

Pneumatic Proximity Switch Instructions

For 33.21.326/57.21.326.EX

Smooth functionality and reliable sensing can only be guaranteed if the instructions within this document are strictly followed.

The presence of a magnetic field actuates the pneumatic proximity sensor, typically used for detecting pneumatic cylinder intermediate or end stroke positions but also used for the contactless sensing of iron (Fe) parts within similar applications.

The pneumatic proximity sensor is essentially a 3-way normally closed valve that generates an output signal when an opposing magnetic field or ferrous material is within sensing distance of the device.

Installation & Mounting



Remove the load rejection clip before using!

The underside of the proximity sensor is profiled and fits 8mm to 100mm diameter round cylinders. Tensioning straps are used to secure the switch to cylinders. Alternatively, use the M4 thread passing through the body of the proximity switch to mount the device. If attached by the M4 thread, the maximum torque that may be applied is 1.5 Nm.

Minimum spacing of 20mm between adjacent proximity switches and spacing from other iron (Fe) parts must be at least 15mm.

A small piece of foam is provided with each proximity switch; this should be used to prevent unwanted ferrous materials from triggering the device. If using the sensor with cylinders, place the foam piece underneath the metal holder. The foam piece can be placed directly to the underside of the sensor when using the M4 threaded mounting option.

Pneumatic Connections

The proximity switch is provided with 3 x barbed connections for use with 3mm inner diameter tubing. Connection 1 (pressure supply), connection 2 (switched output) and connection 3 (exhaust). Please ensure tubing is fully pushed onto the barbed connections. The exhaust should not be restricted in any way, restriction will impair the successful operation of the device.

Operation

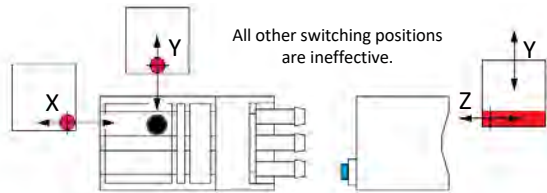
Switching with pneumatic cylinders

The maximum actuating speed when scanning intermediate positions can be approximately 1 m/s (without load volume). This depends on the cylinder, length of pipes and pressure. Please consider the cylinder design carefully, for example, wall thickness and air gap between the cylinder magnet and sensor can influence successful switching. We recommend use with round and mouse ear designs only. Pneumatic proximity sensors are not suitable for square clean profile design pneumatic cylinders. The minimum flux density on the face of the proximity sensor must be at least 7 mT (millitesla).



Switching with iron (Fe) parts

The active surface for switching with iron (Fe) parts is marked by a white dot on the underside of the device. Three switching directions are possible up to a maximum distance of 3.1 ± 1mm at 6 bar. You can determine the operating range and hysteresis of the pneumatic proximity sensor for other directions by experiment.



A positive switched output is identifiable via a blue pop-up indicator on top of the switch.

Environment

Not suitable for external or harsh environments. Protect from corrosion. General advice is to house within an enclosure or control panel with suitable protection rating.

Impulse Automation Limited
United Kingdom
Company Registration 665193

Pneumatic Proximity Switch instructions Continued

Exhaust

Compressed air will exhaust from this device as part of the operating sequence. This could be sufficient volume and pressure to create risk or introduce problems within an enclosure.

Air Quality

Clean, dry and oil free air to instrument quality standards. Please note that at low operating/ambient temperatures air filters alone will not be sufficient. Air dryers are recommended to achieve low moisture dew point.

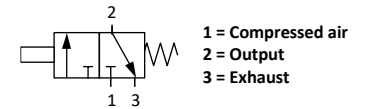
Safety & Warnings

Only competent qualified persons should install, mount, attach hoses, initially operate, maintain, test and disassemble this product. Never disconnect power lines or service the device when the system is powered. This product should only be used for its intended purpose and within the limits and conditions as described. When cleaning or servicing the product, to avoid electrostatic discharges, use a damp anti-static cloth.

Technical Data

Pressure range:	2 to 6 bar
Switching frequency:	5Hz
IP rating:	IP40 when connected.
Temperature range:	15°C to +60°C
Vibro-stability:	50 m/s ² (10Hz - 50 Hz) to IEC 68 part 2 - 6
Impact resistance:	500 m/s ² (for 5ms) to IEC 68 part 2 - 27
Flow rate:	40 l/min
Nominal orifice size:	2mm
Repeatability:	+/- 0.2mm of operating point

Connection Diagram



Pressure	2 bar	4 bar	6 bar
Operating distance	2.7 ± 1 mm	2.9 ± 1 mm	3.1 ± 1 mm
Hysteresis	0.2 - 0.8 mm	0.4 - 1.5 mm	0.6 - 3 mm

Operating distances and hysteresis for actuation in direction Z with an Fe part of 6mm diameter and ≥ 20mm in length. See section **Switching with iron (Fe) parts**.

Product Selection & Accessories

Order Code (No ATEX)	Order Code (+ ATEX)
33.21.326	57.21.326.EX

Order Code	Description
33.006	Mounting strap for Ø 8 - 100 mm cylinders

ATEX

As well as standard sensing devices which are intrinsically safe, we offer ATEX fully certified, CE-marked pneumatic sensing products that comply with the ATEX directives for use within category M2 and group II, zones 1 and 21. See product selection.

ATEX sensing products (57.21.326.EX) conform to the following standards:

Standard	Classification	Issued
EN ISO 80079-36	Ex II 2G Ex h IIC T4 Gb (0°C ≤ Ta ≤ +60°C)	2016
EN ISO 80079-37	Ex II 2D Ex h IIIC T80°C Db (0°C ≤ Ta ≤ +60°C)	
	Ex I M2 Ex h I Mb (0°C < Ta < 60°C)	

Our declaration of conformity can be downloaded from <https://www.impulseautomation.co.uk/downloads>

Warning: ATEX products should never be used in Zone 0 or Zone 20, as defined in IEC 60079-10-1:2015 and IEC 60079-10-2:2015.

The system builder is responsible for ensuring that the final system meets any hazardous zone, EX or ATEX requirements.

Disclaimer

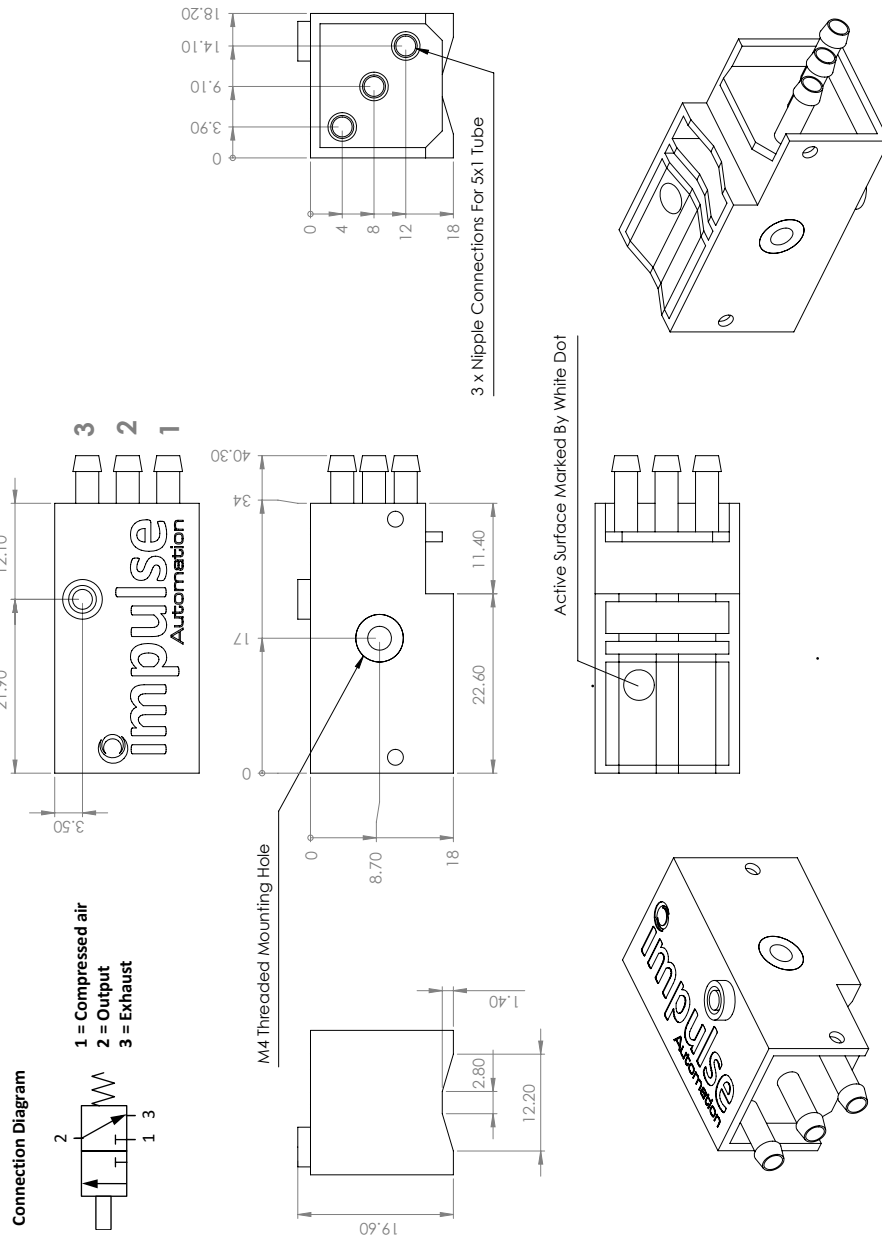
Impulse Automation Limited accepts no responsibility for the application of this product.

email: sales@impulseautomation.co.uk
website: www.impulseautomation.co.uk

Instructions

Pneumatic Proximity Switch

+ ATEX Model



The information shown within these pages is for guidance purposes only. No liability is accepted for errors or omissions. The designer or user is solely responsible for safety and correctly using the parts, assemblies or equipment described. Please always refer to our website for latest updated instruction information. This instruction manual is not available in other languages