

LABEL



**BERNARD[®]
CONTROLS**



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

New

Weatherproof
Quarter-turn Actuators
AQL RANGE

> AQL range

The essentials

for quarter-turn electric actuation



AQ1L - AQ3L



AQ7L

Product overview

Easy commissioning

Wiring diagram directly available inside the cover



Heavy duty design

Full aluminium enclosure protected by durable powder coating

Cable entries

Manual operation

Emergency intervention via manual hexagonal output 10mm



Flange according to ISO 5211

models delivered with standard adaptors

Mechanical position indicator as standard

Check the position of your valve at a glance



New camblock system

Easy set up of the travel limitation system with a standard screwdriver.

New mobile application BC App



> Get access to documentation and Bernard Controls Assistance

Product benefits

COMPACTNESS AND RELIABILITY FOR EXPLOSIVE ATMOSPHERE

• Compact & optimized design

- > Super compact design
- > Product architecture & torque range adapted to customers' requirements: 3 models from 15 to 70 Nm
- > Multi-voltage (AC/DC) & multi-frequency products : suitable whatever your location on the globe
- > 24VDC or 12VDC, both 2 or 3 wires available as an option
- > Short delivery time, even for voluminous project, thanks to large production capacity

• Easy to use

- > Easy commissioning for quick installation on site: pre-wired version, wiring diagram inside the cover, Quick connector (IP68) option
- > User-friendly set up of travel limitation system with a standard screwdriver. Camblock directly accessible at the front
- > Positionner option (4-20mA)
- > Manual operation via manual hexagonal output: essential for emergency intervention
- > BC APP: Bernard Controls new mobile application to get access to full documentation and Assistance

• Reliable design

- > BERNARD CONTROLS design methodology built-up on the nuclear market highly demanding requirements
- > 80+ years of continuous experience and BC inventor of the compact quarter-turn electric actuator
- > Extended lifetime: more than 200000 cycles attained during endurance tests in laboratory
- > Heavy duty design: full aluminum enclosure protected by durable powder coating, C4, IP68, large temperature scale
- > Self-locking at all speeds without any additional component
- > S4 Motor Service Duty. Up to 120 starts per hour at peak of operation
- > Electronic torque limiter for reinforced valve security
- > 100% of delivered products are tested with automatic process before delivery
- > Semi automated assembly line: enables complete electronics traceability

> AQL RANGE

Weatherproof Quarter-turn Actuators



The essentials

> Range overview

AQL

AQ1L-AQ3L-AQ7L

- 1Ph 85-260V 50/60Hz
- 24VDC 3 wires
- 12V DC - 2 or 3 wires (on request)
24V DC - 2 or 3 wires (on request)

On-Off Class A as standard

> OPTIONS

- + Position transmitter (4-20mA out)
 - + Positioner (4-20mA in/out)
> Class B
- Quick connector



Contents

Product specifications - AQL 3

Product selection 5

AQL

PRODUCT SPECIFICATIONS

GENERAL	Description	AQL actuators include a multi-voltage board to supply a 24VDC motor, compact gear case, emergency manual override and standard star-shaped output
	Torque range	15N.m to 70N.m
	Duty Classification	Adapted to process requirements: <ul style="list-style-type: none"> • On-Off: Class A actuators complying with EN15714-2 • Inching/Positioning: Class B actuators complying with EN15714-2
ENCLOSURE - PROTECTION	Casing	<ul style="list-style-type: none"> • Aluminium die casting • Cover fastened by captive and stainless steel screws
	External Protection	<ul style="list-style-type: none"> • Type : Epoxy powder coating as standard • Protection: C4 according to ISO 12944 • For colors and finishes, please consult us
	Weatherproofness	IP68 NEMA 4X as standard <i>Relative humidity: 0 to 95%.</i>
	Ambient temperature range	-20...+60°C / -4 ... +140°F Other temperatures, please consult us
MOTOR	Motor technology	DC motors
	Motor duty rating	On/Off operation (complying with EN15714-2 Class A) and Inching/Positioning (complying with EN15714-2 Class B): S4-30% motor duty rating. Up to 120 starts per hour at peak of operation. <i>(Voltage ±10%, frequency ±2%)</i>
MECHANICAL SPECIFICATIONS	Gear design	Actuator is mechanically self-locking
	Manual emergency operation	Manual emergency operation via manual hexagonal output 10mm
	Output flange	Actuator flanges comply with ISO 5211
	Lubrication	The actuators are lubricated for the product lifetime and do not require any special service.
ELECTRICAL SPECIFICATIONS	Power supply	<ul style="list-style-type: none"> • The actuators can operate on a range of single phase power supply from 85VAC to 260VAC.
	Terminal compartment	<ul style="list-style-type: none"> • Screw-type terminals for controls and power supply. Internal earth grounding post. • Quick connector (on option)
	Conduit entries	2 x M20 as standard
POSITION SENSORS	Travel limit systems	<ul style="list-style-type: none"> • Limit switches actuated by adjustable camblock • 2 SPDT switches as standard (Open and Close) + 2 auxiliary switches (for signaling); 250VAC-5A/ 48VDC-2.5A (resistive load)
	Inching/Positioning control	POSITION TRANSMITTER OPTION: 2 wires for 4-20mA

AQL

PRODUCT SPECIFICATIONS

<p>SETTINGS</p>	<p>Application for mobile device</p>	<p>BERNARD CONTROLS new mobile application is available as standard. BERNARD CONTROLS mobile interface allows the user to:</p> <ul style="list-style-type: none"> • Access to the documentation relative to the selected actuator (enter the Serial number) or scan the QR code on the nameplate of the actuator • Access to BERNARD CONTROLS contact information according to the area concerned
<p>CONFORMITY TO EC DIRECTIVES</p>	<p>Compliance with EC Directives</p>	<p>AQL actuators comply with:</p> <ul style="list-style-type: none"> • 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)

2/2

> Product selection

AQ001L DE 013 P A 0 0 0 E 0 M

Actuator Type

Voltage
FH=1Ph 85-260V 50/60Hz - 24VDC ABC (3 wires); DE=Direct Current 24VDC ABC (3 wires); DF=Direct Current 12VDC ABC (3 wires); DD=Direct current 24VDC PN (2 wires); DG=Direct current 12VDC PN (2 wires)

Operating time (sec)

Control Type
P=SWITCH Prewired

Duty & Modulating Classification
A=Class A;
B=Class B

SWITCH Options
0=Without; 1=Position Transmitter; 2=Positioner;

LOGIC Options
0=N/A

Fieldbus Options
0=N/A

Certification
E=EC Standard
L=EC Low Temperature
C=CSA (Low Temperature)
R=EAC (Low Temperature)

Output Flange
0=Standard Flange

Connection Type
M=Metric
I=Imperial NPT
C= Quick Connector

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Output Flange
0=Standard Flange

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E=EC Standard
L=EC Low Temperature
C=CSA (Low Temperature)
R=EAC (Low Temperature)

Fieldbus Options
0=N/A

LOGIC Options
0=N/A

SWITCH Options
0=Without; 1=Position Transmitter; 2=Positioner;

Duty & Modulating Classification
A=Class A;
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Control Type
P=SWITCH Prewired

Operating time (sec)

Voltage
FH=1Ph 85-260V 50/60Hz - 24VDC ABC (3 wires); DE=Direct Current 24VDC ABC (3 wires); DF=Direct Current 12VDC ABC (3 wires); DD=Direct current 24VDC PN (2 wires); DG=Direct current 12VDC PN (2 wires)

> For each application, our suitable innovation



The essentials

For moderate environment, moderate operational constraints, standard applications.



The complete solution

For severe environment, demanding operational constraints, critical applications.

WEATHERPROOF RANGES

NEW

Quarter-turn AQL RANGE

- 15 to 70 Nm (direct mount)
- Type of Controls: > **Electromechanical SWITCH**
> Positioner, 4-20mA
- BC Duty & Modulating Classification
- On-Off **A** Inching Positioning **B**
- Environment: IP68 / C4 / T: -20°C ...+60°C



NEW

Quarter-turn AQ RANGE

- 50 to 800 Nm (direct mount) & up to 200,000 Nm on request
- Type of Controls: > **Electromechanical SWITCH**
> Integrated LOGIC (v2)
- BC Duty & Modulating Classification
- On-Off **A** Inching Positioning **B** Modulating **III**
- Environment: IP68 / C4 / T: -20°C ...+60°C
Low T° option -40°C



NEW

Multi-turn AT RANGE

- 30 to 500 Nm (direct) & up to 8,000 Nm on request
- 10 to 127 rpm (direct)
- Type of Controls: > **Electromechanical SWITCH**
> Integrated LOGIC (v2)
- Wiring: > Screw Type Terminal
- BC Duty & Modulating Classification
- On-Off **A** Inching Positioning **B** Modulating **III**
- Environment: IP68 / C4 / T: -20°C ...+60°C
Low T° option -40°C



Quarter-turn & Multi-turn SQ & ST RANGES

- SQ: 45 to 10,000 Nm (up to 800 Nm direct mount) & up to 1,000,000 Nm on request
- ST: **60 to 2,200 Nm (direct) & up to 20,000 Nm on request**
10 to 120 rpm (direct) & high speed: up to 190 rpm (direct & <300Nm)
- Type of Controls: > **Electromechanical SWITCH**
> Integrated INTEGRAL (v1)
> Integrated INTELLI+® (v2)
- BC Duty & Modulating Classification
- On-Off **A+** Inching Positioning **B+** Modulating **III**
- Wiring: Double-sealing with INTELLI+®
- Environment: IP68 / C3 up to C5 / T: -20°C ...+70°C
Low T° option -40°C / High T° option +90°C (for SWITCH versions only)



NEW

Multi-turn BT RANGE

- 30 to 500 Nm (direct) & up to 8,000 Nm on request
- 10 to 127 rpm (direct) & **high speed: up to 180 rpm (direct)**
- Type of Controls: > **Electromechanical SWITCH**
> Integrated LOGIC (v2)
> Integrated INTELLI+® (v3)
- Wiring: Double-sealing as standard
> New terminal plate with pins for easy wiring
> **Quick Connector**
- BC Duty & Modulating Classification
- On-Off **A+** Inching Positioning **B+** Modulating **III+**
- Environment: IP68 / C4 up to C5 / T: -20°C ...+70°C
Low T° option -60°C / High T° option +90°C (for SWITCH versions only)



⁽¹⁾ LOGIC (v2) available later ⁽²⁾ INTELLI+® (v3) available later

NEW GENERATION OF INTEGRATED CONTROLS

→ SWITCH

Electromechanical non-integrated controls

NEW

LOGIC (v2)

The main functions you expect from modern integrated controls

NEW

INTELLI+® (v3)

Advanced control solution for your critical applications!

EXPLOSIONPROOF RANGES

NEW

Quarter-turn AQXL RANGE

- 40 Nm and 70 Nm
- Compliance with international explosionproof standards: ATEX, IEC-Ex, NEMA 7...
- Type of Controls: > **Electromechanical SWITCH**
> Positioner, 4-20mA
- BC Duty & Modulating Classification
- On-Off **A** Inching Positioning **B**
- Environment: IP68 / C4 / T: -20°C ...+60°C



Quarter-turn & Multi-turn SQX & STX RANGES

- SQX: 80 to 800 Nm (direct) & up to 1,000,000 Nm on request
- STX: 25 to 2,200 Nm (direct) & up to 20,000 Nm on request
- Compliance with international explosionproof standards: ATEX, INMETRO, IEC-Ex, EAC-Ex, NEMA 7 & 9...
- Type of Controls: > **Electromechanical SWITCH**
> Integrated INTELLI+® (v2) (2)
- BC Duty & Modulating Classification
- On-Off **A+** Inching Positioning **B+** Modulating **III**
- Environment: IP68 / C3 up to C5-M / T: -20°C ...+70°C (low T° option: -60°C)
- Special configurations: Corrosion protection, Fire proofing, Extreme temperatures, SIL2



SPECIAL DESIGN & EXPERTISE

Nuclear Qualified Actuators

- SN & SQN Nuclear qualified electric actuators
- + Full range of other Qualified Solutions: Quarter-turn, Multi-turn and Linear for inside & outside containment applications; Failsafe actuators



Failsafe Actuators FQ RANGE

Fast and shock-free reliable spring-return technology during emergency operation

- BC Duty & Modulating Classification
- On-Off **A** Inching Positioning **B** Modulating **III**
- Environment: IP67 / C3 / T: -20°C ...+70°C (low T° option -40°C)
- Explosionproof versions ATEX-NEMA

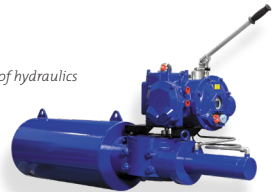


Failsafe Actuators FSE RANGE

The complete combination of modern electrics and power of hydraulics

- BC Duty & Modulating Classification

- On-Off **A** Inching Positioning **B** Modulating **III**
- Environment: IP67 / C4 / T: -20°C ...+60°C
- Explosionproof versions ATEX, IEC Ex



Continuous Modulating Actuators: MODULATING RANGE

OAP, MA, MB, MAS, MBS, SQXM & STXM MODELS

- Explosionproof versions ATEX-NEMA (SQXM/STXM)
- Type of Controls: Electromechanical SWITCH & Integrated INTELLI+® (v2)
- BC Duty & Modulating Classification
- Continuous Modulating **II**
- Environment: IP68 / C3 up to C5-M / T: -20°C ...+60°C (low T° option -40°C)



CUSTOMIZED DESIGN & PROJECTS:

At any time and anywhere on the globe, BERNARD CONTROLS teams are available for dedicated support. From the design stage to installation, commissioning, maintenance and training, our experts help you to define and implement the most appropriate solution to your specific needs thanks to our local R&D centers, test labs, calculation tools and training center.



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