

# BCS Product Warranty

Bradshaw Communication Systems (BCS) products are warranted to be free from defects in material or workmanship for one (1) year from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective will be repaired or replaced by BCS, at our option, provided the product is shipped insured and prepaid to: BCS Service Department, 6272 Old Dahlonega Hwy. Murrayville, Georgia 30564, USA. The product will be returned to you freight prepaid. This warranty does not extend to any BCS products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified, repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced. No employee, agent, dealer, or other person is authorized to give any warranties on behalf of BCS.

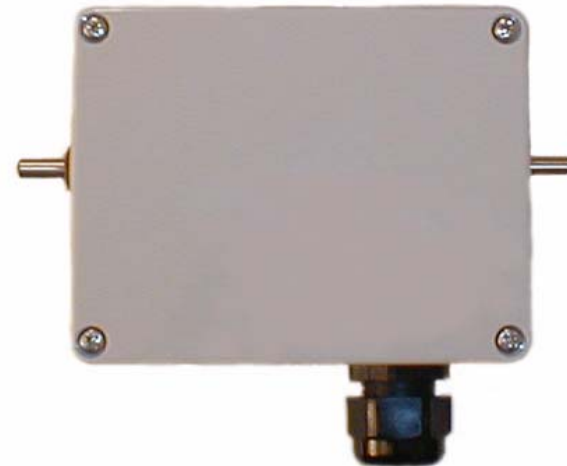
The foregoing limited warranty is the BCS sole and exclusive warranty and the purchaser's sole and exclusive remedy. BCS makes no other warranties of any kind, either express or implied, and all implied warranties of merchantability or fitness for a particular purpose are hereby disclaimed and excluded to the maximum extent of the law. BCS liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the repair or replacement of the product. In no event shall BCS be liable for special, incidental or consequential damages (including, but not limited to, loss of profits, loss of data or loss of use damages) arising out of the manufacture, sale or supplying of products, even if BCS has been advised of the possibility of such damages or losses. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Products that are out of warranty may also be repaired by the BCS Service Department. The parts and labor involved in out of warranty and general repairs are warranted for 90 days when repaired by the BCS Service Department. All shipping charges in addition to parts and labor charges will be at the owner's expense. All returns require a Return Authorization Number that may be obtained by contacting the BCS Service Department prior to return of the product.



# RLS1

## ROTARY LIMIT SWITCH INSTALLATION MANUAL



READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION.  
SAVE THIS INSTALLATION MANUAL FOR FUTURE REFERENCE.  
INSTALLATION SHOULD ONLY BE PERFORMED BY QUALIFIED  
SERVICE PERSONNEL.

BCS reserves the right to change specifications contained herein without notice.

(Release Date: 10AUG07)

BRADSHAW COMMUNICATION SYSTEMS

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## DESCRIPTION:

The RLS1 Rotary Limit Switch, developed by Bradshaw Communication Systems, provides three independently adjustable cam driven limit switches coupled to an input shaft and is typically used for limiting mechanical travel of an earth station antenna. The thru shaft design allows for coupling attachment at either end or for the addition of a bracket to support a position encoder opposite the pickoff point; thus allowing one pickoff point to serve both limit switch and position encoder functions.

The RLS1 Rotary Limit Switch is housed in a NEMA 4X enclosure utilizing all stainless steel hardware; thus supporting the most rugged outdoor applications. A single watertight cable entry gland is provided which supports the use of a wide range of cable diameters.

Two versions of the RLS1 are available. The first version provides three cams, each adjustable in a 180-degree range with two opposing trip points at 180-degrees. The second version also provides three cams, each adjustable in a 360-degree range with a single activation point. The single activation point provides a ~15 degree activation window and may be used for systems requiring more than 180-degree travel as well as for determining center position. All three limit switches are Form C and are terminated to a pluggable terminal block allowing for easy wiring. Internal jumpers allow for series common applications as well as isolated applications.

The RLS1 Rotary Limit Switch has been designed to provide long life and ease of adjustment while still allowing the system integrator great flexibility in configuration and mounting.

## SPECIFICATIONS:

- **Coupling Shaft Size**
  - O.D.: 0.2500 (+0.0/-0.0002) inches
  - Exposed Length: 0.50 inches (each side)
- **Shaft Rotation**
  - 360° Degrees Continuous
  - Maximum Rotation Speed: 5 RPM
- **Adjustability**
  - 3 – 180° Adjustable Cams (-1 version)
  - 3 – 360° Adjustable Cams (-2 version)
- **Switches**
  - 3 Form C
  - 3 Amps @ 125VAC Maximum
- **Cable Entry**
  - Cable O.D. Range: 0.230-0.530 inches
- **Electrical Termination**
  - Pluggable Terminal Block
  - 28-16 AWG Wire Size
- **Environmental**
  - -40° F to +122° F, 95% humidity, condensing
  - (-40° C to +50° C, 95% humidity, condensing)
- **Physical**
  - Enclosure Dimensions
  - 4.5" wide x 3.5" high x 3.125" deep
  - (114.3mm wide x 88.9mm high x 79.4mm deep)
  - Weight: 1 LB (0.45 Kg)
  - Overall Shaft Length: 6.0 inches
- **Approvals**
  - The RLS1 has been designed to meet or exceed CE, UL, & CSA safety requirements.

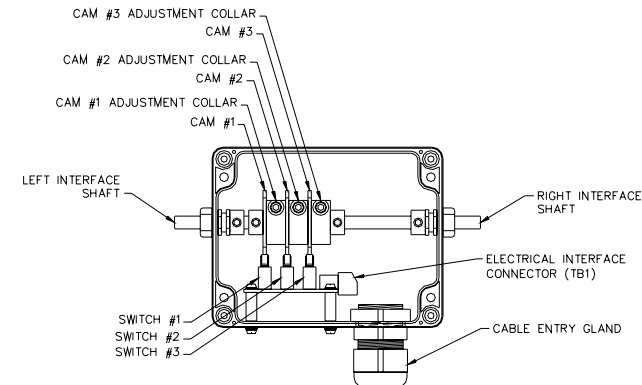
## PART NUMBERS:

- P/N 03-02000-1 RLS1 w/ three 180° Adjustable Cams
  - P/N 03-02000-2 RLS1 w/ three 360° Adjustable Cams
- An optional cable gland location that is parallel to the RLS1 input/output shaft may be ordered by special request only at time of order. Please refer to the RLS1 Outline Mounting Drawing for specific cable gland location details for this option.

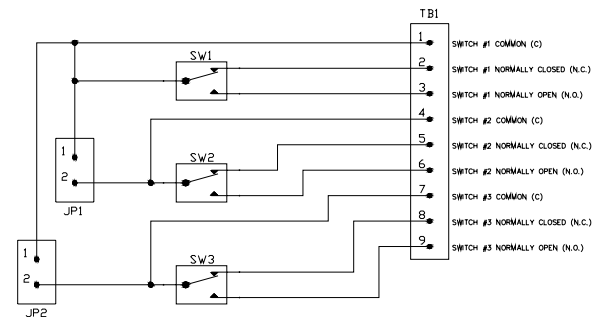
## SETUP & ALIGNMENT:

Attach the RLS1 to the antenna. 8-32 hardware is normally used to secure the RLS1 to a mounting bracket or similar. Use RTV Sealant or similar to ensure a watertight seal at the RLS1 attachment holes. Refer to the RLS1 Outline Mounting Drawing (provided separately) and verify the RLS1 is securely mounted and coupled properly. Open the cover to the RLS1. Install the limit feedback cable in the RLS1 cable gland. Electrically connect RLS1 TB1 per the RLS1 Schematic Diagram below. Install or remove the provided jumpers (JP1 & JP2) to configure the RLS1 for either electrically connected or isolated switch commons.

Refer to the RLS1 Component Location Diagram below. Move the antenna to the desired limit position for Switch #1. Loosen the Cam #1 adjustment collar using a 7/64-inch hex key wrench. Rotate Cam #1 until the rising edge of the cam just trips Switch #1 (note: the cam and the collar are allowed to move separately to facilitate easy adjustment and tightening). Tighten the Cam #1 adjustment collar securely while ensuring Cam #1 is held in it's proper alignment. Ensure that Cam #1 can no longer be rotated with the antenna in fixed position. Move the antenna and verify proper switch activation. If re-adjustment is required, repeat the previous steps making allowances for holding and tightening cam position as required. Close the cover securely to ensure a watertight seal. Repeat the same steps for Switch #2 / Cam #2 and Switch #3 / Cam #3.



RLS1 COMPONENT LOCATION DIAGRAM



RLS1 SCHEMATIC DIAGRAM