

# Rotary

## V-Series

### CONTURA ROTARY SWITCHES

The V-Series Contura Rotary Switch was designed for maximum performance and reliability leveraging the features of the widely popular V-Series Contura Rocker Switches. Available in maintained and momentary circuit options, the V-Series Rotary features a sturdy knob construction, up to three separate LEDs, and fits in an industry standard panel opening.

Internally, the V-Series Contura Rotary uses a patented mechanism that translates rotary to linear motion. This allows for common switch functionality and terminal connections with the V-Series rocker version and requires no harness change. A secondary CAM, which helps drive the mechanism, provides definitive detent positions and prevents the switch from stopping between positions, while improving tactile feel.

The V-Series Rotary also features an innovative PC board that supports the LED and surface mount resistors; and IP67 sealing protection above panel by utilizing LED and actuator stem seals. Together, these features make the V-Series Contura Rotary switch the best choice available in the market today.



#### Product Highlights:

- Accommodates up to three separate LEDs
- Patented mechanism translates rotary into linear motion
- Secondary CAM for definitive detent positions
- PC Board supports LED and surface mount resistors
- Sealed to IP67 for Above-Panel Components
- Common terminal & circuit functionality with V-Series Rocker switches, with no harness change required

#### Typical Applications:

- On/Off Highway Equipment
- Marine
- Test & Measurement
- Instrumentation
- Speed Control



**Carling Technologies®**  
Innovative Designs. Powerful Solutions.

# V-Series Rotary Switch

## DESIGN FEATURES

### OPTIONAL PANEL SEAL

Prevents water/dust ingress behind panel

### SEALS

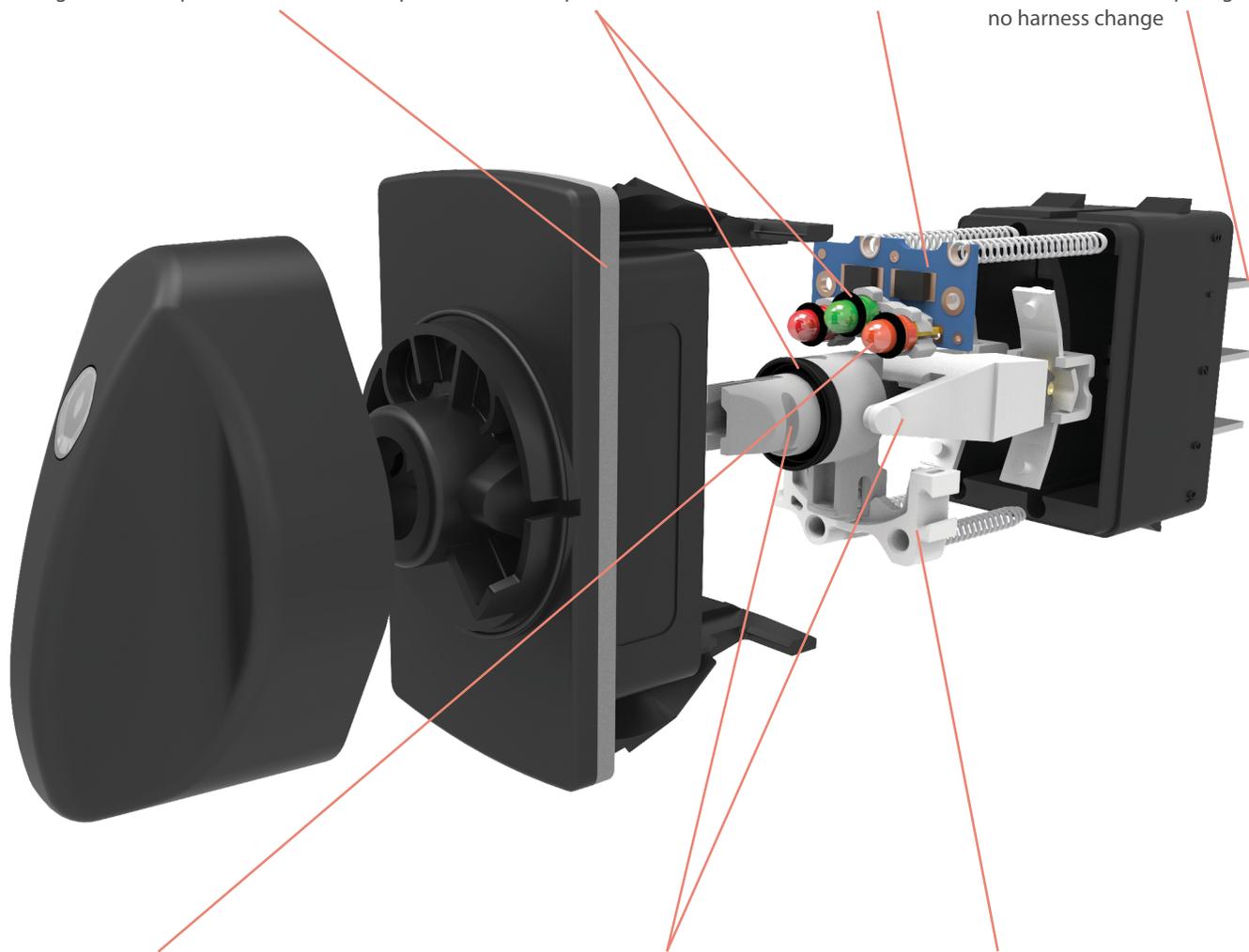
LED and stem seals provide IP67 protection above panel

### PC BOARD

Supports LEDs and surface mount resistors

### TERMINALS

Same pinout as V-Series Rocker Switches, requiring no harness change



### LEDs

Up to three separate LEDs

### ROTARY & LINEAR ACTUATOR

Patented mechanism that translates rotary to linear motion

### SECONDARY CAM

Provides definitive detent positions with ball & spring located in rotary actuator

### Electrical

Rating

Circuit	Voltage	Max Current Resistive
2 Position Maintain	12	20
2 Position Momentary	12	20
3 Position All	12	20
2 Position Maintain	24	15
2 Position Momentary	24	15
3 Position All	24	15

Dielectric Strength 1500 Volts RMS  
 Insulation Resistance 50 Megohms  
 Initial Contact Resistance 10 Milli Ohm max @ 4VDC  
 Life 50,000 Cycles Two Position  
 25,000 Cycles Two Position  
 Momentary and All Three position  
 Terminals 0.250" (6.3mm) Quick Connect

### Physical

Function Circuits Double Pole Single Throw, DPST  
 Double Pole Double Throw, DPDT  
 Operation Two and Three Position  
 Maintained and Momentary  
 Knob Rotation Two Position 60 Degrees  
 Three Position 30 Degrees from  
 Center  
 Illumination LED; Red, Green, Amber, Yellow,  
 White, Blue  
 Seals LED O-ring(s) – Silicone, Bezel  
 gasket – Neoprene, Knob seal -  
 NBR  
 Flammability Exceeds FVMSS 302  
 Requirements, Exterior  
 Components, UL 94 V-2 or Better  
 Interior Components, UL 94 HB or  
 Better  
 Base Polyester, PBT  
 Bracket Nylon 66, PA  
 Knob Polybutylene Terephthalate, PBT  
 6.5%GF  
 Lens Polycarbonate, PC  
 Connector Nylon 66, PA  
 Mounting Front Panel Snap In, 1.450"  
 (36.83mm) X 0.830" (21.08mm)  
 Panel Thickness, 0.030" – 0.187"  
 (0.76 – 4.75mm)

### Mechanical

Knob Impact 50 Gram weight dropped from a  
 height of 18 inches on Top & Sides

### Environmental

Sealing IP68, for above-panel components  
 of actual switch only.  
 Dust Mil STD 810, Method 510.2 Air Velocity  
 300 Ft/Min Duration 16Hr  
 Corrosion IEC 68-2-60 Mixed Flowing Gas (MFG)  
 14 Days  
 Chemical Splash Gasoline, Diesel, Motor Oil, Brake  
 Fluid, Ammonia, Armour All  
 Salt Spray Mil STD 202G, Method 101, Test  
 Condition A 96 Hr  
 Vibration Random Mil STD 202G, Method 214 test  
 Condition C 10G's RMS  
 Vibration Sinusoidal Mil STD 202G, Method 204D, Test  
 Condition A 0.06DA or 10G's 10-500Hz  
 Shock MIL-STD 202G, Method 213B Test  
 Condition K, 30G's  
 Handling Shock 1 Meter Drop onto Hard Surface  
 Thermal Shock MIL-STD 202G, Method 107G Test  
 Condition A -55 C to 85 C  
 Moisture Resistance MIL-STD 202G, Method 106F 10, 25  
 C to 65 C Cycles 95% RH  
 Thermal Cycling 25 Cycles -40 C to 85 C  
 Ignition Protection ISO 8846 with EC Directive 94/25/EC  
 for Marine Products  
 UV Protection 300 hr Xenon Arc, 1.4W/m2  
 wavelength 420 nm  
 ESD Human Static Discharge, +/- 15KV  
 applied during normal operation  
 Shipping/Handling, frequency range  
 200-2000 MHz applied voltage is +8KV  
 to +15KV and -8KV to -15KV 3  
 discharge cycles

\*Manufacturer reserves the right to change product specification without prior notice.

**RV 21 D 2 B 6 0 0 B - K R C**

1 Series      2 Circuit      3 Rating      4 Termination      5 Illumination      6 Lamp 1      7 Lamp 2      8 Lamp 3      9 Bracket      10 Actuator      11 Lens      12 Knob Color

**1 SERIES**  
**RV** Rotary Contura

**2 CIRCUIT 1**  
 Terminal Connections as viewed from bottom of switch: ( ) - momentary

8 - -7      DP - double pole uses 1, 2, 3 and 4, 5, 6.  
 1 - -4  
 2 - -5  
 3 - -6  
 10 - -9

Position:	1	2	3
DP	2 & 3, 5 & 6	Connected Terminals	1 & 2, 4 & 5
21	ON	NONE	OFF
22	(ON)	NONE	OFF
23	ON	NONE	(OFF)
24	ON	NONE	ON
26	ON	OFF	ON
28	(ON)	OFF	(ON)
<b>SPECIAL CIRCUITS</b>			
55	(ON)	OFF	ON
61	2 & 3, 5 & 6	2 & 3, 4 & 5	1 & 2, 4 & 5
62	2 & 3, 5 & 6	2 & 3	OFF
64	(2 & 3, 5 & 6)	2 & 3	OFF

**3 RATING**

<b>1</b>	.4VA 28VDC Resistive
<b>B</b>	15A 24V
<b>D</b>	20A 12V

**4 TERMINATION / BASE STYLE**

8 Term	10 Term	Termination	Jumper
<b>1</b>	<b>2</b>	.250 TAB (QC) - no barriers	No
<b>A</b>	<b>B</b>	.250 TAB (QC) - with barriers	No
<b>J 4, 5</b>	<b>K 4, 5</b>	.250 TAB (QC) - no barriers	Yes (T2 to T5)

- Notes:
- Switch circuit uses terminals 1,2,3,4,5 & 6. Terminals 7,8,9 & 10 are for lamp circuit only.
  - Jumper between terminals 2 & 5 for Circuits 61, 62, & 64 to be specified in the Termination & Jumper selection.
  - Circuit 61 may be used for SP, OFF-ON-ON circuit.
  - Base will not have terminal insulating barriers when connector and/or jumpers are used.
  - Code J,K are optional for circuits 62 and 64. Customer may provide externally wired jumper to connect terminals 2 and 5.
  - Lamp #1 located at top end of switch, above terminal 4.  
Lamp #2 located at top end of switch between terminals 1 & 4.  
Lamp #3 located at top end of switch, above terminal
  - Positive (+) and negative (-) symbols apply to L.E.D. lamps only.  
Mounting hole size is 1.450" (36.83mm) by 0.830" (21.08mm). To mount multiple switches in single panel cut-out order optional interlocking mounting panels.
  - Lens color for L.E.D.s must be clear, white, or match color of L.E.D.

**5 ILLUMINATION 6, 8**

Sealed	Lamps	when illuminated	Terminals
<b>S</b>	NONE		
<b>A</b>	# 1	Independent	8+ 7-
<b>B</b>	# 1	Dependent	3+ 7-
<b>C</b>	# 1	Independent	8+ 7-
	& # 3	Independent	10+ 7-
<b>D</b>	# 1	Dependent	3+ 7-
	& # 3	Dependent	1+ 7-
<b>E</b>	# 1	Independent	8+ 7-
	# 2	Independent	9+ 7-
	# 3	Independent	10+ 7-
<b>F</b>	# 1	Dependent	3+ 7-
	# 2	Independent	9+ 7-
	# 3	Dependent	1+ 7-
<b>G</b>	# 1	Dependent	3+ 7-
	# 3	Independent	8+ 7-
<b>H</b>	# 2	Independent	8+ 7-
<b>J</b>	# 1	Independent	8+ 7-
	# 2	Independent	10+ 7-
<b>K</b>	# 1	Dependent	3+ 7-
	# 2	Dependent	1+ 7-
<b>L</b>	# 1	Dependent	3+ 7-
	# 2	Independent	8+ 7-
<b>M</b>	# 2	Independent	8+ 7-
	# 3	Independent	10+ 7-
<b>N</b>	# 2	Dependent	3+ 7-
	# 3	Dependent	1+ 7-
<b>P</b>	# 2	Independent	10+ 7-
	# 3	Dependent	1+ 7-
<b>R</b>	# 3	Independent	8+ 7-
<b>T</b>	# 3	Dependent	1+ 7-

**6, 7, 8 LAMP #1, 2 AND OR LAMP #3 6, 8**  
 Selection 6: above terminal 7; Selection 8: above terminal 8

No lamp	LED	Red	Amber	Green	Blue	White
<b>0</b>						
12VDC	<b>C</b>	<b>N</b>	<b>H</b>	<b>E</b>	<b>6</b>	
24VDC	<b>D</b>	<b>P</b>	<b>J</b>	<b>K</b>	<b>8</b>	

**9 BRACKET COLOR & PANEL SEAL 7**

Color	No Gasket	1 Gasket	2 Gasket
Black	<b>B</b>	<b>C</b>	<b>D</b>
Gray	<b>G</b>	<b>H</b>	<b>J</b>
White	<b>W</b>	<b>Y</b>	<b>Z</b>

**10 ACTUATOR STYLE**      ACTUATOR ORIENTATION ABOVE TERMINALS

**K** Rotary Knob (Standard)



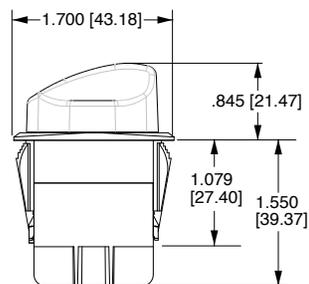
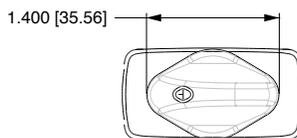
**11 LENS COLOR 8**

No Lens	<b>Z</b>				
Clear	<b>4</b>	White	Amber	Green	Red
		<b>9</b>	<b>E</b>	<b>K</b>	<b>R</b>
					Blue
					<b>W</b>

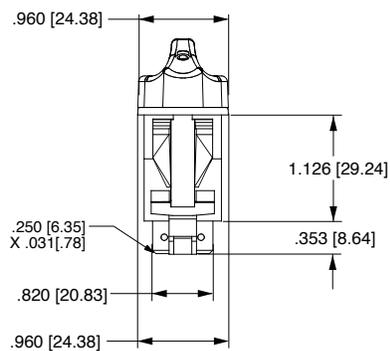
**12 KNOB COLOR**

Black	Gray	Red	White
<b>C</b>	<b>H</b>	<b>S</b>	<b>Y</b>

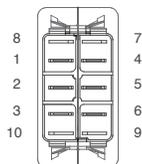
**Dimensional Specifications: in. [mm]**



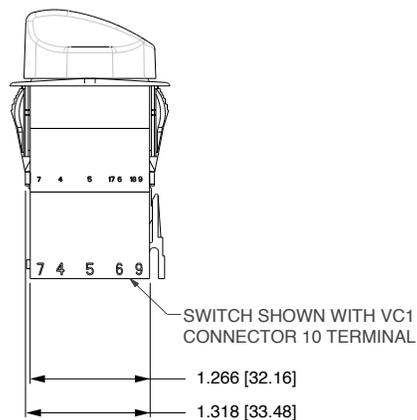
**10 TERMINAL BASE  
W/ BARRIERS**



**10 TERMINAL BASE  
W/O BARRIERS**



**BOTTOM VIEW  
TERMINAL ARRANGEMENT  
10 TERMINAL BASE**



SWITCH SHOWN WITH VC1  
CONNECTOR 10 TERMINAL

**Circuits Diagrams:**

CIRCUIT CODE	CIRCUIT DIAGRAM	KNOB POSITION
21		
22		
23		
24		
26		
28		

CIRCUIT CODE	CIRCUIT DIAGRAM	KNOB POSITION
55		
61		
62		
64		

LEGEND	
SYMBOL	DEFINITION
	TERMINAL LOCATION
	MAINTAINED CIRCUIT
	MOMENTARY CIRCUIT
	INTERNAL CONNECTION (JUMPER TERMINAL)
	2 POSITION CONNECTION
	2 POSITION CONNECTION
	2 POSITION
	3 POSITION

Lamp Circuit Diagrams:

LAMP CIRCUIT CODE	CIRCUIT DIAGRAM
<b>A</b>	
<b>B</b>	
<b>C</b>	
<b>D</b>	
<b>E</b>	
<b>F</b>	
<b>G</b>	
<b>H</b>	
<b>J</b>	
<b>K</b>	

LAMP CIRCUIT CODE	CIRCUIT DIAGRAM
<b>L</b>	
<b>M</b>	
<b>N</b>	
<b>P</b>	
<b>R</b>	
<b>T</b>	