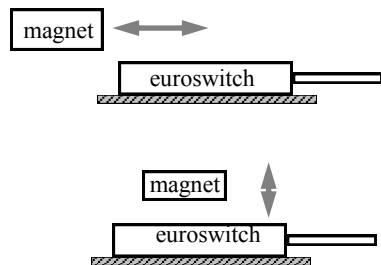


OPERATING PRINCIPLES

Switch Actuation euroswitch is actuated by the introduction of a magnetic actuator into the sensing envelope of the proximity switch. The switch on, or the point at which the actuator causes the switch to operate, is given in mm and is often quoted as the Sensing range of the switch (sn). Once the switch has operated it will remain in that state until the actuator is withdrawn, the actuator will need to be withdrawn by a greater distance to enable the switch to reset to its unoperated state, the difference between the switch on and switch off points is known as the switch hysteresis.

The sensing ranges referred to for individual switches and magnetic actuators is given in ideal conditions, these distances can vary due to several outside influences. It is first of all recommended that care is taken to ensure that both the switch and the actuator are in line and that their magnetic centres are opposite each other, also that both the switch and actuator are mounted away from ferro magnetic materials which could reduce the sensing range of the switch. If it is not possible to keep away from ferro magnetic materials euroswitch offers a range of spacers in either Brass or 316 Stainless Steel to help reduce this effect.

Installation Rectangular types

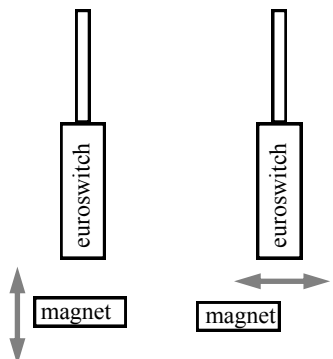


The actuator can approach the switch in two planes.

PARALLEL where the magnet slides across the face of the switch whilst keeping parallel to the switch until the point is reached where the switch operates, if the travel is maintained after the switch on point, a second switch on point will be reached. This sequence of events will repeat in reverse if the magnet is now reversed.

PERPENDICULAR where the magnet approaches the switch in a perpendicular direction with the magnetic centres in line with each other. This is the method of approach on which the sensing ranges of individual switches and magnets have been determined.

Installation Cylindrical types



The actuator can approach the switch in two planes.

PARALLEL where the magnet slides across the face of the switch whilst keeping parallel to the switch until the point is reached where the switch operates. When the magnet passes, the Switch will reset to its off state.

PERPENDICULAR where the magnet approaches the switch in a perpendicular direction with the magnetic centres in line with each other. This is the method of approach on which the sensing ranges of individual switches and magnets have been determined.

TESTING IN HAZARDOUS AREAS MUST BE CARRIED OUT TO SITE REGULATIONS

Longvale Ltd (sales@longvale.co.uk)

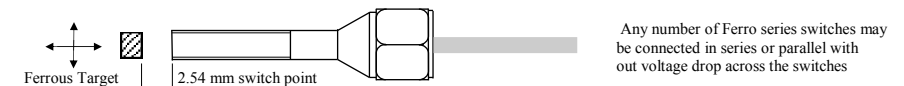
EXDA01PUB 12/11/18

OPERATING PRINCIPLES FERRO ACTUATED

Ferro Sensors Change their output state when a piece of ferrous material such as Mild Steel or series 400 Stainless Steel is introduced into the sensing area of the switch (standard sensing range is 2.5mm) this sensing range can be increased by the use of an external magnetic actuator. The 2.5mm range may be affected by the close proximity of ferrous metals, avoid mounting close to ferrous materials. For maximum sensing range ensure sufficient target mass is introduced into the sensing envelope without touching the end of the sensor.

Hysteresis is the difference between switch on and switch off points, it is the distance the target must move away from the switch on point before the switch goes to the off state.

Series and parallel operation, any number of the FS series of switches may be wired either in series or in parallel without any current drain or voltage drop across their contacts.



NOTE : For SIL to be valid BOTH N/O & N/C contacts must be monitored
Refer to SIL Safety Manual LV-065 for guidance

SPECIAL CONDITIONS FOR SAFE USE

INTEGRAL CABLE TYPES

Where no conduit connection facilities are provided the integral non armoured cable must be suitably terminated and protected from pulling, twisting and mechanical damage.

The female threads are not to be considered as a flamepath and any interface with a flameproof box will require additional separation.

Euroswitches with integral cable are double insulated and do not require an earth.

When used in a dust atmosphere additional sealing should be considered in the threaded entries (e.g. washer, grease, gasket). Regular cleaning should also be carried out to prevent the build up of dust layers.

External earthing is via the mounting or entry thread.

WIREABLE TYPES

The lid of the enclosure must be fully tightened down to maintain both IP rating and explosion protection, the allen screw must be further tightened to prevent the lid from being un-screwed.

When used in a dust atmosphere the separately certified cable gland arrangement shall maintain the IP6X rating of the enclosure.

An internal earth connection point is provided on the wireable types.

The flameproof gap of the rotating terminal head (suffix WLR) is smaller than the maximum permitted by Table 2 of IEC 60079-1 please consult the manufacturer for detail if required.

External earthing is via the mounting or entry threads.

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e-mail:- sales@longvale.co.uk

EUROSWITCH / FERRO SWITCH ATEX / IECE_x CERTIFIED

Exdb IIC T* T₆ = Tamb -20°C to +70°C or -60°C to +70°C T₄ = Tamb -60°C to +120°C

Wireable :- Baseefa14ATEX0119X

IECE_x BAS 14.0056X

Hard Wired :- Baseefa14ATEX0256X

IECE_x BAS 14.0121X

ATEX / IECE_x certified Exd switches are manufactured to:-

EN 60079-0 : 2012 + A11 : 2013 EN 60079-1 : 2014 EN 60079-31 : 2014

Standard Switch types :- (Add -D for DPDT types)

ES-1ZYX, ES-1ZYX-B, ES-2ZYX, ES-3ZYX, ES-3ZYX-B, ES-4Z2X, ES-5Z2X, ES-5Z2X-B, ES-6Z2X, ES-6Z2X

Wireable Switch types :- (Add -D for DPDT types)

ES-3Z2X-W, ES-3Z2X-B-W, ES-4Z2X-W, ES-5Z2X-W, ES-5Z2X-B-W, ES-3Z2X-WL, ES-3Z2X-B-WL, ES-4Z2X-WL, ES-5Z2X-WL, ES-5Z2X-B-WL, ES-3Z2X-WLR, ES-3Z2X-B-WLR, ES-4Z2X-WLR

ES-5Z2X-WLR, ES-5Z2X-B-WLR

Latching Switch types :-

ES-1ZXX-F, HLS-25d, HLS-210d

Ferro Switch types :- (Add -D for DPDT types)

FS-AZ2X, FS-BZ2X, FS-CZ2X, FS-DZ2X, FS-EZ2X, FS-FZ2X, FS-HZ2X, FS-KZXX, FS-LZ2X, FS-MZ2X, FS-NZ2X, FS-0X2X

Ferro Switch Wireable type :- (Add -D for DPDT types)

FS-AZ2X-W, FS-AZ2X-WL, FA-AZ2X-WLR, FS-BZ2X-WL, FS-BZ2X-WLR, FS-CZ2X-W, FS-CZ2X-WL, FS-CZ2X-WLR, FS-DZ2X-W, FS-DZ2X-WL, FS-DZ2X-WLR, FS-EZ2X-W, FS-EZ2X-WL, FS-EZ2X-WLR, FS-FZ2X-W, FS-FZ2X-WL, FS-FZ2X-WLR

Where Z = 0 for ATEX Z = 3 for IECE_x/ATEX Z = A/B/C/D for Dual marked

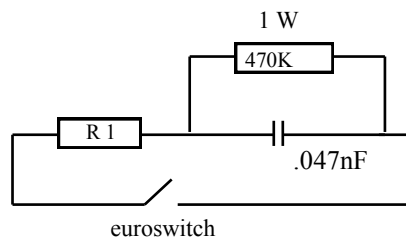
Where Y = 1 for Brass (Nickel plated ES3000) Y = 2 for Stainless Steel

Where X = 1 for PVC Cable (L, leads) X = 2 for Polyrad Cable

Cat 4 Safety Switch type :- ES-SSZ21.

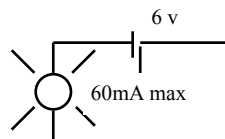
Surge Protection Capacitive loads (in extremely long cable runs) and Lamp loads are prone to high inrush currents which can greatly reduce the life of the switch contacts on closure. The addition of a surge suppression circuit in series with the switch and as close as possible to the switch will alleviate this problem.

For normal signal circuits the capacitance in the cable can be ignored as several thousands of metres of cable will need to be connected to the switch before damage may be caused. The circuit on the right is a typical circuit for 230v AC, please consult the factory if in doubt with your full application, we will undertake the calculations for you.



R1 switching <16W=1KR
switching >16W= 470KR

Testing



DO NOT USE A "MEGGER" OR BELL TEST SET USE A SIMPLE LAMP TESTER AS SHOWN OR AN OHM METER OTHERWISE DAMAGE TO THE SWITCH MAY OCCUR

Testing MUST be carried out to site regulations do NOT use above method in hazardous areas

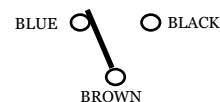
EUROSWITCH ATEX/ IECE_x Certified Exdb IIC T₄ (T₆) Gb, Extb IIIC T135°C (T85°C) Db

ELECTRICAL CONNECTIONS

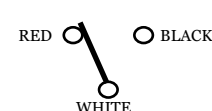
Euroswitch cable type and connections all switches

Electrical Ratings Max			
24vdc	110v ac	230vAC	
60W	2.5A	540mA	250mA
20W	830mA	180mA	N/A

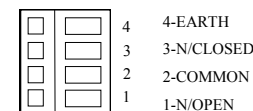
P.V.C 3 core cable



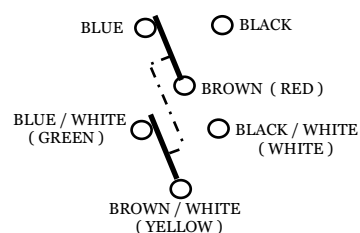
Polyrad 3 core cable



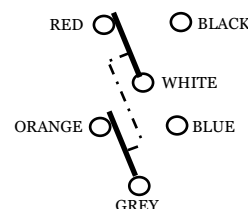
Wireable version



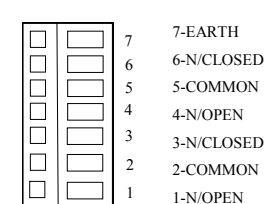
P.V.C. 6 core cable.



Polyrad 6 core cable

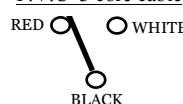


Wireable version

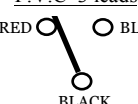


Ferro switch cable type and connections all switches

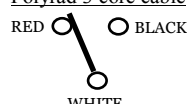
P.V.C 3 core cable



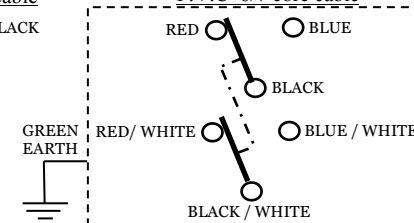
P.V.C 3 leads



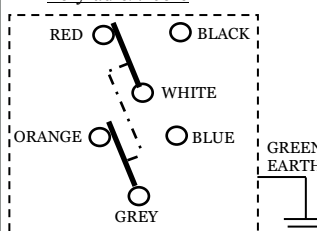
Polyrad 3 core cable



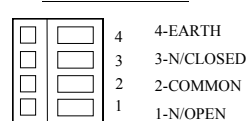
P.V.C 6/7 core cable



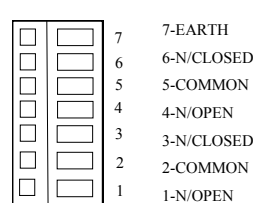
Polyrad 6/7 core



Wireable version

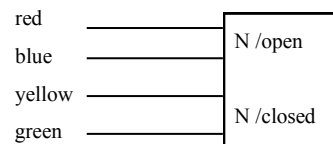


Wireable version



Electrical Ratings Max. 24vdc 3A, 110v AC 4A, 240v AC 2A

Category 4 Safety switch cable types and connections



Operating Temperatures and IP Ratings

PVC cables and leads -20°C to +70°C

Polyrad cable -60°C to +120°C

Ingress protection IP66, IP67, IP68