QUANTA *Elite*

USER GUIDE

Version 1J
9/20/00

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Overview

The QUANTA Elite is a microprocessor-based programmable lighting controller. You can program each of the controller inputs to control any or all of the relay outputs. The QUANTA Elite is UL and FCC approved for commercial and residential applications.

Structure

The major components making up the controller are:

- enclosure
- control transformer
- CPU I/O board
- additional I/O boards
- programming module
- lighting relays

Enclosure – The enclosure is rated NEMA 1. It is divided into a line voltage section containing the line voltage side of the control transformer and lighting relays and a low voltage section containing the Class 2 side of the lighting relays, transformer secondaries and electronic components. Enclosures are available in 6 sizes to accommodate 8, 16, 24, 32, 40 and 48 inputs, outputs, and lighting relays. The QUANTA Elite is shipped to the job-site as a complete assembly.

Transformer – A 40 VA multi-tap control transformer (120 or 277/24 VAC) provides the 24 VAC input to power the controller electronics.

CPU I/O Board – The CPU board provides the controller's intelligence and memory and the first eight (8) of the controller inputs and outputs. Major components include:

- *Power Supply* – converts the 24 VAC input to the +5, -5 and +12 VDC required by the controller logic and communications circuits. A power switch provides the means of energizing/de-energizing all controller electronics.
- *Micro-Processor* – executes the computer code and coordinates all controller functions including the controller real time clock.
- *PROM Chip* – contains the controller operating system and basic tasks.
- the *EEPROM Chips* – store the user-entered operating parameters.
- *"Super Cap"* – keeps the controller real-time clock functioning during power failures.
- *Switch Inputs* – can accept input from either 2- or 3-wire momentary or maintained dry contact devices. Each input has two associated LEDs (light emitting diodes). The ON LED lights when a closure is sensed between the ON and COMMON terminals. The OFF LED lights when a closure is sensed between the OFF and COMMON terminals. The inputs are noise- and surge-resistant. A switch may be located up to 1500 feet from the controller, provided you use a minimum of 18 gauge wire.
- *Relay Outputs* – Each output switches its associated lighting relay ON and OFF. Each output has an associated LED. The LED lights when the output switches the relay ON.
- *Override Switches* – Each relay output is equipped with an ON and an OFF override switch. These switches allow you to turn the associated lighting relay ON or OFF.
- *Stagger Start* - The controller switches those relays impacted by the same switch signal ON/OFF, one at a time.

Section 1 Controller Description

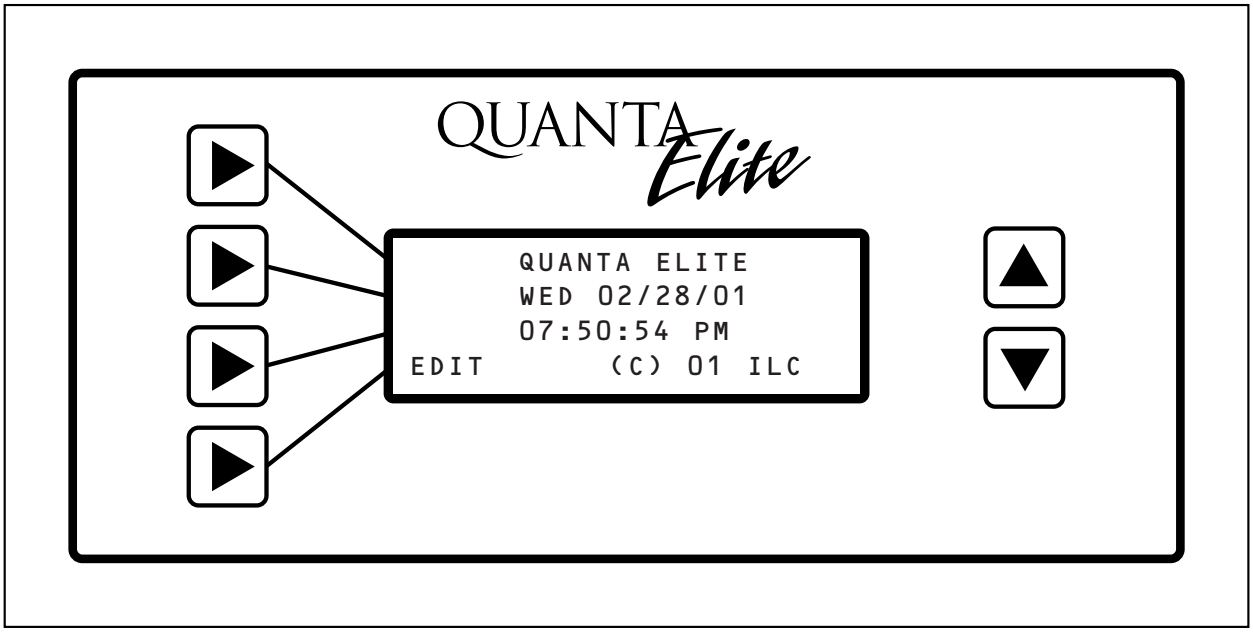
Section 2 Installation

Section 2 Installation, continued

Section 3 Programming

Section 4 Appendix

Section 1
Controller Description



Section 1 Controller Description

Objectives

In this Section you will learn about the structure and configuration of the QUANTA Elite Controller.

Overview

The QUANTA Elite is a microprocessor-based lighting controller. You can program the QUANTA Elite to control lighting relays in response to switch signals sensed by its inputs and/or by time-based scheduling. The QUANTA Elite is UL approved and FCC certified for both commercial and residential applications.

1.1 Controller Architecture

The major components making up the controller are: (See Figure 1.1.)

- enclosure
- control transformer
- CPU I/O board
- additional I/O boards
- programming module
- lighting relays

1.1.1 Enclosure – The enclosure is rated NEMA 1. It is divided into a line voltage section containing the line voltage side of the control transformer and lighting relays and a low voltage section containing the Class 2 side of the lighting relays, transformer secondary, and electronic components. Enclosures are available in 6 sizes to accommodate 8, 16, 24, 32, 40 and 48 inputs, outputs, and lighting relays. (See Table 1-1.) The QUANTA Elite is shipped to the job-site as a complete assembly. (See Figure 1-1 which illustrates QUANTA Elite 8.)

1.1.2 Transformer – A 40 VA multi-tap control transformer (120 or 277/24 VAC) provides the 24 VAC input to power the controller electronics.

1.1.3 CPU I/O Board – (See Figure 1.2.) The CPU board provides the controller's intelligence and memory and the first eight (8) of the controller inputs and outputs. Major components include:

- *Power supply* – converts the 24 VAC input to the +5, -5 and +12 VDC required by the controller logic and communications circuits. A power switch provides the means of energizing/de-energizing all controller electronics.
- *Micro-Processor* – executes the computer code and coordinates all controller functions, including the controller real-time clock.
- *PROM Chip* – contains the controller operating system and basic tasks.
- *EEPROM Chips* – store the user-entered operating parameters.
- *"Super Cap"* – keeps the controller real-time clock functioning during power failures.
- *Switch Inputs* - can accept input from either 2- or 3-wire momentary or maintained dry contact devices. Each input has two associated LEDs. The ON LED lights when a closure is sensed on the ON and COMMON terminals. The OFF LED lights when a closure is sensed on the OFF and COMMON terminals. The inputs are noise- and surge-resistant. A switch may be located up to 1500 feet from the controller, provided a minimum of 18 gauge wire is used.
- *Relay Outputs* - Each output switches its associated lighting relay ON and OFF. Each output has an associated LED (light emitting diode). The LED lights when the output switches the relay ON.
- *Override Switches* - Each relay output is equipped with an ON and an OFF override switch. These switches allow you to turn the associated lighting relay ON or OFF.

1.1.4 Additional I/O Board(s) – Additional I/O boards composed of 8 inputs and 8 outputs can be added to the appropriate size enclosure to expand the controller capacity up to 48 switch inputs and 48 switch relay outputs. (See Figure 1.3, which illustrates a QUANTA Elite 32.)

1.1.5 Programming Module – (See Figure 1.4.) The programming module provides you with access to program and view controller data. It consists of a tactile response keypad and screen. The programming module is either mounted to the CPU I/O board or at your option can be a separate hand-held portable device that you can temporarily connect during programming and then detach.

1.1.6 Lighting Relays – control the line voltage loads. The lighting relays can control 120 or 277 VAC loads rated up to 20 amps. The Class 2 low voltage control part of each relay is terminated to a relay output on the controller CPU I/O board. (See Figure 1.2.) Each relay output controls only one lighting relay.

1.2 Controller Capacity

Unless you have ordered optional communications/expansion features, each QUANTA Elite can control up to 48 programmable switched inputs and 48 relay outputs.

Model	# of Relays & I/O Points	Width	Height	Depth
Elite 8	8	18 inches	15 inches	4 inches
Elite 16	16	24 inches	18 inches	4 inches
Elite 24	24	24 inches	36 inches	4 inches
Elite 32	32	24 inches	36 inches	4 inches
Elite 40	40	24 inches	48 inches	6 inches
Elite 48	48	24 inches	48 inches	6 inches

Table 1.1 – QUANTA Elite Configurations

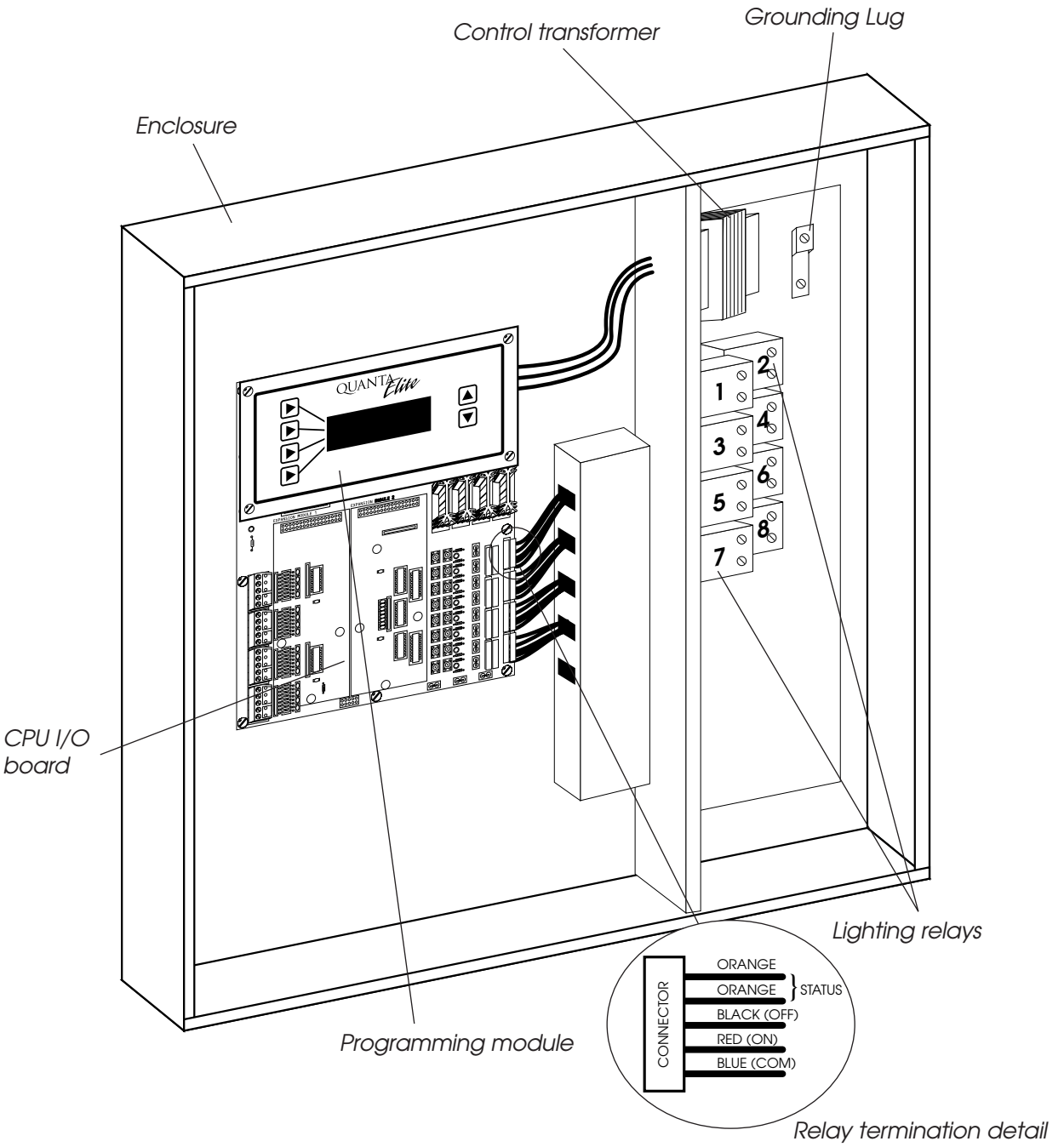


Figure 1.1 – QUANTA Elite 8 Controller

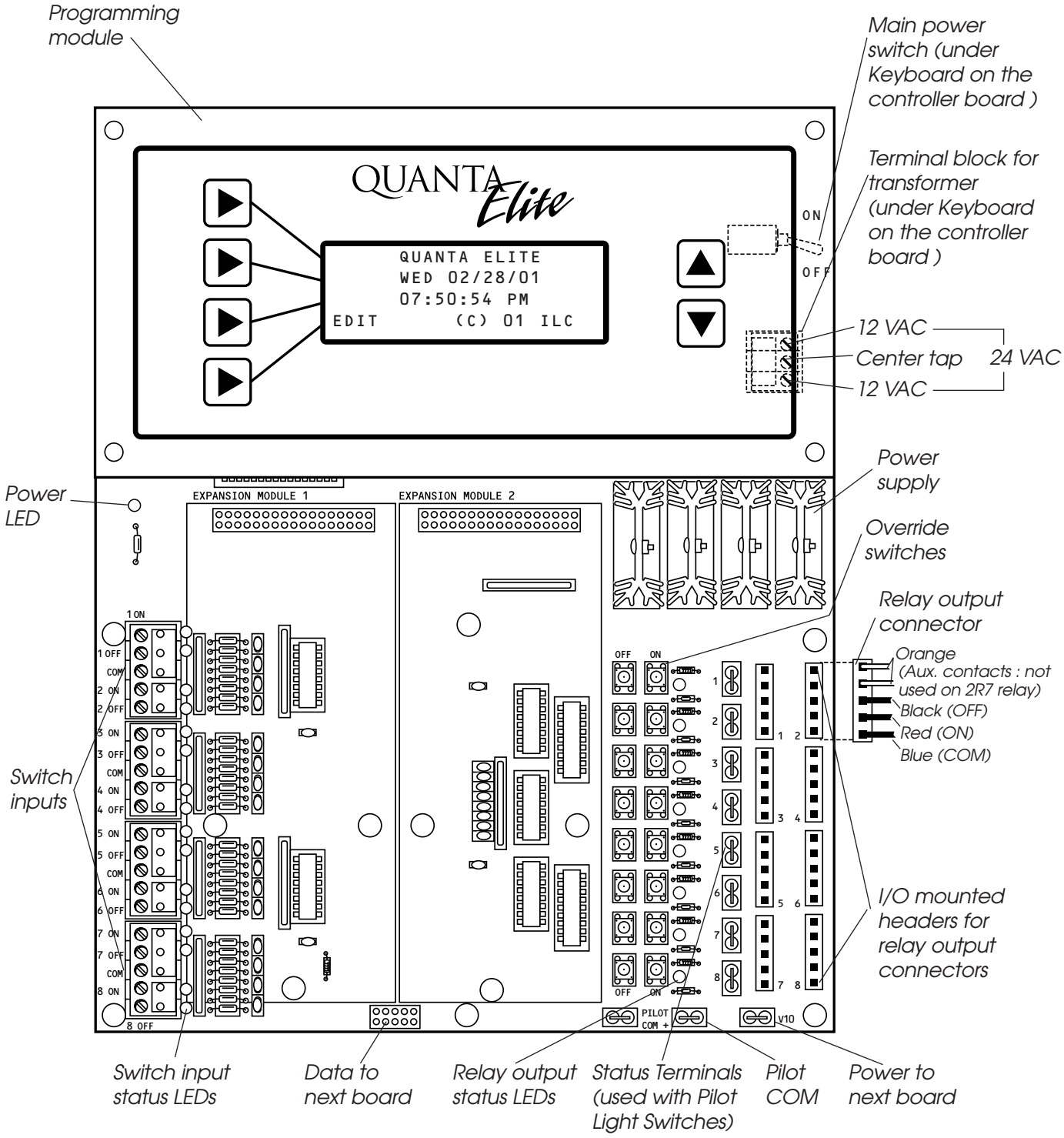


Figure 1.2 – CPU I/O Board

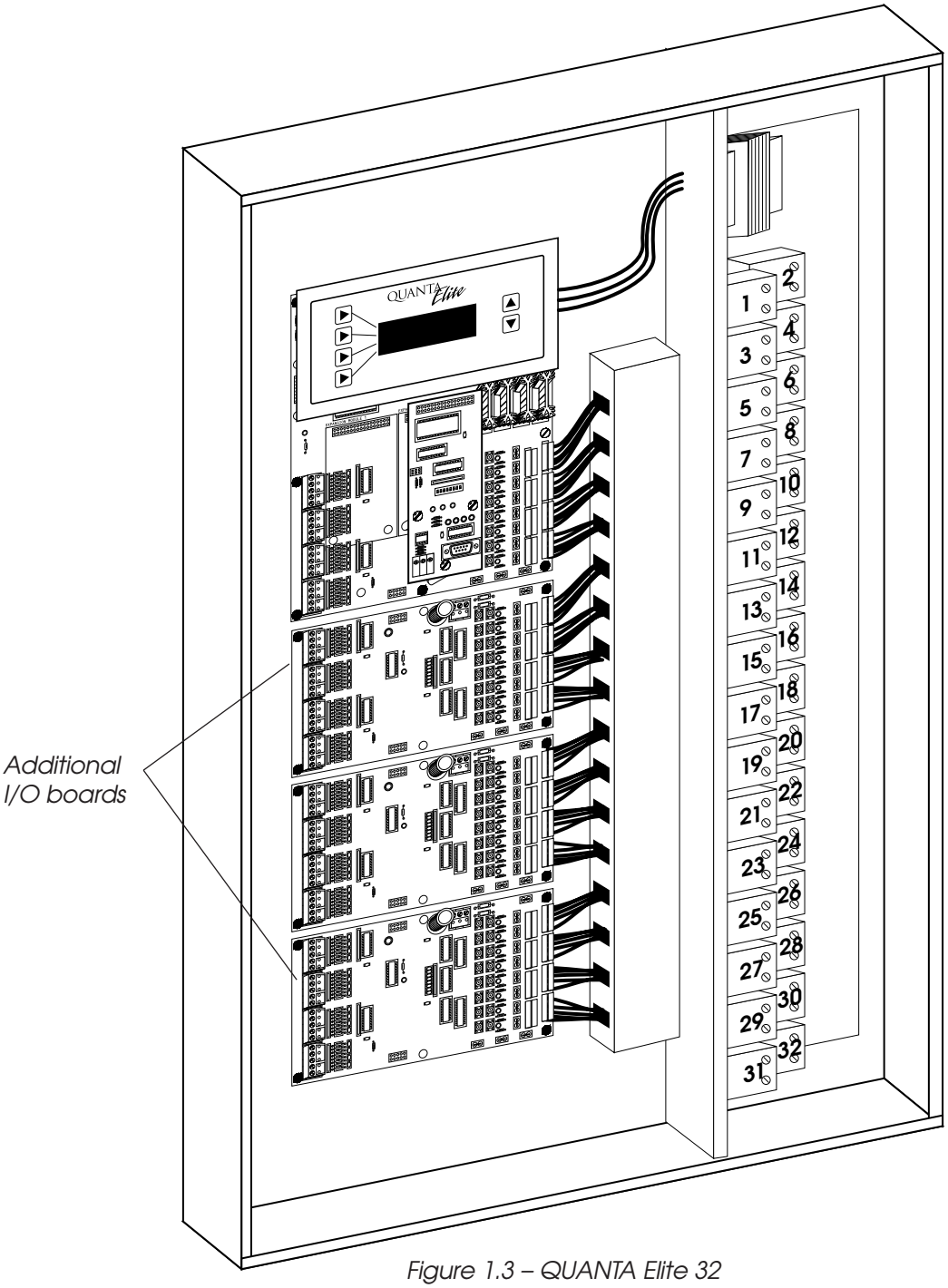


Figure 1.3 – QUANTA Elite 32

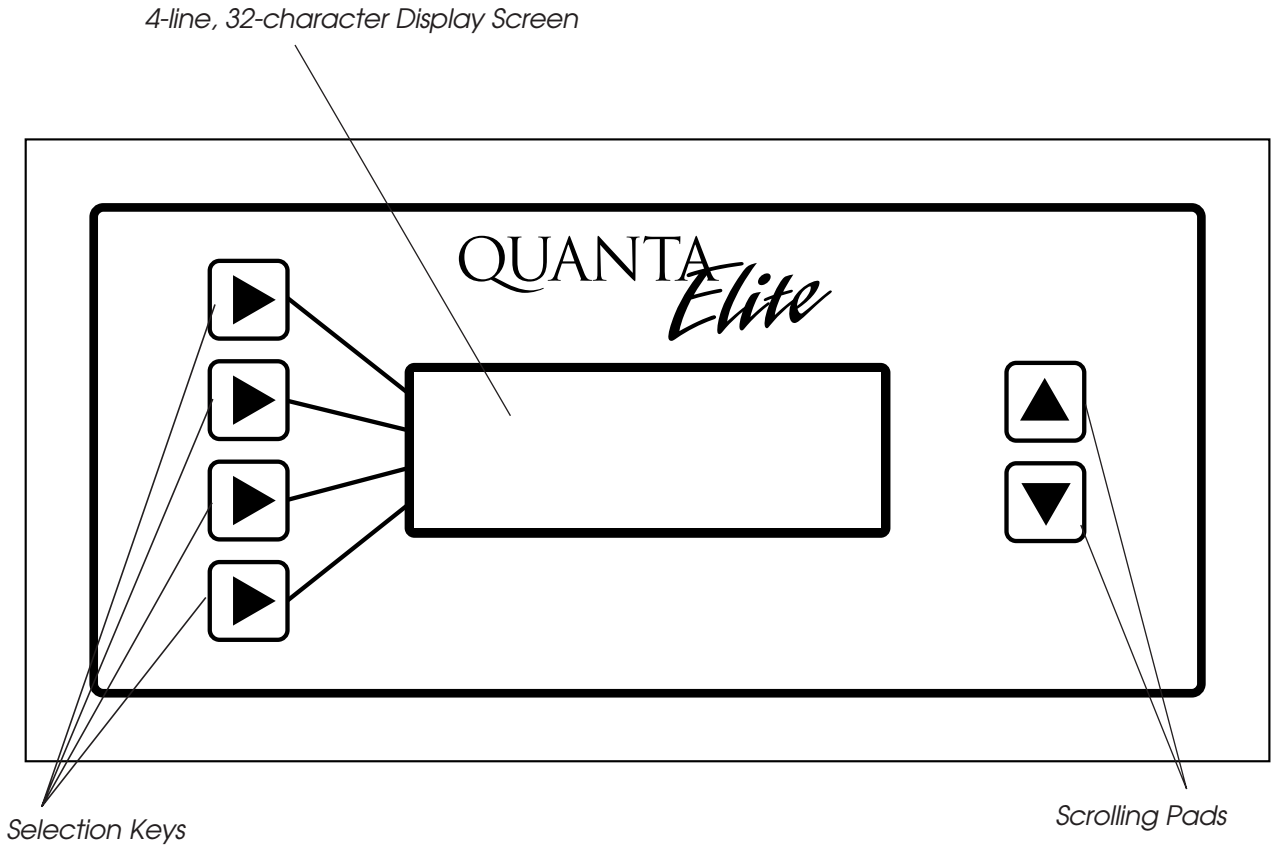


Figure 1.4 – Elite Keypad and Display

1.3 I/O Options

If your application requires, you can equip the controller with certain input/output options.

1.3.1 Telephone Switching – You can equip the controller with a DTMF (Dual Tone Multi Frequency) interface, which allows you to activate switch inputs via commands from a touchtone telephone. See Appendix A.

1.3.2 Pulsed Relay Output Operation – By adding conversion hardware to the relay outputs, you can convert the output from a maintained output to a pulsed output required for control of mechanically latching contactors and other devices that operate on a momentary rather than maintained application of power. Consult factory for details.

1.4 Programming with a PC

If you want to program the controller with a personal computer equipped with QUANTA Pro software, see Appendix B.

1.5 Expansion/Communications Options

With the addition of enhanced software and interface hardware, you can develop a LAN (local area network) composed of up to 256 nodes, each node controlling up to 48 I/O points. Consult Appendix C in this manual if your application requires expansion/networking.

If you want to program the controller over phone lines via a remote personal computer equipped with QUANTA Pro software, see Appendix A.

1.6 DMX Option

You can equip the QUANTA Elite with a DMX interface to control the non-dimmed loads that are part of a theatrical lighting control system. Consult factory if this option is applicable to your situation.

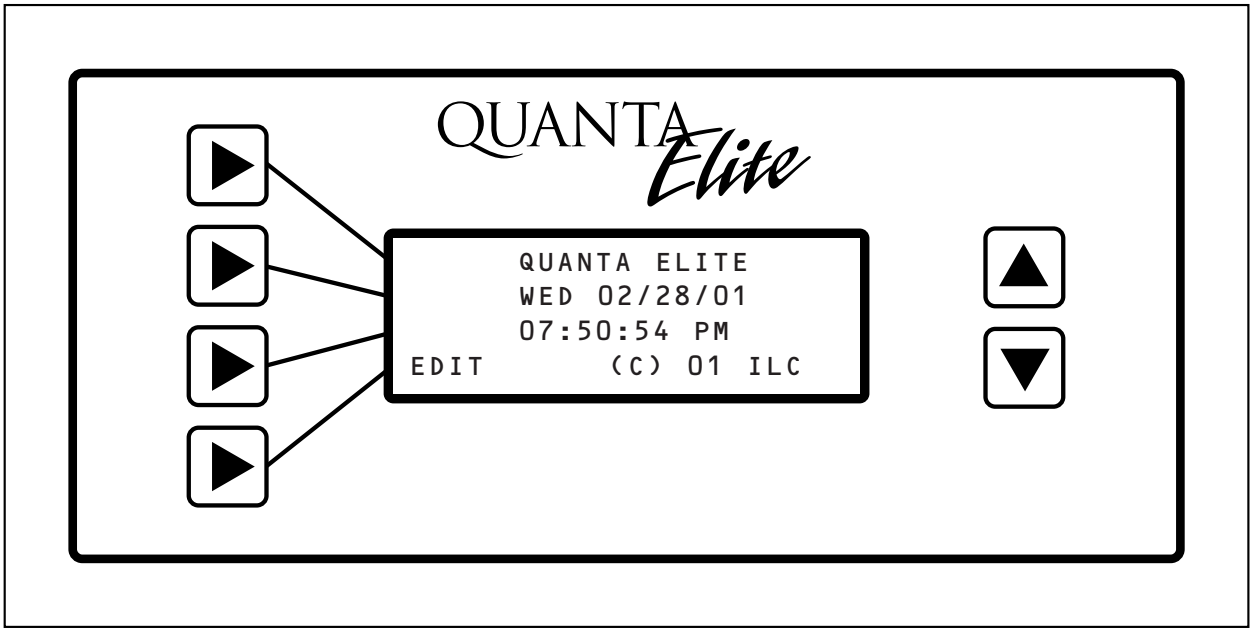
1.7 Enhanced Open/Close Time Control

If your control requirements call for time-based control keyed to multiple sets of Open/Close times, see Appendix E. – Master Scheduler.

1.8 N2 Communications

You can configure the QUANTA Elite as a node on a Building Automation System (BAS) N2 Communications Network. See Appendix N.

Section 2
Installation



Section 2 Installation

Objectives

This sections shows you how to install the QUANTA Elite Controller and how to perform required power-up verification checks. This section covers installation of the basic 48 I/O stand-alone controller. For information on optional features or communication/LAN systems, consult the appropriate appendix.

Overview

This section covers the following topics:

- Pre-installation checks
- Mounting the controller
- Wiring the controller
- Pre-power-up checks
- Power-up and checkout
- Troubleshooting

2.1 Pre-Installation Checks

Do the following before beginning the installation:

1. Verify that you have received the proper equipment. Check the packing slip against the materials you ordered and verify that the material is appropriate for the project. Check to ensure that the voltages of the controller(s) transformers match the available power. Report any discrepancies or visible damage at once.
2. Review submittal, programming worksheets, electrical prints, and other project documentation.
3. Ensure that you have a digital multi-meter.

2.2 Mounting the Controller

Consider the following when selecting a site for the QUANTA Elite.

2.2.1 Location – Typically, the QUANTA Elite controller is mounted near the lighting panel containing the circuits to be controlled by the lighting relays. The enclosure is manufactured with pre-drilled mounting holes located near the four corners of the rear wall of the enclosure. Secure the enclosure to the mounting surface with hardware appropriate for the application.

2.2.2 Environmental Considerations – The QUANTA Elite is designed to operate in temperatures between 0 and 50 degrees C (32-112°F.) and 10%-90% humidity non-condensing.

CAUTION

THE QUANTA ELITE SERIES CONTROLLER IS HOUSED IN A NEMA 1 ENCLOSURE. DO NOT INSTALL IN SITUATIONS REQUIRING SPECIAL PURPOSE ENCLOSURES OR IN AREAS WHERE THE CONTROLLER WILL BE SUBJECT TO CONDITIONS OUTSIDE ITS DESIGNED OPERATING RANGES.

2.2.3 Distance From Control Devices
Switches and other control devices can be located up to 1500 feet from the QUANTA Elite controller using 18 gauge wire.

2.3 Wiring the Controller

Perform the following procedures to wire the line and control circuits of the QUANTA Elite. Do ***NOT*** apply power to any circuits until instructed to do so.

2.3.1 Wire the Control Transformer
Run a dedicated 120 or 277 VAC circuit, including grounding conductor, and terminate it to the primary of QUANTA Elite control transformer. (See Figure 2.1.)

2.3.2 Connect Line and Load – Connect line and load wires of the line voltage circuits to the Lighting Relays.

2.3.3 Wire Switch Inputs - Wire the Class 2 Switch Circuits. (See Figure 2.2.)

1. Run the required wiring between the controller and the field-installed switches. Consult the programming worksheets and project documentation to determine the type and quantity of required switch circuits. Check each switch run to ensure that there are no shorts between conductors or to ground. Also verify that there are no opens.
2. Make the connections at the switch end.
3. Make the connections to the controller switch input terminals. ***(N0TE: REFER TO SWITCH INPUT SCHEDULE FOR LANDING WIRES TO INPUTS OR FILL IN SWITCH SCHEDULE AS YOU PROCEED.)***

2.3.4 Set Relay Response

If you want all relays to respond to a signal instantaneously rather than to stagger ON/OFF one at a time, add jumper W1 on the CPU I/O board. (See Figure 2.1.)

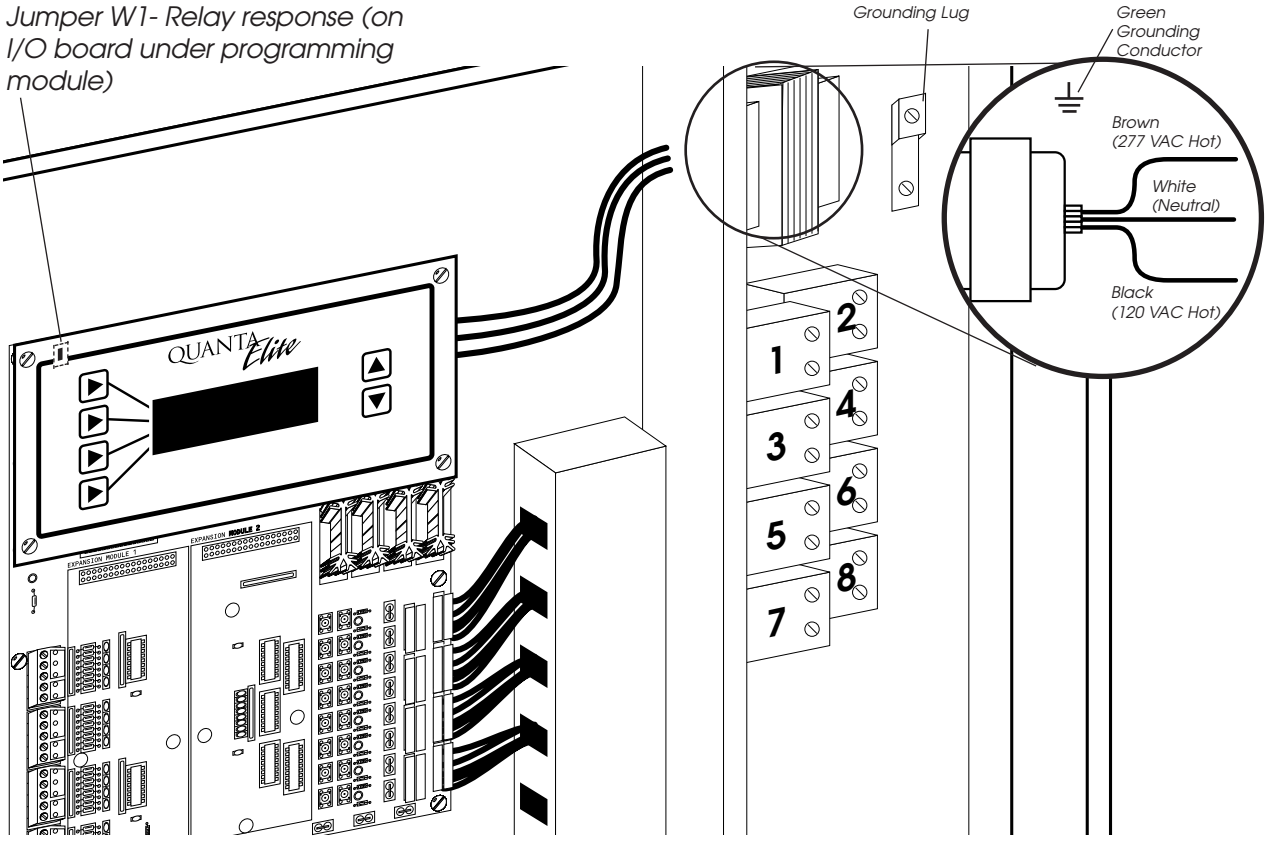


Figure 2.1 – Terminate Line to Control Transformer Primary

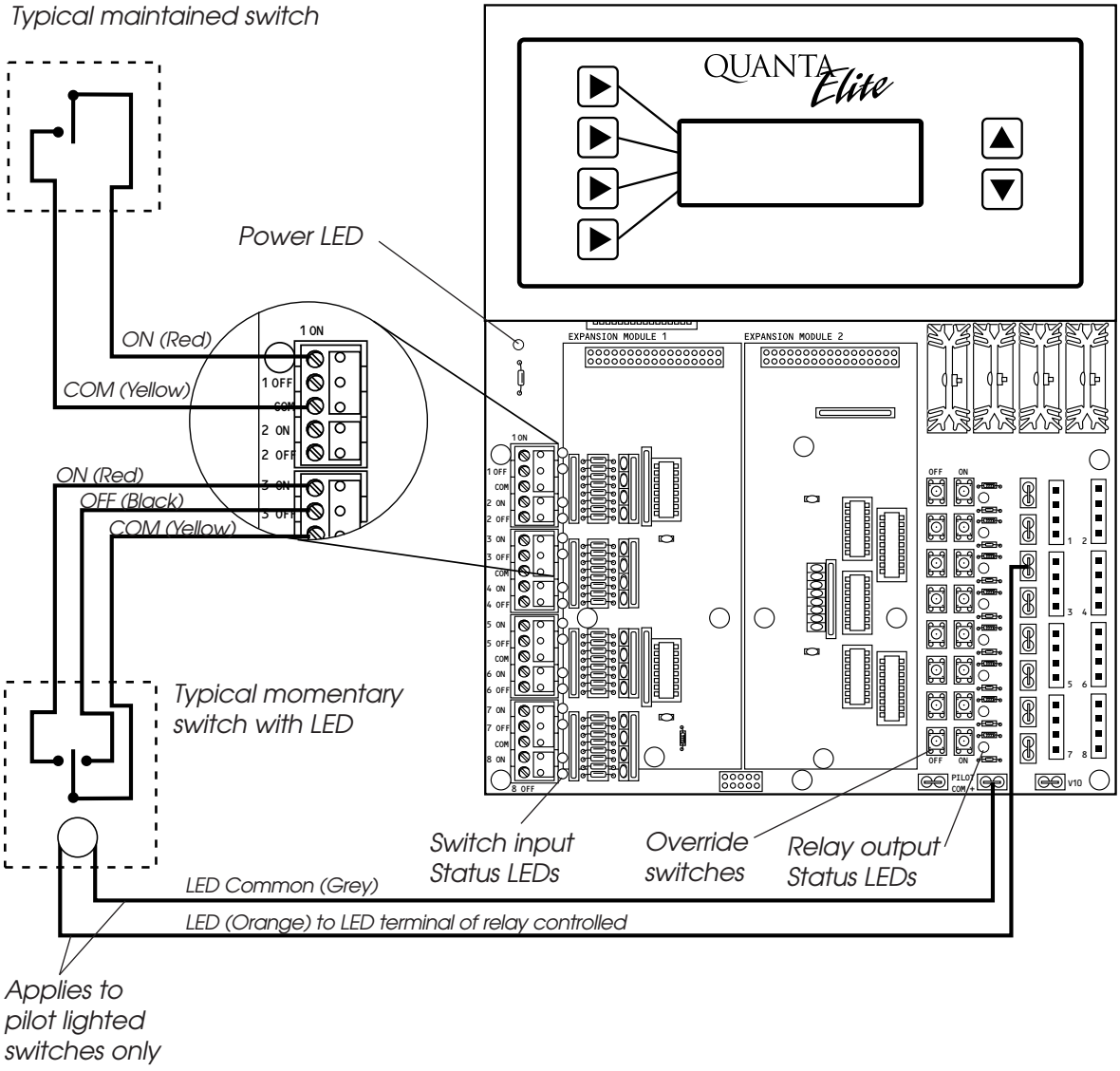


Figure 2.2 – Wire Class 2 Switch Circuits

2.4 Pre-Power Checks

Complete the following checks BEFORE applying power to the QUANTA Elite controller.

2.4.1 Check Controller Power Input

1. Verify that the controller power switch is OFF.
2. After verifying that control transformer source voltage is 120 or 277 VAC (whichever is appropriate), power-up the circuit.
3. Verify correct line voltage on the primary of the transformer.

2.4.2 Verify Controller's Supply Voltage

Verify that there is 24 VAC on control transformer secondary and 12 VAC between each leg and the center tap. (See Figure 1.2.)

2.4.3 Double-Check Connections

1. Verify integrity of I/O connections.
2. Verify integrity of all internal and external wire/cabling.

2.5 Power-Up and Check Out

Complete the following procedures to power-up and check out the QUANTA Elite controller.

2.5.1 Power-Up the Controller

1. Connect a handheld programming module if working with a QUANTA Elite that doesn't have an onboard keypad.
2. Turn the power switch located on the CPU I/O board ON. (See Figure 1.2.)
3. Verify that the controller keypad screen displays the default time and date.
4. Verify that the power light on each I/O board is lit. (See Figure 2.2.)

2.5.2 Verify the Lighting Relays

Switch each relay ON and OFF, pushing the override switches located on the CPU I/O and the other I/O boards. There are separate ON and OFF switches for each lighting relay. (See Figure 2.2.) Verify that the relay status LED goes ON and OFF and that the relay itself changes state. Verify that the relay controls the proper circuit.

2.5.3 Perform Initial Programming Procedures (See Section 3.)

1. Set the correct date & time on the controller.
2. Program the switch inputs & timers.

2.5.4 Verify the Switching Function

1 .Operate each switch.

2. Verify that each switch controls the correct lighting relays in the manner you have programmed.

2.5.5 Verify the Timer Functions –

1. Set the controller clock 10 minutes prior to the times required for each programmed timer to occur.
2. Verify that the relays respond as programmed.
3. Reset the controller clock to the correct date and time.

2.6 Troubleshooting

In the event of trouble, use the following procedures to identify the problem.

2.6.1 Controller Will Not Power-Up

1. Verify that there is 120/277 VAC on the primary and 24 VAC on the secondary of the control transformer.
2. Verify that the power LED on the CPU I/O board is lit.
3. If there is proper primary and secondary voltage on the transformer but the power LED is not lit and the keypad screen doesn't come up, the controller CPU I/O board may be defective.

2.6.2 Lighting Relay(s) Will Not Function

1. Verify that there is 24 VAC on Control Transformer secondary.
2. Make sure that lighting control wiring is landed properly on the relay output of the CPU I/O or other I/O boards. (Blue is common, red is ON, black is OFF, orange is status.) (See Figure 1.1.)
3. Override the affected relay ON/OFF with the override switches located on the I/O board. (See Figure 1.2.)
4. If the relay doesn't respond, replace the relay.

2.6.3 Switch Input Will Not Function

1. Check your programming.
2. Verify proper connections at field and controller end.
3. Verify that there is only one maintained switch connected per input.
4. Unhook field connections from affected input. Connect test switch of same type as field switch.
5. Work the test switch. Observe whether the switch input status LED lights when it senses a switch closure.
6. If the switch input status LED lights and the relays function properly, there is probably a problem with the field wiring.
7. Verify that the CPU is seeing the switch input by *viewing the current switch status*. This can be done with the keypad by going to the *Switch Status* screen and scrolling to the individual input or scanning all of the inputs to verify that a switch closure is being seen by the controller (step-by-step procedure is on page 3 - 6). Also the outputs of the CPU and I/O boards can be tested through the keypad. Relays can be forced individually or all swept ON or OFF using the keypad (a step-by-step procedure can be followed on page 3 - 3).
8. If the switch input or affected relay doesn't respond (or no response is viewed through the keypad), the affected CPU or I/O may be defective.

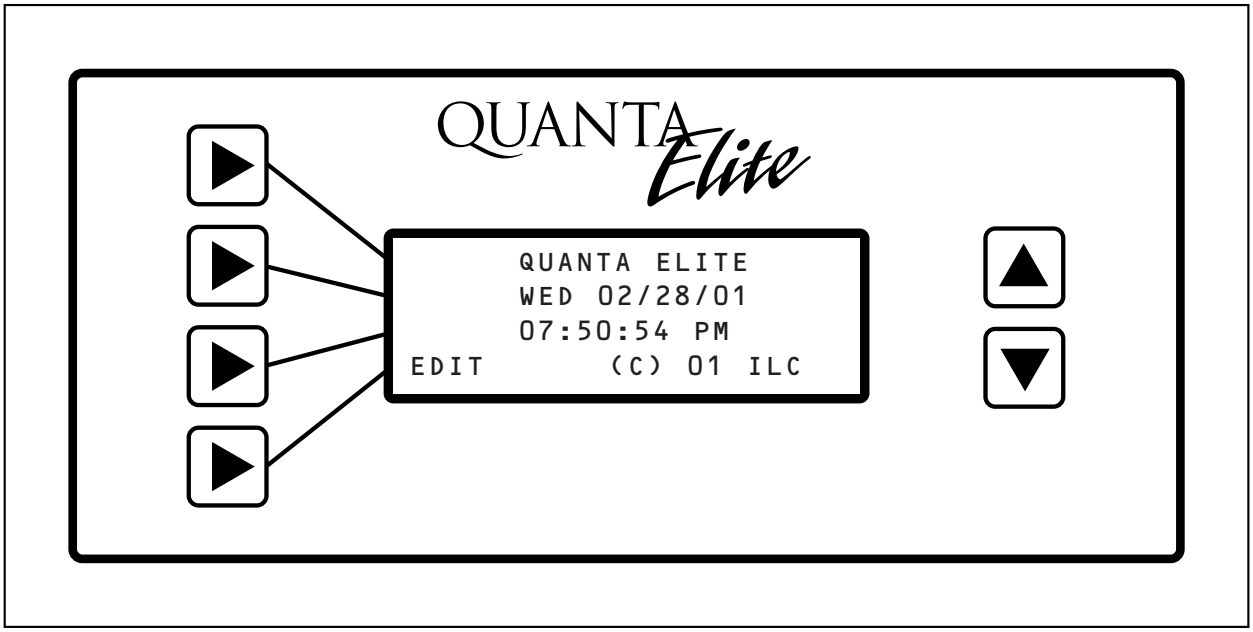
2.6.4 Timers Will Not Function Properly

1. Check your programming.
2. Verify the affected output integrity by mapping a switch input to the output and triggering it with a test switch. If the relay doesn't react, you may have a defective I/O board. Consult factory.

2.6.5 Entire I/O Board(s) Doesn't Work

1. Check to ensure that the data and power cables linking the I/O boards are connected properly and are free of opens and shorts.
2. Check to ensure that the power LED on the I/O board is lit.
3. Verify that the CPU sees the expansion I/O boards, using the keypad. This can be done by going to the Relay Status screen and scrolling through the outputs to see if the CPU sees all of the outputs (a step-by-step procedure is on page 3 - 3).
4. If the I/O board is not recognized by the CPU, you may have a defective board or data cable.

Section 3
Programming



Section 3 Programming

Objectives

In this section you will learn how to program the QUANTA Elite Controller.

Conventions/Definitions

Actual key strokes/entries appear as arrows: for example, ▶ followed (if applicable) by the appropriate keyword. For example, to leave the Home screen, the entry is ▶ EDIT. (See the figure below.)

The term **default** appears in this section. Default means the value or entry preprogrammed at the factory. In many cases the default may be appropriate for your application, making field programming unnecessary. For example, momentary ON/OFF is the default switch type; therefore, if 3-wire momentary switches are used exclusively at your facility, switch input definition will not be necessary.

Another term used often is **Home screen.** The Home screen is the top level screen of the controller. It features the controller name, the date and the time. (See Figure 3.1.) The controller displays this screen on power-up and at times when you are not programming or checking input/output status.

Automatic Timeout/Data Saving

If you do not press any keys for 30 seconds while you are programming, the controller will automatically return to the Home screen and **save** whatever data was entered. Therefore you can save entries simply by stopping keystrokes or by entering the proper keyword – usually ▶ EXIT or ▶ SAVE.

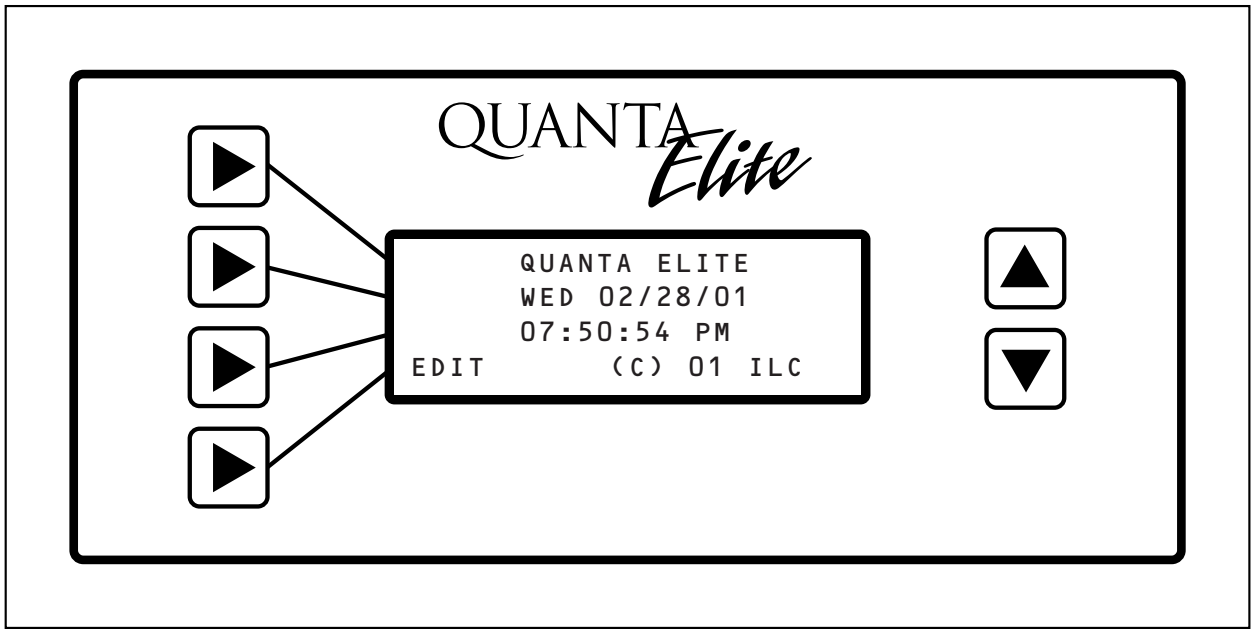


Figure 3.1 - QUANTA Elite Home Screen

3.1 Relay Status

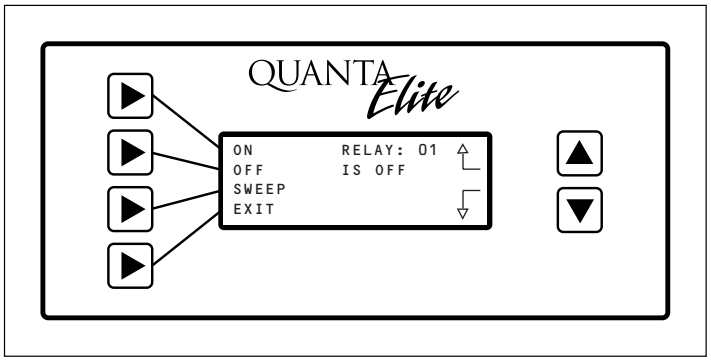
View current relay status or turn relay(s) ON or OFF directly from the keypad.

WHAT IS IT?

This feature permits you to view the current ON/OFF state of the relay outputs. In addition, you can turn a selected relay ON or OFF or you can turn all the relays ON or OFF.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT.
2. Then press ▶ RELAY STATUS to access the top level Relay Status screen. (See Figure 3.2.)



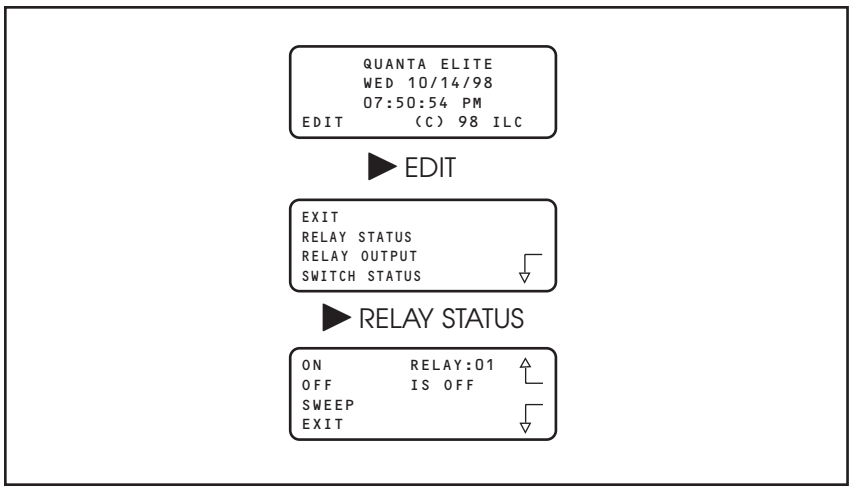
Top Level Relay Status Screen

Parameter Key:

ON = turn the selected relay ON

OFF = turn the selected relay OFF

SWEEP = turn **ALL RELAYS ON** or **ALL RELAYS OFF**



Relay Status Screen Flow

Figure 3.2

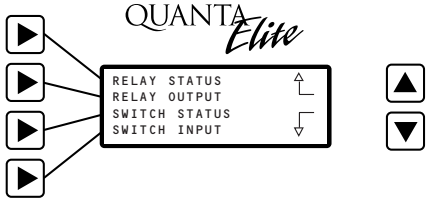
3.2 Controlling Relays From the Keypad

WHAT DO I DO?

1. From the Home screen, press ▶ EDIT.

Step 1

2. Press ▶ RELAY STATUS.



Step 2

3. Press ▲ until the relay to be overridden appears on the screen.

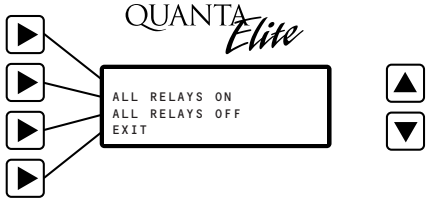
4. Press either ▶ ON or ▶ OFF to override the relay to the desired state.

Steps 3 & 4

5. To turn all the relays ON or OFF, press ▶ SWEEP; then press either ▶ ALL RELAYS ON or ▶ ALL RELAYS OFF.

6. Press ▶ EXIT to return to the top level Relay Status screen.

7. Press ▶ EXIT to return to the Home screen.



Step 5

3.3 Relay Output

Configure relay output properties such as Blink functions and power-up options.

WHAT IS IT?

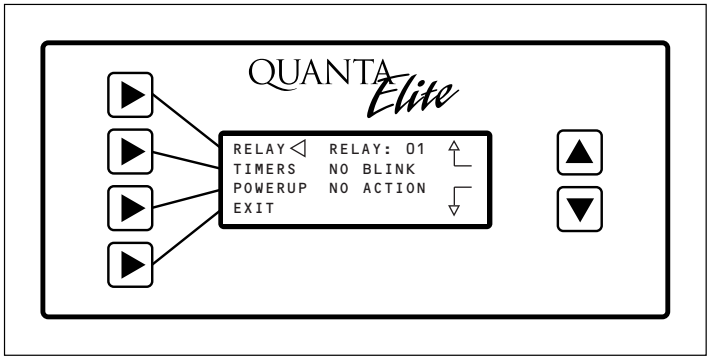
Use relay output definition to determine the way each relay output responds to impending OFF timers and the application/ re-application of power to the QUANTA Elite controller. The controller blinks (momentarily turns OFF/ON each relay controlled by an upcoming OFF) as a warning. (NO BLINK is the default entry.) Blinking is not appropriate for some types of lighting, such as HID. As an alternative to a blink alert, you can program one of the relay outputs to energize an ALARM external to the controller. The alarm sounds when a relay defined for an HID DELAY is about to be turned OFF by a timer.

You can program how each relay output responds to the application or re-application of AC power to the controller. The default setting is NO ACTION (the relay will not change state on controller power-up). The other choices are for the relay to TURN ON or TURN OFF on controller power-up.

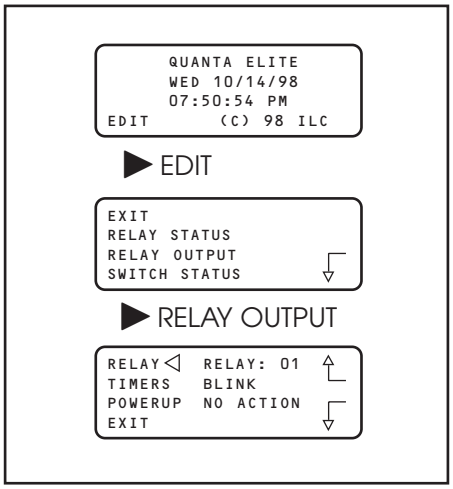
There are two additional choices available. You can program the relay output to turn ON if switch input number 1 is ON (ON/IN:1) or turn OFF (OFF/IN:1) if switch input 1 is ON at time of power-up.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT.
2. Press ▶ RELAY OUTPUT from the Menu screen. (See Figure 3.3.)



Relay Output Definition Screen



Relay Output Definition Screen

Parameter Key:

TIMER = relay output to be defined (1 – 48)

TIMERS = how the relay will respond to an impending timer. Default is **NO BLINK.** Other possible entries: **BLINK, HID DISPLAY, ALARM**

POWERUP = how the relay responds to application or re-application of controller power. Default is **NO ACTION**

Figure 3.3

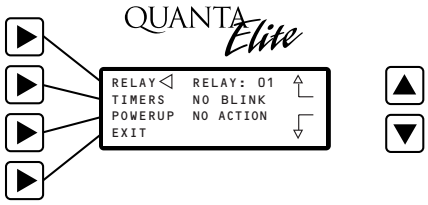
3.4 Set Relay Parameters

WHAT DO I DO?

NOTE: The default parameters are for the relays to not blink alert an upcoming OFF timer and take no action on controller power-up. If these are appropriate for the application, you can skip this section.

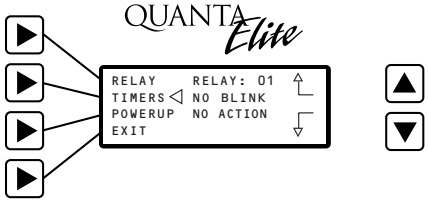
1. From the Home screen, press ▶ EDIT; then press ▶ RELAY OUTPUT.

2. RELAY appears; then press ▲ until the relay you want to define appears.



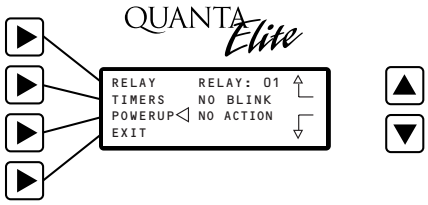
Step 2

3. Press ▶ TIMERS; then press ▲ until the desired response of the relay to an upcoming OFF timer appears.



Step 3

4. Press ▶ POWERUP until the desired relay response to a controller powerup appears.



Step 4

5. Press ▶ EXIT twice to return to the Home screen.

3.5 Switch Status

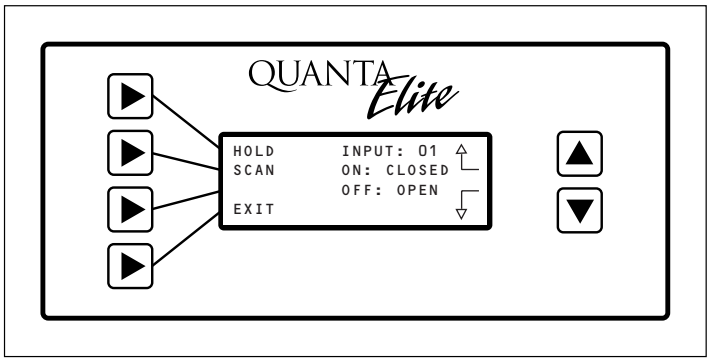
View current switch input status for any switch input or scan all switch inputs.

WHAT IS IT?

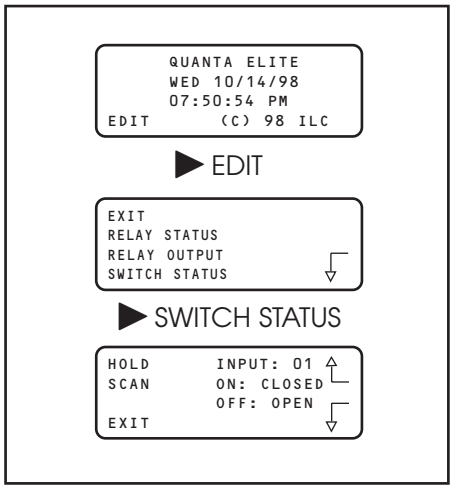
You can view the current status of each switch input. The Switch Status screen will display maintained switch inputs as either OPEN or CLOSED. Momentary inputs are displayed as OPEN when the switch is in the neutral position. During actuation, a momentary OPEN or CLOSED message displays on the screen if the currently selected input is actuated.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT.
2. Press ▶ SWITCH STATUS to access the Switch Status screen. (See Figure 3.4.)



Switch Status Screen



Switch Status Definition Screens

Figure 3.4

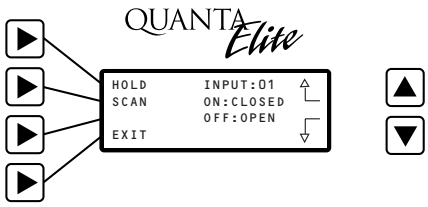
3.6 View Current Switch Status

WHAT DO I DO?

1. Press ▶ HOLD; then press ▲ or ▼ to select the input you want to check.

2. If you press ▶ SCAN while viewing an input, the controller will automatically display the input that has changed state.

3. Press ▶ EXIT to leave the screen.



Step 1

3.7 Switch Input

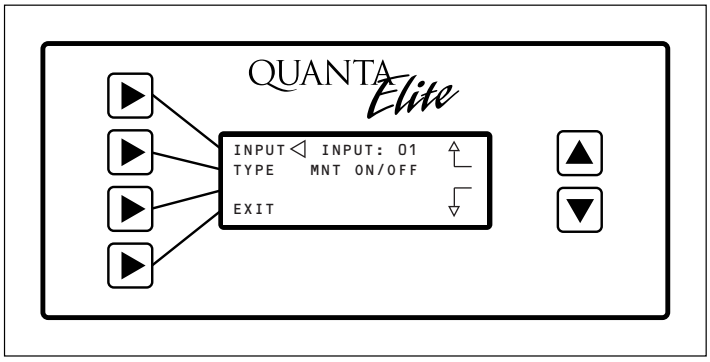
Configure the switch type for switch inputs

WHAT IS IT?

Switch input is used to program the characteristics of each QUANTA Elite controller input. Each of the controller inputs can be connected to either a 2-wire and 3-wire momentary switch or to maintained switch(s). You can program each input as one of the available switch types. Consult Table 3.1 for a description of each switch type and the required physical characteristics of the switch used to trigger the switch type function.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT; then press ▼.
2. Press ▶ SWITCH INPUT. (See Figure 3.5.)

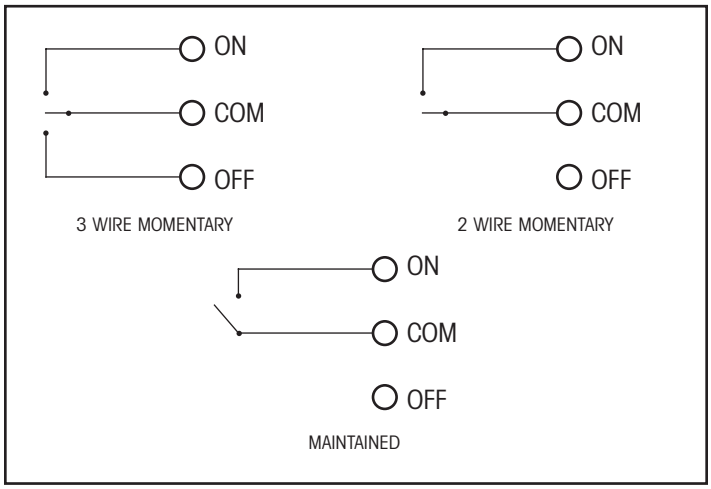


Switch Input Screen

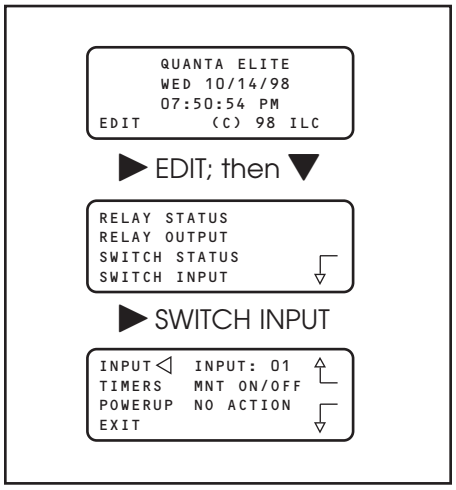
Parameter Key:

INPUT = Control switch input (1 of 48)

TYPE = switch type; momentary ON/OFF is the default



Physical Switch Configurations



Switch Definition Screens

Figure 3.5

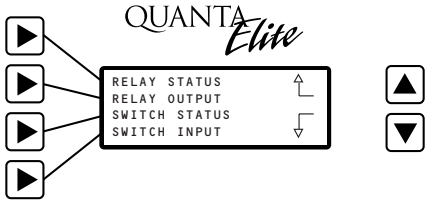
3.8 Programming a Switch Input

WHAT DO I DO?

1. From the Home screen, press ▶ EDIT.

Step 1

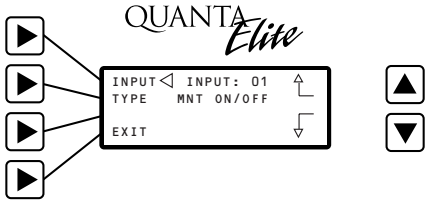
2. Press ▼; then press ▶ SWITCH INPUT.



Step 2

3. Press ▲ to select the switch input that controls the relay.

4. Press ▶ TYPE; then press ▲ until the desired switch type appears on the screen.



Steps 3 & 4

5. Press ▶ EXIT; then press ▲ and ▶ EXIT again to return to the Home screen.

Type	Physical	Operation
Momentary ON/OFF	3-wire momentary	Momentary contact between ON and Common turn controlled relay outputs ON. Momentary contact between OFF and Common turn controlled relay outputs OFF.
Momentary Pushbutton	2-wire momentary	Momentary contact between ON and Common turn controlled relays ON and OFF alternately each time contact is made.
Maintained ON/OFF	2-wire maintained	When contact between ON and Common are made, controlled relays turn ON. When contact is broken, controlled relays turn OFF.
Maintained Multi-way	2-wire maintained	When contact is made or broken between ON and Common, the controlled relays will toggle from ON to OFF or OFF to ON; similar to conventional 3-way switching.
Set Preset	2-wire Momentary	When momentary contact between ON and Common is made, the controlled relay outputs will go to their programmed states.
Timed ON	2-wire momentary	Contact between ON and Common will turn relay outputs on for a programmed time. At the end of this time the controlled relays will turn OFF.
Two-Step Pattern	2-wire momentary	Upon switch activation, Group A relays turn ON and Group B turn OFF. The following activation causes Group A to turn OFF and Group B to turn ON. The pattern repeats with each switch activation.
Four-Step Pattern	2-wire momentary	On the first activation, Group A relays turn ON and Group B turn OFF. On the second activation, Group A turns OFF and B turns ON. The third activation causes both A and B to go ON. On the fourth activation, both A and B go OFF. Then the pattern repeats.
Input Disable	2-wire maintained	As long as the switch is closed, other selected inputs are disabled.
Timer Disable	2 wire maintained	As long as the switch is closed, selected timers are disabled.
Network Disable	2-wire maintained	As long as the switch is closed, all network commands are disabled.
Output Override	2-wired maintained	As long as the switch is closed, selected relay output(s) will ignore all input, timer, or network commands.

Table 3.1 QUANTA Elite Switch Types

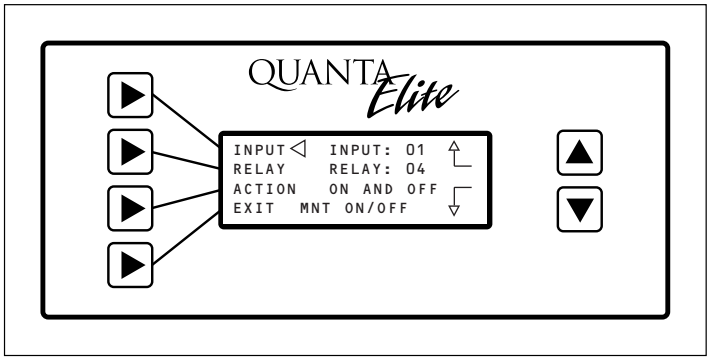
3.9 Input/Relay Control

WHAT IS IT?

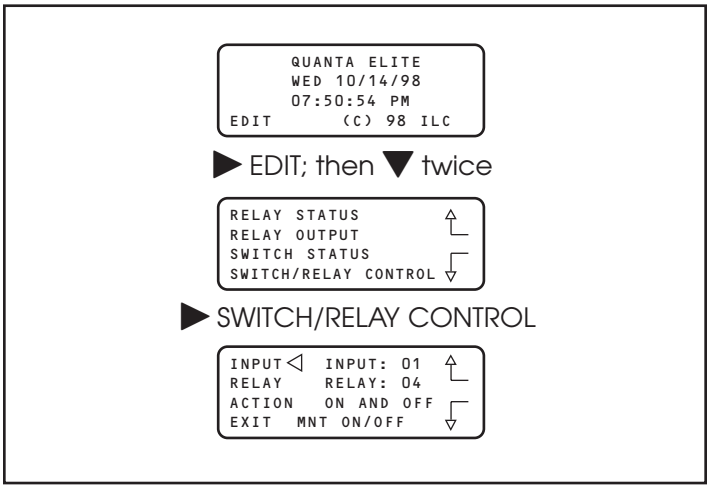
This is the feature used to select which relay output or outputs respond to a particular switch input actuation. You can program a switch input to control any or all of a QUANTA Elite controller's relay outputs. The controller can have up to 48 relay outputs. Each Relay Output(s) can be programmed to respond in one of the following ways: NO ACTION, ON ONLY, OFF ONLY, or ON AND OFF.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT; then press ▼ twice.
2. Then press ▶ INPUT/RELAY CONTROL. (See Figure 3.6.)



Input/Relay Control Screen



Input/Relay Definition Screens

Parameter Key:

INPUT = the number of the controlling switch (1-48)

RELAY = the number of the controlled Relay Output (1-48)

ACTION = how the relay responds to switch actuation (NO ACTION is the default.)

Figure 3.6

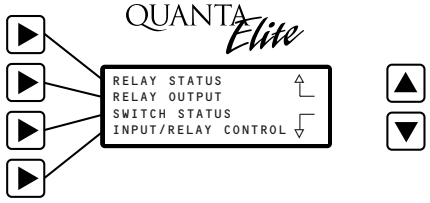
3.10 Map a Switch to a Relay Output

WHAT DO I DO?

1. From the Home screen, press ▶ EDIT.

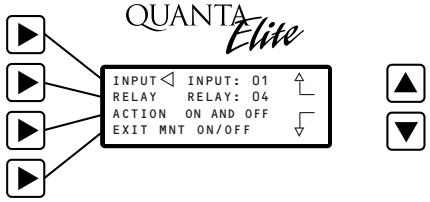
Step 1

2. Press ▼ twice; then press ▶ INPUT/RELAY CONTROL.



Step 2

3. INPUT is displayed; then press ▲ until the controlling input you want appears.
4. Press ▶ RELAY; then press ▲ until the relay to be controlled appears.
5. Press ▶ ACTION; then press ▲ until the desired relay response appears.



Steps 3, 4, 5

6. Press ▶ EXIT; then press ▲ twice and ▶ EXIT again to return to the Home screen.

3.11 Timers

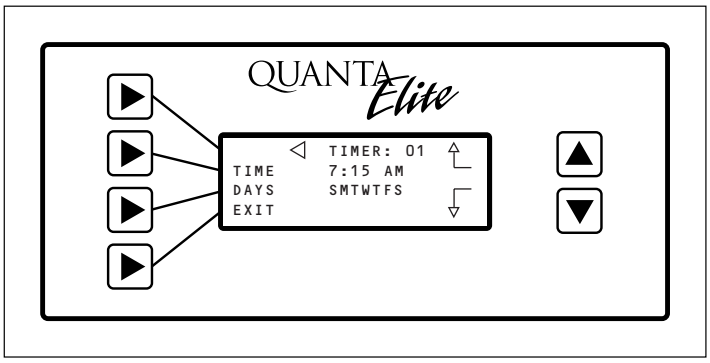
Configure timers for automatic time scheduled activation.

WHAT IS IT?

Timers are time-based events that impact selected relay outputs. The QUANTA Elite controller supports up to 48 different timers. Each timer can control any or all of the relay outputs. You can program the timer to turn relay(s) ON or OFF or not impact the relay(s) at all. You can set the controller to execute a timer on one or more days of the week or a particular holiday. The controller supports the definition of up to 48 Holidays. You can program the timer to occur at an actual time of day (for example, 10:30 PM) or you can define the occurrence in Astro time. Astro time is time defined in relation to sunrise or sunset. (See 3.26 if you are using the OPEN/CLOSE feature.)

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT; then press ▼ 3 times.
2. Press ▶ TIMERS from the menu to access the top level Timer Definition screen.



Top Level Timer Definition Screen

Parameter Key:

TIMER = a time-based event that impacts one or more relays

TIME = when the TIMER occurs expressed in either **NORMAL** or **ASTRO** TIME. NORMAL TIME is defined in **HOUR**(s) and **MINUTE**(s) AM or PM. ASTRO TIME is defined in relation to **SUNRISE** or **SUNSET.**

DAYS = **DAILY**, the day(s) of the week of TIMER occurrence; or **HOLIDAY**, the holiday date of occurrence.

Figure 3.7(a)

3.11 Timers

Configure timers for automatic time scheduled activation.

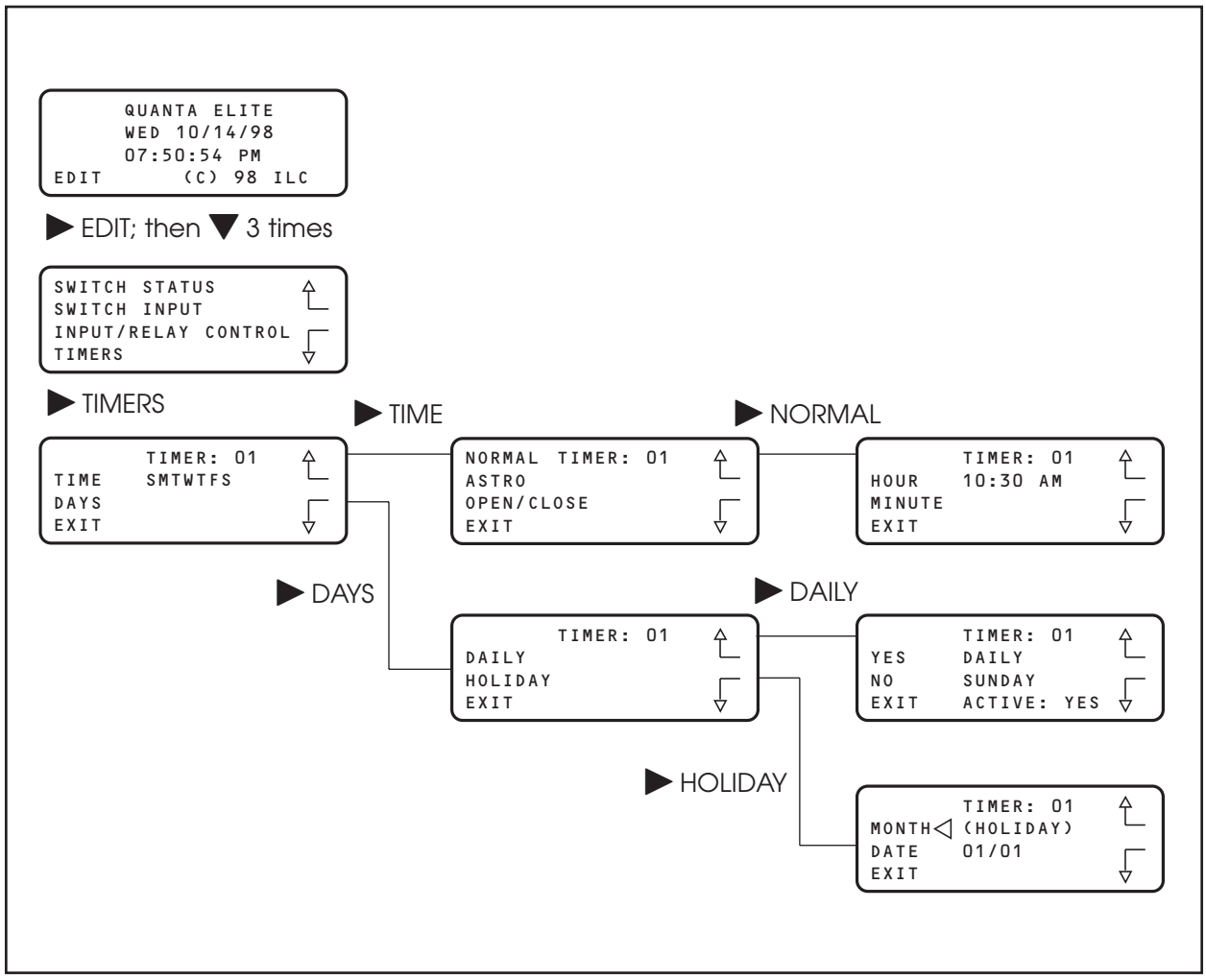


Figure 3.7(b)

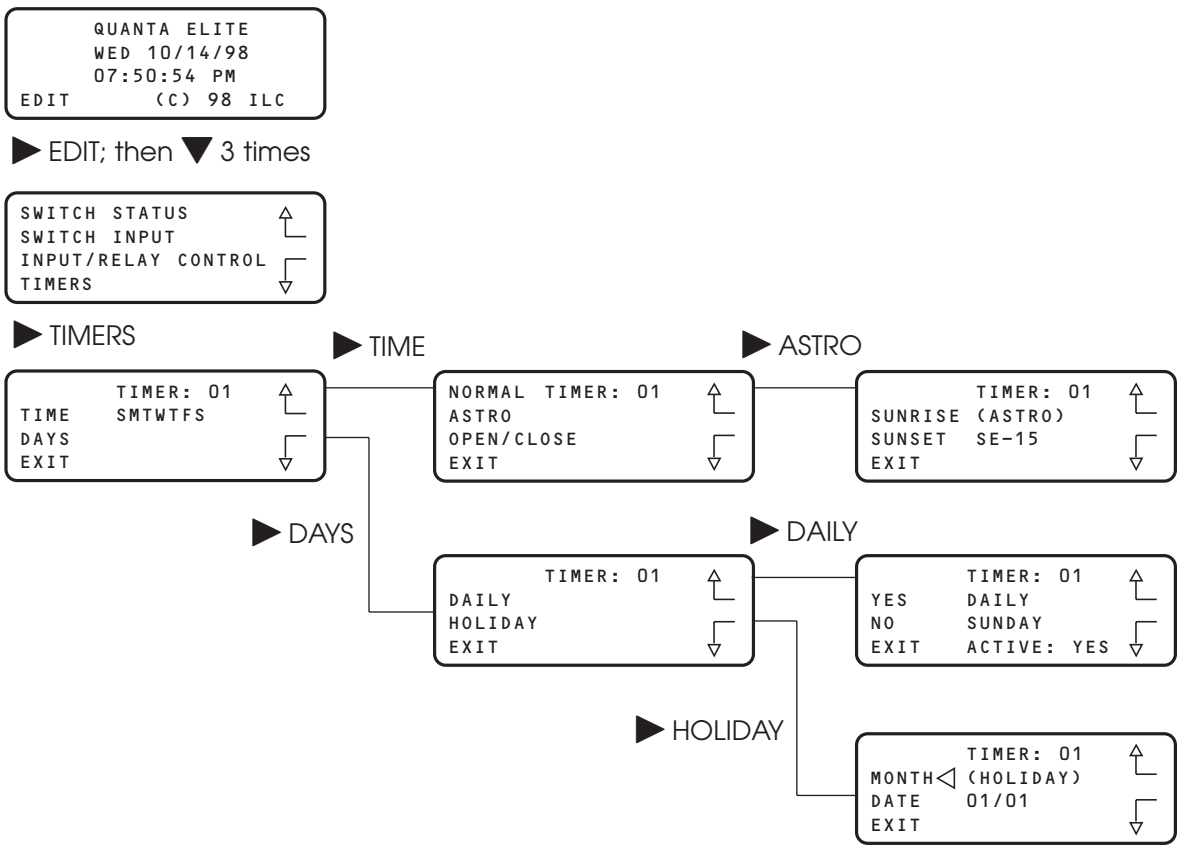
ASTRO TIME – WHAT MORE MUST I KNOW?

Astro time is the time relative to sunrise and sunset. Defining a timer in Astro time is especially useful in parking, security, and other outdoor lighting applications. You can set the timer to occur either exactly at sunrise or sunset or from 15 to 120 minutes before or after these times in 15-minute increments. See Figure 3-8 for ASTRO TIMER programming path.

To execute ASTRO time timers, you must program the controller with the proper latitude, longitude, and time zone coordinates. You do this by programming the SET ASTRO CLOCK feature discussed in Section 3-18.

3.11 Timers

Configure timers for automatic time scheduled activation.



Timer Definition Screens (Astro)

Figure 3.8

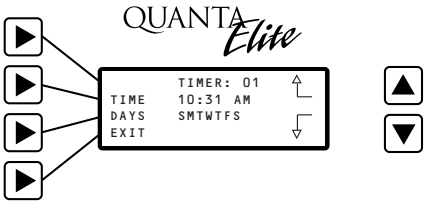
3.12 Define a Timer

WHAT DO I DO?

1. From the Home screen, press ▶ EDIT; then press ▼ 3 times.

2. Press ▶ TIMERS.

3. Press ▲ until the Timer to be defined appears on the screen.

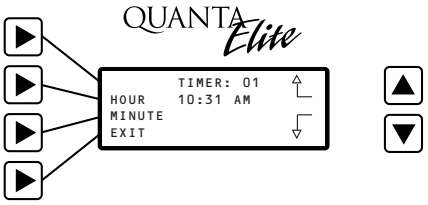


Step 3

4. Press ▶ TIME; then press ▶ NORMAL to select conventional AM/PM time.

5. HOUR is displayed; then press ▲ or ▼ until the desired hour (AM or PM) appears.

6. Press ▶ MINUTE; then press ▲ or ▼ until the desired minute appears; then press ▶ EXIT.



Steps 5 & 6

7. Press ▶ DAYS; then press ▶ DAILY.

8. Press ▲ or ▼ and as each day appears, press either ▶ YES or ▶ NO to select whether or not the Timer is to be active on that day.

Step 8

9. Press ▶ EXIT twice; then press ▲ 3 times, and ▶ EXIT once more to return to the Home screen.

3.13 Timer/Relay Control

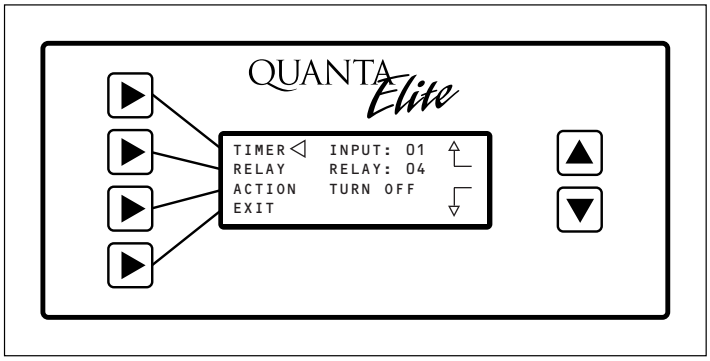
Program timers to control relay outputs.

WHAT IS IT?

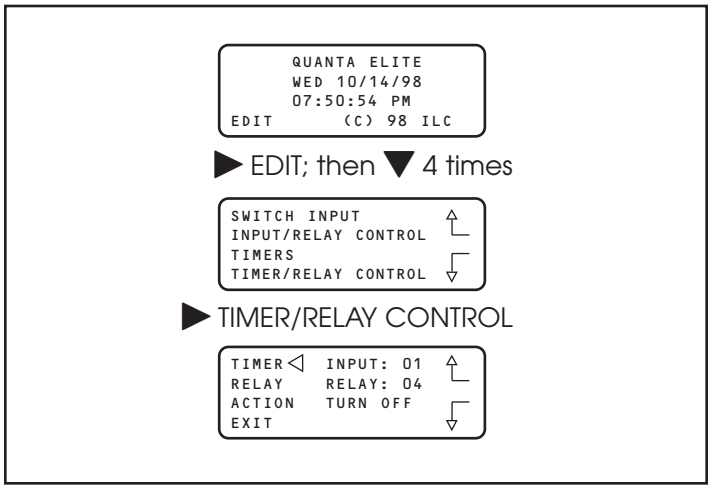
This is the feature used to determine how relay output(s) respond to the timers you have defined. Each timer can control anywhere from one to all 48 relay outputs. Each controlled relay can be turned ON or turned OFF or can be set to not respond at all. The default response is NO ACTION.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT; then press ▼ 4 times.
2. Press ▶ TIMER/RELAY CONTROL. (See Figure 3.9.)



Timer/Relay Control Screen



Timer/Relay Definition Screens

Parameter Key:

TIMER = one of up to 48 time-based events impacting a relay

RELAY = one of up to 48 relay outputs controlled by the timer

ACTION = how the relay responds to the timer. The relay may go ON, or OFF, or take NO ACTION

Figure 3.9

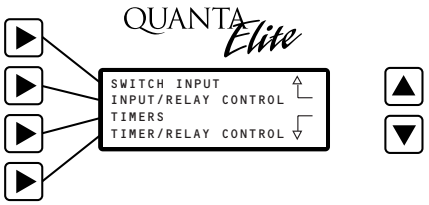
3.14 Map the Timer to a Relay Output

WHAT DO I DO?

1. From the Home screen, press ▶ EDIT.

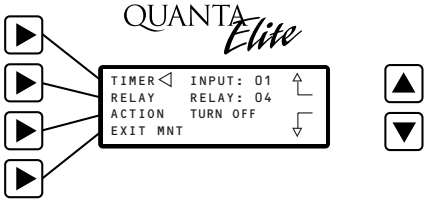
Step 1

2. Press ▼ 4 times; then press ▶ TIMER/RELAY CONTROL.



Step 2

3. TIMER appears; then press ▲ until the timer number you want appears.
4. Press ▶ RELAY; then press ▲ until the relay to be controlled appears.
5. Press ▶ ACTION; then press ▲ until the desired relay response appears.



Steps 3, 4, 5

6. Press ▶ EXIT; then press ▲ 4 times and ▶ EXIT again to return to the Home screen.

3.15 Blink Alerts

Configure the Blink Alert duration and override times.

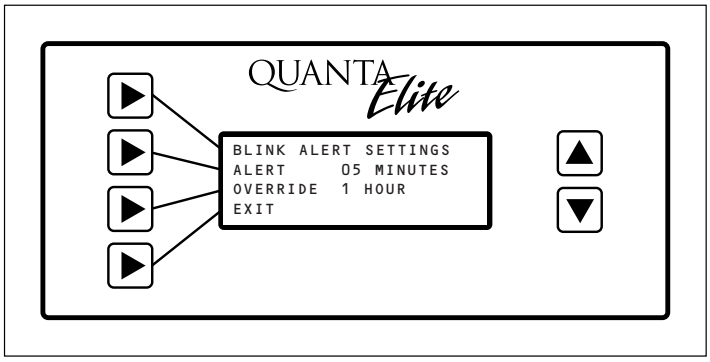
WHAT IS IT?

If any of the relays are subject to the Blink Alert, HID delay or alarm function, you must specify when the QUANTA Elite controller will execute the alert. The choices are from 1 to 5 minutes before the OFF Timer; 5 minutes is the default. The controller supports an override feature.

When the controller executes an alert, you can activate any switch to override the OFF timer for the override time.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT, then press ▼ 5 times.
2. From the menu, press ▶ BLINK ALERTS to access the Blink Alert Settings screen. (See Figure 3.10.)

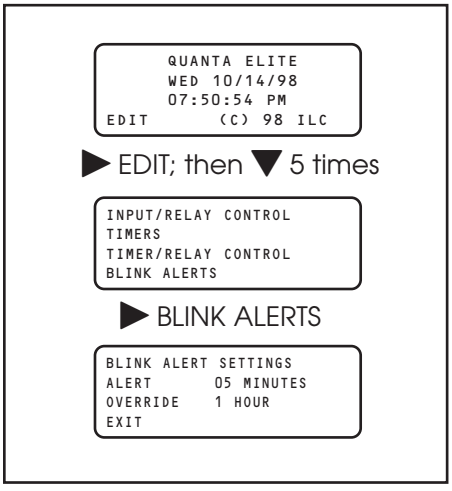


Blink Alert Settings Screen

Parameter Key:

ALERT = lead time of alert from 1 to 10 minutes in increments of 1 minute. The default is 5 minutes

OVERRIDE = time that the OFF Timer will be postponed in response to the override switch signal. From 1 to 6 hours in increments of 1 hour. The default is 1 hour



Blink Alerts Definition Screens

Figure 3.10

3.15 Blink Alerts

Configure Blink Alert duration and override times.

WHAT DO I DO?

1. Press ▶ ALERT until the desired lead time appears.
2. Press ▶ OVERRIDE until the desired override duration appears.

Steps 1&2

3. Press ▶ EXIT to leave the Blink Alert Settings screen.

3.16 Set Time and Date

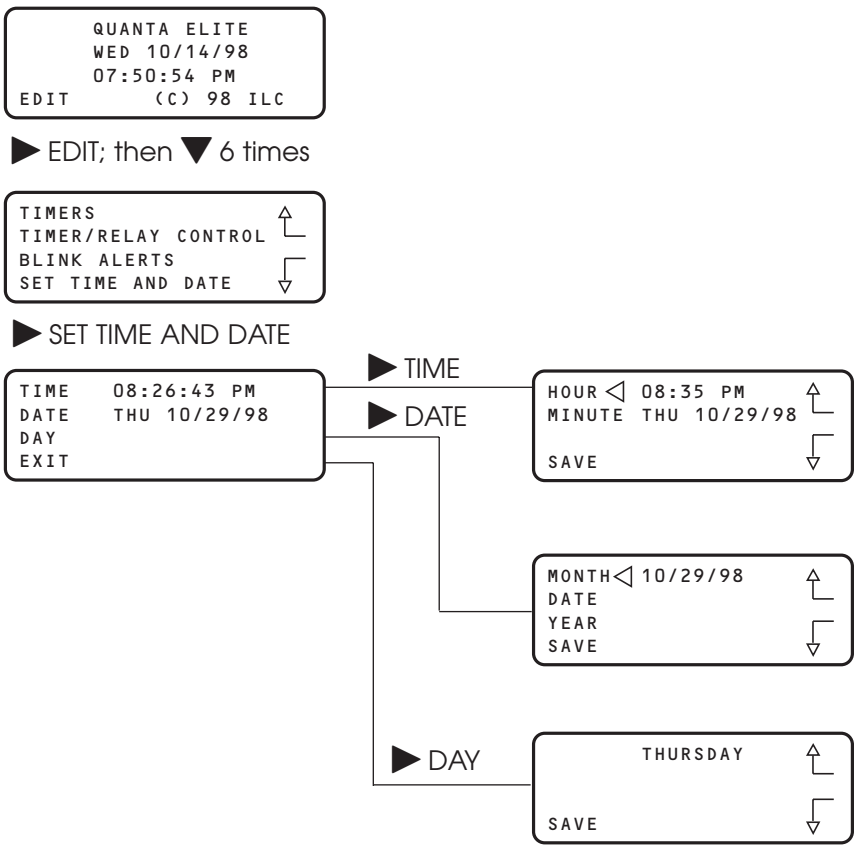
Set system clock date and time.

WHAT IS IT?

This is how you set the QUANTA Elite controller's clock to the proper time and date. This operation is necessary to implement the time-based control features of the controller.

HOW DO I GET THERE?

- From the Home screen, press ▶ EDIT; then press ▼ 6 times.
- Then press ▶ SET TIME AND DATE from the menu of screen choices. (See Figure 3.11.)



Time and Date Definition Screens

Figure 3.11

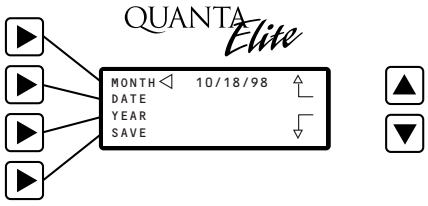
3.17 Set the Controller Clock

WHAT DO I DO ?

1. From the Home screen, press ▶ EDIT; then press ▼ 6 times.
2. Press ▶ SET TIME AND DATE.
3. Press ▶ TIME.
4. Press ▶ HOUR; then press ▲ or ▼ until the proper hour is displayed. Be sure that AM/PM setting is correct.

Step 4

5. Press ▶ MINUTE; then press ▲ or ▼ until the correct minute is displayed.
6. Press ▶ SAVE.
7. Press ▶ DATE.
8. MONTH is displayed; then press ▲ or ▼ until the month you want is displayed.
9. Press ▶ DATE; then press ▲ or ▼ until the correct day of the month is displayed.
10. Press ▶ YEAR; then press ▲ or ▼ until the correct year is displayed.
11. Press ▶ SAVE.



Steps 8-11

12. Press ▶ DAY; then press ▲ or ▼ until the correct day of the week is displayed.
13. Press ▶ SAVE.

Step 12

14. Press ▶ EXIT; then press ▲ 6 times and then ▶ EXIT to return to the Home screen.

3.18 Set Astro Clock

Configure Astro Clock for automated sunrise and sunset activation.

WHAT IS IT?

You must enter the latitude, longitude, and time zone coordinates of the controller site, if you want the controller to execute timers in Astro Time.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT; then press ▼ 7 times.
2. Press ▶ SET ASTRO CLOCK to access the Astro Clock screen. (See Figure 3.12.)

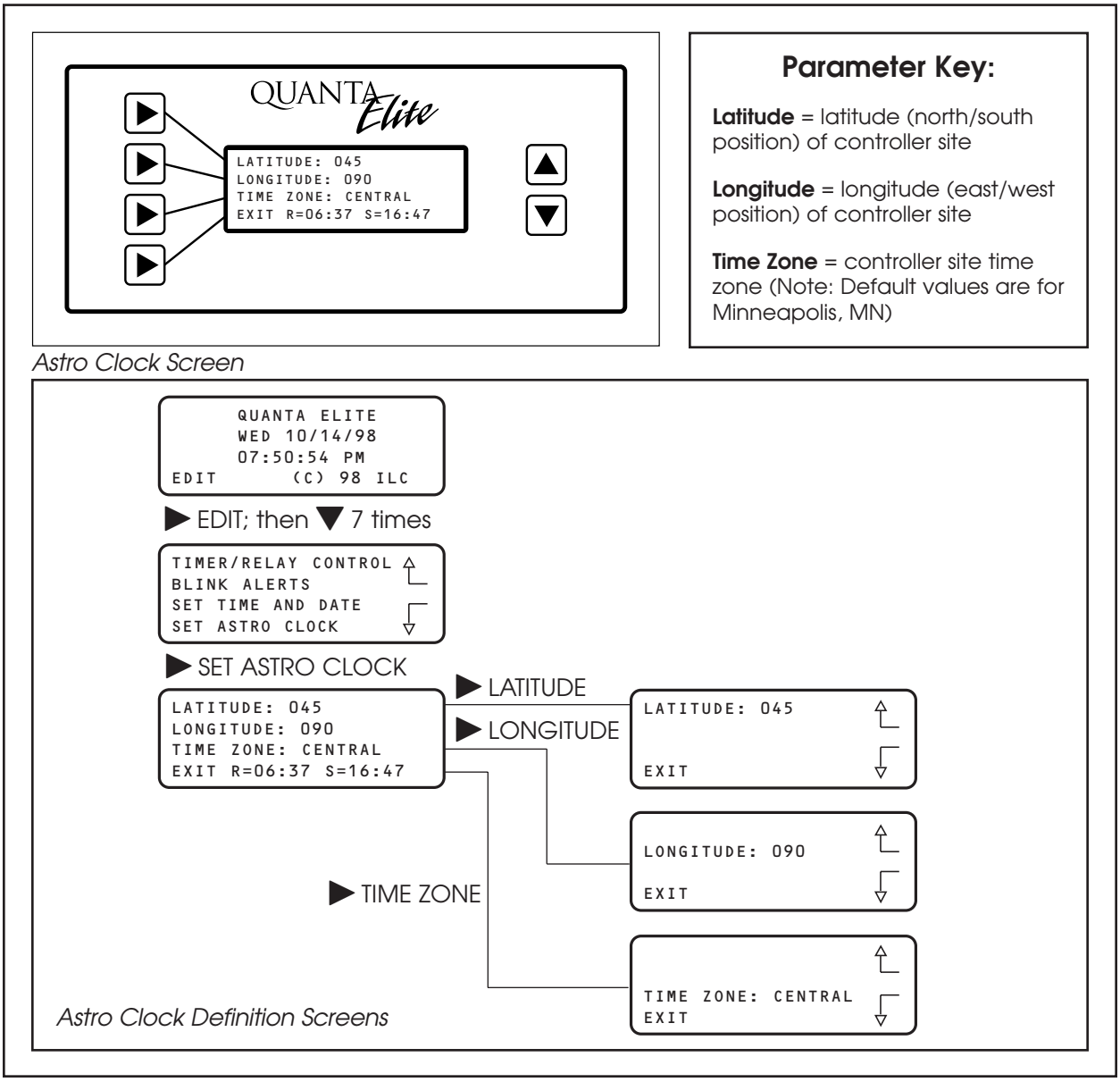


Figure 3.12

3.18 Set Astro Clock

Configure Astro Clock for automated sunrise and sunset activation.

WHAT DO I DO?

1. Press ▶ LATITUDE; then press ▲ or ▼ until the proper latitude appears.

Step 1

2. Press ▶ LONGITUDE; then press ▲ or ▼ until the proper longitude appears.

Step 2

3. Press ▶ TIME ZONE; then press ▲ or ▼ until the proper time zone appears. (Note that the current sunrise and sunset times for the entered coordinates are also displayed on the screen.)

Step 3

4. Then press ▶ EXIT to save the entries.

3.19 Daylight Savings Time

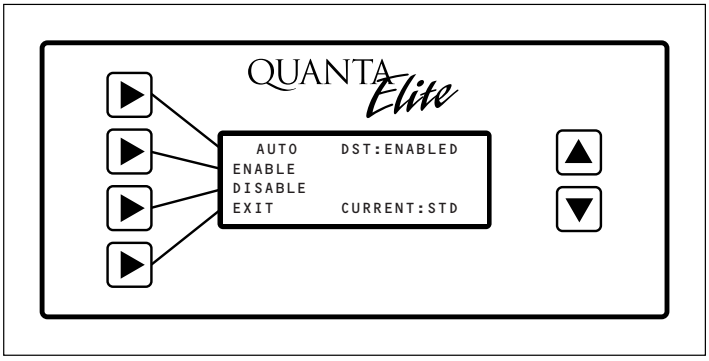
Enable or disable automatic Daylight Savings Time adjustments.

WHAT IS IT?

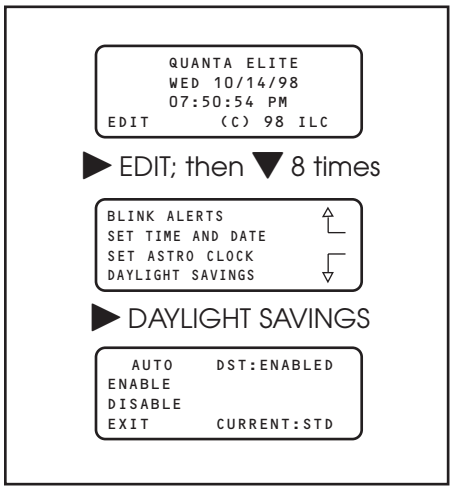
The QUANTA Elite controller supports automatic adjustment of the system clock for Daylight Savings Time. The default is for automatic adjustment between Standard and Daylight Savings on the currently established dates. If the controller is installed in an area where Daylight Savings Time is not implemented, you can disable this feature.

HOW DO I GET THERE?

1. To disable Daylight Savings Time, from the Home screen, press ▶ EDIT.
2. Then press ▼ 8 times and then ▶ DAYLIGHT SAVINGS to access the Daylight Savings screen. (See Figure 3.13.)



Daylight Savings Screen



Daylight Savings Definition Screens

Figure 3.13

3.19 Daylight Savings Time

Enable or disable automatic Daylight Savings Time adjustments.

WHAT DO I DO?

1. Press ▶ DISABLE to disable Daylight Savings Time implementation; or if Daylight Savings is currently disabled and you want to enable it, press ▶ ENABLE. (Note that the screen displays whether controller is Daylight Savings or Standard Time current.)

2. Press ▶ EXIT to save the data and leave the screen.

Steps 1&2

3.20 Serial Interface

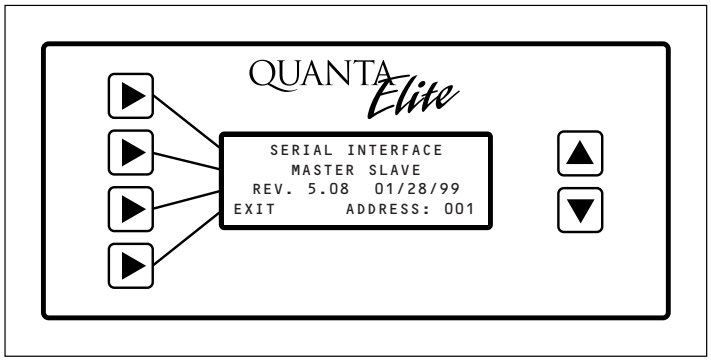
View and edit Serial Interface properties. (See Appendices for specific programming and operating instructions.)

WHAT IS IT?

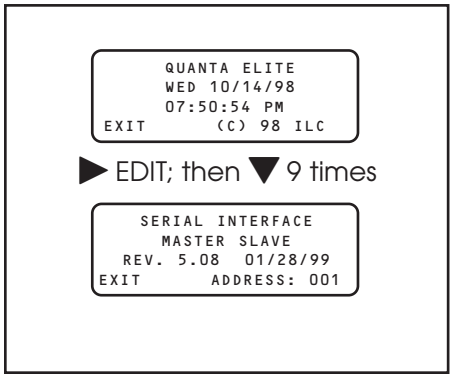
This feature displays the current communications firmware and the controller's node address. In certain non-ILC protocols, it also allows you to edit certain communications parameters.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT; then press ▼ 9 times. (See Figure 3.14.)
2. Press ▶ SERIAL INTERFACE.



Serial Interface Screen



Serial Interface Definition Screens

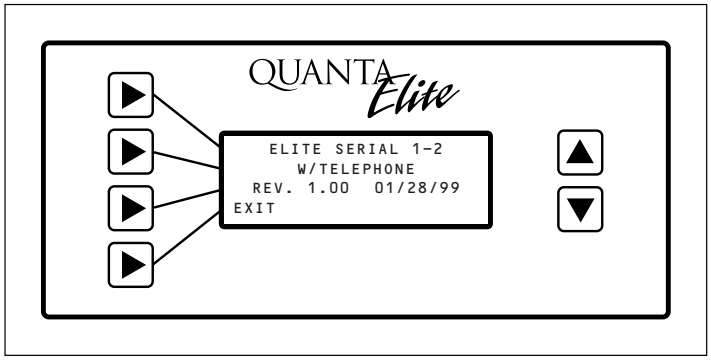
Figure 3.14

3.21 Telephone Interface

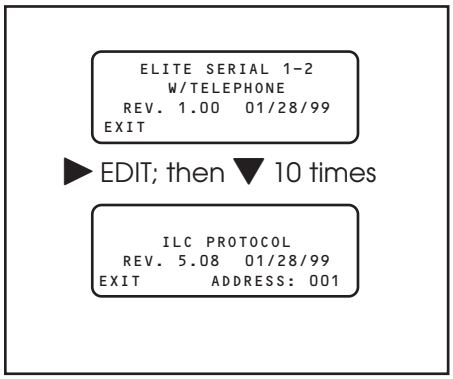
View the current Telephone Interface properties. (See Appendix A for specific programming and operating instructions.)

WHAT IS IT?

This feature permits you to view and edit telephone interface parameters. If your controller is equipped with this feature, see Appendix A.



Telephone Interface Screen



Telephone Interface Definition Screens

Figure 3.15

3.22 DMX Receiver

View and edit DMX interface properties (see appendices for specific programming and operating instructions).

WHAT IS IT?

This feature allows you to view and edit DMX parameters. If your controller is equipped with this feature, see Appendix D.

3.23 Panel Name

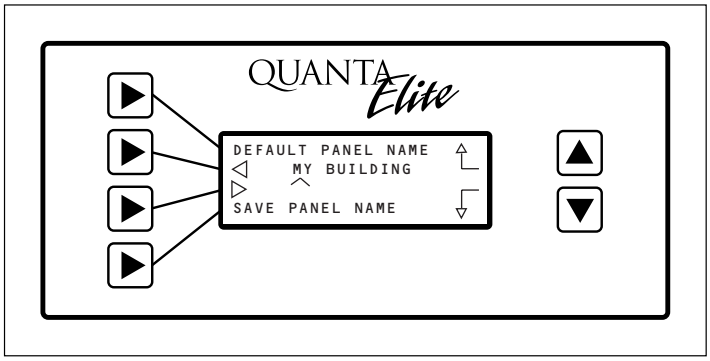
View and edit panel name.

WHAT IS IT?

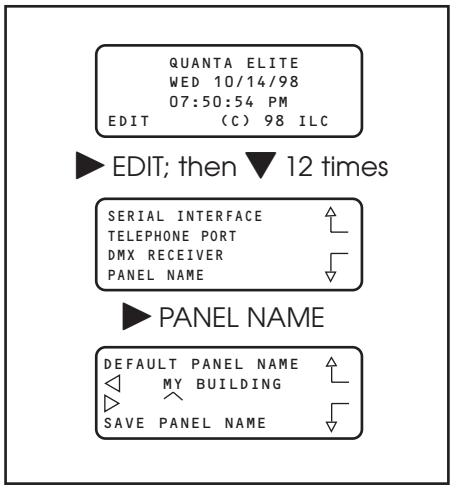
If you choose, you can customize the QUANTA Elite controller (panel) name. The controller name appears at the top of the Home screen.

HOW DO I GET THERE?

1. From the Home Screen, press ▶ EDIT; then ▼ 12 times;
2. Then press ▶ PANEL NAME to access the Panel Name screen. (See Figure 3.16.)



Panel Name Screen



Panel Name Definition Screens

Figure 3.16

3.23 Panel Name

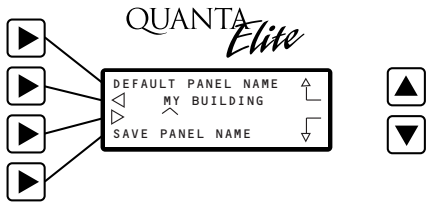
View and edit panel name.

WHAT DO I DO?

1. Press ◀ ; then press ▶ to move the cursor to the first position you want to place the first letter, number, or symbol of the panel name.

2. Then press ▲ or ▼ until the alpha numeric appears. Repeat this process until you have entered the panel name on the screen.

3. Press ▶ SAVE PANEL NAME to load the name into the controller memory. (Note: You can press ▶ DEFAULT PANEL NAME, then ▶ SAVE PANEL NAME, if you want to delete a customized panel name and re-instate the default name (QUANTA Elite)).



Steps 1, 2, 3

3.24 Edit Presets

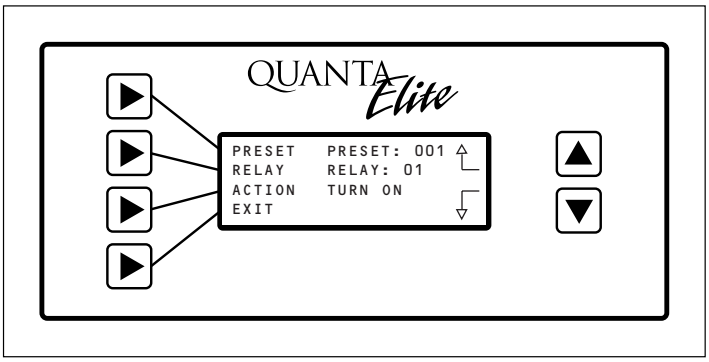
Edit or create preset scenes for activation.

WHAT IS IT?

You can change any of the captured presets using this feature. You can change any or all of the relay ON/OFF states that make up a selected preset.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT.
2. Press ▼ 13 times.
3. Then press ▶ EDIT PRESETS to access the Edit Presets screen. (See Figure 3.17.)



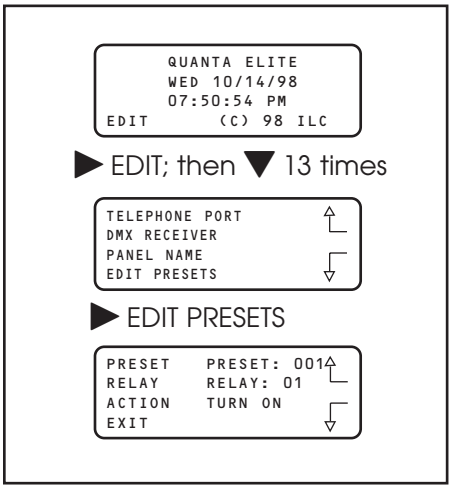
Edit Presets Screen

Parameter Key:

PRESET = the number of the preset you want to edit

RELAY = the number of the relay output whose ON/OFF state you want to change

ACTION = the desired response of the relay to the TEST (See 3.25.) command: NO ACTION, TURN ON, or TURN OFF



Edit Presets Definition Screens

Figure 3.17

3.24 Edit Presets

Edit or create preset scenes for activation.

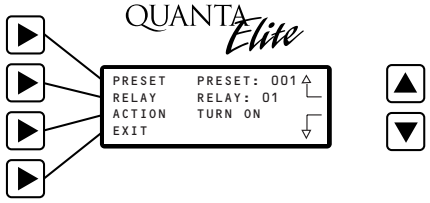
WHAT DO I DO?

1. Press ▶ PRESET; then press ▲ or ▼ until the preset you want to edit appears on the screen.

2. Press ▶ RELAY; then ▲ until the relay whose ON/OFF state you want to change appears.

3. Press ▶ ACTION; then ▲ or ▼ until the desired state appears.

4. After you have edited all the relays to be changed, press ▶ EXIT to save the changes and leave the screen.



Steps 1, 2, 3

3.25 Capture Preset

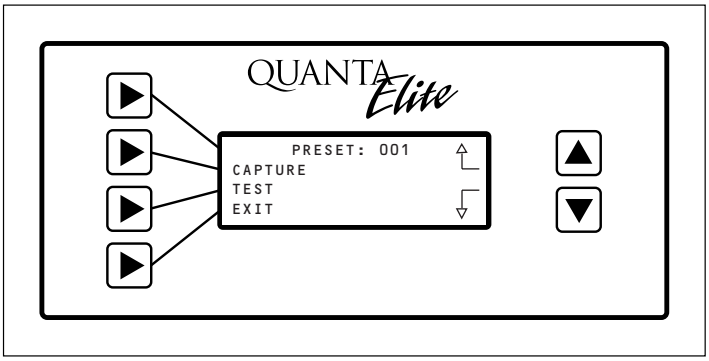
Capture current output relay status and store as a preset scene.

WHAT IS IT?

The QUANTA Elite supports the ability to save the current states of the relay outputs. You can use this stored information to set the relay outputs to the same pre-determined states anytime in the future. You can capture up to 256 presets.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT.
2. Then press ▼ 14 times to access the Capture Preset screen. (See Figure 3.18.)



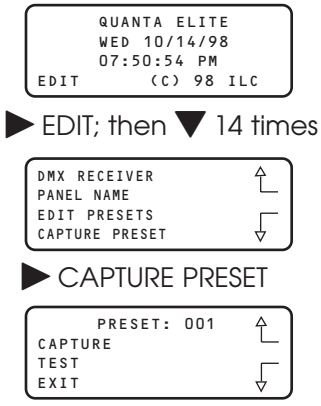
Capture Preset Screen

Parameter Key:

PRESET = the number you assign to a set of relay ON/OFF states that you have commanded the controller to capture

CAPTURE = the command to save the current relay ON/OFF states

TEST = the command to set the relays to the preset states.



Capture Preset Definition Screens

Figure 3.18

3.25 Capture Preset

Capture current output relay states and save them as a preset scene.

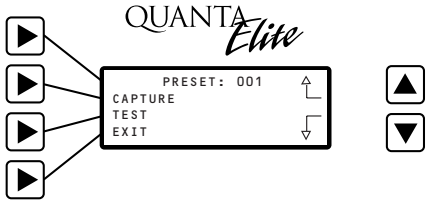
WHAT DO I DO?

1. Press ▲ to select a number for the PRESET.

2. Press ▶ CAPTURE; the controller will store the ON/OFF states of each relay output.

3. Press ▶ EXIT to leave the screen.

Later, after timers or switch signals have changed the relay outputs from the captured states, you can access the Capture Relay screen again, select the appropriate PRESET, then press ▶ TEST. The controller will set the relay outputs to that preset's states.



Steps 1, 2, 3

3.26 Set Open/Close Times

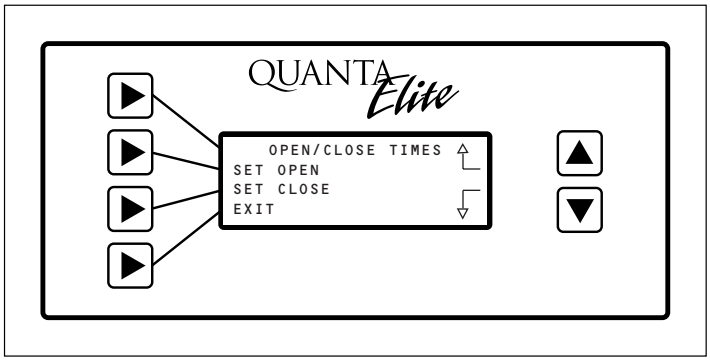
Set Open and Close activation times.

WHAT IS IT?

This feature allows you to define timers in relation to the Open and Close Times of the store. You first enter the Open and Close Times. Then define one timer to occur keyed to opening and a second timer keyed to the store close time. You can program the controller to execute the timer exactly at Open or Close Time or at one of the following offsets either before or after opening or closing: 5, 10, 15, 30, 45 minutes; 1, 1.5, 2, 3, 4, 4.5, 5 hours.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT.
2. Then press ▼ 15 times to access the Set Open/Close Times screen. (See Figure 3.19.)

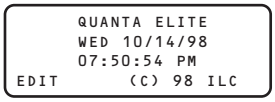


Set Open/Close Time Screen

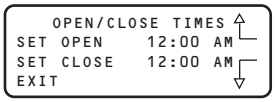
Parameter Key:

SET OPEN = the time you assign for store open

SET CLOSE = the time you assign for store close



▶ EDIT; then ▼ 15 times



Set Open/Close Time Definition Screens

Figure 3.19

EXAMPLE – PART 1

Program the controller to turn on lights 15 minutes before the store opens and turn them off 15 minutes after the store closes. In this example, the store hours are 9 AM to 9 PM.

3.26.1 Set Open/Close Times

Set facility Open and Close activation times.

1. From the Home screen, press ▶ EDIT; then ▼ 15 times.

2. Press ▶ SET OPEN/CLOSE TIMES.

3. Press ▶ SET OPEN; then press ▶ HOUR.

4. Press ▲ or ▼ until 09: appears. Be sure that AM also appears on the screen.

5. Press ▶ MINUTE; then ▲ or ▼ until 00 appears. Now you have set the Open Time to 09:00 AM.

6. Press ▶ EXIT to return to the top level screen.

7. Press ▶ SET CLOSE and set the Close Time at 9:00 PM.

8. Press ▶ EXIT to return to the menu screens.

Steps 3 – 5

After Step 7

EXAMPLE – PART 2

Program the controller to turn on lights 15 minutes before the store opens and turn them off 15 minutes after the store closes. In this example, the store hours are 9 AM to 9 PM. Open/Close times were defined in the example in 3.26.1. The next step is to assign timers to those Open/Close times. Since these timers are based on the Open/Close times, they will change along with a change in store hours without having to reset them.

3.26.2 Define the Timers

Assign specific timers to the Open/Close Times previously defined.

1. From the Home screen, press ▶ EDIT; then, press ▼ 3 times.

2. Press ▶ TIMERS to access the top level Timer Definition screen.

3. Press ▲ until the timer you wish to key to the store opening time appears (in this example, TIMER: 02).

4. Press ▶ TIME; then press ▶ OPEN/CLOSE.

5. Press ▶ OPEN; then ▼ until OPN-15 MN appears.

6. Press ▶ EXIT to return to the top level Timer Definition screen.

7. Press ▲ until the timer you wish to key to the store close time appears (in this example TIMER: 03).

8. Press ▶ TIME; then press ▶ OPEN/CLOSE.

9. Press ▶ CLOSE; then ▼ until CLS+15 MN appears.

10. Press ▶ EXIT to return to the top level Timer Definition screen. Then ▶ EXIT again to return to the menu screens.

Top Level Timer Definition Screen (Step 2)

Time Setting Screen (Step 3)

Top Level Timer Definition Screen (Step 6)

EXAMPLE – PART 3

Program the controller to turn on lights 15 minutes before the store opens and turn them off 15 minutes after the store closes. In this example, the store hours are 9 AM to 9 PM. Open/Close times were defined in the example in 3.26.1. The Timers were defined in 3.26.2. The next step is to map relays controlling the desired lighting circuits to those timers.

3.26.3 Map the Lighting Relays to the Timers

1. From the Home screen, press ▶ EDIT; then ▼ 4 times.

2. Press ▶ TIMER/RELAY CONTROL to access the top level Control Definition screen.

3. Press ▶ TIMER until TIMER: 02 appears.

4. If necessary, press and **HOLD** ▶ RELAY; then ▲ until a node (controller) containing relays controlling level 3 circuits appear. Then press ▶ OK to return to the top level Control Definition screen.

5. Press ▶ RELAY; then ▲ until the first relay to be controlled appears.

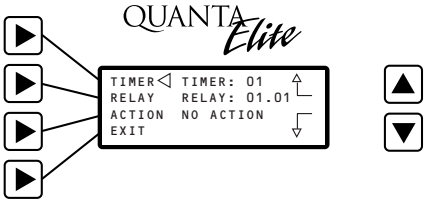
6. Press ▶ ACTION; then ▲ until TURN ON appears.

7. Repeat steps 5 and 6 as required until you have defined all the relays turned on by TIMER: 02.

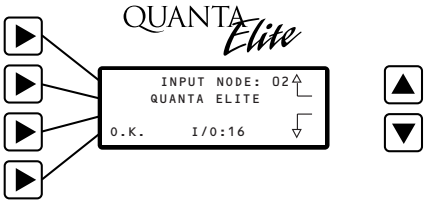
8. Press ▶ TIMER; then ▲ until TIMER: 03 appears.

9. Repeat steps 5 to 7 except that you select TURN OFF for the relay action.

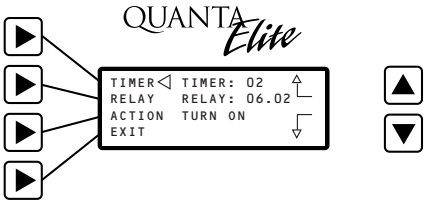
10. Repeat steps 4 to 9 as required to define level 3 relays located in other controllers.



Top Level Timer/Relay Control Definition Screen (Step 2)



Node Selection Screen (Step 4)



Top Level Screen (After Step 6)

3.27 Firmware Revision

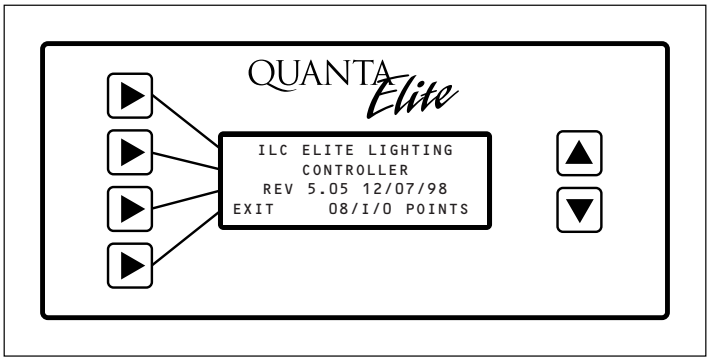
View revision of firmware installed in unit.

WHAT IS IT?

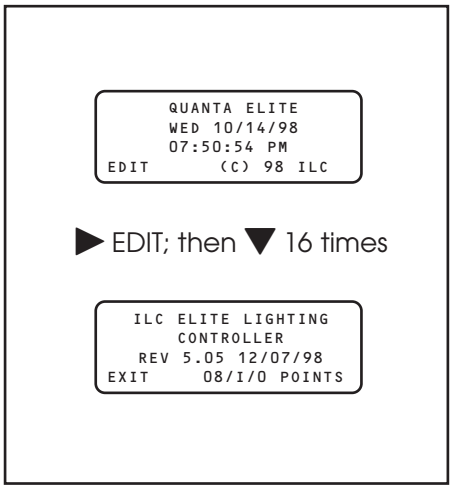
This feature allows you to view the version of firmware currently installed in the controller. It also displays the number of I/O points in the controller.

HOW DO I GET THERE?

1. From the Home screen, press ▶ EDIT.
2. Then press ▼ 16 times to access the Firmware Revision screen. (See Figure 3.20.)



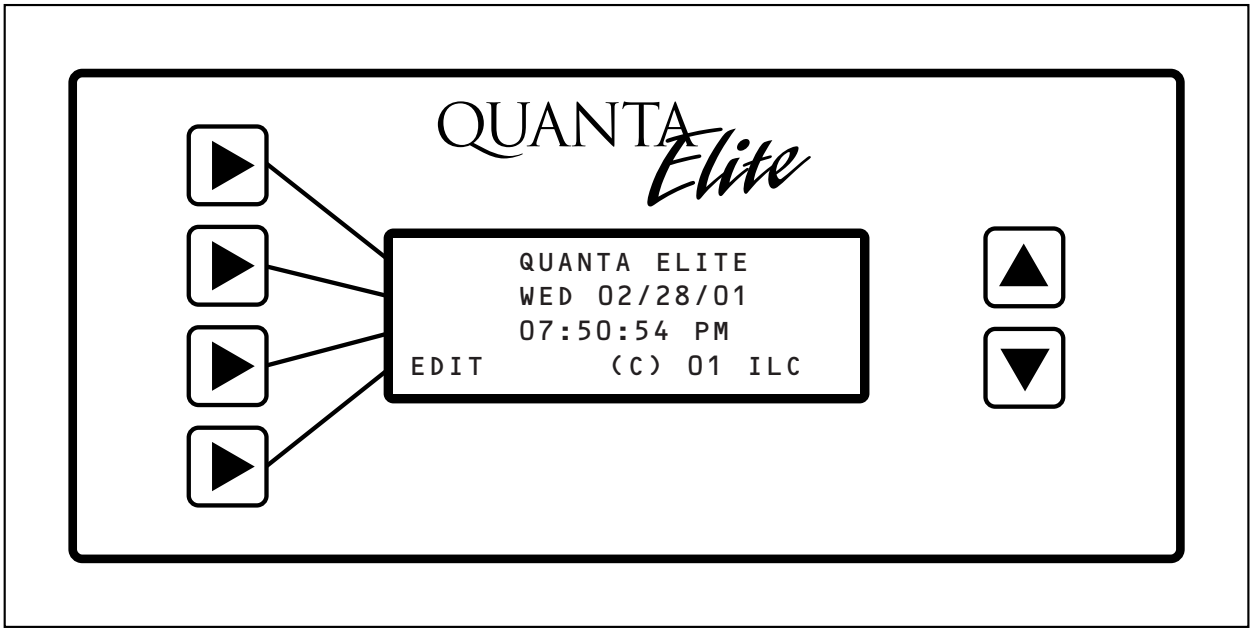
Firmware Revision Screen



Firmware Revision Definition Screens

Figure 3.20

Section 4
Appendix



Section 4 Appendix

The FCC requires that the following statement be included in this manual.
FCC Registration #6TP USA-35522-DM-N
Ringer Equivalence 0.4B

Connecting to the telephone company

This equipment complies with Part 68 of the FCC rules. On the back plate near the RJ 11 jack of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence (REN) for this equipment. If requested, provide this information to your telephone company.

The REN is useful to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs of all devices should not exceed five (5). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

If your telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance isn't practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC if you believe it is necessary.

Your telephone company may make changes in your facilities, equipment, operations, or procedures that could affect he operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.

If you experience trouble with this telephone equipment, please contact: Intelligent Lighting Controls, Inc./Reliant Relay Co., Technical Support Department at 1-800-922-8004 for repair and warranty information. If your equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

This equipment may not be used on public coin service provided by the telephone company. Connection to party lines is subject to state tariffs. (Contact your local state public utility commission or corporation commission for information.)

NOTICE: The Industry Canada label identifies certain equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local t elecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line of individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designed by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

A.1 Overview

The telephone Add-On Module is an optional board that is easily added to the QUANTA Elite controller. This module supports either remote modem programming and control or dual tone multi-frequency (DTMF) touch-tone telephone control and monitoring. The module plugs into either of the expansion slots provided on the QUANTA Elite controller CPU I/O board. (See Figure A-1.)

The telephone Add-On Module can automatically switch between remote modem and DTMF control.

A.2 Telephone Control Features

The Add-On module supports the following touchtone telephone control features:

- Get the current status of the controller's relay outputs
- Turn ON or OFF single relays or groups of relays
- Get the current status of the controller's switch inputs
- Activate preset scenes
- Override timer events

DTMF commands and control functions are supported by voice prompts that guide you through operational commands and give you instructions on how to use the system.

A.3 Telephone Control Setup

1. If you are field-installing the module, power-down the controller and plug the module into an unused expansion slot on the controller CPU I/O board. (See Figure A-1.)
2. Connect a phone cord to the module RJ11 jack and connect the other end to the telephone outlet. **The telephone line must be an analog line and have its own phone number. The line must be direct and not switched through a PBX or any type of extension system.**
3. Dial the telephone number of the controller.
4. When the controller answers, follow the voice prompts that will guide you through the operations you can perform.

A.4 Remote Modem Programming Control and Monitoring

You can link a personal computer (PC) equipped with a modem and QUANTA Pro networking software to the QUANTA Elite controller and perform all the control and programming operations supported by Quanta Pro including:

- Check the status of the controller's relay outputs and switch inputs
- Turn ON/OFF individual relay outputs
- Sweep ON/OFF all the relay outputs
- Define switch inputs and map them to relay outputs
- Define timers and map them to relay outputs
- Define and invoke preset scenes
- Upload and download data between the controller and your PC.

A.5 Remote Modem Control Setup

1. If you are field-installing the module, power-down the controller and plug the module into an unused expansion slot on the controller CPU I/O board. (See Figure A-2.)
2. Connect a phone cord to the module RJ11 jack and connect the other end to the telephone outlet. **The telephone line must be an analog line and have its own phone number. The line must be direct and not switched through a PBX or any type of extension system.**
3. Using QUANTA Pro, dial the controller phone number.
4. When your PC and the controller link, perform the desired QUANTA Pro operations.

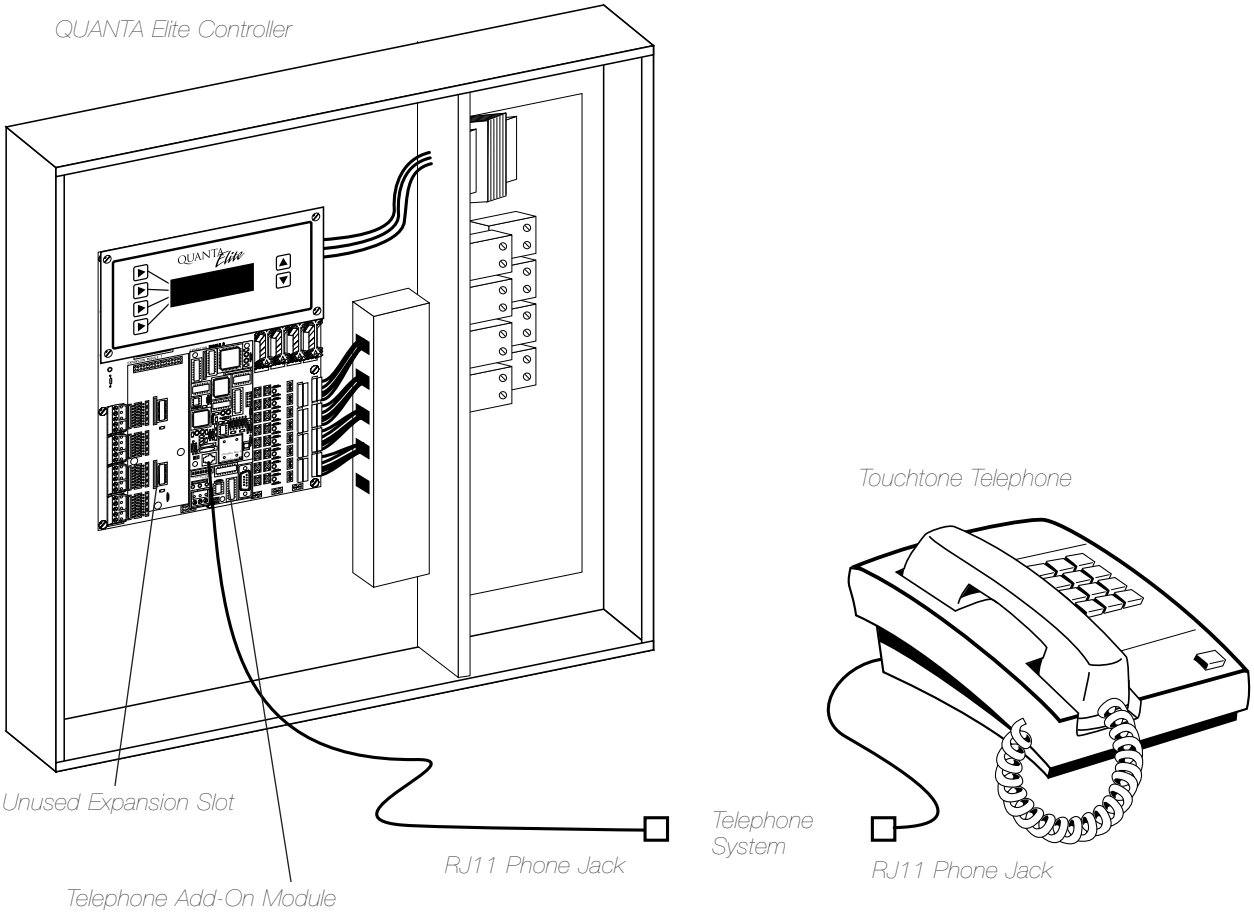


Figure A.1 – DTMF Phone Control

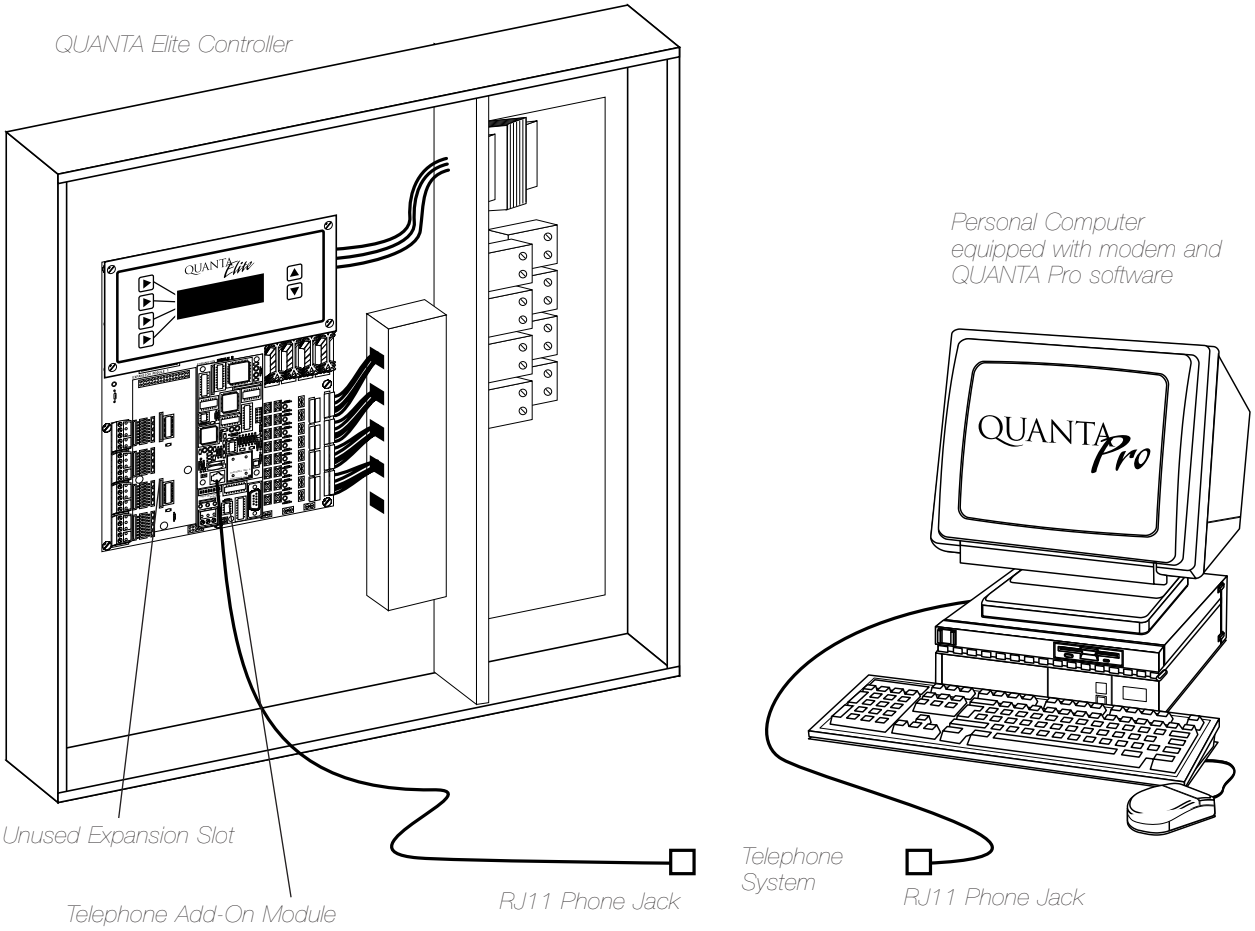


Figure A.2 – Remote Modem Control

B.1 Overview

The PC Add-On Module allows you to program the QUANTA Elite controller using a personal computer (PC) equipped with QUANTA Pro software. **Consult the QUANTA Pro User Manual for installation and operating instructions**.

The minimum requirements for the computer are:

- IBM compatible PC
- 486DX 66 or faster (Pentium recommended)
- 1 RS232 serial port
- CD-ROM or CD-ROM R/W drive
- Windows 95, 98 or newer
- 8 MB RAM
- VGA or SVGA monitor: 640 x 480 min; 800 x 600 recommended
- Mouse & keyboard

With QUANTA Pro you can:

- Check the status of the controller's relay outputs and switch inputs
- Turn ON/OFF individual relay outputs
- Sweep ON/OFF all the relay outputs
- Define switch inputs and map them to relay outputs
- Define timers and map them to relay outputs
- Define and invoke preset scenes
- Upload and download data between the controller and your PC.

B.2 PC Add-On Setup

1. If you are field-nstalling the module, power-down the controller and plug the module into an unused expansion slot on the controller CPU I/O board. (See Figure B-1.)
2. Connect the factory supplied RS232 cable to the module port and connect the other end to the COM port you have selected for communication on your computer.
3. Using QUANTA Pro, connect with the controller.
4. When your PC and the controller link, perform the desired QUANTA Pro operations.

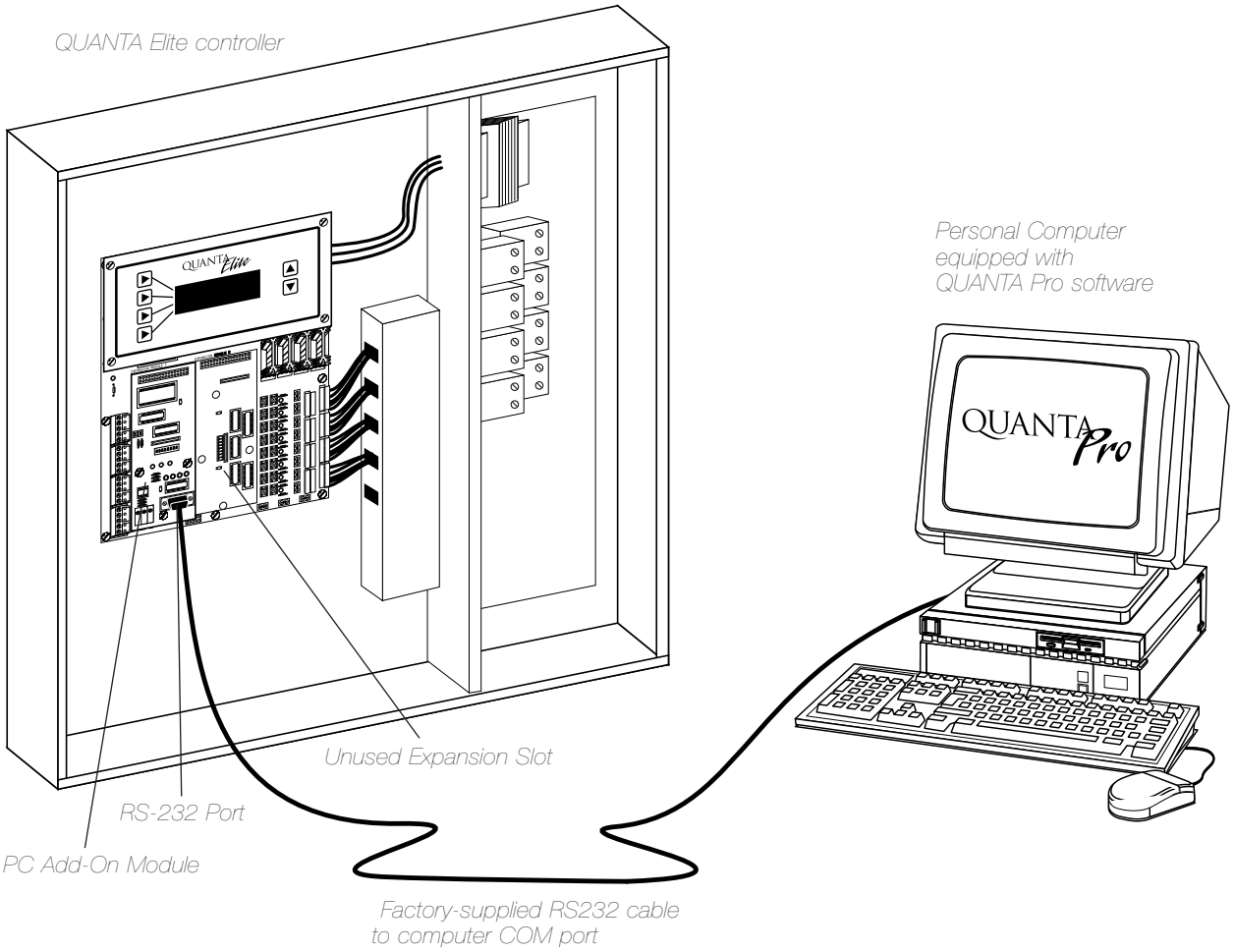


Figure B.1 – Programming the Controller from a PC

C.1 Overview

You can link up to 256 Quanta controllers to form a LAN (Local Area Network). Switches and timers can control relay outputs in any of the controllers regardless of the location of the physical switch. You program all functions and I/O points from the master controller programming module.

C.2 Setup

Each controller in the LAN will come factory equipped with the required networking firmware and a Serial/LAN Module which is mounted on the CPU/I/O board. (See Figure C-1). Make sure the position of the protocol select jumpers on the Serial/LAN Module are in the proper Master/Slave Networking position. Also note the address DIP switches. Each controller in the LAN must have a unique address. The Quanta you choose as the master **MUST** be controller **1**. To set a controller address, set the switches so that when you add the values of each switch set to the ON position, the total will be the desired address.

C.3 Installation

Install each Quanta controller per the instructions in Section 2. The LAN physical link is cable **(Carol 2534 or equal; contact ILC for cable specifications)** connected to the RS485 port on the Serial/LAN Module. (See Figure C-1.) The master controller can be installed anywhere in the chain as long as you address it as controller 1.

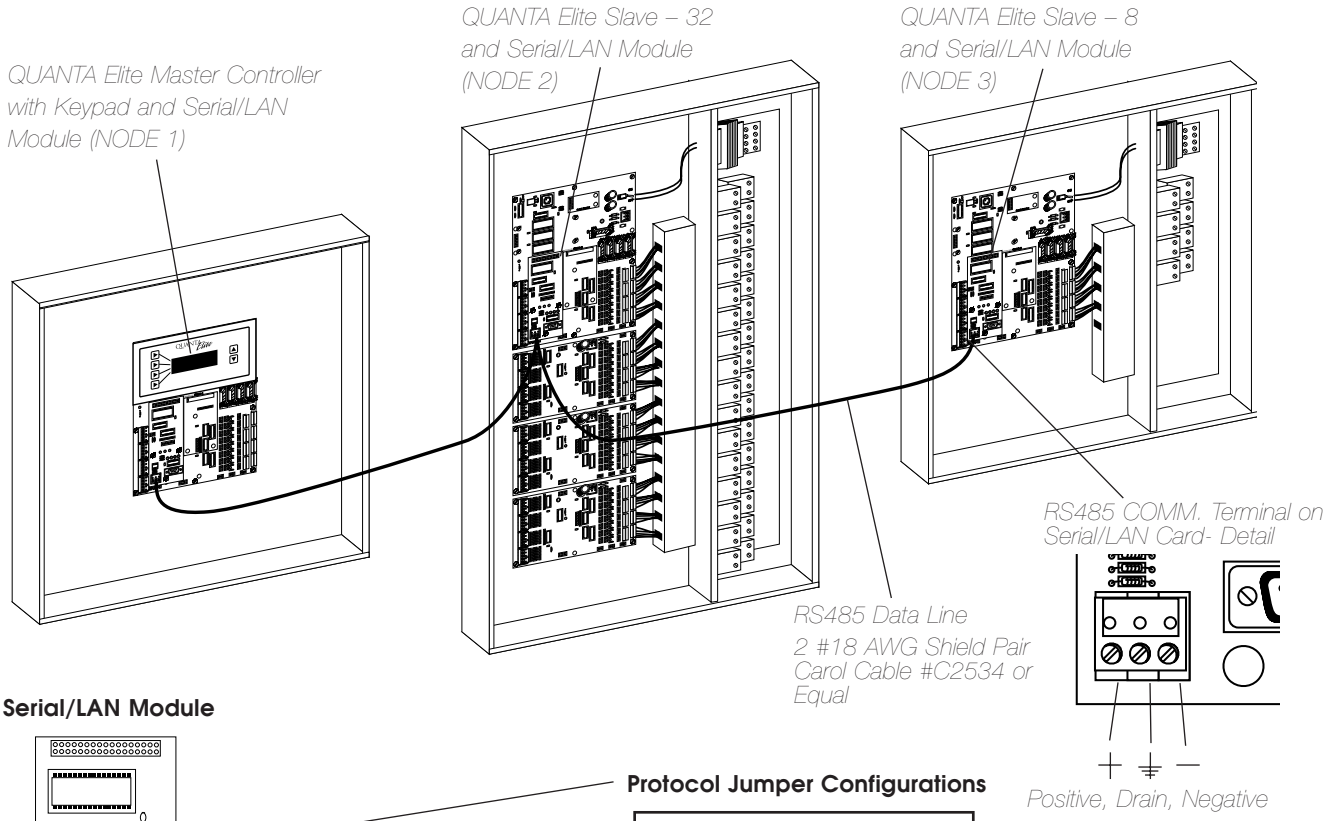
CAUTION

AFTER INSTALLATION, VERIFY THAT THE CABLING IS FREE OF SHORTS BETWEEN CONDUCTORS AND GROUND AND ALSO THAT THERE ARE NO OPENS. SHORTS CAN DAMAGE THE NETWORK.

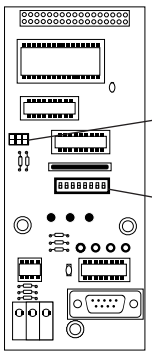
C.4 Power-Up

1. Power-up each of the **slave** controllers one at a time following the instructions in Section 2. ***DO NOT POWER-UP THE MASTER YET.*** Do not attempt to program the slave controllers; you will do the programming at the master controller after power-up.
2. After all slave controllers are powered-up, power-up the master controller. A message indicating that the master is scanning the network will appear on the screen. Then the transmit, receive, and drive LEDs on the master controller's Serial/LAN Module will start blinking and the Home screen will appear.
3. Verify that the transmit, receive, and drive LEDs are blinking on each of the slave controller networking cards.
4. Set the date and time at the master. (See Section 3 for details.) Setting the clock at the master will set the clocks of the slave controllers.
5. Program the switch, timer and other functions. Program the functions is as described in Section 3, except that you will have to select the controller address (node) as an additional parameter.
6. After programming the switch and timer functions, verify them as described in Section 2.

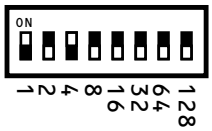
QUANTA Elite Global Network Example – See Termination Detail Below



Serial/LAN Module

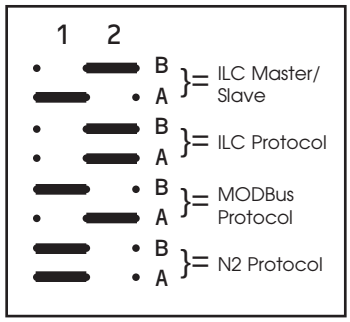


DIP Switch Addressing



Add the value of each ON switch to determine the address (address 5 shown).

Protocol Jumper Configurations



WARNING:
Processor must be turned OFF before protocol jumper changes.

Termination Detail – Connections to Serial/LAN Card With RS485 Data Cable

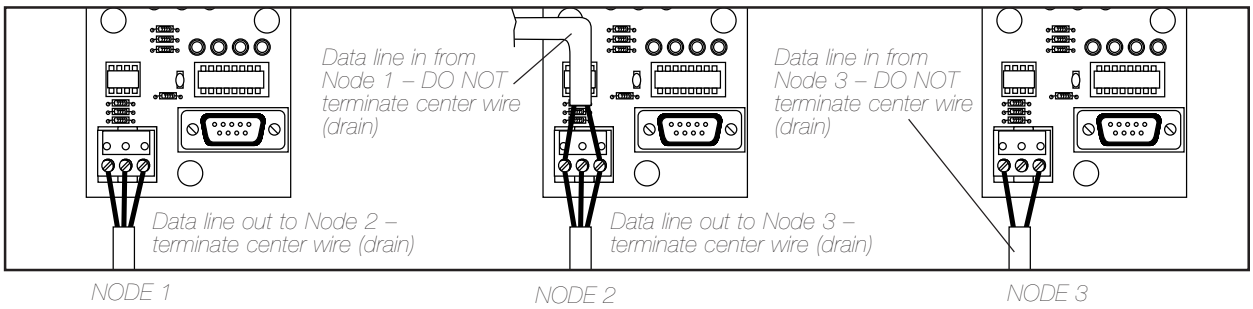


Figure C.1 – LAN Setup

C.5 Programming

You program the entire network from the master controller. The procedures and parameters are the same as described in Sections 1 and 2 except that you need to define the controller number (node) in addition to the other parameters. You do this by pressing and **holding** the appropriate programming module keys.

C.5.1 Example: Program switch input 2 located in controller 4 to control relay output 3 in controller 2.

1. Access the INPUT/RELAY CONTROL screen.

2. Press and **hold** ▶ INPUT until the node selection screen appears.

3. Press ▲ until NODE: 04 appears.

4. Press ▶ O.K. to return to the INPUT/RELAY CONTROL screen.

5. Press ▲ until INPUT: 02 appears.

6. Press and **hold** ▶ RELAY until the node selection screen appears.

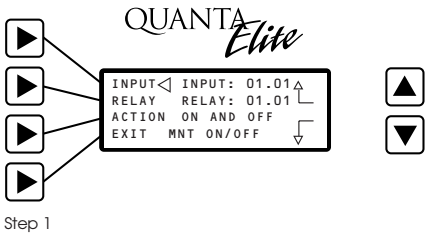
7. Press ▲ until NODE: 02 appears.

8. Press ▶ O.K. to return to the INPUT/RELAY CONTROL screen.

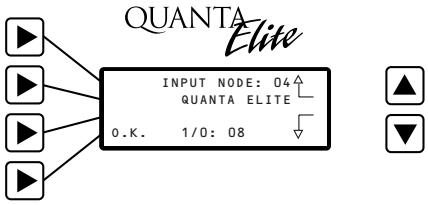
9. Press ▶ RELAY and then ▲ until RELAY: 03 appears.

10. Press ▶ ACTION; then ▲ until the desired relay response appears.

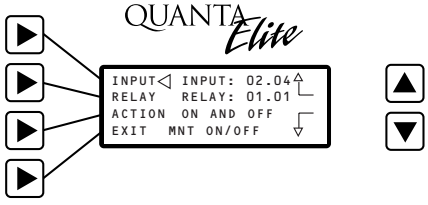
11. Press ▶ EXIT to save the data and leave the screen.



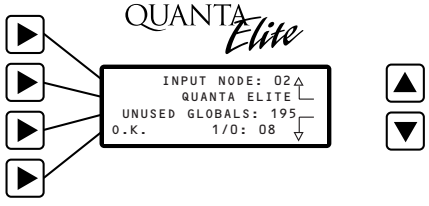
Step 1



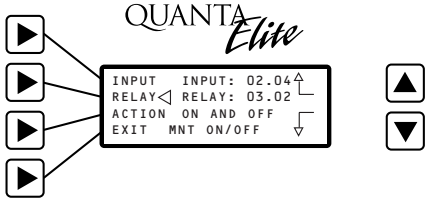
Steps 3-4



Step 5



Steps 7-8



Steps 9-11

D.1 Overview

With the addition of a DMX 512 interface card, the QUANTA Elite controller supports the control of non-dimmed loads via standard USITT DMX 512 communications protocol.

The physical link is a standard USITT DMX 512 control cable (18 gauge, shielded twisted pair) that runs from the DMX output of the theatrical lighting controller to the QUANTA Elite DMX communications port. The DMX 512 interface mounts on the QUANTA Elite CPU board. (See Figure D-1.)

You can program the QUANTA Elite with desired ON and OFF DMX signal levels and then select how the QUANTA Elite relay outputs will respond.

You set common ON and OFF DMX signal levels for all DMX 512 channels (1 to 512 channels). However, you can program relay action on an individual channel basis.

D.2 Objectives

After reading Appendix D, you will be able to program the QUANTA Elite to implement DMX control.

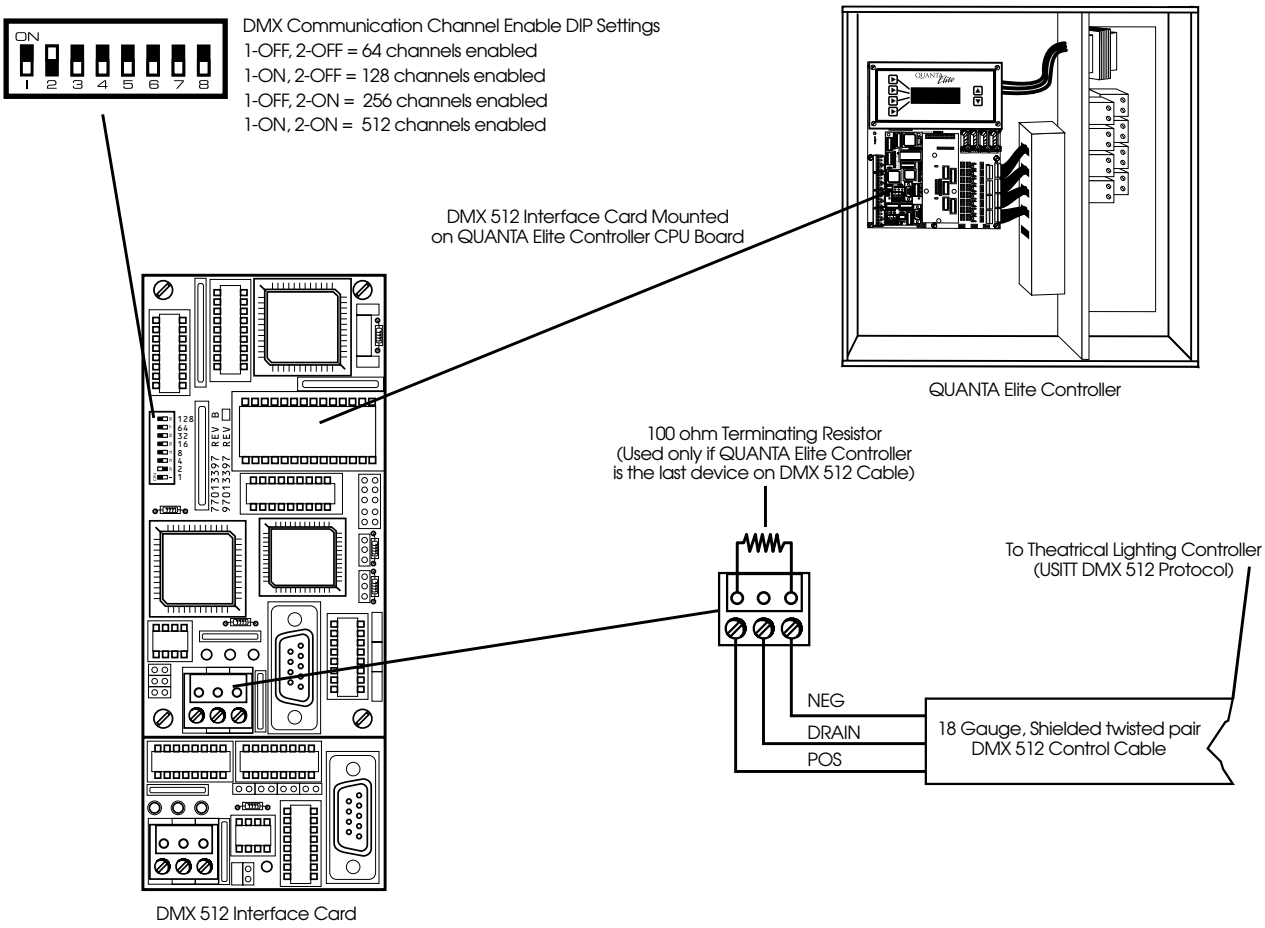


Figure D.1 – DMX Interface Hardware Features

D.3 Programming Example

Set the DMX signal ON level at 92% and the OFF level at 15%. Program relay outputs 4, 5, and 6 to respond by switching ON at 92% and OFF at 15% to signals of this amplitude on channel 2.

1. From the Home screen, press ▶ EDIT; then press ▼ 11 times to access the top level DMX screen.

2. Press ▶ EDIT DMX RECEIVER.

3. When the DMX menu appears, press ▶ DMX–LEVELS.

4. Press ▶ ON, then ▲ until 092% appears, to set the ON signal level.

5. Press ▶ OFF, then ▲ or ▼ until 015% appears, to set the OFF level.

6. Press ▶ EXIT to return to the DMX menu.

7. Press ▶ DMX-RELAY CONTROL.

8. Press ▲ until channel 002 appears.

9. Press ▶ RELAY, then ▲ until relay 004 appears.

10. Press ▶ ACTION, until ON AND OFF appears.

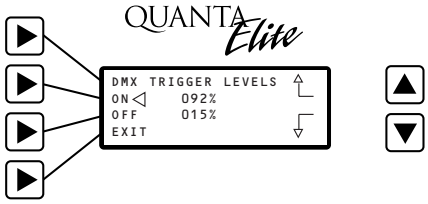
11. Repeat steps 9 and 10 for relays 5 and 6.

12. Press ▶ EXIT to return to the DMX menu.

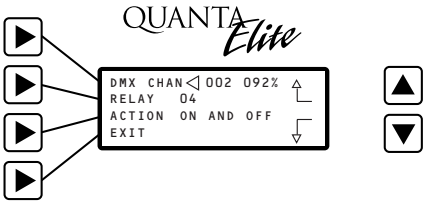
13. Press ▶ EXIT to return to the main menu. Let the controller time out to save your entries and return to the Home screen.

Top Level DMX Screen

DMX Menu



DMX Levels



DMX – Relay Control

E.1 Objectives

This section describes the function and setup of the Master Scheduler and how to program time-based schedules keyed to a facility's multiple open and closed times.

E.2 Overview

This section covers the following topics:

- Master Scheduler description/function
- Programming Operations

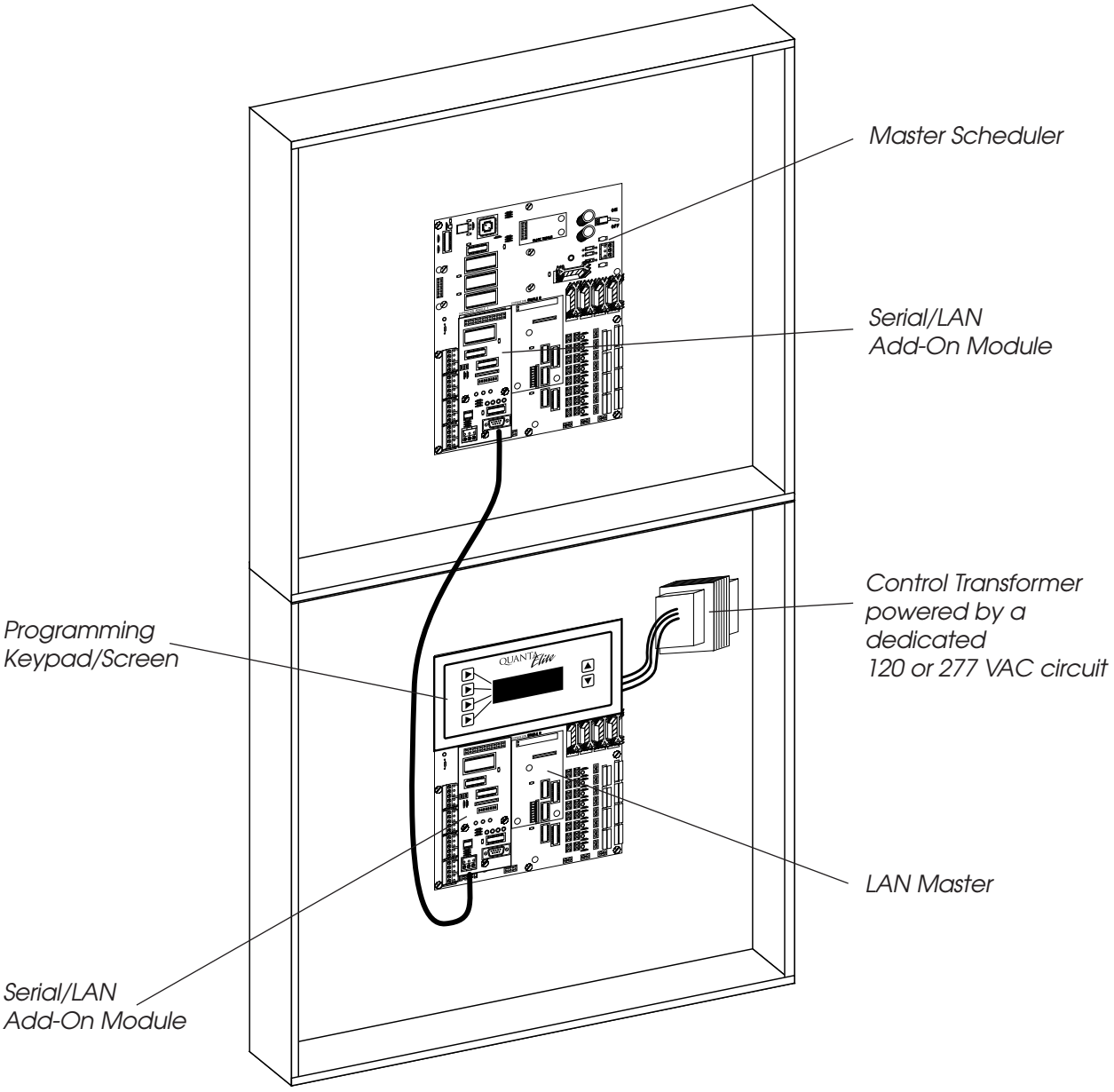


Figure E.1 – Master Scheduler

E.3 Description

The Master Scheduler is a special controller containing a processor whose purpose is to support the entry of multiple OPEN/CLOSE times. (The standard controller firmware supports the entry of only one set of OPEN/CLOSE times.)

The Master Scheduler is usually housed in an enclosure that also contains the LAN Master Controller. (See Figure E-1.)

E.4 Installation

You install the Master Scheduler like any other controller. (See Section 1 and Appendix C.) A dedicated 120 or 277 VAC circuit must be run to power the controller electronics. The node address must be set as node 0.

E.5 How to Program OPEN/CLOSE Time Schedules

The store open and close times define when the lights associated with a particular ON or OFF time will activate. The SCHEDULE MASTER (node 0) processes these times. Since store hours may not be the same on every day, you must define the open and close times for each day (Sunday-Saturday). You can also program open and close times for special dates to accommodate holiday hours.

You can program the system to execute a timer exactly at open or close time, or at one of the following offsets either before or after opening or closing: 5, 10, 15, 30, 45, minutes; 1, 1.5, 2, 3, 4, 4.5, 5 hours.

Example:

Program the control system to turn on lights 15 minutes before the store opens and turn them off 15 minutes after the store closes. In this example the store opens at 10 AM and closes at 9 PM Monday-Friday. The open/close times for Saturday/Sunday are 10 AM and 5 PM.

E.5.1 Set the Open/Close Times

E.5.1a Set the Open/Close Times for Normal Days

1. From the Home screen, press ▶ EDIT; then ▼ 15 times.

2. Press ▶ OPEN/CLOSE TIME.

3. The SCHEDULE MASTER screen appears, showing the current open and close times or the default time of 12:00 AM.

4. Press ▶ EDIT; then press ▶ NORMAL DAYS.

5. The Normal Days screen appears, for Sunday. Press ▶ OPEN; then press ▲ or ▼ until 10:00 AM appears.

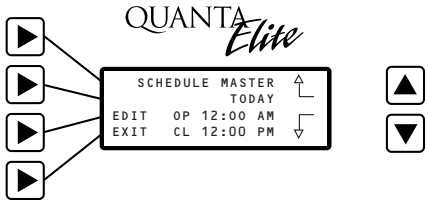
6. Press ▶ CLOSE; then press ▲ or ▼ until 5:00 PM appears.

7. Press ▶ DAY; then press ▲ until MONDAY appears.

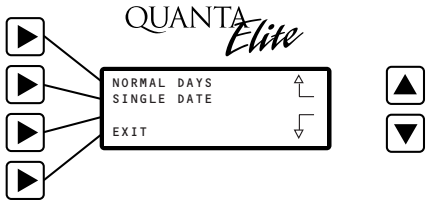
8. Repeat steps 5 & 6 to enter the Monday open and close times of 10:00 AM and 9:00 PM respectively.

9. Repeat steps 7 & 8 to program Tuesday to Saturday open and close times.

10. Let the controller time out, to save your entries.



Step 3, Schedule Master screen



Step 4

Steps 5 and 6 Normal Days screen

E.5.1 Set the Open/Close Times

E.5.1b Set the Open/Close Times for a Single Date

1. From the Home screen, press ▶ EDIT; then press ▼ 15 times.

2. Press ▶ OPEN/CLOSE TIME.

3. The SCHEDULE MASTER screen appears showing the current Open and Close Times or the default time of 12:00 AM.

4. Press ▶ EDIT; then press (SINGLE DATE).
   (Note about Single Date programming: When programming a Single Date, the year is not entered. You must be aware that any time this Single Date occurs (e.g., 4/12), the controller will execute the Open/Close times that you had previously programmed. You must remember to clear the programming before this date occurs the next year if you do not want this Single Date's event to reoccur.)

5. When the top level Single Date screen appears, press ▶ MONTH and then press ▲ or ▼ until the desired month appears.

6. Press ▶ DATE and then press ▲ or ▼ until the desired day of the month appears.

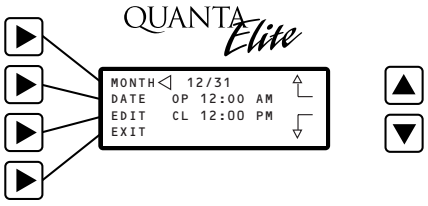
7. Press ▶ EDIT to access the Single Date Open/Close screen.

8. Press ▶ OPEN and then press ▲ or ▼ to enter the desired store opening time.

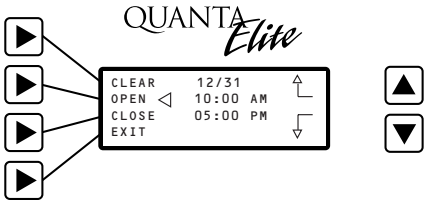
9. Press ▶ CLOSE and then press ▲ or ▼ to enter the desired closing time.

10. Press ▶ EXIT to view the Special Date Open and Close Times.

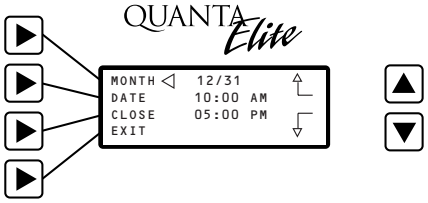
11. Let the controller time out and save the entries.



Steps 5 and 6



Steps 8 and 9

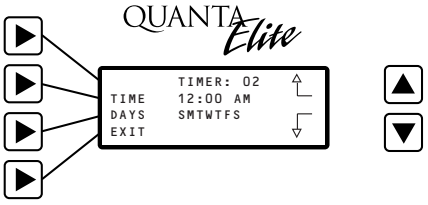


Step 10

E.5.2 Define the Timers

1. From the Home screen, press ▶ EDIT; then press ▼ 3 times.

2. Press ▶ TIMERS to access the top level Timer Definition screen.

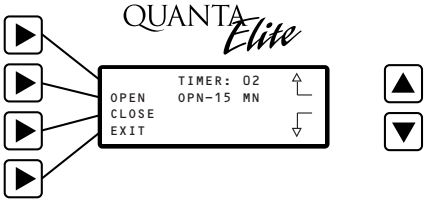


Top Level Timer Definition Screen (Step 2)

3. Press ▲ until the Timer you wish to program to the store opening times appears (in this example, TIMER: 02).

4. Press ▶ TIME; then press ▲ OPEN/CLOSE.

5. Press ▶ OPEN; then ▼ until OPN-15 MN appears. This sets the timer to turn lights ON 15 minutes before the opening time.

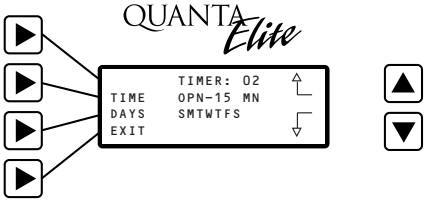


Time Setting Screen

6. Press ▶ EXIT to return to the top level Timer screen.

7. Press ▲ until the timer you wish to key to the store close time appears (in this example, TIMER: 03).

8. Press ▶ TIME; then press ▶ OPEN/CLOSE.



Top Level Timer Definition Screen (after Step 6)

9. Press ▶ Close; then ▼ until CLS+15 MN appears. This sets the timer to turn lights OFF 15 minutes after the closing time.

10. Let the controller time out and save the entries.

E.5.3 Map the Lighting Relays to the Timers

1. From the Home screen, press ▶ EDIT; then press ▼ 4 times.

2. Press ▶ TIMER/RELAY CONTROL to access the top level Control Definition screen.

3. Press ▶ TIMER until 02 appears.

4. If necessary, press and **HOLD** ▶ RELAY; then press ▲ until the node (controller) containing the relays to be controlled appears. Then press ▶ O.K. to return to the top level Control Definition screen.

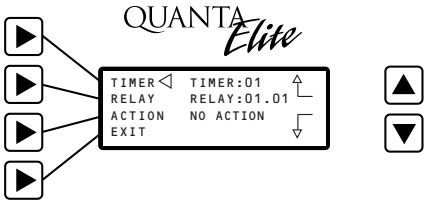
5. Press ▶ RELAY; then ▲ until the first relay to be controlled appears.

6. Press ▶ ACTION; then ▲ until TURN ON appears.

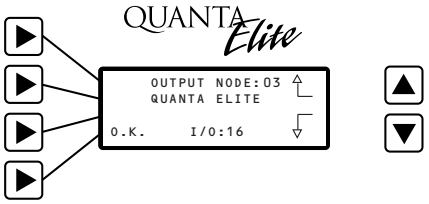
7. Repeat steps 4 to 6 as required until you have defined all the relays in each node turned on by TIMER: 02.

8. Press ▶ TIMER until TIMER: 03 appears.

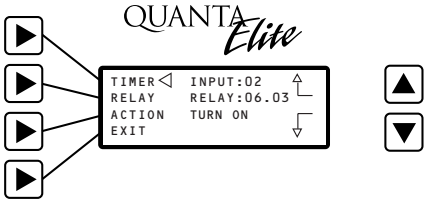
9. Repeat steps 4 to 7 except that you select TURN OFF for the relay action.



Top Level Timer/Relay Control Definition Screen (Before)



Node Selection Screen



Top Level Screen (After Step 6)

M.1 Overview

MODBUS protocol is an industrial communications and distributive control system developed by Gould-Modicon to integrate programmable logic controllers (PLCs), computers, terminals and other monitoring, sensing, and control devices. By setting the protocol jumpers on the Quanta Lighting Controller QSLI plug in LAN Module, and setting a unique address via the address DIP switches, a Quanta Elite lighting controller can become a Slave NODE on the MODBUS Network. (See Figure M-1.)

M.2 Structure

MODBUS is a Master/Slave communications protocol. One device (the Master) controls all serial activity by selectively polling one or more of the slave devices. The maximum number of slave devices is 247 per network. Each device (node) is assigned a unique address to distinguish it from all the other nodes.

Only the Master initiates a transaction. Transactions are either a query/response (only a single slave is addressed), or a broadcast/no response (all slaves are addressed). A transaction comprises a single query and single response frame or a single broadcast frame.

Certain characteristics of the MODBUS protocol are fixed: frame format, frame sequences, communications error handling, exception conditions, and the functions performed.

Other characteristics are selectable: transmission media, baud rate, character parity, number of stop bits, communications error handling, exception conditions, and functions performed.

M.3 Transmission Modes

The transmission mode is the structure of the individual units of information within a message, and the numbering system used to transmit the data. Two transmission modes are available. Both provide the same communication capabilities. The mode slected depends on the equipment used as the MODBUS master. Only one transmission mode may be selected per network. Mixing modes on a single network is not allowed. The two available tranbsmission modes are ASCII (American Standard Code For Information Interchange) and RTU (Remote Terminal Unit)

M.3.1 ASCII

Coding System – ASCII (7 Bit); hexadecimal uses ASCII printable characters (0-9, A-F)

Start Bits – 1

Data Bits (least significant first) – 7

Parity (optional) – 1 (1 Bit set for even or odd, no Bits for no parity)

Stop Bits – 1 or 2

Error Checking – LRC (Longitudinal Redundancy Check)

M.3.2 RTU

Coding System – 8 Bit Binary

Start Bits – 1

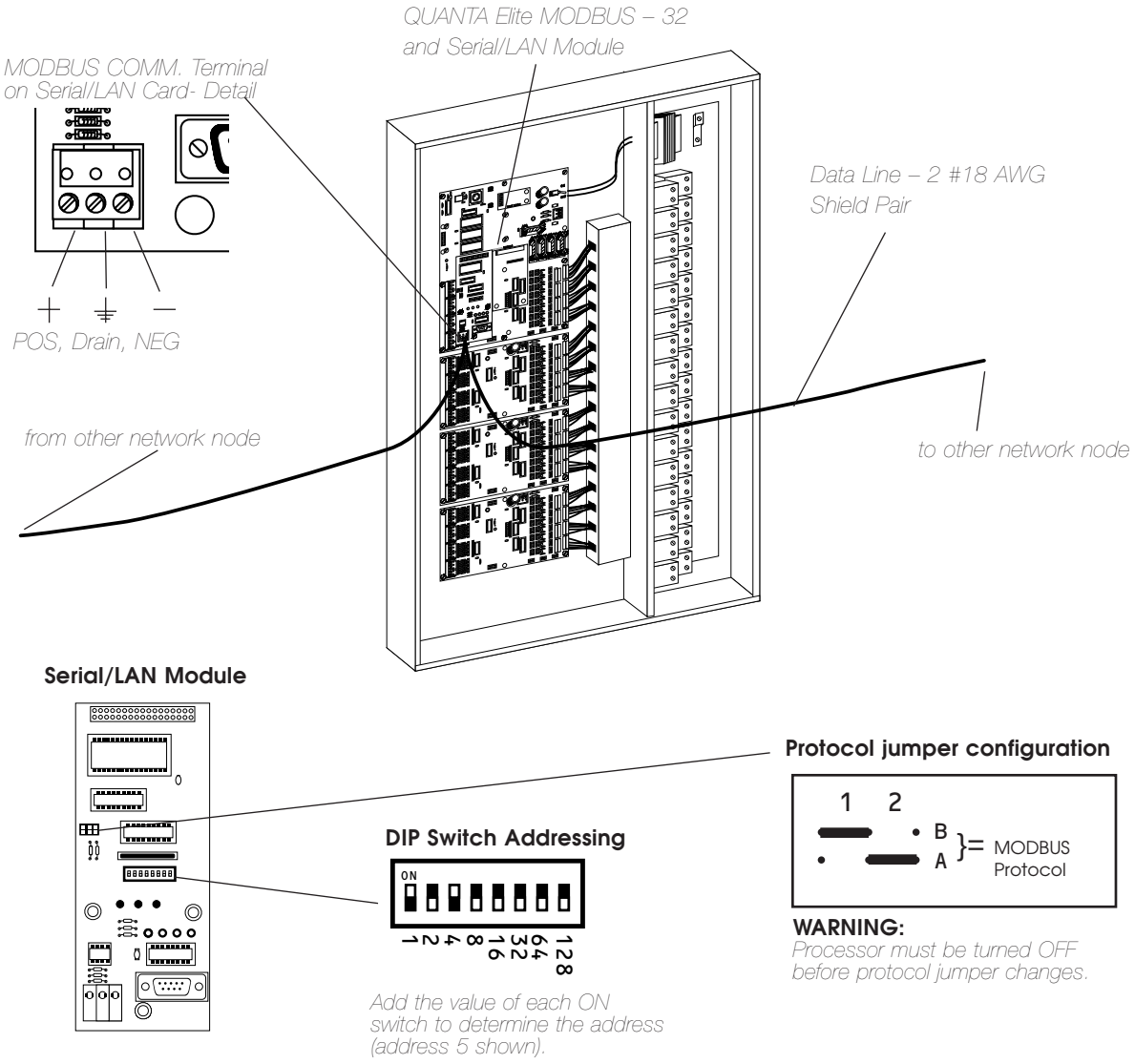
Data Bits (least significant first) – 8

Parity (optional) – 1 (1 Bit set for even or odd, no Bits for no parity)

Stop Bits – 1 or 2

Error Checking – CRC (Cyclical Redundancy Check)

QUANTA MODBUS Communications Example – See Termination Detail Below



Termination Detail – connections to Serial/LAN card with RS485 Data Cable

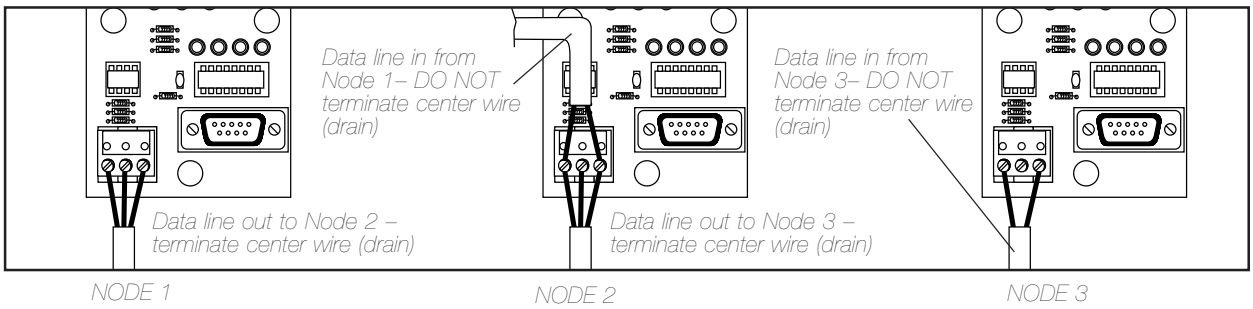


Figure M-1: MODBUS Set-Up

M.4 Transmission Mode Characteristics

ASCII printable characters are easy to view when trouble shooting and this mode is suited to PLC masters and computer masters programmed in a high level language, such as VISCOM BASIC.

In RTU mode, data is sent in 8-bit binary characters. In ASCII mode, data is divided into two 4 bit parts and then represented by the hexadecimal equivalent. ASCII mode uses twice as many characters as RTU mode but decoding is easier.

In RTU mode data must be transmitted in a continuous stream. In ASCII mode breaks of up to one second can occur between characters to allow for a relatively slow master.

M.5 Hardware Setup

The Quanta Elite must be equipped with a QSLI LAN module that is jumpered for MODBUS communications and addressed with a unique node address. (See Figure M-1.) The network cable is a two wire shielded twisted pair. Consult the Automation system provider for the exact specifications. Terminate the cable as shown in Figure M.1.

M.6 Required Parameter Entries

After setting the Quanta Controller jumpers and address DIP switches, you must power up the Quanta controller and define certain operational parameters for MODBUS communication. (See Figure M.2)

M.7 Framing

Both ASCII and RTU transmission modes feature mechanisms to indicate the beginning and end of a frame, the node address, a function code (the type of information sought/command signal), a data field indicating the particular point or register accessed. See Table M-1 for data field I/O point designators for a Quanta Controller node.

M.8 Supported Commands

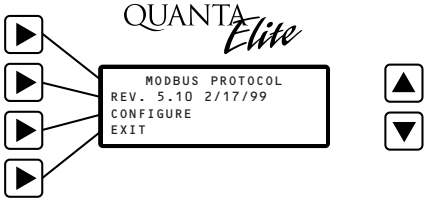
01 Read coil status
02 Read Input status
05 Force single coil
15 Force multiple coils

M.9 Additional Information

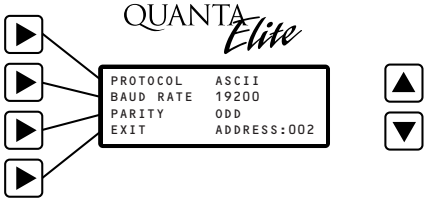
Contact Modicon Inc. if you would like more detailed information on MODBUS protocol or refer to Modcon Modbus Protocol Reference Guide.

Procedure

1. Access the top level MODBUS Screen
2. Press ▶ **CONFIGURE**.
3. When the Configuration screen Appears, press ▶ **PROTOCOL** until the desired transmission mode appears.
4. Press ▶ **BAUD RATE** until the desired baud rate appeared.
5. Press ▶ **PARITY** until the desired parity appears.
6. Press ▶ **EXIT** or let the controller time out to save the entries.



MODBUS Top Level Screen



MODBUS Top Configuration Screen

Figure M-2

Quanta Input	ON	OFF	Closed	Open
1	1	49	1 = Input Closed	0= Input Open
2	2	50	1 = Input Closed	0= Input Open
3	3	51	1 = Input Closed	0= Input Open
4	4	52	1 = Input Closed	0= Input Open
5	5	53	1 = Input Closed	0= Input Open
6	6	54	1 = Input Closed	0= Input Open
7	7	55	1 = Input Closed	0= Input Open
8	8	56	1 = Input Closed	0= Input Open
9	9	57	1 = Input Closed	0= Input Open
10	10	58	1 = Input Closed	0= Input Open
11	11	59	1 = Input Closed	0= Input Open
12	12	60	1 = Input Closed	0= Input Open
13	13	61	1 = Input Closed	0= Input Open
14	14	62	1 = Input Closed	0= Input Open
15	15	63	1 = Input Closed	0= Input Open
16	16	64	1 = Input Closed	0= Input Open
17	17	65	1 = Input Closed	0= Input Open
18	18	66	1 = Input Closed	0= Input Open
19	19	67	1 = Input Closed	0= Input Open
20	20	68	1 = Input Closed	0= Input Open
21	21	69	1 = Input Closed	0= Input Open
22	22	70	1 = Input Closed	0= Input Open
23	23	71	1 = Input Closed	0= Input Open
24	24	72	1 = Input Closed	0= Input Open
25	25	73	1 = Input Closed	0= Input Open
26	26	74	1 = Input Closed	0= Input Open
27	27	75	1 = Input Closed	0= Input Open
28	28	76	1 = Input Closed	0= Input Open
29	29	77	1 = Input Closed	0= Input Open
30	30	78	1 = Input Closed	0= Input Open
31	31	79	1 = Input Closed	0= Input Open
32	32	80	1 = Input Closed	0= Input Open
33	33	81	1 = Input Closed	0= Input Open
34	34	82	1 = Input Closed	0= Input Open
35	35	83	1 = Input Closed	0= Input Open
36	36	84	1 = Input Closed	0= Input Open
37	37	85	1 = Input Closed	0= Input Open
38	38	86	1 = Input Closed	0= Input Open
39	39	87	1 = Input Closed	0= Input Open
40	40	88	1 = Input Closed	0= Input Open
41	41	89	1 = Input Closed	0= Input Open
42	42	90	1 = Input Closed	0= Input Open
43	43	91	1 = Input Closed	0= Input Open
44	44	92	1 = Input Closed	0= Input Open
45	45	93	1 = Input Closed	0= Input Open
46	46	94	1 = Input Closed	0= Input Open
47	47	95	1 = Input Closed	0= Input Open
48	48	96	1 = Input Closed	0= Input Open

Table M.1 – Quanta Elite Data Field Input Point Designators

Quanta Output	Closed	Open
1	1=Output Closed	0=Output Open
2	1=Output Closed	0=Output Open
3	1=Output Closed	0=Output Open
4	1=Output Closed	0=Output Open
5	1=Output Closed	0=Output Open
6	1=Output Closed	0=Output Open
7	1=Output Closed	0=Output Open
8	1=Output Closed	0=Output Open
9	1=Output Closed	0=Output Open
10	1=Output Closed	0=Output Open
11	1=Output Closed	0=Output Open
12	1=Output Closed	0=Output Open
13	1=Output Closed	0=Output Open
14	1=Output Closed	0=Output Open
15	1=Output Closed	0=Output Open
16	1=Output Closed	0=Output Open
17	1=Output Closed	0=Output Open
18	1=Output Closed	0=Output Open
19	1=Output Closed	0=Output Open
20	1=Output Closed	0=Output Open
21	1=Output Closed	0=Output Open
22	1=Output Closed	0=Output Open
23	1=Output Closed	0=Output Open
24	1=Output Closed	0=Output Open
25	1=Output Closed	0=Output Open
26	1=Output Closed	0=Output Open
27	1=Output Closed	0=Output Open
28	1=Output Closed	0=Output Open
29	1=Output Closed	0=Output Open
30	1=Output Closed	0=Output Open
31	1=Output Closed	0=Output Open
32	1=Output Closed	0=Output Open
33	1=Output Closed	0=Output Open
34	1=Output Closed	0=Output Open
35	1=Output Closed	0=Output Open
36	1=Output Closed	0=Output Open
37	1=Output Closed	0=Output Open
38	1=Output Closed	0=Output Open
39	1=Output Closed	0=Output Open
40	1=Output Closed	0=Output Open
41	1=Output Closed	0=Output Open
42	1=Output Closed	0=Output Open
43	1=Output Closed	0=Output Open
44	1=Output Closed	0=Output Open
45	1=Output Closed	0=Output Open
46	1=Output Closed	0=Output Open
47	1=Output Closed	0=Output Open
48	1=Output Closed	0=Output Open

Table M.1.1 – Quanta Elite Data Field Output Point Designators

N.1 Overview

The Quanta Elite Controller(s) can be integrated into a Building Automation System (BAS) that uses the N2 communications protocol. The host system can then pole the status of the Quanta Elite Controller inputs and outputs and issue ON/OFF commands to the Elite's relay outputs.

If the N2 network is not running, all local control features supported by the individual controller nodes will continue to operate.

N.2 Hardware Setup

The Quanta Elite must be equipped with a serial LAN module that is jumpered for N2 communications and addressed with a unique node address. (See Figure N-1.) The network cable is a two wire shielded twisted pair. Consult the BAS system documentation for the exact specifications. Terminate the cable as shown in Figure N-1.

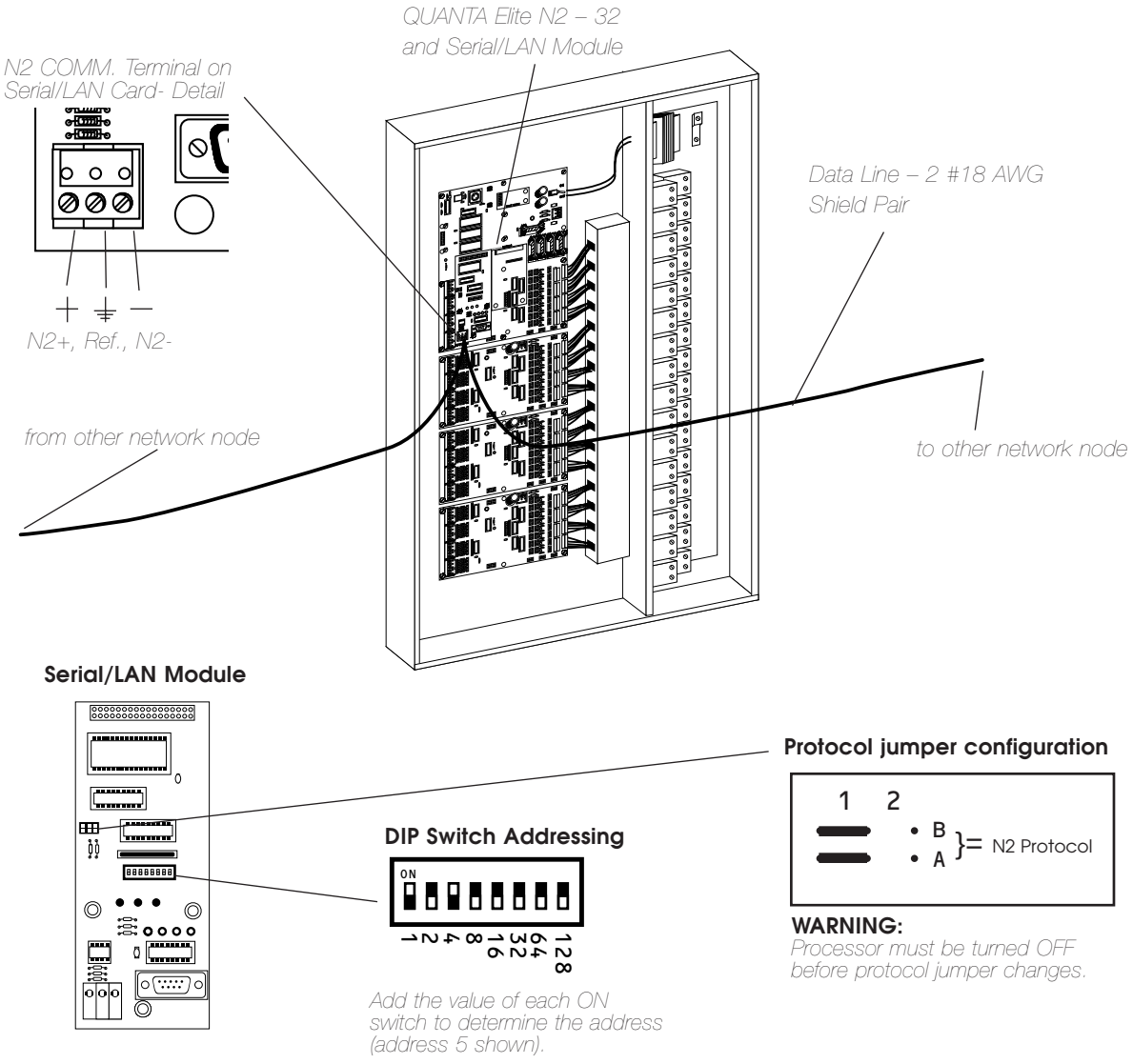
N.3 Point Map

Fill out the point map for the Quanta Elite Controller. Note that only BI (binary input) and BO (binary output) point types are used. **When writing to a BO point the normal state is always OFF.** The completed point map will serve as the control schedule used to determine how Quanta Elite relay outputs will be controlled.

N.4 Unsupported Attributes

Se Table N-2 for a list of unsupported attributes.

QUANTA Elite N2 Network Example – See Termination Detail Below



Termination Detail – connections to Serial/LAN card with RS485 Data Cable

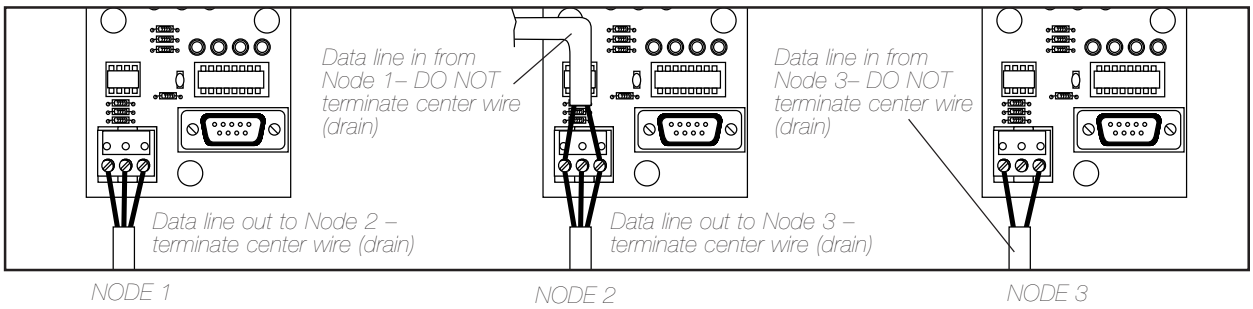


Figure N-1 N2 Set-Up

NETWORK POINT TYPE	NETWORK POINT ADDRESS	UNITS	POINT DESCRIPTION	RANGE/VALUE	NOTES
BI	1		SWITCH INPUT #1 OFF	0-OPEN 1-CLOSED	
BI	2		SWITCH INPUT #1 ON	0-OPEN 1-CLOSED	
BI	3		SWITCH INPUT #2 OFF	0-OPEN 1-CLOSED	
BI	4		SWITCH INPUT #2 ON	0-OPEN 1-CLOSED	
BI	5		SWITCH INPUT #3 OFF	0-OPEN 1-CLOSED	
BI	6		SWITCH INPUT #3 ON	0-OPEN 1-CLOSED	
BI	7		SWITCH INPUT #4 OFF	0-OPEN 1-CLOSED	
BI	8		SWITCH INPUT #4 ON	0-OPEN 1-CLOSED	
BI	9		SWITCH INPUT #5 OFF	0-OPEN 1-CLOSED	
BI	10		SWITCH INPUT #5 ON	0-OPEN 1-CLOSED	
BI	11		SWITCH INPUT #6 OFF	0-OPEN 1-CLOSED	
BI	12		SWITCH INPUT #6 ON	0-OPEN 1-CLOSED	
BI	13		SWITCH INPUT #7 OFF	0-OPEN 1-CLOSED	
BI	14		SWITCH INPUT #7 ON	0-OPEN 1-CLOSED	
BI	15		SWITCH INPUT #8 OFF	0-OPEN 1-CLOSED	
BI	16		SWITCH INPUT #8 ON	0-OPEN 1-CLOSED	
BI	17		SWITCH INPUT #9 OFF	0-OPEN 1-CLOSED	
BI	18		SWITCH INPUT #9 ON	0-OPEN 1-CLOSED	
BI	19		SWITCH INPUT #10 OFF	0-OPEN 1-CLOSED	
BI	20		SWITCH INPUT #10 ON	0-OPEN 1-CLOSED	
BI	21		SWITCH INPUT #11 OFF	0-OPEN 1-CLOSED	
BI	22		SWITCH INPUT #11 ON	0-OPEN 1-CLOSED	
BI	23		SWITCH INPUT #12 OFF	0-OPEN 1-CLOSED	
BI	24		SWITCH INPUT #12 ON	0-OPEN 1-CLOSED	

Table N.1 – Quanta Elite N2 Point Map

NETWORK POINT TYPE	NETWORK POINT ADDRESS	UNITS	POINT DESCRIPTION	RANGE/VALUE	NOTES
BI	25		SWITCH INPUT #13 OFF	0-OPEN 1-CLOSED	
BI	26		SWITCH INPUT #13 ON	0-OPEN 1-CLOSED	
BI	27		SWITCH INPUT #14 OFF	0-OPEN 1-CLOSED	
BI	28		SWITCH INPUT #14 ON	0-OPEN 1-CLOSED	
BI	29		SWITCH INPUT #15 OFF	0-OPEN 1-CLOSED	
BI	30		SWITCH INPUT #15 ON	0-OPEN 1-CLOSED	
BI	31		SWITCH INPUT #16 OFF	0-OPEN 1-CLOSED	
BI	32		SWITCH INPUT #16 ON	0-OPEN 1-CLOSED	
BI	33		SWITCH INPUT #17 OFF	0-OPEN 1-CLOSED	
BI	34		SWITCH INPUT #17 ON	0-OPEN 1-CLOSED	
BI	35		SWITCH INPUT #18 OFF	0-OPEN 1-CLOSED	
BI	36		SWITCH INPUT #18 ON	0-OPEN 1-CLOSED	
BI	37		SWITCH INPUT #19 OFF	0-OPEN 1-CLOSED	
BI	38		SWITCH INPUT #19 ON	0-OPEN 1-CLOSED	
BI	39		SWITCH INPUT #20 OFF	0-OPEN 1-CLOSED	
BI	40		SWITCH INPUT #20 ON	0-OPEN 1-CLOSED	
BI	41		SWITCH INPUT #21 OFF	0-OPEN 1-CLOSED	
BI	42		SWITCH INPUT #21 ON	0-OPEN 1-CLOSED	
BI	43		SWITCH INPUT #22 OFF	0-OPEN 1-CLOSED	
BI	44		SWITCH INPUT #22 ON	0-OPEN 1-CLOSED	
BI	45		SWITCH INPUT #23 OFF	0-OPEN 1-CLOSED	
BI	46		SWITCH INPUT #23 ON	0-OPEN 1-CLOSED	
BI	47		SWITCH INPUT #24 OFF	0-OPEN 1-CLOSED	
BI	48		SWITCH INPUT #24 ON	0-OPEN 1-CLOSED	
BI	49		SWITCH INPUT #25 OFF	0-OPEN 1-CLOSED	

Table N.1 – Quanta Elite N2 Point Map

NETWORK POINT TYPE	NETWORK POINT ADDRESS	UNITS	POINT DESCRIPTION	RANGE/VALUE	NOTES
BI	50		SWITCH INPUT #25 ON	0-OPEN 1-CLOSED	
BI	51		SWITCH INPUT #26 OFF	0-OPEN 1-CLOSED	
BI	52		SWITCH INPUT #26 ON	0-OPEN 1-CLOSED	
BI	53		SWITCH INPUT #27 OFF	0-OPEN 1-CLOSED	
BI	54		SWITCH INPUT #27 ON	0-OPEN 1-CLOSED	
BI	55		SWITCH INPUT #28 OFF	0-OPEN 1-CLOSED	
BI	56		SWITCH INPUT #28 ON	0-OPEN 1-CLOSED	
BI	57		SWITCH INPUT #29 OFF	0-OPEN 1-CLOSED	
BI	58		SWITCH INPUT #29 ON	0-OPEN 1-CLOSED	
BI	59		SWITCH INPUT #30 OFF	0-OPEN 1-CLOSED	
BI	60		SWITCH INPUT #30 ON	0-OPEN 1-CLOSED	
BI	61		SWITCH INPUT #31 OFF	0-OPEN 1-CLOSED	
BI	62		SWITCH INPUT #31 ON	0-OPEN 1-CLOSED	
BI	63		SWITCH INPUT #32 OFF	0-OPEN 1-CLOSED	
BI	64		SWITCH INPUT #32 ON	0-OPEN 1-CLOSED	
BI	65		SWITCH INPUT #33 OFF	0-OPEN 1-CLOSED	
BI	66		SWITCH INPUT #33 ON	0-OPEN 1-CLOSED	
BI	67		SWITCH INPUT #34 OFF	0-OPEN 1-CLOSED	
BI	68		SWITCH INPUT #34 ON	0-OPEN 1-CLOSED	
BI	69		SWITCH INPUT #35 OFF	0-OPEN 1-CLOSED	
BI	70		SWITCH INPUT #35 ON	0-OPEN 1-CLOSED	
BI	71		SWITCH INPUT #36 OFF	0-OPEN 1-CLOSED	
BI	72		SWITCH INPUT #36 ON	0-OPEN 1-CLOSED	
BI	73		SWITCH INPUT #37 OFF	0-OPEN 1-CLOSED	

Table N.1 – Quanta Elite N2 Point Map

NETWORK POINT TYPE	NETWORK POINT ADDRESS	UNITS	POINT DESCRIPTION	RANGE/VALUE	NOTES
BI	74		SWITCH INPUT #37 ON	0-OPEN 1-CLOSED	
BI	75		SWITCH INPUT #38 OFF	0-OPEN 1-CLOSED	
BI	76		SWITCH INPUT #38 ON	0-OPEN 1-CLOSED	
BI	77		SWITCH INPUT #39 OFF	0-OPEN 1-CLOSED	
BI	78		SWITCH INPUT #39 ON	0-OPEN 1-CLOSED	
BI	79		SWITCH INPUT #40 OFF	0-OPEN 1-CLOSED	
BI	80		SWITCH INPUT #40 ON	0-OPEN 1-CLOSED	
BI	81		SWITCH INPUT #41 OFF	0-OPEN 1-CLOSED	
BI	82		SWITCH INPUT #41 ON	0-OPEN 1-CLOSED	
BI	83		SWITCH INPUT #42 OFF	0-OPEN 1-CLOSED	
BI	84		SWITCH INPUT #42 ON	0-OPEN 1-CLOSED	
BI	85		SWITCH INPUT #43 OFF	0-OPEN 1-CLOSED	
BI	86		SWITCH INPUT #43 ON	0-OPEN 1-CLOSED	
BI	87		SWITCH INPUT #44 OFF	0-OPEN 1-CLOSED	
BI	88		SWITCH INPUT #44 ON	0-OPEN 1-CLOSED	
BI	89		SWITCH INPUT #45 OFF	0-OPEN 1-CLOSED	
BI	90		SWITCH INPUT #45 ON	0-OPEN 1-CLOSED	
BI	91		SWITCH INPUT #46 OFF	0-OPEN 1-CLOSED	
BI	92		SWITCH INPUT #46 ON	0-OPEN 1-CLOSED	
BI	93		SWITCH INPUT #47 OFF	0-OPEN 1-CLOSED	
BI	94		SWITCH INPUT #47 ON	0-OPEN 1-CLOSED	
BI	95		SWITCH INPUT #48 OFF	0-OPEN 1-CLOSED	
BI	96		SWITCH INPUT #48 ON	0-OPEN 1-CLOSED	

Table N.1 – Quanta Elite N2 Point Map

NETWORK POINT TYPE	NETWORK POINT ADDRESS	UNITS	POINT DESCRIPTION	RANGE/VALUE	NOTES
BO	1		RELAY OUTPUT #1	0-OFF 1-ON	
BO	2		RELAY OUTPUT #2	0-OFF 1-ON	
BO	3		RELAY OUTPUT #3	0-OFF 1-ON	
BO	4		RELAY OUTPUT #4	0-OFF 1-ON	
BO	5		RELAY OUTPUT #5	0-OFF 1-ON	
BO	6		RELAY OUTPUT #6	0-OFF 1-ON	
BO	7		RELAY OUTPUT #7	0-OFF 1-ON	
BO	8		RELAY OUTPUT #8	0-OFF 1-ON	
BO	9		RELAY OUTPUT #9	0-OFF 1-ON	
BO	10		RELAY OUTPUT #10	0-OFF 1-ON	
BO	11		RELAY OUTPUT #11	0-OFF 1-ON	
BO	12		RELAY OUTPUT #12	0-OFF 1-ON	
BO	13		RELAY OUTPUT #13	0-OFF 1-ON	
BO	14		RELAY OUTPUT #14	0-OFF 1-ON	
BO	15		RELAY OUTPUT #15	0-OFF 1-ON	
BO	16		RELAY OUTPUT #16	0-OFF 1-ON	
BO	17		RELAY OUTPUT #17	0-OFF 1-ON	
BO	18		RELAY OUTPUT #18	0-OFF 1-ON	
BO	19		RELAY OUTPUT #19	0-OFF 1-ON	
BO	20		RELAY OUTPUT #20	0-OFF 1-ON	
BO	21		RELAY OUTPUT #21	0-OFF 1-ON	
BO	22		RELAY OUTPUT #22	0-OFF 1-ON	
BO	23		RELAY OUTPUT #23	0-OFF 1-ON	
BO	24		RELAY OUTPUT #24	0-OFF 1-ON	

Table N.1 – Quanta Elite N2 Point Map

NETWORK POINT TYPE	NETWORK POINT ADDRESS	UNITS	POINT DESCRIPTION	RANGE/VALUE	NOTES
BO	25		RELAY OUTPUT #25	0-OFF 1-ON	
BO	26		RELAY OUTPUT #26	0-OFF 1-ON	
BO	27		RELAY OUTPUT #27	0-OFF 1-ON	
BO	28		RELAY OUTPUT #28	0-OFF 1-ON	
BO	29		RELAY OUTPUT #29	0-OFF 1-ON	
BO	30		RELAY OUTPUT #30	0-OFF 1-ON	
BO	31		RELAY OUTPUT #31	0-OFF 1-ON	
BO	32		RELAY OUTPUT #32	0-OFF 1-ON	
BO	33		RELAY OUTPUT #33	0-OFF 1-ON	
BO	34		RELAY OUTPUT #34	0-OFF 1-ON	
BO	35		RELAY OUTPUT #35	0-OFF 1-ON	
BO	36		RELAY OUTPUT #36	0-OFF 1-ON	
BO	37		RELAY OUTPUT #37	0-OFF 1-ON	
BO	38		RELAY OUTPUT #38	0-OFF 1-ON	
BO	39		RELAY OUTPUT #39	0-OFF 1-ON	
BO	40		RELAY OUTPUT #40	0-OFF 1-ON	
BO	41		RELAY OUTPUT #41	0-OFF 1-ON	
BO	42		RELAY OUTPUT #42	0-OFF 1-ON	
BO	43		RELAY OUTPUT #43	0-OFF 1-ON	
BO	44		RELAY OUTPUT #44	0-OFF 1-ON	
BO	45		RELAY OUTPUT #45	0-OFF 1-ON	
BO	46		RELAY OUTPUT #46	0-OFF 1-ON	
BO	47		RELAY OUTPUT #47	0-OFF 1-ON	
BO	48		RELAY OUTPUT #48	0-OFF 1-ON	

Table N.1 – Quanta Elite N2 Point Map

Attribute Region	Attribute	Bit #	Comments
Analog Inputs			Not supported
Analog outputs			Not supported
Internal Float			Not supported
Internal Integer			Not supported
Internal Byte			Not supported
Binary Input	1	0	COS_enabled Always 0 (COS is always 0)
Binary Input	1	1	Normal State Always Open=0 closed=1
Binary Input	1	3	Alarm_enabled Always 0 (disabled)
Binary Input	2	0	Always reliable (0)
Binary Input	2	1	Override Active Always 0 (not active)
Binary Input	2	4	Normal (0)
Binary Input	2	5	JCI use only
Binary Input	3		JCI use only
Binary Input	4		JCI use only
Binary Output	1	0	COS_enabled Always (COS is always enabled)
Binary Output	1	1	Normal State (Always 0)
Binary Output	2	0	Always reliable (0)
Binary Output	2	1	Override active Always 0 (not active)
Binary Output	2	4	JCI use only
Binary Output	2	5	JCI use only
Binary Output	3		Minimum ON time Always 0
Binary Output	4		Minimum OFF time Always 0
Binary Output	5		Maximum Cycles/Hour Always 0
Binary Output	6		JCI use only
Binary Output	7		JCI use only