



ReadyPanel™ 10

User's Guide

P/N 5001828A Rev A

Notice Page

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Audience Assumptions

This manual is for the person who designs computer related equipment, including but not limited to hardware and software design and implementation of the same. Ampro Computers, Inc. assumes you are qualified in designing and implementing your hardware designs and its related software into your prototype computer equipment.

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Chapter 1 ReadyPanel Setup

About the ReadyPanel

The ReadyPanel products are intended for users of turn-key embedded systems who prefer long life-cycle, configuration controlled computers over desktop grade systems with frequently changing motherboards. ReadyPanel models feature the ReadyBoard single board computer (SBC) which are available in a variety of processors and memory. The desired operating system (OS) is pre-loaded onto the internal compact flash card. Just load your application software and you are ready to use your system applications.

Using this Guide

This guide provides the most efficient way to set up your ReadyPanel with your desired operating system (OS). The instructions provided in this guide include:

- Removing the ReadyPanel from the shipping container and inspecting the accessories
- Connecting peripherals to the ReadyPanel
- Powering up the ReadyPanel

Information not provided in this User's Guide includes:

- ReadyBoard specifications
- Environmental requirements
- ReadyBoard connector/pin numbers and definitions
- Operating system programming or operating instructions

<p>NOTE Refer to Ampro's Linux OS manual or other OS manufacturers' manuals for instructions when using OS software.</p>

Requirements

The following peripherals and devices are needed to make full use of the ReadyPanel.

- Peripherals (customer provided):
 - ♦ PS/2 keyboard - optional
 - ♦ PS/2 mouse - optional
- Power Supply (customer supplied):
 - ♦ AC to DC (+12 or +24 VDC/6A) Power *Brick* (with plug-type mating connector)

<p>CAUTION Using a power supply with a higher voltage will damage the system.</p>
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- Optional Device/Peripheral connections:
 - ♦ Ethernet (LAN) connection
 - ♦ USB device connections

Power Specifications

Tables 1-1 and 1-2 list the current draw values of the ReadyPanel.

Table 1-1. System Current Draw (1.4 GHz CPU)

Parameter	+5VDC	+12VDC
Idle	3.36A (16.79W)	0.92A (11.07W)
In-rush* Current (Typical)	Max: 5.72A (28.60W) Min: 0.12A (0.60W)	Max: 3.96A (47.52W) Min: 0.16A (1.92W)
BIT** Current (Typical)	4.57A (22.87W)	0.91A (10.94W)

Notes: *In-rush measured with ReadyBoard 800, CRT monitor, 10.4 LCD panel, touch controller, touch screen, 256MB RAM, display inverter, power, HDD with WinXP Pro, keyboard and mouse.

**The BIT (burn in test) is conducted with the same criteria as In-rush plus three serial loopbacks, three USB jump drives, compact flash with Win XP Pro, and two Ethernet port connections.

Table 1-2. System Current Draw (1.8 GHz CPU)

Parameter	+5VDC	+12VDC
Idle	3.07A (15.37W)	1.09A (13.06W)
In-rush* Current (Typical)	Max: 4.96A (24.80W) Min: 0.2A (1.00W)	Max: 2.08A (24.96W) Min: 0.12A (1.44W)
BIT** Current (Typical)	4.01A (20.04W)	1.08A (13.00W)

Notes: *In-rush measured with ReadyBoard 800, CRT monitor, 10.4 LCD panel, touch controller, touch screen, 256MB RAM, display inverter, power, HDD with WinXP Pro, keyboard and mouse.

**The BIT (burn in test) is conducted with the same criteria as In-rush plus three serial loopbacks, three USB jump drives, compact flash with Win XP Pro, and two Ethernet port connections.

What's in the Box

The Contents List identifies the items in the shipping box for the ReadyPanel QuickStart Kit. See [Figure 1-1](#).

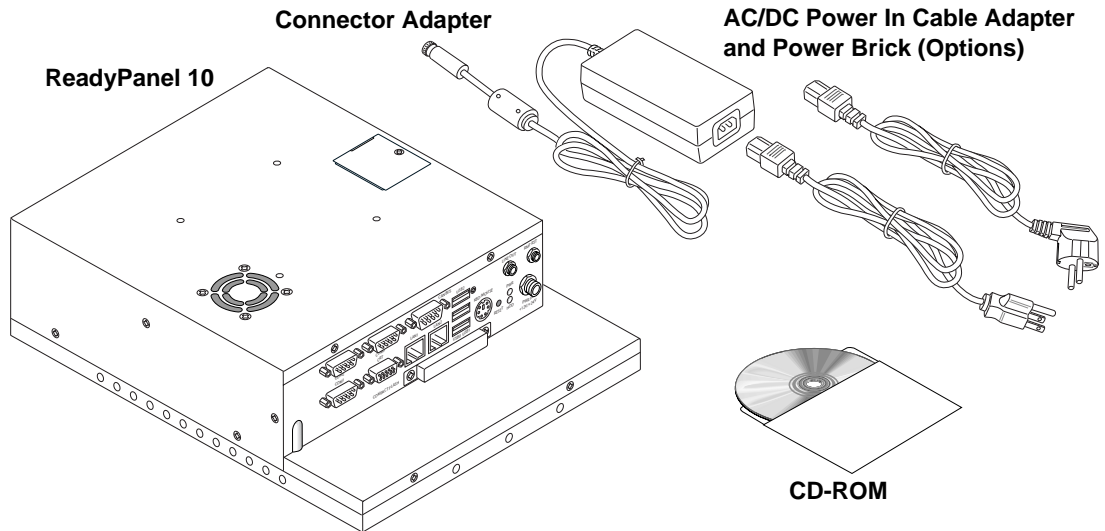


Figure 1-1. ReadyPanel and Accessories

Setup Steps

Follow the setup steps in this section in the exact order listed but skip any steps that do not apply to your application. References to chapters within this guide or to other Ampro manuals are provided in this section for more information about installation and use of this ReadyPanel.

Preparations

1) Open shipping box.	<ul style="list-style-type: none"> • Locate the ReadyPanel Contents List. See Figure 1-1. • Unpack the contents of the shipping box.
2) Verify contents.	<ul style="list-style-type: none"> • Verify the contents of the shipping box against the Contents List included with your ReadyPanel shipping box. • If anything is missing or damaged, call your sales representative. Refer to the Ampro web site at www.ampro.com for contact information.
3) Verify support documentation. (ReadyBoard Support Software CD-ROM located in the QuickStart Kit)	<p><i>ReadyPanel User's Guide</i></p> <p>This document describes how to set up and power up the ReadyPanel and is provided on the Ampro web site as a PDF file.</p>
	<p><i>ReadyBoard Reference Manual</i></p> <p>This document provides detailed information on the ReadyBoard and is located on the Ampro web site as a PDF file.</p>
	<p><i>Operating System Manual(s)</i></p> <p>These documents describe how to use the desired operating system (OS) with the ReadyPanel and provide more detailed operating information. These documents may or may not be provided with the ReadyPanel depending on the specific licensing requirements.</p>

Setting Up the Work Space

CAUTION

To prevent damage to the ReadyPanel, ensure sufficient clearance exists around the air vents for unrestricted airflow.

The air temperature inside the enclosure could rise above the specified operating temperature limits if the airflow through the vents is restricted.

4) Select workbench location.	<ul style="list-style-type: none"> • The workbench location should be a flat clean surface for setup and operation (including the connection of any external peripherals and optional devices). • Ensure sufficient airflow clearance exists around the complete enclosure.
5) Unpack ReadyPanel.	<ul style="list-style-type: none"> • Remove the ReadyPanel from its shipping container and place it on a flat work surface. <div data-bbox="509 1476 1360 1581" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>CAUTION To prevent damage to the touch screen, make sure to cover it with protective material whenever it comes in contact with another surface.</p> </div> <ul style="list-style-type: none"> • The ReadyBoard, the ReadyPanel enclosure, and the desired OS form a complete system ready for operation.

Installing Mounting Hardware

6) Install the appropriate mounting hardware.

- Remove the cover of the ReadyPanel as described in “[Opening the ReadyPanel Enclosure](#)” on page 11.
- Install the mounting hardware for surface or wall mounting to the bottom of the ReadyPanel. See [Figure 1-2](#).

Note: Make sure the mounting plate clears the fan intake and provides enough height to allow for unrestricted air flow.

Make sure not to drive the ends of the screws further than two screw threads past the ends of the PEM nuts located on the inside of the enclosure cover.

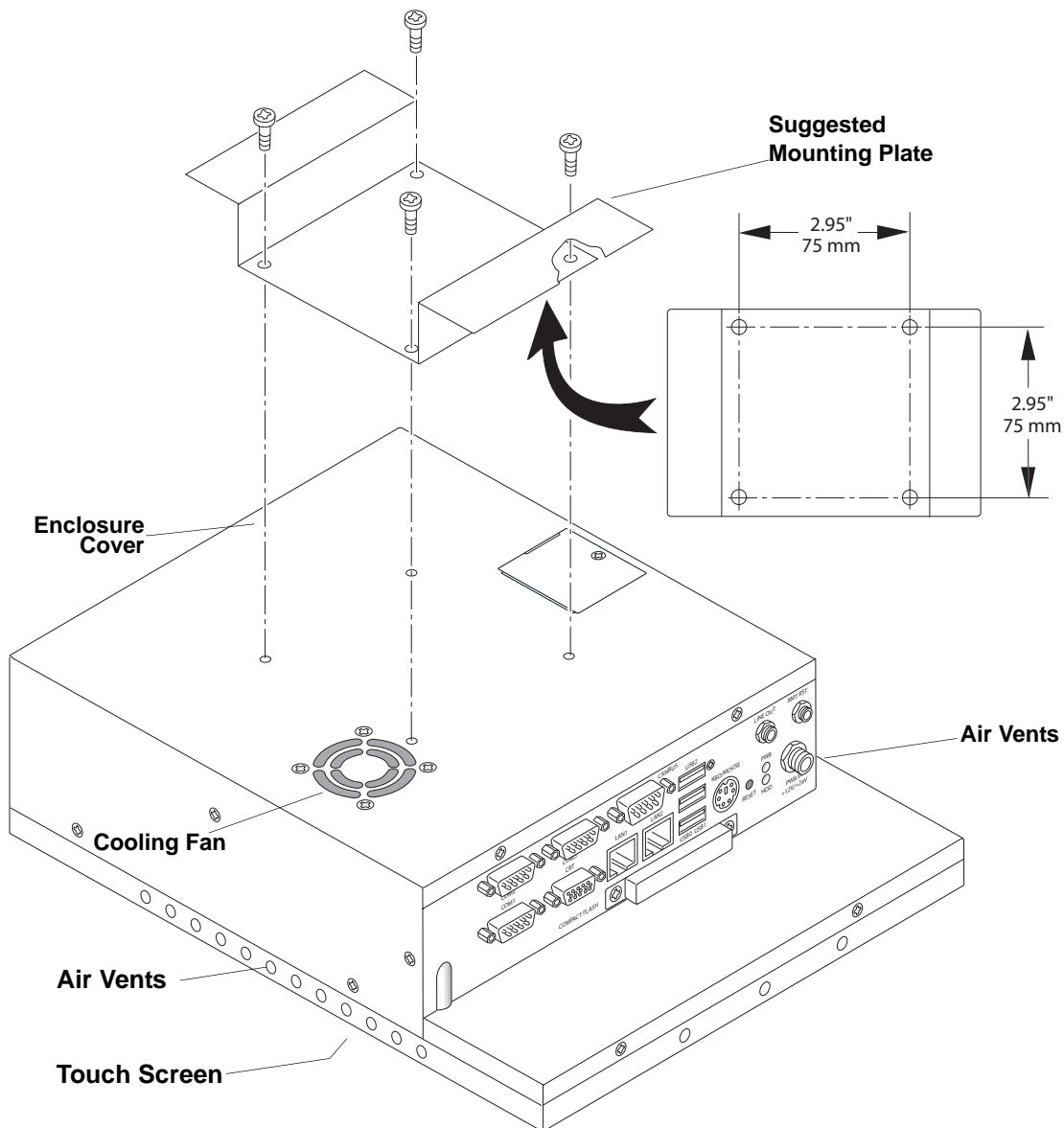


Figure 1-2. Angle View of Enclosure with Mounting Hardware

NOTE The Mounting holes in the bottom of the ReadyPanel conform to the FDMI (Flat Display Mounting Interface) standard for monitor mounting.

Locating the I/O Connectors

7) Locate the I/O connectors on the front of the ReadyPanel.	Refer to Figure 1-3 for locations and descriptions of the connectors and controls before making connections or powering on the ReadyPanel.
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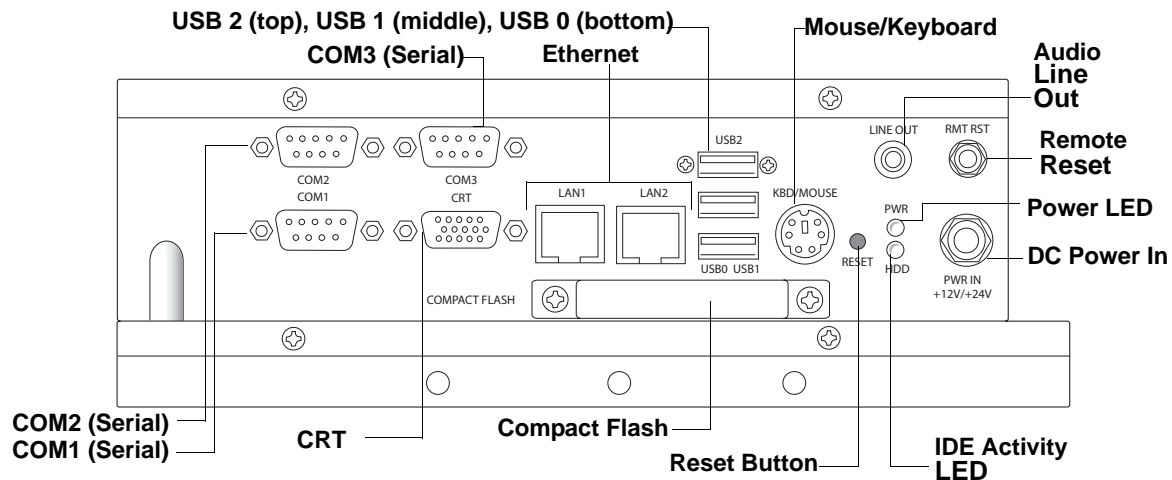


Figure 1-3. Flat View of ReadyPanel I/O Panel

Table 1-3. I/O Panel Connectors, Controls, and Indicators

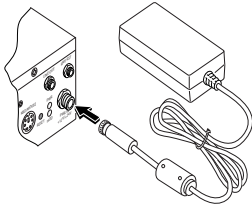
Control/Connector	Description
DC Power In	This two-pin connector accepts input from the external DC In cable adapter.
CRT	Use this standard 15-pin (DB15) connector for the video connection. This connector resides on the ReadyBoard.
Mouse/Keyboard	This 6-pin single PS/2 mouse and keyboard connector resides on the ReadyBoard.
USB 0, 1 & 2	These standard USB connectors originate from the USB header that resides on the ReadyBoard.
LAN 1 (Ethernet 1)	This 8-pin (RJ45) Ethernet port is used for the 10/100BaseT Ethernet connection and resides on the ReadyBoard.
LAN 2 (Ethernet 2)	This 8-pin (RJ45) Ethernet port is used for the 10/100BaseT Ethernet connection and resides on the ReadyBoard.
COM 1 & COM 2 (Serial 1 & Serial 2)	Use these two 9-pin (DB9) serial ports for the standard RS-232 connections to the ReadyPanel. These connectors reside on the ReadyBoard.
COM 3 (Serial 3)	This 9-pin adapter cable connector originates from a 20-pin header on the ReadyBoard and supports RS-232, RS-422, and RS-485 operation.
AUDIO: Line Out	Use this audio out connector for standard stereo out connection from the ReadyPanel.
Remote Reset	This 2-pin outlet connects to the utility header on the ReadyBoard and allows for cable connection to a remote reset button.
Power LED	This green power-on indicator, shown in Figure 1-3 , resides on the ReadyBoard. The LED glows when the ReadyPanel power is turned on and dims when the power is turned off.
IDE Activity LED	This yellow activity indicator, shown in Figure 1-3 , resides on the ReadyBoard and flickers when IDE or compact flash card activity occurs in the ReadyPanel.

Reset Button	Press this reset button, momentarily, to reset the ReadyPanel (hard reset). This button resides on the ReadyBoard.
Compact Flash Cover and Slot	This compact flash cover and slot (not shown) protects the compact flash card if installed, and ensures good EMI shielding for the ReadyPanel.
Compact Flash Socket (not shown)	The compact flash socket is provided on the underside of the ReadyBoard and accepts the compact flash card through the compact flash slot.

NOTE If you wish to connect a Hard Disk Drive (HDD), Floppy Disk Drive (FDD), or CD-ROM to the ReadyPanel, you can use one of the USB ports to connect the device.

Applying Power to the ReadyPanel

8) Follow these steps to apply power to the ReadyPanel.



- Connect the DC power adapter into an AC outlet.
- Plug in the DC cable to the DC Power In jack of the ReadyPanel. See [Figure 1-3](#).

9) Verify the ReadyPanel satisfactorily powers on.

- If you want to enter the BIOS Setup before the operating system loads, press the key during POST at the prompt.
Use BIOS Setup during the initial boot to set the desired options (such as time and date).
- You should see POST complete successfully before the system starts loading the operating system. If you are using Linux, the boot loader will appear first, similar to the one shown below with the desired OS name displayed.

NOTE The optional 2 ½" hard disk drive (40 GB or greater) comes with three partitions for the OS and swap space.

(The Linux 2.6 OS is shown as an example.)

GNU GRUB version 0.95 (632k lower/250768 upper memory)

Fedora Core (2.6.x-xxx)

Use the | and √ keys to select which entry is highlighted.
Press Enter to boot the selected OS, 'e' to edit the commands before booting, 'a' to modify the kernel arguments before booting, or 'c' for a command-line.

NOTE The GNU GRUB boot loader screen will continue to display indefinitely unless you execute one of the listed options.

10) Using the Operating System (OS)	<ul style="list-style-type: none">• You should see a prompt of some kind indicating the OS is loading, or has loaded, as you view the screen at this point.• If you are required to log into the OS, use <i>root</i> for the admin name and <i>software</i> as the password to log on. If you are logging in as a normal user, use <i>software</i> for the name and password.• Refer to the desired OS manual (Ampro's or OS Manufacturer's) that may be provided with the ReadyPanel, depending on licensing agreements.• If you require drivers not installed on the 2½" HDD located inside the ReadyPanel, refer to ReadyBoard support software CD-ROM for additional drivers and instructions.
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Chapter 2 ReadyPanel Components

This chapter discusses components inside the ReadyPanel enclosure. These components include the memory, display power inverter, touch screen controller card, DC power module, cables, and the ReadyBoard Single Board Computer (SBC).

NOTE Refer to the specific ReadyBoard Reference Manual for more information than this chapter provides.

ReadyPanel Assembly Procedures

The following procedures describe how to gain access to the ReadyPanel internal components and the ReadyBoard memory.

Tools Required

Use these tools to install and remove components into or out of the ReadyPanel enclosure.

- Phillips #2 screwdriver
- Anti-static service kit - Use a complete anti-static service kit (or the equivalent) to remove or install the ReadyBoard. A complete anti-static service kit should include a static-dissipating work surface, a chassis clip lead, and a wrist or ankle strap.

Opening the ReadyPanel Enclosure

Always use the following procedure when gaining access to the ReadyPanel's internal components.

To remove the cover of the ReadyPanel

1. Initiate a shut down sequence through the OS, or hold in the reset switch for 4-6 seconds to turn off power. See [Figure 1-3 on page 6](#).
2. Make sure the power LED on the front panel is completely off.
3. Disconnect the power cable from the DC Power In connector of the I/O panel.

CAUTION Components on the ReadyBoard are sensitive to static electricity and can be easily damaged by improper handling. Do the following when handling the ReadyBoard.

Always use an anti-static wrist/ankle strap and a grounding mat.

Before you handle the ReadyBoard, touch a grounded, unpainted metal surface to discharge any static electricity.

4. Remove the cover from the ReadyPanel enclosure. See [Figure 2-1](#).
 - a. Turn over the ReadyPanel so that the touch screen faces down on an anti-static surface.
 - b. taking care not to damage the surface of the touch screen.

CAUTION To prevent damage to the touch screen, make sure to cover it with protective material whenever it comes in contact with another surface.

- c. Lift the cover up from the enclosure.

- d. Unplug the fan cable from the fan connector on the ReadyBoard.
- e. Set aside the cover and screws for later re-installation.

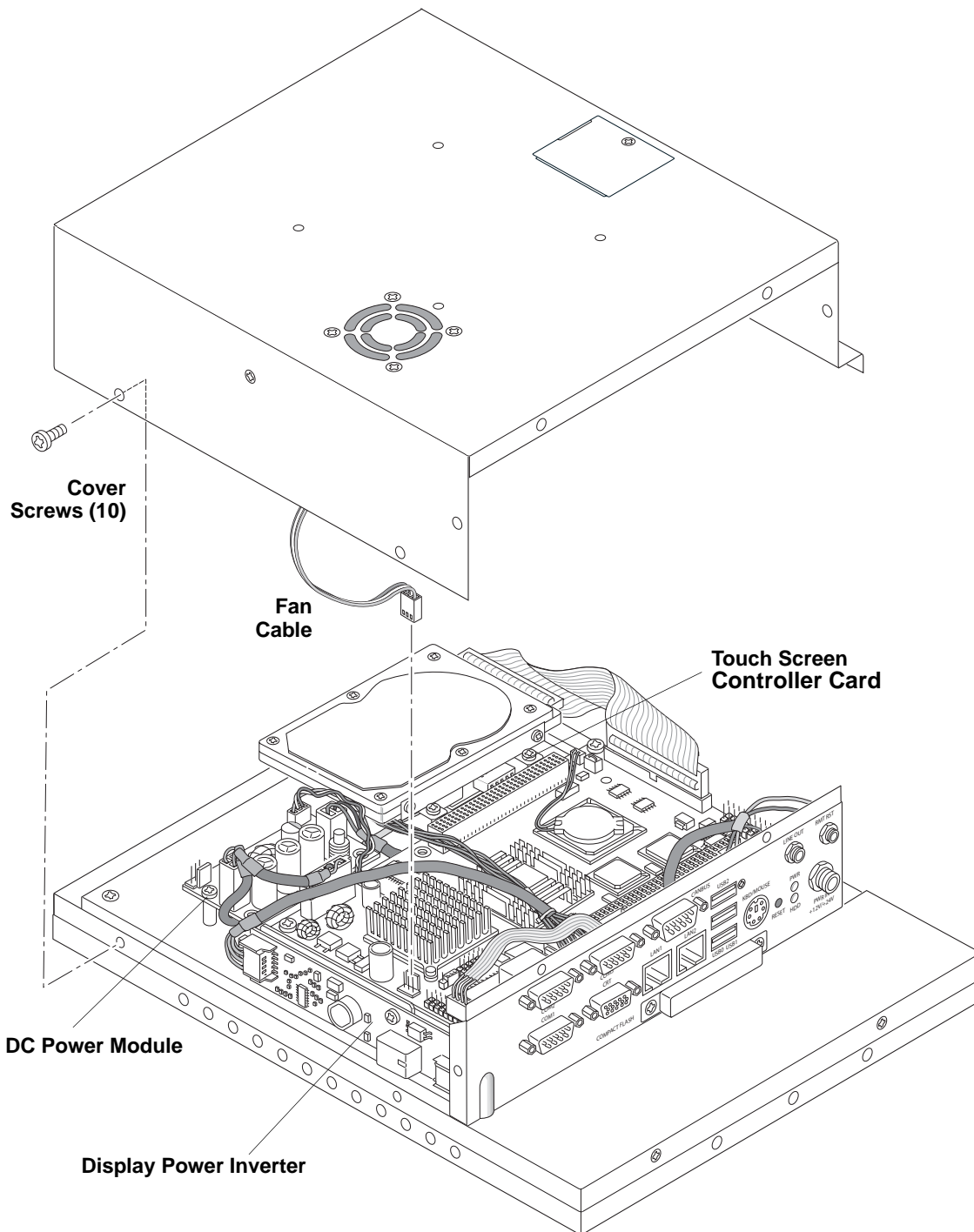


Figure 2-1. Exploded View of ReadyPanel Assembly with Cover and Screws

4. Place the HDD on an anti-static work surface.

CAUTION	Do not touch the drive with magnetic objects (such as magnetic screw drivers) and avoid placing items that are sensitive to magnets near the HDD, such as credit cards and employee ID cards.
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To Install the HDD

1. Align the mounting holes on the HDD with the holes on the drive brackets (2) as shown in [Figure 2-3](#).
2. Install the four original screws to secure the drive to the bracket.
3. Plug in the HDD data and power cable to the correct pins on the HDD as shown in [Figure 2-2](#).
4. Install the four mounting screws that secure the drive to the chassis.

Appendix A Technical Support

Ampro Computers, Inc. provides a number of methods for contacting Technical Support listed in the Table A-1 below. Requests for support through Ask an Expert are given the highest priority, and usually will be addressed within one working day.

- Ampro Ask an Expert – This is a comprehensive support center designed to meet all your technical needs. This service is free and available 24 hours a day through the Ampro web site at <http://ampro.custhelp.com>. This includes a searchable database of Frequently Asked Questions, which will help you with the common information requested by most customers. This is a good source of information to look at first for your technical solutions. However, you must register online if you wish to use the Ask a Question feature.
- Personal Assistance – You may also request personal assistance by creating an Ask an Expert account and then going to the Ask a Question feature. Requests can be submitted 24 hours a day, 7 days a week. You will receive immediate confirmation that your request has been entered followed by an e-mail response. Once you have submitted your request, you must log in to My Stuff where you can check status, update your request, and access other features.
- InfoCenter – This service is also free and available 24 hours a day at the Ampro web site at <http://www.ampro.com>. However, you must sign up online before you can log in to access this service. The InfoCenter was created as a resource for embedded system developers to share Ampro's knowledge, insight, and expertise. This page contains links to White Papers, Specifications, and additional technical information.

Table A-1. Technical Support Contact Information

Method	Contact Information
Ask an Expert	http://ampro.custhelp.com
Web Site	http://www.ampro.com
Standard Mail	Ampro Computers, Incorporated 5215 Hellyer Avenue San Jose, CA 95138-1007, USA

Appendix B Physical Dimensions

Figure B-1 shows the ReadyPanel enclosure dimensions.

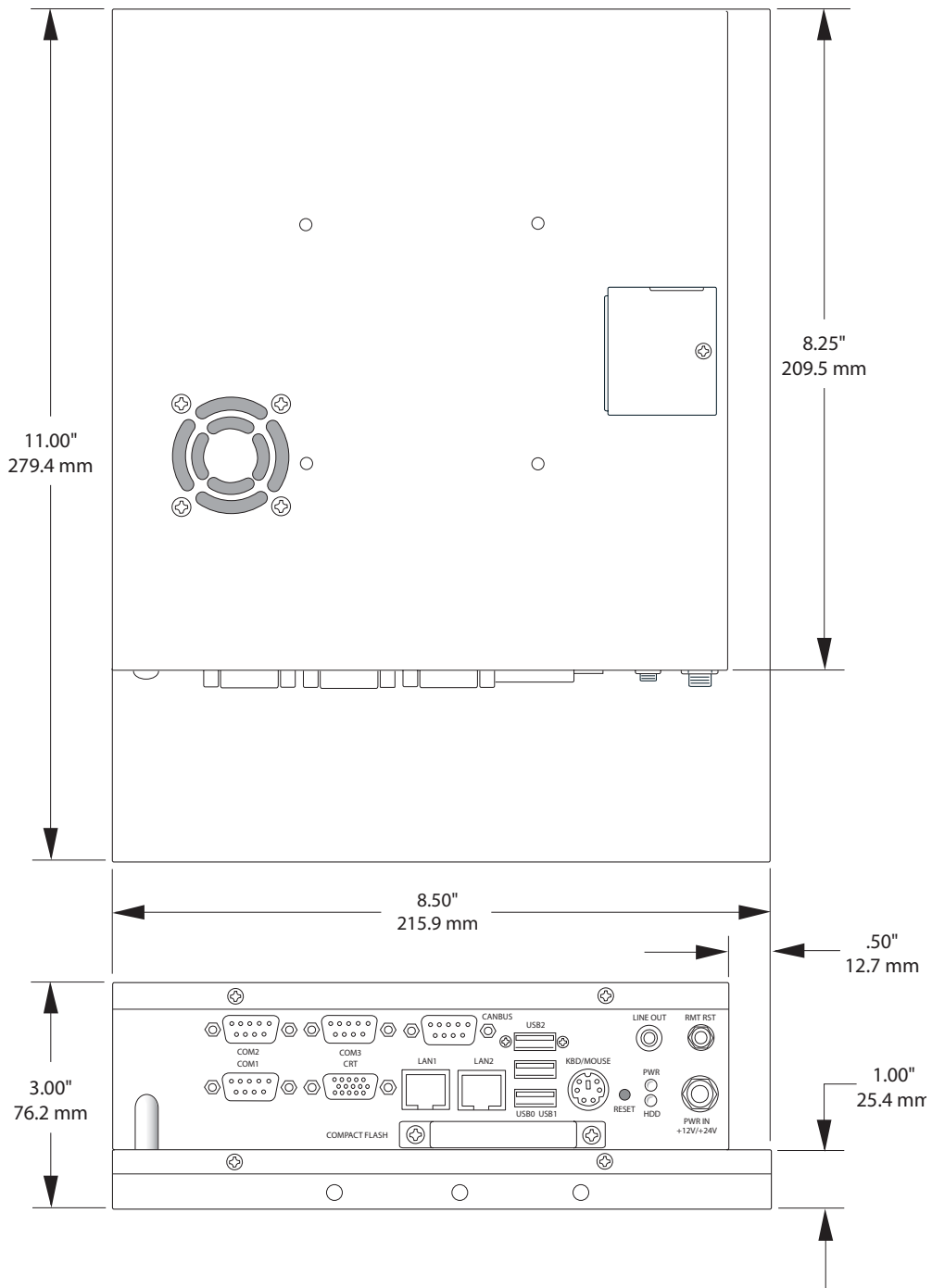


Figure B-1. Width and Depth Dimensions

