Brüel & Kjær Vibro
A member of the NSK Group

Product Specifications and Ordering Information

VIBROCONTROL 1800 Series

Product Specifications and Ordering Information **VC-18xx**, BPS155-EN-15, en,
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1 Features

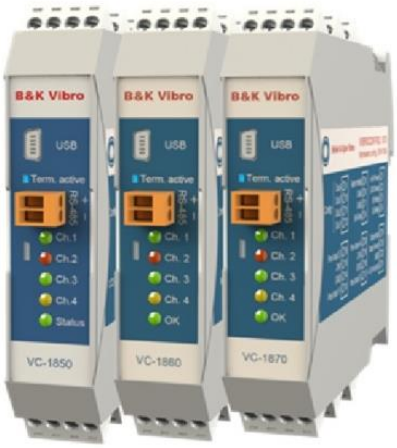


Figure 1-1) VC-1800 series

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 rotational (shaft) 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

1.1 Dedicated solution via three types:

VIBROCONTROL 1850

Acceleration Sensors (CCS)

VIBROCONTROL 1860

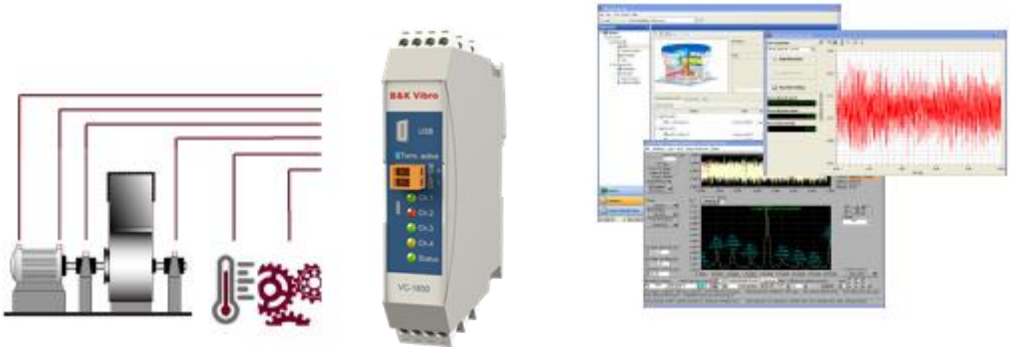
Velocity Sensors

VIBROCONTROL 1870

Displacement Sensors

2 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.



3 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 kΩ, 10 nF

- **VIBROCONTROL 1860**

Velocity sensors*	80-120 mV/mm/s
Maximum input	±6.0/8.0 Vpk
Input Resistance / Impedance	≥ 450 kΩ, 5 nF

**Frequency response linearization 8Hz*

- **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 kΩ, 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, 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 kΩ
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:

The 4 configurable outputs are freely selectable and can be used either as analog output or alarm relay.

- Alert and Danger per each detector with adjust-able 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** ±3.5 % of reading ±0,5 % of Full Scale setup, typical, @calibration ref: 100 Hz, velocity, 25 ℃, with current LP and HP filter setup.
- **Process Measurement** 0-20 mA input: +/-0.75 % of reading +/-0.5 % of Full Scale Range @ 25 °C referring back to the input range 0-20 mA
  0-10 V input: +/-0.75 % of reading +/-0.5 % of Full Scale Range @ 25 °C referring back to the input range e.g 0-10 V
- **Speed sensors** ±0.5 % of reading, Pulse speed 1 Hz to 30 kHz (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 "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 con-tains 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

4 Ordering Information

VIBROCONTROL 1850

Vibration monitoring unit for accelerometer input	Order Code:	VC-1850
Standard CCS type Accelerometer AS-6xx and AS-06x Series	Order Code:	AS-6xx Series AS-06x Series

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.

4.1 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

4.2 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 datadownload on: https://www.bkvibro.com/en.html

4.3 Optional: Accessories

Power Supply 24 VDC
Type: DSP 10-24; 230VAC / 24 VDC, 10 W — Order Code: AC-4111

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Subject to technical changes!