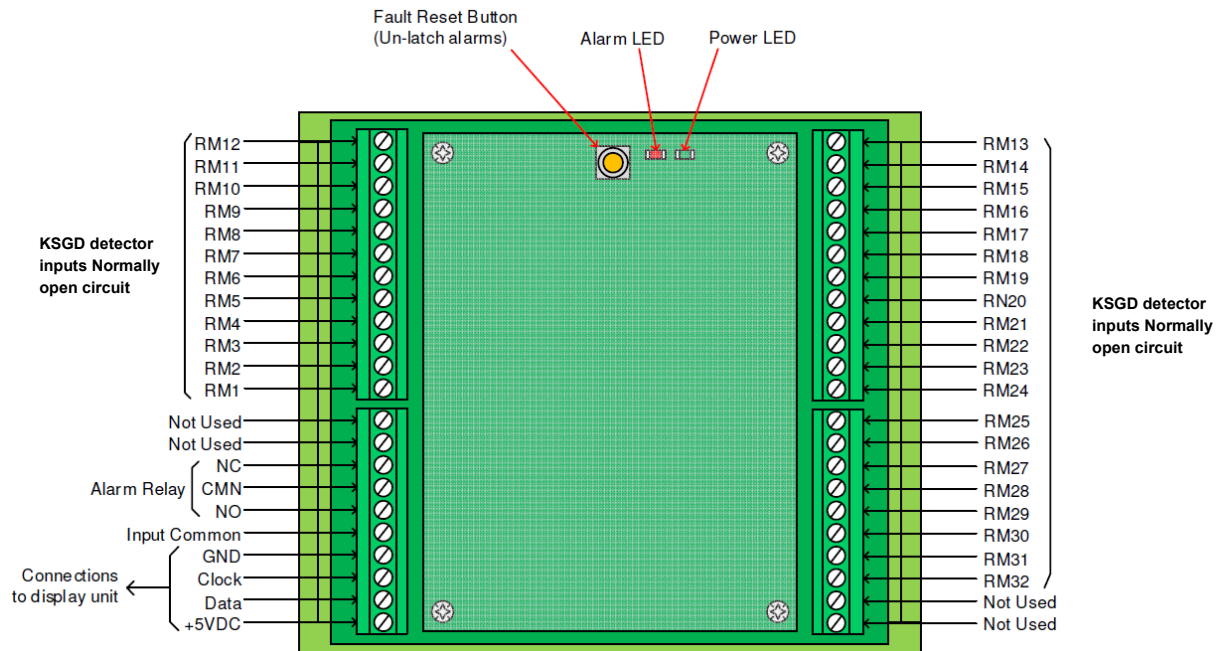
Off – Input disabled, not in use,

Red - On steady – Input in alarm state,

Red - On flashing – Input was in alarm state,

Green – on steady – Leak detector active.

Installation Instructions - Input Module

The input module primarily provides connection terminals for 32 digital inputs, and communication connections to the display.

Fault Reset Button (Un-latch alarms)   Alarm LED   Power LED

Left terminals		Right terminals
RM12		RM13
RM11		RM14
RM10		RM15
RM9		RM16
RM8	KSGD detector inputs Normally open circuit	RM17
RM7		RM18
RM6		RM19
RM5		RN20
RM4		RM21
RM3		RM22
RM2		RM23
RM1		RM24
Not Used		RM25
Not Used		RM26
NC		RM27
CMN (Alarm Relay)		RM28
NO		RM29
Input Common		RM30
GND		RM31
Clock		RM32
Data		Not Used
+5VDC		Not Used

KSGD detector inputs Normally open circuit

Connections to display unit

Fault Reset Button

Pressing the fault reset button will reset (unlatch) all latched alarms. All inputs can be configured to latch following an alarm condition arising, if required.

Alarm LED

The red Alarm LED will illuminate if the alarm relay has been activated. All inputs can be configured to activate the alarm relay if an alarm condition arises, if required.

Power LED

The power LED will illuminate if the input module is powered correctly. Power for the input module comes from the display – therefore the LED also indicates that the display is powered correctly.

Installation Instructions - Input Module

Setup and Viewing Unit Operation

The KS8-RAD is setup, live and historical data is viewed using a web browser, e.g. Internet Explorer / Mozilla Firefox.

Connecting to the unit

The Default IP address for the unit is – 10.10.64.70

When connecting a PC directly to the unit, it may be necessary to use a CAT5 cross over cable. You must also ensure your PC's IP address settings are within range of the IP address of the unit.

Status Overview Page

Once connected to the unit the status overview page will be displayed;

Overall unit status and input status details are displayed.

Input status indicators will mimic the operation of the LED's on the front of the unit.

Latched alarms and faults can be un-latched (acknowledged) from this screen by clicking the "Ack Alarms" button.

You will be prompted to enter a valid username and PIN before you can complete acknowledging alarms and faults.

Alarms may also be acknowledged by pressing the Fault Reset button on the input module.

At the top of the page there is a menu bar, allowing access to other web pages.

Setup Pages

Setup pages are accessed from the setup menu, the following menu options are available,

General details

TCP/IP Comms

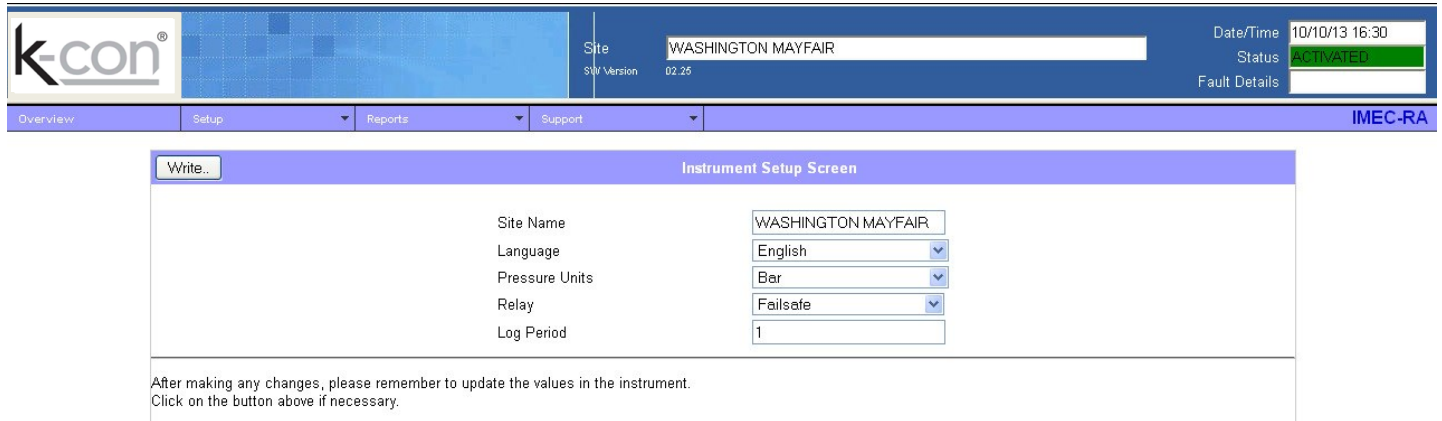Digital Inputs

Analogue Inputs

Note: After any setting has been changed you must click on the "Write" button at the top of the page, you will then be prompted to enter a valid username and pin.

*CONTACT K-Con for Username and PIN details

Installation Instructions - Setup Pages

Setup Pages – General Details

The general details page enables the user to configure the site name, date, and time.

Site name –   The site or unit name.

Max 20 characters

Default = Site ***

Language –   The language file currently in use

(Note: the unit currently only supports English)

Pressure units –   **Not Applicable**

Relay –   Selects the operation of the input module alarm relay

Failsafe = Relay energized if OK

Non-failsafe = Relay energized if Alarm / Latched Alarm

Disabled = Alarm relay always de-energized

Default = Failsafe

Log period –   **Not Applicable**

Installation Instructions - Setup Pages

Setup Pages – TCP/IP Communications

This page allows the user to setup the TCP/IP network variables.

IP Address –	The units IP address
	1.1.1.1 to 254.254.254.254
	Default = 10.10.64.70
Mask –	The subnet mask to be used
	Default = 255.255.255.0
Gateway –	The IP address of the networks default gateway.
	Default = 10.10.64.1
Server –	Not currently used
	Default = 10.10.64.1
Current time –	Allows the user to change the system date and time.
	Click on the date box and the end of the line to select a date and time.
	Clicking on "Reset" in the date selection window will select the PC's current
	time and date.

IMPORTANT: After changing IP address settings, you must power off / on the unit for the new address to be applied.

Setup Pages – Analogue inputs - *Not Applicable*

This page allows the user to configure the Analogue inputs.

For this Application this mode need is disabled.

Installation Instructions - Setup Pages

Setup Pages – Digital Inputs

This page allows the user to configure the digital inputs.

For each input, the user may setup the following;

Name –   The name of the input – as used on the overview page and logs

Max 20 characters

Mode –   The mode of operation of the input

Normal = 24VAC at input = ALARM

Inverted = 24VAC at input = OK

Disabled = Input disabled

Default = Inverted

Latch –   Selects if the input should latch, following an alarm

YES or NO

Default = Yes

Relay –   Selects if this input should activate the alarm relay if this input is in ALARM or Latched

YES or NO

Default = Yes

Alarm Delay –   The time in minutes that the input must be continuously in the ALARM state

before the unit actually recognizes it as ALARM

0 – 30 sec

Default = 0 (i.e. no delay)

Note: - the channels we do not use, all have to be disabled.

Installation Instructions - Setup Pages

Report Pages

The reports allow the user to access historical information, such as alarms, system events and data logs.

Digital Inputs

Analogue Inputs

Alarms

System

Faults

Report Pages – Alarms

The alarm report shows all the alarms logged by the unit. System power resets, and alarm reset (unlatch) actions are also logged in this report.

Reports Pages – System / Faults

The system and faults reports show system related faults and events, such as software fault codes.

Specification Overview

Digital Inputs -   32 x 12 to 24V AC / DC sensing. 24VAC typical application Alarm reset (unlatch) button
                        Disable channels not required.

Analogue Inputs -   *Not Applicable*

Digital Outputs -   1 x Relay output, contact rating 1A / 24VAC, Common, NO, NC.
                        Software selectable failsafe / non-failsafe operation

LED Indicators -   32 x Digital input indicators
                        (But only indicates the used channels)

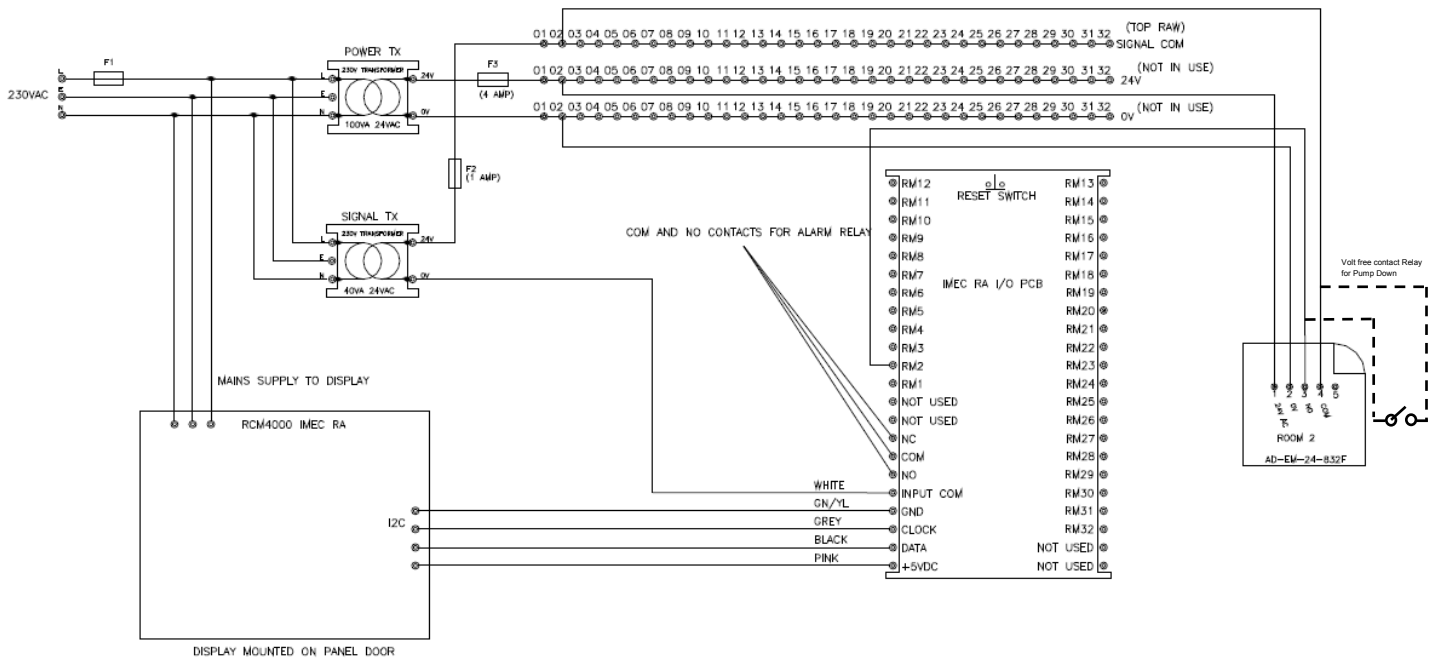Communications -   1 x 10BaseT Ethernet port
                        1 x I2C I/O Interface

Network Interfaces -   HTML based web pages (status, reports and setup)
                        SNMP (status)
                        XML (status and setup)
                        Telnet (factory use only)
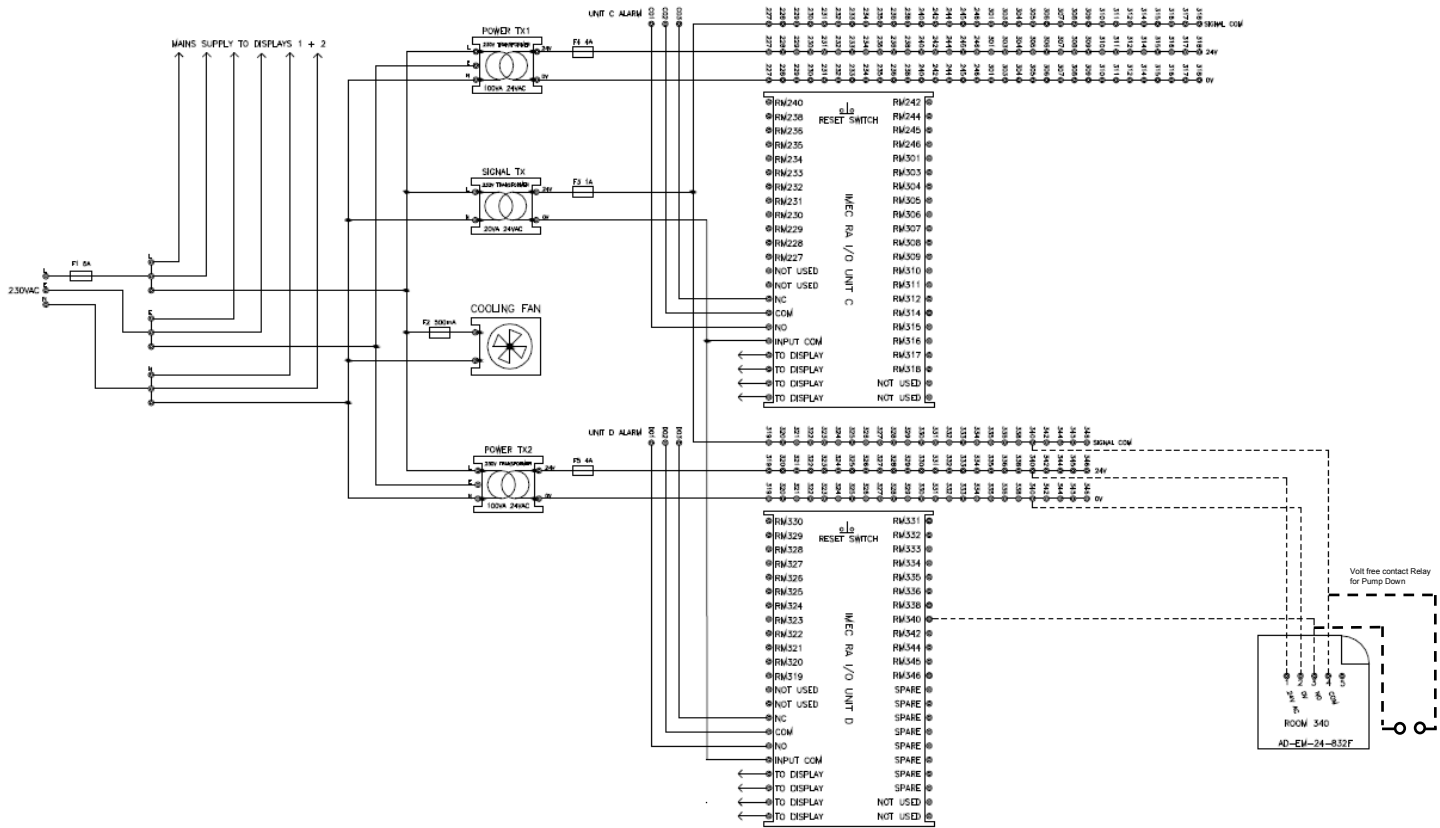   FTP (status, reports)

Enclosure -   Display – Powder coated steel
                        Input module – DIN rail PCB carrier
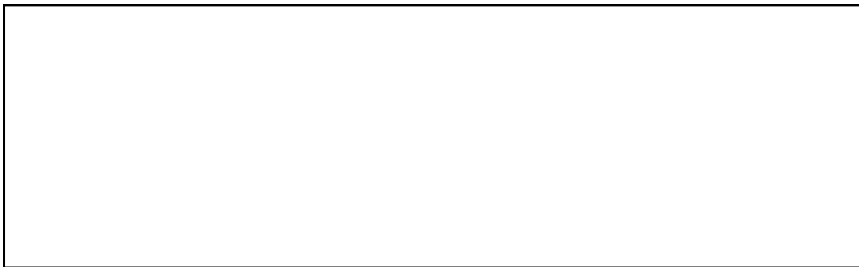
Power supply -   Single 240VAC supply (1A)

Wiring Diagrams

Double KS8-RAD

Please be sure to put the contact address/telephone number
on this manual before handing it to the customer.

MITSUBISHI ELECTRIC UK

MITSUBISHI ELECTRIC UK, TRAVELLERS LANE, HATFIELD, HERTFORDSHIRE, AL10 8XB