



Product Specification VIBROCONTROL 1800 Series

Features

VIBROCONTROL 1800 Series enables cost effective machine protection for all critical rotating equipment with rolling element bearings as well as sleeve bearings.

- 4-vibration channels, plus
- 1-channel speed
- 1-channel process data (VC-1850 & VC-1860)
- 1-channel axial shaft position (VC-1870)
- extremely flexible with modular link concept
- time waveform recording and data storage

Dedicated solution via 3 types:

- **VIBROCONTROL 1850**
Acceleration Sensors (CCS)
- **VIBROCONTROL 1860**
Velocity Sensors
- **VIBROCONTROL 1870**
Displacement Sensors



Applications

VIBROCONTROL 1800 Series of Vibration Monitors are machine protection devices with 4 real-time vibration input channels, 1 tacho input and 1 process input channel or 1 channel for axial shaft position. These vibration monitors are combining machine protection with condition monitoring of rolling element bearing machines, by means of a variety of bearing failure detectors like Envelope, Kurtosis and Crest factor. For sleeve bearing machines VIBROCONTROL-1870 is monitoring relative shaft vibration as well as axial shaft position.

VIBROCONTROL 1800 is offering 4-20 mA analog outputs, danger and alarm relays, a RS-485 and USB port for communication and time waveform recording of RAW data. Several features are supporting the ISO/EN 13849-1 standard for machine protection.



Technical Data

6 Input channels:

- 4 configurable vibration sensor inputs:
VIBROCONTROL 1850 - accelerometers CCS
VIBROCONTROL 1860 - velocity sensors
VIBROCONTROL 1870 - displacement sensors
- 1 Input for process data, analog 4-20 mA, 0-20 mA, 0-22V (VC-1850 & VC-1860)
- 1 input channel - axial shaft position (VC-1870)
- 1 Tacho input for NPN, PNP, AC speed sensor

Sensor types:

- **VIBROCONTROL 1850**
Accelerometers 10-500 mV/g, type CCS
Maximum input ± 5.4 Vpk
Transducer Bias 5 mA
Input Resistance / Impedance ≥ 450 k Ω , 10 nF
- **VIBROCONTROL 1860**
Velocity sensors 50-100 mV/mm/s
Maximum input $\pm 6.0/8.0$ Vpk
Input Resistance / Impedance ≥ 450 k Ω , 5 nF
- **VIBROCONTROL 1870**
Displacement sensors 0.8-8 V/mm
Maximum voltage input -2 to -22 V
Peak detector, attack time 1-1,000 ms
Peak detector, decay time 0.1-100 s
Input Resistance / Impedance ≥ 450 k Ω , 10 nF

Up to 6 Measurement results per vibration channel:

- **2 Overall vibration values**
Detectors True RMS, Pk-Pk or Pk
Sample rates 4,800 or 24,000 Hz
Filter ranges 0.7 Hz to 10 kHz
Measuring parameter mm/s, m/s², g, μ m, mm
- **4 Roller bearing condition units (VC-1850)**
Detectors True RMS, 2 Envelope
Filter ranges 1 - 500 Hz
Kurtosis/Crest factor acc. VDI 3832
- **1 Axial shaft position (VC-1870)**

Configurable measuring ranges:

- Full scale vibration measuring ranges up to 1-100 mm/s, 1-300 m/s², 0.1-15 mm Pk-Pk

Standard frequency ranges:

- 10 Hz – 1,000 Hz, -1 dB, 24 dB/oct.
- Selectable ranges e.g. 1-300/1,000 Hz or multiple filters settings 0.7-10,000 Hz
- **Filter response** High pass and low pass filters; refer to the setup part for the specific parameters for the Cut-off freq., pass band attenuation, Stop band freq. and Stopband attenuation.

Up to 4 configurable outputs:

- **4 Analog DC outputs**
Can be configured as 0/4 - 20 mA, 0/2-10 V, Each output can be assigned to any of the measuring parameters.
Voltage load: min. 10 k Ω
Current load: max. 400 Ω
- or
- **4 Alarm relay drivers**
Relay drivers for external coil: With break-function, can be user configured as Alert or Danger with latch function or auto reset.
Max voltage 30 V
Max current: 100 mA

Alarm detectors:

- Alert and Danger per each detector with adjustable alarm limits.
Alert delay time 0 - 100 s
Danger delay time 0 - 100 s
Reset time for Alert and Danger 0 - 100 s

Up to 12 additional relays: (VIBROCONTROL 1801)

- 1 Relay Module consisting of 12 galvanic isolated relays. Alert and Danger alarms can be directed to these relays.
Max voltage: 30 V
Max current: 100 mA

OK relay & Collective relay for danger:

- 1 galv. isolated redundant relay with break-function (power fail-safe). Danger alarms can be forwarded to this relay, when the monitor is configured as a Protection Monitor according to ISO/EN 13849-1. All system failures, like cable short, cable break and internal system failure, will automatically trip the OK- relay.

Measurement accuracy:

- **Vibration Measurement** $\pm 3.5\%$ of reading $\pm 0.5\%$ of Full Scale setup, typical, @calibration ref: 100Hz, velocity, 25 °C, with current LP and HP filter setup.
- **Process Measurement** $\pm 0.75\%$ of reading $\pm 0.5\%$ of Full Scale setup
- **Speed sensors** $\pm 0.5\%$ of reading, Pulse speed 1Hz to 30kHz (*RPM depending of pulse per revolutions setup*)
- **Analog output** $\pm 1.5\%$ of reading $\pm 1\%$ of Full Scale

Test function:

Can be activated digitally or by PC. As default the alarm relays activate and DC outputs increase to the specified test level of 102 %.

Time waveform recording:

Up to 4 input channels can record digital raw data (time waveform) simultaneously to a PC running "Compact Analyzer". The recording can be done through:
 RS-485/LAN (buffered) Up to 10 kHz
 Mini USB (real-time) Up to 10 kHz
 Time waveform recording is user activated and contains scalar values for vibration and process input data at start of recording.

Communication & Data storage: (VIBROCONTROL 1803 /1804)

All input channels can be trended and alarms can be stored when connected to either VC-1803/04 or directly to a PC running "Compact Analyzer". VIBROCONTROL 1804 can store trends and time wave-form recordings event or time based.

Communication:

RS-485 interface 2 screw terminals
 Daisy chain, up to 255 units
 USB interface: Mini USB/B
 Remote access through EtherBridge Module (VIBROCONTROL 1803) is possible.

Link Concept modularity:

VIBROCONTROL 1800 Series –all components - Vibration Monitor, Communication Module, Relay Module can be interconnected by means of DIN rail bus connectors

Front panel:

5 light diodes indicate channel status (green, yellow, red) for each of the 4 vibration input channels, as well as for general system status.

Temperature:

- Operating: -10 °C to +50 °C
- Storage: -40 °C to +85 °C

Housing:

- DIN rail enclosure IP20 with screw terminals
- Dimensions: H: 110, W: 23, D: 114 mm
 - Weight (measuring module): 160 g

Compliance:

- CE, ISO 13849-1, ISO 10816-3, VDI 3832, API 670 (essential recommendations)

Accessories:

- External Power supply (e.g. AC-4111) +24 V DC, ±5 %, max. power consumption; 10 W



Ordering Information

VIBROCONTROL 1850

Vibration monitoring unit for accelerometer input

Order Code: VC-1850

Standard Accelerometer AS-062 (CCS)

Order Code: AS-062

VIBROCONTROL 1860

Vibration monitoring unit for velocity sensor input

Order Code: VC-1860

Standard velocity sensor VS-068 (horiz.) or VS-069 (vert.)

Order Code: VS-068
VS-069

VIBROCONTROL 1870

Vibration monitoring unit for displacement sensor input

Order Code: VC-1870

Please find alternative sensors out of B&K Vibro's large portfolio.

Additional modules within the VIBROCONTROL 1800 series – Link Concept

VIBROCONTROL 1801 Relay Module

for DIN Rail installation incl. 12 potential free relays 30V

Order Code: VC-1801

VIBROCONTROL 1803 Communication-Module

incl. RS485, shared RS485/RS232 and LAN

Order Code: VC-1803

VIBROCONTROL 1804 Communication-Module & Data Logger

incl. 4 GB RAM

Order Code: VC-1804

Compact Commander Software for Configuration & Diagnostics

Compact Setup - Configuration Software for all
VIBROCONTROL 18xx modules

included in delivery

Compact Analyzer - Analyzing Software for stored measuring data

download on
<https://www.bkvibro.com/en.html>

Optional: Accessories

Power Supply 24 VDC

Type: DSP 10-24; 230VAC / 24 VDC, 10 W

Order Code: AC-4111