User Guide SR20-FDD

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1 Introduction

1.1 Purpose

The purpose of this document is to define the functionality, operation, and maintenance of the SR20-FDD Data Center. This document serves as the sole reference for the system functionality at time of delivery. Any change to the Functional Specifications will require agreement via the change control process between the user and ADDC. The SR20-FDD was designed to provide long range (up to 24 km) remote operation via fiber optic cable KVM of up to 20 BioDigitalPC® computers.

1.2 Scope

This guide has 3 main sections, system functional specifications, operation, and maintenance. The maintenance section requires that only qualified technicians gain access to the internal components of the system. The system's power management controls via the front panel touch screen or the ROMWare GUI are PIN and password protected for security.

1.3 System Organization

Figure 1 is the block diagram for the SR20-FDD system. The system consists of the following main components:

- SR10 Module
- AC-DC 12V Power Supply (main power source for SR10 Module and fans)
- DC-DC 12V-5V Converter (power for all KVM modules)
- ROMWARE Lite Module (provides remote power control of each individual PC Card)
- ROMWARE Lite Software (provides touch screen control and/or web GUI remote power control)

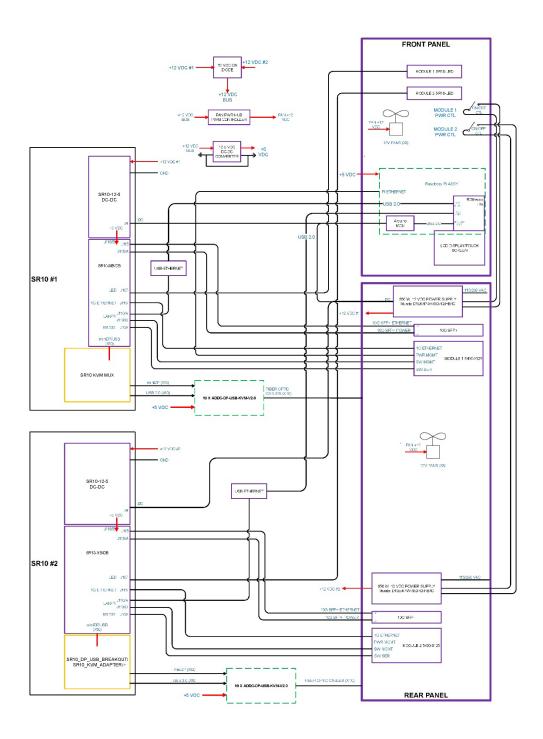


Figure 1- SR20-FDD System Block Diagram

2 System Description

The SR20-FDD combines the power of two ADDC SR10 modules with the Made in the USA, long distance, fiber KVM (Keyboard, Video, Mouse) terminal for extraordinary capability. The SR10 module is specifically designed to be integrated into a SR20-FDD features 20 separate and distinct computers with USB and video delivered through fiber KVM. Each computer is connected to a high-speed layer 2 managed switch through 3 physical 1 GbE NICs. Each of the two SR10 modules has an embedded switch that manages the individual NICs and has two 10G SFP+ trunk ports. Serial and HTTP based switch management is included. Individual auto and remote computer power control.

2.1 Key Features

The SR20-FDD System provides the following key features:

- 20 Separate BioDigitalPC® Cards that can be easily remove and replaced for ease of maintenance and upgradeability.
- Remote power control for each individual PC Card via a web GUI to allow remote resetting of the PC Card.
- Each PC Card has its own KVM over fiber adapter to allow an additional remote operation of the PC Card and its software applications.

2.2 System Inventory

The SR20-FDD system ships with the following components:

- SR20-FDD Chassis (Figure 2)
- 1 each Cable Management Arm (Figure 3)
- 4 each 10Gbps SFP+ Cables (Figure 4)
- 2 each AC power Cord (Figure 5)
- 2 each AC/DC Power Supply (Figure 6)
- BioDigitalPC[®] Cards (Check Invoice for Quantity) (Figure 7)



Figure 2- SR20-FDD Chassis



Figure 3- Cable Management Arm



Figure 4- 10Gbps SFP+ Cables



Figure 5- AC Power Cord



Figure 6- AC/DC Power Supply



Figure 7- BioDigitalPC®

2.3 Environment

The system is intended to be used in an environmentally controlled and secured facility. The following system components are required for installation and remote-control operation.

- Rack Slides (not provided)
- Remote KVM Transceiver Unit (purchased separately)
- Fiber Optic cable (length determined by the end user)
- Laptop or PC with an Ethernet NIC for Remote Control Operation
- Laptop or PC with a Serial Communications Port for Switch Management
- Routers with 10G SFP+ Port

2.4 System Operations

The SR20-FDD can operate unattended once is properly installed and configured for remote KVM operation. The remote users can have as much control of each PC Card as allowed by the system administrator. Each user may be able to login and logout of the PC Card and operate applications also as allowed by the System Administrator. However, System power controls and switch management functions are not available to the user and must be accomplished from a PC or laptop connected to the power and switch management ports on the rear panel of the unit. These functions are password protected and available only to the System Administrator.

3 Installing, Starting and Stopping the System

3.1 Installing the System

When installing the SR20-FDD into a rack, the selected location should meet environmental standards as described below.

Rack Space and Airflow Considerations

To allow for adequate airflow, technicians should observe the following space and airflow requirements when deciding where to install a rack.

- Leave a minimum clearance of 36in (91.4cm) in front of the rack.
- Leave a minimum clearance of 20in (50.8cm) behind the rack.

Temperature Considerations

Your SR20-FDD is designed to operate at room temperature with its self-contained cooling.

Power Considerations

When properly configured and installed the SR20-FDD can draw up to 800 Watts (400 Watts on average) depending on the number, load, and version of the BioDigitalPC®s used.

- To prevent improper cooling of equipment, do not block the fans.
- Clean the front fan filters periodically (at least once a month).
- If the system is intended to operate from an Uninterrupted Power Supply (UPS) power source, ensure that the UPS unit has enough capacity to run the system.

3.2 Installing the SR20-FDD into a rack

The SR20-FDD does not ship with rack rails. The rails must be provided by the end user; follow the rail and rack manufacturers installation instructions.

3.3 Installing System Components

BioDigitalPC®s are hot-pluggable, meaning technicians do not need to remove power to begin adding or removing them.

Note: Only trained technicians are authorized to work inside the SR20-FDD System and access any of the components inside the system.

3.3.1 Removing the SR20-FDD Top Cover

To add or remove BioDigitalPC®s, the SR20-FDD chassis must be pulled out of the rack, and the SR20-FDD's Top Cover needs to be removed temporarily.

Warning: The SR20-FDD can be running while installing new server cards. However, caution must be taken to prevent damage to the equipment as exposed circuit components may short if any metal objects are inadvertently dropped inside the chassis. Future versions of all electronic components will be conformal coated to prevent this from happening.



Figure 8- SR20-FDD Rear Panel

- Step 1- Remove the center Phillips head screw.
- Step 2- Slide the top cover to the rear and lift to release the cover from the 4 side locking pins.

3.3.2 Installing a BioDigitalPC®



- Step 1- Make the PC Card ejection lever is perpendicular to the system cover.
- Step 2- Make sure locking tab is unlocked.

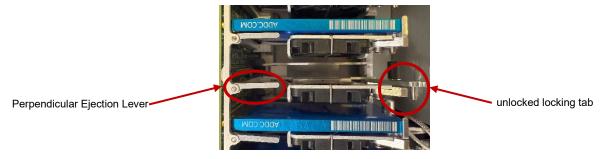


Figure 10- PC Card Track Setup

Step 3- Insert Card with "Arnouse Digital Devices Corp." facing upwards and the
connector of the card is facing towards the PC Card ejection lever. When inserting the
card, place it between the two horizontal metal bars, ensuring the card is going to be
aligned properly.

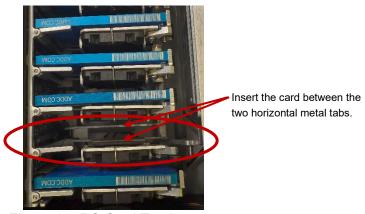


Figure 11- PC Card Track

• Step 4- Once the card is in between the two horizontal bars, locate the small locking tab and push it in towards the PC Card until the tab locks into place.

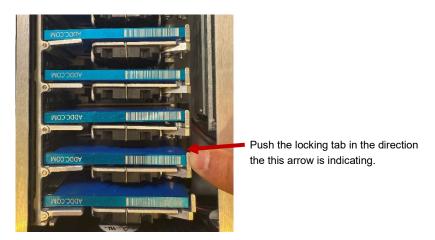


Figure 12- PC Card Locking Mechanism

3.3.3 Removing a BioDigitalPC®

• Step 1- Find the locking tab located to the right of the card slot. Unlock the locking tab.



Figure 13- SR10 PC Card Unlocking

• Step 2- Pull the PC Card ejection lever forward towards you, you should feel the card pop out of the connector.

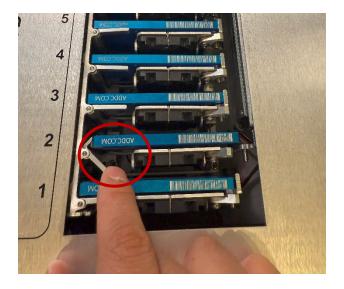


Figure 14- SR10 PC Card Ejection

 Step 3- Reset the ejection lever to the original position to make the PC Card removal easier.



Figure 15- PC Card ejection lever position

3.3.4 Replacing a KVM Over Fiber PCB Stack Module

- Disconnect all cables (USB, miniDP, 5V power, and Fiber Optic)
- Remove 4 Phillips pan head 4-40 X ¼" screws located at the bottom of each corner of the module (see Figure 12).
- Remove the KVM PCB Stack Module from the chassis.
- Install the KVM PCB Stack Module in reverse order as removal.

Warning: The 5V power cable must be installed with the proper polarity (see Figure 17). Connecting the 5V power cable with reverse polarity will severely damage the KVM PCB.

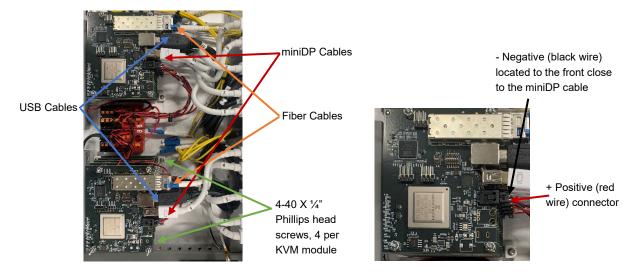


Figure 16- KVM PCB Stack Modules

Figure 17- KVM PCB Power Cable

3.3.5 Replacing the SR20-FDD Top Cover

Once complete, a technician should replace the SR20-FDD top cover following the 2-step removal process in reverse order.

3.3.6 Installing the AC/DC Power Supply

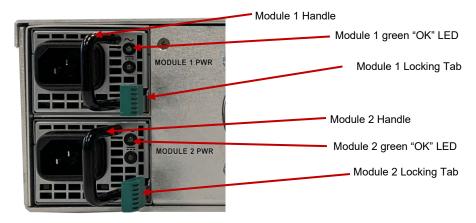


Figure 18- SR20-FDD AC/DC Power Supplies

- Step 1- Push the AC power supplies straight into the power supply cavities. Ensure the
 power supplies are oriented properly and that the locking tabs engage inside the
 cavities.
- Step 2- Connect the AC power cords into the power supplies and connect them to a 20 Amp AC outlet. The green power "OK" LED should illuminate.

3.3.7 Removing the SR20-FDD Power Supply

- Refer to Figure 18.
- Step 1- Turn off power to the system and disconnect the AC power cord.
- Step 2- Push the locking tab to the left to release the power supply.
- Step 3- Pull on the power supply handle to remove it.

3.4 Networking the system

3.4.1 Minimal/Testing Equipment

- 2 each 10/100 Ethernet Cable
- 2 each Cisco compatible RS232 Serial Communications Cable
- 2 each External Computer (e.g., a laptop)



Figure 19- SR20-FDD Switch Management Ports

3.4.2 1Gbps Networking Schema

- 1 each 10/100 Ethernet Cable
- 2 each Cisco compatible RS232 Serial Communications Cable
- 2 each 10/100/1000 Ethernet Cable
- 2 each 10 port (or more) 10/100/1000 Ethernet Switch



Figure 20- SR20-FDD Ethernet Networking Ports

3.4.3 10Gbps Networking (with ROMWare Switch Management)

- This is the recommended SR20-FDD Networking Configuration
- 2 each 10/100 Ethernet Cable
- 2 each Cisco compatible RS232 Communications Cable
- 2 each 4 port (or more) 10/100 Ethernet Switch
- 2 or 4 10Gbps SFP+ Cables



Figure 21- SR20-FDD Ethernet Networking Ports (Recommended Configuration)

3.4.4 SR20-FDD Power ON and OFF

- Connect SR20-FDD to a 20 Amp AC power receptacle.
- Simultaneously press the two ON/OFF Power Buttons on the front panel.
- The blue ring LEDs on the power buttons should illuminate.
- Pressing the power buttons again will turn OFF the system.



Figure 22- SR20-FDD Front Panel

4 Step by Step Operating Instructions

This section outlines the step-by-step procedure for system power ON/OFF and remote-control operation via the ROMWare Lite GUI.

4.1 SR20-FDD Overview

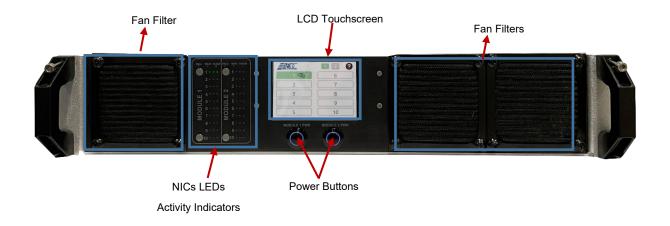


Figure 23- SR20-FDD Front Panel Controls and Indicators

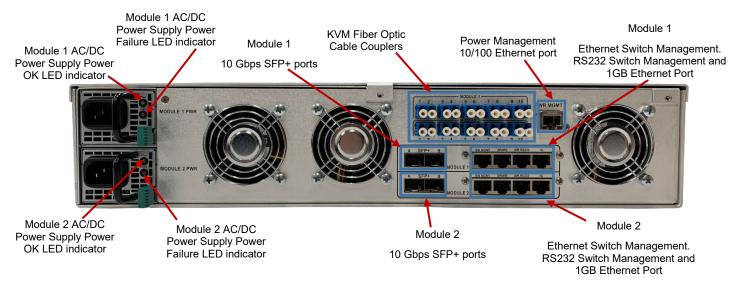


Figure 24- SR20-FDD Rear Panel Connections

4.2 SR10 Modules

As shown in the Section 3, the SR20-FDD consists of two SR-10 Modules and 20 KVM over fiber PCBs. The SR-10 Module contains 10 BioDigitalPC® slots, each having three 1Gbps NICs attached to an integrated switch. The integrated switch has two SFP+ 10Gbps connectors and one 1Gbps RJ-45 connector broken out to the rear panel of the SR20-FDD (See Section 3.4 for additional information). Each SR-10's BioDigitalPC® power control is managed via the SR20-FDD's Web-based management program called ROMWare Lite (See Section 5 for additional information).

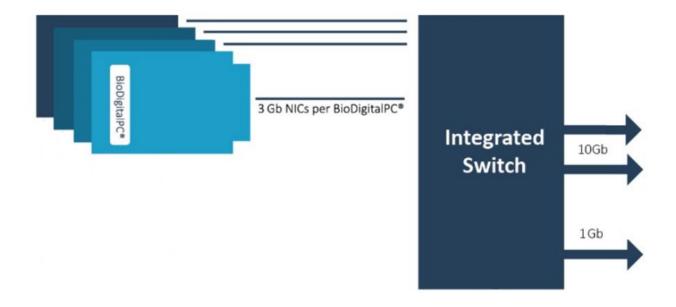


Figure 25- SR10 Block Diagram

4.2.1 Front Panel

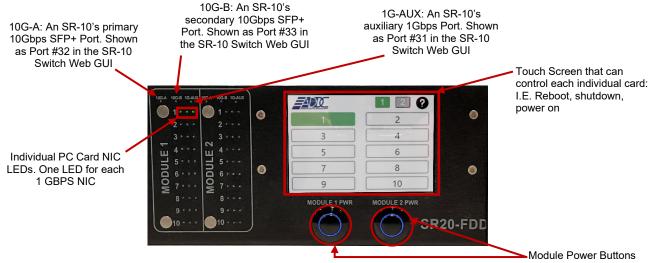


Figure 26- SR20-FDD Front Panel

4.2.2 Rear Panel

- Refer to Figure 20
- The Power OK green LEDs on the power supply will illuminate as soon as the AC power cord is connected to a 20 Amp AC power receptacle.
- The Fault amber LED will illuminate if there is a fault with the power supply.
 Refer to the Murata D1U54P-W-650-12-HB4C power supply manual for additional information.
- The 3 rear 60mm fans pull hot air out of the system and should be unobstructed.

5 ROMware Lite Software

The ROMware Lite software in embedded in the SR20-FDD and all that is required for its operation is a web browser (Chrome is recommended).

5.1 Login



Figure 27 - ROMware Login Page

The web interface for ROMware Lite asks for credentials to log in and begin management and/or monitoring of your SR20-FDD. Users are supplied with administrative credentials that have been factory set. Only one admin can be logged in at once.

5.2 Main Web GUI Screen Overview

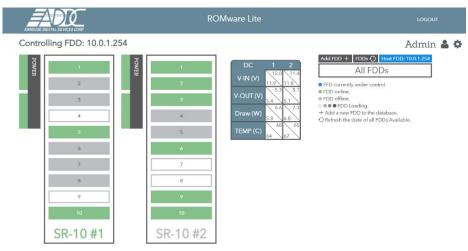


Figure 28 - ROMware Main GUI Overview

5.3 PC Card Power Control and Monitoring

SR-10 #2

Controlling FDD: 10.0.1.254

To verify the SR-10's Power Supply is operating optimally, you can press the button labeled "Power" for more information

To verify the SR-10's Power Supply is operating optimally, you can press the button labeled "Power" for more information

Figure 29 - ROMware SR-10 Modules GUI

SR-10 #1

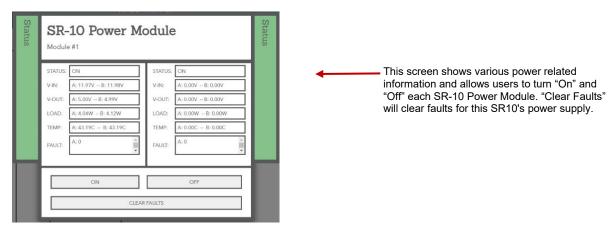


Figure 30 - ROMware SR-10 Power Module Window GUI

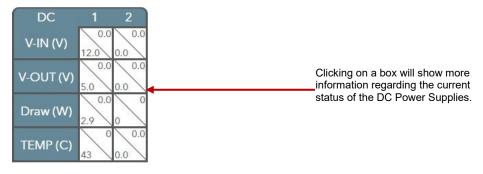


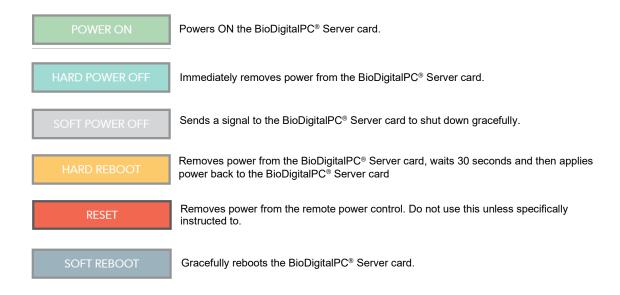
Figure 31 - ROMware SR-10 Power Modules Status GUI

5.4 BioDigitalPC Power Control and Monitoring

Displaying the card management features of the SR20-FDD is done by clicking the **Slot Number.**



Figure 32 - ROMware SR-10 Slot Management Window





BioDigitalPC® Slot Number	The unique SR20-FDD slot number
SR-10 Module Position	The position number of the SR-10 Module within the SR20-FDD
BioDigitalPC® Slot Position	The Position of the Slot within the SR-10
Current Status	Displays the current status of the slot: Present, Not Present, On and Off.
Hardware Information	Click "View" to show the Slot Hardware Information. See the page 26 for more information.

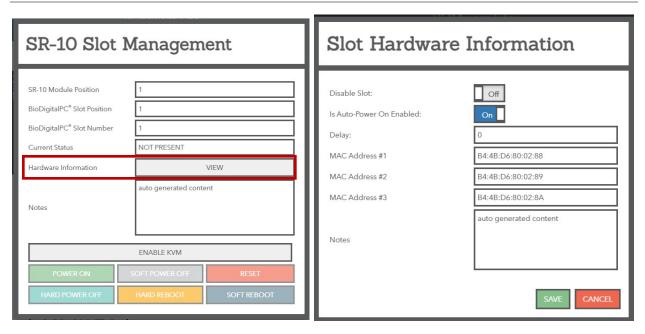


Figure 33- ROMware SR-10 Slot Management and Slot Hardware Information Windows

Disabled Slot	Disables the slot for this SR-10 module.
Is Auto-Power On enabled	When enabled, after boot up of the SR20-FDD the BioDigitalPC® in this slot will be powered on (if present) after [Delay] number of seconds.
Delay	The number of seconds to wait after power up of the SR20-FDD before powering on the BioDigitalPC® (if present) in this slot.
MAC Address [1, 2, 3]	MAC addresses of the 3 1Gbps NICs for this slot.

5.5 SR20-FDD System Settings

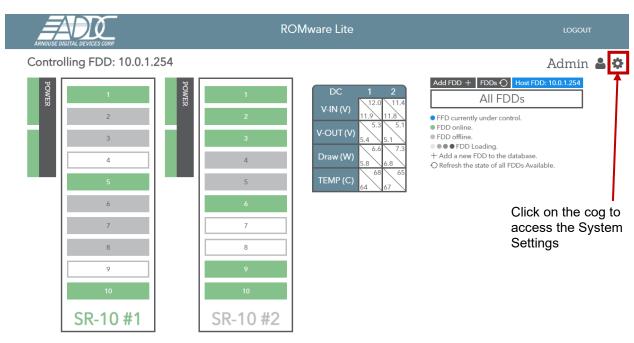


Figure 34- ROMware Main GUI and System Settings Button

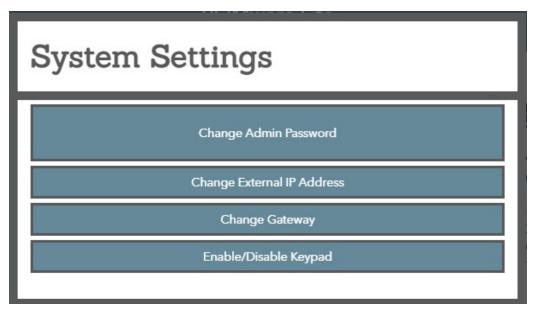
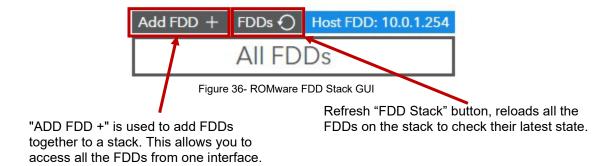


Figure 35 – System Settings Window

The System Settings allows the user to change four things: ROMware password, the machines IP address, the machines Gateway, and the ability to enable or disable the Keypad

5.6 SR20-FDD FDD Stack



Upon clicking on "Add FDD +" the below window will appear. Fill out "FDD IP Address' and 'FDD Name' and the corresponding FDD will be added to the 'FDD Stack'.

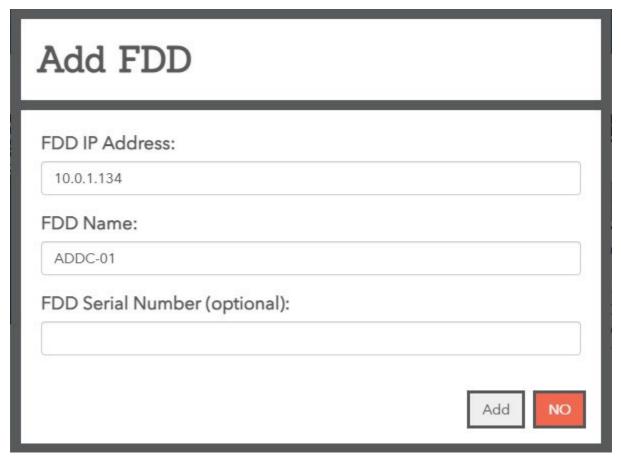


Figure 37 - ROMware Add FDD Window

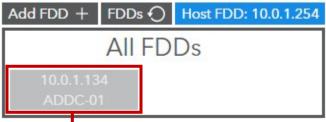
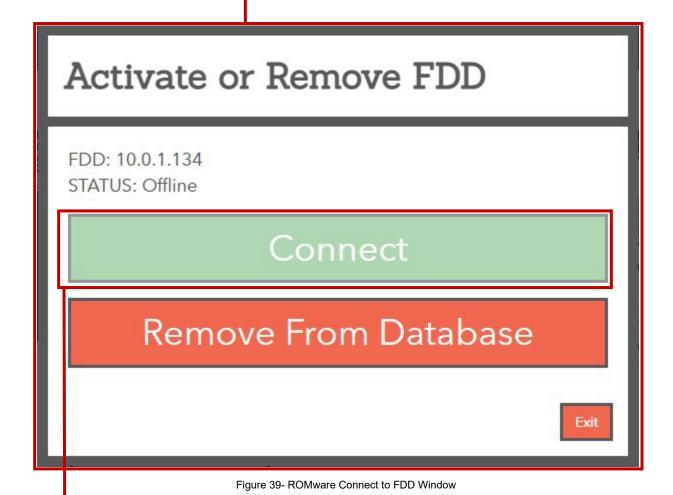


Figure 38 – ROMware Select FDD



The "Connect" button stablishes a connection between ROMware and the selected FDD.

After "Connecting" to the added FDD, your screen will now show the new FDD as the "Controlling FDD"

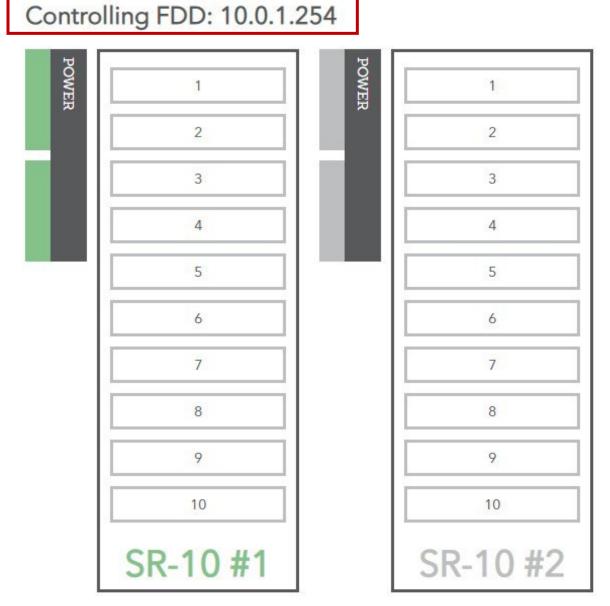


Figure 40- ROMware Controlling FDD Indicator

5.7 Front Panel Touchscreen Overview

• System startup screen – Allow 3-4 minutes for system to boot up.

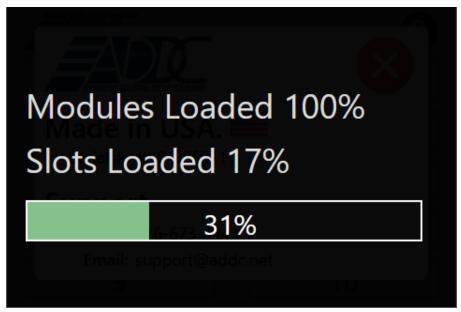


Figure 41- Touchscreen Startup Screen

• ADDC Support Screen – This screen is displayed right after the system boots up and will be closed after ten seconds or it can also be closed by clicking on the red button.



Figure 42- Touchscreen Support Window

 PC Card Slots Power Status Screen – This screen is displayed after the ADDC support screen is closed. WHITE indicates there is no PC Card installed, GRAY indicates there is a PC Card installed but is turned OFF, GREEN indicates that there is a PC Card

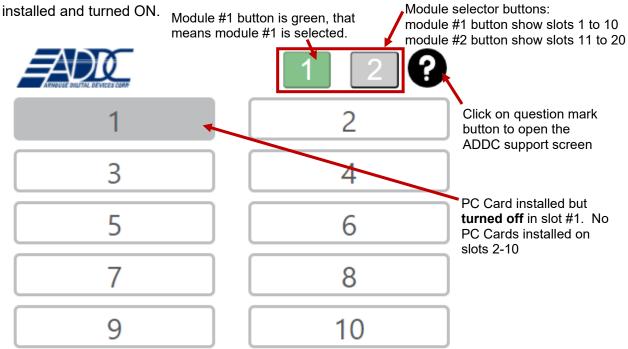


Figure 43- Touchscreen Main Screen Overview



Figure 44- SR20-FDD Front Panel

PC Card installed and turned on in slot #1, no PC Cards installed on slots 2-10. Notice that corresponding NIC LEDs are illuminated indicating that the PC Card's NICs are connected to the switch at 1G speeds. If the LED illuminates in yellow, that is an indication that the NIC is connected at 10/100 speeds.

• PC Card Power Control Screen – Clicking on any slot will bring up the power control screen.

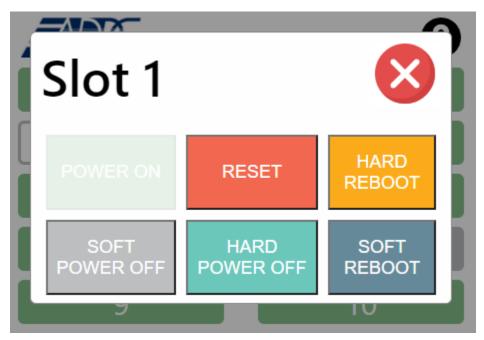
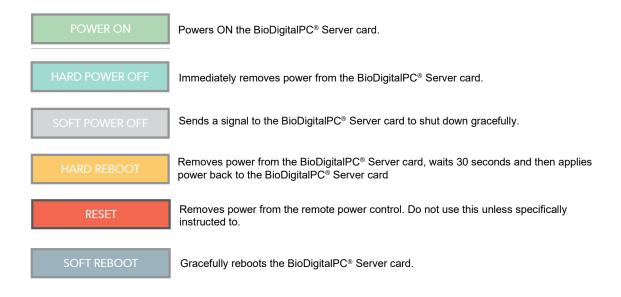


Figure 45- ROMware SR-10 Touchscreen Slot Management Window



 A lock screen can be activated from the web interface. By default, the lock screen is disabled; however, it can be enabled from ROMWare Lite. When enabled, the lock screen will require you to enter the default pin number 123123 to access the PC Card Slots Power Status Screen. It is recommended that you change the default pin number, it can be changed from ROMWare Lite.

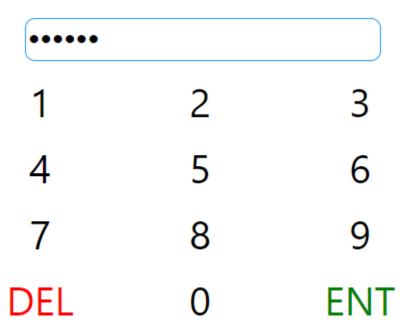


Figure 46 - ROMware Touchscreen Lock Screen

 When the lock screen is enabled, there will be a logout button next to the question mark button; the logout button will lock the screen. There is a default session timeout of six minutes, if there is no user activity in six minutes the session will end, and the screen will be locked. The default session timeout can be changed from ROMWare Lite.

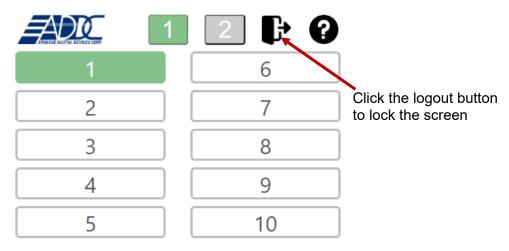


Figure 47 – ROMware Touchscreen Logout Button