TS110 DISPLAY MANUAL

Pro Refrigeration, Inc

PRO
REFRIGERATION INC

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1 Preface

This manual is intended to be used in conjunction with Pro Refrigeration's TS110 touch screen display.

This manual will guide you through the process of installing, wiring and configuring your TS110 display.

Note: Check the following URL for the latest version of this manual and other Pro Refrigeration, Inc product documentation.
http://www.prochiller.com/support

TS110 Summary

The TS110 display is intended to be used with Pro Refrigeration's CR110 refrigeration card and the RGX communication gateway card. The TS110 display can communicate with up to 8 CR110 cards through a RS-485 communications bus.

The TS110 display runs on Microsoft Windows CE 5.

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Pro Refrigeration, Inc.

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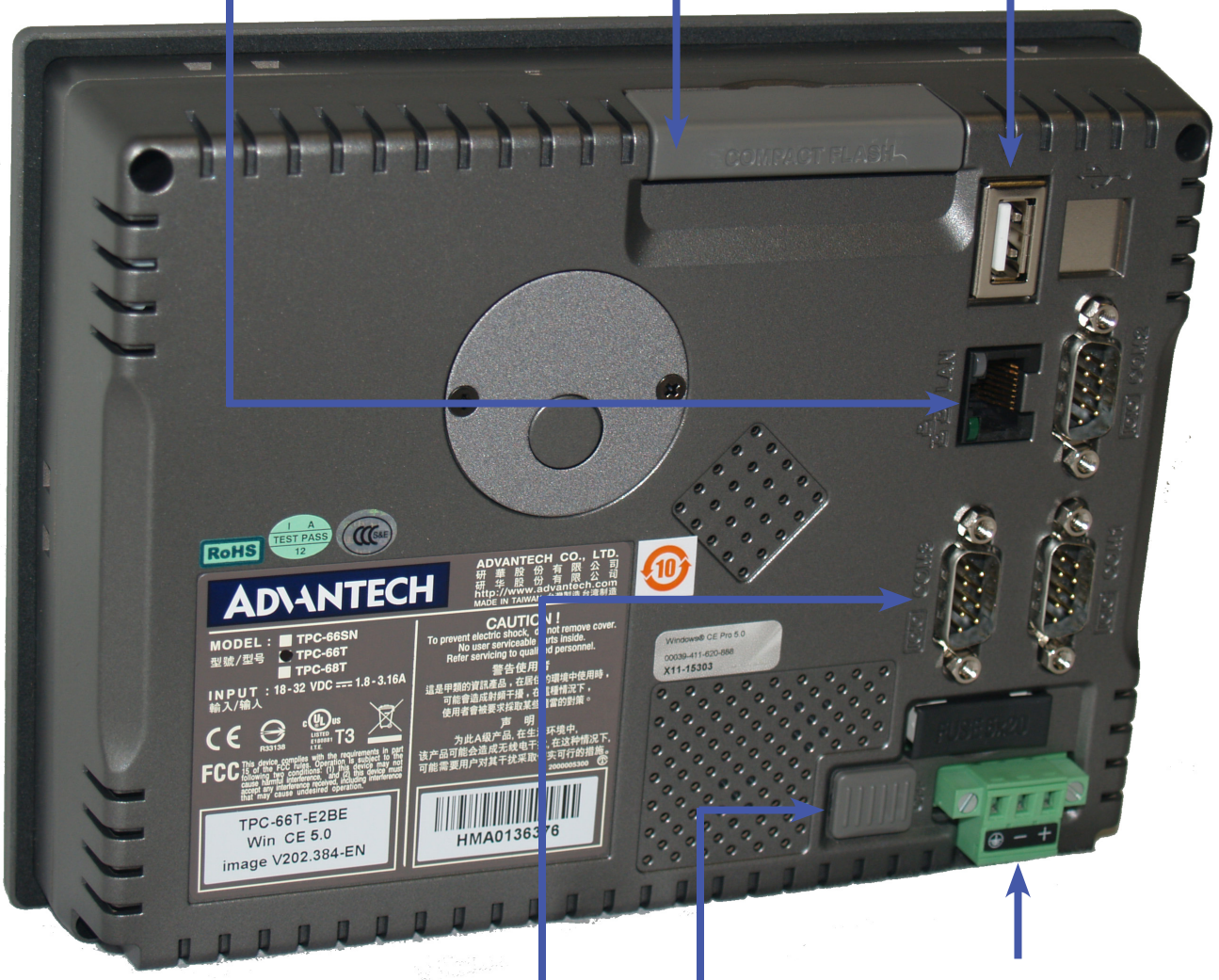
TS110 HARDWARE OVERVIEW

LAN: The Ethernet port on the TS110 allows you to connect the RGX communications gateway to your existing computer network giving you the ability to access the TS110 remotely with VNC software. Please see the Quick Start section for information on setting the TS110's IP address.

Compact Flash: This compartment holds a compact flash storage card which contains all of the Pro Interface software, log files, & INF files. The Storage Card can be accessed by typing "\Storage Card" into the run dialog.

USB Port: When USB device is inserted it will appear on TS110 as "USB Hard Disk" it can be accessed by typing "\USB Hard Disk" into the run dialog.



COM3: The COM3 9-PIN serial port is used for RS485 communication with the CR110 or RGX. Refer to the installation section for wiring instructions.

24V Power Terminal: This terminal should be connected to a 24V AC or DC power source.

Power Switch: Verify that the power switch is in the ON position prior to operation.

TS110 QUICK START GUIDE

(Network Installation)

The quick start guide is designed to be used in conjunction with a TS110 Touch Screen Display that was factory installed on a Pro Refrigeration, Inc Chiller System. As such, this guide assumes that all programming and non-network related wiring is complete. If you have purchased the TS110 display to add to an existing Chiller System please refer to section 3 for installing and wiring your RGX TS110 display. The login information to gain access to your systems operating parameters from the login screen is provided below.

Passwords	Security Level
1111	View Only
2222	View & Control
3333	View, Control & Configure

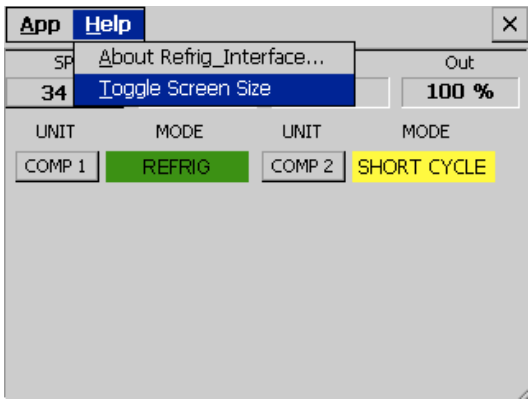
STEP 1 - Connect Ethernet Cable

Connect an Ethernet cable from the Ethernet port on the back of your TS110 display to an open port on your network switch or router.

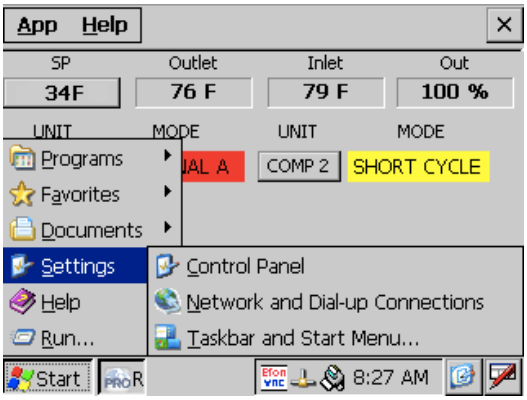
STEP 2 - Set IP Address

To allow the TS110 display to communicate with your network you will need to give it an available IP address on your network. To set the IP address follow the steps and pictures outlined below.

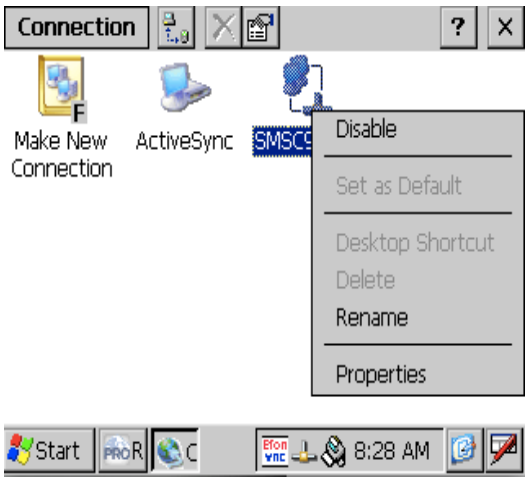
Tap on the "Help" drop down menu and tap "Toggle Screen Size", as seen in the picture below.



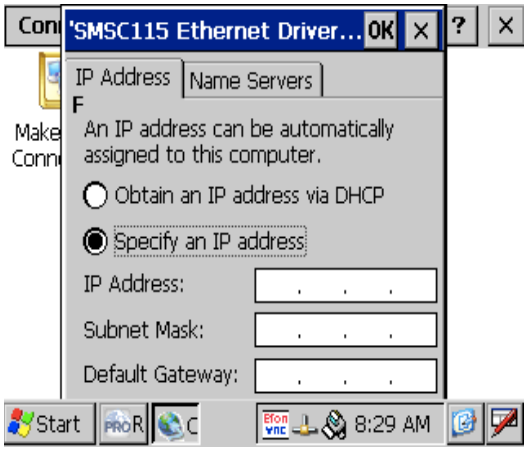
Tap on the Windows Start button, tap "Settings" and tap "Network and Dial-up Connections".



Tap and hold on the "SMSC91181" adapter, on the menu move your finger down to "Properties" remove your finger from the screen to select.



Tap the "Specify an IP address" button, tap in each field below and set them to your desired IP address and network settings using the on screen keyboard. You may need to move the keyboard (tap & drag) to enter values in the lower fields. Tap "OK" when finished.



Tap X to close the "Network and Dial-up Connections" window, tap the "Help" drop down menu and tap "Toggle Screen Size" again to return your window to its original screen size.

STEP 3 - Redirect Ports To TS110

To allow remote connections to access to your TS110 from outside your network you will need to redirect the following UDP & TCP ports from your router to the address you just configured on your TS110 display.

TS110: 502, 5900 & 5800

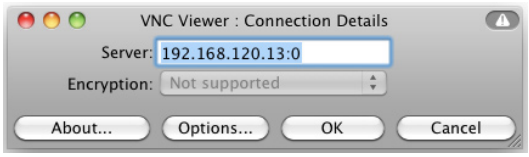
UDP: 4001

STEP 4 - Accessing Your TS110

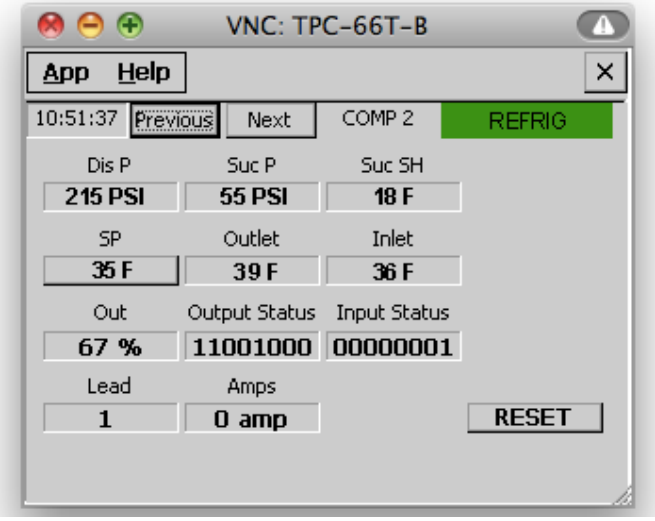
You should now be able to access your TS110 from any computer using your external IP address and port 5800 in a web browser as shown below.

http://YOUR_EXTERNAL_IP:5800

This will launch a Java VNC client dialog that will confirm the IP address you entered above, click OK. You will then be prompted for a password. The default password is "prochill".

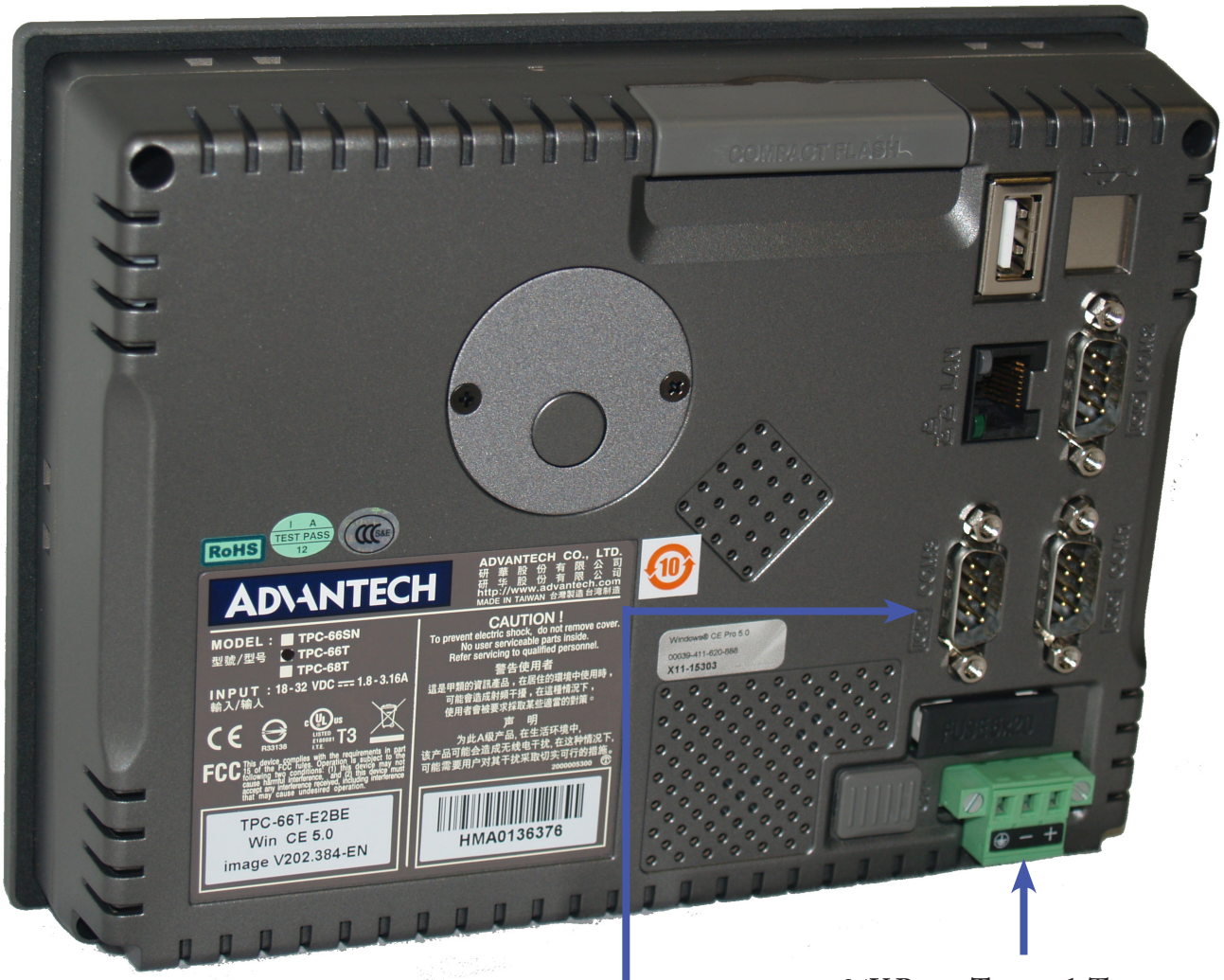


You should now have a window that shows the TS110 display. You can navigate through the display as if you were in front of it. See the picture below for an example of VNC remote control window.



WIRING WITH THE CR110 CONTROLLER

The depiction below shows the connections that need to be made to allow communication between the TS110 display and the CR110 controller. If you do not have an RGX card use the following wiring scheme.



RS-485 Pin Assignment

Pin No.	TPC-66T-E2BE
Pin 1	DATA -
Pin 2	DATA +
Pin 3	No Connection
Pin 4	No Connection
Pin 5	GND
Pin 6	No Connection
Pin 7	No Connection
Pin 8	No Connection
Pin 9	No Connection

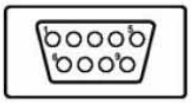
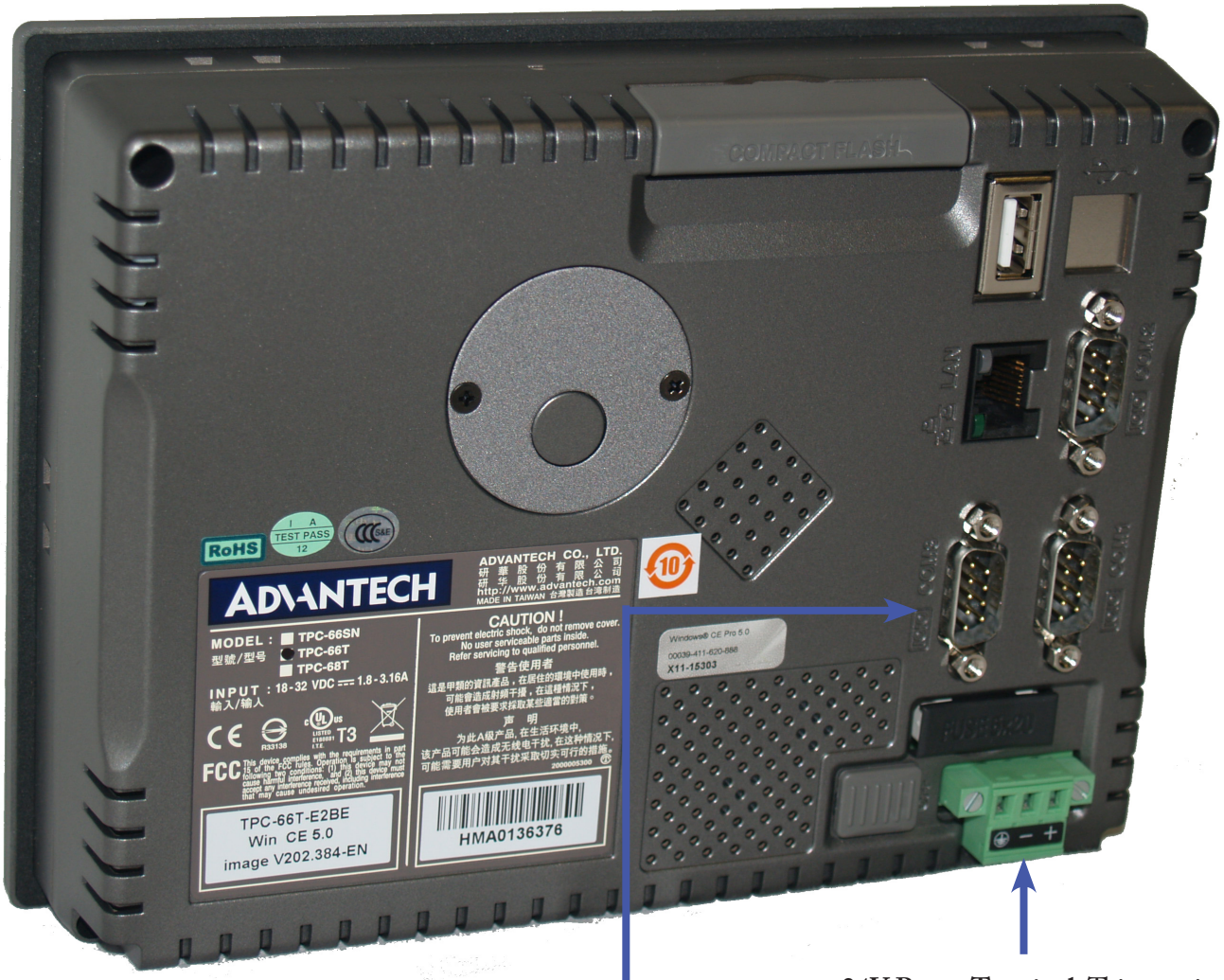


Figure 3-1 COM3 Pin Configuration

WIRING WITH THE RGX COMMUNICATIONS CARD

The depiction below shows the connections that need to be made to allow communication between the RGX and TS110 display. If you have a RGX card use the following wiring scheme.



RS-485 Pin Assignment

Pin No.	TPC-66T-E2BE
Pin 1	DATA -
Pin 2	DATA +
Pin 3	No Connection
Pin 4	No Connection
Pin 5	GND
Pin 6	No Connection
Pin 7	No Connection
Pin 8	No Connection
Pin 9	No Connection

Figure 3-1 COM3 Pin Configuration

TS110 Screen & Operation Overview

This section contains a summary of each screen within the TS110 display. Details will be given on each setting to give a better understanding of how it can be effectively used in your specific deployment.

Default Information

By default the TS110 display has three users with different levels of access. Below are the default user login information.

Password	Security Level
1111	View Only
2222	View & Control
3333	View, Control & Configure

The default IP address is 192.168.1.51.

Login Screen

Tap the "LOG IN" button. A numerical keypad will display allowing you to enter a password. Enter any of the default passwords shown above. See Figure 4-1.

Figure 4-1 Login Screen

Home Screen

Once you have successfully logged-in the Home Screen with be displayed. If the Home Screen is not displaying the correct number of compressors for your system see Set INF File in the App Menu section. The Home Screen's top row displays a Set Point Temperature Button (SP), Outlet Temperature (Outlet), Inlet Temperature (Inlet) and Output Percentage (Out). The rest of the rows will populate to the number of compressors on your chiller system. The rows will contain a Compressor Button and will display the current mode of that refrigeration circuit. If the number of compressors shown does not match the number on your Pro Chiller System please see Set INF File in the App Menu section. See Figure 4-2.

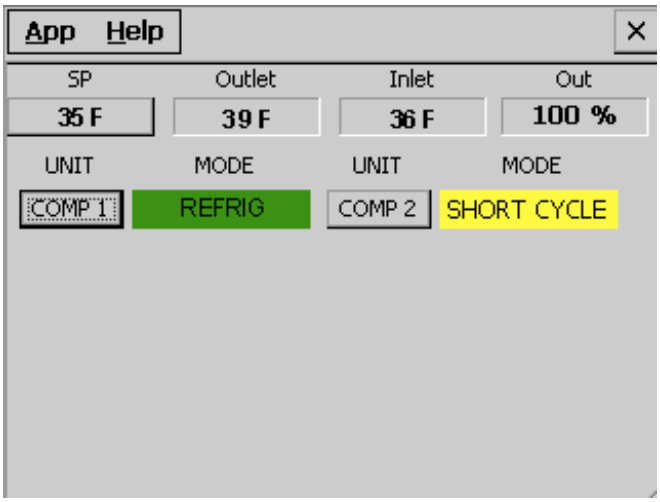


Figure 4-2 Home Screen

•**Set Point Button:** By tapping the set point button on the Home Screen you can adjust the set point for compressor 1. A numerical keypad will popup, tap the value of the desired set point and tap "Enter". The SP value will update on the Home Screen. See Figure 4-3.

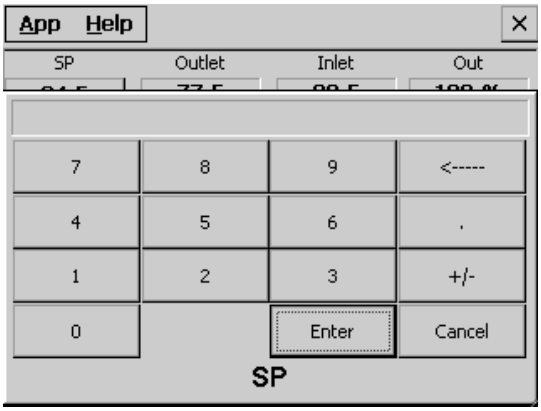


Figure 4-3 Adjust Set Point

•**Compressor Buttons:** Each compressor's name is a button that will take you to the Details Screen for that compressor. (ex: COMP 1, COMP 2 , etc)

Details Screen

The Details Screen contains a fully customizable set of set of fields specific to the selected compressor circuit. The top row displays the time, Pervious Button, Next Button, the compressor number you are viewing and the mode of it's refrigeration circuit. The remaining rows display Discharge Pressure (Dis P), Suction Pressure (Suc P), Suction Superheat (Suc SH), Set Point Button (SP), Outlet Temperature (Outlet), Inlet Temperature (Inlet), Output Percentage (Out), Output Status (Output Status), Input Status (Input Status), Lead Compressor (Lead). See Figure 4-4.

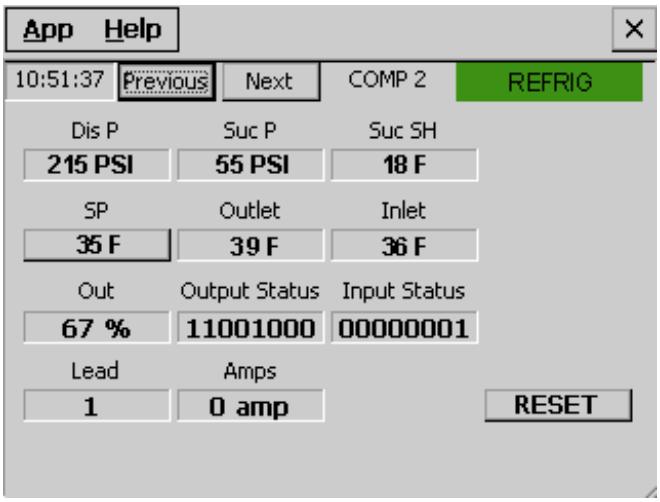


Figure 4-4 Details Screen

•Previous Button: The Previous button will take you back to the Home Screen.

•Next Button: The Next button will take you to the Component Test Screen.

•Set Point Button: By tapping the set point button on the Details Screen you can adjust the set point for compressor circuit you have selected. A numerical keypad will popup, tap the value of the desired set point and tap "Enter". The SP value will update on the Home Screen. See Figure 4-3.

•Reset Button: By tapping the RESET button you will reset the current operation mode of the CR110. This will clear any CR110 alarms if the source of the alarm has been corrected.

Component Test Screen

The Component Test Screen allows you to manually power on the CR110 outputs to each component within the selected circuit. See Figure 4-5.

Caution: The buttons on this screen should be used only as electrical verification prior to system operation. Do not use while system is running.

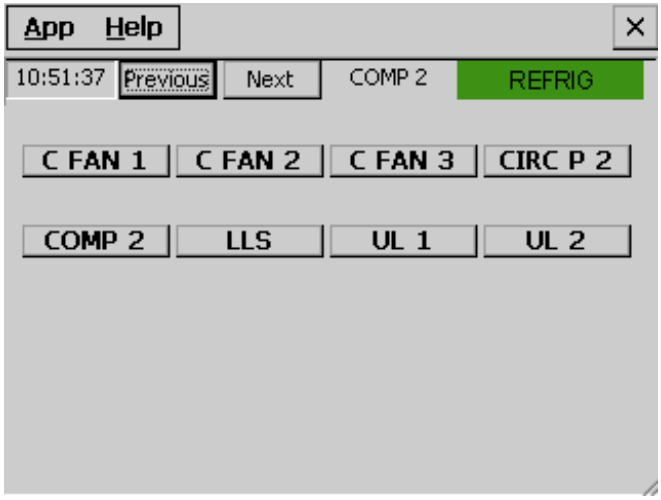


Figure 4-5 Component Test Screen

•Previous Button: The Previous button will take you back to the Details Screen.

•Next Button: The Next button will take you to the System Parameters Screen.

•C Fan 1 Button: Energizes CR110 output for condenser fan 1.

•C Fan 2 Button: Energizes CR110 output for condenser fan 2.

•C Fan 3 Button: Energizes CR110 output for condenser fan 3.

•Circ P 2 Button: Energizes CR110 output for circulation pump 2.

•COMP 2 Button: Energizes CR110 output for compressor 2.

•LLS Button: Energizes CR110 output for the liquid line solenoid valve.

•UL1 Button: Energizes CR110 output for compressor unloader 1.

•UL2 Button: Energizes CR110 output for compressor unloader 2.

System Parameters Screen

The System Parameters Screen contains a scrollable list of system operating parameters specific to the selected circuit. You are able to scroll the list and tap any parameter to adjust its value. Please reference Pro Refrigeration's CR110 manual for a list of factory recommended settings specific to your system's configuration. See Figure 4-6.

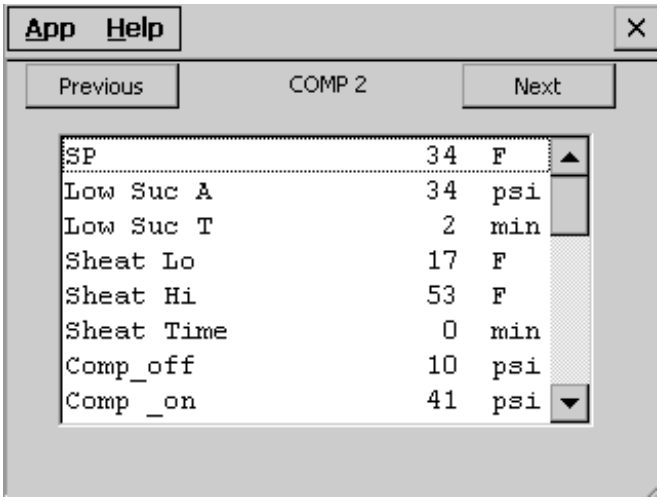


Figure 4-6 System Parameters Screen

•**Previous Button:** The Previous button will take you back to the Component Test Screen.

•**Next Button:** The Next button will take you to the Home Screen.

•**Parameter List:** Tap any setting in the list and you will be given a numerical pad to adjust it's value.

App Menu

The App Menu is at the top left-hand corner of the screen and provides a number of options that can be configured. To access the drop down app menu tap the word App. Each option is discussed in detail below. See Figure 4-7.

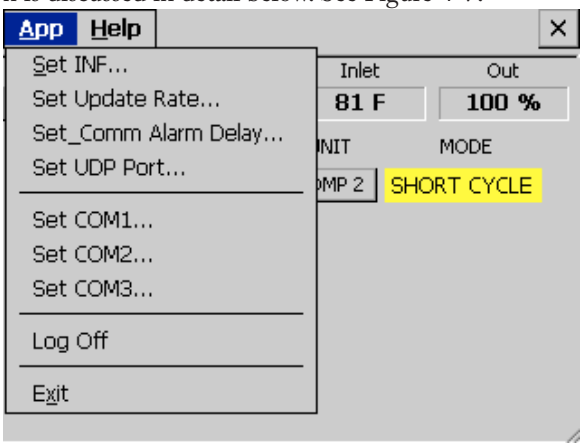


Figure 4-7 App Menu

•**Set INF:** This option allows you to specify the INF file that matches the number of circuits on your chiller system. By default you should have configurations on the storage card for 1 to 5 compressors. If you need a configuration not provided please contact Pro Refrigeration's technical support. To change the INF file tap the Set INF option in the App menu, an open dialog will popup, tap the Storage Card icon to navigate to its directory, you can now tap twice to select the proper INF for your system from the options provide on the storage card (ex "Pro C1 revB ver04B", "Pro C1C2 revB ver04B", "Pro C1C2C3 revB ver04B", etc. Where C# corresponds to the number of compressors on your system). See Figure 4-8 below.

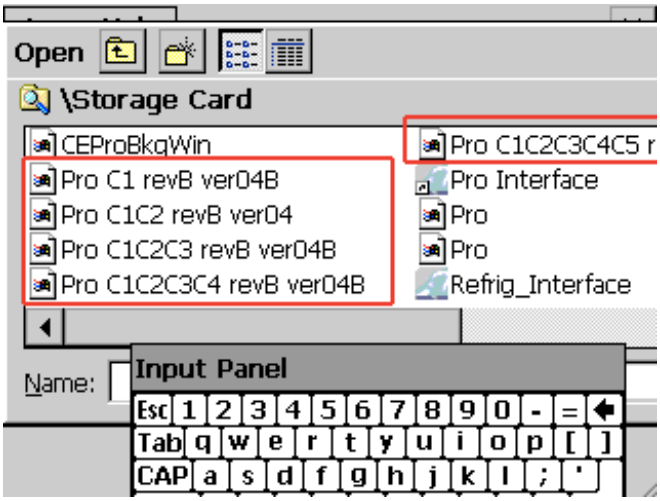


Figure 4-8 Load INF File Dialog

•**Set Update Rate:** This setting controls how often in seconds the TS110 display will request data from the CR110 controller. By taping this option you will be given a numerical keypad to change the Update Rate.

•**Set_Comm Alarm Delay:** This settings controls the amount of time in seconds that the TS110 will wait for a response from the CR110 controller before going into a Comm Alarm state.

•**Set UDP Port:** The UDP port by default is set to 4001 and should not be modified unless instructed to by Pro Refrigeration. This setting is used for communication with the remote monitoring software used by Pro Refrigeration's technical support.

•**Set COM 1:** COM 1 is not used at this time.

•**Set COM 2:** COM 2 is not used at this time.

•**Set COM 3:** This setting can be used to adjust the buad rate at which the TS110 display communicates with the CR110 controller. The default value is 9600. This should not be modified unless instructed by Pro Refrigeration.

•**Log Off:** By tapping Log Off your screen will be returned to the Log On prompt.

•**Exit:** Tapping Exit will close the program and return you to the desk top. To return to the program tap the Pro Interface icon. See Figure 4-8 below.

Figure 4-8 TS110 Desktop

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