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Web: www.edfaamplifier.com/

Advanced Fiber Resources

$LiNbO_3$ Modulators & Chips

COMPANY INTRODUCTION

Advanced Fiber Resources (AFR), established in 2000, is a leading supplier of fiber optical components. With its strong R&D and design capabilities, high efficient manufacturing process and strict quality control, AFR designs and manufactures standard and custom components, modulators, and provides contract manufacturing solutions to our customers. Our products are widely used in fiber laser, telecom, data center, fiber sensing, autonomous driving, biomedical equipment, as well as research institutes and universities around the globe. AFR's products have been sold to customers in more than 40 countries and regions worldwide.

24
Years of History

2017
IPO in China

2,000
Employees

600
Customers

300
Engineers

115,000
m^2 Facility

QUALITY

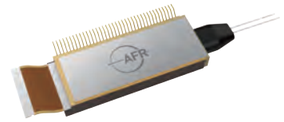
At AFR, quality is our top priority and an integral part of everything we do. The product quality management covers from product development, supply chain management, manufacturing to after-sales. AFR's quality management system fulfills the requirements of ISO 9001:2015, ISO 14001:2015 and IATF 16949, and all products are qualified with Telcordia GR-468 and GR-1221-CORE reliability test.

The company currently has seven dedicated laboratories and equipped with many high precision instruments, to ensure excellent reliability of our products. We have built an optical precision processing center and a machining center, manufacturing crystals, mirrors, PBS, other flat surface optics and mechanical components in-house, the key material production capability makes us more competitive.

We strive to continuously improve our products with proactive, data driven, quality first systems and processes.

Thin-Film $LiNbO_3$ Products

AM70	C+L Band 70 GHz Intensity Modulator
HB-CDM-96G	C+L Band 96 GBaud Coherent Driver Modulator
HB-CDM-128G	C+L Band 128 GBaud Coherent Driver Modulator
800 Gb/s PAM-4	O-Band Thin-Film $LiNbO_3$ Modulator Chip



Bulk $LiNbO_3$ Modulator Products

F10	C-Band 10 GHz High Bandwidth Zero-Chirp Modulator
AM20-XT/AM40-XT	C-Band 20/40 GHz Extended Temperature Intensity Modulator
PM10-C	C-Band 10 GHz Phase Modulator
40G-IQ-XT	C-Band 20 GHz x 2 Extended Temperature IQ Modulator
PM0.2-1060-XT	1060 nm 0.2 GHz Extended Temperature Phase Modulator
PM2.5-1060-XT	1060 nm 2.5 GHz Extended Temperature Phase Modulator
PM10-1060-XT	1060 nm 10 GHz Extended Temperature Phase Modulator

C+L Band 70 GHz Intensity Modulator (AM70)

AFR's Thin-Film $LiNbO_3$ intensity modulators that expand the performance of traditional $LiNbO_3$ modulators combining much lower driving voltage and smaller footprint while extending the bandwidth above 65 GHz. The increasing demand to shift the transmission frequency in analog fiber optic links towards higher frequency finds in AFR analog modulators the most advanced and suitable answer. The experience and know-how of AFR engineers is available to customize our products to the customer's specific requirements.

Features

- X-Cut Thin-Film $LiNbO_3$ Waveguides
- Operating Wavelength at 1530 - 1610 nm
- Bandwidth in Excess of 65 GHz
- Low Drive Voltage
- Single-End Drive

Applications

- Digital Transmission
- Analog Transmission
- High Frequency Fiber Optic Links
- Delay Lines Telemetry Systems
- Instrumentation

C+L Band 96 GBaud Coherent Driver Modulator (HB-CDM-96G)

AFR's HB-CDM-96G is a Quad-Channel 96 GBaud High-Bandwidth coherent driver modulator integrated with an RF driver, based on Thin-Film $LiNbO_3$ chip. It is designed for 400/800 Gb/s/1.2Tb/s coherent optical transport systems and transceivers, with Baud rate over 96G per channel.

Features

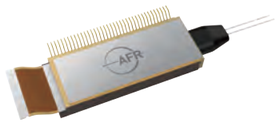
- Support Coherent Transmission at Baud Rate of up to 96 GBaud
- C/C++ Band, and L/L++ Band Available
- High E/O Bandwidth 65 GHz
- High Extinction Ratio ≥ 23 dB
- Compatible with OIF-HB-CDM-2.0 IA Type-1
- Standard Form Factor Module 30 x 12 x 5.2 mm

Applications

- DP-QPSK Coding
- DP-16QAM Coding
- DP-64QAM Coding

C+L Band 128 GBaud Coherent Driver Modulator (HB-CDM-128G)

AFR's HB-CDM-128G is a Quad-Channel 128 GBaud High-Bandwidth coherent driver modulator integrated with an RF driver, based on Thin-Film $LiNbO_3$ chip. It is designed for 400/800 Gb/s/1.2Tb/s coherent optical transport systems and transceivers, with Baud rate over 128G per channel.



Features

- Support Coherent Transmission at Baud Rate of up to 128 GBaud
- C/C++ Band, and L/L++ Band Available
- High E/O Bandwidth 65 GHz
- High Extinction Ratio ≥ 23 dB
- Compatible with OIF-HB-CDM-2.0 IA Type-3
- Standard Form Factor Module 30 x 11.8 x 4.35 mm

Applications

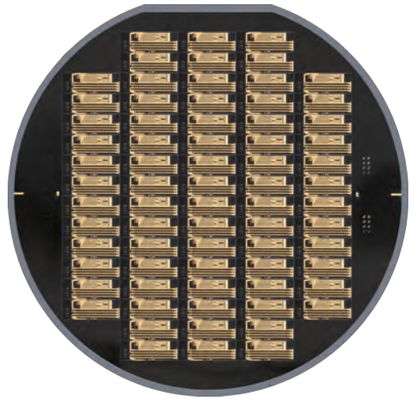
- DP-QPSK Coding
- DP-16QAM Coding
- DP-64QAM Coding

O-Band Thin-Film $LiNbO_3$ Modulator Chip (800 Gb/s PAM-4)

With the cutting-edge Thin-Film $LiNbO_3$ technology, AFR's PAM-4 modulator products support intra data center and data center interconnect at data rate of 800 Gb/s, 1.6Tb/s and beyond, enabling optical I/Os for ultra-high bandwidth switches at 25.6T, 51.2T, 102.4T and beyond.

AFR's PAM-4 product portfolio includes DR4, DR8, FR4 and 2xFR4 modulator chips and Sub-Assemblies for QSFP-DD, OSFP and OSFP-XD optical modules, with low drive voltage and low insertion loss at data rate of 800 Gb/s and above.

Applications of AFR's PAM-4 Chip:
QSFP-DD/OSFP/OSFP-XD Type Transceiver Modules



Ordering Information

Please contact AFR sales for customized PAM-4 modulator products.

C-Band 10 GHz High Bandwidth Zero-Chirp Modulator (F10)

AFR High Bandwidth Zero-Chirp F10 modulators are based on the Mach-Zehnder Interferometer (MZI) architecture. They are manufactured using the highly reliable titanium indiffusion technology in X-Cut, Y-Propagating $LiNbO_3$ substrates. The F10 is a single drive modulator designed for high bit rate advanced metro to long haul communication systems that requires the superior performance. The F10 modulator contains an integrated photo detector that may be used to set and lock the DC bias on the modulator as well as provide an estimate of the modulator output optical power.

Features

- Titanium-Indiffused Waveguide
- X-Cut $LiNbO_3$
- Operating at C-Band
- Enhances E/O Bandwidth for up to 12.5 GHz
- Zero-Chirped Modulator
- Integrated Monitor Photodiode
- Integrated Polarizer
- Compliance with Telcordia GR-468-Core

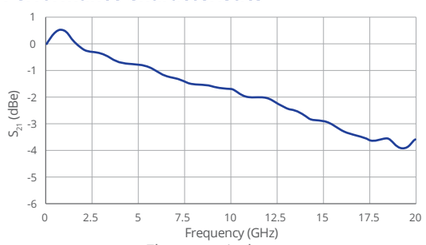
Applications

- External Intensity Modulation NRZ and RZ
- High Frequency RF Signal Over Fiber Optic Links
- Instrumentation

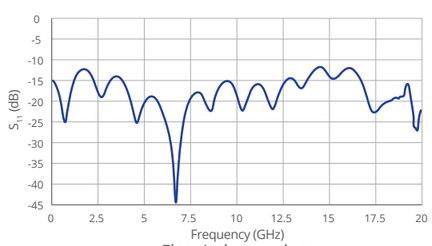
Optical and Electrical Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Optical					
Operating Wavelength	-	1525	-	1570	nm
Insertion Loss	w/o connector	-	-	4.5	dB
Extinction Ratio	@ DC	20	24	-	dB
Maximum Optical Input Power	CW	-	-	100	mW
PRBS Eye Extinction Ratio	10.7 Gb/s PRBS 2^{31}-1	13	-	-	dB
Electrical – RF Port					
S_{21} Electro-Optic Bandwidth	- 3 dBe,130 MHz	11	-	-	GHz
Bandwidth Ripple	130 MHz - 12.5 GHz	- 1	-	1	dB
S_{11} Electrical Return Loss	130 MHz - 12.5 GHz	10	11	-	dB
RF V_π Voltage	@ 1 kHz	-	5	6.5	V
Electrical – Bias Port					
Bias V_π Voltage	@ 1 kHz	-	5.5	6.0	V
Pinout and Fiber Specifications					
RF Connector	GPO male				
Input Fiber	Corning PM15-U25D or PM15-U40D (Panda Fiber), > 1.0 m, 900 µm loose tube fiber				
Output Fiber	Corning SMF-28™ or PM15-U25D (Panda Fiber), >1.0 m, 900 µm loose tube fiber				

Performance Characteristics



Electro optical response

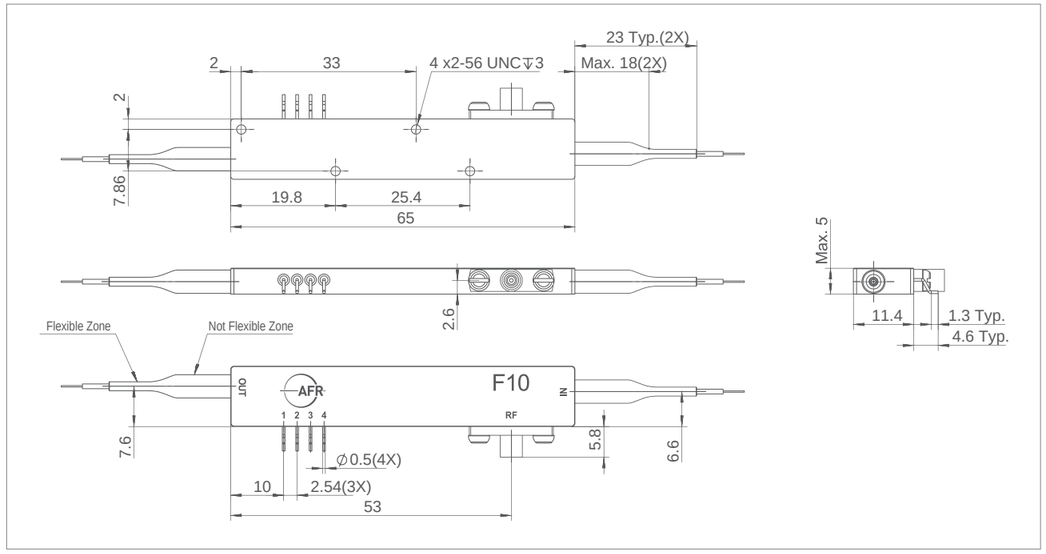


Electrical return loss

Bulk $LiNbO_3$ Modulator Products

C-Band 10 GHz High Bandwidth Zero-Chirp Modulator (F10)

Package Dimensions



* All dimensions measured in mm. L1 is fiber length with 900 µm loose tube. L2 is length of bare fiber.

Pinout Information

Pin	Name	Description
1	PD-C	Photodiode Cathode (-)
2	PD-A	Photodiode Anode (+)
3	Bias	MZ DC Bias Voltage
4	GND	Ground
RF	-	RF Input (GPO male)

Ordering Information

103076200010

F10, C-band 10 GHz High Bandwidth Zero-Chirp $LiNbO_3$ Intensity Modulator
(Black) Corning PM15-U40D, (Blue) Corning SMF-28TM, > 1.1 m, 900 µm PMF/SMF loose tube fiber

103076200007

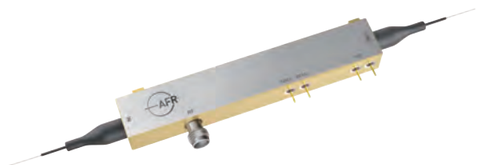
F10, C-band 10 GHz High Bandwidth Zero-Chirp $LiNbO_3$ Intensity Modulator
(Black) Corning PM15-U25D, > 1.1 m, 900 µm PMF/PMF loose tube fiber

103076200013

F10, C-band 10 GHz High Bandwidth Zero-Chirp $LiNbO_3$ Intensity Modulator
(Black) Corning PM15-U40D, > 1.0 m, 900 µm PMF/PMF loose tube fiber

C-Band 20/40 GHz Extended Temperature Intensity Modulator (AM20-XT/AM40-XT)

AFR Broadband Analog Intensity Modulators combine high linearity with low driving voltage and small footprint, covering frequency range from 20 GHz to beyond 40 GHz (AM20-XT: 20 - 30 GHz; AM40-XT: > 30 GHz). The experience and know-how of AFR engineers is available to customize our products to the customer's specific requirements.



Features

- Titanium Indiffused Waveguides
- X-Cut $LiNbO_3$
- Operating at C+L-Band
- Low Drive Voltage Compatible with Commercially Available Drivers
- Low Optical Insertion Loss
- Operating up to 60 GHz
- Smooth Frequency Response up to > 60 GHz
- Integrated Photodiode
- Integrated Polarizer
- Hermatically Sealed
- Operating and Storage Temperature at - 55 to + 85°C

Applications

- Digital Transmission
- Analog Transmission
- High Frequency RF over Fiber Optic Links
- Delay Lines Systems
- Instrumentation

Bulk $LiNbO_3$ Modulator Products

C-Band 20/40 GHz Extended Temperature Intensity Modulator (AM20-XT/AM40-XT)

Optical and Electrical Specifications

Parameter	Conditions	Value (AM20-XT)	Value (AM40-XT)	Unit
Optical				
Operating Wavelength	-	1525 - 1615	1525 - 1615	nm
Insertion Loss	No connectors With connectors	< 4.5 (3.5 typ) < 5.0 (4.0 typ)	< 5.0 (4.0 typ) < 5.5 (4.5 typ)	dB
Optical Return Loss	No connectors	> 45	> 45	dB
Polarization Extinction Ratio	-	> 20 (23 typ)	> 20 (23 typ)	dB
Electrical – RF Port				
S_{21} Electro-Optic Bandwidth	- 3 dBe	> 20 (23 typ)	> 30 (31 typ)	GHz
S_{11} Electrical Return Loss	40 MHz – 20 GHz 20 GHz – 35 GHz	< - 10 (- 12 typ) -	< - 10 (- 12 typ) < - 8 (- 10 typ)	dB -
RF V_π Voltage	@ 1 kHz @ 20 GHz	< 5.0 (4.5 typ) 6.0	< 5.2 (4.7 typ) 6.0	V V
RF Impedance	-	50	50	Ω
Bias V_π Voltage	@ 1 kHz	< 5.5 (5.0 typ)	< 5.5 (5.0 typ)	V
Bias Impedance	@ DC	1	1	MΩ
Photodiode Responsivity	-	> 1 x 10^{-3}	> 1 x 10^{-3}	mA/W
Linearity	-	± 10%	± 10%	-

Pinout and Fiber Specifications

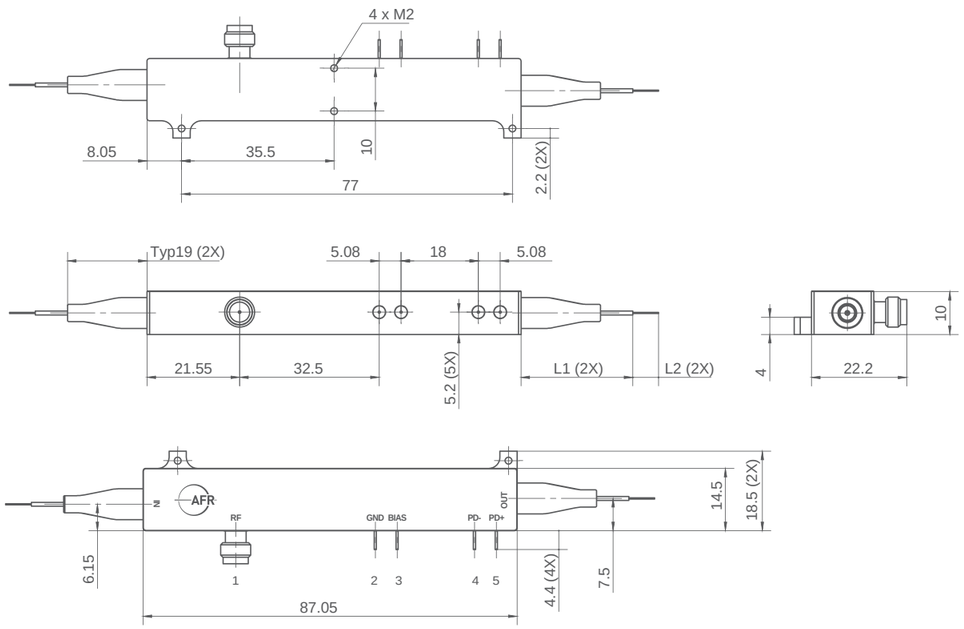
RF Connector	V-Connector
Bias and PD Connector	LEAD pins
Input Fiber	Corning/Fujikura SM15P UV/UV250 (Panda Fiber), > 1.3 m, 900 µm loose tube fiber
Output Fiber	Corning/Fujikura SM15P UV/UV250 (Panda Fiber), > 1.3 m, 900 µm loose tube fiber

Absolute Maximum Ratings

Parameter	Conditions	Min	Max	Unit
Maximum RF Input Power	RF port AC coupled	-	25	dBm
Maximum Optical Input Power	CW	-	100	mW
Operating Case Temperature	AM20-XT/AM40-XT	- 55	+ 85	°C
Storage Temperature	AM20-XT/AM40-XT	- 55	+ 85	°C
Maximum Operating Temperature Variation Rate	AM20-XT/AM40-XT	-	10	°C/min
Operating Humidity	-	5	85	%
Leads Soldering Temperature	-	-	+ 250	°C
Leads Soldering Time	-	-	10	s

C-Band 20/40 GHz Extended Temperature Intensity Modulator (AM20-XT/AM40-XT)

Mechanical Outline



* AM20-XT and AM40-XT have same footprints. All dimensions measured in mm. L1 is fiber length with 900 µm loose tube. L2 is length of bare fiber.

Pinout Information

Pin	Name	Description
1	RF	RF input, V-connector
2	GND	Ground
3	Bias	Bias Voltage
4	PD-C	Photodiode cathode
5	PD-A	Photodiode anode

Ordering Information

103076200001

AM20-XT, C-Band 20 GHz Extended Temperature Intensity Modulator
(> 1.3 m, 900 µm PMF/PMF loose tube fiber)

103076200004

AM40-XT, C-Band 40 GHz Extended Temperature Intensity Modulator
(> 1.3 m, 900 µm PMF/PMF loose tube fiber)

C-Band 10 GHz Phase Modulator (PM10-C)

AFR broadband phase modulators combine high linearity with low driving voltage and small footprint, covering all the frequency range up to 10 GHz.

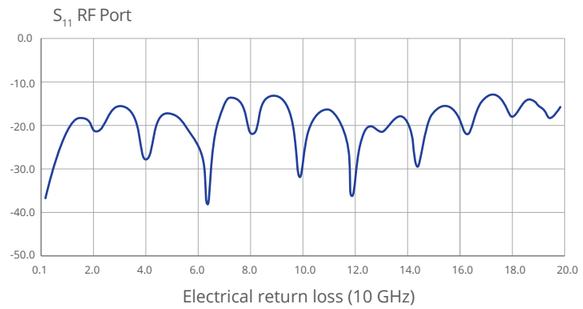
Features

- Titanium-Indiffused Waveguide
- Operating at C-Band
- Z-Cut $LiNbO_3$
- Smooth Frequency Response up to > 10 GHz
- Low Optical Insertion Loss
- Compliance with Telcordia GR-468-Core

Applications

- FM Spectroscopy
- Frequency Shifting
- Laser Linewidth Broadening
- Laser Beam Combining
- Quantum Key Distribution
- Interferometric Fiber Sensing

Performance Characteristics



Electrical return loss (10 GHz)

C-Band 10 GHz Phase Modulator (PM10-C)

Optical and Electrical Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Optical					
Operating Wavelength Range	-	1530	-	1565	nm
Insertion Loss, IL	No connectors	-	2.5	3.5	dB
	With connectors		3.0	4.0	
Optical Return Loss, RL	No connectors	-	45	-	dB
Polarization Dependent Loss	-	-	10	-	dB
Electrical					
S_{21} Electro-optic Bandwidth	- 3 dBe	10	12	-	GHz
ΔS_{21} Ripple	-	-	0.5	1.0	dB
S_{11} Electrical Return Loss	-	-	- 15	- 10	dB
RF V_π Voltage	@ 50 kHz	-	4	5	V
	@ 10 GHz	-	6	7	V
RF Input Impedance	-	-	50	-	Ω

Pinout and Fiber Specifications

RF Connector	GPO male
Ground	LEAD pins
Input Fiber	Corning/Fujikura SM15P UV/UV250 (Panda Fiber), > 1.5 m, 900 μm loose tube fiber
Output Fiber	Corning/Fujikura SM15P UV/UV250 (Panda Fiber), > 1.5 m, 900 μm loose tube fiber

Absolute Maximum Ratings

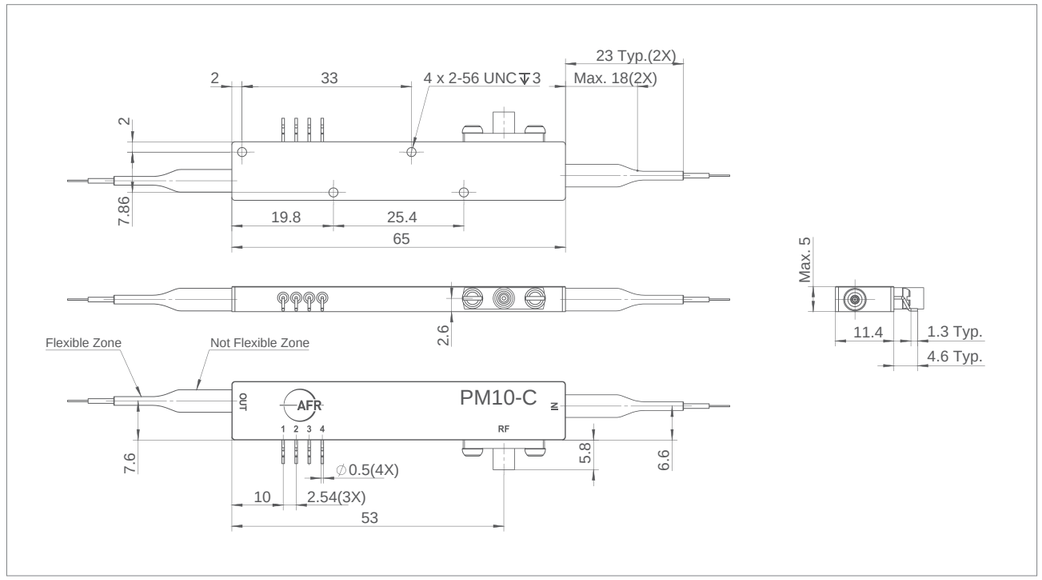
Parameter	Conditions	Min	Max	Unit
Maximum Input Power (Electrical)	RF port AC coupled	-	28	dBm
Maximum Input Power (Optical)	CW	-	20	dBm
Operating Case Temperature	-	0	+ 70	°C
Storage Temperature	-	- 40	+ 85	°C
Maximum Operating Temperature Variation Rate	-	-	1	°C/min
Operating Humidity	-	5	85	%
Leads Soldering Temperature	-	-	+ 250	°C
Leads Soldering Time	-	-	10	s

* All requirements at Top = 25 °C, wavelength 1550 nm and BOL unless otherwise specified.

Bulk $LiNbO_3$ Modulator Products

C-Band 10 GHz Phase Modulator (PM10-C)

Mechanical Outline



* All dimensions measured in mm. L1 is fiber length with 900 μm loose tube. L2 is length of bare fiber.

Pinout Information

Pin	Name	Description
1	GND	Ground
2	GND	Ground
3	GND	Ground
4	GND	Ground
RF	-	RF Input (GPO male)

Ordering Information

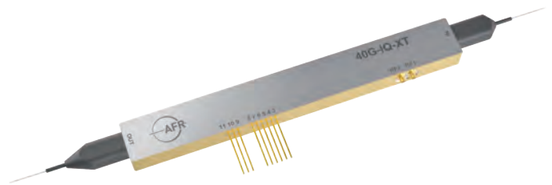
103076100001

PM10-C, C-Band 10 GHz $LiNbO_3$ Phase Modulator,

(> 1.5 m, 900 μm PMF/PMF loose tube fiber)

C-Band 20 GHz x 2 Extended Temperature IQ Modulator (40G-IQ-XT)

The 40G-IQ-XT modulator design is based on a dual parallel structure of two Mach-Zehnder modulators embedded in a Mach Zehnder super-structure. Each internal modulator is designed to have EO bandwidth above 20 GHz. Monitor photodiode is provided for automatic bias control. The 40G-IQ-XT version is provided extended operating temperature at - 55 to + 85°C for different environmental applications.



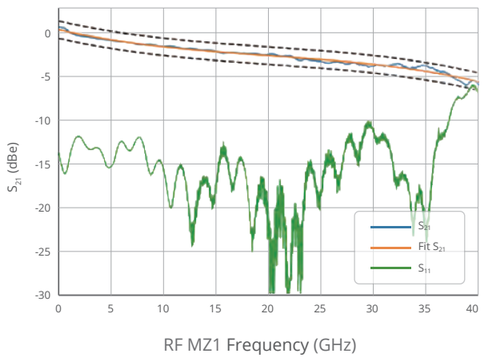
Features

- Titanium-Indiffused Waveguide
- Operating at C-Band
- X-Cut $LiNbO_3$
- High Bandwidth operating > 30 GHz
- Low Optical Insertion Loss
- Compliance with Telcordia GR-468-Core
- Extended Operating Temperature at - 55 °C to + 85 °C
- Hermatically Sealed
- Excellent Linearity

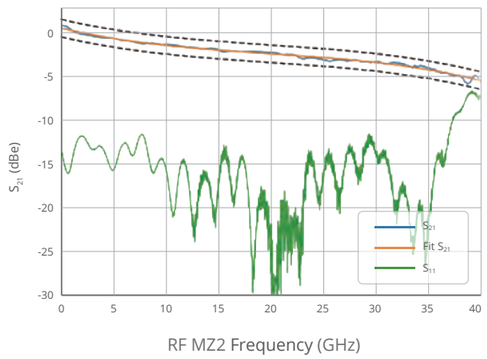
Applications

- OFDM Coding
- QPSK Coding
- QAM Coding
- CS-SSB (Carrier Suppressed Single Side Band)
- FMCW LiDAR in Autonomous Driving

Performance Characteristics



RF MZ1 Frequency (GHz)



RF MZ2 Frequency (GHz)

Bulk $LiNbO_3$ Modulator Products

C-Band 20 GHz x 2 Extended Temperature IQ Modulator (40G-IQ-XT)

Specifications

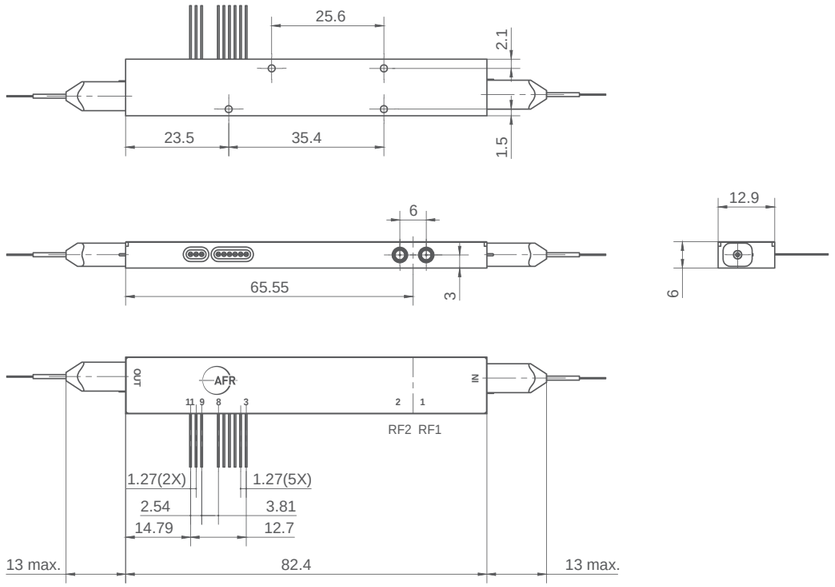
Parameter	Conditions	Min	Typ	Max	Unit
Optical					
Operating Wavelength Range	-	1525	-	1570	nm
Insertion Loss, IL	EOL, - 5 to + 75 °C, over C-Band	-	5.0	7.0	dB
Phase-MZI Optical Extinction Ratio	@ DC	24	-	-	dB
RF-MZI Optical Extinction Ratio	@ DC	24	29	-	dB
PER	-	20	-	-	dB
Optical Return Loss, RL	Input & Output	40	-	-	dB
Maximum Input Power (Optical)	CW	-	-	100	mW
Electrical RF Ports					
RF-MZI V_π Voltage	@ 1 kHz	-	5.0	7.0	V
RF-MZO - 3 dB E/O Bandwidth	wrt. 2 GHz	20	23	-	GHz
RF-MZI S_{21} Flatness	300 MHz – 20 GHz	- 1	-	1	dB
Amplitude Difference Between - MZIs (Difference between two S_{21})	-	- 1	-	1	dB
RF Delay Between RF-MZIs	-	- 5	-	5	ps
RF-MZI Electrical Return Loss S_{11}	40 MHz – 17 GHz 17 GHz – 30 GHz	10 8	12 10	- -	dB
Electrical Bias Ports					
RF MZI Bias V_π Voltage	@ 1 kHz	-	7	8	V
RF and Phase MZI Bias V_π Voltage Variation Over Wavelength	1550 nm	- 5	-	5	%
Bias Port Impedance	@ DC	1	-	-	MΩ
Monitor Photodiode					
Responsivity	-	20	-	120	mA/W
Linearity	-	- 10	-	10	%
Phase Error	PD is not inverting	- 5	-	5	Degree
Pin-Out and Fiber Specifications					
RF Connector	SMPM male				
Bias Ports	DC pins				
Input Fiber	Polarization Maintaining Fiber, PMF - Panda (Corning/Fujikura PM15-U25D), > 1.5 m, 900 µm loose tube fiber				
Output Fiber	Polarization Maintaining Fiber, PMF - Panda (Corning/Fujikura PM15-U25D), > 1.5 m, 900 µm loose tube fiber				

Absolute Maximum Ratings

Parameter	Conditions	Min	Max	Unit
Maximum Input Power (Electrical)	RF port AC coupled	-	10	V_{pk-pk}
DC Voltage at DC Port	-	- 40	40	V
Monitor Photodiode Reverse Current	-	-	< 2	mA
Monitor Photodiode Forward Current	-	-	< 10	mA
Monitor Photodiode Reverse Voltage	-	-	< 15	V
Operating Case Temperature	40G-IQ-XT	- 55	+ 85	°C
Maximum Top Variation Rate	40G-IQ-XT	-	10	°C/min
Storage Temperature	40G-IQ-XT	- 55	+ 85	°C
Operating Humidity	Non-Condensing	5	85	%

C-Band 20 GHz x 2 Extended Temperature IQ Modulator (40G-IQ-XT)

Mechanical Outline



* All dimension measured in mm.

Pin-Out Information

Pin	Name/Description	Note
1	RF. 1	RF Input (SMPM male)
2	RF. 2	RF Input (SMPM male)
3	BIAS 2+	Bias wrt RF.2 +V
4	BIAS 2-	Bias wrt RF.2 -V
5	BIAS 1+	Bias wrt RF.1 +V
6	BIAS 1-	Bias wrt RF.1 -V
7	Bias PH+	Bias Phase +V
8	Bias PH-	Bias Phase -V
9	PD Cathode	- ve
10	PD Anode	+ ve
11	GND	Ground

Note: The pin# 3&4, 5&6, 7&8 pin pair doesn't need to be exact as above table, but any pin pair need to be of opposite voltage.

Ordering Information

103076300008

40G-IQ-XT, C-Band 20 GHz x 2 Extended Temperature IQ Modulator
(>1.4 m, 900 µm PMF/PMF loose tube fiber)

PM0.2-1060-XT/PM2.5-1060-XT/PM10-1060-XT Phase Modulator

AFR Broadband Phase Modulator combines high linearity with low driving voltage and small footprint, covering frequency range from DC up to 10 GHz. The extended operating temperature range given this series of phase modulators can operate at different environmental applications.

Features

- APE Waveguide
- Z-Cut $LiNbO_3$
- Operating Wavelength Range 950 – 1150 nm
- Low Drive Voltage Compatible with Commercially Available Drivers
- Low Optical Insertion Loss
- Smooth Frequency Response up to > 0.2 GHz (PM0.2-1060-XT)
- Smooth Frequency Response up to > 2.5 GHz (PM2.5-1060-XT)
- Smooth Frequency Response up to > 10 GHz (PM10-1060-XT)
- Extended Operating Temperature at - 55 to + 85°C
- Hermatically Sealed

Applications

- Ultra-Fast High-Power Lasers
- Phase Shifting
- Laser Linewidth Broadening
- Laser Beam Combining

Optical and Electrical Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Optical					
Operating Wavelength Range	-	1025	-	1090	nm
Insertion Loss, IL	Standard/Premium	-	-	3.0 / 2.0	dB
Optical Return Loss, RL	-	40	45	-	dB
Polarization Dependent Loss	-	25	30	-	dB
Electrical					
S_{21} Electro-optic Bandwidth	PM0.2-1060-XT @ - 3 dBe	0.2	-	-	GHz
	PM2.5-1060-XT @ - 3 dBe	2.5	-	-	
	PM10-1060-XT @ - 3 dBe	10	-	-	
ΔS_{21} Ripple	-	-	0.5	1.0	dB
S_{11} Electrical Return Loss	-	-	-	- 10	dB
V_π RF Voltage	PM0.2-1060-XT @ 50 kHz	-	-	2	V
	PM2.5-1060-XT @ 50 kHz	-	-	2	
	PM10-1060-XT @ 50 kHz	-	-	2	
RF Input Impedance	-	-	50	-	Ω

Pinout and Fiber Specifications

RF Connector	2.92 mm Female K connector
Input Fiber & Output Fiber	Corning PM98-U25D (PM980), > 1.5 m, 900 µm PMF/PMF loose tube fiber

* Without optical connectors

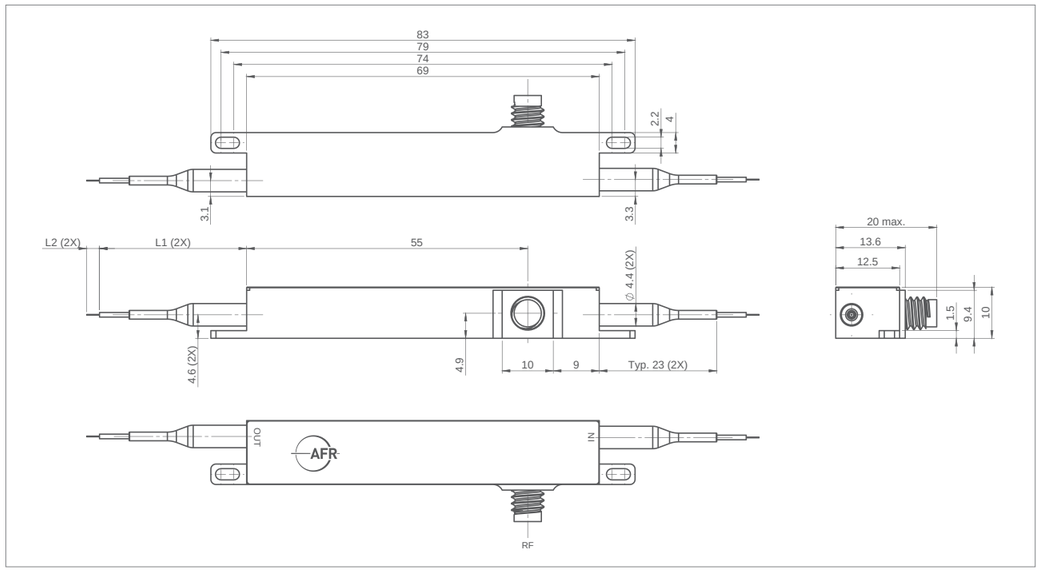
Bulk $LiNbO_3$ Modulator Products

PM0.2-1060-XT/PM2.5-1060-XT/PM10-1060-XT Phase Modulator

Absolute Maximum Ratings

Parameter	Conditions	Min	Max	Unit
Maximum Input Power (Electrical)	RF port AC coupled	-	33	dBm
Maximum Input Power (Optical)	CW	-	25	dBm
Operating Case Temperature	-	- 55	+ 85	°C
Storage Temperature	-	- 55	+ 85	°C
Operating Humidity	-	5	85	%

Mechanical Outline



* All dimension measured in mm.

Ordering Information

103076100010

PM0.2-1060-XT, 1060 nm 0.2 GHz $LiNbO_3$ Phase Modulator
(Corning PM98-U25D (PM980), > 1.5 m, 900 μm PMF/PMF loose tube fiber)

103076100011

PM2.5-1060-XT, 1060 nm 2.5 GHz $LiNbO_3$ Phase Modulator
(Corning PM98-U25D (PM980), > 1.5 m, 900 μm PMF/PMF loose tube fiber)

103076100012

PM10-1060-XT, 1060 nm 10 GHz $LiNbO_3$ Phase Modulator
(Corning PM98-U25D (PM980), > 1.5 m, 900 μm PMF/PMF loose tube fiber)

Brochure version: APR, 2024