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## Description of Product

Chief Enterprises' *BRIC mini* Power Distribution Module (PDM) is an extremely small device that houses plug-in 280 series electrical components such as ATM Fuses, Micro Relays, ATM Circuit Breakers, and similar components, in a sealed chamber. The PDM is designed for use in construction, agriculture, and heavy duty transportation applications where ruggedness is required.

A minimal PDM consists of a Base and Cover. Wire leads with terminals and single wire seals (SWS) are inserted in the bottom of the base, and unused cavities are plugged. Electrical components are mated to the terminals from the top of the base, and a cover is assembled from the top. The cover is secured to the base with snap-fits.

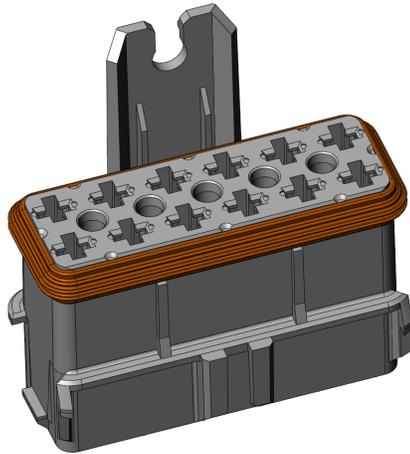
Bases are available with and without a hydrophobic vent. The vent allows a slow air flow in/out of the sealed chamber to relieve pressure differentials from component heating. In applications with low heat generation and minimal water exposure, the vent may not be required. For more demanding applications, the vent will prevent gasket blow-by and water intrusion into the sealed chamber.

The PDM can be pre-wired before mounting, or wired after mounting. The PDM should be rigidly secured using the EWCAP-005-7 slots and/or the mounting arm.

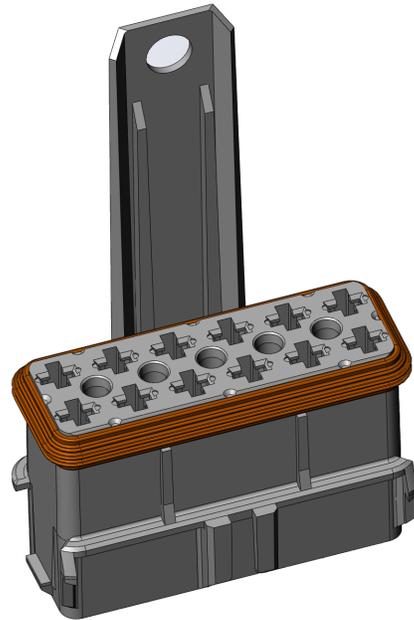
Accessories such as TPAs, Labels, and Tethers are available, and can be specified as needed. Our Engineering team can assist in selecting the components.

While the design of the PDM has been highly engineered and tested, each application can have unique characteristics that affect its functionality. Recommendations in this document are based on typical configurations and applications, but cannot cover the extent of all uses. We recommend that OEMs test the PDM in their configuration, with the specified electrical components and environmental requirements.

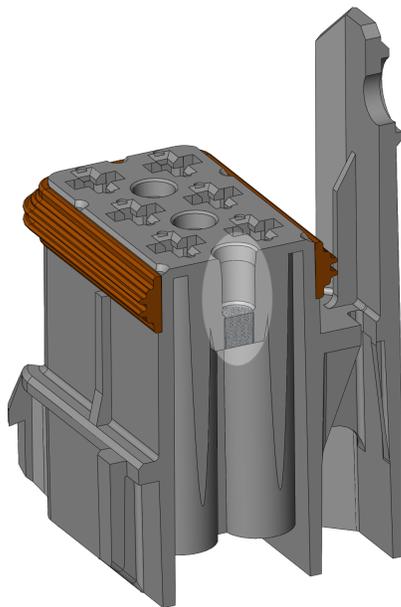
## Configurations



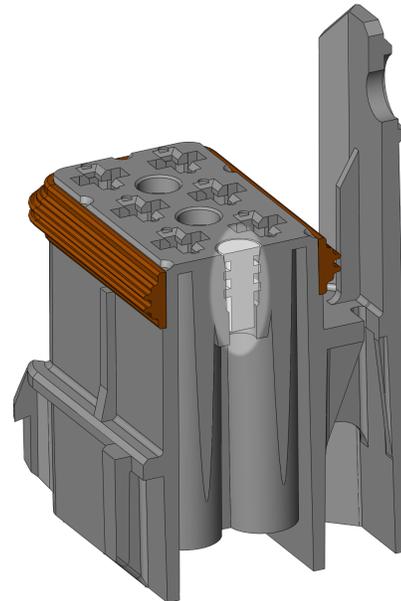
Standard Mounting Arm



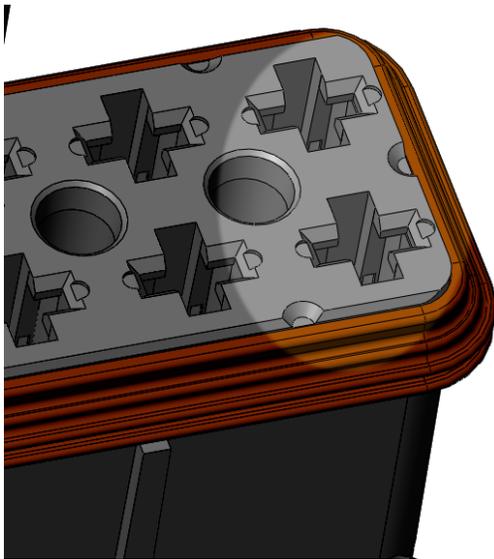
Special Mounting Arms



With Hydrophobic Vent



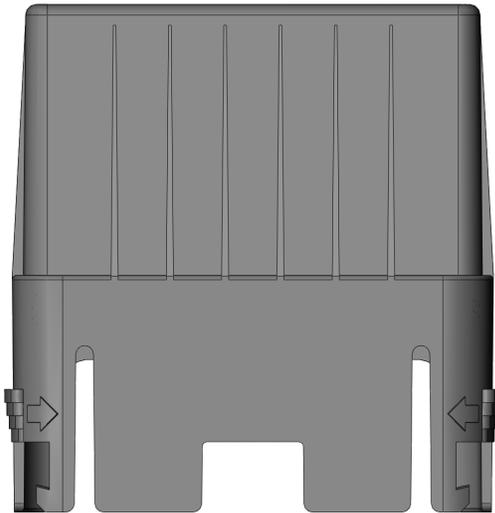
Without Hydrophobic Vent



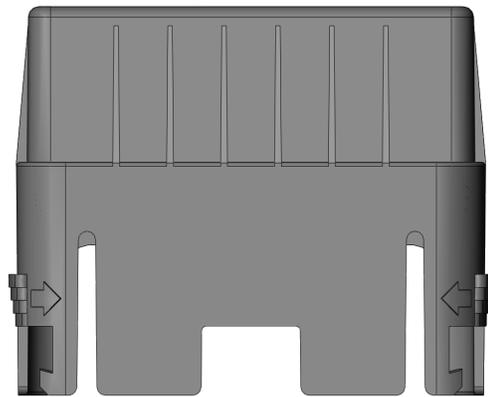
Standard Terminal Orientation



90° Terminal Orientation (cavities 6 & 12 only)



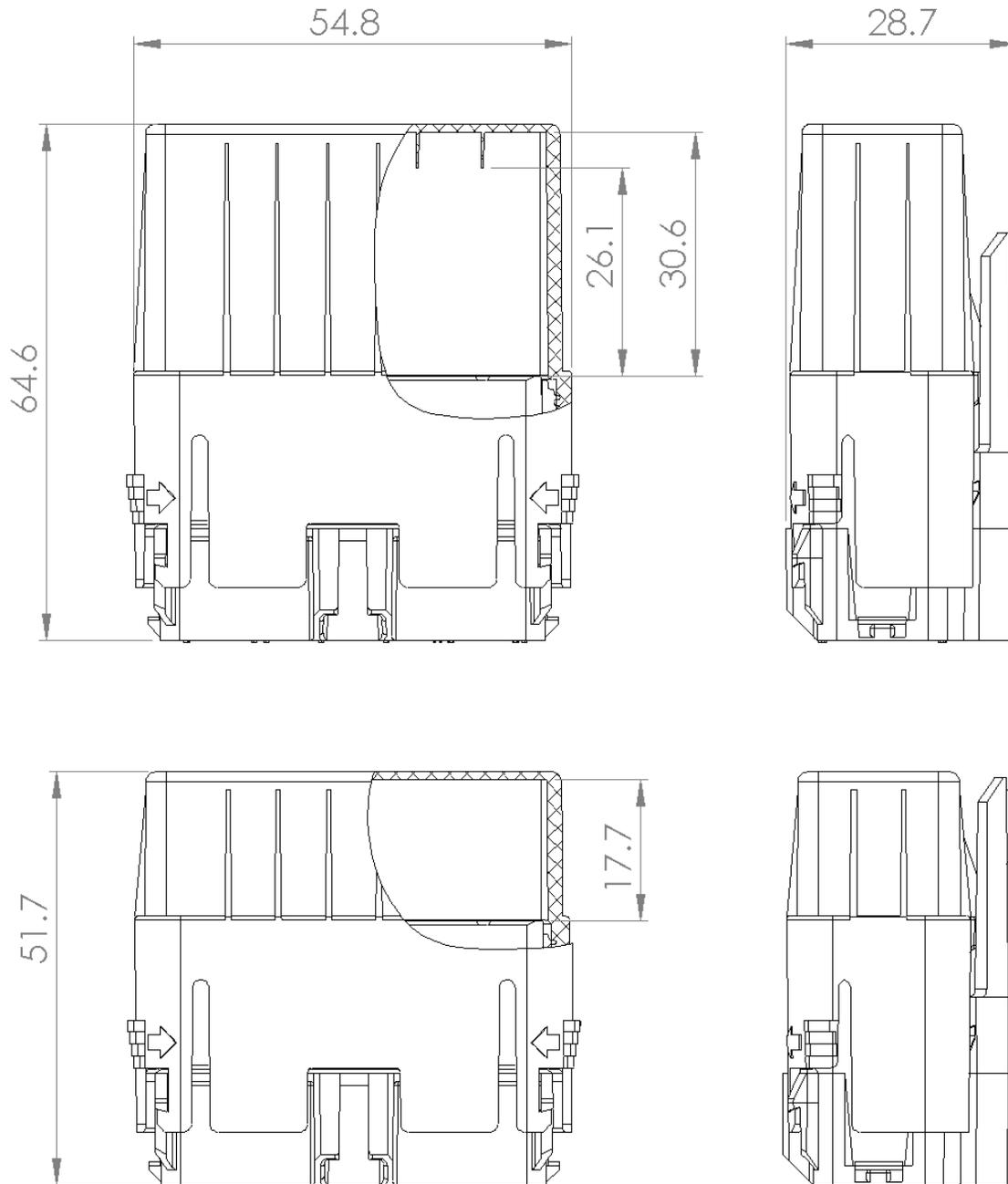
Standard Height Cover



Short Cover

## Basic Dimensions

(reference only - see drawings for dimensions and tolerances)



## Mounting

*BRIC mini* bases include three mounting points. Two of the mounting points are EWCAP-005-7 slots, accepting a variety of fasteners from different manufacturers. The third mounting point on the standard mounting arm is designed to hold a double-headed clip. Standard clips are shown below; alternately, custom mounting solutions can be designed into the vehicle to utilize the features on *BRIC mini*. Please ask our Engineers for design assistance.

If standard fasteners are used

- Low/Medium Vibration - Use any two of the three mounting points
- High Vibration - Use all three mounting points
- Extreme Vibration - Use all three mounting points, plus foam in the cover for relay dampening

Recommended EWCAP-005-7 clips:

- 151-01108 (HellermannTyton)
- 12110783 (Aptiv)

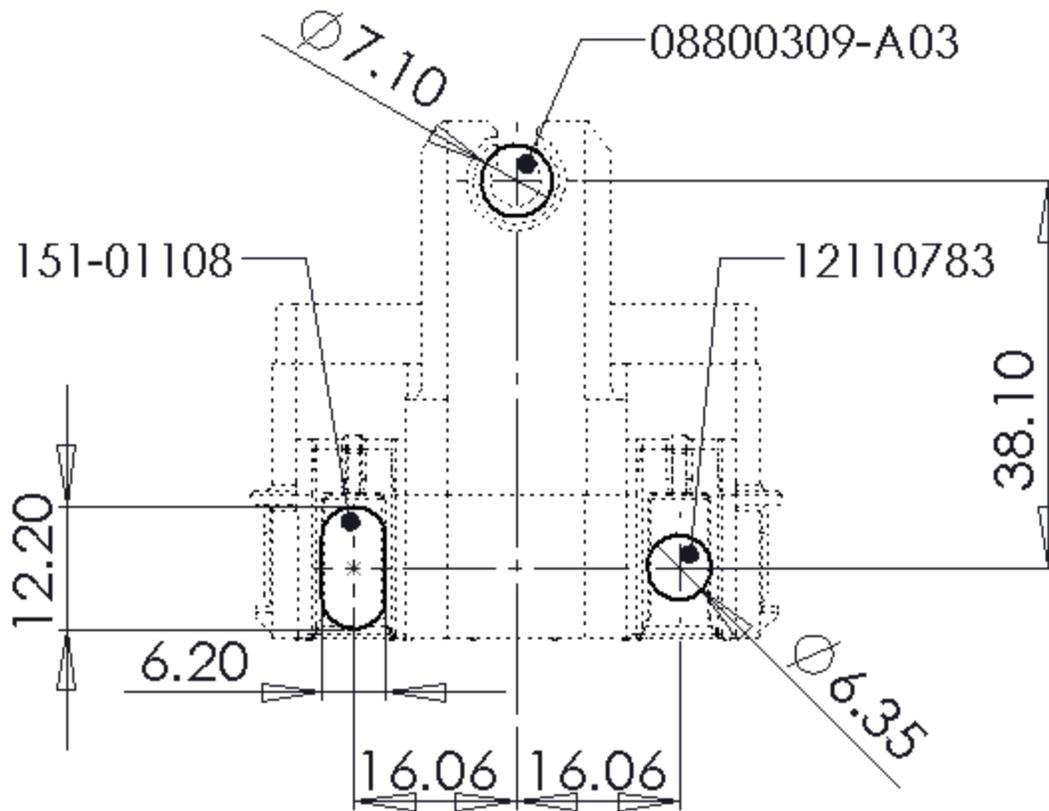
Other EWCAP-005-7 clips verified to fit *BRIC mini*, but with reduced clamp range

- 151-01243 (HellermannTyton)
- 151-00775 (HellermannTyton)
- 151-00785 (HellermannTyton)
- 15366630 (Aptiv)
- 15476537 (Aptiv)
- 15318012 (Aptiv)
- 13832083 (Aptiv)
- 15326712-B (Aptiv) Obsolete

The third mounting point on the standard mounting arm accepts the following clips

- 08800309-A03 (EFC), same as M39-0714-05 Black (ITW)
- 08800179-A03Q (EFC), same as M38-0700-01 Black (ITW)

The following diagram shows recommended panel cutouts for selected clips. If other clips are used, modify the cutout accordingly.



## Assembly Instructions

### Wires and Terminals

Insert wires with correct seals and terminals into cavities as shown. After locking, pull back gently on wire to assure terminals are seated. Terminals are symmetric and can be assembled in two orientations.

### Cover

Push the cover onto the base until snaps on both sides engage. Engagement force is <20 lbs (90 N).

### Tether

Insert one end of the tether through the base, then through the slot in the cover. Make sure that the tether is not pinched between the cover and the base. After installing the cover onto the base, pull the tether and secure the free end in the slot of the base.

### TPA

After installing all wires and cavity plugs, insert the TPA as shown, securing all snaps.

### Label

Align label using a jig. Due to the extremely compact footprint, there are no poka-yoke features for label orientation. Important: label must not cover the vent in the center of the base.

## Disassembly Instructions

### Wires and Terminals

Insert the proper TE MCP terminal extraction tool as shown. Gently pull on the wires to remove.

### Cover

Depress both tabs in the direction indicated by arrows, while pulling on the cover. Tab squeeze force is approximately 20 lbs (90 N) and removal force is <20 lbs (90 N).

### Tether

Pull on tether until it disengages from the slot in the base.

### TPA

Use a flat screwdriver to pry the TPA tabs from the snap-fit on the base. If TPA is damaged, discard and replace with a new TPA.

## Terminal System

Example part numbers are shown in the table below, this table is for reference only -- the latest information is available from the terminal manufacturers. Note that x- and -x represent material, plating, or tooling options.

MCP 2.8						
Cavity Plug: 828922-1						
Terminal Extraction Tool: 1-1579007-2						
Wire Size mm <sup>2</sup> (AWG)	Insulation Diameter (mm)	Strip Form	Loose Piece	Applicator Tool	Hand Crimp Tool (Die Set)	Single Wire Seal
0.35 - 0.50 (22 - 20)	1.2 - 1.4	x-968882-x	x-968896-x	2151559-x	539725-2	828904-1
0.5 - 1.0 (20 - 18)	1.4 - 2.1	x-968855-x	x-968875-x	2151227-x	539726-2	828904-1
1.0 - 2.5 (16 - 14)	2.2 - 3.0	x-968857-x	x-968876-x	2151346-x	539727-2	828905-1
3.3 (12)	3.0 - 3.2	x-1719506-x	-	-	539727-2	638865-1
	3.3 - 3.6					184141-1

## Electrical & Environmental

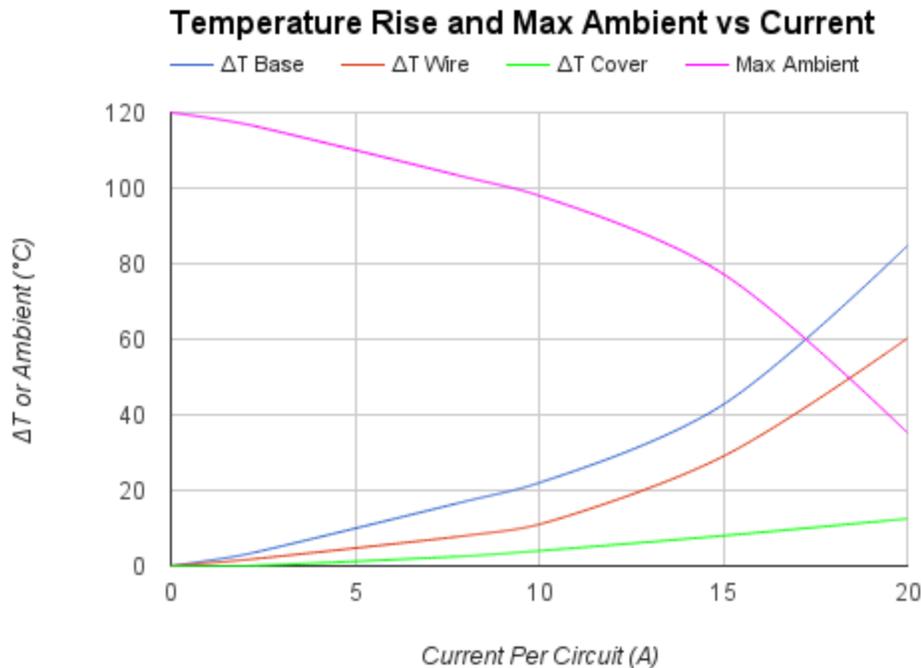
Ambient Temperature:	-40 to 105° C
Max Current per Terminal:	30 Amps Intermittent 20 Amps Continuous (with temperature derating)
Max Continuous Current per PDM:	120 A
Max Intermittent Current per PDM:	Must be determined by customer
Water & Dust Ingress Protection:	IP 67
Wire Range:	24 to 12 AWG
Environmental Compatibility:	Resistant to most underhood chemicals, UV Stable
Compliance:	ROHS Cover: UL 94HB Body: UL 94HB Seal: UL 94HB
Materials:	Cover: PA66 Body: Glass Reinforced PA66 Seal: Silicone
Design Recommendations:	Place heat-generating components on perimeter Maximize wire gauge for heat dissipation Mount in area with airflow, away from heat sources

## Terminal Temperature Derating

The PDM materials can withstand high temperatures before degradation, but Chief does not recommend exceeding 120 °C for any components or the PDM itself.

Thorough testing has demonstrated the relationship between temperature and current on a PDM with properly specified wire gauges. At no point should the base or interior components be exposed to temperatures exceeding 120 °C, or the maximum component temperature, whichever is lower. For example, a PDM with 15A per each circuit continuous should be in ambient temperature below ~77 °C.

The chart below shows this as a derating for MCP 2.8 terminals in a 48-way BRIC. Note that temperature derating has not been performed on *BRIC mini*.



## Validation Testing

Temperature Cycle: ●	-40 to 125 °C, 10 Cycles (Operational)
Drop Test: ●	1 Meter onto Concrete, All Sides
Vibration: ●	Random 100 hrs (Operational)
Water & Dust Ingress: ●	1 Meter Immersion - IP 67
	Protection from Dust - IP 6KX
	Pressure Wash - IP X9
Combined Heat & Water Spray: ●	100 Hours (Operational) - IP X9K

- complete & passed
- in process/planned

## Accessories & Options

- Tether
- TPA
- Custom Labels
- Custom Laser Marking
- Custom Backshells
- Anti-Backout Foam