Honeywell

Lighting Stryker BACnet™ CLB6438S Configurable Lighting Controller

INSTALLATION INSTRUCTIONS

⚠ WARNING
DO NOT CONNECT LINE VOLTAGE TO THIS DEVICE.
This is a low-voltage device designed to send low-voltage signals to relays for lighting control.

⚠ WARNING
ALWAYS KEEP LINE AND LOW VOLTAGE WIRES PHYSICALLY SEPARATED.

⚠ WARNING
This device is supplied by two sources of power.
Contact may cause electric shock or burn. Disconnect from power supply before servicing.

IMPORTANT

If either a TR75 and/or TR71 is installed in the system:

1. *TR75 needs to be set to address 3 on the rotary switch next to the TR75 terminal block.*
2. *TR71 needs to be set to address 4 on the rotary switch next to the TR71 terminal block.*

DESCRIPTION

The Lighting Stryker is a configurable direct digital controller designed for lighting control applications. The controller features pre-programmed control algorithms for lighting applications. It can be configured to match a wide range of lighting scenarios.

The Lighting Stryker is designed to work as a stand-alone lighting controller or to connect to a building control network through a BACnet MS/TP network. This provides many options and advanced system features that allow for state-of-the-art commercial lighting control. Each controller is configurable through the Zio (TR75) and/or through the BACnet network.

The Zio (TR71/75) Wall Modules are used in conjunction with the Lighting Stryker. Zio is an LCD Wall Module that communicates to the Lighting Stryker via a two-wire, polarity insensitive bus with the Honeywell Spyder and Stryker controller families. The TR75 can be used to configure the Lighting Stryker in “contractor mode” by pressing the Up and Down arrow keys and the top middle key all at the same time. After configuration, the TR75 or TR71 can be used as a Scene Selector for the end-user to change lighting scenes. The TR71 is used only as a Scene Selector, not for configuration.

For additional Lighting Stryker configuration instructions and updates – and tips to save energy with lighting controls – visit customer.honeywell.com and search for Lighting Stryker.

If desired, the installer can configure the Lighting Stryker with a TR75 Zio® and then remove the TR75 Zio® from the system. The Lighting Stryker can then manage the lighting by schedule, switches, occupancy sensors, photo sensors, and/or communications with the BACnet® network.

Lighting Stryker Functions

Circuit Control – CKT-1, CKT-2, CKT-3, CKT-4, CKT-5

The Lighting Stryker provides a low-voltage switching signal to line voltage relays. Relays used can be normally closed (NC) or normally open (NO). Relay type is set during configuration to “NC” or “NO” under the category “Relays,” parameter “Circuits.” The default setting is “NO” – Normally Open.

⚠ WARNING
DO NOT CONNECT LINE VOLTAGE CIRCUITS DIRECTLY TO THE LIGHTING STRYKER.

0–10v Dimming – DIM-1, DIM-2, DIM-3 Outputs

Voltage output to control fluorescent ballasts or LED drivers with 0-10v dimming control inputs. Many 0-10v dimming products do NOT turn fully “off”. To maximize energy savings by turning a 0-10v lighting fixture completely “off”, match DIM-1, DIM-2, DIM-3 dimming outputs to CKT-1, CKT-2, CKT-3 relay outputs for full-zero energy usage.

NOTE: If dimming does not seem to work, turn off all power and reverse the polarity of the dimming outputs.

NOTE: A 499 OHM resistor across DIM-1 & COM, DIM-2 & COM, DIM-3 & COM is required to deliver the full 0-10v dimming range.

62-0440-05

Motion Detection MOTN-1, MOTN-2

Two motion detector inputs to turn lights on when presence is detected in the lighting zone and turn lights off when vacancy is detected in the lighting zone. These inputs will operate with any motion/occupancy/vacancy or other sort of detector that provides a relay for contact closure. The Lighting Stryker default setting for occupancy detection relays is set to “NC” for “Normally Closed” relays. Change this setting in “Relays”, “Motion” to “NO” if using Normally Open relays.

Motion detector inputs are associated with each circuit. Parameters: “MOTION”, CIRCUIT#” – Select “1”, “2” or “NONE”

The Lighting Stryker will provide a warning flash when no motion is detected and the lights are about to turn off. If motion is detected after this flash, the motion timeout will double in length to improve tenant comfort in the case of a space that is occupied, but the occupant is not moving enough to set off the motion detector. To disable the warning feature, set the “WARNING”, “POSITION” parameter to 100% during configuration.

Emergency Override Switch – OVRD

Switching contact closure input that will turn all circuits to full on.

Switch – SWITCH

Switching contact closure that will toggle between two pre-set scenes. TR75 Parameters: “Switch”. “Off SCN”, “On SCN”

Photo Sensor – Photo

0-10v input to measure ambient light level for daylight harvesting. During configuration, the ambient light level can be set to a relative scale from 5-100 for each circuit. This can be disabled for any circuit by selecting “disb”. TR75 Parameters: “Photo”, “Circuit#”. If using the Honeywell/Lutron wired Daylight Sensor - ECDIRWH, a 5k OHM resistor is required to limit this sensor to a 10v input.

Sylk – S-BUS

Used to connect the Lighting Stryker to a TR75 Zio for configuration and lighting scene selection or to a TR71 Zio® for lighting scene selection only.

Scene Selection

When used with a TR75 or TR71, the Lighting Stryker will scroll through lighting scenes “ON”, “FULL” (Emergency Override), “OFF”, “SCN1”, “SCN2”, “SCN3”, “SCN4”, “SCN5”, these lighting scenes can be configured and customized by the installer to define circuits that are on/off for each lighting scene, dimming levels for each lighting scene and the standard scheduled scene for “Occupied”, “Standby” and “Unoccupied” modes.

Scheduling

The Lighting Stryker follows the standard building automation scheduling nomenclature of “Occupied”, “Standby” and “Unoccupied”. The installer configures the standard lighting scene for each of these events.

Example: A typical schedule may use “ON” during “Occupied” mode to have all circuits on 100% with no occupancy/vacancy detection; Scene 3 during “Standby” mode for after-hours cleaning time with two circuits at 50% and controlled by a motion detector; and “OFF” during “Unoccupied” mode.

Setting the system time and Occupied/Standby/Unoccupied event times are standard TR75 Zio settings. Refer to Honeywell document 63-2719 for detailed instructions on TR75 scheduling. Parameters: “SCD SCENES”, “OCCUPIED”/“STANDBY”/“UNOCC”

Select lighting scene.

LIGHTING STRYKER INPUTS AND OUTPUTS

1. 24VAC = Power Supply
2. 24VAC Com = Power Supply
3. EGND = Earth Ground - essential that this is connected for proper BACnet communications
4. SHLD = Capacitive coupling is caused by placing MS/TP cabling close to lines carrying higher voltage. The shield should be grounded on only one end of the MS/TP segment (typically the router end). Tie the shield through using the SHLD (terminal 4) on the Stryker. For BACnet communications cable shield with no internal connections use as termination point of shield on incoming and outgoing BACnet cable. See “Shield Terminating.”
5. S-BUS = Sylk Bus
6. S-BUS = Sylk Bus
7. BAC + = BACnet
8. BAC - = BACnet
9. CKT-1 = Circuit 1 – On/Off OR Match to DIM-1 for full-zero output of dimming control
10. CKT-2 = Circuit 2 – On/Off OR Match to DIM-2 for full-zero output of dimming control
11. COM = Common
12. CKT-3 = Circuit 3 – On/Off OR Match to DIM-3 for full-zero output of dimming control
13. CKT-4 = Circuit 4 – On/Off
14. COM = Common
15. CKT-5 = Circuit 5 – On/Off
16. Reserv1 = Not Used
17. COM = Common
18. Reserv2 = Not Used
19. Reserv3 = Not Used
20. COM = Common
21. DIM-1 = 0-10v output Dimming Control - Match to CKT-1 for full-zero output of dimming control. A 499 OHM resistor across DIM-1 and COM is required to deliver the full 0-10v dimming range.
22. COM = Common
23. DIM-2 = 0-10v output Dimming Control - Match to CKT-2 for full-zero output of dimming control. A 499 OHM resistor across DIM-2 and COM is required to deliver the full 0-10v dimming range.
24. DIM-3 = 0-10v output Dimming Control - Match to CKT-3 for full-zero output of dimming control. A 499 OHM resistor across DIM-3 and COM is required to deliver the full 0-10v dimming range.
25. COM = Common
26. MOTN-1 = Motion/Occupancy/Vacancy Sensor 1
27. MOTN-2 = Motion/Occupancy/Vacancy Sensor 2

28. COM = Common
29. OVRD = Emergency Override Switch
30. Switch = Low Voltage Switch to switch between on/off or selected scenes
31. 20VDC = 20 Volt DC Output
32. Photo = Photo sensor for daylight harvesting. (If using the Honeywell/Lutron wired Daylight Sensor - ECDIRWH, a 5k OHM resistor is required to limit this sensor to a 10v input.)
33. COM = Common
34. STS-1 = Not Used
35. STS-2 = Not Used
36. COM = Common
37. STS-3 = Not Used
38. STS-4 = Not Used
39. COM = Common
40. STS-5 = Not Used

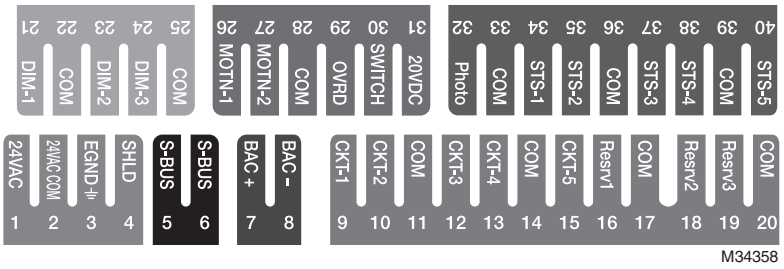

Fig. 1. Stryker inputs and outputs.

SPECIFICATIONS

General Specifications

Rated Voltage: 20–30 Vac; 50/60 Hz
Power Consumption:
100 VA for controller and all connected loads.
Controller Only Load: 5 VA maximum
External Sensors Power Output: 20 Vdc ±10% @ 75 mA maximum.
Operating & Storage Temperature Ambient Rating:
Minimum -40 ºF (-40 ºC); Maximum 150 ºF (65.5 ºC)
Relative Humidity: 5% to 95% non-condensing
LED: Provides status for normal operation, controller download process, alarms, manual mode, and error conditions

BEFORE INSTALLATION

Review all power, input, and output specifications in this guide before installing the controller.

— Lighting relays driven by Triac outputs (CKT) must have a minimum current draw, when energized, of 25 mA and a maximum current draw of 500 mA.
— Hardware driven by the analog outputs (DIM) with a maximum resistance of 550 Ohms will cause the analog output to operate in current mode. If resistance exceeds 550 Ohms, analog outputs will operate in voltage mode. A 499 OHM resistor across each analog (DIM) output and Common (COM) will cause the analog output to operate in voltage mode.
— CKT outputs are designed to drive external line voltage relays.
— DIM outputs are designed to drive 0-10v dimming inputs to dimming ballasts and LED drivers.

⚠ WARNING

Electrical Shock Hazard. Can cause severe injury, death or property damage.
Disconnect power supply before beginning wiring or making wiring connections to prevent electrical shock or equipment damage.

INSTALLATION

The controller must be mounted in a position that allows clearance for wiring, servicing, removal, connectors, and access to the MS/TP MAC address DIP switches. The controller may be mounted in any orientation.

IMPORTANT

Avoid mounting in areas where acid fumes or other deteriorating vapors can attack the metal parts of the controller, or in areas where escaping gas or other explosive vapors are present.

Wiring

All wiring must comply with applicable electrical codes and ordinances, or as specified on installation wiring diagrams. Controller wiring is terminated to the screw terminal blocks located on the top and the bottom of the device.

Disconnect power supply before beginning wiring or making wiring connections, to prevent electrical shock or equipment damage.

A note on dimming outputs: If dimming does not seem to work, turn off all power and reverse the polarity of the dimming outputs. A 499 OHM resistor across DIM-1 & COM, DIM-2 & COM, DIM-3 & COM is required to deliver the full 0-10v dimming range.

NOTES:

- For multiple controllers operating from a single transformer, the same side of the transformer secondary must be connected to the same power input terminal in each controller. Controller configurations will not necessarily be limited to three devices, but the total power draw, including accessories, cannot exceed 100 VA when powered by the same transformer (U.S. only). The earth ground terminal (terminal 3) must be connected to a verified earth ground for each controller in the group.
- Keep the earth ground connection (terminal 3) wire run as short as possible. Use 14 gauge wire.
- Do not connect input/output terminals to earth ground. The 24 Vac power from an energy limited Class II power source must be provided to the controller. To conform to Class II restrictions (U.S. only), the transformer must not be larger than 100 VA.
- Keep line and low voltage wires physically separate.

IMPORTANT

Power must be off prior to connecting to or removing connections.

IMPORTANT

Use the heaviest gauge wire available, up to 14 AWG (2.0 sq mm), with a minimum of 18 AWG (1.0 sq mm), for all power and earth ground wiring. Screw-type terminal blocks are designed to accept up to one 14 AWG (2.0 sq mm) conductor or up to two 18 AWG (1.0 sq mm) conductors. More than two wires that are 18 AWG (2.0 sq mm) can be connected with a wire nut. Include a pigtail with this wire group and attach the pigtail to the terminal block.

IMPORTANT

Connect terminal 2, (the 24 Vac common [24 VAC COM] terminal) to earth ground.

Communications

Each controller uses a BACnet MS/TP communications port. The controller's data is presented to other controllers over a twisted-pair MS/TP network, which uses the EIA-485 signaling standard capable of the following baud rates: 9.6, 19.2, 38.4, 76.8 or 115.2 Kilobits per second (configured at global controller). The Lighting Stryker will listen to the network and "AutoBaud" and begin communicating on the first baud rate it hears. In some instances, this may require the global controller to power on before the Lighting Stryker for initial communications. In the event of power outage, the Lighting Stryker is designed to continue communicating on its last baud rate. The Stryker BACnet controllers are master devices on the MS/TP network. Each Stryker BACnet controller uses a high-quality EIA-485 transceiver and exerts 1/4 unit load on the MS/TP network.

Cabling should be selected that meets or exceeds the BACnet Standard which specifies the following: An MS/TP EIA-485 network shall use shielded, twisted-pair cable with characteristic impedance between 100 and 130 ohms. Distributed capacitance between conductors shall be less than 100 pF per meter (30 pF per foot). Distributed capacitance between conductors and shield shall be less that 200 pF per meter (60 pF per foot). Foil or braided shields are acceptable. The Honeywell tested and recommended MS/TP cable is Honeywell Cable 3322 (18 AWG, 1-Pair, Shielded, Plenum cable), alternatively Honeywell Cable 3251 (22 AWG, 1-Pair, Shielded, Plenum cable) is available and meets the BACnet Standard requirements (www.honeywellcable.com). The maximum BACnet MS/TP network Bus segment length is 4,000 ft. (1,071 m) using recommended wire. Repeaters must be used when making runs longer than 4,000 ft. (1,071 m). A maximum of three repeaters can be used between any two devices. Signal grounds must be grounded to the same source as EGND Terminal 3.

Setting the MS/TP MAC address

The MS/TP MAC address for each device must be set to a unique value in the range of 0-127 on an MS/TP network segment (address 0, 1, 2, & 3 should be avoided as they are commonly used for the router, diagnostic tools, and as spare addresses). DIP switches on the Stryker BACnet controller are used to set the controller's MAC address.

To set the MS/TP MAC address of a Stryker BACnet controller:

1. Find an unused MAC address on the MS/TP network to which the Stryker BACnet controller connects.
2. Locate the DIP switch bank on the Stryker BACnet for addressing. This is labeled MAC Address
3. Values of DIP switches are 1=1, 2=2, 3=4, 4=8, 5=16, 6=32, 7=64
4. With the Stryker BACnet Controller powered down, set the DIP switches for the MAC Address you want. Add the value of DIP switches set to ON to determine the MAC address. Example, if only DIP switches 1, 3, 5, and 7 are enabled the MAC address would be 85 (1 + 4 + 16 + 64 = 85).

MS/TP Service Connector Pins

Local device BACnet MS/TP network connection is provided via the molex connector pins (0.100-in molex connector - part no. 22-01-2035).

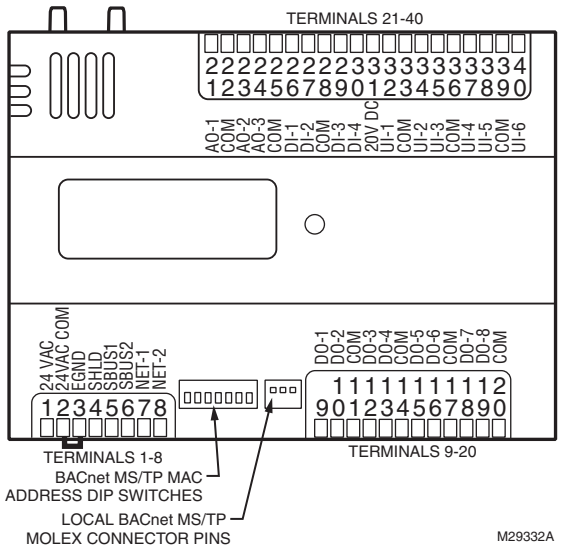

Fig. 2. Controller Terminal Connections, MS/TP MAC address DIP switches, MS/TP service connector pins, and BACnet Status LED (PVB6438NS shown).

Setting the Device Instance Number

The Device Instance Number must be unique across the entire BACnet system network because it is used to uniquely identify the BACnet devices. It may be used to conveniently identify the BACnet device from other devices during installation. The Stryker BACnet Controllers Device Instance Number is automatically set when it is added to a WEBStation-AX project. The Device Instance Number can be changed by the user, which may be necessary when integrating with a third party or when attempting to replace an existing controller and it is desired to maintain the existing Device Instance Number.

To edit the Device Instance Number using WEBs AX:

1. Identify an unused Device Instance Number on the BACnet Network, in the range of 0 - 4194302.
2. Open the Stryker BACnet Device Mgr View
   a. Double click on the BACnet Network located in the Nav tree.
   b. Select the Stryker Controller to be modified.
   c. Click on the Edit button.
   d. Enter an unused value in the Device Id field.
   e. Select OK
3. Right Click on the Stryker Controller and select Actions > Write Device Instance to complete the update

Termination Resistors

Matched terminating resistors are required at each end of a segment bus wired across (+) and (-). Use matched precision resistors rated 1/4W ±1% / 80 - 130 Ohms. Ideally, the value of the terminating resistors should match the rated characteristic impedance of the installed cable. For example, if the installed MS/TP cable has a listed characteristic impedance of 120 Ohm, install 120 Ohm matched precision resistors.

Shield Terminating

Following proper MS/TP cabling shield grounding procedures is important to minimize the risk of communication problems and equipment damage caused by capacitive coupling.

Wiring Method

⚠ WARNING

Electrical Shock Hazard. Can cause severe injury, death or property damage.
Disconnect power supply before beginning wiring, or making wiring connections, to prevent electrical shock or equipment damage.

NOTE: When attaching two or more wires to the same terminal, other than 14 AWG (2.0 sq mm), be sure to twist them together. Deviation from this rule can result in improper electrical contact.

Capacitive coupling is caused by placing MS/TP cabling close to lines carrying higher voltage. The shield should be grounded on only one end of the MS/TP segment (typically the router end). Tie the shield through using the SHLD (terminal 4) on the Stryker BACnet Controller. Terminal 4 SHLD has no internal connection within the Lighting Stryker. It is used only as a connection point to land the shield wires at each unit. An earth ground connection is required at one end.

Sylk™ Bus

Sylk is a two wire, polarity insensitive bus that provides both 18 VDC power and communications between a Sylk-enabled sensor and a Sylk-enabled controller. Using Sylk-enabled sensors saves I/O on the controller and is faster and easier to install since only two wires are needed and the bus is polarity insensitive. The Sylk Bus is used to connect the Lighting Stryker to a TR75 Zio for configuration and lighting scene selection or to a TR71 for lighting scene selection only.

— Maximum wiring distance between Lighting Stryker and Sylk Bus devices is 200 feet

Each terminal can accommodate the following gauges of wire:

— Single wire: from 22 AWG to 14 AWG solid or stranded
— Multiple wires: up to two 18 AWG stranded, with 1/4 watt wire-wound resistor
— Maximum 18 AWG wire should be used when connecting to TR75, TR71 or other Zio device.

Prepare wiring for the terminal blocks, as follows:

1. Strip 1/2 in. (13 mm) insulation from the conductor.
2. Cut a single wire to 3/16 in. (5 mm). Insert the wire in the required terminal location and tighten the screw.
3. If two or more wires are being inserted into one terminal location, twist the wires together a minimum of three turns before inserting them.
4. Cut the twisted end of the wires to 3/16 in. (5 mm) before inserting them into the terminal and tightening the screw.
5. Pull on each wire in all terminals to check for good mechanical connection.

Photo Sensor

If using the Honeywell/Lutron wired Daylight Sensor - ECDIRWH, a 5k OHM resistor is required to limit this sensor to a 10v input.

TR75 and TR71

If either a TR75 and/or TR71 is installed in the system:

1. TR75 needs to be set to address 3 on the rotary switch next to the TR75 terminal block.
2. TR71 needs to be set to address 4 on the rotary switch next to the TR71 terminal block.

Controller Replacement (CLB6438S)

Perform the following to replace the CLB6438S controller:

1. Remove all power from the controller.
2. Remove the terminal blocks.
3. Remove the old controller from its mounting.

IMPORTANT

(FOR CONTROLLERS MOUNTED TO A DIN RAIL):
1. Push straight up from the bottom to release the top pins.
2. Rotate the top of the controller outwards to release the bottom flex connectors.

4. Set DIP switches to match the old controller.
5. Mount the new controller (See “Installation” on page 2.).

6. Replace the terminal blocks:
   - Insert each terminal block onto its alignment pins.
   - Press straight down to firmly seat it.
   - Repeat for each terminal block.
7. Restore power to the controller.
8. The Lighting Stryker is pre-programmed for Lighting Controls. It is configurable through a Honeywell TR75 Zio.

OPERATING THE TR75 ZIO WALL MODULE

There are two modes of operation:

- Contractor mode provides features a contractor or facility manager would use to configure the Lighting Stryker settings for Lighting Scenes, switching, motion detector setup, motion detector timeouts, daylight harvesting, demand response, relay settings, time, date, smart scheduling and other lighting controls parameters.
- Scene Selection mode allows the tenant to scroll through the lighting scenes configured in Contractor mode. “View More” in this mode allows the tenant to view, not edit the configuration settings of the Lighting Stryker, but only lighting scenes can be changed in this mode.

Contractor Mode (Entering and Exiting)

Contractor mode allows access to the Setup function of the wall module.

To enter and exit the Setup function - Press the Up and Down arrow keys and the middle top key all at the same time. The TR75 will display the revision and model before going to the next screen. TR75 should be version 5.16 or later. TR71 should be version 4.16 or later.

“Set Home Screen” allows the contractor to set the standard view in Scene Selection Mode. It is recommended that this be set in the “Lighting” mode to avoid tenant confusion.

“Set View More” - It is recommended to keep all settings at “NO”

“Parameters” allows the contractor to configure the Lighting Stryker lighting control settings.

“Next” allows the contractor to move through the lighting control Categories in the following chart.

“Edit” allows the contractor to change the Parameters within each Category with the Up and Down arrow keys

“Next” moves to the next Parameter within that Category

“Done” saves any changes and moves back into the Category

“Done” again moves to the initial Contractor Mode screen.

To exit the Setup function and save changes - Press the Up and Down arrow keys and the middle top key all at the same time. The TR75 will revert back to Scene Selection mode.

The Lighting Stryker is pre-programmed with standard defaults in order to make the device as “plug and play” as possible.

A note on occupancy detection relays: The Lighting Stryker default setting for occupancy detection relays is set to “NC” for “Normally Closed” relays. Change this setting in “Relays”, “Motion” to “NO” if using Normally Open relays.

A note on line voltage relays: The Lighting Stryker default setting for line voltage relays is set to “NO” for “Normally Open” relays. Change this setting in “Relays”, “Circuits” to “NC” if using Normally Closed relays.

Table 1. Lighting Stryker TR75 and BACnet Configuration Chart.

Lighting Stryker TR75 Configuration					
Category					
“Next” Button	**“Edit” Button**	**Parameter**	**Meaning**	**Default**	**BACnet Object Name**
On Scn	Timeout	Timeout	The length of time, in minutes, after which the lights will be turned-off when no motion is sensed when the “On” scene is in use.	30 min	AV_OnSceneOffDly

Table 1. Lighting Stryker TR75 and BACnet Configuration Chart. (Continued)

Lighting Stryker TR75 Configuration			Meaning	Default	BACnet Object Name
Category					
"Next" Button	"Edit" Button	Parameter			
Scene 1	Circuit 1	Circuit 1	The level circuit 1 should be set to when "Scene 1" is in use. For non-dimming circuits, any value above 0% will cause the relay to turn on.	100%	AV_Sc1Ckt1Level
		Circuit 2	The level circuit 2 should be set to when "Scene 1" is in use. For non-dimming circuits, any value above 0% will cause the relay to turn on.	100%	AV_Sc1Ckt2Level
		Circuit 3	The level circuit 3 should be set to when "Scene 1" is in use. For non-dimming circuits, any value above 0% will cause the relay to turn on.	100%	AV_Sc1Ckt3Level
		Circuit 4	The level this circuit should be set to when this scene is in use. This circuit does not support dimming and can only be set to "Yes" or "No".	Yes	AV_Sc1Ckt4Level
		Circuit 5	The level this circuit should be set to when this scene is in use. This circuit does not support dimming and can only be set to "Yes" or "No".	Yes	AV_Sc1Ckt5Level
		Timeout	The length of time, in minutes, after which the lights will be turned-off when no motion is sensed when "Scene 1" is in use.	10 min	AV_Scene1OffDly
Scene 2	Circuit 1	Circuit 1	See the description for "Circuit 1" in category "Scene 1".	100%	AV_Sc2Ckt1Level
		Circuit 2	See the description for "Circuit 2" in category "Scene 1".	100%	AV_Sc2Ckt2Level
		Circuit 3	See the description for "Circuit 3" in category "Scene 1".	100%	AV_Sc2Ckt3Level
		Circuit 4	See the description for "Circuit 4" in category "Scene 1".	Yes	AV_Sc2Ckt4Level
		Circuit 5	See the description for "Circuit 5" in category "Scene 1".	Yes	AV_Sc2Ckt5Level
		Timeout	See the description for "Timeout" in category "Scene 1".	10 min	AV_Scene2OffDly
Scene 3	Circuit 1	Circuit 1	See the description for "Circuit 1" in category "Scene 1".	100%	AV_Sc3Ckt1Level
		Circuit 2	See the description for "Circuit 2" in category "Scene 1".	0%	AV_Sc3Ckt2Level
		Circuit 3	See the description for "Circuit 3" in category "Scene 1".	100%	AV_Sc3Ckt3Level
		Circuit 4	See the description for "Circuit 4" in category "Scene 1".	No	AV_Sc3Ckt4Level
		Circuit 5	See the description for "Circuit 5" in category "Scene 1".	Yes	AV_Sc3Ckt5Level
		Timeout	See the description for "Timeout" in category "Scene 1".	10 min	AV_Scene3OffDly

Table 1. Lighting Stryker TR75 and BACnet Configuration Chart. (Continued)

Lighting Stryker TR75 Configuration					
Category					
"Next" Button	**"Edit" Button**	**Parameter**	**Meaning**	**Default**	**BACnet Object Name**
Scene 4	Circuit 1	Circuit 1	See the description for "Circuit 1" in category "Scene 1".	50%	AV_Sc4Ckt1Level
		Circuit 2	See the description for "Circuit 2" in category "Scene 1".	50%	AV_Sc4Ckt2Level
		Circuit 3	See the description for "Circuit 3" in category "Scene 1".	50%	AV_Sc4Ckt3Level
		Circuit 4	See the description for "Circuit 4" in category "Scene 1".	No	AV_Sc4Ckt4Level
		Circuit 5	See the description for "Circuit 5" in category "Scene 1".	No	AV_Sc4Ckt5Level
		Timeout	See the description for "Timeout" in category "Scene 1".	10 min	AV_Scene4OffDly
Scene 5	Circuit 1	Circuit 1	See the description for "Circuit 1" in category "Scene 1".	25%	AV_Sc5Ckt1Level
		Circuit 2	See the description for "Circuit 2" in category "Scene 1".	25%	AV_Sc5Ckt2Level
		Circuit 3	See the description for "Circuit 3" in category "Scene 1".	25%	AV_Sc5Ckt3Level
		Circuit 4	See the description for "Circuit 4" in category "Scene 1".	No	AV_Sc5Ckt4Level
		Circuit 5	See the description for "Circuit 5" in category "Scene 1".	No	AV_Sc5Ckt5Level
		Timeout	See the description for "Timeout" in category "Scene 1".	10 min	AV_Scene5OffDly
Timeouts	Maximum	Maximum	The maximum timeout for this Lighting Stryker. If the current timeout exceeds this value it will be capped at this length of time.	30 min	AV_MotnMaxT
Warning	Position	Position	The Lighting Stryker will provide a warning flash when no motion is detected and the lights are about to turn off. If motion is detected after this flash, the motion timeout will double in length to improve tenant comfort in the case of a space that is occupied, but the occupant is not moving enough to set off the motion detector. This setting is the position in the current timeout when the warning flash should occur. For example, using the default settings the warning flash will occur after 7.5 minutes of no motion for scene 1. To disable the warning feature, set this parameter to 100%.	75%	AV_FlashPosition
		Duration	This is the length of time, in seconds, for the warning flash.	1 sec	AV_FlashDuration
Switch	Off Scn	Off Scn	This is the scene that will be used when the wall switch is closed (i.e. the signal transitions from high to low).	Off (0)	AV_WallSwToOff
		On Scn	This is the scene that will be used when the wall switch is opened (i.e. the signal transitions from low to high).	On (6)	AV_WallSwToOn

Table 1. Lighting Stryker TR75 and BACnet Configuration Chart. (Continued)

Lighting Stryker TR75 Configuration			Meaning	Default	BACnet Object Name
Category					
"Next" Button	"Edit" Button	Parameter			
Motion	Circuit 1	Circuit 1	Defines which motion sensor, if either, is used for the timeout for this circuit. If this is set to "None" this circuit will not timeout.	1	AV_Ckt1MotionSen
		Circuit 2	See "Circuit 1" description in this category.	1	AV_Ckt2MotionSen
		Circuit 3	See "Circuit 1" description in this category.	1	AV_Ckt3MotionSen
		Circuit 4	See "Circuit 1" description in this category.	1	AV_Ckt4MotionSen
		Circuit 5	See "Circuit 1" description in this category.	1	AV_Ckt5MotionSen
Photo	Circuit 1	Circuit 1	Defines the percentage input from the photo sensor when this circuit will be turned-off for daylight harvesting. If the light level from the photo sensor is greater than the level specified here, circuit 1 will be turned off. If this parameter is set to "Disb" the circuit will never be shut-off based on the photo sensor level.	Disb	AV_Ckt1Harvest
		Circuit 2	See "Circuit 1" description in this category.	Disb	AV_Ckt2Harvest
		Circuit 3	See "Circuit 1" description in this category.	Disb	AV_Ckt3Harvest
		Circuit 4	See "Circuit 1" description in this category.	Disb	AV_Ckt4Harvest
		Circuit 5	See "Circuit 1" description in this category.	Disb	AV_Ckt5Harvest
Demand	Level	Level	Defines the percentage of reduction that should be applied to all circuits. This is typically used to reduce the lighting power cost during peak usage periods when variable power pricing is used.	0%	AV_LoadShedPct
Advanced	MinTrans	MinTrans	This is the minimum transition time between photo sensor changing state.	15	AV_PhotoTranTime
		Hyst	This is the hysteresis between photo sensor transitions.	0.01	AV_PhotoHystrsis
Metrics	Reset C1	Reset C1	Resets the lighting metrics for circuit 1.	Run	BV_CktlReset
		Reset C2	See "Circuit 1" description in this category.	Run	BV_Ckt2Reset
		Reset C3	See "Circuit 1" description in this category.	Run	BV_Ckt3Reset
		Reset C4	See "Circuit 1" description in this category.	Run	BV_Ckt4Reset
		Reset C5	See "Circuit 1" description in this category.	Run	BV_Ckt5Reset
		MS Reset	Reset the motion counter and multiplier for both motion sensors	Run	BV_ResetMotnCnt
Relays	Motion	Motion	Defines if the motion detectors use normally open or normally closed relays.	NC	BV_AllRelayType
		Circuits	Defines if the power relays are normally open or normally closed.	NO	BV_CktRelayType
Diags	Version	Version	Version of the application running in the Stryker	50	AV_AppVersion
		Reset	Master reset for the system	No	BV_Reset
		Photo	Current photo sensor reading	-	AI_Photocell

Table 1. Lighting Stryker TR75 and BACnet Configuration Chart. (Continued)

Lighting Stryker TR75 Configuration					
Category					
"Next" Button	**"Edit" Button**	**Parameter**	**Meaning**	**Default**	**BACnet Object Name**
Test	Circuit 1	Circuit 1	Will force "Circuit 1" to the defined lighting level. This will override any other setting. No other lighting control will affect the circuit unless this parameter is set to 0%.	Off	AV_Ckt1ManLevel
		Circuit 2	See "Circuit 1" description in this category.	Off	AV_Ckt2ManLevel
		Circuit 3	See "Circuit 1" description in this category.	Off	AV_Ckt3ManLevel
		Circuit 4	Will force "Circuit 4" on if this is set to "On". This will override any other setting. No other lighting control will affect the circuit unless this parameter is set to "Off".	Off	AV_Ckt4ManLevel
		Circuit 5	See "Circuit 4" description in this category.	Off	AV_Ckt5ManLevel
	NOTE: TEST MODE SETTINGS WILL OVERRIDE NORMAL OPERATION. SET TEST MODE CIRCUITS TO "OFF" WHEN TESTING IS COMPLETED.				
Display	Man Scn	Man Scn	The scene currently selected by the TR75	6	AV_TR71Scene and AV_TR75Scene
Time			Standard TR75 option	-	
Set Time	Hours	Hours	Standard TR75 option	-	
		Min	Standard TR75 option	-	
Set Date	Year	Year	Standard TR75 option	-	
		Month	Standard TR75 option	-	
		Day	Standard TR75 option	-	
Scd Scns	Occupied	Occupied	The scene that should be used when the schedule transitions to the "Occupied" state.	Scn1	AV_SchedOccScn
		Standby	The scene that should be used when the schedule transitions to the "Standby" state.	Scn2	AV_SchedStbyScn
		Unocc	The scene that should be used when the schedule transitions to the "Unoccupied" state.	Scn3	AV_SchedUnocScn
Schedule	Monday	Monday	Standard TR75 option	-	
		Tuesday	Standard TR75 option	-	
		Wednesday	Standard TR75 option	-	
		Thursday	Standard TR75 option	-	
		Friday	Standard TR75 option	-	
		Saturday	Standard TR75 option	-	
		Sunday	Standard TR75 option	-	
Lighting Stryker Additional BACnet Objects					

Table 1. Lighting Stryker TR75 and BACnet Configuration Chart. (Continued)

Lighting Stryker TR75 Configuration			Meaning	Default	BACnet Object Name
Category					
"Next" Button	"Edit" Button	Parameter			
Only available on the network			Network override to turn all circuits on 100% and disable the motion sensor timeout.	0	BV_AllCktsOn
			Current status of the wall switch	Open	BI_WallSwitch
			The status of the wired override input point.	-	BI_AllLightsOn
			The status of the wired input point for motion sensor 1.	-	BI_MotionSensor1
			The status of the wired input point for motion sensor 2.	-	BI_MotionSensor2
			The current schedule state of the Stryker.	-	AV_ScheduleState
			The scene that is currently being used by the Stryker.	-	AV_ActiveScene
			The base timeout currently in-use by the system. This does not account for the multiplier that is applied to each of the motion sensors due to motion during a warning period.	-	AV_MotnTimeOut
			This is a "1" until the timeout occurs for motion sensor 1, and then it will be "0".	-	BV_MotionSignal1
			This is a "1" until the timeout occurs for motion sensor 2, and then it will be "0".	-	BV_MotionSignal2
			The remaining timeout for motion sensor 1.	-	AV_Motion1Timer
			The remaining timeout for motion sensor 2.	-	AV_Motion2Timer
			This is the timeout multiplier for motion sensor 1. When AV_Motion1Timer reaches the warning level and then motion occurs prior to AV_Motion1Timer reaching zero, the multiplier is incremented by 1. When AV_Motion1Timer reaches 0, this multiplier is reset to 1.	-	AV_TimeoutMult1
			This is the timeout multiplier for motion sensor 2. When AV_Motion2Timer reaches the warning level and then motion occurs prior to AV_Motion2Timer reaching zero, the multiplier is incremented by 2. When AV_Motion2Timer reaches 0, this multiplier is reset to 2.	-	AV_TimeoutMult2
			This is the number of times the motion sensor 1 relay has cycled since the last MS_Reset or BV_ResetMotnCnt.	-	AV_Motion1Cnt
			This is the number of times the motion sensor 2 relay has cycled since the last MS_Reset or BV_ResetMotnCnt.	-	AV_Motion2Cnt
			This is the percentage output currently being used for circuit 1.	-	AV_DimmerC1
			This is the number of hours circuit 1 has been on since the last "Reset C1" or BV_CktlReset.	-	AV_Ckt1Hours
			Indicates if the relay for circuit 1 is open or closed.	-	BO_Relay_C1
			See "AV_DimmerC1"	-	AV_DimmerC2
			See "AV_Ckt1Hours"	-	AV_Ckt2Hours

Table 1. Lighting Stryker TR75 and BACnet Configuration Chart. (Continued)

Lighting Stryker TR75 Configuration			Meaning	Default	BACnet Object Name
Category					
"Next" Button	"Edit" Button	Parameter			
Only available on the network			See "BO_Relay_C1"	-	BO_Relay_C2
			See "AV_DimmerC1"	-	AV_DimmerC3
			See "AV_Ckt1Hours"	-	AV_Ckt3Hours
			See "BO_Relay_C1"	-	BO_Relay_C3
			See "AV_Ckt1Hours"	-	AV_Ckt4Hours
			See "BO_Relay_C1"	-	BO_Relay_C4
			See "AV_Ckt1Hours"	-	AV_Ckt5Hours
			See "BO_Relay_C1"	-	BO_Relay_C5

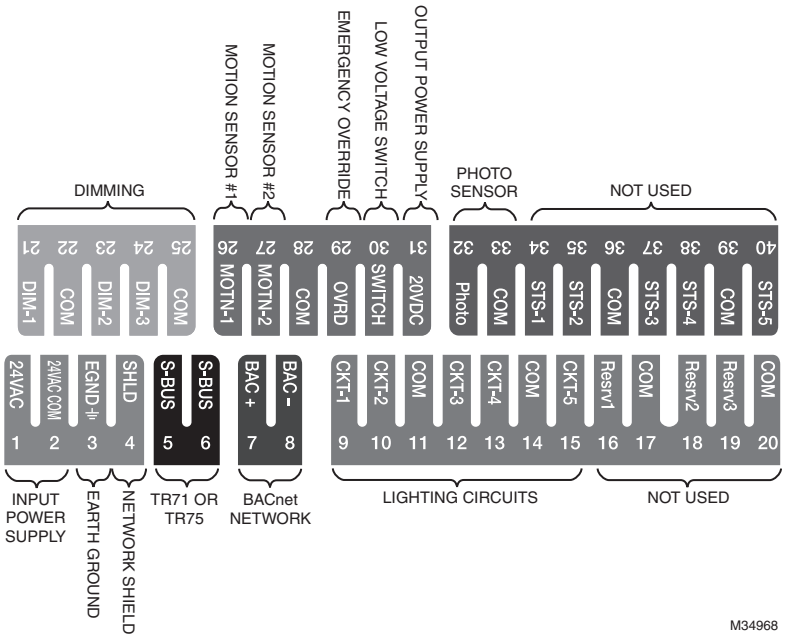

Fig. 3. Lighting Stryker Label Definitions.

BACnet Network Points

All the Lighting Stryker network points are easily accessible on BACnet network. The Lighting Stryker operates as a generic BACnet device.

Table 2. BACnet Hardware Points.

Sr. No.	Lighting Stryker Point Name	Description	IO's	Internal Data Type	ZIO point name	BACnet Network Points	
						Object Name	Instance Number
1	MotionSensor1	Motion Sensor-1 Occupancy Status Normally Open: (0=No Motion; 1=Motion Detected) Normally Close: (1=No Motion; 0=Motion Detected)	DI1	-	-	BI_MotionSensor1	1
2	MotionSensor2	Motion Sensor-2 Occupancy Status Normally Open: (0=No Motion; 1=Motion Detected) Normally Close: (1=No Motion; 0=Motion Detected)	DI2	-	-	BI_MotionSensor2	2
3	AllLightsOn	Manual Override Switch Status Digital Input Normally Close (1= Normal; 0 = Overridden)	DI3	-	-	BI_AllLightsOn	3
4	WallSwitch	Wall Switch Status (0 = Wall Switch Off Scene; 1 = Wall Switch On Scene)	DI4	-	-	BI_WallSwitch	4
5	Photocell	Daylight Photo Sensor Input Low-High: 0-10 Vdc Output Low-High: 0-100%	UI1	Percentage	TR75: Diags/ PHOTOCELL	AI_Photocell	1
6	Dimmer_C1	Circuit-1 Dim Level Input Low-High: 0-100% Output Low-High: 0-10Vdc	AO1	Percentage	-	AO_Dimmer_C1	1
7	Dimmer_C2	Circuit-2 Dim Level Input Low-High: 0-100% Output Low-High: 0-10Vdc	AO2	Percentage	-	AO_Dimmer_C2	2
8	Dimmer_C3	Circuit-3 Dim Level Input Low-High: 0-100% Output Low-High: 0-10Vdc	AO3	Percentage	-	AO_Dimmer_C3	3
9	Relay_C1	Circuit-1 ON/OFF Command Output Normally Open: 0=Off; 1=On Normally Close:1=Off; 0=On	DO1	-	-	BO_Relay_C1	1
10	Relay_C2	Circuit-2 ON/OFF Command Output Normally Open: 0=Off; 1=On Normally Close:1=Off; 0=On	DO2	-	-	BO_Relay_C2	2
11	Relay_C3	Circuit-3 ON/OFF Command Output Normally Open: 0=Off; 1=On Normally Close:1=Off; 0=On	DO3	-	-	BO_Relay_C3	3
12	Relay_C4	Circuit-4 ON/OFF Command Output Normally Open: 0=Off; 1=On Normally Close:1=Off; 0=On	DO4	-	-	BO_Relay_C4	4
13	Relay_C5	Circuit-5 ON/OFF Command Output Normally Open: 0=Off; 1=On Normally Close:1=Off; 0=On	DO5	-	-	BO_Relay_C5	5

Table 3. BACnet Software Points.

Sr. No.	Lighting Stryker Point Name	Description	Internal Data Type	ZIO point name	Default Value	Read/ Write	BACnet Network Points	
							Object Name	Instance Number
1	AppVersion	Version number of the Stryker application.	VAL-uint16	TR71: General/ VERSION TR75: Diags/ VERSION	-	R	AV_AppVersion	100
2	LoadShedPct	The energy reduction factor that should be applied to each circuit that is configured to support this feature. This is used to allow energy reduction during high-cost periods.	Percentage	TR75: Demand / LEVEL	0	W	AV_LoadShedPct	101
3	ScheduleState	Current Schedule State.	VAL-ubyte	TR75: Occupancy Status	-	R	AV_ScheduleState	102
4	ActiveScene	Actual Scene Currently selected	VAL-ubyte	TR71: General/ ACT SCN TR75: Display/ ACT SCN	-	R	AV_ActiveScene	103
5	TR75Scene	Manual Scene selection from TR75 ZIO wall module	VAL-ubyte	TR75: Display/ MAN SCN	6	W	AV_TR75Scene	104
6	TR71Scene	Manual Scene selection from TR71 ZIO wall module	VAL-ubyte	TR71: General/ MAN SCN	6	W	AV_TR71Scene	105
7	SchedOccScn	Scene Selection for Occupied Mode	VAL-ubyte	TR75: Scd_Scns/ OCCUPIED	1	W	AV_SchedOccScn	106
8	SchedStbyScn	Scene Selection for Standby Mode	VAL-ubyte	TR75: Scd_Scns/ STANDBY	2	W	AV_SchedStbyScn	107
9	SchedUnocScn	Scene Selection for Unoccupied Mode	VAL-ubyte	TR75: Scd_Scns/ UNOCC	3	W	AV_SchedUnocScn	108
10	WallSwToOff	Scene selection for the Wall Switch Off position	VAL-ubyte	TR75: Switch/ OFF SCN	0	W	AV_WallSwToOff	109
11	WallSwToOn	Scene selection for the Wall Switch On position	VAL-ubyte	TR75: Switch/ ON SCN	6	W	AV_WallSwToOn	110
12	PhotoHystrsis	Create a hysteresis band by applying the factor specified to the photo sensor value. This is to avoid toggling between ON/OFF when they are switched ON/OFF due to the circuits Harvest time.	VAL-float	TR75: Advanced/ HYST	0.01	W	AV_PhotoHystrsis	120
13	PhotoTranTime	Photo Sensor Minimum Transition Time in seconds by which all circuits will be kept ON/OFF when they are switched ON/OFF due to the circuits Harvest time.	Second	TR75: Advanced/ MINTRANS	15Sec	W	AV_PhotoTranTime	121

Table 3. BACnet Software Points. (Continued)

Sr. No.	Lighting Stryker Point Name	Description	Internal Data Type	ZIO point name	Default Value	Read/ Write	BACnet Network Points	
							Object Name	Instance Number
14	FlashPosition	How far from the start of the timeout should the warning flash occur in %. This is set either in Zio Module or through network.	Percentage	TR75: Warning/ POSITION	0.75	W	AV_FlashPosition	122
15	FlashDuration	How long the warning flash should be in Seconds	Second	TR75: Warning/ DURATION	1Sec	W	AV_FlashDuration	123
16	MotnTimeOut	The current base timeout, in minutes, the Stryker is using for all motion sensors	minutes	-	-	R	AV_MotnTimeOut	124
17	Motion1Timer	The remaining timeout until motion sensor 1 will transition to show there is no motion	minutes	-	-	R	AV_Motion1Timer	125
18	Motion2Timer	The remaining timeout until motion sensor 2 will transition to show there is no motion	minutes	-	-	R	AV_Motion2Timer	126
19	TimeoutMult1	Its counts the number of time motion is detected at Motion sensor 1 after the warning period for particular scene. It get reset to '0' when Scene changes.	VAL-uint16	-	-	R	AV_TimeoutMult1	127
20	TimeoutMult2	Its counts the number of time motion is detected at Motion sensor 2 after the warning period for particular scene. It get reset to '0' when Scene changes.	VAL-uint16	-	-	R	AV_TimeoutMult2	128
21	Motion1Cnt	The number of times motion has been detected for motion sensor 1 since the last controller reset	VAL-uint16	-	-	R	AV_Motion1Cnt	129
22	Motion2Cnt	The number of times motion has been detected for motion sensor 2 since the last controller reset	VAL-uint16	-	-	R	AV_Motion2Cnt	130
23	AllCktsOn	Flag indicating if the all circuits should be turned-on at 100% at highest priority with no other interlocks.	VAL-ubyte	-	0	W	BV_AllCktsOn	100
24	MotionSignal1	It is the signal indication held high until the timeout occurs for Motion Sensor 1.	VAL-ubyte	-	-	R	BV_MotionSignal1	102
25	MotionSignal2	It is the signal indication held high until the timeout occurs for Motion Sensor 2.	VAL-ubyte	-	-	R	BV_MotionSignal2	103
26	AllRelayType	Type of relay used in all motion/ occupancy sensors.	VAL-ubyte	TR75: Relays/ MOTION	1	W	BV_AllRelayType	104
27	CktRelayType	Type of relay used to control the lighting on each circuit	VAL-ubyte	TR75: Relays/ CIRCUITS	0	W	BV_CktRelayType	105
28	Reset	Reset for all controller logic (will not reset the metric counters for each circuit) Once flagged, Scene from TR75 will be selected.	VAL-ubyte	TR75: Diags/ RESET	0	W	BV_Reset	106

Table 3. BACnet Software Points. (Continued)

Sr. No.	Lighting Stryker Point Name	Description	Internal Data Type	ZIO point name	Default Value	Read/ Write	BACnet Network Points	
							Object Name	Instance Number
29	ResetMotnCnt	This will reset the Statistics of both motion sensors	VAL-ubyte	TR75: Metrics/ RESET MS	0	W	BV_ResetMotnCnt	107
30	MotnMaxT	Maximum timeout for either motion sensor. This is the maximum time the Scene off delay can be set for.	minutes	TR75: Timeouts/ MAXIMUM	30min	W	AV_MotnMaxT	135
31	OnSceneOffDly	The length of time (in minutes) where there is no motion before the “On” scene should be turned-off	minutes	TR75: On_Scn/ TIMEOUT	15min	W	AV_OnSceneOffDly	136
32	Scene1OffDly	The length of time (in minutes) where there is no motion before the “Scene 1" scene should be turned-off	minutes	TR75: Scene1/ TIMEOUT	10min	W	AV_Scene1OffDly	137
33	Scene2OffDly	The length of time (in minutes) where there is no motion before the “Scene 2" scene should be turned-off	minutes	TR75: Scene2/ TIMEOUT	2Min	W	AV_Scene2OffDly	138
34	Scene3OffDly	The length of time (in minutes) where there is no motion before the “Scene 3" scene should be turned-off	minutes	TR75: Scene3/ TIMEOUT	10Min	W	AV_Scene3OffDly	139
35	Scene4OffDly	The length of time (in minutes) where there is no motion before the “Scene4” scene should be turned-off	minutes	TR75: Scene4/ TIMEOUT	10Min	W	AV_Scene4OffDly	140
36	Scene5OffDly	The length of time (in minutes) where there is no motion before the “Scene 5" scene should be turned-off	minutes	TR75: Scene5/ TIMEOUT	10Min	W	AV_Scene5OffDly	141
37	Sc1Ckt1Level	The level of lighting for circuit 1 (dimmable) when scene 1 is used	Percentage	TR75: Scene1/ CIRCUIT1	100%	W	AV_Sc1Ckt1Level	151
38	Sc2Ckt1Level	The level of lighting for circuit 1 (dimmable) when scene 2 is used	Percentage	TR75: Scene2/ CIRCUIT1	100%	W	AV_Sc2Ckt1Level	152
39	Sc3Ckt1Level	The level of lighting for circuit 1 (dimmable) when scene 3 is used	Percentage	TR75: Scene3/ CIRCUIT1	100%	W	AV_Sc3Ckt1Level	153
40	Sc4Ckt1Level	The level of lighting for circuit 1 (dimmable) when scene 4 is used	Percentage	TR75: Scene4/ CIRCUIT1	50%	W	AV_Sc4Ckt1Level	154
41	Sc5Ckt1Level	The level of lighting for circuit 1 (dimmable) when scene5 is used	Percentage	TR75: Scene5/ CIRCUIT1	25%	W	AV_Sc5Ckt1Level	155
42	Ckt1Hours	The number of hours circuit 1 has been on since it's metrics were last reset	Hour	-	-	R	AV_Ckt1Hours	167
43	Ckt1MotionSen	To select motion sensor which should be used for circuit 1	VAL-ubyte	TR75: Motion/ CIRCUIT1	1	W	AV_Ckt1MotionSen	168

Table 3. BACnet Software Points. (Continued)

Sr. No.	Lighting Stryker Point Name	Description	Internal Data Type	ZIO point name	Default Value	Read/ Write	BACnet Network Points	
							Object Name	Instance Number
44	Ckt1ManLevel	Manual level set for circuit 1 (forces just this circuit to the specified level- primarily for diagnostics)	Percentage	TR75: Test/ CIRCUIT1	0%	W	AV_Ckt1ManLevel	169
45	Ckt1Harvest	The level of ambient light where circuit 1 should be turned-off. Also when Set to 100%, photosensor effect on circuit 1 should be turn off.	Percentage	TR75: Photo/ CIRCUIT1	100%	W	AV_Ckt1Harvest	170
46	Ckt1Flash	Flag indicating if circuit 1 should be flashed when the warning time in the timeout is reached	VAL-ubyte	TR75: Warning/ CIRCUIT1	1	W	BV_Ckt1Flash	161
47	Ckt1Reset	Flag indicating if the metrics for circuit 1 should be reset	VAL-ubyte	TR75: Metrics/ RESET C1	0	W	BV_Ckt1Reset	162
48	Sc1Ckt2Level	The level of lighting for circuit2 (dimmable) when scene 1 is used	Percentage	TR75: Scene1/ CIRCUIT2	100%	W	AV_Sc1Ckt2Level	171
49	Sc2Ckt2Level	The level of lighting for circuit 2(dimmable) when scene 2 is used	Percentage	TR75: Scene2/ CIRCUIT2	100%	W	AV_Sc2Ckt2Level	172
50	Sc3Ckt2Level	The level of lighting for circuit 2(dimmable) when scene 3 is used	Percentage	TR75: Scene3/ CIRCUIT2	0%	W	AV_Sc3Ckt2Level	173
51	Sc4Ckt2Level	The level of lighting for circuit 2 (dimmable) when scene 4 is used	Percentage	TR75: Scene4/ CIRCUIT2	50%	W	AV_Sc4Ckt2Level	174
52	Sc5Ckt2Level	The level of lighting for circuit 2 (dimmable) when scene5 is used	Percentage	TR75: Scene5/ CIRCUIT2	25%	W	AV_Sc5Ckt2Level	175
53	Ckt2Hours	The number of hours circuit 2 has been on since it's metrics were last reset	Hour	-	-	R	AV_Ckt2Hours	187
54	Ckt2MotionSen	To select motion sensor which should be used for circuit 2	VAL-ubyte	TR75: Motion/ CIRCUIT2	1	W	AV_Ckt2MotionSen	188
55	Ckt2ManLevel	Manual level set for circuit2 (forces just this circuit to the specified level- primarily for diagnostics)	Percentage	TR75: Test/ CIRCUIT2	0%	W	AV_Ckt2ManLevel	189
56	Ckt2Harvest	The level of ambient light where circuit 2 should be turned-off Also when Set to 100%, photosensor effect on circuit 2 should be turn off.	Percentage	TR75: Photo/ CIRCUIT2	100%	W	AV_Ckt2Harvest	190
57	Ckt2Flash	Flag indicating if circuit 2 should be flashed when the warning time in the timeout is reached	VAL-ubyte	TR75: Warning/ CIRCUIT2	0	W	BV_Ckt2Flash	181
58	Ckt2Reset	Flag indicating if the metrics for circuit 2 should be reset	VAL-ubyte	TR75: Metrics/ RESET C2	0	W	BV_Ckt2Reset	182
59	Sc1Ckt3Level	The level of lighting for circuit3 (dimmable) when scene 1 is used	Percentage	TR75: Scene1/ CIRCUIT3	100%	W	AV_Sc1Ckt3Level	191

Table 3. BACnet Software Points. (Continued)

Sr. No.	Lighting Stryker Point Name	Description	Internal Data Type	ZIO point name	Default Value	Read/ Write	BACnet Network Points	
							Object Name	Instance Number
60	Sc2Ckt3Level	The level of lighting for circuit 3 (dimmable) when scene 2 is used	Percentage	TR75: Scene2/ CIRCUIT3	100%	W	AV_Sc2Ckt3Level	192
61	Sc3Ckt3Level	The level of lighting for circuit 3 (dimmable) when scene 3 is used	Percentage	TR75: Scene3/ CIRCUIT3	100%	W	AV_Sc3Ckt3Level	193
62	Sc4Ckt3Level	The level of lighting for circuit 3(dimmable) when scene 4 is used	Percentage	TR75: Scene4/ CIRCUIT3	50%	W	AV_Sc4Ckt3Level	194
63	Sc5Ckt3Level	The level of lighting for circuit 3 (dimmable) when scene5 is used	Percentage	TR75: Scene5/ CIRCUIT3	25%	W	AV_Sc5Ckt3Level	195
64	Ckt3Hours	The number of hours circuit 3 has been on since it's metrics were last reset	Hour	-	-	R	AV_Ckt3Hours	207
65	Ckt3MotionSen	To select motion sensor which should be used for circuit 3	VAL-ubyte	TR75: Motion/ CIRCUIT3	1	W	AV_Ckt3MotionSen	208
66	Ckt3ManLevel	Manual level set for circuit3 (forces just this circuit to the specified level- primarily for diagnostics)	Percentage	TR75: Test/ CIRCUIT3	0%	W	AV_Ckt3ManLevel	209
67	Ckt3Harvest	The level of ambient light where circuit 3 should be turned-off. Also when Set to 100%, photosensor effect on circuit 3 should be turn off.	Percentage	TR75: Photo/ CIRCUIT3	100%	W	AV_Ckt3Harvest	210
68	Ckt3Flash	Flag indicating if circuit 3 should be flashed when the warning time in the timeout is reached	VAL-ubyte	TR75: Warning/ CIRCUIT3	0	W	BV_Ckt3Flash	201
69	Ckt3Reset	Flag indicating if the metrics for circuit 3 should be reset	VAL-ubyte	TR75: Metrics/ RESET C3	0	W	BV_Ckt3Reset	202
70	Sc1Ckt4Level	The level of lighting for circuit4 (dimmable) when scene 1 is used	Percentage	TR75: Scene1/ CIRCUIT4	1%	W	AV_Sc1Ckt4Level	211
71	Sc2Ckt4Level	The level of lighting for circuit 4 (dimmable) when scene 2 is used	Percentage	TR75: Scene2/ CIRCUIT4	1%	W	AV_Sc2Ckt4Level	212
72	Sc3Ckt4Level	The level of lighting for circuit 4(dimmable) when scene 3 is used	Percentage	TR75: Scene3/ CIRCUIT4	0%	W	AV_Sc3Ckt4Level	213
73	Sc4Ckt4Level	The level of lighting for circuit 4 (dimmable) when scene 4 is used	Percentage	TR75: Scene4/ CIRCUIT4	0%	W	AV_Sc4Ckt4Level	214
74	Sc5Ckt4Level	The level of lighting for circuit 4 (dimmable) when scene5 is used	Percentage	TR75: Scene5/ CIRCUIT4	0%	W	AV_Sc5Ckt4Level	215
75	Ckt4Hours	The number of hours circuit 4 has been on since it's metrics were last reset	Hour	-	-	R	AV_Ckt4Hours	227
76	Ckt4MotionSen	To select motion sensor which should be used for circuit 4	VAL-ubyte	TR75: Motion/ CIRCUIT4	1	W	AV_Ckt4MotionSen	228

Table 3. BACnet Software Points. (Continued)

Sr. No.	Lighting Stryker Point Name	Description	Internal Data Type	ZIO point name	Default Value	Read/ Write	BACnet Network Points	
							Object Name	Instance Number
77	Ckt4ManLevel	Manual level set for circuit4 (forces just this circuit to the specified level- primarily for diagnostics)	Percentage	TR75: Test/ CIRCUIT4	0%	W	AV_Ckt4ManLevel	229
78	Ckt4Harvest	The level of ambient light where circuit 4 should be turned-off. Also when Set to 100%, photosensor effect on circuit 4 should be turn off.	Percentage	TR75: Photo/ CIRCUIT4	100%	W	AV_Ckt4Harvest	230
79	Ckt4Flash	Flag indicating if circuit 2 should be flashed when the warning time in the timeout is reached	VAL-ubyte	TR75: Warning/ CIRCUIT4	0	W	BV_Ckt4Flash	221
80	Ckt4Reset	Flag indicating if the metrics for circuit 4 should be reset	VAL-ubyte	TR75: Metrics/ RESET C4	0	W	BV_Ckt4Reset	222
81	Sc1Ckt5Level	The level of lighting for circuit5 (dimmable) when scene 1 is used	Percentage	TR75: Scene1/ CIRCUIT5	1%	W	AV_Sc1Ckt5Level	231
82	Sc2Ckt5Level	The level of lighting for circuit 2(dimmable) when scene 2 is used	Percentage	TR75: Scene2/ CIRCUIT5	1%	W	AV_Sc2Ckt5Level	232
83	Sc3Ckt5Level	The level of lighting for circuit 5 (dimmable) when scene 3 is used	Percentage	TR75: Scene3/ CIRCUIT5	1%	W	AV_Sc3Ckt5Level	233
84	Sc4Ckt5Level	The level of lighting for circuit 5 (dimmable) when scene 4 is used	Percentage	TR75: Scene4/ CIRCUIT5	0%	W	AV_Sc4Ckt5Level	234
85	Sc5Ckt5Level	The level of lighting for circuit 5 (dimmable) when scene5 is used	Percentage	TR75: Scene5/ CIRCUIT5	0%	W	AV_Sc5Ckt5Level	235
86	Ckt5Hours	The number of hours circuit 5 has been on since it's metrics were last reset	Hour	-	-	R	AV_Ckt5Hours	247
87	Ckt5MotionSen	To select motion sensor which should be used for circuit 5	VAL-ubyte	TR75: Motion/ CIRCUIT5	1	W	AV_Ckt5MotionSen	248
88	Ckt5ManLevel	Manual level set for circuit5 (forces just this circuit to the specified level- primarily for diagnostics)	Percentage	TR75: Test/ CIRCUIT5	0%	W	AV_Ckt5ManLevel	249
89	Ckt5Harvest	The level of ambient light where circuit 5 should be turned-off. Also when Set to 100%, photosensor effect on circuit 5 should be turn off.	Percentage	TR75: Photo/ CIRCUIT5	100%	W	AV_Ckt5Harvest	250
90	Ckt5Flash	Flag indicating if circuit 5 should be flashed when the warning time in the timeout is reached	VAL-ubyte	TR75: Warning/ CIRCUIT5	0	W	BV_Ckt5Flash	241
91	Ckt5Reset	Flag indicating if the metrics for circuit 5 should be reset	VAL-ubyte	TR75: Metrics/ RESET C5	0	W	BV_Ckt5Reset	242

Wiring Diagram Example: Five (5) On/Off Circuits

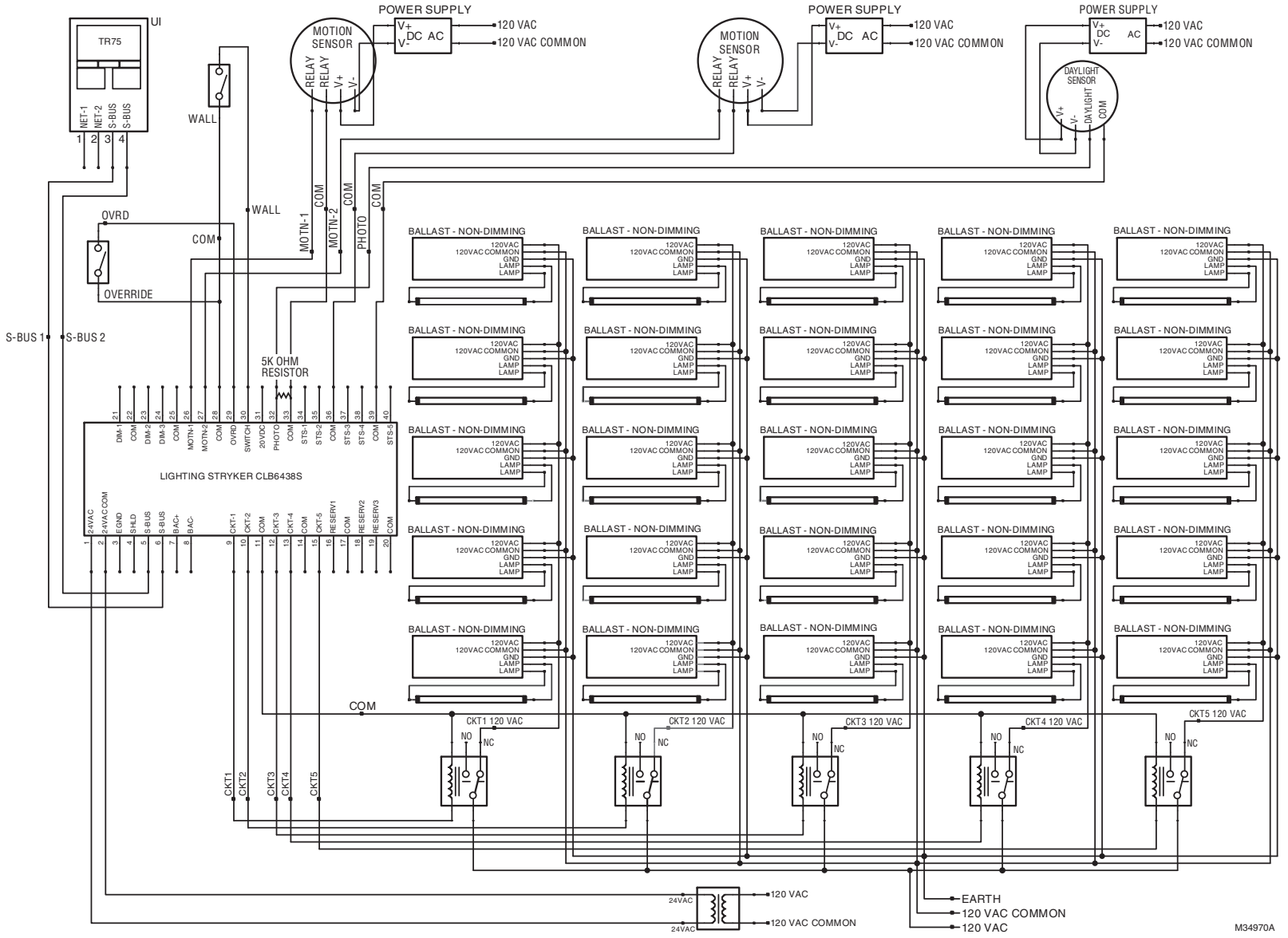

Fig. 4. Five On/Off Lighting Circuit Design.

NOTE:If using the Honeywell/Lutron wired Daylight Sensor - ECDIRWH, a 5k OHM resistor is required to limit this sensor to a 10v input.

Wiring Diagram Example: Three (3) 0-10v Dimming Circuits, Two (2) On/Off Circuits

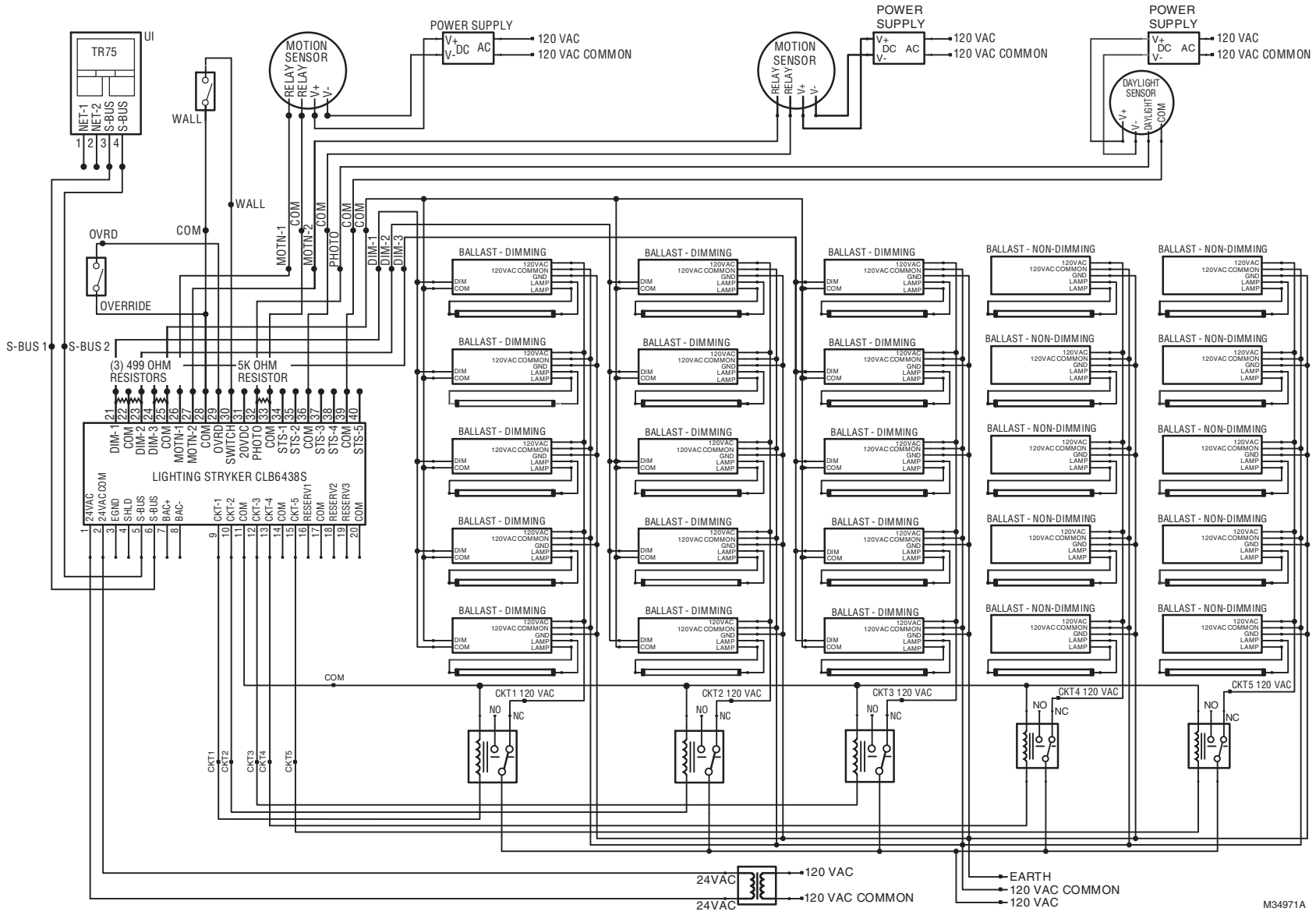

Fig. 5. Three Dimming and Two On/Off Lighting Circuits Example.

NOTE:A 499 OHM resistor across DIM-1 & COM, DIM-2 & COM, DIM-3 & COM is required to deliver the full 0-10v dimming range.

Controller Status LED:

The LED on the front of the controller provides a visual indication of the status of the device. When the controller receives power, the LED appears in one of the following allowable states, as described in Table 4.

Table 4. Status LED States.

LED State	Blink Rate	Status or Condition
OFF	Not applicable	No power to processor, LED damaged, low voltage to board, first second of power up or loader damaged.
ON	ON steady; not blinking	Processor not operating. Application Program CRC being checked. This takes 1-2 seconds and occurs on each restart (power up, reset and reflash, and following configuration file download).
Very Slow Blink (continuous)	1 second ON, 1 second OFF	Controller is operating normally
Slow Blink (continuous)	0.5 second ON, 0.5 second OFF	Controller alarm is active or controller in process of configuration file download.
Medium Blink (continuous)	0.3 second ON, 0.3 second OFF	Controller is in reflash mode or awaiting/ receiving reflash data via the BACnet network.

BACnet Status LED:

The LED on the front of the controller, between the BACnet MS/TP terminals and MAC Address DIP Switches, provides a visual indication of the BACnet MS/TP communication status. When the controller receives power, the LED appears in one of the following allowable states, as described in Table 5.

Table 5. BACnet Status LED States.

BACnet LED Status	Status or Condition
Solid on	Controller has power, loader is not running
Solid on, blinking off once in 2.5 sec.	Controller is in reflash mode, no MS/ TP communication.
Solid on, blinking off twice in 2.5 sec.	Controller is in reflash mode, MS/TP communication present.
Solid on, blinking off thrice in 2.5 sec.	Controller is in reflash mode, MS/TP communication data transfer in progress
Solid off, there is no power	No power to processor, LED damaged, low voltage to board, or loader damped
Solid off, blinking on once in 2.5 sec.	Controller is running, no MS/TP communication.
Solid off, blinking on twice in 2.5 sec.	Controller is running, MS/TP communication present.
Solid off, blinking on thrice in 2.5 sec.	Controller is running, MS/TP communication data transfer in progress.

Controller Replacement

There are no serviceable or repairable parts inside the controller.

TROUBLESHOOTING

Problem	Troubleshooting Steps
TR75 or TR71 will not communicate with Lighting Stryker or displays "Please Load" on the screen.	Ensure that TR75 is set on address 3 on the rotary switch next to the TR75 terminal block or the TR71 is set to address 4 on the rotary switch next to the TR71 terminal block.
Relays do not operate as expected	The Lighting Stryker default setting for occupancy detection relays is set to “NC” for “Normally Closed” relays. Change this setting in “Relays”, “Motion” to “NO” if using Normally Open relays.
Occupancy Sensor does not operate as expected	• Many occupancy sensors use a proprietary signal designed for closed lighting control systems. Ensure that occupancy Sensor has a relay output. • The Lighting Stryker default setting for line voltage relays is set to “NO” for “Normally Open” relays. Change this setting in “Relays,” “Circuits” to “NC” if using Normally Closed relays.
Lighting Stryker will not change lighting Scenes as expected	• Ensure that “Test” parameter category is set to “Off” for every circuit. • Ensure that Demand parameter category level is set to 0% for normal operation.
Dimming does not work as expected	• Ensure that dimming ballast or driver is 0-10v and AND NOT DALI or other dimming technology. • Power off systems and reverse polarity on DIM and Common inputs to Lighting Stryker.

NOTE: A 499 OHM resistor across DIM-1 & COM, DIM-2 & COM, DIM-3 & COM is required to deliver the full 0-10v dimming range.

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