

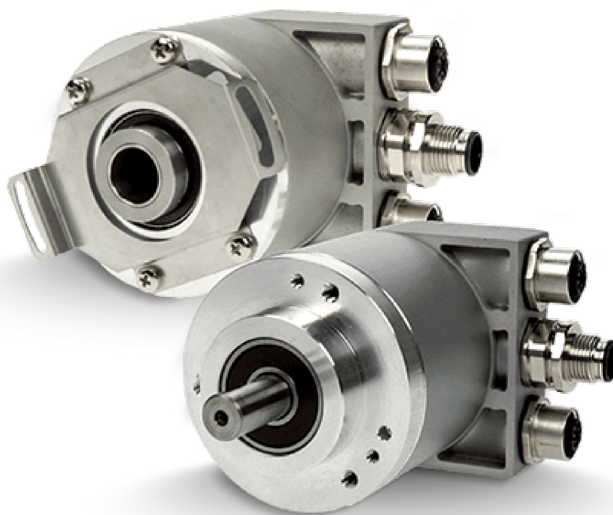
FEEDBACK

QUICK REFERENCE GUIDE

A comprehensive line of absolute, incremental
And resolver rotary feedback products.



NorthStar™



Dynapar



HENGSTLER®

Harowe™



ABOUT US

The leader in light-duty, industrial duty, and high-performance absolute rotary encoders and incremental encoders.

Dynapar's Mission

To provide the world with trusted, innovative sensing technologies that monitor and automate the machines that accelerate progress and enhance everyday lives.

The Dynapar brand stands for quality, reliability, innovation, customization, fast delivery, and customer service. Dynapar offers the world's broadest range of encoders, resolvers, and accessories for motion feedback control. With over 60+ years of experience, our breadth of product offering has served us well in many sectors, from heavy-duty industrial applications to industrial duty applications to light-duty applications.

Quality and reliability are two attributes our customers can expect from Dynapar. In many applications, you will find Dynapar encoders that have been in operation for over 20 years and are still vigorously doing the job.

Innovation is ingrained into the fabric of our company. We pride ourselves on being at the forefront of feedback technology, making advances to our products through a detailed understanding of the voice of our customers. Customization is a trademark at Dynapar. Our manufacturing process and engineering capability make it easier for us to make customized products, allowing our customers to meet the varied specifications of feedback applications.

Fast delivery is a customer requirement, and at Dynapar, we take pride in operational excellence. All Dynapar and NorthStar encoders are built to order, allowing for fast delivery and best in class lead times on most models.

Customer Service and Dedicated Support Teams Customer Satisfaction is of the utmost importance to Dynapar. We continue to be a leader in motion feedback control because of our dedication to our customers.

Find Root Cause Immediately

HS35iQ Encoder with PulseIQ™ Technology

Providing visual indication of encoder health through fault specific LEDs and digital output.



HOW TO USE THIS GUIDE

The Feedback Quick Reference Guide is designed to make product selection simple.

The guide provides you with a decision tree to assist with selecting the appropriate product for your needs.

Step 1: Select the type of interface (Absolute, Resolver, Incremental)

Step 2: Select mounting style (Shafted, Hub Shaft, Hollowshaft, etc.)

Step 3: Select the appropriate "Duty Classification" for your application (See page 4 for encoder duty classifications)

Step 4: Scroll down to the appropriate "Duty" section to view encoder specifications

Step 5: Select the encoder that fits your criteria

		Page			
Incremental	Shafted	E12	1.2" servo mount encoder. 100-1024 PPR.	7	
		E14	<2.0" servo mount encoder. 100-2540 PPR.	7	
		E14IC	<2.0" servo mount encoder. 100-2540 PPR.	7	
		E23	2.3" diameter standard servo mount encoder. 1-2540 PPR.	7	
		EC23	2.3" diameter standard servo mount encoder. 3000-5000 PPR.	7	
	Industrial Duty	NexGen 22 Qube	2-2.5" Qube style encoder. 1-3600 PPR.	8	
		H20	2.0" square and servo mount encoder. 1-2540 PPR.	8	
		HA25	2.5" square flange/servo mount encoder. 1-2540 PPR.	8	
		HR25	2.5" square flange/servo mount encoder. 1-1024 PPR.	8	
		HC25	2.5" square flange/servo mount encoder. 3000-5000 PPR.	8	
		HA26	2.5" encoder. 1-2540 PPR.	8	
		HR26	2.5" encoder. 1-1024 PPR.	8	
		HC26	2.5" encoder. 3000-5000 PPR.	8	
		H58	58mm servo mount encoder. 1-2540 PPR	9	
		RI58-0	Synchro, clamping and square flange mounts. 1-10,000 PPR.	9	
		H42	2.5" flange mount. 1-600 PPR.	9	
		HA725	2.5" square flange. 8192-10,000 PPR	9	
		Heavy Duty	Standard Models		
			HD20	2.0" square flange mount encoder. 1-3600 PPR.	12
			HD25	2.5" square flange mount encoder. 1-5000 PPR.	12
HD35R	110mm IEC Euro Flange. 1-5000 PPR.		12		
DWD38	>2.5" drawworks encoder. 1-5000 PPR.		12		
60 Rotopulser	3.5" servo mount encoder. 1-2500 PPR.		12		
60P Rotopulser	>2.5" foot mount or 4.5" C-face encoder. 1-2500 PPR.		12		
H56 Rotopulser	>2.5" foot mount or 4.5" C-face encoder. 1-2500 PPR.		12		
Rim Tach® NexGen 6200	4.5" C-FACE encoder. 60-1200 PPR.		14		
Rim Tach® 6200	4.5" C-FACE encoder. 60-2400 PPR.		14		
Hazardous Duty Models					
Hazardous HD20	2.0" square flange encoder. 1-3600 PPR.		12		
Hazardous HD25	2.5" square flange encoder. 1-5000 PPR.		12		
ISW38	>2.5" drawworks encoder. 1-5000 PPR.		12		
X25	>2.5" square flange encoder. 1-5000 PPR		12		
RX70/71	69mm clamping flange encoder. 1-10,000 PPR	12			
Hub Shaft	Light Duty	E14H	<2.0" hub shaft encoder. 100-2540 PPR.	7	
	Industrial Duty	H20 Hub Shaft	2.0" hub shaft encoder. 1-2540 PPR.	9	
		RI58 - H	58mm synchro flange encoder. 1-5000 PPR.	9	
	Heavy Duty	Standard Models			
		HSD25	Hub shaft encoder. 1-3600 PPR.	12	
		HSD44	>2.5" hub shaft encoder. 1024 PPR.	13	
		RR25	Hub shaft encoder. 180-512 PPR.	13	
		Hazardous Duty Models			
	ISD25	2.5" hub shaft encoder. 1-3600 PPR.	12		
	EN44	>2.5" hub shaft encoder. 1024 & 2048 PPR.	12		

			Page			
Incremental	Hollow Shaft	Industrial Duty	HS20	2.0" hollow bore encoder. 1-2540 PPR.	9	
			HS35R	>2.5" hollow bore encoder. 1-5000 PPR.	9	
			HS35iQ	> 1-1/4" hollow bore encoder	9	
	Servo Duty	F10	1.25" compact encoder. 1024 & 2048 PPR. 6 poles	10		
		F14	<2.0" hollow bore encoder. 400-5000 PPR. 4, 6 or 8 poles.	10		
		F15	<2.0" pancake style servo mount encoder. 1024 & 2048 PPR. 6 or 8 pole.	10		
		F18	<2.0" encoder. 500-5000 PPR. 4, 6, 8 or 12 pole.	10		
		F21	2.0" pancake style servo mount encoder. 1024 & 2048 PPR. 8 or 10 pole.	10		
		HC20	2.0" hollow bore direct mount encoder. 50-2500 PPR. 4, 6 or 8 pole.	11		
		Heavy Duty	Standard Models			
	HSD35		3.5" hollow bore encoder. 1-5000 PPR.	13		
	HSD37		3.5" hollow bore encoder. 1-5000 PPR.	13		
	HSD38		3.5" hollow bore encoder. 15-5000 PPR.	13		
	Slim Tach® HS85		>3.5" hollow bore encoder. 60-2048 PPR.	14		
	Slim Tach® HS60		>3.5" hollow bore encoder. 64-2048 PPR.	15		
	Slim Tach® HS56		>3.5" hollow bore encoder. 64-2048 PPR.	15		
	Hazardous Models					
	Hazardous HSD35		>2.5" hollow bore encoder. 1-5000 PPR.	13		
	ISD37		>2.5" hollow bore encoder. 1-5000 PPR.	13		
	EN42		>2.5" hollow bore encoder. 1-5000 PPR.	13		
	Bearingless		Heavy Duty	Slim Tach® NEXGEN ST56	4.5" C-Face encoder. 64-2048 PPR.	14
				Slim Tach® SL56	4.5" C-Face encoder. 64-1024 PPR.	14
		Slim Tach® NEXGEN ST67		4.5" C-Face encoder. 64-2048 PPR.	14	
Slim Tach® RL67		4.5" C-Face encoder. 64-1024 PPR.		14		
Slim Tach® NEXGEN ST85		8.5" C-Face encoder. 64-2048 PPR.		14		
Slim Tach® SL85		8.5" C-Face encoder. 64-1024 PPR.		15		
Slim Tach® SL1250		12.5" C-Face encoder. 64-1024 PPR.		15		
Rim Tach® NEXGEN 1250		12.5" C-Face encoder. 60-2400 PPR.		14		
Rim Tach® 1250		12.5" C-Face encoder. 60-1200 PPR.		14		
Rim Tach® NEXGEN 8500		8.5" C-Face encoder. 60-2400 PPR.		15		
Rim Tach® 8500		8.5" C-Face encoder. 60-1200 PPR.		15		
HDP18		<2.5" shaft-less encoder. 64 PPR.		15		
HDP30		<2.5" shaft-less encoder. 8-512 PPR.		15		
HDN58		58mm shaft-less encoder. 8-512 PPR.		15		
R45 Rotopulser		4.5" C-Face encoder. 60 & 120 PPR.		15		
Modular		Servo Duty		E9	0.9" diameter modular encoder. 100-512 PPR.	11
				M9	0.9" diameter modular encoder. 100-512 PPR.	11
	M15		Size 15 commutating encoder. 200-1000 PPR. 4, 6 or 8 pole.	11		
	M53		2.0" modular hollow bore encoder. 500-2048 PPR. 4, 6 or 8 pole.	11		

Absolute				
Shafted				
Industrial Duty	AI25	58mm, 2.5" or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	8-9	
	AC36	37.5mm encoder. 22 bit ST, 12 bit MT resolution.	9	
Servo Duty	AD34	37.5mm encoder. 22 bit ST, 12 bit MT resolution.	10	
	AD25	58mm encoder. 22 bit ST, 12 bit MT resolution.	10	
Heavy Duty	Standard Models			
	AR62/63	58mm or 2.5" encoder. 12 bit ST, 16 bit MT resolution.	15	
	Hazardous Models			
	AX65	59mm servo mount encoder. 12 bit ST, 16 bit MT resolution.	13	
	AX70/71	70mm servo mount encoder. 17 Bit ST, 12 Bit MT resolution.	13	
	AX73	73.5mm face mount encoder. 14 bit ST, 12 bit MT resolution.	13	
	AC61	63.5mm square flange encoder. 17 Bit ST, 12 Bit MT.	13	
	AI25 C1D2	58mm, 2.5" encoder. 22 Bit ST, 12 Bit MT	13	
	Hub Shaft			
	Industrial Duty	AI25	58mm, 2.5" or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	8-9
AC36		37.5mm encoder. 22 bit ST, 12 bit MT resolution.	9	
Servo Duty	AD35	38mm hub shaft encoder. 22 bit ST, 12 bit MT resolution.	10	
	AD36	38mm hollow bore or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	10	
Heavy Duty	Hazardous Models			
	AI25 C1D2	58mm, 2.5" encoder. 22 Bit ST, 12 Bit MT	13	
Hollow Shaft				
Servo Duty	AD36	38mm hollow bore or hub shaft encoder. 22 bit ST, 12 bit MT resolution.	10	
Housed Resolver				
Servo Duty	11	1.1" servo mount resolver. +/- 3 arcmin accuracy.	10	
	R11	1.1" servo mount resolver. +/- 6 arcmin accuracy.	10	
Heavy Duty	R25	2.5" servo and flange mount resolver. +/- 7 arcmin single speed accuracy.	13	
	RH25	2.5" Hub Shaft Resolver. +/- 7 arcmin single speed accuracy	13	
	R56	>2.5" servo and flange mount resolver. +/- 7 arcmin single speed accuracy.	13	
	RF25	2.5" square flange resolver. +/- 10 arcmin single speed accuracy.	13	
Frameless Resolver				
Heavy Duty	Frameless 10	1.0" frameless resolver. +/- 15 arcmin single speed accuracy.	11	
	Frameless 15	1.5" frameless resolver. +/- 7 arcmin single speed accuracy.	11	
	Frameless 21	2.1" frameless resolver. +/- 7 arcmin single speed accuracy.	11	
	Frameless 31	3.1" frameless resolver. +/- 10 arcmin single speed accuracy.	11	
	Frameless 55	5.5" frameless resolver. +/- 30 arcmin single speed accuracy.	11	
	HaroMax® 15	1.5" frameless resolver. +/- 16 arcmin spread single speed accuracy.	11	
	HaroMax® 21	2.1" frameless resolver. +/- 18 arcmin spread single speed accuracy.	11	

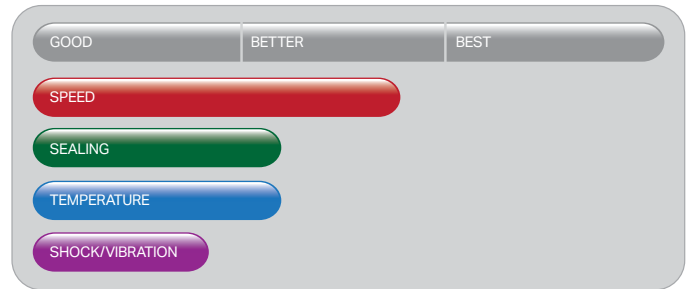
Light Duty

Light duty encoders are commonly referred to as “commercial duty” due to their frequent use in commercial or office automation products. Copiers, fax machines, lab equipment, and medical equipment are common applications for light duty encoders. Typically these devices reside in fairly benign environments with little temperature variation, are fairly clean, and not generally subjected to high shock loading or moisture.



E14 Pictured.

GENERAL PERFORMANCE DATA

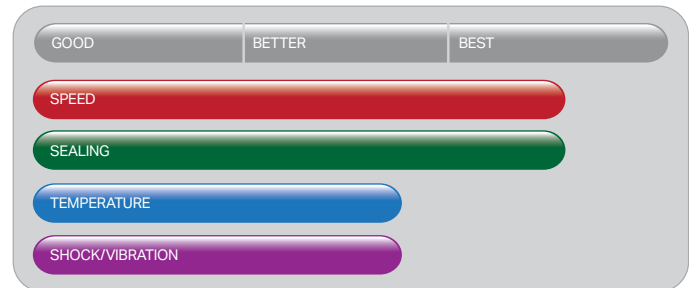


Industrial Duty

Often considered the “workhorse” of the encoder world, industrial duty encoders achieve a good compromise between ruggedness and performance. These encoders are typically used in factory environments where contaminants like dust and moisture are common. The hollow-shaft variety of industrial duty encoders is often the preferred choice of vector motor OEM’s for speed feedback.



HA25 Pictured.

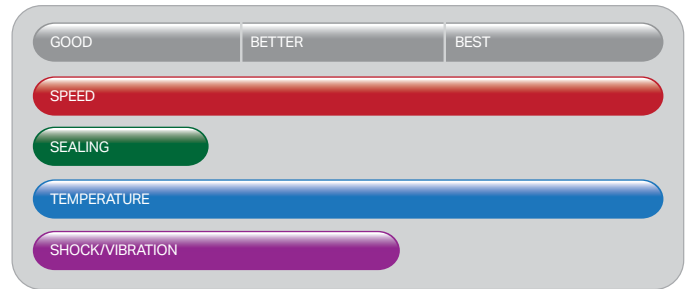


Servo Duty

This class of encoders and resolvers is specifically suited to use on small-to mid-size stepper and servo motors. They typically have limited sealing due to their use inside motor housings, but are capable of very high speeds and high temperatures, a benefit due to being in such close proximity to motor windings. These devices typically come from the factory ready to mount to common motor back shafts.



AD36 Pictured.

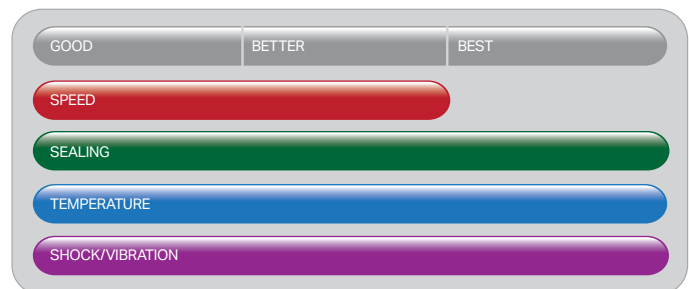


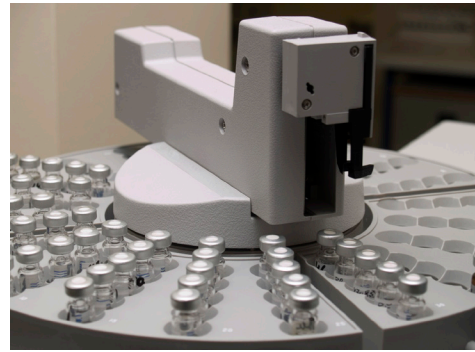
Heavy Duty

Heavy Duty encoders and resolvers are designed to survive some of the toughest environments. Paper and steel mills, aerospace applications, and food and beverage processing machinery are all areas that benefit from heavy duty encoders. Using magnetic, inductive, or specially designed optical technology, their tight sealing, heavy-duty bearings (where applicable), and high temperature range all suit them for use in harsh environments.



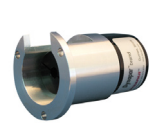





ST56 Pictured.





OPTICAL - INCREMENTAL

						
Product	E12	E14	E14IC (Integral Coupling)	E23	EC23	E14H (Hub Shaft)
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Hub Shaft
Shaft/Bore Sizes	1/8"	1/8" or 1/4"	1/4" or 3/8"	1/4"	1/4"	1/4" to 5/8", 6mm to 14mm
Available Resolutions (PPR)	100 to 1024	100 to 2540	100 to 2540	1 to 2540	3000 to 5000	100 to 2540
Input Voltage (VDC)	5, 12, 15	5, 12, 15	5, 12, 15	5-26	5-26	5, 12, 15
Operating Temperature (°C)	0 to +70	0 to +70	0 to +70	0 to +70	0 to +70	0 to +70
Enclosure Rating	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
Special Features	Sub-Compact 1.2" diameter	Rugged Metal Housing	Integrated coupling	Screw terminal connections	High 5000 PPR capability	Hub Shaft with flex tether



OPTICAL - INCREMENTAL

Product	NexGen 22 Qube	H20	HA25	HR25	HC25	HA26	HR26	HC26	
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	
Shaft/Bore Sizes	1/4" or 3/8"	1/4", 3/8" or 10mm	1/4" or 3/8"	1/4" or 3/8"	1/4" or 3/8"	1/4", 3/8" or 1/2"	1/4", 3/8" or 1/2"	1/4", 3/8" or 1/2"	
Available Resolutions (PPR)	1 to 3600	1 to 2540	1 to 2540	1 to 1024	3000 to 5000	1 to 2540	1 to 1024	3000 to 5000	
Input Voltage (VDC)	5-26	5-26	5-26	5-26	5-26	5-26	5-26	5-26	
Operating Temperature (°C)	0 to +70	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	0 to +70 (-40 to +85 opt.)	
Enclosure Rating	IP67 with shaft seals	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54 (NEMA 4/IP66 opt.)	NEMA 12/IP54	NEMA 12/IP54	NEMA 12/IP54	
Shock / Vibration	100g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	50g / 20g	
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	
Key Features	Economical anodized housing	Reliable dual-row bearing design	Wide range of resolutions available	Unbreakable code disc	High 5000 PPR capability	Integral coupling and flange	Unbreakable code disc	High 5000 PPR resolution capability	

OPTICAL - ABSOLUTE

Product	AI25 (Ethernet/IP)	AI25 (Profinet)	AI25 (Profibus)	AI25 (EtherCAT)	AI25 (SSI)	AI25 (BISS)	
Mounting Type	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	
Shaft/Bore Sizes	Shaft: 6-12mm or 3/8" Bore: 10-14mm; 1/2" or 3/8"	Shaft: 6-12mm or 3/8" Bore: 10-14mm; 1/2" or 3/8"	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	
Available Resolutions (Bits)	UUp to 22 Bit Single-Turn, 12 Bit Multi-Turn	Up to 22 Bit Single-Turn, 12 Bit Multi-Turn	Up to 14 Bit Single-Turn, 12 Bit Multi-Turn	UUp to 22 Bit Single-Turn, Up to 12 Bit Multi-Turn	Up to 17 Bit Single-Turn, 12 Bit Multi-Turn	Up to 22 Bit Single-Turn, 12 Bit Multi-Turn	
Input Voltage (VDC)	7-30	7-30	10-30	7-30	5 or 10-30	5 or 10-30	
Operating Temperature (°C)	-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +100	-40 to +100	
Enclosure Rating	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	
Shock / Vibration	400g / 30g	400g / 30g	100g / 10g	400g / 30g	100g / 10g	100g / 10g	
Certifications	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	
Key Features	Ethernet/IP interface	Profinet interface	Profibus interface	EtherCAT interface	SSI interface	BISS interface	


OPTICAL - INCREMENTAL





H58	RI58-0	H42	HA725	H20 Hub Shaft	RI58 Hub Shaft	HS20	HS35R	HS35iQ	Product
Shafted	Shafted	Shafted	Shafted	Hub Shaft	Hub Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft	Mounting Type
6 or 10mm	6 or 12mm	3/8"	3/8"	1/4", 3/8", 1/2" or 5/8"	10 or 12mm	1/4" to 5/8" 6mm to 16mm	up to 1-1/4" hollow shaft	up to 1-1/4" hollow shaft	Shaft/Bore Sizes
1 to 2540	1 to 10,000	1 to 600	8192 to 10,000	1 to 2540	1 to 5,000	1 to 2540	1 to 5000	1 to 2000	Available Resolutions (PPR)
5-26	5, 10-30	5-26	5 or 10-30	5-26	5 or 10-30	5-26	5-26	5-26	Input Voltage (VDC)
0 to +70 (-40 to +85 opt.)	-10 to +70	0 to +70	-10 to +70	0 to +70 (-40 to +85 opt.)	-10 to +70	0 to +70 (-40 to +85 opt.)	-40 to 85 (-40 to +100 opt.)	-40 to 85 (-40 to +100 opt.)	Operating Temperature (°C)
NEMA 12/IP54 (NEMA 4/IP66 opt.)	IP65, IP67	NEMA 12/IP54	NEMA 4/IP66	NEMA 12/IP54 (NEMA 4/IP66 opt.)	IP64	NEMA 4/IP65	IP67	IP67	Enclosure Rating
50g / 20g	100g / 10g	50g / 20g	50g / 2g	50g / 20g	100g / 10g	50g / 2.5g	400g / 30g	40g / 20g	Shock / Vibration
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS		Certifications
Euro-Standard 58mm mounting	Up to 40,000 steps with 10,000 pulses	Simplified economical design	Direct-read resolution up to 10,000 PPR	Hub Shaft with spring tether	High Accuracy with integrated flexible coupling	Electrically isolated hollow shaft	Shock Resistant to 400g	Encoder Diagnostics, Fault Output, Programmable Option Available	Key Features




OPTICAL - ABSOLUTE

AI25 (CANOpen)	AI25 (CANLayer2)	AI25 (DeviceNet)	AI25 (Interbus)	AI25 (Parallel)	AC36 (BiSS/SSI)	Product
Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Shafted and Hub Shaft	Mounting Type
Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	Shaft: 6 & 10mm, 3/8" Bore: 10 & 12mm, 3/8" Other Sizes Available	6 mm (Solid Shaft) 8 mm (Hub Shaft)	Shaft/Bore Sizes
Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 12 bit Single-Turn, Up to 12 bit Multi-Turn	Up to 14 bit Single-Turn, 12 bit Multi-Turn	Up to 22 Bit Single-Turn 12 Bit Multi-Turn	Available Resolutions (Bits)
10-30	10-30	10-30	10-30	5 or 10-30	5 or 7-30	Input Voltage (VDC)
-40 to +85	-40 to +85	-40 to +85	-40 to +85	-40 to +100	-40 to +100	Operating Temperature (°C)
IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64 or IP67	IP64	Enclosure Rating
100g / 10g	100g / 10g	100g / 10g	100g / 10g	100g / 10g	100g / 10g	Shock / Vibration
CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	CE, RoHS, UL	Certifications
CANOpen interface	CANLayer2 interface	DeviceNet interface	Interbus interface	Parallel interface	Multi-Turn positioning in compact size	Key Features



OPTICAL - ABSOLUTE

				
Product	AD34 (BiSS/SSI)	AD35 (BiSS/SSI)	AD36 (BiSS/SSI)	AD25 (BiSS/SSI)
Mounting Type	Shafted	Hub Shaft	Hollow Shaft & Hub Shaft	Shafted
Shaft/Bore Sizes	6mm	8mm	8mm	10mm
Available Resolutions (Bits)	Up to 19 bit Single-Turn	Up to 22 bit Single-Turn	Up to 22 bit Single-Turn, 12 bit Multi-Turn	Up to 22 bit Single-Turn, 12 bit Multi-Turn
Input Voltage (VDC)	5 or 7-30	5 or 7-30	5 or 7-30	5
Operating Temperature (°C)	-15 to +120	-15 to +120	-15 to +120	-15 to +120
Enclosure Rating	IP40	IP40	IP40	IP40
Shock / Vibration	100g / 10g	100g / 10g	100g / 10g	100g / 10g
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
Special Features	Unique one-step notched shaft mounting	Short mounting depth	Up to 22 bit single-turn resolution	Unique conical shaft for concentric motor mounting

			
11	R11	Frameless 10	
Shafted	Shafted	Hollow Shaft	
0.120" (3.05mm)	0.120" (3.05mm)	Up to 6mm	
+/- 3 arcmin	+/- 6 arcmin	+/- 15 arcmin Single speed	
2-26	2-6	2-10	
Up to 125	Up to 125	Up to 200	
N/A	N/A	N/A	
N/A	N/A	N/A	
N/A	N/A	N/A	
Radiation Hardened	Radiation Hardened	Radiation Hardened	

OPTICAL - INCREMENTAL

					
Product	F10	F14	F15	F18	
Mounting Type	Hollow Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft	
Shaft/Bore Sizes	6mm	1/4", 6mm, 8mm	3/8"	1/4" to 1/2" 6 to 12mm	
Available Resolutions (PPR)	1024 to 2048	1000 to 5000	1024 to 2048	500 to 5000	
Input Voltage (VDC)	5	5	5	5	
Operating Temperature (°C)	0 to +120	0 to +120	0 to +120	0 to +120	
Enclosure Rating	N/A	NEMA 1/IP40 (w/cover)	N/A	NEMA 1/IP40 (w/cover)	
RPM	5,000	12,000	5,000	12,000	
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	
Special Features	Compact 1.0" diameter servo ring mount	Non-marring hollow shaft	Industry standard size 15 servo mounting	Under 2.0" dia package with high 10,000 PPR capability	

A NOTE ABOUT RESOLVERS

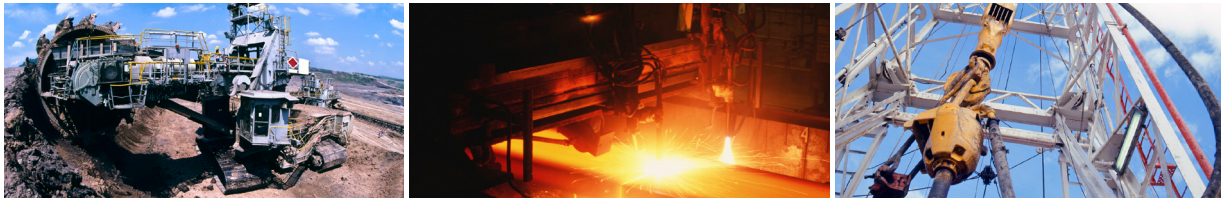
Frameless resolvers are classified here as Servo Duty for their servo ring mounting. By nature, resolvers are extremely rugged devices with no internal electronics. Resolvers can perform flawlessly in harsh duty applications with severe shock, vibration, contamination, and extreme temperatures.

INDUCTIVE - RESOLVER

							
	Frameless 15	Frameless 21	Frameless 31	Frameless 55	HaroMax[®] 15	HaroMax[®] 21	Product
	Bearingless	Bearingless	Bearingless	Bearingless	Bearingless	Bearingless	Mounting Type
	Up to 12mm	Up to 20mm	Up to 40mm	Up to 92mm	Up to 12mm	Up to 20mm	Shaft size/ Max bore size
	+/- 7 arcmin Single speed +/- 4 arcmin Multiple speeds	+/- 7 arcmin Single speed +/- 4 arcmin Multiple speeds	+/- 10 arcmin Single speed +/- 5 arcmin Multiple speeds	+/- 30 arcmin Single speed +/- 2 arcmin Multiple speeds	16 arcmin spread - Single speed	18 arcmin spread - Single speed	Accuracy Speed
	2-10	2-10	2-10	2-10	2-10	2-10	Input Voltage (Vrms)
	Up to 200	Up to 200	Up to 200	Up to 200	Up to 155	Up to 155	Operating Temperature (°C)
	N/A	N/A	N/A	N/A	N/A	N/A	Enclosure Rating
	50g / 10g	50g / 10g	N/A	N/A	50g / 10g	50g / 10g	Shock / Vibration
	N/A	N/A	N/A	N/A	N/A	N/A	Certification
	Radiation Hardened	Radiation Hardened	Radiation Hardened	Radiation Hardened	Machine Wound Stator	Machine Wound Stator	Special Features

OPTICAL - INCREMENTAL

						
	HC20	E9	M9	M15	M53	Product
	Hollow Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft	Mounting Type
	6mm, 8mm	1.5 to 4mm, .125", .156"	1.5 to 4mm, .125", .156"	1/8" or 3/8" 6 to 10mm	1/4" to 1/2" 6 to 12mm	Shaft/Bore Sizes
	500 to 2500	100 to 512	100 to 512	200 - 1000	500 - 2048	Available Resolutions (PPR)
	5-26	5	5	5	5 or 12	Input Voltage (VDC)
	0 to +120	-20 to +100	-20 to +100	0 to +120	0 to +120	Operating Temperature (°C)
	IP51	N/A	N/A	NEMA 1/IP50 (w/cover)	NEMA 1/IP50 (w/cover)	Enclosure Rating
	2,000	5,000	12,000	12,000	12,000	RPM
	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	Certifications
	Economical servomotor feedback	Super-compact size for small motors	Up to 512 PPR resolution	Easy installation without special tools	Up to 2048 PPR with commutation tracks	Special Features



OPTICAL - INCREMENTAL

Product	HD20	HD25	HD35R	DWD38	Series 60 Rotopulser®	Series 60P Rotopulser®	H56 Rotopulser®	HSD25
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Shafted	Hub Shaft
Shaft/Bore Sizes	3/8" or 10mm	3/8", 10mm, or 12mm	11mm	1"-14UNS x 5/8"-18 Threaded Shaft or 1"-14UNS Threaded Shaft	1/4" or 1/2"*	5/8" shaft (single or dual)	5/8"	6mm - 19mm or 1/4" - 3/4"
Available Resolutions (PPR)	1 to 3600	1 to 5000	1 to 5000	15 to 5000	1 to 2500	1-2500	1 to 5000	1 to 3600
Input Voltage (VDC)	5-26	5-26	5-26	5-26	5-15	5-15	5-26	5-26
Operating Temperature (°C)	-40 to +100	-40 to +100	-40 to +85	-40 to +100	0 to +54	0 to +54	-40 to +80	-40 to +100
Enclosure Rating	IP67	IP67	IP67	IP67	NEMA 12/IP54	NEMA 12/IP54 NEMA 4/IP66 opt.)	NEMA 4/IP66	IP67
Shock / Vibration	50g / 20g	50g / 20g	400g / 20g	400g / 20g	N/A	N/A	50g / 2.5g	50g / 20g
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
Special Features	Unbreakable Code Disc up to 3600 PPR	Dual Isolated Outputs Available	Improved Seal Design for Increased Moisture Resistance	Stackable Encoder Options Available	Dual shaft output option	Mill-Duty Foot or Face Mount Design	Large Outer Bearings Isolate Shaft Loads	Field Replaceable Shaft Isolators

OPTICAL - INCREMENTAL, HAZARDOUS DUTY

Product	Hazardous HD20	Hazardous HD25	ISW38	X25	RX70/71	ISD25	EN44
Mounting Type	Shafted	Shafted	Shafted	Shafted	Shafted	Hub Shaft	Hub Shaft
Shaft/Bore Sizes	3/8", 10mm	3/8", 10mm, 12mm	1"-14UNS x 5/8"-18 Threaded Shaft or 1"-14UNS Threaded Shaft	1/4" or 3/8"	10 mm	6mm - 19mm or 1/4" - 3/4"	16mm
Available Resolutions (PPR)	1 to 3600	1 to 5000	1 - 5000	1 - 5000	1 - 10,000	1 to 3600	1024 and 2048
Input Voltage (VDC)	5-26	5-26	5 or 7-26	5-26	5 or 10-30	5 or 7-26	7-26
Operating Temperature (°C)	-40 to +80	-40 to +80	-40 to +80	0 to +70	-40 to +60	-40 to +80	-50 to +100
Enclosure Rating	IP67	IP67	IP67	NEMA4X/IP56	IP64 / IP67	IP67	IP67
Shock / Vibration	50g / 20g	50g / 20g	400g / 20g	50g / 2g	100g / 10g	50g / 20g	50g / 20g
Certifications	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX	CE, RoHS, UL	CE, ATEX, IECEx	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX, IECEx
Special Features	Ideal for Corrosive Environments with Stringent Wash-down Requirements	Ideal for Corrosive Environments with Stringent Wash-down Requirements	Draw Works Threaded Shaft with Field Replaceable Adapters	NEC Class 1&2, Div 1&2, Groups C, D, E, F, G	Explosion Proof Design for Hazardous Applications	Field Replaceable Shaft Isolators	Triple Certified Encoder for Hazardous Locations



OPTICAL - INCREMENTAL

HSD44	RR25	HSD35	HSD37	HSD38
Hub Shaft	Hub Shaft	Hollow Shaft	Hollow Shaft	Hollow Shaft
16mm	1" or 1-1/8"	1/4" to 1-1/4", or 6mm to 28mm	6mm to 1" hollow shaft	12mm - 20mm or 1/2"
1024	180 to 512	1 to 5000	15 to 5000	15 to 5000
5-30	5-28	5-26	7-26	5-26
-30 to +100	-20 to +85	-40 to +85	-40 to +100	-40 to +100
NEMA 6	IP67	IP67 (IP64 at shaft speeds above 5000 RPM)	IP67	IP67
400g / 20g	50g / 10g	400g / 20g	400g / 20g	50g / 20g
CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS
For use in Heavy-Rail Traction Drive Applications	Corrosion Resistant Construction; Ideal for the Ag Industry	Stainless Steel Clamp and Hub Shaft for Mill Duty	Operates in High Shock and Vibration Environments	Electrically & Thermally Isolated Hollow shaft

INDUCTIVE - RESOLVER

RH25	R25	R56	RF25	Product
Hub Shaft	Servo/Flange	Foot/ C-Face	Flange	Mounting Type
3/8"	3/8"	5/8"	3/8"	Shaft/Bore Sizes
+/- 7 arcmin - Single speed +/- 2 arcmin - Multiple speeds	+/- 7 arcmin - Single speed +/- 2 arcmin - Multiple speeds	+/- 10 arcmin - Single speed 10 arcmin spread - Two speed	+/- 10 arcmin - Single speed 10 arcmin spread - Two speed	Accuracy
2-12	2-26	26	26	Input Voltage (Vrms)
-55 to +125	-55 to +125	-40 to +120	-55 to +125	Operating Temperature (°C)
IP54	IP65	IP66	IP65	Enclosure Rating
N/A	200g / 40g	50g / 10g	200g / 40g	Shock/ Vibration
RoHS	RoHS	RoHS	RoHS	Certifications
Optional Interface Connectors	Optional Connectors & Locations	Latching Connector	Optional Connectors & Locations	Special Features

OPTICAL - ABSOLUTE, HAZARDOUS DUTY



Hazardous HSD35	ISD37	EN42
Hollow Shaft	Hollow Shaft	Hollow Shaft
6mm - 28mm, or 1/4" - 1 1/4"	6mm - 25mm or 1/4" to 1"	15mm-16mm or 5/8" - 1"
1 - 5000	15 - 5000	15 - 5000
5-26	5 or 7-26	7-26 or 10-30
-40 to +85	-40 to +80	-50 to +100
IP67	IP67	IP67
400g / 20g	400g / 20g	50g / 20g
CE, RoHS, UL	CE, RoHS, CSA, ATEX	CE, RoHS, CSA, ATEX, IECEx
Class 1 Div 2 Groups A,B,C,D Class 2 Div 2 Groups F,G	Dual Isolated Outputs	Encapsulated Electronics with Increased Safety Interface for Zone 1 Use

OPTICAL - ABSOLUTE, HAZARDOUS DUTY


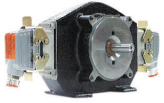



AI25 Class 1 Div 2 (SSI/BiSS)	AX65 (SSI/CAN-Open)	AX70/71 (BiSS/SSI/Profibus/DeviceNet/CAN-Open)	AX73 (Profibus)	AC61 (Parallel/Profibus/CAN-Open/CANlayer2/DeviceNet/Interbus/SSI Programmable)	Product
Shafted and Hub Shaft Shaft: 6&10mm, 3/8" Bore: 10&12mm; 1/4"-3/8"	Shafted	Shafted	Shafted	Shafted	Mounting Type
Up to 22 bit Single Turn, 12 bit Multi-Turn	12 Bit Single-Turn, 12, 13 and 16 Bit Multi-Turn	10 - 17 Bit Single-Turn, 12 Bit Multi-Turn	14 Bit Single-Turn, 12 Bit Multi-Turn	10 - 17 Bit Single-Turn, 4 - 12 Bit Multi-Turn	Available Resolutions (Bits)
5 or 7-30	10-30	5 or 10-30	10-30	10-30	Input Voltage (VDC)
-40 to +80	-40 to +60	-40 to +60	-40 to +70	-40 to +100	Operating Temperature (°C)
IP64/IP66	IP66/IP67	IP64/IP67	IP67	IP67	Enclosure Rating
100g / 10g	200g / 30g	100g / 10g	100g / 10g	100g / 10g	Shock / Vibration
CE, RoHS, UL	CE, RoHS, ATEX	CE, RoHS, ATEX, IECEx	CE, RoHS, ATEX, IECEx	CE, RoHS, UL	Certifications
Class 1 Division 2 Groups A,B,C,D	Extreme Robust Explosionproof Absolute Multiturn Encoder	Pressure-Resistant Housing for Explosive Environments	Extreme corrosion resistance: high grade stainless steel housing	Chemical and Seawater Resistant; programmable encoder	Special Features



MAGNETIC - INCREMENTAL

				
Product	Slim Tach® NEXGEN ST56	Slim Tach® NEXGEN ST67	Slim Tach® NEXGEN ST85	
Mounting Type	Bearingless	Bearingless	Bearingless	
Shaft/Bore Sizes	5/8" - 2 7/8" or 16mm - 80mm	5/8" - 2 7/8" or 16mm - 80mm	5/8" - 2 7/8" or 16mm - 80mm	
Available Resolutions (PPR)	64 - 2048	64 - 2048	64 - 2048	
Input Voltage (VDC)	5-26	5-26	5-26	
Operating Temperature (°C)	-40 to +100 Extended -40 to +120	-40 to +100 Extended -40 to +120	-40 to +100 Extended -40 to +120	
Enclosure Rating	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	
Shock /Vibration	300g / 20g	300g / 20g	30g / 18g	
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	
Special Features	Mounts to 56 and 140 C-Face Motors; Replaceable Wheels	Mounts to Reliance 6.75 Recess, 56 and 140 C-Face Motors; Replaceable Wheels	Mounts to 180 C-Face Motors; Replaceable Wheels	

MAGNETIC - INCREMENTAL


						
Product	Rim Tach® NEXGEN 6200	Rim Tach® 6200	Rim Tach® NEXGEN 1250	Rim Tach® 1250	Rim Tach® NEXGEN 8500	
Mounting Type	Shafted	Shafted	Bearingless	Bearingless	Bearingless	
Shaft/Bore Sizes	5/8"	5/8"	5/8" - 2 7/8" or 16mm - 80mm	5/8" - 2 7/8"	5/8" - 2 7/8" or 16mm - 80mm	
Available Resolutions (PPR)	60 - 2400	60 - 1200	60 - 2400	60 - 1200	60 - 2400	
Input Voltage (VDC)	5-26	5-26	5-26	5-26	5-26	
Operating Temperature (°C)	-40 to +100	-40 to +70	-40 to +100	-40 to +80	-40 to +100	
Enclosure Rating	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	
Shock /Vibration	30g / 18g	30g / 18g	200g / 18g	30g / 18g	200g / 18g	
Certifications	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	
Special Features	Delivers a 70 Thousandths Air Gap; Replaceable Sensors	Foot-Mount or 56-C Face Mount	Circuitry for On-Board Diagnostics with LED and Alarm; Replaceable Wheels and Sensors	Mounts to 250-C Face Motors (12.5 Diameter Mounting Flange)	Circuitry for On-Board Diagnostics with LED and Alarm; Replaceable Wheels and Sensors	



MAGNETIC - INCREMENTAL

			
	Slim Tach® SL1250	Slim Tach® HT55	Rim Tach® HS60
	Bearingless	Hollow Shaft	Hollow Shaft
	5/8" - 2 7/8"	1/2" - 2 7/8"	5/8" - 4 1/2"
	64 - 2048	256 - 4096	60 - 2400
	5-26	5-26	5-26
	-40 to +100 Extended -40 to +120	-40 to +85	-20 to +70
	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65	NEMA 4 & 12, IP65
	300g / 20g	100g / 20g	30g / 18g
	CE, RoHS	CE, RoHS	CE, RoHS
	Mounts to 250-C Face Motors; Requires only 1.4 of Motor Shaft	Encapsulated Electronics Resist Moisture and Contamination	Hollow Shaft Design Mounts Easily to Large Motor Shafts

MAGNETIC ABSOLUTE

		Product
	AR62/63	Product
	Shafted	Mounting Type
	3/8", 10 mm	Shaft/Bore Sizes
	12 Bit Single-Turn, 12, 13 and 16 Bit Multi-Turn	Available Resolutions (Bits)
	10-30	Input Voltage (VDC)
	-40 to +100	Operating Temperature (°C)
	IP67/ IP69k	Enclosure Rating
	200g / 20g	Shock /Vibration
	CE, RoHS	Certifications
	SSI, CAN-Open and Analog Outputs Available	Special Features

MAGNETIC - INCREMENTAL

						Product
	Rim Tach® 8500	HDP18	HDP30	HDN58	R45 Rotopulser®	Product
	Bearingless	Bearingless	Bearingless	Bearingless	Bearingless	Mounting Type
	5/8" - 2 7/8"	1/2" to 1 1/2"	1/2" to 1 1/2"	1/2" to 1 1/2"	5/8" or 7/8"	Shaft/Bore Sizes
	60 - 1200	256	8 - 512	8 - 512	60	Available Resolutions (PPR)
	5-26	6-30	6-30	6-30	5-26	Input Voltage (VDC)
	-40 to +90 Extended -40 to +100	-25 to +80	-25 to +80	-25 to +70	-40 to +85	Operating Temperature (°C)
	NEMA 4 & 12, IP65	IP68	IP68	Connector dependent IP65, IP67 or IP68	N/A	Enclosure Rating
	30g / 18g	N/A	N/A	50g / 10g	20g / 2.5g	Shock /Vibration
	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	CE, RoHS	Certifications
	Mounts to 180-C Face Motors:	Incremental & Absolute Output's Available; Completely Sealed & Encapsulated Electronics	Incremental & Absolute Output's Available; CAN SAE J1939 Communication Protocol	Incremental & Absolute Output's Available; Wide Sensing Envelope is Tolerant to Misalignment	56C-Face Mounting	Special Features

For full part numbers and descriptions please visit our catalog or website @ www.dynapar.com

RIM SS2 SIGNAL SPLITTER



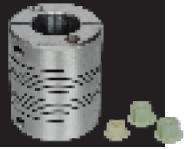
The NorthStar signal splitter routes one encoder signal to multiple isolated locations.

CABLE ASSEMBLIES



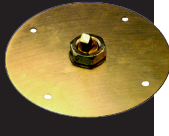
NorthStar brand offers shielded cable with MS or M12 connector and cable clamps at one end and tinned leads at the other end.

FCPL FLEXIBLE SHAFT COUPLINGS



CPL Series couplings provide maximum mechanical, thermal, and electrical protection for encoder shaft connections.

GROUNDING BRUSH KITS



Provide a low resistance, and electrical contact to the motor shaft to reduce or eliminate induced shaft currents in AC and DC motors

MEASURING WHEELS



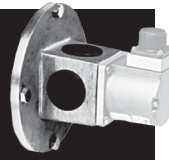
Dynapar offers a wide range of precisely machined 12" circumference wheels including rubber, phenolic and O-ring surfaces to provide maximum accuracy over a wide temperature range for a variety of conveyor or material speed measurement applications.

MATING CONNECTORS



Dynapar offers a wide variety of military style connectors for use with different style encoders.

NEMA & 5PY ADAPTERS



Dynapar offers NEMA C-face, 5PY and custom adapters to allow you to mount a variety of flange mounted encoders to 4-1/2" NEMA and DC accessory flanges.

BRACKETS



Dynapar offers a wide variety of rugged, stable, precision machined mounting brackets to secure popular Dynapar encoders for coupling to a machine shaft.

TETHER & COVER KITS



A variety of tether kits are available for NEMA C-Face and other AC motors including single point tethers, slotted tethers and rod tethers. Dynapar also offers cover kits and basket covers that fit over the motor face.



For additional information contact your Dynapar Representative at 1.800.873.8731 or visit our website at: www.dynapar.com

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