



## KEYSTONE EPI-2 ELECTRIC ACTUATORS

The EPI-2 series are compact, intelligent quarter-turn electric actuators for the accurate control of valves with torques from 35 to 2000 Nm / 308 to 17,700 lb.in.



### FEATURES

- Low or high voltage single phase DC or AC power supply with 3-phase option
- Multiple adjustable stroking times to suit specific applications
- Interchangeable base plate and range of shaft inserts enable simple connection to any valve type
- Intelligent control unit prevents overheating
- Epicyclical gearing ensures reliable and smooth operation
- Top-mounted position indicator
- Constantly-engaged, hand wheel-operated manual override in case of power failure
- Bluetooth™ wireless connectivity for non-intrusive configuration, operation and diagnostics
- Optional local control panel for manual valve operation with additional open/close indicator
- Simple upgrade options for modulating control and network communication via DeviceNet or Profibus DP protocols
- Latched-type output contacts for fully open/fully close remote indication. Output contacts for monitor and blinker/local selector indication are also available

Bluetooth™ is a trademark of Bluetooth SIG. Inc, USA

### GENERAL APPLICATION

The EPI-2 is available in six sizes and is designed for on/off or modulating control of butterfly, ball, rotary plug valves or dampers in a wide range of heavy industrial, chemical and petrochemical plants on and offshore.

### APPROVALS

Waterproof: IP66/68 or NEMA 4/4X/6 (NEMA ICS6/NEMA 250) CAN/CSA C22.2 No 139-10 UL 429-2009

Explosionproof: Ex d e IIB T5 Gb (gas) Ex tb IIIC T100°C Db (dust) (prefix c for model 2000) NEC 500 (FM approval) Class I, Zone 1 Group IIB Class II, III, Division 1, Groups E, F,G

### TECHNICAL DATA

Power supply: Single phase from 24 to 48 V DC or AC at 50/60 Hz  
Single phase from 100 to 240 V DC or AC at 50/60 Hz  
3-phase from 208-240 V AC, 380-480 V AC and 500-575 V AC

Voltage fluctuations: +/- 10%

Frequency: +/- 5%

Torque output: From 35 to 2000 Nm / 308 to 17,700 lb.in.

Ambient temperature  
Standard range: -25°C to +70°C / -13°F to 158°F

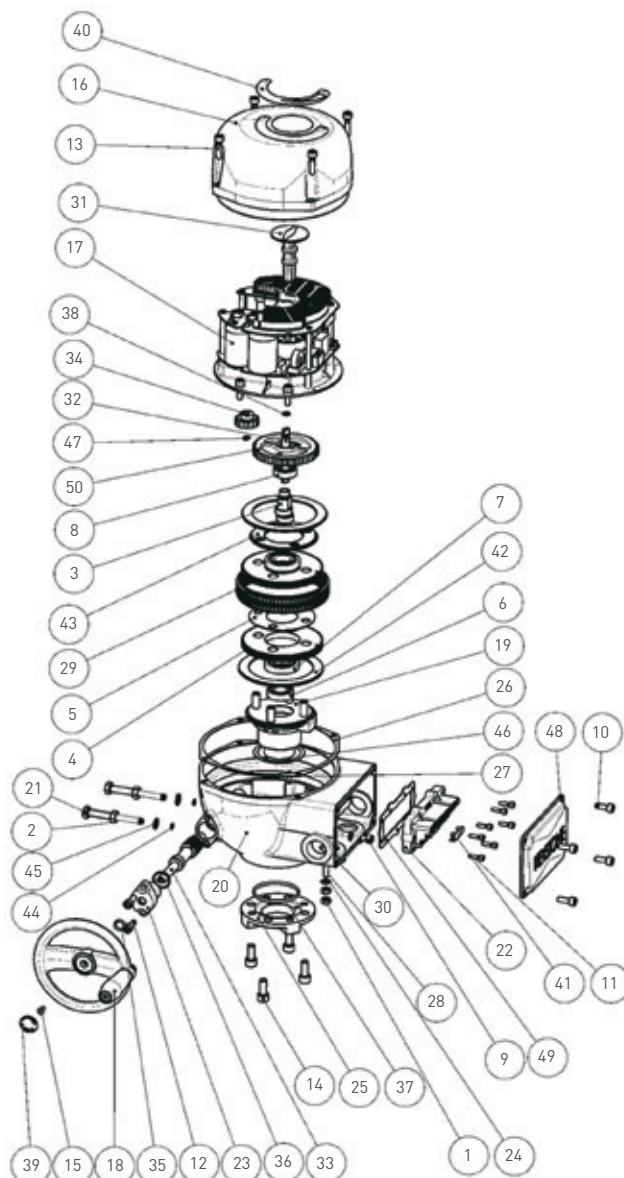
Low temp range: -40°C to +70°C / -40°F to 158°F

Conduit entry: M25/1" NPT

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

COMPONENT PARTS - MODELS 063/E006-125/E013-250/E025-500/E051-1000/E091

| Part | Description                       | Quantity |
|------|-----------------------------------|----------|
| 1    | Nut UNI5588 M6                    | 2        |
| 2    | Nut UNI5588 M8                    | 2        |
| 3    | Eccentric                         | 1        |
| 4    | Planocentric gear                 | 2        |
| 5    | Spacer                            | 1        |
| 6    | Ball bearing type 16002           | 1        |
| 7    | Ball bearing type 16004           | 2        |
| 8    | Ball bearing type 6001            | 1        |
| 9    | ESH screw UNI5931- M6x8           | 1        |
| 10   | HSCH screw UNI5931- M6x16         | 4        |
| 11   | HSCH screw UNI5931- M4x14         | 7        |
| 12   | HSCH screw UNI5931- M6x18         | 2        |
| 13   | HSCH screw UNI5931- M6x25         | 4        |
| 14   | HSCH screw UNI5931- M8x20         | 4        |
| 15   | HSSC screw UNI5933- M4x10         | 1        |
| 16   | Cover assembly                    | 1        |
| 17   | Drive and control unit            | 1        |
| 18   | Handwheel                         | 1        |
| 19   | Output drive assembly             | 1        |
| 20   | Standard housing                  | 1        |
| 21   | Stopper                           | 2        |
| 22   | Terminal block                    | 1        |
| 23   | Worm shaft flange                 | 1        |
| 24   | Anti-loosening washer UNI 8842-J6 | 1        |
| 25   | Base plate ISO 5211 / F05-F07     | 1        |
| 26   | Cover gasket                      | 1*       |
| 27   | Dowel pin UNI EN 22338            | 1        |
| 28   | Earth stud                        | 1        |
| 29   | Fixed anulus                      | 1        |
| 30   | Gasket                            | 1*       |
| 31   | Indicator                         | 1        |
| 32   | Indicator shaft                   | 1        |
| 33   | Manual worm shaft                 | 1        |
| 34   | Motor pinion                      | 1        |
| 35   | O-ring Di=10.77/W=2.62            | 1*       |
| 36   | O-ring Di=18.77/W=1.78            | 1*       |
| 37   | O-ring Di=52.07/W=2.62            | 1*       |
| 38   | O-ring Di=6.07/W=1.78             | 1*       |
| 39   | Plug                              | 1        |
| 40   | Position label                    | 1        |
| 41   | Power clamps protection           | 1        |
| 42   | Ring                              | 2        |
| 43   | Ring for pins alignment           | 1        |
| 44   | Ring RW 7 UNI7433                 | 2        |
| 45   | Seal washer 8.3                   | 2        |
| 46   | Sliding ring                      | 1        |
| 47   | Snap ring for shaft D.6           | 1        |
| 48   | Terminal block cover              | 1        |
| 49   | Terminal board gasket             | 1*       |
| 50   | Wheel                             | 1        |



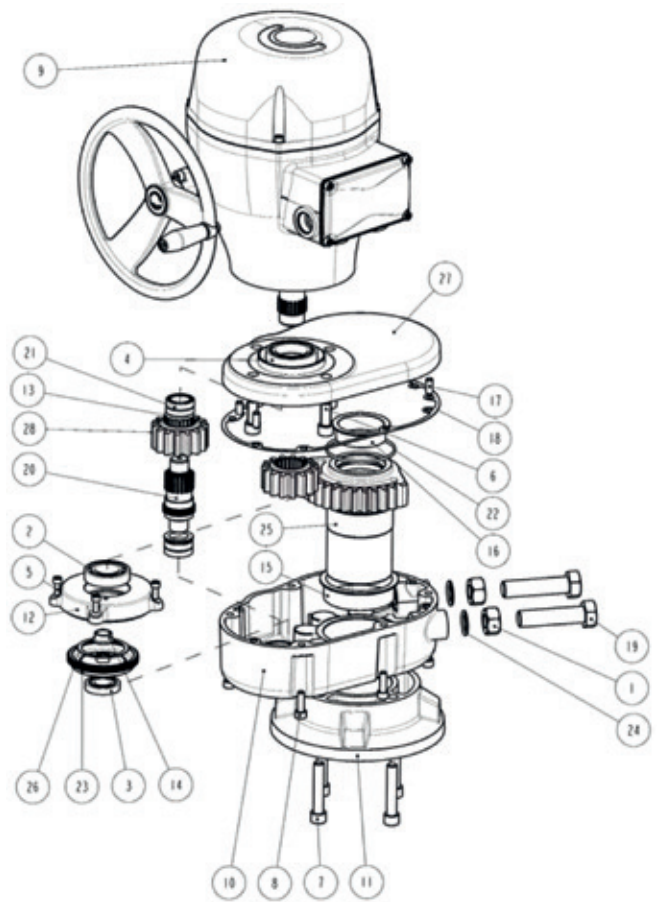
\* Indicates recommended spare parts

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## COMPONENT PARTS - MODEL 2000/E171

| Part | Description                          | Quantity |
|------|--------------------------------------|----------|
| 1    | Nut M20 ISO 4032 EN 24032            | 2        |
| 2    | Ball bearing type 6006               | 1        |
| 3    | Ball bearing type 16004              | 1        |
| 4    | Ball bearing type 61908              | 1        |
| 5    | HSBC screw UNI5931- M6x16            | 3        |
| 6    | HSBC screw UNI5931- M12x30           | 4        |
| 7    | HSBC screw UNI5931- M12x65           | 4        |
| 8    | HSBC screw UNI5931- M8x25 A4-70      | 6        |
| 9    | EPI-2 actuator                       | 1        |
| 10   | Base housing                         | 1        |
| 11   | Base plate ISO 5211 / F12-F16        | 1        |
| 12   | Bearing support                      | 1        |
| 13   | Bushing                              | 2        |
| 14   | Bushing                              | 1        |
| 15   | Bushing                              | 1        |
| 16   | Bushing                              | 1        |
| 17   | Dowel pin UNI EN 22338 D 8x20 type B | 4        |
| 18   | Gasket                               | 1*       |
| 19   | Hex head screw M20x80 UNI EN 24017   | 2        |
| 20   | Idle wheel shaft                     | 1        |
| 21   | Needle bearing type NKI 22/16        | 2        |
| 22   | O-ring Di=82.22/W=2.62               | 1*       |
| 23   | Position wheel                       | 1        |
| 24   | Seal washer 20.3                     | 2        |
| 25   | Selector gear                        | 1        |
| 26   | Sliding ring                         | 1        |
| 27   | Upper vover                          | 1        |
| 28   | Wheel                                | 2        |

\* Indicates recommended spare parts



# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## DESIGN FEATURES

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### **Mechanical connection to the valve**

EPI-2 actuators feature a multi drilled base plate and a range of drive inserts to allow direct mounting to almost all valve types according to the EN ISO 5211 and other manufacturers' standards.

### **Power supply**

EPI-2 can simply be connected to the local power supply. It accepts any single phase input voltages (from 24 to 48 V DC or AC and 100 to 240 V DC or AC). Alternatively 3 phase voltages from 208-240 V AC, 380-480 V AC and 500-575 V AC are also available

### **Electric motor thermostat**

A thermostat to protect the motor temperature in hot applications is included as standard in the control circuit of the electric actuator.

### **Heater**

A heater is standard available within the unit and is powered from the motor power supply. It is automatically activated when the temperature drops below 10°C in order to prevent condensation.

### **Actuator service**

The standard actuator is suitable for open/close and modulating applications.

### **Compact and light design**

EPI-2 actuators are very compact and balanced for easy installation to small valves minimizing pipe work stress or loads to the valve shaft.

### **Actuator configuration**

Each actuator is equipped with 2 rotary switches on the logic board to configure each function and parameter like position, torque, open/close speed and output contacts. Additionally each optional module has its own additional switches for its specific configuration.

### **Local manual override**

A constantly engaged manual override (not rotating during motor operation) is fitted to all EPI-2 actuators.

### **Torque and sizing**

The EPI-2 range comprises of six models, for operating torques of up to 2000 Nm / 17,700 lb.in. with a configurable operation time from 15 to 180 seconds. The nominal output torque value is constant along the entire stroke.

### **Non-intrusive configuration**

With Bluetooth® wireless technology enabled on your PDA or PC all configuration requirements can be undertaken without opening the unit. Direct access to the EPI-2 is then available for configuration and predictive/preventative maintenance information, including valve position, actuator speed, output torque, alarm and status.

### **Position monitoring**

The EPI-2 provides a local mechanical position indication. For remote indication the position is detected by a non-contact sensor. The open and close position are configured via the electronic control card.

### **Electronic controls**

Internal drive to reverse the actuator rotation direction via remote control signals with internal 24 V DC or external 24 V DC/AC up to 120 V DC/AC power supply.

### **Output contacts**

4 latched-type output contacts for fully open/fully close remote indication; 1 output contact for monitor (loss of power, torque alarm, high temperature alarm, travel alarm, position sensor, hardware malfunction, local interface malfunction, local selector in LOCAL); 1 output contact for blinker/local selector indication (local selector feature only with OM3 installed).

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## OPTIONAL MODULES AND PERFORMANCE

### OPTIONAL MODULES

#### OM1 I/O additional module

Analog position INPUT 4-20 mA or 0-10 V DC  
 Analog position OUTPUT 4-20 mA or 0-10 V DC  
 4 additional SPST output contacts  
 Optional Bluetooth interface

#### Monitor relay

Information about loss of input signal and Bluetooth failure are available on monitor relay output contact.

#### OM3 local interface

Local/remote selector  
 OP/CL pushbuttons  
 2 LEDs for local indication  
 Available in WP version

#### OM13 3-wire module

110/240 V AC  
 3-wire control module for open/close

#### Bus communication – network interfaces

OM9) Profibus DP V0/V1  
 OM11) DeviceNet

### OPTIONAL MODULES SELECTION TABLE

| Order code | OM1 I/O additional module | OM3 local interface | Bluetooth component | OM9 PDP V0/V1 | OM11 DeviceNet | OM13 3-wires module |
|------------|---------------------------|---------------------|---------------------|---------------|----------------|---------------------|
| P1         | ✓                         |                     |                     |               |                |                     |
| PA         | ✓                         | ✓                   | ✓                   |               |                |                     |
| P6         | ✓                         | ✓                   |                     |               |                |                     |
| P7         | ✓                         |                     | ✓                   |               |                |                     |
| P3         |                           | ✓                   |                     |               |                |                     |
| 5P         |                           |                     | ✓                   | ✓             |                |                     |
| 6P         |                           | ✓                   | ✓                   | ✓             |                |                     |
| 5D         |                           |                     | ✓                   |               | ✓              |                     |
| 6D         |                           | ✓                   | ✓                   |               | ✓              |                     |
| PG         |                           |                     |                     |               |                | ✓                   |

### NOTES

- Each optional module (OMx) will be provided with its own installation and maintenance instructions.
- All modules except OM13 are available for both single phase and 3-phase voltage versions.
- Bluetooth component is integrated in the OM1, OM9 and OM11 card: not available for integration by local organizations, as a stand alone unit.
- OM13 is not available with 3-phase supply and for LV version (single phase voltage from 24 to 48 V DC/V AC).

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## PERFORMANCE AND APPROVALS

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### OPERATING TIMES

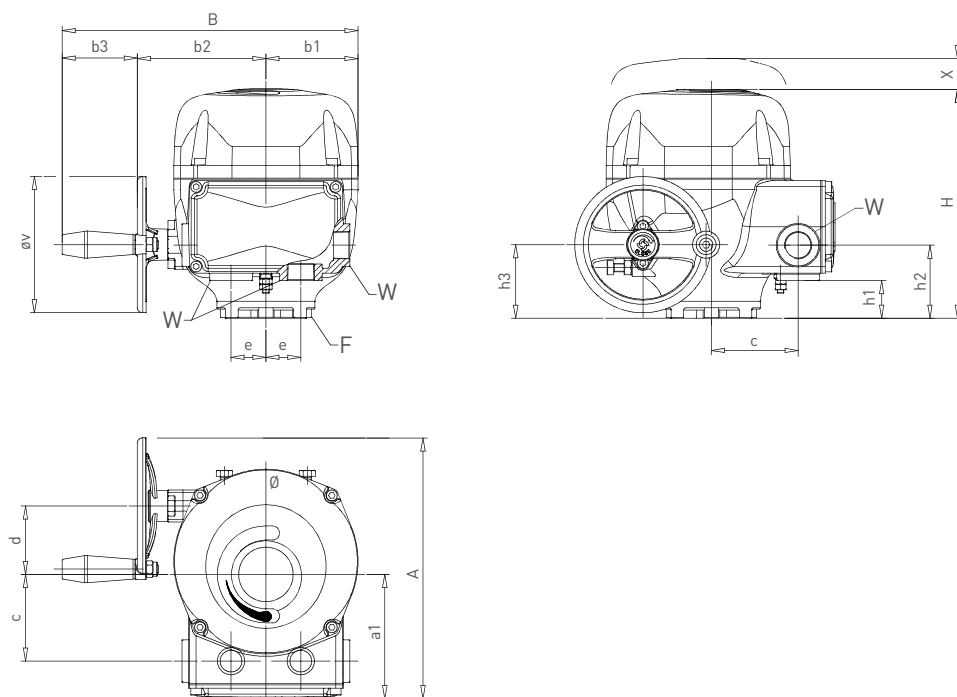
| Model     | Nominal torque<br>(Nm / lb.in.) | Operating time (secs 90°) at selected step |     |     |
|-----------|---------------------------------|--|-----|-----|
|           |                                 | 8  | 6   | 4   |
| 063/E006  | 63/600                          | 15   | 28  | 48  |
| 125/E013  | 125/1300                        | 15   | 28  | 48  |
| 250/E025  | 250/2500                        | 15   | 28  | 48  |
| 500/E051  | 500/5100                        | 15   | 28  | 48  |
| 1000/E091 | 1000/9100                       | 24   | 45  | 80  |
| 2000/E171 | 2000/17700                      | 53   | 100 | 180 |

Times are guaranteed with a tolerance of  $\pm 10\%$  on the 90° stroke

| Approvals                  |   |
|----------------------------|---|
| <b>Waterproof</b>          | IP66/68 or NEMA 4/4X/6 (NEMA ICS6/NEMA 250)<br>CAN/CSA C22.2 No 139-10 and UL 429-2009  |
| <b>Explosionproof</b>      | Ex d e IIB T5 Gb (gas)<br>Ex tb IIIC T100°C Db (dust)<br>(prefix c for model 2000)<br>NEC 500 (FM approval)<br>Class I, Zone 1 Group IIB<br>Class II, III, Division 1, Groups E, F, G |
| <b>Painting</b>            | ESPC for 1000 hrs salt spray resistance (ASTM D 2247-02 and ASTM B117-97)   |
| <b>Vibration and noise</b> | 1 to 500 Hz with 2 g peak acceleration<br>(IEC60068-2-6-appendix B)<br>65 dB (grade A) (EN 21680)   |

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

OVERALL DIMENSIONS - MODELS 063/E006-125/E013-250/E025-500/E051-1000/E091



## NOTES

W = Nr. 4 cable entries M25x1.5 acc. to ISO 724/965-1 (others available as special versions)

X = Space for cover removal

F = ISO 5211 Standard flange (others available)

## EPI-2 BASE UNIT MODELS 063/E006 TO 1000/E091 - METRIC (mm / kg)

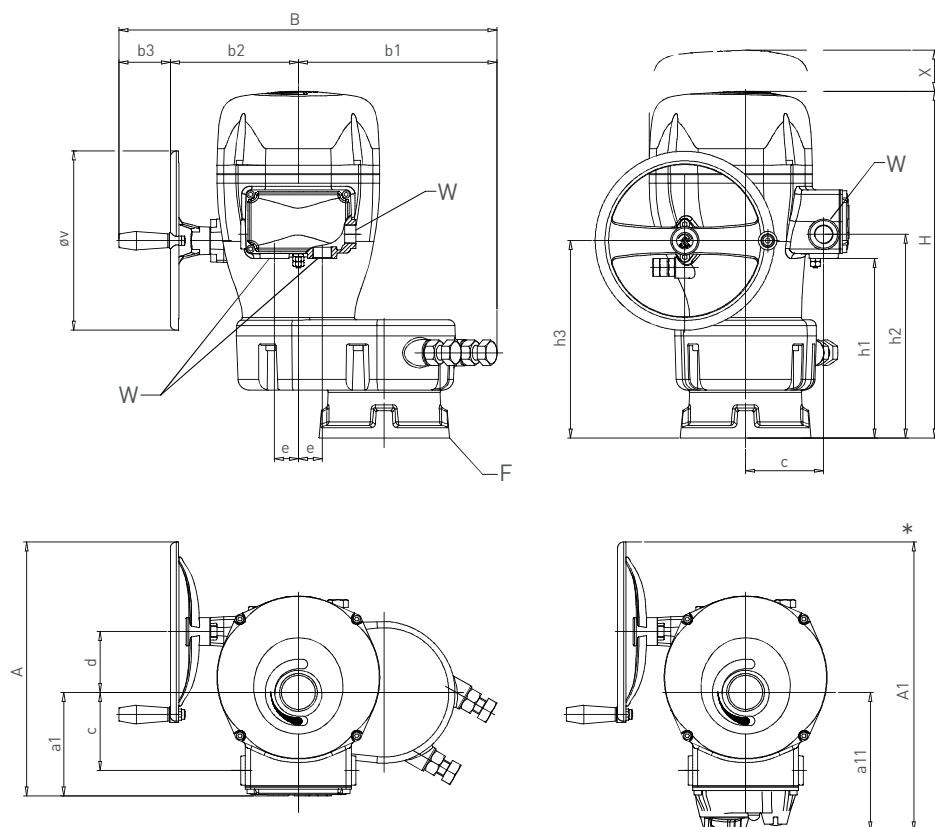
| Model     | A   | B   | H   | a1    | b1  | b2  | b3 | c     | d  | e  | h1    | h2    | h3    | øv  | x   | F   | kg   |
|-----------|-----|-----|-----|-------|-----|-----|----|-------|----|----|-------|-------|-------|-----|-----|-----|------|
| 063/E006  | 239 | 272 | 210 | 114.0 | 85  | 118 | 69 | 80.0  | 63 | 32 | 35.5  | 67.0  | 67.5  | 125 | 175 | F07 | 7.5  |
| 125/E013  | 239 | 272 | 230 | 114.0 | 85  | 118 | 69 | 80.0  | 63 | 32 | 53.5  | 86.0  | 86.5  | 125 | 175 | F10 | 9.5  |
| 250/E025  | 295 | 332 | 287 | 129.0 | 109 | 154 | 69 | 95.0  | 76 | 32 | 63.5  | 95.0  | 92.0  | 180 | 230 | F12 | 16.5 |
| 500/E051  | 295 | 332 | 287 | 129.0 | 109 | 154 | 69 | 95.0  | 76 | 32 | 63.5  | 95.0  | 92.0  | 180 | 230 | F12 | 18.0 |
| 1000/E091 | 340 | 349 | 364 | 138.5 | 109 | 171 | 69 | 104.5 | 81 | 32 | 140.0 | 172.5 | 164.0 | 240 | 230 | F16 | 26.0 |

## EPI-2 BASE UNIT MODELS 063/E006 TO 1000/E091 - IMPERIAL (in / lb)

| Model     | A    | B    | H    | a1  | b1  | b2  | b3  | c   | d   | e   | h1  | h2  | h3  | øv  | x   | F   | lb |
|-----------|------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| 063/E006  | 9.4  | 10.7 | 8.3  | 4.5 | 3.3 | 4.6 | 2.7 | 3.1 | 2.5 | 1.3 | 1.4 | 2.6 | 2.7 | 4.9 | 6.9 | F07 | 17 |
| 125/E013  | 9.4  | 10.7 | 9.1  | 4.5 | 3.3 | 4.6 | 2.7 | 3.1 | 2.5 | 1.3 | 2.1 | 3.4 | 3.4 | 4.9 | 6.9 | F10 | 21 |
| 250/E025  | 11.6 | 13.1 | 11.3 | 5.1 | 4.3 | 6.1 | 2.7 | 3.7 | 3.0 | 1.3 | 2.5 | 3.7 | 3.6 | 7.1 | 9.1 | F12 | 36 |
| 500/E051  | 11.6 | 13.1 | 11.3 | 5.1 | 4.3 | 6.1 | 2.7 | 3.7 | 3.0 | 1.3 | 2.5 | 3.7 | 3.6 | 7.1 | 9.1 | F12 | 40 |
| 1000/E091 | 13.4 | 13.7 | 14.3 | 5.5 | 4.3 | 6.7 | 2.7 | 4.1 | 3.2 | 1.3 | 5.5 | 6.8 | 6.5 | 9.4 | 9.1 | F16 | 57 |

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## OVERALL DIMENSIONS - MODEL 2000/E171



### NOTES

W = Nr. 4 cable entries M25x1.5 acc. to ISO 724/965-1 (others available as special versions)

X = Space for cover removal

F = ISO 5211 Standard flange (others available)

### EPI-2 MODEL 2000/E171 - METRIC (mm / kg)

| Model     | A   | A1  | B   | H   | a1    | a11   | b1  | b2  | b3 | c     | d  | e  | h1  | h2    | h3  | øv  | x   | F       | kg   |
|-----------|-----|-----|-----|-----|-------|-------|-----|-----|----|-------|----|----|-----|-------|-----|-----|-----|---------|------|
| 2000/E171 | 340 | 387 | 506 | 464 | 138.5 | 185.5 | 266 | 171 | 69 | 104.5 | 81 | 32 | 240 | 272.5 | 264 | 240 | 230 | F10-F14 | 45.0 |
| 2000/E171 | 340 | 387 | 506 | 464 | 138.5 | 185.5 | 266 | 171 | 69 | 104.5 | 81 | 32 | 240 | 272.5 | 264 | 240 | 230 | F12-F16 | 46.5 |

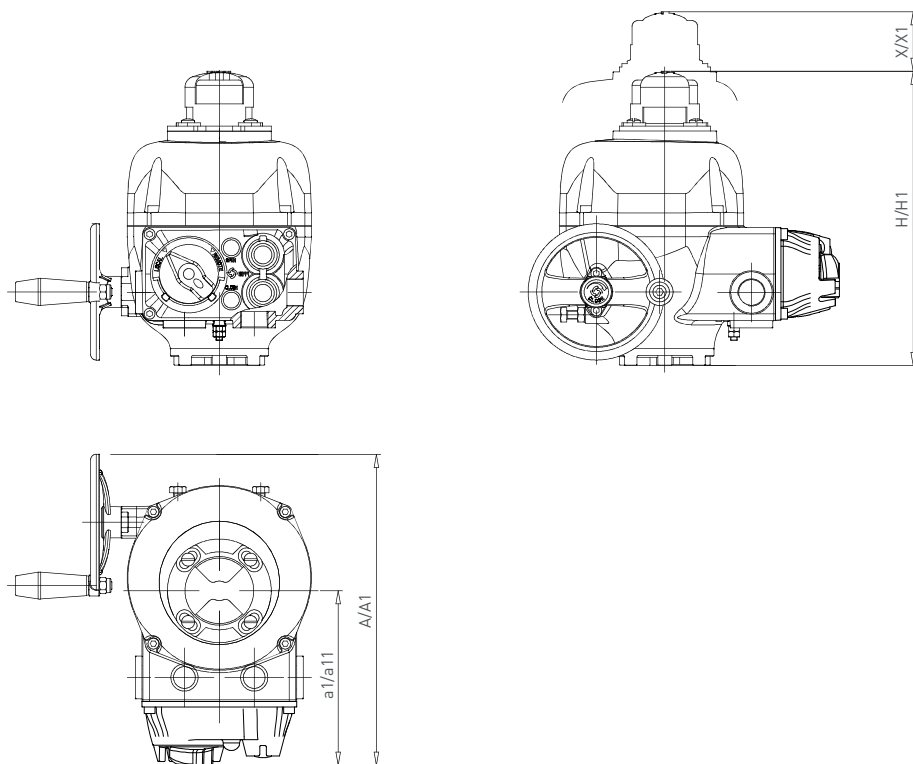
### EPI-2 MODEL 2000/E171 - IMPERIAL (in / lb)

| Model     | A    | A1   | B    | H    | a1  | a11 | b1   | b2  | b3  | c   | d   | e   | h1  | h2   | h3   | øv  | x   | F       | lb  |
|-----------|------|------|------|------|-----|-----|------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|---------|-----|
| 2000/E171 | 13.4 | 15.2 | 19.9 | 18.3 | 5.5 | 7.3 | 10.5 | 6.7 | 2.7 | 4.1 | 3.2 | 1.3 | 9.4 | 10.7 | 10.4 | 9.4 | 9.1 | F10-F14 | 99  |
| 2000/E171 | 13.4 | 15.2 | 19.9 | 18.3 | 5.5 | 7.3 | 10.5 | 6.7 | 2.7 | 4.1 | 3.2 | 1.3 | 9.4 | 10.7 | 10.4 | 9.4 | 9.1 | F12-F16 | 103 |



# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## OVERALL DIMENSIONS - OPTIONAL MODULES



### NOTES

1. Dimensions a1 and A are for the standard unit.
2. Dimensions a11 and A1 are for the standard unit plus a local interface option.
3. Dimensions H and X are for the standard unit.
4. Dimensions H1 and X1 are for the standard unit plus a Beacon type indicator.
5. X / X1 indicates the space for cover removal.
6. All other dimensions are as the standard unit.

### EPI-2 WITH OPTIONAL MODULES - METRIC (mm / kg)

| Model     | A   | A1  | a1    | a11   | H   | H1  | X   | X1  | kg <sup>[1]</sup> | kg <sup>[2]</sup> |
|-----------|-----|-----|-------|-------|-----|-----|-----|-----|-------------------|-------------------|
| 063/E006  | 239 | 285 | 114.0 | 160.0 | 210 | 270 | 175 | 265 | 7.5               | 8.0               |
| 125/E013  | 239 | 285 | 114.0 | 160.0 | 230 | 290 | 175 | 265 | 9.5               | 10.0              |
| 250/E025  | 295 | 341 | 129.0 | 175.0 | 287 | 347 | 230 | 330 | 15.5              | 16.0              |
| 500/E051  | 295 | 341 | 129.0 | 175.0 | 287 | 347 | 230 | 330 | 17.0              | 17.5              |
| 1000/E091 | 340 | 387 | 138.5 | 185.5 | 364 | 425 | 230 | 330 | 23.0              | 26.5              |

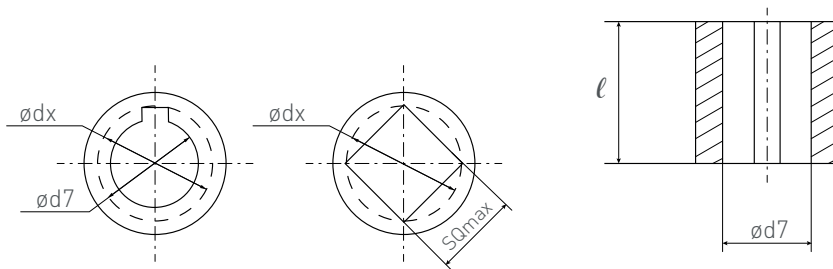
### EPI-2 WITH OPTIONAL MODULES - IMPERIAL (in / lb)

| Model     | A    | A1   | a1  | a11 | H    | H1   | X   | X1   | lb <sup>[1]</sup> | lb <sup>[2]</sup> |
|-----------|------|------|-----|-----|------|------|-----|------|-------------------|-------------------|
| 063/E006  | 9.4  | 11.2 | 4.5 | 6.3 | 8.3  | 10.6 | 6.9 | 10.4 | 17                | 18                |
| 125/E013  | 9.4  | 11.2 | 4.5 | 6.3 | 9.1  | 11.4 | 6.9 | 10.4 | 21                | 22                |
| 250/E025  | 11.6 | 13.4 | 5.1 | 6.9 | 11.3 | 13.7 | 9.1 | 13.0 | 34                | 35                |
| 500/E051  | 11.6 | 13.4 | 5.1 | 6.9 | 11.3 | 13.7 | 9.1 | 13.0 | 37                | 39                |
| 1000/E091 | 13.4 | 15.2 | 5.5 | 7.3 | 14.3 | 16.7 | 9.1 | 13.0 | 51                | 58                |

1. Weight with Beacon option module
2. Weight with local interface module

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## OUTPUT DRIVE DIMENSIONS



### NOTES

1. Insert bush supplied with unmachined bore.  
Largest bore can be supplied with solid piece bush.
2. Fixing bolts or rods supplied only on request.
3. dx: the maximum accepted diameter described by key, square or flat machining.
4. Position of the shaft with the valve closed.

### OUTPUT DRIVE EN ISO 5211 STANDARD

| Model     | EN ISO 5211 flange | Output drive dimensions (mm/in) |         | Order code | Output drive dimensions (mm/in) |               |                  |         | Order code |
|-----------|--------------------|---------------------------------|---------|------------|---------------------------------|---------------|------------------|---------|------------|
|           |                    | Style square                    | l*      |            | Flat                            | Bore diameter | Key              | l*      |            |
| 063/E006  | F05-F07            | 17/0.66                         | 35/1.36 | D4         | 14xD20 / 0.55xD0.78             | -             | -                | 35/1.36 | E3         |
| 125/E013  | F07-F10            | 22/0.86                         | 54/2.11 | D5         | 22xD30 / 0.86xD1.18             | -             | -                | 54/2.10 | E5         |
| 250/E025  | F07-F10-F12        | 22/0.86                         | 54/2.11 | D5         | 22xD30 / 0.86xD1.18             | -             | -                | 54/2.11 | E5         |
| 500/E051  | F10-F12            | 27/1.05                         | 62/2.42 | D6         | -                               | D35 / D1.37   | 10x8 / 0.39x0.31 | 62/2.42 | E6         |
| 1000/E091 | F10-F14            | 36/1.41                         | 40/1.56 | D7         | -                               | -             | -                | -       | -          |
| 1000/E091 | F12-F16            | 36/1.41                         | 40/1.56 | DA         | -                               | D50 / D1.96   | 14x9 / 0.55x0.35 | 80/3.12 | E9         |
| 2000/E171 | F10-F14            | 36/1.41                         | 40/1.56 | D7         | -                               | -             | -                | -       | -          |
| 2000/E171 | F12-F16            | 36/1.41                         | 40/1.56 | DA         | -                               | D50 / D1.96   | 14x9 / 0.55x0.35 | 80/3.12 | E9         |

\* Insert length (mm/in)

### OUTPUT DRIVE K TYPE NON-ISO FLANGES

| Model     | K flange                | Output drive dimensions (mm/in) |                |                         |          | Order code |
|-----------|-------------------------|---------------------------------|----------------|-------------------------|----------|------------|
|           |                         | Flat                            | Bore diameter  | Key                     | l*       |            |
| 063/E006  | 44.45-82.55 / 1.75-3.25 | 12.7xD19 / 0.5xD0.74            | -              | -                       | 35/1.36  | U4         |
| 125/E013  | 82.55 / 3.25            | -                               | D28.7 / D1.12  | 6.35x6.35 / 0.25x0.25   | 54/2.11  | U8         |
| 250/E025  | 82.55-127 / 3.25-5      | -                               | D28.7 / D1.12  | 6.35x6.35 / 0.25x0.25   | 54/2.11  | U8         |
| 500/E051  | 82.55-127 / 3.25-5      | -                               | D41.38 / D1.62 | 9.53x9.53 / 0.375x0.375 | 62/2.42  | UA         |
| 1000/E091 | 127-165 / 5-6.5         | -                               | D47.73 / D1.87 | 12.7x12.7 / 0.5x0.5     | 108/4.21 | UC         |
| 2000/E171 | 127-165 / 5-6.5         | -                               | D47.73 / D1.87 | 12.7x12.7 / 0.5x0.5     | 108/4.21 | UC         |

\* Insert length (mm/in)

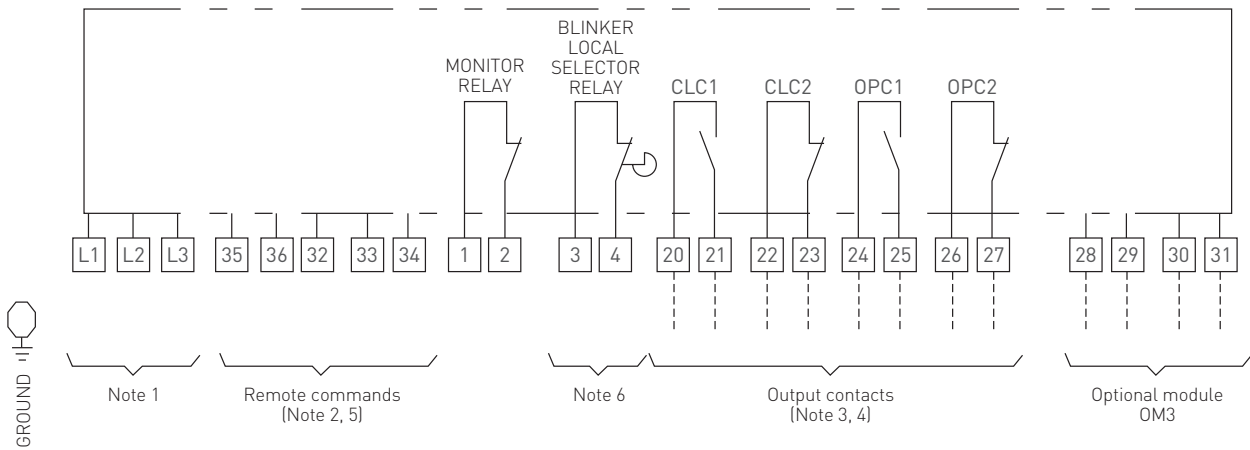
### OUTPUT DRIVE NON-STANDARD

| Model     | Output drive dimensions (mm/in) |                      |         |          |
|-----------|---------------------------------|----------------------|---------|----------|
|           | $\varnothing d7$ max            | $\varnothing dx$ max | SQ max  | l*       |
| 063/E006  | 17/0.66                         | 23/0.90              | 17/0.66 | 35/1.36  |
| 125/E013  | 22/0.89                         | 29/1.13              | 22/0.89 | 54/2.11  |
| 250/E025  | 28/1.09                         | 37/1.44              | 27/1.05 | 54/2.11  |
| 500/E051  | 28/1.09                         | 37/1.44              | 27/1.05 | 62/2.42  |
| 1000/E091 | 40/1.56                         | 49/1.91              | 36/1.41 | 108/4.21 |
| 2000/E171 | 40/1.56                         | 49/1.91              | 36/1.41 | 108/4.21 |

\* Insert length (mm/in)

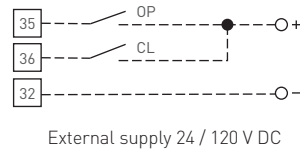
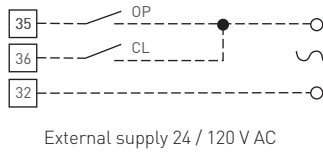
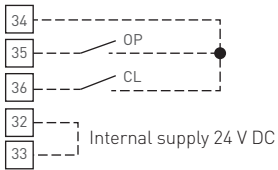
# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## WIRING DIAGRAM - BASE VERSION



### NOTES

- Power connection L1-L2 for V DC or V AC single phase motor supply from 24 V to 48 V or from 100 V to 240 V.  
Power connection L1-L2-L3 for 3 phase motor supply from 208 V to 575 V (check the actuator label for the correct voltage to be applied).
- Remote command options.



- Contacts shown in intermediate position CLC1-CLC2 end of travel signaling in closing.  
Contacts shown in intermediate position OPC1-OPC2 end of travel signaling in opening.
- Output contact rating 240 V AC / 5 A ; 30 V DC / 5 A ; 120 V DC / 0.5 A.
- Control command rating 24 to 120 V AC or DC.
- Blinker or local selector monitoring function (when OM3 is present) to be configured.

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## CURRENT ABSORPTION - SINGLE PHASE AND DC VOLTAGE

### CURRENT ABSORPTION - SINGLE PHASE AND DC VOLTAGE

| Model     | Selected step | Operating time (secs/90°) | Current absorption (A) |         |         |          |          |          |         |         |         |          |          |          |
|-----------|---------------|---------------------------|------------------------|---------|---------|----------|----------|----------|---------|---------|---------|----------|----------|----------|
|           |               |                           | 24 V AC                | 48 V AC | 90 V AC | 110 V AC | 230 V AC | 264 V AC | 24 V DC | 48 V DC | 90 V DC | 110 V DC | 230 V DC | 264 V DC |
| 063/E006  | 8             | 15                        | 2.26                   | 1.01    | 0.590   | 0.473    | 0.334    | 0.289    | 2.02    | 1.01    | 0.605   | 0.476    | 0.222    | 0.196    |
|           | 6             | 28                        | 1.60                   | 0.84    | 0.405   | 0.334    | 0.253    | 0.217    | 1.53    | 0.75    | 0.415   | 0.343    | 0.158    | 0.138    |
|           | 4             | 48                        | 1.38                   | 0.73    | 0.317   | 0.265    | 0.209    | 0.176    | 1.30    | 0.64    | 0.318   | 0.260    | 0.120    | 0.106    |
| 125/E013  | 8             | 15                        | 4.20                   | 1.70    | 0.980   | 0.810    | 0.430    | 0.420    | 4.50    | 1.81    | 1.040   | 0.820    | 0.390    | 0.340    |
|           | 6             | 28                        | 2.60                   | 1.28    | 0.780   | 0.630    | 0.370    | 0.340    | 2.65    | 1.27    | 0.810   | 0.640    | 0.300    | 0.260    |
|           | 4             | 48                        | 2.04                   | 1.00    | 0.680   | 0.560    | 0.340    | 0.290    | 2.10    | 0.96    | 0.720   | 0.570    | 0.270    | 0.220    |
| 250/E025  | 8             | 15                        | 10.30                  | 4.90    | 2.440   | 1.970    | 0.920    | 0.800    | 9.70    | 4.80    | 2.520   | 1.950    | 0.900    | 0.780    |
|           | 6             | 28                        | 8.20                   | 3.80    | 1.650   | 1.350    | 0.640    | 0.570    | 7.20    | 3.60    | 1.650   | 1.320    | 0.630    | 0.540    |
|           | 4             | 48                        | 6.40                   | 3.30    | 1.440   | 1.170    | 0.560    | 0.500    | 6.80    | 3.20    | 1.460   | 1.140    | 0.540    | 0.470    |
| 500/E051  | 8             | 15                        | 14.50                  | 6.80    | 3.200   | 2.520    | 1.150    | 1.000    | 14.00   | 7.00    | 3.220   | 2.530    | 1.120    | 0.980    |
|           | 6             | 28                        | 9.50                   | 4.60    | 1.900   | 1.550    | 0.760    | 0.670    | 9.30    | 4.50    | 1.920   | 1.540    | 0.720    | 0.620    |
|           | 4             | 48                        | 7.00                   | 3.40    | 1.550   | 1.240    | 0.600    | 0.530    | 7.10    | 3.40    | 1.510   | 1.240    | 0.580    | 0.500    |
| 1000/E091 | 8             | 24                        | 14.50                  | 6.80    | 3.200   | 2.520    | 1.150    | 1.000    | 14.00   | 7.00    | 3.220   | 2.530    | 1.120    | 0.980    |
|           | 6             | 45                        | 9.50                   | 4.60    | 1.900   | 1.550    | 0.760    | 0.670    | 9.30    | 4.50    | 1.920   | 1.540    | 0.720    | 0.620    |
|           | 4             | 80                        | 7.00                   | 3.40    | 1.550   | 1.240    | 0.600    | 0.530    | 7.10    | 3.40    | 1.510   | 1.240    | 0.580    | 0.500    |
| 2000/E171 | 8             | 53                        | 14.50                  | 6.80    | 3.200   | 2.520    | 1.150    | 1.000    | 14.00   | 7.00    | 3.220   | 2.530    | 1.120    | 0.980    |
|           | 6             | 100                       | 9.50                   | 4.60    | 1.900   | 1.550    | 0.760    | 0.670    | 9.30    | 4.50    | 1.920   | 1.540    | 0.720    | 0.620    |
|           | 4             | 180                       | 7.00                   | 3.40    | 1.550   | 1.240    | 0.600    | 0.530    | 7.10    | 3.40    | 1.510   | 1.240    | 0.580    | 0.500    |

#### NOTES

1. A = absorbed current (Amp) at nominal conditions (output torque 100%)
2. Max current (Amp) at stall conditions = 1.2 x A
3. Power factor for V AC supply = 0.60
4. Peak current: max 8xIn
5. Peak current duration: less than 0.1 secs

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## CURRENT ABSORPTION - THREE PHASE VOLTAGE

### CURRENT ABSORPTION - THREE PHASE VOLTAGE

| Model     | Selected step | Operating time<br>(secs/90°) | Current absorption (A) |          |          |          |          |          |          |
|-----------|---------------|------------------------------|------------------------|----------|----------|----------|----------|----------|----------|
|           |               |                              | 208 V AC               | 240 V AC | 380 V AC | 400 V AC | 480 V AC | 500 V AC | 575 V AC |
| 063/E006  | 8             | 15                           | 0.226                  |          |          | 0.176    |          |          | 0.107    |
|           | 6             | 28                           | 0.165                  |          |          | 0.101    |          |          | 0.080    |
|           | 4             | 48                           | 0.132                  |          |          | 0.083    |          |          | 0.057    |
| 125/E013  | 8             | 15                           | 0.344                  |          |          | 0.227    |          |          | 0.171    |
|           | 6             | 28                           | 0.295                  |          |          | 0.180    |          |          | 0.143    |
|           | 4             | 48                           | 0.245                  |          |          | 0.155    |          |          | 0.125    |
| 250/E025  | 8             | 15                           | 0.800                  | 0.73     | 0.52     |          | 0.49     | 0.37     | 0.340    |
|           | 6             | 28                           | 0.590                  | 0.56     | 0.41     |          | 0.35     | 0.29     | 0.280    |
|           | 4             | 48                           | 0.530                  | 0.50     | 0.37     |          | 0.30     | 0.27     | 0.250    |
| 500/E051  | 8             | 15                           | 1.073                  | 0.97     | 0.65     |          | 0.58     | 0.46     | 0.430    |
|           | 6             | 28                           | 0.720                  | 0.64     | 0.47     |          | 0.39     | 0.32     | 0.310    |
|           | 4             | 48                           | 0.590                  | 0.55     | 0.41     |          | 0.32     | 0.29     | 0.280    |
| 1000/E091 | 8             | 24                           | 1.073                  | 0.97     | 0.65     |          | 0.58     | 0.46     | 0.430    |
|           | 6             | 45                           | 0.720                  | 0.64     | 0.47     |          | 0.39     | 0.32     | 0.310    |
|           | 4             | 80                           | 0.590                  | 0.55     | 0.41     |          | 0.32     | 0.29     | 0.280    |
| 2000/E171 | 8             | 53                           | 1.073                  | 0.97     | 0.65     |          | 0.58     | 0.46     | 0.430    |
|           | 6             | 100                          | 0.720                  | 0.64     | 0.47     |          | 0.39     | 0.32     | 0.310    |
|           | 4             | 180                          | 0.590                  | 0.55     | 0.41     |          | 0.32     | 0.29     | 0.280    |

#### NOTES

1. A = absorbed current (Amp) at nominal conditions (output torque 100%)
2. Max current (Amp) at stall conditions = 1.2 x A
3. Power factor for V AC supply = 0.60
4. Peak current: max 8xIn
5. Peak current duration: less than 0.1 secs

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## ORDERING INFORMATION

### SELECTION GUIDE

| Example                      | KPD  | 063        | LV                          | PD                    | P1        | 2                  | D4 |
|------------------------------|--|------------|-----------------------------|-----------------------|-----------|--------------------|----|
| <b>Product</b>               |  |            |                             |                       |           |                    |    |
| <b>KPD</b>                   | ISO 5211 with double star insert   |            |                             |                       |           |                    |    |
| <b>KPE</b>                   | ISO 5211 with flat or key insert   |            |                             |                       |           |                    |    |
| <b>KPU</b>                   | Non-ISO flange   |            |                             |                       |           |                    |    |
| <b>KPB</b>                   | ISO 5211 flange - insert not machined  |            |                             |                       |           |                    |    |
| <b>KPK</b>                   | Key non-ISO flange - insert not machined   |            |                             |                       |           |                    |    |
| <b>KEU</b>                   | (NPT) US version ISO 5211 flange with ISO insert, 4x 1" NPT entries  |            |                             |                       |           |                    |    |
| <b>Models</b>                |  |            |                             |                       |           |                    |    |
| <b>063</b>                   | Model 063/E006   | <b>06B</b> | Model 063/E006 with Beacon  |                       |           |                    |    |
| <b>125</b>                   | Model 125/E013   | <b>12B</b> | Model 125/E013 with Beacon  |                       |           |                    |    |
| <b>250</b>                   | Model 250/E025   | <b>25B</b> | Model 250/E025 with Beacon  |                       |           |                    |    |
| <b>500</b>                   | Model 500/E051   | <b>50B</b> | Model 500/E051 with Beacon  |                       |           |                    |    |
| <b>1K0</b>                   | Model 1000/E091  | <b>1KB</b> | Model 1000/E091 with Beacon |                       |           |                    |    |
| <b>2K0</b>                   | Model 2000/E171  | <b>2KB</b> | Model 2000/E171 with Beacon |                       |           |                    |    |
| <b>Voltage</b>               |  |            |                             |                       |           |                    |    |
| <b>LV</b>                    | 1-phase 24-48 V AC/DC  |            | <b>3A</b>                   | 3-phases 208-240 V AC |           |                    |    |
| <b>HV</b>                    | 1-phase 100-240 V AC/DC  |            | <b>3B</b>                   | 3-phases 380-480 V AC |           |                    |    |
|                              |  |            | <b>3C</b>                   | 3-phases 500-575 V AC |           |                    |    |
| <b>Speed/Duty</b>            |  |            |                             |                       |           |                    |    |
| <b>PD</b>                    | Standard speed range and standard duties for model 063/E006 to 500/E051  |            |                             |                       |           |                    |    |
| <b>PE</b>                    | Standard speed range and standard duties for model 1000/E091   |            |                             |                       |           |                    |    |
| <b>PF</b>                    | Standard speed range and standard duties for model 2000/E171   |            |                             |                       |           |                    |    |
| <b>Option modules</b>        |  |            |                             |                       |           |                    |    |
| <b>00</b>                    | No optional modules  |            | <b>P7</b>                   | OM1/Bluetooth         | <b>5D</b> | OM11/Bluetooth     |    |
| <b>P1</b>                    | OM1  |            | <b>P3</b>                   | OM3                   | <b>6D</b> | OM11/OM3/Bluetooth |    |
| <b>PA</b>                    | OM1/OM3/Bluetooth  |            | <b>5P</b>                   | OM9/Bluetooth         | <b>PG</b> | OM13               |    |
| <b>P6</b>                    | OM1/OM3  |            | <b>6P</b>                   | OM9/OM3/Bluetooth     |           |                    |    |
| <b>Approvals/Protections</b> |  |            |                             |                       |           |                    |    |
| <b>0</b>                     | Standard protection NEMA 4/4X/6 (IP66/68M) - CSA certificate T°amb from -40°C to +60°C / -40°F to +140°F   |            |                             |                       |           |                    |    |
| <b>2</b>                     | Standard protection NEMA 4/4X/6 (IP66/68M) T°amb from -25°C to +70°C / -13°F to +158°F   |            |                             |                       |           |                    |    |
| <b>3</b>                     | Standard protection NEMA 4/4X/6 (IP66/68M) T°amb from -40°C to +70°C / -40°F to +158°F   |            |                             |                       |           |                    |    |
| <b>4</b>                     | Explosionproof IP66/68 (NEMA 4/4X/6) + Ex d e IIB T5 Gb - EX tb IIC T100°C Db T°amb from -20°C to +65°C / -4°F to +149°F (prefix c for model 2000)   |            |                             |                       |           |                    |    |
| <b>9</b>                     | Explosionproof IP66/68 (NEMA 4/4X/6) + Ex d e IIB T5 Gb - EX tb IIIC T100°C Db T°amb from -40°C to +65°C / -40°F to +149°F (prefix c for model 2000) |            |                             |                       |           |                    |    |
| <b>6</b>                     | Explosionproof NEC 500 (FM approval) Class I, Zone 1 Group IIB, Class II, III, Division 1, Groups E, F, G  |            |                             |                       |           |                    |    |
| <b>Flange/Insert</b>         |  |            |                             |                       |           |                    |    |
| <b>00</b>                    | No flange insert   |            |                             |                       |           |                    |    |
| <b>B4</b>                    | Model 063/E006 flange ISO 5211/F05/F07 - insert not machined (KPB)   |            |                             |                       |           |                    |    |
| <b>B5</b>                    | Model 125/E013 flange ISO 5211/F07/F10 - insert not machined (KPB)   |            |                             |                       |           |                    |    |
| <b>B5</b>                    | Model 250/E025 flange ISO 5211/F07/F10/F12 - insert not machined (KPB)   |            |                             |                       |           |                    |    |
| <b>B6</b>                    | Model 500/E051 flange ISO 5211/F10/F12 - insert not machined (KPB)   |            |                             |                       |           |                    |    |
| <b>B7</b>                    | Models 1000/E091-2000/E171 flange ISO 5211/F10/F14 - insert not machined (KPB)   |            |                             |                       |           |                    |    |
| <b>BA</b>                    | Models 1000/E091-2000/E171 flange ISO 5211/F12/F16 - insert not machined (KPB)   |            |                             |                       |           |                    |    |
| <b>D4</b>                    | Model 063/E006 ISO 5211 (KPD)  |            |                             |                       |           |                    |    |
| <b>D5</b>                    | Models 125/E013-250/E025 ISO 5211 (KPD)  |            |                             |                       |           |                    |    |
| <b>D6</b>                    | Model 500/E051 ISO 5211 (KPD)  |            |                             |                       |           |                    |    |
| <b>D7</b>                    | Models 1000/E091-2000/E171 F10 to F14 ISO 5211 (KPD)   |            |                             |                       |           |                    |    |
| <b>DA</b>                    | Models 1000/E091-2000/E171 F12 to F16 ISO 5211 (KPD)   |            |                             |                       |           |                    |    |
| <b>E3</b>                    | Model 063/E006 ISO 5211 (KPE)  |            |                             |                       |           |                    |    |
| <b>E5</b>                    | Models 125/E013-250/E025 ISO 5211 (KPE)  |            |                             |                       |           |                    |    |
| <b>E6</b>                    | Model 500/E051 ISO 5211 (KPE)  |            |                             |                       |           |                    |    |
| <b>E9</b>                    | Models 1000/E091-2000/E171 F12 to 16 ISO 5211 (KPE)  |            |                             |                       |           |                    |    |
| <b>K4</b>                    | Model 063/E006 flange key 44.45-82.6 - insert not machined (KPK)   |            |                             |                       |           |                    |    |
| <b>K8</b>                    | Model 125/E025 flange key 82.6 - insert not machined (KPK)   |            |                             |                       |           |                    |    |
| <b>K8</b>                    | Model 250/E025 flange key 82.6-127 - insert not machined (KPK)   |            |                             |                       |           |                    |    |
| <b>KA</b>                    | Model 500/E051 flange key 82.6-127 - insert not machined (KPK)   |            |                             |                       |           |                    |    |
| <b>KC</b>                    | Models 1000/E091-2000/E171 flange key 127-165 - insert not machined (KPK)  |            |                             |                       |           |                    |    |
| <b>U4</b>                    | Model 063/E006 non-ISO (KPU)   |            |                             |                       |           |                    |    |
| <b>U8</b>                    | Models 125/E013-250/E025 non-ISO (KPU)   |            |                             |                       |           |                    |    |
| <b>UA</b>                    | Model 500/E051 non-ISO (KPU)   |            |                             |                       |           |                    |    |
| <b>UC</b>                    | Models 1000/E091-2000/E171 non-ISO (KPU)   |            |                             |                       |           |                    |    |

# KEYSTONE EPI-2 ELECTRIC ACTUATORS

## ORDERING INFORMATION

### ORDERING INFORMATION - US MARKETS ONLY

| Example                                      | E   | 006 | A | L | W5 | 00 | 0 |
|--|---|-----|---|---|----|----|---|
| <b>Model</b>                                 |   |     |   |   |    |    |   |
| E  | EPI-2 quarter-turn electric   |     |   |   |    |    |   |
| <b>Size</b>                                  |   |     |   |   |    |    |   |
| 006  | Model E006  |     |   |   |    |    |   |
| 013  | Model E013  |     |   |   |    |    |   |
| 025  | Model E025  |     |   |   |    |    |   |
| 051  | Model E051  |     |   |   |    |    |   |
| 091  | Model E091  |     |   |   |    |    |   |
| 171  | Model E171  |     |   |   |    |    |   |
| <b>Local indicator</b>                       |   |     |   |   |    |    |   |
| A  | Standard window   |     |   |   |    |    |   |
| <b>Voltage ratings</b>                       |   |     |   |   |    |    |   |
| L  | 1-phase 24-48 V AC/DC   |     |   |   |    |    |   |
| H  | 1-phase 100-240 V AC/DC   |     |   |   |    |    |   |
| A  | 3-phases 208-240 V AC   |     |   |   |    |    |   |
| B  | 3-phases 380-480 V AC   |     |   |   |    |    |   |
| C  | 3-phases 500-575 V AC   |     |   |   |    |    |   |
| <b>Classification and temperature rating</b> |   |     |   |   |    |    |   |
| W1   | NEMA 4/4X/6 (IP66/68M)<br>Ambient temp: -13°F to 158°F (-25°C to 70°C)  |     |   |   |    |    |   |
| W2   | NEMA 4/4X/6 (IP66/68M)<br>Ambient temp: -40°F to 158°F (-40°C to 70°C)  |     |   |   |    |    |   |
| W5   | CSA 139 (C-US)<br>NEMA 4/4X/6 (IP66/68M)<br>AWWA<br>Ambient temp: -40°F to 140°F (-40°C to 60°C)  |     |   |   |    |    |   |
| X5   | NEC 500 (FM approval)<br>Class I, Zone 1 Group IIB, Class II, III, Division 1, Groups E, F, G<br>Ambient temp: -40°F to 149°F (-40°C to 65°C) |     |   |   |    |    |   |
| <b>Option modules</b>                        |   |     |   |   |    |    |   |
| 00   | NONE, standard On-Off configuration   |     |   |   |    |    |   |
| P1   | Servoamp w/retransmission (OM1)   |     |   |   |    |    |   |
| P3   | Local interface (OM3)   |     |   |   |    |    |   |
| P6   | Servoamp w/retransmission, local interface (OM1/OM3)  |     |   |   |    |    |   |
| P7   | Servoamp w/retransmission, Bluetooth® communication (OM1/Bluetooth)   |     |   |   |    |    |   |
| PA   | Servoamp w/retransmission, local interface, Bluetooth® communication (OM1/OM3/Bluetooth)  |     |   |   |    |    |   |
| 3D   | DeviceNet™ bus communication (OM11)   |     |   |   |    |    |   |
| 5D   | DeviceNet™ bus communication, Bluetooth® communication (OM11/Bluetooth)   |     |   |   |    |    |   |
| 6D   | DeviceNet™ bus communication, local interface, Bluetooth® communication (OM11/OM3/Bluetooth)  |     |   |   |    |    |   |
| 3P   | PDP V0/V1 bus communication (OM9)   |     |   |   |    |    |   |
| 5P   | PDP V0/V1 bus communication, Bluetooth® communication (OM9/Bluetooth)   |     |   |   |    |    |   |
| 6P   | PDP V0/V1 bus communication, local interface, Bluetooth® communication (OM9/OM3/Bluetooth)  |     |   |   |    |    |   |
| PG   | 3-wire interface card (OM13)  |     |   |   |    |    |   |
| <b>Special option code</b>                   |   |     |   |   |    |    |   |
| 0  | Standard  |     |   |   |    |    |   |

