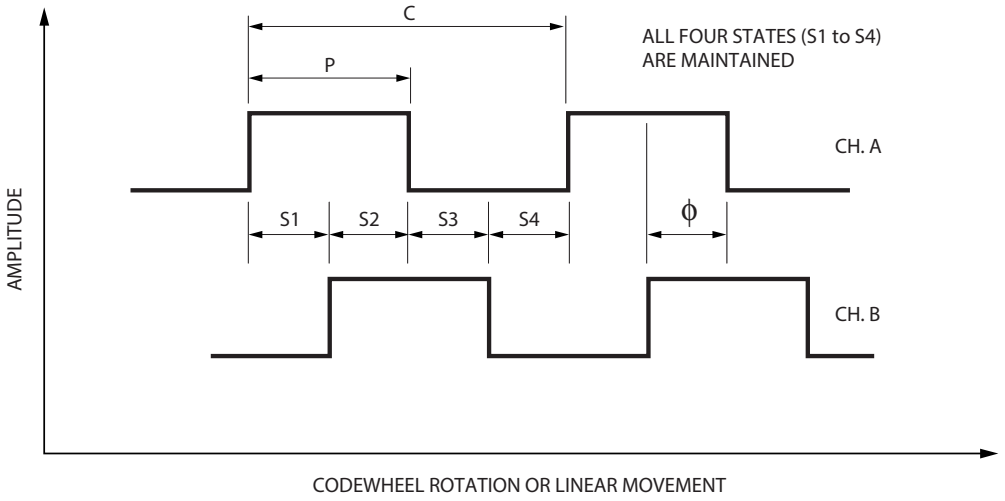
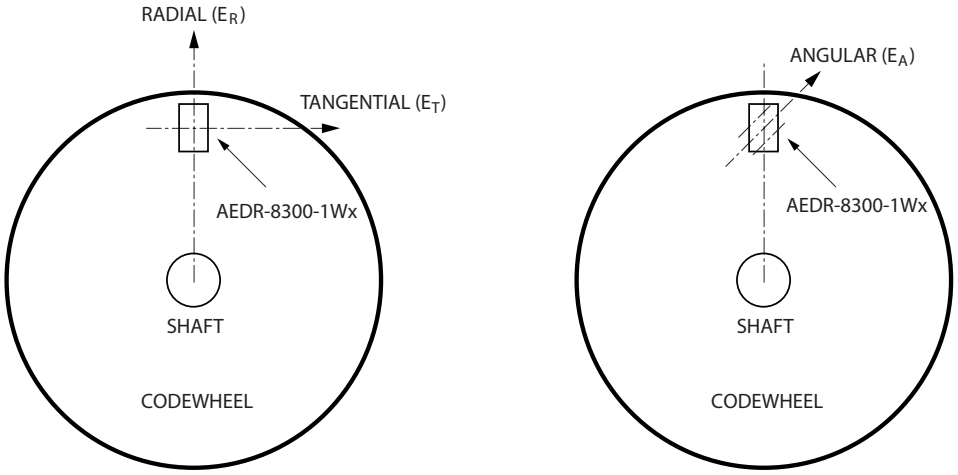
Output waveform





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:
1. LED Current Limiting Resistor:
   For Vcc = 5.0 V, recommended series resistor = 220 Ω (±10 %)
   For Vcc = 3.3 V, recommended series resistor = 110 Ω (± 10 %)
2. Count frequency = velocity (rpm) x N / 60.
3. 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:
1. 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	Vcc = 5 V
			3.9	4.1		Vcc = 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 R_L = 2.7 kΩ
Fall Time	t_f		100		ns	