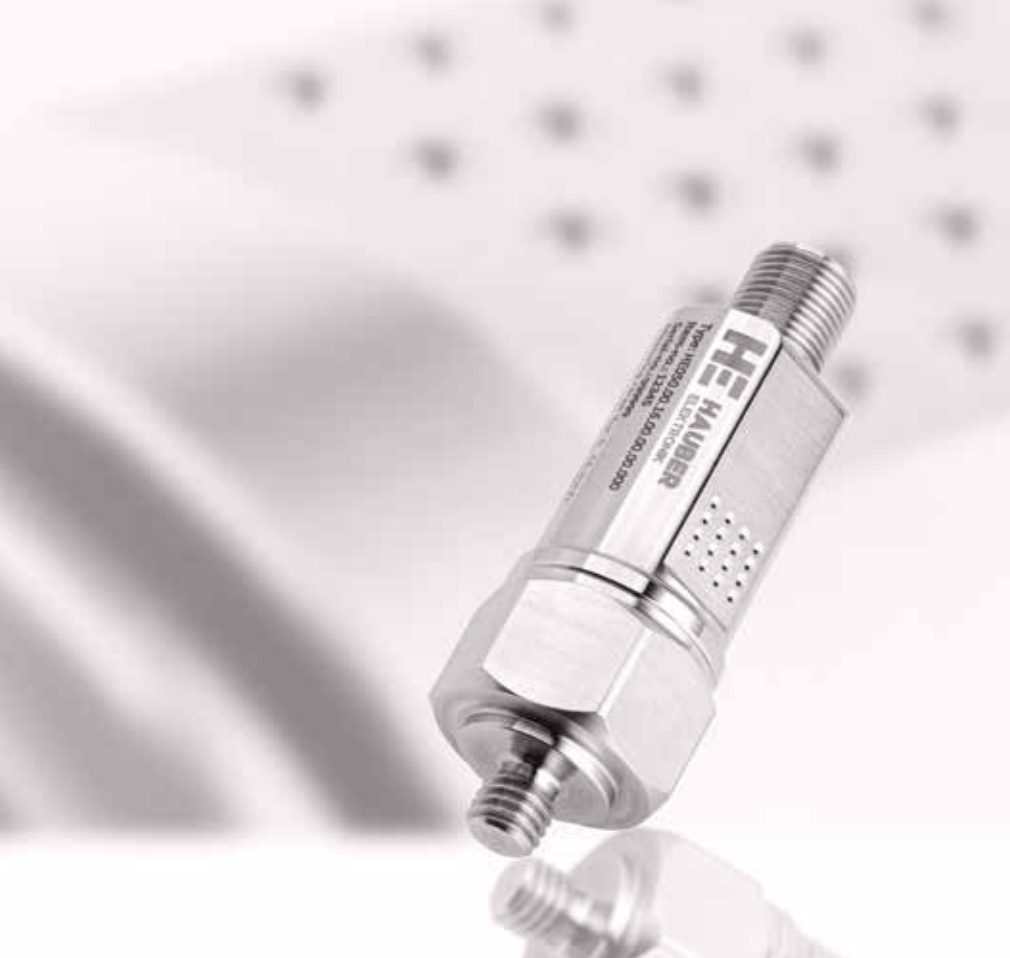# Smart Condition Monitoring
HE050 | HE055

Effective vibration monitoring with IO-Link

Monitor vibration – avoid standstill

So that machines and systems can work economically, downtimes must be kept to a minimum. At the start of any measure to increase availability, it is important to know the condition of the system.

The recorded process data of the critical variables such as temperature, noise and vibration represent the operating state, making precise predictions about the optimal maintenance times and remaining service life possible.

You can individually set the relevant parameters for your machine and modify them via IO-Link communication. This allows you to set up real-time indicators for automated warning messages or alarms.

The sensors also feature smart maintenance data for this purpose. Settings for maintenance data, event and counter parameters are made and read out via IO-Link.

COMPACT
IO-LINK
SAVES COSTS
HIGH OEE
MAINTENANCE COUNTER
NEW SERVICE STRATEGIES
FAST COMMISSIONING

# COMPACT VIBRATION MONITORING UNITS

HE050 Analog Sensor

- *A measurand above 4-20mA in three-wire technology*
  - Vibration speed (mm/s, rms)
  - Vibration acceleration (g, rms)
  - Vibration acceleration (g, peak)
  - Temperature (°C)

HE050 IO-Link Sensor

- *All measurands are cycled through IO-Link as process data*
  - Vibration speed (mm/s, rms)
  - Vibration acceleration (g, rms)
  - Vibration acceleration (g, peak)
  - Temperature (°C)
- *Acyclic retrieval of device data and diagnostic data*
- *Maintenance Manager*
- *Both outputs can be configured as digital switching outputs*
- *Output 2 can be configured as an analog output*
- *Frequency range: any can be selected between 10-1,000 Hz*

HE055 IO-Link Sensor

- *All measurands are cycled through IO-Link as process data*
  - Vibration speed (mm/s, rms)
  - Vibration acceleration (g, rms)
  - Vibration acceleration (g, peak)
  - Temperature (°C)
  - Bearing status parameter (cresT) 10Hz-10,000Hz
- *Acyclic retrieval of device data and diagnostic data*
- *Maintenance Manager*
- *Both outputs can be configured as digital switching outputs*
- *Output 2 can be configured as an analog output*
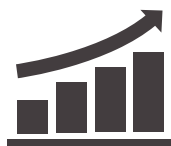- *Frequency range: any can be selected between 1-1,000 Hz*
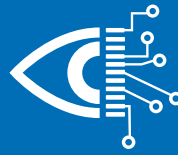
Longer service life
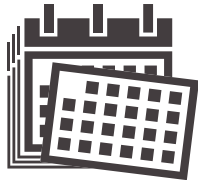
Reduced maintenance costs

Higher productivity

Higher OEE (Overall Equipment Effectiveness)

IO-Link

IO-Link is an open standard according to IEC 61131-9 which allows for direct connections between the control system and the field bus level independent of the field bus. Just as the USB once set a new standard in the world of PCs, IO-Link enables simpler installation and additional information for machine monitoring. In this way, future-proof Industry 4.0 technology can be integrated directly into the existing control platforms of your systems and machinery. Expensive secondary networks, gateways and IT support are no longer necessary. IO-Link masters send process values and status signals to both the control system and to superordinate systems.

Fast, simple installation

- Commissioning
- Replacement
- Convenient interfaces - cables and plugs
- Parameters can be set for intended use

Independent standard

- Control-independent
- Open standard
- Full functionality with IO-Link masters

Transparent machine status

- Data collection
- The sensor becomes a diagnostic tool - collects multiple statuses with one sensor
- Pre-configured or event-based data retrieval

Use of smart data

- Condition Monitoring
- Optimise OEE
- Data basis for Predictive Maintenance

Smart vibration sensors with IO-Link

Because almost no two machines are the same, the sensors for your reliable monitoring have to meet very specific requirements. With the vibration sensors HE050/HE055, you can easily set and modify your specific parameters. Define vibration severity levels for the machine's productive times. Then you easily get an OEE value with the hour counter. Furthermore, an additional analog measuring channel or an additional switching signal on pin 2 can be activated. You can even set up the IO-Link sensor as a purely analog sensor.

All adjustments made to the sensor will be saved as a configuration status along with a sensor/device type ID in the IO-Link master. When sensors are replaced, the saved configuration status will automatically transfer to the new unit. This makes it easy and convenient to copying presettings to other machines and systems.

Identification

- Device parameters
- Logistics parameters
- Order parameters
- Point of use (application tag)

Process data

- Cyclic retrieval of all measurands
- Visualise values
- Detect trends
- Limit values
- 8ms cycles

Diagnostics

- Maintenance Manager
- Event counter
- Operating conditions

Predictive maintenance through condition-based real-time monitoring

Unplanned downtimes can account for nearly a quarter of total production costs. Predictive maintenance thus offers huge potential for significant cost savings and productivity increases. By reducing downtime and maintenance costs, both throughput and plant utilization are increased. With respect to product quality, predictive maintenance contributes to a constant level. Overall, this extends the entire service life of a machine or system. In short: A higher OEE (Overall Equipment Effectiveness).

IO-Link
Sensor

IO-Link
Master

Everything under control
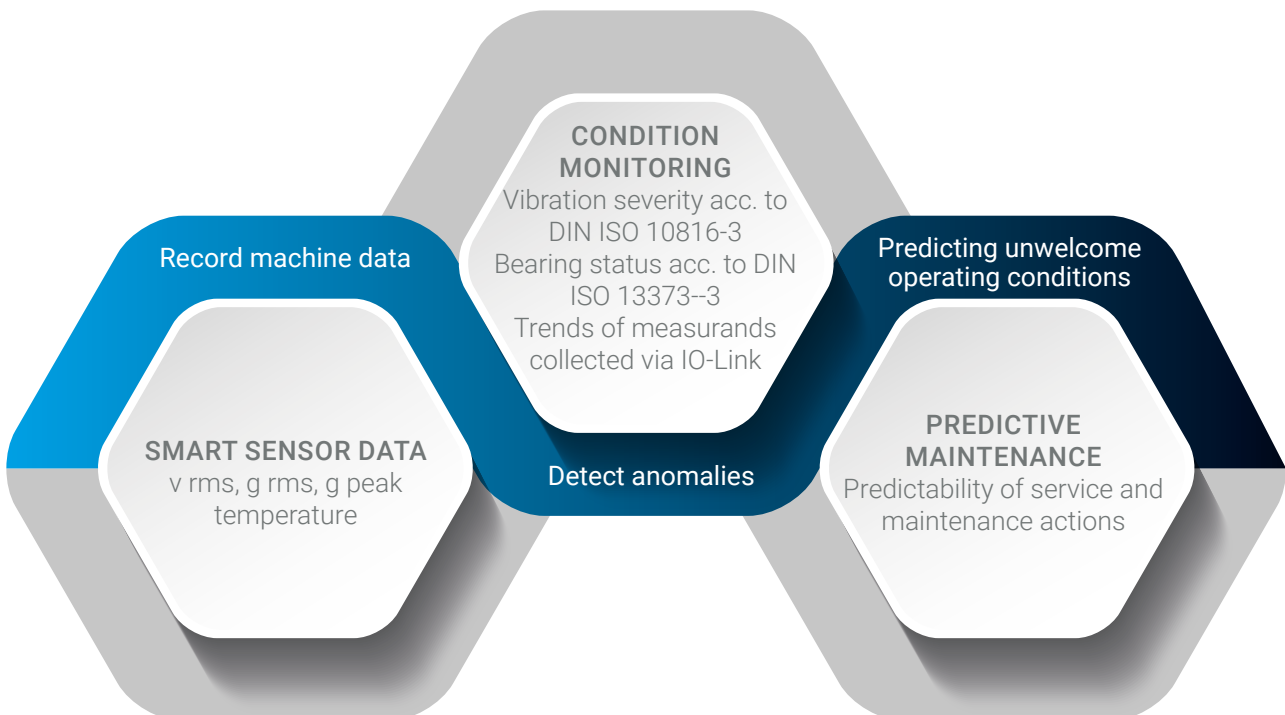- Monitoring cyclical process data
- with 8ms - detect trends

Crest value (HE055)
a peak / a rms

v rms

a rms

a peak

Temperature

CONDITION MONITORING
Vibration severity acc. to DIN ISO 10816-3
Bearing status acc. to DIN ISO 13373--3
Trends of measurands collected via IO-Link

Record machine data

Predicting unwelcome operating conditions

SMART SENSOR DATA
v rms, g rms, g peak temperature

Detect anomalies

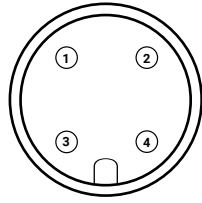**PREDICTIVE MAINTENANCE**
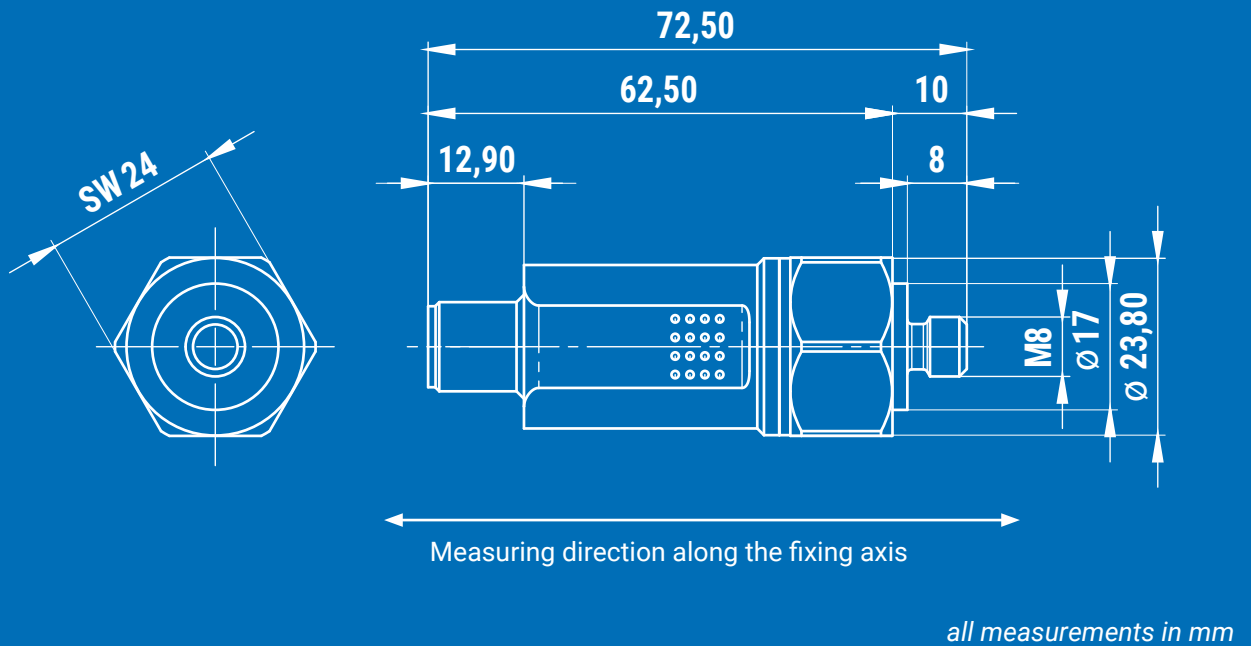Predictability of service and maintenance actions

Connection

Connector, M12, 4-pin

Pin 1: L+ 18-30 V DC

Pin 2: Out 2 4-20 mA or switching contact

Pin 3: L- 0V / GND

Pin 4: Out 1 IO-Link or switching contact

SW 24

72,50
62,50
10
12,90
8
M8
Ø 17
Ø 23,80

Measuring direction along the fixing axis

all measurements in mm

Housing dimensions

Accessories

Designation	Length	Item number
Cable type C 4 pole, shielded, M12 socket (additional lengths on request)	1.5 m / 3 m / 7.5 m / 10 m	13051 / 13052 / 13223 / 11888
Rubber protective nozzle		12524
USB IO-Link master		12987

Optional mechanical adapter

Designation	Item number	Designation	Item number
Magnetic base	10054	M8 M10	11104
EMC Adapter	10473	M8 M18	11108
Adhesive adapter	11650	M8 to 1/4"	11102
M8 to M8 Cone SPM	11112		

Type key

Type (measurand)	Vibration Monitoring Unit	HE 0 50
	Vibration monitoring unit and bearing status parameter	HE 0 55
Safety	No safety standard	0
	SIL1 (only analog version HE050)	1
Interface	Analog + 1 switching output	0
	IO-Link	1
Housing material and fastening	1.4305 (V2A) with fastening M8 x 8; pitch 1.25 mm (standard)	0
	1.4404 (V4A) with fastening M8 x 8; pitch 1.25 mm	1
	1.4462 duplex stainless steel with fastening M8 x 8; pitch 1.25 mm	2

Output/ measuring range

IO-Link — 0 0 1

Analog version HE050 (4 – 20 mA 10 – 1000 Hz)

0 – 1 g rms	0 15	0 – 8 mm/s rms	0 12
0 – 2 g rms	0 16	0 – 10 mm/s rms	0 13
0 – 4 g rms	0 17	0 – 16 mm/s rms	0 02
0 – 6 g rms	0 18	0 – 20 mm/s rms	0 14
0 – 8 g rms	0 19	0 – 25 mm/s rms	0 03
0 – 10 g rms	0 20	0 – 32 mm/s rms	0 04
0 – 12 g rms	0 21	0 – 50 mm/s rms	0 05
		0 – 64 mm/s rms	0 06

Connection	M12 connector
Frequency range	**HE050**: 10 – 1,000 Hz can be configured with IO-Link **HE055**: 1 – 1,000 Hz can be configured with IO-Link **HE055**: Bearing status parameter: 10 – 10,000 Hz
Ambient temperature	-40 °C … +80 °C
Measuring head temperature	-40 °C … +85 °C
Protection class	IP 66/67

Ready-to-assemble, application-specific IO-Link sensor configuration by request.