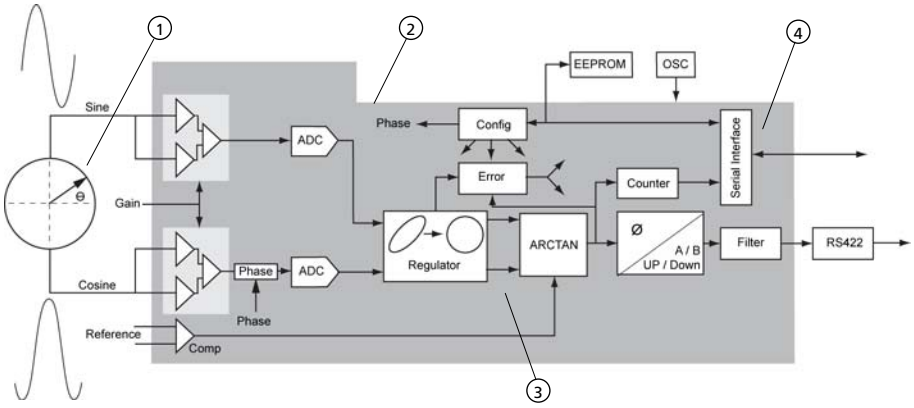
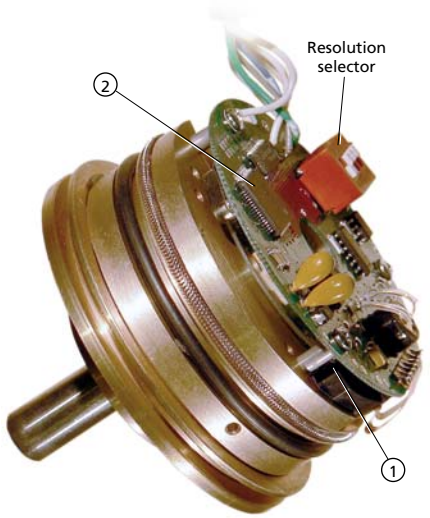
High Resolution Incremental Encoders



Item	Description
1	High fidelity base sinewave encoder
2	Digital interpolator
3	Signal correction
4	16-bit asynchronous or synchronous serial output



CP-850-HHC high resolution encoder less cover

High Resolution Incremental Encoder Technology

Very high resolution incremental encoders are used in many high precision positioning and measuring systems. One technique for achieving high resolution is that employed by Allied Motion, which enables up to 2,250,000 incremental A/B cycles per revolution. Conventional "edge detection" multiplication can then be employed to raise the resolution to 9,000,000 measuring points per revolution with repeatability of better than one arc second.

The foundation of Allied Motion's high resolution encoding technology is an optimized sinewave encoder with servo-controlled light source to maintain illumination quality level.

This is combined with an electronic interpolator with signal correction technology that outputs digital incremental A and B signals, plus an index channel.

Allied Motion's high resolution encoders can be used as any incremental encoder would be, but with a much higher resolution potential and bandwidth (up to 4 MHz).

Advantages of High Resolution Encoders

Allied Motion's high resolution encoders offer benefits for many positioning and measuring applications:

- Extremely fine resolution per revolution of up to 0.52 arc sec* along with excellent temperature characteristics
- High repeatability to allow "mapping" system error to achieve absolute accuracy of better than two arc seconds
- A high resolution technology that enables a more cost-effective solution than alternate methods
- An encoder disc that is more robust than those employed in typical high-count encoders
- A compact encoder package without the need for additional interpolation electronics included elsewhere in the system

* ~0.13 arc sec with edge detection

High Resolution Encoder Applications

Below are representative applications that benefit from the advantages of high resolution encoders:

- Azimuth and elevation encoders for 3D scanners
- Spectrum analyzers for the communication industry
- Spectrum analyzers for chemical analysis equipment
- Medical gas chromatography
- High definition facial recognition surveillance cameras
- Tunable lasers for communication system instrumentation
- Optical spectrum wavemeters
- Missile seeker heads
- High precision theodolites
- Optical trackers
- 3D printers

High Resolution Incremental Encoders

	Size [mm (in)]	Resolution [cycles/r]	Output	Voltage Supply [VDC]	Speed* [RPM]	Shaft or Bore, D x L [mm (in)]	Options
CP-250-HHC 	45.2 x 63 (1.78 x 2.48)	5000 to 125000	Linedriver, RS-422 levels, 4 MHz	+ 5 ± 5%	1920 up to 4800 RPM	Up to 10 mm (0.39) hub	• Cable and connector
CP-850-HHC 	"Size 25" 63.5 Ø (2.5) solid shaft	25000 to 1250000	Linedriver, RS-422 levels, 4 MHz	+ 5 ± 10%	192 up to 9,600 RPM	9.52 x 22.3 (0.3848 x 0.879)	• Flange, face or servo mount • Rear or side connector or cable exit
CP-950-HHC 	"Size 25" 63.5 Ø (2.5) hollow shaft	25000 to 1250000	Linedriver, RS-422 levels, 4 MHz	+ 5 ± 10%	192 up to 9,600 RPM	12.7 x 22 (0.5 x 0.866)	• Spring mount (shown) • Rear or side connector or cable exit • Up to 0.5" hollow shaft ID
CP-2650-HHC 	67.3 Ø, 19 ID (2.65 Ø, 0.748" ID) hollow shaft	25000 to 1250000	Linedriver, RS-422 levels, 4 MHz	+ 5 ± 10%	192 up to 9,600 RPM	0.748" (19 mm) hollow shaft	• Cable and connector
CP-3750-HHC 	95.3 Ø, 50.8 ID (3.75 Ø, 2 ID) hollow shaft	50000 up to 2250000	Linedriver, RS-422 levels, 4 MHz	+ 5 ± 10%	106 up to 4800 RPM	2" (50.8 mm) hollow shaft	• Cable and connector

* Speed depends upon resolution: N_{max} =2.4 E8 ÷ Linecount