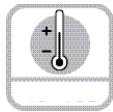


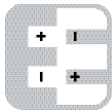
# Linear Position Technology

## Draw Wire Mechanics with Encoder or Analog Sensor

### Draw Wire Encoder DW70



Wide temperature range



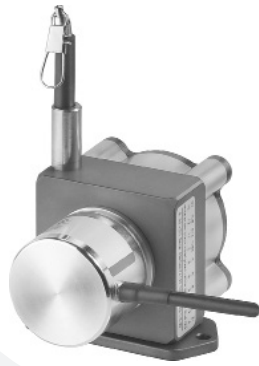
Reverse polarity protection



Maximum acceleration

#### Robust

- **Corrosion resistant:** Titanium-anodized aluminium housing.
- **High-strength stainless steel draw wire.**
- **Low friction design or wire exit free from wear.** Diamond-polished ceramic guide.
- **Wide temperature range**



#### Versatile

- **Suitable for various sensors/encoders:** Incremental and analog.
- **Quick mounting:** Fastening by means of two screws.
- **Flexible connection options:** Cable, M12 connector, radial, axial.
- **Linearity up to 0.05%.**

#### Fast

- **High traverse speed.**
- **High acceleration:** Dynamic spring traction by means of a constant force spring.

#### Mechanical Characteristics (Draw Wire Mechanics):

|                                |  |                              |                              |
|--------------------------------|--|------------------------------|------------------------------|
| Measuring range:               | 250 mm   | 500 mm                       | 1250 mm                      |
| Extension force                | Fmin:  | (6.8 N) 1.53 lbs             | (3.4 N) 0.76 lbs             |
|                                | Fmax:  | (7.9 N) 1.78 lbs             | (4.0 N) 0.90 lbs             |
| Max. speed:                    | 26.2 ft/s (8 m/s)                                    | 26.2 ft/s (8 m/s)            | 32.8 ft/s (10 m/s)           |
| Max. acceleration:             | (200 m/s <sup>2</sup> ) 20 g                         | (200 m/s <sup>2</sup> ) 20 g | (300 m/s <sup>2</sup> ) 30 g |
| Linearity (of measuring range) | analog output:                                       | 0.15%                        | 0.15%                        |
|                                | encoder:   | 0.05%                        | 0.05%                        |
| Weight:                        | approx. 330 g (depending on the sensor/encoder used) |                              |                              |
| Materials:                     | housing: titanium-anodized aluminium                 |                              |                              |
|                                | wire: stainless steel Ø 0.5 mm                       |                              |                              |
| Protection (encoder only):     | IP65   |                              |                              |

#### Electrical Characteristics (Digital Output):

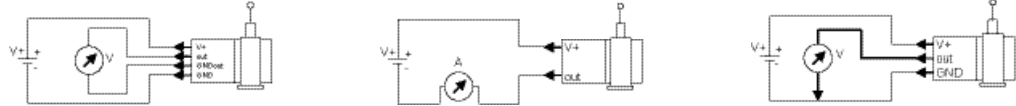
The electrical characteristics of the draw wire encoder assembly may be found in the data sheets of the encoder selected.

### Draw Wire Encoder DW70

#### Electrical Characteristics (Analog Output):

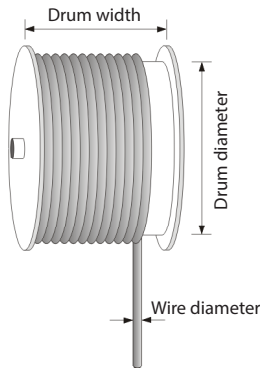
|                              |   |                               |                               |
|------------------------------|---|-------------------------------|-------------------------------|
| Analog output [Key code]:    | 0-10 V [8C]                                   | 4-20 mA [7E]                  | Potentiometer [PA]            |
| Output:                      | 0-10 V galvanically isolated,<br>4 conductors | 4-20 mA,<br>2 conductors      | 1 kOhm                        |
| Supply voltage:              | 12-30 VDC                                     | 12-30 VDC                     | max. 30 VDC                   |
| Recommended slider current:  | -   | -                             | < 1 µA                        |
| Max. current consumption:    | 22.5 mA (no load)                             | 50 mA                         | -                             |
| Reverse polarity protection: | yes   | yes                           | -                             |
| Operating temperature:       | -4 to +140 °F (-20 to +60 °C)                 | -4 to +140 °F (-20 to +60 °C) | -4 to +185 °F (-20 to +85 °C) |

Connection diagrams:



ROHS compliant according to: EU guideline 2011/65/EU

#### Operating Principle:



#### Construction:

The core of a draw wire device is a drum mounted on bearings, onto which a wire is wound. Winding takes place via a spring-loaded device.

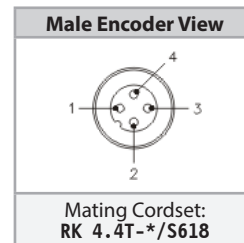
#### Note:

Exceeding the maximum extension length of the draw wire will lead to damage to the wire and the mechanics.

#### Wiring Diagram (Analog Output):

#### Standard Wiring (Analog Output):

| Pin | Color | 0-10 V   | 4-20 mA | 10 kOhm |
|-----|-------|----------|---------|---------|
| 1   | BN    | V+       | V+      | V+      |
| 2   | WH    | Signal   | N/C     | Slider  |
| 3   | BU    | GND      | Signal  | GND     |
| 4   | BK    | GND Sig. | N/C     | N/C     |



\* Length in meters.

#### Accessories:

- See page H1, Connectivity, for cables and connectors

# Linear Position Technology

## Draw Wire Mechanics with Encoder or Analog Sensor

### Draw Wire Encoder DW70

#### Part Number Key: DW70 with Encoder

| A  | B   |   | C  |   | D  |   | E  | F    |   | G     |   | H        |
|----|-----|---|----|---|----|---|----|------|---|-------|---|----------|
| DW | 250 | - | 70 | - | 04 | - | 2H | 1000 | - | H1181 | / | Specials |

| A  | Type      |
|----|-----------|
| DW | Draw Wire |

| B    | Measuring Range*   |
|------|--------------------|
| 250  | 250 mm Steel Wire  |
| 500  | 500 mm Steel Wire  |
| 1250 | 1250 mm Steel Wire |

\*Other measuring ranges available on request

| C  | Housing |
|----|---------|
| 70 | 50 mm   |

#### Available resolution, drum circumference: 125 mm

|                      |      |       |        |
|----------------------|------|-------|--------|
| Encoder PPR          | 125  | 1250  | 2500   |
| PQ* pulse/revolution | 500  | 5000  | 10000  |
| Pulses/mm            | 4    | 40    | 80     |
| Resolution [mm]      | 0.25 | 0.025 | 0.0125 |

\*PQ = Post Quadrature

#### Standard resolutions for draw wire with absolute encoder RM-46 or RM-47 CANopen, drum circumference 125 mm

| Absolute encoder  | RM-46       | RM-47 CANopen                        |
|-------------------|-------------|--------------------------------------|
| Pulses/resolution | 4096/12 bit | 4096, programmable via the bus/12bit |
| Pulses/mm         | 32.8        | 32.8                                 |
| Resolution (mm)   | ~ 0.03      | ~ 0.03                               |

| D  | Encoder Type       |
|----|--------------------|
| 04 | RI-04, Incremental |
| 46 | RM-46, SSI         |
| 47 | RM-47, CANopen     |

| E   | Voltage Supply and Output Type |
|---|--------------------------------|
| Dependant on Encoder Selected <sup>1)</sup> |                                |

| F   | Pulse Rate/Resolution |
|---|-----------------------|
| Dependant on Encoder Selected <sup>1)</sup> |                       |

| G   | Type of Connection |
|---|--------------------|
| Dependant on Encoder Selected <sup>1)</sup> |                    |

<sup>1)</sup>Recommended encodes listed below

#### Recommended standard device:

DW\*\*\*-04-2H1250-C

Draw wire with mounted encoder typ RI-04 incremental RI-04Q6C-2H1250-C

- Push-pull with inverted signals
- Supply voltage 8-30 VDC
- Cable radial 2 M
- 1250 PPR

DW\*\*\*\*-46-3C12S12M-C

Draw wire with mounted encoder RM-46 RM-46T6S-3C12S12M-CT1M

- SSI interface
- Supply voltage 10-30 VDC
- SSI gray code
- Cable tangential 1 M
- Resolution 4096 PPR

DW\*\*\*-47-9D32B-CT1M

Draw wire with mounted encoder RM-47 RM-47T6S-9D32B-CT1M

- CANopen interface
- Supply voltage 10-30 VDC
- Cable tangential 1 M
- CANopen encoder profile V3.2

#### Part Number Key: DW70 with Analog Sensor

| A  | B   |   | C  |   | D  |   | E     |
|----|-----|---|----|---|----|---|-------|
| DW | 250 | - | 70 | - | 7E | - | H1441 |

| A  | Type      |
|----|-----------|
| DW | Draw Wire |

| B    | Measuring Range*   |
|------|--------------------|
| 250  | 250 mm Steel Wire  |
| 500  | 500 mm Steel Wire  |
| 1250 | 1250 mm Steel Wire |

\*Other measuring ranges available on request

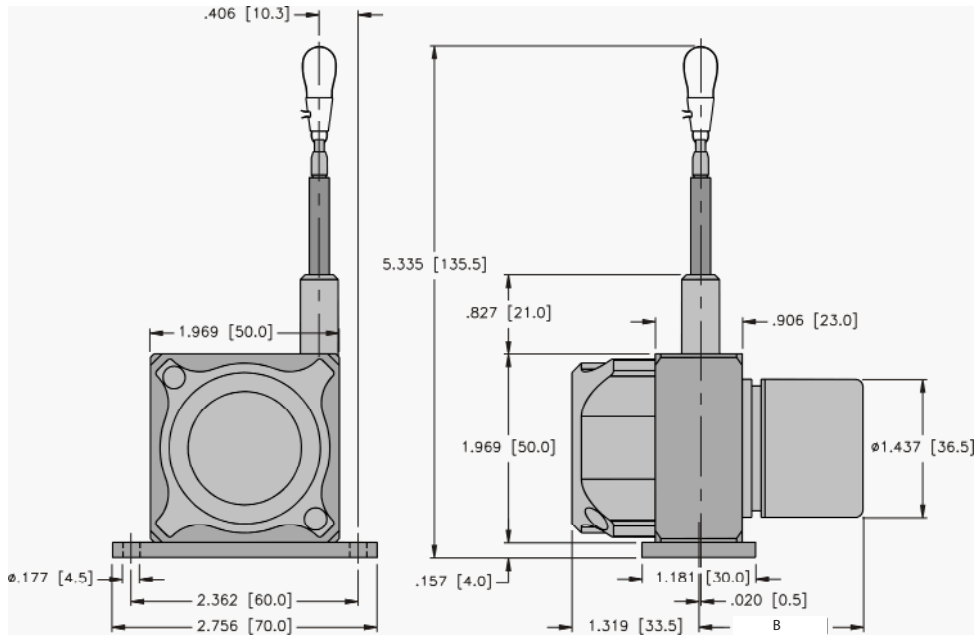
| C  | Housing |
|----|---------|
| 70 | 50 mm   |

| D  | Voltage Supply and Output Type  |
|----|---------------------------------|
| 7E | 12-30 VDC, 4-20 mA              |
| 8C | 12-30 VDC, 0-10 V               |
| PA | 30 VDC max, 1 kΩ, Potentiometer |

| E     | Type of Connection                 |
|-------|------------------------------------|
| H1441 | Axial 4-pin M12 Eurofast Connector |
| CA    | Axial Cable (2 m PVC)              |

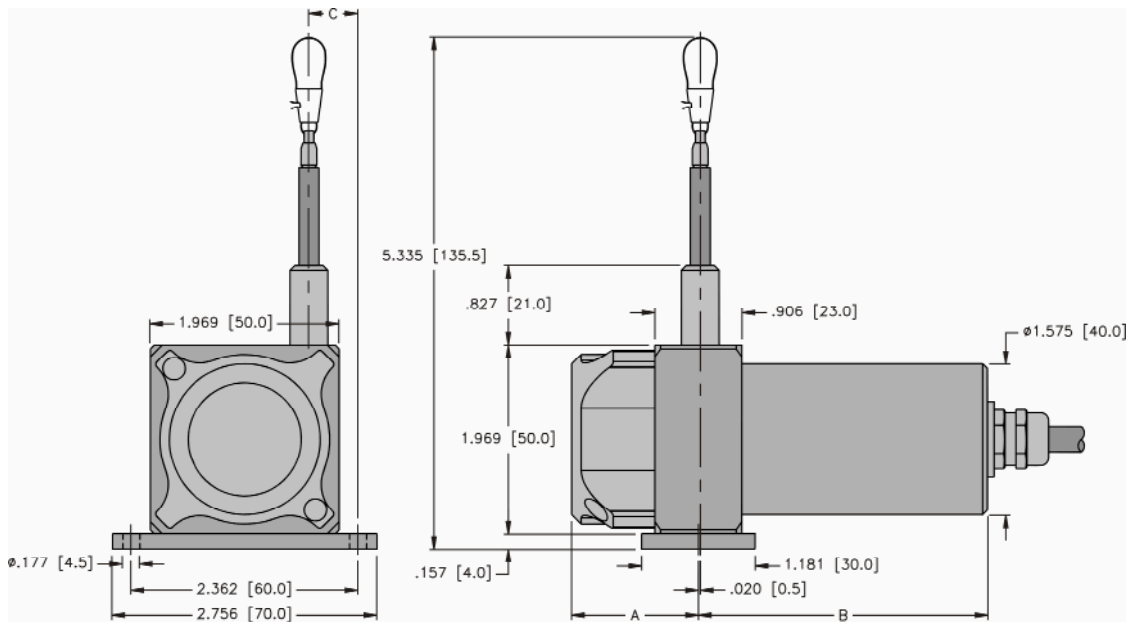
**Draw Wire Encoder DW70**

**Dimensions: DW70 with Encoder**



| Encoder Type | Measuring Length | B in. [mm]   |
|--------------|------------------|--------------|
| Incremental  | 250-1250 mm      | 1.693 [43]   |
| Absolute     | 250-1250 mm      | 2.114 [53.7] |

**Dimensions: DW70 with Analog Sensor**



| Sensor Type       | Measuring Length | A in. [mm]   | B in. [mm]   | C in. [mm]   |
|-------------------|------------------|--------------|--------------|--------------|
| Potentiometer     | 250 mm           | 1.043 [26.5] | 2.559 [65]   | 0.840 [21.3] |
|                   | 500 mm           | 1.043 [26.5] | 2.559 [65]   | 0.840 [21.3] |
|                   | 1,250 mm         | 1.319 [33.5] | 2.559 [65]   | 0.406 [10.3] |
| 0-10 V<br>4-20 mA | 250 mm           | 1.043 [26.5] | 3.091 [78.5] | 0.840 [21.3] |
|                   | 500 mm           | 1.043 [26.5] | 3.091 [78.5] | 0.840 [21.3] |
|                   | 1,250 mm         | 1.319 [33.5] | 3.091 [78.5] | 0.406 [10.3] |