Neles Easyflow™ limit switches
Series K

The Neles Easyflow K-series features versatile range of limit switches for quarter turn actuators and valve assemblies. With the K-series limit switches our customers receive reliable information of the limits of desired rotary travel set by the customer. Limit switch shaft is coupled directly to the actuator shaft with NAMUR (VDI/VDE 3845) adaptation. Actuator movement is transferred via the unit shaft to preset cams that actuate either inductive or mechanical switch elements. The switches are prewired to terminal strips for easy connection to an external monitoring system.



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Benefits

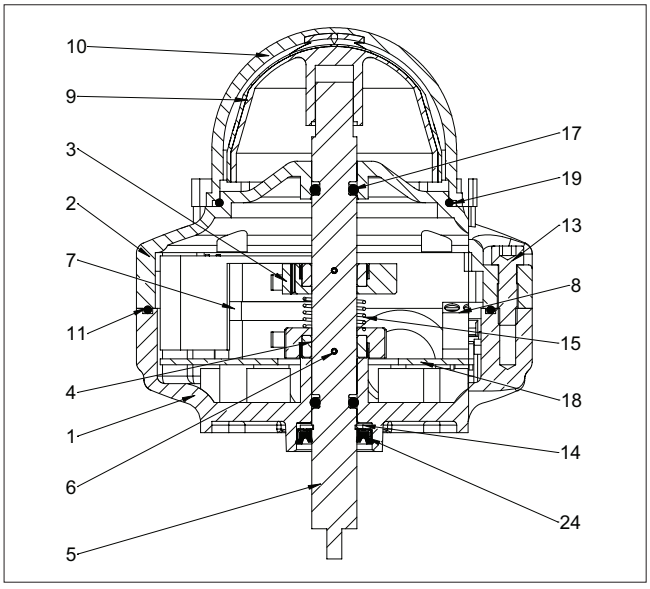
- The versatile K-series limit switches can be mounted on top of virtually any rotary actuator
- VDI/VDE 3845 mounting face
- K-series limit switch is very cost competitive solution for sensing the limits of rotary travel
- Its compact size makes it easy to fit even to tight spaces
- K-series limit switches are suitable even for the most harsh weather conditions with three different housing material options and IP67 ingress protection class as standard
- Switch elements can be chosen between mechanical, inductive and reed type switches
- SOV termination provided inside the limit switch box (with D, E, F, H, R and V switch elements)

Features

- Two product series
  - KS = K-series, standard housing
  - KC = K-series compact housing
- KC = K-series compact housing
  - Epoxy powder coated, low copper die cast aluminum (LM6)
  - Stainless steel (CF8M, equivalent to AISI316)
  - Polycarbonate (only for KC-series)
- Cable entry options
  - M20x1,5
  - ½”NPT
  - 3/4”NPT (KS only)
- Choice of 9 switch element variants
  - Inductive
  - Mechanical
  - Reed type
- Large visual indicator
  - Inside a shatter proof polycarbonate dome
- VDI/VDE 3845 mounting face with NAMUR shaft
- Three different temperature ranges
  - General: -20 °C to +80 °C
  - Cold: -40 °C to +80 °C
  - High: -20 °C to +100 °C
- KS-series with two or four cable entries and KC-series with three cable entries
  - M20x1.5, ½”NPT, or 3/4”NPT (Only with KS)
- Easily adjustable cams
- Cams color coded to ease up installation
- IP67 as standard
- Switch elements connected to terminals via PCB to ensure good short circuit protection

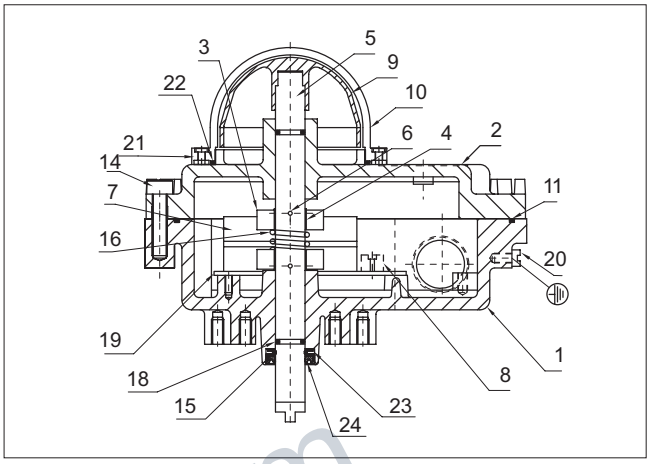
Assembly drawing and main parts

Series KC



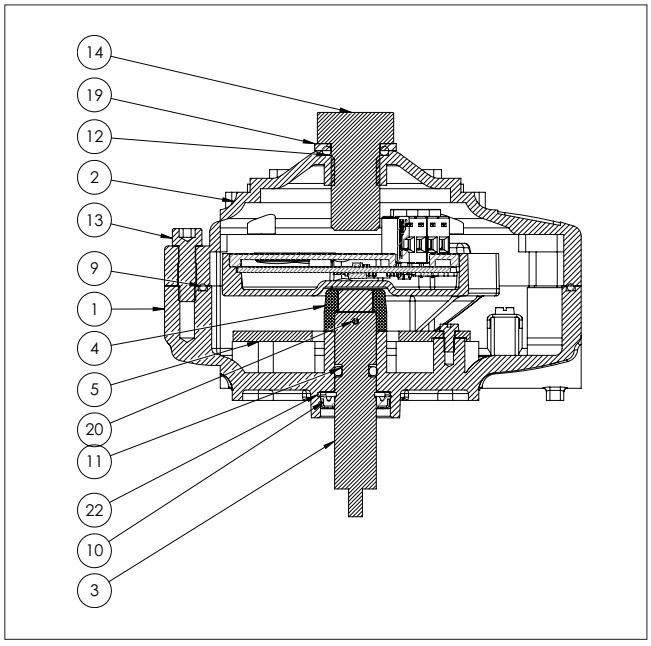
S.NO.	DESCRIPTION	QTY.
1	HOUSING	1
2	COVER	1
3	CAM	2
4	CAM-LOCK 2	2
5	SHAFT	1
6	SPRING DOWEL	2
7	SWITCH ELEMENTS	2
8	TERMINAL BLOCK	4
9	INDICATOR	1
10	INDICATOR COVER	1
11	GASKET	1
13	NON FALLING SCREW	4
14	'E' TYPE CIRCLIP	1
15	SPRING	1
17	O-RING	2
18	PRINTED CIRCUIT BOARD	1
19	O-RING	1
24	CUP SEAL	1

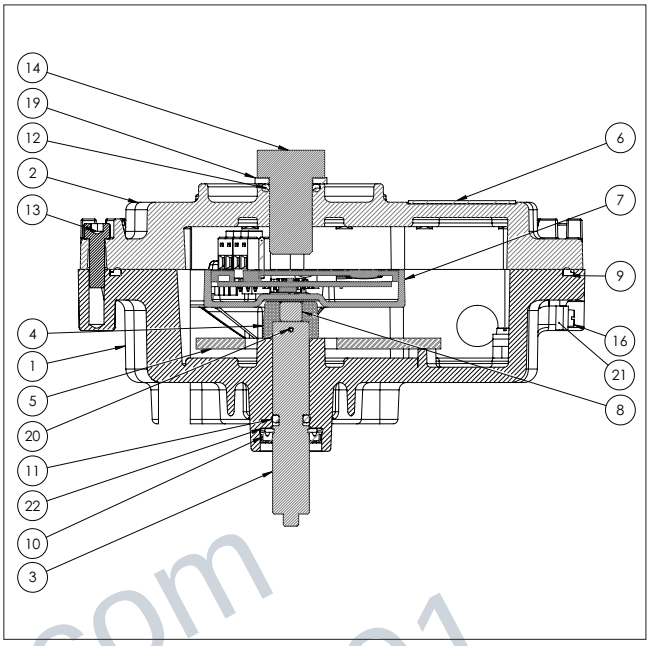
Series KS



S.NO.	DESCRIPTION	QTY.
1	HOUSING	1
2	COVER	1
3	CAM	2
4	CAM-LOCK	2
5	SHAFT	1
6	SPRING DOWEL	2
7	SWITCH ELEMENTS	2
8	CONNECTOR STRIP	1
9	INDICATOR	1
10	INDICATOR COVER	1
11	GASKET	1
14	NON FALLING SCREW	8
15	EXTERNAL CIRCLIP	1
16	SPRING	1
18	O-RING	2
19	PRINTED CIRCUIT BOARD	1
20	SCREW FOR EARTH CONN.	2
21	PHILIPS HEAD SCREW	4
22	O-RING	1
23	WASHER	1
24	CUP SEAL	1

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S.NO.	DESCRIPTION	QTY.
1	COVER	1
2	HOUSING	1
3	SHAFT	1
4	SHAFT BUSHING	1
5	MOUNTING PLATE	1
6	NAME PLATE	1
7	SENSOR	1
8	MAGNET	1
9	GASKET	1
10	WIPER SEAL	1
11	O-RING 7.59 x 2.62 C/S	1
12	O-RING 13.95 x 2.62 C/S	1
13	NON FALLING SCREW	4
14	HEXAGONAL BOLT	1
15	SCREW M3 x 16	2
16	SCREW M4 x 8	2
17	SCREW M3 x 8	3
18	ROUND HEAD SCREW	2
19	WASHER	1
20	SPRING PIN	1
21	CLAMP	2
22	RETAINER RING	1
23	PLUG	3

S.NO.	DESCRIPTION	QTY.
1	COVER	1
2	HOUSING	1
3	SHAFT	1
4	SHAFT BUSHING	1
5	MOUNTING PLATE	1
6	NAME PLATE	1
7	SENSOR	1
8	MAGNET	1
9	GASKET	1
10	WIPER SEAL	1
11	O-RING 7.59 x 2.62 C/S	1
12	O-RING 13.95 x 2.62 C/S	1
13	NON FALLING SCREW	8
14	HEXAGONAL BOLT	1
15	SCREW M3 x 16	2
16	SCREW M4 x 8	2
17	SCREW M3 x 8	3
18	ROUND HEAD SCREW	2
19	WASHER	1
20	SPRING PIN	1
21	CLAMP	2
22	RETAINER RING	1
23	PLUG	2

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Operation principle

The K-series limit switches include from two to four inductive, mechanical or reed type switch elements. They are activated by cams that are directly driven by the actuator shaft through the limit switch shaft. Cams are set by the customer to the desired rotary travel limits. The switch elements are prewired to terminal strip in the enclosure, permitting easy connection of switch output to external electrical monitoring system or indication devices.

K-series limit switches also include a visual indicator on top of the enclosure cover that indicates 90° rotary travel between open and closed valve position.

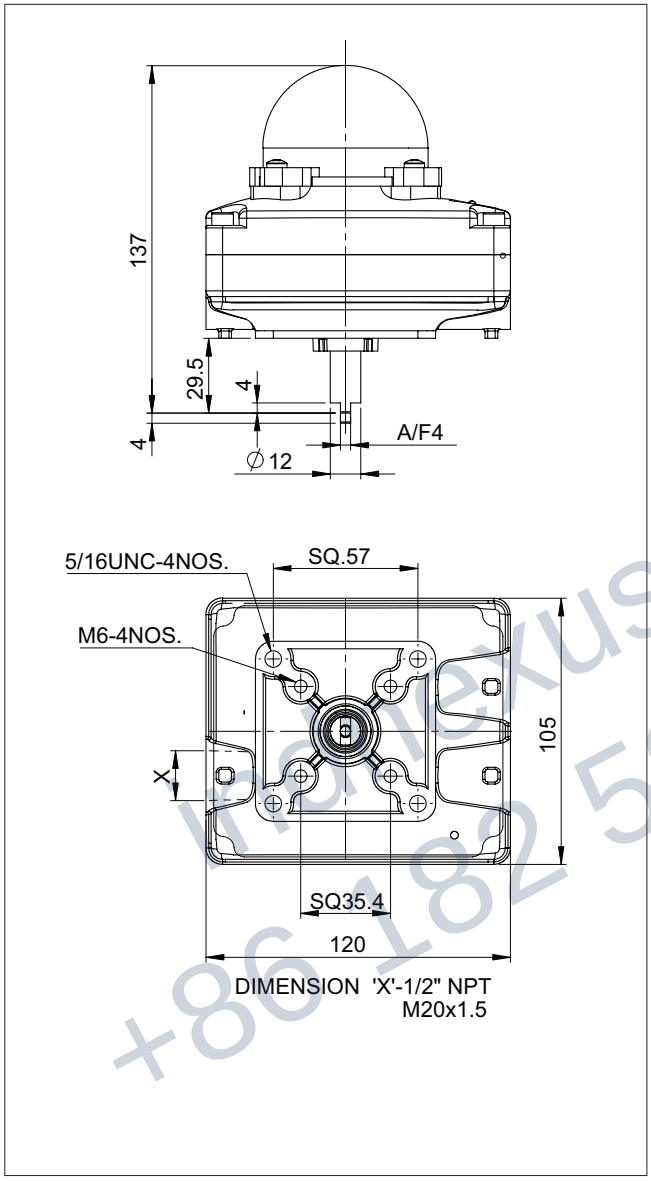
Technical specification

Ambient temperature:	
General:	-20 ... +80 °C / -4 ... +176 °F
Cold:	-40 ... +80 °C / -40 ... +176 °F
High:	-20 ... +100 °C / -4 ... +212 °F (Not applicable with polycarbonate body)
Protection class:	IP67
Body:	
KS series:	Epoxy powder coated, low copper die cast aluminum (LM6) / stainless steel (CF8M)
KC series:	Epoxy powder coated, low copper die cast aluminum (LM6) / stainless steel (CF8M) / polycarbonate (LEXAN 3412R)
Pointer cover:	Shatter proof polycarbonate (INFINO SC-1220UR)
Internal parts:	
Shaft:	AISI304 / AISI316 (SS body)
Cams:	ABS
PCB:	Grade FR4
Fasteners:	AISI304
Sealing:	Nitrile rubber (NBR) (General temp range) Fluoro Silicon (Cold temp range) Viton (High temp range)
Conduit entry:	
KS series:	2 x M20 or 2 x 1/2 NPT or 2 x 3/4 NPT 4 x M20 or 4 x 1/2 NPT or 4 x 3/4 NPT
KC series:	3 x M20 or 3 x 1/2 NPT
Weight:	
KS series:	Die cast aluminum 1.7 kg / 3.8 lbs, stainless steel 4.5 kg / 9.9 lbs
KC series:	Die cast aluminum 0.7 kg / 1.6 lbs, stainless steel 2.5 kg / 5.5 lbs, polycarbonate 0.6 kg / 1.3 lbs
Switches:	
A1:	Inductive proximity switch, P+F NJ2-12GM-N 2-wire type, Namur NC
Supply voltage:	nominal 8.2VDC (Ri = approx. 1 kOhm)
Output current:	
Active face free:	> 3 mA
Active face covered:	< 1 mA
Nominal sensing range:	2 mm
A3:	Inductive proximity switch, P+F NBN4-12GM40-Z0 2-wire type, NO
Supply voltage:	5 - 60 V DC Output current:
Operating current:	2 - 100 mA
Off-state current:	0 - 0,5 mA
Nominal sensing range:	4 mm
D1:	Inductive proximity switch, P+F NJ2-V3-N 2-wire type, Namur NC
Supply voltage:	nominal 8.2VDC (Ri = approx. 1 kOhm)
Output current:	
Active face free:	> 3 mA
Active face covered:	< 1 mA 4
Nominal sensing range:	2 mm
D2 :	Inductive proximity switch, P+F NBB3-V3-Z4 2-wire type, NO
Supply voltage:	5 - 60 V DC Output current:
Operating current:	4 - 100 mA
Off-state current:	0,4 - 0,55 mA
Nominal sensing range:	3 mm
F1:	Inductive proximity switch, P+F SJ3.5-N 2-wire type, Namur NC
Supply voltage:	nominal 8.2VDC (Ri = approx. 1 kOhm)
Output current:	
Active face free:	> 3 mA
Active face covered:	< 1 mA
Slot width:	3,5 mm
F2:	Inductive proximity switch, P+F SJ3.5-SN 2-wire type, Namur NC
Supply voltage:	nominal 8.2VDC (Ri = approx. 1 kOhm
Output current:	
Active face free:	> 3 mA
Active face covered:	< 1 mA
Slot width:	3,5 mm
R1:	Reed proximity switch, Neles R1
Supply voltage:	220 V AC/DC
Output current:	
Operating current:	2000 mA
Off-state current:	0 mA
V1:	Mechanical micro switch, Honeywell V15S05-CZ100A05-01, SPDT type
Electrical values:	5 A @ 125/250 VAC, 100 mA @ 48 VDC or 125/250 VAC
W1:	Mechanical micro switch, Honeywell V15S05-CZ100A05-01, DPDT type
Electrical values:	5 A @ 125/250 VAC, 100 mA @ 48 VDC or 125/250 VAC
V2:	Mechanical micro switch Honeywell V7-1C17E9-201 SPDT
Electrical values:	15 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA, 250 VDC (NO/ NC)
W2:	Mechanical micro switch Honeywell V7-1C17E9-201 DPDT 15 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA, 250 VDC (NO/ NC)

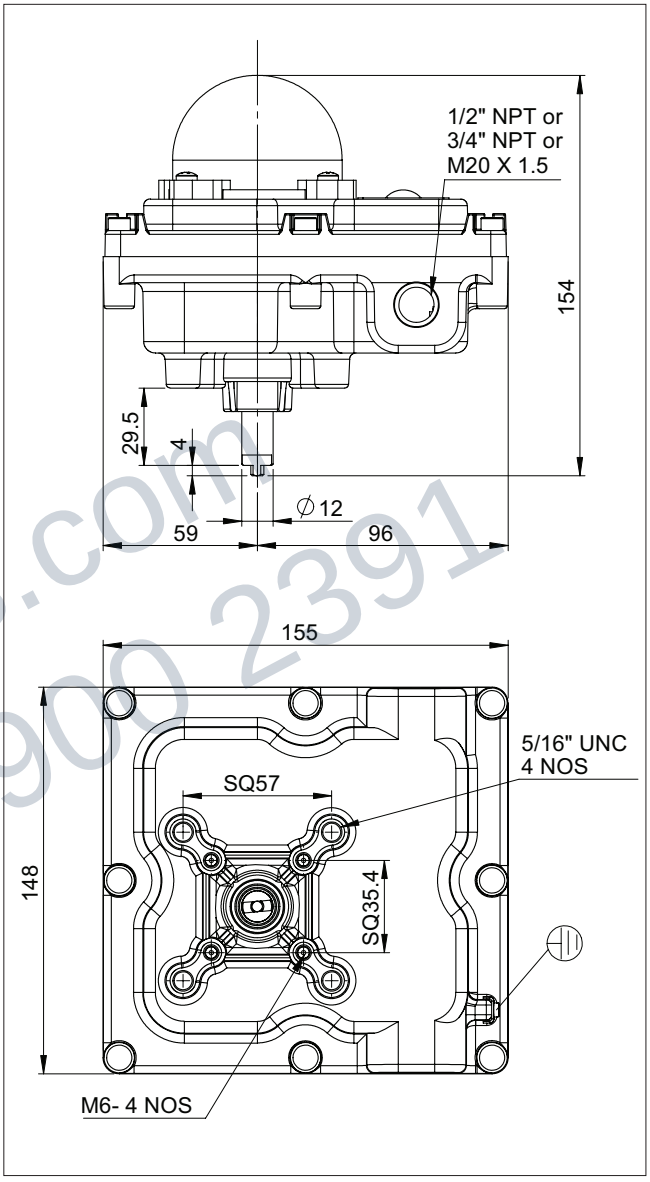
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Dimensional drawings, mm

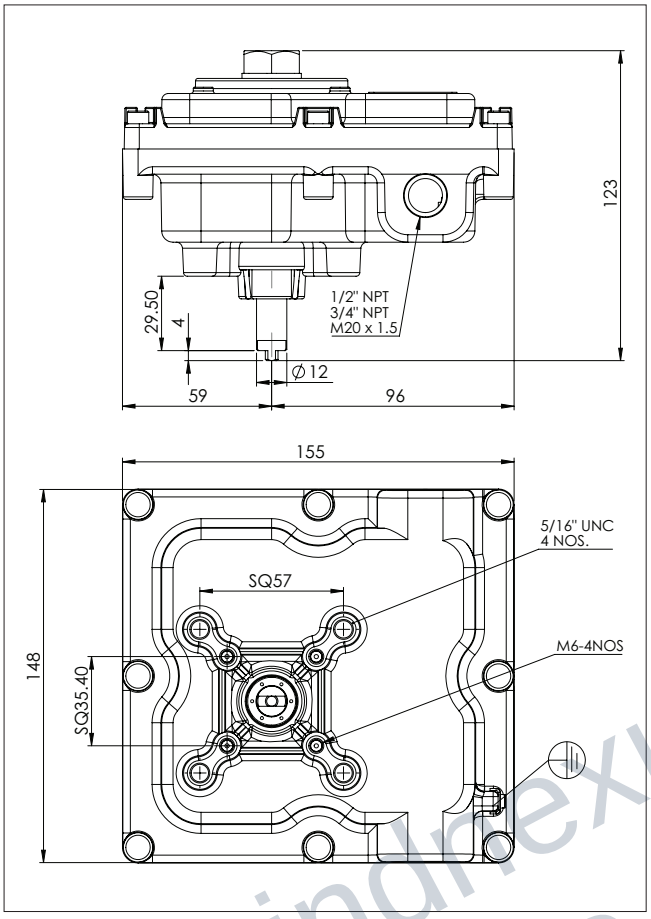
Series KC

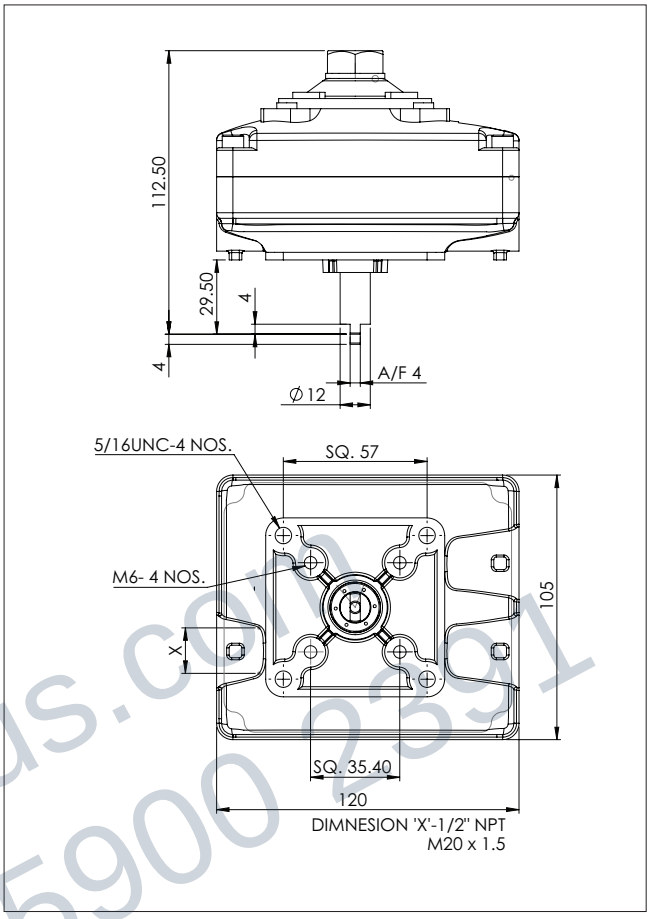


Series KS



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Neles Easyflow™ K-series limit switches type code

1. sign

	PRODUCT GROUP
KC	Compact enclosure, weather proof
KS	Standard enclosure, Ex d capable
	Sign 2-1 Positioner Transmitter Module - Only applicable with Sign 3 QT and Sign 8 N

2. sign

	Note	QUANTITY OF SWITCHES
1	Position transmitter module	1 module
2		2 switches
3	Not applicable with 1. sign KC Not applicable with 9. sign EN, CN	3 switches
4	Not applicable with 1. sign EN, CN Not applicable with 9. sign EN, CN	4 switches

3. sign

	Manufacturer	Model	Note	SWITCH TYPE
INDUCTIVE PROXIMITY SWITCHES				
A1	P&F	NJ2-12GM-N	Cylidrical	8.2VDC
A3	P&F	NBN4-12GM40-Z0	Cylidrical	5-60V DC 100mA
D1	P&F	NJ2-V3-N	Flat	8.2VDC, 3mA, NC
D2	P&F	NBB3-V3-Z4	Flat	
F1	P&F	SJ3.5-N	Slot	8 VDC, >3 mA ; <1 mA (NC)
F2	P&F	SJ3.5-SN	Slot	8.2VDC >3 mA ; <1 mA (NC)
W4	P&F	NJ2-V3-N	Flat limit switch having total 4 sensors with 2 open and 2 close combination only	8.2VDC 3 mA, NC
REED TYPE PROXIMITY SWITCHES				
	Manufacturer	**Model**	**Note**	**Electrical values**
R1	Neles	R1	SPDT, Not applicable with 1. sign KC Only applicable with 7. sign G and C	2 A, 220 VAC/VDC
MECHANICAL MICRO SWITCHES				
	Manufacturer	**Model**	**Note**	**Electrical values**
V1	Honeywell	V15S05-CZ100A05-01	SPDT	5 A, 125 OR 250 VAC, 100 mA, 48 VDC (NO/NC), 30 mA, 250 VDC (NO/NC)"
V2	Honeywell	V7-1C17E9-201	SPDT	15 A, 125 OR 250 VAC, 500 mA, 125 VDC,250 mA 250 VDC (NO/ NC)
W1	Honeywell	V15S05-CZ100A05-01	DPDT Not applicable with 1. sign KC Only applicable with 2. sign 2"	5 A, 125 OR 250 VAC, 100 mA, 48 VDC (NO/NC), 30 mA, 250 VDC (NO/NC)"
W2	Honeywell	V7-1C17E9-201	DPDT Not applicable with 1. sign KC only applicable with 2. sign 2	15 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA, 250 VDC (NO/ NC)
V5	Unionwell	G5S05-C1Z100A05-T116U	SPDT	5 A @ 125/250 VAC, 100 mA @ 48 VDC or 125/250 V AC Temperature range -20 °C ... 85 °C V6
V6	Unionwell	G5T16-C1Z100A05-KU	SPDT	16 A, 125 OR 250 VAC, 500 mA, 125 VDC, 250 mA, 250 VDC (NO/NC)
W5	Unionwell	G5S05-C1Z100A05-T116U	DPDT, Applicable only with 1. sign "KS"	5 A @ 125/250 VAC, 100 mA @ 48 VDC or 125/250 V AC Temperature range -25 °C ... 85 °C
W6	Unionwell	G5T16-C1Z100A05	DPDT Applicable with 1 sign KS.	15 A, 125 OR 250 VAC, 500 Ma, 125 VDC, 250 Ma, 250 VDC (NO/NC)
DIGITAL POSITION TRANSMITTER				
QT	Positioner Transmitter Module		2 WIRE 4-20mA ,10-40VDC	

4. sign

	Note	ENCLOSURE MATERIAL
A		Diecast aluminum (LM6)
S		Stainless steel CF8M (AISI 316 / CF8M)
P	Only with 1. sign KC	Polycarbonate

5. sign

	Note	QUANTITY OF CONDUIT ENTRIES
2	Only with 1. sign KS	2 entries
3	Only with 1. sign KC	3 entries
4	Only with 1. sign KS	4 entries

6. sign

	Note	CABLE ENTRY
M		M20x1.5
N		1/2NPT
L	Only with 1. sign KS	3/4NPT

7. sign

	Note	TEMPERATURE RANGE
G		General (-20 - +80 °C)
C	Only with 3. signs F2, R1, V2 and W2 Not Applicable only with Sign 3- QT type	Cold temperature (-40 - +80 °C),
H	Not applicable with 9. sign EN, CN. Not applicable with 4. sign P Only applicable with 3. signs A1, D1, F1, F2 and R1 With aluminum indicator, no polycarbonate dome Only to temperature class T4 Not Applicable only with Sign 3- QT type	High temperature (-20 - +100 °C)

8. sign

	VISUAL INDICATOR
R	Red and yellow
G	Red and green
N	No Indicator (Only applicable with Positioner Transmitter module Sign 2-1

9. sign

	APPROVALS
NN	No approvals
EN	ATEX / IECEx Exd/ Ext Applicable only with 1. sign "KS" - Not applicable with Sign 3-QT Type
CN	PESO / IECEX Exd Applicable only with 1. sign "KS" - Not applicable with Sign 3-QT Type
CC	CCC Applicable only with 1. sign "KS" - Not applicable with Sign 3-QT Type

1. sign	2. sign	3. sign	4. sign	5. sign	6. sign	7. sign	8. sign	9. sign
KS	2	A1	A	2	M	G	R	NN

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