

6040 Gateway Overview

Description:

Fiberdyne Labs, Inc offers a managed Dense Wavelength Multiplexing (DWDM) solution with the Fiberdyne 6040 Gateway. The Fiberdyne 6040 Gateway provides data transport capability for metropolitan area networks and data center networks. This document provides an understanding of the Fiberdyne 6040 Gateway architecture and application. It provides information to help plan and implement a Fiberdyne 6040 Gateway network.

Overview:

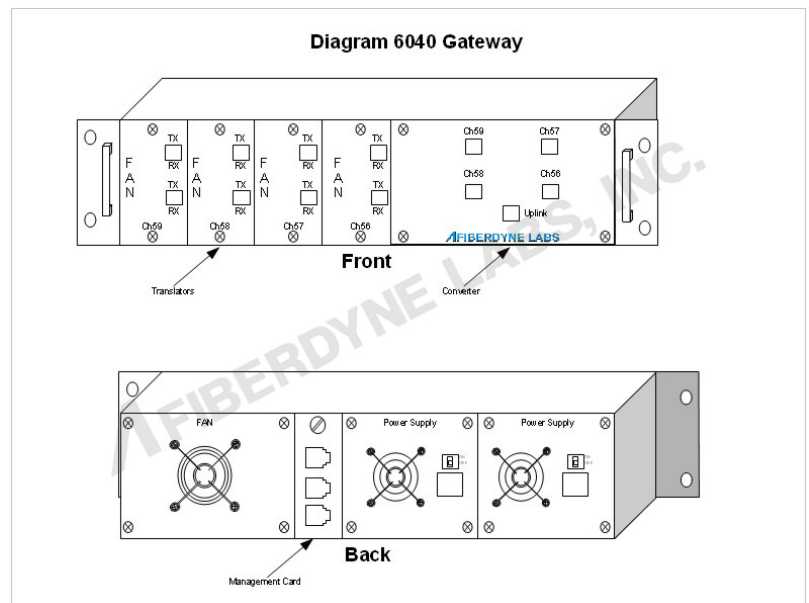
The Fiberdyne 6040 Gateway is a high speed, high capacity, remotely managed, scalable fiber optic transport system that uses Dense Wavelength Division Technology (DWDM). It is designated for metropolitan area data communications and data center communications. It has per wavelength management and passive optical pass through which delivers true optical networking. Designed to meet the economic and technical requirements of metropolitan and data center applications, it can achieve the distance requirements in most these networks without using optical amplifiers.

Fiberdyne 6040 Gateway mainframe:

The Fiberdyne 6040 Gateway mainframe is the basic unit of a Fiberdyne 6040 network. The Fiberdyne 6040 Gateway mainframe consists of translation cards, 10 Gbe XFP transceivers, a management card, dual power supplies, cooling fans and an optical DWDM mux/demux converter module that converts optical signals.

The optical signals from the Fiberdyne 6040 Gateway network are converted into electrical signals at the Gateway that drops them. All optical signals are passed through the Gateway. The use of passive optical filters allows traffic continuity through a Gateway even in the event of a power failure.

The Translator: The translator consists of optical and electrical circuitry that converts optical to electrical and back to optical. The optical circuitry accepts a mixture of the following types of 10Gbe XFPs. The XFPs can be mixed in any configuration. Customer must specify XFP requirement types at the time of order.



The following XFPs are available:

- XFP 10GBASE-ZR (Dual LC/80KM/1550nm/single-mode)
Fiberdyne FDN-XFP-10GZR-OC192LR

Each Fiberdyne 6040 Gateway network operates in a specific wavelength group which is determined by the wavelength group of the optical module installed in the Gateway. There are four groups, Group A, Group B, Group C and Group D that can be used in a Fiberdyne network.

The four groups are illustrated in the diagrams above. Each group has two wavelength specific Gateway add/drop multiplexers, a single channel and a dual channel. The diagrams below illustrate the Fiberdyne 6040 Gateway add/drop multiplexers.

Fiberdyne 6040A				
Frequency (GHz)	Translator A	Converter Module A	Wavelength (nm)	Channel (#)
155900			1530.33	59
155800			1531.12	58
155700			1531.90	57
155600	6040 TA	6040 CA	1532.68	56

Fiberdyne 6040B				
Frequency (GHz)	Translator B	Converter Module B	Wavelength (nm)	Channel (#)
155500			1533.47	55
155400			1533.25	54
155300			1535.04	53
155200	6040 TB	6040 CB	1535.82	52

Fiberdyne 6040C				
Frequency (GHz)	Translator C	Converter Module C	Wavelength (nm)	Channel (#)
155100			1536.61	51
155000			1537.40	50
154800			1538.19	49
154600	6040 TC	6040 CC	1538.98	48

Fiberdyne 6040D				
Frequency (GHz)	Translator D	Converter Module D	Wavelength (nm)	Channel (#)
154700			1539.71	47
154600			1540.56	46
154500			1541.35	45
154400	6040 TD	6040 CD	1542.14	44

Fiberdyne 6040A-1 Add/Drop 1 Channel				
Frequency (GHz)	Translator A	Converter Module A	Wavelength	Channel (#)
155900			1530.33	59
	6040 TA-1	6040 CA-1		

Fiberdyne 6040A-2 Add/Drop 2 Channel				
Frequency (GHz)	Translator B	Converter Module B	Wavelength (nm)	Channel (#)
155800			1531.12	58
155700			1531.90	57
	6040 TA-2	6040 CA-2		

Fiberdyne 6040B-1 Add/Drop Mux/Demux				
Frequency (GHz)	Translator C	Converter Module C	Wavelength (nm)	Channel (#)
155400			1533.25	54
	6040 TB-1	6040 CB-1		

Fiberdyne 6040B-2 Add/Drop Mux/Demux				
Frequency (GHz)	Translator D	Converter Module D	Wavelength (nm)	Channel (#)
155300			1535.04	53
155200			1535.82	52
	6040 TB-2	6040 CB-2		

Add/Drop A and Add/Drop Mux/Demux B

Features:

- Support 2U Rack (16 channel) and independent use
- Support network management (Web SNMP, Console)
- Support a WEB form and simple network management protocol SNMP mode.
- Web management can let user to allows monitor and manage the card status easily; Support SNMP unified network-management platform
- Support ITUT prescribed DWDM/CWDM wavelength
 - Transmission rate:9.95 Gb/s - 11.35 Gb/s
 - Transparent Transport for data, less delay
- Support DMI function for SFP module (Diagnostic Monitoring with), can detect light power change
- Support Loopback test function
- Support hot plugging
- State indicator light is complete
- Easy installation
- 3R function (balanced amplification, Timing Clock Obtaining, Shaping and regeneration), good dispersion management function, data transmission ripple at low.

Fiberdyne 6040C-1 Add Drop 1 Channel				
Frequency (GHz)	Transistor	Converter Module	Wavelength (nm)	Channel (#)
195100	6040 TC-1	6040 CC-1	1536.61	51
Fiberdyne 6040C-2 Add Drop 2 Channel				
Frequency (GHz)	Transistor	Converter Module	Wavelength (nm)	Channel (#)
195000	B	B	1537.40	50
194900	6040 TC-2	6040 CC-2	1538.19	49
Fiberdyne 6040B-1 Add Drop Mux/Demux				
Frequency (GHz)	Transistor	Converter Module	Wavelength (nm)	Channel (#)
194700	C	C	1539.77	47
194600	6040 TD-1	6040 CD-1		
Fiberdyne 6040B-2 Add Drop Mux/Demux				
Frequency (GHz)	Transistor	Converter Module	Wavelength (nm)	Channel (#)
194800	D	D	1540.56	46
194500	6040 TD-2	6040 CD-2	1541.35	45

Add/Drop C and Add/Drop Mux/Demux D

100 GHz DWDM Specifications:

Channel Wavelength	Ref. ITU Grid
Channel Spacing	100 GHz (0.8nm)
Channel Passband	(nm) @ -0.5dB; 0.3
Number of Channels	2, 4, 8, 16
Add/Drop Channel Insertion Loss (dB)	< = 1.5, < = 2.1, < = 3.0, < = 4.0
Express Channel Insertion Loss (dB)	< = 0.7, < = 1.2, < = 2.5, < = 3.5
Return Loss (dB)	> = 45
Adjacent Channel Isolation (dB)	> = 25 (Demux)
Non-Adjacent Channel Isolation (dB)	> = 40
Wavelength Temperature Stability (nm/°C)	< = 0.002
Insertion Loss Thermal Stability dB/°C	< = 0.005
Channel Uniformity	< = 1.5
Polarization Dependent Loss (dB)	< = 0.2
Maximum Power Handling	(mW) 250
Operating Temperature (°C)	0 to 65
Storage Temperature (°C)	-45 to 85
Note: Insertion Loss values do not include connector losses.	

Chaining:

Up to 4 Fiberdyne 6040 Gateways can be slaved together both from a management prospective and optically. In order to obtain a low chained insertion loss Fiberdyne has incorporated proprietary technology which effectively only increase loss by less than .4 db per Fiberdyne 6040 Gateway in the serial chain.

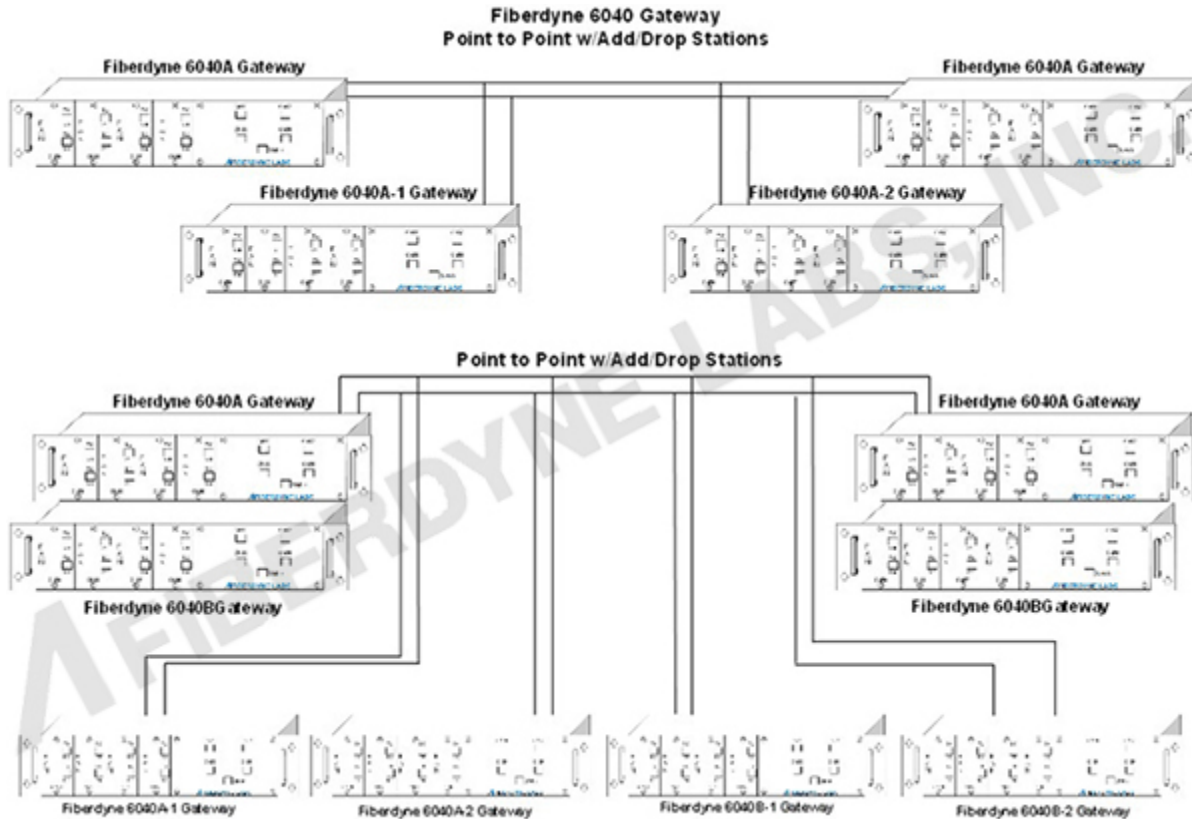
Optical backup Switch:

The Fiberdyne 7030 auto sensing switch can with 50 ms activation time can switch the output pair of fibers to a backup pair locally and remotely. A second Fiberdyne 7030 is required at the remote end.

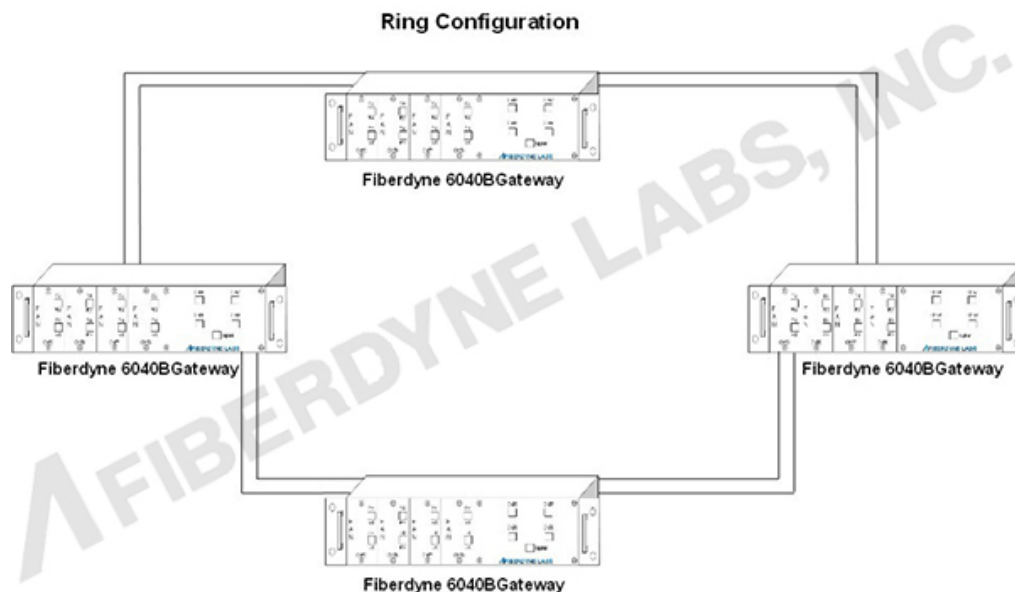
Redundant Power Supplies:

The standard configuration for Fiberdyne 6040 products include two power supplies. Customer must specify at time of order the power supply voltages requires: 120V AC, 220V AC or -48 volt DC.

The Fiberdyne 6040 Gateway can be configured as a Point to Point network or in Ring network.



Add/Drop C and Add/Drop Mux/Demux D



Ring Configuration

Fiberdyne 6040A Gateway:

Fiberdyne 6040A Gateway mainframe chassis supports ITU 100 GHz channels 56,57,58,59.

Customer to specify XFP configuration and power supply configuration.

Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040B Gateway:

Fiberdyne 6040B Gateway mainframe chassis supports ITU 100 GHz channels 52,53,54,55. Customer to specify XFP configuration and power supply configuration.

Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040C Gateway:

Fiberdyne 6040C Gateway mainframe chassis supports ITU 100 GHz channels 48,49,50,51.

Customer to specify XFP configuration and power supply configuration.

Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040D Gateway:

Fiberdyne 6040D Gateway mainframe chassis supports ITU 100 GHz channels 44,45,46,47.

Customer to specify XFP configuration and power supply configuration.

Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040A-1 Gateway ADD/DROP 1 Channel:

Fiberdyne 6040A-1 Gateway ADD/DROP 1 Channel chassis supports ITU 100 GHz channel 59.

Customer to specify XFP configuration and power supply configuration.

Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040A-2 Gateway ADD/DROP 2 Channel:

Fiberdyne 6040A-2 Gateway ADD/DROP 2 Channel chassis supports ITU 100 Ghz channel 57 & 58.
Customer to specify XFP configuration and power supply configuration.
Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040B-1 Gateway ADD/DROP 1 Channel:

Fiberdyne 6040B-1 Gateway ADD/DROP 1 Channel chassis supports ITU 100 Ghz channel 54.
Customer to specify XFP configuration and power supply configuration.
Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040B-2 Gateway ADD/DROP 2 Channel:

Fiberdyne 6040B-2 Gateway ADD/DROP 2 Channel chassis supports ITU 100 Ghz channel 52 & 53.
Customer to specify XFP configuration and power supply configuration.
Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040C-1 Gateway ADD/DROP 1 Channel:

Fiberdyne 6040C-1 Gateway ADD/DROP 1 Channel chassis supports ITU 100 Ghz channel 51.
Customer to specify XFP configuration and power supply configuration.
Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040C-2 Gateway ADD/DROP 2 Channel:

Fiberdyne 6040C-2 Gateway ADD/DROP 2 Channel chassis supports ITU 100 Ghz channel 49 & 50.
Customer to specify XFP configuration and power supply configuration.
Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040D-1 Gateway ADD/DROP 1 Channel:

Fiberdyne 6040D-1 Gateway ADD/DROP 1 Channel chassis supports ITU 100 Ghz channel 46.
Customer to specify XFP configuration and power supply configuration.
Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR

Fiberdyne 6040D-2 Gateway ADD/DROP 2 Channel:

Fiberdyne 6040D-2 Gateway ADD/DROP 2 Channel chassis supports ITU 100 Ghz channel 45 & 46.

Customer to specify XFP configuration and power supply configuration.

Power Supplies: 120V AC, 220V AC, -48V DC

XFP selection:

- XFP 10 GBASE-ZR