



Optical Rotary Encoders Series 61C

Features: • Competitively priced to similar electromechanical switches • Optically coupled for more than a million trouble-free operations • Has data entry pushbutton switch activated by switch shaft • Compatible with CMOS, TTL and HCMOS Logic • Operationally used to move display icon and input data • Used to set radio frequency, drill depth, RPM, etc. Plastic shaft and bushing.
Specifications: • **Dimensions:** • Shaft: .250" (6.35mm) diameter, .375" (9.52mm) long • **Pin Spacing:** .1" x .025" (2.54mm x .64mm) diameter • **Thread:** 3/8 - 32 • **Overall Diameter:** .750" (19.05mm) • **Encoder Ratings:** • **Operating Voltage:** 5 ±.25VDC • **Supply Current:** 30mA maximum at 5VDC • **Life:** 1 million cycles of operation, 1 cycle is rotation through all positions and a full return • **Rotational Torque:** 1.5 inch-ounces ± 30% • **Load Current:** 5mA maximum per channel • **Turn-On Time:** ≤30 mSec at 16.6 RPM • **Turn-Off Time:** ≤30 mSec at 16.6 RPM • **Pushbutton Switch Ratings:** • **Rating:** at 5VDC, 10mA, resistive • **Contact Resistance:** <10Ω • **Life Expectancy:** 3 million operations • **Contact Bounce:** <4 mSec at make <10 mSec at break • **Operating Temperature Range:** -40°C - 70°C.

Clockwise Rotation		
Position	Output A	Output B
1	○	○
2	●	○
3	●	●
4	○	●

Position	Digi-Key Part No.	Price Each			Grayhill Part No.
		1	25	100	
16	GH6101-ND	22.08	17.67	13.26	61C22-01-04-02
32	GH6102-ND	22.08	17.67	13.26	61C11-01-08-02

• RoHS Compliant

Optical Rotary Encoders Series 62A

These low cost encoders offer long life (over 1 million operations) with small size and optional integrated pushbutton. These encoders are ideal for radio frequency setting, drill depth setting and other applications where detents are desired for operator feedback. Rugged metal shaft and bushing for long life. Mates with AMP Connector 7-215079-6 Vertical and 7-215460-6 Right Angle.
Electrical Ratings: • **Operating Voltage:** 5 ±.25VDC • **Supply Current:** 30 mA maximum at 5VDC • **Operating Torque:** 2.0 in-oz ±1.40 in-oz initially • **Rotational Life:** >1 million cycles of operation (cycle is rotation through all positions and return)

Detent Positions	Push-button	Termination	Digi-Key Part No.	Price Each			Grayhill Part No.
				1	25	100	
32	No	2" Cable/Connector	GH3046-ND	30.89	24.71	18.54	62A11-01-020S
32	Yes	2" Cable/Connector	GH3047-ND	33.75	27.01	20.26	62A11-02-020S
32	No	5" Cable/Connector	GH3048-ND	31.52	25.22	18.92	62A11-01-050S
32	Yes	5" Cable/Connector	GH3049-ND	34.42	27.54	20.65	62A11-02-050S
32	No	Pin; .100" centers	GH7383-ND	30.89	24.71	18.54	62A11-01-P
32	Yes	Pin; .100" centers	GH7384-ND	33.75	27.01	20.26	62A11-02-P
32	No	6" Cable/Connector	GH7385-ND	31.72	25.38	19.04	62A11-01-060C
32	Yes	6" Cable/Connector	GH7386-ND	34.64	27.71	20.79	62A11-02-060C
24	No	Pin; .100" centers	GH7387-ND	30.89	24.71	18.54	62A15-01-P
24	Yes	Pin; .100" centers	GH7388-ND	33.75	27.01	20.26	62A15-02-P
24	No	6" Cable/Connector	GH7389-ND	31.72	25.38	19.04	62A15-01-060C
24	Yes	6" Cable/Connector	GH7390-ND	34.64	27.71	20.79	62A15-02-060C
16	No	Pin; .100" centers	GH7391-ND	30.89	24.71	18.54	62A22-01-P
16	Yes	Pin; .100" centers	GH7392-ND	33.75	27.01	20.26	62A22-02-P
16	No	6" Cable/Connector	GH7393-ND	31.73	25.39	19.04	62A22-01-060C
16	Yes	6" Cable/Connector	GH7394-ND	34.64	27.71	20.79	62A22-02-060C

Optical Rotary Encoders Series 62S

These low cost encoders offer long life (over 1 million operations) with small size and optional integrated pushbutton. These encoders are ideal for radio frequency setting, drill depth setting and other applications where detents are desired for operator feedback. Rugged metal shaft and bushing for long life. Mates with AMP Connector 7-215079-6 Vertical and 7-215460-6 Right Angle.
Electrical Ratings: • **Operating Voltage:** 5 ±.25VDC • **Supply Current:** 30 mA maximum at 5VDC • **Operating Torque:** 2.20 in-oz ±1.40 in-oz initially • **Rotational Life:** >1 million cycles of operation (cycle is rotation through all positions and return)

Detent Positions	Push-button	Termination	Digi-Key Part No.	Price Each			Grayhill Part No.
				1	25	100	
32	Yes	5" Cable/Connector	GH7297-ND	34.42	27.54	20.65	62S11-M5-050C
32	No	5" Cable/Connector	GH7298-ND	31.52	25.22	18.92	62S11-M0-050C
32	No	Pin; .050" centers	GH7395-ND	30.89	24.71	18.54	62S11-M0-P
32	Yes	Pin; .050" centers	GH7396-ND	33.75	27.01	20.26	62S11-M5-P
32	No	6" Cable/Connector	GH7397-ND	31.72	25.38	19.04	62S11-M0-060C
32	Yes	6" Cable/Connector	GH7398-ND	34.64	27.71	20.79	62S11-M5-060C
24	No	Pin; .050" centers	GH7399-ND	30.89	24.71	18.54	62S15-M0-P
24	Yes	Pin; .050" centers	GH7400-ND	33.75	27.01	20.26	62S15-M5-P
24	No	6" Cable/Connector	GH7401-ND	31.72	25.38	19.04	62S15-M0-060C
24	Yes	6" Cable/Connector	GH7402-ND	34.64	27.71	20.79	62S15-M5-060C
16	No	Pin; .050" centers	GH7403-ND	30.89	24.71	18.54	62S22-M0-P
16	Yes	Pin; .050" centers	GH7404-ND	33.75	27.01	20.26	62S22-M5-P
16	No	6" Cable/Connector	GH7405-ND	31.73	25.39	19.04	62S22-M0-060C
16	Yes	6" Cable/Connector	GH7406-ND	34.64	27.71	20.79	62S22-M5-060C

Optical Rotary Encoders Series 62C

Series 62C Concentric Shaft Encoders
Features: • Economical Size • Combined Functionality • Optically coupled for more than a million cycles of operations • Optional Integral Pushbutton • Detent positions for each code section
Applications: • Used to set radio frequency, drill depth, RPM, menu selection, parameter selection for patient monitoring devices • **Specifications:** • **Pushbutton Switch Rating:** • 5Vdc, 10mA, resistive • **Contact Bounce:** less than 4mS at make; less than 10mS at break • **Actuation Life:** 3,000,000 operations • **Actuation Force:** 1,000 ± 300 grams • **Encoder Ratings:** • **Operating Voltage:** 5 ±.25 Vdc • **Supply Current:** 50 mA maximum @ 5 Vdc • **Operating Torque:** 2.0 in.-oz. ± 1.4 in.-oz. • **Rotational Life:** >1 million cycles of operation • **Operating Temperature:** -40°C - 85°C

Detent Positions	Pushbutton	Termination	Digi-Key Part No.	Price Each			Grayhill Part No.
				1	25	100	
32/32	No	6" Cable/Connector	GH7375-ND	60.15	48.12	36.09	62C1111-01-060C
32/32	Yes	6" Cable/Connector	GH7376-ND	62.93	50.35	37.77	62C1111-02-060C
16/16	No	6" Cable/Connector	GH7377-ND	60.15	48.12	36.09	62C2222-01-060C
16/16	Yes	6" Cable/Connector	GH7378-ND	62.93	50.35	37.77	62C2222-02-060C
32/16	No	6" Cable/Connector	GH7379-ND	60.15	48.12	36.09	62C1122-01-060C
16/32	No	6" Cable/Connector	GH7380-ND	60.15	48.12	36.09	62C2211-01-060C

Industrial Optical Rotary Encoders Series 61K, 61R, 63R

These rugged encoders are designed for continuous operations with high resolution. Made with stainless steel shaft and bushing for exceedingly long life (10 million life cycles). **Features:** • High resolution • Rugged construction • Cable or pinned version • 10 million life cycles • 300 RPM shaft rotation • 61K is a 4 pin output • 61R is a 5 pin output • 63R is a 5 pin output with 300 million life cycles • 5,000 RPM Shaft Rotation • No detents
Specifications: • **Operating Voltage:** 5 ±.25VDC • **Supply Current:** 30mA maximum at 5VDC • **Logic Output Characteristics:** Output Type: Open collector with integrated Schmitt Trigger and 10KΩ pull-up resistor. Maximum Sink Current: 16mA at .40 Volts. • **Power Consumption:** 150mW maximum • **Optical Rise Time:** 500ns • **Optical Fall Time:** 16ns • **Mechanical Life:** 10 million revolutions • **Time Life:** Guaranteed for 10 years of continuous operation (calculated from emitter degradation data) • **Operating Temperature Range:** -40°C - 85°C

Description	Pulse Per Revolution	Digi-Key Part No.	Price Each				Grayhill Part No.
			1	25	100	250	
4 Pin PC Mount	64	GH3064-ND	43.15	34.52	30.21	26.76	61K64
4 Pin PC Mount	128	GH3065-ND	43.15	34.52	30.21	26.76	61K128
5" Cable/Connector	128	GH3066-ND	46.92	37.54	32.85	29.10	61K128-050
5 Pin PC Mount	64	GH3067-ND	43.15	34.52	30.21	26.76	61R64
5 Pin PC Mount	128	GH3068-ND	43.15	34.52	30.21	26.76	61R128
5 Pin PC Mount	256	GH7381-ND	43.15	34.52	30.21	26.76	61R256
5 Pin PC Mount	64	GH7382-ND	47.91	38.33	33.54	29.71	63R64
5 Pin PC Mount	128	GH3069-ND	47.91	38.33	33.54	29.71	63R128
5 Pin PC Mount	256	GH3070-ND	49.60	39.69	34.73	30.76	63R256

Note: Contact Digi-Key for cable versions

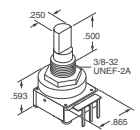
Optical Rotary Encoders Series 62P

Grayhill's low cost, highly reliable Series 62P Optical Encoders are being designed into automotive controls, white goods, and audio.
Features: • Compact Size • PC Mount • No De-Bouncing • Up to 2 Million Cycles
Specifications: • **Operating Voltage:** 5VDC ±.25 VDC • **Supply Current:** 30mA @ 5VDC • **Logic Rise and Fall:** Less than 30mS • **Operating Speed:** 100 RPM Maximum • **Operating Temperature:** -40°C - 85°C **Materials:** • Shaft: Thermoplastic • **Detent Rotor:** Reinforced Thermoplastic • **Bushing:** Thermoplastic • **Terminals:** Brass, Tin Plated

Position	Description	Digi-Key Part No.	Price Each			Grayhill Part No.
			1	100	1,000	
16	High Torque	GH7291-ND	4.91	3.88	3.44	62P22-H0
	High Torque, 400 gF Pushbutton	GH7292-ND	5.04	3.99	3.53	62P22-H4
	High Torque, 600 gF Pushbutton	GH7293-ND	5.30	4.19	3.72	62P22-H6
16	Low Torque	GH7294-ND	4.51	3.57	3.17	62P22-L0
	Low Torque, 400 gF Pushbutton	GH7295-ND	5.04	3.99	3.53	62P22-L4
	Low Torque, 600 gF Pushbutton	GH7296-ND	5.30	4.19	3.72	62P22-L6

Mechanical Rotary Encoders Series 25L

The 25L series of encoders are inexpensive single deck mechanical encoders designed for human interface terminals.
Features: • Quality construction and contact materials • 100,000 life cycles • Has detents • PC mount
Specifications: • **Switching Loads:** 1.5mA @ 115VAC, resistive; 150mA @ 14VDC, resistive • **Life Expectancy:** 100,000 cycles of operation @ rated loads; one cycle of operation is a rotation through all of the active positions and a return to the starting position • **Operating Temperature:** -40°C - 85°C **Materials and Finishes:** • Bushing/Housing and Shaft: Reinforced Thermoplastic • **Detent Ball:** Stainless Steel, nickel-plated



Detent Positions	Angle of Throw	Output Code	Digi-Key Part No.	Price Each			Grayhill Part No.
				1	100	250	
36	10°	Quadrature (2-bit)	GH3071-ND	4.42	3.54	2.65	25L10-Q
32	11°	Quadrature (2-bit)	GH7407-ND	4.42	3.54	2.65	25L11-Q
24	15°	Quadrature (2-bit)	GH3072-ND	4.42	3.54	2.65	25L15-Q
20	18°	Quadrature (2-bit)	GH7408-ND	4.42	3.54	2.65	25L18-Q
16	22.5°	Quadrature (2-bit)	GH3073-ND	4.42	3.54	2.65	25L22-Q
16	22.5°	Hexadecimol (4-bit)	GH3074-ND	4.42	3.54	2.65	25L22-H
16	22.5°	Gray (4-bit)	GH7299-ND	4.42	3.54	2.65	25L22-G
12	30°	Quadrature (2-bit)	GH7409-ND	4.42	3.54	2.65	25L30-Q
8	45°	Quadrature (2-bit)	GH7410-ND	4.42	3.54	2.65	25L45-Q

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