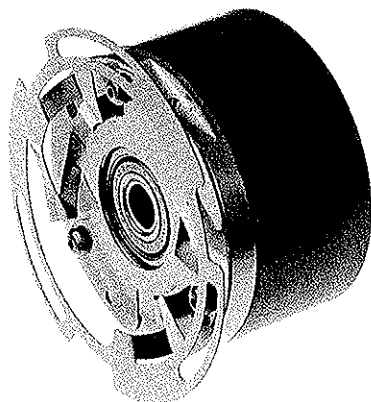




Features:

- Easy Installation
- Integral coupling
- High resolutions
- Index (marker pulse)
- Frequency response to 200 KHz
- Operating temperatures to 100°C

The RHS21 Series Incremental Optical Encoder is designed for ease of installation on the motor shaft. It features an integral bearing system with a hollow shaft and a flexible spring mount. This allows the encoder to accommodate large amounts of axial shaft movement and radial play; yet it is capable of providing high performance at high resolutions.

This encoder series uses a single, solid state L.E.D. light source with full differential sensing and amplification to compensate for temperature and voltage variations. The RHS21 package is small and lightweight yet TTL compatible differential line driver outputs and resolutions up to 5000 cycles/revolution are available in this compact unit.

RENCO Model RHS21 Encoder

Specifications

Mechanical	RHS21
Outline	See figure 1
Mounting Requirements	See figure 1
Moment of Inertia	5.0 oz x 10 ⁻⁴ oz-in-sec ²
Weight	6 oz
Starting Torque	.4 oz
Bearing Life	L ₁₀ = 2 billion revolutions
Slew Speed	Resolution dependent
Shaft Axial Movement	.060" each direction

Electrical	RHS21
Input Power	5 VDC ±5%
Output Configuration	Per figure 2
Operating Frequency	Up to 200 KHz available
Electrical Termination	18 inch round cable w/connector
Flutter	1% max

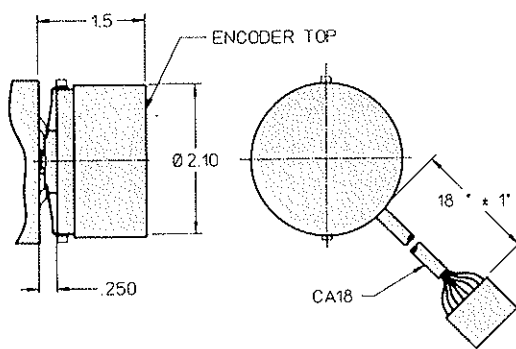
Environmental	RHS21
Operation Temperature	P1: 0 to 70°C P3: 0 to 100°C
Storage Temperature	-30°C to +110°C
Humidity	90% relative (non-condensing)

Resolutions	RHS21
Range	P1: 50 to 2500 P3: 250 to 5000
Currently available	P1: 50, 100, 200, 250, 256, 360, 500, 508, 512, 800, 900, 1000, 1024, 1140, 1250, 1500, 1800, 2000, 2048, 2500 P3: 250, 256, 360, 500, 508, 512, 800, 900, 1000, 1024, 1140, 1250, 1500, 1800, 2000, 2048, 2500, 3000, 5000

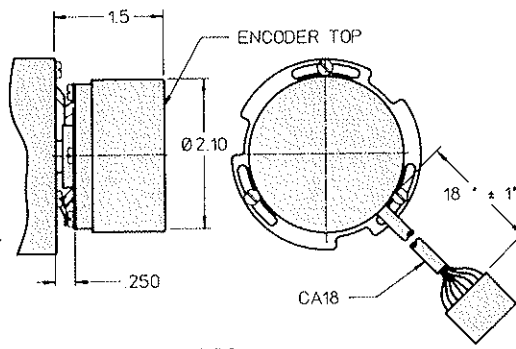
All dimensions are in inches unless otherwise specified
Product specifications subject to change without notice



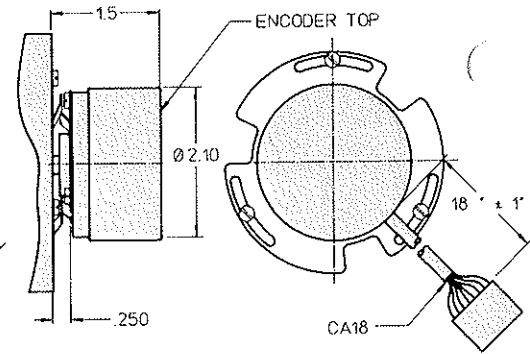
Mechanical Outline RHS21 Series



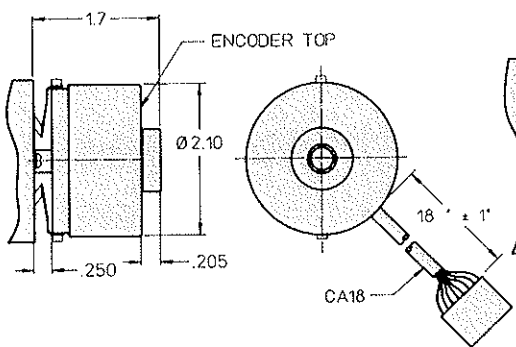
M1
INBOARD CLAMP
Ø1.812 MTG PATTERN



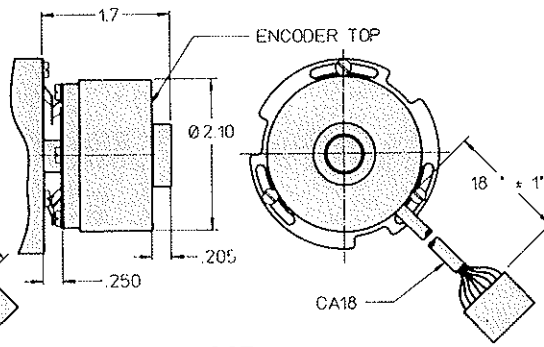
M2
INBOARD CLAMP
Ø2.375 MTG PATTERN



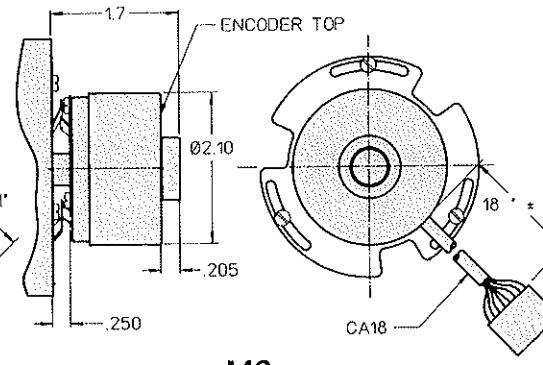
M3
INBOARD CLAMP
Ø2.812 MTG PATTERN



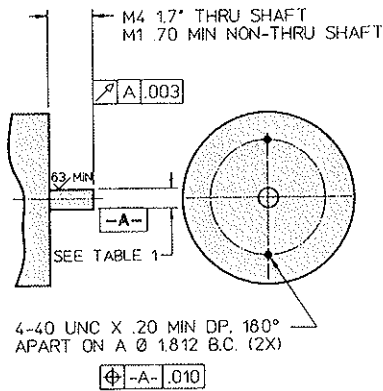
M4
OUTBOARD CLAMP
Ø1.812 MTG PATTERN



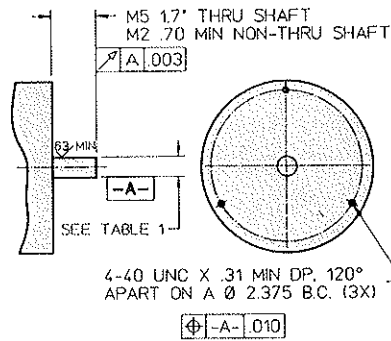
M5
OUTBOARD CLAMP
Ø2.375 MTG PATTERN



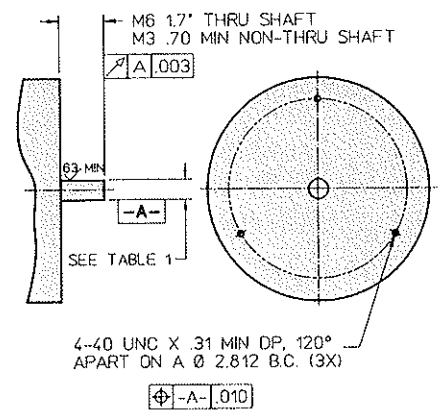
M6
OUTBOARD CLAMP
Ø2.812 MTG PATTERN



Ø1.812 MOUNTING PATTERN



Ø2.375 MOUNTING PATTERN



Ø2.812 MOUNTING PATTERN

Figure 1

STANDARD TOLERANCES

CA LENGTHS	
LENGTH	TOLERANCE
0-12'	± 1/2'
13-36'	± 1'
37-72'	± 3'

Product Specification
Standard Performance Encoders
(0-70°C, 100 KHz Data Rate)

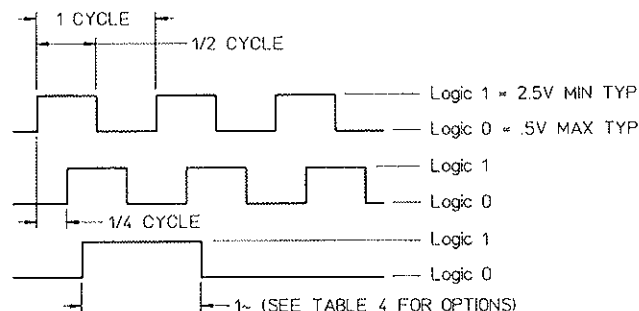
NOTES:

1. RESOLUTIONS OTHER THAN THOSE LISTED ON FRONT SHEET MAY BE ORDERED. CONSULT FACTORY.
2. SUPPLIED ROUND CABLE CONNECTOR P/N: AMP 103650-7 OR EQUIVALENT. MATES WITH ANY .025 SQ. NON-POLARIZED SINGLE ROW HEADER OR MAY BE INSTALLED INTO SINGLE ROW LATCHING SHROUD (AMP P/N: 103680-5). CUSTOM LENGTHS AVAILABLE. 28 AWG SHIELDED CABLE IS STANDARD.
3. GATING OPTION 0 (UNGATED) IS STANDARD. OTHER GATING OPTIONS ARE AVAILABLE. SEE TABLE 4.
4. STANDARD COVER IS PLASTIC. METAL COVER IS AVAILABLE. CONSULT FACTORY.
5. LARGE BORES 10mm - 1/2" ARE AN ADDED COST OPTION.

△ 6 VC & VO OUTPUT OPTIONS MAY BE ORDERED WITH +12V INPUT VOLTAGE.

△ 7 NOMINAL POWER REQUIREMENTS IN TABLE 3 INDICATES CURRENT CONSUMPTION FOR ENCODER WITH RECOMMENDED LOADS.

Figure 2
Output Configuration



MINIMUM TRANSITION TO TRANSITION EDGE SEPARATION IS TYPICALLY 45° AT MAX OPERATING TEMPERATURE AND FREQUENCY. COMPLEMENTARY OUTPUTS ARE NOT SHOWN FOR SIMPLICITY. CCW VIEWING ENCODER TOP.

Table 1

HUB SIZE	
HUB BORE	SPECIFY SHAFT SIZE
.2502	1/4
.3752	3/8
.5002	1/2
.2364	6MM
.3151	8MM
.3937	10MM
.4726	12MM

Table 2

TERMINATION		
CA18		
FUNCTION	WIRE COLOR	PIN NO.
+V	RED	1
GND	BLK	2
CH A	WHT	3
CH A	YEL	4
CH B	GRN	5
CH B	BLU	6
INDEX	ORN	7
INDEX	BRN	8

Table 3

OUTPUT INTERFACES		POWER
△ 6 VC	LM339 VOLTAGE COMPARATOR	75mA
LD	26LS31 LINE DRIVER	135mA
B4	7404 BUFFER OUTPUT	125mA
B6	7406 W/ 470 OHM INT. P.U.	175mA
OC	7406 OPEN COLLECTOR	175mA
△ 6 VO	LM339 OPEN COLLECTOR	125mA

Table 4

GATING OPTIONS		
SPECIFY	GATING	INDEX WIDTH
0	UNGATED	360°±20%
1	GATED W/A&B	90°±45°
2	GATED W/A	180°±45°
3	GATED W/B	180°±45°
4	GATED W/B	180°±45°
5	GATED W/A	180°±45°
6	GATED W/A&B	90°±45°

Ordering Information: To order, specify model number from tables and codes above.

RHS21_ - P1 - _____

DUAL CH - B
DUAL CH + INDEX - D

RESOLUTION
SEE FRONT SHEET

SHAFT SIZE
SEE TABLE 1

INPUT VOLT.
+5V
+12V
SEE NOTE 8

TERMINATION
CA18 STD
SEE TABLE 2

OUTPUT TYPE
SEE TABLE 3

INDEX GATING
SEE TABLE 4

P - PLASTIC
M - METAL
COVER OPTION

M1 - M8
MS-SPL MT8
(Consult Factory)
SEE FIGURE 1

For Technical and Sales Information:
CALL 1-805-968-1525

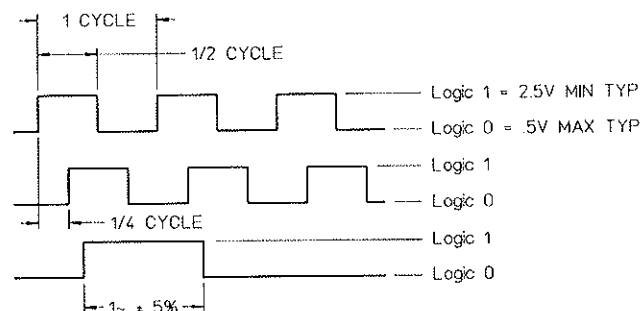
Example Model Number:
RHS21D-P1-1000-1/4-5-CA18-LD-M1-0-P

Product Specification
Extended Performance Encoders
 (0-100°C, 200 KHz Data Rate)

Figure 2
Output Configuration

NOTES:

1. RESOLUTIONS OTHER THAN THOSE LISTED ON FRONT SHEET MAY BE ORDERED. CONSULT FACTORY.
2. SUPPLIED ROUND CABLE CONNECTOR P/N: AMP 103650-7 OR EQUIVALENT. MATES WITH ANY .025 SQ. NON-POLARIZED SINGLE ROW HEADER OR MAY BE INSTALLED INTO SINGLE ROW LATCHING SHROUD (AMP P/N: 103680-5). CUSTOM LENGTHS AVAILABLE. 28 AWG SHIELDED CABLE IS STANDARD.
3. STANDARD COVER IS PLASTIC. METAL COVER AVAILABLE. CONSULT FACTORY.
4. STANDARD OUTPUT IS 26LS31 LINE DRIVER, +5V, 135mA.
5. LARGE BORES 10mm - 1/2" ARE AN ADDED COST OPTION.



MINIMUM TRANSITION TO TRANSITION EDGE SEPARATION IS TYPICALLY 67° AT MAX OPERATING TEMPERATURE AND FREQUENCY. COMPLEMENTARY OUTPUTS ARE NOT SHOWN FOR SIMPLICITY. CCW VIEWING ENCODER TOP.

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HUB SIZE	
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TERMINATION		
CA18		
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GND	BLK	2
CH A	WHT	3
CH A	YEL	4
CH B	GRN	5
CH B	BLU	6
INDEX	ORN	7
INDEX	BRN	8

Ordering Information: To order, specify model number from tables and codes above.

RHS21_ - P3 - _____ - _____ - _____ - LD - _____

DUAL CH - B
 DUAL CH + INDEX - D

RESOLUTION
 SEE FRONT SHEET

SHAFT SIZE
 SEE TABLE 1

INPUT VOLT.
 +5V

TERMINATION
 CA18 STD
 SEE TABLE 2

SEE NOTE 4

M1 - M8
 MS=SPL MTG
 (Consult Factory)
 SEE FIGURE 1

P - PLASTIC
 M - METAL
 COVER OPTION

For Technical and Sales Information:
CALL 1-805-968-1525

Example Model Number:
RHS21D-P3-1000-1/4-5-CA18-LD-M1-P