



# Auto-steering System Installation Guide

2011 Version 1.0

**Gemini Navsoft Technologies Inc.**  
**Fredericton, NB, Canada**

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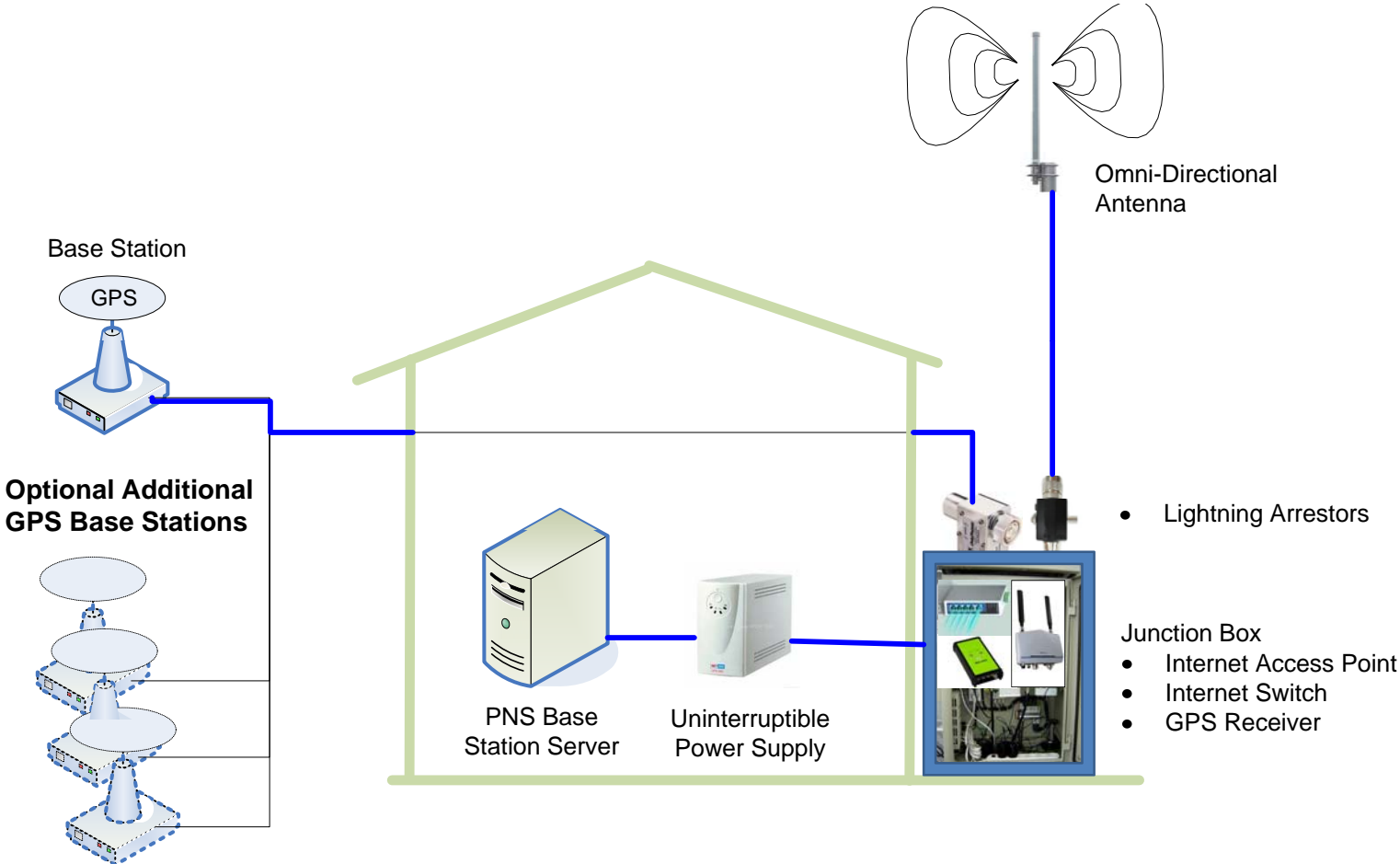


## Notes

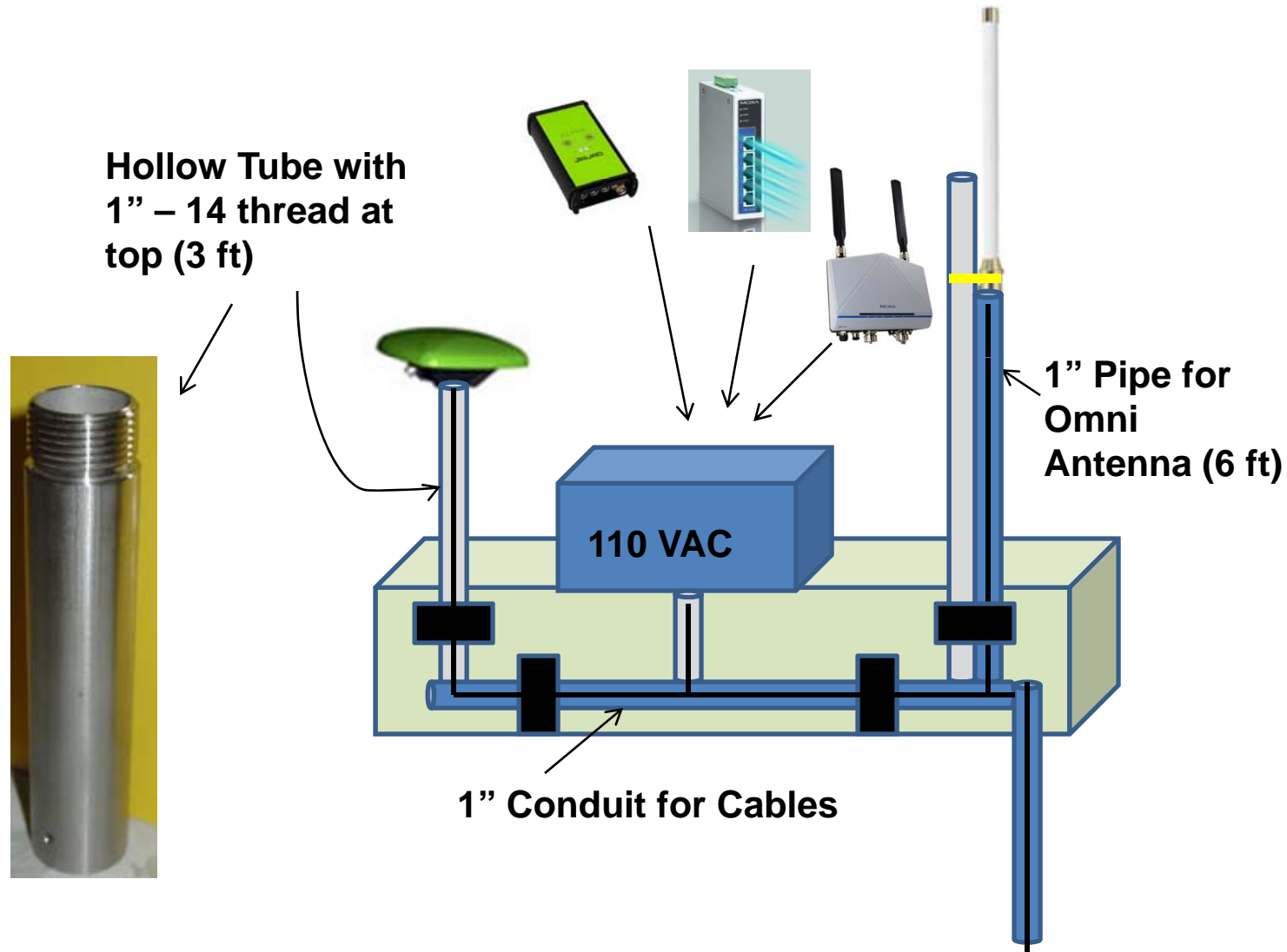
- The following illustrations are meant to serve as a guide in providing the basic ideas necessary to build an effective GPS auto-steering system infrastructure. Each project site is different and therefore the GPS auto-steering system setups will require modifications to suit the particular environment.



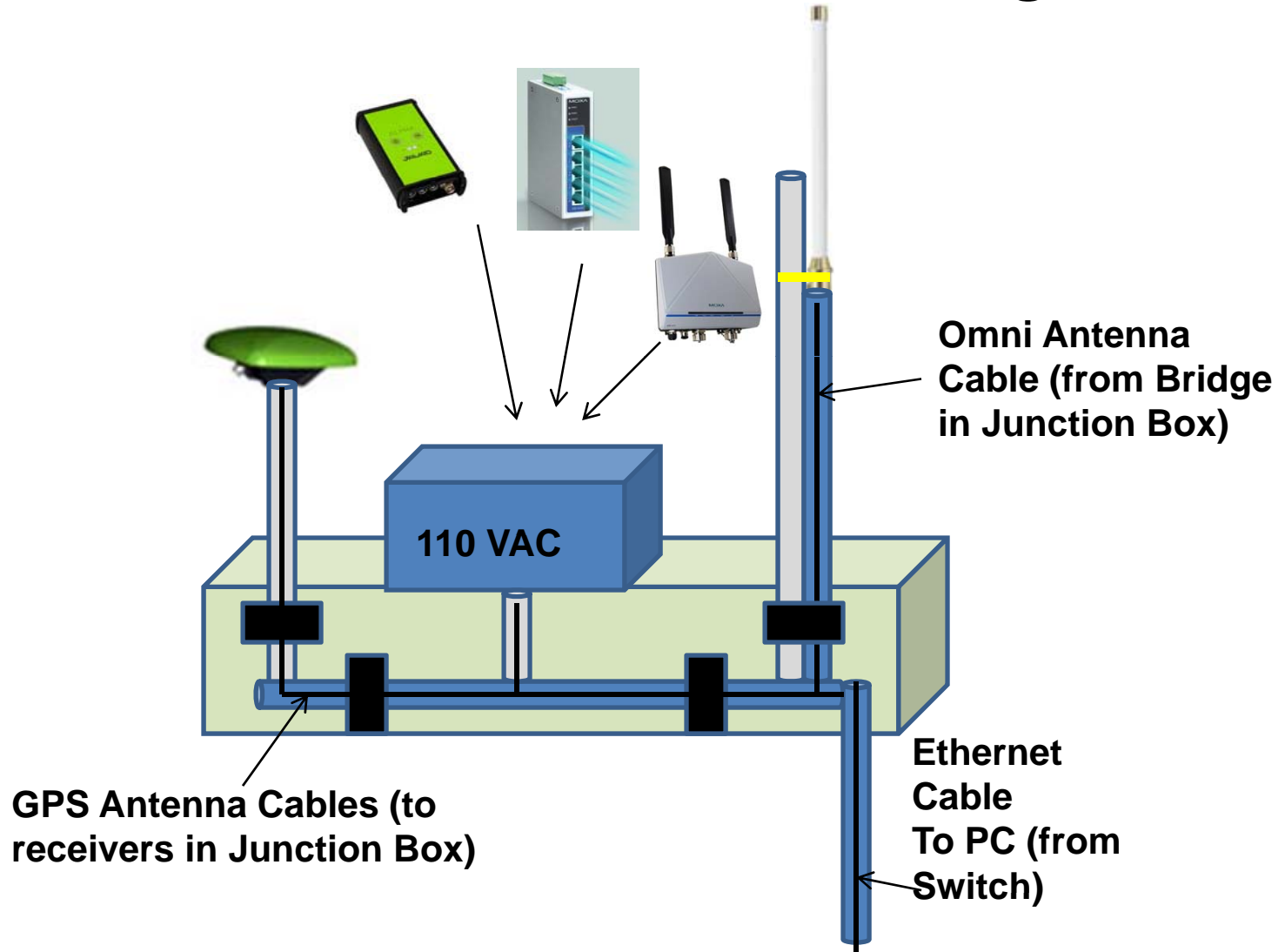
# Base Station Server Infrastructure



# Base Station Installation Hardware

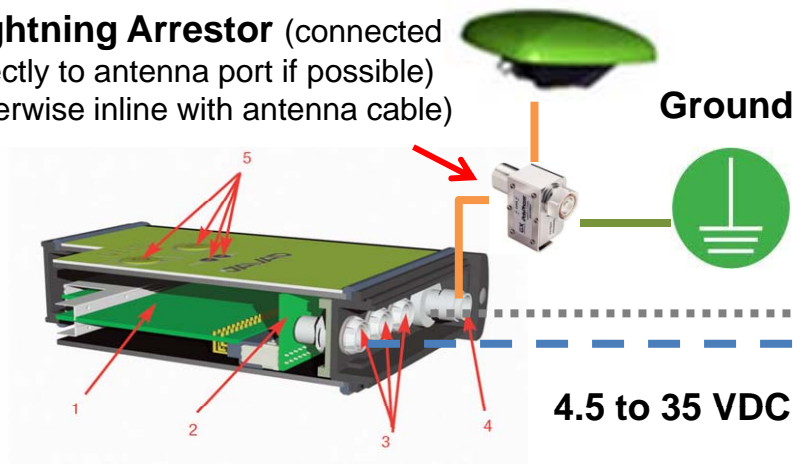


# Base Station Installation Wiring



# Base Station Wiring

**Lightning Arrestor** (connected directly to antenna port if possible) otherwise inline with antenna cable)



**Lightning Arrestor** (inline between AWK-4121 and antenna cable)

12 to 48 VDC

4.5 to 35 VDC

UPS

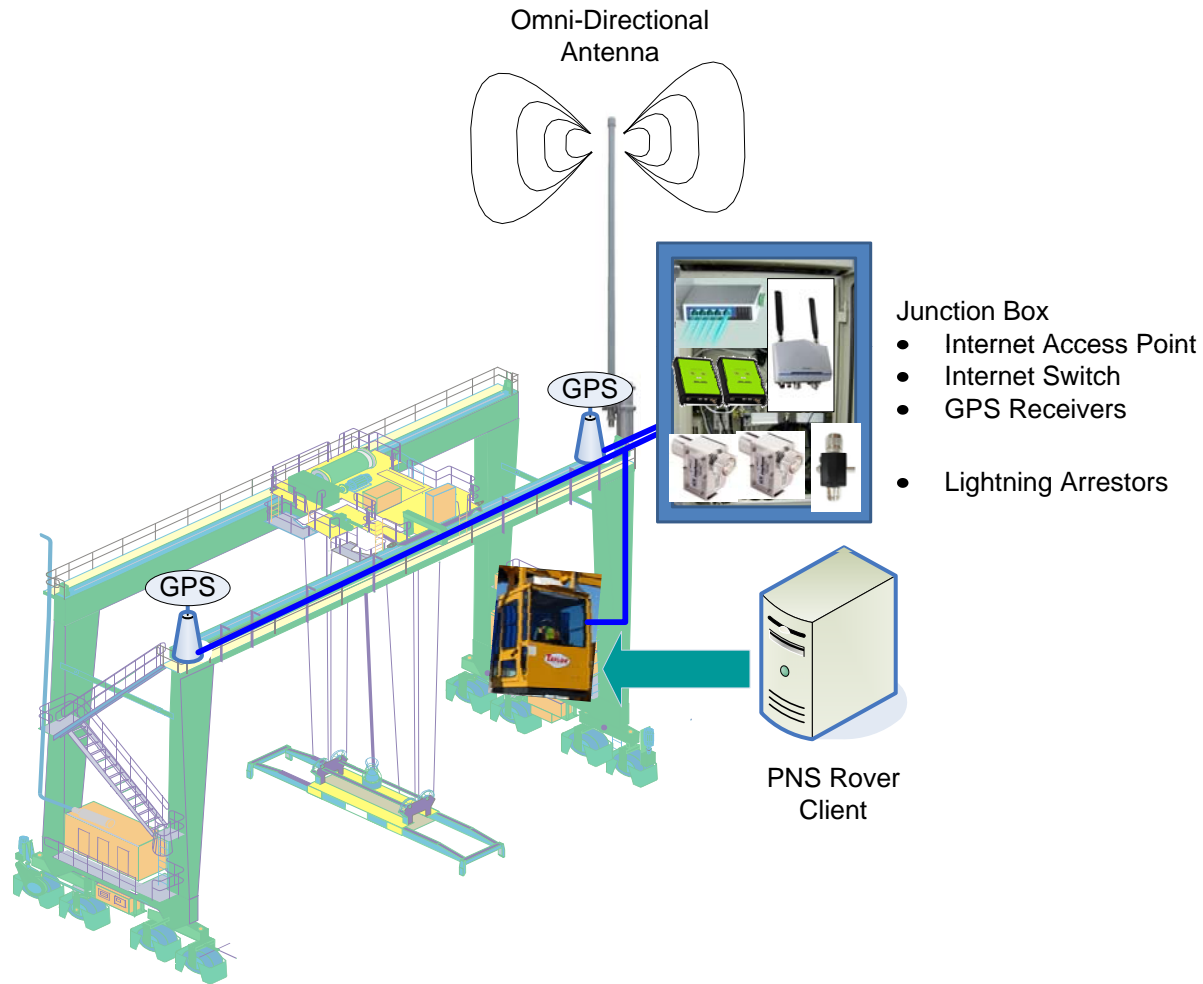
12 to 48 VDC

AC/DC Adapters

110 VAC



# Rover Client Infrastructure



# Rover Client Hardware Installation



**GPS Antenna (1 or more) (1"-14 thread receptor)**



**Arrestor**



**GPS Receiver**



**9dB (10° Vert Angle) Omni Directional Antenna**



**Access Point/ Bridge**



**Arrestor**

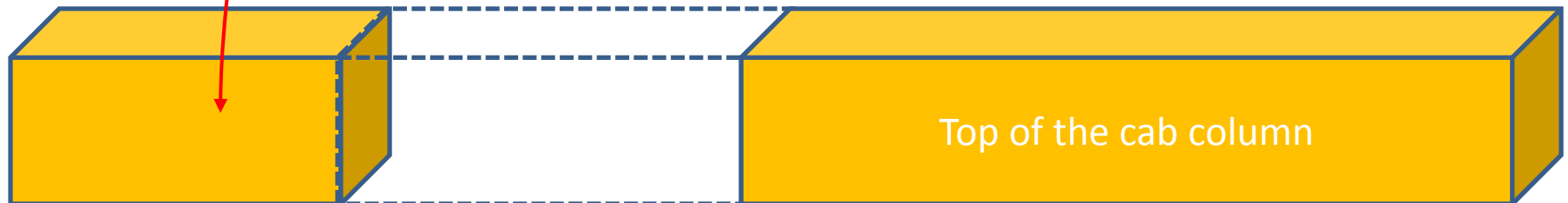




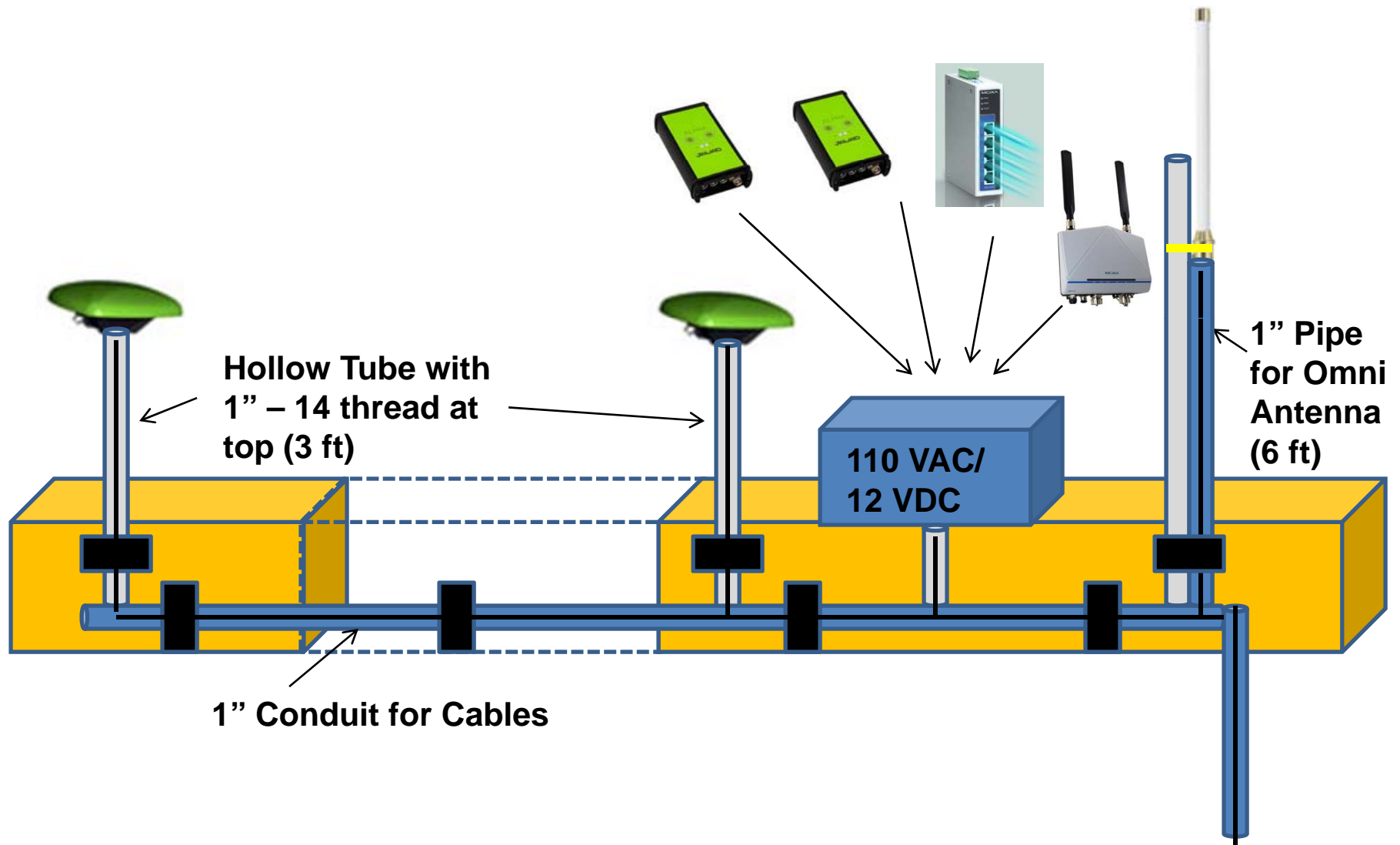
# Rover Client Infrastructure - Hardware



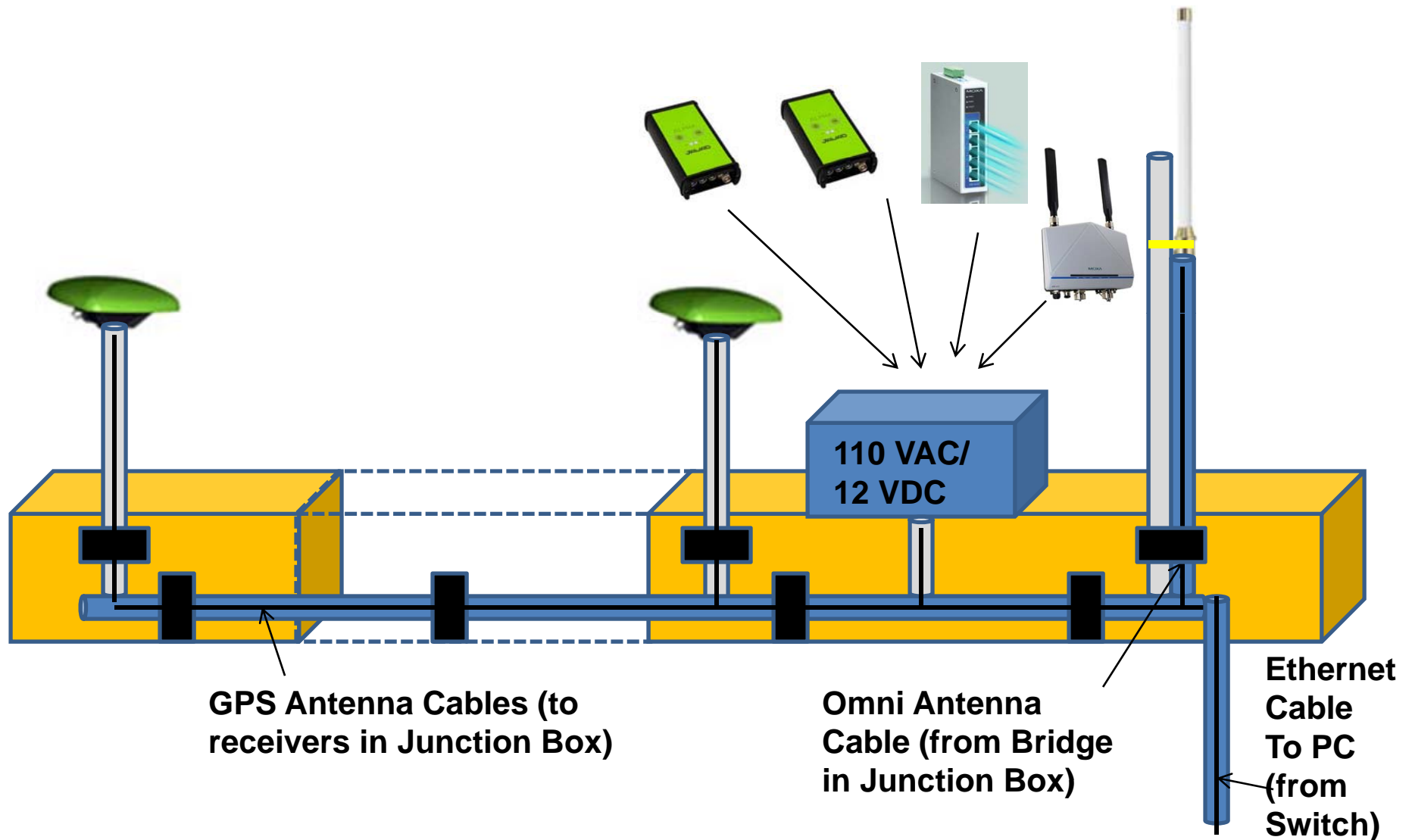
Top of the center point (or the column farthest away from the cab) of the upper support beam



# Rover Client Infrastructure (Upper Support Beam )

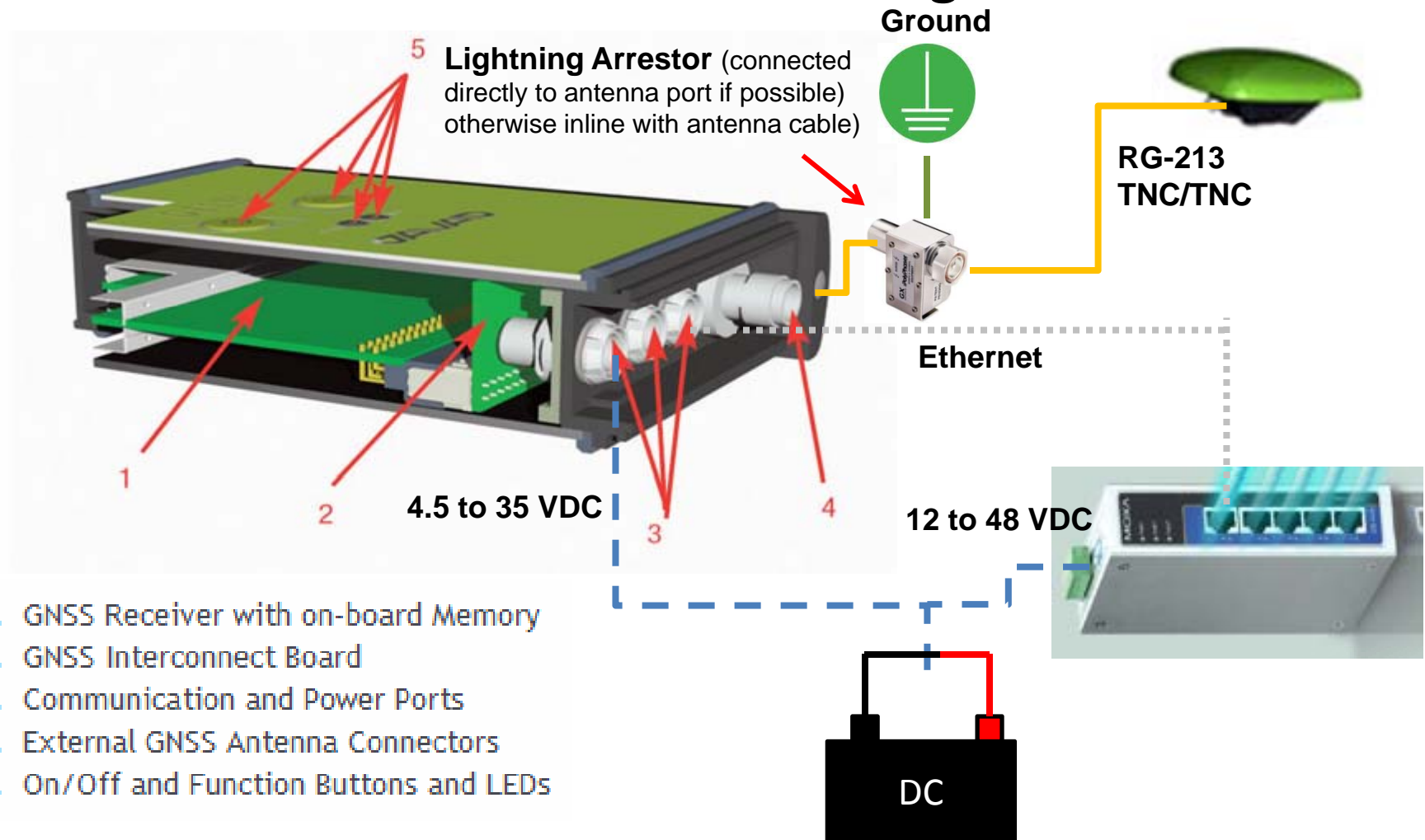


# Rover Client Infrastructure (Upper Support Beam )



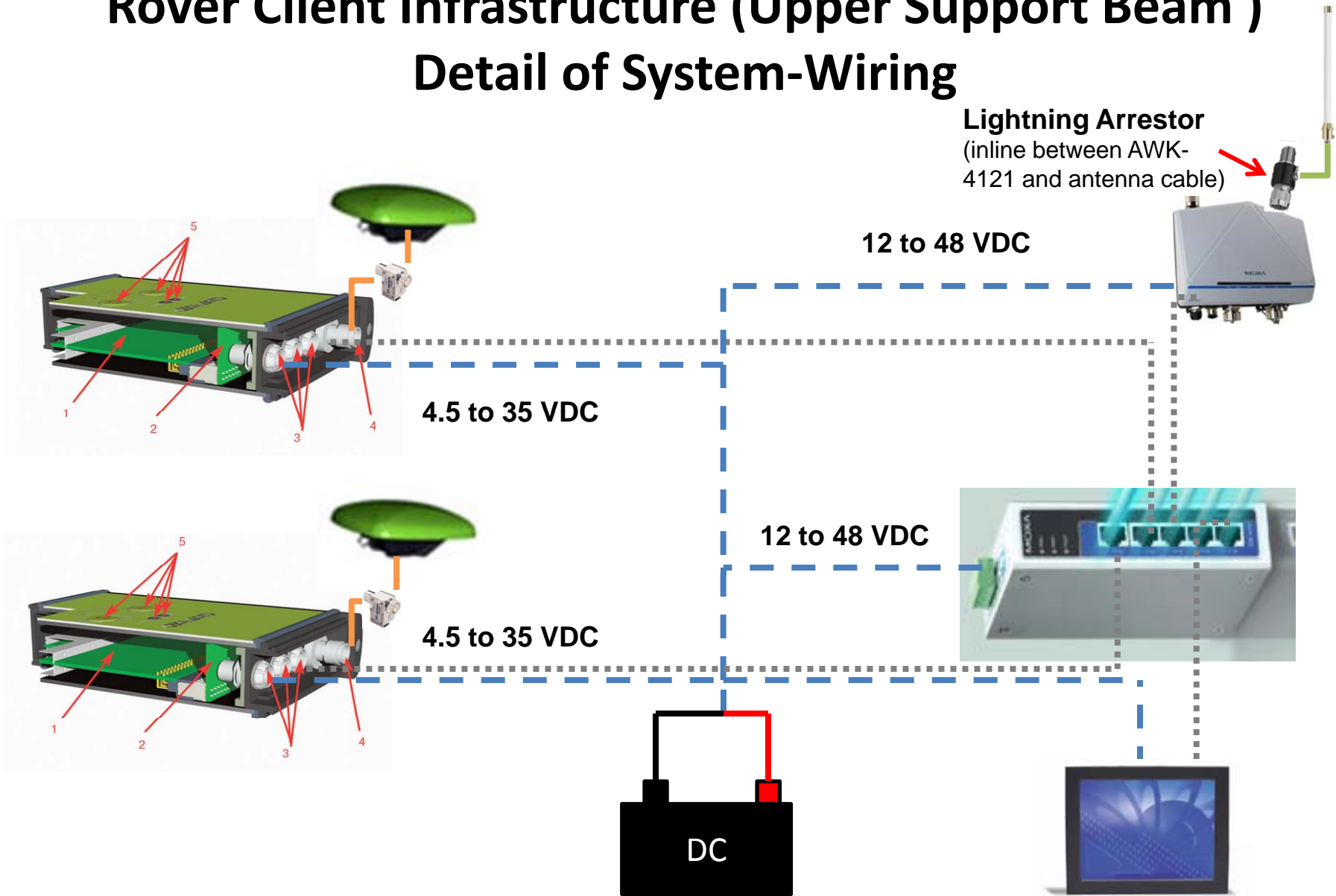
# Rover Client Infrastructure (Upper Support Beam )

## Detail of GPS-Wiring



# Rover Client Infrastructure (Upper Support Beam )

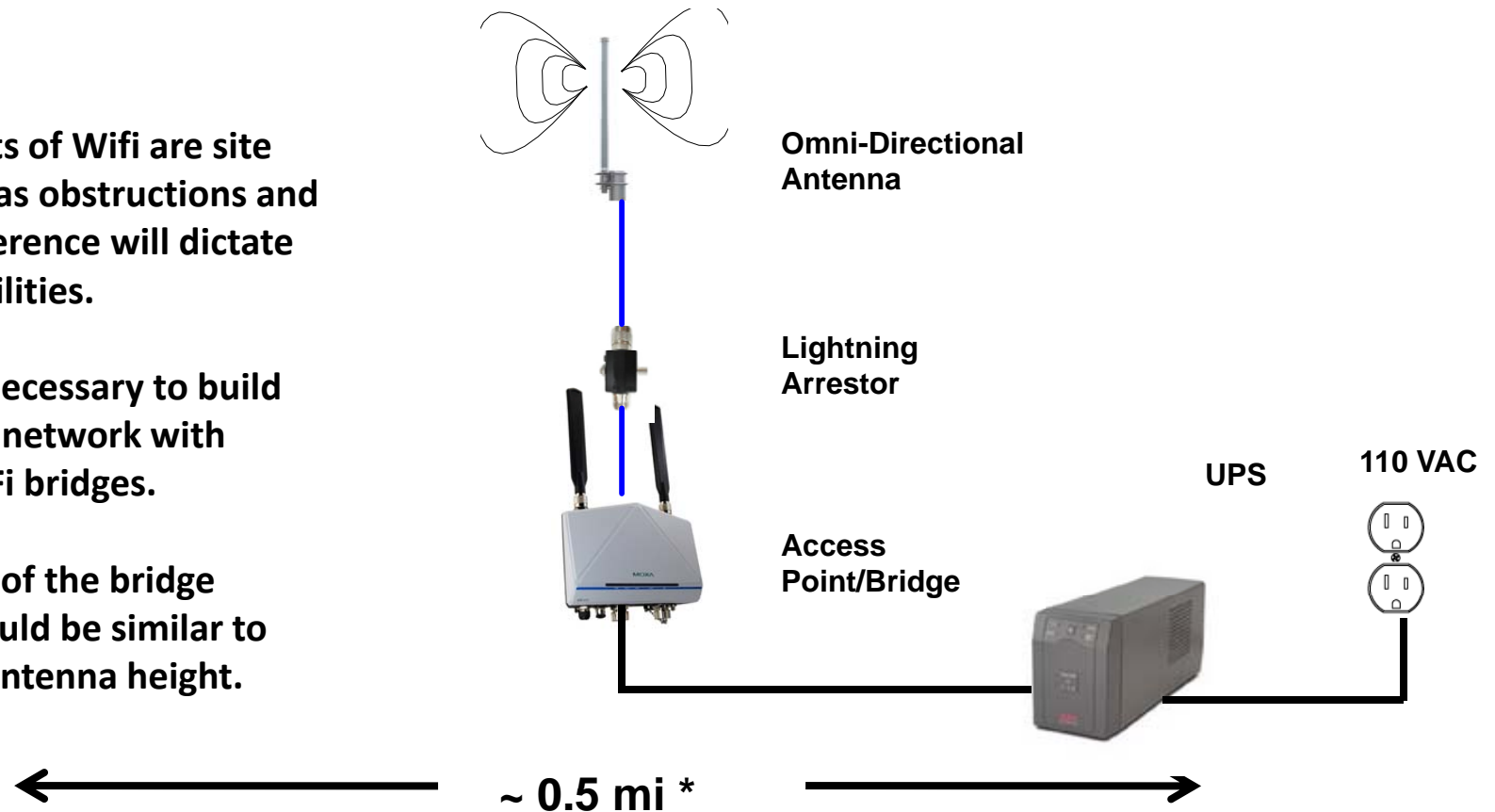
## Detail of System-Wiring



# Bridge Infrastructure

## \* Notes:

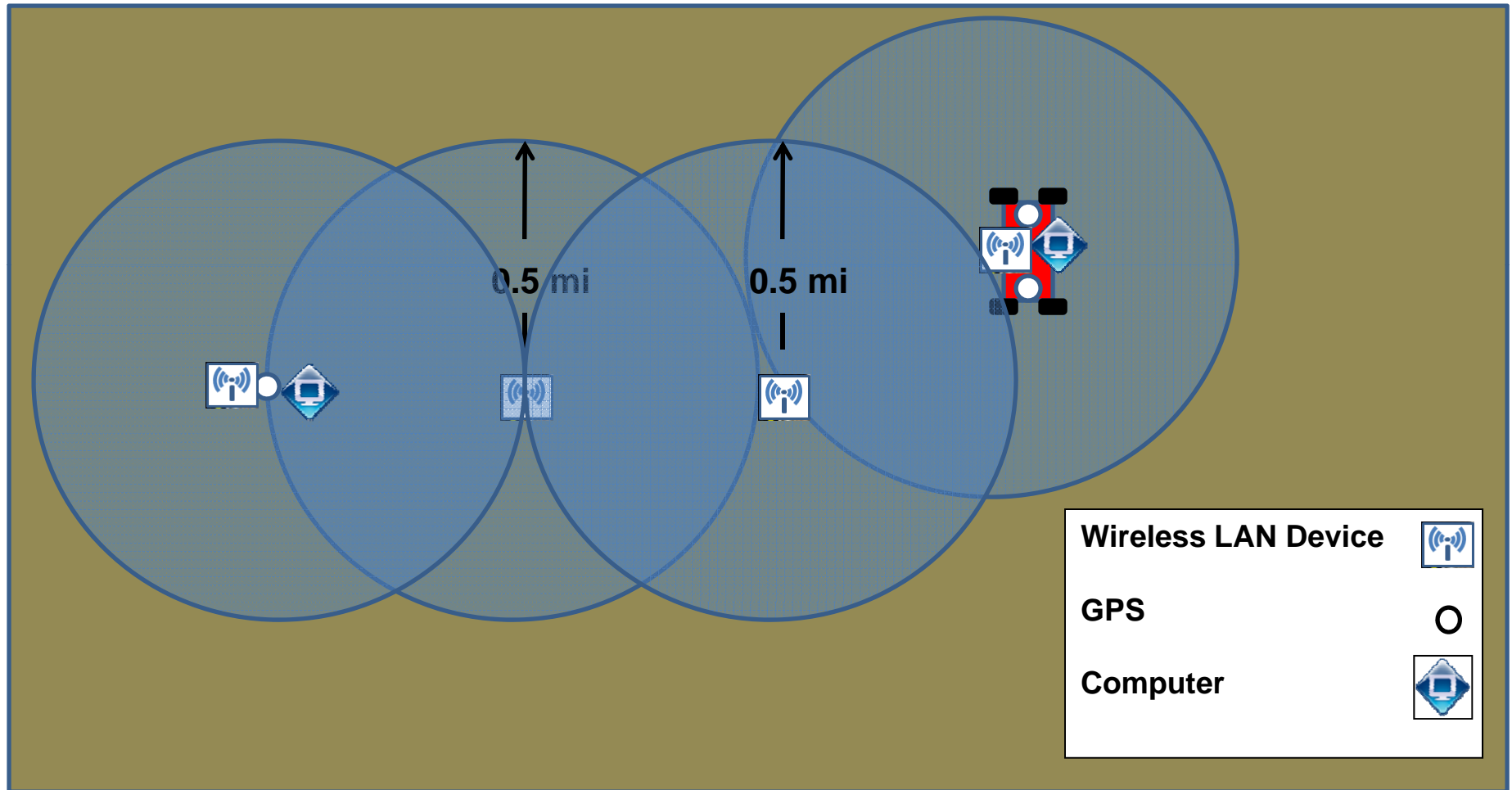
- Range limits of Wifi are site dependent, as obstructions and signal interference will dictate range capabilities.
- It may be necessary to build the wireless network with multiple WiFi bridges.
- The height of the bridge antenna should be similar to the rover's antenna height.



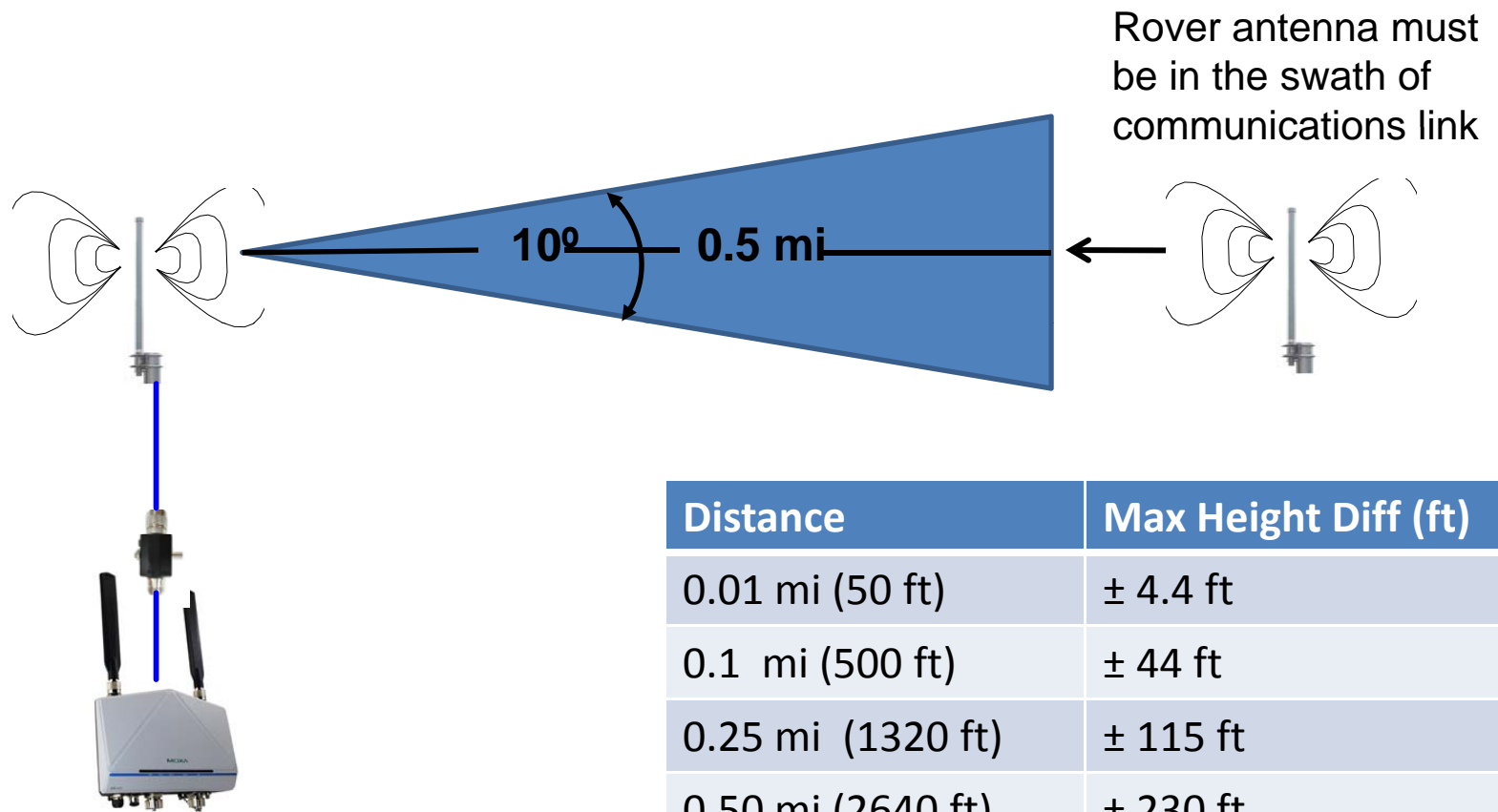
# Plan View of Generic Project Site Showing Wifi Infrastructure and Anticipated Range Limit

1  
5

(As many wireless bridges as necessary are used to cover the project area)



# Profile View of Omni Directional Antenna Beam Pattern



*Network bridges should be kept ~ 50 ft away from nearest rover approach*

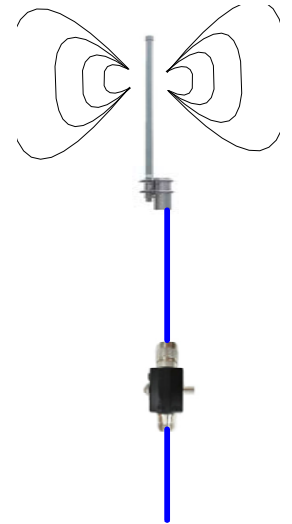




# Bridge Infrastructure



Directional Antenna



Lightning Arrestor



Access Point/Bridge



# Power Consumption

$$P = V \times I$$

$$P = I^2 \times R$$

$$P = \frac{V^2}{R}$$

Device	Power/Current Consumption
MOXA AWK-4121 Access Point, Bridge (Outdoor)	<b>0.121</b> to 0.494 A @ 12 to 48 VDC
MOXA AWK-3121 Access Point, Bridge (Indoor)	<b>0.121</b> to 0.494 A @ 12 to 48 VDC
MOXA EDS-205 Switch	0.12 A @ 24 V, 12 to 48 VDC
Javad Delta G2T Receiver	(2.7 W) 4.5 to 35 VDC, <b>0.225 A</b> @12 VDC
Base Station Server PC	(700 W) <b>59 A</b> @12 VDC

## UPS Requirements:

- Base Station: ~1 hour power supply for 60 A.
- Bridge: ~1 hour power supply for 0.121 A



# UPSs from APC [www.apc.com](http://www.apc.com)

**Your Configuration**

Power Draw: 600 Watts

Estimated Runtime: 0:48



Extendable life using external battery

## APC Smart-UPS XL 2200VA 120V Tower/Rack Convertible

[More Images](#)

**Ships With:** CD with software, Smart UPS signalling RS-232 cable, USB cable, User Manual

Description	Part Number	Price*	Estimated Order Total (USD)
✓ APC Smart-UPS XL 2200VA 120V Tower/Rack Convertible	SUA2200XL	\$1,150.00	\$1,150.00

### Smart-UPS

## APC Smart-UPS SC 420VA 120V

APC Smart-UPS, 260 Watts / 420 VA, Input 120V / Output 120V, Interface Port DB-9 RS-232

**Includes:** CD with software, Smart UPS signalling RS-232 cable, User Manual

**Standard Lead Time:** Usually in Stock



**SC420**

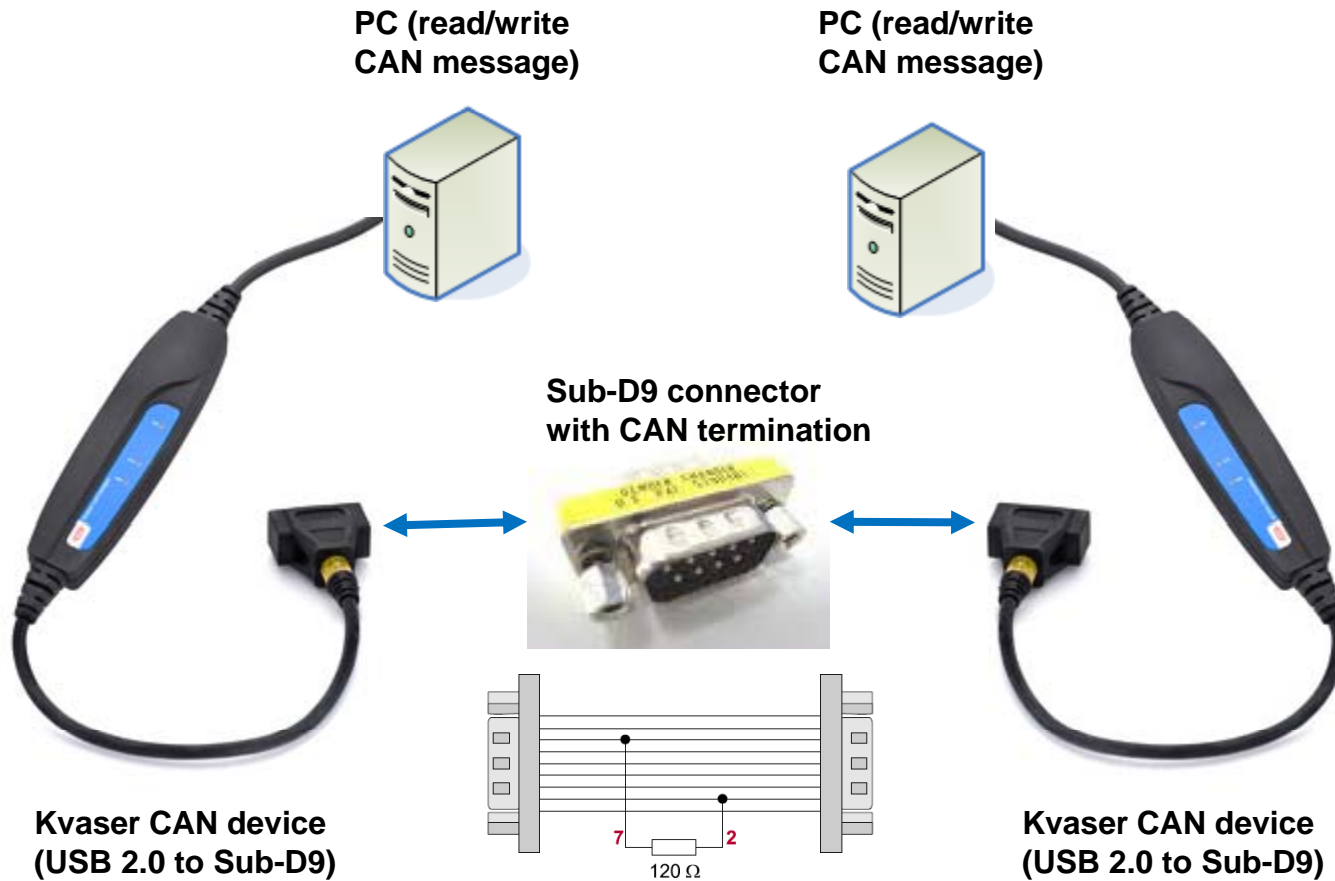
Price \* : ~~US\$129.99~~  
**US\$116.49**

[Email Technical Specifications](#)

[Printer Friendly](#)



# CAN Interface Loop-Back Test



# Preliminary Site Test Set-Up



12" and 24" hollow tube with 5/8" coarse thread to attach GPS and omni-antenna to the top of the tube.

Magnetic mount with 5/8" coarse thread to attach a hollow tube to the top of a van.

400 W power inverter



Power bar

