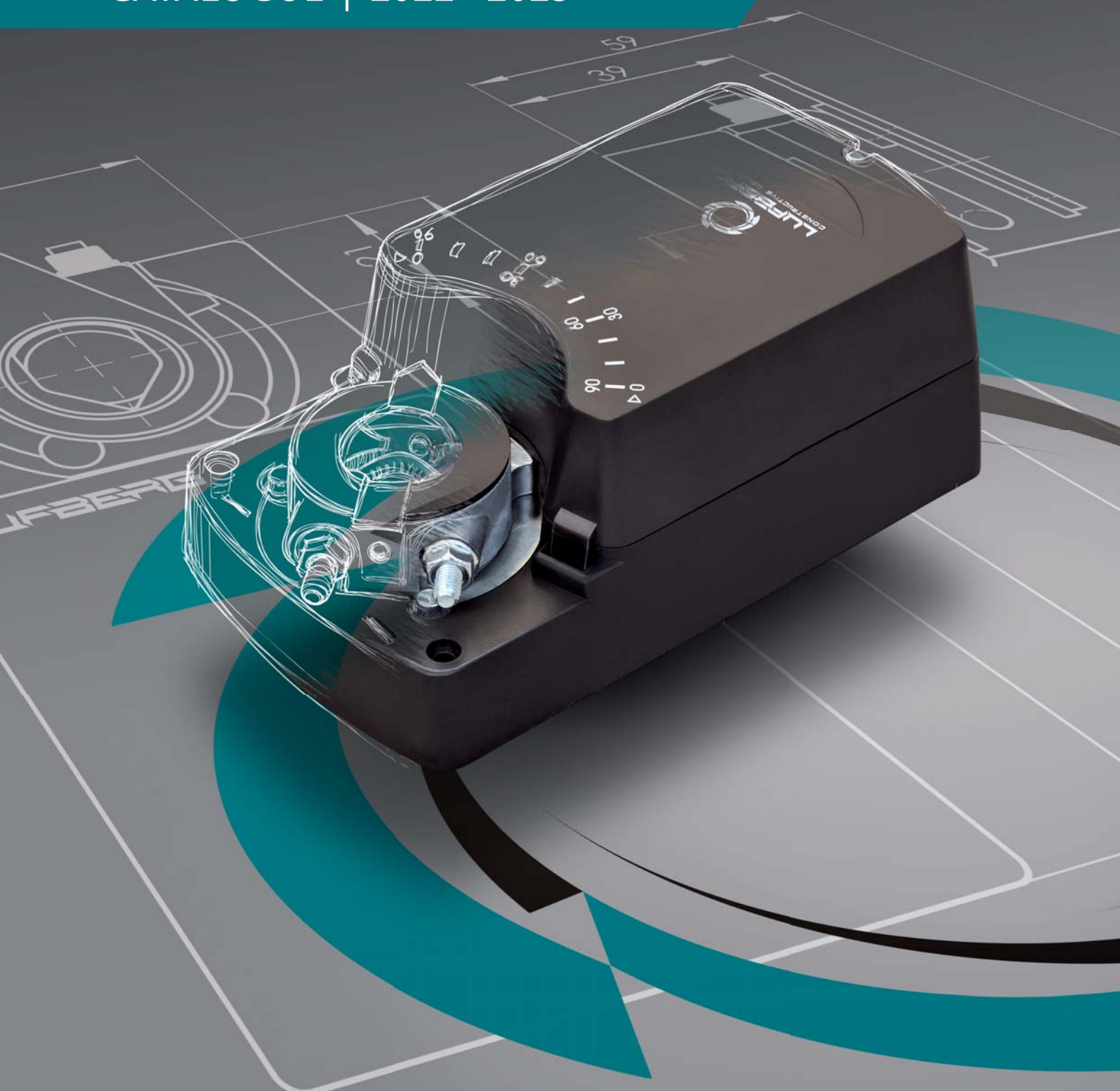




LUFBERG
CONSTRUCTIVE DECISIONS

ACTUATORS

CATALOGUE | 2022 - 2023



AIR CONTROL

ACTUATORS WITHOUT SPRING RETURN		Page
2 Nm	DA02N	05
4 Nm	DA04N	06
8 Nm	DA08N	07
16 Nm	DA16N	07
24 Nm	DA24N	07
32 Nm	DA32N	08



FAST RUNNING ACTUATORS WITHOUT SPRING RETURN		Page
8 Nm	DA08F	09
16 Nm	DA16F	09



ACTUATORS WITH SPRING RETURN		Page
3 Nm	DA03S	10
5 Nm	DA05S	11
10 Nm	DA10S	12
15 Nm	DA15S	13



ACTUATORS WITH SPRING RETURN FOR FIRE AND SMOKE DAMPERS		Page
5 Nm	FS05S	14
10 Nm	FS10S	15
15 Nm	FS15S	16



ACTUATORS WITHOUT SPRING RETURN FOR FIRE AND SMOKE DAMPERS		Page
10 Nm	FS10N	17
30 Nm	FS30N	18



WATER CONTROL



CONTROL BALL VALVES		Page
DN15 - DN50	BV	19



ZONE VALVES WITH ACTUATOR		Page
DN15 - DN32	ZV	20

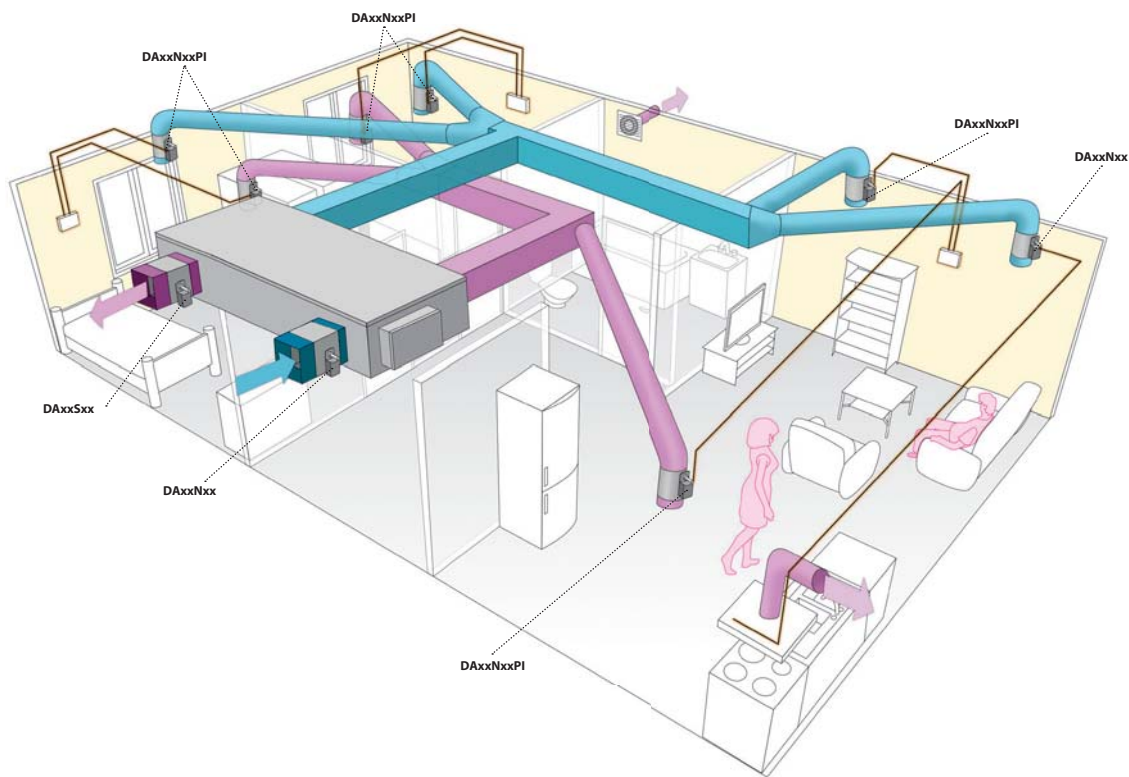


ZONE VALVES WITH SPRING RETURN ACTUATOR		Page
DN15, DN20, DN25	ZV-S	21



USING THE INDIVIDUAL TYPES OF ACTUATORS

- **Actuators without spring return** are used for regulating buildings' heat and ventilation systems. In particular, they are air dampers and water valves.
- **Fast running actuators without spring return** are particularly used in industry, when equipment must react quickly to changes in the conditions of a technological process.
- **Actuators with spring return** are used wherever it is necessary to set dampers or other equipment to a specific position if the electricity fails.
- **Actuators with spring return for fire and smoke dampers** are used in fire ventilation systems where it is necessary to set dampers or other equipment to a specific position if the electricity fails or is shut off.
- **Actuators without spring return for fire and smoke dampers** are used exclusively in fire ventilation systems that provide outward ventilation to burning buildings, so that all occupants can be safely evacuated.
- **2/3-point control** is suitable for equipment that requires setting to two positions. It is typically open/close.
- **Modulating control** is suitable for precise position management of the controlled equipment with feedback on the current position. These are VAV ventilation systems, air mixing, temperature control, water flow control, etc.



LUFBERG ACTUATOR CODING

DA08N24PIS

BUILT-IN SWITCHES	S - Auxiliary switch T - Thermoelectric tripping device No designation - No switches
CONTROLS	P - Modulating - voltage signal I - Modulating - current signal PI - Modulating - voltage signal/current signal No designation - 2/3 point controls
VOLTAGE	24 - 24 V AC/DC 220 - 230 V AC
TYPE	N - Actuator without spring return F - Fast running actuator without spring return S - Actuator with spring return
TORQUE	02 - 2 Nm (also available: 3, 4, 5, 8, 10, 15, 16, 24, 30, 32 Nm)
ACTUATOR	DA - Actuator for air dampers and water valves FS - Actuator for fire and smoke dampers

Example: Model DA04N24P - without spring return, 24V, modulating control - voltage signal

2Nm



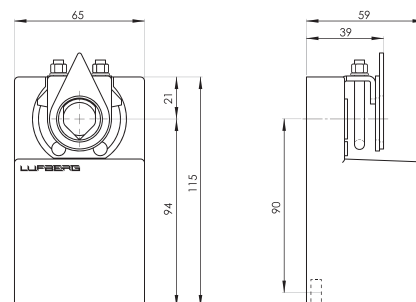
TECHNICAL SPECIFICATIONS

Controls		2/3 point		Modulating 2 -10V DC
Voltage		24V AC/DC	230V AC	24V AC/DC
Torque 2 Nm Damper surface < 0.4 m ² *		DA02N24 0.49 kg	DA02N220 0.51 kg	DA02N24P 0.50 kg
	1 auxiliary switch SPDT**	DA02N24S 0.53 kg	DA02N220S 0.55 kg	DA02N24PS 0.54 kg
Running time - motor		35-45s		45-55s
Frequency		50/60Hz (AC)		
Power consumption				
- in operation		3.0 W	3.0 W	3.0 W
- at rest		0.6 W	0.7W	0,9W
- for wire sizing		4.5 VA	4.5 VA	4,5VA
Angle of rotation		0~90°		
- setting		0°~90° (continuous)		
Direction of rotation		direction of rotation chosen with a switch on the actuator		
Sound power level - motor		<45 dB(A)		
Feedback signal		-	-	2-10V DC
Electrical connection		actuator includes 1 m cable		
Auxiliary switches		3 (1.5)A, 230V		
Degree of protection		IP54		
Protection class		III low voltage	II	III low voltage
Ambient humidity		95% RH, without condensation		
Ambient temperature		-30~+50 °C		
Non-operating temperature		-40~+70 °C		
Service life		60,000 full operating cycles		
Mechanical connection				
- round shaft		from ø6 to ø16 mm		
- square shaft		from 5x5 to 12x12 mm		
Manual override		gears disengaged using a button on the actuator cover		
Norms and standards		Declaration of conformity, ISO, CE, EAC		

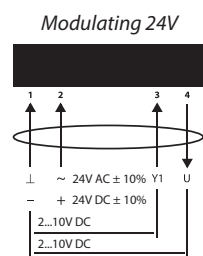
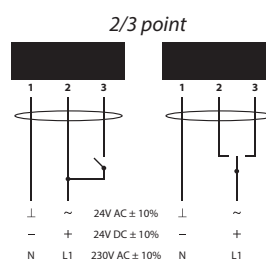
* Maximum damper surface is calculated for optimum conditions (without the effects of airflow, pressure difference, etc.).

** SPDT (Single-Pole Double-Throw)

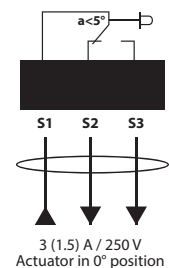
DIMENSIONS (mm)



ELECTRICAL CONNECTION



Auxiliary switches



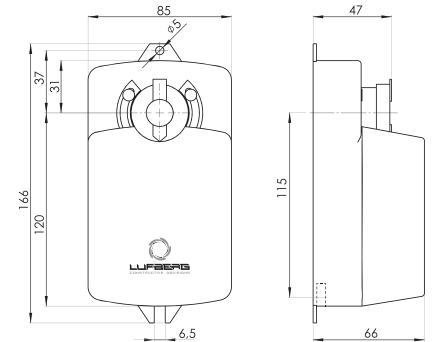
4Nm



TECHNICAL SPECIFICATIONS

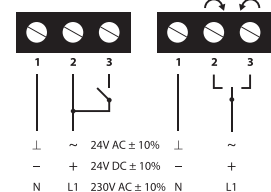
Controls		2/3 point		Modulating	
				...P: 0-10V DC	0 -10V DC
				...I: 4-20mA DC	
Voltage		24V AC/DC	230V AC	24V AC/DC	230V AC
Torque 4 Nm Damper surface < 0.8 m ^{2*}	2 auxiliary switches SPDT**	DA04N24 0.73 kg	DA04N220 0.75 kg	DA04N24P 0.75 kg	DA04N220P 0.76 kg
		DA04N24S 0.74 kg	DA04N220S 0.76 kg	DA04N24I 0.75 kg	DA04N220PS 0.77 kg
Running time - motor		30-60s			
Frequency		50/60Hz (AC)			
Power consumption					
- in operation		3.0 W	3.0 W	4,0W	2,5W
- at rest		0.9 W	0.9 W	0,9W	0,9W
- for wire sizing		8.0 VA	8.0 VA	4,0VA	5,0VA
Angle of rotation		0~90°			
- setting		two end stops with settings from 0° to 30° and from 60° to 90° (stepless)			
Direction of rotation		by switch on actuator			
Sound power level - motor		<45 dB(A)			
Feedback signal		-		0 -10V DC	
Electrical connection		terminal in actuator body			
Auxiliary switches		3 (1.5)A, 230V			
Degree of protection		IP54			
Protection class		III low voltage	II	III low voltage	II
Ambient humidity		95% RH, without condensation			
Ambient temperature		-30~+50 °C			
Non-operating temperature		-40~+70 °C			
Service life		60,000 full operating cycles			
Mechanical connection					
- round shaft		from ø10 to ø16 mm			
- square shaft		from 9x9 to 12x12 mm			
Manual override		gears disengaged from button on actuator cover			
Norms and standards		Declaration of conformity, ISO, CE, EAC			
* Maximum damper surface is calculated for optimum conditions (without the effects of airflow, pressure difference, etc.).					
** SPDT (Single-Pole Double-Throw)					

DIMENSIONS (mm)

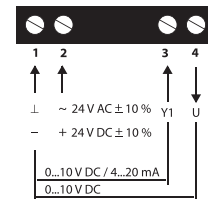


ELECTRICAL CONNECTION

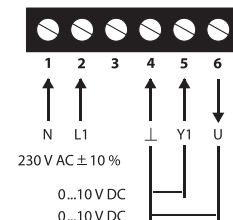
2/3 point



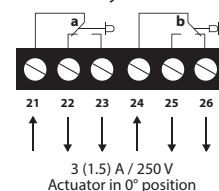
Modulating 24V



Modulating 230V



Auxiliary switches



Factory setting:
a = 10°
b = 80°

Adjustment:
a: 0°~90°
b: 0°~90°

8 Nm, 16 Nm, 24 Nm

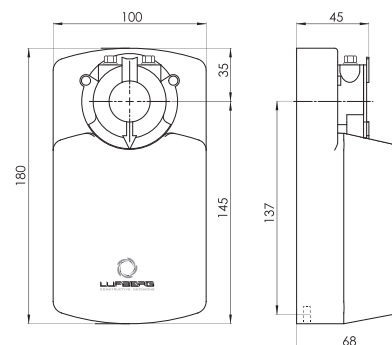


TECHNICAL SPECIFICATIONS

Controls		2/3 point		Modulating	
				0(2)-10V/ 0(4)-20mA DC	0-10V DC
Voltage		24V AC/DC	230V AC	24V AC/DC	230V AC
Torque 8 Nm Damper surface < 1.6 m ² *		DA08N24 1.08 kg	DA08N220 1.08 kg	DA08N24PI 1.08 kg	DA08N220P 1.10 kg
	2 auxiliary switches SPDT**	DA08N24S 1.09 kg	DA08N220S 1.10 kg	DA08N24PIS 1.09 kg	DA08N220PS 1.13 kg
Torque 16 Nm Damper surface < 3.2 m ² *		DA16N24 1.08 kg	DA16N220 1.09 kg	DA16N24PI 1.08 kg	DA16N220P 1.10 kg
	2 auxiliary switches SPDT**	DA16N24S 1.09 kg	DA16N220S 1.10 kg	DA16N24PIS 1.11 kg	DA16N220PS 1.13 kg
Torque 24 Nm Damper surface < 4.8 m ² *		DA24N24 1.08 kg	DA24N220 1.09 kg	DA24N24PI 1.09 kg	DA24N220P 1.10 kg
	2 auxiliary switches SPDT**	DA24N24S 1.09 kg	DA24N220S 1.10 kg	DA24N24PIS 1.12 kg	DA24N220PS 1.12 kg

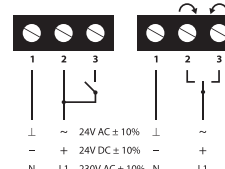
Running time - motor	
- 8 Nm	30-40s
- 16 Nm	70-95s
- 24 Nm	115-160s
Frequency	
50/60Hz (AC)	
Power consumption	
- in operation	4.5 W 4.8W 4.5 W 4.8W
- at rest	0.4 W 1.2 W 0.7W 1,0W
- for wire sizing	6.5 VA 6.5 VA 6.5 VA 10,0VA
Angle of rotation	
0~90°	
- setting	5°~85° (5° step)
Direction of rotation	
by turning the motor connector on the electronics board by switch inside of the actuator	
Sound power level - motor	
<45 dB(A)	
Feedback signal	
- 0(2)-10V DC 0-10V DC	
Electrical connection	
terminal in actuator body	
Auxiliary switches	
3 (1.5)A, 230V	
Degree of protection	
IP54	
Protection class	
III low voltage II III low voltage II	
Ambient humidity	
95% RH, without condensation	
Ambient temperature	
-30~+50 °C	
Non-operating temperature	
-40~+70 °C	
Service life	
60,000 full operating cycles	
Mechanical connection	
- round shaft	from ø10 to ø20mm
- square shaft	from 10x10 to 16x16 mm
Manual override	
gears disengaged using a button on the actuator cover	
Norms and standards	
Declaration of conformity, ISO, CE, EAC	
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).	
** SPDT (Single-Pole Double-Throw)	

DIMENSIONS (mm)

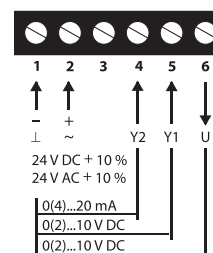


ELECTRICAL CONNECTION

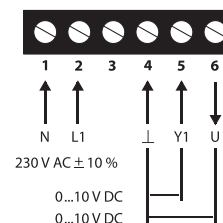
2/3 point



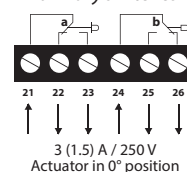
Modulating 24V



Modulating 230V



Auxiliary switches



Factory setting:
a = 10°
b = 80°

Adjustment:
a: 0°~90°
b: 0°~90°

32Nm



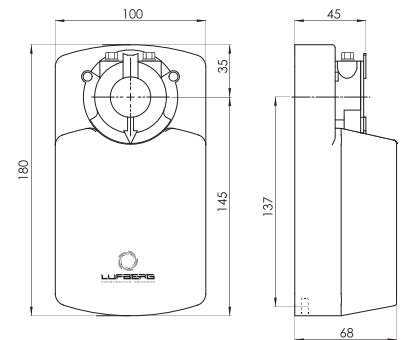
TECHNICAL SPECIFICATIONS

Controls		2/3 point		Modulating 0(2)-10V/0(4)-20mA DC
Voltage		24V AC/DC	230V AC	24V AC/DC
Torque 32 Nm Damper surface < 6.4 m ² *	2 auxiliary switches SPDT**	DA32N24 1.09 kg	DA32N220 1.10 kg	DA32N24PI 1.09 kg
		DA32N24S 1.10 kg	DA32N220S 1.11 kg	DA32N24PIS 1.12 kg
Running time - motor		135-185s		
Frequency		50/60Hz (AC)		
Power consumption				
- in operation		4.5 W	5.5W	4.5 W
- at rest		0.5W	1.0 W	0.7W
- for wire sizing		6.5 VA	6.5 VA	6.5 VA
Angle of rotation		0~90°		
- setting		5°~85° (5° step)		
Direction of rotation		by turning the motor connector on the electronics board		by switch inside of the actuator
Sound power level - motor		<45 dB(A)		
Feedback signal		-		0(2)-10V DC
Electrical connection		terminal in actuator body		
Auxiliary switches		3 (1.5)A, 230V		
Degree of protection		IP54		
Protection class		III low voltage	II	III low voltage
Ambient humidity		95% RH, without condensation		
Ambient temperature		-30~+50 °C		
Non-operating temperature		-40~+70 °C		
Service life		60,000 full operating cycles		
Mechanical connection				
- round shaft		from ø10 to ø20mm		
- square shaft		from 10x10 to 16x16 mm		
Manual override		gears disengaged using a button on the actuator cover		
Norms and standards		Declaration of conformity, ISO, CE, EAC		
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).				
** SPDT (Single-Pole Double-Throw)				

* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

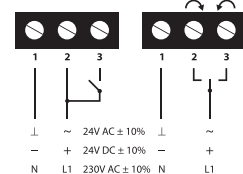
** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

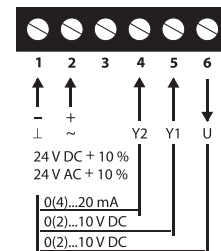


ELECTRICAL CONNECTION

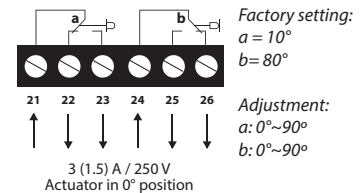
2/3 point



Modulating 24V



Auxiliary switches



8 Nm, 16 Nm

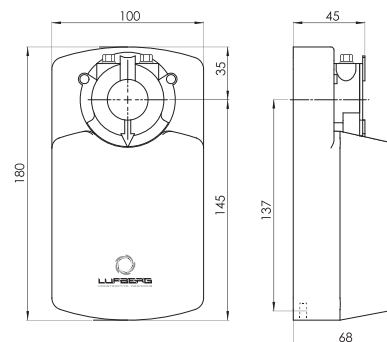


TECHNICAL SPECIFICATIONS

Controls		2/3 point		Modulating 0(2)-10V/0(4)-20mA DC
Voltage		24V AC/DC	230V AC	24V AC/DC
Torque 8 Nm Damper surface < 1.6 m ² *		DA08F24 1.08 kg	DA08F220 1.09 kg	DA08F24PI 1.09 kg
	2 auxiliary switches SPDT**	DA08F24S 1.09 kg	DA08F220S 1.10 kg	DA08F24PIS 1.11 kg
Torque 16 Nm Damper surface < 3.2 m ² *		DA16F24 1.08 kg	DA16F220 1.09 kg	DA16F24PI 1.09 kg
	2 auxiliary switches SPDT**	DA16F24S 1.09 kg	DA16F220S 1.10 kg	DA16F24PIS 1.11 kg

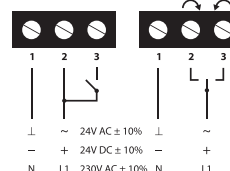
Running time - motor	
- 8 Nm	8s
- 16 Nm	16s
Frequency	
50/60Hz (AC)	
Power consumption	
- in operation	12.0 W
- at rest	0.5W
- for wire sizing	13.0 VA
Angle of rotation	
0~90°	
- setting	5°~85° (5° step)
Direction of rotation	
by turning the motor connector on the electronics board	by switch inside of the actuator
Sound power level - motor	
<55 dB(A)	
Feedback signal	0(2)-10V DC
Electrical connection	terminal in actuator body
Auxiliary switches	3 (1.5)A, 230V
Degree of protection	IP54
Protection class	III low voltage
Ambient humidity	95% RH, without condensation
Ambient temperature	-30~+50 °C
Non-operating temperature	-40~+70 °C
Service life	60,000 full operating cycles
Mechanical connection	
- round shaft	from ø10 to ø20mm
- square shaft	from 10x10 to 16x16 mm
Manual override	gears disengaged using a button on the actuator cover
Norms and standards	
Declaration of conformity, ISO, CE, EAC	
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).	
** SPDT (Single-Pole Double-Throw)	

DIMENSIONS (mm)

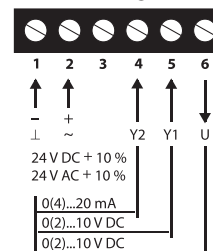


ELECTRICAL CONNECTION

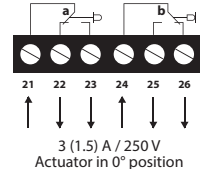
2/3 point



Modulating 24V



Auxiliary switches



Factory setting:

a = 10°

b = 80°

Adjustment:

a: 0°~90°

b: 0°~90°

3Nm



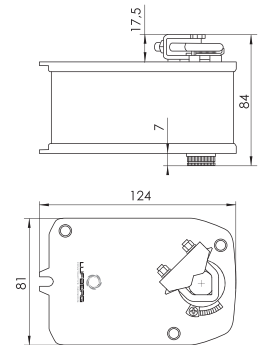
TECHNICAL SPECIFICATIONS

Controls		Open/Closed		Modulating 0-10V DC
Voltage		24V AC/DC	230V AC	24V AC/DC
Torque 3 Nm Damper surface $< 0.5 \text{ m}^2$		DA03S24 0.98 kg	DA03S220 0.99 kg	DA03S24P 1.02 kg
	2 auxiliary switches SPDT**	DA03S24S 1.08 kg	DA03S220S 1.09 kg	-
	1 auxiliary switch SPDT**	-	-	DA03S24PS 1.07 kg
Running time - motor/spring return		60s / < 30s		
Frequency		50/60Hz (AC)		
Power consumption				
- in operation		2.5 W	2.5 W	2.5 W
- at rest		1,6 W	1,6 W	1,6 W
- for wire sizing		5.0 VA	5.0 VA	7.0 VA
Angle of rotation		-5°~90°		
- setting		45°~90° (5° step)		
Direction of rotation		can be selected by mounting L/R		
Sound power level - motor / spring return		<50 dB(A) / <65 dB(A)		
Feedback signal		-	-	0-10V DC
Electrical connection		actuator includes 1 m cable		
Auxiliary switches		3 (1.5A), 230V		
Degree of protection		IP54		
Protection class		III low voltage	II	III low voltage
Ambient humidity		95% RH, without condensation		
Ambient temperature		-30~+50 °C		
Non-operating temperature		-40~+70 °C		
Service life		60,000 emergency positions		
Mechanical connection				
- round shaft		from $\varnothing 6$ to $\varnothing 12$ mm		
- square shaft		from 5x5 to 8x8 mm		
Manual override		not possible		
Norms and standards		Declaration of conformity, ISO, CE, EAC		

* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

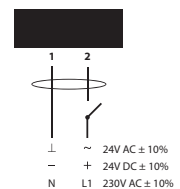
** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

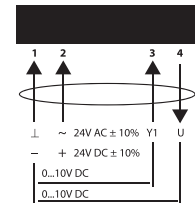


ELECTRICAL CONNECTION

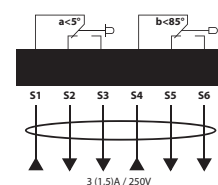
Open/Closed



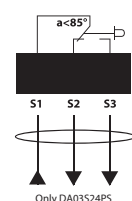
Modulating



Auxiliary switches



Auxiliary switches



5Nm



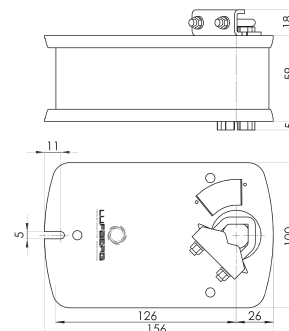
TECHNICAL SPECIFICATIONS

Controls		Open/Closed		Modulating 0-10V DC
Voltage		24V AC/DC	230V AC	24V AC/DC
Torque 5 Nm Damper surface $< 1.0 \text{ m}^2$ *		DA05S24 1.58 kg	DA05S220 1.58 kg	DA05S24P 1.54 kg
	2 auxiliary switches SPDT**	DA05S24S 1.68 kg	DA05S220S 1.68 kg	-
	1 auxiliary switch SPDT**	-	-	DA05S24PS 1.64 kg
Running time - motor/spring return		70s / < 20s	70s / < 20s	120s / < 20s
Frequency		50/60Hz (AC)		
Power consumption				
- in operation		5.0 W	5.0 W	5.0 W
- at rest		3.0 W	3.0 W	2.0 W
- for wire sizing		5.0 VA	5.0 VA	10.0 VA
Angle of rotation		-5°~90°		
- setting		5°~85° (5° step)		
Direction of rotation		can be selected by mounting L/R		
Sound power level - motor / spring return		<45 dB(A) / <62 dB(A)		
Feedback signal		-	-	0-10V DC
Electrical connection		actuator includes 1 m cable		
Auxiliary switches		3 (1.5)A, 230V		
Degree of protection		IP54		
Protection class		III low voltage	II	III low voltage
Ambient humidity		95% RH, without condensation		
Ambient temperature		-30~+50 °C		
Non-operating temperature		-40~+70 °C		
Service life		60,000 emergency positions		
Mechanical connection				
- round shaft		from $\varnothing 10$ to $\varnothing 16$ mm		
- square shaft		from 7x7 to 11x11 mm		
Manual override		not possible		
Norms and standards		Declaration of conformity, ISO, CE, EAC		

* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

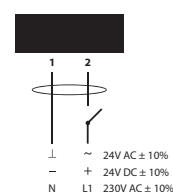
** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

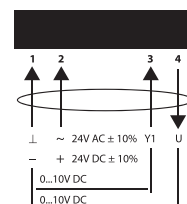


ELECTRICAL CONNECTION

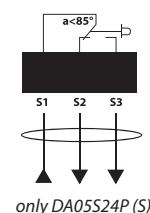
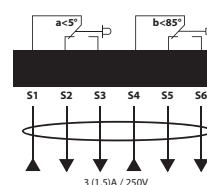
Open/Closed



Modulating



Auxiliary switches



10Nm



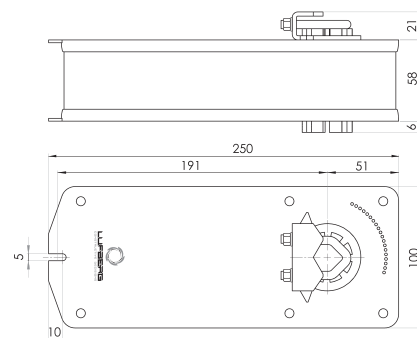
TECHNICAL SPECIFICATIONS

Controls		Open/Closed		Modulating 0-10V DC
Voltage		24V AC/DC	230V AC	24V AC/DC
Torque 10 Nm Damper surface < 2.0 m ² *	2 auxiliary switches SPDT**	DA10S24 2.24 kg	DA10S220 2.24 kg	DA10S24P 2.30 kg
		DA10S24S 2.37 kg	DA10S220S 2.37 kg	DA10S24PS 2.42 kg
Running time - motor/spring return		100s / < 25s	100s / < 25s	120s / < 20s
Frequency		50/60Hz (AC)		
Power consumption				
- in operation		5.0 W	5.0 W	2.5 W
- at rest		3.0 W	3.0 W	0.4 W
- for wire sizing		10.0 VA	10.0 VA	10.0 VA
Angle of rotation		-5°~90°		
- setting		5°~85° (5° step)		
Direction of rotation		can be selected by mounting L/R		
Sound power level - motor / spring return		<50 dB(A) / <62 dB(A)		
Feedback signal		-	-	0-10V DC
Electrical connection		actuator includes 1 m cable		
Auxiliary switches		3 (1.5)A, 230V		
Degree of protection		IP54		
Protection class		III low voltage	II	III low voltage
Ambient humidity		95% RH, without condensation		
Ambient temperature		-30~+50 °C		
Non-operating temperature		-40~+70 °C		
Service life		60,000 emergency positions		
Mechanical connection				
- round shaft		from ø10 to ø19 mm		
- square shaft		from 10x10 to 16x16 mm		
Manual override		not possible		
Norms and standards		Declaration of conformity, ISO, CE, EAC		
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).				
** SPDT (Single-Pole Double-Throw)				

* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

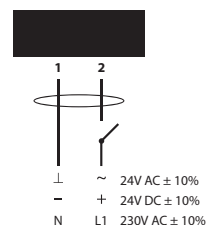
** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

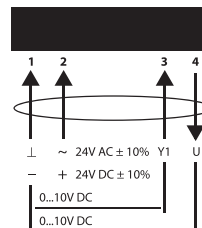


ELECTRICAL CONNECTION

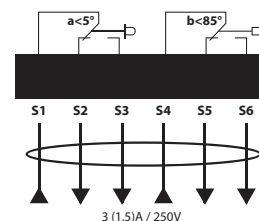
Open/Closed



Modulating



Auxiliary switches



15Nm



TECHNICAL SPECIFICATIONS

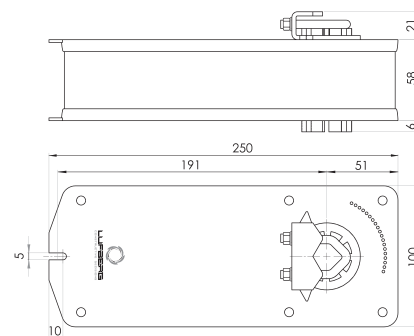
Controls		Open/Closed		Modulating 0-10V DC
Voltage		24V AC/DC	230V AC	24V AC/DC
Torque 15 Nm Damper surface $< 3.0 \text{ m}^2$ *	2 auxiliary switches SPDT**	DA15S24 2.37 kg	DA15S220 2.58 kg	DA15S24P 2.41 kg
		DA15S24S 2.54 kg	DA15S220S 2.72 kg	DA15S24PS 2.55 kg

Running time - motor/spring return	150s / < 30s		
Frequency	50/60Hz (AC)		
Power consumption			
- in operation	6.5 W	6.5 W	3.5 W
- at rest	2.5 W	2.5 W	1.2 W
- for wire sizing	10.0 VA	10.0 VA	10.0 VA
Angle of rotation	-5°~90°		
- setting	5°~85° (5° step)		
Direction of rotation	can be selected by mounting L/R		
Sound power level - motor / spring return	<50 dB(A) / <62 dB(A)		
Feedback signal	-	-	0-10V DC
Electrical connection	actuator includes 1 m cable		
Auxiliary switches	3 (1.5)A, 230V		
Degree of protection	IP54		
Protection class	III low voltage	II	III low voltage
Ambient humidity	95% RH, without condensation		
Ambient temperature	-30~+50 °C		
Non-operating temperature	-40~+70 °C		
Service life	60,000 emergency positions		
Mechanical connection			
- round shaft	from $\varnothing 10$ to $\varnothing 19$ mm		
- square shaft	from 10x10 to 16x16 mm		
Manual override	not possible		
Norms and standards	Declaration of conformity, ISO, CE, EAC		

* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

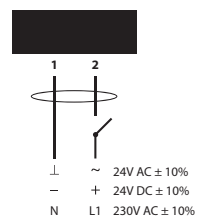
** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

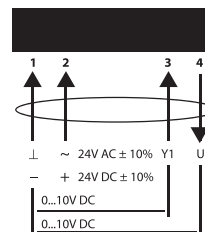


ELECTRICAL CONNECTION

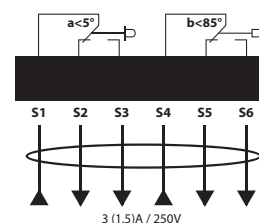
Open/Closed



Modulating



Auxiliary switches



5Nm



TECHNICAL SPECIFICATIONS

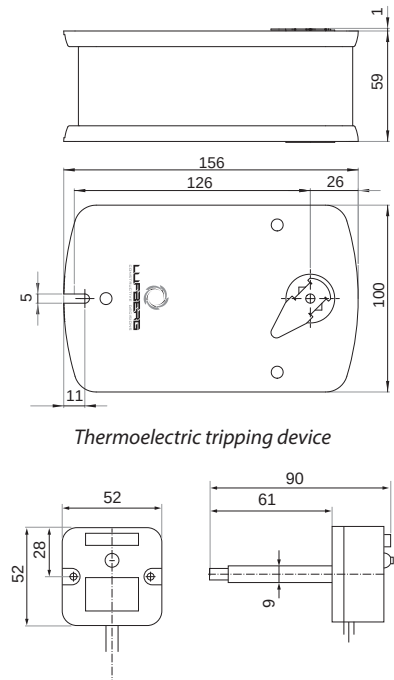
Controls		Open/Closed	
Voltage		24V AC/DC	230V AC
Torque 5 Nm Damper surface < 1.0 m ² *	Thermoelec- tric tripping device	FS05S24S 1.69 kg	FS05S220S 1.75 kg
		FS05S24ST 1.77 kg	FS05S220ST 1.83 kg

Running time - motor/spring return	70s / < 20s	
Frequency	50/60Hz (AC)	
Power consumption		
- in operation	5.0 W	5.0 W
- at rest	3.0 W	3.0 W
- for wire sizing	10.0 VA	10.0 VA
Angle of rotation	-5°~90°	
- setting	-	
Direction of rotation	can be selected by mounting L/R	
Sound power level - motor / spring return	<50 dB(A) / <62 dB(A)	
Feedback signal	-	
Electrical connection	actuator includes 1 m cable	
Auxiliary switches	2x SPDT**; 3 (1.5)A, 230V	
Degree of protection	IP54	
Protection class	III low voltage	II
Ambient humidity	95% RH, without condensation	
Ambient temperature	-30~+50 °C	
Non-operating temperature	-40~+70 °C	
Service life	60,000 emergency positions	
Mechanical connection		
- round shaft	-	
- square shaft	12x12 mm	
Manual override	by crank handle	
Thermoelectric tripping device	switching off at temperature >72 °C (FS...T type only)	
Norms and standards	Declaration of conformity, ISO, CE, EAC	

* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

** SPDT (Single-Pole Double-Throw)

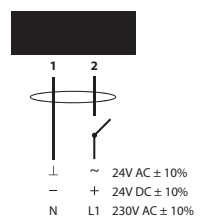
DIMENSIONS (mm)



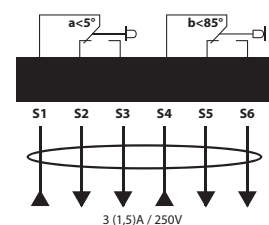
Thermoelectric tripping device

ELECTRICAL CONNECTION

Open/Closed



Auxiliary switches



10Nm



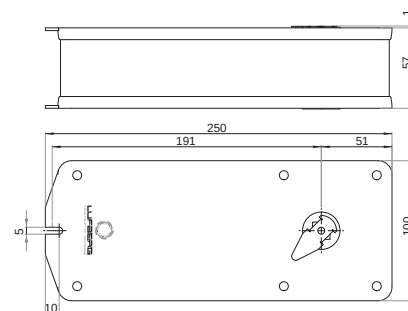
TECHNICAL SPECIFICATIONS

Controls		Open/Closed	
Voltage		24V AC/DC	230V AC
Torque 10 Nm Damper surface < 2.0 m ² *		FS10S24S 2.50 kg	FS10S220S 2.51 kg
	Thermoelectric tripping device	FS10S24ST 2.58 kg	FS10S220ST 2.59 kg
Running time - motor/spring return		100s / < 25s	
Frequency		50/60Hz (AC)	
Power consumption			
- in operation		5.0 W	5.0 W
- at rest		3.0 W	3.0 W
- for wire sizing		10.0 VA	10.0 VA
Angle of rotation		-5°~90°	
- setting		-	
Direction of rotation		can be selected by mounting L/R	
Sound power level - motor / spring return		<50 dB(A) / <62 dB(A)	
Feedback signal		-	
Electrical connection		actuator includes 1 m cable	
Auxiliary switches		2x SPDT**; 3 (1.5)A, 230V	
Degree of protection		IP54	
Protection class		III low voltage	II
Ambient humidity		95% RH, without condensation	
Ambient temperature		-30~+50 °C	
Non-operating temperature		-40~+70 °C	
Service life		60,000 emergency positions	
Mechanical connection			
- round shaft		-	
- square shaft		12x12 mm	
Manual override		by crank handle	
Thermoelectric tripping device		switching off at temperature >72 °C (FS...T type only)	
Norms and standards		Declaration of conformity, ISO, CE, EAC	

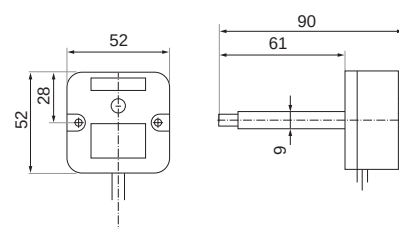
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

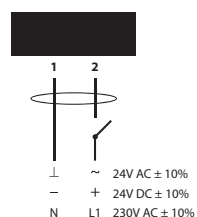


Thermoelectric tripping device

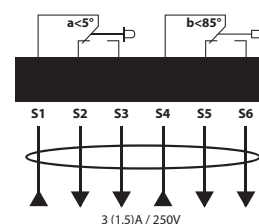


ELECTRICAL CONNECTION

Open/Closed



Auxiliary switches



15Nm



TECHNICAL SPECIFICATIONS

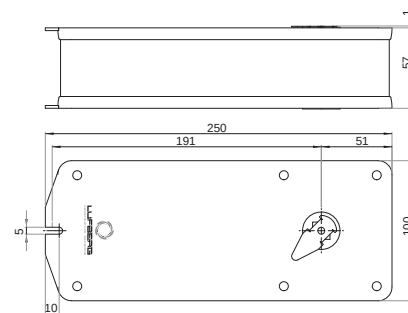
Controls		Open/Closed	
Voltage		24V AC/DC	230V AC
Torque 15 Nm Damper surface < 3.0 m ² *	Thermoelectric tripping device	FS15S24S 2.55 kg	FS15S220S 2.88 kg
		FS15S24ST 2.76 kg	FS15S220ST 3.00 kg

Running time - motor/spring return	150s / < 30s	
Frequency	50/60Hz (AC)	
Power consumption		
- in operation	6.5 W	6.5 W
- at rest	2.5 W	2.5 W
- for wire sizing	10.0 VA	10.0 VA
Angle of rotation	-5°~90°	
- setting	-	
Direction of rotation	can be selected by mounting L/R	
Sound power level - motor / spring return	<50 dB(A) / <62 dB(A)	
Feedback signal	-	
Electrical connection	actuator includes 1 m cable	
Auxiliary switches	2x SPDT**; 3 (1.5)A, 230V	
Degree of protection	IP54	
Protection class	III low voltage	II
Ambient humidity	95% RH, without condensation	
Ambient temperature	-30~+50 °C	
Non-operating temperature	-40~+70 °C	
Service life	60,000 emergency positions	
Mechanical connection		
- round shaft	-	
- square shaft	12x12 mm	
Manual override	by crank handle	
Thermoelectric tripping device	switching off at temperature >72 °C (FS...T type only)	
Norms and standards	Declaration of conformity, ISO, CE, EAC	

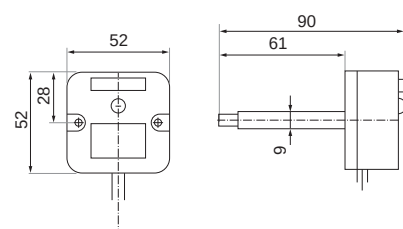
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

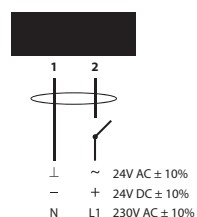


Thermoelectric tripping device

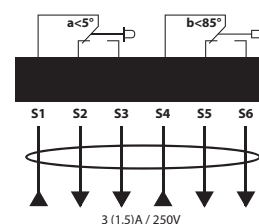


ELECTRICAL CONNECTION

Open/Closed



Auxiliary switches



10Nm



TECHNICAL SPECIFICATIONS

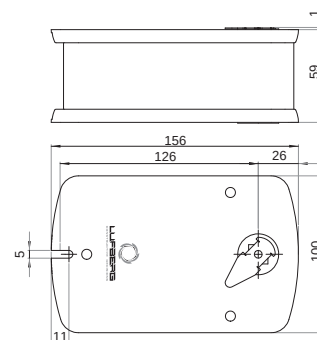
Controls		3-point	
Voltage		24V AC/DC	230V AC
Torque 10 Nm Damper surface < 2.0 m ² *	Thermoelectric tripping device	FS10N24S 1.55 kg	FS10N220S 1.56 kg
		FS10N24ST 1.74 kg	FS10N220ST 1.74 kg

Running time - motor	30-45s	
Frequency	50/60Hz (AC)	
Power consumption		
- in operation	5.0 W	5.0 W
- at rest	1.0 W	1.0 W
- for wire sizing	10.5 VA	10.5 VA
Angle of rotation	-5°~90°	
- setting	-	
Direction of rotation	can be selected by mounting L/R	
Sound power level - motor	<50 dB(A)	
Feedback signal	-	
Electrical connection	actuator includes 1 m cable	
Auxiliary switches	2x SPDT**; 3 (1.5)A, 230V	
Degree of protection	IP54	
Protection class	III low voltage	II
Ambient humidity	95% RH, without condensation	
Ambient temperature	-30~+50 °C	
Non-operating temperature	-40~+70 °C	
Service life	60,000 emergency positions	
Mechanical connection		
- round shaft	-	
- square shaft	12x12 mm	
Manual override	by crank handle	
Thermoelectric tripping device	switching off at temperature >72°C (FS...T type only)	
Norms and standards	Declaration of conformity, ISO, CE, EAC	

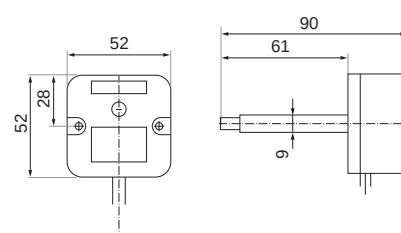
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

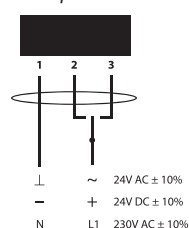


Thermoelectric tripping device

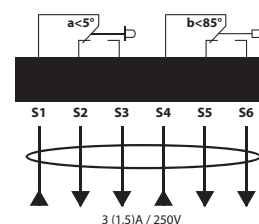


ELECTRICAL CONNECTION

3-point



Auxiliary switches



30Nm



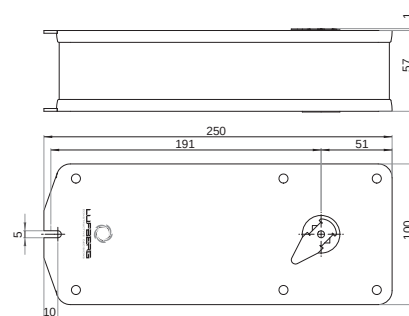
TECHNICAL SPECIFICATIONS

Controls		3-point	
Voltage		24V AC/DC	230V AC
Torque 30 Nm Damper surface < 6.0 m²*		FS30N24S 2.19 kg	FS30N220S 2.19 kg
	Thermoelec- tric tripping device	FS30N24ST 2.75 kg	FS30N220ST 2.75 kg
Running time - motor		120s	
Frequency		50/60Hz (AC)	
Power consumption			
- in operation		6,0W	6,5W
- at rest		1,0W	1,0W
- for wire sizing		10,0VA	10,0VA
Angle of rotation		-5°~90°	
- setting		-	
Direction of rotation		can be selected by mounting L/R	
Sound power level - motor		<50 dB(A)	
Feedback signal		-	
Electrical connection		actuator includes 1 m cable	
Auxiliary switches		2x SPDT**; 3 (1.5)A, 230V	
Degree of protection		IP54	
Protection class		III low voltage	II
Ambient humidity		95% RH, without condensation	
Ambient temperature		-30~+50 °C	
Non-operating temperature		-40~+70 °C	
Service life		60,000 emergency positions	
Mechanical connection			
- round shaft		-	
- square shaft		12x12 mm	
Manual override		by crank handle	
Thermoelectric tripping device		switching off at temperature >72°C (FS...T type only)	
Norms and standards		Declaration of conformity, ISO, CE, EAC	
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).			
** SPDT (Single-Pole Double-Throw)			

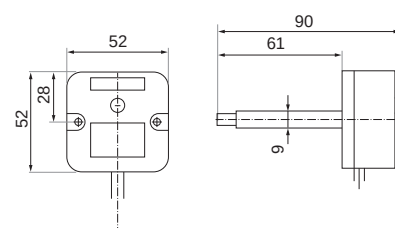
* Maximum damper surface is calculated for optimum conditions (without the influence of air flow, pressure difference, etc.).

** SPDT (Single-Pole Double-Throw)

DIMENSIONS (mm)

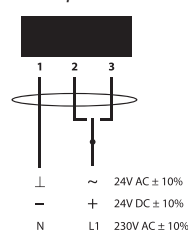


Thermoelectric tripping device

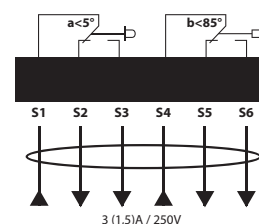


ELECTRICAL CONNECTION

3-point



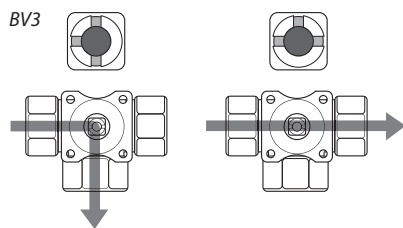
Auxiliary switches





BV control ball valves are for regulating the flow of hot or cold water. They are controlled by a Lufberg DA actuator, which itself is controlled by a signal from the temperature regulator of the HVAC system.

HYDRAULIC SCHEMATIC



TYPE OVERVIEW

Construction	Nominal diameter	Kvs	Bypass Kvs	Control torque	Weight	Model
2-way valves	DN15	1.6	-	4 Nm	0.23 kg	BV-2-15-1,6
		2.5	-		0.22 kg	BV-2-15-2,5
	DN20	4	-		0.30 kg	BV-2-20-4
		6.3	-		0.31 kg	BV-2-20-6,3
	DN25	10	-	8 Nm	0.45 kg	BV-2-25-10
		16	-		0.46 kg	BV-2-25-16
	DN32	25	-		0.76 kg	BV-2-32-25
		40	-		1.05 kg	BV-2-40-25
3-way valves	DN15	1.6	0.8	4 Nm	0.26 kg	BV-3-15-1,6
		2.5	1.6		0.25 kg	BV-3-15-2,5
	DN20	4	2.5		0.38 kg	BV-3-20-4
		6.3	4		0.38 kg	BV-3-20-6,3
	DN25	10	6.3	8 Nm	0.65 kg	BV-3-25-10
		16	10		0.64 kg	BV-3-25-16
	DN32	25	12.5		0.94 kg	BV-3-32-25
		40	20		1.27 kg	BV-3-40-25
	DN40	25	16	8 Nm	1.25 kg	BV-3-40-25
		40	20		1.25 kg	BV-3-40-40
	DN50	63	31.5		2.19 kg	BV-3-50-63
		63	31.5		2.19 kg	BV-3-50-63

TECHNICAL SPECIFICATIONS

Medium	Water, glycol fluid up to 50% concentration
Nominal diameter	DN15, DN20, DN25, DN32, DN40, DN50
Construction	2-way or 3-way
Controls	depends on actuator choice
Voltage	
Power consumption	
Degree of protection	
Running time	
Connection	internal NPT thread
Body	brass
Valve stem	brass with 2 EPDM O-ring
Ball	chromed brass with PTFE seat
Max. medium pressure	2.0 MPa
Max. differential pressure	1.4 MPa
Installation environment temperature	from 5°C to 50°C
Medium temperature	from -5°C to 120°C

CAUTION: When using a BV valve with a series DA actuator, a special BV-BR adapter must be ordered.

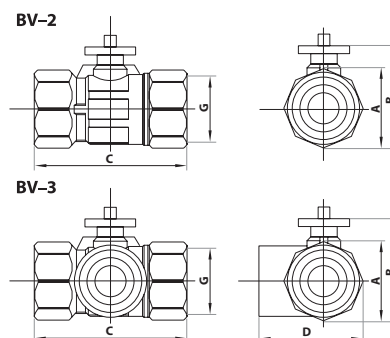
BV-2	G	C	B	A
DN15	1/2"	61	47	27
DN20	3/4"	69	52	36
DN25	1"	89	60	42
DN32	1 1/4"	104	70	52
DN40	1 1/2"	113	79	60
DN50	2"	128	91	74

Dimensions in mm

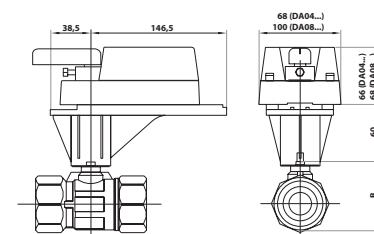
BV-3	G	C	D	B	A
DN15	1/2"	61	47	47	27
DN20	3/4"	69	49	52	36
DN25	1"	89	65	60	42
DN32	1 1/4"	99	75	70	52
DN40	1 1/2"	107	81	79	60
DN50	2"	123	103	90	71

Dimensions in mm

DIMENSIONS (mm)



ADAPTER

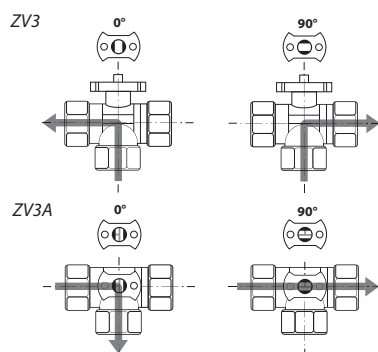


BV valve +
BV-BR adapter +
series DA actuator



ZV zone valves have broad use in heating and cooling systems. ZV type valves are for regulating the flow of cold or hot water based on the required room temperature.

HYDRAULIC SCHEMATIC



TYPE OVERVIEW

Construction	Nominal diameter	Kvs	Voltage	Weight	Model
2-way	DN15	4.62	230V	0.67 kg	ZV2-15-5-230
	DN20	7.50		0.69 kg	ZV2-20-8-230
	DN25	13.02		0.86 kg	ZV2-25-13-230
	DN32	25.97		1.07 kg	ZV2-32-26-230
	DN15	4.62	24V	0.65 kg	ZV2-15-5-24
	DN20	7.50		0.67 kg	ZV2-20-8-24
	DN25	13.02		0.83 kg	ZV2-25-13-24
	DN32	25.97		1.05 kg	ZV2-32-26-24
3-way "vertical"	DN15	4.62	230V	0.70 kg	ZV3-15-5-230
	DN20	7.50		0.75 kg	ZV3-20-8-230
	DN25	13.02		0.95 kg	ZV3-25-13-230
	DN15	4.62	24V	0.68 kg	ZV3-15-5-24
	DN20	7.50		0.72 kg	ZV3-20-8-24
	DN25	13.02		0.92 kg	ZV3-25-13-24
	DN15	4.62	230V	0.75 kg	ZV3A-15-5-230
	DN20	7.5		0.77 kg	ZV3A-20-8-230
3-way "horizontal"	DN25	13.02		0.99 kg	ZV3A-25-13-230
	DN15	4.62	24V	0.72 kg	ZV3A-15-5-24
	DN20	7.5		0.74 kg	ZV3A-20-8-24
	DN25	13.02		0.96 kg	ZV3A-25-13-24

TECHNICAL SPECIFICATIONS

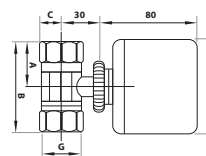
Medium	Water, glycol fluid up to 60% concentration
Nominal diameter	DN15, DN20, DN25, DN32
Construction	2-way or 3-way
Controls	3-point
Voltage	230 V AC or 24 V AC
Power consumption	5 W (in operation)
Degree of protection	IP65
Run time	15s
Connection	internal NPT thread
Body	brass
Valve stem	brass with 2 EPDM O-ring
Ball	stainless steel with PTFE seat
Max. medium pressure	2.0 MPa
Max. differential pressure	1.0 MPa
Installation environment temperature	from 5 °C to 50 °C
Medium temperature	from 1 °C to 95 °C

size	G	A	B	C	D	E
DN15	1/2"	33.5	67	15.5	34	34
DN20	3/4"	33	66	18	36	36
DN25	1"	44	88	20	40	38
DN32	1 1/4"	50	100	25	-	-

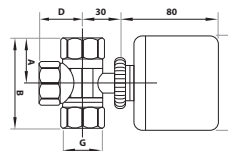
Dimensions in mm, accuracy ± 1 mm

DIMENSIONS (mm)

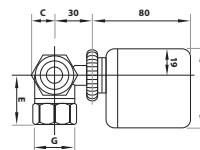
ZV2



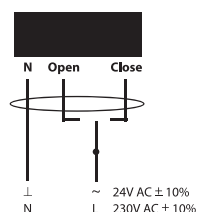
ZV3



ZV3A



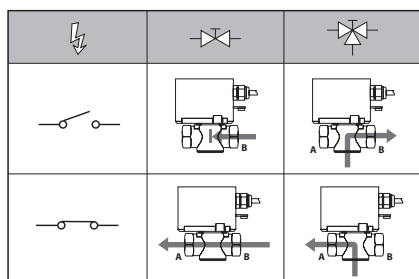
ELECTRICAL CONNECTION





ZV-S zone valves are recommended for all heating and cooling systems with a required safety function for electrical supply interruption. In this case, the spring will safely close.

HYDRAULIC SCHEMATIC



TYPE OVERVIEW

Construction	Dimension	Kvs	Voltage	Weight	Model
2-way	DN15	2.2	230V	0.79 kg	ZV2-S-15-2-230
	DN20	3.0		0.80 kg	ZV2-S-20-4-230
	DN25	6.9		0.88 kg	ZV2-S-25-8-230
3-way	DN15	2.2		0.80 kg	ZV3-S-15-3-230
	DN20	3.0		0.84 kg	ZV3-S-20-4-230
	DN25	6.9		0.99 kg	ZV3-S-25-8-230

TECHNICAL SPECIFICATIONS

Medium	Water, glycol fluid up to 50% concentration
Nominal diameter	DN15, DN20, DN25,
Construction	2-way or 3-way
Controls	On/Off
Voltage	230 V AC
Power consumption	7 W (in operation)
Degree of protection	IP20
Run time	25 sec (open), 10 sec (close)
Connection	internal NPT thread
Body	brass
Valve stem	brass with EPDM seal
Ball	NBR (nitrile butadiene rubber)
Max. medium pressure	1.6 MPa
Max. differential pressure	DN15 = 0.2 MPa; DN20 = 0.18 MPa; DN25 = 0.15 MPa
Installation environment temperature	from 5 °C to 60 °C
Medium temperature	from 5 °C to 90 °C

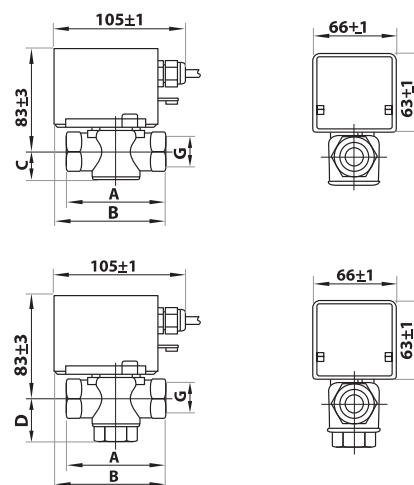
ZV2-S	G	A	B	C
DN15	1/2"	70	86	22.5
DN20	3/4"	79	90	22.5
DN25	1"	88	95	22.5

Dimensions in mm, accuracy ± 1 mm

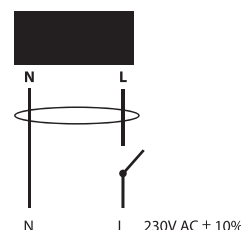
ZV3-S	G	A	B	D
DN15	1/2"	70	86	31.5
DN20	3/4"	79	90	34
DN25	1"	88	95	42

Dimensions in mm, accuracy ± 1 mm

DIMENSIONS (mm)



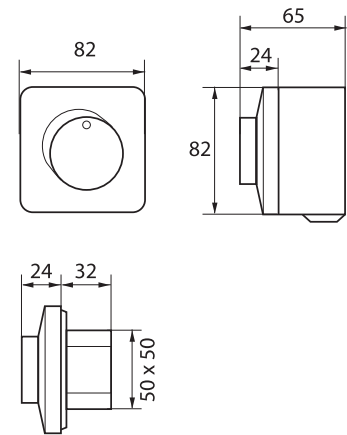
ELECTRICAL CONNECTION





This potentiometer is designed to control actuators or EC-fans. It is mounted in a splash water proof design enclosure and can be used for inset as well as for surface mounting. It provides a proportional output signal between 0 - 10 VDC adjustable with internal trimmers: V1 and V2. The potentiometer has off-position.

DIMMENSIONS (mm)



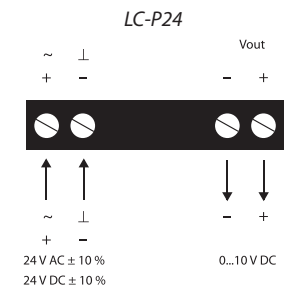
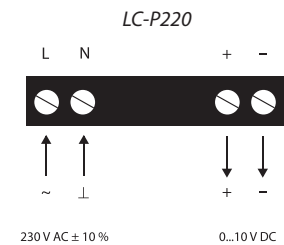
TYPE OVERVIEW

Voltage	Analog output	Weight	Model
24V AC/DC	0-10V DC	145g	LC-P24
230V AC	0-10V DC	165g	LC-P220

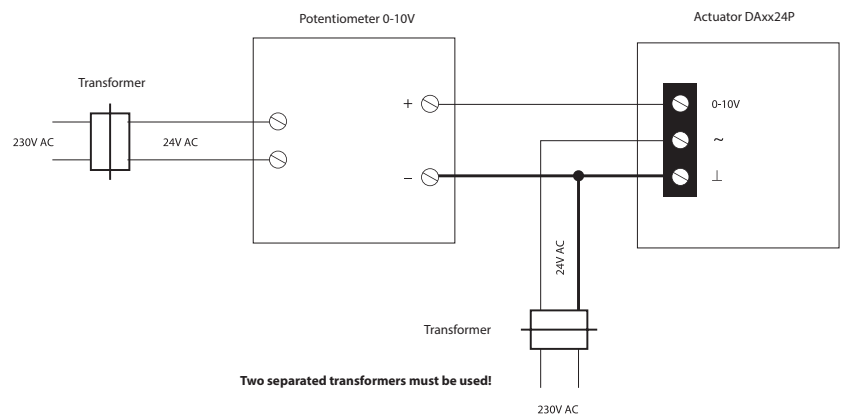
TECHNICAL SPECIFICATIONS

Supply voltage (Vin):	24V AC/DC	230V AC
Frequency	50 Hz	
Analog output (Vout):	0 - 10 VDC	
Setting of min output value (Vmin)	0 - 7 VDC	-
Setting of max output value (Vmax)	3 - 10 VDC	-
Output load	$\geq 2 \text{ k}\Omega$	$\geq 1 \text{ k}\Omega$
	max 20 mA	max 8 mA
Degree of protection	IP44 (inset mount.) IP54 (surface mount.)	
Protection class	III low voltage	II double insulation
Ambient humidity	95% r.h.w/o condensation	
Ambient temperature	0~+40 °C	
Non-operating temperature	-40~+70 °C	
Electrical connection	terminal board	

ELECTRICAL CONNECTION



LC-P24 and actuator with common ground terminal for power supply and control





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Dealer stamp: