



Brüel & Kjær Vibro



# VIBROCONTROL 920

Reliable prevention of machine damage

# VIBROCONTROL 920

During operation, machines are subjected to a number of influences which change the condition of rotating parts, bearings, machine housing and foundations and may result in costly damage or secondary defects. The most common causes of damage are:

- Unbalanced rotating parts as a result of manufacturing errors, material defects and normal wear
- Unbalance due to deposits on the blades of exhaust fans, blowers and air separators
- Unbalance due to asymmetric loading of centrifuges and separators
- Unbalance due to eccentric winding of wire coils
- Alignment errors due to assembly faults, thermal growth in bearing supports or foundation movement
- Damaged roller bearings or gear mechanisms as a result of wear, ageing or overloading

Almost all causes of damage affect the smooth operation of machines and lead to increased mechanical vibrations. Vibrations are thus a reliable indicator of the condition of the individual machine elements and also the entire machine.



## Vibration monitoring

Measurement of bearing vibration is performed in accordance with the ISO standard 10816.

Vibration occurring at the machine surface is converted into electrical signals, which in turn are used to establish the RMS value of the vibration velocity.

This machine condition parameter is continuously compared with two preset limit values. If these limit values are exceeded, the switching contacts of allocated relays trigger an alarm or shutdown of the machine.

Thanks to the permanent monitoring, changes in the machine condition can be reliably identified, regardless of whether they are continuous (e.g. due to wear) or intermittent/erratic (e.g. due to sudden material failure or sudden peeling away of material deposited on the rotor).

## Electronic control unit

The electronic control unit is integrated in a plastic housing and is intended for use in a control cabinet. The unit is mounted by either clipping it onto a standardised profile rail or screwing it to a mounting plate inside the control cabinet.

## Vibration sensor

The vibration sensor converts the vibration occurring at the machine surface into electrical signals. Vibration velocity or acceleration sensors can also be connected. The sensor is screwed to the machine housing, preferably at a point of support, and connected to the electronic control unit.



The connecting cable, which is either 5 m or 10 m in length, depending on the sensor type, can be extended a further 300 m. Signal cable and terminal protective housings are available as options.

## Parameter configuration

The electronic control unit is configured interactively at the device with the software.

<p><b>Characteristics</b></p> <ul style="list-style-type: none"> <li>• Outstanding price/performance ratio</li> </ul>
<ul style="list-style-type: none"> <li>• Simple and cost-saving installation</li> </ul>
<ul style="list-style-type: none"> <li>• Interactive parameter configuration via display               <ul style="list-style-type: none"> <li>- Measuring range</li> <li>- Frequency</li> <li>- Limit values</li> <li>- Relay time delays</li> <li>- Closed-circuit or open-circuit operation</li> <li>- Analogue outputs</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Signalling of limit value operations by two relays with change-over contacts</li> </ul>
<ul style="list-style-type: none"> <li>• Display of measured value and limit violation at the monitoring device</li> </ul>
<ul style="list-style-type: none"> <li>• Analogue output for the connection of diagnostic devices</li> </ul>
<ul style="list-style-type: none"> <li>• Buffered output for the connection of diagnostic devices</li> </ul>
<ul style="list-style-type: none"> <li>• Self-monitoring of power supply and vibration pick-up</li> </ul>
<ul style="list-style-type: none"> <li>• Use of vibration velocity or acceleration sensors</li> </ul>
<ul style="list-style-type: none"> <li>• Vibration pick-up for explosion-endangered areas can be connected</li> </ul>

# VIBROCONTROL 920 Specifications

 	
<b>Order code</b>  <b>Inputs</b> No. of vibration channels Sensor connections  Sensor power  Sensor OK monitoring	VC-920  1 Acceleration sensor, e.g. AS-022, AS-062 (CCS), ASA-022, etc. Velocity sensor, e.g. VS-068, VS-069, VS-0168, VS-0169 -24 V DC (max. 30 mA) or 4 mA constant-current supply (CCS) <sup>1)</sup> Velocity sensor: no power required Yes
<b>Measured parameters</b> Measurement channel Measuring ranges Frequency Bearing vibration measurement Measurement accuracy	1-channel operation with continuous monitoring Vibration velocity: 0 ... 10/20/50/100 mm/s 1/10 ... 1000 Hz RMS value of vibration velocity in mm/s 5% of the measured value
<b>Monitoring</b> Alarm signalling  Relay delay times Limit relays Self-monitoring Signalling display	Alert and danger alarm, adjustable between 0 and measuring range full scale value 0 ... 100 sec. in steps of 1 sec for alert and danger alarms 2 relays, closed-circuit and open-circuit connection, latching or non-latching OK fault signalling with separate OK relay OK fault with green LED Limit violations: LIM 1 yellow LED, LIM 2 red LED
<b>Outputs</b> Analogue signal outputs	0/4 ... 20 mA, load < 500 Ω or 0 ... 10 V (load resistance R <sub>L</sub> > 10 kΩ)
<b>Power supply</b> Mains outlet	230/115 V AC, +/- 15%, 50 ... 60 Hz, approx. 12 VA 24 V DC (18 ... 32 V DC), approx. 7 W
<b>Environmental conditions</b> Operating temperature range Storage temperature range	0 °C ... +50 °C -10 °C ... +70 °C
<b>Mechanical design</b> Housing Dimensions	Plastic housing, protection class IP 20, total weight approx. 900 g 150 x 78 x 115 mm (W x H x D)

<sup>1)</sup> only with acceleration sensor with constant current supply (CCS)

## Scope of delivery and order information

### 1. Electronic control unit

consisting of:

1 VIBROCONTROL 920 vibration monitoring device with  
2 user manuals in German, English or French  
(please specify the language when ordering).

### 2. Vibration sensor

Acceleration sensor standard design	AS-022	Any measurement direction, radial cable exit, 5 m, PVDF cable with open ends
	AS-030	Any measurement direction, axial cable connection, with FASTON plug terminal
Acceleration sensor in Ex design <sup>1)</sup>	ASA-022 <sup>1)</sup>	Any measurement direction, 5 m cable, Ex only when used with AC-293 safety barrier set
	AC-293	Safety barrier set for acceleration sensor ASA-022
Vibration velocity sensor standard design	VS-068	For horizontal measurement, 2-wire lead, PTFE, 5 m cable with steel protective conduit T <sub>A</sub> -40 °C ... +80 °C, <sup>2)</sup>
	VS-069	For vertical measurement, 2-wire lead, PTFE, 5 m cable with steel protective conduit, T <sub>A</sub> -40 °C ... +80 °C, <sup>2)</sup>
Vibration velocity sensor in Ex design	VS-0168	For horizontal measurement, 3-wire lead, PVC, 10 m cable T <sub>A</sub> -10 °C ... +65 °C, <sup>2)</sup>
	VS-0169	For vertical measurement, 3-wire lead, PVC, 10 m cable T <sub>A</sub> -10 °C ... +65 °C, <sup>2)</sup>

### 3. Terminal protective housing

Rugged aluminium housing in IP 65 protection class, painted  
RAL 7001, with cable feed-throughs.

Standard design	AC-2104	For max. 2 vibration sensors VS-068/069 or AS-022/030 Weight approx. 1.25 kg
Ex design	AC-2105	For max. 2 acceleration sensors, e.g. ASA-022 <sup>1)</sup> , Weight approx. 600 g
	AC-2103	For max. 2 vibration velocity sensors, VS-0168, VS-0169, Weight approx. 650 g
<b>4. Signal cable</b>		
Standard design	AC-112	For vibration sensors AS-022/030 and VS-068/069, 4 x 0.5 mm <sup>2</sup> , shielded, PVC black LIY (ST) Y, 7 mm Ø T <sub>A</sub> -20 °C ... +70 °C, <sup>2)</sup>
Ex design	AC-114	For acceleration sensors, e.g. ASA-022 <sup>1)</sup> , 4 x 0.5 mm <sup>2</sup> shielded, PVC blue, Li2Y-St / C-Y, 7 mm Ø T <sub>A</sub> -25 °C ... +70 °C, <sup>2)</sup>
	AC-180	For vibration velocity sensors, e.g. VS-0168/VS-0169 <sup>1)</sup> , 3 x 0.75 mm <sup>2</sup> shielded, PVC grey (N) YLHCY-J, 7 mm Ø T <sub>A</sub> -10 °C ... +80 °C, <sup>2)</sup>

<sup>1)</sup> ATEX certification and data sheets are  
available for download from our website

<sup>2)</sup> T<sub>A</sub> operating temperature range

**Brüel & Kjær Vibro A/S**  
Skodsborgvej 307B  
2850 Nærum  
Denmark  
Tel.: +45 77 41 25 00  
Fax: +45 45 80 29 37  
info@bkvibro.com

**Brüel & Kjær Vibro GmbH**  
Leydheckerstraße 10  
64293 Darmstadt  
Germany  
Tel.: +49 (0) 6151 428 11 00  
Fax: +49 (0) 6151 428 12 00  
info@bkvibro.com

**www.bkvibro.com**