

# I/A Series® Hardware

**PSS 21H-2X4 B4**

## B04 Enclosure



*The B04 I/A Series® system metal industrial enclosure provides mild environmental protection for DIN rail mounted modules, power modules, terminals and connectors for external field wiring.*

### FEATURES

The B04 enclosure features include:

- ▶ Rugged environmental protection (with sealed doors) for location in mild environments
- ▶ NEMA® 12 rated, Class G1 environments
- ▶ Accommodation for up to 32 Fieldbus Modules (FBMs)/Fieldbus Communication Modules (FCMs)
- ▶ Option for two-position Modular Baseplate to support Fieldbus Communication Modules (FCMs)/Field Control Processors (FCP270s)
- ▶ DIN rails, wireways, and optional earthing bar for field terminations
- ▶ 2000 mm H x 800 mm W x 800 mm D or 2000 mm H x 800 mm W x 600 mm D sizes
- ▶ 800 mm W x 800 mm D provides two additional DIN rails for mounting Termination Assemblies
- ▶ Options for single, redundant, or no power supplies
- ▶ Both front and rear access, which provides separate access for maintenance (via the front door) and interface wiring (via the rear door)
- ▶ Front and rear sealed doors that have comfortable handles with push-buttons and keylocks

- ▶ Available with no side panels, removable left or right side panels.
- ▶ Bottom cable entry for field and power wiring, but can be modified for top cable entry
- ▶ Standard lifting eye bolts and a 100 mm (4 in) plinth - total enclosure height of 2155 mm (88.7 in).

INTRODUCTION

The B04 enclosure is specially designed for DIN rail mounted modules and equipment. Each enclosure can be configured with vertically mounted baseplates for mounting up to 32 Fieldbus Modules (FBMs)/Fieldbus Communication Modules (FCMs). An optional 2-position baseplate accommodates Fieldbus Communication Modules (FCMs) or Field Control Processors (FCPs). DIN rails also provide ample space for the associated termination assemblies (TAs).

The enclosure is a sealed, free-standing, floor mounted unit with a NEMA 12 rating, which allows it to be located in mild (ordinary) environmental areas.

Multiple B04 enclosures can be installed connected to one another to maximize the use of floor space and ease of cabling. The enclosures can be adjoined using third-party kits.

ENVIRONMENTAL PROTECTION

The enclosure is non-vented, having a sealed roof and doors, and uses natural convection to remove module heat. Heat is dissipated into the ambient environment by the enclosure’s exterior surfaces.

END-USER ENCLOSURE CONFIGURATIONS

The enclosure can be reconfigured on-site to meet the needs of specific applications. For example, an enclosure can be reconfigured to contain only baseplates or only termination assemblies. Also, the enclosure can be ordered empty (without baseplates

or power equipment), allowing it to be used to house other Invensys® or third-party DIN rail mounted equipment.

MODULAR BASEPLATE MOUNTING

The enclosure can contain various types of Modular Baseplates, which accommodate different quantities and types of modules: just FCMs or FBMs, a combination of FCMs and FBMs, or a combination of FCPs and FBMs. The Modular Baseplate is DIN rail mounted (see Figure 1). The Modular Baseplate includes signal connectors for the FBMs, redundant independent dc power connections, I/O cable connections, Module Fieldbus connections and time synchronization connections.

The B04 enclosure has two vertical DIN rails for mounting 2- or 8-position vertical Modular Baseplates. The standard configuration has four 8-position FBM/FCM Modular Baseplates and one optional 2-position FCM or FCP Modular Baseplate. The standard configuration for Modular Baseplates is listed in Table 1 and the positions are shown in Figure 1 on page 4.

Table 1. Typical B04 Modular Baseplate Configurations

| Optional - 2 FCP270 or 2 FCM |                   |
|------------------------------|-------------------|
| Position 1                   | Position 2        |
| None or 8 FBM/FCM            | None or 8 FBM/FCM |
| Position 3                   | Position 4        |
| None or 8 FBM/FCM            | None or 8 FBM/FCM |

For more information on the various types of baseplates in an I/A Series system, refer to *DIN Rail Mounted Modular Baseplates* (PSS21H-2W6 B4).

## **FIELD TERMINATION ASSEMBLIES**

Field I/O wires enter through the bottom of the enclosure. (The enclosure can be modified on-site for top cable entry.) Two wireways (see Figure 1) provide routing for the field I/O wires, which terminate at termination assemblies (TAs).

The TAs mount on two DIN rails located in the rear of the 800 mm and 600 mm deep enclosure. The 800 mm deep enclosure has two additional DIN rails located on the side of the enclosure.

The DIN rails have the capacity (length) to mount a reasonable mix of TAs to meet the requirements of the 32 DIN rail mounted modules (maximum) that the enclosure can accommodate.

Two bus bars (optional) located in the rear section of the enclosure provide for the termination of field cable shields.

## **POWER DISTRIBUTION ARCHITECTURE**

The B04 enclosure supports an optional redundant power system, in which a dual power distribution network (two power supplies fed by independent entry sources) provide redundancy protection against power failures (see Figure 1).

Power wiring to the enclosure is routed through the bottom of the enclosure. The enclosure can be modified on-site for top power cable entry. Ac power connects to the primary and secondary entry terminal blocks for main and backup ac power.

The B04 enclosure uses a DIN rail mounted power supply that provides 24 V dc to DIN rail mounted baseplates. The Model FPS400-24 is a 400 W power supply that is agency certified for use in Class 1, Division II and Zone 2 applications. For more information, refer to *DIN Rail Mounted Power Supply* (PSS 21H-2W3 B4).

## **ENCLOSURE OPTIONS**

The B04 enclosure can be configured for shipment with the following options:

- ▶ Baseplates, mounted vertically, to accommodate up to 32 FBM/FCM DIN rail modules
- ▶ Option for two-position Modular Baseplate to support Fieldbus Communication Module (FCM) or Field Control Processor (FCP270)
- ▶ A print pocket inside the front door
- ▶ Two field cable shield bus bars
- ▶ No side panels, or removable left and/or right side panels
- ▶ A duplex utility outlet (120 V, 60 Hz, general purpose areas only)
- ▶ Single (400 W) or redundant power supplies with power distribution, or no power supplies.
- ▶ A general purpose or hazardous area (Class I, Division II and Zone 2) area certification
- ▶ 800 mm or 600 mm deep enclosure
- ▶ Left or right hinged door.

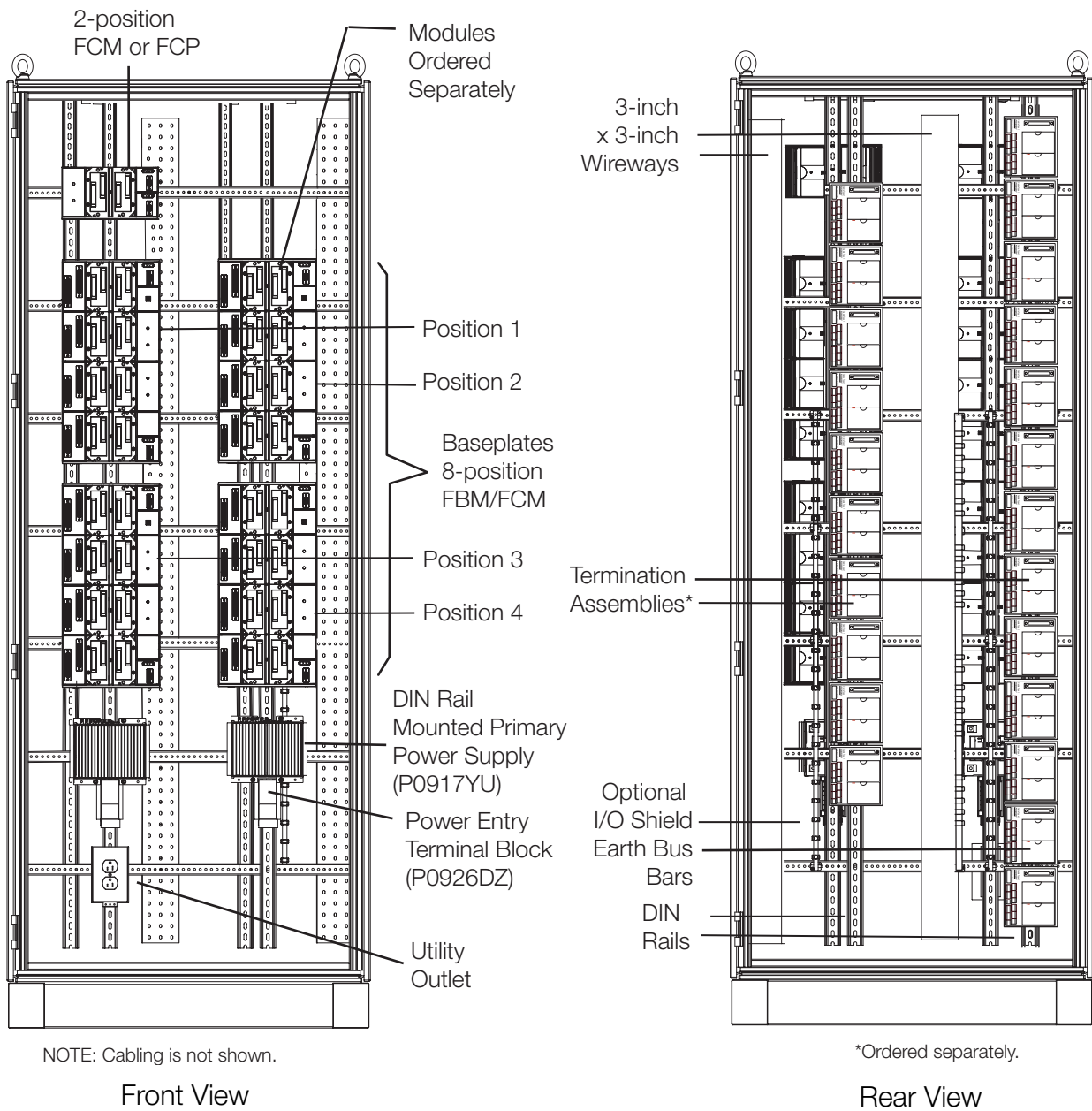


Figure 1. B04 Enclosure (Typical Installation)

## FUNCTIONAL SPECIFICATIONS

### Enclosure

Floor-mounted, metal enclosure, mounting up to 32 DIN rail mounted FBMs/FCMs and associated termination assemblies. Optional 2-position baseplate accommodates FCMs or FCPs.

### Power Supplies (Optionally Redundant)

Refer to PSS 21H-2W3 B4.

## ENVIRONMENTAL SPECIFICATIONS

### Ingress Protection

NEMA 1, 12, 13

IP55 (Per EN 60 529/IEC 529)

### Operating Temperature (external ambient) and Thermal Loading

See Table 2

**Table 2. Temperature and Thermal Loading**

| Enclosure Size  | Temperature                 | Thermal Loading (Watts)         |
|-----------------|-----------------------------|---------------------------------|
| 800 mm x 600 mm | -20 to +60°C (-4 to +140°F) | Fully Loaded, Maximum 293 Watts |
|                 | -20 to +50°C (-4 to +122°F) | Fully Loaded, Maximum 523 Watts |
| 800 mm x 800 mm | -20 to +60°C (-4 to +140°F) | Fully Loaded, Maximum 391 Watts |
|                 | -20 to +50°C (-4 to +122°F) | Fully Loaded, Maximum 697 Watts |

### Storage Temperature

-40 to 70°C (-40 to +158°F)

### Altitude

#### OPERATING

-300 to +3,000 m (-1,000 to +10,000 ft)

#### STORAGE

-300 to +12,000 m (-1,000 to +40,000 ft)

### Contamination Class

Class G1 (Mild) as defined in ISA® Standard S71.04

### Relative Humidity

5 to 95% (noncondensing)

### Agency Certification

UL®/UL-C listed, ordinary locations.

Enclosure meets all applicable European Union directives and bears the CE mark.

### Area Designation

Per customer order, designed for general purpose or hazardous area (Class 1, Division II and Zone 2)

## PHYSICAL SPECIFICATIONS

### Construction

Sheet steel with textured, powder-coated finish

### Color

#### PANELS AND DOORS

RAL 7035 - light gray

#### PLINTH

RAL 7022 - dark gray

### Panel Thickness

#### DOORS

14 Gauge (2 mm)

#### SIDE PANELS, TOP

16 Gauge (1.5 mm)

### Cable Entry

Bottom (through cable plates); can be modified on-site for top cable entry [see *DIN Rail Mounted FBM Subsystem User's Guide* (B0400FA)].

### Mounting

Floor

### CAUTION

To prevent injury, this enclosure must be bolted down. Refer to the manufacturer's installation guide.

### Field-Wire Termination

#### DIN RAILS

Two DIN rails in 800 mm x 600 mm enclosure, four DIN rails in 800 mm x 800 mm for mounting termination assemblies (TAs). Each DIN rail is 1708 mm (67.2 in) long.

#### WIREWAYS

Two wireways for segregation of cables. Each wireway is 75 x 75 mm (3 x 3 in).

#### EARTH BUS BARS

Two optional bus bars for earthing (grounding) of field device shield wiring.

### Mass

The mass of the enclosure is dependent upon the particular configuration. Consult with an Invensys representative if precise mass figures are required.

#### MASS (FULLY LOADED)

800 mm x 600 mm - 191 kg (425 lb), or  
800 mm x 800 mm - 235 kg (517 lb), without modules, TA cables, TAs and field wiring (with sidewalls)

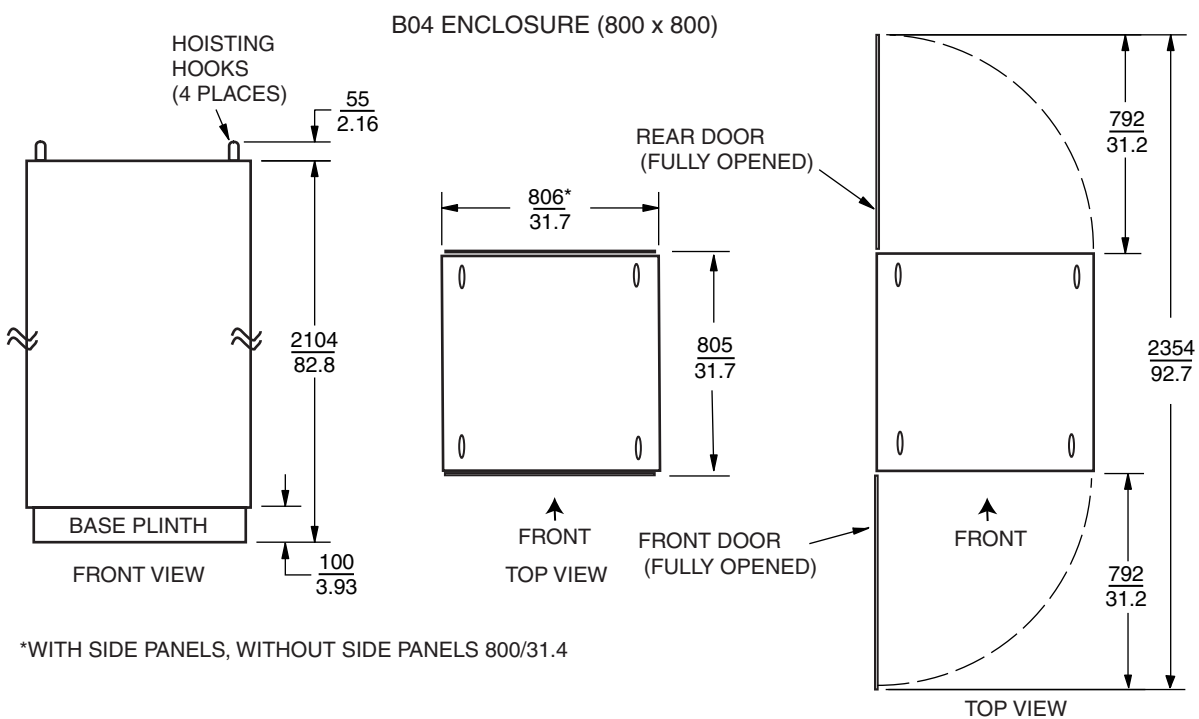
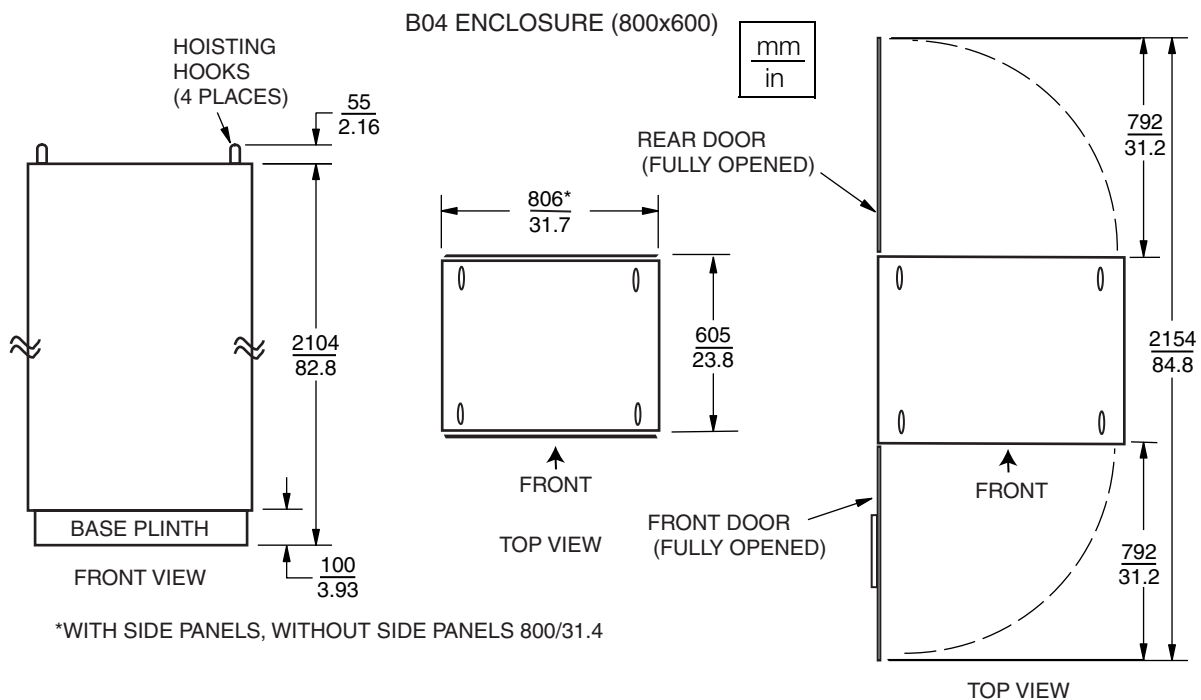
#### MASS (EMPTY)

800 mm x 600 mm - 191 kg (425 lb)  
800 mm x 800 mm - 218 kg (480 lb)

#### SIDE PANEL MASS

800 mm x 600 mm - 27 kg (60 lb)  
800 mm x 800 mm - 34 kg (75 lb)

## DIMENSIONS - NOMINAL



## FOR MORE INFORMATION

For more information refer to the following Product Specification Sheets (PSS):

| PSS Number     | Description                                       |
|----------------|---------------------------------------------------|
| PSS 21H-2W2 B3 | DIN Rail Mounted Equipment, Agency Certifications |
| PSS 21H-2W6 B4 | DIN Rail Mounted Modular Baseplates               |
| PSS 21H-2W3 B4 | DIN Rail Mounted Power Supply                     |
| PSS 21H-2W1 B3 | DIN Rail Mounted Subsystem Overview               |



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