

## **FSD-1001 Series – Single / Three Phase Quarter-Turn Flameproof Stayput Electrical Actuators**

The **FSD-1001 Series** from **SDTORK Controls Pvt. Ltd.** is a flameproof, high-performance quarter-turn electric actuator designed for precise, reliable valve and damper automation in hazardous and explosive environments.

Engineered to comply with **IEC 60079-0:2011**, **IEC 60079-1:2014**, and **IEC 60529:2013**, the FSD-1001 Series ensures superior explosion protection by containing any internal ignition and preventing flame propagation into the surrounding atmosphere.

Built from high-grade **aluminium alloy**, the actuator's robust construction withstands the high internal pressure of explosions without structural damage, ensuring operator safety and operational reliability.

Designed for industrial applications where **flammable gases, vapors, or dust** are present, the FSD-1001 Series provides dependable performance, mechanical strength, and operational endurance even in the harshest field conditions.

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### **Technical Overview**

**Type:** Flameproof (Ex d) Stayput Quarter-Turn Electric Actuator (Single / Three Phase)

**Body Material:** Aluminium Alloy – strong, corrosion-resistant, and explosion-proof

**Torque Output:** 300 Nm – 600 Nm

**Motor Type:** Squirrel Cage Induction Motor – fully enclosed, high-torque, low-inertia design with thermal protection

**Duty Modes:** On-Off / Inching / Modulating

**Manual Operation:** Non-rotating wheel type with worm reduction and self-locking function

**Degree of Protection:** IP65 / IP67 / IP68 (optional)

**Mounting Standard:** ISO 5211 – F07 / F10 / F12

**Operating Angle:** 0°–90° (adjustable ±5°)

**Ambient Temperature:** –20 °C to +70 °C

**Supply Voltage:**

- Single Phase – 110 VAC / 230 VAC ±10%, 50 / 60 Hz
- Three Phase – 380 VAC / 415 VAC ±10%, 50 / 60 Hz

**Paint:** Standard RAL 5021 + Black (other colors on request)

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### **Explosion Protection**

The FSD-1001 Actuator prevents ignition hazards caused by:

- High surface temperature
- Electrical sparking due to transient current
- Electrostatic discharge

Its precision flamepath design ensures safe operation by limiting flame propagation. The robust Ex d enclosure, certified to IEC standards, contains internal explosions and prevents ignition of the external atmosphere.

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## Performance Features

- Fully enclosed, maintenance-free squirrel-cage motor
  - Self-locking gear train prevents back-drive and ensures stability
  - Integrated thermal switch safeguards motor from overload
  - Spur + worm gear mechanism for smooth torque transfer with minimal noise
  - Cam-operated travel limit switches for precise position control
  - Optional LED indicators for full OPEN / CLOSE position
  - Manual override operation available under de-energized conditions
  - Factory-filled with long-life synthetic grease – no additional lubrication required
  - Suitable for installation in any mounting direction
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## Applications & Industries

### Hazardous & Process Environments

- Oil & Gas – Refineries, pipeline control, offshore/onshore terminals
- Petrochemical – Flammable chemical process zones
- Power Generation – Fuel handling, combustion, and control systems
- Paint & Coating – Explosion-prone mixing and curing areas

- Pharmaceutical – Controlled hazardous environments

### Valve & Damper Compatibility

- Ball Valves
  - Butterfly Valves
  - Plug Valves
  - Dampers
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### Key Benefits

- Certified flameproof construction for Ex d zones
  - High torque with compact design
  - Precision gear mechanism for quiet and efficient operation
  - Over-torque and thermal protection
  - Easy calibration of limit switches and travel stops
  - Low maintenance and long service life
  - Reliable performance under vibration, dust, and humidity
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### Why Choose SDTORK FSD-1001 Series

- Complies with **IEC explosion protection standards**
- Designed for hazardous and heavy-duty environments
- Compact, efficient, and safe operation
- Proven reliability in critical automation systems
- Supported by **SDTORK's global expertise and after-sales service**

## **Model ;-**

- 1)FSD-1001 Series
- 2)FSD-1001-Ex Series
- 3)FSD-12000 + WG Series
- 4)HQ + Rotary gear box Series

## **Flameproof Quarter-Turn Electric Actuator – FSD-1001-25**

The **FSD-1001-25** offers **250 Nm torque** with superior explosion protection and reliable automation performance for medium-duty valves and dampers. Designed for rugged field conditions, it delivers consistent operation and long service life.

### **FSD-1001-25 – Key Specifications**

- **Industry Applications:** Oil & Gas, Water Treatment, Power Generation, HVAC
- **Rated Torque:** 250 Nm
- **Operating Angle:** 90° (Quarter-Turn)
- **Operating Time:** 45 sec per 90° rotation
- **Protection Class:** IP65 / IP67 (Flameproof Ex d IIB T4)
- **Duty Modes:** On-Off / Inching / Modulating
- **Motor Type:** Flameproof Squirrel-Cage Induction Motor
- **Mounting Standard:** ISO 5211 – F07 / F10 (Max Ø28, Depth 35 mm)
- **Weight:** 20 kg
- **Ambient Temperature:** –20 °C to +70 °C
- **Supply Voltage:** 1 Ph 230 VAC / 110 VAC ±10% or 3 Ph 415 VAC ±10%, 50 / 60 Hz
- **Handwheel:** Engage / Disengage type

- **Paint:** Standard RAL 5021 + Black

## Optional Accessories

Same as FSD-1001-12.5

## Applications & Industries

- **Energy Sector:** Turbine & plant control automation
  - **Oil & Gas:** Valve and damper automation in Ex zones
  - **HVAC Systems:** Fire and ventilation dampers in hazardous locations
  - **Process Industries:** Chemical mixing, pharmaceutical, and food safety zones
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## ◆ Flameproof Quarter-Turn Electric Actuator – FSD-1001-40

The **FSD-1001-40** delivers **400 Nm torque**, ideal for high-performance valve automation in demanding, explosive, or high-vibration environments. It combines heavy-duty gearing with precise control and proven flameproof reliability.

### FSD-1001-40 – Key Specifications

- **Industry Applications:** Power Generation, Process Industry, Oil & Gas, HVAC
- **Rated Torque:** 400 Nm
- **Operating Angle:** 90° (Quarter-Turn)
- **Operating Time:** 50 sec per 90° rotation
- **Protection Class:** IP65 / IP67 (optional IP68) Flameproof Ex d IIB T4
- **Duty Modes:** On-Off / Inching / Modulating
- **Motor Type:** Explosion-proof Squirrel-Cage Induction Motor
- **Mounting Standard:** ISO 5211 – F12 (Max Ø45, Depth 40 mm)
- **Weight:** 23 kg

- **Ambient Temperature:** –20 °C to +70 °C
- **Supply Voltage:** 1 Ph 230 VAC / 110 VAC ±10% or 3 Ph 415 VAC ±10%, 50 / 60 Hz
- **Handwheel:** Engage / Disengage type
- **Paint:** Standard RAL 5021 + Black

## Optional Accessories

Same as FSD-1001-12.5

## Applications & Industries

- **Energy & Power Plants:** High-torque valve actuation
- **Process Control:** Chemical, paper, food, and pharma automation
- **Oil & Gas:** Pipeline and storage automation in hazardous zones
- **HVAC Systems:** Explosion-proof damper and valve control

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## ◆ Flameproof Quarter-Turn Electric Actuator – FSD-1001-50

The **FSD-1001-50** is the top-range model of the FSD-1001 Series, delivering up to **500 Nm torque**. Built for large valves and severe industrial environments, it provides dependable, precise, and safe operation under extreme conditions.

### FSD-1001-50 – Key Specifications

- **Industry Applications:** Energy, Oil & Gas, Power Generation, Process Industry
- **Rated Torque:** 500 Nm
- **Operating Angle:** 90° (Quarter-Turn)
- **Operating Time:** 55 sec per 90° rotation
- **Protection Class:** IP65 / IP67 (optional IP68) Flameproof Ex d IIB T4
- **Duty Modes:** On-Off / Inching / Modulating

- **Motor Type:** Flameproof Squirrel-Cage Induction Motor
- **Mounting Standard:** ISO 5211 – F12 (Max Ø45, Depth 40 mm)
- **Weight:** 26 kg
- **Ambient Temperature:** –20 °C to +70 °C
- **Supply Voltage:** 1 Ph 230 VAC / 110 VAC ±10% or 3 Ph 415 VAC ±10%, 50 / 60 Hz
- **Handwheel:** Engage / Disengage type
- **Paint:** Standard RAL 5021 + Black

### **Optional Accessories**

Same as FSD-1001-12.5

### **Applications & Industries**

- **Oil & Gas:** Heavy-duty pipeline and terminal automation
- **Energy & Power:** Large valve actuation in hazardous areas
- **Process Industries:** High-torque automation under Ex conditions
- **HVAC & Industrial Systems:** Explosion-safe air and gas flow control

## **FSD-1001-Ex Series – Flameproof Quarter-Turn Electrical Actuators (Single / Three Phase)**

The **FSD-1001-Ex Series** from **SDTORK Controls Pvt. Ltd.** represents the next generation of **flameproof, weatherproof quarter-turn actuators** engineered for **valve and damper automation** in hazardous, explosive, and marine environments.

Built to deliver **precision, safety, and long-term reliability**, the FSD-1001-Ex actuators are designed for areas where **flammable gases, vapors, or dust** are present — such as **offshore oil platforms, refineries, ships, chemical plants, and coastal installations**.

Manufactured from **marine-grade aluminium alloy** and certified to **IEC 60079-0 / IEC 60079-1 / IEC 60529**, the actuator housing is capable of **containing internal explosions** without deformation and prevents flame propagation into the surrounding atmosphere.

With torque outputs from **30 Nm to 600 Nm**, the series offers rugged mechanical design, thermal safety protection, and efficient gear operation, making it ideal for **critical flow control in marine, process, and energy applications**.

### **Technical Overview**

**Type:** Flameproof (Ex d) Stayput Quarter-Turn Electric Actuator (Single / Three Phase)

**Body Material:** Marine-grade Aluminium Alloy Die-Cast – Corrosion-resistant and lightweight

**Torque Range:** 30 Nm to 600 Nm

**Motor Type:** Squirrel-Cage Induction Motor – Fully enclosed, high-torque, thermally protected

**Duty Modes:** On-Off / Inching / Modulating

**Manual Operation:** Handwheel / Key-type / Wrench with clutch-based manual override

**Degree of Protection:** IP65 / IP67 / IP68 (optional) – Weatherproof & Dustproof

**Mounting Standard:** ISO 5211 – Flange F05 / F07 / F10 (depending on model)

**Operating Angle:** 0°–90° (Adjustable ±5°)

**Ambient Temperature:** –20 °C to +70 °C

**Supply Voltage:**

- 1 Ph 110 VAC ±10%, 50 / 60 Hz
- 1 Ph 230 VAC ±10%, 50 / 60 Hz
- 3 Ph 380 / 415 VAC ±10%, 50 / 60 Hz

**Insulation Class:** Class F

**Paint Finish:** RAL 5021 + Black (Epoxy Marine Coating / Optional Shades on Request)

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## **Explosion & Marine Protection**

The FSD-1001-Ex Actuator is certified for **Ex d IIB / Ex d IIC T4 / T5 Gb Zones**, meeting international safety directives including **ATEX 2014/34/EU**.

Its robust enclosure prevents ignition from:

- Electrical sparking / arcing within the motor housing
- Over-temperature on the actuator surface
- Electrostatic discharge or vibration-induced spark

Precision flamepaths and pressure-resistant joints ensure containment of internal explosions, while high-performance gaskets and **marine-grade stainless-steel fasteners** guarantee superior protection against **saltwater, condensation, and corrosion**.

These features make the FSD-1001-Ex Series ideal for **offshore and shipboard environments**, where equipment reliability under vibration, humidity, and salt exposure is critical.

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## **Performance Features**

- **High-strength Flameproof Aluminium Enclosure** for hazardous & marine zones
  - **Worm + Spur Gear Combination** for smooth torque transmission
  - **Self-locking Design** ensures valve position retention during power loss
  - **Thermal Overload Protection** prevents motor overheating
  - **Cam-Operated Limit Switches** for accurate travel control
  - **Torque Limit Protection** to safeguard valve and actuator components
  - **Visual Position Indicator** for 0–100 % open/close status
  - **Factory-lubricated for Life** – zero maintenance requirement
  - **Flexible Mounting Orientation** for installation convenience
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## **Applications & Industries**

### **Hazardous & Marine Automation:**

- Offshore Oil & Gas Platforms
- Ship Engine Rooms & Ballast Control Systems
- Marine Ventilation & Fuel Handling Automation
- Coastal Water Treatment & Desalination Plants
- Refineries, Terminals & Chemical Processing Units
- Paint & Coating Facilities (Explosion-prone zones)

### **Valve & Damper Compatibility:**

Ball Valves | Butterfly Valves | Plug Valves | Dampers | Louver Valves | Diverter Valves

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### **Key Benefits**

- Certified **Flameproof Ex d** protection for Zone 1 & Zone 2 applications
  - **Marine-grade anti-corrosive finish** ensures durability in coastal conditions
  - Compact, energy-efficient design with **high torque output up to 600 Nm**
  - **Thermal & Torque Protection** for extended service life
  - **ISO 5211 mounting pattern** for universal compatibility
  - Optional **4–20 mA feedback / remote control station** integration
  - Reliable operation under **vibration, humidity, and salt spray exposure**
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### **Why Choose SDTORK FSD-1001-Ex Series**

- Designed for **hazardous and marine automation applications**
- **IEC & ATEX-compliant** flameproof construction
- High-efficiency gear system ensures **quiet and precise operation**

- Backed by **SDTORK's global engineering & after-sales support**
- Long-life lubrication and sealed enclosure for minimal maintenance
- **Proudly engineered and manufactured in India**, trusted worldwide

## **FSD-1001-03-Ex Flameproof Quarter-Turn Electric Actuator**

The **SDTORK FSD-1001-03-Ex** is a **compact flameproof quarter-turn actuator** designed for **small-to-medium valve automation in hazardous and marine environments**.

It provides **30 Nm of torque** with exceptional precision, making it ideal for controlling **butterfly valves, dampers, and fuel line valves** on ships and offshore platforms.

Its **Ex d IIB / IIC T4 Gb-certified enclosure** ensures explosion protection, while the **marine-grade epoxy coating** defends against salt, humidity, and corrosion.

### **Key Specifications**

- **Rated Torque:** 30 Nm
- **Operating Angle:** 90° (Adjustable ±5°)
- **Operating Time:** 23 seconds per 90° rotation
- **Protection Class:** IP65 / IP67 (optional IP68)
- **Motor Type:** Squirrel-Cage Induction Motor (Thermal Protected)
- **Supply Voltage:** 1 Ph 230 V / 3 Ph 415 V ± 10%, 50/60 Hz
- **Mounting Standard:** ISO 5211 – Flange F05 / F07
- **Manual Operation:** Key / Handwheel Override
- **Body Material:** Aluminium Alloy – Marine Grade (RAL 5021 Epoxy Coated)
- **Ambient Temperature:** –20 °C to +70 °C

### **Applications & Industries**

- Ship ventilation and fuel automation systems
- Offshore oil rigs – valve and damper actuation

- Chemical dosing and small pipeline automation
- HVAC systems in hazardous or coastal facilities

### Why Choose

Compact, flameproof, and corrosion-resistant — the FSD-1001-03-Ex ensures **reliable automation** in tight spaces and **explosive environments** where precision and safety are critical.

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## FSD-1001-05-Ex Flameproof Quarter-Turn Electric Actuator

The **FSD-1001-05-Ex** offers **50 Nm of torque** and delivers **superior performance** for **medium-sized valves and dampers** in explosive or corrosive conditions.

Engineered for **marine, petrochemical, and offshore applications**, it provides dependable operation with built-in **thermal overload protection** and a **self-locking gear system**.

### Key Specifications

- **Rated Torque:** 50 Nm
- **Operating Angle:** 90°
- **Operating Time:** 23 seconds
- **Protection Class:** IP65 / IP67
- **Motor Type:** Squirrel-Cage Induction Motor
- **Mounting Standard:** ISO 5211 – F05 / F07
- **Manual Operation:** Handwheel / Key Override
- **Supply Voltage:** 1 Ph 230 V / 3 Ph 415 V ± 10%, 50/60 Hz
- **Weight:** 6 kg
- **Body Material:** Marine Aluminium Alloy – Epoxy Coated

### Applications & Industries

- Fuel management valves in ship engine rooms
- Ball valve actuation on offshore rigs
- Chemical processing units
- Hazardous ventilation systems

### Why Choose

Combining **compact size**, **explosion protection**, and **marine durability**, the FSD-1001-05-Ex ensures **safe, smooth, and long-life operation** across diverse industrial settings.

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## FSD-1001-10-Ex Flameproof Quarter-Turn Electric Actuator

Delivering **100 Nm of torque**, the **FSD-1001-10-Ex** is the preferred choice for **process automation** and **marine valve control** requiring consistent torque and safety.

It integrates **precision limit switches**, **self-locking worm gear**, and a **corrosion-resistant flameproof enclosure** for maximum reliability.

### Key Specifications

- **Rated Torque:** 100 Nm
- **Operating Time:** 30 seconds per 90°
- **Protection:** IP65 / IP67
- **Motor:** Squirrel-Cage Induction Motor with thermal protection
- **Mounting Standard:** ISO 5211 – F05 / F07
- **Supply Voltage:** 1 Ph 230 V / 3 Ph 415 V ± 10%, 50/60 Hz
- **Manual Operation:** Handwheel / Wrench Type
- **Paint:** Marine-grade RAL 5021 Epoxy

### Applications & Industries

- Shipboard dampers and HVAC control
- Fuel and ballast automation systems
- Chemical and solvent handling
- Zone 1 / Zone 2 explosion-proof areas

### Why Choose

A perfect balance of **power, size, and protection**, ensuring **smooth torque delivery** and **safe operation** under extreme vibration and humidity.

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## FSD-1001-20-Ex Flameproof Quarter-Turn Electric Actuator

The **FSD-1001-20-Ex** provides **200 Nm torque output** for **medium-to-large valve automation**.

It's engineered for **offshore platforms, refineries, and desalination plants**, offering **long-term performance** with **zero maintenance** and **high efficiency**.

### Key Specifications

- **Rated Torque:** 200 Nm
- **Operating Time:** 30 seconds per 90°
- **Protection:** IP65 / IP67
- **Mounting Standard:** ISO 5211 – F05 / F07
- **Supply Voltage:** 1 Ph 230 V / 3 Ph 415 V ± 10%
- **Motor:** Squirrel-Cage Induction – Thermally Protected
- **Weight:** 9 kg
- **Paint:** Marine Epoxy (RAL 5021)

### Applications & Industries

- Process control in petrochemical plants

- Ball and butterfly valve automation
- Offshore water injection and treatment systems
- Marine engine room valve operations

### Why Choose

Designed for **harsh industrial zones**, the FSD-1001-20-Ex delivers **robust torque** with **flameproof safety** and **marine reliability**.

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## FSD-1001-40-Ex Flameproof Quarter-Turn Electric Actuator

The **FSD-1001-40-Ex** is a **heavy-duty flameproof actuator** offering **400 Nm torque** for **critical industrial and marine applications**.

Its **precision gear system** ensures torque efficiency and self-locking stability, while its **IP68-rated housing** provides total weather and salt-spray protection.

### Key Specifications

- **Rated Torque:** 400 Nm
- **Operating Time:** 30 seconds per 90°
- **Protection:** IP65 / IP67 (optional IP68)
- **Mounting Standard:** ISO 5211 – F07 / F10
- **Supply Voltage:** 1 Ph 230 V / 3 Ph 415 V ± 10%
- **Motor Type:** Induction with Stall Duty Protection
- **Body Material:** Marine Aluminium Alloy
- **Weight:** 12 kg
- **Finish:** RAL 5021 Marine Epoxy

### Applications & Industries

- Offshore oil and gas platforms

- Shipboard heavy damper control
- Desalination plant automation
- Hazardous industrial valve systems

## Why Choose

When **power, protection, and performance** matter most, the FSD-1001-40-Ex stands out with **high torque, explosion safety, and marine-grade endurance**.

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## FSD-1001-60-Ex Flameproof Quarter-Turn Electric Actuator

The **FSD-1001-60-Ex** is the most powerful model in the FSD-1001-Ex series, delivering **600 Nm torque** for **large valve and damper actuation** in **Zone 1 / Zone 2 hazardous and offshore areas**.

Built for **continuous service**, this actuator combines **precision engineering, flameproof protection, and long-life reliability**.

## Key Specifications

- **Rated Torque:** 600 Nm
- **Operating Time:** 30 seconds per 90°
- **Protection:** IP65 / IP67 (optional IP68)
- **Mounting Standard:** ISO 5211 – F07 / F10
- **Supply Voltage:** 1 Ph 230 V / 3 Ph 415 V ± 10%, 50/60 Hz
- **Motor Type:** Squirrel-Cage Induction – Thermal Protected
- **Body:** Marine Aluminium Alloy Die-Cast
- **Weight:** 13 kg
- **Finish:** Marine Epoxy RAL 5021

## Applications & Industries



- Large butterfly and ball valve actuation
- Offshore platforms & oil terminals
- Ship fuel transfer and pipeline systems
- Hazardous petrochemical environments

### Why Choose

The FSD-1001-60-Ex is built for **mission-critical automation**, combining **explosion-proof reliability**, **high torque**, and **marine-grade corrosion resistance**, ensuring **uninterrupted performance** even in the world's harshest environments.