

SQX range

Explosionproof Part-turn
Electric Actuators

Product Specifications



> SQX RANGE

Explosionproof part-turn electric actuators

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> SQX RANGE

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SQX Range Overview

Engineered for explosive environments and intelligent performance, our actuator features seamless connectivity, versatile fieldbus compatibility, and smart communication—unlocking your flow control's full potential.

FEATURES

- ❑ Enhanced Intelli+® V3 controls
- ❑ Explosionproof ATEX, IEC-Ex up to IIC and dust protection
- ❑ C5 protection
- ❑ Temperature -30°C / +70°C
- ❑ Multiple buses & bluetooth communication interfaces available
- ❑ Multiple voltages available

OPTIONS

- ❑ Fieldbus Interfaces :
Fieldbus Foundation, Profibus, Modbus, Hart, Modbus TCP/IP & Profinet
- ❑ CX paint Protection
- ❑ API6DX
- ❑ Up to SIL3
- ❑ Low temp. -55°C
- ❑ Analog Positioner
- ❑ Position & Torque Transmitter
- ❑ Additional signaling relays
- ❑ Padlockable local controls
- ❑ Protection against sandy winds and vandalism
- ❑ Sunshades
- ❑ Remote hand held



PRODUCT SPECIFICATIONS - SQX INTELLI+® V3

GENERAL	Description	SQX part-turn electric actuators offer a wide range of torques. INTELLI+® control offers many advanced solutions. INTELLI+® specificities: • NAMUR NE 107 signaling • Emergency Shut Down command • Partial Stroke Test • Speed control (timer) • Limitation of overtorque applied to valve seat • Optimised positioning precision by Intelli+ self-learning algorithm • Events log (last 50 alarms, ...) • 15 days log of environmental parameters: - Temperature - Humidity - Actuator activity • Log of the last 50 valve torque curves • Overview of actuator lifetime temperature and vibration conditions and operation • An INTELLI+® controls up to SIL3 assessment is also available*
	Torque Range	• Direct : 60 N.m to 1000 N.m
	Duty Classification	Adapted to process requirements: • On-Off : Class A actuators complying with EN ISO 22153 and improved endurance class A+ actuators • Inching/Positioning: Class B actuators complying with EN ISO 22153 and improved class B+ endurance actuators • Modulating: Class III actuators with higher duty performance and specification of additional performance criteria compared to EN ISO 22153 Class C basic design requirements
ENCLOSURE PROTECTION	Casing	• Aluminum Alloy 46100 (Al-Si11Cu3) or equivalent - Low copper content • Cover fastened by captive and stainless screws A2 or A4 grade
	Explosionproof Protection	• IECEX/ATEX certified • Qualified for gas and dust protection - Gas: Zone 1 & 2, up to IIC - Dust: Zone 21 & 22, up to IIIC
	Temperature Protection	• Gas : - IIB & IIC T4/T5 Gb : -30°C ...+70°C / -22°F ...+158°F (extended low temperature range -55°C / -67°F in option) - IIB & IIC T6 Gb : -30°C ...+60°C / -22°F...+140°F (extended low temperature range -55°C / -67°F in option) • Dust : - IIIC T135°C : -30°C ...+70°C / -22°F...+158°F (extended low temperature range -55°C / -67°F in option) - IIIC T100°C/T85°C : -30°C ...+60°C / -22°F...+140°F (extended low temperature range -55°C / -67°F in option)
	Corrosion Protection	• Standard : Powder coating Protection - Type C5 according to ISO 12944 / Composition Epoxy and polyester / Durability(M) 10 years • Option : Liquid painting Protection - Type CX according to ISO 12944 / Composition Epoxy and polyurethane / Durability (M) 10 years • Color : RAL 9002 Grey White - Other colors available as an option • C5 High & CX high durabilities as an option
	Weatherproof Protection	• IP66 • IP68 - 10m/96h
	Vibration Resistance	• 1g (9.8 m/s²) at 10-500 Hz (Please contact us for higher vibration levels).
	Fire Protection (option)	• Certified 30 minutes at 1103 °C / 2000 °F with additional protection enclosure (Tested to UL1709 criteria)

*Available on previous version of Intelli+® V2 controls

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MOTOR	Motor technology	- TENV design (Totally-enclosed, not ventilated) 3-phase or single-phase asynchronous motor, Class H insulation with integral thermal overload protection - DC motors
	Motor duty classification	- On/Off operation (Class A+) and Inching/Positioning (Class B+): S2-15min, S4-30% motor duty rating. Up to 360 starts per hour at peak of operation. S2-30mn as an option, S4-50% as an option - BC Modulating Class III (Class C) : S2-15min S4-50% motor duty rating. S2-30mn as an option, Up to 1 200 starts per hour at peak of operation
MECHANICAL SPECIFICATIONS	Gear design	- Reduction by planetary gear and largely sized worm & wheel - The gears are mechanically self-locking
	Manual emergency operation	- Handwheel does not rotate during motor operation - Automatic switch between manual and electrical. Priority to electric drive - Standard : maximum rim force to apply conform to EN 12570 - Option : maximum rim force to apply conform to API6DX 15.25 turns for manual operations
	Output flange	Actuator flanges comply with ISO 5211
	Lubrication	The actuators are lubricated for the product lifetime and do not require any special maintenance.
ELECTRICAL SPECIFICATIONS	Power supply	Actuators can operate on a wide variety of power supplies (see detail on Bernard Controls Digital Library): - single-phase or 3-phase, VDC - up to 480 VAC (±10%) 50 or 60 Hz (±5%)
	Terminal compartment	- Internal and external earth ground rod - Up to 10 mm² (larger sizes as an option)
	Fuse protection	FU1: transformer primary fuse 6,3 x 32mm - 0,5A-500V + 2 automatic resettable fuses FU2 - FU3: 50mA - 500mA
	Cable entries	2 for signalling : 1" NPT 1 for motor supply : 1"1/2 NPT 4 for fieldbuses : 3/4" NPT - Possibility to rotate cable entries for buses - Metric adaption as an option

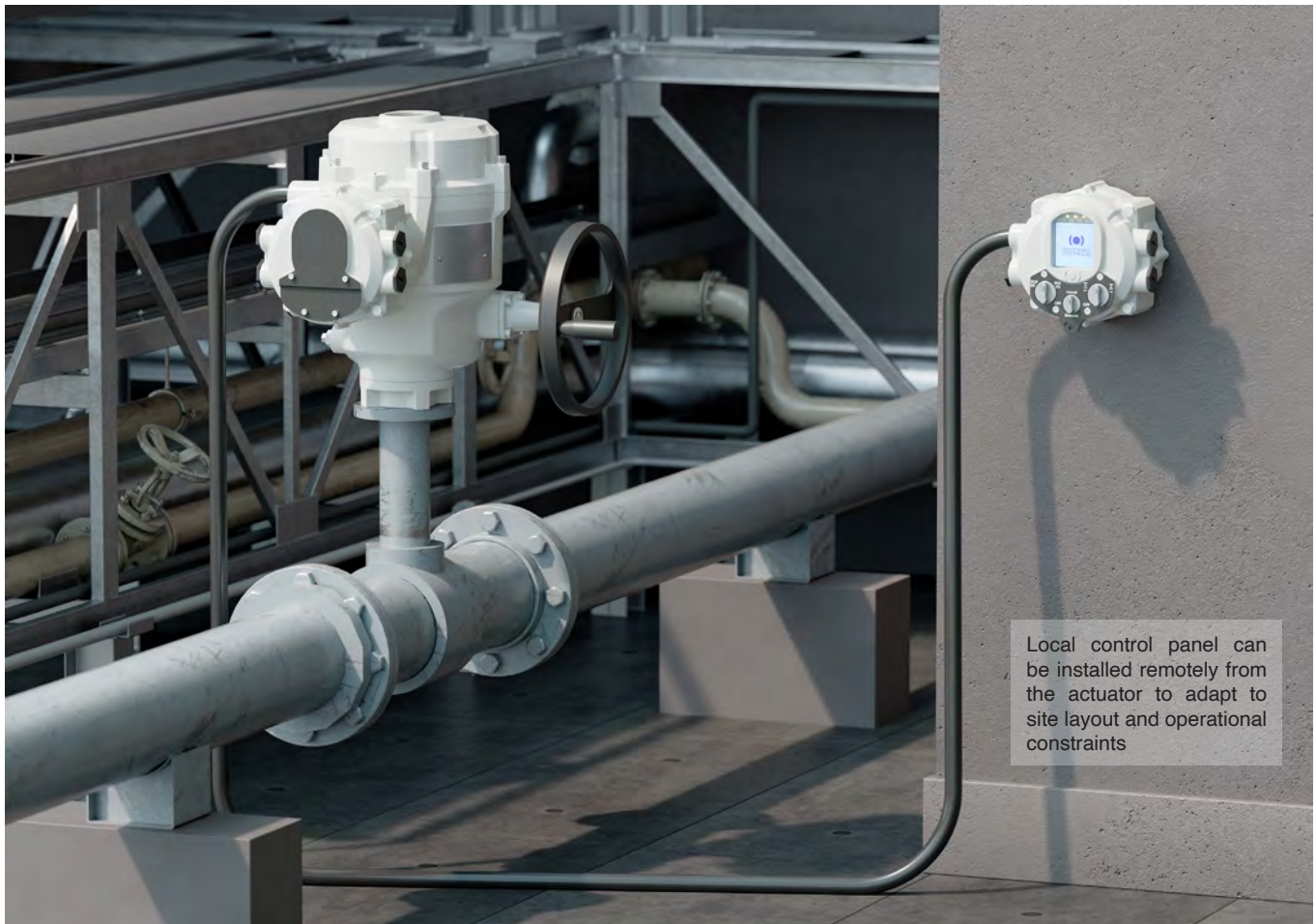


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CONTROLS	Controls Location	- As standard, the INTELLI+® control is integrated into the actuator - As an option, controls can be mounted in a separated box (max distance between actuator and controls 50m)
	Double sealing protection	The control compartment of the actuator is fully isolated (IP54) from the wiring compartment
	Local commands	3 selectors, one being lockable - A large LCD screen to display the position, the torque and alarms and to perform the settings - Standard LED: Green OPEN / Red CLOSE / Yellow POSITION RUNNING (configurable) - Possibility to rotate the display - Remote display capability
	Remote Commands	- Isolated by opto-couplers - by Voltage: 10V to 60V; 90V to 250 VDC/AC (Current: 10mA at 24V) - by dry contacts (using actuator isolated 24VDC output supply) - Minimum pulse duration: 100ms - Time of rotational direction's change: 200ms
	Auxiliary power supply	•24VDC/3W output
	Signaling relays	3 latching relays - Contact configuration: normally open or normally closed - Minimum switching load 10mA at 5VDC - Maximum switching load 5A at 250VAC or 5A at 30VDC (resistive load) - Additional 4 relays board as an option - All relays are configurable among a list of available information
	Fault relay	- Fault relay configurable - SPDT nonlatching relay, in fault position when not supplied - Minimum switching load 10mA at 5VDC - Maximum switching load 5A at 250VAC or 5A at 30VDC (resistive load)
	Visual position indication	- A large LCD screen to display the position, the torque and alarms - Mechanical Position Indicator as standard
	Travel limit system	- Position: movement reading on output shaft. - Position sensor : Hall effect absolute sensor - Actuator has mechanical stops
	Torque limit system	- Direct mechanical torque measurement - Self maintained torque information - Hall effect absolute sensor - The torque limiting system is calibrated in factory. It remains ajustable from 40 to 100% of max torque via INTELLI+® (non intrusive setting), BC App and Local HMI.
	Signaling continuity	- Standard : External 24VDC input to use the display and update the open and closed position information in case of lack of power supply (through the signaling relays or via fieldbus or via Transmitter option) - As an option : Supercapacitors integrated into the actuator for continuous information exchange with the actuators for several days
	Proportional Control (option)	Analog Positioner, signal configurations (configurable) : - Standard input signal: 4-20 mA - Other input signal: 0-20mA, 4-12mA, 12-20mA, 0-10V Analog Inputs interface characteristics : - In current: impedance of 260 Ohms - In voltage: impedance of 10 kOhms Note: when the Proportional Control option is selected, the analog transmitter function is provided with
	Analog Transmitter (option)	Position & Torque transmitter - Position 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 - Torque output signal: 4-20mA Analog Outputs interface characteristics : - In current: maximum acceptable load of 600 Ohms/24V - In voltage : 12-32VDC

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SETTINGS	Settings	• Non-Intrusive settings : - Adjustable via Local control - Via BC application with Android and iOS used as hand held with secured Bluetooth connection (to keep a high level of security, Bluetooth range is limited). • All actuator settings and parameters are stored in a non-volatile EEPROM memory. • Protection by password.
	Local settings	• The INTELLI+® can be fully set via its local display and selectors • Does not require any specific setting tool • Local/Off/Remote selector is padlockable • Optional padlockable protection against sandy winds & vandalism. • Possibility to rotate and remotize the display
	Application for mobile device	BERNARD CONTROLS 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 System Alarms and Warnings following NAMUR NE 107 codification • Duplicate one actuator configuration to another actuator • Check the actuator life operation • Select suitable language among 14 available languages • Identify the actuator operated valve by its valve tag and location process • Track the last user connections with date/time for traceability and safety reasons • Possibility to use any device with Android and iOS as hand held communicator through BC App



Local control panel can be installed remotely from the actuator to adapt to site layout and operational constraints

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FIELD BUS CONTROLS	Profibus DPV1 (option)	PROFIBUS-DPV1 - RS 485 • Profibus Single - Redundant • 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 or redundant line (redundant option) • 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: 124 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 via INTELLI+®. 24VDC emergency power supply to refresh Open/Close position information in case of loss of electric supply • Technical approval: operability approved by Profibus & Profinet international • Redundancy available as an option • Bus continuity : keep bus continuity in case of actuator removal
	Modbus (option)	• MODBUS RTU - RS 485 • Modbus Single - Redundant - Loop • 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, parity configurable • Communication protocol: Modbus (slave) • Modbus address: configurable by the actuator menu • Modbus redundant / Modbus loop as an option
	Profinet (option)	Industrial Ethernet based Protocol • Conformance Class – B • Profinet Revision 2.42 • Real-Time Data Exchange Cycle time down to 1 ms • Cyclic & Acyclic data exchange • Alarms & Diagnostics • SNMP support • Media Redundancy Protocol in compliance with IEC 62439 • Different Network topology support : - Line - Star - Tree - Ring (with MRP) Compliance to standards : Profinet IO interface based on IEC 61158 and IEC 61784 (Communication protocol) Ethernet Interface IEEE 802.3u (Connection) 2 pair cabling in compliance with IEC 61784-5-3
	Hart (option)	• Interface: HART, 4-20mA current, FSK modulation • Transfer speed: 1.2 kbit/s • Protocol: HART 7.4 • Impedance: 250 Ohms • Power consumption: Internal by Intelli+ transformer, External power supply for 4-20mA loop only • Actuator configuration: Available through EDD file • Connection line: Point-to-Point or Multi-drop • Technical approval: approved by Hart Communication Foundation
	Foundation Fieldbus* (option)	• H1 speed = 31.25kBit/s • Fully compliant with fieldbus standard IEC 61158 • Physical layer: IEC 61158-2, 2 wires communication • Current consumption: 20mA • Operating voltage: 9 to 32 VDC • Cable specification: Type A (for example: 3076F Belden) • Line connection - Actuators per line without repeater: 31 max. - Line length without repeater: 1.9 km max. - Number of repeaters per line: 4 max. - Maximum number of actuators and line length depends on consumption available • Technical approval: Fieldcomm Group tested. Several DCS manufacturer operability checked

Modbus TCP/IP and other buses available. Please contact us for further details

*Available on previous version of Intelli+® V2 controls

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