

# 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 P214-215 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.

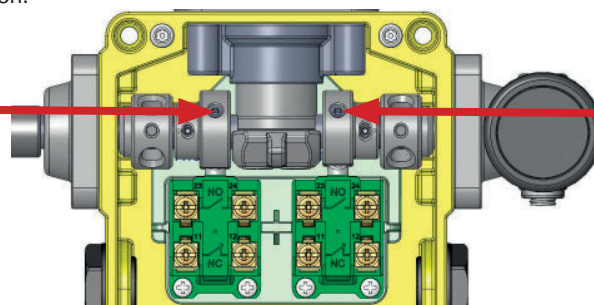
Final Adjustment of contact block action:

### 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

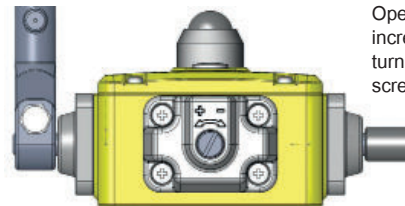
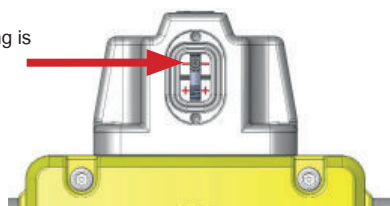
Contact block 2  
Adjustment cam.

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.

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## 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.

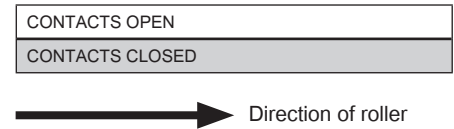
### Every 6 months:

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:

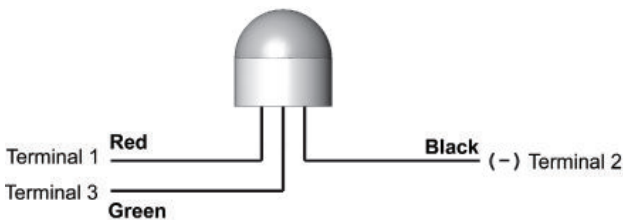
0 Degrees      14 Degrees      25 Degrees      65 Degrees  
 WARNING      STOP

|                                   |    |            |  |  |  |
|-----------------------------------|----|------------|--|--|--|
|                                   |    | 1NC<br>1NO |  |  |  |
| WARNING SIGNAL<br>Contact Block 1 | NC | 11/12      |  |  |  |
|                                   | NO | 23/24      |  |  |  |
| STOP SIGNAL<br>Contact Block 2    | NC | 11/12      |  |  |  |
|                                   | NO | 23/24      |  |  |  |



## WIRING EXAMPLES (Standard Versions):

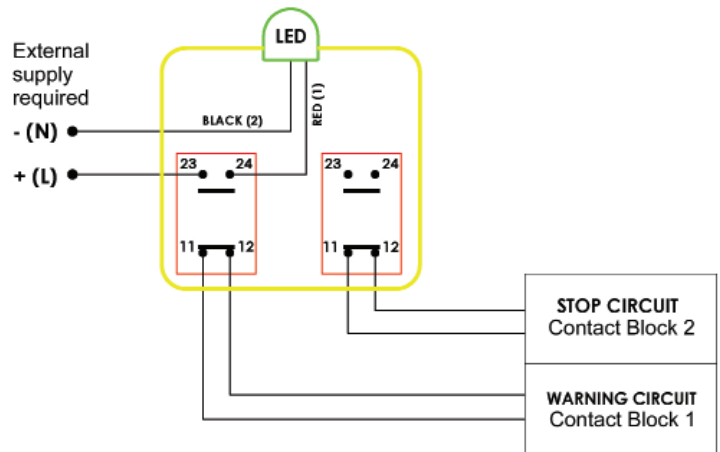
LED Steady Green or Flashing Red (Bi-colour)



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.



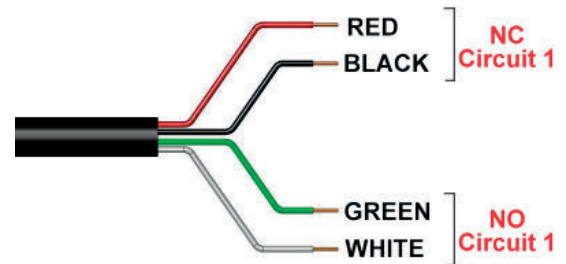
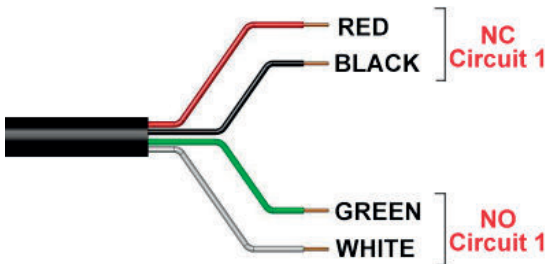
## WIRING COLOURS (EX Versions):

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

- 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 - 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<br><br>(Factory set to 1.8Nm) | 10-18 degrees<br><br>(Factory set at 14 degrees) | 15-35 degrees<br><br>(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<br><br>(Factory set to 3.0Nm) | 10-18 degrees<br><br>(Factory set at 14 degrees) | 15-35 degrees<br><br>(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:

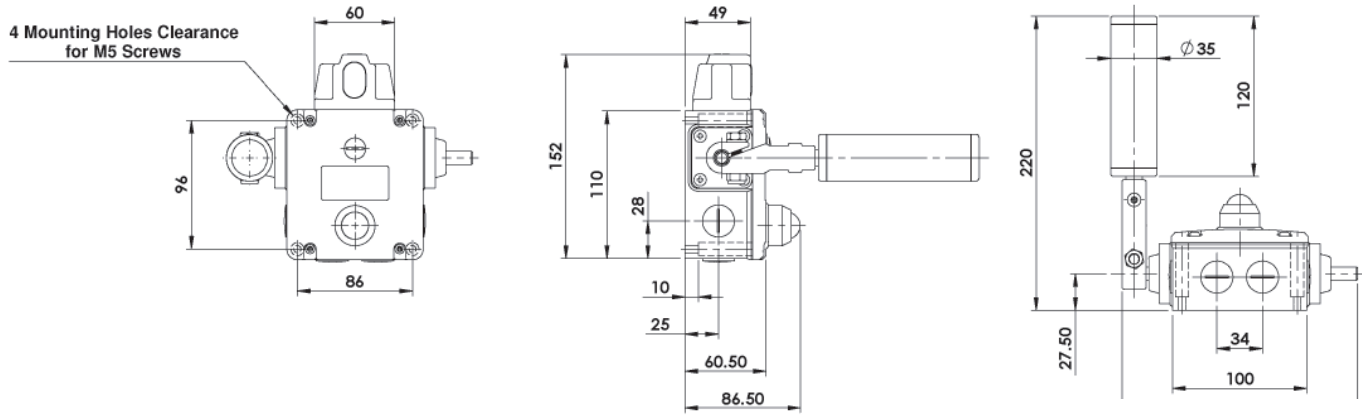


| SALES NUMBER | DESCRIPTION                                     | MEDIUM DUTY BELT ALIGNMENT SWITCH            |  |  |
|--------------|---|--|--|--|
|              |   | Operating Torque                             | WARNING  | STOP   |
|              | ALL VERSIONS ARE 2NC 2NO                        |  |  |  |
| 501009       | Belt Switch 50 x 170mm Roller M20               | 3.0Nm to 5.0Nm<br><br>(Factory set to 3.0Nm) | 10-18 degrees<br><br>(Factory set at 14 degrees) | 15-35 degrees<br><br>(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   |  |  |  |

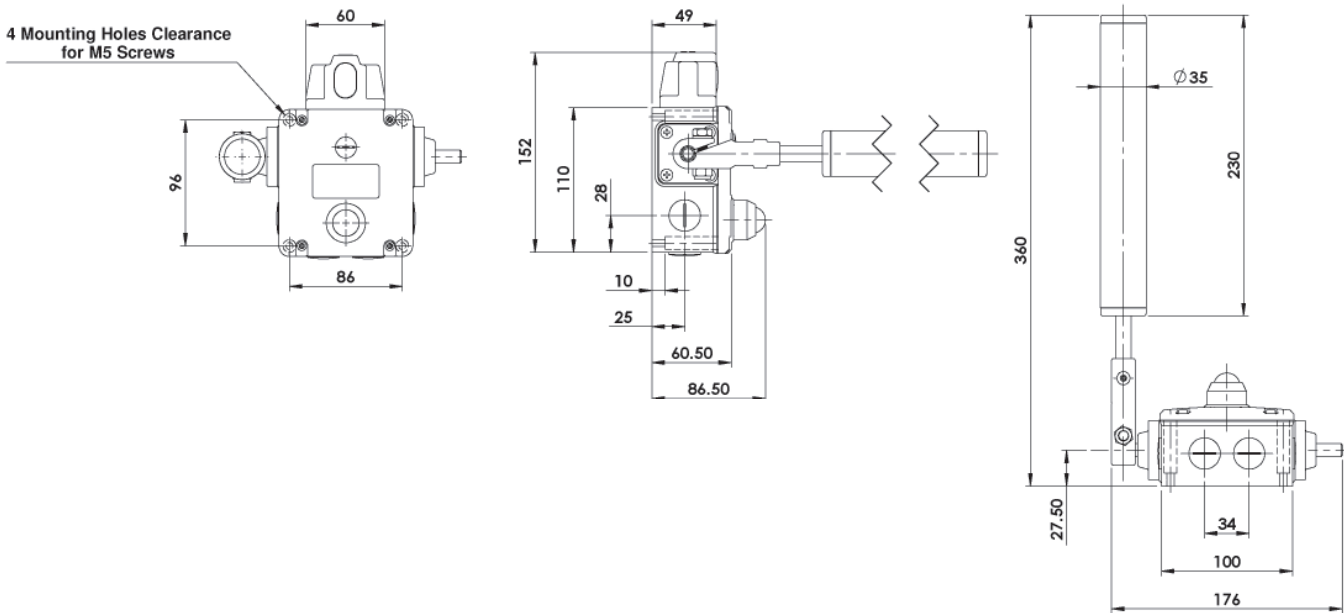
For all IDEM switches the normally closed (NC) circuits are closed when the system is tensioned correctly and the switch has been reset.

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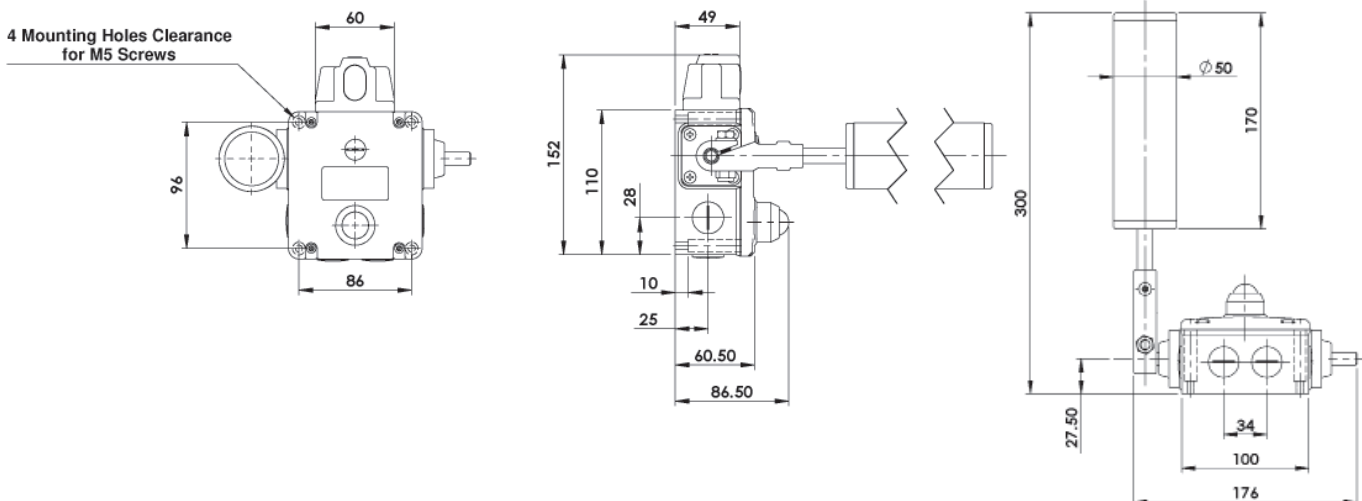
## MEDIUM DUTY - STAINLESS STEEL BELT SWITCH 35mm x 120mm DIMENSIONS (mm):



## 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.