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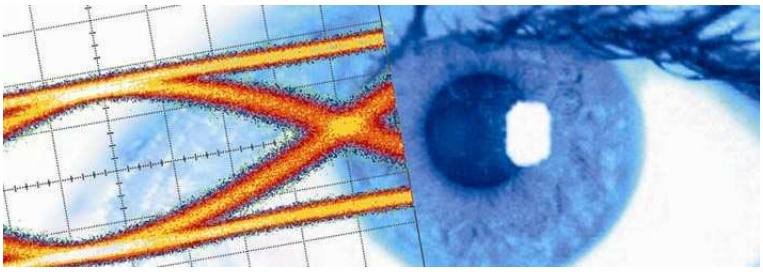
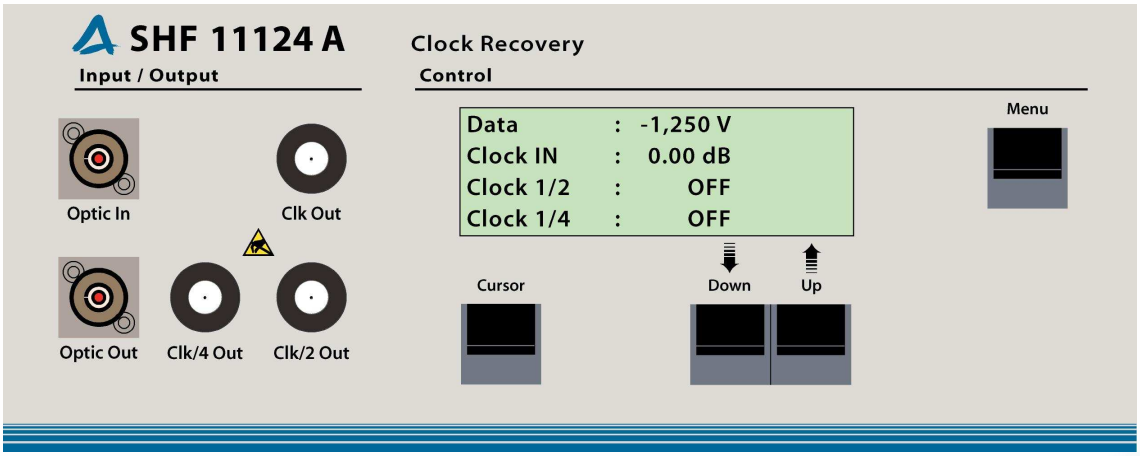


Datasheet

SHF 11124 A

Clock Recovery



Description

The SHF 11124 A Clock Recovery is designed to extract and synchronize the clock from an optical data stream. It operates at bit rates from 19 to 26 (CR25) or 25.3 to 32 (CR28) Gbps. An internal synthesizer provides a reference clock for the whole bit rate range.

By using a tap coupler, the optical input signal appears at the optical output with only minimum attenuation.

The extracted optical signal is converted by a receiver to an electrical signal which is processed by the clock recovery circuit.

The SHF 11124 A can be operated locally by the front panel or remote controlled via Ethernet-connection from a PC running the SHF BERT Control Center control software (BCC). Its programming features allow automated measurements using test programs like AGILENT VEE® [1] or National Instruments LabVIEW™ [2].

The module is a compact solution which offers superb performance while including easy to use features.

Features

- Operating bit rate range from 19 to 26 Gbps (Option CR25) or 25.3 to 32 Gbps (Option CR28)
- Clock output frequency at full, half and quarter of the nominal input data bit rate
- Local or remote operation via Ethernet-connection to a PC (SHF BERT Control Center)

Options

- Option CR25: With clock recovery 19 to 26 Gbps
- Option CR28: With clock recovery 25.3 to 32 Gbps
- Option TC60: Optical tap coupler with a 60/40 ratio (60% of the inserted optical power is fed through)
- Option TC90: Optical tap coupler with a 90/10 ratio (90% of the inserted optical power is fed through)

Please note that only one clock recovery option and one tap coupler option could be ordered at the same time. Other tap coupler ratios are available on request.

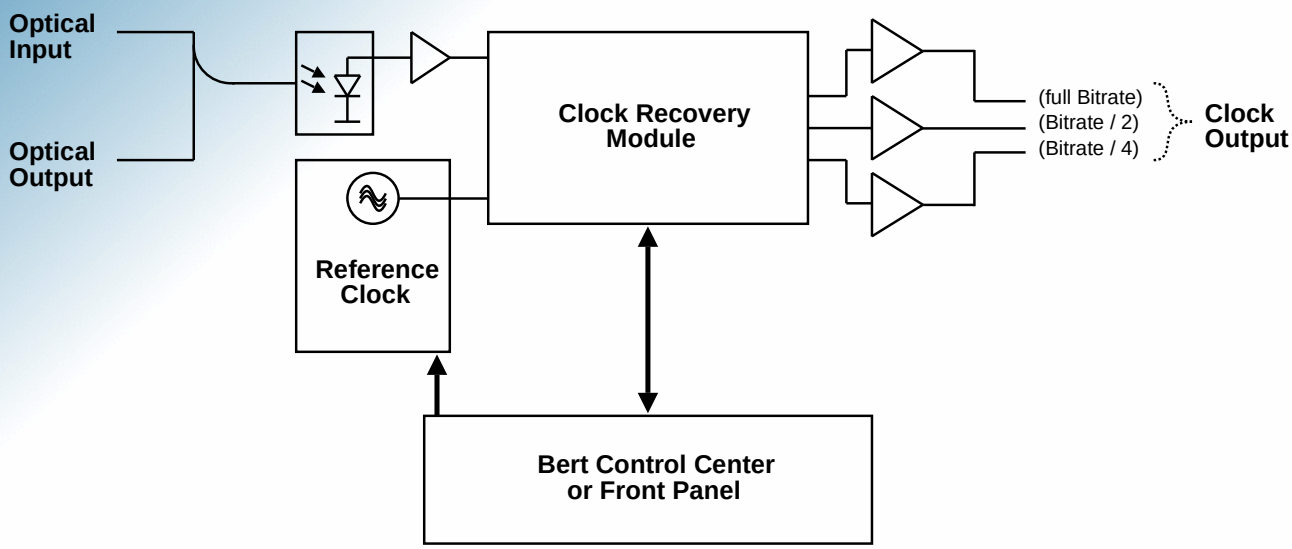
Applications

- R&D for optical communication systems at bit rates from 19 to 26 Gbps or 25.3 to 32 Gbps
- Characterization of high speed optical components
- Bit error rate testing
- Optical component and fiber loop testing
- Optical transmitter testing

[1] AGILENT VEE is a registered trademark of Agilent Technologies, Inc., USA

[2] LabVIEW is a registered trademark of NATIONAL INSTRUMENTS CORPORATION, USA

Block Diagram



Precautions with Optical Connectors

The fiber optic connectors must be kept clean in order to ensure best performance of the SHF 11124 A.

Contaminated or damaged fiber ends result in performance degradation. Cover connectors with dust caps when they are not in use.

The following cleaning procedure is recommended for the connector interface of the SHF 11124 A and the external connectors attached to these ports.

- Before cleaning, the external connectors should be detached from the SHF 11124 A.
- To clean the fiber-end face, use a new natural cotton swab that is moistened with isopropyl alcohol.
- We recommend that no other solvents are used to clean the optical surfaces.
- Move the swab back and forth across the fiber end face several times applying a gentle pressure.
- Afterwards dry the fiber end face with a clean dry cotton swab or lens paper.
- Do not press the swab or lens paper too hard onto the fiber end face. This may damage the surface.
- Use clean dry compressed air (free of dust, water and oil) to blow away any remains from the fiber end face. Nitrogen gas can also be used.
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Never exceed the maximum ratings of the optical input power.

Specifications – SHF 11124 A

Parameter	Unit	Symbol	Min.	Typ.	Max.	Comment
Optical						
Input and Output Connectors				FC/PC		
Wavelength	nm	λ	1300 1530		1330 1620	
Optical Insertion Loss	dB			2.9 1.0		Opt. TC60 Opt. TC90
Absolute max. Optical Input Power	dBm				7.0 13.0	Opt. TC60 Opt. TC90
Optical Input Dynamic Range at 1310 nm	dBm		+1.7 -1.2 +8.1 +5.1			Opt. TC60, CR25 Opt. TC60, CR28 Opt. TC90, CR25 Opt. TC90, CR28
Optical Input Dynamic Range at 1550 nm	dBm		-0.4 -3.4 +5.8 +2.8			Opt. TC60, CR25 Opt. TC60, CR28 Opt. TC90, CR25 Opt. TC90, CR28
Clock / 4 Output (quarter bit rate)						
Output Frequency	GHz	f_{out}	4.75 6.33		6.5 8.0	CR25 CR28
Output Voltage (V_{pp})	mV	V_{out}	400		700	
Connector	Ω			50		2.92 mm (K) female
RMS-Jitter [3]	fs	J_{RMS}			1000	
Clock / 2 Output (half bit rate)						
Output Frequency	GHz	f_{out}	9.50 12.65		13 16	CR25 CR28
Output Voltage (V_{pp})	mV	V_{out}	500		800	
Connector	Ω			50		2.92 mm (K) female
RMS-Jitter [3]	fs	J_{RMS}			800	

[3] on scope display, measured with Agilent 86100A with precision time base

Parameter	Unit	Symbol	Min.	Typ.	Max.	Comment
Full Clock Output (full bit rate)						
Output Frequency	GHz	f_{out}	9.50 12.65		13 16	CR25 CR28
Output Voltage (V_{pp})	mV	V_{out}	500		800	
Connector	Ω			50		2.92 mm (K) female
RMS-Jitter [3]	fs	J_{RMS}			600 800	CR25 CR28
General Data						
Power Supply	V		90		240	47 … 63 Hz
Power Consumption	W			TBD		
Weight	kg			TBD		
Dimensions (WxHxD)	mm					235 x 110 x 355
Operation temperature	℃		10		35	
Storage temperature	℃		-20		70	
Network Connection	Mbps			10 / 100		Ethernet, RJ-45