

# Densité 3 mini

## Guide to Installation and Operation

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A **BELDEN** BRAND

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## Electromagnetic Compatibility



This equipment has been tested for verification of compliance with FCC Part 15, Subpart B requirements for Class A digital devices.

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**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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This equipment has been tested and found to comply with the requirements of the EMC directive 2004/108/CE:

- EN 55022 Class A radiated and conducted emissions
- EN 61000-3-2 Harmonic current injection
- EN 61000-3-3 Limitation of voltage changes, voltage fluctuations and flicker
- EN 61000-4-2 Electrostatic discharge immunity
- EN 61000-4-3 Radiated electromagnetic field immunity – radio frequencies
- EN 61000-4-11 Voltage dips, short interruptions and voltage variations immunity

## Safety Compliance

The provided power supply complies with the requirements of:

- UL 60950-1 Safety of information technology equipment

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# 1 Densité 3 mini Housing Frame

## 1.1 Introduction

The new Densité-3 mini frame is 3G capable, and offers multi-format operation and multiple advanced monitoring capabilities. It is designed for the growing range of 3RU cards, but also supports 2RU Densité modules by using a card extender. The frame features external redundant power supplies. The modules for the frame are hot-swappable, and are configured automatically when a card is replaced. The frame is air-cooled and all modules, redundant PSUs and fans are monitored to provide status via GPI or the Ethernet port. The basic frame configuration includes one external PSU and a basic controller card, which allows card adjustments by the front panel. A more advanced controller is available for remote operation using iControl. Front panel multi-color LEDs provide status reporting.

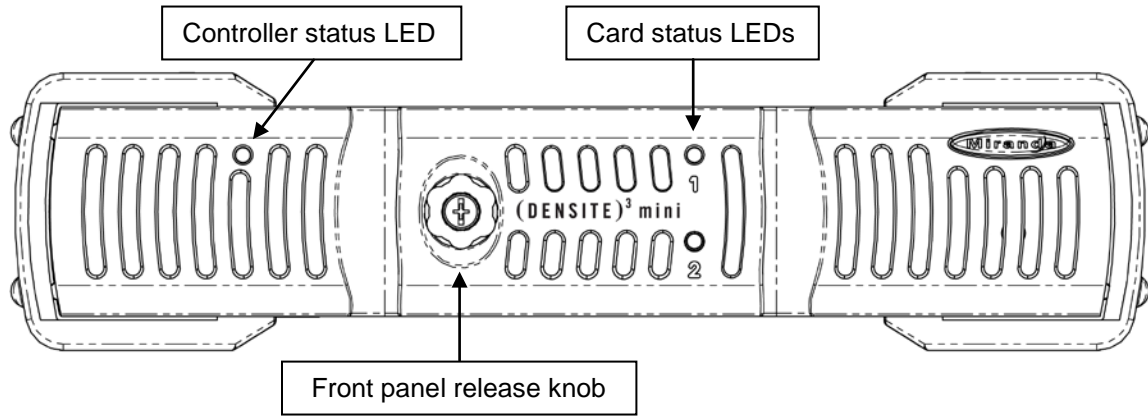


## 1.2 Features

- 1 RU high – two units will fit side-by-side in a 19" rack on available tray
- Holds two 3RU Densité cards
- Backwards-compatible with 2RU Densité cards
- External PSU with a 2<sup>nd</sup> redundant PSU optional
- Menu-driven front panel for card configuration
- Optional Densité 3 mini-CPU-ETH2 controller enables network interface to iControl

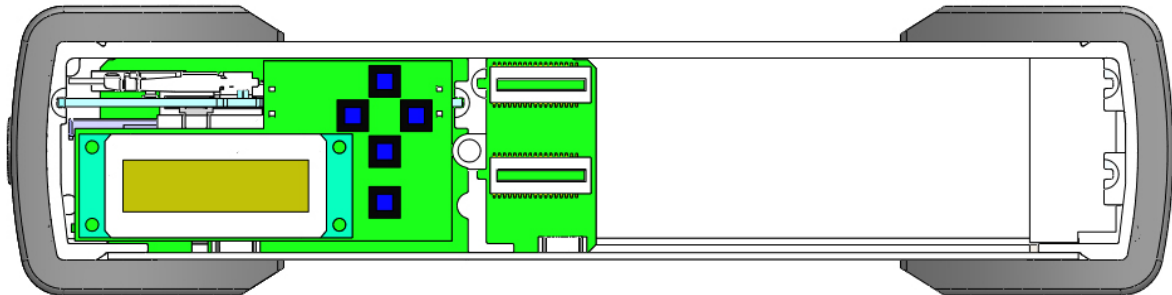
### 1.3 Physical Layout

#### Front Panel Appearance



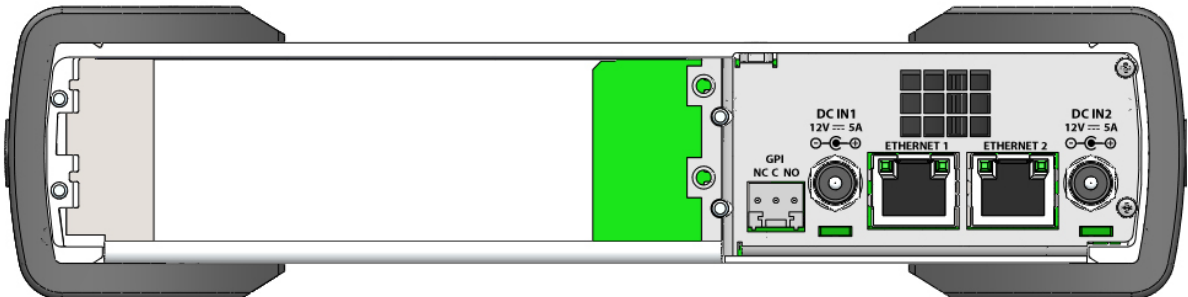
The card status LEDs and the controller status LED are visible on the front panel via light pipes as shown in the figure above.

The figure below shows the frame with the front panel removed. The controller and its local control panel are on the left, and the two card slots are on the right.



#### Rear Panel Appearance

This drawing shows the rear of the frame with no cards and card rears installed. The functionality of the GPI and ethernet connectors is described in the Controller manual.



## 2 Installation

### 2.1 Unpacking

Make sure the following items have been shipped with your Densité 3 mini frame:

- Densité 3 mini frame, including 1 external Power Supply unit (AC in) and 1 controller card
- Blank rear panels (for empty slots)
- A second external power supply (optional)

### 2.2 Mechanical Installation

The Densité 3 mini frame can be used as a free-standing unit on the desktop or workbench. It can also be rack-mounted with the use of the optional tray which holds two units.

#### 2.2.1 Desktop Use

The frame is supplied with a wrap-around rubber foot at each corner, secured to the unit with Allen-head screws top and bottom. These provide stable, non-slip footing which protects both the frame and the work surface.

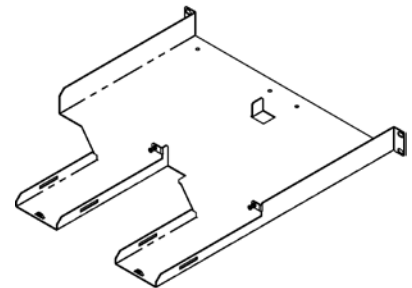
- An Allen key is provided with the unit. A groove is incorporated in the rubber feet to hold the key in place.

The unit can be positioned horizontally or vertically. In a vertical orientation, it is recommended that the connector panel be placed at the bottom to keep power supply and ethernet lines out of the way of the card rear panels. In a vertical orientation, be aware that the unit is very thin, and take care to prevent it from tipping over.

#### 2.2.2 Rack Mounting

An optional rack mounting tray is available for the Densité 3 mini frame. (Miranda part: Densité 3 mini-Tray)

This tray provides space for two Densité 3 mini frames to be mounted side-by-side in 1 RU of space in a standard rack. The tray is configured to support a single external power supply for each frame while leaving space for access to the rear connector panels of the frame and the installed cards.



The Densité 3 mini frame must be attached to the tray. Proceed as follows:

- Remove the four wrap-around rubber feet from the Densité 3 mini frame by removing the Allen-head screws on the top and bottom of each foot. An Allen key of the correct size is supplied with the frame, inserted into a groove on the side of one of the feet.
- Position the Densité 3 mini frame on the tray and fasten it in place using the captive screw on the tray that connects to a socket on the rear connector panel of the frame.
- Alternatively, the frame can be secured to the tray with four 3/16" flat-head, Philips-drive screws (supplied with the tray) using the rubber-foot holes in the bottom of the frame case.



Do not re-use the Allen-head screws from the rubber feet – they are too long for this application and could cause damage to cards installed in the frame.

- Place the external power supply on the rear extension of the tray, and fasten it in place with a plastic tie-wrap.

## 2.3 Opening the Front Panel

The front panel of the Densité 3 mini frame is fastened in place by a captive screw with a large knob.

- To remove the panel, turn the knob counterclockwise until it releases and pull gently on it until the panel comes off.

There are no electrical connections to the panel.

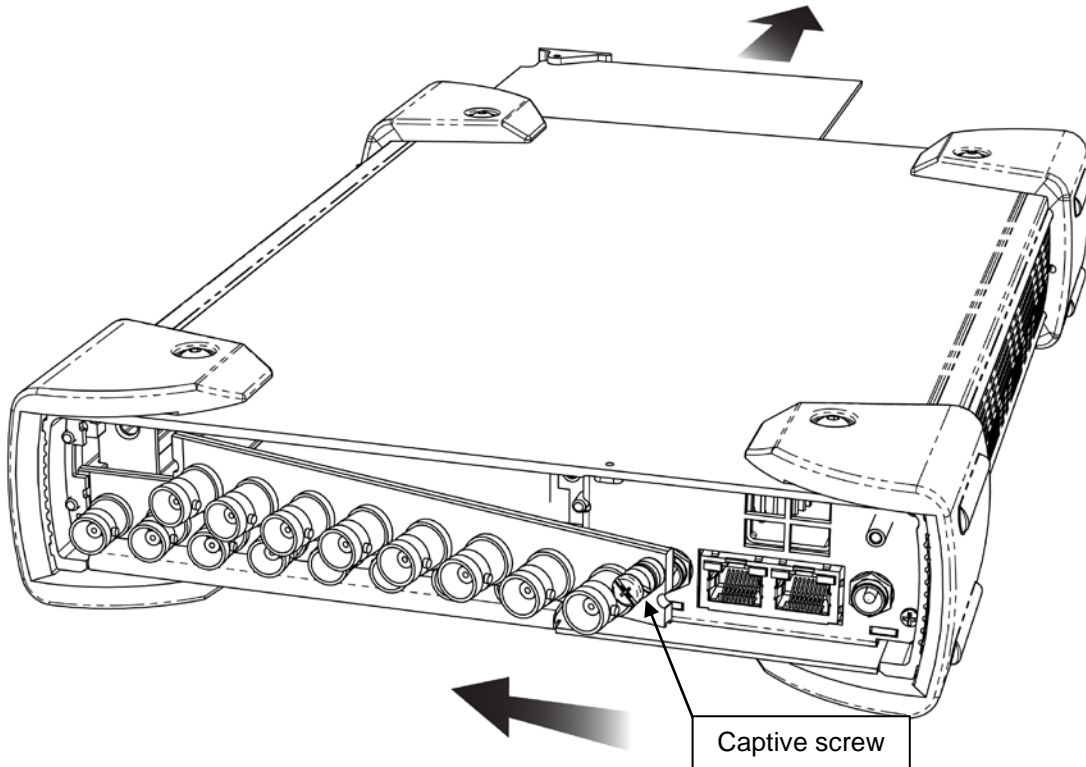
- Reinstall the panel by placing it in position against the front of the frame, using the mechanical guides, and turning the knob clockwise until the screw locks the door into position

## 2.4 Installing Cards in the Densité 3 mini Frame

Each card requires a rear connector panel which must be installed before the card can be placed in service.

All cards and rear panels can be installed with the frame power on. The card plugs into a mid-frame mother board for distribution of power and connection to the controller card, and also plugs directly into the rear connector panel for input and output.

- ***The rear connector panel should be installed with the card out of the frame.***



***To install the rear connector panel:***

1. If a card is installed in the slot whose rear panel is being changed, remove it as described below.



2. Remove the existing panel (either blank or belonging to an existing card that is being changed) by releasing the captive screw(s) at the center near the frame's connection panel.
3. Position the new panel and secure it in place with the captive screw(s) at the center near the frame's connector panel.

**To install the card:**

1. Remove the front panel of the frame
2. To remove an existing card from the slot, tilt the swivel handle on the front of the card to lever the connectors apart, then use the handle to pull the card straight out of the slot.
3. Slide the new card into the slot (the handle with the card name should be on the right, near the edge of the frame) and push gently on the handle to seat the connectors. If the card requires a double-width rear panel to accommodate many connectors, it should be inserted into the lower slot. Inserting the card into the wrong slot will not damage the card, and will be flagged by the on-card status LED flashing red to indicate that there is no connection to the rear panel.
4. Reinstall the front panel of the frame.

**Note:** Detailed descriptions of the rear panel connections are included in the individual manuals for each card. Information about the ethernet and GPI connections is found in the Controller manual

## 2.5 Installing Densité 2 Cards and Rear Panels in a Densité 3 mini Frame

The Densité 3 mini frame supports most Miranda Densité 2 series cards. Should you need to install a Densité 2 card in your Densité 3 mini frame, you will need two adapters – one for the card, and one for the rear panel (but see the note at the end of this section about native 3RU rears for Densité 2-series cards). These adapters extend the height of the Densité 2 devices so that they will fit into the 3RU slots of the Densité 3 mini frame.

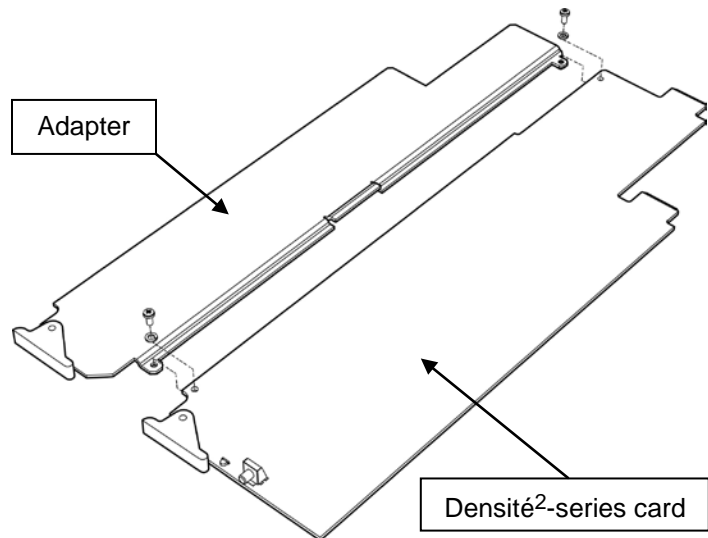
**Card adapters:**

There are 3 different types of adapters that can be used, depending on the Densité 2 card geometry:

- DENSITE 3-EXT-A
- DENSITE 3-EXT-B
- DENSITE 3-EXT-C

Install these on the Densité 2 card as follows:

1. Fit the top edge of the card into the holding slot along the bottom edge of the adapter
2. Align the holes in the top of the card with the holes on the adapter, and secure them together with the two provided screws and lock washers, as shown in the figure



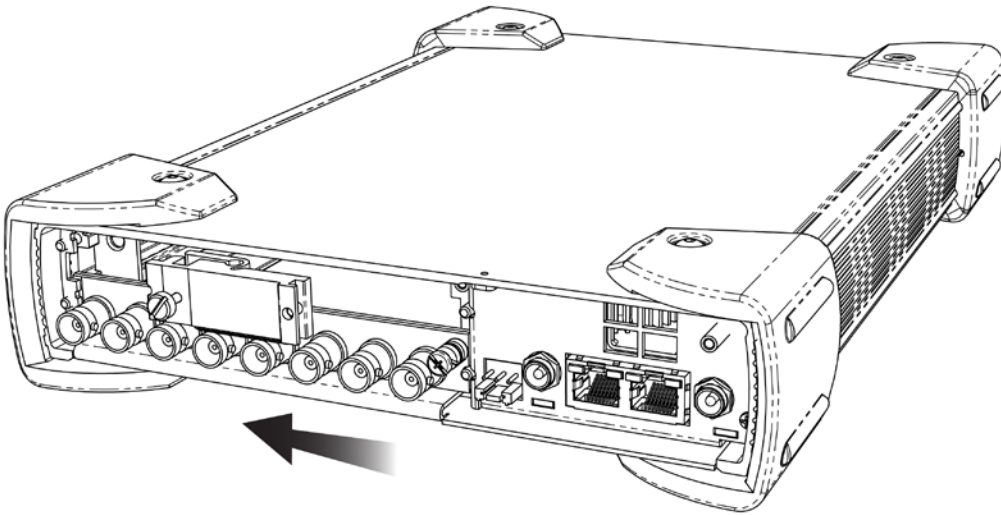
**Rear adapters:**

3-RU rear panel adapters are available for single and double Densité 2 rear panels:

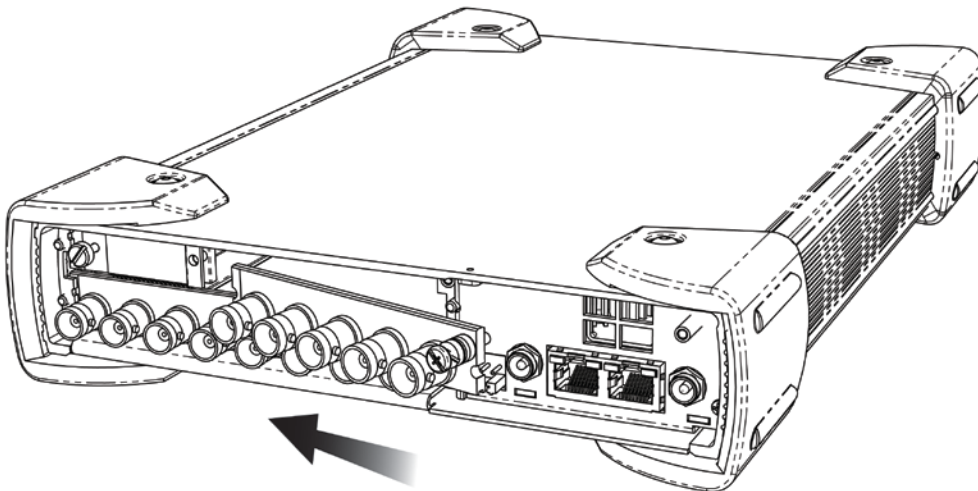
- DENSITE SRP-3RU for single rear panels
- DENSITE DRP-3RU for double rear panels

Install these as follows:

1. Position the adapter at the left-hand side of the empty slot(s) on the rear of the frame.
2. Use the captive screw in the adapter to fasten it securely in position



3. Finally, install the 2RU rear module – slip the left end of the 2RU rear module into the slot at the right end of the adapter, and secure it to the frame using the captive screw at the right end of the module.



### **Available 3RU rears for some Densité 2 cards**

Native 3-RU single and double rear panels are also available for some Densité 2 cards to optimize chassis configuration by providing maximum density (e.g. maximum number of supported Audio or Video connections) in a single or double 3-RU slot.

- Cards which required a double-width rear in a Densité 2 frame may only need a single-width rear in a Densité 3 frame, freeing up a slot for another card.
- Cards which required a triple-width rear in a Densité 2 frame may only need a double-width rear in a Densité 3 frame, allowing them to be used in a Densité 3 mini frame.

## **2.6 Replacing or Upgrading the Controller Card**

The Controller card is located on the left-hand side of the frame. To replace the card, proceed as follows:

1. Grasp the mauve-colored tab on the upper left-hand side of the card; it will slide out so that it can be gripped properly.
2. Pull gently on the tab until the card is released from the rear connector, and then slide the card out of the frame.
3. Slide the new card into the controller slot, and push gently on the card edge to engage the rear connectors.

## **2.7 Ventilation**

Ventilation for the frame is provided by a fan above the connectors on the rear panel. The fan draws air through the frame and exhausts it to the rear. Ventilation slots are provided in the frame's front panel to allow air to flow into the frame. An air filter is installed in the front panel behind the slots.

Ensure that the front panel ventilation slots are not obstructed. Check the air filter regularly to ensure that it is not plugged up with debris. The filter may be cleaned by rinsing in warm water. Dry thoroughly before replacing it in the frame.

### **Replacing the air filter**

To remove the air filter for cleaning or replacement, proceed as follows:

- Remove the front panel of the frame
- Pull out the flexible back support holding the filter in place
- Pull the filter away from the panel

To install a filter, proceed as follows:

- Push the filter into place on the panel, taking care to align the openings in the filter with the light pipes and the connecting screw on the panel
- Pop the flexible back support into position – it fits into the grooves in the upper and lower guides.
- Reinstall the front panel of the frame

### **3 Specifications**

**MECHANICAL:**

Dimensions: 1.75" (45mm) x 8.4" (214mm) x 12" (305mm)  
Weight: 4.3 lbs (~2 kg), and 1 controller

**POWER:**

Input Range: DC 22~26volts  
Frame Rating: 35W Max  
Rating per slots: 12.5W Max  
Operating Temperature: 0-40°C  
Alarm: GPI contact (NO/NC)

**CONTROL & MONITORING:**

Communication Ports: Optional ETHERNET 10/100 BASE-T

**COOLING:**

Fans: 1 on frame