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MTN/8066/G-MAC VIBRATION MODULE

OPERATING NOTES

1. Module Description

The MTN/8066/G-MAX Vibration Module is designed for use with a constant current type piezoelectric accelerometer to provide vibration signals to remote programmable controllers and local data collectors. The module monitors overall vibration velocity and peak acceleration to determine bearing condition in many types of rotating machinery. The unit is powered from 24Vdc and is housed in a 22.5mm wide DIN rail mounting case for easy fitting into enclosures in multi-channel systems. Cable connections are made via screw terminals.

The overall vibration velocity signal is derived from the accelerometer output to provide RMS velocity (mm/s) in accordance with the international standard ISO10816-3. This standard classifies vibration severity for machines with nominal power above 15KW and rotational speeds between 120 and 15000rpm.

The bearing condition signal is true peak acceleration (Gpk), which has proved effective for monitoring the condition of roller bearings, gearboxes and reciprocating machines.

The 0-10V and the 4-20mA outputs from the module can be configured to indicate velocity and/or Gpk by internal links. In addition, a buffered acceleration signal is provided via a BNC connector to enable vibration signal analysis.

Internal links are also used to set velocity and Gpk range, and Gpk high and low pass filters, to suit a wide range of applications. Vibration module inputs can be connected in parallel for multiple outputs from a single accelerometer channel. In this case a 'master' module provides accelerometer power and the 'slave' modules have this function disabled by an internal link.

2. Operation

Prior to installation the internal links must be set to the optimum positions for the application. To do this the module PCB must be withdrawn from the case by depressing the plastic retaining tabs at the edges of the module, using a fingernail or small screwdriver, whilst pulling the top and lower sections apart. The link functions and positions are shown in Appendix 1 and link positions are indicated on the PCB as shown. Note that for correct operation, the Gpk high pass filter links 3 & 4 must be in the same position as must the low pass filter links 5 & 6. Ensure that the accelerometer sensitivity Link 2 is in the correct position and note that if using a 100mV/g accelerometer with Link 2 in the 50mV/g position the output ranges will be halved.

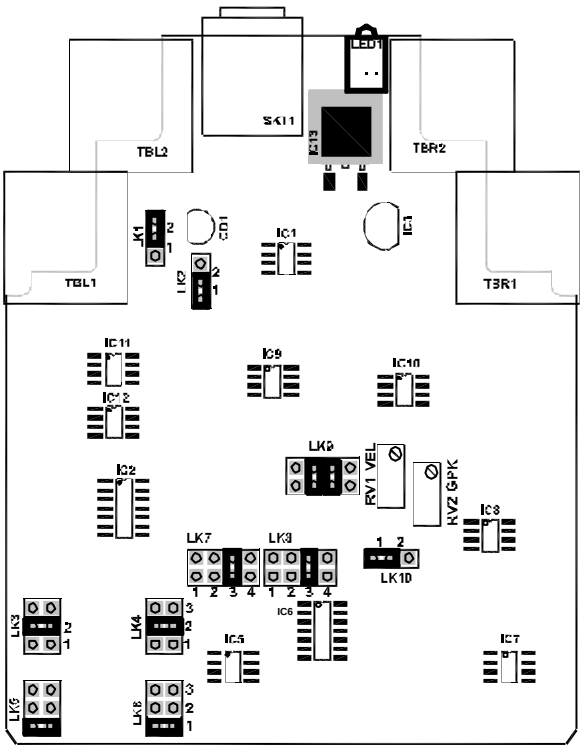
The module clips into a standard 'top hat' DIN rail with a metal clip located at the base. Terminal connections are arranged such that inputs are at the front of the module and outputs at the rear as shown in Appendix 2. Note that, to avoid ground loop issues, the accelerometer screen terminals are not connected internally and any connection to ground or 0V must be done with external wiring.

On applying power, and with an accelerometer properly connected, the green TDXOK indicator on the front of the module will illuminate. If the accelerometer becomes faulty and the bias voltage is outside acceptable limits, or if there is an open-circuit or short circuit in the input wiring, the TDXOK indicator will not illuminate. In this condition 0-10V and the 4-20mA outputs will indicate zero vibration.

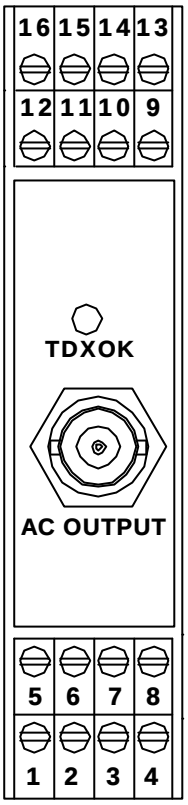
Suitable vibration alarm levels can be set in the remote programmable controller with reference to the ISO10816-3 standard or from machine manufacturers specifications.

APPENDIX 1 Module Links

Link No.	Function	Position
1	Accel. Current Supply	2 = Supply On 1 = Supply Off
2	Accel. Sensitvity	2 = 50mV/g 1 = 100mV/g
3 + 4	Gpk High Pass Filter	3 = 100Hz 2 = 10Hz 1 = 2Hz
5 + 6	Gpk Low Pass Filter	3 = 1KHz 2 = 3.5KHz 1 = 5KHz
7	Velocity Range	1 = 100mm/s 2 = 50mm/s 3 = 25mm/s 4 = 10mm/s
8	Gpk Range	1 = 80g pk-pk 2 = 40g pk-pk 3 = 20g pk-pk 4 = 10g pk-pk
9	Output Select	1 = 4-20mA Gpk 2 = 0-10V Gpk 3 = 4-20mA Velocity 4 = 0-10V Velocity
10	Gpk Response	1 = Fast 2 = Slow



APPENDIX 2



TERMINAL CONNECTIONS

13 - 0V POWER IN
14 - 0V POWER OUT
15 - 0V (0-10V OUTPUT)
16 - 0V (4-20mA OUTPUT)

9 - +24V IN
10 - +24V OUT
11 - 0-10V OUTPUT +
12 - 4-20mA OUTPUT +

5 - ACCEL + IN
6 - ACCEL 0V IN
7 - ACCEL. SCREEN
8 - NO CONNECTION

1 - ACCEL + IN
2 - ACCEL 0V IN
3 - ACCEL. SCREEN
4 - NO CONNECTION

APPENDIX 3

Technical Specification

Power Requirement	+24Vdc ±10% @ 65mA. via screw terminals 9,13 and 10,14 for parallel module connection.
Input	100mV/g or 50mV/g Current Driven Accelerometer Via terminals 1,2,3 and 5,6,7 for parallel module Connection. Sensitivity Set by Link 2.
Accelerometer Power	4.7mA nominal current driven from 24Vdc supply On/Off selection via Link 1.
Outputs	4-20mA proportional to selected range. Via screw terminals 12 & 16. Output 4mA when TDXOK fails. Maximum load resistance 600Ω 0-10Vdc proportional to selected range

via screw terminals 11 & 15.

APPENDIX 3 Cont.

Output 0V when TDXOK fails.
Output impedance 150Ω

Buffered accelerometer (g) AC output
including dc bias voltage.
Via 50Ω BNC connector.

Ranges	Velocity -	10, 25, 50, 100mm/s via Link 7
	Gpk -	20,40,80,120g via Link 8
Filters	Velocity -	2Hz – 1KHz (–3db), 2-pole
	Gpk -	2, 10, 100Hz High Pass (–3db), 2-pole
	-	1, 3.5, 5KHz Low Pass (–3db), 2-pole
	Selected via Links 3+4 & 5+6.	
Output Response Time	Velocity -	360mS
	Gpk -	Fast = 120ms Slow = 1.2s
		Set with Link10
TDXOK Function	3mm LED TDXOK operates when Accelerometer bias Voltage is between 5V and 15V and enables outputs.	
Dimensions	22.5mm (W) x 100mm (D) x 131mm (Overall Height)	
Weight.	0.11Kg	