

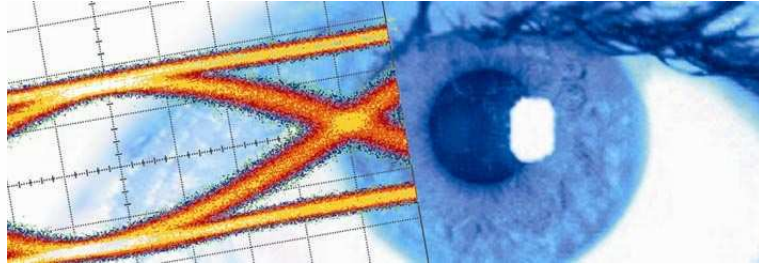


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Datasheet

SHF 47215C

28 Gbps Optical DPSK Receiver
with complementary limiting output



Description

Differential phase-shift keying (DPSK) is a well-known coding method which is of current interest in the transmission of high bit rate signals through optical fibers. Compared to the more conventional amplitude-shift keying (ASK), DPSK offers higher sensitivity and enhanced robustness against the impact of non-linear effects in DWDM transmission.

The SHF 47215C optical 28 Gbps DPSK receiver offers a solution for demodulation of DPSK-encoded optical signals and conversion back into electrical signals for further analysis. It is a field replaceable plug-in module which needs to be installed in a mainframe type SHF 10001A or SHF 10000B. Together with other plug-in modules from this instrument series, a modular and scalable measurement system can be implemented. In conjunction with the 28 GSymbol/s (56 Gbps) DQPSK transmitter (SHF 46213B), optical D(Q)PSK transmission system studies can be performed very efficiently.

The module is controlled over a standard Ethernet connection by an external computer. An easy to use software package provides not only a user friendly interface for changing the operating parameters but also the capabilities of feature enhancement through future firmware & software upgrades.

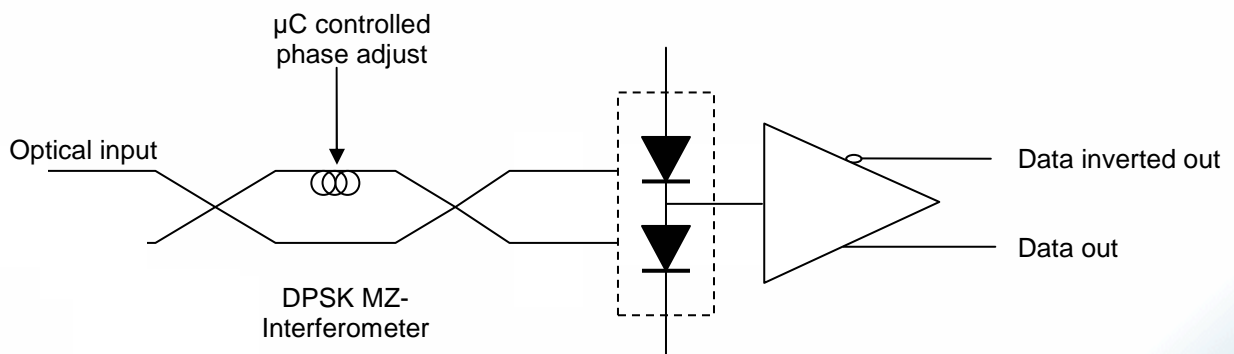
To assist the customer in performing efficient measurements and to make the instrument robust against variations of the wavelength of the input signal, a tracking mode is implemented. When operating in this mode, the instrument automatically monitors the output signal and compensates for any changes in the wavelength of the laser light. This feature is a powerful tool for long term measurements.

The output of the balanced detector drives a limiting amplifier which limits the signals amplitude at the complementary outputs to, or less than 1 Vpp.

Features

- Scalable and modular system
- Windows Style BERT Control Center software package
- Computer controlled operation over the Ethernet which also enables remote access.
- Feature enhancement through firmware & software upgrades
- User-specified bit rate (narrowband operation)
- Decodes NRZ, RZ and CS-RZ DPSK signals
- High sensitivity
- Limiting complementary outputs

Functional block diagram





Specifications – SHF 47215 C

Parameter	Unit	Min.	Typ.	Max.	Conditions
Decoder					
Optical Connector Type					FC/PC, other types on request
Operating wavelength	nm	1520		1620	
Optical input power into receiver	dBm			10	mean power
Optical return loss	dB		25		
Decoder Excess optical loss	dB		1.6	2.2	
Data rate	Gb/s	26		30	One fixed data rate per decoder. User to specify.
Decoder phase tuning range	FSR			2	
Phase tuning response	second			2	fiber heater operation only
Balanced detector					
Electro-optic bandwidth	GHz		35		broad band operation
Detector responsivity	A/W	0.5	0.6		at DC
Detector responsivity matching	%		10		
Common-mode rejection	dB	12 12			Up to 20 GHz 20 to 50 GHz
PDL			0.4	0.8	



Parameter	Unit	Min.	Typ.	Max.	Conditions
Output signal					
Connector type			50 Ω		ruggedized 1.85 mm (V-compatible) male connectors
Electrical output return loss	dB			-10	
Positive and negative pulse amplitude matching	%			20	worst case
Positive and negative pulse delay matching	ps			4	
Output pulse amplitude	mV	600	800	1000	+6 dBm mean optical input power
Output pulse zero crossing	mV		0		
Receiver sensitivity	dBm		-4	-3	measured with SHF 11110B @ BER = 10^{-9}

Absolute maximum ratings

Parameter	Unit	Min.	Typ.	Max.	Conditions
Optical input power into receiver	dBm			13	CW

General

Parameter	Unit	Min.	Typ.	Max.	Conditions
Weight	kg		2.5		
Operating temperature	$^{\circ}\text{C}$	10		35	
Storage temperature	$^{\circ}\text{C}$	-20		70	