

Panasonic® 11mm and 16mm Square Encoders

EVE-P/EVE-Q: Recommended Applications: • Centralized control of automotive audio equipment, navigation systems and air conditioners. **Features:** • Smooth, high rotational torque • Long life achieved by the high click torque • Runout protection: Runout: 0.1mm max. **Specifications: Mechanical:** • Rotation Angle: 360° (endless) • Rotation Torque: 40 mN-m maximum • Detents: EVE-P: 16; EVE-Q: 32 **Electrical:** • Output Signals: Phase A and B • Resolution: EVE-P 8 pulses/360°; EVE-Q 16 pulses/360° • Rating: 1mA, 10VDC (at each bit) • Contact Resistance: 1Ω maximum • Bouncing: 5 ms maximum • Insulation Resistance: 50MΩ minimum (at 250VDC) • Dielectric Withstanding Voltage: 300VAC for 1 minute **Switch Part:** • Type: SPST Push-on • Rating: 20mA, 16VDC • Contact Resistance: 100mΩ maximum • Operating Force: 6N • Travel: 0.5mm **Endurance:** • Rotation Life: 1,000,000 cycles minimum • Operating Life: 1,000,000 times minimum **Operating Temperature:** -40°C - 85°C (45-85% RH)

EVE-V: Recommended Applications: • Car audio, navigation systems and air conditioners. **Features:** • Low Profile: 4mm • Wave soldering type • Integrated push-ON switch **Specifications: Mechanical:** • Rotation Angle: 360° (endless) • Shaft Pull/ Push Strength: 100 N-m minimum • Rotation Torque: 3 mN-m to 20 mN-m • Detents: 32 **Electrical:** • Output Signals: Phase A and B • Resolution: 16 pulses/360° • Rating: 1mA, 10VDC (at each bit) • Contact Resistance: 1Ω maximum • Insulation Resistance: 50MΩ minimum (at 250VDC) • Dielectric Withstanding Voltage: 300VAC for 1 minute • Bouncing: 5 ms maximum **Switch Part:** • Type: SPST Push-on • Rating: 20mA, 16VDC • Contact Resistance: 100mΩ maximum • Operating Force: 1.5mm travel type: 4N • Travel: 1.5mm **Endurance:** • Rotation Life (encoder): 30,000 cycles minimum • Operating Life (switch): 50,000 times minimum **Operating Temperature:** -40°C - 85°C

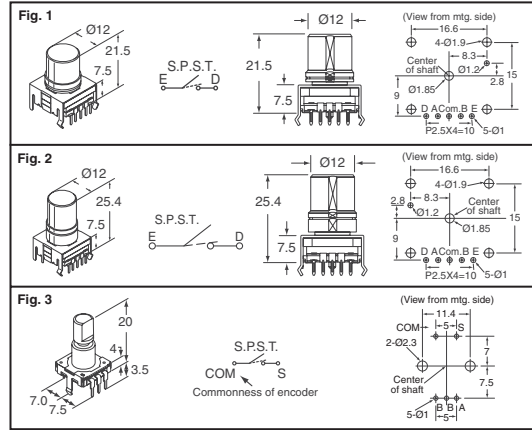


Fig.	Description	Digi-Key Part No.	Price Each			Panasonic Part No.
			1	10	100	
1	8 PPR, SPST, 16 Detents, 21.5mm Height	P12420-ND	10.55	8.80	7.39	EVE-PDBRG508B
	16 PPR, SPST, 32 Detents, 21.5mm Height	P12422-ND	9.86	8.23	6.91	EVE-QDBRG516B
2	8 PPR, SPST, 16 Detents, 25.4mm Height	P12421-ND	10.55	8.80	7.39	EVE-PDBRL408B
	16 PPR, SPST, 32 Detents, 25.4mm Height	P12423-ND	9.86	8.23	6.91	EVE-QDBRL416B
3	16 PPR, SPST, 32 Detents, 20mm Height	P12418-ND	3.21	2.68	2.25	EVE-VCGJL016B

• RoHS Compliant

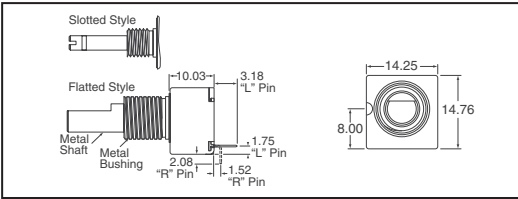


14mm Rotary Optical Encoder



Electrical Characteristics: • Output: 2-bit quadrature code • Supply Voltage (V_{CC}): 5.0VDC ±0.25VDC • Supply Current (I_{CC}): 26mA maximum • Output Voltage: Low (V_{CE(sat)}): per Channel: 800mV maximum @ I_(SINK)=25mA; High (V_{O(HI)}): per Channel: 4.0VDC minimum @ V_{CC}=4.75VDC • Output Current (I_(SINK)): per Channel: 25mA minimum • Rise/Fall Time: 200ns • Power Dissipation: 167mW

maximum • Pulse Width (per Channel): 180°e • Phase Angle (Channel A Leads Channel B, Clockwise Rotation): 90°e ±45°e • Insulation Resistance @ 500VDC: 1,000MΩ minimum • RPM (Operating): Non-Detent, 300 maximum • Switch Power Rating: 12VDC/20mA (600Ω maximum load) • Switch Contact Resistance: 200Ω maximum • Mounting hardware included

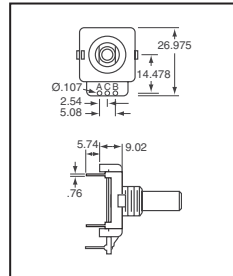


Bushings Dim. D x L (mm)	Shaft Dim. D x L (mm)	Shaft Style	Terminal Style	W/Switch Yes/No	Cycles Per Revolution	Digi-Key Part No.	Price Each		
							1	25	50
9.52 x 9.52	6.35 x 22.23	Slotted	AXIAL	Yes	8	EM14A0D-B28-L008S-ND	19.10	14.62	13.85
9.52 x 9.52	6.35 x 19.05	Flatted	AXIAL	No	8	EM14A0D-C24-L008N-ND	17.90	13.70	12.98
9.52 x 9.52	6.35 x 19.05	Flatted	AXIAL	No	32	EM14A0D-C24-L032N-ND	17.90	13.70	12.98
9.52 x 9.52	6.35 x 19.05	Flatted	AXIAL	Yes	64	EM14A0D-C24-L064S-ND	19.10	14.62	13.85
6.35 x 6.35	3.18 x 19.05	Slotted	AXIAL	Yes	64	EM14C0D-E24-L064S-ND	19.10	14.62	13.85
6.35 x 6.35	3.18 x 22.23	Slotted	AXIAL	No	16	EM14C0D-E28-L016N-ND	17.90	13.70	12.98
6.35 x 6.35	3.18 x 22.23	Slotted	AXIAL	No	64	EM14C0D-E28-L064N-ND	17.90	13.70	12.98
6.35 x 6.35	3.18 x 22.23	Slotted	AXIAL	Yes	64	EM14C0D-E28-L064S-ND	19.10	14.62	13.85

Digital Contacting Encoders



Electrical Characteristics: • Output: 2-bit gray code, Channel A leads Channel B by 90° electrically turning clockwise (CW) • Closed Circuit Resistance: 5Ω maximum • Open Circuit Resistance: 100kΩ minimum • Contact Rating: 10milliamp @ 10VDC or 0.1 watt maximum • Insulation Resistance (500VDC): 1,000MΩ minimum • Dielectric Withstanding Voltage: 1,000VAC minimum • Electrical Travel: Continuous • Contact Bounce (15 RPM): 5 milliseconds maximum • RPM (Operating): 120 maximum **Environmental Characteristics:** • Operating Temperature Range: -40°C - 85°C **Mechanical Characteristics:** • Mechanical Angle: Continuous • Mounting hardware sold separately



Anti-Rotation Lug Position	Cycles Per Revolution	Digi-Key Part No.	Price Each			
			1	25	50	100
None	24	ECW1D-B24-BC0024L-ND	3.46	2.70	2.20	2.20
9:00	24	ECW1J-B24-BC0024L-ND	3.46	2.70	2.20	2.20

Description	Digi-Key Part No.	Pricing			
		1	10	100	1,000
Lockwasher for ECW Encoder	H-37-2-ND	.16	1.24	7.47	59.85
Mounting Nut for ECW Encoder	H-38-11-ND	.53	4.13	24.90	199.50

Rotary Optical Encoders



Electrical Characteristics: • Output: 2-bit gray code, Channel A leads Channel B by 90° electrically turning clockwise • Supply Voltage: 5.0VDC ±0.25VDC • Supply Current: 26mA maximum • Output Voltage: 0.8V maximum for low output and 4V minimum for high output • Output Current (Low Output): 25mA minimum • Insulation Resistance (500VDC): 1,000MΩ • Rise/Fall Time: 200ns (typical) • Shaft RPM (Ball Bearing): 3,000rpm maximum • Power Consumption: 136mW maximum • Pulse Width (Electrical Degrees, Each Channel): 180° ±45° Typical • Pulse Width (Index Channel): 360° ±90° • Phase (Electrical Degrees, Channel A to Channel B): 90° ±45° Typical • Index Channel Centered on 1-1 State Combination of A and B Channels: 0° ±45°

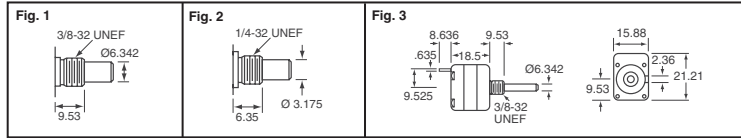


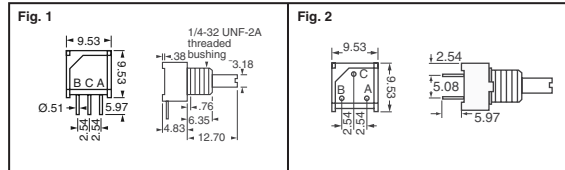
Fig.	Cycles Per Revolution	Digi-Key Part No.	Price Each		
			1	25	50
1	64	ENA1J-B28-L00064L-ND	51.37	40.00	32.67
	100	ENA1J-B28-L00100L-ND	51.37	40.00	32.67
2	128	ENC1J-D28-L00128L-ND	51.37	40.00	32.67
3	256	ENS1J-B28-L00256L-ND	82.74	64.43	52.62

9mm Square/Sealed Encoder



Electrical Characteristics: • Output: 2-bit gray code, Channel A leads Channel B by electrically turning clockwise (CW): 6 pulses per resolution • Closed Circuit Resistance: 5Ω maximum • Open Circuit Resistance: 100kΩ minimum • Contact Rating: TTL compatible loads • Insulation Resistance (500VDC): 1,000MΩ minimum • Dielectric Withstanding Voltage: (Sea Level) 900VAC minimum; (Electrical Travel) Continuous • Contact Bounce (15 RPM): 5 milliseconds max. • RPM (Operating): 120 maximum **Environmental Characteristics:** • Operating Temperature Range: -40°C - 125°C • Rotational Life: 100,000 cycles **Mechanical Characteristics:** • Mechanical Angle: 360° Continuous • Mounting hardware included

Fig.	Description	Digi-Key Part No.	Price Each			
			1	10	50	100
1	9mm Square Right Angle Encoder	3315C-001-006L-ND	2.56	2.33	2.00	1.63
2	9mm Square Vertical Encoder	3315V-001-006L-ND	3.26	2.89	2.42	2.07



More Product Available Online: www.digkey.com

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