

Available with actuator function: **POWER OPEN - POWER CLOSE FAILSAFE MODULATING FAILSAFE MODULATING**

Feature rich **J+J** multi-voltage smart electric actuator with LED status light and function conversion kits.



**Overview**

The J3C-H20DPS high voltage electric valve actuator from the electric actuator manufacturer J+J offers an impressive list of standard features that include protection against damage from over-torque or condensation, safety features, the ability to have its standard on-off function changed with user friendly plug & play conversion kits, and a highly visible LED light to offer users continual actuator operational status feedback.

The J3C Failsafe electric actuator is the same on-off J3C actuator but with a simple to install, user friendly 'BSR' failsafe function conversion kit. The J3C BSR failsafe actuator can be set to fail open or fail closed.

The J3C Modulating electric actuator is the same on-off J3C electric actuator but this time with the quick and easy to install 'DPS' modulating function conversion kit. The J3C DPS modulating actuator can be controlled by either a 4-20mA or 0-10V control signal and provides feedback as standard.

The LED light remains constantly lit if the actuator is able to respond to remote commands - if it can't, it flashes. The sequence of the flashes indicates what the reason may be for it being unable to respond.

**J3C-H20DPS Electric Actuator Specifications**

Voltage range - automatic sensing	85-220 AC (1ph) or DC
DPS Modulating 4-20mA or 0-10V	Pre-installed & tested
Operating time (0-90° no load)	10 seconds
Maximum break torque	25 Nm (221 lb.ins)
Maximum operating torque (run/ reseat)	20 Nm (177 lb.ins)
Duty rating	75%
IP Rating (IEC 60529)	IP67
Working angle Standard (on request)	90° (180° or 270° options)
Mounting ISO:5211 x DIN 3337	F03, F04 & F05 x 14 (std)
Motor switches	2 x SPDT micro switches
End of travel confirmation (volt free)	2 x SPDT micro switches
Heater	3.5 W
Ambient temperature range	-20° to +70°C (-4 to +158°F)
Electrical connecting plugs	DIN 43650/ ISO4400 & C192
Weight	1.8 kg

**J3C-H20 Consumption**

220V/1ph	At maximum torque	84mA (for power supply sizing x 3)
110V/ 1ph	At maximum torque	168mA (for power supply sizing x 3)

**How this J3C electric 1/4 turn modulating electric valve actuator works:**

The rotational movement of the J3C modulating actuator is controlled by the DPS (Digital Positioning System), and creates movement proportional to the input control signal. The DPS PCB compares the physical position of the J3C actuator's output shaft, fed back via a potentiometer driven by the output shaft, to the input signal. If a difference exists between input (desired) and output (actual) positions, the DPS considers that an error and instructs the actuator's motor to turn in the direction and angular travel required to eliminate the difference. The J3C DPS from J+J is programmed to virtually eliminate hunting and once the desired input position is reached, it stops.

**J3C Main features**

IP67 Weatherproof, UV protected, corrosion resistant plastic housing.

LED light gives user continuous visual actuator status feedback - if the LED is flashing, there's a problem!

Many protective features as standard - such as over-torque and anti-condensation.

Multi-voltage capable, automatically sensed

Very user friendly and easy to install - all the electrical connections are external.

Unique plug & play function conversion kits create FAILSAFE & MODULATING function from a standard on-off electric actuator.

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**Main features of the J3C electric actuator**

IP67 Weatherproof, UV protected, corrosion resistant Polyamide housing.

IP67 allows the J3C electric actuator to be submerged, the international standard IEC60529 states: *Test duration is 30 minutes. Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion). The lowest point of enclosures with a height less than 850 mm is located 1000 mm below the surface of the water, the highest point of enclosures with a height equal to or greater than 850 mm is located 150 mm below the surface of the water.*  
The J3C is therefore fully weatherproof.

LED light gives user continuous visual actuator status feedback - if the LED is flashing, there's a problem!

The LED light provides a continuous highly visible indication of the J3C electric actuator's operational status. If all is well, the LED is solidly lit. If it is blinking there is a problem and the J3C will not respond to remote commands - the sequence gives an indication of the likely cause. The 2 most common are:

-  = Torque limiter has engaged (valve jammed?)
-  = Actuator is in 'manual' mode

Many protective features as standard - such as over-torque and anti-condensation.

Over-torque protection is electronic, the J3C constantly measures the current being drawn and compares it with pre-set parameters, if the current draw exceeds the parameter, the power is cut preventing mechanical damage to the actuator. An internal thermostatic heater, energised from the external power supplied to the power DIN connector, ensures the J3C's internal temperature remains above that at which condensation could form.

Multi-voltage capable, automatically sensed

The J3C-H20 valve actuator automatically senses the external power being applied and can accept any external voltage between 85V and 220V AC or DC

Very user friendly and easy to install - all electrical connections are external.

J3C-H20 mounting options are ISO5211 F03, F04 or F05 with a 14mm female star drive. Electrical connections are made using external DIN plugs supplied with the J3C actuator eliminating the need to remove the actuators cover to connect.

Unique plug & play function conversion kits create **FAILSAFE & MODULATING** function from a standard on-off electric actuator.

Uniquely, the J3C electric actuator can have it's standard on-off functionality changed by the installing of very user friendly plug and play function conversion kits. See the following page for more details

Manufactured in the EU by J+J

The J3C electric valve actuators are designed and manufactured by J+J in Spain. J+J have been designing and manufacturing electric actuators for over 25 years and the J+J valve actuators are sold in more than 30 countries.

**J3C Series Smart Electric Actuator**

**Function options:**

**J3C ON-OFF ELECTRIC ACTUATOR**

Standard function

Power open, power close. Stays put on loss of external power. Power remains on at all times.

**J3C FAILSAFE ELECTRIC ACTUATOR**

Fails to pre-set position on loss of external power

Power open, power close, fails to pre-set 'safe' position on loss of external power using internal industrial trickle charged rechargeable NiCad battery. Can be set to fail close (NC or normally closed) or fail open (NO or normally open) on loss of external power. The failsafe electric actuator moves to the position command applied at the time external power is restored.

**J3C MODULATING ELECTRIC ACTUATOR**

Movement proportional to input signal

Power is applied continuously. Movement of valve actuator is then controlled by an internally fitted digital positioner and is proportional to changes supplied in an input control signal. This input signal is typically 0-10VDC, or 4-20mA. An output signal is supplied as standard providing closed loop control. Fails closed on loss of control signal (or see configuration options below), stays put on loss of external power.

Configuration options:

- 1) Closes on loss of control signal
- 2) Opens on loss of control signal
- 3) Stays put on loss of control signal

**J3C FAILSAFE MODULATING ACTUATOR**

Combination of failsafe & modulating kits above:

Uses battery failsafe system and digital positioner plug and play function conversion kits to provide fail to safe position function on loss of external power in a modulating application.

**NOTE ON POWER SUPPLIES**

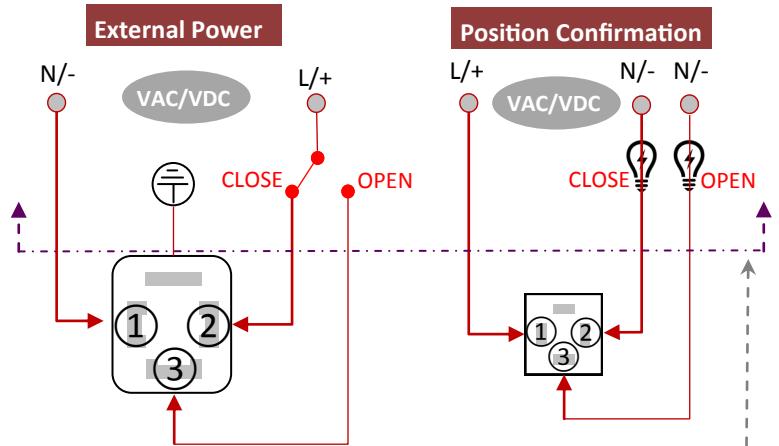


It is imperative that the power supply has sufficient capacity to drive the J3C electric actuator. Ensure that safety factor of 3 is used to cover inrush on start-up, and for increased draw over time as the brushed DC motor wears.

**Electrical Wiring Connections**

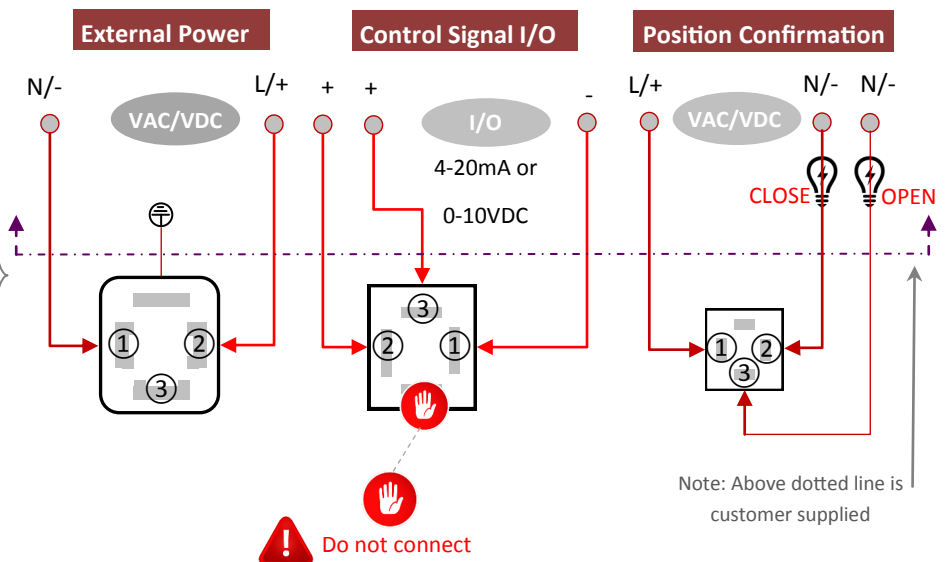
In J+J electric actuators all electrical connections are made externally using the external DIN plugs supplied with the actuator. There is no need to remove the valve actuator's cover to connect electrically. There are no terminals internally to connect to.

**J3C ON-OFF & FAILSAFE WIRING** (Same connection for either)



Note: Above line above is customer supplied

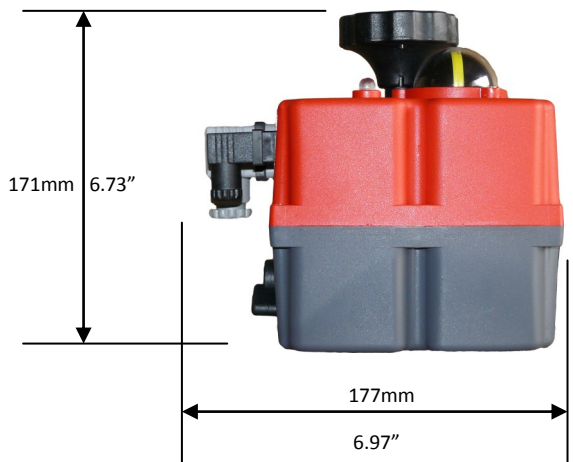
**J3C MODULATING WIRING**



Note: Above dotted line is customer supplied

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**J3C-20 Dimensions**



ISO5211 Mounting	F03	F04	F05
Mounting PCD (mm)	36	42	50
Drive (Standard)	14mm		
Drive (Optional)	9mm or 11mm		



**J3C Materials of construction:**

Housing	Anti-corrosive Polyamide
Fasteners	Stainless steel
Gears	Polyamide (speed reducing) & steel
Shaft	Stainless steel
Output drive	Zamac
Position indicator	Clear Polyamide

**J3C Plug & Play function conversion kits:**

Failsafe and/or modulating function is quick and easy to achieve in the J3C smart electric actuator by the fitting of the user friendly failsafe and/or modulating plug & play function conversion kits to the standard on-off J3C smart valve actuator. When actuated valves are ordered with failsafe, modulating or failsafe modulating function, J+J install and test the plug and play function conversion kits. They can however easily be retro-fitted to J3C smart electric actuators should the on-off function requirement, supplied as standard, change.

Fitting both plug and plug function conversion kits creates failsafe modulating functionality.

**BSR** plug & play kit for **J3C** creates a **FAILSAFE** ELECTRIC ACTUATOR

**DPS** plug & play kit for **J3C** creates a **MODULATING** ELECTRIC ACTUATOR

## Model J3C DPS Modulating System

### Convert a J3C on-off electric actuator to modulating (or proportional control)

Uniquely, the J3C electric actuator can change its operating function by the simple addition of a plug and play function conversion kit. By installing the DPS from electric actuator manufacturer J+J, the factory supplied on-off function changes to modulating.

Modulating functionality means that the movement of the actuator is controlled by an input signal, either 4-20mA or 0-10V. Any change of the input signal results in a corresponding and proportional change in the position of the actuator. A replacement cover is included in the plug and play DPS kit that has an extra DIN plug fitted to accept the control signal.

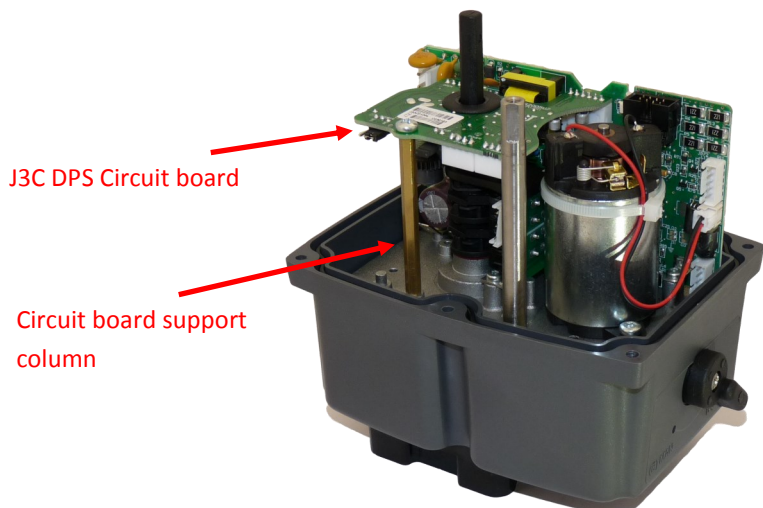
### Advantages of J+J's DPS (Digital Positioning System)

The main advantages of the DPS are that the system can be retro-fitted into a standard on-off J3C electric actuator, it is plug and play with auto-calibration for zero and span settings, an output signal is provided as standard and hunting is virtually eliminated - it moves to the demanded position and stops. Digital control ensures high sensitivity and repeatability, providing characteristics that show hysteresis, linearity and precision at less than 1%. The DPS can be configured standard acting whereby a low signal closes the J3 actuator, high signal opens it, or reverse acting where a low signal opens the J3 modulating actuator and a high signal closes it.

### Function on loss of external power or control signal

On loss of external power Stays put (can fail to safe position with the BSR kit installed)

### Model J3C-20 with DPS modulating system installed



J3C DPS Circuit board

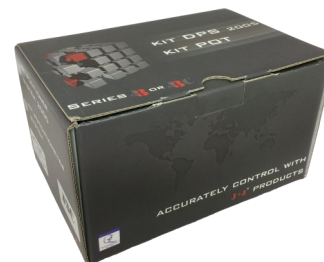
Circuit board support column

### Detail of the DPS's functionality

The DPS is self-calibrating and on initial power up, or restoration following a power cut, will perform a short automatic self-calibration sequence. In situations where the J3C actuator is used in manual mode (eg: during commissioning when there is no power available) and subsequently returned into automatic mode, if the modulating J3C actuator has been left out of its normal operating quadrant, the DPS will auto-adjust itself back to the correct quadrant, re-set itself and be ready for use.

### External reset

Should the J3C DPS require a 'soft reset', this is quickly and easily done using the male connections on control signal DIN plug. See instructions for details.



DPS Plug & Play Kit



### Overview of the DPS principle of operation

Modulating control functionality in the J3C electric actuator is achieved by an internal micro-processor on the DPS circuit board, which forms part of the plug and play kit, continuously monitors digitally the analogue input and output signals and compares them with the physical output shaft position and if there is a discrepancy, moves the valve actuator to balance the signals.

### Retro-fit

The DPS plug & play function conversion kit can quickly and easily be retro-fitted to a standard on-off J3C electric actuator, so if the