



Product Information

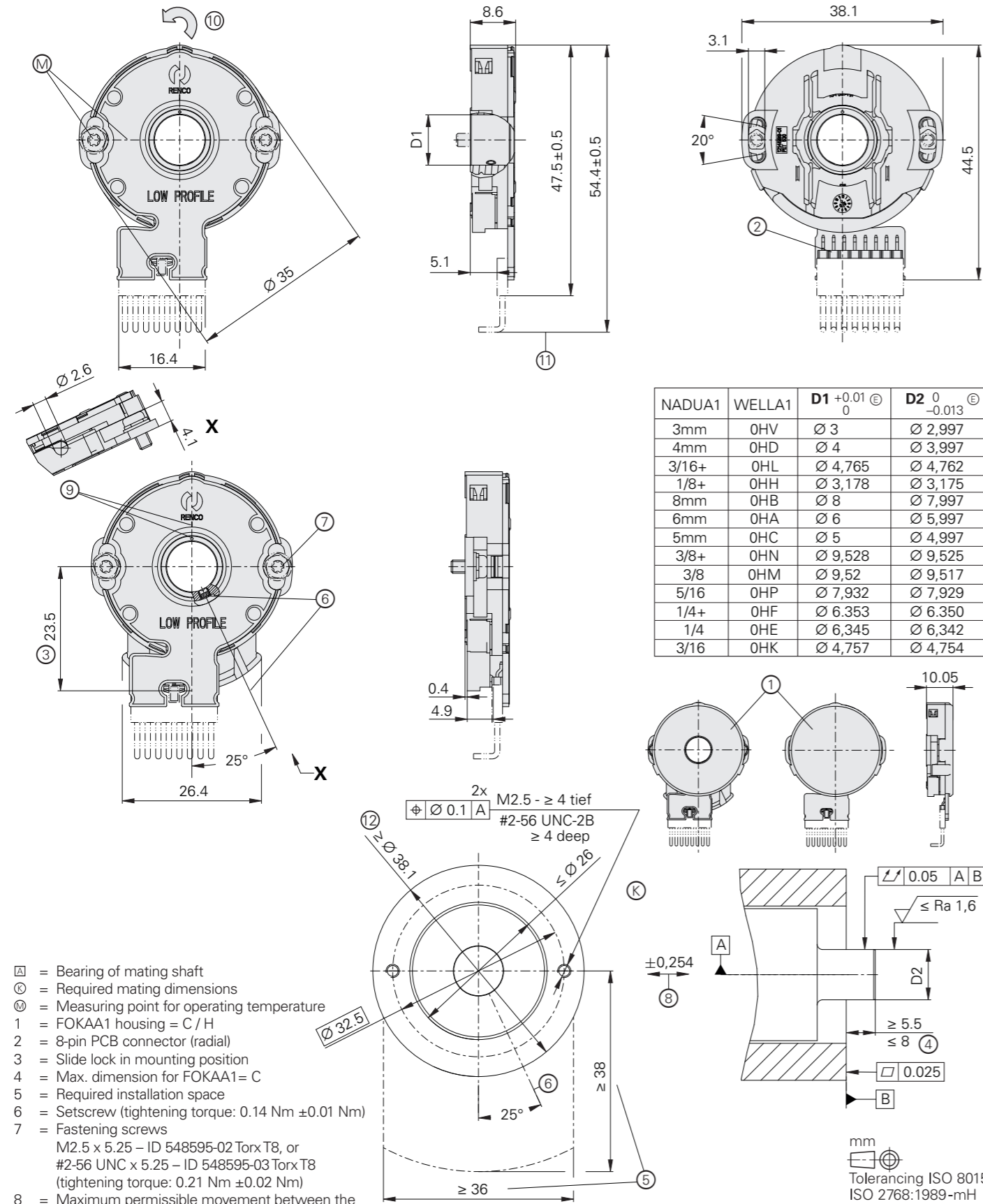
R35iL

Special Variant with
8-Pin Connector

R35iL rotary encoders

Incremental rotary encoders

- Ø 32.5 mm flange for axial mounting
- Hollow through shaft
- Self-centering, without integral bearing



| NADUA1 | WELLA1 | D1 $+0.01$ ₀ E | D2 0 _{-0.013} E |
|--------|--------|------------------------------------|-------------------------------------|
| 3mm | 0HV | $\varnothing 3$ | $\varnothing 2,997$ |
| 4mm | 0HD | $\varnothing 4$ | $\varnothing 3,997$ |
| 3/16+ | 0HL | $\varnothing 4,765$ | $\varnothing 4,762$ |
| 1/8+ | 0HH | $\varnothing 3,178$ | $\varnothing 3,175$ |
| 8mm | 0HB | $\varnothing 8$ | $\varnothing 7,997$ |
| 6mm | 0HA | $\varnothing 6$ | $\varnothing 5,997$ |
| 5mm | 0HC | $\varnothing 5$ | $\varnothing 4,997$ |
| 3/8+ | 0HN | $\varnothing 9,528$ | $\varnothing 9,525$ |
| 3/8 | 0HM | $\varnothing 9,52$ | $\varnothing 9,517$ |
| 5/16 | 0HP | $\varnothing 7,932$ | $\varnothing 7,929$ |
| 1/4+ | 0HF | $\varnothing 6,353$ | $\varnothing 6,350$ |
| 1/4 | 0HE | $\varnothing 6,345$ | $\varnothing 6,342$ |
| 3/16 | 0HK | $\varnothing 4,757$ | $\varnothing 4,754$ |

- ⊠ = Bearing of mating shaft
- ⊙ = Required mating dimensions
- ⊙ = Measuring point for operating temperature
- 1 = FOKAA1 housing = C / H
- 2 = 8-pin PCB connector (radial)
- 3 = Slide lock in mounting position
- 4 = Max. dimension for FOKAA1 = C
- 5 = Required installation space
- 6 = Setscrew (tightening torque: 0.14 Nm \pm 0.01 Nm)
- 7 = Fastening screws
M2.5 x 5.25 – ID 548595-02 Torx T8, or
#2-56 UNC x 5.25 – ID 548595-03 Torx T8
(tightening torque: 0.21 Nm \pm 0.02 Nm)
- 8 = Maximum permissible movement between the shaft and stator, including thermal expansion; the entire value is permissible under dynamic effects
- 9 = Reference mark position $\pm 10^\circ$
- 10 = Direction of shaft rotation for ascending position values
- 11 = Dimension for RENCO standard cable
- 12 = Flange surface; ensure full-surface contact for the screws

| R35iL | |
|---|---|
| Interface* | PP/0 PP/PP |
| Signal periods per rev.* | 100, 200, 250, 256, 400, 500, 512, 625, 800, 1000, 1024, 1250, 2000, 2048, 2500, 4000, 4096, 5000 |
| Reference mark Width / Gate* | One 1 Width: $90^\circ \pm 45^\circ$ el. Gate: U _{a1} High and U _{a2} High 6 Width: $90^\circ \pm 45^\circ$ el. Gate: U _{a1} Low and U _{a2} Low 7 Width: $270^\circ \pm 45^\circ$ el. Gate: U _{a1} High and U _{a2} High 8 Width: $270^\circ \pm 45^\circ$ el. Gate: U _{a1} Low and U _{a2} Low |
| Output frequency | ≤ 1.83 MHz |
| Commutation Signal periods per rev.* | Without 0 Signal tracks U, V, W 2 to 32 |
| System accuracy ¹⁾ | $\pm 300''$ |
| Electrical connection Connection direction | PCB connector, 8-pin Radial |
| Supply voltage | DC 5 V \pm 0.5 V |
| Current consumption Typical, without load Maximum, without load Maximum, with load | 5 V: ≤ 55 mA 5.5 V: ≤ 90 mA 5.5 V: ≤ 105 mA 5 V: ≤ 55 mA 5.5 V: ≤ 90 mA 5.5 V: ≤ 110 mA |
| Shaft* | Hollow through shaft with radial fastening Shaft diameter: See Mating dimensions |
| Mech. permissible speed | ≤ 30000 rpm |
| Moment of inertia of rotor | $0.2 \cdot 10^{-6}$ kgm ² |
| Permissible motion of measured shaft | Axial: ± 0.254 mm Radial runout: 0.05 mm TIR |
| Vibration 55 Hz to 2000 Hz Shock 6 ms | ≤ 200 m/s ² (EN 60068-2-6) ≤ 2000 m/s ² (EN 60068-2-27) |
| Operating temperature | -30 °C to 100 °C |
| Relative humidity | $\leq 93\%$ (40 °C/21 d as per EN 60068-2-78), without condensation |
| Protection rating ²⁾ EN 60529 | Without protective cover*: IP00 With protective cover*: IP30 |
| Mass | ≈ 0.03 kg |
| ID number | 1293425-xx (collective packaging with 10 encoders) 1085410-xx (single packaging) |

* Please select when ordering
¹⁾ Unmounted; additional errors due to mounting and the bearing of the shaft to be measured are not considered. For a measured shaft eccentricity of 1 μ m, the measuring error increases by $\pm 16.4''$
²⁾ Electromagnetic compatibility must be ensured in the entire system

Mounting accessories

Check the torque setting and the level of bit wear on a regular basis.

Screwdriver

When using screwdrivers with adjustable torque, ensure that they comply with DIN EN ISO 6789 and thus meet the required torque tolerances.

Adjustable torque
0.02 Nm to 0.3 Nm

ID 350379-10



Screwdriver bit (4-spline)

For shaft fastening

The screwdriver bit set contains the following parts:

- 1/4-inch adapter with 4-spline (0.048) bit from Bristol Wrench Co.
- Wrench for changing the bits
- Ten "4-spline" replacement bits (0.048)

ID 825869-01



Torx T8 screwdriver bit

For flange fastening screws

ID 350378-11

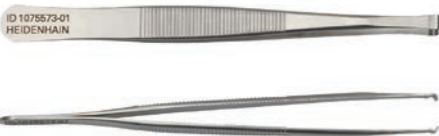


Mounting aid

For disengaging the output cable.

ID 1075573-01

To avoid damage to the cable, the pulling force must be applied only to the connector, not to the wires.



Testing equipment and diagnostics

PWT 101

The PWT 101 is a testing device for the functional testing and mounting inspection of RENCO R35i and R35iL rotary encoders.

Block commutation software module

This module lets you perform the following inspections and settings:

- Output signals
- Level display
- Counts
- Encoder information

HEIDENHAIN Filebase

You can download the block commutation software module and its user's manual at www.heidenhain.com > Service & Support > Downloads > Software.

Further information:

For more information, please refer to the *PWT 101 Block Commutation Module User's Manual*

Testing cable for connecting the R35iL with the PWT 101

Including three 8-pin adapter cables*

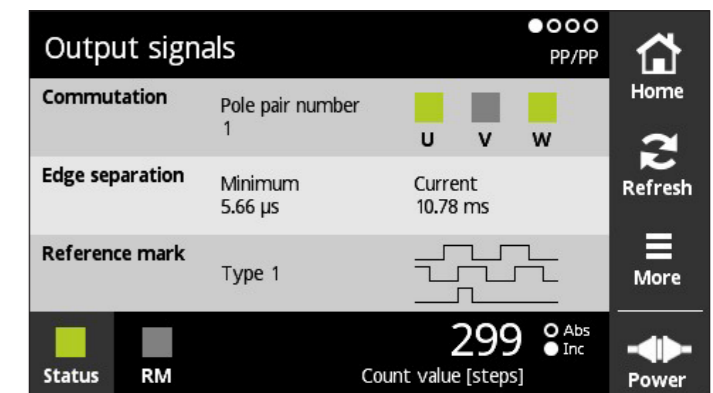
ID 1401533-01

* Replace the adapter cable after 500 plugging cycles

Adapter cable


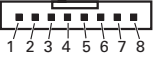

Three connectors for replacement

ID 1314702-03




Electrical connection

Pin layout

| 8-pin PCB connector | | | | | | | | |
|--|---|----------|---------------------|-----------------|-----------------------|---------------------|----------|----------|
|  |  | | | | | | | |
| | Power supply | | Incremental signals | | Reference mark signal | Commutation signals | | |
|  | 4 | 1 | 3 | 5 | 2 | 6 | 7 | 8 |
| PP/0 | U _P | 0V | U _{a1} | U _{a2} | U _{a0} | – | – | – |
| PP/PP | U _P | 0V | U _{a1} | U _{a2} | U _{a0} | U | V | W |
| | Red | Black | Yellow | Blue | Orange | Green | Brown | White |

Vacant pins or wires must not be used!

Cables

| PUR output cable \varnothing 4.5 mm \pm 0.2 mm 4 x 2 x 0.9 mm ² (AWG28 7/36; twisted wire pair) | | |
|--|---|---------------|
| With 8-pin PCB, braided shield with flexible filler lead and unstripped cable end |  | ID 1351457-xx |
| <p><i>Braided shield insulation:</i> heat-shrink tubing (maximum \varnothing 5.5 mm) <i>Single-wire insulation:</i> TPE \varnothing 0.6 mm</p> <p>Bend radius at 20 °C: <i>Rigid configuration:</i> \geq 14 mm <i>Frequent flexing:</i> \geq 36 mm</p> <p>Temperature range <i>PUR cable jacket:</i> –40 °C to 100 °C –20 °C (when flexing) and +80 °C (when exposed to media and hydrolysis) <i>TPE wires:</i> –40 °C to 120 °C</p> | | |

To prevent damage to the encoders, insulate any unused wires.

HEIDENHAIN

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This Product Information document supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is placed.



Further information:

Comply with the requirements described in the following documents to ensure correct and intended operation:

- Operating Instructions

1403370-xx