

“Welcome to the K Controls e-training course designed to deliver useful “Pneumatic Valve Actuation” application information in small instalments.”

To unsubscribe or to register a colleague to receive these documents [Click here](#)

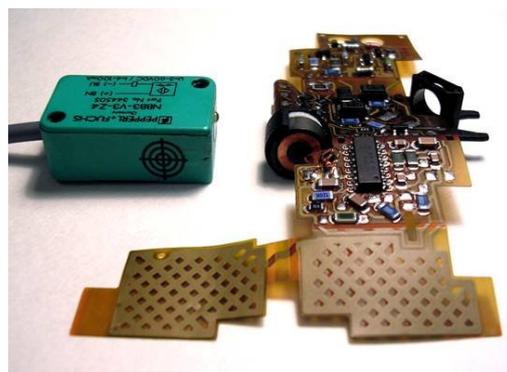
## An introduction to the different switch types used for valve monitoring

Clients will have certain preferences when selecting a switch type for actuator monitoring. Here are some definitions:

**A mechanical micro switch** relies on contact from a switch cam for operation, there are moving contacts within the switch and ingress protection is provided by the switchbox enclosure. (This switch costs less than a reed or solid state proximity switch). The contact options are defined as S.P.S.T (Single pole, single throw – two wires per switch), S.P.D.T (Single pole, double throw – three wires per switch although sometimes the switch is used with just two wires and functions like a S.P.S.T switch) or D.P.D.T (in effect this is two S.P.D.T sets of contacts in a single switch – four or six wires per switch).

**A reed switch** is sometimes referred to as a proximity switch but it is important to distinguish between a reed switch and a solid state proximity switch. A reed switch operates when a target magnet comes in close proximity to the switch, there are moving contacts within the switch but they are sealed from the environment by both the switchbox enclosure and the switch itself. (This switch costs more than a mechanical switch but less than a solid state proximity switch). Like a mechanical switch the contacts in a reed switch are defined as S.P.S.T (Single pole, single throw) or S.P.D.T (Single pole, double throw).

**A solid state proximity switch** is more complex and operates when a metal target comes in close proximity to the switch, there are no moving contacts within the switch and the solid state electronic components are sealed from the environment by both the switchbox enclosure and the switch itself. (Costs more than a mechanical or reed switch). There are two or three wire versions designed to switch a variety of currents and voltages.



The photograph above shows from left to right: 1) A “two wire” 5 -60 VDC solid state proximity switch for safe area use. 2) The internals of such a switch showing the electronic components laid out on a flexible backing that is folded together prior to encapsulation. 3) The internals of a 007 Switchbox designed for use in intrinsically safe systems. As electronic components can store or induce energy the component count is kept to a minimum in intrinsically safe proximity sensors.



# E-training

**K Controls designs and manufactures valve networking monitoring and control products:**

**Switchboxes**

**Control Monitors**

**Position Transmitters**

Corrosion resistant

ATEX certified – gas + dust

High and low temperatures

IP68 for submersion

Low powered solenoids

Remote I/O compatible

AS-interface®

DeviceNet™

PROFIBUS® PA

FOUNDATION™ FIELDBUS

4-20mA + HART®

Wireless solutions

Linear or rotary adaptation

K Controls can also supply your positioner requirements

If you have any questions or comments, would like a colleague to receive this information or you would like the latest list of training documents, please use the contact details below:

**K Controls Ltd**

2 Crown Way  
Crown Business Centre  
Horton Road  
West Drayton UB7 8HZ  
United Kingdom

Phone:  
+44 (0)1895 449601

Fax:  
+44 (0)207 990 8111

E-mail:  
sales@k-controls.co.uk

Web:  
www.k-controls.co.uk

Blog:  
www.k-controls.info

Visit us:  
View a map

As a result of the lower component count the switching is carried out in a remote safety barrier situated in the safe area. Intrinsically safe proximity sensors (also known as “Namur” sensors) should not be selected for use in a safe area because without an associated safety barrier they will not switch any current. Note that we refer to an intrinsically safe version as a “proximity sensor” and an AC or DC version for safe area use as a “proximity switch”.

Each application should be individually assessed. Please contact K Controls.

Three further documents are available that deal with mechanical, reed and inductive proximity switches in detail.

**Trademarks** K Controls has used all reasonable resources and efforts to indicate and supply information regarding trademarks used in this document. The absence of a trademark identifier is not a representation that a particular word or technology is not a trademark. All trademarks are property of their respective owners. If we have failed to properly show a trademark, please e-mail us and we will attempt to correct it. The ownership of all trademarks referred to in this document is acknowledged.

**Legal Disclaimer** This document is written by K Controls for use by its clients. Although we make every reasonable attempt to verify the accuracy of the technical information and advice provided, we can take no responsibility for loss or damage resulting from its interpretation or application. K Controls is not in any way responsible, and has no legal liability, in respect of the contents of any other web site accessed via this document, nor for information provided via that site. All information accessed via links in this document is protected by international copyright laws and may not be reproduced in any form without the explicit written permission of the author. This E-mail and any files transmitted with it are confidential and may be legally privileged. It is intended solely for clients of K Controls Ltd. Any unauthorized recipient should advise K Controls immediately of the error.

**Copyright K Controls Ltd 2010 - All rights reserved.**