

## Specification - PU1TZA1:

|                      |   |
|----------------------|---|
| Supply:              | 24-240v ac/dc.  |
| Supply Rating:       | 2VA.  |
| Output:              | FET   |
| Switching Capacity:  | 100mA max.  |
| Saturation Voltage:  | 5.5 volts max (output on).  |
| Ambient Temp:        | -15°C to +50°C.   |
| Output State:        | Normally closed (Volt drop 5.5 volts max) above set speed. Normally open (leakage current 1.0mA max). |
| Calibration:         | Automatic. Initiated by magnet supplied.  |
| Sensing Range:       | Nominally 8mm on ferrous metal at 25°C.   |
| Input Pulse Range:   | 10 to 3600 p.p.m.   |
| Repeat Accuracy:     | 1%.   |
| Start Up Delay:      | Adjustable to 0 - 30 seconds.   |
| Operation Setting:   | Automatic calibration by applying magnet to 'Cal' point. Relay de-energises at 20% under set speed.   |
| Enclosure:           | Moulded Nylon. DIN threaded 30mm by 1.5mm pitch.  |
| Protection:          | IP66.   |
| Relative Humidity:   | 90% RH.   |
| LED Indication:      | Target Detected (Sense) & Output.   |
| Cable (Std. length): | 3 metres 2 core 600/1000V (or as order).  |

The equipment is covered by a 12 months guarantee from the date of shipment. Any faults arising due to faulty materials or workmanship, within the guarantee period, will be corrected free of charge providing the equipment is returned to us carriage paid.

Provided that the equipment covered by these instructions is installed and operated as directed, it presents no hazard and conforms fully to health and safety regulations.



### DECLARATION OF CONFORMITY

We, the undersigned, on behalf of Synatel Instrumentation Limited, hereby declare the products listed below conform to the relevant provisions of the legislation, as well as pertinent clauses of the standards and other normative documents mentioned herein.

EQUIPMENT DESCRIPTION: **30 MM AI SERIES OF PROXIMITY SWITCHES**  
PRODUCT NAMES: **IDE1TXXAI, PU1TXXAI, CXXTXXAI**

ATEX DIRECTIVE **2014/34/EU**  
CERTIFICATE No. : **Baseefa12ATEX0226X**  
ISSUED BY : SGS Baseefa, Staden Lane, Buxton, Derbyshire, SK17 9RZ  
NOTIFIED BODY NO. : 1180  
CATEGORIES : 1G Ex ma IIC T4 Ga  
: 1D Ex ma IIIC T200110°C Da  
Tamb -15°C to 50°C, IP66

BS EN 60079-0 :2012 Explosive Atmospheres- General requirements  
BS EN 60079-18 :2009 Equipment protection by encapsulation 'm'

### SPECIFIC CONDITIONS OF USE

1. The supply circuit shall be protected by a suitably rated fuse capable of interrupting a short circuit current of 1500 Amps.
2. The external connections shall meet the requirements for EPL Ga in accordance with EN 60079-26 and EPL Da in accordance with EN 60079-31.
3. Warning: Potential static ignition risk, clean only with a damp cloth.
4. The integral cable shall be terminated in a suitably certified enclosure or in the safe area.

### LOW VOLTAGE DIRECTIVE 2014/35/EU

BS EN 61010-1 :2010 General safety requirements for electrical equipment  
BS EN60332-1-1 :2004 Single cable flame propagation test  
EMC DIRECTIVE 2014/30/EU  
BS EN 61000-6-3 :2007 Electromagnetic Compatibility - General Emission Standard  
BS EN 61000-6-1 :2007 Electromagnetic Compatibility - General Immunity Standard

### RoHS DIRECTIVE 2011/65/EU

Restriction Of The Use Of Certain Hazardous Substances In Electrical And Electronic Equipment Is Conformed To As Set Out In ANNEX II Of The Directive

NAME: D. WHEAT POSITION: MANAGING DIRECTOR

SIGNED:

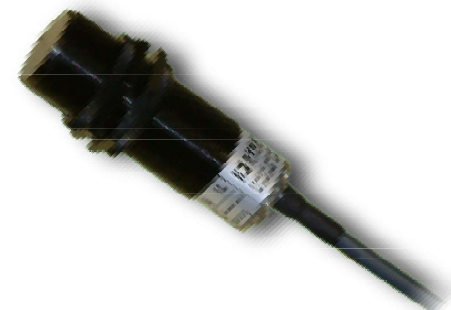
ISSUE DATE : 20th April 2016

# SYNATEL

## Instrumentation Ltd.

Detection & Control - in Action

www.synatel.co.uk | sales@synatel.co.uk | +44 (0) 1543 277003 | Cannock, Staffordshire, WS11 9TB GB



**ROTASLIP MK3**  
**Type PU1TZA1**  
**IECEx & ATEX APPROVED,**  
**SELF CONTAINED, 2 WIRE (FET)**  
**UNDERSPEED MONITOR**  
**Manual No: 2570**

## OPERATING INSTRUCTIONS



M25700

## Introduction:

The **ROTASLIP** series is designed to detect slippage or stoppage on elevators, conveyors, fans etc. The units require no connection with the shaft, have no moving parts and a virtually unlimited life. They incorporate microcontroller circuitry which automatically calibrates to 20% under normal speed and provides a programmable 0-30 second start up delay.

## Installation:

The Inductive sensor section detects a metal target on the shaft. The target can be an existing bolt head or similar.

Ideally, the target should be of ferrous metal. Maximum range ferrous materials is 8mm with a 30mm dia. circular target. Smaller targets may be used but operating distance will be reduced.

The **ROTASLIP** should be mounted adjacent to the target, ensuring that the distance to the target does not exceed the stated maximum.

When mounted against a solid steel shaft, the target or bolt head should protrude from the shaft at least 15mm, otherwise the sensor will not be able to distinguish the target from the shaft and red input light would stay on permanently.

Wiring to the **ROTASLIP** can be any length as required, using ordinary unscreened cable. However, if long cable runs are to be used, the wiring should **not** be positioned adjacent to cables carrying high voltage or current.

Two locknuts are provided to mount the units in position. Mount securely to withstand vibration. Ensure that the unit and target are adequately guarded.

**PU1TZAI** is a two wire, FET output type sensor.

The **PU1TZAI** must be wired through a load/resistor (see diagram) and not directly to the supply voltage. The supply polarity is not important and the load can be connected in either wire. The cable on the unit can be extended to virtually any length in ordinary 2 wire, cable.

## Cabling:

Connect the unit as shown in the connections diagram. The **PU1TZAI** is a two wire device. **Do not** connect directly across the supply without a load present.

The **PU1TZAI** is designed to operate into any type of PLC input and as such it only requires approximately 5 milli-watts to operate correctly eg 5 volts at 1 milliamp. Therefore the cabling **MUST** be arranged in such a way as to prevent even the smallest amount of induced voltage from adjacent ac cables being present at the sensor. Failure to do so will cause the sensor to be continually powered and the start-up timer will not operate at true power-on.

## Commissioning & Auto-calibration

Two LED's are provided for information purposes, on the **ROTASLIP**. The input LED flashes everytime a target passes the face of the sensor. With normal running, the output LED is a static and the output is on (energised). With an underspeed condition both the LED and output will be off (de-energised). The **ROTASLIP** is factory set to a speed of 10PPM and a start up time of 5 seconds. If the time delay required is greater than 5 seconds, see 'Recalibration for a Different Setting', otherwise, proceed as follows-

Apply power to the machine and **ROTASLIP**.

Ensure that the machine has reached normal running speed and then place the magnet on the 'Cal' point (above the cable entry). Count flashes of the output LED to set the start delay required in seconds, then remove magnet.

The output LED will echo the setting in seconds, during which time, automatic calibration to 20% below normal speed will be carried out.

## Recalibration for a Different Setting:

If the unit is to be used for a slower speed or with longer time delay than previously set, the unit may trip out before it can be calibrated. This can be avoided by applying power while holding the magnet on the Cal point and removing the magnet only when the machine has reached normal speed. Wait for the output LED to illuminate permanently and then recalibrate as above.

## Notes:

IECEX Certificate No: IECEX BAS 18.0025X

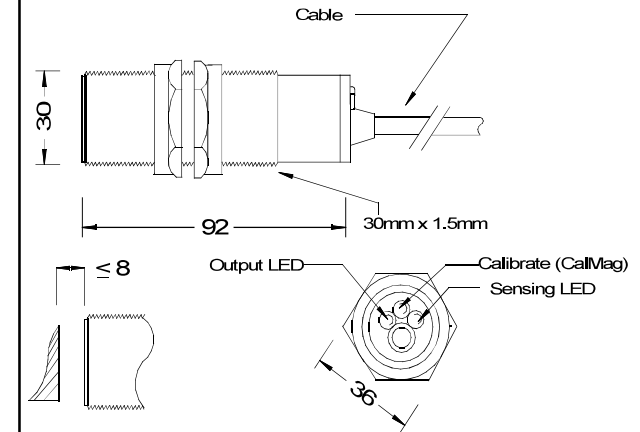
Ex ma IIC T4 Ga

Ex ma IIIC T200110°C Da

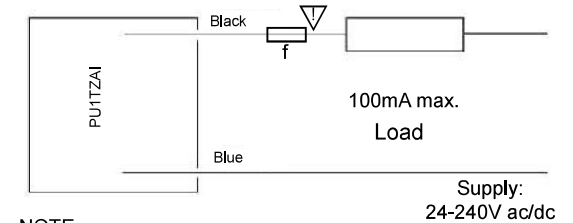
Tamb= -15°C to +50°C IP66

For Certificate of Conformity go to [www.iecex.com](http://www.iecex.com)

## Dimensions (in mm):



## Connections - PU1TZAI:



NOTE:

- 1) Supply polarity is not important & load can be connected in either lead.
- 2) Supply voltage **MUST** be same voltage as supply voltage being used.

|   |  |
|---|--|
| ▽ | <b>NOTE:</b> f= 1500A Capable fuse<br>500mA max. rating.<br>1 fuse per unit <b>MUST</b> be used. |
|   |  |
|   |  |

## Specification - PU1TRHA1:

|                      |   |
|----------------------|---|
| Supply:              | 15-240V dc or 24-240V ac.   |
| Supply Rating:       | 2VA.  |
| Output:              | S.P.C.O. Relay  |
| Switching Capacity:  | 3A 240V non-inductive maximum.  |
| Ambient Temp:        | -15°C to +50°C.   |
| Output State:        | Normally open. Closed above set speed.  |
| Calibration:         | Automatic. Initiated by magnet supplied.  |
| Sensing Range:       | Nominally 8mm on ferrous metal at 25°C.   |
| Input Pulse Range:   | 10 to 3600 p.p.m.   |
| Repeat Accuracy:     | 1%.   |
| Start Up Delay:      | Adjustable to 0 - 30 seconds.   |
| Operation Setting:   | Automatic calibration by applying magnet to 'Cal' point. Relay de-energises at 20% under set speed. |
| Enclosure:           | Moulded Nylon. DIN threaded 30mm by 1.5mm pitch.  |
| Protection:          | IP66.   |
| Relative Humidity:   | 90% RH.   |
| LED Indication:      | Target Detected (Sense) & Output.   |
| Cable (Std. length): | 3 metres 5 core 600/1000V (or as order).  |

The equipment is covered by a 12 months guarantee from the date of shipment. Any faults arising due to faulty materials or workmanship, within the guarantee period, will be corrected free of charge providing the equipment is returned to us carriage paid.

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EQUIPMENT DESCRIPTION: **30 MM AI SERIES OF PROXIMITY SWITCHES**  
PRODUCT NAMES: **PUxxTxxHxAI**

ATEX DIRECTIVE **2014/34/EU**  
CERTIFICATE No. : **Baseefa18ATEX0032X**  
ISSUED BY : SGS Baseefa, Staden Lane, Buxton, Derbyshire, SK17 9RZ  
NOTIFIED BODY NO. : 1180  
CATEGORIES : II 2G Ex mb IIC T4 Gb

II 2D Ex mb IIIC T110°C Db  
Tamb -15°C to 50°C, IP66  
Explosive Atmospheres- General requirements  
BS EN 60079-0 :2012 Equipment protection by encapsulation 'm'

### SPECIFIC CONDITIONS OF USE

1. The supply circuit shall be protected by a suitably rated fuse capable of interrupting a short circuit current of 1500 Amps.
2. The external connections shall meet the requirements for EPL Ga in accordance with EN 60079-26 and EPL Da in accordance with EN 60079-31.
3. Warning: Potential static ignition risk, clean only with a damp cloth.
4. The integral cable shall be terminated in a suitably certified enclosure or in the safe area.

### LOW VOLTAGE DIRECTIVE 2014/35/EU

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EMC DIRECTIVE 2014/30/EU  
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NAME: D. WHEAT POSITION: MANAGING DIRECTOR

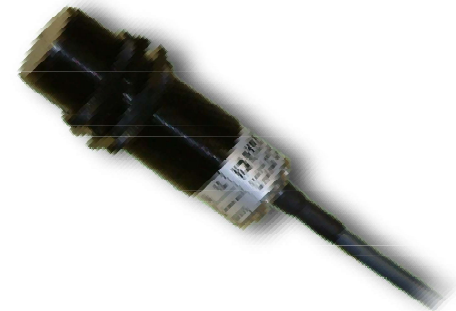
SIGNED: ISSUE DATE : 3rd April 2018

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**ROTASLIP MK3**  
**Type PU1TRHA1**  
**IECEx & ATEX APPROVED,**  
**SELF CONTAINED, 5 WIRE**  
**UNDERSPEED MONITOR**  
**Manual No: 2606**

## OPERATING INSTRUCTIONS



M2606A

## Introduction:

The **ROTASLIP** series is designed to detect slippage or stoppage on elevators, conveyors, fans etc. The units require no connection with the shaft, have no moving parts and a virtually unlimited life. They incorporate microcontroller circuitry which automatically calibrates to 20% under normal speed and provides a programmable 0-30 second start up delay.

## Installation:

The Inductive sensor section detects a metal target on the shaft. The target can be an existing bolt head or similar.

Ideally, the target should be of ferrous metal. Maximum range ferrous materials is 8mm with a 30mm dia. circular target. Smaller targets may be used but operating distance will be reduced.

The **ROTASLIP** should be mounted adjacent to the target, ensuring that the distance to the target does not exceed the stated maximum.

When mounted against a solid steel shaft, the target or bolt head should protrude from the shaft at least 15mm, otherwise the sensor will not be able to distinguish the target from the shaft and red input light would stay on permanently.

Wiring to the **ROTASLIP** can be any length as required, using ordinary unscreened cable. However, if long cable runs are to be used, the wiring should **not** be positioned adjacent to cables carrying high voltage or current.

Two locknuts are provided to mount the units in position. Mount securely to withstand vibration. Ensure that the unit and target are adequately guarded.

**PU1TRHAI** is a 5 wire, relay output type sensor rated at 3A 240V ac non-inductive.

Connect the unit as shown in the connections diagram.

## Commissioning & Auto-calibration

Two LED's are provided for information purposes, on the **ROTASLIP**. The input LED flashes everytime a target passes the face of the sensor. With normal running, the output LED is a static and the output is on (energised). With an underspeed condition both the LED and output will be off (de-energised). The **ROTASLIP** is factory set to a speed of 10PPM and a start up time of 5 seconds. If the time delay required is greater than 5 seconds, see 'Recalibration for a Different Setting', otherwise, proceed as follows-

Apply power to the machine and **ROTASLIP**.

Ensure that the machine has reached normal running speed and then place the magnet on the 'Cal' point (above the cable entry). Count flashes of the output LED to set the start delay required in seconds, then remove magnet.

The output LED will echo the setting in seconds, during which time, automatic calibration to 20% below normal speed will be carried out.

### Recalibration for a Different Setting:

If the unit is to be used for a slower speed or with longer time delay than previously set, the unit may trip out before it can be calibrated. This can be avoided by applying power while holding the magnet on the Cal point and removing the magnet only when the machine has reached normal speed. Wait for the output LED to illuminate permanently and then recalibrate as above.

### Notes:

IECEX Certificate No: IECEX BAS 18.0025X

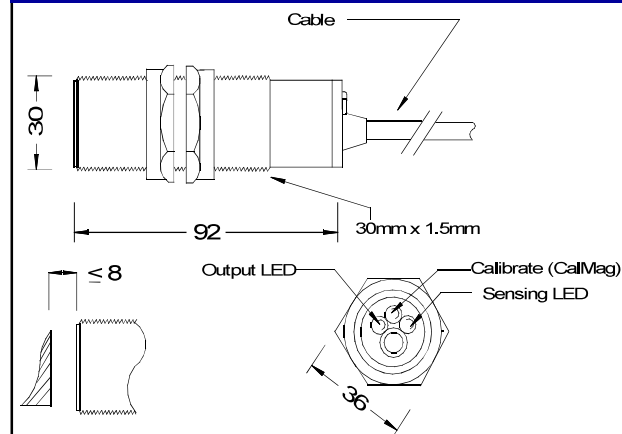
Ex mb IIC T4 Gb

Ex mb IIIC T110°C Db

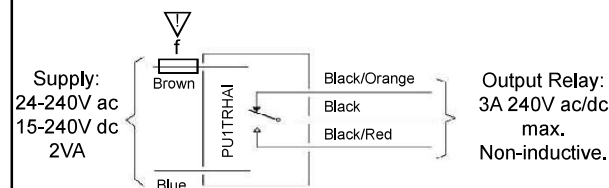
Tamb= -15°C to +50°C IP66

For Certificate of Conformity go to [www.iecex.com](http://www.iecex.com)

## Dimensions (in mm):



## Connections - PU1TRHAI:



**NOTE:** f= 1500A Capable fuse  
500mA max. rating.  
1 fuse per unit **MUST** be used.