



Description:

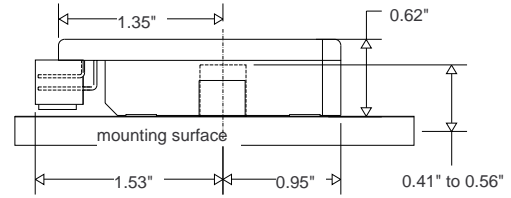
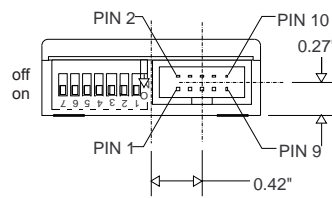
The CP-250-HHC is an extremely versatile and rugged high resolution modular encoder with eight user-selectable resolutions. The maximum frequency of 3.44 MHz allows for a high motor RPM rate as well as high resolution (e.g. 125,000 cycles/rev with up to 1,651 rpm)

Resolutions range from 5,000 quadrature cycles per revolution to 144,000 cycles/rev (576,000 measuring points).

The encoder mounts easily to any available shaft platform or motor. The .25 mm (10 mil) (non-glass) disk to optics distance makes the unit very forgiving for motor runout and thermal shaft growth.

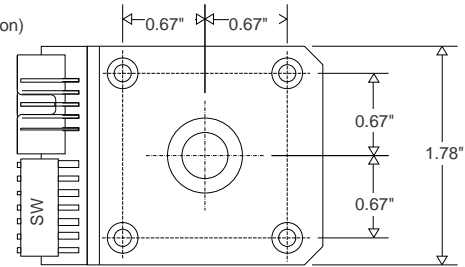
Application include high speed scanners, spectrum analyzers, monochromators, XY tables and in general any application where high resolution is required.

Mechanical:

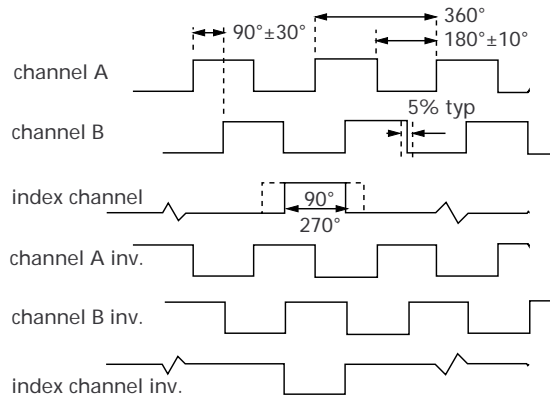


Mating Connector: AMP/TYCO 746285-1 (IDC Ribbon)

Pin #	Function
1	Data A (inv)
2	Data A
3	Data B (inv)
4	Data B
5	Index (inv)
6	Index
7	NERR (inv)
8	NERR
9	Ground
10	+V in



Output signals:



waveforms, ccw seen from cover end

Specification:

Mechanical Data

- hub diameter: up to 0.39" (10 mm)
- moment of inertia: 0.2 x 10⁻⁴ in.oz sec² max.
- acceleration: 500,000 radians/sec² max.
- slew speed: 10,000 RPM maximum
- material: Ryton 4™ (PPS with a 40 % glassfill)

Environmental Data

- temp. range: 0°C to +70°C
- storage temp.: -40°C to +85°C
- operating relative humidity: 90% @ 35°C
- storage relative humidity: 80% @ 45°C

Electrical Data

- supply voltage Vin: +5 Vdc ±5%
- supply current: 125 typ. (250 mA max.)
- freq. response (fout): DC to 3.44 MHz*
- output driver: linedriver 26LS31
- output format: digital incremental

- output levels: RS-422 & DIN 66259 (Teil 3)
- power supply Vcc = 4.75V:
- V_{low} ≤ 0.5 V @ 20 mA sink
- V_{high} ≥ 2.5 V @ 20 mA source
- (all 6 outputs)

How to calculate frequency response :

$$*f_{out} \text{ (max.)} = \frac{0.86 \times (IR)}{1000 \times (IT)} \quad \text{RPM (max.)} = \frac{f_{out} \text{ (max.)} \times 60 \times 10^6}{\text{disk (linecount)} \times (IR)}$$

e.g.: IR=250, IT=.0625 μs e.g. disk=500 linecount
 ==> fout= 3.44 MHz ==> RPM (max.)= 1,651rpm

Modular Encoders

CP-250-HHC, incremental, multi-count, high resolution

Interpolation:

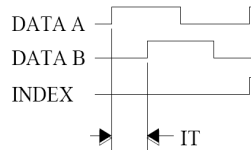
Error Signal (NERR): The error signal (negative going 300 ns pulse) is generated if the shaft rotational speed is so high that the square-wave signals are unable to follow, and/or when the maximum shaft speed is exceeded. The output resumes to normal operation after the shaft speed is reduced.

Interpolation Rate (IR), DIP 5-6: The interpolation rate can be set at 250, 200, 125, 100, 62.5, 50, 31.25 and 25 via DIP switch positions 5 thru 7. The interpolation rate is the number of increments into which one period of the input signal from the disk is divided. E.g. a disk with 200 cycles/rev. used with the x250 multiplier will generate 50,000 cycles/rev. or 200,000 pulses/rev. See DIP Switch Settings.

Interpolation Rate (IR)				Cycles/rev. with disk linecount			
SW7	SW6	SW5	(IR)	200	256	400	500
off	off	on	250	50,000	64,000	100,000	125,000
off	off	off	200	40,000	51,200	80,000	100,000
on	off	on	125	25,000	32,000	50,000	62,500
on	off	off	100	20,000	25,600	40,000	50,000
off	on	on	62.5	12,500	16,000	25,000	31,250
off	on	off	50	10,000	12,800	20,000	25,000
on	on	on	31.25	6,250	8,000	12,500	15,625
on	on	off	25	5,000	6,400	10,000	12,500

Glitch Filter (GFE), DIP 4: In order to avoid permanent toggling of the downstream counters as a result of analog noise of the input signals while the encoder disk is at standstill, a digital filter can be activated for the square-wave outputs. In such a case, the minimum edge-to-edge distance at the output (ie: A leading edge to B leading edge) is then automatically set at 64 while the encoder disk is at or near standstill.

Interval Time (IT), DIP 1-3: The minimum edge-to-edge distance can be set via the DIP switch. The Interval Time is useful to avoid the edge-to-edge time from being too fast and causing miscounts. Limiting this time will affect the maximum speed the encoder disk can rotate without causing an Error Signal (ERR).



Interval Time (IT)			
SW3	SW2	SW1	(IT) μs
off	off	off	.0625 μs
on	off	off	.125 μs
off	on	off	.25 μs
on	on	off	.5 μs
off	off	on	1 μs
on	off	on	2 μs
off	on	on	4 μs
on	on	on	8 μs

Mounting:

Instructions:

- 1/ open cover by gently wedging the cover off with a small screwdriver at the slot opposite the wire exit. Leave the PCB in place.
- 2/ loosely mount the encoder to a motor with four mounting screws through the PCB
- 3/ unlock the locking ring by turning ccw (view from encoder end), access ring from the side
- 4/ gently press down hub into the locking mechanism and lock the hub by turning locking ring clockwise
- 5/ tighten set screw
- 6/ tighten the four mounting screws
- 7/ unlock the locking ring by turning ccw until it stops
- 8/ snap on cover

Electrical:

Recommended line receivers are 26LS32 and 26LS33. To minimize noise use individually shielded twisted pair cable with 100 ohm resistors between non-inverting and inverting signals at the receiver. Other noise filtering techniques may be required depending on the application. See appropriate line driver/receiver data sheets for further technical discussion.

Mechanical:

The platform to which the CP-250-HHC is mounted should be flat within .001, the shaft should be perpendicular to the mounting surface by .001 and the shaft runout should be .0008 TIR. The 4 mounting screws should be either 3mm or #4 styles with a head diameter no greater than .219.

Ordering information:

CP-250-HHC- (1) - (2) - (3)

- (1) resolution: e.g. 200 cycles/rev. (standard 200, 256, 400, 500)
- (2) hub size: e.g. 1/4" (standard 4, 6, 8, 10mm or 1/4, 3/8")
- (3) special: consult factory for any special configuration

For other linecounts or hub sizes please contact factory