High Amperage Solar Combiner Boxes

Engineered for PV systems designed with T-junction cable harnesses to reduce labor, materials, and system maintenance!
Eaton's Crouse-Hinds series High Amperage Combiner Boxes are engineered, tested, and third party certified for use in PV systems designed with T-junction cable harnesses to reduce installation labor, material costs, and system maintenance.

**Application:**
Eaton's Crouse-Hinds series High-Amperage Solar Combiner Boxes are designed and built to minimize costs in grid-tied PV system applications designed with "T-junction" cable harness wiring. T-connection harnesses allow for the combination of two strings in parallel prior to entry and termination in the combiner box. The use of these T-connection harnesses in conjunction with high amperage solar combiner boxes reduces cable, labor, and overall installed PV system costs. The boxes are available in models with up to 20 input circuits and a 30A max fuse size, with durable (NEMA 4X, 4 & 3R) enclosures and flexible custom options to suit customer application. The robust design is engineered for greater heat dissipation and manufactured to perform in the harshest of environmental conditions. ETL Listed to UL 1741 standards, they provide peace of mind and plenty of wiring room for ease of installation.

**Features:**
- Isc rating 19.2A at 50°C
- Rated for 600 VDC or 1000 VDC - continuous duty
- Integral Disconnects available in 100A, 250A, 320A, 400A, and 600A
- Open type fuse holders with added spacing for improved heat dissipation and ease of wiring
- Lexan shield covers all live components
- 90°C output terminals
- Configured for positive and negative grounded arrays*

**Standard Materials and Finishes:**
**Fiberglass Enclosure:**
- Hot compression molded fiberglass-reinforced thermoset polyester
- Non-conductive, impact-resistant, UV resistant, flame retardant
- Poured polyurethane seamless gasket provides watertight, dust-tight environmental seal
- Stainless steel used on all external hardware

**Certifications and Compliances:**
- cETLus 1741 Listed
- cETLus Listed to CSA Standards C22.2 No. 31 & No. 107.1
- NEMA 4X (fiberglass and stainless steel)
- NEMA 4 (powder coated steel)
- NEMA 3R (painted steel)

**Integral Disconnect Rating:**
To determine the required rating of integral disconnect, simply multiply the number of input circuits by the panel max. short circuit current, and then multiply that figure by 125%. Round the result to the next (higher) disconnect size. Disconnect switches are rated for 100% continuous duty. In NO case can the maximum output current exceed the disconnect amperage rating Example: In a T-Junction application where two strings are combined prior to entry into the combiner box, a 16 string combiner box with max short circuit current of 19.2A per string: (2 x 9.6A) x 16 strings x 1.25 = 384A, which equates to a 400A disconnect switch. See technical information for combiner box maximum Isc, current, and fuse size calculations.

**Options:**
- Fuses (shipped unpacked)
- Surge Protection
- NEMA 4X Stainless Steel
- NEMA 4 Powder Coated Steel
- NEMA 3R Painted Steel#
- Solar cable whip (pre-assembled and installed) – consult factory
- Compression output lugs
- Factory installed breather vent
- Factory installed drain
- Factory drilled entrance holes
- Factory installed conduit fittings/cable glands
- Custom lugs available upon request
- Lockable enclosures
- Custom options available – consult factory
- Factory installed post-mount strut

*T-N junctions at each row-end reduce one positive and one negative string for every row of panels down to one positive and one negative string for every two rows of panels.

*Negative fused configurations available for positive grounded arrays. Replace F30 with NF30 in the catalog number.

#Suitable for vertical mounting applications only.
Enclosure
Durable environmentally tested enclosures are available in NEMA 3R, 4, and 4X in a variety of materials including: fiberglass (shown), stainless steel, NEMA 4 powder coat and painted steel.

Positive Output Lug
Lug sizes may vary based on output requirement. Custom lugs are available upon request.

Open Style Fuse Holders
Low-maintenance, open style fuse holders are used for improved heat dissipation and ease of wiring.

Direct Busbar
Copper busbar with added spacing for improved heat dissipation busses input circuits into a common conductor. Tin plated for corrosion resistance.

Surge Protection (Optional)
Used to limit voltage in the event of electrical surge, lighting strike, etc. Surge protection is available in 2 module and 3 module variations. (Standard 3 module. 600V and 1000V rated.) Wired to the combiner box common positive/negative, and ground.

Negative Assembly
Tin plated copper negative assembly busses negative inputs into a common negative output. Lug sizes may vary by combiner box output requirement. Custom lugs available upon request.

Standoffs
Standoffs support the Lexan Shield which covers live components and protects against risk of shock.

Grounding
Grounding bar allows for termination of copper or aluminum ground inputs. Tin plated for corrosion resistance. Ground output accepts a maximum of 250 MCM output. Custom ground lugs available upon request.

DC Disconnect Switch
Rotary DC disconnect switch comes equipped with an external handle, which allows for lock-out tag out. The disconnect switch is intended to be used to manually make/break electrical connections and disconnect modules from downstream components. Available in 100A, 250A, 320A, 400A and 600A.

Catalog Number Matrix
Part number example
CCBF12 F30 DS400 SP
Combiner box, fiberglass NEMA 4X enclosure, 12 string, 30A fused, 400A integral disconnect switch, surge protection, 1000V

<table>
<thead>
<tr>
<th>CCBF</th>
<th>12</th>
<th>F30</th>
<th>DS400</th>
<th>SP</th>
<th>1000V</th>
</tr>
</thead>
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**Enclosure Type**
- CCBF = Fiberglass N4X
- CCB = Painted Steel N3R
- CCBSS = Stainless Steel N4X
- CCB4S = Powder Coated Steel N4

**Number of Input Circuits**
- 04 = 4 input circuits
- 05 = 5 input circuits
- 06 = 6 input circuits
- (Offered up to 20 circuits)

**Fuse Amperage**
- F25 = 25A fuse
- F30 = 30A fuse
- BLANK = fuses not provided by factory

**Integral Disconnect Rating**
- DS100 = 100A
- DS250 = 250A
- DS320 = 320A - consult factory
- DS400 = 400A
- DS600 = 600A - consult factory
- BLANK = No integral disconnect

**Voltage**
- 1000V = 1000V
- BLANK = 600V

**Breather Vent or Drain**
- BV = Breather Vertical
- BH = Breather Horizontal
- DV = Drain Vertical
- DH = Drain Horizontal
- BLANK = No Vent or Drain

**Surge Protection**
- SP = Surge protection
  - 30kA/800 VDC Interrupting rating or 30kA/1000 VDC
  - IP20 Fingersafe construction
  - Small size takes up minimal space in enclosure (Only 2 inches wide)
- BLANK = No surge protection

*Negative fused configurations available for positive grounded arrays. Example: Replace F30 with NF30 in the catalog number.*
## Technical Information for Combiners

### Solar Combiner CCB High Amperage Series Technical Information

| Standard Design: 1.0 CCB High Amperage Series | Tech Spec | Mech Spec | Description | Voltage (VDC) | Max. Ambient (°C) | Max. Fuse Size (A) | Max. Current for Greatest Number of Strings (A) | Max. PV Module Short Circuit Current (A) | Input Conductors (Cu. Only) | Output Conductors (Cu/Al) | Fiberglass Dimensions (in.) | NEMA Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.1 CCB_06 | 6 String Combiner Box (02-06 Strings) | 600/1000 | 50 | 30 | 144 | 19.2 | #14 - #8 | 35 | 350 MOM | 325 | 20x16x08 | 4X/4/3R |
| 2.2 CCB_12 | 12 String Combiner Box (07-12 Strings) | 600/1000 | 50 | 30 | 288 | 19.2 | #14 - #8 | 35 | 500 MOM | 375 | 24x20x10 | 4X/4/3R |
| 2.3 CCB_18 | 18 String Combiner Box (13-18 Strings) | 600/1000 | 50 | 30 | 433 | 19.2 | #14 - #8 | 35 | 500 MOM | 375 | 24x24x10 | 4X/4/3R |
| 2.4 CCB_24 | 24 String Combiner Box (19-24 Strings) | 600/1000 | 50 | 30 | 577 | 19.2 | #14 - #8 | 35 | 800 MOM | 500 | 24x24x10 | 4X/4/3R |
| 2.5 CCB_06 DS | 6 String Combiner Box w/ Integral Disconnect Switch (02-06 Strings) | 600/1000 | 50 | 30 | 144 | 19.2 | #14 - #8 | 35 | 350 MOM | 325 | 24x20x10 | 4X/4/3R |
| 2.6 CCB_12 DS | 12 String Combiner Box w/ Integral Disconnect Switch (07-12 Strings) | 600/1000 | 50 | 30 | 288 | 19.2 | #14 - #8 | 35 | 500 MOM | 375 | 24x24x10 | 4X/4/3R |
| 2.7 CCB_18 DS | 18 String Combiner Box w/ Integral Disconnect Switch (13-18 Strings) | 600/1000 | 50 | 30 | 433 | 19.2 | #14 - #8 | 35 | 500 MOM | 375 | 30x24x10 | 4X/4/3R |
| 2.8 CCB_24 DS | 24 String Combiner Box w/ Integral Disconnect Switch (19-24 Strings) | 600/1000 | 50 | 30 | 576 | 19.2 | #14 - #8 | 35 | 800 MOM | 500 | 36x30x12 | 4X/4/3R |

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### For more information:

If further assistance is required, please contact an authorized Eaton Distributor, Sales Office, or Customer Service Department.

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### Technical Information for Combiners

Commercial Products delivers quality, reliability, labor savings and lower installed cost, all from a single dependable source.

See the complete offering of Commercial Products at www.crouse-hinds.com.

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