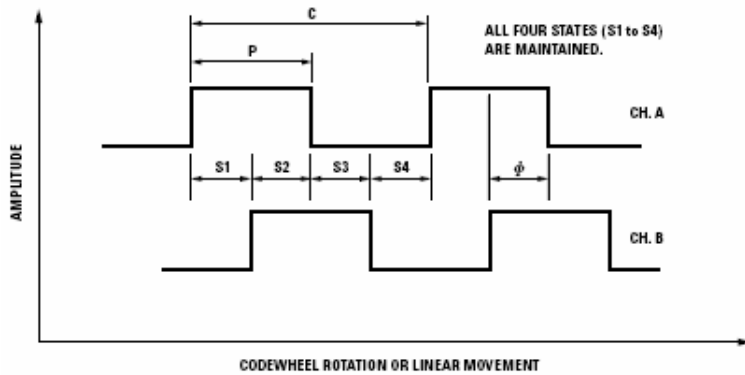


Output waveform



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 3A 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	Min.	Typ.	Max.	Units	Notes
Temperature	T_A	-20	25	85	°C	See note 1
Supply Voltage	V_{CC}	2.6	2.8	3.0	V	Ripple < 100mVp-p
LED Current	I_{LED}	5	6	8	mA	See note 2
Load Capacitance	C_L			100	pF	2.7 kΩ Pull-Up
Count Frequency ³	F			15	kHz	
Radial Misalignment	E_R			±0.2	mm	
Tangential Misalignment	E_T			±0.2	mm	
Angular Misalignment	E_A		0	±1.5	deg.	
Codewheel/strip Tilt	C_T		0	1	deg.	
Codewheel/strip Gap	G	0.23	0.43	0.63	mm	

Notes:

1. Refer to AEDR-8400 Reliability Datasheet
2. LED Current Limiting Resistor: Recommended series resistor = 121Ω (±1%) for 254 LPI and 255Ω (±1%) for 318 LPI.
3. Count frequency = velocity (rpm) x N / 60.

Encoding Characteristics

Encoding characteristics over the recommended operating condition and mounting conditions.

Parameter	Symbol	Typical	Maximum	Unit
Pulse Width Error (Channel A)	ΔP	10	75	°e
Pulse Width Error (Channel B)	ΔP	11	80	°e
Phase Error	$\Delta\phi$	7	60	°e

Note:

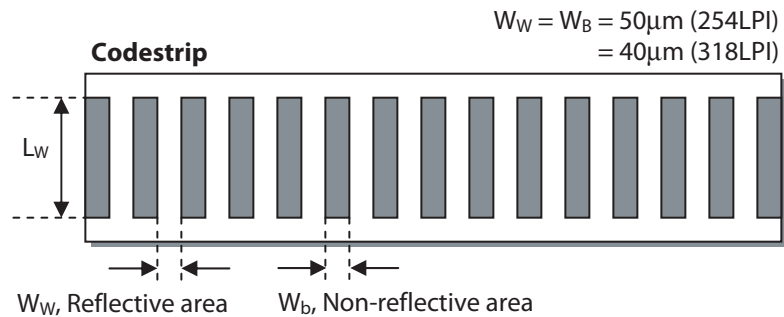
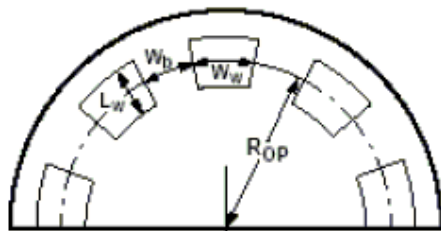
1. Typical values represent the encoder performance at typical mounting alignment, whereas the maximum values represent the encoder performance across the range of recommended mounting tolerance.

Electrical Characteristics

Characteristics over recommended operating conditions at 25°C.

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Detector Supply Current	I_{CC}		6.0	7.0	mA	
High Level Output Voltage	V_{OH}	2.4			V	$I_{OH} = -0.2\text{mA}$
Low Level Output Voltage	V_{OL}			0.4	V	$I_{OL} = 8.0\text{mA}$
Rise Time	t_r		400		ns	$C_L = 25\text{pF}$
Fall Time	t_f		120		ns	$R_L = 2.7\text{k}\Omega$

Recommended Codewheel and Codestrip Characteristics



Parameter	Symbol	Min.	Max.	Unit	Notes
Window/bar Ratio	W_w/W_b	0.9	1.1		
Window/bar Length	L_w	1.80 (0.071)	2.31 (0.091)	mm (inches)	
Specular Reflectance	R_f	60	-		Reflective area. See note 1.
		-	10		Non reflective area
Line Density	LPmm (LPI)	10 (254) 12.5 (318)		lines/mm (inch)	
Optical radius	R_{op}	11	-	mm	Recommended $R_{op}=11.0\text{mm}$

Notes:

1. Measurements from SMS μScan System. Contact factory for more information.
2. Contact factory for more information on compatibility of codewheel/strip.