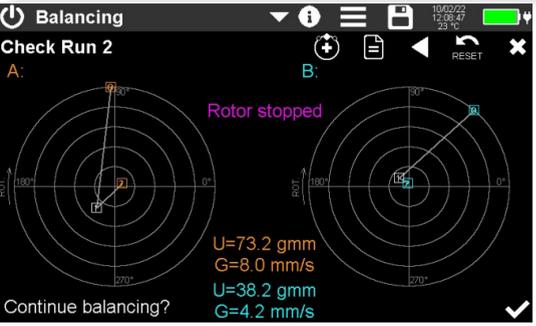
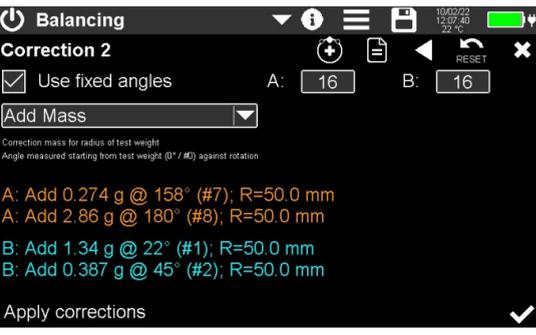


VM80-BAL / VM100-BAL: Balancing System (Option)

Available as sensor kit



- Field balancing in one or two planes
- User guidance
- Fixed or free angles for mass changes
- Keep/remove test mass
- Combination of correction weights
- Photoelectric reflex switch VM100-PS as angle sensor
- Balancing report as CSV file



Balancing Settings

Balancing mode: Two planes (A/B)

RPM tolerance: 1 %

Gain: A: 10 B: 10

Balancing radius: A: 50.0 B: 50.0 mm

Vibration quantity: mm/s RMS

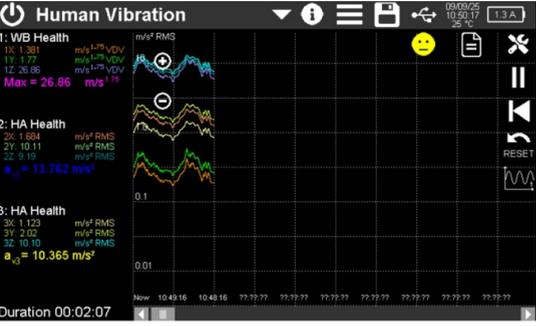
Mass unit: g (test and correction)

Unbalance unit: gmm

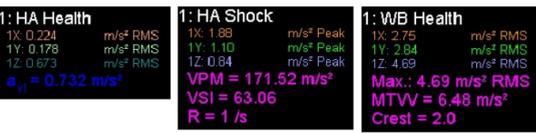
Rotor weight: 1.50 kg

VM80-HUM / VM100-HUM: Human Vibration Measurement (Option)

Available as sensor kit

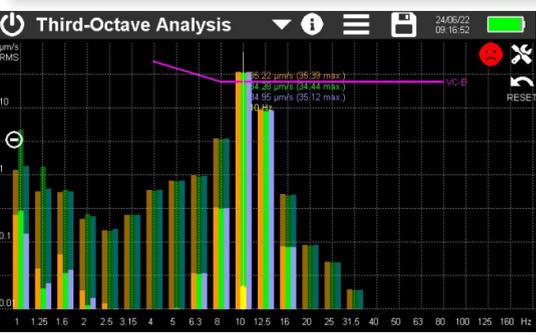


- Hand-arm vibration for health evaluation with one or two (VM100A) hands according to ISO 5349-2
- Hand-arm shock vibration (VPM) to ISO 5349-3 for compliance with EU Machinery Regulation (EU) 2023/1230
- Whole-body vibration for health and comfort evaluation based on RMS or VDV measurements to ISO 2631
- Whole-body vibration for ride comfort in motor vehicles with 3 triaxial sensors to GB/T 4970 (VM100A)
- Simultaneous measurement with 3 triaxial sensors (VM100A) or up to 3 different evaluations with 1 sensor, e.g. hand-arm health, shock and unweighted
- Plots the time graph in 1 s intervals for up to 10 hours
- Calculation of daily exposure A(8) to guideline 2002/44/EC
- External start/stop trigger
- Real-time vibration signal view for signal integrity check
- Recording of time data and test report as CSV file



VM80-VC / VM100-VC: Third-Octave Analysis for "VC" and "Nano"

Available as sensor kit



- "VC lines" are a widespread method for the evaluation of vibration with regard to different levels of precision manufacturing, especially in the semiconductor industry
- The method uses the third octave spectrum of vibration velocity from 1 to 160 Hz
- Particularly strict "Nano" criteria are used in nanotechnology
- Peak hold function
- Recording at limit exceedance for long-term monitoring
- Recommended sensors: KB12VD (uniaxial) down to VC-G / Nano-EF, KS48C (uniaxial) and KS823B (triaxial) down to VC-D

Technical Data

	VM80	VM100B	VM100A
Sensor input channels	4 (Binder 712, 4 pins)	3 (Binder 712, 4 pins)	9 (Binder 712, 4 pins)
Infrared temperature sensor	-	-	Built in
IEPE sensor supply	4 mA / 24 V		
TEDS (Transducer Electronic Data Sheet)	IEEE 1451.4; templates 25, 27, 28		
Measurement point identification	NFC reader; compatible with type A, B, F and V tags		
Tacho input	24 V; 7 pin Binder 712 socket; <60 000 rpm		
Data acquisition	24 bit Sigma-Delta ADC, one per input, fully simultaneous		
Analog gains	1 / 10 / 100 / Auto		
Measurement range	0.1 µm/s² to 10 000 m/s² (depending on transducer sensitivity)		
Accuracy	<1 % at reference conditions		
Resolution	>90 dB SNR		
Overall values in time domain	RMS (1 s); RMS (infinite); peak; peak-peak; peak hold; crest; frequency		
Filtering in time domain	35 Butterworth two-pole high pass filters from 0.2 to 5000 Hz 38 Butterworth two-pole low pass filters from 10 to 24 000 Hz Single integration for velocity; double integration for displacement		
Human vibration weighting filters	Wb; Wc; Wd; Wh; Wj; Wk; Wm		
Human vibration modes	Hand-arm: health; shock; unweighted; RMS; A _v ; Peak; VPM; VSI Whole-body: health; comfort; RMS; MTVV; Crest; VDV		
Data plotter in time domain and human vibration	1 value per second; max. 10 hours		
Frequency analysis	3 channel FFT of acceleration or velocity; FRF; PSD; ESD 1 Hz to 4.4 kHz / 1 Hz to 22 kHz 1024 to 65 536 points Resolution: >0.1 Hz Y axis: linear or logarithmic Peak hold mode Windowing types: Hann(ing); Hamming; Flattop; Rectangular Averaging: 1 to 16 spectra Triggering: auto; amplitude; single amplitude; tacho input Waterfall mode; spectrogram mode (1 channel)		
Interface / charge connector	USB type C; mass storage device; no driver needed		
Data memory	Micro SD card; 4 GB; FAT file system; CSV, BMP or WAV files		
WAV recording of raw signal	3 channels; 4.4 kHz bandwidth; approx. 300 MB/hour		
Operating temperature range	-20 to 60 °C; <95 % relative humidity without condensation		
Rechargeable battery; operating time	NiMH; 6 to 8 hours	NiMH; 10 to 14 hours	
User interface	Touch screen, English / German		
Screen size; pixels	TFT 5"; 800 x 480	TFT 7"; 800 x 480	
Dimensions [mm], weight	160 x 100 x 36; 0.9 kg	215 x 150 x 50; 1.3 kg	
Accessories (included)	Carrying case; USB data & update cable; USB charger; manual		
Optional accessories	Licenses VMxx-MAC; VMxx-VC; VMxx-BAL; VMxx-HUM 034-B711-BNCf: Sensor adapter cable to 3 BNC female plugs VM100-LS photoelectric rpm sensor with magnetic stand		

Trusted Quality Since 1959



In the 1950s Metra began manufacturing piezoelectric accelerometers and vibration meters. Developing and making both sensors and instruments in our house ensures high quality and design flexibility.

Metra Meß- und Frequenztechnik in Radebeul GmbH & Co. KG
 Meißner Str. 58a DE-01445 Radebeul Germany
 Tel. +49-351-8362191 Fax: +49-351-8362940 Web: www.mmf.de E-Mail: info@mmf.de



The VM80 and VM100 vibration analyzers have been designed for the typical tasks of vibration measurement in laboratories, field and industry. Despite the large range of functions, the main focus was on ease-of-use.

The instrument software is modular, so you only need to pay for what you need. New functions can be added later on.

The compact units provide up to nine IEPE compatible sensor channels with TEDS support.

All commercially available IEPE accelerometers can be connected. Please choose from our wide range of vibration sensors.

In addition, some modules support measurements with IEPE type sensors for force and pressure and with IEPE microphones.



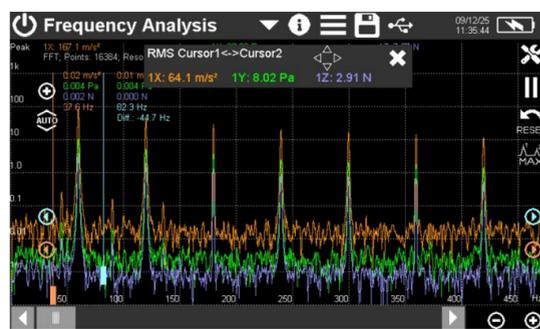
Choose from our wide range of piezoelectric accelerometers

Time Domain Measurement and Recording (Included)

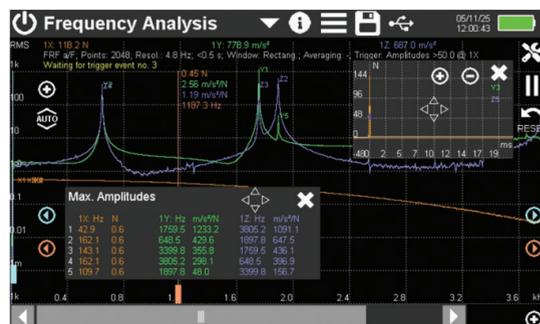


- Measures and plots for up to 9 channels acceleration, velocity, displacement or other physical quantities
- RMS (1 s or infinite), peak(-peak), peak-hold, crest, vector sum and main frequency
- RPM plot
- High pass and low pass filters from 0.2 Hz to 24 kHz (> 4 kHz only 3 channels)
- Up to 10 hours plot time
- CSV recording of 1 measurement per second on SD card
- Recording time only limited by SD card size

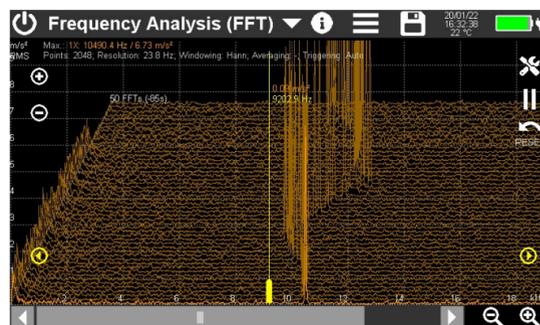
Frequency Analysis (Included)



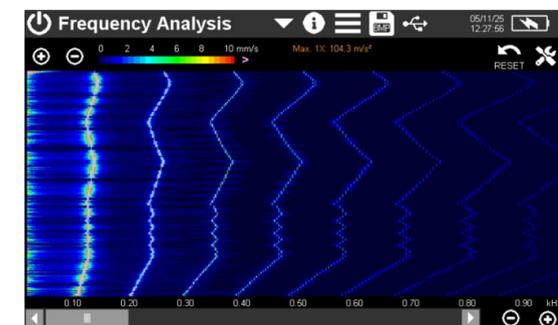
FFT with amplitude between cursors



FRF mode with impact hammer

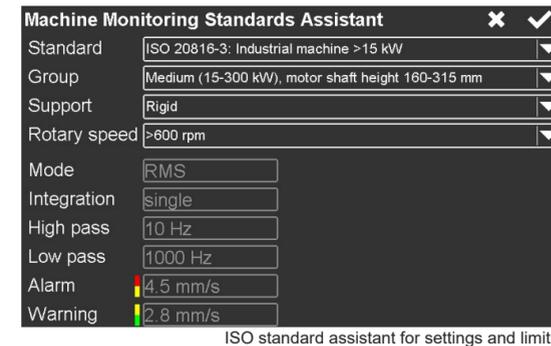
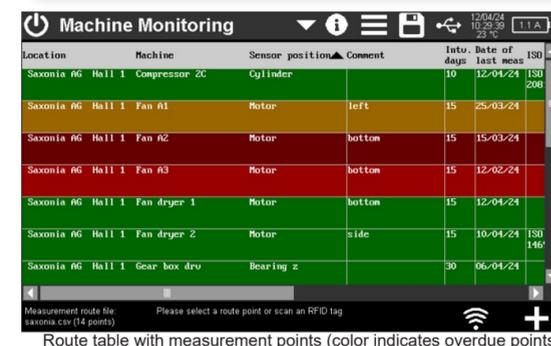


Waterfall mode



Spectrogram mode

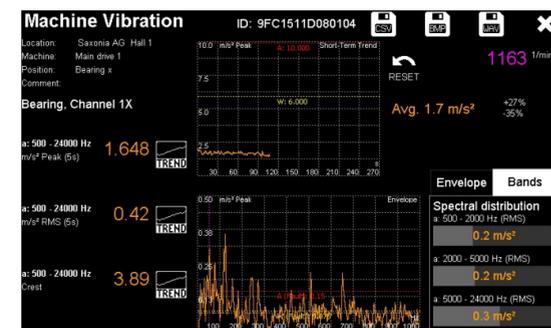
VM80-MAC / VM100-MAC: Machine Monitoring, Route Measurement



ISO standard assistant for settings and limits



Unbalance vibration view

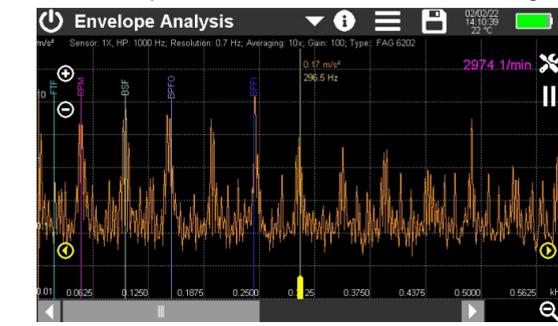


Bearing condition view

- Measures and monitors machine vibration as part of predictive maintenance
- Manages measuring routes
- Route table with individual settings, limits and descriptions for each measuring point
- Keeps track of large numbers of measuring points using NFC identification
- Unbalance vibration** view provides several useful analysis tools, including RMS and peak of triaxial velocity, acceleration or displacement, phase angle, short-term trend of amplitude and phase incl. average/max./min. values, FFT of measured vibration from 3 to 300 Hz, 6 main spectral frequencies, rotation speed
- Roller bearing monitoring** view includes RMS, peak and crest factor of high frequency acceleration, short-term trend of peak with average/max./min. values, envelope spectrum, spectral distribution, rotation speed
- Easy to operate, no profound knowledge required
- Built-in support for monitoring of turbines, pumps, compressors, gear boxes and other machines to ISO 20816
- Plots trend diagrams, storage of CSV reports



- License also includes an **envelope analyzer** for bearing diagnosis and a **9-channel amplitude-over RPM plotter** for run-up/coast-down tests and resonance finding



Key Features

- Fully touch operated, simple and intuitive design
- 3, 4 or 9 IEPE sensor channels with TEDS support
- Simultaneous 24 bit data acquisition for high accuracy and resolution
- Bandwidth 0.4 Hz to 24 kHz
- Tacho input
- NFC detection of measurement points for route measurement and saving
- Raw signal recording
- Storage on SD card, standard data formats (CSV, BMP, WAV)
- USB interface
- Rechargeable battery
- IP65 protection rating



Applications

- Simultaneous measurement and plot of up to 9 overall vibration values
- Vibration analysis using FFT, FRF, PSD etc.
- Machine condition monitoring and analysis by means of route-based measurements
- Envelope analysis for roller bearing diagnostics
- Run up / coast down tests, resonance finding
- Balancing with one or two planes
- Human vibration measurement for hand-arm and whole-body
- Third-octave analysis for the measurement of extremely low vibrations with "VC" and "Nano" criteria

Function Modules (Software Licenses)

- General time domain measurement (included)
- Frequency analysis (included)
- VM80-MAC / VM100-MAC:** Machine monitoring, route-based, including envelope analysis and run-up/coast down (optional)
- VM80-BAL / VM100-BAL:** Balancing with one or two planes (optional)
- VM80-VC / VM100-VC:** Third-octave analysis for extremely low vibrations: "VC" and "Nano" criteria (optional)
- VM80-HUM / VM100-HUM:** Human vibration, hand-arm and whole-body vibration measurement (optional)