

# Application Note

## Fuse Holder vs Terminal Block

Pictured on the right is a product most users would describe as a DIN rail mounted fuse terminal. In actual fact it is a fuse holder. What's the difference?

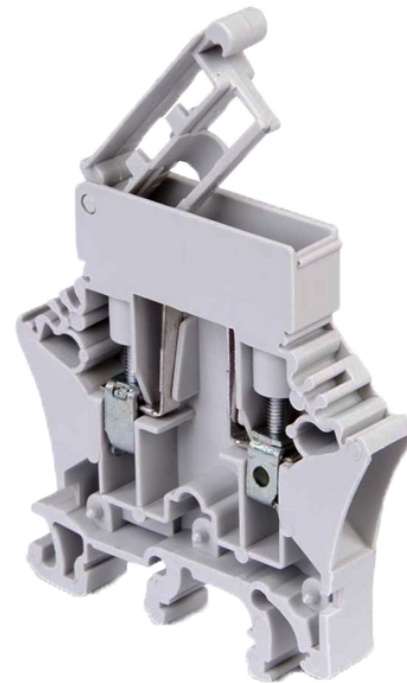
Fuse holders and fuse terminals may look identical but the vast majority of fuse terminals are not fuse holders. The difference is how they were tested for agency approval. A fuse terminal tested by CSA or UL is actually tested with a metal slug replacing the fuse. With the slug in place the rated current is conducted through the terminal and the temperature rise is measured. If within acceptable limits the terminal has passed the test. But is this relevant?

The resistance of the metal slug is very small – in the milliohm range. The resistance of actual fuses varies greatly depending on the trip characteristics and other factors. For example, a quick scan of a 5x20mm fuse manufacturer's specifications reveals a fuse rated 0.5A could have a resistance of 0.2Ω to 1.7Ω, a 1A version could have a resistance of 0.1Ω to 0.7Ω while 5A fuses range from 0.01Ω to 0.05Ω. If we look at the situation with 5A fuses, the power dissipated by the fuse ( $P=I^2R$ ) ranges from 0.25W to 1.25W – that's a significant variation in power dissipation. If the metal slug used during testing had a resistance of 10mΩ the power dissipation would have been 0.25W or only 1/5 what might actually be the case when a real fuse is used. Increased power dissipation means a higher temperature rise which could impact the plastic the terminal is made from.

Fuse holders are tested with actual fuses installed so the temperature rise measurements more closely resemble what will be seen in real applications. This is very important for hazardous location applications where temperature rise is critical. Class 1 Division 2 and Zone 2 products are tested as fuse holders, not fuse terminals.

For C1D2 / Z2 applications choose the fuse carefully and make sure you use a fuse holder.

Fuse modules, since they are not considered terminal blocks, are tested with fuses installed so Weidmuller's C1D2 certified DEPRO® fuse modules have been tested under actual operating conditions.



**BC5F C1D2 Fuse Holder**  
Catalog #330017

### Weidmuller Ltd.

10 Spy Court  
Markham, ON  
Canada  
L3R 5H6  
Toll Free: (800)268-4080  
orders\_can@weidmuller.com

[www.klippon-engineering.com/emphatec](http://www.klippon-engineering.com/emphatec)

Subject to technical changes

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