Orbit 5 Retail IP Installation Manual

V1.4

Orbit 5 System Overview

The *Orbit 5* System uses overhead-mounted devices to count pedestrian foot traffic. *Orbit 5* discerns the direction (*in or out*) of each shopper with at least 90% accuracy. The system can be configured to either count or ignore children, and does not count shopping carts or strollers. Each *Orbit 5* unit monitors movement by tracking objects in a pre-defined area. Objects must meet a number of criteria in terms of their size and net movement in order to be counted. *Orbit 5* units are configured remotely via modem or TCP/IP connection. They can be instructed to capture a still image, or a digital video recording of the images in the field of view.

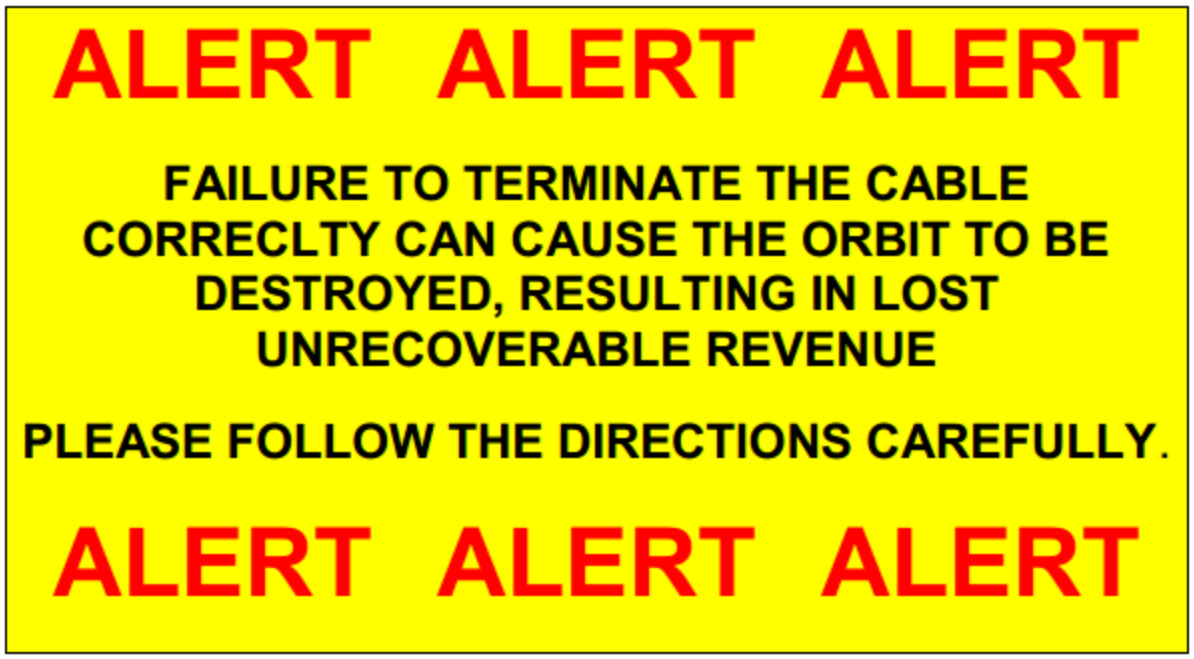
Tools and Parts Required

- Cable Toner	- Smartphone w/ Camera & charger
- Wire Strippers	- Wire Cutters
- Pliers	- Screwdrivers
- Ladder (8’ and 12’)	- Tape Measure
- Level	- Fish Tape
- Wire Ties	- RJ45 Crimp Tool
- RJ45 Male Modular Connectors	- 110 Punch Tool
- Drill	- Cat5e or Cat6 plenum cable

***IFF Laptop is needed: Lap top and a null modem cable (see details below)

The tech’s laptop needs to be equipped with hyper terminal (Note that Vista does not have this as an option) and a 9 pin serial port (or USB serial adapter with driver).

- 9 pin female – 9 pin female null modem cable
- 9 pin female – 9 pin female straight thru cable with null modem adapter



Installation Order

1. Complete Inventory and verify any missing equipment
2. Run homerun cables to all required locations, run daisy-chained cables if required
3. Install equipment at the network switch location
4. Call NET to verify set up, and verify correct terminations
5. Power on equipment, verify flashing green light on Orbit(s).6. When step 5 is successful, tech should remain on the line with NET and ShopperTrak and proceed
to mount the Orbit at the permanent location for final shot verification.
7. Before departing, tech is required to walk in and out of the door a dozen or more times while the Orbit initiates. Tech is also expected to take pictures per the requirements below before logging out with NET.

Deliverables

The following items are required to complete the installation.

*Required Photos:

1. Orbit mounted to ceiling including the ceiling area around the Orbit.
2. Orbit mounted to ceiling including the entrance.
3. Back office equipment arrangement including the surrounding area.
4. Back of all EQ shipped showing SN and/or MAC address

1. All documents MUST be submitted to dss@nettechnology.com
2. Do not zip your files up. The site will automatically resize photos as needed.
3. CHECK YOUR E-MAIL AFTER SUBMITTING – if your photos are rejected, it is your responsibility to see the rejection e-mail and re-submit immediately.
4. Email subject line must contain ONLY THE WORK ORDER ID IN BRACKETS. The WO ID is the 2nd # in the purchase order. Example: [542174] An EXAMPLE: work order ID as it appears on your work order is circled in red below:

2 Pages in Document

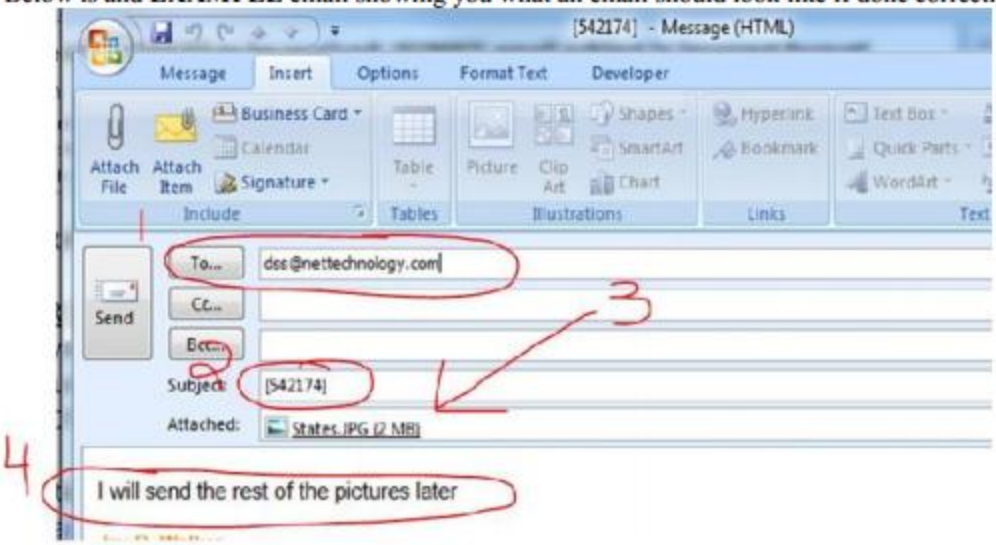
Network Engineering Technologies®
3140 Deming Way, Middleton, WI 53562
P: 608.827.6700 | F: 608.827.6705
www.nettechnology.com

Your VendorID:	55557
Purchase Order:	~~152762-542174-00001~~
Work Order:	542174
Service ETA:	11/30/11 at 8:00 AM

* Purchase Order MUST appear on all invoices and emailed to apinbox@nettechnology.com or invoice will be rejected, Invoice must match this Purchase Order Receipt.

SITE LOCATION INFORMATION	TECHNICIAN INFORMATION

Below is and **EXAMPLE** email showing you what an email should look like if done correctly.



If you have any questions about photo submission, please watch this 1 minute video:
http://www.screencast.com/t/BRRoO04hm

Contact NET Helpdesk at 608-827-2271 for Log IN, Log OUT, Support

Provide the following information:

1. Your name & work order ID
2. The store name
3. The store number

Arrival Onsite - Contacting Store Manager

Please note the name of your contact as ShopperTrak will ask you this.
Locate the store manager and explain that you are a technician with ShopperTrak and you will be installing the store's traffic counting system.

If the manager is not available, speak with the manager on duty.

If the manager refuses the installation, or if there are any questions regarding the installation of the traffic counting system, call NET Support at 608-827-2271

Locate Installation Equipment

The installation equipment should be in the store manager's possession. The equipment ships via major delivery provider (UPS/FedEx), and should have arrived prior to the installation visit.

The box will be labeled with a green or yellow sticker reading:

If the installation materials are not at the store, contact NET Support at 608-827-2271

Orbit Placement and Mounting

Orbit Numbering

Orbit 5 units are assigned a unit number at the factory. If only one *Orbit 5* will be installed at a particular store, its unit number will be 01. If several units will be installed at a store, the unit numbers will be 01, 02, 03, and so on.

Orbit 5 unit numbers are unique within a particular store. In other words, there can be only one unit numbered 01, one unit numbered 02, one 03, etc. in a particular store.

As you prepare to mount the units you should always mount unit number 01 in the left-most position above the left-most door as observed from inside the store looking out. Unit number 02 should be mounted just to the right of Orbit 01, 03 to the right of 02, and so on, until all units are installed.

***See mounting guides at end of document

Outside

01	02
Store	

Orbit Mounting Height

- Each *Orbit 5* unit MUST be mounted at a height based on the color dot on the back side of the Orbit. See photos below.

  - **Yellow (2.1) – mounting height: 8'-12'**
  - **Blue (2.9) – mounting height: 12'-16'**
  - **Red (3.6) – mounting height: 16'-20'**
  - **Green (5.7) – mounting height: 20'+**

Orbit Placement

- In a location where there are no doors (such as a mall opening) – the *Orbit 5* unit will be mounted 0" to 24" in from the entrance threshold.
- In a location where the doors swing out – the *Orbit 5* unit will be mounted 18" to 30" inches in from the entrance threshold.
- In a location where the doors swing in – the *Orbit 5* unit will be mounted 18" to 30" inches in from the furthest in-swing of the doors.

Historical Note: *Orbit 5* will **NOT** be mounted at 36" to 48" inches in from the door, as was the policy with Orbit 3A.

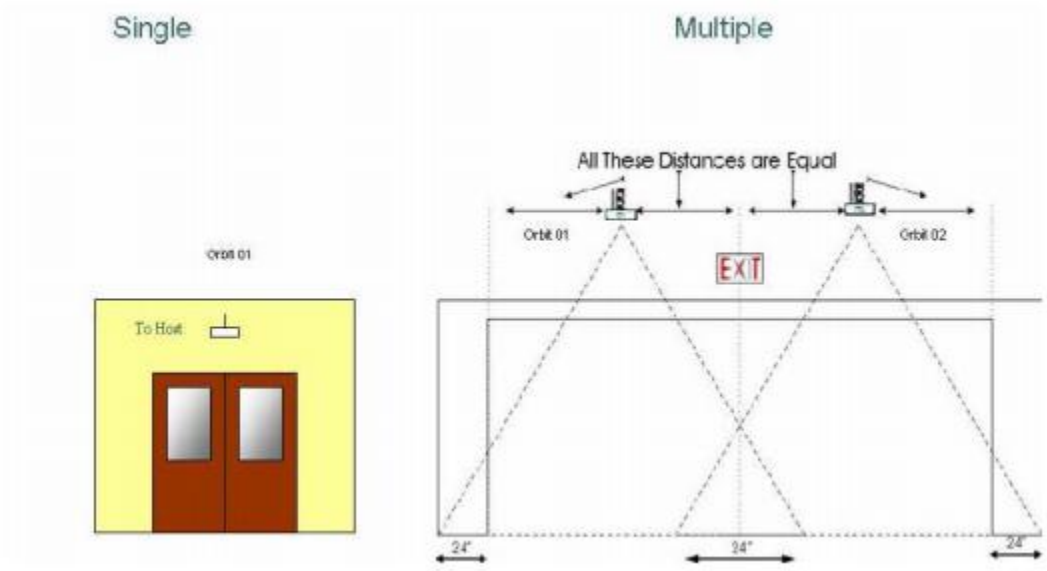
Orbit spacing in each entryway

If only one Orbit is required for an entryway, the Orbit will be centered from left-to-right across the entryway.

If more than one Orbit is required for an entryway, the left-to-right spacing is determined as follows:

> The units will be mounted such that the separation between any two units is equal to the entryway width divided by the number of units mounted in the entryway.
>
> The units on the ends of the doorway will be mounted so that the distance from the Orbit unit to the sidewall is equal to the width of the doorway divided by twice the number of units installed in the entryway.

For example for a 20' wide doorway requiring two units, the unit on the left will be mounted 5' from the left side wall, there will be a 10' separation between the units, and the unit on the right will be mounted 5' from the right sidewall. Examples at end of packet.



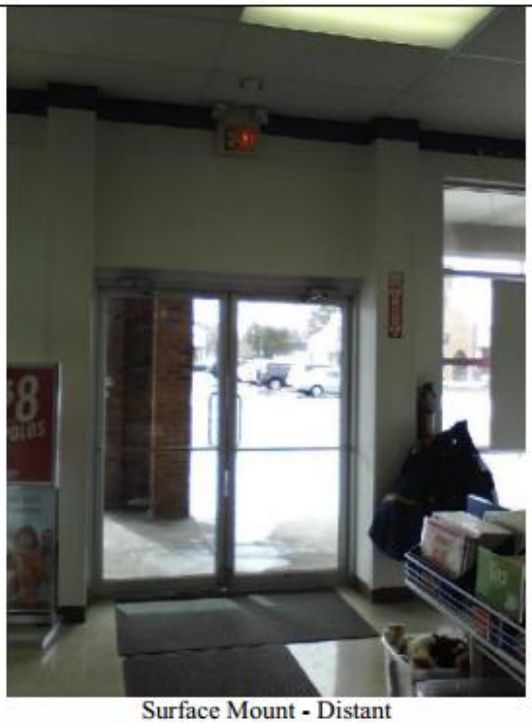
Orbit 5 Mounting Bracket (Y-bracket)

Surface Mounting *Orbit 5* – Level Surfaces

Mount the *Orbit 5* flush to the ceiling/wall using the Orbit 5 Mounting Bracket and use one of the following 2 methods: the Surface mount or the Angle Bracket method. Instructions and a template are included with every Orbit 5 shipment.

Orbit 5 should be placed such that the door logo on the back of the Orbit faces the entranceway. The LED on the face of the Orbit will also face the entryway. An imaginary line between the two lenses would be parallel to the door.

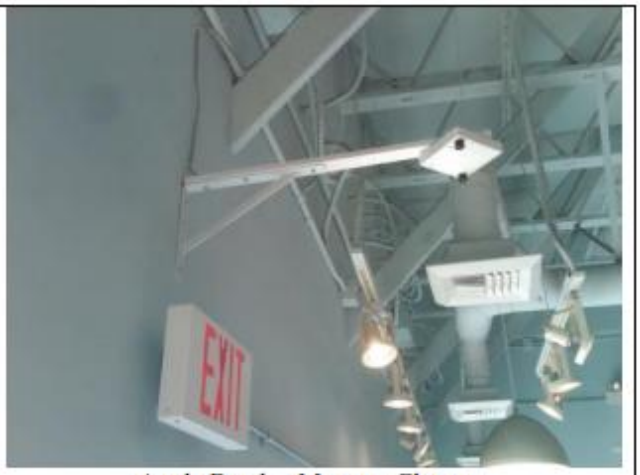
Orbit 5 must be mounted so that it is completely stationary. The unit must not move or vibrate as a result of the wind, a door closing, or for any other reason.



Surface Mount - Distant

Surface Mount – Close up

Angle bracket Mount - Distant



Angle Bracket Mount – Close up

Mounting *Orbit 5* – Non-Level Surfaces

Note: Only use the ball-and-socket joint when the Orbit 5 would be out of level if mounted directly to the ceiling. The Orbit 5 should be flush-mounted whenever possible.

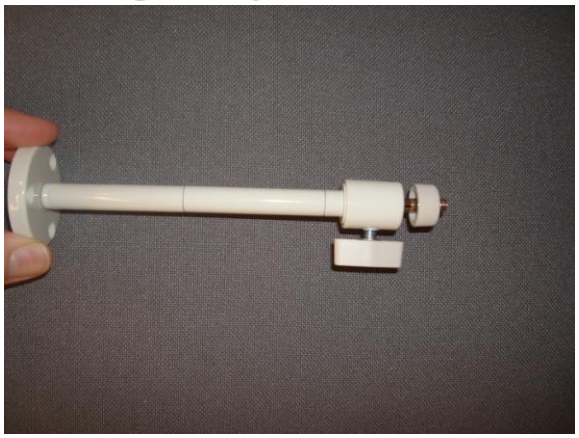
The threaded portion of the Toggle Bolt will be inserted into the base of the ball-and-socket joint.

If *Orbit 5* is to be mounted on a drywall ceiling, drill the mounting hole large enough to insert the Toggle bolt through, with the wings folded in towards the threaded end of the bolt. Before mounting, spin the ball-and-socket on to the threaded portion of the bolt. Insert the winged end of the bolt into the mounting hole, and continue to spin the Ball-and-socket until it is tight against the ceiling.

Spin the *Orbit 5* onto the other end of the ball-and-socket until it is tight. Position the Orbit so that it is level, and the door logo on the back of the Orbit faces the entranceway. The LED on the face of the Orbit will also face the entryway. An imaginary line between the two lenses would be parallel to the door. Tighten the knob on the Ball-and-socket to secure the Orbit in this position.

- Balance the *Orbit 5* using a bubble level. It is important that the device is level.
- The *Orbit 5* mounting should be immovable and completely stationary. The unit must not move or vibrate as a result of the wind, a door closing, or for any other reason.

Post Mount:



Cabling

Orbit Cable Specification
CATEGORY 5 CABLE
4 Pairs, 24 AWG, solid conductors, twisted pairs, 7x32 tinned copper, 12.5 Pf, 110 Ohms, CL2, plenum rated.

Suggested:
Berk-Tek Cable- #230247 (Solid Plenum)
Belden Cable - #1701A (bonded, solid twisted pairs, plenum)

Single Orbit 5 Installations
For single *Orbit 5* installations, a Category 5 cable must be run from the ShopperTrak Host to the front door (main customer entrance).

The maximum allowable run length for a single Orbit is 1500' if installed with an ST600, and 300' if installed with a modem.

Multiple Orbit 5 Installations
Multiple Orbit 5 Installations should be cabled in either a Daisy Chain or Star topology depending upon the total number of Orbits and run length.

The maximum allowable run length for a chain of Orbits is 1500' divided by the number of Orbits on the run.

If the total run length is **less than** 1500' divided by the number of Orbits (1500'/*n*), wire the Orbits in a **Daisy Chain** topology.

If the total run length is **greater than** 1500' divided by the number of Orbits (1500'/*n*), wire the Orbits in a **Star** topology.

If the devices will terminate at a modem, Orbit 01 must be the first Orbit in the chain (closest to modem) and that home run may not exceed 300'.

Daisy-Chain Topology
A Category 5 cable must be run from the ShopperTrak Host to the first *Orbit 5* unit. In most cases, the "first" *Orbit 5* should be the left-most Orbit above the left-most doorway, as observed from inside the store looking out. If this would result in an excessively long cable run, the homerun can be run to opposite end of the chain.

Check with ShopperTrak or the client's store systems group to determine the ShopperTrak Host location. In most cases, the host will be either a modem or TCP/IP, installed near the telecomm board, store controller, or network switch.

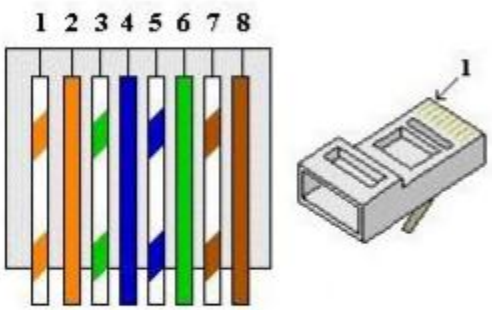
Another line must be run from the first Orbit to the second, then another line from the second to the third, and so on, until all units are networked in a daisy-chain topology.

Star Topology
Follow the guidelines for installing a multiple *Orbit 5* network as described above to determine the number of Orbits required, and their mounting locations.

A home run cable will be run to each Orbit from the ShopperTrak Host location. Check with ShopperTrak or the client's store systems group to determine the ShopperTrak Host location. In most cases, the host will be either a modem or TCP/IP, installed near the telecomm board, store controller, or network switch.

In some cases it is possible to daisy-chain multiple units at the end of each homerun. However, the 1500'/*n* rule still applies. In other words, if the run length will exceed 1500' divided by the number of Orbits, the run must be broken up into two.

Terminate following the "T568-B" standard:



Pin	Color
1	White/Orange
2	Orange
3	White/Green
4	Blue
5	White/Blue
6	Green
7	White/Brown
8	Brown

For multiple Orbit installations, terminate daisy-chain cables on both ends using male RJ45 modular connectors. Connect one end of the daisy-chain cable to the "OUT" port of the first Orbit. The other end of this cable should connect to the "IN" port of the second Orbit, and so on.

Terminating Cable at Host

Host cable terminations will differ depending upon 1) whether a Single, or Dual Hosts will be connected, and 2) in the case of Dual Hosts, whether Single or Multiple *Orbit 5* units will be connected, and 3) whether or not a Concentrator will be used.

Review the Technical Overview shipped to site to determine whether this site will be Single or Dual Host and whether or not a Concentrator will be used, and follow the corresponding instructions below.

If you are unable to determine whether this site has Single or Dual Hosts or if a Concentrator is being used, Contact ShopperTrak at 312-529-5301.

Terminating the Cable for a Single Host

Terminate the host end using the **EIA/TIA 568 B standard**:

- **The green pair should be terminated to the red-keyed RJ45 jack in their respective color positions. This jack should be placed in the *Orbit* Power position on the faceplate.**
- **The blue, orange, and the brown pairs should be terminated in their respective color positions to the green RJ45 jack. This jack should be placed in the *Orbit* Data position on the faceplate.**

Terminating the Cable for Dual Hosts – Single *Orbit 5*

Terminate the host end using the **EIA/TIA 568 B standard**:

- **The green pair should be terminated to the red-keyed RJ45 jack in their respective color positions. This jack should be placed in the *Orbit* Power position on the faceplate.**
- **The orange pair and the brown-white wire should be terminated in their respective color positions to the green RJ45 jack. This jack should be placed in the *Orbit Modem* position on the faceplate.**
- **The blue pair and the white-brown wire should be terminated in their respective color positions to the yellow RJ45 jack. This jack should be placed in the *POS System* position on the faceplate.**

Terminating the Cable for Dual Hosts – Multiple *Orbit 5's*

Terminate the host end using the **EIA/TIA 568 B standard**:

- **The green pair from the shorter homerun cable should be terminated to the red-keyed RJ45 jack in their respective color positions. This jack should be placed in the *Orbit* Power position on the faceplate.**
- **The blue, orange, and the brown pairs from the homerun to the Left-Most Orbit above the Left Most Door (Orbit 00) should be terminated in their respective color positions to the green RJ45 jack. This jack should be placed in the *Orbit* Modem position on the faceplate.**
- **The blue, orange, and the brown pairs from the homerun to the Right-Most Orbit above the Right-Most Door (The Orbit with the highest address) should be terminated in their respective color positions to the yellow RJ45 jack. This jack should be placed in the *POS System* position on the faceplate.**

Terminating the Cable when using a Concentrator

Terminate the host end using the **EIA/TIA 568 B standard**:

- When using a Concentrator, the faceplate and jacks are not used. Instead, the home run cable is punched down to a plug.
- All pairs should be terminated to a plug in their respective color positions. The plug should be plugged into the only Red jack next to a Green jack. This jack can also be described as the 6th red jack from one end.

Powering the Orbits

Insert the RJ45 plug of the *Orbit 5* Power Cable into the **red** *Orbit 5* Power jack of the faceplate.

Verify that the *Orbit 5(s)* are getting power by checking the LED's on all Units.

If the LED's are not lit on any of the units:

- Verify all punch downs at the host and at the first *Orbit 5* in the chain. Verify the *Orbit 5* Whip at the first *Orbit 5* is firmly connected. Verify that the wall outlet is live. Verify that the *Orbit 5* Power Supply is producing 24 volts dc.

If some of the LED's are lit:

- Verify all punch downs from the last lit *Orbit 5* on the chain. Verify that all *Orbit 5* Whips are firmly connected.

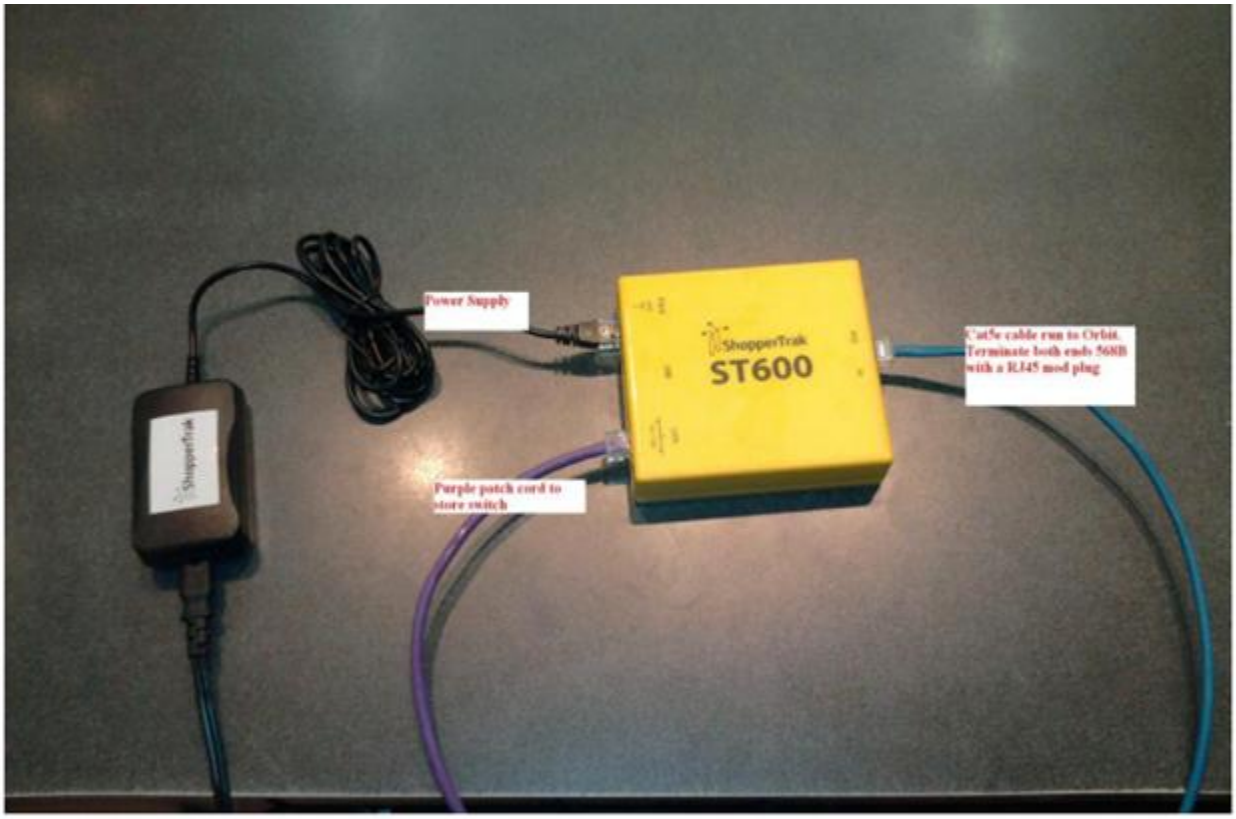
Appropriate back office equipment setup for ST600

ShopperTrak may ship a newer serial-to-Ethernet device for certain installations and service calls. This device, the ShopperTrak ST600, is a replacement for the current TS100. There are a number of differences in the installation process when installing a ST600 vs. a TS100.

- The ST600 is 4-3/4" x 4" x 1" in size, just slightly bigger than the TS100. The ST600 is yellow in color and is powered by a standard Orbit power supply, which also serves as a power supply for the Orbits.

ST600 Wiring Instructions

- Terminate both ends of the Orbit home run cables following the EIA/TIA 568 B standard
- When using an ST600, the faceplate and jacks are not used. Instead, the home run cable is terminated using the RJ45 Male Modular Connectors that are provided in the ShopperTrak Installation Kit.
- All pairs should be terminated to the provided connectors in their respective color positions using EIA/TIA 568 B standards.
- The RJ45 Male Modular Connector must be connected to the "OUT" port of the ST600 and the "IN" port of the Orbit.
- Plug the ShopperTrak Orbit Power Supply provided in kit to 24 Hour Electrical Outlet and the PWR 24V port of the ST600.
- Plug the Purple Cat5 Patch Cord provided in kit into the first available port
- The other end of the Purple Cat5 Patch Cord provided in kit to the "LAN" port of the ST600.
- See in/out port lights.



Testing

Once cabling is complete and all equipment is installed, you are ready to test the Orbit(s).

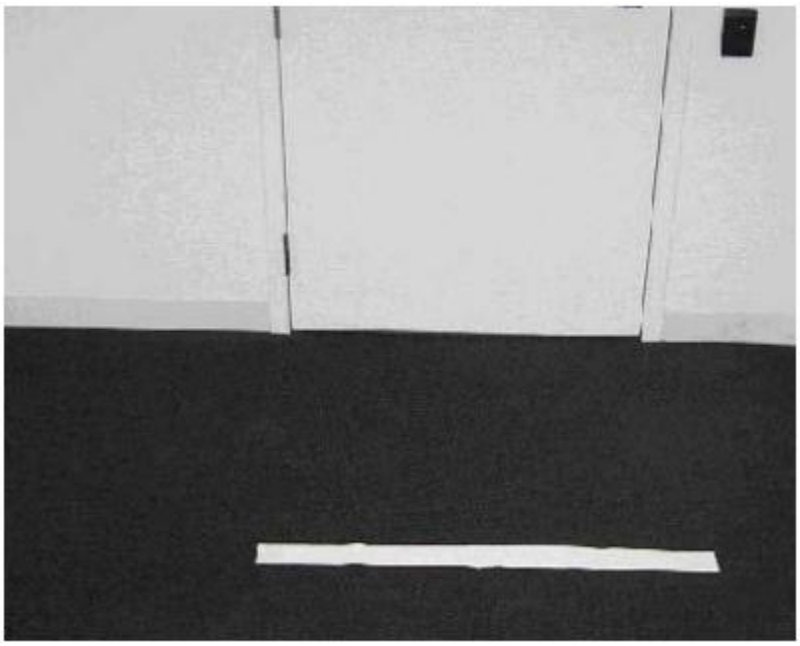
Contact NET Support at 608-827-2271

The 3' Strip Sticker

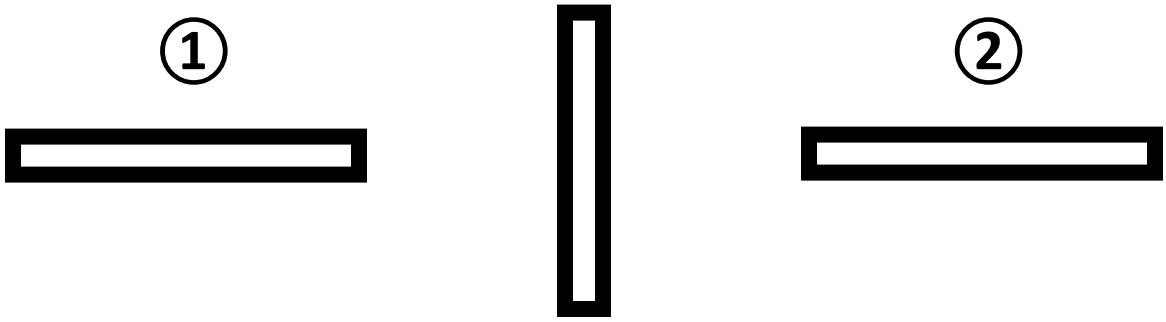
Before calling NET for testing, place the 3' black and white strip directly under the permanent Orbit location, parallel with the entryway. Make sure the strip is stretched out completely and flat on the floor. ShopperTrak will acquire a video snapshot from the Orbit, and needs this strip under the Orbit at that time.

Positioning Requirements of the 3 Ft. Calibration Tape

1. The tape should be parallel with the entrance, going left to right under the Orbit if facing the outside. Please see photo below.
2. The tape should be directly under the Orbit Unit or as close as possible to being directly under the Orbit Unit. Please see photo below.
3. Make sure your ladder is moved out of the way when NET is taking snapshots



4. For Multi-Orbit testing, place vertical strip in between the 2 horizontal strips in the center of the doorway.



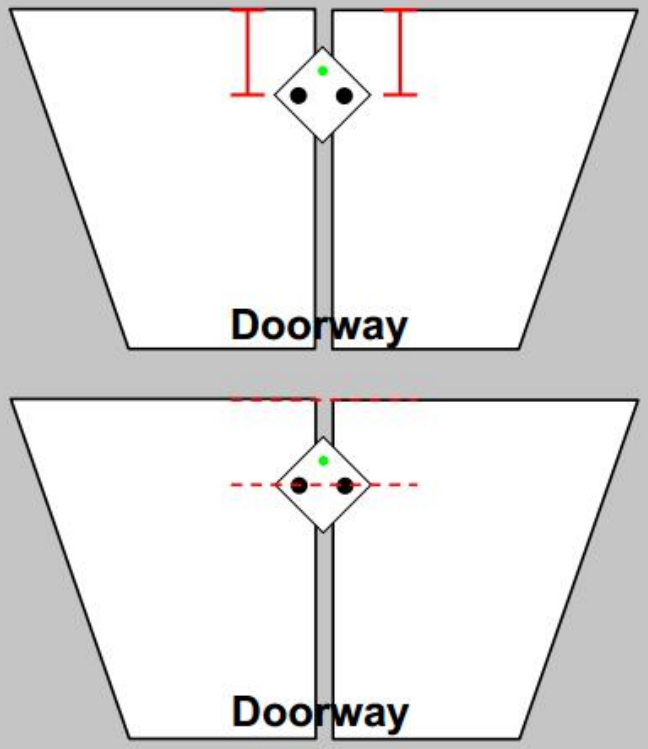
Completing Installation

Once the installation is complete, document the **Check In/Out codes** if working with ShopperTrak. You will also be asked the following questions. It is helpful if you have this information available when you log out with NET.

1) Switch type and port number
2) How cable was used
3) Any issues with the cable path or installation
4) Use of any materials that were not included in kit
5) Any issues we should note

608-827-2271
NET Support

Orbit 5 Placement / Alignment



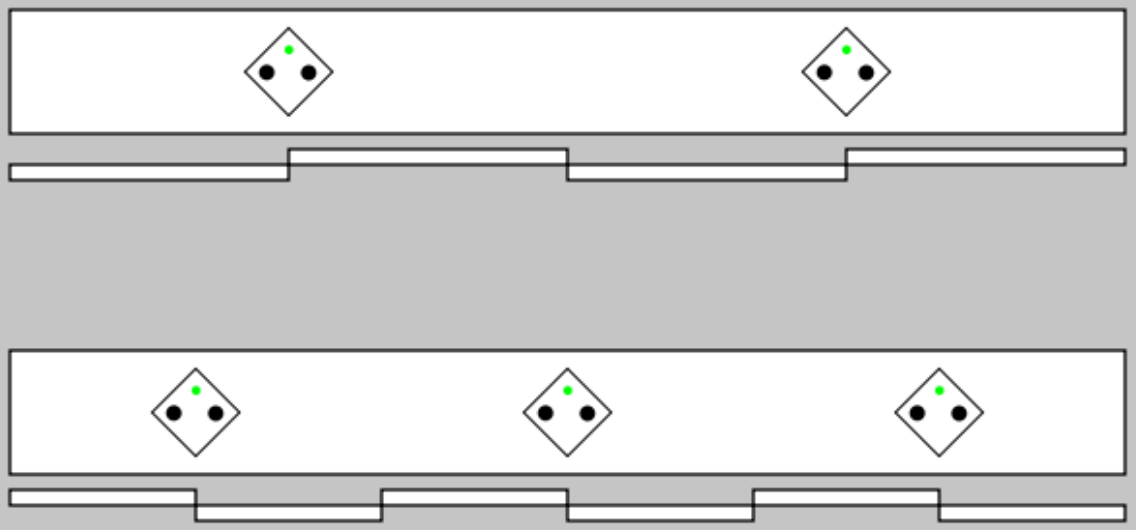
Placement:
Orbit should be centered over entrance,
at the distance below:
- No doors: 0” to 24” from threshold
- Doors that swing out: 18” to 36” from threshold

Alignment:
Orbit LED should be poining outside the store
An imaginary line between the two Orbit lenses should be parallel to the door.
To verify, measure distance from each Orbit lens to front or back edge edge of the ceiling tile, soffit, or door threshold – each distance should be the same.

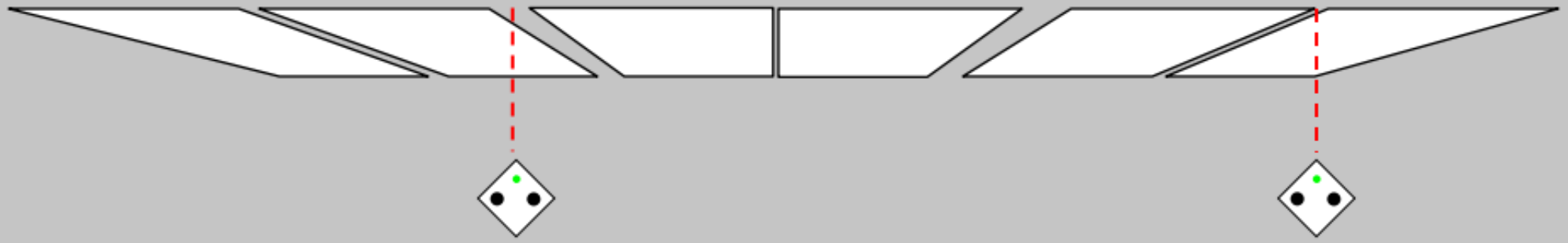
Orbit Spacing

$$\text{Distance between Orbits} = \frac{\text{Entrance Width}}{\text{Number of Orbits}}$$

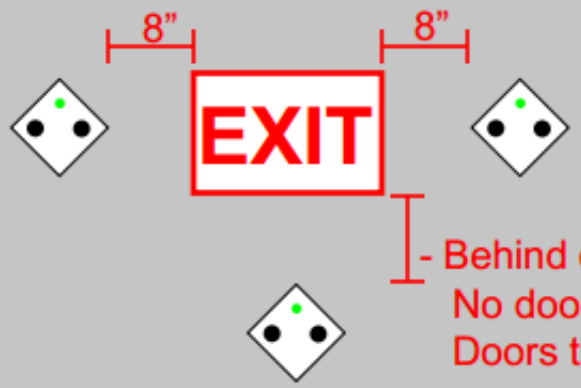
$$\text{Distance from sidewall to first / last Orbit} = \frac{\text{Entrance Width}}{2 \times \text{Number of Orbits}}$$



Orbit 5 Placement
3 Sets of double-doors

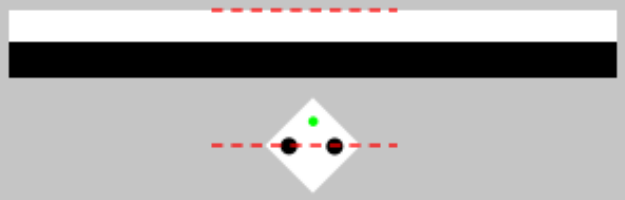


Orbit placement around objects

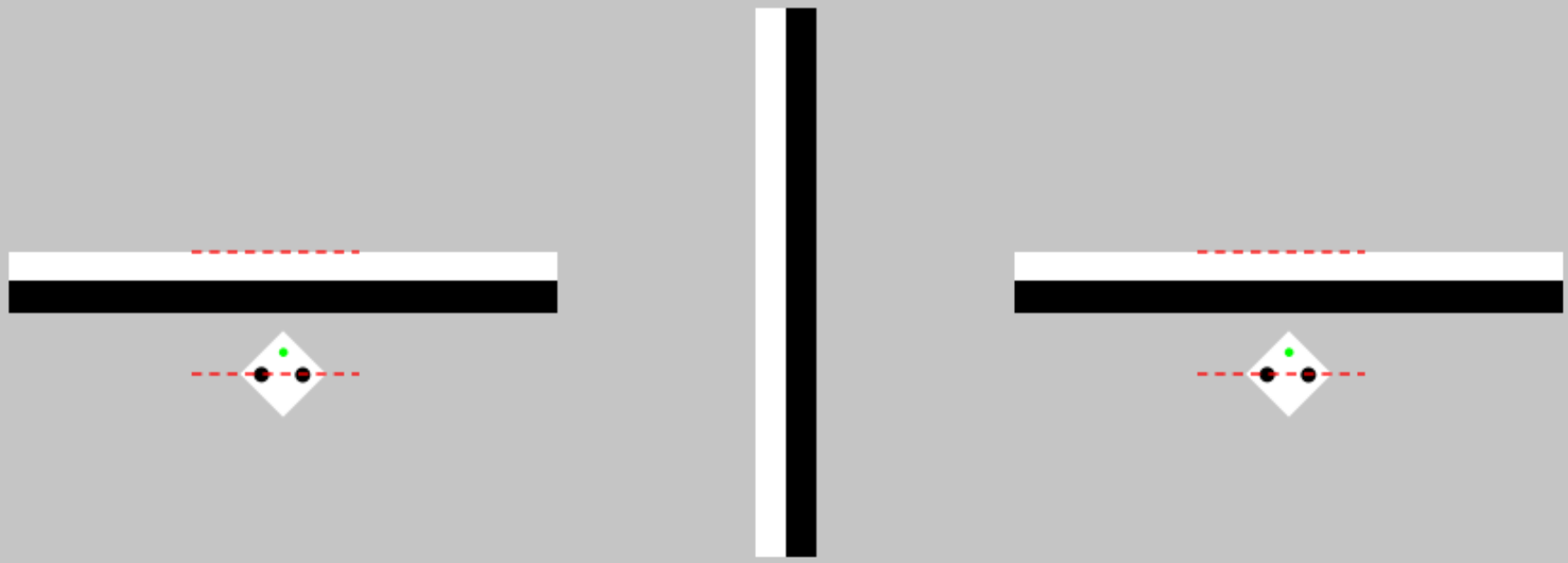


- Behind object within specified threshold:
  No doors: 0” to 24” from threshold
  Doors that swing out: 18” to 36” from threshold

Calibration Tape Placement – Single Orbit Entrance



Calibration Tape Placement – Multiple Orbit Entrance



ShopperTrak

Orbit 5 Mounting Bracket Template #0701