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Modular Enclosure
Buyer’s Guide

Change for the Better.

FRIDHELM L O H GROUP
Understanding Modular Enclosures.

Modular freestanding enclosures offer a number of key advantages over traditional unibody enclosures.

While modular enclosures are the predominant enclosure worldwide, the adoption rate in North America has been slower. For many prospective buyers and specifiers, the primary reason is a lack of understanding about the differences and benefits.

Despite a number of functional and financial advantages offered by modular enclosures, purchasing decisions are being driven by the shortsighted focus on acquisition cost, and in some cases, the mistaken notion that modular enclosures are inherently more expensive. When specifications for control panels and other applications are written, the true costs and benefits of utilizing one enclosure solution over another must be fully considered—especially in today’s economic climate where every penny counts.

While acquisition costs for unibody enclosures might be more cost effective, once the use and operating costs are factored into the equation, a unibody solution may prove to be cost-prohibitive. Because the lifecycle of a typical industrial enclosure is filled with planned and unplanned modifications and repairs, using a modular platform can limit exposure to risks associated with additional costs and downtime—often making a modular enclosure the most cost effective choice.

Modular enclosures provide the protection required for industrial drives, controls and other equipment along with the practical flexibility to evolve with the changing demands of modern business—all while saving time and money over the course of their lifecycles.

This Buyer’s Guide will show you how.
Modular freestanding enclosures offer a number of key advantages over traditional unibody enclosures. The physical differences between modular and unibody enclosures provide the first discernible advantages. The most basic differences are described below.

**Gasket**
Most basic unibody enclosures use a peel-and-stick strip gasket for the door seal. Most modular enclosures feature a foam-in-place gasket that is poured continuously around the perimeter of the enclosure skin (door, sidewall, etc.) to ensure no gaps exist. This provides a better seal and memory retention which increases atmospheric and corrosive protection.

**Paint**
Any plain carbon steel enclosure will be required to be painted for corrosion protection. The paint of choice is generally powder paint, known for its hard durable finish. Modular enclosures use a three-step painting process similar to the process used in the automotive industry. In a closed frame modular enclosure, the addition of an electrophoretic dip-coat primer adds a level of protection, and finally, the two-part primer and powder coat combination ensures maximum corrosion resistance and durability.

**Mounting Panel**
The most commonly modified part on any enclosure, the mounting panel, differs in both construction and ease of use. Unibody panels are generally painted steel and constructed with an L-fold around the perimeter to stiffen them. Modular panels are generally zinc-plated steel allowing for an easier, more accessible ground that does not require the scraping of paint. They may also feature a C-fold for easier handling and greater strength. The modular enclosure design allows for the addition of rails making it possible to slide the panel into and out of the front, side, or rear enclosure openings. This saves time and increases safety compared to the unibody technique of laying the enclosure on its back and lifting the panel with a crane or forkift.

**External Skins**
Modular enclosure skins offer many benefits over their unibody counterparts. The ability to easily remove the door, sidewalls, and other parts allows for greater accessibility and more accurate cutouts and modifications. The inside door surface has a stiffener with multiple holes which is capable of supporting a wide variety of chassis rails or panels, yielding an entire separate mounting surface to be utilized. Standard off-the-shelf unibody enclosures only allow the attachment of a print pocket.

**Frame**
In addition to the ability to join enclosures and easily add accessories, the modular enclosure frame can accommodate more door options. Custom motor control center (MCC) solutions can be configured with several smaller partial doors making up the face of the cabinet. Then both horizontal and vertical dividers can be added to the frame, easily separating these compartments—e.g. high/low voltage sections.
Common Modular Enclosure Misperceptions

Modular enclosures have gained acceptance in almost every industrial market, however misperceptions continue to exist. The most common are:

- **Modular enclosures are not as strong as unibody enclosures.**
  
  *False.* This misperception stems from the fact that modular enclosure walls are thinner than a unibody enclosure. However, the strength of a modular enclosure comes from its frame, not the enclosure walls. The equipment load being exerted on the enclosure is transferred to the vertical frame members.

- **Many part numbers must be ordered to complete a modular enclosure assembly.**
  
  *False.* A basic modular enclosure consists of two part numbers – the core frame/assembly (with included mounting panel) and a pair of sidewalls. Coincidentally the equivalent unibody enclosure will also require two part numbers – the core enclosure plus a mounting panel.

- **Modular enclosures require a lot of assembly work like an erector set.**
  
  *False.* Assembly work, while required, is minimal for a basic system. The more complex the configuration, the more assembly required. However, the system accessories can be added by someone without specialized training, unlike the more difficult fabrication techniques (cutting/welding/bending) needed to modify a unibody enclosure.

- **Modular systems are more expensive.**
  
  *False.* Standard pricing on core systems are comparable to unibody enclosures. Additionally, there are many hidden costs that become evident over the total lifecycle of the enclosure.
The Journey of an Enclosure

From start to finish, the Rittal TS 8 Modular Enclosure is Engineered Better.

- **E-coat, powder-coat and nano-coat multi-step process** delivers long-lasting corrosion resistance.
- **Rittal Xpress stock, modification and paint program** expedites standard and modified enclosure delivery.
- **Unique frame enables versatile installation of accessories to inner and outer frame**.
- **One-person installation and grounded frame** increases safety.
- **Nano finish, stainless steel construction and complete indoor/outdoor rating** ensures long product lifetime.
- **Welded symmetrical frame** increases baying options and load weight.
How tough is the TS 8 Enclosure from Rittal?
Tough enough to support 1500 pounds—about the weight of a young Sumatran rhinoceros. And tough enough to withstand the harshest industrial environments, like...

Why so Tough?
Not all enclosures are created equal. Rittal protects controls and systems for the world’s leading companies. Rittal is built tough to keep operations running around the globe, in every environment. See how Rittal is engineered better and choose TS 8 to make a change for the better.

- Steel folded 16x and closed welded for stronger frame construction and fewer points of failure
- Carbon steel base and enclosure frame, zinc-plated carbon steel mounting panel
- Durable, rugged corrosion-resistant finish from our 3-step, automotive-like coating process
- 30% higher stability – but with 15% less frame weight
- Proven, preferred modular construction handles more equipment
- Available for indoor and outdoor solutions
TS 8 Leads the Competition

TS 8 modular enclosure system provides unsurpassed flexibility, scalability, strength, and durability compared to competitive products. Whether housing drives, flow monitoring systems or critical electrical components, the complete line of TS 8 products maintain a clean, consistent environment in the most extreme conditions. Compared to similar products TS 8 features and benefits include:

- 30 percent more available mounting space than traditional unibody enclosures
- Four-point latching system and a continuous foamed-in-place gasket creates a water- and dust-proof seal
- All exposed hardware (handle, hinges, latches, eye-bolts, etc.) is made of 316 stainless steel
- Fold-away handle does not take up valuable door space and provides a simple way to exchange lock inserts or add padlock provisions
- A large assortment of internal accessories that allow for three-dimensional mounting on all internal surfaces
- Internally removable floor panel that simplifies conduit and wiring installation mounting panel
- Quick-release hinges that enable fast and easy door removal and replacement
- Strength of modular construction delivers a load capacity of 3,150 pounds to handle more equipment within the enclosure
- CSA, UL, cUL and 7 additional global standard approvals increases markets like shipping, oil and gas, and automotive

Acquisition Costs + Use Costs + Operating Costs = True Cost

Acquisition costs are realities for control panel shops, integrators, OEMs, and end users alike as these costs are passed down from one group to the next. However, when taking the actual design and procurement processes into account, the primary beneficiary of reduced acquisition costs will be the system designer. However, after the initial purchase decision is made, panel shops and integrators are more likely to be concerned with use costs which are attributed to labor and the use of floor space during modification and integration. End users are more concerned with operating costs which are affected by labor maintenance, reduction of productivity during downtime and costs incurred during expansion. The inherent advantages of modular enclosures can substantially reduce all of these costs.

True Cost

Most people are familiar with the concept of Return On Investment (ROI). Considering the savings or possible yields of a decision beyond the initial cost is a wise course of action in any business. True cost is calculated by simply totaling the costs of an enclosure solution over the course of its lifecycle, and is represented by the short equation:

$\text{Acquisition Costs + Use Costs + Operating Costs} = \text{True Cost}$

TS 8 Modular Enclosures

Invented here. Perfected here. Poorly copied over there.

With more than 12 million units sold around the world, Rittal is the undisputed leader in modular enclosures. We’re glad that the benefits of modular enclosures have pushed the competition to finally offering their own modular products. What took them so long?

Rittal Advantage Design Features Hoffman

<table>
<thead>
<tr>
<th>Feature</th>
<th>Rittal Advantage</th>
<th>Design Features</th>
<th>Hoffman</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Installation</td>
<td>Non-symmetrical vertical and horizontal sections</td>
<td>Mounting on inner frame only</td>
<td>Mounting on inner frame only</td>
</tr>
<tr>
<td>Frame Symmetry</td>
<td>Stronger, more symmetrical vertical and horizontal sections</td>
<td>3-point latches</td>
<td>4-point latches</td>
</tr>
<tr>
<td>Mounting Plate</td>
<td>Side-to-side and front-to-rear baying options only</td>
<td>Slide blocks are not self aligning</td>
<td>Mounting</td>
</tr>
<tr>
<td>Door Installation</td>
<td>Assured grounding minimizes risks and reduces EMI/RFI interference</td>
<td>Shims must be purchased and installed separately</td>
<td>Grounding</td>
</tr>
<tr>
<td>Surface Finish</td>
<td>Textured powder inside and out</td>
<td>Stainless steel coated</td>
<td>Stainless steel coated</td>
</tr>
<tr>
<td>Material Thickness</td>
<td>12-gauge steel frame</td>
<td>15-gauge steel frame</td>
<td>15-gauge steel frame</td>
</tr>
<tr>
<td>Approvals</td>
<td>CSA, UL, cUL</td>
<td>CSA, UL, cUL</td>
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For inquiries contact rittal@rittal.com.

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Our full line of modular enclosures are perfect for every environment and every task.

**TS 8 Meets Every Challenge**

**Carbon Steel Freestanding (Type 12)**
- High load-bearing capacity of over 3000 lbs.
- Inner and outer mounting on the frame level for effective space utilization
- Integral enclosure protection channel prevents the ingress of dirt and water when the door is opened
- Optimum sealing achieved with 4-point lock system
- Full flexibility with the use of accessories, thanks to a fully symmetrical frame section, with identical accessories for the width and depth

**Carbon Steel Freestanding Disconnect (Type 12)**
- Expandable and modular enclosure compatible with all standard TS 8 accessories
- Rigid flange door to accept a variety of high and low amperage operator handles
- Enhanced and greatly simplified hardware installation

**Carbon Steel Floormount (Type 12)**
- Modular design flexibility
- 12” removable floor stand kits installed
- Overlapping doors for complete access to full size mounting panel and interior
- 4-point latching for impervious NEMA-12 seal

**Carbon Steel Floormount Disconnect (Type 12)**
- The flexibility of Rittal’s revolutionary modular design
- Rigid flange door to adapt to high or low amperage operator handles
- 4-point latching for impervious NEMA-12 seal

**Stainless Steel 316L Freestanding (Type 4X)**
- 30 percent more available mounting space than traditional unibody enclosures of equal dimensions
- Four-point latching system and continuous foamed-in-place gasket provide a water and dust proof environmental seal
- Padlock-able handle that provides both easy access and security
- Full functionality and expandability of the TS enclosure series
- Quick-release hinges that enable fast and easy door removal and replacement

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**Stainless Steel 316L Features/Accessories**
- **Padlock-able Handle** Provides both easy access and security.
- **Four-Point Latching System and Continuous Foamed-In-Place Gasket** Provides a water and dust proof environmental seal.
- **Base/Plinth Trim Panels** Fewer parts, more opportunities, lower purchasing, storage and assembly costs – this is the formula behind the base/plinth system.
- **Floor Stand Kit** Permits easy access to the bottom of the enclosure and is purchased separately.
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