

# Valworx® Industrial Electric Actuators-Explosion Proof

AC and DC Voltages (On/Off, EPS Positioner)  
50 & 200Nm/442 & 1770 inch lbs

SERIES  
**5818**

## Features

- Quarter turn (90°) operation with mechanical travel stops
- Type 4X/IP67 weatherproof aluminum alloy enclosure
- Highly visual dial style valve position indicator
- Manual override
- ISO5211 multi-flange valve mounting
- Heavy duty motor with overload protection
- Two auxiliary limit switches included with on-off units
- Self-locking all metal gear train, no additional brake required
- EPS- Electronic Positioner models available
- Approvals - CSA listed per UL429 and CSA C22.2 and Explosion ratings per Approvals section
- Electrical interface: Two 1/2" NPT threaded ports with temporary plugs. Remove and replace with corresponding explosion proof cable connectors, pipe or plugs

## Description

Excellent power to size, performance packed electric actuators take the valve automation industry to the next level. Features include rugged motor integral to actuator housing, all metal gears, manual override for emergency hand operation, visual valve position indicator and Type 4X/IP67 weatherproof enclosure. Actuators are certified by CSA per rigorous UL and CSA standards, and also comply with the CE marking. On-Off units include two auxiliary dry contact limit switches used to confirm valve position. Anti-condensation heater is standard and will help protect against condensation build-up inside the actuator.

## Operation

Electric actuator uses power-to-open and power-to-close, stays in the last known position with loss of power. On receipt of a continuous voltage signal, the motor runs and via a rugged all metal gear system rotates 90°. The motor is automatically stopped by internal cams striking limit switches. On receipt of a reversing continuous signal, the motor turns in the opposite direction reversing the output drive position. Actuators with EPS positioner use an analog input signal to control the drive output position. Rugged self-locking all metal gear train eliminates the need for additional braking.

## Construction

Enclosure	Anti-corrosive durable painted aluminum alloy, Type 4X/ IP67
Output Drive	ISO5211 aluminum alloy, female double square
Visual Position Indicator	High strength glass lens
Gears	Heat treated steel and aluminum bronze, self locking
Fasteners	Stainless Steel
Electrical Connections	Terminal strip
Manual Override	Standard hex wrench (included) with protective cover
EPS Positioner Models	Fully potted control module



## Applications

Industrial quality electric actuators typically used in applications where explosive gases may be present. Refer to the Approvals section for more information. The 5818 series actuator is quick and easy to mount with standard ISO5211 multi-flange mounting and a double square drive.

## Approvals

### ANTI EXPLOSION GRADE

The anti-explosion grade of these actuators is

- ♦ Class 1, Division 1, Groups C & D T5
- ♦ Ex db IIC T5 Gb Class 1 Zone 1
- ♦ AEx db IIC T5 Gb

Where:

Class I – Hazard Class

Division I/ Zone 1 – Area Classification

db – Explosion Proof Type

II – Electrical Equipment design for explosive atmospheres (except colliery)

C – Magnitude of the explosion

T5 - Highest allowed surface temperature of the actuator (+55C)

Gb – Protection Grade

The grades of combustible gas, steam and temperature group are listed in CSA 22.2 No 60079-0-2019, CSA 22.2 No 60079-1-2016, CSA 22.2 No 30-M1986(R2016), CSA 22.2 No 145-11(R2015), ANSI/UL 60079-2:2020, ANSI/UL 1203-2013, ANSI/UL 674 Fifth Edition. It is the user's responsibility to ensure compatibility with the applicable regulations.

- CE- EN 60204-1:2006

# Valworx® Industrial Electric Actuators-Explosion Proof

AC and DC Voltages (On/Off, EPS Positioner)  
50 & 200Nm/442 & 1770 inch lbs

SERIES  
**5818**

## Construction Features



## Temperature

Temperature Range: -13°F to 131°F (-25°C to 55°C)

**Installation Requires-Two 1/2" NPT threaded explosion-proof connectors or pipe for electrical interface**

**(\*\*Not included\*\*)**

## Typical Applications



## Specifications

Stock Number	Torque Nm in lbs		Voltage AC (50/60Hz) or DC	Current F.L. Amps	Cycle Time/90° (seconds)	Duty Cycle	Valve Mounting ISO5211	Output Drive (mm)	Enclosure Type	Weight (lb/kg)
ELECTRIC ACTUATORS (ON-OFF)										
581850	50	442	110 VAC	0.27	20	70	F03, F05, F07	14	4X / IP67	6.6 lb/ 3.0 kg
581851	50	442	24 VDC	1.8	20	70	F03, F05, F07	14	4X / IP67	6.6 lb/ 3.0 kg
581870	200	1770	110 VAC	0.63	30	70	F05, F07	17	4X / IP67	12.1 lb/ 5.5 kg
581871	200	1770	24 VDC	2.4	30	70	F05, F07	17	4X / IP67	12.1 lb/ 5.5 kg
ELECTRIC ACTUATORS with EPS POSITIONER, 4-20mA INPUT										
581856	50	442	110 VAC	0.27	20	70	F03, F05, F07	14	4X / IP67	6.6 lb/ 3.0 kg
581857	50	442	24 VDC	1.8	20	70	F03, F05, F07	14	4X / IP67	6.6 lb/ 3.0 kg
581876	200	1770	110 VAC	0.63	30	70	F05, F07	17	4X / IP67	12.1 lb/ 5.5 kg
581877	200	1770	24 VDC	2.4	30	70	F05, F07	17	4X / IP67	12.1 lb/ 5.5 kg

## Electric Actuators

Valworx quarter turn electric actuators use power-to-open and power-to-close, stays in the last known position with loss of power. The actuator will rotate the output drive 90° to open or close ball valves, butterfly valves or other valves requiring a quarter turn function. Limit switches automatically stop the motor drive in either the open or closed position as required.

## EPS - Electronic Positioning System

Valworx electric actuators with EPS Electronic Positioning Systems provide an accurate valve positioning function whereby the movement of the actuator is controlled by a 4-20mA input control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator.

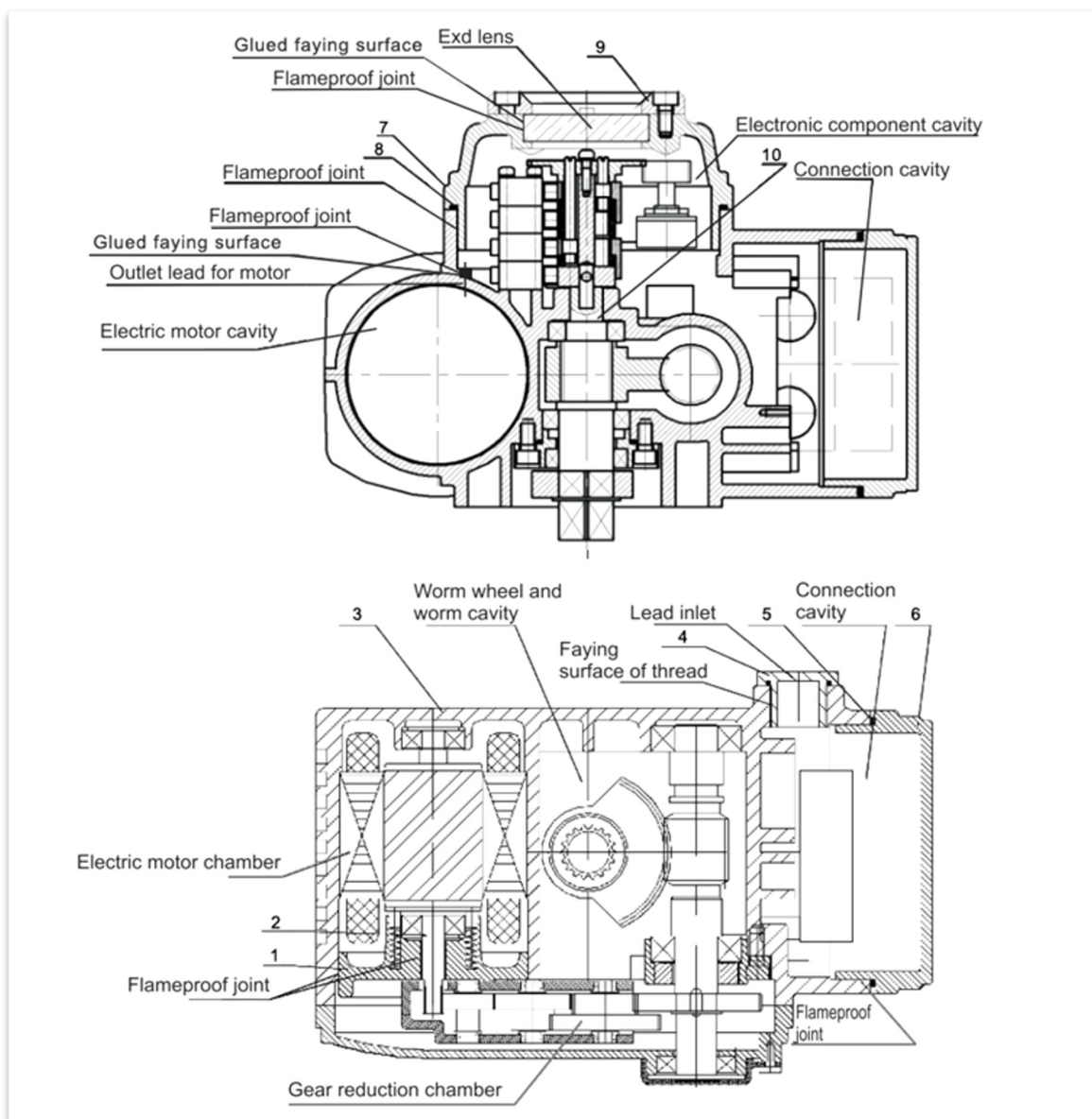
This is achieved with a unique built in electronic positioning module. The module is fully potted to help protect the electronics from vibration and moisture resistance.

An internal microprocessor on the EPS circuit board continuously monitors the analog input and output signals and compares them to the physical position via a precision potentiometer feedback system, moving the actuator output as required to balance the signals.

The EPS system is self-calibrating which virtually eliminates "hunting" and provides a 4-20mA output monitoring signal as standard. The following features are standard on the EPS module:

- Adjustable forward or reversing action. Ex: standard 4mA close/20mA open or selectable 4mA open/20mA close
- Deadband adjustment from 0.5%-5.0%
- Selectable fail mode: fail closed, fail open or stop in place. This is not for loss of power, but for loss of input command signal.
- Electric manual control on control module
- Fault LED lights indicate valve jam or signal loss
- Power on LED

## Construction Drawing



No.	Part Name	No.	Part Name
1	Motor cover	6	Junction Box cover
2	Electric motor rotor shaft	7	Electric elements cover
3	Box body	8	"O" Washer seal
4	Explosion-proof plug	9	Exd lens
5	"O" washer seal	10	Output shaft

## Wiring– On/Off

### ELECTRICAL WIRING

Confirm the actuator VOLTAGE is correct, then remove the terminal box cover and connect wiring to terminal strip according to appropriate wiring diagram.

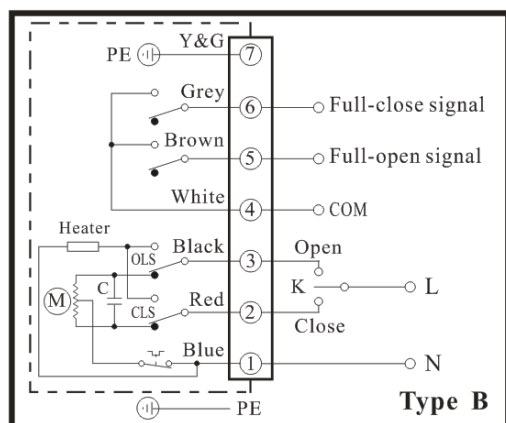
Wiring diagrams for each actuator are attached to the inside of the terminal box cover.

Input control signal type is 4-20mA. Actuator should have its own fused and isolated circuit. Do not connect actuators in parallel. Power to actuator should be maintained to activate the internal heater. This heater will help prevent condensation build-up inside the actuator.



**Before connecting power, confirm correct VOLTAGE is being applied. Incorrect voltage may damage actuator and void the warranty.**

#### AC Voltage Wiring Diagram



FOR SUPPLY CONNECTIONS, USE WIRES SUITABLE FOR AT LEAST 90°C (194°F) Employer Des Fils D'alimentation Qui Convienent Pour Au Moins 90°C

#### AC Voltage Wiring:

[User/Installer to Supply Relay or 3-way Switch (K)]

Terminal 1: Power Neutral (N)

Terminal 2: Power (L) to terminal 2 - Actuator OFF or CLOSED

Terminal 3: Power (L) to terminal 3 - Actuator ON or OPEN

#### Auxiliary Position Confirmation Limit Switches

Terminal 4: Common

Terminal 5: Open status confirmation signal

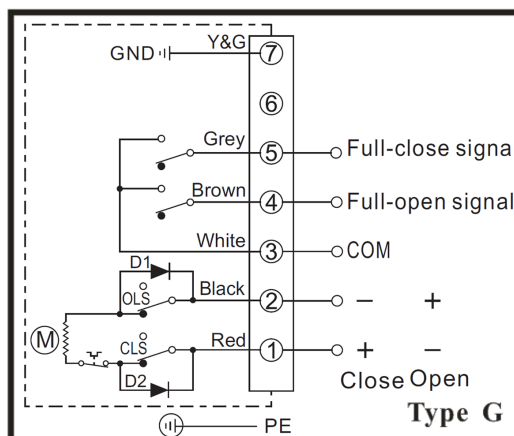
Terminal 6: Closed status confirmation signal

#### Ground PE

Terminal 7: Earth Ground

**NOTES:** 1. Auxiliary limit switches are rated 3A@125/250VAC, 30VDC resistive load. 2. Actuator should have its own fused and isolated circuit. Do not wire actuators in parallel.

#### DC Voltage Wiring Diagram



FOR SUPPLY CONNECTIONS, USE WIRES SUITABLE FOR AT LEAST 90°C (194°F) Employer Des Fils D'alimentation Qui Convienent Pour Au Moins 90°C

#### DC Voltage Wiring:

[User/Installer to Supply Reversing Relay or Switch]

Terminal 1: Power Positive (+) to close, power Negative (-) to open

Terminal 2: Power Negative (-) to close, power Positive (+) to open

#### Auxiliary Position Confirmation Limit Switches

Terminal 3: Common

Terminal 4: Open status confirmation signal

Terminal 5: Closed status confirmation signal

#### Ground PE

Terminal 7: Earth Ground

## Wiring-EPS

### ELECTRICAL WIRING

Confirm the actuator VOLTAGE is correct, then remove the terminal box cover and connect wiring to terminal strip according to appropriate wiring diagram.

Wiring diagrams for each actuator are attached to the inside of the terminal box cover.

Input control signal type is 4-20mA. Actuator should have its own fused and isolated circuit. Do not connect actuators in parallel. Power to actuator should be maintained to activate the internal heater. This heater will help prevent condensation build-up inside the actuator.



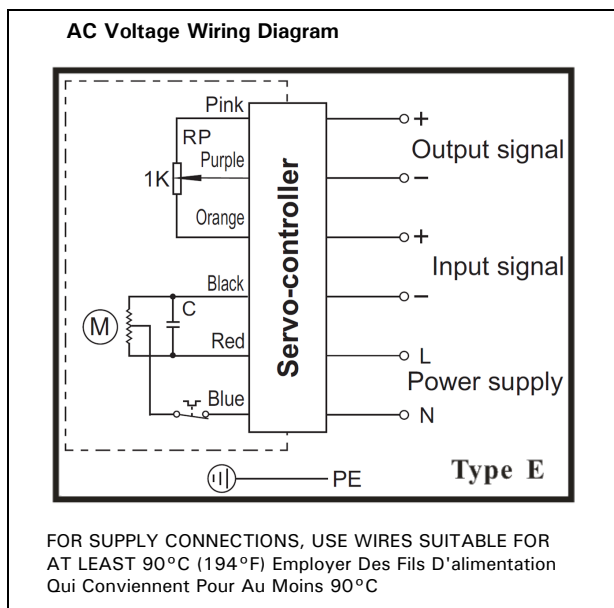
**Before connecting power, confirm correct VOLTAGE is being applied. Incorrect voltage may damage actuator and void the warranty.**

### OPERATION (EPS ONLY)

Valworx 5818 series electric actuators with EPS- Electronic Positioning System provide an accurate valve positioning function whereby the movement of the actuator is controlled by a 4-20mA input control signal. Any change in the control input signal results in a corresponding and proportional change in the position of the actuator drive output.

This is achieved with a unique built in electronic positioning module. The module is fully potted to help protect the electronics from vibration and moisture.

An internal microprocessor on the EPS circuit board continuously monitors the analog input and output signals and compares them to the physical position via a precision potentiometer feedback system, moving the drive output as required to balance the signals



#### AC Voltage Wiring:

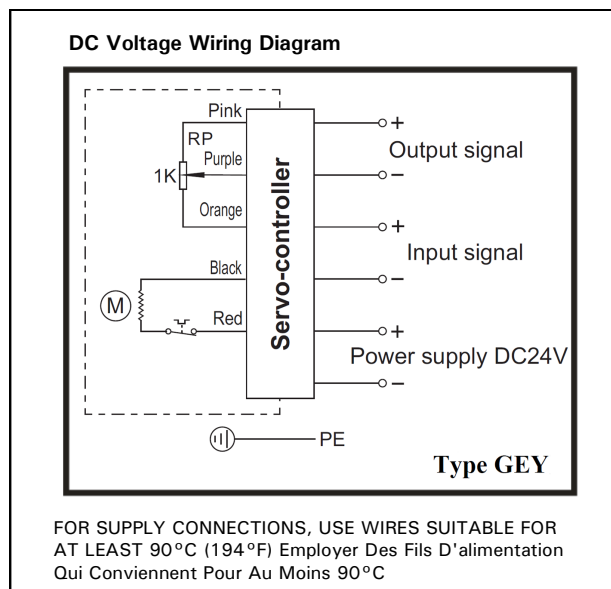
1. AC power - Neutral
2. AC power - Line/Hot
3. Input control signal - Negative (-)
4. Input control signal - Positive (+)
5. Output monitoring signal - Negative (-)
6. Output monitoring signal - Positive (+)

#### EPS POSITIONER TECHNICAL DATA

Input Signal: 4-20mA

Output Signal: 4-20mA

Deadband: 0.5% to 5.0%



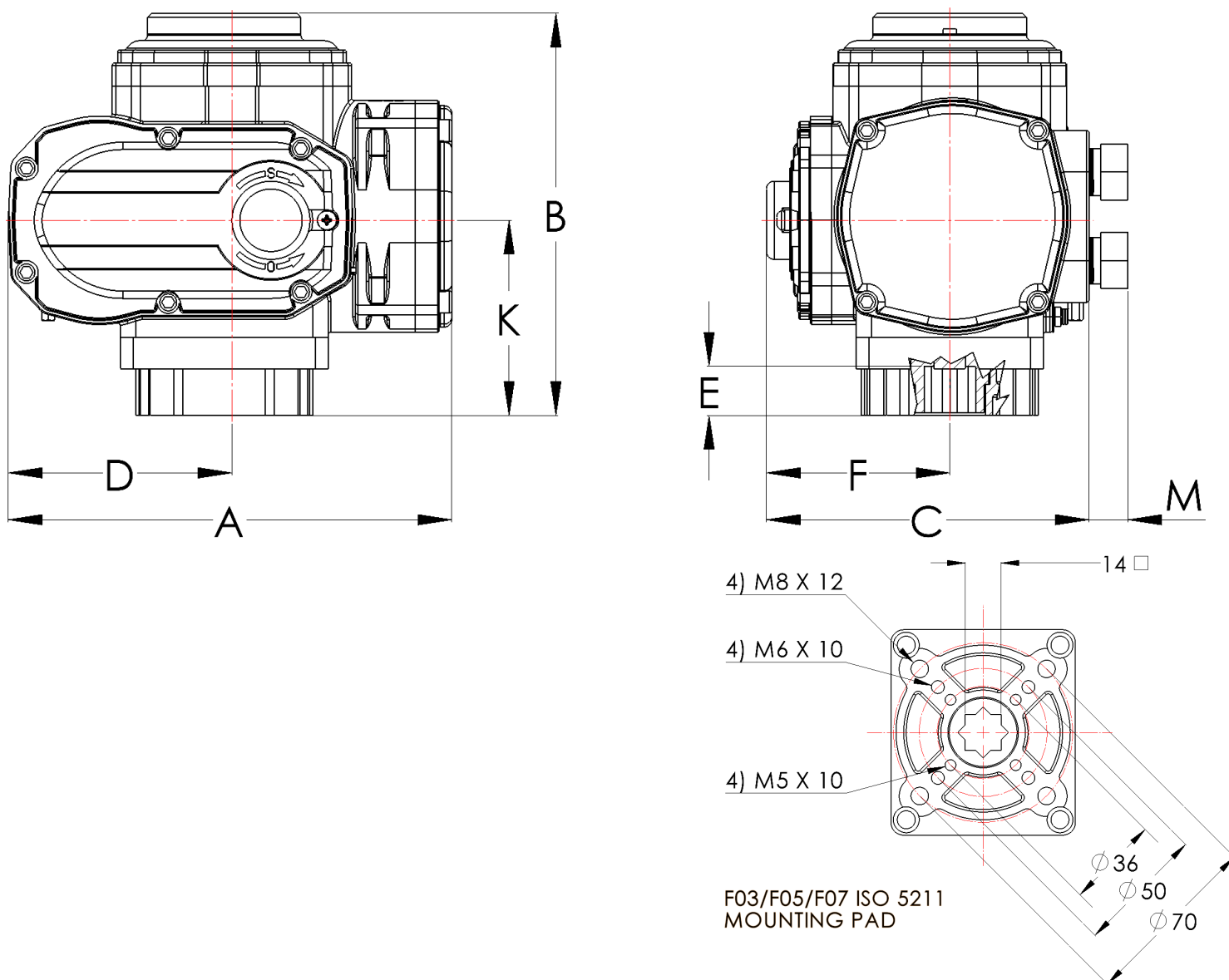
#### DC Voltage Wiring:

1. DC power - Negative (-)
2. DC power - Positive (+)
3. Input control signal - Negative (-)
4. Input control signal - Positive (+)
5. Output monitoring signal - Negative (-)
6. Output monitoring signal - Positive (+)

**NOTES:** 1. Actuator should have its own fused and isolated circuit. 2. Do not wire actuators in parallel. 3. Output signal is 4-20mA. Use of the output is optional.



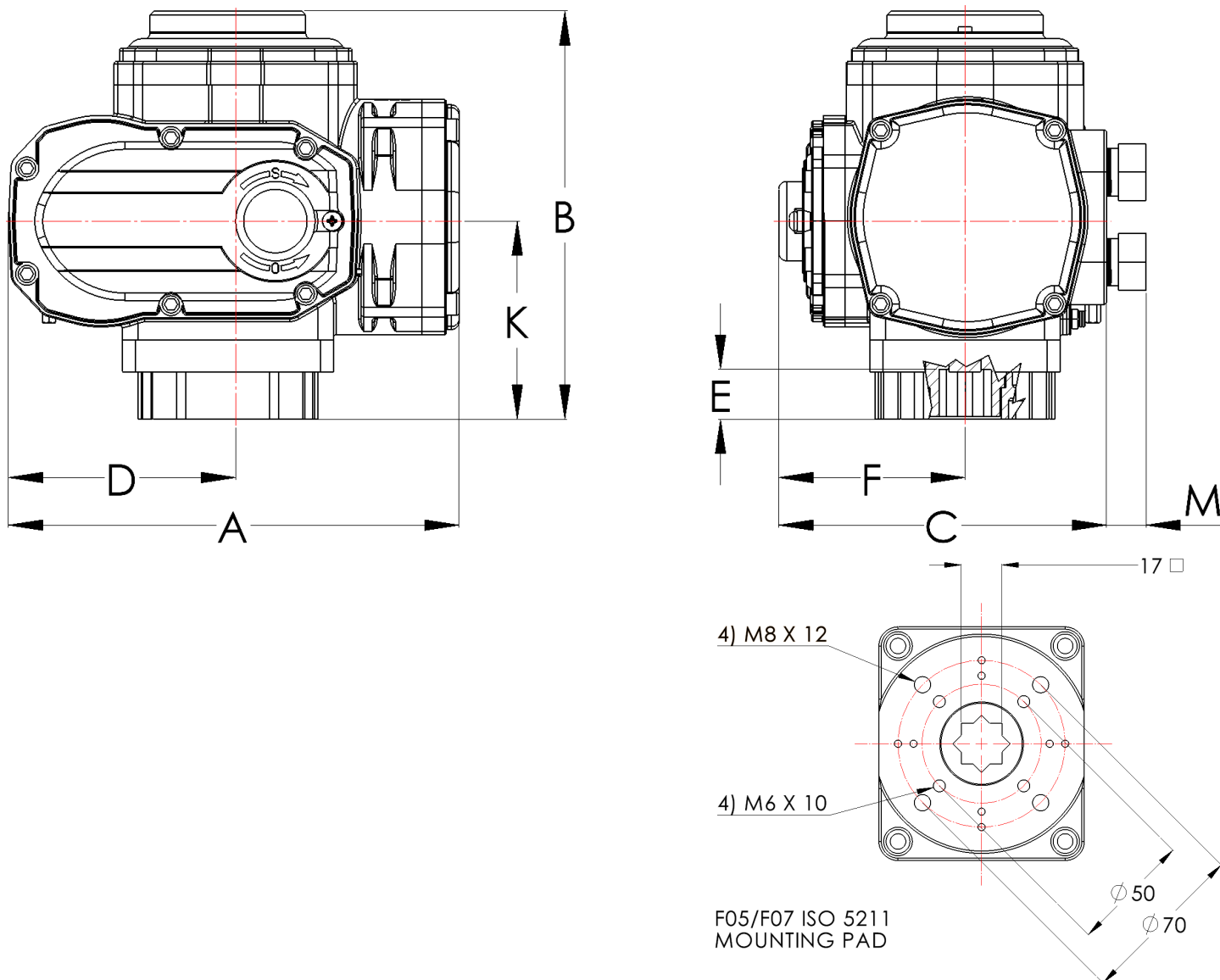
## Dimensions– 50Nm



	A	B	C	D	E	F	K	M
inch	6.7	4.7	3.9	3.3	0.7	1.8	3.0	0.6
mm	170.5	120.0	99.5	83.0	19.0	46.0	75.0	15.0

\* Actuators 581850, 581851, 581856, & 581857 are all same dimensions

## Dimensions– 200Nm



	A	B	C	D	E	F	K	M
inch	8.6	5.9	5.5	3.8	0.7	3.2	3.2	0.6
mm	217.5	150.0	139.0	96.0	19.0	82.5	81.0	15.0

\*Actuators 581870, 581871, 581876, & 581877 are same dimensions