touch-plate®
LIGHTING CONTROLS

Nexus System Manual

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Precautions

The Nexus hardware is designed to be in environments that have a temperature range of 0-60°C (non-condensing atmosphere). Installing in an environment outside of these parameters will shorten the life span of the hardware.

Touch-Plate recommends the use of 18 to 22 AWG wire for low voltage wiring of contact closure products, 18 AWG wire for all 24V power connections, and 16 AWG wire for 2-wire Smart Switch Stations.

All 120VAC wiring must use wire as specified by National Electric Code for load size and wire length.

Compatible Hardware

- Digital Control Stations

    - 2-Wire Stations (Mystique and Ultra Series)

    - 5-Wire Stations (Mystique and Ultra Series)

- Contact Closure Control Stations via Smart Control Bridge or on board inputs

- Panel Products (Solare, Soluxe, Calypso, and ZoneZ Series)

Warranty

Touch-Plate warrants this product against defects in materials or workmanship, under normal use, for a period of ONE (1) year from date of shipment. If a defect arises and a valid claim is received within the Warranty Period, Touch-Plate will repair or replace the product at no charge.

This warranty does not apply to:

a. Damage to unit(s) caused by accident, acts of God, inappropriate installation, faulty installation, or any negligent use;
b. Unit(s) which have been subject to being taken apart or otherwise modified;
c. Unit not used in accordance with instructions;
d. The finish on any portion of the product, such as surface and/or weathering, as this is considered normal wear and tear;
e. Non-Touch-Plate hardware installed by the user;
f. Damage caused by Non-Touch-Plate products;
g. Damage caused by operating the product outside the permitted or intended uses described by Touch-Plate;
h. -or- Specific plans or Specific application requirements, unless the plans and specifications have been forwarded to Touch-Plate and Touch-Plate has approved and accepted the plans in writing.

EXCEPT AS PROVIDED IN THIS WARRANTY, TOUCH-PLATE IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, INCLUDING BUT NOT LIMITED TO, INSTALLATION OR REPLACEMENT LABOR COSTS.

Nexus Overview

The Nexus menu is an on board menu. The LEDs lit on the Nexus menu options are the cursors. As you navigate through the menu options look for and use the cursors.

The Nexus is capable of operating in a BACnet system or as a Standalone system. For BACnet installations and operation please see the Nexus BACnet Manual.

| Board Items	Options	Board Position	Page #
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	RS485 (BACnet MS/TP)	F	
Dip Switches	MS/TP Address	G	N/A
	Options	H	
Programming	Programming Interface	I	
	Clear/Discover	J	
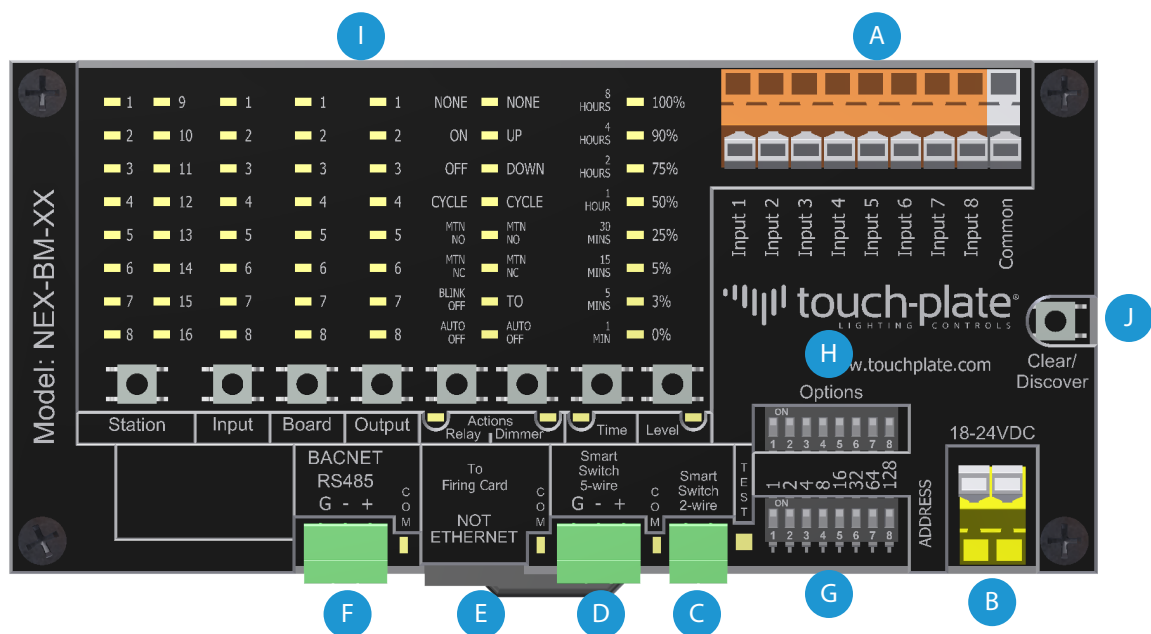
Nexus Contact Closure Input Wiring

To correctly wire the Contact Closure Inputs to the Nexus, use the wiring diagram below.

Recommended gauge wire is 16-26.

Wired to Contact Closure Switch

Model: NEX-BM-XX

Station	Input	Board	Output
1 9	1	1	1
2 10	2	2	2
3 11	3	3	3
4 12	4	4	4
5 13	5	5	5
6 14	6	6	6
7 15	7	7	7
8 16	8	8	8

NONE NONE 8 HOURS 100%
ON UP 4 HOURS 90%
OFF DOWN 2 HOURS 75%
CYCLE CYCLE 1 HOUR 50%
MTN NO MTN NO 30 MINS 25%
MTN NC MTN NC 15 MINS 5%
BLINK OFF TO 5 MINS 3%
AUTO OFF AUTO OFF 1 MIN 0%

Actions Relay Dimmer | Time | Level

Input 1 Input 2 Input 3 Input 4 Input 5 Input 6 Input 7 Input 8 Common

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Clear/Discover

Options
ON
1 2 3 4 5 6 7 8

1 2 4 8 16 32 64 128

ON
1 2 3 4 5 6 7 8

ADDRESS

18-24VDC

BACNET RS485
G - +
COM

To Firing Card
NOT ETHERNET

Smart Switch 5-wire
G - +
COM

Smart Switch 2-wire
COM

TEST

Nexus Power Wiring

To correctly bring power to the Nexus, use the wiring diagram below. Power must be a Class 2, Isolated Transformer, with a rating of 18-24VDC. This will typically come from the factory pre-wired. The power connection is not polarity sensitive.
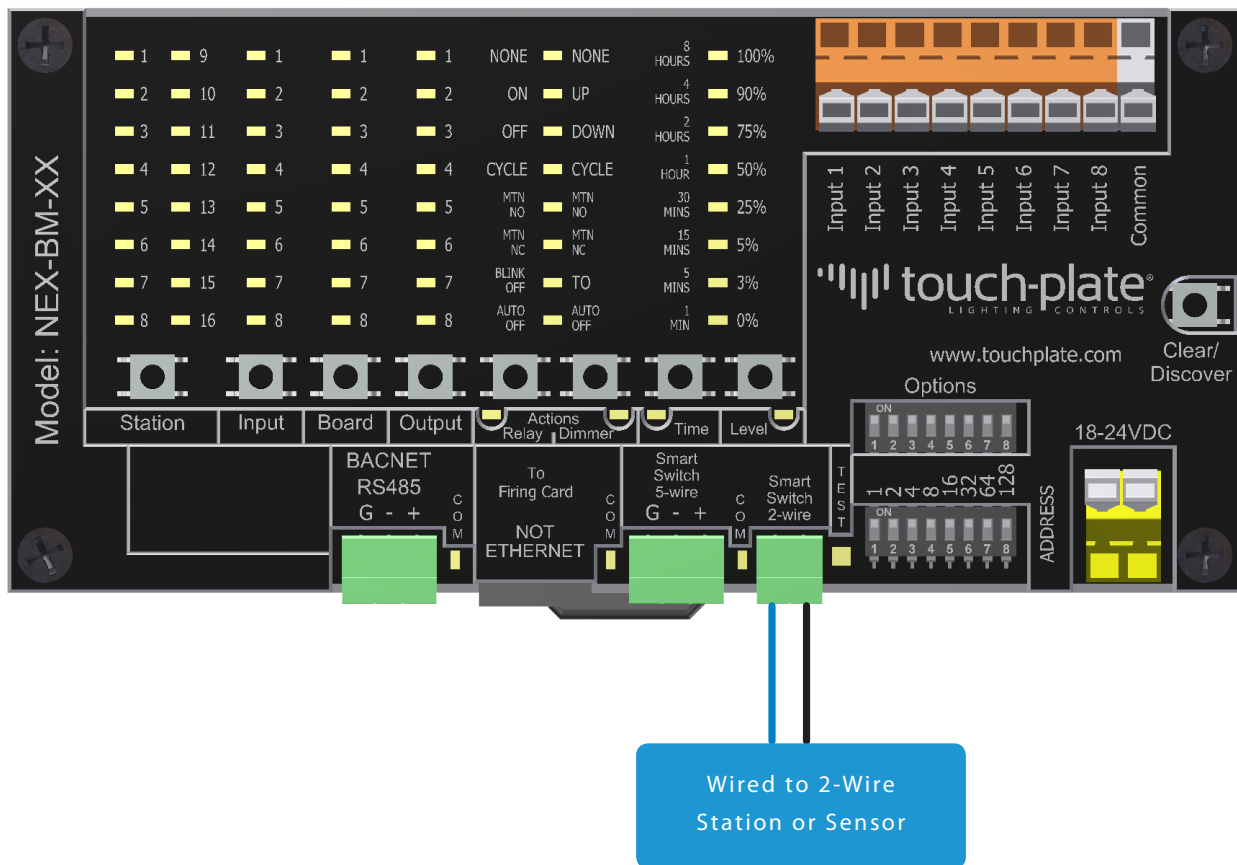

Wired to 18-24VDC Transformer
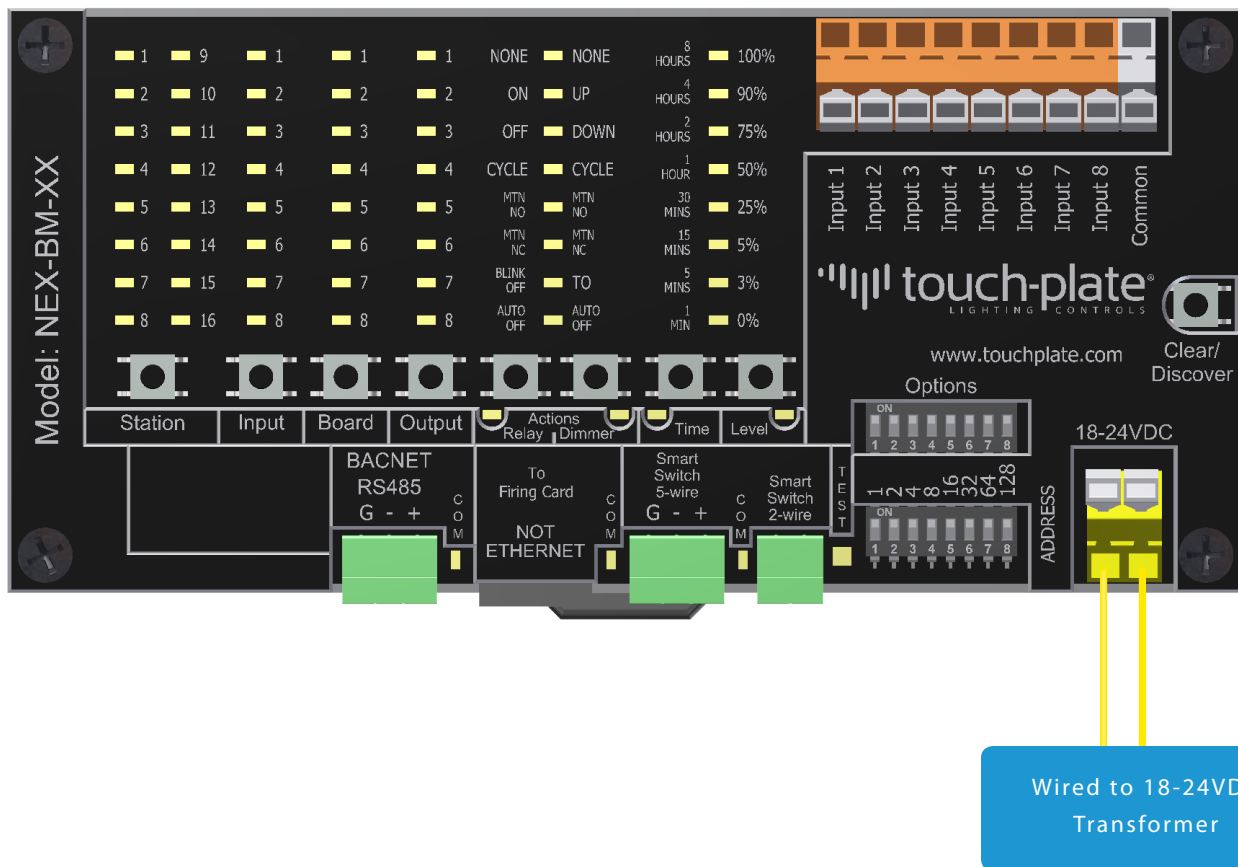
Nexus 2-Wire Wiring

To correctly wire the 2-Wire connection to the Nexus, use the wiring diagram below.

- **2-Wire Stations and Sensors are not polarity sensitive (topology free).**

Wire must be Tappan 1680AB2/CMP (16 AWG, 2 Conductor, Twisted, Unshielded) or an equivalent wire.

Wired to 2-Wire Station or Sensor

Nexus 5-Wire Wiring

To correctly wire the 5-Wire connection to the Nexus, use the wiring diagram below.

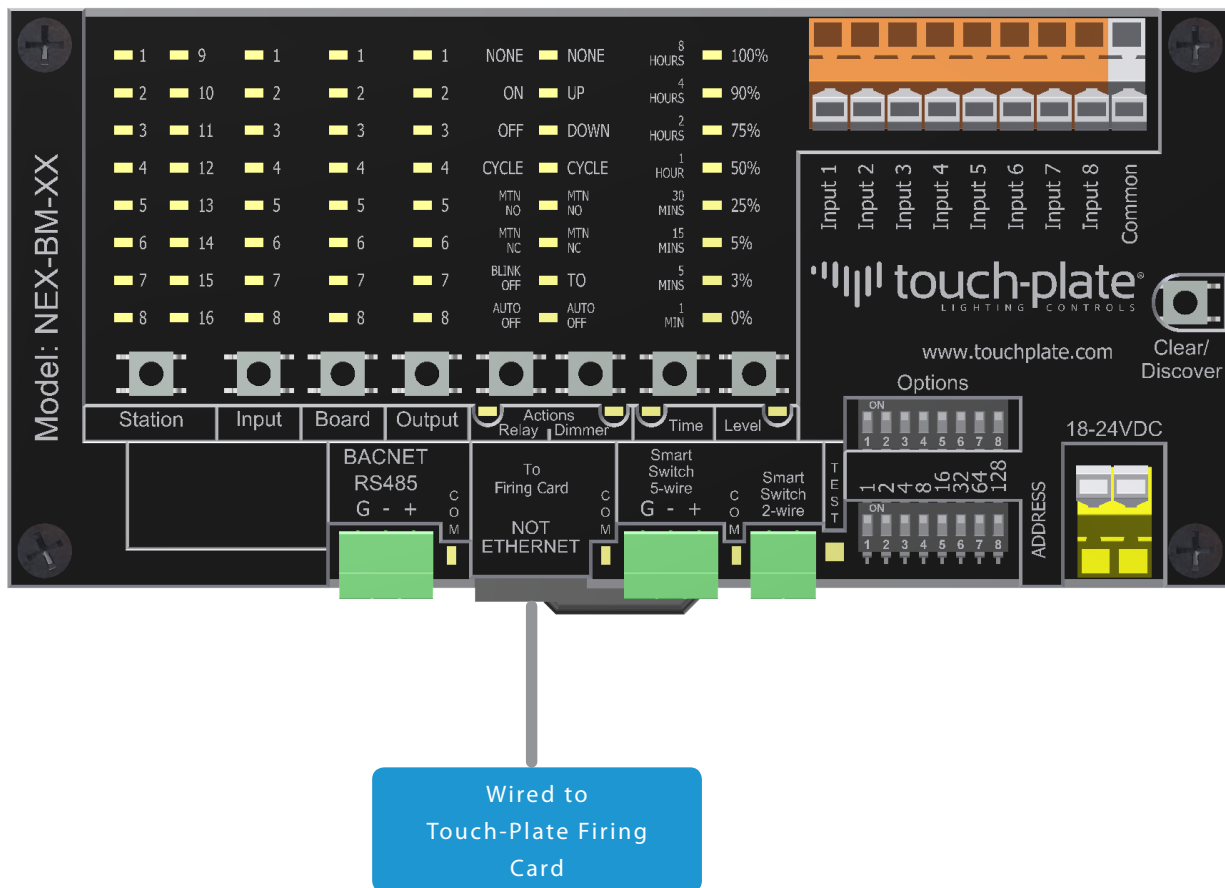Wire must be Axlink 22/01PSH + 18/2C or an equivalent wire.
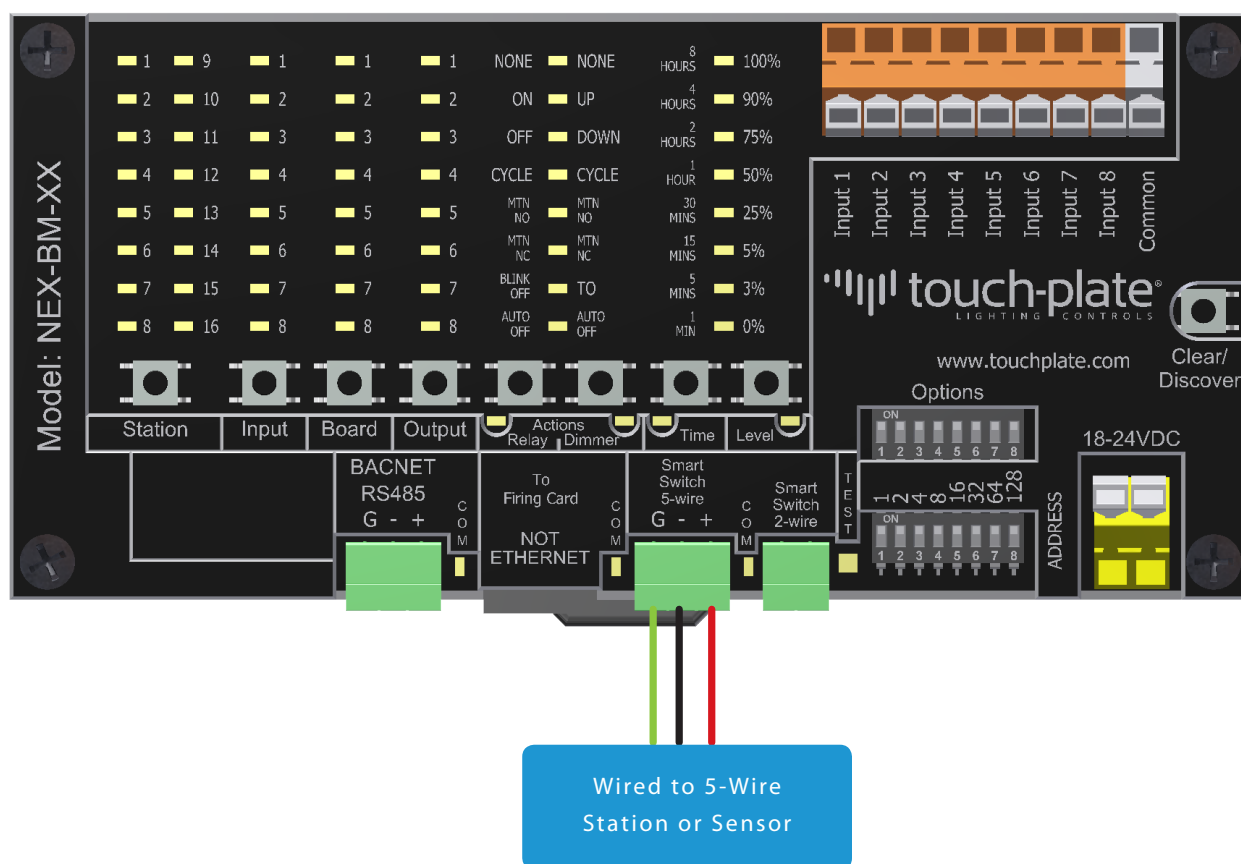
Nexus Firing Card Wiring

To correctly wire the Firing Card connection to the Nexus, use the wiring diagram below.

Wire must be Cat5e or an equivalent wire.

Typical items wired via the RJ-45 connection are: Touch-Plate Relay and Dimmer Firing Cards.

Wired to Touch-Plate Firing Card

Nexus MS/TP RS485 Wiring

To correctly wire the RS485 connection to the Nexus, use the wiring diagram below.

- **Shield or Ground for MS/TP RS485 connection must be isolated from the ground on the power supply. Using the same ground will create a direct short across the diode bridge and damage the unit.**

Wire must be Liberty 18/2C SHLD or an equivalent wire.
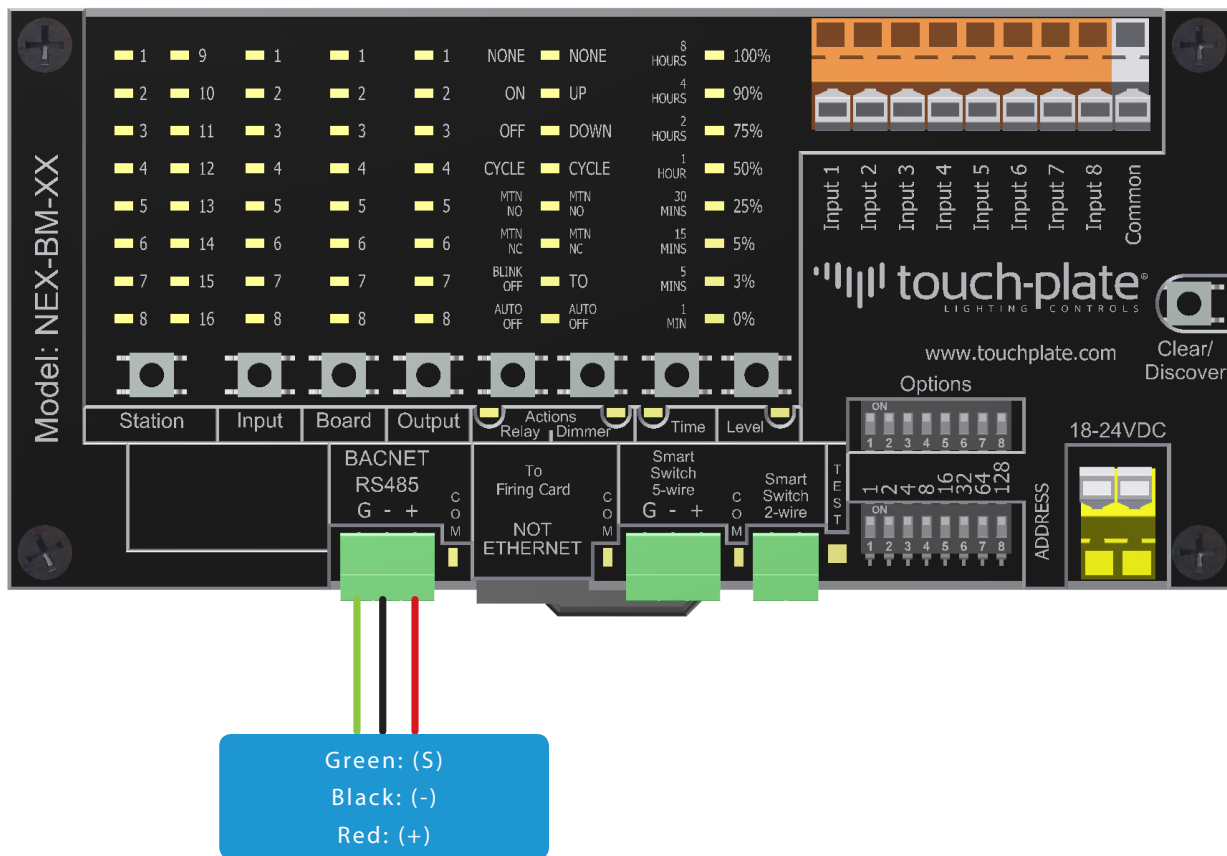
Nexus Softpatching

Softpatching is available for use with the Nexus, which will allow you to utilize the internal software of the Nexus. This step will need to occur before any BACnet programming takes place. For Standalone systems, this is the primary programming function.

Programming Contact Closure or Station Inputs

Use the programming diagram to setup your system. In this step contact closure buttons or station buttons will be programmed. Each button and associated load will need to have its action pre-determined before any programming takes place.

Each system will have different programming characteristics and this document does not show all possible programming options. When Contact Closure Inputs are enabled they will always show up as Station number 16.

Utilize Appendix IV and V for programming interface explanations.

1. Press the 'STATION' button multiple times until the LED is lit next to the Station Address that is to be programmed.

2. Press the 'BUTTON/INPUT' button multiple times until the LED is lit next to the Button that is to be programmed.

3. Press the 'BOARD' button multiple times until the LED is lit next to the Firing Card that is to be programmed.

4. Press the 'OUTPUT' button multiple times until the LED is lit next to the Load that is to be programmed.

5. Press the 'RELAY ACTIONS' or 'DIMMER ACTIONS' button multiple times until the LED is lit next to the Action that is to be carried out by either the relay(s) or dimmer(s). If 'AUTO OFF' or 'TO ACTION' is chosen, proceed to step 7. If not, proceed to step 6.

6. Press the 'STATION' or 'BUTTON/INPUT' button to move to the next Station Address or Button that is to be programmed.

The next two steps are only to be used if the 'Auto Off' Action has been chosen or the 'To Action' has been chosen.

7. Press the 'TIME' button multiple times until the LED is lit next to the Time that the load is to turn off at when using the Auto Off Action.

8. Press the 'LEVEL' button multiple times until the LED is lit next to the Level that the dimmer is to dim to when using the To Action.

9. Press the 'STATION' button to move to the next Station Address that is to be programmed.

Appendix I - Powering the Nexus

This step is used for replacing or installing a new Nexus only.

When the Nexus has power applied to it, it will go through a process to establish communication and to identify all inputs and outputs. When the process is completed, communication to all input and output devices can be verified.

Utilize the following steps to correctly startup the Nexus.

1. Verify Option Dip Switches 1 - 7 are in the OFF position, if the Inputs are being used.

    If the Inputs are not being used, Option Dip Switches 1 - 8 need to be in the OFF position.

2. Bring power to the Nexus. The system will take a moment to boot up.

3. The LED "heartbeat" will begin flashing. This is the verification that power has been correctly brought to the Nexus.

Appendix II - Discovery Mode

Discovery Mode is used to enable the Nexus to discover attached devices, report the addresses of discovered devices, and save the configuration in the Nexus memory.

Discovery Mode is also used after enabling Contact Closure Switches, installation of any new devices to the system, or after the initial powering up of the Nexus.

Use the following steps to correctly utilize Discovery Mode.

1. Turn ON Option DIP Switch #7.

2. Press the Discovery/Clear button for one second. The Nexus "heartbeat" will turn OFF.
    The communication LED next to the Firing Card port will turn on. Allow several seconds to complete the discovery of all connected input and output devices.

3. Discovered input addresses will light up the corresponding LED in the STATION section on the programming interface. Verify that all inputs are discovered at the correct address.

4. Discovered output addresses will light up the corresponding LED in the BOARD section on the programming interface. Verify that all outputs are discovered at the correct address.

5. To exit Discovery Mode, turn OFF Option DIP Switch #7. All the LEDs will turn OFF and the Nexus "heartbeat" will flash. This will save the discovered configuration.

Appendix III - Clearing the Programming

Use the clearing the programming diagram to clear the programming on the Nexus. This clearing will not clear out certain configuration parameters, such as the baud rate(s).

1. Press and hold the 'STATION' button. After a few seconds, the LEDs in the 'STATION', 'INPUT', 'BOARD', and 'OUTPUT' columns will light up.

2. As the 'STATION' button is held, the column LEDs will light in sequence, starting at the bottom and move towards the top. After the top LEDs light up, all of the LEDs will clear and this indicates that the programming is cleared.

3. Release the 'STATION' button.

Appendix IV - Programming Interface Explanations

These explanations will help to understand each section of the Interface and its definition.

Section	Number	Definition
Station	1	Address #1 on a control station, sensor, or bridge
	2	Address #2 on a control station, sensor, or bridge
	3	Address #3 on a control station, sensor, or bridge
	4	Address #4 on a control station, sensor, or bridge
	5	Address #5 on a control station, sensor, or bridge
	6	Address #6 on a control station, sensor, or bridge
	7	Address #7 on a control station, sensor, or bridge
	8	Address #8 on a control station, sensor, or bridge
	9	Address #9 on a control station, sensor, or bridge
	10	Address #10 on a control station, sensor, or bridge
	11	Address #11 on a control station, sensor, or bridge
	12	Address #12 on a control station, sensor, or bridge
	13	Address #13 on a control station, sensor, or bridge
	14	Address #14 on a control station, sensor, or bridge
	15	Address #15 on a control station, sensor, or bridge
	16	Address #16 on a control station, sensor, or bridge If Inputs are enabled, then it will correspond to the CCI Inputs
Input	1	Control Station button #1, Sensor button #1, or Bridge Input #1
	2	Control Station button #2, Sensor button #2, or Bridge Input #2
	3	Control Station button #3, Sensor button #3, or Bridge Input #3
	4	Control Station button #4, Sensor button #4, or Bridge Input #4
	5	Control Station button #5, Sensor button #5, or Bridge Input #5
	6	Control Station button #6, Sensor button #6, or Bridge Input #6
	7	Control Station button #7, Sensor button #7, or Bridge Input #7
	8	Control Station button #8, Sensor button #8, or Bridge Input #8
Board	1	Firing Card Address #1
	2	Firing Card Address #2
	3	Firing Card Address #3
	4	Firing Card Address #4
	5	Firing Card Address #5
	6	Firing Card Address #6
	7	Firing Card Address #7
	8	Firing Card Address #8
Output	1	Relay or Dimmer #1
	2	Relay or Dimmer #2
	3	Relay or Dimmer #3
	4	Relay or Dimmer #4
	5	Relay or Dimmer #5
	6	Relay or Dimmer #6

Appendix V - Programming Interface Explanations

Section	Item	Definition
Output (cont.)	7	Relay or Dimmer #7
	8	Relay or Dimmer #8
Relay Actions	None	No action will occur
	On	The load turns ON with a button press
	Off	The load turns OFF with a button press
	Cycle	Each button press cycles the load between ON and OFF
	MTN NO	The load is OFF during the button press
	MTN NC	The load is ON during the button press
	Blink OFF	If the lights are on, a button press will turn them off and then quickly turn them back on and the timer starts. If another button is not pressed, after the set time, the lights will go off.
	Auto OFF	If the lights are off, they will turn on. After the set time they will turn off. If the lights are on, they will stay on. After the set time, the lights will turn off.
Dimmer Actions	None	No action will occur
	Up	The load dims up as the button is held
	Down	The load dims down as the button is held
	Cycle	Each button press cycles the load between ON and OFF
	MTN NO	The load is OFF during the button press
	MTN NC	The load is ON during the button press
	To	The button press dims the light to the preset level
	Auto Off	If the lights are off, they will turn on. After the set time they will turn off. If the lights are on, they will stay on. After the set time, the lights will turn off.
Time	8 Hours	Used with Auto Off option; light will turn off after 8 hours
	4 Hours	Used with Auto Off option; light will turn off after 4 hours
	2 Hours	Used with Auto Off option; light will turn off after 2 hours
	1 Hour	Used with Auto Off option; light will turn off after 1 hour
	30 Mins	Used with Auto Off option; light will turn off after 30 minutes
	15 Mins	Used with Auto Off option; light will turn off after 15 minutes
	5 Mins	Used with Auto Off option; light will turn off after 5 minutes
	1 Min	Used with Auto Off option; light will turn off after 1 minute
Level	100%	The load will dim to 100% out of 100%
	90%	The load will dim to 90% out of 100%
	75%	The load will dim to 75% out of 100%
	50%	The load will dim to 50% out of 100%
	25%	The load will dim to 25% out of 100%
	5%	The load will dim to 5% out of 100%
	3%	The load will dim to 3% out of 100%
	0%	The load will dim to 0% out of 100%

Appendix VI - Option Dip Switches

The Option DIP Switches are used to set different functions. Use the following guide as to what each of the Option DIP Switches are used for.

Function	BACnet/ Standalone	#	1	2	3	4	5	6	7	8
No Function	N/A	1	--	--	--	--	--	--	--	--
No Function	N/A	2	--	--	--	--	--	--	--	--
Enables setting the MS/TP Baud Rates for communication with the BACnet MS/TP network and for communication with the Firing Card(s).	BACnet	3	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
Enables the auto creation of BI objects 1 - 128.	BACnet	4	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
Reads all the parameters from attached sensors and updates the sensor objects. If a remote is used to configure the sensor, the changes are not sent back to the Nexus automatically.	BACnet & Standalone	5	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
Runs the diagnostic All On/Off test. CCI1=All On;CCI2=All Off	BACnet & Standalone	6	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
Runs the Discover mode.	BACnet & Standalone	7	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
Performs normal clear/ factory reset operation.	BACnet & Standalone	7	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Contact Closure Switch Inputs are enabled and mapped to Station 16.	BACnet & Standalone	8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
Contact Closure Switch Inputs are disabled and Address #16 is recognized.	BACnet & Standalone	8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Troubleshooting Guide

If no response occurs when the system is powered up, use the following steps to identify the problem.

1. Look for the LED indicator to be blinking on the Nexus.

    a. For the indicator to be blinking, power has to be correctly brought to the system.
    b. If the LED indicator is not blinking, confirm power connections and then contact the factory for assistance.

If the communications LED does not stop flashing, the LEDs on the control stations, and/or output boards do not flash.

1. Verify that the wiring is correct.

2. Verify that all devices are connected to power.

3. Verify the baud rate on the Nexus.

Frequently Asked Questions

1. What if there is no response from the main controller?

    a. Verify that the MS/TP cable is correctly connected.
    b. Verify that there are not conflicts with the MS/TP MAC addresses. Each device on a MS/TP network must have unique MS/TP MAC address.
    c. Run the Device Discovery. Upon running this, verify that any communication is possible with the Nexus. If this is not the problem then contact Touch-Plate.

2. Why are the relays not able to be cycled from the front end controller?

    a. Verify that another controller does not have the relay locked out by using a higher priority.
    b. Verify that the relay output boards are properly communicating with the Nexus.

3. Are the Contact Closure Inputs dry contacts?

    a. Yes they are dry contacts. Common outputs are what put out voltage. The common output on the Nexus puts out +24V.

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Revision: 2.0a

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