AV series

Anti-vandal and security pushbutton switches

Distinctive features

- Attractive, robust and durable
  - Irremovable
  - Anti-jamming construction: reduced travel to prevent insertion of foreign parts
  - Contact and mechanism protected against crushing
  - Fire resistant
  - Long life

- Different bushing sizes and actuator shapes

- Sealed versions

- Degree of protection of sealed versions (switches mounted on vertical panels): IP65 to IP67 or IP69K depending on models

- UL/CSA approved models

The AV series is a large range of very robust pushbutton switches, consisting of 2 families:

**ANTI-VANDAL PUSHBUTTON SWITCHES** (pages 77-79)
- Great robustness (impact resistance IK08 (Ø 19 mm) and IK10 (Ø 22 mm)
- Actuator and bushing: stainless steel
- Bushing Ø 19 mm (.748) or 22 mm (.866)

**SECURITY PUSHBUTTON SWITCHES** (pages 80-106)
- Large variety of models
- Actuator and bushing: nickel plated, chrome plated or polished varnished brass, stainless steel
- Bushing diameter 16 mm (.629), 19 mm (.748), 22 mm (.866) or 24 mm (.944)
- Marking, illumination, tactile feedback
- Numerous electrical functions (momentary or maintained)

**EXAMPLES OF MOUNTING FOR SEALED VERSIONS**

- Preferred for thin panels
- With boot U2187 (sect. H)

Dimensions: first dimensions are in mm while inches are shown as bracketed numbers.

**Packaging unit:** specified on the following pages.

**Mounting accessories:** Standard and special hardware are presented in section I.

**Sealing boots** are available for models with Ø 19 mm (.748) bushing. See Section H.
AV series
Anti-vandal pushbutton switches
Distinctive features and specifications

- Very robust
  Impact resistance IK08 for model Ø 19 mm (.748)
  and IK10 for model Ø 22 mm (.866)

- Stainless steel actuator and bushing

- UL-CSA approved (long case only)

### SPECIFICATIONS

- Max. current/voltage rating with resistive load:
  - A contacts: 4A 12VDC, 500,000 cycles
  - C contacts: 2A 48 VDC, 10,000 cycles
- Initial contact resistance: 10 mΩ max.
- Insulation resistance: 1.000 MΩ min. at 500VDC
- Dielectric strength: 2.000 Vrms 50 Hz min. between terminals and frame
  2.000 Vrms 50 Hz min. between terminals
- Torque: 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness: 1 (.039) to 11 mm (.433) max.
- Operating temperature: -30°C to +70°C
- Low level or mechanical life: 1.000,000 cycles
- Hand soldering: 300°C, 3 sec. max.
- Packaging unit: 20 pieces (models Ø 22) or 40 pieces (models Ø 19)

### MATERIALS

- Case: PBT
- Contacts: silver (A) or brass, silver plated (C)
- Bushing: stainless steel
- Actuator: stainless steel

### CUT-OUT

- Panel cut-out:
  - Ø 19,2 mm (.755)
  - Ø 22,2 mm (.874)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181)

### ROBUSTNESS

<table>
<thead>
<tr>
<th>Degree of protection according to EN 50102, June 95 (NFC 20-015)</th>
<th>Model Ø 19 mm (.748)</th>
<th>Model Ø 22 mm (.866)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IK08 Striking energy: 5 joules (SNm)</td>
<td>Hammer radius 25 mm</td>
<td>Hammer radius 50 mm</td>
</tr>
<tr>
<td>IK10 Striking energy: 20 joules (20Ncm)</td>
<td>1.7 Kg</td>
<td>5 Kg</td>
</tr>
<tr>
<td>Hammer radius 25 mm</td>
<td>25.5 cm</td>
<td>44.5 cm</td>
</tr>
</tbody>
</table>

Increased impact resistance provided by a nut or mechanical stop.

### SEALING (OPTION T)

- Front panel sealing (IP65)
  - Internal gasket
  - External gasket
  - Option N does not include ① nor ②.
AV series
Anti-vandal pushbutton switches Ø 19 mm (.748)
Momentary (NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>AV</th>
<th>SERIES</th>
<th>Actuator type</th>
<th>Case</th>
<th>Function</th>
<th>Contacts</th>
<th>Terminals</th>
<th>Bush./act. material</th>
<th>Sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>09</td>
<td>Flat</td>
<td>000</td>
<td>3</td>
<td>A</td>
<td>9</td>
<td>Stainless steel</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Curved</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9D</td>
<td>Flush</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the following model numbers, replace • with elements selected in the above order format.

**Flat actuator - short case - 48VDC - AV09100**

Screw terminals
AV091003•940•
Solder lug / quick-connect term.
AV091003•240•

Screw terminals for wires 1.5 mm² max.

**Flat actuator - long case - 4A 250VAC/8A125VAC - UL/CSA - AV09000**

Screw terminals
AV090003A940•

To order switches marked UL-CSA, add “UU” at the end of model number.

Screw terminals for wires 1.5 mm² max.

**Curved actuator - AV19**

Screw terminals
AV19•003•940•
Solder lug/quick-connect term. (short case)
AV191003•240•

**Flush model - AV9D**

Screw terminals
AV9D•003•940•
Solder lug / quick-connect terminals (short case only)
AV9D1003•240•

Panel cut-out
AV series

Anti-vandal pushbutton switches Ø 22 mm (.866)

Momery (NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>AV</th>
<th>Series Bushing/act. configuration</th>
<th>Function Contacts</th>
<th>Terminals</th>
<th>Bush/act. material</th>
<th>Sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>03 Flat act. 02 Curved act. M3 Flat act. + flatted bush. M2 Curved act. + flatted bush.</td>
<td>3 NO</td>
<td>C Silver, brass, silver pl.</td>
<td>2 Quick-connect</td>
<td>40 Stainless steel</td>
</tr>
</tbody>
</table>

Case 000 Long 100 Short

In the following model numbers, replace • with elements selected in the above order format.

Flat actuator - short case - 48VDC - AV03100

Screw terminals AV031003•940•

Solder lug / quick-connect term. AV031003•240•

Screw terminals for wires 1,5 mm² max.

Flat actuator - long case - 4A 250VAC/8A125VAC - UL/CSA - AV03000

Screw terminals AV030003•940•

Solder lug / quick-connect (short case) AV031003•240•

To order switches marked UL-CSA, add "UU" at the end of model number.

Screw terminals for wires 1,5 mm² max.

Curved actuator - AV02

Screw terminals AV02•003•940•

Solder lug / quick-connect (short case) AV020103•240•

Flatted bushing - AVM3 and AVM2

Flat actuator, screw terminals AVM3•003•940•

Curved actuator, screw terminals AVM2•003•940•

Panel cut-out
AV series
Snap action security pushbutton switches ∅ 16 mm (.629)
Momentary (NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Function</th>
<th>Case</th>
<th>Contacts</th>
<th>Terminals</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td>3 NO</td>
<td>0</td>
<td>C</td>
<td>9 Screw</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td>6 Flat</td>
<td>3 NO</td>
<td>C</td>
<td>9 Screw</td>
<td></td>
</tr>
</tbody>
</table>

SPECIFICATIONS

- Travel : 1,60 mm (.063) ± 0,3 mm (.011)
- Max. current/voltage rating with resistive load : 200mA 48 VDC - 100mA 48VDC
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1,000 MΩ min. at 500VDC
- Dielectric strength : 2,000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 50,000 cycles at 200mA 48VDC
- 100,000 cycles at 100mA 48VDC
- Torque : 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -30°C to +70°C
- Low level or mechanical life : 1,000,000 cycles
- Packaging unit : 60 pieces

MATERIALS

- Case : PBT
- Contacts : brass, silver plated (C)
- Bushing and actuator : see “Options” page

CUT-OUT

- Panel cut-out : ∅ 16,2 mm (.637)
- Min. pitch for matrix mounting : 24 mm x 24 mm (.944 x .944)
  (AV6P & AV6B : 20 mm x 20 mm)

To order a product, select a basic model below and add the desired options.

BASIC MODEL

Flat or curved actuator - screw terminals

<table>
<thead>
<tr>
<th>Actuator Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>AV0630C9</td>
</tr>
<tr>
<td>Curved</td>
<td>AV1630C9</td>
</tr>
</tbody>
</table>

Hex nut 19 (.748) across flats

Screw terminals for wires 1.5 mm² max.

With chamfer

<table>
<thead>
<tr>
<th>Actuator Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curved</td>
<td>AV0830C9</td>
</tr>
<tr>
<td>Flat</td>
<td>AV0730C9</td>
</tr>
</tbody>
</table>

With knurled nut for matrix mounting 20 x 20 - AV6P and AV6B

<table>
<thead>
<tr>
<th>Actuator Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>AV0630C9</td>
</tr>
<tr>
<td>Curved</td>
<td>AV0680C9</td>
</tr>
</tbody>
</table>

Wrench available under P/N U1990.
AV series

Security pushbutton switches Ø 16 mm (.629)

Latching action

ORDER FORMAT

<table>
<thead>
<tr>
<th>AV</th>
<th>SERIES</th>
<th>06 Flat</th>
<th>16 Curved</th>
<th>Function</th>
<th>1 Off-On</th>
<th>Case</th>
<th>A Silver</th>
<th>Terminals</th>
<th>See “Options” page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>A</td>
<td>2 Solder</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td>3</td>
<td>4</td>
<td>6 Quick</td>
<td></td>
</tr>
</tbody>
</table>

SPECIFICATIONS

• Max. current/voltage rating with resistive load : 1A 24VDC
• Initial contact resistance : 50mΩ max.
• Insulation resistance : 1 GΩ min. at 500VDC
• Dielectric strength : 1.500 Vrms 50 Hz min. between terminals
• 1,000 Vrms 50 Hz between terminals and frame
• Electrical life : 100,000 cycles at 1.5A 250VAC
• 40,000 cycles at 1A 24VDC
• Torque : 5 Nm min. - 14 Nm max. applied to nut
• Panel thickness : 1 (.039) to 6 mm (.236) max.
• Operating temperature : -30°C to +70°C
• Low level or mechanical life : 200,000 cycles
• Hand soldering : 300°C, 5 sec. max.
• Packaging unit : 25 pieces

MATERIALS

• Case : PA-6T, UL94-V0
• Contacts : silver (A)
• Gold plated silver (AD) on request
• Bushing and actuator : see “Options” page

CUT-OUT

• Panel cut-out : Ø 16.2 mm (.637)
• Min. pitch for matrix mounting : 24 mm x 24 mm (.944 x .944)

To order a product, select a basic model below and add the desired options.

BASIC MODEL

Flat or curved actuator - solder lug terminals

Flat actuator
AV0611A2 OFF - ON
Curved actuator
AV1611A2 OFF - ON

Hex nut 19 (.748) across flats

Straight PC terminals

Flat actuator
AV0611A4
Curved actuator
AV1611A4

Quick-connect terminals

Flat actuator
AV0611A8
Curved actuator
AV1611A8
**AV series**

Security pushbutton switches Ø 16 mm (.629)

*Options*

After selecting basic model number, fill in last 2 boxes with desired options.

<table>
<thead>
<tr>
<th>BASIC MODEL</th>
<th>Bushing/act. material</th>
<th>Sealing</th>
</tr>
</thead>
</table>

**BUSHING/AKTUATOR MATERIALS**

<table>
<thead>
<tr>
<th>Flat or curved metal actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>00 (standard)</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>40</td>
</tr>
</tbody>
</table>

**SEALING**

<table>
<thead>
<tr>
<th>Blank</th>
<th>No sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Front panel sealing (IP65)</td>
</tr>
</tbody>
</table>
AV series
Security pushbutton switches Ø 19 mm (.748)
Momentary (NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>AV</th>
<th>Bushing/act. config.</th>
<th>Case</th>
<th>Function</th>
<th>Contacts</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>09 Flat actuator</td>
<td>000</td>
<td>1</td>
<td>A</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>19 Curved actuator</td>
<td>100</td>
<td>2</td>
<td>C</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>9P Flat act., knurled nut</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>98 Curved act., knurled nut</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OPTIONS

See “Options” page.

SPECIFICATIONS

- Max. current/voltage rating with resistive load:
  - A contacts: 4A 12VDC, 500,000 cycles
  - C contacts: 2A 48 VDC, 10,000 cycles
- Approved ratings of models with long case and A contacts (AV..000):
  - UL-CSA: 4A 250VAC - 8A 125VAC - 6,000 cycles
- Initial contact resistance: 10 mΩ max.
- Insulation resistance: 1,000 MΩ min. at 500VDC
- Dielectric strength: 2,000 Vrms 50 Hz min. between terminals and frame
- Torque: 5 Nm min.- 14 Nm max. applied to nut
- Panel thickness: 1.039 mm to 1.181 mm max.
- Operating temperature: -30°C to +70°C
- Low level or mechanical life: 1,000,000 cycles
- Hand soldering: 300°C, 3 sec. max.
- Packaging unit: 40 pieces

MATERIALS

- Case: PBT
- Contacts: silver (A) or brass, silver plated (C)
- Bushing and actuator: see “Options” page

CUT-OUT

- Panel cut-out: Ø 19.2 mm (.755)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181) (AV9P & AV9B: 25 mm x 25 mm)

To order a product, select a basic model below and add the desired options.

BASIC MODEL

Flat actuator - short case - 48VDC - AV09100

Screw terminals AV091003•9
Solder lug / quick-connect term. AV091003•2

Curved actuator - short case

Screw terminals AV191003•9
Solder lug / quick-connect terminals AV191003•2

Contacts: replace • with A (silver) or C (silver plated brass).

With knurled nut for matrix mounting 25 x 25 - AV9P and AV9B

Flat actuator, screw terminals AV9P1003•9
Flat actuator, solder lug term. AV9P1003•2
Curved actuator, screw terminals AV9B1003•9
Curved actuator, solder lug term. AV9B1003•2

Wrench available under P/N U1929

To order a product, select a basic model below and add the desired options.

BASIC MODEL

Flat actuator - short case - 48VDC - AV09100

Screw terminals AV091003•9
Solder lug / quick-connect term. AV091003•2

Curved actuator - short case

Screw terminals AV191003•9
Solder lug / quick-connect terminals AV191003•2

Contacts: replace • with A (silver) or C (silver plated brass).

With knurled nut for matrix mounting 25 x 25 - AV9P and AV9B

Flat actuator, screw terminals AV9P1003•9
Flat actuator, solder lug term. AV9P1003•2
Curved actuator, screw terminals AV9B1003•9
Curved actuator, solder lug term. AV9B1003•2

Wrench available under P/N U1929
AV series
Security pushbutton switches Ø 19 mm (.748)
Momentary (NO)

Flat actuator - long case - 4A 250VAC/8A 125VAC - UL/CSA - AV09000

To order switches marked UL-CSA, add "UU" at the end of model number.

Screw terminals for wires 1.5 mm² max.

Curved actuator - long case

With knurled nut for matrix mounting 25 x 25 - AV9P and AV9B

Screw terminals
AV9P0003A9
AV9B0003A9

Wrench available under P/N U1929.
AV series
Security pushbutton switches Ø 19 mm (.748)

After selecting basic model number, fill in last 3 boxes with desired options.

<table>
<thead>
<tr>
<th>BASIC MODEL</th>
<th>Bush./actuator material</th>
<th>Marking</th>
<th>Sealing</th>
</tr>
</thead>
</table>

### BUSHING/ACTUATOR MATERIALS

**Flat or curved metal actuator**

<table>
<thead>
<tr>
<th>CODE</th>
<th>BUSHING</th>
<th>ACTUATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 (standard)</td>
<td>Nickel plated brass</td>
<td>Nickel plated brass</td>
</tr>
<tr>
<td>10</td>
<td>Nickel plated brass</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>12</td>
<td>Nickel plated brass</td>
<td>Chrome plated brass</td>
</tr>
<tr>
<td>20</td>
<td>Chrome plated brass</td>
<td>Chrome plated brass</td>
</tr>
<tr>
<td>30</td>
<td>Chrome plated brass</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>40</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>80</td>
<td>Varnished polished brass</td>
<td>Varnished polished brass</td>
</tr>
</tbody>
</table>

**Flat thermoplastic actuator**

<table>
<thead>
<tr>
<th>CODE</th>
<th>BUSHING</th>
<th>ACTUATOR COLOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0+ (standard)</td>
<td>Nickel plated brass</td>
<td>Replace • with one of the following codes.</td>
</tr>
<tr>
<td>2+</td>
<td>Chrome plated brass</td>
<td>1: blue - 1/4: dark blue - 2: black - 3: green</td>
</tr>
<tr>
<td>8+</td>
<td>Varnished polished brass</td>
<td>4: grey - 5: yellow - 6: red - 7/1: white</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9: orange</td>
</tr>
</tbody>
</table>

### MARKING

- By engraving on flat or curved brass actuator (stainless steel on request)
- By hot stamping on flat thermoplastic actuator

Select an option from each of the two tables below.

#### TYPE OF MARKING

<table>
<thead>
<tr>
<th>CODE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 9</td>
<td>Numbers 0 to 9</td>
</tr>
<tr>
<td>X</td>
<td>Symbol *</td>
</tr>
<tr>
<td>Y</td>
<td>Symbol #</td>
</tr>
<tr>
<td>A to N</td>
<td>Letters A to N</td>
</tr>
<tr>
<td>P to W</td>
<td>Letters P to W</td>
</tr>
<tr>
<td>0</td>
<td>Letter O</td>
</tr>
</tbody>
</table>

Letter O: same code and same design as number 0.
For special symbols, consult factory.
Minimum order: 500 pieces

#### COLOUR OF MARKING

<table>
<thead>
<tr>
<th>CODE</th>
<th>COLOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Same as finish</td>
</tr>
<tr>
<td>2</td>
<td>Black</td>
</tr>
<tr>
<td>7</td>
<td>White</td>
</tr>
</tbody>
</table>

Note: A finished product supplied in version "0" cannot be modified to version "2".

### SEALING

- Blank: No sealing
- K: Frontal panel sealing (IP65)

1. Internal gasket
2. External gasket

Letter O: same code and same design as number 0.
For special symbols, consult factory.
Minimum order: 500 pieces
AV series
Security pushbutton switches Ø 19 mm (.748)
Momentary (NC/NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>Series</th>
<th>Bushing diameter</th>
<th>Bush./act. config.</th>
<th>Actuator style</th>
<th>Bush./act. matl</th>
<th>Contact/terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV</td>
<td>19</td>
<td>L</td>
<td>P</td>
<td>40</td>
<td>7</td>
</tr>
</tbody>
</table>

See below

SPECIFICATIONS
- Max. current/voltage rating with resistive load:
  - 5A 250VAC - 5A 125VAC - 6,000 cycles
  - 5A 15VDC - 3A 30VDC - 50,000 cycles
- Initial contact resistance: 100 mΩ max.
- Insulation resistance: 1.000 MΩ min. at 500VDC
- Dielectric strength: 2.000 Vrms 50 Hz min. between term. and frame
- Torque: 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness: 1 (.039) to 9 mm (.354) max.
- Operating temperature: -20°C to +85°C
- Low level or mechanical life: 1,000,000 cycles
- Front panel sealing: IP65 and IP69K
- Packaging unit: 20 pieces

MATERIALS
- Case: PA 6/6
- Contacts: silver
- Bushing: stainless steel (std)
- Actuator: stainless steel (std)

CUT-OUT
- Panel cut-out: Ø 19.2 mm (.755)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181 x 1.181)

All model numbers below are for switches with standard bushing/actuator material.

BASIC MODEL
Solder lug terminals - AV19..407

BUSHING/ACTUATOR MATERIALS
For non-standard material, replace 40 with one of the following codes.

<table>
<thead>
<tr>
<th>CODE</th>
<th>BUSHING ACTUATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Nickel plated brass Nickel plated brass</td>
</tr>
<tr>
<td>20</td>
<td>Chrome plated brass  Chrome plated brass</td>
</tr>
</tbody>
</table>
AV series

Security pushbutton switches Ø 19 mm (.748)

With illuminated ring - momentary (NC/NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Bushing dia. 19 mm</th>
<th>LED colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no LED</td>
<td>0: no LED</td>
</tr>
<tr>
<td>1</td>
<td>blue</td>
<td>1: blue</td>
</tr>
<tr>
<td>2</td>
<td>green</td>
<td>2: green</td>
</tr>
<tr>
<td>3</td>
<td>yellow</td>
<td>3: yellow</td>
</tr>
<tr>
<td>4</td>
<td>red</td>
<td>4: red</td>
</tr>
<tr>
<td>5</td>
<td>yellow</td>
<td>5: yellow</td>
</tr>
<tr>
<td>6</td>
<td>white</td>
<td>6: white</td>
</tr>
<tr>
<td>7</td>
<td>amber</td>
<td>7: amber</td>
</tr>
<tr>
<td>8</td>
<td>amber</td>
<td>8: amber</td>
</tr>
<tr>
<td>9</td>
<td>amber</td>
<td>9: amber</td>
</tr>
</tbody>
</table>

Options : see next page.

** SPECIFICATIONS **

- Travel : 2 mm ± 0.3 mm (.003)
- Max. current/voltage rating with resistive load : 1A 30VDC
- LED voltage : 12VDC, 24VDC or 48VDC
  (If not supplied by APEM, a resistor must be series-connected by the user)**
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 10 MΩ min. at 500VDC
- Dielectric strength : 500 Vrms 50 Hz min. between terminals
- Electrical life : 250,000 cycles at full load
- Operating force : 5N ± 2N
- Torque : 14 Nm min. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -20°C to +55°C
- Hand soldering : 350°C, 5 seconds max.

** MATERIALS **

- Case : polyamide, glass filled
- Contacts : silver
- Bushing : see next page
- Actuator : see next page
- Elastomeric membrane : silicone
- LED

** CUT-OUT **

- Panel cut-out : Ø 19.2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (.118x.118)

To order a product, select a basic model below and add the desired LED colour and voltage. Then select the desired options on next page.

** Flat actuator - solder lug terminals **

Illuminated (select LED colour above) *

AV9•022

Non-illuminated

AV90022

* No LED resistor supplied on this model.

** Flat actuator - flying lead terminals**

Illuminated (select LED colour & resistor above)

AV9••2F

Non-illuminated

AV9002F

Wire colours : black: NC, orange: NO, red: LED anode (+), blue : LED cathode (-)
AV series
Security pushbutton switches Ø 19 mm (.748)

With illuminated ring - momentary (NC/NO)

Flat actuator - cable terminals

After selecting basic model No., fill in last 5 boxes with desired options.

FLYING LEAD PROTECTION

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No protection and/or no flying leads</td>
</tr>
<tr>
<td>1</td>
<td>Heat-shrink sleeves</td>
</tr>
<tr>
<td>2</td>
<td>Tube + epoxy</td>
</tr>
</tbody>
</table>

FLYING LEAD/CABLE LENGTH

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>000</td>
<td>No flying leads / no cable</td>
</tr>
<tr>
<td>020</td>
<td>Length 20 cm (standard)</td>
</tr>
<tr>
<td>XXX</td>
<td>Length in centimeters</td>
</tr>
</tbody>
</table>

RING COLOURS

<table>
<thead>
<tr>
<th>Code</th>
<th>Colour</th>
<th>Code</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blue</td>
<td>6</td>
<td>Red</td>
</tr>
<tr>
<td>2</td>
<td>Black *</td>
<td>7</td>
<td>Opal white (std)</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
<td>8</td>
<td>Translucent</td>
</tr>
<tr>
<td>4</td>
<td>Grey *</td>
<td>9</td>
<td>Orange</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* non-illuminated only

BUSHING/PLUNGER MATERIALS

<table>
<thead>
<tr>
<th>Code</th>
<th>Bushing</th>
<th>Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Brass, nickel plated</td>
<td>Brass, nickel plated</td>
</tr>
<tr>
<td>04</td>
<td>Stainless steel 303</td>
<td>Stainless steel 303</td>
</tr>
<tr>
<td>04A</td>
<td>Stainless steel 304</td>
<td>Stainless steel 304</td>
</tr>
<tr>
<td>04B</td>
<td>Stainless steel 316</td>
<td>Stainless steel 316</td>
</tr>
</tbody>
</table>

Other : on request.

SEALING

Blank     No sealing

K Front panel sealing (IP67)

1. internal membrane
2. external gasket
**AV series**

Security pushbutton switches Ø 19 mm (.748)

*Illuminated and non-illuminated - latching*

**ORDER FORMAT**

<table>
<thead>
<tr>
<th>AV</th>
<th>1</th>
<th>LED colour</th>
<th>Function</th>
<th>Contacts</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**

- Max. current/voltage rating with resistive load : 2A 48 VDC
- LED voltage and consumption : blue 3.5V 10mA, green : 2V 10mA, yellow & red : 2V 20mA (a resistor must be series-connected by the user)**
- Initial contact resistance : 50 mΩ max.
- Insulation resistance : 1,000 MΩ min. at 500VDC
- Dielectric strength : 1,000 Vrms 50 Hz min. between terminals 500 Vrms 50 Hz min. between terminals and frame
- Electrical life : 500,000 cycles at 2A 48VDC
- Torque : 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 9 mm (.354) max.
- Operating temperature : -30°C to +70°C
- Low level or mechanical life : 1,000,000 cycles
- Hand soldering : 300°C, 4 seconds max.
- Packaging unit : 20 pieces
- **Resistor value = supply voltage - LED forward voltage / LED forward current**

**MATERIALS**

- Case : PA6T UL94-V0
- Contacts : silver
- Bushing and actuator : see next page
- LED

**CUT-OUT**

- Panel cut-out : Ø 19.2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181 x 1.181)

To order a product, select a basic model below and add the desired options selected on next page.

**Non-illuminated - solder lug terminals**

Flat actuator *
AV09100EA2 ON - ON
Curved actuator
AV19100EA2 ON - ON

* Also available with prominent actuator in the non-latched position

**Illuminated - solder lug terminals**

Flat actuator
AV091L•EA2 ON - ON

Replace • with desired LED colour.

Standard actuator position : the actuator is flush in the non-latched position and recessed in the latched position.
AV series
Security pushbutton switches Ø 19 mm (.748)

Latch - Options

**Straight PC terminals**

Replace 2 with 4 at the end of the model numbers shown on previous page.

**Quick-connect terminals**

Replace 2 with 8 at the end of the model numbers shown on previous page.

After selecting basic model number, fill in last 2 boxes with desired options.

**Bush/Actuator Materials**

<table>
<thead>
<tr>
<th>CODE</th>
<th>Bushing</th>
<th>Actuator</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Nickel plated brass</td>
<td>Nickel plated brass</td>
</tr>
<tr>
<td>10</td>
<td>Nickel plated brass</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>40</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>50</td>
<td>Stainless steel</td>
<td>Nickel plated brass</td>
</tr>
</tbody>
</table>

**Sealing**

Blank No sealing

1. elastomeric membrane
2. external gasket

K Frontal panel sealing (IP65)
**AV series**

Snap-action security pushbutton switches Ø 19 mm (.748)

Illuminated and non-illuminated - momentary (NO)

**ORDER FORMAT**

<table>
<thead>
<tr>
<th>AV</th>
<th>Actuator type</th>
<th>C7</th>
<th>Illumin.</th>
<th>3</th>
<th>D</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flat</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
<td>Solder</td>
</tr>
<tr>
<td>09</td>
<td>Curved</td>
<td></td>
<td>Illum.</td>
<td></td>
<td></td>
<td>Screw</td>
</tr>
</tbody>
</table>

See next page

**SPECIFICATIONS**

- **Travel**: 0.7 mm (.027) ±0.1 mm (.003)
- **Max. current/voltage rating with resistive load**: 50mA 24VDC
- **LED voltage and consumption**: 2-colour LED : 2V (3V max.) 20mA
- **Other colours**: 2V (3V max.) 10mA
- A resistor must be series-connected by the user **
- **Initial contact resistance**: 100 mΩ max.
- **Insulation resistance**: 1.000 MΩ min. at 500VDC
- **Dielectric strength**: 500 Vrms 50 Hz min. between terminals
  2.000 Vrms 50 Hz min. between terminals and frame
- **Electrical life**: 1.000.000 cycles at full load
- **Operating force**: 7 N ±2 N
- **Torque**: 5 Nm min. - 14 Nm max. applied to nut
- **Panel thickness**: 1 (.039) to 6 mm (.236) max.
- **Operating temperature**: -30°C to +70°C
- **Hand soldering**: 270°C, 3 seconds max.
- **Packaging unit**: 40 pieces

**MATERIALS**

- **Case**: PBT UL94-V0
- **Terminals**: brass, gold plated
- **Contacts**: gold plated dome
- **Bushing and actuator**: see next page
- **LED**

**CUT-OUT**

- **Panel cut-out**: Ø 19.2 mm (.755)
- **Min. pitch for matrix mounting**: 30 mm x 30 mm (1.181 x 1.181)

To order a product, select a basic model below and add the desired options selected on next page.

**Flat actuator - non-illuminated**

Solder lug terminals
AV09C703D2
Screw terminals
AV09C703D9

Also available with curved actuator: AV19C703D2 or AV19C703D9

**Flat actuator - illuminated**

Solder lug terminals
AV09C713D2
Screw terminals
AV09C713D9

Hex nut 22 (.866) across flats
# AV series

Snap-action security pushbutton switches Ø 19 mm (.748)

## Options

After selecting basic model no., fill in last 4 boxes with desired options.

### BUSHING/ACTUATOR MATERIALS

<table>
<thead>
<tr>
<th>Code</th>
<th>Non-illuminated models</th>
<th>Illuminated models</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 (std)</td>
<td>Nickel plated brass</td>
<td>Nickel plated brass</td>
</tr>
<tr>
<td>10</td>
<td>Nickel plated brass</td>
<td>Chrome plated brass</td>
</tr>
<tr>
<td>30</td>
<td>Chrome plated brass</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>40</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>80</td>
<td>Varnished polished brass</td>
<td>Varnished polished brass</td>
</tr>
</tbody>
</table>

### LED COLOURS

<table>
<thead>
<tr>
<th>Code</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>No LED</td>
</tr>
<tr>
<td>1</td>
<td>Blue</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
</tr>
<tr>
<td>6</td>
<td>Red</td>
</tr>
<tr>
<td>7</td>
<td>White</td>
</tr>
<tr>
<td>9</td>
<td>Amber</td>
</tr>
<tr>
<td>2</td>
<td>Red/green</td>
</tr>
</tbody>
</table>

### MARKING

For flat or curved actuator.
- by engraving on non-illuminated brass actuator (stainless steel on request).
- by hot stamping on thermoplastic insert (illuminated actuators)

<table>
<thead>
<tr>
<th>Code</th>
<th>Type of Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 9</td>
<td>Numbers 0 to 9</td>
</tr>
<tr>
<td>X</td>
<td>Symbol *</td>
</tr>
<tr>
<td>Y</td>
<td>Symbol #</td>
</tr>
<tr>
<td>A to N</td>
<td>Letters A to N</td>
</tr>
<tr>
<td>P to W</td>
<td>Letters P to W</td>
</tr>
<tr>
<td>0</td>
<td>Letter O</td>
</tr>
</tbody>
</table>

Letter O : same code and same design as number 0.

For special symbols, consult factory.

Minimum order : 500 pieces

### SEALING

<table>
<thead>
<tr>
<th>Code</th>
<th>Sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>No sealing</td>
</tr>
</tbody>
</table>

K Front panel sealing (IP65)

1. internal gasket
2. external gasket
AV series
Snap-action security pushbuttons Ø 19 mm (.748) with overmolded actuator

Illuminated and non-illuminated - momentary (NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Bush./act. configuration</th>
<th>Illumination</th>
<th>контакты</th>
<th>Terminals</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV</td>
<td></td>
<td>S0 No</td>
<td>SL illum.</td>
<td>2 Solder</td>
<td>See next page</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td>9 Screw</td>
<td>page</td>
</tr>
</tbody>
</table>

SPECIFICATIONS

- Travel : 0,7 mm (.027) ± 0,1 mm (.003)
- Max. current/voltage rating with resistive load : 50mA 24VDC
- LED voltage and consumption : 2-colour LED : 2V (3V max.) 20mA
- Other colours : 2V (3V max.) 10mA
  (a resistor must be series-connected by the user)**
- Initial contact resistance : 100 mΩ max.
- Insulation resistance : 1.000 Ω min. at 500VDC
- Dielectric strength : 500 Vrms 50 Hz min. between terminals
- 2,000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 1.000.000 cycles at full load
- Operating force : 7 N ±2N
- Torque : 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -30°C to +70°C
- Hand soldering : 270°C, 3 sec. max.
- Packaging unit : 16 pieces
** Resistor value = supply voltage - LED forward voltage / LED forward current
- Contact resistance : 100 mΩ max.
- Insulation resistance : 1.000 MΩ min. at 500VDC
- Dielectric strength : 500 Vrms 50 Hz min. between terminals
- 2,000 Vrms 50 Hz min. between terminals and frame
- Electrical life : 1.000.000 cycles at full load
- Operating force : 7 N ±2N
- Torque : 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness : 1 (.039) to 6 mm (.236) max.
- Operating temperature : -30°C to +70°C
- Hand soldering : 270°C, 3 sec. max.
- Packaging unit : 16 pieces
- ** Resistor value = supply voltage - LED forward voltage / LED forward current

MATERIALS

- Case : PBT UL94-V0
- Terminals : brass, gold plated
- Contacts : gold plated dome
- Bushing : see next page
- Actuator : stainless steel, with thermoplastic overmolding
- LED

CUT-OUT

- Panel cut-out : Ø 19,2 mm (.755)
- Min. pitch for matrix mounting : 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired options selected on next page.

Flat actuator - solder lug terminals

Illuminated AV9SLD2
Non-illuminated AV9S0D2

Also available with bushing Ø 22 (.866) : on request.

Flat actuator - screw terminals

Illuminated AV9SLD9
Non-illuminated AV9S0D9

Also available with bushing Ø 22 (.866) : on request.
**AV series**

Snap-action security pushbuttons Ø 19 mm (.748) with overmolded actuator

### Options

After selecting basic model no., fill in last 5 boxes with desired options.

<table>
<thead>
<tr>
<th>BUSHING MATERIALS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE</td>
<td>MATERIAL</td>
</tr>
<tr>
<td>0 (std)</td>
<td>Nickel plated brass</td>
</tr>
<tr>
<td>2</td>
<td>Chrome plated brass</td>
</tr>
<tr>
<td>4</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>5</td>
<td>Gold plated brass</td>
</tr>
<tr>
<td>6</td>
<td>Chrome plated brass, satin</td>
</tr>
<tr>
<td>7</td>
<td>Chrome pl. brass, matt black</td>
</tr>
<tr>
<td>8</td>
<td>Varnished polished brass</td>
</tr>
<tr>
<td>9</td>
<td>Polished brass</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OVERMOLDING COLOURS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE</td>
<td>COLOUR</td>
</tr>
<tr>
<td>1</td>
<td>Blue</td>
</tr>
<tr>
<td>2</td>
<td>Black *</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
</tr>
<tr>
<td>4</td>
<td>Grey *</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

**To order a green LED for actuator style 002, always use code V. Other actuator styles can be ordered with LED code 3 or V.**

### ACTUATOR STYLES

The ring and symbols are obtained by photochemical engraving of a stainless steel insert. The insert is then overmolded in the desired colour.

The following actuator styles are available. For other types, consult factory.

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
<th>RING/SYMBOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>Illuminated ring and disc</td>
<td>![Illuminated ring and disc]</td>
</tr>
<tr>
<td>002</td>
<td>Illuminated ring</td>
<td>![Illuminated ring]</td>
</tr>
<tr>
<td>003</td>
<td>Arrow</td>
<td>![Arrow]</td>
</tr>
<tr>
<td>004</td>
<td>Loudspeaker OFF</td>
<td>![Loudspeaker OFF]</td>
</tr>
<tr>
<td>005</td>
<td>Opening</td>
<td>![Opening]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
<th>SYMBOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>006</td>
<td>Validation</td>
<td>![Validation]</td>
</tr>
<tr>
<td>008</td>
<td>Closing</td>
<td>![Closing]</td>
</tr>
<tr>
<td>009</td>
<td>Standby</td>
<td>![Standby]</td>
</tr>
<tr>
<td>010</td>
<td>Cancel</td>
<td>![Cancel]</td>
</tr>
<tr>
<td>011</td>
<td>Power</td>
<td>![Power]</td>
</tr>
</tbody>
</table>

### SEALING

**Blank** No sealing

Recommended panel mounting for IP69K

---

**B2**

www.apem.com

---

**B2-94**

www.apem.com
AV series
Snap-action security pushbuttons Ø 22 mm (.866) with overmolded actuator

ORDER FORMAT

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Bush./act. configuration</th>
<th>Illumination</th>
<th>Contacts</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OPTIONS

See next page

SPECIFICATIONS

- **Travel**: 0.7 mm (.027) ± 0.1 mm (.003)
- **Max. current/voltage rating with resistive load**: 50mA 24VDC
- **LED voltage and consumption**: 2-colour LED: 2V (3V max.) 20mA
  Other colours: 2V (3V max.) 10mA
  (a resistor must be series-connected by the user)**
- **Initial contact resistance**: 100 mΩ max.
- **Insulation resistance**: 1,000 MΩ min. at 500VDC
- **Dielectric strength**: 500 Vrms 50 Hz min. between terminals
  2,000 Vrms 50 Hz min. between terminals and frame
- **Electrical life**: 1,000,000 cycles at full load
- **Operating force**: 7 N ±2N
- **Torque**: 5 Nm min. - 14 Nm max. applied to nut
- **Panel thickness**: 1 (.039) to 6 mm (.236) max.
- **Operating temperature**: -30°C to +70°C
- **Hand soldering**: 270°C, 3 sec. max.
- **Packaging unit**: 16 pieces
  **Resistor value = supply voltage - LED forward voltage / LED forward current**

MATERIALS

- **Case**: PBT UL94-V0
- **Terminals**: brass, gold plated
- **Contacts**: gold plated dome
- **Bushing**: see next page
- **Actuator**: stainless steel, with thermoplastic overmolding
- **LED**

CUT-OUT

- **Panel cut-out**: Ø 22.2 mm (.874)
- **Min. pitch for matrix mounting**: 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired options selected on next page.

**ORDER FORMAT**

<table>
<thead>
<tr>
<th>Flat actuator - solder lug terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illuminated AV3SLD2</td>
</tr>
<tr>
<td>Non-illuminated AV3S0D2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flat actuator - screw terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illuminated AV3SLD9</td>
</tr>
<tr>
<td>Non-illuminated AV3S0D9</td>
</tr>
</tbody>
</table>

**MATERIALS**

**CUT-OUT**

**To order a product, select a basic model below and add the desired options selected on next page.**
AV series
Snap-action security pushbuttons Ø 22 mm (.866) with overmolded actuator

Options

After selecting basic model no., fill in last 5 boxes with desired options.

** To order a green LED for actuator style 002, always use code V. Other actuator styles can be ordered with LED code 3 or V.

ACTUATOR STYLES
The ring and symbols are obtained by photochemical engraving of a stainless steel insert. The insert is then overmolded in the desired colour.

The following actuator styles are available. For other types, consult factory.

SEALING
Blank No sealing

Recommended panel mounting for IP69K
AV series

Security pushbutton switches Ø 22 mm (.866)

Momentary (NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Bushing/act. configuration</th>
<th>Case</th>
<th>Function</th>
<th>Contacts</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV 03</td>
<td>Flat actuator</td>
<td>00</td>
<td>NO</td>
<td>A Silver</td>
<td>9 Screw</td>
</tr>
<tr>
<td>AV 02</td>
<td>Curved actuator</td>
<td>100</td>
<td>Short</td>
<td>C Brass, silver pl.</td>
<td>2 Quick-connect</td>
</tr>
<tr>
<td>AV 03</td>
<td>Curved act.+flatted bush.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AV 03</td>
<td>Flat act.+flatted bush.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OPTIONS

See “Options” page.

SPECIFICATIONS

- Max. current/voltage rating with resistive load:
  - A contacts: 4A 12VDC, 500,000 cycles
  - C contacts: 2A 48 VDC, 10,000 cycles
- Approved ratings of models with long case and A contacts (AV..000):
  UL-CSA: 4A 250VAC - 8A 125VAC - 6,000 cycles
- Initial contact resistance: 10 mΩ max.
- Insulation resistance: 1,000 MΩ min. at 500VDC
- Dielectric strength: 2,000 Vrms 50 Hz min. between terminals and frame
- Torque: 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness: 1 (.039) to 11 mm (.433) max.
- Operating temperature: -30°C to +70°C
- Low level or mechanical life: 1,000,000 cycles
- Hand soldering: 300°C, 3 sec. max.
- Packaging unit: 20 pieces

MATERIALS

- Case: PBT
- Contacts: silver (A) or brass, silver plated (C)
- Bushing and actuator: see “Options” page

CUT-OUTS

- Panel cut-out: Ø 22.2 mm (.874)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below or on next page and add the desired options.

BASIC MODEL

Flat actuator - short case - 48VDC - AV03100

Screw terminals
AV031003•9

Solder lug / quick-connect term.
AV031009•2

Contacts: replace • with A (silver) or C (silver plated brass).

Curved actuator - short case

Screw terminals
AV021003•9

Solder lug / quick-connect terminals
AV021003•2

Flattened bushing - short case - AVM3 and AVM2

Flat actuator, screw terminals
AVM31003•9

Curved actuator, screw terminals
AVM21003•9

2.00 (78)
12.70 (.500)
6.30 (248)
5.00 (.196)

EPOXY
2.80 (.110)
7.30 (.287)
1.20 (.047)
0.50 (.019)
1.10 (.047)
0.110 (.0047)

Hex nut 25 (.984) across flats

ORDER FORMAT

AV

Bushing/act. configuration

03 Flat actuator
02 Curved actuator
M2 Curved act.+flatted bush.
M3 Flat act.+flatted bush.

Case

000 Long
100 Short

Function

3 NO

Contacts

A Silver
C Brass, silver pl.

Terminals

9 Screw
2 Quick-connect

OPTIONS

See “Options” page.

Screw terminals for wires 1.5 mm² max.

Materials

- Case: PBT
- Contacts: silver (A) or brass, silver plated (C)
- Bushing and actuator: see “Options” page

Cut-outs

- Panel cut-out: Ø 22.2 mm (.874)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181)
AV series

Security pushbutton switches Ø 22 mm (.866)

Momentary (NO) - momentary (NC) - alternate action

Flat actuator - long case - 4A 250VAC/8A 125VAC - UL/CSA - AV03000

Hex nut 25 (.984) across flats

Curved actuator - long case

Flatted bushing - long case - AVM3 and AVM2

MOMENTARY NORMALLY CLOSED MODEL (NC)

Bushing Ø 22 (.866) - AV..1200

- Single pole, screw terminals, without marking
- Silver plated copper contacts (C)
- Max. current/voltage rating with resistive load:
  2A 250VAC - 3A 125VAC - 2,5A 24VDC
- Dielectric strength:
  2.000 Vrms 50 Hz min. betw. term. and frame
  2.000 Vrms 50 Hz min. between terminals
- Electrical life:
  100.000 cycles at 0,3A 24VAC or DC
- Packaging unit: 20 pieces

Bushing Ø 22 (.866) - alternate action - AV..4700

- Double pole, solder lug/quick-connect term., curved actuator
- Silver contacts
- Max. current/voltage rating with resistive load:
  3(1,5)A 250VAC - 6A 125VAC - 3A 24VAC or DC
- Dielectric strength:
  3.000 Vrms min. between terminals and frame
- Electrical life:
  10.000 cycles at full load
  50.000 cycles at 1A 24VAC or DC
- Mechanical life:
  100.000 cycles
- Packaging unit: 10 pieces

Further specifications: see previous page. Bushing/actuator materials, marking and sealing: see "options" on next page.
**AV series**

**Security pushbutton switches Ø 22 mm (.866)**

*Options*

After selecting basic model number, fill in last 3 boxes with desired options.

<table>
<thead>
<tr>
<th>BASIC MODEL</th>
<th>Bush/actuator material</th>
<th>Marking</th>
<th>Sealing</th>
</tr>
</thead>
</table>

**BUSHING/ACTUATOR MATERIALS**

**Flat or curved metal actuator**

<table>
<thead>
<tr>
<th>CODE</th>
<th>BUSHING</th>
<th>ACTUATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Nickel plated brass</td>
<td>Nickel plated brass</td>
</tr>
<tr>
<td>10</td>
<td>Nickel plated brass</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>12</td>
<td>Nickel plated brass</td>
<td>Chrome plated brass</td>
</tr>
<tr>
<td>20</td>
<td>Chrome plated brass</td>
<td>Chrome plated brass</td>
</tr>
<tr>
<td>30</td>
<td>Chrome plated brass</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>40</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>80</td>
<td>Varnished polished brass</td>
<td>Varnished polished brass</td>
</tr>
</tbody>
</table>

**Flat thermoplastic actuator**

<table>
<thead>
<tr>
<th>CODE</th>
<th>BUSHING</th>
<th>ACTUATOR COLOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0+</td>
<td>Nickel plated brass</td>
<td>Replace • with one of the following codes.</td>
</tr>
<tr>
<td>2+</td>
<td>Chrome plated brass</td>
<td>1: blue - 1/4: dark blue - 2: black - 3: green</td>
</tr>
<tr>
<td>8+</td>
<td>Varnished polished brass</td>
<td>4: grey - 5: yellow - 6: red - 7/1: white</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9: orange</td>
</tr>
</tbody>
</table>

**MARKING**

- By engraving on flat or curved brass actuator (stainless steel on request)
- by hot stamping on flat thermoplastic actuator

- By engraving on flat or curved brass actuator (stainless steel on request)
- by hot stamping on flat thermoplastic actuator

**TYPE OF MARKING**

<table>
<thead>
<tr>
<th>CODE</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 9</td>
<td>Numbers 0 to 9</td>
</tr>
<tr>
<td>X</td>
<td>Symbol *</td>
</tr>
<tr>
<td>Y</td>
<td>Symbol #</td>
</tr>
<tr>
<td>A to N</td>
<td>Letters A to N</td>
</tr>
<tr>
<td>P to W</td>
<td>Letters P to W</td>
</tr>
<tr>
<td>0</td>
<td>Letter O</td>
</tr>
</tbody>
</table>

Letter O : same code and same design as number 0.
For special symbols, consult factory.
Minimum order : 500 pieces

**COLOUR OF MARKING**

<table>
<thead>
<tr>
<th>CODE</th>
<th>COLOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Same as finish</td>
</tr>
<tr>
<td>2</td>
<td>Black</td>
</tr>
</tbody>
</table>

Note : a finished product supplied in version "0" cannot be modified to version "2".

<table>
<thead>
<tr>
<th>CODE</th>
<th>COLOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SEALING**

- Blank : No sealing

- Blank : No sealing

---

1. internal gasket
2. external gasket

---

**APEM**

www.apem.com
**AV series**

Security pushbutton switches Ø 22 mm (.866)

With illuminated ring - momentary (NC/NO)

### ORDER FORMAT

<table>
<thead>
<tr>
<th>AV</th>
<th>3</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIES</td>
<td>Bushing dia. 22 mm</td>
<td>LED resistor</td>
</tr>
<tr>
<td>0</td>
<td>no LED</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>blue</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>yellow</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>red</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>white</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>amber</td>
<td></td>
</tr>
</tbody>
</table>

### SPECIFICATIONS

- Travel: 2 mm ± 0.3 mm (.003)
- Max. current/voltage rating with resistive load: 1A 30VDC
- LED voltage: 12VDC, 24VDC or 48VDC
- If not supplied by APEM, a resistor must be series-connected by the user)**
- Initial contact resistance: 100 mΩ max.
- Insulation resistance: 10 MΩ min. at 500VDC
- Dielectric strength: 500 Vrms 50 Hz min. between terminals, 1,000 Vrms 50 Hz min. between terminals and frame
- Electrical life: 250,000 cycles at full load
- Operating force: 5N ± 2N
- Torque: 3 Nm min. - 14 Nm max. applied to nut
- Panel thickness: 1 (.039) to 6 mm (.236) max.
- Low level or mechanical life: 1,000,000 cycles
- Operating temperature: -20°C to +55°C
- Hand soldering: 350°C, 5 seconds max.
- Packaging unit: flying lead/cable models: 1 piece - other models: 40 pieces

** Resistor value = supply voltage - LED forward voltage

### MATERIALS

- Case: polyamide, glass filled
- Contacts: silver
- Bushing: see next page
- Actuator: see next page
- Elastomeric membrane: silicone
- LED

### CUT-OUT

- Panel cut-out: Ø 22.2 mm (.874)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired LED colour and voltage. Then select the desired options on next page.

** Wire colours: black: NC, orange: NO, red: LED anode (+), blue: LED cathode (-)
AV series
Security pushbutton switches Ø 22 mm (.866)
With illuminated ring - momentary changeover (NC/NO)

Flat actuator - cable terminals

After selecting basic model No., fill in last 5 boxes with desired options.

<table>
<thead>
<tr>
<th>BASIC MODEL</th>
<th>Flying lead protection</th>
<th>Flying lead/cable length</th>
<th>Ring colour</th>
<th>Bushing/plunger mat.</th>
<th>Sealing</th>
</tr>
</thead>
</table>

FLYING LEAD PROTECTION

0  No protection and/or no flying leads
1  Heat-shrink sleeves
2  Tube + epoxy

WIRE/CABLE LENGTH

000  No flying leads / no cable
020  Length 20 cm (7.874) - standard
XXX  Length in centimeters

RING COLOURS

<table>
<thead>
<tr>
<th>CODE</th>
<th>COLOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blue</td>
</tr>
<tr>
<td>2</td>
<td>Black *</td>
</tr>
<tr>
<td>3</td>
<td>Green</td>
</tr>
<tr>
<td>4</td>
<td>Grey *</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

* non-illuminated only

BUSHING/PLUNGER MATERIALS

<table>
<thead>
<tr>
<th>CODE</th>
<th>BUSHING</th>
<th>ACTUATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Brass, nickel plated</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Stainless steel 303</td>
<td></td>
</tr>
<tr>
<td>4A</td>
<td>Stainless steel 304</td>
<td></td>
</tr>
<tr>
<td>4B</td>
<td>Stainless steel 316</td>
<td></td>
</tr>
</tbody>
</table>

Other: on request.

SEALING

Blank  No sealing

K  Front panel sealing (IP67)

Illuminated (select colour & resistor) AV3••2C
Non-illuminated AV3002C

Other: on request.
**AV series**

Security pushbutton switches Ø 22 mm (.866)

Illuminated and non-illuminated - latching

**ORDER FORMAT**

<table>
<thead>
<tr>
<th>AV</th>
<th>1</th>
<th>LED colour</th>
<th>E</th>
<th>A</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIES</td>
<td>Actuator type</td>
<td>Bush./act. config.</td>
<td>Illumin.</td>
<td>Function</td>
<td>Terminals</td>
</tr>
<tr>
<td>03</td>
<td>Flat</td>
<td>0 No LED</td>
<td>0 No Illum.</td>
<td>0 Solder</td>
<td>2 Solder lug</td>
</tr>
<tr>
<td>02</td>
<td>Curved</td>
<td>1 Blue</td>
<td>1 Illum.</td>
<td>1 PC</td>
<td>3 PC</td>
</tr>
<tr>
<td>01</td>
<td>Curved</td>
<td>2 Green</td>
<td>2 Illum.</td>
<td>2 Quick-connect</td>
<td>4 Quick-connect</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**

- Max. current/voltage rating with resistive load: 2A 48 VDC
- LED voltage and consumption: blue: 3.5V 10mA, green: 2V 10mA, yellow & red: 2V 20mA (a resistor must be series-connected by the user)**
- Initial contact resistance: 50 mΩ max.
- Insulation resistance: 1,000 MΩ min. at 500VDC
- Dielectric strength: 1,000 Vrms 50 Hz min. between terminals, 500 Vrms 50 Hz min. between terminals and frame
- Electrical life: 500,000 cycles at 2A 48VDC
- Torque: 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness: 1 (.039) to 9 mm (.354) max.
- Operating temperature: -30°C to +70°C
- Low level or mechanical life: 1,000,000 cycles
- Hand soldering: 300°C, 4 seconds max.
- Packaging unit: 20 pieces
- **Resistor value = supply voltage - LED forward voltage / LED forward current**

**MATERIALS**

- Case: PA6T UL94-V0
- Contacts: silver
- Actuator and bushing: see next page
- LED

**CUT-OUT**

- Panel cut-out: Ø 22.2 mm (.874)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired options selected on next page.

**Non-illuminated - solder lug terminals**

- Flat actuator
  - AV03100EA2
  - ON - ON
- Curved actuator
  - AV02100EA2
  - ON - ON

*Also available with prominent actuator in the non-latched position*

**Illuminated - solder lug terminals**

- Flat actuator
  - AV031L•EA2
  - ON - ON

Replace • with desired LED colour.
AV series

Security pushbutton switches Ø 22 mm (.866)

Illuminated and non-illuminated - latching

Straight PC terminals

Quick-connect terminals

Replace 2 with 4 at the end of the model numbers shown on previous page.

Replace 2 with 8 at the end of the model numbers shown on previous page.

After selecting basic model number, fill in last 2 boxes with desired options.

BUSHING/ACTUATOR MATERIALS

<table>
<thead>
<tr>
<th>CODE</th>
<th>BUSHING</th>
<th>ACTUATOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Nickel plated brass</td>
<td>Nickel plated brass</td>
</tr>
<tr>
<td>10</td>
<td>Nickel plated brass</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>40</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>50</td>
<td>Stainless steel</td>
<td>Nickel plated brass</td>
</tr>
</tbody>
</table>

SEALING

Blank  No sealing

K Frontal panel sealing (IP65)

① elastomeric membrane
② external gasket
AV series
Security pushbutton switches Ø 22 mm (.866) or 24 mm (.944) with large actuator

Momentary (combined NC+NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>SERIES</th>
<th>Av</th>
<th>L</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bushing diameter</td>
<td></td>
<td></td>
<td>Bush./actuator material</td>
</tr>
<tr>
<td>P</td>
<td>Flat</td>
<td>See next page</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Curved</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Recessed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminals</td>
<td></td>
<td>4</td>
<td>Quick-connect</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Solder lug</td>
</tr>
</tbody>
</table>

SPECIFICATIONS
- Max. current/voltage rating with resistive load: 5A 250VAC
- Initial contact resistance: 100 mΩ max.
- Insulation resistance: 1,000 MΩ min. at 500VDC
- Dielectric strength: 2,000 Vrms 50 Hz min. between terminals and frame
- Electrical life: 1,000,000 cycles at 1A 250VAC
  100,000 cycles at full load
- Torque: 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness: 1 (.039) to 6 mm (.236) max.
- Operating temperature: -20°C to +55°C
- Low level or mechanical life: 3,000,000 cycles
- Front panel sealing: IP65
- Hand soldering: 300°C, 5 sec. max.
- Packaging unit: 20 pieces (except black chrome plated: 16 pieces)

MATERIALS
- Case: polyester, glass filled
- Contacts: silver/nickel alloy
- Bushing and actuator: see next page.

CUT-OUT
- Panel cut-out: Ø 22.2 mm (.874) or Ø 24.2 mm (.952)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181) or 33 mm x 33 mm (1.299x1.299)

BASIC MODEL
Flat actuator - AV22LP

Curved actuator - AV22LB

Recessed actuator - AV22LC

To order a product, select a basic model below or on next page and add the desired bushing/actuator materials.
**AV series**

Security pushbutton switches Ø 22 mm (.866) or 24 mm (.944) with large actuator

**Momentary (combined NC+NO)**

---

**BASIC MODEL**

**Flat actuator - low profile - AV24LP**

- Quick-connect terminals: AV24LP••4
- Solder lug terminals: AV24LP••2

**Curved actuator - AV24LB**
- Quick-connect terminals: AV24LB••4
- Solder lug terminals: AV24LB••2

**Recessed actuator - AV24LC**
- Quick-connect terminals: AV24LC••4
- Solder lug terminals: AV24LC••2

---

**BUSHING/ACTUATOR MATERIALS**

- **Models with non-anodized actuator**
  - **CODE** | **BUSHING** | **ACTUATOR**
  - 40 (standard) | Stainless steel | Stainless steel
  - 20 | Chrome plated brass |

- **Models with anodized actuator**
  - **CODE** | **BUSHING** | **ACTUATOR COLOUR**
  - 1• | Black chrome plated brass | 1 : blue - 2 : black - 3 : pale green - 3F : dark green - 4 : natural - 5 : gold yellow - 6 : red - 6B : maroon
  - 2• | Chrome plated brass |
  - 4• | Stainless steel |
AV series
Mushroom head security pushbutton switches Ø 22 mm (.866)
Momentary (combined NC+NO)

ORDER FORMAT

<table>
<thead>
<tr>
<th>AV</th>
<th>22</th>
<th>PNA</th>
<th>OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SERIES</td>
<td>Bushing diameter</td>
<td>Bush./act. config.</td>
<td>Actuator colour</td>
</tr>
<tr>
<td>4</td>
<td>Quick-connect</td>
<td>2</td>
<td>Solder lug</td>
</tr>
</tbody>
</table>

SPECIFICATIONS

- Max. current/voltage rating with resistive load: 5A 250VAC
- Initial contact resistance: 100 mΩ max.
- Insulation resistance: 1,000 MΩ min. at 500VDC
- Dielectric strength: 2,000 Vrms 50 Hz min. between terminals and frame
- Electrical life: 1,000,000 cycles at 1A 250VAC
- 50,000 cycles at full load
- Torque: 5 Nm min. - 14 Nm max. applied to nut
- Panel thickness: 1 (.039) to 6 mm (.236) max.
- Operating temperature: -20°C to +55°C
- Low level or mechanical life: 1,000,000 cycles
- Front panel sealing: IP65
- Hand soldering: 300°C, 5 sec. max.
- Packaging unit: 16 pieces

MATERIALS

- Case: polyester, glass filled
- Contacts: silver/nickel alloy
- Bushing: brass, nickel plated
- Actuator: aluminium, anodized

CUT-OUT

- Panel cut-out: Ø 22.2 mm (.874)
- Min. pitch for matrix mounting: 30 mm x 30 mm (1.181x1.181)

To order a product, select a basic model below and add the desired actuator colour.

BASIC MODEL

Mushroom head actuator - AV22PNA

ACTUATOR ANODIZATION COLOURS