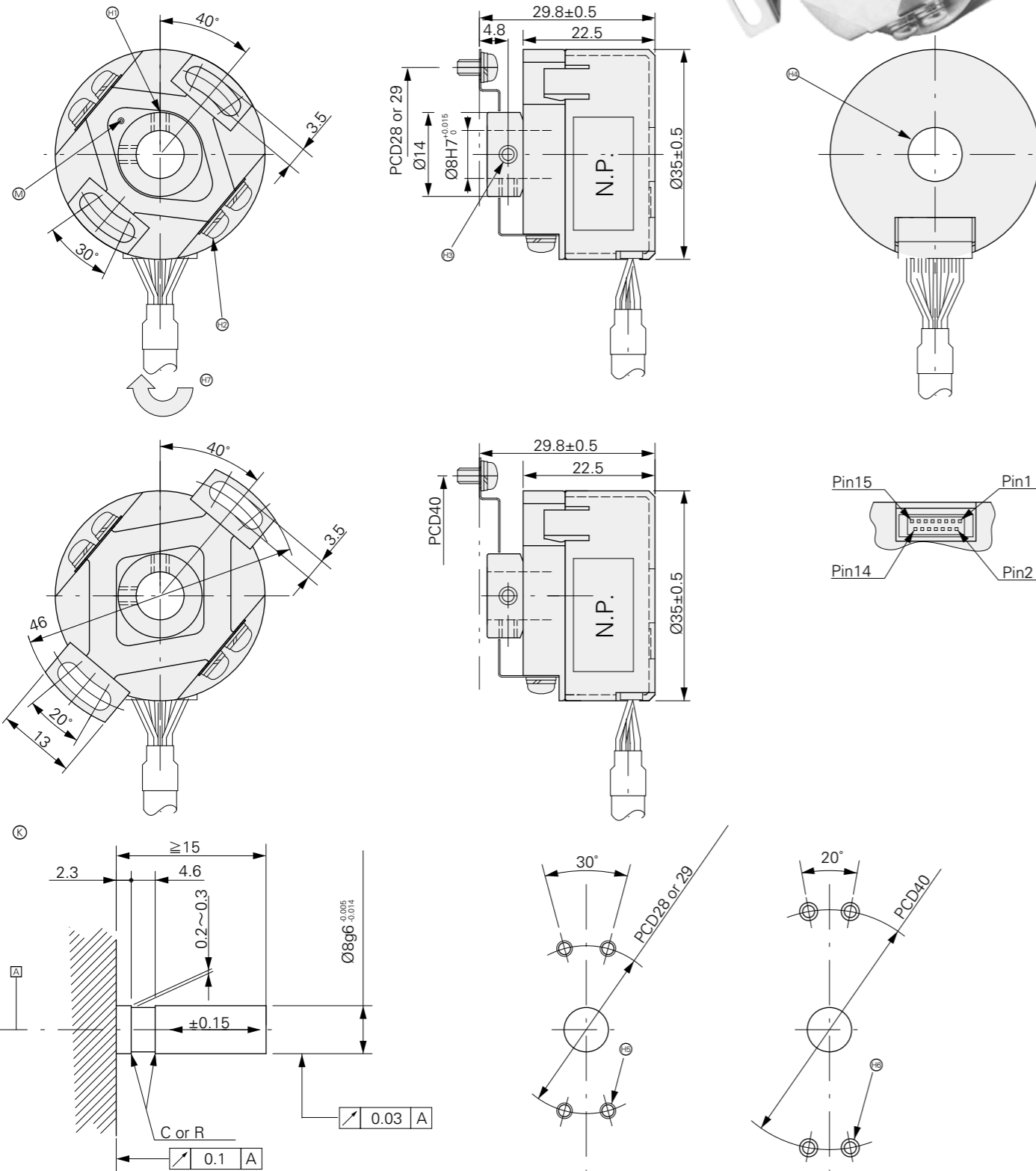


# ERN 1100 Series

## Incremental Rotary Encoder with Mounted Stator Coupling

- Outer Diameter 35 mm
- Length 29.8 mm
- Through Hollow Shaft Diameter 8.0 mm



Dimensions in mm



Tolerancing ISO 8015

- ⊕ = Required mating dimensions
- ⊙ = Measuring point for operating temperature
- ⊖ = Reference pulse output ±10°
- ⊗ = Screw 4-M2.5x6, SW,W
- ⊕ = Hexagon socket set screws 2-M3 SW1.5

- ⊕ = Hole Ø9
- ⊙ = Threaded mounting hole 4-M2.6
- ⊖ = Threaded mounting hole 4-M3
- ⊗ = Direction of shaft rotation for output signals as per the interface description

Coupling for PCD28 and 29 is not mounted on the encoder

	ERN 1120	ERN 1123	ERN 1130
<b>Incremental signals</b>	□ TTL - C <sup>1)</sup>	□ TTL - C <sup>1)</sup>	□ HTLS <sup>2)</sup> - C <sup>1)</sup>
Output pulse*	<b>600 1000 1024 2000 2048 2500</b> 4096 8192		
Commutation signal *	-	2, 3, 4 P/R	-
Scanning frequency	≤ 300 kHz	≤ 300 kHz	≤ 200 kHz
Edge separation <i>a</i>	≥ 0.41 μs	≥ 0.41 μs	≥ 0.62 μs
<b>System accuracy</b>	≤ 1500 P/R: ±0.1 T 1501 to 3000 P/R: ±0.2 T 3001 to 6000 P/R: ±0.4 T ≥ 6001 P/R: ±0.8 T T = 360° / N; N: Output pulse (P/R) of U <sub>a1</sub> or U <sub>a2</sub> signal		
<b>Power supply</b>	5V ± 10%	5V ± 10%	10.8V to 26.4V
<b>Current consumption</b> without load	≤ 70 mA	≤ 70 mA	≤ 70 mA
Output current	± 20 mA	± 20 mA	≤ 40 mA
Electrical connection	15-pin PCB connector		
<b>Shaft</b>	Thorough hollow shaft D = 8 mm		
<b>Mech. permissible speed n</b>	≤ 6000 min <sup>-1</sup>		
<b>Starting torque</b> (at 20°C)	≤ 0.005 Nm		
<b>Moment of inertia of rotor</b>	0.5 · 10 <sup>-6</sup> kgm <sup>2</sup>		
<b>Permissible axial motion of measured shaft</b>	± 0.15 mm		
<b>Vibration</b> 25 to 2000 Hz	≤ 100 m/s <sup>2</sup> (JIS C 60068-2-6, EN 60 068-2-6)		
<b>Shock</b> 6 ms	≤ 1000 m/s <sup>2</sup> (JIS C 60068-2-27, EN 60 068-2-6)		
<b>Max. operating temp. (Ambient Temperature)</b>	90°C (85°C)		
<b>Min. operating temp.</b>	-20°C		
<b>Protection</b> EN 60 529	IP00		
<b>Mass</b>	Approx. 0.06 kg		
<b>ID number</b>	1386843-xx	1386845-xx	1386850-xx

**Bold** : preferred versions


\* Please select when ordering.

<sup>1)</sup> Bypass capacitor is connected to FG.

<sup>2)</sup> Without inverse signal

# Connecting Elements and Cables

## Connecting Cables

Encoder cable inside the motor housing Cable diameter 5.5 mm			With one connector With PCB connector
	PCB connector	Cable Specification	
<b>ERN 1123</b>	15-pin	7x2x0.1mm <sup>2</sup> (with Commutation signal)	721 655-01 (0.3m) 721 655-03 (1m)
<b>ERN 1120</b> <b>ERN 1130</b>	15-pin	4x2x0.1mm <sup>2</sup> (without Commutation signal)	721 654-01 (0.3m) 721 654-03 (1m)

## Pin Layout


### TTL - C

15-pin PCB Connector															
	Power supply			Incremental signals						Other signals					
<b>15-pin PCB Connector</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
	<b>U<sub>P</sub></b>	<b>0V</b>	<b>FG</b>	<b>U<sub>a1</sub></b>	<b><math>\bar{U}_{a1}</math></b>	<b>U<sub>a2</sub></b>	<b><math>\bar{U}_{a2}</math></b>	<b>U<sub>a0</sub></b>	<b>U<sub>a0</sub></b>	<b>U<sup>1)</sup></b>	<b><math>\bar{U}^{1)</math></b>	<b>V<sup>1)</sup></b>	<b><math>\bar{V}^{1)</math></b>	<b>W<sup>1)</sup></b>	<b><math>\bar{W}^{1)</math></b>
	White	Black		Red	Pink	Olive	Blue	Yellow	Orange	Beige	Brown	Green	Gray	Light Blue	Violet

**U<sub>P</sub>** = power supply

<sup>1)</sup> Only **ERN1123**. **Cable shield** connected to housing

### HTLs - C

15-pin PCB Connector										
	Power supply			Incremental signals						
<b>15-pin PCB Connector</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	
	<b>U<sub>P</sub></b>	<b>0V</b>	<b>FG</b>	<b>U<sub>a1</sub></b>	<b>0V</b>	<b>U<sub>a2</sub></b>	<b>0V</b>	<b>U<sub>a0</sub></b>	<b>0V</b>	
	White	Black		Red	Pink	Olive	Blue	Yellow	Orange	

**Cable shield** connected to housing; **U<sub>P</sub>** = power supply

# HEIDENHAIN

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