Positronic Industries

An alternative to CT shorting blocks

AutoShunt
Uncoupled

Features:

- Quick and easy alternative to commonly used CT shorting blocks
- Innovative design automatically shorts circuits together upon connector being uncoupled
- Selective load up to six contacts for use in six-line “Delta” configurations, or four-line “Y” configurations
- Two position connector is ideal for “Ground Fault Protection” configurations
- Accepts 10 (six pole version) and 12 AWG wire
- Reduces operating cost

RoHS Compliant options available!

Catalog C-030 Rev. C
TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:
Insulator: Glass-filled polyester, UL 94V-0.
Contacts: Precision machined copper alloy with gold flash over nickel. Other finishes available upon request.
Shorting Clip: Copper alloy with gold plate.

ELECTRICAL CHARACTERISTICS:
Contact Current Rating: 15 amperes, continuous.
Initial Contact Resistance: 0.003 ohms max. per IEC 512-2, Test 2b.
Insulation Resistance: 5 G ohms per IEC 512-2, Test 3a, Method A.
Voltage Proof: 2,000 V rms per IEC 512-2, Test 4a, Method C.
Creepage Distance: 4 mm [0.157 inch] minimum.
Clearance Distance: 3.2 mm [0.125 inch] minimum.
Working Voltage: Designed to meet UL 600 VAC and CSA 600 VAC.
Working Temperature: -55°C to +125°C

MECHANICAL CHARACTERISTICS:
Removable Contacts: Insert contact to rear face of insulator. Size 16, 1.57 mm [0.062 inch] diameter male contact. Female contact “closed entry” design for highest reliability.
Removable Contact Retention in Insulator: 67N [15 lbs.] per IEC 512-8 Test 15a.
Contact Insertion and Withdrawal Forces: 2.2 N [8 oz.] nominal per contact.
Connection Systems: Connector provides cable to cable and cable to panel mount.
Locking System: Insulators provide locking between cable to cable, cable to printed board and cable to panel mount applications.
Polarization: Provided in insulator design.
Mechanical Operations: 50 operations per IEC 512-5.

AUTOSHUNT ELECTRICAL SCHEMATIC
SIX POSITION CONNECTOR USED AS AN EXAMPLE

Coupled

Uncoupled
CABLE TYPE CONNECTORS
CODE 0
REMOVABLE CRIMP CONTACTS MUST BE ORDERED SEPARATELY

MALE CONNECTOR
(CONTAINS SHorting DEVICE)

FEMALE CONNECTOR

TYPICAL PART NUMBER: PLZ6W6M0000
TYPICAL PART NUMBER: PLZ6W6F0000

PANEL MOUNT CONNECTORS
CODE 1
REMOVABLE CRIMP CONTACTS MUST BE ORDERED SEPARATELY

MALE CONNECTOR
(CONTAINS SHorting DEVICE)

FEMALE CONNECTOR

TYPICAL PART NUMBER: PLZ6W6M1000
TYPICAL PART NUMBER: PLZ6W6F1000
SIX POLE

STRAIGHT SOLDER PRINTED BOARD MOUNT
CODE 3, 3.18 [0.125] CONTACT EXTENSION

FEMALE CONNECTOR

CONTACT HOLE PATTERN

TYPICAL PART NUMBER:
PLZ6W6F3000*

NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 6.

HOOD
CODE 5
FOR USE WITH CABLE TYPE CONNECTORS

PART NUMBER: PLZ6W600050

*To order hood with connector, use part numbers:
PLZ6W6M0050 or PLZ6W6F0050

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

www.connectpositronic.com
REMOVABLE CRIMP CONTACTS
SIZE 16
REMOVABLE CRIMP CONTACTS MUST BE ORDERED SEPARATELY
For 5.3 mm² [10 AWG] Wire

MALE CONTACT
6.46±0.51 [0.254±0.020]
Ø3.58 [0.141]

MALE CONTACT
22.77±0.51 [0.896±0.020]
Ø1.58 [0.062]

FEMALE CONTACT
6.45±0.51 [0.254±0.020]
Ø3.58 [0.141]

FEMALE CONTACT
21.83±0.51 [0.860±0.020]
Ø1.58 [0.062]

PART NUMBER: MC110N
PART NUMBER: FC110N2

For 4.0 mm² [12 AWG] Wire

MALE CONTACT
6.45±0.51 [0.254±0.020]
Ø2.54 [0.100]

MALE CONTACT
22.77±0.51 [0.896±0.020]
Ø1.58 [0.062]

FEMALE CONTACT
6.45±0.51 [0.254±0.020]
Ø2.54 [0.101]

FEMALE CONTACT
21.83±0.51 [0.860±0.020]
Ø1.58 [0.062]

PART NUMBER: MC112N-381.0
PART NUMBER: FC112N2-381.0

MATERIALS:
Copper alloy

PLATING:
STANDARD FINISH: Gold flash over nickel plate.
OPTIONAL FINISHES: 0.76µ [0.000030] gold over nickel by adding -14 suffix onto part number. Example: FC110N2-14
1.27µ [0.000050 inch] gold over nickel by adding -15 suffix onto part number. Example: MC112N-15-381.0

RECOMMENDED TOOLS FOR CRIMP CONTACTS

CONTACT EXTRACTION TOOL
SHOWN FOR REFERENCE ONLY

CYCLE-CONTROLLED STEP
ADJUSTABLE HAND CRIMP TOOL
SHOWN FOR REFERENCE ONLY

<table>
<thead>
<tr>
<th>TOOL DESCRIPTION</th>
<th>MC110N</th>
<th>FC110N2</th>
<th>MC112N-381.0</th>
<th>FC112N2-381.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crimp Tool</td>
<td>9509-6-3-0</td>
<td>9509-6-3-0</td>
<td>9501-0-0-0 with 9502-19-0-0 Positioner</td>
<td>9501-0-0-0 with 9502-19-0-0 Positioner</td>
</tr>
<tr>
<td>Extraction Tool</td>
<td>9081-4-0-0</td>
<td>9081-4-0-0</td>
<td>9081-4-0-0</td>
<td>9081-4-0-0</td>
</tr>
</tbody>
</table>
## ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

<table>
<thead>
<tr>
<th>STEP</th>
<th>EXAMPLE</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEP 1 - BASIC SERIES</td>
<td>PLZ - PLZ Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEP 2 - CONNECTOR VARIANTS</td>
<td>6W6 - Six (6) size 16 contacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEP 3 - CONNECTOR GENDER</td>
<td>M - Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>F - Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEP 4 - CONTACT TERMINATION TYPE</td>
<td>0 - Order contacts separately for cable connectors.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 - Removable contact, panel mount connector. Order contacts separately.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*3 - Solder, Straight Printed Board Mount with 3.18 [0.125] tail extension.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEP 5 - MOUNTING STYLE</td>
<td>0 - None.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST2 - Self-tapping screws 2-28 x 6.35 [0.250] length for 2.36 [0.093] thick board or panel. Use with contact code 1 or 3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ST3 - Self-tapping screws 2-28 x 7.92 [0.312] length for 3.18 [0.125] thick board or panel. Use with contact code 1 or 3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEP 6 - CABLE ADAPTER AND BLIND MATE SYSTEM</td>
<td>0 - None.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 - Top Opening Hood.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Female only

**NOTE:** Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.

**EXAMPLE:** PLZ6W6F300A1

**STEP 9 - SPECIAL OPTIONS**

-14 - 0.76µ [0.000030] gold over nickel
-15 - 1.27µ [0.000050 inch] gold over nickel

**CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS**

**STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS**

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

**NOTE:** If compliance to environmental legislation is not required, this step will not be used. Example: PLZ6W6F300A1

**STEP 7 - CONTACT PLATING FOR PRINTED BOARD CONNECTORS**

0 - Crimp Contacts ordered separately.
A1 - Gold flash over nickel on mating end and termination end.
A2 - Gold flash over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end.
C1 - 0.76µ [0.000030 inch] gold over nickel on mating end and termination end.
C2 - 0.76µ [0.000030 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coated termination end.
D1 - 1.27µ [0.000050 inch] gold over nickel on mating end and termination end.
D2 - 1.27µ [0.000050 inch] gold over nickel on mating end and 0.00020 inch [5.00µ] tin-lead solder coated termination end.

**NOTE:** If compliance to environmental legislation is not required, this step will not be used.

Example: PLZ6W6F300A1

Unless otherwise specified, dimensional tolerances are:
1. ±0.03 mm [0.001inch] for male contact mating diameters.
2. ±0.08 mm [0.003 inch] for contact termination diameters.
3. ±0.13 mm [0.005 inch] for all other diameters.
4. ±0.38 mm [0.015 inch] for all other dimensions.

**DIMENSIONS ARE IN MILLIMETERS [INCHES]. ALL DIMENSIONS ARE SUBJECT TO CHANGE.**
The Positronic AutoShunt system allows circuit to be insulated from one another when the system is coupled. When the system is uncoupled circuit is shorted together through the male connector.

**TECHNICAL CHARACTERISTICS**

**MATERIALS AND FINISHES:**
- **Insulator:** Glass-filled nylon, UL 94V-0, green color.
- **Contacts:** Precision machined copper alloy with gold flash over nickel plate. Other finishes available upon request.
- **Shorting Clip:** Copper alloy with gold plate.
- **Swaged Rivet:** Copper alloy with gold plate.

**ELECTRICAL CHARACTERISTICS:**
- **Contact Current Rating:** 15 amperes, continuous.
- **Initial Contact Resistance:** 0.003 ohms max. per IEC 512-2, Test 2b.
- **Insulation Resistance:** 5 G ohms min. per IEC 512-2, Test 3a.
- **Voltage Proof:** 2,400 V rms
- **Creepage Distance:** 4 mm [0.157 inch] minimum.
- **Working Voltage:** 600 V rms

**MECHANICAL CHARACTERISTICS:**
- **Removable Contacts:** Insert contact to rear face of insulator, release from front face of insulator. Female contact feature “closed entry” design for highest reliability.
- **Removable Contact Retention in Insulator:** 67N [15 lbs.] min. per IEC 512-8 Test 15a.
- **Polarization:** Provided in insulator design.
- **Locking System:** Insulators provide locking between cable to cable, cable to printed board and cable to panel mount applications.

**CLIMATIC CHARACTERISTICS:**
- **Working Temperature:** -55º to +125º C

**RECOGNIZED:**
- UL and TÜV certification in process.
CONNECTOR OUTLINE DIMENSIONS

MALE CONNECTOR

FEMALE CONNECTOR

TYPICAL PART NUMBER: DFS02M00

TYPICAL PART NUMBER: DFS02F00

CONTACT TERMINATION DIMENSIONS AND HOLE PATTERNS

CODE F3 AND F4

FOR STRAIGHT SOLDER AND RIGHT ANGLE SOLDER (90°) PCB MOUNT FEMALE CONNECTORS

FEMALE, STRAIGHT PCB MOUNT
Specify Code F3 in Step 3

FEMALE, RIGHT ANGLE (90°) PCB MOUNT
Specify Code F4 in Step 3

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest Ø2.00±0.08 [0.079±0.003] holes for connector mounting holes with push-on fasteners.
Suggest Ø2.54 [0.100] holes for connector mounting holes with screws.

SCREW TERMINATION CONNECTOR

CODE M7

FOR MALE CONNECTORS

Screw terminations allow for convenient field installation when required.

MALE CONNECTOR
Specify Code M7 in Step 3

REPLACEMENT CONTACT

TYPICAL PART NUMBER: MST112N3

MATERIAL: Cooper alloy with gold plate.

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES:

0.76µ [0.000030 inch] gold over nickel available by adding -14 suffix onto part number. Example: MST112N3-14.
1.27µ [0.000050 inch] gold over nickel available by adding -15 suffix onto part number. Example: MST112N3-15.
PANEL MOUNT CONNECTOR
CODE PS
FOR FEMALE CONNECTORS
REMOVABLE CRIMP CONTACTS MUST BE ORDERED SEPARATELY

FEMALE CONNECTOR
Specify Code PS in Step 4

INSTALLATION TO PANEL
Suggested installation of DFS02F0PS to panel with screws and nuts.
(Screws and nuts shown for reference only.)

TYPICAL PART NUMBER:
DFS02F0PS

FLANGE DIMENSIONS

PANEL CUTOUT

HOOD OUTLINE DIMENSIONS
CODE W
FOR MALE CONNECTORS

MATERIALS:
Hood top and bottom, insert:
Polypropylene, UL94 V-0. Color: black.
Hood screws:
Steel with black oxide or Steel with zinc plate and chromate seal
Cable clamp (not shown):
Steel, nickel plate.
Cable clamp screws:
Steel with black oxide or Steel with zinc plate and chromate seal

DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.
REMOVABLE CRIMP CONTACTS
SIZE 16
REMOVABLE CRIMP CONTACTS MUST BE ORDERED SEPARATELY

**MALE CONTACT**

<table>
<thead>
<tr>
<th>ØA</th>
<th>ØB</th>
<th>22.30 [0.878]</th>
<th>6.48 [0.255]</th>
<th>1.65 [0.065]</th>
</tr>
</thead>
</table>

**FEMALE CONTACT**

<table>
<thead>
<tr>
<th>ØA</th>
<th>ØB</th>
<th>19.80 [0.780]</th>
<th>6.48 [0.255]</th>
<th>1.65 [0.065]</th>
</tr>
</thead>
</table>

**MATERIAL:** Cooper alloy with gold plate.

**PLATING:**

**STANDARD FINISH:** Gold flash over nickel plate.

**OPTIONAL FINISHES:**

- 0.76µ [0.000030 inch] gold over nickel available by adding -14 suffix onto part number. Example: MC112N3-14.

- 1.27µ [0.000050 inch] gold over nickel available by adding -15 suffix onto part number. Example: FC112N2-15-1565.0.

**CONTACT EXTRACTION TOOL**

**CONTACT INSERTION TOOL**

**CYCLE-CONTROLLED STEP ADJUSTABLE HAND CRIMP TOOL**

**HAND CRIMP TOOL**

**SEMI-AUTOMATIC CRIMP MACHINE**

Please use correct wire size and it should be smaller than ØA of the contact. Connector body may not accommodate thick insulation AWG 12 wires. Customer review recommended.
## ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 4

<table>
<thead>
<tr>
<th>STEP</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMPLE</td>
<td>DF</td>
<td>S02</td>
<td>F0</td>
<td>0</td>
<td>/AA</td>
<td>-XXX.X</td>
</tr>
</tbody>
</table>

### STEP 1 - BASIC SERIES
DF - DragonFly

### STEP 2 - CONNECTOR VARIANTS
S02 - AutoShunt Connector
Two (2) size 16 power contacts

### STEP 3 - CONNECTOR GENDER AND TYPE OF CONTACTS
- **F0** - Female, removable contact. Order contacts separately.
- **F3** - Female, solder, straight PCB mount.
- **F4** - Female, solder, right angle (90°) PCB mount.
- **M0** - Male, removable contact. Order contacts separately.
- **M7** - Male, screw termination contact. Supplied with 2 contacts.

CONSULT FACTORY FOR OTHER VERSIONS

* For female connector only.

### STEP 4 - MOUNTING STYLES
- **0** - None
- **N** - Push-on fastener.
- **B** - Plastic 90° mounting bracket.
- **BN** - Plastic 90° mounting bracket with push-on fastener.
- **PS** - Panel mount for female connector with removable contact only.
- **W** - Hood for male connector only.

### STEP 5 - ENVIRONMENTAL COMPLIANCE OPTIONS
/AA - Compliant per EU Directive 2002/95/EC (RoHS)

**NOTE:** If compliance to environmental legislation is not required, this step will not be used.
Example: DFS02F00

### STEP 6 - SPECIAL OPTIONS
CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

### EXAMPLE

**EXAMPLE**

**NOTE:** Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.

Unless otherwise specified, dimensional tolerances are:
1. ±0.03 mm [0.001 inch] for male contact mating diameters.
2. ±0.08 mm [0.003 inch] for contact termination diameters.
3. ±0.13 mm [0.005 inch] for all other diameters.
4. ±0.38 mm [0.015 inch] for all other dimensions.
NORTH AMERICAN LOCATIONS

UNITED STATES, Springfield, Missouri, Corporate Headquarters
Factory Sales and Engineering Offices (800) 641-4054

PUERTO RICO, Ponce Factory
Factory Sales and Engineering Offices (800) 641-4054

MEXICO
Factory Sales and Engineering Offices (800) 872-7674

CANADA
Factory Sales and Engineering Offices (800) 327-8272

ASIA/PACIFIC LOCATIONS

SINGAPORE, Asia/Pacific Headquarters
Factory Sales and Engineering Offices (65) 6842-1419 singapore@connectpositronic.com

ASIA, Direct Sales Offices
China -Shenzhen Sales Office (86) 755-2643-7578 shenzhen@connectpositronic.com
China -Shanghai Sales Office (86) 21-5078-2096 shanghai@connectpositronic.com
Korea Sales Office (82) 31-909-8047/8 korea@connectpositronic.com
Taiwan Sales Office (88) 62-2937-8775 taiwan@connectpositronic.com

JAPAN, Direct Sales Offices
Sales and Engineering Offices (81) 3-5812-7720 japan@connectpositronic.com

INDIA, Direct Sales Offices
Factory Sales and Engineering Offices (91) 20-2439-4810 india@connectpositronic.com

ASIA/PACIFIC, Technical Agents
Technical Agents in Malaysia, Australia, New Zealand, Philippines, Hong Kong, Vietnam, Thailand

EUROPEAN LOCATIONS

FRANCE, Auch Factory, European Headquarters
Factory Sales and Engineering Offices 33 (0)5 62 63 44 91 contact@connectpositronic.com

EUROPE, Direct Sales Offices
Northern France Sales Office 33 (0)1 45 88 13 88 chalaux@connectpositronic.com
Southern France Sales Office 33 (0)4 67 72 80 28 platon@connectpositronic.com
Italy Sales Office 39 (0)2 54 116 106 rmagni@connectpositronic.com
Northern Germany Sales Office 49 (0)30 34 504 307 gzimmermann@connectpositronic.com
Southern Germany Sales Office 49 (0)2351 63 47 39 cbouche@connectpositronic.com

EUROPE, Technical Agents
Technical Agents in Austria, Benelux, Eastern Europe Countries, Greece, Ireland, Scandinavia, Spain, Switzerland and the United Kingdom

MIDEAST, Technical Agents
Technical Agents in Israel and Turkey
**Positronic Products**

**Power**
- **Contact Sizes:** 8, 20 and 22
- **Current Ratings:** To 40 amperes nominal
- **Terminations:** Crimp, wire solder, straight solder, right angle solder and straight press-fit
- **Configurations:** Multiple variants in both standard and high densities
- **Qualifications:** MIL-DTL-24308, Goddard Space Flight 311P, SAE AS 39029, IP65, IP67

**FEATURES:** Three performance levels available: professional quality, military quality and space-flight quality provide multiple performance-to-cost choices • Options include thermocouple contacts, environmentally sealed and dual port package including mixed density • Broad selection of accessories

**Rectangular**
- **Contact Sizes:** 16, 20 and 22
- **Current Ratings:** To 13 amperes
- **Terminations:** Crimp, wire solder, straight solder and right angle solder
- **Configurations:** Multiple variants in both standard and high densities
- **Qualifications:** MIL-DTL-28748, SAE AS 39029, CCITT V.35

**FEATURES:** Two performance levels available: industrial quality and military quality provide two performance to cost choices • Large surface area contact mating system • A wide variety of accessories • Broad selection of contact variants and package sizes

**Cable**
- **Contact Sizes:** 8, 12, 16, 20 and 22
- **Current Ratings:** To 100 amperes
- **Terminations:** Crimp, wire solder, straight solder, right angle solder, straight press-fit and right angle press-fit
- **Configurations:** Multiple variants in a variety of package sizes
- **Compliance:** PICMG 2.11, PICMG 3.6, VITA 41

**FEATURES:** Hot swap capability • AC/DC operation in a single connector • Signal contacts for hardware management • Blind mating • Sequential mating • Large surface area contact mating system • Wide variety of accessories • Customer specified contact arrangements

**For more information, visit www.connectpositronic.com or call your nearest Positronic sales office as given on the back of this catalog.**