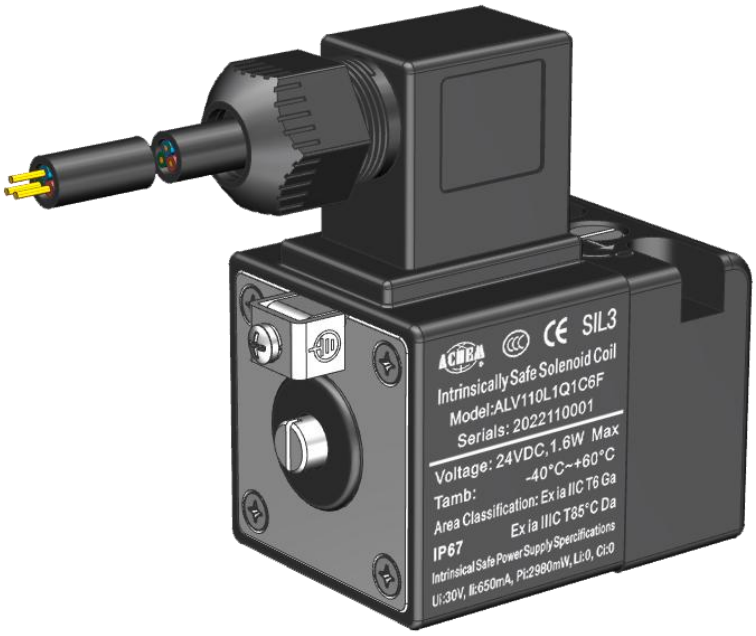
ALV110C6 Series intrinsically safe solenoid valves

Operation Manual

(Direct Acting)



ALLIED AUTOMATION PTE. LTD.

⚠ WARNING

1、THE SOLENOID VALVE MUST FORMS A INTRINSICAL SAFE SYSTEM TOGETHER WITH THE SAFETY BARRIER APPROVED BEFORE IT CAN BE USED IN THE HAZARDOUS ZONE ON SITE.

2、EARTHING FIRST BEFORE OPERATION.

3、DO NOT CHANGE THE PART OF THE PRODUCT BY YOURSELF. YOU SHOULD DISCUSS WITH THE SUPPLIER TO SETTLE THE PROBLEM, IN ORDER TO BE AWAY FROM BROKEN.

4、PLEASE CONSULTING WITH THE DRAWINGS OF P. 2 FOR INSTALLATION.

1. General Description

ALV110C6 series intrinsically safe solenoid valve is a 3/2 direct acting explosion-proof solenoid valve which can be used in hazardous area (Class 0 Zone 0). The valve body is made of aluminum alloy or stainless steel and the coil enclosure is made of thermoplastic. The electromagnetic coil is made of H class enameled wire. The internal safety circuit of the diodes is sealed in the enclosure with epoxy resin. The product is designed and manufactured according to the intrinsic safety device requirements of IEC 60079-11 explosion-proof standard, and is widely used in explosive environment in automatic control field.

2. Type code designation

ALV110XYC6F

X：Represents ambient temperature, optional code and meaning:

□: -20℃~+60℃

L1: -40℃~+60℃

Y：Represents the valve body installation form, optional code and meaning:

F1: Namur installation

Q1: Cnomo installation

P1: In-line installation

3. Service Condition

3.1 Ambient temperature: -20℃~+60℃, optional -40℃~+60℃

3.2 Working medium: less than 40μm filtered and dried air, 0～8 bar

3.3 Area Classification: Ex ia IIC T6 Ga ; Class 0 Zone 0 AEx ia IIC T6 Ga

3.4 Enclosure Type 4 and 4X, IP67

4. Applicable Standards

EN IEC 60079-0； EN IEC60079-11

5. Specification

5.1 Cable connection: Flying leads (cable length Φ7mm×1 m and other lengths on request)

5.2 Electricity parameter: ≤24VDC, ≤1.6W

5.3 Maximum electric inputs (intrinsic parameters):

Ui = 30 VDC; Ii = 650 mA; Pi = 2.98 W; Ci = 0 uF; Li = 0 mH

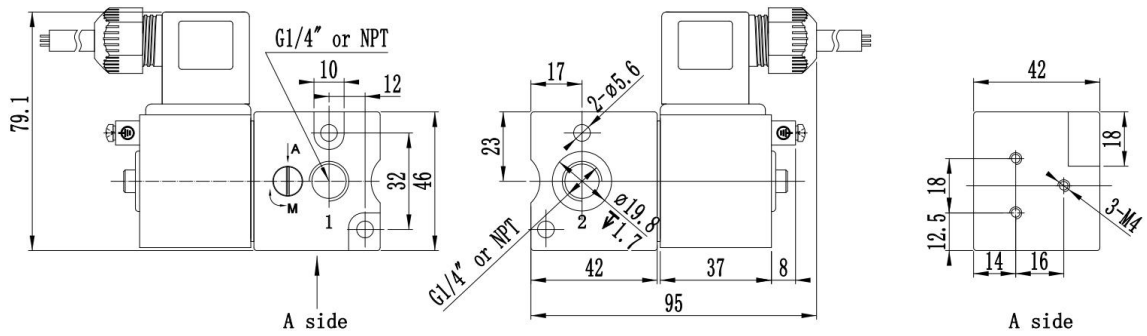
5.4 Minimum working voltage: 13VDC (0.46W) @ -40℃～60℃; 12VDC(0.41W) @ -20℃～60℃

5.5 Installation standard: Namur、Cnomo or In-line

6. Dimension

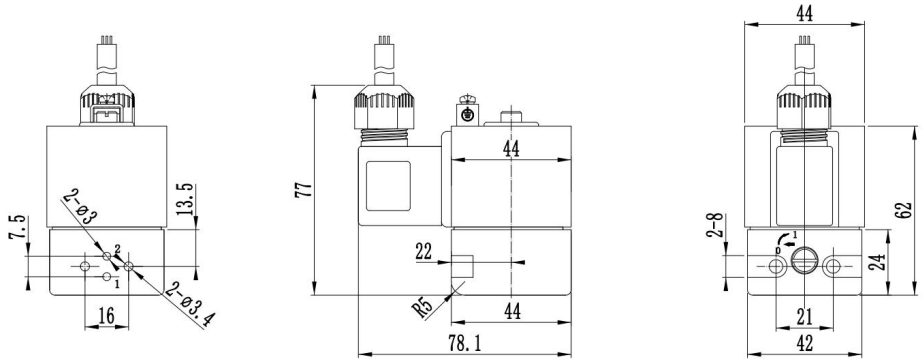
6.1 ALV110F1C6F, ALV110L1F1C6F

(Aluminum body & thermoplastic coil, 3/2NC, Monostable, Ex ia)



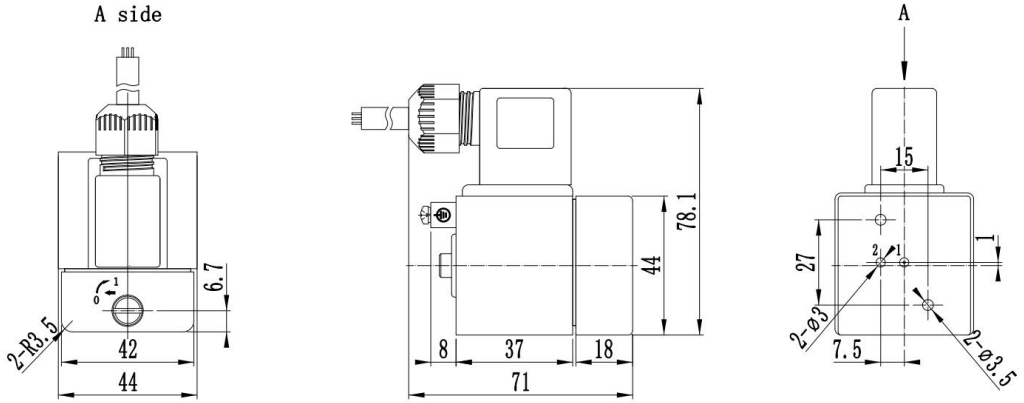
6.2 ALV110Q1C6F, ALV110L1Q1C6F

(Aluminum body & thermoplastic coil, 3/2NC, Monostable, Ex ia)



6.3 ALV110P1C6F, ALV110L1P1C6F

(Aluminum body & thermoplastic coil, 3/2NC, Monostable, Ex ia)



7. Installation and commissioning

7.1 Important Precautions

7.1.1 Electrical connection must be made by qualified personnel and according to applicable local standards and regulations.

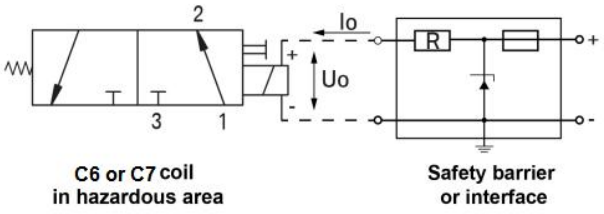
7.1.2 Before any electrical connection, turn off the electrical current to power off the components.

7.1.3 Ground before operation

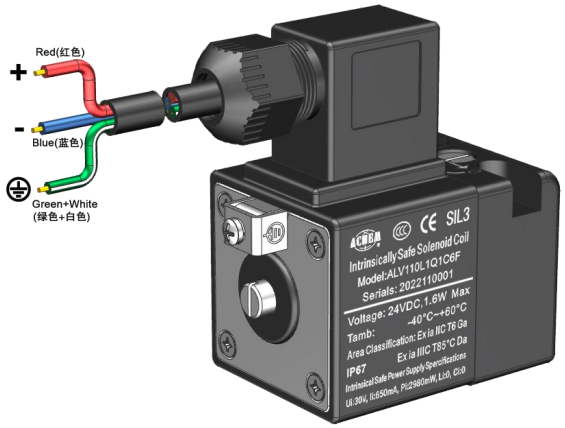
7.1.4 The power supply of the solenoid valve must come from the approved safety barrier, and other power supply cannot guarantee the intrinsically safety of the product.

7.1.5 There should be no harmful gas corrosive to aluminum alloy at the installation site.

7.2 Installation and wiring procedure



7.2.1 Install the solenoid valve on the vent interface of the pneumatic valve or the pneumatic actuator with the specified fastening screws. Ensure that the connection interface is sealed without air leakage.



7.2.2 Ground according to the wiring diagram. Note that the ground terminal is located below the cable gland.

7.2.3 The flying leads cables must be connected individually to an approved safety barrier placed in safe zone, these safety barriers can be used to supply the solenoid valve installed in a hazardous zone. Refer to the above right figure please.

7.2.4 The electrical connection between the safety barrier(or interface) and the solenoid valve can be made using the flying leads cable (cable length 1 m and other lengths on request). Note that the solenoid valve has positive and negative wiring requirements, the red line is positive, the blue line is negative, and the green and white double color line is grounding. Refer to the bottom-right figure please.

8. Maintenance precautions

8.1 Observe the warning on labels for on site installation and maintenance.

8.2 The product is equipped with grounding terminal. Users should be grounded reliably when using the product.

8.3 The product must be equipped with weather-proof (Type 4 4X,IP67) cable Gland (user self-purchase), and the connection thread of the product M20X1.5 (or 1/2 "NPT) shall comply with the relevant requirements of the operation manual of the lead-in device.

8.4 The installation, use and maintenance of the products shall be in accordance with the provisions of the operation manual.

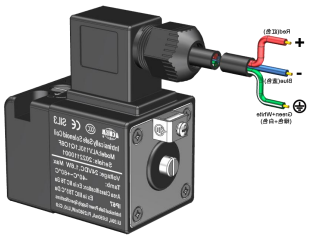
8.5 Intrinsically safe power supply specifications Ui:30V, Ii:650mA, Pi:2.980W, Li:0, Ci:0

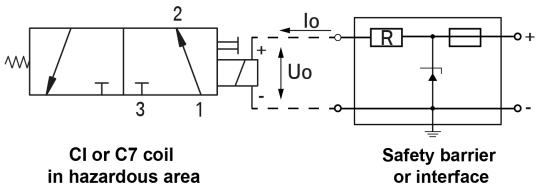
8.6 The maximum output voltage, current and power of isolation barrier (explosion-proof parameters Uo, Io, Po) must be less than or equal to the maximum input voltage, current and power of the solenoid valve (explosion-proof parameters Ui, Ii, Pi).

9. Precautions for product use

9.1. The nameplate indicates the ambient temperature range of the product

9.2. The product must form an explosion-proof system together with the associated equipment (safety barrier) approved by explosion-proof before it can be used in the hazardous zone with explosive gas mixture on site. Refer to the following schematic diagram. The wiring of the system must comply with the operating instructions of the product and the related equipment at the same time, and the wiring terminals should not be connected wrong.





9.3. The electrical parameters are as follows:

Type	Installation	Ambient Temperature	Electricity parameter	Minimum working voltage
ALV110F1C6F	Namur	-20℃~+60℃	≤24VDC, ≤1.6W	12VDC @ 0.41W
ALV110Q1C6F	Cnomo	-20℃~+60℃	≤24VDC, ≤1.6W	12VDC @ 0.41W
ALV110P1C6F	In-line	-20℃~+60℃	≤24VDC, ≤1.6W	12VDC @ 0.41W
ALV110L1F1C6F	Namur	-40℃~+60℃	≤24VDC, ≤1.6W	13VDC @ 0.46W
ALV110L1Q1C6F	Cnomo	-40℃~+60℃	≤24VDC, ≤1.6W	13VDC @ 0.46W
ALV110L1P1C6F	In-line	-40℃~+60℃	≤24VDC, ≤1.6W	13VDC @ 0.46W

9.4. The user shall not replace the components and parts of the product by himself, and shall work with the product manufacturer to solve the faults in operation to prevent the occurrence of damage.

9.5. The installation, use and maintenance of the product shall comply with the requirements of the operation manual.

10. Troubleshooting

10.1 Valve fails to operate (No switching noise)	-Check that electrical supply complies with values mentioned on the nameplate or coil. -Check coil for shorts or damage. -Check that plunger is not blocked by foreign particles. -Check if the mounted incorrectly Check if the safety barrier output voltage current and power are too small
10.2 Valve fails to return	-Check if the return spring is broken. -Check if the pilot exhaust port is blocked.
10.3 Valve switches but without effect	-Verify air pilot pressure (mini 2 bar) -Verify if the pilot plunger spring is broken.
10.4 External leakage	-Verify connectors and tightening of the valve on its interface plate.

11. Important reminder

11.1 Install, debug and use the product after reading this manual.

11.2 If you have any questions about the technology, installation, use and other aspects of the product, please contact the supplier in time.

11.3 For the safety of the installation personnel, the product and the system, please observe the safety matters indicated in this manual when installing the product. Our company will not guarantee the safety of those who fail to comply with the safety instructions in this manual.

11.4 Our company will not compensate for personal injury or material loss caused by user's arbitrary modification or maintenance of the product. If you need to repair or modify this product, please contact us in advance.

11.5 When the product is not in use and placed outdoors for a long time, cover the product shell to prevent rainwater from entering the product, and prevent moisture from agglutinating inside the product in a high temperature and high humidity environment.

11.6 In principle, the warranty period shall be subject to the warranty period indicated on the quotation sheet.

11.7 During the warranty period, our company will charge for the repair of any problem caused by the following reasons.

11.7.1 Problems caused by product dis-assembly or improper maintenance.

11.7.2 Problems arising from improper transportation and storage.

11.7.3 Problems Caused by Incorrect Installation.

11.7.4 Problems arising from fire, earthquake, storm, flood, lightning and other natural disasters or natural and man-made disasters such as riot, war and radiation.

*Any information please contacted with original manufacturer:

ALLIED AUTOMATION PTE. LTD.
140 Paya Lebar RD #09-13 AZ@Paya Lebar Singapore 409015
Tel: +65-80708988 Website: www.allied-actuator.com
E-mail: info@allied-actuator.com