

Quartz

The Quartz is available in explosion proof (QX), nonincendive and intrinsically safe (QN) and general purpose (QG) versions. The robust epoxy coated anodized aluminum construction makes this platform extremely durable and well suited for use in corrosive, heavy wash down environments. A broad range of switching, position transmitter and communication options may be selected to accommodate most applications.

This versatile platform adapts to a wide variety of valve systems. Attach the Quartz to quarter-turn actuators, manual operators, linear operators and positioners using readily available stainless steel mounting systems.



The Stonel Quartz series is durable, corrosion resistant, and versatile, making it ideal for most of your process valve monitoring requirements.



Wide Variety of Switch/Sensor Functions



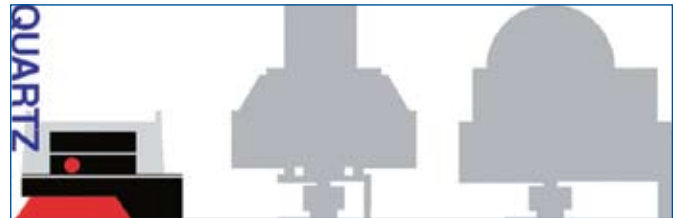
Proximity Switches



Mechanical Switches

A wide variety of switch/sensor communications and position transmitters may be selected for the Quartz series. Options include 2, 4 or 6 mechanical or proximity switches, position transmitters with or without switches, and the Stonel dual module with two SST or two Namur sensors or AS-Interface, DeviceNet or FOUNDATION Fieldbus communication capabilities.

Save Space with Low Profile Design



Clearance above the actuator is critical in complex piping systems. Quartz boldly displays valve position and encloses all electrical components in an explosion-proof compartment with less than 5" clearance requirement.

Speed Installation with LED Indication

Stonel's coordinated visual indicator and LEDs give you an extra measure of safety and increased convenience during plant start-up and operation. Green visual indication and green LED means the valve is open and the computer circuit is properly operating. Red visual indication and red LED means the valve is closed and the computer is properly matched. All systems are functioning properly.



Features

1. Enclosures Optimized for Environment



QX: Explosion-proof, water tight and corrosion-proof enclosure is approved for use in div.1/zone 1 hazardous areas.



QN: Nonincendive is approved for all div.2/zone 2 hazardous environments with proximity sensors using a clear cover. Intrinsically safe Namur sensors or passive switches are available for div.1/zone 0 applications.



QG: General purpose features a clear Lexan cover with mechanical switches. All enclosures are rated NEMA 4, 4x, and 6.

2. Rapid Enclosure Access

Screw-on cover allows quick enclosure access, saving you valuable maintenance and set-up time. The cover provides a vapor tight seal and allows entry to internal components in less than five seconds.

3. Faster Wiring

Pre-wired and labeled terminal strip enables quick, convenient attachment of field wires.

4. Wide Variety of Switching & Communication

Switching options include dual module sensors and communication, Maxx-Guard proximity switches and mechanical switches. Continuous signal output is available in a 4 to 20 mA position transmitter.

5. Quick Set Cams are Easy to Adjust

Touch and Tune switch settings allow you to make adjustments in seconds without the use of tools.

6. Dual Shaft O-ring Seals Eliminate Corrosion

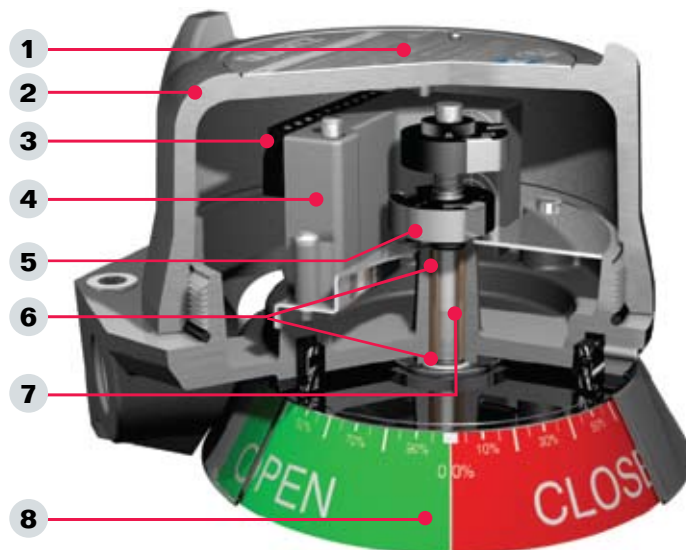
Top inner and bottom outer shaft o-rings seal the drive bushing from both external corrosives and internal contaminants that enter the enclosure.

7. Special drive bushing assures long cycle life

The oil impregnated brass bushing maintains smooth operation and eliminates the potential for shaft seizure due to actuator shaft eccentricity.

8. Space Saving Visual Indication

Visual indicator offers excellent viewability without sacrificing accessibility or adding to space requirements. Indicators are also available with continuous percentage or three-way indication.



Eliminate Seal Fittings in Division 1 and 2 Areas

FM_{us} ratings certify the Quartz QX series with proximity switches for use without seal fittings in all hazardous areas. By passing special pressure piling tests, the all aluminum enclosure was certified for this elite distinction. Now, a time-consuming procedure can be safely eliminated in division 1 and division 2 areas.

Consolidate Your Components and Minimize Costs

The Quartz design offers up to three conduit entries with extra wire terminations. By terminating solenoid valves in the switch enclosure, significant savings are realized by eliminating a junction box, wiring, conduit materials and labor.



Applications and Adaptation



Quartz Mounting Systems

Low profile convenient mounting systems are readily available in stainless steel for most non-Namur and Namur (VDI/VDE 3845) actuators. You get direct output on rotary actuators, and easy access to positioner internal adjustments.



Manual Valves

Proper fit and operation are assured with StoneL's custom designs for each manual valve. Hundreds of unique mounting systems have been designed and fabricated for manually operated valves.



Linear Operators

Precision ball joint connections attach the Quartz to valve travel stems. Stroke lengths ranging from 20mm to 150mm (3/4" to 6") may be easily accommodated.



Positioners

Quartz position transmitter and switches may be retrofitted directly to most positioners. You get direct output on rotary actuators, and easy access to positioner internal adjustments.



Position Transmitter

The Quartz two-wire 4 to 20 mA position transmitter offers exceptional accuracy, reliability and performance. It may be directly attached to positioners or actuators in both linear and quarter-turn applications.

Span Range	35° to 270° (Adjustable)
Linearity Error, Standard	± 0.85° Maximum
High Performance	± 0.35°
Cycle Life, Standard	2 Million Rotations Minimum
High Performance	50 Million Rotations Minimum
Temperature Range	-40° to 80° C (-40° to 176° F)

Quartz Expeditor

Fill Control Applications

Fill tanks and hoppers rapidly and accurately. The Quartz Expeditor's field adjustable intermediate position reduces flow as the full level approaches. You get fast, economical "topping off" of every batch.

Flow Dampening Applications

The Quartz Expeditor allows fast closure yet gentle, gradual shut-off from a preset intermediate position. You get prolonged piping life, improved process flow performance and less potential for catastrophic failure.

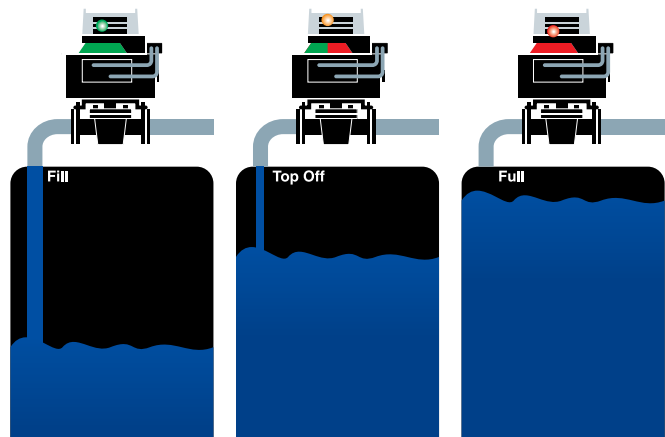
Emergency Shut Down (ESD) Applications

Test your ESD valves by actuating them to a preset intermediate position that does not shut down the process. Reduce costs and increase safety by eliminating several cumbersome manual operations.



Communication Enabled Expeditor

Now you can improve process performance and take advantage of incredible cost savings by utilizing proven bus networking technology with the communication enabled Expeditor. The Expeditor functions are available in the Quartz with either AS-Interface or DeviceNet protocols. An additional switch and cam are integrated into the VCT which may be set to a pre-determined intermediate position enabling fill control, flow dampening or ESD capabilities. Please specify the "82" or "86" for DeviceNet or AS-Interface Expeditor respectively.



The Expeditor enables three position control of On/Off valves in combination with two standard solenoid valves.

Sensors and Communications

Dual Module System

The Quartz series is available with the dual module in its various configurations. Two solid state sensors and/or communications and other electronics are sealed in for the ultimate in reliability and convenience. All dual module versions have a 5 year warranty. (For more detailed information please see pages 28 through 39.)



SST Switching Sensors (33)

Configuration (2) SST Switching Sensors
Terminations for Solenoid

Electrical Ratings 0.3 Amps @ 125 VAC/DC

Namur Sensors (44)

Configuration (2) Namur Sensors
Terminations for Solenoid
Intrinsically safe (DIN 19234)

Voltage Range 6 to 29 VDC

Current Ratings Target On I < 1 mA
Target Off I > 3 mA

AS-Interface VCT (96)

Configuration (2) Sensor Inputs
(2) Auxiliary Inputs
(2) Power Outputs (Solenoids)

Max. Current 160mA, Both Outputs Combined
(Current Limited to 200mA)

Outputs, Max. Power 4 Watts, Both Outputs
Combined

Outputs, Voltage 25 to 30 VDC

AS-Interface VCT (97) with Extended Addressing

Configuration (2) Sensor Inputs
(2) Auxiliary Discrete Inputs
(1) Power Output (Solenoid)

Max. Current 100mA

Outputs, Max. Power 2.4 Watts

Outputs, Voltage 25 to 30 VDC

DeviceNet VCT (92)

Configuration (2) Discrete Inputs
(Open & Closed)
(2) Power Outputs (Solenoids)
(1) 4-20 mA Auxiliary Input

Outputs, Max. Power 4 Watts, Both Outputs Combined

Outputs, Voltage 24 VDC

FOUNDATION Fieldbus VCT, Bus Powered (93)

Configuration (2) Discrete Inputs, DI
(Open & Closed)
(2) Discrete Outputs, DO
(Piezo Valves)

Outputs 2mA @ 6.5 VDC each; Current
Limited to 2mA (Bus Powered)

FOUNDATION Fieldbus VCT, Externally Powered (94)

Configuration (2) Discrete Inputs, DI
(Open & Closed)
(2) Power Outputs, DO
(Solenoids)

Outputs 4 watts @ 24VDC Both Outputs
Combined; Current Limited to
200mA (Externally Powered)

Modbus VCT (95)

Configuration (2) Discrete Inputs
(Open & Closed)
(2) Power Outputs (Solenoids)

Outputs (1) 4-20 mA Auxiliary Input
4 Watts @ 24 VDC Both
Outputs Combined (Current
Limited to 200mA)

Switch/Sensor Options

SST Solid State Sensors



SST sensors have an unlimited application life and are ideal for AC and DC computer input circuits. (See page 38 for more details.)

Operation Cam Selectable NO or NC

Electrical Ratings 0.3 Amps @ 125VAC/DC

Max Leakage Current 0.5 mA

Maximum Voltage Drop 6.5 Volts @ 10 mA

Operating Life Unlimited

Maxx-Guard Switches



Maxx-Guard reed switches with SPDT tungsten contacts are suitable for 125VAC computer inputs and 240VAC moderate power applications. SPDT rhodium contacts are designed for either 24VDC or 125VAC low power computer inputs. SPST ruthenium contacts are ideal for either 24VDC or 125VAC low power computer inputs. (See page 38 for more details.)

Electrical Ratings SPST (See page 38)

Electrical Ratings SPDT (See page 38)

Seal Hermetically Sealed

Operating Life 5 Million Cycles

Mechanical Switches (DPDT)



DPDT switches are available for isolation of two circuits operating at the same time. One DPDT operates identically to two SPDT being actuated simultaneously.

(See page 39 for more details.)

Electrical Ratings 4.5 Amp @ 125/250 VAC

Operating Life 250,000 Cycles

Mechanical Switches (SPDT)



Mechanical silver contact switches are ideal for high power applications. Gold SPDT contacts may be used for low power applications. (See page 39 for more details.)

Electrical Ratings (Silver) 10 Amp @ 125/250 VAC
0.5 Amp @ 125 VDC

Operating Life (Silver) 400,000 cycles

Electrical Ratings (Gold) 1.0 Amp @ 125 VAC
0.5 Amp @ 30 VDC

Operating Life (Gold) 100,000 Cycles

Explosion Proof Model Selector (Aluminum Cover)

Model Example: QX33E02SRA

	Function	Enclosure	Conduit Entries	Visual Indication
QX	Sensor/Switching Modules (Proximity Type) 33 SST N.O. Switching Sensor Dual Module Valve Communication Terminals (VCTs) 92 DeviceNet 93 FOUNDATION Fieldbus (Bus Powered; I.S.) 94 FOUNDATION Fieldbus (Externally Powered) 95 Modbus 96 AS-Interface 97 AS-Interface (with extended addressing) Mechanical Switches 2V (2) SPDT Switches 2W (2) SPDT Switches, Gold Contact 4V (4) SPDT Switches 4W (4) SPDT Switches, Gold Contact 14 (2) DPDT Switches Expeditors (Proximity Type) 82 DeviceNet 86 AS-Interface	E North American (NEC/CEC) R International (IEC/ATEX) All QX models have epoxy coated anodized aluminum housing and cover.	02 (1) 3/4" NPT & (1) 1/2" NPT 03 (1) 3/4" NPT & (2) 1/2" NPT 05 (2) M20 06 (3) M20	SRA Red-Closed Green-Open SGA Green-Closed Red-Open S1A T1 Three Way S2A T2 Three Way S3A T3 Three Way S4A T4 Three Way S5A T5 Three Way S0A No Indication SXA Special See Visual Indications Designations Chart on page 15
	Switches/Sensors 2 (2) Switches 4 (4) Switches 5 Position Transmitter with (2) or No Switches 7 High Performance Position Transmitter with (2) or No Switches 8 Expeditor (only available with H or Y switches)	Proximity P SPST Maxx-Guard L SPST Maxx-Guard (LED) G SPDT Maxx-Guard (low current) H SPDT Maxx-Guard (3 amp) S SPDT Maxx-Guard (LED) Y Expeditor Only (3 Switches) F PNP Solid State 3-wire P+F O No Switches X SST Sensor (LED)		

Mounting system required for all and sold separately.

Nonincendive & Intrinsically Safe Model Selector (Clear Cover)

Model Example: QN33C02SRA

	Function	Enclosure	Conduit Entries	Visual Indication
QN	Sensor/Switching Modules (Proximity Type) 33 SST N.O. Switching Sensor Dual Module 44 Namur Dual Module (DIN 19234; IS) Valve Communication Terminals (VCTs) 92 DeviceNet 93 FOUNDATION Fieldbus (Bus Powered; I.S.) 94 FOUNDATION Fieldbus (Externally Powered) 95 Modbus 96 AS-Interface 97 AS-Interface (with extended addressing) Expeditors (Proximity Type) 82 DeviceNet 86 AS-Interface	C North American (NEC/CEC) D International (IEC/ATEX) All QN models have clear Lexan® cover and anodized aluminum housing.	02 (1) 3/4" NPT & (1) 1/2" NPT 03 (1) 3/4" NPT & (2) 1/2" NPT 05 (2) M20 06 (3) M20	SRA Red-Closed Green-Open SGA Green-Closed Red-Open S1A T1 Three Way S2A T2 Three Way S3A T3 Three Way S4A T4 Three Way S5A T5 Three Way S0A No Indication SXA Special See Visual Indications Designations Chart on page 15
	Switches/Sensors 2 (2) Switches 4 (4) Switches 5 Position Transmitter with (2) or No Switches 7 High Performance Position Transmitter with (2) or No Switches 8 Expeditor (only available with H or Y switches)	Proximity P SPST Maxx-Guard L SPST Maxx-Guard (LED) G SPDT Maxx-Guard (low current) H SPDT Maxx-Guard (3 amp) S SPDT Maxx-Guard (LED) Y Expeditor Only (3 Switches) F PNP Solid State 3-wire P+F O No Switches X SST Sensor (LED)		
	Intrinsically Safe J SPST Maxx-Guard; Passive M SPDT Maxx-Guard; Passive N P+F NAMUR Sensors			

Mounting system required for all and sold separately.

General Purpose Model Selector (Clear Cover)

Model Example: QG2VC02SRA

	Function	Enclosure	Conduit Entries	Visual Indication*
QG	Mechanical Switches	C General Purpose, Universal All QG models have clear Lexan® cover and anodized aluminum housing.	02 (1) ¾" NPT & (1) ½" NPT 03 (1) ¾" NPT & (2) ½" NPT 05 (2) M20 06 (3) M20	SRA Red-Closed Green-Open SGA Green-Closed Red-Open S1A T1 Three Way S2A T2 Three Way S3A T3 Three Way S4A T4 Three Way S5A T5 Three Way S0A No Indication SXA Special
	2V (2) SPDT Switches			
	2W (2) SPDT Switches, Gold Contact			
	4V (4) SPDT Switches			
	4W (4) SPDT Switches, Gold Contact 14 (2) DPDT Switches			

Mounting system required for all and sold separately.

*See Visual Indications Designations chart on page 15

Other Specifications and Ratings

Materials of Construction

Housing & Aluminum Cover	Epoxy coated anodized marine grade aluminum
Clear Cover & Indicator	Lexan® polycarbonate
Elastomer Seals	Buna-N; Optional Viton and EPDM
Drive Shaft	Stainless steel
Drive Bushing	Brass, oil impregnated
Fasteners	Stainless Steel

Temperature Ratings

Mechanical Components	-40° to 80° C (-40° to 176° F)
Dual Modules	-40° to 80° C (-40° to 176° F)
Maxx-Guard & SST	-40° to 80° C (-40° to 176° F)

Warranty

Mechanical Components	Two Years
SST & Dual Modules	Five Years

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Explosion Proof Ratings

QX Models

NEC/CEC	Class I Divisions 1 and 2 Groups B, C, D Class II Divisions 1 and 2 Groups E, F, G
IEC/ATEX	EEEx d IIC T5 - T6, Zones 1 & 2

Nonincendive Ratings

QN Models

NEC/CEC	Class I Division 2 Groups A, B, C, D Class II Division 2 Groups F, G
IEC/ATEX	EEEx nA IIC T5, Zone 2

Intrinsically Safe Ratings

QN Models (Function Dependent)

NEC/CEC	Class I Divisions 1 and 2 Groups A,B,C,D Class II Divisions 1 and 2 Groups E,F,G
IEC/ATEX	EEEx ia IIC T5, Zones 0,1,& 2

Enclosure Protection

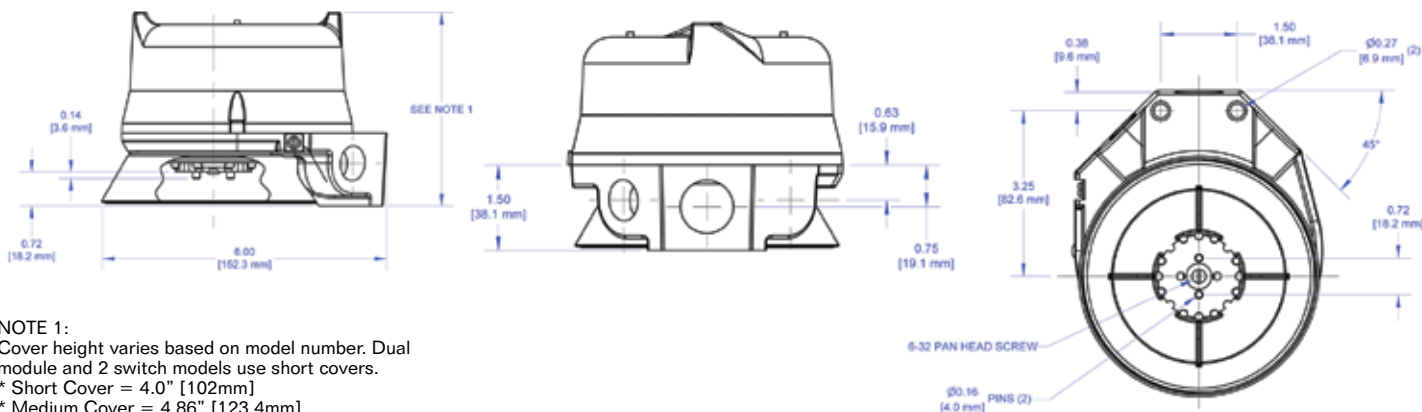
QX, QN and QG Models

NEC/CEC	4, 4X & 6
IEC/ATEX	IP67

For approval information visit www.stonel.com/approvals



Dimensions
Inches [mm]



NOTE 1:
Cover height varies based on model number. Dual module and 2 switch models use short covers.
* Short Cover = 4.0" [102mm]
* Medium Cover = 4.86" [123.4mm]
* Tall Cover = 6.12" [155.4mm]