

# Proportional Vacuum Regulator

## QKL-HS1V、HS2V



QKL-HS1V, QKL-HS2V are 3-way electronic vacuum regulators. It consists of proportional solenoid, pressure transducer, intelligent electronics, and a refined spool. It features high flow rate, extremely fast pressure switching time, high accuracy. Using the powerful in-house software, the control parameter can be customized that allows user to build unique pressure profile. It is available with analogue and digital command signal.

### Ordering Code

QKL -  -  -  -  -

#### Type

|      |                   |        |
|------|-------------------|--------|
| HS1V | Internal Feedback | 1/4"PT |
| HS2V | Internal Feedback | 1/2"PT |

#### Input Signal

|    |              |
|----|--------------|
| *E | 0 - 10 V     |
| A  | 4 - 20 mA    |
| R  | RS485 Modbus |

#### Monitor Output

|   |           |
|---|-----------|
| C | 0 - 10 V  |
| A | 4 - 20 mA |

#### Body Material

|   |          |
|---|----------|
| A | Aluminum |
| B | Brass    |

#### Pressure Range

|    |                       |
|----|-----------------------|
| -  | -101~0 kPa(-1~0 Bar)  |
| P1 | -101~101kPa(-1~1 Bar) |

\*For Command Signal type 0-10V, the minimum driving current is 50mA.

\*\*For cable length >2meter, please select current loop or RS485-modbus input signal.

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### Specifications

| Type                      | QKL-HS1V  | QKL-HS2V             |            |
|---------------------------|---|----------------------|------------|
| Valve Type                | 3/2 Directly actuated seating valve             |                      |            |
| Materials                 | Body brass or Aluminum, Mandrel stainless steel |                      |            |
| Seals                     | FFKM  |                      |            |
| Wetted Materials          | Aluminum, Brass, Stainless steel, VITON         |                      |            |
| Mounting Bracket Material | Galvanized Steel                                |                      |            |
| Port                      | PT 1/4"   | PT 1/2"              |            |
| Output Pressure           | -101~0 kPa(-1~0bar) / -101~101 kPa(-1~1bar)     |                      |            |
| Power Supply              | DC24V ±10% (≤40W)                               |                      |            |
| Input Signal              | 0-10V / 4-20mA/ RS485                           |                      |            |
| Monitor Output            | 0-10V / 4-20mA                                  |                      |            |
| Flow Rate (ANR)           | 500 NI/min @1 bar                               | 900 NI/min @1 bar    |            |
| Medium                    | Vacuum  |                      |            |
| Recommended Filter        | 50 μm   |                      |            |
| Mounting Position         | Magnet must not face downwards                  |                      |            |
| IP Degree of protection   | IP 54   |                      |            |
| Weight                    | 1.2 kg(Body Aluminum)                           | 2 kg(Body Aluminum)  |            |
| Ambient Temperature       | 0 – 60 °C                                       | Hysteresis           | < 0.1 % FS |
| Temperature of medium     | 0 – 60 °C                                       | Response Sensitivity | < 0.1 % FS |
| Operating Temperature     | 0 – 60 °C                                       | Linearity            | < 0.1 % FS |
| Temperature Drift         | < 1 % / 10K                                     | Repeatability        | < 0.1 % FS |
| Long-term Drift           | < 1 % FS/Year                                   |                      |            |

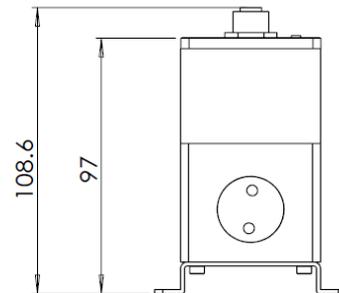
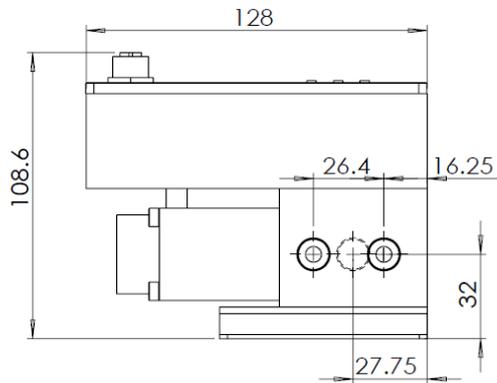
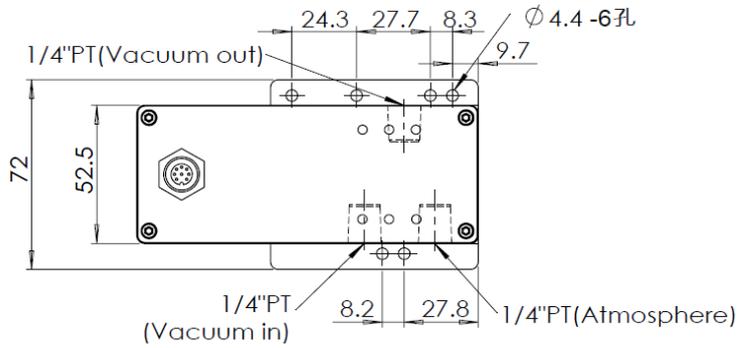
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## QKL-HS1V · HS2V

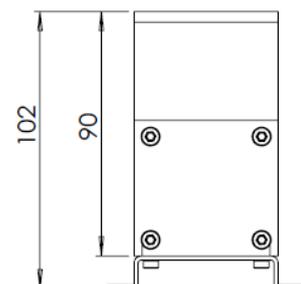
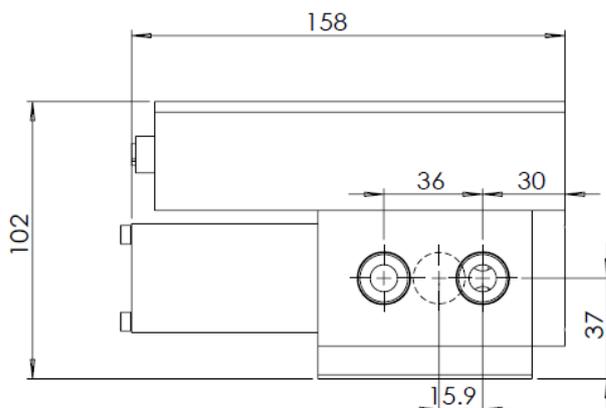
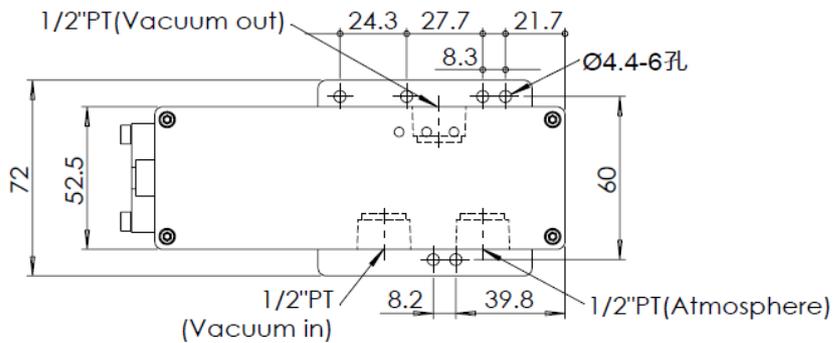


### Overall Dimension

#### QKL-HS1V



#### QKL-HS2V



# Proportional Vacuum Regulator

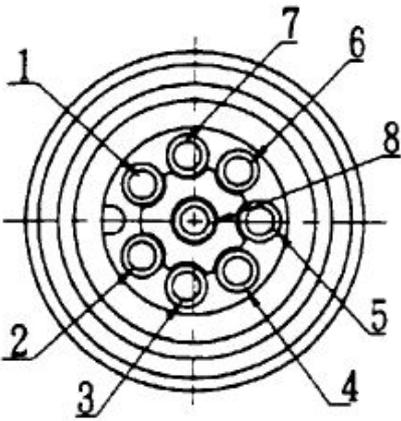
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### Indicator LED Status

|  |   |
|--|---|
|  | <p><b>Power Supplying Light:</b><br/>LED on is power DC 24V normally supplied.</p>  |
|  | <p><b>Pressure Light:</b><br/>LED on means setting pressure reach the set value.</p>  |
|  | <p><b>Error Light :</b></p> <ol style="list-style-type: none"> <li>LED flashing slowly - The supply voltage exceed DC30V or lower than DC20V.</li> <li>LED flashing fast - The temperature of valve body is over 70°C.</li> <li>LED stays on - Air pressure inlet is not supplied or insufficient.</li> </ol> |

### Wiring Description



| No. | Color  | Function  |
|-----|--------|---|
| 1   | Blue   | 24V DC Power (-)  |
| 2   | Brown  | 24V DC Power (+)  |
| 3   | Black  | Monitor output (+)  |
| 4   | White  | 0-10 V Command (+)<br>4-20 mA Command (+)                       |
| 5   | Gray   | RS485(D-)   |
| 7   | Purple | 0-10 V Command (-)<br>4-20 mA Command (-)<br>Monitor output (-) |
| 8   | Red    | RS485(D+)   |

※The wiring diagram shows from top view.

HS1V and HS2V can be customized with error output signal(24V).



**Warning: Do not rotate the connection socket when connected, to avoid damage to the internal sensor.**

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### Product Precautions



**Read the operating manual carefully before installing and operating the product**

Ignoring the safety instructions in the operating manual may result in malfunction of the product or a serious risk for the operator.



**Connection, installation, operation, maintenance and dismantling of the product may only be carried out by qualified personnel**



**Pressurized systems**

1. Pressure lines and screw connections must be adequately designed for the input pressure and output pressure of the valve.
2. Ensure that the pressure lines are connected properly to the input and output, before pressurizing the system.
3. Turn off the pressure supply, release the residual pressure, and remove all pressure connections before replacing or maintenance of the valve.



**Danger of explosion**

1. Do not operate the valve in rooms with flammable gases, steams or dust.
2. Do not use the control valve for the pressure control of flammable or explosive gases.



**Risk of damage to the valve electronics**

To avoid damages to the valve, please comply with the following notes:

1. Overvoltage may damage the electronics. Before turning on the valve, check the electrical connections and the supplied voltages carefully. Pay attention to the specified supply voltage range.
2. Lay the wires of the communication system and I/O device separately from power lines and servo motor cables.
3. Make sure the cables are adequately insulated. Use only cables that are suitable for the power consumption and ambient conditions of the valve.
4. Avoid repeatedly bending or stretching the cables or damaging the valve's housing.



**Operating pressures greater than 10 bar of the stated pressure range may cause permanent damage to the sensor of the valve**

Operate the valve only in the permissible pressure range, as specified in the technical specifications.



**Electronic discharge may damage sensitive microelectronic components**

1. Do not touch the electrical connections of the valve without sufficient electrostatic discharge (ESD) protection.
2. Follow the ESD protection instructions before opening the housing of the electronics.



**The following conditions must be met for EMC compliance operation**

1. Connect the shield connection, the plug and the equipment cabinet to ground accordingly.
2. Connect the valve body and the housing to the protective earth conductor (equipment grounding conductor).

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### **Risk of damage to the valve**

To avoid damages to the valve please comply with the following notes:

1. In built-in position the valve magnet must not face downwards.
2. Tighten the connection between pressure lines and the valve correctly, otherwise resulting chips may damage the valve.
3. Pay attention to strong magnetic fields in order to avoid malfunctions.
4. Make sure that the pressure supply system is at least equipped with 50 µm filters.
5. Fluids containing condensate may cause malfunctions of the valve. Make sure that the pressure supply system is equipped with an air dryer, after cooler and an oil and water extractor.



### **Excessive heating of the magnet, due to the input pressure being less than or equal to the given set value or if the valve is operated without input pressure, may cause a decreasing accuracy of the sensor system and a shortened lifetime of the electronic components**

1. Make sure that the valve is always pressurized with at least 1 bar more input pressure than the set value.
2. Switch on the input pressure first then enable the set value. Do not turn the input pressure on and off while the set value is activated.
3. Always switch off the set value before switching off the input pressure.



### **NOTICE**

Warranty void if any label or serial number is changed, made illegible or removed.



### **NOTICE**

Do not run control cables next to high-voltage lines, servo-motor cables, inverters...etc.



### **NOTICE**

Technical data are subject to changes without further notice. Design may vary from the actual product.