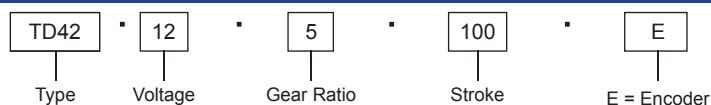


## ENCODER OPTION FOR TD ACTUATOR SERIES

This document describes only the data for the encoders. For actuator data please refer to the separate actuator data sheets. The encoder design is based on a rotating magnetic disk and two hall sensors. It is a simple, long life, robust and low cost technology. In standard our encoders generate the maximum number of pulses that are possible in relation to the diameter of the magnet and encoder.

### MODEL NO. DESIGNATIONS



Example: TD42-12-5-100-E

### MAGNETIC TWO CHANNEL HALL EFFECT ENCODERS



### ENCODER FEATURES AND BENEFITS

- Magnetic hall sensor encoders
- Two encoder channels is standard
- Available for all our TD actuators
- Simple design
- Robust and long lifetime
- Low cost
- High number of pulses

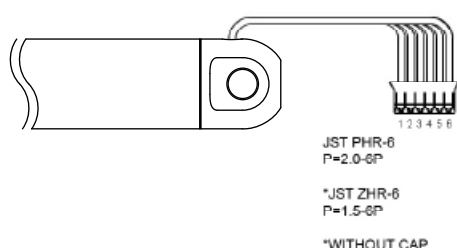
### ENCODER DATA

| Actuator | Encoder magnetic poles | Pulses Per motor Revolution PPR (Two channels) | Screw pitch mm | Cable length mm | Cable connector    | Hall pulses/mm stroke |
|----------|------------------------|------------------------------------------------|----------------|-----------------|--------------------|-----------------------|
| TD16     | 3                      | 3*2                                            | 1,6            | 500             | JST ZHR-6 P=1 5-6P | 1.875                 |
| TD21     | 3                      | 3*2                                            | 1,6            | 500             | JST ZHR-6 P=1 5-6P | 1.875                 |
| TD25     | 3                      | 3*2                                            | 2              | 500             | JST ZHR-6 P=2 0-6P | 1.5                   |
| TD37     | 7                      | 7*2                                            | 4              | 1500            | JST ZHR-6 P=2 0-6P | 1.75                  |
| TD42     | 7                      | 7*2                                            | 4              | 1500            | JST ZHR-6 P=2 0-6P | 1.75                  |
| TD52     | 5                      | 5*2                                            | 4              | 1500            | JST ZHR-6 P=2 0-6P | 1.25                  |

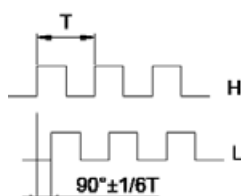
### ELECTRIC CHARACTERISTICS

| CHARACTERISTICS           | SYMBOL                                        | TEST CONDITIONS                    | MIN | REF   | MAX | UNITS |
|---------------------------|-----------------------------------------------|------------------------------------|-----|-------|-----|-------|
| Supply voltage            | Vcc                                           | ---                                | 3.5 | -     | 20  | V     |
| Output saturation voltage | Vce (sat)                                     | Vcc = 14V ; Ic = 20mA              | -   | 300   | 700 | mV    |
| Output leakage current    | Icex                                          | Vce = 14V ; Vcc = 14V              | -   | < 0.1 | 10  | µA    |
| Supply Current            | Icc                                           | Vcc = 20V Output open              | -   | 5     | 10  | mA    |
| Output rise time          | tr                                            | Vcc = 14V; RL = 820 Ohm; CL = 20pF | -   | 0.3   | 1.5 | µS    |
| Output fall time          | tf                                            | Vcc = 14V; RL = 820 Ohm; CL = 20pF | -   | 0.3   | 1.5 | µS    |
| Hall sensor               | UTC Unisonic KS1816 (OUTPUTS: Open collector) |                                    |     |       |     |       |

### APPEARANCE SIZE



### OUTPUT WAVEFORM WITH EXTERNAL CONNECTED RESISTORS



|                     |                      |
|---------------------|----------------------|
| TWO CHANNEL ENCODER |                      |
| CONNECTIONS:        |                      |
| 1. BLACK            | : - MOTOR            |
| 2. RED              | : + MOTOR            |
| 3. BROWN            | : HALL SENSOR Vcc    |
| 4. GREEN            | : HALL SENSOR GND    |
| 5. BLUE             | : HALL SENSOR A Vout |
| 6. PURPLE           | : HALL SENSOR B Vout |

## TD16 TUBULAR LINEAR DC ACTUATORS

Small, light weight, compact, low voltage, tubular dc motor linear actuators with encoder feed back option. These actuators have been specifically developed for usage in home automation applications, consumer products and remote control systems. Customized versions are welcome upon request. Additional data and CAD drawings are available on our web site.

### MODEL NO. DESIGNATIONS

|      |         |                              |                                 |             |
|------|---------|------------------------------|---------------------------------|-------------|
| TD16 | 3       | 4                            | 100                             | E           |
| Type | Voltage | Gear Ratio                   | Stroke                          | E = Encoder |
|      | 3V      | 4/1<br>16/1<br>64/1<br>256/1 | 50mm<br>100mm<br>150mm<br>200mm |             |

Example: TD16-3-4-100-E

### TD16



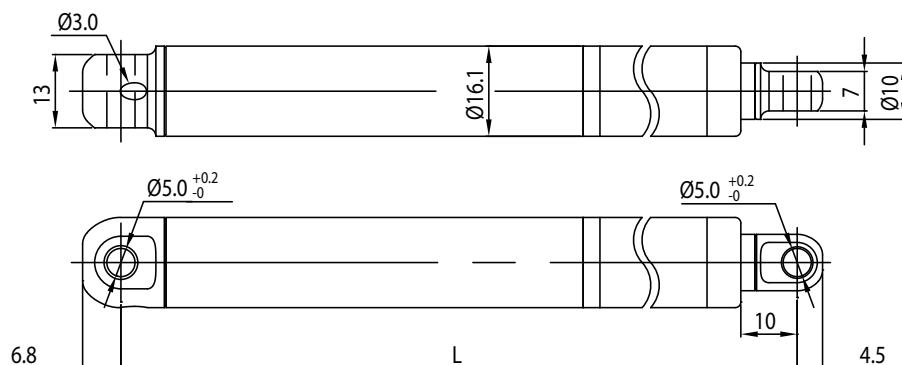
### ENCODER VERSION

SEE SEPARATE DATA SHEET



| MOTOR DATA                                 |      |      |       |       |
|--------------------------------------------|------|------|-------|-------|
| Reduction                                  | 1:4  | 1:16 | 1:64  | 1:256 |
| Voltage Rated (V)                          | 3    |      |       |       |
| Current, max Load (A)                      | 0.4  |      |       |       |
| Speed, no Load (mm/s)                      | 83   | 20.5 | 5.2   | 1.3   |
| Speed, max Load (mm/s)                     | 68   | 17   | 4.2   | 1     |
| Load max. push/pull energized (Kg)         | 0.1  | 0.35 | 1.2   | 4.2   |
| Load max. push/pull energized (N)          | 0.98 | 3.43 | 11.76 | 41.16 |
| Self-lock max. push/pull de-energized (Kg) | 0.2  | 0.7  | 2.4   | 8.4   |
| Self-lock max. push/pull de-energized (N)  | 1.96 | 6.86 | 23.52 | 82.32 |
| Weight (g ±50 g)                           | 150  | 150  | 150   | 150   |

### APPEARANCE SIZE



|                  |     |     |     |     |
|------------------|-----|-----|-----|-----|
| S (Stroke)       | 50  | 100 | 150 | 200 |
| L (S + 120mm)    | 170 | 220 | 270 | 320 |
| Weight (g ±50 g) | 150 | 150 | 150 | 150 |

### FEATURES AND BENEFITS

- Encoder feedback magnetic hall sensor option
- Aluminum house and rod
- Duty cycle max. 10%
- Ambient operational temperature range -10 °C to +60 °C
- Max duty time @ max load 1min.
- No end limit switches
- IP Grade IP54
- See separate database for further data
- Customizations are welcome upon request

## TD21 TUBULAR LINEAR DC ACTUATORS

Small, light weight, compact, low voltage, tubular dc motor linear actuators with encoder feed back option. These actuators have been specifically developed for usage in home automation applications, consumer products and remote control systems. Customized versions are welcome upon request. Additional data and CAD drawings are available on our web site.

### MODEL NO. DESIGNATIONS

|      |            |                                                              |                         |             |
|------|------------|--------------------------------------------------------------|-------------------------|-------------|
| TD21 | 12         | 4                                                            | 100                     | E           |
| Type | Voltage    | Gear Ratio                                                   | Stroke                  | E = Encoder |
|      | 12V<br>24V | 4:1<br>14:1<br>19:1<br>29:1<br>53:1<br>62:1<br>84:1<br>104:1 | 100mm<br>150mm<br>200mm |             |

Example: TD21-12-4-100-E

### TD21



TRANSMOTEC

### ENCODER VERSION

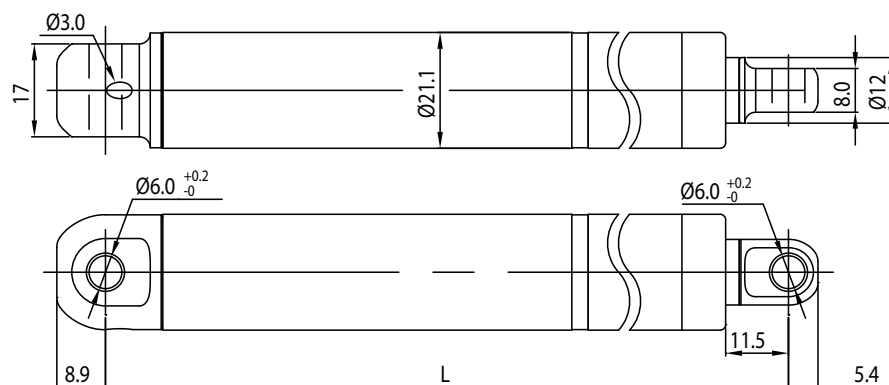
SEE SEPARATE DATA SHEET



### MOTOR DATA

| Reduction                                  | 4:1  |      | 14:1 |      | 19:1  |      | 29:1 |      | 53:1 |      | 62:1  |      | 84:1  |      | 104:1 |      |
|--------------------------------------------|------|------|------|------|-------|------|------|------|------|------|-------|------|-------|------|-------|------|
| Voltage (V)                                | 12   | 24   | 12   | 24   | 12    | 24   | 12   | 24   | 12   | 24   | 12    | 24   | 12    | 24   | 12    | 24   |
| Current, max Load (A)                      | 0.24 | 0.12 | 0.24 | 0.12 | 0.24  | 0.12 | 0.24 | 0.12 | 0.24 | 0.12 | 0.24  | 0.12 | 0.24  | 0.12 | 0.24  | 0.12 |
| Speed, no Load (mm/s)                      | 82   |      | 25.5 |      | 18.7  |      | 12.3 |      | 6.8  |      | 5.8   |      | 4.2   |      | 3.4   |      |
| Speed, max Load (mm/s)                     | 66   |      | 20.8 |      | 15.2  |      | 10   |      | 5.5  |      | 4.7   |      | 3.4   |      | 2.8   |      |
| Load max. push/pull energized (Kg)         | 0.16 |      | 0.45 |      | 0.65  |      | 1    |      | 1.5  |      | 1.7   |      | 2.4   |      | 3     |      |
| Load max. push/pull energized (N)          | 1.57 |      | 4.41 |      | 6.37  |      | 9.8  |      | 14.7 |      | 16.66 |      | 23.52 |      | 29.4  |      |
| Self-lock max. push/pull de-energized (Kg) | 0.32 |      | 0.9  |      | 1.3   |      | 2    |      | 3    |      | 3.4   |      | 4.8   |      | 6     |      |
| Self-lock max. push/pull de-energized (N)  | 3.14 |      | 8.82 |      | 12.74 |      | 19.6 |      | 29.4 |      | 33.32 |      | 47.04 |      | 58.8  |      |
| Weight (g ±50 g)                           | 270  |      | 270  |      | 270   |      | 270  |      | 270  |      | 270   |      | 270   |      | 270   |      |

### APPEARANCE SIZE



| S (Stroke)       | 100 | 150 | 200 |
|------------------|-----|-----|-----|
| L (S + 130mm)    | 230 | 280 | 330 |
| Weight (g ±50 g) | 270 | 270 | 270 |

### FEATURES AND BENEFITS

- Encoder feedback magnetic hall sensor option
- Aluminum house and rod
- Duty cycle max. 10%
- Ambient operational temperature range -10 °C to +60 °C
- Max duty time @ max load 1min.
- No end limit switches
- IP Grade IP54
- See separate database for further data
- Customizations are welcome upon request

## TD25 TUBULAR LINEAR DC ACTUATORS

Small, light weight, compact, low voltage, tubular dc motor linear actuators with encoder feed back option. These actuators have been specifically developed for usage in home automation applications, consumer products and remote control systems. Customized versions are welcome upon request. Additional data and CAD drawings are available on our web site.

### MODEL NO. DESIGNATIONS

| TD25 | 12         | 10                                                           | 100                              | E           |
|------|------------|--------------------------------------------------------------|----------------------------------|-------------|
| Type | Voltage    | Gear Ratio                                                   | Stroke                           | E = Encoder |
|      | 12V<br>24V | 10:1<br>13:1<br>18:1<br>29:1<br>42:1<br>52:1<br>67:1<br>80:1 | 100mm<br>150mm<br>200mm<br>250mm |             |

Example: TD25-12-10-100-E

### TD25



### ENCODER VERSION

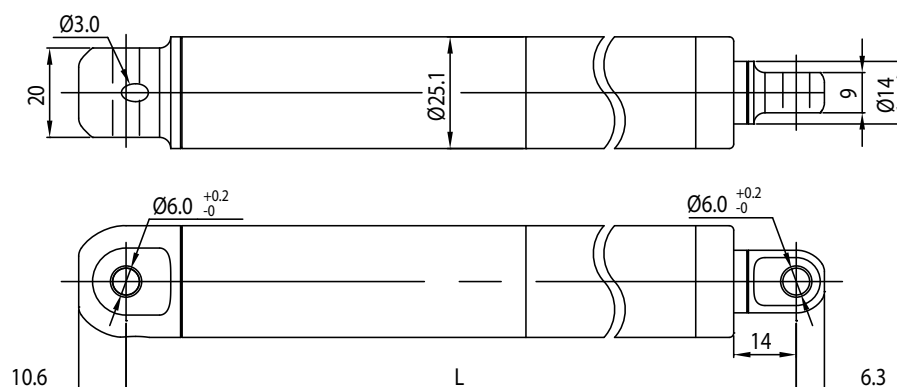
SEE SEPARATE DATA SHEET



### MOTOR DATA

| Reduction                                  | 10:1  |      | 13:1  |      | 18:1  |      | 29:1  |      | 42:1  |      | 52:1  |      | 67:1  |      | 80:1  |      |
|--------------------------------------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
| Voltage (V)                                | 12    | 24   | 12    | 24   | 12    | 24   | 12    | 24   | 12    | 24   | 12    | 24   | 12    | 24   | 12    | 24   |
| Current, max Load (A)                      | 0.32  | 0.16 | 0.32  | 0.16 | 0.32  | 0.16 | 0.32  | 0.16 | 0.32  | 0.16 | 0.32  | 0.16 | 0.32  | 0.16 | 0.32  | 0.16 |
| Speed, no Load (mm/s)                      | 30    |      | 23.9  |      | 16.4  |      | 10.4  |      | 7.1   |      | 5.7   |      | 4.4   |      | 3.7   |      |
| Speed, max Load (mm/s)                     | 24.6  |      | 19.7  |      | 13.5  |      | 8.5   |      | 5.8   |      | 4.7   |      | 3.6   |      | 3     |      |
| Load max. push/pull energized (Kg)         | 0.85  |      | 1.1   |      | 1.3   |      | 2.2   |      | 2.8   |      | 3.4   |      | 4.5   |      | 4.7   |      |
| Load max. push/pull energized (N)          | 8.33  |      | 10.78 |      | 12.74 |      | 21.56 |      | 27.44 |      | 33.32 |      | 44.1  |      | 46.06 |      |
| Self-lock max. push/pull de-energized (Kg) | 1.7   |      | 2.2   |      | 2.6   |      | 4.4   |      | 6     |      | 6.6   |      | 8.6   |      | 9.2   |      |
| Self-lock max. push/pull de-energized (N)  | 16.66 |      | 21.56 |      | 25.48 |      | 43.12 |      | 58.8  |      | 64.68 |      | 84.28 |      | 90.16 |      |
| Weight (g ±50 g)                           | 350   |      | 350   |      | 350   |      | 350   |      | 350   |      | 350   |      | 350   |      | 350   |      |

### APPEARANCE SIZE



| S (Stroke)       | 100 | 150 | 200 | 250 |
|------------------|-----|-----|-----|-----|
| L (S + 141mm)    | 241 | 291 | 341 | 391 |
| Weight (g ±50 g) | 350 | 350 | 350 | 350 |

### FEATURES AND BENEFITS

- Encoder feedback magnetic hall sensor option
- Aluminum house and rod
- Duty cycle max. 10%
- Ambient operational temperature range -10 °C to +60 °C
- Max duty time @ max load 1min.
- No end limit switches
- IP Grade IP54
- See separate database for further data
- Customizations are welcome upon request

## TD37 TUBULAR LINEAR DC ACTUATORS

Small, light weight, compact, low voltage, tubular dc motor linear actuators with encoder feed back option. These actuators have been specifically developed for usage in home automation applications, consumer products and remote control systems. Customized versions are welcome upon request. Additional data and CAD drawings are available on our web site.

### MODEL NO. DESIGNATIONS

| TD37 | 12         | 5                                                            | 100                                       | E           |
|------|------------|--------------------------------------------------------------|-------------------------------------------|-------------|
| Type | Voltage    | Gear Ratio                                                   | Stroke                                    | E = Encoder |
|      | 12V<br>24V | 5:1<br>14:1<br>19:1<br>27:1<br>35:1<br>51:1<br>71:1<br>100:1 | 100mm<br>150mm<br>200mm<br>250mm<br>300mm |             |

Example: TD37-12-5-100-E

### TD37



### ENCODER VERSION

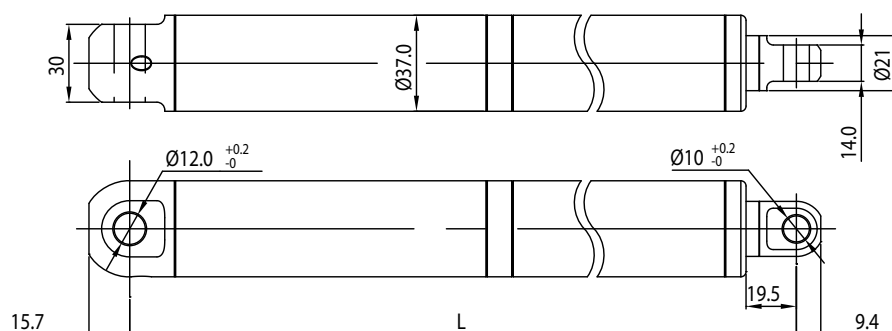
SEE SEPARATE DATA SHEET



### MOTOR DATA

| Reduction                                  | 5:1  |     | 14:1 |     | 19:1  |     | 27:1 |     | 35:1 |     | 51:1 |     | 71:1 |     | 100:1 |     |
|--------------------------------------------|------|-----|------|-----|-------|-----|------|-----|------|-----|------|-----|------|-----|-------|-----|
| Voltage (V)                                | 12   | 24  | 12   | 24  | 12    | 24  | 12   | 24  | 12   | 24  | 12   | 24  | 12   | 24  | 12    | 24  |
| Current, max Load (A)                      | 1.2  | 0.6 | 1.2  | 0.6 | 1.2   | 0.6 | 1.2  | 0.6 | 1.2  | 0.6 | 1.2  | 0.6 | 1.2  | 0.6 | 1.2   | 0.6 |
| Speed, no Load (mm/s)                      | 90   |     | 32   |     | 24.5  |     | 17   |     | 13   |     | 9    |     | 6.5  |     | 4.8   |     |
| Speed, max Load (mm/s)                     | 77   |     | 28   |     | 19.4  |     | 14.2 |     | 11.2 |     | 7.6  |     | 5.3  |     | 4.2   |     |
| Load max. push/pull energized (Kg)         | 4    |     | 10   |     | 16    |     | 20   |     | 25   |     | 40   |     | 50   |     | 65    |     |
| Load max. push/pull energized (N)          | 39.2 |     | 98   |     | 156.8 |     | 196  |     | 245  |     | 392  |     | 490  |     | 637   |     |
| Self-lock max. push/pull de-energized (Kg) | 8    |     | 20   |     | 32    |     | 40   |     | 50   |     | 80   |     | 100  |     | 130   |     |
| Self-lock max. push/pull de-energized (N)  | 78.4 |     | 196  |     | 313.6 |     | 392  |     | 490  |     | 784  |     | 980  |     | 1274  |     |
| Weight (g ±50 g)                           | 950  |     | 950  |     | 950   |     | 950  |     | 950  |     | 950  |     | 950  |     | 950   |     |

### APPEARANCE SIZE



| S (Stroke)       | 100 | 150 | 200 | 250 | 300 |
|------------------|-----|-----|-----|-----|-----|
| L (S + 208mm)    | 308 | 358 | 408 | 458 | 508 |
| Weight (g ±50 g) | 950 | 950 | 950 | 950 | 950 |

### FEATURES AND BENEFITS

- Encoder feedback magnetic hall sensor option
- Aluminum house and rod
- Duty cycle max. 10%
- Ambient operational temperature range -10 °C to +60 °C
- Max duty time @ max load 1min.
- No end limit switches
- IP Grade IP54
- See separate database for further data
- Customizations are welcome upon request

## TD42 TUBULAR LINEAR DC ACTUATORS

Small, light weight, compact, low voltage, tubular dc motor linear actuators with encoder feed back option. These actuators have been specifically developed for usage in home automation applications, consumer products and remote control systems. Customized versions are welcome upon request. Additional data and CAD drawings are available on our web site.

### MODEL NO. DESIGNATIONS

| TD42 | 12         | 5                                                    | 100                                       | E           |
|------|------------|------------------------------------------------------|-------------------------------------------|-------------|
| Type | Voltage    | Gear Ratio                                           | Stroke                                    | E = Encoder |
|      | 12V<br>24V | 5:1<br>14:1<br>19:1<br>27:1<br>51:1<br>71:1<br>100:1 | 100mm<br>150mm<br>200mm<br>250mm<br>300mm |             |

Example: TD42-12-5-100-E

### TD42



### ENCODER VERSION

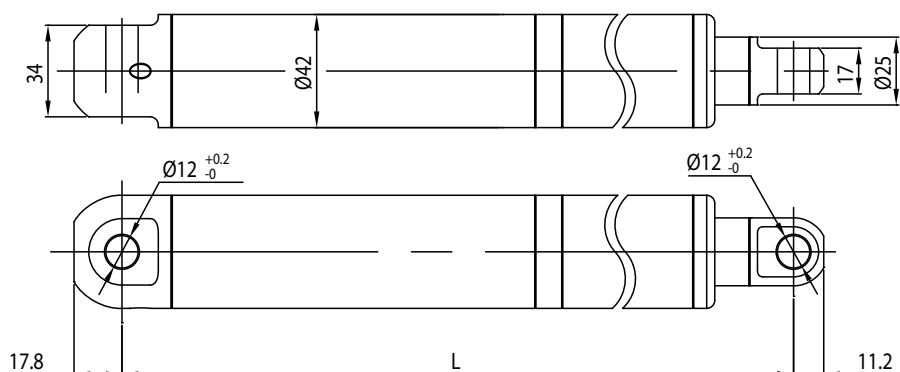
SEE SEPARATE DATA SHEET



### MOTOR DATA

| Reduction                                  | 5:1   |     | 14:1 |     | 19:1  |     | 27:1 |     | 51:1 |     | 71:1   |     | 100:1 |     |
|--------------------------------------------|-------|-----|------|-----|-------|-----|------|-----|------|-----|--------|-----|-------|-----|
| Voltage (V)                                | 12    | 24  | 12   | 24  | 12    | 24  | 12   | 24  | 12   | 24  | 12     | 24  | 12    | 24  |
| Current, max Load (A)                      | 1.6   | 0.8 | 1.6  | 0.8 | 1.6   | 0.8 | 1.6  | 0.8 | 1.6  | 0.8 | 1.6    | 0.8 | 1.6   | 0.8 |
| Speed, no Load (mm/s)                      | 77    |     | 29   |     | 20.8  |     | 14.8 |     | 7.8  |     | 5.6    |     | 4     |     |
| Speed, max Load (mm/s)                     | 64    |     | 24   |     | 17.5  |     | 12.5 |     | 6.6  |     | 4.7    |     | 3.3   |     |
| Load max. push/pull energized (Kg)         | 6     |     | 15   |     | 22    |     | 30   |     | 50   |     | 68     |     | 95    |     |
| Load max. push/pull energized (N)          | 58.8  |     | 147  |     | 215.6 |     | 294  |     | 490  |     | 666.4  |     | 931   |     |
| Self-lock max. push/pull de-energized (Kg) | 12    |     | 30   |     | 44    |     | 60   |     | 100  |     | 136    |     | 190   |     |
| Self-lock max. push/pull de-energized (N)  | 117.6 |     | 294  |     | 431.2 |     | 588  |     | 980  |     | 1332.8 |     | 1862  |     |
| Weight (g ±50 g)                           | 1500  |     | 1500 |     | 1500  |     | 1500 |     | 1500 |     | 1500   |     | 1500  |     |

### APPEARANCE SIZE



| S (Stroke)       | 100  | 150  | 200  | 250  | 300  |
|------------------|------|------|------|------|------|
| L (S + 230mm)    | 330  | 380  | 430  | 480  | 530  |
| Weight (g ±50 g) | 1500 | 1500 | 1500 | 1500 | 1500 |

### FEATURES AND BENEFITS

- Encoder feedback magnetic hall sensor option
- Aluminum house and rod
- Duty cycle max. 10%
- Ambient operational temperature range -10 °C to +60 °C
- Max duty time @ max load 1min.
- No end limit switches
- IP Grade IP54
- See separate database for further data
- Customizations are welcome upon request

## TD52 TUBULAR LINEAR DC ACTUATORS

Small, light weight, compact, low voltage, tubular dc motor linear actuators with encoder feed back option. These actuators have been specifically developed for usage in home automation applications, consumer products and remote control systems. Customized versions are welcome upon request. Additional data and CAD drawings are available on our web site.

### MODEL NO. DESIGNATIONS

|      |            |                                                              |                                           |             |
|------|------------|--------------------------------------------------------------|-------------------------------------------|-------------|
| TD52 | 12         | 4                                                            | 100                                       | E           |
| Type | Voltage    | Gear Ratio                                                   | Stroke                                    | E = Encoder |
|      | 12V<br>24V | 4:1<br>14:1<br>17:1<br>24:1<br>49:1<br>61:1<br>84:1<br>104:1 | 100mm<br>150mm<br>200mm<br>250mm<br>300mm |             |

Example: TD52-12-4-100-E

### TD52



### ENCODER VERSION

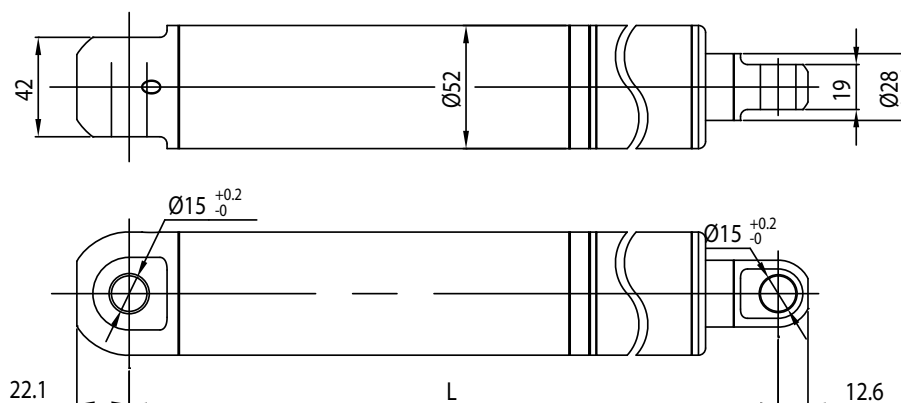
SEE SEPARATE DATA SHEET



### MOTOR DATA

| Reduction                                  | 4:1  |     | 14:1 |     | 17:1 |     | 24:1 |     | 49:1 |     | 61:1 |     | 84:1 |     | 104:1 |     |
|--------------------------------------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-------|-----|
| Voltage (V)                                | 12   | 24  | 12   | 24  | 12   | 24  | 12   | 24  | 12   | 24  | 12   | 24  | 12   | 24  | 12    | 24  |
| Current, max Load (A)                      | 4.4  | 2.2 | 4.4  | 2.2 | 4.4  | 2.2 | 4.4  | 2.2 | 4.4  | 2.2 | 4.4  | 2.2 | 4.4  | 2.2 | 4.4   | 2.2 |
| Speed, no Load (mm/s)                      | 110  |     | 32   |     | 26   |     | 19   |     | 9.5  |     | 7.5  |     | 5.5  |     | 4.4   |     |
| Speed, max Load (mm/s)                     | 95   |     | 27   |     | 22   |     | 15.5 |     | 7.7  |     | 6.2  |     | 4.5  |     | 3.6   |     |
| Load max. push/pull energized (Kg)         | 10   |     | 35   |     | 45   |     | 65   |     | 115  |     | 145  |     | 200  |     | 250   |     |
| Load max. push/pull energized (N)          | 98   |     | 343  |     | 441  |     | 637  |     | 1127 |     | 1421 |     | 1960 |     | 2450  |     |
| Self-lock max. push/pull de-energized (Kg) | 20   |     | 70   |     | 90   |     | 130  |     | 230  |     | 290  |     | 400  |     | 500   |     |
| Self-lock max. push/pull de-energized (N)  | 196  |     | 686  |     | 882  |     | 1274 |     | 2254 |     | 2842 |     | 3920 |     | 4900  |     |
| Weight (g ±50 g)                           | 2500 |     | 2500 |     | 2500 |     | 2500 |     | 2500 |     | 2500 |     | 2500 |     | 2500  |     |

### APPEARANCE SIZE



| S (Stroke)       | 100  | 150  | 200  | 250  | 300  |
|------------------|------|------|------|------|------|
| L (S + 280mm)    | 380  | 430  | 480  | 530  | 580  |
| Weight (g ±50 g) | 2500 | 2500 | 2500 | 2500 | 2500 |

### FEATURES AND BENEFITS

- Encoder feedback magnetic hall sensor option
- Aluminum house and rod
- Duty cycle max. 10%
- Ambient operational temperature range -10 °C to +60 °C
- Max duty time @ max load 1min.
- No end limit switches
- IP Grade IP54
- See separate database for further data
- Customizations are welcome upon request