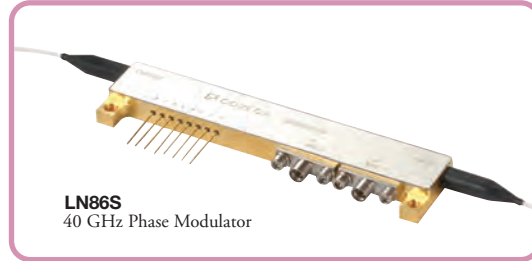


40 GHz DQPSK/4QAM Modulator

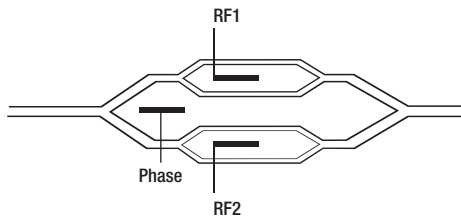
The LN86S Titanium-Indiffused X-Cut Lithium Niobate Modulator, a Dual-Parallel Modulator, is the latest addition to Covega's high-performance offerings. It is capable of providing a 40 Gb/s signaling rate and offers a large bandwidth to benefit customers developing high-speed modulation systems. Each Mach-Zehnder Interferometer (MZI) has an independently controlled bias section to achieve maximum performance.

The front end of the modulator is a phase modulator to allow for the required phase control in the signal channel. The back end of the modulator consists of two MZIs in parallel. Each MZI is an intensity modulator with separate external DC bias controls, giving the user the ability to perform multi-level signaling. The LN86S is designed for quadrature modulation (QPSK or 4QAM) and single side-band suppressed carrier (SSB-SC) transmission.

The LN86S modulator is part of a family of high-performance, Telcordia-compliant external optical modulators with industry-leading long-term stability. This modulator is hermetically packaged in a durable housing with PMF and SMF fiber pigtailed on the device input and output, respectively. The standard device has fiber pigtailed connectorized with FC/PC and SC/PC connectors.



LN86S
40 GHz Phase Modulator



System Diagram of a Dual Parallel Modulator

Mach-Zehnder Modulator Operation

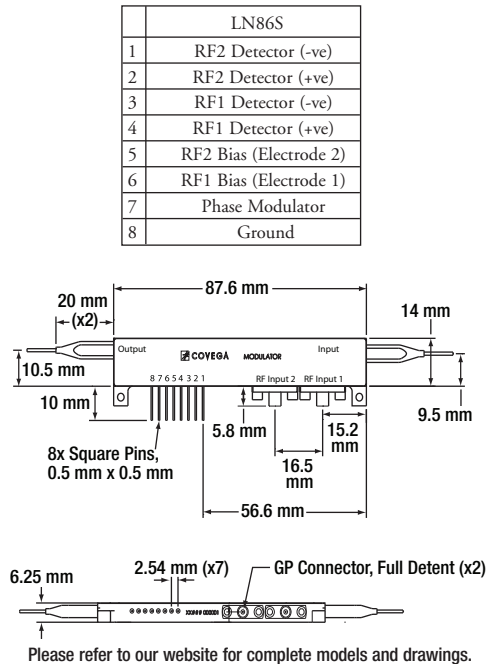
In this dual-parallel modulator, the incoming signal is equally split into two legs and sent through a low speed phase modulator. The phase modulator serves the purpose of applying a phase delay between the legs. The signals in each leg are then sent through separate intensity modulators. Each intensity modulator is modulated with a DPSK format. The outputs of each intensity modulator's legs are re-combined to form the output signal of the dual-parallel modulator. This resultant re-combined signal forms a DQPSK signal through the interference effects.

ITEM#	LN86S			
Parameter	Symbol	Min	Typ	Max
Optical Extinction Ratio (@ DC)*	E.R.	20 dB	-	-
Optical Insertion Loss (Connectorized)	I.L.	-	5 dB	6 dB
Insertion Loss Variation (EOL)	ΔI.L.	-0.5 dB	-	0.5 dB
Optical Return Loss		-	-	40 dB
Operating Wavelength	λ	1525 nm	-	1575 nm
Operating Case Temperature TCASE		0 °C	-	70 °C
Storage Temperature		-40 °C	-	85 °C
V _{PI} RF Ports (@ DC)		-	2.5 V	4.5 V
V _π RF Ports (@ 1 GHz)		-	4.5 V	6 V
V _π Bias Ports (@ 1 GHz)		-	4.5 V	5.5V
RF Port S11		-	-12 dB	-10 dB
RF Parameters				
E/O Bandwidth (-3 dB)	f _{c-3dB}	16.0 GHz	-	-
S21 Amplitude Ripple**		-1.5 dB	-	-1.5 dB
S21 Phase Difference		10°	-	10°
Phase Ripple		10°	-	10°
Differential RF Delay		-5 ps	-	5 ps
Phase Modulator				
DC Input V _π		-	-	6 V
E/O Bandwidth		1 MHz	-	-
RF Detectors				
Threshold		-	-	0.5 V
Slope		0.1 V/V _{pp}	-	0.4 V/V _{pp}
Linearity		-5 %	-	5 %

*per MZI E.R.

** (50 MHz to 20 GHz)

40 GHz DQPSK Modulator Package Drawing



Please refer to our website for complete models and drawings.

ITEM#	\$	£	€	RMB	DESCRIPTION
LN86S-FC	\$ 4,850.00	£ 3,363.00	€ 4,306.00	¥ 40,954.00	40 GHz DQPSK Modulator, FC/PC Connectors
LN86S-SC	\$ 4,850.00	£ 3,363.00	€ 4,306.00	¥ 40,954.00	40 GHz DQPSK Modulator, SC/PC Connectors