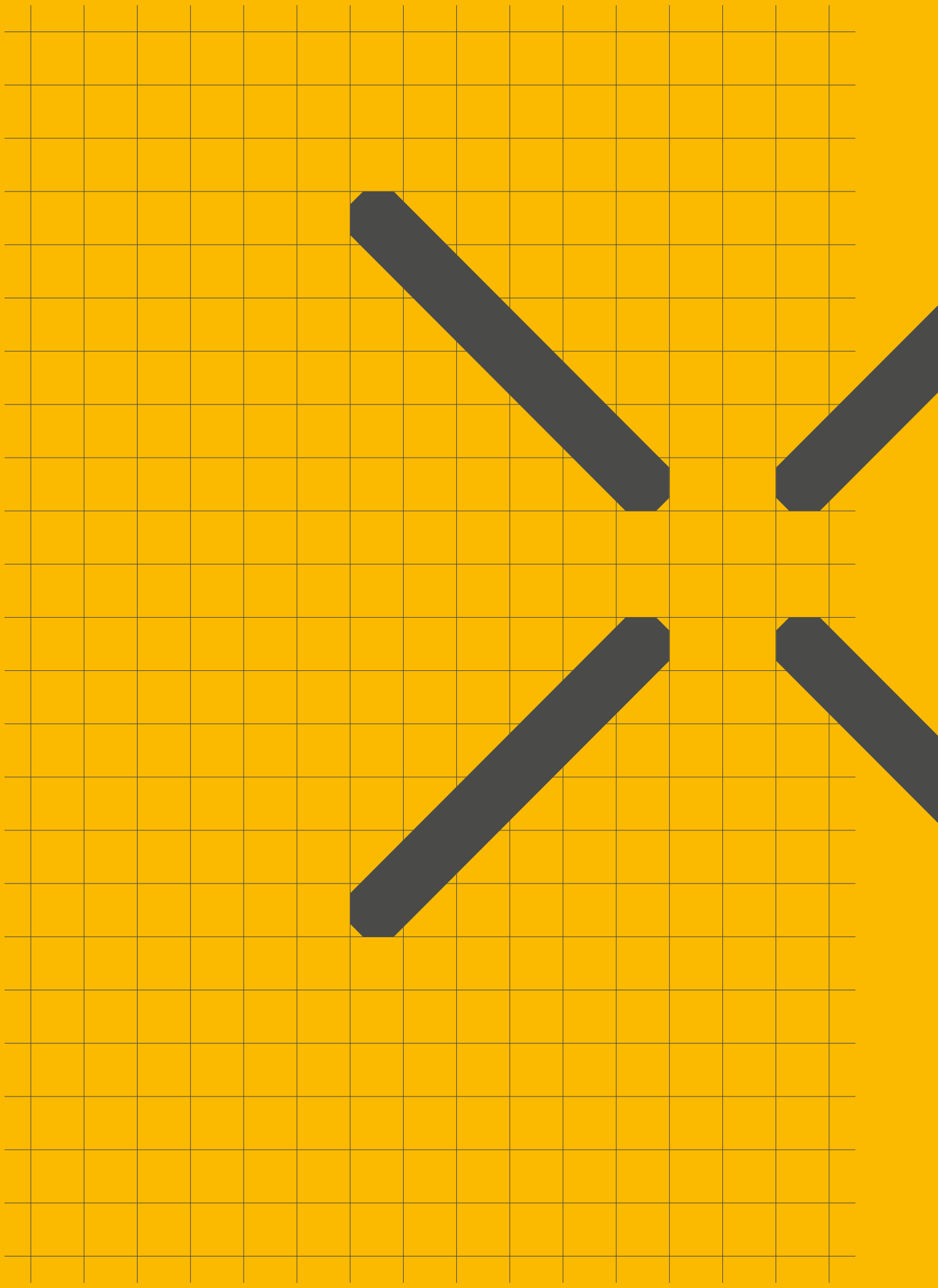
EWELLIX

MAKERS IN MOTION

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

CRAB

Rotary actuator



Contents

⚠ WARNING

Read this manual before installing, operating or maintaining this actuator. Failure to follow safety precautions and instructions could cause actuator failure and result in serious injury, death or property damage.

1.0 General information

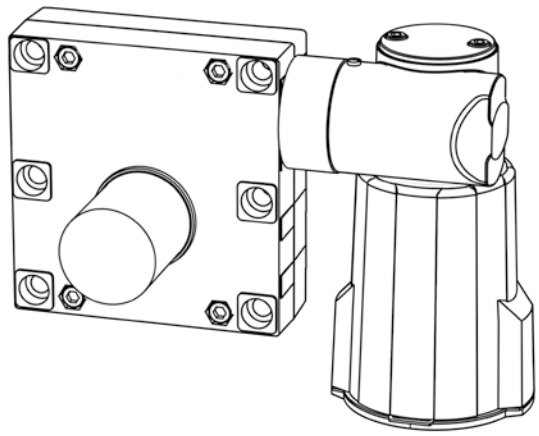
1.1 Important safety information

The actuator is assembled and delivered by Ewellix according to the ordering key. Modification of the actuator is not allowed in any way. Any modification will void the warranty and could create a safety hazard. Ewellix disclaims any and all liability or responsibility for the modified product and for any claims, demands or causes of action for damage or for personal injury resulting from modification and/or use of such product. In addition, if the actuator has been disassembled, misused or altered without prior written authorisation, warranty will be voided. These installation instructions are part of the actuator and should be kept together with all relevant documentation regarding the application in which it is used.

The following are important safety precautions that must be followed during installation:

- All electrical installation and maintenance should be carried out by qualified personnel.
- Terminate power supply to the actuator before installation or maintenance.
- Make sure that the actuator is not under load or in tension before installation or maintenance.
- Use the appropriate safety equipment when installing/repairing the actuator.
- When connecting the actuator, make sure that the power supply corresponds to what is required in the technical specifications. See section 5 below.
- When heavy load and high duty factor is used, motor and surrounding components can get hot.

Fig. 1



⚠ DANGER

Indicates a dangerous situation, which will lead to death or serious personal injury, if the precautionary measures are ignored.

⚠ WARNING

Indicates a dangerous situation, which can lead to minor or moderate injury or property damage, if the precautionary measures are ignored.

⚠ CAUTION

Indicates a dangerous situation, which can lead to minor or moderate injury, if the precautionary measures are ignored.

NOTE

Emphasizes useful hints and recommendations as well as information for efficient and trouble-free operation.

⚠ WARNING

Do not exceed the actuator's load limits. Doing so can result in serious injury and/or property damage. For technical data on load limits, see section 5 below.

2.0 Intended use

The actuator is designed to be used only in the following situations:

- Torque loads.
- Indoor applications.
- Ambient temperature range of –20 to +60 °C (–5° to +140 °F).
- Intermittent use.

2.1 Duty factors

Permitted load is related to the duty factor i.e. load must be reduced when the duty factor is increased.

If the recommended duty factor is exceeded the actuator may be overheated and damaged.

Duty factor is defined as amount of time running under load vs. total cycle time.

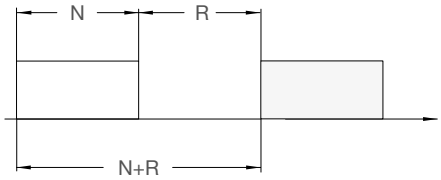
$$\text{Duty factor \%} = \frac{N}{N + R} \times 100$$

N = running under load

R = rest period

N+R = total cycle time

Permitted load for DC actuators at a specific duty factor is expressed in percentage of maximum dynamic load capacity.



Duty factor at max dynamic load and at 20 °C (68 °F): 10%.

2.2 Requirements for correct installation

- The actuator main shaft must always be perpendicular to the adjacent interface.
- The surface to which the actuator is attached must be able to withstand the force applied by the actuator.

3.0 Available versions

CRAB 17 is available in the following versions:

- 12/24 V DC
- 120/230 V AC
- Six types of shaft design

4.0 Optional equipment

- Emergency manoeuvre
- Limit switch
- Motor without cable
- Encorder E2 (↳ **7.0 Encoder E2**)
- Motor without cover
- Straight cable 2,0 m
- Jack plug cable 2,0 m

More information is available on www.ewellix.com.

5.0 Technical data

All values for standard actuators are tested under the following conditions:

- Temperature +20 °C (68 °F)
- Stabilized voltage

Table 1

Description	Unit	-
Max. angular working range	-	∞
Max. angular speed (theoretical)	°/s	85-11[1]
Max dynamic torque on main shaft	Nm	15-200
Max. axial load	N	5 000
Max. tilting torque on main shaft	Nm	100
Backlash (CRAB 17)	°	±0,25
Start torque (CRAB 17)	Nm	≈0,3 Nm
Temperature range	°C	–20 to +60
Weight	kg	3

[1] Max dynamic torque and max angular speed depends on secondary gear and motor selection

6.0 Wiring diagrams

Fig. 2

120/230 V AC

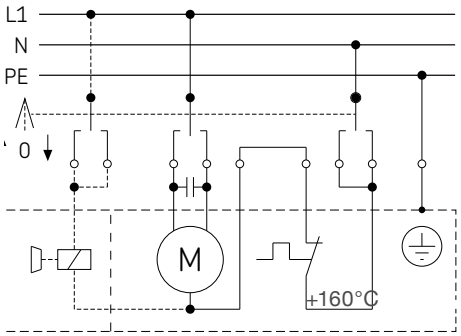
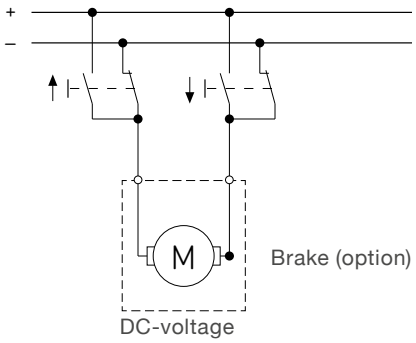


Fig. 3

12/24 V DC



⚠ WARNING

- All electrical installation/maintenance should be carried out by qualified personnel.
- Isolate the power before installation or maintenance. Use the appropriate safety equipment when installing/repairing the equipment.
- When connecting this equipment to the electrical supply, make sure that it corresponds to the one described in the technical specifications.

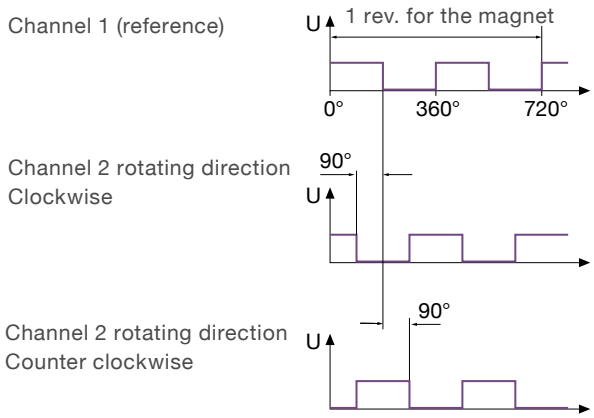
7.0 Encoder E2

Two-channel quadrature encoder for CRAB17

- The encoder is available for all motor types and screw pitches in the CRAB17-modular range
- The encoder consists of two parts; one rotating magnet on the motor drive shaft, and one circuit board (PCB) assembled on the motor's opposite side.
- The rotating permanent magnet has four poles (2N and 2S) and during one motor revolution, two pulses are generated in each channel.
- The output signals, channel 1 and 2, are phase-shifted ±90°
- Supply voltage range is from 5 to 24 V DC
- Temperature range is from –20 to +60 °C

Technical information

Fig. 4



(1) Output signals when the actuator is rotating either clockwise or counter clockwise.

Table 2

Movement resolution

Actuator	Gear option	Pulse at 1° angle
CRAB 17	1	7,22
CRAB 17	2	3,61
CRAB 17	4	1,81

Table 3

Recommended operating ratings

Parameter	Value
Temperature range	-20 to +60°C
Supply voltage range	+5 to +24 V DC
Current sink capability	Max 20 mA

Table 4

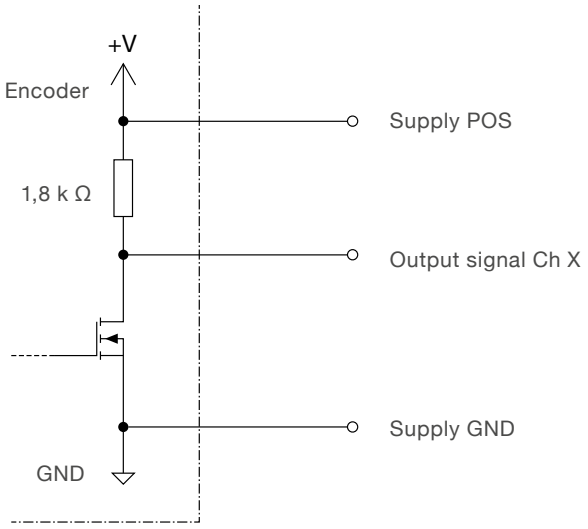
Wire color coding (colors according to DIN 47100)

Wire color	Function
Brown	Supply voltage GND (-)
White	Supply voltage POS (+)
Green (L)[1] alt. Yellow (R)[1]	Output signal channel 1
Yellow (R)[1] alt. Green (L)[1]	Output signal channel 2

[1] The alternatives in wire color for output signals channel 1 and 2 mean that the motor has been assembled on the left or right side of the gearbox. The wire is delivered with stripped ends (no connector).

Fig. 5

Encoder output circuitry – open drain with pull-up



8.0 Maintenance

Table 5

Interval	Maintenance work
Daily	Check actuator for visible damage Clean off dust and dirt if necessary
Monthly	Check attachments and tighten if necessary Check that cables are not damaged, replace if necessary Check optional equipment for visible damage, replace if necessary Functional check of operation
Annualy	Check labels

Keep this information for future reference. Please contact your local Ewellix sales office if you need more information or spare parts.

Please check www.ewellix.com for relevant addresses.

ewellix.com

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