



Automate ESD Valves Confidently

Bettis™ EHO Electro-Hydraulic Operator
A complete, intelligent solution to handle all your ESD valve needs



It's all about safety

You know the challenges you face when there are limits impacting your ESD (Emergency Shut Down) valve applications: Limited power. Limited space. Unrelenting, harsh environmental conditions.

Your application requires fast stroking, self-contained, resistant to extreme environmental condition, and ability to operate large valves requiring high output torques. All this demand while maintaining uncompromising reliability and safety.

To stay competitive, you need a trusted, reliable, robust solution.

“60% of all safety incidents occur when a maintenance job was performed reactively, versus proactively.”

– Handbook of Maintenance Management and Engineering



“Emergency maintenance costs 3 to 4 times as much as the same preventive maintenance task.”

– Plant Engineer Today

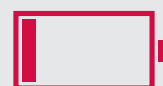


“A large plant can incur losses of \$5,000 to \$10,000 (USD) per day or more due to internal leakage.”

– ChemicalProcessing.com



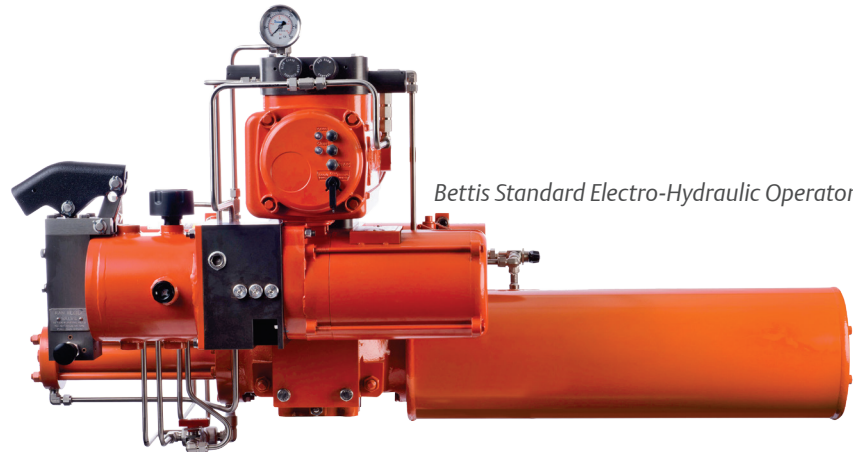
“In remote locations, your ESD system must be able to operate reliably when power is scarce.”



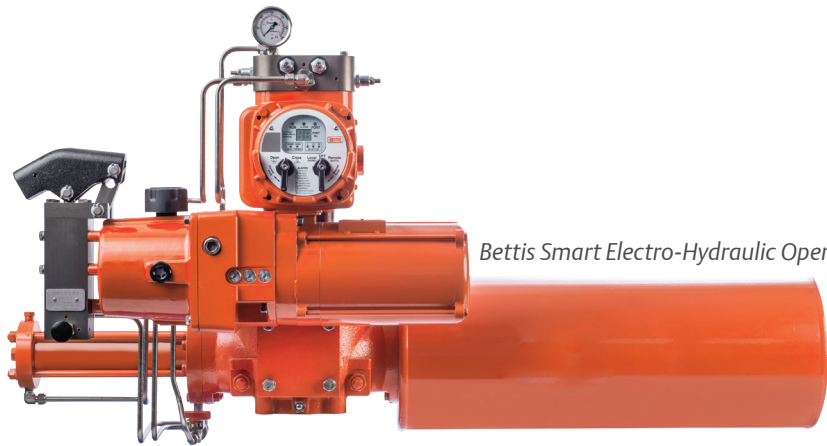


Instead of worrying about ESD failure consequences, what if you knew your ESD system will perform in an emergency allowing you to focus on maximizing system performance and safety to protect the environment, your facility and your people.

Bettis™ EHO is your reliable ESD valve actuation solution



Bettis Standard Electro-Hydraulic Operator



Bettis Smart Electro-Hydraulic Operator

Using time-proven, final control innovation and combining it with the best in critical shutdown and process shutdown reliability, the Bettis Standard EHO for On/Off applications and SMART EHO for modulating applications are an affordable and effective way to maintain and operate shutdowns in severe, inaccessible and remote locations.

Seconds matter in isolating failures that can adversely impact people, environment and communities. The EHO utilizes a quick, dependable spring-return actuator for the fail safe stroke combined with an integral hydraulic power pack and electronic control module ideal for ESD valve operation.





“Emerson’s Bettis EHO product line offers reliable ESD actuation solutions. Complex and hazardous applications with limited power sources in remote, unmanned areas need uncompromising reliability. The EHO operates responsibly and effectively to help preserve and protect assets, personnel and the environment.”
– Eric Yen, Product Manager, Emerson

Keep personnel safe

Designed to mitigate system risk, personnel injuries, and reduce negative environmental impacts, the EHO’s inboard spring design, relief valves, and safety features ensure problems are detected and reported well in advance of the problems becoming a safety issue. The Smart EHO also has more than 15 alerts and alarms that will trigger if any abnormal conditions are present.

Safety ► p06, p08, p10

Prevent costly damage

Reliable ESD solutions prevent bigger problems from developing into reputation damaging, expensive, emergency clean-up efforts. Reliable ESD solutions also help in reducing the interruption of production. Both the Standard and Smart EHO utilizes the Bettis G-Series hydraulic actuator for a quick, dependable spring-return actuator for the fail-safe stroke.

Prevention ► p08, p10

Low power usage

Remote and offshore ESD systems are typically designed for low power sourcing requiring maximum uptime. The EHO is built for low power design requirements, spring fail safe, low power motors, and optimally designed electronic circuitry.

Low Power ► p06

Modulation designed for efficiency

Modulation capability is key to keeping a system running at peak capacity. In large systems, even small adjustments to a valve’s position can help maximize efficiency and reduce costs, which can lead to an increase in profitability. The Smart EHO is designed for your valve modulation needs requiring less than 1% accuracy.

Modulation ► p08



Avoid downtime and revenue loss with reliable ESD safety you can trust

Reliability is paramount to Emerson's emergency shutdown solutions. The Standard and Smart EHO is designed to protect people, equipment, and the environment. It stops process flow as soon as a command signal is received or on loss of power. With over fifteen built-in alerts and alarms, the EHO continually monitors any abnormalities in your system and will alert you if one arises. It's all about minimizing downtime and preventing loss of assets and revenue.

As part of Emerson's commitment to safety, the Bettis EHO product line should be an integral part to your system's safety initiatives.

The Bettis Electro-Hydraulic Operator is available in the Standard or Smart version.

- **Safety:** Certifications to worldwide hazardous zone safety standards
- **Ease of Use:** Field-proven hydraulic hand pump local control and display panel with clear indication of valve position
- **Easy Installation:** Self-contained and designed for compactness and is readily adaptable to new or existing valves
- **Convenience:** Fewer worries in hazardous environments, versatility regarding power options, and reliability directed for hostile environments with strict ESD requirements

What's your challenge?



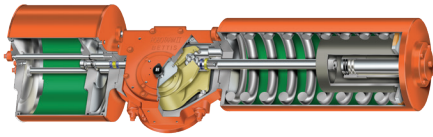
"Safety and environmental issues impact how we do business. We must follow strict federal and state regulations so we need to custom fit our ESD solutions."



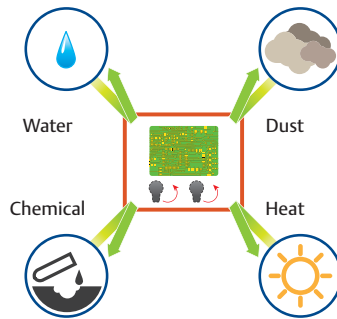
What's your opportunity?

"Emerson's Bettis™ EHO is designed to protect people, assets, and the environment by stopping the process flow as soon as a command signal is received."

Operate efficiently while protecting employees and the environment



G-Series modular, reliable design enables safe field maintenance which reduces service time.



Non-intrusive design allows device configuration to be modified without exposing the electronics to the adverse elements and conditions.



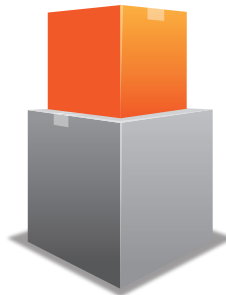
No internal or external hydraulic leakage ensures the valve is held in its seated position without drifting.

Optimize space

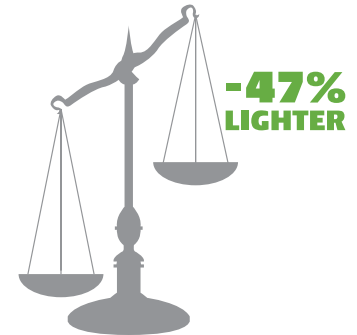


Compact hydraulic power unit (HPU); integrated into the actuator eliminating the need for a remotely located hydraulic power source.

25% SMALLER



Built for limited space applications with a 25% smaller envelope compared to most competitive offerings.



Lightweight design weighing 47% less than other actuators making it ideal in offshore applications and saves money.

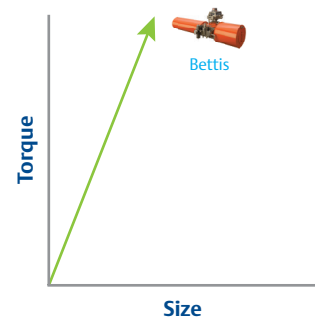
Energy source flexibility



Self-contained operating power supply; allows for installation in remote locations where no external pneumatic or hydraulic power sources are available. Solar panels are available for areas without electrical power.



Low power motors; specifically designed for remote and power scarce environments.

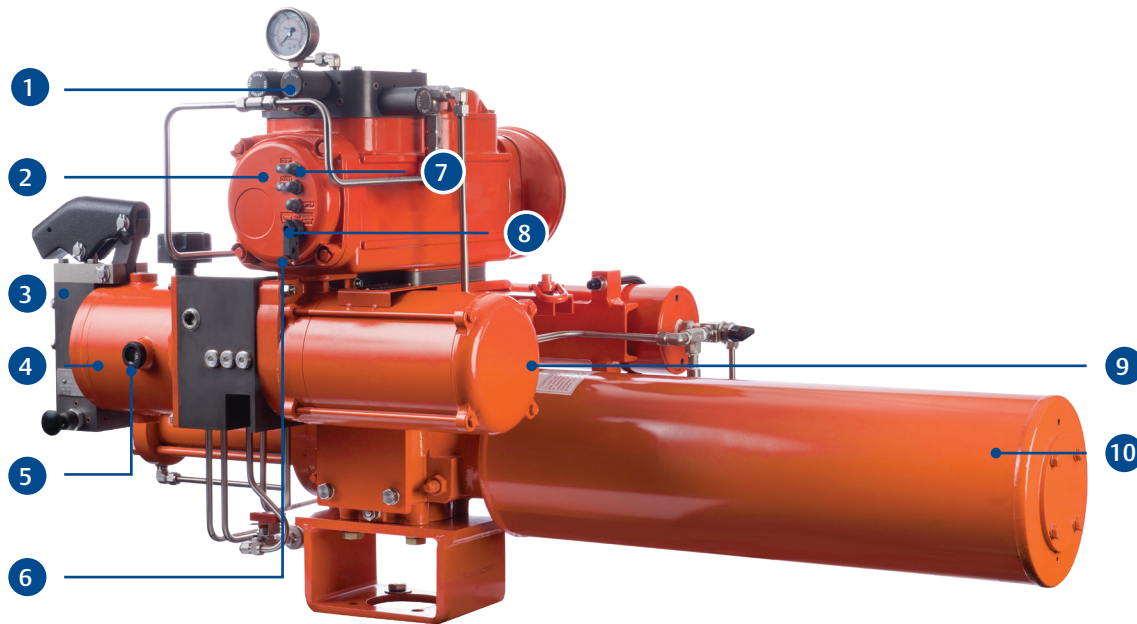


High torque efficiency hydraulic actuators; based on proven technology of the Bettis G-Series hydraulic actuators, the Bettis EHO provides full direct power to the valve stem.



For interactive experience, visit www.emerson.com/BettisEHO

Bettis™ Standard EHO



No.	Description
1	Hydraulic Manifold
2	Local Open/Close Light Display
3	Hand Pump
4	Reservoir
5	Sight Level Gauge

No.	Description
6	Lockable (Local/Off/Remote) Selector Switch
7	Local Open/Close/Stop Push Buttons
8	Electrical Control Enclosure
9	Electric Motor
10	G-Series Hydraulic Spring-Return Actuator

Product Specifications:

Quarter Turn Torque Output:

Spring Return:

- 1,264 to 707,696 in-lbs

Double Acting:

- Up to 2,379,683 in-lbs

Maximum Operating Pressure:

- 3000 Psi (207 bar)

Operating Temperature:

- -20°F to +140°F (-29°C to +60°C)
- -40°F to +140°F (-40°C to +60°C) (optional)

Input Power:

- Multiple AC and 24V DC available

Remote Operation:

Input:

- Discrete: open, close, stop, and ESD

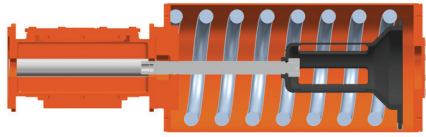
Output:

- Open, close position feedback
- 4 – 20mA hydraulic pressure (optional)

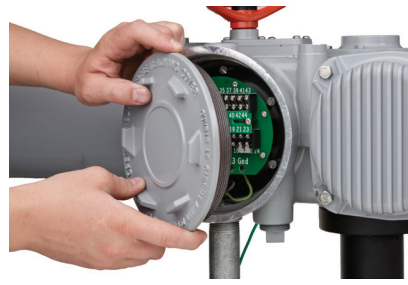
Limit Switches:

- 2 SPDT – 4A @ 120VAC, 3A @ 24VDC
- 4 SPDT – 4A @ 120VAC, 3A @ 24VDC (optional)

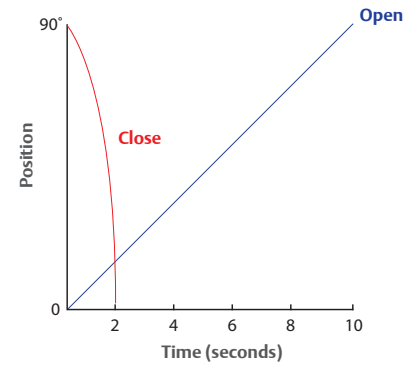
Compatible and reliable using spring power, utility power or solar power



Reliability is maximized by utilizing a spring-return actuator to stroke the valve after power failure or during an emergency event.



With the dual-sealed **Separate Terminal Chamber (STC)**, installation wiring can be terminated and fuses can be replaced without exposing the internal control components to hostile environmental conditions.



Fast-closing or precise speed control is obtained through field-adjustable flow control valves to meet application requirements.

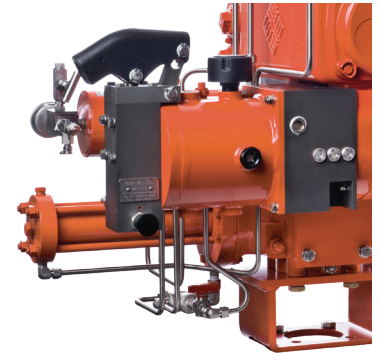
Designed for demanding modulation requirements



Solenoids, speed controls, pressure transducers and pressure switches are integrated in a compact manifold block eliminating external tubing and connections.



During an emergency power loss, the hydraulic hand pump can be used to stroke the actuator directly or recharge an accumulator.



Corrosion resistant materials ensure longevity. The control enclosure, hydraulic manifold and hand pump are constructed from marine grade aluminum with stainless steel trim.

Environmental Protection:

- Control enclosure: IP68
- Hydraulic actuator: IP67M
- Motor: IP68
- Reservoir: IP54 (IP66 optional)

Local Operation and Display:

- Local Open/Close/Stop push buttons
- Lockable (Local/Off/Remote) selector switch
- Local Open/Close light display
- Local physical position indicator
- Lockable manual emergency fail-safe control valve

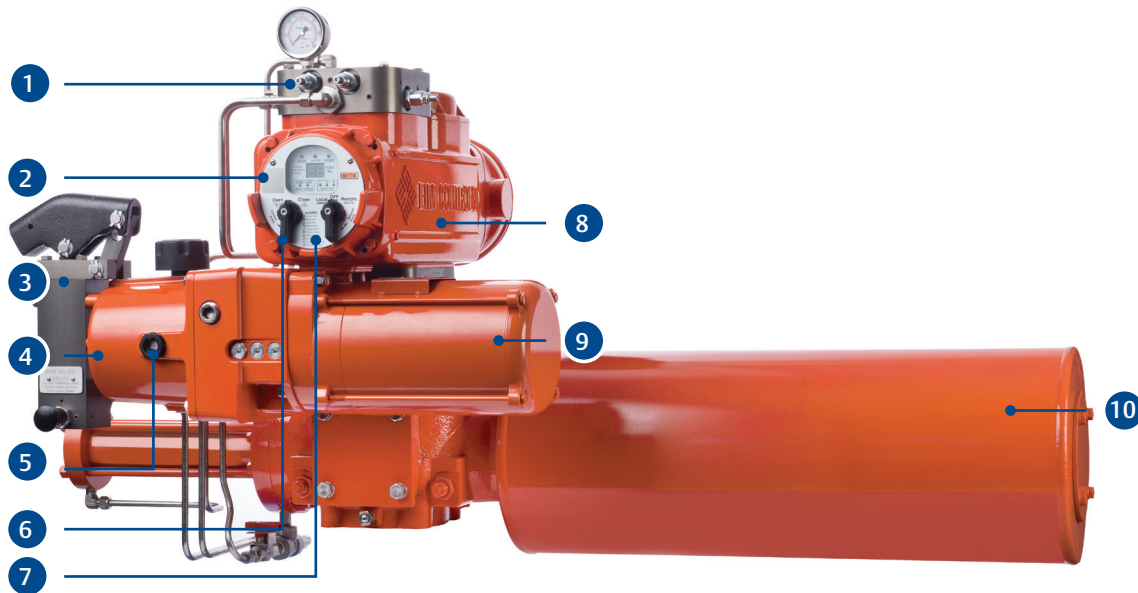
Hazardous Area Classification & SIL Certification

- CSA – Class I, Division I, Groups B (optional), C, and D
- FM – Class I, Division I, Groups B (optional), C, and D
- ATEX – EExd IIB T4
- IECEx – Ex d IIB T4
- SIL-2 Certification

Optional Features

- Accumulators
- Remote Display Module (RDM)
- Circuit breakers (close-coupled or remote mounted)
- Solar panels
- 4-20mA pressure transmitter
- Auxiliary internal pressure switches
- Low power ESD solenoids
- Redundant emergency shutdown

Bettis™ Smart EHO



No.	Description
1	Hydraulic Manifold
2	Digital Display and LED Alarm Indicators
3	Hand Pump
4	Reservoir
5	Sight Level Gauge

No.	Description
6	Local Open/Close Selector Knob
7	Lockable (Local/Off/Remote) Selector Switch
8	Electrical Control Enclosure
9	Electric Motor
10	G-Series Hydraulic Spring Return Actuator

Product Specifications:

Quarter Turn Torque Output:

Spring Return:

- 1,264 to 707,696 lbf-in.

Operating Temperature:

- -20°F to +140°F (-29°C to +60°C)
- -40°F to +140°F (-40°C to +60°C) (optional)

Input Power:

- Multiple AC available

Remote Operation:

Input:

- Discrete: open, close, stop, PST, and ESD
- Analog: 4-20mA positioning (1% accuracy)

Output:

- Discrete: 4 configurable, 1 ESD monitor
- Analog: 4-20mA hydraulic pressure feedback and position feedback

Communication Protocols:

- ModBus, HART™ and FOUNDATION™ Fieldbus
- DCMLink™ remote diagnostics, configuration and monitoring compatibility

Certifications:

- CSA - Class I, Division I, Groups B (optional), C, and D
- FM – Class I, Division I, Groups B (optional), C, and D
- ATEX – EExd IIB T4
- IECEx – Ex d IIB T4
- SIL-3 Certification

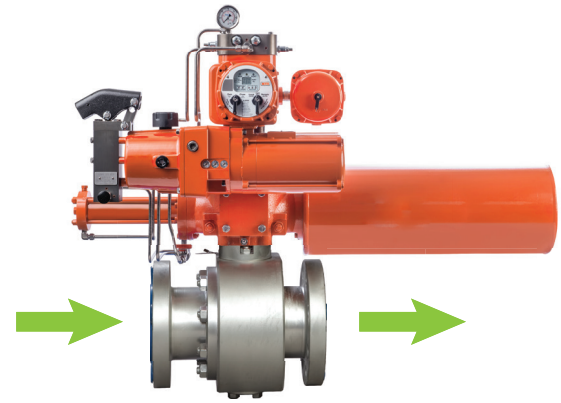
Limit Switches:

- 2 SPDT – 4A @ 120VAC, 3A @ 24VDC (optional)

Provides intelligent ESD system data

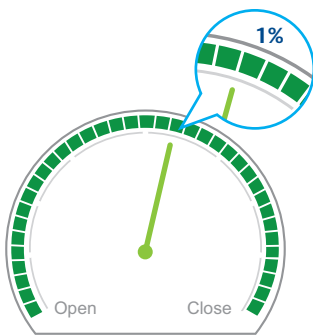


Over fifteen alerts and alarms to keep you informed on failures and abnormal conditions.

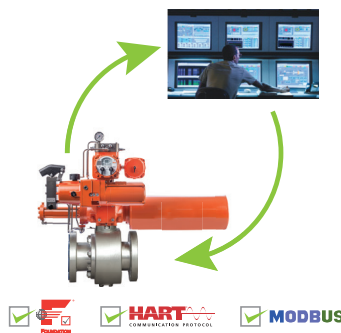


Partial stroke ensures rarely operated ESD valves function properly during an emergency situation.

Designed for demanding modulation requirements and remote locations

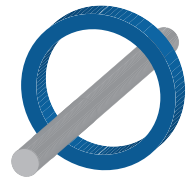


≤1% guaranteed accuracy when the valve needs to be precisely positioned. 4-20mA analog input and output to provide both precise control and instantaneous feedback.



Configurable to integrate into your existing communication system.

Hall-Effect Position Sensing Technology



Precise Hall-Effect position encoder; provides consistent and accurate position feedback with no loss of calibration during power failures.

Environmental Protection:

- Control enclosure: IP68
- Hydraulic actuator: IP67M
- Motor: IP68
- Reservoir: IP54 (IP66 optional)

Local Operation:

- Integrates with DCMLink™ remote monitoring diagnostics
- Lockable (Local/Off/Remote) selector switch
- Hydraulic hand pump manual override
- Lockable manual emergency fail-safe control valve

Diagnostics/Safety

- 15+ different alarms and alerts
- Self-calibration
- Partial stroke test
- Log jam
- Integral overpressure protection
- 4-20mA pressure transmitter
- Integrates with DCMLink™ remote diagnostics, configuration and monitoring software

Local Display

- 2 digit LED display
- LED alarm and alerts display
- Mechanical dial position indicator
- Sight level gauge
- Hydraulic pressure gauge

Optional Features

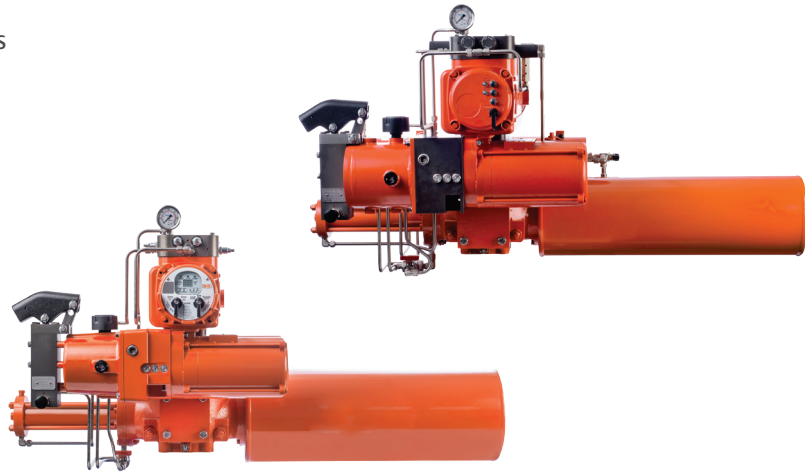
- Accumulators
- Remote Display Module (RDM)
- Circuit breakers (close-coupled or remote mounted)
- Solar panels
- Auxiliary internal pressure switches
- Low power ESD solenoids
- Redundant emergency shutdown

This product is only intended for use in large-scale fixed installations excluded from the scope of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2).

Optimize reliability, energy efficiency, lower operational cost and safety

The Bettis™ EHO Electro-Hydraulic Operator is designed for the toughest environments and critical emergency shutdown applications. With the EHO, you have a field-proven ESD system with one single source of accountability.

BETTIS™



NORTH & SOUTH AMERICA

19200 Northwest Freeway
Houston TX 77065
USA
T +1 281 477 4100

Av. Hollingsworth
325 Iporanga Sorocaba
SP 18087-105
Brazil
T +55 15 3413 8888

ASIA PACIFIC

No. 9 Gul Road
#01-02 Singapore 629361
T +65 6777 8211

No. 1 Lai Yuan Road
Wuqing Development Area
Tianjin 301700
P. R. China
T +86 22 8212 3300

MIDDLE EAST & AFRICA

P. O. Box 17033
Jebel Ali Free Zone
Dubai
T +971 4 811 8100

P. O. Box 10305
Jubail 31961
Saudi Arabia
T +966 3 340 8650

EUROPE

Holland Fazor 6
Székesfehérvár 8000
Hungary
T +36 22 53 09 50

Strada Biffi 165
29017 Fiorenzuola d'Arda (PC)
Italy
T +39 0523 944 411

 www.emerson.com
 [emrns.co/facebook](https://www.facebook.com/emrns.co)
 [emrns.co/linkedin](https://www.linkedin.com/company/emrns.co)
 [emrns.co/twitter](https://www.twitter.com/emrns.co)

The Emerson logo is a trademark and service mark of Emerson Electric Co. © 2018 Emerson Electric Co. Bettis is a registered trademark of one of the Emerson family of companies. All other marks are the property of their respective owners.
© 2017 Emerson. All rights reserved.
DOC.6P.EHO.EN REV B 06-18


EMERSON™

CONSIDER IT SOLVED.™