

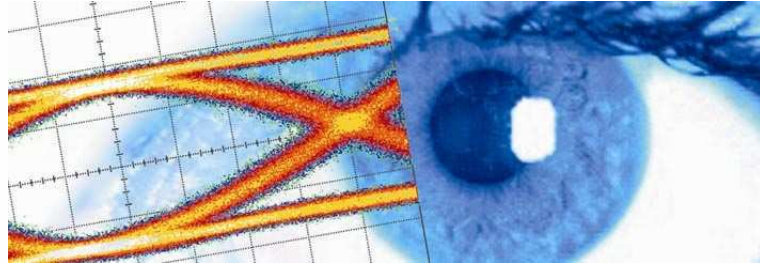


# SHF Communication Technologies AG

Wilhelm-von-Siemens-Str. 23D • 12277 Berlin • Germany

Phone ++49 30 / 772 05 10 • Fax ++49 30 / 753 10 78

E-Mail: [sales@shf.de](mailto:sales@shf.de) • Web: <http://www.shf.de>

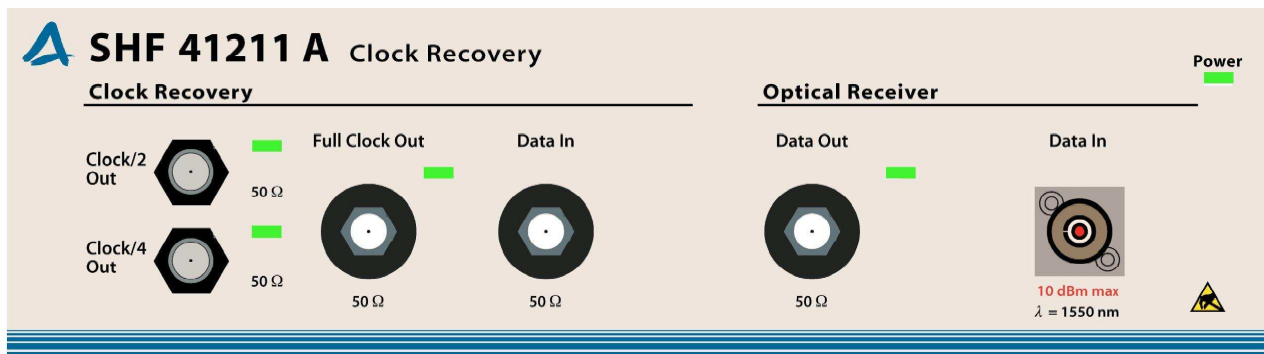


## Datasheet

### SHF 41211A

#### Clock Recovery

#### Optical Receiver with single ended out





## Description

The SHF 41211A is an optical receiver and clock recovery unit. This plug-in module is part of the SHF modular measurement series and needs to be installed in a mainframe type SHF 10001A or SHF 10000A/B. Together with other plug-in modules from this instrument series, a modular and scalable measurement system can be configured. Field installation or upgrade by the end-user is possible for this part of equipment.

It can be specified as optical receiver (option OE), clock recovery (either option CR25 or CR28) or with both options. Both options are separate building blocks, they are not connected internally!

The optical receiver converts optical signals with a bit rate up to 50 Gbps into electrical signals. The wide output dynamic range combined with excellent pulse behavior makes the device ideal for optical system research.

The Clock Recovery is designed to extract and synchronize the clock from a serial 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. The SHF 41211A can be operated remotely 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 or National Instruments LabView.

## Features

### Clock Recovery

- Operating bit rate range from 19 to 26 Gbps (Option CR25)<sup>1</sup>
- Operating bit rate range from 25.3 to 32 Gbps (Option CR28)<sup>1</sup>
- Clock output frequency at full, half and quarter of the nominal input data bit rate

### Optical Receiver

- Broadband operation up to 50 Gbps
- High optical sensitivity
- Wide output dynamic range
- High output saturation suitable for 2R regeneration
- Excellent pulse behavior
- Unsurpassed high power handling capability
- High responsivity

### Options

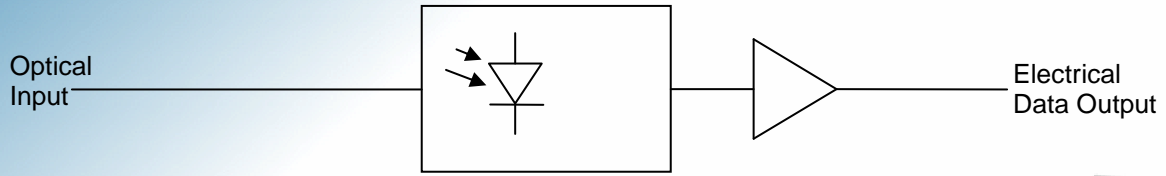
- Option OE: With optical/electrical converter
- Option CR25: With clock recovery 19 to 26 Gbps
- Option CR28: With clock recovery 25.3 to 32 Gbps

<sup>1</sup> Not available at the same time

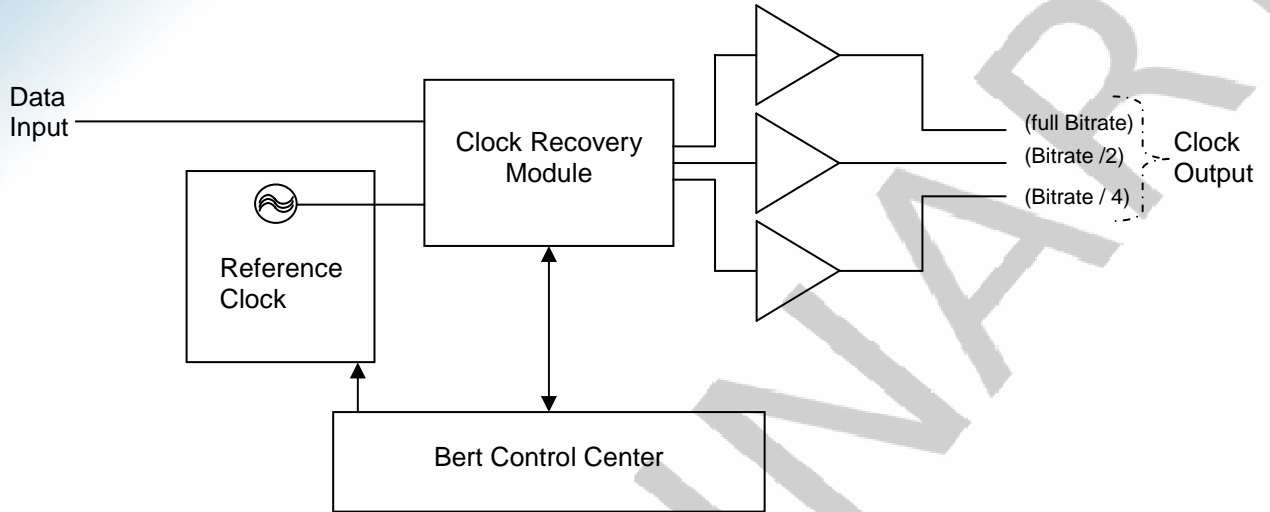



# Block Diagram

## Optical Receiver



## Clock Recovery






# Specifications – SHF 41211A

## Option CR28/CR25 – Clock recovery

Parameter	Unit	Min.	Typ.	Max.	Comment
<b>Data Input</b>					
Operating bit rate	Gbps				
CR25		19.0		26.0	
CR28		25.3		32.0	
Input Voltage	mV	200		1000	
Connector	Ω		50		ruggedized 2.92mm male
<b>Clock / 4 Output (quarter bit rate)</b>					
Output Frequency	GHz				
CR25		4.75		6.5	
CR28		6.33		8.0	
Output Voltage (V <sub>pp</sub> )	mV	500		800	
Connector	Ω		50		SMA - female
RMS-Jitter	fs			1000	
<b>Clock / 2 Output (half bit rate)</b>					
Output Frequency	GHz				
CR25		9.50		13	
CR28		12.65		16	
Output Voltage (V <sub>pp</sub> )	mV	500		800	
Connector	Ω		50		SMA - female
RMS-Jitter <sup>2</sup>	fs			800	
<b>Full Clock Output (full bit rate)</b>					
Output Frequency	GHz				
CR25		19.0		26	
CR28		25.3		32	
Output Voltage (V <sub>pp</sub> )	mV	500		800	
Connector	Ω		50		ruggedized 2.92 male
RMS-Jitter <sup>2</sup>	fs				
CR25				600	
CR28				800	

<sup>2</sup> on scope display, measured with Agilent 86100A with precision time base



## Option OE – Optical receiver

Parameter	Unit	Min.	Typ.	Max.	Comment
Wavelength range		C and L band			
High frequency 3dB point	GHz	30			
Low frequency 3dB point	kHz			30	
Conversion gain	mV/mW	350	450		at 1550 nm
Receiver sensitivity	dBm		-9		
Output saturation voltage (peak-peak)	V		5	6	
Rise/fall times	ps		9	10	10...90%
Optical input power	dBm			13	CW
Data Out Connector	$\Omega$		50		ruggedized V-male
Optical Connector <sup>3</sup>			FC/PC		

<sup>3</sup> Consult SHF for other requests