USBM™ PLC SPLITTER MODULES

INSTALLATION INSTRUCTIONS FOR PLUGIN OPTICS 1X2, 1X4, & 1X8 USBM™ SPLITTERS

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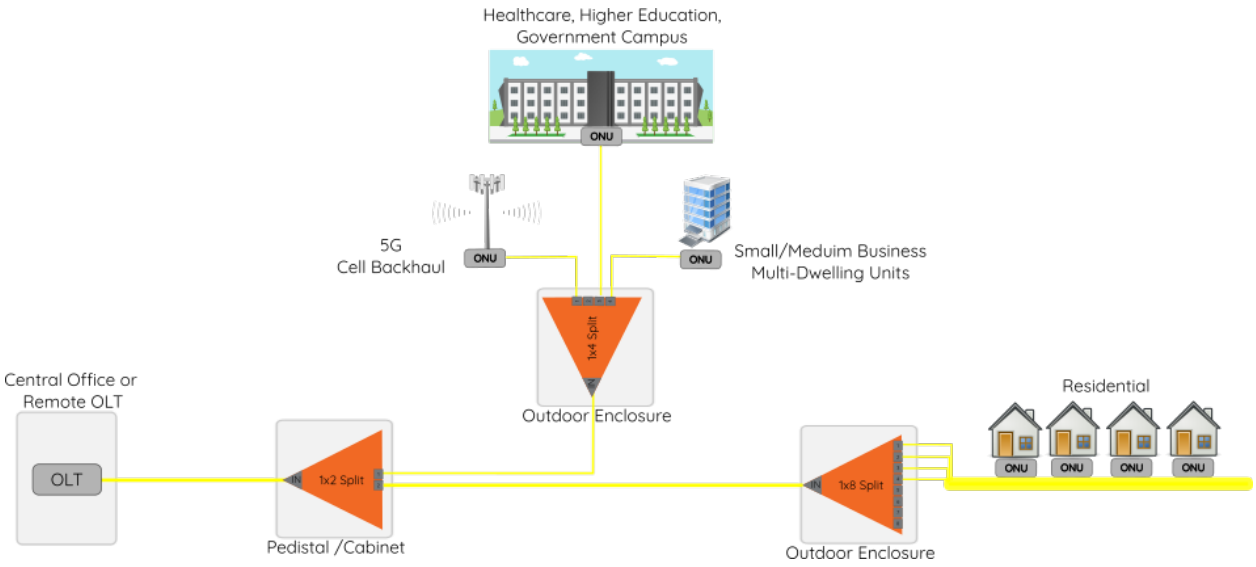
OVERVIEW

The patent pending Plugin Optics USBM™ PLC Splitter series modules are designed to integrate into pedestal, enclosure, customer premises and almost anywhere you need it to be. Utilizing premium, extended temperature PLC splitter technology, USBM™ modules are built to make installation and quick and painless.

PON APPLICATION

Optical splitters are often used in Passive Optical Networking (PON) applications which uses 1:N PLC splitters for a point to multipoint configuration over a single fiber. These splitters allow for a single PON Optical Line Terminal (OLT), in the service providers space, to connect to multiple Optical Network Units (ONU) at subscriber locations.



GETTING STARTED

When taking the USBM™ splitter module out of the box take note of the condition of the shipping box, ensure that all dust caps remained in place, and nothing has been damaged during shipping.

The modules come fully assembled, and factory tested but you may want to take a few baseline test measurements for your records prior to Installation. For guidelines on how to make these test and a table to record your results please refer to Appendix A: Field Testing Splitters.

INSTALLATION

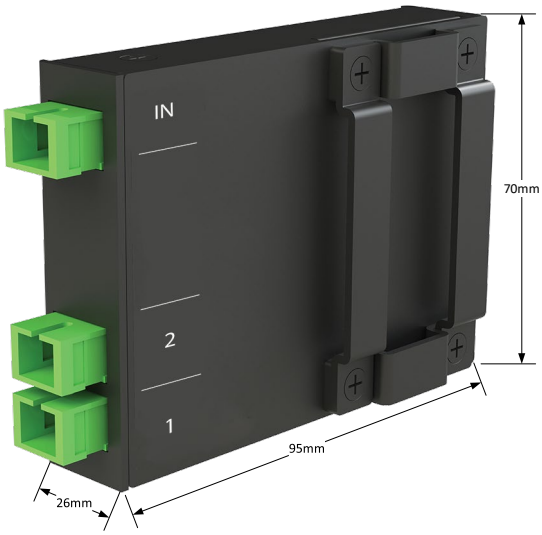
1. Test fit the module in the place where you would like to install it. The module can be installed in any orientation that works for your project. Be sure to allow for 2-3 inches of room in front of the fiber connectors to allow technician access to the fiber connectors, the fiber, connectors, fiber boot and proper fiber bend radius.
2. Use the patent pending USBM™ mounting brackets to secure the module in place. For this you can use whatever method best fits your application and company SOP requirements. Based on where you are installing the module you could use industrial strength adhesive tape, hook and loop straps or even zip ties.
3. Once the module is in place make sure that the module is secure by trying to move the module by hand. Remember any tension applied to fibers connected to this module will create torque on the module and its mounting. If the module moves more than a few mm using moderate pressure with your hand you will want to resecure or tighten the straps.
4. Once the module is tested and installed its time to begin making connections per your engineered specification. The first connection is typically going to be made to the “IN” port. This will need a SC/APC connector and be spliced/connected to the OSP fiber facing towards the OLT (Central Office or Headend).
5. To make the connection for the “IN” port remove the dust cap and use a stick fiber cleaner to clean inside the port. Once this is done remove the dust cap from the SC/APC fiber jumper connector, clean with a fiber male end swipe cleaner and connect to the port labeled “IN” on the USBM™. Ensure that the connector is seated all the way in, and you hear an audible click when fully seated.
6. Once the “IN” port is connected you can continue making connections to the ports labeled 1:N following the procedure in step 5 above. For proper, reliable, and long-term performance of your network make sure to clean each fiber mating surface as you go.

TECHNICAL SPECIFICATIONS

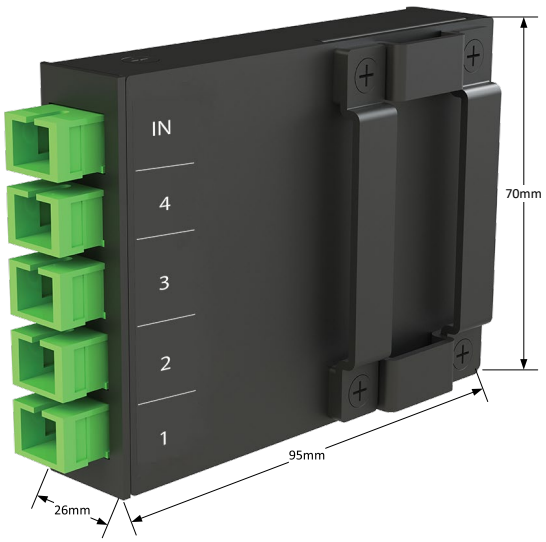
TECHNICAL SPECIFICATIONS			
PARAMETER	**1x2**	**1x4**	**1x8**
Dimensions LxWxH (mm)	95x70x26	95x70x26	95x70x38
Insertion Loss (dB)	4.2	7.6	10.9
Loss Uniformity (dB)	0.6	0.7	1.0
Polarization Dependent Loss (dB)	0.2	0.2	0.2
OPERATING WAVELENGTH (NM)	1260 ~ 1650		
FIBER TYPE	G.65701 OR EQUIVALENT TO G.657A1		
RETURN LOSS (DB)	≥55		
DIRECTIVITY (DB)	≥55		
WAVELENGTH DEPENDENT LOSS (DB)	≤0.3		
OPERATING TEMPERATURE (°C)	-40 ~ 85		
STORAGE TEMPERATURE (°C)	-40 ~ 85		
CONNECTOR TYPE	SC/APC		

MECHANICAL DIMENSIONS

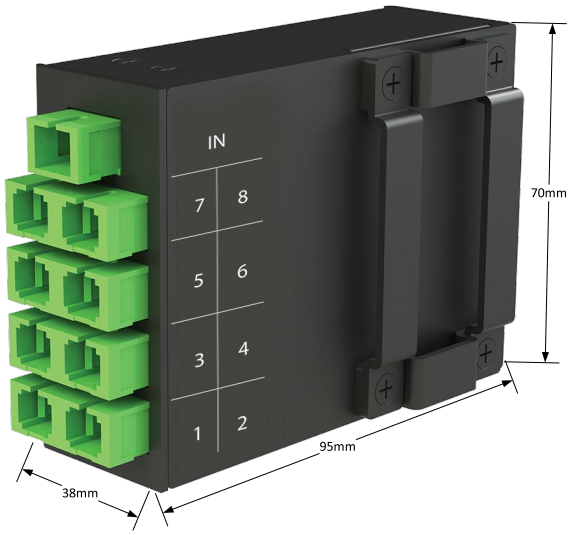
Mechanical case dimensions of Plugin Optics USBM™ 1X2, 1x4, and 1x8 Splitter Series Modules.



PLUGIN USBMTM 1X2 SPLITTER MODULE



PLUGIN USBMTM 1X2 SPLITTER MODULE



PLUGIN USBMTM 1X8 SPLITTER MODULE

APPENDIX A: FIELD TESTING SPLITTERS

Before installation you may want to test and record measured loss values. Below we will walk through the required tools, and the steps to measure your splitters before installation.

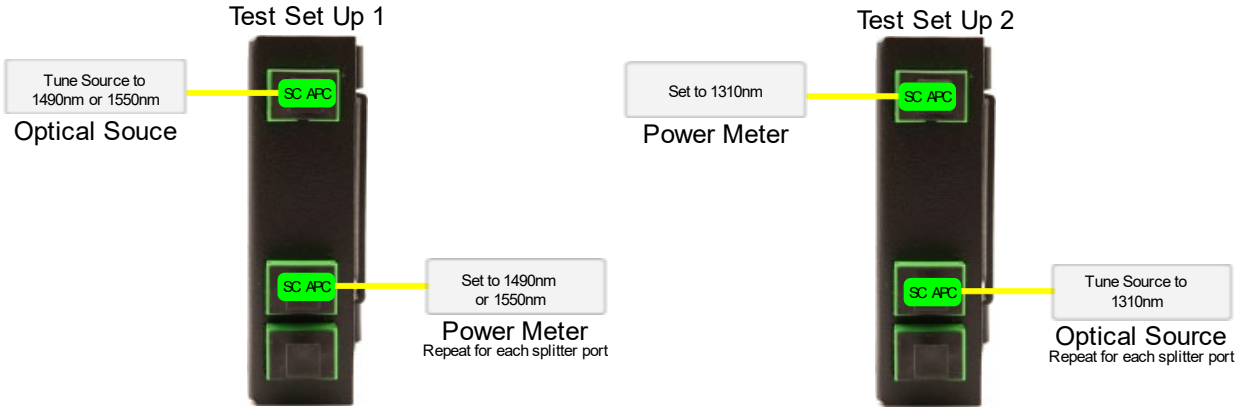
TOOLS REQUIRED

1. **Optical Power Source and Meter.** Since PON uses wavelengths in the 1310nm and 1490nm range it pays to have a source and meter that can do multiple wavelengths. They do not have to be exact for your application, but it is recommended to be able to do, at a minimum, 1310nm and 1550nm wavelengths.
2. **Fiber optic cleaning supplies:** Cleaning as you go is an especially important step in deploying any reliable fiber network. Have on hand both stick type and swipe type for both SC/APC ports and SC/APC fiber jumper ends.

Remember that laser radiation cannot be seen by the naked eye but can be very harmful to your eyes and cause serious injury. Never look directly into the end of an optical port, optical fiber end, or connector when it is operational. Be sure to follow all safety precautions outlined in your optical source and meter manuals while performing these tests.

TESTING PROCEDURE

To test for the insertion loss value on the day of install perform the following test procedures. For each module perform two test setups: For **Test Setup 1** set the optical source and meter to 1490nm or 1550nm to test the downstream direction from IN port to split ports 1:N. For **Test Setup 2** set the optical source and meter to 1310nm to test the upstream direction from split ports 1:N to the IN port. Record your data and compare the results against the technical specification section for max insertion loss values.



TEST RECORD

TEST RECORD					DATE:
For each module perform two test setups: For Test setup 1 set the optical source and meter to 1490nm or 1550nm to test the downstream direction from IN port to split ports 1:N. For Test Setup 2 set the optical source and meter to 1310nm to test the upstream direction from split ports 1:N to the IN port.					
USBM 1x2 SPLITTERS	PWR IN (dB)	PORT	PORT	PWR OUT (dB)	NOTES
TEST SETUP 1 (1490nm or 1550nm)		IN	P1		
[redacted]			P2		
TEST SETUP 2 (1310nm)		P1	IN		
		P2	IN		
USBM 1x4 SPLITTERS	PWR IN (dB)	PORT	PORT	PWR OUT (dB)	NOTES
TEST SETUP 1 (1490nm or 1550nm)		IN	P1		
[redacted]			P2		
			P3		
			P4		
TEST SETUP 2 (1310nm)		P1	IN		
		P2	IN		
		P3	IN		
		P4	IN		
USBM 1x8 SPLITTER	PWR IN (dB)	PORT	PORT	PWR OUT (dB)	NOTES
TEST SETUP 1 (1490nm or 1550nm)		IN	P1		
[redacted]			P2		
			P3		
			P4		
			P5		
			P6		
			P7		
			P8		
TEST SETUP 2 (1310nm)		P1	IN		
		P2	IN		
		P3	IN		
		P4	IN		
		P5	IN		
		P6	IN		
		P7	IN		
		P8	IN		

ORDERING INFORMATION

Below are a few of our most popular USBM Splitter Modules. A variety of splitters with taps, tap only modules, and interconnect modules are also available in UBM form factor.

ORDERING INFORMATION	
PART NUMBER	**DESCRIPTION**
PLO-U-102-SCA-SCA	PLC, 1X2, UNIVERSAL SPLITTER BULKHEAD MODULE, SC/APC
PLO-U-104-SCA-SCA	PLC, 1X4, UNIVERSAL SPLITTER BULKHEAD MODULE, SC/APC
PLO-U-108-SCA-SCA	PLC, 1X8, UNIVERSAL SPLITTER BULKHEAD MODULE, SC/APC
NOTE: MODULES WITH RATIO TAPS, AND SPLITTER-TAP COMBOS ARE ALSO AVAILABLE.	

SAFETY NOTICES

It is important to follow company and local safety guidelines when handling fiber optic cables. Never look into the end of a fiber jumper or cable in the presence of laser light. Exercise extreme caution when installing, testing, or maintaining live circuits. If eyes are exposed to laser light or radiation occurs, immediately seek treatment by a medical professional as exposure is a substantial risk of serious damage to the eye and can result in total vision loss!

Fiber cables and fiber cleaning solvents may contain hazardous or harmful materials. Refer to the Material Safety Data Sheet (MSDS) when working with cleaning solvents or similar products. Also, Fiber optic glass fragments can very sharp and can be harmful to skin and eyes so be sure to exercise extreme discipline when handling fibers, cables and solvents. Use company standard procedures to collect and dispose of glass shards and fragments.

When working around the job site, it is important to use all safety equipment recommended by your company. Items like laser safe protective eyewear, work gloves, steal toe boots and tools in good working order can be the difference between finishing the job in good health, without injury, and with your eyesight.

SUPPORT

If you encounter issues, please contact us via phone or email. Alternately, you can use the camera on your smartphone to scan the QR code below to review the latest product specs and applications or submit a contact ticket for support.

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