NOTRAFFIC

# Installation Guide

A guide for traffic engineers, signal technicians, and contractors to install NoTraffic sensors and cabinet equipment.

Version 5.2
March 2024

## CONTENTS

| NoTraffic Definitions | |
|---|---|
| **Nexus** | The processor in the cabinet that interfaces with the controller. |
| **Sensor Unit (SU)** | The video/radar combined sensor with edge processing. |
| **Sensor Unit V2X (SU-V2X)** | The video/radar combined sensor that also contains a Roadside Unit (RSU) for C-V2X or DSRC connected vehicle applications. |
| **Main DIN Rail** | The standard NoTraffic DIN rail in the cabinet that houses the communications and power supply equipment |
| **Power DIN Rail** | An additional DIN Rail that is required when sensors are powered from the cabinet. It houses the power supply, circuit breakers and sensor web relay. |
| **Mobility Operating System (Mobility OS)** | The cloud-based software used to access video streams, draw detection zones, manage alerts, and view performance measures. |

## INTRODUCTION

NoTraffic has developed a hardware and software solution to manage traffic in real-time using a network of cloud-linked sensors deployed at intersections, corridors, or grid networks. Intersections may run in a detection mode, passive data collection mode, or optimization mode.

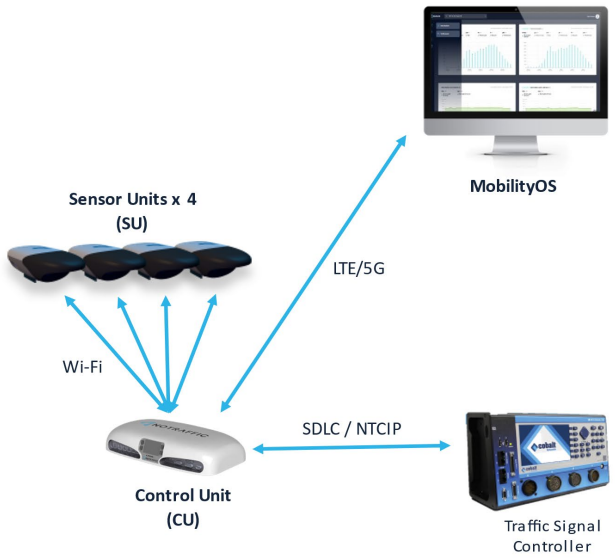
Our sensors are vendor agnostic when it comes to mounting hardware and will work with any existing infrastructure. The Sensor Units can communicate to our cabinet using Wi-Fi up to 270', or a CAT-5 connection if preferred. We have additional equipment (e.g., repeaters) to support further distances. Sensor Units can be powered via luminaires using a NEMA Tap, which doesn't require pulling cable to the cabinet. The sensor's fuse video & radar for object detection & classification, and one sensor unit at each intersection will have a built-in Road-Side Unit (RSU) for Connected Vehicle applications.

All sensors are connected to the cloud using LTE communications that are built into the solution, and accessed anywhere using our Mobility Operating System (MoS) application. MoS monitors the proper functioning of the traffic controller and will provide alerts if it detects abnormalities with the NoTraffic hardware or connected cabinet equipment. Typical alerts involve stalled vehicles, accidents, road work, or other items that do not allow traffic to flow correctly at the intersection.

The Nexus and DIN Rail are installed in the cabinet to provide power and communications across all the NoTraffic devices and with your current infrastructure.

Mobility OS also offers live viewing, detection zone creation and modification, data analytics, and a way to look at new applications for your intersections.

**Figure 1:** NoTraffic system Overview



## Modes of Operation

NoTraffic system can be run in three different modes of operations:

**Detection Mode:** In Detection mode, the NoTraffic sensors detect and classify all road users, and provide inputs to the traffic controller for signal operations. Data is sent to Mobility OS for performance measures. The intersection still operates using the timing and detector plans programmed in the traffic controller.

**Optimization Mode:** In Optimization Mode, NoTraffic uses AI to autonomously optimize traffic signal operations in real-time based on actual demand, and by predicting 2 minutes into the future. Rather than adhering to a fixed cycle or historical estimates, a predictive system changes, or adapts, based on actual traffic demand in real time. The software uses advanced AI algorithms to track and count vehicles, analyze incoming data, and respond appropriately regardless of intersection geometries or traffic demand changes.

**Passive Mode:** In Passive mode, the sensor collects data, but does not actuate the traffic signal. This is a typical application for a roundabout or pedestrian signal. The data from the sensors is still sent to the dashboard for accessing data and generating performance measures. Additionally, the sensors pass traffic demand information to downstream intersections if the corridor/grid is in Optimization mode.

## Sensor Unit Power & Mounting

The NoTraffic Sensor Units (SUs) communicate wirelessly to the cabinet equipment, and therefore can be installed at locations with a variety of power sources and mounting locations.

**Sensor Power Variations:** Sensor Units require 120VAC and use 3-conductor power cable between 14- & 18-gauge stranded copper cable. The 120VAC can be provided 2 different ways:

- **Cabinet Power & Power DIN Rail** – The Power DIN Rail is installed in the cabinet, and 3-conductor cable is run to each sensor. See Figure 2.
- **Luminaire Power & NEMA Tap** – A NEMA Tap is installed on a luminaire that contains a photocell and continuous 120VAC power. The NEMA tap has a 10’ 3-conductor whip to terminate at the sensor. See Figure 3.

**Figure 2:** Power diagram - Sensors powered from the cabinet using a Power DIN Rail.

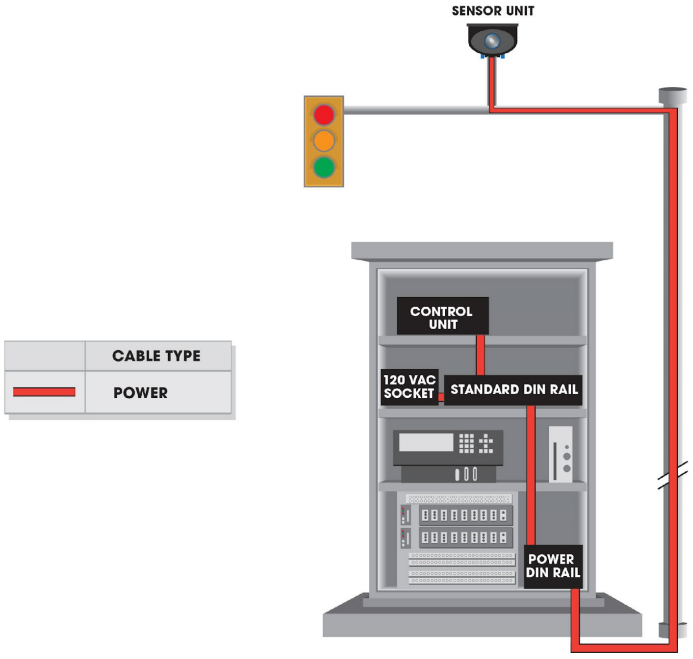
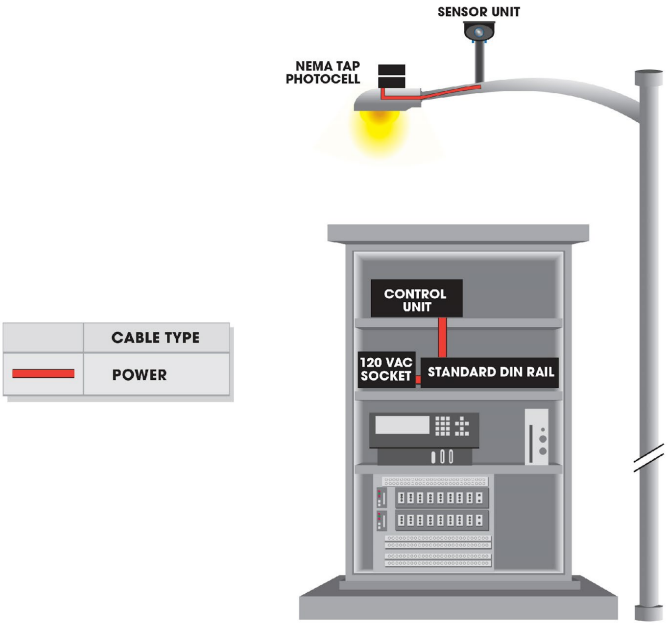



**Figure 3:** Power diagram - Sensors powered using the luminaire & NEMA Taps.

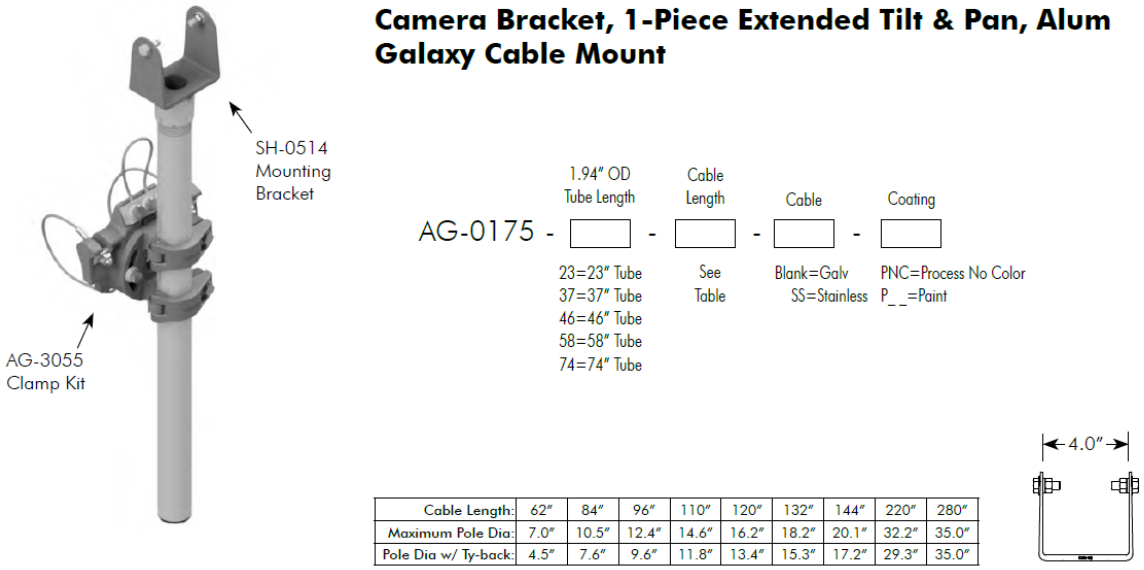


## SENSOR UNIT MOUNTING HARDWARE

**Sensor Unit Mounting:** Sensors can be mounted to mast arms or luminaires using standard detection camera mounting brackets. The following are recommended:

- **For Mast Arms:** A Pelco Astro-Brac with a SH-0514 mounting bracket, and a 6-foot riser tube. The clamp kit will vary by agency preference. Equivalent products from other vendors are acceptable; but ensure that the mounting yoke has the same width (4-inches) and bolt size.
- **For Luminaires:** The Iteris "Universal Camera Mount" MA/SOP-16 is recommended. Equivalent products from other vendors are acceptable.

**Figure 4:** Example mounting bracket - Pelco Astro-Brac




| Cable Length: | 62" | 84" | 96" | 110" | 120" | 132" | 144" | 220" | 280" |
|---|---|---|---|---|---|---|---|---|---|
| Maximum Pole Dia: | 7.0" | 10.5" | 12.4" | 14.6" | 16.2" | 18.2" | 20.1" | 32.2" | 35.0" |
| Pole Dia w/ Ty-back: | 4.5" | 7.6" | 9.6" | 11.8" | 13.4" | 15.3" | 17.2" | 29.3" | 35.0" |

Most standard detection camera mounting brackets are compatible but should be reviewed on a case-by-case basis. The yoke of the mounting bracket should be 4 inches wide.

## CABINET AND CONTROLLER COMPATIBILITY

NoTraffic is compatible with the following traffic cabinet equipment:

**Cabinet Equipment:**

- **Traffic Cabinets:** NEMA TS1, TS2-1 & TS2-2, 332 / Caltrans cabinets, and ATC cabinets.
- **Power:** NoTraffic requires one 120 VAC socket to power all cabinet equipment
- **Detection I/O:** SDLC (via SDLC bus, controller SDLC port, or 2070 module with SDLC port & a virtual BIU), or by terminating spades directly to the input file.
- **Traffic Light Status I/O:** NTCIP is used to read traffic light status and phase call information. SDLC can be used, but will only read traffic light status. For Caltrans TEES software, a C1 to C4 harness is used.
- **Optimization & ATSPM requirements:** NTCIP is required for intersections to run in optimization mode, or collect ATSPMs.

## SUPPORT

Technical support for troubleshooting is available 24/7/365 by phone or email. Certain restrictions and exclusions may apply. Please contact the support number 3-days in advance if you will be aiming sensors, or re-aiming existing sensors.

**Phone:** +1 202-800-1890

**Email:** support@notraffic.tech

## NoTraffic System Components

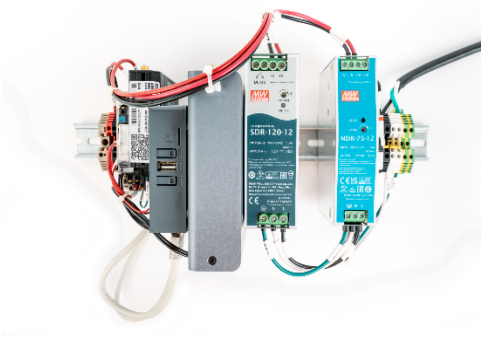
The following components are included with a NoTraffic Installation.

**Nexus**

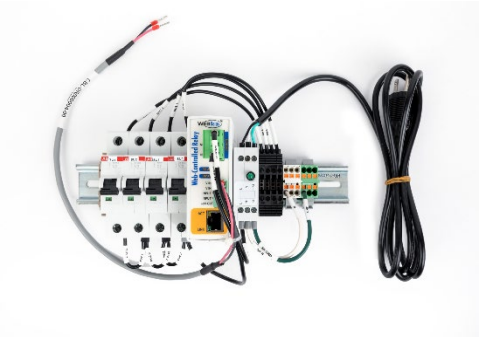

**Sensor Unit**

**Sensor Unit with CV Roadside Unit (SU-V2X)**

**Standard DIN Rail**



**Power DIN Rail (for cabinet-powered SUs only)**



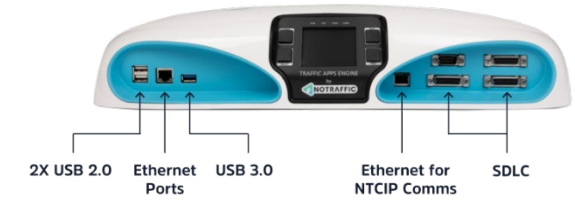
**Antenna**

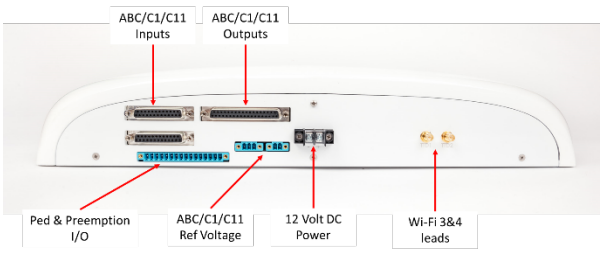
**NEMA Power Tap (luminaire-powered SUs only)**

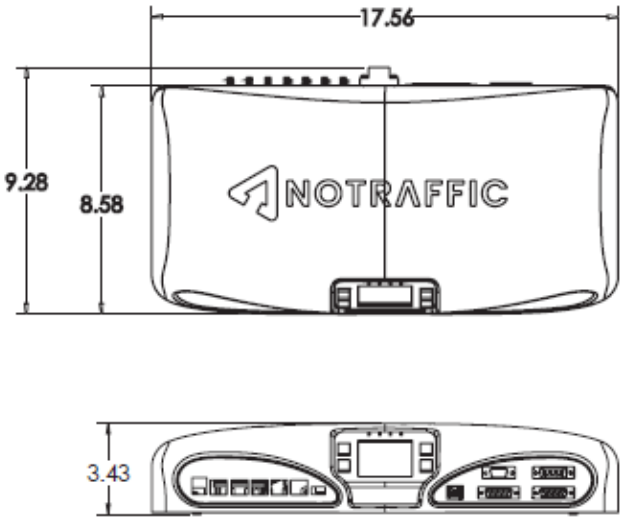
**SDLC Cable**

## NEXUS

The Nexus is the “processor” of the NoTraffic System. It receives the processed traffic demand data collected by the Sensor Unit(s) and is the Interface to the traffic controller. It places calls if in detection mode, reads traffic light status back from the controller, and places phase calls if running in optimization mode.



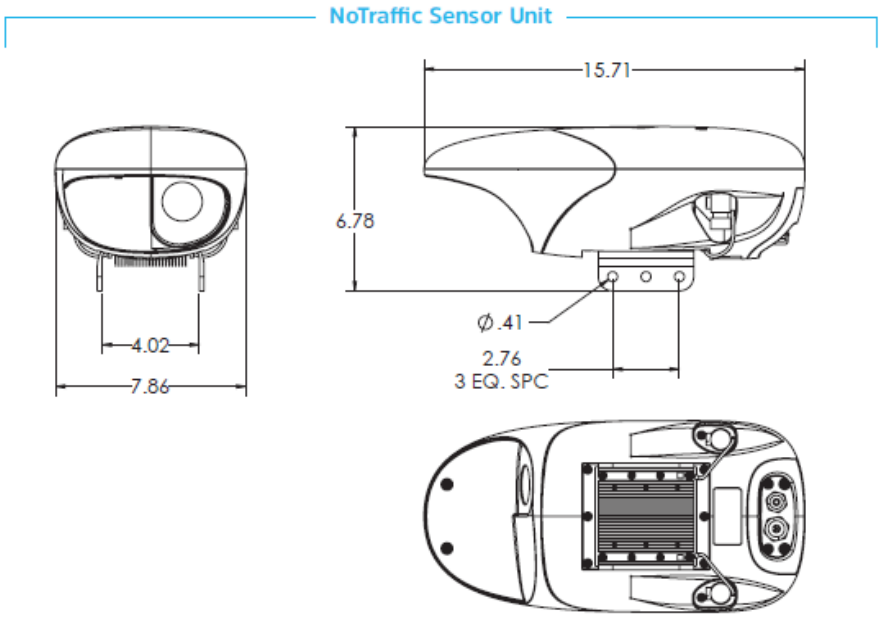




| Specifications and Features | |
|---|---|
| Temp & Humidity | -30F to +165F, up to 95% RH per NEMA TS2 |
| Ingress Protection | Exo per EC-60529 |
| Dimensions | L 17.56” x W 9.28” x H 3.43” |
| Weight | 5 lb. 8 oz. |
| Detector I/O | SDLC BIU or Caltrans C1/C11, and NTCIP |
| Power | 89V-264 VAC 50/60Hz (power provided from Main DIN Rail) |
| Mounting | Shelf mounted, Rack mount available upon request |
| Additional Ports | 5X ethernet, 2X USB 2.0 and 1X USB 3.0 |

## SENSOR UNIT (STANDARD AND CV)

The Sensor Unit (SU) is a video/radar combined sensor for roadway user detection and classification. One sensor unit at each intersection contains an embedded Connected Vehicle Roadside Unit (Sensor Unit – V2X).

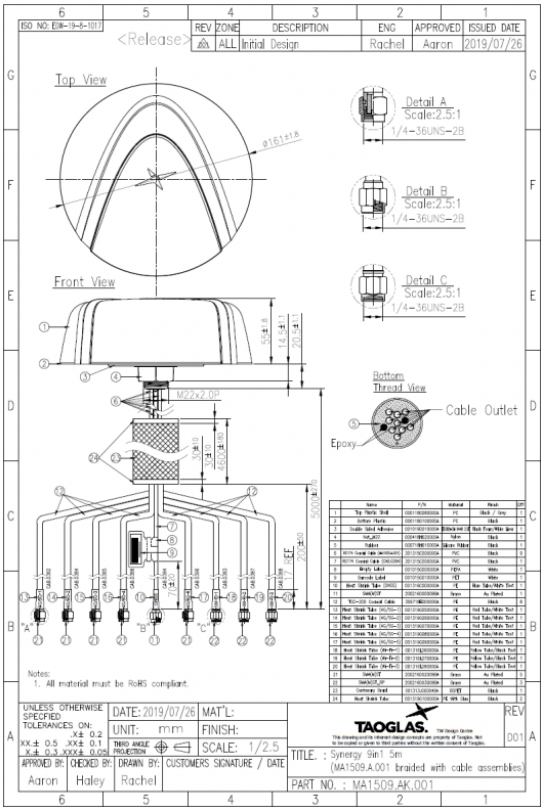
**Specifications and Features**




| | |
|---|---|
| Temp & Humidity | -30F to +165F, up to 95% RH |
| Ingress Protection | IP67 |
| Dimensions | L 15.71” x W 7.86” x H 6.78” |
| Weight | Six lb. 13 oz. for SU, 7 lb. 15 oz. for SU with CV RSU |
| Video | 1080p @ 30FPS MPJEG stream |
| Radar | 60GHz Operating Frequency (V Band) |
| Wi-Fi | IEEE 802.11a/n/ac 5GHz |
| CV RSU | DSRC – SAE J2735, USDOT RSU v. 4.1 + C-V2X |
| Power | 90V-264 VAC 50/60Hz |
| Power Cable | 14-18 AWG stranded copper 3-conductor cable |
| Max Consumption | 40W |
| Mounting | Compatible with 4” mounting yoke |
| Additional Ports | Optional Ethernet port if Cat-5 is preferred |

## ANTENNA

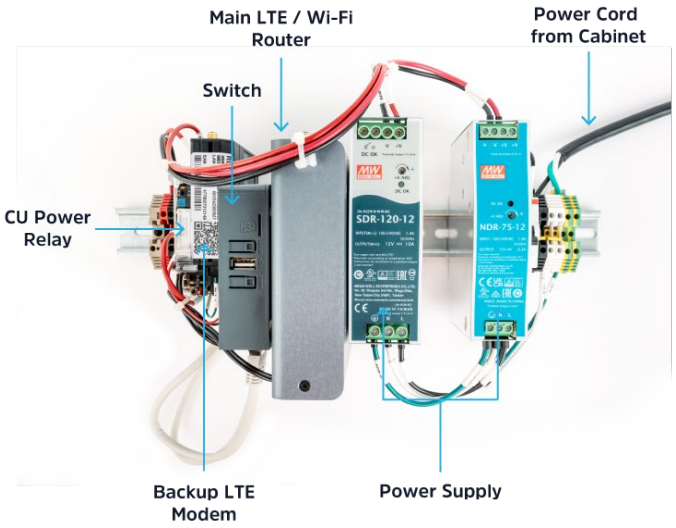
The Antenna ensures reliable signal for LTE, Wi-Fi and GPS. It has 4X LTE leads (for main modem & backup), 4X Wi-Fi leads, and 1 GPS/GNSS lead. All leads are 6 feet.




| **Specifications and Features** | |
|---|---|
| IP Rating | IP67 rated waterproof |
| LTE | 4X 5G/4G (600MHz) |
| Wi-Fi | 4X Wi-Fi 2.4GHz-5GHz with range of 250 feet |
| GPS | 1X GPS/GLONASS patch antenna for location |
| Dimensions | Antenna: D 6.33” x H 2.2”<br><br>A 7/8’ hole is required for the leads, and sealed using 3M adhesive and a locking nut. |
| Lead Length | 6’ |

## MAIN DIN RAIL

The Main DIN rail houses the power distribution, main modem/router, switch, backup LTE modem, CU power relay, and power terminal for the CU. It is used in all installations.

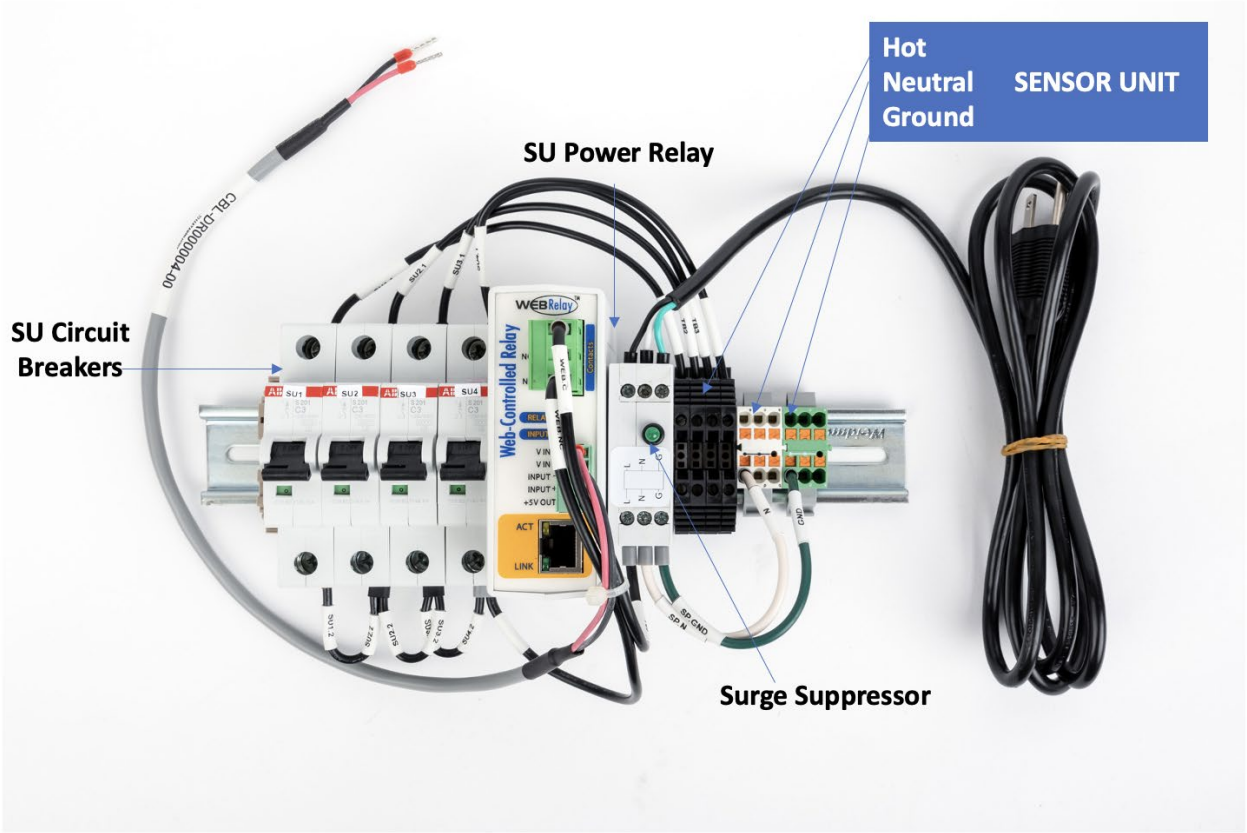



- **CU Power Relay:** Allows NoTraffic to remotely power cycle the Nexus
- **Main LTE/Wi-fi Router:** Provides LTE, Wi-Fi and GPS connection. The SIM card will connect to 1 of 3 networks, depending on optimal signal strength.
- **Backup LTE Modem (ELTE):** Built-in backup source for LTE to alleviate any potential situations where the main LTE is unusable.
- **Managed Switch:** This 5-port managed
- **Power Cord from Cabinet:** Brings 120VAC in from cabinet to power all equipment
- **Power Supply:** DC power supply for various equipment
- **DC Power Terminals:** The red/black power terminals are used to power the Nexus. The adjacent tan-colored terminals are used to power the Power DIN Rail's web relay.

| **Specifications and Features** | |
|---|---|
| Dimensions | 14” L |
| DIN Rail | TS 35X7.5 slotted DIN Rail |
| Temp & Humidity | -30F to +165F, up to 95% RH |
| Wi-Fi | Wi-Fi - IEEE 802.11a/n/ac 5GHz |
| Cloud Communications | 4G/5G |
| Power | 120 VAC from cabinet |
| Power Connections | Power input from cabinet using provided 3-conductor power cord |
| Max Consumption | 40W |
| Mounting | Adapter kit is available for rack mounting<br>Provide appropriate T-Nuts and screws for mounting |

## POWER DIN RAIL (CABINET-POWERED SUS ONLY)

For intersections where power to the SUs will be provided by the cabinet, we will also provide a Power DIN Rail. The Power DIN Rail houses the power-related equipment to the SUs, including circuit breakers, power relay, surge suppressor and power terminals. This is the preferred way to power the SUs, as it allows the SUs to be power cycled remotely if needed.




| Specifications and Features | |
|---|---|
| Dimensions | Power DIN is 10” |
| Temp & Humidity | -30F to +165F, up to 95% RH |
| DIN Rail | TS 35X7.5 slotted DIN Rail |
| Power | 90V-264 VAC 50/60Hz |
| Mounting | 8” spacing for mounting to NEMA cabinets<br>Adapters provided to extend the DIN Rail to 19” for 332 or ATC cabinets<br>Provide appropriate T-Nuts and screws for mounting |
| Other Features | Power Relay for remote power cycling of SUs |

## NEMA Power Tap (Luminaire-powered SUs Only)

The NEMA tap is used for SUs that will be mounted to and powered by a luminaire. The NEMA Power Tap hooks directly to the photocell of a continuously on luminaire and is used to provide power.

**Key Features**

- 10 ft, 2 wire, 16 AWG SOOW cord (durable and ozone, aging, and abrasion resistant)
- Simple twist-lock installation; does not interfere with normal luminaire photocontrol operation
- Compliant with ANSI C136.10 for roadway/street and area lighting and C136.41 control pass through

| **Specifications and Features** | |
|---|---|
| Input Voltage (AC) | 120 VAC |
| Input Voltage Range | 90 - 480 V |
| Input Current | 15 A |
| Output Voltage (AC) | 120 VAC |
| Output Current | 7 A |
| Weight | 1 lb. |
| Output Cable Length | 10’ |
| Mounting | Twist-lock |

## CONTROLLER I/O CONNECTIONS

When integrating with the existing controller, you will use one, or a combination of these, to be able to read and write to the controller. NoTraffic's system can interface with the Inputs/Outputs of a traffic cabinet and controller with the following three connection types:

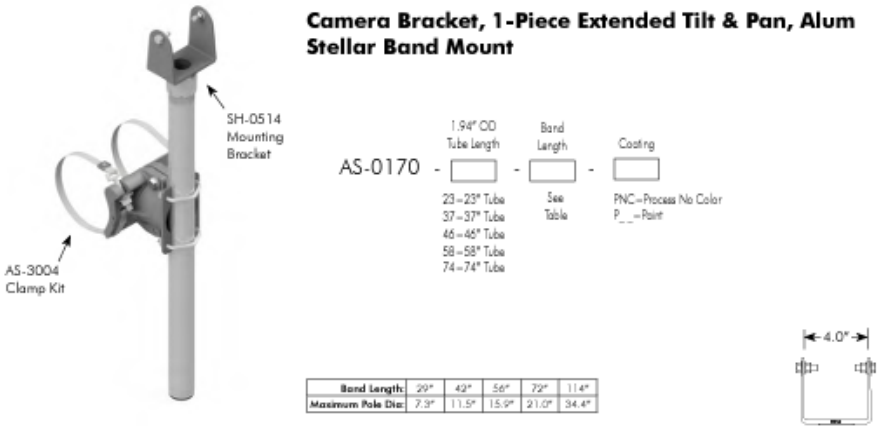
| I/O Cable | **Detection I/O Cable** | **I/O to read Controller Status** |
|---|---|---|
| **SDLC**  | Placing Detection Calls | Reads Traffic Light Status only |
| **Cat5 for NTCIP**  | Required for optimization to place phase calls. | Reads Traffic Light Status and vehicle and detector calls. Required for ATSPMs. |
| **DB37 to Spade Cable & C1/C4 Harness**  | DB37 places calls to up to 37 detectors by terminating spades directly to input file | C1/C4 Harness reads Traffic Light Status for Caltrans TEES software |

## NEEDED FOR INSTALLATION

### MOUNTING BRACKETS

The SU's are compatible with the majority of standard detection camera mounting equipment, which consists of a clamp kit, riser pole, and a 4-inch mounting bracket. 6-ft riser poles are recommended for mast arms. The Pelco assembly shown below with a SH-0514 yoke is recommended. Camera mounting assemblies from other manufacturers (e.g., Sky Bracket, Iteris) can be used, provided the mounting bracket has the same dimensions.

**Figure 5:** Pelco Astro-Brac for mounting the Sensor Units




### POWER CABLE

Power cable between the Power DIN in the cabinet and the Sensor Units should be 14-18 gauge, 3 conductor stranded copper cable. 2-conductor cable can be used between the cabinet Power DIN and Sensor Unit, provided there is a grounding wire that can be terminated in the Sensor Unit.

**Figure 6:** 14/3 cable for the Sensor Units

## Tools For Installation

You will need the following generic tools for installation:

- PH1 Phillips-Head Screwdriver
- 2.5mm Hex Screwdriver
- Cordless drill & step bit up to 1'
- Silicone waterproof sealant
- Wire cutters and wire strippers
- Multimeter
- Banding Tool

Note that you may need additional mounting hardware and associated tools depending on the specific hardware purchased and traffic cabinet.

## Installation Materials Checklist

Use the table below to ensure you have the proper quantities of NoTraffic provided hardware and procure auxiliary hardware.

| Equipment | Provided By | Guidance | Qty |
|---|---|---|---|
| Nexus | NoTraffic | 1 per intersection | |
| Sensor Unit & Sensor Unit V2X | NoTraffic | 1 SU for each approach, one of which is the V2X Sensor.**Ex:** A 4-leg intersection has 1 SU-V2X and 3 SUs | |
| Antenna | NoTraffic | 1 per intersection | |
| SDLC Cable | NoTraffic | 1 per intersection using SDLC for detection | |
| DB37 and C1/C4 Harness (uncommon) | NoTraffic | 1 of each cable per Caltrans TEES cabinet | |
| 19" DIN Rail Adapter Kit | NoTraffic | 1 per Main DIN Rail + 1 per Power DIN Rail for 332 or ATC cabinets | |
| Main DIN Rail | NoTraffic | 1 per intersection | |
| Power DIN Rail | NoTraffic | 1 per Intersection where at least 1 SU will be powered from the cabinet | |
| NEMA Tap | NoTraffic | 1 per SU be powered by a luminaire | |
| Power Cable | Agency / Contractor | # Feet to reach the cabinet-powered SUs from the cabinet through existing conduit. 14-18 /3, stranded copper, outdoor rated. | |
| Camera Mounting Assembly | Agency / Contractor | 1 per SU that will be **mounted to the mast arm.** Pelco Assembly AS-0170 with Bracket SH-0514. Typical riser height is 6 feet. | |
| Spring nuts | Agency / Contractor | 2X per Main DIN Rail and 2X per Power DIN Rail for NEMA cabinets | |
| **Below – Auxiliary items only for large intersections or Cat5 to Sensors** | | | |
| Ethernet repeater kit | NoTraffic | 1 per 300 feet of ethernet cable | |
| Wi-Fi Repeater kit | NoTraffic | 1 for any SUs further than 270 feet from cabinet | |
| Cat-5 outdoor-rated Ethernet cable + RJ45 Plugs | Agency / Contractor | # Feet of to reach the Wi-Fi repeater or each Sensor Unit | |

## INSTALLATION STEPS

### STEP 1: INSTALL CABINET EQUIPMENT

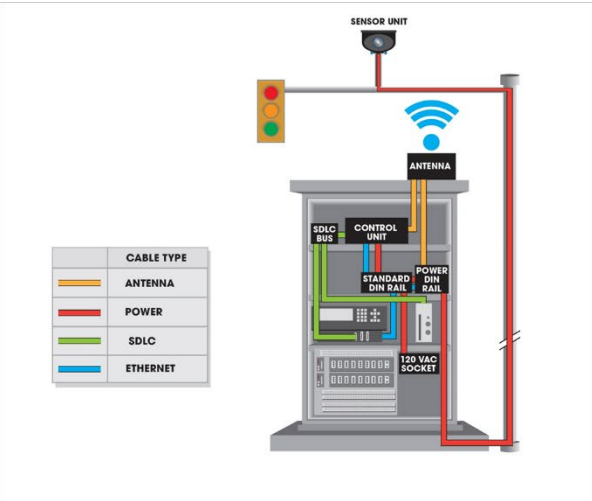
**Identify Mounting Locations**

Select mounting locations of the Antenna, Main DIN Rail, Power DIN Rail (if needed) and Nexus

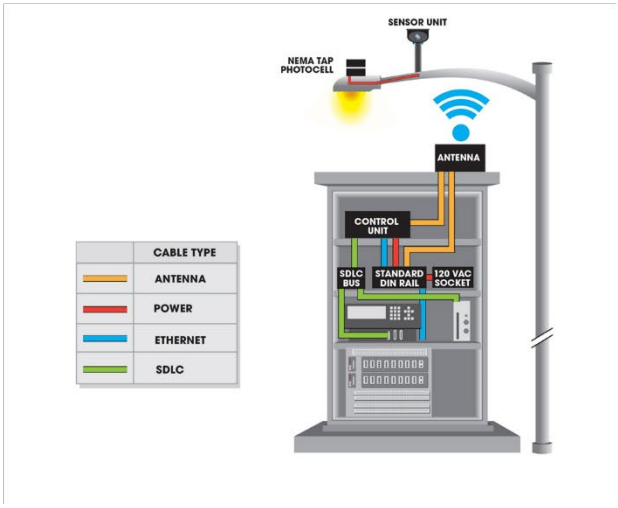
- **The Antenna** is installed on top of the cabinet by drilling a hole, has 9 leads. 7 go to the Main DIN Rail and 2 go to the CU.
- **Main DIN Rail** should be mounted horizontally to the vertical rails. Ensure the leads from the Antenna will be able to reach the Main DIN Rail.
- **Power DIN Rail (if needed):** Ensure the power cable from the Main DIN rail can reach the CU. Ensure the power and ethernet cables between the Main DIN Rail and Power DIN Rail (if a power DIN is needed) will reach.
- **Nexus** should be mounted on a shelf. Ensure that the power cable from the Main DIN and 2 of the 9 leads from the antenna can reach the CU.

The cabinet equipment required for cabinet-powered SUs vs luminaire-powered SUs are shown below.

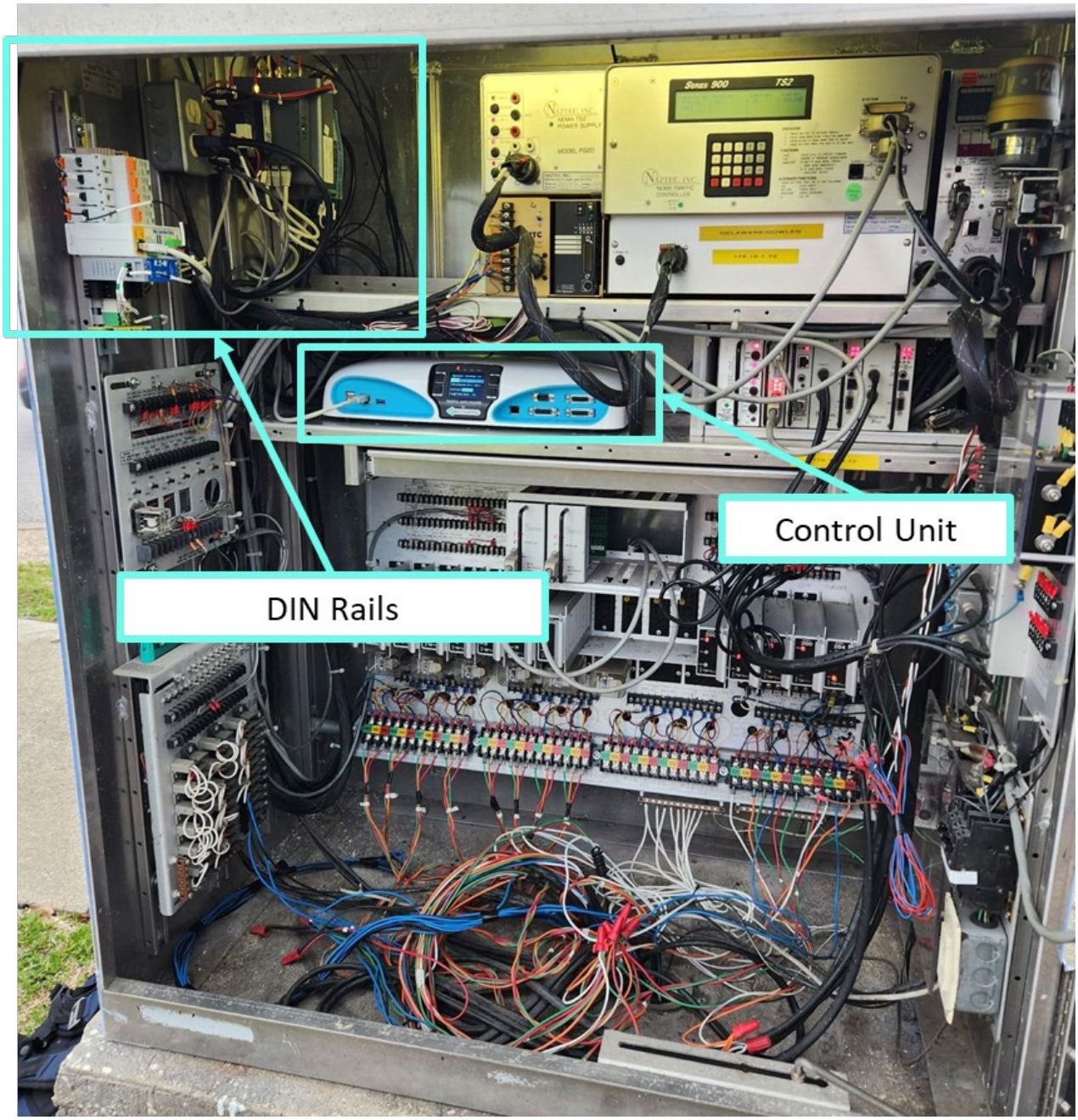
**Sensors Powered from Cabinet**




**Sensors Powered from Luminaires**

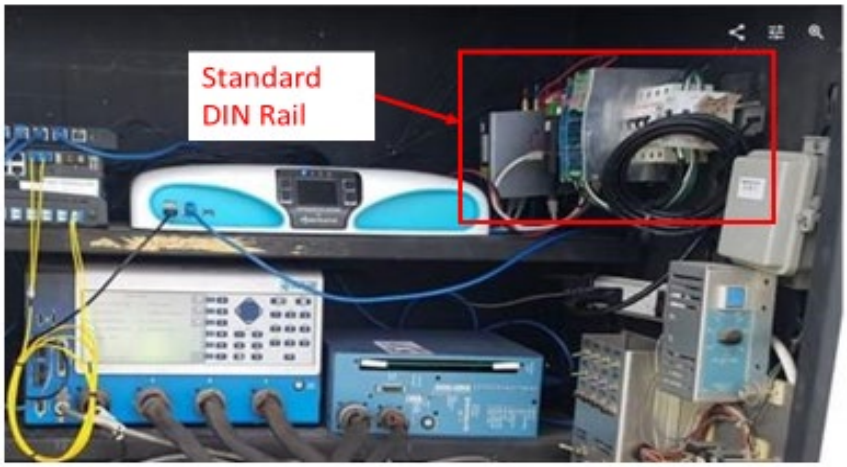


**Example:** Below is a NEMA cabinet showing the Nexus (Control Unit), Main DIN and Power DIN.

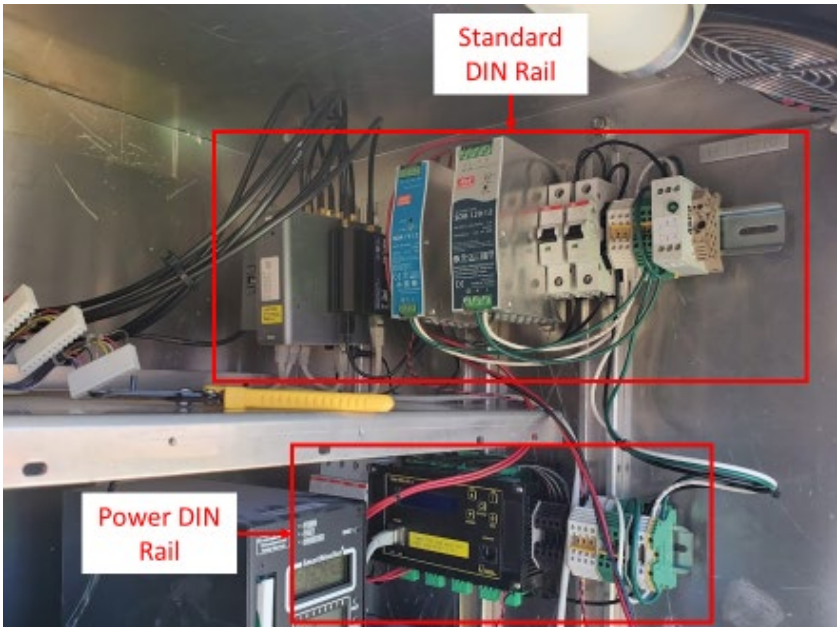


## Mount DIN Rails and Nexus

Place the Nexus on a shelf, close to the traffic controller, and mount the DIN Rail to the cabinet wall.




If using a Power DIN, mount the Power DIN rail to the wall, and make the ethernet and power connections between the Main DIN Rail and Power DIN Rail.



## Install the Antenna

Drill a 25 mm (1 inch) hole in the top of the cabinet, remove debris from the mounting surface, clean the surface with a fresh alcohol wipe. Place the antenna firmly on the cabinet top using 3M adhesive and pass the antenna cable assembly wiring harness through the hole from the top side.

Route the antenna cable to the area where the Main DIN Rail and CU will be installed. Seal around the antenna using silicone waterproof sealant.

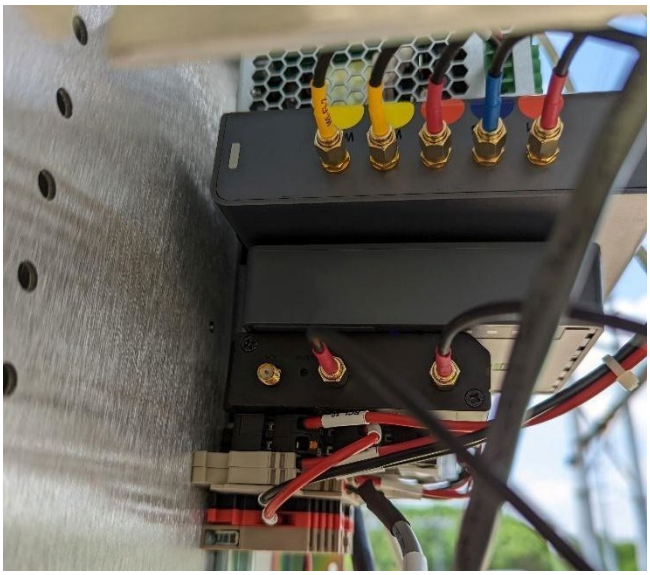
## Connect Antenna Leads

Make the following antenna lead connections to the main router on the Main DIN Rail:

- 4G/5G-1 to LTE1 (red)
- GNSS to GPS (blue)
- 4G/5G-2 to LTE2 (red)
- Wi-Fi-1 to WiFi1 (yellow)
- Wi-Fi-2 to WiFi2 (yellow)

Then, make the two LTE connections to the backup LTE:

- 4G/5G-3 to mobile on LTE Modem
- 4G/5G-4 to mobile on LTE Modem

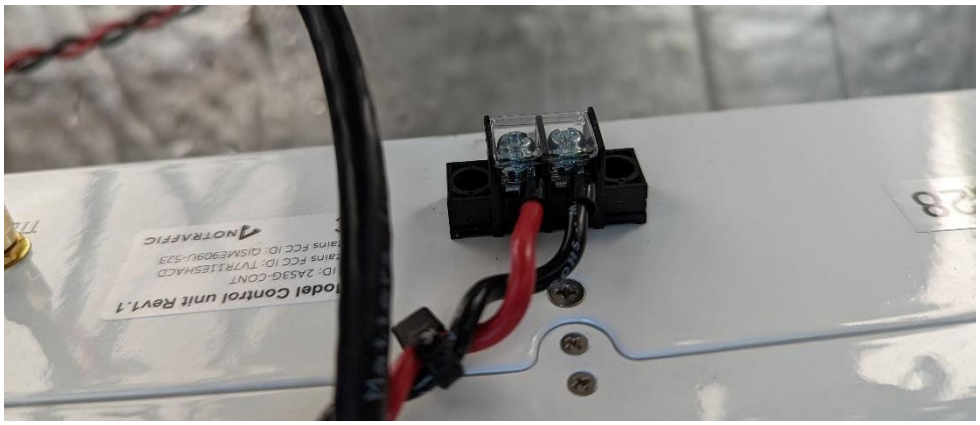


Lastly, connect the remaining 2 Wi-Fi leads to the back of the CU:

- Wi-Fi-3 to Wi-Fi 1
- Wi-Fi-4 to Wi-Fi 2

## Connect power to Nexus

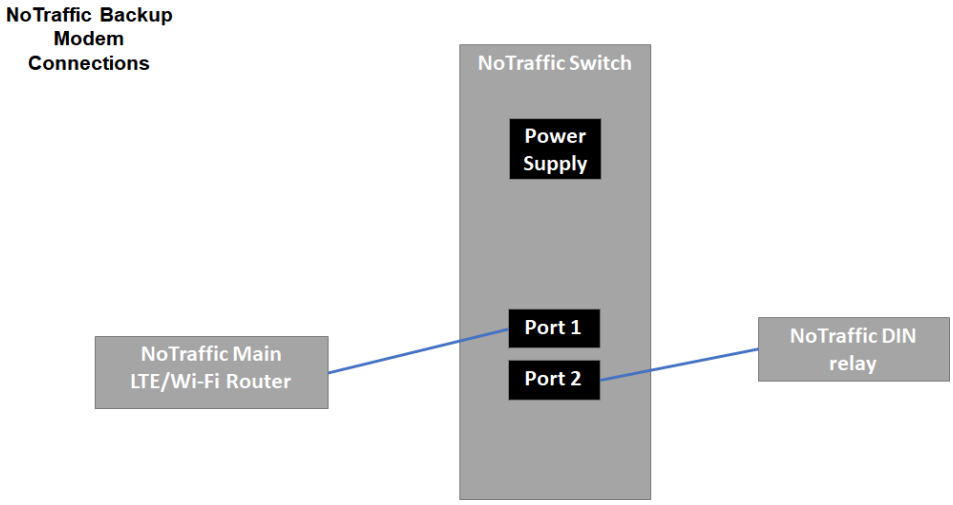
Use red and black terminals on the Main DIN for connecting the 12V DC power to the CU. Note +/- markings on power connector, at the back of the CU. Red is + / Black is –.



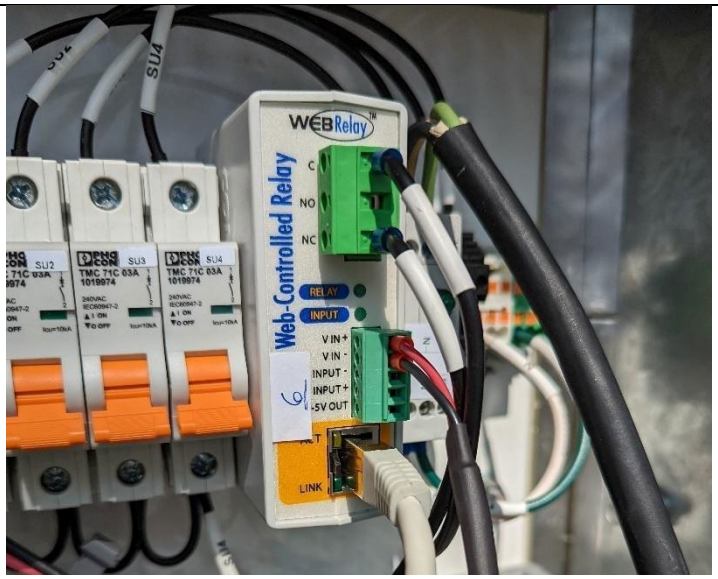
## Connect Power DIN to Main DIN (if powering Sensors from Cabinet)

First, connect the 14-guage 3-conductor AC Power bridging cable to connect the black/white/green terminals on the Main DIN Rail to the surge protector on the Power DIN Rail. Black is for live, white is for neutral, and green is for ground.

Next, connect the ethernet cable from the backup LTE on the Main DIN to the Web Relay on the power DIN.



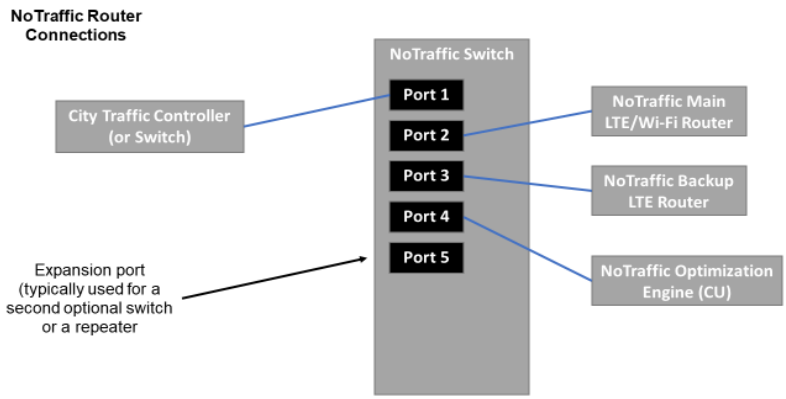

Lastly, connect the 12V DC power cable from the web relay, to the tan power terminations on the Main DIN Rail. Note which side is used for red and black.




## Make Ethernet Connections

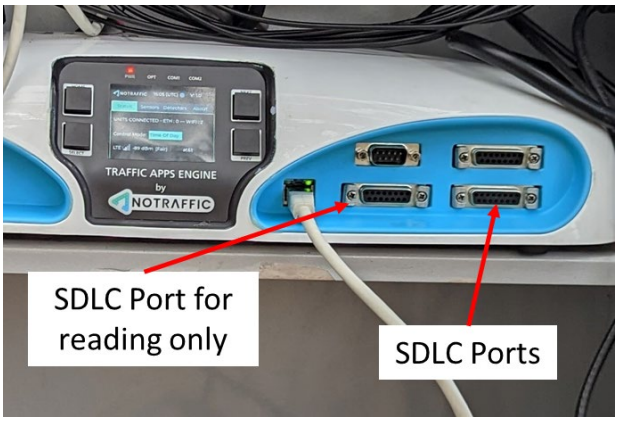
Using two additional ethernet cables, make the following connections from the router:

a. Port 1 – connect to City switch or controller
b. Port 2 – connect to the Main LTE/Wi-Fi router on the Main DIN
c. Port 3 – connect to the backup LTE Router
d. Port 4 – connect to Nexus ethernet port on front-face
e. Port 5 - Optional. This may serve as an expansion port (e.g., Daisy-chaining to a second switch, directly connect Wi-Fi repeater)



## Connect to Detection I/O

Plug SDLC cable into either SDLC Port on the right side of the Nexus. The two SDLC ports allow the CU to function as a Y cable.




## Connect to I/O for Traffic Light Status

**NTCIP:** Connect a Cat5 patch cable from the ethernet port on the right side of the Nexus to the traffic controller, or switch. Note: If using a switch, NoTraffic must be assigned an IP. Note the IP of the controller and UDP port for NTCIP

**SDLC:** Record the channel to phase assignment of the cabinet

## Check Connections and Power on Equipment

1. Antenna cables - make sure all are tightened
2. Power cables - tug on all to make sure they are not loose
3. Turn MAIN circuit breaker from green to red.
    a. Listen for Main Router “beep” then “beep-beep” to ensure it is on
    b. Watch power supplies LEDs light up
    c. Watch CU screen turn on

## Call NoTraffic to verify communications

If NoTraffic is not on site, call NoTraffic support (**Phone:** +1 202-800-1890) to verify communications.

STEP 2: SELECT SENSOR MOUNTING LOCATION

## Select Sensor Mounting Location

Each sensor covers a single intersection approach, which includes right, through and left turn traffic. Ideally, they will be mounted in the center of the approach, at the greatest height achievable

The V2X SU (1 per intersection) should be mounted facing the main street with minimum obstruction to field of view to provide the best possible range for V2I communications.


If the installation location for the SU is not clear, consult the NoTraffic team at +1 202-800-1890 to troubleshoot the best possible location.

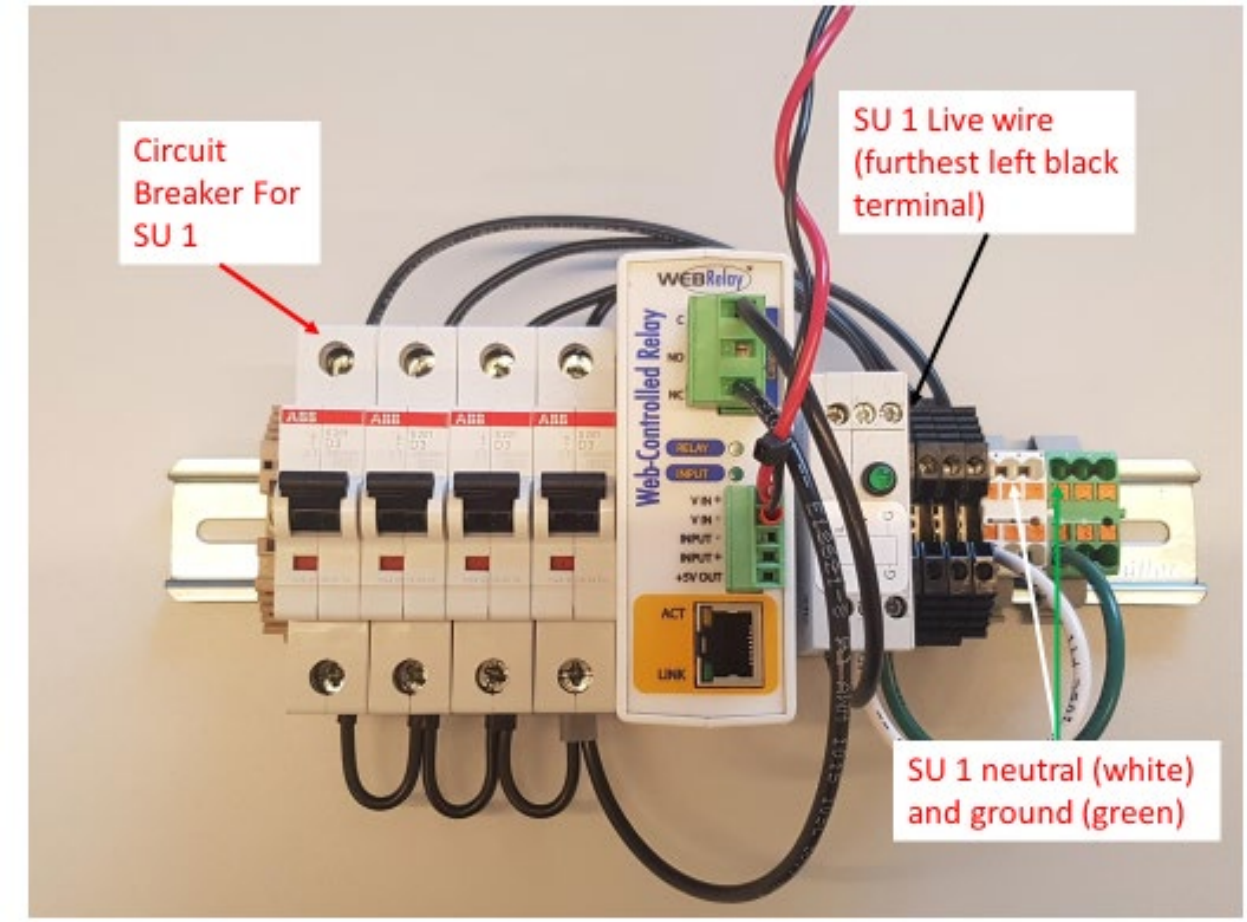
## STEP 3. RUN POWER CABLE TO SENSORS

**For Sensor Units powered using Power DIN from Cabinet:**

Run 14-gauge 3-conductor cable to the mast arm location where the SUs will be mounted.

In the cabinet, strip down the 3-conductor cable and terminate the live (black), neutral (white) and ground (green) to the power terminals on the right side of the picture below.

The live (black terminals), are 1-4 going from left to right. This corresponds to the circuit breakers SU1 – SU4, going from left to right. See example below.



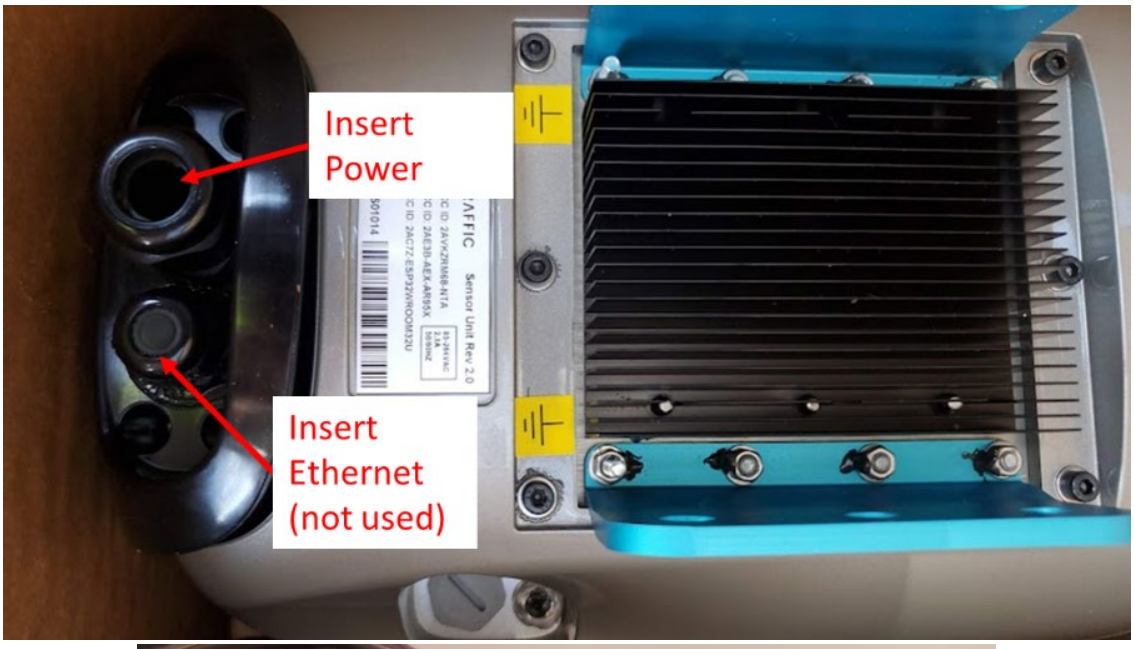

**For Sensor Units powered using a NEMA Tap:**

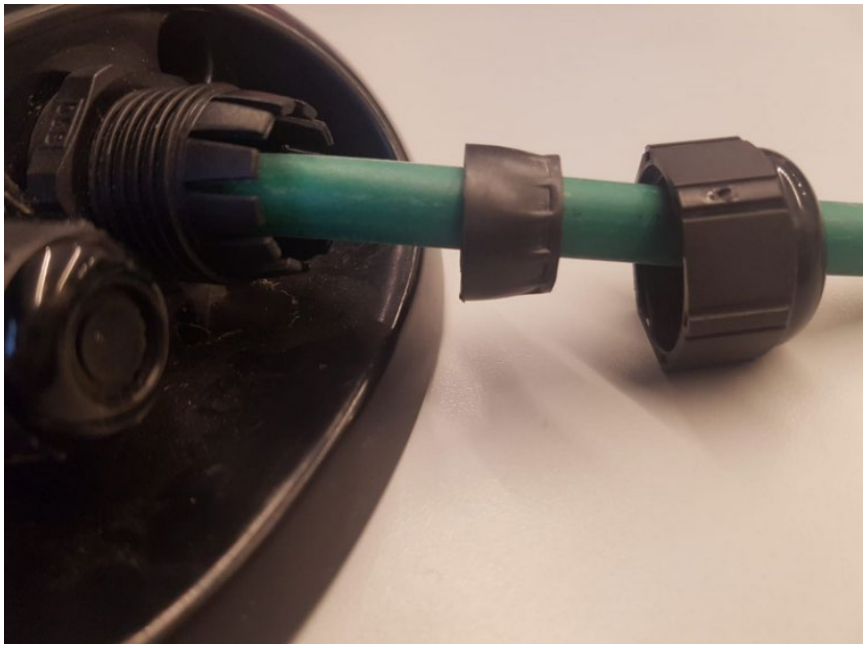
1. Attach the NEMA tap to the top of the photocell on the luminaire
2. Cut the power cable to appropriate length to reach the mounting location of the SU
3. Strip power connections

## STEP 4: MOUNT AND AIM SENSORS

### Connect Power to Sensor Unit

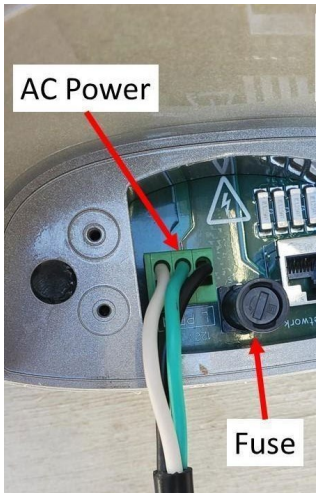
Remove back compartment from sensor, which is connected via 4 Phillips-head screws. Place power cable through “power” hole in back compartment, along with rubber grommet and plastic nut (see image below). Note you will not need to use the ethernet port.



Strip the power cables. Terminate AC power as shown below at terminal block on the sensor. Newer sensors have orange push lever connectors, which do not require any tools. Older push-pin connectors require a small flathead to open and close the terminal

L = Hot; N = Neutral; PE = protective earth (ground)




Place back compartment, grommet, and nut (shown below). Ensure that back compartment is securely fastened and that the seal between the power cable and the nut is tight.

Mount the sensor towards the horizon, with a few taps down, similar to the example below. You will aim the sensor with remote or on-site support via video feed.


**Power on Sensor Unit**

Power system on by flipping the appropriate circuit breaker on the Power DIN Rail (if using Power DIN). It takes ~1 minute for the system to connect to Wi-Fi once powered.

**Call NoTraffic to Aim Sensor, or work with technician at cabinet**

Once the breaker has been turned on, call the NoTraffic support line (202) 800-1890 to aim.

Keep the horizontal and vertical movements of the mounting bracket slightly loose. NoTraffic will give instructions for any adjustments to the sensor aiming.

**Lock Down**

Please see the below required torques to lock down the sensor mounting location:

8-10 [ft-lb] / 96-120 [lb-in] - Allen wrench, section 5

12-15 [ft-lb] / 144-180 [lb-in], section 9

20-22 [ft-lb] / 240-264 [lb-in] , section 10 and 11

Confirm with NoTraffic that the sensor hasn't moved. Once confirmed, the task is complete.

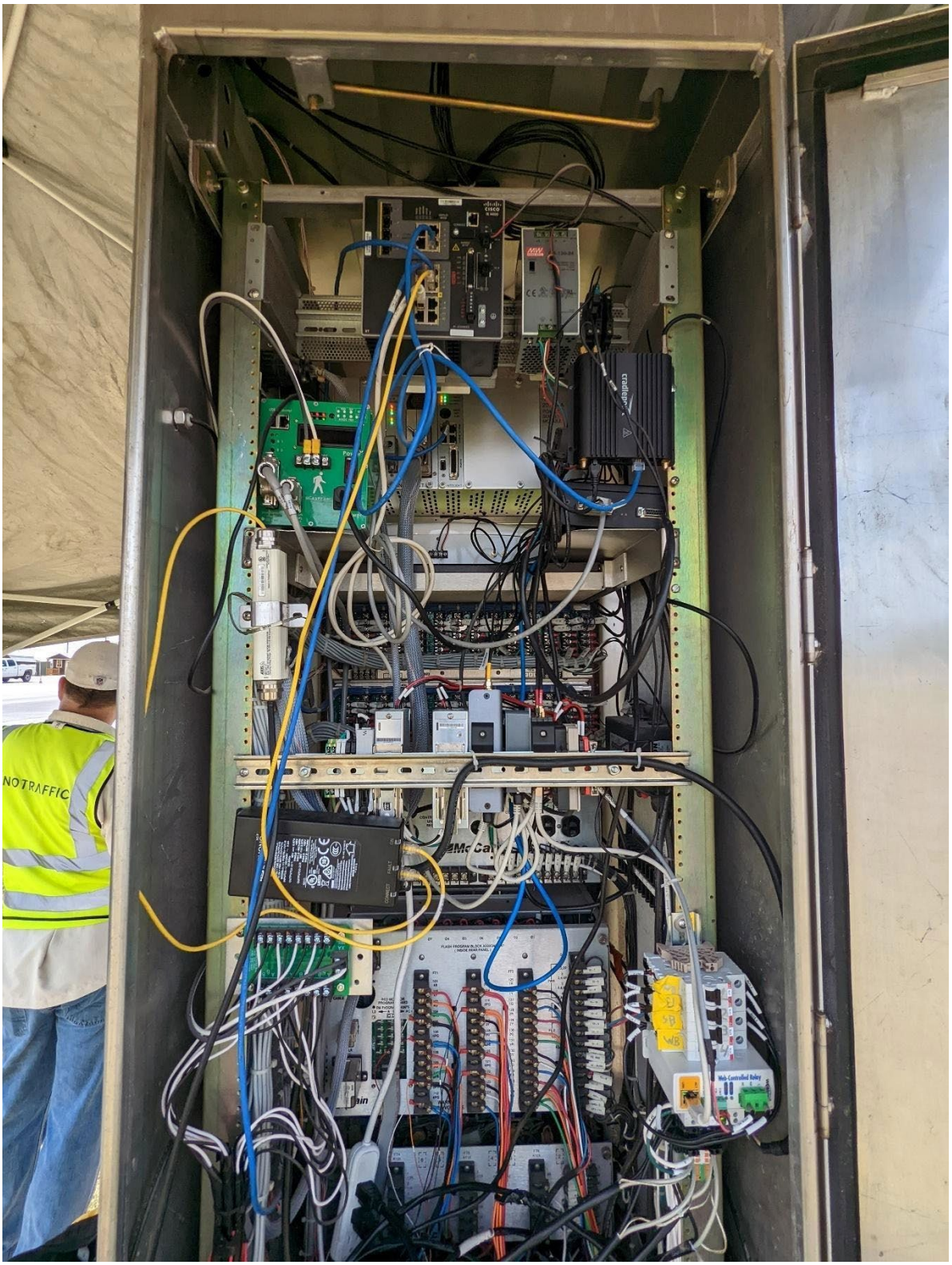
# INSTALLATION EXAMPLES

## CABINET EQUIPMENT

### ATC/332 CABINET WITH MAIN DIN

**Figure 7:** Front view of 332 cabinet after installation.

**Figure 8:** Rear view of 332 cabinet after installation.



## NEMA CABINET WITH MAIN DIN AND POWER DIN

**Figure 9:** Cabinet equipment installed in a NEMA cabinet.

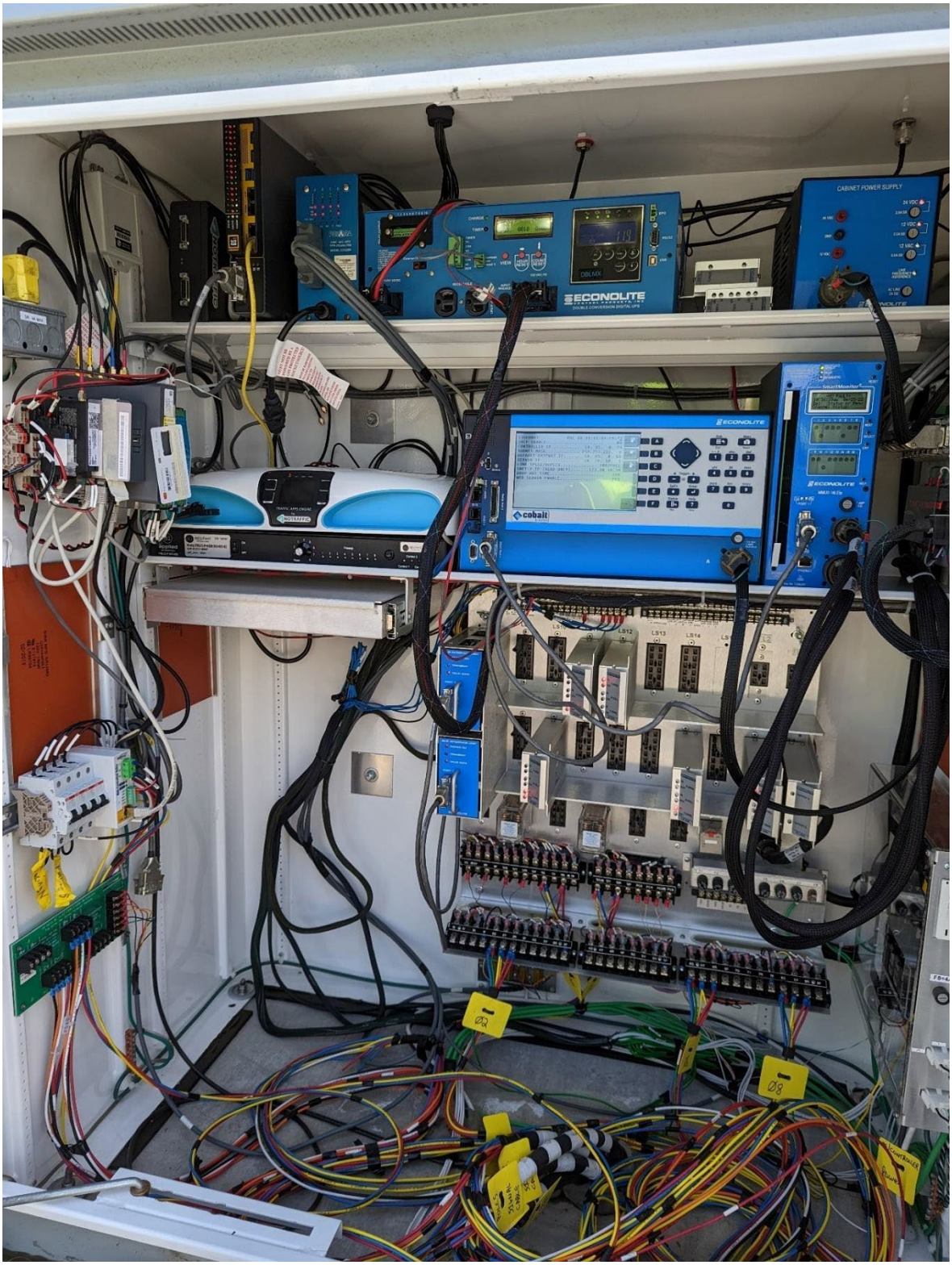
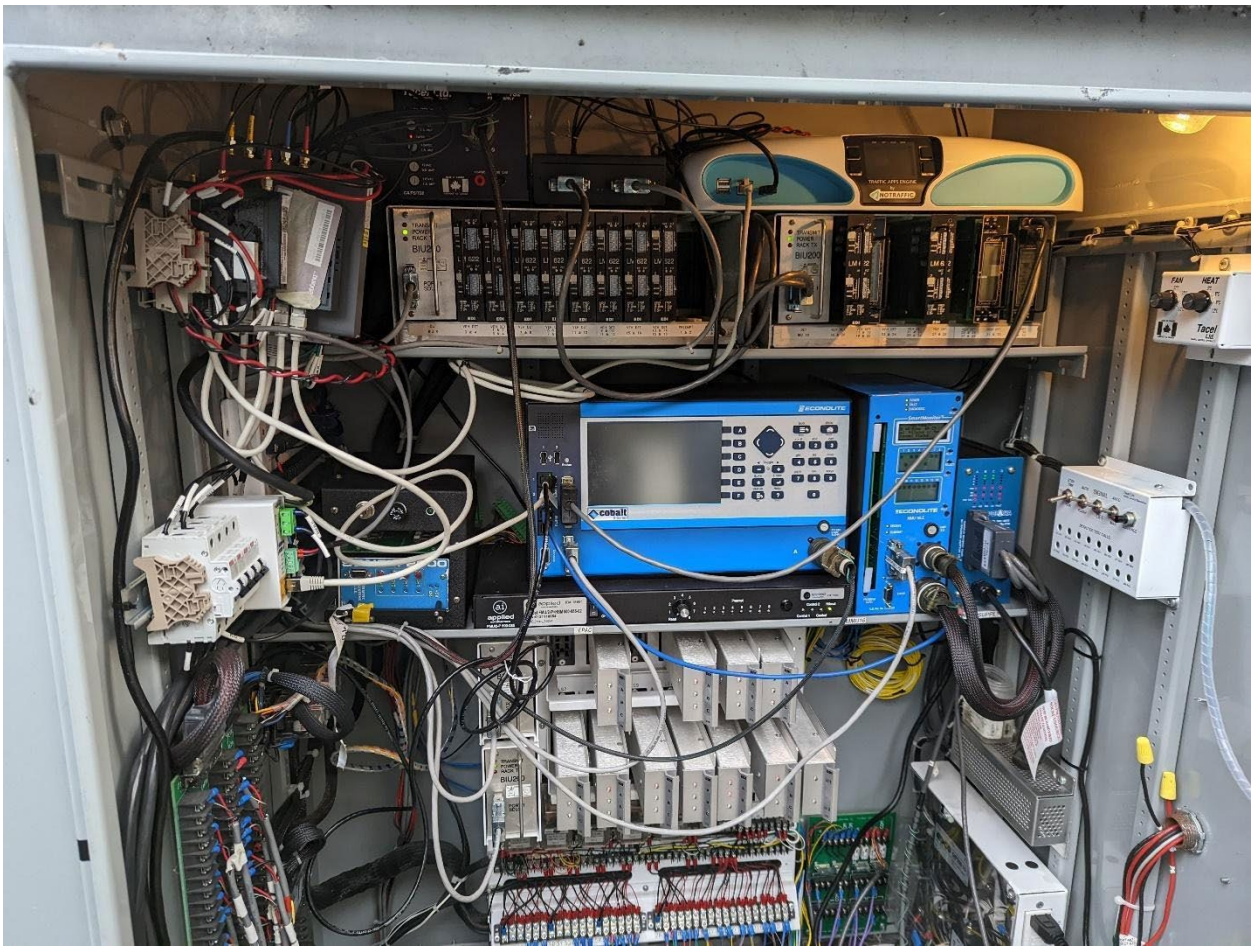


**Figure 10:** Cabinet equipment installed in a NEMA cabinet (2)



## SENSOR UNIT EXAMPLES

**Figure 11:** Sensor unit installed at one approach

**Figure 12:** Connected Vehicle SU (left), and regular sensor unit