MEGGITT

DATA SHEET

vibro-meter®

VMS 830-2 vibration monitor

VMS 830-2

CE

KEY FEATURES AND BENEFITS

- From the vibro-meter® product line
- Two measurement channels (independently configurable)
- Measurement ranges:
  Displacement:
  100, 200 or 500 µm PEAK
  Velocity:
  10, 20 or 50 mm/s RMS
- Frequency range: 3 to 1000 Hz
- Temperature range: 0 to 50°C
- One 0 or 4 to 20 mA current loop output and one "Raw" voltage output per channel
- Two alarms and three relays per channel
- Front-panel displays
- Robust steel housing with lockable hinged door
- Protection rating: IP66
- Compatible with industry-standard velocity sensors

APPLICATIONS

- Vibration measurement chains for machinery protection and/or condition monitoring
- Vibration monitoring in accordance with ISO 10816
- General-purpose vibration monitoring and protection for stand-alone machines in harsh industrial environments

DESCRIPTION

The VMS 830-2 vibration monitor from Meggitt's vibro-meter® product line is a dedicated vibration monitor for use in vibration measurement chains.

The VMS 830-2 is a two-channel vibration monitor that measures vibration displacement (PEAK) and/or vibration velocity (RMS), using industry-standard velocity sensors.

Each VMS 830-2 measurement channel is independently configurable to measure displacement or velocity. Each channel provides one 0 or 4 to 20 mA current loop output and a buffered "Raw" voltage output signal. Further, for each measurement, two alarms (Alert and

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DESCRIPTION (*continued*)

Danger) and three relays (OK, Alert and Danger) are supported. The alarms/relays are easily user-configurable using potentiometers and DIP switches. The VMS 830-2 also features LCD displays to show measurement values.

During operation, the velocity sensor signal (23 mV/mm/s) is converted by a preamplifier into a standardized voltage signal (70.7 mV/mm/s). It then passes through high-pass and low-pass filters before being amplified by a two-step wide-band amplifier to the level essential to the electronic circuitry. It is user-configurable DIP switches that determine which of the two possible measurements/units – velocity or displacement – is used for the vibration monitoring.

The DC-output signal (current loop output) is available after true RMS rectification (RMS units). The DC-output signal also acts with two adjustable alarm level limit level detectors. The response delay of the alarms/relays is set by DIL switches to 1, 3, 5 or 10 seconds. The relays' change-over contacts enable the Alert and Danger circuits to operate as ether normally energized (NE) or normally de-energized (NDE), again, as set by DIL switches.

Accordingly, the VMS 830-2 vibration monitor is recommended for the monitoring and protection of stand-alone machines and auxiliary balance of plant (BOP) equipment such as fans, pumps, centrifuges, mills and gears. Among other things it allows observation according to ISO 10816 (DIN 45665).

For evaluating the machine state, the VMS 830-2 vibration monitor provides velocity measurements after machine-specific filtering and/or displacement measurements (after additional simple integration). Analog DC output signals (current and voltage) corresponding to the measured vibration are also provided.

Independently adjustable alarm level limits with selectable response delay allow the communication of Alert and Danger alarms via appropriate assigned relays with dry contacts (fail-safe-function).

For specific applications, contact your local Meggitt representative.

SPECIFICATIONS

General operation

Sensor compatibility	: Velocity sensors. For example, CV 211 (20 mV/mm/s nominal).
Input circuitry	: Input amplifier with frequency linearization
Amplifier	: AC amplifier
Measurement range	
• Displacement (S)	: 100, 200 or 500 µm PEAK
• Velocity (V)	: 10, 20 or 50 mm/s RMS Note: Measurement range and units are selectable via DIP switch (S1 and S2).
Filters / frequency range	
• Type	: Butterworth, 2-pole
• High-pass filter (HPF) range	: 3 or 10 Hz
• Low-pass filter (LPF) range	: 1000 Hz
• Roll-off (slope) characteristic	: 40 dB/decade

SPECIFICATIONS *(continued)*

Current outputs	: See **Current outputs on page 3**
Voltage outputs	: See **Voltage outputs on page 3**
Relay outputs	: See **Relay outputs on page 3**
Limits / configuration	: See **Alarm limits / configuration on page 3**

Current outputs

Number	: One (1) per measurement channel
Type	: 0 or 4 to 20 mA current loop output, corresponding to the processed output measurement (displacement or velocity).
Load	: 500 Ω max.
Connector	: Screw or spring terminal connector

Voltage outputs

Number	: One (1) per measurement channel
Type	: "Raw" output measurement (displacement or velocity), corresponding to the unfiltered sensor signal (3 Hz to 5 kHz). Note: These output signals are buffered and protected against short-circuits.
Load	: 20 kΩ min.
Connector	: Screw or spring terminal connector

Relay outputs

Number	: Three (3) per measurement channel: OK, Alert and Danger
Mode of operation	: For each measurement channel, the relays (OK, Alert and Danger) can be configured as normally energized (NE) or normally de-energized (NDE), latched or unlatched, using DIP switches on the circuit board (see **Layout (circuit board controls) on page 7**). Note: See also **Alarm limits / configuration on page 3**.
Switching voltage	: 220 V_{DC} or 250 V_{AC} max.
Switching current	: 2 A max.
Switching power	: 60 W or 125 VA max.
Connector	: Screw or spring terminal connector

Alarm limits / configuration

Number	: Two (2) per measurement channel: Alert (set-point 1) and Danger (set-point 2)
Alarm limit configuration	: For each measurement channel, the alarm limit values are configurable in 10 to 100% (1 to 10 V_{DC}) range using potentiometers on the circuit board
Alarm time delay	: For each measurement channel, an alarm/relay limit time delay of 1, 3, 5 or 10 seconds can be configured using DIP switches on the circuit board

Note: The alarms/relays are configurable on a measurement channel basis (independently/simultaneously). See **Layout (circuit board controls) on page 7**.

SPECIFICATIONS *(continued)*

Display

Number	: Two (2). Note: One per measurement channel.
Type	: Liquid-crystal display (LCD)

Environmental

Temperature range	: 0 to 50°C
Humidity	: 95% relative humidity (RH) max., non-condensing
Protection rating (according to IEC 60529)	: IP66

Approvals

Conformity	: European Union (EU) declaration of conformity (CE marking)

Power supplies to vibration monitor (input)

Number	: Two (2). Note: The power supply (input) is on a per measurement channel basis.
Voltage	: 230 V_{AC} nominal (+15 / −10%), 50/60 Hz
Power consumption	: 7 VA approx.

Power supplies to sensors (output)

Voltage	: 24 V_{DC} nominal (±1%)
Current	: 125 mA max.
Noise	: 50 mV PEAK-to-PEAK

Physical

Housing material	: Sheet steel, power coated. 1.38 mm for housing body. 1.25 mm for housing door.
Color	: Light gray (RAL 7035)
Dimensions	: 300 × 300 × 128. See **Mechanical drawings on page 6**
Weight	: 6 kg approx.
Mounting	: Four mounting holes in the rear of the housing for use with external mounting bolts/brackets. Note: Wall mounting recommended.
Cover/door	: Door with two hinges. Note: The hinges are right-mounted for a left-opening door.
Lock	: Cabinet lock (3 mm double bit) with 90° movement

SPECIFICATIONS *(continued)*

Cable fittings (stuffing glands)

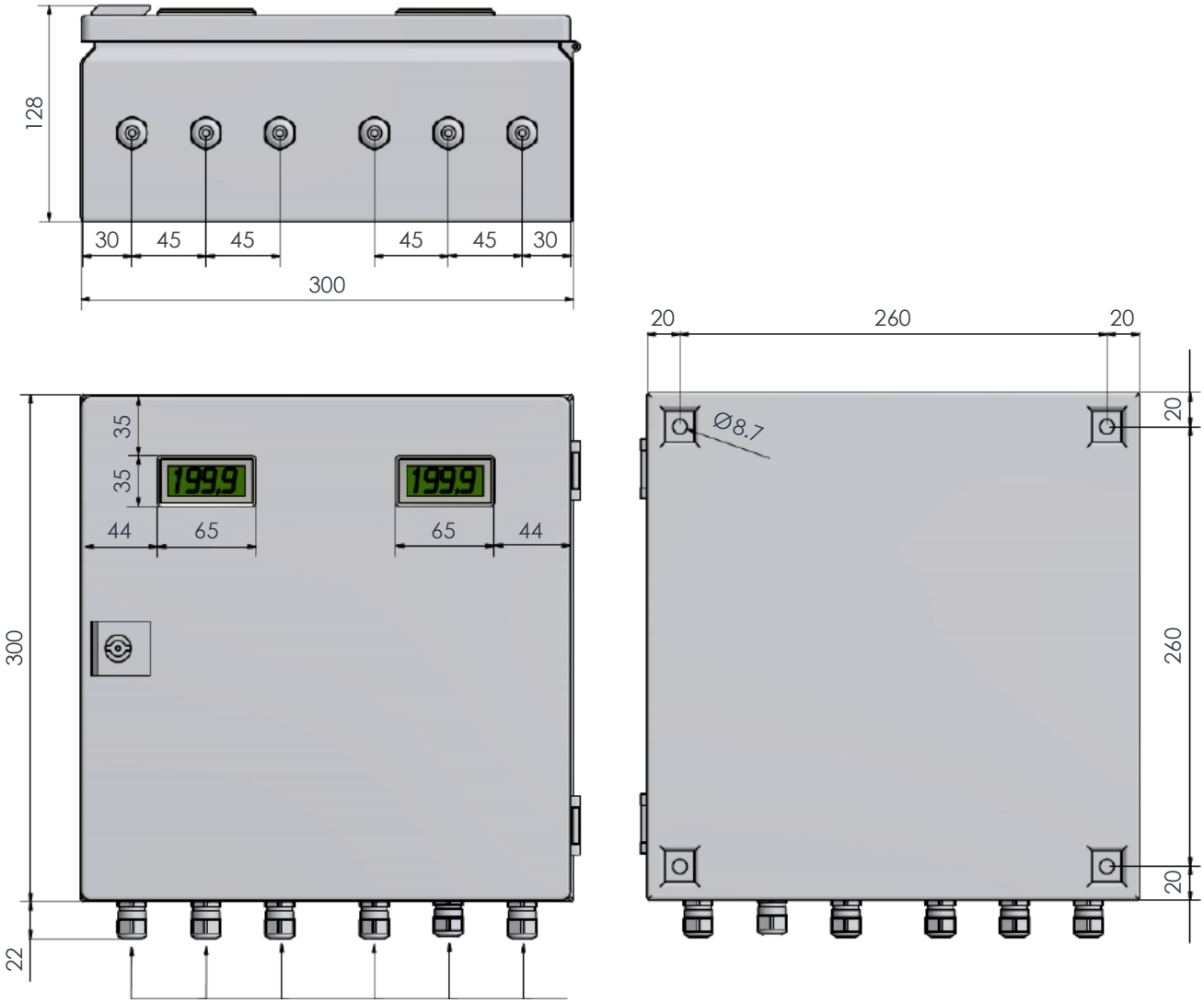
- Number : Six (6).
  Note: Two groups of three (3) per measurement channel.
- Type : M16 × 1.5, screw-fit
- Material : Plastic (polyamide)

Cable connection / connectors

- Screw-terminal (ordering option code Y1) : Twenty (20) × screw-terminal contacts. Clamping range: 2.5 mm^2 nominal.
- Spring-terminal (ordering option code Y2) : Twenty (20) × spring-terminal contacts. Clamping range: 1.5 mm^2 nominal.

DRAWINGS

Mechanical drawings

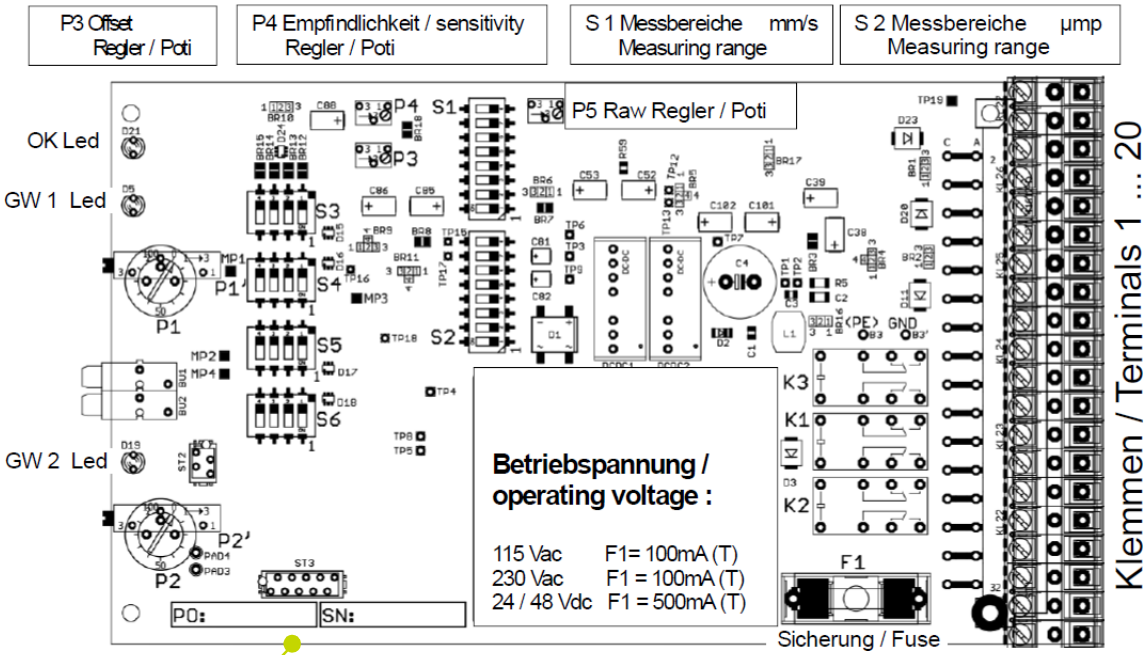


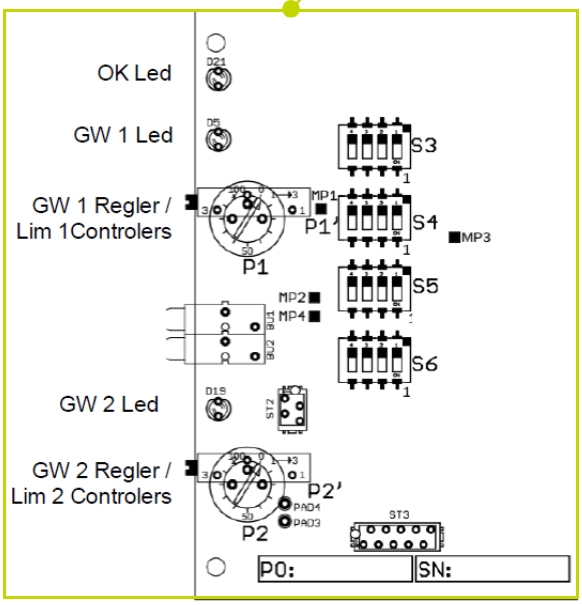
Six (6) M16 cable fittings (stuffing glands)

Note: All dimensions in mm unless otherwise stated.

DRAWINGS *(continued)*

Layout (circuit board controls)





DIP switches	Switch			
S3 and S5	**4**	**3**	**2**	**1**
1 s	---	---	---	X
3 s	---	---	X	---
5 s	---	X	---	---
10 s	X	---	---	---

DIP switches	Switch			
S4 and S6	**4**	**3**	**2**	**1**
Latched	---	---	---	X
Unlatched	---	---	X	---
Normally energized (NE) – fail-safe	---	X	---	---
Normally de-energized (NDE)	X	---	---	---
Switches 1 and 2 are each compatible with switches 3 and 4.				

Note: Incorrect DIP switch settings result in a blinking LED of the corresponding limit value.

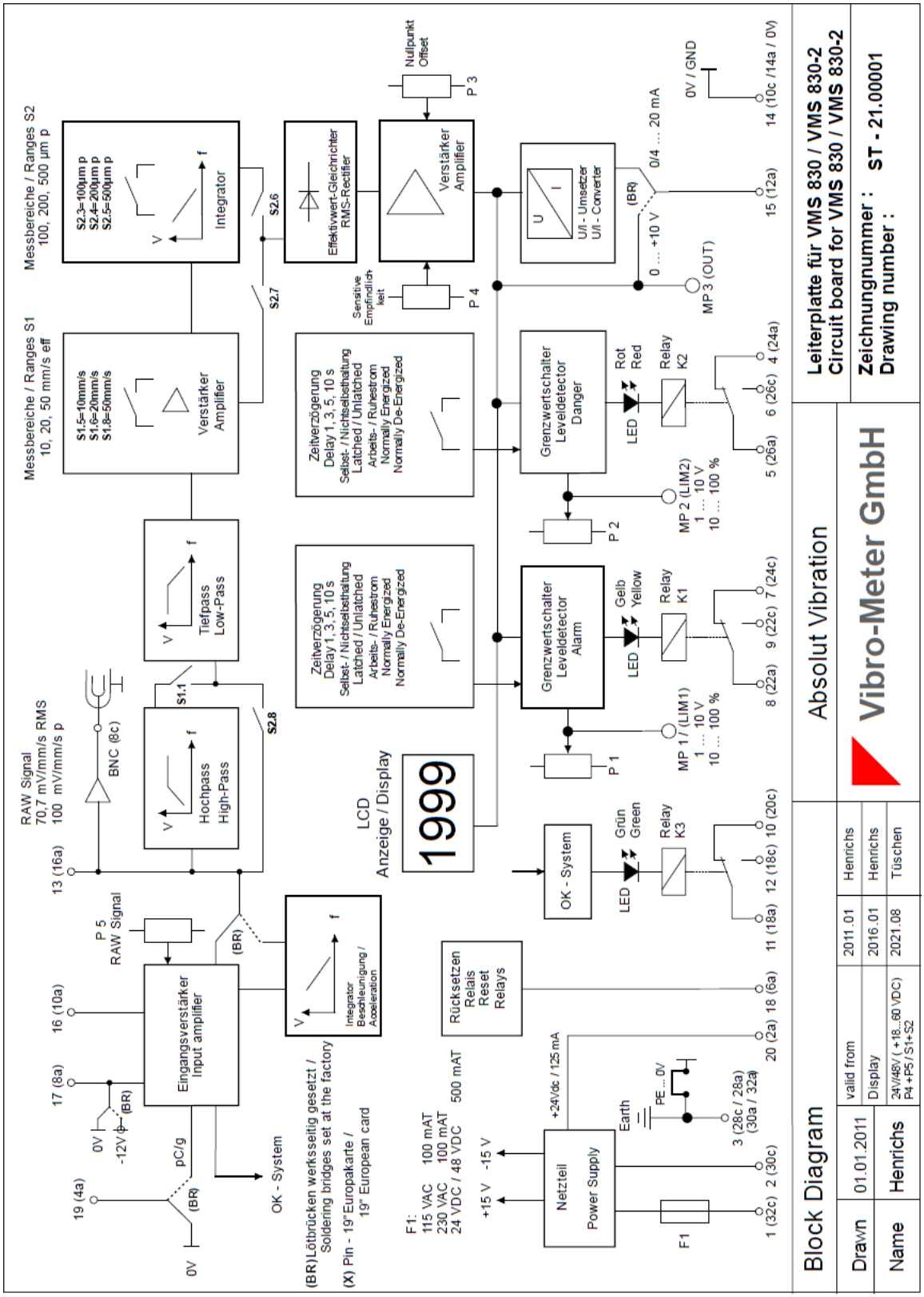
Notes

MP1 = Alert (set-point 1 / GW1).
MP2 = Danger (set-point 2 / GW2).
MP3 = 0 to 10 V_{DC} measurement point.
MP4 = 0 V_{DC} (GND) reference point.

MP1 and MP2 are adjustable from 1 to 10 V_{DC}.

DRAWINGS *(continued)*

Block diagram



ORDERING INFORMATION

To order, please specify the version of the VMS 830-2 vibration monitor required …

Ordering number (PNR):

VMS830-2 — **B** — **C** — **D** — **E** — **G** — **Y**

Input (B)	
mV/mm/s	4

Input sensitivity (C)	
23 mV/mm/s	023

High-pass filter (D)	
3 Hz	03
10 Hz	10

Terminals (Y)	
1	Screw
2	Spring

Output (G)	
04	4 to 20 mA

Low-pass filter (E)	
1000	1000 Hz

Notes
Other combinations of VMS 830-2 ordering option codes are available/possible.
The normalized versions of the VMS 830-2 that are readily available are listed below.

Normalized versions:

Type	Designation	Ordering number (PNR)
VMS 830-2	See Ordering number (PNR) above	VMS830-2-B4-C023-D03-E1000-G04-Y2
VMS 830-2	See Ordering number (PNR) above	VMS830-2-B4-C023-D10-E1000-G04-Y2

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The Energy & Equipment division includes the Energy Sensing and Controls product group that specialises in sensing and monitoring solutions for a broad range of energy infrastructure, and control valves for industrial gas turbines, primarily for the Power Generation, Oil & Gas and Services markets. Energy & Equipment is headquartered in Switzerland (Meggitt SA) and incorporates the vibro-meter® product line, which has over 65 years of sensor and systems expertise and is trusted by original equipment manufacturers (OEMs) globally.

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