



Series 291A

Precision, Long-life 12mm Optical Encoder

- Available with 6, 8 Pulses per Revolution
- Momentary Switch
- Consistent feeling when rotating the shaft both clockwise and counterclockwise

Description

The 291A Series allows versatility in design applications by providing highly reliable, precise digital output and long rotational life with our non-contacting design. This product focuses on consistent feeling when rotating the shaft both clockwise and counterclockwise. The options of Schmitt trigger, detents, momentary switch, shaft & bushing length, dual shaft, termination styles, torque, operating voltage, and IP ratings provide flexibility to meet your exacting design requirements.



Ordering Information

Series	Termination	Bushing Length	Shaft Length	Shaft Trim	Output Combination	Operating Voltage	Switch	Schmitt Trigger & Locating Lug
291A	P1	0	22	F	832	A	B	S

Code	Termination
P1	.10" pitch pins header facing front .354" length
F1	.10" pitch female header Facing front .197" length
C1	2" ribbon cable With .050" pitch Connector terminals

Code	Shaft Length "L"
Single shaft structure	
22	.687"
Dual shaft structure	
DD	Outer shaft: .690" Inner shaft: 1.065"

Code	Spec.
F	Flat

Code	Combination
605	6 PPR, 24 Detents Torque 20 to 80 gf-cm
608	6 PPR, 24 Detents Torque 30 to 130 gf-cm
610	6 PPR, 24 Detents Torque 60 to 140 gf-cm
805	8 PPR, 32 Detents Torque 20 to 80 gf-cm

Code	Spec.
B	Momentary

Code	Spec.
S	With Schmitt trigger

Code	Bushing Length "B"
0	.312" For single/dual shaft construction
1	.515" Only for F1 termination

Code	Spec.
A	3.3V
B	5V

Electrical Specifications

Encoder Function					
Parameter	Conditions & Remarks	Min	Nominal	Max	Unit
Voltage		4.75 3.175	5.0 3.3	5.25 3.425	V _{DC}
Output Code	2-Bit Quadrature Channel A leads Channel B by 90° during clockwise rotation				
Sink Current	5.0 Vdc 3.3 Vdc	2.0mA 1.0mA			
Power Consumption	5.0 Vdc 3.3 Vdc			150 80	mW mW
Resolution	6, 8				Pulses per Revolution

Mechanical and Environmental

Manual Soldering	Maximum temperature of 350°C for 5 seconds	
RoHS	Lead-Free. Fully compliant to RoHS Directive	
Shock :	Per MIL-STD-883F (100G's)	
Vibration :	Per MIL-STD-883F (15G's)	
IP Rating:	IP 50	
Packaging :	Standard anti-static tray packaging	
Operating Temperature:	-40°C to +85°C	
Storage Temperature:	-55°C to +100°C	
Rotational Life	With detent @60 RPM	1 Million Cycles
Push-Pull Strength of Shaft	10 seconds	20 kg
Terminal Pull-out Strength	10 seconds	6 kg
Rotational Torque		20 to 80 gf-cm
	24 Detents	30 to 130 gf-cm
		60 to 140 gf-cm
	32 Detents	30 to 130 gf-cm

Optional Momentary Switch Function:

Parameter	Conditions & Remarks	Min.	Nominal	Max	Unit
Switch contact resistance				10	ohms
Switch rating	5 VDC @10 mA				
Switch travel		0.25	0.5	0.75	mm
Actuation Force		300	350	430	grams
Switch Life	Standard	1 Million			Actuations
Switch Life		Consult CTS for custom life requirements			

Mechanical Specifications

Figure 1 –291AC1022FXXXABS – With Schmitt Trigger, Ribbon Cable

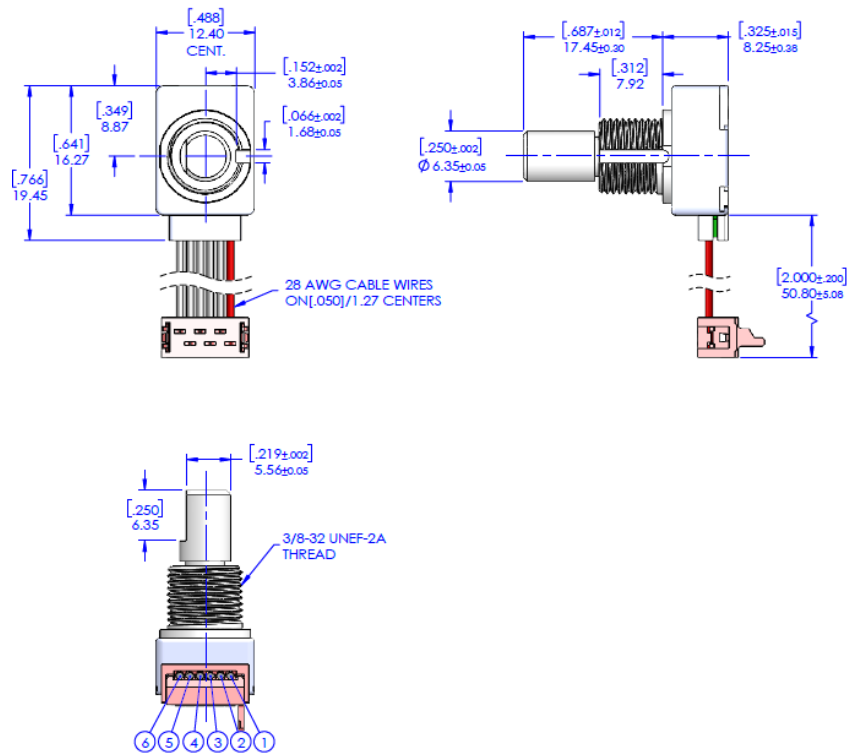
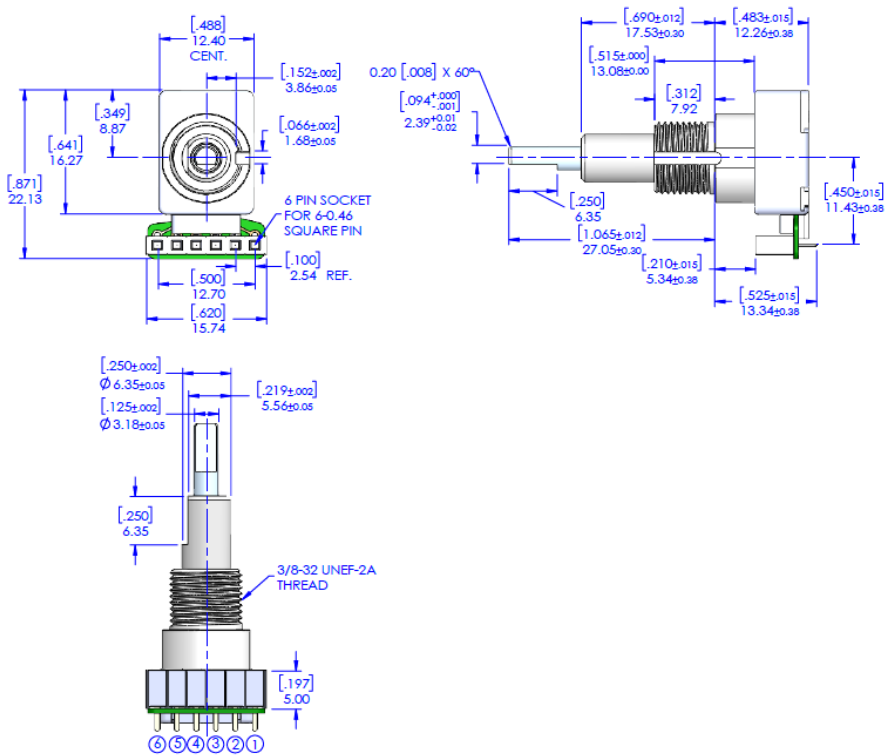
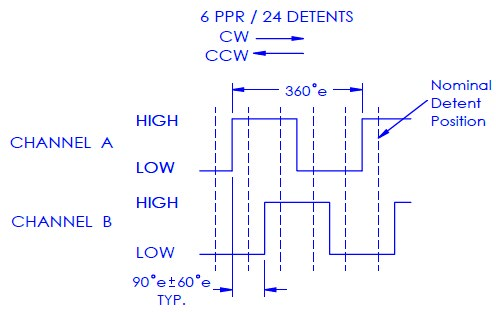
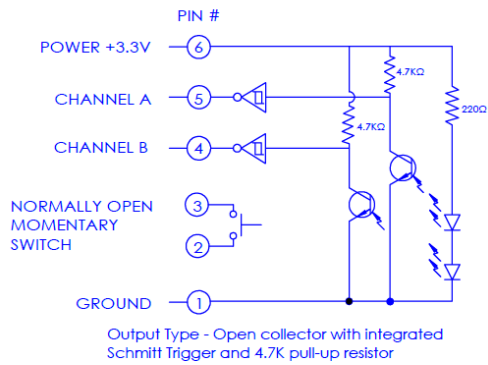


Figure 2 –291AF11DDFXXXABS – With Schmitt Trigger, .10" pitch Female header



6 PPR

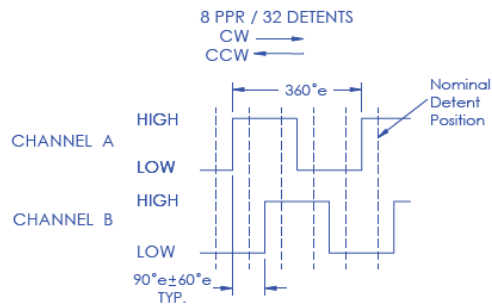
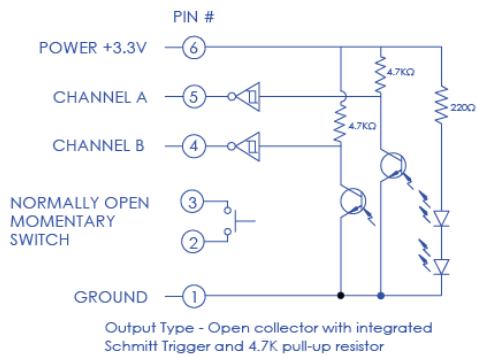
ELECTRIC CIRCUIT AND WAVEFORM Standard Quadrature 2-Bit Code



1. Code repeats every 4 positions
2. Channel A leads Channel B in CW direction and lags in CCW direction

8 PPR

ELECTRIC CIRCUIT AND WAVEFORM Standard Quadrature 2-Bit Code



1. Code repeats every 4 positions
2. Channel A leads Channel B in CW direction and lags in CCW direction