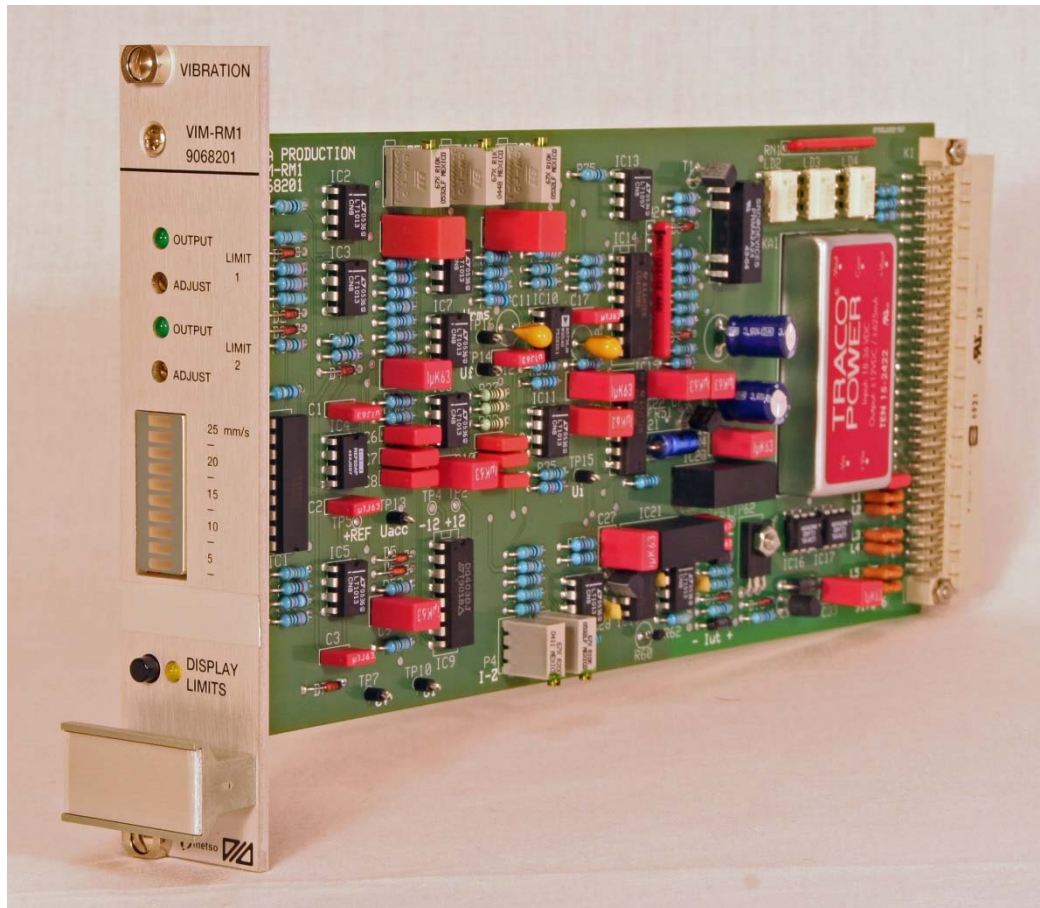


dametric

VIM – RM1



VAL0123136 / SKC9068201

VIBRATION MONITOR
FOR THE RMS-SYSTEM

USERS MANUAL

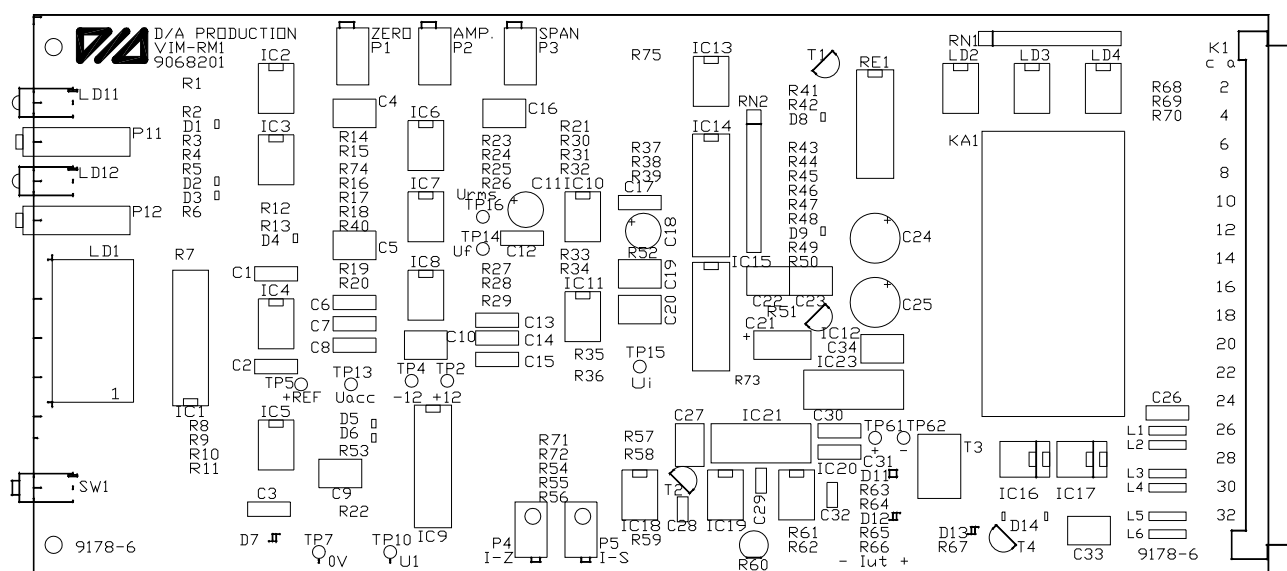
Valmet 

CONTENTS

Contents

1. LOCATION OF COMPONENTS	2
2. DESCRIPTION OF OPERATION	3
3. TECHNICAL SPECIFICATION.....	4
4. ADJUSTMENT.....	4
5. CALIBRATION.....	5
6. CONTACT	5

1. LOCATION OF COMPONENTS



2. DESCRIPTION OF OPERATION

The VIM-RM1 unit measures the low frequency true rms vibration amplitude on the refiner.

The unit monitors a low impedance piezo electric accelerometer-transducer, which is mounted on the refiner stand. The accelerometer is fed with a constant current excitation, and returns a superimposed voltage signal proportional to the acceleration amplitude. The frequency is in the range of 10 Hz to 1000 Hz.

The monitor includes following functions:

- An adjustable ac-voltage amplifier for absolute calibration of the unit.
- A 10 Hz to 1000 Hz band pass filter to accommodate the vibration specifications standard.
- A 1/f filter to convert the acceleration vibration signal to a velocity vibration signal. Rms to dc-converter to measure the vibration amplitude.
- Internal zero and span level-adjustments to 1V (0%) and 5V (100%).
- Isolated 4-20 mA output current.
- A 10 led-bar display for quick on board signal read-out.
- A 1-5 V voltage output for the RMS display unit.
- A transducer check circuit which detects open loop and short-circuit input. Any fault deactivates the limit-outputs and generates 125 % signal amplitude both on the display and the current output.
- 2 circuits, which compares the signal to two limit values. The limits are adjustable from 0 to 100% of signal amplitude. Each limit-output is active when the signal is lower than the adjusted limit value, and is indicated by the front panel led's. A not active output initiates a hysteresis on the falling slope of the signal. The output is opto-isolated from the unit, and drives a P-channel power transistor. The transistor is connected to the +rail of the system power supply.
- A RMS-system interface that permits readouts of the measured level and the adjusted limit-values to the LDU-RM1 unit or the DCU-RM1 unit.
- A dc/dc power unit, which converts and isolates the 24 Vdc system power supply to the internal +12V and -12V dc-voltages.

3. TECHNICAL SPECIFICATION

Article no:	VIM-RM1 / VAL0123136 / SKC9068201		
Power supply:	+24 Vdc $\pm$ 10%,	0.19 A, max	
Internal supply:	$\pm$ 12 Vdc, isolated from the power supply		
Board dimension:	L=220 mm, W=100 mm, T=30 mm (6 HE)		
Panel adjustments:	LIMIT - 1, LIMIT - 2: 15-turn potentiometers		
Panel indicators:	LIMIT OUTPUT-1, LIMIT OUTPUT-2: green led's SIGNAL: 10 led bar-display		
Panel switch:	DISPLAY LIMITS: push-button switch		
Transducer type:	Piezo-electric accelerometer.		
Transducer excitation:	10 mA constant current, U=20 Vdc		
Short circuit trip resistance:	315 Ω		
Open loop trip resistance:	2.95 k Ω		
Amplifier input impedance:	50 k Ω		
AC-signal amplification:	0.1 - 110, internally adjustable		
Filter type:	Active, 12 dB/octave		
Filter cut-off frequencies:	Hp=7 Hz, Lp=1100 Hz		
Integrator:	1/f filter, cut-off frequency: 160 Hz		
Amplitude measurement:	True rms to dc converter		
Internal zero level:	+1.0 V $\pm$ 0.5%		
Internal full-span level:	+5.0 V $\pm$ 0.5%		
External digital outputs:	Opto isolated P-channel fet transistor connected to positive rail of the RMS system voltage. Max. current, 0.1 A		
	DO+VIM1	Digital output	LIMIT 1 to PLC
	DO+VIM2	Digital output	LIMIT 2 to PLC
	The limits are activated when the VIM value is lower than the adjusted limit. It is no hysteresis when changing from the active to the inactive state. It is 2 % hysteresis when changing from the inactive to the active state. The led in the front of the unit indicates an activated output.		
Analog output:	Galvanically isolated current, 4-20 mA, $\pm$ 1%, (daughter board). Load: 0 - 800 Ω , Isolation voltage: max 500V		
RMS-unit interface:	Yes		

4. ADJUSTMENT

The adjustment of the alarm limits is done on this unit, but the reading of the limits must be done on the indicator unit (LDU-RM1 or DCU-RM1/2) of the RMS-system.

For adjustments, see the CALIBRATION MANUAL for the RMS-system, RMS-EX1, RMS-SD1, RMS-CD1 or RMS-DD1.

5. CALIBRATION

Following adjustments is done by the supplier, and usually not necessary after delivery.
If necessary, however, this must be done by qualified personnel only.
The potentiometers is located on the upper part of the board, and is reached from the top.

Zero level

- Connect the transducer without any vibration signal applied.
- Connect a DVM (+ to TP10, - to TP7) to the board.
- Adjust the potentiometer P1 (ZERO), until the DVM reads $+1.0 \pm 0.005$ Vdc.
- Connect a DVM (in current mode) to the current output of the unit.
- Adjust the potentiometer P4 (I-Z), until the DVM reads 4 ± 0.002 mAdc.

Internal level

- Disconnect the accelerometer transducer.
- Connect an ac-signal across a 1 k Ω resistor at the transducer input.
Amplitude = 257 mVrms, Frequency= 160 Hz.
- Connect a DVM (+ to TP14, - to TP7) to the board.
- Adjust the potentiometer P2 (AMP), until the DVM reads 4.4 ± 0.1 Vrms.

Full range

- Disconnect the accelerometer transducer.
- Connect an ac-signal across a 1 k Ω resistor at the transducer input.
Amplitude = 257 mVrms, Frequency= 160 Hz.
- Connect a DVM (+ to TP10, - to TP7) to the board.
- Adjust the potentiometer P3 (SPAN), until the DVM reads $+5.0 \pm 0.005$ Vdc
- Connect a DVM (in current mode) to the current output of the unit.
- Adjust the potentiometer P5 (I-S), until the DVM reads 20 ± 0.01 mAdc.

6. CONTACT

Sales, development, production and service:

Dametronic AB

Jägerhorns Väg 19, 141 75 Kungens Kurva, Sweden

Phone: +46-8 556 477 00

Telefax: +46-8 556 477 29

e-mail: service@dametric.se

Web site: www.dametric.se

dametric 

Valmet 