



A Furukawa Company

## InvisiLight® Optical Solutions Multiple Dwelling Unit (MDU) and Indoor Living Unit (ILU) Applications



### Indoor Optical Solutions for Home and Business 100X Faster Speeds for the Internet of All Things

Fiber-to-the-Home (FTTH) and Fiber-to-the-Business (FTTB) deployment is accelerating globally, offering ultra-high-speed Gigabit service to consumers. The OFS InvisiLight® Optical Solution, launched in 2012, is a revolutionary system that enables fast, easy-to-install and almost invisible fiber drop connections for the indoor living unit (ILU) or businesses for fiber-to-the-desk (FTTD) services. OFS' EZ-Bend® Optical Fiber enables worry-free bending around the many tight corners typically found inside buildings and rooms. These optical fibers surpass the G.657.B3 technical standard, with a 2.5 mm bend radius, helping to ensure reliable, ultra-high-speed internet and services.

After tens of thousands of installations, the InvisiLight Optical Solution is now available for the multi-dwelling unit (MDU). Leveraging this same proven technology, the new InvisiLight ILU and InvisiLight MDU Solutions help make optical fiber easily available to each building tenant. These solutions can help accelerate the adoption of fiber optic services in residential or business premises by differentiating indoor fiber deployment from traditional methods. In this way, the InvisiLight Solutions can help to significantly improve the consumer experience while lowering costs and speeding installation. These benefits result in higher subscriber acceptance and take rates, higher profitability and faster time-to-revenue for service providers.

#### Advantages

- Independent plug-and-play installation
- Simple and flexible versus traditional methods
- Faster time to service and revenue turn up
- No expensive retraining of staff
- Optical fiber surpasses G.657.B3 standards
- Décor, wall, corner and obstacle friendly
- Easy to reposition or remove

## InvisiLight ILU Solution

Discerning residents, tight spaces, corners, textured surfaces and a myriad of other challenges encountered while deploying fiber in an ILU require a solution that can reliably meet these challenges.

The InvisiLight ILU Solution allows quick and easy indoor optical fiber installation. Installers unwind the optical fiber, route it along a predetermined path and simply adhere it in place. Using this innovative yet simple process, the installer adheres the fiber in crevices where walls intersect (drywall, brick or concrete) and along crown molding, baseboards and various ceiling surfaces. This solution offers consumers a safe, protected optical fiber link that blends seamlessly into the ILU, is virtually invisible to the eye and installed without disruption to the homeowner or décor. In addition to these benefits, the optical fiber can also be painted or caulked over if desired.

The InvisiLight ILU Solution is offered as a complete kit consisting of:

- **a wall-mounted interconnection module;**
- **a spool that spins EZ-Bend fiber (terminated with SC-APC connectors) out of the module;**
- **a limited number of corner protectors, wall plugs, caps and a through-wall placement tool; and**
- **an adhesive (in tubes).**

An optional extension pole enables easy ceiling-level adhesive placement. This pole and an adhesive applicator tool are sold separately and are reusable for multiple installations.

Inside the ILU or business, the EZ-Bend Optical Fiber can be routed around many corners with negligible signal loss. The consumer and pet-safe installation adhesive dries in approximately 60 minutes, allowing the installer to quickly adjust the optical fiber if needed. With the innovative wall mount module, this plug-and-play solution solves the slack management challenge with a spinning spool (or auto-slack manager) in the module itself.

The InvisiLight ILU Solution helps an installer to quickly adapt to the indoor environment, offering substantial flexibility in routing fiber to the desired optical network terminal (ONT) location. In some cases, at the installer's discretion, the optical fiber can be routed from the wall-mounted module towards the ONT or from the ONT towards the wall module. Installation time decreases with easy pre-planning and minimal experience, with a typical ILU installation taking approximately 30 minutes.

## InvisiLight ILU Installations

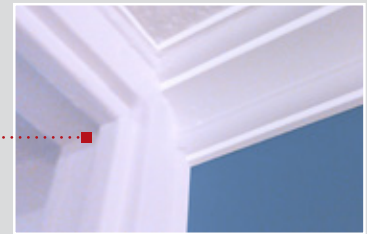
Corner and stucco ceiling



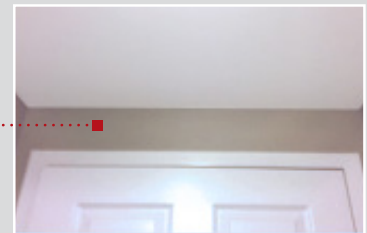
Crown molding



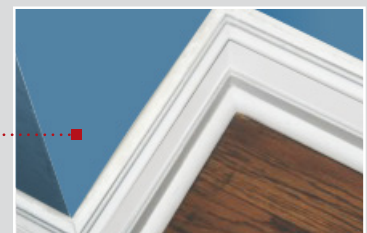
Crown molding



Ceiling edge above door



Baseboard







## InvisiLight MDU Solution

The high density of potential subscribers makes Fiber-to-the-Building installations popular in many parts of the world. This application can be used in residential or corporate buildings, hospitals, schools and even smaller shopping malls. As bandwidth demands explode, service providers are increasingly running fiber to each unit within a building to provide reliable Gigabit services. However, deploying fiber inside many existing buildings can be difficult and expensive. The InvisiLight MDU Solution meets these challenges with a fast to-install, practically invisible multifiber cord that can be surface mounted in hallways and between floors to connect subscribers to ultra-high-speed services.

Installing optical fiber horizontally on floors can be an excruciating challenge in buildings without existing duct, molding or free space. In these cases, the deployment options are limited to cutting and patching drywall to place and hide the fiber optic cables; building new molding systems and then placing fiber optic cables inside them; or using unattractive tape-based pathways. Cut-and-patch installations are slow and typically the most expensive approach and may also be impossible in buildings constructed of masonry. Building new molding systems is also expensive and unsightly, especially for ornate plastic or wood-based molding systems.

The new InvisiLight MDU Solution solves these challenges with a multifiber product. Designed for horizontal installation in building hallways, twelve 250  $\mu\text{m}$  EZ-Bend optical fibers are joined together in a single 2 mm diameter package. The optical fibers, the installation process and the tools involved are identical to those used in the field-proven InvisiLight ILU Solution deployment process. This uniformity helps to ensure that identical optical fibers provide the necessary bend radius performance needed for the many corners that can exist in MDU hallways, along with making effective use of installer skills and controlling the inventory of common components.

The InvisiLight MDU Solution is offered as a complete kit consisting of:

- a point-of-entry (POE) wall-mounted interconnect module with slack storage space;
- InvisiLight® Multifiber Cord containing 12 EZ-Bend ultra-bend insensitive fibers on a spool;
- corner protectors, wall plugs, wall caps and an intra-wall drop tool; and
- an adhesive (in tubes)

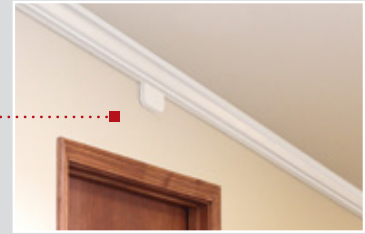
Inside the residential building, installers first survey the hallways before mounting the point-of-entry (POE) wall module above and on the exterior of each flat. The fiber is then unspooled and adhered to crown molding or wall-ceiling crevices horizontally in the hallway across a row of living units. A recommended length of slack is then stored inside each POE module after which a dedicated, colour-coded strand of optical fiber for the living unit is extracted and fusion spliced into a connector. Alternatively, mechanical connectors can also be used. This method allows for simple plug-and-play connections to the InvisiLight ILU Solution inside the flat at any point before, after or during the InvisiLight MDU Solution installation. Although not recommended, this solution can be adapted to situations where a service provider needs to install the POE module on the interior of the flat.

During deployment, an installation may need to go through a fire wall or into an unsupported space, such as in a closet. In addition, the fiber can be installed without being adhered in between building floors, risers or other spaces. In such scenarios, the fiber may be placed in a low-friction OFNR (or equivalent national standard) fire-rated duct with a minimum 3.5 mm internal diameter to provide the necessary mechanical protection and comply with regional or local fire codes.

An optional extension pole enables easy ceiling-level adhesive placement. This pole and an adhesive applicator tool are sold separately and are reusable for multiple installations. These accessories and the adhesive (in tubes) are identical and interchangeable with those used for the ILU solution.

## InvisiLight MDU Installations

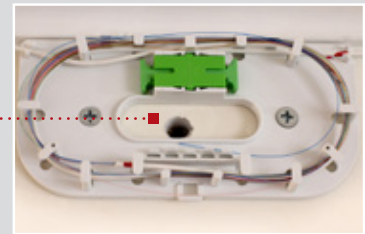
MDU Hallway



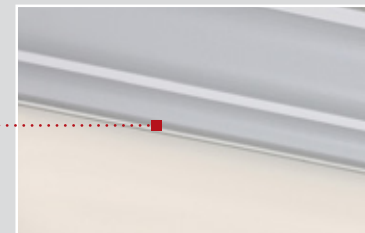
POE Module



Tenant Connection



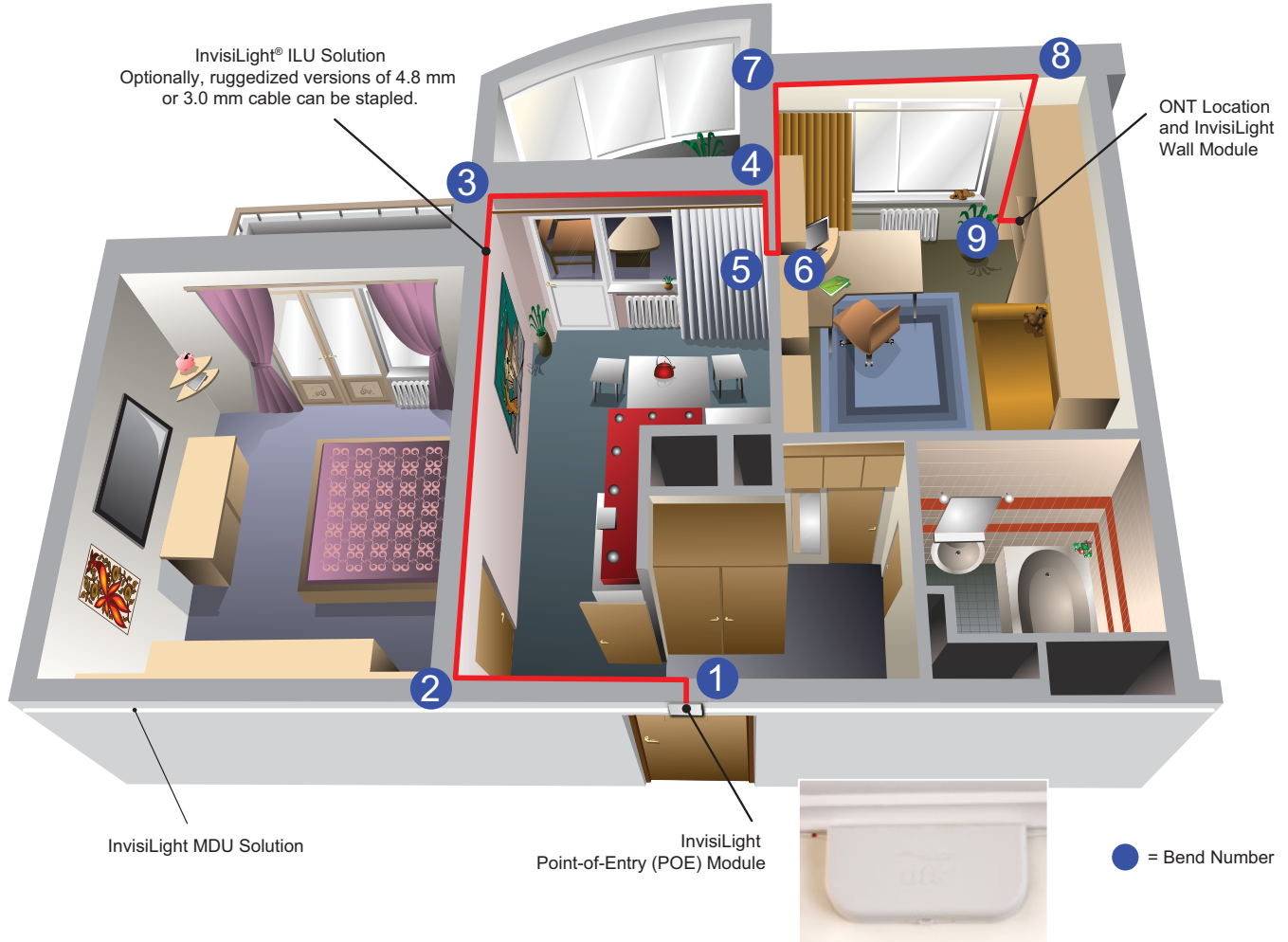
InvisiLight Multifiber Cord



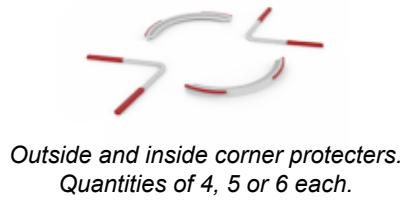
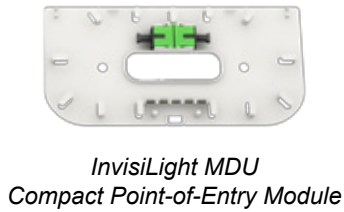
\* The InvisiLight Multifiber Cord consists of the same twelve EZ-Bend fibers, but now meets the OFNR/FT4 fire ratings.

# InvisiLight Optical Solutions

## TYPICAL INSTALLATION



## KIT COMPONENTS AND TOOLS



*Tools Sold Separately  
(not shown)*

Dispensing Tool  
(Adhesive in tubes sold separately)

Inside corner protection installation tool

Through-hole tool  
(to push connector through holes)

Product Specifications	InvisiLight ILU Solution	InvisiLight MDU Solution
<b>Size</b>	One 900 µm EZ-Bend Optical Fiber 10X smaller than 2.9 mm cordage 5 to 20X smaller than tape-based cables	Twelve 250 µm EZ-Bend Optical Fibers in a 2 mm unit 15X smaller than tape-based cables
<b>Application</b>	Indoor living unit (home or flat)	Building/MDU hallways or risers if in OFNR (or equivalent national standard) duct
<b>Install Process</b>	Quick, simple and low-cost installation process to adhere fiber to wall or ceiling surfaces	
<b>Install Tools</b>	Adhesive applicator tool for quick installation; through-wall application tool; and optional extender tool to apply adhesive without a ladder	
<b>Install Materials</b>	adhesive (in tubes) with precision pre-cut tip (fits in applicator tool)	
	Inside and outside corner protectors, wall plugs and caps Indoor unit surface-mounted wall module	Inside and outside corner protectors, wall plugs and caps Mechanical connector or pigtail POE wall module outside tenant unit
<b>Connectors</b>	Plug-and-play, factory-terminated connectors	Factory-terminated connectors for closet - Mechanical connectors or spliced pigtails for point of entry
<b>Surface Mounting</b>	Adheres to most common types of painted and unpainted indoor wall, molding and ceiling surfaces	
<b>Aesthetics</b>	Minimum disruption to owner or tenants	
	Virtually invisible and blends into the décor	
	Can be caulked and painted with latex and oil-based indoor paint	
	Can be repositioned or removed and reapplied if required without damage	
	Easily installed around corners, obstacles and on textured surfaces	
<b>Corners</b>	Supports maximum 30 outside corners and 30 inside corners*	Supports maximum 40 outside corners and no limit on inside corners*
<b>Spool Lengths</b>	Available in various spool lengths	
<b>Slack Management</b>	Built-in auto-slack manager	POE module has storage space for slack
<b>Install Conditions</b>	Temperature $\geq 50$ °F ( $\geq 10$ °C) for adhesive installation - No humidity restriction or preconditioning required	
<b>Operating Conditions</b>	-41 °F to 110 °F (5 °C to 43 °C)	
<b>Safety</b>	Does not require entry into single-family home attics	Does not require entry into MDU attics
<b>Standards</b>	UL-1651 compliant fiber and adhesive	<b>InvisiLight Multifiber Cord:</b> OFNR/FT4 For in-between floors, in risers or through fire walls, it may be placed inside OFNR-rated conduits or ducts.
<b>Environmental</b>	Environmentally friendly, free of heavy metals, RoHS compliant and not hazardous to human touch. Minimal scrap/waste remains after installation process is complete.	

\*See InvisiLight Optical Solutions Data Sheet for further guidance.



For additional information please contact your sales representative.

You can also visit our website at [www.ofsoptics.com](http://www.ofsoptics.com)  
or call 1-888-FIBER-HELP (1-888-342-3743) from inside the USA  
or +1-770-798-5555 from outside the USA.  
EMEA Specific: +49 (0) 228 7489 201



FOR ADDITIONAL INFORMATION PLEASE  
CONTACT YOUR SALES REPRESENTATIVE.

You can also visit our website at  
[www.ofsoptics.com](http://www.ofsoptics.com).

InvisiLight and EZ-Bend are registered trademarks of  
OFS FITEL, LLC.

OFS reserves the right to make changes to the prices  
and product(s) described in this document at any time  
without notice. This document is for informational pur-  
poses only and is not intended to modify or supplement  
any OFS warranties or specifications relating to any of  
its products or services.

Copyright © 2017 OFS FITEL, LLC  
All rights reserved, printed in USA.

OFS  
Marketing Communications

Doc ID: FAP-286

Date: 02/17