

DURA *Touch*

USER GUIDE

Version 1A
1/1/06



INTELLIGENT LIGHTING CONTROLS, INC.

5229 Edina Industrial Boulevard
Minneapolis, Minnesota 55439
Phone 952 829 1900
FAX 952 829 1901
1-800-922-8004

Overview

The DuraTouch is a completely solid-state, self-contained stand-alone lighting control module in a compact, sealed design for secure environment applications. It provides flexibility in programming and durability that makes it ideal for single room control. It can be programmed to control simple On/Off room lighting, and complex switching schemes that include timed-ON inspection switches and remote override controls. The DuraTouch is typically programmed at the factory to the end-user's specifications, but may be field programmed (contact factory for more information). The DuraTouch has 6 low voltage inputs, 3 zero-cross solid state outputs, 3 LED status outputs and is UL recognized.

Thermal Formed ABS Enclosure

Electronics Encased in Potting Epoxy

120 or 277 VAC Input Power

Easy-to-Use Spade Connectors

Preprogrammed



*DuraTouch JB (Junction Box Mount) Module
– fits standard 4¹¹/₁₆" electrical junction box*

*DuraTouch FM (Fixture Mount) Module
– fits in ballast tray of fluorescent fixtures*

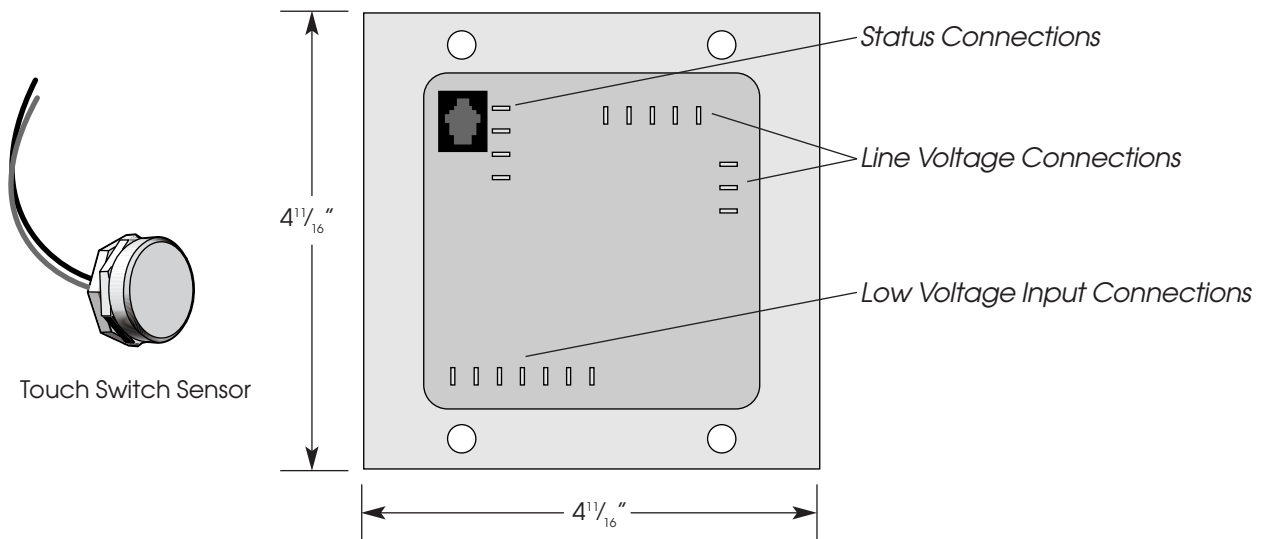
Hardware

1. Module Enclosure: Each DuraTouch module is in a thermal formed enclosure constructed of black ABS plastic. The electronics are fully encased in a potting epoxy.

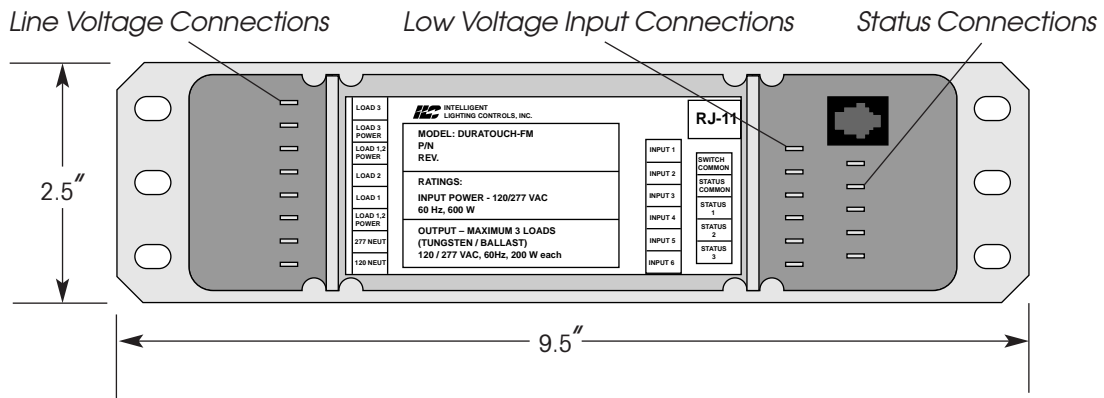
- **Junction Box Mount Module:** It is designed to attach to and cover a 4¹¹/₁₆" junction box using 4 screws to mount it. It provides a barrier for the high voltage wires. The physical dimensions are: 4.75" x 4.75" x 1.625" deep.

- **Fixture Mount Module:** It is designed to be installed in a lighting fixture wire/ballast chase. The high voltage wires exit from one end and the low voltage wires from the other end. The physical dimensions are: 9.5" x 2.5" x 1.5" deep.

2. Inputs / Outputs: The module accommodates 6 switch inputs, 3 LED status outputs and 3 zero-cross solid state load control outputs.



DuraTouch Junction Box Mount Module



DuraTouch Fixture Mount Module

Capacities and Specifications

1. Line Voltage and Control Voltage: The module is capable of being powered by either 120 VAC or 277 VAC. It is also capable of switching both voltages within the same unit, with one of the voltages being the same as the control voltage and having control of the first two loads.

2. Outputs: The module has 3 zero-cross lighting control outputs. Each output can switch up to 200 watts at 120 or 277 VAC. Load outputs 1 and 2 must be the same voltage as the control voltage. Load 3 is isolated from loads 1 and 2 and may be a different voltage.

3. Inputs: Each switch input can be actuated by dry contact or logical equivalent from a 2-wire momentary or maintained type switch. It can accept a touch-activated piezo security switch. Typically the current through the switch input is .5mA at 5 VDC. Inputs can be de-bounced through programming if a mechanical switch is used. A 2-second delay for the change of state can also be programmed (typically for prison applications). The available switch types are:

a. Momentary Pushbutton: When momentary contact is made between the ON and COM, outputs will change to the next state that they were programmed to. Can step all 3 loads in up to eight (8) sequences.

b. Maintained ON/OFF: When contact is made between the ON and COM, outputs will change to the next state that they were programmed to. When the contact is opened, it can have the capability to go to any of the eight (8) states. Can step all 3 loads in up to eight (8) sequences.

c. Timed-ON: The timed-ON input will operate from the momentary input closure. It will change to one of the eight (8) states programmed and after that it will return to the original state. The timed-ON duration shall be set to 1-60 seconds or 1-120 minutes.

d. Input Disable: When maintained contact is made between the ON and COM on switch input 3, switch inputs 1 and/or 2 will be disabled.

e. Timed-ON Disable: When maintained contact is made between the ON and COM on switch input 3, timed-ON switch input will be disabled.

f. Master Override: When maintained contact is made between the ON and COM, outputs controlled by this input will be forced to a specific state and held in their current state until the input is released. All input commands are ignored for controlled output(s) until released. At release, the input can be set to stay at the present state or go to any other state. It can step to one of the eight (8) sequences on Close and on Open of the switch.

g. Secondary Override: When maintained contact is made between the ON and COM, outputs controlled by this input will be forced to a specific state and held in their current state until the input is released. All input commands are ignored for controlled output(s) until released except for the Master Override input. At release, the input can be set to stay at the present state or go to any other state. It can step to one of the eight (8) sequences on close and on open of the switch.

4. Status Output: The module is provided with three (3) low voltage status outputs. Each status output will track the corresponding load control output. Each output will provide 7mA at 10 VDC to drive a single remote status LED. **NOTE:** A current limiting resistor is required for the status LED as shown in Figure 2. The resistor must be 1.2K ohms or greater and 1/4 Watt.

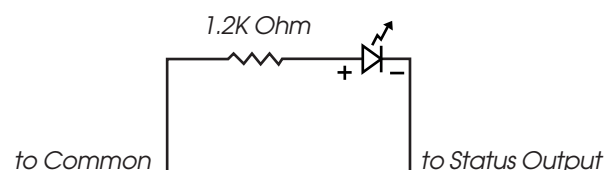


Figure 2

Low Voltage Status Connections

J2	Wire Connection
1	Status Power
2	Load 1 Status
3	Load 2 Status
4	Load 3 Status

Line Voltage Connections

J3	Wire Connection
1	Neutral 120 VAC
2	Neutral 277 VAC
3	Line 120/277 VAC (for L1 & L2)
4	Load 1
5	Load 2
6	Line 120/277 VAC (for L1 & L2)
7	Line 120/277 VAC (for L3)
8	Load 3

RJ-11 Programming Jack

Low Voltage Input Connections

J1	Wire Connection
1	Input COMMON
2	Input 1
3	Input 2
4	Input 3
5	Master Override
6	Secondary Override
7	Timed ON

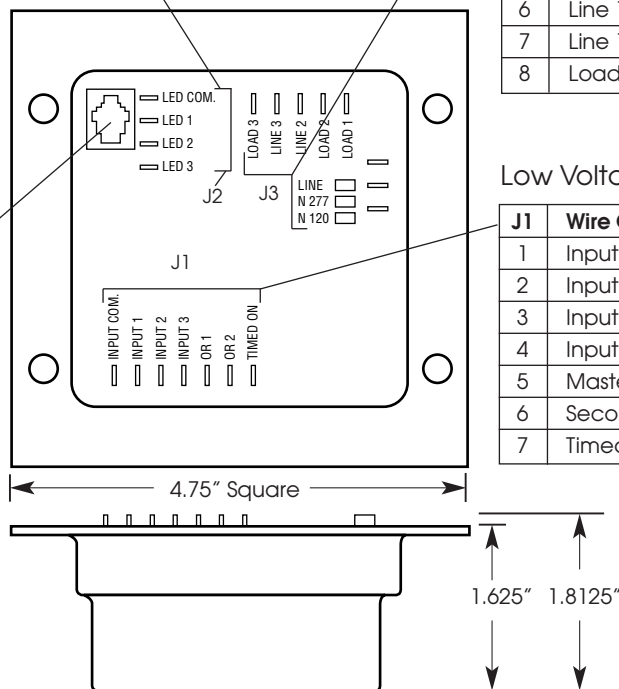


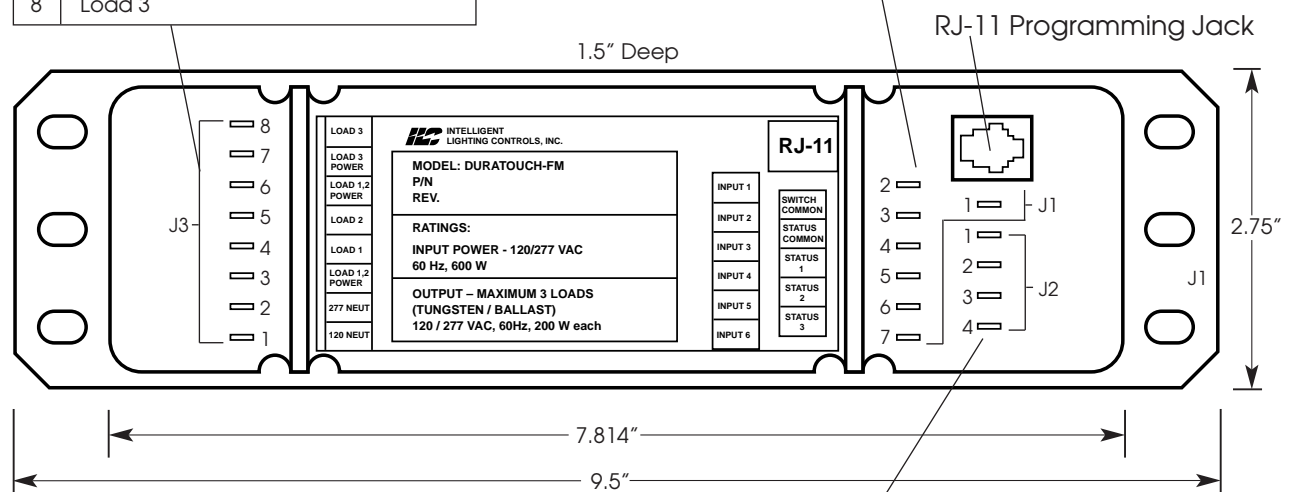
Figure 3 – DuraTouch Junction Box Mount Module Detail

Line Voltage Connections

J3	Wire Connection
1	Neutral 120 VAC
2	Neutral 277 VAC
3	Line 120/277 VAC (for L1 & L2)
4	Load 1
5	Load 2
6	Line 120/277 VAC (for L1 & L2)
7	Line 120/277 VAC (for L3)
8	Load 3

Low Voltage Input Connections

J1	Wire Connection
1	Input COMMON
2	Input 1
3	Input 2
4	Input 3
5	Master Override
6	Secondary Override
7	Timed ON



Low Voltage Status Connections

J2	Wire Connection
1	Status Power
2	Load 1 Status
3	Load 2 Status
4	Load 3 Status

Figure 4 – DuraTouch Fixture Mount Module Detail

Installation

1. Pre-Installation Checks:

- Verify that you received the proper equipment. This includes the module, switches, and switch plates.
- Be sure you have an adequate supply of the proper terminal connectors required to make the line and control connections. Line voltage connectors required are .25" Fast-On and the control connectors are .1875".
- Review wiring diagrams provided by ILC Applications Dept.

Wiring

1. Connect High Voltage Line and Control Wiring

- Connect the neutral wire. If the control voltage is 120 VAC, wire it to terminal J3-1, if it is 277 VAC, connect it to J3-2.
- Connect the line wire to J3-3. **NOTE:** It is the same for 120 or 277 VAC.
- Connect a jumper from J3-6 to J3-7 if load output 3 has the same voltage as loads 1 and 2. If load 3 is a different voltage or a different line, connect it to J3-7. Check the provided documentation for exact connection.
- Cover any unused connections with a Fast-On connector.

2. Connect Low Voltage Switch Wiring

- Separate all high voltage and low voltage wiring. Do not run them in the same chase.
- Do not connect inputs together across DuraTouch modules. Use the DuraTouch as a stand-alone controller only.
- Connect the COMMON wire from each switch to switch input COMMON J1-1. A minimum of 18 AWG wire is recommended for all control wiring.
- Connect the switch return to the switch input required. Switch inputs are J1-2 through J1-7. Check the documentation for exact connection.

3. Connect Status Wiring

- Connect the COMMON wire from each status LED and connect it to terminal J2-1.
- Connect the return wire from each status LED and connect to terminal J2-2 through J2-4. Check the provided documentation for exact connection.

Mounting

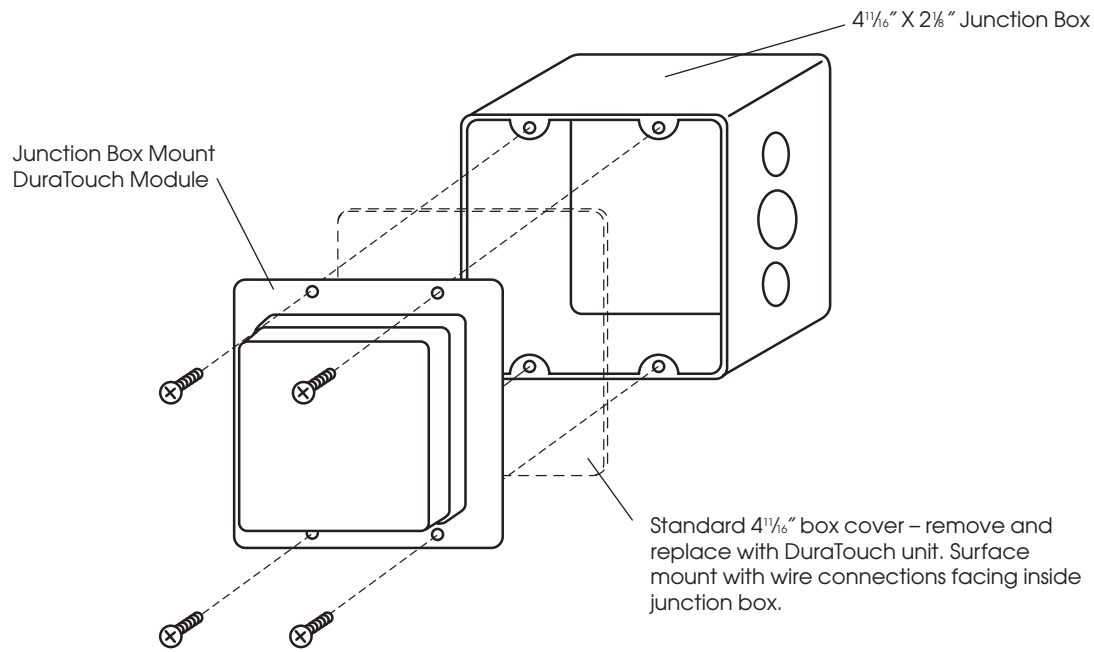


Figure 5 – DuraTouch Junction Box Mount Module Diagram

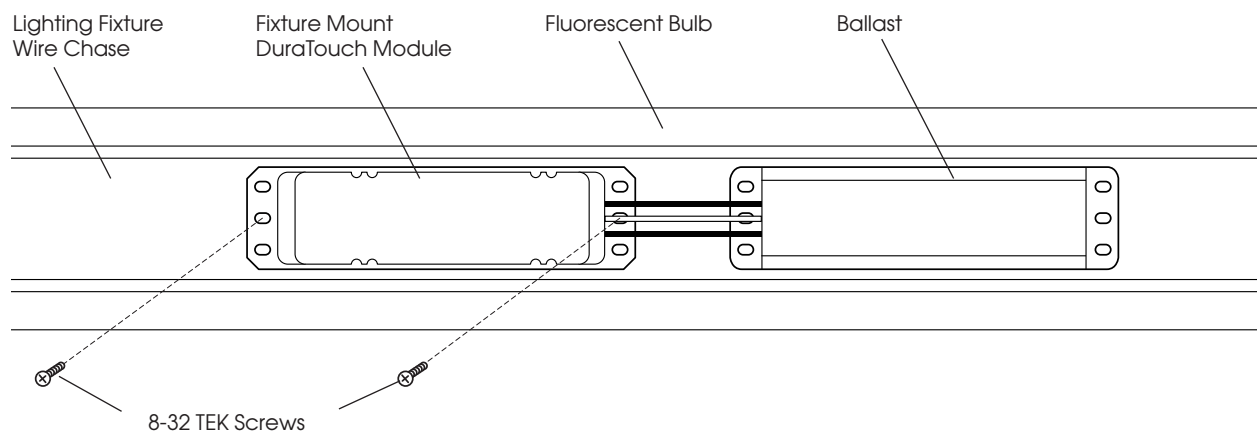


Figure 6 – DuraTouch Fixture Mount Module Diagram

Power-Up and Checkout

- Power-up the circuit feeding the DuraTouch module.
- If the module has a separate circuit feeding load 3, power-up this circuit also.
- Actuate each control switch as specified and verify that the module controls the loads as desired.
- If status LEDs are used, verify operation.

States of the loads

There are eight (8) possible states that the loads can be programmed to, from all ON to all OFF. Programming uses an If/Then logic type of system.

State	Load 1	Load 2	Load 3
1	OFF	OFF	OFF
2	ON	OFF	OFF
3	OFF	ON	OFF
4	ON	ON	OFF
5	OFF	OFF	ON
6	ON	OFF	ON
7	OFF	ON	ON
8	ON	ON	ON

Figure 7 – Output State Possibilities

Sample 1: Prison Cell Application

Figure 8 is a sample of a typical prison cell control wiring. There are 3 fixtures to control this area: load 1, which is a sink fixture, load 2, which is a ceiling fixture; and load 3, which is a nightlight. Four switches control this area; a local security piezo switch controls the three loads. With each press of the switch, it will sequence through each fixture and allow only one to be ON at a time. Outside

the cell is the second security piezo switch, which is programmed to turn ON the ceiling and sink lights for 10 seconds and then revert back to the original state. In the guard area are 2 maintained type switches; one forces all of the lights OFF except for the nightlight. The other switch forces the ceiling and vanity lights ON and the night light OFF. There are also 3 status LEDs that show the status of the cell loads.

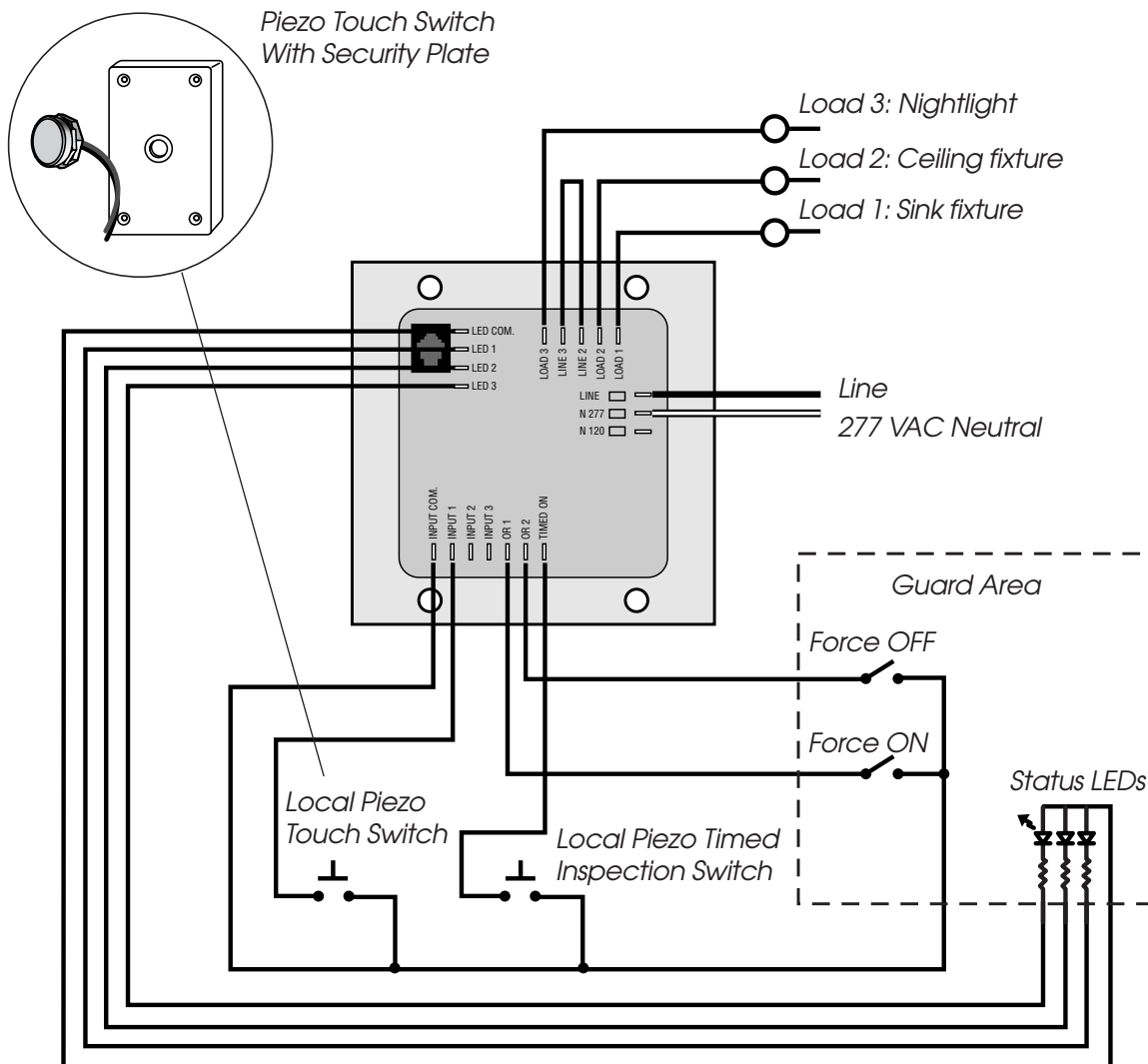


Figure 8 – Prison Cell Lighting Control

Sample 2: Hospital Room Application

Figure 9 is a sample of a typical hospital room control wiring. There are 3 lighting loads to control, which consist of load 1, a reading light; load 2, a down light; and load 3, an up light. There are 2 switch locations, one at the entry of the room that has two switches and a single bed switch for the patient. One momentary switch (3-wire) at the entry controls the up/down lights and

the reading light. The other entry switch is a maintained switch that turns all of the lights ON and overrides all other switches. The patient bed switch will sequence the loads. The load sequence is:

- 1 on, 2 off, 3 no change
- 1 off, 2 on, 3 no change
- 1 & 2 on, 3 no change
- 1 & 2 off, 3 no change

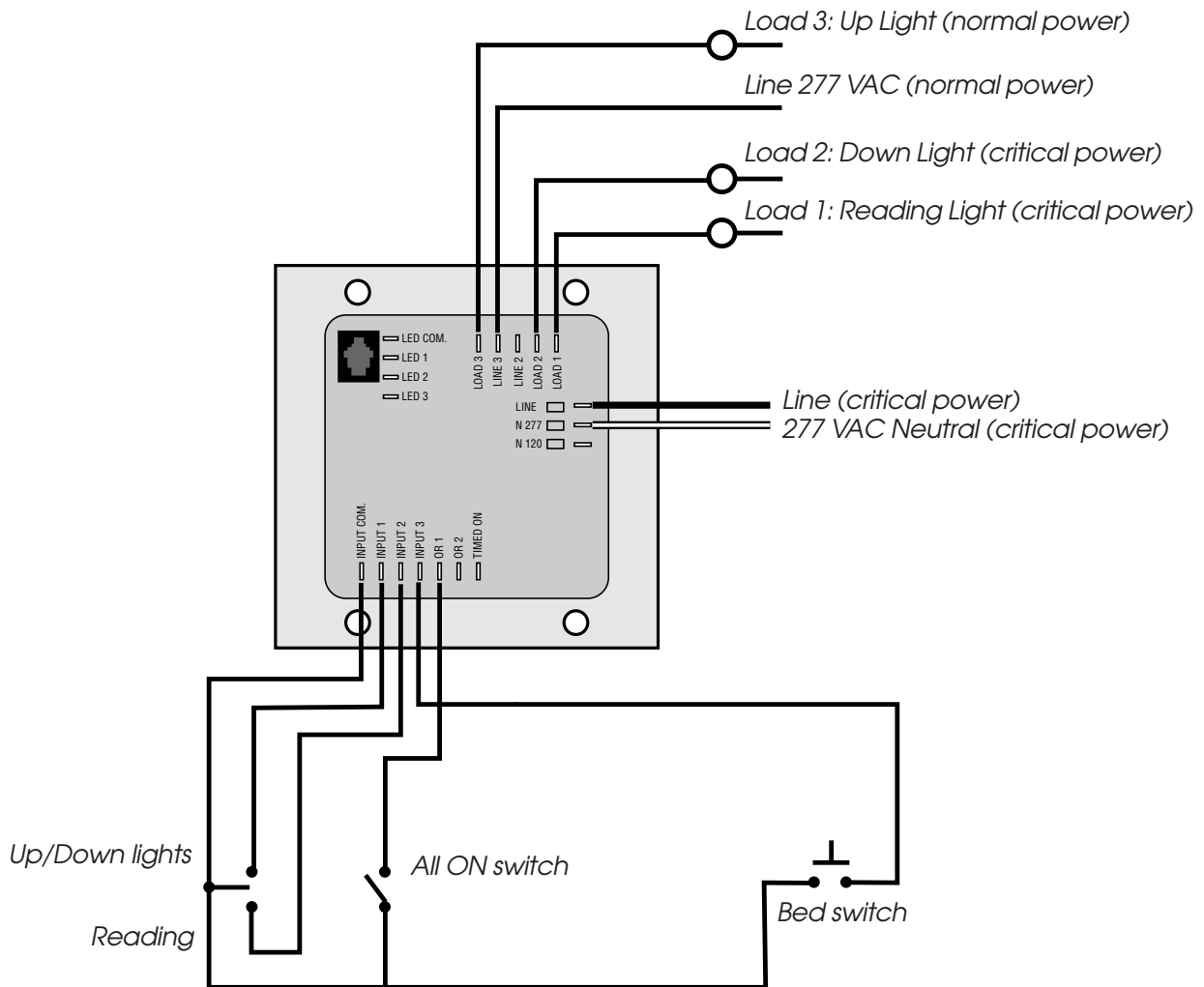


Figure 9 – Hospital Room Lighting Control

DuraTouch Module Configuration Form

*The DuraTouch Programmable Sequencer works on an IF/THEN logic sequence. A switch activation will cause the outputs to go to the unit's next programmed state. For example, using a pushbutton switch, if the current state is #2 (load #1 ON, loads #2 and #3 OFF), the next selected state can be #7 (loads #2 and #3 ON and load #1 OFF). To create a repeat pattern, you must select the beginning state as the Next State at the end of the loop.

Switch Type:

(Momentary, Maintained, TS Touch Switch-Momentary)

Input #1 _____

Input #2 _____

Input #3 _____

NOTE: If disable function is required, Input #3 must be a Maintained switch type.

Input #3 disables (Y or N)

Input #1 _____

Input #2 _____

Input #3 _____

Input #4

(Primary Override) _____ MAINTAINED _____

When override is closed, desired Action is (ON, OFF)

Load #1 _____

Load #2 _____

Load #3 _____

When override is opened, desired Action is (ON, OFF)

Load #1 _____

Load #2 _____

Load #3 _____

Input #5

(Secondary Override) _____ MAINTAINED _____

When override is closed, desired Action is (ON, OFF)

Load #1 _____

Load #2 _____

Load #3 _____

When override is opened, desired Action is (ON, OFF)

Load #1 _____

Load #2 _____

Load #3 _____

Input #6

_____ MOMENTARY _____

Enable 2 sec. delay between switch actuation (Y or N) _____

Enable switch de-bounce (Y or N) _____

Power-Up State _____

Load Description:

Load #1 _____

Load #2 _____

Load #3 _____

Qty./Type of DuraTouch Modules:

____ JB (Junction Box Mount) ____ FM (Fixture Mount)

Directions:

1. Enter load states for all desired actuation sequences.
2. Indicate desired time duration if Input #6 is used as a timed override.
3. List switch types used for each input.
4. If Input #3 is used as a disable, list input to be disabled. (Maintained switch type only.)
5. List Override Actions if applicable.
6. Indicate desired power-up state of loads.
7. Specify whether switch delay and de-bounce features are required.
8. Duplicate this form as required to document all of the project's DuraTouch Modules.

State Sequence Selection Chart

Input #1		Input #2		Input #3	
Current State	Next State	Current State	Next State	Current State	Next State
#1		#1		#1	
#2		#2		#2	
#3		#3		#3	
#4		#4		#4	
#5		#5		#5	
#6		#6		#6	
#7		#7		#7	
#8		#8		#8	

Timed ON Chart

Input #6 Current Status	Timed Next State	Timed ON Duration (1-60 sec. or 1-120 min.)
#1		
#2		
#3		
#4		
#5		
#6		
#7		
#8		

State Sequence Options Chart

State Sequence Options	Load #1	Load #2	Load #3
#1	OFF	OFF	OFF
#2	ON	OFF	OFF
#3	OFF	ON	OFF
#4	ON	ON	OFF
#5	OFF	OFF	ON
#6	ON	OFF	ON
#7	OFF	ON	ON
#8	ON	ON	ON