Automate Your Industrial Valves With Zero Emissions

Bettis™ Electric Actuator Product Selection Guide

Improve plant reliability and support sustainability mandates with actuators suited to most application requirements

EMERSON™

For decades, companies around the world and in a range of industries have trusted Bettis actuators to solve their toughest flow control challenges. Today, as you face demands to maximize safety, reliability, productivity and sustainability in your operations, we offer a comprehensive portfolio of electric valve actuation solutions to support your goals.

Whether you are selecting products for a brand new facility or updating aging assets, chances are one of our electric actuators will meet your needs. Just a few key pieces of information will help you determine the right actuator for your application.

1. What type of stroke do you need: multi-turn, quarter-turn or linear?
2. Is ***fail-safe*** functionality needed?
3. What ***duty cycle*** do you need: on/off, modulating or continuous modulation?
4. What ***style*** of actuator do you prefer: non-intrusive or conventional?
5. What ***torque*** (rotary motion) or ***thrust*** (linear motion) is required?
6. Are there any ***specific requirements*** for your application, e.g., corrosion resistance, remote connectivity support, high/low temperature environments, safety integrity level (SIL) requirements, industry certifications, etc.?

RTS Series

Stroke:

Function:

Special Features:

Features:

- Highly configurable and intelligent actuator with options for continuous modulation and mechanical fail-safe
- Independently adjustable operating and fail-safe speed and torque
- Non-intrusive setup via local interface, Bluetooth® or DCMlink
- Multi-turn torque up to 64 Nm (47 lbf-ft)
- Quarter-turn torque up to 5,000 Nm (3,687 lbf-ft)
- Linear force up to 60 KN (13,489 lbf)
- Certified explosion-proof and weatherproof

Protocols:

- Modbus®, HART®, PROFIBUS, PROFINET, Ethernet

Fail-Safe Functionality

A fail-safe actuator is able to draw power from a secondary source to drive the actuator to a predetermined, safe position in case of a power supply fault or system failure. This functionality is often a requirement for safety-critical applications, such as emergency shutdown (ESD) or well kill.

Power options for the fail-safe stroke include super capacitors, battery backups or mechanical spring return. Emerson's actuator experts believe a mechanical spring return is the optimal fail-safe method.

The spring is completely independent of the actuator's motor and electrical system, so it can power the fail-safe stroke even if these components are damaged. The spring mechanism is a mechanical system that requires no separate maintenance and is highly reliable. While there are some size and weight considerations that come with a spring return system, these actuators may still be suitable for applications with certain space constraints.

LEGEND

Stroke: Multi-turn, Linear, Quarter-Turn

Duty Type: Control/Modulating, On/Off

Special Features: Fail-Safe, DCMlink Connectivity

XTE3000

Stroke:

Function:

Special Features:

Features:

- Intelligent and versatile actuator with a wide range of torque and speed for on/off and control
- Non-intrusive setup via local interface, Bluetooth or DCMlink
- Multi-turn torque up 57,000 Nm (42,000 lbf-ft)
- Quarter-turn torque up to 1,000,000 Nm (737,500 lbf-ft)
- Linear force up to 150 KN (33,720 lb)
- Certified explosion-proof and weatherproof

Protocols:

- Modbus, HART, FOUNDATION™ Fieldbus, PROFIBUS, LonWorks

Duty Cycles

Understanding the performance rating, or duty cycle, that your application requires is a critical component of selecting the correct electric actuation solution. There are three duty cycles relevant to electric actuators:

S2: Short Time Duty (On/off duty, Class A / B)	S4: Periodic Duty (Modulating, Class C)	S9: Non-Period Duty (Continuous Modulation, Class D)
Motor starts, runs, stops, and cools down	Motor starts, runs, rests repeatedly	Motor must be able to move continuously (no cool-down period)
Manufacturer will state amount of run time allowed (e.g., 15 mins, 30 mins)	Manufacturer will state duty cycle (percentage of time the actuator will run, e.g., 25%) and/or number of starts per hour (e.g., 600/hr.)	Load, speed and cycles may vary
Example application: Opening or closing an isolation valve	Example application: Setting a flow rate in a pipeline	Example application: Maintaining a flow rate in variable conditions

The robustness of the motor and the complexity of the technology increases as the duty cycle increases, which is why it is important to verify process requirements. If a valve is only opening and closing a few times per hour, S2 service is likely enough. S4 duty typically goes up to 1200 starts per hour, which equates to a start every three seconds. S9 duty is generally for control applications where continuous adjustment is required.

If your duty cycle is under-specified, the actuator may not perform to your process requirements. But if you over-specify the duty cycle, it may drive up cost with no return benefit.

LEGEND

Stroke: Multi-turn, Linear, Quarter-Turn

Duty Type: Control/Modulating, On/Off

Special Features: Fail-Safe, DCMlink Connectivity

M2CP

Stroke:

Function:

Special Features:

Features:
- Robust, easy to service, conventional actuator
- Multi-turn torque up to 21,693 Nm
- (16,000 lbf-ft)
- Quarter-turn torque up to 370,000 Nm (273,000 lbf-ft)
- Linear force up to 2,224 KN (500,000 lb)
- Certified explosion-proof and weatherproof

Protocols:
- Modbus, HART, FOUNDATION Fieldbus, PROFIBUS, DeviceNet™, Ethernet

Actuator Styles: Conventional vs. Non-Intrusive

Whether an actuator's design is conventional (intrusive) or non-intrusive is a key distinction in electric actuators.

Common features of non-intrusive designs:
- Can be set up without opening cover
- Separate, sealed chambers for line and control wiring
- On-device display and user interface
- Includes sensors and electronics for device intelligence

Common features of conventional designs:
- Simple design with point-to-point wiring
- Single chamber for all wiring
- Limited or no on-device display
- Generally suited for severe service applications with extreme vibration and/or temperature

One actuator style is not inherently superior to the other; both have their place in modern industrial environments. Deciding between the two styles will depend on the needs of your application, the facility in which the actuator will be used and the general preferences at your organization.

LEGEND

Stroke: Multi-turn, Linear, Quarter-Turn

Duty Type: Control/Modulating, On/Off

Special Features: Fail-Safe, DCMlink Connectivity

EHO *(Smart and Standard)*

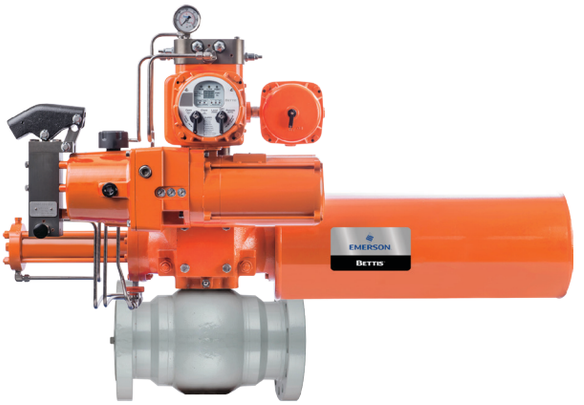
Stroke:

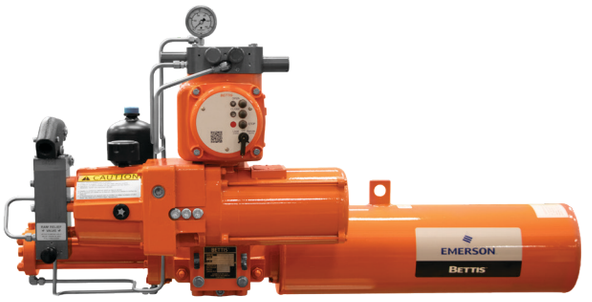
Function:

Special Features:

Features:
- Electro-hydraulic actuators that provide a mechanical fail-safe for emergency shut-down valves
- Smaller footprint than pneumatic solutions and faster operating speeds at higher torque ranges than electric solutions
- Smart and standard versions available
- Smart version: Non-intrusive setup via local interface or DCMlink
- (Spring-return units) Quarter-turn spring-end torque up to 80,000 Nm (58,000 lbf-ft)
- (Double-acting units) Quarter-turn torque up to 268,000 Nm (198,300 lbf-ft)
- Certified explosion-proof and weatherproof

Protocols (Smart version):
- Modbus, HART, FOUNDATION Fieldbus





TorqPlus

Stroke:

Function:

Special Features:

Features:
- Robust, easy to service, conventional actuator
- Compact design with mechanical fail-safe option
- Torque from 11 Nm (8 ft lb) to 2,260 Nm (1,667 ft lb)
- Certified explosion-proof and weatherproof

SCE300

Stroke:

Function:

Features:
- Smart, compact, quarter-turn actuator
- Highly configurable with variable speed and torque settings
- Quarter-turn torque from 63 Nm (46 ft lb) to 2,000 Nm (1,475 lbf-ft)
- Certified explosion-proof and weatherproof

Protocols:
- PROFIBUS, DeviceNet

LEGEND

Stroke: Multi-turn, Linear, Quarter-Turn

Duty Type: Control/Modulating, On/Off

Special Features: Fail-Safe, DCMlink Connectivity

Software and Network Controls

Emerson provides innovative solutions to simplify the monitoring and control of multiple field-installed electric valve actuators, eliminating the need for individual device interaction.

DCMlink Software

Features:

- Diagnose, configure, calibrate and monitor all electric actuators from a central location, independent of the protocol, actuator or host system
- Real-time monitoring and control of asset data, profiles, alarm and event logs
- Integrates with Emerson Plantweb™, AMS Snap-On and Bluetooth
- Downloadable from Emerson.com

Controlinc Network Master

Features:

- Control and monitor up to 250 actuators
- Graphical, full-color touch panel interface
- Hot standby redundant units to eliminate downtime
- Common functions come pre-configured
- Connect multiple masters to automate 1000+ actuators
- Supports redundant RS-485 ring networks

Protocols:

- Modbus, Ethernet

Meet reliability, productivity and sustainability goals with zero-emission electric actuators suited for nearly any application

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