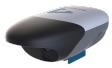
NOTRAFFIC

Detection System Specifications

NoTraffic's Plug & Play IoT Sensor provides unparalleled vehicle detection and classification accuracy for all road users. The Sensor leverages computer vision and radar, coupled with AI algorithm and edge proccessing, never before applied to traffic management.

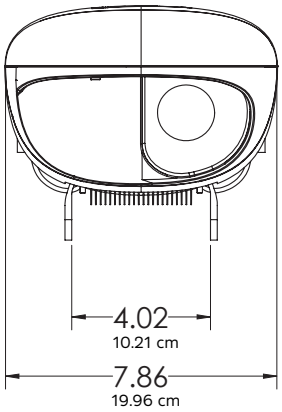
Presence Detection:	Up to 99.9% stop bar accuracy
Advanced Detection:	Up to 600ft (180m)
Sensory Input Types:	Video and Radar
Classification:	▸ High accuracy vehicle and vulnerable roadway user detection and classification in all conditions including pedestrians, bicyclists & scooters ▸ Standard FHWA defined vehicle classifications with agency customizable classification categories
Installation Requirements:	▸ Simple Plug & Play installation – only requires power and mounting ▸ Secure wireless connection to in-cabinet interface
Processing:	Sensor-based edge processing with high-powered AI GPU
Monitoring and Management Tools:	Cloud-based monitoring and management dashboard and communications included
NoTraffic Monitoring and Customer Support:	24/7/365 NOC monitoring service included to ensure detection reliability
NoTraffic Ecosystem:	Advanced products and solutions are available as software downloads
Hardware Replacement:	5-year Hardware replacement
System Upgrades:	Over-the-Air (OTA) software updates

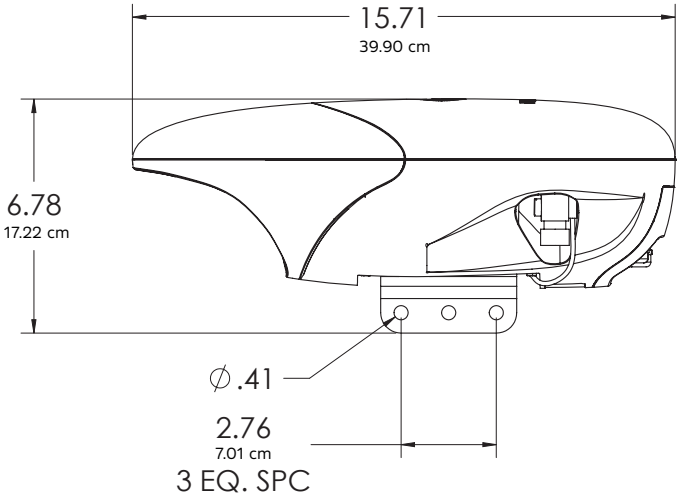
Technical Specifications

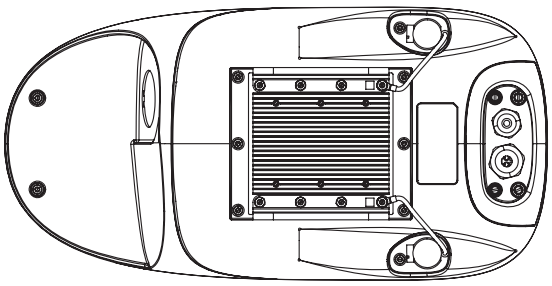
	 NoTraffic Plug & Play IoT Sensor	 NoTraffic Apps Engine
Temperature and Humidity	-30°F to +165°F, up to 95 % RH per NEMA TS2 (-34.4 degree celsius + 73.8 degree celsius)	
Ingress Protection	IP67 per IEC-60529	IP20 per IEC-60529
Shock & Vibration	Shock: 10g Handling, 30g Crash safety Vibration: 1.5GRMS operational, 5g Endurance per IEC-60068-2, NEMA TS-2	
Qualification Environmental test	Salt Fog, Freeze/Thaw, Fogging per MIL-STD-810G	
Weight	6 lb. 13 oz., 7 lb. 15 oz w/DSRC & C-V2X Roadside Unit (3.1kg, 7kg, respectively)	5 lb. 8 oz. (2.5kg)
Dimensions	L 15.71 in. x W 7.86 in. x H 6.78 in L 39.09 cm. x W19.96 cm. x H 17.22 cm	L 17.56 in. x W 9.28 in. x H 3.43 in L 44.60 cm. x W 23.57 cm. x H 8.71 cm.
Detector I/O		NTCIP, SDLC, NEMA TS-1 & TS-2, ABC, or Caltrans C1/C11
Video	Supports 1080p@30FPS MJPEG stream	
Regulatory	FCC	
Radar	60GHz Operating Frequency (V Band)	
Cloud Communications		4G/5G
Wi-Fi	Wi-Fi – IEEE 802.11a/n/ac 5GHz	
Bluetooth		Bluetooth v4.2 +EDR, Class 1, 2 and 3
CAV Roadside Unit	DSRC - SAE J2735, USDOT RSU v. 4.1 + C-V2X	
Power	90V-264 VAC 50/60Hz	
Max Consumption	40W	
Mounting	Pelco Astro-Brac, other mounting adapters available on request	NEMA TS-2 style, Caltrans 332, Shelf mounting, rack mounting available on request

Technical Specifications

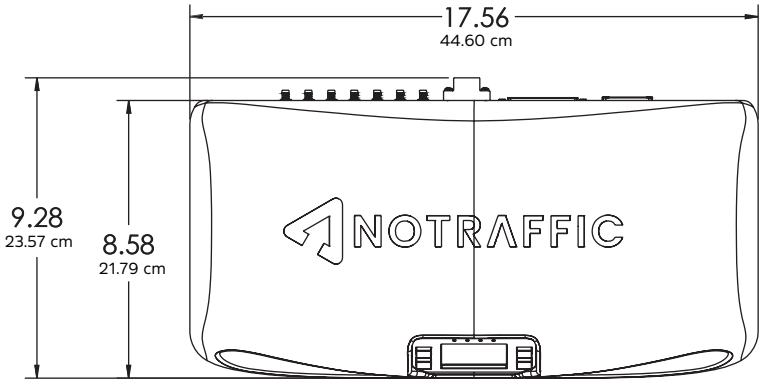
NoTraffic Plug & Play IoT Sensor

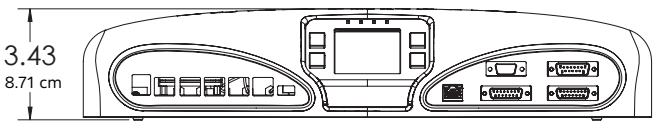


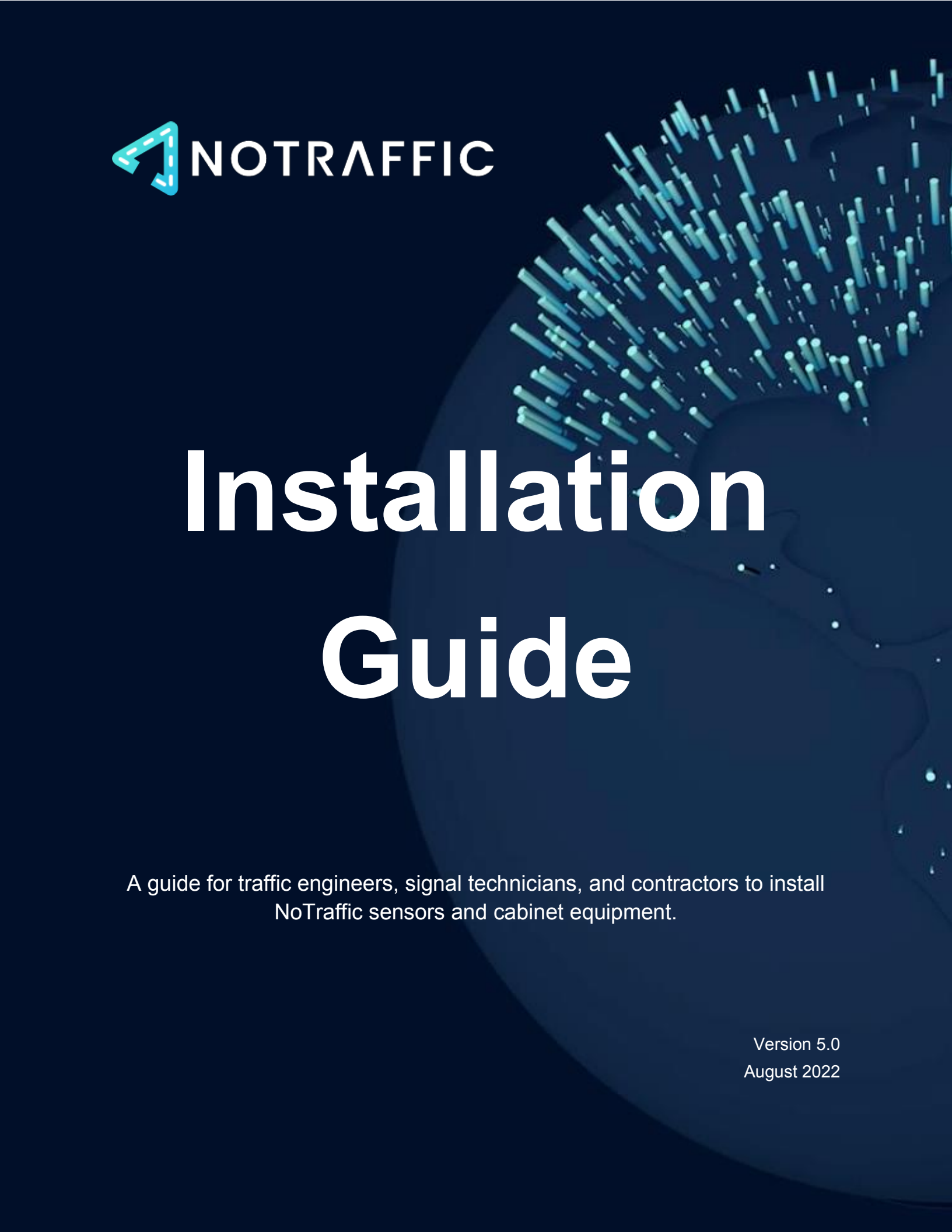




NoTraffic Apps Engine







NOTRAFFIC

Installation Guide

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

Version 5.0
August 2022

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TABLE OF FIGURES

NoTraffic Definitions	
Connected Vehicle Sensor Unit (CV SU)	A video/radar sensor with embedded Connected Vehicle Roadside Unit (CV RSU)
Control Unit (CU)	The processor in the cabinet receives data from each sensor, makes detection decisions, and interfaces with the controller.
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.
Sensor Unit (SU)	The NoTraffic video/radar combined sensor.
Standard DIN Rail	The standard NoTraffic DIN rail in the cabinet that houses the communications and power supply equipment
Virtual Management Center (VMC)	The cloud-based system monitors the sensors, alerts, and data tables.

INTRODUCTION

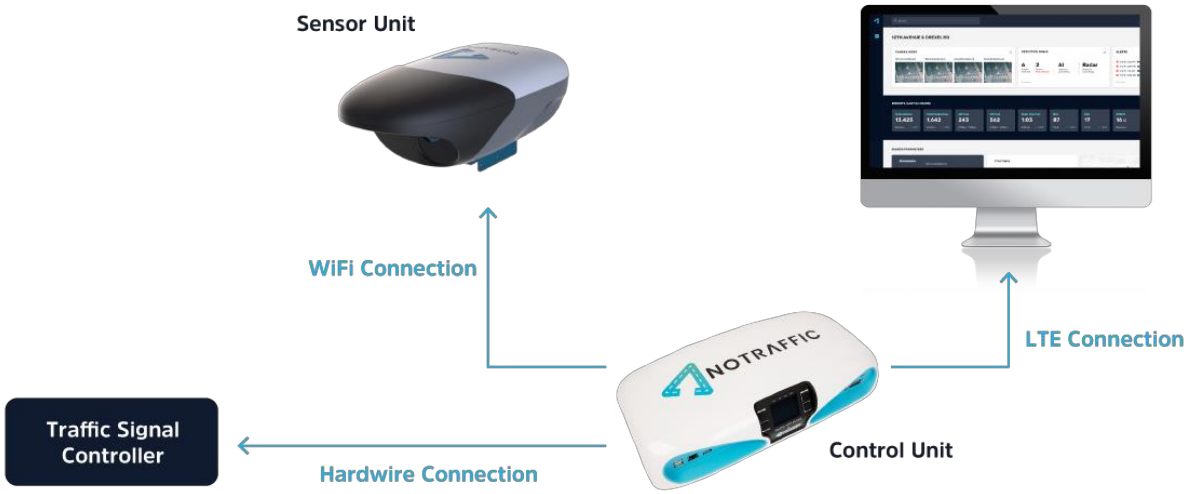
SYSTEM OVERVIEW

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 and will work with any existing infrastructure. The sensors communicate to the cabinet equipment wirelessly, so only power is required. The sensors fuse video & radar for object detection & classification and have a built-in Road-Side Unit (RSU) for Connected Vehicle applications. The Control Unit in the cabinet interfaces with the traffic signal controller.

All sensors are connected to the cloud using wireless communications and accessed anywhere using our Virtual Management Center (VMC) dashboard. The VMC monitors the proper functioning of the traffic controller and will provide real-time alerts if it detects any problems with the traffic controller (E.g., signal in flash, stuck pedestrian calls, communications failure). It will also provide alerts from events picked up by the sensors, such as accidents or stuck vehicles.

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 the Virtual Management Center 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 optimizes 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 POWER AND 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 3-conductor power cable (14-18 gauge) from a 120 VAC source. Power can be supplied from the cabinet by using the NoTraffic Power DIN Rail in the cabinet, or from a luminaire using the NoTraffic NEMA power adapter.

- **Cabinet Power** – Sensor Units can be powered from the cabinet by installing the NoTraffic Power DIN Rail and running 3-conductor stranded copper cable to the mounting location.
- **Luminaire Power** – Sensor Units can be powered from a luminaire (streetlight) that has continuous power by installing the NoTraffic NEMA Power Tap on the photocell and running it to the mounting location.

Sensor Unit Mounting: Sensors can be mounted to mast arms or luminaires using one of the following standard camera brackets:

- Pelco Astro-Brac Assembly AS-0170 with Bracket SH-0514 and a 6-foot riser, or similar (e.g., Sky Bracket) is the preferred mounting hardware
- Iteris “Universal Camera Mount” MA/SOP-16 (preferred for luminaires)

Most standard detection camera mounting brackets are compatible but should be reviewed on a case-by-case basis.

TWO TYPICAL INSTALLATION VARIATIONS

A typical installation with power to the SUs from the cabinet is shown in Figure 2. A typical installation with power to the SUs from luminaires is shown in Figure 3.

Figure 2: Typical installation and cabinet-powered SUs

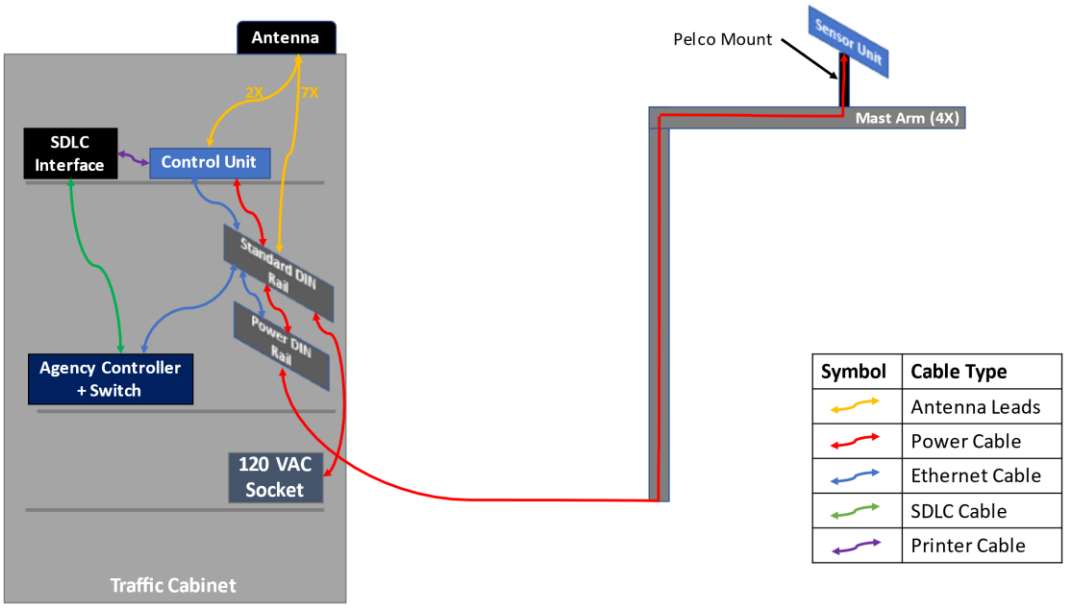
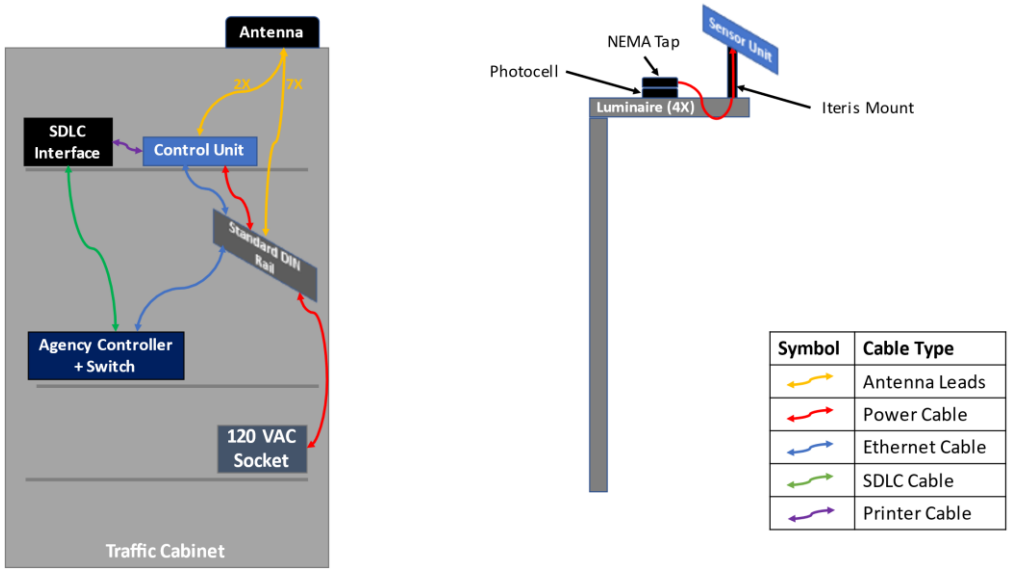


Figure 3: Typical installation with luminaire-powered SUs



CABINET AND CONTROLLER COMPATIBILITY

NoTraffic is compatible with the following traffic cabinet equipment:

Cabinet Equipment:

- **Traffic Cabinets:** NEMA TS2 Type 1, NEMA TS2 Type 2, ATC, and 332-style cabinets
- **Power:** NoTraffic requires one 120 VAC socket to power all cabinet equipment
- **Traffic Controller Detector I/O Interface:** SDLC and C1/C11 is supported for sending detection calls and reading Traffic Light Status
- **Traffic Light Status:** Traffic light status can be read from the controller using either SDLC, C1/C11 or NTCIP. NTCIP is preferred.
- **Optimization-only:** For optimization, NTCIP on a read/write port is required to place simulated calls

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

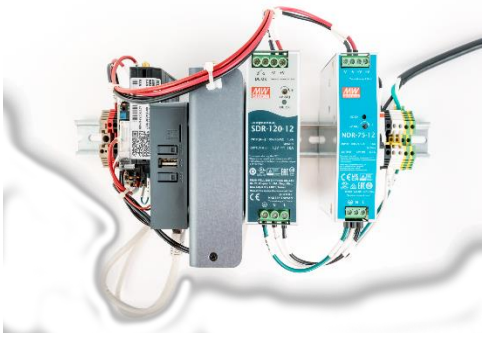
The following components are included with a NoTraffic Installation.

Control Unit (CU)

Sensor Unit (SU)

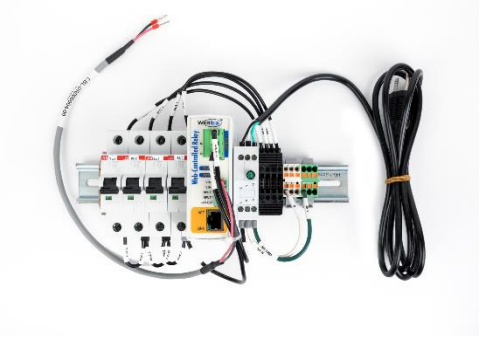
Sensor Unit with Roadside Unit (SU-RSU)

Standard DIN Rail



Power DIN Rail (for cabinet-powered SUs only)

Antenna



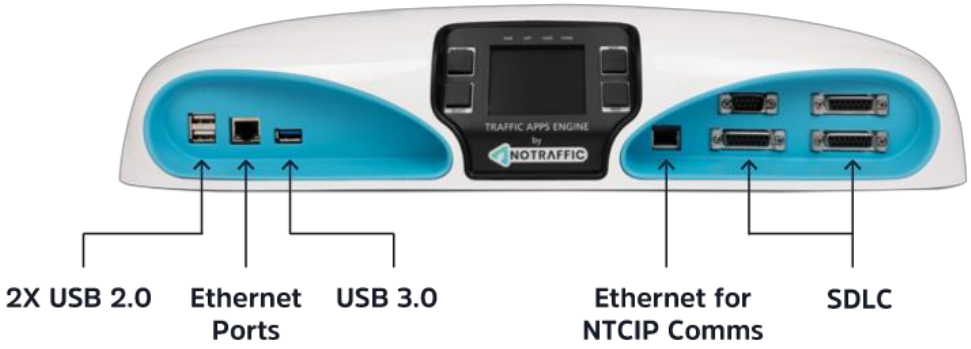
SDLC Interface

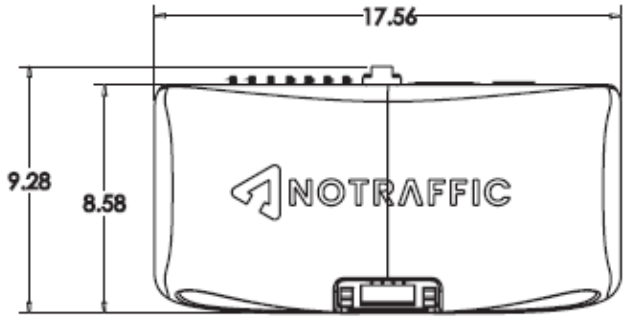
NEMA Power Tap (luminaire-powered SUs only)

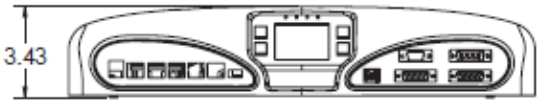
CONTROL UNIT

The Control Unit is installed in the cabinet at each intersection. It receives traffic demand data from the local sensor units, and places detection calls to the existing traffic controller.

Figure 4: Control Unit





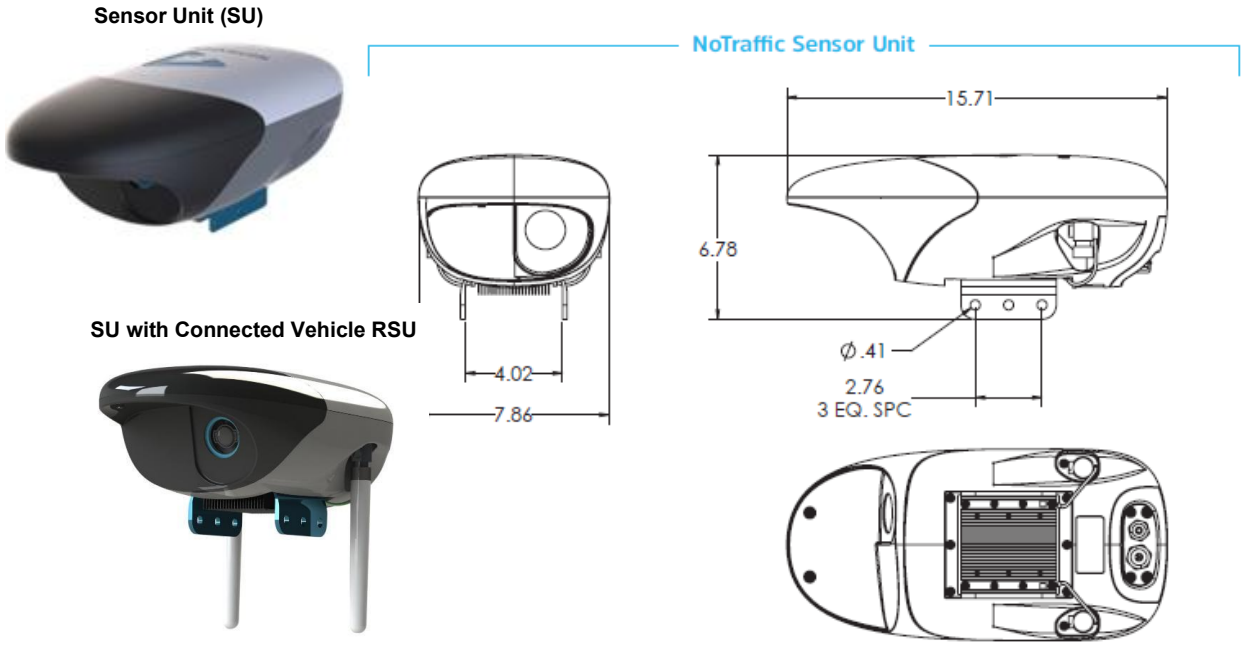


Specifications and Features	
Temp & Humidity	-30F to +165F, up to 95% RH per NEMA TS2
Ingress Protection	IP20
Dimensions	L 17.56” x W 9.28” x H 3.43”
Weight	Five lb. 8 oz.
Detector I/O	SDLC with SDLC Interface
Power	90V-264 VAC 50/60Hz (power provided from Standard DIN Rail)
Mounting	Shelf mounted
Additional Ports	5X ethernet, 2X USB 2.0 and 1X USB 3.0

SENSOR UNIT (STANDARD AND RSU)

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 (CV RSU).

Figure 5: Sensor Unit diagram



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	Pelco Assembly AS-0170 with Bracket SH-0514 OR Iteris “Universal Camera Mount” (MA/SOP-16)
Additional Ports	Ethernet port if Cat-5 connection is preferred over Wi-Fi

ANTENNA

The Antenna ensures reliable communications between the SUs, cabinet equipment, and the cloud-based dashboard. The Antenna is installed on top of the cabinet by drilling a 1” hole at the top of the cabinet and pulling the harness through.

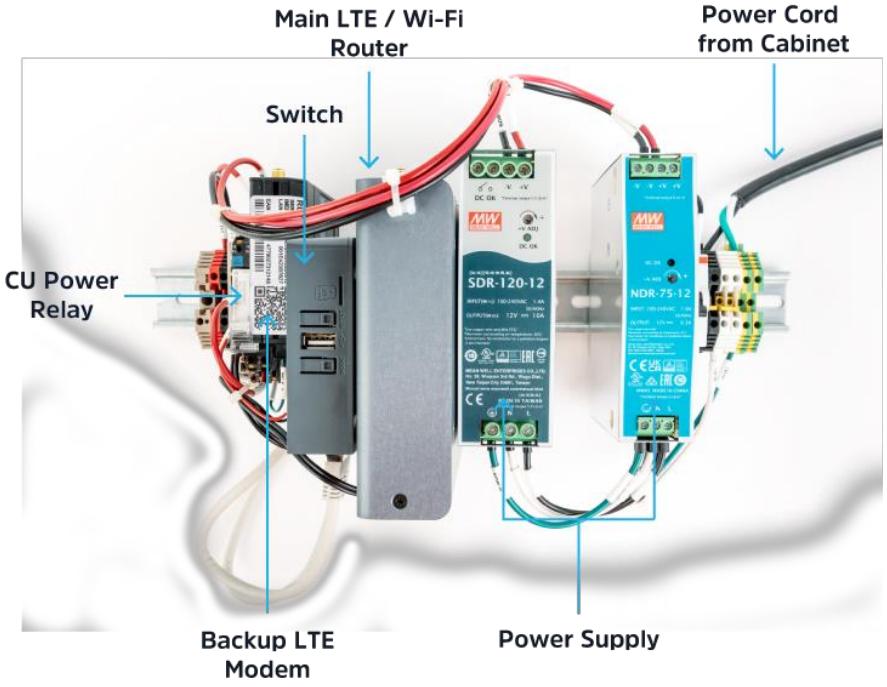
Figure 6: Antenna

Specifications and Features	
Temp & Humidity	-40F to +185F, up to 95% RH
Ingress Protection	IP67
Dimensions	D 6.33” x H 2.2”
Leads	4X 4G/5G 1X GPS 4X 2.4/5.8GHz Wi-Fi
Lead Length	6’

STANDARD DIN RAIL

The Standard DIN rail houses the power distribution, main modem/router, switch, backup LTE modem, CU power relay, and power terminal for the CU.

Figure 7: Standard DIN Rail

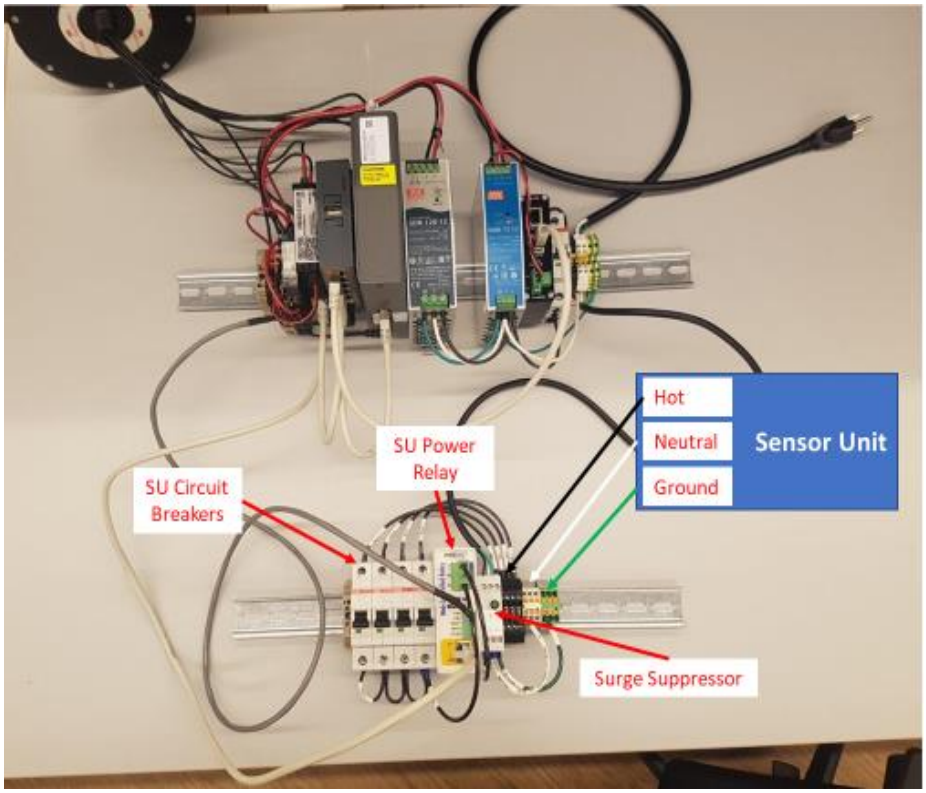


Specifications and Features	
Dimensions	14” L
DIN Rail	TS 35X7.5 slotted DIN Rail
Temp & Humidity	-30F to +165F, up to 95% RH
Wi-Fi	Wi-Fi - IEEE 802.11a/n/ac 5GHz
Cloud Communications	4G/5G
Power	90V-264 VAC from Cabinet
Power Connections	Power input from cabinet using provided 3-conductor power cord
Max Consumption	40W
Mounting	8” spacing for mounting to NEMA cabinets Adapters provided to extend the DIN Rail to 19” for 332 or ATC cabinets Provide appropriate T-Nuts and screws for mounting
Other Features	Power Relay for remote power cycling of CU

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.

Figure 8: Power DIN Rail (bottom)



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 Adapters provided to extend the DIN Rail to 19” for 332 or ATC cabinets Provide appropriate T-Nuts and screws for mounting
Other Features	Power Relay for remote power cycling of SUs

SDLC INTERFACE

The NoTraffic SDLC Interface allows the CU to place detection calls to the traffic controller using Synchronous Data Link (SDLC) protocol. The SDLC interface sits between the CU and traffic controller. **IMPORTANT Note:** The SDLC box has been integrated into the Control Unit for hardware manufactured after July 2022, and do not require the SDLC Interface.

Figure 9: SDLC Interface

Specifications and Features	
Dimensions	W 5 5/8”” x D 6” H 2”
Temp & Humidity	-30F to +165F, up to 95% RH
Power	Power from CU using USB-A to USB-B cable
Connections	USB-A to USB-B cable from CU to SDLC Interface SDLC cable from SDLC Interface to Controller
Mounting	Shelf mounted

NEMA POWER TAP (LUMINAIRE-POWERED SUS ONLY)

For SUs that will be mounted to and powered by a luminaire, a NEMA Power Tap is used to provide power. Two versions are available – 3-Pin for a standard luminaire, or 7-pin for a "smart" luminaire.

Figure 10: 3-Pin NEMA Power Tap for standard luminaire

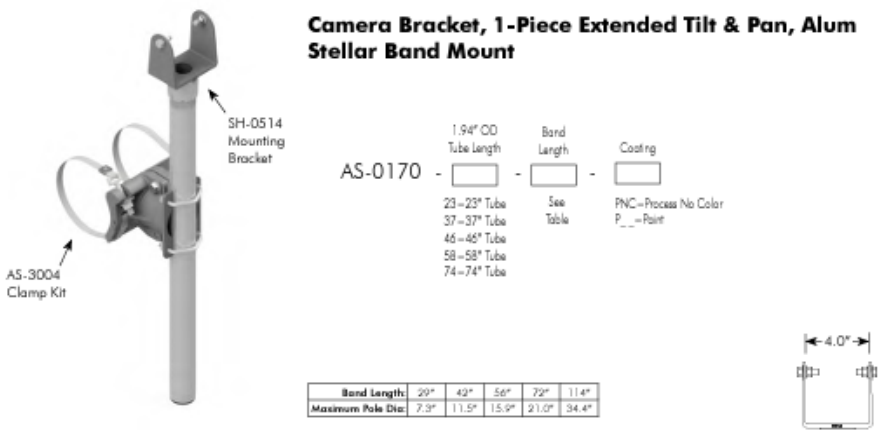
Specifications and Features	
Input Voltage (AC)	120 VAC
Input Voltage Range	90 - 480 V
Input Current	15 A
Output Voltage (AC)	120 VAC
Output Current	7 A
Weight	1 lb.
Output Cable Length	10'
Mounting	Twist-lock

NEEDED FOR INSTALLATION

MOUNTING BRACKETS

Procure mounting hardware for the sensor units. You will need a camera mounting assembly with a clamp kit, 6-foot riser pole, and a mounting bracket. The Astro-Brac assembly shown below with SH-0514 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 11: 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 gauge, 3 conductor copper cable; IMSA 19-1 stranded is typical. 16 and 18 gauge cable is also acceptable.

Figure 12: 14 AWG, 3-conductor cable for the Sensor Units

Cable as small as 18 AWG can be used if necessary. 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.

TOOLS FOR INSTALLATION

You will need the following generic tools for installation:

- Small Phillips and flat head screwdriver
- Cordless drill
- Silicon waterproof sealant to waterproof around the Antenna
- Wire cutters and wire strippers
- Multimeter
- Banding Tool

The table below identifies the recommended equipment to bring for proper installation of the SUs and DIN rails.

Name	Details	Installation Step	Photo
Adjustable Torque wrench	12-68 [N-m] 10-50 [lb –ft] 100-600 [lb – in]	Mount SU to Iteris or Astro Brac mounting bracket	
Pre-calibrated torque wrench + Square drive 3/8	10-65 [N-m] 7-48 [lb-ft] 84 – 576 [lb – in]	Alternative option to Mount SU to Astro-Brac Mounting Bracket	
Combination Wrench	6-Point Openings, 9/16" Size, 8-5/8" Long, Dull Chrome Plated	Mount SU to Astro-Brac Mounting Bracket	
3/8 Inch Drive x 1/4 Inch Hex Bit Holder		Mount the internal setscrews of Pelco	
Step Drill Bit	7/8 in. - 1-1/8 in. #9 Black Oxide Step Drill Bit (2-Steps)	Antenna above the cabinet top (For Toglas)	
Flat Head Terminal Block	1/8-Inch Cabinet Tip, 4-Inch Round Shank	Terminal block in DIN rails Connect the SU wiring	

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
Control Unit	NoTraffic	1 per intersection	
Standard Sensor Unit	NoTraffic	1 per intersection approach, minus the CV-RSU SU (i.e., 3 Standard SUs for a 4-leg intersection)	
Sensor Unit with CV RSU	NoTraffic	1 per intersection	
Standard DIN Rail	NoTraffic	1 per intersection	
Power DIN Rail	NoTraffic	1 per Intersection **where at least 1 SUs will be powered by the cabinet**	
SDLC Interface + cables	NoTraffic	1 per intersection	
Antenna	NoTraffic	1 per intersection	
NEMA Power Tap	NoTraffic	1 per SU that will be **powered by a luminaire.** Note if you need a 3-pin or 7-pin variation	
19" DIN Rail Adapter Kit	NoTraffic	1 per Standard DIN Rail + 1 per Power DIN Rail for 332 or ATC cabinets	
Power Cable	Agency / Contractor	# Feet to reach the **cabinet-powered SUs** from the cabinet through existing conduit**.** 14/3, stranded, outdoor rated. IMSA 19-1 is typical.	
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 2 Meters.	
Spring nuts	Agency / Contractor	2X per Standard DIN Rail and 2X per Power DIN Rail for NEMA cabinets	
Below – Items needed only for very large intersections requiring Wi-Fi repeater			
Ethernet repeater	NoTraffic	1 per 300 feet of ethernet cable	
Wi-Fi Repeater	NoTraffic	1 for any SUs further than 230 feet from cabinet	
Cat-5 outdoor-rated Ethernet cable + RJ45 Plugs	Agency / Contractor	# Feet of to reach the Wi-Fi repeater through conduit from the cabinet if a Wi-Fi repeater is used, or SU's will not use wireless comms **(uncommon)**	

INSTALLATION STEPS

STEP 1: INSTALL CABINET EQUIPMENT

Identify Mounting Locations

Select mounting locations of the DIN rail(s), CU, SDLC Interface and Antenna in the cabinet using the following guidance:

- **DIN Rail(s)** should be mounted horizontally to the vertical rails. Ensure the leads from the Antenna will be able to reach the Standard DIN Rail. Ensure the power cable from the standard DIN rail can reach the CU. Ensure the power and ethernet cables between the Standard DIN Rail and Power DIN Rail (if a power DIN is needed) will reach.
- **Control Unit** should be mounted on a shelf and not on top of any equipment that generates excessive heat. Ensure that the power cable from the Standard DIN and 2 of the 9 leads from the antenna can reach the CU.
- **SDLC interface** should be placed between the controller and CU.
- **The Antenna** is installed on top of the cabinet by drilling a hole, has 9 leads. 7 go to the Standard DIN Rail and 2 go to the CU.

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

Figure 13: Cabinet equipment.

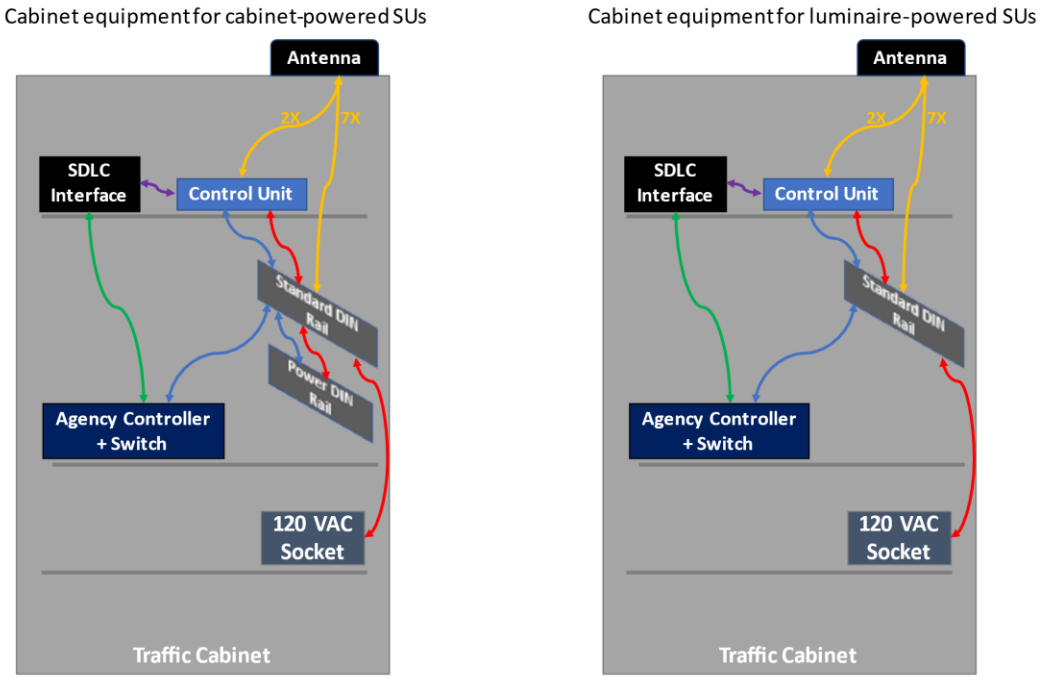


Figure 14: Standard DIN and Power DIN in a NEMA cabinet

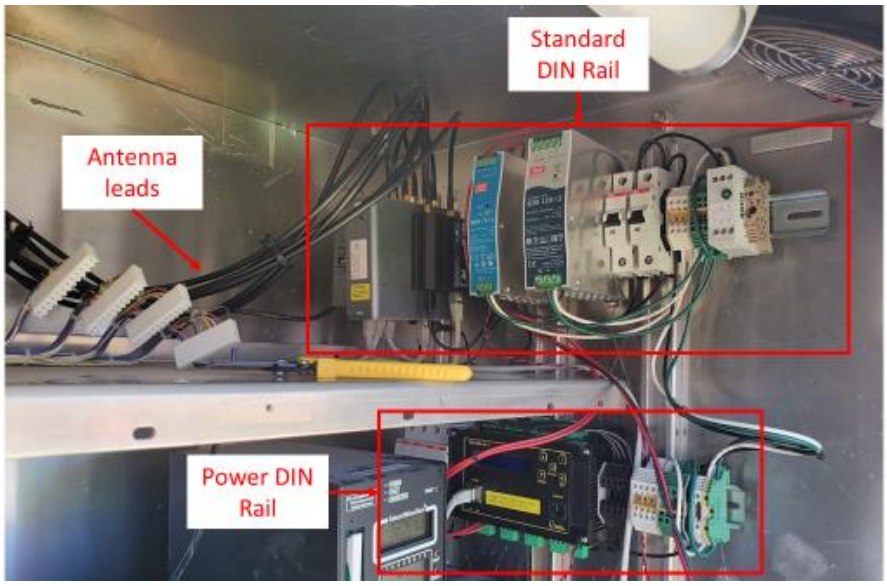


Figure 15: Antenna leads connected to the standard DIN Rail

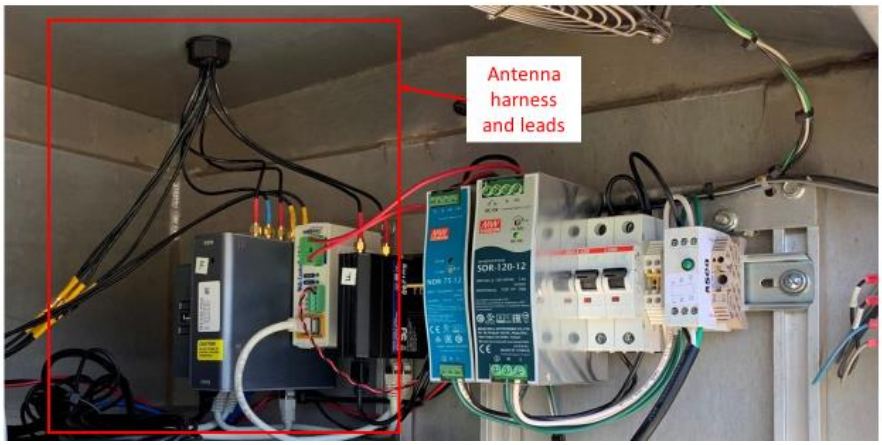
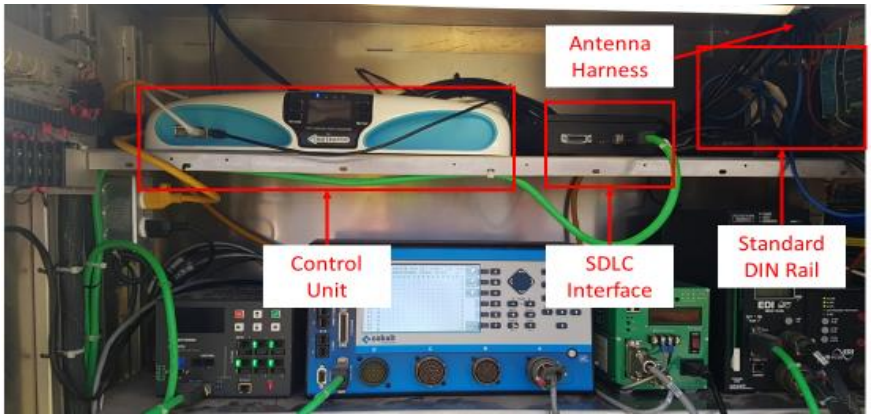


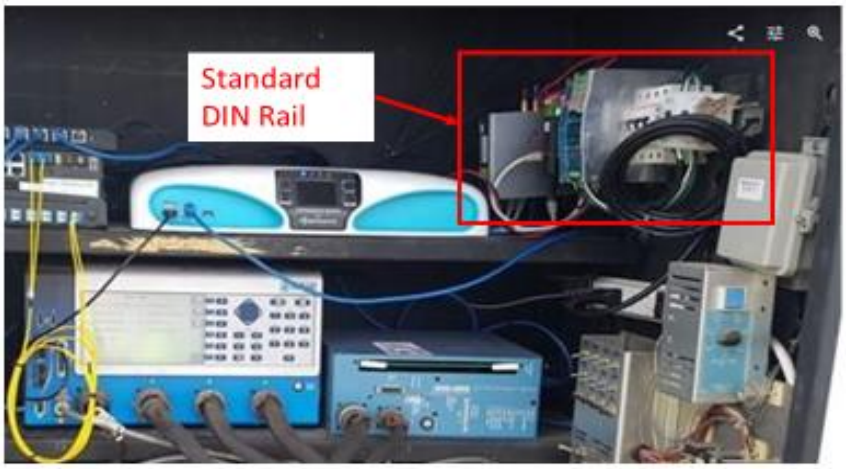
Figure 16: Control Unit, SDLC Interface and Standard DIN



Mount DIN Rails and Control Unit

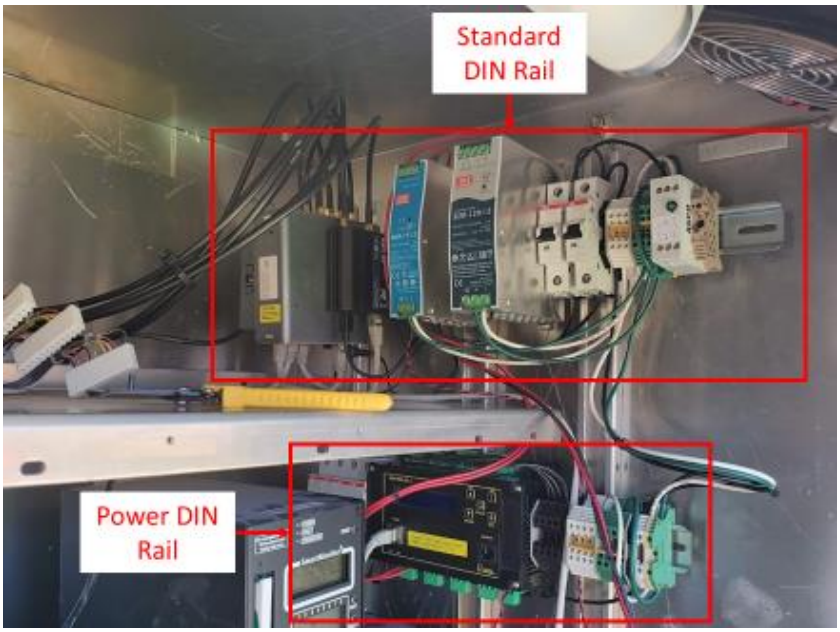
Place the Control Unit on a shelf, close to the traffic controller, and mount the DIN Rail to the cabinet wall.

Figure 17: Installing the CU and Standard DIN Rail



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

Figure 18: Addition of a 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.

Figure 19: Antenna mounted to top of cabinet

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

Figure 20: View of the antenna from inside the cabinet

Connect Antenna Leads

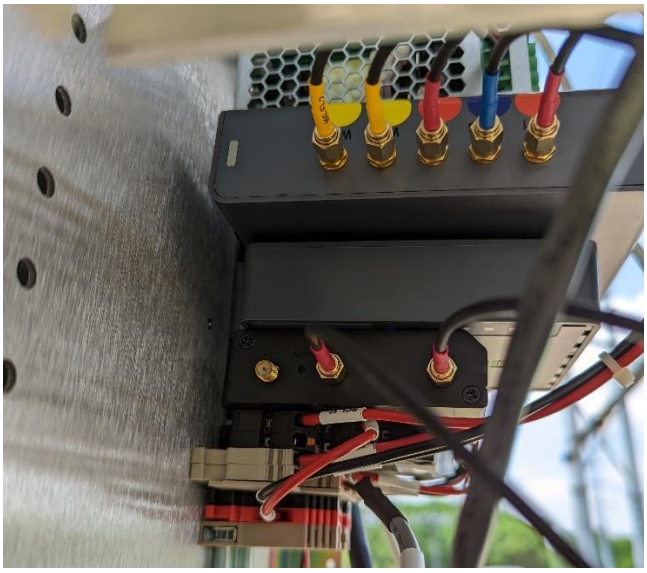
Make the following antenna lead connections to the main router on the Standard DIN Rail:

- 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

Figure 21: Antenna connections to Standard DIN main router (top), and backup LTE (bottom)



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

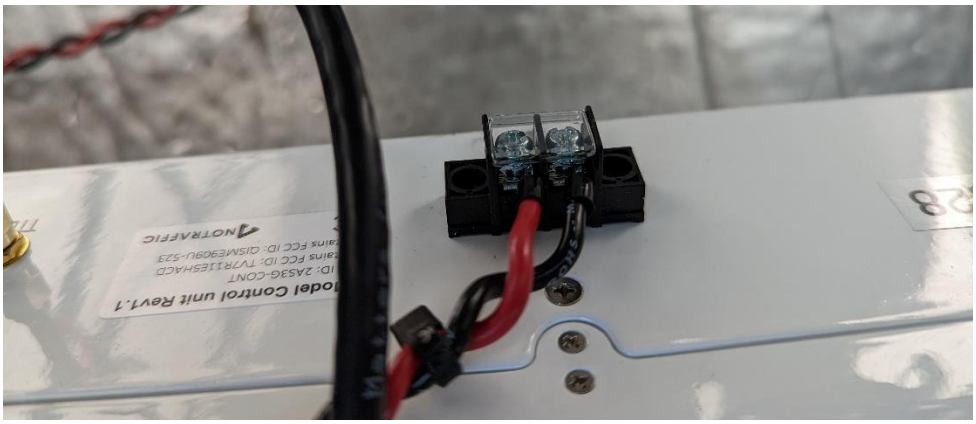
- Wi-Fi-3 to Wi-Fi 1
- Wi-Fi-3 to Wi-Fi 2

Figure 22: CU Wi-Fi antenna leads

Connect power to CU

Use red and black terminals on the Standard 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 –.

Figure 23: Power termination on back of CU

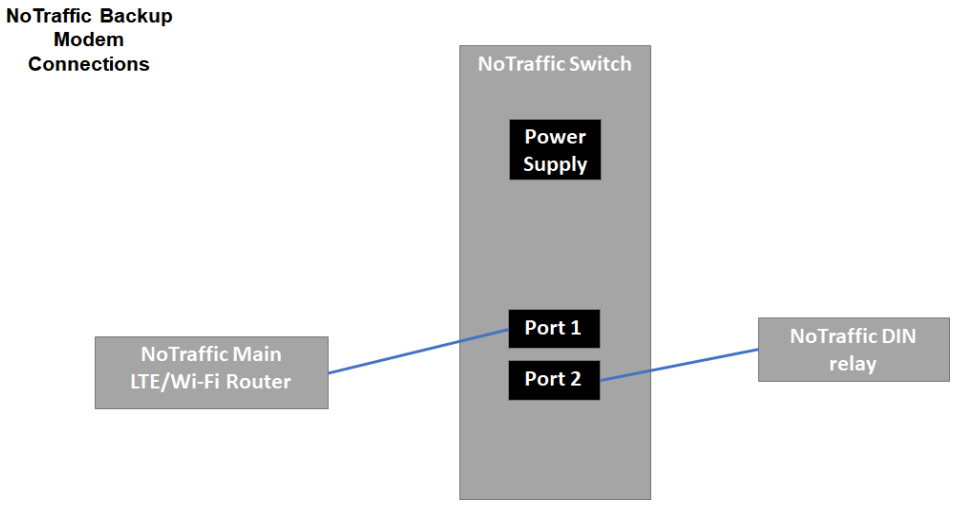


Make DIN Rail connections (if using Power DIN)

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

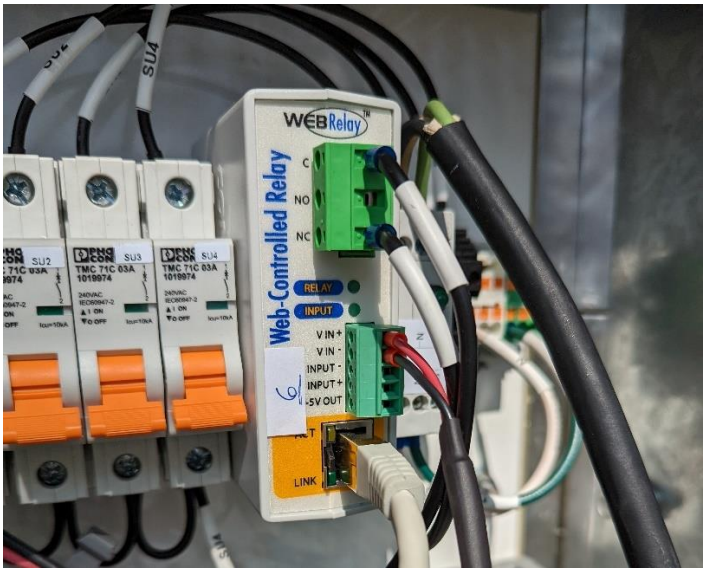
Next, connect the ethernet cable from the backup LTE on the Standard DIN to the Web Relay on the power DIN.

Figure 24: Ethernet connections on backup LTE



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

Figure 25: Power and ethernet on the Power DIN Rail



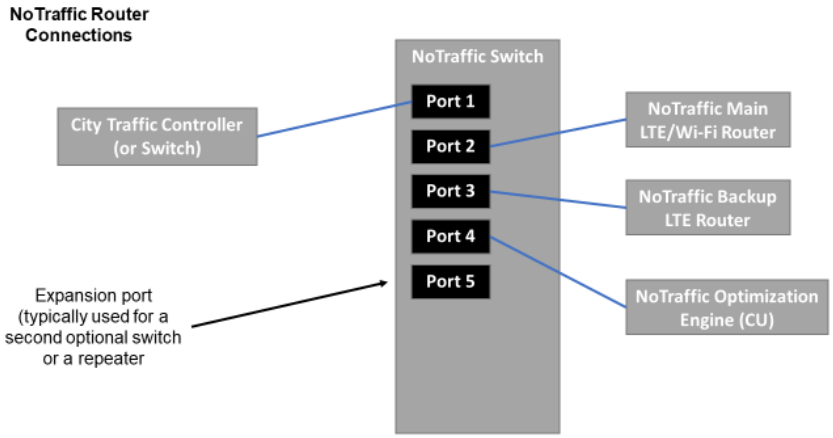
Make Ethernet Connections

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

a. Port 1 – connect to City switch or controller
b. Port 4 – connect to Control Unit ethernet port on front-face

c. Port 5 - Optional. This may serve as an expansion port (e.g., Daisy-chaining to a second switch, directly connect Wi-Fi repeater)

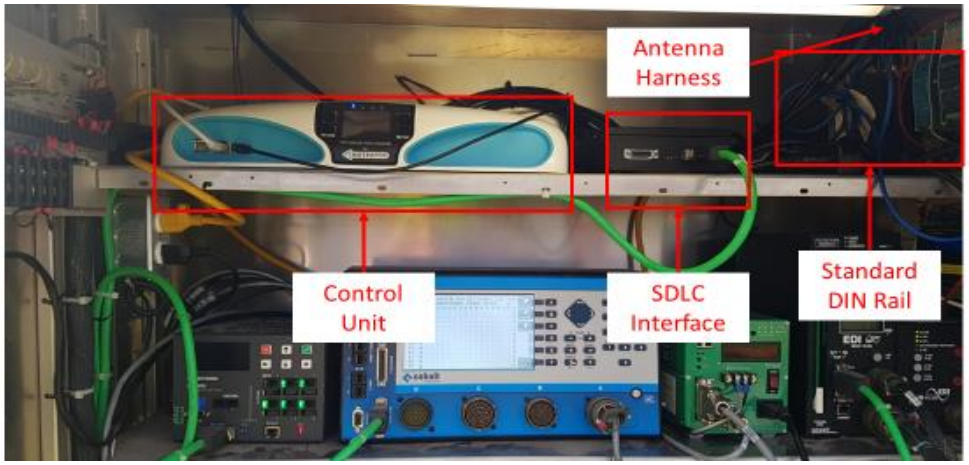
Figure 26: Ethernet connections on Main LTE



Connect SDLC Interface

Connect the SDLC interface to the Control Unit by using the USB-A to USB-B cable. Then connect the SDLC cable to the SDLC box and appropriate cabinet location (either serial bus, or directly to the controller).

Figure 27: SDLC interface connection



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. Test the connectivity between the traffic controller and SU

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.

Figure 28: Typical SU mounting - center of the approach at maximum height

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

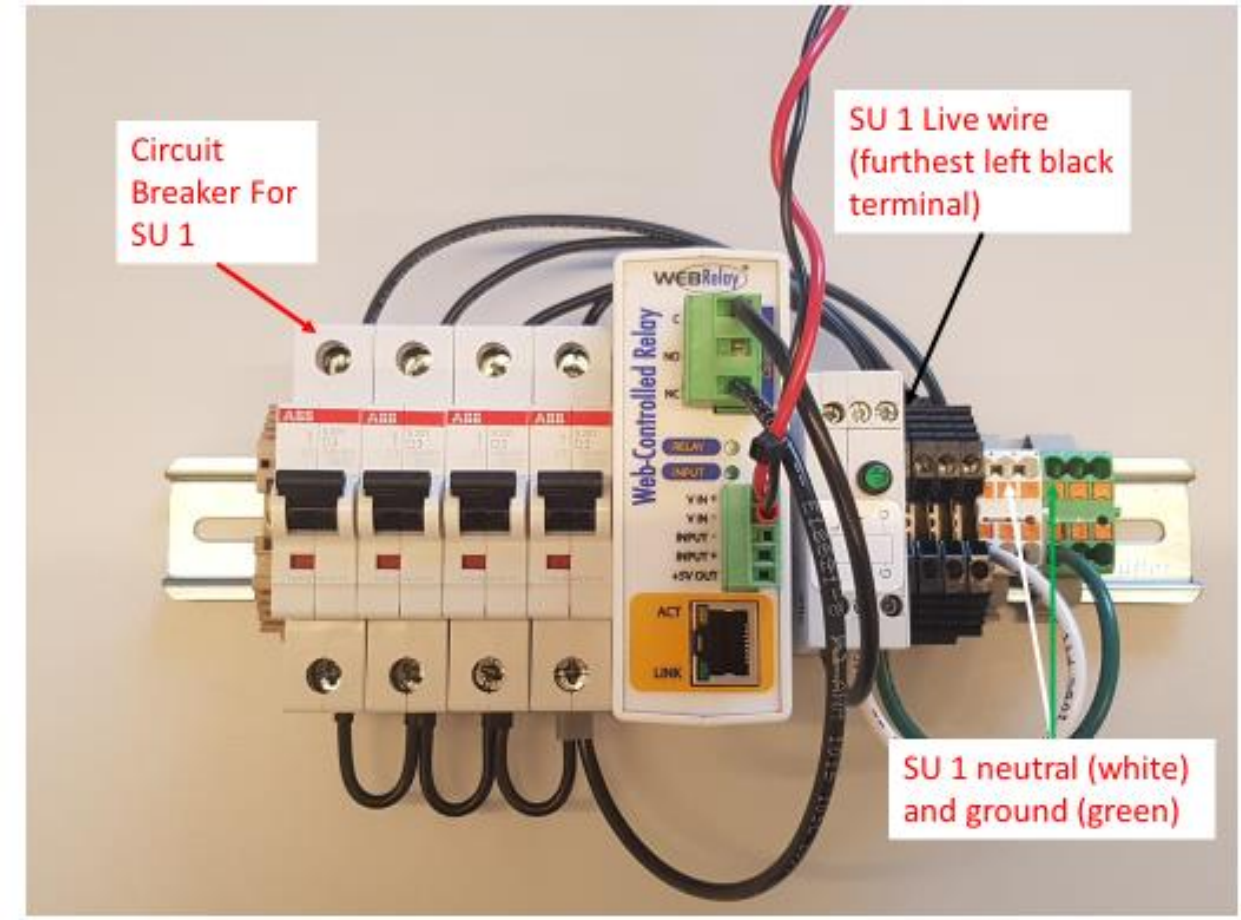
For Sensor Units powered using Power DIN from Cabinet:

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.

Figure 29: Power cable terminations on Power DIN Rail for Sensor Unit



For Sensor Units powered using a NEMA Tap:

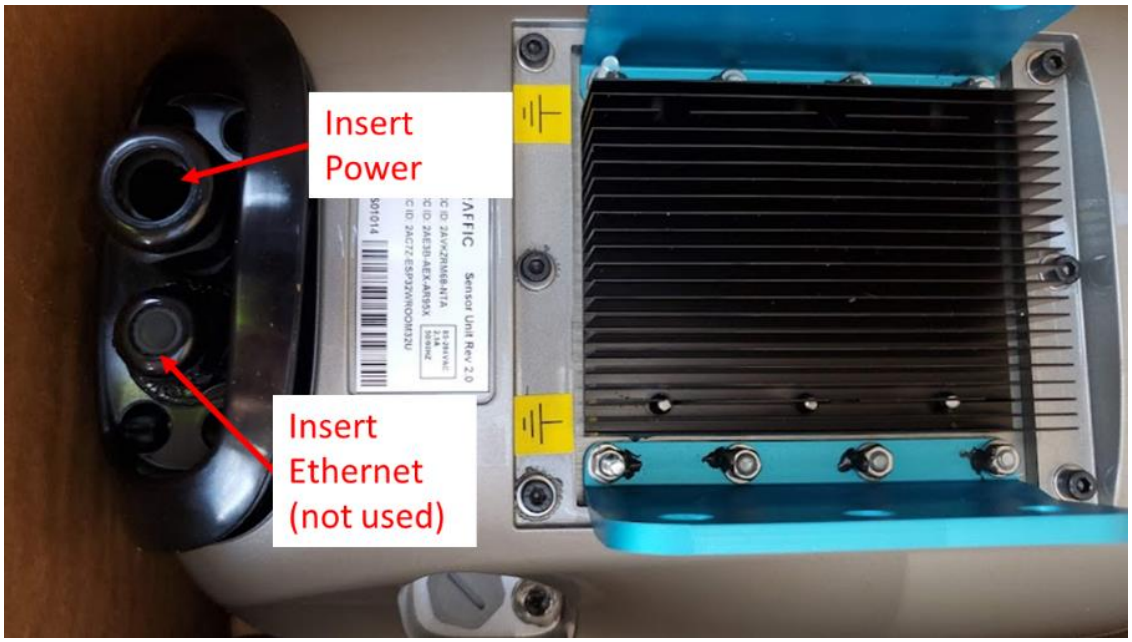
1. Attach the NEMA tap to the top of the photocell on the luminaire
2. Cut the power cable to appropriate length to reach the mounting location of the SU
3. Strip power connections

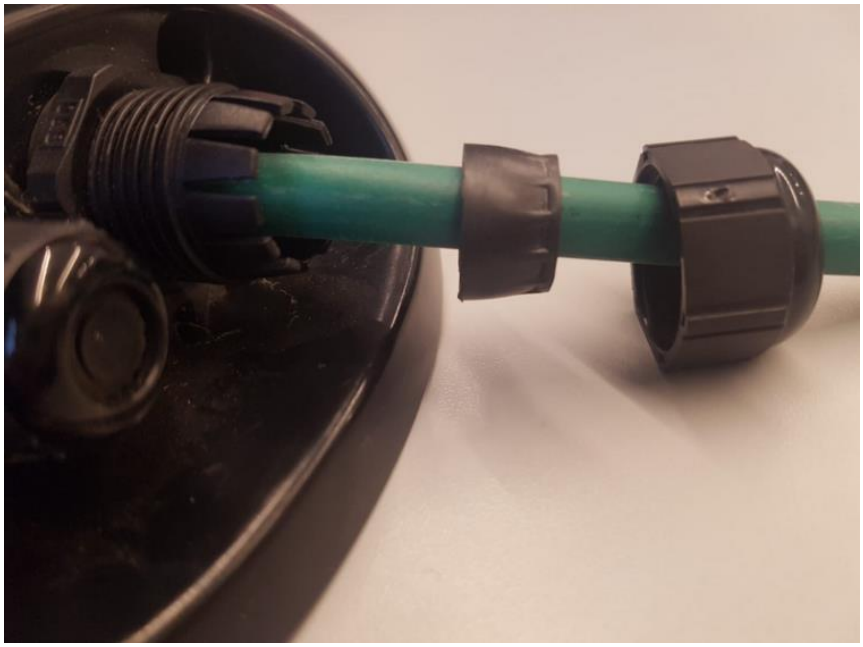
STEP 4: MOUNT AND AIM SENSORS

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.

Figure 30: Back compartment and rubber grommet for power cable (and Cat 5 if used)

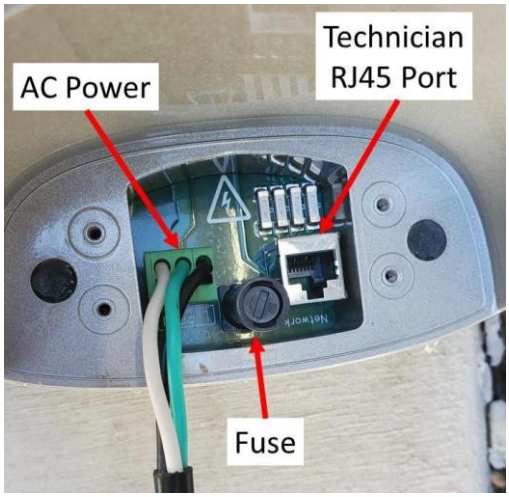




Strip the power cables. Terminate AC power as shown below at terminal block on the sensor. Use a flathead screwdriver or the disposable metal “toothpicks” (provided in the box) to “release” the metal tabs, put AC power cable in, and remove screwdriver or “toothpicks.” Tug on cable to make sure it is in correctly.

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

Figure 31: Power terminations inside the SU once back compartment is removed



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

Figure 32: Back compartment grommet and nut.

Aim the sensor towards the horizon, with a few taps down, similar to the example below.

Figure 33: Sensor Unit initial aiming guidance

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

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

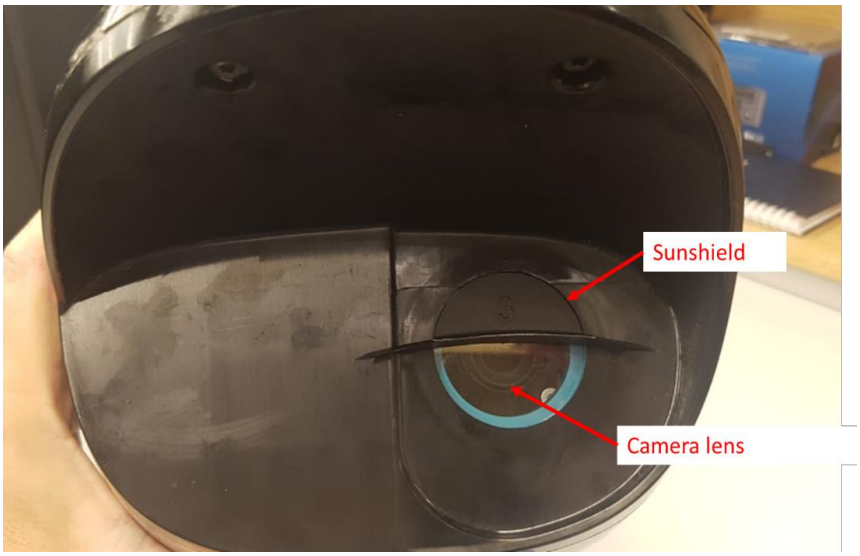
Keep the horizontal and vertical movements of the mounting bracket slightly loose. NoTraffic will give instructions for any adjustments to the sensor aiming.

Attach Sunshield:

Once the sensor is aimed (note it may still need to be adjusted), NoTraffic will instruct you on how to affix the sunshield on the lens of the camera.

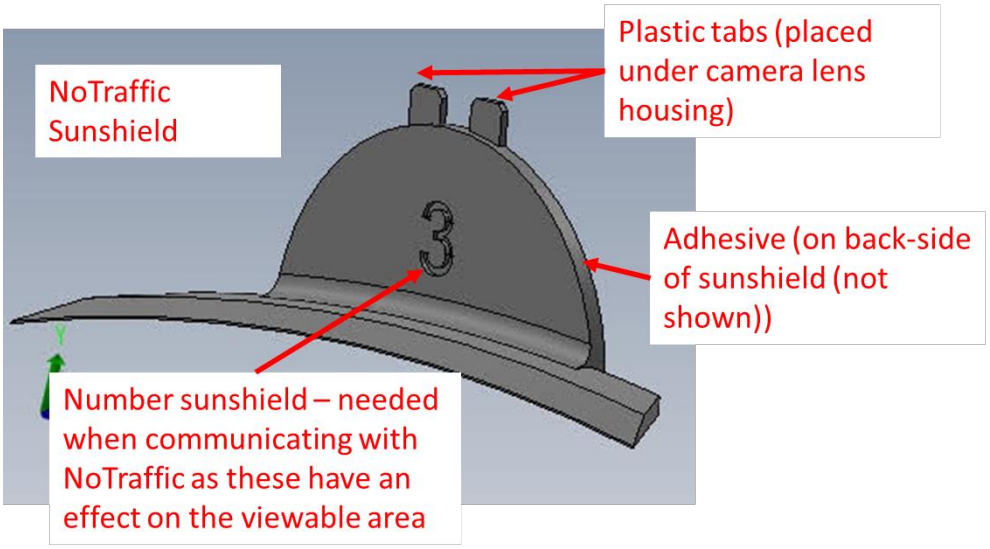
The sun shields are provided in the small accessories box that comes with each SU. Note that there will be three sunshields numbered “1”, “2”, and “3”.

Figure 34: Sunshield on front of Sensor Unit



The sunshield is provided in the NoTraffic Accessories Box. Take both sunshields in the bucket truck. Use Sunshield #2 to start. Affix tabs underneath the lens, prior to removing the adhesive.

Figure 35: Guidance for attaching sunshielf



Confirm with NoTraffic via phone that sunshield is on correctly. It can be difficult to determine if it is straight, so confirmation with NoTraffic is important.

Once confirmed by NoTraffic remove the sun shield carefully. Use the NoTraffic wipes to clean the camera lens. Use Number 1 – WET to remove debris and oil and then dry with Number 2 – DRY.

Remove the adhesive on the back of the sunshield and place back on the camera lens. Confirm with NoTraffic via phone that sunshield is straight. Once confirmed, press, and hold sunshield for 5-10 seconds

Figure 36: Sensor Unit with sunshield attached

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 sensor hadn't moved. Once confirmed, task is complete.

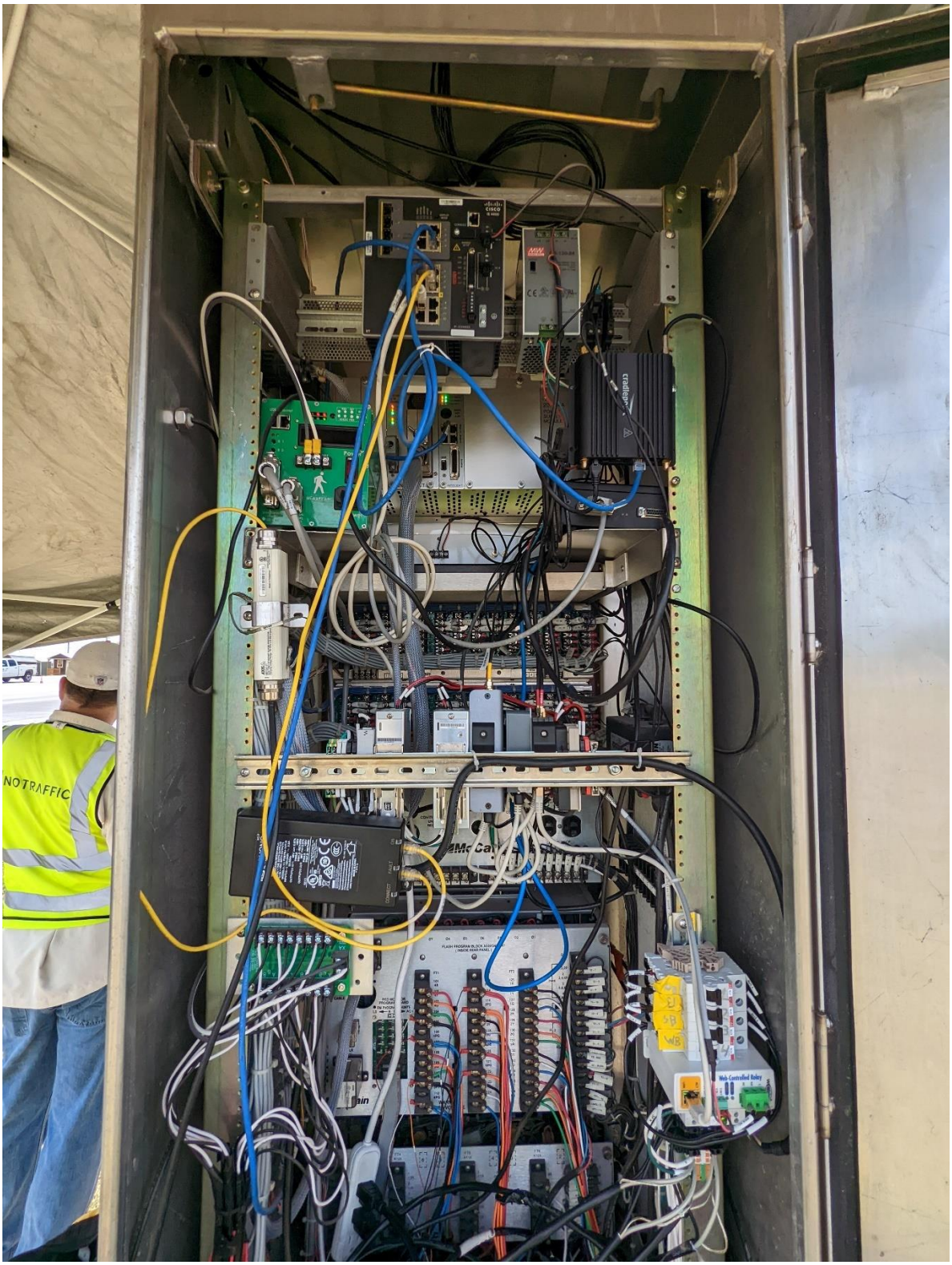
INSTALLATION EXAMPLES

CABINET EQUIPMENT

ATC/332 CABINET WITH STANDARD DIN

Figure 37: Front view of 332 cabinet after installation.

Figure 38: Rear view of 332 cabinet after installation.



NEMA CABINET WITH STANDARD DIN AND POWER DIN

Figure 39: Cabinet equipment installed in a NEMA cabinet.

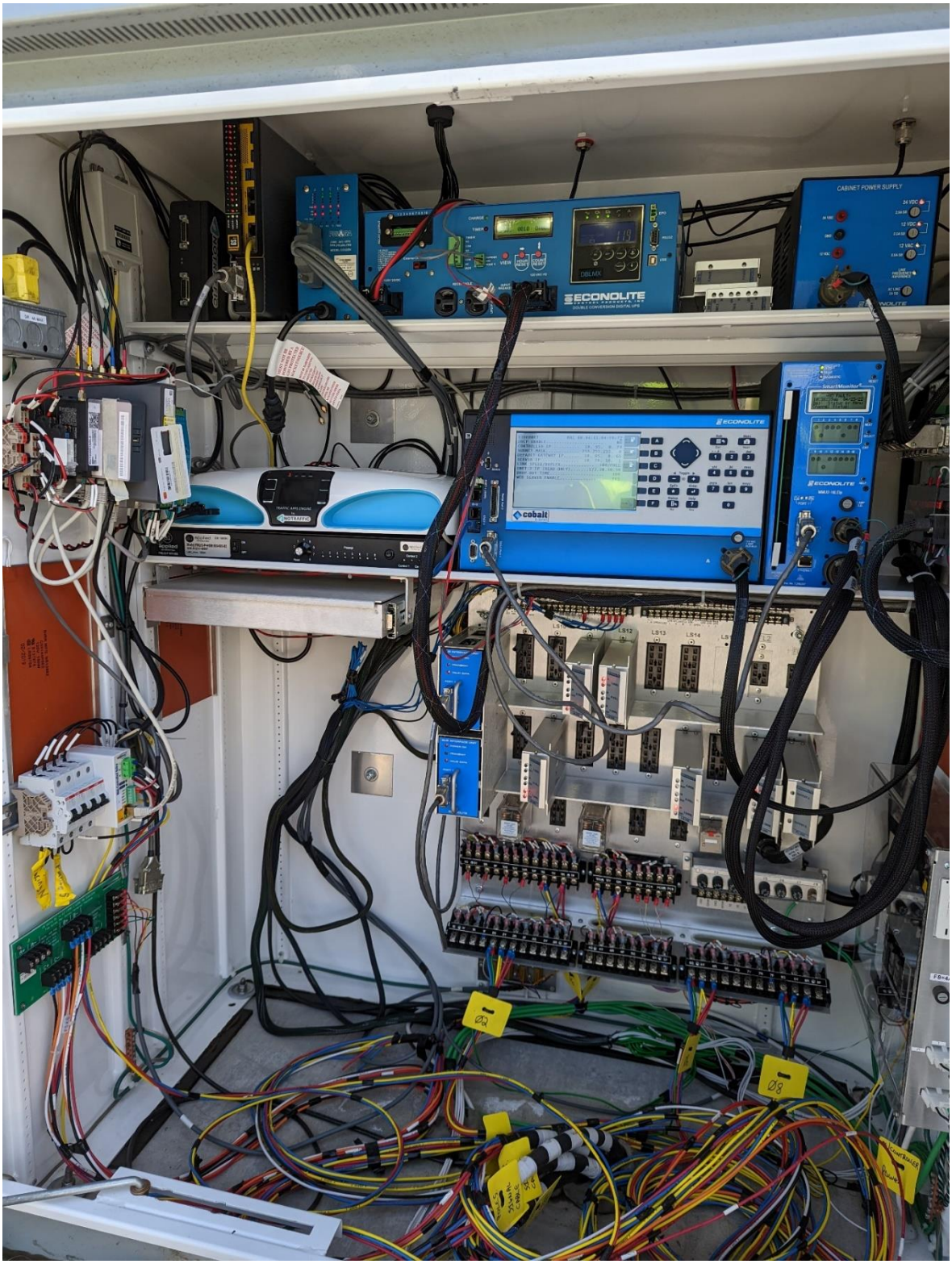
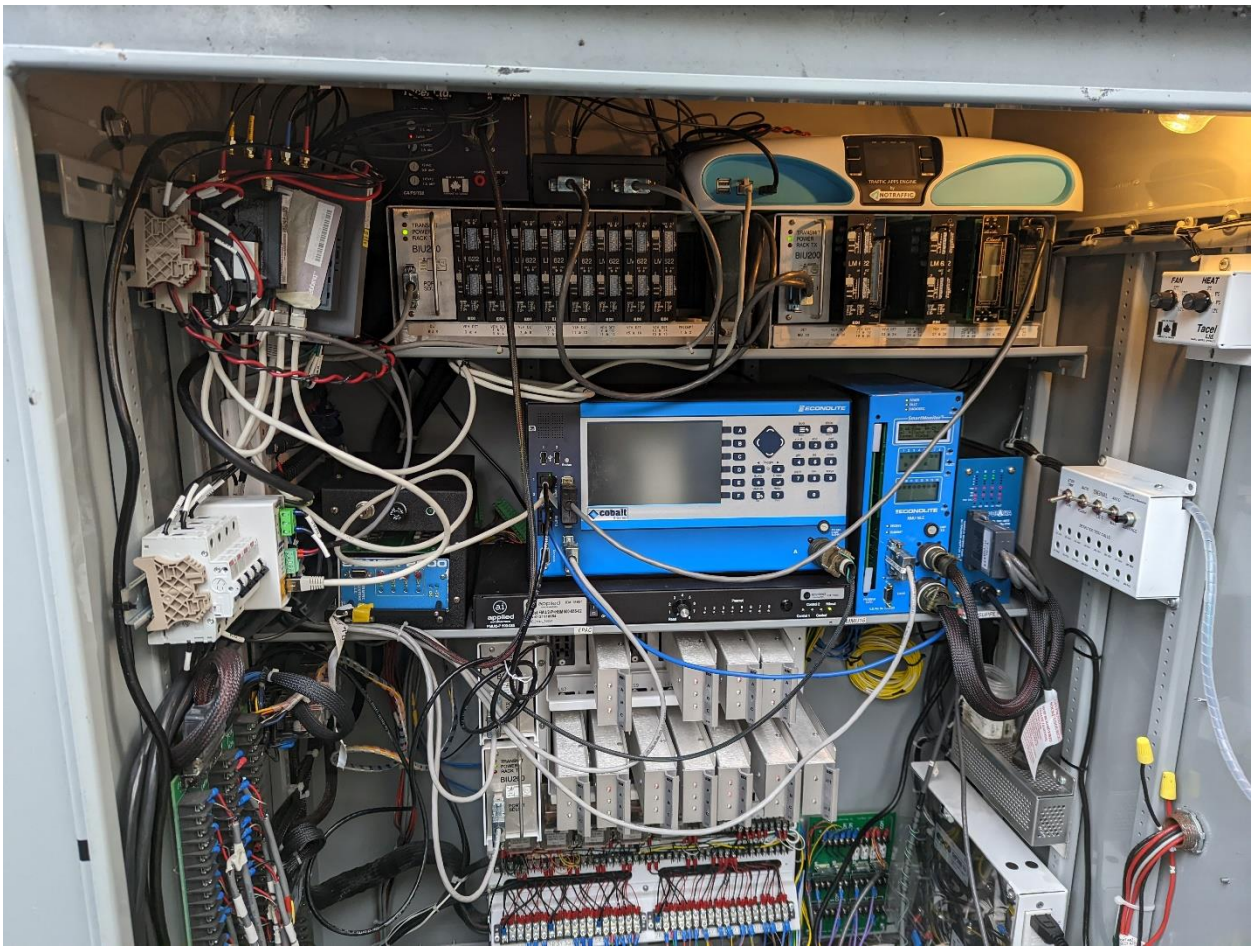


Figure 40: Cabinet equipment installed in a NEMA cabinet (2)



SENSOR UNIT

Figure 41: Sensor unit installed at one approach

Figure 42: Connected Vehicle SU (left), and regular sensor unit