



USER INSTRUCTIONS

Detect

Vibration sensor and condition monitoring for pumps

65010502(3)-1-21-E

Original Instructions

Installation Operation Maintenance

 ***These instructions must be read prior to installing, operating, and maintaining this equipment.***





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CONTENTS

1	General Information	3
1.1	Scope of manual.....	3
1.2	Disclaimer.....	3
1.3	Certification instruction.....	3
2	Safety Information	4
2.1	Intended use.....	4
2.2	Safety symbols and description.....	4
2.3	Qualified personnel and targeted group.....	5
2.4	Potential explosive areas.....	5
3	Product Description	6
3.1	General product description.....	6
3.2	Connections.....	7
3.3	Accessories.....	7
3.4	Operating software.....	8
3.5	DataUSB.....	9
4	Packaging, Transportation and Storage	10
4.1	Consignment receipt.....	10
4.2	Unpacking.....	10
4.3	Packaging.....	10
5	Installation	10
5.1	Mounting.....	10
5.2	Installation.....	11
5.3	Electrical connection check.....	13
6	Operation	13
6.1	Configuration.....	13
6.2	Calibration condition monitoring.....	15
6.3	Monitoring operation.....	18
7	Troubleshooting Guide	20
8	Technical Data	20
8.1	Ex-Characteristic.....	21
8.2	Mechanical condition.....	21
8.3	Nameplate.....	21
8.4	Electrical data.....	23
8.5	Environmental condition.....	23
	Annex A: Declaration of Conformity	24

1 General Information

1.1 Scope of manual



These instructions must be kept close to the product's operating location or directly with the product.



These instructions must be read prior to installing, operating, using, or maintaining the equipment in any region worldwide. The equipment must not be put into service until all of the safe operating conditions noted in the instructions have been met. Failure to comply with the information provided in the User Instructions is considered to be misuse. Personal injury, product damage, delay in operation, or product failure caused by misuse are not covered by the Flowserve warranty.

These instructions are intended to familiarize the reader with the product and its permitted use. Operating the product in compliance with these instruction is important to help ensure reliability in service and avoid risks. These instructions may not take into account all local regulations; ensure such regulations are observed by all, including those installing the product. Always coordinate repair activities with operations personnel, and follow all plant safety requirements and applicable safety and health legislation.

Supplementary user instructions determined from the contract requirements for inclusion into User Instructions for buy-out equipment such as driver, instrumentation, controller, sub-driver, seals, sealant system, mounting component etc., are included in Annex (insert reference).

1.2 Disclaimer

Information in this User Instruction is believed to be complete and reliable. In spite of all Flowserve's efforts to provide comprehensive information and instructions, sound engineering and safety practices should always be used. Please consult with a qualified engineer.

Flowserve manufactures products to applicable International Quality Management System Standards as certified and audited by external Quality Assurance organizations. Genuine parts and accessories have been designed, tested, and incorporated into the products to help ensure continued product quality and performance in use. As Flowserve cannot test parts and accessories sourced from other vendors the incorrect incorporation of such parts and accessories may adversely affect the performance and safety features of the product. The failure to properly select, install, or use authorized Flowserve parts and accessories is considered to be misuse. Damage or failure caused by misuse is not covered by Flowserve's warranty. In addition, any modification of Flowserve products or removal of original components may impair the safety of these products in use.

1.3 Certification instruction


It is a legal requirement that machinery and equipment put into service within certain regions of the world shall conform to the Marking Directives applicable to Flowserve products (i.e. Machinery Directive, Low Voltage Directive, Electromagnetic Compatibility (EMC) Directive, Pressure Equipment Directive (PED), Equipment for Potentially Explosive Atmospheres (ATEX), etc.).

Note: Certificates defined in the Contract requirements are provided with these instructions where applicable. Examples of the certificates can be found in the Annex of this document. If

required, copies of other certificates sent separately to the Purchaser should be obtained from the Purchaser for retention with this User Instruction.

2 Safety Information

2.1 Intended use





 The product/system must not be operated beyond the parameters specified for the application. If there is any doubt as to the suitability of the product/system for the application intended, contact Flowserve for advice, quoting the serial number.

- Installing, operating, or maintaining the product/system in any way that is not covered in this User Instruction could cause death, serious personal injury, or damage to the equipment. This includes any modification to the product/system or use of the parts not provided by Flowserve.
- Only operate the product/system when it has successfully passed all inspection acceptance criteria
- Do not operate the product/system in a partially assembled condition.
- If the conditions of service on the customer's purchase order change (i.e. pumping fluid, temperature, or duty conditions) it is requested that the user seeks written agreement from Flowserve before start up.
- Observe equipment labels, such as arrows designating the direction of rotation, warning signs, etc., and keep them in a legible condition. Replace any damaged and/or illegible labels immediately.
- (Add additional instructions/information here as necessary.)

2.2 Safety symbols and description

This User Instruction contains specific safety markings where non-observance of an instruction would cause a hazard. The specific safety markings are:

Table 1: Definition of safety symbols and markings

Symbol	Description
	DANGER This symbol indicates a hazardous situation which, if not avoided, will result in death or serious injury
	WARNING This symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION This symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury
	Safety Instruction This symbol indicates specific safety-related instruction or procedures






	<p>NOTICE This symbol is used to address practices not related to physical injury</p>
	<p>This is the safety alert symbol. It is used to alert you to potential physical injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.</p>

Table 2: Additional symbols

Symbol	Description
	<p>ELECTRICAL HAZARD This symbol indicates electrical safety instructions where non-compliance would affect personal safety and could result in loss of life</p>
	<p>TOXIC HAZARD This symbol indicates “hazardous substances and toxic fluid” safety instructions where non-compliance would affect personal safety and would damage the equipment or property</p>
	<p>ATEX EXPLOSION PROTECTION This symbol indicates explosive atmosphere marking according to ATEX. It is used in safety instructions where non-compliance in the hazardous area would cause the risk of an explosion</p>

2.3 Qualified personnel and targeted group

All personnel involved in the operation, installation and maintenance of the unit must be qualified to carry out the work involved. If the personnel in question does not already possess the necessary knowledge and skill, appropriate training and instruction must be provided. If required the operator may commission the manufacturer / supplier to provide applicable training.

Always co-ordinate repair activities with operation and health and safety personnel, and follow all plant safety requirements and applicable safety and health laws and regulations.

2.4 Potential explosive areas



Measures are required to:

- Avoid excess temperature
- Prevent build-up of explosive mixtures
- Prevent the generation of sparks
- Prevent leakages
- Maintain the pump to avoid hazard

All instructions for equipment installed in potentially explosive atmospheres must be followed to help ensure explosion protection. For ATEX, both electrical and non-electrical equipment must meet the requirements of the European Explosion Protection Directive 2014/34/EU. Always observe the regional legal Ex requirements, e.g. Ex electrical items outside the EU may be required certified to other than ATEX e.g. IECEx, UL.



Use equipment only in the zone for which it is appropriate. Always check that all equipment is suitably rated and/or certified for the classification of the specific atmosphere in which they are to be installed.

3 Product Description

3.1 General product description

The Detect module is a remote sensor that is easily attached to the pump.


The sensor is an ideal solution for vibration velocity measurement in accordance with DIN/ISO 20816 (formerly 10816), 5199, 9905. The unit also monitors the condition of the pump at frequencies in excess of those cited within DIN/ISO 20816 (sometimes known as noise) in order to predict long(er) term failure through process upset that can lead to vibration and consequent failure.

Monitoring of these parameters allows the user to optimise Life Cycle Cost by controlling the effects caused by bearing failure, imbalance, misalignment, detrimental pipe-work forces, and cavitation, etc.

Simply put, the sensing module compares actual running values with a pre-defined threshold in order to notify the user about any alarming conditions. There are two ways to get this information. Firstly, there is an LED display on the module with a traditional Green, Yellow, and Red lamp arrangement. Secondly, the 4-20mA signal can be connected to site-standard control modules.

With the same interface, digital communication can be achieved through an FSK-Modem (FSK STERLING link) for further information and calibration (HART® compatible modems can be used). A software tool is also available for use with a WINDOWS® operated PC.

Features:

- Output of vibration velocity (RMS 10Hz–1kHz; 0 – 10 (20) mm/s) according to DIN/ISO 20816, 5199, 9905
- Condition monitoring up to 5.6 kHz (normal / unacceptable operating mode)
- 4 - 20 mA interface
- Installation up to 160 °C surface temperature by use of cooling elements
- LED display green, yellow and red
- Digital communication through FSK* modem (HART® compatible) for additional information or the professional software Vibrosoft
- EDD driver for Siemens SIMATIC PDM and Emerson AMS
- DTM driver for FDT frame applications
- Integrated error memory
- Simple mounting on the pump
- Requires no experience of vibration analysis technology
- ATEX  II 1G Ex ia IIC T4 Ga

- IECEx Ex ia IIC T4 Ga
- NEC 500 / CEC J18 Class I Division 1 Groups A,B,C,D, T4
- NEC 505 Class I, Zone 0 AEx ia IIC T4 Ga
- IEC / CENELEC / CSA Ex ia IIC T4 Ga

* FSK Frequency Shift Keying

3.2 Connections

3.2.1 Electrical connections

Cable: 2-wire

Supply: 11- 30 VDC

Output: 4-20 mA HART®

3.2.2 Mechanical connections

M8 screw direct connection to object or glue adapter

3.3 Accessories

3.3.1 Cooling element

Max. surface temperature T_s : without cooling element

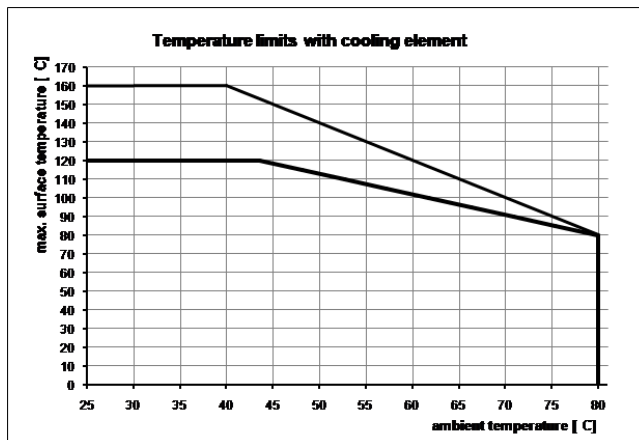
Order-No. 65010504 cooling element (1.)

Order-No. 65010702 cooling element HT (2.)

max. T_s = 80°C

max. T_s = 120°C

max. T_s = 160°C



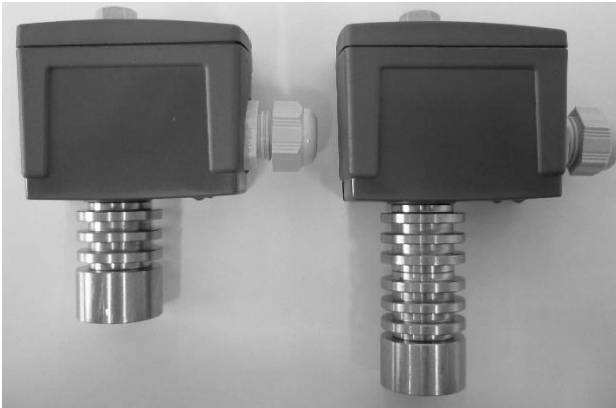


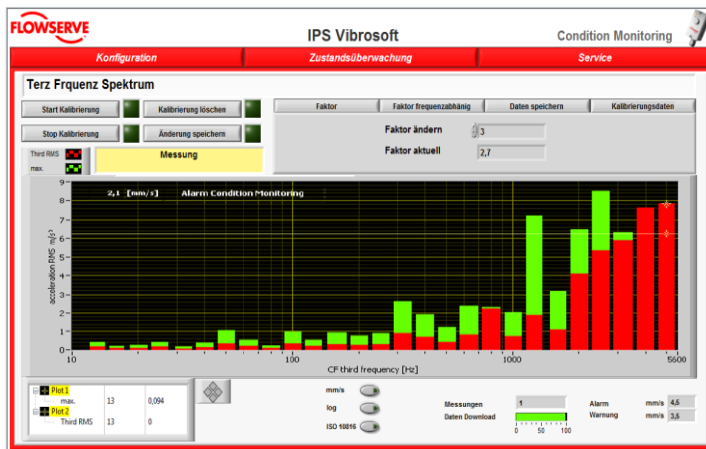
Figure 1: Cooling elements

3.4 Operating software

3.4.1 Vibrosoft software

Vibrosoft software has been developed purposely for professional analysis of the data, which has been generated by the Detect sensor. Detailed evaluation of the data can subsequently be made in order to reveal very specific aspects of vibration.

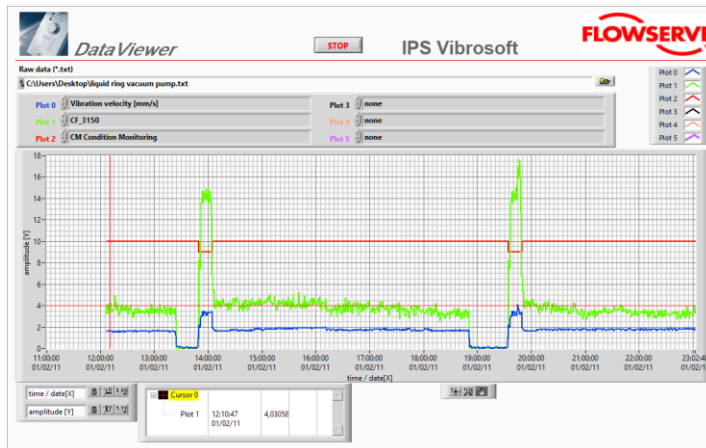
Condition monitoring



- Visual mapping of vibration data
- Frequency-specific, and/or general, threshold magnitudes based on calibration data
- Data logging

Service

- Extracting the error memory
- Sensor temperature
- Data analysis



- Evaluation of the logged data
- end analysis for wear
- analysis of intermittent anomalies

3.4.2 EDD for Siemens and Emerson

With the EDD (Electronic Device Description) for Siemens SIMATIC PDM and Emerson AMS process control systems, the same functions as the Vibrosoft software can be used. Data logging with the EDD standard is not possible.

3.4.3 DTM for FDT frame applications

With the DTM (Device Type Manager) for FDT frame applications (Field Device Tool) e.g. PACTware, SmartVision ABB, FieldCare Endress+Hauser, IndraWorks Rexroth etc. the same functions as the Vibrosoft software can be used.

3.5 DataUSB

Trend data memory for Detect

DataUSB Trend data memory is the ideal solution to store the vibration data, which were taken by the Detect sensor, and serves as a uncomplicated communication interface for the vibration analysis. Independent from installation (stand alone or DCS integrated), condition data can be logged to a USB flash drive for a period of up to 3 years at permanent measurement.

These condition data can be analysed professionally by use of the Vibrosoft software, the current condition of the machine can be evaluated and hence, further actions can be initiated at an early stage.

- Vibration data in correlation to the production process
- Long-term data memory
- Direct USB communication
- Trend data fast assessed
- Simple power supply
- Modbus TCP

Table 3: Technical data

Casing	Compact plastic casing for mounting rail installation EN 60715
Dimensions	118 x 45 x 138 mm

Protection type	IP 20
Ambient temperature	- 20 °C to + 60 °C
Power supply	24 VDC or via 5V USB ports

4 Packaging, Transportation and Storage

4.1 Consignment receipt

Immediately after receipt of the product/system it must be checked against the delivery/shipping documents for its completeness and that there has been no damage in transportation. Any shortage and/or damage must be reported immediately to Flowserve and must be received in writing within one month of receipt of the equipment. Later claims cannot be accepted.

4.2 Unpacking

After unpacking, protection will be the responsibility of the user.

4.3 Packaging

Normal packaging is designed to protect the unit and parts during shipment and for dry, indoor storage.

5 Installation

5.1 Mounting

The recommended mounting position for detect sensor is shown document OIM_FLS_IPS_Detect_mounting_EN"

The sensor is mounted with a single M8 x 60mm [VA2] screw at the pump.

Flowserve volute casing pumps with a bearing bracket are generally prepared with two standard M8 tapped holes. For other pumps, or if no M8 threaded hole available, an M8 adaptor can be used which is bonded to the surface with a suitable metal adhesive glue. This eliminates the need to drill a fixing hole. The M8 adaptor is included in delivery.

The metal adhesive should be suitable for condition of use.

Examples for metal adhesive:

Weicon, Epoxy Resin Putty -35°C – 200°C FLS: 60006416

Loctite 3450, Epoxy Adhesive max. 100°C FLS: 43109642

SikaFast-5215, Sika

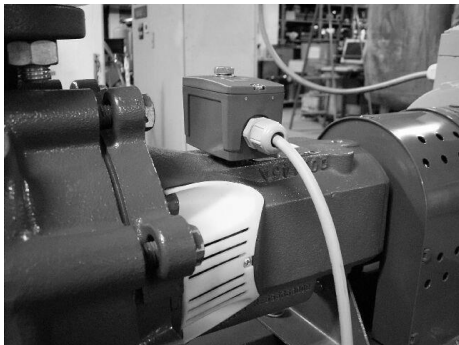


Figure 2: Mounting at bearing bracket

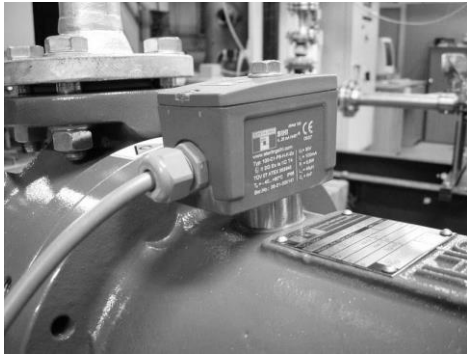


Figure 3: Adaptor with metal adhesive

5.2 Installation

Connecting the wires to housing

1. To remove housing cover and gasket, remove the two small screws.



Figure 4: Sensor Detect

2. Remove the ends away from the protective covering of the supply cable as shown in figure.

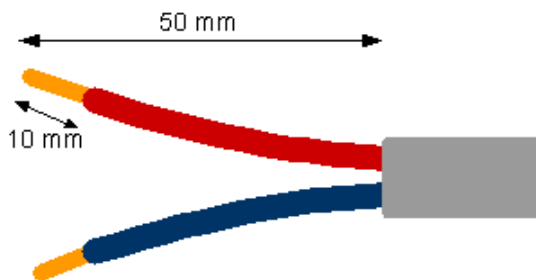


Figure 5: Supply cable

3. Insert the cable through the cable gland so that the ends easily reach the connection terminals.



Figure 6: Cable ends

- 4 Connect the cable to the terminals. To open the terminal clamps, use a screwdriver to press open and then insert the cable ends.

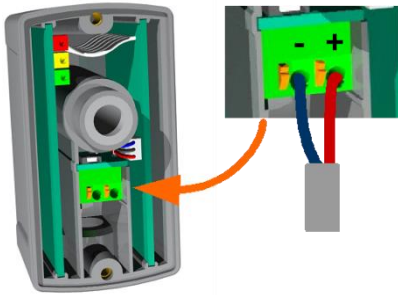


Figure 7: Connection description

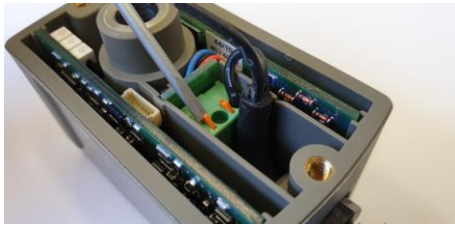


Figure 8: Open the clamp

⚠CAUTION Explosion hazardous area

Disconnect the electrical supply before installing the device.

Ensure that the bare cable ends cannot make contact with any other part of the device other than the terminals.

Ensure that the device is kept free from moisture and foreign bodies.

5. Pull back the cable in order to remove any excess from within the terminal head. Subsequently tighten the cable gland.



Figure 9: Connected cable



Figure 10: Cable inside of the housing

6. Replace the sensor gasket ensuring that it does not cover the LEDs and then tighten with the two screws.



Figure 11: Sensor gasket

5.3 Electrical connection check

Perform the following checks after completing electrical installation of the device.

- Is the connection in accordance with the description?
- Is the cable gland firmly tightened?
- Is the fitting of the gasket correct and the LEDs clearly visible?
- Are the housing cover screws tightened correctly?
- Check that the LED's light-up once the electrical supply is (re) connected.

6 Operation

Detect measures the vibration velocity of the pump in accordance with DIN/ISO 20816, 5199 and 9905 for preventive maintenance.

Furthermore, an optional condition-monitoring element can be simply activated in order to monitor vibration up to 5.6kHz. For this condition monitoring to be possible, however, the sensor must be calibrated beforehand (see topic: Calibration condition monitoring). Subsequently, the sensor compares actual values of the vibration Third-octave spectrum (up to 5.6 kHz) with pre-defined alarm thresholds. Consequently, site personnel can be informed if these values are exceeded.

6.1 Configuration

For most applications, the sensor is sent out already configured without the need to make any changes. Should the user want to make any changes to the pre-set parameters, however, then such configuration is possible with an FSK-modem (HART®-Modem) with the Detect EDD and DTM framework software tools or with DataUSB (SIHldataUSB) coupled to Vibrosoft software.

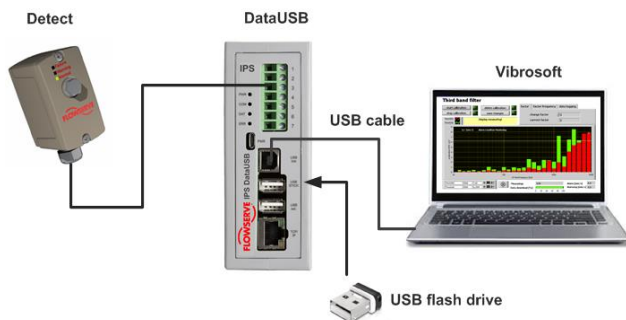


Figure 12: Configuration over DataUSB and Vibrosoft Software

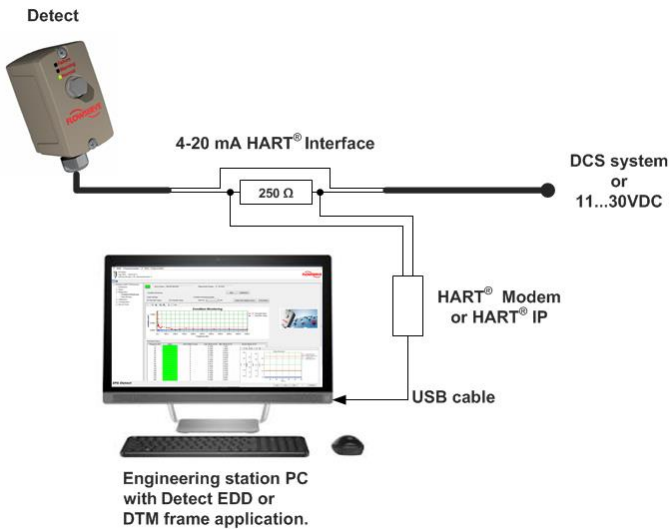


Figure 13: Configuration over HART® Modem and Detect EDD or DTM Software

CAUTION If FSK-Modem is to be installed in an explosion hazardous (Ex) rated area, then all associated national standards, directives, and safety instructions of the FSK-Modem must be adhered to for the appropriate area

6.1.1 Configuration vibration velocity

Measurement of the vibration velocity (RMS) enables the condition of the pump to be determined. This gives an indication of the Mechanical wear within the pump unit.

Examples for causes of high vibration velocity:

- Mechanical wear
- Imbalance
- Misalignment
- Excessive force from the pipe-work

Table 4: Vibration velocity settings

Parameter	Standard setting	Possible setting
Measuring range [mm/s]	0-10	0 - 10 0 - 20
Warning LED ■ mm/s]	3,5	0 - 20
Failure LED ■ [mm/s]	4,5	0 - 20

Changes to the standard values can be saved and loaded onto the sensor through the use of the "Save changes" button. In order to illustrate successful data transfer the new value will be displayed in the configuration software.

6.2 Calibration condition monitoring

Optionally, the Detect can detect changes in the vibration Third-octave spectrum by comparing actual values with calibrated threshold values. Therefore, the sensor must be calibrated to the pump installation. Cavitation, misalignment, imbalance together with other wrong operation modes can subsequently be easily detected.

The sensor used thresholds (RMS vibration acceleration m/s^2) from the Third-octave spectrum in the range of 10Hz to 5600Hz. The threshold values (“multiples from calibrated reference value”) refer to the calibrated values and are described as signal multiplication.

After the calibration the sensor compares the actual values with specified alarm thresholds and informs if the values are exceeded (see topic Condition monitoring **6.3.2**).

Note:

During calibration the vibration velocity is monitored in order to check if the pump is operating in an acceptable condition. Should the vibration velocity exceed the threshold value, then a warning (yellow LED display see topic 5.1.1) light is displayed. This would cause the calibration to be cancelled and the system should be checked before continuing. Upon successful calibration, subsequent mechanical manipulation of the sensor and/or pump is no longer possible.

6.2.1 Calibration condition monitoring with push button

6.2.1.1 Starting calibration with the push-button

1. Start the pump and wait until normal operating conditions have been reached.
2. Loosen the screws and remove the housing-cover and gasket. Depress and hold the button down for approximately 3 seconds until red and yellow LED flash alternatively.
3. Release the button until green and yellow LED flash alternately.
4. To commence (and confirm) the calibration process; within 1 minute depress the button once again for approximately 3 seconds until the green, yellow, and red LED's flash alternately.

▲ CAUTION If calibration is not commenced at this point, then the sensor changes to measuring mode and all calibration data is deleted. Consequently, the condition monitoring element is deactivated.

5. The calibration must last at least 60 seconds. The calibration cannot be interrupted within this time. The maximum calibration time is not limited and can be of indefinite duration, until all normal operation conditions are detected.

It is recommended to calibrate the sensor at least 10 minutes.

If the pump operates with different motor speeds, it is recommended to adjust the motor speed manually operated and calibrate the sensor for each third-octave-band at least 5 minutes. During the calibration the speeds of the pump can be operated one after another. It is also possible to stop the calibration and to start once again. In this case the calibration data will be complemented.

Third-Octave-Band [Hz]	Lower speed [rpm]	Centre speed [rpm] for calibration	Upper speed [U/min]
CF 13	600	780	840
CF 16	840	980	1080
CF 20	1080	1200	1320
CF 25	1320	1500	1680
CF 32	1680	1920	2100
CF 40	2100	2400	2640
CF 50	2640	3000	3360
CF 63	3360	3780	4200
CF 80	4200	4800	5280

Example:

Pump is operated in speed from 2000 RPM up to 3600 RPM.

The calibration should be operated in the following speed steps:

2000 U/min minimal speed

2400 U/min

3000 U/min

3600 U/min maximal speed

6. To stop the calibration process, depress the push button for approximately 3 seconds until the green LED flashes.
7. At the end of calibration, the sensor changes to the condition-monitoring mode. The calibrated reference values are also saved even if the power supply is disconnected. These calibrated values can now be compared with actual readings. Importantly, the maximum value, which has been measured during the calibration phase, is saved. Condition monitoring mode is now activated.

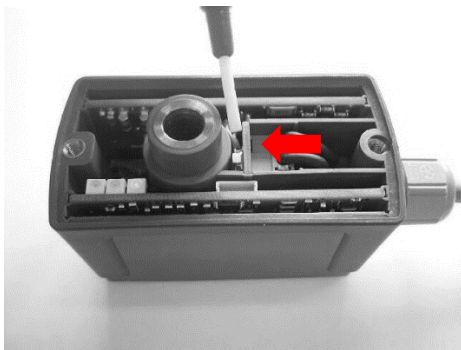


Figure 14: Push button sensor

CAUTION Explosion hazardous area

Ensure that the screwdriver cannot make contact with other parts of the device other than the terminals.

Ensure that the device is kept free from moisture and foreign bodies

6.2.2 Deactivating the condition monitoring mode with the push-button

1. Loosen the screws and remove housing-cover and gasket. Depress the push-button for approximately 3 seconds until red and yellow LED's flash alternatively.
2. Release the push-button until the green and yellow LED's flash alternatively.
3. After approximately 1 minute the sensor will change to measuring mode and any existing calibration data is deleted.
The condition monitoring is then deactivated.

6.2.3 Calibration with Vibrosoft software

6.2.3.1 Starting calibration with the Vibrosoft software

1. Start the pump and wait until normal operation conditions are reached.
2. Start up the Vibrosoft software and wait until “normal operation” is displayed.
3. Click the button “start calibration”. At the sensor the green, yellow and red LED flash alternately. The calibration must last at least 60 seconds. The calibration cannot be interrupted within this time. The maximum calibration time is not limited and can be of indefinite duration, until all normal operation conditions are detected.
It is recommended to calibrate the sensor at least 10 minutes.

If the pump operates with different motor speeds, it is recommended to adjust the motor speed manually operated and calibrate the sensor for each third-octave-band at least 5 minutes. During the calibration the speeds of the pump can be operated one after another. It is also possible to stop the calibration and to start once again. In this case the calibration data will be complemented.

Third-Octave-Band [Hz]	Lower speed [rpm]	Centre speed [rpm] for calibration	Upper speed [U/min]
CF 13	600	780	840
CF 16	840	980	1080
CF 20	1080	1200	1320
CF 25	1320	1500	1680
CF 32	1680	1920	2100
CF 40	2100	2400	2640
CF 50	2640	3000	3360
CF 63	3360	3780	4200
CF 80	4200	4800	5280

Example:

Pump is operated in speed from 2000 RPM up to 3600 RPM.

The calibration should be operated in the following speed steps:

2000 U/min minimal speed

2400 U/min

3000 U/min

3600 U/min maximal speed

4. Click the button “stop calibration” .

5. Subsequently, the sensor changes to the condition-monitoring mode. The calibrated reference values are saved even if the power supply is disconnected. These calibrated values can now be compared with actual readings. Importantly, the maximum value, which has been measured during the calibration phase, is saved. Condition monitoring mode is now activated.

6.2.3.2 Deactivating the calibration condition monitoring using Vibrosoft software

1. Click the button "*delete calibration*".
2. Wait until the green display behind the button is then switched off. The sensor changes to measuring mode and exist calibration data is deleted. The condition monitoring is deactivated.

6.3 Monitoring operation

You can simply check the pump operation by taking a quick glance at the pump and viewing the LED display.

Online detection is possible with a 4-20mA interface directly connected to conventional control equipment.

6.3.1 Vibration velocity

Normal operation	Warning	Failure
■ failure	■ failure	■ failure
■ warning	■ warning	■ warning
■ normal	■ normal	■ normal

Table 5:4-20mA Interface

Measurement range	Interface display	Calculation
Vibration velocity 0-10 mm/s (factory setup)	10-20 mA	$v_{\text{eff}} [\text{mm/s}] = i[\text{mA}] - 10$
Vibration velocity 0-20 mm/s	10-20 mA	$v_{\text{eff}} [\text{mm/s}] = 2 * i[\text{mA}] - 20$
CM-mode [CM = Condition Monitoring]	9,10,11 and 12 mA	9 mA ■ (flashing) CM-TRUE 10 mA ■ normal 11 mA ■ warning 12 mA ■ failure

6.3.2 Condition monitoring

Table 6: LED Display

Normal operation (FALSE)	Condition monitoring (TRUE)
■ failure	■ failure (flashing)
■ warning	■ warning
■ normal	■ normal

Table 7:4-20mA Interface

Condition monitoring	Interface display
FALSE	Vibration velocity (see topic.Vibration velocity)
TRUE	9 mA

7 Troubleshooting Guide

Table 8: Troubleshooting recommendations

Scenario	Causes	Remedies
All LEDs (Green,yellow and red) flash simultaneously and interface shoes 21 mA	Electronic failure/Sensor failiure	Replace sensor
LED display no system check [running light LED]	Low Power supply Vcc < 11 V	Check the polarity of the cable
No LED display	No power supply	Check the polarity of the cable No software
	Incorrect installation of the gasket. Gasket cover the LED display.	Check the installation of the gasket.

8 Technical Data

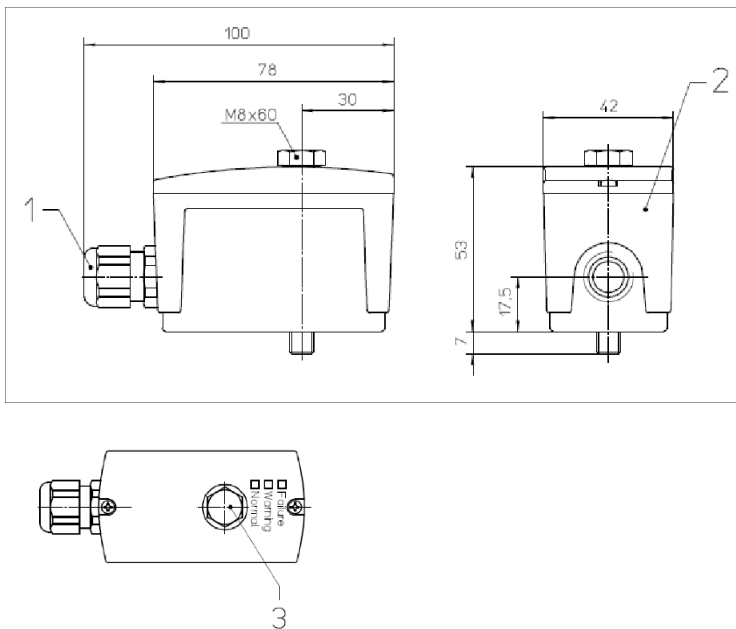


Figure 15: Detect

- 1 Cable gland M16 X 1.5
- 2 Housing
- 3 Screw M8X60

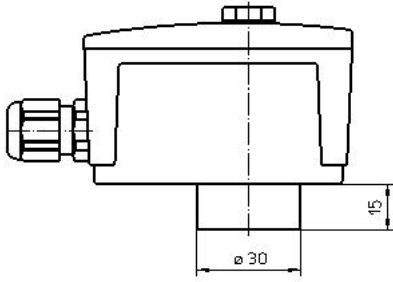


Figure 16: Detect with glue adaptor

8.1 Ex-Characteristic



II 1G Ex ia IIC T4 Ga
TÜV 07 ATEX 553845

IECEX Ex ia IIC T4 Ga

TUN 15.0038

LR1560-1



Class I Division 1 Groups A,B,C,D, T4

Class I, Zone 0 AEx ia IIC T4 Ga

Ex ia IIC T4 Ga (i.e. CAN)

If the sensor Detect is to be installed in an explosion hazardous (Ex) area or other applications where approvals are necessary, then respective official documentation must be observed. As standard, the unit can be supplied with the following documentation: Operating Instruction, EC-Type Examination, Safety Instruction and Declaration of Conformity)

8.2 Mechanical condition

Table 9: Mechanical properties

Dimension	76 x 40 x 53 mm
Mounting of sensor	0,12 kg
Material of body	M8 screw
Material of body	PA 6 GF 10 + GB 20, 22% Irgastadt P18, 3% colour ("warm" gray)

8.3 Nameplate

e.g. IPS Detect 100 C1 P6 H K Ex

Table 10: Name plate details

Type / Function (software)	Pump sensor	100
Design	Compact	C1
Housing/casing	Polyamid PA6	P6
Output interface	4..20 mA HART	H
Connectivity	Terminal block	K
Approval	For non hazardous areas	00
	Ex-ia	Ex

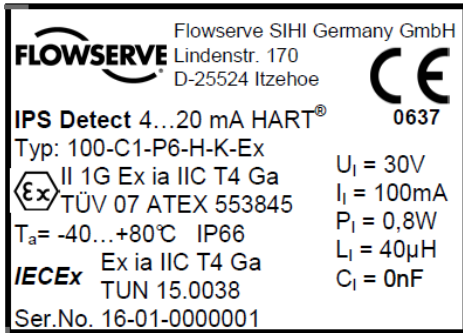


Figure 17: Name plate

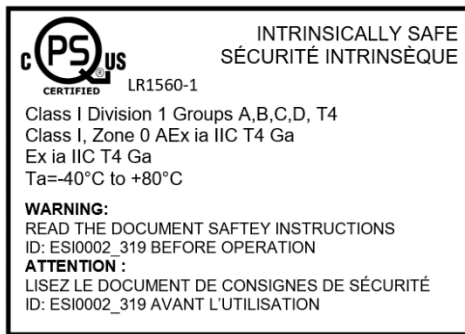
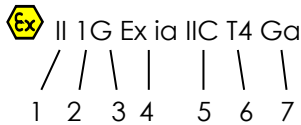
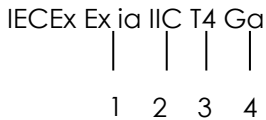


Figure 18: Name plate



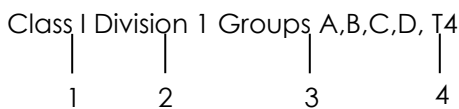
ATEX Labeling

- | | | | |
|---|----------------------------------|---|-------------------------------|
| 1 | Device group | 2 | Category |
| 3 | Area (gas or dust) | 4 | Electrical type of protection |
| 5 | Explosion group | 6 | Temperature Class |
| 7 | Equipment Protection Level (EPL) | | |



IECEx Labeling

- | | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Electrical type of protection | 2 | Explosion group |
| 3 | Temperature Class | 4 | Equipment Protection Level (EPL) |



NEC 500 / CEC J18 Labeling

- | | | | |
|---|-------------------------------|---|----------------------------|
| 1 | Hazard category | 2 | Area classification |
| 3 | Hazardous atmosphere category | 4 | Temperature classification |

Class I, Zone 0 AEx ia IIC T4 Ga
 / \ | \ | \
 1 2 3 4 5 6

NEC 505 Labeling

- | | | | |
|---|----------------------------------|---|--------------------------------|
| 1 | Hazard category | 2 | Area classification |
| 3 | Explosion-protection standard | 4 | Method of explosion protection |
| 5 | Hazardous atmosphere category | 6 | Temperature classification |
| 7 | Equipment Protection Level (EPL) | | |

Ex ia IIC T4 Ga
 / / \ | |
 1 2 3 4 5

IEC / CENELEC / CSA Labeling

- | | | | |
|---|----------------------------------|---|----------------------------|
| 1 | Explosion protection marking | 2 | Type of protection |
| 3 | Hazardous atmosphere category | 4 | Temperature classification |
| 5 | Equipment Protection Level (EPL) | | |

8.4 Electrical data

Table 11: Electricla data

Output signal	4..20 mA with modulated FSK signal (physically Bell 202 HART® compatible) only 8..20 mA support Detect: 10..20 mA vibration velocity 9 mA condition monitoring
Display sensor failure	21 mA (>20,5 mA)
Max. signal deviation	1.5 %
Min. current consumption	8 mA (4- 8 mA are not supported)
Max. current consumption	22 mA
Min. required voltage at sensor input	11 V
Max. allowed load impedance	750 Ω if 30 V supply
Connecting wire	2-wire
Connection 4-20 mA	Internal screw-clamping terminal

8.5 Environmental condition

Table 12: Environmental condition

Safety class at EN 60529	IP66
Temperature	-40 °C - 80 °C

Annex A: Declaration of Conformity



EU declaration of conformity

SIHI® Pumps



The manufacturer: - Original -
Flowsolve SIHI Germany GmbH
Lindenstraße 170
D-25524 Itzehoe

declares herewith that the product

System: IPS Detect 100 C1 P6 H K Ex

fulfils all relevant provisions of following EU directives:

- Restriction of hazardous substances 2011/65/EU
- Electromagnetic compatibility 2014/30/EU
- Explosion protection 2014/34/EU as follows:
II 1G Ex ia IIC T4 Ga TÜV 07 ATEX 553845

Notified body acc. to directive 2014/34/EU, annex III: 0044

TÜV NORD CERT GmbH
Am TÜV 1
D-30519 Hannover

Notified body acc. to directive 2014/34/EU, annex VII: 0637

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
D-09599 Freiberg

Harmonised standards used:

EN 61326-1:2013
EN 1127-1:2011
EN 60079-0:2012+A11:2013
EN 60079-11:2012

Other technical standards and specifications used:

EN 61010-1:2010

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Place, date:

Itzehoe, 15.05.2020

Person empowered to draw up this declaration:

General Manager


Peter Röper



SIHI® Pumps

**EU declaration of conformity**

- Original -

The manufacturer:

Flowserve SIHI Germany GmbH
Lindenstraße 170
D-25524 Itzehoe

declares herewith that the product

System: IPS Detect 100 C1 P6 H K 00

fulfils all relevant provisions of following EU directives:

- Restriction of hazardous substances 2011/65/EU
- Electromagnetic compatibility 2014/30/EU

Harmonised standards used:

EN 61326-1:2013

Other technical standards and specifications used:

EN 61010-1:2010

This declaration of conformity is issued under the sole responsibility of the manufacturer.**Place, date:**

Itzehoe, 15.05.2020

Person empowered to draw up this declaration:

General Manager


Peter Röper



IPS Detect User Instruction –6501050-5-20-E

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