V-Series
Contura Switches

Product Highlights:
- Maximum sealing protection with dual seals around lamps and rocker stem, certified to IP66 & IP68. Optional panel seals for additional protection.
- Silver plated butt contact mechanism provides 50 to 100 thousand electrical cycles and a variety of different electrical ratings.
- Roller pin mechanism does not require lubricants and allows the switch to withstand extreme temperatures.
- The switch base accommodates up to 10 terminals and a large variety of switch and lighting circuits.
- The multi-step mounting wings provide a secure fit for panel thicknesses of 0.032” thru 0.250” in an industry standard 0.830” x 1.450” mounting hole.
- The switch connector allows the user to preload FQC terminals for easy assembly to switch base.
- Numerous choices of removable rockers allow for style change without having to retest or re-qualify the switch base.
- Illumination options are endless with bar, oval, and square lenses available with choices of incandescent, neon and a wide variety of LEDs including superbrite, megabr ite, flashing and bicolor lighting.
- Available with a variety of complimentary mounting panels, hole plugs, illuminated indicators and boots to accommodate most any design need.

Carling Technologies’ sealed V-Series Contura switches are well known for their cutting edge design, high quality, maximum performance and unmatched reliability. These switches are a staple in the marine and transportation industries and have passed a range of environmental, corrosion, temperature, vibration, shock and sealing tests including MIL Std 202F, MIL Std 810C, UL 1500, ISO 8846, IEC 60529 and BS 5490 among others, making them one of the most rugged and reliable switches ever manufactured.
V-Series Switch

**DESIGN FEATURES**

**INTERCHANGEABLE ACTUATORS**
Panel redesign is a snap with our wide range of rocker styles. Achieve maximum design variety with minimum inventory. Simply swap rockers to create an entirely new look for your panel.

**DUAL SEAL PROTECTION**
Seals out water, dust, debris, and enables switch certification to IP66/IP68 for front panel components.

**CLEAN CONNECTIONS**
Options for both eight and ten terminal base styles with AMP & Packard compatible connectors affords myriad circuit options while providing ease of assembly.

**OPTIONAL PANEL SEAL**
Prevents water/dust ingress behind panel.

**MULTIPLE LIGHTING OPTIONS**
In addition to incandescent lamps, our LED illumination is offered in a wide array of light intensities, colors, as well as dual level, tri-color, and flashing options.

**BRASS ROLLER PIN**
Robust mechanism eliminates the need for lubricants. Enables switch to withstand -40°C to +85°C temperatures.

**SILVER PLATED BUTT CONTACT MECHANISM**
Providing 50K to 100K electrical cycles and a variety of different electrical ratings.
Contura II & III
The Contura II & III actuators are constructed of thermoplastic polycarbonate and are offered with a hard nylon overlay or a “soft-touch” elastomer overlay. These models incorporate aesthetic designs on the top and bottom of the rocker featuring two rows of raised “bumps” on the Contura II and three “indented” lines on the Contura III.

Contura IV
The Contura IV’s “Shape to create a Shape” actuator works with the curves, contours & advanced styling of the latest panel designs, flowing with these advanced curves & radii. This actuator style fits on the Contura flush bracket/bezel.

Contura V
The symmetrically curved Contura V actuator provides the perfect complement to the Contura IV’s “Shape to create a Shape” design concept. With its flush style mounting bracket, Contura V can be mounted in between two Contura IV’s, by itself, or in groups.

Contura VI (WAVE)
The Contura VI WAVE sealed rocker switches, when used in a row, create an uniquely appealing “wave” design on your panel. A variety of colors and finishes are available for both rocker and wave insert. Contura VI features bar and oval lenses.

Contura VII
Contura VII featuring gently curved corners and edges assuring compatibility with most any panel design. Intuitive feel is maximized by the use of 2 embossed circular pads located at opposite ends of the rocker. Any combination of Bar or Oval style lenses can be located in the pads providing a truly unique look, exclusive to Contura VII.

Contura X
The raised bracket/bezel on the Contura X helps prevent inadvertent actuation of the rocker, as well as preventing debris from being trapped under the actuator. This curved rocker style is available with a variety of lenses and legends.

Contura XI
The raised bracket/bezel on the Contura XI helps prevent inadvertent actuation of the rocker, as well as preventing debris from being trapped under the actuator. This convex style rocker is available with a wide variety of lenses and legends.

Contura XII
The Contura XII version features a paddle style actuator with the raised bracket/bezel of Contura X and XI. The contoured handle design provides intuitive recognition and ease of operation and is available with all Contura X and XI lens and legend offerings.

Contura XIV
The Contura XIV represents a sleek new crossover rocker design which should appeal to Trucks, Buses and Heavy Vehicles as well as the Marine Industry. Intuitive feel is provided by recessed ridges along with a Center Groove which effectively defines the boundary between top and bottom switch functions.

V-Series Illuminated Indicators & Accessories
Alert operator of systems functions or malfunctions, are offered with removable/replaceable lamps in Contura II, II, V or X styles. Accessories include connectors, mounting panels, hole plugs, panel seals, and actuator removal tools. Refer to accessories page for full details.
### Electrical Specifications

- **Contact Rating**: 0.4VA @ 24VDC (MAX) resistive
  - 15 amps, 125VAC
  - 10 amps, 250VAC
  - 1/2 HP, 125-250VAC
  - 20 amps, 4-14VDC
  - 15 amps, 15-28VDC
  - 10A, 14V
  - 6A, 125VAC

- **Dielectric Strength**: 1500 Volts RMS

- **Insulation Resistance**: 50 Megohms

- **Initial Contact Resistance**: 10 millionths max. @ 4VDC

- **Contacts**: Silver alloy, silver tin-oxide, fine silver

- **Terminals**: Brass or copper/silver plate 1/4” (6.3mm) Quick Connect terminations standard. Solder lug, Wire Lead

### Mechanical Specifications

- **Endurance**: 150,000 cycles minimum circuit dependent

### Physical Specifications

- **Lighted**: Incandescent - rated 10,000 hours
  - Neon - rated 25,000 hours
  - LED - rated 100,000 hours

- **Seals**: Internal

- **Base**: Polyester blend rated to 125°C with a UL flammability rating of 94V0.

- **Contura II, III, IV, VI, VII Actuator**: Hard Surface: Basic actuator structure molded of thermoplastic polycarbonate with a hard Nylon 66 thermoplastic surface overlay.

- **Contura XXI, XII Actuator**: Hard Surface: Basic actuator structure molded of thermoplastic polycarbonate with an elastomer overlay.

- **Contura XIV**: Lens - Polycarbonate rated at 105°C
  - Polycarbonate lens/subrocker with ABS shell

### Actuator Travel (Angular Displacement)

- **2 position**: 18°
- **3 positions**: 9° from center

### Mounting Specifications

- **Panel Thickness Range**:
  - 0: .030 to .250 (.76mm to 6.35mm)
  - 1: .030 to .109 & .147 to .157 (.76 to 2.77mm & 3.73 to 3.98mm)

- **Recommended**: No gasket with panel thickness of .032, .062, .093, .125, .187 or .250

- **SWITCH MOUNTING HOLE**

### Agency Certifications

#### Environmental

- **Sealing**: Sealed version: IP68, in accordance with IEC 60529, BS 5490, DIN 40050 & NFC 20 010. This rating applies to front panel components of the actual switch only, and signifies protection against dust and the prolonged effects of immersion under pressure.

- **Operating Temp.**
  - 150°C to +85°C
  - Per Mil-Std 202F, Method 204D

### Mechanical

- **Resonance search**
  - 24-50 Hz 0.40 DA

### Electrical Agency Certifications

- **Corrosion**: Mixed Flowing Gas (MFG) Class III 3 year accelerated exposure per ASTM B-827, B-845 Silver and gold contacts

### Environmental

- **Mixed Flowing Gas (MFG) Class III**
  - 3 year accelerated exposure per ASTM B-827, B-845 Silver and gold contacts

### Environmental

- **Shock**: Per Mil-Std 202F, Method 213B, Test Condition K @ 30G’s. Tested with VCH connector. Test criteria - No loss of circuit during test, pre and post test contact resistance.

### Environmental

- **Salt Spray**: Per Mil-Std 202F, Method 101D, Test Condition A, 96 Hrs. Sealed version only.

### Environmental

- **Thermal Shock**: Per Mil-Std 202F, Method 107F, Test Cond. A, -55°C to +85°C. Test criteria - pre and post test contact resistance.

### Environmental

- **Moisture Resistance**: Per Mil-Std 202F, Method 106F, Test Criteria - pre and post test contact resistance.

### Environmental

- **Ignition Protection**: All Contura switches with sealed construction meet the requirements of UL1500/ISO8846 for ignition protection, in addition to conformance with EC directive 94/25/EC for marine products.

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**Email**: sales@carlingtech.com • **Application Support**: team2@carlingtech.com

**Phone**: (860) 793–9281 • **Fax**: (860) 793–9231 • **www.carlingtech.com**
Dimensional Specifications: in. [mm]

**CONTURA II**

- Shown with Square Lens
- 8 Terminal Base W/BARRIERS

**CONTURA III**

- 8 Terminal Base W/O BARRIERS

**CONTURA IV**

- Shown with Bar Lens
- Dimensions: 2.000 [50.80] in.
- 10 Terminal Base W/BARRIERS

**8 TERMINAL BASE W/BARRIERS**

- Dimensions: 0.800 [20.32] in.
- Dimensions: 0.800 [20.32] in.

**10 TERMINAL BASE W/BARRIERS**


**SWITCH SHOWN WITH VCH CONNECTOR 8 TERMINAL**

- Dimensions: 2.029 [51.55] in.
- Dimensions: 2.029 [51.55] in.

**BOTTOM VIEW TERMINAL ARRANGEMENT**

- **8 TERMINAL BASE**
  - Dimensions: 0.505 [12.83] in.
  - Dimensions: 0.505 [12.83] in.
  - Dimensions: 0.250 [6.35] in.
  - Dimensions: 0.250 [6.35] in.

- **10 TERMINAL BASE**
  - Dimensions: 0.800 [20.32] in.
  - Dimensions: 0.800 [20.32] in.
  - Dimensions: 0.250 [6.35] in.
  - Dimensions: 0.250 [6.35] in.

**SWITCH SHOWN WITH VCH CONNECTOR 10 TERMINAL**

- Dimensions: 0.505 [12.83] in.
- Dimensions: 0.505 [12.83] in.
## SYMBOL LEGEND

<table>
<thead>
<tr>
<th>SYM.</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>●</td>
<td>DESIGNATES TERMINALS AND CONTACTS</td>
</tr>
<tr>
<td>○</td>
<td>DESIGNATES LAMP LOCATION</td>
</tr>
<tr>
<td>□</td>
<td>DESIGNATES MAINTAINED CIRCUITS</td>
</tr>
<tr>
<td>----</td>
<td>DESIGNATES OTHER POSITION</td>
</tr>
<tr>
<td>▲</td>
<td>DESIGNATES MOMENTARY CIRCUITS</td>
</tr>
<tr>
<td>▲</td>
<td>DESIGNATES TWO POSITION CONNECTION</td>
</tr>
<tr>
<td>▲</td>
<td>DESIGNATES EXTERNAL JUMPER PROVIDED BY CUSTOMER</td>
</tr>
</tbody>
</table>

### V-Series Contura II to XIV - Circuit Diagram

<table>
<thead>
<tr>
<th>CIRCUIT</th>
<th>CIRCUIT DIAGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image1.png" alt="Circuit 1 Diagram" /></td>
</tr>
<tr>
<td>2</td>
<td><img src="image2.png" alt="Circuit 2 Diagram" /></td>
</tr>
<tr>
<td>3</td>
<td><img src="image3.png" alt="Circuit 3 Diagram" /></td>
</tr>
<tr>
<td>4</td>
<td><img src="image4.png" alt="Circuit 4 Diagram" /></td>
</tr>
<tr>
<td>5</td>
<td><img src="image5.png" alt="Circuit 5 Diagram" /></td>
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<tr>
<td>6</td>
<td><img src="image6.png" alt="Circuit 6 Diagram" /></td>
</tr>
<tr>
<td>7</td>
<td><img src="image7.png" alt="Circuit 7 Diagram" /></td>
</tr>
<tr>
<td>8</td>
<td><img src="image8.png" alt="Circuit 8 Diagram" /></td>
</tr>
</tbody>
</table>
NOTE:
J circuits are available for all non-locking V-Series styles. Consult factory for p/n details.
### 1 SERIES

**V**

### 2 CIRCUIT

**Terminal Connections as viewed from bottom of switch:**
- SP - single pole - uses terminals 1, 2, 3, 4, 5 & 6
- DP - double pole uses terminals 1, 2, 3, 4, 5 & 6

**Position:**
- S: 1 & 2, 4, 5 & 6
- A: 1, 2, 3, 4, 5 & 6
- B: 1, 2, 3, 4, 5 & 6
- C: 1, 2, 4, 5 & 6
- D: 1, 2, 3, 4, 5 & 6
- E: 1, 2, 3, 4, 5 & 6

**Note:** Jumper between terminals 2 & 5 for circuits H, G, R & S are specified in selection 4.

### 3 RATING

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Wattage/amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 4VA/28VDC Resistor</td>
<td>4VA</td>
<td>28VDC</td>
</tr>
<tr>
<td>B 15A 24V</td>
<td>15A</td>
<td>24V</td>
</tr>
<tr>
<td>C 20A 18V</td>
<td>20A</td>
<td>18V</td>
</tr>
<tr>
<td>D 20A 12V</td>
<td>20A</td>
<td>12V</td>
</tr>
<tr>
<td>E 20A 14V, 10A 14VT (circuit 1, 4, A &amp; D only)</td>
<td>20A</td>
<td>14V, 10A</td>
</tr>
<tr>
<td>F 10A 14V, 6A 14VT (circuit G only)</td>
<td>10A</td>
<td>14V</td>
</tr>
<tr>
<td>M 4VA/25A 12V</td>
<td>4VA</td>
<td>25A</td>
</tr>
<tr>
<td>N 4VA/15A 24V</td>
<td>4VA</td>
<td>15A</td>
</tr>
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</table>

### 4 TERMINATION/BASE STYLE

<table>
<thead>
<tr>
<th>Lamp</th>
<th>Term</th>
<th>Actuator</th>
<th>Orientation</th>
<th>Legend</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Black</td>
</tr>
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<td>2</td>
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<td>7</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>Black</td>
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</tbody>
</table>

### 5 ILLUMINATION

<table>
<thead>
<tr>
<th>Lamp</th>
<th>Terminal Connections</th>
<th>Lamp</th>
<th>Illumination Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1: 1, 2, 3, 4, 5, 6</td>
<td>8</td>
<td>Superbright Red</td>
</tr>
<tr>
<td>B</td>
<td>1: 1, 2, 3, 4, 5, 6</td>
<td>8</td>
<td>Superbright Green</td>
</tr>
<tr>
<td>C</td>
<td>1: 1, 2, 3, 4, 5, 6</td>
<td>8</td>
<td>Superbright Red</td>
</tr>
<tr>
<td>D</td>
<td>1: 1, 2, 3, 4, 5, 6</td>
<td>8</td>
<td>Superbright Green</td>
</tr>
<tr>
<td>E</td>
<td>1: 1, 2, 3, 4, 5, 6</td>
<td>8</td>
<td>Superbright Red</td>
</tr>
</tbody>
</table>

### 6.7 LAMP (SAME CODING FOR BOTH SELECTIONS)

- Selection 6: above terminals 1 & 4; Selection 7: above terminals 3 & 6
- **No lamp** 0
- **Neon** 1
- **Incandescent** 2
- **LED** 4
- **Superbright** 6

### 8 FLUSH BRACKET COLOR, PANEL SEAL

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Black White</td>
</tr>
<tr>
<td>White</td>
<td>White Gray</td>
</tr>
<tr>
<td>Grey</td>
<td>Grey Red</td>
</tr>
<tr>
<td>Red</td>
<td>Red Blue</td>
</tr>
</tbody>
</table>

### 9 ACTUATOR COLOR AND TEXTURE

<table>
<thead>
<tr>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Black Grey</td>
</tr>
<tr>
<td>Grey</td>
<td>Grey Red</td>
</tr>
<tr>
<td>Red</td>
<td>Red White</td>
</tr>
<tr>
<td>White</td>
<td>White Hard</td>
</tr>
</tbody>
</table>

### 10 LENS

- **No lens** 0
- **No actuator** 1
- **Contura II** 2
- **Contura III** 3

**Actuator orientation above terminals:**
- 3.0 / 1.4

**Note:** Lens color for LEDs must be clear, white, or match color of LED. Green or blue lenses are not recommended with Neon lamps.

### 11 ACTUATOR LENS OR BODY LEGEND

- **No lens** 0
- **No actuator** 1
- **Lens** 2

**Legend options & codes:**

### 12 ACTUATOR LENS OR BODY LEGENDS

<table>
<thead>
<tr>
<th>Lens</th>
<th>Body Legend</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>G</td>
<td>Black</td>
</tr>
<tr>
<td>B</td>
<td>R</td>
<td>Grey</td>
</tr>
<tr>
<td>C</td>
<td>W</td>
<td>Red</td>
</tr>
<tr>
<td>D</td>
<td>H</td>
<td>White</td>
</tr>
</tbody>
</table>

**Legend options & codes:**

### 13 LEGEND ORIENTATION

- **No legend** 0
- **No legend used with codes 11-18 in selection 12** 1
  - Orientation 1
  - Orientation 2
  - Orientation 3
  - Orientation 4

**Legend options & codes:**

### 14 ACTUATOR LENS LEGEND

- **No lens** 0
- **No legend used with codes 11-18 in selection 12** 1
- **Legend** 2

**Legend options & codes:**

**Notes:**
- Consult factory to verify horsepower rating for your particular circuit choice.
- Custom colors are available. Consult factory.
- Body legends not available on Soft surface actuators; White imprinting is standard on black actuators. Black imprinting is available on white and red actuators.
- Custom colors are available, consult factory.
- Additional ratings available. See V-Series Switch Accessories page.
- Contura II available with two square lenses. Consult factory for details.

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**Email:** sales@carlingtech.com • **Phone:** (860) 793–9281 • **Fax:** (860) 793–9231 • **Website:** www.carlingtech.com
### Contura Mounting Panels

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensional Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>VH1</td>
<td>2.000 [50.80]</td>
</tr>
<tr>
<td>VH2</td>
<td>1.067 [27.10]</td>
</tr>
<tr>
<td>VH3</td>
<td>1.928 [49.07]</td>
</tr>
<tr>
<td>VH4</td>
<td>1.020 [25.91]</td>
</tr>
<tr>
<td>VH5</td>
<td>1.600 [40.64]</td>
</tr>
<tr>
<td>VH6</td>
<td>1.800 [45.72]</td>
</tr>
<tr>
<td>VH7</td>
<td>2.600 [66.04]</td>
</tr>
<tr>
<td>VH8</td>
<td>3.000 [76.20]</td>
</tr>
</tbody>
</table>

### Contura Hole Plug

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

<table>
<thead>
<tr>
<th>Model</th>
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<tr>
<td>VH4</td>
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**Contact Information**

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