Quest Controls
Smart Control Solutions for Buildings

TELSEC® MINI™ PRO

User Guide

Rev 1.9 05/21/2019

CRITICAL APPLICATIONS DISCLAIMER

QUEST CONTROLS PRODUCTS ARE NOT INTENDED OR AUTHORIZED FOR USE IN ANY APPLICATION THAT REQUIRES FAIL-SAFE OPERATION, OR ANY SYSTEM THAT IS RESPONSIBLE FOR PROVIDING DETECTION, MONITORING OR CONTROL OF CRITICAL SAFETY, LIFESAVING OR LIFE-SUPPORT CONDITIONS, FUNCTIONS OR OPERATIONS (INCLUDING BUT NOT LIMITED TO FIRE DETECTION, ALARMING, OR SUPPRESSION), OR ANY APPLICATION WHEREIN A FAILURE OR MALFUNCTION OF THE PRODUCT MAY LEAD TO SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE, PERSONAL INJURY OR DEATH.

Lithium Battery Notice

Replace Battery with Panasonic CR1025 or equivalent Lithium Battery, rated at 3 Vdc. Use of another battery may present a risk of fire or explosion.

CAUTION - battery may explode if mistreated. **Do Not** recharge, disassemble or dispose of in fire.

Specifications are subject to change without notice.

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1 Overview

Quest TELSEC MINI PRO is designed to provide advanced monitoring and alarming for small remote facilities and cabinets using industry standard communications protocols such as SNMP and SMTP (Email) over Ethernet. The system has a built in web server for status review and programming and can be polled using SNMP Gets. The MINI PRO has up to 32 universal inputs for monitoring temperature, humidity, contact closures and any 0-6 VDC or 0-20 mA sensors. Each input may be scaled and displayed in the proper engineering units. The system has an RS485 serial port for monitoring Modbus RTU devices and four digital outputs which can be actuated based upon user programmable events. This user guide is intended to provide basic operational information for programming and status review of the MINI PRO System. Please contact Quest Controls for additional information and or questions regarding to the operation of the system.

1.1 Getting Started

The TELSEC MINI PRO is simple to setup and program to allow you to start monitoring your facility quickly. The basic steps are listed below along with a chapter reference for this manual:

1. Mount the MINI PRO in the desired location (section 3.1)
2. Power the system. (section 3.2.1)
3. Connect the inputs to be monitored to the system. (section 3.4)
4. Connect the RS485 serial port to Modbus RTU Devices. (section 3.5)
5. Wire the outputs if they are to be used. (section 4.3)
6. Connect the MINI PRO to an Ethernet switch and configure the IP settings. (section 5.1)
7. Define the inputs. (section 6.4)
8. Define the Modbus points. (section 6.5)
9. Define the alarm points. (section 6.6)
10. Configure the alarm distribution. (section 6.3)

2 Product Specifications

Part number: 150998-16, 150998-32
Inputs: 16 or 32 universal inputs, 0-6VDC, 0-20 MA, thermistor and contact closure.
Temp sensor accuracy: ± 1 F
Digital Outputs-: 4 form C outputs. Contact Rating: .5amp @ 60VDC
Serial Port: 2 wire RS485 supporting Modbus RTU protocol
Network interface: Ethernet 10/100 Base-T, RJ45 connector
IP protocols supported: HTTP, SMTP, SNMP (v1, v2c) Gets, Sets, Traps and Informs, TFTP, NTP
Logging: Logs all inputs, Modbus points and alarms.
I/O terminal: two piece pluggable connectors
Power: Dual feed 18-65VDC, (50 mA at 48VDC max)
Field Terminal: two-piece pull off.
Battery: Long Life Lithium*
Ambient operating Temp: -20 to 180 F (-29 to 82 C), 0-95 %Non-condensing
Dimensions: 4.15 W x 13.15 L x 1.63 H in. (105 x 334 x 41 mm)
Weight: 1.0 lb (454 g)
Warranty: 1 Year

**CAUTION - Battery May Explode If Mistreated. Do Not Recharge, Disassemble or Dispose Of In Fire.*

Specifications subject to change without notice

3 Installation

All local and national electrical safety standards must be followed when installing the Mini Pro. If there is any contradiction in this manual and those standards, then the installer must follow the local and national standards. Use copper conductors only. The TELSEC MINI PRO is designed for wall or rack mounting. Rack mounting can be accomplished by using the appropriate optional mounting ears for a 19 or 23" rack. Mounting ears are provided separately. Contact your Quest representative to order them if needed for your application.

3.1 Mounting the MINI PRO

Install the MINI PRO in the desired location using #8 hardware to connect the two mounting tabs to the wall.

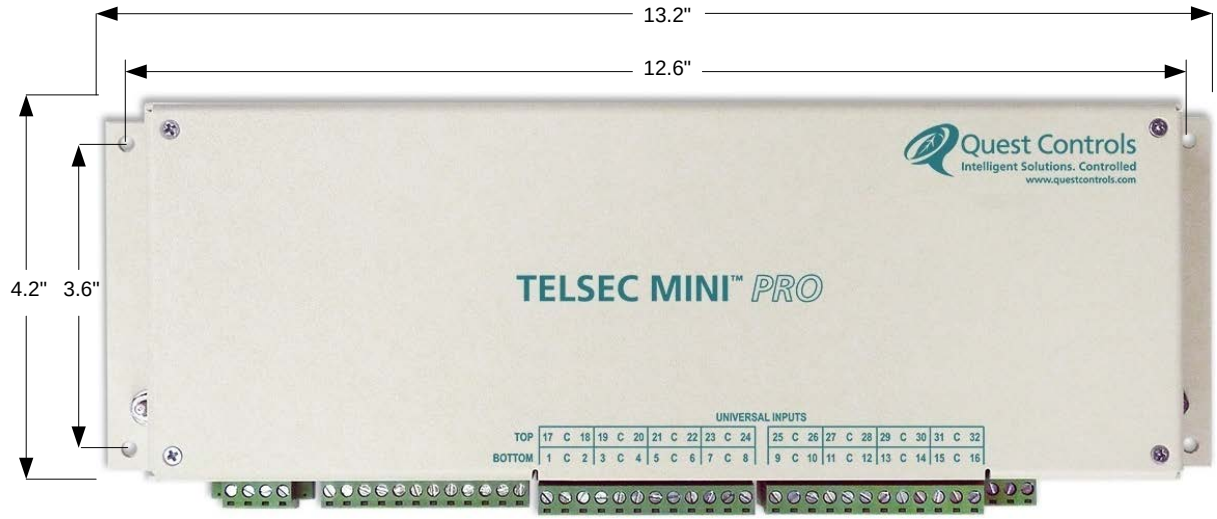


Figure 1 - TELSEC MINI PRO Dimensions

3.2 Powering and Grounding

3.2.1 Powering the MINI PRO

Follow all national and local electrical codes when powering the MINI PRO. Quest recommends a minimum of 18AWG conductor for powering. The TELSEC MINI PRO will operate from 18-65 VDC power (50 mA max at 48 VDC). The power input is isolated from the rest of the system and will work on either a positive or negative DC system. The MINI PRO supports power from a dual (A & B) feed DC power system to provide redundancy in case one of the feeds is lost. Connect the power source A and B (optional) to the MINI PRO observing the polarity markings on the enclosure. Quest recommends fusing each power source at 1 amp. Reverse polarity will not damage the unit, but it will not operate until corrected. It is recommended that all input wiring be completed with no power to the system. Turn on power once all input wiring is verified.

3.2.2 Removing the Battery Insulator

The MINI PRO is shipped with an insulator to keep the battery disengaged from the system. Remove the insulator once the unit is permanently powered, by pulling the tab in the upper right corner. The system uses the battery to save the system time, log data and alarm history during power failures.

3.2.3 Grounding the MINI PRO

There is a ground post on the left and right side of the chassis. Place a ground wire using a minimum 12 AWG conductor from the Electrical panel ground bus (or other approved grounding point) to the ground terminal on the MINI PRO. Follow national and local codes and practices for properly grounding the system.

3.3 Connecting the Ethernet

Use a standard Cat 5 Ethernet cable to connect the MINI PRO to the local switch or hub. Configure the switch port to auto baud detect and auto negotiation. A green LED link light will be illuminated when a physical link has been established.

3.4 Wiring inputs

Wire each input to be used between the input terminal and a common terminal. There is a common terminal available for every two inputs available for termination. The MINI PRO does not provide power for sensor operation thus any device requiring power will need an external power source to operate properly. The number of inputs available depends on the MINI PRO version that was purchased. The units come in groups of eight. Refer to the silkscreen on the enclosure for location of each input and common terminal. The inputs will support any sensor that is a 10k Type III thermistor: 0-6 VDC or 0-20 mA analog sensors. In addition the system accepts dry contact closures or wet contact closures up to 65 VDC.

3.4.1 Thermistors

Thermistors are resistive devices and do not have polarity. Connect one lead to the input terminal of the desired input and the second lead to a common terminal. Quest recommends using shielded cable for all analog sensors. Connect the shield of the cable to chassis ground on the MINI PRO. Cut the drain wire and isolate the shield at the sensor end of the cable.

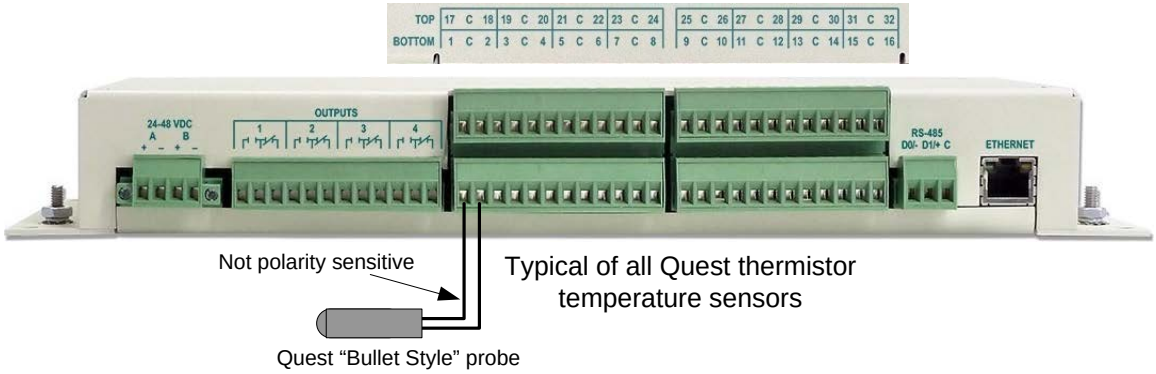


Figure 2 - Thermistor Temperature Sensor Wiring

3.4.2 Voltage Sensors

The TELSEC MINI PRO can read and scale any linear voltage input from 0 to 6 VDC. Sensors requiring power must be externally powered. Contact Quest Controls for the Input Scaling spread sheet to determine the correct number for the Low and High Custom scale factors.

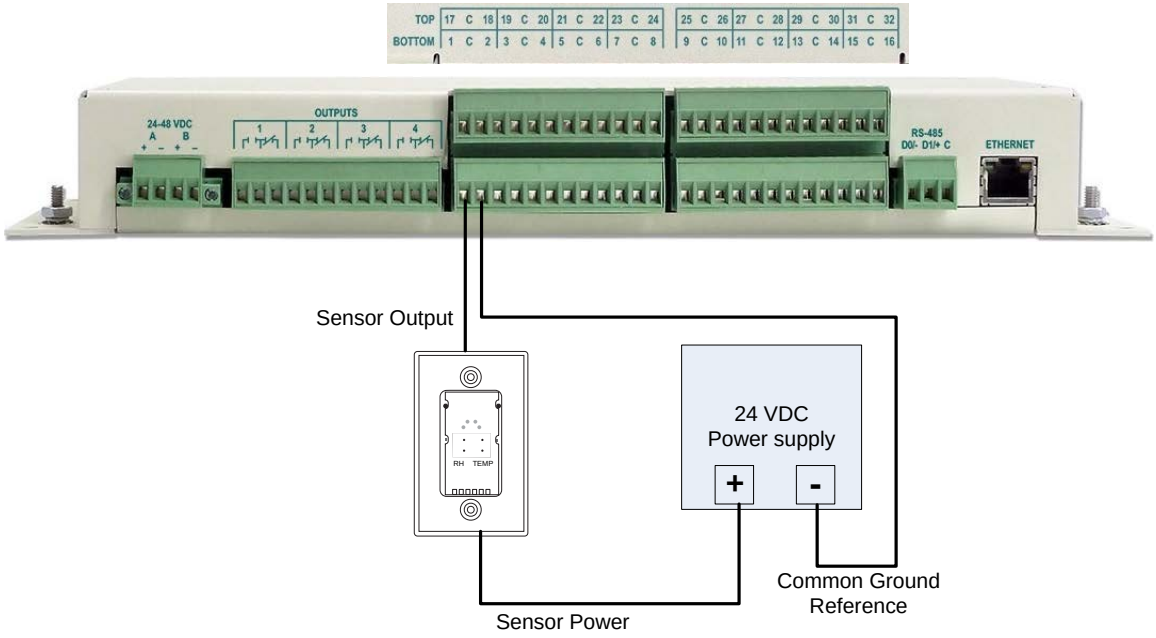


Figure 3 - Wiring Voltage Sensors

3.4.3 Current Sensors

The TELSEC MINI PRO can read and scale any linear current input from 0 to 20 mili Amps. An external 249 ohm resistor (recommend 1% tolerance) is required to convert the signal to voltage and will require an external voltage source to power the sensor. Contact Quest Controls for the Input Scaling spread sheet to determine the correct number for the Low and High Custom scale factors.

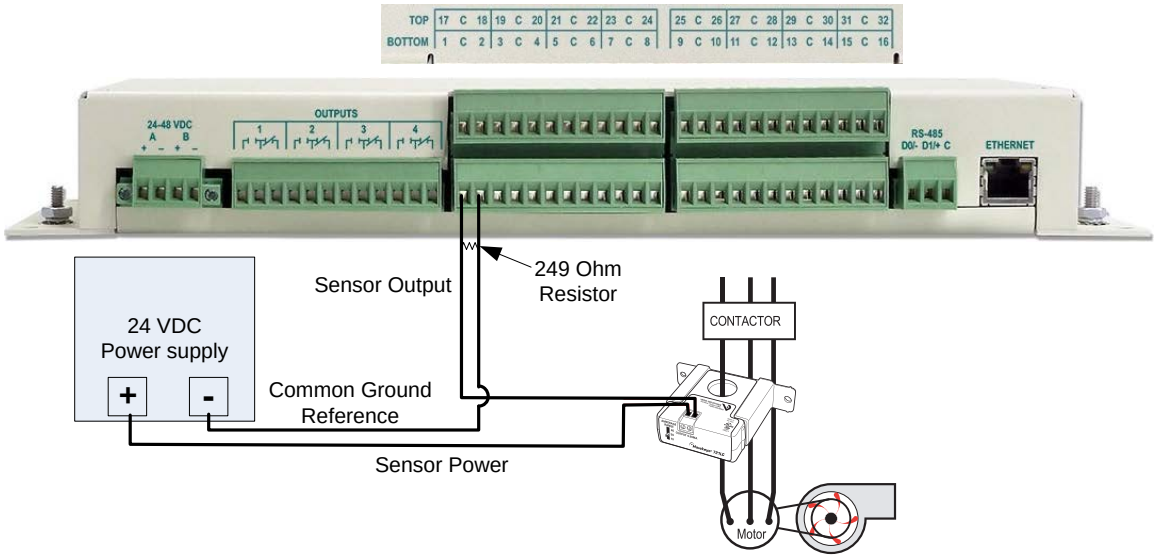


Figure 4 - Wiring a 4-20mA Sensor

3.4.4 Contact Closures

The TELSEC MINI PRO supports dry contact closures or wet contacts up to 65 VDC. A *wet* contact is an input where there is an external voltage present. A *dry* contact has no voltage present and the MINI PRO provides the sensing voltage. The detection point for determining ON/OFF status is greater than 2.8 VDC and less than 0.8 VDC. There is no transition when the voltage is between these two values. Both wet and dry input types are connected between the input terminal and a common terminal. For Wet inputs the voltage must be between 0VDC and up to +65VDC. Negative voltages are not supported. Make sure to define the input properly for either "Wet" or "Dry" contact closures to ensure correct operation.

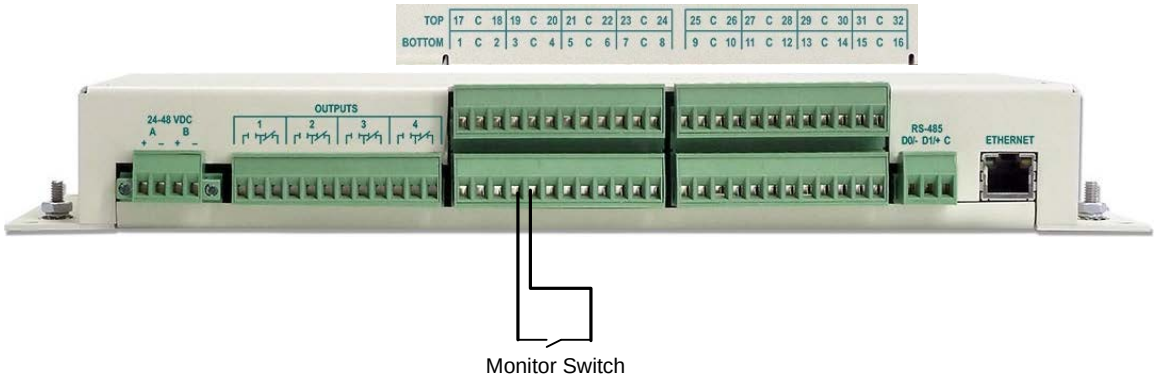


Figure 5 - Wiring Contact Closures

3.5 Wiring for Modbus

1. Connect no more than 32 Modbus devices to the Modbus cable network
2. The maximum overall Modbus cable network length is 3,000 feet.
3. For normal applications, use Belden Cable #8102 or equivalent. This cable has two twisted pairs and a separate foil shield. For applications requiring a more mechanically robust cable, use Belden Cable #9842. This cable has two twisted pairs, a separate shield and a separate braided shield.
4. Use one of the twisted pairs for the D0 (-) and D1 (+) connections and use the second twisted pair for the C/Common connections. The cable shields must never be used for the C/Common connections.
5. All of the D0 (-) pins from every Modbus device on the network must be connected together. The same is true with the D1 (+) pins, and the C/Common pins.
6. Connect the Modbus devices together in a daisy-chain configuration only. In this configuration, the cable from the first Modbus device connector goes directly to the connector of the second Modbus device, then from that connector directly to the connector of the third Modbus devices, and so on. No star, ring or tree cabling network configurations, or additional cable stubs are allowed. See Figure 7 below.
7. Connect all of the cable shields together so that they form one continuous connection from one end of the Modbus cable network to the other. If a braided shield is also included in the cable, then connect all of them together as well. If there is a mix of braided and non-braided shields in

the cabling network, then connect the braided shields together and then to the foil shields of the nearest non-braided cable. At no time are any shields to be left floating.

8. At the MINI PRO, connect the cable shield to the protective earth ground. The cable shields must not be connected to earth ground anywhere else in the cabling network except at this point.

3.6 Line Termination

1. At each end of the Modbus cable network daisy-chain, connect a 1/2W 120 ohm resistor across the D0 and D1 conductors.
2. If the MINI PRO is at one end of the Modbus cable network, then move jumper "J4" to the 1-2 position (Default) which enables the built in End of Line resistor. If the PRO is not the last device on the Modbus cable network, then move "J4" to the 2-3 position. See Figure 6 and Figure 7 below. No more than 2 terminations are allowed per Modbus cable network.

3.7 Line Polarization

When there is no data activity on an RS-485 balanced pair, the lines are not driven and, thus susceptible to external noise or interference. To insure the receiver line stays in a constant state, when no data signal is present, some devices need to bias the network. Polarization of the pair must be implemented **at one location for the entire Serial Bus**. Generally this point is at the master device. Other devices must not implement any polarization. Refer to the manual of the device you are monitoring to determine if line biasing is required. Move jumpers J5 and J8 on the MINI PRO to position 1 & 2 (default) to enable line polarization. Refer to Figure 6.

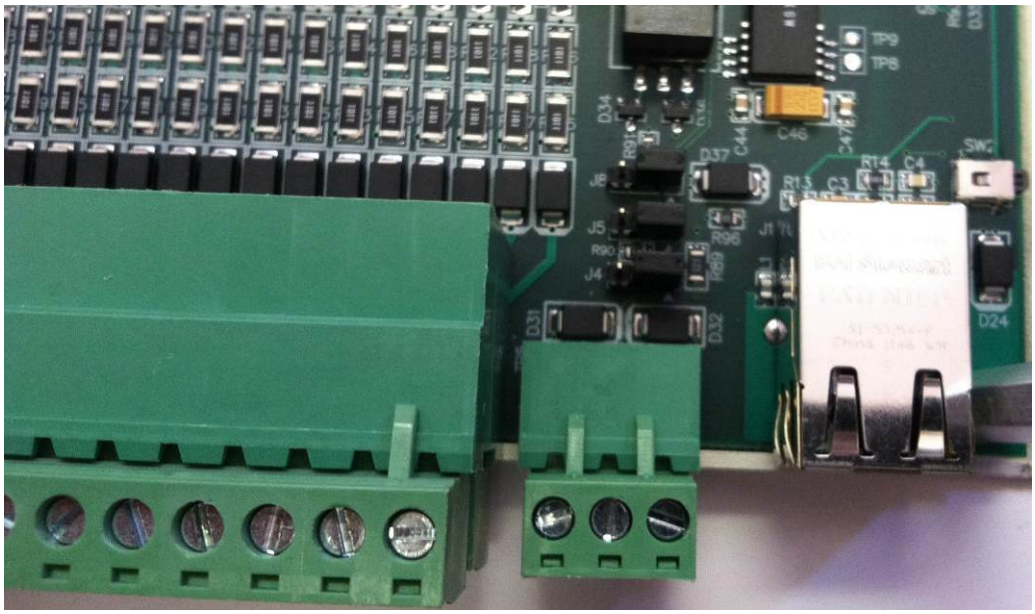
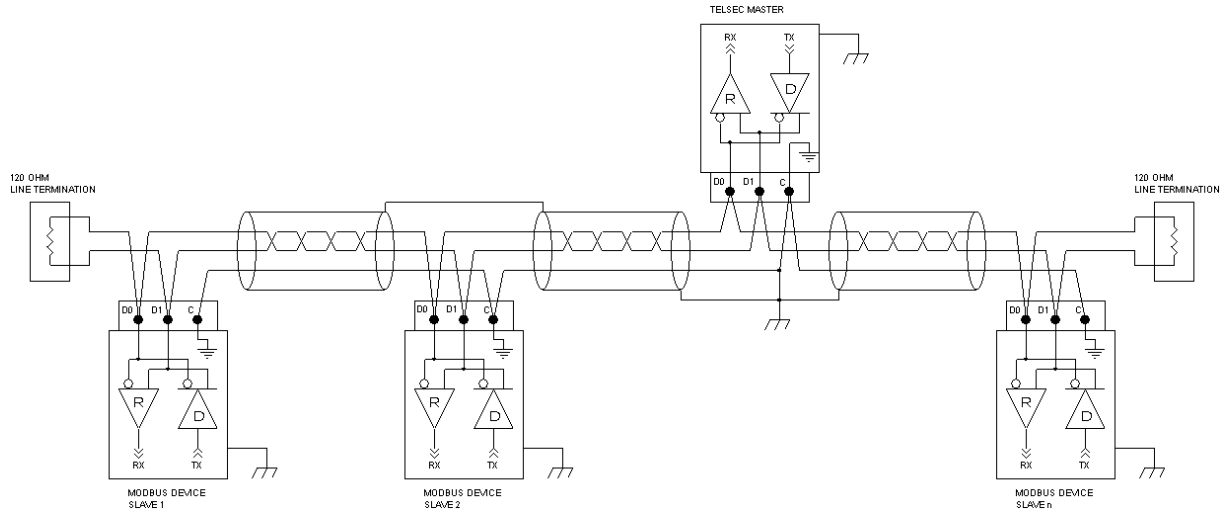


Figure 6 - Modbus End of Line and Line Polarization Jumpers

Drawing A - shows the TELSEC MINI PRO in the center of the chain



Drawing B - shows the MINI PRO on the end of the chain.

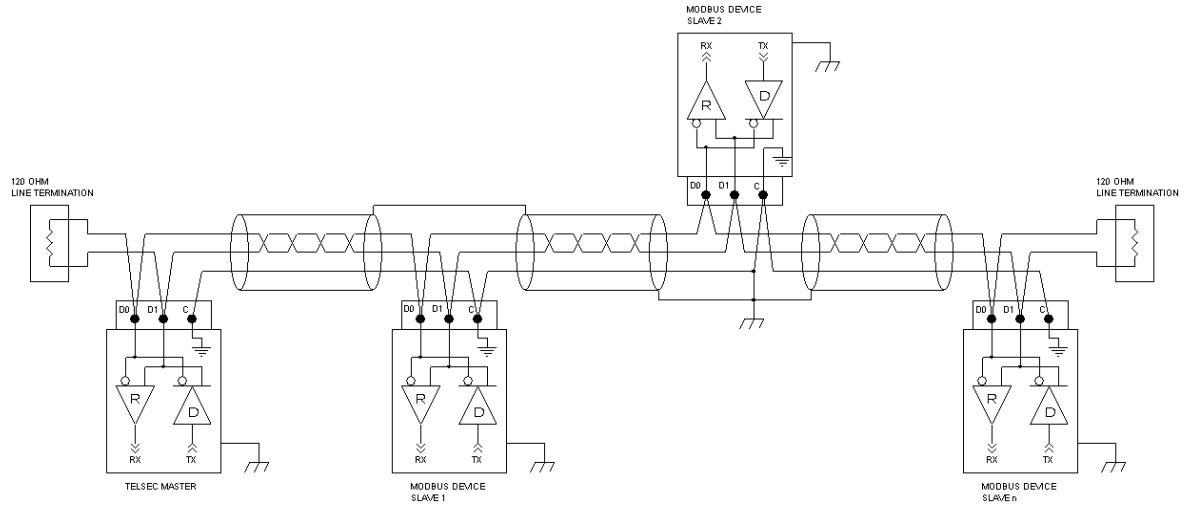


Figure 7 - Typical Modbus Network

3.8 Wiring Outputs

There are four form C relays available for control of external devices based upon alarm conditions. The relays are energized in their normal operating state and de-energized when an associated Alarm Point is true (active) or if power is lost to the MINI PRO. This relay configuration creates a “fail on” condition. Place wire between the common and normally open or normally closed terminals for each output on the MINI PRO. The relays are designed for Class 2 wiring and are rated for a maximum of 1 amp at 24VAC or 30VDC, 0.3 amps @ 60VDC.

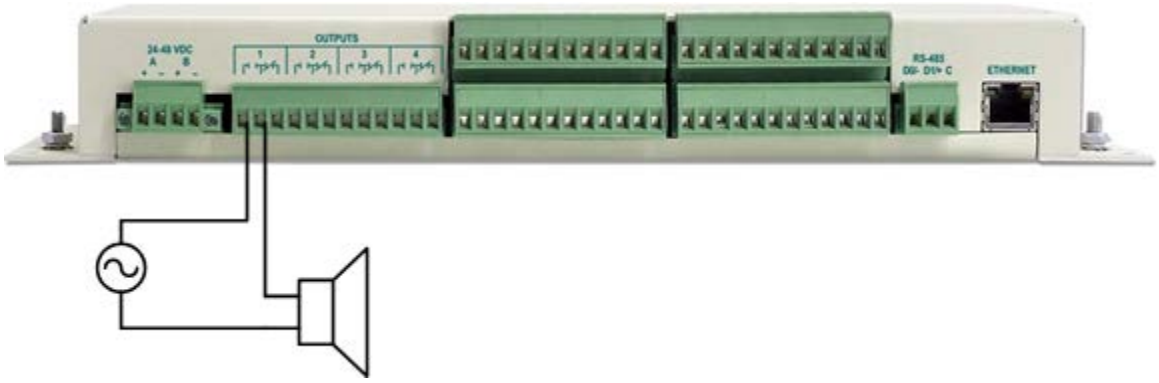


Figure 8 - Wiring Outputs

4 Local Operation

4.1 Power LED

Once the TELSEC MINI PRO is installed, powered, and connected with an Ethernet connection, the system will start operation based on the program controlling the unit. Under normal operation the green Power LED will flash at one second intervals to indicate the system is operating properly. Occasionally there may be a pause in this operation if the system is saving data to flash memory. If the LED is off for longer than one minute then check the power connection and cycle power to the unit. If the LED is constantly on longer than a minute then cycle power to the system to see if it goes back to normal operation of flashing the LED.

4.2 Alarm LED

The red alarm LED will be illuminated when any of the alarm points are in alarm. This LED does not provide notification of the state of the control relays since an alarm point may be in alarm, but not associated with an output. If this LED is illuminated, then log into the web server on the MINI PRO and review the active alarm log on the home page.

4.3 Relay Outputs

The default for relay outputs are energized under normal conditions and de-energized when the system does not have power or when an Alarm Point associated with the relay is active (in alarm). The normally

open/normally closed terminations on the board refer to this “normal” operating state. There are four outputs that may be associated with any alarm points. The logic is such that when any associated Alarm Point is active, the relay is de-energized and will remain in that state until all associated Alarm Points are cleared (no longer active). The output(s) can be used to notify other equipment of alarm conditions or to turn on and off equipment at the site based upon alarm conditions. For example: turning on an exhaust fan if the temperature exceeds a threshold.

4.4 Restoring to Factory Defaults

The TELSEC MINI PRO has a small access hole on the right side for the cold start switch. Holding this switch in for 5 seconds during a power up (cycle power off then back on) will cause the system to erase all programmed settings and go back to the factory defaults. During the Cold Start process, you will see both the power LED and Alarm LED flash simultaneously every second. After the five seconds, the power LED will be solid and the alarm LED will be out. Once the cold start is completed, the system will return to normal operation with the power LED flashing.

5 Communicating with the MINI PRO

Connect a standard Ethernet cable between the TELSEC MINI PRO and to your local Ethernet switch or router. You can also direct connect to the system with your PC using a crossover Ethernet cable and setting a static IP address on your PC. The MINI has a default IP address of 192.168.1.31. Use this address to log into the unit and then change the IP address to a new permanent setting if required. See Appendix A – Setting a Temporary IP Address for information on setting a temporary address if you are unable to use the default.

5.1 Connecting to the System

The built-in web server uses a *username* and *password* combination to authenticate a user and allow access. No information will be shown without proper authorization. The default username is **User** and the password is **user.** The username and password are case sensitive so make sure your caps lock key is turned off. In addition to the user password, there is an *Administrator password* that must be entered in order to gain access to any Admin functions such as programming alarms and configuring communications. The default Administrator username/password is **Admin** and **admin**.

Figure 9 - Log in Screen

5.2 Web Page Navigation

Upon initial log into the web server, the MINI PRO will present the Home Page. All pages use frames where the top and left navigation side remains the same and the center section changes depending on the screen requested. This minimizes the amount of data that has to be sent to display the chosen page. All available page choices will be listed in the blue navigation bar on the left of the page. On some pages you have the option of an additional link in the center section for action specific to the data you are reviewing. An example would be a link to download the Alarm Log while reviewing the Active Alarm page.

5.2.1 The Home Page

After you log in with your username and password, the MINI PRO will display the Home page. This page can also be displayed if you click on the HOME link or at any point that you press the Refresh button on your browser. The home page will show Active Alarms and Site Information. See Figure 10.

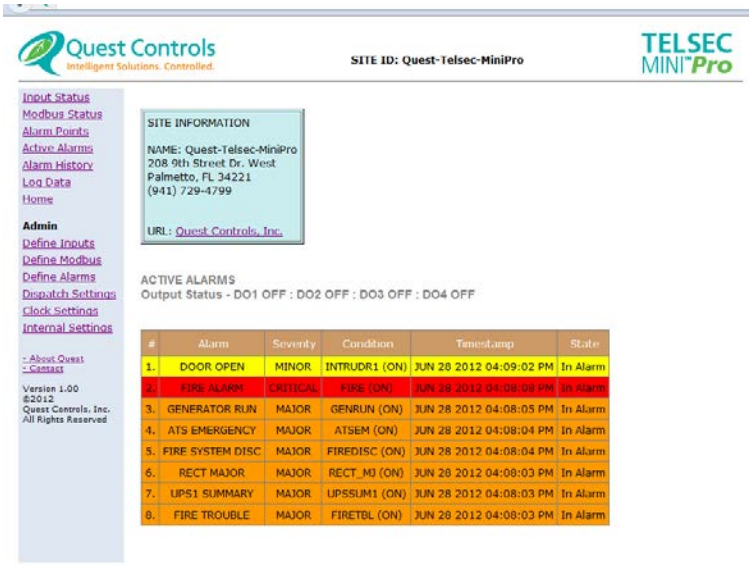


Figure 10 - The TELSEC MINI PRO Home Page

5.2.2 Site Information

A teal colored box is provided to put site specific information such as the site name, address, phone number and contact number. In addition, a user programmable Universal Record Locator (URL) is available to allow you to link to another web page. This might be a maintenance page, directions to the facility via a mapping site, or connectivity to other Ethernet enabled devices such as web cameras. This information is programmed through the Web Server Setup page (see Figure 11).

5.2.3 Active Alarms

The table on the Home page is Active Alarms. Any active alarm conditions are also displayed on the main page. Alarms are color coded based on severity. Critical alarms are shown in red, major alarms are shown in orange and minor alarms are shown in yellow. If the page doesn't display any alarms under the Active Alarm header then there are no active alarms present.

5.2.4 Output Status

The Output Status line shows the ON/OFF value of each relay output. Outputs are turned on based upon an alarm program (AP) that is defined to control the output is active or true. The status of the outputs is displayed on the Home page, Active Alarm page and Alarm History page.

6 Programming the MINI PRO

Programming the MINI PRO consists of setting the IP address, setting the system clock, configuring the alarm dispatch, defining the inputs and programming the alarm configurations. This section will provide detailed information on these steps to properly configure your MINI PRO system.

6.1 Web Server Setup

The Internal Settings link is used to display the current configuration for the MINI PRO's web server and Ethernet connectivity. This page is used by the system administrator to set the IP and site specific information for the system. Refer to Figure 11 for the fields described in this section. The system will present a username/password prompt if you previously have not entered the Administrator level password (or have not configured your browser to store that information.)

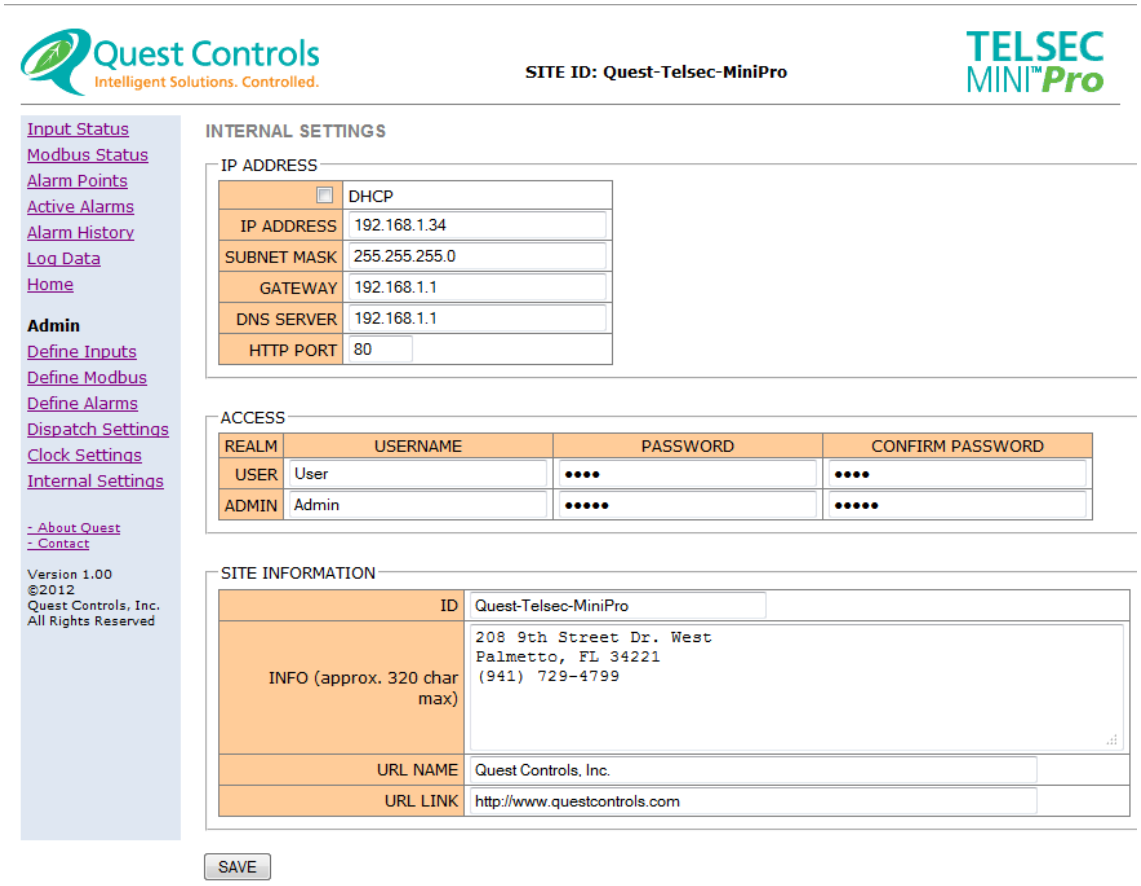


Figure 11 - Web Server Setup

6.1.1 IP Address

The TELSEC MINI PRO supports DHCP to get an address assigned automatically or you can enter in a Static IP address and appropriate information. If you use DHCP, the system will request and address from your server. If no DHCP activity is detected, the system will default to what is loaded in the static settings. For a static address, enter the IP address, subnet mask, gateway address and DNS server address (if using domain names for SMTP and NTP). Additionally, the setup page allows you to change the IP port number for web browser. Port 80 is the default HTTP port and should only be changed if you require a different port number for your network scheme.

6.1.2 Password

The password field is case sensitive and is used to change the username and password for logging into the system. The default values for the User realm are **User** for the username and **user** for the password. The Admin realm username and password are **Admin** and **admin.** Note: the Password and Confirm Password fields will not echo the characters you typed.

6.1.3 Site Information

This section is used to enter site specific data that appears on the HOME page in the teal box. Additionally, the Site ID field will be displayed in the top section (mast area) of all MINI PRO web pages (as well as email and SNMP alarm messages.) Enter the site identification to be displayed in the ID field.

In the Info box enter any site specific data you want displayed on the HOME Page. Items such as the address, site phone number, and contact person are entered in this section. The URL name is a user programmable field where you can enter a description of the hyperlink displayed in the teal box. The final field is the actual URL address. Enter it exactly as required to access the site. The best way to do this is to open a separate browser window, navigate to the desired location and then copy the address from the address bar to this box. Examples of links would be directions to the facility, other IP connected devices such as a network camera page, or a maintenance log page.

6.1.4 Saving Information

After entering the appropriate information you must click on the SAVE button for your changes to take effect. All changes **will be** discarded if you navigate away from this page without saving. When you click on the SAVE button, the system will accept your changes and then present a "system restarting, reconnect in N seconds" message (N may vary based on the different settings.) Note if you change the IP address to another subnet, the system will be unable to send the restarting message. Your browser will timeout and show an error page. Reconnect to the MINI PRO at the new IP address after waiting at least 60 seconds. If the same page appears after pressing SAVE, then one of the fields you entered was not accepted. Correct the error and resubmit the changes.

NOTE: If you have accessed the MINI PRO using a cross-over cable and your laptop, you must change your laptop static IP settings to compliment the new address of the MINI PRO. For example, if you set the address to 10.10.10.51 with a subnet of 255.255.255.124 and gateway of 10.10.10.50, then you must assign your laptop to an address close to the TELSEC MINI PRO address to continue to communicate (you could use 10.10.10.50 for your IP with the same subnet).

6.2 Setting the System Clock

The Set Clock link allows you to set the system clock. The system will present a username/password prompt if you previously have not entered the Admin password. The clock is used to time and date stamp all alarms and historical log entries. There are drop down boxes for setting the date and time as well as the time zone. You must click on the SET button to send the changes to the MINI PRO.

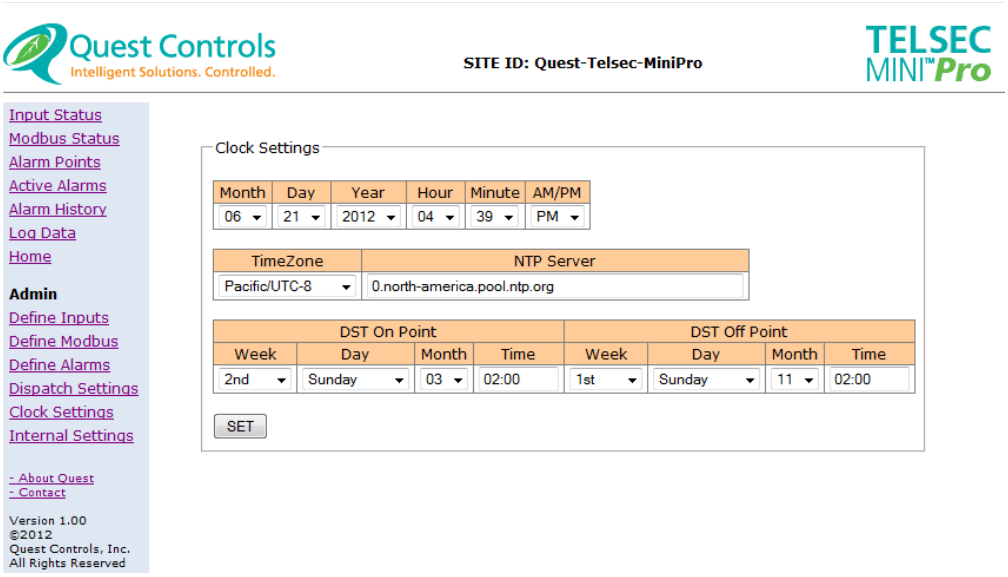


Figure 12 - System Clock

6.2.1 Using NTP

The MINI PRO supports Network Time Protocol (NTP) as an option. If you have access to an NTP server then enter either the IP address or domain name of the NTP server. To use the domain name, you must have entered a DNS IP address on the Internal Settings page (see 6.1.1).

6.2.2 Daylight Savings

The MINI PRO will automatically adjust for Daylight Savings. The default is to have DLS on to the current US definition. You can change these settings using the dropdown boxes. To turn off DLS, select the word NONE in the "Week" drop down box in the "DST On Point" section and also in the "DST Off Point" section.

6.3 Alarm Dispatch Settings

This page is used by the administrator to setup the alarm dispatching of the MINI PRO system. The system will present a username/password prompt if you previously have not entered the Admin level password. The MINI PRO can send alarms via Email and/or SNMP. This page will allow you to setup the global parameters and then the specific locations and filters for sending alarms. Refer to Figure 13 for configuring the alarm dispatching.

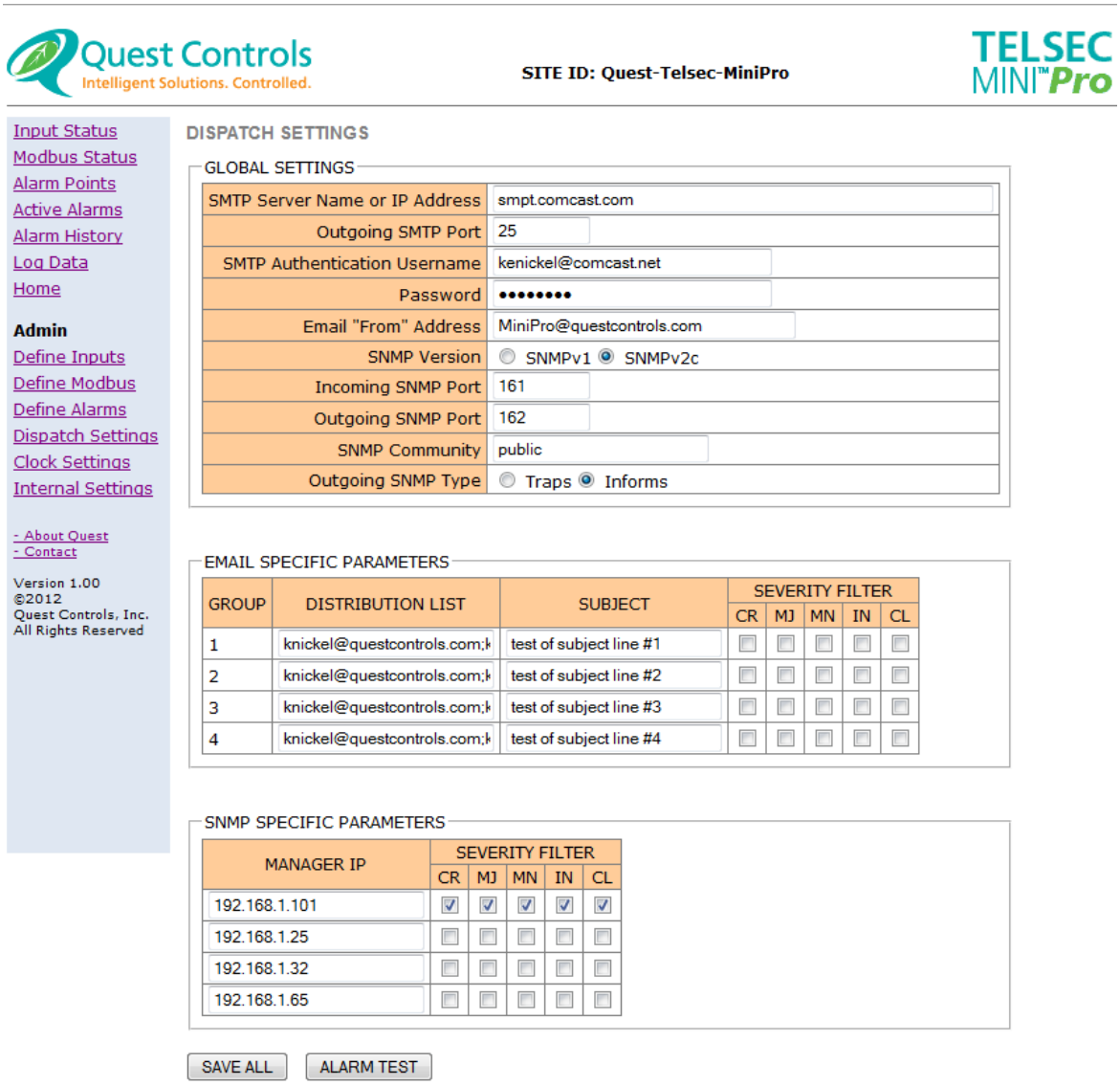


Figure 13 - Alarm Dispatch

6.3.1 Global Settings

The global settings are used by all of the specific address parameters when sending the alarms. These settings must be entered so the system will know how to deliver the alarms.

6.3.1.1 SMTP Server Name or IP Address

The TELSEC MINI PRO uses Simple Mail Transport Protocol (SMTP) for sending emails to the appropriate people. Enter the IP address of the SMTP server so the system can send the emails for delivery. The system will support a DNS name or an IP address. If using a name, make sure you enter a DNS server address under the Web Server Setup page (Figure 11 - Web Server Setup).

6.3.1.2 SMTP Port

The default SMTP port number is 25; however some email servers may require a different port number. This field allows you to change the port number to the required number for your server.

6.3.1.3 SMTP Authentication

Some mail servers require a *username* and *password* to log in prior to sending the email. Enter the username and password in the appropriate fields if required, otherwise leave the fields blank. Note the web page will not display the characters you enter in the password field.

6.3.1.4 Email "From" Address

Enter the email From address for the MINI PRO. This address is typically the Site ID@<domain name>. Example: TELSECMINIPRO1000@questcontrols.com. Try to pick an address that will be unique for this site so the people receiving the email will be able to reference the alarm by the From Address.

6.3.1.5 SNMP Version

The TELSEC MINI PRO system supports sending alarms via SNMP traps in either v1 or v2c. Select the version your trap alarm receiver will use.

6.3.1.6 Incoming SNMP Port

The incoming SNMP port is 161 by default, but can be changed to another IP port number if required. Setting the port number to 0 will cause the system to not respond to any SNMP queries. This in affect turns off the SNMP get function for status. You can still send alarms via SNMP, but the system will not respond to queries.

6.3.1.7 Outgoing SNMP Port

The default outgoing IP port number for traps is 162. You can change this to another port number if your trap server requires a different port number.

6.3.1.8 SNMP Community

The community variable is used for SNMP gets (reads) and sets (writes). This variable needs to match with your SNMP server in order to allow access to the system. The TELSEC MINI PRO uses the same variable for gets and sets.

6.3.1.9 Outgoing SNMP Type

The TELSEC MINI PRO supports either Trap or Inform notifications when sending alarms via SNMP. If you select Informs, then the system expects to get a response back from the trap receiver confirming the receipt of the alarm message. The system will continually resend the alarm if it does not get an acknowledgement of receipt from the trap receiver. Only select Informs if your SNMP trap receiver supports this function.

6.3.2 Email Specific Parameters

This next section is for entering specific data and filters to customize your alarming via email. You can setup for different user groups and specify which alarm types will be sent to each group.

6.3.2.1 Distribution List

Each group can contain multiple email addresses. There is room for 120 characters per group. Enter each email address desired and separate them with a semicolon. Make sure you do not add any additional spaces before or after the semicolon used to separate the individual email addresses. Some email servers are very particular, and errors in the distribution list could result in none of the recipients getting email.

6.3.2.2 Subject Field

A programmable subject line is available so you can add information you want sent with the alarm message. The subject field in the actual alarm sent will always have the alarm severity followed by the information you program in the subject field.

6.3.2.3 Severity Filter

These check boxes allow you to apply filters to only send the appropriate alarm level. CR is for Critical, MJ for Major, MN for Minor, IN for Informational and CL for Cleared alarm conditions. Check the boxes for the alarm severities you want to send. No alarms will be sent unless you check at least one of the severity boxes.

6.3.3 SNMP Specific Parameters

The TELSEC MINI PRO can send SNMP traps to four different servers. Each server address can be segregated based upon severity of the alarm.

6.3.3.1 Trap Server IP address

Under the Manager IP column enter the IP address of the trap receiver. You need to use an IP number (names not currently supported.)

6.3.3.2 Severity Filter

These check boxes allow you to apply filters to only send the appropriate alarm level. CR is for Critical, MJ for Major, MN for Minor, IN for Information and CL for Cleared alarm conditions. Check the boxes for the alarm severities you want to send. No alarms will be sent unless you check at least one of the severity boxes.

6.3.4 Saving Alarm Dispatch Information

After you enter the appropriate information you must click on the SAVE ALL button for your changes to take effect. All changes will be discarded if you navigate away from this page without saving first.

6.3.5 Testing Email Addresses

The web page has an Alarm TEST button that can be used to send a test email and trap to all programmed addresses. You must save the settings first by pressing the SAVE button and then you can use the test function. Once you have pressed the test button, you can verify that an Informational (IN) test email was sent to everyone in your distribution list. Also verify that a test trap was received at all programmed trap servers. Correct any errors, press save again and then retest until all test messages are received. Note that SMTP Email servers can often delay the delivery and/or receipt of emails.

6.4 Defining Inputs

Click on the Define Inputs link to define the inputs. The page will display the current names and settings for each input along with an option to upload a file, download a file and save your changes to flash. The upload option allows you to send a text file using TFTP (trivial file transfer protocol) to program the inputs and alarm points all at once. See section 8. The Download button will download a text file to your browser with all of the input definitions, alarm point parameters, network and dispatch settings. Clicking on the current name of an input will bring up the change window and allow you to modify the settings. Click on the “Save to Flash” button after you have made all of your input modifications.

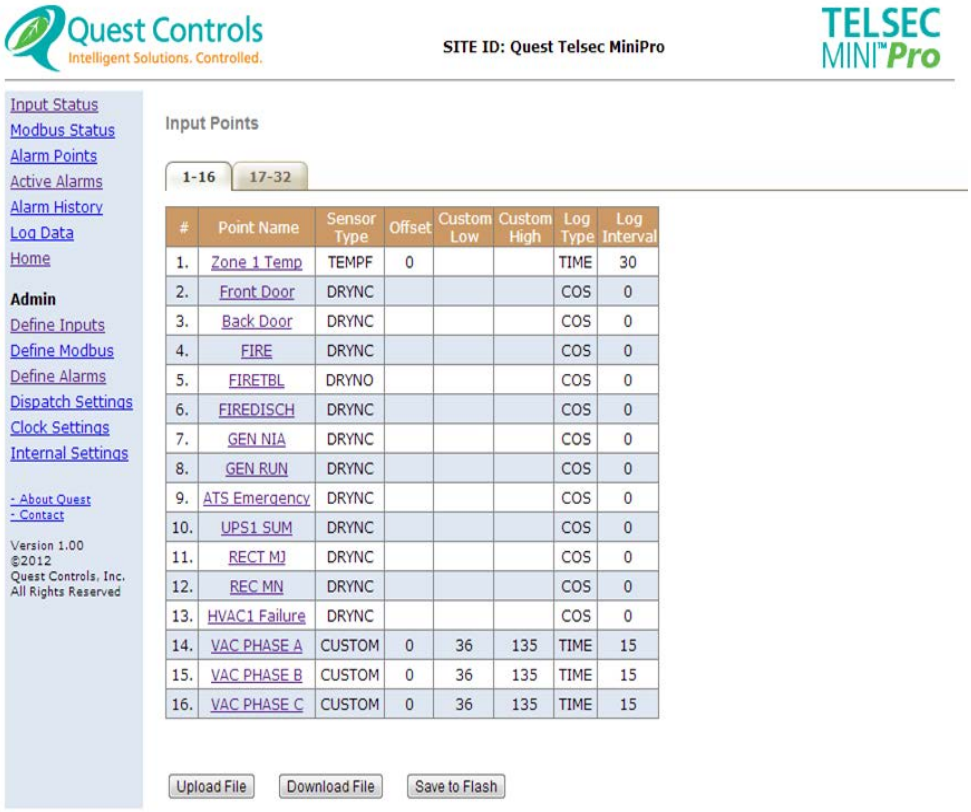


Figure 14 - Define Inputs Page

6.4.1 Change Input Page

Clicking on the name of the input will bring up the Change input page. Use this page to modify the settings for the input or to clear the timers if the point is defined as a digital.

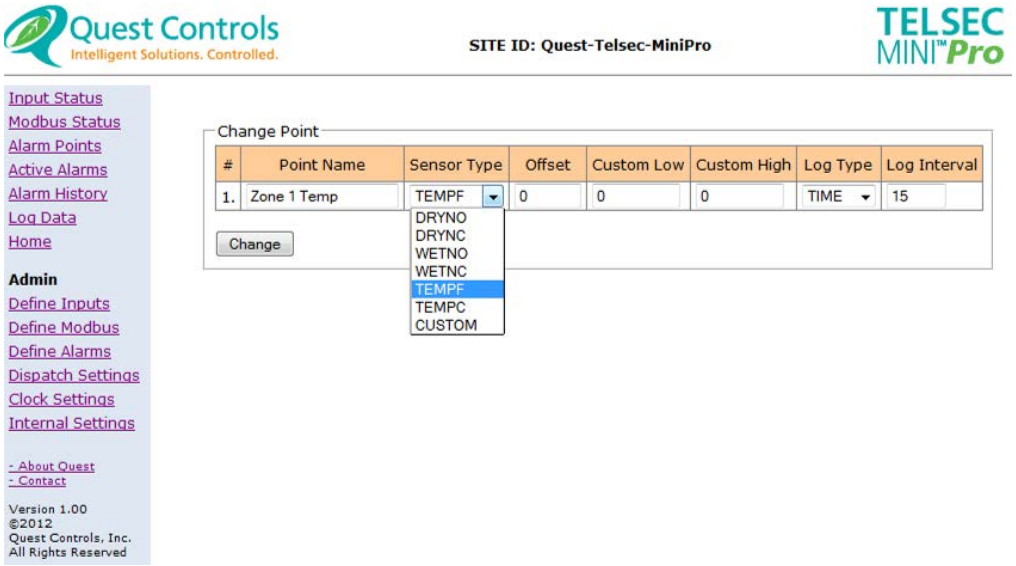


Figure 15 - Change Input Point Page

6.4.1.1 Point Name

The point name will allow up to thirty two characters to describe the point being monitored. The name is case sensitive and will be displayed exactly as you typed it.

6.4.1.2 Sensor Type

The sensor type drop down will list the available choices for the input. They are as follows:

DRYNO	A dry contact closure that is normally open. This input will show an OFF value when open and an ON value when closed.
DRYNC	A dry contact closure that is normally closed. This input will show an ON value when open and an OFF value when closed.
WETNO	A wet contact closure that is normally open. A wet contact is an input that provides its own voltage. A value greater than 2.8 VDC is determined to be in the ON state and a voltage less than 0.8VDC is deemed to be in the OFF state. The maximum voltage allowed on the input is 65VDC.
WETNC	A wet contact closure that is normally closed. A wet contact is an input that provides its own voltage. A value greater than 2.8 VDC is determined to be in the OFF state and a voltage less than 0.8VDC is deemed to be in the ON state. The maximum voltage allowed on the input is 65VDC.
TEMPF	The MINI PRO supports 10k Type III thermistors. Choosing TEMPF will display readings in Fahrenheit.
TEMPC	The MINI PRO supports 10k Type III thermistors. Choosing TEMPC will display readings in Celsius.
CUSTOM	The custom scale allows you to enter your own scale using the Custom Low and Custom High fields. This allows you to create a scale for any sensor that provides a signal between 0-6 VDC or 0-20 milliamps. Note the scale is a linear interpolation between the low and high values.

6.4.1.3 Offset

The offset field is used for any analog sensor to correct the reading of the input. The MINI PRO will read the input and add the offset value automatically so all alarms, logging and display screens show the corrected value. The field will accept values from -999 to 9999.

6.4.1.4 Custom Low

This field is used when selecting the CUSTOM input type and will be the value displayed when the input is reading the minimum value or 0VDC in. The MINI PRO will use this value along with the Custom High value to create a scale and display the sensor in the correct engineering units. The value range is -32767 to 32768 and must be different than the Custom High.

6.4.1.5 Custom High

Used in conjunction with the Custom Low field to create a scale for the sensor attached to the input. The High value is the reading the sensor would have if the input is at maximum input value or 6VDC. Quest has created a special Excel spreadsheet for calculating the minimum and maximum values based

on your sensor output. Contact Quest Controls for additional information on what values to use for your specific sensor. The value range is -32767 to 32768 and must be different than the Custom Low.

6.4.1.6 Log Type

Choose between TIME for a timed interval, COS for change of state or NONE to disable the logging for the input. The TIME option is best for analog sensors to log on a user specified interval. Using COS for digital inputs will optimize your logging to only put entries in the historical log when the point changes its ON/OFF state. If you select COS for an analog input, the system will log whenever the input value read changes 4 counts on the A/D converter. Needless to say, this will fill up your log rather quickly if you decide to use COS on an analog point.

6.4.1.7 Log Interval

This is the logging interval in minutes when you select a log type of TIME. The field will allow values between 1 and 120 minutes for the interval.

6.4.1.8 Saving Input Point Definitions

Press the change button to send the new definition to the MINI PRO. The MINI PRO will accept your changes and display the new settings on the Define Input page. At this point, you changes are saved in battery backed memory. You must press the "Save to Flash" button to permanently write all changes to flash once you have completed changing all of your inputs.

6.5 Defining Modbus

Click on the Define Modbus link to define the Modbus inputs. The page will display the current names and settings for each input defined along with an option to upload a file, download a file and save your changes to flash. The upload option allows you to send a text file using TFTP (trivial file transfer protocol) to program the inputs and alarm points all at once (See section 8). The Download button will download a text file to your browser with all of the input definitions, alarm point parameters, network and dispatch settings. Clicking on the name of a Modbus point will bring up the change window and allow you to modify the settings. Click on the "Add New Row" link located below the table of points to add a new Modbus point. Make all of your changes and additions and then click on the "Save to Flash" button to write all the changes to the non-volatile flash memory.

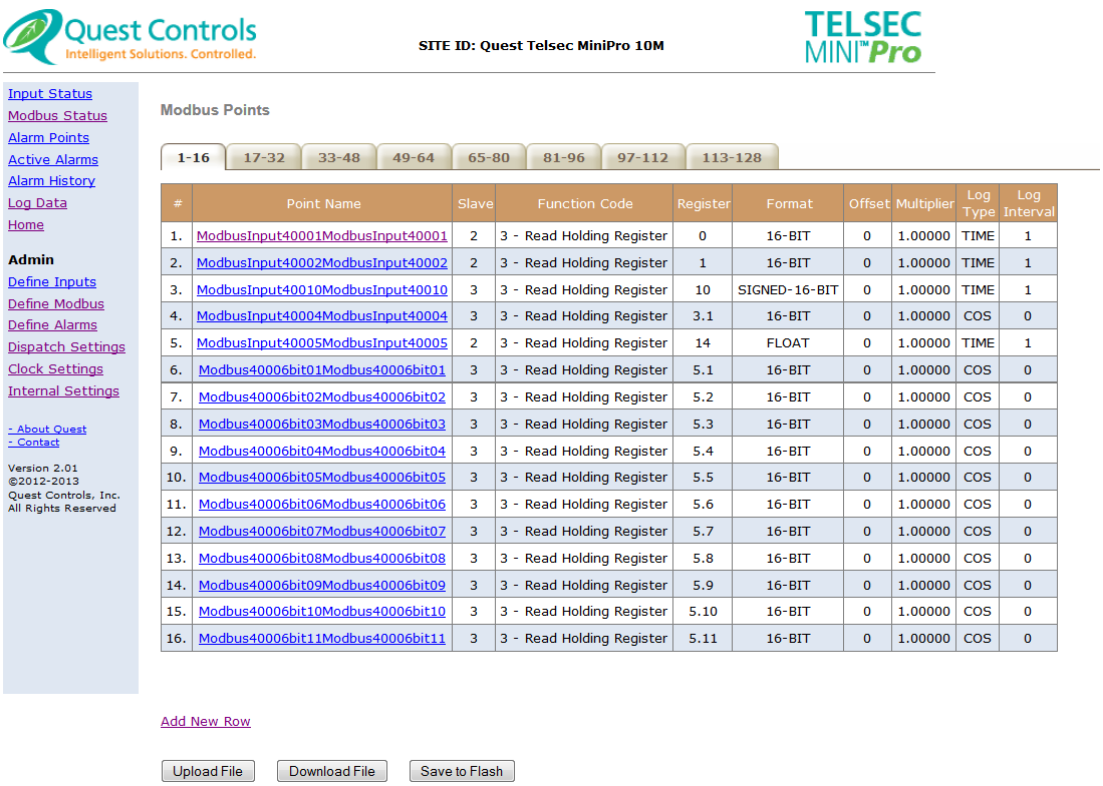


Figure 16 - Define Modbus Points

6.5.1 Change Modbus Point Page

Clicking on the name of an existing point or the “Add New Row” button, will bring up the Change point page. Use this page to modify the settings for the point. To remove an existing point, enter the word REMOVE in the point name field and click on the change button.

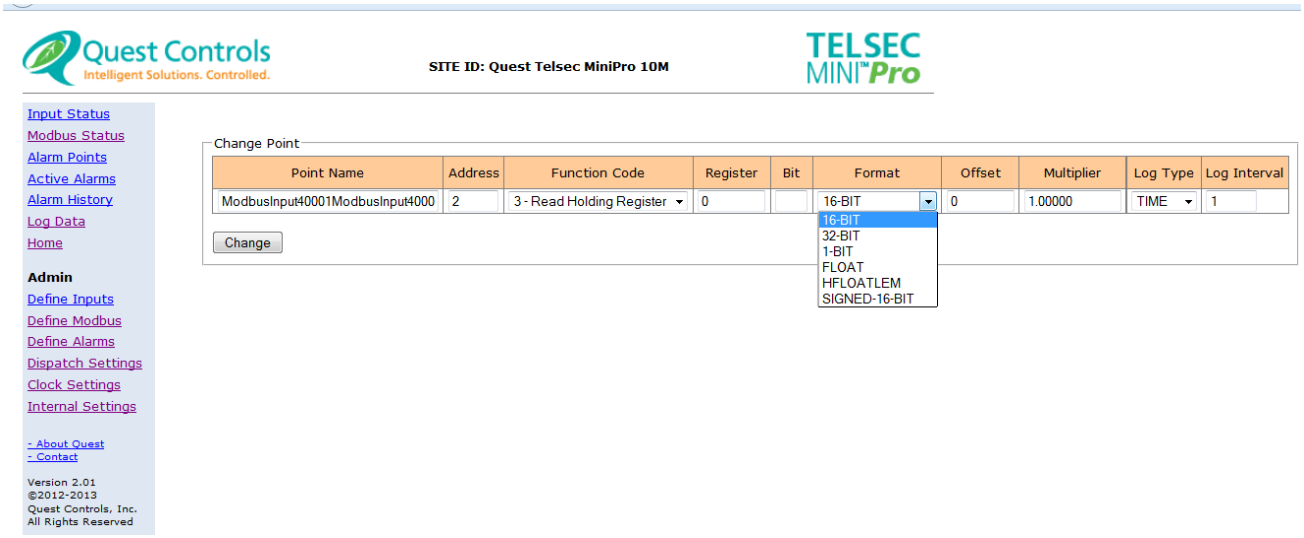


Figure 17 - Change Modbus Point Page

6.5.1.1 Point Name

The point name will allow up to thirty-two characters to describe the point being monitored. The name is case sensitive and will be displayed exactly as you typed it.

6.5.1.2 Address

This is the Modbus address of the device you want to monitor. Every Modbus device must have a unique address in the range of 1-254.

6.5.1.3 Function Code

The MINI PRO supports reading four Modbus register types. Each type has a different function code. Select the register type you want from the following available choices:

Function 01 for Reading Modbus Coil registers
Function 02 for reading Modbus Discrete Input registers
Function 03 for reading Modbus Holding registers
Function 04 for reading Modbus analog Input registers.

6.5.1.4 Register

The MINI PRO will accept register number from 0 to 65535. Enter the register number that contains the data you want to monitor. Note some Modbus device documentation may show their data using the conventional format of assigning register ranges such as:

Coil Inputs @ 00001-09999 (single bit registers)
Discrete Inputs @ 10001-19999 (single bit registers)
Input Registers @ 30001-39999 (16 or 32 bit registers)
Holding Registers @ 40001-49999 (16 or 32 bit registers)

To use a holding registers when the documentation displays number in this fashion, you would subtract 40001 from the number shown. Example: Generator Fuel on register 41010 would be Function code 3 and register 1009

6.5.1.5 Bit

Some devices store data as individual bits in a 16 or 32 bit register. This field will allow you to enter the bit position containing the data you want. Note that some devices number their bits 0-15 while others number 1-16. Our device uses 1-16 to indicate the bit position from the least significant bit (LSB) to the most significant bit (MSB). I.e. if you enter 5 then you mean the 5th available bit starting from the LSB. The Mini Pro will treat this input as a digital point and return the value of ON and OFF in the Web status page.

6.5.1.6 Format

Specify the type of register to be monitored. The MINI Pro supports single bit, 16 bit, 16 bit signed, 32 bit integer, half float and floating point registers. The format is tightly coupled with the register address entered above. Coil and Discrete inputs are always single bit. Input and Holding registers are either 16

or 32 bit. Refer to the user manual of the device you are monitoring to determine the available registers and the format used for each one.

6.5.1.7 Offset

The offset is applied to the Modbus value read and is used to correct or convert the values to the appropriate reading. The offset is applied after the multiplier has been applied. The field will accept values from -999 to 9999.

6.5.1.8 Multiplier

The multiplier is applied to the Modbus value prior to the offset and is used to convert integer values to the proper engineering units. The multiplier can be from 0.00001 to 999999. For example a Modbus register reads 100ths of a volt and you want volts. To accomplish this, use a multiplier of 0.01.

6.5.1.9 Log Type

Choose between TIME for a timed interval, COS for change of state or NONE to disable the logging for the input. The TIME option is best for analog registers to log on a user specified interval. Using COS for digital input registers will optimize your logging to only put entries in the historical log when the point changes its ON/OFF state. Selecting COS for an analog input will cause a log entry whenever the value changes. This could cause the history log to fill rather quickly.

6.5.1.10 Log Interval

This is the logging interval in minutes when you select a log type of TIME. The field will allow values between 1 and 120 minutes for the interval.

6.5.1.11 Saving Modbus Point Definitions

Press the change button to send the new definition to the MINI PRO. The MINI PRO will accept your changes and display the new settings on the Define Input page. From this point you can modify another existing point or add a new Modbus Point. Press the" Save to Flash" button after you have made all your changes and additions, to write the program to nonvolatile flash memory.

6.6 Define Alarms

The MINI PRO will allow programming of up to 544 unique alarm points. Each alarm point will create an alarm log entry when the point is true or active. The system will automatically log a Clear condition when the point is no longer true or active for the programmed Clear Delay time. From the Define Alarm Point page you can click on an existing alarm point name to change the program, add a new alarm point (Add New Row), upload a text file using TFTP, download the existing program parameters and save your changes to flash memory.

Figure 18 - Define Alarms Page

6.6.1 Adding/Modifying an Alarm Point

Clicking on either the name of an existing point or the Add New Row link will bring up the Change point page.

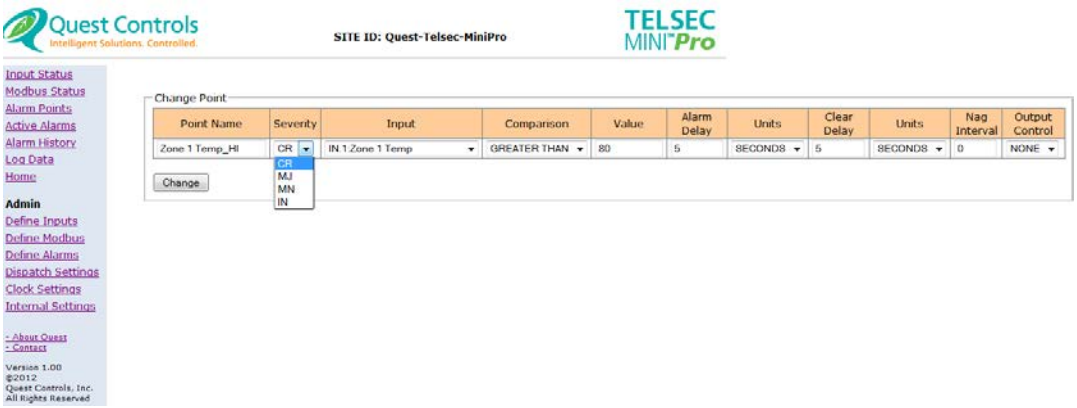


Figure 19 - Change Point Page

6.6.1.1 Point Name

The point name is a unique thirty-two character maximum name that will be displayed and sent in a message when the point goes into alarm. The name can be upper and lower case alphanumeric characters. There is one special name which is REMOVE. Entering REMOVE (all caps) in the name field will cause that alarm point to be removed from the list of alarm points.

6.6.1.2 Severity

The severity drop down will allow you to assign a severity level to the alarm when the point is true. The available options are:

CR = Critical alarm displayed in red on the alarm point status and alarm logs.
MJ = Major alarm displayed in orange on the alarm point status and alarm logs.
MN = Minor alarm displayed in yellow on the alarm point status and alarm logs.
IN = Informational alarm displayed in grey on the alarm point status and alarm logs

Note: Clear is not a choice because that will be the status of the point when it is not in alarm. Clear alarms display as green on the alarm point status and alarm logs.

6.6.1.3 Input Selection

The input drop down will show a list of all the inputs including Modbus inputs, with the names that were assigned to them. Each alarm point is unique and multiple alarm points can refer to the same input thereby creating various levels of alarming using different criteria. Select a point from the drop down that you want to use for the alarm point you are creating.

6.6.1.4 Comparison

The comparison field is used to compare the status of the input to the value field to the right of the comparison. When this condition is true (for the delay time) then the point is considered in alarm. The available choices are: Greater than, Less than, Equal To and Not Equal To.

6.6.1.5 Alarm Value

The Value field next to the Comparison field is where you enter the value you want to compare the input reading to. The field accepts constants from -999999 to 999999. For digital inputs use 1 to equal ON and a 0 to equal OFF.

6.6.1.6 Alarm Delay

There are two fields that make up the alarm delay. They are the Alarm Delay field and the Units field. They are used in conjunction with each other to create a delay time where the alarm point comparison must be true for the delay period. For the Alarm Delay field, enter a constant from 1 to 9999. This value along with the Units field to the right will determine the actual delay time. The Units field is a drop down box and will allow you to choose Seconds, Minutes or Hours.

6.6.1.7 Clear Alarms

Once an Alarm Point goes into alarm, it stays in the alarm condition until the comparison statement is no longer true for the Clear Delay time. Once this occurs, a clear event is entered into the alarm history log and traps/emails will be sent if the system is programmed to do so. There are two fields that make up the clear delay. They are the Clear Delay field and the Units field. For the Clear Delay field, enter a constant from 1 to 9999. This value along with the Units field to the right will determine the actual delay time. The Units field is a drop down box and will allow you to choose Seconds, Minutes or Hours.

6.6.1.8 Nag Interval

The TELSEC MINI PRO has a nag feature where if the alarm condition is still present, it will generate another alarm based on this interval. The field accepts values from 0 to 168, which represents the number of hours to wait before sending another alarm. A value of 0 means only send the alarm (trap or email) when the event occurs. A value from 1-168 will cause the system to resend an alarm every time

that alarm period is up. For example, a Nag Interval of 1 will cause the system to resend an alarm every hour if the alarm point is still in alarm condition.

6.6.1.9 Output Control

The TELSEC MINI PRO has four form C digital outputs that can be used for control of devices such as local warning lights, horns, and exhaust fans or to provide redundant alarming though telemetry overhead. The drop down box will allow you to choose NONE, RLY1, RLY2 RLY3 or RLY4. Multiple alarm points can control the same relay. The MINI PRO will look through all alarm points and activate the relay point if any of the Alarm Points associated with the relay are active or true. The relay will stay in the on (or active) state until all Alarm Points associated to the Relay are in the Clear condition.

6.6.1.10 Saving Changes

Press the Change button once you have entered data in all the fields. Pressing the Change button will send the data to the MINI PRO and bring you back to the Main Define Alarms page. From this point you can modify another existing point or add a new Alarm Point. Press the Save to Flash button after you have made all your changes and additions, to write the program to nonvolatile flash memory.

6.7 Define Outputs

6.7.1 Output Control Page

The ouput control page will show the name of the point, the default state of the output, the action, minutes remaining (for one-shot) and whether the output is locked out from being used with the alarm logic. Clicking on an output name allows the user to make changes to the output definition and to manually operate the output. Like the other IO program pages, the user can upload a file, download the program file or save changes to flash. Making changes on the output control page will require the user to press the Save to Flash button if they want to make the changes permanent. Note One-Shot is not a permanent option. The sytem will revert to the stored values after the one-shot action. Also a power failure/reset will immediately stop the one-shot action and clear the timer.

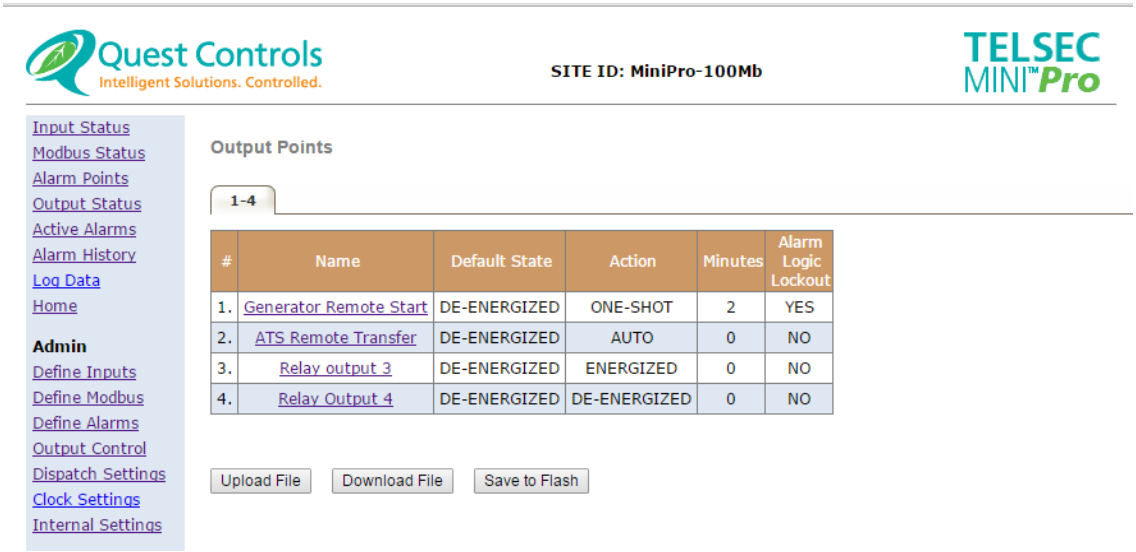


Figure 20 - Program Output Control

6.7.1.1 Name

a thirty-two character name for each output. The name is a hyperlink that allows the user to change the properties of each output.

6.7.1.2 Default State

This is the state the relay will be in when not being commanded otherwise manually or by an alarm stragegy. The options are:

Energized - meaning be energized norrmally and will be de-energized when in auto and an assigned alarm program is active or when using the one-shot function.

De-Energized - meaning be de-energized norrmally and will be energized when in auto and an assigned alarm program is active or when using the one-shot function.

6.7.1.3 Action

The user can choose the following actions for each output:

AUTO – In auto mode, the output will be in the default state until either an assigned alarm program is active or if the one-shot function is used.

DE-ENERGIZED – the output will always be de-energized until a user changes the value of the actioin field. Alarm program cannot override this option.

ENERGIZED – the output will always be energized until a user changes the value of the actioin field. Alarm program cannot override this option.

ONE-SHOT – This option along with the Minutes column will allow the user to change the status of the output for a time period. One-shot always does the opposite action of what is defined in the Default State column. At the end of the time period, the output will either go back to the default state if the previously saved action was Auto, or it will go back to energized or de-energized continously if that was the saved option.

6.7.1.4 Minutes

The user enters the number of minutes for the one-shot to last. Minutes can be up to 1440 minutes.

6.7.1.5 Alarm Logic Lockout

Selecting YES will prevent this output from being controlled by the alarm point logic regardless if the point action is set to Auto. This ensures the user that regardless of how the action status is left, that the alarm logic can not affect operatoin of the output.

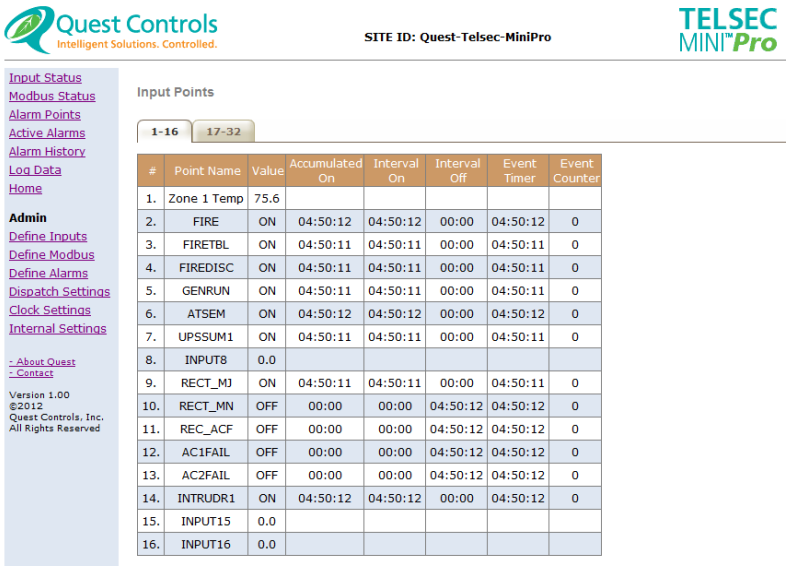
After making changes, click on the “Save to Flash” button for changes become permanent. If you are only doing a manual operation of output via either the one-shot or the energize/de-energize command in the action field then you do not need to save to flash.

7 Reviewing Status

The TELSEC MINI PRO's built in web server is designed to provide the user with a simple interface to review the status of points being monitored and assist in diagnosing and troubleshooting problems causing alarm conditions. The Status review screens consist of the Inputs Status, Modbus Point status, Alarm Point status, Active Alarm log, Alarm History log and Log Data (history logging/graphing page).

7.1 Input Status

The input status page will show the current value of all user programmable inputs. Figure 21 shows a typical input status screen where each analog sensor being monitored is displayed in the defined engineering units. Digital input points will show a status (value) of ON or OFF and will have timers automatically associated with the point.



#	Point Name	Value	Accumulated On	Interval On	Interval Off	Event Timer	Event Counter
1.	Zone 1 Temp	75.6					
2.	FIRE	ON	04:50:12	04:50:12	00:00	04:50:12	0
3.	FIRETBL	ON	04:50:11	04:50:11	00:00	04:50:11	0
4.	FIREDISC	ON	04:50:11	04:50:11	00:00	04:50:11	0
5.	GENRUN	ON	04:50:11	04:50:11	00:00	04:50:11	0
6.	ATSEM	ON	04:50:12	04:50:12	00:00	04:50:12	0
7.	UPSSUM1	ON	04:50:11	04:50:11	00:00	04:50:11	0
8.	INPUT8	0.0					
9.	RECT_MJ	ON	04:50:11	04:50:11	00:00	04:50:11	0
10.	RECT_MN	OFF	00:00	00:00	04:50:12	04:50:12	0
11.	REC_ACF	OFF	00:00	00:00	04:50:12	04:50:12	0
12.	AC1FAIL	OFF	00:00	00:00	04:50:12	04:50:12	0
13.	AC2FAIL	OFF	00:00	00:00	04:50:12	04:50:12	0
14.	INTRUDR1	ON	04:50:12	04:50:12	00:00	04:50:12	0
15.	INPUT15	0.0					
16.	INPUT16	0.0					

Figure 21 - Input Status

7.1.1 Digital input timers

Digital input timers are automatically created for an input defined as a Wet or Dry contact closure. The timers start functioning once the point is defined and the timers will retain their values during power failures or resets. The times can be cleared manually from the Define Inputs Detail page for each point. The available timers are as follows:

Accumulated ON	This timer counts time when the input is ON and accumulates the total amount of on time for the input. When the point goes off, this timer stops counting, but will start again where it left off once the point goes on again. The display value is in "Days:Hours:Minutes:Seconds".
Interval On	When the input is ON, this timer starts at 0 and begins counting the on time for this interval. When the input is off, this timer freezes showing the amount of on time during the last on state. The timer automatically resets to zero when the point goes back on and begins counting on time for the new interval. The display value is in "Days:Hours:Minutes:Seconds".

Interval Off	When the input is OFF, this timer starts at 0 and begins counting the off time for this interval. When the input goes on, this timer freezes showing the amount of off time during the last off state. The timer automatically resets to zero when the point goes back off and begins counting off time for the new interval. The display value is in “Days:Hours:Minutes:Seconds”.
Event Timer	This timer keeps track of the total time that has elapsed since the timers for this input were cleared. You can use this timer along with the accumulated on timer to calculate percentage on and off time. Or, use this timer with the Event Counter to determine cycling frequency or the number of events that have occurred in a given time period. The display value is in “Days:Hours:Minutes:Seconds”.
Event Counter	The Event counter will increment with every change of state to keep track of the frequency a point is changing. A complete cycle would consist of two (ON/OFF) events.

7.2 Modbus Point Status

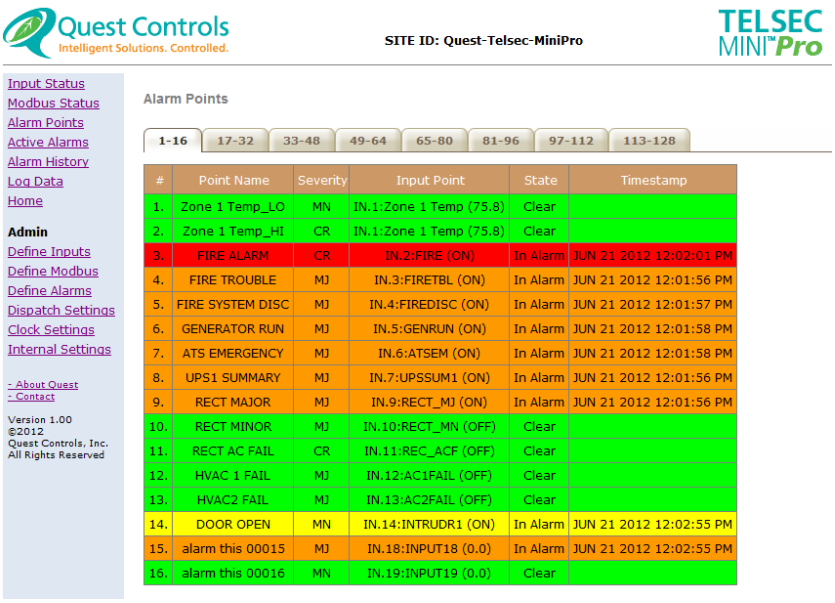
Clicking on the Modbus Status link on the navigation pane will display the programmed points and their current status (see below). There will be a tab for every 16 status points defined up to the maximum of 512 points. Each point will be displayed with a sequence number, the 16 character point name and the value of the Modbus register. The value displayed will be the corrected value after any defined offset and multiplier has been applied to the value contained in the Modbus register. Single bit points will be shown as ON for a 1 value and OFF for a value of 0.

Figure 22 - Modbus Point Status

7.3 Alarm Point Status

The Alarm Points link will show the current status of the defined alarm points. Each alarm point will be displayed in color based on alarm severity programmed for the point or in green for clear. Alarm severity colors are: red for critical alarms, orange for major alarms, yellow for minor alarms and grey for informational alarms. The status display will show the programmed severity and the current state which is either Clear or In Alarm. The Alarm State could also show COMM ERROR if the alarm point is referencing a Modbus point that stopped communicating. Communications errors occur if the Modbus point has stopped responding to polling for 5 minutes. The MINI PRO constantly polls the points and will clear the COMM ERROR once it gets responses for polling the point. The Timestamp column will show

the date and time when the last event occurred, i.e. either when the alarm occurred or the clear. Any point with no timestamp means the TELSEC MINI PRO has never created an alarm event for that point.

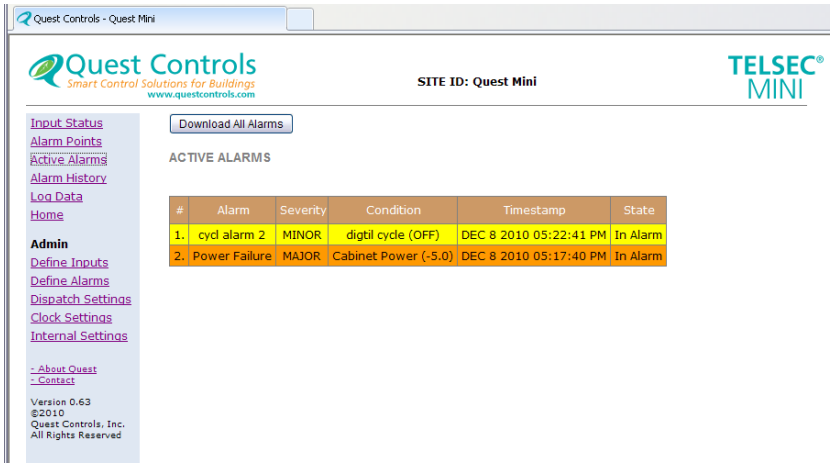


#	Point Name	Severity	Input Point	State	Timestamp
1.	Zone 1 Temp_LO	MN	IN.1:Zone 1 Temp (75.8)	Clear	
2.	Zone 1 Temp_HI	CR	IN.1:Zone 1 Temp (75.8)	Clear	
3.	FIRE ALARM	CR	IN.2:FIRE (ON)	In Alarm	JUN 21 2012 12:02:01 PM
4.	FIRE TROUBLE	MJ	IN.3:FIRETBL (ON)	In Alarm	JUN 21 2012 12:01:56 PM
5.	FIRE SYSTEM DISC	MJ	IN.4:FIREDISC (ON)	In Alarm	JUN 21 2012 12:01:57 PM
6.	GENERATOR RUN	MJ	IN.5:GENRUN (ON)	In Alarm	JUN 21 2012 12:01:58 PM
7.	ATS EMERGENCY	MJ	IN.6:ATSEM (ON)	In Alarm	JUN 21 2012 12:01:58 PM
8.	UPS1 SUMMARY	MJ	IN.7:UPSSUM1 (ON)	In Alarm	JUN 21 2012 12:01:56 PM
9.	RECT MAJOR	MJ	IN.9:RECT_MJ (ON)	In Alarm	JUN 21 2012 12:01:56 PM
10.	RECT MINOR	MJ	IN.10:RECT_MN (OFF)	Clear	
11.	RECT AC FAIL	CR	IN.11:REC_ACF (OFF)	Clear	
12.	HVAC 1 FAIL	MJ	IN.12:AC1FAIL (OFF)	Clear	
13.	HVAC2 FAIL	MJ	IN.13:AC2FAIL (OFF)	Clear	
14.	DOOR OPEN	MN	IN.14:INTRUDR1 (ON)	In Alarm	JUN 21 2012 12:02:55 PM
15.	alarm this 00015	MJ	IN.18:INPUT18 (0.0)	In Alarm	JUN 21 2012 12:02:55 PM
16.	alarm this 00016	MN	IN.19:INPUT19 (0.0)	Clear	

Figure 23 - Alarm Point Status

7.4 Active Alarms

The active alarm link will show basically the same information as the Alarm Points link, but in this case only points that are currently in alarm will be displayed. Pressing on the Download All Alarms will cause the system to send you a comma separated (CSV) text file of the entire alarm history log.



#	Alarm	Severity	Condition	Timestamp	State
1.	cycl alarm 2	MINOR	digtil cycle (OFF)	DEC 8 2010 05:22:41 PM	In Alarm
2.	Power Failure	MAJOR	Cabinet Power (-5.0)	DEC 8 2010 05:17:40 PM	In Alarm

Figure 24 - Active Alarms log

7.5 Alarm History

This link will show the most recent 200 alarms and clear events that have occurred in the system. The alarms are displayed chronologically with the most recent events at the beginning of the log. The data is displayed in groups of 16. Click on the various tabs to scroll through the data or click on the Download All Alarms button to get a comma separated (CSV) text file of all the alarms.

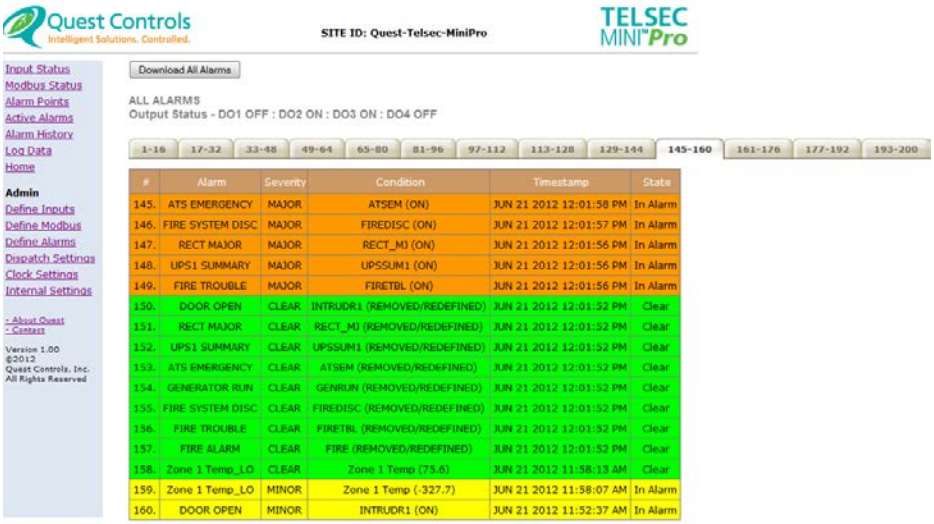


Figure 25 - Alarm History Log

7.6 Log Data

The TELSEC MINI PRO logs each input and Modbus point based upon the user defined interval. The Log Data Link will allow you to review a quick graph based on 6 hour, 24 hour and 7 day intervals. This feature is for analog sensor graphing. Digital inputs log based on change of state thus there may not be any entries for the date range. There is an option to download the entire log for a point in a comma separated (CSV) text file. Select the point you wish to graph and the time range. Then click on show graph to see a graph of the log or the Download File button to get a CSV text file.

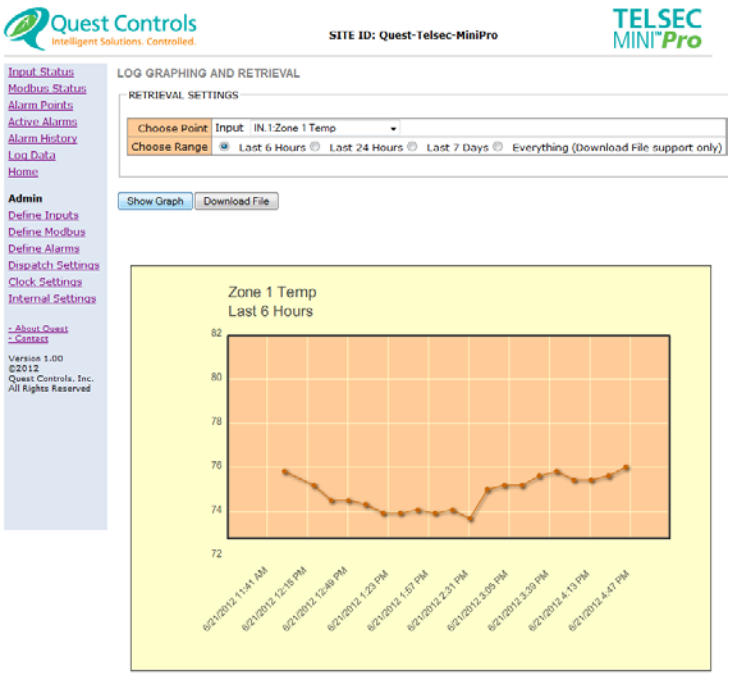


Figure 26 - Log Graph Display

7.7 Output Status

The Output Status link will show the current state of each output. The current state column shows the acutal status of the output and the action column shows whether it is Auto meaning following the alarm logic. De-energized and energized means it is manually foreced into that mode. One-Shot with time remaining means it will go back to auto or the manual defined state after the timer has counted down to zero.

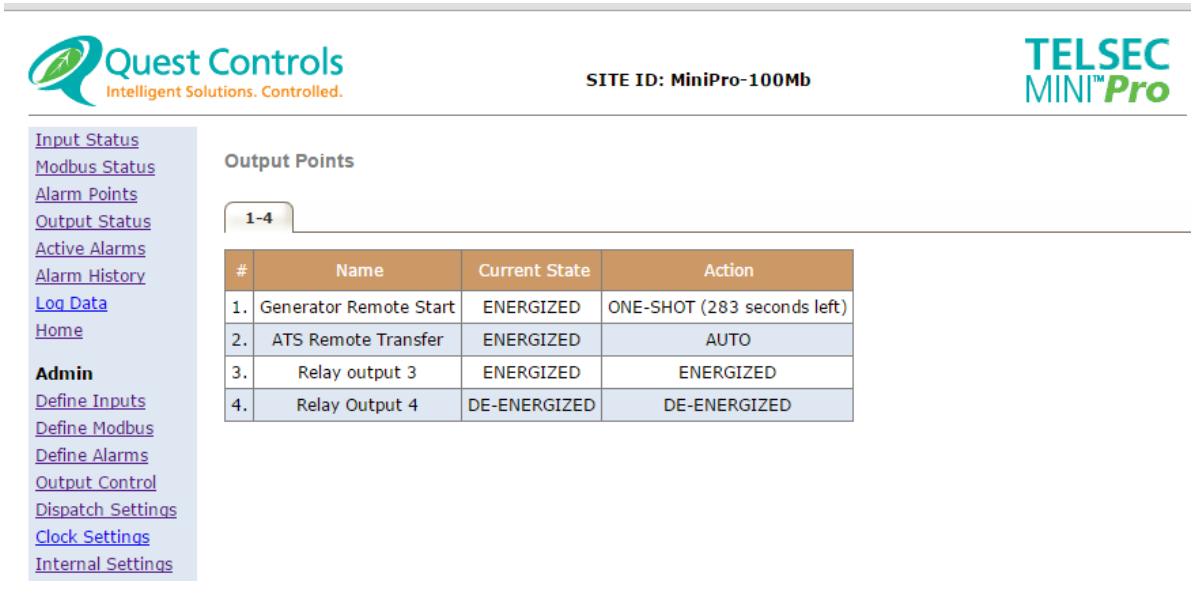


Figure 27 - Output Status Page

8 TFTP Program Upload

The MINI PRO can be programmed by uploading a text file using trivial file transfer protocol (TFTP). The text file can contain all or portion of all the available command lines for programming the system. This will make it quicker to program units especially if you are deploying multiple units where the program is essentially the same. A good way to have a standard file is to program a MINI PRO through the web server interface, as described earlier in this manual, and then select the download button from either the Define Inputs or Define Alarms page. This will cause the MINI PRO to download a text file to your PC in the format that the system will accept. You can then modify the file and save it for the specific site or use it as a template for additional sites.

8.1 TFTP Commands

The following is a list of commands and format for uploading to the MINI PRO:

8.1.1 Command Format

Parameter	Code	Format	Causes Restart
IP Address	IP	IP, <[NOT]DHCP>, <IP Address>, <subnet mask>,<gateway>,<DNS ip,"none">, <http port #>	Yes
Site Identification	ID	ID,<"Site ID">, <"URL Name">, <"URL address"> The URL Name and URL address appear in the blue information box on the home page.	No
SMTP data	MI	MI,<IP number|"name">, <outgoing port #>, <"from address">, <"username">, <"password"> Note: omit the username and password if your email server doesn't require them.	Yes
SNMP data	SI	SI,<Trap type 1|2 >, <trap|inform>, <"community string"> ,<incoming port #>,<outgoing port #>	Yes
Email list	EM	EM,<group1-4>,<"Distribution list 120 characters">, <"subject">, <[NOT] CR>, <[NOT] MJ>, <[NOT] MN>, <[NOT] IN>, <[NOT] CL> Note: separate email addresses with a semicolon in the distribution list. Make sure there are no spaces before and after the semicolon. Use of the work NOT in front of the severity will prevent alarms with that severity from being sent.	No
Trap Server	TS	TS,<server1-4>, <IP number>, <[NOT] CR>, <[NOT] MJ>, <[NOT] MN>, <[NOT] IN>, <[NOT] CL> Use of the work NOT in front of the severity will prevent alarms with that severity from being sent.	No
Clock Settings	CS	CS, <NTP Server ip # |"name">,<Timezone -11 TO 11>, <DSTON week # 0|1|2|3|4>, <DSTON dow SUN|MON…>, <DSTON JAN|FEB…>, <DSTON time HH:MM>, <DSTOFF week # 0|1|2|3|4>, <DSTOFF dow SUN|MON…>, <DSTOFF JAN|FEB…>, <DSTOFF time HH:MM> Using 0 for the "week" value will turn off the transition point for daylight savings.	Yes

Define input	IN	IN,<1-32>, <”32 char name”>, <DRYNO|DRYNC|WETNO|WETNC|TEMPF|TEMPC|{CUSTOM LOW #,HIGH #}>, <Offset -99 to 99>,<Log type|TIME|COST|NONE>, <log interval 0-120>	No
Modbus serial settings	MS	MS, <baud>, <parity> Where: <baud> = 1200, 2400, 4800, 9600, 19200, 28800, 38400 or 57600 <parity> = N for none, E for even and O for odd.	No
Define Modbus	MD	MD,<1-512>, <”32 char name”>, <Modbus Address>,<Function Code #> <Modbus Register>, <BIT#>, <16-BIT|32-BIT|1-BIT|FLOAT|HFLOATLEM |SIGNED-16-BIT>, <Offset -99 to 99>, <Multiplier 0.0001 - 99999>, <Log type|TIME|COS|NONE>,<log interval 0-120>	No
Alarm Point	AP	AP,<”32 char name”>, <severity>, <input #>, <comparison>, <value>, <duration>, <duration time units>, <clear duration>, <clear duration units>,<nag value 0-48>,<output: NONE|RLY1|RLY2|RLY3|RLY4> Severity keywords are: CRITICAL, MAJOR, MINOR, and INFO. Comparison values are: "GREATER THAN", "LESS THAN", "NOT EQUAL TO" and "EQUAL TO". Duration time units are: SECONDS, MINUTES and HOURS	No
Relay output	OC	OC, <1-4>, ,<”32 char name”>, <Default state -ENERGIZED|DE-ENERGIZED>, <Action - ON|OFF|AUTO>, <Alarm logic lockout -YES|NO>	

Each command starts with a specific two character code to tell the MINI PRO what is going to be programmed. Text labels must be between quotation marks. The available parameters are enclosed between the < and > symbols. The choices for a particular parameter are separated by the pipe (|) symbol. You must choose one of those options when creating a program line. Items in brackets [] are optional. Comments can be added to your file by using two forward slashes as the first characters on the line. The MINI PRO will ignore commented lines when processing the file.

8.1.2 Example program lines:

Parameter	Example Program Line
IP Address	IP, NOT DHCP, 192.168.1.31, 255.255.255.0, 192.168.1.1, 192.168.1.1, 80
Site Identification	ID, "Quest West Coast ", "Directions to office.", "http://tiny.cc/slj56"
SMTP data	MI, "smtp.questcontrols.com", 25, "TELSECMINIPRO@questcontrols.com", "questcontrols", "quest123"
SNMP data	SI, 2, INFORM, "public", 161, 162
Email list	EM, 1, "Alarm1@questcontrols.com;Alarm2@ questcontrols.com; Alarm3@ questcontrols.com", "this is a test of the maximum available info in 1", CR, MJ, MN, IN, CL

Trap Server	TS, 1, "192.168.1.101", CR, MJ, MN, IN, CL
Clock Settings	CS, "time.windows.com", -8, 2, SUN, MAR, 02:00, 1, SUN, NOV, 02:00
Define input	IN, 1, "Zone Sensor 1", TEMPF, 0, TIME, 5
Modbus Serial Settings	MS, 19200, N
Define Modbus	MD, 1, "ModbusInput40108", 2, 3, 107, 0, 16-BIT, 0, 1.00000, TIME, 10
Alarm Point	AP, "Zone 1 High CR", CRITICAL, IN.1, "GREATER THAN", 85, 10, SECONDS, 10, SECONDS, 0, RLY1
Relay Output	OC, "Critical Alarms", DE-ENERGIZED, AUTO, NO

8.2 Uploading a File

To upload a file you must first tell the MINI PRO that you are going to send the file. To do this go to either the Define Inputs, Define Modbus or the Define Alarms page and click on the Upload File button. The MINI PRO will open up the TFTP port (port # 69) and wait up to 5 minutes to receive the file. Next use your TFTP client to send (or Put) the file to the MINI PRO. Windows XP has a built in client accessible from the command prompt. The format for using TFTP at the command prompt is: tftp <ipaddress of MINI PRO> put <filename>. Make sure you do the command from the same directory as where the file is located or provide the full path to access the file. Example: tftp 192.168.1.31 put MINIPROprogram.txt.

The MINI PRO will process each line in the file and either accept or reject the line if it is not formatted correctly. The status of the upload will be on the debug page (<IPaddress>/debug.shtml) of the MINI PRO. Some items will cause the unit to restart, but prior to the restart the upload information will be available on debug page. After the upload the MINI PRO will save all new changes to flash and in some cases reboot the system. See the format table above for commands that cause a reboot. Make sure to verify operation of the MINI PRO after you complete your upload especially if this is the first time using a newly created file.

9 SNMP Traps

The TELSEC MINI PRO can send traps or informs to four different trap servers. The user can program the system to send v1 traps, v2 traps or v2 informs to the server. When the MINI PRO sends a trap, it will be sent with an OID based on the severity of the alarm. There will also be multiple variable bindings (varabinds) sent to provide detailed information of the event that occurred. For proper trap reception, you will need the alarmMIB and MINIMIB. Please contact Quest Controls for the current revision of both MIBs.

9.1 TRAP OIDs

The following table shows the available trap OID names and numbers for each trap type:

Alarm Severity	OID Number	OID Name
Critical	11476.100.0.5	alarmCritical

Major	11476.100.0.4	alarmMajor
Minor	11476.100.0.3	alarmMinor
Info	11476.100.0.2	alarmInfo
Clear	11476.100.0.1	alarmClear

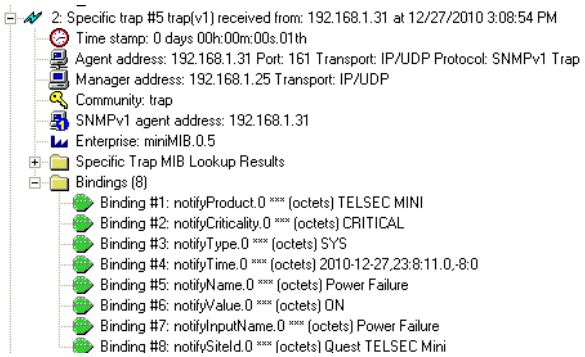
When a point goes into alarm, it will generate a trap using the critical, major, minor or info OID. Once the alarm point goes out of alarm or clears, the MINI PRO will send a trap with the clear OID.

9.2 Trap Variable Bindings

The MINI PRO will send the following bindings with every trap that is sent:

Varabind Name	OID Number	Value Type	Value
sysUpTime	1.3.6.1.2.1.1.3	Timeticks	This binding is only available with v2 traps and will contain the system up time since the MINI PRO started up.
snmpTrapOID	1.3.6.1.6.3.1.1.4.1	Object Identifier	This binding is only available with v2 traps and will contain the OID value for the alarm severity.
notifyProduct	11476.100.1.3	Text String	The product type that is alarming. The value is TELSEC MINI PRO
notifyCriticality	11476.100.1.4	Text String	The alarm severity in Text. Available values are: CRITICAL, MAJOR, MINOR, INFO and CLEAR
notifyType	11476.100.1.5	Text String	Alarm type. For TELSEC MINI PRO's the type value is SYS
notifyTime	11476.100.1.6	Timeticks	The time the alarm was generated.
notifyName	11476.100.1.7	Text String	The sixteen character name of the alarm point
notifyValue	11476.100.1.8	Text String	The text value of the sensor that caused the alarm.
notifyInputName	11476.100.1.9	Text String	The sixteen character name of the input referenced in the alarm point
notifySiteId	11476.100.1.10	Text String	The programmed site identification value for the system.

v1 Trap



v2 Trap

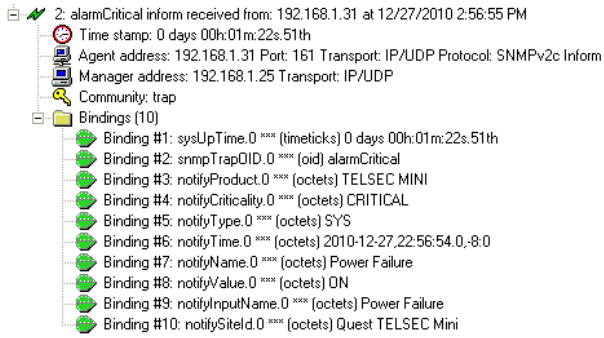


Figure 28 - Typical SNMP v1 and v2 Trap

10 Polling the MINI PRO with SNMP

The TELSEC MINI PRO supports SNMP polling for some MIB-2 variables along with input status and alarm point status. Please contact Quest Controls to obtain a copy of the current TELSEC MINI MIB file.

10.1 MIB Tables

The following tables and values are available; refer to the MIB for more detailed information on each variable:

10.1.1 Mib-2 System Variables

sysDescr	Read only – current revision of the MINI PRO's operating system
sysObjectID	Read only – object identifier for the product and MIB value = MINI MIB
sysUpTime	Read only – the time since the system started up.
sysContact	Read/Write – contact name or email address. Default is support@questcontrols.com
sysName	Read/Write – the systems name. Default value is: Quest Telsec MiniPro
sysLocation	Read/Write – system location field. Default value is: Quest Telsec MiniPro

10.1.2 Input Table

This table will show the status of direct inputs as well as all defined Modbus inputs

OID Name	Type	Description
miniInputTableIndex	Integer	Sequence number of the table for each input
miniInputName	Text String	The thirty-two character name assigned to each input.
miniInputNumericValue	Integer	The current value of an input. Digital inputs show 0 and 1 for off and on
miniInputCausingAlarm	Integer	This value will be a 1 if the input is referenced in an alarm point that is currently active, otherwise the value will be 0.

10.1.3 Extended Input Table

This table shows the extended program values unique to the direct wired inputs

OID Name	Type	Description
miniInputExtendedTableIndex	Integer	Sequence number of the table for inputs 1-32
miniInputExtendedName	Text String	The thirty-two character name assigned to each input.
miniInputExtendedNumericValue	Integer	The current value of an input. Digital inputs show 0 and 1 for off and on
miniInputExtendedCausingAlarm	Integer	This value will be a 1 if the input is referenced in an alarm point that is currently active.
miniInputExtendedStringValue	Text String	The value of the input in textual form. This is useful if the input has a decimal point
miniInputExtendedType	Integer	Shows the input defined type. I.e. dry normally open, temp F, custom etc.
miniInputExtendedOffset	Integer	The offset programmed for the input
miniInputExtendedCustomLow	Integer	Value programmed for custom scales when the input is at the lowest value (0 VDC)
miniInputExtendedCustomHigh	Integer	Value programmed for custom scales when the input is at the highest value (6 VDC)
miniInputExtendedLogType	Integer	The type of logging for this input. notLogged = 0, timeLogged = 1, changeOfStateLogged = 2
miniInputExtendedLogInterval	Integer	The user defined logging interval in minutes for the input.
miniInputExtendeddigitalAccumOn	Timeticks	For digital inputs this is the accumulated on timer
miniInputExtendeddigitalintervalOn	Timeticks	For digital inputs this is the interval on timer
miniInputExtendeddigitalIntervalOff	Timeticks	For digital inputs this is the interval off timer
miniInputExtendeddigitalEventCounter	Integer	For digital inputs this is the number of change of states or events.
miniInputExtendeddigitalEventTimer	Timeticks	For Digital inputs this is the total time since the input timers have been cleared.

10.1.4 Alarm Point Table

This table shows the status of all alarm points that have been defined in the system.

OID Name	Type	Description
miniAlarmPointTableIndex	Integer	Sequence number of the table for alarm points 1-128
miniAlarmPointName	Text String	The thirty-two character name assigned to each alarm point.
miniAlarmPointStatus	Integer	Active (1) or Clear (0) of each alarm point
miniAlarmPointSeverity	Integer	The programmed alarm severity value of each alarm point
miniAlarmPointLastAlarmTime	Date and Time	The last time the alarm point went into alarm. A zero indicates the point has never alarmed.
miniAlarmPointLastClearTime	Date and Time	The last time the alarm point clear. A zero indicates the point has never cleared.

miniAlarmPointInputName	Text String	The name of the input assigned to this alarm point
miniAlarmPointInputIndex	Integer	The index number of the referred to input for this alarm point.
miniAlarmPointInputValue	Integer	The value of the input

10.1.5 Extended Alarm Point Table

The extended table shows the Alarm Point program parameters as well as the current status of the programmed alarm points

OID Name	Type	Description
miniAlarmPointExtendedTableIndex	Integer	Sequence number of the table for alarm points 1-512
miniAlarmPointExtendedName	Text String	The thirty-two character name assigned to each alarm point.
miniAlarmPointExtendedStatus	Integer	Active (1) or Clear (0) of each alarm point
miniAlarmPointExtendedSeverity	Integer	The programmed alarm severity value of each alarm point
miniAlarmPointExtendedLastAlarmTime	Date and Time	The last time the alarm point went into alarm. A zero indicates the point has never alarmed.
miniAlarmPointExtendedLastClearTime	Date and Time	The last time the alarm point clear. A zero indicates the point has never cleared.
miniAlarmPointExtendedInputName	Text String	The name of the input assigned to this alarm point
miniAlarmPointExtendedInputIndex	Integer	The input index number from 1-7 of the input associated with this alarm point
miniAlarmPointExtendedInputValue	Integer	The value of the input
miniAlarmPointExtendedComparisonType	Integer	The programmed comparator used for the alarm program. I.e. “greater than” or “less than” etc.
miniAlarmPointExtendedComparisonValue	Integer	The value that the input is being compared to for alarm determination
miniAlarmPointExtendedAlarmDelay	Integer	The amount of delay that the comparison statement must be true for the point to alarm
miniAlarmPointExtendedAlarmUnits	Integer	The type of time units for the delay e.g. seconds, minutes, hours
miniAlarmPointExtendedClearDelay	Integer	The amount of delay that the comparison statement must be false for the point to clear
miniAlarmPointExtendedClearUnits	Integer	The type of time units for the delay e.g. seconds, minutes, hours
miniAlarmPointExtendedNagValue	Integer	The value in hours before an alarm will regenerate if the condition is still present.
miniAlarmPointExtendedOutputs	Integer	Value shows which relay is actuated when the alarm point is true.

10.1.6 Extended Modbus Point Table

This table shows the extended program values unique to the Modbus defined inputs.

OID Name	Type	Description
miniModbusExtendedTableIndex	Integer	Sequence number of the table for Modbus points.
miniModbusExtendedName	Text String	The thirty-two character name assigned to each input.
miniModbusExtendedNumericValue	Integer	The current value of an input. Digital inputs show 0 and 1 for off and on
miniModbusExtendedCausingAlarm	Integer	This value will be a 1 if the input is referenced in an alarm point that is currently active.
miniModbusExtendedStringValue	Text String	The value of the input in textual form. This is useful if the input has a decimal point
miniModbustExtendedSlave	Integer	Slave address of each Modbus input
miniModbustExtendedRegister	Integer	The register number of each Modbus input
miniModbustExtendedBit	Integer	Bit number of the Modbus input. Note that if this number is 0, the number means nothing as the input is not a bit defined point.
miniModbustExtendedFormat	Integer	The format of this Modbus input. Unsigned 16bit - 0, signed 32bit - 1, single bit - 2, float32 bit - 3, lemHalfFloat16 - 4, signed 16bit - 5.
miniModbusExtendedOffset	Integer	The offset applied to the Modbus input data.
miniModbustExtendedMultiplier	Integer	The value of the multiplier for this Modbus input.
miniModbusExtendedLogType	Integer	The type of logging for this input. Not Logged = 0, time Logged = 1, change of state logged = 2
miniModbusExtendedLogInterval	Integer	The user defined logging interval in minutes for the input.

10.1.7 Output Table

This table shows the available data for the outputs and allows a user to operate the outputs by doing an SNMP Set command.

OID Name	Type	Description
miniOutputTableIndex	Integer	Sequence number of the table for Modbus points.
miniOutputName	Text String	The thirty-two character name assigned to each output.
miniOutputState	Integer	The current state of the output. energized - 1, deenergized - 2.
miniOutputDefaultState	Integer	The state the output should be in when not controlled. energized - 1, deenergized - 2.
miniOutputActionType	Integer	The current action of the output. auto - 0, uses default state or alarm logic. energized - 1, energizes the output. deenergized - 2, deenergizes the output. oneshot - 3, the output is currently in the non-default state for a period of time. Note you cannot write oneshot values here. In order to accomplish that action, use the miniOutputMinutesLeft OID.
miniOutputMinutesLeft	Integer	If the output is in a oneshot action, this retrieves the amount of minutes left in the action. The field is undefined if the action is something else. You can also write a value between 1 and 1440 into this variable to accomplish a one-shot action.
miniOutputLogicLockout	Integer	A user can lockout an output from control by the alarm logic. no - 0, the output is NOT locked out, and the alarm logic can control. yes - 1, the output is locked out, and the alarm logic has no effect on the output logic.

11 Troubleshooting

The following section is designed to help you isolate the most likely system malfunctions that may occur. For additional help, contact Quest's Technical Support and Service Center.

11.1.1 Power Up

PROBLEM

- Green Power Light is not blinking every second.

SOLUTION

1) Verify you have a power properly applied (18-65VDC).
2) Verify input power polarity.

11.1.2 Communication

PROBLEM

- I experienced a communication failure with the TELSEC MINI PRO through my Ethernet connection.

SOLUTION

1) Verify you have a physical link by looking at the Green LED on the Ethernet jack. Reconnect or replace any defective IP/Ethernet cables.
2) Verify the router the TELSEC MINI PRO is connected to is operable and properly configured.
3) Verify the IP address has not been changed. Connect to the TELSEC MINI PRO with a crossover cable and follow the directions in section 5.10 for using the ARP and ping commands.
4) Replace the Ethernet communications module.

11.1.3 Sensor Reading

PROBLEM

- I am not receiving data from one of my sensors.

SOLUTION

1) Verify wiring is correct from the sensor to the TELSEC MINI PRO.
2) Use a known good sensor and replace the suspected bad sensor.
3) If the known good sensor doesn't work then disconnect the field wiring from the TELSEC MINI PRO and connect it directly. If it works now then correct or replace field wiring.
4) If the known good sensor doesn't read when connected directly to the TELSEC MINI PRO then replace the TELSEC MINI PRO.

11.1.4 Control Point Failure

PROBLEM

- One of my control points is not turning off.

SOLUTION

1) Verify that the program is correct and has the proper Alarm Points assigned to the output.
2) Verify the relay on the TELSEC MINI PRO opens and closes when the Alarm Point is active and when it clears.
3) Verify the wiring to the control point is correct
4) Verify the control source voltage (typically an external 24 VAC transformer) is operable and supplying proper voltage.

11.1.5 Alarm Notification Failure

PROBLEM

- I am not receiving email alarms.

SOLUTION

1) Verify network connection.
2) Check the setting in the Email Alarm notification page.
3) Verify the EMAIL SMTP server is operational and that the proper username and password (if required) has been entered.
4) Check for any firewalls and or rule sets preventing emails being sent from the location to the SMTP server.
5) Do a test email by clicking on the Email test button.

PROBLEM

- I am not receiving traps.

SOLUTION

1) Verify network connection.
2) Check the settings for the trap server and make sure all the filter boxes are checked.
3) Check for any firewalls and or rule sets preventing emails being sent from the location to the SMTP server.
4) Send a test trap by clicking on the test button.

11.1.6 Battery

PROBLEM

- The system keeps losing history memory and clock settings.

SOLUTION

1) Verify the battery insulating tab was removed at install to enable the battery circuit.
2) Power down the system, remove the cover and change the system battery.

11.1.7 Defining Inputs

PROBLEM

- The system won't accept my changes for an input via the web page.

SOLUTION

1) Make sure you are using a unique name for each input. An alarm point can have the same name as an input, but inputs cannot have the same name.
2) If your using a CUSTOM scale, make sure the Low and High Values are not the same.

11.1.8 Defining Alarm Points

PROBLEM

- The system won't accept additional alarms points I am trying to program via the web page.

SOLUTION

1) Verify the alarm point you are programming has a unique name. Alarm points and inputs can have the same name, but alarm points cannot have the same name.
2) Make sure that you have entered a delay value greater than 0 in the alarm delay field and also the clear delay field. The value has to be at least 1 second.

11.1.9 Modbus Communication and Status

PROBLEM

- Modbus data is not updating or you notice that Alarm Points referencing Modbus points show COMM ERROR as the status.

SOLUTION

1) Verify that every Slave device has a unique address and that all devices including the MINI PRO is using the same baud rate and parity.
2) Verify that the End of Line (EOL) and line biasing jumpers on the MINI PRO are in the proper position. If the PRO is in the middle of the chain then disable the EOL resistor by move jumper J4 to pins 2&3 (left).
3) Verify that the MINI PRO is communicating over the bus. Remove the cover and look at the Tx and Rx lights. If you see Tx and and no Rx activity then the PRO is attempting to talk to devices, but none of them are responding.
4) Verify the proper wiring between the MINI PRO and all slave devices. Isolate the bus to one device first to see if you can get data from that device and then move on to the next device in the chain.

Appendix A – Setting a Temporary IP Address

The TELSEC MINI PRO Ethernet module supports the ARP protocol and PING command to set a temporary IP address. You will need to know the physical (or MAC) address of the module in order to use the PING function. The MAC address will be on a label affixed to the system near the Ethernet port and is also on the configuration sheet shipped with each unit. Use the following procedure to set a temporary address:

1 Connect the MINI PRO to the local hub/switch. Or you can use a crossover cable for direct connection to the system from your PC instead of going through a hub or switch.
2 Connect your laptop to the same hub/switch.
3 Open up the command prompt window and issue the command IPCONFIG. Verify that your laptop has an IP address in the same subnet as the address you will be assigning to the TELSEC MINI PRO.
4 Use the ARP command to enter the TELSEC IP address into your ARP table. The command is ARP –S <IP address> <MAC address><enter>

Example: ARP –S 192.168.0.31 00-90-c2-c4-bb-f7

5 Type ARP –A and verify that the address is entered in as static.
6 Ping the address by typing ping <IP address> and verify that the system responds to the ping. This address is temporary; you will need to set the address permanently by completing the rest of the steps.

Example: ping 192.168.0.31

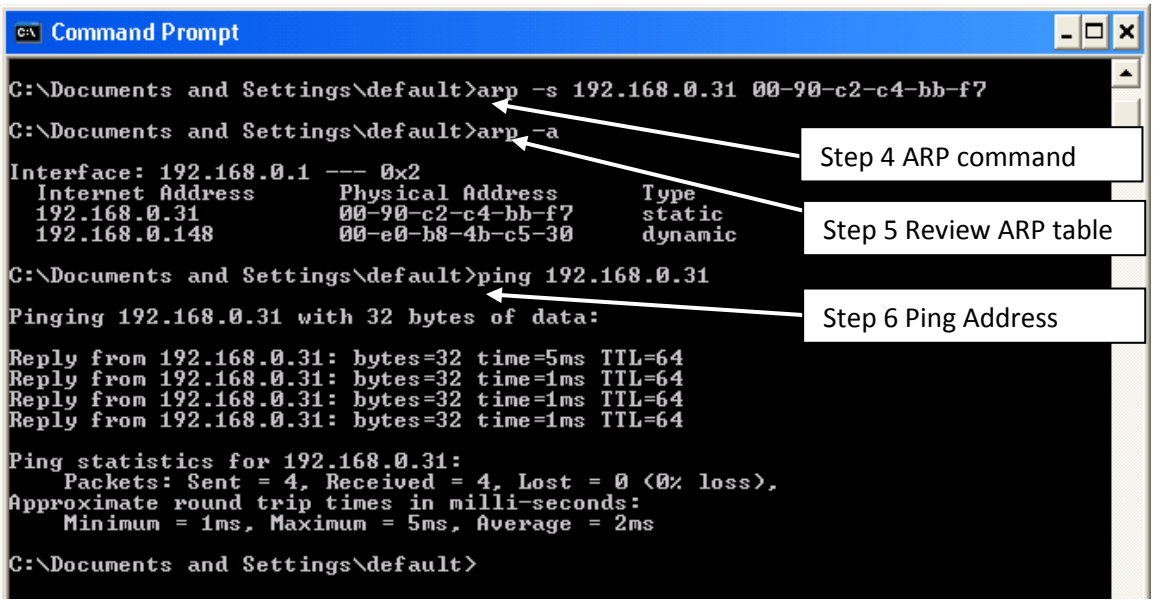


Figure 29 - Using the Arp and Ping Commands

7 Open your browser and connect to the new address. Follow the instructions in the Web Server Setup (section 6.1) to complete the programming of a permanent IP address.