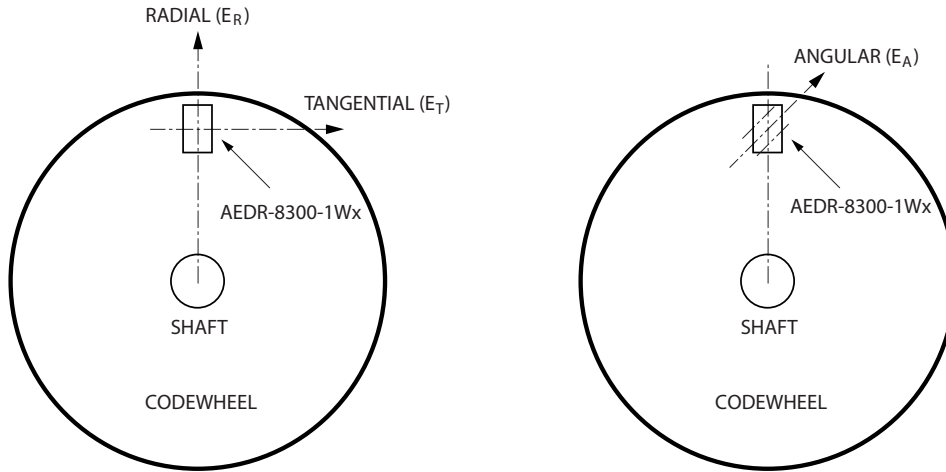
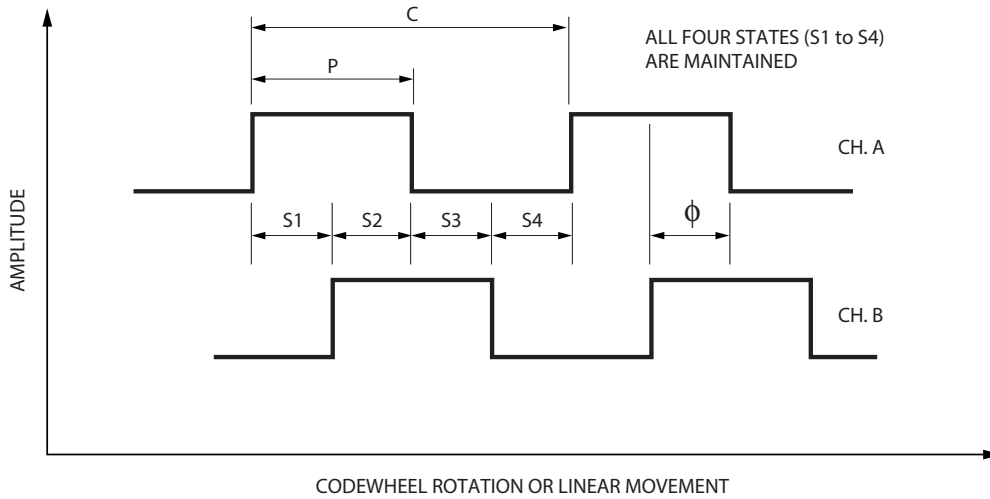


Output waveform



Absolute Maximum Ratings

Storage Temperature, T_S	-40° C to 85° C
Operating Temperature, T_A	-20° C to 85° C
Supply Voltage, V_{CC}	-0.5 V to 7 V
Output Voltage, V_O	-0.5 V to V_{CC}
Output Current per Channel, I_{OUT}	-1.0 mA to 8 mA
ESD	Human Body Model JESD22-A114-A Class 2
	Machine Model JESD22-A115-A Class B

Notes:

1. Exposure to extreme light intensity (such as from flashbulbs or spotlights) may cause permanent damage to the device.
2. CAUTION: It is advised that normal static precautions should be taken when handling the encoder in order to avoid damage and/or degradation induced by ESD.
3. Proper operation of the encoder cannot be guaranteed if the maximum ratings are exceeded.

Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Units	Notes
Temperature	T _A	-20	25	85	°C	
Supply Voltage	V _{CC}	3.0	3.3 / 5.0	5.5	V	Ripple < 100 mVp-p
LED Current	I _{LED}	13	15	18	mA	See Note 1
Load Capacitance	C _L			100	pF	2.7 kΩ Pull-Up
Count Frequency ²	F	0.3		60	kHz	See Note 3
Radial Misalignment	E _R			±0.38 (±0.015)	mm (in.)	
Tangential Misalignment	E _T			±0.38 (±0.015)	mm (in.)	
Angular Misalignment	E _A		0	±1.5	deg.	
Codewheel/strip tilt	C _T		0	1	deg.	
Codewheel/strip Gap	G	1.0 (0.04)	2.0 (0.08)	2.5 (0.10)	mm (in.)	

Notes:

- LED Current Limiting Resistor:
For V_{CC} = 5.0 V, recommended series resistor = 220 Ω (±10 %)
For V_{CC} = 3.3 V, recommended series resistor = 110 Ω (± 10 %)
- Count frequency = velocity (rpm) x N / 60.
- Data collected based on Avago production characterization.

Encoding Characteristics

Encoding characteristics over the recommended operating condition and mounting conditions.

Parameter	Symbol	Typical	Maximum	Unit
Pulse Width Error (Ch.A, Ch.B)	ΔP	16	75	°e
Phase Error	Δφ	10	60	°e

Note:

- Typical values represent the encoder performance at typical mounting alignment, whereas the maximum values represent the encoder performance across the range of recommended mounting tolerance.

Electrical Characteristics

Characteristics over recommended operating conditions at 25° C.

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Notes
Detector Supply Current	I _{CC}		4.8	6.0	mA	V _{CC} = 5 V
			3.9	4.1		V _{CC} = 3.3 V
High Level Output Voltage	V _{OH}	2.4			V	I _{OH} = -0.2 mA
Low Level Output Voltage	V _{OL}			0.4	V	I _{OL} = 8.0 mA
Rise Time	t _r		500		ns	C _L = 25 pF
Fall Time	t _f		100		ns	R _L = 2.7 kΩ