Series 290

Commercial Miniature 9mm Encoders

- Miniature 9mm style
- 2-bit quadrature (Gray code)
- Optional Momentary Switch
- Continuous Rotation
- Durable Metal Shaft
- Available with 16 or 20 Detents
- RoHS Compliant

Description

The 290 Series robust construction provides the user with flexible options of 8 pulse and 20 pulse Gray code output. A long life, highly reliable precision product provides users comfortable and robust feelings. As a standard, the 290 series is supplied with PC formed to rear. Options include various shaft and bushing lengths, shaft styles, detents and switches to meet your design requirements.

Ordering Information

Series	Terminal Style	Bushing Length	Shaft Length "L"	Shaft Trim	Output Combination	Encoder Code	Switch	Detent
290	V	A	A5	F	20	1	B	2

Code	Spec.
V	PC formed to rear

Code	Spec.
A5	15mm, 6.0mm Dia.
B0	20mm, 6.0mm Dia.
B5	25mm, 6.0mm Dia.
C0	30mm, 6.0mm Dia.

Code	Spec.
08	8 PPR
20	20 PPR

Code	Spec.
A	None
B	Momentary

Code	LB	M
A	5.0mm	M7 (No thread)
B	5.0mm	M7 x .75P

Code	Spec.
1	2 bit Gray

Code	Spec.
1	None
2	20 Detents (20PPR)
3	16 Detents (8PPR)

Code	Spec.
R	Round
F	Flatted
K	Knurled & Slotted
S	Slotted

Electrical Specifications

Parameter	Conditions & Remarks	Min	Max	Unit
Operating Temperature Range		-30	+70	°C

Encoder Function

Contact Resistance			1	ohms
Voltage Rating	12 VDC 5 VDC		10 1	mA mA
Phase Difference (FIG.1)	T1,T2,T3,T4 for 20 pulse encoder T1,T2,T3,T4 for 8 pulse encoder	2 8		milliseconds milliseconds
Contact Bounce/Chatter (FIG.3)	t1, t2, t3		3	milliseconds
Detent Points	16 or 20			detents
Rotational Life		50,000		cycles
Resolution	8 or 20 pulses		360	degrees
Insulation Resistance	250 VDC, between all terminals & bushing	100		Megohms
Push-Pull Strength of Shaft	Withstand a pushing or pulling force of 10 kg-f static load applied in axial direction without physical damage or electrical degradation	9	11	second

Mechanical and Environmental

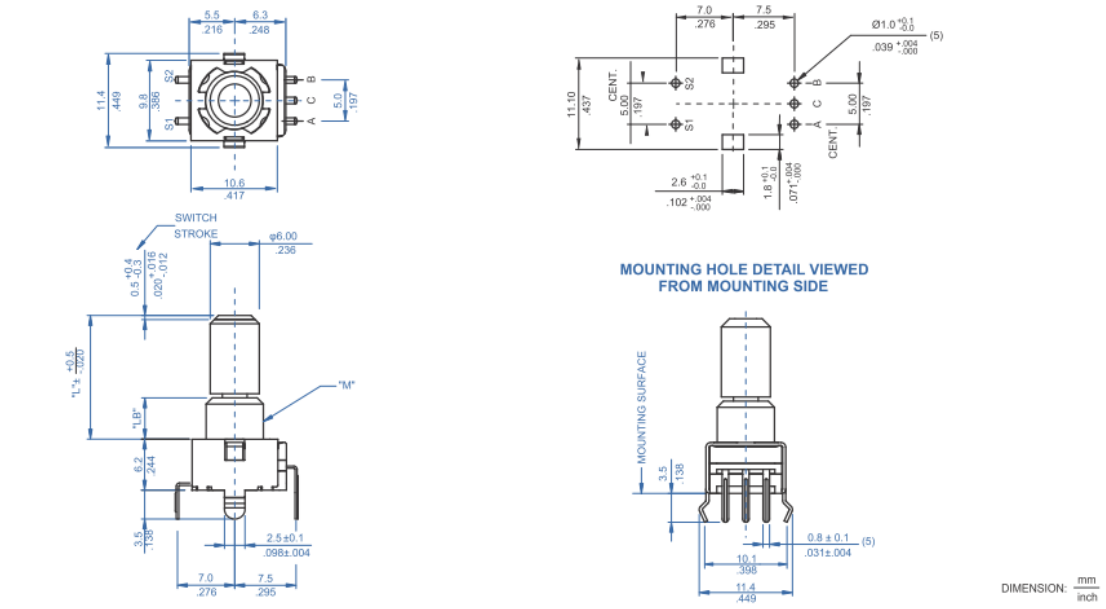
Reflow Soldering	Maximum temperature of 260°C for 3 seconds
RoHS	Lead-Free. Fully compliant to RoHS Directive
Packaging :	Standard tray packaging
Storage Temperature:	-30°C to +100°C

Optional Momentary Switch Function:

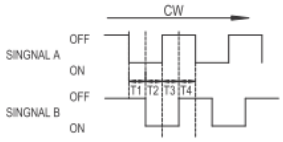
Contact Resistance	Initial After life cycles		100 200	mΩ
Switch Rating	16 VDC	10	500	mA
Switch Bounce			5	milliseconds
Switch Operating Force	0.5mm travel	300 10	900 32	g oz.
Switch Life			100,000	operations
Switch Travel		0.2	0.9	mm

Mechanical Specifications

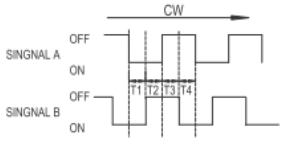
Figure 1 – MC-290V – Typical 2-bit Encoder with Momentary Switch, Shaft Perpendicular to PC Board



20 PPR OUTPUT SIGNAL (FIG.1.1)

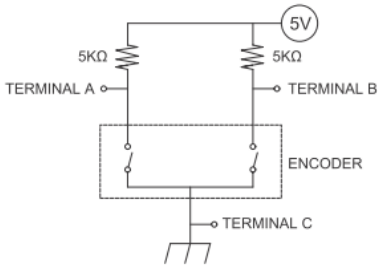


8 PPR OUTPUT SIGNAL (FIG.1.2)

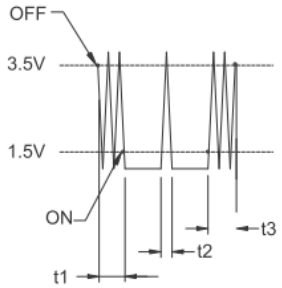


PHASE DIFFERENCE

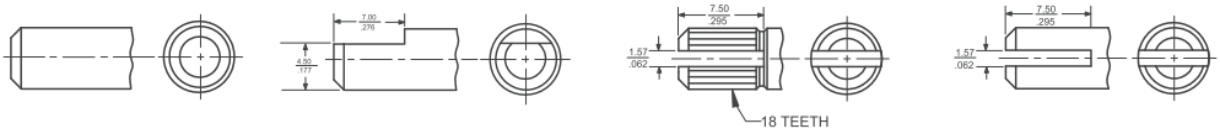
TYPICAL CIRCUIT (FIG.2)



BOUNCE / CHATTER (FIG.3)



Shaft Trim



R - ROUND | F - FLATTED | K - KNURLED & SLOTTED | S - SLOTTED

DIMENSION: mm / inch