

# Rittal – The System.

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## ► Modular Enclosure Buyer's Guide



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# ► 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.



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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.**

# What Are **Modular Enclosures**?



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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 forklift.



### 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.

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# Common Modular Enclosure Misperceptions

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



## 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 found in industries like oil and gas, mining, pulp and paper, food and beverage, and life sciences. 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
- Depth adjustable and removable zinc-plated carbon steel mounting panel
- Spring-loaded, 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 operational footprint in vertical markets like shipping, oil and gas, and automotive.

# The Journey of an Enclosure



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

## MANUFACTURING

Welded symmetrical frame increases buying options and load weight



## FINISHING

E-coat, powder-coat and nano-coat multi-step process delivers long-lasting corrosion resistance



## SHIPPING

Rittal Xpress stock, modification and paint program expedites standard and modified enclosure delivery



# 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:

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

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 benefactor 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.

## CUSTOMIZATION

Unique frame enables versatile installation of accessories to inner and outer frame



## INSTALLATION

One-person installation and grounded frame increases safety



## LIFETIME

Nano finish, stainless steel construction and complete indoor/outdoor rating ensures long product lifetime



# 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?



VS.



Rittal	Advantage	Design Features	Hoffman
Side-to-back; side-to-side; top-to-bottom and back-to-back	<i>Greater design possibilities to meet customer needs</i>	<b>Baying</b>	Side-to-side and front-to-rear baying options only
Steel folded 16x and closed welded	<i>Stronger frame construction and fewer points of failure</i>	<b>Frame</b>	Steel folded 6x and closed welded
Completely symmetrical vertical and horizontal sections	<i>Identical accessories for width and depth limits inventory and parts needed on site</i>	<b>Frame Symmetry</b>	Non-symmetrical vertical and horizontal sections
4-point latches	<i>4-point latches generate a tighter and stronger seal</i>	<b>Latch System</b>	3-point latches
Mounting on inner and outer frame level	<i>15% more mounting surface for accessories</i>	<b>Mounting</b>	Mounting on inner frame only
Plastic slide blocks with metal pin; retrofit installation of earthing	<i>Mounting plate is easier to install due to fewer screws and the lock-in aid</i>	<b>Mounting Plate</b>	Slide blocks are not self aligning with the frame of the enclosure
One-person changeover on any side	<i>Swapping door hinges to opposite side is much less time-consuming</i>	<b>Door Installation</b>	Doors installed on sides of enclosure require the purchase and install of an addition adapter kit
External panels grounded to frame	<i>Assured grounding minimizes risks and reduces EM/RF interference</i>	<b>Grounding</b>	Straps must be purchased and installed separately
Nanoceramic pre-treatment, electrophoretic dipcoat priming, powder coating	<i>Multi-step automotive-like process increases long-lasting corrosion resistance</i>	<b>Surface Finish</b>	Textured powder inside and out
16-gauge steel frame	<i>Lighter, easier to maneuver and requires only one person to move</i>	<b>Material Thickness</b>	12-gauge steel frame
2 screws on top for installation	<i>One-person installation improves efficiency and less hardware decreases potential for errors</i>	<b>Panel Installation</b>	Slide blocks require 12 pieces of hardware to attach mounting plate to the enclosure. No installation safety provision provided
CSA, UL, cUL; 7 additional global standard approvals	<i>Greater operational footprint in vertical markets like shipping, oil and gas, and automotive</i>	<b>Approvals</b>	CSA, UL, cUL

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## Baying Systems TS 8 (TS 8806.500)

Product Description	
<b>Material</b>	Enclosure frame: Carbon steel, 1.5 mm / Roof: Carbon steel 1.5 mm / Door: Carbon steel, 2.0 mm / Rear panel: Carbon steel, 1.5 mm / Base plates: Carbon steel, 1.5 mm / Mounting plate: Carbon steel, 3.0 mm
<b>Surface finish</b>	Enclosure frame: Dipcoat-primed / Door, roof and rear panel: Dipcoat-primed, powder-coated on the outside, textured paint / Mounting plate and base plates: Zinc-plated
<b>Color</b>	RAL 7035
<b>Protection category IP to IEC 60 529</b>	IP 55
<b>Protection category NEMA</b>	NEMA 12
<b>IK code</b>	IK09
<b>Supply Includes</b>	Enclosure frame / Door(s) / Roof plate / Rear panel, detachable / 4 eyebolts / Lock: 3 mm double-bit / Base Plates / Mounting plate, depth-adjustable / 2 slide rails / 2 support strips fitted in the enclosure depth
<b>Base material</b>	Carbon Steel
Product Features	
<b>Dimensions</b>	Height: 2000 mm (79 ") / Width: 800 mm (31 ") / Depth: 600 mm (24 ")
<b>Mounting plate</b>	Height: 1896 mm (75 ") / Width: 699 mm (28 ")
<b>Number of doors</b>	1
<b>2 support strips fitted in the enclosure depth</b>	Yes
<b>Packaging unit</b>	1 pc(s)
<b>Weight/packaging unit</b>	130.5 kg
<b>EAN</b>	4028177251038
<b>Customs tariff number</b>	94032080
Approvals	
■ UL	■ Germanischer Lloyd
■ CSA	■ Russian Maritime Register of Shipping
■ TÜV	■ Lloyds Register of Shipping
■ Norske Veritas	■ Bureau Veritas

## System 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.



### Floor Stand Kit

Permits easy access to the bottom of the enclosure and is purchased separately.



### Base/Plinth Trim Panels

Fewer parts, more opportunities, lower purchasing, storage and assembly costs – this is the formula behind the base/plinth system.

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- Power Distribution
- Climate Control
- IT Infrastructure
- Software & Services

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