

TELSEC® MP2

User Guide



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Lithium Battery Notice

Replace Battery with Panasonic CR2032 or equivalent Lithium Battery (Quest PN 250034), 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.

FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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Revision History

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1 Overview

The TELSEC® MP2 is designed to provide advanced monitoring and alarming for remote facilities and cabinets using industry standard communications protocols such as SNMP, DNP3 and SMTP (Email) over Ethernet. The system has a built-in web server for status review and programming and can be polled using SNMP GET requests. The MP2 has up to 32 universal inputs for monitoring temperature, humidity, contact closures and any 0-6 VDC or 0-20 mA sensors. Each individual input may be scaled and displayed in the proper engineering units. The system has two RS485 serial port for monitoring Modbus RTU devices or to act as a DNP3 Outstation 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 MP2 System. Please contact Quest for additional information and or questions about the operation of the system.

1.1 Getting Started

The TELSEC® MP2 is simple to setup and program which allows you to start monitoring your facility quickly. The basic steps are listed below along with a chapter reference for this manual:

1. Mount the MP2 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 one or both serial ports to Modbus RTU Devices. (section 3.5)
5. Wire the digital outputs. (section 3.8)
6. Connect the MP2 to an Ethernet switch and configure the IP settings. (section 5.1)
7. Configure the system (Section 8.1)
8. Configure the alarm distribution. (section 8.2)
9. Define the inputs. (section 9.1)
10. Define the Modbus points. (section 9.3)
11. Define the alarm points. (section 9.4.1)

2 Product Specifications

Part number: 151052-32

- Inputs: 32 universal inputs supporting 0-5 VDC, 4-20 mA, thermistor & contact closure
- Outputs: 4 form C digital outputs. Contact rating: 0.5 A @ 60 VDC
- Network interface: Ethernet 10/100 Base-T
- Protocols supported: IPv6, IPv4, HTTP, HTTPS, DNP3, RADIUS Password Authentication, NTP, SMTP (email), SNMP v1, v2c and v3 for Gets, Sets and traps/informs
- Serial interface: Two RS485 serial ports
- Serial Protocols Supported: DNP3, Modbus RTU read and write with up to 1024 (512 per port) registers for 16 & 32-bit integers, floating point and signed integers
- Logging: Logs data for inputs, outputs, alarms and Modbus registers
- Alarm notification methods: TL1, Email and SNMP traps or informs
- Alarm destinations: four programmable trap destinations, nine email addresses or distribution lists
- I/O terminal: removable screw terminals supports up to 12 AWG wire
- Power: dual feed 24-48 VDC, 3.7 W max.
- Battery: long life lithium (PN 250034) 3 VDC*
- Ambient operating temperature: 23° to 131°F (-5° to 55°C), 0-95% RH
- Non-condensing
- Certification: UL, cUL, FCC 47 CFR Part 15B, ISED ICES-003 Class A
- Dimensions: 13.15 W x 4.15 L x 1.63 H in. (334 x 105 x 41 mm)
- Weight: 1 lb. (454 g)
- Warranty: 1 Year



Specifications subject to change without notice

3 Installation

All local and national electrical safety codes (NESC®) must be followed when installing the MP2. If there is any contradiction in this manual and those standards, then the installer must follow the local and national codes. Use copper conductors only. The TELSEC® MP2 is designed for mounting on a wall or within a rack. Rack mounting is accomplished by using the optional (not included) mounting ears for a 19 or 23" rack. Contact your Quest representative to order the Rack Mounting Ear kit (PN 150989).

3.1 Mounting the MP2

Install the MP2 in the desired location using #8 hardware to connect the two mounting tabs to the wall. For mounting in a 19" rack, use the optional mounting ears Quest p/n 150989.

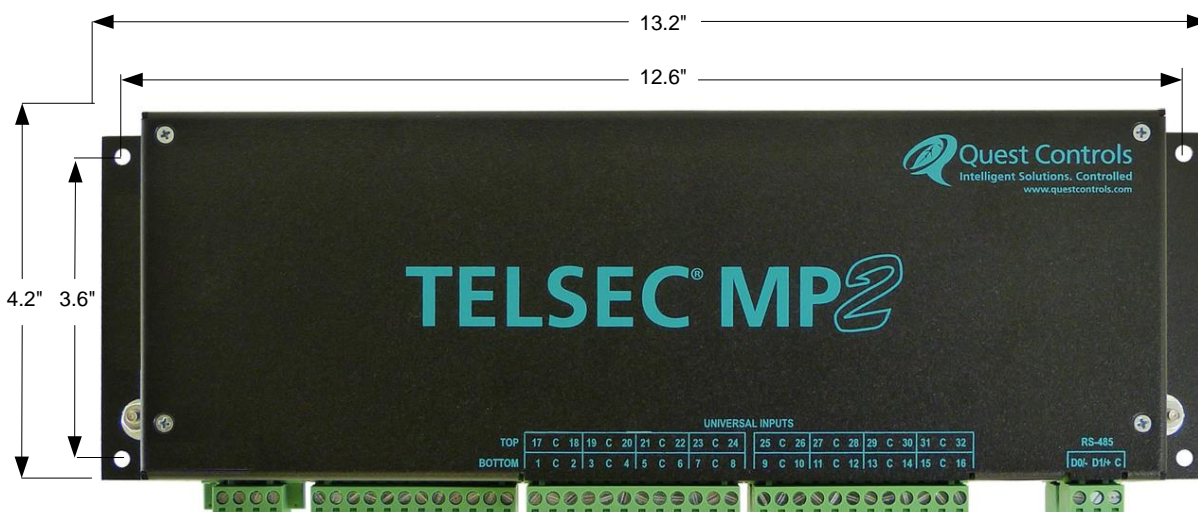


Figure 1 - TELSEC® MP2 Dimensions

3.2 Powering and Grounding

3.2.1 Powering the MP2

Follow all national and local electrical codes when powering the MP2. Quest recommends a minimum of 18AWG conductor for powering. The TELSEC® MP2 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 MP2 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 MP2 observing the polarity markings on the enclosure. Quest recommends fusing each power source at 1 A. 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 wiring is verified.

3.2.2 Removing the Battery Insulator

The MP2 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 front of the unit. The system uses the battery to save the system time and input time status.

3.2.3 Grounding the MP2

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 MP2. Follow national and local codes and practices for properly grounding the system.

3.3 Connecting the Ethernet

Use a standard Cat5 Ethernet cable to connect the MP2 to the local switch or hub. Configure the switch port to auto speed detect and auto negotiation. A green LED link light on the ethernet jack will be illuminated when a physical link has been established. The amber LED on the ethernet jack will be illuminated when the connection is 100Mb and off if the connection is 10Mb.

3.4 Wiring inputs

Wire each input to be used between the input terminal (1-32) and a common terminal (C). There is a common terminal available for every two inputs available for termination. **The MP2 does not provide power for sensor operation thus any device requiring power will need an external power source to operate properly.** 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 and stranded cable for all analog sensors. Connect the shield of the cable to chassis ground on the MP2. Cut the drain wire and isolate the shield at the sensor end of the cable.

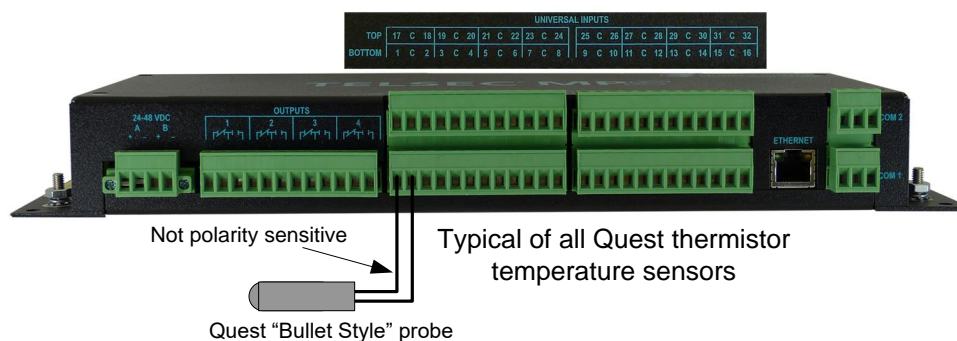


Figure 2 - Thermistor Temperature Sensor Wiring

3.4.2 Voltage Sensors

The TELSEC® MP2 can read and scale any linear voltage input from 0 to 6 VDC. **Sensors requiring power must be externally powered.** Contact Quest for the Input Scaling spread sheet to determine the correct number for the Low and High Custom scale factors.

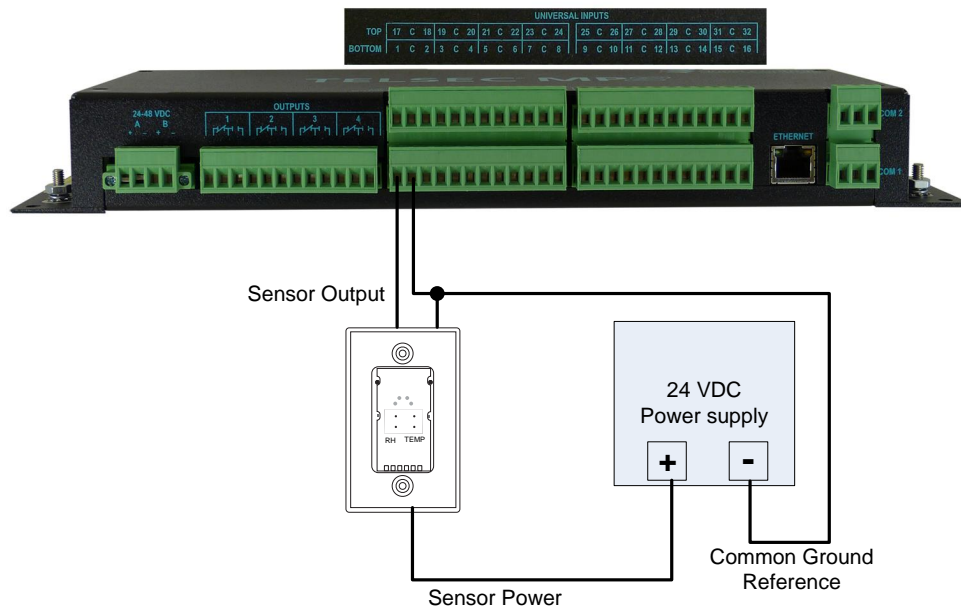


Figure 3 - Wiring Voltage Sensors

3.4.3 Current Sensors

The TELSEC® MP2 can read and scale any linear current input from 0 to 20 mA. 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 for the Input Scaling spread sheet to determine the correct number for the Low and High Custom scale factors.

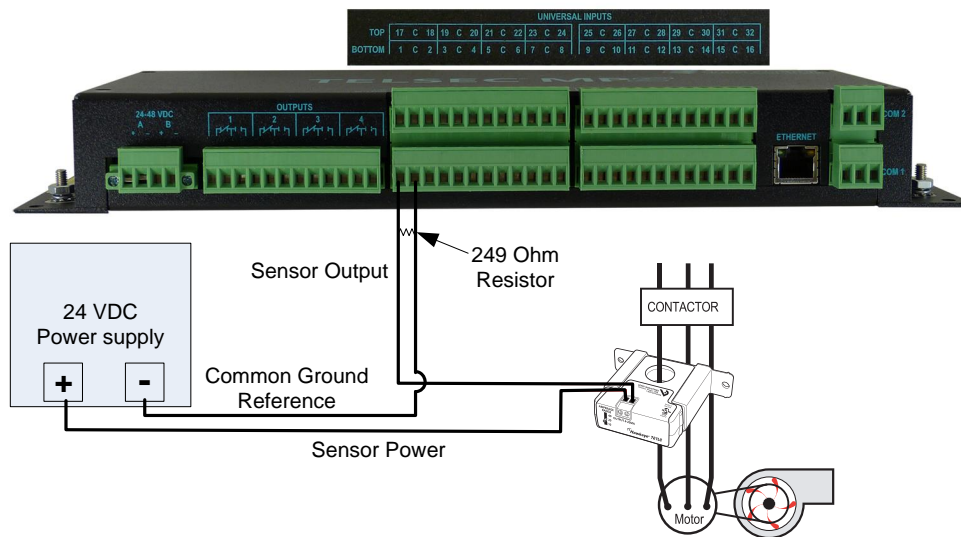


Figure 4 - Wiring a 4-20mA Sensor

3.4.4 Contact Closures

The TELSEC® MP2 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 MP2 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 “Wet” or “Dry” contact closures (see section 9.1) for proper operation.

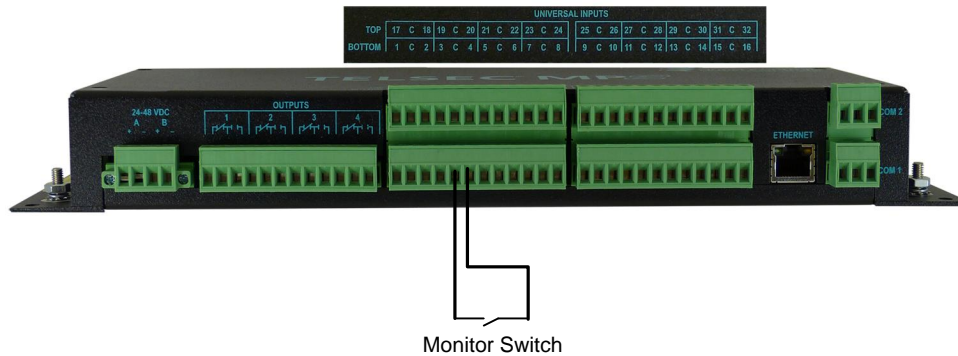


Figure 5 - Wiring Contact Closures

3.5 Wiring for Modbus

The MP2 has two serial ports labeled COM 1 and COM 2. Either port (or both) can be used to poll Modbus RTU devices. The MP2 acts as the master and can support up to 512 registers per serial port (1024 total).

1. Connect no more than 32 Modbus devices per Modbus serial port
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 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 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.

- At the MP2, connect the cable shield to the protective (protected) 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

- At each end of the Modbus cable network daisy-chain, there must be an end of line termination resistor. Connect a 1/2W 120-ohm resistor across the D0 and D1 conductors of the end devices. See Figure 7 below.
- If the MP2 is at one end of the Modbus cable network, then use the built in End of Line resistor. Remove the cover of the MP2 and locate DIP switch in the front right corner of the board. SW3 is for COM1 and SW4 is for COM2. Press switch number 2 down (middle switch) to enable the end of line terminating resistor. If the MP2 is not the last device on the Modbus cable network, then move switch 2 to the up position. See Figure 6 and Figure 7 below. No more than two line 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 ensure 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 such as the MP2. Other devices must not implement any polarization. Refer to the manual of the device you are monitoring to determine if line biasing is required. Remove the cover of the MP2 and locate DIP switch in the front right corner of the board. Switches 1 & 3 on dipswitch SW3 is for COM1 and Switches 1 & 3 on dipswitch SW4 are for COM2. Line polarization is enabled when both switches are in the down position and disabled when in the up position. Switches 1&3 must be in the same position on the dipswitch. Refer to Figure 6.

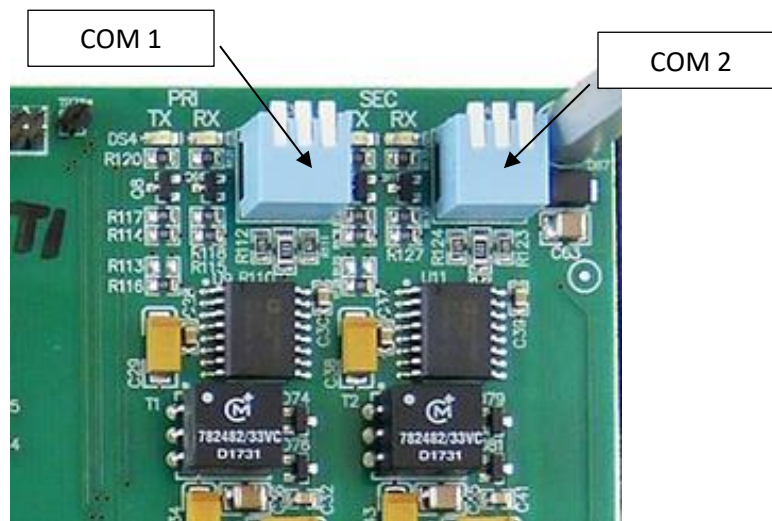
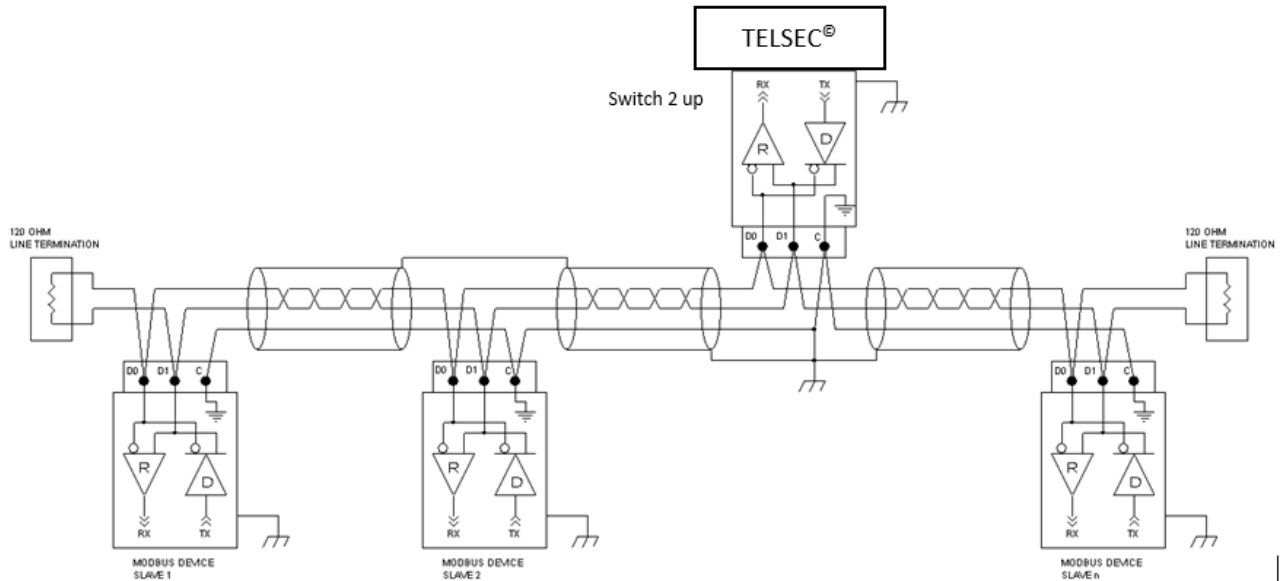


Figure 6 - Modbus End of Line and Line Polarization Jumpers

Drawing A - shows the TELSEC® MP2 in the center of the chain



Drawing B - shows the TELSEC® MP2 on the end of the chain.

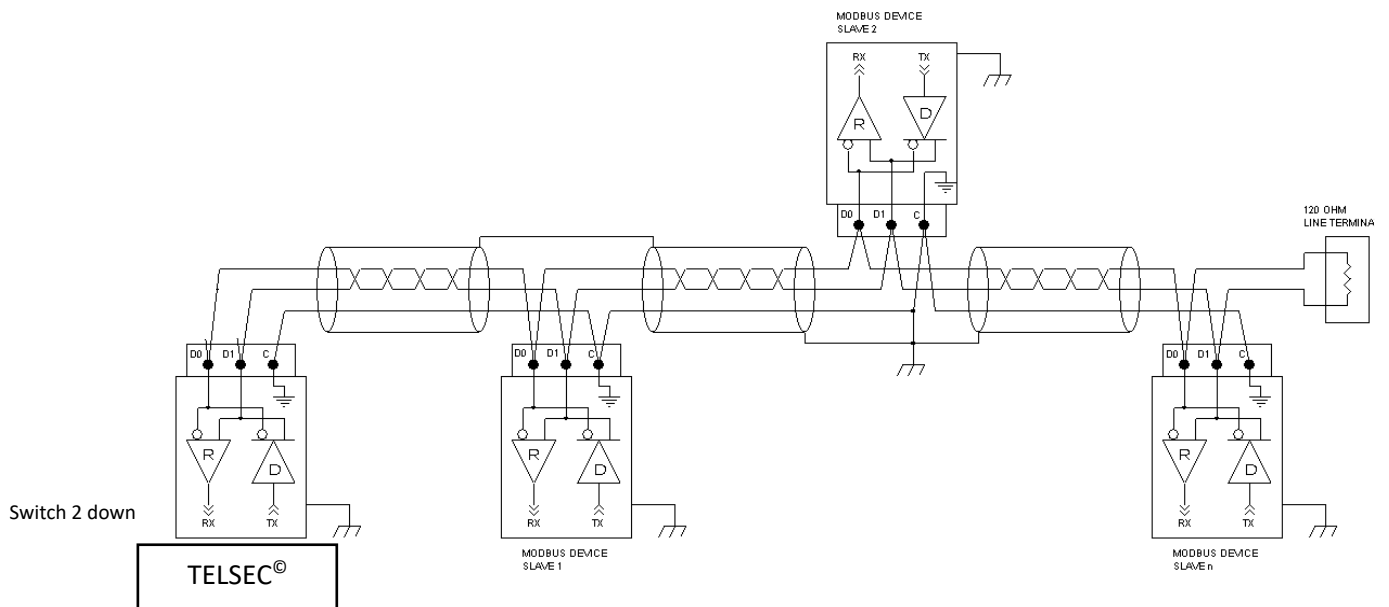


Figure 7 - Typical Modbus Networks

3.8 Wiring Outputs

There are four form C relays available for control of external devices based upon alarm conditions or time schedules. Place wire between the common and normally open or normally closed terminals for each output on the MP2. The relays are designed for Class 2 wiring and are rated for a maximum of 1 amp at 24VAC or 30VDC, 0.3 A @ 60VDC.

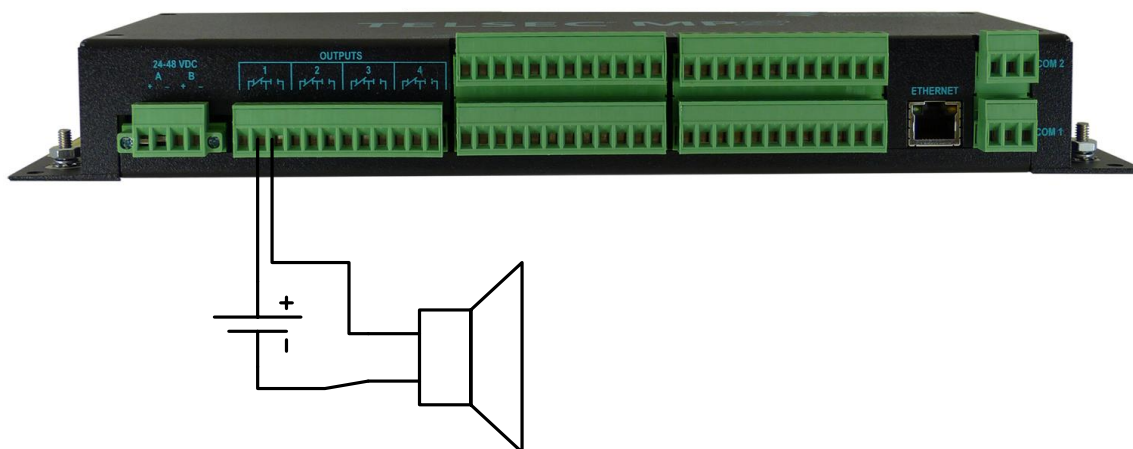


Figure 8 - Wiring Outputs

4 Local Operation

4.1 Power LED

Once the TELSEC® MP2 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 MP2 and review the active alarm log on the home page.

4.3 Relay Outputs

Relay outputs are programmable for normally energized or de-energized condition. The normally open/normally closed terminations on the board refer to when the output is de-energized. There are four outputs that may be associated with an alarm severity or a time schedule. Outputs that are

associated to an alarm severity will be “active” when the alarms are present and will deactivate when either all alarms with the associated severity have cleared or if the acknowledge function is used. Outputs associated with a time schedule will be “active” when the schedule is on and deactivated when the schedule is off. Outputs can be bypassed indefinitely or for a period of time remotely via the built-in web server or by SNMP SET commands.

4.4 Restoring to Factory Defaults

The TELSEC® MP2 has a small access hole on the right side (when looking at the rear of the unit) for the cold start switch. Holding this switch in for approximately 15 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 a few seconds, the alarm (red)LED will be illuminated solidly. Release the cold start switch once the alarm LED is on solid.



Figure 9 - Cold Start Access Hole

5 Communicating with the MP2

Connect a standard Ethernet cable between the TELSEC® MP2 and 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 MP2 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.

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 setting uses HTTP protocol with a username of **Admin** and password of **admin**. The username and password are case sensitive so make sure your caps lock key is turned off. The default password along with the five available User level passwords can be change once you log in and go to the Settings/User Administration web page. Keep track of your password because there is no way to access the system without a valid password. The system will have to be cold started to return to default settings if the password is unknown.

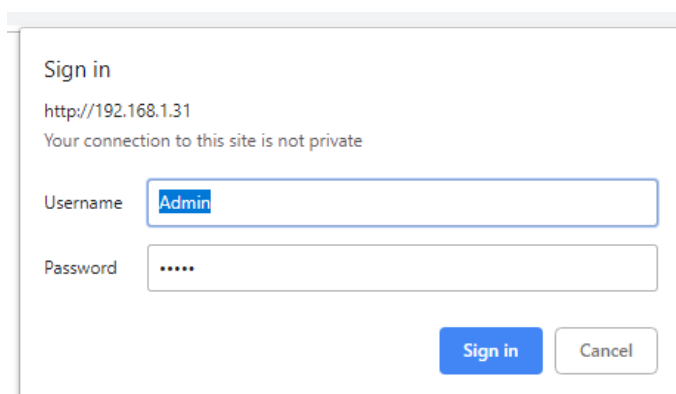


Figure 10 - Log in Screen

5.2 Web Page Navigation

All MP2 web pages will have a top header section that shows the Site Name, the systems date and time, Alarm bell icon and a menu ribbon with the available choices for navigation. The choices presented on the menu ribbon will be dependent on the access level of the password used. Clicking on the alarm icon will navigate directly to the active alarms page.

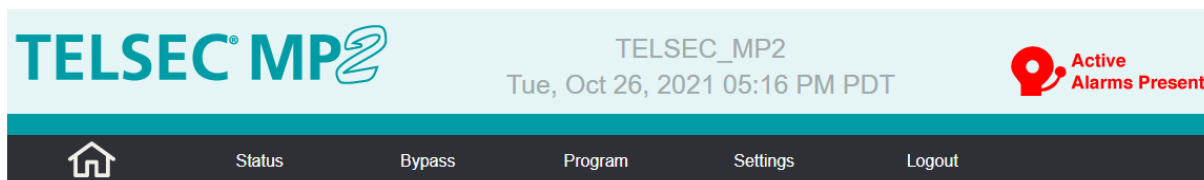


Figure 11 - Web Page Header Section

5.2.1 The Home Page

After you log in with your username and password, the MP2 will display the Home page. This page can also be displayed if you click on the home icon on the menu ribbon. The home page will show the site information box, the status of the outputs and any Active Alarm condition. Outputs have an acknowledge button to allow the user the ability to return the output to the inactive state. See Figure 12.

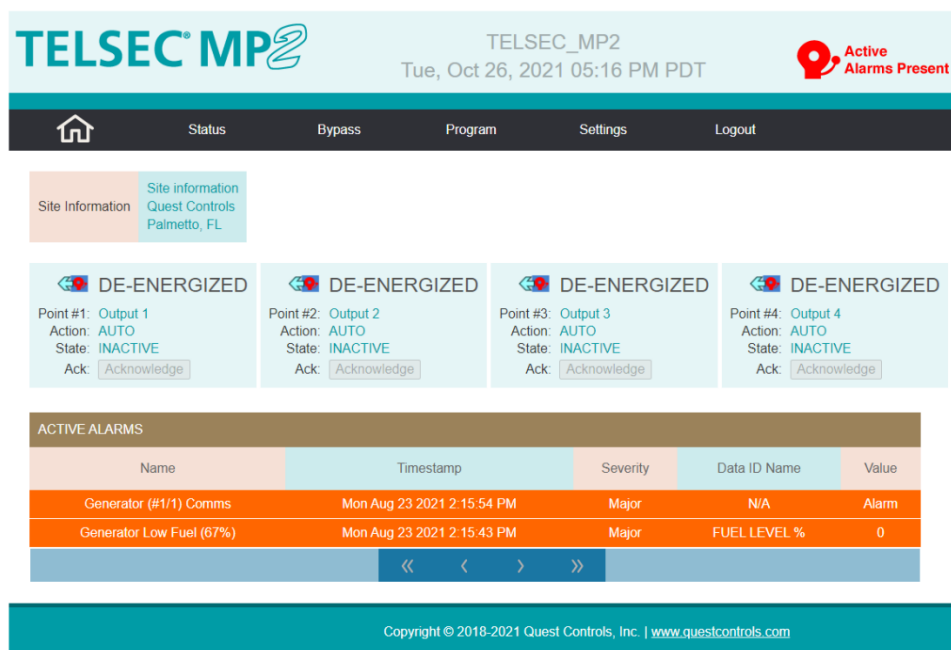


Figure 12 - The TELSEC® MP2 Home Page

6 System Status

Hovering your mouse pointer on the Status option will provide the choices of Input Status, Modbus status (if defined), Output Status and Log Data. This section of the manual will review each one of these options and the available functions.

6.1 Input Status

The input status page will show the current value of the universal inputs that are programmed in the system. The status page allows you to see all inputs in one group or separate groups for digital inputs and analog inputs. Click on the Tab header to expand or contract each section for viewing.

6.1.1 Digital Inputs

Digital inputs will show the input number followed by the defined name of the point and the current value. The page will show the ACCUMULATED ON which represents the entire time the input has been active (ON), this timer can be cleared. The INTERVAL ON timer shows how long this input has been active this time, when the input clears (OFF) this value will be held. When the input re-activates, this timer will clear to zero and start counting. The INTERVAL OFF timer reacts similarly to the ON timer but only counts when the input is off or inactive. The EVENT counter counts one for each change in state of

the input, on is one, off is two, next on is three and so on. The EVENT TIMER begins counting from the time the input is programmed or from the time the input was last cleared.

The system will keep track of the number of alarms that are active for the input and display that as a hyper link. Clicking on the link will bring up a window with a table of active alarms for the point.

The last column on the digital input page will show the defined “normal state” of the input. The purpose of this column is to indicate how the point is defined to make trouble shooting easier without having to navigate to the input definition page. The following will be displayed:

DRYNO = A normally open input wired between input and ground.

DRYNC = A normally closed point wired between input and ground

WETNO = A normally open input wired between the 24V terminal (or external voltage max 60 VDC) and the input terminal.

WETNC = A normally closed input wired between the 24V terminal (or external voltage max 60 VDC) and the input terminal.

DIGITAL INPUTS									
Point #	Name	Value	Related Alarms	Accumulated On	Interval On	Interval Off	Event Count	Event Timer	Normal State
1	DC CRITICAL	OFF	0	000:00:15:56	000:00:15:56	064:02:33:54	1	064:03:01:15	DRYNO
2	DC MAJOR	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
3	DC MINOR	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
4	DC BATT DISC	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
5	DC LOW VOLT	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
6	DC FUSE	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
7	DC AC FAIL	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
8	DC RECT FAIL	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
9	DC MULT RECT FAIL	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
10	DC HIGH VOLT	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
11	HVAC1 SUMMARY	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
12	HVAC1 HIGH TEMP	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
13	HVAC2 SUMMARY	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
14	HVAC 2 HIGH TEMP	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
15	HVAC3 SUMMARY	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
16	HVAC3 HIGH TEMP	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
17	HVAC4 SUMMARY	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
18	HVAC4 HIGH TEMP	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
19	OPEN DOOR	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
20	ATS EMERGENCY	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
21	AC PWR	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
22	ATS NORM	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
23	MTS OFF	OFF	0	000:00:00:00	000:00:00:00	064:03:01:15	0	064:03:01:15	DRYNO
ANALOG INPUTS									

Figure 13 - Digital Input Status

6.1.2 Analog Inputs

Analog input status will show the input number, the programmed name for the point and the current value of the input in the defined engineering units. The related alarms column will indicate the number of active alarms currently present that reference the input. A number greater than 0 will be a hyperlink that will bring up a window showing a table of active alarms for the point.

UNIVERSAL INPUTS

DIGITAL INPUTS			
ANALOG INPUTS			
Point #	Name	Value	Related Alarms
6	Light Level Sensor	0.0	0
8	Zone Temp 1	68.5	0
24	Zone Temp 2	68.6	0
32	Zone Temp 3	-155.0	0

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Figure 14 - Analog Input Status

6.2 Modbus Status

The MP2 supports two serial ports that both can be configured as Modbus networks. The MP2 acts as the primary which polls Modbus devices. The Status menu will show Modbus (port #) where # equals the physical port being used for Modbus. If both ports are used for Modbus, then there will be two entries on the menu. Note Modbus will not show as a status option unless the ports are defined for Modbus.

Selecting the Modbus port status will display as status screen of available Modbus points. The points will be grouped based upon the device they are associated with and the name of the device will be displayed in the header for each window. Clicking on the expand window icon will display the points for each device. The points will be listed with their defined name, the current value based on the point definition and a column showing any related alarms. Related alarms are Alarm Points that reference the Modbus point and are in an active alarm condition. Clicking on the related alarms number will display a popup window with a listing of the active alarms.

MODBUS DEVICES (PORT 1)





SLAVE DEVICE: Power Meter					
SLAVE DEVICE: Generator					
VALUES					
Name	Value	Related Alarms	Name	Value	Related Alarms
Generator RPM	 0.00		Generator Voltage	 0.00	
Generator Current	 0.00		Generator KW	 0.00	
Generator Frequency	 0.00		Battery DC Voltage	 0.00	
Generator Running	 OFF		Generator Summary Alarm	 OFF	
Generator Summary Warning	 OFF		Generator in Auto	 OFF	1
Generator Over Cranking	 OFF		Coolant High Alarm	 OFF	
Coolant High Warning	 OFF		Oil Pressure Low Alarm	 OFF	
Oil Pressure High Warning	 OFF		Generator is OFF	 OFF	
<div> <div><<</div> <div><</div> <div>></div> <div>>></div> </div>					

Figure 15 - Modus Input Status

Modbus points that are writable, will be displayed with a write icon . Clicking on this icon will bring up a window to allow the user to change the value. Enter the value in the converted engineering units that are being displayed. The MP2 will use the point definition to determine the correct value to be sent to the device. Note: the actual ability to change a value is dependent on the device being monitored. Even though the MP2 attempts to write the data, the device may reject the change.

6.3 Output Status

The output status page shows the current status of the four digital outputs. Each output will be shown with the defined name, Action which is either automatic (AUTO) or BYPASSED if a user has bypassed the output (Settings/Bypass). The state field shows whether the point is Active or Inactive based upon the user defined program. The last function is the ability to Acknowledge the current active state which will cause the output to go to an inactive state until the next condition causing an Active state occurs.

OUTPUT STATUS




 DE-ENERGIZED Point #1: Turn on Tower Lights Action: AUTO State: INACTIVE Ack: <input type="button" value="Acknowledge"/>	 ENERGIZED Point #2: Critical Alarms Action: AUTO State: ACTIVE Ack: <input type="button" value="Acknowledge"/>	 DE-ENERGIZED Point #3: Major Alarms Action: AUTO State: INACTIVE Ack: <input type="button" value="Acknowledge"/>	 DE-ENERGIZED Point #4: Minor Alarms Action: AUTO State: INACTIVE Ack: <input type="button" value="Acknowledge"/>
---	---	---	---

Figure 16 - Digital Output Status

6.4 Alarm Status

The Alarm Status page will provide the current status of all the defined alarm points. Each alarm point will be listed with the defined name, the name of the point being referenced in the alarm, a timestamp when the alarm point last transitioned to its current value and the current value of the point.

ALARMS STATUS			
FILTER			
Category:	All	Name:	Data ID Name:
ALARMS			
Name	Data ID Name	Timestamp	Value
Power Meter (#1/1) Comms	N/A	Thu Mar 21 2019 5:16:11 PM	OFF
Generator (#1/100) Comms	N/A	Thu Mar 21 2019 5:16:11 PM	OFF
Alarm Test	N/A	Mon Mar 04 2019 3:45:40 PM	OFF
Tower - Photocell Failure	Tower - Photocell Failure	N/A	OFF
Tower - Marker Light Alarm	Tower - Marker Light Fail Alarm	N/A	OFF
Tower - Beacon Fail - Night mode	Tower - Night Beacon Light Fail	Fri Mar 01 2019 10:45:37 AM	ON (alarm)
Tower - Beacon Fail Day Mode	Tower - Day Beacon Light Failure	N/A	OFF
Tower Light for alarm qualifier	Tower - Light Status	Fri Mar 22 2019 4:00:03 PM	ON
<< < > >>			

Figure 17 - Alarm Status Page

Use the forward, back, beginning and end icons to navigate through the alarms. The page supports filtering alarms based on category from the dropdown box such as Inputs or Modbus, or by word matching of point names. Use the Name field for the alarm name and the Data ID Name field to search by an input name. For example, you can type Tower in the name field to get a list of all alarms that have the word "Tower" in the name.

6.5 Active Alarm Log

The Active Alarms page will display any alarm that is currently active in the system. The page allows for searching based on severity level and by date. The alarms displayed can also be downloaded to a CSV file by clicking on the Download To CSV button.

ACTIVE ALARMS

TYPE/DATE FILTER

Critical

Minor

Notice

Major

Warning

Clear

Start Date

End Date

Regenerate Alarm Table

Download To CSV

ACTIVE ALARMS				
Name	Timestamp	Severity	Data ID Name	Value
GEN NOT IN AUTO	Fri Mar 01 2019 4:47:42 PM	Critical	Generator in Auto	Alarm
Tower - Beacon Fail - Night mode	Fri Mar 01 2019 10:45:37 AM	Critical	Tower - Night Beacon Light Fail	Alarm

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Figure 18 - Active Alarms Page

6.6 Historical Alarm Log

The Historical Alarm page will show the alarm history of the stored alarms. Use the back, next, beginning and ending button on the bottom of the table to navigate through the list of alarms. The Download To CSV button will create a CSV file and download it to your computer.

Regenerate Alarm Table

Download To CSV

HISTORICAL ALARMS				
Name	Timestamp	Severity	Data ID Name	Value
Tower Lights are not on	Fri Mar 22 2019 3:30:05 PM	Critical	Light Level Sensor	0.1
Tower Light for alarm qualifier	Fri Mar 22 2019 3:00:05 PM	Notice	Tower - Light Status	Alarm
Tower Lights are not on	Fri Mar 22 2019 2:00:04 PM	Major	Light Level Sensor	0.1
Tower Lights are not on	Fri Mar 22 2019 1:30:04 PM	Critical	Light Level Sensor	0.1
Tower Light for alarm qualifier	Fri Mar 22 2019 1:00:05 PM	Notice	Tower - Light Status	Alarm
Tower Lights are not on	Fri Mar 22 2019 9:00:05 AM	Major	Light Level Sensor	0.1
Tower Lights are not on	Fri Mar 22 2019 8:30:05 AM	Critical	Light Level Sensor	0.1
Tower Light for alarm qualifier	Fri Mar 22 2019 8:00:05 AM	Notice	Tower - Light Status	Alarm
Tower Lights are not on	Fri Mar 22 2019 6:30:03 AM	Critical	Light Level Sensor	0.1
Tower Light for alarm qualifier	Fri Mar 22 2019 6:00:03 AM	Notice	Tower - Light Status	Alarm

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Figure 19 - Historical Alarm Page

6.6.1 Filtering Alarm Data

Use the TYPE/DATE FILTER functions to filter the alarm severity and the Start/Stop Date fields to select the specific desired ranges. The page has additional filters for the alarm category (All, Inputs, Modbus by device) and the ability to word match the name of the alarm and/or the data point being referenced in the alarm. Press the Regenerate Alarm Table button once you create your search criteria. For example, a search of all Critical Tower Alarms:



HISTORICAL ALARMS

TYPE/DATE FILTER

Critical	Minor	Notice	Start Date	<input type="text"/>
Major	Warning	Clear	End Date	<input type="text"/>

CATEGORY/NAME FILTER

Category: Name: Data ID Name:

 Regenerate Alarm Table  Download To CSV

HISTORICAL ALARMS

Name	Timestamp	Severity	Data ID Name	Value
Tower Lights are not on	Fri Mar 22 2019 3:30:05 PM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Fri Mar 22 2019 1:30:04 PM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Fri Mar 22 2019 8:30:05 AM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Fri Mar 22 2019 6:30:03 AM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Fri Mar 22 2019 4:30:03 AM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Fri Mar 22 2019 2:30:06 AM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Thu Mar 21 2019 7:30:05 PM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Thu Mar 21 2019 3:30:03 PM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Thu Mar 21 2019 1:30:04 PM	Critical	Light Level Sensor	0.1
Tower Lights are not on	Thu Mar 21 2019 8:30:04 AM	Critical	Light Level Sensor	0.1

« < > »

Figure 20 - Alarm History Search Results

Press the “Download to CSV” button if you want to save a copy of this search to your computer in a comma separated values (CSV) file format.

6.7 Log Data

The MP2 will plot a graph of up to four points at a time. The page controls will allow the user to select from Analog Inputs, Digital Inputs, Modbus and Digital Outputs. Any combination of point types can be charted at one time. Select the point to be graphed and then select the date range for the data. If no date range is specified, then the system will display the most recent data for the points when clicking on the Regenerate Graph button. When there are a lot of points present, you can type a name or partial name in the “Point name match string” field. The system will only show points that contains those characters. For example you could type Zone in the point name match field and the system will only display analog inputs with value of Zone in the name.

LOG DATA

Choose Points			
Point 1	Point 2	Point 3	Point 4
<input type="text" value="Point name match string..."/>	<input type="text" value="Point name match string..."/>	<input type="text" value="Point name match string..."/>	<input type="text" value="Point name match string..."/>
<div>Analog Inputs</div>	<div></div>	<div></div>	<div></div>
<div>ZONE TEMP</div>			

Start Date

End Date


 Regenerate Graph

Figure 21 - Select Data Point to be Graphed

The system will display the graph with a default view of the last 24 hours. Use the page buttons and zoom in and out icons to view the data in your web browser. The MP2 will display a Download to CSV button which will download the data in a CSV file for viewing in another program. Note the download will be the most current 4095 entries per point when no time range was selected. If a large time range was selected, then the system will return the last 4095 entries per point for the range.

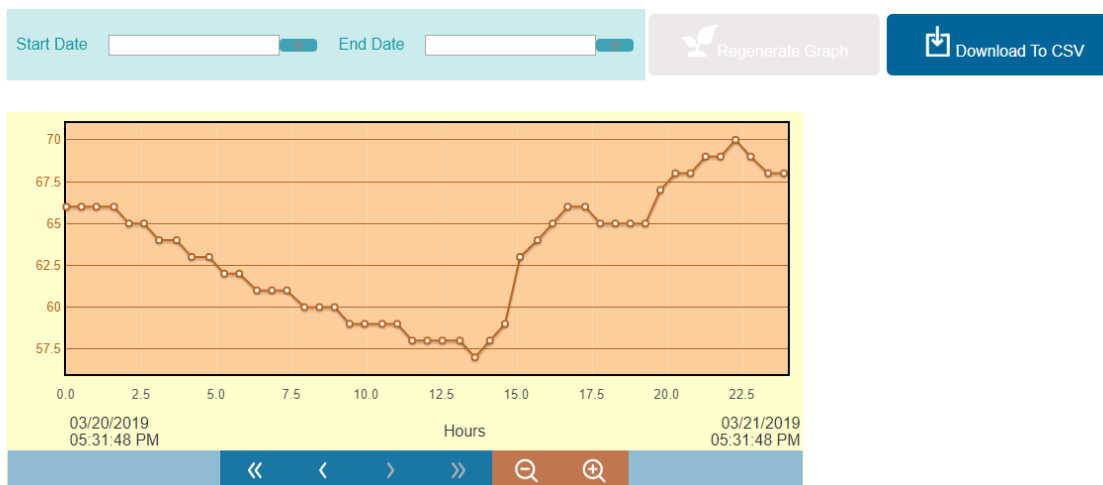


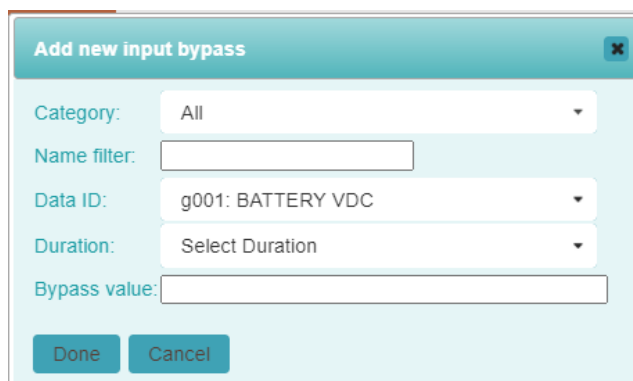
Figure 22 - Graph of Selected Data Points

7 Bypassing

The Bypass page is used to bypass the four outputs on the MP2 and to override the current status of directly wired inputs and Modbus points.

7.1 Bypass Inputs

Directly wired inputs and any defined Modbus point can have their current value overridden by clicking on the “Add new input bypass” button. This will bring up the following dialogue:

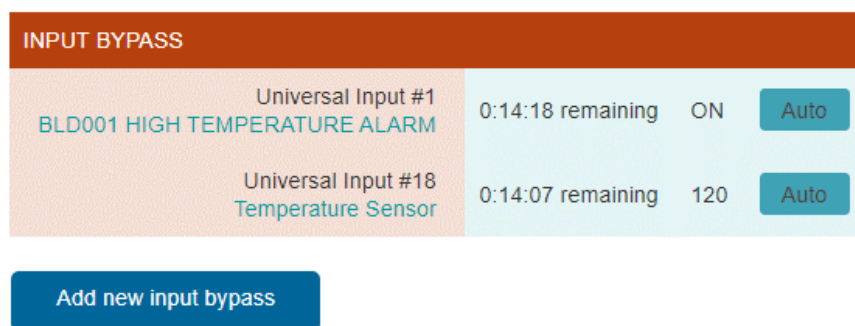


The dialog box titled "Add new input bypass" contains the following fields and controls:

- Category:** A dropdown menu currently set to "All".
- Name filter:** A text input field.
- Data ID:** A dropdown menu currently set to "g001: BATTERY VDC".
- Duration:** A dropdown menu currently set to "Select Duration".
- Bypass value:** A text input field.
- Buttons:** "Done" and "Cancel" buttons at the bottom.

Figure 23 - Bypass Inputs

The category field is used to filter the points in the Data ID dropdown. The choice of ALL will show all defined inputs and Modbus points. You can select from All, Universal inputs or the Modbus device name. The Name Filter is used to reduce the number of available points in the drop down. Type the name or partial name of the point to bypass and the system will only show points that contain those characters. Select the point to be bypassed in the Data ID field and then select the duration. The bypass value field will have the option of ON or OFF for binary points or will allow the user to enter a numeric value for analog sensors. Press the Done button to complete the bypass. The point in bypass will then appear on the bypass page. Clicking on the Auto button for the input will return the point to automatic readings.



The "INPUT BYPASS" screen displays a table of bypassed inputs and an "Add new input bypass" button at the bottom.

INPUT BYPASS			
Universal Input #1 BLD001 HIGH TEMPERATURE ALARM	0:14:18 remaining	ON	Auto
Universal Input #18 Temperature Sensor	0:14:07 remaining	120	Auto

Below the table is a blue button labeled "Add new input bypass".

Figure 24 - Input Bypass Status

7.2 Bypassing Outputs

The bypass output function is used to turn on (activate) or off (deactivate) the outputs. Select a time duration from the dropdown or the word FOREVER and then select the desired action of ON or OFF. Outputs bypassed for a time period will return to automatic mode once the time elapses. Outputs bypassed FOREVER must be manually returned to automatic by selecting Auto.

BYPASS		
Point #1 Turn on Tower Lights	Select Duration ▾	On Off Auto
Point #2 Critical Alarms	Select Duration ▾	On Off Auto
Point #3 Major Alarms	Select Duration ▾	On Off Auto
Point #4 Minor Alarms	Select Duration ▾	On Off Auto

Figure 25 - Bypassing MP2 Outputs

8 Configuring the MP2

Configuring the MP2 consists of setting up the basic functions and features that will be used with your application. Items such as the network settings, system clock, serial ports, network protocols and alarm dispatch need to be configured so the system knows what and how to operate when you program the system for monitoring and alarming.

8.1 System Setup

Select Settings from the main menu and choose General. The MP2 will display a list of options for configuration with the first one being Site Parameters. Click on each accordion header to modify the settings for each section and press Save Settings to write the changes to non-volatile flash memory. Save Settings will cause the system to save the changes and reboot to come up with the new values. You can navigate through each section on this page, make changes and then press the Save button to save all changes at once. **Changes will not be saved if you navigate from this page without pressing the “Save Settings” button.**

GENERAL SETTINGS

▼ SITE PARAMETERS

Site Name

RDNGPAREH72_MP2

Site Information

Alarm Response Center
Reading, PA

▼ IPV4 CONFIGURATION

▼ IPV6 CONFIGURATION

▼ IP GENERAL

▼ TIME SETTINGS

▼ SERIAL PORTS

▼ DNP CONFIGURATION

▼ SNMP/SMTP GENERAL CONFIGURATION

▼ SNMPV3 USER CONFIGURATION

▼ RADIUS CONFIGURATION

▼ TELNET/SSH USER CONFIGURATION

Save Settings

Press to save settings after
making changes in all sections

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Figure 26 - Web Server Setup

8.1.1 Site Parameters

The Site name is displayed in the header of web pages and is used when sending Emails and/or SNMP traps. Enter the desired name to reference the site where the MP2 is located. **Note spaces are not allowed and will be converted to underscores.** The Site Information section is to store unique information about the site such as the address to the facility or contact information.

SITE PARAMETERS	
Site Name	TELSEC_MP2
Site Information	Site information Quest Controls Palmetto, FL

Figure 27 - Site Name and Information

8.1.2 IPV4 Configuration

The MP2 supports dual stack for IPv4 and IPv6 or you can disable either IPv4 or IPv6. The default setting is for IPv4 to be enabled and IPv6 disabled. The system will not allow a user to disable both. Use this section to enable/disable IPV4 protocol and to configure an IP address for the unit. The system supports DHCP or Static. If Static is chosen, then enter the desired IP address, Subnet mask and Gateway address.

IPV4 CONFIGURATION	
IPv4 Protocol	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Address Type	<input type="radio"/> DHCP <input checked="" type="radio"/> Static
IP Address	192.168.1.31
Netmask	255.255.255.0
Gateway	192.168.1.1

Figure 28 - IP address and settings

8.1.3 IPV6 Configuration

The MP2 supports either dual stack for IPv4 and IPv6 or you can enable IPv6 and disable IPv4. Use this section to enable IPv6 and configure the network address using either Auto configuration or manual configuration. If Auto is chosen, then the system will display the address in the IP address field after pressing the Save Settings button and the system goes through its restart. For manual configuration, enter the IP address with the prefix and the gateway address without a prefix.

IPv6 CONFIGURATION

IPv6 Protocol	<div>Enabled</div> <div>Disabled</div>
Auto Config	<div>Auto</div> <div>Manual</div>
IP Address (with /prefix)	fd75:983f:60e7:a16e::4/64
Gateway (without /prefix)	fd75:983f:60e7:a16e::1

Figure 29 - IPv6 settings

8.1.4 IP General

This section is used to enter the DNS server IP addresses, change the default IP ports, enable/disable SSL and configure the location of where the update server is located. The Telnet and SSH port are used for Transaction Language 1 (TL1) alarming and access to the management shell see section 8.1.11 for configuring usernames and passwords. The TL1 port is a read only access that uses Telnet and does not require a log in sequence. Changing the port number to 0 for Telnet, TL1 Port or SSH will disable access to that function.

When selecting SSL, the system will allow you to copy/paste the contents of your own PEM data file if you have one. If no PEM data is entered, then the system will create a self-certification. Self-certification will allow HTTPS connection, but your browser will generate an error notice and ask you if you want to continue. The update server section is used to identify where to look for updates when a user presses the Check and Install Updates button found on the Settings/Advanced page. It is recommended that this field is not changed unless you know the IP address and path for update files.

IP GENERAL

DNS1	8.8.8.8
DNS2	8.8.4.4
Telnet Port	23
TL1 Port	3024
SSH Port	22
HTTP Port	80
SSL	<div>Disable</div> <div>Enable</div>
Update Server	192.168.1.104/mp2
Ethernet MAC Address	3c:98:bf:00:00:1f

Figure 30 - Additional network settings

8.1.5 Time Settings

Use this section to either set the system clock manually or to turn on automatic time updates using an NTP Server. This page will also allow you to enter a time zone for the system and configure daylight savings time. In manual mode, the web page will allow you to set the time of the system manually by clicking on the time field. This will bring up a dialog box for setting the time which will include a button to set the time using time on your computer.

Figure 31 - System clock settings

8.1.6 Serial Ports

The MP2 has two RS485 serial ports that can be used for Modbus RTU or DNP3. The Modbus option makes the MP2 a Modbus master to poll equipment that support Modbus RTU protocol. The DNP option will allow the MP2 to function as a DNP outstation to provide status of its universal inputs and digital outputs. Use the dropdowns to configure the serial ports for baud rate, data bits, stop bits and parity options. For Modbus you can also select an alarm severity and delay in seconds. This alarm will generate when a defined device on the network is not responding.

SERIAL PORTS

Serial Port 1
Modbus client

Baud Rate:
19200

Port Config:
8-N-1

Comm Alarm Severity:
Major

Comm Alarm Delay:
5

Comm Clear Delay:
5

Serial Port 2
DNP outstation

Baud Rate:
19200

Port Config:
8-N-1

Figure 32 - Configure serial ports for Modbus or DNP3

8.1.7 DNP Configuration

The MP2 supports DNP3 via ethernet and serial communications. The DNP option will allow the MP2 to function as a DNP outstation to provide status of its universal inputs and digital outputs. The system supports polling of the points along with unsolicited messages of inputs defined as digital and digital outputs. Use the options to enable DNP3 over IP and select the TCP port (default 20000), local address (the MP2's address), the Remote address and the point class if used. The system will support point class 1,2 or 3 to provide the status of points that have changed since the last poll.

DNP CONFIGURATION

DNP over IP
Disable Enable

TCP port:
20000

DNP over Serial
controlled by SERIAL PORTS section

Allow unsolicited messages
Disable Enable

Local address
4

Remote address
1

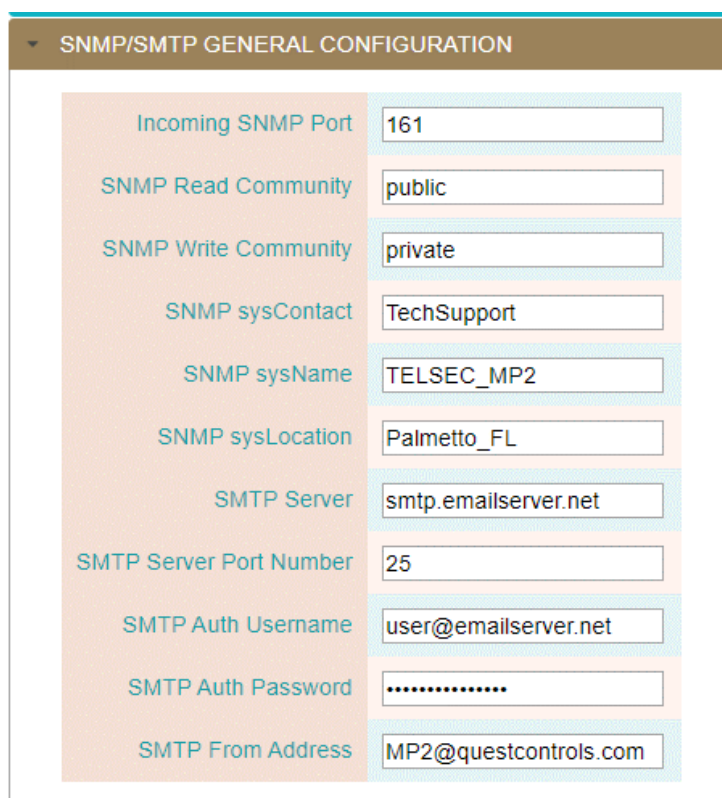
Points class
1

Figure 33 - DNP Outstation setup

8.1.8 SNMP/SMTP General Configuration

Use this section to set up the common settings when using SNMP or SMTP (Email). When using SNMPv3, you can have SNMPv1 & v2c active by putting in a Read and Write community string. Leave these fields blank to disable v1 & v2c SET and GET operations. Contact Quest to obtain the MIB files for the MP2. There is a specific MP2 MIB for doing SET and GET commands along with Quest's standard Alarm MIB file for trap reception.

The SMTP setup is to allow the MP2 to send text-based emails when an alarm occurs. Enter the SMTP server information, username and password if necessary, to allow the MP2 to connect to the sever for sending email notifications. The email dispatch addresses and alarm severity are configured in the Settings Alarm Dispatch page (section 8.2.2). The format of the email can be found in Appendix D – Email Alarm Format



The screenshot displays the 'SNMP/SMTP GENERAL CONFIGURATION' section of a web interface. It contains a list of configuration fields with their current values:

Field	Value
Incoming SNMP Port	161
SNMP Read Community	public
SNMP Write Community	private
SNMP sysContact	TechSupport
SNMP sysName	TELSEC_MP2
SNMP sysLocation	Palmetto_FL
SMTP Server	smtp.emailserver.net
SMTP Server Port Number	25
SMTP Auth Username	user@emailserver.net
SMTP Auth Password
SMTP From Address	MP2@questcontrols.com

Figure 34 - SNMP and Email configuration

8.1.9 SNMPv3 User Configuration

Use this section to create up to four different users for SNMP Set/Get access to the system and sending traps if v3 traps are configured under the Settings/Dispatch page. The MP2 supports authentication using MD5 or SHA and Privacy using DES or AES. Usernames and passwords are 8-32 characters in length and accept the characters a-z,A-Z and 0-9.

SNMPv3 USER CONFIGURATION						
Username	Access Type	Auth Type	Auth Protocol	Auth Pswd (twice)	Priv Protocol	Priv Pswd (twice)
UserNumber1	R/O R/W	authPriv	MD5 SHA	DES AES
UserNumber2	R/O R/W	noAuthNoPriv	MD5 SHA	 	DES AES	
UserNumber3	R/O R/W	authNoPriv	MD5 SHA	DES AES	
	R/O R/W	noAuthNoPriv	MD5 SHA	 	DES AES	

Figure 35 - SNMPv3 Username configuration

8.1.10 RADIUS Configuration

If RADIUS is enabled, the MP2 will contact the defined server when a user attempts to log into the system to determine if the username/password is valid. The MP2 will grant access if the username/password is valid and will show the menu options based upon the user's access level defined in the RADIUS server. See Appendix B - RADIUS Server Configuration for the required setting when configuring the RADIUS server.

RADIUS CONFIGURATION	
Authentication	Disable Enable
Server	
Port	1812
Timeout	15
Retries	3
Shared Secret

Figure 36 - RADIUS server interface setup

8.1.11 Telnet/SSH User Configuration

The MP2 supports SSH and Telnet for access to the system to receive alarms via TL1 (Appendix E – TL1 Alarms and Commands) or to access the Shell console for managing the network settings of the MP2 (section 10). The Telnet/SSH User Configuration section is used to set usernames, passwords, inactivity timeout delay and the access type for up to nine different users. The default username/password for the "shell" level is Shelllevel/shelllevel and for TL1 access it is TL1level/tl1level. Change the default settings and or add additional users by entering the appropriate information and then select the access

type. Press the save changes button to write the settings to flash. Usernames are 8-32 characters in length and can contain A-Z,a-z, 0-9 and special character _. Passwords are 8-32 characters in length and can contain A-Z,a-z, 0-9 and special characters _@#%*-

▼ TELNET/SSH USER CONFIGURATION

Username	Password (twice)	Inactivity Timeout (minutes)	Access Type
Shelllevel	<input type="password" value="....."/> <input type="password" value="....."/>	15	shell ▼
TL1level	<input type="password" value="....."/> <input type="password" value="....."/>	60	tl1 ▼
<input type="text"/>	<input type="password"/> <input type="password"/>	<input type="text"/>	none ▼
<input type="text"/>	<input type="password"/> <input type="password"/>	<input type="text"/>	none ▼
<input type="text"/>	<input type="password"/> <input type="password"/>	<input type="text"/>	none ▼
<input type="text"/>	<input type="password"/> <input type="password"/>	<input type="text"/>	none ▼
<input type="text"/>	<input type="password"/> <input type="password"/>	<input type="text"/>	none ▼
<input type="text"/>	<input type="password"/> <input type="password"/>	<input type="text"/>	none ▼
<input type="text"/>	<input type="password"/> <input type="password"/>	<input type="text"/>	none ▼

Figure 37 - Telnet/SSH User Configuration

8.2 Alarm Dispatch Settings

The Alarms Dispatch option under the Settings menu will display the current settings for both the SNMP dispatch and Email dispatching of alarms.

8.2.1 SNMP Dispatch

The MP2 supports sending SNMP traps or Informs (v2c or v3 only) to four trap servers. Enter the IP address of the trap server and select the SNMP version and either Trap or Inform. Some trap servers require a specific Community String to be used, but if not, use the value of Trap which is the default. For SNMPv3, you will need to use one of the defined Usernames that was created during the configuration of SNMPv3 (section 8.1.9). Press the “Save Settings” button to save your changes. **Note: if you are also using Email dispatching, then make those entries first prior to pressing the “Save Settings” button (section 8.2.2).**

ALARM DISPATCH

SNMP DISPATCH

Number	Receiver IP	Version	Type	Community String/V3 Username
1.	<input type="text" value="192.168.1.100"/>	v1 v2 v3	Trap Inform	<input type="text" value="WhyWontYou"/>
2.	<input type="text" value="192.168.1.104"/>	v1 v2 v3	Trap Inform	<input type="text" value="Trap"/>
3.	<input type="text"/>	v1 v2 v3	Trap Inform	<input type="text" value="Trap"/>
4.	<input type="text"/>	v1 v2 v3	Trap Inform	<input type="text" value="Trap"/>

EMAIL DISPATCH

Figure 38 - SNMP Trap/Inform configuration

8.2.2 Email Dispatch

Click on the Email Dispatch expand icon to display the settings for creating email distribution. The Email server settings must be configured for email alarming to occur (See section 8.1.8). The MP2 supports nine email addresses for sending alarms. Enter the users email address or distribution list address to be used. The subject field allows for a custom message to be included with the email. The system will create a subject line with the severity of the alarm followed by the text entered in the subject field. The last column allows for filtering of what type of alarms to be sent. The system will automatically send a clear email when the alarm condition clears. For example, if only Critical alarms are sent via email then the Clear for those critical alarms will be sent.

ALARM DISPATCH

SNMP DISPATCH

EMAIL DISPATCH

Number	Recipient	Subject	Severity Filter
1.	<input type="text"/>	<input type="text"/>	Disabled
2.	<input type="text"/>	<input type="text"/>	Critical, Major, and Minor
3.	<input type="text"/>	<input type="text"/>	Critical and Major
4.	<input type="text"/>	<input type="text"/>	Critical Only
5.	<input type="text"/>	<input type="text"/>	All Severities
6.	<input type="text"/>	<input type="text"/>	Disabled
7.	<input type="text"/>	<input type="text"/>	Disabled
8.	<input type="text"/>	<input type="text"/>	Disabled
9.	<input type="text"/>	<input type="text"/>	Disabled

Figure 39 - Email alarm dispatch

Press the Save Settings button at the bottom of the page when completed. This will save any changes made to the email dispatch and changes made to the SNMP dispatch.

8.2.3 Heartbeat Function

The MP2 can be enabled to send a heartbeat message based on a user defined interval. This is typically used to coordinate with a monitoring system platform to ensure the system is operational. Heartbeat messages are only sent via SNMP or TL1 over a Telnet/SSH connection. The heartbeat message is a user definable 32-character message. Enter the desired message and select the interval by entering in the number of seconds to wait between sending messages. A value of 0 will disable this function.

The screenshot shows a web interface for 'HEARTBEAT CONFIGURATION'. It contains two input fields: 'Heartbeat Event Interval (sec, 0=disabled)' with the value '120' and 'Heartbeat Event String' with the value 'MP2 Heartbeat message'.

Figure 40 - Heartbeat configuration

8.2.4 Test Alarms

The [Send Test Alarm](#) button at the bottom of the page will cause a test trap to be sent to all the defined destinations along with a test email to the defined recipients. The Test alarm will have a critical severity with all the data fields showing TEST ALARM. The critical alarm will be followed by a clear alarm again with all the data fields showing TEST ALARM.

8.3 HTTP User Administration

This page sets up the six available usernames for the password and what areas the user can access. If the RADIUS server function is enabled, then this option does not affect user access. The default passwords are the same as the username, but in all lower case. No characters are displayed in the password field for security purposes. Passwords can be 5-32 characters in length and contain A-Z,a-z, 0-9 and special characters _@#%*-.

The screenshot shows a 'USER ADMINISTRATION' table with the following structure:

User	Password	Confirm Password	Privileges
User1	<input type="password"/>	<input type="password"/>	Home Status Bypass Program Settings
User2	<input type="password"/>	<input type="password"/>	Home Status Bypass Program Settings
User3	<input type="password"/>	<input type="password"/>	Home Status Bypass Program Settings
User4	<input type="password"/>	<input type="password"/>	Home Status Bypass Program Settings
User5	<input type="password"/>	<input type="password"/>	Home Status Bypass Program Settings
Admin	<input type="password"/>	<input type="password"/>	Home Status Bypass Program Settings

Figure 41 - Webserver password setup

8.4 Advanced Settings

8.4.1 System Version & Update

Choosing the Advanced settings will display the current version of the system's firmware. Selecting the Update button will cause the system to try and connect to an update server to look for upgrades. The IP address used for upgrades must be accessible from the network the MP2 is on in order to perform the upgrade. The IP address for the upgrade server is configured in the IP General window. See section 8.1.4. Alternatively, the MP2 can be upgraded locally using an SD card. Contact Quest for upgrade information.

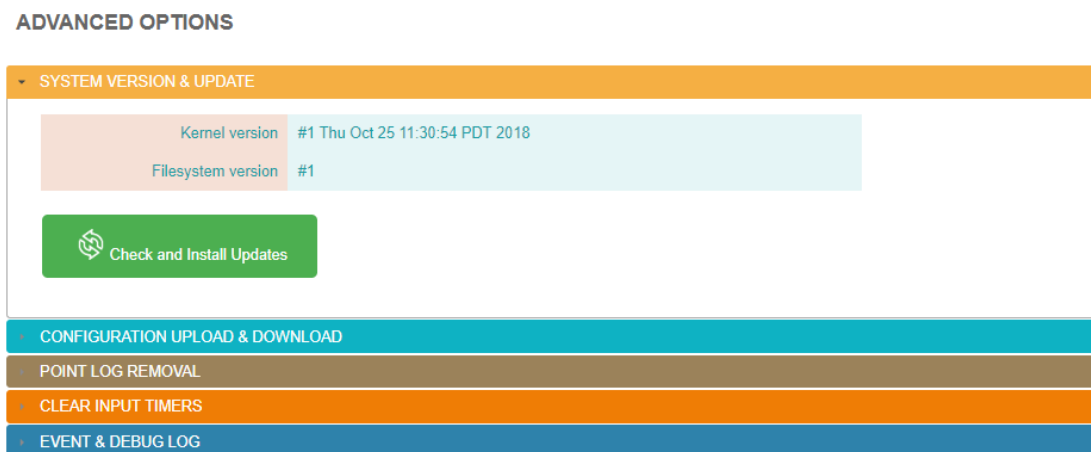


Figure 42 - Firmware version and update

8.4.2 Configuration Upload & Download

Select the expand arrow to display the option for downloading or uploading a configuration file to the system. The download option will download a text file to your web browser. The file will have all of the current settings configured in the system. This file can then be saved in case the site needs to be uploaded in the future. The Upload option will allow you to load a configuration file to the system. While the system will download all settings into a single file, it will accept uploading files with individual sections. This way you can upload only the sections requiring changes. Each section has a label in brackets [] to denote the section. The entire section must be loaded together to be successful.

First select the Choose File button to navigate and select a file from your computer. Then select the Upload button. The system will receive the file and then verify the information to ensure it conforms to the proper syntax. The system will then present a dialogue box displaying any errors with their line number or a notice of no errors. If there are no errors, then there will be a Save and Reboot button below the dialogue box. Pressing this button will cause the system to save the contents of the configuration file to flash and then reboot and come back up with the new settings.

ADVANCED OPTIONS

The screenshot shows the 'CONFIGURATION UPLOAD & DOWNLOAD' section of the 'ADVANCED OPTIONS' menu. It contains three main buttons: 'Download Configuration to browser' with a download icon, 'Choose File' with a file icon and the text 'No file chosen', and 'Upload Configuration from browser' with an upload icon. The menu is structured with a sidebar on the left containing 'SYSTEM VERSION & UPDATE', 'CONFIGURATION UPLOAD & DOWNLOAD' (selected), 'POINT LOG REMOVAL', 'CLEAR INPUT TIMERS', and 'EVENT & DEBUG LOG'.

Figure 43 - Configuration file upload & download

8.4.3 Point Log Removal

This section will allow clearing of log data for a single point or erasing history log data for all the points. It is not necessary to periodically remove log data since the system will overwrite old data when the log is full. Typically, the manual clearing of logs might be done after the system is properly wired and configured to eliminate erroneous data that could have occurred during installation.

The screenshot shows the 'POINT LOG REMOVAL' section of the 'ADVANCED OPTIONS' menu. It features a light blue box with the text 'Select log point to erase:' followed by a dropdown menu. To the right of the dropdown are two buttons: 'Erase' and 'Erase All Points'. The sidebar on the left shows 'SYSTEM VERSION & UPDATE', 'CONFIGURATION UPLOAD & DOWNLOAD', 'POINT LOG REMOVAL' (selected), 'CLEAR INPUT TIMERS', and 'EVENT & DEBUG LOG'.

Figure 44 - Remove log data

8.4.4 Clear Input Timers

This option will clear all digital input timers at one time. Users with Program level password access can clear individual inputs on the status page. See section 6.1

The screenshot shows the 'CLEAR INPUT TIMERS' section of the 'ADVANCED OPTIONS' menu. It contains a single button labeled 'Clear Input Timers' within a light blue box. The sidebar on the left shows 'SYSTEM VERSION & UPDATE', 'CONFIGURATION UPLOAD & DOWNLOAD', 'POINT LOG REMOVAL', 'CLEAR INPUT TIMERS' (selected), and 'EVENT & DEBUG LOG'.

Figure 45 - Clear input timers

8.4.5 Event & Debug Log

The Event and Debug log will provide diagnostic information regarding the operation of the MP2. Typical use of this log would be to resolve issues with sending traps or email alarms. Contact Quest for

assistance if you are experiencing issues with your MP2 system. The filter options allow you to select the category and then the detail level of events to be displayed. Select the choices you want and use the optional date range and press the Regenerate Debug Log button. The information will be displayed in a window with controls for forward, back, beginning and end of log navigation. A download button will also be displayed which when pressed will download a text file of the log to your browser.

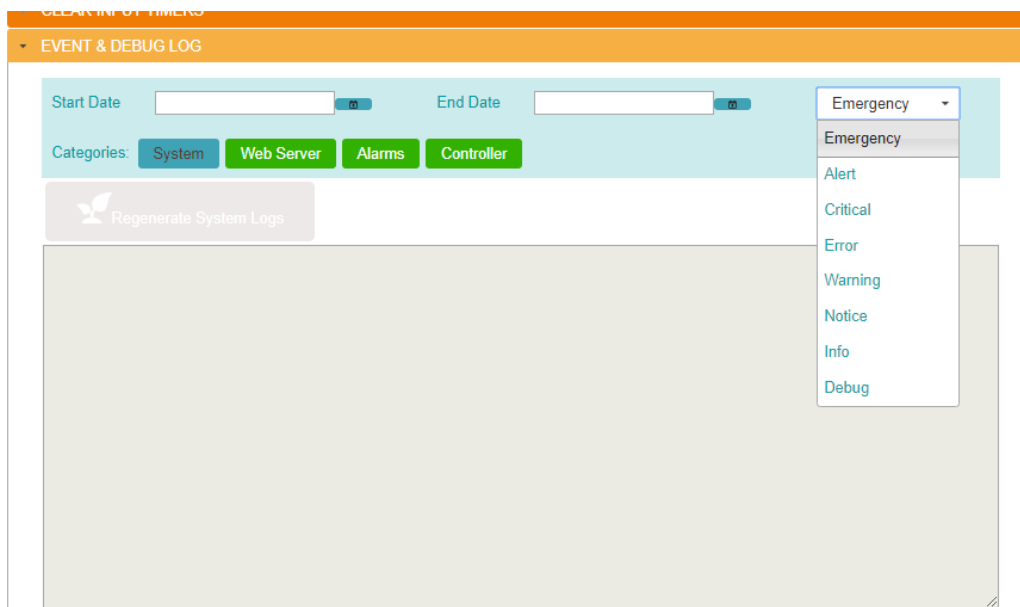


Figure 46 - Event and debug log

9 Programming the System

Hovering on the Program menu will display the available program options. For all program pages the system must save changes/additions to flash and do a reboot. When entering data, you will notice that after pressing the Done button there will be a 60 second count down timer in the header. You will have 60 seconds to enter the next point information, which will reset the timer to 60 seconds again. You can continue to add additional points in this manor or if you are completed, you can click on the Save and Reboot button to save immediately instead of waiting for the time out. Note for the Modbus programming option to appear in the menu, you must first enable Modbus on at least one of the serial ports. See section 8.1.6

9.1 Input Programming

The program input page will show all inputs that have been defined with their current settings. The point names are hyperlinks to bring up a window for changing the setting. The same window will appear when selecting the “Add new point” button. Use the forward, back, beginning and end icons to navigate to through the pages of inputs. The Jump field can be used to enter a specific input number and jump directly to the page where that input is contained.

PROGRAM UNIVERSAL INPUTS

Point #	Name	Input Type	Offset	Custom Low	Custom High	Log Type	Log Interval (min)
1	Tower - Light Status	DRYNO	0	0	0	COS	0
2	Tower - Photocell Failure	DRYNO	0	0	0	COS	0
3	Tower - Marker Light Fail Alarm	DRYNO	0	0	0	COS	0
4	Tower - Night Beacon Light Fail	DRYNO	0	0	0	COS	0
5	Tower - Day Beacon Light Failure	DRYNO	0	0	0	COS	0
6	Light Level Sensor	Custom	0	0	300	Time	15
8	Zone Temp 1	TEMPF	0	0	0	Time	5
9	Fire Panel Alarm	DRYNO	0	0	0	COS	0

<<
<

Jump
>
>>

Add new point

Save Settings

Figure 47 - Defining Universal Inputs

PROGRAM UNIVERSAL INPUTS

Point #	Name	Input Type	Offset	Custom Low	Custom High	Log Type	Log Interval (min)
1	Tower - Light Status						0
2	Tower - Photocell Failure						0
3	Tower - Marker Light Fail Alarm						0
4	Tower - Night Beacon Light Fail						0
5	Tower - Day Beacon Light Failure						0
6	Light Level Sensor						15
8	Zone Temp 1						5
9	Fire Panel Alarm						0

Add new point

Save Settings

Add new point

Point: 7
Name:
Input Type: TEMPF
Offset: 0
Custom Low: 0
Custom High: 0
Log Type: NONE
Log Interval (min): 0

Done Cancel

Figure 48 - Add/change input settings

9.1.1 Point

This is the physical location of the input on the back of the MP2. Use the dropdown to select input 1-32.

9.1.2 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.

9.1.3 Sensor Type

The sensor type dropdown 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 MP2 supports 10k Type III thermistors. Choosing TEMPF will display readings in Fahrenheit.
TEMPC	The MP2 supports 10k Type III thermistors. Choosing TEMPC will display readings in Celsius.
CUSTOM	The custom scale allows you to enter a scale using the Custom Low and Custom High fields. This allows you to create a scale for any sensor that provides a signal between 0-5 VDC or 0-20 mA. Note the scale is a linear interpolation between the low and high values. Quest has a spreadsheet file to assist in determining scale factors. Please contact your representative to obtain a copy of the file.

9.1.4 Offset

The offset field is used for any analog sensor to correct the reading of the input. The MP2 will read the input and add the offset value automatically so all alarms, logging and display screens show the corrected value.

9.1.5 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 0 VDC in. The MP2 will use this value along with the Custom High value to create a scale and display the sensor in the correct engineering units

9.1.6 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 6 VDC. Quest has created a special Excel spreadsheet for calculating the minimum and maximum values based on your sensor output. Contact Quest to obtain a copy of this file for your use.

9.1.7 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

changes. Needless to say, this will fill up your log rather quickly if you decide to use COS on an analog point.

9.1.8 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.

9.2 Output Programming

The program outputs page will show the current settings for the four outputs. The output name is a hyperlink that when clicked on will bring up the change settings window for that output.

PROGRAM OUTPUTS

Point #	Name	Default State	Follows	Acknowledge Input
1	Turn on Tower Lights	DE-ENERGIZED	Schedule 2	unused
2	Critical Alarms	DE-ENERGIZED	CR Alarms	unused
3	Major Alarms	DE-ENERGIZED	MJ Alarms	unused
4	Minor Alarms	DE-ENERGIZED	MN Alarms	unused

[Save Settings](#)

Figure 49 - Output settings page

9.2.1 Output Name

Enter up to thirty-two alphanumeric characters to name the output. The name is case sensitive and will be displayed exactly as you typed it.

9.2.2 Default State

The default state is the condition of the relay when it is not being commanded to the active state. This option allows for the relay coil to be either de-energized or energized as the default state of the relay. Select whether the output should be De-energized when not activated (normal relay logic) or Energized when not in the activated state (reverse relay logic).

9.2.3 Output Follows Option

Use the dropdown to select what function you want the relay to follow. This dropdown will show the options of NONE meaning it will only be activated with a user bypass, Alarm severity options or defined time schedules. Time schedules must be defined first for them to appear in the dropdown. By following an alarm severity, the output will be in the activated (ON) condition when there is an active alarm with the chosen severity. The output will stay activated until there are no longer any active alarms with the chosen severity or if the Acknowledge button on the web page is pressed. Additionally, an input can be used as the acknowledge function as well. When either Acknowledge function is activated, the system will de-active the output. The output will remain deactivated until another active alarm with the corresponding severity occurs. See Figure 50 below.

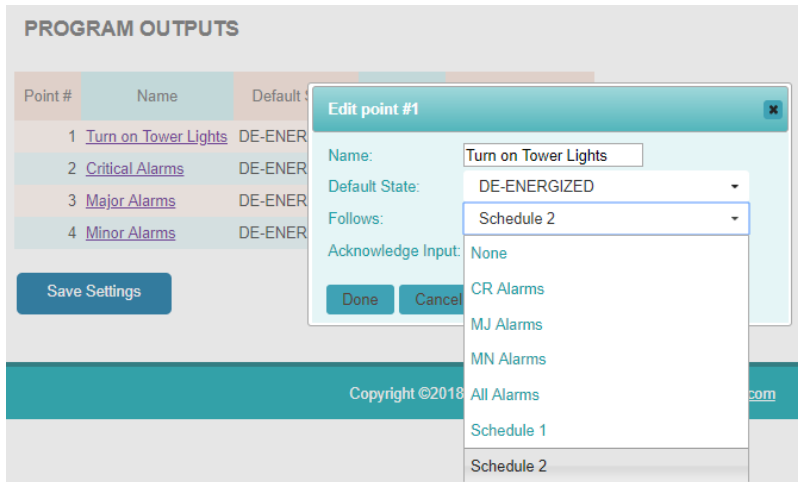


Figure 50 - Program output window

9.2.4 Output Acknowledge Function

The program output window has the option to select a digital input as an acknowledge function. If the output is activated due to an Active Alarm, then the output will de-activate when the acknowledge input is in the ON condition. This is useful when using a local enunciator panel that has a momentary input to acknowledge the alarm condition and turn off the output. For example, you may program an output to control a warning light when there is a critical alarm active and program another relay controlling the horn. Pressing the acknowledge button could silence the horn until the next alarm occurs.

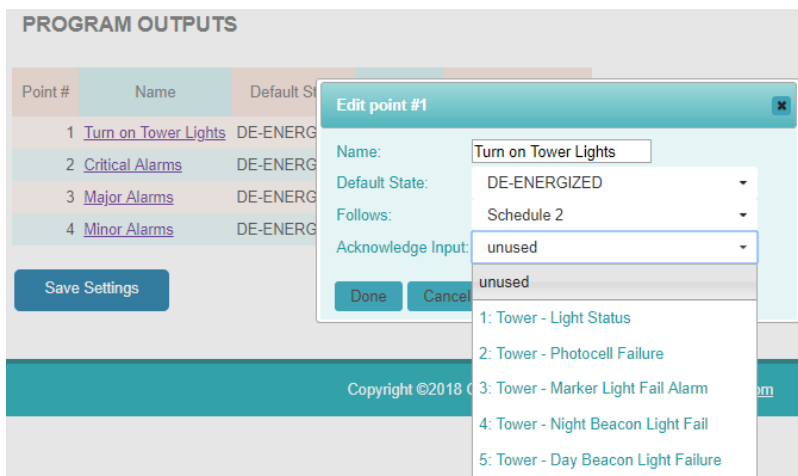


Figure 51 - Adding an Acknowledge input

Press the Done button to go back to the program outputs page and then select another output to program or press the Save Settings button.

9.3 Modbus Programming

The Modbus programming option will be present if either serial port 1 or 2 is defined for Modbus. Both ports can be configured simultaneously to provide a total of 1024 Modbus points (2 ports x 512 registers each). The MP2 acts as a master to poll Modbus RTU data over the RS485 two wire serial ports.

9.3.1 Define Modbus devices

Select Modbus port 1 or port 2 from the program menu to see the Modbus program page. The first section of the page is for defining the name of the device and the address of the device on the network. The name can be up to thirty-two-character alphanumeric characters in upper or lower case. The next section(s) of the page will have a header for each defined device with the name of the device. Clicking on the expand icon for the device will show all defined registers for the device along with the option to add points.

PROGRAM MODBUS (PORT 1)

SLAVE DEVICE CONFIGURATION

Name	Address
Power Meter	1
Generator	100

Add new slave device

SLAVE DEVICE: Power Meter

SLAVE DEVICE: Generator

Save Settings

Figure 52 - Modbus program page

PROGRAM MODBUS (PORT 1)

SLAVE DEVICE CONFIGURATION

Name	Address
Power Meter	1
Generator	100

Add new slave device

SLAVE DEVICE: Power Meter

SLAVE DEVICE: Generator

Save Settings

Add New Slave Device

Address: 1

Name:

Done Cancel

Figure 53 - Modbus define device page

9.3.2 Modbus Registers

Click on the expand window icon for the device that you want to add registers. The window will show the defined registers with navigation buttons for forward, back, beginning and end along with a link to add new points. The point ID is a hyperlink to bring up the define window for the previously defined register. The Add new point button will bring up the same window with blank form so you can add a new point.

PROGRAM MODBUS (PORT 1)

SLAVE DEVICE CONFIGURATION

SLAVE DEVICE: Power Meter

Point ID	Display Name	Function Code	Register	Bit	Format	Offset	Multiplier	Log Type	Log Interval (Min)
s101	KWH Total Energy	3	16464	0	Dword	0	0.1	Time	5
s102	KW Demand	3	16418	0	Float	0	0.001	Time	5
s103	KW Demand 15min	3	16450	0	Float	0	0.001	Time	5
s104	Phase A VAC	3	16386	0	Float	0	1	Time	5
s105	Phase B VAC	3	16388	0	Float	0	1	Time	5
s106	Line Voltage Avg	3	16392	0	Float	0	1	Time	5
s107	Voltage L to L	3	16394	0	Float	0	1	Time	5
s108	Phase A AMP	3	16402	0	Float	0	1	Time	5
			<<	<	>	>>			

Add new point

Figure 54 - Modbus registers by device

9.3.3 Defining Modbus Registers

Click on the Point ID of an existing Modbus point or select Add new point. The Modbus program point window will appear with the necessary fields for creating a point in the system.

SLAVE DEVICE CONFIGURATION									
SLAVE DEVICE: Power Meter									
Point ID	Display Name	Function Code	Register	Bit	Format	Offset	Multiplier	Log Type	Log Interval (Min)
s101	KWH Total Energy	3	16464	0	Dword	0	0.1	Time	5
s102	KW Demand							Time	5
s103	KW Demand 15min							Time	5
s104	Phase A VAC							Time	5
s105	Phase B VAC							Time	5
s106	Line Voltage Avg							Time	5
s107	Voltage L to L							Time	5
s108	Phase A AMP							Time	5

Add new point

SLAVE DEVICE: Generator

Save Settings

Add New Point

ID:

Display Name:

Function Code:

Register:

Bit:

Format:

Offset:

Multiplier:

Log Type:

Log Interval:

Done Cancel

Figure 55 - Defining Modbus registers

9.3.3.1 Modbus ID

The ID field is a unique alphanumeric four-character code used to identify the point in the system. This is used for alarm programming, and SNMP to create a reference ID for the point. The four-character ID can be whatever the user would like to use to organize the points. For example, you may want to have IDs per device so later you can sort data based on the ID, Such as G001 for generator point 1, etc. You

may want to use the same numbering scheme when setting up multiple sites because the ID will also be the SNMP index number for doing sets and gets.

9.3.3.2 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.

9.3.3.3 Function Code

The function code option tells the MP2 what type of Modbus register is being polled. 1 is for coil registers, 2 is for digital inputs, 3 is for holding registers and 4 is for analog input registers. Select the number for the type of register to be monitored.

9.3.3.4 Register Number

Enter the number of the register in the Register field. The MP2 uses 0 based numbering scheme for the register numbers. If the register map uses the convention of 40000 series numbers for holding registers, then subtract 40001 from the number and use that for the register number.

9.3.3.5 Register Bit

Some devices will use a single register with 16 bits to represent multiple pieces of information. This field will allow you to select a specific bit of the 16-bit register. When using the bit function, the value of the register will be displayed as ON for a value of 1 and OFF for a value of 0. Enter the bit number were 1 means the lowest bit and 16 means the highest bit. Some register map will show 0-15 and in that case 0 is the first bit and 15 is the 16th bit.

9.3.3.6 Register Format

Use the Format drop down to select the register type. Digital inputs and Coil registers are single Byte format. Analog input registers are always Word registers. For Holding registers, they can be Word (16 bit), Dword (32bit), Float for floating setpoint or Sword for signed word format. Sign word is a 16-bit register that can have a positive or negative value.

Point ID	Display Name	Function Code	Register	Bit	Format	Offset	Multiplier	Log Type	Log Interval (Min)
s101	KWH Total Energy	3	16464	0	Dword	0	0.1	Time	5
s102	KW Demand							Time	5
s103	KW Demand 15min							Time	5
s104	Phase A VAC							Time	5
s105	Phase B VAC							Time	5
s106	Line Voltage Avg							Time	5
s107	Voltage L to L							Time	5
s108	Phase A AMP							Time	5

Add New Point

ID:

Display Name:

Function Code:

Register:

Bit:

Format:

Offset:

Multiplier:

Log Type:

Log Interval:

Done Cancel

SLAVE DEVICE: Generator

Save Settings

Figure 56 - Modbus Register Format

9.3.3.7 Register Offset and Multiplier

The offset field is used to correct or modify the value being returned by the Modbus device. The offset is applied after any multiplier being used for the register. Enter a positive or negative value to be applied to the reading. Some registers return an integer value that could be in different engineering units than what is desired to be displayed in the MP2. The multiplier can be used to change the displayed value into the proper units. For example, to convert a register reading Celsius into Fahrenheit, the multiplier would be 1.8 and the offset would be 32. Or if a register is reading in hundreds and you want to change that to ones based you could have a multiplier of 0.01.

9.3.3.8 Log Type and Interval

Select the log type of NONE for no logging, COS for Change of State or Time for interval logging based on the number of minutes entered in the interval field. COS logging works best for registers that return a binary state such as 0 and 1 or on and off. Interval logging is best used for analog sensors to trend their value of a specific time interval. The maximum time interval is 1440 minutes (24hrs).

9.4 Alarm Programming

Select Alarms from the Program menu to see the alarm program screen. This screen will display all programmed alarms in a table with the ability to navigate the table using the next, back, beginning and end buttons. In addition, the page has filter options to display all alarm points or just those associated with the direct inputs or Modbus ports. The filter section will also allow you to search based on the alarm name or the name of the point used in the alarm. For example, to see all Tower alarms, you can type Tower in the name field and press enter. Now only alarms with the word Tower in the name will be displayed.

The alarm names are hyperlinks that when selected will bring up the program alarm window. The same window is used for new alarms when selecting the Add new alarm button.

PROGRAM ALARMS

FILTER

Category: All Name: Data ID Name:

ID	Name	Data ID Name	Severity	Comparison	Value	Qualifier	Alarm Delay	Clear Delay	Nag Interval	TL1 Type
a109	Tower Light Status	Tower - Light Status	Notice	>	0		10 second(s)	5 second(s)	0 minute(s)	ENV
ai09	Power Alarm	DC Voltage	Critical	>	30		1 second(s)	1 second(s)	0 minute(s)	ENV
ai01	Tower - Photocell Failure	Tower - Photocell Failure	Critical	>	0		5 second(s)	30 second(s)	0 minute(s)	ENV
ai02	Tower - Marker Light Alarm	Tower - Marker Light Fail Alarm	Critical	>	0		5 second(s)	30 second(s)	0 minute(s)	ENV
ai03	Tower - Beacon Fail - Night mode	Tower - Night Beacon Light Fail	Critical	>	0		5 second(s)	30 second(s)	0 minute(s)	ENV
ai04	Tower - Beacon Fail Day Mode	Tower - Day Beacon Light Failure	Critical	>	0		5 second(s)	30 second(s)	0 minute(s)	ENV
ai05	Tower Light for alarm qualifier	Tower - Light Status	None	=	0		0 hour(s)	0 hour(s)	0 minute(s)	ENV
ai06	Tower Lights are not on	Light Level Sensor	Critical	<	10	ai05	30 second(s)	5 second(s)	0 minute(s)	ENV

<< < > >>

Add new alarm

Save Settings

Figure 57 - Program alarm page

9.4.1 Defining Alarm Strategies

Selecting an existing alarm name or clicking on the Add new alarm button will bring up the dialog for modifying or adding a new alarm.

ID	Name	Category
a109	Tower Light Status	Tower -
ai09	Power Alarm	DC Volt
ai01	Tower - Photocell Failure	Tower -
ai02	Tower - Marker Light Alarm	Tower -
ai03	Tower - Beacon Fail - Night mode	Tower -
ai04	Tower - Beacon Fail Day Mode	Tower -
ai05	Tower Light for alarm qualifier	Tower -
ai06	Tower Lights are not on	Light Le

Clear Delay	Nag Interval	TL1 Type
5 second(s)	0 minute(s)	ENV
1 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
0 hour(s)	0 minute(s)	ENV
5 second(s)	0 minute(s)	ENV

Figure 58 - Defining an alarm strategy

9.4.1.1 Alarm ID

The ID field is a unique alphanumeric four-character code used to identify the point in the system. This is used for alarm programming, and SNMP to create a reference ID for the point. The four-character ID can be whatever the user would like to use to organize the points. For example, you may want to have IDs per alarm type so later you can sort data based on the ID, Such as GEN1 for generator point 1 alarm, etc. You may want to use the same numbering scheme when setting up multiple sites because the ID will also be the SNMP index number for doing sets and gets.

9.4.1.2 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.

9.4.1.3 Category and Data ID

The category field is used in conjunction with the Data ID dropdown to filter the display list. This way you can limit the size of the dropdown list for specific points. The category list choices are ALL for every defined point in the system, universal inputs for a list of the defined inputs and Modbus/Device name for a list of defined Modbus points sorted by device. Select the desired category and then select the Device ID to be used for the alarm strategy.

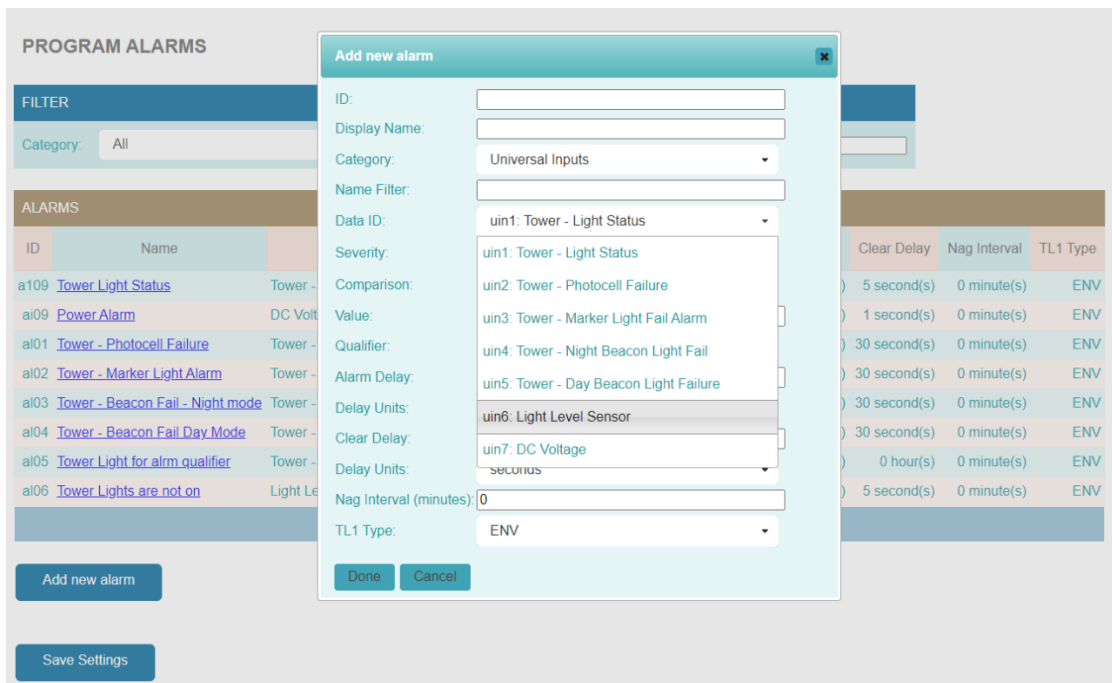


Figure 59 - Selecting a point to alarm

9.4.1.4 Alarm Severity

Select the desired alarm severity from the Severity dropdown. A severity of NONE will disable the alarm until the severity is changed to another level. Notice is special case severity level where the alarm when active and cleared will appear in the alarm historical log, but alarms with Notice level are not sent as traps or emails.

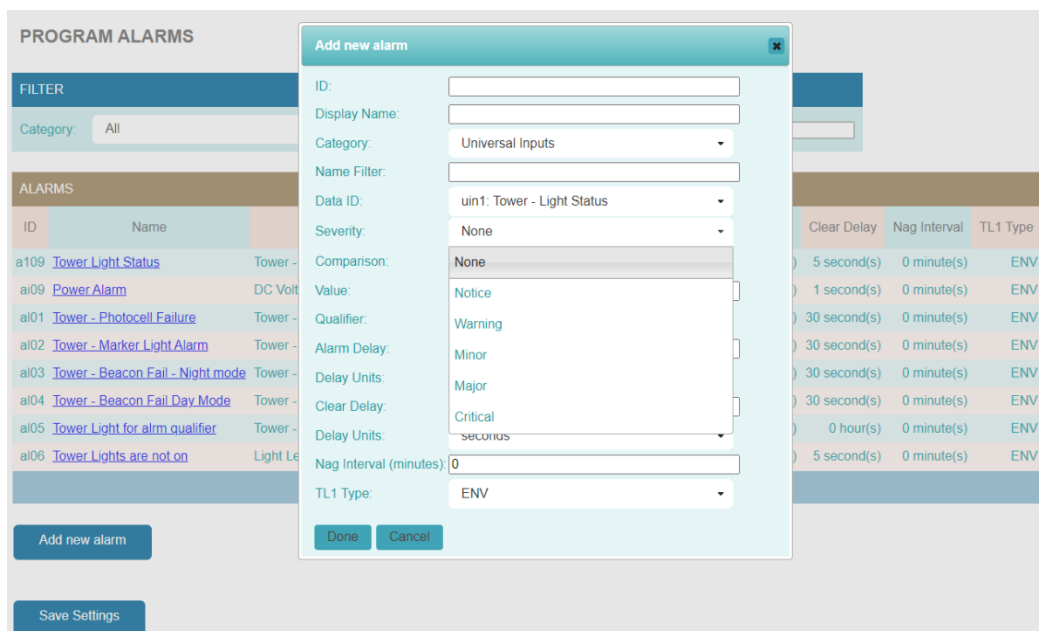


Figure 60 - Selecting the alarm severity

9.4.1.5 Comparison operator and value

The Comparison field is used to select the operator for creating the alarm strategy. The alarms are looking for “true” statements and will alarm when the condition described is in the true state. The value field is used with the operator to determine if the point being monitored is in the alarm condition. Digital inputs are compared to 0 for OFF and 1 for ON. Thus, to create an alarm when the digital input has an ON status, you would compare the input > (greater than) 0 or you could compare the input = (equal to) 1, or input ≠ (not equal to) 0. Analog sensors such as temperature and humidity, use the greater than (>) value or the less than (<) value for alarm condition determination. An example would be if the zone temperature sensor is greater than 80 degrees. Alarm values are entered as integer numbers.

Clear Delay	Nag Interval	TL1 Type
5 second(s)	0 minute(s)	ENV
1 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
0 hour(s)	0 minute(s)	ENV
5 second(s)	0 minute(s)	ENV

Figure 61 - Select comparison operator

9.4.1.6 Additional Qualifier

Alarm strategies allow for a qualifier to create additional conditions that must be true (on) before this alarm statement is true or active. The qualifier field is optional and will contain a list of previously defined alarm strategies and time schedules. Time schedules can be used to only create the alarm during certain times of the day or days of the week. By using other alarm strategies as qualifiers, you can create combinatorial logic to create an alarm based on multiple conditions. The MP2 will allow you to string together multiple alarm strategies in this way to then generate the alarm condition. Keep in mind that ALL conditions must be true or active for the alarm strategy to be in alarm (active/on). If any conditions become false (off) then the alarm strategy is no longer active and has a status of off, which generates a clear alarm in the alarm log.

PROGRAM ALARMS

Filter

Category: All

ALARMS

ID	Name	
a109	Tower Light Status	Tower -
ai09	Power Alarm	DC Volt
ai01	Tower - Photocell Failure	Tower -
ai02	Tower - Marker Light Alarm	Tower -
ai03	Tower - Beacon Fail - Night mode	Tower -
ai04	Tower - Beacon Fail Day Mode	Tower -
ai05	Tower Light for alarm qualifier	Tower -
ai06	Tower Lights are not on	Light Le

Add new alarm

ID:

Display Name:

Category: Universal Inputs

Name Filter:

Data ID: uin1: Tower - Light Status

Severity: None

Comparison: >

Value: 0

Qualifier:

Alarm Delay:

Delay Units: Schedule 1

Clear Delay:

Delay Units: Schedule 2

Nag Interval (minutes):

TL1 Type:

Done Cancel

Clear Delay	Nag Interval	TL1 Type
5 second(s)	0 minute(s)	ENV
1 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
30 second(s)	0 minute(s)	ENV
0 hour(s)	0 minute(s)	ENV
5 second(s)	0 minute(s)	ENV

Add new alarm

Save Settings

a109: Tower Light Status

Figure 62 - Using additional qualifiers

9.4.1.7 Alarm Delay and Delay Units

Use the Alarm Delay field and the Delay Units drop down to create a delay time for the alarm condition. The alarm condition must be true for this time period for the alarm to be generated. An alarm will not be generated if the conditions become false before the delay time elapses. The maximum delay time is 25 hours

9.4.1.8 Clear Delay and Delay Units

Use the Clear Delay field and the Delay Units drop down to create a delay time for the clear condition. A clear alarm will be generated once the alarm condition is no longer true for the defined delay time. The maximum delay time is 24 hours.

9.4.1.9 Nag Interval

The nag interval is used to resend the alarm if the alarm is still active. A value of 0 means the alarm will be sent once per occurrence. A value in minutes greater than 0 will create an interval timer where the alarm will be resent every time the time has been elapsed. The maximum nag interval is 1440 minutes.

9.4.1.10 TL1 Type

This field allows the user to select the TL1 Alarm type. The default es ENV for environmental alarm but can be changed to Equipment Service Affecting (EQPTSA) or Equipment Non-service affecting. This function is used with the TL1 alarming protocol supported by the MP2.

9.5 Time Schedules

Select Schedule from the Program menu to see the Program Schedule page. This page will show the defined schedules (up to 8 schedules) and their current status or state. The name of the schedule is a hyperlink that when selected will bring up a window showing the current settings and allow the user to modify the schedule. The “Add new schedule” button will bring up the same change schedule dialogue window. Press the “Save Settings” button once you have made changes to an existing schedule or created a new schedule.

PROGRAM SCHEDULE

Sched #	Name	State
1	Check to see if Light Level Fail	OFF
2	Turn On Tower Lights	OFF

Add new schedule

Save Settings

Figure 63 - Change/view time schedules

9.5.1 Change Time Schedule

The change schedule window has a place for the user to enter a thirty-two-character name to describe the schedule and up to sixteen priorities for turning the schedule on and off. Select the action for a priority line and then select the hours, minutes and AM/PM setting. Finally select which days of the week the priority line will be active. Press the “Done” button once you are completed with filling out the desired priorities. Schedules typically have at least one ON and OFF priority to allow the schedule to change status based on time of day and the day of the week. Once the schedule is created, it will be available for use in programming outputs and/or alarm strategies.

TELSEC® MP2

Home

Status

PROGRAM SCHEDULE

Sched #

Name

1

Check to see if Light Lev

2

Turn On Tower Lights

Add new schedule

Save Settings

Active Alarms Present

Add new schedule

Name:

PRI#	ACTION	TIME			DAY OF WEEK						
					SU	MO	TU	WE	TH	FR	SA
1	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	NONE ▾	12 ▾	00 ▾	AM ▾	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Done

Cancel

Figure 64 - Define schedule priorities

10 Shell Commands

The MP2 supports a management shell that is accessible through SSH or Telnet. From this shell, the user can issue various commands to administer the communications of the system. Use your favorite SSH or Telnet client to connect to the MP2. The default username/password is Shelllevel/shelllevel. The username/password can be changed or additional username/password combinations can be created through the Telnet/SSH User Configuration on the web server. See section 8.1.11 of this manual. A command prompt will be shown after a successful login. Type the word “show” to see the available commands:

Available commands:

set ip
set mtu
set httpswd
set snmpmgr
set upgradeurl
set upgradecheck
ping
show
exit
logout

All commands when entered will execute without further confirmation to the user. When using the “set” commands the system will output a message of “parameters set...unit will restart after you exit”. You can do multiple “set” commands and then type “exit” or “logout” to exit and reboot the system. The system will then restart and come up with the new settings.

10.1 Set IP Command

Typing “set ip” only will show the current settings for the network configuration. To change the settings, use the following format:

Format: set ip <ipaddress> <subnetmask> <gateway> <DNS1 | none> <DNS2 | none> <http_port>

Where:

<ipaddress> = the IP address for the device in decimal dot format

<subnetmask> = The subnet mask entered in decimal dot format

<gateway> = the gateway IP address entered in decimal dot format.

<DNS1 | none> = DNS 1 server IP address in decimal dot format or the word none when DNS is not used

<DNS2 | none> = DNS 2 server IP address in decimal dot format or the word none when DNS is not used

<http_port> = The port number to use for HTTP access.

Example:

set ip 192.168.1.58 255.255.255.0 192.168.1.1 8.8.8.8 8.8.4.4 80

Where 192.168.1.58 is the IP address, 255.255.255.0 is the subnet, 192.168.1.1 is the gateway, 8.8.8.8 is DNS 1 server, 8.8.4.4 is DNS 2 server and the HTTP port is 80.

When there is no DNS then use the following example:

```
>set ip 192.168.1.58 255.255.255.0 192.168.1.1 none none 80
```

10.2 Set MTU Command

Type “set mtu” to see the current settings. The set mtu command will change the size of the Maximum Transmission Unit value. The default value is 1500.

Format: set mtu <value>

Example: set mtu 1200

Sets the max mtu size to 1200.

10.3 Set httpswd Command

The set httpswd command will change the passwords for the built in web server. There are a total of six usernames (User1 – User5 & Admin) that can be change. Note this changes the password only and does not change the access levels assigned to each username. To change the access level go to the web server go to Settings/HTTP User Administration. See section 8.3.

Format: set httpswd <username> <pswd> <pswd copy>

Where:

<username> = User1, User2, User3, User4, User5, Admin

<pswd> = the password value used when logging into the webserver using the username

<pswd copy> = reenter the password again for confirmation.

10.4 Set snmpmgr Command

This command will allow you to set the four SNMP trap receiver addresses. Typing “set snmpmgr” without any parameters will show the existing settings for the four trap server addresses.

Format: set snmpmgr <#> <ipaddress|none> <v1|v2|v3> <Trap|Inform> <community string/v3 username>

Where:

<#> = The trap server number to be changed 1-4

<ipaddress|none> = IP address of the trap server or the word none to remove and existing definition

<v1|v2|v3> = the trap format to be used

<Trap|Inform> = Whether to send traps or informs to the server.

<community string/v3 username> = the SNMP community string to be used or one of the defined SNMP user names to be used if sending v3 traps/informs (see section 8.1.9).

Example: set snmpmgr 1 192.168.1.104 v2 Inform Trap

Sets the first trap manager to IP address 192.168.1.104 and will send SNMP v2c informs with a community string of Trap.

10.5 Upgrade URL

The set upgradeurl will allow the user to change the IP address and path of where the Ethernet module can locate upgrades. Typing “set upgradeurl” and pressing enter will show the current location of where upgrades can be found when the system is told (through the web server link or the upgrade command) to check for upgrades. The format for changing the location is as follows:

Format: set upgradeurl <ipaddress/filelocation>

Example: set upgradeurl 192.168.1.105/MP2

10.6 Checking for Upgrades

The set upgradecheck command can be used to have the system go check to see if there is an available upgrade and if so, the system will upgrade to the version stored on the upgraded server assuming the build number of the code is greater than what is currently running in the MP2. Entering “set upgradecheck” will show the current firmware build number. Entering “set upgradecheck on” will cause the system to check for and perform the upgrade.

Example:

Command: set upgradecheck

Response: kernel version is #2 Fri Oct 4 10:28:18 PDT 2019
filesystem version is 2

Command: set upgradecheck on

Response: upgrade check turned on...unit will restart and check after you exit

10.7 Ping Command

The ping command will allow you to verify communications on the network. This command can be helpful when reusing an IP address for the MP2. By doing the ping, the Ethernet switch the MP2 is connected to will update its ARP table for the new MAC address of the unit.

Format: ping <ipaddress>

Example:

Command: ping 192.168.1.1

Response: PING 192.168.1.1 (192.168.1.1): 56 data bytes

64 bytes from 192.168.1.1: seq=0 ttl=64 time=10.726 ms
64 bytes from 192.168.1.1: seq=1 ttl=64 time=0.758 ms
64 bytes from 192.168.1.1: seq=2 ttl=64 time=0.775 ms
64 bytes from 192.168.1.1: seq=3 ttl=64 time=0.802 ms

--- 192.168.1.1 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet loss
round-trip min/avg/max = 0.758/3.265/10.726 ms

10.8 Exit & Logout Command

The exit and logout command have the same function. Typing exit or logout will terminate your session and if changes were made, will cause the system to reboot and come back up with the new settings.

11 File upload format

The MP2 supports complete programming by uploading a file through the web server. The file is broken down into multiple segments and each starts with a heading in brackets. It is permissible to upload only certain sections at a time, but when uploading a section, all the options for that section must be sent. For example, if you send the [network] section, you must send all items in that section. For application programs sections such as [alarms], you must send all alarm programs since the new uploaded alarm section would replace all alarms that were in the unit. The alarms section [alarms] require that the reference points (inputs, Modbus etc.) must be defined first. Therefore, they either have to be in the same file during the upload or have previously been defined.

The configuration settings in each section are comma separated values. You can use a text editor or a CSV application program to edit and or create the entire file or individual sections.

To become familiar with the file format, it is recommended that you download the file from the MP2 by going to Settings/Advanced/Configuration Upload & Download and select “Download Configuration to browser”. A text file will be downloaded from the system to your web browser.

11.1 Section Formats

Listed below are the various sections in the configuration file along with explanation of what the section is used for and how it correlates to programming through the web server.

11.1.1 [network]

Contains the network settings that are configured through the Settings/General section of the web server for IPv4, IPv6 and IP General sections.

11.1.2 [site]

Site specific information from the Settings/General/Site Parameters section. In addition, there are fields for latitude, longitude, and URL text information that are for future use and should not be changed.

11.1.3 [timeserver]

Information for setting the system clock which is configured through Settings/General/Time Settings.

11.1.4 [timezone]

The time zone used for the system which is configured through Settings/General/Time Settings.

11.1.5 [snmp]

The SNMP general settings that are configured through Settings/General/ “SNMP/SMTP General” Settings. This section also contains the heartbeat trap configuration which can be set through the web server Settings/Alarm Dispatch/Heartbeat Configuration section.

11.1.6 [smtp]

The general email settings that are configured through Settings/General/ “SNMP/SMTP General”.

11.1.7 [email]

This section will contain the email dispatch configuration that is created through the Settings/Alarm Dispatch/Email Dispatch tab. The severity mask is as follows:

62 = All severities
56 = Critical, Major & Minor
48 = Critical and Major
32 = Critical only
0 = Disabled

11.1.8 [log]

This section is for internal use and should not be changed unless directed to do so by Quest Controls, Inc. personnel. Changes to this section can impact the performance of your system and or render it inoperable.

11.1.9 [snmpv3]

This section contains the SNMPv3 settings that are entered through the web server Settings/General/SNMPv3 User Configuration tab.

11.1.10 [radius]

Settings for the RADIUS server connectivity that are entered through the web servers Settings/General/Radius Configuration tab.

11.1.11 [telnetssh]

Settings used for Telnet and SSH access that are entered through the web servers Settings/General/Telnet/SSH User Configuration.

11.1.12 [port]

The serial port settings for use with Modbus or DNP and alarm severities for communications. These settings are from the web servers Settings/General/Serial Ports tab.

11.1.13 [inputs]

This section is for defining inputs that are tie to the MP2 main board or Quest expansion boards. See Section 9.1 for additional information on defining inputs.

Options:

#pt = The point number where the point is connected to the system. from 1-32

Name = The 32-character display name defined for the point

Type = tempf, tempc, dryno, drync, wetno, wetnc, custom

Offset = offset value to correct the sensor reading.

custom low = When input is defined as custom this value is the low end of the scale.

custom high = When input is defined as custom this value is the high end of the scale.

log type = "COS" for change of state or "time" for interval time logging

log interval (min) = number of minutes for interval time logging or 0 when using COS.

Example:

[inputs]

#pt,name,type,offset,custom low,custom high,log type,log interval (min)

1,Outside Air,tempf,0,0,0,time,5

2,Zone 1,tempf,0,0,0,time,5
3,Humidity,custom,0,0,139,time,10

11.1.14 [outputs]

This section is for defining outputs that are tied to the MP2 main board or Quest expansion boards. See Section 9.1.8 for additional information on defining outputs.

Options:

#pt = The point number where the point is connected to the system. All four points must be defined.

Name = The 32-character display name defined for the point

default state = 0 for De-energized, 1 for Energized

follows = equations for equation control, CR-alarms for critical alarms, MJ-alarms for major alarms, MN for minor alarms, alarms for all alarms or TOD# where # is the schedule number.

ack input = for outputs following alarms add the input ID number i.e., UIN16

Example:

[outputs]

#pt,name,default state,follows,ack input

1,Turn on Tower Lights,0,TOD2,

2,Output 2,0,none,

3,Output 3,0,none,

4,Output 4,0,none,10

11.1.15 [modbus1]

This section is for defining all the Modbus points that are connected to serial port 1. Each Serial port can support up to 512 Modbus registers. The section is made up of two parts. Part 1 is to define the Modbus device and part 2 is used for defining the Modbus points. See section 9.3 for additional information on defining Modbus devices and points.

Options for Modbus device:

#SN = prefix used to indicate a Modbus device is being defined.

address = the address number the device is configured to respond to.

Name = a 32-character display name for the device.

Options for Modbus points:

#MD = prefix used to indicate a Modbus device is being defined.

Id = the four character unique id assigned to the point.

display name= a 32-character display name for the device.

Address = the address of the device where the point can be found

function code = the function code number used to gather the data 1-4

register = The register number used to request the data.

Bit = either 0 to use the entire register or 1-15 to use a single bit of the register.

Format = the type of register: byte, word, dword, sword or float.

log interval (min) = minutes for interval logging or 0 when using cos or none.

MD,H112,Remote Zone Temp float,1,4,202,0,float,0,1,time,5

#Id = the four character unique id assigned to the point.
display name= a 32-character display name for the device.
data id = the id number of the point used to create the alarm condition i.e., UIN1, M001 (Modbus id#)
severity = critical, major, minor, notice, warning, none
comparison = greater_than, less_than, equal_to, not_equal_to
value = value to compare the data id point with to determine the alarm condition
qualifier = additional qualifier such as a time schedule or another alarm program. The field is blank if not used.
alm delay = delay in seconds before the alarm is active when the comparison is true
clr delay = clear delay in seconds to wait after the condition is no longer true before clearing
nag = nag interval in minutes
tl1 type = env, eqptsa, eqptnsa

Example:

[alarms]

#id,disp name, data id, severity, comparison, value, qualifier, alm delay, clr delay,nag, tl1 type
a001,Testing an alarm for input 15,uin15,major,greater_than,0.000000,,60,5,0,env

11.2 Uploading config files.

once the upload file has been created go to the Settings/Advanced/Configuration Upload & Download tab. Click on the Choose File option to select the file from your computer. Then click on the Upload Configuration from browser button. To load the file. The system will upload the file and then process all of the sections. If there are no errors the system will indicate a successful upload and ask you to click on the reboot button. Any errors found will be listed out in the upload status window. Correct the errors and then resend the file. See section 8.4.2 for additional information.

12 SNMP Sets & Gets

The MP2 can be managed using SNMP Sets to review data and Gets to make changes. Contact Quest Controls, Inc. to obtain a copy of the product MIB. The System uses Quest's standard Alarms MIB for sending traps (see 8.2.1). This section will focus on using the product MIB for gathering data.

12.1 Public SNMPv2

The MP2 supports the standard v2-MIB OIDs for system branch. sysDescr, sysObjedID and sysUpTime are read only while sysContact, sysName and sysLocation support read and write.

12.2 Input table

The input table will contain all the defined inputs that are physically wired to the base MP2. The table index will be the integer input number for each point. The table has the following objects available:

Object	Description
Input name	The defined 32-character name for the input
Input integer value	The input reading as an integer. Digital inputs will show 1 for On and 0 for Off
input integer value times 100	The input reading as an integer in 100ths. Divide the analog input value by 100 to convert the value. Digital inputs will show 1 for On and 0 for Off
Input string value	The Input value as a string value. Analog inputs will display values to the 10 th . Digital inputs will display ON and OFF
Input causing alarm	Shows if the point is causing an alarm point to be active.
Input type	Shows the input definition type. I.e., Dry contact, thermistor, custom etc.
Input offset	For analog sensors this will display the offset value defined for the point
Input custom low	The defined low value for an input defined as CUSTOM. Used with the Custom High value to scale the sensor reading.
Input custom high	The defined high value for an input defined as CUSTOM. Used with the Custom low value to scale the sensor reading.
Input log type	The type of logging defined for the input. Either interval logging based on time or change of state (COS).
Input log interval	For inputs defined as interval logging this will be the number of minutes between log entries.
Input accumulated on time	Total accumulated on time for inputs defined as digital
Input interval on time	The interval on time for inputs defined as digital
Input interval off time	The interval off time for inputs defined as digital
Input event counter	The number of cycles (on/off events) for inputs defined as digital
Input event timer	The amount of time that has elapsed since all the timers were cleared

12.3 Alarm point table

The alarm point table will contain all the defined alarm points in the system. The alarms that have an "@" as the first character of the index are alarms that get created automatically when adding Modbus devices. The table index is a four-character ASCII index based upon the user defined point ID number. If your SNMP client doesn't support ASCII index, then use the decimal equivalent to the ASCII characters. The Index number format will be the number 4 plus the decimal value for each ASCII character. For

example, an alarm ID of a001 will have an ACII table index of a001 or the decimal value of 4.97.48.48.49. The table has the following objects available:

Object	Description
Alarm point name	The defined 32-character name for the alarm
Alarm point state	Either active meaning in alarm or the word clear meaning not in alarm.
Alarm point timestamp	The time of the last event for the point. ie if in alarm then that is the time the alarm occurred or if clear, that is the time the clear occurred
Alarm point severity	The defined alarm severity for the alarm
Alarm point input name	The name of the input or point that is used to determine an alarm condition.
Alarm point string value	A string value showing the status of the point being monitored.
Alarm point comparison	The comparison type used for creating the alarm condition
Alarm point comparison value	The value that the input point is being compared to when determining an alarm condition.
Alarm point alarm delay	The delay in seconds that the comparison must be true before the alarm is active.
Alarm point clear delay	The delay in seconds that the comparison must no longer be true before the alarm is cleared.
Alarm point nag interval	The value in minutes that will cause an alarm dispatch if the alarm point is still active. A value of 0 means no nag function.
Alarm point tl1 type	The TL1 alarm type. env, eqptsa or eqptnsa

12.4 Modbus point table

The Modbus point table will contain all the defined Modbus points in the system. The table index is a four-character ASCII index based upon the user defined point ID number. If your client doesn't support ASCII index, then use the decimal equivalent to the ASCII characters. The Index number format will be the number 4 plus the decimal value for each character. For example, a Modus ID of b001 will have an ACII table index of b001 or the decimal value of 4.98.48.48.49. The table has the following objects available:

Object	Description
Modbus point name	The defined 32-character name for the input
Modbus integer value	The register reading as an integer. Digital points will show 1 for On and 0 for Off. This object is writable and will allow SNMP Gets to write to the Modbus register. It is up to the Modbus device to accept the write.
Modbus integer value times 100	The reading as an integer in 100ths for analog points. Divide the value by 100 to convert the value. Digital inputs will show 1 for On and 0 for Off. This object is writable and will allow SNMP Gets to write to the Modbus register. It is up to the Modbus device to accept the write.
Modbus String Value	The Input value as a string value.
Modbus point causing alarm	Shows if the point is causing an alarm point to be active.
Modbus point address	The Modbus address for the device that point is associated with
Modbus point register	The register number for reading the point from the Modbus device
Modbus point bit	Specifies to look at a single bit in the defined register. A value of 0 means to read the entire register.
Modbus point format	The format type for reading the register from the device.
Modbus point offset	The defined offset value applied to the register to correct the reading

Modbus point multiplier	The multiplier value used to convert the Modbus register to desired engineering units.
Modbus log type	The type of logging defined for the point. Either interval logging based on time or change of state (COS).
Modbus log interval	For points defined as interval logging this will be the number of minutes between log entries.
Modbus point function code	The defined Modbus function code used to read the point from the device.
Modbus point port number	The serial port used on the MP2 to talk to the Modbus device
Modbus device name	The defined name of the Modbus device where the point is located
Input event counter	The number of cycles (on/off events) for inputs defined as digital
Input event timer	The amount of time that has elapsed since all the timers were cleared
Input remote board address	The decimal address for the input expansion board that the input is located on. For inputs on the main IO board the value will be -1
Input remote board position	The physical location of the input on the remote board.

12.5 Output table

The output table will contain the digital outputs that are on the base MP2. The table index will the integer output number for each point. The table has the following OIDs available:

Object	Description
Output name	The defined 32-character name for the output
Output logical state	The current logical state of the output. Note that an Active will be the inverse of the default state
Output control mode	The current control mode of the output. Values here will either be: Auto, bypOff (time left), bypOn (time left) Note that the units of time are seconds and a time of FOREVER may be displayed This object is writable to create a bypass by using bypOn <seconds forever>, bypOff <seconds forever> or auto
Output default state	The state the relay will be in when not commanded to be ON or Active.
Output follows	The defined use of the output. This can be an alarm severity, TOD schedule or equations
Output acknowledge input	For outputs following an alarm severity there can be an input used to acknowledge the alarm condition and turn off the output. You can also write the word "ack" to remotely acknowledge an alarm condition.
Output remote board address	The decimal address for the output expansion board that the point is located on. For outputs on the main IO board the value will be -1
Output remote board position	The physical location of the output on the remote board.

12.6 Active alarm point table

The active alarm point table will display any alarm that is currently in the active state. The alarms that have an "@" as the first character of the index are alarms that get created automatically when adding Modbus devices. The table index is a four-character ASCII index based upon the user defined point ID number. If your client doesn't support ASCII index, then use the decimal equivalent to the ASCII characters. The Index number format will be the number 4 plus the decimal value for each character. For example, an alarm ID of a001 will have an ACII table index of a001 or the decimal value of 4.97.48.48.49. The table has the following objects available:

Object	Description
Active alarm point name	The defined 32-character name for the alarm
Active alarm point timestamp	The time when the point went into the active condition
Active alarm point severity	The defined alarm severity for the alarm
Active alarm point input name	The name of the input or point that is used to determine the alarm condition.
Active alarm point string value	A string value showing the status of the point in alarm.

12.7 Scalar values

This section of the MIB contains the firmware version for the system. This is a string value that will contain the current firmware version of the system.

13 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.

13.1 Power Up

PROBLEM

- Green Power Light is not blinking every second.

SOLUTION

- 1) Use a voltmeter and verify that the incoming power to the MP2 is between 18 and 65VDC.
- 2) Verify input power polarity. If using an A&B feed, make sure both feeds have correct polarity.
- 3) Replace the MP2

13.2 Communication

PROBLEM

- I experienced a communication failure with the TELSEC® MP2 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® MP2 is connected to is operable and properly configured.
- 3) Verify the IP address has not been changed. Connect to the TELSEC® MP2 with a crossover cable using the programmed address or try the default address of 192.168.1.31
- 4) Replace the Ethernet cable.
- 5) Power cycle the MP2

13.3 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® MP2.
- 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® MP2 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® MP2 then try the sensor on another input. Be sure to define the input accordingly.
- 5) If the input is bad, then either move the sensor to a spare input or replace the unit.

13.4 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 program assigned to the output.
- 2) Verify the relay on the TELSEC® MP2 opens and closes when using the bypass command from the web server or via SNMP set to the output
- 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.

13.5 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) have been entered.
- 4) Check for any firewalls and or network rule sets preventing emails being sent from the location to the SMTP server.
- 5) Do a test email by clicking on the Send Test Alarm button.

PROBLEM

- I am not receiving traps.

SOLUTION

- 1) Verify network connection.
- 2) Check the settings for the trap server on the TELSEC® MP2 and make sure they match the requirements of the trap server including SNMP version and community string or username (v3).
- 3) Check for any firewalls and or rule sets preventing traps being sent from the location to the SMTP server.
- 4) Send a test trap by clicking on the Send Test Alarm button.

13.6 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.

13.7 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 Modbus device has a unique address and that all devices including the MP2 is using the same baud rate and parity.
- 2) Verify that the End of Line (EOL) and line biasing jumpers on the MP2 are in the proper position.
- 3) Verify that the MP2 is communicating over the bus. Remove the cover and look at the Tx and Rx lights. If you see Tx and no Rx activity then the system is attempting to talk to devices, but none of them are responding.
- 4) Verify the proper wiring between the MP2 and all Modbus 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 - SNMP Trap Format

The TELSEC® MP2 can send traps or informs to four different trap servers. The user can program the system to send v1 traps, v2 traps/informs or v3 traps/informs to the server. When the MP2 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 alarm MIB. Please contact Quest for the current revision of the alarm MIB.

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 MP2 will send a trap with the clear OID.

Trap Variable Bindings

The MP2 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 <u>only available with v2 and v3 traps</u> and will contain the system up time since the MP2 started up.
snmpTrapOID	1.3.6.1.6.3.1.1.4.1	Object Identifier	This binding is <u>only available with v2 and v3 traps</u> and will contain the OID value for the alarm severity.
notifyProduct	11476.100.1.2	Text String	The product type that is alarming. The value is TELSEC® MP2
notifyCriticality	11476.100.1.3	Text String	The alarm severity in Text. Available values are: CRITICAL, MAJOR, MINOR, INFO and CLEAR
notifyType	11476.100.1.4	Text String	Alarm type. For TELSEC® MP2's the type value is SYS for inputs and MOD for Modbus alarms
notifyTime	11476.100.1.5	Timeticks	The time the alarm was generated.
notifyName	11476.100.1.6	Text String	The thirty-two-character name of the alarm point
notifyValue	11476.100.1.7	Text String	The text value of the sensor that caused the alarm.
notifyInputName	11476.100.1.8	Text String	The thirty-two-character name of the input referenced in the alarm point
notifySiteId	11476.100.1.9	Text String	The programmed site identification value for the system.
notifyPointOID	11476.100.1.10	Object Identifier	The OID of the value of the point in alarm

Appendix B - RADIUS Server Configuration

For the RADIUS server configuration, you must use the “Filter-ID” attribute for each user to have access. Inside the “Filter-ID” you must have QuestMP2:<number>

<number> is an encoded value for access to the different sections of the web server. The sections and values are:

Home page – 1

Status – 2

Bypass – 4

Program – 8

Settings – 16

Add up the access level for the user and use that number. Example if you want a user to have full access then the value to enter would be “QuestMP2:31”.

Appendix C – SD Card Update

Overview

The TELSEC® MP2 can be upgraded using a standard SD memory card. The system supports firmware upgrade as well as loading application programs with an SD card. Use this procedure when you need change or upgrade the application program of your system. Please contact Quest prior to performing the upgrade if you have any questions or concerns regarding the upgrade files and or process.

Items needed:

1. SD memory card 2-8 GB in size formatted for use with Windows file format FAT32. (Cards typically come this way)
2. PC or laptop with an SD card reader to allow transfer of files
3. Firmware upgrade file – Contact Quest for the most current firmware.
4. Application program file (optional)

Process:

1. Obtain the appropriate files from Quest
2. The program files are in a zip file (compressed) format. Open the file with “File Explorer” and copy the “update” folder with its contents to the SD card.
3. When completed, your SD card should have a file folder with the name “update” on it and in that folder will be all the files necessary to perform the update.
4. If you want to load the application program only using an SD card, then create a folder called “update” and put the application file in this folder. The name of the file must be “allconfig.txt” to work properly.
5. Remove the card from your PC and insert it into the SD slot on the front of the MP2. Make sure it clicks into place.
6. The system will take approximately 10-15 seconds to shut down the current processing and then look for the update information.
7. The system will then reboot and rapidly flash the power LED to indicate it is performing the update
8. The system will reboot again after the update is completed and begin operating with the new parameters. Note this process could be repeated if you are doing both a firmware upgrade and loading a new application program.
9. Remove the SD card by pressing on it to unlatch the spring-loaded connection.

Note the MP2 will write a file in the update directory that have the name of the MAC address for this system. The file is unique to this system and is to prevent the RSC 1000 from attempting to load the configuration again on reboot. The file can be erased if you need to upgrade this system in the future.

Appendix D – Email Alarm Format

The TELSEC® MP2 will generate text-based emails for alarm conditions. The email notification will follow a specific format which is outlined below.

Format:

Subject line:

MP2 <email type> (<severity>) - <user defined subject line>

Email body:

MP2 named <site name> generated <email type>

Description of <alarm name>

Timestamped at <day month year hh:mm:ss -UTC>

Severity of <severity>

Value of <current value>

Data point name of <data point name>

Where:

<email type> = ALARM or CLEAR

<severity> CRITICAL, MAJOR, MINOR OR WARNING

<user defined subject line> = Subject field entered when defining the Email dispatch.

<site name> = The site name entered under Site Parameters

<alarm name> = The name of the alarm strategy that generated the alarm

<data point current value> = The current value of the data point causing the alarm condition

<data point name> = The name of the data point causing the alarm condition.

Example:

Subject: MP2 ALARM (Critical) - TELSEC® MP2 Email notification

MP2 named MP2_Site_101 generated ALARM

Description of Tower Lights are not on

Timestamped at 01 Mar 2019 13:30:04 -0700

Severity of Critical

Value of 0.07

Data point name of Light Level Sensor

Appendix E – TL1 Alarms and Commands

TL1 Commands and Alarm:

TL1 stands for “Transaction Language 1.” The MP2 supports TL1 alarm messaging for all alarms being sent out. When an Alarm Point becomes active, the system will generate an alarm. The alarm will be sent using SNMP, SMTP (Email) and/or TL1 depending on how the MP2 is configured. TL1 alarms assumes the receiving system has established a Telnet session to either the standard IP telnet port or the port number defined in the TL1 Port setup (see section 8.1.4). In addition to sending TL1 autonomous alarm messages, the MP2 will respond to the following read only commands:

13.7.1 RTRV-HDR:

The RTRV-HDR command is used to retrieve the system identification which is configured in the System Site Configuration (see section 8.1.1). The command format is as follows:

RTRV-HDR:<TID>::<CTAG>;

TID Target identifier (the first ID line). This can be omitted on direct connect.

CTAG Correlation tag. Used to match the response to the command with who sent the command

Examples:

Command: RTRV-HDR:::K;

Response: MONITOR 19-10-23 09:57:37
 M K COMPLD
 ;

Command: RTRV-HDR:MP2_MONITOR::K;

Response: MONITOR 19-10-23 09:57:37
 M K COMPLD
 ;

13.7.2 RTRV-ALM:

The RTRV-ALM command is used to review active alarms. By issuing the command, the MP2 will show all currently active alarms. The format for RTRV-ALM command is as follows:

RTRV-ALM-<TYPE>:<TID>::<CTAG>;

Where:

TYPE

ALL Will show active equipment alarms.
EQPT Will show active equipment alarms.
ENV Shows active environmental alarms.

TID Target identifier (first line of the ID). This can be left out for direct connect.

CTAG Correlation tag to match the request with response.

Examples:

Command: RTRV-ALM-ENV:::X123;

Response: MP2_MONITOR 19-10-23 09:59:48
M X123 COMPLD
* 1 REPT ALM ENV
"ALM_A002:MN,BTL_LTMP,10-04,15-46-10:\ "BLD002 LOW TEMPERATURE ALARM,ON\ ""
* 2 REPT ALM ENV
"ALM_A004:MN,BHL_LHUM,10-04,15-46-10:\ "BLD011 LOW HUMIDITY ALARM,ON\ ""
;

5.2.6 Automatic TL1 Alarms

Once a point is determined to be in alarm, the controller will automatically send the alarm and log the event in the alarm log. When the alarm goes away, the controller will automatically send out a clear message in TL1 format. The clear will also be logged in the alarm log.

TL1 ALARM MESSAGE

FORMAT:

<cr><lf><lf>
<sp><sp><sp>TID<sp>YY-MM-DD<sp>HH:MM:SS<cr><lf>
ALMCDE<sp><ALARM SEQUENCE NUMBER><sp>REPT<sp>ALM<sp>ENV <cr><lf>
<sp><sp><sp>"ALM_<REF#>:<NOTIFICATION CODE>, <ALARM NAME>,MM-
DD,HH:MM:SS,<ALARMMESSAGE>"<cr><lf>

;

<ALMCDE>

*C = CRITICAL ALARM

** = MAJOR ALARM

*<sp> = MINOR ALARM

A<sp> = AUTOMATIC used for clear alarm and heartbeat messages

<ALARM SEQUENCE NUMBER> = sequential sequence number assigned to every TL1 autonomous message.

<REF#>= The four-digit alarm reference number that was assigned when defining the alarm.

<NOTIFICATION CODE>

CR = Critical alarm

MJ = Major alarm

MN = Minor alarm

CL = Cleared alarm

NA = Non Alarm used for notifications.

<ALARM NAME> = The 32-character name that was defined for the alarm.

< ALARMMESSAGE> = The 32-character name of the point causing the alarm followed by a comma and the current status of the alarm.

Sample alarm:

SITE401 19-10-26 11:43:39

** 1 REPT ALM ENV

"ALM_A005:MJ,POWER_Failure,10-26,11:43:39,COMMERCIAL POWER FAILURE"

;

Sample Clear Alarm:

SITE401 19-10-26 11:43:59

A 2 REPT ALM ENV

" ALM_A005:CL,POWER_Failure,10-26,11:43:59,COMMERCIAL POWER FAILURE"

;

Sample Heartbeat message:

RDNGPAREH72_MP2 19-10-23 09:48:05

A 13808 REPT EVT ENV

"HEARTBEAT:NA,HEARTBEAT,10-23,09-48-05:\"User defined Heartbeat message\""

;

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