Single contact blocks

Selection diagram

CONTACT BLOCKS
- 10G: 1NO slow action
- 01G: 1NC slow action
- 10L: 1NO slow action early make
- 01K: 1NC slow action delayed

CONTACT TYPE
- silver contacts (standard)
- gold-plated silver contacts

CONNECTIONS
- V: clamping screw
- M: PUSH-IN spring-operated connection
- S: solder connection

MOUNTING TYPE
- P: panel mounting
- F: base mounting
**Code structure**

<table>
<thead>
<tr>
<th>Article</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2 CP01G2V1</td>
<td>G</td>
</tr>
</tbody>
</table>

**Contact rating**

- 2: 10A

**Mounting type**

- P: panel mounting
- F: base mounting

**Contact block**

- 01G: 1NC, slow action
- 10G: 1NO, slow action
- 01K: 1NC, slow action, delayed
- 10L: 1NO, slow action, early make
- 01S: 1NC, slow action, self-monitored (with clamping screw only)

**Contact type**

- silver contacts (standard)
- gold-plated silver contacts

**Protection degree**

- 0: IP00 solder connection
- 1: IP20 screw connection and PUSH-IN spring-operated connection
- 2: IP20 screw connection and PUSH-IN spring-operated connection, with dust protection cap (panel mounting only)

**Connection type**

- V: clamping screw
- M: PUSH-IN spring-operated connection
- S: solder connection (panel mounting only)

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**Attention!** The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.
Main features

- Highly reliable contact blocks provided with self-cleaning contacts with quadruple support point
- Versions with gold-plated contacts
- Positive opening NC contacts acc. to IEC 60947-5-1
- Screw, PUSH-IN spring, or solder connections.

Quality marks:

- IMO approval: CA02.04805
- UL approval: E131787
- CCC approval: 2013010305631156
- EAC approval: RU C-IT.YT03.B.00035/19

Technical data

**General data**
- Protection degree acc. to EN 60529:
  - IP20 with screw connection
  - IP20 with PUSH-IN spring-operated connection
  - IP00 with solder connection
- Ambient temperature: -40°C ... +80°C
- Mechanical endurance: 20 million operating cycles
- Max. actuation frequency: 3600 operating cycles/hour
- Utilization requirements: see page 149

**Contact block**
- Switching force of the contacts:
  - 1.8 N (NO) / 1.4 N (NC)
  - 1.7 N (NO early make) / 1.4 N (NC delayed)
- Actuating force at limit of travel:
  - 3.5 N (NO) / 2.3 N (NC)
  - 3.5 N (NO early make) / 1.9 N (NC delayed)
- Positive opening force: 17 N
- Actuation speed:
  - min 1 mm/s
  - max. 0.5 m/s
- Safety parameter B_{ref}:
  - 1,000,000 (NO), 40,000,000 (NC)
- Material of the contacts:
  - Silver contacts (standard)
  - For low current: silver contacts with 1 µm gold coating (on request)
- Contact type:
  - “V-shape” self-cleaning contacts with quadruple support point

**Clamping screw connection**
- Cable cross section:
  - min 1 x 0.5 mm² (1 x AWG 20)
  - max 2 x 2.5 mm² (2 x AWG 14)
- Tightening torque:
  - 0.6 ... 0.8 Nm
- Cable stripping length (x):
  - 8 mm

**PUSH-IN spring-operated connection**
- Cable cross section (flexible conductors, with or without wire-end sleeve):
  - min. 1 x 0.25 mm² (1 x AWG 24)
  - max. 2 x 1.5 mm² (2 x AWG 16)
- Cable stripping length (x):
  - min. 8 mm, max. 10 mm

In compliance with standards:
- IEC 60947-1, IEC 60947-5-1, IEC 60204-1, EN 60947-1, EN 60947-5-1, EN 60204-1, EN 50981, UL 508, CSA 22-2 N°14.

⚠️ Installation for safety applications:
- Use only contact blocks marked with the symbol . The safety circuit must always be connected to NC contacts (normally closed contacts: .1-.2)

Compliance with the requirements of:
- Low Voltage Directive 2014/35/EU,
- EMC Directive 2014/30/EU,
- RoHS Directive 2011/65/EU.
- Positive contact opening in conformity with standards:
  - IEC 60947-5-1, EN 60947-5-1.

**Electrical data**

- Thermal current (Ith):
  - 10 A
- Rated insulation voltage (U):
  - 500 Vac/dc
- Protection against short circuits:
  - type gG/gl. fuse 10 A 500 V
- Rated impulse withstand voltage (Uimp):
  - 8 kV
- Pollution degree:
  - 3

**Utilization category**

- Alternating current: AC15 (50 ... 60 Hz)
- Ue (V): 24 48 120 250 400
- Ie (A): 6 6 6 6 3
- Direct current: DC13
- Ue (V): 24 48 125 250
- Ie (A): 2.5 1.3 0.6 0.3
**Features approved by UL**

Electrical ratings:
- **A600 pilot duty**
  - (720 VA, 120-600 Vac)
- **Q300 pilot duty**
  - (69 VA, 125-250 Vdc)

Note:
For contact block series E2 C provided with clamping screw terminals: use 60 or 75 °C copper (Cu) conductor and wire size range 14-20 AWG, stranded or solid. The terminal tightening torque of 7.1 Lb In (0.8 Nm).
For contact block series E2 C provided with screw less type terminals: use 60 or 75 °C copper (Cu) conductors and wire size range 16-24 AWG, stranded. These terminals are suitable also for stranded conductors prepared with ZMLF ferrules. Recommended stripping length: 8 mm.

Please contact our technical department for the list of approved products.

**Features approved by IMQ**

- **Rated insulation voltage (Ui):** 500 V
- **Conventional free air thermal current (Ith):** 10 A
- **Thermal current inside housing (Ithe):** 10 A
- **Rated impulse withstand voltage (Uimp):** 8 kV
- **Protection degree of the housing:** IP20 (screw terminals), IP00 (solder terminals)
- **Terminals:** screw terminals
- **Utilization category:** AC15
- **Operating voltage (Ue):** 400 Vac (50/60 Hz)
- **Operating current (Ie):** 3 A
- **Forms of the contact element:** X, Y

Positive opening of contacts: E2 C provided with clamping screw terminals. For contact blocks, the terminals are suitable also for stranded conductors prepared with ZMLF ferrules. Recommended stripping length: 8 mm.

Please contact our technical department for the list of approved products.

**General data**

**Positive opening**

All NC contacts are suitable for safety applications. The NC contacts are positive opening contacts acc. to IEC 60947-5-1.

**Screw connection with clamping screw plates**

The clamping screw plates of the contact blocks are provided with a particular "roofing tile" structure and are loosely coupled to the clamping screw. This way, during the wires fixing, the clamping screw plate is able to suit to cables of different diameters and tends to tighten the wires toward the screw instead of permitting them to escape towards the outside.

**PUSH-IN spring-operated connection**

The PUSH-IN spring connection allows quick and simple wiring, as the wire just needs to be inserted into the appropriate hole in order to establish the electrical connection and automatically secure the wire. The reduced force required to insert the wire allows completely tool-free connection by using wires with crimped wire-end sleeves. They are released by pressing a special wire release button - including individually - with any tool, without the need to use a screwdriver of a predefined size.

In addition, the contact block has holes for insertion of tester tips, so that electrical measurements can be carried out, without having to remove the connecting cables.

**High-reliability self-cleaning contacts**

“V-shape” self-cleaning contacts with quadruple support point. This type of shape, thanks to the presence of the double support point, makes it possible to drastically reduce the probability of contact commutation failure. In addition to this, it improves considerably the reliability in the presence of dust.

**Gold-plated silver contacts**

The contact blocks can be supplied with silver electric contacts with a special gold-plated surface, with total gold thickness of one micron. This type of treatment can be useful in environments which are aggressive against silver and in case of very small electric charges, usually with low voltages and supply currents.

**Solder connection on printed circuit**

Versions with panel mounting of the EROUND series contact blocks with solder pin are available. If there is no wiring but a printed circuit, these contact blocks can be directly welded on the latter.
### Selection table for contact blocks

<table>
<thead>
<tr>
<th>Contact block</th>
<th>Panel mounting</th>
<th>Base mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Screw connection</td>
<td>PUSH-IN spring-operated connection</td>
</tr>
<tr>
<td>1NC slow action</td>
<td>E2 CP01G2V1</td>
<td>E2 CP01G2M1</td>
</tr>
<tr>
<td>1NO slow action</td>
<td>E2 CP10G2V1</td>
<td>E2 CP10G2M1</td>
</tr>
<tr>
<td>1NC slow action, delayed</td>
<td>E2 CP01K2V1</td>
<td>E2 CP01K2M1</td>
</tr>
<tr>
<td>1NO slow action, early make</td>
<td>E2 CP10L2V1</td>
<td>E2 CP10L2M1</td>
</tr>
</tbody>
</table>

Other combinations on request.

### Complete units with contact block and mounting adapter

<table>
<thead>
<tr>
<th>Contacts</th>
<th>Panel mounting</th>
<th>Contacts</th>
<th>Panel mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>pos. 2</td>
<td>pos. 3</td>
<td>pos. 1</td>
<td>Screw connection</td>
</tr>
<tr>
<td>-</td>
<td>1NO</td>
<td>-</td>
<td>E2 AC-XXBC0010 E2 1BAC11 + E2 CP10G2V1</td>
</tr>
<tr>
<td>-</td>
<td>1NC</td>
<td>-</td>
<td>E2 AC-XXBC0009 E2 1BAC11 + E2 CP01G2V1</td>
</tr>
</tbody>
</table>

### Dimensions

All values in the drawings are in mm

- Contact blocks for panel mounting with screw connection, PUSH-IN spring-operated connection
- Contact blocks for base mounting with screw connection, PUSH-IN spring-operated connection
- Contact blocks for panel mounting with solder connection

### Dust protection

<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VE PR3A70</td>
<td>Transparent dust protection for E2 series contact blocks. Suitable for all panel mounting contact blocks.</td>
</tr>
</tbody>
</table>
Single self-monitored contact blocks

Main features

- Self-monitored contact block. Electrical circuit opening indicates the detachment from the device
- Versions with gold-plated contacts
- Positive opening NC contacts acc. to IEC 60947-5-1

Quality marks:

- IMQ approval: CA02.04805
- UL approval: E131787
- CCC approval: 2013010305631156
- EAC approval: RU C-IT.YT03.B.00035/19

Technical data

**General data**
- Protection degree: IP20 acc. to EN 60529 at the terminals
- Ambient temperature: -40°C ... +80°C
- Mechanical endurance: 20 million operating cycles
- Max. actuation frequency: 3600 operating cycles/hour
- Utilization requirements: see page 149

**Contact block**
- Switching force of the contacts: 2.9 N
- Actuating force at limit of travel: 5 N
- Positive opening force: 17 N
- Actuation speed: min 1 mm/s
- max. 0.5 m/s
- Safety parameter B in:
  - Silver contacts (standard)
  - For low current: silver contacts with 1 µm gold coating
  - (on request)
- Material of the contacts: Silver contacts (standard)
- Contact type: “V-shape” self-cleaning contacts with quadruple support point
- Cable cross section:
  - min 1 x 0.34 mm² (1 x AWG 22)
  - max. 2 x 1.5 mm² (2 x AWG 16)
- Cable stripping length: 7 mm
- Tightening torque of the terminal screws: 0.6 ... 0.8 Nm

**In compliance with standards:**

- IEC 60947-1, IEC 60947-5-1, IEC 60204-1, EN 60947-1, EN 60947-5-1, EN 60204-1,

**Electrical data**

**Utilization category**

<table>
<thead>
<tr>
<th>Alternating current: AC15 (50 ... 60 Hz)</th>
<th>Direct current: DC13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ue (V) 24 48 120 250</td>
<td>Ue (V) 24 48 125 250</td>
</tr>
<tr>
<td>Ie (A) 6 6 6 6</td>
<td>Ie (A) 2.5 1.3 0.6 0.3</td>
</tr>
</tbody>
</table>

**Functioning of self-monitored contact blocks**

The operating principle of the self-monitoring contact blocks ensures that their associated control devices are free from faults and malfunctions caused by contacts separating, and that the safety function remains permanently available during machine operation.

Characterised by two NC contacts connected in series; during normal operation, both contacts are in the closed position.

If the emergency stop button is pressed, the direct action of the force exerted on the control device opens the first contact (positive opening); this interrupts the safety circuit, while the second contact remains closed.

If the housing cover is removed (in the case of base-mounted contact blocks), or if the contact block or mounting adapter becomes unintentionally separated (in the case of panel-mounted contact blocks), the second contact opens, which always interrupts the same safety circuit.

When using the machine in this way, the operator can always identify any hidden faults that have occurred internally to the electrical enclosures.
High-reliability self-cleaning contacts

“V-shape” self-cleaning contacts with quadruple support point. This type of shape, thanks to the presence of the double support point, makes it possible to drastically reduce the probability of contact commutation failure. In addition to this, it improves considerably the reliability in the presence of dust.

Features approved by UL

Electrical ratings:

- A300 pilot duty (720 VA, 120-240 V ac)
- Q300 pilot duty (69 VA, 125-250 V dc)

Note:

- Use 60 or 75 °C copper (CU) conductor and wire size range 16-22 AWG, stranded or solid.
- The terminal tightening torque of 7.1 Lb In (0.8 Nm).

Please contact our technical department for the list of approved products.

Features approved by IMQ

- Rated insulation voltage (U): 250 V
- Conventional free air thermal current (I): 10 A
- Rated impulse withstand voltage (Uimp): 4 kV
- Protection degree of the housing: IP20
- Utilization category: AC-15
- Operating voltage (Ue): 250 Vac (50/60 Hz)
- Operating current (Ie): 6 A
- Forms of the contact element: Y, Y+Y, X+X, Zb

Positive opening

All NC contacts are suitable for safety applications. The NC contacts are positive opening contacts acc. to IEC 60947-5-1.

Selection table for contact blocks

<table>
<thead>
<tr>
<th>Contact block</th>
<th>Panel mounting</th>
<th>Screw connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1NC, slow action, self-monitored</td>
<td>E2 CP01S2V1</td>
<td>2.3, 1.1, 0.9, 0.8, 0.6</td>
</tr>
</tbody>
</table>

The self-monitoring contact block with panel mounting can be installed to any position on the 3-slot mounting adapter, and in the two central positions only on the 4-slot mounting adapter.

Complete units with contact block and mounting adapter

Contacts

<table>
<thead>
<tr>
<th>pos. 2</th>
<th>pos. 3</th>
<th>pos. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>1NC, self-monitored</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel mounting</th>
<th>Screw connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2 AC-XXBC0139</td>
<td>E2 CP01S2V1</td>
</tr>
</tbody>
</table>

Other combinations on request.

Dust protection

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<th>Description</th>
</tr>
</thead>
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<tr>
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<td>Transparent dust protection for E2 series contact blocks. Suitable for all panel mounting contact blocks.</td>
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</table>

Installation of several single, double and self-monitored contact blocks

Always install self-monitored contact blocks directly on the mounting adapter.

Do not install self-monitored contact blocks on standard contact blocks. Forbidden application!

Per each emergency button no more than two self-monitored contact blocks can be installed.

Contact block dimensions

All values in the drawings are in mm.