
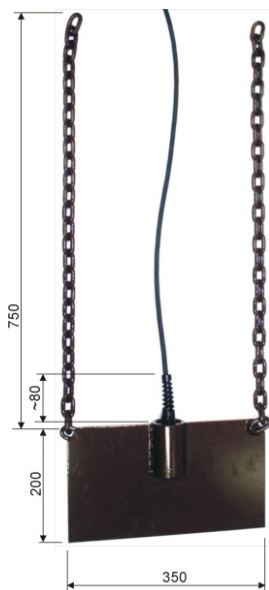




## RHP-5 Flap Transfer Point Sensor

 zone 22



### Use:

The RHP-5 transfer point sensor (hereinafter referred to as the “transfer point sensor”) is intended for indicating blockage of transfer points on belt conveyers and chutes by loose material of fine to medium grain size which does not cause undesired mechanical damage to the sensor structure by their properties.

The sensor indicates without troubles any blockage of the transfer point by coal, iron ore, lime, gravel sand, various intermediate products, mine debris, coke and materials forming piles.

The figure shows the most frequently used RHP-5 applications. In the upper part there is an optimal placement of the sensor which does not require any modification to the transfer point. A disadvantage of this application is that it only indicates blockage after filling up of the whole down-take by material.

The most efficient blockage detection is in the lower part of the belt, see the lower drawing. It requires a modification to the down-take structure.

During the coal transportation there is usually an explosive environment ZONE 22 etc. inside the transfer points. RHP-5 transfer point sensor, model NAMUR, is also used in such environment.

..

Another application is indicating the filling up of a tank; see the figure on the other side. This application is suitable for closed spaces, where the flap does not swing because of the wind.

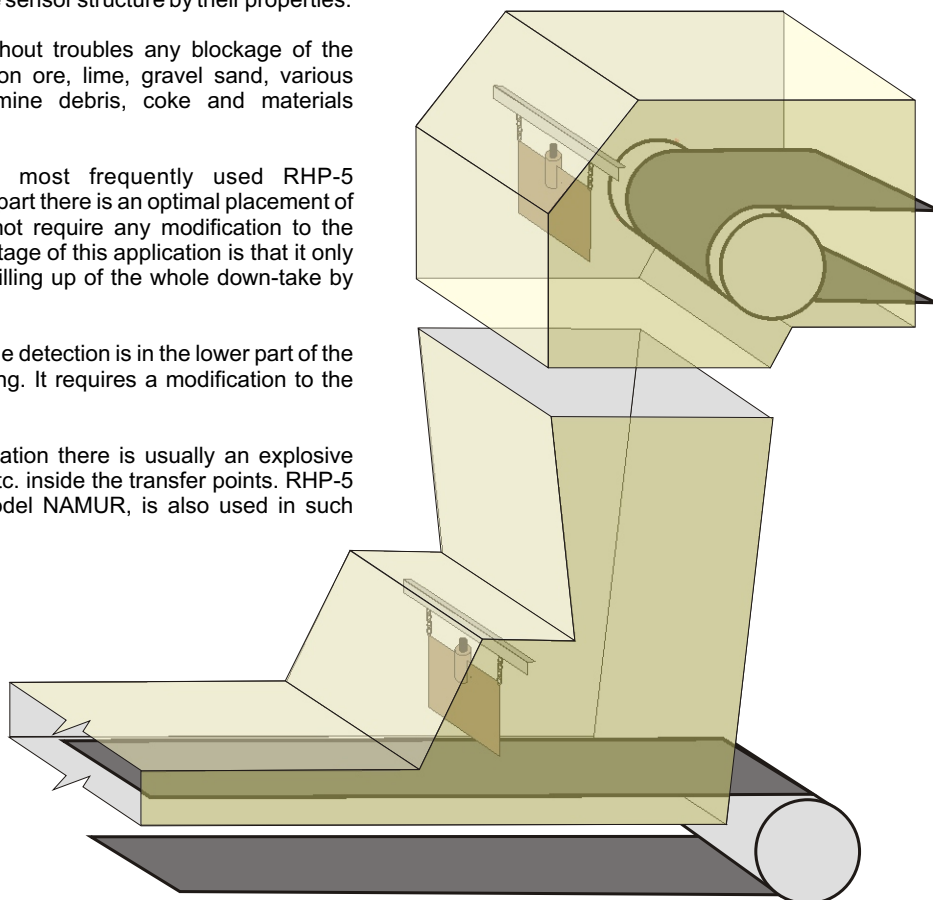
This transfer point sensor cannot be used with materials which enable immersing of the hanging part, i.e. the material flows around the sensor which is not deflected. For these materials, the RHP-5 cone model is used.

The transfer point sensor cannot be used for assembly on movable equipment such as travel conveyers, vibration feeders, etc. It is not intended for equipment the vibrations of which could cause self-actuation caused by setting vibrations.

### Description:

The transfer point sensor with a flap is of a rectangular shape with a vertical tube. 750mm long chains are welded on the upper corners which are trimmed away. Using the chains the sensor is hung to the required place.

The sensor is made of 3mm thick steel. The surface treatment of all types of sensors including the hanging components is made by brown Comaxit. The probe is inserted in a steel tube which is welded in the upper part of the sensor. The cable from the probe is led upwards in a flexible metal protecting pipe coated with PVC foil.



The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.





## RHP-5 Transfer Point Detector – Flap Type



### Principle:

The principle of blockage indication uses the function of a spherical induction switch which switches when it deviates from the vertical axis.

A condition for reliable function is that the material forms a cone at the transfer point blockage which deflects the hanging part of the transfer point sensor at least by 20° - 25° from the vertical position when it grows up.

Therefore, the sensor must be placed to be deflected by the necessary angle when the transfer point gradually blocks.

The evaluation should be performed by a time element which excludes all accidental short-term deviations caused by rebound material.

### Models:

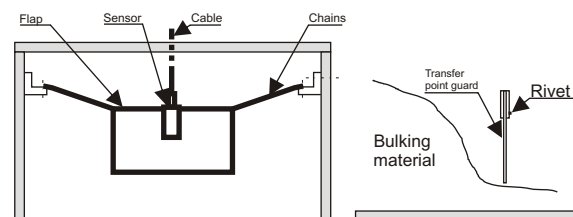
RHP-5 flap transfer point sensors are recommended to be applied as directional sensors, which mean that only after its deviation to the determined side the caving fall is signalled. Its deviation to the opposite side does not result in any response. The all-directional switch needs a longer term to quiet the sensor and repeated sensor activation after the end of the caving fall signalisation (straightening of the flap position to the vertical position)

### Installation and Assembly

The place of deployment is selected in such way that if a delay is set, the sensor switches off the drive of the respective conveyer before it is dangerously blocked and the drive is switched off by its protection.

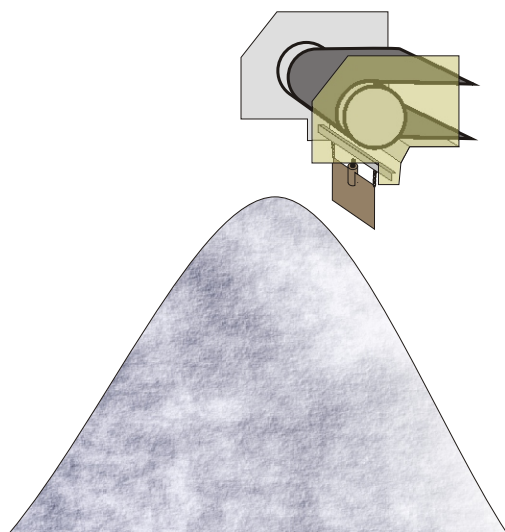
The place of deployment must be selected in such way that the number of accidental deviations (from the rebound material, by vibrations, etc.) is as low as possible, but not exceeding the status which can be eliminated by the set time delay. Chain hangers of the transfer point sensor are fixed to the bearing structure (e.g. a cover of the transfer point) by two M10 screws. Chain hangers can be shortened, if needed.

Hang the sensor so that the small rivet on its front side is oriented from the mounting material. This direction must always be adhered to with the directional type.



### Type designation and ordering options:

Designation	Movement	Cable	Voltage	Principle
RHP-5-S11200	Directional	2m	230V AC 2-wire	
RHP-5-S11200-S	Directional	2m	230V AC 2-wire	
RHP-5-V11200	Omni-direct	2m	230V AC 2-wire	
RHP-5-V11200-S	Omni-direct	2m	230V AC 2-wire	
RHP-5-S21200	Directional	2m	24 V 3-wire PNP	
RHP-5-S21500	Directional	5m	24 V 3-wire PNP	
RHP-5-V21200	Omni-direct	2m	24 V 3-wire PNP	
RHP-5-V21500	Omni-direct	5m	24 V 3-wire PNP	
RHP-5-S31200	Directional	2m	NAMUR (Ex)	
RHP-5-V31200	Omni-direct	2m	NAMUR (Ex)	



### Technical parameters:


Weight of the sensor with the flap	5.5kg
Dimensions of the sensor with the flap	200 x 350 x 58
Length of chains of the sensor with the flap	750mm
Allowed ambient temperature	-25°C - +70°C
Protection	IP 54
<b>PNP Output 3-wire</b>	
Supply voltage	10 ... 30 V DC
Voltage drop	$\leq 1.5V$ at $I_{a \max}$
Constant current, $I_{a \max}$	$\leq 300mA$
Conductor cross-section	$0.25 \text{ mm}^2$
Conductor length	approx. 2 m or 5 m
Time delay	2ms
<b>230 V AC Output two-wire</b>	
Supply voltage	20...250V AC
Supply drop	$\leq 8.5 V$ at $I_{a \max}$
Constant current, $I_{a \max}$	$\leq 250mA$ (...+50°C) $\leq 200mA$ (...+80°C)
Conductor cross-section	$0.5 \text{ mm}^2$
Conductor length	ca 2m
Time delay	$\leq 10ms$
<b>NAMUR</b>	
Supply voltage	5...25V DC
Current consumption, unloaded	$\leq 1mA$
Current consumption, loaded	$\geq 2.2mA$
Conductor cross-section	$0.5 \text{ mm}^2$
Conductor length	approx. 2 m

The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.





## RHP-5 Rod Transfer Point Sensor

 zone 22



Another application is guarding a fall in the transfer point. The rod can only be mounted in the upper part of a closed transfer point. A disadvantage of this application is that it only indicates fall after the whole down-take is filled up with the material.

This transfer point sensor cannot be used with materials which enable immersing of the hanging part, i.e. the material flows around the sensor which is not deflected. For these materials, the RHP-5 board or cone model is used.

The transfer point sensor cannot be used for assembly on movable equipment such as travel conveyers, vibration feeders, etc. It is not intended for equipment the vibrations of which could cause self-actuation caused by setting vibrations.

### Description:

The transfer point sensor is of a cylindrical shape with a vertical tube. 750mm long chains are welded on the upper part by which the sensor is hung to the required place.

The sensor is made of 3mm thick steel. The surface treatment of all types of sensors including the hanging components is made by brown Comaxit. The probe is inserted in a steel tube which is welded in the upper part of the sensor. The cable from the probe is led upwards in a flexible metal protecting pipe coated with PVC foil.

### Use:

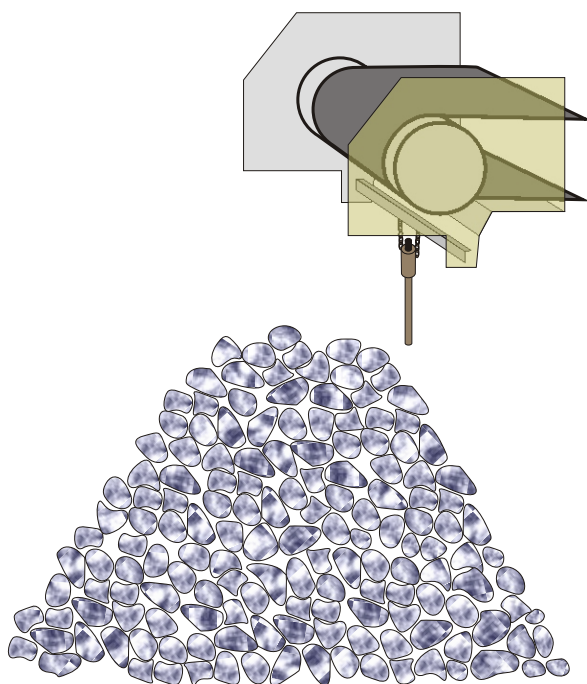
The RHP-5 transfer point sensor (hereinafter referred to as the "transfer point sensor") is intended for indicating blockage of transfer points on belt conveyers and chutes by loose material of fine to medium grain size which does not cause undesired mechanical damage to the sensor structure by their properties.

The sensor indicates without troubles any blockage of the transfer point by coal, iron ore, lime, gravel sand, various intermediate products, mine debris, coke and materials forming piles.

It can also be used for indicating an inclination of a part of the structure. The sensor rod can be disassembled and the sensor can be attached to a fixed part of the guarded structure.

The figure shows the most frequently used RHP-5 applications for indicating the state of filling up of a tank or a pile; see the figure. In the upper part there is an optimal placement of the switch which does not require any modification to the transfer point. It is used at places where another type of a sensor, e.g. RHP-5 flap, would be swung by the wind. It is also suitable for coarse fractions of the raw material.

During the coal transportation there is usually an explosive environment ZONE 22 etc. inside the transfer points. RHP-5 transfer point sensor, model NAMUR, is also used in such environment.

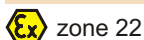


The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.





## RHP-5 Rod Transfer Point Sensor



### Principle:

The principle of the transfer point blockage indication by the transfer point sensor uses the function of a spherical induction switch which switches when it deviates from the vertical axis.

A condition for reliable function is that the material forms a cone at the transfer point blockage which deflects the hanging part of the transfer point sensor at least by 20° - 25° from the vertical position when it grows up.

Therefore, the sensor must be placed to be deflected by the necessary angle when the transfer point gradually blocks. The evaluation should be performed by a time element which excludes accidental short-term deviations caused by rebound material.

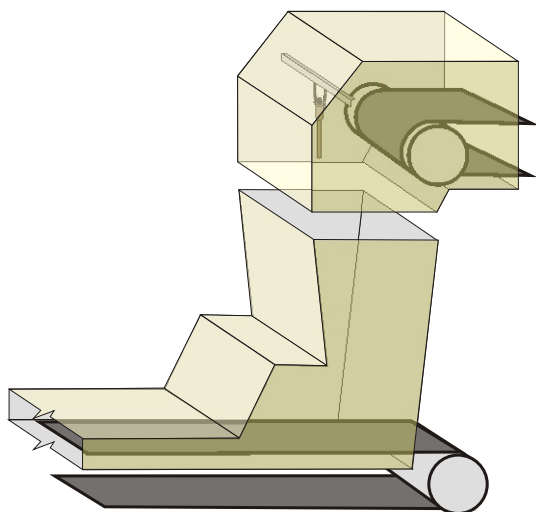
### Models:

The RHP-5 flap transfer point sensors is recommended to be applied as directional sensors, which mean that only after its deviation to the determined side the caving fall is signalled. Its deviation to the opposite side does not result in any response. The all-directional switch needs a longer term to quiet the sensor and repeated sensor activation after the end of the caving fall signalisation (straightening of the flap position to the vertical position).

The RHP-5 with a rod is recommended for the all-directional application.

### Type designation and order options:

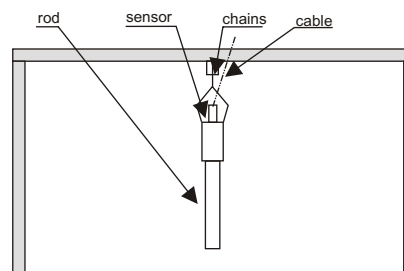
Designation	Movement	Cable	Voltage	Principle
RHP-5-S12200	directional	2m	230V AC 2-wire	
RHP-5-S12200-S	directional	2m	230V AC 2-wire	
RHP-5-V12200	all-direct.	2m	230V AC 2-wire	
RHP-5-V12200-S	all-direct.	2m	230V AC 2-wire	
RHP-5-S22200	directional	2m	24V 3-wire PNP	
RHP-5-S22500	directional	5m	24V 3-wire PNP	
RHP-5-V22200	all-direct.	2m	24V 3-wire PNP	
RHP-5-V22500	all-direct.	5m	24V 3-wire PNP	
RHP-5-S32200	directional	2m	NAMUR (Ex)	
RHP-5-V32200	all-direct.	2m	NAMUR (Ex)	



### Installation and assembly:

The place of deployment is selected in such way that if a delay is set, the sensor switches off the drive of the respective conveyer before it is dangerously blocked and the drive is switched off by its protection. The place of deployment must be selected in such way that the number of accidental deviations (from the rebound material, by vibrations, etc.) is as low as possible, but not exceeding the status which can be eliminated by the set time delay. Chain hangers of the transfer point sensor are fixed to the bearing structure (e.g. a cover of the transfer point) by two M10 screws. Chain hangers can be shortened, if needed.

Hang the sensor so that the small rivet on its front side is oriented from the mounting material. This direction must always be adhered to with the directional type.



### Technical parameters:

Model	II 3 D Ex tD A22 IP65 T85°C
Weight of the sensor with a flap	5.5kg
Dimensions of the sensor with a flap	200 x 350 x 58
Chain length of the sensor with a flap	750mm
Permitted ambient temperature	-25°C - +70°C
Protection	IP 65
<b>Output PNP 3-wire</b>	
Supply voltage	10...30V DC
Voltage drop	$\leq 1.5V$ at $I_{a \max}$
Constant current, $I_{a \max}$	$\leq 300mA$
Conductor cross-section	0.25 mm <sup>2</sup>
Conductor length	approximately 2 or 5 m
Time delay	2ms
<b>Output 230 V AC 2-wire</b>	
Supply voltage	20...250V AC
Voltage drop	$\leq 8.5V$ at $I_{a \max}$
Constant current, $I_{a \max}$	$\leq 250mA$ (...+50°C) $\leq 200mA$ (...+80°C)
Conductor cross-section	0.5 mm <sup>2</sup>
Conductor length	approximately 2 m
Time delay	$\leq 10ms$
<b>NAMUR</b>	
Supply voltage	5...25V DC
Current consumption unloaded	$\leq 1mA$
Current consumption loaded	$\geq 2.2mA$
Conductor cross-section	0.5 mm <sup>2</sup>
Conductor length	approximately 2 m

The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.

## RHP-5 Vx3y Cone-type Overfill Detector

### Sample application of the cone-type detector

The cone-type overfill detector is suspended on the tip using chains of the required length welded to the specified position.

### Description

The RHP-5 Vx3y overfill detector (hereinafter "overflow detector") is designed for indicating congestions of the conveyor and chute overflows with a material. The product is used especially for the self-acting shutdown of the automated conveyor lines.

The overfill detector may be used for all materials of fine up to medium grain size, whose properties (e.g. aggressiveness, abrasiveness) do not cause undesirable mechanical damage to the overfill detector.

Materials compatible with the detector include washed and raw coal, intermediate product, gangue, coke, iron ore, limestone, gravel, and materials of a bulky nature.

The pre-requisite of a correct operation is that the material causing congestion of the overflow forms a loose cone, which will deflect, with increasing congestion, the suspended section of the overfill detector by at least 20° up to 25° from the vertical position.

### Application

The overfill detector thus cannot be used for materials that allow the suspended section to sink into the material conveyed.

The overfill detector is not designed for installation to the mobile equipment, such as mobile conveyers, vibratory feeders, and so on, and to equipment, the vibration of which could cause a spontaneous activation through the sensor vibration.

### Function

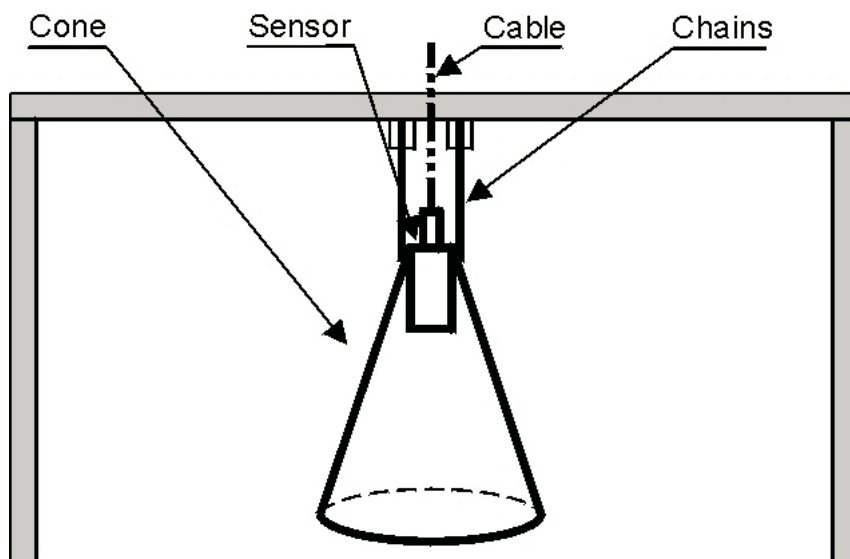
The principle of the overflow congestion indication by means of the overfill detector utilizes the spherical induction switch, which trips when deflected from the vertical axis.

Due to this, it is necessary to locate the overfill detector so that the flap moves, when a congestion occurs, to the side of the cone formed by the material conveyed in case of congestion. As the congestion increases, the flap is deflected by a given angle.

The overfill evaluation should be time-based to eliminate incidental short-term displacements caused e.g. by rebounding material

### Design

The RHP-5 Vx3y cone-type overfill detector is made as omnidirectional (deflection in all directions).



The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.



## RHP-5 Vx3y Cone-type Overfill Detector

### Material

The detectors are made of the steel plate with a thickness of 3 mm. All types of detectors including suspended components are powder coated in brown color. The sensor itself is located in the steel pipe welded at the upper section of the detector. The sensor cable is routed upwards from the sensor in the flexible metallic protector coated with the PVC foil.

### Installation and assembly

The overfill detector is mounted to the overflow cover or to the support structure above the overflow or chute, always from the loose material cone in the material motion direction.

The installation location shall be selected so that the detector disconnects, even with activated delay, the feed conveyor drive before hazardous congestion and deactivation of the drive by its own protection occur.

When locating the unit it is necessary to ensure the minimum number of incidental deflections (caused by the rebounding material, vibrations, and so on). The number shall not exceed value, which can still be eliminated by setting the delay. The chain suspensions of the overfill detector are attached to the support structure (e.g. to the overflow cover) by two M10 bolts.

The chain suspensions can be shortened as needed.

The sensor shall be suspended so that the rivet on its front side faces towards the accumulating material.

### Type designation and ordering

#### RHP 5 - XXXY

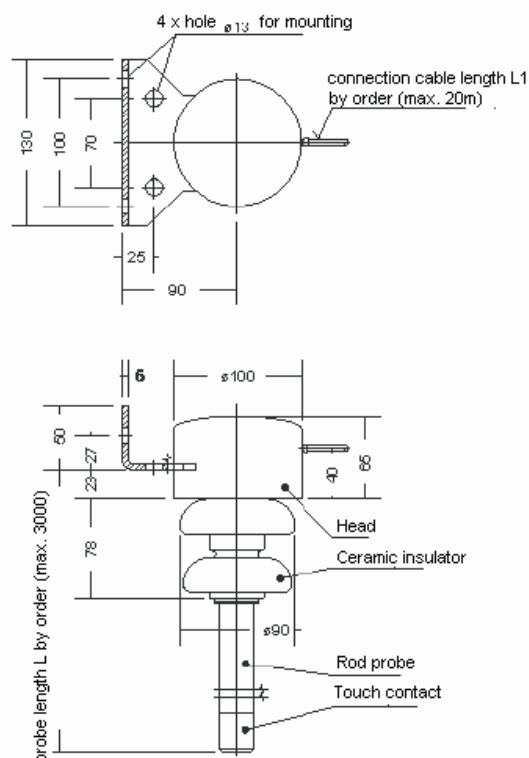
<input type="checkbox"/>	Cable length [cm]
<input type="checkbox"/>	Plate
<input type="checkbox"/>	<del>Welded on piece for bar, hose</del>
<input type="checkbox"/>	<del>Lug</del>
<input type="checkbox"/>	230 V, twisted-pair
<input type="checkbox"/>	24 V, three-wire, PNP
<input type="checkbox"/>	NAMUR
<input type="checkbox"/>	<del>S Unidirectional</del>
<input type="checkbox"/>	V Omni-directional

### Technical parameters:

Detector weight incl. cone	2kg
Detector dimensions incl. cone	200 x 350 x 58
Detector chains length incl. cone	up to 5m
Ambient temperature range	-25°C - +70°C
<b>Switching system</b>	
<b>PNP output - three-wire</b>	
Supply voltage	10...30V DC/230V
Voltage loss	$\leq 1,5V$ při $I_{a \max}$
Constant current, $I_{a \max}$	$\leq 300mA$
Wire cross-section	0,25 mm <sup>2</sup>
Wire length	approx. 2m or 5m
Delay	2ms
Supply voltage	20...250V AC
<b>Výstup 230V AC dvoudrát</b>	
Voltage loss	$\leq 8,5V$ při $I_{a \max}$
Constant current, $I_{a \max}$	$\leq 250mA$ (...+50°C) $\leq 200mA$ (...+80°C)
Wire cross-section	0,5 mm <sup>2</sup>
Wire length	approx. 2m
Delay	$\leq 10ms$
<b>NAMUR</b>	
Supply voltage	5...25V DC
Current consumption, unloaded	$\leq 1mA$
Current consumption, loaded	$\geq 2,2mA$
Wire cross-section	0,5 mm <sup>2</sup>
Wire length	approx. 2m
IP rating	IP 54

The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.

## BOS-4T rod conductivity probe



### Use:

The probe is designed to guard the transfer point at the conveyor belt and to measure the level of liquids on the electric conductivity measurement principle. The probe can be used with electrically conductive liquids and fine-grained bulk solid materials which cannot damage the level gauge due to their properties (e.g. abrasivity, corrosion, etc.)

The probe can communicate with the evaluation electronics of the JPB-BOS intrinsically safe converter or the BOS 21 electronic module.

The probe can be used in normal, humid, dusty, or explosion hazard environments.

### Description:

The probe is a rod with a conductive contact at its lower end and an insulator at its top end. The insulator is embedded in the head.

The head is equipped with a holder to hold the level gauge on the construction by means of two M12 screws. A cable 2x1.0 mm<sup>2</sup> for connecting to the evaluation unit is connected to the head.

### Technical parameters:

Max. probe length L	3 m
Min. probe length L	0,5 m
Max. cable length L1	20 m
Operating position	vertical
Max. connecting line voltage	24 V
Max. probe current	1 mA
Min. insulation between contact and head cover	5 MΩ
Weight for max. probe length and max. cable length	8,07 kg
Protection	IP 65
Ambient temperature	0°C ... 35°C
Relative air humidity	max. 95 %

The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.

## BOS-4L rope conductivity probe



### Description:

The suspension rope probe is comprised of a steel wire rope "Herkules" with 12.5mm diameter which is PVC-coated so that the final rope diameter is 16.5mm.

The lower end of the rope is embedded in a cylindrical steel weight with a brass touch ring by means of a tin-lead solder. The top end of the rope is embedded in the conical opening of the body located inside the head and insulated from this head by an alkamide ring.

### Use:

BOS-4L is mounted to the steel construction by means of two M12 screws, in vertical position only.

When selecting a location, take into consideration that the level gauge may not be placed inside the flow of the material.

The cable is connected to the head through a P13.5 type gland bushing. After mounting the level gauge it is necessary to check the length of the suspension probe with regard to the required indicated level.

### Technical parameters:

Max. probe length L	3 m
Min. probe length L	0,5 m
Max. cable length L1	20 m
Operating position	vertical
Max. connecting line voltage	24 V
Max. probe current	1 mA
Min. insulation between contact and head cover	5 MΩ
Weight for max. probe length and max. cable length	8,07 kg
Protection	IP 65
Ambient temperature	0°C ... 35°C
Relative air humidity	max. 95%

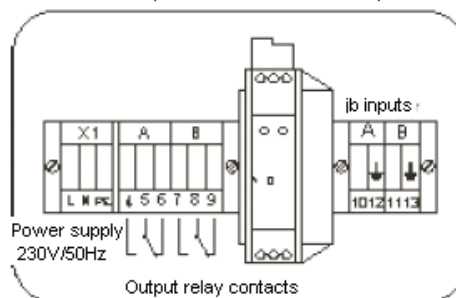
The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.



## BOS 21 evaluation unit for the conductivity probe



BOS-21 (on the distribution board)



### Use:

BOS-21 is a two-channel intrinsically safe evaluation device for liquid and bulk solid level measurement systems based on the electric conductivity measurement principle or on the sphere switch principle.

The conductivity principle is used to measure the level of drinking water and waste water, water solutions and mixtures, humid materials, fine-grained coal, conveyor transfer points, etc. An intrinsically safe switching circuit can be connected to the input and BOS-21 can be used to separate the intrinsically safe circuit. A higher-level control system or action power elements can be connected to the relay outputs.

The BOS-21 device must be placed in such an environment where it is not exposed to explosion hazard or in an adequate casing (e.g. JPB-BOS for mine environment).

### Description:

The device is a compact module with fixtures for DIN moulding. On the front side there are LEDs which signalize the state of the output relays of the individual channels. On the bottom side there are inputs, on the upper side there are power supply and output terminals.

Both channels are independent and have a common ground. The relay outputs (change-over contact) are galvanically separated from each other as well as from other circuits. Delayed output relay operation and release (about 5 sec) can be selected in production or later (accredited intervention). The inputs are designed for suitable probes e.g. BOS-4T, BOS-4L, or switches, by means of which a measuring circuit between the ground, the material and the device input is created. If the resistance of this circuit is <100kOhm, the relay will switch on.

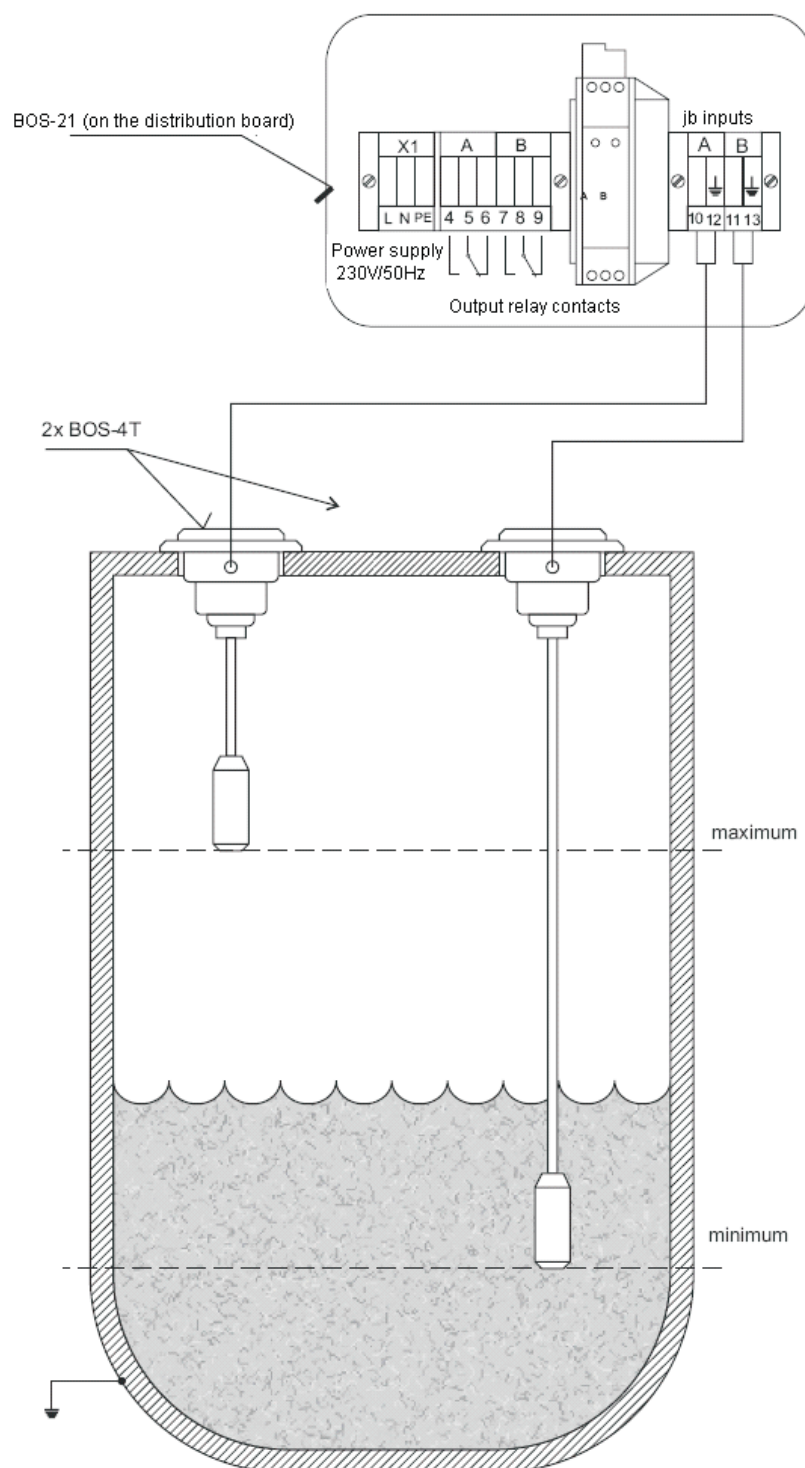
The modules are delivered as separate units or mounted in distribution boards, individually or more pieces, according to customers' requirements. These are marked K BOS-21.

### Technical parameters:

Power supply	230V / 50Hz
Input power	1,8VA
Max.probe circuit resistance	100kΩ
Operating position	vertical
Intrinsically safe input	[EExia] I / II C
Max. capacity of the connected CEXT cable	100nF
Max. inductance of the connected LEXT cable	500mH
Max. voltage in the intrinsically safe UMAX circuit	34V
Max. current in the intrinsically safe IMAX circuit	2,3mA
Dielectric strength between the inputs and the power supply.	4kV
Output relay operation and relay release	0/5 s adjustable
Max. switching current	300V / 0,3Ass
Operating temperature	-10°C ... +40°C
Weight	0,2kg
Dimensions	100 x 75 x 35mm
Protection	IP 20,IP 54 ( BOS-21)
Protection	IP 65 (K BOS-21)

The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.

## BOS 21 evaluation unit for the conductivity probe



The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.

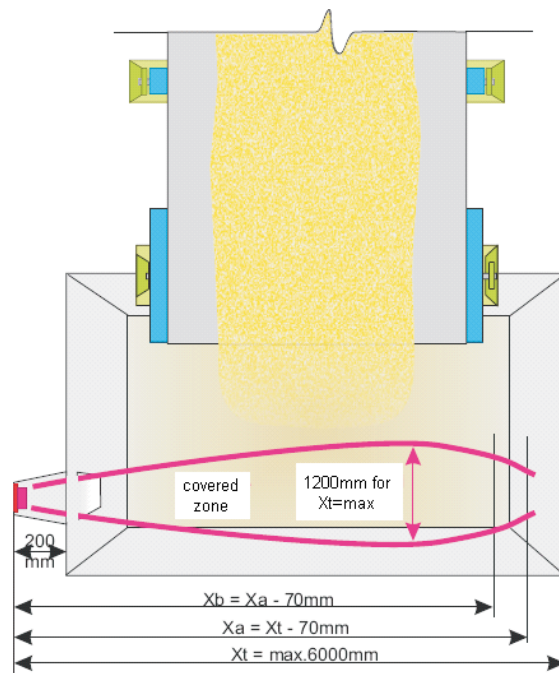
## UMV-1 ultrasonic level measurement system



evaluation unit



probe reach 6 m or probe reach 1 m



### Use

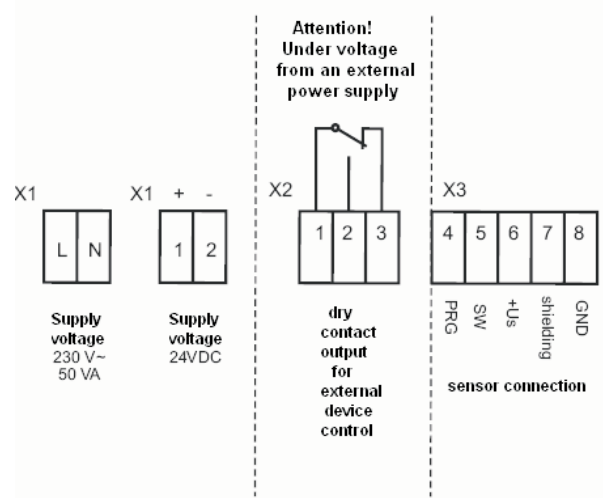
The UMV-1 system is designed for the evaluation of pulses from the distance sensor. The distance is sensed by means of a contactless ultrasonic sensor fixed vertically to the measured point. The sensor responds to the material level on the conveyor belt or at the transfer point by transmitting the adjusted distance in the form of a binary output; if it is within the adjusted range, the LED will light (see the user manual for the sensor). This signal is led to the evaluation unit which will transfer it to the output relay contacts. The output relay is closed, if the sensor is within the adjusted range! The unit also contains a time relay for the elimination of random fluctuation.

### UMV1 description

The evaluation system is an assembly unit which is comprised of a UTP263-4, UTP213-4, UTS213-4 sensor and of the UMV 1 evaluation unit with a display.

The UTP263-4, UTP213-4, UTS213-4 sensor is designed for distance measurements and it can be used to measure (detect material) on the conveyor belt or to guard the transfer point. The general construction of the sensor is shown in the picture.

The UMV 1 evaluation unit with four relays is designed to transfer the signal from the sensor to the output relay contacts. The unit is comprised of a power supply, relays and a modular terminal block, all placed on a DIN moulding.



The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.

## UMV-1 ultrasonic level measurement system with PID regulator



evaluation unit



probe reach 6m



probe reach 1m

### Use

The UMV-1 system with PID regulator is designed for the evaluation of pulses from the distance sensor used to sense distance and determine distance by virtue of the PID regulator. The distance is sensed by means of a contactless ultrasonic sensor fixed vertically to the measured point.

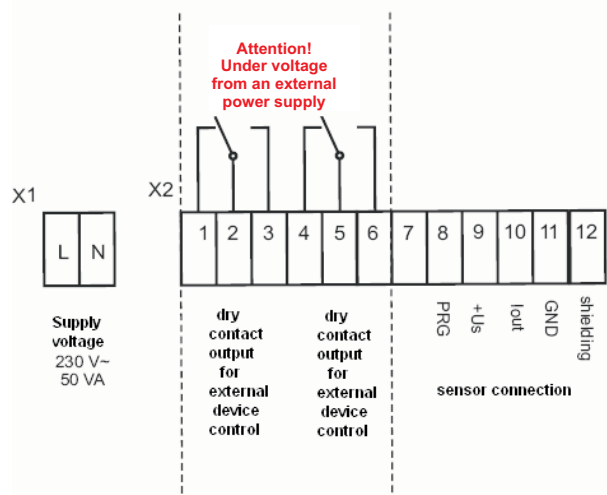
The sensor responds to the material level on the conveyor belt or at the transfer point by transmitting the adjusted distance in the form of 4...20mA; if it is within the adjusted range, the LED will light (see the user manual for the sensor). This signal is led to the evaluation unit of the PID regulator which will transfer it to the output relay contacts. The output relay is closed, if the sensor is within the adjusted range! See the user manual for the PID regulator. The unit also contains a stabilized power supply for the sensor.

### Description

The evaluation system is an assembly unit which is comprised of a UTP261-4, UTP211-4, UTS211-4 sensor and of the UMV 1 evaluation unit with a display.

The UTP261-4, UTP211-4, UTS211-4 sensor is designed for distance measurements and it can be used to measure (detect material) on the conveyor belt or to guard the transfer point. The general construction of the sensor is shown in the picture.

The UMV 1 evaluation unit with four relays is designed to transfer the signal from the sensor to the output relay contacts. The unit is comprised of a power supply, relays and a modular terminal block, all placed on a DIN moulding.



The catalogue sheet contains only some parameters important for your decision. For planning always require a corresponding user manual and eventually a technical consultation on the possibilities of use.





## SHR-2 Induction Sensor

Zone 22



### Use:

The set of the SHR-2 induction sensor, MHR-2, MHR-3, MHR-4 and MHR-5 magnets is intended for monitoring a rotary or oscillatory movement. A robust model enables their usage in the most difficult operational conditions such as for checking belt conveyers, sorting machines or vibration feeders in quarries. It is highly mechanically resistant and reliably works in a larger temperature range. **The sensor does not need any power supply.**

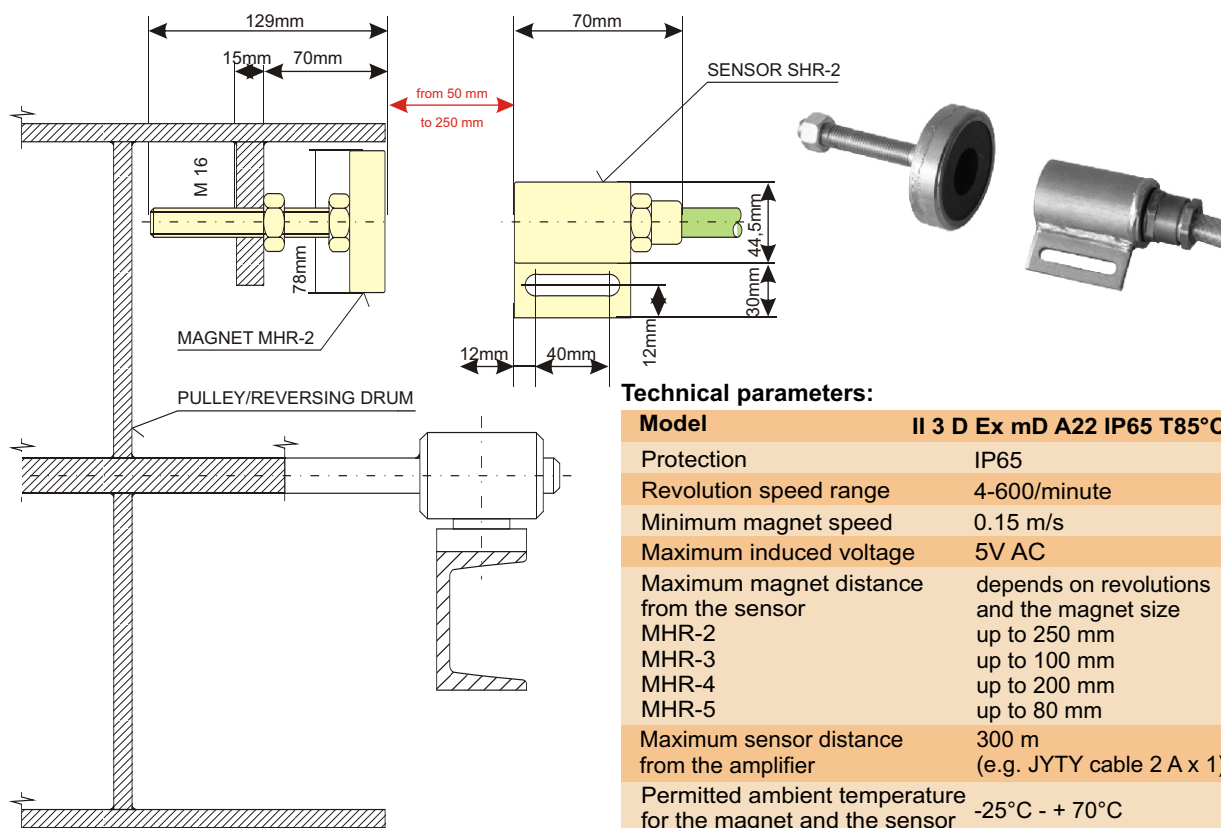
### Description:

The sensor casing is made of steel with a surface treatment in which an electrical sensing element is buried (without electronic components). At the end of the casing there is a Pg16 bushing. A cable with a rubber hose protecting the cable is fixed to the bushing. The rubber hose is resistant to perforation by the falling material and accidental hits and thus protects the cable. The cable with the protecting duct is ended in a plastic box (a standard delivery). The box can be ordered made of another material such as cast steel, etc.

### Assembly and principle:

The sensor functions on the principle of magnetic induction. The magnet is mounted to the movable part of the checked equipment (a reversing drum of the belt conveyer, a movable part of the vibration feeder, a screen in the sorting machine, etc.) The distance of the MHR-2 magnet from the sensor ranges from 50 mm to 250 mm while the same function is preserved. This distance guarantees a minimum damage to the sensor caused by the rotating part movements in the axis. The maximum achievable distance is determined by the magnet location in the steel structure and to determine the threshold, it is necessary to test the application in question.

The magnet movement around the sensor induces a voltage impulse in the sensor which is further processed in the VHR-Z amplifier. The amplified and shaped voltage impulse can be used as an input signal to the VHR-10M evaluation unit or to the control system.



### Technical parameters:

Model	II 3 D Ex mD A22 IP65 T85°C
Protection	IP65
Revolution speed range	4-600/minute
Minimum magnet speed	0.15 m/s
Maximum induced voltage	5V AC
Maximum magnet distance from the sensor	depends on revolutions and the magnet size
MHR-2	up to 250 mm
MHR-3	up to 100 mm
MHR-4	up to 200 mm
MHR-5	up to 80 mm
Maximum sensor distance from the amplifier	300 m (e.g. JYTY cable 2 A x 1)
Permitted ambient temperature for the magnet and the sensor	-25°C - + 70°C
Relative humidity	95% w/o condensation
Dimensions	See the figure

The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.







## VHR-Z amplifier

### VHR-Z description

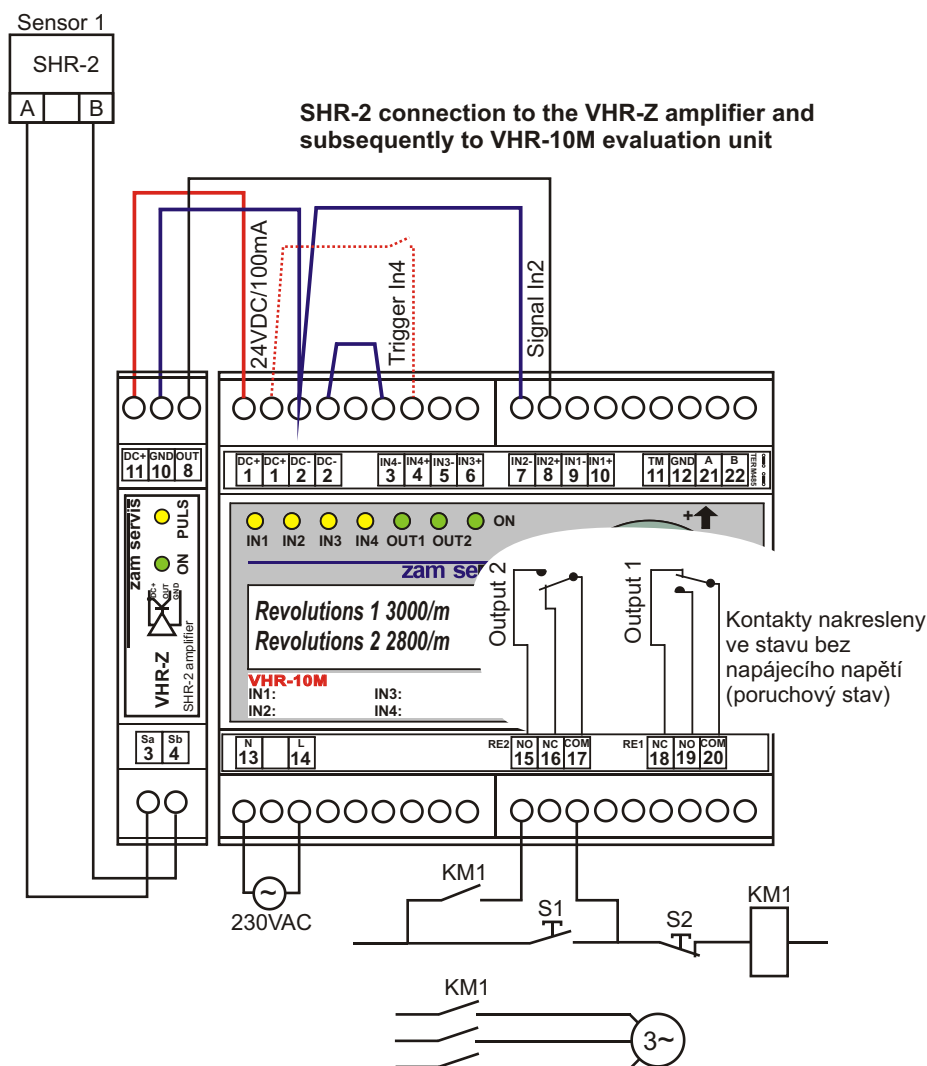
The VHR-Z amplifier unit is produced in a module box having the size of 1 single-pole circuit breaker intended for being mounted on a 35mm DIN rail.

The amplifier reads voltage impulses from the SHR-2 coil which it filters and transfers to a standard 24V output by means of a PNP switching transistor. The output current (typically 5 mA, the maximum of 25 mA) is added to the amplifier consumption (max. 25 mA).

The amplifier can also be connected to 24V digital outputs of PLC automated machine with software for evaluating slippage of revolutions. It means you can keep the existing sensors when changing the control for a control system with a PLC automated machine and only replace the old VHR evaluation unit with a VHR-Z amplifier which can be placed at the PLC automated machine (it depends on the distance).

### Technical parameters:

VHR-Z supply	19 - 28 V DC; 25 mA
Maximum output current on VHR-Z	25 mA (internally limited) typically 5 mA (with VHR-10M)
Output type	PNP
SHR-2 distance from VHR-Z	Maximum of 300 m (JYTY cables 2 A x 1)
VHR-Z distance from VHR-10M	Maximum of 1 km
Humidity	Maximum of 90% without condensation
Protection	IP20
Dimensions	17mm x 95mm x 60mm
Weight	Maximum of 0.1 kg
Conductor cross-section	Maximum of 4 mm <sup>2</sup>



The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.



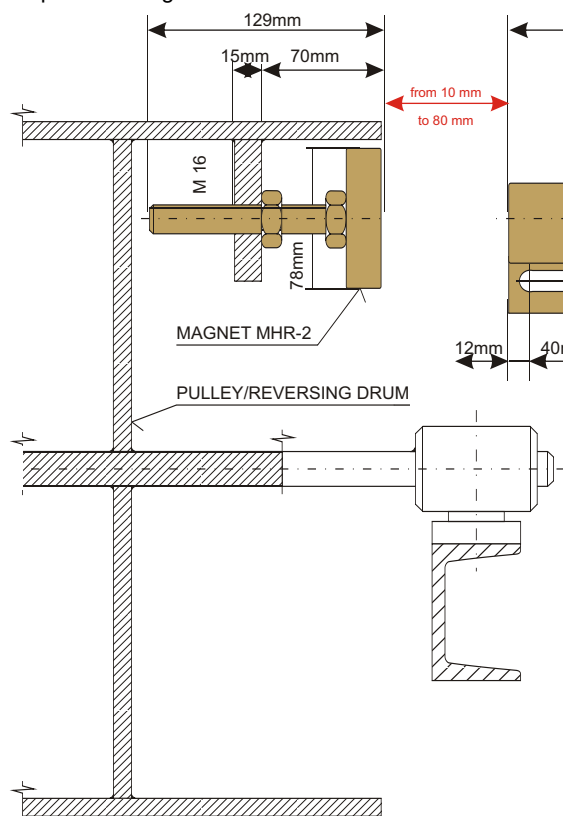
## SHR-3 Induction Sensor

Zone 22



### Use:

The set of the SHR-3 induction sensor, MHR-2, MHR-3, MHR-4 and MHR-5 magnets is intended for monitoring a rotary or oscillatory movement and position. A robust model enables their usage in the most difficult operational conditions such as for checking belt conveyers, sorting machines or vibration feeders, positions of fork chutes and tank closures in quarries. It is highly mechanically resistant and reliably works in a larger temperature range.



### Description:

The sensor casing is made of steel with a surface treatment in which an electrical sensing element is buried including an electronic evaluator. At the end of the casing there is a Pg16 bushing. A cable with a rubber hose protecting the cable is fixed to the bushing. The rubber hose is resistant to perforation by the falling material and accidental hits and thus protects the cable. The cable with the protecting duct is ended in a plastic box (standard delivery). The box can be ordered made of another material such as cast steel, etc.

### Assembly and principle:

The sensor functions on the principle of magnetic induction. The magnet is mounted to the movable part of the checked equipment (a reversing drum of the belt conveyer, a movable part of the vibration feeder, a screen in the sorting machine, etc.) The distance of the MHR-2 magnet from the sensor ranges from 10 mm to 80 mm while the same function is preserved. This distance guarantees a minimum damage to the sensor caused by the rotating part movements in the axis. The maximum achievable distance is determined by the magnet location in the steel structure and to determine the threshold, it is necessary to test the application in question.

The magnet movement around the sensor induces a voltage impulse (PNP output) in the sensor. It can be used as an input signal to the VHR-10M evaluation unit or to the control system.

### Technical parameters:

Model	II 3 D Ex tD A22 IP65 T85°C
Protection	IP65
Supply voltage	10...30VDC
Consumption	10mA
Switched current	200mA
Output function	Switching PNP
Output	Short-circuit resistant
Switching frequency	5000Hz
Hysteresis	1%
Maximum magnet distance from the sensor	depends on revolutions and the magnet size
MHR-2	up to 80 mm
MHR-3	up to 50 mm
MHR-4	up to 80 mm
MHR-5	up to 30 mm
Permitted ambient temperature for the magnet and the sensor	-25°C - + 70°C
Dimensions	See the figure

The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.





## MHR-2, MHR-3, MHR-4 and MHR-5 magnet

### Use:

Magnets for monitoring the rotation serve in the assembly with magnetic field sensors for monitoring the rotary or oscillating movement and position (only with SHR-3). The MHR-2, MHR-3 and MHR-4 rotation monitoring magnets are suitable for the SHR-2 magnetic field sensor. The MHR-5 rotation monitoring magnet is recommended for the SHR-3 magnetic field sensor.

### Description:

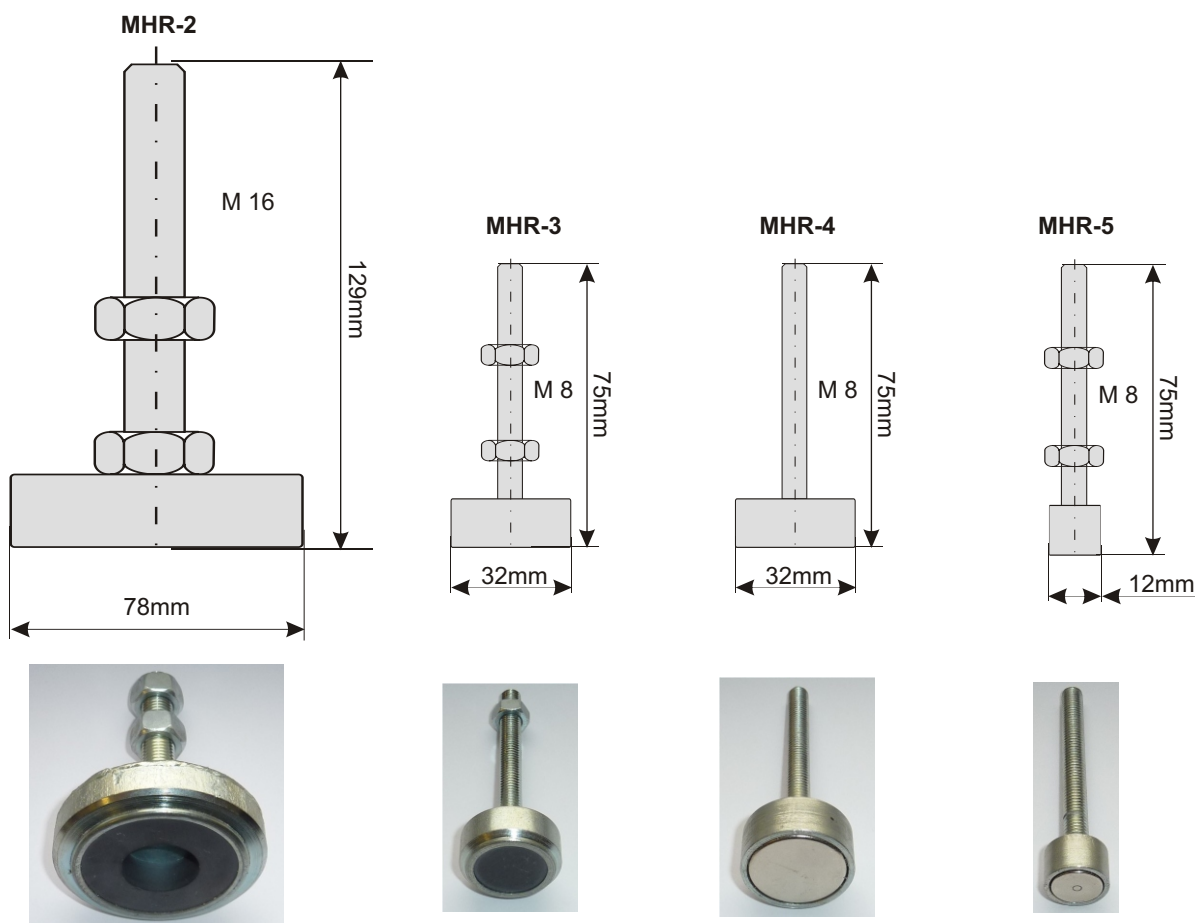
MHR-4 and MHR-5 rotation monitoring magnets consist of a threaded rod ended with a head in which a neodymium magnet is attached. MHR-2 and MHR-3 rotation monitoring magnets use standard "black" magnets. All of them differ by the size of the head with a respective magnet.

MHR-2 and MHR-4 rotation monitoring magnets have a bigger head; therefore create a stronger force of the magnetic field, which means the magnetic field sensor responds to a magnet movement from a higher distance (see technical parameters).

The threaded rod serves for attaching the magnet to the rotating part of the checked equipment (e.g. reversing drum of a conveyor). The magnet movement around the magnetic field sensor induces voltage impulse which is further processed in an evaluation device.

### Technical parameters:

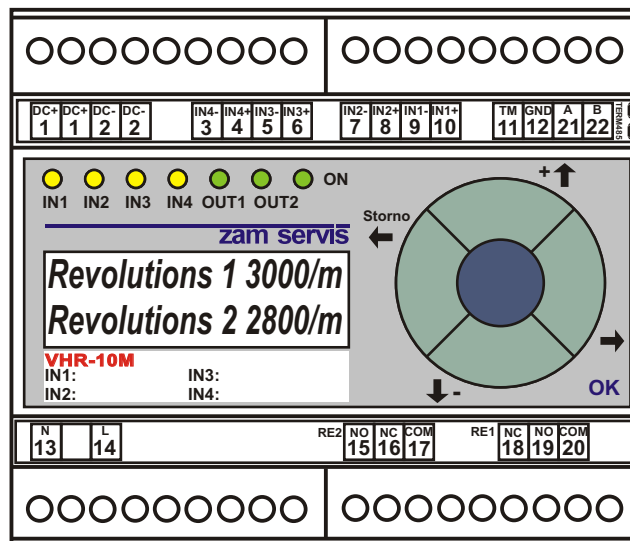
Maximum magnet distance from SHR-2 sensor	depends on revolutions and the magnet size
MHR-2	up to 250 mm
MHR-3	up to 100 mm
MHR-4	up to 200 mm
MHR-5	up to 80 mm
Maximum magnet distance from SHR-3 sensor	depends on revolutions and the magnet size
MHR-2	up to 80 mm
MHR-3	up to 50 mm
MHR-4	up to 80 mm
MHR-5	up to 30 mm
Permitted ambient temperature for the magnet and the sensor	-25°C - + 70°C
Dimensions	See the figure



The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.



## VHR-10M Evaluation Unit



### Use

The evaluation unit serves for monitoring and evaluating revolutions, frequency or time between impulses from the connected probes according to the set thresholds, e.g. in the system of conveyer monitoring. The VHR-10M evaluation unit contains two identical sections set independently which can be used in various modes of operation.

One section is set independently of the other, the VHR-10M is not affected during setting up. After entering new values, the newly set section is reset only. The section can be disabled (not used). The drive (section) can be commenced by a signal (the first probe impulse), a special input (the start-up spanning) or by one-off VHR-10M switching on.

Nominal revolution speed can be set either manually or automatically (by measuring) in the range from 2 to 99999 revolutions/minute with the step of 1 revolution/minute. A positive and negative deviation (thresholds) can be set in the range from 0 to 99% with a step of 1%. The time of start-up, run-out and deviation (the time of quiet before possible repeated start) can be selected in the range from 0 to 99 s with a step of 1 s.

The LCD display can show Revolutions (/minute), Frequency (Hz) or Period (ms). Various sensing probes can be used (PNP output, NPN output, passive contact, voltage signal up to 50 V DC, SHR-3, SHR-2+VHR-Z). Probes can be supplied by 24 V DC from VHR-10MxxA to 100 mA or from an external source.

### Compatibility with older types:

An older type of VHR-10Z amplifier for SHR-2 can also be used to the VHR-10M unit but yellow LED will not flash on the amplifier. The new VHR-Z amplifier can be used for the older type of the VHR-10 unit without problems.

**After installation and setting via menu the VHR-10M evaluation unit is fully unattended device which requires minimum attention and care.**

The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.

### VHR-10M description

The VHR-10M evaluation unit is manufactured in a module box consisting of 6 modules (6 single-pole circuit breakers) intended for being mounted on a 35mm DIN rail.

On the front panel of VHR-10M there is a two-line LCD display which serves for showing the status, measured value and setting in the menu mode, four yellow LEDs signalling input levels and impulses from probes, two green LEDs signalling the status of the output relay and a green LED indicating the supply. The VHR-10M is set intuitively by a cross control switch with five pushbuttons.

The VHR-10M is manufactured in the version with RS485 communication or without communication, with standard or slip-on terminals (for easy replacement) and the supply of 230 V AC (24 V DC) or 24 V DC only.

### Alternatives:

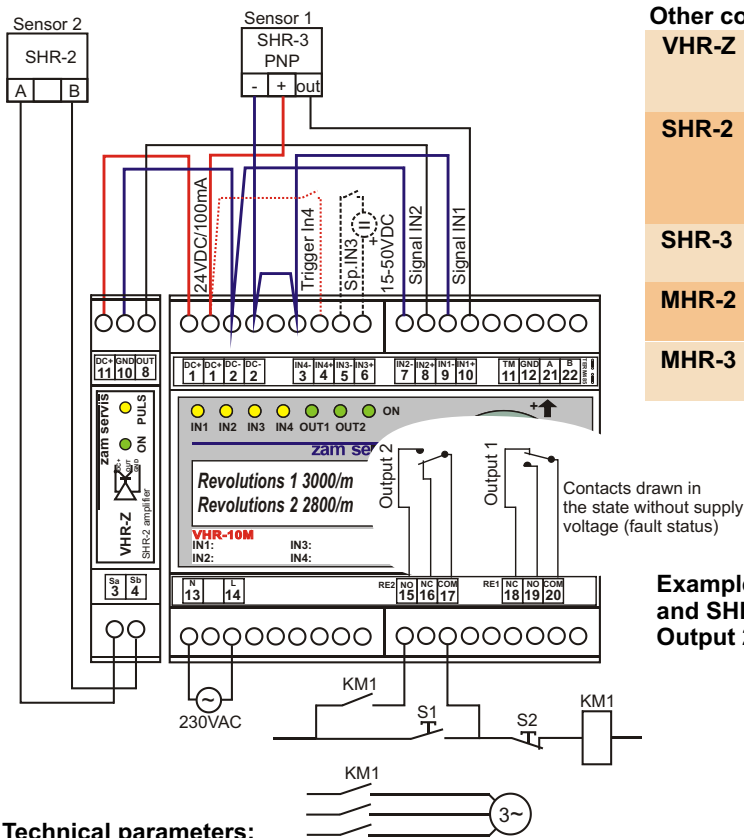
#### VHR-10M

- A** the supply of 230 V AC or 24 V DC
- D** the supply 24 V DC only
- S** standard terminals - 4 mm<sup>2</sup>
- N** nsip-on (connector), terminals 2.5 mm<sup>2</sup>
- 0** without communication
- 4** RS485 communication

The VHR-10MxxD unit can be supplied by SELV voltage of 19-28 V DC; 60 mA. In addition to 19-28 V DC, the VHR-10MxxA unit can also be supplied with the voltage of 200-250 V AC; 50 mA. Simultaneous connection of both types of supply is impossible. When using the supply from 230 V AC, the output voltage of 20-24 V DC can be used for supplying probes. The direct current of 24 V DC can be replaced by a back-up battery which must have its own SELV charging source dimensioned according to its capacity.



## VHR-10M Evaluation Unit



### Other components for VHR-10M:

<b>VHR-Z</b>	Voltage impulses amplifier, PNP transistor. Possible to use with SHR-2 Induction sensor.
<b>SHR-2</b>	Induction sensor reacting to magnet movement. It is necessary to use VHR-Z amplifier to connect SHR-2 to VHR-10M.
<b>SHR-3</b>	Induction sensor reacting to magnet movement, output PNP.
<b>MHR-2</b>	Magnets for monitoring the rotation diameter 90 mm, bolt M16.
<b>MHR-3</b>	Magnets for monitoring the rotation diameter 30 mm, bolt M8.

**Example of VHR-10MxxA connection with SHR-3 and SHR-2 sensors with a VHR-Z amplifier.**  
Output 2 is used for switching of the KM1 contactor.

### Technical parameters:

Supply of VHR-10MxxD	19-28 V DC; 60 mA
Supply of VHR-10MxxA	200-250 V AC; 50 mA or 19-28 V DC; 60 mA
Output voltage VHR-10MxxA	20-24 V DC; 100 mA at the supply of 230 V AC
Frequency and network type	50-60 Hz, TN, IT, TT
Signal (logical) inputs	4 mutually galvanically separated inputs
Insulation voltage between inputs	100 V
Maximum voltage of inputs	50 V DC constantly
High level of inputs	15 - 50 V DC
Low level of inputs	- 50 - + 6 V DC
Input current	3 mA at 15 V, 6 mA at 24 V, 15 mA at 50 V DC
Repetitive frequency of inputs	Maximum of 8 kHz
Connectible probe types	NPN, PNP, voltage, passive contact, SHR
Optional commencement types	By signal, input, switching-on the VHR-10M
Range of setting the revolution speed	2 - 99999 revolutions/minute with a step of 1 revolution/min
Range of setting the tolerance	0 - 99% with a step of 1%
Range of setting the times of commencement, run-out and fault (calm)	0 - 99 s with a step of 1 s

Reading slot distance	Maximum of 20 m
RS485 bus length	Maximum of 1 km, maximum of 32 devices without duplicating unit
Recommended data cables	Twisted twin cable, twin and earth cable, UTP, STP
Outputs	2 relays with switch-over contacts
Nominal current	8 A, see the characteristics
Nominal voltage	250 V, see the characteristics
Maximum switched AC output power	2,000 VA
Maximum switched DC output power	200 W
Ambient temperature	-20°C - +60°C
Humidity	Maximum of 90% without condensation
Protection	IP20
Dimensions	106mm x 95mm x 60mm
Weight	Maximum of 0.45 kg
VHR-10MxSx conductor cross-section	Maximum of 4 mm <sup>2</sup>
VHR-10MxNx conductor cross-section	Maximum of 2.5 mm <sup>2</sup>

Protection against dangerous touch of non-live parts is ensured by a safe SELF, PELF voltage in the case that the external supply source has an earthed pole, accessory protection is made by mutual connecting and connecting to an earth conductor.

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## Control Cabinet K1-VHR-10M-D



The K1-VHR-10M-D control cabinet serves for installing the VHR-10M evaluation unit and connecting two sensors in the speed monitoring and evaluation system of two (even mutually independent) machines in production processes. The control cabinet is usually placed near the machines (sensors).

### Description

The whole evaluation system is installed in a RITTAL type control cabinet and the K1-VHR-10M-D control cabinet in the AE1033.500 control cabinet.

The K1-VHR-10M-D control cabinet contains a VHR-10M evaluation unit for monitoring and evaluating the speed, frequency or time between impulses from the connected sensors according to the set thresholds, e.g. in the system of conveyor monitoring.

### Technical parameters:

Operating voltage	1+PE+N 230 V, 50 Hz
	2 bushings M25 x 1.5 Ip68
Protection according to CSN 332000-4-41	By self-actuated disconnection from the source
Distribution system	TN-S
Short-circuit protection	By protection
Protection	IP66/20
Operation	By trained workers
Weight	9 kg
Dimensions	300x300x155
Protection against atmospheric faults	By earth
Ambient temperature	-15° - +50°C

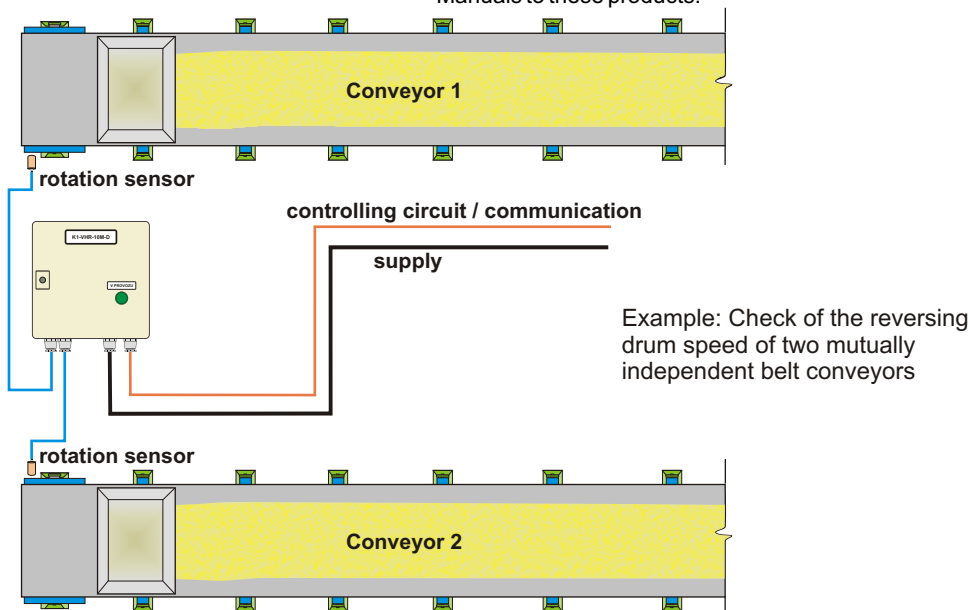
### Equipment necessary for the system commencement

Evaluation unit	VHR-10M_ _ _ *	2 pcs
Signal amplifier	VHR-Z	2 pcs
Rotation sensor	SHR-2	2 pcs
Magnet	MHR-2 or MHR-3	2 pcs

\* The type must be specified and marking added according to the User Manual.

The VHR-Z amplifier serves for processing the signal from SHR-2 only. There is a connecting terminal board for connecting the supply voltage, supply signals from sensors and the terminal board of output signals. The control cabinet is equipped with signalling of the voltage presence on the front door. H05V-K (CYA) conductors with the cross-section of 1.0 mm<sup>2</sup> are used for connecting the supply and with the cross-section of 1 mm<sup>2</sup> for other connections.

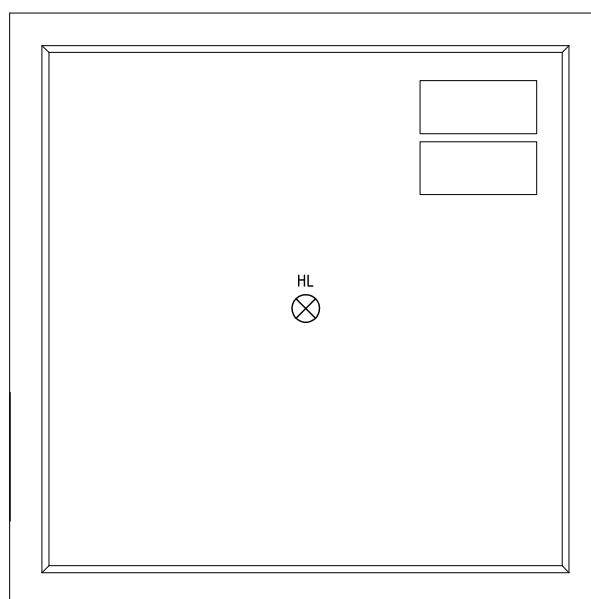
Technical parameters, possibilities for connections, programming and other information about the VHR-10M evaluation unit and VHR-Z amplifier can be found in the User Manuals to these products.



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## Control Cabinet K1-VHR-10M-D



ISO 9001 : 2001  
V100407

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## Control Cabinet K1-VHR-10M-S



The K1-VHR-10M-S control cabinet serves for installing the VHR-10M evaluation unit and connecting a sensor in the speed monitoring and evaluation system of a machine in production processes. The control cabinet is usually placed near the machine (sensor).

### Description

The whole evaluation system is installed in a RITTAL type control cabinet and the K1-VHR-10M-S control cabinet in the AE1033.500 control cabinet.

The K1-VHR-10M-S control cabinet contains a VHR-10M evaluation unit for monitoring and evaluating the speed, frequency or time between impulses from the connected sensor according to the set thresholds, e.g. in the system of conveyor monitoring.

### Technical parameters:

Operating voltage	1+PE+N 230 V, 50 Hz
	2 bushings M25 x 1.5 Ip68
Protection according to CSN 332000-4-41	By self-actuated disconnection from the source
Distribution system	TN-S
Short-circuit protection	By protection
Protection	IP66/20
Operation	By trained workers
Weight	5kg
Dimensions	200x300x155
Protection against atmospheric faults	By earth
Ambient temperature	-15° - +50°C

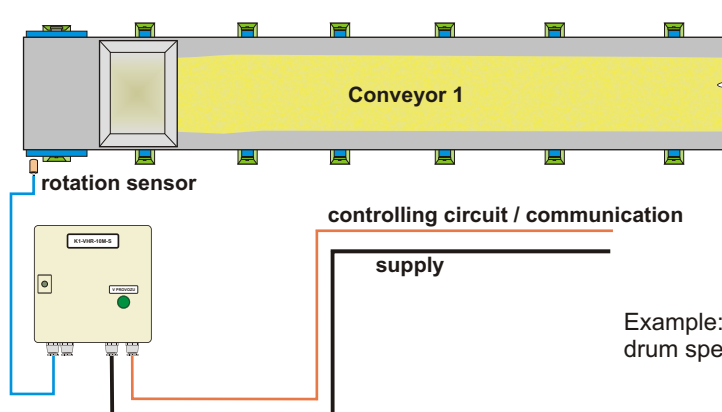
### Equipment necessary for the system commencement

Evaluation unit	VHR-10M_ _ _ *	1 piece
Signal amplifier	VHR-Z	1 piece
Rotation sensor	SHR-2	1 piece
Magnet	MHR-2 or MHR-3	1 piece

\* The type must be specified and marking added according to the User Manual.

The VHR-Z amplifier serves for processing the signal from SHR-2 only. There is a connecting terminal board for connecting the supply voltage, supply signals from sensors and the terminal board of output signals. The control cabinet is equipped with signalling of the voltage presence on the front door. H05V-K (CYA) conductors with the cross-section of 1.0 mm<sup>2</sup> are used for connecting the supply and with the cross-section of 1 mm<sup>2</sup> for other connections.

Technical parameters, possibilities for connections, programming and other information about the VHR-10M evaluation unit and VHR-Z amplifier can be found in the User Manuals to these products.

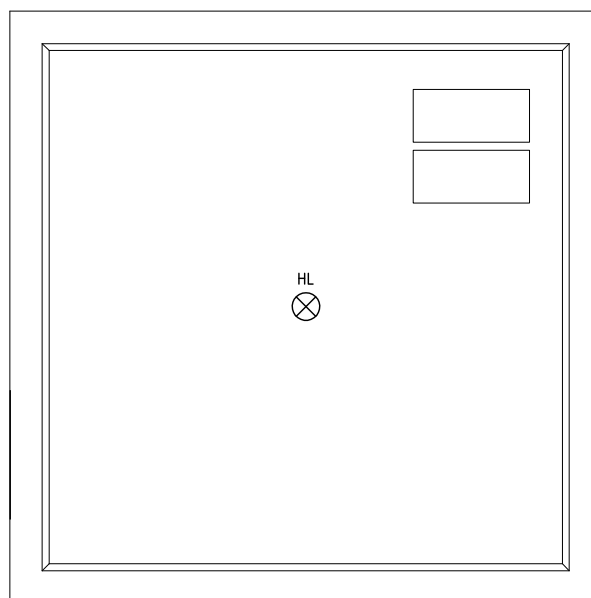
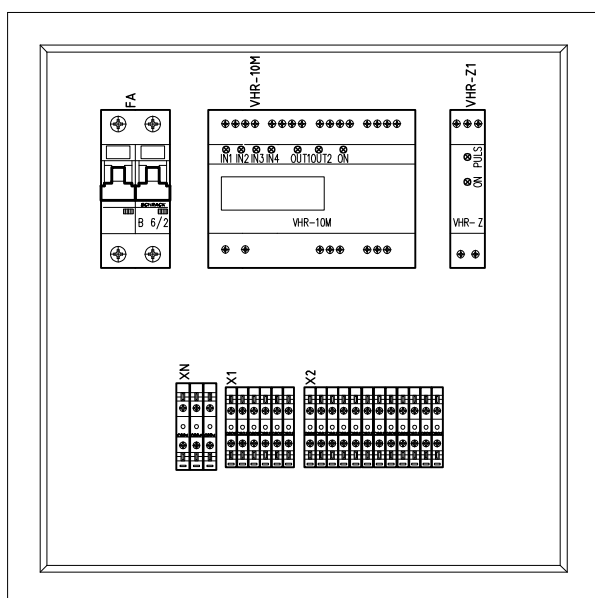
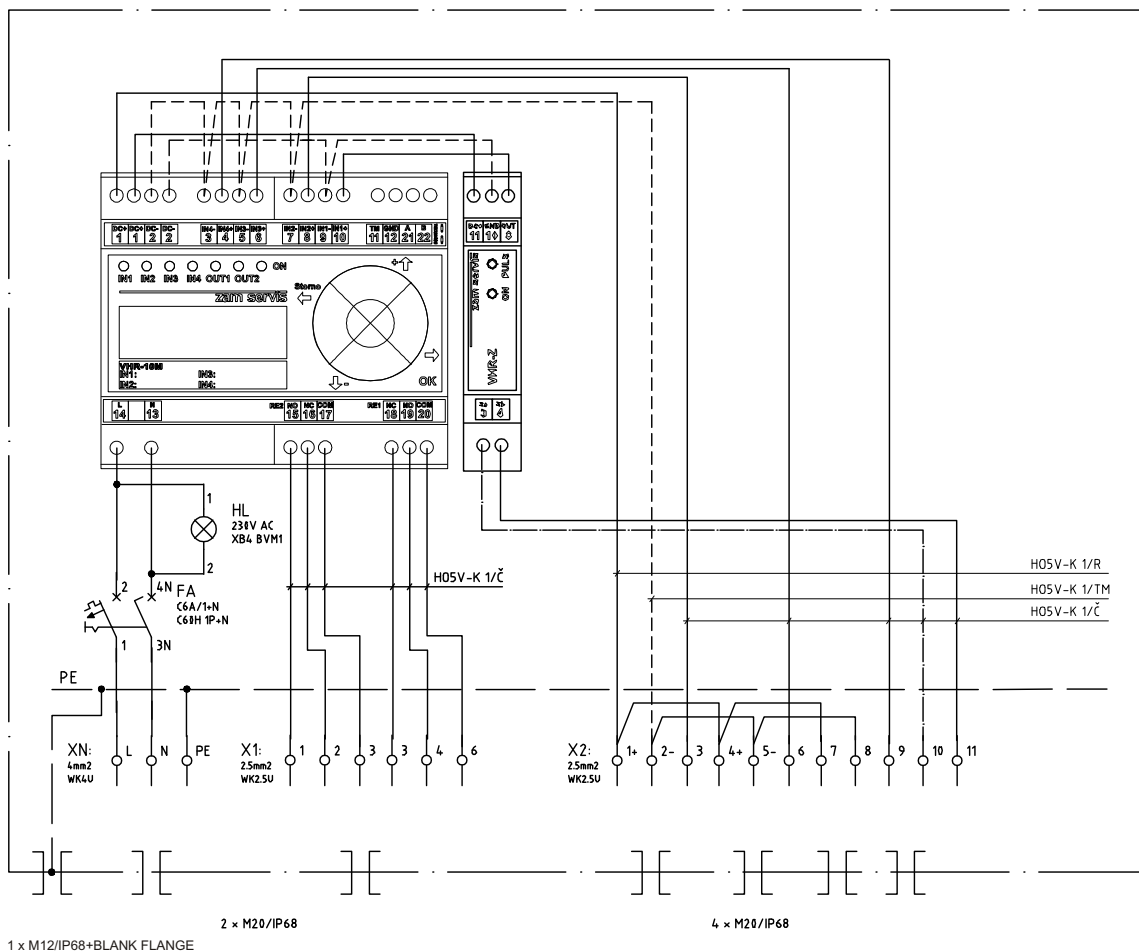


Example: Check of the reversing drum speed of a belt conveyor

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## Control Cabinet K1-VHR-10M-S



The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.



## Control Cabinet K1-VHR-10M-I



The K1-VHR-10M-I control cabinet serves for installing the VHR-10M evaluation unit and connecting two sensors in the speed monitoring and evaluation system of two (even mutually independent) machines in production processes. The control cabinet is usually placed near the machines (sensors).

### Description

The whole evaluation system is installed in a RITTAL type control cabinet and the K1-VHR-10M-I control cabinet in the AE1035.500 control cabinet.

The K1-VHR-10M-I control cabinet contains a VHR-10M evaluation unit for monitoring and evaluating the speed, frequency or time between impulses from the connected sensors according to the set thresholds, e.g. in the system of conveyor monitoring.

### Technical parameters:

Operating voltage	1+PE+N 230 V, 50 Hz
	2 bushings M25 x 1.5 Ip68
Protection according to CSN 332000-4-41	By self-actuated disconnection from the source
Distribution system	TN-S
Short-circuit protection	By protection
Protection	IP66/20
Operation	By trained workers
Weight	5kg
Dimensions	200x300x155
Protection against atmospheric faults	By earth
Ambient temperature	-15° - +50°C

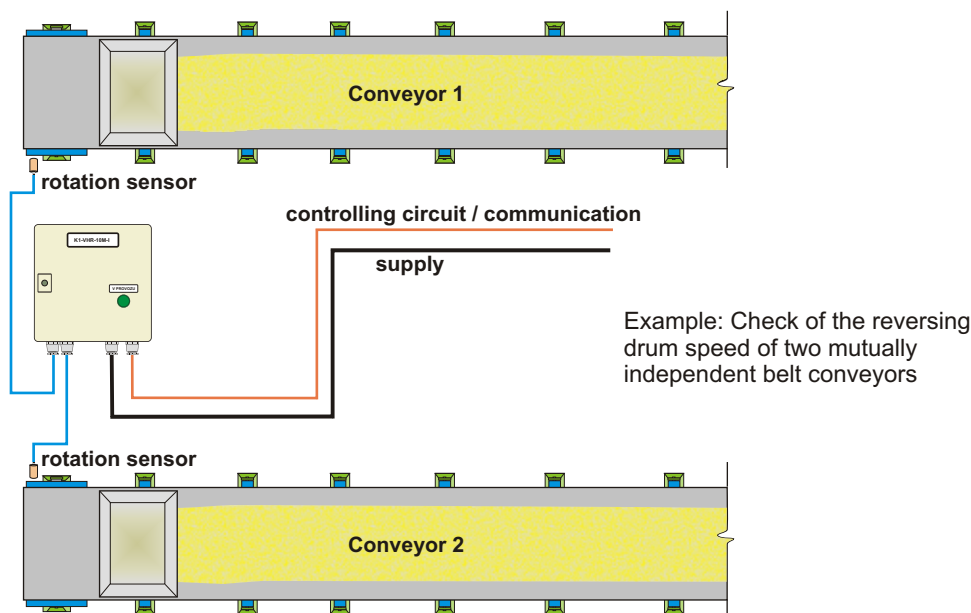
### Equipment necessary for the system commencement

Evaluation unit	VHR-10M_ _ _ *	1 pcs
Signal amplifier	VHR-Z	0 pcs
Rotation sensor	SHR-3	2 pcs
Magnet	MHR-2 or MHR-3	2 pcs

\* The type must be specified and marking added according to the User Manual.

There is a connecting terminal board for connecting the supply voltage, supply signals from sensors and the terminal board of output signals. The control cabinet is equipped with signalling of the voltage presence on the front door. H05V-K (CYA) conductors with the cross-section of 1.0 mm<sup>2</sup> are used for connecting the supply and with the cross-section of 1 mm<sup>2</sup> for other connections. This cabinet does not contain VHR-Z amplifiers and SHR-2 sensors cannot be connected to it.

Technical parameters, possibilities for connections, programming and other information about the VHR-10M evaluation unit can be found in the User Manuals to the products.

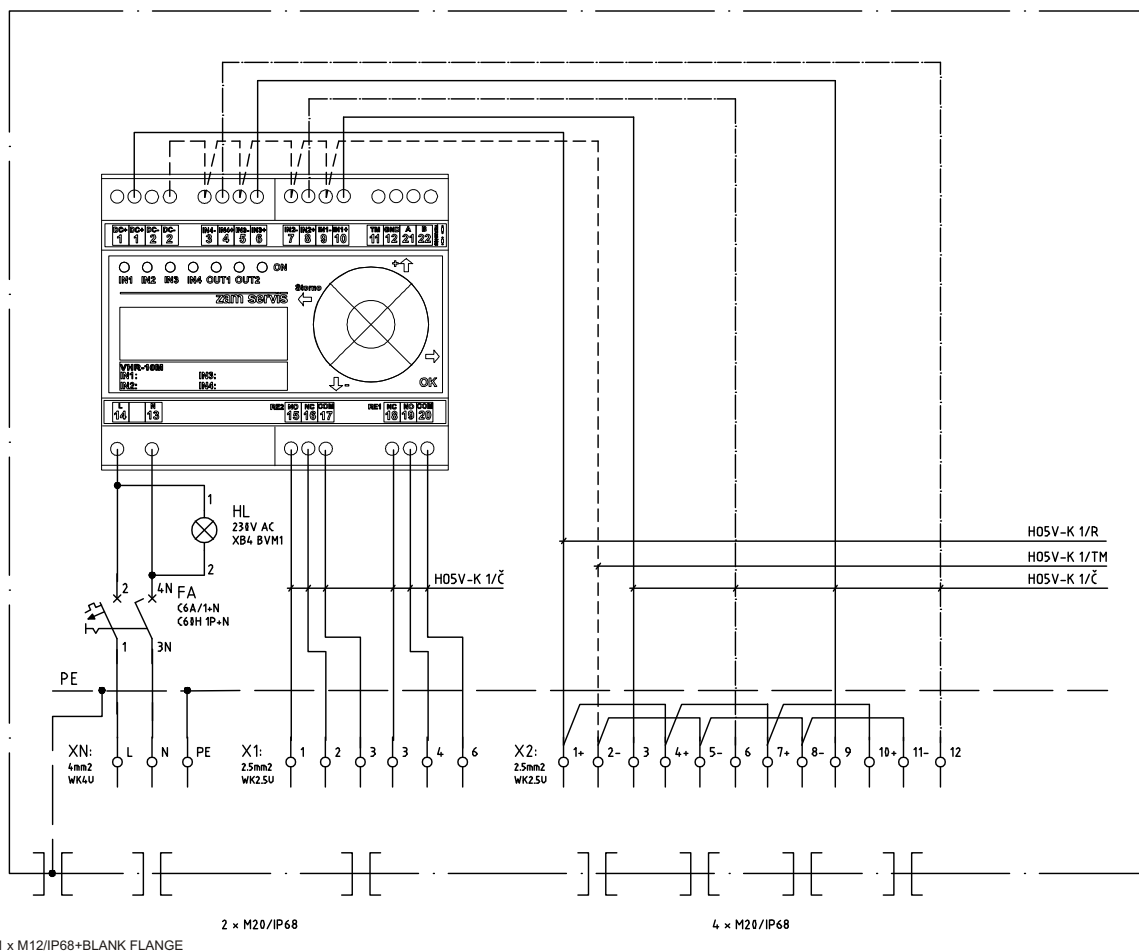


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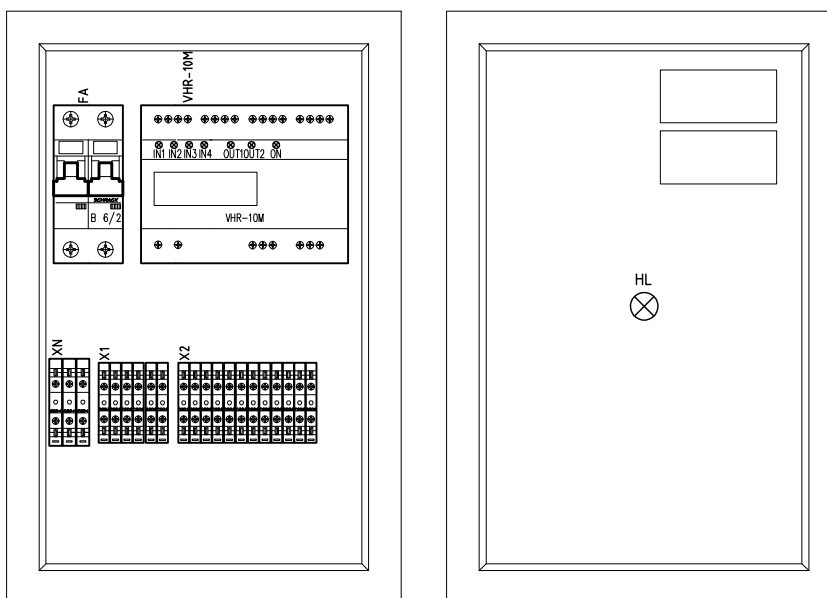
## Control Cabinet K1-VHR-10M-D



1 x M12/IP68+BLANK FLANGE

2 x M20/IP68

4 x M20/IP68



The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.



## Conveyor Belt Swing Switch LHPE-10/2-L50V



### Use:

Conveyor belt swing switches are deployed at belt conveyors to minimize the danger of damage or destruction of the belt when it swings aside from its trajectory.

### Description:

The LHPE-10/2-L50V switches are intended for being deployed along a conveyor belt. They are distributed in pairs on the right and left side. In the event of the belt swinging from its presumed trajectory, the belt edge affects a belt cylindrical lever of the sensor and pushes against the self-aligning force of an inside spring.

Swing switches marked "V" have two types of contacts A and B which switch on under two swing angles. At the angle of swing above 15° contacts B switch over. At the angle of swing above 25° contacts A switch over. The maximum swing of the cylindrical lever is 75°. As soon as the swing drops under the above-mentioned angles, respective contacts switch back. For this model of the switch a blocking device for locking the swing switch position is not used.

This type of a switch is not used for emergency stop circuits. This type of connection is common in the control system circuits which records partial swinging of the belt from its trajectory (15° angle of switching) but does not switch off the conveyor. If the following contact (25° angle of switching) is switched over, the conveyor is immediately switched off. Movements of the first switch serve for warning the operator and subsequent correction in the quantity of transported material on the conveyor. According to the frequency of switching on the first contact it can be evaluated when an intervention of the machine maintenance is necessary to adjust the conveyor.

The contacts of A and B switches are only manufactured in this series in the economy version (with "E" economy in the name). A synchronizing module has no meaning in this model.

Every module of A and B contacts is equipped with a disconnecting and a connecting contact with forced guiding.

The switch cabinet is made of colour glass-fibre reinforced polyester (LPH). The protection is at the level of IP67.

Small cylinders with ball bearings of the L50 switch swing sensing lever are made of VA stainless steel. The L50 lever is attached to the axis of the switch in the required angle and tightened with a tie-bolt. An advantage of free setting the lever angle is that the switch can be attached in other positions according to the conveyor structure layout. A disadvantage is that the lever attachment to the switch axis must be more frequently checked, whether it has not loosen thus losing its function.

The effect of the sensing lever to the switch axis is only guaranteed for type "L" (LHPw-10/2-L). For this type the lever angle is set in the production. To align the correct lever angle toward the belt, the whole switch must be turned and fixed at the position.

### Recommended distribution:

Swing switches are usually placed at the end of a conveyor behind the hopper and in front of the transfer point. For long conveyors above 30 m these switches should also be located in the middle of the trajectory. Switches are also suitable for inclined conveyors and conveyors with a movable hopper, e.g. propellers with carriages etc. For impact skid platform of belt conveyors swing switches must be used although the conveyor is equipped with a mechanical alignment of the belt trajectory.

### Technical parameters:

Meets standards	ČSN EN 60947 ČSN EN 60204 ČSN EN 60529 ČSN EN 620
Switching angle - contact A - contact B	25° 15°
Maximum lever swinging	75°
Cylindrical lever	VA steel, two ball bearings
Weight	2.6 kg
Cable input	2 holes for M25x1.5 with a blank flange
Cabinet material	glass fibre reinforces polyester
Cabinet colour	yellow RAL 1003
Attachment	By two M10 belts
Working temperature	-40°C - +85°C
Protection class	Class I
Number and function of contacts	A 1 disconnecting and 1 connecting B 1 disconnecting and 1 connecting
Protection	IP 67
Load-bearing capacity	400 V AC / 6 A, 230 V AC / 8 A, 24 V DC / 10 A, 80 V DC / 3 A

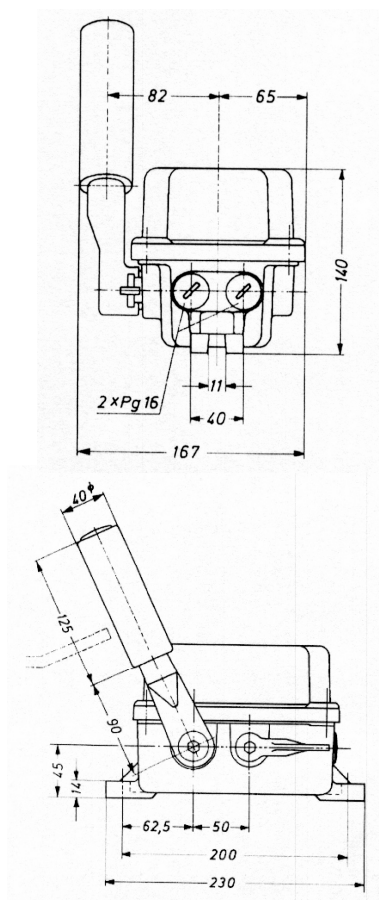
The catalogue has only those selected important parameters for your final decision. For project designs always ask for the user's guide for this product and any engineering consultation about possible uses.



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# zam servis

## Conveyor Belt Swing Switch LHPE-10/2-L50V



Example of assembly

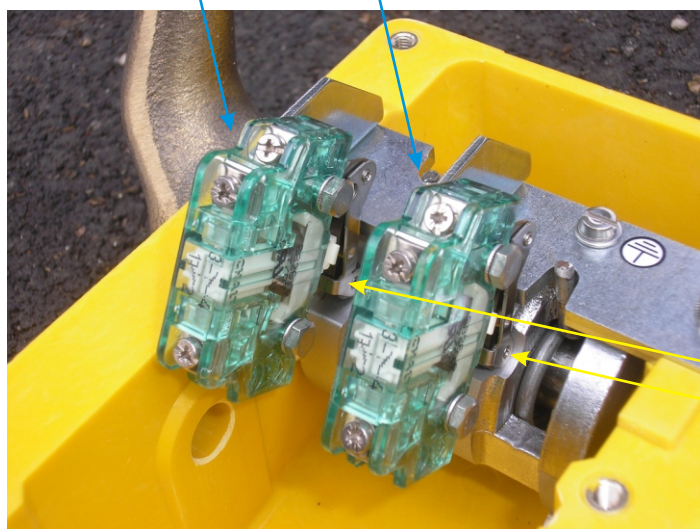


Switch contacts

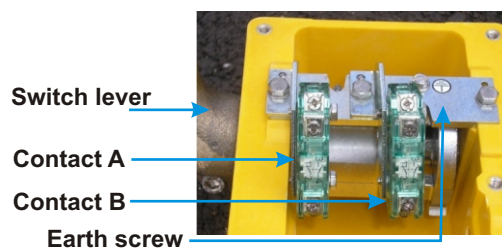


Contact B switches at 15°

Contact A switches at 25°



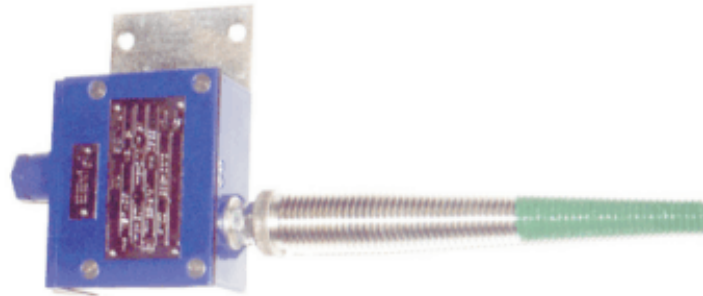
Order of contacts in the switch



Cavity for the switched angle of 25°  
Cavity for the switched angle of 15°

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## VSP-3B omnidirectional sensor



### Use:

The sensors are designed to signalize the position of slowly moving devices or objects. The signaling is made by switching the galvanically separated switching contact of the microswitch.

### Description:

The base of the VSP-3B sensor is the case with a microswitch and leverage. The sensor is formed by a bowden protected by a spring. If the bowden deflects a certain angle in any direction, the lever will operate the microswitch. The deflection angle sensitivity is adjustable from outside within the range 30 to 80 without the necessity of disassembling the device. The sensor can be mounted in any position, because it will return to the starting position after removal of actuating force.

The sensors may be connected to an intrinsically safe circuit if the remaining elements of the circuit are corresponding and if limit inductance and capacity values of the connecting cable between the sensor and the intrinsically safe device with these values specified are not exceeded.

### Technical parameters:

Switched voltage	2.5 90 VDC/AC
Switched current	0.0005 0.1 ADC/AC
Load character	resistive load
Maximum switching rate	1s <sup>-1</sup>
Maximum bowden deflection angle	95°
Protection	IP 54
Construction	EExi I
Operating temperature	-20 to +40°C
Relative humidity	max. 95%

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## ET-4/1-L deflection switch



### Description:

Deflection switches are mounted on conveyor belts to minimize the risk of damaging or destroying the belt caused by it deflecting from the path.

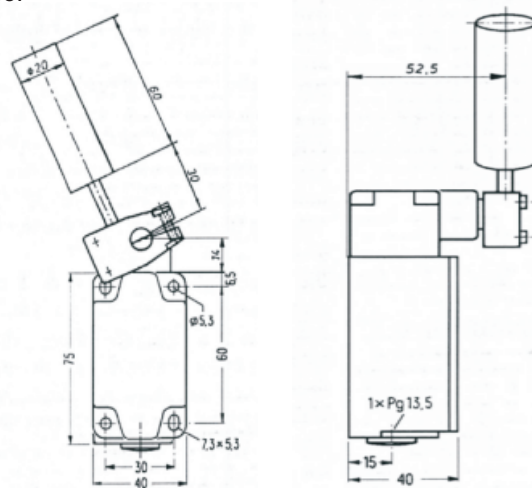
ET-4/1-L deflection switches are designed for longitudinal mounting on smaller conveyors. They are placed in pairs on both the right and the left side of the belt. If the belt deflects from its track, its edge will push back the cylindrical lever of the switch against the inner spring tension. If the deflection angle reaches 25°, the switch-over will occur. The maximum deflection of the cylindrical lever is 55°. As soon as the belt returns to the correct position, the cylindrical lever will follow this movement and switch back as soon as the deflection angle is c. 16°. For easy mounting, the cylindrical lever can be mounted at any angle.

### Use:

Deflection switches are mounted on conveyor belts to minimize the risk of damaging or destroying the belt caused by it deflecting from the path.

ET-4/1-L deflection switches are designed for longitudinal mounting on smaller conveyors. They are placed in pairs on both the right and the left side of the belt. If the belt deflects from its track, its edge will push back the cylindrical lever of the switch against the inner spring tension. If the deflection angle reaches 25°, the switch-over will occur. The maximum deflection of the cylindrical lever is 55°. As soon as the belt returns to the correct position, the cylindrical lever will follow this movement and switch back as soon as the deflection angle is c. 16°. For easy mounting, the cylindrical lever can be mounted at any angle.

The roller of the cylindrical lever is mounted in a slide assembly on the shaft (axis) from fine steel and is made of polyamide with a portion of graphite. Due to this composition, the service life of the roller is much longer than that of a white polyamide roller without graphite. The roller diameter can be 20 mm or 32 mm by request. The advantage of the thinner roller is the possibility of use in small area conditions, while the advantage of the thicker roller is its lower rotating speed for the same belt speed. Both roller types, especially the thicker one, have the biggest outside diameter-axis diameter ratio compared to similar products. This is very important for easily putting into operation, e.g. if the device has not been used for some time and the rollers are seized due to impurities, dust, or ice. If it be to the contrary, the outside of the roller would be worn by the edge of the belt. The case is made of pressure aluminium alloy and its degree of protection is IP 65.



Type	Description
ET-4/1-L	Deflection switch with a 20 mm diameter roller
ET-4/1-L32	Deflection switch with a 35 mm diameter roller

### Technical parameters:

Switching angle	25°
Max. deflection	55°
Switching elements	34mm
Switching force	1 operating contact and 1 break contact
Load capability of the contacts	240 VAC 6 A or 24 VDC 5 mA - 10A
Lead outlet	1 x PG 13.5 hole with thread
Protection	IP 65
Case (housing) material	aluminium pressure alloy
Case colour	yellow RAL 1003
Weight	0,3kg
Temperature range	-40°C to +85°C

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