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## WATER LEAK DETECTION SYSTEM MKLDS-1 INSTALLATION & COMMISSIONING

**DESCRIPTION:** An electronic control panel used in conjunction with one pulse meter (water meter with pulse output proportional to flow rate) installed on the incoming water supply.

The control monitors the flow of water through the meter and raises an alarm in the following situation:

'When a continuous flow of water passes through the Main water meter above a preset maximum for a preset period of time'

Hence by setting the flow rates and time periods (allowing for usual fluctuations in consumption) any increase above these norms may be detected and dealt with – saving water and limiting damage caused by a major leaks.

**IMPORTANT:** In order to enter meaningful parameters into the control panel we recommend that an initial Water Audit is undertaken using the water meter supplied. This will establish usual patterns of consumption over a given period of time (typically 1 week).

Readings should include night/weekend, peak periods and other situations where differing consumption levels are expected. These readings and their interpretation will be unique to each installation.

### LCD display & keypad



This incorporates a 2 line 16 character LCD display with LED backlighting. The keypad and display enable the user to enter parameters and monitor water flow.

**INSTALLATION:** Fix the steel enclosure in a suitable position protected from the elements as close to the pulse meter as is practicable. A 240v 50Hz supply (5A spur) with means of disconnecting the power will be required.

**Connect single phase supply** to terminals E, L & N using 0.75 or 1.0 mm<sup>2</sup> cable - see wiring diagram - Fig 1

**Connect Main (M1) pulse meter** using 2 core 0.5 or 0.75mm<sup>2</sup> cable to terminals 1 & 2 - see wiring diagram - Fig 1

**A Normally Open** contact is available at terminals 11 & 12 used for alarm or BMS - see wiring diagram - Fig 2 & Fig 3

**A Normally Closed** contact is available at terminals 13 & 14 used for closing a solenoid shut off valve in the event of an alarm - see wiring diagram - Fig 4

A 24v DC supply is available on terminals marked - & + which can be used in conjunction with either contact to suit individual applications – see specifications for ratings.

**The installation should comply with local and site regulations and be carried out by a qualified electrician.**

When the above steps have been completed turn on the electricity supply. After a brief welcome screen showing 'Metron FMC MKLDS-1' the Main screen will show as per the example below:

### Main screen

M	A	I	N			0	0	0	0	0	1	5	0	\	L
0	9	:	1	5		O	K								

The top line shows TOTAL LITRES registered by the meter at the incoming water supply (similar to a car's milometer)

The bottom line shows real time (for reference only) and status OK or HIGH. OK is flow rate below preset maximum rate, HIGH is flow rate above preset maximum rate and will alarm if it continues for the 'Time to Alarm' period.

Check that the Main display increments as water flows through the pulse meter.

**Note: Larger pulse meters (1" and above) may produce 1 pulse per 10 or 100 litres and the display will correspondingly be programmed to increment by 10 or 100 litres. Enter the actual number of litres into the preset fields - irrespective of the pulse per litres output.**

### SETTING MAXIMUM FLOW RATE:

M	A	X		L		/		H	H	:	M	M	:	S	S
0	0	0	5	0				0	0		0	1		0	0

Press ► key to show the above screen. Cursor will flash to prompt the user to enter the number of litres.

Enter number of litres using the 0-9 numeric keys. Above example shows 50 litres. Confirm by pressing ↵ key.

Next enter the time over which the litres are to be measured ie 50 litres per minute. Enter the required time using the 0-9 numeric keys then confirm by pressing ↵ key.

Note: If the setting is already correct – just press ↵ key.

Press ◀ or ▶ to return to Main screen.

## SETTING TIME TO ALARM:

S	E	T		T	I	M	E			H	H	:	M	M		
T	O			A	L	A	R	M			0	0		3	0	

Press ◀ to show above screen. Cursor will flash to prompt the user to enter a time period - from 1 min to 45 hours 59 mins (Example shows 30 minutes). Confirm by pressing ↵ key.

Press ◀ or ▶ to return to Main screen.

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### IMPORTANT:

**Reboot panel (turn power off / on again) after changing parameters**

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**Alarm output:** If the preset parameters are exceeded, the NO & NC contacts will change over and the following screen will be shown. If this situation occurs, reset the panel by rebooting (turning power off then on again) and investigate the possible cause by studying total litres on the Main screen together with the set parameters.

### Alarm screen 1

H	I	G	H		F	L	O	W		A	L	A	R	M	!
R	E	B	O	O	T		T	O		R	E	S	E	T	

Press ◀ or ▶ to return to Main screen.

**SETTING THE CLOCK:** Press and hold the 'INFO' key for approximately 5 seconds. Use ▶ key to scroll through INPUTS / OUTPUTS, MB/MI/SB/SI, TIMERS, SYSTEM. Press ↵ key at SYSTEM, press ↵ key to select TIME & DATE, press ↵ key again to select TIME: press ↵ key again to enable flashing cursor prompt, enter correct time (in 24Hr clock format) using 0 – 9 keypad. When correct press INFO key 3 times to revert back to Main screen.

### PULSE METER RESETTING:

Main: Press keys 1 & 9 together to reset the total litres to 00000000

### SETTING PULSE METER LITRES/PULSE:

Caution: this setting is factory set and should not be changed unless the panel is used with a pulse meter with a different LPP output than specified/supplied.

Press ▲ and ▼ keys together to enter SET PULSE METER LPP mode.

Enter the digits required eg 1, 10 or 100 Litres per pulse then press Enter key.

Press ▶ or ◀ key to return to Main screen.

### SERIAL NUMBER:

Press keys 1 & i (info) together to display the Serial Number of the panel.

The Main screen will be displayed again after 3 seconds.

## TROUBLESHOOTING:

**Blank HMI display:** Check power is present, check wiring, check mains fusing. Green light on PSU indicates 24v is OK. Check DC fuse. This is located at right hand side of PSU in grey housing. Lift grey lid at top edge to reveal fuse. Replace if necessary with spare 20x5mm 1A quick blow fuse located in upper compartment.

**LITRES display on Main screen not incrementing:** check water is passing – the pulse meter will indicate water flow on it's dial. To check the pulse meter disconnect from panel and check that its contacts open and close as water flows through it (1,10 or 100 litres per pulse). The panel can be checked by short circuiting terminals 1 & 2 and watching the Main screen. This should cause the litres display to increment each time the terminals are shorted.

**NOTE: IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO ENSURE THAT THIS PANEL HAS BEEN COMMISSIONED AND SET UP CORRECTLY.**

**THE INSTALLER MUST SATISFY HIMSELF THAT THE ALARM WILL BE RAISED IN THE EVENT OF EXCESSIVE WATER FLOW. THIS CAN BE ACHIEVED BY DELIBERATELY ENTERING LOW PARAMETERS TO VERIFY THAT THE ALARM WILL BE RAISED.**

## TECHNICAL SPECIFICATIONS:

**Power requirements:** Universal input 100-240v AC 50/60Hz, power consumption 30W

**Pulse Meter input:** 24v DC 5mA maximum for one reed switch type pulse meter, suitable for 1, 10 or 100 litres per pulse output

**Alarm output:** Normally open free relay contact rated at 5A resistive load 250V ac / 30V dc

**Valve output:** Normally closed free relay contact rated at 5A resistive load 250V ac / 30V dc

**24v DC PSU:** 1.1A maximum available for powering alarm or valve

**Parameters:** High Flow: Litres input range 1 – 32,767, time period range 10 seconds - 45 hours, time to alarm range 1 minute – 45 hours.

**LCD display:** 2x 16 ASCII character with LED backlight

**Keypad:** with tactile feedback, 0-9 numeric keys plus navigation keys for parameter setting and monitoring

**Real Time clock:** battery backed (10 year life)

**Connections:** via DIN rail terminals maximum conductor size 4mm<sup>2</sup>, cable entry via stuffing glands in gland plate

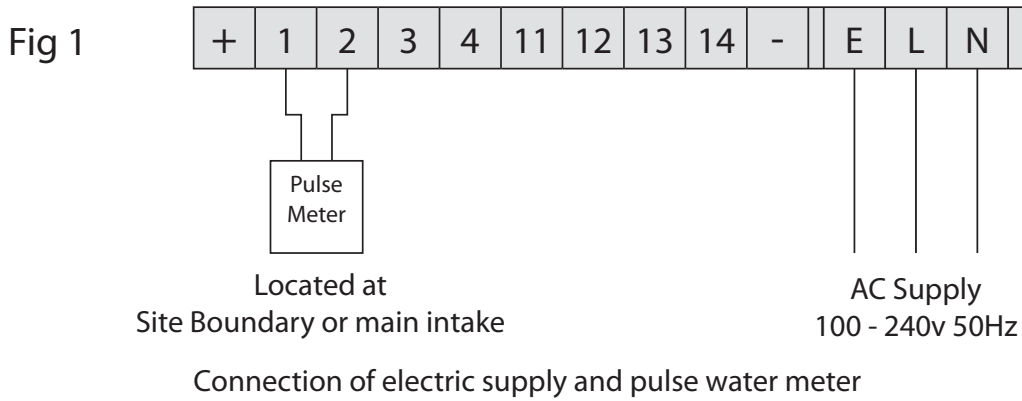
**Enclosure:** Steel wall mounting overall dimensions 300 x 200 x 150mm (W x H x D) RAL7035 powder coated

**Protection:** to IP65 (nearest NEMA 4X) overall weight 5kg

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# MKLDS-1 wiring diagram showing connections for supply and pulse meter



## Wiring alarm options for BMS, flasher/sounder and solenoid shut off valve:

