

## Features:

- 25Nm max break-away torque, 20Nm run torque
- IP67 Weatherproof electric actuator
- 24-240V AC/DC Multi-voltage (patent pending)
- Multi-colour LED status & diagnostic light
- All external electrical connectivity via supplied DIN plugs
- Selectable manual override with hand wheel
- Dome style indicator to show local visual position
- Volt-free end of travel confirmation switches x 2
- Electronic over-torque protection
- Thermostatic anti-condensation protection
- Long life brushless motor

## Main Specifications:

Type & Model No	J4C - S20
Voltage range	24-240V AC/DC
Working time	10 secs (0-90 deg)
Max break torque	25Nm / 221 in.lbs
Max run/ reseal torque	20Nm / 177 in.lbs
Duty Rating	75% S4 Motor
Working angle	90 / 180 / 270 deg
Temp range	-20C to +70C
Heater	3.5W
Electrical connectors	DIN 43650/ EN175301-803

## Main Materials:

Part	Material	Options
Housing	Anti-corrosive Polyamide	GRPP
Valve mount	Coated aluminium (Zamac)	Teflon coating
Valve drive	Coated aluminium (Zamac)	Teflon coating
Gears	Steel & Polyamide	
Position indicator	Clear polycarbonate dome	
Fixings	Stainless steel	
DIN connectors	Plastic	
Hand wheel	Polyamide	
Hand wheel shaft	Polyamide	

20Nm



Manufacturer:



Model:



## Overview :

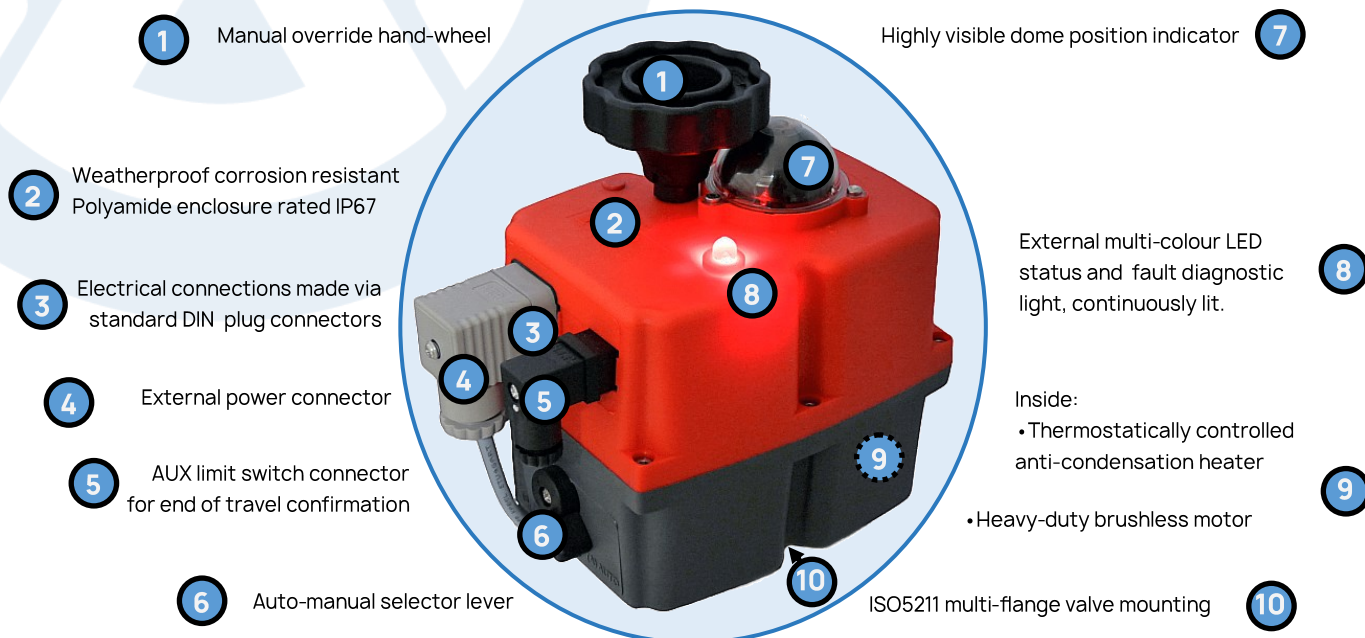
The J4C-S Series of part turn electric actuators from the EU manufacturer J+J offers an impressive array of standard features that include a single multi-voltage capability that allows the J4C-S to auto-sense and supply voltage between 24V and 2450V AC or DC. It has a multi-colour LED status light, selectable hand-wheel operated manual override, an electronic over-torque protection system and a thermostatic anti-condensation heater as standard, and all electrical connections are made using external DIN connectors that are supplied with the actuator, eliminating the need to remove the actuator's cover to connect. The J4C range has a brushless motor for further reliability and longevity in service to an actuator with an already impressive in-service pedigree gained over more than 25 years of global experience. Part-turn electric valve actuators are primarily used on quarter turn valves such as ball valves, plug valves and butterfly valves, and are ideally suited to dampers.

## How the J4C-S on-off actuator works:

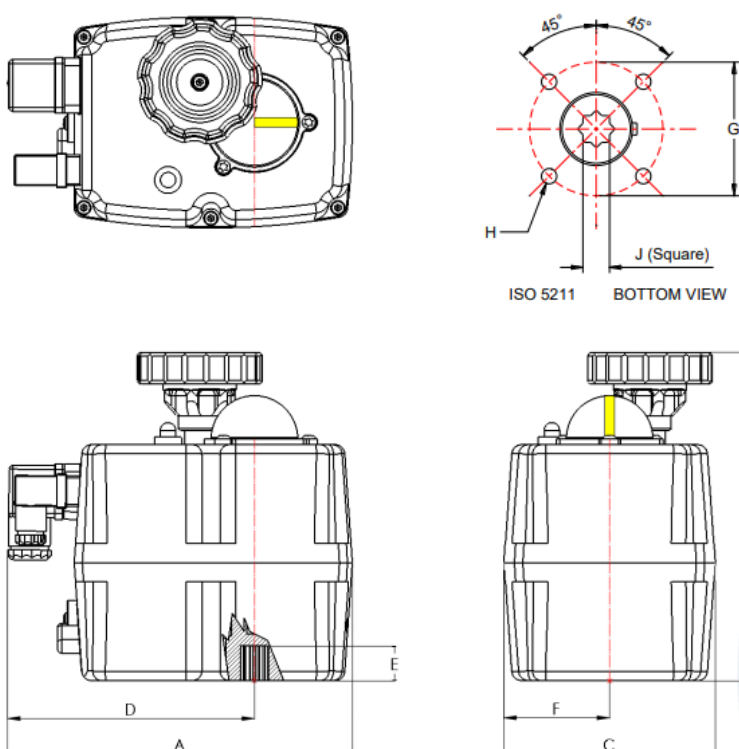
J4C-S electric actuators use power-to-open and power-to-close, staying in the last known position upon power failure. On receipt of a continuous voltage signal the motor runs and via a flat gear system, rotates the output drive through 90°. The motor is automatically stopped by internal cams striking limit switches. On receipt of a reversing continuous signal, the motor turns in the opposite direction reversing the output drive position. The J4C-S actuator is designed to have the external power continuously applied, and power must not be switched off when end of travel is achieved.



## Main features:



## Dimensions:



	MM	INCH
A	179	7.05
B	171	6.73
C	110	4.33
D	126	4.96
E	16	0.63
F	55	2.17
J	14	0.43
Weight	1.8Kg	4 lbs

### ISO5211 Valve mount:

ISO5211	THREAD 'H'	DIM	PCD
F03	M5	G	36MM
F04	M5	H	42MM
F05	M6	J	50MM

## Full Specifications:

Type & Model No	J4C-S20	J4C-S20-BSR	J4C-S20-DPS	J4C-S20-DPS-BSR
AVOL Part Number	61528	61589	61597	61640
Function	Power open, power close	Power open, power close	Modulating 4-20mA/ 0-10V	Modulating 4-20mA/ 0-10V
On loss off external power	Stays put	Fails closed (open option)	Stays put	Fails closed (open option)
Supply voltage range	24-240V AC/DC	24-240V AC/DC	24-240V AC/DC	24-240V AC/DC
Working time (0-90 deg)	10 secs (0-90 deg)	10 secs (0-90 deg)	10 secs (0-90 deg)	10 secs (0-90 deg)
Max break away torque	25Nm / 221 in.lbs	25Nm / 221 in.lbs	25Nm / 221 in.lbs	25Nm / 221 in.lbs
Max run/ reseal torque	20Nm / 177 in.lbs	20Nm / 177 in.lbs	20Nm / 177 in.lbs	20Nm / 177 in.lbs
Duty Rating	75% S4 Motor	75% S4 Motor	75% S4 Motor	75% S4 Motor
Working angle	90 Deg (180/ 270 optional)	90 Deg (180/ 270 optional)	90 Deg (180/ 270 optional)	90 Deg (180/ 270 optional)
Temp range	-20C to +70C / -4 to +158F	-20C to +70C / -4 to +158F	-20C to +70C / -4 to +158F	-20C to +70C / -4 to +158F
Anti-condensation heater	3.5W	3.5W	3.5W	3.5W
Electrical connectors	DIN 43650/ EN175301-803	DIN 43650/ EN175301-803	DIN 43650/ EN175301-803	DIN 43650/ EN175301-803
Excess torque protection	Electronic limiter + LED	Electronic limiter + LED	Electronic limiter + LED	Electronic limiter + LED
Motor switches	2 x SPDT	2 x SPDT	2 x SPDT	2 x SPDT
Position confirmation	2 x SPDT 3A@ 240VAC /	2 x SPDT 3A@ 240VAC /	2 x SPDT 3A@ 240VAC /	2 x SPDT 3A@ 240VAC /
Weight	1.8Kg / 4lbs	2.0Kg / 4.4lbs	1.9Kg / 4.2lbs	2.1Kg / 4.6lbs
Consumption (Full load)				
24VDC	0.97A			
24VAC	1.28A			
110VAC	0.30A			
240VAC	0.16A			

## Approvals:

### CE Mark. Confirming to:

2006/42/EC Machinery Directive

2006/95/EC Low Voltage Directive

2004/108/EC EMC Compatibility



Standard	Description
ISO:5211	Valve mounting to actuators
IEC6xxx	Ingress protection level IP67



## LED Status Light:

The multi-colour LED status light gives users a continuous highly visible at-a-glance indication of the J4C-S actuator's current status, advising whether the actuator is open, closed, moving between open and closed, and if there is a fault. Feedback from users advises that this is the single most liked feature of the J4C-S actuators, as it not only gives them instant visual confirmation of the status of the actuator, but is also invaluable in supporting after-sales technical telephone support from their distributor.

Actuator Operational Status	LED Colour and Sequence - On-Off & Failsafe							
No external power being applied Actuator stationary	★	★	★	★	★	★	★	★
External power applied, J4C-S fully OPEN Actuator stationary	★	★	★	★	★	★	★	★
External power applied, J4C-S fully CLOSED Actuator stationary	★	★	★	★	★	★	★	★
External power applied, J4C-S opening Actuator moving	★	★	★	★	★	★	★	★
External power applied, J4C-S closing Actuator moving	★	★	★	★	★	★	★	★
Power applied to both open AND close contacts Actuator stationary	★	★	★	★	★	★	★	★
Actuator in 'MANUAL' mode	★	★	★	★	★	★	★	★
Actuator in mid position.	★	★	★	★	★	★	★	★
FAIL SAFE: BSR Activated (stops after 3 mins)	★	★	★	★	★	★	★	★
FAIL SAFE: Low battery charge warning	★	★	★	★	★	★	★	★

Actuator Operational Status	LED Colour and Sequence - Modulating Only							
No external power being applied Actuator stationary	★	★	★	★	★	★	★	★
Actuator has reached the desired set-point Actuator stationary	★	★	★	★	★	★	★	★
Actuator driving towards CLOSED position Actuator moving	★	★	★	★	★	★	★	★
Actuator driving towards the OPEN position Actuator moving	★	★	★	★	★	★	★	★
External power applied, J4C-S closing Actuator moving	★	★	★	★	★	★	★	★
Torque limiter activated whilst CLOSING Actuator stationary	★	★	★	★	★	★	★	★
Torque limiter activated whilst OPENING Actuator stationary	★	★	★	★	★	★	★	★
Actuator in MANUAL mode	★	★	★	★	★	★	★	★
No control signal detected Actuator stationary	★	★	★	★	★	★	★	★
Positioner malfunction, requires re-setting Actuator stationary	★	★	★	★	★	★	★	★



## J4C-S20-BSR Failsafe version:

The BSR 'Battery 'Spring Return' kit is available as a retro-fit or pre-installed option for J4C-S Series electric actuators, and converts the standard power open - power close .stay-put on power failure into a fail-safe actuator. J4C-S-BSR kits will work with both on-off models and when used with DPS positioners creates failsafe modulating functionality.

The battery failsafe system provides an alternative source of power to drive the actuator to a pre-set failsafe position in the event of an external power failure. The industrial quality battery is constantly trickle charged during normal operation to assure maximum charge when required. The battery kit is installed under the actuator cover so no additional piggy-back boxes are required to house the BSR.



BSR function conversion retrofit conversion kit



BSR function conversion kit pre-installed



Battery inside



Fitting internally, the BSR does not change the overall dimensions of the J4C-S20 actuator. The installed BSR with a charged battery will provide enough power to move the valve to a failsafe position upon loss of external power. The BSR kit comes configured to fail closed as standard but can be user adjusted to fail open as required.

## How the BSR works:

The actuator operates in the normal power open and power close mode while external power is available. Internal circuitry monitors the incoming main power and automatically switches within a few seconds to the battery backup system should external power be lost. The battery will then provide enough power to move the actuator to the pre-set failsafe position. On resumption of external power, conditional that the actuator control signal remained unchanged, the actuator will reset to the position it saw at the time of the main power failure.

## Keep the power on:

Under normal operation the external control power will trickle charge the battery and maintain a full charge. External control power should remain connected and energised at all times

### BSR Specification

Working operations without recharge, with 100% initial battery	10
Recharge time per working operation	15 mins
Full Initial Charge Time 100%	28 hours
Battery capacity +/-5%	2200mA



## J4C-S20-DPS Modulating version:

The DPS Digital Positioner System is available as a plug and play retrofit kit or a factory installed option for J4C-S series electric actuators. Installing the DPS kit will change a standard On-Off type electric actuator to modulating or proportional control. This will allow positioning of the actuator output drive anywhere between 0 and 90° using either a 4-20mA or 0-10VDC input command signal. When using an electric actuated valve with DPS option, the valve's output flow can be adjusted anywhere between 0-100%.



DPS function conversion retrofit conversion kit



DPS function conversion kit pre-installed



Positioner  
inside



The DPS system provides an accurate valve positioning function whereby the movement of the actuator is controlled by either a 4-20mA or 0-10VDC control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator (valve). The DPS positioner has auto-calibration, no need to adjust zero and span settings. An output monitoring signal, in the same format as the input signal is also provided to confirm the output drive position (ex: 4-20mA input, 4-20mA output). The standard DPS actuator will fail closed with loss of the control signal. Actuator can also be setup reverse-acting (4mA or 0V=open) & fail open with loss of the control signal.

DPS Specification	
Input control signal	4-20mA / 0-10VDC
Output signal (feedback)	4-20mA / 0-10VDC
Accuracy	3% Full scale
Linearity	3% Full scale
Hysteresis	3% Full scale
Steps 4-20mA	150
Steps 0-10V	>98
Impedance 4-20mA	100 Ohms
Impedance 0-10V	25,000 Ohms

Note: Accuracy will depend upon the tolerances between the J4C-S actuator's drive and the valve stem, any loose tolerances will introduce 'play' or 'slack' in the drive and will reduce the positioning accuracy.

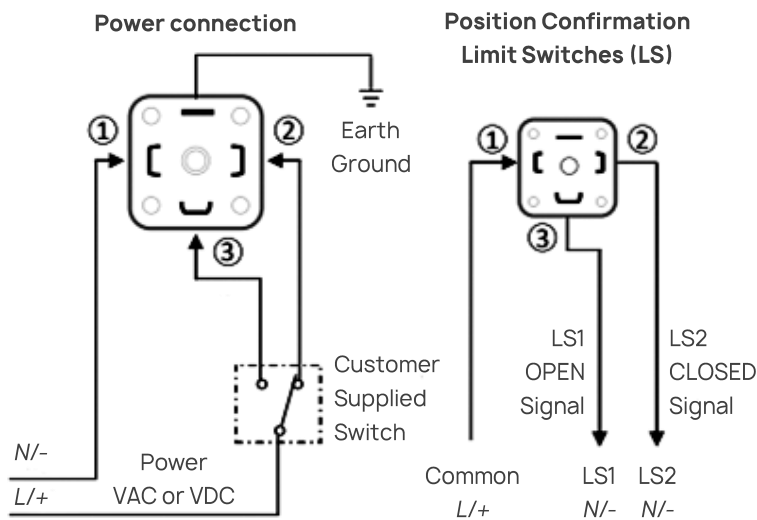
## How the DPS works:

The DPS kit contains a microprocessor based control board and mounting hardware. The control board continuously monitors the analog input and output signals and compares them to the actual physical position of the output drive. An electric motor/gear drive moves the actuator output drive as required to balance the signals and find the desired position. The digital microprocessor ensures highly sensitive and repeatable control.

## Wiring and electrical control:

In J4C-S Series electric valve actuators all electrical connections are made externally using the supplied DIN connector plugs. There are no internal terminal strips and all internal connections are made during manufacture using plug and socket connectors. There is no need to remove the actuator's cover to connect it electrically, therefore removing the cover without prior approval of the J4C-S distributor will most likely invalidate the warranty. Only qualified electricians should make electrical connections to the J4C-S actuator, and each should have its own, independently fused supply.

## On-Off and Fail Safe wiring Schematic



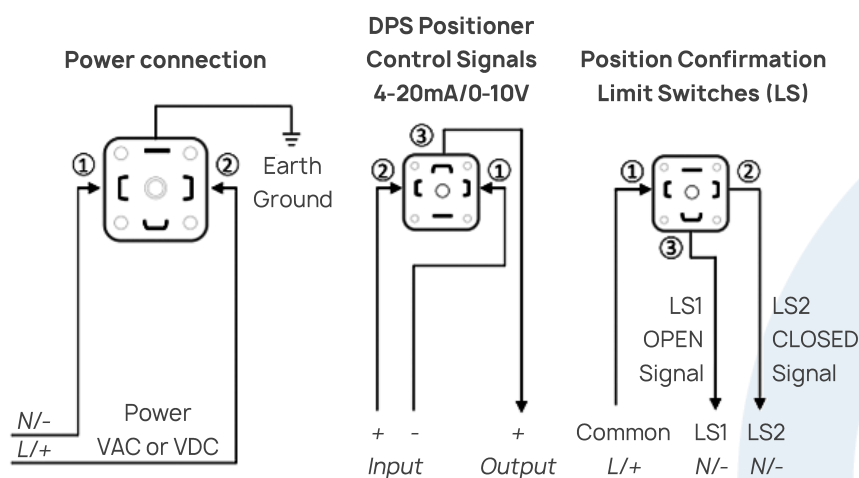
### Function: ON-OFF version:

- Power to PIN 1 and 2 - actuator CLOSED
- Power to PIN 1 and 3 - actuator OPEN
- Stays in last known position on loss of power.

### Function: ON-OFF version with BSR option:

- Wiring is the same as standard ON-OFF version.
- Power to open, power to close - maintain power to trickle charges battery system in either open or closed position.
- Actuator sent by battery power to failsafe position with power failure.
- Actuator returns to pre-failure position on power resumption.

## Modulating wiring Schematic












### Function: Modulating version with DPS option:

- Power open, power close - actuator movement controlled by 4-20mA or 0-10VDC input signal.
- Standard operation: 4mA or 0V = actuator closed, 20mA or 10V = actuator open (can be setup reverse acting).
- Actuator closes with loss of control signal, stays in last known position with loss of main power.
- Output monitoring signal (in same format as supply signal) provided as standard.

## AVOL Part numbers:

Function	AVOL Part Number
J4C-S20 On-Off, Stays put on loss of power	61528
J4C-S20-BSR On-Off, Fails closed on loss of power	61589
J4C-S20-BSR On-Off, Fails open on loss of power	61593
J4C-S20-DPS 4-20mA Modulating control, stays put on loss of power	61597
J4C-S20-DPS-BSR 4-20mA Modulating control, fails closed on loss of power	61640
J4C-S20-DPS-BSR 4-20mA Modulating control, fails open on loss of power	61646
J4C-S20-DPS 0-10V Modulating control, stays put on loss of power	61601
J4C-S20-DPS-BSR 0-10V Modulating control, fails closed on loss of power	61652
J4C-S20-DPS-BSR 0-10V Modulating control, fails open on loss of power	61658

## Backward compatibility with superseded models:

	Superseded Model	Valve Mounting	Electrical connections	Electrical Control	Dimensions	Difference(s)
	J3C-S20	Same	Same	Same	Same	Brushed motor & main PCB
	J3C-S20-BSR	Same	Same	Same	Same	Brushed motor & main PCB BSR kit not interchangeable
	J3C-S20-DPS	Same	Same	Same	Same	Brushed motor & main PCB DPS kit not interchangeable
	J3C-H20	Same	Same	Same	Same	Brushed motor & main PCB
	J3C-H20-BSR	Same	Same	Same	Same	Brushed motor & main PCB BSR kit not interchangeable
	J3C-H20-DPS	Same	Same	Same	Same	Brushed motor & main PCB DPS kit not interchangeable
	J3C-L20	Same	Same	Same	Same	Brushed motor & main PC
	J3C-L20-BSR	Same	Same	Same	Same	Brushed motor & main PCB BSR kit not interchangeable
	J3C-L20-DPS	Same	Same	Same	Same	Brushed motor & main PCB DPS kit not interchangeable