

# **Conveyor Belt - Misalignment Switch**

# HES EX 2D HES EX 3D



#### APPLICATION

KIEPE misalignment switches of Type HES EX are designed for heavy duty application and used at fixed belt conveyors according to DIN EN 620 requirements in order to keep the risk of unintentional operation as low as possible. The lateral movement of the conveyor belt is monitored and by switching off the conveyor in the case of unacceptable belt drift, the belt monitoring prevents damage and destruction of the belt and the machine.

The KIEPE misalignment switches Type HES EX are suited for use in explosive atmosphere with conductive dust, Group II, category 2, in zone 21 and 22 (Type HES EX 2D) or categorie 3, only in zone 22 (Type HES EX 3D).

The KIEPE misalignment switch Type HES EX complies with the ATEX Directive 2014/34/EU and meets the safety objectives of the Low Vol-tage Directive 2014/35/EU.

KIEPE Misalignment switch Type HES EX features a robust aluminum housing and is equipped with 2 force-actuated changeover contacts with snap-action function with two settable switching points.

#### Note:

The misalignment switch must only be used in electrical control circuits.

### FUNCTION

The misalignment switch Type HES EX operates, when the roller lever is deflected. The operating angle can be adjusted by an adjustable cam for each switching element.

In addition to the safety shutdown is thereby also a pre-warning feasible. The roller lever is spring-assisted and turns back automatically after deflection.

#### TECHNICAL DATA

Type of actuationBidirektional, by roller leverComplies withDIN EN 60204-1; DIN EN 60947-5-1; EN 620ATEX/IECExComplies with StandardDIN EN 60079-31 Protection by enclosure ,t*, IEC 60079-31 Protection COULD Protection P	Designation		Misalignment switch Type HES EX ATEX-Versionn	
ATEX/IECEx     Complies with Standard   DIN EN 60079-0; DIN EN 60079-31 Protection by enclosure "t", IEC 60079-0; IEC 60079-31     Device group / category   II / 2D, 3D; flamable, conductive dust     ATEX-Identification   If 2D, 3D; flamable, conductive dust     for Zone 21, 22   HES EX 2D   G)II 2D Ext IIIC T85°C Db IP 67     for Zone 22   HES EX 3D   G)II 3D Ext IIIC T85°C Dc IP 67     Certifikates   EP5 12 ATEX 1 479 X, IECEx EP5 14.0040X     Mechanics   DD-Paint yellow, RAL 1004     Roller lever   Stainless steel, Ø 50 mm, Ball-beared roller     Mounting   2 slotted holes for M8-Screws     Installation position   Horizontal, tilt angle up 030°     Deflection of roller lever   Maximum +/- 75°     Mechanical reliability   > 10,000 actuations     Weight   2.2 kg     Electrical system   2 changeover contacts (SPDT with snap action), cam operated positive-opening switches     Switching fange   5° 15° and 15° 35°, adjustable (factory setting: 10° each)     Cable entry   2 Threaded holes M25x1.5     with standard owner, 250 V   Rated insulation voltage U,     Cable entry   2 Store to connection     Montor cons section   0.75 mm² to 1.5 mm²	Type of actuation		Bidirektional, by roller lever	
Complies with StandardDIN EN 60079-0; DIN EN 60079-31 Protection by enclosure ,t", IEC 60079-0; IEC 60079-31 IEC 60079-31 Protection by enclosure ,t", IEC 60079-31 Protection dustDevice group / categoryII / 2D, 3D; flamable, conductive dustATEX-IdentificationII / 2D, 3D; flamable, conductive dustfor Zone 21, 22HES EX 2DGoll 2D Ext IIIC T85°C Do IP 67CertifikatesEPS 12 ATEX 1 IIC T85°C Dc IP 67CertifikatesEPS 12 ATEX 1 479 X, IECEx EPS 14.0040XMechanicsD-Panity Yellow, RAL 1004Roller leverStainless steel, Ø 50 mm, Ball-beared rollerMounting2 slotted holes for M8-ScrewsInstallation positionHorizontal, tilt angle up to 30°Deflection of roller leverMaximum 4/- 75°Mechanical reliability> 10,000 actuationsWeight2.2 kgElectrical systemSo "15° and 15°35°, adjustable (factory setting: 10° each)Cable entry2 Threaded holes MZSA1.5 	Complies with		DIN EN 60204-1; DIN EN 60947-5-1; EN 620	
IEC 60079-0; IEC 60079-31       Device group / category     II / 2D, 3D; flamable, conductive dust       ATEX-Identification     II / 2D, 3D; flamable, conductive dust       for Zone 21, 22     HES EX 2D     ©II 2D Ex t IIIC T85°C Dc IP 67       for Zone 22     HES EX 3D     ©II 3D Ex t IIIC T85°C Dc IP 67       Certifikates     EPS 12 ATEX 1 479 X, IECEx EPS 14.0040X       Mechanics     Intrinum GK-AISi 12 DD-Paint yellow, RAL 1004       Roller lever     Stainless steel, Ø 50 mm, Bal-baered roller       Mounting     2 slotted holes for M8-Screws       Installation position     Horizontal, tilt angle up to 30°       Deflection of roller lever     Maximum +/- 75°       Mechanical reliability     > 10,000 actuations       Weight     .2 kg       Electrical system     2 changeover contacts (SPDT with snap action), cam operated positive-opening switches       Switching System     2 changeover contacts (SPDT with snap action), cam operated positive spening switches       Cable entry     2 Threaded holes M25x1.5       Cable entry     2 Threaded holes M25x1.5       Villization category     .0,75 mm <sup>2</sup> to 1.5 mm <sup>2</sup> Protective conductor connection     M4, Protection class I: Protective earthing <td>ATEX/IECEx</td> <td></td> <td></td>	ATEX/IECEx			
ATEX-identificationfor Zone 21, 22HES EX 2D(G) II 2D Ext IIIC T85°C Dc IP 67for Zone 22HES EX 3D(G) II 3D Ext IIIC T85°C Dc IP 67CertifikatesEPS 12 ATEX 1 479 X, IECEX EPS 14.0040XMechanicsDD-Paint Yellow, RAL 1004Roller leverAluminum GK-AIS 12 DD-Paint yellow, RAL 1004Mounting2 slotted holes for M8-SrewsInstallation positionHorizontal, tilt angle up to 30°Deflection of roller leverMaximum +/- 75°Mechanical reliability> 10,000 actuationsWeight2.2kgElectrical system2 changeover contacts (SPDT with snap action), cam operated positive-opening switchesSwitching SngenS°15° and 15°35°, adjustable (factory setting: 10° each)Cable entry2 Threaded holes M2Sx1.5 with 2.24WUtilization category0.75 mm² to 1.5 mm²Protective conductor connectionM4, Protection class I: Protective earthingRated insulation voltage U <sub>1</sub> 250VRated insulation voltage U <sub>1</sub> 6AConnet reliability0.000 operations with 10% I <sub>6</sub> Ambient centrel L <sub>1</sub> 6AConnet reliability-25°C+70°C	Complies with Standard			
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Mechanics     Enclosure   Aluminum GK-AlSi 12 DD-Paint yellow, RAL 1004     Roller lever   Stainless steel, Ø 50 mm, Ball-beared roller     Mounting   2 slotted holes for M8-Screws     Installation position   Horizontal, tilt angle up to 30°     Deflection of roller lever   Maximum +/- 75°     Mechanical reliability   > 10,000 actuations     Weight   2.2 kg     Electrical system   2 changeover contacts (SPDT with snap action), can operated positive-opening switches     Switching range   5°15° and 15°35°, adjustable (factory setting: 10° each)     Cable entry   2 Threaded holes M25x1.5 with 2x screw plug, 1x cable gland (added)     Utilization category   AC-15: 20V; 1.5A DC-13: 60V; 0.5A DC-13: 24V; 2A     Connection cross section   0.75 mm² to 1.5 mm²     Protective conductor connection   M4, Protection class I: Protective earthing     Rated insulation voltage U <sub>i</sub> 250V     Rated inpulse withstand voltage U <sub>imp</sub> 2.5 kV, overvoltage category II, degree of pollution 3     Conventional thermal current I <sub>kh</sub> 6A     Contact reliability   30,000 operations with 100% I <sub>e</sub> Ambient conditions   -25°C+70°C	for Zone 22	HES EX 3D	© II 3D Ex t IIIC T85℃ Dc IP 67	
EnclosureAluminum GK-AISi 12 DD-Paint yellow, RAL 1004Roller leverStainless steel, Ø 50 mm, Ball-beared rollerMounting2 slotted holes for M8-ScrewsInstallation positionHorizontal, tilt angle up to 30°Deflection of roller leverMaximum +/- 75°Mechanical reliability> 10,000 actuationsWeight2.2 kgElectrical system2 changeover contacts (SPDT with snap action), cam operated positive-opening switchesSwitching range5°15° and 15°35°, adjustable (factory setting: 10° each)Cable entry2 Threaded holes M25x1.5 with 2x screw plug, 1x cable gland (added)Utilization categoryAC-15: 230V; 1.5A 	Certifikates		EPS 12 ATEX 1 479 X, IECEx EPS 14.0040X	
DD-Paint yellow, RAL 1004     Roller lever   Stainless steel, Ø 50 mm, Ball-beared roller     Mounting   2 slotted holes for M8-Screws     Installation position   Horizontal, tilt angle up to 30°     Deflection of roller lever   Maximum +/- 75°     Mechanical reliability   > 10,000 actuations     Weight   2 kg     Electrical system   2 changeover contacts (SPDT with snap action), cam operated positive-opening switches     Switching range   5°15° and 15°35°, adjustable (factory setting: 10° each)     Cable entry   2 Threaded holes M25x1.5 with 2x screw plug.1x cable gland (added)     Utilization category   AC-15: 230V; 1.5A DC-13: 60V; 0.5A DC-13: 24V; 2A     Connection cross section   0.75 mm² to 1.5 mm²     Protective conductor connection   M4, Protection class 1: Protective earthing     Rated insulation voltage U <sub>imp</sub> 250V     Rated insulation voltage U <sub>imp</sub> 250V     Rated insulation steparo Lurent I <sub>th</sub> 6A     Conventional thermal current I <sub>th</sub> 6A     Contact reliability   30,000 operations with 100% I <sub>e</sub> Permissible ambient temperature   -25°C+70°C	Mechanics			
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DC-13: 60V; 0.5A DC-13: 24V; 2AConnection cross section0.75 mm² to 1.5 mm²Protective conductor connectionM4, Protection class I: Protective earthingRated insulation voltage Ui Protective earthing250 VRated impulse withstand voltage Uimp2.5 kV, overvoltage category II, degree of pollution 3Conventional thermal current Ith6 AContact reliability30,000 operations with 100% IeAmbient conditions-25°C+70°C	Cable entry			
DC-13: 24V; 2AConnection cross section0.75 mm² to 1.5 mm²Protective conductor connectionM4, Protection class I: Protective earthingRated insulation voltage Ui250 VRated impulse withstand voltage Uimp2.5 kV, overvoltage category II, degree of pollution 3Conventional thermal current Ith6AContact reliability30,000 operations with 100% IeAmbient conditions-25°C+70°C	Utilization category		AC-15: 230V; 1.5A	
Connection cross section0.75 mm² to 1.5 mm²Protective conductor connectionM4, Protection class I: Protective earthingRated insulation voltage Ui250 VRated impulse withstand voltage Uimp2.5 kV, overvoltage category II, degree of pollution 3Conventional thermal current Ith6AContact reliability30,000 operations with 100% IeAmbient conditions-25°C+70°C			DC-13: 60V; 0.5A	
Protective conductor connection   M4, Protection class I: Protective earthing     Rated insulation voltage U <sub>i</sub> 250 V     Rated impulse withstand voltage U <sub>imp</sub> 2.5 kV, overvoltage category II, degree of pollution 3     Conventional thermal current I <sub>th</sub> 6 A     Contact reliability   30,000 operations with 100% I <sub>e</sub> Ambient conditions   -25°C+70°C			DC-13: 24V; 2A	
Rated insulation voltage Ui250 VRated impulse withstand voltage Uimp2.5 kV, overvoltage category II, degree of pollution 3Conventional thermal current Ith6AContact reliability30,000 operations with 100% IeAmbient conditions-25°C+70°C	Connection cross section		0.75 mm <sup>2</sup> to 1.5 mm <sup>2</sup>	
Rated impulse withstand voltage U <sub>imp</sub> 2.5 kV, overvoltage category II, degree of pollution 3     Conventional thermal current I <sub>th</sub> 6A     Contact reliability   30,000 operations with 100% I <sub>e</sub> Ambient conditions   -25°C+70°C	Protective conductor connection		M4, Protection class I: Protective earthing	
Conventional thermal current Ith6 AContact reliability30,000 operations with 100% IeAmbient conditions-25°C+70°C	Rated insulation voltage U <sub>i</sub>		250 V	
Contact reliability30,000 operations with 100% IeAmbient conditions-25°C + 70°C	Rated impulse withstand voltage U <sub>imp</sub>		2.5 kV, overvoltage category II, degree of pollution 3	
Ambient conditionsPermissible ambient temperature-25°C+70°C	Conventional thermal current I <sub>th</sub>		6 A	
Ambient conditionsPermissible ambient temperature-25°C+70°C	Contact reliability		30,000 operations with 100% I <sub>e</sub>	
	Ambient conditions			
Protection rating IP67 according to EN 60529	Permissible ambient temperature		-25°C +70°C	
	Protection rating		IP67 according to EN 60529	

SELECTION C	CHART		
Switch Type	Explosive dust atmosphere	Contact Configuration SPDT	Order number
HES EX 011 2D	occurs in normal operation occasionally	2	92.096 187.011
HES EX 011 3D	not occurs in normal operation or infrequently add for a short time	2	92.096 319.011
Spare parts and accessories:			
EX-Cable gland M25 x 1.5; sealing area $\varnothing$ 11mm to $\varnothing$ 16 mm			113.52.01.20.01
EX-Screw plug M25 x 1.5			113.52.87.20.01
EX-Roller lever, stainless steel, $arnothing$ 50 mm			93.055 201.101
Important advice!			

The cable gland and screw plugs are carried out according to EC-Type Examination Certificate. The use of other cable glands or screw plugs may void the divice operation approval!

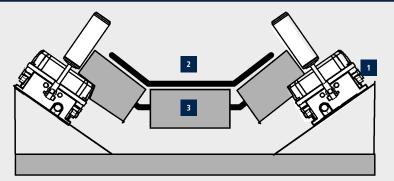
#### MOUNTING

The misalignment switch of Type HES EX **1** is fastened with two (2) M8 screws each in installation position on the substructure The the case of belt misalignment, the belt **2** must not leave the lateral guide rollers **3** and should contact the roller of the misalignment switch perpendicularly. The actuation roller of the switch has no contact with the belt during normal operation of the belt. The roller lever is a wear part and therefore exchangeable. It can be affixed freely on the switch axis.

#### Important advice!

For protection against electrostatic discharge HES EX is provided with conductive compounds and an external potential equalization connection, to which a minimum of 4 mm2 potential equalization cable must be connected directly to the system. All connections must be checked regularly in accordance with the operation instructions.

#### MOUNTING DIAGRAM

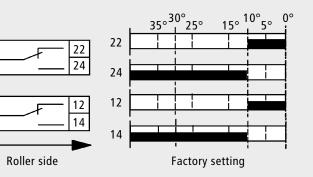


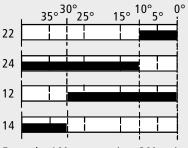
Sketch of conveyor with support rollers and belt

Misalignment switch
Belt
Support roller

### CONNECTION DRAWING

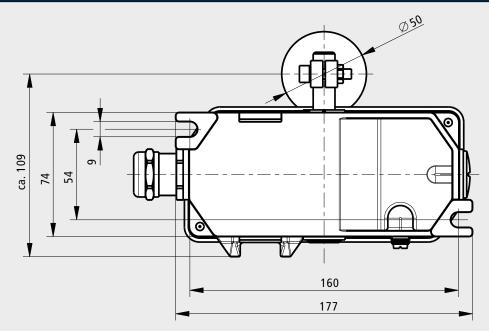
21

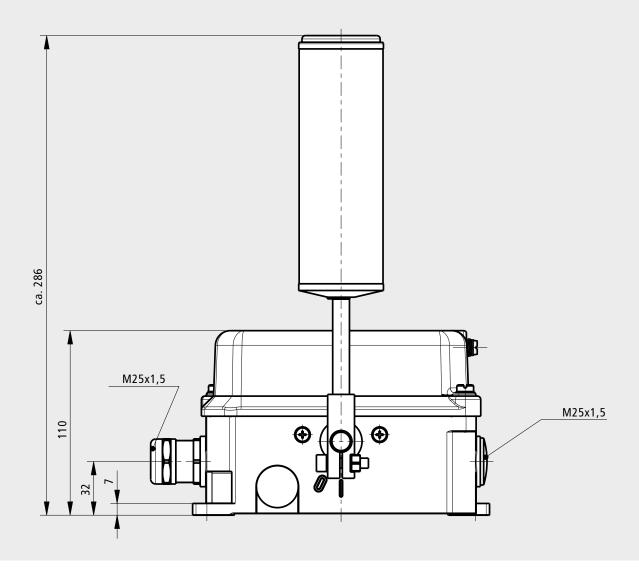




Example: 10° pre-warning, 30° mçisalignment

#### DIMENSIONS





Subject to change without notice

## **Kiepe Electric GmbH**

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