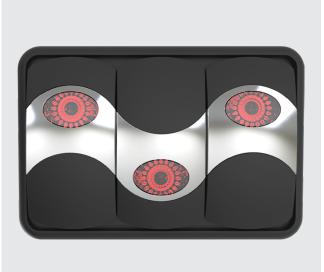
V-Series CONTURA SWITCHES

Carling Technologies' Contura VI sealed rocker switches offer the perfect complement to the already popular Contura line of sealed V-Series rocker switches. Used in a row, they create a unique wave design on your panel. The Contura product offers endless possibilities for your product development, always offering creative, dynamic, yet economical, alternatives in dash panel design.

The Contura switches with sealed option, are certified to IP66/68, signifying complete protection against dust and prolonged spray and submersion under pressure, and are recognized to UL1500 - Ignition Protection for Marine Products. These switches are vibration, shock, thermoshock, moisture and salt spray resistant. Temperature ratings range from -40°C to +85°C.









Product Highlights:

- Countless options for ratings, circuits, colors, illuminations and legends
- Sealed to IP66/68 for Above-Panel Components
- Vibration, shock, thermoshock, moisture and salt spray resistant
- Temperature range from -40°C to +85°C.

Typical Applications:

- On/Off Highway Equipment
- Marine
- · Military Armored Vehicles
- · Mining Machinery and Equipment
- Any application requiring environmental protection





V-Series Switch DESIGN FEATURES

INTERCHANGEABLE ACTUATORS

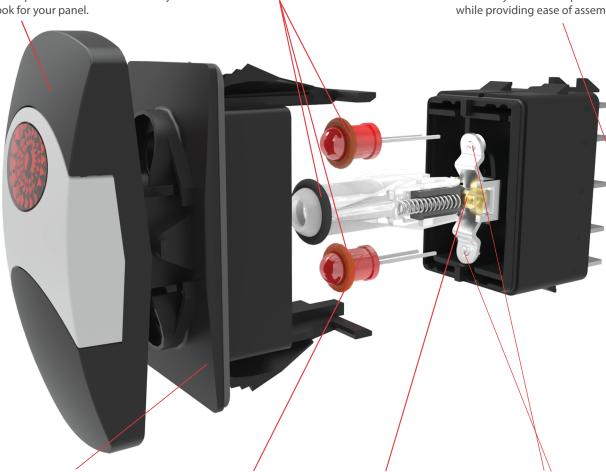
Panel redesign is a snap with our wide range of rocker styles. Achieve maximum design variety with minimum inventory. Simply swap rockers to create an entirely new look for your panel.

DUAL SEAL PROTECTION

Seals out water, dust, debris, and sealed to IP66/68 for above-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

Helps prevent 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, circuit and load dependent

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



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 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 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 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 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 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 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 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.



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.



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

Contact Rating .4VA @ 24VDC (MAX) resistive

> 15 amps, 125VAC 10 amps. 250VAC 1/2 HP 125-250VAC 20 amps, 4-14VDC 15 amps, 15-28VDC

10A, 14VT 6A, 125VAC L 1500 Volts RMS

Dielectric Strength Insulation Resistance 50 Megohms Initial Contact Resistance 10 milliohms max. @ 4VDC

Life Up to 100,000 cycles, circuit

and load dependent 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

Physical

Lighted Incandescent - rated 10,000

hours Neon - rated 25,000 hours LED - rated 100,000 hours 1/2 life (LED is internally ballasted for

voltages to 24VDC)

Seals Internal

Optional external gasket panel seal

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

Contura II.III.IV.V. Hard Surface: Basic actuator VI. VII Actuator structure molded of thermoplastic

polycarbonate with a hard Nylon 66 thermoplastic surface overlay. Soft Surface: Basic actuator structure molded of thermoplastic polycarbonate

with an elastomer overlay.

Contura X,XI,XII Actuator,VP Nylon 66 Reinforced rated to 105°C

Lens Polycarbonate rated at 100°C

Polycarbonate lens/sub-rocker with Contura XIV ABS shell

Actuator Travel (Angular Displacement)

2 position

9° from center 3 positions

Mounting Specifications

Panel Thickness Range

1

Gaskets Acceptable Panel Thickness 0 .030 to .250 (.76 to 6.35mm)

.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

Agency Certifications



Environmental

Moisture Resistance

Sealing IP66/68, for above-panel components

of actual switch only.

Mixed Flowing Gas (MFG) Class III Corrosion 3 year accelerated exposure per

ASTM B-827, B-845 Silver and gold

contacts

-40°C to +85°C Operating Temp.

Per Mil-Std 202F, Method 204D Vibration 1

Test Condition A 0.06 DA or 10G's 10-500 Hz. Tested with VCH connector. Test criteria - No loss of circuit during

test, pre and post test contact

resistance.

Vibration 2 Resonance search 24-50 Hz 0.40 DA

50-2000 Hz ±10 G's peak

Horizontal Axis 3-5 G's max.

Random

24 Hz 0.06 PSD-Gsq/Hz

60 Hz 0.50 100 Hz 0.50 200 Hz 0.025 2000 Hz 0.025

No loss of circuit during test; <10µ

seconds chatter.

Per Mil-Std 202F. Method 213B. Test Shock Condition K @ 30G's. Tested with

VCH connector. Test criteria - No loss of circuit during test, pre and post

test contact resistance.

Per Mil-Std 202F, Method 101D, Test Salt Spray Condition A, 96 Hrs. Sealed version only. Dust Mil STD 810, Method 510.2 Air Velocity

300 Ft/Min Duration 16Hr

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

Per Mil-Std 202F, Method 106F, Test Criteria - pre and post test contact

resistance

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.



.830[21.08]

1.450[36.83]



Actuator

Lens

Lens

Color

Bracket

2 & 1 5 & 1

1 SERIES

Circuit

Ratina

Series

2 CIRCUIT () - momentary Terminal Connections as viewed from bottom of switch: SP - single pole - uses terminals 1, 2 & 3. 8 terminal 10 terminal DP - double pole uses terminals 1, 2, 3, 4, 5 & 6. 8 - -7 8 - -7 Terminals 7, 8, 9 & 10 for lamp circuit only. 8 - - 7 1 - - 4 1 - - 4 2 - - 5 3 - - 6 2 - - 5 3 - - 6 10 - - 9 Position: SP DP 1 A 2 B 3 C 4 D 5 F 6 J 7 K 8 L SPECIAL 1 2 2 3, 5 & 6 Connected Terminals ON NONE (ON) NONE ON NONE ON ON ON ON (ON) NONE OFF OFF SPECIAL CIRCUITS 2 & 3 2 & 3, 5 & 6 2 & 3, 5 & 6 (2 & 3, 5 & 6) (2 & 3, 5 & 6) 5 & 6 2 & 3, 5 & 4 2 & 3 2 & 3 2 & 3 2 & 3 2 & 3 5 & 3 5 & 4 OFF 1 & 2 OFF

Termination Illumination Lamp

 * Jumper between terminals 2 & 5 for circuits H,G,M,R & S are specified in selection 4. External jumper between terminals 2 & 4 for circuit E are provided by customer. Circuit E may be used for SP OFF-ON-ON circuit.

3 RATING 3 1 .4VA @ 28VDC Resistive B 15A 24V C 20A 18V D 20A 12V E 20A 14V, 10A 14VT (circuit 1, 4, A & D only) F 10A 14V, 6A 14VT (circuit G only) M 4VA/20A 12V BCDEFMN

4 TERMINATION	/ BASE STYLE	
8 term 10 Term	Termination	Jumper
1 2	.250 TAB (QC) no barriers	No ·
А В	.250 TAB (QC) with barriers	No
J K	.250 TAB (QC) no barriers	Yes T2 to 5
3 5	Solder Lug no barriers	No
C D	Solder Lug	No
5 6	Wire Leads no barriers	No
E F	Wire Leads	No

Note: Codes J & K for circuits H, G & M. Do not use silicone based lubricants to reduce terminal insertion forces during connector assembly, as it is detrimental to function and performance.

		& SWITCH minals 1 & . Positive	I SEALING 4 end of switch.; L (+) and negative (-)	amp #2 above terminals symbols apply to LED
Sealed	Unsealed 0 1 2 3 4	<u>Lamps</u> NONE	Illumination Type	Lamp wired to Terminals
Ā	1	NONE 1	INDEPENDENT	8 (+) 7 (-)
C	3	1 2	DOWN UP	8 (+) 7 (-) 3 (+) 7 (-) 3 (+) 7 (-) 3 (+) 7 (-)
Ď	4	2 1 2 1 2 1 2 1 2 1 2 1	DOWN DOWN	3 (+) 7 (-)
E	5	1	UP	1 (+) 7 (-)
F	6	2 1	UP INDEPENDENT	3 (+) 7 (-) 8 (+) 7 (-) 3 (+) 6 (-) 8 (+) 7 (-) 3 (+) 7 (-) 8 (+) 7 (-) 8 (+) 7 (-)
G	7	2	UP INDEPENDENT	3 (+) 6 (-)
-	-	2	UP	8 (+) 7 (-) 3 (+) 7 (-)
H	Z Y	2	INDEPENDENT INDEPENDENT	8 (+) 7 (-)
_	-	2	INDEPENDENT	10 (+) 9 (–)
SINGL	E POLE SW 8	ITCHES (DNLY DOWN	2(1) 9 ()
J	0	2	INDEPENDENT	3 (+) 8 (-) 6 (+) 7 (-)
K	w	1	INDEPENDENT	8 (+) 7 (–)
DOUB	LE POLE SV	VITCHES.	INDEPENDENT	6 (+) 7 (–)
L	9	1	DOWN	3 (+) 6 (-)
M N	R T	1	UP DOWN	3 (+) 6 (-) 3 (+) 6 (-) 3 (+) 6 (-)
14	•	2	DOWN	1 (+) 4 (-)
P	٧	2 1 2	UP	1 (+) 4 (–)
		2	UP	3 (+) 6 (–)

6,7 LAMP Lamp above te	erminals 3 & 6	6 end of swite	ch	
No lamp	0	• • • • • • •		
Neon	1 125VAC	2 250VAC		
Incandescent	4 3V	5 6V	6 12V	7 18V 8 24V
LED*			superbright	superbright
	Red	Amber	Green	Red
2VDC	Α	L	F	R
6VDC	В	М	G	S
12VDC	С	N	Ĥ	Ť
24VDC	Ď	P	.i	v
* Consult facto LED is 20ma.	ry for "dayligl	nt bright" LEI	O options. Typ	ical current draw for

Actuator

Legend

Actuator Orientation Lens Legend

Insert

8 FLUSH E	BRACKET Black	COLOR 1 White	I, PANEL SEAL Grav	
No Seal	В	W	Ġ	
One Seal	С	Υ	Н	

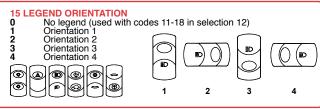
9 ACTUATOR 0 No Actuator	H High Insert	L Low Insert
10 11 LENS		

	Actuato	r Amber	Z - No I	Lens Red	Blue	e
_	7	С	Н	N	U	Bar Lens Translucent
3	_	D	J	Р	٧	Bar Lens Transparent
4	_	E	K	R	W	Oval Lens Transparent
-	Α	F	L	S	Υ	Oval Lens Translucent
Lens o	Lens color for LEDs must be clear, white, or match color of LED.					

	12 ACTUATO C Black	R COLOR H Gray	S Red	Y White	
--	-----------------------	-------------------	--------------	---------	--

Green or blue lenses are not recommended with Neon lamps.





16 ACTUATOR LENS LEGEND 10 No legend this location / no actuator (used with codes 11-18 in selection 12) Selection 14 required when switch requires two legends. If the two legends consist of one lens and one body legend, lens legend must be specified in selection 12; body legend specified in selection 14.

For legend options & codes, visit us at www.carlingtech.com.

Consult factory to verify horsepower rating for your particular circuit choice.

1 Custom colors are available. Consult factory.

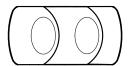
White imprinting is standard on black actuators. Black imprinting is standard on white, red and gray actuators. Custom colors are available, consult factory.

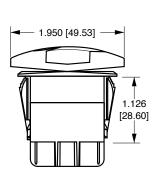
Additional ratings available. See V-Series Switch Accessories page.

Dimensional Specifications: in. [mm]

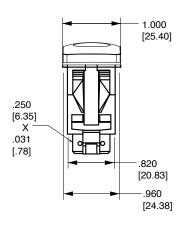
CONTURA VI

SHOWN WITH OVAL LENS

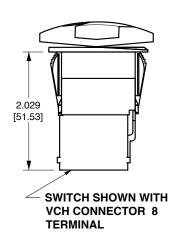


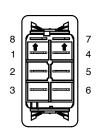


10 TERMINAL BASE W/BARRIER AND **LAMP TERMINAL**

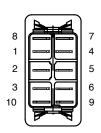


10 TERMINAL BASE W/O BARRIERS

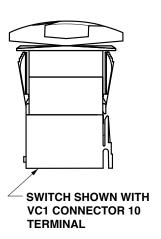




BOTTOM VIEW TERMINAL ARRANGEMENT **8 TERMINAL BASE**

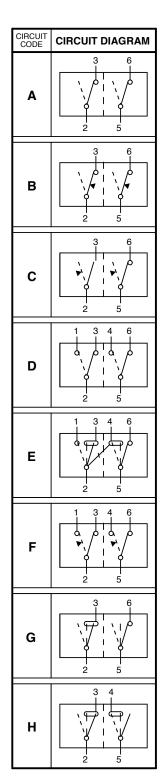


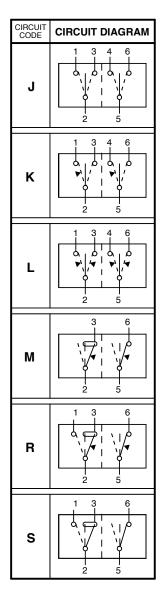
BOTTOM VIEW TERMINAL ARRANGEMENT 10 TERMINAL BASE



Circuit Diagrams:

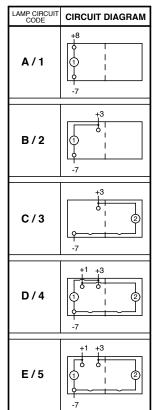
CIRCUIT CODE	CIRCUIT DIAGRAM
1	3
2	3
3	3
4	
5	1 3
6	1 3
7	
8	1 3 Q P P P P P P P P P P P P P P P P P P





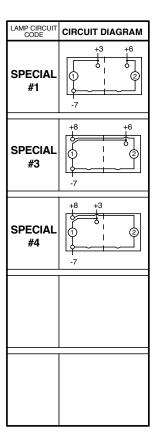
	SYMBOL LEGEND				
SYM.	DEFINITION				
0	DESIGNATES TERMINALS AND CONTACTS				
~	DESIGNATES MAINTAINED CIRCUITS				
	DESIGNATES OTHER POSITION				
○▼ ○	DESIGNATES MOMENTARY CIRCUITS				
	DESIGNATES TWO POSITION CONNECTION				
	DESIGNATES EXTERNAL JUMPER PROVIDED BY CUSTOMER				

Lamp Circuit Diagrams:

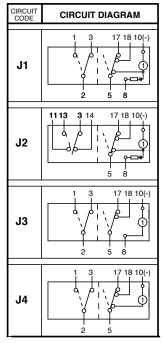


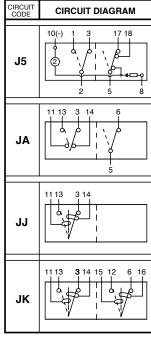
LAMP CIRCUIT CODE	CIRCUIT DIAGRAM
F/6	+8 +3 -6
G/7	+8 +3
H/Z	+8
J/8	-7 +6 +6 +6 +6 +6 +6 +6 +6 +6 +6 +6 +6 +6
K/W	+8 +6 (1) (2) (-)7

LAMP CIRCUIT CODE	CIRCUIT DIAGRAM
L/9	+3 -6
M/R	+3 -6
N/T	1 +3 -4 -6
P/V	+1 +3 -4 -6
U/Y	+8 +10



J-Series Hazard Warning Circuit Diagrams:





NOTE: J circuits are available for all non-locking V-Series styles. Consult factory for partnumber details.

SYMBOL LEGEND					
SYM.	DEFINITION				
0	DESIGNATES TERMINALS AND CONTACTS				
0	DESIGNATES LAMP LOCATION				

Reduce inventory levels and cost by stocking actuators and base switches separately.

Contura II, III, IV, V Actuator only: VV with code A or C for selection 9, & with selections 10-14 in the ordering schemes.

Contura VI Actuator with lenses and inserts only: VV with code selections 9-16

Contura II, III, IV, V, VII Actuator only: VV with code A, C, E, G, P or Z for selection 9 & with selections 10-14 in the ordering schemes.

Contura X, XI, XII, XIV actuators with lenses separately: VV with code selections 9-14 in the ordering schemes.

Panel Seal: VPS

Contura X & XI actuators without lenses separately:



1 CONTURA X & XI ACTUATOR SEPARATELY

2 ACTUATOR STYLE & COLOR									
Contura X Contura XI	Black 1 6	Gray 2 7	White 3 8	Red 4 9					



- One bar lenses
- One square lens two square lens
- square lens on top/ bar lens on bottom (Contura X only)

ACTUATOR LENS OR BODY LEGEND

- 00 No Legend this location 11 ON **12** OFF 13 I OFF ON 0 15 00 **16** O O 17 OI 18 I O F N NF
- For additional legend options & codes, visit us at www.carlingtech.com.

5 LEGEND ORIENTATION 1

- No legend Orientation 1 Orientation 2 3 Orientation 3 Orientation 4
- **E I**D 1 2





Contura X, XI & XII top piece of 2-piece lens separately:



Contura X, XI & XII actuator lens assembly:



1 piece lens/bar lens are positioned the same as bottom lens for assembly,

Notes:

- If actuator lens opening for 2 bar or 2 square lenses, legend orientation 0,1, or 2 $\,$ must be chosen.
 Center of actuator marking not available for Contura XII.
- Legend is not available for bar style lens. Not recommended with neon lamps.
- Must also order top piece of 2 piece square lens separately

Contura XII actuators without lenses separately:

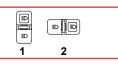


2 ACTUATOR STYLE & COLOR J Black K Gray N Whit N White M Red





- 6 LEGEND ORIENTATION 3
- 0 No legend
- Orientation 1
- Orientation 2



Contura X, XI & XII actuator lens assembly separately:



1 CONTURA X, XI & XII LENS SEPARATELY VVL

- 2 LENS STYLE 3
 - Bar lens
- Bottom of Two-Piece Square lens 5



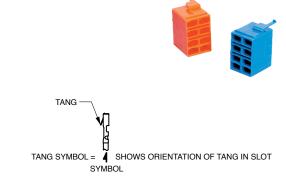


5 LEGEND ORIENTATION 3 0 No legend IID IID ≣D ≣D Orientation 1 1 2 3 4 Orientation 2 ■

Easily integrate Contura products into your system, with Contura Accessories

Contura Connectors

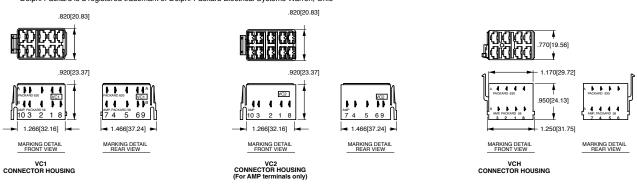
Q.C. SELECTION GUIDE								
	PART NO		WIRE RANGE					
COMPANY SERIES	PLAIN BRASS	TIN PLATED BRASS	AWG	MM ² (REF)	ORIEN- TATION			
	02965580		12	3.0				
	02965471	12010601	(2)16-14	(2)1.0-2.0	1			
PACKARD 58 SERIES	02965470		16-14	1.0-2.0	В			
00 021 1120	02965469	06288318	20-18	.58				
		12084590	10	5.0				
		12052224	12	3.0	l			
PACKARD		12015870	16-14	1.0-2.0	l			
METRI-PACK		12020035	(2)22-18	(2).58	Α			
630 SERIES	12015832	12015869	20-18	.58	l			
		12052222	20-22	.355				
	60253-1	60253-1 60253-2	16-12	1.3-3				
AMP 250 SERIES	00233-1		(2) 16	(2) 1.3				
FASTIN-FASTON	42100-1	42100-2	18-14	.8-2	В			
	60295-1	60295-2	22-18	.39				



NOTE: Consult Delphi Packard and/or Amp on actual part numbers and availability.

AMP is a registered trademark of AMP Inc. Harrisburg, PA

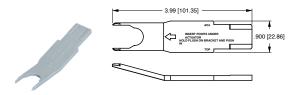
Delphi Packard is a registered trademark of Delphi-Packard Electrical Systems Warren, Ohio



Contura X Boot (P/N VB1-01)



Contura II, III, IV, V, VI & VII Actuator Removal Tool (P/N VRT)



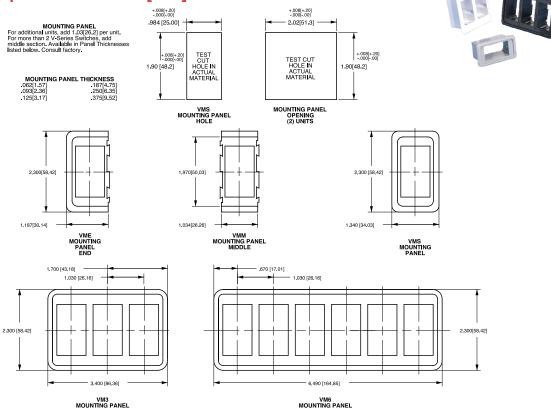
Additional V-Series Ratings

- .4VA @ 28VDC Resistive
- 10A 250VAC 1/2 HP, 15A 125 VAC 1/2 HP, No Agency Listings
- 10A 250VAC 1/2 HP, 15A 125 VAC 1/2 HP, UL Recognized, CSA Certified В
- 15A 24V
- 20A 18V
- D 20A 12V
- Е 20A 14V, 10A 14VT (circuits 1, 4, A, & D only)
- 10A 14V, 6A, 14VT (circuit G only)
- G 20A 6V
- H 20A 3V
- L² 15A 125 VAC, 10A 250VAC, 1/2 HP 125-250 VAC; 6A 125 VAC L
- M
- .4VA/20A 12V (combi-contact) (combination gold/silver contacts for borderline dry circuit applications)
- .4VA/15A 24V (combi-contact) Ν
- (combination gold/silver contacts for borderline dry circuit applications)

Consult factory to determine availability for individual circuits and their HP rating.

- Not available with Contura 7 or 14 rocker styles.
- Rating L available with circuits 1, 4, A & D only.

Contura Mounting Panels Dimensional Specifications: in. [mm]



Contura Hole Plug Dimensional Specifications: in. [mm]

