# ULLI & DIGICON Electric Actuators




info@klinger.dk www.klinger.dk +45 43646611

# Introduction


Refined through years of dedicated development and optimization, our electric rotary actuators offer exceptional reliability and durability, making them a trusted choice for a wide range of applications. Our electric rotary actuators are manufactured in accordance with JB/T8219-1999 and certified to CE and ISO 9001 standards, ensuring consistent quality and regulatory compliance. We also hold a portfolio of patents, underscoring our commitment to innovation and excellence. A key advancement is our exclusive bracket-free models, developed to provide a compact, lightweight, stable, and precise design. We proudly offer three specialized series designed to meet diverse operational requirements for modern industrial needs:

## Basic Model

- **Ulli Series**
  On/off rotary actuators for general duty designed for robustness and reliability.

- **Digicon Series**
  Modulating rotary actuators for general duty tailored for precise adjustments and control.

## Advanced Model

- **Highspeed Series**
  Extreme speed actuators that deliver unparalleled speed and performance, redefining industry standards.

- **BLDC Series**
  Brushless DC actuators combining high efficiency, extended service life, and low energy consumption.

- **Explosion Proof Series**
  EXD-certified, designed for harsh envrionments.

- **SuperCap Series**
  Fail-safe actuators powered by supercapacitor technology, ensuring automatic return to a safe position during power loss.

# Features and Functionalities for ULLI & DIGICON Series


ulli®

The ulli® series represents the company's on/off actuators

- **Prefix Meaning:**

  "U" stands for "unique," highlighting patented designs.

  "L" for "light" (lightweight) and "long life" (durability).

  "I" for "intelligentize," emphasizing smart features.

- **20NM-6000NM**


digicon®

The digicon® series represents the company's modulating actuators

- **Prefix Meaning:**

  "Digi" stands for "digital" , "Con" for "control.

  "Digicon" symbolizes control technology centered around digital technology.

- **20NM-6000NM**

# Features and Functionalities

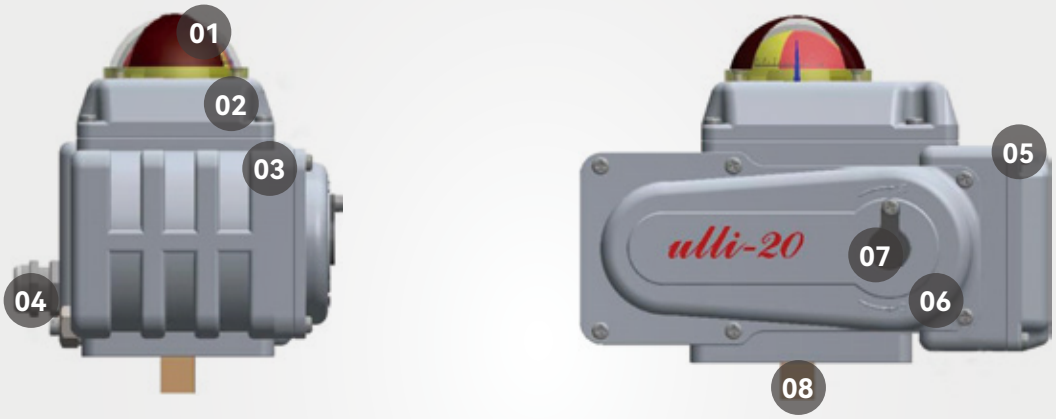
## Functionality Performance & Integration

- **Ultra Compact and Lightweight**
  Truly bracket-free - only 35% of the size and weight of products in the same class with ISO 5211 direct mount.
- **Smart Control**
  Built-in smart control module, eliminating the need for external positioners.
- **Customization Options**
  Shaft types, male/female, BLDC motor, overload protection, explosion-proof, emergency shut-off, etc.
- **Versatile Power Option**
  AC220V, AC110V, DC24V, AC24V, AC380V
- **High-Speed Option**
  Full travel time adjustable to 5s, 10s, 15s, 30s, or 60s. Proprietary patented design enables significantly increased speed and minimal heat generation.

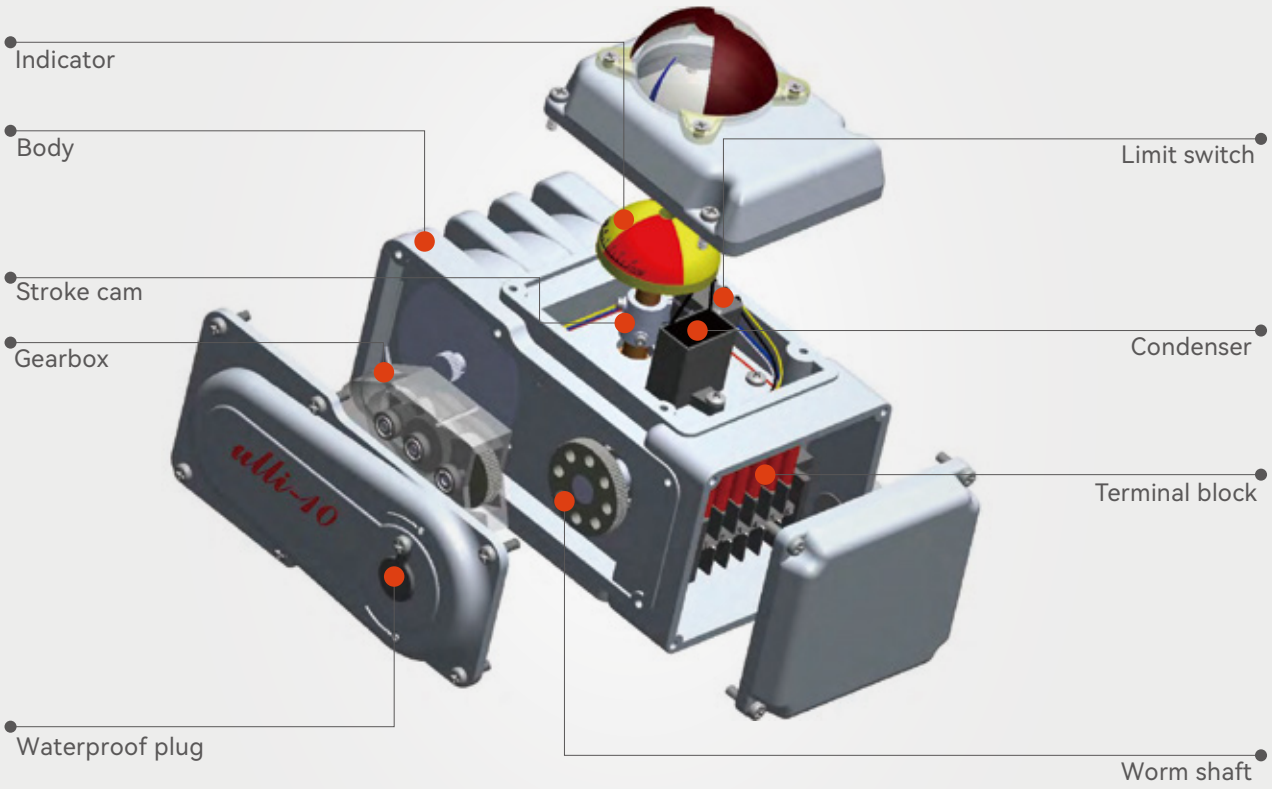
## Reliability & Durability

- **Certified Safe**
  Tested with 1500V withstand voltage, F-class insulation, CE compliant.
- **Robust Build**
  Die-cast aluminum housing with a refined, smooth finish to reduce electromagnetic interference. Integrated worm gear output shaft made of specially forged copper alloy, offering high strength and excellent wear resistance.
- **Wide Environmental Compatibility**
  No lubrication or inspection needed. IP68 waterproof, rustproof, and supports angle-free installation.
- **Position Feedback**
  Clear visual indicator for quick status check.

# Structure Diagram for ULLI & DIGICON Series




| | | | |
|---|---|---|---|
| 1 | Spherical Viewing Window | 5 | Wiring Cover |
| 2 | Electrical Cover | 6 | Gear Reduction Cover |
| 3 | Housing/Body | 7 | Handle or Handwheel Opening Plug |
| 4 | Cable Fixing Head | 8 | Output Shaft or Output Hole |



# Structure Diagram for ULLI & DIGICON Series

## Front View


**Spherical viewing window**
Allows for horizontal observation of the open/closed state from distance

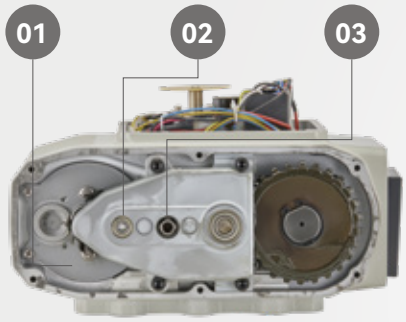
**Electrical cover**
Various electrical components built in

**Wiring Cover**
Users open this cover to connect wires

**Gear reduction cover**
contains a gearbox inside

**Stainless steel anti-drop screws**
A handle or handwheel can be installed here

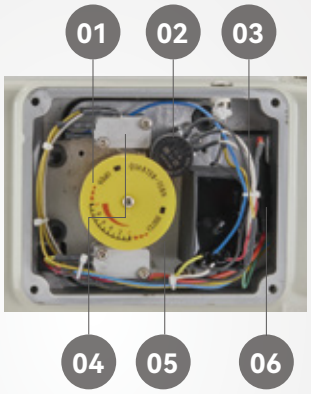
## Detailed diagrams




**01 Motor Cover**
contains an F-class high-temperature-resistant motor

**02 Fully Rolling Bearings**
Designed for Permanent Durability

**03 Manual Operation Port**
Standardized dimensions for compatibility




**02 Japanese Potentiometer**
High precision and wear resistance

**01 Indicator Dial**
(Opening Plate): Ball/flat

**03 Internal Wiring**
High-temperature resistant and anti-aging wiring for durability

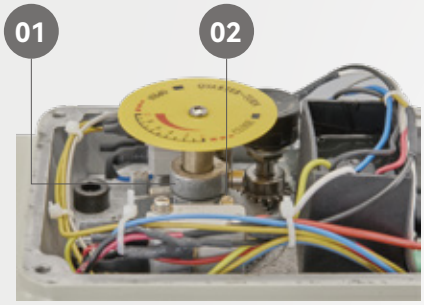
**05 Electrical Limit Cam**
Located below the indicator dial adjustable for open/close angles or signal output points.

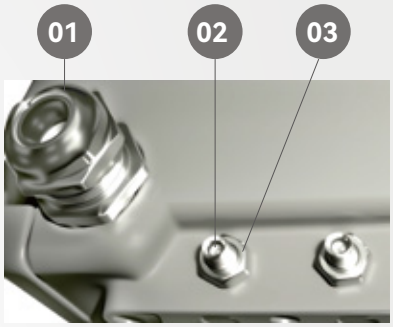
**06 Capacitor**
Long lifespan with high-temperature resistance

**04 OMRON Micro Switch**
Electrical limit position switch for precision control

# Structure Diagram for ULLI & DIGICON Series

## Detailed diagrams




**01** **Electrical Limit Cam**
Located below the indicator dial and adjustable for open/close angles or signal output points

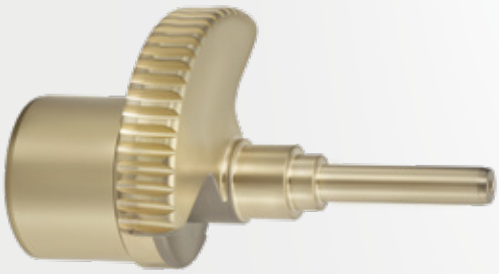
**02** **Electrical Limit Cam Fixing Screw**
Loosen to adjust cam angles for fine-tuning

**01** **Brass Cable Gland**
High strength, fully sealed and non-aging

**02** **Limit Screw**
Mechanical limit adjustment screw

**03** **Locknut**
Locks in place after mechanical limit adjustment

---

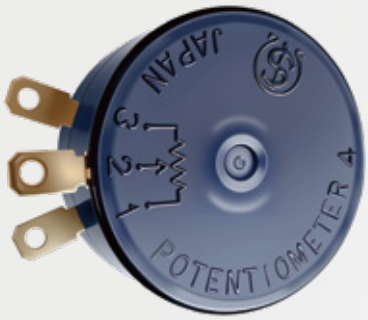


**Specially Designed Integrated Output Shaft**
Integrates five positions into one, providing greater reliability and reducing gaps

**Dome Position Indicator with Color Coding**
Displays open/close status from a distance without needing to climb up and complies with IP68 protection standards

# Structure Diagram for ULLI & DIGICON Series

## Detailed diagrams




**Potentiometer**

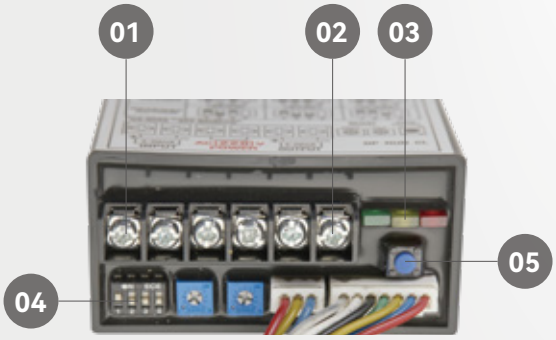
Japanese brand, precision-made, and highly durable

**Patented Terminal Block Design**

Patented with highstrength, one-piece casting and terminal numbering, ensuring correct wiring indication.

**Handwheel with Clutch (Optional)**

Unique design with a standardized size, compatible with our entire actuator series




**01** **Intelligent Control Module (Optional)**
High reliability, supports large currents, and offers high precision

**05** **Automatic Calibration Button**
Simplifies configuration and system calibration

**02** **Reinforced Stainless Steel Terminals**
Durable and corrosion-resistant terminal connectors

**04** **Mode Selection Switch**
Allows easy switching between operation modes

**03** **Status or Fault Indicator**
Clear status feedback for system monitoring

KLINGER Denmark

# Data Sheet for ULLI Series

## Ulli Series (On-Off Rotary)

| Model | Power Supply | Torque (NM) | Stroke Time for 50Hz (Sec) | Motor F Class In/Out | 220VAC Start Current | 220VAC Rated Current | Weight (kg) | IP CLASS |
|---|---|---|---|---|---|---|---|---|
| ulli-2 | AC24V AC220V AC110V | 20 | 30 | 15W/5W | 0.12A | 0.12A | 1.8 | IP68 |
| ulli-5 | AC380V AC/DC24V AC220V AC110V | 50 | 30 | 30W/10W | 0.25A | 0.25A | 2.6 | IP68 |
| ulli-10 | AC380V AC/DC24V AC220V AC110V | 100 | 30 | 80W/23W | 0.58A | 0.5A | 3.7 | IP68 |
| ulli-16 | AC380V AC/DC24V AC220V AC110V | 160 | 45 | 100W/30W | 0.72A | 0.6A | 7.5 | IP68 |
| ulli-20 | AC380V AC/DC24V AC220V AC110V | 200 | 30 | 100W/30W | 0.72A | 0.68A | 3.7 | IP68 |
| ulli-25 | AC380V AC/DC24V AC220V AC110V | 250 | 30 | 150W/90W | 0.69A | 0.6A | 7.5 | IP68 |
| ulli-50 | AC380V AC/DC24V AC220V AC110V | 500 | 30 | 300W/90W | 1.38A | 1.2A | 8 | IP68 |
| ulli-60 | AC380V AC/DC24V AC220V AC110V | 600 | 30 | 300W/90W | 1.38A | 1.2A | 8 | IP68 |
| ulli-100 | AC380V AC/DC24V AC220V AC110V | 1000 | 50 | 300W/90W | 1.38A | 1.2A | 12 | IP68 |
| ulli-200 | AC380V AC220V AC110V | 2000 | 100 | 300W/90W | 1.38A | 1.2A | 12 | IP68 |
| ulli-400 | AC380V AC220V AC110V | 4000 | 150 | 500W/150W | 2.3A | 2.0A | 31 | IP68 |
| ulli-600 | AC380V AC220V AC110V | 6000 | 150 | 500W/150W | 2.3A | 2.0A | 31 | IP68 |

# Data Sheet for ULLI Series

## Model Variations

- **ulli-xxs**
  Four-position switch signal feedback (dry contact or LED)

- **ulli-xxR**
  Potentiometer (resistive) position feedback

**ulli-xxEX**
Explosion-proof design

- **ulli-xxw**
  Wireless remote control with RS-485 Bus Control

**ulli-xxt**
Electronic bidirectional overload protection

- **ulli-xxCB**
  Super capacitator failsafe function

**ulli-Lxx**
Linear actuator with position indicator light

## Other specifications (applicable for all models)

### Materials

Mounting/Shaft: Copper Alloy

Cover: Diecast aluminum alloy

Base: Diecast aluminum alloy

Cover & Base Finish: Powder coated epoxy

### ISO 5211 Direct Mount Connections

Flange: F05 / F07 / F10 / F12 / F14 / F16 / F25

Drive shaft: Female or Male drive shaft

### Temperature Range

-40°C (space heater required) to 55°C

-40°F (space heater required) to 131°F

### Enclosure Rating

IP68

### Electrical Connection

PF1/2″ conduit

### Duty Cycle

xxx-05, xxx-10: 80%

xxx-25: ~60%

xxx-50 to xxx-200: ~50%

(Above ratings apply to AC motors)

All DC motor models: 100% continuous duty

### Lubrication

Molybdenum-based grease, permanent and effective

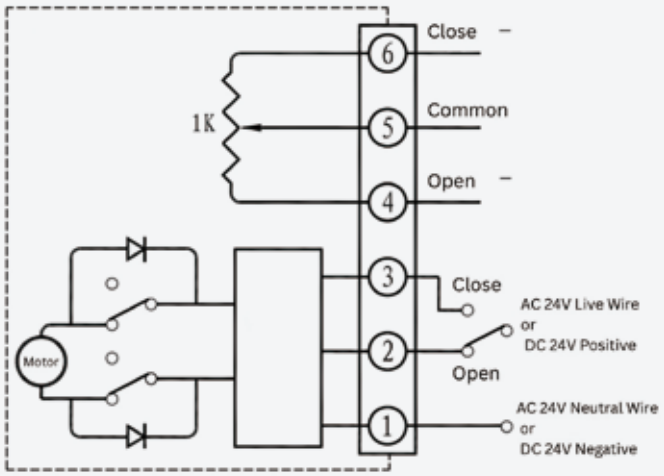
# AC24V / DC24V Dual Voltage Actuator

The AC24V/DC24V universal actuator utilizes our proprietary "function block" design (as shown in the diagram) to achieve dual-voltage compatibility. When using AC24V, the wiring method is exactly the same as for our standard AC models.If using DC24V, connect the negative terminal to terminal 1 and switch the positive polarity between terminals 2 and 3 to control rotation direction.

## Model Specification Table (AC/DC 24V Universal Models)

| Model | Power Supply | Torque (NM) | Stroke Time for 50Hz (Sec) | Motor F Class In/Out | Locked-Rotor Current (A) | Working Current (A) | Weight (kg) | IP CLASS |
|---|---|---|---|---|---|---|---|---|
| ulli-5 | AC/DC 24V | 50 | 6 | 15W / 5W | 3.0 | 0.8 | 2.6 | IP68 |
| ulli-10 | AC/DC 24V | 100 | 12 | 15W / 5W | 3.0 | 0.8 | 3.7 | IP68 |
| ulli-25 | AC/DC 24V | 250 | 11 | 9W / 30W | 10 | 1.6 | 7.8 | IP68 |
| ulli-50 | AC/DC 24V | 500 | 22 | 9W / 30W | 10 | 1.6 | 8.0 | IP68 |
| ulli-100 | AC/DC 24V | 1000 | 45 | 9W / 30W | 10 | 1.6 | 13.0 | IP68 |

## AC/DC 24V Power Supply Universal Circuit Diagram



# Data Sheet for DIGICON Series

The Digicon Series offers general-duty electric rotary actuators with reliable modulating control and torque output from 50Nm to 2000Nm.

## Digicon Series (Modulating Rotary)

| Model | Power Supply | Torque (NM) | Stroke Time for 50Hz (Sec) | Motor F Class In/Out | Input Signal | Output Signal | Weight (kg) | IP CLASS |
|---|---|---|---|---|---|---|---|---|
| dogicon-5 | DC24V<br>AC24V<br>AC220V<br>AC110V | 50 | 30 | 30W/10W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 3 | IP68 |
| digicon-10 | DC24V<br>AC24V<br>AC220V<br>AC110V | 100 | 30 | 80W/23W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 4.5 | IP68 |
| digicon-25 | DC24V<br>AC24V<br>AC220V<br>AC110V | 250 | 30 | 150W/45W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 7.5 | IP68 |
| digicon-50 | ADC24V<br>AC24V<br>AC220V<br>AC110V | 500 | 30 | 300W/90W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 8.7 | IP68 |
| digicon-100 | DC24V<br>AC24V<br>AC220V<br>AC110V | 1000 | 50 | 300W/90W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 12.8 | IP68 |
| digicon-200 | AC220V<br>AC110V | 2000 | 100 | 300W/90W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 12.8 | IP68 |
| digicon-400 | AC220V<br>AC110V | 4000 | 150 | 500W/150W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 32 | IP68 |
| digicon-600 | AAC220V<br>AC110V | 6000 | 150 | 500W/150W | 4-20mA<br>0-10V | 4-20mA<br>0-10V | 32 | IP68 |

## Note

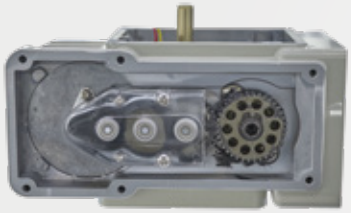
- All parameters are not limited to the datasheet. Parameters such as torque, stroke time, inner bore dimensions, and other key metrics can be customized to meet specific application requirements.

- Digicon-Lxx: Linear option with position indicator light.

# Explosion-Proof Series


Explosion-proof Certification: EXD II BT4

- Certified as explosion-proof with a conformity certificate accredited by CNAS
- Withstood extensive testing experience in harsh environments
- Internationally certified electronic control module



Standard model

Explosion-proof

**Reinforced for Safety**

Standard Actuator vs Explosion-Proof

Explosion-proof actuator features a much thicker housing for superior durability and protection in hazardous environments.

# SPECIFICATIONS

## Explosion Proof Type Actuator EXB II actuator

| Model | Power Supply | Torque (NM) | Stroke Time for 50Hz (Sec) | Motor F Class In/Out | 220VAC Start Current | 220VAC Rated Current | Weight (kg) | IP CLASS |
|---|---|---|---|---|---|---|---|---|
| ulli-10EX | AC380V 24V AC220V AC110V | 100 | 80W/23W | ulli-10EX | ulli-10EX | ulli-10EX | 10 | IP68 |
| ulli-16EX | AC380V 24V AC220V AC110V | 160 | 110W/30W | ulli-16EX | ulli-16EX | ulli-16EX | 10 | IP68 |
| ulli-25EX | AC380V 24V AC220V AC110V | 250 | 150W/45W | ulli-25EX | ulli-25EX | ulli-25EX | 10 | IP68 |
| ulli-50EX | AC380V 24V AC220V AC110V | 500 | 300W/90W | ulli-50EX | ulli-50EX | ulli-50EX | 10 | IP68 |
| ulli-60EX | AC380V 24V AC220V AC110V | 600 | 300W/90W | ulli-60EX | ulli-60EX | ulli-60EX | 10 | IP68 |
| digicon-10EX | DC24V AC24V AC220V AC110V | 100 | 80W/23W | digicon-10EX | digicon-10EX | digicon-10EX | 11 | IP68 |
| digicon-16EX | DC24V AC24V AC220V AC110V | 160 | 80W/23W | digicon-16EX | digicon-16EX | digicon-16EX | 11 | IP68 |
| digicon-25EX | DC24V AC24V AC220V AC110V | 250 | 150W/45W | digicon-25EX | digicon-25EX | digicon-25EX | 11 | IP68 |
| digicon-50EX | DC24V AC24V AC220V AC110V | 500 | 300W/90W | digicon-50EX | digicon-50EX | digicon-50EX | 11 | IP68 |
| digicon-60EX | DC24V AC24V AC220V AC110V | 600 | 300W/90W | digicon-60EX | digicon-60EX | digicon-60EX | 11 | IP68 |

# High Speed Series


## Patented Technology

**High-speed**

**Soft-start**

**Stall Protection**

Travel time ranges from 2 to 5 seconds, achieving speeds 5 to 20 times faster than traditional actuators, earning it the title of an ultra-fast actuator

Suitable for scenarios where solenoid valves are used but offers greater reliability, a wider range of applications, and compatibility with larger calibres.

Surpasses pneumatic actuators in speed while eliminating the need for an air supply, providing a solution that is more convenient, lightweight, and cost-effective.

The wiring method is identical to that of a single-phase AC actuator, ensuring full compatibility and easy replacement.

This technology significantly reduces the travel time of high-torque actuators. For instance, the Highspd-200 model accelerates from 100 seconds to just 15 seconds, greatly enhancing operational efficiency.

# Data Sheet for High Speed Series

Delivers high speed and stability with exceptional precision and efficiency, supported by a 100% duty cycle for continuous operation.

| Model | Power Supply | Torque (Nm) | Stroke Time (sec) | Motor (In/Out) | Weight (kg) | Compatible Valve (DN Reference) |
|---|---|---|---|---|---|---|
| highspd-5 | AC220V / AC110V | 50 | 5 | 450 W / 150 W | 2.5 | 25–100 |
| highspd-10 | AC220V / AC110V | 100 | 10 | 450 W / 150 W | 3.5 | 80–150 |
| highspd-25 | AC220V / AC110V | 250 | 9 | 500 W / 200 W | 7.3 | 150–200 |
| highspd-50 | AC220V / AC110V | 500 | 15 | 500 W / 200 W | 7.3 | 200–300 |
| highspd-100 | AC220V / AC110V | 1000 | 35 | 600 W / 300 W | 11.5 | 300–400 |
| highspd-200 | AC220V / AC110V | 2000 | 50 | 600 W / 300 W | 11.5 | 400–500 |
| highspd-400 | AC220V / AC110V | 5000 | 20 | 800 W / 500 W | 30 | 600–700 |
| highspd-600 | AC220V / AC110V | 10000 | 30 | 800 W / 500 W | 30 | 800–1000 |
| hidigico-5 | AC220V / AC110V | 50 | 5 | 450 W / 150 W | 2.5 | 25–100 |
| hidigico-10 | AC220V / AC110V | 100 | 10 | 450 W / 150 W | 3.5 | 80–150 |
| hidigico-25 | AC220V / AC110V | 250 | 9 | 500 W / 200 W | 7.3 | 150–200 |
| hidigico-50 | AC220V / AC110V | 500 | 15 | 500 W / 200 W | 7.3 | 200–300 |
| hidigico-100 | AC220V / AC110V | 1000 | 35 | 600 W / 300 W | 11.5 | 300–400 |
| hidigico-200 | AC220V / AC110V | 2000 | 50 | 600 W / 300 W | 11.5 | 400–500 |
| hidigico-500 | AC220V / AC110V | 5000 | 20 | 800 W / 500 W | 30 | 600–700 |
| hidigico-1000 | AC220V / AC110V | 10000 | 30 | 800 W / 500 W | 30 | 800–1000 |

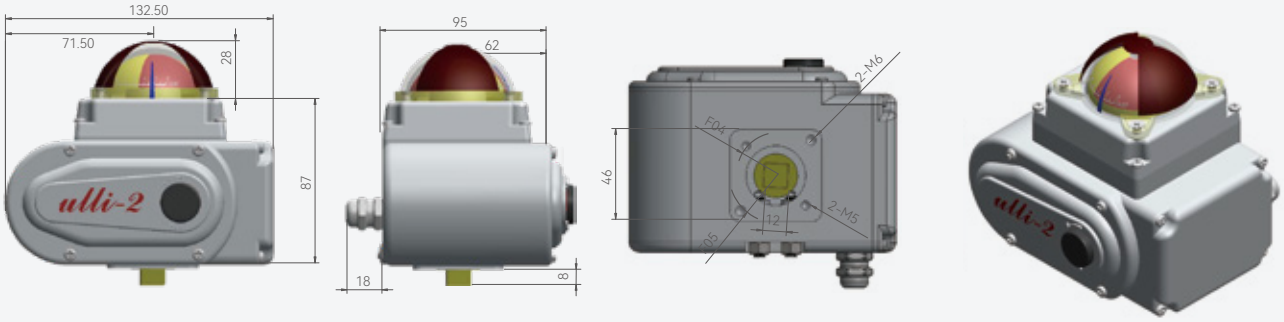
# Data Sheet for Linear Option

Our Ulli-L and Digicon-L Series offers high-performance electric linear actuators from 50kgf to 2000kgf.

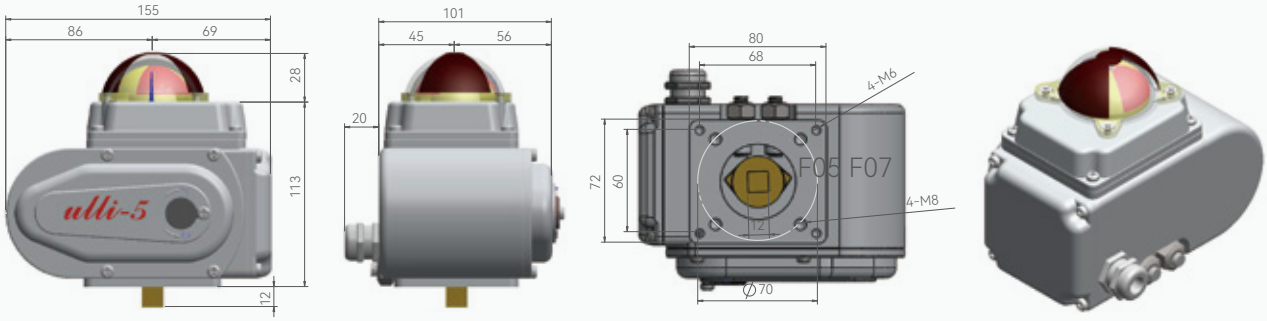
| Model | Power Supply | Thrust (kgf) | Stroke | Stroke time for 50Hz (sec) | IP grade | Motor F Class in/out | 220V start current | 220V rated current | Weight (kg) | Control signal |
|---|---|---|---|---|---|---|---|---|---|---|
| ulli-L5 | AC24V | 50 | 20 | 60 | IP65 | 20W/6W | 0.8A,24V | 0.7A,24V | 1.2 | |
| ulli-L10 | AC24V | 100 | 20 | 60 | IP65 | 20W/6W | 0.8A,24V | 0.7A,24V | 1.2 | |
| ulli-L25 | AC24V AC220V 110V | 250 | 40 | 25/50 | IP65 | 80W/23W | 0.58A,220V 3.5A,24V | 0.62A,220V 3.8A,24V | 3.5 | |
| ulli-L35 | AC24V AC220V 110V | 350 | 40 | 25/50 | IP65 | 80W/23W | 0.58A,220V 3.5A,24V | 0.62A,220V 3.8A,24V | 3.5 | |
| ulli-L50 | AC24V AC220V 110V | 500 | 40 | 50 | IP65 | 80W/23W | 0.58A,220V 3.5A,24V | 0.62A,220V 3.8A,24V | 3.5 | |
| ulli-L70 | AC24V AC220V 110V | 700 | 40 | 50 | IP65 | 80W/23W | 0.58A,220V 3.5A,24V | 0.95A,220V 5.8A,24V | 3.5 | |
| ulli-L120 | AC24V AC220V 110V | 1200 | 80 | 50 | IP65 | 200W//60W | 0.9A,220V 5.3A,24V | 1.3A,220V | 7.8 | |
| ulli-L200 | AC24V AC220V 110V | 2000 | 80 | 50 | IP65 | 300W /90W | 1.2A,220V | 0.7A,24V | 7.8 | |
| dogicon-L5 | AC24V | 50 | 20 | 60 | IP65 | 20W/6W | 0.8A,24V | 0.7A,24V | 1.3 | 0-10v 4-20mA |
| dogicon-L10 | AC24V | 100 | 20 | 60 | IP65 | 20W/6W | 0.8A,24V | 0.7A,24V | 1.3 | 0-10v 4-20mA |
| dogicon-25 | AC24V AC220V 110V | 250 | 40 | 25 | IP65 | 80W/23W | 0.58A,220V 3.5A,24V | 0.62A,220V 3.8A,24V | 4 | 0-10v 4-20mA |
| dogicon-50 | AC24V AC220V 110V | 500 | 40 | 50 | IP65 | 80W/23W | 0.58A,220V 3.5A,24V | 0.62A,220V 3.8A,24V | 4 | 0-10v 4-20mA |
| dogicon-L120 | AC24V AC220V 110V | 1200 | 60 | 60 | IP65 | 200W /60W | 0.9A,220V 5.3A,24V | 0.95A,220V 5.8A,24V | 7.8 | 0-10v 4-20mA |
| dogicon-L200 | AC24V AC220V 110V | 2000 | 60 | 120 | IP65 | 300W/90W | 1.2A,220V | 1.3A,220V | 7.8 | 0-10v 4-20mA |

# Dimensioned Drawings for ULLI & DIGICON Series

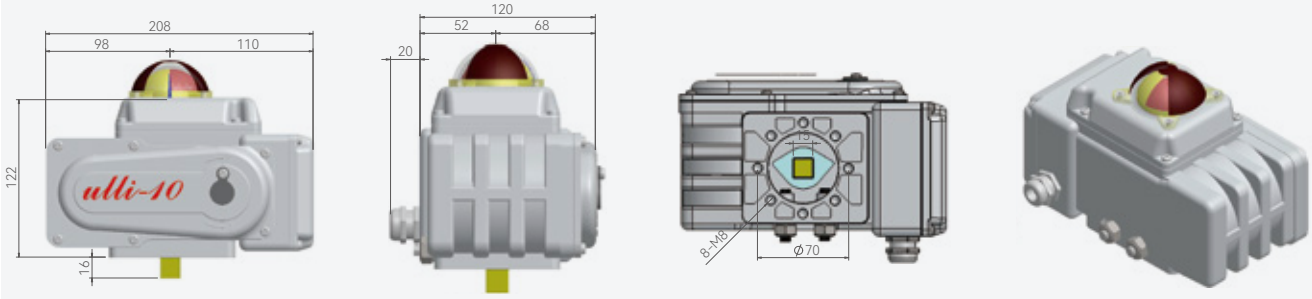
## ulli-2 (male type)




## ulli-5 & digicon-5 (male type)

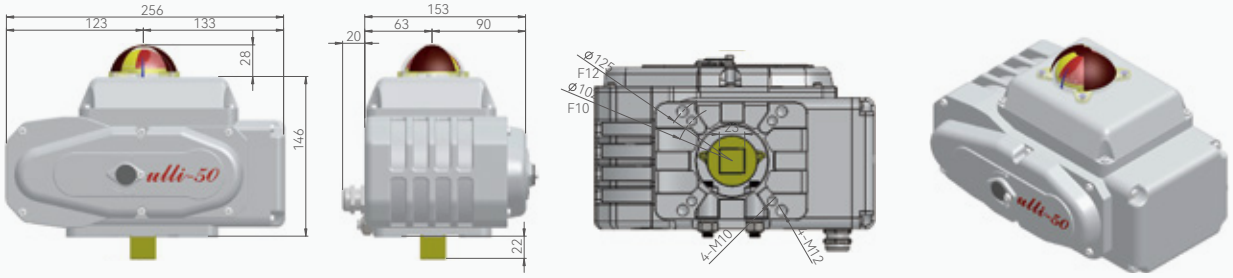



## ulli-10 & digicon-10 (male type)

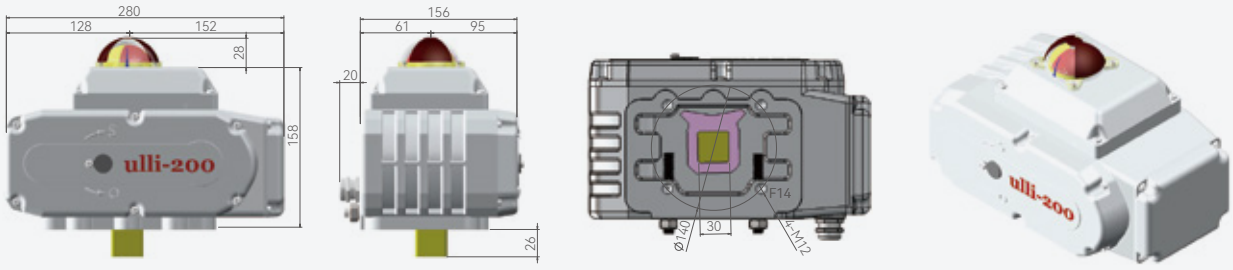


# Dimensioned Drawings for ULLI & DIGICON Series

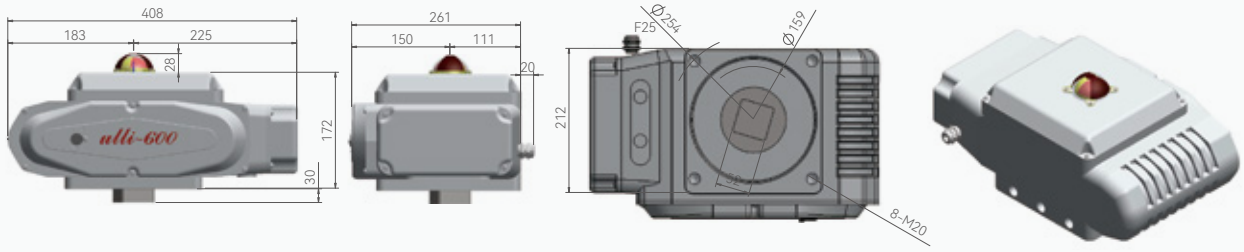
## ulli-25/50 & digicon-25/50 (male type)




## ulli-100/200 & digicon-100/200 (male type)

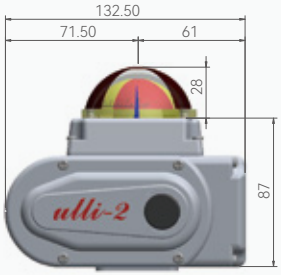


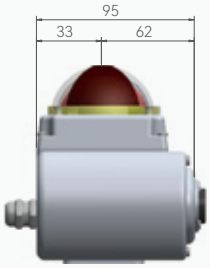

## ulli-400/600 & digicon-400/600 (male type)

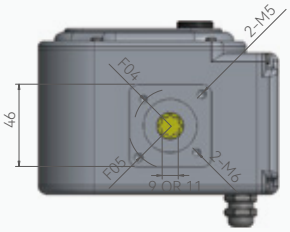


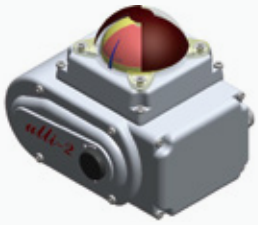
# Dimensioned Drawings for ULLI & DIGICON Series

## ulli-2 (female type)



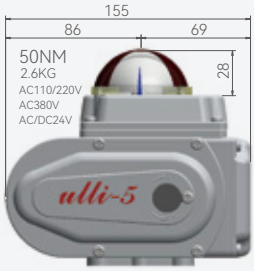



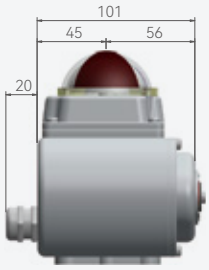



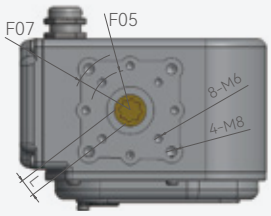



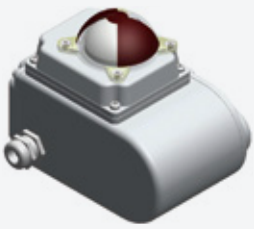

F03 / F05. Option F04
# max 11x11mm

## ulli-5 (female type)



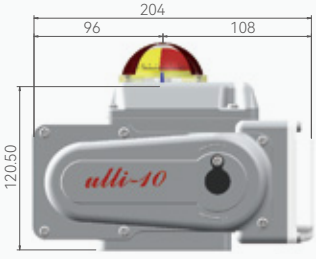



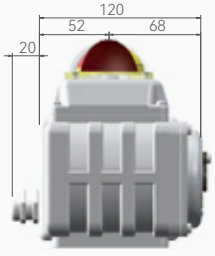



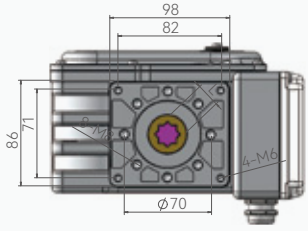



F05 / F07
# max 14x14mm

## ulli-10 digicon-10 (female type)



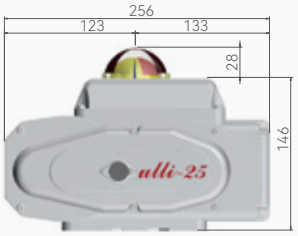



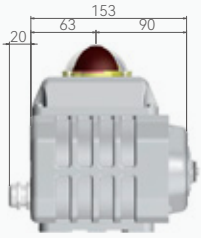



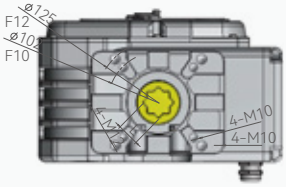

F07 / F10
# max 17x17mm

# Dimensioned Drawings for ULLI & DIGICON Series

## ulli-25/50 digicon-25/50 (female type)

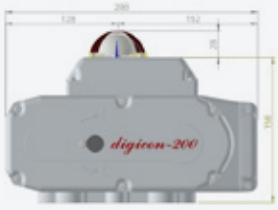


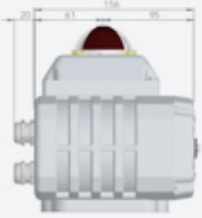



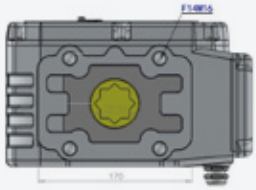



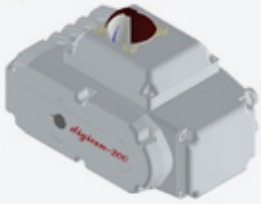

F10/ F12
# max 27x27mm

## ulli-100/200 & digicon-100/200 (female type)



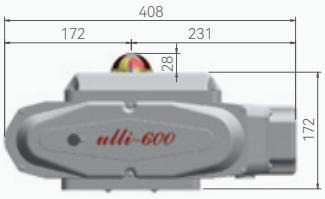



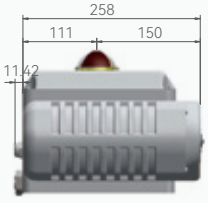


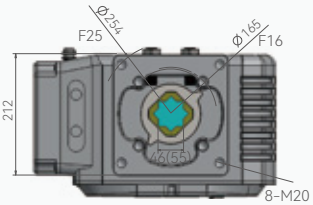


F10 / F14. Option F12
# max 36x36mm

## ulli-400/600 digicon-400/600 (female type)



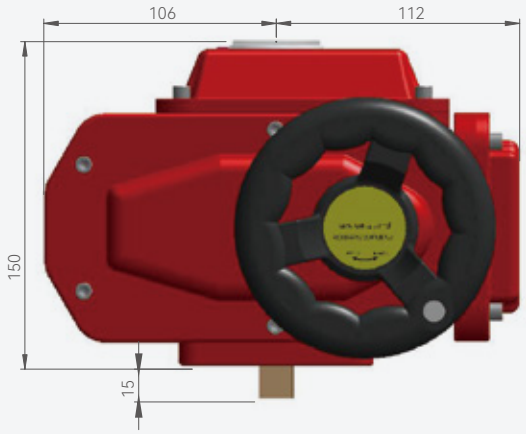



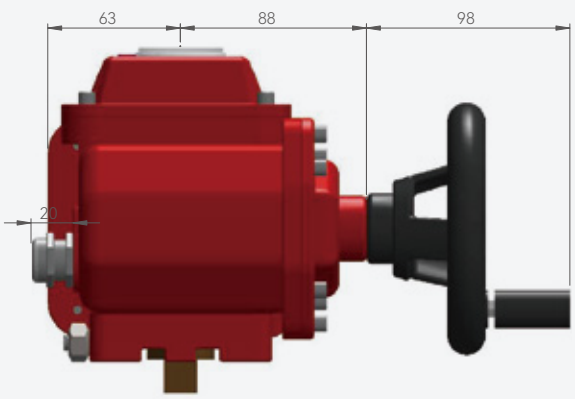



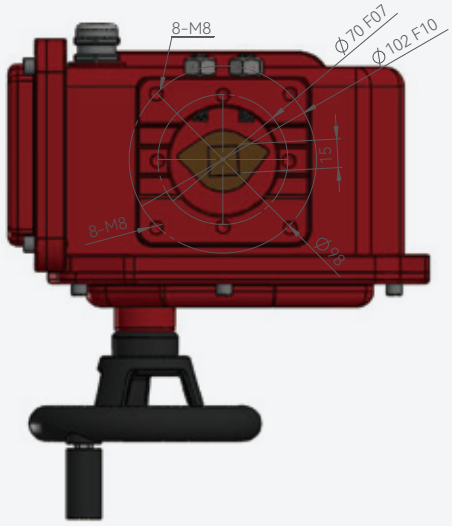

F16 / F25
# max 55x55mm

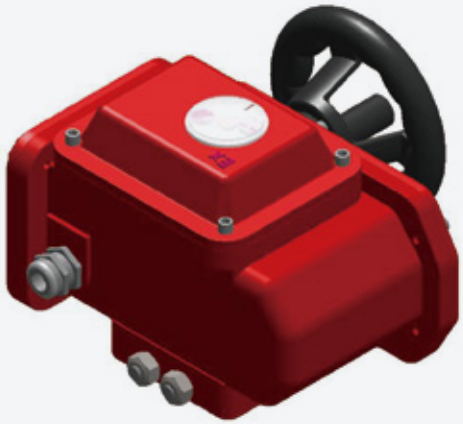
# Dimensioned Drawings for Explosion-Proof Series

## ulli-06/16EX digicon-06/16EX



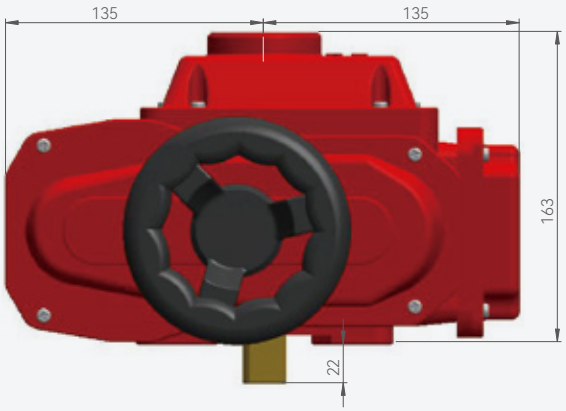



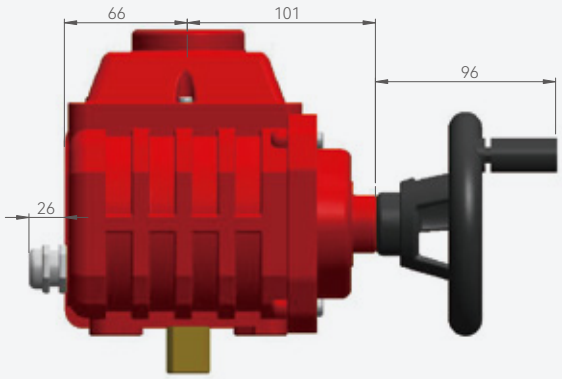



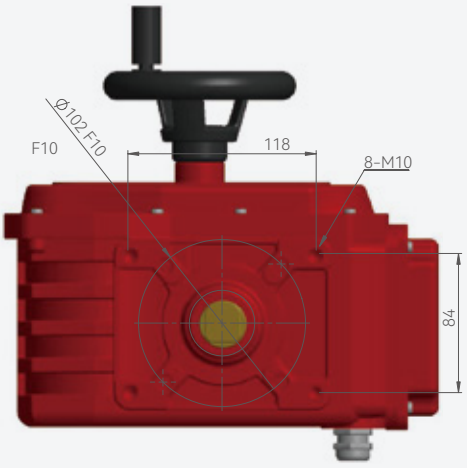



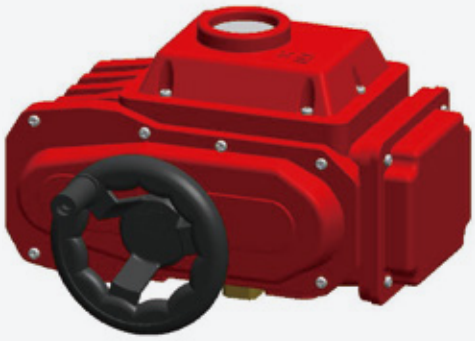
# Dimensioned Drawings for Explosion-Proof Series

## ulli-25/50EX digicon-25/50EX



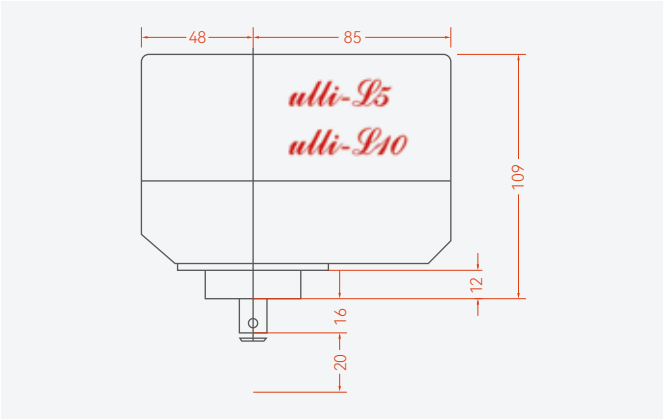



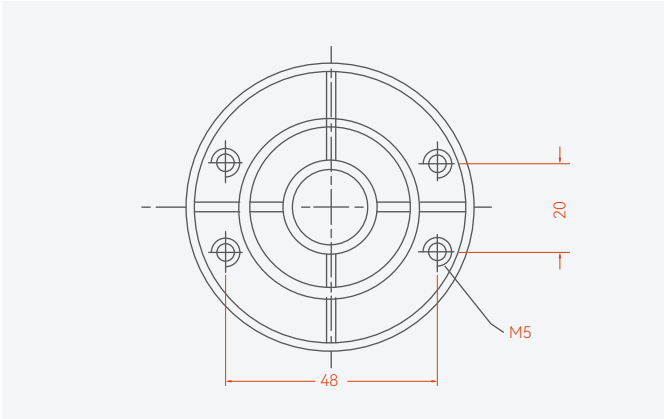



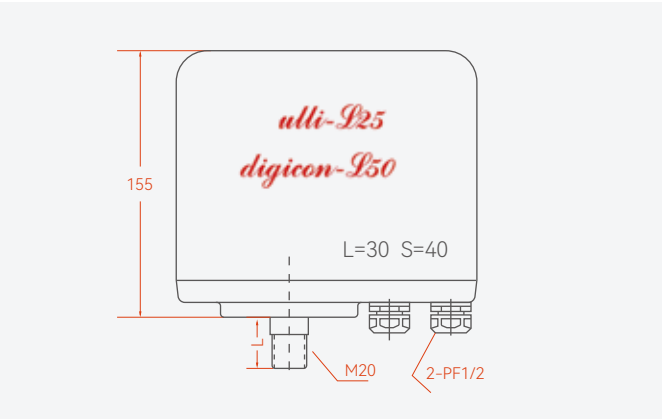
# Dimension Drawing for Linear Option

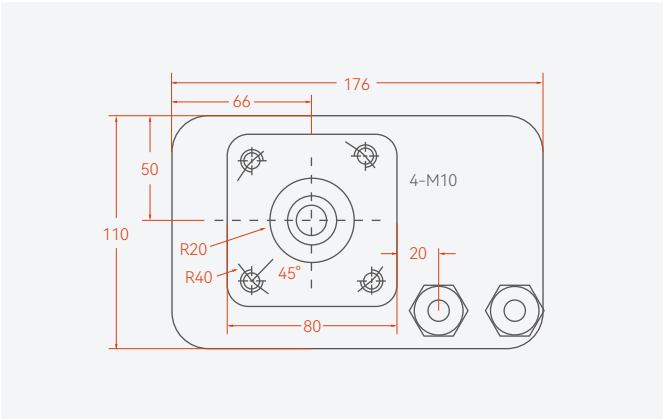
## ulli-L5/L10 digicon-L5/L10



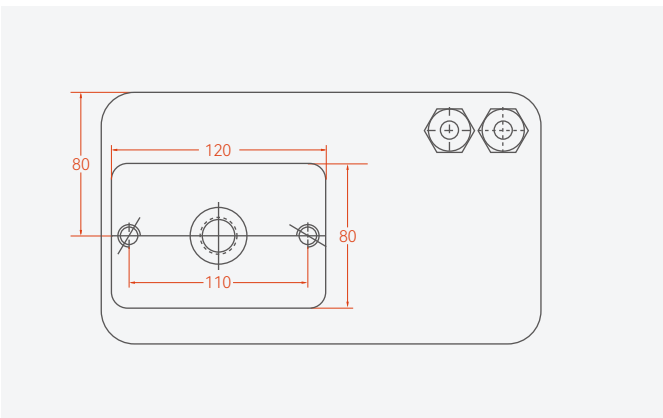



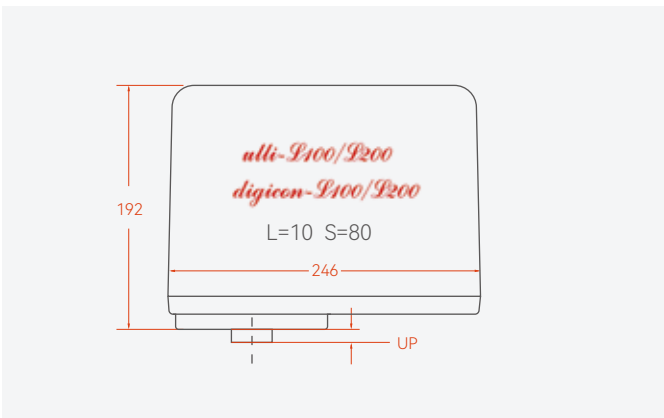

## ulli-L25/L50 digicon-L25/L50



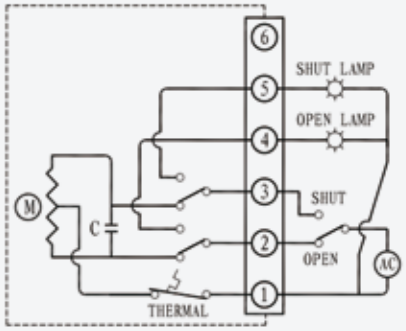




## ulli-L100/L200 digicon-L100/L200

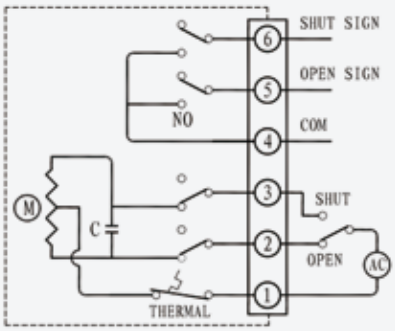


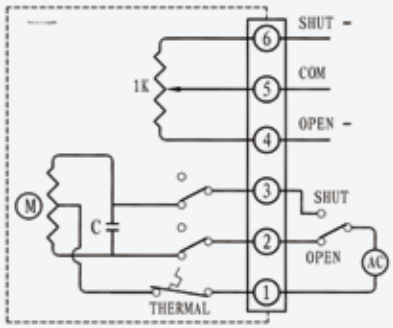
# Wiring



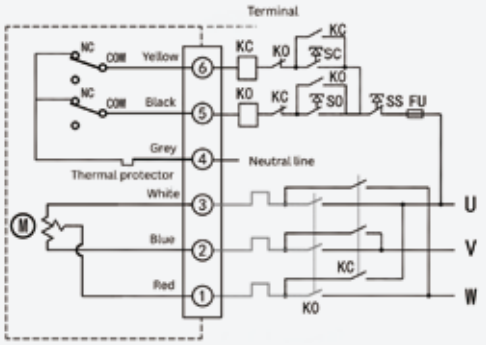

ulli-xx connection(std)



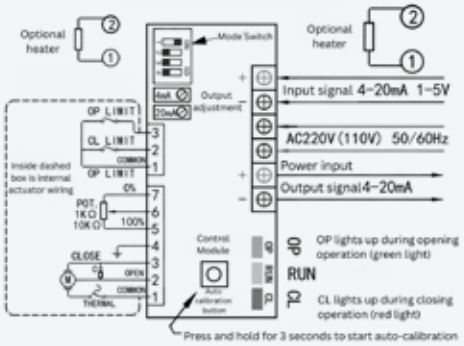

ulli-xxS connection



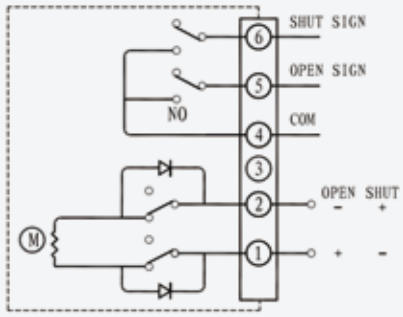

ulli-xxR connection




ulli-xxS connection




Digicon Connection




DC power connection

## Note

-Do not connect the power supply lines of multiple electric actuators in parallel. In other words, a single control contact point must not be used to operate multiple actuators simultaneously. Doing so may result in loss of control and motor overheating, which may cause control failure or motor overheating.

-The wiring shown within the dashed box represents the internal circuitry of the electric actuator. Wiring outside the dashed area is for user reference only when planning external connections.

# BLDC Actuator


## Key Advantages of AOITEC BLDC Actuators

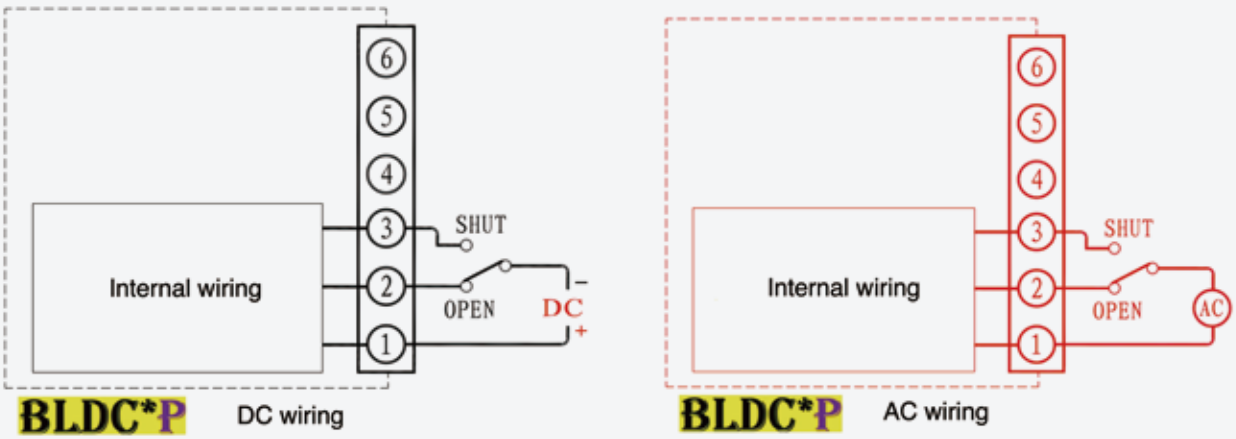
- **High Energy Efficiency Ratio**
  Achieves energy savings of 20%–60%, offering significant cost reductions over long-term operation.
- **100% Duty Cycle with Minimal Heat**
  Designed to generate less heat, enabling uninterrupted operation without the need for overheating protection mechanisms.
- **Overload Protection**
  Equipped with advanced overload protection to ensure the safety and longevity of both the actuator and the valve.
- **Multi-Power Source Compatibility**
  Supports a wide range of input voltages: DC12V, DC24V, AC24V, AC110V, and AC220V, providing flexibility for diverse applications.
- **Extended Lifespan**
  Brushless motor technology, combined with low heat output, results in superior durability and reliability.
- **Low Current Models**
  Capable of producing low-current, low-speed models that reduce line losses and decrease the electrical burden, enhancing overall system reliability.
- **Compact and Lightweight Design**
  Smaller size and reduced weight make transportation more cost-effective and installation easier.
- **Improved Safety**
  Unlike traditional DC motors, BLDC actuators eliminate sparks, and compared to AC motors, they generate less heat, ensuring safer operation.
- **Ease of Maintenance**
  DC motors are easier to replace and maintain compared to AC motors, reducing downtime and maintenance costs.
- **Enhanced Waterproofing**
  The motor is suspended in the hollow section of the actuator, preventing water ingress even in the presence of minor internal condensation, effectively improving the waterproof performance.

# Diagram

**BLDC Motor**
Equipped with overcurrent protection, blockage protection, and overheating protection.

**BLDC Module**
PProvides a wide voltage power supply and is recognized internationally for stable and reliable operation.


# Wiring



# Data Sheet for BLDC Actuator

| Model | Power Supply | Torque (Nm) | Stroke Time (sec) | BLDC Motor (W) | Rated Current (A) | Stall Current (A) | Weight (kg) | IP Level |
|---|---|---|---|---|---|---|---|---|
| BLDC*P-2 | DC24V only | 20 | 5 | 3.6 | 30.15 | 0.8 | 1.5 | IP68 |
| BLDC*P-5 | DC24V, AC24V Wide Voltage | 50 | 10 | 5 | 0.25 | 0.8 | 2.3 | IP68 |
| BLDC*P-10 | DC24V, AC24V Wide Voltage | 100 | 30 | 11 | 0.5 | 1.5 | 3.3 | IP68 |
| BLDC*P-20 | DC24V, AC24V Wide Voltage | 200 | 30 | 20 | 0.8 | 2 | 3.5 | IP68 |
| BLDC*P-40 | DC24V, AC24V Wide Voltage | 400 | 30 | 30 | 1.2 | 2 | 7.2 | IP68 |
| BLDC*P-60 | DC24V, AC24V Wide Voltage | 600 | 60 | 30 | 1.2 | 2 | 7.2 | IP68 |
| BLDC*P-100 | DC24V, AC24V Wide Voltage | 1000 | 50 | 48 | 2 | 5 | 12 | IP68 |
| BLDC*P-200 | DC24V, AC24V Wide Voltage | 2000 | 100 | 48 | 2 | 5 | 12 | IP68 |
| BLDC*P-400 | DC24V, AC24V Wide Voltage | 4000 | 100 | 100 | 4 | 8 | 30 | IP68 |
| BLDC*P-600 | DC24V, AC24V Wide Voltage | 6000 | 150 | 100 | 4 | 8 | 30 | IP68 |
| BLDC*M-5 | DC24V only | 50 | 20 | 5 | 0.25 | 0.8 | 2.6 | IP68 |
| BLDC*M-10 | DC24V, AC24V Wide Voltage | 100 | 56 | 9.6 | IN 4–20mA | OUT 4–20mA | 3.6 | IP68 |
| BLDC*M-20 | DC24V, AC24V Wide Voltage | 200 | 50 | 20 | IN 4–20mA | OUT 4–20mA | 3.7 | IP68 |
| BLDC*M-40 | DC24V, AC24V Wide Voltage | 400 | 50 | 20 | IN 4–20mA | OUT 4–20mA | 7.6 | IP68 |
| BLDC*M-60 | DC24V, AC24V Wide Voltage | 600 | 150 | 20 | IN 4–20mA | OUT 4–20mA | 7.6 | IP68 |
| BLDC*M-100 | DC24V, AC24V Wide Voltage | 1000 | 50 | 48 | IN 4–20mA | OUT 4–20mA | 12.5 | IP68 |
| BLDC*M-200 | DC24V, AC24V Wide Voltage | 2000 | 100 | 48 | IN 4–20mA | OUT 4–20mA | 12.5 | IP68 |
| BLDC*M-400 | DC24V, AC24V Wide Voltage | 4000 | 100 | 100 | IN 4–20mA | OUT 4–20mA | 30.5 | IP68 |
| BLDC*M-600 | DC24V, AC24V Wide Voltage | 6000 | 150 | 100 | IN 4–20mA | OUT 4–20mA | 30.5 | IP68 |

## Note

- BLDC*P refers to a 2-position actuator, designed for on-off operation.

- BLDC*M refers to a modulating actuator, designed for precise regulation.

-"Wide Voltage" refers to AC110V– 230V and is internationally certified to ensure stable performance under both undervoltage and overvoltage conditions.

# SuperCap Return Actuators

## Key Features of AOITEC Supercapacitor Return Actuator


**Supercapacitor Energy Storage**
Utilizes supercapacitors for energy storage, ensuring reliability ensuring reliable performance without risk of overcharging or over-discharging.

**Overload Protection**
Built-in overload protection prevents damage from blockages.

**Rapid Valve Operation**
Operates valves 2–5 times faster than conventional actuators for quick opening and closing.

**DC Brushless Motor**
Equipped with a brushless motor design, eliminating the risk of failure caused by carbon brush wear.

**Wide Torque Range**
Available in a variety of options, supporting torque ranges from 50NM to 2000NM.

**Consistent Performance**
Delivers strong torque that remains steady during acceleration.

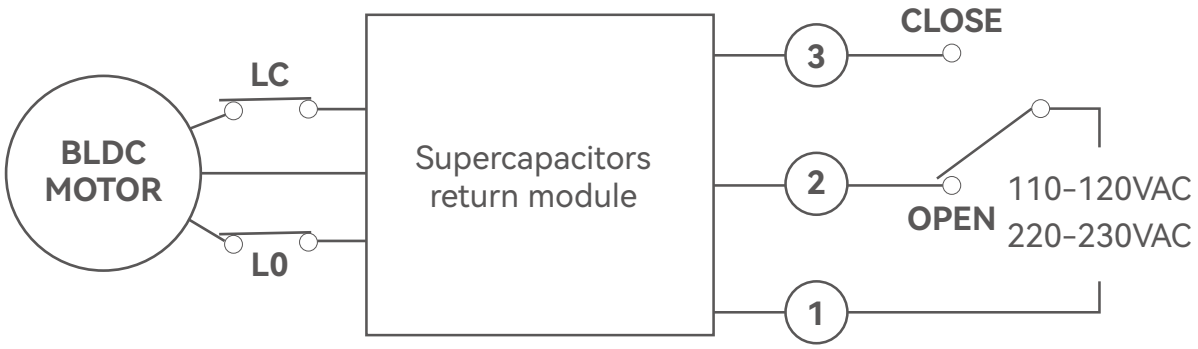
# Data Sheet for SuperCap Return Actuator

## Instructions and Reminders for Use

### Wiring Setup:

The wiring method remains consistent with the configuration below, ensuring ease of installation.

| Model | Torque (Nm) | Torque (in-lb) | Time (sec) | Weight (kg) | Compatible Ball Valve (mm) | Compatible ButterflyValve (mm) |
|---|---|---|---|---|---|---|
| SCRET-05 | 50 | 442 | 6 | 5 | 15–40 | 50–80 |
| SCRET-10 | 100 | 885 | 10 | 5 | 50–65 | 50–125 |
| SCRET-25 | 250 | 2212 | 20 | 10 | 65–80 | 150–200 |
| SCRET-50 | 500 | 4425 | 30 | 12 | 80–100 | 200–250 |
| SCRET-100 | 1000 | 8850 | 50 | 12 | 125–150 | 300–400 |
| SCRET-200 | 2000 | 17700 | 100 | 12 | 150–200 | 400–500 |




### Special Notes

- On initial power-up after wiring, operation may take several seconds—this is normal, not a malfunction.

- Customers can choose between two power outage modes when placing an order.

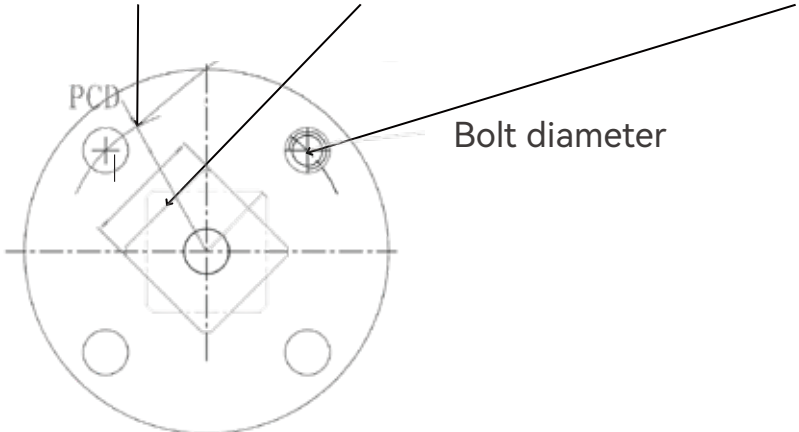
Default Option: Valve closes during a power outage.

Alternate Option: Valve opens during a power outage.

# Direct Mounted Dimensions for Butterfly Valve

## Recommended Butterfly Valve Mounting Dimensions for Direct (bracket-free) Installation

| Electric Actuator Model | Compatible Butterfly Valves (For Reference Only) | Referenced Flange Standard | Flange Hole Pattern Diameter PCD (Any One) | Recommended Valve Stem Square Dimensions and Extension Length | Recommended Chamfered Circular Diameter | Screw Thread Diameter |
|---|---|---|---|---|---|---|
| ulli-2 | 25-50 | F05/F03 | D50/D36 | 9*9 Height:10-15 | No restrictions | M6/M5 |
| ulli-5 | 50-80 | F07/F05 | D70 | 11*11Height:10-20 | No restrictions | M8/M6 |
| ulli-10 | 100 | F07 | D70 | 14*14 Height: 15-25 | No restrictions | M8 |
| ulli-16 | 125-150 | F07 | D70 | 17*17 Height15-25 | ≤ Φ22 | M8 |
| ulli-25 | 200 | F12/F10 | D125/D102 | 22*22 Height:20-30 | ≤ Φ30 | M12/M10 |
| ulli-50 | 250 | F12/F10 | D125/D102 | 27*27 Height:25-40 | ≤ Φ36 | M12/M10 |
| ulli-100 | 300-400 | F14 | D140 | 27*27 Height:25-40 | ≤ Φ37.6 | M12 |
| ulli-200 | 400-500 | F14 | D140 | 36*36 Height:30-40 | ≤ Φ48 | M12 |
| ulli-400 | 600-700 | F25 | D254 | 38*38 Height:35-50 | ≤ Φ75 | M20 |
| ulli-600 | 800 | F25 | D254 | 46*46 Height:35-50 | ≤ Φ75 | M20 |
| ulli-600 | 900-1000 | F25 | D254 | 55*55 Height:35-50 | ≤ Φ75 | M20 |



# Options and Add-Ons

| | | | |
|---|---|---|---|
| 1 | Viewing Window Type |  Flat Viewing Window  Spherical Viewing Window | Free |
| 2 | Female OR Male Type | • Female(recessed connection)<br>– more compact, smaller diameter, high precision<br>• Male (protruding connection)<br>– Taller height, larger diameter, more flexible installation | Free |
| 3 | Outer Cover Colour |  Black  Blue  Gray | Free |
| 4 | Output Shaft Types | • Four-Square Output Shaft<br>• Round-Hole Output Shaft<br>• Double-D Output Shaft<br>• Keyed Output Shaft | Free |
| 5 | Voltage Options | • AC220V Single-Phase<br>• AC380V Three-Phase<br>• AC110V Single-Phase<br>• AC24V Single-Phase<br>• DC24V 220V etc. | Free |
| 6 | Handwheel |  Disengagement functionality. Shared across multiple models. | Chargeable |
| 7 | Power Outage Return | In case of power failure, follow preset instructions to open or close the valve to ensure safety and property protection. | Chargeable |
| 8 | Electronic Overload Protection | • Protection against bidirectional overload<br>• Overload output terminals<br>• Multiple voltage options | Chargeable |
| 9 | Brushless DC Motor Drive | • High efficiency<br>• Low heat output<br>• High configuration and long lifespan | Chargeable |
| 10 | Current Position Feedback (Current Position Transducer) | • Protection against bidirectional overload<br>• Overload output terminals<br>• Multiple voltage options | Chargeable |
| 11 | Advanced H-Class Configuration | • Includes advanced protective labels with high standards  High-Precision, Wear-Resistant  Acid and Alkali Resistant, UV Resistant, Highly Weather-Resistant | Chargeable |

## Note

All features and functionalities listed above can be mixed and matched to suit your specific requirements. We are continuously upgrading and adding new options to our offerings. For tailored solutions and further customization needs, please contact us directly.

03

# Control Packs and Modules

Auto Setting Control Pack (FACP-11)

FACP-11 Interface, Operation and Indicator Guide

# FACP-11 Interface, Operation and Indicator Guide

The FACP-11 Auto Setting Controll Pack is capable of controlling the actuator's open/close degree over a resolution of 200:1 by a control signal of 4-20mA dc or 2-10vdc.

## Features

Needless to adjust- fully automated

High rangeability of control - over 200:1 resolution

Additional function

1. Fail mode (upon control signal loss)
   - Open - fail to open • Stop - fail to stop
   - Close -fail to close

2. Self checking function
   - Checking for limit switch • Checking for potentiometer
   - Checking for motor

4. Feedback output: 4~20mA 1%DC(RL:250ohm)

3. Lectronic brake control

5. Compact & lightweight

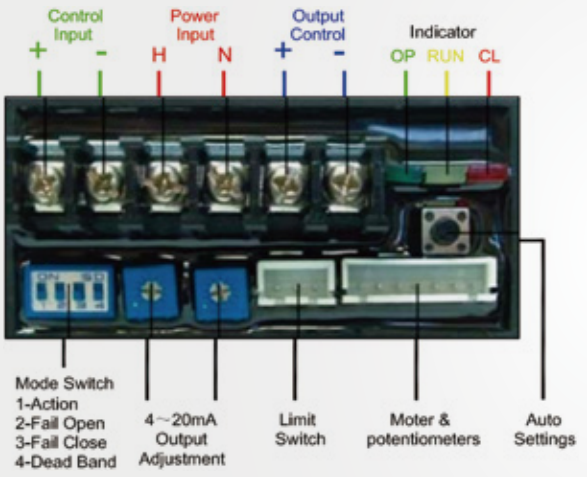
## Electrical Specifications

| | |
|---|---|
| **Power** | 110vac or 220vac 50/60Hz |
| **Control Signal Input** | 4~ 20mA dc or 2~10vdc |
| **Output Signal** | 4~20mA 1% DC (RL:250ohm) |
| **Calibration** | Auto setting |
| **Resolution** | Over 200:1 |

## Power consumption

**Max 150W @110vac or 200W @220vac**

# FACP-11 Interface, Operation and Indicator Guide




Our modulating module is equipped with a blockage protection feature. If the actuator encounters a blockage, the module will automatically shut off the motor approximately 7 seconds after detection. Simultaneously, the yellow indicator lamp will flash rapidly, signaling that the actuator has entered Blockage Protection Mode.

To exit this mode, a reverse input signal must be provided. Upon receiving this signal, the actuator will deactivate the Blockage Protection Mode and resume normal operation.

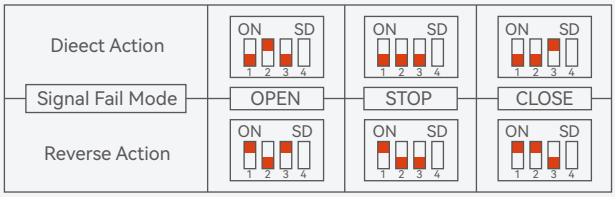
## Indicator explanations

| | |
|---|---|
| **Green Lamp On** | Actuator is Opening |
| **Yellow Lamp On** | Actuator is Operating |
| **Yellow Lamp Flashing Slowly** | Fully open/closed |
| **Yellow Lamp Flashing Quickly** | Fail check limit switch, potentiometer, etc |
| **Red Lamp On** | Actuator is Closing |

## Auto Setting Switch

Press and hold the Auto Setting Switch for 3 seconds to start the actuator's auto-calibration, where it cycles twice to find and confirm its open and close limit positions for precise operation.

## Mode Switch Operation & Setting




## Output Adjust VR

Fine-tune the "feedback output" for precise adjustment.

## Limit Switch

Input terminal where the digital limit is activated, indicated as "A."

• Limit switch common • Close limit switch • Open limit switch

## Motor & Potentiometer

• Motor common • Open motor • Close motor • Ground • Potentiometer P1 • Potentiometer P2 • Potentiometer P3

04

# Electric Valves

High-Speed Electric Ball Valve (Threaded Connection)

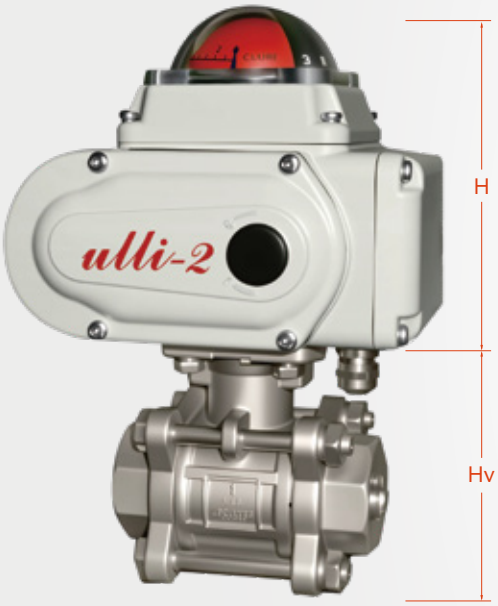
High-Speed Electric Ball Valve (Flanged Design)

High-Speed Electric High-Temperature V Control Ball Valve

Electric Butterfly Valve

Dynamic Balancing Electric Control Valve

# High Speed Electric Ball Valve (Threaded Connection)




## Key Advantages

**Ultra-Fast Response**
Rapid operation with unmatched reliability and durability.

**Exclusive Electric Actuator**
Proprietary design with a self-contained power source for optimal performance.

**Exceptional Motor Characteristics**
Designed for frequent operation without overheating, achieving a 100% duty cycle for continuous operation.

**Stainless Steel Valve Construction**
Rapid operation with unmatched reliability and durability.

**Compact and Tight Structure**
Strong connections with minimal deviation and space-saving design.

**No External Air Source Required**
Simplifies system setup and reduces installation complexity.

**Highly Reliable Design**
Built to withstand demanding industrial applications with consistent precision.

| DN | INCH | Electric device | Travel time (Sec) | Valve height (Hv) | Head height (H) | IS05211 (P) | IS05211 (P) |
|---|---|---|---|---|---|---|---|
| 15 | 1/2″ | highspd-5 | 3.6 | 46 | 135 | F05 | 9 |
| 20 | 3/4″ | highspd-5 | 3.6 | 51 | 135 | F05 | 9 |
| 25 | 1″ | highspd-5 | 3.6 | 62 | 143 | F05 | 77 |
| 32 | 1.25″ | highspd-5 | 3.6 | 72 | 143 | F05 | 77 |
| 40 | 1.5″ | highspd-5 | 3.6 | 78 | 150 | F07 | 14 |
| 50 | 2″ | highspd-10 | 5 | 86 | 150 | F07 | 14 |
| 65 | 2.5″ | highspd-16 | 6.6 | 108 | 150 | F07 | 17 |
| 80 | 3″ | highspd-25 | 5 | 116 | 176 | F10 | 22 |

# High Speed Electric Ball Valve (Flanged Design)


## Key Features & Benefits

**Ultra-Fast Response**
Reliable and lightning-fast operation without compromise.

**Proprietary Electric Actuator**
Equipped with a patented electric actuator system, featuring a self-contained power source for superior performance.

**Outstanding Motor Performance**
Designed for frequent operation with no overheating, delivering a 100% duty cycle for continuous and reliable use.

**Stainless Steel Valve Construction**
The valve is crafted from stainless steel, offering durability, corrosion resistance, and an aesthetically pleasing design.

**Compact and Robust Structure**
The design ensures tight connections, minimal backlash, and space efficiency, making it ideal for precise industrial applications.

| DN | INCH | Electric device | Travel time (Sec) | Valve height (Hv) | Head height (H) | IS05211 (P) | IS05211 (P) |
|---|---|---|---|---|---|---|---|
| 15 | 1/2″ | highspdS | 3.6 | 46 | 135 | F05 | 9 |
| 20 | 3/4″ | highspd-5 | 3.6 | 51 | 135 | F05 | 9 |
| 25 | 1″ | highspd-5 | 3.6 | 62 | 143 | F05 | 77 |
| 32 | 1.25″ | highspd-5 | 3.6 | 72 | 143 | F05 | 77 |
| 40 | 1.5″ | highspd-5 | 3.6 | 78 | 150 | F07 | 14 |
| 50 | 2″ | highspd-10 | 5 | 86 | 150 | F07 | 14 |
| 65 | 2.5″ | highspd-16 | 6.6 | 108 | 150 | F07 | 17 |
| 80 | 3″ | highspd-25 | 5 | 116 | 176 | F10 | 22 |
| 100 | 4″ | highspd-50 | 9 | 139 | 176 | F10 | 22 |
| 125 | 5″ | highspd-50 | 9 | 176 | 176 | F12 | 22 |
| 150 | 6″ | highspd-100 | 18 | 192 | 186 | F12 | 27 |

# High Speed Electric High-Temperature V Control Ball Valve


## Key Features & Benefits

### Exceptional Control Capability
The V-port ball valve provides a flow characteristic approximating an equal percentage curve, achieving a high control ratio of up to 300:1 for precise flow regulation.

### Stable and Low-Friction Operation
The ball is supported by a robust axial bearing, ensuring minimal rotational resistance, stable performance, and quick response times.

### Superior Cutting Capability
The combination of a hardened sealing seat and V-shaped port delivers strong shearing force, allowing it to cut through fibers effectively, maintain smooth operation, and avoid blockages or jamming.

### Proprietary High-Speed Actuator
Utilizes a patented, high-speed electric actuator for rapid control response, enabling frequent operation without any risk of overheating.

### Compact and Robust Structure
The design ensures tight connections, minimal backlash, and space efficiency, making it ideal for precise industrial applications.

| DN | INCH | Electric device | Travel time (Sec) | Valve height (Hv) | Head height (H) | IS05211 (P) | IS05211 (P) |
|---|---|---|---|---|---|---|---|
| 15 | 1/2″ | highspdS | 3.6 | 46 | 135 | F05 | 9 |
| 20 | 3/4″ | highspd-5 | 3.6 | 51 | 135 | F05 | 9 |
| 25 | 1″ | highspd-5 | 3.6 | 62 | 143 | F05 | 77 |
| 32 | 1.25″ | highspd-5 | 3.6 | 72 | 143 | F05 | 77 |
| 40 | 1.5″ | highspd-5 | 3.6 | 78 | 150 | F07 | 14 |
| 50 | 2″ | highspd-10 | 5 | 86 | 150 | F07 | 14 |
| 65 | 2.5″ | highspd-16 | 6.6 | 108 | 150 | F07 | 17 |
| 80 | 3″ | highspd-25 | 5 | 116 | 176 | F10 | 22 |
| 100 | 4″ | highspd-50 | 9 | 139 | 176 | F10 | 22 |
| 125 | 5″ | highspd-50 | 9 | 176 | 176 | F12 | 22 |
| 150 | 6″ | highspd-100 | 18 | 192 | 186 | F12 | 27 |

# Electric Butterfly Valve



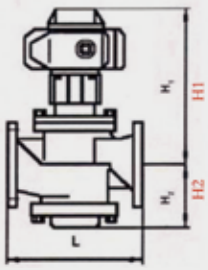
| Port diameter (mm) | Size (Inch) | Electric Actuator (For Reference) | Hv | H | Valve Body Thickness (mm) | Weight (kg) | Special Features |
|---|---|---|---|---|---|---|---|
| 50 | 2 | ulli-2 | 161 | 230 | 43 | 5 | |
| 65 | 2.5 | ulli-5 | 175 | 244 | 46 | 6 | |
| 80 | 3 | ulli-5 | 181 | 250 | 49 | 7 | |
| 100 | 4 | ulli-10 | 200 | 114 | 56 | 9 | |
| 125 | 5 | ulli-16 | 213 | 127 | 64 | 11 | |
| 150 | 6 | ulli-16 | 226 | 139 | 70 | 13 | |
| 200 | 8 | ulli-25 | 260 | 175 | 71 | 20 | |
| 250 | 10 | ulli-50 | 292 | 203 | 76 | 26 | Overload protection |
| 300 | 12 | ulli-60 | 337 | 242 | 83 | 40 | Overload protection |
| 350 | 14 | ulli-100 | 368 | 267 | 92 | 62 | Overload protection |
| 400 | 16 | ulli-100 | 400 | 309 | 102 | 83 | Overload protection |
| 450 | 18 | ulli-200 | 422 | 328 | 114 | 106 | Overload protection |
| 500 | 20 | ulli-200 | 480 | 361 | 127 | 155 | Overload protection |
| 600 | 24 | ulli-400 | 560 | 459 | 154 | 217 | Overload protection |
| 700 | 28 | ulli-400 | 624 | 520 | 165 | 322 | Overload protection |
| 800 | 32 | ulli-400 | 672 | 591 | 190 | 422 | Overload protection |
| 900 | 36 | highspd-600 | 756 | 660 | 203 | 550 | Overload protection |
| 1000 | 40 | highspd-600 | 840 | 730 | 216 | 690 | Overload protection |

# Dynamic Balancing Electric Control Valve


## Overview

In HVAC systems, heating networks, or locations where remote operation is inconvenient or areas that are hard to reach during installation or maintenance, the KDZL dynamic balancing electric control valve offers a smart solution. Through its intelligent control module, it allows for convenient manual and automatic regulation of flow rates and temperatures across different circuits. This facilitates optimized energy use and intelligent energy management.

**Control Methods:** Intelligent Mode, Proportional Mode, On/Off Mode




## Key Product Advantages

**Stability**
The flow rate changes at the end-user equipment are not affected by system pressure fluctuations, ensuring no mutual interference in flow adjustments.

**Energy Efficiency**
Saves 6–20% energy compared to traditional systems.

**High Efficiency**
Significantly reduces commissioning time, ensuring efficient system operation.

**Comfort**
Provides more precise temperature control, making the system more comfortable compared to traditional variable flow systems.

**Actuator Compatibility**
Excellent interchangeability with angle actuators.

**Flow Characteristic Curve**
Linear or equal-percentage options available.

**Flow Accuracy**
Error margin ≤ 5%.

**Operating Temperature**
0–150°C.

**Operating Differential Pressure Range**
20–500 kPa.

| Model | DN (mm) | Connection Type | Length (mm) | H1 (mm) | H2 (mm) | Flow rate ($m^3/h$) | Weight (kg) |
|---|---|---|---|---|---|---|---|
| 5EBV15-16 | 15 | Threaded connection | 80 | 60 | 50 | 0.2-1 | 2.6 |
| EBV20-16 | 20 | Threaded connection | 80 | 60 | 50 | 0.3-1.5 | 2.6 |
| EBV25-16 | 25 | Threaded connection | 90 | 60 | 50 | 0.5-2 | 2.7 |
| EBV32-16 | 32 | Flanged Connection | 160 | 180 | 70 | 1-4 | 4 |
| EBV40-16 | 40 | Flanged Connection | 200 | 200 | 100 | 1.5-6 | 11 |
| EBV50-16 | 50 | Flanged Connection | 215 | 210 | 105 | 2-8 | 12 |
| EBV65-16 | 65 | Flanged Connection | 230 | 240 | 110 | 3-12 | 15 |
| EBV80-16 | 80 | Flanged Connection | 275 | 289 | 170 | 5-20 | 27 |
| KBV100-16 | 100 | Flanged Connection | 290 | 305 | 185 | 10-30 | 30 |
| EBV125-16 | 125 | Flanged Connection | 310 | 310 | 200 | 15-45 | 40 |
| EBV150-16 | 150 | Flanged Connection | 350 | 340 | 220 | 30-70 | 63 |
| EBV200-16 | 200 | Flanged Connection | 425 | 380 | 285 | 40-180 | 105 |
| EBV250-16 | 250 | Flanged Connection | 480 | 470 | 385 | 100-300 | 189 |
| EBV300-16 | 300 | Flanged Connection | 650 | 565 | 480 | 150-500 | 218 |
| EBV350-16 | 350 | Flanged Connection | 700 | 580 | 545 | 200-700 | 265 |

# Instructions For Use

## Installation

### 1. Installation Location

**1a. Indoor Installation Notes**

- Non-explosion-proof and must not be installed in environments containing explosive gases.
- Ensure that the rubber sealing boot is properly secured to prevent malfunction.
- The ambient temperature should be within the range of -20°C to +60°C.

**1b. Outdoor Installation Notes**

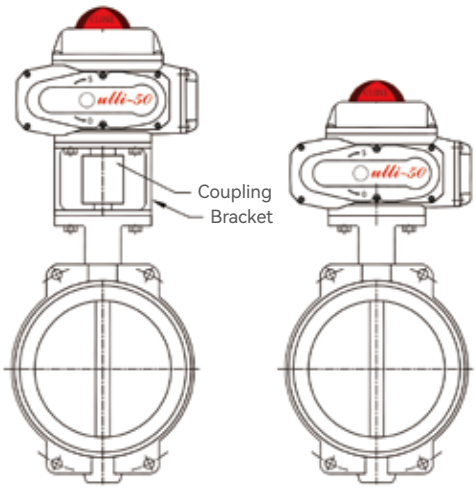
- Protective covers must be added, and the rubber sealing boot must be properly secured to prevent malfunction.

**Note**

- Direct sunlight can cause high internal temperatures, accelerating component aging.
- Rainwater can accelerate the aging of seals, leading to water ingress and equipment damage.

### 2. Connection to Valve (Bracket-Mounted Type)

1. Manually rotate the valve to confirm there are no abnormalities, and ensure the valve is in the fully closed position.
2. Gently secure the bracket to the valve using screws.
3. Fit the coupling onto the valve stem.
4. Rotate the actuator to the fully closed position.
5. Insert the actuator's output shaft into the coupling.
6. Gently secure the actuator to the bracket using screws.
7. Manually rotate the actuator to ensure there is no misalignment, jamming, or other abnormalities.
8. Tighten all screws on the bracket.




**Traditional model**

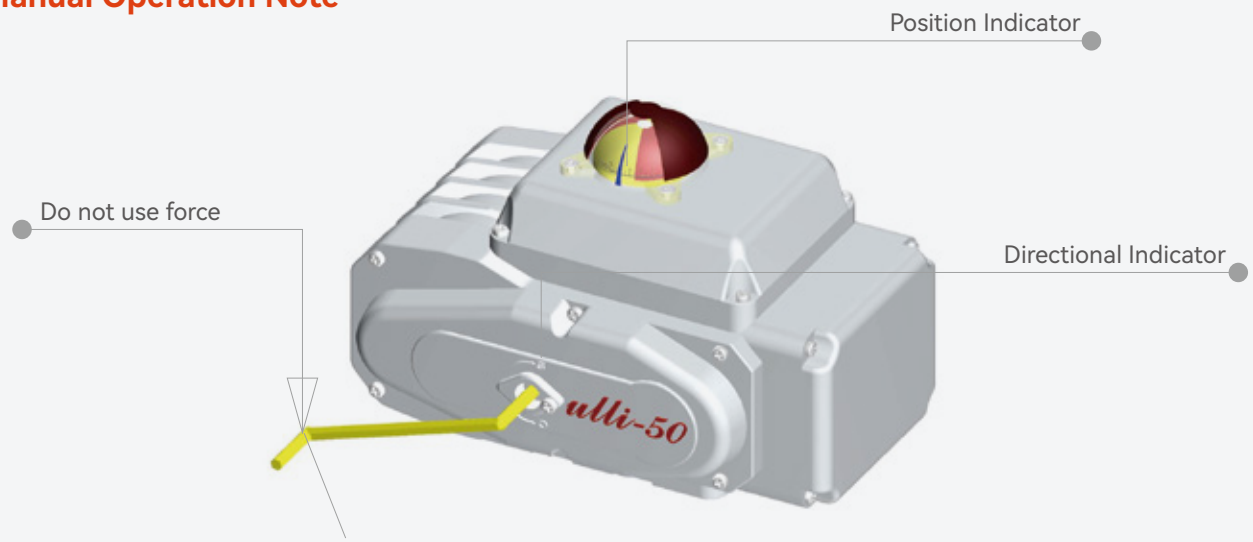
Bracket-free, coupling free

Compact, lightweight, user-friendly, cost-effective, and reliable.

**New model**

When installing the bracketless model, simply insert the valve stem into the corresponding hole of the electric actuator and tighten the flange screws.

## Manual Operation Note




### Instructions for manual operation

- This actuator is equipped with a dedicated S shaped hand lever for convenient manual operation. To operate manually, gently rotate the lever to actuate the valve.
- Before beginning, refer to the position indicator to confirm the current valve position. Use the rotation direction indicator to determine the correct direction of movement.
- During operation, monitor the position change carefully. Do not exceed the 0 to 90 degree range to avoid potential damage. If you experience a significant increase in resistance, which indicates the actuator has reached its limit, stop manual operation immediately.Reverse operation may be performed if necessary.

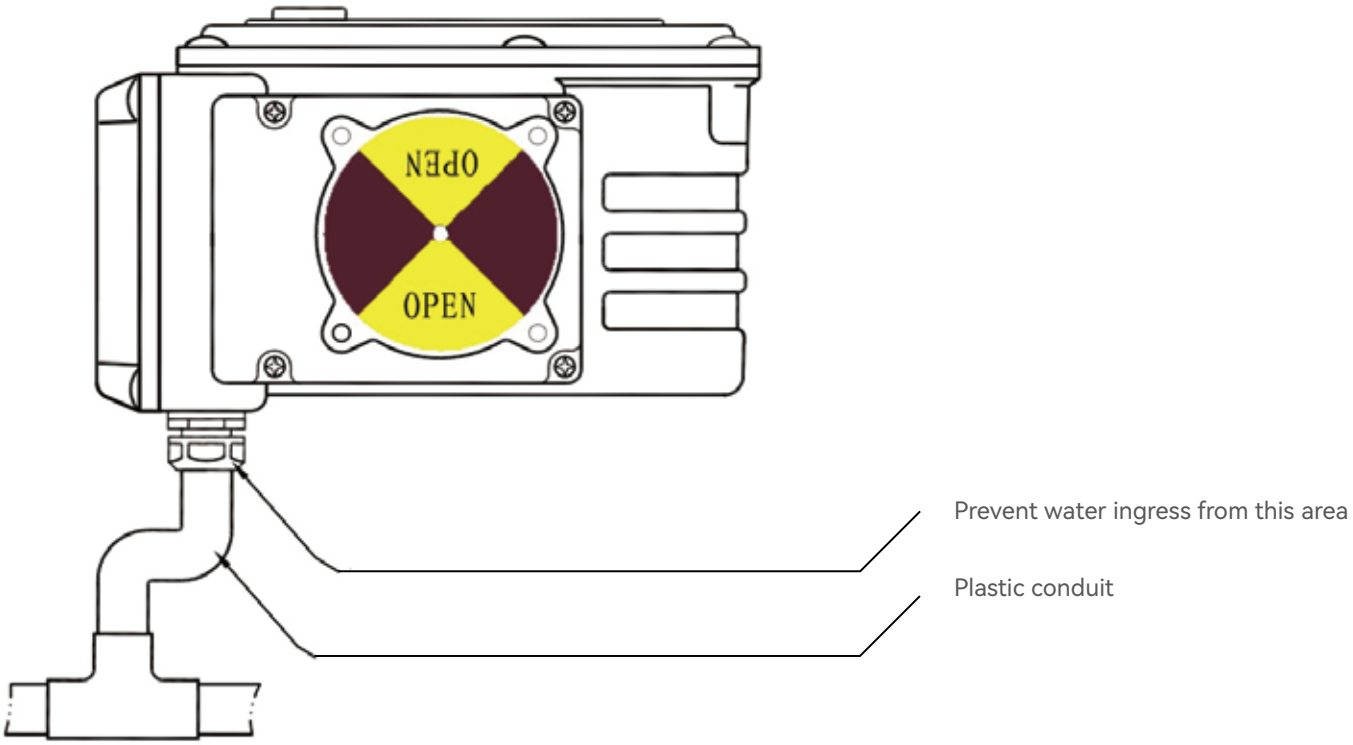
## 3. Wiring Connection

### 3-a Cable Wiring

- Use cable with an outer diameter of ϕ9–ϕ12 mm to ensure reliable clamping and sealing.
- Pass the cable through the cable gland and secure the cable head to the terminal block according to the wiring diagram.
- Tighten the cable gland nut and its outer cover to securely lock the cable in place.
- The cross-sectional area of a single conductor should be greater than 1 $mm^2$.

### 3-b Conduit Wiring

- Only conduits with an outer diameter of ϕ9–ϕ12 mm are allowed, and proper waterproofing measures must be taken.
- As shown in the diagram, the actuator must be positioned higher than the conduit to prevent water from flowing into the actuator through the cable.




## 4. Connection

### 4-a Supply Voltage

Please confirm the power supply voltage according to the product nameplate or wiring diagram.
Possible voltage types include:

- AC220V ±10%-15% 50/60Hz
- AC380V ±10%-15% 50/60Hz
- AC110V ±10%-15% 50/60Hz
- AC24V ±10%-15% 50/60Hz
- DC24V–DC220V

### 4-b Fuse and Circuit Breaker Selection

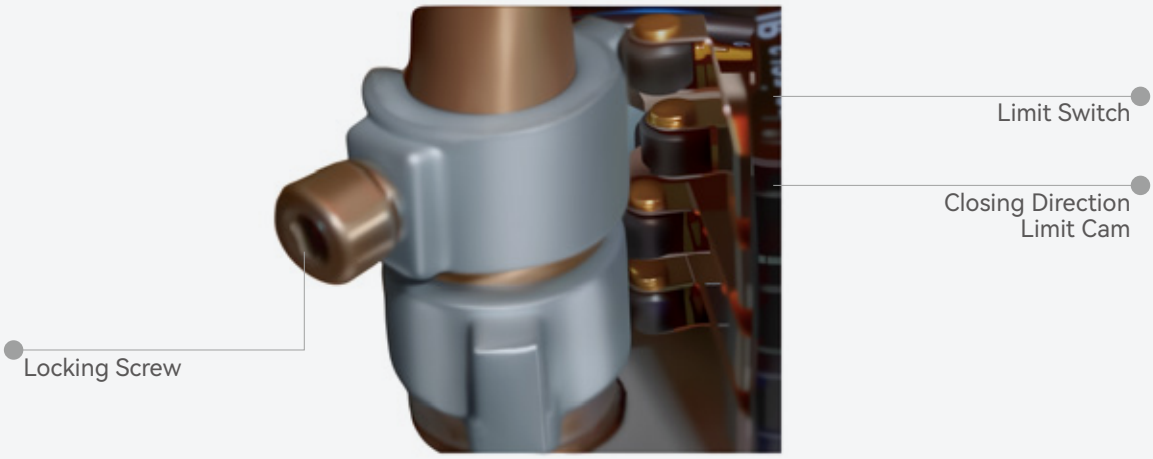
A fuse or circuit breaker must be used!
Its rated capacity should be 2 to 3 times the actuator's normal operating current.

## 5. Adjustment of Opening and Closing Angles

1. Loosen the locking screw on the limit cam.
2. Insert a screwdriver into the side notch of the cam.
3. Gently rotate the cam to the desired position to modify the actuator's opening or closing angle.
4. Tighten the locking screw securely to fix the cam in place.

**Warning: The adjustment range must not exceed -5 to +95 degrees, or it may lead to malfunction or damage.**

## Cam and Limit Switch Layout for ulli/digicon-02, 05, 10, 20:

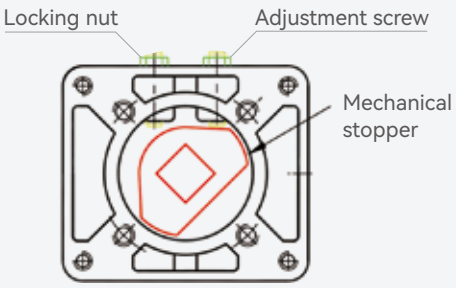



## Cam and Limit Switch Layout for ulli/digicon-50, 100, 200, 400, 600:


**Note**

For S-type models, after adjusting the electrical limit cam (lower cam), also adjust the signal cam (upper cam) accordingly.
Ensure that the signal triggers approximately 3 degrees before the full-open or full-close position, so that the signal is sent in advance of the full stroke (for open or close action).

### 5.b Mechanical Limit Adjustment




**Adjustment screw**

- Turn the handle to the fully open position.
- Loosen the locknut (green line), then rotate the adjustment screw (yellow line) until it contacts the mechanical stop block (red line).
- Then, rotate the screw back half a turn, and tighten the locknut.
- Use the same method to adjust the fully closed position.

**Note**

After adjusting the electrical limit, the mechanical limit must be re-adjusted to ensure the electrical limit is activated before the mechanical limit is reached. This prevents gear damage and ensures the actuator's safety.