

DCA4201

Digital Sampling Scope

Version 4.8



Product Description

Semight Instruments DCA4201 sampling oscilloscope is based on equivalent-time sampling and reconstructed eye diagram technology, resulting in higher accuracy and better cost of measurement of high-speed optoelectronic digital signals. This is also recognized as the industry standard for verifying optical transmitter compliance to communications standards. The DCA4201 is designed for mass production test applications. Its accuracy is as high as industry-standard sampling oscilloscope. Through different filter option configurations, it can simultaneously support 10G and other below 4 rates optical eye diagram tests. DCA4201 also has a fast-tuning mode, in this mode, the extinction ratio and average power can be maintained at a refresh rate of 1Hz, thus greatly improving test efficiency and reducing test costs. Unlike the other traditional sampling scope solution, which uses mainframe and modules to create a waveform analysis system, the DCA4201 is completely integrated instruments built in a small form factor.

The noise of the DCA4201 can be as low as $3\mu\text{W}$, ensuring its low noise and high sensitivity. Its calibrated reference receiver (compliant to industry standard tolerances) is available for both multimode and single-mode signals at wavelengths from 850 to 1650 nm.

In order to get consistent result comparing with other Industry Standard DCA, DCA4201 support Extinction Ratio and Average Optical Power calibration, dark current self-calibration algorithms. It is not “MUST” , but it is especially valuable to compensate different testing instruments and make you get consistent result as the other Industry Standard solution.

The user interface of the DCA4201 is similar with the industry standard sampling oscilloscope. Users can run the DCA4201 software on a PC and easily control the DCA4201 through the LAN/USB interface.

Key Features

- Fast sampling rate;
- Support extinction ratio correction;
- Support traditional mask file;
- Flexible combination of different filters, which can cover 1-11.3 Gbps data rate;
- Consistent result similar as industry standard DCA;
- Support hit ratio automatic mask margin testing.

Software function

The intuitive and simple interface GUI of the Semight Instruments DCA4201 makes it easy to configure the system, determine its reference frame and perform measurements. Built-in analysis functions are available to analyze the eye diagram and display all commonly used optical signal test parameters.



10G Optical Eye Diagram



10G Electrical Diagram

Technical Specifications

Optical Specifications	Wavelength Range	850~1650 nm
	Calibrated Wavelengths (OE)	850/1310/1550 nm

	conversion gains)	
	Filters	
	DCA4201-140	GPON,1.244 Gbps, 1 Gb Ethernet,1.250 Gbps, CPRI 1.229 Gbps
	DCA4201-160	OC-48/STM-16 2.488 Gbps, 2 Gb Ethernet 2.500 Gbps, CPRI 2.458 Gbps
	DCA4201-180	10Gb Ethernet LX-4 3.125 Gbps, CPRI 3.072 Gbps
	DCA4201-200	CPRI 6.144 Gbps 6.25 Gbps
	DCA4201-100	OC-192/STM-64, 9.953 Gbps, 10Gb Ethernet, 10.3125 Gbps, 10× Fibre Channel, 10.51875 Gbps, OC-192/STM-64 FEC, 10.664 Gbps , OC- 192/STM-64 FEC, 10.709 Gbps, 10Gb Ethernet with FEC, 11.0957 Gbps, 10× Fibre Channel with FEC, 11.317 Gbps
	Optical input	62.5/125 μm FC/UPC (single-mode/multi-mode)
	Optical sensitivity	-10 dBm
	Measurement consistency	Average Power: ±0.1 dB; Extinction Ratio: ±0.3 dB Mask Margin: ±5% (after calibration)
	Max Input (None-Destruction, Peak)	Max. 5 mW (+7 dBm)

	Max Input(Linearity)	Max. 0.5 mW (-3 dBm)
	Monitor Average Power Range	-20 dBm to -3 dBm
	Average power monitor accuracy	Single-mode $\pm 5\% \pm 200 \text{ nW} \pm \text{connector uncertainty}$
		Multimode (characteristic): $\pm 10\% \pm 200 \text{ nW} \pm \text{connector uncertainty}$
		Due to variations in mode-filling conditions, the measured power in multimode fiber will vary more than the measured power in single-mode fiber. For users needing the most accurate power measurements, use an optical power meter for multimode power measurements
	Input return loss	>24 dB
Electrical Specifications	Electrical channel bandwidth	20 GHz (typ.)
	Rise time (10%~90%)	20 ps
	Max Input Amplitude	<1 V
	RMS noise	<2 mV (typ.)
	Electrical Sensitivity	24 mV
	Impedance	50 Ω
	Electrical input	2.92 mm female
	Reflection	10%

Mainframe Specification s	Sampling system		Acquisition Mode : Sampling (Default), Envelop and Average 1350 points/Waveform, Accumulation Waveform Numbers: 25 waveforms to unlimited
	Sensitivity		200 mV
	Maximum trigger signal		<±1.5 V
	Trigger Impedance		50 Ω
General Specification s	Working Place		Indoor
	Working Condition		10°C ~ +40 °C, 30 % ~ 80 % Relative Humidity
	Storage		-30 °C ~ 70°C, 10 % ~ 90 % Relative Humidity
	Altitude		Operation: 0m to 2000m, Storage: 0m to 4600m
	Power		LINE: 100-240 VAC, 50/60 Hz, 250 W FUUSE: T3.15AL 250 VAC
	Warm-up time		After 30 minutes warm-up, ambient temperature changes less than ± 3 °C
	Dimensions		450*212*105 mm (with foot pad/handle)
	Weight		Net weight 5.0 kg
	CE	EMC	2014/30/EU; EN 61326-1; CISPR 11: 2015+A1: 2016+A2: 2019; EN IEC 61000-3-2; EN 61000-3-3(Verification in progress)
LVD		2014/35/EU: EUEN 61010-1(Verification in progress)	

		RoHS	2011/65/EU: IEC62321-4, 5, 6, 7-1, 7-2, 8(Verification in progress)
--	--	------	--

* Remarks: the test environment is 23 ± 5 °C

Ordering Information

DCA4201	Standard Mainframe
Bandwidth and Channel Options	
100	Single 10 GHz Optical Channel(Default)
140/160/180/200	Add Low Data Rate Filters
EOC	Add Electrical Input Channel
Clock Recovery Option	
CR4201	1.244 ~ 11.3 Gbps Clock Recovery

★Factory bandwidth option default 100/140/160/EOC

Contact us

Mail

sales@semight.com

Address

No. 1508, Xiangjiang Road, Suzhou New District (SND), Jiangsu , China

Web

Visit www.semight.com for more information.

*This information is subject to change without notice.