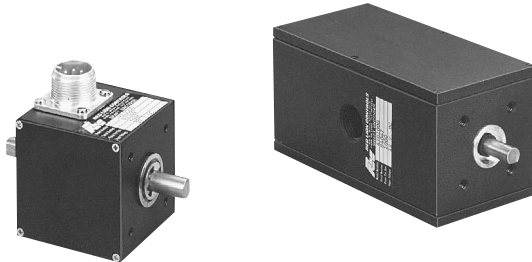


ROTARY PULSE GENERATORS (RPG'S) TRANSFORM SHAFT ROTATION TO COUNT PULSE TRAINS FOR COUNTERS, TACHOMETERS, MOTION MONITORS & CONTROLS



- **CURRENT SINK OUTPUTS**
- **HIGH PULSE PER REVOLUTION (PPR) RATES**
 Up to 1200 PPR for fine, high-resolution counting or precision speed measurement from slow shaft speeds.
- **QUADRATURE OUTPUT**
 For position measurement, bi-directional counting and in systems with backlash counting requirements.
- **AVAILABLE WITH MS AND M12 CONNECTORS (RPGB)**
- **IDEAL FOR DUSTY, DIRTY ENVIRONMENTS**
 Where "Non Contact" sensing means are impractical.

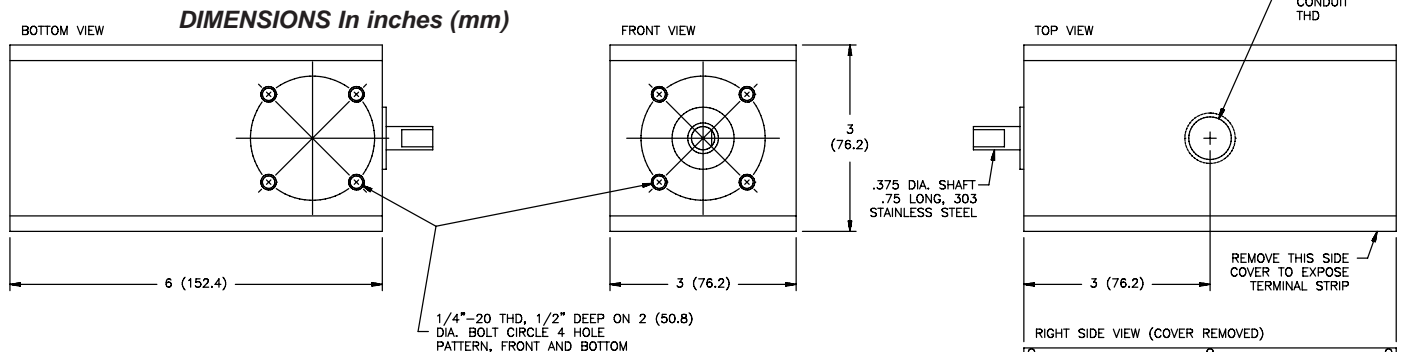
RPG's contain an L.E.D. light source and a photo sensor that scans a shaft-mounted, slotted disc. An internal pulse-shaping amplifier circuit delivers a rectangular pulse signal from the current sinking output in response to the passing slots as it rotates. RPG's can be direct-coupled to a machine shaft by

means of a flexible-bellows, spring, or rubber sleeve type coupling that allows for axial and radial misalignment. They can also be coupled with light instrument timing-belts. Timing-belt drives also allow convenient gear-up or gear-down speed ratio changes that can be useful for obtaining non-standard PPR rates.

MODEL RPGH - HEAVY-DUTY SEALED HOUSING

These heavy duty units feature a heavy cast aluminum housing with 1/4" thick aluminum cover plates and O-ring seals. Heavy duty bearings are double-sealed and allow radial shaft loading of 30 lbs (13.6 Kg) and axial loading of 10 lbs (4.5 Kg). Starting Torque is 1 oz-in (7.06 N-mm). Weight of the RPGH is 3.8 lbs (1.7 Kg). Maximum operating speed is 6000 RPM.

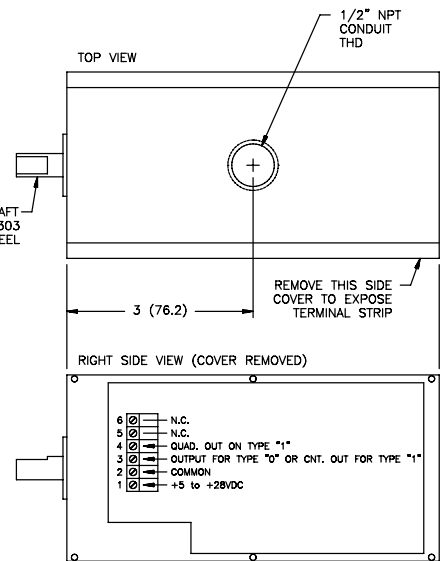
A 1/2" (12.7 mm) NPT Conduit entry permits signal wiring to be run via flex-conduit to an internal terminal block. Electrical characteristics are identical to those for the Model RPGB. Terminal board markings correspond to the Pin-Out identification of the RPGB.



ORDERING INFORMATION

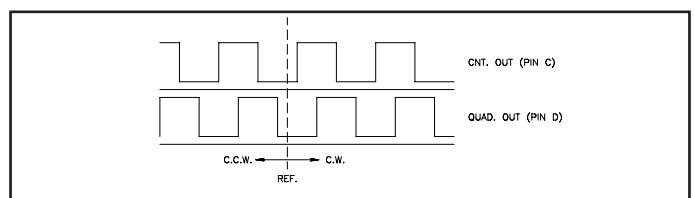
MODEL NO.	DESCRIPTION	PPR*	PART NUMBER
RPGH	Single Channel Type "0"	600	4700600
		1000	4701000
		1200	4701200
RPGFC	Flexible Coupling (1" Length) 0.250"-0.375"	--	RPGFC002
	Flexible Coupling (1" Length) 0.375"-0.375"	--	RPGFC003

* Only Stock PPR's listed, other PPR's as well as Quad. (Type "1") output available on special order.



ABOUT QUADRATURE OUTPUT

A quadrature output consists of two pulse trains, one of which is 90° (electrical) out of phase with the other. By virtue of this arrangement the direction of motion can be determined. Referring to the following waveform, when the CNT output (Pin C) goes from low to high while the Quadrature output (Pin D) is low, the motion is counter-clockwise.



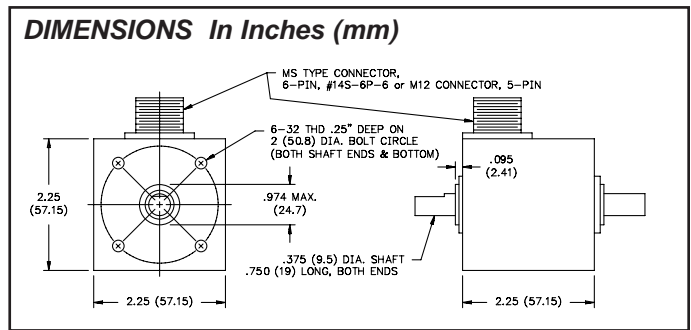
MODEL RRGB - UP TO 1200PPR, WITH SINGLE CHANNEL OR QUADRATURE OUTPUT FOR GENERAL INDUSTRIAL SERVICE

SPECIFICATIONS

- SUPPLY VOLTAGE:** +5 to +28 VDC
- OUTPUT:** Current Sinking
Type "0" Single Channel: 250 mA max.
Type "1" Quadrature: 250 mA max. per output
 (Quad. Phase relationship is 90° ±36°)

Note: NPN Transistor outputs have 1.5 KΩ load resistors returned to supply for internal feed back purposes. This does not interfere with the ability to use these outputs as conventional "Open-Collector" outputs as long as the supply voltage for the RRGB is supplied by the indicator or control receiving its output signal. The RRGB's internal load resistor also allows the output to be used as a current source, however, load current must be limited to 1 mA max.

- MAXIMUM SHAFT SPEED:** 6000 RPM
- MAXIMUM PULSE RATE:**
Type "0" Single Channel: 20 KHz
Type "1" Quadrature: 20 KHz
 PPR available up to 1270 for both type "1" and "0".
- HOUSING:** Black non-corrosive finished 6063-T6 aluminum.
- BEARINGS:** ABEC3 double sealed ball bearings
- RADIAL SHAFT LOAD:** 20 lbs. operating (9 kg)
- AXIAL SHAFT LOAD:** 10 lbs operating (4.5 kg)
- STARTING TORQUE:** 0.38 oz-in (2.68 N-mm)
- MOMENT OF INERTIA:** 2.5 x 10⁻³ oz-in-sec² (1.77 x 10⁻² N-mm-sec²)
- CONNECTIONS:** Consult factory for special lengths.
6-pin MS Connector: #14S-6P-6 or cable/connector assembly (4-wire shielded), 10' (3.05 m), 25' (7.62 m), or 50' (15.24 m) long, must be ordered separately.
M12 Cable/Connector Assembly: 5-Wire Shielded, 1 meter or 6 meters long, must be ordered separately.
- OPERATING TEMPERATURE:** 0° to 70°C.
- WEIGHT:** 10 oz (283.5 g)

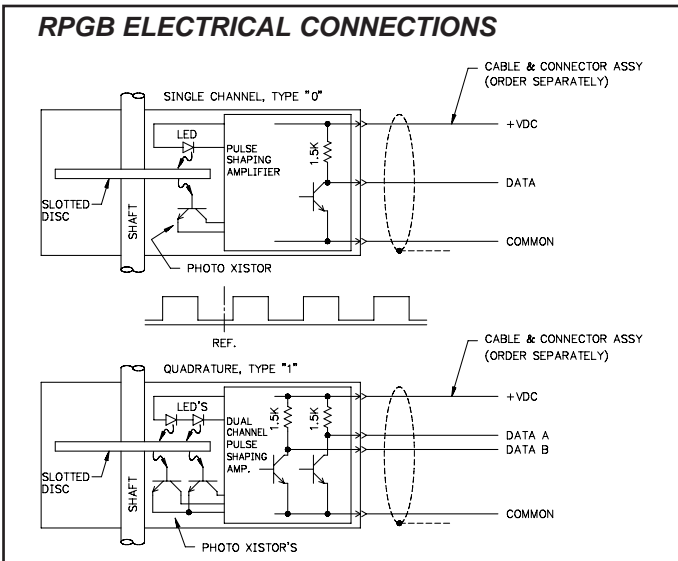


ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PPR*	PART NUMBER
RRGB	Type "0" Single Channel 6-Pin MS Connector	60	4600060
		100	4600100
		600	4600600
		1000	4601000
		1200	4601200
	Type "0" Single Channel M12 Cable/Connector	100	4600100M
		600	4600600M
	** Type "1" Quadrature 6-Pin MS Connector	10	4610010
		12	4610012
		100	4610100
		120	4610120
		500	4610500
600		4610600	
** Type "1" Quadrature M12 Cable/Connector	100	4610100M	
	600	4610600M	
RPGFC	Flexible Coupling (1" Length) 0.250" - 0.375"	--	RPGFC002
	Flexible Coupling (1" Length) 0.375" - 0.375"	--	RPGFC003
Mating 6-Pin MS Connector			2101100
10 Feet 6-Pin 4-Wire Cable/Connector			CCARPG01
25 Feet 6-Pin 4-Wire Cable/Connector			CCARPG25
50 Feet 6-Pin 4-Wire Cable/Connector			CCARPG50
1 Meter 5-Wire M12 Cable/Connector			CCM12S01
6 Meter 5-Wire M12 Cable/Connector			CCM12S06

* Other PPR's available on special order, only stock PPR's listed.

** For quadrature PPR's above 600, the Gemini Series or a Model BDMD can be used to double or quadruple the effective PPR's listed, (See the Accessory section of the Catalog.)



Cable Connections

The tables below list the pin connections from the RRGB single channel and quadrature encoder to the optional CCARPG or CCM12S cable.

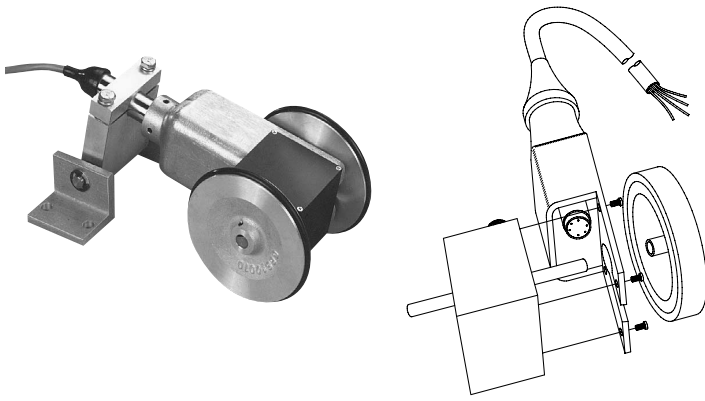
RRGB WITH MS CONNECTOR, SINGLE CHANNEL AND QUAD OUTPUT

RRGB PIN	FUNCTION	CCARPG WIRE
A	+VOLTS DC	RED
B	COMMON	BLACK
C	DATA A	WHITE
D	DATA B if appl. (quad)	GREEN
E	NO CONNECTION	

RRGB WITH M12 CONNECTOR, SINGLE CHANNEL AND QUAD OUTPUT

RRGB PIN	FUNCTION	CCM12S WIRE
A	+VOLTS DC	BROWN
B	COMMON	BLUE
C	DATA A	BLACK
D	DATA B if appl. (quad)	WHITE
E	NO CONNECTION	GRAY

LENGTH SENSOR CONVERSION BRACKET (P/N LSCB1000)
ADAPTS RPGB ROTARY PULSE GENERATOR TO LENGTH MEASUREMENT



- FOR BI-DIRECTIONAL MOTION APPLICATIONS REQUIRING QUADRATURE
- FOR FINE RESOLUTION, HIGH-PULSE-RATE APPLICATIONS

DESCRIPTION

This conversion bracket allows the customer to assemble a custom length sensor by purchasing the following items separately.

1. Length Sensor Conversion Bracket (P/N LSCB1000)
2. RPGB with appropriate PPR and Single Channel or Quadrature Output.
3. One or two measuring wheels. Install OF & OK measuring wheels with set screw hub facing RPGB shaft (as shown). Apply thread locking material to wheel set screw threads during installation to RPGB shaft.
4. Hinge Clamp Assembly (P/N LSAHC001)

Note: To complete installation, insure guards, shields or other devices are in place to protect personnel from rotating equipment.

The tubular arm length of this bracket, related to the wheel axis center-line of the RPGB is 6.8" similar to the LSQ. The 10' long, 4-wire, shielded cable (included with conversion bracket) has the same color coding as described for the RPGB cable P/N CCARPG01. Screws for mounting the conversion bracket to the RPGB are included.

LENGTH SENSOR MEASUREMENT ACCURACY

Factors which affect measurement accuracy include Measuring Wheel accuracy and wear, and material conditions. Ideally, materials which are hard, thin and strong provide good readings, conversely, soft, thick and elastic materials can present problems in obtaining true readings. The great majority of these situations, where this effect is consistent, can be compensated for by applying a multiplier to the quadrature output pulse train so as to obtain a corrected measurement. Counter or Rate Indicators with "input scaling" can compensate for Measuring Wheel wear and material elastic and compliance errors. In addition, English/Metric conversions may also be accomplished (See RLC catalog for more information).

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
LSCB	Length Sensor Conversion Bracket for RPGB	LSCB1000
	Length Sensor Conversion Bracket for RPGB (Special Length)	LSCB1099
--	Hinge Clamp Assembly for Model LSC & Conversion Bracket (Above)	LSAHC001

LENGTH SENSOR ACCESSORIES
SEPARATE LENGTH MEASURING WHEELS - DIMENSIONS In Inches (mm)

WHEEL CODE	OR	WHEEL CODE	OF	WHEEL CODE	OK
	<p>Round Section Replaceable Tire .210" Section Dia. Black Neoprene</p> <p>8-32 UNF Set Screw .376" (9.6) Bore +.001" / -.000"</p> <p>Cast Alum.</p> <p>3/8" (9.5)</p> <p>FOR USE ON: Metal, paper, foil, film and hard plastics. Line contact on material being measured, convenient when available measuring track is narrow or for measuring on end of roller beside passing material.</p> <p>Max. Speed: 600 RPM</p>	<p>Tan, Smooth Polyurethane Tread</p> <p>10-32 UNF Set Screw</p> <p>.376" (9.6) Bore +.001" / -.000"</p> <p>Cast Alum.</p> <p>1" (25.4)</p> <p>FOR USE ON: Soft, smooth materials such as soft paper, matting, cardboard, fine weave textiles. Broad wheel tread minimizes contact pressure and tan polyurethane tread minimizes marking.</p> <p>Max. Speed: 600 RPM</p> <p>Balanced version of 1ft. circumference available. Balanced to ANSI S2.19-1989 Quality Grade 6.3 @ 3000 RPM.</p>	<p>Diamond Knurled Aluminum Tread</p> <p>10-32 UNF Set Screw</p> <p>.376" (9.6) Bore +.001" / -.000"</p> <p>Cast Alum.</p> <p>1" (25.4)</p> <p>FOR USE ON: Rubber, coarse weave fabrics, rough wood surfaces, foam, insulation.</p> <p>Max. Speed: 600 RPM</p> <p>Balanced version of 1ft. circumference available. Balanced to ANSI S2.19-1989 Quality Grade 6.3 @ 3000 RPM.</p>		

SELECTING APPROPRIATE WHEEL SIZE & PPR (Pulses Per Rev.) OF ROTARY PULSE GENERATOR

When the desired output of an RPG and wheel combination is either in feet or inch units, selection of the proper combination is relatively straight forward. For example, with a 1-foot wheel circumference, a 1 PPR Rotary Pulse Generator will deliver 1 pulse/ft, 12 PPR would deliver 12 pulses/ft (1 pulse/inch); 100 PPR would yield 100 pulses/ft; and 120 PPR would permit measuring to 1/10th of an inch (1/120th of a foot).

Measuring in yards or meters, however, is a bit more involved since a 1-yard or 1-meter circumference wheel would be prohibitively large. Instead, 4/10 yard and 4/10 meter wheels can be used in conjunction with RPGB.

WHEELS & REPLACEMENT TIRES FOR CODE OR WHEELS

ORDERING INFORMATION

WHEEL CODE	CIRCUMFERENCE	TOLERANCE	PART NUMBER
OR	1 foot (1/3 yd)	±0.40%	WF1000OR
	1/3 meter	±0.40%	WM0333OR
	4/10ths yard	±0.40%	WY0400OR
	4/10ths meter	±0.40%	WM0400OR
OF	1 foot (1/3 yd)	±0.35%	WF1000OF
	1/3 meter	±0.30%	WM0333OF
	4/10ths yard	±0.30%	WY0400OF
	4/10ths meter	±0.30%	WM0400OF
BF (Balanced)	1 foot (1/3 yd)	±0.40%	WF1000BF

WHEEL CODE	CIRCUMFERENCE	TOLERANCE	PART NUMBER
OK	1 foot (1/3 yd)	±0.35%	WF1000OK
	1/3 meter	±0.30%	WM0333OK
	4/10ths yard	±0.30%	WY0400OK
	4/10ths meter	±0.30%	WM0400OK
BK (Balanced)	1 foot (1/3 yd)	±0.35%	WF1000BK
Replacement Tires for OR Wheels	1 foot (1/3 yd)		TORF1000
	1/3 meter		TORM0333
	4/10ths yard		TORY0400
	4/10ths meter		TORM0400

Note: After installation of measuring wheels, ensure guards, shields or other devices are in place to protect personnel from rotating equipment.

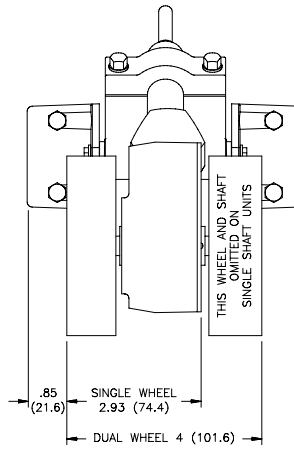
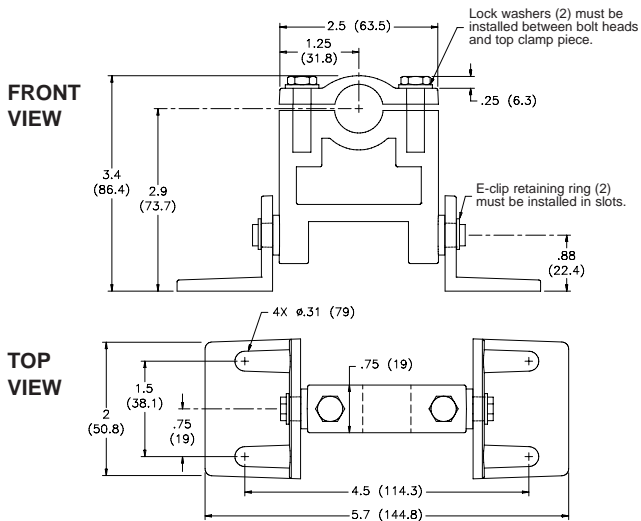
MODEL LSAHC - LENGTH SENSOR HINGE CLAMP ASSEMBLY

The Length Sensor Hinge Clamp Assembly provides an easy method for attachment and mounting of Model LSC and LSQ Length Sensors and LSCB1 Conversion Bracket. The removable top on the solid zinc LSAHC mounting block allows quick installation of the Length Sensor handle tube and provides secure clamping retention. The mounting block pivots freely in zinc right angle brackets to allow mounting the assembly via clearance holes for 1/4" dia. bolts.

The lock washers must be used as indicated (between the bolt head and the top clamp piece). Assemble the top clamp piece as follows.

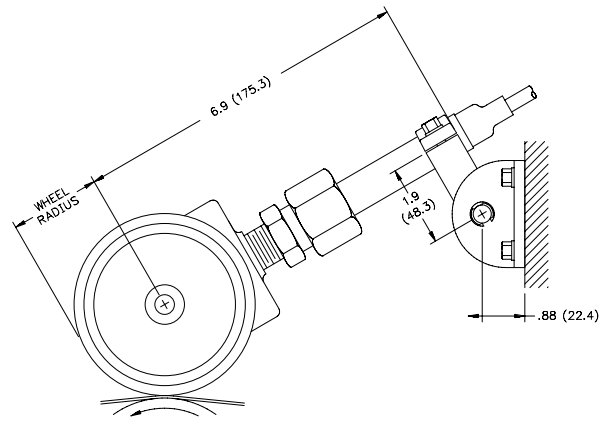
1. Tighten both bolts so that the top clamp half draws down evenly on the sensor tube.
2. Tighten the bolts until both lock washers are flat.
3. Then turn each bolt an additional 1/2 to 3/4 turn.

DIMENSIONS In inches (mm)



CAUTION: Downward tension on signal cable can cause wheel(s) to lift. Make sure cable is clamped to machine frame near encoder and allow slack.

NOTE: The weight at the Length Sensor unit provides sufficient traction for accurate operation when mounted as shown, with arm angle from horizontal not exceeding ±30°, and with hinge clamp toward the far extreme of the extension arm.



Length Sensors should be mounted so measuring wheel(s) contact ribbon, strip or web as it passes over a roller. As an alternative, wheel(s) can be driven by roller surface next to material being measured.

ORDERING INFORMATION

MODEL NO.	DESCRIPTION	PART NUMBER
LSAHC	Length Sensor Hinge Clamp Assembly for Model LSC, LSQ, and LSCB1	LSAHC001