

INSTALLATION REQUIREMENTS

Covered Monitor System



**TOPTRACER
RANGE**

Hello!

This document provides insight for golf clubs and driving ranges considering installing Toptracer on their existing or future covered structure. It ensures a clear understanding of network architecture and installation requirements, facilitating a successful and seamless Toptracer installation.

Included in this guide:

- 1 Local Network and Electrical Requirements
- 2 Bay Monitor Mounting Options
- 3 Outfield Coverage
- 4 Low Light/Nighttime Use
- 5 Responsibilities

⚠ This document is for awareness purposes only. Please refrain from initiating any structural, electrical, or data work based solely on the illustrations provided. The design presented here is generic and subject to change without notice.

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Local Network and Electrical Requirements

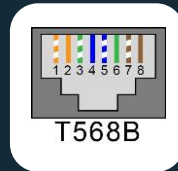
1 Local Network Requirements

CABLE TYPE

- Cat6 F/UTP cable, with a maximum single cable run of 295ft.

TERMINATION

- RJ45 outlets at each bay monitor and camera locations
- Cat6 cables terminated using the straight-through T568B pinout configuration.



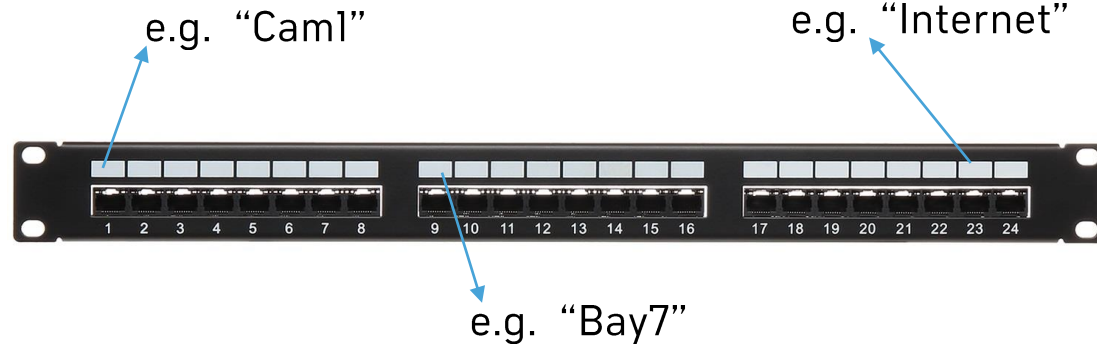
NETWORK CABINET

- To run the Toptracer system, Toptracer will supply and install a network cabinet which will house all Toptracer server and network equipment.
- If you have a dedicated network/server room and wish to install the Toptracer server and network equipment there, that is also possible.



PATCH PANEL

- All camera and bay monitor data cables should be terminated in a grounded Cat6 patch panel with a service loop.
- All patch panel ports must be clearly labeled to indicate which Toptracer equipment they correspond to.



1 Network Cable Testing

Toptracer requires a network cable validation upon the completion of data cable installation. This validation must be in the form of a digital or physical document provided to Toptracer before the Toptracer installation commences.

The document must have the following information:

- Installed cable type
- All tested cables (labelled correctly)
- Individual cables length
- Date and time of the test
- Wire map / termination type of cable

Toptracer accepts many forms of data network documents with the above-mentioned information.



Fluke Networks LIQ-KIT - LinkIQ™
Cable+Network Tester

**Toptracer recommends Fluke
Network for all network
cable testing.**

1 Internet Requirements

Toptracer requires an uninterrupted and open internet connection to operate its software, provide the latest updates and remote support. An open connection means a direct connection to the external internet without any firewall rules or port restrictions.

The internet connection must be provided by the site in the form of 1 x Local Area Network (LAN) RJ45 terminated cable, or a 4G SIM card. The LAN cable must be supplied at a Toptracer defined network cabinet location.

4G SIM Card

Correct SIM: Mini SIM — 2FF



Nano SIM
(12.3mm x 8.8mm)
4FF



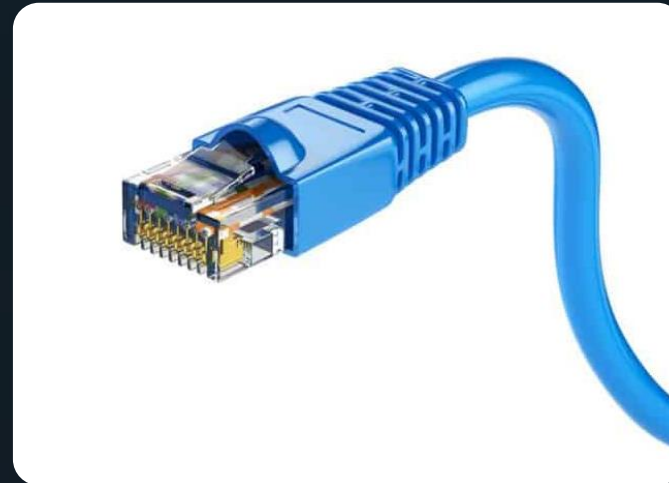
Micro SIM
(15mm x 12mm)
3FF



Mini SIM
(25mm x 15mm)
2FF



Ethernet Cable



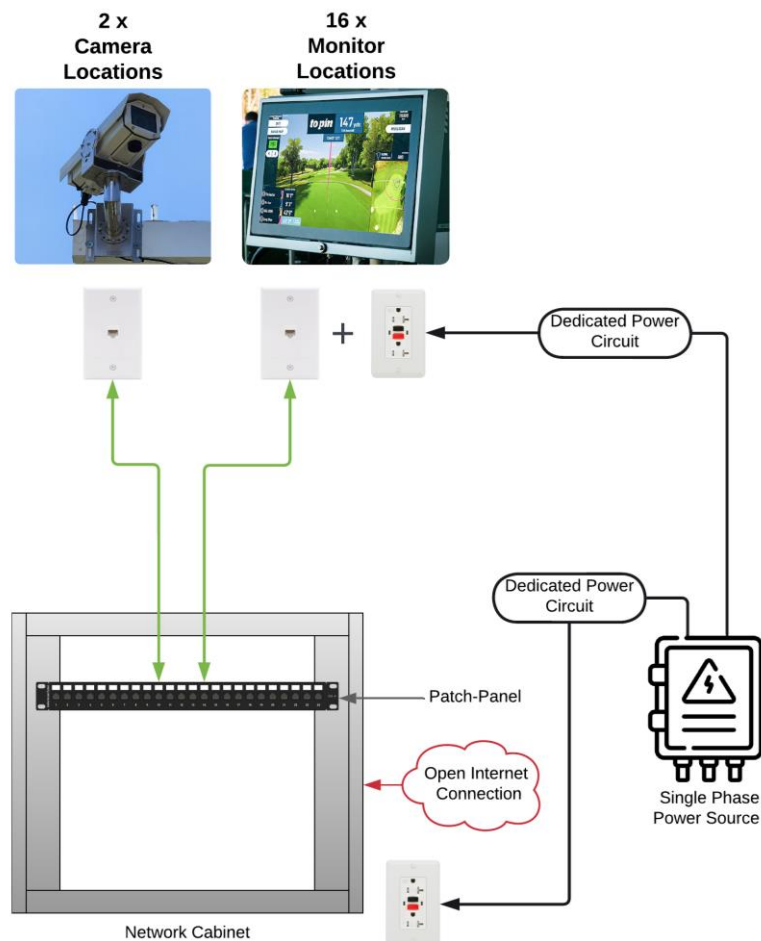
Internet Speed Requirements

Download - 4 Mbps

Upload - 2 Mbps

The Toptracer system will use approximately 50GB per month in data usage. Please review this allowance with your internet service provider before installing Toptracer. Data usage and internet speed requirements will increase depending on total hitting bay coverage and selected Toptracer products.

1 Electrical and Data Cabling



Legend:

↔ Cat6 F/UTP* Cable

← Open Internet Connection

— 120V Electrical cable



WR GFCI AC Power Outlet



Cat6 Data Outlet

Cat6 network cables from the patch panel should be terminated with data outlets at the driving range hardware locations.

* F/UTP: Foiled with Unshielded Twisted Pairs. (with grounded patch-panel and shielded connectors).

Power consumption example:

The table below shows calculated maximum power consumption for the connected Toptracer Range hardware illustrated on the left.

Hardware	Power (W)	Current (A)
Network Cabinet	153	1.28
Monitors	1440	12
Total	1593	13.28

An accurate assessment of your proposal, including bespoke calculations, will be provided in your personalized design pack

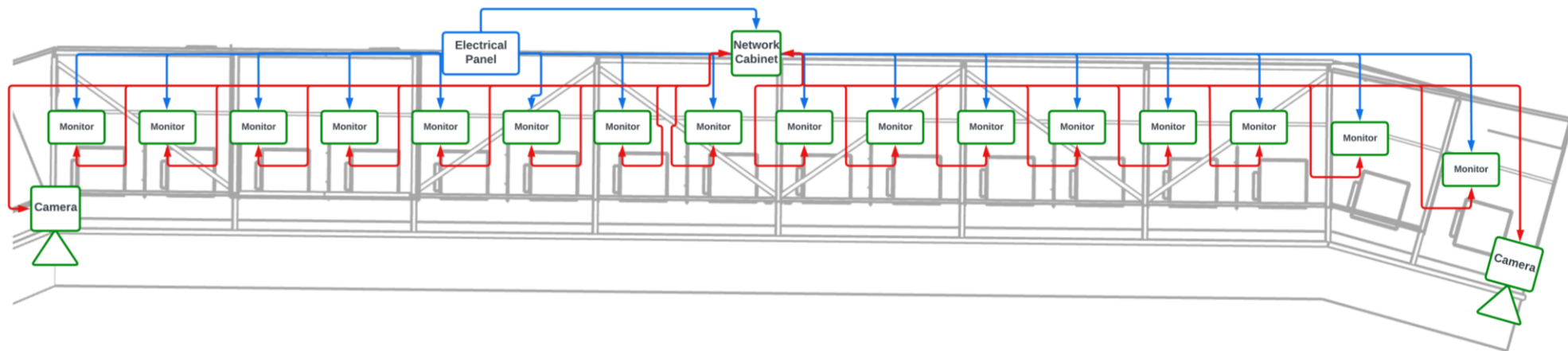
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Cabling Overview

Power and data requirements change based on structure size and Toptracer offering.

Example layout: 15 right-handed bays and 1 left-handed bay setup

Outfield direction



Please note: The routing and containment of power and data cabling are at the discretion of the contractor, but they must adhere to the latest local and industry regulations.

— Power cable

— Data cable

1 Power & Data – Camera

CAMERA LOCATION

Toptracer cameras use Power over Ethernet (PoE) technology, allowing them to receive power from a PoE-compatible network switch.

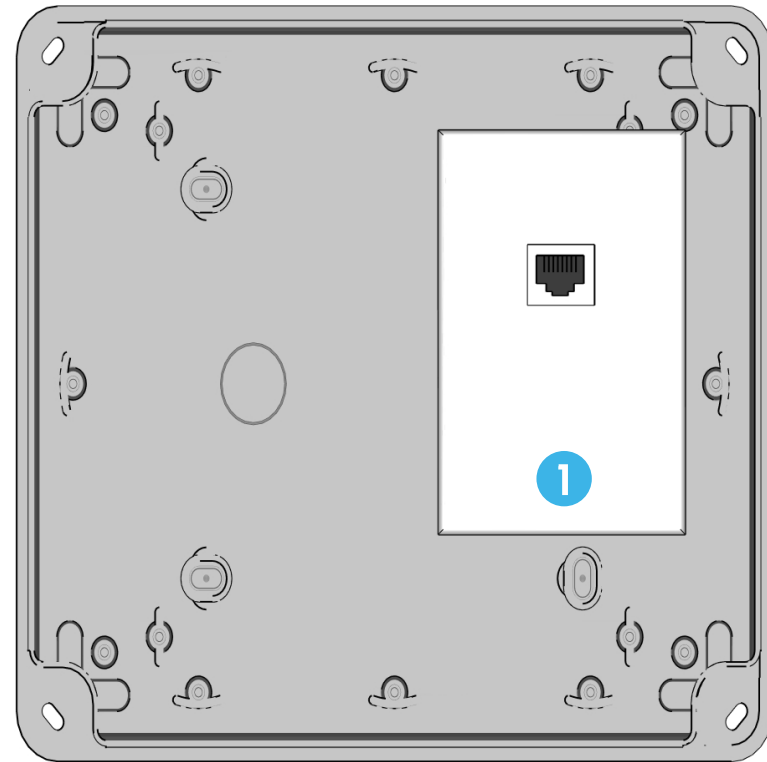
Each camera location requires a junction box containing:

- 1 **1 x Data outlet**
[Wired to the Toptracer network cabinet]

Installation Notes:

A weatherproof junction box is recommended for cable management and protection.

Minimum junction box size: 8" x 8" x 6"



1 Power & Data – Monitor

MONITOR LOCATION

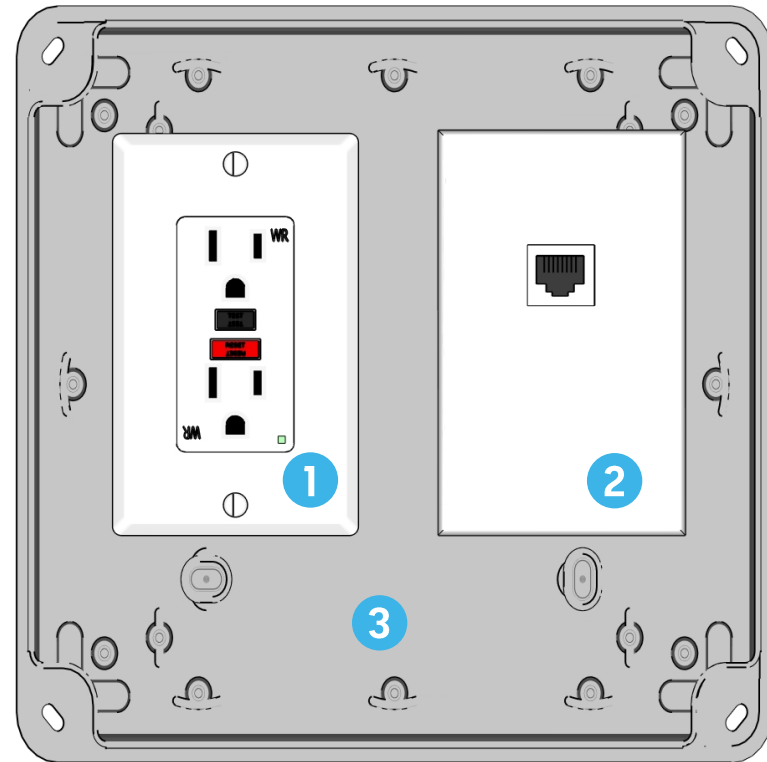
At each monitor location, Toptracer requires a junction box with:

- 1 **1 x GFCI Power outlet** (WR-rated if not housed in a weatherproof junction box)
- 2 **1 x Data outlet** (Wired to the Toptracer network cabinet)
- 3 **Adequate space for the AC/DC Power Adapter of the monitor**

Installation Notes:

A weatherproof junction box is recommended for cable management and protection.

Minimum junction box size: 8" x 8" x 6"



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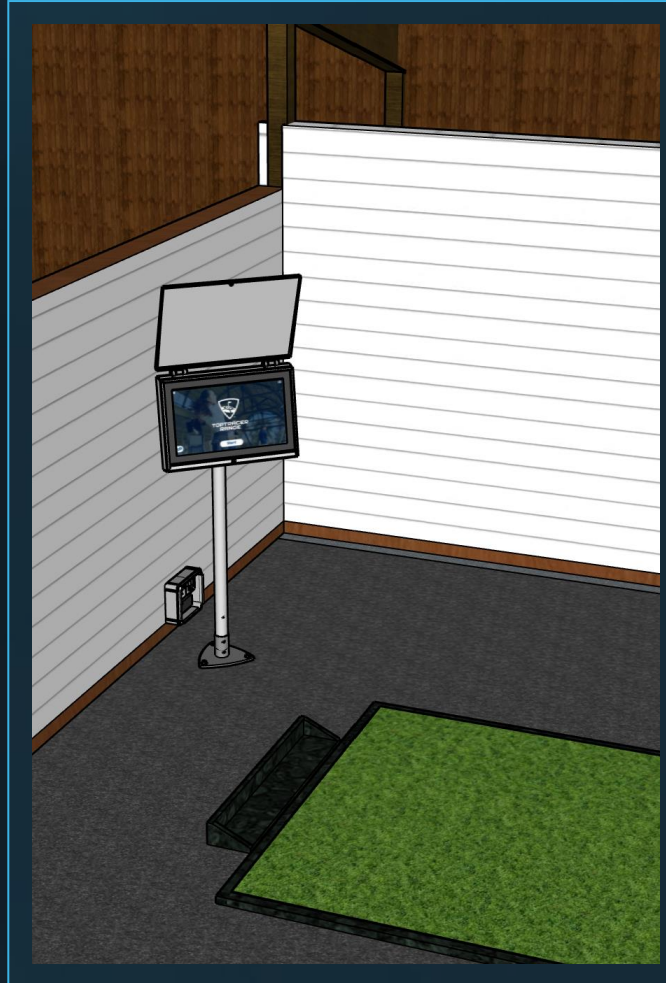
Bay Monitor Mounting Options

2 Potential Monitor Mount Options

Floor-To-Ceiling



Floor Stand



Wall Mount






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Outfield Coverage

3 Outfield Coverage

The tracking zone is the area where the Toptracer system can track the flight of the golf ball. Only shots hit from the assigned bays inside the tracking zone will be traced and shown on the Toptracer Range enabled bays. A Toptracer system can be installed at any range without altering the existing targets, provided the outfield has at least 6-8 targets evenly distributed within a range of 30-275 yards from the bay line.



-  **Light Grey Area:** Targets will be available in all Toptracer Range game modes.
-  **Dark Grey Area:** Targets are allowed on the outfield but will not appear in any Toptracer Range game modes.
-  **Potential Target Layout**

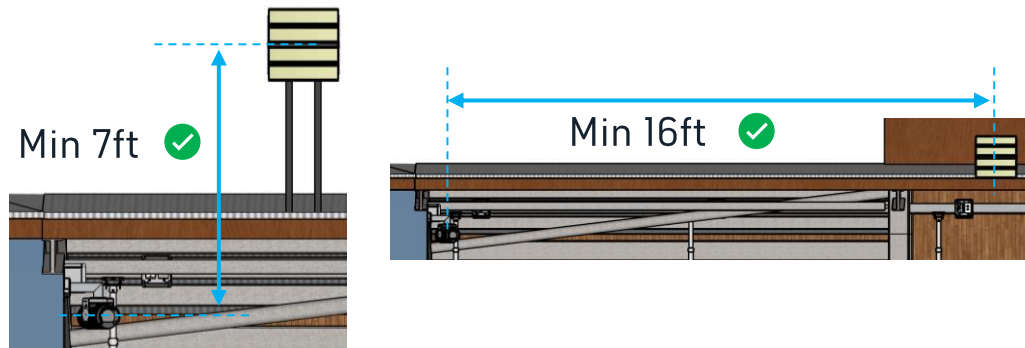
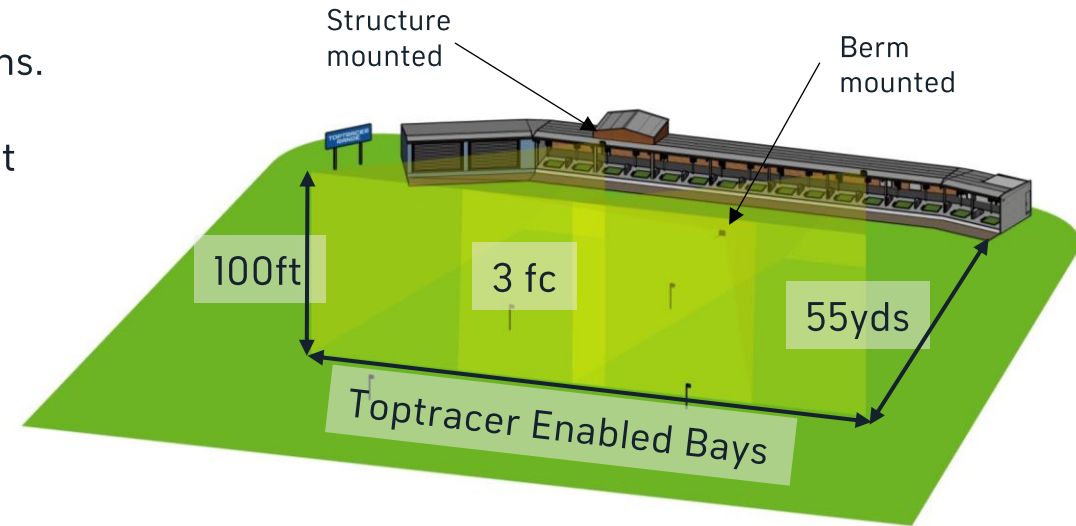
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Low Light/Nighttime Use

4 Low Light/Nighttime Use

The Toptracer system requires adequate lighting to operate at night or during low natural light conditions. If the system is to be used under these conditions, light fixtures that meet the requirements below must be installed by the site or a lighting specialist.

To enable the use of Toptracer in these conditions, a light wall with a minimum value of 3-foot candles measuring 100ft high and covering the entire width between the Toptracer cameras, is required 55yds out from the camera locations.



The light source must be at least 16 ft horizontally or 7 ft vertically from any camera. The light fixture should be aligned with or positioned behind the cameras.

5

Responsibilities

5 Responsibilities

A list of responsibilities expected to be completed by the site and their chosen contractor(s) before the Toptracer Installation week.

Site/Contractor(s)

- Supply, install, and test all electrical and data* cables.
- Supply, install, and secure all electrical and data* conduits.
- Terminate all electrical and data* outlets/patch-panels.
- Label all electrical and data cables and their corresponding outlets.
- Supply, install, and confirm the activation of an open internet connection.
- Supply and install outfield targets.
- Arranging and issuing permits

*Some designs may involve Fiber cabling

5 Responsibilities

A list of responsibilities to be completed by Toptracer during the Toptracer Installation week.

Toptracer

- Supply, install, and test all Toptracer hardware and software.
- Supply and carry out final connections between outlets and Toptracer hardware.
- Measure site outfield and calibrate it with confirmed targets.
- Carry out staff training on Toptracer system.



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