

# Python Line Series - Conveyor Belt Alignment Switches



## OPTIONS:

### Housings:

Die-cast painted yellow, or Stainless Steel 316.

### Roller Options:

35 x 120mm Short Roller

35 x 230mm Long Roller

50 x 170mm Medium Roller

### MINIATURE BELT ALIGNMENT SWITCHES

Please see P238-239 HLM-CBA Types.

**Housings:** Die-cast painted red or S/Steel 316.

## APPLICATION:

Conveyor Belt Alignment switches are mounted on sections of plant conveyors to protect against excessive belt drift due to an unintentional movement. They can be fitted at appropriate points along the conveyor length to ensure that should the belt position drift, the roller arm of the switch will move to a pre-determined position and cause activation of a control circuit.

All switches conform to European Standard IEC 60947-5-1 and provide positively operated contacts at the point of tripping. They can be used to satisfy the requirements of EN 620 with regard to conveyor control hazards caused by shifting of the belt position during running.

They are available in different roller diameters to provide heavy duty performance and long life.

## OPERATION:

The steel roller of the switch is placed near to the running edge of the conveyor belt such that deflection of the roller and arm will cause activation "tripping" of the internal contacts of the switch. Adjustment of the tripping angles and necessary activation torque is provided by the switch.

## INSTALLATION GUIDE:

1. Installation of all switch systems must be in accordance with a risk assessment for the individual application. Installation must only be carried out by competent personnel and in accordance with these instructions.
2. M5 mounting bolts must be used to fix the switches. Tightening torque for mounting bolts to ensure reliable fixing is 4 Nm. Tightening torque for the lid screws, conduit entry plugs and cable glands must be 1.5 Nm to ensure IP seal. Only use the correct size gland for the conduit entry and cable outside diameter.
3. The position of the roller must be chosen to ensure that in normal use the belt does not touch the roller, but that should the belt move beyond its normal guides it will make contact with the roller. After selecting the correct mounting position, the switching points of the internal contact blocks can be finely adjusted via internal cams.

There are 2 internal contact blocks one to provide a "STOP" signal the other to provide a "WARNING" signal. The blocks offer NC and NO circuits.

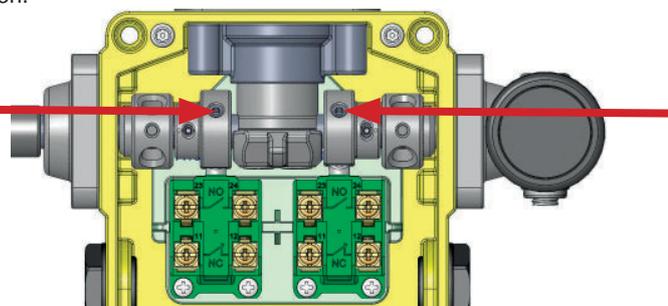
Final Adjustment of contact block action:

### WARNING SIGNAL

Contact block 1  
Adjustment cam.

Allen screw (2.5mm)  
Tightening Torque 2Nm

Factory setting 14 degrees  
(Adjustable 10 to 18 degrees)



### STOP SIGNAL

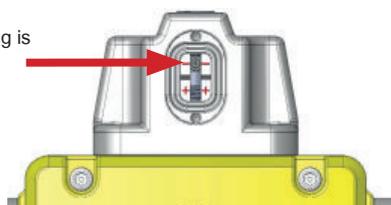
Contact block 2  
Adjustment cam.

Allen screw (2.5mm)  
Tightening Torque 2Nm

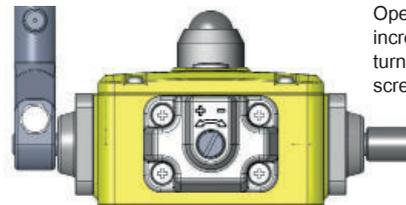
Factory setting 25 degrees.  
(Adjustable 15 to 35 degrees)

4. The operational torque can be adjusted to cope with belt sensitivity or mounting angle.

Factory setting is low setting



Operational torque can be increased or decreased by turning the adjustment screw.



# Python Line Series - Conveyor Belt Alignment Switches

## MAINTENANCE:

### Every month:

Check correct operation at all switch locations along all coverage length. Check for nominal warning and trip angle, re-set if necessary.

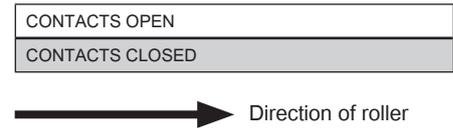
### Every 6 months:

Isolate power and remove cover. Check screw terminal tightness and check for signs of moisture ingress. Never attempt to repair any switch.

## CONTACT OPERATION/DEFLECTION OF ROLLER:

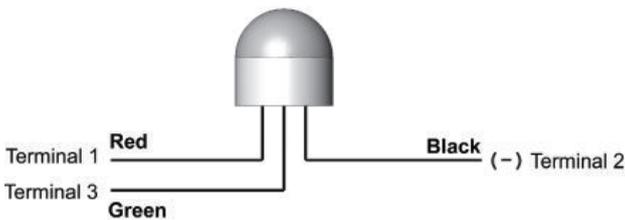
0 Degrees      14 Degrees      25 Degrees      65 Degrees  
 WARNING      STOP

		1NC 1NO			
WARNING SIGNAL Contact Block 1	NC	11/12			
	NO	23/24			
STOP SIGNAL Contact Block 2	NC	11/12			
	NO	23/24			



## WIRING EXAMPLES (Standard Versions):

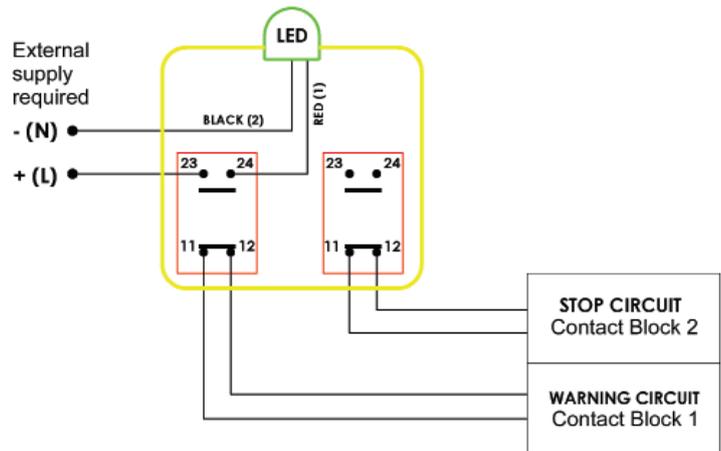
LED Steady Green or Flashing Red (Bi-colour)



When power is applied to the Red wire, the lamp will illuminate Red and Flash.

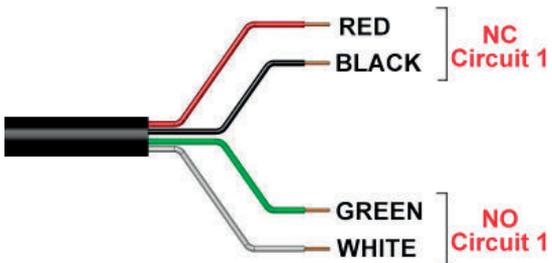
When power is applied to the Green Wire, the Lamp will illuminate Green.

Black is 0V.dc or Neutral for 110Vac and 230Vac versions.



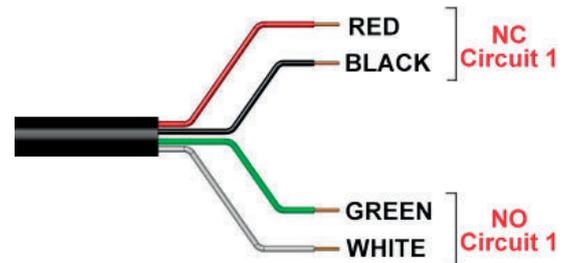
## WIRING COLOURS (EX Versions):

WARNING SIGNAL Contact Block 1



Pre-wired EX versions (see Part Numbers)

STOP SIGNAL Contact Block 2



Standards: IEC 60947-5-1 EN 620

### Mechanical Features:

- Enclosure/Cover: Die-Cast (Painted Yellow) or Stainless Steel 316
- External Parts: Stainless Steel
- IP Rating: IP67
- Mounting: 4 x M5
- Mounting position: Any
- Conduit entries: 4 x M20 or 4 x 1/2" NPT by part number
- Mounting M5 4.0 Nm
- Lid T20 Torx M4 1.5 Nm
- Terminals 1.0 Nm
- Torque settings: --25C. 80 C.

- Ambient Temperature: --25C. 80 C.
- Vibration resistance: 10-500Hz 0.35mm
- Shock resistance: 15g 11ms
- Mechanical Reliability: 150,000 operations at 100mA load

- Switching range: WARNING signal 10 to 18 degrees  
STOP signal 15 to 35 degrees

- Operating Torque range (adjustable): Medium Duty 1.8Nm to 2.8Nm  
Heavy Duty 3.0Nm to 5.0Nm

- Maximum tilt angle (mounting angle): 30 degrees
- Maximum Deflection: 65 degrees

### Electrical Features:

- Safety Contact type: IEC 60947-5-1 Double break Type Zb
- Contact Material: Silver
- Termination: Clamp up to 2.5 sq. mm conductors
- Rating: Utilisation Category : AC15
- Operational Rating: AC15 A300 240V. 3A. / 120V. 6A. ac 24V. 2.5A dc
- Thermal Current (Ith): 10A.
- Rated Insulation Voltage (Ui): 500V.
- Withstand Voltage (Uimp): 2500V.
- Short Circuit Overload Protection: Fuse Externally 10A. (FF)

- Optional Explosion Proof Contact Blocks: ATEX Zones 1,21,2,22
- Classification: Ex d IIC T6 (-20C Ta 60C) Gb  
Ex tb IIIC T85C (-20C Ta 60C) Db
- Rated Voltage: 250V ac/dc
- Rated Current: 2 pole 4A.

# Python Line Series - Conveyor Belt Alignment Switches

## MEDIUM DUTY - DIE-CAST BELT SWITCH 35mm x 120mm ROLLER ORDERING:



SALES NUMBER	DESCRIPTION	MEDIUM DUTY BELT ALIGNMENT SWITCH		
		Operating Torque	WARNING	STOP
	ALL VERSIONS ARE 2NC 2NO			
500001	Belt Switch 35 x 120mm Roller M20	1.8Nm to 2.8Nm  (Factory set to 1.8Nm)	10-18 degrees  (Factory set at 14 degrees)	15-35 degrees  (Factory set at 25 degrees)
500002	Belt Switch 35 x 120mm Roller 1/2" NPT			
500003A	Belt Switch 35 x 120mm Roller M20 24V LED			
500003B	Belt Switch 35 x 120mm Roller M20 110V LED			
500003C	Belt Switch 35 x 120mm Roller M20 230V LED			
500004A	Belt Switch 35 x 120mm Roller 1/2" NPT 24V LED			
500004B	Belt Switch 35 x 120mm Roller 1/2" NPT 110V LED			
500004C	Belt Switch 35 x 120mm Roller 1/2" NPT 230V LED			
500021	Belt Switch 35 x 120mm Roller EX 3m pre-wired			

## HEAVY DUTY - DIE-CAST BELT SWITCH 35mm x 230mm ROLLER ORDERING:



SALES NUMBER	DESCRIPTION	MEDIUM DUTY BELT ALIGNMENT SWITCH		
		Operating Torque	WARNING	STOP
	ALL VERSIONS ARE 2NC 2NO			
500005	Belt Switch 35 x 230mm Roller M20	3.0Nm to 5.0Nm  (Factory set to 3.0Nm)	10-18 degrees  (Factory set at 14 degrees)	15-35 degrees  (Factory set at 25 degrees)
500006	Belt Switch 35 x 230mm Roller 1/2" NPT			
500007A	Belt Switch 35 x 230mm Roller M20 24V LED			
500007B	Belt Switch 35 x 230mm Roller M20 110V LED			
500007C	Belt Switch 35 x 230mm Roller M20 230V LED			
500008A	Belt Switch 35 x 230mm Roller 1/2" NPT 24V LED			
500008B	Belt Switch 35 x 230mm Roller 1/2" NPT 110V LED			
500008C	Belt Switch 35 x 230mm Roller 1/2" NPT 230V LED			
500051	Belt Switch 35 x 230mm Roller EX 3m pre-wired			

## HEAVY DUTY - DIE-CAST BELT SWITCH 50mm x 170mm ROLLER ORDERING:

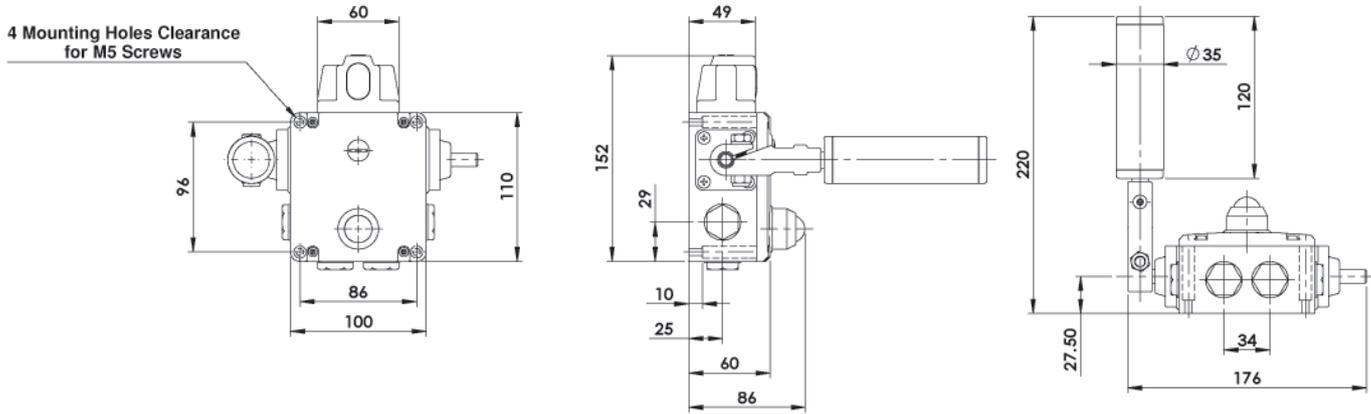


SALES NUMBER	DESCRIPTION	MEDIUM DUTY BELT ALIGNMENT SWITCH		
		Operating Torque	WARNING	STOP
	ALL VERSIONS ARE 2NC 2NO			
500009	Belt Switch 50 x 170mm Roller M20	3.0Nm to 5.0Nm  (Factory set to 3.0Nm)	10-18 degrees  (Factory set at 14 degrees)	15-35 degrees  (Factory set at 25 degrees)
500010	Belt Switch 50 x 170mm Roller 1/2" NPT			
500011A	Belt Switch 50 x 170mm Roller M20 24V LED			
500011B	Belt Switch 50 x 170mm Roller M20 110V LED			
500011C	Belt Switch 50 x 170mm Roller M20 230V LED			
500012A	Belt Switch 50 x 170mm Roller 1/2" NPT 24V LED			
500012B	Belt Switch 50 x 170mm Roller 1/2" NPT 110V LED			
500012C	Belt Switch 50 x 170mm Roller 1/2" NPT 230V LED			
500091	Belt Switch 50 x 170mm Roller EX 3m pre-wired			

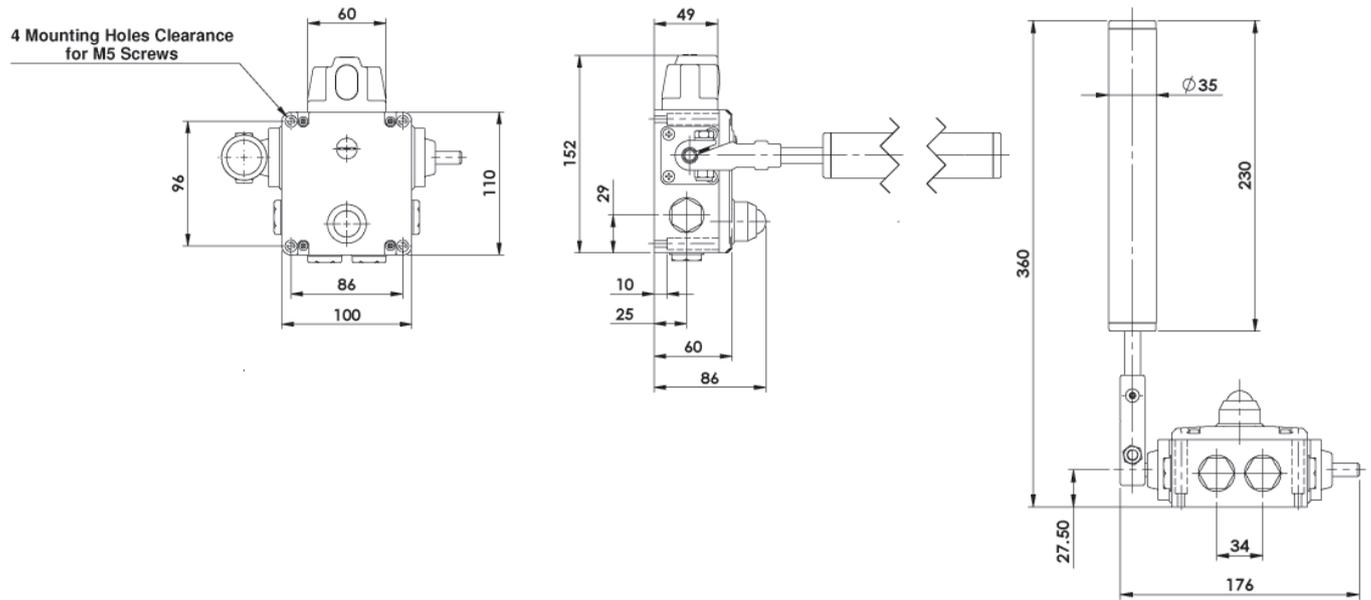
For all IDEM switches the normally closed (NC) circuits are closed when the system is tensioned correctly and the switch has been reset.

# Python Line Series - Conveyor Belt Alignment Switches

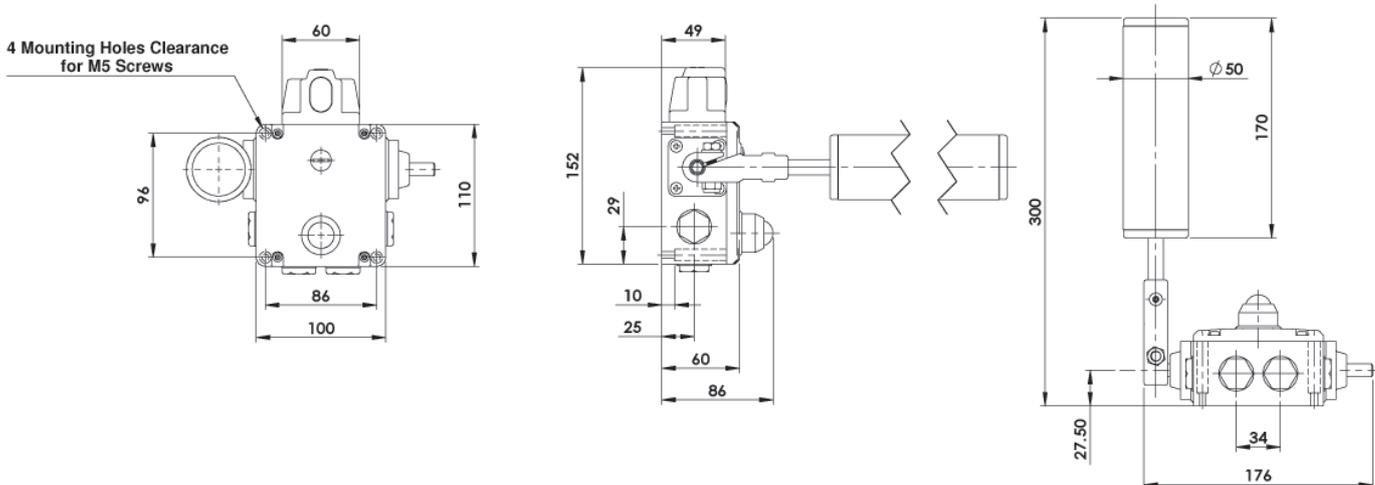
## MEDIUM DUTY - DIE-CAST BELT SWITCH 35mm x 120mm DIMENSIONS (mm):



## HEAVY DUTY - DIE-CAST BELT SWITCH 35mm x 230mm DIMENSIONS (mm):



## HEAVY DUTY - DIE-CAST BELT SWITCH 50mm x 170mm DIMENSIONS (mm):



For all IDEM switches the normally closed (NC) circuits are closed when the system is tensioned correctly and the switch has been reset.

# Python Line Series - Conveyor Belt Alignment Switches

## MEDIUM DUTY - STAINLESS STEEL BELT SWITCH 35mm x 120mm ROLLER ORDERING:



SALES NUMBER	DESCRIPTION	MEDIUM DUTY BELT ALIGNMENT SWITCH		
		Operating Torque	WARNING	STOP
	ALL VERSIONS ARE 2NC 2NO			
501001	Belt Switch 35 x 120mm Roller M20	1.8Nm to 2.8Nm  (Factory set to 1.8Nm)	10-18 degrees  (Factory set at 14 degrees)	15-35 degrees  (Factory set at 25 degrees)
501002	Belt Switch 35 x 120mm Roller 1/2" NPT			
501003A	Belt Switch 35 x 120mm Roller M20 24V LED			
501003B	Belt Switch 35 x 120mm Roller M20 110V LED			
501003C	Belt Switch 35 x 120mm Roller M20 230V LED			
501004A	Belt Switch 35 x 120mm Roller 1/2" NPT 24V LED			
501004B	Belt Switch 35 x 120mm Roller 1/2" NPT 110V LED			
501004C	Belt Switch 35 x 120mm Roller 1/2" NPT 230V LED			
501021	Belt Switch 35 x 120mm Roller EX 3m pre-wired			

## HEAVY DUTY - STAINLESS STEEL BELT SWITCH 35mm x 230mm ROLLER ORDERING:



SALES NUMBER	DESCRIPTION	MEDIUM DUTY BELT ALIGNMENT SWITCH		
		Operating Torque	WARNING	STOP
	ALL VERSIONS ARE 2NC 2NO			
501005	Belt Switch 35 x 230mm Roller M20	3.0Nm to 5.0Nm  (Factory set to 3.0Nm)	10-18 degrees  (Factory set at 14 degrees)	15-35 degrees  (Factory set at 25 degrees)
501006	Belt Switch 35 x 230mm Roller 1/2" NPT			
501007A	Belt Switch 35 x 230mm Roller M20 24V LED			
501007B	Belt Switch 35 x 230mm Roller M20 110V LED			
501007C	Belt Switch 35 x 230mm Roller M20 230V LED			
501008A	Belt Switch 35 x 230mm Roller 1/2" NPT 24V LED			
501008B	Belt Switch 35 x 230mm Roller 1/2" NPT 110V LED			
501008C	Belt Switch 35 x 230mm Roller 1/2" NPT 230V LED			
501051	Belt Switch 35 x 230mm Roller EX 3m pre-wired			

## HEAVY DUTY - STAINLESS STEEL BELT SWITCH 50mm x 170mm ROLLER ORDERING:

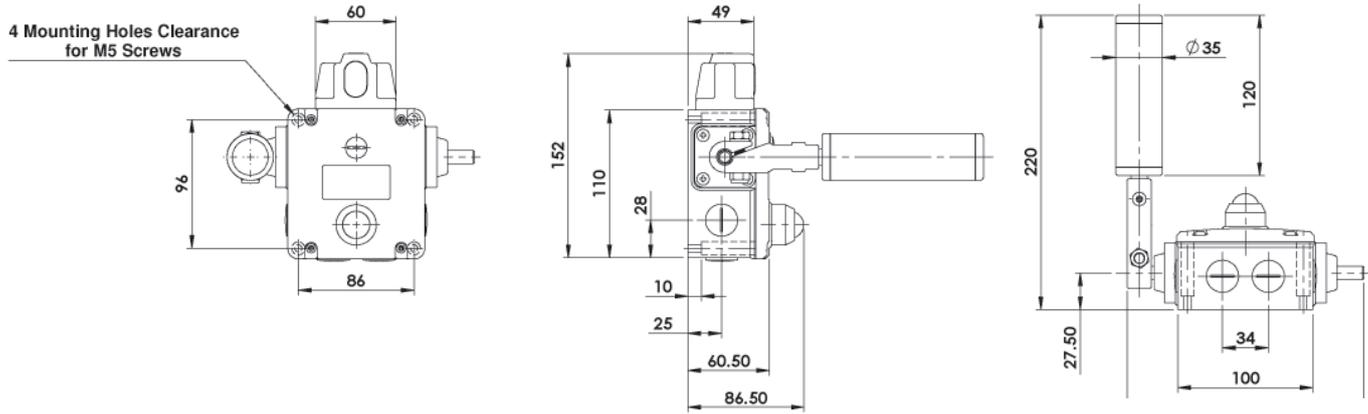


SALES NUMBER	DESCRIPTION	MEDIUM DUTY BELT ALIGNMENT SWITCH		
		Operating Torque	WARNING	STOP
	ALL VERSIONS ARE 2NC 2NO			
501009	Belt Switch 50 x 170mm Roller M20	3.0Nm to 5.0Nm  (Factory set to 3.0Nm)	10-18 degrees  (Factory set at 14 degrees)	15-35 degrees  (Factory set at 25 degrees)
501010	Belt Switch 50 x 170mm Roller 1/2" NPT			
501011A	Belt Switch 50 x 170mm Roller M20 24V LED			
501011B	Belt Switch 50 x 170mm Roller M20 110V LED			
501011C	Belt Switch 50 x 170mm Roller M20 230V LED			
501012A	Belt Switch 50 x 170mm Roller 1/2" NPT 24V LED			
501012B	Belt Switch 50 x 170mm Roller 1/2" NPT 110V LED			
501012C	Belt Switch 50 x 170mm Roller 1/2" NPT 230V LED			
501091	Belt Switch 50 x 170mm Roller EX 3m pre-wired			

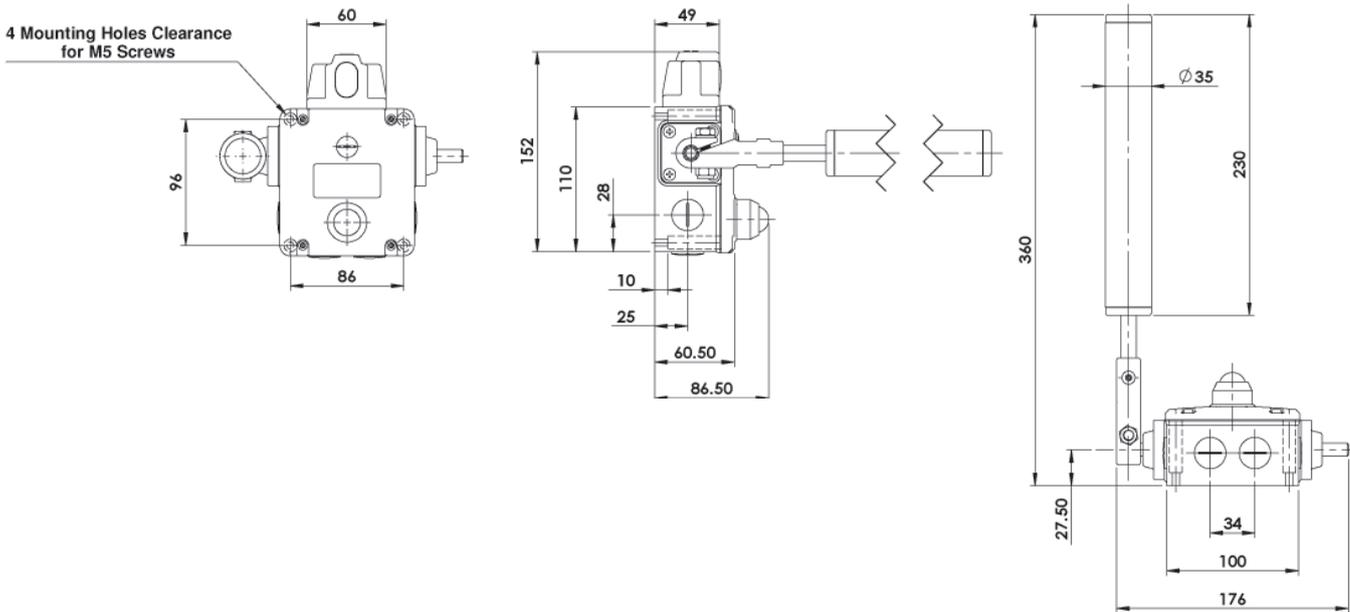
For all IDEM switches the normally closed (NC) circuits are closed when the system is tensioned correctly and the switch has been reset.

# Python Line Series - Conveyor Belt Alignment Switches

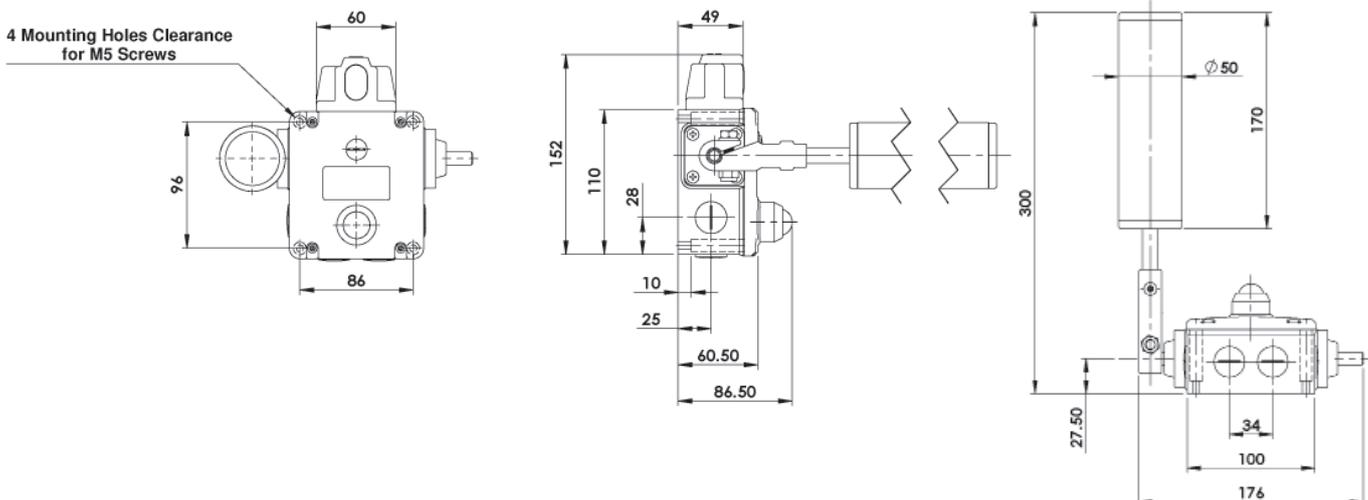
## MEDIUM DUTY - STAINLESS STEEL BELT SWITCH 35mm x 120mm DIMENSIONS (mm):



## HEAVY DUTY - STAINLESS STEEL BELT SWITCH 35mm x 230mm DIMENSIONS (mm):



## HEAVY DUTY - STAINLESS STEEL BELT SWITCH 50mm x 170mm DIMENSIONS (mm):



For all IDEM switches the normally closed (NC) circuits are closed when the system is tensioned correctly and the switch has been reset.

# Mini Belt Alignment Switches TYPE: HLM-CBA

## APPLICATIONS:

IDEM's HLM-CBA mini conveyor belt alignment switches come with either plastic roller or stainless steel roller.

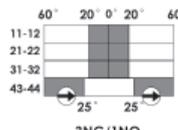
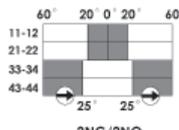
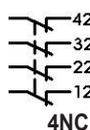
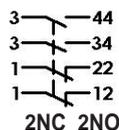
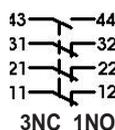
They are available with either slow break or snap action contacts.

## FEATURES:

- Heavy duty die cast bodies (painted red)
- Positive opening NC safety contact to EN60947-5-1
- High mechanical life over 500,000 cycles
- Industry standard mounting to EN50041
- Choice of Stainless Steel or Plastic Roller

## CONTACT BLOCKS:

Contact blocks provide positively operated safety contacts to EN60947-5-1 with optional Explosion Proof versions available.

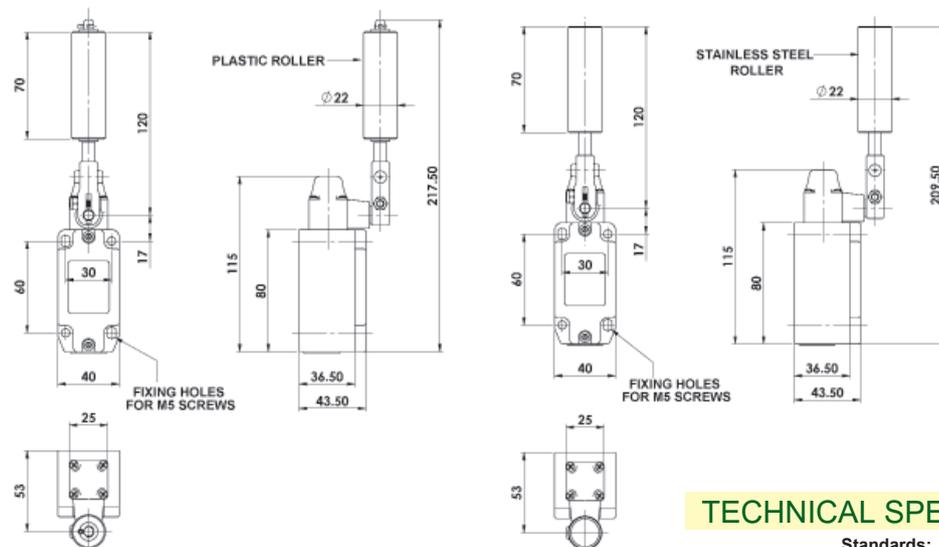


## EX CLASSIFICATION:



EXPLOSION PROOF MODELS ALSO AVAILABLE.  
SEE MODELS/PART NUMBERS MARKED WITH EX

## DIMENSIONS:



## ORDERING:

HLM-CBA-P with PLASTIC ROLLER	SALES NUMBERS		
	M20	1/2"NPT	QC M23
2NC 2NO	174401	174402	174403
3NC 1NO	174404	174405	174406
4NC	174407	174408	174409
1NC 1NO Snap	174410	174411	174412
1NC 1NO EX	174413	3m 4 core Ex	
2NC EX	174414	3m 4 core Ex	
2NC 2NO EX	174415	3m 8 core Ex	

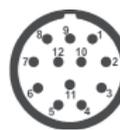
  

HLM-CBA-S with STAINLESS STEEL ROLLER	SALES NUMBERS		
	M20	1/2"NPT	QC M23
2NC 2NO	174451	174452	174453
3NC 1NO	174454	174455	174456
4NC	174457	174458	174459
1NC 1NO Snap	174460	174461	174462
1NC 1NO EX	174463	3m 4 core Ex	
2NC EX	174464	3m 4 core Ex	
2NC 2NO EX	174465	3m 8 core Ex	



HLM-CBA-P  
Plastic Roller

HLM-CBA-S  
S/Steel Roller



Quick Connect (QC) M23 12 Way Male (connector length 26mm) (pin view from switch)		Switch Circuit
1	3	11/12
4	6	21/22
7	8	33/34 or 31/32
9	10	41/42 or 43/44
12		Earth

## TECHNICAL SPECIFICATIONS:

**Standards:** ISO14119 EN60947-5-1 EN60204-1  
ISO13849-1 EN62061 UL508

### Safety Classification and Reliability Data:

Mechanical Reliability	B10d
ISO13849-1	Up to PLe depending upon system architecture
EN62061	Up to SIL3 depending upon system architecture
Safety Data - Annual Usage	8 cycles per hour/24 hours per day/365 days
PFHd	$3.44 \times 10^{-8}$
Proof Test Interval (Life)	35 years
MTTFd	356 years
Positive Opening Operation	NC contacts
Utilisation Category	AC15 A300 240V 3A
Minimum Current	5V 5mA dc
Thermal Current (Ith)	10A
Rated Insulation Voltage	300Vac
Rated Impulse Withstand	2500Vac
Maximum Switching Speed	250mm/sec
Housing Material	Die Cast
Roller Material:	Stainless Steel or Plastic
Enclosure Protection	IP67
Operating Temperature	-25C to +80C
Electrical Life Expectancy	100,000 cycle min (at full load)
Vibration	IEC68-2-6 10-55Hz 0.35mm
Conductor Size	1.5mm <sup>2</sup>
Fixing	M5 bolts
Operating Torque	1.10Nm Plastic Roller 1.40Nm Stainless Steel Roller

# Mini Belt Alignment Switches TYPE: HLM-SS-CBA

## APPLICATIONS:

IDEM's HLM-SS-CBA mini conveyor belt alignment switches are manufactured in Stainless Steel 316 and come with either plastic roller or stainless steel roller. They are available with either slow break or snap action contacts.

## FEATURES:

- Fully Stainless Steel 316 housing
- Positive opening NC safety contact to EN60947-5-1
- High mechanical life over 500,000 cycles
- Industry standard mounting to EN50041
- Choice of Stainless Steel or Plastic Roller

## CONTACT BLOCKS:

Contact blocks provide positively operated safety contacts to EN60947-5-1 with optional Explosion Proof versions available.

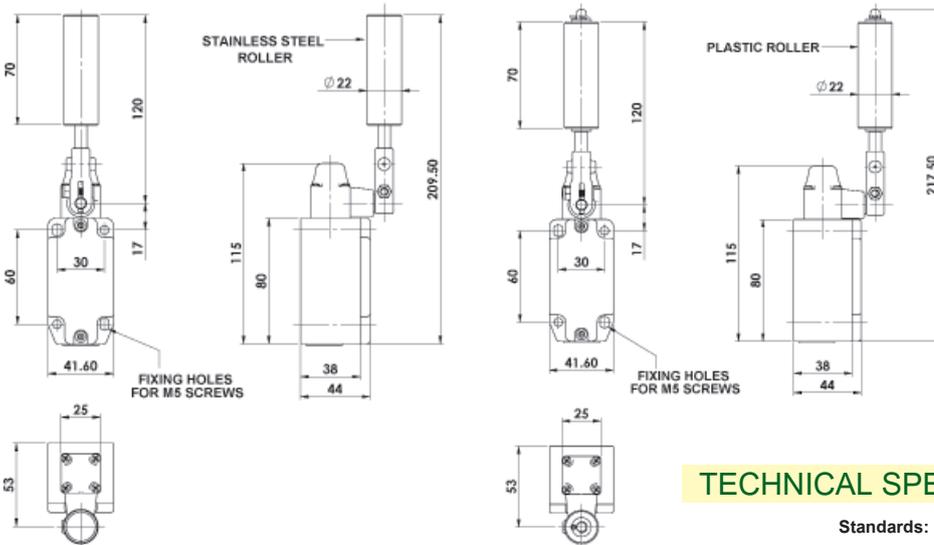


## EX CLASSIFICATION:



EXPLOSION PROOF MODELS ALSO AVAILABLE. SEE MODELS/PART NUMBERS MARKED WITH EX

## DIMENSIONS:



## ORDERING:

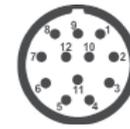
HLM-SS-CBA-P with PLASTIC ROLLER	SALES NUMBERS		
	M20	1/2"NPT	QC M23
2NC 2NO	175401	175402	175403
3NC 1NO	175404	175405	175406
4NC	175407	175408	175409
1NC 1NO Snap	175410	175411	175412
1NC 1NO EX	175413	3m 4 core Ex	
2NC EX	175414	3m 4 core Ex	
2NC 2NO EX	175415	3m 8 core Ex	

HLM-SS-CBA-S with STAINLESS STEEL ROLLER	SALES NUMBERS		
	M20	1/2"NPT	QC M23
2NC 2NO	175451	175452	175453
3NC 1NO	175454	175455	175456
4NC	175457	175458	175459
1NC 1NO Snap	175460	175461	175462
1NC 1NO EX	175463	3m 4 core Ex	
2NC EX	175464	3m 4 core Ex	
2NC 2NO EX	175465	3m 8 core Ex	



HLM-SS-CBA-P Plastic Roller  
HLM-SS-CBA-S S/Steel Roller



Quick Connect (QC) M23 12 Way Male (connector length 26mm) (pin view from switch)	Switch Circuit
1 3	11/12
4 6	21/22
7 8	33/34 or 31/32
9 10	41/42 or 43/44
12	Earth

## TECHNICAL SPECIFICATIONS:

**Standards:** ISO14119 EN60947-5-1 EN60204-1  
ISO13849-1 EN62061 UL508

### Safety Classification and Reliability Data:

- Mechanical Reliability B10d 500,000 operations at 100mA load
- ISO13849-1 Up to PLe depending upon system architecture
- EN62061 Up to SIL3 depending upon system architecture
- Safety Data - Annual Usage 8 cycles per hour/24 hours per day/365 days
- PFHd  $3.44 \times 10^{-8}$
- Proof Test Interval (Life) 35 years
- MTTFd 356 years
- Positive Opening Operation NC contacts
- Utilisation Category AC15 A300 240V 3A
- Minimum Current 5V 5mA dc
- Thermal Current (Ith) 10A
- Rated Insulation Voltage 300Vac
- Rated Impulse Withstand 2500Vac
- Maximum Switching Speed 250mm/sec
- Housing Material Stainless Steel 316
- Roller Material: Stainless Steel or Plastic
- Enclosure Protection IP69K
- Operating Temperature -25C to +80C
- Electrical Life Expectancy 100,000 cycle min (at full load)
- Vibration IEC68-2-6 10-55Hz 0.35mm
- Conductor Size 1.5mm<sup>2</sup>
- Fixing M5 bolts
- Operating Torque 1.10Nm Plastic Roller  
1.40Nm Stainless Steel Roller