

# ALSD series Top Valve Controller Operation Manual

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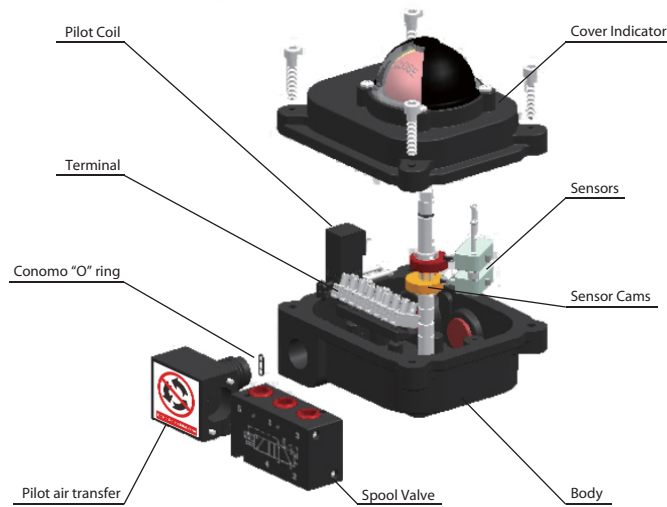
## Description

\* **ALSD series Top Valve Controller is an optimizing solution to integrate position sensor, solenoid coil and spool valve together and use for on/off valve control and position sensing in the process industries. Armed with low watt miniature pilot coil, and ASi sensor communication module, the ALSD series ASi top valve controller can be directly connected to ASi network which help plants, platforms, and pipelines improve productivity, increase safety and decrease cost in the harshest environments and toughest applications. Followings are the main technical data.**

Series	Type	CV Value	Nominal flow rate(L/min)	Air Port	Air Function	Cable Entry	Voltage	Sensor / Bus
ALSD300	Weather Proof (IP67)	1.40	1390 (at 5 bar)	1/4" BSPP or NPT	5/2 or 3/2 with plug	2x1/2"BSPP, NPT	24VDC 110,220VAC	Available for <ul style="list-style-type: none"> <li>○ Mechanical switches</li> <li>○ Inductive sensors</li> <li>○ Magnet sensors</li> <li>○ AS-i module</li> </ul>
ALSD400	Explosion Proof (Ex d IIC T6)					2x3/4"BSPP, NPT		

## STRUCTURE AND MODULES

\* The ALSD series top valve controller is developed and produced based on the design ideas of integration, block structure and replaceable for different application. The main connection interface between block to block are fully according to CONOMO SIZE 15, NAMUR and ISO5211 standards. Following is the product structure.



## Special Conditions for Safe Use



\* To ensure the proper function of the device and promote long service life, you must comply with the information in these Operation Manual and the application conditions and specifications provided in the Data Sheet. Usage of the device in a manner that is contrary to those Operation Manual or the application condition and specification provided in the Data Sheet is improper and will avoid your warranty. This device serves exclusively as a 3/2, 5/2 functions for the media stated to be permissible on this Operation Manual. Any other use is considered to be improper use. The manufacturer will not be responsible for any improper use of the device.

\* Changes to the product may only be made after consulting the manufacturer or his representative. Installation and maintenance of the product must be carried out by qualified personnel only.

\* The spool valve of the product are designed to operate with filtered ( $\leq 40\mu\text{m}$ ), dry or lubricated air or neutral gas and with the technical characteristics specified on the nameplate and in the data sheet.

## Mechanical Installation

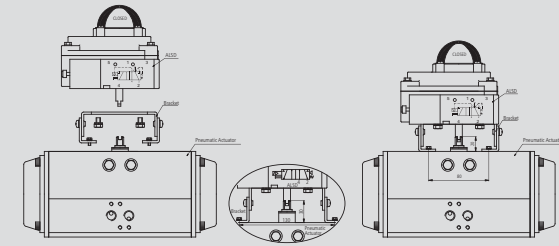
The mounting bracket of ALSD series top valve controller is designed and made fully based on Namur and ISO5211 standard (30x80 or 130, H20, 30). Installation details, please consult with following steps and the drawings

### \* Steps of Installation

1. Attach proper mounting bracket to the limit switch box housing using four aniseed cap screws provided.
2. Align limit switch box shaft to top of actuator shaft and engage it.
3. Attach bracket to actuator using hardware provided.
4. By actuating package the switch and actuator will self-align.
5. Tighten bracket to top of actuator.

### \* General recommendation

- Do not open the box when energized in hazardous atmospheres
- Use only wet cloth when cleaning the indicator.



## Pneumatic Connection

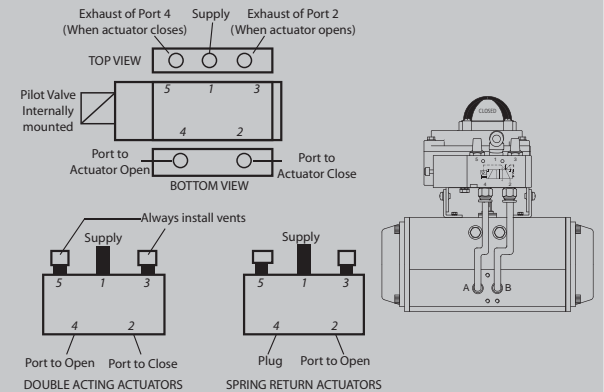
### \* General recommendations

Make sure that no foreign matter enters the system. Correctly support and align pipes to prevent mechanical strain on the valve. When tightening, do not use the valve as a lever. Locate wrenches as close as possible to connection point. To avoid damage to the equipment, **DO NOT OVER TIGHTEN** pipe connections.

### \* Connection of the spool valve

ALSD series top valve controller serves exclusively as a 3/2, 5/2 functions. Pressure inlet at port 1 on the top view of the spool valve, Pressure outlet at port 2 and 4 on the bottom view of the spool valve, Exhaust at ports 3 and 5 on the top view of the spool valve. Pipes connection details please consult with right drawings.

\* **The standard model has a  $\Phi 4$  pilot exhaust port with brass silencer at the end of the Pilot Air Transfer. Ensure it clean always.**



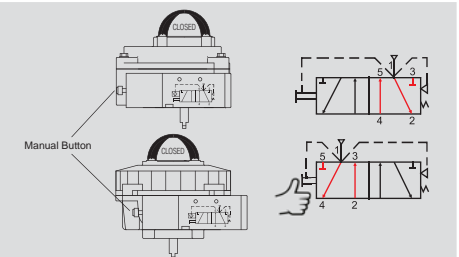
## Manual Operation

### \* General recommendation

After pneumatic connection and the supply of pressure air, you can operate the top valve controller and the control valve manually. **Make sure that the manual operation can be workable only when the coil is de-energized.**

### \* Manual Operation

In the right drawing, you can find the location of the manual button which is spring return. Just pressing the manual button by thumb, you can switch the spool valve. Below drawing tell you details of the switch principle.



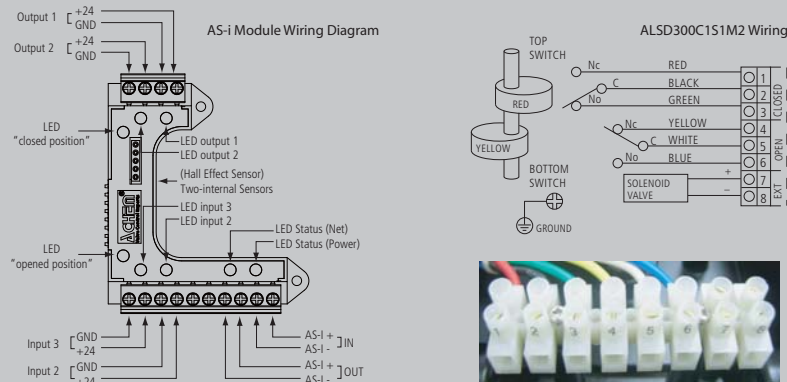
## Electrical connection

### \* General recommendation

- 1, Electrical connection must be made by qualified personnel and according to applicable local standards and regulations.
- 2, Before any electrical connection, turn off the electrical current to power off the components.
- 3, Depending on the voltage, electrical components must be grounded according to local standards and regulations. A ground screw is also included inside of the box.
- 4, All user connections are made at a numbered terminal strip. A wiring diagram is located inside the cover and indicated which terminal numbers correspond to switches and solenoid valve contacts, etc. Simply follow the wiring diagram and electric code to connect electric power and switches to your system.
- 5, As for a standard ASi top valve controller, the electric connection is very simple, only connects two wires cable to "AS-I in" terminal to your ASi network. **Be sure the ASi network cable have anode and cathode connectors.** The wiring should be follow the instruction in the datasheet included, if an auxiliary control or manual valve be connected with ASi top valve controller.
- 6, Ensure the flameproof surface have not any paint and scratch in the process of adjustment.

### \* Connection installation

1. Remove top valve controller cover(Disconnect supply circuit before opening).
2. Remove protection plugs from conduit entries and install conduit or plugs suitable for type of protection required. ALSD300 series include two 1/2"BSPP or NPT conduit entries and ALSD400 series include two 3/4"BSPP or NPT conduit entries(Note that Exd Cable Gland is needed for ALSD400). Be sure to follow the National Electric Code regulations for rigid conduit, flexible conduit or cable systems as applicable.
3. Engage wires in terminal strip using a small screwdriver.



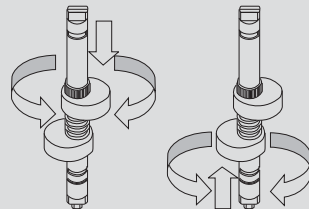
## Feedback Position Adjustment

### \* Steps of the adjustment

1. Loosen the top valve controller cover screws and remove cover.
2. Rotate actuator to full counterclockwise position. Valve is on fully open or closed position.
3. Lift up bottom cam and turn until switch or sensor is activated and then release. Engage cam back onto the splined retainer. Spring will maintain cam engagement.
4. Rotate actuator to full clockwise position. Valve is on fully closed or open position.
5. Push down top cam and turn until switch or sensor is activated and then release. Engage cam back onto the splined retainer. Spring will maintain cam engagement.
6. Place cover on limit switch box and tighten.

### \* General recommendation

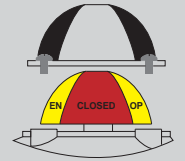
- Take care to ensure that housing O-ring is properly located in seal groove.
- Keep the box tight while circuits are alive.
- Disconnect supply circuit before opening.
- Ensure the flameproof surface have not any paint and scratch in the process of adjustment.



## Indicator Setting

### \* Setting

1. Remove four screws and remove indicator cover.
2. Lift up indicator from the cover.
3. Set indicator on cover according to valve position.
4. Replace indicator cover and fasten with cover screws.  
Check to ensure that position indicator O-ring is properly located in seal groove.
5. Be sure to use only wet cloth when cleaning the indicator.



## Maintenance

Prior any maintenance work, switches off power supply, depressurize and vent the valve to prevent the risk of personal injury or damage equipment.

### ◆ Preventive maintenance

- Operate the valve at least once a month to check its function.
- Avoid obstruction of exhaust port when it is not connected or protect it with a cap.

### ◆ Cleaning

Maintenance of the valve depends on the operating conditions. They must be cleaned at regular intervals. Cleaning must be done when a slowing down of the cycle, a leakage or an abnormal noise is noticed. The components must be checked for excessive wear. Cleaning must be made with suitable solvent.

### Spare parts

- ◆ After a prolonged use, it can be necessary to replace the active components of the valve. A spare Parts Kit is available for each version of top valve controller. Contact the manufacturer or his representative.

### Storage

- ◆ To store the top valve controller, the following precautions are recommended.
  - 1, Ensure the product is completely dry and water free.
  - 2, Maintain the entrances of air and cable passages by fitting the original protecting plugs or replacement plastic caps.
  - 3, Protect from dust, dirt and damage by packing in box or plastic bag.

### ◆ Troubleshooting



Spool 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 the cable connection correct
- Check that mobile parts (spool, pilot plunger) are not blocked by foreign particles.

Spool Valve fails to return

- Check if the return spring is broken.
- Check if the pilot exhaust port is blocked.

Spool valve operate without effect

- Verify air pilot pressure (mini 2 bar).
- Verify if the pilot plunger spring broken.

External leakage

- Verify connecting parts tightening.
- Verify manual operator "O" ring damage.

Port 3 or 5 always exhaust

- Check if the spool "O" ring damaged.
- Check if the pneumatic actuator has internal leakage.

## Statement

- 1, ALL ALSD TOP VALVE CONTROLLERS HAVE BEEN 100% FACTORY TESTED IN OPERATION, AIRTIGHTNESS. THE ADDRESS OF AS-I TOP VALVE CONTROLLER IS ALWAYS SETTED AS "1A".
- 2, REPAIRS OF FLAMEPROOF JOINTS MUST BE MADE IN COMPLIANCE WITH THE STRUCTURAL SPECIFICATIONS PROVIDED BY THE MANUFACTURER.
- 3, TECHNOLOGY CONSULTING: wilson@alpha-achem.com
- 4, FOR CONTINUOUS IMPROVEMENT OF THE PRODUCT, WE RESERVE THE RIGHT TO ALTER THE DIMENSIONS, TECHNICAL DATA AND INFORMATION INCLUDED IN THIS MANUAL OPERATION.