**Tonhe A20-T Series**

**MOTORIZED BALL VALVE**

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### Technical Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product size</strong></td>
<td>□ NPT/BSP 1/4&quot; 3/8&quot; 1/2&quot; 3/4&quot; 1&quot; 1-1/4&quot; (2-way brass/ss304 valve)</td>
</tr>
<tr>
<td>Maximum working pressure</td>
<td>1.0MPa</td>
</tr>
<tr>
<td>Circulation medium</td>
<td>Fluid, air</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>□ DC5V □ DC12V □ DC24V □ DC9-35V □ AC110-230V (Optional)</td>
</tr>
<tr>
<td>Wiring control methods</td>
<td>□ CR2-01 □ CR2-02 □ CR3-01 □ CR3-02 □ CR3-03 □ CR3-04 □ CR3-05 □ CR4-01 □ CR5-01 □ CR5-02 □ CR7-01 □ CR7-02 □ CR7-03 □ CR7-04 (Optional)</td>
</tr>
<tr>
<td>Working current</td>
<td>≤ 500mA</td>
</tr>
<tr>
<td>Open/close time</td>
<td>≤ 5S</td>
</tr>
<tr>
<td>Life time</td>
<td>70000 times</td>
</tr>
<tr>
<td>Valve Body material</td>
<td>□ Brass □ SS304/316 (Optional)</td>
</tr>
<tr>
<td>Actuator material</td>
<td>Engineering Plastics</td>
</tr>
<tr>
<td>Sealing material</td>
<td>FKM &amp; PTFE</td>
</tr>
<tr>
<td>Actuator rotation</td>
<td>90°</td>
</tr>
<tr>
<td>Max. torque force</td>
<td>2 N.M</td>
</tr>
<tr>
<td>Cable Length</td>
<td>0.5m</td>
</tr>
<tr>
<td>Environment temperature</td>
<td>-15℃ ~ 50℃</td>
</tr>
<tr>
<td>Liquid temperature</td>
<td>2℃ ~ 90℃ (Brass valve)</td>
</tr>
<tr>
<td>Manual override</td>
<td>□ Yes □ No (Optional)</td>
</tr>
<tr>
<td>Indicator</td>
<td>□ Yes □ No (Optional)</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP67</td>
</tr>
<tr>
<td>Certificate</td>
<td>CE(LVD EMC), ROHS and SS304 valve passed NSF61-G</td>
</tr>
<tr>
<td>Company passed</td>
<td>Iso9001:2015</td>
</tr>
</tbody>
</table>
Wiring diagram

CR2 01 Wiring Diagram (2 wires control)

 RD connect with positive, the BK connect with negative, the valve closed, the actuator automatically power off after in place , the valve remains fully closed position.
 BK connect with positive, the RD connect with negative, the valve open, the actuator automatically power off after in place, the valve remains fully open position.

* Suitable Working Voltage: DC5V, DC12V, DC24V
* Exceeding the working voltage is forbidden

CR2 02 Wiring Diagram (2 wires control – Power reset function)

 When SW is CLOSED, the valve OPEN, the actuator automatically power off after in place.
 When SW is OPEN, the valve CLOSED, the actuator automatically power off after in place.

* Suitable Working Voltage: AC/DC9-35V, AC/DC110V-230V
* Exceeding the working voltage is forbidden

Please Note A20 CR2 02 must need charge time >10 seconds for every time use

CR3 01 Wiring Diagram (3 wires control)

 RD & GR connect with positive, BK connect with negative
 When OPEN( RD) & SW connected , the valve open, the actuator automatically power off after in place , valve remains fully open position
 When CLOSE(GR) & SW connected, the valve closed, the actuator automatically power off after in place, valve remains fully closed position.

* Suitable Working Voltage: DC5V, DC12V, DC24V
* Exceeding the working voltage is forbidden

CR3 02 Wiring Diagram (3 wires control)
- RD connect with positive, the BK & GR connect with negative.
- SW CLOSED, the valve OPEN, the actuator automatically power off after in place.
- SW OPEN, the valve CLOSED, the actuator automatically power off after in place.
  * Suitable Working Voltage: DC7-35V
  * Exceeding the working voltage is forbidden

**CR3 03 Wiring Diagram (3 wires control)**

- RD& GR connect with positive, and the BK connected with negative.
- SW CLOSED, the valve OPEN, the actuator automatically power off after in place.
- SW OPEN, the valve CLOSED, the actuator automatically power off after in place.
  * Suitable Working Voltage: AC/DC9-35V, AC110-230V
  * Exceeding the working voltage is forbidden

**CR3 04 Wiring Diagram (3 wires control)**

- RD & GR connected with positive, and the BK connected with negative.
- When RD & SW connected, the valve closed, the actuator automatically power off after in place, remains fully closed position.
- When GR & SW connected, the valve open, the actuator automatically power off after in place, remains fully open position.
  * Suitable Working Voltage: DC5V, DC12V, DC24V
  * Exceeding the working voltage is forbidden

**CR3 05 Wiring Diagram (3 wires control – Power reset funtion)**

- RD& GR connect with positive, the BK connect with negative.
- SW CLOSED, the valve OPEN, the actuator automatically power off after in place.
- SW OPEN, the valve CLOSED, the actuator automatically power off after in place.
  * Suitable Working Voltage: AC110-230V
CR3 06 Wiring Diagram (3 wires control – Power reset function)

- RD & GR connect with positive, the BK connect with negative
- SW CLOSED, the valve close, the actuator automatically power off after in place
- SW OPEN, the valve open, the actuator automatically power off after in place.

* Exceeding the working voltage is forbidden

CR4 01 Wiring Diagram (4 wires control)

1. RD & BK are connected to the power, GY & GR are connected to the controlled wiring.
2. When the SW is closed, the valve open
3. When the SW is open, the valve closed

* Suitable Working Voltage: AC110V-230V
* Exceeding the working voltage is forbidden

The control wiring with power DC5V/DC24V, when multiple motorized valves are working in parallel, must put the same color control wiring together, otherwise the valve could working

CR5 01 Wiring diagram (with feedback signal)

1. RD connect with positive, the BK connect with negative, the valve closed, the actuator automatically power off after in place.
2. BK connect with positive, the RD connect with negative, the valve open, the actuator automatically power off after in place.
3. GR & WT are connect when the valve open fully, YW & WT are connect when the valve closed fully

* Suitable Working Voltage: DC5V, DC12V, DC24V
* Exceeding the working voltage is forbidden!

**CR5 02 Wiring diagram (with feedback signal and Power reset function)**

1. When SW is closed, the valve open. The actuator automatically power off after in place.
2. When SW is open, the valve closed, the actuator automatically power off after in place.
3. GR & WT are connect when the valve open fully, YW & WT are connect when the valve closed fully.
5. Exceeding the working voltage is forbidden.

**CR7 01 Wiring Diagram (7 wires control with feedback signal)**

1. RD connect with positive.
2. GR connect with SW and negative wiring.
3. BK connect with negative wiring.
4. SW open. The valve open, and keeping fully open.
5. SW closed. The valve closed, and keeping fully closed.
6. BL & GY connect with the valve’s fully open signal wiring.
7. YW & WT connect with the valve’s fully closed signal wiring.
9. Exceeding the working voltage is forbidden.
10. Feedback with load ability:
    ① The Max. off voltage: DC36V AC220V
    ② The Max. off current: ≤0.4A

**CR7 02 Wiring Diagram (7 wires control with feedback signal)**

1. RD & GR connect with positive, the BK connect with negative.
2. When RD & SW connected, the valve open, the actuator automatically power off after the valve fully open.
3. When GR & SW connected, the valve closed, the actuator automatically power off after the valve fully closed.

4. BL & GY connect with the valve’s fully open signal wiring

5. YW & WT connect with the valve’s fully closed signal wiring
   * Suitable Working Voltage: DC5V, DC12V, DC24
   * Exceeding the working voltage is forbidden

※ Feedback with load ability:

① The Max. off voltage: DC36V AC220V  ② The Max. off current: ≤0.4A

CR7 03 Wiring Diagram (7 wires control with feedback signal)

· RD & GR connect with positive, the BK connect with negative.
· SW CLOSED, the valve OPEN, the actuator automatically power off after in place
· SW OPEN, the valve CLOSED, the actuator automatically power off after in place.
· BL & GY connect with the valve’s fully open signal wiring
· YW & WT connect with the valve’s fully closed signal wiring.
   * Suitable Working Voltage: AC/DC9-35V
   * Exceeding the working voltage is forbidden

CR7 04 Wiring Diagram (7 wires control with feedback signal)

· RD & BK are connected to the power, GR & BL are connected to the controlled wiring.
· When the SW is closed, the valve open
· When the SW is open, the valve closed
· GR & WT connect with the valve’s fully open signal wiring
· YW & WT connect with the valve’s fully closed signal wiring.

Suitable Working Voltage: AC/DC110V-230V
   * Exceeding the working voltage is forbidden
Instruction For Manual Function

In case of an electric supply failure, it is possible to operate the actuator manually:

1. Power must in off position when start the manual override.
2. Gently pull up the knob about 3mm, then revolve the knob around left and right to control the valve open or close.
3. When the red needle in the indicator pointing to 5, means the valve is closed. When pointing to 0, means the valve is open.
4. After finish the manual override operation, must press down the knob, so that for the normal electric operation.

 RD & GR connect with positive, the BK connect with negative,
 SW CLOSED, the valve OPEN, the actuator automatically power off after in place
 SW OPEN, the valve CLOSED, the actuator automatically power off after in place.
 When external power off, the valve open, the actuator automatically power off after in place
 BL & GY connect with the valve’s fully open signal wiring
 YW & WT connect with the valve’s fully closed signal wiring.
 * Suitable Working Voltage: AC/DC9-24V, AC110-230V
 * Exceeding the working voltage is forbidden

从全关到全开，手动要转七圈
motorized valve from full close to full open(S-O), the manual override need 7 turns