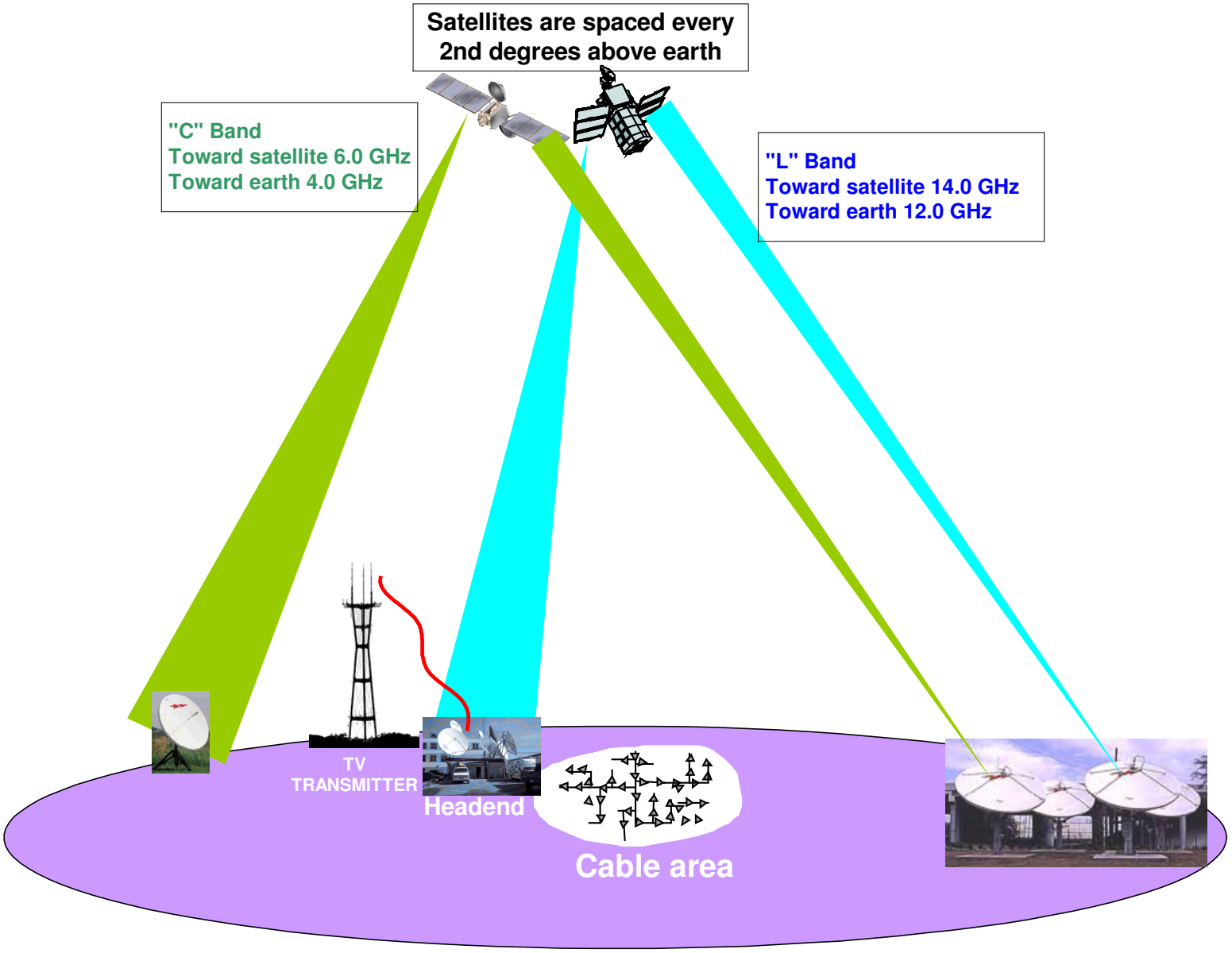
Broadband System - I



TRISPEC COMMUNICATIONS INC
www.trispec.com

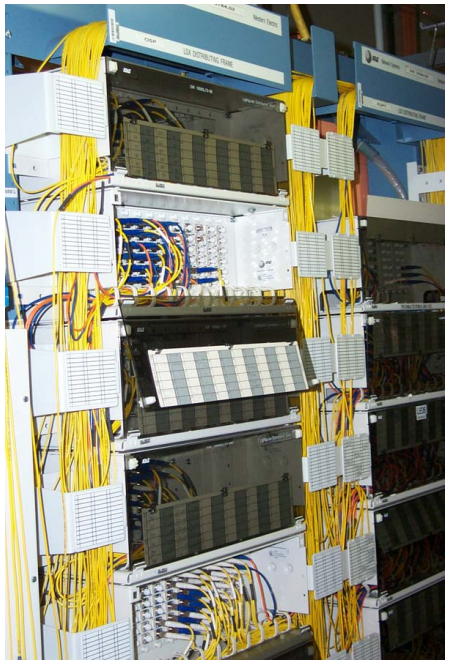
Fiber Optic Management System.

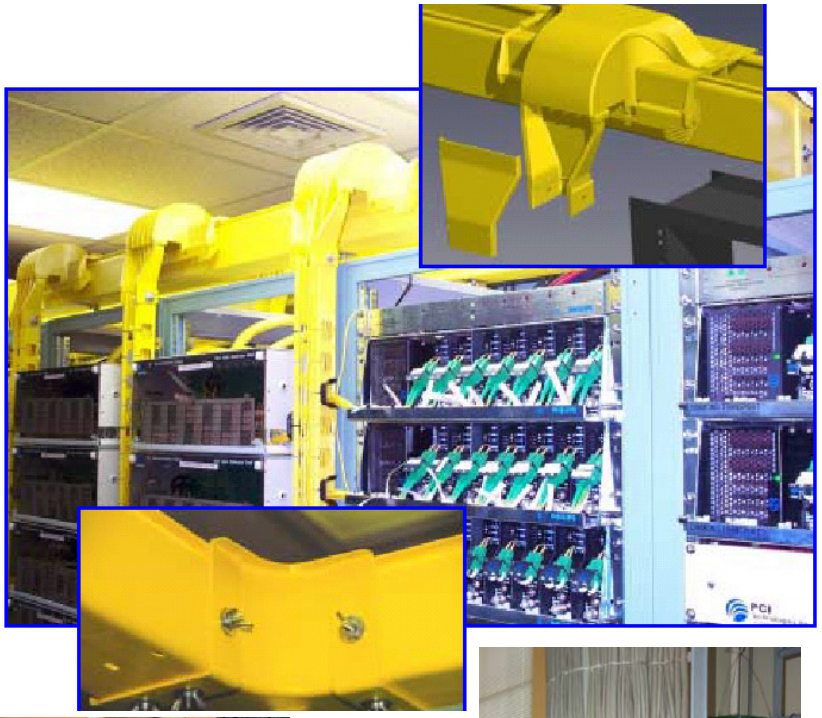
Fiber Management.

Fiber management equipment will do one of the following:

- Will joint two or more fiber optic cables.
- Will reduce the fiber count in a cable. (from 144 to 36 fiber).
- Will joint the outside fiber to the inside fiber.
- Will interconnect fiber, optic transmitting and receiving equipments.

Fiber Optic Interconnection Center.





TRISPEC COMMUNICATIONS INC
www.trispec.com

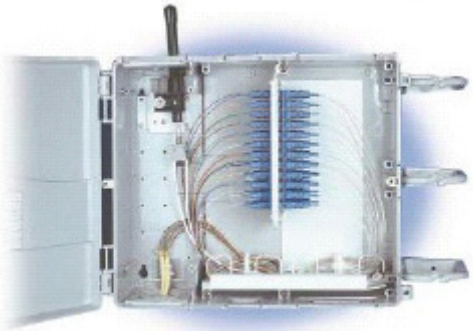
Interconnection Box from Outside to Inside Fiber.

Capable of handling

24 to 288 fiber.

This Box Interconnect the outside fiber and the inside fiber. This box should be installed no further than 30 feet from where the outside fiber enters the building. This distance is determined by the Local Building Code.

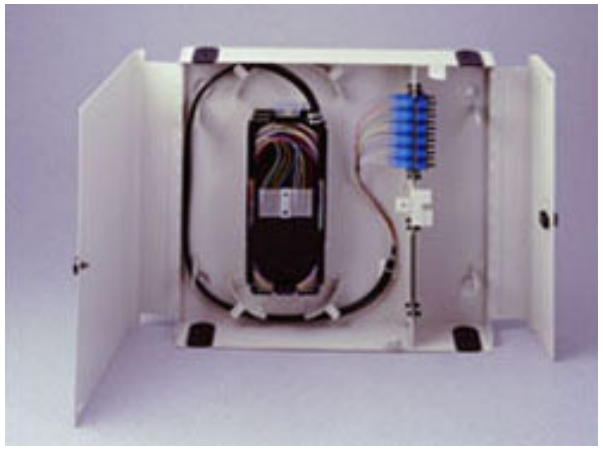
Interconnection Outside to Inside Fiber mounted in a frame rack.



From the Interconnection centre, the fiber optic cable usually goes to a connection rack, which can be 19” or 23” wide. The CATV industry uses 19” frame. The TELCO industry uses a 23” frame.

These racks contains Fiber Interconnection System , Passive equipments and Transmission and receiving Equipments.

Interconnection Boxes Outside to Inside Fiber mounted on a wall.



Handles up to 48 fibers

Handles up to 24 fibers

In a small system, this type of interconnection box can be used instead of interconnection boxes that fit in racks. These are usually installed on a wall of a building.

Interconnection Stub Cable

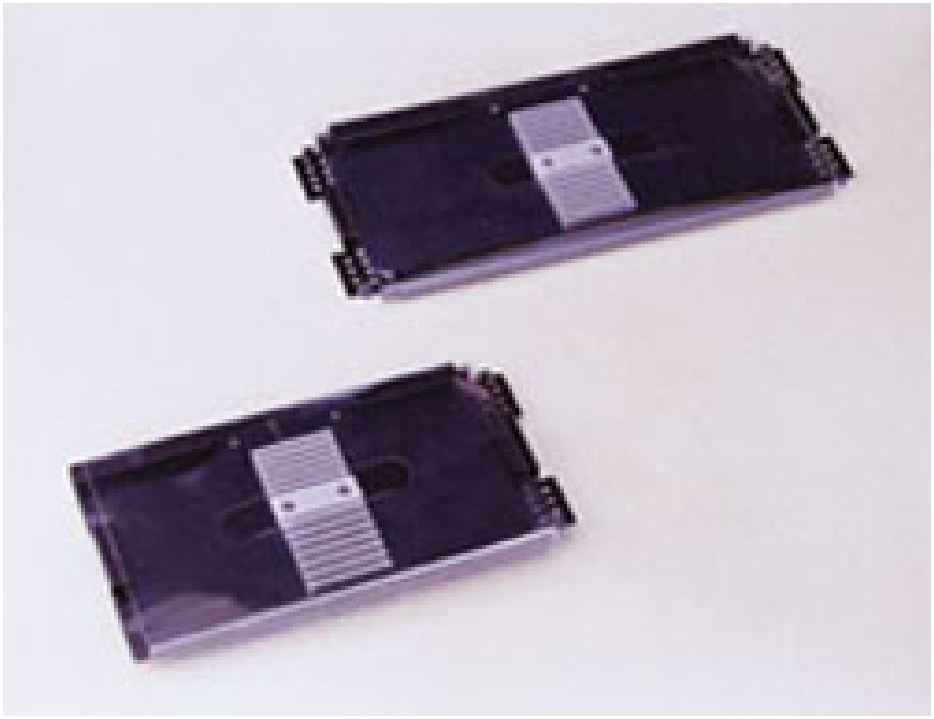
This interconnetion box comes with a interconnection cable saving a fusion and helping for a faster and better connection. This connection box can be installed in a 19” and 23” frame and can connect up to 144 fibers.

Fiber Interconnection Centre

Sometimes a costumer will want the splicing done in the main rack.

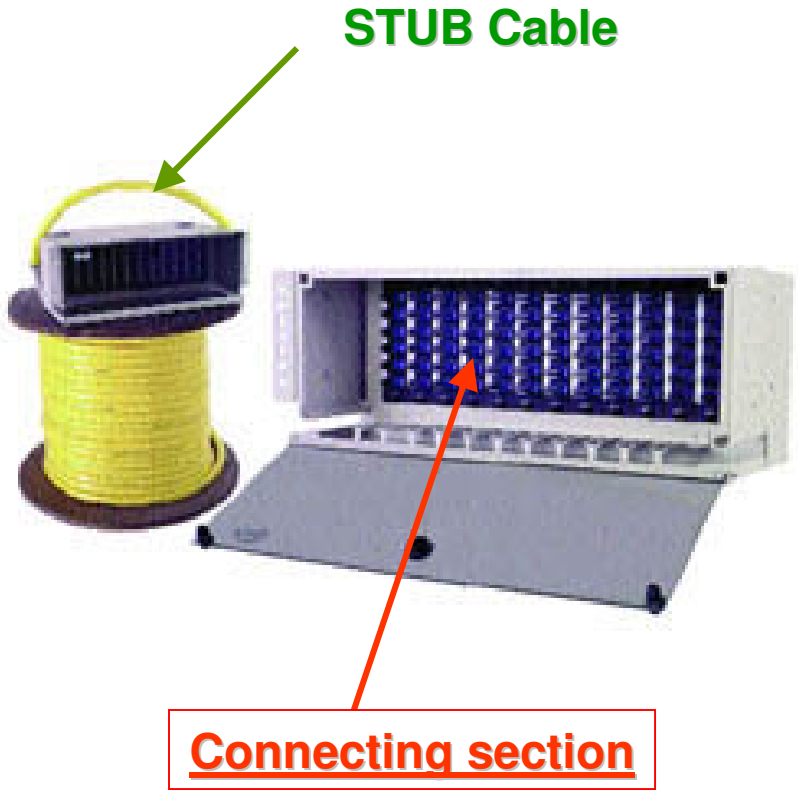
This unit can support 144 fusion or 12 splicing trays.

Splice Tray



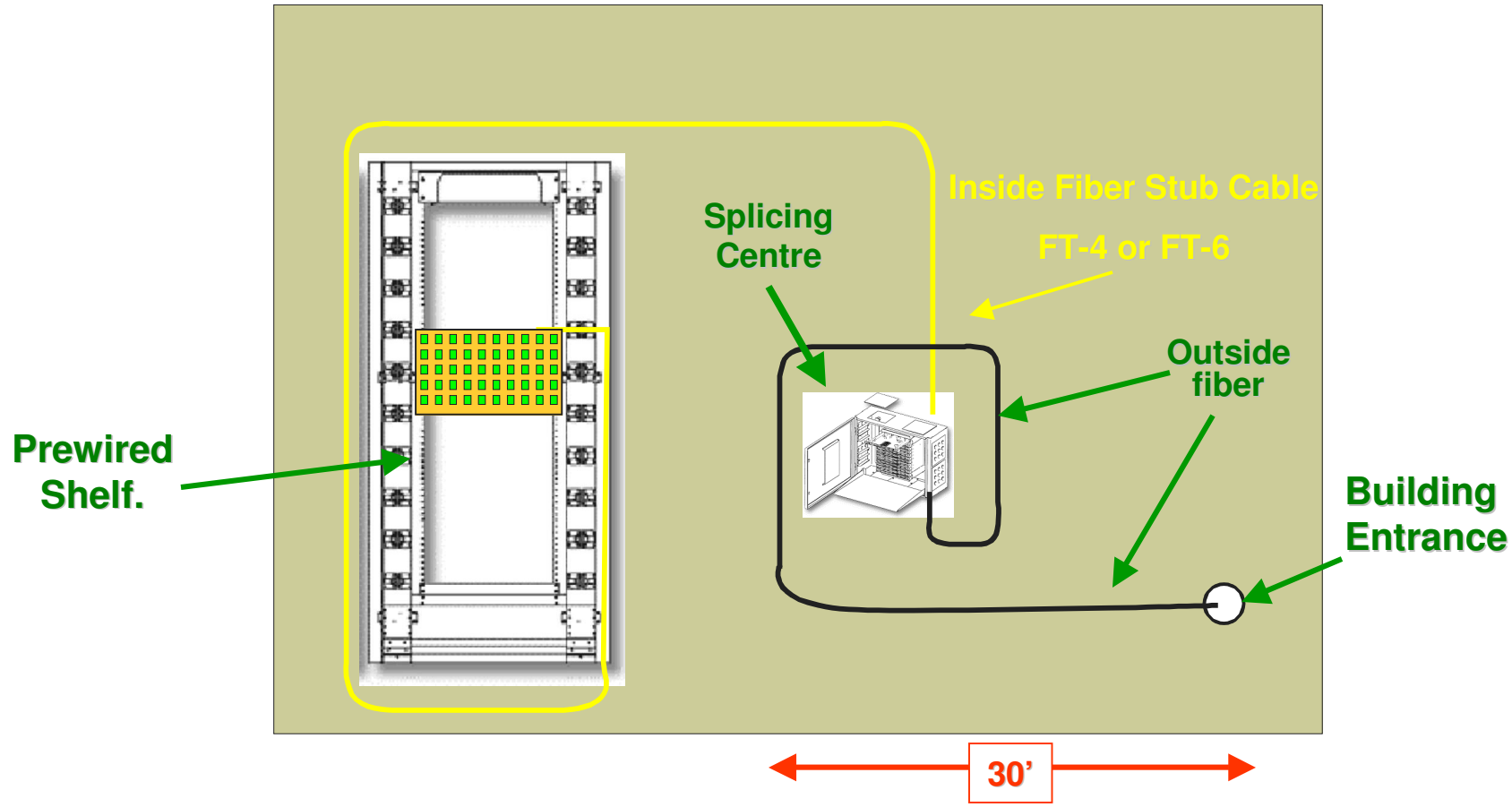
Usually a splice tray hold 12 or 24 splices.

Fiber Interconnection Centre



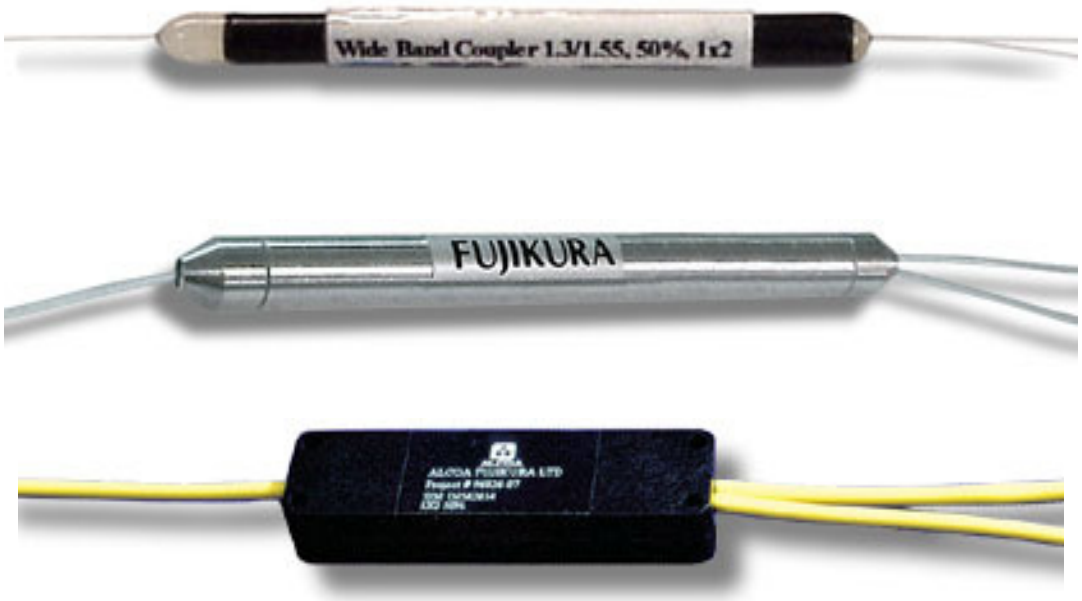
- Often a connecting housing will be order with a STUB cable. This stub cable will then be connected at one end with proper connectors and the other end will be spliced to the junction box.
- This STUB cable needs to be FT-4 or FT-6, which are flamed retarded cable. FT-4 is used when the cable stay on the same floor, and FT-6 is used when the cable goes from floor to floor.
- This STUB cable can be of any length, sometime as much as 150 mt.

Interconnection from Outside to Inside Fiber.



Example of an Interconnection Centre for a Telco or a CATV system.

Fiber optic COUPLER / SPLITTER



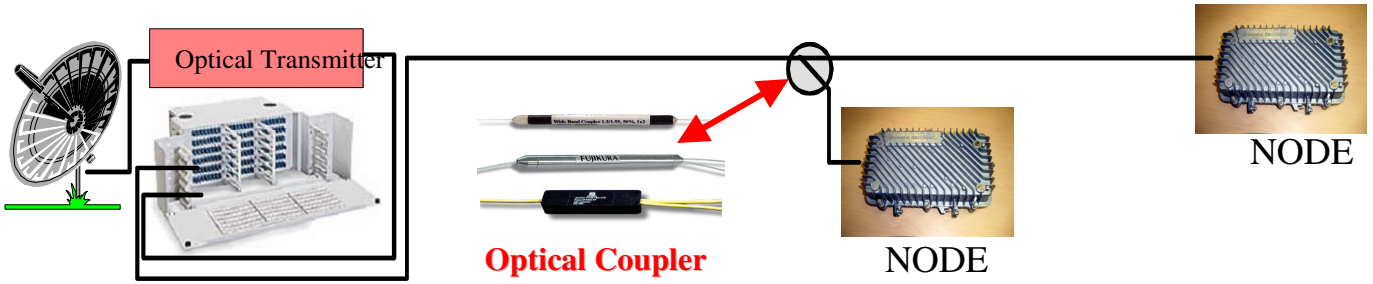
Sometime a fiber optic transmitter will feed more than one fiber. When this is required, you'll need to install a optic COUPLER or SPLITTER between the transmitter and the fibers it needs to be connected to.

Optical Couplers / Splitters come in three types, as illustrated above, BARE with 250 micron fiber, BARE with 900 mc fiber and in a plastic CASING with 3.0 mm fiber.

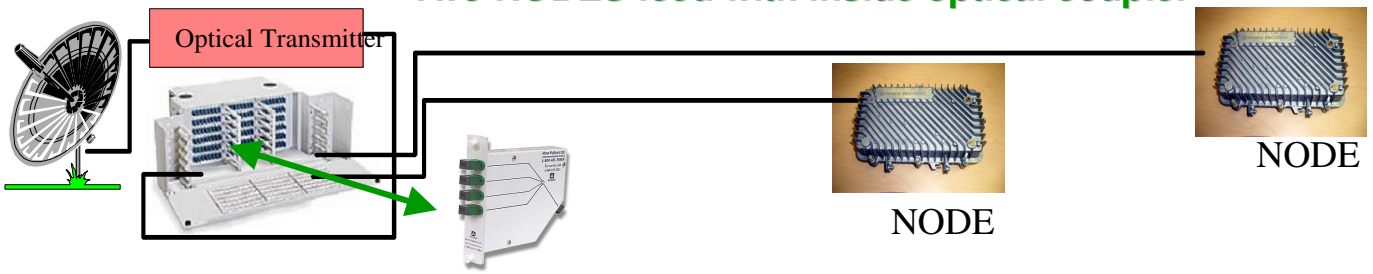
Fiber optic COUPLER / SPLITTER

One NODE feed from single optical transmitter

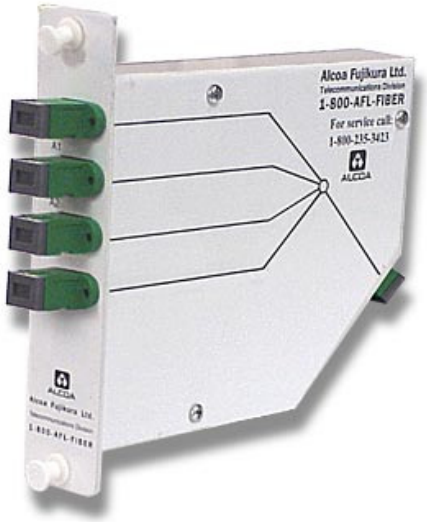
Two NODES feed with outside optical coupler



Two NODES feed with inside optical coupler



Fiber optic COUPLER / SPLITTER



Fiber optic Couplers and Splitters can be order in a special casing where they will be installed in a 19” or 23” main frame.

Rack Mount Compatible Coupler Module

This module can be installed in a 19” or a 23” rack and carry as much as five outputs per module.

Fiber optic COUPLER / SPLITTER

Specifications

Oprerating Wavelength nm 1310 / 1550 ± 50		
Retrun Loss	dB	55
Directivity	dB	55
Operating Temperature	C	-40 to + 85°

SINGLE- MODE Standard Grade

Ratio	Unit	Insertion loss
50/50	dB	3.7/3.7
55/45	dB	3.3/4.2
60/40	dB	2.5/5.6
65/35	dB	2.3/5.8
70/30	dB	2.1/6.2
75/25	dB	1.8/7.2
80/20	dB	1.5/8.2
85/15	dB	1.4/10.0
90/10	dB	1.0/12.0
95/5	dB	0.7/16.0

Specifications

Oprerating Wavelength nm 1310 / 1550 ± 50		
Retrun Loss	dB	55
Directivity	dB	55
Operating Temperature	C	-40 to + 85°

SINGLE- MODE Premium Grade

Ratio	Unit	Insertion loss
50/50	dB	3.6/3.6
55/45	dB	3.2/4.1
60/40	dB	2.5/4.7
65/35	dB	2.3/5.3
70/30	dB	2.1/5.7
75/25	dB	2.0/6.0
80/20	dB	1.8/6.8
85/15	dB	1.3/7.8
90/10	dB	1.0/9.2
95/5	dB	0.7/14.4

Optical Connectors

ST Connector

MTP Connector for 2 fibers

SC/UPC Connector

MT-RJ Connector

SC/APC Connector

FC/APC or FC/UPC Connector

Optical Connectors

BICONIC Connector

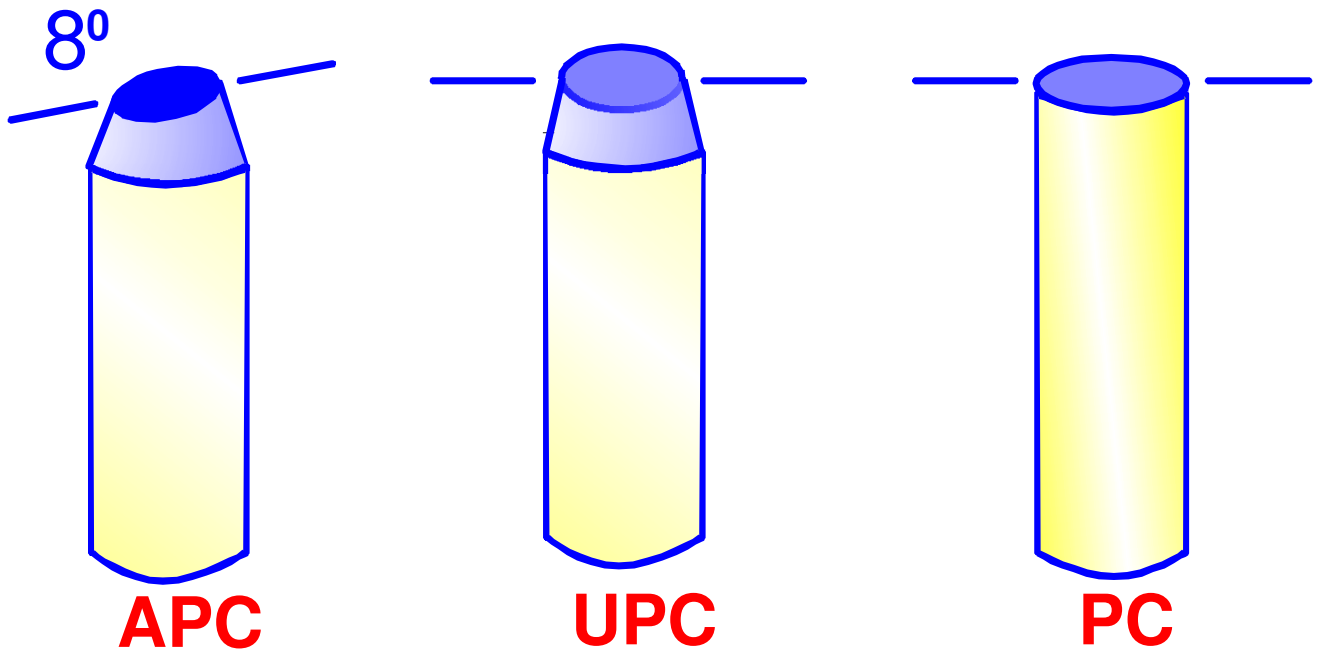
D4 Connector

SMA Connector

E-2000 Connector

End of Optical Connectors

HFC system should always demand a APC fiber optic type connector.



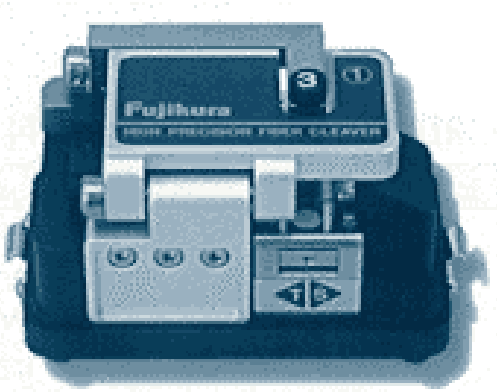
End of a APC connector
65 dB VSWR

End of a UPC connector
50 dB VSWR

End of a PC connector
40 dB VSWR

Equipment Required For Fusing Fiber Optic

FSM-40F Fusion Splicer



CT-100B High Precision Fiber Cleaver

Optic Jumpers and Pig Tails

Above is a 3 mm fiber optic JUMPER with SC-APC to SC-APC connectors.

Jumpers can also be order with a 900 mc fiber.

When order with one optical connector at *one end only*, it is called a PIG TAIL Jumper

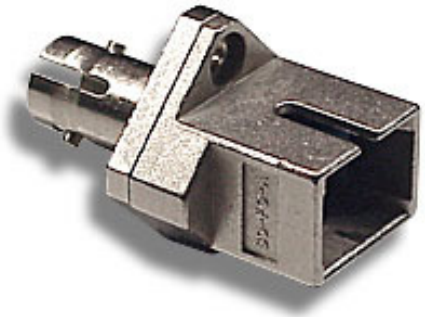
Optical Terminators

FC-UPC Terminator, can also be a FC-APC.

SC-APC Terminator, can also be a SC-UPC.

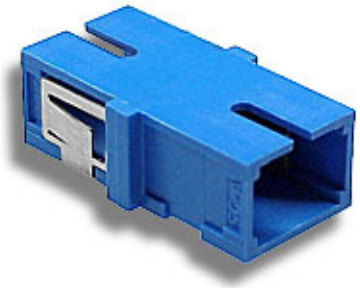
Optical Adapters.

SC to FC Adapter



ST to SC Adapter

FC to ST Adapter



SC to SC Adapter

FC to FC Adapter

E-2000 Adapter

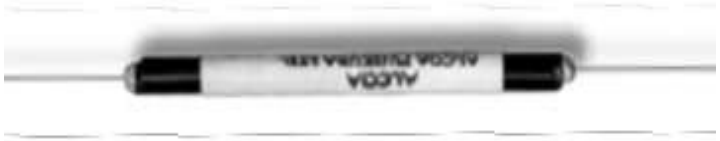
Variable Optical Attenuator.

This variable attenuator will work from 0 to -35 dB.

It can be order with all of the connectors previously mentioned.

Fixed Optical Attenuators.

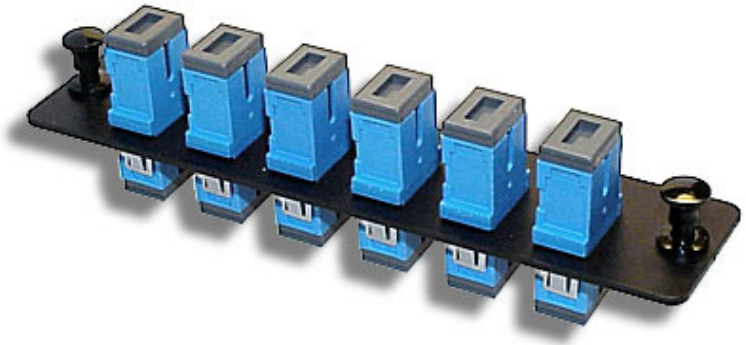
SC & FC Build out Attenuator.



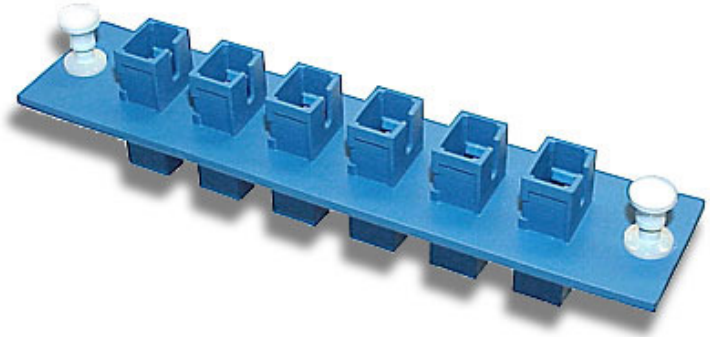
900 mc Fixed Value In-Line attenuators.

3.0 mm Fixed Value In-Line attenuators.

Optical Adapter Plates.

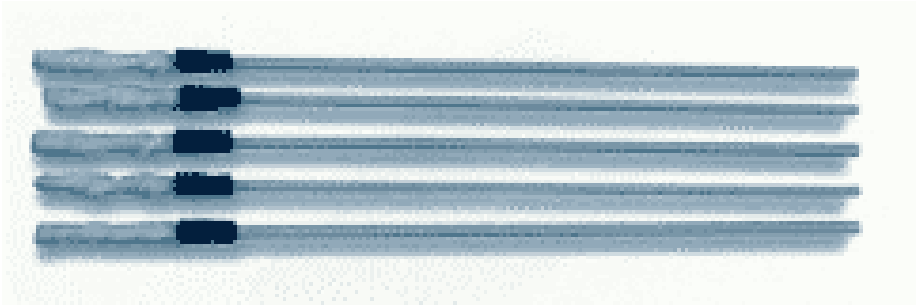


Six, Eight and twelve Pack SC Adapter Plate.



SC Moulded six pack Adapter Plate.

Optical Cleaner Kits.



ACT-01 Adapter Cleaner Tips.

Ferrule Cleaner.

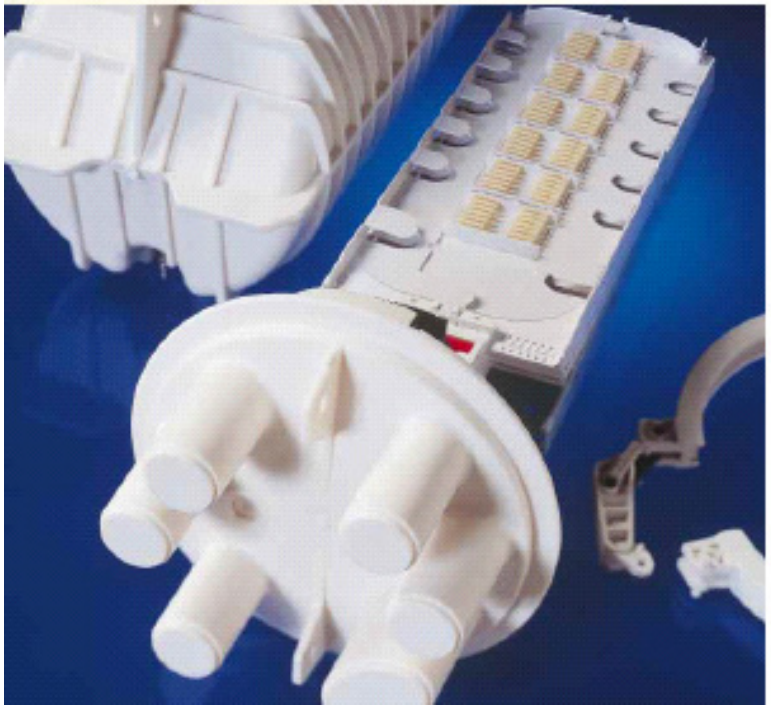
Optical Tool Kits

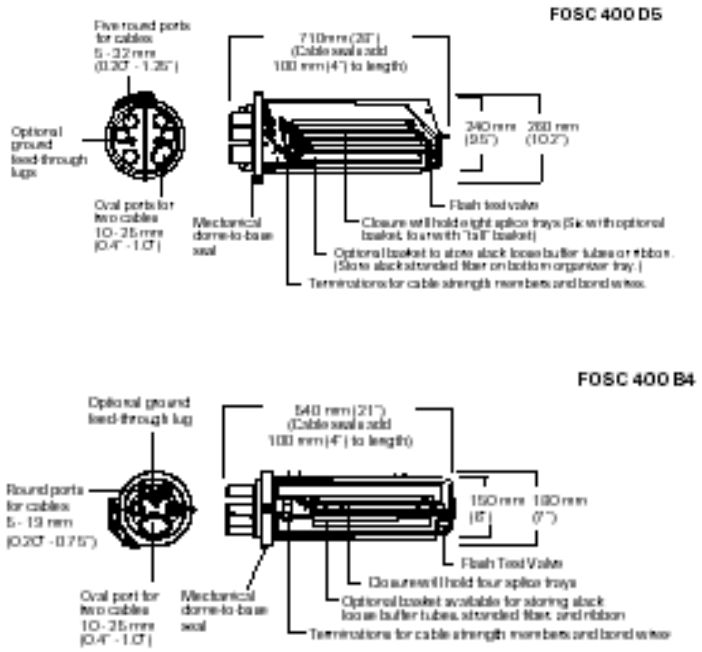
This Kit contains all the preparation tools for splicing and cleaning fiber optic.

Optical Outside Work.

Outside Fiber Optic Splicing Closure

Optical Outside Work.





Outside Fiber Optic Splicing Closure

Optical Outside Work.

Outside Fiber Optic Splicing Closure

Test!

•What does a fiber optic interconnection boxes do?

_____

•Name two types of fiber optic connectors used in a HFC system?

_____

•What is a variable optical attenuator?

_____

•What is the loss of a SCAPC connector?

_____

•What is the angle of a APC connector?

_____

•Where and why do we use an optical jumper?

_____

•What is an optical pig tail and where do we usually install it?

_____

•What operation do we need to splice two fiber optic together?

_____

The end of this session.