



Installation & Operating Manual



C23E, C21V, C22V Control Actuator

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1. Introduction

Albion Valves (UK) Ltd's ART 20F is a Pressure Independent Control Valve (PICV) which can be used to control the amount of fluid flowing through the valve within a given pressure differential range. Thanks to their unique design, PICVs can perform flow regulation, and modulation for comfort control and, if required, isolation.

The following actuators can be used with the ART 20F PICV to perform the following functions.

- The C23E with a 24V AC supply provides 0 – 10V (or 2-10V) feedback signal modulating control with full authority regardless of any fluctuations in the differential pressure of the system within the range of the valve (up to 800kPa).
- The C21V with a 24V AC supply provides 3-position on/off control of the PICV with full authority regardless of any fluctuations in the differential pressure of the system within the range of the valve (up to 800kPa).
- The C22V with a 230V AC supply provides 2-position or 3 point floating on/off control of the PICV with full authority regardless of any fluctuations in the differential pressure of the system within the range of the valve (up to 800kPa).

The actuators can be mounted on the valve by hand and without the need of a specific tool making installation easy to complete and are particularly suitable for installations where space is limited due to the compact design.



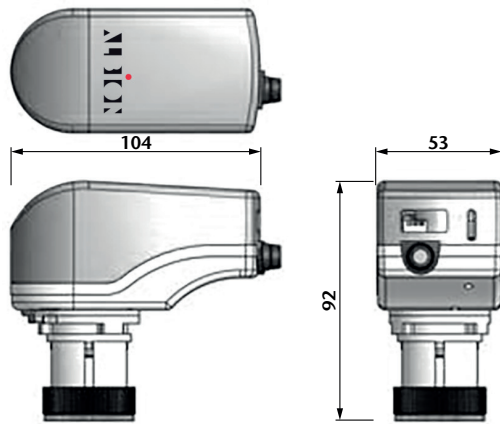
2. Technical Data

	C23E	C21V	C22V
Minimum force	200N (45lbs)	200N (45lbs)	200N (45lbs)
Power supply	22 to 26 Vac or Vdc	22 to 26 Vac or Vdc	230 Vac
Power consumption	5VA	5VA	5VA
Electrical connection	4 wire halogen free cable 0.8mm ² (18AWG), 1m long	3 Wire halogen free cable 0.8mm ² (18AWG), 1m long	3 wire halogen free cable 0.8mm ² (18AWG), 1m long
Control mode & signal	Analog, 0-10Vdc or 2-10Vdc. 4-20mA with external 500Ω resistor	Digital, 2 positions or 3 point floating	Digital, 2 positions or 3 point floating
Feedback signal	0-10Vdc or 2-10Vdc	No feedback	No feedback
Running time	18.5 sec/mm - 120 sec for 6.5mm	18.5 sec/mm - 120 sec for 6.5mm	18.5 sec/mm - 120 sec for 6.5mm
Failsafe running time	No failsafe	No failsafe	No failsafe
Maximum stroke	Up to 6.5mm (1/4"), self calibrating	Up to 6.5mm (1/4"), self calibrating	Up to 6.5mm (1/4"), self calibrating
Direction	Reversible, normally up position (open) or normally down position (close)	Reversible, normally up position (open) or normally down position (close)	Reversible, normally up position (open) or normally down position (close)
Ambient temperature	2°C to 50°C (36°F to 122°F)	2°C to 50°C (36°F to 122°F)	2°C to 50°C (36°F to 122°F)
Medium temperature	2°C to 120°C (36°F to 248°F)	2°C to 120°C (36°F to 248°F)	2°C to 120°C (36°F to 248°F)
Weight	0.24kgs	0.24kgs	0.3kgs
Ingress protection	IP54	IP54	IP54

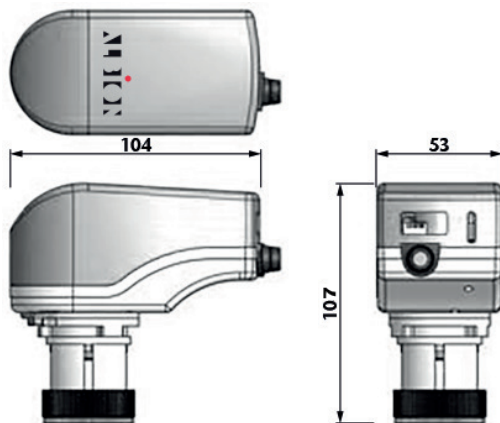
3. Valve Features

- Minimum force 200N
- Anti-stick option (C23E only)
- Manual override
- Direct or reverse acting (configurable)
- Status LED
- Standard cable 1 meter long
- IP54 enclosure
- Equal percentage available on C23E model (upon request)

Dimensions C23E / C21V



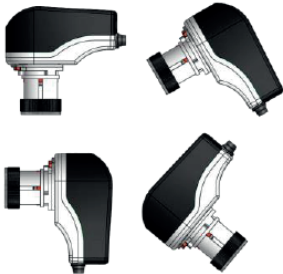
Dimensions C22V



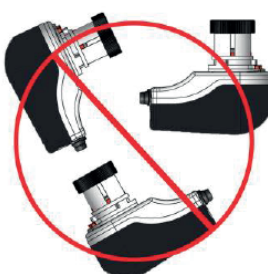
4. Valve Installation

Mounting of the actuated valve on system

Correct mounting



Incorrect mounting



1. The actuated valve installation should be easily accessible and provide sufficient clearance for service and replacement.
2. Horizontal and vertical positions are preferred orientation for the installation of actuated valve. However, this actuator can be installed at any in between angle.

Caution:

Do not install at more than 90° from horizontal.

Mounting of the actuator on valve

ACTUATOR TO VALVE ADAPTOR



No foam insulation above the dotted line and around the adaptor

ACTUATOR



No foam insulation above the dotted line and around the adaptor

1. Mount the valve adaptor to the valve and fingers tighten only.
2. Rotate knob clockwise to open the valve.
Do not force knob in either direction!
3. Manually adjust the knob to test piping network.
4. Once satisfied that the network is working properly, engage the actuator over the valve adaptor and turn 30° clockwise (CW). You should hear an audible click.

To disengage the actuator, press the release button while turning the actuator CCW 30°.

Caution:

Actuator specifically calibrated to its adaptor. **DO NOT** exchange original adaptor with a different actuator.

NOTE: You must connect the actuator to its adaptor and mount it on a valve before applying power. Failure to do so will result in incorrect operation of the actuator.

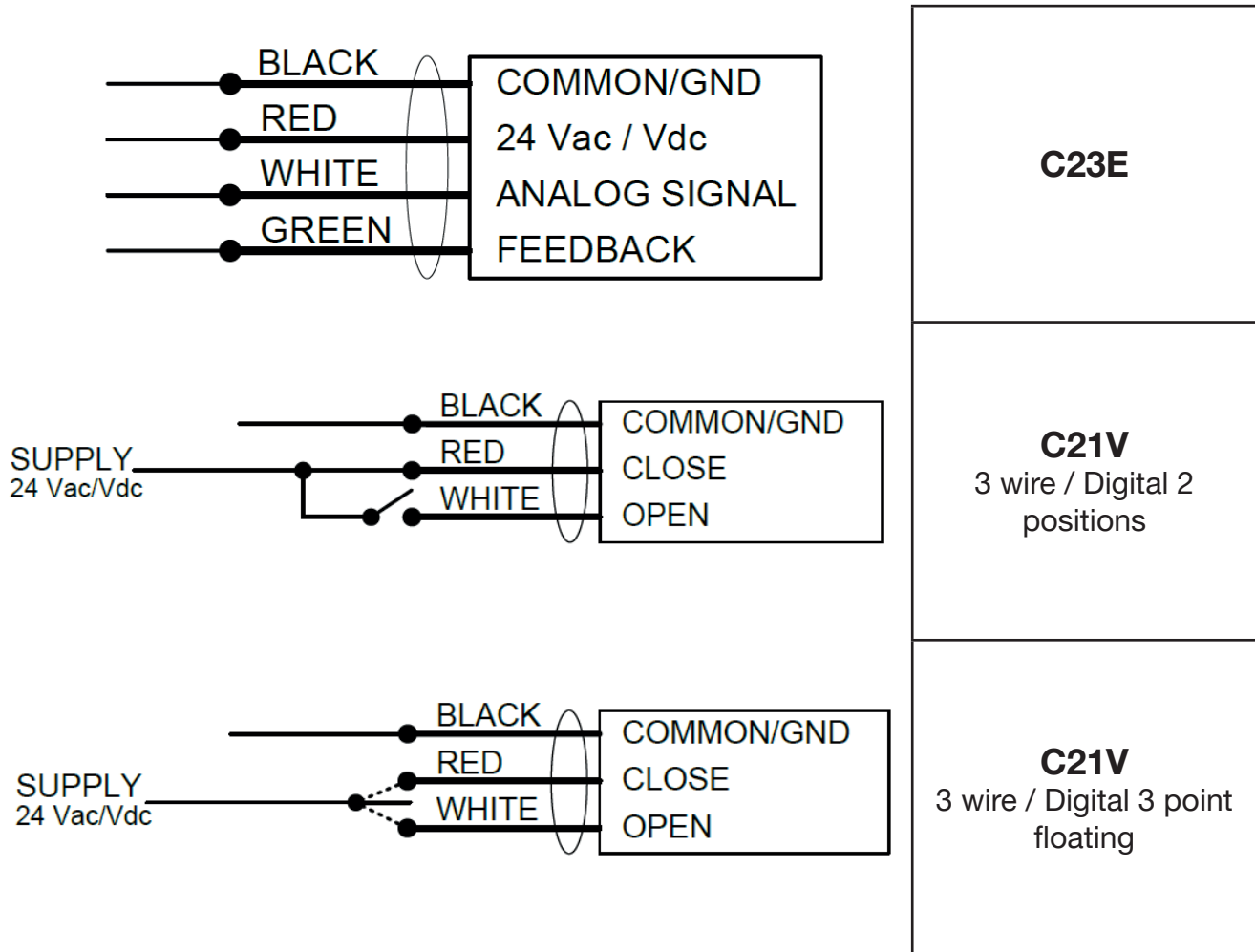
Actuator mounting on the valve

1. Pre-set the valve to the design flow. (See instruction for the valve)
2. Mount the actuator, on the valve. (See fig. 1)
 - Please don't use any tools when mounting the actuator.
3. Connect the wires in the controller terminal according to the instruction manuals.
4. Switch on the power and let the actuator run the calibration procedure and calibration. This will take 2-3 minutes.
 - During calibration the LED on the actuator will be flashing intermittently.
 - When the calibration has finished, the LED on the actuator will give a slow flash (0.5 secs on / 10 secs off).
5. The actuator is now ready to operate.

Please Note: Do never turn on the power before the actuator is mounted onto the valve.



5. Wiring Diagrams



DIP Switches

Each model has a different number of DIP switches, which are located behind the translucent silicone cap at the back of the actuator. Read the following sections carefully for detailed information on the different options. The DIP switches can be changed at any time. The changed option (DIP switch setting) takes effect immediately. If a change is made during an Auto-Stroke sequence (analog models only), the change takes effect once the Auto-Stroke sequence is complete (up to 240 seconds).

6. Settings

6.1 Settings: Analog Models (C23E)

Auto-Stroke

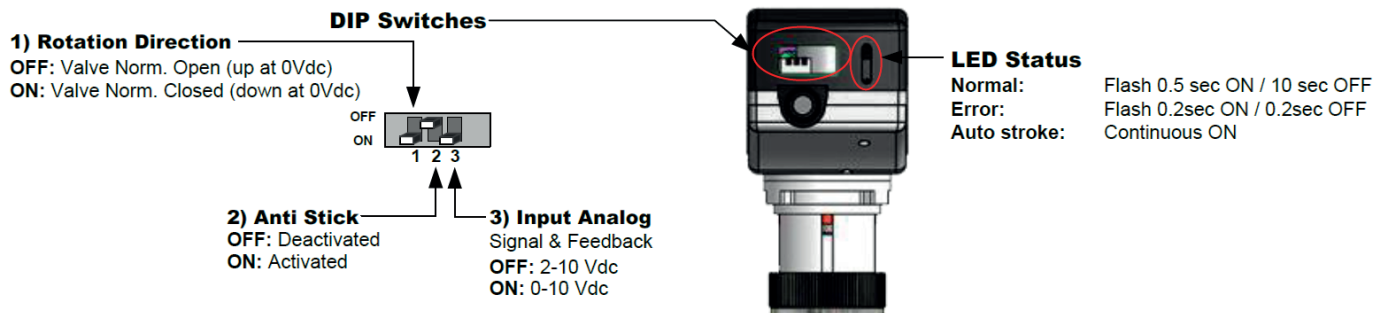
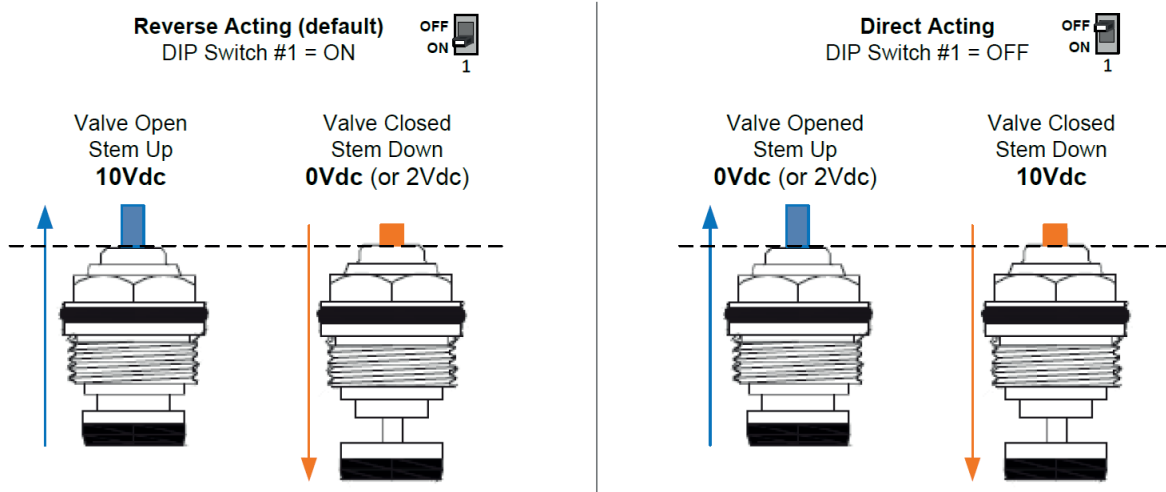
Analog actuators perform an Auto-Stroke sequence upon every power-up. The Auto-Stroke sequence runs from 0 to the end position and back in order to automatically detect the stroke limits and calibrate the input signal to the detected stroke limits. The Auto-Stroke sequence can take up to a maximum of 2 minutes to complete.

During the Auto-Stroke sequence, the status LED remains on and the actuator will not perform any other action.

If the actuator and/or adaptor are removed from the valve after initial installation, an Auto-Stroke sequence must be initiated to recalibrate the actuator. To do so, remove and reapply the power.

Rotation Direction

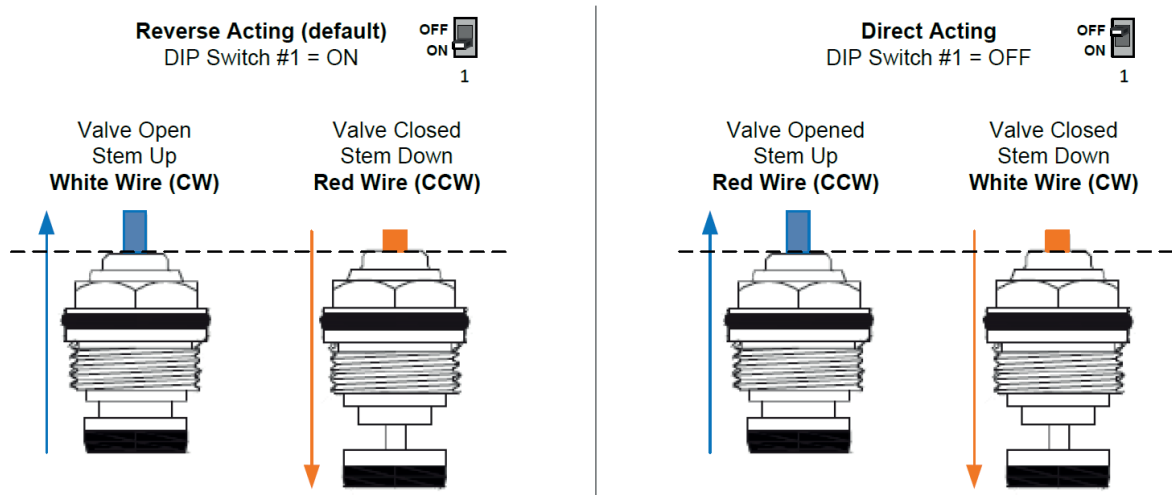
The motor direction for analog actuators is reversible. By default, the actuator is set to reverse acting (DIP switch #1 = ON).



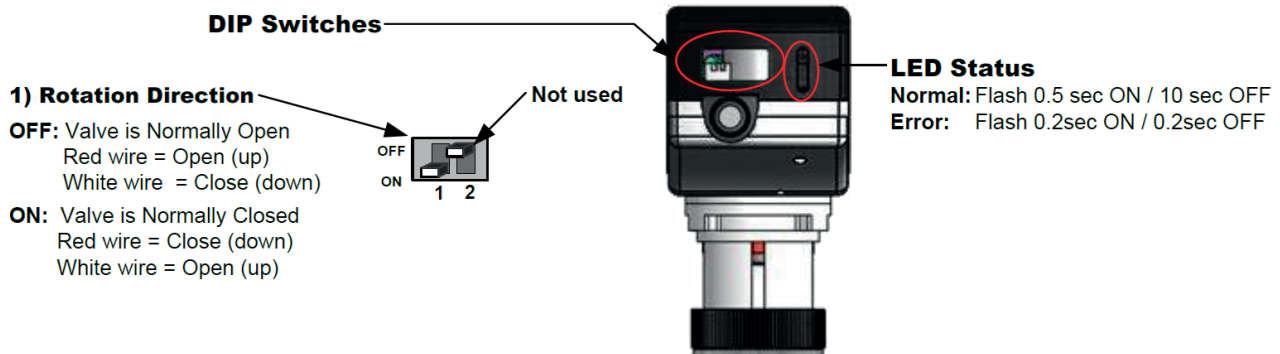
6.2 Settings: Digital Models (C21V & C22V)

Rotation Direction

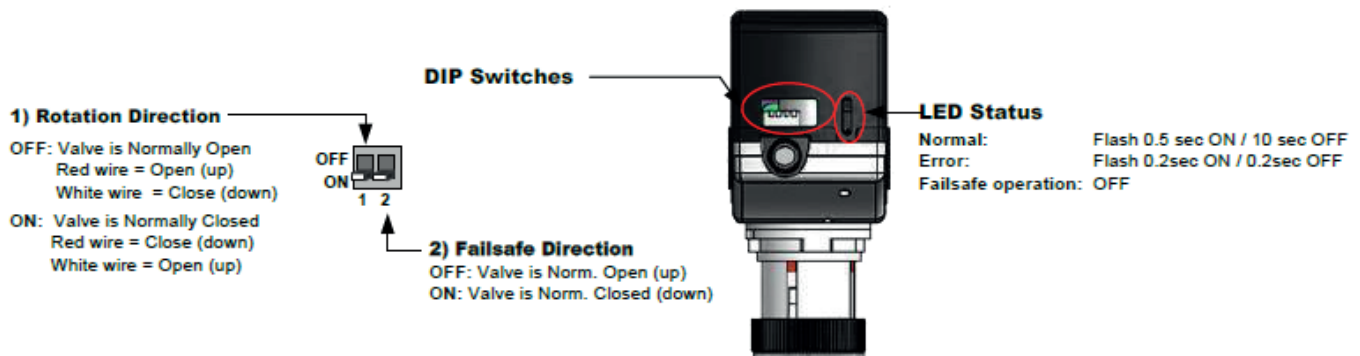
The motor direction for digital actuators is reversible. By default, the actuator is set to reverse acting (DIP switch #1 = ON).



C21V



C22V



If you plan to add foam insulation, do not add insulation foam beyond the chrome ring and around the adaptor. Improper installation of insulation material could lead to a build-up of condensate water around the valve and the chrome ring of the adaptor, which could lead to build up of rust and compromise the structure of the chrome ring that holds the adaptor.



7. Warranty

For further details of Albion Valves (UK) Ltd warranty period, please refer to Albion Valves (UK) Ltd 'Conditions of Sale' available on our website.



About Albion Valves (UK) Limited

Albion Valves (UK) Limited has been in the industrial heating and valve market for over 40 years, with this comes a wealth of knowledge and expertise that allows us to support our network of independent distributors and their customers.

Albion aims to supply a readily available, complete, quality valve solution alongside excellent cradle-to-grave support and service.

That is why we say, 'It's all at Albion'.

Quality

Whatever you need, you can rest assured that if it comes from Albion it has been designed and manufactured to deliver optimum performance and is accredited with the necessary approvals. Our in-house quality and technical departments are always on hand too!

Service

Our cradle-to-grave approach means you will never be on your own. Whether you need assistance with your system designs, an industry-leading turnaround time on your quote, or some help with commissioning after installation, we have a team to help!

Delivery

We know that time is money, and when a priority project depends on a part, you can trust Albion to deliver. We deliver 95% of products the next day with 99.98% accuracy!

Choice

We may have started with a single brass ball valve, but our range has grown substantially since and we can now offer a full building services valve solution, alongside a comprehensive range of valves for the industrial and process markets.

It is becoming more and more apparent to the industry, that it really is, all at Albion.