

## **Advanced Fiber Cabling for Robust Security**

**Don't make cabling the weak point of your  
security and surveillance systems**

Security is important to everyone, whether it's a business protecting its facility, a local authority safeguarding buildings or neighborhoods, or a homeowner securing their residence. With the availability of relatively low-cost cameras that offer good performance and the shift from analog to digital, the industry is experiencing significant changes.



*Figure 1: Modern digital security cameras are an increasingly common sight these days*

The market for video surveillance is strong and showing significant long-term growth. A recent report<sup>[1]</sup> by marketsandmarkets estimated the market at USD 53.7 billion in 2023, growing to around USD 83 billion by 2028.

There are a number of drivers for this strong market growth, including increased need for security and greater availability of suitable solutions. However, as with many sectors artificial intelligence (AI) is making its presence felt. Until recently, reviewing security footage (whether in real time or retrospectively) required one or more human operators which was both expensive and prone to mistakes.

With the integration of AI into security networks, the reliance on humans for 24/7/365 monitoring is removed. An AI-equipped system can detect unusual activity such as an unknown vehicle or person, and provide an instant alert, locally or globally. This increased capability and reduction in costs is cited by marketsandmarkets as a key reason for recent market growth.

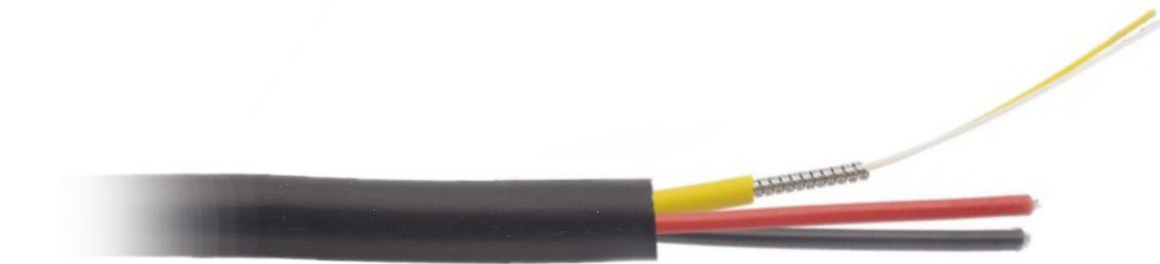
## **Cabling for Security Systems**

There are a number of factors that make connecting cameras to a wider security system challenging. Signal integrity is paramount as interference or degradation due to long runs can render the footage useless. Security of the cable is also important as someone may want to damage the system, or possibly eavesdrop. Power is another critical factor – while some cameras may rely on solar power this can be unreliable so, often, a power feed is needed. And with complete systems comprising both indoor and outdoor cameras, cables must be small enough to be run through congested conduits inside a building as well as robust enough to withstand external conditions – including heat, cold and damp.

In the past, coaxial cable has been used for security applications. Increasingly, fiber optic cable is being used to take advantages of a number of benefits including the high bandwidth, better quality transmission and stability over a wide temperature range. Additionally, as all data is transmitted as light, interference from any electrical source (lightning, switchgear, EMI, RFI etc.) is impossible, whether inadvertent or deliberate.

As there is no electrical signal, fiber optic can safely pass through hazardous zones (such as those with explosive atmospheres) and will not interfere with any sensitive equipment that may be nearby. This also minimizes the possibility of ‘snooping’.

TiniFiber's patented Micro Armor Fiber™ Optic Cable is an ideal solution for security applications. It is easy to install in long runs of tight or congested conduit as it is 65% smaller in diameter and 75% lighter than normal Aluminum Interlock Armor (AIA) cable. Despite the small size, a version of the cable is also capable of delivering power alongside data, providing a single cable solution for any camera where solar is deemed too unreliable.



*Figure 2: TiniFiber's Hybrid Power Micro Armor cable conveys power and data in a single cable*

The high-performance fiber optic strands are protected by a tightly wrapped tubular stainless-steel outer coil (combined with Kevlar®) during installation. During the operational lifetime of the cable, this then protects against common challenges of crushing, tampering or chewing by vermin.

Even with this essential armor, the cable remains flexible, allowing for tight bend radii inside small or congested conduits. This strength and flexibility make damage during install highly unlikely. As Micro Armor occupies less space than other cables, more space will remain for future upgrades and additions, should they be needed.

The small dimensions also apply to reels of this cable. This benefits installers as more cable can be transported per journey, saving time and fuel while making it easier to carry a full reel up to a height during install.

Customers can also access a full 25-year TiniFiber warranty on the installation, provided that they use an installation firm that is registered under their TiniFiber Certified Installer (TCI) Program. The long-term peace of mind and confidence is invaluable in security applications.

## TiniFiber Cables

TiniFiber offer a very wide range of armored fiber cables, including types that are suitable for use indoors or outdoors, or bridging between the two. A range of popular environmental cable jackets (including LSZH) are available. With head ends generally indoors and cameras often installed outside, this is exactly what is needed for security applications. Incredibly useful for powering distant cameras, TiniFiber cables can be ordered with inbuilt power cables – a perfect single-cable solution.

Supporting the range of cables, installers can also buy high-quality tools and useful accessories, including fusion splicers for joining cables.



*Figure 3: TiniFiber cable is rugged, small and lightweight – perfect for security applications*

The fiber heart of the cable is formed from modern bend-insensitive glass (Corning LBL G.657.A2) in two coated sizes (250  $\mu$ m and 900  $\mu$ m). The 900  $\mu$ m tight buffer cables contain up to 24 strands while the gel-free sub-unitized 250  $\mu$ m breakout style cables are available with up to 12, 24, 36, 48, 72, 96 or 144 strands.

TiniFiber's Micro Armor cable offers high performance in a slim but strong form factor. Despite this, it has a low total cost of ownership, saving money on installation and during use, as a result of its strength and reliability.

## Notes/References

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1. <https://www.marketsandmarkets.com/Market-Reports/video-surveillance-market-645.html>