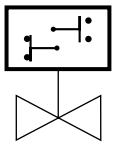
ASCO™ Signaling Box all Stainless Steel

With intrinsically safe pilot & NAMUR inductive contacts

Series K890

General Description

The K890 series signal box has a compact and robust design for single acting linear actuators. This series provides piloting and valve positions feedback while maintaining plant efficiency and safety in any process. A visual indicator provides a clear indication of valve position. It is designed for use in harsh environments in the chemical, pharmaceutical and food industries.



Features and Benefits

- Hygienic exterior shape is easy to clean, with no retention zone or label
- Suitable for harsh environments
- Laser marked actuator to retain important specifications and identifications over time and in harsh environments
- Exhaust air can be easily collected to minimize environmental impact
- Signaling box 890 series are Intrinsically Safe apparatus and can be located in Hazardous Locations or Class I, Division 1, Groups A, B, C, D, and Class II, Division 1, Groups E, F, G, Temperature Code T4 Hazardous Locations; UL certificate Number: E532033
- The adaptation kit allows quick mounting on most of hygienic valves
- SIL2 Capable
- Signaling Box can be mounted in any position

General

Ambient temperature range	-10°C (14°F) up to +40°C (+140°F)
Pilot pressure	Air or inert gas, filtered at 50µm, Dew point: -20°C, 0-8 bar (0-116 psi)
Degree of protection	IP66 (EN 60529) , NEMA rating: Type 4X
Vibration	Max. 1 g (EN 60068-2-6)
Cable gland entry	1/2" NPT
Grip, cross section stranded wire	Minimum 0.14 mm^2 (25 AWG) Maximum 2.5 mm^2 (14 AWG) Wire strip length 5 mm (0.2 in)

Construction

Body	Stainless steel 316L
Cover	Stainless steel 316L
Visual indicator	Stainless steel 316L
Valve adaptor	Stainless steel 316L
Seals	EPDM
Filter	Stainless steel 316L

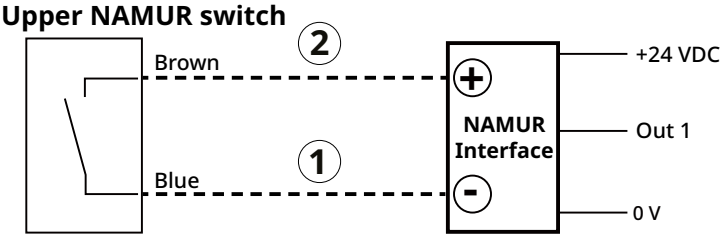
Depending on type of circuit and maximum ambient temperature (Ta), the temperature classification for gas (Ga/Gb) and Dust (Da) of the complete equipment is shown in the table below:

Ga / Gb		
Ta	**3021 Pilot + Intrinsically Safe Sensor**	**Intrinsically Safe Sensor without 3021 Pilot**
40°C	T4	T6...T1

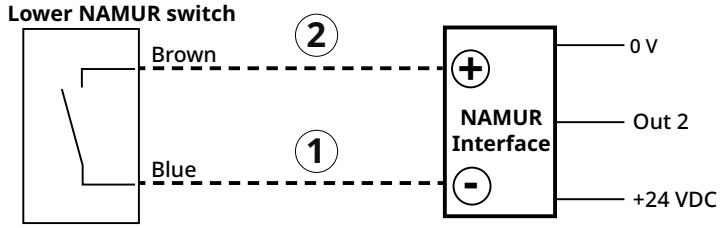
Da		
Ta	**3021 Pilot + Intrinsically Safe Sensor**	**Intrinsically Safe Sensor without 3021 Pilot**
40°C	T135°C	T135°C

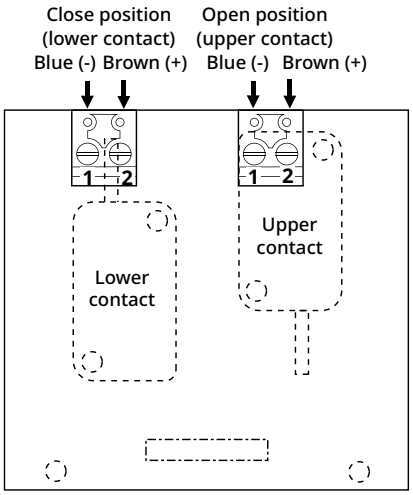
Installation

Upper NAMUR switch



Lower NAMUR switch





Electrical characteristics

2 NAMUR intrinsic safety contacts

Contact type	Ex ia Namur Inductive contacts: Pepperl and Fuchs NJ2-V3-N

Designed to be installed in potentially explosive atmospheres
Class I, Division 1, Groups A, B, C, D
Class II, Division 1 Groups E, F, G, Temperature Code T6...T1 Hazardous locations
UL certificate Number: E501628

Characteristics

Nominal voltage	8.2 V (Ri approx. 1 kΩ)
Hysteresis	0.01 ... 0.1 mm
Suitable for 2/1 technology	Yes, reverse polarity protection diode nor required
Current consumtion	Measuring plate not detected ≥ 3 mA
	Measuring plate detecte ≤ 1 mA
Electrical connection	2 terminal block with 2 positions

Recommended interfaces:
Galvanic separator:
- Pepperl & Fuchs Ref. KFA6-SR2-EX1.W
- MTL instruments Ref. MTL5511

ZENER barrier:
- MTL instruments Ref. MTL7742

Check that the interfaces used is adapted to the specified temperature and is compatible with the application.

Electrical Connection
- Terminal Strip grip 2.5 mm².
- Connection Method: Plug-in type.

Functional Parameters:
- Power supply: 8.2 V DC (Ri approximate 1 kΩ)
- Switching frequency: 1000 Hz max.
- Current consumption: Not activated: ≥3 mA, Activated: ≤ 1 mA

Safety parameters of compatible interfaces (galvanic separators or ZENER barriers)

Type 1	Type 2	Type 3	Type 4
U_1 = 16 V	U_1 = 16 V	U_1 = 16 V	U_1 = 16 V
I_1 = 25 mA	I_1 = 25 mA	I_1 = 52 mA	I_1 = 76 mA
P_1 = 34 mW	P_1 = 64 mW	P_1 = 169 mW	P_1 = 242 mW
C_1 = 34 mF	C_1 = 34 mF	C_1 = 34 mF	C_1 = 34 mF
L_1 = 50 µH	L_1 = 50 µH	L_1 = 50 µH	L_1 = 50 µH

Compact pilot valve

Pilot type: Solenoid valve, type 3021, is Intrinsically Safe component located in Hazardous locations or Class I, Division 1, Groups A, B, C, D, T4 Hazardous Locations
(UL Certificate Number: E541033)

Characteristics:

DC coils(=)

type (series) 3021

Nominal supply voltage Umax. = 28V

Max. current consumption Imax. = 70mA(12V) or 40mA(24V)

Max. dissipated power Pmax. = 1.6W

Insulation class F(155°C) 100% E.D.

U_1	I_1	P_1	L_1	C_1
(V)	(mA)	(W)	(mH)	(µF)
Interface type 1 (version 12 V or 24 V) - group IIC				
28	120	1.6	0	0
Interface type 2 (version 12 V or 24 V) - group IIC				
26	150	1.6	0	0

The solenoid valve type 3021 must be supplied with power from an IS barrier certified for use in potentially explosive atmospheres in Class 1 Division system and having an output circuit that is rated intrinsically safe. The valve and the IS barrier combination must be compatible in terms of intrinsic safety.

To avoid electrostatic charging of the enclosure, the solenoid valve type 3021 must be protected from external air currents and friction when used in Class 1 Division System. The IS barrier for the equipment must have the following maximum characteristics as described in Table 1.

Since the two parameters Ci and Li of the equipment are both equal to zero, the maximum output characteristics Co and Lo of the IS barrier must exceed the effective values of C and L of the connecting cable used.

Selecting the IS barrier and making the interconnections are at the user's responsibility.

Maximum allowable ambient temperatures for 3021 Pilot – see Table

Maximun Surface Temperature	Maximum Ambient Temperature	
	Version 12 V	Version 24 V
+ 135°C	+ 60°C	+ 60°C

Certifications and Approvals

- RoHS compliance
- SIL2 Capable - IEC 61508 :2010
- UL C1, Div.1

Compatibles barriers

The 12 V DC and 24 V DC solenoid valves are compatible with the barriers listed in the tables.
Located in safe areas, these barriers allow to feed the intrinsically safe solenoid valves located in explosive areas.

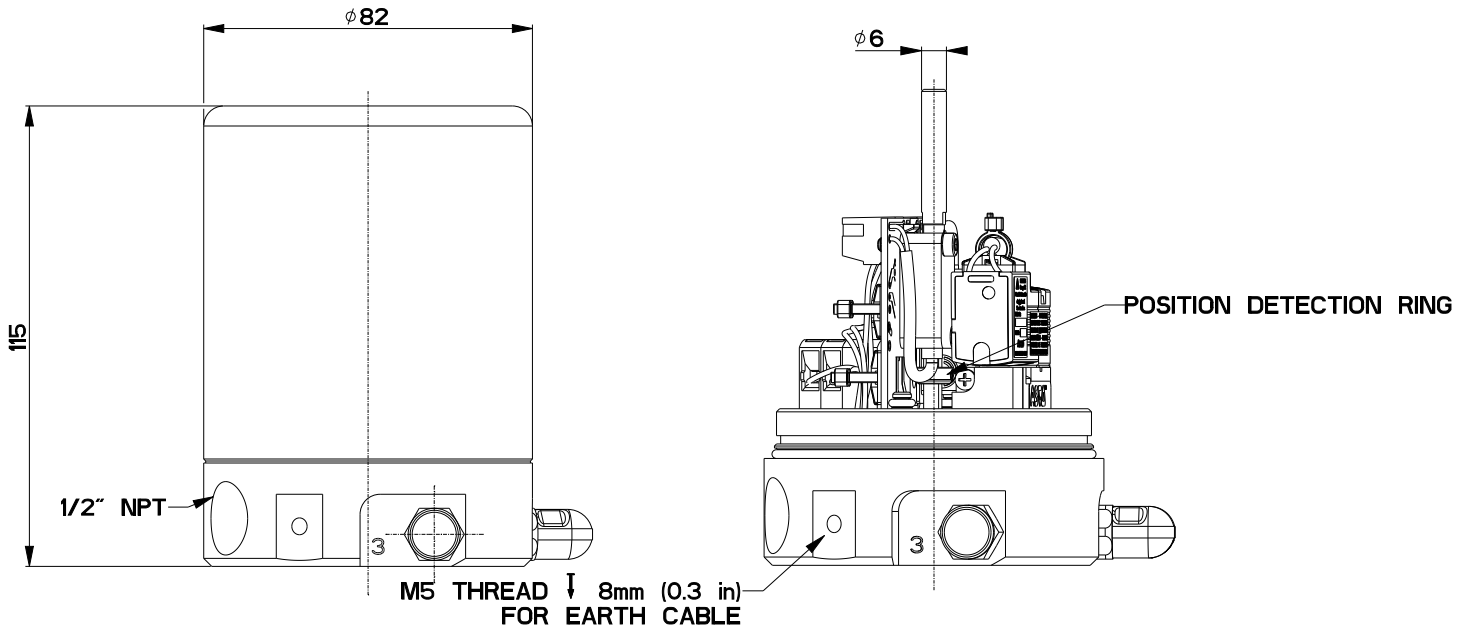
0.5 W			
ASCO™ pilot (3021)			
Suppliers	**Barrier reference**	**12 V with LED**	**24 V with LED**
MTL	MTL4521	X	X
	MTL5521	X	X
	MTL4521L	X	X
	MTL5522	X	X
	MTL4523	X	X
	MTL5523	X	X
	MTL4523L	X	X
	MTL4523R	X	X
	MTL4523V	X	X
	MTL5523V	X	X
	MTL4524	X	X
	MTL5524	X	X
	MTL4524S	X	X
	MTL4525	X	
	MTL5525	X	
	MTL5521T	X	X
	MTL4523VL	X	X
	MTL5523VL	X	X
	MTL5523	X	X
Pepperl + Fuchs	KCD0-SD3-Ex1.1045	X	X
	KCD0-SD3-Ex1.1245	X	X
	KCD0-SD-EX1.1245	X	X
	KCD2-SLD-EX1.1045	X	X
	KCD2-SLD-EX1.1065	X	
	KCD2-SLD-EX1.1245	X	X
	KFD0-SD2-EX1.10100	X	
	KFD0-SD2-EX1.1045	X	
	KFD0-SD2-EX1.1065	X	
	KFD0-SD2-EX1.1180	X	X
	KFD0-SD2-EX2.1045	X	
	KFD0-SD2-EX2.1245	X	X
	KFD2-SL2-EX1	X	X
	KFD2-SL2-EX1.B	X	X
	KFD2-SL2-EX1.LK	X	X
	KFD2-SL2-EX2	X	X
	KFD2-SL2-EX2.B	X	X
	KCD0-SD3-Ex1.1245.SP	X	X
	KCD0-SD-Ex1.1245.SP	X	X
	KFD2-SL2-Ex1.LK-Y1	X	X
	HiC2871	X	X
	HIC2871A	X	X
	HIC2873	X	X
	HIC2877	X	
	HIC2883	X	X
	HID2872	X	X
	HID2876	X	
	LB-2103 AR/ER	X	
	LB-2112 AR/ER	X	X
	FB-2203	X	
	FB-2212	X	X
	FB-2216	X	X
	FB2217	X	
	FB6216	X	X
	FB6217	X	

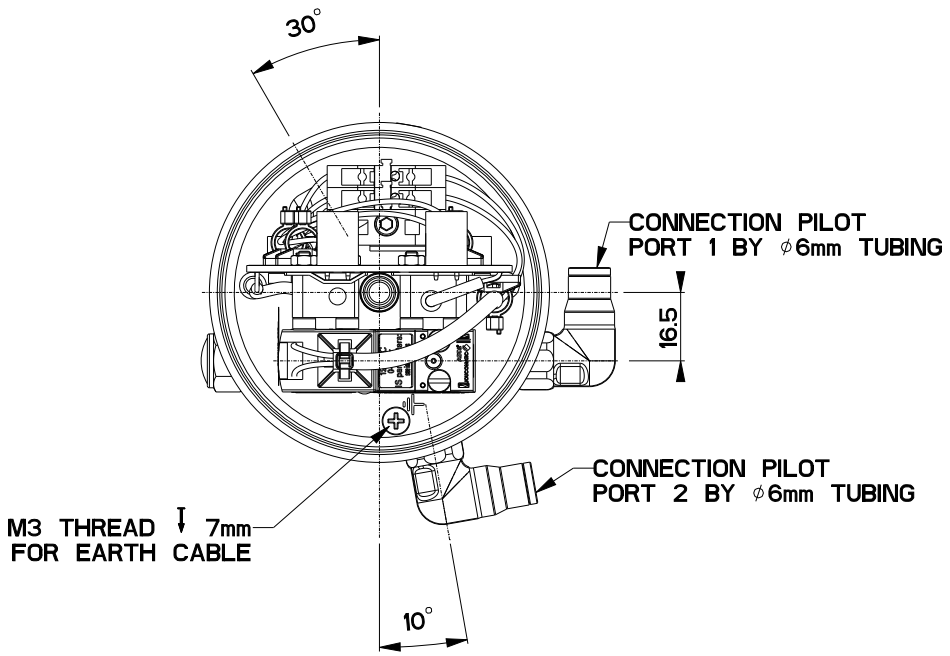
Not compatible

For other compatible barriers and interfaces, please ask our product support.

In accordance with the zone classification and the national legislation of each country, apply the certification procedures for the connection of IS-rated products with associated equipment.
All information subject to change without notice. All responsibility for the use of products from other suppliers and the possible modifications of their characteristics is disclaimed.

Dimensions: mm (inches)





ASCO™ Signaling Box all Stainless Steel

With intrinsically safe pilot & NAMUR inductive contacts

Series K890

How To Order

PRODUCT CODE

K	890	A	T	H	H	1	X	9NM	F3

Piloting Connection Type
K = Quick Fit

Product Series
890 = Signaling Units and Digital Positioner for Air Operated Valves

Revision
A = First Release

Product Type
T = Signaling Box

Sensor type - Enclosure type
H = Inductive switch Ex ia Namur
J = No Sensor

Pilot Type
0 = No pilot
H = 3021 UA High Flow Pilot (UL)

Communication Features - Electrical Connection Type
1 = No Communication - No Cable Gland

Valve Type : Specific Adapter
X = Other Valve
1 = 290/390 NC - Stainless Steel Act. 50/63
4 = 290/390 NC - Stainless Steel Act. 90

Piloting Voltage
00 = No pilot
F1 = 24V DC (Class F)
F3 = 12V DC (Class F)

Options
9NM = UL Class I & II Div 1 Certification (US) (Canada) + ASCO 290 Adapters
X91 = UL Class I & II Div 1 Certification (US) (Canada) + Sisto Adapters for DN10 & DN15
X92 = UL Class I & II Div 1 Certification (US) (Canada) + Sisto Adapters DN25
X93 = UL Class I & II Div 1 Certification (US) (Canada) + Sisto Adapters DN 40 & DN50
X94 = UL Class I & II Div 1 Certification (US) (Canada) + Sanders Adapter DN15 to DN50