

# Incremental Rotary Encoders

## Solid Shaft Optical Incremental Encoder

The rotary incremental encoder is used to indicate the direction of angular movement of the external mechanism. It produces pulses the number of which corresponds to the rotation of the shaft at a certain angle. This type of encoders, in contrast to the absolute, does not generate code position of the shaft when the shaft does not move.

Encoder incremental consists of the following components: a light source, a disk with referent points, phototransistor and scheme of signal processing. The number of marks determines the number of pulses per revolution.

The zero point of the machine must be reset at every new start.



In the magnetic encoder position signal of the shaft is formed by a Hall sensor. This technology opens new possibilities, for example programmable number of pulses in rotation.

Incremental shaft encoders, characterized by high resistance to mechanical load and environmental influences, a variety of connection types (cables and connectors), and also high resolution (up to 24000 pulses per revolution).

# Rotary Shaft Optical Incremental Eltra Encoder



## Shaft encoder series:

- EH 115 A-R
- EH 90A
- EH 38 A-B-D
- EL - ER 115 A
- EL - ER 90 A
- EL - ER 30 E-H-I
- EL - ER 40 A-B-C-E-H-I-N-X
- EL - ER 58 B-C-H-T
- EL - ER 63 A-D-E
- EL - ER 63 AX-DX
- EX 80 A-D

Eltra incremental shaft encoder provides excellent performance in many general factory automation applications.

## Key features:

- Shaft diameter: 6 - 12 mm
- Power supply range: 5 V DC, 8 - 24 V DC, 5 - 28 V DC
- Resolution: 1 - 24 000 ppr.
- Operating temperature: -25 .. +85 °C
- Rotation speed: 3000 or 6000 rpm.
- External diameter: 38 - 115 mm
- Enclosure protection: IP54/IP66.
- Cable or connector output
- Shaft load type: axial or radial.
- Mounting types:
  - REO-444 flange,
  - synchronous flange,
  - clamping flange,
  - centering square flange,
  - coupling flange



## Optical encoder with special features:

**Made from stainless steel** with high corrosion resistance (EL 63 AX-DX, ER 63 AX-DX)

**For heavy duty application** with high mechanical resistance requirements (EH 115 A-R, EH 90 A, EL-ER 115 A, EL-ER 90 A, EL 58 B-C-H-T, ER 58 B-C-H-T, EL 63 A-D-E, ER 63 A-D-E)

**Explosion proof encoders** with ATEX certification for hazardous and explosive areas (EX 80 A-D)

**Miniaturized encoders** for application in small devices (EH 38 A-B-D, EL 30 E-H, ER 30 E-H, EL 40 A-B-C-E-H-I-N-X, ER 40 A-C-B-I-H-E-N-X)

## Solid Shaft Optical Incremental Encoders

Series	key features							
	External diameter, mm (max)	Shaft diameter, mm (max)	Resolution (min) ppr	Resolution (max) ppr	Rotation speed (max) rpm	Output frequency (max)	Operating temperature (°C)	Enclosure rating (max)
EH 115A	115	11	200	2048	6000	100 kHz	-10..+60	IP66
EH 115R	115	11	200	2048	6000	100 kHz	-10..+60	IP66
EH 90A	90	11	200	2048	6000	100 kHz	-10..+60	IP66
EH 38A	38	6	50	1024	3000	100 kHz	-20..+70	IP54
EH 38B	38	6	50	1024	3000	100 kHz	-20..+70	IP54
EH 38D	38	6	50	1024	3000	100 kHz	-20..+70	IP54
EL 115A	115	11	1	10000	6000	500 kHz	-10..+60	IP54
ER 115A	115	11	1	10000	6000	500 kHz	-20..+85	IP54
EL 90A	90	10	1	10000	6000	500 kHz	-10..+60	IP66
ER 90A	90	10	1	10000	6000	500 kHz	-20..+85	IP66
EL 30E	30	6	1	2500	3000	220 kHz	-10..+60	IP54
ER 30E	30	6	1	2500	3000	220 kHz	-25..+85	IP54
EL 30H	30	6	1	2500	3000	220 kHz	-10..+60	IP54
ER 30H	30	6	1	2500	3000	220 kHz	-25..+85	IP54
EL 40A	42	6	1	14400	3000	220 kHz	-10..+60	IP66
EL 40B	42	6	1	14400	3000	220 kHz	-10..+60	IP66
EL 40C	42	6	1	2500	6000	220 kHz	-10..+60	IP54
EL 40E	42	6	1	2500	6000	220 kHz	-10..+60	IP54
EL 40H	42	6	1	2500	6000	220 kHz	-10..+60	IP54
EL 40I	42	6	1	2500	6000	220 kHz	-10..+60	IP54
EL 40N	42	6	1	2500	6000	220 kHz	-10..+60	IP54
EL 40X	42	8	1	2500	6000	220 kHz	-10..+60	IP54
ER 40A	42	6	1	14400	3000	220 kHz	-25..+85	IP66
ER 40B	42	6	1	14400	3000	220 kHz	-25..+85	IP66
ER 40C	42	6	1	2500	6000	220 kHz	-25..+85	IP54
ER 40E	42	6	1	2500	6000	220 kHz	-25..+85	IP54

Series	key features							
	External diameter, mm (max)	Shaft diameter, mm (max)	Resolution (min) ppr	Resolution (max) ppr	Rotation speed (max) rpm	Output frequency (max)	Operating temperature (°C)	Enclosure rating (max)
ER 40H	42	6	1	2500	6000	220 kHz	-25..+85	IP54
ER 40I	42	6	1	2500	6000	220 kHz	-25..+85	IP54
ER 40N	42	6	1	2500	6000	220 kHz	-25..+85	IP54
ER 40X	42	8	1	2500	6000	220 kHz	-25..+85	IP54
EL 58B	58	10	1	24000	6000	500 kHz	-10..+60	IP66
EL 58C	58	10	1	24000	6000	500 kHz	-10..+60	IP66
EL 58H	58	10	1	24000	6000	500 kHz	-10..+60	IP66
EL 58T	58	12	1	24000	6000	500 kHz	-10..+60	IP66
ER 58B	58	10	1	24000	6000	500 kHz	-25..+85	IP66
ER 58C	58	10	1	24000	6000	500 kHz	-25..+85	IP66
ER 58H	58	10	1	24000	6000	500 kHz	-25..+85	IP66
ER 58T	58	12	1	24000	6000	500 kHz	-25..+85	IP66
EL 63A	63	10	1	24000	6000	500 kHz	-10..+60	IP66
EL 63D	63	10	1	24000	6000	500 kHz	-10..+60	IP66
EL 63E	63	10	1	24000	6000	500 kHz	-10..+60	IP66
ER 63A	63	10	1	24000	6000	500 kHz	-25..+85	IP66
ER 63D	63	10	1	24000	6000	500 kHz	-25..+85	IP66
ER 63E	63	10	1	24000	6000	500 kHz	-25..+85	IP66
EL 63AX	63	10	1	24000	3000	500 kHz	-10..+60	IP66
EL 63DX	63	10	1	24000	3000	500 kHz	-10..+60	IP66
ER 63AX	63	10	1	24000	3000	500 kHz	-25..+85	IP66
ER 63DX	63	10	1	24000	3000	500 kHz	-25..+85	IP66
EX 80A	80	10	100	10000	3000	500 kHz	-20..+50	IP65
EX 80D	80	10	100	10000	3000	500 kHz	-20..+50	IP65

Series	special features					Mounting Type
	high corrosion resistance	stainless steel	heavy duty (high mechanical resistance)	explosion proof (ATEX)	miniaturized	
EH 115A			+			REO-444 flange
EH 115R			+			REO-444 flange
EH 90A			+			synchronous flange
EH 38A					+	clamping flange
EH 38B					+	centering square flange
EH 38D					+	centering square flange
EL 115A			+			REO-444 flange
ER 115A			+			REO-444 flange
EL 90A			+			synchronous flange
ER 90A			+			synchronous flange
EL 30E					+	clamping flange
ER 30E					+	clamping flange
EL 30H					+	threaded flange
ER 30H					+	threaded flange
EL 40A					+	clamping flange
EL 40B					+	centering square flange
EL 40C					+	clamping flange
EL 40E					+	
EL 40H					+	threaded flange
EL 40I					+	threaded flange
EL 40N					+	synchronous flange
EL 40X					+	synchronous flange
ER 40A					+	clamping flange
ER 40B					+	centering square flange
ER 40C					+	clamping flange
ER 40E					+	

Series	special features					Mounting Type
	high corrosion resistance	stainless steel	heavy duty (high mechanical resistance)	explosion proof (ATEX)	miniaturized	
ER 40H					+	threaded flange
ER 40I					+	threaded flange
ER 40N					+	synchronous flange
ER 40X					+	synchronous flange
EL 58B			+			synchronous flange
EL 58C			+			clamping flange
EL 58H			+			clamping flange
EL 58T			+			coupling flange
ER 58B			+			synchronous flange
ER 58C			+			clamping flange
ER 58H			+			clamping flange
ER 58T			+			coupling flange
EL 63A			+			synchronous flange
EL 63D			+			centering square flange
EL 63E			+			centering square flange
ER 63A			+			synchronous flange
ER 63D			+			centering square flange
ER 63E			+			centering square flange
EL 63AX	+	+				clamping flange
EL 63DX	+	+				centering square flange
ER 63AX	+	+				clamping flange
ER 63DX	+	+				centering square flange
EX 80A				+		synchronous flange
EX 80D				+		centering square flange

Series	Output type		Power supply			Type of shaft load	
	cable output type	connector output type	5 V DC power supply	8...24 V DC power supply	5...28 V DC power supply	Axial shaft loads	Radial shaft loads
EH 115A	+	+	+	+		+	+
EH 115R	+	+	+	+		+	+
EH 90A	+	+	+	+		+	+
EH 38A	+		+	+			+
EH 38B	+		+	+			+
EH 38D	+		+	+			+
EL 115A	+	+	+	+	+	+	+
ER 115A	+	+	+	+	+	+	+
EL 90A	+	+	+	+	+	+	+
ER 90A	+	+	+	+	+	+	+
EL 30E	+		+	+	+	+	+
ER 30E	+		+	+	+	+	+
EL 30H	+		+	+	+	+	+
ER 30H	+		+	+	+	+	+
EL 40A	+		+	+	+	+	+
EL 40B	+		+	+	+	+	+
EL 40C	+		+	+	+	+	+
EL 40E	+		+	+	+		+
EL 40H	+		+	+	+	+	+
EL 40I	+		+	+	+	+	+
EL 40N	+		+	+	+	+	+
EL 40X	+		+	+	+		+
ER 40A	+		+	+	+	+	+
ER 40B	+		+	+	+	+	+
ER 40C	+		+	+	+	+	+
ER 40E	+		+	+	+		+



Series	Output type		Power supply			Type of shaft load	
	cable output type	connector output type	5 V DC power supply	8...24 V DC power supply	5...28 V DC power supply	Axial shaft loads	Radial shaft loads
ER 40H	+		+	+	+	+	+
ER 40I	+		+	+	+	+	+
ER 40N	+		+	+	+	+	+
ER 40X	+		+	+	+		+
EL 58B	+	+	+	+	+	+	+
EL 58C	+	+	+	+	+	+	+
EL 58H	+	+	+	+	+	+	+
EL 58T	+	+	+	+	+	+	+
ER 58B	+	+	+	+	+	+	+
ER 58C	+	+	+	+	+	+	+
ER 58H	+	+	+	+	+	+	+
ER 58T	+	+	+	+	+	+	+
EL 63A	+	+	+	+	+	+	+
EL 63D	+	+	+	+	+	+	+
EL 63E	+	+	+	+	+	+	+
ER 63A	+	+	+	+	+	+	+
ER 63D	+	+	+	+	+	+	+
ER 63E	+	+	+	+	+	+	+
EL 63AX	+		+	+	+		+
EL 63DX	+		+	+	+		+
ER 63AX	+		+	+	+		+
ER 63DX	+		+	+	+		+
EX 80A	+		+	+	+		+
EX 80D	+		+	+	+		+