

Vibro-Meter Vibration Monitor

FEATURES

- Absolute vibration measurement
- Monitoring of machines and industrial plants
- Suitable for velocity transducers (CV ...) and piezoelectric accelerometers (CA ... / CE ...)
- High cable length to the transducer possible
- 115/230VAC or 24 V DC or 48 V DC
- Aluminium or sheet steel housing or 19" European card
- Dual version available
- LCD Display with protection class IP66



GENERAL

The VMS 830 is a compact Vibration Monitor to control stand-alone machines as well as auxiliary aggregates (e.g. fans, pumps, centrifuges, mills, gears, etc.); on who's revising important big installations or process bounds are depending. Among other things it allows observation according to DIN 45665 DIN ISO 10816.

Utilized for this are the vibrations of important machine parts (pillow blocks, foundations, casings), converted by rugged and wear-resistant accelerometers with integrated electronics (piezoelectric accelerometer) or velocity transducers in electrical signals. When using a galvanic separation unit of type GSI into the measurement circuit potential differences (up to 4kVeff) between front-end and Vibration Monitor are without influence. In this case the accelerometer (with integrated electronics) needs to provide a current modulating ($\mu\text{A/g}$) output signal (VIBRO-METER-patent). This method allows supplementary wide signal amplitude- and -frequency range, as well as Signal-cable lengths up to 1000m. For the front end circuit control the Vibration Monitor is equipped with a so called OK-System, that works with all mentioned front ends.

Using accelerometer and separation unit with PTB-Certificate or velocity transducer in pressure proof casing into the front end circuit, the Vibration Monitor is also suitable to control machines in ex - sectors (beginning with zone 1).

For evaluating the machine state the Vibration Monitor can alternatively consider the velocity after machine-specific filtering (high/low pass combination) or - after simple integration - the displacement. To the vibration size proportional DC signals are available as current or voltage output

Two independent adjustable level switches with selectable response delay allow the signalisation of „warning“ and „alarm“ via appropriate assigned relays by dry contacts (fail-safe-function).

For field mounting the complete signal- and evaluating electronics is fitted together with the power supply unit into a sheet steel (protection class IP66) or aluminium casing (protection class IP65) dual units in a common casing are available.

FUNCTIONAL DISCRIPTION

To the signal of the velocity transducer CV 2 (mV/mm/s) or piezoelectric accelerometers CE (mV/g) is converted in a preamplifier into a standardized voltage signal (velocity 70, 7 mV/mm/s RMS)). Following it is passed via a high- / a low pass filter and amplified in a 2-step wide-band amplifier to the level essential to the adjustment electronics.

The normalized acceleration signal is adjusted in a band-pass (high/low pass combination) to the specific machine requirements regarding the frequency range to assess. With DIL-switches is determined, which of the two possible units – velocity or displacement– is used for Vibration Monitoring.

The DC-output signal (voltage or current) available after the following rectifying (true RMS rectifier) is calibrated in RMS units. The DC-output signal acts on the two adjustable level detectors. The response delay of the appropriate assigned relays is set by DIL-switches to 1, 3, 5 or 10s. The assigned relays' change-over contacts enable the alarm and trip circuits, responding either on opening or on closing the contact. It can be selected between normally energized and normally de-energized by Dil-Switches.

Technical Information

Power supply for each channel	115/230 V _{AC} (-10/+15 %) 50/60 Hz +18...36 V _{DC} or +36 ... 60 V _{DC} optional	Approx. 7 VA Approx. 10 W
Input circuit	<ul style="list-style-type: none"> - input amplifier (mV/mm/s) with linearization - input amplifier (mV/g) with constant current source (0,5/4mA) - input amplifier (mV/g) with auxiliary voltage for GSI 	
Sensors	<ul style="list-style-type: none"> CV ... velocity transducer Signal mV/mm/s CE ... accelerometer for constant current supply mV/g CE ... accelerometer with current modulating output Signal µA/g(only with GSI) CA ... accelerometer with charge output Signal pC/g 	
Amplifier	AC - amplifier	
RAW Signal	3Hz ... 5kHz (not filtered), loaded with ≥ 20 kΩ	
Frequency range	<ul style="list-style-type: none"> High-pass HP: 3 Hz or 10 Hz Low-pass LP: 100 or 1000 Hz Filter (Butterworth 2 Pol; 40 dB / Decade) 	
Measuring units	<ul style="list-style-type: none"> selected by DIP – Switches V => velocity mm/s eff S => displacement µmp 	

Measuring range	selected by DIP – Switches Velocity 10, 20, 50 mm/s eff or displacement 100, 200, 500 μ m
DC output	0 ... +10V, R Last >10 k Ω or 0/4..20mA R Last < 500 Ohm
Power supply for external devices	+ 24 V _{DC} Tolerance \pm 1 % ; max.125 mA ; Noise level max.50 mV _{pp}
Level switches	2 pieces, independent adjustable in range of 10 - 100% (1V to 10VDC)
Time delay	selected by DIP switches; 1,3, 5 or 10 seconds
Relay contact	max. switching voltage 220 V DC or 250 VAC max. switching current 2 A max. 60W or 125 VA

Version: Aluminium Housing

Temperature range:	-20 ... +70°C operating temperature -30 ... +80°C storage temperature
Humidity	maximum humidity 95%, not condensing
Housing	Pressure cast aluminium, material GD AL Si 12
Dimensions	Single 120 x 220 x 91 mm (H x B x T) Dual 230 x 280 x 110 mm (H x B x T)
Colour	RAL 7001
Protection Class	IP65
Connection	Screwed cable gland M16x1,5 polyamide Single 3 pieces Dual 2 x 3 pieces
Weight	Single 2 kg Dual 4 kg

Version: Europa card

Temperature range	0 ... +50°C operating temperature -20 ... +80°C storage temperature
Format	European board
Dimensions	160 x 100mm
Width	8 TE (40mm) front plate
Height	3 HE
Connection	Plug connector 32pol DIN 41612 design D
Weight	approx. 0,45 kg

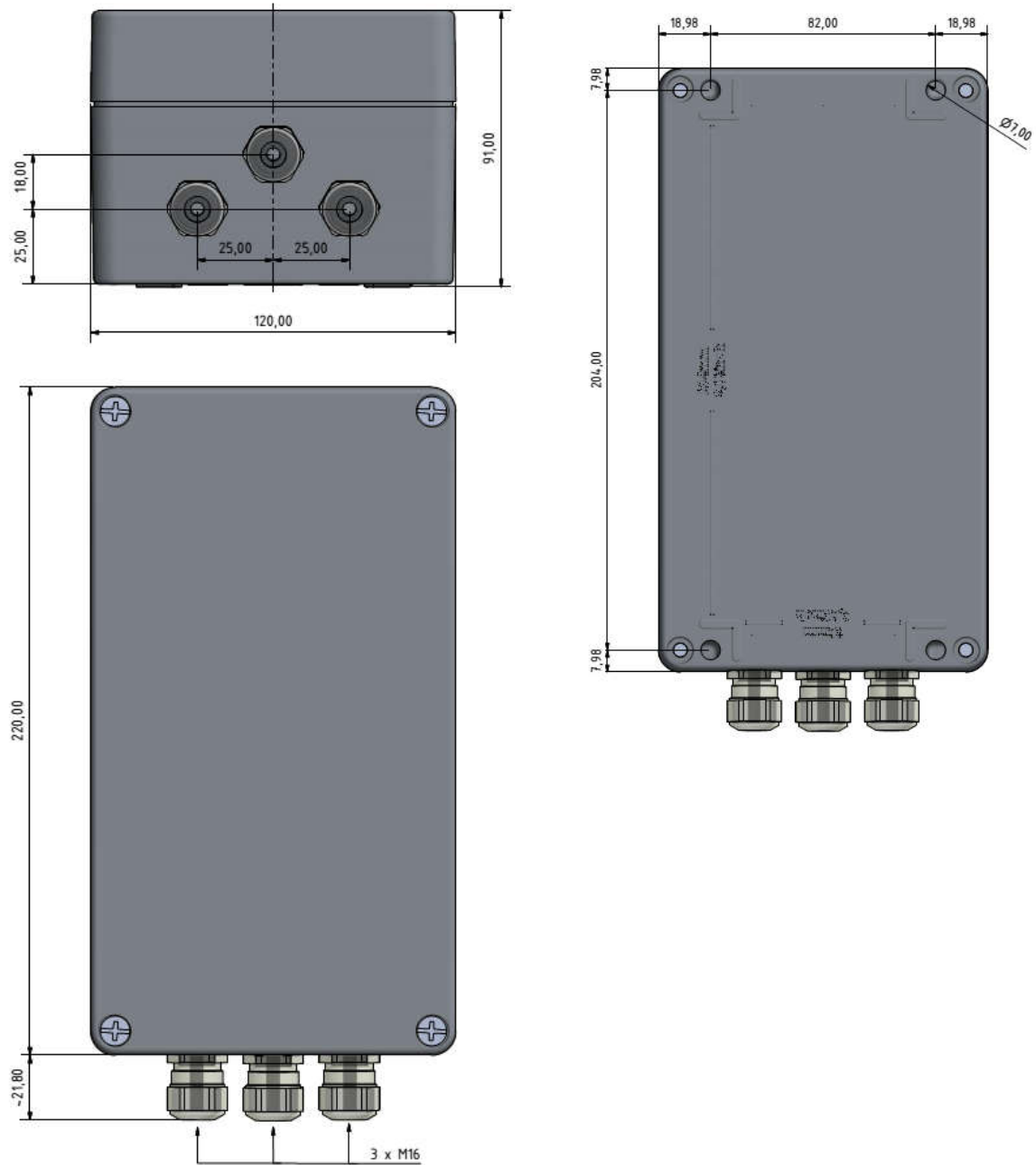
Version: Sheet steel housing with LCD-Display

Temperature range	0 ... +50°C operating temperature 0 ... +50°C storage temperature
Humidity	maximum humidity 95%, not condensing

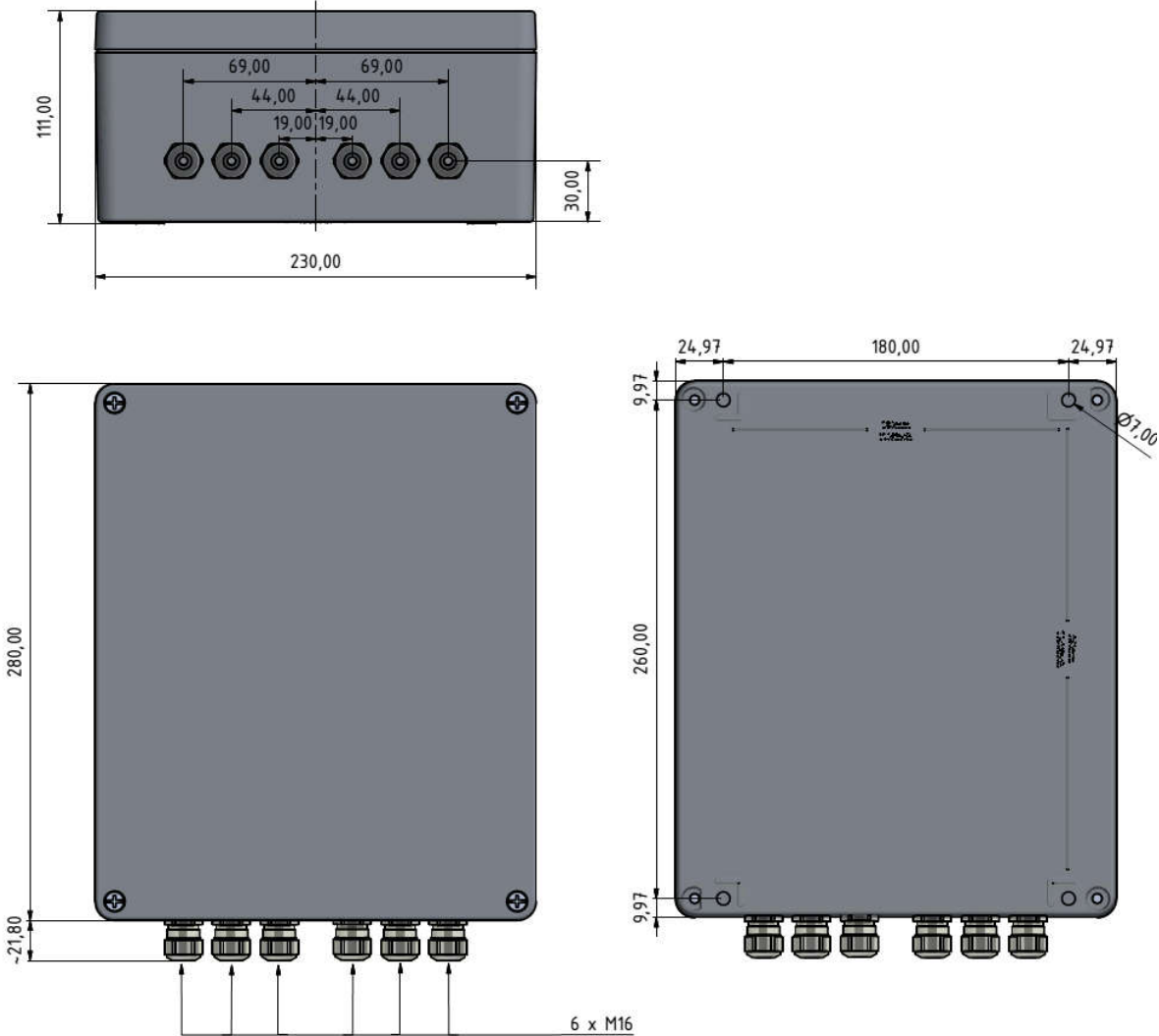
Housing	Sheet steel, powder coated
Dimensions	Single 150 x 300 x 128 mm (B x H x T) Dual 300 x 300 x 128 mm (B x H x T)
Colour	RAL 7035
Protection Class	IP 66
Material thickness	Housing: 1.38 mm ; Door: 1.25 mm
Technical design	Housing with hinged door; Lock with 3 mm double bit
Connection	Screwed cable gland M16x1,5 polyamide Single 3 pieces Dual 2 x 3 pieces
Weight	Single 3,5 kg Dual 6,0 kg

Drawings

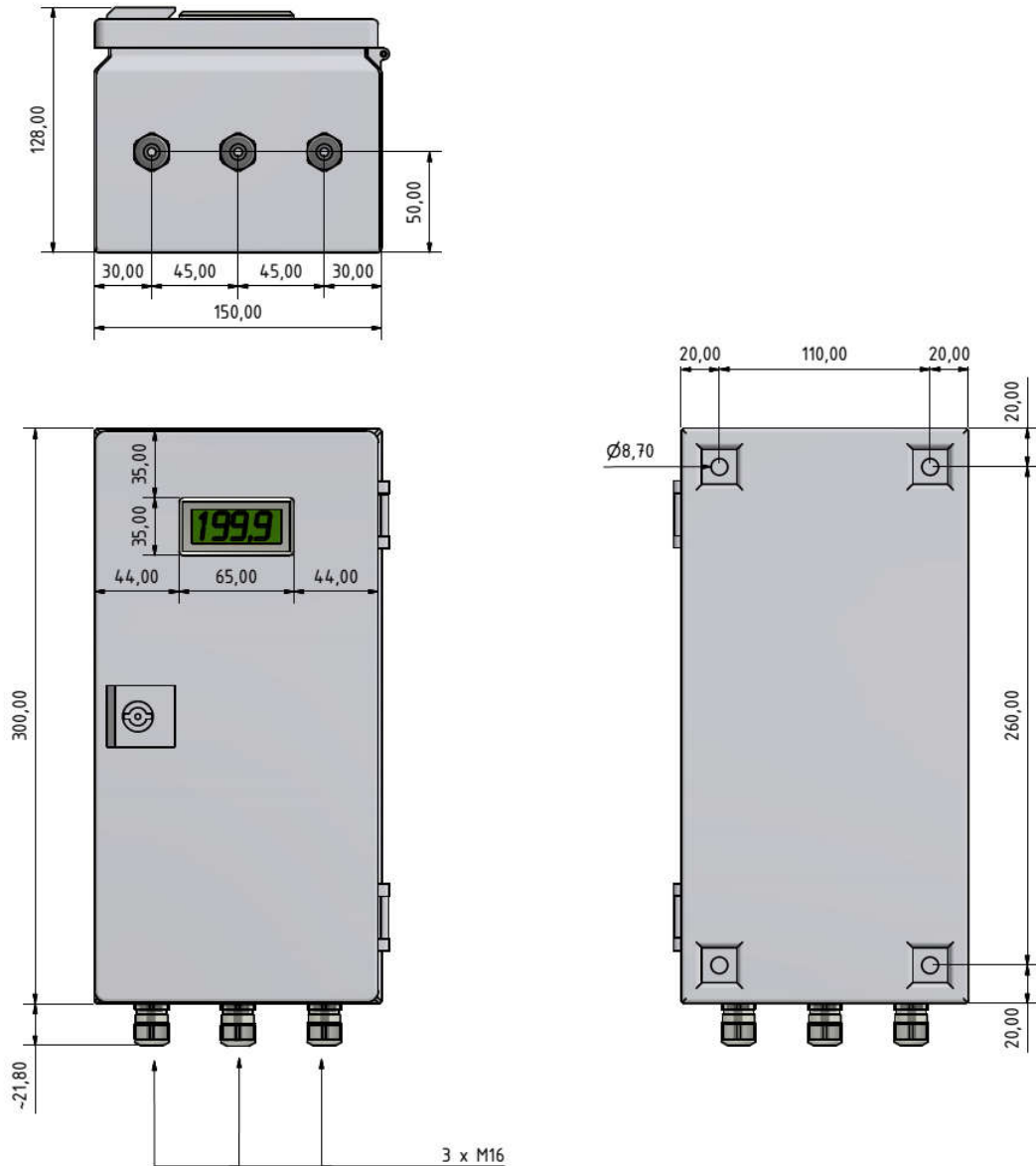
Single version with Aluminium housing



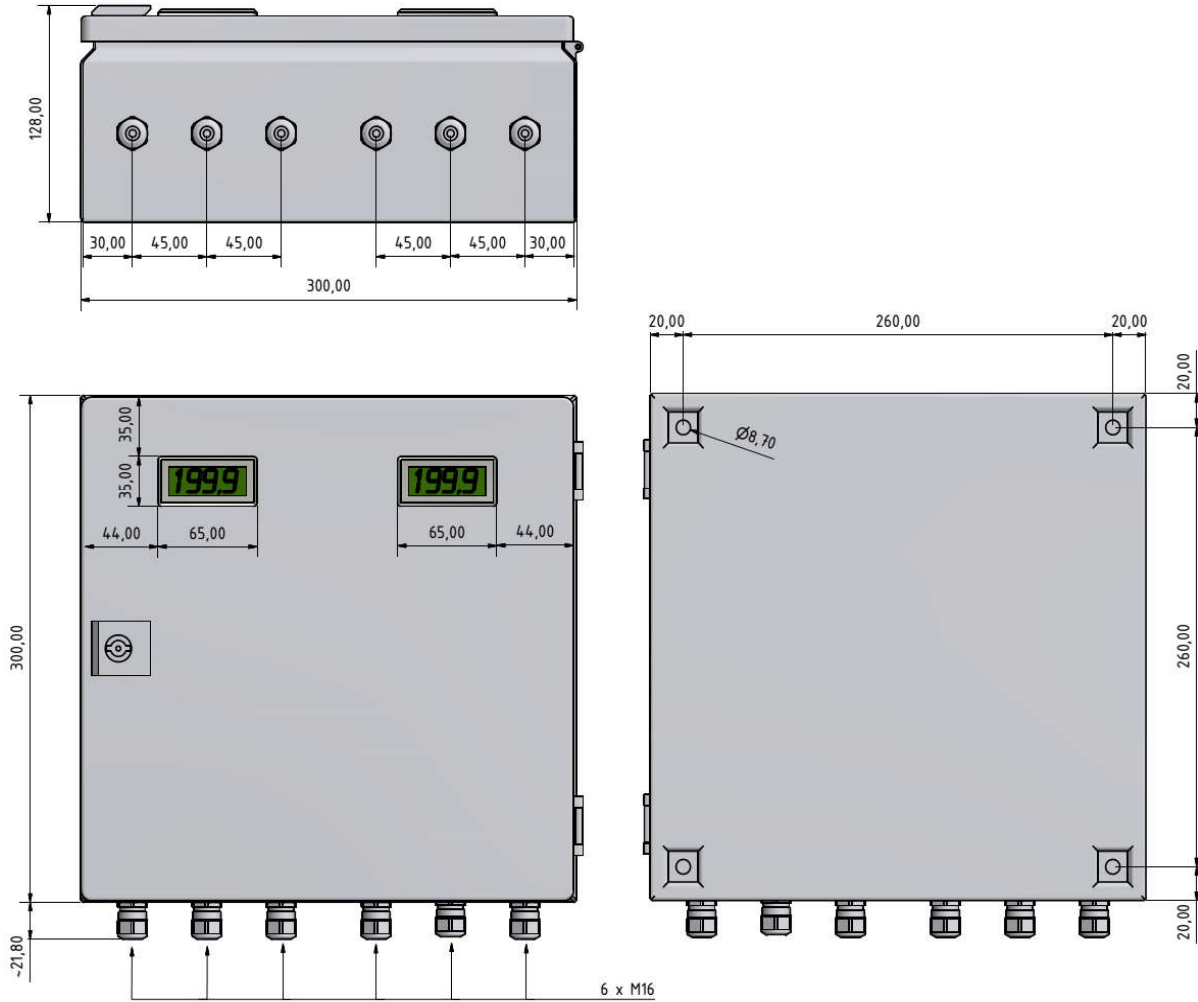
Dual version with Aluminium housing



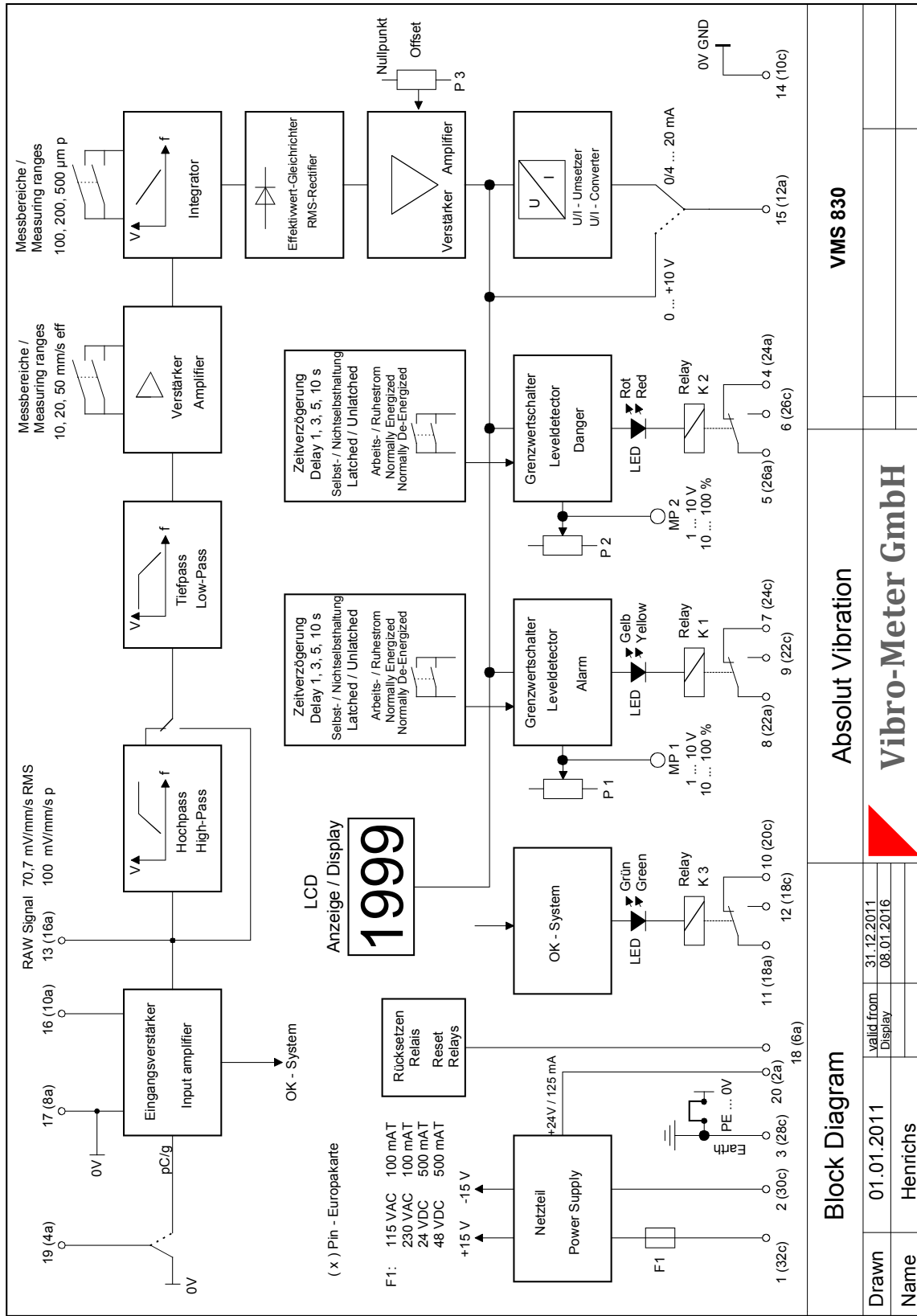
Single version with sheet steel housing with LCD-Display



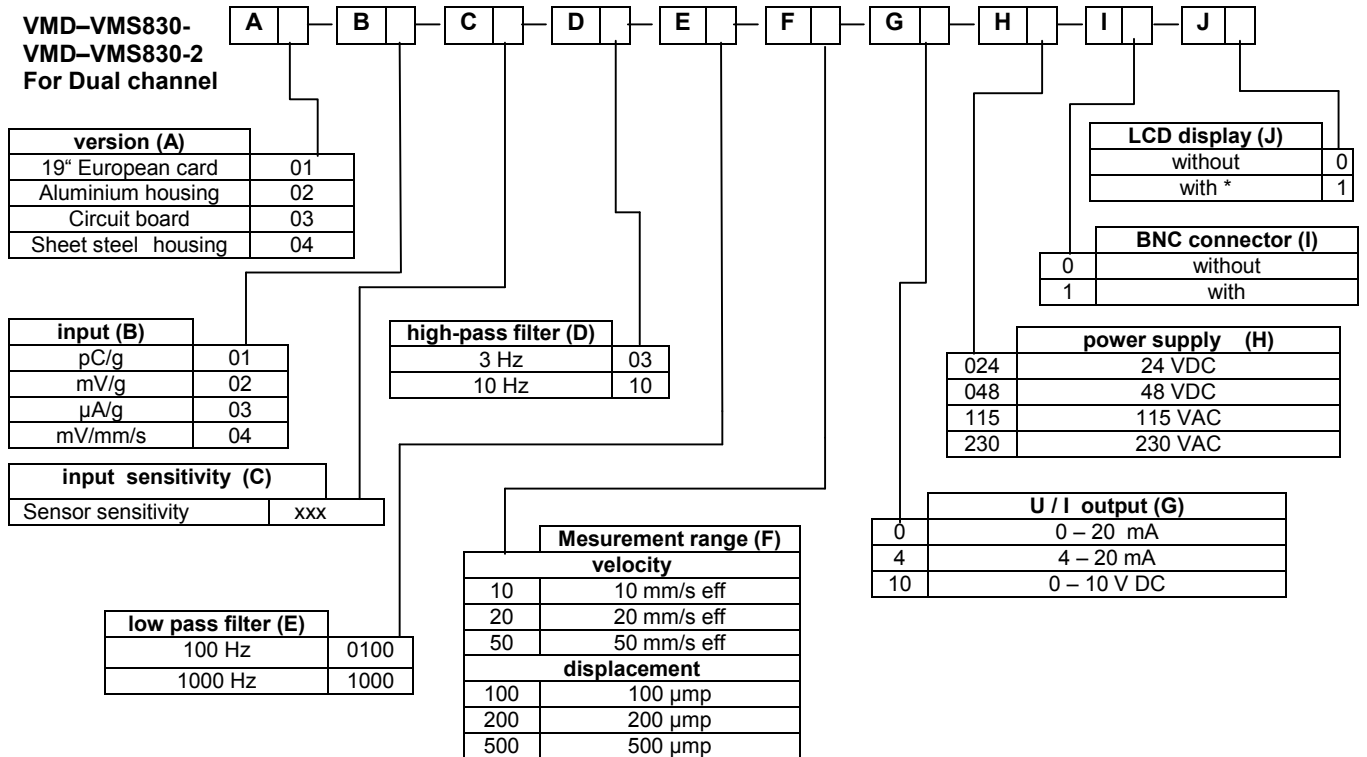
Dual version with sheet steel housing with LCD-Displays



Block diagram



**VMD-VMS830-
VMD-VMS830-2
For Dual channel**



* LCD-display only available in combination with sheet steel housing

Example:

VMD-VMS830-A04-B01-C100-D10-E1000-F20-G4-H230-I0-J1
(VMS830-2 for DUAL channel instrument)

Version (A04):	Sheet steel housing
Input (B02):	mV/g
Input sensitivity (C100):	100
HP – high-pass filter (D10):	10 Hz
TP – low pass filter (E1000):	1000 Hz
Measuring range (F20):	20 mm/s eff
Current output (G4):	4 – 20 mA
Power supply (H230):	230 V AC
BNC connector (I0):	none
LCD display (J1):	with LCD display

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Sales Offices

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