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# Rotary Optical Incremental & Absolute Encoders

**CE**  
Certified Products  
ISO 9001:2008  
Certified Co.



Precision Movements Captured

**Encoders India**

(ISO 9001:2008 Certified)

# 79-B, HSIIDC Industrial Estate,  
Sector-31, Faridabad-121003 (Haryana), INDIA.

Ph.: 0129-2271579, 2250546.

Mobile : +91-9811034512

E-mail : Sales@encodersindia.com

Website : www.encodersindia.com

**Encoders India**

# Introduction



Started in the name of R. R. Electronics in 1983, serving the needs of Indian Industry, the company is engaged in Indigenisation of Electronic Products & has customised product solutions to suit varied requirements of the Industry.

The Company's main focus is on delivering customised, reliable & cost effective solutions in the shortest possible time. Our standard product range includes Rotary Encoders, Counters, Timers, Signal Convertors, Photo-electric Safety Guards, Linear and Switched Mode Power Supplies, LED drivers etc. The company has delivered its quality products to some of the most reputed companies in India. The company has a stringent focus on quality which has helped us to emerge as a market leader in the business stream.

In 1995, a need was felt to scale up the design & manufacturing facilities to make Rotary Encoders by starting a separate unit to manufacture totally indigenous Rotary Optical Incremental & Absolute Encoders. Thus, Encoders India, an ISO9001:2008 company, was started. All our products adhere to strict quality standards & CE Compliance. The Company has state-of-the-art manufacturing facilities with well-defined production procedure, which ensures high performance quality products of international standards.

Besides offering the Import substitutes for Industries in India, the company exports its products to almost 30 Countries around the globe for the replacement market of Encoders and the associated products.

Encoders India has created a name for itself in the industry delivering reliable, high performance customised & cost effective products / solutions. Some of the industries that have benefited from our products are: Machine Tool Industry, Elevator Industry, Steel Industry, Coal Industry, Paper Industry, Cement Plants, Textile, Aviation, Defence, Railways, Process Plants...

Our Product range includes Rotary Optical Incremental & Absolute Encoders, Resolvers, Electronic Tacho-Generators, Digital Readouts (DRO's), Pulse Convertors, Encoder Couplings and Encoder accessories. These are ideally used in Industry for Elevators/ Escalators, CNC machines, Weigh feeders, Special Purpose Machines (SPM's), Cut to Length application, Machine Tools Industry, Textile Industry, Railways, Antenna Tracking, Radars, Dams, Solar Tracking, Windmills etc.

Encoders India is now ready to spread it's wings and focus on catering OEM's for the bulk & Global market of Encoders.



## Encoder Couplings



TYPE	AHC	ARC	SSHC	SSBC	ADC	SSDC
Application	Aluminium Helical Coupling	Aluminium Rubber Coupling	SS Helical Coupling	SS Bellow Coupling	Aluminium Disc Coupling	SS Disc Coupling
Outer Dia.(mm)	16, 20, 25, 32, 35	24	16, 20, 25, 32	16, 25	32, 49, 57, 70, 80	32
Length (mm)	20, 28, 32, 40, 50	35	20, 28, 32, 40, 45, 50	35, 32	18, 65, 70, 90, 100	19, 32, 36, 40, 44
Bore-1 (mm)	6, 8, 9.5, 10, 12, 14, 15	6, 8, 9.5, 10	6, 8, 9.5, 10, 12, 14, 15	6, 8, 9.5, 10	15, 19, 25, 30, 35	6, 8, 9.5, 10, 12
Bore-2 (mm)	6, 8, 9.5, 10, 12, 14, 15	6, 8, 9.5, 10	6, 8, 9.5, 10, 12, 14, 15	6, 8, 9.5, 10	15, 19, 25, 30, 35	6, 8, 9.5, 10, 12
Max. Torque	1.5 - 2.0 Nm	1.0 - 1.5 Nm	5 - 7 Nm	6 - 8 Nm	10 - 12 Nm	8 - 10 Nm
Max. RPM	3000	2000	3000	6000	2500	2500
Max. permissible misalignment of Shaft (Angular/ Radial)	± 2 degree / ± 0.3mm	± 3 degree / ± 0.4mm	± 4 degree / ± 0.5mm	± 5 degree / ± 0.6mm	± 4 degree / ± 0.5mm	± 4 degree / ± 0.5mm
Material	Aluminium Alloy	Aluminium Alloy for Hub & Rubber Bush	SS 303	Bellow: SS-316, HUB: SS-303/Aluminium	Hub:Aluminium, Disc: SS 304	Hub:SS-303, Disc:SS 304

## Flanges

Accessory for Encoder Mounting

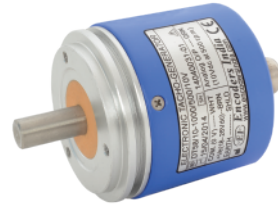


TYPE	SQUARE FLANGE	SQUARE FLANGE	SQUARE FLANGE	ROUND FLANGE
Size (mm)	63 X 63	65 X 65	76 X 76	F 115
Thickness (mm)	6	6	6	10
Bore dia. (mm)	58 X 2.5mm	26	26	26
Spigot/ Locating Dia. (mm)	36	31.75 x 1mm	50 x 2.5mm	F 85 x 3mm
Mounting	Ø 5.5 X 4 Holes on 52.6 mm CD	Ø 5.5 X 4 Holes on 52.6 mm CD	Ø 5.5 X 4 Holes on 64.5 mm CD	Ø 6.5 X 6 Holes on 100 mm PCD at 60 Deg.
Material	Aluminium	Aluminium	Aluminium	Aluminium
Application	for Clamping Flange Encoders	for Servo Mounted Encoders	for Servo Mounted Encoders	for Servo Mounted Encoders

# Encoders India

## Electronic Tacho Generator

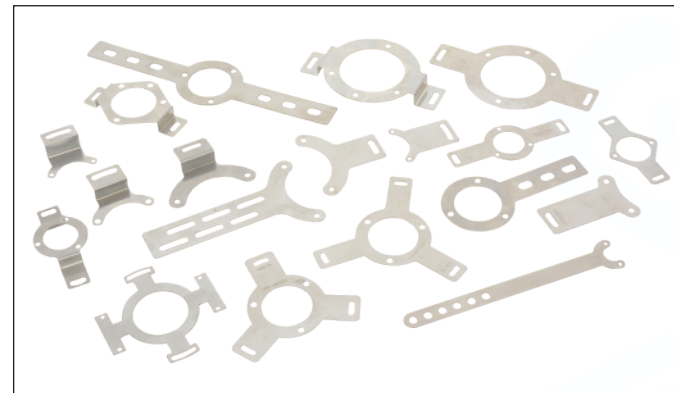
Very low Inertia and Compact,  
Generates 0-20mA,  
4-20 mA or 0-10Vdc  
proportional to Shaft R.P.M.



SERIES	DT 58
BODY DIA. (mm)	58
SPIGOT (Location Dia.) mm	50
MOUNTING	M4 x 3 holes @ 120° on 42mm PCD
SHAFT Dia. (mm) Solid Shaft	6x12, 8x16, 10x20 Long
SHAFT Dia. (mm) Blind Bore	6x12, 8x16, 10x18, 12x18, 15x18 Deep
SHOCK / VIBRATION	20 G, 11msec / 10 G, 500 Hz max
MAX. SHAFT LOADING	20 N Axial, 50 N Axial
R. P. M. (Max.) Mech.	3000
SHAFT MATERIAL	Stainless Steel (SS-304)
BODY MATERIAL	Aluminum (Anodised)
COVER MATERIAL	Aluminum (Powder Painted)
OUTPUT	0-20mA, 4-20mA or 0-10 Vdc proportional to required RPM
OUTPUT LINEARITY	0.5% of full scale
POWER SUPPLY (DC regulated)	18-28V
MAX. NO LOAD CURRENT	50mA
MAX. OUTPUT CURRENT	20mA
OUTPUT TYPE	Sourcing
CABLE ENTRY	RADIAL / AXIAL
OUTPUT CONNECTOR	1.0 meters, free end Cable
OPERATING TEMPERATURE	0-60 degree C.
STORAGE TEMPERATURE	-20 to +70 degree C.
PROTECTION CLASS (As per)	IP 64

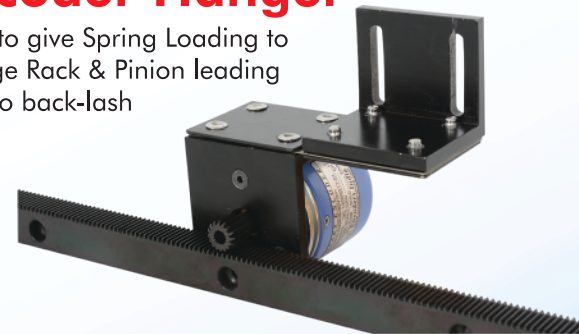
## Mounting Clamps

TYPE 58H1, 58H5-1, 82H1, 82HD, 40-8H.



## Encoder Hanger

Used to give Spring Loading to engage Rack & Pinion leading to Zero back-lash



SIZE (mm)	58 X 51 X 6
MOUNTING	By 2 No's M6 Screws at 38mm CD
MOUNTING PRESSURE	By 2 No's SS-Hard Strips
MATERIAL	Aluminium
FINISH	Anodised (Black)

## Rack & Pinion

Used for Length Measurement using Rotary Encoders



SIZE / Section (mm)	16 X 20	OD (mm)	14.4
LENGTH (mm)	220 / 320 / 520	LENGTH (mm)	22
MODULE	0.8	BORE (mm)	6
NO. OF TEETH	88 / 128 / 208	MODULE	0.8
MATERIAL	EN 8	NO. OF TEETH	16 x 12 mm long
		MATERIAL	EN 8

## Eccentric Bush

Accessory for Encoder Mounting



OD (mm)	12
THICKNESS (mm)	4.5
ID	4.1
MOUNTING	By M4 Screw
MATERIAL	SS 303

## Manufacturing...



- The Company has all in-house Design, Manufacturing & Testing facilities. All the PCB assemblies are done through state of the art fully automatic pick & place machine from- ESSEMTEC Switzerland.
- Every encoder rolled out of Encoders India carries a Test Certificate with actual wave form and other parameters, which are printed through top of the line Tektronix Digital Storage Oscilloscope.
- Assembly & testing of encoder is done in a class 10,000 clean room having Anti- static flooring, ensuring long trouble free life of the product.

## Recognitions...



## Incremental Encoders

(Body dia. 25-125mm, Resolution : upto 18000 PPR)



Specifications:

SERIES	ENC 25	ENC 33	ENC 40
APPLICATION	Miniature Series	Joy Stick Encoders	Economy Series
BODY DIA. (mm)	25	33	40
SPIGOT (Locating Dia.) mm	-	28	20/35
MOUNTING	M3 x 2 holes at 20mm CD	By Threaded body/ Nut M 28	M3 x 3 holes at 120° on 30mm PCD
SHAFT Dia. (mm) Solid Shaft	6 x 10 long	6 x 14 long	6x12, 8x16 Long.
SHAFT Dia. (mm) Through Bore	--	--	--
SHAFT Dia. (mm) Blind Bore	-	-	6x12, 8x16 Deep
SHOCK/VIBRATION	20g-11ms/2g (10-2000Hz)	20g-11ms/2g (10-2000Hz)	20g-11ms/2g (10-2000Hz)
MAX. SHAFT LOADING	10N Axial, 20N Radial	10N Axial, 20N Radial	20N Axial, 50N Radial
R.P.M. (Max.) Mech.	3000	3000	3000
SHAFT MATERIAL	Stainless Steel (SS - 304)	Stainless Steel (SS - 304)	Stainless Steel (SS - 304)
BODY MATERIAL	Aluminum (Anodised)	Aluminum (Anodised)	Aluminum (Anodised)
COVER MATERIAL	Plastic	Plastic	Plastic
P.P.R. (available ex-stock)	300	300	30, 50, 100, 110, 200, 250, 256, 360, 400, 500, 512, 600, 625, 750, 800, 900, 1000, 1024, 1250, 1500, 1600, 1800, 2000, 2048, 2500, 3000, 3600, 4096, 5000, 6000, 7200, 8192, 10000, 12000, 14400
OUTPUT CHANNELS	(A&B) Two Channel 90° Phase shifted square pulses	(A&B) Two Channel 90° Phase shifted square pulses	
POWER SUPPLY (DC regulated)	5V (TTL)	5V (TTL)	5V (TTL), 5-24V (HTL)
MAX. NO LOAD CURRENT	20mA.	20mA.	100mA, 50mA.
MAX. OUTPUT CURRENT/CHANNEL	5mA	5mA.	+/- 20mA
OUTPUT TYPE	Open Collector	Open Collector	Source / Sink
MAX. OUTPUT FREQUENCY	30 KHz	30 KHz	25 KHz upto 250 PPR, Upto 960 KHz for higher PPR
CABLE ENTRY	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable
OUTPUT CONNECTOR	Free end cable	Free end cable	9-PIN D-type Male
OPERATING TEMPERATURE	0-60 degree C.	0-60 degree C.	0-60 degree C.
STORAGE TEMPERATURE	-20 to +70 degree C.	-20 to +70 degree C.	-20 to +70 degree C.
PROTECTION CLASS (As per)	IP 40	IP 40	IP 51

## DRO's

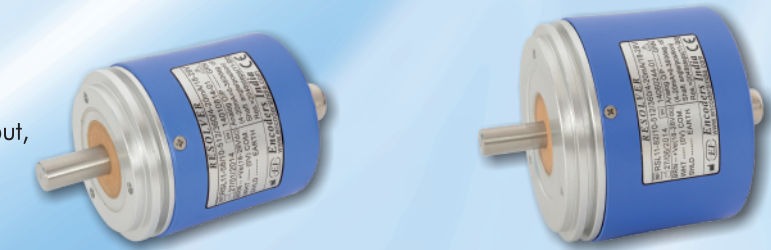
Digital Readouts take 2 channel input from Incremental Encoder/ linear scale & displays Position/ Travel to the desired resolution. It has user programmable scale factor from 0.00001 - 9.99999.

TYPE	DRO 0622X	DRO 0622X	DRO-CTL 1622X-2L
Size (mm)	48 X 96	48 X 96	96 X 96
Panel Cut Out	44 X 92	44 X 92	92 X 92
I/P	From Encoder (AB Pulses)	From Encoder (AB Pulses)	From Encoder (AB Pulses)
Display	6 Digit	6 Digit	6 Digit
Scale Factor	Required reading 4XPPR of ENCODER	Required reading x 60 4XPPR of ENCODER x 100	Required reading 4XPPR of ENCODER
Output	-	-	2 Relay Output
Application	Length measurement	Deg. Min. (Rotary Tables)	Cut to Length



## Resolvers

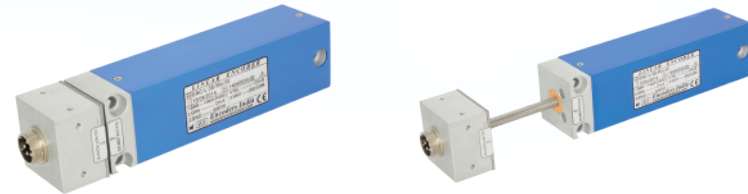
They give 4-20mA or 0-10 Vdc output, precisely proportional to the Angular Position of the Resolver Shaft in 2048 steps, 11-Bits)



SERIES	RSL 11/ 58	RSL 11/82
BODY DIA.(mm)	58	82
SPIGOT (Locating Dia.) mm	50	72
MOUNTING	M4 x 3 holes @ 120° on 42mm PCD	M4 x 3 holes @ 120° on 60mm PCD
SHAFT Dia. (mm) Solid Shaft	10 x 20 long	10 x 20 long
SHOCK / VIBRATION	20G, 11 msec/ 10G, 500 Hz max	20G, 11 msec/ 10G, 500 Hz max
MAX SHAFT LOADING	20 N Axial, 50 N Radial	20 N Axial, 50 N Radial
R.P.M. (Max.) Mech.	3000	3000
SHAFT MATERIAL	Stainless Steel (SS-304)	Stainless Steel (SS-304)
BODY MATERIAL	Aluminum (Anodised)	Aluminum (Anodised)
COVER MATERIAL	Aluminum (Powder Painted)	Aluminum (Powder Painted)
RESOLUTION	11- Bits (2048 Steps)	11- Bits (2048 Steps)
OUTPUT	0-20mA, 4-20mA, or 0-10Vdc proportional to 0-360 degree angular position of the shaft	0-20mA, 4-20mA, or 0-10Vdc proportional to 0-360 degree angular position of the shaft
OUTPUT LINEARITY	0.5% of full scale	0.5% of full scale
POWER SUPPLY (dc regulated)	18-28V (HTL)	18-28V (HTL)
MAX. NO LOAD CURRENT	50mA	50mA
CABLE ENTRY	AXIAL	AXIAL
OUTPUT CABLE	1 Meter standard, with free end cable.	1 Meter standard, with free end cable.
OPERATING TEMPERATURE	0-60 degree C.	0-60 degree C.
STORAGE TEMPERATURE	-20 to +70 degree C.	-20 to +70 degree C.
PROTECTION CLASS (As per)	IP 64	IP 64

## Linear Encoders

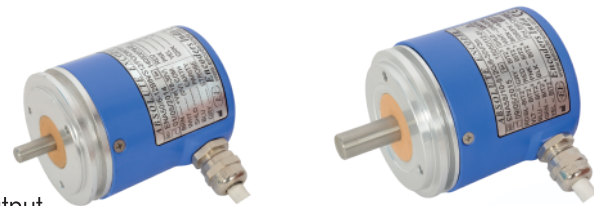
These are designed as a very cost effective solution to substitute high resolution but expensive Glass-Scales or Magnetic Scales, which offers 5-Micron or better. The Linear Encoders give 100% repeatability with 50-Microns resolution. With the use of Linear Ball-bearings, our Encoders are designed to offer long service life and are immune to industrial dust / contamination.



Size (mm)	38 X 38	50 X 50
Type	Linear	Linear
Usable Length mm	50, 100, 150, 200, 250, 300	350, 400, 450, 500, 550, 600
Output Type	Square Wave CH-A & B 90° Ph	Square Wave CH-A & B 90° Ph shifted
Output Connector Type	5 Pin Metal Connector (Male)	5 Pin Metal Connector (Male)
Power Supply (DC regulated)	5 -24V DC	5 -24V DC
Resolution	50 Micron (1 Pulse = 200 microns)	50 Micron (1 Pulse = 200 microns)
Application	SPM, Power Press, Hydraulics Press, Moulding Machines	SPM, Power Press, Hydraulics Press, Moulding Machines

## Absolute Encoders

Upto 11-Bits/2048 Steps with Gray/Binary/BCD Data Parallel output



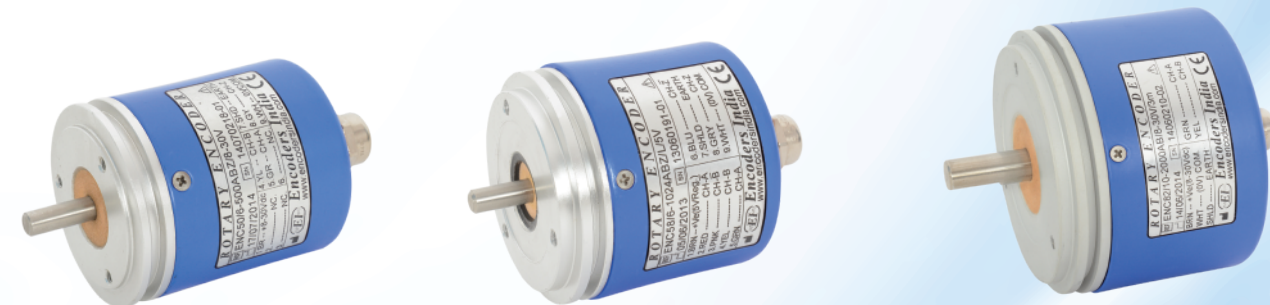
SERIES	ENA 50	ENA 58
BODY DIA.(mm)	50mm	58mm
SPIGOT (Locating Dia.) mm	40mm	50mm
MOUNTING	M3 x 3 holes at 120° on 34mm PCD	M4 x 3 holes at 120° on 42mm PCD
SHAFT Dia. (mm) Solid Shaft	6x12, 8x16, 10x20 Long	6x12, 8x16, 10x20 Long
SHOCK / VIBRATION	20G, 11 msec/ 30G, 500 Hz max	20G, 11 msec/ 30G, 500 Hz max
MAX SHAFT LOADING	10 N Axial, 20 N Radial	10 N Axial, 20 N Radial
R.P.M. (Max.) Mech.	3000	3000
SHAFT MATERIAL	Stainless Steel (SS-304)	Stainless Steel (SS-304)
BODY MATERIAL	Aluminum (Anodised)	Aluminum (Anodised)
COVER MATERIAL	Aluminum (Powder Painted)	Aluminum (Powder Painted)
P.P.R. (available ex-stock)	6, 8, 10, 12	24, 30, 180, 256, 360, 512, 1024, 2048
OUTPUT (Parallel)	FOUR BIT Binary DATA increasing CW, with STORBE and PARITY, Square wave outputs.	Upto 11 Bit Data (Gray Code) & upto 8 Bit Data (Binary Code), Square Wave Output
INDICATION	Through Blink of an LED in back cover for position - 1.	Through Blink of an LED in back cover for position - 1.
POWER SUPPLY (DC regulated)	18-30V	5V (TTL), 8-28V (HTL)
MAX. NO LOAD CURRENT	100mA, 50mA	100mA, 50mA
MAX. OUTPUT CURRENT/CHANNEL	+/- 20mA	+/- 20mA
OUTPUT TYPE	Source / Sink	Source / Sink
MAX. OUTPUT FREQUENCY	25 KHz	100 KHz
CABLE ENTRY	RADIAL / AXIAL	RADIAL / AXIAL
OUTPUT WIRE	500mm standard, with free end.	3 Meter standard, with free end.
OPERATING TEMPERATURE	0-60 degree C.	0-60 degree C.
STORAGE TEMPERATURE	-20 to +70 degree C.	-20 to +70 degree C.
PROTECTION CLASS (As per)	IP 64	IP 64

## Pulse Converters

Pulse convertor takes ABZ as input from Incremental/ Linear Encoders & gives dual output ABZ/ L which can be used in PLC/ Drives



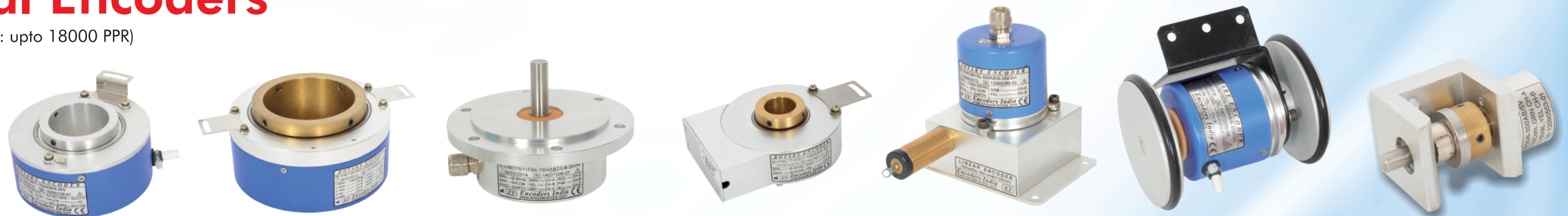
Model	PAC -09
Dimension (LxWxH) (mm)	92x92x36
Mounting	Wall Mounting with two screws at a distance of 108mm. (DIN Rail Mounting optional)
Supply Voltage	24V DC
I/P	From Encoder (ABZ/L) (Pulses 5V DC or 24V DC)
O/P	Dual Output (ABZ/L) (5V DC or 24V DC), Selectable with Jumper



ENC 50	ENC 58	ENC 82
Economy Rugged Series	Industrial Series	Industrial Heavy Duty Series
50	58	82
40	50	72
M3 x 3 holes at 120° on 34mm PCD	M4 x 3 holes @ 120° on 42mm PCD	M4 x 3 holes @ 120° on 60mm PCD
6x12, 8x16, 10x20 Long	6x12, 8x16, 10x20 Long	10 x 20 Long
--	6, 8, 9.5, 10, 12, 12.7, 15	20, 25.4, 30, 35, 40
6x12, 8x16, 10x18 Deep	6x12, 8x16, 10x18, 12x18, 15x18 Deep	10x20, 12x20, 15x20, 16x20, 20x20 Deep
20g-11ms/2g (10-2000Hz)	50g-11ms/3g (10-2000Hz)	50g-11ms/3g (10-2000Hz)
20N Axial, 50N Radial	40N Axial, 110N Radial	40N Axial, 110N Radial
3000	3000	3000
Stainless Steel (SS - 304)	Stainless Steel (SS - 304)	Stainless Steel (SS - 304)
Aluminum (Anodised)	Aluminum (Anodised)	Aluminum (Anodised)
Aluminum (Powder Painted)	Aluminum (Powder Painted)	Aluminum (Powder Painted)
30, 50, 100, 110, 200, 250, 256, 360, 400, 450, 500, 512, 600, 625, 750, 800, 900, 1000, 1024, 1250, 1500, 1600, 1800, 2000, 2048, 235, 250, 256, 300, 330, 360, 380, 384, 400, 2500, 3000, 3600, 4096, 5000, 6000, 7200, 8192, 10000, 12000, 14400.	4, 5, 6, 9, 10, 16, 18, 20, 25, 26, 30, 45, 48, 50, 60, 64, 90, 100, 102, 120, 150, 180, 190, 200, 235, 250, 256, 300, 330, 360, 380, 384, 400, 450, 500, 512, 600, 625, 635, 700, 720, 750, 762, 768, 800, 900, 1000, 1024, 1200, 1250, 1440, 1500, 1600, 1800, 2000, 2048, 2500, 3000, 3600, 4096, 5000, 6000, 7200, 9000, 10000, 12000, 14400, 16384, 18000.	50, 100, 160, 128, 200, 240, 256, 500, 512, 550, 600, 680, 800, 900, 1000, 1024, 1080, 1250, 1270, 1320, 1500, 1800, 2000, 2048, 2256, 2500.
(A&B) Two Channel 90° Phase shifted square pulses with Z-marker/ref. pulse per revolution. Also with Inverted channels (complementary output A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ )		
5V (TTL), 8-30V (HTL)	5V (TTL), 8-30V (HTL)	5V (TTL), 8-30V (HTL)
100mA, 50mA.	100mA, 50mA.	100mA, 50mA.
+/- 20mA	+/- 20mA	+/- 20mA
Source / Sink	Source / Sink	Source / Sink
25 KHz upto 250 PPR, Upto 960 KHz for higher PPR	25 KHz upto 512 PPR, 100 KHz upto 1600 PPR & Upto 960 KHz for higher PPR	25 KHz upto 512 PPR, 100 KHz upto 1600 PPR & Upto 960 KHz for higher PPR
RADIAL / AXIAL with 0.5mm cable	RADIAL / AXIAL with 0.5mm cable	RADIAL / AXIAL with 0.5mm cable
9-PIN D-type Male	9-PIN D-type Male	9-PIN D-type Male
0-60 degree C.	0-60 degree C.	0-60 degree C.
-20 to +70 degree C.	-20 to +70 degree C.	-20 to +70 degree C.
IP 64	IP 64	IP 64

## Incremental Encoders

(Body dia. 25-125mm, Resolution : upto 18000 PPR)



Specifications:

SERIES	ENC 90	ENC 125	ENC 115	ENC 76	SENC 58	ENC-W 58 DS	ENC-R 25M
APPLICATION	Direct Motor Mounting Series	Direct Motor Mounting Series	Rhubust for Steel Industry	Slim Series	String Encoder	Wheel Encoder	Magnetic Coupling Encoder
BODY DIA. (mm)	90	125	115	76	58	58	25
SPIGOT (Locating Dia.) mm	-	-	85	-	-	-	-
MOUNTING	Through SS Clamps via. M4 screw at 51 mm CD	Through SS Clamps via. 2 no's M4 screws at 160mm CD	M6 screws x 6 no's on 100mm PCD at 60 Deg. apart	Through SS Clamps via. M4 screws at 56 mm CD	M6 X 4 Holes on 60mm CD	Through MS Clamps.	Ø4.2 X 2 Holes on 23mm CD
SHAFT Dia. (mm) Solid Shaft	--	--	6x12, 8x16, 10x12, 11x30 Long	--	10	10 (Double ended)	6
SHAFT Dia. (mm) Through Bore	35, 38, 40	45, 50, 55, 60, 65, 70	-	8, 10, 12, 14	-	-	-
SHOCK/VIBRATION	20g-11ms/2g (10-2000Hz)	20g-11ms/2g (10-2000Hz)	50g-11ms/3g (10-2000Hz)	20g-11ms/2g (10-2000Hz)	20g-11ms/2g (10-2000Hz)	20g-11ms/2g (10-2000Hz)	20g-11ms/2g (10-2000Hz)
MAX. SHAFT LOADING	20N Axial, 50N Radial	20N Axial, 50N Radial	20N Axial, 50N Radial	20N Axial, 50N Radial	20N Axial, 50N Radial	20N Axial, 50N Radial	20N Axial, 50N Radial
R.P.M. (Max.) Mech.	2000	2000	3000	3000	3000	1000	1000
SHAFT MATERIAL	Aluminium	Aluminium	Stainless Steel (SS - 304)	Aluminium	Stainless Steel (SS - 304)	Stainless Steel (SS - 304)	Stainless Steel (SS - 304)
BODY MATERIAL	Aluminum (Anodised)	Aluminum (Anodised)	Aluminum (Anodised)	Aluminum (Anodised)	Aluminum (Anodised)	Aluminum (Anodised)	Aluminum (Anodised)
COVER MATERIAL	Aluminum (Powder Painted)	Aluminum (Powder Painted)	Aluminum (Powder Painted)	Aluminum (Powder Painted)	Aluminum (Powder Painted)	Aluminum (Powder Painted)	Aluminum (Powder Painted)
P.P.R. (available ex-stock)	240, 256, 500, 512, 550, 600, 680, 800, 900, 1000, 1024, 1080, 1250, 1270, 1320, 1500, 1800, 2000, 2048, 2256, 2500	100, 512, 1000, 2500	90, 100, 102, 120, 150, 180, 190, 200, 235, 250, 256, 300, 330, 360, 380, 384, 400, 450, 500, 512, 600, 625, 635, 700, 720, 750, 762, 768, 1500, 1600, 2000, 2048, 2500, 4096, 5000	256, 500, 512, 550, 600, 680, 800, 900, 1000, 1024, 1080, 1250, 1270, 1320, 1500, 1800, 2000, 2048, 2256,	500, 1000 (String Length : 1 Meter) Gives Resolution of ~ 0.07mm using 500 PPR Encoder	500, 1000, 2500 Gives Resolution of ~ 0.125mm through 79.5 dia rolling wheels when used with 500 PPR Encoder	300 Gives Resolution of 50-Micron by rolling 19 dia magnetic wheel.
OUTPUT CHANNELS	(A&B) Two Channel 90° Phase shifted square pulses with Z-marker/ref. pulse per revolution. Also with Inverted channels (complementary output A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$ )			(A&B) Two Channel 90° Phase shifted square pulses			
POWER SUPPLY (DC regulated)	5V (TTL), 8-30V (HTL)	5V (TTL), 8-30V (HTL)	5V (TTL), 8-30V (HTL)	5V (TTL), 8-30V (HTL)	5V (TTL), 8-30V (HTL)	5V (TTL), 8-30V (HTL)	5V (TTL)
MAX. NO LOAD CURRENT	100mA, 50mA.	100mA, 50mA.	100mA, 50mA.	100mA, 50mA.	100mA, 50mA.	100mA, 50mA.	20mA.
MAX. OUTPUT CURRENT/CHANNEL	+/- 20mA	+/- 20mA	+/- 20mA	+/- 20mA	+/- 20mA	+/- 20mA	5mA
OUTPUT TYPE	Source / Sink	Source / Sink	Source / Sink	Source / Sink	Source / Sink	Source / Sink	Open Collector
MAX. OUTPUT FREQUENCY	25 KHz upto 512 PPR, 100KHz for PPR upto 2500	25 KHz upto 512 PPR, 100KHz for PPR upto 2500	25 KHz upto 512 PPR, 100KHz for PPR upto 2500	25 KHz upto 512 PPR, 100KHz for PPR upto 2500	25 KHz upto 512 PPR, 100KHz for PPR upto 2500 PPR	25 KHz upto 512 PPR, 100KHz for PPR upto 2500 PPR	30 KHz
CABLE ENTRY	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable	RADIAL with 0.5mm cable
OUTPUT CONNECTOR	9-PIN D-type Male	9-PIN D-type Male	9-PIN D-type Male	9-PIN D-type Male	Free end cable	Free end cable	Free end cable
OPERATING TEMPERATURE	0-60 degree C.	0-60 degree C.	-20 to +100 degree C.	0-60 degree C.	0-60 degree C.	0-60 degree C.	0-60 degree C.
STORAGE TEMPERATURE	-20 to +70 degree C.	-20 to +70 degree C.	-40 to +120 degree C.	-20 to +70 degree C.	-20 to +70 degree C.	-20 to +70 degree C.	-20 to +70 degree C.
PROTECTION CLASS (As per)	IP 51	IP 51	IP 64	IP 51	IP 64	IP 64	IP 50