

# 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:

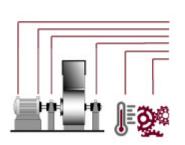
- VIBROCONTROL 1850
   Acceleration Sensors (CCS)
- VIBROCONTROL 1860
   Velocity Sensors
- VIBROCONTROL 1870
   Displacement Sensors



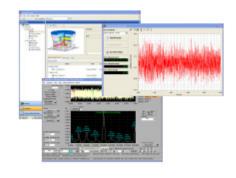
## **Applications**

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.

VIBRONCONTROL 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.







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### **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  $\pm 5.4$  Vpk Transducer Bias 5 mA Input Resistance / Impedance ≥ 450 kΩ, 10 nF

VIBROCONTROL 1860

Velocity sensors 50-100 mV/mm/s Maximum input  $\pm 6.0/8.0$  Vpk Input Resistance / Impedance ≥ 450 kΩ, 5 nF

VIBROCONTROL 1870

Displacement sensors0.8-8 V/mmMaximum voltage input-2 to -22 VPeak detector, attack time1-1,000 msPeak detector, decay time0.1-100 sInput Resistance / Impedance  $\ge 450 \text{ k}\Omega$ , 10 nF

# Up to 6 Measurement results per vibration channel:

2 Overall vibration values

Detectors

Sample rates
Filter ranges

Measuring parameter

True RMS, Pk-Pk or Pk
4,800 or 24,000 Hz
0.7 Hz to 10 kHz
mm/s, m/s², g, µm, 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 $\Omega$  Current load: max. 400  $\Omega$ 

or

4 Alarm relay drivers

Relay drivers for external coil: With breakfunction, 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 breakfunction (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 ±3.5% of reading ±0,5% of Full Scale setup, typical, @calibration ref: 100Hz, velocity, 25°C, with current LP and HP filter setup.
- Process Measurement ±0.75% of reading ±0.5% of Full Scale setup
- Speed sensors ±0.5% of reading, Pulse speed 1Hz to 30kHz (RPM depending of pulse per revolutions setup)
- Analog output ±1.5% of reading ±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 "Commpact 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:

VIBROCONTRL 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 recommandations)

#### **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