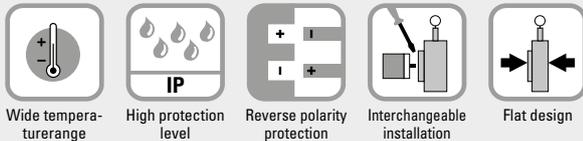


Linear measuring technology

| | | |
|-------------------------------|---------------------|----------------------------------|
| Draw-wire encoder C105 | Compact-Line | Measuring length max. 6 m |
|-------------------------------|---------------------|----------------------------------|



The draw-wire encoder C105 features a compact design. It is available with various wire types. All encoders with 58 mm synchro flange and 6 mm shaft, as well as analog sensors with redundant interfaces can be combined with this draw-wire mechanism. The cable and connector orientations of the encoder can easily be adapted to the position of the mechanism. A flexible wire outlet compensates mounting tolerances.



Flexible and compact

- Encoder replacement and connection technology adaptation possible by the user.
- Measuring lengths from 3 m to 6 m.
- Simple adaptation of the position for the connection technology.
- Flexible wire outlet and different wire types.
- Compact design.
- Simple installation.
- Scalable analog output with limit switch function.
- Redundant sensors.

Order code with encoder (incremental, absolute)

D8.1 XXX.XXXX
Type a b c d e f

- a** Wire type
 1 = steel wire
 2 = Para-Line ¹⁾
 5 = Steel wire, plastic coated
 - b** Measuring range
 A1 = 3 m
 04 = 4 m
 05 = 5 m
 06 = 6 m ¹⁾
 - c** Encoder used
 2Z = Sendix 5000, incremental
 M3 = Sendix M5863, absolute
 F3 = Sendix F5863, absolute
 63 = Sendix 5863, absolute
 M8 = Sendix M5868, absolute
 F8 = Sendix F5868 absolute
 68 = Sendix 5868, absolute
 - d** Output circuit
 depends on the encoder used
 - e** Type of connection
 depends on the encoder used
 - f** Resolution / Protocol / Options
 depends on the encoder used
- Draw-wire mechanism without encoder write 0 in c, d, e + f*
 Example: D8.1106.0000.0000

| Standard resolutions for draw-wire with incremental encoder Sendix 5000 | | | |
|---|-----|------|------|
| Drum circumference [mm] | 200 | 200 | 200 |
| Pulses / revolution [ppr] | 200 | 2000 | 4000 |
| Pulses / mm | 1 | 10 | 20 |
| Resolution [mm] | 1 | 0.1 | 0.05 |

| Standard resolutions for draw-wire with absolute encoder Sendix M5863 (12 bit ST) or M5868 (12 bit ST, programmable via bus) | |
|--|------|
| Drum circumference [mm] | 200 |
| Pulses / revolution [ppr] | 4096 |
| Pulses / mm | 20.5 |
| Resolution [mm] | 0.05 |

Recommended standard variants (with incremental, absolute encoder)

| Order no. draw-wire encoder | Mounted encoder | Interface | Power supply | Type of connection | Resolution / Protocol | Option |
|-----------------------------|----------------------------------|--------------------------------|----------------|--------------------------|----------------------------------|--------|
| D8.1xxx.2254.2000 | Sendix 5000 (8.5000.B154.2000) | Push-pull with inverted signal | 10 ... 30 V DC | 1 x radial M12 connector | 2000 ppr | - |
| D8.1xxx.M324.G222 | Sendix M5863 (8.M5863.4124.G222) | SSI | 10 ... 30 V DC | 1 x radial M12 connector | 4096 ppr / SSI-Gray-Code | - |
| D8.1xxx.M824.2122 | Sendix M5868 (8.M5868.4124.2122) | CANopen | 10 ... 30 V DC | 1 x radial M12 connector | CANopen encoderprofil DS406 V4.0 | - |

¹⁾ Wire type **a** = 2 (Para-Line) not available for measuring range 6 m.

Draw-wire encoder C105

Compact-Line

Measuring length max. 6 m

Other variants (with absolute encoder)

| Order no. draw-wire encoder | Mounted encoder | Interface | Power supply | Type of connection | Resolution / Protocol | Option |
|-----------------------------|----------------------------------|-------------|----------------|--------------------------|--|-------------------------|
| D8.1xxx.F326.G223 | Sendix F5863 (8.F5863.2126.G223) | SSI | 10 ... 30 V DC | 1 x radial M12 connector | 4096 ppr / SSI-Gray-Code | SET button + status LED |
| D8.1xxx.6326.G223 | Sendix 5863 (8.5863.2126.G223) | SSI | 10 ... 30 V DC | 1 x radial M12 connector | 4096 ppr / SSI-Gray-Code | SET button + status LED |
| D8.1xxx.F82E.2123 | Sendix F5868 (8.F5868.212E.2123) | CANopen | 10 ... 30 V DC | 1 x radial M12 connector | CANopen encoder profile DS406 V3.2 | SET button |
| D8.1xxx.6822.2123 | Sendix 5868 (8.5868.2122.2123) | CANopen | 10 ... 30 V DC | 2 x radial M12 connector | CANopen encoder profile DS406 V3.2 | SET button |
| D8.1xxx.M834.3222 | Sendix M5868 (8.M5868.4134.3222) | SAE J1939 | 10 ... 30 V DC | 1 x radial M12 connector | SAE J1939 | - |
| D8.1xxx.M844.4122 | Sendix M5868 (8.M5868.4144.4122) | IO-Link | 18 ... 30 V DC | 1 x radial M12 connector | IO-Link | - |
| D8.1xxx.6832.3113 | Sendix 5868 (8.5868.2132.3113) | PROFIBUS | 10 ... 30 V DC | 3 x radial M12 connector | Profibus-DP V0 encoder profile Class 2 | SET button |
| D8.1xxx.68B2.B212 | Sendix 5868 (8.5868.21B2.B212) | EtherCAT | 10 ... 30 V DC | 3 x radial M12 connector | EtherCAT with CoE 3.2.10 | - |
| D8.1xxx.F8CN.C122 | Sendix F5868 (8.F5868.21CN.C122) | PROFINET IO | 10 ... 30 V DC | 3 x axial M12 connector | PROFINET encoder profile version 4.2 | - |
| D8.1xxx.F8AN.A222 | Sendix F5868 (8.F5868.21AN.A222) | EtherNet/IP | 10 ... 30 V DC | 3 x axial M12 connector | EtherNet/IP | - |

Order code with encoder (analog, scalable with limit switch function)

D8.1 XXX . M1XX . XXXX
 Type a b c d e f

- a** Wire type
 1 = steel wire
 2 = Para-Line ¹⁾
 5 = Steel wire, plastic coated
 - b** Measuring range
 A1 = 3 m
 04 = 4 m
 05 = 5 m
 06 = 6 m ¹⁾
 - c** Encoder used
 M1 = Sendix M5861, absolute ²⁾
 - d** Output circuit
 depends on the encoder used
 - e** Type of connection
 depends on the encoder used
 - f** Resolution / Protocol / Options
 depends on the encoder used
- Draw-wire mechanism without encoder write 0 in c, d, e + f*
 Example: D8.1106.0000.0000

Recommended standard variants (with encoder analog, scalable with limit switch function)

| Order no. draw-wire encoder | Mounted encoder | Interface | Power supply | Type of connection | Resolution / Protocol | Option |
|-----------------------------|----------------------------------|---------------------|----------------|----------------------|-----------------------|--|
| D8.1xxx.M134.3512 | Sendix M5861 (8.M5861.4134.3512) | Analog, 4 ... 20 mA | 10 ... 30 V DC | radial M12 connector | 12 Bit / 4 ... 20 mA | scalable with limit switch function ³⁾ |
| D8.1xxx.M144.4512 | Sendix M5861 (8.M5861.4144.4512) | Analog, 0 ... 10 V | 15 ... 30 V DC | radial M12 connector | 12 Bit / 0 ... 10 V | scalable with limit switch function ³⁾ |
| D8.1xxx.M134.3612 | Sendix M5861 (8.M5861.4134.3612) | Analog, 4 ... 20 mA | 10 ... 30 V DC | radial M12 connector | 12 Bit / 4 ... 20 mA | scalable without limit switch function ³⁾ |
| D8.1xxx.M144.4612 | Sendix M5861 (8.M5861.4144.4612) | Analog, 0 ... 10 V | 15 ... 30 V DC | radial M12 connector | 12 Bit / 0 ... 10 V | scalable without limit switch function ³⁾ |

Order code with analog sensor (scaled to measuring range)

D8.3 1 XX . XXX 2 . 0000
 Typ a b c d

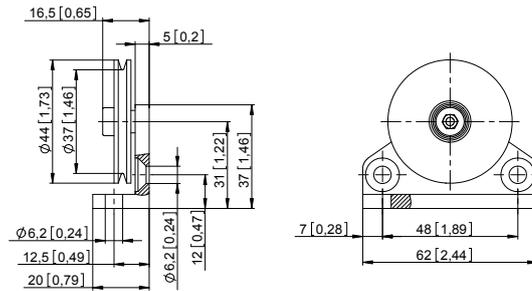
- a** Wire type
 1 = steel wire (ø 0,6 mm)
- b** Measuring range
 05 = 5 m
 06 = 6 m
- c** Redundant sensor / supply voltage
 R11 = 2 x 4 ... 20 mA / 10 ... 30 V DC
 R33 = 2 x potentiometer 10 kΩ / max. 30 V DC
- d** Type of connection
 2 = radial M12 connector, 8-pin

1) Wire type **a** = 2 (Para-Line) not available for measuring range 6 m.
 2) With ccw option.
 3) Delivery condition: unscaled.
 Description for scaling and limit switch function see data sheet M5861.

| | | |
|-------------------------------|---------------------|----------------------------------|
| Draw-wire encoder C105 | Compact-Line | Measuring length max. 6 m |
|-------------------------------|---------------------|----------------------------------|

| Accessories for draw-wire encoder | Dimensions in mm [inch] | Order no. |
|-----------------------------------|-------------------------|-----------|
|-----------------------------------|-------------------------|-----------|

| | | | |
|---------------------|--|---|---------------------------------------|
| Guide pulley | Technical data: - mounting bracket (anodized alum.) - guide pulley (plastic POM) - ball bearing (type 696-2R5) | Scope of delivery: - 2 x countersunk screws for lateral fixing - 2 x hexagonal screws for fixing on a flat surface | 8.0000.7000.0045 ¹⁾ |
|---------------------|--|---|---------------------------------------|



| | | | |
|--|--|---|--|
| Extension cable (further on request) | | <p>Technical drawing of the extension cable showing dimensions in mm and inches:</p> <ul style="list-style-type: none"> max. 6 [0.24] (spring length) 2.4 [0.09] (spring diameter) 12 [0.47] (spring length) 20 [0.79] (cable length) 25 [0.98] (cable length) 4.7 [0.19] (connector diameter) M6 (connector thread) | Steel wire 2 m [6.56'] 8.0000.7000.0033 Steel wire 5 m [16.40'] 8.0000.7000.0034 Steel wire 10 m [32.81'] 8.0000.7000.0035 Paraleine 2 m [6.56'] 8.0000.7000.0032 |
|--|--|---|--|

| Cables and connectors | Order no. |
|-----------------------|-----------|
|-----------------------|-----------|

| | |
|--|-----------------------------|
| Preassembled cables M12 female connector with coupling nut, 4-pin, A coded, straight single ended 2 m [6.56'] PUR cable | 05.00.6061.6211.002M |
| M12 female connector with coupling nut, 5-pin, A coded, straight single ended 2 m [6.56'] PVC cable | 05.00.6081.2211.002M |
| M12 male connector with external thread, 4-pin, D coded, straight single ended 2 m [6.56'] PUR cable | 05.00.6031.4411.002M |
| M12 female connector with coupling nut, 8-pin, A coded, straight single ended 2 m [6.56'] PVC cable | 05.00.6041.8211.002M |

| | |
|---|----------------------------|
| Connectors M12 female connector with coupling nut, 5-pin, A coded, straight (metal) | 8.0000.5116.0000 |
| M12 female connector with coupling nut, 5-pin, A coded, straight (metal/plastic) | 05.B-8151-0/9 |
| M12 female connector with coupling nut, 5-pin, A coded, straight (metal, Ex approval) | 8.0000.5121.0000.Ex |

Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

1) Stock types.

Linear measuring technology

| | | |
|-------------------------------|---------------------|----------------------------------|
| Draw-wire encoder C105 | Compact-Line | Measuring length max. 6 m |
|-------------------------------|---------------------|----------------------------------|

Technical data

| Mechanical characteristics | |
|--|---|
| Measuring range | 3000 ... 6000 mm |
| Speed max. | 3000 mm/s |
| Acceleration max. | 23.5 m/s ² |
| Extension force F_{min} | 8 N |
| Repeat accuracy | ±0.25 mm |
| Working temperature | with encoder -20 °C ... +80 °C [-4 °F ... +176 °F] -40 °C ... +80 °C [-40 °F ... +176 °F], optional on request, speed max. 800 mm/s with analog sensor -40 °C ... +80 °C [-40 °F ... +176 °F] |
| Weight | approx. 800 g [28.22 oz] |
| Drum circumference | 200 mm |
| Wire | Para-Line ø 0,6 mm steel wire ø 0,6 mm |

| Electrical characteristics analog sensor R11 | |
|--|---|
| Supply voltage | 10 ... 30 V DC |
| Output current | 4 ... 20 mA (2x) 20 ... 4 mA (2x) 4 ... 20 mA + 20 ... 4 mA |

For the electrical characteristics as well as for the terminal assignment, please refer to the data sheet of the encoder used.

| Electrical characteristics analog sensor R33 | |
|--|-------------------|
| Analog output | 2 x potentiometer |
| Output | 10 kΩ |
| Supply voltage | max. 30 V DC |
| Load capacity | 2 W at 70 °C |
| Resistance tolerance | ±5 % |
| Standard terminal resistance | 0.5% or 1Ω |
| Linearity tolerance | ±0.25 % |

| Approvals | |
|--|------------|
| CE compliant in accordance with | |
| EMC Directive | 2014/30/EU |
| RoHS Directive | 2011/65/EU |

Terminal assignment (analog output)

| | | | | | | | | | | | | |
|---|--|--|-----------------|------|--------------------|-------|--------------------|------|-------|-------|--|------|
| Analog sensor R11 , redundant (2 x 4 ... 20 mA) | | | R/I-converter 1 | | R/I-converter 2 | | | | | | | |
| | | | Signal: | +V 1 | I _{out} 1 | +V 2 | I _{out} 2 | n.c. | n.c. | n.c. | | n.c. |
| | | | Pin: | 1 | 3 | 5 | 7 | 2 | 4 | 6 | | 8 |
| Analog sensor R33 , redundant (2 x Potentiometer 1 kΩ) | | | Potentiometer 1 | | | | Potentiometer 2 | | | | | |
| | | | Signal: | +V 1 | Out 1 | 0 V 1 | n.c. | +V 2 | Out 2 | 0 V 2 | | n.c. |
| | | | Pin: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 8 |

Top view of mating side, male contact base



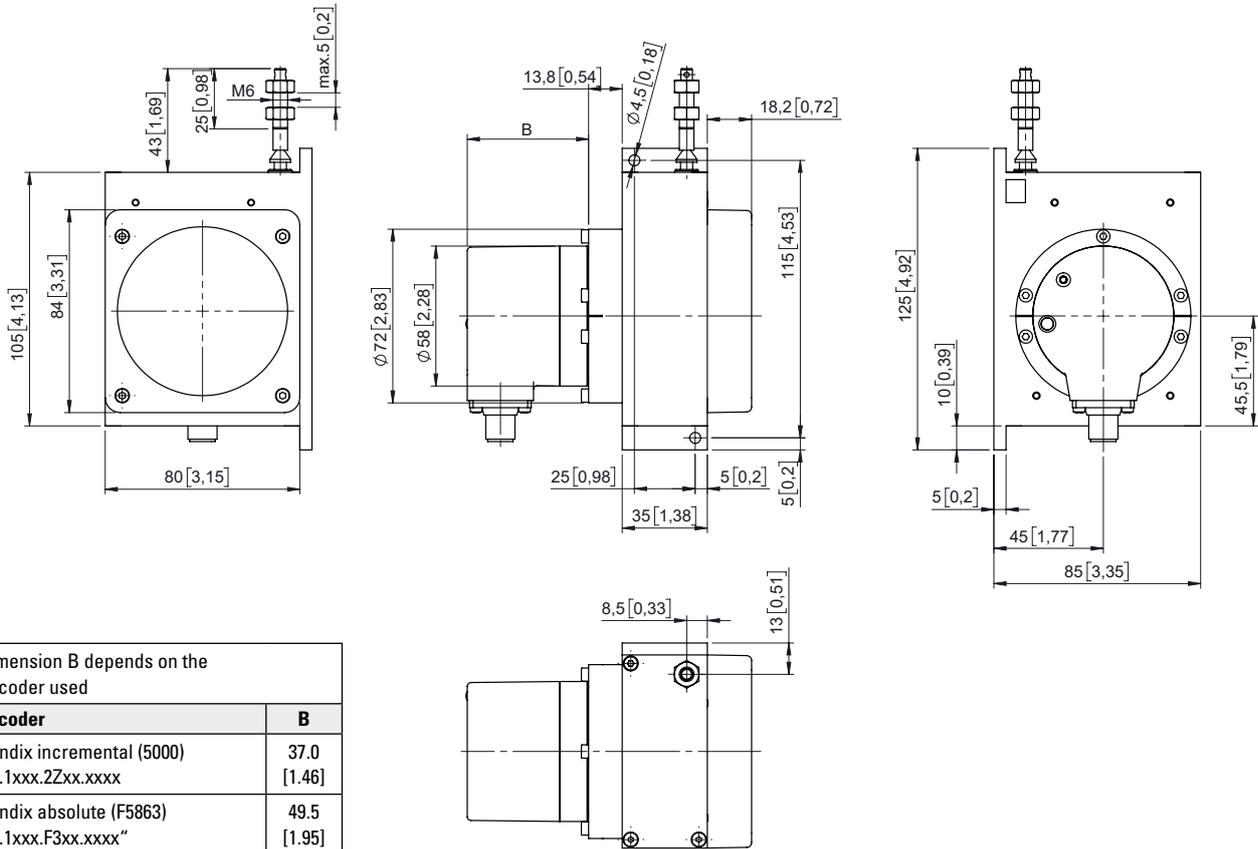
M12 connector, 8-pin

Draw-wire encoder C105 **Compact-Line** **Measuring length max. 6 m**

Dimensions

Dimensions in mm [inch]

Draw-wire mechanics with encoder



| Dimension B depends on the encoder used | |
|---|----------------|
| Encoder | B |
| Sendix incremental (5000) D8.1xxx.2Zxx.xxxx | 37.0 [1.46] |
| Sendix absolute (F5863) D8.1xxx.F3xx.xxxx" | 49.5 [1.95] |
| Sendix absolute (5863) D8.1xxx.63xx.xxxx | 49.5 [1.95] |
| Sendix absolute (F5868, CANopen) D8.1xxx.F8xx.21xx | 70.0 [2.76] |
| Sendix absolute (F5868, EtherNet/IP) D8.1xxx.F8xx.A2xx | 59.5 [2.34] |
| Sendix absolute (F5868, EtherNet/IP) D8.1xxx.68xx.A2xx | 77.2 [3.04] |
| Sendix absolute (F5868, EtherNet/IP) D8.1xxx.Mxxx.xxxx | 49.8 [1.96] |

