

## SLD-5



### 1. Scope

1-1 This product is designed for the automatic hinge of intelligent toilet lids and seats, enabling full automation of opening and closing. This configuration manual provides instructions on the performance and usage conditions of the electric damper.

1-2 Quantity of Application: One unit is used for each toilet lid/seat.

### 2. Specification

| Item  | Spec.   | Remark                        |
|---|---|-------------------------------|
| Rated Voltage   | DC12V   |                               |
| Power Consumption   | 12W Max   |                               |
| Operating Temperature   | 0° C~40° C  | Ice free & Dew Free           |
| Storage Temperature   | -10° C~50° C  | Ice free & Dew Free           |
| Operating Humidity  | 45~85%RH  | Ice free & Dew Free           |
| Operating Angle   | 0° ~120°  |                               |
| Rotation Direction  | CW  | R: CLOSE, L:OPEN<br>DIRECTION |
| Load Reversal Direction   | CCW   | From Output Shaft             |
| Output Torque (Rated Load)  | 2.8N • m Min  | CCW                           |
| Mechanical Strength<br>(strength of output shaft and mounting components) | The output shaft and mounting components must not be subjected to external forces exceeding 5 N • m | CCW                           |
| Motor Type  | DC MOTOR  |                               |

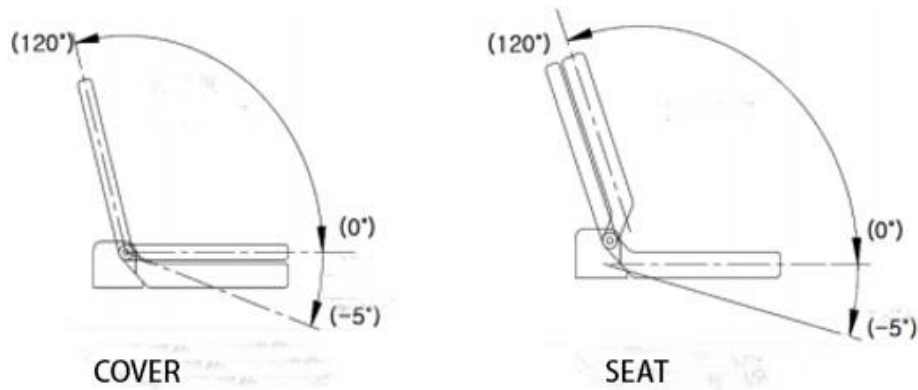
### 3. Basic Performance

| Item              | Spec.    | Remark               |
|-------------------|----------|----------------------|
| Insulation Class  | Class A  |                      |
| Driving Voltage   | DC12V±5% |                      |
| Operating Current | 1.5A Min | Max Current of Motor |

|                        |   |        |          |   |
|------------------------|---|--------|----------|---|
| No-load Rotation Speed | 19.5RPM   |        |          |   |
| Open Time              | 2.5±1 sec   |        |          | Rated Load, CCW、Duty100%  |
| Close Time             | 3± 1sec   |        |          | meet the combined SET control conditions  |
| Signal Part Voltage    | DC5V±5%   |        |          |   |
| Output Circuits        | Extracted through voltage division with a variable resistor         |        |          | Total resistance of the variable resistor 10kQ±30%  |
| Driving Circuit        | No  | Color  | Wiring   | SET Necessary conditions for control program:<br><br>1.Detection of abnormal load: Power should be cut off if abnormal torque (TORQUE) is detected after the switch is turned on.<br><br>2.Drive speed control: Implement deceleration before full opening to prevent impact noise. |
|                        | 1   | Red    | MOTOR(-) |   |
|                        | 2   | Black  | MOTOR(+) |   |
|                        | 3   | Red    | GND      |   |
|                        | 4   | White  | OUTPUT   |   |
|                        | 5   | Yellow | Vcc:DC5V |   |
| Output Signal          | Closing Position-5°: 0.85±0.25V<br>Opening Position 125°:3.85±0.25V |        |          | This tolerance range refers to the signal output range of the limit position among different individuals under the standard supply voltage of 5V.   |

#### 4. Mechanical Performance

| Item                | R30 Cover     | L30 Seat      | Remark  |
|---------------------|---------------|---------------|---|
| Open/Close Angle    | 0° ~120°      |               | Refer to the diagram for [] excess angle  |
| Operating Direction | Close- CW     | Open-CW       | Rated Voltage   |
| Torque (Open)       | 28 Kgf.cm Max | 28 Kgf.cm Max |   |
| Noise               | 55dB Max      |               | Operate at the position of 1m in front and 1m above, under the maximum load torque. |
| Gear Clutch TORQ    | 48~55 kgf.cm  |               | Power Shaft   |



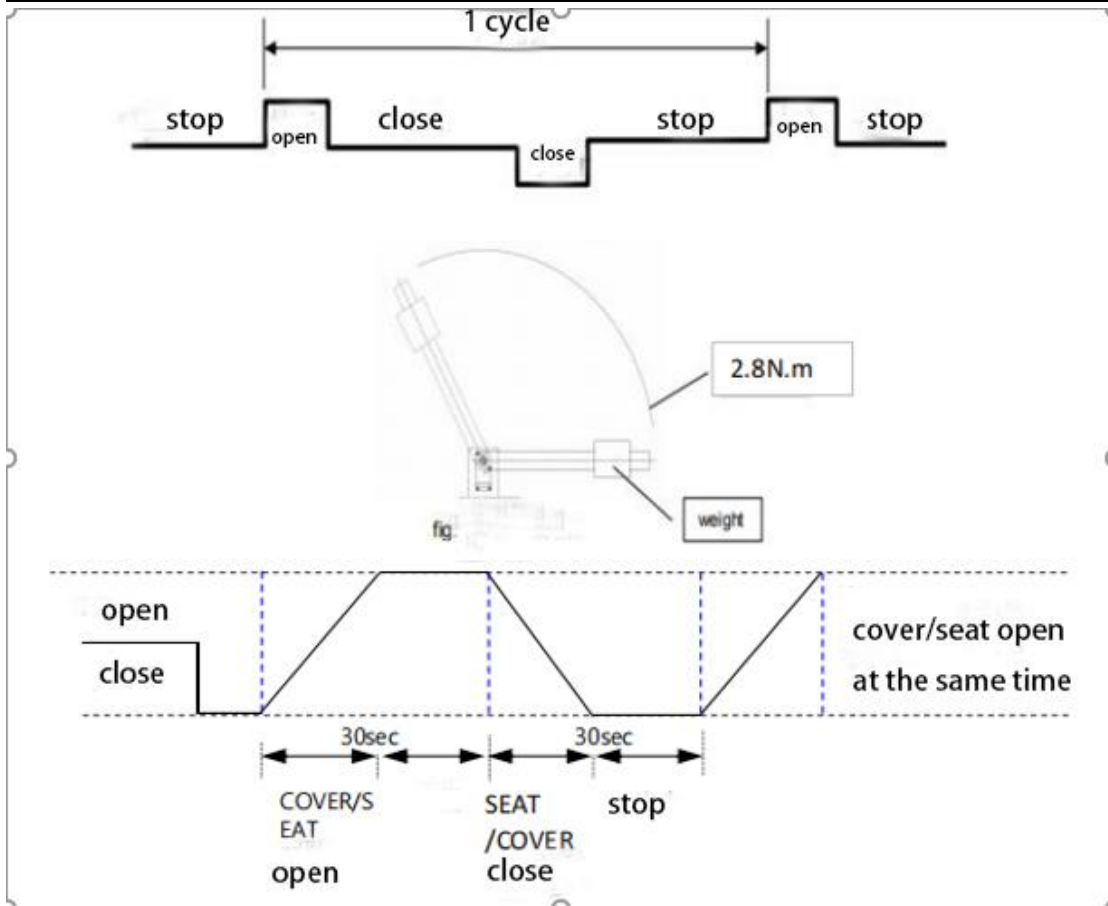
## 5. Environmental Performance

| Item                   | Instruction   | Test Result                                  | Remark   |
|------------------------|---|--|--|
| Heat Resistance Test   | After a unit is left for 96 hours in 50° C, then it takes out at the normal temperature and it left for 2 hours.                    | Normal Operation when no accessories damaged | Measurements within 1-2h after reaching normal temperature |
| Cold Resistance Test   | After a unit is left for 96 hours in -10° C, then it takes out at the normal temperature and it left for 2 hours.                   | Normal Operation when no accessories damaged | Measurements within 1-2h after reaching normal temperature |
| Humidity Test          | After a unit is left for 48 hours in 40°C and 95 %RH then it takes out at the normal temperature and it left for 2 hours.           | Normal Operation when no accessories damaged | Measurements within 1-2h after reaching normal temperature |
| Temperature Cycle Test | (-10° C for 1 hour, -50° C for 1 hour) After 20 temperature cycles as one loop, confirm by placing at room temperature for 2 hours. | Normal Operation when no accessories damaged | Measurements within 1-2h after reaching normal temperature |

## 6. Life Performance

| Item                              | Instruction  | Test Result                                | Remark               |
|-----------------------------------|--|--|----------------------|
| Electric opening and closing life | It opens and closes with specification and the drive circuits by using Terminal voltage DC12V (Load torque: 3.2N·m) { close → stop for 30 seconds → open → stop for 30 seconds → close } This is assumed to be one cycle, and it does 50,000 cycles. | Normal operation, no damage to appearance. | Open: 2 times/minute |

|                                 |   |   |  |
|---------------------------------|---|---|--|
| Manual opening and closing life | After applying voltage to the control circuit, manually perform 1,000 open-close cycles (at a speed of 70 ° /s). The basic performance requirements should be met   | Normal operation, no damage to appearance.                          | Please refer to the test cycle diagram below |
| Forced opening and closing life | Under standard test conditions, after applying the rated load (2.8N • m) using a dedicated fixture, drive the product with a special drive circuit. Manually force it to close 10 times at a speed of 0.5 seconds when flipped open to 60 degrees | It should operate normally without any jamming or improper flipping |  |



## 7. Wire Plug Instruction

| No | Color | Item     |
|----|-------|----------|
| 1  | Red   | MOTOR(-) |
| 2  | Black | MOTOR(+) |
| 3  | Blue  | GND      |

|   |        |             |
|---|--------|-------------|
| 4 | White  | Vout(0~5V)  |
| 5 | Yellow | GND vcc(5V) |

## 8. Notes and Operating Instructions

- (1) There is a risk of motor blockage and product burning caused by external loads. Be sure to set up a protective circuit.
- (2) Do not immerse the product in water. This product is not waterproof.
- (3) Do not insert wires and motor terminals into household sockets to avoid the risk of electric shock. After the product is powered on, do not touch the terminals and other conductive parts to avoid the risk of electric shock.
- (4) After the product is powered on, do not touch the rotating parts, including accessories, to avoid the risk of injury.
- (5) The operating conditions of the product (installation status, load, environmental temperature) can cause the motor to heat up. Be careful of burns.
- (6) Do not disassemble the product.
- (7) Do not drop the product. Do not use the product after it has fallen.
- (8) Set up a protective circuit to avoid risks when exceeding the maximum load.
- (9) Continuous operation can cause the motor to heat up. Set an appropriate stop time.
- (10) The product's output shaft can operate within the internal mechanical stop point range ( $0^{\circ}$  -  $120^{\circ}$  ), but there is a possibility of damage to the contacting parts when the output shaft contacts the mechanical stop point. Use within the operating range.
- (11) Do not pull wires and connectors with a force exceeding 10N.
- (12) Pay attention to the correct wiring of terminals.