AV/AHV-Series
ANTI-VANDAL PUSHBUTTON SWITCHES

The AV/AHV-Series sealed switch product line features a sleek, stainless design with various LED illumination options. These single pole switches are available with momentary and maintained circuits, with quick connect tab terminals for easy installation and daisy chaining.

The high powered AVH-Series also features ratings up to 30 amps, and safeguards internal switch circuitry with integrated overload protection and thermal cut off, while providing superior safety and performance capabilities. Switching options include ON-OFF, as well as progressive circuits perfectly suited for NAV/ANCHOR functions.

Product Highlights:
• Sealed to IP67 for Above-Panel Components
• High Current Ratings
• Momentary and Maintained Circuits
• LED Halo Illumination
• UL1500 Ignition Protection

Typical Applications:
• Marine
• Industrial Controls
• Security Panels
• Public Transit Systems
• Traffic Signals
• Emergency Phones
• Harsh and/or Outdoor Environments
<table>
<thead>
<tr>
<th><strong>Electrical</strong></th>
<th><strong>Environmental</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Rating</td>
<td>10.1A Resistive @ 12VDC</td>
</tr>
<tr>
<td>LED Rating</td>
<td>12 VAC/DC @ 15mA</td>
</tr>
<tr>
<td>Dielectric Strength</td>
<td>1000V RMS 50~60 Hz</td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>50 M-ohms min. @ 500VDC</td>
</tr>
<tr>
<td>Initial Contact Resistance</td>
<td>≤10 mΩ</td>
</tr>
<tr>
<td>Electrical Endurance</td>
<td>Up to 25K Cycles</td>
</tr>
<tr>
<td>Contacts</td>
<td>Silver alloy</td>
</tr>
<tr>
<td>Terminals</td>
<td>.110” x 0.020 [2.79 x 0.5 mm] plug-in terminal, copper alloy silver plate.</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td><strong>Environmental</strong></td>
</tr>
<tr>
<td>Function</td>
<td>NO / NC contact (changeover)</td>
</tr>
<tr>
<td>Operation</td>
<td>Momentary or maintained</td>
</tr>
<tr>
<td>Illumination</td>
<td>Independent LED</td>
</tr>
<tr>
<td>Seals</td>
<td>Silicone, Bezel and Button</td>
</tr>
<tr>
<td>Mounting</td>
<td>M19-P1.0 Nut (SUS316), Tightening torque: 2~3Nm.</td>
</tr>
<tr>
<td>Base</td>
<td>Glass filled Nylon</td>
</tr>
<tr>
<td>Actuator</td>
<td>Stainless Steel 316</td>
</tr>
<tr>
<td>Lens</td>
<td>Polycarbonate, PC</td>
</tr>
<tr>
<td>Bushing</td>
<td>Stainless Steel 316</td>
</tr>
<tr>
<td>Actuation Force</td>
<td>7N max</td>
</tr>
<tr>
<td>Weight</td>
<td>18g</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td><strong>Environmental</strong></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +85°C</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-30°C to +70°C (may affect endurance)</td>
</tr>
<tr>
<td>Vibration, High Frequency</td>
<td>Mil-Std 202G, Method 204D, Test Condition A 0.06 DA or 10G’s 10-500 Hz. Test criteria- No loss of circuit during test and pre and post test contact resistance.</td>
</tr>
<tr>
<td>Vibration, Random</td>
<td>Mil-Std 202G, Method 214A, Test Condition I and B 7.56G’s RMS, 8-hours in each of the 3 mutually perpendicular axes. Test criteria- No loss of circuit during test and pre and post test contact resistance.</td>
</tr>
<tr>
<td>Thermal Shock</td>
<td>MIL-STD 202G Method 107G, Condition A (Five cycles @ -55°C to +25°C to +85°C to +25°C)</td>
</tr>
<tr>
<td>Moisture Resistance</td>
<td>MIL-STD 202G Method 106G, i.e.10~24-hour cycles @ +25°C to +60°C, 80-90% RH.</td>
</tr>
<tr>
<td>Sealing</td>
<td>IP67, for above-panel components of the actual switch; compliant with IEC 60529.</td>
</tr>
<tr>
<td>Ignition Protection</td>
<td>UL1500, ISO 8846, SAE J1171</td>
</tr>
<tr>
<td>Electro-Static Discharge</td>
<td>Compliant with EN61000-4-2 Discharge Level: Max. ±8KV; Discharge Level: Max. ±15KV</td>
</tr>
</tbody>
</table>

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

GPS-0003 Rev. B
AV 1 - 1 A 2 1 1 A - R 00

1 SERIES
AV Anti-Vandal Pushbutton Switch

2 MOUNTING
1 M19 Threaded Bushing

3 MATERIAL / FINISH
1 Stainless Steel Bushing / Button

4 CIRCUIT
A Momentary NC / NO
B Maintained NC / NO

5 RATING
2 10.1A Resistive, 12VDC

6 TERMINATION
1 .110” Quick Connect Tabs - Silver Plated

7 LENS / BUTTON
1 Flush

8 LED COLOR
N No LED
A Red
B Green
C Amber
D White
E Blue

9 ILLUMINATION STYLE
N None
R Ring

10 LEGEND
00 No Legend
01 On/Off
02 Stand By
03 Light
04 Bell
05 Door Open
06 Information
07 Horn

Dimensional Specifications: in. [mm]

MON-ILLUMINATED WITH NUT
RING-ILLUMINATED WITH NUT

MOUNTING CUT-OUTS (RECOMMENDED SWITCH SPACING)

DETAIL A SCALE 3:000
**AVH-Series**

**Electrical**

Supply Voltage Range 9VDC – 16VDC  
Overtemp. Protection ≥150°C (SmartFET temperature), Latched status signal  
Reverse Polarity Protection 16 VDC  
Insulation Resistance 50 M-ohms min. @500VDC  
Initial Contact Resistance ≤10 mΩ  
Electrical Endurance Up to 50K Cycles  

**Circuit B (High-Current Latching)**

Current Rating 20A 12VDC, 80A surge  
(300 ms), 14 AWG lead wire  
30A 12VDC, 100A surge (300 ms), 12 AWG lead wire  
Function ON / OFF  
Overload Protection ≥135A, Output does not function. Switch is reset by cycling through OFF position (unless overload continues).  
Connections 14AWG, 12 AWG Lead Wire (20A, 30A, respectively), 6” Lg. 1.08” PC Quick Connect Terminal Ground Connection.

**Circuit C (Nav-Anchor)**

Current Rating 10A total, 5A each Output; 10A surge each Output (300 ms)  
Function NAV-ANC, First press: Load 1 ON & Load 2 ON, Red Ring Illuminated Second press: Load 1 ON, Load 2 OFF, Blue Ring Illuminated Third Press: OFF  
Overload Protection ≥60A, Output does not function Switch reset by cycling through OFF position (unless overload continues).  
Connections 16AWG, 5A per Output, 6” Lg. 1.08” PC Quick Connect Terminal Ground Connection.

**Circuit D (Dual-Output)**

Current Rating 10A total, 5A each Output; 10A surge each Output (300 ms)  
Overload Protection ≥60A, Output does not function Switch reset by cycling through OFF position (unless overload continues).  
Connections 16AWG, 5A per Output, 6” Lg. 1.08” PC Quick Connect Terminal Ground Connection.

**Physical**

Operation Push button, Momentary (Circuit C & D), Maintained (Circuit B)  
Illumination Dependent LED  
Seals Gasket, bezel silicone, potted housing  
Mounting M19-P1.0 Nut, Tightening torque: 2~3Nm  
Housing Aluminum 6061 T6, Anodized per MIL-STD-8625, Type II, Class 2; Black  
Actuator Stainless steel 316  
Lens Polycarbonate, PC  
Bushing Stainless steel 316  
Actuation Force 7N max  
Weight 45-50g

**Environmental**

Storage Temperature -55°C to +85°C  
Operating Temperature -30°C to +70°C (may affect endurance)  
Vibration Mil-Std 202G, Method 204D, Test Condition A 0.06 DA or 10G’ s 10-500 Hz. Test criteria - No loss of circuit during test and pre and post test contact resistance.  
Vibration, Random Mil-Std 202G, Method 214A, Test Condition I and B 7.56G’ s RMS. 8-hours in each of the 3 mutually perpendicular axes. Test criteria - No loss of circuit during test and pre & post test contact resistance.  
Shock Mil-Std 202G, Method 213B, Test Condition K @ 30g’s,11ms normal duration. No resistance value loss pre and post test and no function malfunction. No loss of contact or unintended contact making.  
Thermal Shock MIL-STD 202G Method 107G, Condition A (Five cycles @ -55°C to +25°C to +85°C to +25°C)  
Moisture Resistance MIL-STD 202G Method 106G, i.e.10~24-hour cycles @ +25°C to +60°C, 80-90% RH.  
Sealing IP67, for above-panel components of the actual switch compliant with IEC 60529.  
Ignition Protection UL1500, ISO 8846, SAE J1171

**Notes:**

1. The switch was designed to directly control the load and is not recommended for any application where the load may be removed via another switch.  
2. For backfeed protection, it is recommended to use a diode in series for pump control circuits as shown below.

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GPS-0019 Rev. A
AVH 1 - 1 B 2 6 - R E N A

1 SERIES
AVH - Anti-Vandal High Current Pushbutton Switch

2 MOUNTING
1 M19 Threaded Bushing

3 MATERIAL / FINISH
1 Stainless Steel Bushing / Button

4 CIRCUIT 1, 2
B ON - OFF (Output 1 - None) Maintained
C ON - ON - OFF (Output 1 & Output 2) Momentary
D OFF - ON - ON (None - Output 1 - Output 2) Momentary

5 RATING 3
1 30A 12VDC
2 20A 12VDC
3 5A 12VDC (Per Output) / 10A 12VDC (Total)

6 WIRE LENGTH
6 6 inches (152.4 mm) with 0.187" (4.8mm) Ground Tab Terminal

7 ILLUMINATION STYLE 4
N None
R Ring

8 POSITION 1 LED COLOR
N No LED
A Red
C Amber
E Blue

9 POSITION 2 LED COLOR 5, 6
N No LED
E Blue

10 ILLUMINATION TYPE 7
N None
A Dependent (LED illuminates when the specified output is “ON”)

Notes:
1 Circuit code B requires rating code 1 or 2 only.
2 Circuit codes C & D require rating code 3.
3 Rating will determine the wire gauge used.
4 Illumination Style code N requires: Position 1 LED Color N; Position 2 LED Color code N; Illumination Type code N.
5 Circuit codes C & D require Position 2 LED Color code E.
6 Circuit code B requires Position 2 LED Color code N.
7 Other lighting options available: Consult Manufacturer.

Dimensional Specifications: in. [mm]

CIRCUIT B: BATTERY(+): RED WIRE
LOAD 1: ORANGE WIRE
GROUND: TAB OR BLACK

CIRCUIT C: BATTERY(+): RED WIRE
LOAD 1: BLUE WIRE
LOAD 2: WHITE WIRE
GROUND: TAB

CIRCUIT D: BATTERY(+): RED WIRE
LOAD 1: BLUE WIRE
LOAD 2: ORANGE WIRE
GROUND: TAB

Mounting Cut-Outs (Recommended Switch Spacing)
\[\phi 0.012 - 0.004 [0.30 - 0.11] \]

MOUNTING CUT-OUTS (RECOMMENDED SWITCH SPACING)
\[\phi 0.012 - 0.004 [0.30 - 0.11] \]

CIRCUIT B: MOUNTING CUT-OUTS (RECOMMENDED SWITCH SPACING)
\[\phi 0.012 - 0.004 [0.30 - 0.11] \]

CIRCUIT C: MOUNTING CUT-OUTS (RECOMMENDED SWITCH SPACING)
\[\phi 0.012 - 0.004 [0.30 - 0.11] \]

CIRCUIT D: MOUNTING CUT-OUTS (RECOMMENDED SWITCH SPACING)
\[\phi 0.012 - 0.004 [0.30 - 0.11] \]

Notes:
1 Circuit code B requires rating code 1 or 2 only.
2 Circuit codes C & D require rating code 3.
3 Rating will determine the wire gauge used.
4 Illumination Style code N requires: Position 1 LED Color N; Position 2 LED Color code N; Illumination Type code N.
5 Circuit codes C & D require Position 2 LED Color code E.
6 Circuit code B requires Position 2 LED Color code N.
7 Other lighting options available: Consult Manufacturer.
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To view all of Carling’s environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications