

## Technical Clauses

### IQT (3rd Generation) QUARTER TURN ELECTRIC ACTUATOR

This description provides the basic specification, please refer to the Schedule of Equipment for actuator size, mounting flange, area classification, power supply and performance data. Remote control and indication functions are described under the Wiring Diagram. Additional options may also be found in the Extras Included section.

- **INGRESS PROTECTION:** IP66/IP68 - 20 metres/10 days, double-sealed terminal compartment
- **TEMPERATURE:** -30° C to 70° C (-22° F to 158° F) for Watertight, FM or CSA EP enclosures, -20° C to 70° C (-4° F to 158° F) for ATEX or IECEx enclosures
- **SERVICE/DUTY RATING:** Class A (On/Off)/Class B (Inching), nominal 60 starts at a rate  $\leq$  600 starts/hour. 15 minute rated at nominal 33% of rated torque.
- **MOTOR SWITCHING & SPEED CONTROL:** Solid state motor switching incorporating 25% to 100% motor speed control.
- **SYNCRHASE:** Auto Phase rotation correction and lost phase protection on three phase supplies.
- **LOCAL CONTROLS:** Open/Close selector and padlockable Local/Stop/Remote selector (stop remains available for safety).
- **LOCAL INDICATION:** Illuminated LCD position indicator (0.1% increments) with closed/open limit symbols, torque and other status data. 3 LED's; red-open/yellow-intermediate/green-closed (reversible), blinker and alarms configurable.
- **POSITION SENSOR:** Absolute encoder provides continuous high resolution position measurement, fully maintained during manual operation and without power or battery support.
- **BATTERY SUPPORT:** Battery is not required for position sensing but, supports LCD display, operation of indication relays, commissioning and data logging in the absence of mains power.
- **MOUNTING:** Can be in any orientation, local indication and controls rotatable in 90° increments to suit
- **MANUAL OVERRIDE:** Padlockable clutch lever, Handwheel clockwise to close, automatically disengages when motor starts, non-rotating during electric operation.
- **LUBRICATION:** Gearcase oil filled for life.
- **TORQUE SWITCHES:** Configurable - 40% to 100% of rated with bypass option for start of travel
- **COMMISSIONING:** Non- intrusive setup of; travel limits (auto setup option), relays, alarms and other functions via Infrared/Bluetooth Setting Tool (one supplied with each order). Can be password protected.
- **MECHANICAL TRAVEL STOPS:** Stop bolt adjustment allows +/-5% variation of travel at each end position.
- **DATA LOGGING AND ASSET MANAGEMENT:** Date/time stamped logging and display of operational events/trends, motor starts and valve torque profiles. Valve/actuator/gearbox data can be stored and service alarms set. Battery supported when power off. Data download via Infrared/Bluetooth Setting Tool for upload to a PC and analysis via free InSight2 software.
- **TERMINALS:** M5 power and M4 control terminals, screws and washers supplied. For ring tag conductors, power 16.0mm<sup>2</sup>, controls 4.0mm<sup>2</sup>
- **CABLE ENTRIES:** 4x M25 threaded cable entries (alternatively 0.75" NPT or PG16). Cable glands not included in our scope of supply.
- **PAINT FINISH:** Polyester powder coating 100 micron nominal thickness. Colours: Housings/Covers - Grey (00-A-05), Handwheel/Hand Auto Lever – Black.

Wiring diagram 300B0000 is described in IQ/IQT Control and Monitoring publication (PUB002-041) and includes:

- **CONTROL SUPPLY:** 20 – 60VDC/40 – 120VAC or actuator derived 24VDC
- **CONTROL INPUTS:** 6 inputs for open, close, stop/maintain, ESD and interlock signals
- **INDICATION CONTACTS:** 4 volt-free (SPST) latching contacts (S1-S4), rated at 120VAC/30VDC, 5mA to 5A, each configurable NO or NC to signal one of the following; open/closed or intermediate positions, moving (continuous or pulsing), Handwheel operation, local selected, remote selected, open/close interlock active, ESD active, motor tripped on torque in mid travel/going open/going closed, valve jammed, loss of power/phase or control supply, battery low, internal failure detected, thermostat tripped, programmable service alarms.
- **MONITOR AND AVAILABILITY RELAY:** Independent relay with volt-free changeover contact, rated at 120VAC/30VDC, 5mA to 5A. De-energises in case of; loss of power/phase or control supply, local control or local stop selected (can be excluded), motor thermostat tripped or detected internal failure

COMMENTS:

Actuators offered will be provided with our standard paint finish suitable for onshore application and our basic colour. Please find attached the copy of the paint finish cycle. The standard paint finish is equivalent to epoxy base. If this does not meet your requirement, please contact us for a rev. quotation.

The drive sleeves are unmachined.

The quoted actuators are designed for up to 60 starts per hour at a rate not exceeding 600 starts per based on 75% of rated torque.

Please note that the Stall torque for the quoted actuator will be 1.4 to 2 times torque rating, depending on speed and voltage.

#### Conduit entries

For IQ models four threaded conduit entries are provided tapped 4x M25.

Cable Glands are not included in the a.m. price schedule.

Plastic plugs included for transport and storage only. Certified metal plugs are available on request.

#### COMMISSIONING SPARES

We will supply a commissioning spares bag free of charge with every Rotork actuator dispatched to make good losses on site. This will include terminal cover screws and O-rings, with barrel nuts and washers for power and control terminals.

#### Testing

We detail below full details of IQ tests carried out which are specific to the design of the IQ actuator and relevant to the squirrel cage induction motor used on the IQ, which we trust will be acceptable.

Every IQ actuator prior to despatch is fully tested within the Rotork ISO9001:2000 approved quality system and a copy of the test certificate is provided, which includes details of:

#### ACTUATOR SPECIFICATION

Size, base, coupling, enclosure, gearbox type, power supply, speed/operating time, wiring diagram number and paint.

#### ACTUATOR CONFIGURATION & OPTIONS

Closing direction, maintained local controls, ESD, signal priority, interlocks, power loss inhibit, insulation class, thermostat trip, turns set, handwheel ratio and details of the configurations of any of the optional extras supplied.

#### PERFORMANCE TESTING

Torque performance tests for actuator rated torque, stall torque and customer required torque setting (when specified), are performed in both the opening and closing directions. High potential flash tests are carried out along with basic control and indication function tests. Control and indication options are tested when fitted. When a second stage worm or bevel gearbox is supplied, the combination is functionally tested to ensure correct operation. Worm gearbox stop bolts are set at 90 degrees and actuator limits set. All actuators and combinations are issued with a certificate on test completion detailing individual build and test results.

#### GENERAL NOTES

Actuator and gearbox combinations are functionally tested to ensure correct operation. Worm gearbox stop bolts are set at 90 degrees and actuator limits set.