J3C-L140 170Nm Smart Electric Valve Actuator

Failsafe Function Type: J3C Model: L140-BSR

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-L140 low 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 it's 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-L140 Electric Actuator Specifications

Voltage range - automatic sensing	24 VDC or 24 VAC (50/60Hz)
Operating time (0-90° no load)	34 seconds
Maximum break torque	170 Nm (1504 lb.ins)
Maximum operating torque (run/ reseat)	140 Nm (1239 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	F07 & F10 x 22 star (std)
Motor switches	2 x SPDT micro switches
End of travel confirmation (volt free)	2 x SPDT micro switches
Heater	3.5W
Ambient temperature range	-20° to +70°C (-4 to +158°F)
Electrical connecting plugs	DIN 43650/ ISO4400 & C192
Weight	5.2kg

J3C-L140 Consumption

24V AC	At maximum torque	2290mA (for power supply sizing x 2.5)
24V DC	At maximum torque	1890mA (for power supply sizing x 2.5)

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.

How this J3C electric 1/4 turn valve actuator works (on-off)

Electrically operated valves are driven by an electric actuator containing a motor and gearbox. On receipt of a continuous voltage signal (not pulse) the motor runs and, via a gearbox in the electric actuator, rotates the valve stem. The motor stops at the desired position (usually 0° or 90°) by an internal cam striking a micro-switch. The valve actuator remains in this position, with the voltage still applied continuously, until switched and a continuous voltage reversing signal (not pulse) is applied, which runs the motor in the opposite direction, reversing the rotation until a separate internal cam strikes a separate micro-switch and stop the motor.

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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 J3CL-140 valve actuator automatically senses the external power being applied and can accept any external voltage between 12V and 24V AC or DC

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

J3C-L140 mounting options are ISO5211 F07 or F10 with a 22mm 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.

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Main features of the J3C electric actuator's multi-colour LED status light.

J3C responds to remote commands - normal opening and closing.

Valve closed	 Solid RED
Valve opening	 Blink GREEN/ AMBER
Valve open	 Solid GREEN
Valve closing	 Blink RED / AMBER

J3C does not respond to remote commands - normal opening and closing.

Torque limiter activated, valve closing	 Blinks RED
Torque limiter activated, valve opening	 Blinks GREEN
'MAN' Manual mode selected	 Double blinks AMBER

J3C in battery mode (external power lost) when BSR failsafe system installed

Battery back-up activated, valve closing	 Slow blinks RED
Battery back-up activated, valve opening	 Slow blinks GREEN

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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

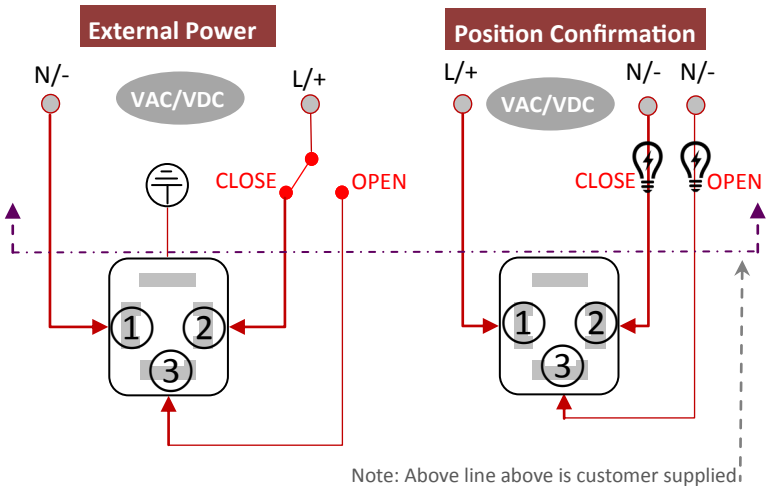
Fails to pre-set position on loss of external power

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.

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)



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J3C MODULATING ELECTRIC ACTUATOR

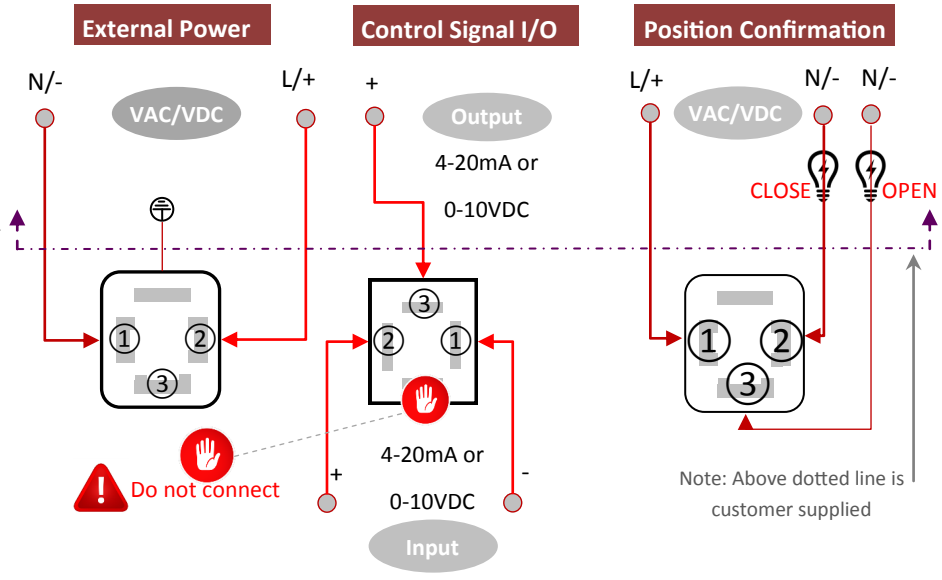
Movement proportional to input signal

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 MODULATING WIRING



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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.

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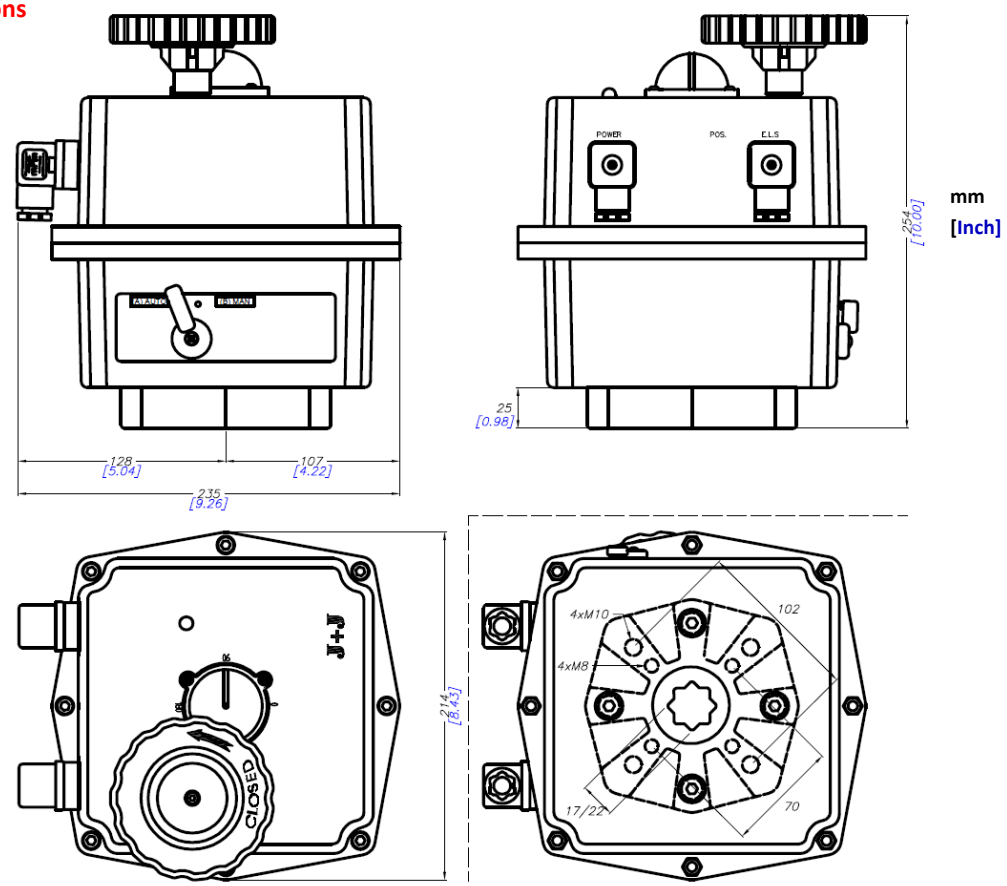
J3C-L140 Dimensions



mm
[Inch]

J3C Materials of construction:

Housing	Anti-corrosive Polyamide
Fasteners	Stainless steel
Gears	Polyamide (speed reducing) & steel
Shaft	Stainless steel
Output drive	Coated aluminium
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 ACTAUTOR

BSR Failsafe System for J3 & J3C

Convert a J3 or J3C on-off electric actuator to failsafe

Uniquely, the J3 electric actuator can change it's operating function by the simple addition of a plug and play function conversion kit. By installing the BSR from electric actuator manufacturer J+J, the factory supplied on-off function changes to failsafe.

Failsafe functionality means that in the event of external power being lost, the BSR will drive the actuator to a pre-determined failsafe position - if it is not already in that position, and will respect the external signal being applied at the time the external power is restored. The failsafe position can be configured to either be fail closed, or fail open on loss of external power.

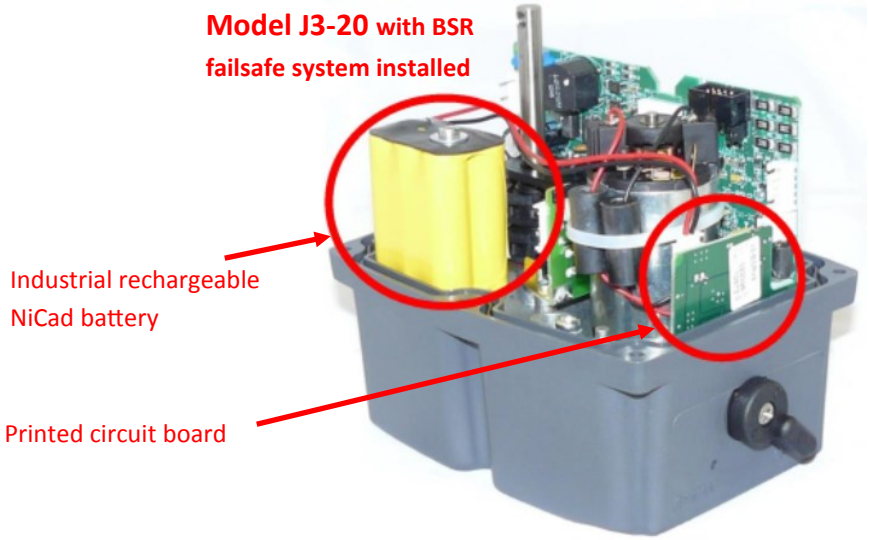
BSR Plug & Play Kit

Advantage of a battery failsafe system over a true mechanical spring return system

In conventional mechanical spring return electric actuators, the actuator has to over-come the torque in the valve AND the torque in the spring, so the mechanical spring return actuator is therefore bigger, and more expensive, compared to a non-failsafe actuator providing the same torque output.

A battery failsafe system simply provides an alternate power source, so the actuator

Model J3-20 with BSR failsafe system installed



Overview of the BSR principle of operation

Failsafe functionality in the J3/J3C electric actuator is achieved by providing an alternate power supply by way of an internal NiCad industrial rechargeable battery that is trickle charged via the circuit board whenever external power is supplied to the J3 actuator. The circuit board detects loss of external power and switches the power source to 'internal', drawing power from the battery to set the J3 actuator to its pre-determined failsafe position. The battery and circuit board are supplied in the BSR plug and play kit.

Retro-fit to J3 or J3C on-off electric actuator

The BSR plug & play function conversion kit can quickly and easily be retro-fitted to a standard on-off J3 actuator, so if the require-

Detail of the J3 or J3C'sBSR's functionality

A few seconds after loss of external power, the J3's LED light will slowly flash and, if not already in its pre-determined failsafe position, will be driven to its failsafe position by the trickle-charged internal industrial battery. The LED will continue to flash for a couple of minutes and at the end of this period, if external power has not been restored, the J3 completely shuts down to preserve battery charge, and the LED light is

Re-charging the J3 or J3C's internal industrial battery

Every movement made under battery power draws energy from the internal battery, and this energy must be replaced before the next de-mand is made otherwise the battery will run flat, it is therefore important to respect the recharge times shown in the table on page 3.

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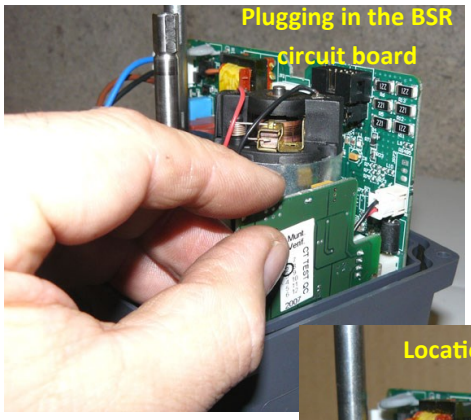
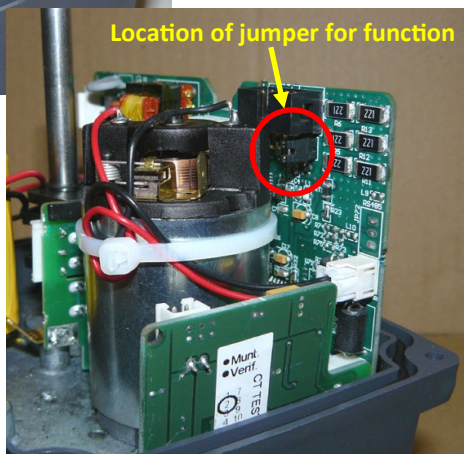
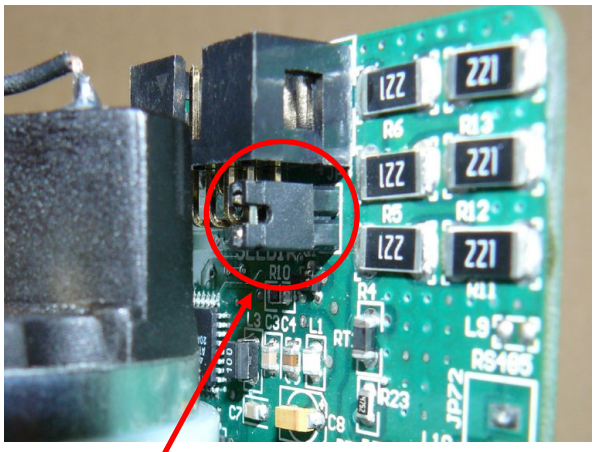
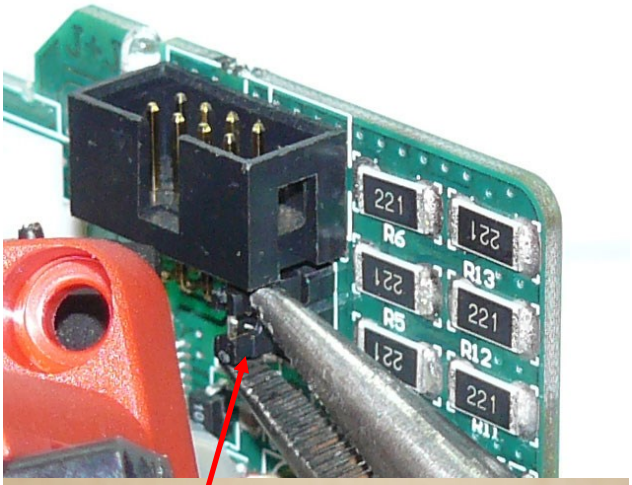
Configuring the J3 or J3C for FAIL OPEN functionality

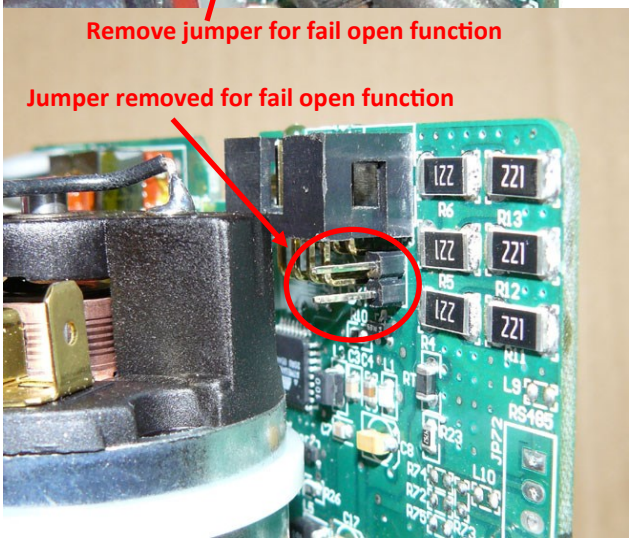
The factory supplied BSR kit is configured to fail closed on loss of external power. It is quick and easy to change the fail position to open, by removing a jumper from the J3 actuator's main circuit board. See photographs below.











Technical and charging information

J3 Model	20	35	55	85
Location of BSR	Internal	Internal	Internal	Internal
Cycles on 1 charge	6	6	3	2
Initial charge time	36 hours	36 hours	36 hours	36 hours
Minimum recharge time* after each movement	**26 mins**	**26 mins**	**50 mins**	**65 mins**
Battery consumption per operation	0.1W	0.1W	0.18W	0.2W
Battery nominal capacity ±5%	800mA	800mA	800mA	800mA

* Minimum time external power must be applied after each movement under battery power to maintain battery at full capacity.

Note on 'solenoid' function for J3/ J3C with BSR installed

The J3-BSR failsafe actuator can be connected with 2 wires to give energise open, battery close (in solenoid terminology, normally closed/ NC, or vice versa for normally open/ NO function) which replicates the function of a solenoid valve - whilst not designed for this, the J3-BSR will work CONDITIONAL that the minimum energise (external power applied) times are completely respected. Battery life may shorten depending upon the frequency of operation under battery power.