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WEATHER PROOF ELECTRIC ACTUATOR

PROTECTION CLASS IP67



MORE THAN 120 YEARS OF EXPERIENCE AS VENDORS OF VALVES AND INSTRUMENTS

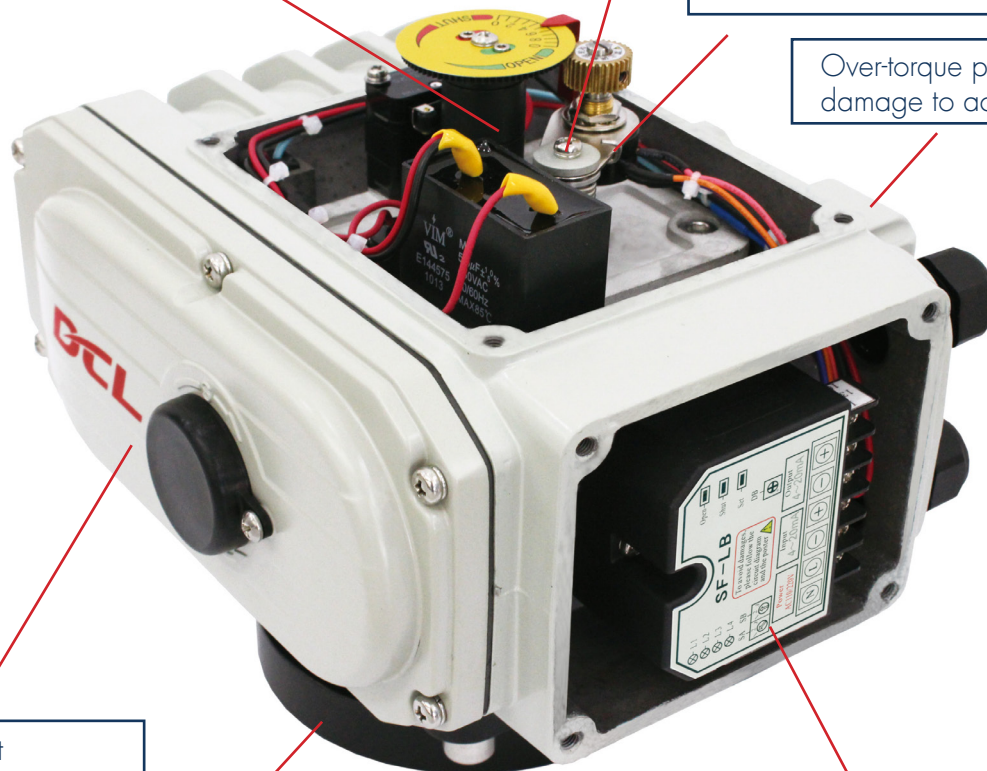
Oslo | Bergen | Arendal | Larvik | Trondheim

The unique anti-backlash mechanism of the spring eliminates transmission backlash between the gears, reduces the reciprocating difference of the actuator and improves positioning accuracy.

Micro Regulation Device of Electric Limit Stroke is a Patented Design by DCL. It makes the adjustment of electric limit simpler and more precise. Patent Number: ZL 201020214725.8

The high quality potentiometer ensures higher accuracy and long service life.

Over-torque protection prevents damage to actuator and valve.



High quality die cast aluminum alloy casing standard with protection Class IP67 (IP68 on request).

Direct installation type mounting Plate in accordance with ISO5211, and makes installation on valve simple and convenient.

High quality Servo-Controller employs high grade electronic components. The circuit board is encased with resin plastic for better shock and humidity protection. The unique electronic brake function makes actuator non-surge when positioning.

PRODUCT TYPE LIST OF COMMON DCL SERIES ELECTRIC ACTUATORS

Actuator Type	Standard Time/ Torque	Optional Time/Torque	Turning Angle (Max. Range)	Total Weight	Power Supply	Control Circuit Type	Page
DCL - 02	15S/18Nm	7S/9Nm 30S/25Nm	0 ~ 90°	1.2kg	24VDC/24VAC 110VAC/220VAC	A/B/E/G/GEY	7
DCL - 05	25S/50Nm	5S/20Nm 12S/30Nm 60S/50Nm	0 ~ 360°	2.5kg	24VDC/24VAC 110VAC/220VAC/380VAC	A/B/C/D/E/F/ G/H/GEY	8
DCL - 10	30S/100Nm	15S/50Nm 60S/100Nm	0 ~ 90°	4.5kg		A/B/BD/C/D/E/ ED/F/G/GD/H/ GEY/GEYD	9
DCL - 20	30S/200Nm	15S/100Nm 60S/200Nm		9kg			10
DCL - 40	30S/400Nm	15S/200Nm 60S/400Nm		9.5kg			
DCL - 60	45S/600Nm			10kg			
DCL - 100	30S/1000Nm			14kg			
DCL - 200	90S/2000Nm			21kg			
DCL - 300	110S/3000Nm		21kg				
Performance Parameter List of Adjusting Type(Type E)							12
Overall Dimensions and Performance Parameters of Quick Open Series							13
Equipment and Function							15

VALVE MATCH (FOR REFERENCE ONLY)

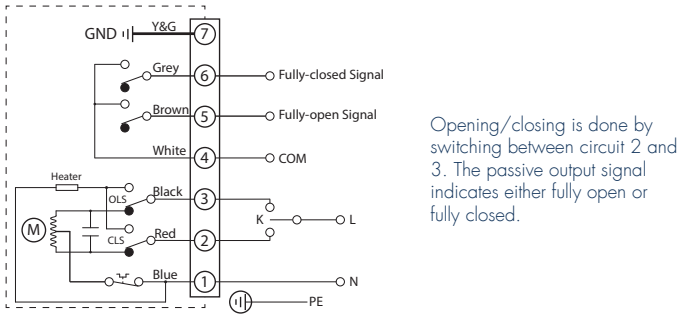
Actuator Type	Butterfly Valve (≤ PN 10)	Ball Valve (≤ PN 16)
DCL - 02	≤ DN40	≤ DN32
DCL - 05	DN50 ~ 65	DN40
DCL - 10	DN80 ~ 100	DN50 ~ 65
DCL - 20	DN125 ~ 150	DN80 ~ 100
DCL - 40	DN200	DN125
DCL - 60	DN250	DN150
DCL - 100	DN300	DN200
DCL - 200	DN350 ~ 400	DN250
DCL - 300	DN450 ~ 600	DN300 ~ 350

Note: The data for electric actuators and valves listed in the table above are for reference only; actual data should be based on the torque values provided by the valve manufacturer. Valve torque can differ significantly due to the wide variety of valve categories. Even valves of the same type and specification may vary because of differences in manufacturing technologies, quality levels, structural forms, and material qualities. Opening torque may also vary depending on the type of medium, site conditions, operating characteristics, and pressure fluctuations. To ensure stable and reliable functionality, a reasonable safety margin should be allowed when selecting actuators. It is recommended to use a safety factor of at least 1.3. All actuator output torques are tested with pressurized valves.

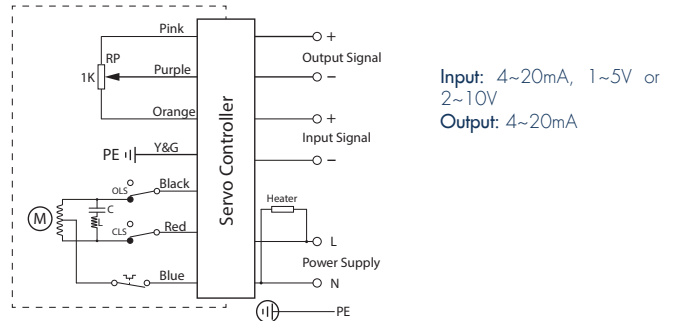
DCL WEATHER PROOF ELECTRIC ACTUATOR

CONTROL CIRCUIT - STOCKED UNITS DCL - 05/10

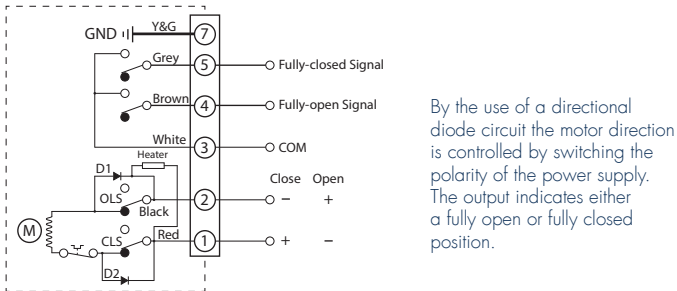
Type B: Limit position switch(Passive Contact)



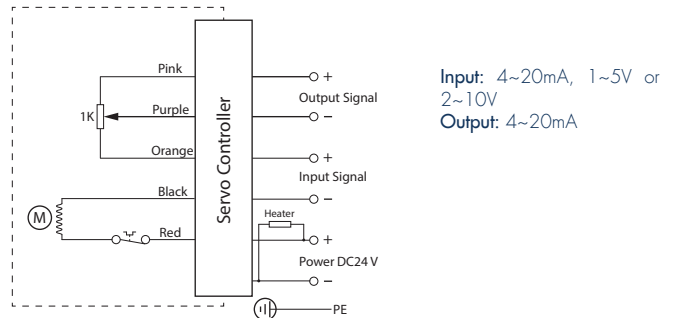
Type E: With Servo Controller(Adjusting Type)



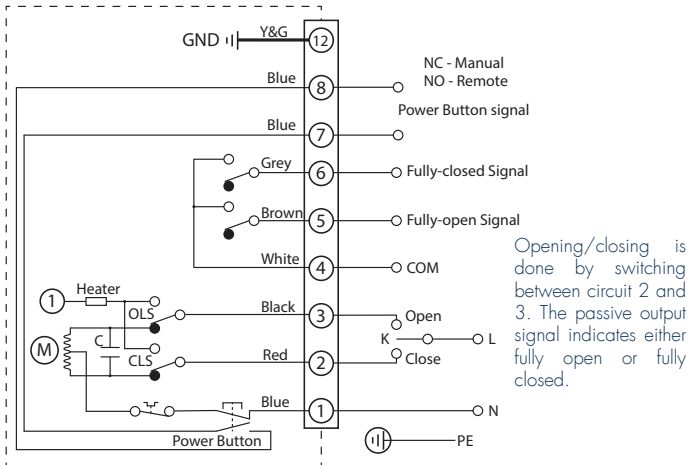
Type G: DC Control Circuit with Passive Contact Switch



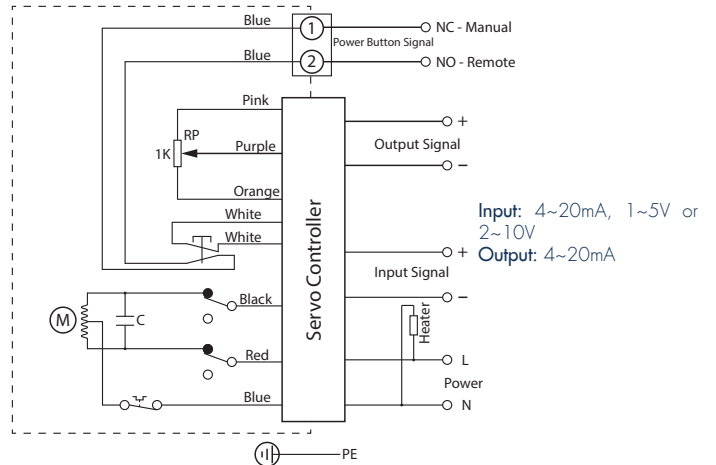
Type GEY: With Servo Controller(Adjusting Type)



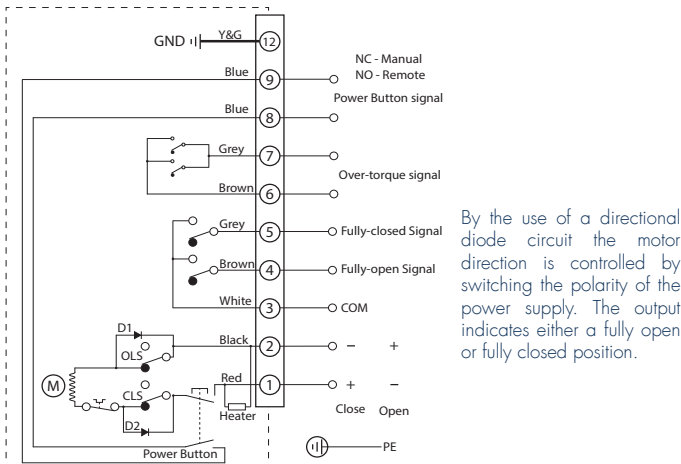
Type BD: Limit position switch(Passive Contact)



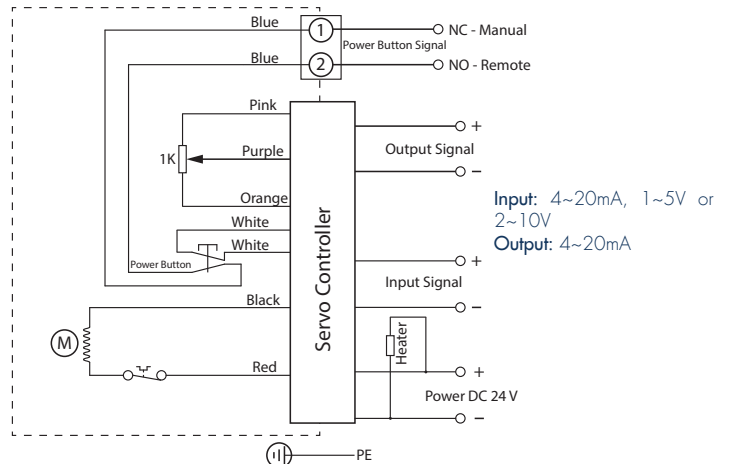
Type ED: With Servo Controller(Adjusting Type)



Type GD: DC Control Circuit with Passive Contact Switch



Type GEYD: With Servo Controller(Adjusting Type)

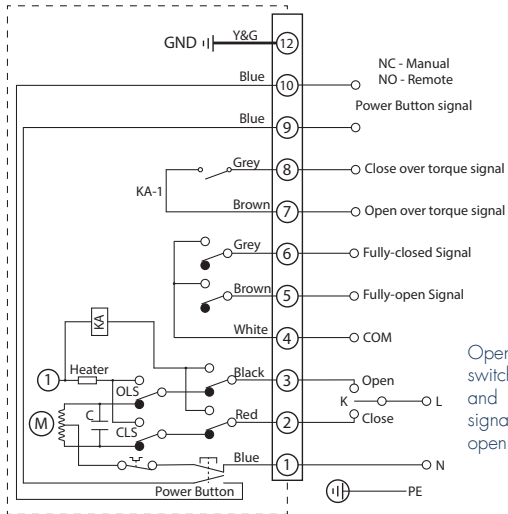


Note: The internal circuit of the actuator is marked by a dotted line. The circuit outside the dotted line is for the customers reference.

DCL WEATHER PROOF ELECTRIC ACTUATOR

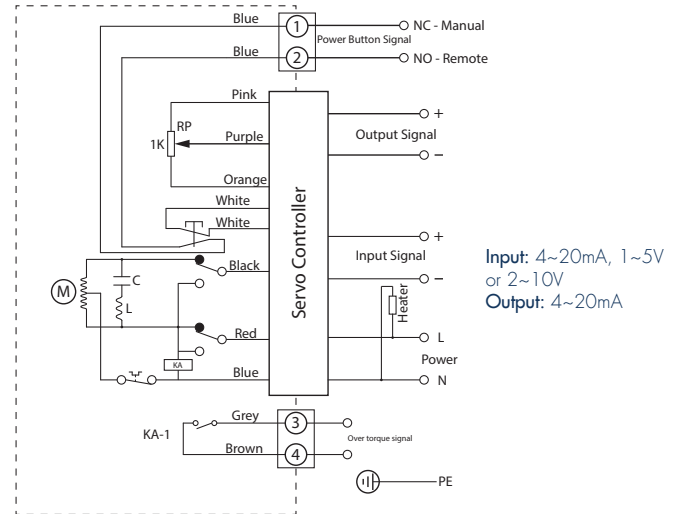
CONTROL CIRCUIT - STOCKED UNITS DCL - 20/40/60/100/200/300

Type BD: Limit position switch(Passive Contact)



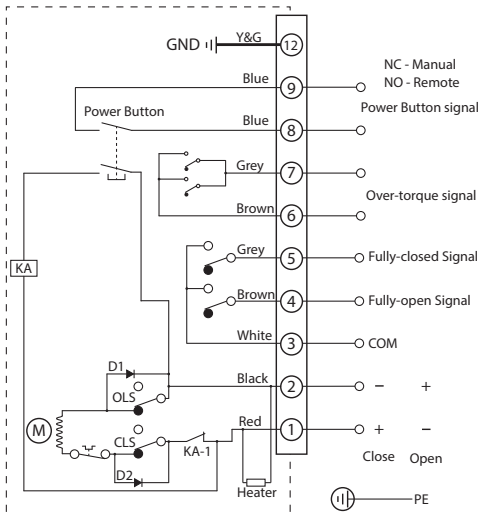
Opening/closing is done by switching between circuit 2 and 3. The passive output signal indicates either fully open or fully closed.

Type ED: With Servo Controller(Adjusting Type)



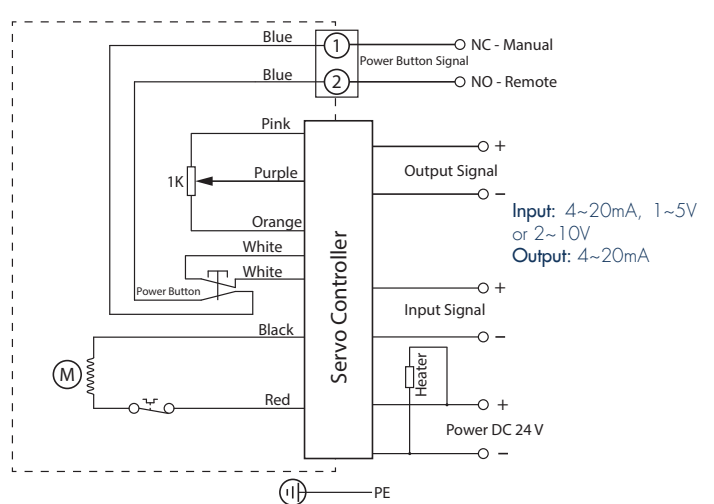
Input: 4~20mA, 1~5V or 2~10V
Output: 4~20mA

Type GD: DC Control Circuit with Passive Contact Switch



By the use of a directional diode circuit the motor direction is controlled by switching the polarity of the power supply. The output indicates either a fully open or fully closed position.

Type GEYD: With Servo Controller(Adjusting Type)

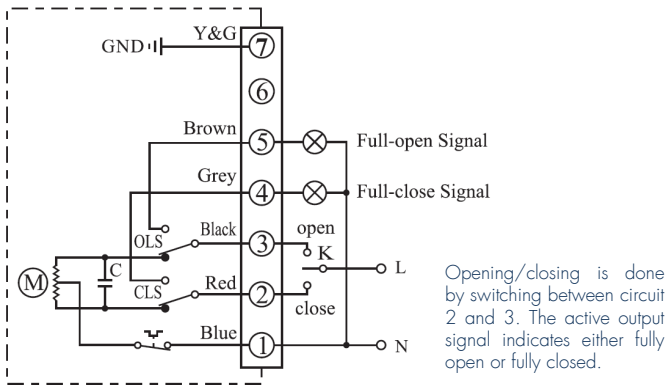


Input: 4~20mA, 1~5V or 2~10V
Output: 4~20mA

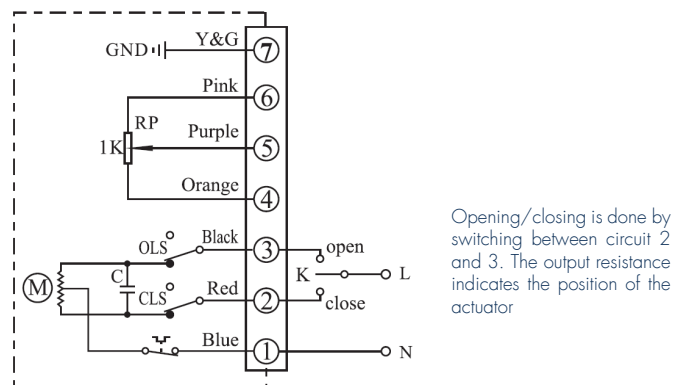
Note: The internal circuit of the actuator is marked by a dotted line. The circuit outside the dotted line is for the customers reference.

DCL WEATHER PROOF ELECTRIC ACTUATOR

OPTIONAL CONTROL CIRCUIT

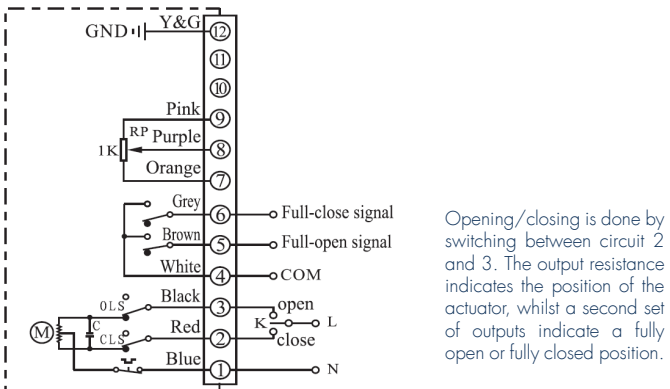


Opening/closing is done by switching between circuit 2 and 3. The active output signal indicates either fully open or fully closed.



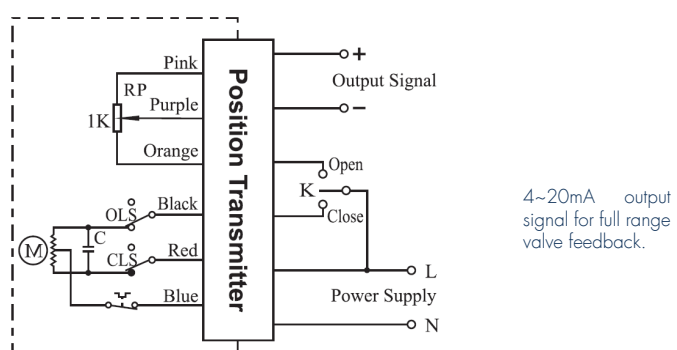
Opening/closing is done by switching between circuit 2 and 3. The output resistance indicates the position of the actuator

Type D: Position Switch with Potentiometer and Passive Contact



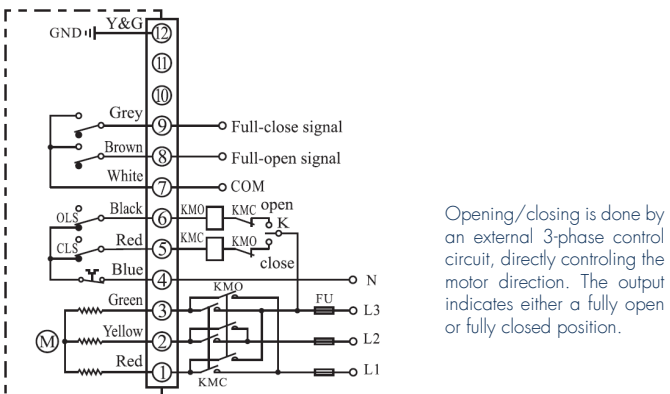
Opening/closing is done by switching between circuit 2 and 3. The output resistance indicates the position of the actuator, whilst a second set of outputs indicate a fully open or fully closed position.

Type F: With Position Transmitter



4~20mA output
signal for full range
valve feedback.

Type H: 3-Phase Control Circuit with Passive Contact Switch



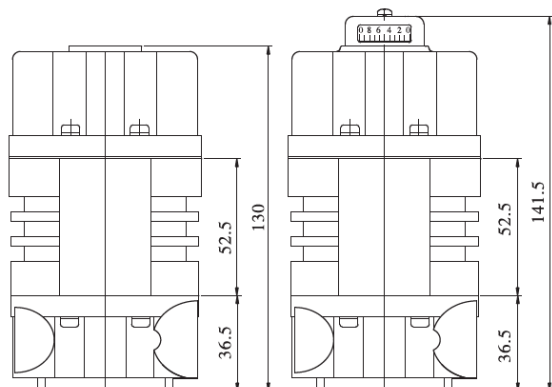
Opening/closing is done by an external 3-phase control circuit, directly controlling the motor direction. The output indicates either a fully open or fully closed position.

Note: The internal circuit of the actuator is marked by a dotted line. The circuit outside the dotted line is frame is for the customers reference.

DCL WEATHER PROOF ELECTRIC ACTUATOR

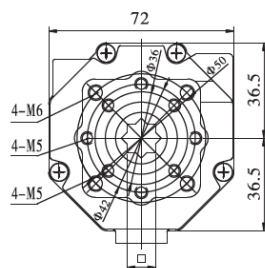
DCL - 02 SERIES - SUBMINIATURE ELECTRIC ACTUATOR

DCL—02 (Type E|GEY)



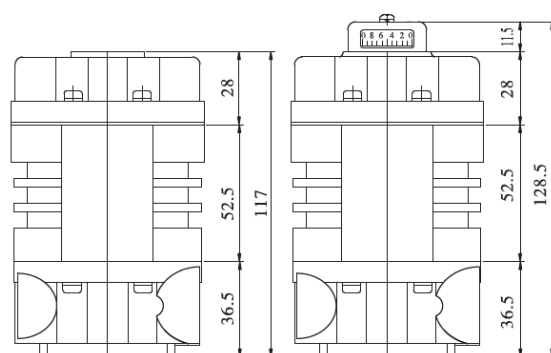
**FLAT-TYPE OPENING
INDICATION TYPE**

**SALIENT-TYPE OPENING
INDICATION TYPE**



Square	□9×9、□11×11
Flange	F03、F04、F05
Valve Stem	Height ≤16mm

DCL—02 (Type A|B|C|G)



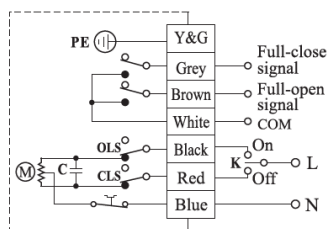
**FLAT-TYPE OPENING
INDICATION TYPE**

**SALIENT-TYPE OPENING
INDICATION TYPE**

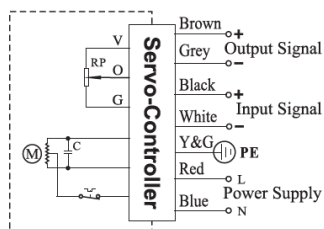
PERFORMANCE PARAMETERS

Parameters	Power	24 VDC	220 VAC
Motor Power		8W	6W
Rated Current		0.7A	0.15A
Standard Time/Torque		30S/25Nm	
Maximum Torque		24Nm	
Time/Torque on Request		7S/9Nm 15S/18Nm	
Turning Angle		0 ~ 90°	
Standard Control Circuit		G, GEY	B, E
Total Weight		1.2 kg	
Insulating Resistance		100MΩ/250VDC	100MΩ/500VDC
Voltage Class Tolerance		500 VAC @ 1 minute	1500 VAC @ 1 minute
Protection Class		IP67	
Installation Angle		360° at any angle	
Electric Interface		7-core cable connection cable	
Ambient Temperature		-25°C ~ +55°C	
Fuse		2A	3A
			1A
			1A

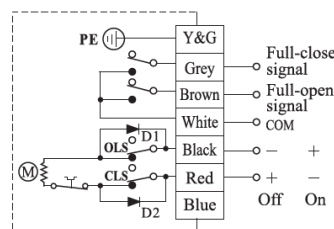
CONTROL CIRCUIT



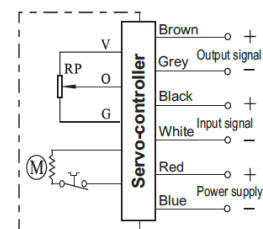
Type B: With Intermediate Position Switch (Passive contact)



Type E: With Servo Controller (Adjusting Type)



Type G: DC Control Circuit (Passive Contact Switch)



Type GEY: With Servo Controller

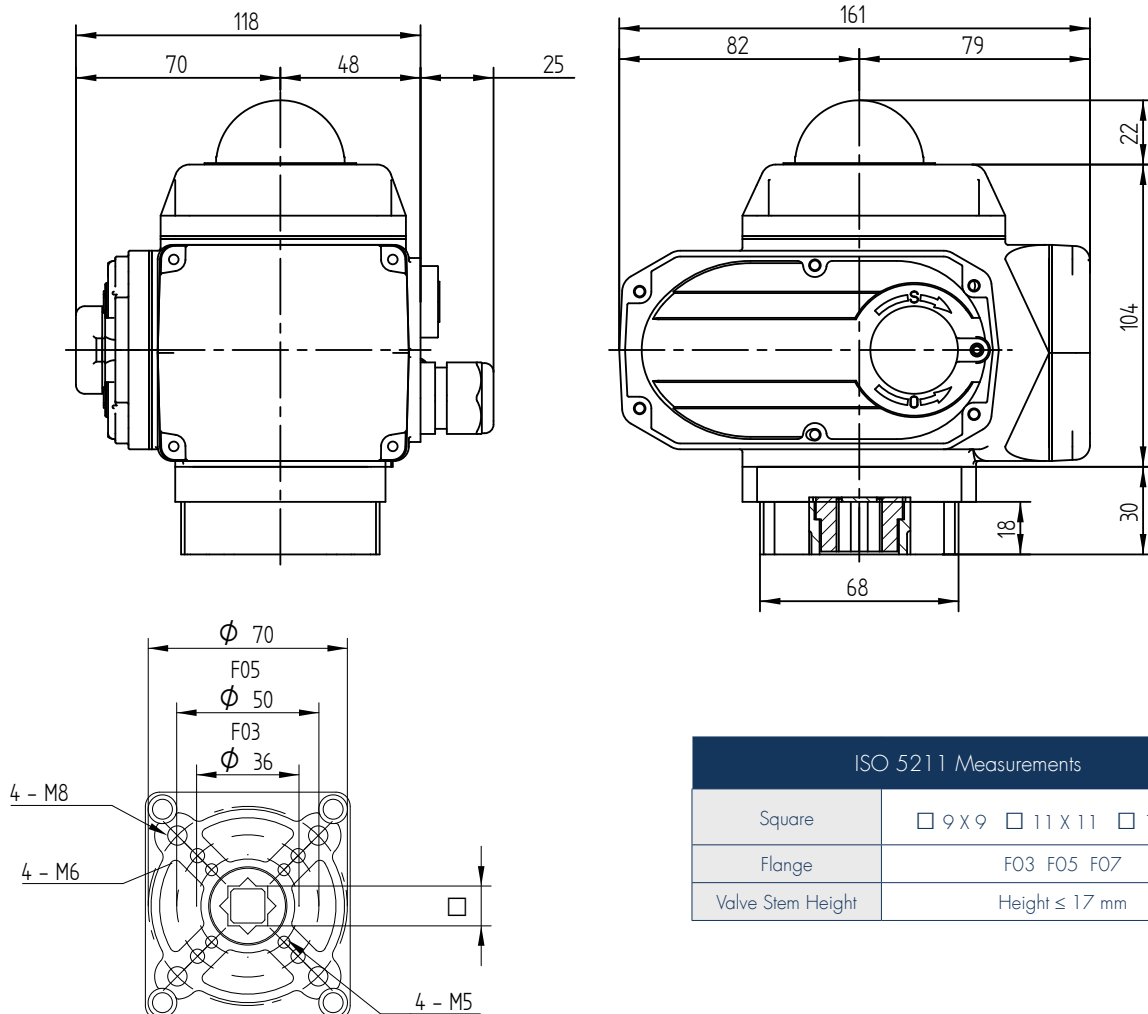
OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS DCL - 05



Direct installation type

Parameters	Power	24 VDC	220 VAC
Motor Power		13W	10W
Rated Current		1.28A	0.16A
Standard Time/Torque		25s/50Nm	
Maximum Torque		65Nm	
Time/Torque on Request		5s/20Nm 12s/30Nm	4s/20Nm 12s/30Nm
Turning Angle		0 ~ 360°	
Standard Control Circuit		G, GEY	B, E
Total Weight		2.5 kg	
Insulating Resistance		100M Ω /250VDC	100M Ω /500VDC
Voltage Class Tolerance		500 VAC @ 1 minute	1500 VAC @ 1 minute
Protection Class		IP67	
Installation Angle		360° at any angle	
Electric Interface		2 x G 1/2 Water proof cable connectors, one for power and one for signal	
Ambient Temperature		-25°C ~ +55°C	
Standard Features		Dehumidification Heater Visual Position Indicator	

Direct Installation Type



Note: Actuators are standard with the largest square, smaller square sizes are delivered with sleeve adapters.

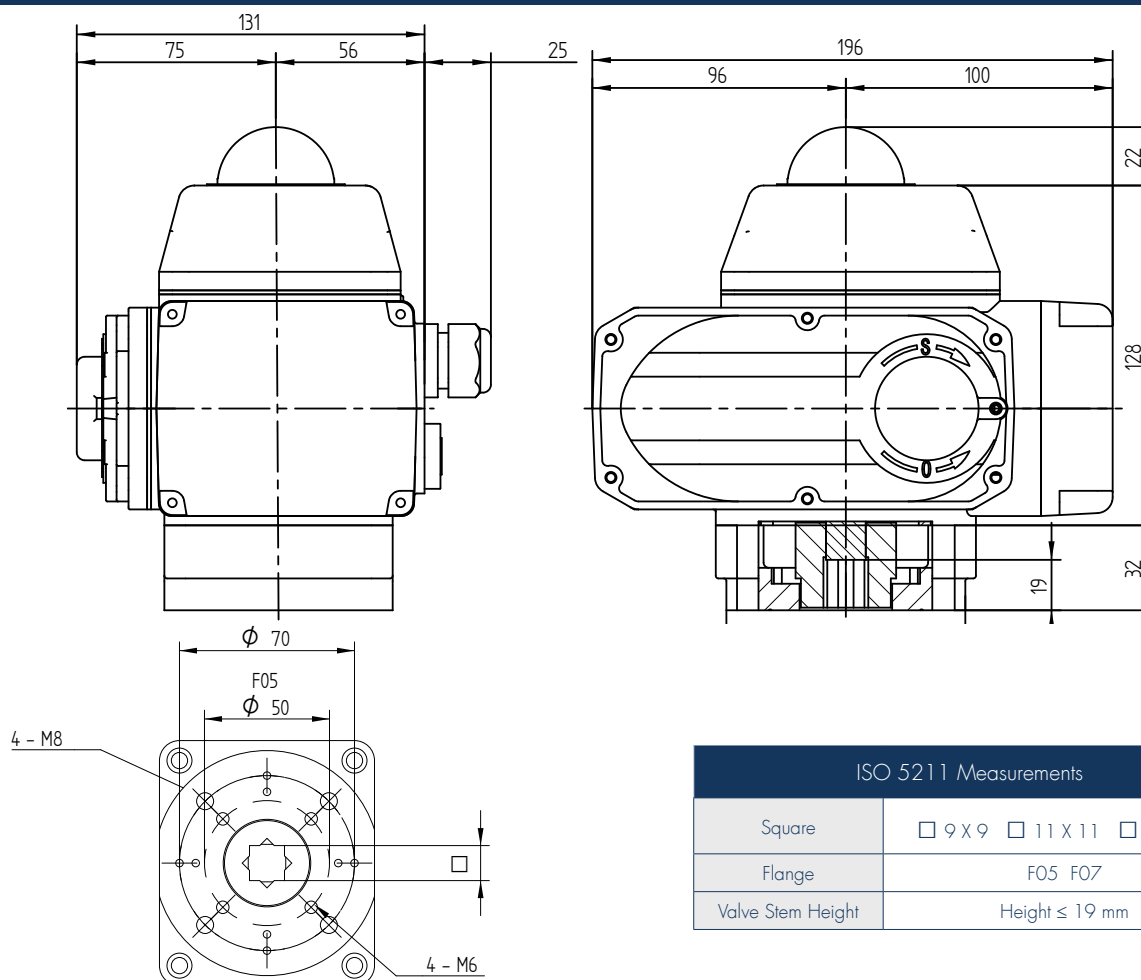
OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS DCL - 10



Direct installation type

Parameters	Power	24 VDC	220 VAC
Motor Power		25W	25W
Rated Current		2.03A	0.35A
Standard Time/Torque		30s/100Nm 15s/50Nm	
Maximum Torque		130Nm	
Turning Angle		0 ~ 90°	
Standard Control Circuit		GD, GEYD	BD, ED
Total Weight		4.5 kg	
Insulating Resistance		100M Ω /250VDC	100M Ω /500VDC
Voltage Class Tolerance		500 VAC @ 1 minute	1500 VAC @ 1 minute
Protection Class		IP67	
Installation Angle		360° at any angle	
Electric Interface		2 x G 1/2 Water proof cable connectors, one for power and one for signal	
Ambient Temperature		-25°C ~ +55°C	
Standard Features		Dehumidification Heater Visual Position Indicator Handle Emergency Button	

Direct Installation Type



ISO 5211 Measurements

Square	$\square 9 \times 9$ $\square 11 \times 11$ $\square 14 \times 14$
Flange	F05 F07
Valve Stem Height	Height ≤ 19 mm

Note: Actuators are standard with the largest square, smaller square sizes are delivered with sleeve adapters.

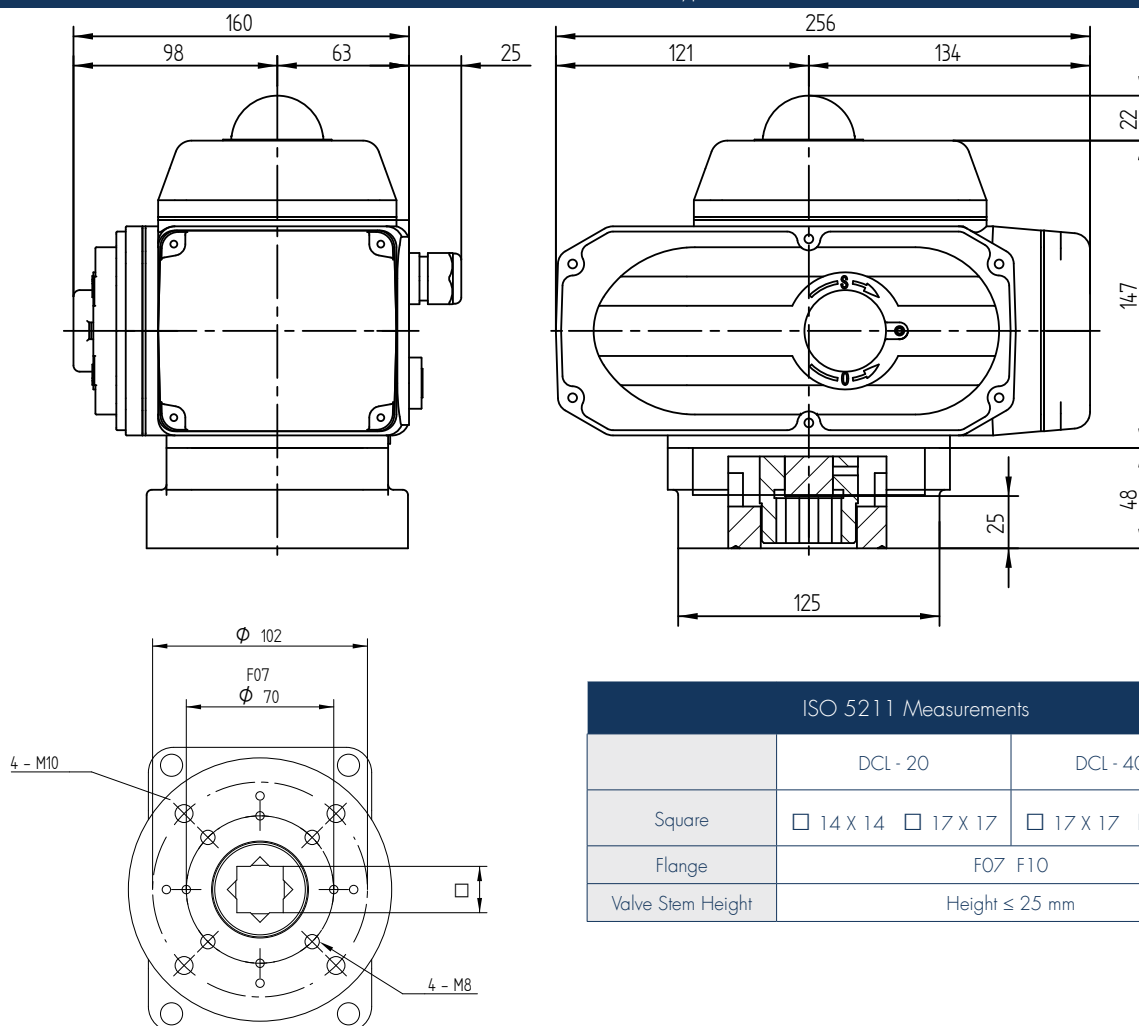
OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS DCL - 20/40/60



Direct installation type

	Type	DCL - 20		DCL - 40		DCL - 60	
Parameters	Voltage (V)	24DC	220AC	24DC	220AC	24DC	220AC
Motor Power (W)		35	40	70	90	70	90
Rated Current (A)		3.57	0.37	5.13	0.57	6.80	0.60
Standard Time/Torque		30s/200Nm 15s/200Nm		30s/400Nm 15s/200Nm		30s/600Nm	
Maximum Torque		260Nm		520Nm		800Nm	
Turning Angle		0 ~ 90°					
Standard Control Circuit		BD, ED, GD, GEYD					
Total Weight		9kg		9.5kg		10kg	
Insulating Resistance		24V:100MΩ/250VDC 220V:100MΩ/500VDC					
Voltage Class Tolerance		24VDC: 500 VAC @ 1 minute 220VAC: 1500 VAC @ 1 minute					
Protection Class		IP67					
Installation Angle		360° at any angle					
Electric Interface		2 x G 1/2 Water proof cable connectors, one for power and one for signal					
Ambient Temperature		-25°C ~ +55°C					
Standard Features		Dehumidification Heater Visual Position Indicator Handle Over Torque Protection Emergency Button					

Direct Installation Type



ISO 5211 Measurements		
	DCL - 20	DCL - 40/60
Square	□ 14 X 14 □ 17 X 17	□ 17 X 17 □ 22 X 22
Flange	F07 F10	
Valve Stem Height	Height ≤ 25 mm	

Note: Actuators are standard with the largest square, smaller square sizes are delivered with sleeve adapters.

OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS DCL - 100/200/300



DCL-100

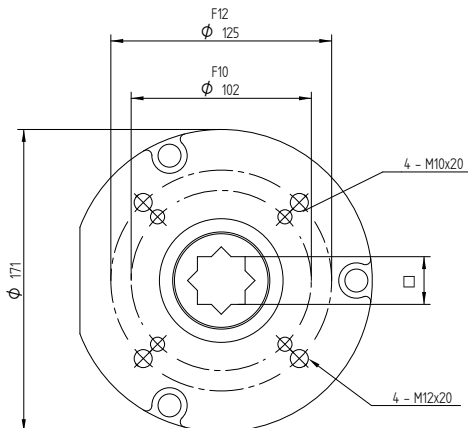
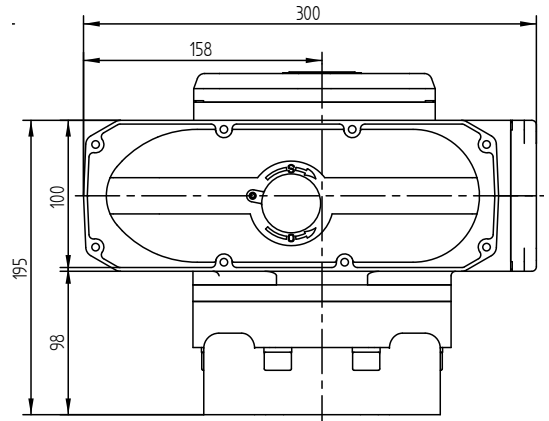
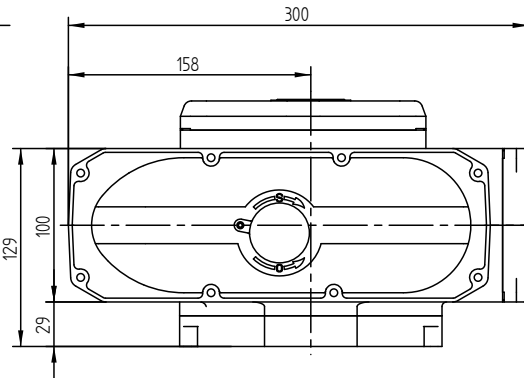
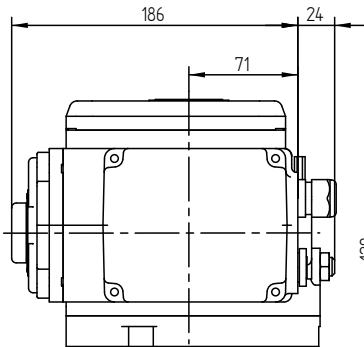


DCL-200 / DCL-300

	Type	DCL - 100		DCL - 200 / DCL - 300	
Parameters	Voltage (V)	24DC	220AC	24DC	220AC
Motor Power (W)		113	120	113	120
Rated Current (A)		6.5	1.0	7.1	1.1
Standard Time/Torque		50s/1000Nm	30s/1000Nm	110s/2000Nm 170s/3000Nm	90s/2000Nm 110s/3000Nm
Maximum Torque		1300Nm		2600Nm/3900Nm	
Turning Angle		0 ~ 90°			
Standard Control Circuit		BD, ED, GD, GEYD			
Total Weight		14kg		21kg	
Insulating Resistance		24V:100MΩ/250VDC 220V:100MΩ/500VDC			
Voltage Class Tolerance		24VDC: 500 VAC @ 1 minute 220VAC: 1500 VAC @ 1 minute			
Protection Class		IP67			
Installation Angle		360° at any angle			
Electric Interface		2 x G 1/2 Water proof cable connectors, one for power and one for signal			
Ambient Temperature		-25°C ~ +55°C			
Standard Features		Dehumidification Heater Visual Position Indicator Handle Over Torque Protection Emergency Button			

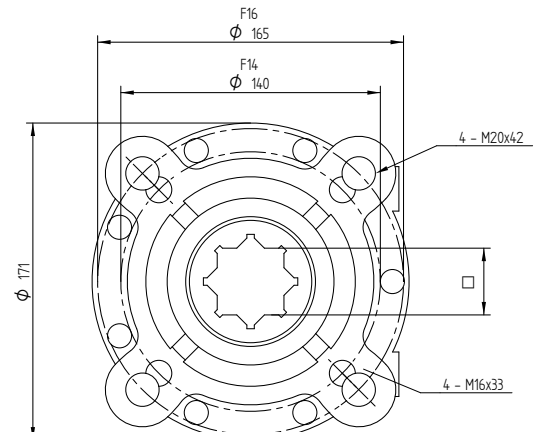
DCL - 100

DCL - 200/DCL - 300



ISO 5211 Measurements		
	DCL - 100	DCL - 200/300
Square	□ 14 X 14	□ 17 X 17
	□ 17 X 17	□ 22 X 22
Flange	F10 F12	F14 F16*
Valve Stem Height	Height ≤ 40 mm	Height ≤ 66 mm

*On DCL - 200: F14 as standard - F16 on request.
On DCL - 300: F16 as standard - F14 on request.



Note: Actuators are standard with the largest square, smaller square sizes are delivered with sleeve adapters.

PERFORMANCE PARAMETERS OF ADJUSTING SERIES(TYPE E)

	Type	DCL - 05E	DCL - 10E	DCL - 20E	DCL - 40E	DCL - 60E	DCL - 100E	DCL - 200E	DCL - 300E
Parameters	Voltage (V)	220AC 24DC	220AC 24DC	220AC 24DC	220AC 24DC	220AC 24DC	220AC 24DC		
Output Torque (Nm)		50	100	200	400	600	1000	2000	3000
Maximum Torque (Nm)		65	130	260	520	800	1300	2600	3900
Acting Time (s)		25	30	30	30	45	30/50	90/110	110/170
Turning Angle		0 ~ 90°							
Motor Power (W)		10	25	40	90	90	120	120	120
Rated Current (A)		0.16/1.28	0.35/2.03	0.37/3.57	0.57/5.13	0.60/6.04	1.0/6.50	1.1/7.10	1.1/7.10
Total Weight (kg)		2.5	4.5	9	9.5	10	14	21	21
Input Signal		4~20mA DC, 1~5 VDC, 2~10 VDC							
Output Signal		4~20mA DC							
Basic Error		Not more than $\pm 0.5\%$							
Reciprocating Error		$\leq 0.5\%$							
Dead Space		0.5~5.0% (Adjustable)							
Damping Characteristics		0 Times							
Repeating Error in Actuator		$\leq 0.5\%$							
Insulation Resistance		24V:100M Ω /250VDC 220V:100M Ω /500VDC							
Voltage Class Tolerance		24V: 500 VAC @ 1 minute 220VAC: 1500 VAC @ 1 minute							
Protection Class		IP67							
Installation Angle		360° at any angle							
Electric Interface		2 x G 1/2 Water proof cable connectors, one for power and one for signal							
Ambient Temperature		-25°C ~ +55°C							
Standard Features		Dehumidification Heater Passive Contact Switch Visual Position Indicator Handle Over Torque Protection Emergency Button							
Remark		Other input/output signals and voltage ratings are available at request.							

OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS - QUICK OPEN SERIES



Direct installation type

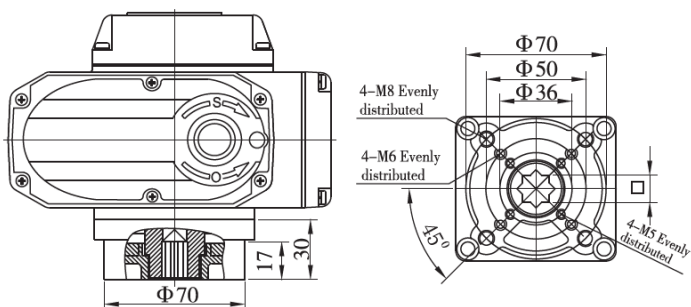
Product Type	DCL - K05		DCL - K10	
Power Supply	24VDC	220VAC	24VDC	220VAC
Motor Power	13W	10W	25W	25W
Rated Current	3.0A	0.16A	6.0A	0.35A
Standard Time/Torque	2s/15Nm 5s/30Nm	3s/15Nm 6s/30Nm	2s/25Nm 4s/50Nm 8s/80Nm	
Available Control Circuit	Type G	Type A/B	Type G	Type A/B
Turning Angle	0 ~ 270°		0 ~ 90°	
Total Weight	2.5 kg		4.5kg	
Insulating Resistance	24VDC: 100MΩ/250VDC 24-380VAC: 100MΩ/500VDC			
Voltage Class Tolerance	24VDC: 500 VAC @ 1 minute 220VAC: 1500 VAC @ 1 minute			
Protection Class	IP67			
Installation Angle	360° at any angle			
Electric Interface	2 x G 1/2 Water proof cable connectors, one for power and one for signal			
Ambient Temperature	-25°C ~ +55°C			
Optional Features	Dehumidification Heater Visual Position Indicator		Dehumidification Heater Visual Position Indicator Handle	

Note: - The stated running time is the time between 0 ~ 90°.

- Quick Open Series are not fit for circumstances when butterfly valves and other valves require a self-lock function.

Dimensions DCL - K05

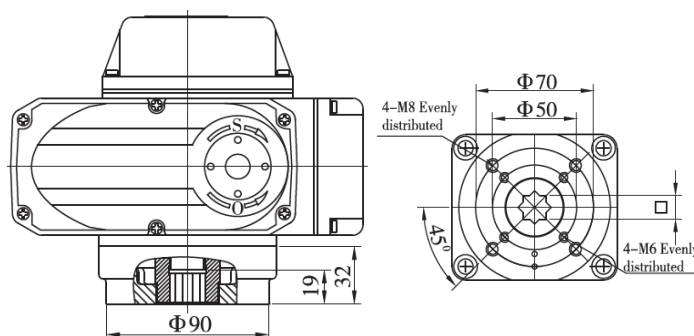
Direct Mounting



Parameters of Direct installation	
Square	□9 × 9 □11 × 11 □14 × 14
Flange	F03 F05 F07
Valve stem	Height ≤ 17mm

Dimensions DCL - K10

Direct Mounting



Parameters of Direct installation	
Square	□9 × 9 □11 × 11 □14 × 14
Flange	F05 F07
Valve stem	Height ≤ 19mm

Note: Actuators are standard with the largest square, smaller square sizes are delivered with sleeve adapters.

OVERALL DIMENSIONS AND PERFORMANCE PARAMETERS - QUICK OPEN SERIES



Direct installation type



Direct installation type

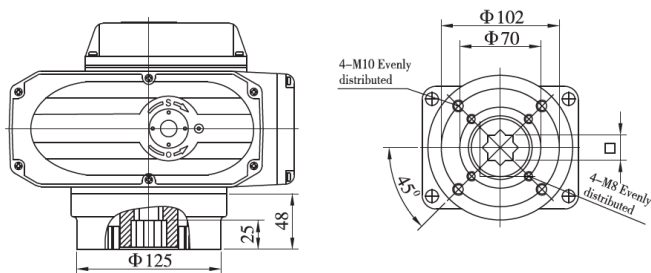
Product Type	DCL - K20		DCL - K40	DCL - K100
Power Supply	24VDC	220VAC	220VAC	220VAC
Motor Power	35W	40W	90W	120W
Rated Current	6.0A	0.37A	0.57A	0.94A
Standard Time/Torque	2s/50Nm 4s/100Nm 8s/200Nm		2s/80Nm 4s/160Nm 8s/330Nm	4s/500Nm 8s/800Nm 12s/1200Nm
Available Control Circuit	Type G	Type A/B	Type G	Type A/B
Turning Angle	0 ~ 90°		0 ~ 90°	
Total Weight	9kg		9.5kg	19kg
Insulating Resistance	24VDC: 100MΩ/250VDC 220VAC: 100MΩ/500VDC			
Voltage Class Tolerance	24VDC: 500 VAC @ 1 minute 220VAC: 1500 VAC @ 1 minute			
Protection Class	IP67			
Installation Angle	360° at any angle			
Electric Interface	2 x G 1/2 Water proof cable connectors, one for power and one for signal			
Ambient Temperature	-25°C ~ +55°C			
Optional Features	Dehumidification Heater Visual Position Indicator Handle			

Note: - The stated running time is the time between 0 ~ 90°.

- Quick Open Series are not fit for circumstances when butterfly valves and other valves require a selflock function.

Dimensions DCL - K20/40

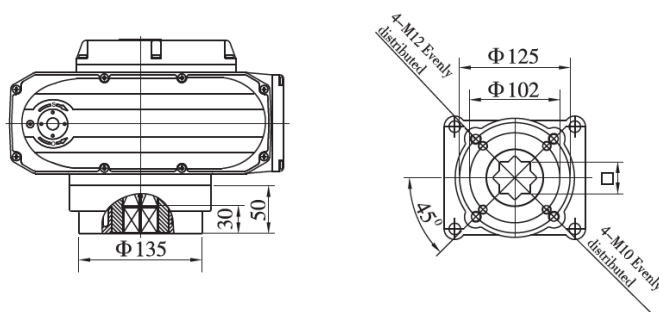
Direct Mounting



Parameters of Direct installation		
	DCL-K20	DCL-K40
Square	□14 × 14 □17 × 17	□17 × 17 □22 × 22
Flange	F07 F10	
Valve stem	Height ≤ 25mm	

Dimensions DCL - K100

Direct Mounting

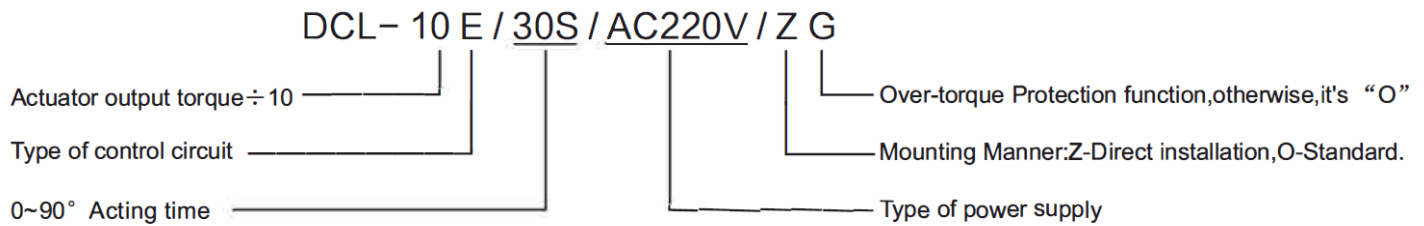


Parameters of Direct installation	
Square	□22 × 22 □27 × 27
Flange	F10 F12
Valve stem	Height ≤ 30mm

Note: Actuators are standard with the largest square, smaller square sizes are delivered with sleeve adapters.

EQUIPMENT & FUNCTION

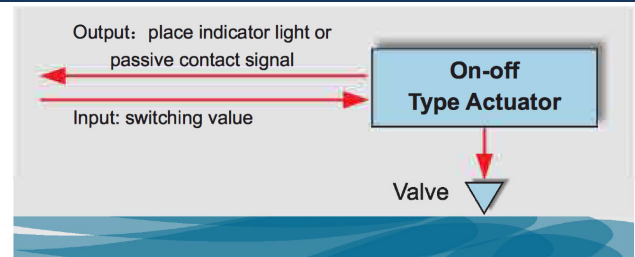
Model Designation



On - Off Type Actuator

Control Circuit Type A, B, D, G and H

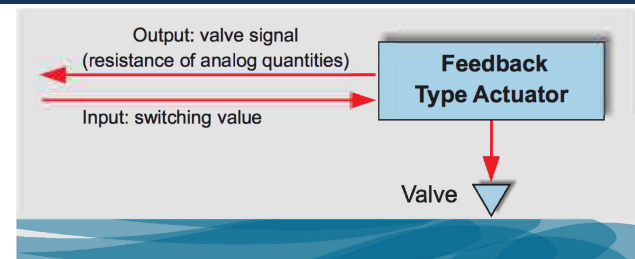
On-off actuators have two primary positions: fully-open and fully-closed. However, if needed, a preset middle position can be set (type B, G, H). When a command is received, the actuator will drive the valve to the fully open, fully closed, or middle position. The actuators operate under the S2 short-time duty classification, meaning they can operate continuously for less than 15 minutes.



Feedback Type Actuator

Control Circuit Type C, D and F

While the actuator drives the valve, it provides full-range feedback signals to the PLC. Types C and D provide feedback signals based on resistance (potentiometer-based feedback), while Type F provides an analog signal (such as 4~20 mA or 0~10 V). The actuator adopts the S2 short-time duty classification, meaning it can operate continuously for less than 15 minutes at a time.

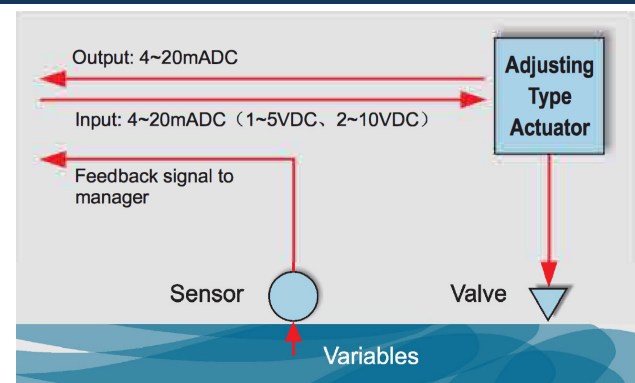


Adjusting Type Actuator

Control Circuit Type E

The servo-controller is located inside the actuator. It receives commands from the Programmable Logic Controller (PLC) and adjusts the valve to the appropriate opening position based on varying conditions of variables—such as flow, pressure, temperature, and fluid level—in the pipeline.

The actuator operates with the characteristics of an S4 intermittent duty type, capable of handling up to 1,200 cycles per hour.



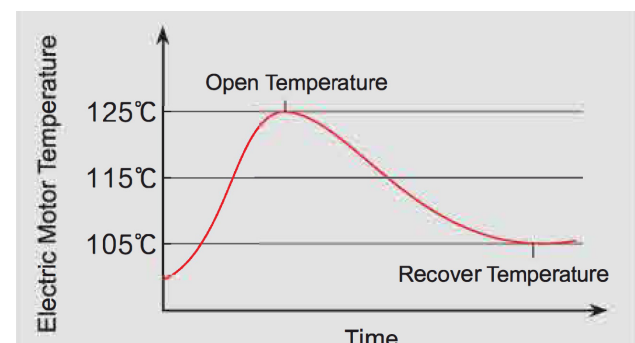
Electric Motor

Electric motors of the DCL series electric actuators have specific design features:

Higher Starting Torque: The actuator's electric motor has a higher starting torque to meet the working characteristics of valves. This allows the actuator to start under full load conditions at the opening, closing, and any intermediate positions.

Lower Rotational Inertia: The motor is designed with reduced rotational inertia to facilitate precise adjustment of the flow (opening range).

Overheating Protection: If the actuator stalls, it can cause a rapid temperature rise in the motor. To protect the motor and control system, a PTC overheating protector located in the motor winding will switch off the circuit when the temperature reaches 125°C. The circuit will automatically recover when the temperature drops to between 90°C and 105°C.

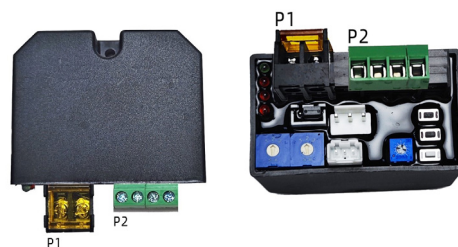


DCL WEATHER PROOF ELECTRIC ACTUATOR

EQUIPMENT & FUNCTION

Servo Controller

The DCL actuator's servo-controller features a unique circuit design, utilizes imported technical-grade electronic parts and components, and is produced using modern manufacturing technology. These factors ensure high quality and reliability. The circuit board is encapsulated in resin, which enhances its resistance to shock and humidity. Additionally, the unique electronic brake function ensures the actuator stops precisely when the position is set to fixed, resulting in zero damping oscillations (the standard allows for less than 3.5 oscillations).



Micro Regulation Device of Electric Stroke Limit

Adjusting the actuator's electric limit strokes for both the open and close directions is very easy using a hexagon spanner, thanks to DCL's unique patented technology. Additionally, the unique micro-regulation function allows for more precise adjustment of the electric limit strokes. Patent NO. : ZL201020214725.8

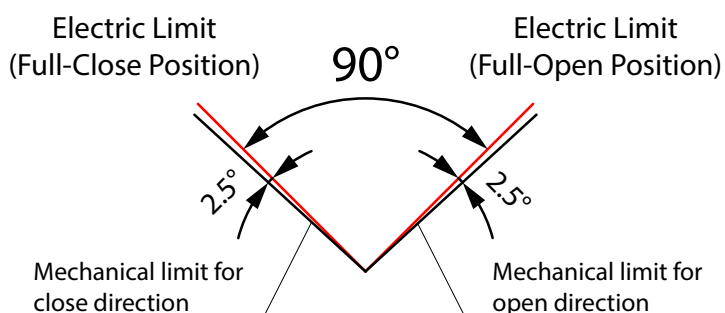


Electric & Mechanical Limit Function

The electric limit switch located inside the actuator will disconnect the circuit to protect the actuator when it reaches the full-open, full-close, or any predetermined position between them.

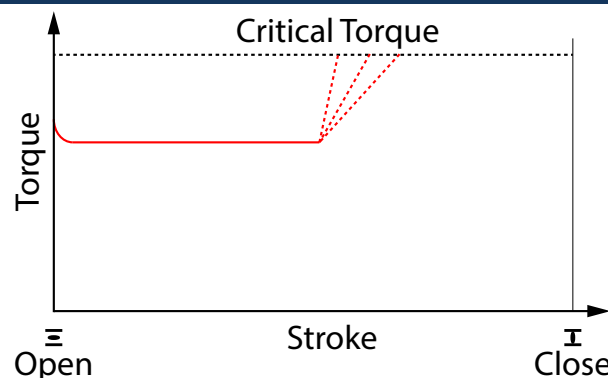
If the electric limit function fails, the actuator's output shaft will be locked by a mechanical limit device to prevent damage to the valve.

A graphical representation illustrates the positional relationship between the electric limit and the mechanical limit.



Over-Torque Protection (Standard on DCL 20 and up)

If the valve becomes stuck due to impurities, foreign matter in the pipeline, or other causes, the output torque of the actuator will increase up to a preset limit. When this limit is reached, the torque switch will disconnect the circuit to protect both the valve and the actuator from damage.



Heating & Dehumidification Function (Standard Feature)

The electrical enclosure of the DCL Series actuator is equipped with a PTC (Positive Temperature Coefficient) electronic heating component. This heater prevents damage to electronic components caused by condensation. It is particularly useful in areas with high humidity and significant temperature differences between day and night. The heater operates continuously and remains powered at all times, regardless of whether the actuator is in operation or not.

Oslo



Trondheim



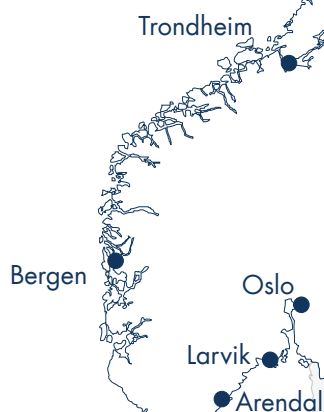
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