
Metal-Clad Switchgear or Metal-Enclosed Switchgear: Which is it?

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Would you be surprised if I said it might be both? Metal-clad switchgear is one of three common types of metal-enclosed switchgear, as defined in ANSI standards. Before I confuse you further, a definition is in order.

Metal-enclosed power switchgear: A switchgear assembly completely enclosed on all sides and top with sheet metal (except for ventilating openings and inspection windows) containing primary power circuit switching or interrupting devices, or both, with buses and connections. The assembly may include control and auxiliary devices. Access to the interior of the enclosure is provided by doors or removable covers, or both.

This definition appears in all three of the ANSI/IEEE standards covering the types of metal-enclosed power switchgear: C37.20.1, Metal-Enclosed Low Voltage Power Circuit Breaker Switchgear; C37.20.2, Metal-Clad Switchgear and C37.20.3, Metal-Enclosed Interrupter Switchgear. Let's look at some of the things that define each of these types.

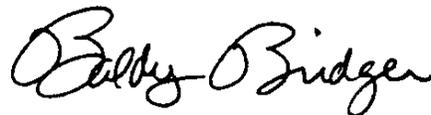
Metal-enclosed low voltage power circuit breaker switchgear is obviously for use on low voltage systems. The maximum ratings in C37.20.1 are 635 V for ac switchgear and up to 3200 V for dc switchgear. The interrupting device is a low voltage power circuit breaker, either withdrawable or stationary. It may be either manually or electrically operated, fused or unfused. Each circuit breaker is enclosed in a grounded metal compartment, but other isolation, such as between buses and cable connections, is not required. Shutters are not required over bus connections when drawout breakers are used, and bare bus is standard. While some of these features may be available as options (Powell can provide all of them), they are not required by the standard. Under the ANSI standards, low voltage switchgear cannot be considered metal-clad.

Metal-clad switchgear requires that the main switching and interrupting device be drawout. It may be either a circuit breaker (usual) or a load-break interrupter switch (unusual). Circuit breakers are always electrically operated. Extensive barriering, shutters over the primary circuit elements when the interrupter is withdrawn, and insulation-covered bus are all required. The minimum rated voltage listed in C37.20.2 is 4.76 kV. This rating is commonly used on 2400 V ac circuits, but is seldom used at lower voltages. Ratings are available up to 38 kV. Metal-clad is usually considered the top of the line of medium-voltage metal-enclosed switchgear.

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Metal-enclosed interrupter switchgear covers the same voltage range as metal-clad, but is of simpler construction. The main switching device is an interrupter switch, usually load-break, which may be stationary (usual) or drawout (unusual). Overcurrent protection is usually provided by fuses. Bare bus is standard and required barriering is minimal. Although electrical operators are available, the switches are usually manually operated.



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