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MTVS0004 VIBRATION MONITOR HANDBOOK

MTVS0004 Vibration Monitor

Contents

1. Introduction

 2. Installation
 - 2.1. Mounting
 - 2.2. Connexions
 - 2.3. Setting alarm Levels

 3. Operation

 4. Warranty
-
- Appendix 1 Connexion and setting Details
-
- Appendix 2 Technical specifications

1. Introduction

The **MTVS0004 Vibration Monitor** is designed to provide simple condition monitoring of rotating machinery to give early warning of fault conditions and hence to avoid catastrophic failures. An accelerometer is used to detect excessive vibration and internal circuitry converts the measured acceleration to velocity in mm/sec. Two alarm levels can be set internally and these activate both warning lamps and relays with changeover contacts. The relay contacts can be used to operate remote alarm devices. Alarm trip levels are easily set via internal DIL switches. A 4 to 20mA output is also available for remote metering etc.. Options include a remote sensor and latching relays. The unit mounts directly to the equipment to be monitored via two bolts accessible on removal of the top cover. The housing is sealed but care must be taken to properly seal the cable glands.

2. Installation

2.1 Mechanical Mounting

The Vibration Switch should be firmly fixed to the equipment to be monitored with the plane of vibration perpendicular to the base. The two mounting holes are accessible on removal of the top cover, hole positioning details are on the bottom of the case. The unit should be fixed to a flat surface and care should be taken that the mounting screws are evenly tightened to prevent stress on the enclosure.

2.2 Electrical Connections

The MTVS00034 operates from 24Vdc, 120 or 240V supply. Power input relay contact output and 4 to 20 mA cables enter the unit via cable glands on the top cover, and connections are made to a demountable terminal strip the mating half of which is labeled as shown in Fig.1 of Appendix 1. For reliable operation it is essential that the terminal connections are made securely and that the cable glands are properly fastened. Care should be taken on re-fitting the top cover that no wires are trapped.

2.3 Setting Alarm Levels

The two alarm levels AL1 and AL2 are set using the internal 6 pole switch. The switch functions are shown in Fig.2 of Appendix 1. The 4 to 20mA output is scaled to 5 times the alarm 2 setting. e.g. If alarm 2 is set to 10mm/s the output will be 20mA for 50mm/s and 4mA for 0mm/s

3. Operation

On applying power to the unit the green 'OK' lamp will blink for 30 seconds and then light solidly indicating normal operating condition with low vibration level. Should a fault develop in a bearing or impeller etc. and the vibration level exceeds the AL1 setting, the amber AL1 lamp will light and the green 'OK' lamp will extinguish. Simultaneously the AL1 relay contacts will switch. On further increase of the vibration level above the AL2

setting the red AL2 lamp will also light and AL2 relays switch. For the non latching option the relays will return to normal condition on reduction of the vibration below the respective trip levels. The latching version requires the latch switch to be pressed to reset the relays. A ten second delay in the alarm circuits prevents spurious tripping.

4. Warranty

The product is guaranteed against defects in materials and workmanship, subject to specific exclusions, for the period of 12 months from date of purchase.

This warranty is void if unauthorised persons or agents attempt repair, or, if the product has been used for purposes for which it was not intended, and or subjected to abuse or wilful neglect.

Specific exclusions are incandescent lamps, fuses, batteries or any consumable items or components supplied.

No liability can be accepted for loss of items and or component parts, it is expected that the user takes sufficient precautions to safeguard all guaranteed items.

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APPENDIX 1

Connexion and setting Details

Figure 1. Terminal connexions.

Terminal Number	PCB Legend		Function
1	4.20		4 to 20mA output sink to GND (5V maximum burden)
2	+24		15 to 30V DC at less than 150mA
3	GND		Case ground and common for 4.20 and +24
4	240V		220 to 250VAC 50 to 60Hz
5	120V		110 to 125VAC 50 to 60Hz
6	NEUT		Neutral for 240 or 120V
7	C	A	Alarm two common
8	NC	L	Alarm two normally closed
9	NO	2	Alarm two normally open
10	C	A	Alarm one common
11	NC	L	Alarm one normally closed
12	NO	1	Alarm one normally open

Figure 2. Alarm Level Switch Settings

DIL SWITCH AL1 ALARM SETTINGS - SW6 OFF								
SW6	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW5	OFF	OFF	OFF	OFF	ON	ON	ON	ON
SW4	OFF	OFF	ON	ON	OFF	OFF	ON	ON
SW3	OFF	ON	OFF	ON	OFF	ON	OFF	ON
AL1 mm/s	50	45	40	30	25	20	12.5	5

DIL SWITCH AL1 SETTINGS – SW6 ON								
SW6	ON	ON	ON	ON	ON	ON	ON	ON
SW5	OFF	OFF	OFF	OFF	ON	ON	ON	ON
SW4	OFF	OFF	ON	ON	OFF	OFF	ON	ON
SW3	OFF	ON	OFF	ON	OFF	ON	OFF	ON
AL1 mm/s	10	9	7.5	6	5	4	2.5	1

DIL SWITCH AL2 ALARM SETTINGS				
SW2	OFF	ON	OFF	ON
SW1	ON	ON	OFF	OFF
AL2 mm/s	1.5xAL1	2xAL1	3xAL1	5xAL1

APPENDIX 2

Technical Specifications

MTVS0004 Technical Specification

Power Input	24Vdc \pm 10% @ 100mA 230V AC 120V AC 50/60Hz
Velocity Range	50mm/sec max Alarm 1, 250mm/s Alarm 2
Frequency Range	5Hz to 60Hz
Alarm Levels	AL1 1.5 mm/sec - 50mm/sec AL2 1.5, 2, 3 or 5 times AL1
'OK' Indicator	Green LED indicates power on and normal operation. Extinguishes on alarm.
Alarm Indicators	AL1 - Amber LED non-latching AL2 - Red LED non-latching
Alarm Delay	10 seconds
Relay Contacts	Changeover Contacts. Max. ratings 8A @ 240Vac, 8A @ 30Vdc
Temperature Range	-10°C to +70°C
Construction	Sealed Cast Aluminium enclosure
Dimensions	125mm x 80mm x 58mm (82mm over glands)
Weight	770gm