

Lithium Niobate 10 to 20 Gb/s Modulators



Ultra-low Loss Intensity Modulators for 10, 12.5, and 20 Gb/s Communication Systems and Wideband Analog Applications

EOSPACE's modulators for use in 10, 12.5, or 20 Gb/s digital communication systems and high bandwidth analog applications offer industry leading low optical insertion loss. This low insertion loss feature is maintained over the entire optical C&L bands.

The low drive voltage requirements of these integrated optical modulators make them compatible with a wide variety of commercial drivers available for high bandwidth systems. The slim and sleek profile of the modulator package allows the use of many mounting configurations of line and circuit cards. A single ended K-connector at the data port provides a usable bandwidth of greater than 20 GHz.

The availability of a wide variety of options for this product line allows a user to customize these devices for virtually any wideband application. These custom options include; customer specified fiber and fiber connector configurations, wavelength operations centered at other than 1550 nm (e.g. 1.06 and 1.3 microns), an integrated photodiode for optical power monitoring and bias control, and custom insertion loss and drive voltage requirements. 1x2 modulators are also available as a custom option.

A key product in this family has been optimized for extended environmental performance for the stringent requirements of the aerospace industry.

EOSPACE's modulators are based on our proprietary exceptionally high performance lithium niobate technology developed over the last 20 years for demanding aerospace applications.

Key Features

- Very low insertion loss
- Wide bandwidth and extended frequency performance
- Low drive voltage
- 0 chirp (x-cut) or -0.7 chirp (z-cut) versions
- Low loss operation over entire C&L bands
- Separate RF and DC bias electrodes
- Compact package

Applications

- 12.5+ Gb/s digital data communications
 - SONET OC-192 with FEC
 - SDH STM-64 with FEC
 - 10 Gb/s WDM transmission systems
- Wideband analog signal transmission
- RZ optical pulse formation
- Long haul terrestrial links
- Undersea links
- Ultra-high speed test equipment

Options

- Industry leading ultra-low insertion loss
- 0.8, 1.06, or 1.3 micron operation
- Dual-band (1.3/1.55 μm operation)
- Extended environmental performance for aerospace applications
- Ultra-low drive voltage
- 1x2 dual complementary optical outputs
- Higher optical power handling capability

Specifications

Parameter	AZ-0K1-12			AZ-0K1-20			AX-0K1-12			AX-0K1-20			Unit
	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	

General

Material	LiNbO3											
Crystal Orientation	z-cut						x-cut					

Electrical/Optical¹

Operating Wavelength	1525		1620	*	*	*	*	*	*	*			nm
1.3 μm (-130 option)		1300			*		*		*		*		nm
Optical Insertion Loss ²			3.0		*			4.0		*			dB
Ultra-low-loss (-UL)			2.0		*			3.0		*			dB
Modulation Port													
V _{pi} (@ 1 GHz)			4.5		*			5.5		*			volts
3 dB Bandwidth	12.5			16				12.5			16		GHz
S ₁₁ (0–12.5 GHz)			-10					-10					dB
S ₁₁ (0–16 GHz)						-10						-10	dB
DC Bias Port V _{pi}		4	10		*	*		5	10		*	*	volts
Optical Null Depth(DC)	20			*				*			*		dB
Alpha Chirp Factor		-0.7			*			-0.1	0.0	+0.1	*	*	*
Optical return loss			45		*			*			*		dB

Mechanical

Input fiber pigtail	Polarization Maintaining											
Output fiber pigtail	Single Mode or Polarization Maintaining											
Fiber core/clad	9/125											
Fiber jacket material	900 μm Hytrel polyester loose tube											
Fiber length	1											
Fiber connector	FC/UPC standard, FC/APC, SC/UPC, SC/APC available											
Electrical Connections	K™ for RF port, pins for bias control											
Package	Designed to pass Telcordia GR-468											

Absolute Max

Optical input power		100		*		*		*		*			mW
RF input power		+27		*		*		*		*			dBm
DC bias MZ electrode	-25		25	*	*	*	*	*	*	*	*	*	volts
Operating temp. ³	0		70	*	*	*	*	*	*	*	*	*	°C
Storage temperature	-40		85	*	*	*	*	*	*	*	*	*	°C

* value unchanged from previous model column

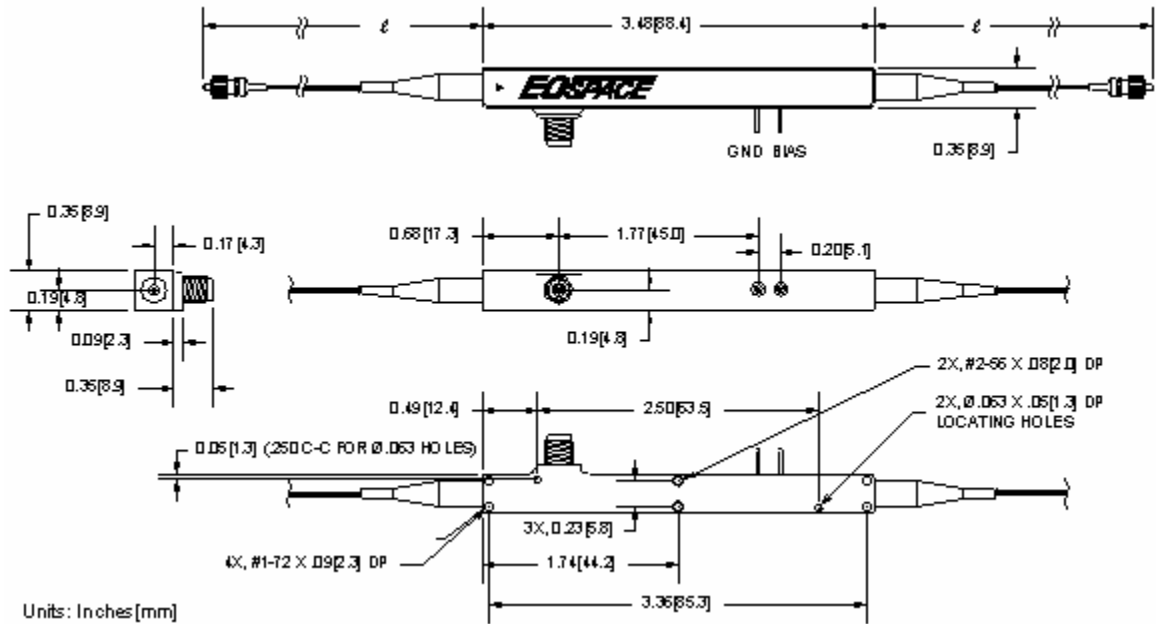
Higher performance and/or custom specifications may be available upon request.

¹ All parameters specified at 1550 nm. Same specifications for 1300nm. Contact EOSPACE for specifications at other wavelength bands.

² Includes FC/PC connector losses. Add 0.5 dB for FC/APC. Losses are lower when fusion spliced.

³ The AX-0K1 models are also available in an aerospace-grade version with extended temperature range.

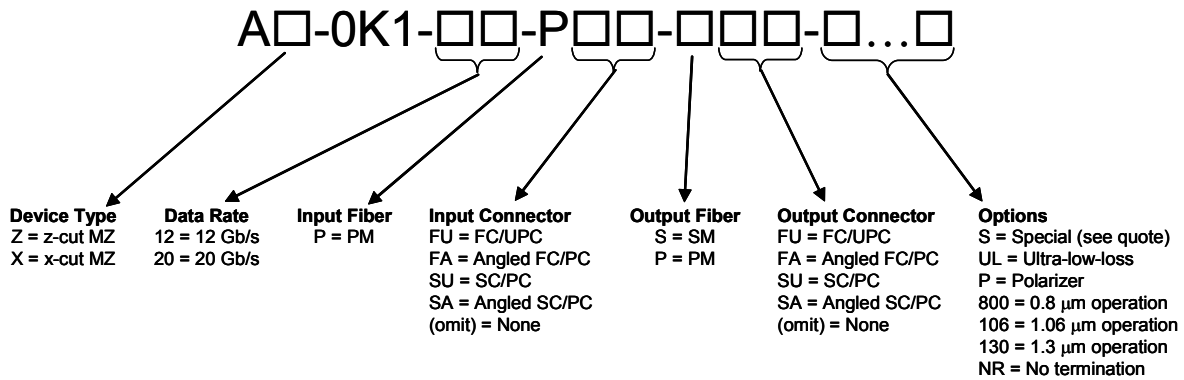
Package Drawing (K1)



Pin Descriptions

Pin	Description
GND	Case Ground
BIAS	DC Bias Input

Model Number Information



Contact Information

EOSPACE Inc.
8711 148th Ave. NE
Redmond, WA 98052

(425) 869-8673
www.eospace.com
info@eospace.com

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