



N6PC15AA.M41A.U



energetx™ 6-port control valve, N6_ series

- Change/over valve for HVAC applications
- Nominal pressure: PN16 (16bar)
- Valve size: DN15 or DN25
- Valve body: brass CW617N
- Medium: water, water/glycol (max. 50%)
- Medium temperature: +5°C..+90°C
- Differential pressure: max. 2 bar
- With electrical actuator: 3-point or 0..10Vdc control
- Optional: coupling pieces for DN25 valve: G $\frac{1}{2}$ " or G $\frac{3}{4}$ "

6-port



DN15 / DN25

Description

The 6-port control valves, series N6_, are used in hydraulic circuits for the control of heating and cooling water flows of climate ceilings in HVAC applications with a medium temperature from +5°C to +90°C and a nominal pressure up to 16 bar (PN16).

The valve body of the N6_ series is made of brass, with outside thread and with flat connections. These valves can be delivered with or without coupling pieces with outside thread.

The N6_ valves come together with an electric rotary actuator and can easily be connected to any BMS systems. The control by the BMS can be a 3-point control signal (3P), or a proportional control signal Y: 0(2)..10Vdc.

Patent pending WO2020157612

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1. Nomenclature

N	6	P	15AA	M	41A	U	-
valve			actuator				
N							Valve series N control valve for terminal controls
	6						Number of ports 6 6-port valve
		P PC					Connection P flat sealing PC flat sealing COMPACT version
15AA 15AD 15AE 25AA 25AB 25AC						DN and K _{vs} value 15AA DN15 1,9 1,9 15AD DN15 1,9 1,3 15AE DN15 1,9 1,0 etc. 25AA DN25 4,25 4,25 25AB DN25 4,25 3,45 25AC DN25 4,25 2,5 etc..	
	M					Actuator type M Electric rotary actuator	
		2 4				Power supply U _v 2 AC 230 Volt 4 AC 24 Volt	
1A						Running time (0..100%) 1A 80s/130s/150s	
					Control signal Y - 3-point control U proportional 0..10Vdc		

Note for all K_{vs}-values available, please refer to the K_{vs}-inserts overview (next page)

2. Overview 6-port valves

6-port control valves DN15 (G¹/₂")



Type	connection	K _{vs} insert Nr 1	K _{vs} port 1	K _{vs} insert Nr 2	K _{vs} port 2
N6PC15 AA	G ¹ / ₂ "	A	1,9 m³/h	A	1,9 m³/h
N6PC15 A y	G ¹ / ₂ "	A	1,9 m³/h	y	¹⁾
N6PC15 x A	G ¹ / ₂ "	x	¹⁾	A	1,9 m³/h
N6PC15 x y	G ¹ / ₂ "	x	¹⁾	y	¹⁾



Type	connection	K _{vs} insert Nr 1	K _{vs} port 1	K _{vs} insert Nr 2	K _{vs} port 2
N6P15 AA	G ¹ / ₂ "	A	1,9 m³/h	A	1,9 m³/h
N6P15 A y	G ¹ / ₂ "	A	1,9 m³/h	y	¹⁾
N6P15 x A	G ¹ / ₂ "	x	¹⁾	A	1,9 m³/h
N6P15 x y	G ¹ / ₂ "	x	¹⁾	y	¹⁾

K_{vs}-inserts DN15 (optional)



Type	reference x y	K _{vs} [m³/h]
N615KIN160	D	1,6
N615KIN130	E	1,3
N615KIN100	F	1,0
N615KIN065	G	0,65
N615KIN040	H	0,40
N615KIN025	I	0,25

¹⁾ K_{vs}-inserts for DN15 valves can be chosen from the table above

6-port control valves DN25 (G³/₄")



Type	connection	K _{vs} insert Nr 1	K _{vs} Port 1	K _{vs} insert Nr 2	K _{vs} Port 2
N6P25 AA	G ¹ "	A	4,25 m³/h	A	4,25 m³/h
N6P25 A y	G ¹ "	A	4,25 m³/h	y	²⁾
N6P25 x A	G ¹ "	x	²⁾	A	4,25 m³/h
N6P25 x y	G ¹ "	x	²⁾	y	²⁾

K_{vs}-inserts DN25 (optional)



Type	reference x y	K _{vs} [m³/h]
N6KIN345	B	3,45
N6KIN250	C	2,5
N6KIN160	D	1,6
N6KIN130	E	1,3
N6KIN100	F	1,0
N6KIN065	G	0,65
N6KIN040	H	0,40
N6KIN025	I	0,25

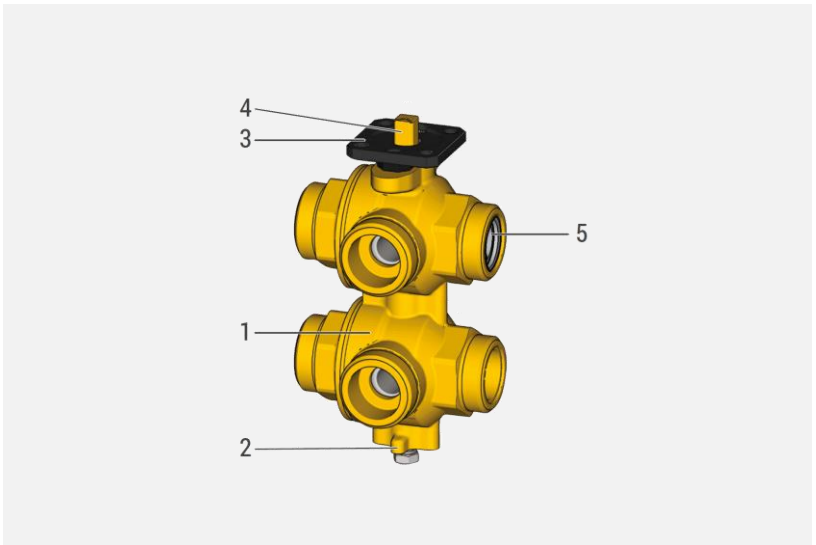
²⁾ K_{vs}-inserts for DN25 valves can be chosen from the table above

3. Technical data		N6_valves		
Construction		6-port		
Application		change/over heating or cooling		
Nominal pressure		PN16 (16bar)		
Max. differential pressure		2bar		
Rotating angle		↺ 90°		
Valve closed at		↺ 45°		
Leakage rate		A, no leakage (according to EN12266-1)		
		N6PC15AA	N6P15AA	N6P25AA
Body size		DN15	DN15	DN25
K _{vs} -value		1,9m³/h	1,9m³/h	4,25m³/h
Connection ISO228/1		G½"	G½"	G1"
Heart distance		40mm	45mm	60mm
Dead zone		↺ 40°..50°	↺ 30°..60°	↺ 40°..50°
K _{vs} -inserts (option)		can be added to obtain different Kvs-values		
Actuator flange ISO 5211		F04		
Medium		water or water/glycol mixture ²⁾		
Water treatment		according to VDI2035		
Medium temperature		+5..+90°C		
Materials	valve body	brass CW617N		
	sealing	PTFE/EPDM sealings		

¹⁾ the desired K_{vs}-value has to be specified when ordering

²⁾ max.50% glycol

1. Valve body
2. M4 or M6 holes for valve fixing
3. F04 - ISO 5211 actuator flange
4. Valve spindle
5. Calibrated washers (optional)



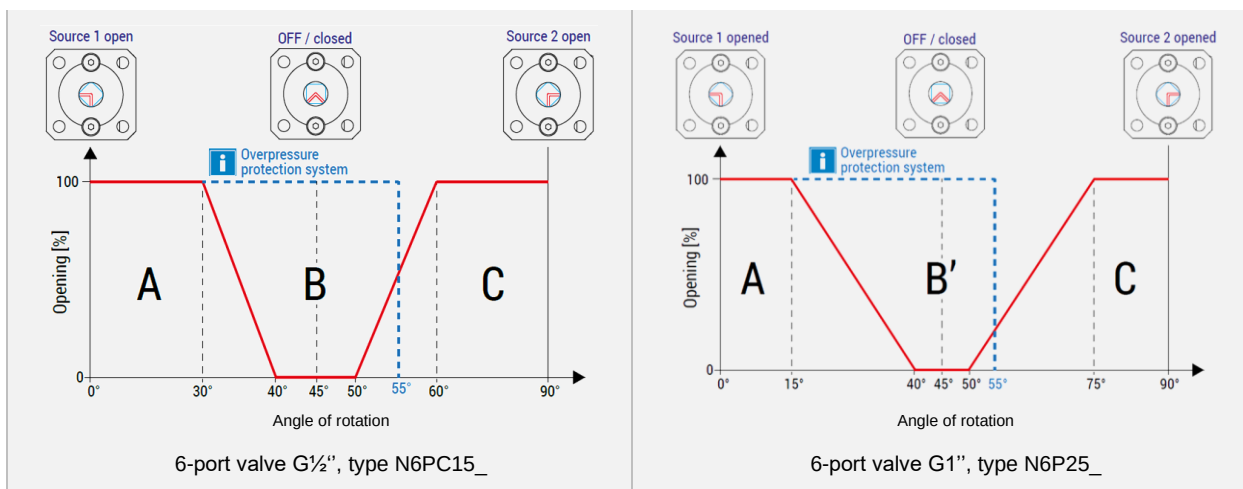
4. Operation

The N6P_ compact 6-way zone valve controls the flow (return) of two different heat sources to (from) a single point of use. In other words, it's designed to control 4-pipe change/over systems (usually heating and cooling). A 6-port valve, with its actuator, can therefore replace four motorized 2-port zone valves without the need to synchronize them to open/close the two sources.

The 6-port zone valve allows you to switch between heating and cooling (0° and 90° positions) and also to close both sources simultaneously (45° position).

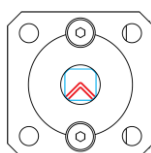
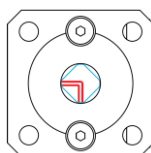
N6P_ 6-port valves are generally installed in radiant ceiling and fan coil systems, where the user can easily switch between heating and cooling during the same day, independently for each zone.

The N6PC15_ (DN15) valve's 40mm distance between inlet and outlet enables direct connection to fan coil units.

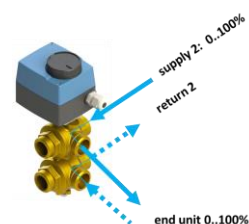
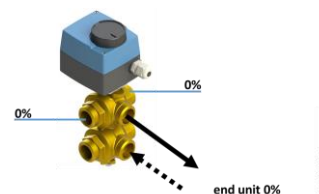
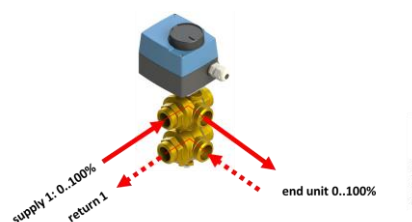
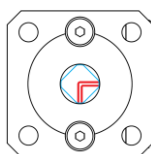


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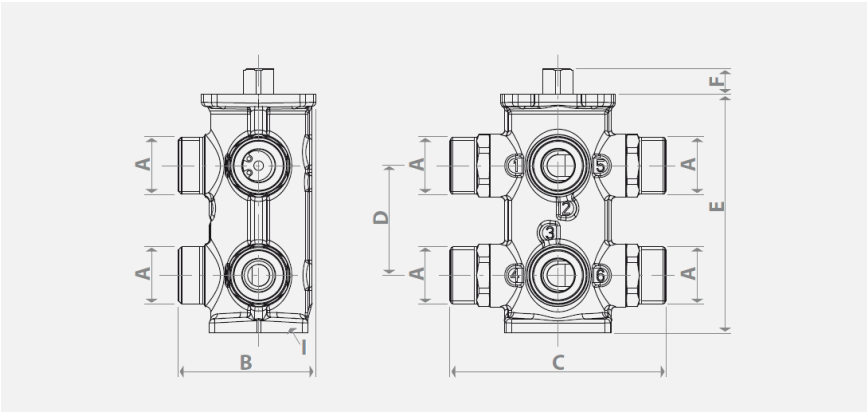
Position of the spindle



valve CLOSED

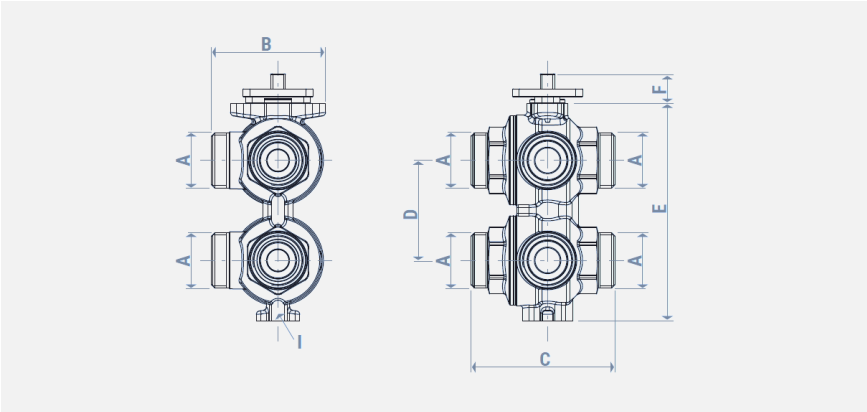


5. Dimensions DN155 **N6PC15_**



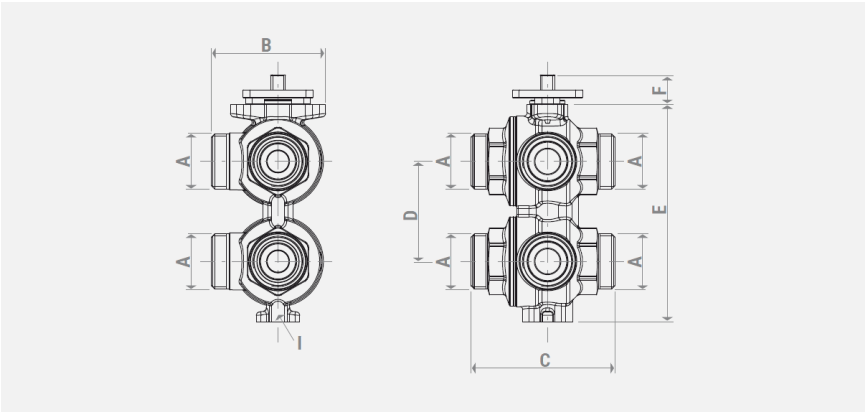
A	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I	L [mm]	M [mm]	N [mm]
G 1/2"M	51	79	40	87	10	90	59	4 M4 holes	90	108	59

N6P15_



A	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I	L [mm]	M [mm]	N [mm]
G 1/2"M	51	68	45	100	18	90	59	2 holes M4	90	108	59

6. Dimensions DN25 N6P25_



A	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	I	L [mm]	M [mm]	N [mm]
G 1" M	67	87	60	131	18	90	70	1 hole M6	90	108	59

7. Kvs-insert



To install the calibrated orifice, manually insert it inside the valve connection and then simply block the orifice by inserting the stop ring (included with the calibrated orifice), using suitable pliers if necessary.

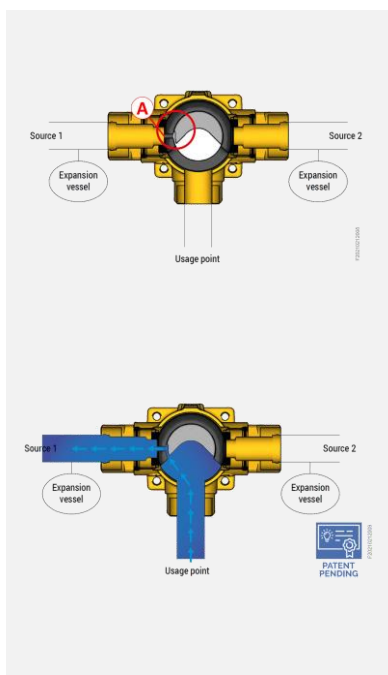
The two calibrated orifices balance the flow within the two circuits (from source 1 to the point of use, and from source 2 to the point of use).

The two circuits may require different K_{vs} -values, so two calibrated orifices with two different product codes are required (see overview of calibrated orifices). Calibrated K_{vs} -inserts must be ordered separately.

Calibrated orifices can be installed on either the flow or return circuit.

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8. Overpressure protection



N6_ valves have built-in overpressure protection to compensate for pressure variations in the closed position. Water flowing towards the unit will be isolated when the valve is in the closed position.

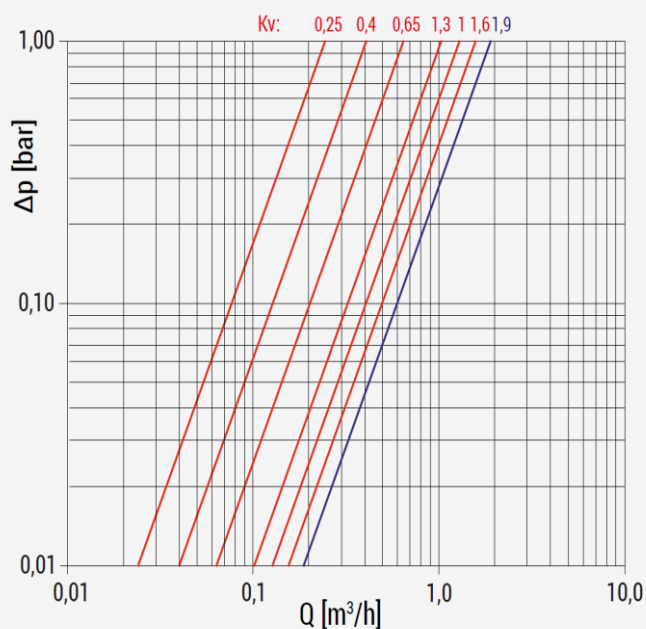
Fluid pressure within (for example) the climate ceiling circuit may therefore increase or decrease as the fluid temperature changes.

A small opening in the top port of the 6-port valve keeps the ceiling unit ("usage point") connected to "source 1" even when the valve is closed.

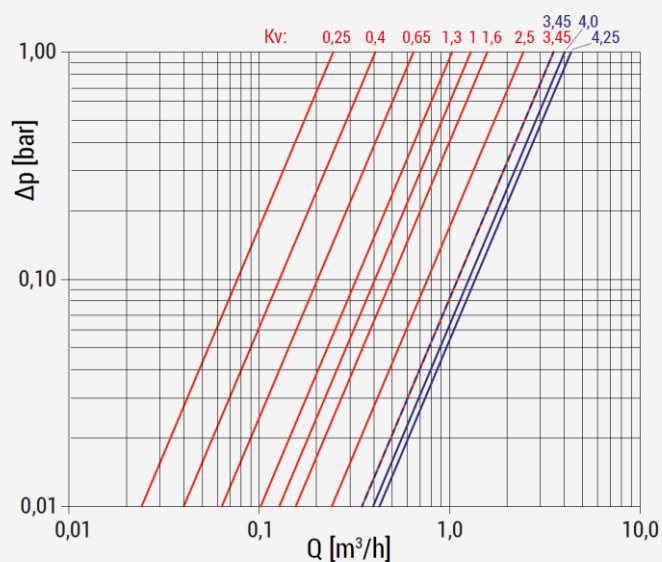
However, this opening prevents fluid from flowing out when the valve is closed, and does not compromise the tightness of the N6_ valve.

No water can flow through the unit when the valve is closed. In this way, the two hydraulic sources of heating and cooling are always separate.

9. Pressure drop diagram



The K_{vs} value 1,9 refers to supply and return line without K_{vs} insert for the DN15 valve body



The K_{vs} value 4,25 refers to supply and return line without K_{vs} insert for the DN25 valve body.

The K_{vs} value of the 6-port valves, N6_ series, is determined by the K_{vs} insert used.

The total pressure drop of the supply and return line of the N6_ valves, with and without K_{vs} insert can be found in the pressure drop diagram.

10. Overview rotary actuators for 6-port valves N6_



Type	AC	AC	3-point	proportional	running time
	24 Volt	230 Volt	control	0..10Vc	0..100%
M41A	-	●	●	-	130s
M41A.U	● ¹⁾	-	●	●	80/150s ²⁾
M21A	-	●	-	-	130s

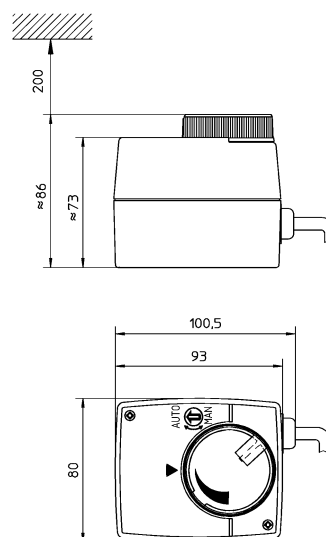
¹⁾ DC 24 Volt power supply available on request
²⁾ Default factory setting: 80s



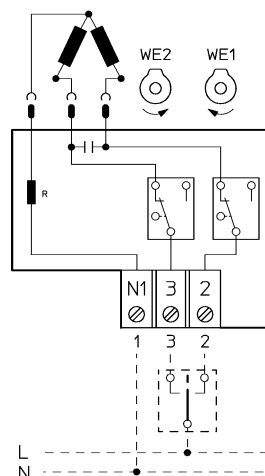
11. Technical data M41A

Power supply U_v	AC 24 Volt, 50/60Hz $\pm 5\%$
Running time @ 50 Hz	130s
Torque	6Nm
Angle of rotation	$\leq 90^\circ$
Power consumption	3,5VA
Input signal	3-point
Degree of protection	IP43
Operating mode	S4-50% ED c/h 1200 EN 60034-1
End position switch	integrated and preset on 0° and $\leq 90^\circ$
Electrical connection	actuator with 1,5m cable (flexible) 3x 0,7mm ² with ferrules
Ambient temperature	$0^\circ\text{C}..+50^\circ\text{C}$

Dimensions



Electrical wiring

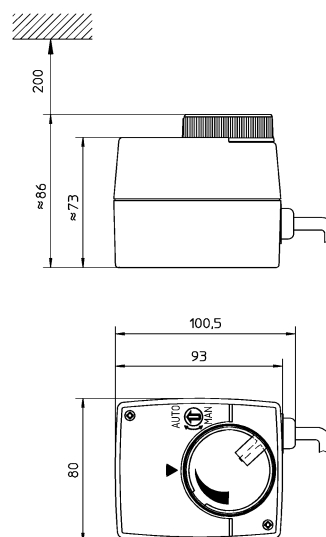




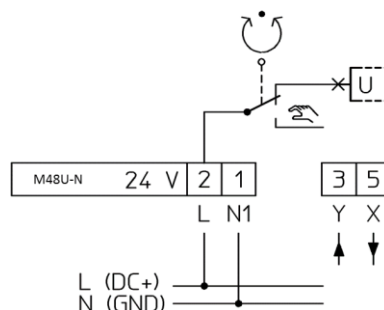
12. Technical data M41A.U

Power supply U_v	AC 24 Volt $\pm 10\%$, 50/60Hz $\pm 5\%$
Running time @ 50 Hz	80s / 150s
Torque	6Nm
Angle of rotation	$\leq 90^\circ$
Power consumption	3,0VA
Input signal Y	0(2)..10Vdc, 77kOhm
Output signal X	0..10Vdc, max. 8mA, min. 1.200Ohm
Degree of protection	IP43
Operating mode	S4-50% ED c/h 1200 EN 60034-1
Electrical connection	actuator with 1,5m cable (flexible) 3x 0,7mm ² with ferrules
Ambient temperature	0°C..+50°C

Dimensions



Electrical wiring

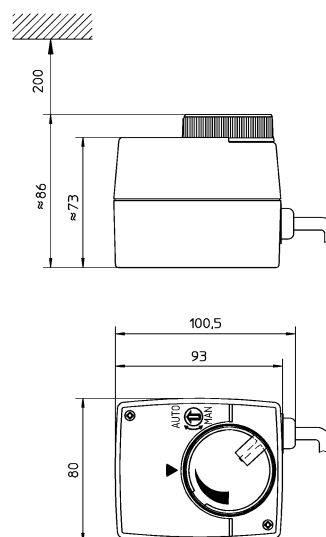




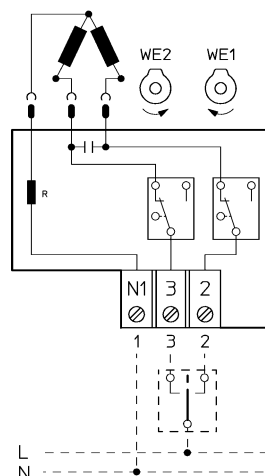
13. Technical data M21A

Power supply U_v	AC 230 Volt +6% -10%, 50/60Hz $\pm 5\%$
Running time @ 50 Hz	130s
Torque	6Nm
Angle of rotation	$\leq 90^\circ$
Power consumption	3,5VA
Input signal	3-point
Degree of protection	IP43
Operating mode	S4-50% ED c/h 1200 EN 60034-1
End position switch	integrated and preset on 0° and $\leq 90^\circ$
Electrical connection	actuator with 1,5m cable (flexible) 3x 0,7mm ² with ferrules
Ambient temperature	$0^\circ\text{C}..+50^\circ\text{C}$

Dimensions



Electrical wiring



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