

TITLE: TECHNICAL DATA AND FEATURES, MULTI-TURN ACTUATORS. AC THREE PHASE
MODELS: CK, CKC, CKR, CKRC

Application: Multi-turn electric actuators designed for use worldwide in nonhazardous water, power and industrial applications, for valve motorization and actuation.

Series:

- **CK:** Standard isolating duty, multi-turn electric actuator. Multi-turn actuators require electric controls. CK actuators can be retrofitted/upgraded, by adding a centronik control module to provide intelligent valve automation.
- **CKR:** Standard modulating, multi-turn electric actuator. Multi-turn actuators require electric controls. CK actuators can be retrofitted/upgraded, by adding a centronik control module to provide intelligent valve automation.
- **CKC:** Isolating duty, multi-turn electric actuator with centronik control module
- **CKRC:** Modulating duty, multi-turn electric actuator with centronik control module

Torque range:

- The tripping torque is independent adjustable for directions OPEN and CLOSE within the range (100%-40%).
- Default factory setting is 100%.
- Actuator duty cycle is rated at nominal torque, see datasheets.

Duty: Motor duty ratings are in compliance with EN 15714-2 and IEC 60034-1

- Isolating: Short-time duty S2 - 15 min, and S2-30 min, refer to motor technical datasheet for details
- Modulating: S4-25% and S4-50%, refer to motor technical datasheet for details

Motors:

- 3-ph AC asynchronous motor, type IM B9 according to IEC 60034
- Motor protection: Self-resetting thermo-switches embedded in the motor windings which are designed to trip as soon as the motor temperature exceeds +132 °C. Once the motor has cooled to normal operating temperature, the thermo-switch will reset and electrical operation can resume.
- Insulation class F, tropicalized (H, under request).

Mains voltage and frequency: Compatible power supplies for CK range actuators are shown below. Not all actuator versions or sizes are available with all motor types or voltages/frequencies. For detailed information please refer to the separate motor datasheets.

- 3-phase AC Isolating Duty, available voltage and frequency:
 220V, 240V, 380V, 400V, 415V, 440V, 500V, at 50 Hz
 220V, 240V, 380V, 440V, 460V, 480V, 600V, at 60Hz
- 3-phase AC Modulating Duty, available voltage and frequency:
 220V, 240V, 380V, 400V, 415V, 440V, 500V, at 50 Hz
 220V, 240V, 380V, 440V, 460V, 480V, 600V, at 60Hz

Permissible power supply tolerances for voltage and frequency
 Voltage tolerance ± 10%
 Frequency ± 5%
 (Special voltages and frequencies, under request)

Self-locking: Multi-turn electric actuators are self-locking up to 36 rpm (at 50 Hz), for higher speeds, and when actuator is operated manually, depending on the operating conditions might not be self-locking. Contact with Rotork.

Manual operation:

- All actuators are fitted with a handwheel for setting, emergency operation, with a low speed clutch operable at all times, providing a manual override even when the motor is running. Handwheel does not rotate during electrical operation
- Hand/Auto lever: The manual operation engagement lever can be padlocked in place, restricting manual operation to authorized personnel only. This will suit a padlock with hasp diameter of 6.5 mm.

Rotork Controls. All rights reserved. Subject to change without notice. Previous data sheets invalid with the issue of the latest data sheets. Due to production tolerance variation, the electrical values shown are averages compiled from Actuator production test data. Values are therefore provided for guidance only. Individual production tests are available on request (nominal load not included). Rotork Controls underwrite rated torque output only (specified tolerance -0/+10%)

Electromechanical control unit (EMSM)

- Limit switching:
 - Counter gear mechanism for end positions OPEN and CLOSED.
 - Settable range: 2 to 1500 (standard) Turns per stroke. Special version; 2 to 15.000 (optional)
 - 2 end position switches - 1 for each direction. DPDT, with a NO and NC contact, sealed to IP67
 - 2 extra end position switches (optional) - 1 for each direction. DPDT, with a NO and NC contact, sealed to IP67
- Torque switching:
 - Torque switching adjustable for directions OPEN and CLOSE
 - Settable range: 100%-40% of the rated torque (Max tripping torque)
 - 2 torque switches - 1 for each direction. DPDT, with a NO and NC contact, sealed to IP67
 - 2 extra torque switches (Optional) - 1 for each direction. DPDT, with a NO and NC contact, sealed to IP67
- Intermediate position switches (optional): Up to 4 intermediate position (optional) –middle travel- switches adjustable for any position. Snap action switch, 2 wires, NO/NC contact settable by cam.
- Electrical rating (Limit, torque, intermediate position and running indication blinker switches)
 - Switch voltage
 - AC inductive load ($\cos \varnothing > 0.8$): 5A (30 VAC), 5A (125 VAC), 5A (250 VAC)
 - DC resistive load : 0,5A (30 VDC), 0,5A (125 VDC), 0,5A (250 VDC)
 - Lever action: snap action
 - Contacts: Silver
- Position feedback signal, analogue (options)
 - Precision potentiometer
 - Linearity $\leq 2 \%$
 - Power 0.5 W
 - Resistance (standard) 10 k Ω , (optional) 1 k Ω , 5 k Ω . Other values under request.
 - Electronic current position transmitter: two versions
 - 2 wires CPT current position transmitter
 - 2, 3 and 4 wires CPT current position transmitter
- Mechanical position indicator (Optional): Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
- Running indication Blinker transmitter
- Heater: A resistive heater maintains a stable and humidity free environment for the internal switch mechanism compartment of the CK Standard actuator. This will utilize an independent power supply to ensure the integrity of the switch mechanism is maintained during a mains power loss. Available types: 110VAC, 220VAC and 24VDC

Digital Switch Mechanism (DSM) . Only for CKC and CKRC range.

- An absolute encoder enables the user to perform non-intrusive configuration of the actuator position limits and torque trip limits via the local display.
- The Rotork absolute encoder is a contactless position and torque sensor using only five moving parts. Through the use of multiple gearing, Rotork has been able to develop a positioning encoder that incorporates redundancy and self-checking. The orientation of the three position spur gears dictates the current actuator position between the set travel limits, up to 8.000 output turns apart.
- Torque sensing is performed through an integral sensor providing accurate torque measurement up to rated torque.
- DSM digital switch Mechanism can be fitted with following components when a back-up feedback signal is required:
 - Mechanical position indicator: Continuous indication, adjustable indicator disc with symbols OPEN and CLOSED
 - Up to 4 intermediate position (optional) –middle travel- switches adjustable for any position. Snap action switch, 2 wires, NO/NC contact settable by cam.
 - Position feedback signal, analogue (options)

Electrical connection: Universal Plug & socket, with separate power and control field wiring terminals.

- Motor contacts:

Max. rated current.	20 A
Customer connection type:	Screw
Max. cross section:	6 mm ²
Pin socket carrier material	Polyamide
Contact material:	Brass
- Protective earth contact:

Max. rated current.	-
Customer connection type:	Ring tag
Max. cross section:	M4 Ring Tag
Pin socket carrier material	Polyamide
Contact material:	Brass
- Control contacts:

Max number of contacts:	52
Max. rated current.	5A
Customer connection type:	Screw
Max. cross section:	1,5 mm ²
Pin socket carrier material	Polyamide
Contact material:	Brass, Tin Plated
- Conduits/cable entries:

Metric threads (standard)	1 x M20 x 1.5, 1 x M25 x 1.5, 1 x M32 x 1.5
Pg – threads (option)	1 x Pg 13.5, 1 x Pg 21, 1 x Pg 29
NPT – threads (option)	2 x ¾" NPT, 1 x 1¼" NPT

Enclosure protection: Watertight - IP68 (8 m/96hrs) according to EN 60529, NEMA 4 & 6 rating as standard providing enhanced environmental protection. Other conditions, under request.

Valve attachment:

- Mounting flange dimensions are in compliance with ISO 5210 or MSS SP-102 (under request). Please refer to the E.CK00035 technical data for further details.
- Output drive couplings
 - All CK range actuators have a B1 output drive type as standard. B3 and B4 are available through the use of adapter sleeves designed to mate with the standard B1 coupling.
 - Thrust bearing coupling: A detachable thrust base can be fitted for thrust bearing applications. The A type drive assembly is supplied as a self-contained cartridge assembly, facilitating quick removal and reassembly. Please refer to E.CK00035 technical data section for details.

Vibration resistance according to EN 60068-2-6: The actuators are resistant to vibration up to 2-g over a frequency Range of 10 to 200 Hz.

Noise level: The noise level originated by the multi-turn CK actuator range does not exceed 70 dB(A) at a distance of 1 m under normal operating conditions.

Design life: Design life according to EN15714-2:2010. An actuator start is any operation that requires the motor to start movement in either direction. If the motor is already moving and a command to operate in the same direction is applied this will not count as a start.

- CK Standard & CKC actuators for isolating duty: 500,000 output turns, seating at rated torque, 33% rated torque through stroke
- CKR & CKRC actuators for modulating duty: 1,800,000 starts at 50% rated torque, minimum 1° movement

Rotork Controls. All rights reserved. Subject to change without notice. Previous data sheets invalid with the issue of the latest data sheets. Due to production tolerance variation, the electrical values shown are averages compiled from Actuator production test data. Values are therefore provided for guidance only. Individual production tests are available on request (nominal load not included). Rotork Controls underwrite rated torque output only (specified tolerance -0/+10%)

Mounting position: CK range actuators (with or without Centronik module) can be operated without restriction in any mounting position.

Corrosion protection:

- Rotork actuators are designed for use worldwide in nonhazardous water, power and industrial applications. Corrosion protection is a vital part of a reliable actuation solution to ensure a long service life is achieved for the product. CK range offers two levels of protection (Refer to E.CK00060 technical datasheet for further details):
 - Standard corrosion protection degree
 - High corrosion and protection degree: Coastal and off-shore areas
- Actuator standard color is RAL5024 blue, handwheel & lever to be RAL9005 black and cover tube (if required) to be RAL9005 black. (Other colors under request)

Temperature range:

- Standard -30°C to +70°C. All CK range: CK, CKR, CKC and CKRC
- Low temperature (Optional) -40°C to +60°C. All CK range: CK, CKR, CKC and CKRC
- Extreme low temperature (Optional): -50°C to +40°C, under request
- High temperature range(Optional) 0°C to +120°C, under request

Centronik (Optional)

- The centronik is the control module that provides intelligent integral controls for integration with all types of site control systems is compatible with all CK and CKR actuator
- Provide intelligent valve automation. Centronik is designed to work either with the CK Standard mechanical switch mechanism or the optional digital switch mechanism (DSM)
- Features:
 - Microprocessor based controls
 - Multilingual user interface
 - Fully configurable LCD display:
 - All actuator configuration settings are shown in a logical menu structure on the large Centronik LCD display. The multilingual user interface display on the Centronik module shows text and numerical figures relevant to actuator operation.
 - Graphical symbols are also visible for appropriate functions. The display backlight is designed to provide good visibility in direct sunlight or challenging weather conditions.
 - Configuration via local controls or using a handheld Rotork Setting Tool
 - Bluetooth wireless connectivity is also available for the Centronik module (Optional)
 - Optional analogue control input and Current Position Transmitter (CPT) 0-20 and 4-20 mA
 - Optional Current Torque Transmitter (CTT) 0-20 and 4-20 mA for digital switch mechanism only (DSM)
 - Network bus connectivity
 - Data logging and analysis with Accent software
- Remotely mounted electronics
- Rotork provide an option to remotely mount the Centronik module of a CKC or CKRC actuator for applications
- Where high ambient temperatures or excessive levels of vibration are present at the valve location, centronik unit can be remotely mounted, up to 100 meters
(For further detail, refer to centronik technical datasheets)

Multi-turn electric actuators combined with external gearboxes: Multi-turn electric actuators can be mounted on ROTORK gearboxes (Bevel gearboxes, spur gearboxes, worm gearboxes...) in order to operate any industrial valve. Contact with ROTORK for further details.

Rotork Controls. All rights reserved. Subject to change without notice. Previous data sheets invalid with the issue of the latest data sheets. Due to production tolerance variation, the electrical values shown are averages compiled from Actuator production test data. Values are therefore provided for guidance only. Individual production tests are available on request (nominal load not included). Rotork Controls underwrite rated torque output only (specified tolerance -0/+10%)