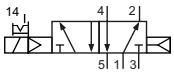
Series KM-09 and KM-10

Technical details

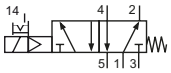
Connection	KM-09: G1/8 KM-10: G1/4
Nominal size	KM-09: 6 mm KM-10: 9 mm
Temperature range	-10°C ... +70°C
Medium	Filtered, oil-free and dried compressed air according to ISO 8573-1:2010, Class 7:2:4, instrument air, free of aggressive additives. Differing the pressure dew point must be at least 10°C below lowest occurring ambient temperature.
Materials	Body: Al (anodized), plastic, seals: NBR, inner parts: Al, stainless steel and brass
Protection	IP 65 according to EN 60529
Ex	Valves in accordance with 2014/34/EU (ATEX) available. (page 10)

Electrically operated spool valve. The manual override is detent and is operated by screw driver.

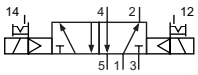
5/2-way-valves



KM-09-510-HN-xxx
KM-10-510-HN-xxx
5/2-way, single solenoid, air spring return

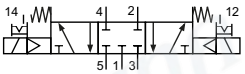


KM-09-511-HN-xxx
KM-10-511-HN-xxx
5/2-way, single solenoid, mechanical spring return

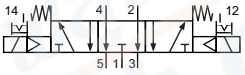


KM-09-520-HN-xxx
KM-10-520-HN-xxx
5/2-way, double solenoid

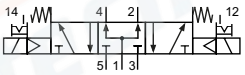
5/3-way-valves



KM-09-530-HN-xxx
KM-10-530-HN-xxx
5/3-way, center position closed



KM-09-533-HN-xxx
KM-10-533-HN-xxx
5/3-way, center position exhausted



KM-09-534-HN-xxx
KM-10-534-HN-xxx
5/3-way, center position pressurized

Please complete: xxx = electrical option

Electrical options

Nominal voltage	Power consumption	Specifics	Plug connection*1	-xxx Manual override on same side of ports 2 and 4	-xxx Manual override on same side of ports 1, 3 and 5
12 V DC	4.2 W		Form B industrial norm	-441	-411
12 V DC	2.2 W	max. 8 bar	Form B industrial norm	-461	-431
24 V DC	4.2 W		Form B industrial norm	-442	-412
24 V DC	4.2 W		M 12	-O42	-O12
24 V DC	2.2 W	max. 8 bar	Form B industrial norm	-462	-432
24 V DC	2.5 W	max. 8 bar	M 12	-O62	-O32
24 V AC	7/4 VA		Form B industrial norm	-452	-422
115 V AC	7/4 VA		Form B industrial norm	-456	-426
230 V AC	7/4 VA		Form B industrial norm	-457	-427

*1 *Plug socket not included, suitable plug sockets see page 5.*

Series KM-09 and KM-10

Technical data

Model-no.:	KM-09-510	KM-09-511	KM-09-520	KM-09-530	KM-09-533	KM-09-534
Operating pressure* (bar)	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10
Pilot pressure* (bar)	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10	3 ... 10
Flow rate (Nl/min)	950	810	950	680	680	680
Response time (ms) at 6 bar	on: 15 off: 16	on: 13 off: 28	on: 15 off: 15	on: 14 off: 16	on: 14 off: 16	on: 14 off: 16
Weight (kg)	0.230	0.231	0.330	0.330	0.330	0.330

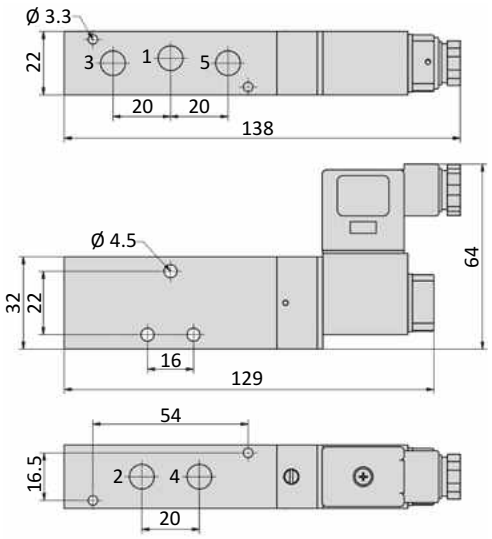
Model-no.:	KM-10-510	KM-10-511	KM-10-520	KM-10-530	KM-10-533	KM-10-534
Operating pressure* (bar)	2.5 ... 10	2.5 ... 10	2.5 ... 10	3 ... 10	3 ... 10	3 ... 10
Pilot pressure* (bar)	2.5 ... 10	2.5 ... 10	2.5 ... 10	3 ... 10	3 ... 10	3 ... 10
Flow rate (Nl/min)	2100	1800	2100	1500	1500	1500
Response time (ms) at 6 bar	on: 18 off: 19	on: 16 off: 27	on: 18 off: 18	on: 16 off: 22	on: 16 off: 22	on: 16 off: 22
Weight (kg)	0.470	0.470	0.630	0.630	0.630	0.630

* max. 8 bar at 2.2 W and 2.5 W

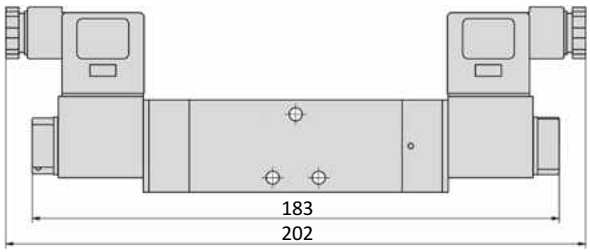
Series KM-09 and KM-10

Dimensions

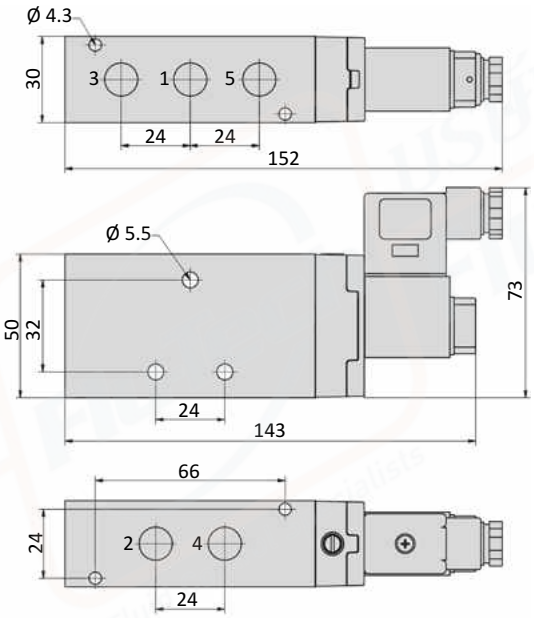
KM-09-51x-HN



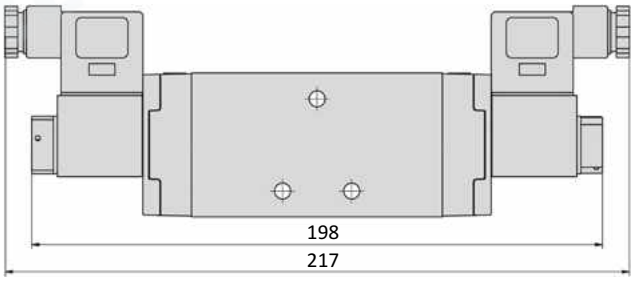
KM-09-520-HN, KM-09-53x-HN



KM-10-51x-HN



KM-10-520-HN, KM-10-53x-HN



1 = pressure inlet
2,4 = outlets
3,5 = exhausts

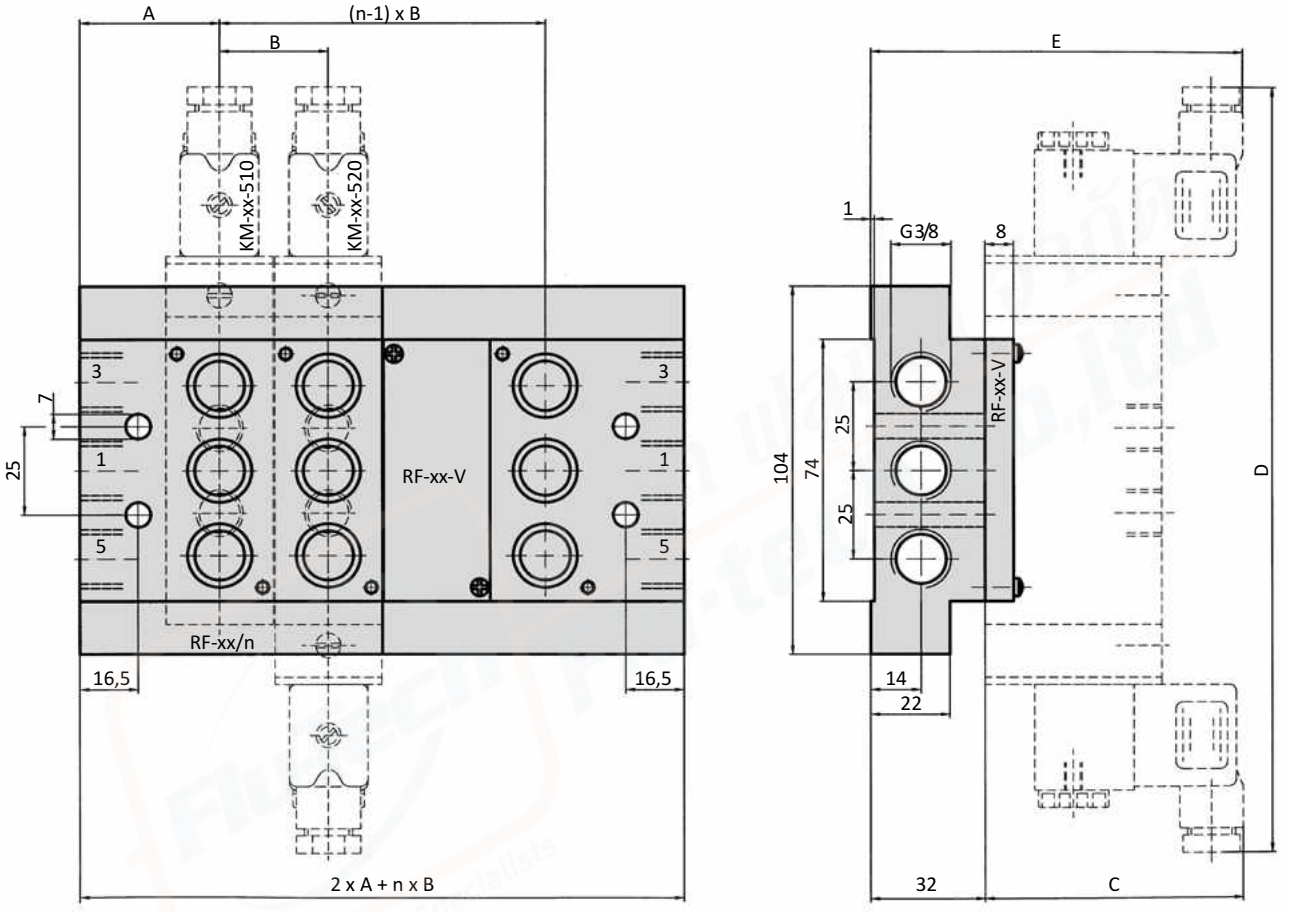
Plug socket (not included in scope of delivery) can be repositioned by 180°.
Solenoid coil can be repositioned by 4 x 90°.

Series KM-09 and KM-10

General information

The RF-09/n and RF-10/n manifolds are suitable for the KM-09 and KM-10 valve series. This is a modular system and extendable.
The RF-09 and RF-10 can be combined into one manifold with different valve sizes.
Blind plates RF-09-V and RF-10-V are available for blank stations.
All mounting screws and o-rings are included.

Dimensions



n = number of stations
1 = pressure inlet
3,5 = exhausts

Model-no.:	A	B	C	D	E
RF-09/n	35.25	22.5	64	202	96
RF-10/n	39.25	30.5	73	217	105

Model-no.:	n	1	2	3	4	5	6	7	8
Weight(kg)	RF-09/n	0.415	0.550	0.680	0.810	0.990	1.060	1.190	1.320
	RF-10/n	0.470	0.660	0.850	1.040	1.250	1.380	1.570	1.760

Model-no.:	n	9	10	11	12	13	14	15	16
Weight(kg)	RF-09/n	1.500	1.565	1.700	1.830	2.010	2.075	2.210	2.340
	RF-10/n	1.970	2.100	2.290	2.480	2.690	2.820	3.010	3.200

Plug sockets

Form A according to DIN EN 175301-803

Overall width	27 mm
Contact distance	18 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a profile gasket
For use with series	

Model-no.:	28-ST-03	28-ST-11-112
Voltage (AC/DC)	0 - 250 V	24 V
Status indicator	no	yes
Protective circuit	no	yes (Varistor)
Connecting cable	without	without
Wire cross section	max. 1.5 mm²	max. 1.5 mm²
Ø Connecting cable	6 - 8 mm	6 - 8 mm

Form B according to DIN EN 175301-803

Overall width	22 mm
Contact distance	10 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a flat gasket
For use with series	

Model-no.:	28-ST-01-G
Voltage (AC/DC)	0 - 250 V
Status indicator	no
Protective circuit	no
Connecting cable	without
Wire cross section	max. 1.5 mm²
Ø Connecting cable	6 - 8 mm

Form B industrial norm

Overall width	22 mm
Contact distance	11 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 requires a flat gasket
For use with series	M-04, M-05, M-07, M-22, KM-09, KM-10, MS-18, KN-05, MN-06, MI-01, MI-02, MI-03

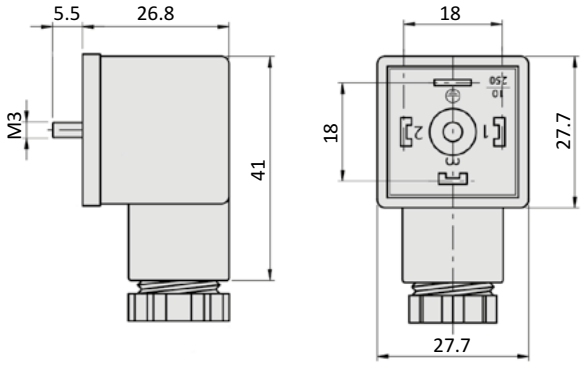
Model-no.:	28-ST-01	28-ST-04-112	28-ST-04-127	28-ST-06-112	28-ST-06-127	28-ST-06-K3-112*	28-ST-06-K3-127*
Voltage (AC/DC)	0 - 250 V	10 - 50 V	70 - 250 V	24 V	230 V	24 V	230 V
Status indicator	no	yes	yes	yes	yes	yes	yes
Protective circuit	no	no	no	yes (varistor)	yes (varistor)	yes (varistor)	yes (varistor)
Connecting cable	without	without	without	without	without	3 m	3 m
Wire cross section	max. 1.5 mm²	max. 1.5 mm²	max. 1.5 mm²	max. 1.5 mm²	max. 1.5 mm²	3 x 0.75 mm²	3 x 0.75 mm²
Ø Connecting cable	6 - 8 mm	6 - 8 mm	6 - 8 mm	6 - 8 mm	6 - 8 mm		

* These plug sockets are fitted with integrated flat gaskets.

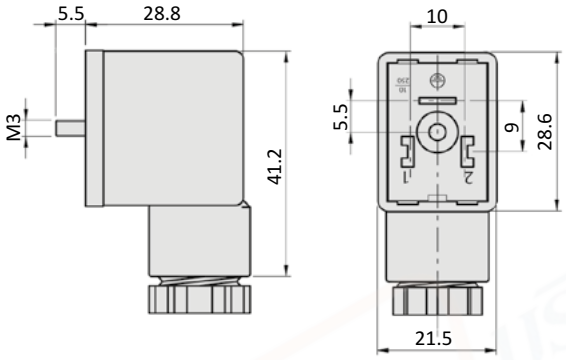
Plug sockets

Dimensions

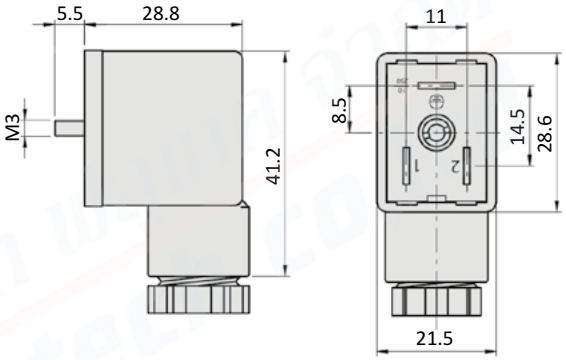
Form A according to DIN EN 175301-803



Form B according to DIN EN 175301-803

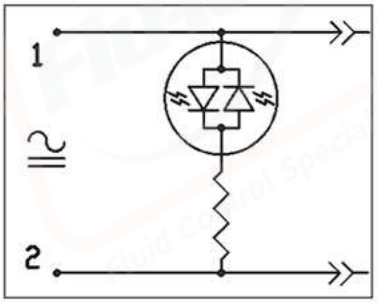


Form B industrial norm

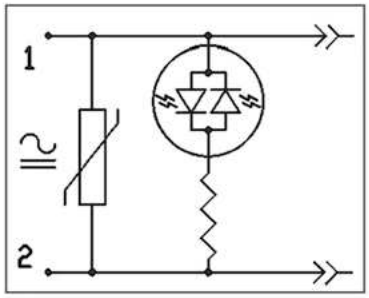


Electrically circuits

Status indicator (LED)



Status indicator (LED) and protective circuit (varistor)



Solenoid coils

Form A according to DIN EN 175301-803

Overall width	30 mm
Contact distance	18 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Temperature range*	-40°C ... +50°C
Voltage tolerance	± 10 %
For use with series	no standard

* The max. applicable operating temperature depends on the temperature specification of the used valve.

Model-no.:	23-SP-016-712	23-SP-016-722	23-SP-016-726	23-SP-016-727
Voltage	24 V DC	24 V AC	110/115 V AC	230 V AC/ 110 V DC
Power consumption DC	4.5 W	-	-	5.3 W
Power consumption AC	-	8.0 VA	7.6 VA/ 8.6 VA	7.9 VA
Specifics	enhanced humidity resistance			

Form B according to DIN EN 175301-803

Overall width	22 mm
Contact distance	10 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Temperature range*	-40°C ... +50°C
Voltage tolerance	± 10 %
For use with series	no standard

* The max. applicable operating temperature depends on the temperature specification of the used valve.

Model-no.:	23-SP-011-G-412	23-SP-011-G-427
Voltage	24 V DC	230 V AC
Power consumption DC	4.2 W	-
Power consumption AC	-	5 VA

Solenoid coils

Form B industrial norm

Overall width	22 mm
Contact distance	11 mm
Contacts	2P + E
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Voltage tolerance	± 10 %
For use with series	M-04, M-05, M-07, M-22, KM-09, KM-10, MS-18, KN-05, MN-06, MI-01, MI-02, MI-03

Model-no.:	23-SP-011-411	23-SP-011-412	23-SP-011-422	23-SP-011-426	23-SP-011-427	23-SP-012-431	23-SP-012-432
Voltage	12 V DC	24 V DC	24 V AC	115 V AC	230 V AC	12 V DC	24 V DC
Power consumption DC	4.2 W	4.2 W	-	-	-	2.2 W	2.2 W
Power consumption AC	-	-	5 VA	5 VA	5 VA		
Temperature range*	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C	-40°C...+50°C

Model-no.:	23-SP-011-1-711	23-SP-011-1-712	23-SP-011-1-725	23-SP-011-1-727	23-SP-012-1-732
Voltage	12 V DC	24 V DC	110/115 V AC	230 V AC	24 V DC
Power consumption DC	4.2 W	4.2 W	-	-	3 W
Power consumption AC	-	-	6.0 VA/ 7.6 VA	7.9 VA	-
Temperature range*	-50°C...+80°C	-50°C...+80°C	-20°C...+50°C	-20°C...+50°C	-50°C...+80°C
Specifics	enhanced humidity resistance				

* The max. applicable operating temperature depends on the temperature specification of the used valve.

M12 connection

Overall width	22 mm
Contact distance	-
Contacts	2P
Protection	IP 65 according to EN 60529 with connected plug socket
Duty cycle	100 %
Temperature range*	-20°C ... +50°C
Voltage tolerance	± 10 %
For use with series	

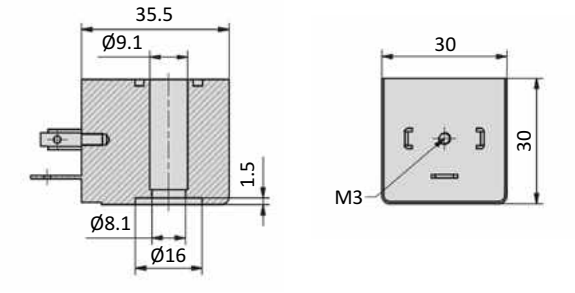
* The max. applicable operating temperature, depends on the temperature specification of the used valve.

Model-no.:	23-SP-011-5-O12	23-SP-012-5-O32
Voltage	24 V DC	24 V DC
Power consumption DC	4.8 W	2.5 W
Power consumption AC	-	-
Specifics	Mounting on manifold not allowed. With integrated LED and protective circuit.	Min. mounting distance for manifold mounting is 20 mm. With integrated LED and protective circuit.

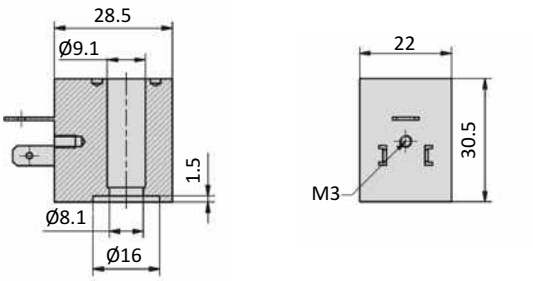
Solenoid coils

Dimensions

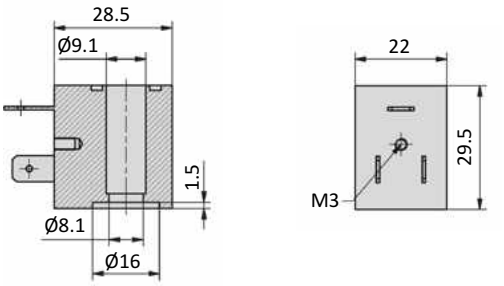
Form A according to DIN EN 175301-803



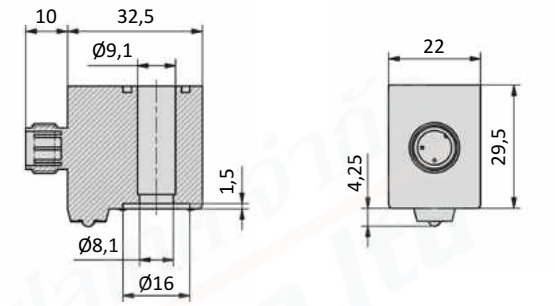
Form B according to DIN EN 175301-803



Form B industrial norm



M12 connection



Series KM-09 and KM-10

Device marking

Electrically operated valves are marked as follows:

II 2G Ex h IIC T5 Gb
II 2D Ex h IIIC T100°C Db
-10°C T_{amb} +50°C

Marking according to DIN EN ISO 80079-36/ -37.

Series KM-09

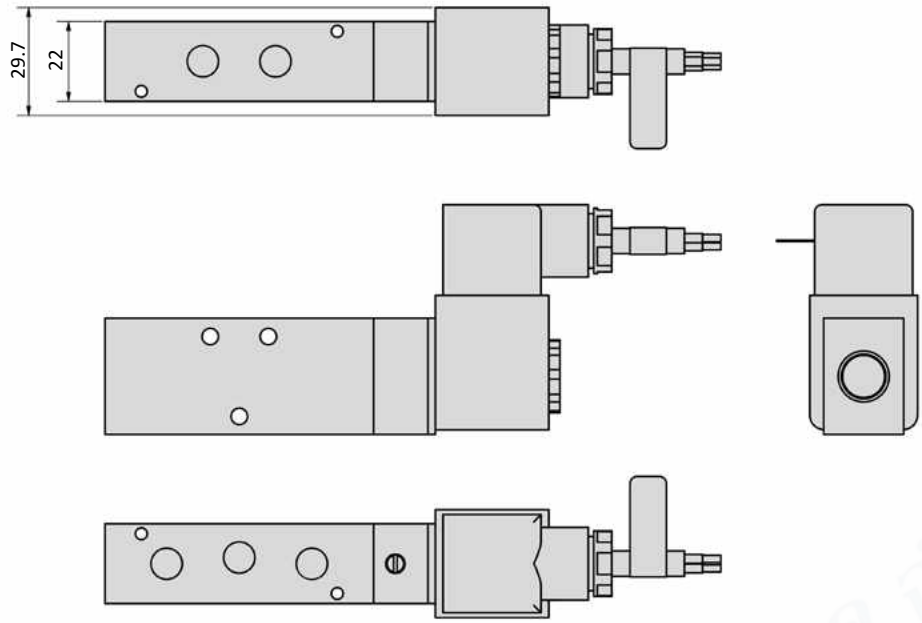
Series KM-10

Electrically operated valves conform to equipment category 2 can be used in Zone 1 respectively in Zone 21.
For the use in hazardous areas the category group of the used coil has to be taken into account. The specification of the whole equipment corresponds always to the lowest category of the single components.

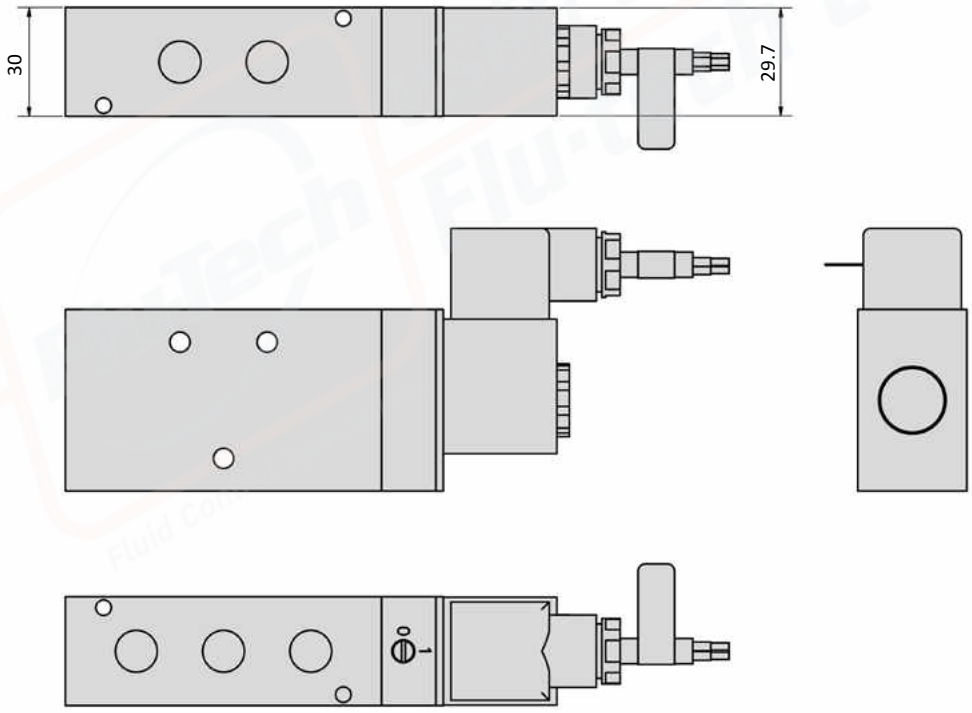
Series KM-09 and KM-10

Divergent dimensions

Series KM-09



Series KM-10



The use of special electrical equipment and operators requires in certain cases a design change of the valve. All changes are shown on the following pages.

The operating instructions for the valve and the electrical equipment must be taken into account before putting into operation. These are included with each valve and are available at www.airtec.de .

Series KM-09 and KM-10

Electrical options

ATEX-category	Voltage	Power consumption	Ignition protection	Solenoid coil	-xxx Manual override on same side of ports	
					2 or 2 and 4	1. 3 or 1. 3 and 5
3GD	24 V DC	2.7 W	Non-sparking device	23-SP-040-B12	-B42	-B12
3GD	230 V AC	4 VA	Non-sparking device	23-SP-040-B27	-B57	-B27
2GD	12 V DC	3.3 W	Encapsulated with casting compound	23-SP-037-011-xx*	-041-xx*	-011-xx*
2GD	24 V DC	3.3 W	Encapsulated with casting compound	23-SP-037-012-xx*	-042-xx*	-012-xx*
2GD	110...120 V AC	3 VA	Encapsulated with casting compound	23-SP-037-025-xx*	-055-xx*	-025-xx*
2GD	230 V AC	3.1 VA	Encapsulated with casting compound	23-SP-037-027-xx*	-057-xx*	-027-xx*
2GD	U ≤ 28 V DC / U ≤ 32 V DC	I ≤ 115 mA / I ≤ 195 mA	Intrinsically safe	23-SP-038-01-912	-942	-912

* xx = length of connecting cable: 03 = 3 m. 05 = 5 m. 10 = 10 m (available length see page 12)

Series KM-09 and KM-10

Solenoid coils

23-SP-037

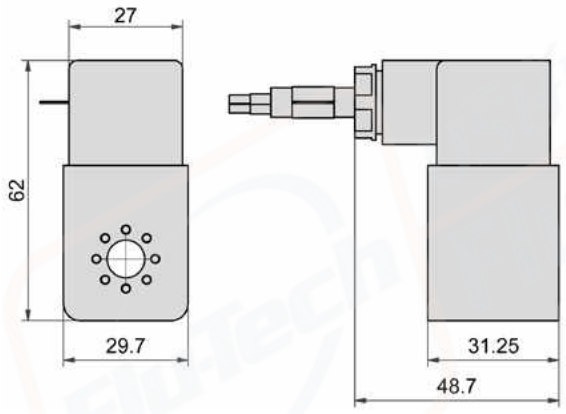
Ignition protection class	Encapsulated with casting compound mb (gases) mb tb (dust)
Classification	II 2G Ex mb IIC T5 II 2D Ex mb tb IIIC T95°C IP65
Overall width	30 mm
Temperature range*	-20°C...+50°C (battery fitted -20°C...+40°C)
Temperature range medium	-10°C...+50°C (battery fitted -10°C...+40°C)

* The max. applicable operating temperature depends on the temperature specification of the used valve.

Model-no.:	23-SP-037-011-xx	23-SP-037-012-xx	23-SP-037-025-03	23-SP-037-027-xx
Voltage	12 V DC	24 V DC	110...120 V AC	230 V AC
Power consumption	3,3 W	3,3 W	3 VA	3,1 VA
Rated current	275 mA	136 mA	27 mA	14 mA
Connecting cable (xx)	03 = 3 m	03 = 3 m, 05 = 5 m, 10 = 10 m	03 = 3 m	03 = 3 m, 05 = 5 m

Dimensions

23-SP-037



Series KM-09 and KM-10

Solenoid coils

23-SP-038

Ignition protection class	Intrinsically safe ia (gases) t (dust)
Classification	II 2G Ex ia IIC T6 Ga (≤ 28 V DC) II 2G Ex ia IIB T6 Ga (≤ 32 V DC) II 2D Ex t IIIC T80°C Db IP65
Overall width	30 mm
Temperature range*	-40°C...+50°C
Temperature range medium	-10°C...+50°C (battery fitted -10°C...+40°C)

* The max. applicable operating temperature depends on the temperature specification of the used valve.

Model-no.:	23-SP-038-01-912
Voltage	U ≤ 28 V DC / U ≤ 32 V DC
Rated current	I ≤ 115 mA / I ≤ 195 mA
Rated current	375 mA
Connection	plug (part of delivery)

23-SP-040

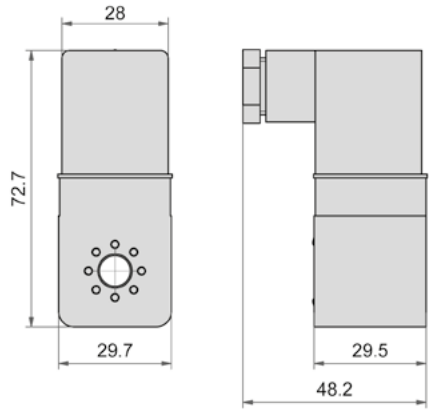
Ignition protection class	Non-sparking device na (gases) tc (dust)
Classification	II 3G Ex nA IIC T6 Gc II 3D Ex tc IIIC T95°C Dc IP65
Overall width	30 mm
Temperature range*	-20°C...+50°C
Temperature range medium	-10°C...+50°C (battery fitted not allowed)

* The max. applicable operating temperature depends on the temperature specification of the used valve.

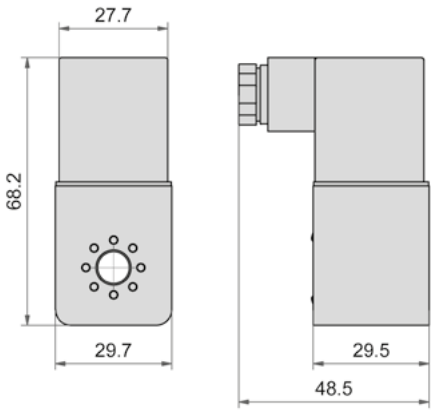
Model-no.:	23-SP-040-B12	23-SP-040-B27
Voltage	24 V DC	230 V AC
Power consumption	2.7 W	4 VA
Rated current	112 mA	15...18 mA
Connection	plug (part of delivery)	plug (part of delivery)

Dimensions

23-SP-038



23-SP-040



Voltage code

- HN * - * * *

Manual override	
HN	detent
HNR	detent
HNT	non-detent

Coil and plug options		Coil type
0	ATEX 2GD, encapsulated with casting compound width 30 mm	23-SP-037
1	with coil and plug	according to valve
2		
3	with coil, power consumption different from standard, without plug	shape according valve series
4	with coil, without plug	according to valve
5	without coil	no
6	without pilot valve	no
7	with coil, with enhanced humidity resistance, without plug	according to valve
8	with coil, with enhanced humidity resistance, with plug	according to valve
9	ATEX 2GD, intrinsically safe, with plug width 30 mm	23-SP-038
A	ATEX 3GD, without plug, width 30 mm	23-SP-040
B	ATEX 3GD, with plug, width 30 mm	23-SP-040
C	ATEX 3GD, without plug, width 22 mm	23-SP-041
D		
E		
F	with coil, with enhanced humidity resistance, without plug, low temperature version	23-SP-011-1-711 23-SP-011-1-712
G		
H	with coil shape B according to DIN EN 175301-803, with plug	23-SP-011-G
I	with coil shape B according to DIN EN 175301-803, without plug	23-SP-011-G
J	with coil shape A according to DIN EN 175301-803, without plug (if not standard)	23-SP-016
K	with coil shape A according to DIN EN 175301-803, with plug (if not standard)	23-SP-016
L	with coil, with plug with LED and protective circuit	according to valve
M	with coil, with plug with LED, without protective circuit	according to valve
N	with coil with M12 connection	according to valve
O	with coil with M12 connection with LED and protective circuit	according to valve
P	without connector bridge, without plug	
Q	with coil with with cable	according to valve
R	with cable up to 1 m length	according to valve
S	with connector bridge, without plug	
T		
U	ATEX 2GD, without coil (for coil 23-SP-036)	no
V	ATEX 2GD, Flame proof enclosuresand encapsulated with casting compound	23-SP-045
W	ATEX 2GD / 3GD, without coil (for coil 23-SP-041 and 23-SP-045)	no
X	ATEX 3GD, without coil (for coil 23-SP-040 in 230V AC and 115V AC)	no
Y	ATEX 2GD, without coil (for coil 23-SP-038)	no
Z	ATEX 2GD / 3GD, without coil (for coil 23-SP-040 in 24V DC and 23-SP-037)	no

Manual override position on side of	
0	without indication ports 1/3/(5)
1	DC ports 1/3/(5)
2	AC ports 1/3/(5)
3	DC, low power consumption ports 1/3/(5)
4	DC ports 2/(4)
5	AC ports 2/(4)
6	DC, low power consumption ports 2/(4)
7	without indication ports 2/(4)

Voltage	
0	without indication
1	12 V
2	24 V
3	42 V
4	48 V
5	110 V
6	115 V
7	230 V
8	240 V
9	
A	4 V
B	6 V
C	8 V
D	61 V
E	36 V
F	9 V

Not all options are suitable for all valve series