

ZELT INDUCTIVE LOOPS FOR BICYCLES

INSTALLATION IN ASPHALT

Serial numbers starting with X or Y



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Warnings

DANGER

Fire, explosion and burn hazard.

Do not short circuit, crush, disassemble, heat above 100 °C (212 °F) or incinerate the components of your Eco-Counter counting system.

NOTICE

All Eco-Counters have been tested to be resistant under the most severe environmental conditions (moisture, salt content, dust, temperature variations, etc.).

We remind you that your Eco-Counter remains a measuring system, and therefore it should always be handled with care.

Preparing the Installation

Safety



Warning! Risk of bodily harm!

- Use safety cones and hazard signs to secure the work site.
- Wear the necessary protective equipment.



Delivered Equipment

Counter



Eco-Combo Logger



Selective ZELT Sensor
*For installation on
shared roads*



Battery pack



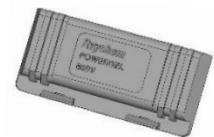
Wires for forming the
loops in solid ground

OR



Greenway ZELT Sensor
*For installation on
dedicated bicycle lanes
and greenways*

Additional Hardware



RayGel junction box



Yellow reference tags



Scotchlock connectors



Magnetic key



Geotextile fabric



Screwdriver and anti-
vandalism screws



B125 manhole

OR

OR

OR



Geotextile fabric and
an elastic band to
attach it underneath
the manhole



Torx wrench and anti-
vandalism screw



Rainbird manhole & cap

Required Equipment

- **To trace the saw cuts**

- Straight plank of wood (150 cm (60 in) minimum)
- Meter stick
- Chalk

- **To cut the diamonds into the asphalt**

- Thermal saw with blower and double diamond disk capable of cutting out a gutter measuring 10 mm (1/2") wide and 50 mm (2") deep.

- **To install the loops**

- To form the loops: Drill, pliers and a short ruler (to push in the loops).
- To verify the inductance of the loops (optional): Multimeter.
- To protect the loop ends (optional): Conduit Ø 25 mm (1"), utility knife.
- If you would like to use your own wire to form the loops, make sure that you use a stranded wire.

- **To fill in the saw cuts**

- Asphalt or other filler regularly used for roadwork with a temperature that does not exceed 60° C (140° F).



We recommend using micro-cement for sealing the road work (example: sika fastfix-138tp, 714 scellflash micro-beton (micro-cement)).

- Sponge
- Water
- Trowel

- **To install the manhole**

- Shovel and pickaxe.
- Gravel to put under the manhole to facilitate drainage (recommended).

- **To test the system**

- Bicycle
- Eco-Link software

If you do not have the Eco-link software, ensure that there are two people present.

List of compatible devices with Eco-Link:

- *Laptop: The laptop must be equipped with a compatible Bluetooth connection.*

Download the Bluetooth compatibility test and run it on your laptop.

<https://www.eco-visio.net/Download/bluetooth-test-en.exe>

If the result of the test is positive, download and install Eco-Link:

<https://www.eco-visio.net/Download/ecolink.zip>

- *Tablet or Smartphone: Must be an Android-based device* .

Download Eco-Link via the Google Play Store



- **To display photos of your counter on Eco-Visio (optional)**

- Camera

Installation Site

Respect the following instructions in order to choose the appropriate installation site for your counter.



AVOID

- **Areas subject to electromagnetic interferences:**

- Proximity to other ZELT Inductive Loops.
- Electrical wires, overhead or underground.
- Buried telecommunication equipment, etc.

- **Locations that circulation is congested:**

- Peaks of inclined paths.
- Stops.
- Proximity to road crossings.
- Proximity to lookout points.
- The presence of undesired obstacles throughout the area being counted.



CHOOSE

- A location that has a stable and steady flow of traffic; preferring flat and straight paths.
- If you have a system with the Automatic Transmission Feature activated, select a location with sufficient cellular network coverage.

See **Appendix B**, page 35, to learn how to check the network coverage.

If you do not know if the automatic data transmission function is active, refer to section **Testing the system → Automatic data transmission**, page 19.

Installing the Counter

Layout

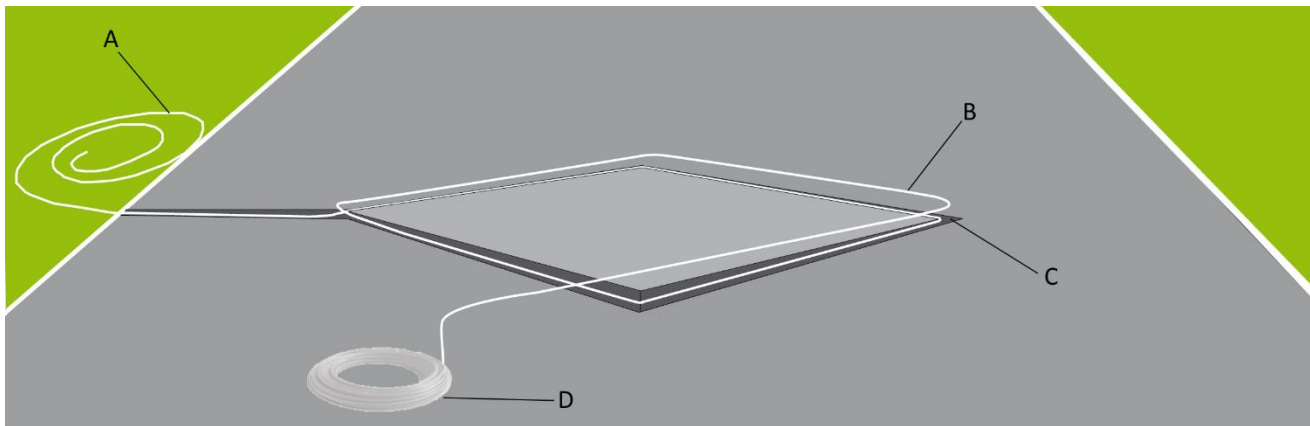
Example of a completed system



Example of a four-loop system with direction detection installed on a bike path

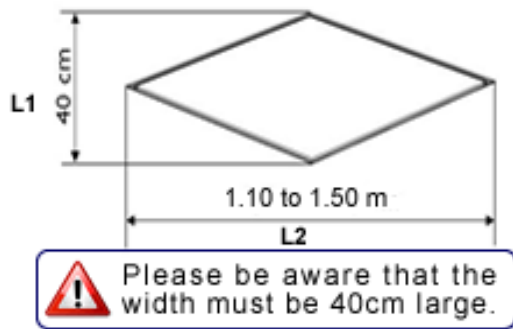
Principle of the ZELT Loop System

● Shape of the Loops



A	Stranded wire to be twisted up to the manhole
B	Form a loop of 8 turns in the cut-out
C	Cut-out
D	Wires for forming the loops in solid ground

- **Dimensions of the Loops**



The width L1 of the diamond must be 40 cm +/- 2 cm (16" +/- 0.5").

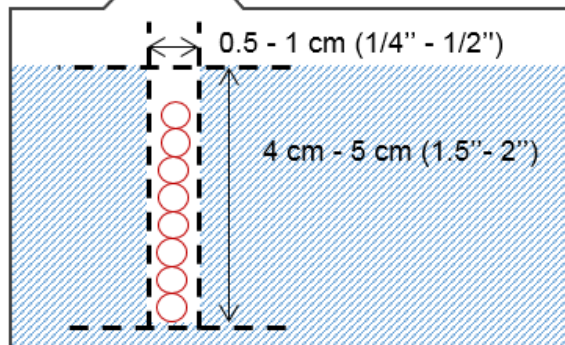
The length L2 can be adjusted between 110 cm (43") and 150 cm (60") (140 cm (55") is the most common) depending on the width of the path where it will be installed.

The diamond shape must be perfect.



If there is a need for the loops to be a different size, please contact Eco-Counter to verify whether or not the desired dimensions are feasible.

- **Dimensions of the Cut-outs**

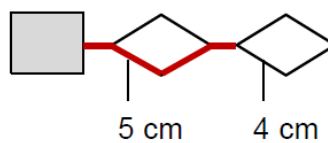


Width: 0.5 to 1 cm (1/4" to 1/2")

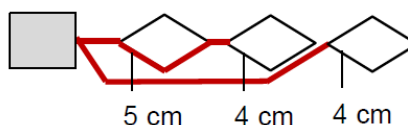
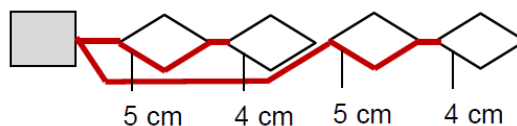
Depth:

- Systems on which the loops are installed one above the other: 4 cm (1.5")
- Systems on which the loops are installed side by side: you will place the end of the Loop furthest from the manhole through the cut-out in the loop closest to the manhole:

- The loop furthest from the manhole: 4 cm (1.5")
- The loop closest to the manhole: 5 cm (2")



- For systems with 3 or 4 Loops installed side by side, it is recommended to cut another gutter for the end of the loops furthest from the manhole:



- **Positioning of the Loops**



The number of loops and the positioning depend on the type of system ordered.

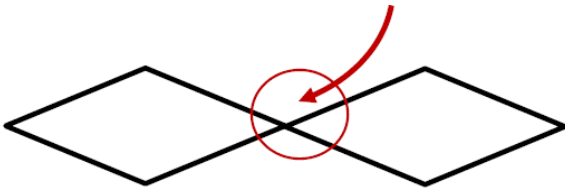
Please refer to:

- **Appendix A - Layout**, page 24, if you have ordered a system with Greenway ZELT Sensor.
- **Appendix A - Layout**, page 30, if you have ordered a system with Selective ZELT Sensor.

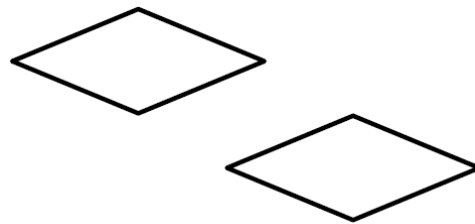


To avoid imperatively:

Loops installed side by side without respecting the required spacing



Loops installed without respecting the recommended positioning



Installing the ZELT Loops

Preparing the Installation Surface

1. Trace the area needed to be cut out perpendicularly to the flow of circulation **respecting the dimensions and positioning for your system:**
 - **Appendix A - Layout**, page 24, if you have ordered a system with Greenway ZELT Sensor.
 - **Appendix A - Layout**, page 30, if you have ordered a system with Selective ZELT Sensor.



2. Cut into the asphalt with the thermal disk according to the markings indicated in step 1 and the recommended dimensions for the gutter.



Dimensions of the Cut-Outs

Width: 0.5 to 1 cm (1/4" to 1/2")

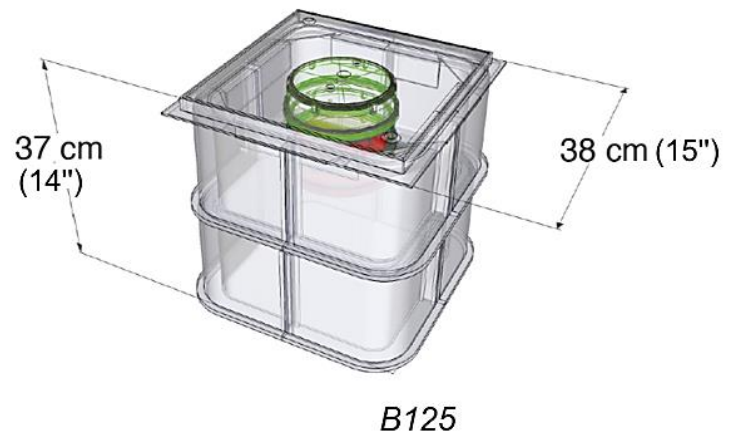
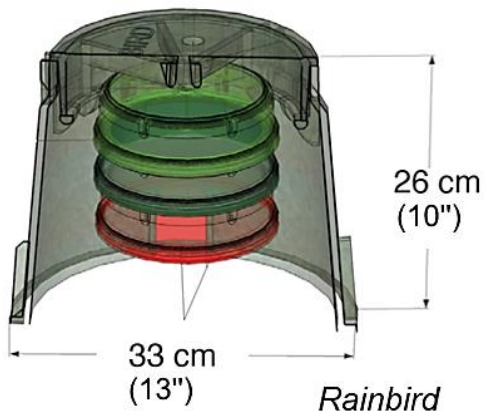
Depth (per set of loops):

- The loop furthest from the manhole: 4 cm (1.5")
- The loop closest to the manhole: 5 cm (2")

See the section **Principle of the ZELT Inductive Loop > Dimensions of the cut-outs**, page 9, for more information.

3. Clear out gravel from the saw cuts using a blower.
Use the short ruler to remove any remaining pieces of gravel.
4. On the shoulder, dig a hole for the manhole less than 20 meters (65') from the loop furthest from the shoulder. Cut a slit in the shoulder to pass the wiring from the loops to the manhole.

The cover needs to be at ground level.



5. Rainbird manhole :

- Recommended: Put gravel at the bottom of the hole dug for the manhole to facilitate drainage.
- Place the geotextile under the manhole and secure it with the supplied elastic band.



B125 manhole: place the geotextile at the bottom of the hole and place the manhole on top of it.

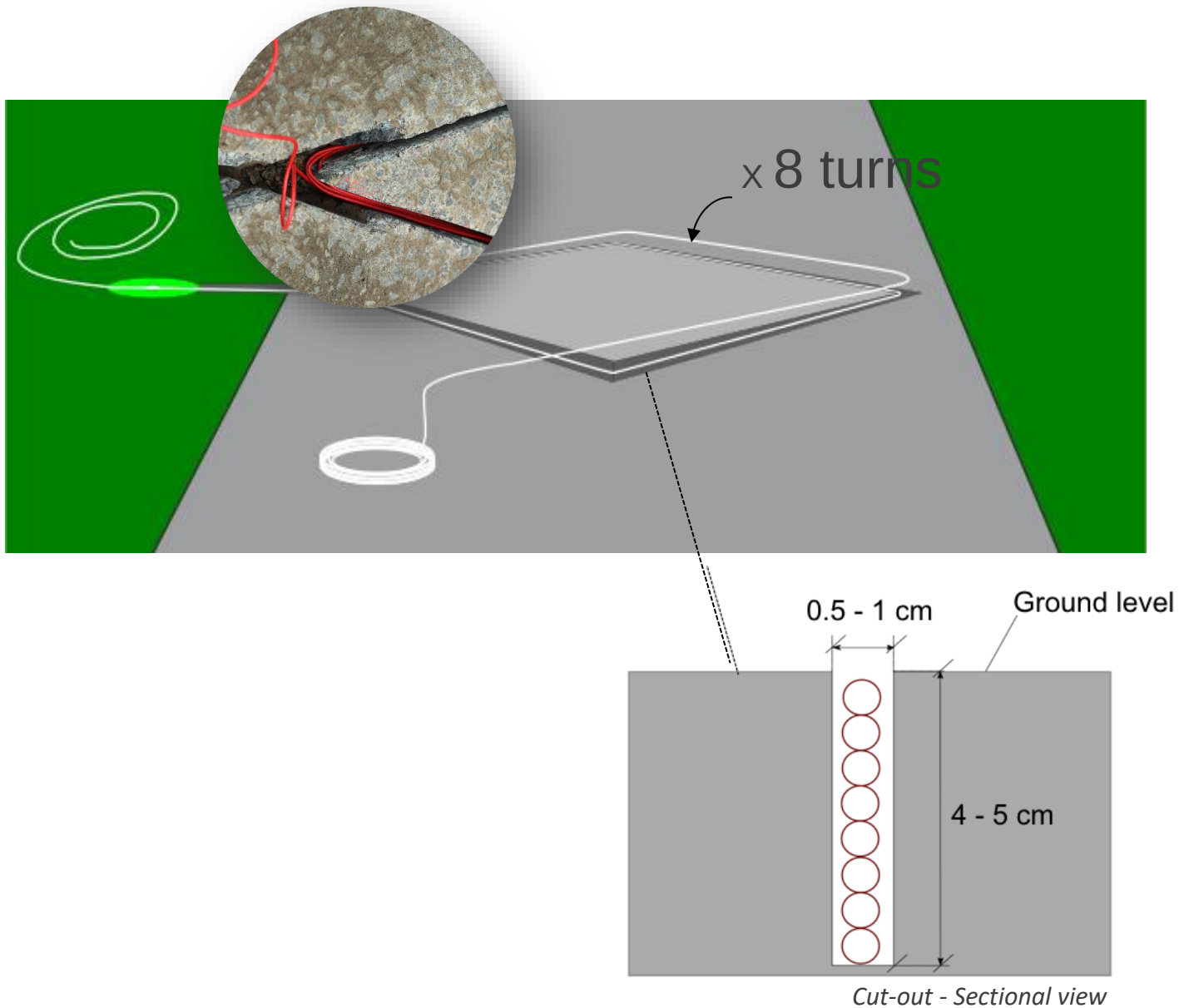
Forming the ZELT Loops



Warning! If you would like to use your own wire to form the loops, make sure that you use a stranded wire.

1. Form loops of **8 turns**.

Keep enough slack so that the wire extends back to the manhole.

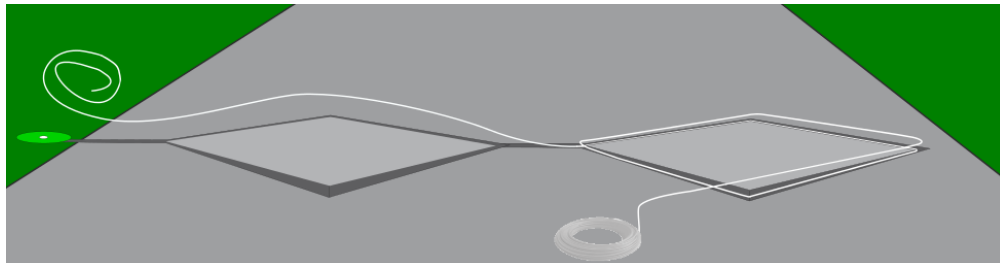


Practical Information

- **Systems with more than two loops:** Form loops A1 and A2 with the red conductive wire and loops B1 and B2 with the black conductive wire.

This will make it easier to identify the two pairs of loops.

- Form a first loop in the cut-out furthest from the manhole.



- Push the wire into the saw cut with the small ruler.



2. Stretch out the end of the two wires and bring them to the manhole. The end must be long enough to reach the manhole with 50 centimetres (20") of extra slack.

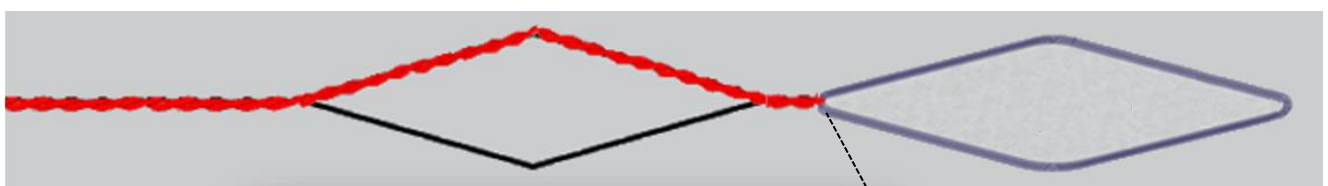
Cut the end if it is longer.

3. Stretch out the end of the two wires and twist them.

Attention! Only twist the end of the wires. The 8 turns forming the diamond shape must not be twisted.

Example for a system with two loops installed side by side: Only the red portion must be twisted.

Bring the twisted end to the manhole while placing its end through the cut-out in the loop closest to the manhole.



-
- a) Attach the two extremities of the wire to a drill or an electric screwdriver.
 - b) Stretch out the wires.
 - c) Twist the wires.
 - d) Keep the wires tought while rotating the drill at a slow pace in order to achieve optimal results.
 - e) There should be at least **30 twists per meter (per yard)**.
-



4. Bring the twisted end to the manhole while placing its end through the cut-out in the loop closest to the manhole if you have loops installed side by side.
5. Put a yellow reference tag at the end of the twisted end to indicate the loop reference (A1, A2, B1 or B2...).

If you do not know which loop has which reference, refer to:

- Systems with Greenway ZELT Sensor: **Appendix A - Layout**, page 24.
- Systems with Selective ZELT Sensor: **Appendix A - Layout**, page 30.

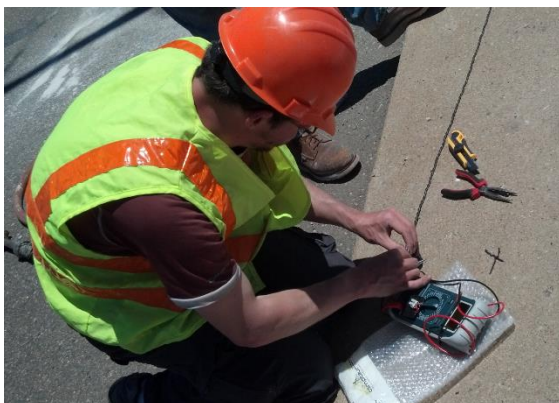


6. Form the other loops the same way.

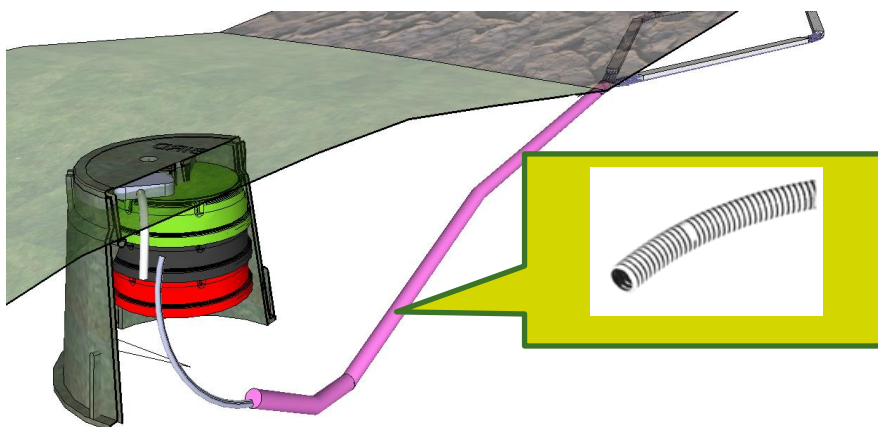
If you have loops installed side by side, form the loop closest to the manhole on top of the twisted end of the furthest loop.

Making the Connections

1. Verify the inductance of the loops. The level of inductance must be between 100 and 150 μH .

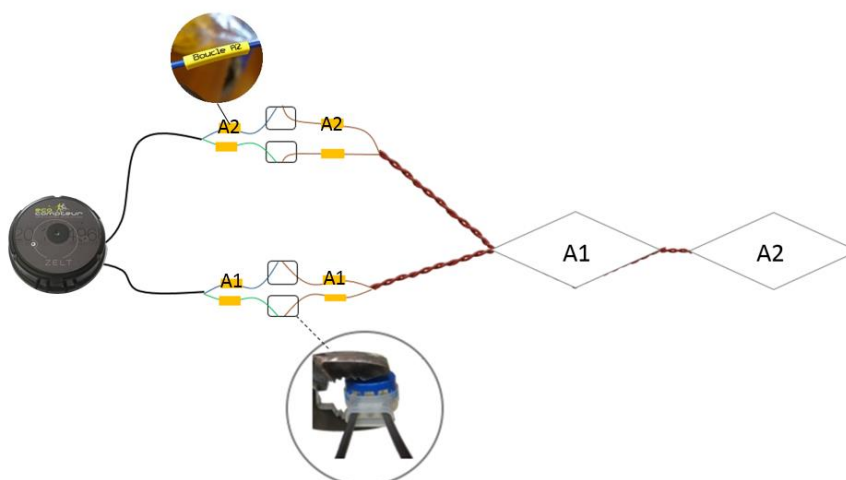


2. Run the twisted wires into the conduit (optional).



3. Make the connections inside the manhole:

Make sure to connect the right loop to the right scotchlock connector by using the yellow reference tags supplied.

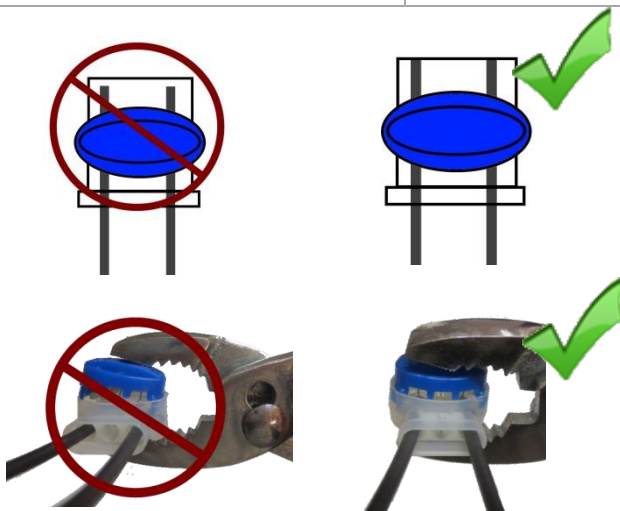


Example of connections on a two-loop system

If you have a three-loop system, cable B1 is not used. Close this cable with a scotchlock connector.

Install the Scotchlock connectors by proceeding as follows:

		
a) Insert the two wires into the two external holes of the Scotchlock connector.	b) Insert the wires as far as possible - there is no need to strip the wires.	c) Close the connector by using a pair of pliers to release the gel and establish a connection.



Testing the system

Counting Function

- 1. Wake-up your Eco-Combo logger by waving the magnetic key over the wake-up zone. While waving the magnetic key, the activation zone lights up green. The activation zone will start flashing blue at regular intervals.

i If you don't wave the magnetic key over the wake-up zone for more than five minutes, the Eco-Combo logger switches automatically to energy-saving counting mode. Wave the magnetic key over the activation zone of the Eco-Combo logger to wake it up.



B125



Rainbird

- 2. Ride over the loops and verify that:

If you have the Eco-Link software	If you do not have the Eco-Link software
The passages are being correctly recorded. Refer to the section Making Verifications of Counts in the Eco-Link software guide to know how to check the counts in real-time using Eco-Link.	The activation zone flashes green at each passage.

Automatic Data Transmission

How do I know if the Automatic Transmission Function is Active?

All Eco-Counter® counting systems are equipped with the capability to transmit data automatically to our online platform Eco-Visio however, depending on how your device was ordered, the function may not be activated.

You can determine whether your device was sent from the factory with this function activated by looking at the third letter of the serial number of your Eco-Combo logger.



- Letter « I »: Your device's Automatic Transmission function has not yet been activated.
- Letter « H »: The Automatic Transmission function is active.

If you wish to activate this function, please contact Eco-Counter®.

- 1- Wake-up your counter (see the first step in the previous section if necessary): **Testing the system > Counting function.**
- 2- **If you have the Eco-Link software:** Follow the section **Testing automatic data transmission** in the Eco-Link software guide to learn how to test automatic data transmission automatically.

If you do not have the Eco-Link software: Wave the magnetic key 6 times over the wake-up zone.

When waving the magnetic key, the wake-up zone must light solid green. After waving the magnetic key six times, the wake-up zone illuminates solid blue.

The modem is now activated for 12 minutes. The following light signals indicate the modem is functioning correctly:

a) Blue LED, 3 flashes 	Modem trying to connect to the network.
b) Blue LED, 2 flashes 	Modem connected to the network.
c) Blue LED, 1 flash 	Modem connected to the server that receives the data.
d) Steady blue LED 	Data file transmitted to the server that receives the data.

Filling in the Saw Cuts

1. Shut the black **Raygel** junction boxes over the connected Ethernet sockets.



2. Fill in the saw cuts.



Attention: The wiring used in the loops will not withstand temperatures exceeding 60° C (140° F). Do not use a substance that surpasses this temperature when filling in the saw cuts.



3. Secure the lid of the manhole.



Anti-vandalism screws

4. Put the cap on the secured screw to protect it from dirt.



5. Conceal the manhole cover with grass or earth if possible.

Systems with the Automatic Transmission feature activated: Cover the manhole with less than 1 cm (0.4") thick of earth to avoid reducing the signal.



6. Take a photo of the installation to illustrate your counter on Eco-Visio.

Analysing Your Data

Counters Equipped with an Active Automatic Transmission Feature

Activate the counting site in our online software, Eco-Visio, on the installation date.

Follow the instructions in the document ***Eco-Visio: Quick Start Guide*** to activate your counter.

Counters with Manual Data Collection

1. Retrieve the data using Eco-Link before leaving the installation site.
Follow the instructions in the Eco-Link software guide to proceed.
2. Send the data to the online software Eco-Visio by following the instructions in the Eco-Link software guide.

Appendix A – Layout

Abacus

1

The spacing indicated by the between the two loops is very important to respect and will vary depending on the length of the loops themselves.

Apply the corresponding spacing to the length of the loops:

Loop Length	Distance
Greater than 150 cm (59")	Contact Eco-Counter to evaluate the feasibility
150 cm (59")	8 cm (3.00")
140 cm (55")	10 cm (4.00")
130 cm (51")	12 cm (4.75")
120 cm (47")	14 cm (5.50")
110 cm (43")	16 cm (6.25")
Less than 110 cm (43")	Contact Eco-Counter to evaluate the feasibility

Systems with Sensor ZELT Greenways

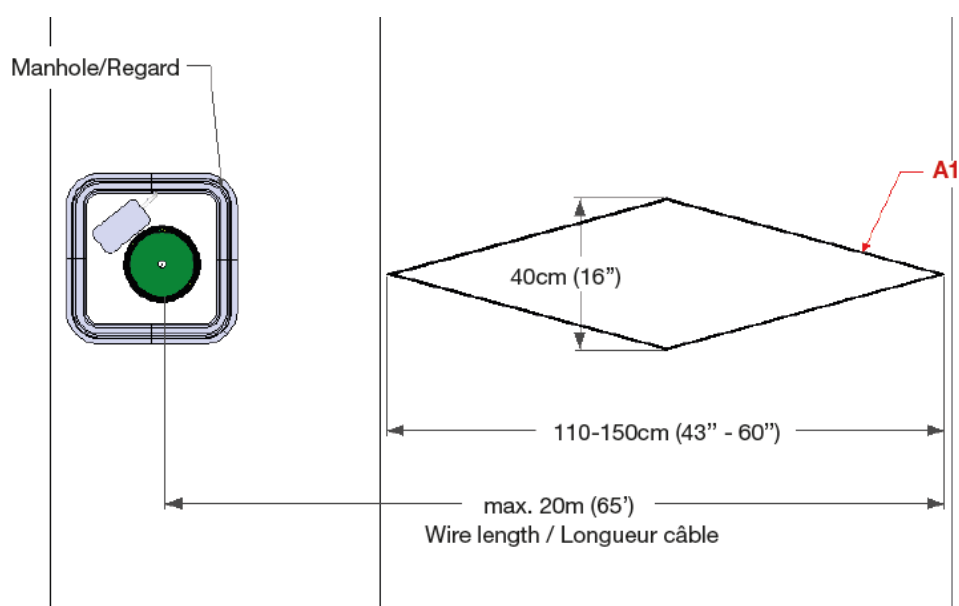


Make sure that your ZELT sensor is dark green.

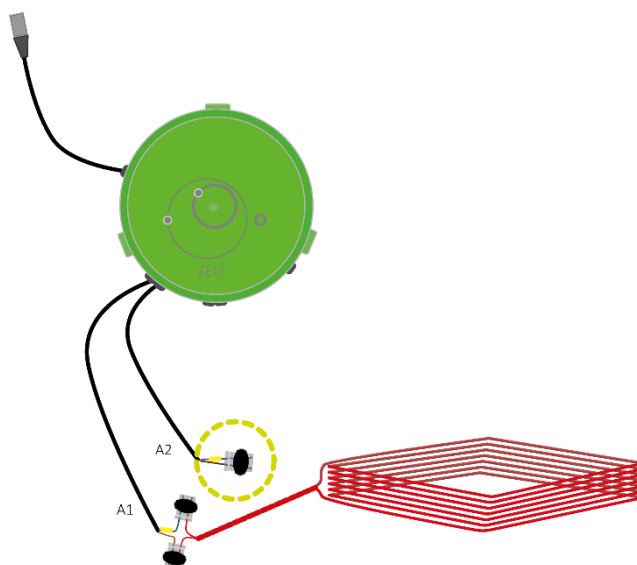
If your ZELT sensor is black, it is a ZELT Selective sensor.

Unidirectional systems (or those that do not determine the direction of passage)

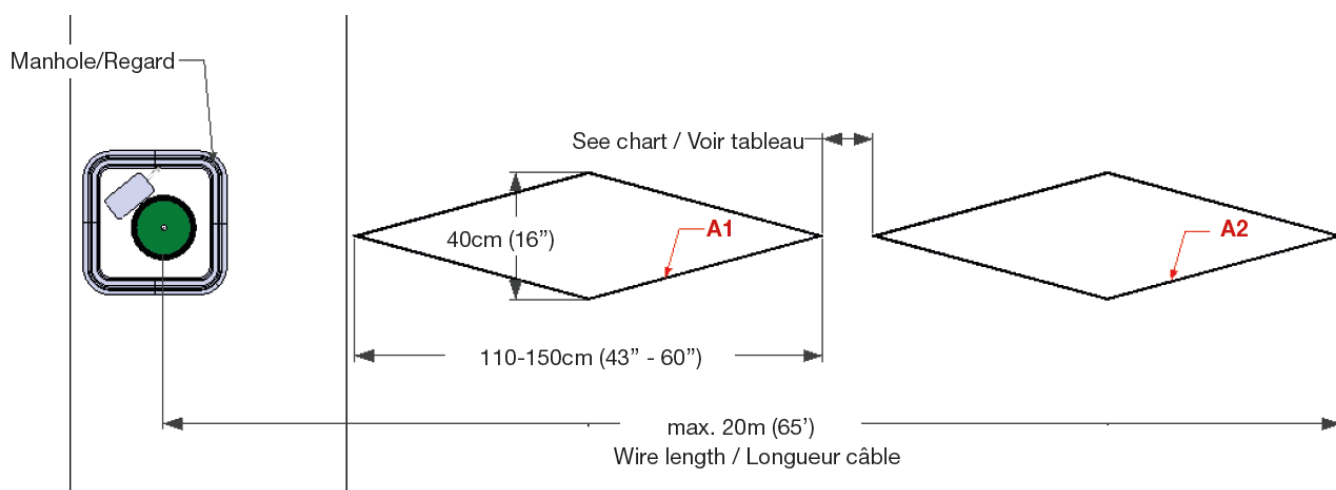
1 Loop – Lanes less than 1.5 m (5') wide



Cable A2 is not used. Close this cable with a Scotchlock® connector.



2 Loops – Lanes less than 3 m (10') wide

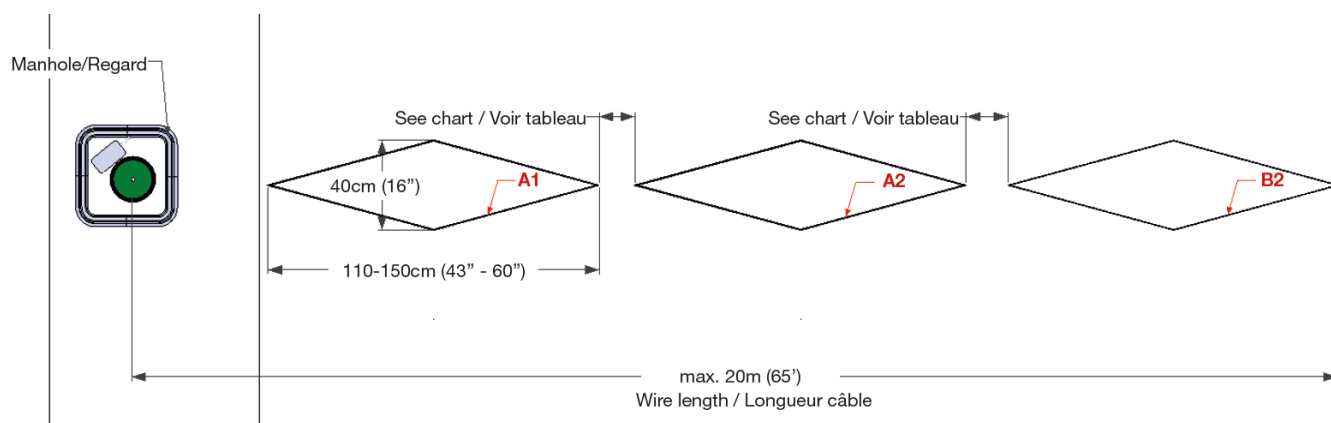


1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

Place the end of the Loop A2 under the Loop A1.

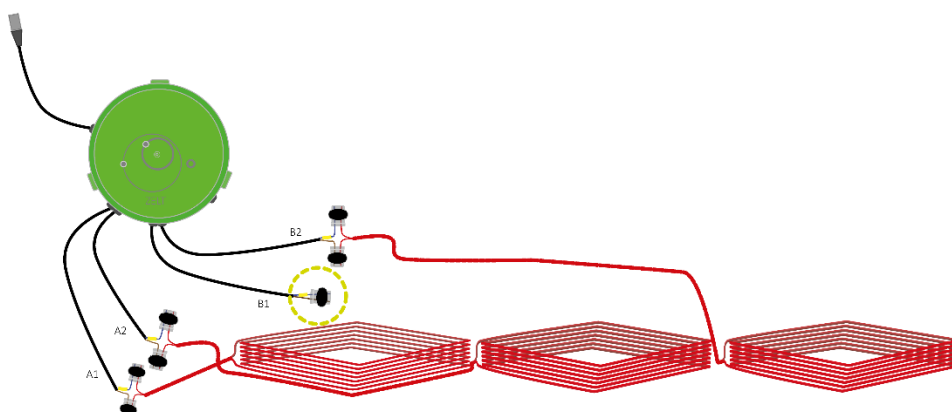
3 Loops – Lanes less than 4 m (15') wide



1

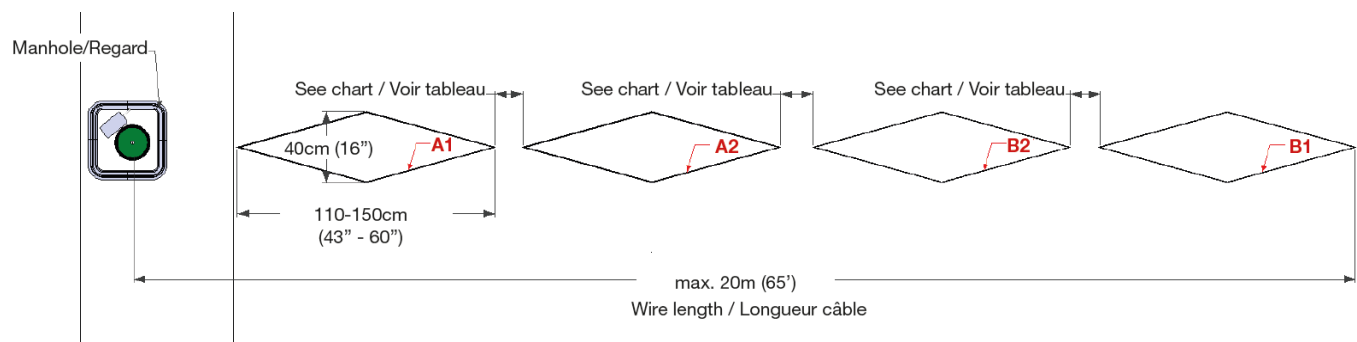
Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

Cable B1 is not used. Close this cable with a Scotchlock® connector.



Place the end of the Loop A2 under the Loop A1.

4 Loops – Lanes less than 6 m (20') wide



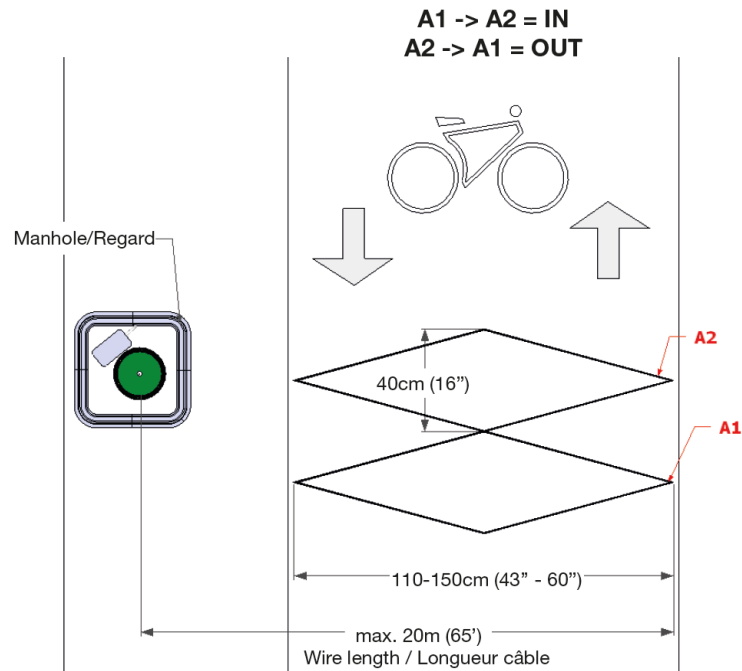
1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

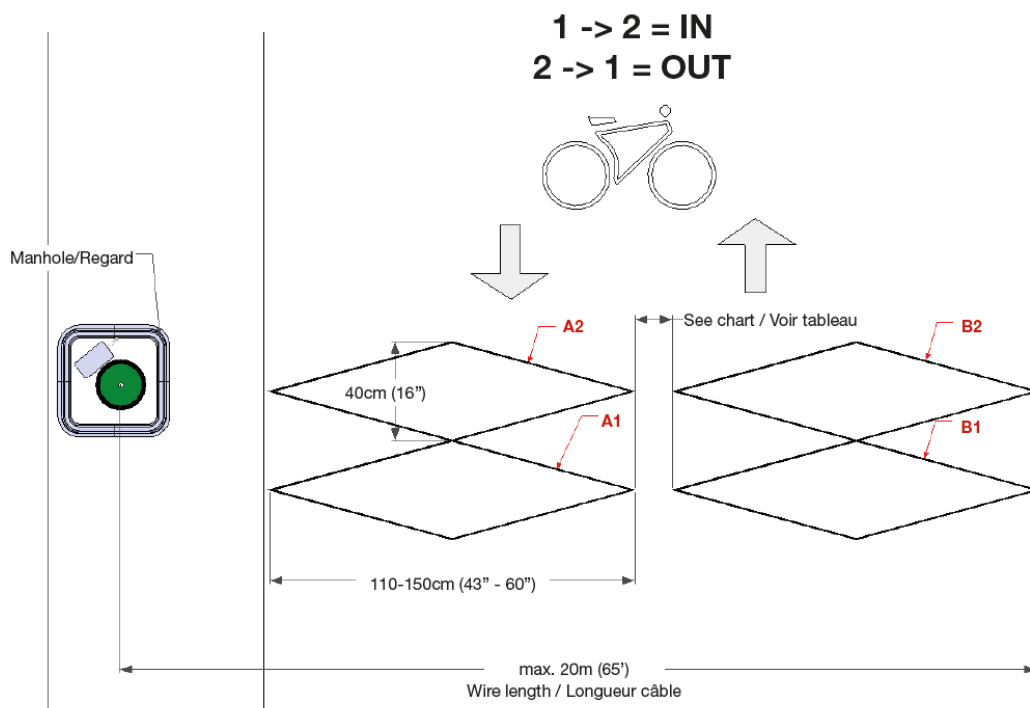
- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

Bidirectional systems (or those that are capable of determining the direction of passage) for bidirectional lanes

2 Loops – Lanes less than 1.5 m (5') wide



2 x 2 Loops – Lanes less than 3 m (10') wide

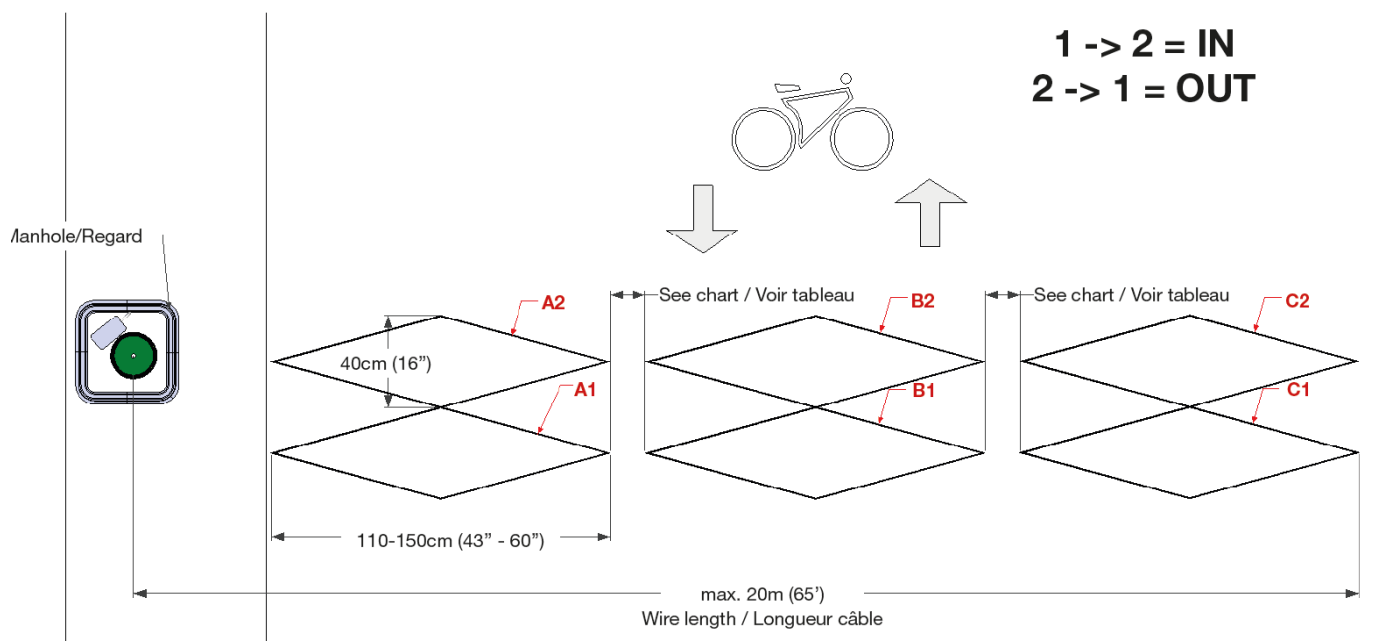


1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

- Place the end of the Loop B2 under the Loop A2.
- Place the end of the Loop B1 under the Loop A1.

6 Loops – Lanes less than 4 m (15') wide



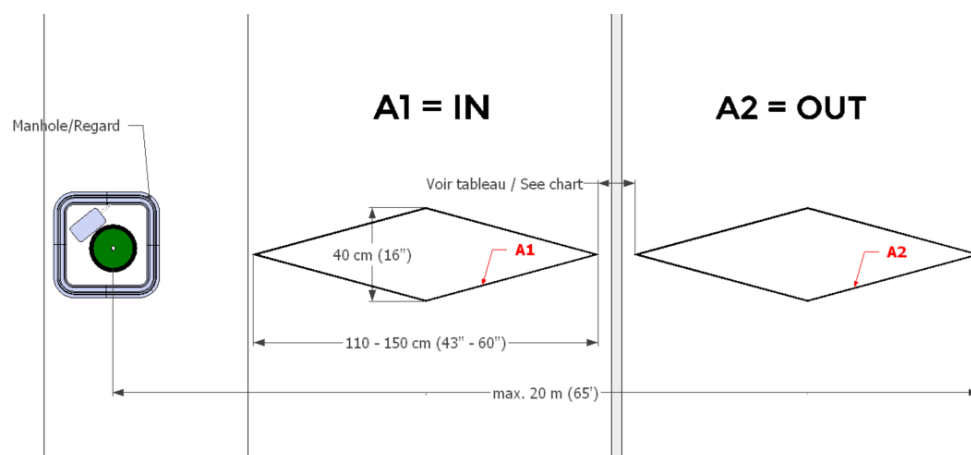
1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

- Place the end of the Loop B2 under the Loop A2.
- Place the end of the Loop B1 under the Loop A1.

Bidirectional systems (or those that are capable of determining the direction of passage) for two independent unidirectional lanes

2 Loops – Lanes less than 1.5 m (5') wide

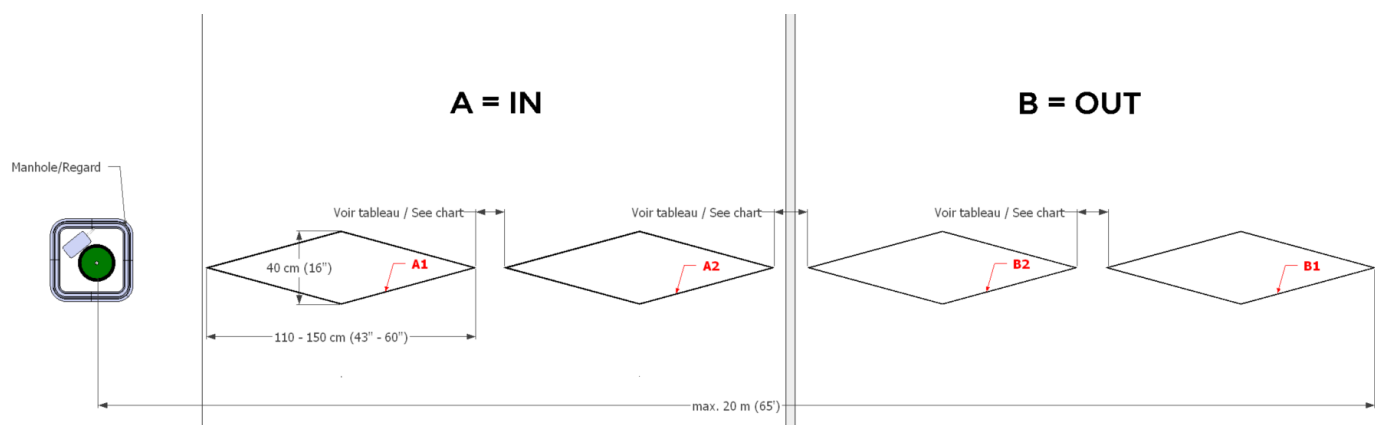


1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

Place the end of the Loop A2 under the Loop A1.

4 Loops – Lanes less than 3 m (10') wide



1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

Systems with Sensor ZELT Selective (for shared lanes)



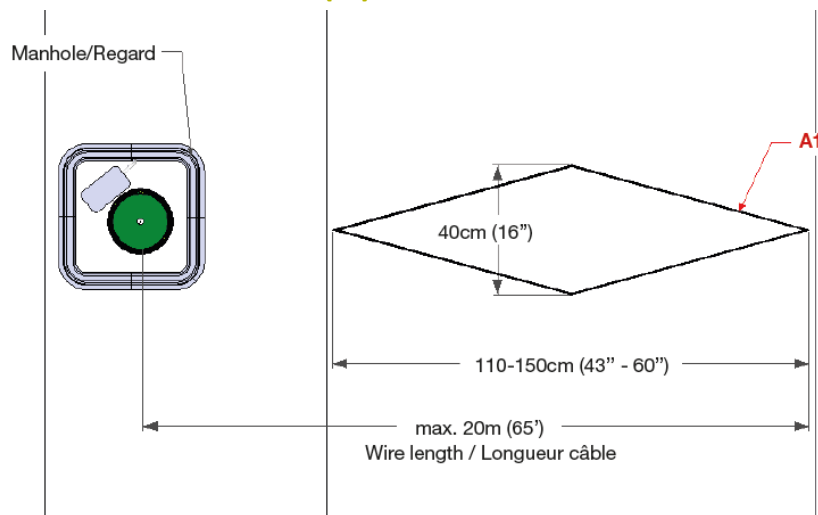
Make sure that your ZELT sensor is black.

If your ZELT sensor is dark green, it is a Greenway ZELT sensor.

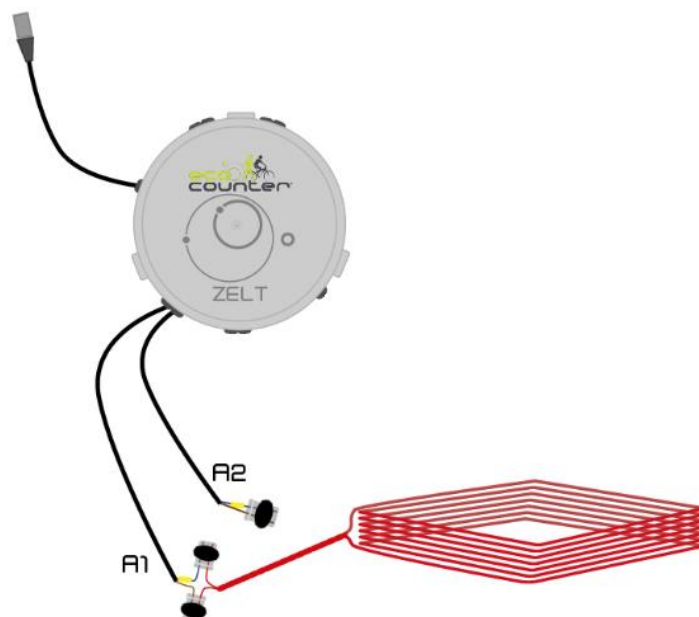
The ZELT Selective sensor is specifically designed to monitor bicycles on roads in mixed traffic (bicycle lanes, shared bicycle/bus lanes).

Unidirectional systems (or those that do not determine the direction of passage)

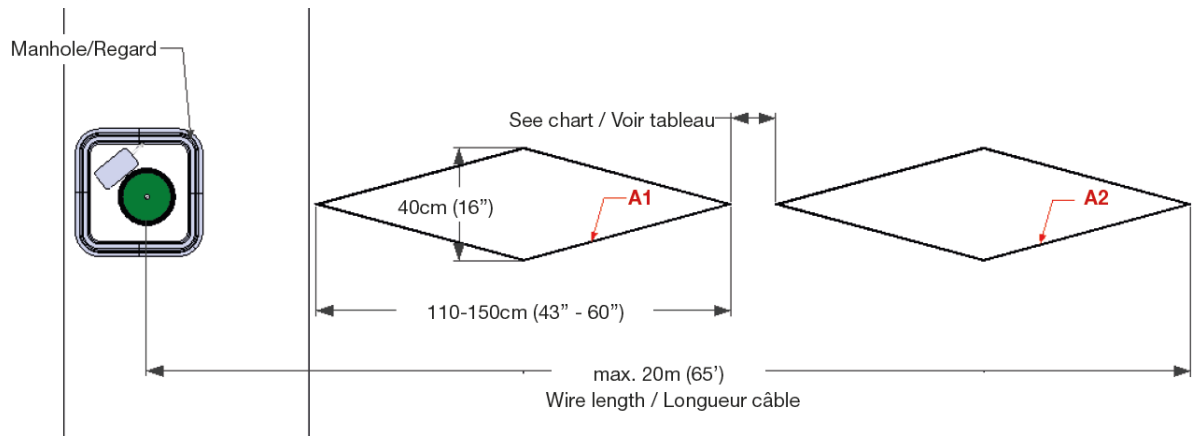
1 Loop – Lanes less than 1.5 m (5') wide



Cable A2 is not used. Close this cable with a Scotchlock® connector.



2 Loops – Lanes less than 3 m (10') wide

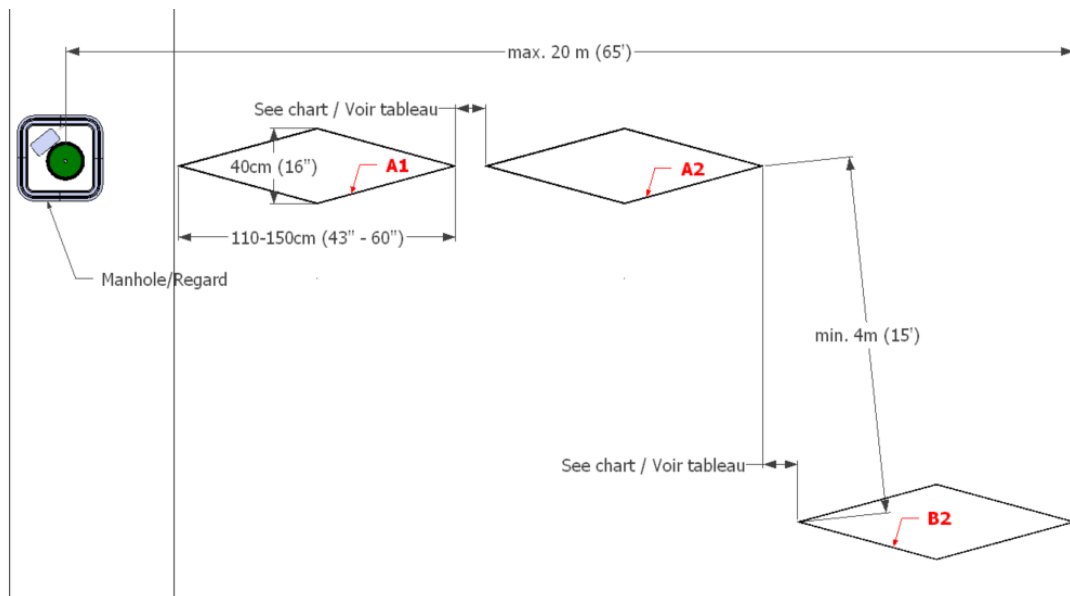


1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

Place the end of the Loop A2 under the Loop A1.

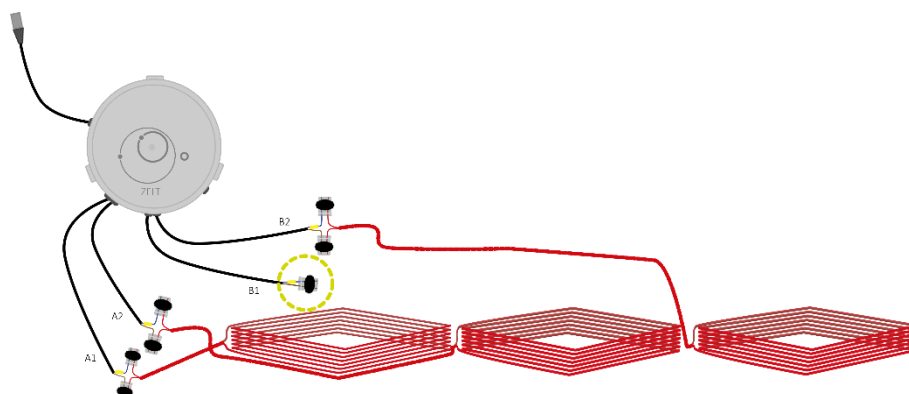
3 Loops – Lanes less than 4 m (15') wide



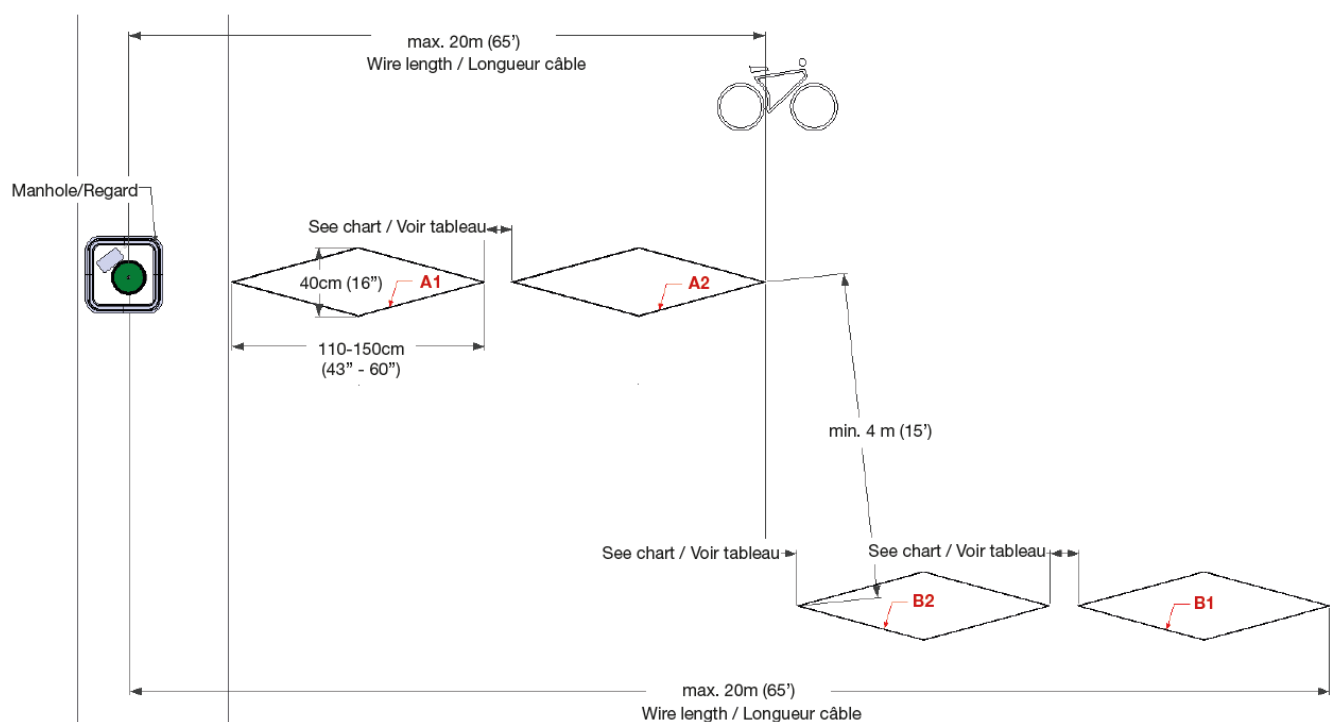
1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

- Cable B1 is not used. Close this cable with a Scotchlock® connector.
- Place the end of the Loop A2 under the Loop A1.



4 Loops – Lanes less than 6 m (19'5") wide



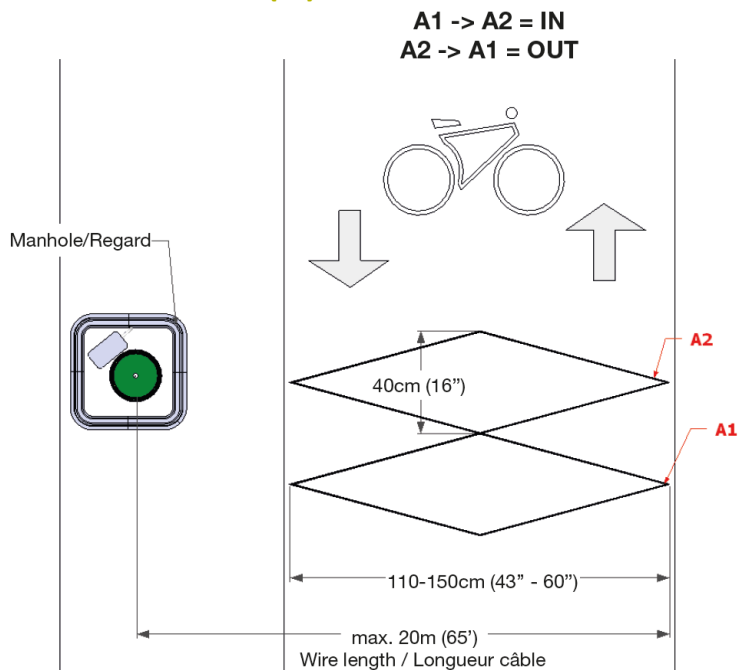
1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

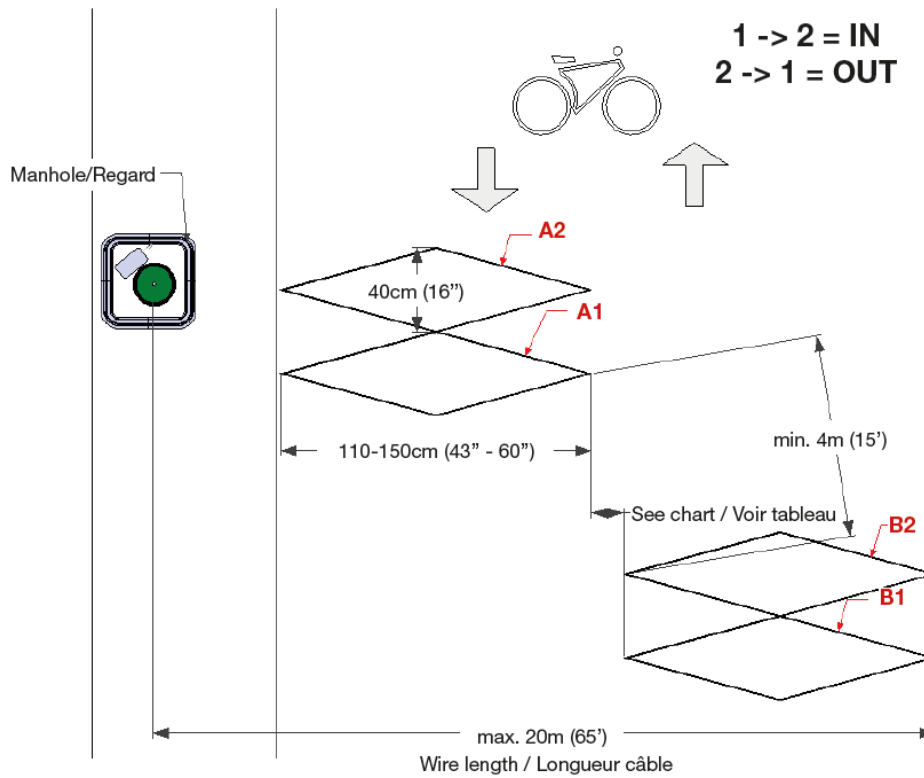
- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

Bidirectional systems (or those that are capable of determining the direction of passage) for bidirectional lanes

2 Loops – Lanes less than 1.5 m (5') wide



2 x 2 Loops – Lanes less than 3 m (10') wide

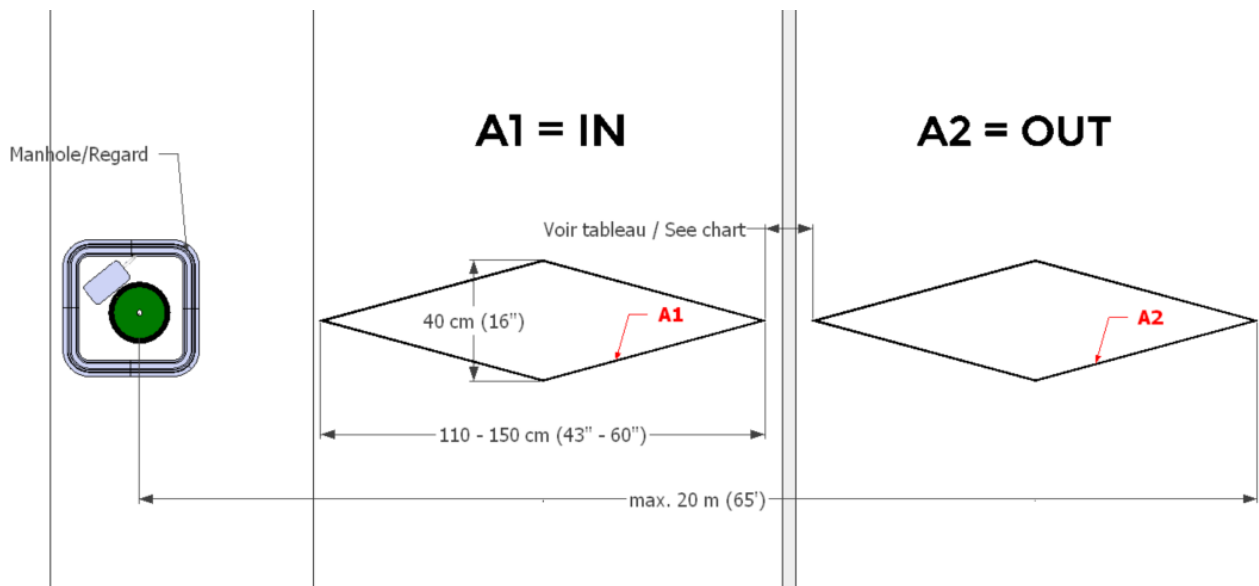


1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

Bidirectional systems (or those that are capable of determining the direction of passage) for two independent unidirectional lanes

2 Loops – Lanes less than 1.5 m (5') wide

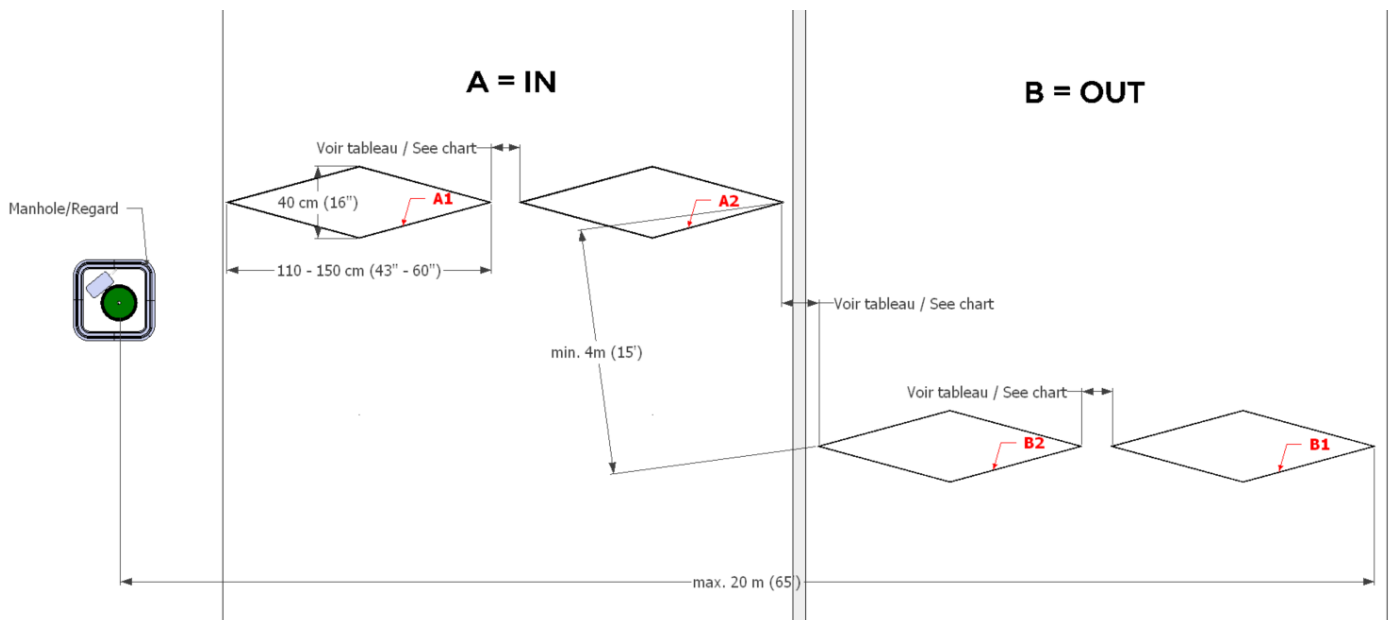


1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

Place the end of the Loop A2 under the Loop A1.

4 Loops – Lanes less than 3 m (10') wide



1

Refer to the chart on page 23 to apply the correct spacing to the length of the Loops.

- Place the end of the Loop A2 under the Loop A1.
- Place the end of the Loop B1 under the Loop B2.

Appendix B - Checking the Level of GPRS Coverage

Hardware

Go to the installation site with the battery connected to the Eco-Combo logger to check the level of GPRS coverage.

	
Magnetic key	Mobile device with internet connection



If you do not have a mobile device with internet connection, you can check the level of network coverage using the Eco-Link software.

- List of compatible devices: see page 6.
- Procedure: See the section **Testing the system > Automatic data transmission**, page 19.

Procedure

Go to the installation site with the Eco-Combo logger connected to the battery pack.

1. Wake-up your counter. See step 1 on page 18.
2. Wave the magnetic key 6 times over the wake-up zone.
When waving the magnetic key, the wake-up zone must light solid green.
3. When the wake-up zone is solid blue, go to the following webpage: <http://eco-counter.net/status/>



web

4. Type in the serial number of your Eco-Combo logger.

Test your system

Y2H15317153

Status

The serial number starts with X or Y and appears on the Eco-Combo logger itself and on the identification sheet delivered with your counter.

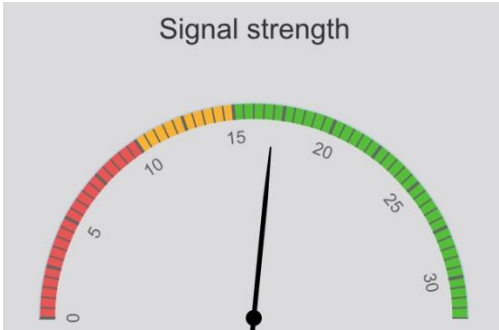
5. Click on **Status**.

Test your system

Y2H15317153

Status

The webpage gives you:

The date and time when the counter communicated for the last time	The quality of the coverage
Make sure that the date and time matches with when you started the test, keeping in mind that a device may take a few minutes to communicate after you start the test. Test your system Y2H15317153 Status Results: Last file transmitted 51 mn, 54 s (February 13, 2015 2:10 PM) Cell Phone Carrier: Rogers Wireless If the date and time doesn't match, proceed as follows: - Leave the magnetic key over the wake-up zone until it switches off. - Repeat the procedure again.	Signal strength  - If the indicator is in the red zone, the system will not be able to send data, so do not install the system at this location. - If the indicator is in the orange zone, the counter may have difficulty sending data on a daily basis.

Appendix C - Useful Information for Electrical Connections

Manhole

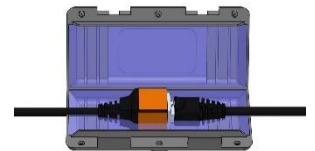
If a manhole is being used, we recommend positioning the battery in the bottom in order for it to be replaced as easily as possible.



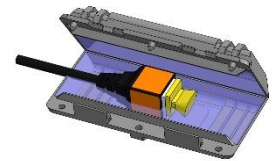
Example of a Rainbird manhole

Ethernet Connectors

Shut the black Raygel junction box over the connected Ethernet sockets to ensure total waterproofness.



If you have to leave an Ethernet connector unplugged, protect it using the cap supplied and shut a black Raygel junction box over it.



Four Pins Connectors

The four pins connectors don't need to be protected by a Raygel Junction Box.



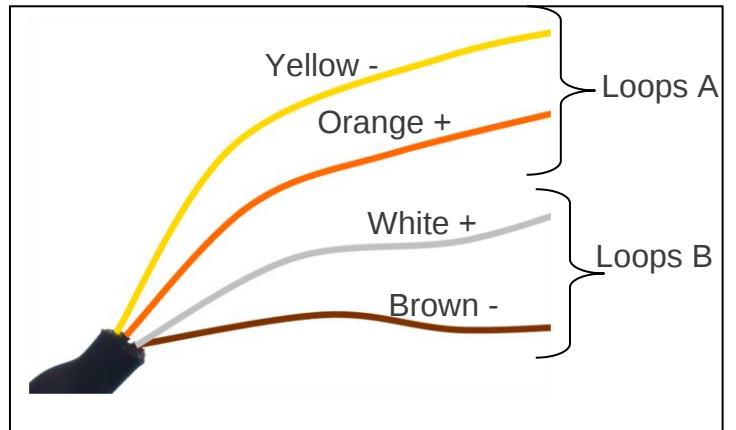
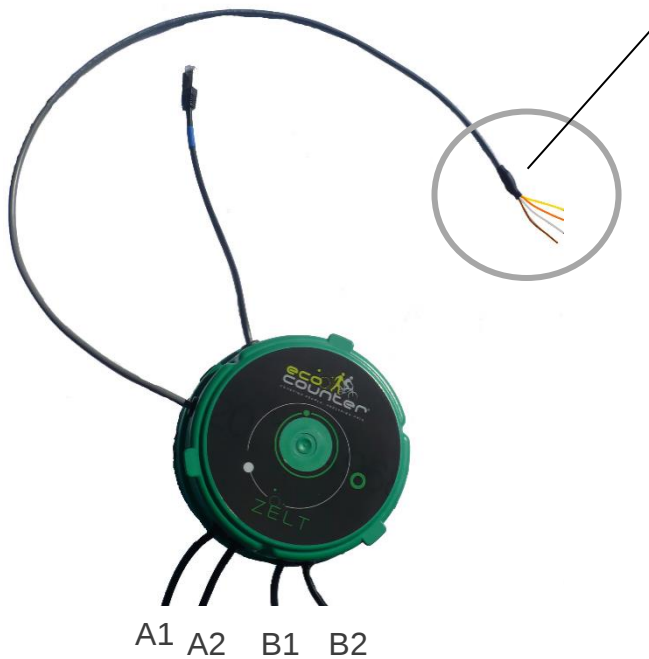
If you have to leave a four pins connector unplugged, protect it using the cap supplied.



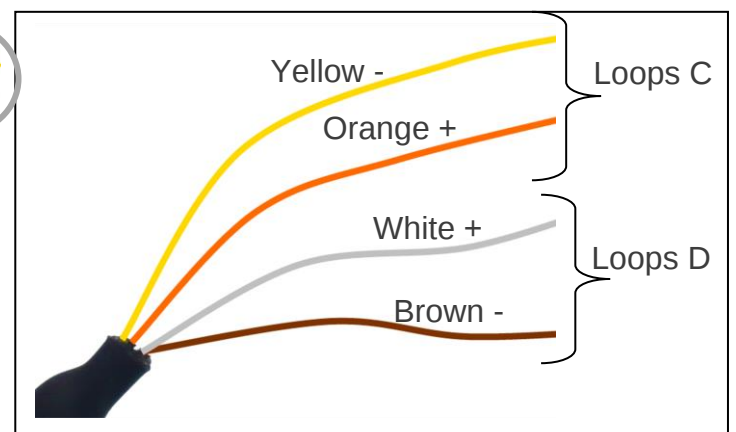
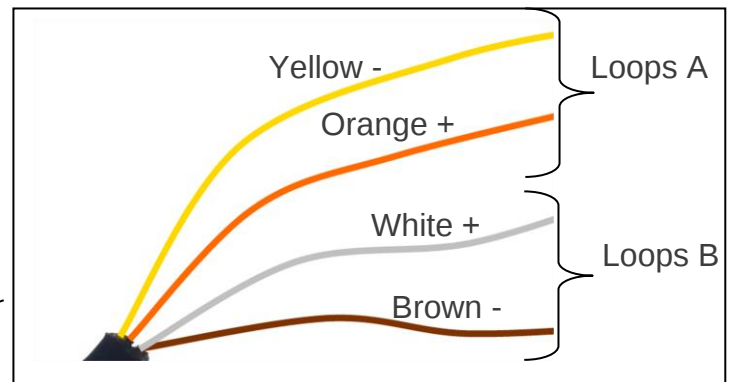
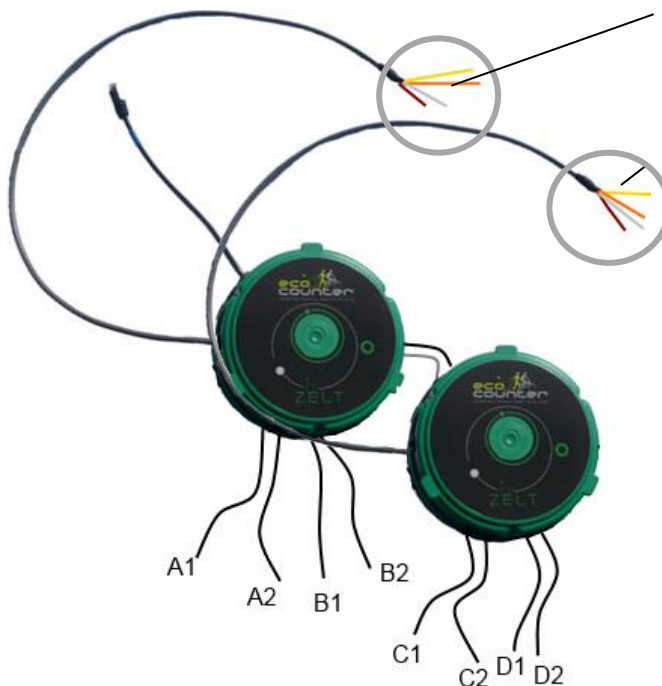
Dry Contact Outputs

If you have ordered a ZELT System with dry contact output, your ZELT Sensor looks like this:

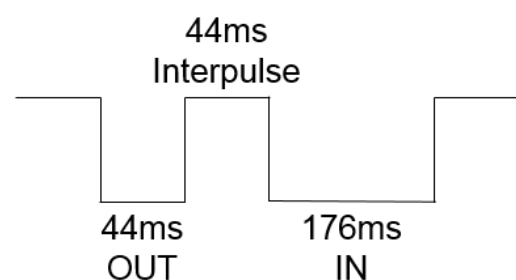
- **Systems with one to four Loops:**



- **Systems with five to eight Loops:**



The output signals are as shown:



Customer Service

Hardware

The entire system is guaranteed for 2 years starting from the date printed on the warranty certificate (the warranty certificate is delivered with your product).

In the rare case that there is a problem with a part in your system, the product must be returned with the Product Return Sheet. Please contact us to receive this sheet. The logger serial number (please see the warranty certificate delivered with the product) must be identified on the Product Return Sheet.

The warranty cannot be implemented in the case of mishandling, incorrect installation (by someone other than Eco-Counter®), or any other reason listed in the warranty certificate. If the product can be repaired, a quote will be submitted to the customer prior to repair. Any product damaged as a result of mishandling or improper use will be either replaced or repaired according to the parts price list used at the time of the request.

Software

Problems related to the use of the software can be dealt with remotely. Please do not hesitate to contact Customer Service for assistance:

Europe / World	North America
Tel: +33. (0)2.96.48.48.83 Fax: +33. (0)2.96.48.69.60 Email: support@eco-counter.com	Toll Free: 1-866-518-4404 Phone: 1-514-849-9779 Email: help@eco-counter.com

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