

Weatherproof
Multi-turn Actuators
AT RANGE

# >AT range The essentials for multi-turn electric actuation







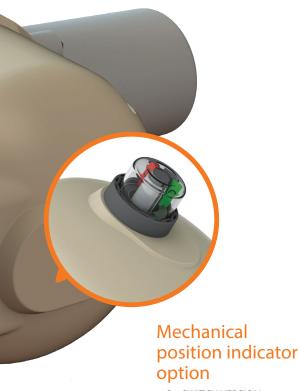


AT7
SWITCH & LOGIC versions

# Two possible positions for the cover

## Heavy duty design

Full aluminium enclosure protected by durable powder coating Grey & Champagne!



> On SWITCH VERSION: Easy & quick customization of color indication & orientation from the outside

# **Product benefits**

## • Innovative, reliable & unique design

- > Product architecture & torque range adapted to customers' requirements: 7 models from 7 to 500 Nm
- > Selection of the essential features to ensure a competitive but performing solution: actuator duty from On-Off to Modulating, heavy duty enclosure protection, IP68, integrated control, wide range of output speeds...
- > New reliable camblock system unaffected by vibrations. Fully new & unique design with internal modularity for compact solution, e.g. modular position sensor enables up to 1700 turns with the same product

## · Performance for multi-turn actuation

- > From 7Nm to 500Nm (direct) and more with gearboxes
- > Wide range of speeds to address all types of applications
- > Wide stem acceptance
- > Self-locking at all speeds without any additional component\*
- > S4 Motor Service Duty on all models
- > Suitable for modulating applications (BC Class III complying with EN15714-2 Class C)

## Easy to install

> Easy commissioning: set up of travel limitation system (new camblock)

- with a standard screwdriver (similar to FIRST BC AQ range), only two standard tools required to install and set up the actuator on valve, wiring reduced to the minimum for fast assembly
- > Large LCD display on LOGIC version for user-friendly commissioning and local command. Easily orientable (4-way direction) in few clicks
- > Product suitable for rising stem thanks to adjustable torque sensor from 40 to 100%

## • Easy to maintain

- > Declutch-free manual override for quick intervention on site
- > Mechanical position indicator as an option on SWITCH versions: check the position of your valve at a glance
- > BC APP: Bernard Controls new mobile application for setting, operating, troubleshooting and easy access to documentation

## • The main functions of integrated control with the new LOGIC control (v2)

- > Turn-key, time & cost-saving solution
- > User-friendly & intuitive
- > Non-intrusive setting for enhanced safety and reliability
- > Compatible with common fieldbus protocols: Modbus RTU, Profibus DPV1.
- > Bluetooth communication (as standard) to communicate with Bernard Controls' BC App

# Large LCD display

Easily orientable in few clicks on the BC APP or through local commands

# >AT RANGE

# Weatherproof Multi-turn Actuators



# Range Overview

A new range of multi-turn electric actuators made up of 7 models with or without integrated controls



## AT SWITCH

AT3-AT6L-AT7-AT6-AT14-AT25-AT50

- □ 1x110 VAC 50Hz
- 1x115/120 VAC 60Hz
- 1x220/230 VAC 50/60Hz
- 3x200/220 VAC 50/60Hz
- 3x230 VAC 50/60Hz
- 3x240 VAC 50Hz
- 3x360 VAC 60Hz
- 3x380/400 VAC 50/60Hz
- 3x415/550 VAC 50Hz
- □ 3x440 VAC 50/60Hz
- □ 3x460/480 VAC 60Hz
- 3x575/660 VAC 60Hz
- 3x600 VAC 50/60Hz
- Other voltages on request

## On-Off Class A as standard

## > OPTIONS

- + Low temp. -40°
- + Class B
- + Class III
- + Position potentiometer (1000 Ω)
- + Analog Transmitter (4-20mA)
- + Name Plate 316L
- Mechanical position indicator
- + Handwheel: dual speed and motorization (AT25 & AT50)



## AT LOGIC

AT3-AT6L-AT7-AT6-AT14-AT25-AT50

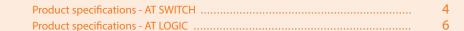
- □ 1x110 VAC 50Hz
- □ 1x115/120 VAC 60Hz
- □ 1x220/230 VAC 50/60Hz
- □ 3x200/220 VAC 50/60Hz
- □ 3x230 VAC 50/60Hz
- ☐ 3x240 VAC 50/60H
- □ 3x360 VAC 60Hz
- □ 3x380/400 VAC 50/60Hz
- □ 3x415/550 VAC 50Hz
- □ 3x440 VAC 50/60Hz
- □ 3x460/480 VAC 60Hz
- □ 3x575/660 VAC 60Hz
- □ 3x600 VAC 50/60Hz
- Other voltages on request

## On-Off Class A as standard

## > OPTIONS

- + Low temp. -40°
- + Class B
- + Class III
- + Analog Positioner
- + Position & Torque Transmitter
- + 4 additional signaling relays
- + Profibus DPV1
- + Modbus RTU
- + Name Plate 316L
- + Padlockable HMI protection
- + Handwheel: dual speed and motorization (AT25 & AT50)









AT SWITCH			
PRODUCT SPECIFICATIONS			
	Description	All AT actuators include motor with thermal protection, gear case, emergency handwheel, travel limit switches, torque switches and anticondensation heater.  Wide range of number of turns: 4 to 1695 turns	
GENERAL	Torque range	• AT3 = 12 to 30 Nm • AT6L = 24 to 60 Nm • AT7 = 7 to 70 Nm • AT6 = 24 to 60 Nm • AT14 = 56 to 140 Nm • AT25 = 100 to 250 Nm • AT50 = 200 to 500 Nm	
	Duty Classification	Adapted to process requirements:     On-Off: Class A actuators complying with EN15714-2     Inching/Positioning: Class B actuators complying with EN15714-2     Modulating: Class III actuators with higher duty performance and specification of additional performance criteria compared to EN15714-2 Class C basic design requirements	
	Casing	Aluminium casting     Cover fastened by captive and stainless screws	
ENGLOCUES	External Protection	Type: Polyester based powder coating as standard Protection: standard tested to C4 environments acc. to ISO 12944, up to C5 as an option. Durability (M): 10 years Color: Grey & Champagne Other colors and finishes, please consult us	
ENCLOSURE PROTECTION	Weatherproofness	IP68 NEMA 4X as standard Relative humidity: 0 to 95%.	
	Ambient temperature range	• -20+70°C / -4 +158°F • -40°C (-40°F) as an option Other temperatures, please consult us	
	Vibration resistance	1g (9.8 m/s²) at 10-200 Hz. (Contact our sales teams for higher vibration levels)	
	Motor technology	TENV design (Totally-enclosed, not ventilated) 3-phase or single-phase asynchronous motor, Class F insulation and Class B temperature rise; integrated thermal overload protection. TENV DC motors with 2-wire connection available on request for some references	
MOTOR	Motor duty rating	<ul> <li>On/Off operation (complying with EN15714-2 Class A): S4-30% and S2-15min (as a standard)</li> <li>Inching/Positioning (complying with EN15714-2 Class B): S4-30% motor duty rating. Up to 360 starts per hour at peak of operation. S4-50% as option.</li> <li>BC Modulating Class III (complying with EN15714- 2 Class C): S4-50% motor duty rating. Up to 1 200 starts per hour at peak of operation. (Voltage ±10%, frequency ±2%)</li> </ul>	
	Gear design	Reduction by planetary gear and largely sized worm & wheel     The gears are mechanically self-locking	
MECHANICAL SPECIFICATIONS	Manual emergency operation	Handwheel does not rotate during motor operation.  • Automatic switch between manual and electrical. Priority to electric drive.  • Manual control gear ratios: Standard ratio = between 11 and 55 depending on the model AT3 = ratio 30:1 AT3 = ratio 55:1 (speed 7 & 10 rpm) AT6L = ratio 30:1 AT7 = ratio 1:1 AT7 = ratio 1:1 AT6 = ratio 27:1 AT14 = ratio 27:1 AT25 = ratio 29:1 (speed ≤ 96rpm) AT25 = ratio 11:1 (speed > 96rpm) AT50 = ratio 11:1 (speed > 96rpm) AT50 = ratio 11:1 (speed > 96rpm) AT25 & AT50 = ratio 1:1 and 3:1 with dual speed option  • Maximum rim force to apply conform to EN 12570	



AT SWITCH			
PRODUCT SPECIFICATIONS			
MECHANICAL	Output flange	Actuator flanges comply with ISO 5210 (see corresponding output flange spreadsheet p.6)	
SPECIFICATIONS	Lubrication	The actuators are oil lubricated for the product lifetime and do not require any special maintenance.	
ELECTRICAL	Power supply	Actuators can operate on a wide variety of power supplies (see detail on technical handbook): • single-phase or 3-phase, • up to 480 V • 50 or 60 Hz	
SPECIFICATIONS	Terminal compartment	<ul> <li>All control elements are directly connected to push type terminals</li> <li>Internal and external earth ground rod.</li> <li>up to 2,5mm² for Control terminal</li> <li>up to 2,5mm² for Power terminal</li> </ul>	
	Conduit entries	3 x M20 (or 3x3/4" NPT)	
	Travel limit systems	<ul> <li>Limit switches actuated by adjutable camblock</li> <li>As standard: 4 SPDT switches (2 for Open, 2 for Close); 250VAC-5A/48VDC-5A (resistive load)</li> </ul>	
POSITION & TORQUE SENSORS	Torque limiting system	Direct mechanical torque measurement Self maintened torque information The torque limiting system is calibrated at the factory. Switches as standard (1 in opening and 1 in closing); SPDT; 250VAC-5A/48VCC-5A under resistive load Ajustable torque from 40 to 100% of max torque	
	Position Transmitter (option)	POSITION TRANSMITTER OPTION: • 2 wires for 4-20mA Position Transmitter • POT 1000Ω	
CONTROLS	Visual position indication (option)	Mechanical position indicator	
	Actuator on valve settings	Easy and quick setting of position and torque camblocks with a standard screwdriver	
SETTINGS	Application for mobile device	BERNARD CONTROLS new mobile application is available as standard. BERNARD CONTROLS mobile interface allows the user to:  assistance to commissioning on valve  access to the documentation relative to the selected actuator (enter the Serial number) or scan the QR code on the nameplate of the actuator  assistance to curative maintenance with a simple and efficient troubleshooting  access to BERNARD CONTROLS contact information according to the area concerned	
CONFORMITY TO EC DIRECTIVES	Conformity to EC directives	AT actuators comply with:  directive 2004/108/EC Electromagnetic compatibility directive 2006/95/EC Low voltage the following harmonised standards: EN 61000- 6-4: Generic emissions standard for industrial environments; EN 61000-6-2: Generic immunity standard for industrial environments; EN 60034-1: Rotating electrical machines; EN 60529: Degrees of protection provided by enclosures (IP ratings code)	
OPTIONS	On SWITCH version	Low temp40° Class B Class III Position potentiometer (1000 Ω) Analog Transmitter (4-20mA) Stainless steel name plate C5 Protection Mechanical position indicator Handwheel: dual speed and motorization	
		(AT25 & AT50) 2/2	





	A	AT LOGIC	
PRODUCT SPECIFICATIONS			
GENERAL	Description	All AT actuators include motor with thermal protection, gear case, emergency handwheel, position sensor, torque sensor and anti-condensation heater.  AT LOGIC models also include:     integrated controls     built-in motor reversing starters     local commands with large LCD display Wide range of number of turns: 4 to 2450 turns.	
	Torque range	• AT3 = 12 to 30 Nm • AT6L = 24 to 60 Nm • AT7 = 7 to 70 Nm • AT6 = 24 to 60 Nm • AT14 = 56 to 140 Nm • AT25 = 100 to 250 Nm • AT50 = 200 to 500 Nm	
	Duty Classification	Adapted to process requirements: On-Off: Class A actuators complying with EN15714-2 Inching/Positioning: Class B actuators complying with EN15714-2 Modulating: Class III actuators with higher duty performance and specification of additional performance criteria compared to EN15714-2 Class C basic design requirements	
	Casing	Aluminium casting     Cover fastened by captive and stainless screws	
ENCLOSURE - PROTECTION	External Protection	<ul> <li>Type: Polyester based powder coating as standard</li> <li>Protection: standard tested to C4, environments acc. to ISO 12944, up to C5 as an option.</li> <li>Durability (M): 10 years</li> <li>Color: Grey &amp; Champagne</li> <li>Other colors and finishes, please consult us</li> </ul>	
	Weatherproof	IP68 - NEMA 4X as standard Relative humidity: 0 to 95%.	
	Ambient temperature range	• -20+70°C / -4 +158°F • -40°C (-40°F) as an option Other temperatures, please consult us	
	Vibration resistance	1g (9.8 m/s²) at 10-200 Hz. Contact our sales teams for higher vibration levels	
MOTOR	Motor technology	<ul> <li>TENV design (Totally-enclosed, not ventilated) 3-phase or single-phase asynchronous motor, Class F insulation and Class B temperature rise; integrated thermal overload protection.</li> <li>TENV DC motors with 2-wire connection available on request for some references</li> </ul>	
	Motor duty rating	<ul> <li>On/Off operation (complying with EN15714-2 Class A): S4-30% and S2-15min (as a standard)</li> <li>Inching/Positioning (complying with EN15714-2 Class B): S4-30% motor duty rating. Up to 360 starts per hour at peak of operation. S4-50% as option.</li> <li>BC Modulating Class III (complying with EN15714- 2 Class C): S4-50% motor duty rating. Up to 1 200 starts per hour at peak of operation. (Voltage ±10%, frequency ±2%)</li> </ul>	
	Gear design	Reduction by planetary gear and largely sized worm & wheel     The gears are mechanically self-locking	
MECHANICAL SPECIFICATIONS	Manual emergency operation	Handwheel does not rotate during motor operation.  • Automatic switch between manual and electrical. Priority to electric drive.  • Manual control gear ratios:  Standard ratio = between 11 and 55 depending on the model  AT3 = ratio 30:1  AT3 = ratio 55:1 (speed 7 & 10 rpm)  AT6L = ratio 30:1  AT7 = ratio 1:1  AT6 = ratio 27:1  AT14 = ratio 27:1  AT25 = ratio 29:1 (speed ≤ 96rpm)  AT25 = ratio 11:1 (speed > 96rpm)	



AT LOGIC			
PRODUCT SPECIFICATIONS			
MECHANICAL SPECIFICATIONS	Manual emergency operation	AT50 = ratio 29:1 (speed ≤ 96rpm) AT50 = ratio 11:1 (speed > 96rpm) AT25 & AT50 = ratio 1:1 and 3:1 with dual speed option  • Maximum rim force to apply conform to EN 12570	
	Output flange	Actuator flanges comply with ISO 5210 (see corresponding output flange spreadsheet p.6)	
	Lubrication	The actuators are oil lubricated for the product lifetime and do not require any special maintenance.	
	Power supply	Actuators can operate on a wide variety of power supplies (see detail on technical handbook): • single-phase or 3-phase • up to 480 V • 50 or 60 Hz	
	Bluetooth	Bluetooth (BLE 4.1) in standard	
ELECTRICAL SPECIFICATIONS	Terminal compartment	<ul> <li>All control elements are directly connected to push type terminals</li> <li>Internal and external earth ground rod.</li> <li>up to 1,5mm² for Control terminal</li> <li>up to 2,5mm² for Power terminal</li> </ul>	
	Fuse protection	Primary: 0,5A-500V Secondary: Two automatic resettable fuses	
	Conduit entries	• 3 x M20 + 2 x M16 (or 3 x 3/4" + 2 x 1/2" NPT)	
	Travel limit systems	Position: movement reading on the output shaft     Position sensor: Absolute encoder (Hall effect sensor)	
POSITION & TORQUE SENSORS	Torque limiting system	Direct mechanical torque measurement Self maintained torque information Absolute encoder sensor (Hall effect sensor) The torque limiting system is calibrated at the factory. It remains ajustable via LOGIC (non intrusive setting) Non intrusive setting: Ajustable torque from 40 to 100% of max torque	
	Position Transmitter (option)	In current: maximum acceptable load of 600 Ohms (24VDC), must be supplied (12 to 32VDC) 2-wire or 3-wire connection	
	Control	<ul> <li>Isolated by opto-couplers</li> <li>by Voltage: 10V to 60V; 90V to 250 VDC/AC (Current: 10mA at 24V)</li> <li>by dry contacts (using actuator isolated 24 VDC supply)</li> <li>Minimum pulse duration: 100ms</li> <li>Time of rotational direction's change: 200ms</li> </ul>	
	Visual position indication	A black & white LCD screen to display the position, the torque and alarms	
	Local command description	<ul> <li>2 buttons + 1 padlockable selector</li> <li>A large LCD screen to display the position, the torque and alarms and to perform the settings</li> <li>Green/Red: Configurable LED for CLOSED/OPEN</li> </ul>	
CONTROLS	Power circuit	Motor reversing starters (electromechanical controls for On-Off Class A / Inching-Positioning Class B / Modulating Class III)	
CONTROLS	Auxiliary power supply	With external 24VDC supply	
	Signaling relay	3 latching relays     Contact configuration: normally open or normally closed     Minimum current 10mA at 5V     Maximum current 5A at 250V or 5A at 30VDC (resistive load) Relay 1: Valve open Relay 2: Valve closed Relay 3: Configurable relay     Additional 4 relays board as an option	
	Fault relay	Fault relay is pre-programmed (not configurable)  SPDT non-latching relay, in fault position when not supplied.  Minimum current 10mA at 5V  Maximum current 5A at 250VAC or 5A at 30VDC (resistive load)	



		LOGIC
	PRODUCTS	PECIFICATIONS
CONTROLS	Inching/Positioning & Modulating control (option)	LOGIC Positioner: Signal configurations (with integrated analog output): • Standard input signal: 4-20 mA Position output signal: 4-20mA • Torque output signal: 4-20mA Other input signal (configurable): 0-20mA, 4-12mA, 12-20mA, 0-10V Other Position output signal (configurable): 2 wires: 4-20mA; 4-12mA; 12-20mA, 3/4 wires: 0-20mA; 4-20mA; 4-12mA; 12-20mA. Configurable input & output signal (direct/reverse) Analogue Input: - in current: impedance of 260 Ohms - in voltage: impedance of 10 kOhms: Analogue Output: - in current: maximum acceptable load of 350 Ohms, external supply 12-32VDC
	Transmitter (option)	Position & Torque transmitter in standard, Position output signal: 4-20mA Torque output signal: 4-20mA Other Position output signal (configurable): 2 wires: 4-20mA; 4-12mA; 12-20mA 3/4 wires: 0-20mA; 4-20mA; 4-12mA; 12-20mA Configurable signal (direct/reverse) Analogue Output: - in current: maximum acceptable load of 350 Ohms, external supply 12-32VDC
SETTINGS	Settings	Non-Intrusive settings All actuator settings and parameters are stored in a non-volatile EEPROM memory. Protection by password. Configurable via Local control; via BC Application as standard (to keep a high level of security, Bluetooth range is limited to 10m. With BC App, communication is encrypted and access is restricted with password.)
	Local settings	The LOGIC can be fully set via its local display and selectors Does not require any specific setting tool Local / Off / Remote selector is padloackable. Optionnal padlockable protection against sandy winds & vandalism.
	Application for mobile device	BERNARD CONTROLS new mobile application is available as standard, with its bluetooth secured communication interface, and allows the user to:  - Assistance to commissioning on valve - Simply set every parameters of the actuator (non-intrusive setting) - Command the actuator (open/close/stop) as a local control - Check at a glance an overview of the feedbacks information which are displayed on a large color screen of the mobile - Assistance to curative maintenance with a simple and efficient troubleshooting - Access to BERNARD CONTROLS contact information according to the area concerned - Access to the documentation relative to the selected and scanned actuator - Customize the actuator display - Log the Systems Alarms and Warnings - Duplicate one actuator configuration to another actuator - Check the actuator life operation - Select the suitable language among 14 available languages - Identify the actuator operated valve by its valve tag and location process - Track the last user connections for traceability and safety reasons
	Profibus DP (option)	Available with DPV1
FIELDBUS	Profibus DPV1 (option)	PROFIBUS-DPV1 - RS 485 Baud rate: 9.6 kbit/s up to 1.5 Mbit/s (autodetection) Communication protocol: PROFIBUS DPV1 slave-cyclic & acyclic Type of connection: single line Cable specification: Profibus certified cable only Line connection without repeater: Actuators per line: 31 max. Line length: 1.2 km max. (0.75 mi) Line connection with repeaters: Number of repeaters per line: 9 max 30 actuators and 1 Km max. per segment Number of actuators per line with repeater: 120 maximum Line length with 9 repeaters: 10.2 km max. (6.2 mi) Scan speed (30 units & 1.2 km): 0.1s (at a baud rate of 93.75 Kbit/s) Power supply: internal and isolated. 24VDC emergency power supply to refresh Open /Close position information in case of loss of electric supply Technical approval: operability approved by PNO (Profibus Nutzer Organisation)



AT LOGIC			
PRODUCT SPECIFICATIONS			
	Modbus (option)	MODBUS RTU - RS 485     Transmission medium: 1 shielded pair cable     Functions: Half Duplex, asynchronous mode, multidrop     Baud rate: 1.2k to 115 Kbit/s     Format: 8 data bits, 1 stop bit, no parity     Communication protocol: Modbus (slave)     Modbus address: configurable by the actuator menu     Modbus loop (option operated with Master Station)	
FIELDBUS	Profinet (option)	<ul> <li>Industrial Ethernet based Protocol</li> <li>Conformance Class – B</li> <li>Profinet Revision 2.42</li> <li>Real-Time Data Exchange Cycle time down to 1 ms</li> <li>Cyclic &amp; Acyclic data exchange</li> <li>Alarms &amp; Diagnostics</li> <li>SNMP support</li> <li>Media Redundancy Protocol in compliance with IEC 62439</li> <li>Different Network topology support:</li> <li>Line</li> <li>Star</li> <li>Tree</li> <li>Ring (with MRP)</li> <li>Compliance to standards: Profinet IO interface based on IEC 61158 and IEC 61784 (Communication protocol)</li> <li>Ethernet Interface IEEE 802.3u (Connection) 2 pair cabling in compliance with IEC 61784-5-3</li> </ul>	
CONFORMITY TO EC DIRECTIVES	Compliance with EC Directives	AT actuators comply with:  • directive 2004/108/EC Electromagnetic compatibility  • directive 2006/95/EC Low voltage  • the following harmonised standards: EN 61000-6-4: Generic emissions standard for industrial environments; EN 61000-6-2: Generic immunity standard for industrial environments; EN 60034-1: Rotating electrical machines; EN 60529: Degrees of protection provided by enclosures (IP ratings code)	
OPTIONS	Options LOGIC	Position and torque feed-back (current loop) Analog Positioner Fieldbus interface A additionnal signaling relays Stainless steel name plate C5 Protection Padlockable HMI protection against sandy winds and vandalism Handwheel: dual speed and motorization (AT25 & AT50)	

## Corresponding output flange

	C FORM / B3 / B4	A FORM / B1 / B2
AT3 / AT6L / AT7	F10	F07 and F10 / F07 et F10 (F05 on request)
AT6 / AT14	F10 or F14	F10 and F14
AT25 / AT50	F14 or F16	F14 or F16



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