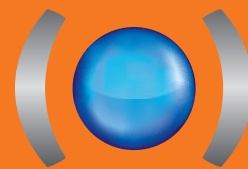


Simple  
Sturdy  
Economical



by



BERNARD<sup>®</sup>  
CONTROLS

//////////////////// Invest in Confidence //////////////////////////////////

ET

Weatherproof  
Multi-turn Actuators

ET RANGE



# Industrial actuation made easy

**BERNARD CONTROLS**, inventor of the industrial compact quarter turn actuator, brings to its customers valve actuation solutions supported by decades of experience.

Through discussions with users over the years, BERNARD CONTROLS has identified a demand for electric actuators that are both **simple and sturdy**. This demand is fulfilled with BERNARD CONTROLS' FIRST BC labelled products.

These actuators are well designed to work under **moderate environmental & operational conditions**.

These ranges have been developed without compromising on quality, applying the unique expertise and feedback that are the cornerstones of BERNARD CONTROLS' reputation.

Thus, the FIRST BC label is the guarantee of actuator solutions with a total cost of ownership (TCO) among the lowest in their category, thanks to **easy commissioning, proven reliability** and a **maintenance-free** design.

The quarter-turn EZ range was the first product range to meet all criteria set by the FIRST BC label. With the ET range, BC now offers a multi-turn actuator solution to its customers within the FIRST BC label criteria.



**FIRST BC**

## 2015 - What's new? ET RANGE

> New weatherproof  
multi-turn actuators

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# ET range overview

**SIMPLE, STURDY, ECONOMICAL**

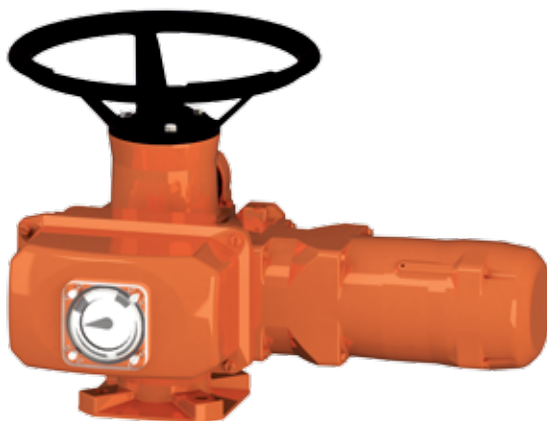
## Weatherproof Multi-turn Actuators

- Adaptation to all multi-turn valves:  
torque range from 30 to 200 Nm
- IP 67
- Type of operation:
  - > Class A: On/Off
  - > Class B: Positioning
- Type of controls:
  - > Switches
    - **ET SWITCH** for On-Off applications
  - > Integrated control
    - **ET LOGIC** for On-Off or Positioning applications



*Compact industrial design & Maintenance-free*

### > ET SWITCH



### > ET LOGIC





# Main features

## FIRST BC features

FIRST BC labelled actuators are technically and economically optimized for their applications:

- > **Moderate environmental constraints**  
(IP67 and ambient temperatures)
- > **Moderate operational constraints**  
(limited operating service)

in order to address perfectly customers' demand for simple and sturdy actuators.

ET actuators are:

- > **Easy to install** thanks to compactness, non intrusive settings for ET LOGIC models,
- > **Easy to use** with local display and signaling by LED on ET LOGIC models (integrated control),
- > **Easy to maintain** as ET are maintenance-free.



### | ET RANGE

- | → Easy commissioning
- | → Proven reliability
- | → Maintenance-free

## > Proven mechanical design

Relying on its expertise on multi-turn actuators built-up on the ST, STX and ASM ranges, BERNARD CONTROLS has designed a compact and heavy duty multi-turn actuator with key mechanical features:

- > Self-locking gearing available at all speeds and lubrication for product life-time for trouble-free operation
- > Adjustable torque limiter from 40 to 100% of torque value. Easy setting with screwdriver.
- > Reliable travel limit system: vibration-proof camblock system for ET SWITCH and hall-effect sensor for ET LOGIC
- > Wide range of number of turns: several ranges available from 2 to 1215 turns (please refer to ET Tech Data for details)

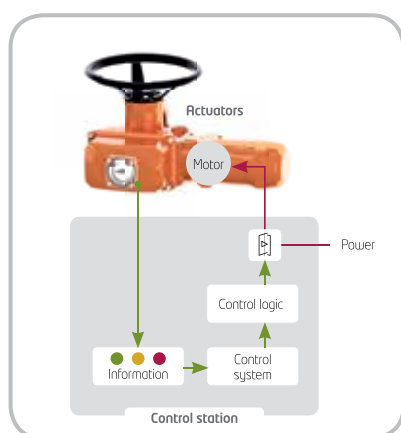


## ➤ ET SWITCH, for On-Off applications

In this configuration, the control unit is designed by the customer and located in a remote cabinet.

All information sent by the actuator sensors (travel limit, torque limit, thermal overload, ...) have to be processed by user's control logic. Power reversing starters are also housed in the remote cabinet.

As far as travel limitation adjustment is concerned, **BERNARD CONTROLS original patented camblock system** allows to quickly set the cams' positions with a standard flat head screwdriver. Each single cam can be set independently from the others. The cams are automatically locked in their respective positions, once adjusted, and unaffected by vibrations.



SWITCH control



BC patented camblock

## ➤ ET LOGIC, for On-Off or Positioning applications

ET actuators are available with integrated control for **extended control features and improved user-friendliness**:

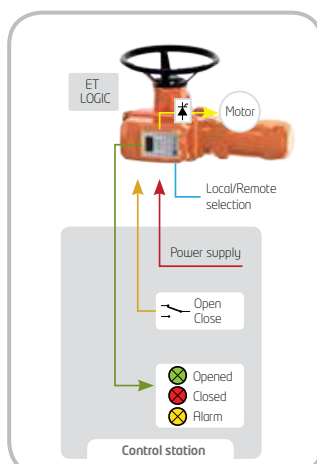
- **Easy commissioning:** non-intrusive simplified settings thanks to keys and menus on **local display**,
- **Improved compactness** of integrated electronics.

- **Local commands** with 4 keys and signaling on a 7-segment display, with position displayed in percentage of opening,

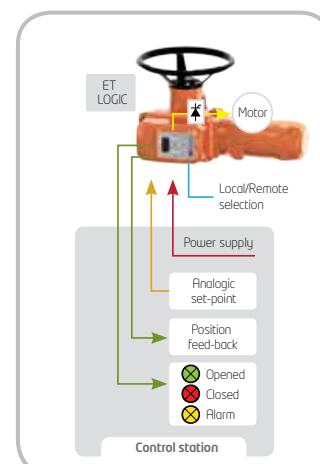
BERNARD CONTROLS proposes ET LOGIC actuators for **On-Off or Positioning applications** which allow **precise positioning** (better than 2%) with **position feedback**.



ET LOGIC control board



ET LOGIC integrated control  
On-Off version



ET LOGIC integrated control  
Positioning version





# Product specifications

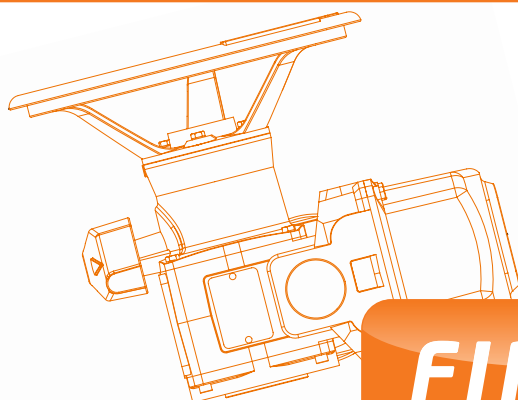
## ➤ General specifications

General	<ul style="list-style-type: none"> <li>Setting range: 40% to 100% of actuator maximum torque by steps of 10%</li> <li>ET actuators include TENV* motor, gear case, emergency handwheel, travel limit control and torque control</li> <li>Wide range of number of turns: 2 to 1215 turns</li> </ul>
Gear design	Gears are lubricated for product lifetime, and are mechanically self-locking in option.
Design life	10,000 cycles Tested according to EN15714-2 Class A: On-Off & Class B: Positioning
Enclosures	<ul style="list-style-type: none"> <li>Actuator housing in cast aluminum, polyuréthane paint Ral2010 complying with ISO 12944 (C2)</li> <li>IP67</li> </ul>
Motor technology	Totally-enclosed, 3-phase or 1-phase asynchronous motor, class F insulation with integrated thermal overload protection
Motor duty	S4-25% motor duty rating to IEC 60034-1. 360 starts/hour in peak
Temperature range	-20 ... +60°C / -4 ... +140°F
Electrical connection	Screw-type terminals for controls and power supply. Internal earth grounding post
Compliance with Directives & Standards	Actuators comply with: EC directives 2004/108/EC, 2006/95/EC and standards EN 61000-6-4, EN 61000-6-2, EN 60034-1 and EN 60529
Other certifications available	Customs Union (EAC) certified models for Belarus, Kazakhstan and Russia

\* Totally Enclosed & Not Ventilated

## ➤ ET SWITCH specifications

Operation	On/Off
Commissioning	Easy setting of travel limit and torque limit systems with a simple screwdriver
Position indication	Mechanical position indicator
Cable entries	2 x M20 sealed by caps
Anti-condensation	Heater
Travel limit system	Camblock with 4 SPDT switches ; 250 VAC-16 A / 48 VDC-2,5 Amax. (resistive load)
Torque limiting system	<ul style="list-style-type: none"> <li>Torque limit switch gives a maintained signal with self-locking option (and gives a pulse signal as standard).</li> <li>2 contacts as standard; SPDT; 250VAC-16A / 48 VDC-2,5A max. (resistive load)</li> </ul>



**FIRST BC**

## ➤ ET LOGIC specifications

Operation	On/Off or Positioning with resolution better than 2%
Commissioning	<ul style="list-style-type: none"> <li>• Non-intrusive settings</li> <li>• Setting simplified by use of keys and menus on the display</li> </ul>
Cable entries	3 x M20 sealed by caps
Anti-condensation	Included in the power board
Motor Supply	Solid state relay (all voltages)
Protections	<ul style="list-style-type: none"> <li>• Fuse protection: <ul style="list-style-type: none"> <li>- At transformer primary: 1 fuse (not exchangeable)</li> <li>- At transformer secondary: 1 exchangeable fuse for each output.</li> </ul> </li> <li>• Automatic phase correction (for 3-phase supply)</li> <li>• Reversal rotation protection</li> <li>• Alarm signaling (local and remote)</li> <li>• Torque limiter</li> <li>• Local command inhibition by local command</li> </ul>
Remote command (ON/OFF)	<ul style="list-style-type: none"> <li>• Isolated by optocouplers</li> <li>• by voltage: 10 to 250 V DC/AC</li> <li>• by dry contacts (use ET LOGIC internal DC supply)</li> <li>• Minimum pulse duration: 100ms</li> <li>• Time of rotational direction change: 300ms</li> </ul>
Analog input command (Positioning)	<ul style="list-style-type: none"> <li>• Input signal and position signal are fully isolated</li> <li>• Standard input signal: 4-20 mA</li> <li>• Input signal: 0-20 mA (on request)</li> <li>• Input signal: 0-10 V (on request)</li> </ul>
Analog inputs	<ul style="list-style-type: none"> <li>• In current: impedance of 160 <math>\Omega</math></li> <li>• In voltage: impedance of 4000 <math>\Omega</math></li> </ul>
Local command	4 keys : Local-remote selector/ Open / Close / Stop
Position signaling relays	<ul style="list-style-type: none"> <li>• 1 latching relay* : 'valve opened'</li> <li>• 1 latching relay* : 'valve closed'</li> <li>• Switch configuration : Normally Opened</li> <li>• Minimum current 10mA at 5V</li> <li>• Max current: 5A at 250V AC or 5A at 30V DC max. (resistive load)</li> </ul> <p>*Latching relay allows keeping the position in case of power cut.</p>
Alarm relay	<p>SPDT switch</p> <ul style="list-style-type: none"> <li>• Minimum current 10mA at 5V</li> <li>• Max current: 5A at 250V AC or 5A at 30V DC max. (resistive load)</li> </ul> <p>Fault reported:</p> <ul style="list-style-type: none"> <li>• Power supply or fuse alarm</li> <li>• Loss a phase (with 3-phase supply)</li> <li>• Motor overheating</li> <li>• Motor jamming</li> <li>• Local command in 'local' mode</li> <li>• Loss of 4-20mA input signal (if configured with positioner and 4-20mA)</li> </ul>
Local signaling	<ul style="list-style-type: none"> <li>• Signaling by LED: <ul style="list-style-type: none"> <li>- Setting (yellow LED): ON in set-up mode</li> <li>- Alarm (red LED): ON if a fault appear</li> <li>- Local (green LED): ON in 'Local' mode</li> <li>- Opened (configurable red or green LED): ON when 'Opened' position reached. Flashing during operation.</li> <li>- Closed (configurable green or red LED): ON when 'Closed' position reached. Flashing during operation.</li> </ul> </li> <li>• Menu &amp; position: on 7-segment display</li> </ul>
Analog position signal	<ul style="list-style-type: none"> <li>• External DC supply (12 to 30VDC)</li> <li>• Output signal: 4-20mA if input signal is 4-20mA</li> <li>• Output signal: 0-20 mA if input signal is 0-20 mA</li> <li>• Output signal: 0-20 mA (0-10V using a 500<math>\Omega</math> external resistor) if input signal is 0-10V</li> </ul>
Max. output impedance	Maximum acceptable impedance of 750 Ohms with 24VDC (without 500 $\Omega$ resistor)

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