ZLG

High-end Industry Analyzing and Universal Testing Instrument

Product Brochure for 2018

Company Profile

**Professor Zhou Ligong,
Academic Leader**

Zhou Ligong, born in March 1964 and Hunan Province, is the founder of Guangzhou ZLG MCU Technology Co., Ltd. and Guangzhou ZHIYUAN Electronics Co., Ltd., a professor and a well-known technical expert in embedded system. He has published more than 40 university textbooks and monographs about embedded system technology and won 2 first prizes for provincial teaching achievement and 1 second prize for national teaching achievement.

Guangzhou ZHIYUAN Electronics Co., Ltd. is affiliated with ZLG Group. It was founded in 2001 by Professor Zhou Ligong, a famous embedded system expert.

As a leading provider of industrial IoT system solutions in China, ZLG ZHIYUAN Electronics specializes in electronics field and provides competitive professional solutions ranging from data acquisition, communication network, control implementation to cloud computing, help users create value. We focus on strategy, invest continuously in high-accuracy data acquisition, wireless communication, field bus and embedded control technology and drive innovation with user demand and cutting-edge technology to promote the industry progress. ZLG ZHIYUAN Electronics invest more than 20% of sales revenue in R&D every year. More than 55% of employees are engaged in innovation, research and development. Our company holds core positions in many standard organizations, creates value for the development of industrial Internet in China.
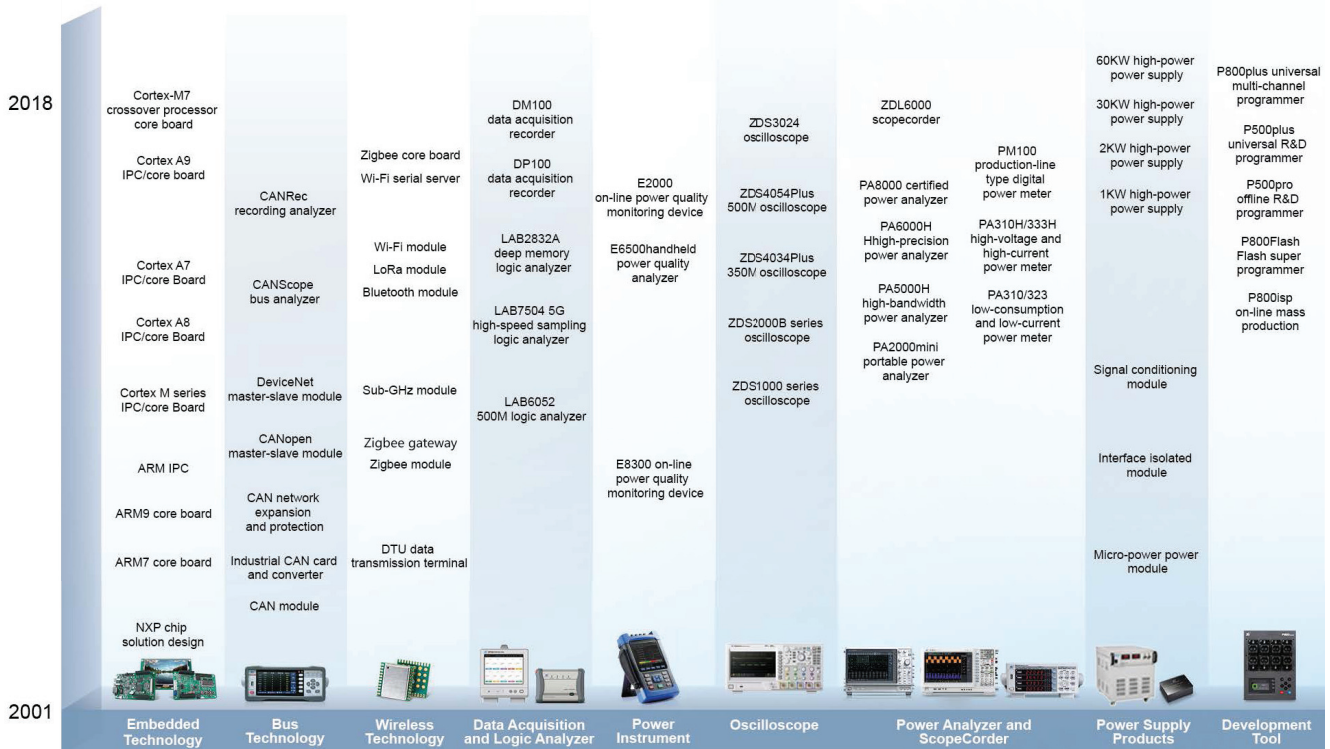
Roadmap for all-series products of ZHIYUAN Electronics

Content

Universal Testing Instrument

High-end Industry Analyzing Instrument

ZDS4000 Series Data Mining Oscilloscope

Opening a new era of data mining and analysis

By capturing 512M massive waveforms and having an in-depth data mining capability, and a smooth operation experience based on a full touch screen, ZDS4000 series data mining oscilloscopes offer a brand new model of analysis to locate problems.
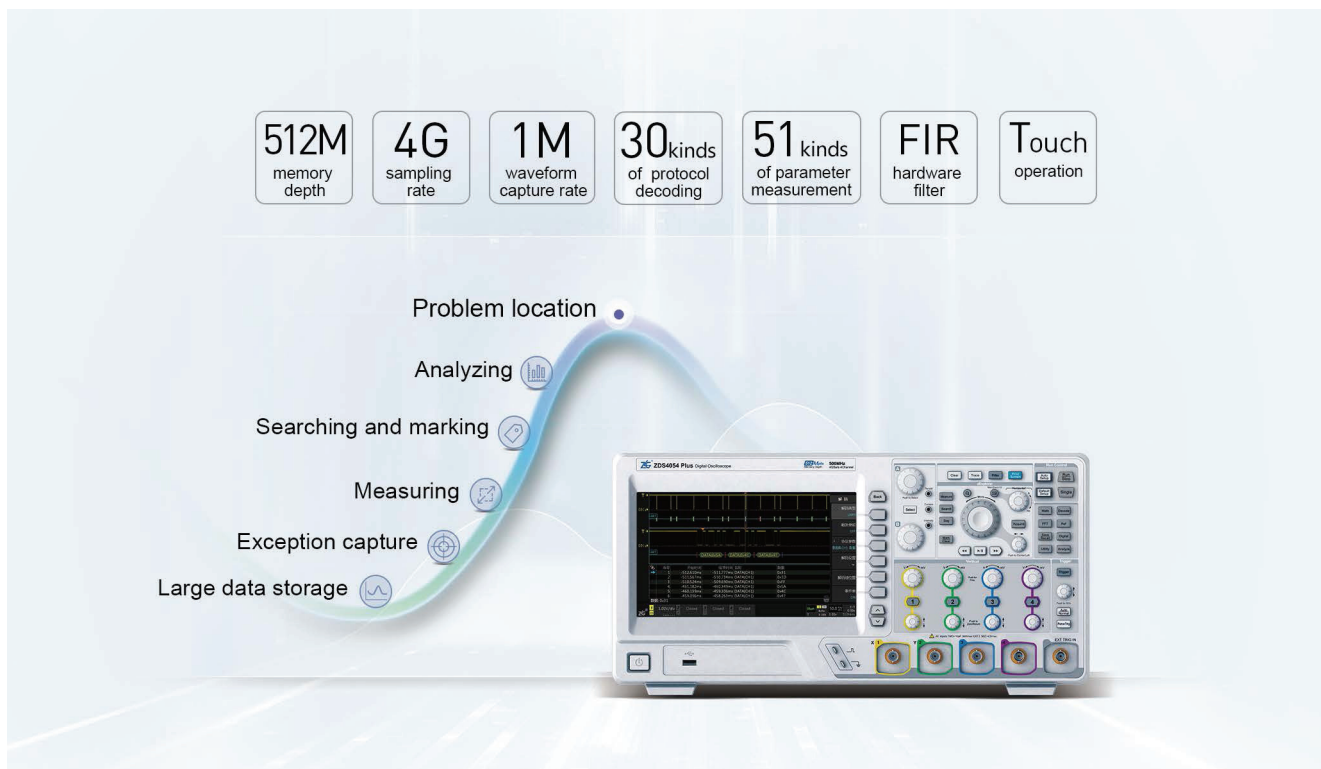

Parameters Table

Model	ZDS4054 Plus	ZDS4034 Plus	ZDS4024 Plus
Input channel	4	4	4
Analog bandwidth	500MHz	350MHz	200MHz
Maximum real-time sampling rate	4GSa/s, use every two channels interleaved		
Memory depth	512Mpts	512Mpts	512Mpts
Maximum waveform capture rate	1Mwfms/s	1Mwfms/s	1Mwfms/s
Range of time base	500ps/div-1ks/div	500ps/div-1ks/div	500ps/div-1ks/div
Range of vertical sensitivity (1:1)	2mv/div ~ 10V/div	2mv/div ~ 10V/div	2mv/div ~ 10V/div
Input impedance	1MΩ/50Ω	1MΩ/50Ω	1MΩ/50Ω
Protocol decoding (standard configuration)	Over 30 kinds of protocol decoding, including UART, SPI, I2C, USB, PS/2, DALI, Wiegand, 1-Wire, DS18B20, HDQ, SD_SPI, SD_SD, IrDA, Manchester, DiffManche, Miller, DHT11, SHT11, NEC, RC5, RC6, CAN, LIN, FlexRay, CAN FD, MVB, ISO7816, Modbus, WTB, MIL-STD-1553B, MIPI_DSI.		
Hardware FIR filter	Supported	Supported	Supported

Step1 of data mining:512M large data storage

The memory depth is the product of sampling rate and sampling time. 512M large memory depth enables long-time waveforms to be captured without any distortion.

The sampling rate stays as high as **500MHz** in **512M** memory depth. The waveform of **1,024ms** is captured without any distortion.
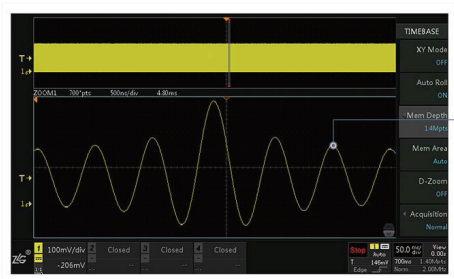

The sampling rate drops to **2M** in a memory depth of **1.4M**. The waveform of **700ms** is captured in total distortion.

Step2 of data mining: Exception capture at 1M capture rate

The faster the waveform capture rate is, the shorter the dead time will be. The ZDS4000 series oscilloscope is equipped with the highest capture rate of 1M waveforms/second in the industry. When combined with the mask trigger function, there is the greatest probability of locating and capturing abnormal signals.

Only oscilloscopes with a **high capture rate** can capture abnormal signals with **low probability of occurrence**.

Full support for dual touch
Simple **area trigger**

## Step3 of data mining: True parameter measurement

The ZDS4000 series oscilloscope measures every period of each frame of the waveform through FPGA full hardware parallel processing. It supports the measurement items as many as 51 kinds and the simultaneous display of 24 parameters.

Supports measurement of **51** parameters
Displays **24 kinds** of parameters simultaneously
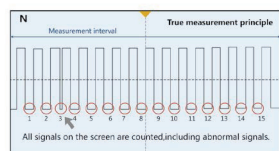
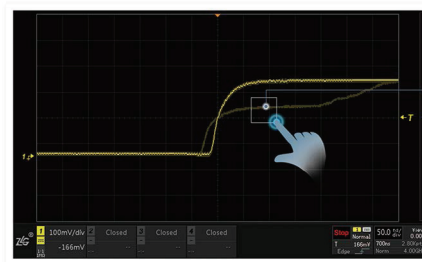For data mining oscilloscopes, all periodic signals can be measured, realizing true measurement.
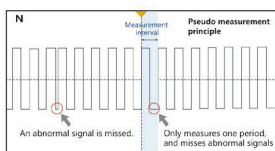
For traditional oscilloscopes, only one periodic waveform is measured near the triggering position, which is a pseudo measurement.

Step 4 of data mining: Waveform searching and intelligent marking

You can locate the abnormal position in 512Mpts waveform data through such search conditions as edge, pulse width, runt, rising/falling time, cycle/frequency, etc; and quickly mark abnormal signals with an intelligent marking function.
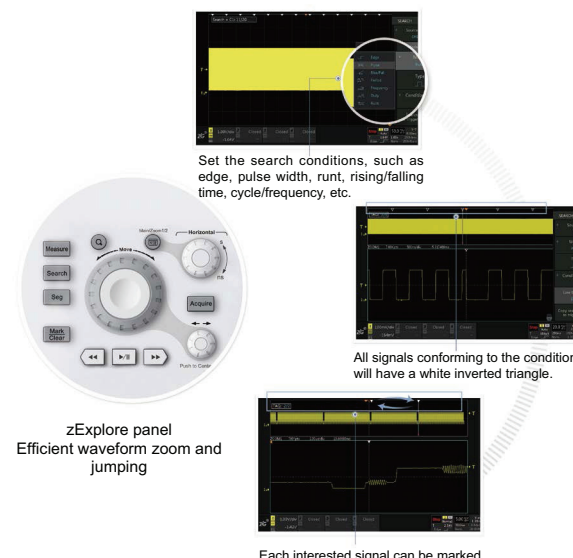
Set the search conditions, such as edge, pulse width, runt, rising/falling time, cycle/frequency, etc.

zExplore panel
Efficient waveform zoom and jumping

All signals conforming to the conditions will have a white inverted triangle.

Each interested signal can be marked.

ZDS3000/2000 Series Universal Oscilloscope

New Standard for Universal Oscilloscopes

Over the last decade, I have been asking myself the same questions every day. Why do users continue to select us even though they have Tektronix and Keysight? If the domestic oscilloscope brands are only synonymous with low prices or shoddy products, then we'd rather give up our business. If we're unable to promote the advancement of industry, then what good are we? In the face of technological blockade, only transcendence can achieve true "Created in China".

Parameters Table

Model	ZDS3054 Plus	ZDS3034 Plus	ZDS3024 Plus	ZDS2024B Plus	ZDS2022B Plus
Input channel	4	4	4	4	2
Analog bandwidth	500MHz	350MHz	200MHz	200MHz	200MHz
Maximum real-time sampling rate	4GSa/s	4GSa/s	4GSa/s	2GSa/s	2GSa/s
Memory depth	250Mpts	250Mpts	250Mpts	250Mpts	250Mpts
Maximum waveform capture rate	330kwfms/s	330kwfms/s	330kwfms/s	150kwfms/s	150kwfms/s
Range of time base	500ps/div ~ 1ks/div	500ps/div ~ 1ks/div	500ps/div ~ 1ks/div	1ns/div ~ 1ks/div	1ns/div ~ 1ks/div
Range of vertical sensitivity (1:1)	2mv/div ~ 10V/div	2mv/div ~ 10V/div	2mv/div ~ 10V/div	2mv/div ~ 10V/div	2mv/div ~ 10V/div
Input impedance	1MΩ/50Ω	1MΩ/50Ω	1MΩ/50Ω	1MΩ	1MΩ
Protocol decoding (standard configuration)	Over 27 kinds of protocol decoding, including CAN, LIN (LIN1.3, LIN2.0), FlexRay, CAN-FD, 1-WIRE, I2C, SPI, UART, USB1.1 (USB2.0 full speed), PS/2, Manchester, DiffManchester, WIEGAND, Miller, DALI, NEC infrared transmission protocol analysis, Philips RC-5, Philips RC-6, DS18B20, SHT11, DHT11, HDQ, SD-SPI, SD-SD, USB-PD, QC2.0/3.0, MDIO				

250M Memory Depth

A sufficient memory depth enables the maximum waveform sampling rate to be achieved, so users can observe a more authentic and delicate waveform. The universal oscilloscope innovatively applies DDR3 storage technology to reach a maximum memory depth of 250M with the help of large-scale FPGA devices, full hardware acceleration, and multithreading parallel processing. Users will not miss waveform details when observing long-duration waveforms.

The sampling rate stays **1G** in **250M** memory depth, and the waveform detail is crystal clear.

The sampling rate drops to **20M** in a memory depth of **1.4M**, and the waveform is in total distortion.

27 kinds of protocol decoding

The universal oscilloscope is unprecedentedly equipped with 27 kinds of protocol decoding for free, including CAN, LIN, I2C, SPI, UART, USB, PS/2, DALI, Wiegand, 1-Wire, DS18B20, HDQ, SD_SPI, SD_SD, IrDA, Manchester, DiffManche, Miller, DHT11, SHT11, NEC, RC5, RC6 and FlexRay. In addition, it is the world's exclusive oscilloscope to be equipped with CAN FD protocol decoding for free.
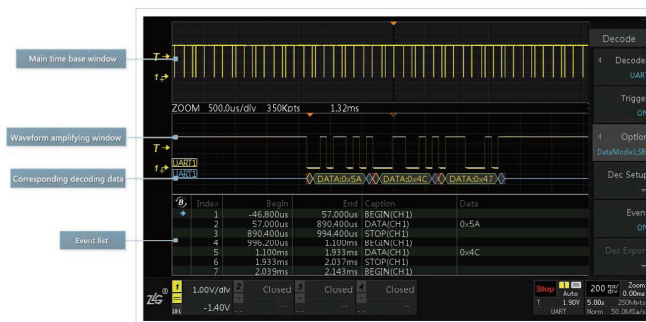

330,000 wfms/s waveform capture rate

Due to the limitations of the waveform synthesizer's real-time processing capacity and waveform display's throughput bandwidth, the waveform capture rate of the universal oscilloscope is generally very low. In addition, there is much dead time when observing the waveform. Therefore, the working efficiency is substantially reduced. The universal oscilloscope uses a large-scale FPG, solves various technical difficulties, and tries different realization approaches for each line of code to seek the best results. Higher waveform capture rate enables users to quickly find abnormal signals, so as to greatly improve working efficiency.

Mask trigger

Engineers may often come across some signals that are hard to capture when debugging the product. Are we able to capture it with an easy and simple method even without any knowledge of the signal's characteristics? Based on the powerful trigger function of the oscilloscope, the R&D group innovatively adds a mask trigger function that is able to isolate any regular abnormal signals with a touch filtration theory. This makes testing simple and fun.

ZDS3024 Customized Oscilloscope for Power Supply Testing NEW

As a general-purpose instrument, the oscilloscope design must balance the needs of different industries. However, power supply engineers only concern about analog signals! Using a general-purpose oscilloscope for power supply testing not only results in resource redundant, but also do not provide dedicated power supply analysis software as a standard configuration. Why can't we customize and optimize a kind of oscilloscope based on the test requirements of power supply engineers. The ZDS3024 is exactly born for this!

Designed for Power Supply Testing

ZDS3024 oscilloscope customized for power supply testing

Customized configuration

Customized software

Customized probe

Customized for power

Parameters Table

| Model	ZDS3024
Input channel	4
Analog bandwidth	200MHz
Maximum sampling rate	2GSa/s
Maximum waveform capture rate	150K wfms/s
Maximum memory depth	250Mpts
Parameter measurement	52 kinds
Trigger modes	33 kinds
Protocol decoding	25 kinds
Number of FFT points	4Mpts
Waveform searching type	7 kinds
Digital filtering	Supported
Screen size	9-inch touch screen

Customized configuration: 200M bandwidth, 2G sampling rate

After visiting dozens of domestic first-line power supply companies, we learned that the 200M bandwidth is the best choice for the entire power supply industry. From the point of view of instrument measurement principle, the sampling rate of above 2G is relatively redundant for the several hundred K switching devices' waveforms. Therefore, we finally optimized the characteristics of all devices to the limit based on the common power supply test items with a final custom configuration of 200M bandwidth and 2G sampling rate.


Customized software: one-key measurement for switching loss

The switching loss test of PFC MOS is a difficult point in the power supply debugging. Since the voltage and current waveforms of different cycles are not the same, and the accurate assessment of power loss is more dependent on the waveform acquisition in the high sampling rate for long time, the memory depth and number of original power loss calculation points is the key of the accuracy of switching loss. With the standard configuration of 250M memory depth and the full hardware acceleration process optimization, the ZDS3024 oscilloscope is able to accurately quantify the power loss of switching devices.
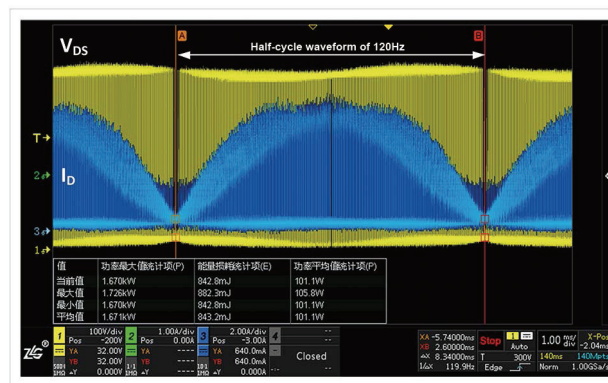
Customized software: SOA (Safe Operating Area) test

The switching devices often suffer high power consumption for a long time, and the over voltage or over current may cause device damage or even explosion. Although the IDM and VDS parameters are clearly marked in the device manual, the conventional debugging method cannot assess the entire operating cycle of the device. With ZDS3024's customized SOA measurement function, all states of the switching devices in the entire operating cycle can be accurately assessed, and the abnormal probability that the power supply exceeds the safe operating area can be given explicitly so that engineers can easily assess the stability of power supply operation.
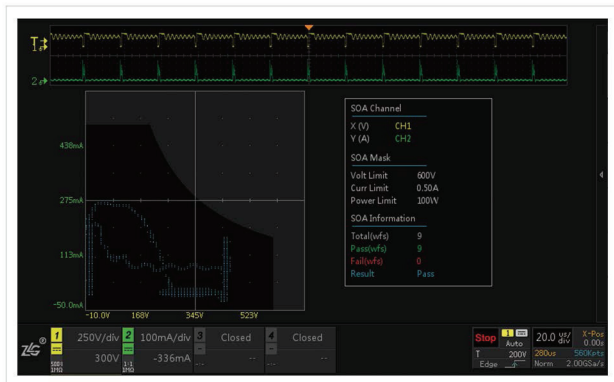
Customized probe: self-owned high-voltage differential probe

With their leading technology, the international oscilloscopes always make the probe a dedicated interface. And it has become an entry for differentiated competition and a high-priced component bundled with the oscilloscope. Over the past three years, ZLG ZHIYUAN Electronics broke through the high-voltage differential probe technology and fully opened all probe interfaces, so that users can freely use the high-voltage differential probe on any brand or any type of oscilloscope.

ZDS1000 Series Basic Oscilloscope

This time, ZLG ZHIYUAN Electronics tried to find the best balance between performance and cost, and designed an entry-level R&D oscilloscope with a "small and convenient" product concept. "Small" focuses on basic R&D testing needs, and "Convenient" pursues the ultimate user experience. We hope that all engineers can experience the R&D oscilloscope's analysis function as soon as they use the instrument.

"Small" focuses on basic R&D testing needs.
"Convenient" pursues the ultimate user experience.

16.04cm

11.82cm

30.94cm

| 28M memory depth | 17 kinds of free protocol decoding | 100k FFT analysis | 51 kinds of parameter measurement | 50K waveform capture rate | Touch operation |

Parameters Table

| Model	ZDS1104	ZDS1074
Input channel	4	4
Analog bandwidth	100MHz	70MHz
Maximum real-time sampling rate	1GSa/s	1GSa/s
Memory depth	28Mpts	28Mpts
Maximum waveform capture rate	50kwfms/s	50kwfms/s
Range of time base	5ns/div ~1000s/div	5ns/div ~1000s/div
Range of vertical sensitivity (1:1)	1mV/div ~ 10V/div	1mV/div ~ 10V/div
Input impedance	1MΩ	1MΩ
Protocol decoding (standard configuration)	17 kinds of protocol decoding, including UART, SPI, I²C, USB, PS/2, DALI, Wiegand, 1-Wire, DS18B20, HDQ, SD_SPI, SD_SD, Manchester, Diff-Manche, Miller, DHT11, SHT11	

28M memory depth

The sampling time is equal to the memory depth divided by the sampling rate. The 28M memory depth effectively guarantees the full utilization of the sampling rate. The long-time waveform can be captured without distortion in the case of the decrease of sampling rate.

Main time base window

Waveform amplifying window

Event list

Corresponding decoding data
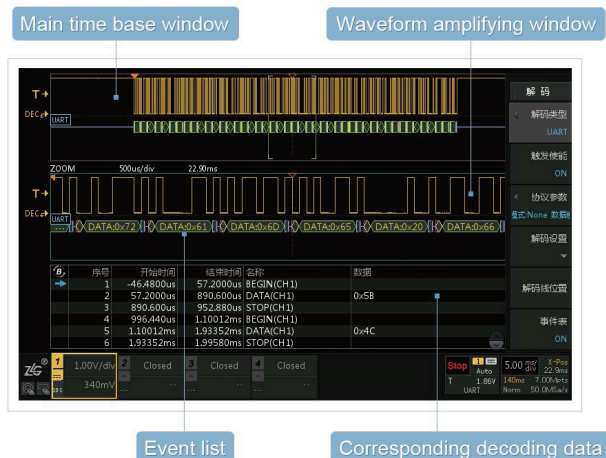
Free standard configuration of 17 kinds of protocol decoding

The ZDS1104 provides 17 kinds of serial protocol decoding as a standard configuration for free. With the ZOOM function, the multi-frame waveforms can be acquired and analyzed against the decoded data.

The data for the duration as many as 7.5 hours can be acquired in the fixed 28M memory depth.
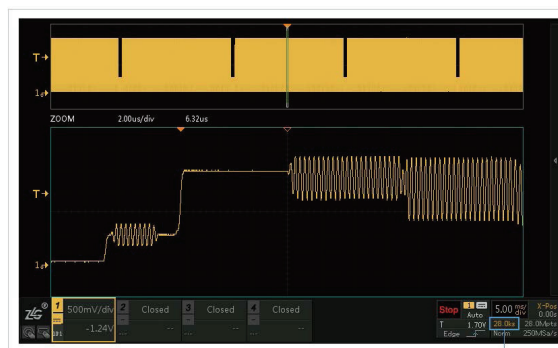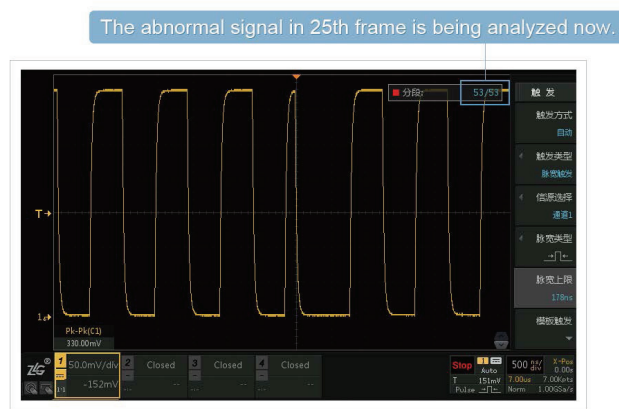
True parameter measurement

The ZDS1104 supports the measurement and statistics for every period of each frame of the waveform. The sufficient data can be measured in the maximum sampling rate and maximum memory depth and all abnormal signals can be captured.

Abnormal signal

The abnormal signal is found during measurement.
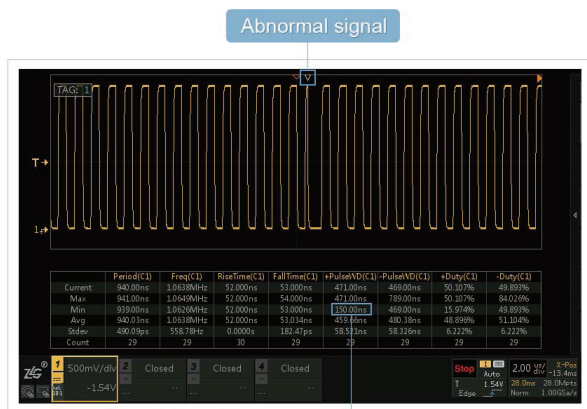
Segmented storage function

When you want to find an abnormal signal that you have already know, set the trigger condition according to the characteristic of this signal. The abnormal signal of each frame can be accurately recorded through the ZDS1104's standard configuration of segmented storage function, and then you can replay and analyze them conveniently.

The abnormal signal in 25th frame is being analyzed now.

View and analyze the abnormal waveform in each frame through the segmented storage function.
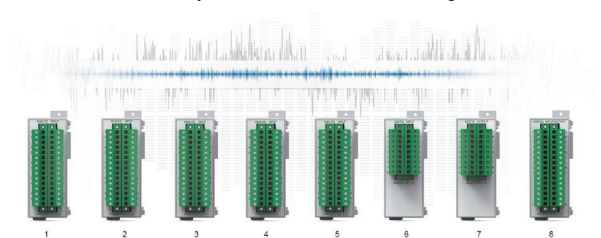
Data Acquisition Recorder

The DM100 and DP100 data acquisition recorders are a universal data acquisition device which provides users with diversified data acquisition modules through modular design framework, comprehensively collects multiple sensor signal data including DC voltage, DC current, digital quantity, temperature, humidity, etc., operates in real time and displays multiple measurement results. Users can conduct user-defined operation for the collected data and achieve high-reliability data storage and recording functions. We provide users with a reliable data acquisition recorder ranging from data acquisition, measurement, operation, storage to recording.


DM100

DP100

High-precision acquisition and excellent anti-interference capability

With a DC voltage measurement accuracy of 0.05%, analog signal acquisition module adopts a 32-bit high-precision ADC for sampling and has excellent low-temperature drift performance. It can conduct synchronous sampling with the fastest sampling period of 100ms/10 points. The isolation voltage resistance of up to 1,000V AC between the channels can effectively shield the interference among the channels.


Dual network port design, maximally expand to 200 acquisition channels

Users can perform the cascade of multiple machines and the remote operations through Ethernet cable, flexibly increase or decrease the type and number of data acquisition modules. Maximum 200 acquisition channels can be expanded. When measuring places are scattered, it can avoid connecting signal lines over long distances.

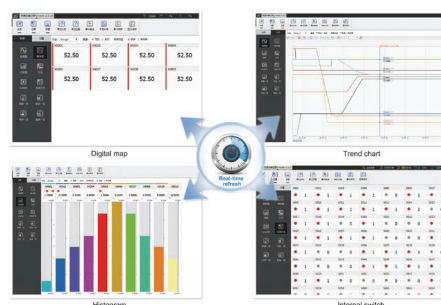Main unit: Laboratory data monitoring   Subunit: Installed in the measuring site
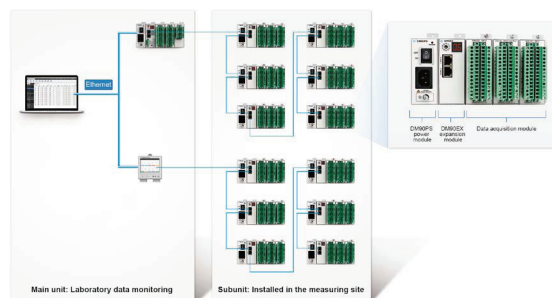
Quadratic operation directly measure the temperature rise value

In the temperature measurement, the Delta operation function is used to directly measure the temperature rise value, eliminating manual calculation steps and improving the accuracy and efficiency of test.

Quadratic operation

Operation channel setting interface   DP100 data acquisition recorder   DM100 data acquisition recorder
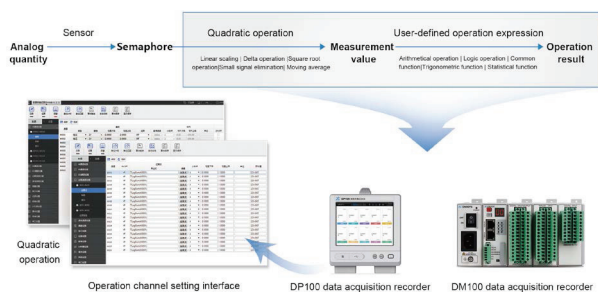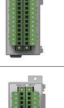
Display multiple measurement results

The acquisition channels of the data acquisition module are measured independently, and users can group, measure and configure any channel. The operation interface is refreshed in real time, displaying multiple states and measurement results such as trend chart, digital map, histogram and internal switch state. The measurement results are clear at a glance.

Digital map   Trend chart

Histogram   Internal switch

Product Selection

Category		Product image	Name	Model	Number of channels	Descriptions
Host			Host of data acquisition recorder	DM100	-	No display screen
			Host of data acquisition recorder	DP100	-	5.7- inch LCD touch screen
Expansion module			Expansion module	DM90EX	-	Communication connection between host and expansion unit and between expansion units
Power module			Power module	DM90PS	-	Supply power for DM100 and DM90EX
Data acquisition module	Analog quantity		Universal analog input module	DM90XA-10-U2-3	10	DC voltage, GS standard voltage, RTD thermal resistance, DI level/ contact input can be measured.
			Universal analog input module	DM90XA-10-U3-3	10	DC voltage, GS standard voltage, TC thermocouple, RTD thermal resistance, DI level/ contact input can be measured.
			Analog current input module	DM90XA-10-C1-3	10	DC current and GS standard current can be measured.
			Relay scanning analog input module	DM90XA-10-T1-3	10	DC voltage, GS standard voltage, DI level/ contact input can be measured. The scanning period is minimum 1s.
			Relay scanning analog input module	M90XA-10-T2-3	10	DC voltage, GS standard voltage, TC thermocouple, DI level/ contact input can be measured. The scanning period is minimum 1s.
	Digital quantity		Digital input module	DM90XD-16-11-3	16	DI level/contact input and pulse can be measured.
			Digital output module	DM90YD-06-11-3	6	It can be used as relay output (C-contact) when an alarm occurs. Output (ON/OFF) can be conducted manually via touch screen.
			Digital input and output module	DM90WD-0806-01-3	14	There are 8 DI digital input channels and 6 DO digital output channels. DI channel can measure DI pulse. DO channel can select excitation mode and non-excitation mode.

Logic Analyzer

Outstanding timing and protocol analysis to solve difficulties of circuits with ease

The logic analyzer is a kind of waveform analytical equipment similar to an oscilloscope. It is able to acquire the logic level of a circuit continuously, present the signal timing relationship through memory and waveform display intuitively, and help users debug communication problems quickly in circuits.

Key Features

Supports high-speed sampling

5GHz sampling rate to acquire any spurious signals with accuracy.
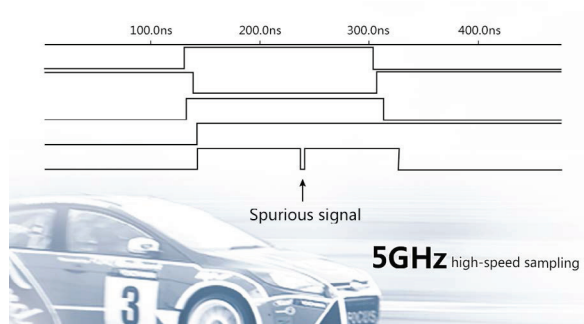
Deep memory depth

The memory capacity of a single channel is 128Mbits. It supports compressed storage (timing, state and timingstate), so users can set flexibly according to actual measured signals for recording waveforms with longer times.

The memory capacity of a single channel is

128Mbits
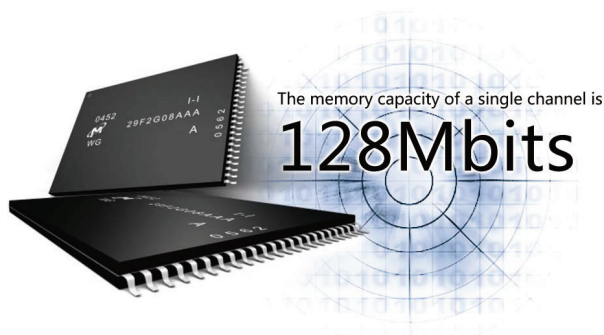
Powerful trigger function

It supports prompt triggering, edge triggering, level triggering, data triggering, combination triggering, delay triggering, data count triggering, protocol triggering, advanced triggering and visual triggering for helping users to acquire interested logic signals.

Powerful protocol analysis and decoding functions

It is able to debug more than 40 kinds of buses with ease, including USB, CAN, SPI and CF card. Moreover, its protocol data can be derived as CSV files for archiving and analysis by the third-party software.

Product Selection

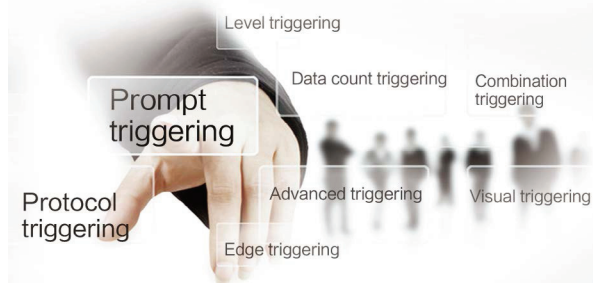| Product Series	Flagship Model			Deep Memory							
Appearance											
Model	LAB7504	LAB6052	LAB6022	LA2832A plus	LA2832A	LA2532A	LA2232A	LA1832A plus	LA1832A	LA1532A	LA1232A
Memory capacity(bits)	2G	1G	1G	2G	1G	512M	256M	2G	1G	256M	32M
Memory depth(bits/CH)	64M/128M (half-channel)	32M	32M	64M	32M	16M	8M	64M	32M	8M	1M
High-speed timing sampling rate	5GHz	--	--	--	--	--	--	--	--	--	--
Segmented memory (number of segments)	--	--	--	65536	32768	16384	8192	65536	32768	8192	1024
Maximum timing sampling rate	500MHz/1GHz (half-channel)	500MHz	200MHz	200MHz	200MHz	200MHz	200MHz	100MHz	100MHz	100MHz	100MHz
Maximum state sampling rate	250MHz	250MHz	80MHz	80MHz	80MHz	80MHz	80MHz	30MHz	30MHz	30MHz	30MHz
Bandwidth	250MHz	250MHz	80MHz	80MHz	80MHz	80MHz	80MHz	30MHz	30MHz	30MHz	30MHz
Input channel	34CH	32CH	32CH	32CH	32CH	32CH	32CH	32CH	32CH	32CH	32CH
Record mode	--	--	--	Supported	Supported	Supported	--	Supported	Supported	--	--
Channel multiplexing	32CH/16CH	--	--	32CH/16CH/8CH							
Compressed storage	Supported			Supported							
Frequency meter	Supports 2 channels			Supports 32 channels							
Logic pen	Supported			Supports 32 channels							
External trigger	Supports trigger output and input			Supports trigger output and input							
Input range	-30V~+30V			-30V~+30V							
Probe parameters	100KΩ/15pF			1MΩ/15pF							
Threshold voltage	-10~+10V			-6~+6V							
Power supply	DC 12V@2A（internal: positive; external: negative.）			DC 5V@1A（internal: positive; external: negative.）							

P800Flash Programmer for Mass Production

With the combination of a new design architecture and high performance FPGA, P800Flash programmer achieves high speed and stable programming. It has supported many mainstream Flash chips, such as Nor, NAND, eMMC, and brings a new programming experience for factory production with the help of user-friendly operation interface.

Break through traditional programming experience
P800Flash Programmer for Mass Production

4.3

SD

4.3-inch touch LCD screen | True offline | Multi-channel programming | Support for automated production line

Product Selection

Model	P500plus	P800isp	P800Flash
Physical picture			
Communication interface	Network interface, serial port, USB		
Display screen	4.3-inch touch LCD screen		
Encryption protection	Project encryption, chip encryption and mass production limit		
MCU	Supported	Supported	Not supported
Large-capacity Flash	Supported	Customized	Supported
eMMC	Supported	Not supported	Supported
Online programming	Supported	Supported	Not supported
Offline programming	Supported	Not supported	Supported
Offline	Supported	Supported	Supported
Maximum number of programming channels	4	4	8
Software upgrade	Free of charge	Customized	Free of charge
Recommended usage scenarios	R&D, small batch production	Mass production	Mass production

Support for chips from various semiconductor manufacturers, more versatile

The P800 series programmer will achieve the ultimate in versatility. New chip sequences are added continuously with the development of chip industry and the needs of users, and updated weekly. Users can download the latest firmware from the official website of ZHIYUAN Electronics for free, breaking the restriction of traditional programmer tools' single chip support type.

Exclusive full offline and more flexible operation

Combined with embedded operating system, the P800 series programmer creates, configures and operates projects on the machine itself, and solves the problem that traditional programmers in the industry cannot be separated with computers, which not only saves the equipment costs, but also facilitates to arrange the use of programmer in any place.

Complete automatic control protocol, more intelligent programming

The P800 series programmer has a complete automatic control protocol. It provides rich interface functions and DLLs for users' secondary development, meets the integration requirements of FCT, ICT and other testing instruments, which achieve perfect transition from programming to testing process, improves the production efficiency, realize the production line upgrade of new automation factory.

Encryption protection for full intellectual property right protection

The P800 has a reliable encryption mechanism, which can not only encrypt the chip, but also limit the number of engineering mass production, so that R&D engineers can send the solution to the factory for production with confidence. It provides powerful management and control capability.

Adapter

Adapter head: the global best brand of adapter head is used and it is provided by manufacturer itself, so the quality can be guaranteed.
Life time: Used with the P800 series programmer, it has long life time and is convenient and durable. To ensure proper programming, please use the original adapter made by ZLG ZHIYUAN Electronics.
Compatibility: it is compatible with the chip with same package to its maximum extent, reducing users' costs.

Package	Adapter
QFN/MLF/···	ZY032A ZY044A ZY048A ······
PLCC/CLCC/ JLCC/LDCC/···	ZY101A ZY115B ZY144A ······
TSOP/TSSOP/ SSOP/···	ZY200A ZY248A ZY290A ······
SOP/PSOP/SOIC/ SOT/HSOP/···	ZY301A ZY306A ZY344A ······
DIP/DIL/SDIP/ SIP/ZIP/···	ZY402A ZY403A ZY464A ······
QFP/PQFP/TQFP/ LQFP/···	ZY500A ZY503A ZY512A ······
BGA/EBGA/ SBGA/LBGA/···	ZY800A ZY802A ZY804A ······
Other special adapters. It has a circuit, and the package is not restricted.	ZY901A ZY906A ZY907A ······

ZDL6000 Scopecorder

The ZDL6000 scopecorder offers a variety of input boards to suit the test requirements in different scenarios. Up to 20 kinds of input boards can be selected and one scopecoder can be equipped with at most 8 boards at one time.

26 kinds of boards   **8** slots

Analog voltage measurement boards

Model	DQM-12180	DQM-16250*	DQM-12490-58*	DQM-12290-28*	DQM-12290-22*
Sampling rate	100MS/s	200kS/s	4GSa/s	2GSa/s	2GSa/s
Resolution	14bit	16bit	8bit	8bit	12bit
Bandwidth	DC,20MHz	DC,15kHz	DC,500MHz	DC,200MHz	DC,200MHz
Number of channels	2	16	2	2	2
Isolated	Isolated	Isolated	Non-isolated	Non-isolated	Non-isolated
Maximum input voltage	200V(DC+ACpeak)	42V	50Vpp	50Vpp	50Vpp
DC accuracy	±0.5%	±0.3%	±2%	±2%	±1%

CAN boards

Model	DQM-62151*
Number of channels	2 channels
Electrical isolation	Isolated
Interface	DB-9 male
CAN physical layer protocol	CAN2.0A/B and CAN FD
Terminal resistance	120Ω, selected through a relay
Number of channels	2
CAN FD baud rate	25kbit/s~5Mbit/s
High-speed CAN baud rate	25kbit/s~1Mbit/s
Custom baud rate	25kbit/s~1Mbit/s
Isolated withstand voltage	1500Vrms

Boards in development

Board names	
15MS/s voltage acquisition board (2ch)	Vehicle Ethernet board (2 ch)
2MS/s voltage acquisition board (2ch)	30MHz signal generator (2 ch)
500S/s voltage, temperature acquisition board (2 ch)	120MHz signal generator (2 ch)
10S/s voltage, temperature acquisition board (16 ch)	Voltage, current and resistance measurement of digital multi-meter board (1 ch)
Acceleration, voltage board (2 ch)	$6^1/_2$ voltage board
Frequency measurement board (2 ch)	Resistance simulation board (1 ch)
500MS/s logic analyzer board (32 ch)	Digital I/O board (16 ch)
5GS/s logic analyzer board (32 ch)	0~30V, 15W power supply output board (1 ch)
CAN, LIN board (2 ch)	-15~15V, 15W power supply output board (2ch)
Strain gauges measurement board (2 ch)	30W programmable electronic load

"*" indicates it will be launched in 2018. The boards in development will be released in 2019.

0.03% metrology-level board accuracy

Accuracy is the basis of testing. The oscilloscope board of ZDL6000 provides metrology-level measurement accuracy regardless of the sampling rate requirements. With a measurement accuracy of 0.03%, the 15M sampling board is ideal for accurate measurement of new-material power electronic devices such as SiC, GaN. The 100M sampling board still achieves a measurement accuracy of 0.3% and supports 16 channels of simultaneous full isolation measurements.

0.03%
measurement accuracy
15M sampling board

0.3%
measurement accuracy
100M sampling board

Full isolated measurement between boards

Each scopecorder is equipped with 8 board slots as standard configuration, and each input channel is insulated and isolated from each other to ensure the accurate measurement in the complex environments such as strong interference and multiple reference voltages.

Each input channel is
insulated and isolated from each other

Multiple signals are combined freely

The scopecorder can provide various input boards such as voltage, current, CAN and temperature, etc... The number of channels can be up to 128. Users may freely combined electrical and physical signals according to specific test requirements so as to meet the test needs in various scenarios.

All channels are tested simultaneously

The scopecorder is integrated with a high-stability and temperature-compensated 100MHz synchronous clock to avoid the measurement error due to clock drift caused by the temperature. Meanwhile, it guarantees the synchronous sampling phase of each ADC channel, which reduces the error due to phase angles between channels during measurement, and the error is within 3ns, which ensures the synchronous testing of all channel signals.

100MHz synchronous clock
Phase error is within 3ns
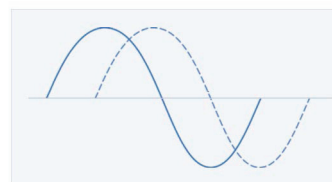
AC Power Source

With the gradual improvement of the new energy market, power source interference test requirements are also increasing, which requires that the power source not only has the characteristics of harmonics and grid interference simulation, but also meets specific test specifications and IEC standard. The PWR series AC power source is gradually replacing the traditional power source, becoming the best choice for engineers to test.

The PWR series AC power source is a high-performance test power source. Based on the unique 10kHz frequency conversion feature, it can easily simulate any combination of waveforms. Either the simulation for gradual waveform change of voltage and frequency or the interference simulation on test circuits can be easily performed. With a convenient and easy-to-use software platform, engineers can also conduct in-depth analysis for products based on the IEC61000-4 series standards to maximize the characteristics of AC power source interference simulation.

Core Specifications

- Output voltage range: 0~150Vrms/0~300Vrms.
- Output mode: DC, AC, DC+AC.
- Comprehensive protection function: OV, OC, OP, OT.
- Arbitrary waveform output.
- Auxiliary I/O control function.
- Output parameters measurement: current, voltage and power measurement as well as harmonics analysis.

- IEC61000-4 standard analysis.
- 4.3 inch LCD, simple user interface for easy and intuitive operation.
- Good operability: rich and fast function keys.
- Synchronous interface, support for multi-machine parallel output.
- Standard RS232, USB, Ethernet and GPIB interfaces for quick and easy connection to PC.
- Equipped with PC software for remote control.

Interface

Both PWR1000W and PWR1000L AC power source are equipped with rich interfaces for communication and secondary development.
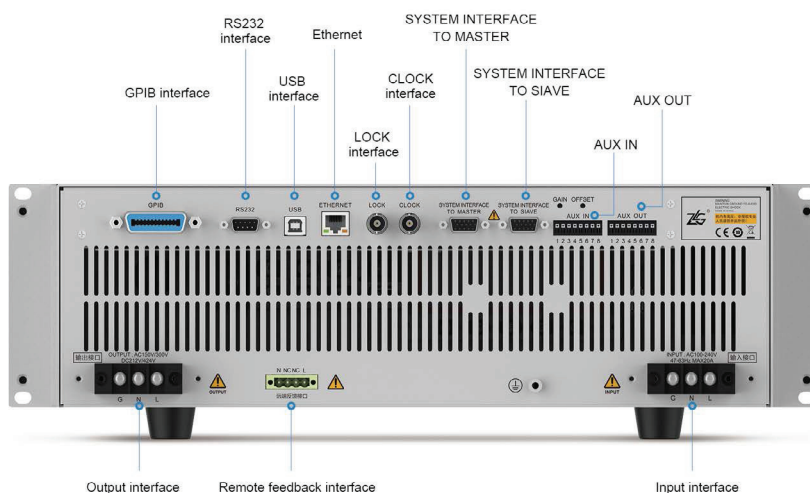
Specifications

Specifications		PWR1000L		PWR2000W	
Maximum output power (VA)		1000VA		2000VA	
Type		Linear power supply		Switching power supply	
AC Output					
Voltage (rms)	AC	L output position	0~150V	L output position	0~150V
		H output position	0~300V	H output position	0~300V
Current (rms)	AC	L output position	10A	L output position	20A
		H output position	5A	H output position	10A
Phase		Single-phase		Single-phase	
Maximum repeatable peak current (peak)		Maximum current (rms) x3		Maximum current (rms) x3	
Load power factor		0-1 (leading or lagging)		0-1 (leading or lagging)	
Output frequency		0.1Hz~10kHz		1Hz~1kHz	
Load regulation	0-100% restrictive load	0.2% FS（≤1kHz）		0.5% FS	
		（0.2%+0.05% /kHz）F.S.（1kHz~10kHz）			
Linear regulation	10% Line	0.1% F.S.		0.1% F.S.	
DC offset		<20mV		<20mV	
Harmonics distortion (THD)		0.2%（1~500Hz）		0.5%（1~500Hz）	
		0.3%（>500Hz~1kHz）		1%（>500Hz~1kHz）	
		1%+0.2%/kHz（>1kHz~10kHz）			
Output resolution	Voltage	100mV		100mV	
	Frequency	0.01Hz（0.1Hz~100Hz）		0.01Hz（0.1Hz~100Hz）	
		0.1Hz（>100~1kHz）		0.1Hz（>100~1kHz）	
		1Hz（>1kHz~10kHz）			
	Phase	0.1°		0.1°	
Accuracy@23~±5°C	Voltage(Output % + offset)	0.3% + 0.6V（≤1kHz）		0.3% + 0.6V	
		0.3% + 0.6V+0.2%/kHz（>1kHz~10kHz）			
	Frequency(Output % + offset)	0.01% +0.01Hz		0.01% +0.01Hz	
	Phase(±)	1°		1°	
Response time		60uS		150uS	
AC+DC/DC Output					
Voltage(rms)	DC	L output position	0~212V	L output position	0~212V
		H output position	0~424V	H output position	0~424V
	AC+DC	L output position	0~150V	L output position	0~150V
		H output position	0~300V	H output position	0~300V
Maximum current(rms)	AC+DC/DC	L output position	7A	L output position	10A
		H output position	3.5A	H output position	5A
Load regulation	0~100%	0.2% F.S.		0.2% F.S.	
Linear regulation	10% Line	0.1% F.S.		0.1% F.S.	
Output resolution	Voltage	100mV		100mV	
Accuracy@23~±5°C	Voltage(Output % + offset)	0.05% + 0.1V		0.05% + 0.1V	
Ripple(rms)	5Hz-1MHz	<300mVRMS		<300mVRMS	
Protection characteristics					
Protection	Overload	OV\OC\OP		OV\OC\OP	
	Over temperature	OT		OT	
Measurement characteristics					
Voltage	Range	AC:0~300Vrms，DC:0~440Vdc		AC:0~300Vrms，DC:0~440Vdc	
	Resolution	0.01V		0.01V	
Current	Range	AC:0~10Arms；peak:4×rms		AC:0~20Arms；peak:4×rms	
	Resolution	0.01A		0.01A	
Power	Range	AC:0~1000VA		AC:0~2000VA	
	Resolution	0.1VA		0.1VA	
Measurement accuracy @23℃ ±5℃	Voltage(Output % + range %)	0.2%+0.2%F.S.（≤1kHz）		0.2%+0.2%F.S.	
		0.2%+0.2%F.S. + 0.2%/kHz（>1kHz~10kHz）			
	Current(Output % + range %)	0.4%+0.3%F.S.（≤500Hz）		0.4%+0.3%F.S.（≤500Hz）	
		0.4%+0.3%F.S.+0.5%/kHz(>500Hz~10kHz)		0.4%+0.3%F.S.+0.5%/kHz（>500Hz~1kHz）	
	Power(Output % + range %)	0.4%+0.4%F.S（≤500Hz）		0.4%+0.4%F.S（≤500Hz）	
		0.4%+0.4%F.S.+0.5%/kHz(>500Hz~10kHz)		0.4%+0.4%F.S.+0.5%/kHz（>500Hz~1kHz）	
	Frequency accuracy (Output% + offset)	0.1%+0.01Hz		0.1%+0.01Hz	
Harmonics measurement accuracy	Voltage accuracy (Output% + offset)	0.5%+0.2%F.S.+0.2%/kHz		0.5%+0.2%F.S.+0.2%/kHz	
	Current accuracy (Output% + offset)	0.5%+0.4%F.S.+0.2%/kHz		0.5%+0.4%F.S.+0.2%/kHz	
	Fundamental wave frequency range	15-1000Hz		15-1000Hz	
	Harmonic order	Fundamental wave frequency: 10~150Hz	0~99	Fundamental wave frequency: 10~150Hz	0~99
		Fundamental wave: 150Hz~500Hz	0~63	Fundamental wave: 150Hz~500Hz	0~63
		Fundamental wave: 500~1000Hz	0~34	Fundamental wave: 500~1000Hz	0~34
Routine characteristics					
Input voltage		100~240Vac±10%，L-N，Single phase		100~240Vac±10%，L-N，Single phase	
Frequency		47~63Hz		47~63Hz	
Maximum current(rms)		Max20A		Max20A	
Power factor		0.97(Typical value)		0.97(Typical value)	
Efficiency		>56% , resistive load (full load)		>75%, resistive load (full load)	
Operating temperature		0~40℃		0~40℃	
Storage temperature		-10~60℃		-10~60℃	
Operating environment		20%~80% R.H.，No condensation. Altitude<2000m. indoor use.		20%~80% R.H.，No condensation. Altitude<2000m. indoor use.	
Dimensions1（H×W×D）		3U，132.8×425×585mm		3U，132.8×425×585mm	
Weight		About 27kg		About 27kg	

Notes: 1. Shell dimensions (not overall dimensions).

CAN-bus Analyzer

A global unique solution to fault location, interference elimination, reliability testing

As the ultimate tool for CAN bus development test, the CANScope-pro analyzer is integrated with mass storage oscilloscope, network analyzer, bit error rate (BER) analyzer, protocol analyzer and reliability testing tools. Moreover, it organically integrates and connects different instruments; redefines the development testing method of CAN bus, and evaluates the correctness, reliability, and rationality of CAN network communication from multiple angles. Furthermore, it helps users quickly locate faults and solve any problems concerning the CAN bus application.

• Analyzes CAN bus in multiple layers while comprehensively measuring and analyzing CAN bus from physical, protocol and application layers.

• 13,000-frame over length waveform storage capacity.

• A reliable message recording and analysis function to enable a comprehensive mastery of messages.

• Oscilloscope with a FFT function to enable quick location of bus interference frequency.

• Practical message relay function to reproduce bus error precisely.

• Support for hardware eye diagrams to evaluate bus quality rapidly.

• Support for software eye diagrams to locate problem nodes accurately.

• Support for its network sharing function to solve problems easily and remotely.

• Useful event marking function to maximize storage of user-concerned waveforms.

• A powerful bus interference function to test bus anti-interference ability.

CANDT Conformance Test System —— CAN-bus Security System

The CANDT conformance test system can automate the conformance test of CAN node's physical layer, link layer and application layer. It is the only instrument in current CAN bus test field that can complete the physical layer automation test and export the report. It is designed to promote the stable development of CAN bus in various fields such as automotive electronics, military, rail transit, and build a CAN-bus security system to ensure the interconnection and intercommunication of CAN networks.
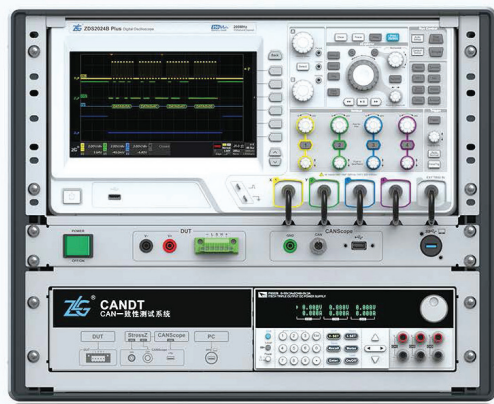
CAN conformance automation test

Exports detailed test report

Vehicle access assessment

Node failure prevention

Meets ISO 11898 standard

Simulation Protocol Test between BMS and Charger

The CANScope can simulate the charger (or BMS) to do the protocol test between the charger (or BMS) and the BMS (or charger), and can be used as a third party to only monitor the communication message between the charger and the BMS. In addition, it can also determine the integrity of the communication protocol between the charger and the BMS in accordance with GBT 27930-2015 (Communication protocols between off-board conductive charger and battery management system for electric vehicle), and export detailed testing report.
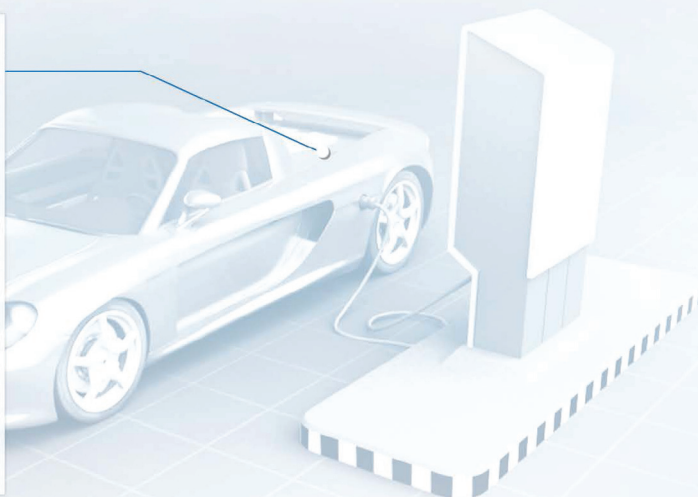
Simulation test

It simulates the charger to do the protocol communication with BMS so as to test the integrity of protocol. The test stage is divided to:
1. Handshake stage
2. Charging configuration stage
3. Charging stage
4. End stage

Stability test

1. Voltage test
2. Edge test
3. Bus delay test
4. Bus utilization test
5. ...

CAN Recording Analyzer

## CANREC Series 8-channel CAN-bus Recording Analyzer

The most difficult point in CAN-bus troubleshooting is accidental faults whose primary causes cannot be diagnosed accurately by users and even CAN experts. For example, CAN data transmission interruption occurs once within 72 hours in the pitch system of wind power generator. Instrument panel of new energy automobile "turns blank" once within a 10,000-kilometer drive, and it cannot be recovered again. High-speed train suffers emergent deceleration once caused by CAN communication abnormality within a 2,000-kilometer drive. Like a time bomb, these accidental CAN communication abnormalities are thrilling designers and users.

As a leading supplier of CAN-bus in China, ZLG ZHIYUAN Electronics has developed the latest CANREC — 8-channel CAN-bus recording analyzer as per customers' requirements. It can operate independently without PC, store CAN messages and waveforms for a long time and enable users to find out the errors and view the waveforms before and after such errors occur.
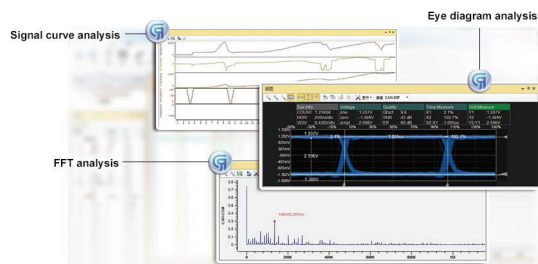
8 CAN channels can work simultaneously

8 channels can record messages simultaneously, and two of them can record waveforms.
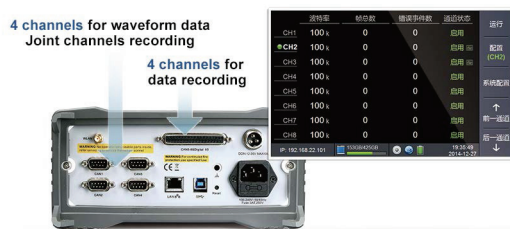
Powerful analysis software

Perform eye diagram analysis, FFT analysis and signal curve analysis for waveforms.

Corresponding view of message and waveform

Corresponding view of message and waveform facilitates the check of waveforms before, during and after the faults.

Maximum 100M sampling rate makes a clear view of waveform possible

Huge solid state disk memory depth

Capture any data waveform without dead zone
Maximum **51 million** waveform frames storage

Professional **2TB** Standard **1TB** Basic **512GB**

CAN interface with 2500VDC electrical isolation (analog channel isolation)

No grounding backflow interference, ±8 KV static contact discharge.

2500V DC Isolation

EMI
EN 55022

ESD
±8KV

CAN baud rate is automatically adaptive or locked forcedly

The baud rate range is 0Kbps~1.5Mbps. Terminal resistance can be enabled or disabled.

CAN baud rate
○5kbps
○10kbps
○50kbps
○100kbps
○125kbps
○250kbps
○500kbps
○800kbps
○1Mbps
○Custom

Recording trigger modes

Only record the bus status before and after faults, and therefore the storage space is saved.

Interference Interference Interference Interference

Record Record Record Record

High-capacity UPS can supply the power for 2-3 hours during power down

Supply the power

3h

UPS power supply

Support for vehicle DBC decoding, CANopen, J1939 protocol, State Grid charging pile and BMS protocol analysis

Features

• 2 channels for mixed CAN analog and digital signal recording (simultaneous storage of CAN messages and corresponding waveforms, 100MSA/s sampling rate).

• 6 channels for CAN digital signal recording (long-time storage of CAN messages).

• Run independently without PC, self-equipped with 2TB solid state disk, and 8 channels work simultaneously to achieve long-time storage (when only messages are stored, 22 days of CAN messages can be stored in the case of 8-channel full traffic recording and 1M baud rate).

• High-capacity UPS can supply the power for 3 hours after power down.

• A 5-inch large screen for displaying current recording status and error condition.

• CAN interface type: high-speed CAN, fault-tolerant CAN, and single-line CAN (dependent on user needs).

• 1-channel USB3.0 Device interface for rapidly exporting data to PC for analysis (professional CANREC can do on-line analysis).

• 1-channel USB2.0 Host interface for exporting data to a U disk.

• 1-channel Gigabit Ethernet interface used for distributed measurement in combination with other instruments (also for exporting data).

• 1-channel Bluetooth interface for communication with handheld terminals.

• Includes all off-line measurement and analysis functions of CANScope analyzer (professional CANREC can do on-line analysis).

• Supply voltage: 220VAC or 12-36VDC (DC power supply uses aviation socket to ensure stability), 20W maximum power consumption.

• Operating temperature range: -25°C~+75°C.

• Dimensions: 220*331.5*109.2mm (mm).

High-precision Power Analyzer

Global Leader in the Power Management Industry

With the improvement of energy efficiency, the demand for higher precision and more reliable power measurement is increasing. As the largest high-end instrument manufacturer in China, ZLG ZHIYUAN Electronics provides users with a variety of selections in different fields, including PA8000 certified power analyzer, PA6000H and PA5000H enterprise-class power analyzer, PA2000mini portable power analyzer, which can meet all power measurement needs.

0.01% accuracy, professional calibration and authoritative certification
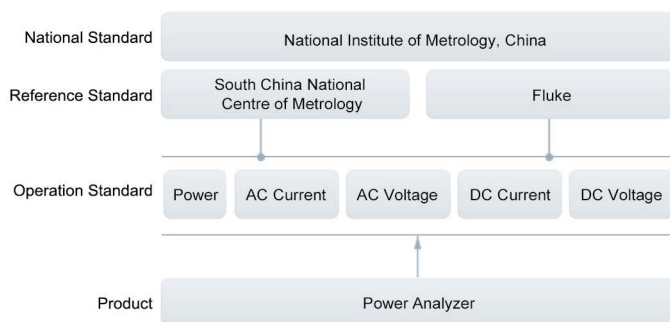
Metrology Certification

CE Certification

PA Power Analyzer Specifications

With the improvement of energy efficiency, the demand for higher precision and more reliable power measurement is increasing. As the largest high-end instrument manufacturer in China, ZLG ZHIYUAN Electronics provides users with a variety of selections in different fields, including PA8000 certified power analyzer, PA6000H and PA5000H enterprise-class power analyzer, PA2000mini portable power analyzer, which can meet all power measurement needs.

	Product	Accuracy	Bandwidth	Sampling Rate	Number of Elements	Voltage, Current Value	Harmonic Order	Storage Capacity
Certified	PA8000	0.01%	DC/0.1Hz~5MHz	2MS/s	7 power elements Any element adaptable to motor element	1500V (1.33 crest factor) 5A/50A	500	60G
Enterprise-class	PA6000H	0.01%	DC/0.1Hz~2MHz	2MS/s	7 power elements Any element adaptable to motor element	1500V (1.33 crest factor) 5A/50A	500	60G
Enterprise-class	PA5000H	0.05%	DC/0.1Hz~5MHz	2MS/s	7 power elements Any element adaptable to motor element	1500V (1.33 crest factor) 5A/50A	500	60G
Portable	PA2000mini	0.05%	DC/0.1Hz~500KHz	500KS/s	4 power elements One optional motor element available Optional battery component available	1500V (1.33 crest factor) 5A	256	4G

AC/DC Current Sensor (optional)

| Brand	Appearance	Model	Sensor Type	Current	Transformation Ratio	Accuracy	Measurement Bandwidth
LEM		IT 60-S	AC/DC current sensor	DC: 0-60A; AC: 42 Arms	1:600	Accuracy: ±(0.05% of rdg + 30uA)	DC~800KHz
LEM		IT 200-S	AC/DC current sensor	DC: 0-200A; AC: 141 Arms	1:1000	Accuracy: ±(0.05% of rdg + 30uA)	DC~500KHz
LEM		IT 400-S	AC/DC current sensor	DC: 0-400A; AC: 282 Arms	1:2000	Accuracy: ±(0.05% of rdg + 30uA)	DC~500KHz
LEM		IT 700-S	AC/DC current sensor	DC: 0-700A; AC: 495 Arms	1:1750	Accuracy: ±(0.05% of rdg + 30uA)	DC~100KHz
LEM		IT 1000-S/SP1	AC/DC current sensor	DC: 0-1000A; AC: 707 Arms	1:1000	Accuracy: ±(0.05% of rdg + 30uA)	DC~500KHz
CA		C117	AC current sensor	Current: 1000 Arms	1mV/A	Accuracy: 0.3% of rdg	30Hz~10KHz
CA		PAC22	AC/DC current sensor	DC: 1400A; AC: 990A rms	10mV/A (150A) 1mV/A (1400A)	Accuracy: 1.5% of rdg Accuracy: 2% of rdg	DC~10KHz
CA		D36N	AC current sensor	Current: 3000 Arms	1mA/A	Accuracy: 0.5% of rdg	30Hz~5KHz

High Precision Digital Power Meter

A new generation of high-precision power meter with perfect 6-level energy consumption to achieve new energy efficiency and new challenge


Product Features

More suitable for the power consumption measurement of switching power supplies and frequency-conversion home appliances

More and more electronic products and home appliances on the market use switching power supply or frequency conversion technology, therefore the waveform signals of these products became distorted while saving energy consumption. Due to the limitations of sampling rate and bandwidth, a normal power meter is not able to accurately measure the high frequency harmonic components and the measured results are totally different from the actual values. The sampling rate of 500KS/s and bandwidth of 500KHz of PA300 series power meter can meet higher bandwidth test requirements.
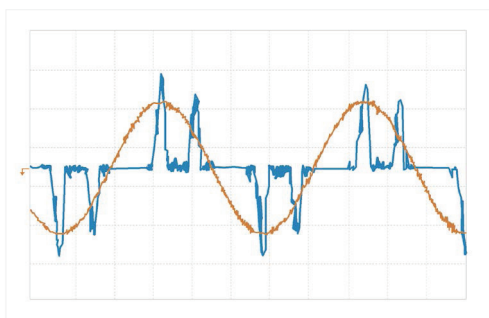
Input signal waveform of a frequency-conversion home appliance
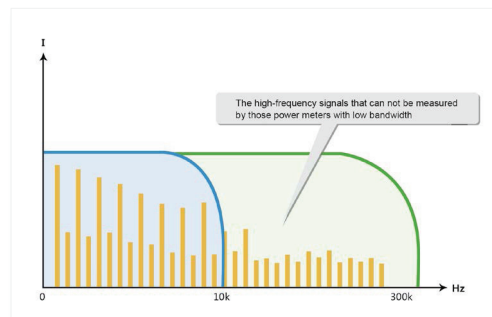
The high-frequency signals have been captured accurately in the bandwidth of 300k.

New design is more suitable for standby power consumption measurement

The PA300 series power meter uses new design architecture and makes much optimization in terms of low power consumption measurement. It has higher power factor accuracy, and very suitable for low power consumption measurement at a low power factor.

Fully compliant with IEC61000-4-7 harmonics measurement standard

The PA300 series power meter adopts pure hardware analog filter and phase-locked loop technology to avoid frequency aliasing and spectrum leakage. It complies with IEC6100-4-7 harmonics measurement standard and ensures the reproducibility of harmonic measurement.
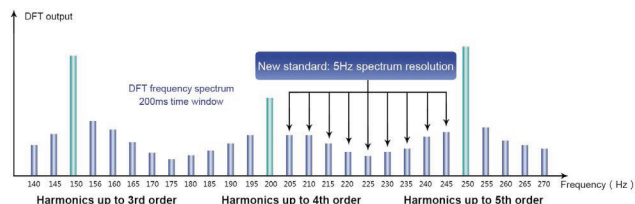
PAM Power Meter Testing Management Software

For many measurement items that cannot be directly displayed by the PA300 series power meter, their management and display can be realized through PAM software, such as all measurement parameter value, each harmonics data, harmonics histograms, trend graphs, waveform graphs, etc.

High-precision Digital Power Meter Selection Guide

Model	High voltage, high current		Low power, low current		Production-line
	PA310H	PA333H	PA310	PA323	PM100
Input element	Single-element	Three-element	Single-element	Three-element	Single-element
Basic accuracy	0.1% reading+0.05% range	0.1% reading+0.05% range	0.1% reading+0.05% range	0.1% reading+0.05% range	0.1% reading+0.10% range
Input bandwidth	DC，0.1Hz-300kHz	DC，0.1Hz-300kHz	DC，0.1Hz-300kHz	DC，0.1Hz-100kHz	DC，0.5Hz-10kHz
Sampling rate	500KS/s	200KS/s	500KS/s	200KS/s	20KS/s
Data update cycle	100ms, 250ms, 500ms, 1s, 2s, 5s, 10s, 20s, Automatic	100ms, 250ms, 500ms, 1s, 2s, 5s, 10s, 20s, Automatic	100ms, 250ms, 500ms, 1s, 2s, 5s, 10s, 20s, Automatic	100ms, 250ms, 500ms, 1s, 2s, 5s, 10s, 20s, Automatic	100ms, 250ms, 500ms, 1s, 2s, 5s
Harmonics measurement	Standard configuration，IEC61000-4-7	Standard configuration，IEC61000-4-7	Standard configuration，IEC61000-4-7	Standard configuration，IEC61000-4-7	/
THD calculation order	1st-50th	1st-50th	1st-50th	1st-50th	/
Voltage range	15V, 30V, 60V, 150V, 300V, 600V, 1000V	15V, 30V, 60V, 150V, 300V, 600V, 1000V	15V, 30V, 60V, 150V, 300V, 600V	15V, 30V, 60V, 150V, 300V, 600V	15V, 30V, 60V, 150V, 300V, 600V
Current range of direct input	1A, 2A, 5A, 10A, 20A, 50A	1A, 2A, 5A, 10A, 20A, 50A	5mA, 10mA, 20mA, 50mA, 100mA, 200mA, 0.5A, 1 A, 2 A, 5 A, 10 A, 20 A	0.5A, 1 A, 2 A, 5 A, 10 A, 20 A	5mA, 10mA, 20mA, 50mA, 100mA, 200mA, 0.5A, 1A, 2A, 5A, 10A, 20A
External sensor input	100mV, 200mV, 400mV, 1V, 2V, 5V, 10V	100mV, 200mV, 400mV, 1V, 2V, 5V, 10V	50mV, 100mV, 200mV, 500mV, 1V, 2V, 2.5V, 5V, 10V	50mV, 100mV, 200mV, 500mV, 1V, 2V, 2.5V, 5V, 10V	/
Communication interfaces	Standard configuration GPIB (In accordance with IEEE488.2), LAN, RS-232，USB-Host	Standard configuration GPIB, LAN、RS-232, USB-Host、USB-Device	Standard configuration GPIB (In accordance with IEEE488.2), LAN, RS-232, USB-Host	Standard configuration GPIB (In accordance with IEEE488.2), LAN, RS-232, USB-Host	RS-232, IO detection

AC/DC Current Clamp (Optional)

Model	ZY-CTS100	ZY-CTS500	C117	LF 205-S/SP3	LF 205-S	LF 505-S	LF 1005-S
Appearance							
Current measurement range	100Arms (AC)	500Arms (AC)	1000Arms (AC)	100Arms (DC/AC)	200Arms (DC/AC)	500Arms (DC/AC)	1000Arms (DC/AC)
Accuracy	±0.3%	±0.3%	±0.3%	±0.5%	±0.5%	±0.6%	±0.4%
Bandwidth	45Hz-5kHz	45Hz-5kHz	30Hz-10KHz	DC-100KHz	DC-100KHz	DC-100KHz	DC-150KHz
Transformation ratio	1 mV/A	1mV/A	1mV/A	1:1000	1:2000	1:5000	1:5000

Junction box (Optional)

Model	JXH10A
Appearance	
Maximum operating voltage	250V
Maximum operating current	10A

E6500 Handheld Power Quality Analyzer

E6500 handheld power quality analyzer can record and analyze all power quality parameters such as harmonics, voltage, current, frequency, fluctuation, flicker, power and three-phase unbalance on site, as well as possess transient electrical energy monitoring, waveform recording analysis, energy-efficiency loss assessment, inverter measurement and other advanced measurement functions. The analysis software running on PC performs secondary analysis for measurement results, providing accurate data basis for power quality management.

A

Supported standard
IEC61000-4-30 A

Perform strict tests in accordance with the international IEC61000-4-30 Class A standard.

Core Technical Specifications

- Flicker accuracy: ± 5%
- Voltage accuracy: 0.1%
- Frequency: 50Hz/60Hz
- Measurement cycle: 10/12 cycle
- Frequency bandwidth: 42.5-69Hz
- Voltage unbalance: ± 0.2%
- Current unbalance: ± 0.5%
- Maximum sampling frequency: 200kHz
- Current accuracy: 0.1% + CT accuracy
- Power factor accuracy: 0.5% + CT accuracy
- Voltage test range: 0-1000V. 6000V transient voltage
- Data storage: 8G
- Working hours: ≥5h

- IP grade: IP53
- Support for manual/automatic waveform recording
- Waveform recording time: 10s-10min
- Waveform recording cycle: 10/12 cycles
- Minimum recording interval: 0.2s
- USB transmission speed: ≥17M/S
- Harmonics measurement: 50th/50Hz-2500Hz
- Waveform recording sampling point: 128/256/512 points/cycle
- Security level: 600 V CAT IV/1000 V CAT III
- Interface language setting (Chinese and English)
- Support for multi-brand transformer
- Inverter measurement: single-phase/three-phase

- Energy loss analysis: monetary statistics
- Professional PC analysis freeware
- Transient monitoring: captures 50μs shortest waveform pulse
- Complies with IEC61000-4-7 harmonics measurement standard
- Complies with IEEE 1459, DIN 40110 algorithm
- Complies with IEC61000-4-15 flicker measurement standard
- Interharmonics measurement: 50th/25Hz-2475Hz
- Higher frequency harmonics: 35th/2100Hz-8900Hz

	Model	ZY-CTS5	ZY-CTS200	ZY-CTS500	ZY-CTS3000F	ZY-CTS6000
Current Transformer (optional)	Appearance					
	Amplitude Accuracy (10~100%fs)	±0.3%rdg	±0.3% rdg	±0.3%rdg	±1%rdg	±1%rdg
	Nominal Input Current (AC)	5A	200A、20A	500A	3000A	6000A、600A、60A
	Output Voltage (AC)	10mV/A	10mv/A、1mv/A	1mV/A	85mV/kA	0.5mV/A、5mV/A、50mV/A

Advanced Measurement Function

Waveform recording analysis

Supports 1-10min waveform recording function. Users can record the original waveforms with customized sampling points. The professional software running on PC performs the secondary waveform analysis so as to analyze the causes of power grid faults more effectively.

Parameter statistics

Records and analyzes power quality parameters comprehensively. The minimum recording interval is 0.2s. The analysis software running on PC performs the secondary analysis for recorded data and generates customized or national standard report.
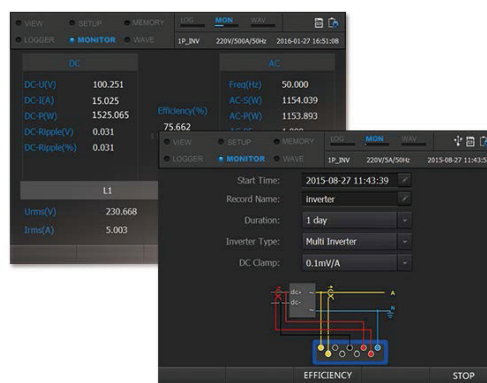
Transient monitoring

Captures instantaneous 50μs shortest waveform pulse and fast-changing waveform data at 200kHz high-speed fixed frequency sampling rate. Furthermore, the original waveform recording function for transient events is supported.
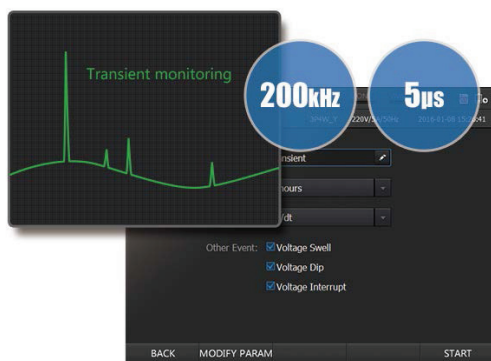
Inverter measurement

Supports energy parameters analysis for single-phase/three-phase inverter, analyzes and records parameters such as DC input, AC output and conversion efficiency of inverter.

Measurement Parameters

Function	Parameter Type	Description
Logger	Oscilloscope	Real-time waveforms of A, B, C, N phase voltage and current
	Voltage, current, frequency	Frequency, voltage RMS, half-cycle voltage RMS, voltage positive peak value, voltage negative peak value, voltage form factor, current RMS, half-cycle current RMS, current positive peak value, current negative peak value, current form factor
	Power and energy	Active power, reactive power, apparent power, power factor, displacement power factor, active energy, reactive energy, apparent energy
	Voltage harmonics	THD, DC, 1-50th harmonics, 0-49th interharmonics, 1-35th higher frequency harmonics
	Current harmonics	THD, DC, KF, 1-50th harmonics, 0-49th interharmonics, 1-35th higher frequency harmonics
	Harmonic power	THD, DC, 1-50th harmonic power
	Flicker	PST (short term flicker), PLT(long term flicker)
	Unbalance	Positive-sequence voltage, positive-sequence current, negative-sequence voltage, negative-sequence current, zero-sequence voltage, zero-sequence current, unbalance
	Energy loss	Active, reactive and apparent power decomposition, line loss power, line loss cost, pollution evaluation
	Demand	Demand
	Event record	Voltage swell, voltage dip, voltage interruption, inrush current, PST limit, PLT limit, voltage upper deviation, voltage lower deviation, over frequency, under frequency, steady-state voltage fluctuation, voltage unbalance limit, voltage THD limit, 1~50th harmonic voltage limit, 2~50th harmonic current limit
Inverter	DC	DC voltage, DC current, DC power, ripple voltage, ripple voltage percent
	AC	Frequency, voltage RMS, current RMS, total apparent power, total active power, total power factor, fundamental power, fundamental power factor
	Efficiency	Conversion efficiency
Transient	Voltage	Voltage RMS, half-cycle voltage RMS, voltage positive peak value, voltage negative peak value
	Current	Current RMS, half-cycle current RMS, current positive peak value, current negative peak value
	Frequency	Frequency
	Event record	Voltage swell, voltage dip, voltage interruption
Monitor	Monitor	Voltage RMS, 1~50th harmonic voltage, PLT, voltage dip, voltage swell, voltage interruption, steady-state voltage fluctuation, voltage unbalance

E8300 On-line Power Quality Monitoring Device

National Authority-Certified Monitoring Device

The E8300 is an on-line power quality monitoring device with independent intellectual property rights, which is launched by ZLG ZHIYUAN Electronics after many years' technical accumulation. It has passed through the safety certification of China Electric Power Research Institute, the certification of Global Intelligent Internet Research Institute and the experimental certification of the conformance of IEC61850 protocol. Its accuracy is in accordance with the IEC61000-4-30A standard. At present, the E8300 has gained the network certification of Guangdong, Guangxi, Yunnan, Zhejiang, Jiangsu, Shanghai, Tianjin, Shanxi, Sichuan and other electric power research institute, and is widely used in power quality monitoring and analysis of substations, new energy generation and high energy-consuming enterprises in China.

Core Technical Specifications

• Number of measurement channels: E8300 supports loop configuration for 24 channels of voltage and 24 channels of current.
• Voltage measurement range: 100V nominal value, 460V maximum value

• Current measurement range: 5A nominal value
• Support for 50Hz power frequency measurement, 42.5Hz~57.5Hz measurement range.
• Measuring circuit: three-phase three-wire or three-phase four-wire.

High Measurement Accuracy

The E8300 has a measurement accuracy of IEC61000-4-30A standard, and is fully complies with national standards.

• GB/T 15945-2008 (Power quality- Frequency deviation for power system)
• GB/T 12326-2008 (Power quality- Voltage fluctuation and flicker)

• GB/T 14549-93 (Power quality – Harmonics in public supply network)
• GB/T 15543-2008 (Power quality – Three phase voltage unbalance)

EMC Performance

ZLG ZHIYUAN Electronics has an internationally advanced EMC test system and the equipments in the system come from EMTEST, HAEFELY, Agilent, Schaffner and other brands, which makes it be a leader among the domestic competitors, and ensures its products to pass the GB series EMC performance tests.

• GB/T 17626.2 – 2006 Electrostatic discharge immunity — Class 4
• GB/T 17626.3-2006 Radiated Radio- Frequency Electromagnetic Field Immunity — Class 3
• GB/T 17626.4-2008 Electrical Fast Transient/Burst Immunity — Class 3

• GB/T 17626.5-2008 Surge(Impact) Immunity — Class 3
• GB/T 17626.8-2006 Nominal Frequency Magnetic Field Immunity — Class 3
• GB/T 17626.9-1998 Pulse Magnetic Field Immunity — Class 3
• GB/T 17626.12-1998 Oscillatory Waves Immunity — Class 3

Ketop Type Test Report | Ketop Communication Protocol Inspection Report | State grid Sichuan Electric Power Research Institute Network Certification | East China Electric Power Research Institute Network Certification | State grid Jiangsu Electric Power Research Institute Network Certification | IEC61850 Communication Protocol Certificate

Function

Harmonics analysis

Monitor harmonic components up to 50th order, including 1~50th THD, harmonic ratio, harmonic phase angle and 1 ~ 16th interharmonic, which meet the test requirements for harmonics in the public supply network of GB/T 14549 and IEC 61000-4-7.

Voltage fluctuation and fault waveform recording

The E8300 on-line power quality monitoring device can capture all waveforms of voltage and current channels and analyze the interference source. When THD, frequency, voltage RMS, unbalance and other parameters exceed their limits, the fault waveform recording is started to capture any small change of voltage waveform.

Monitoring and recording of power system frequency fluctuations

The frequency measurement accuracy of E8300 is 0.001Hz, and the frequency range is from 42.5Hz to 57.5Hz. The power system frequency is monitored online, and the alarm and recording is started in time at the time of frequency overlimit.

Large capacity storage

The E8300 has a 64G storage space and the data can be stored for one year.

Component measurement and voltage unbalance analysis

The E8300 on-line power quality monitoring device can measure voltage/current unbalance as well as amplitude and phase of zero-sequence, positive-sequence and negative-sequence voltage/current, and display the phase diagram of voltage/current.

Flicker analysis

The flicker effect caused by the rapid voltage change due to the impact power load (such as electric arc furnace for steelmaking, electric arc welder, etc.) of the public supply point voltage is easy to make eyes tired and uncomfortable, and even emotion irritable. The E8000 series on-line power quality monitoring device has voltage flicker monitoring function, and it complies with GB/T 12326-2008 standard.

Power quality overlimit measurement

The E8300 on-line power quality monitoring device can continuously monitor whether the power quality complies with the related standards. The operations such as setting different overlimit conditions, starting power quality overlimit parameter statistics and recording the related overlimit quantity can be performed via the software, and the time resolution is up to 200ms.

Rich communication methods

The E8300 supports dual-port Ethernet, modbus and IEC103 protocols and is equipped with USB, RS232 and other debugging interfaces

Special Function

IEC61850 communication protocol

The E8300 has pass through the IEC61850 protocol conformance test of Ketop laboratory and can seamlessly connect to any master station back stage that supports the IEC61850 communication protocol.
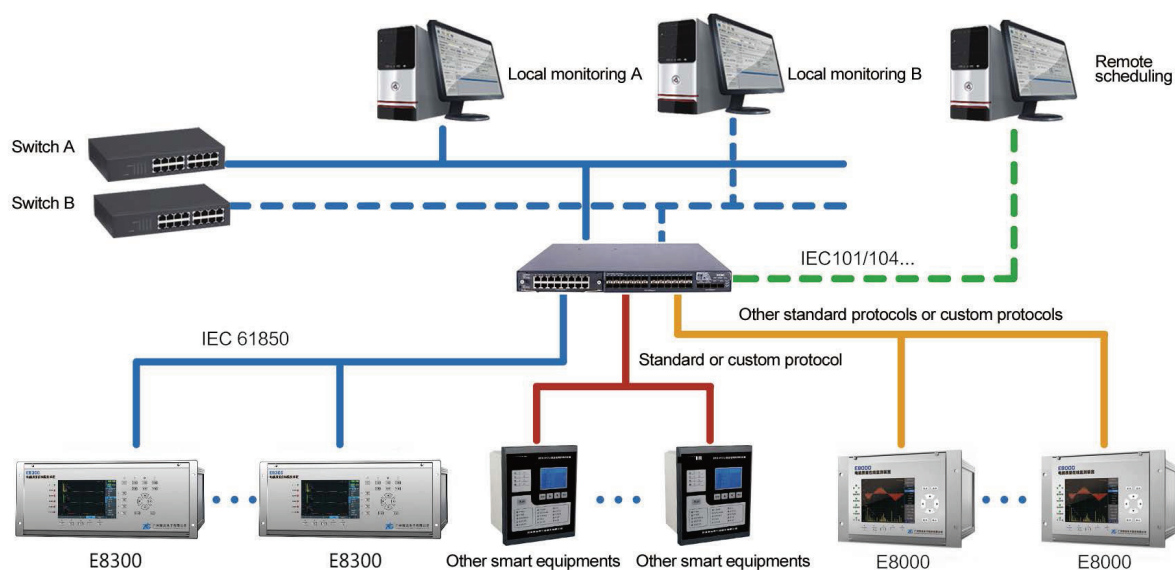
E2000 On-line Power Quality Monitoring Device

The E2000 is an on-line power quality monitoring device, which is developed by ZLG ZHIYUAN Electronics after long-term market research. It is specialized for enterprise-level users, and mainly used in large high energy-consuming enterprises, energy management, communication center, research and testing institutions and other industries. The E2000 is featured with compact size and high cost performance, and supports multiple communication protocols. With its accurate market positioning as well as mature and stable performance, E2000 is quickly recognized by the market and widely used for enterprise-level power quality monitoring and analysis.

Function

Voltage fluctuation and fault waveform recording

Capture all waveforms of voltage and current channels and analyze the interference source when the power grid is abnormal. When the harmonic distortion rate, voltage RMS and voltage unbalance exceed their limits, the voltage waveform and fault waveform recording are started to provide accurate data for the power quality management of power grid.

Harmonics analysis

Harmonics up to 63th order, interharmonics up to 50th and higher frequency harmonics of 2k~9kHz can be analyzed, which meets the harmonics testing requirements of public power grid specified in the GB/T 14549 and IEC 61000-4-7 standards.
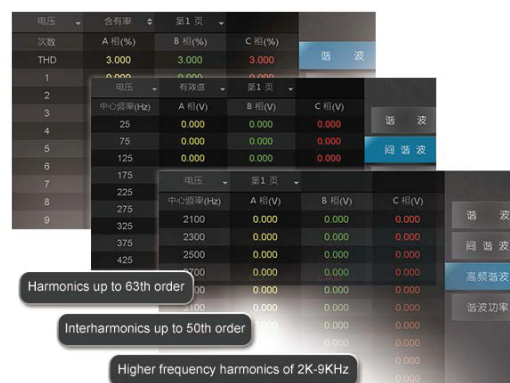
Event alarm monitoring

The E2000 can detect power transient and steady-state events. The events are listed in the descending order, and the most recent event is placed in the top row. Users can position the cursor on the event list to view events by page. Furthermore, the event list can also be queried by date, therefore users can quickly and correctly locate the power quality problem by viewing past events.

Time Calibration

There are multiple time calibration methods, including SNTP, B code and PPS.

Multi-standard Protocol

Multiple communication protocols are supported, including Modbus (485/TCP) and IEC103.

Support for standardized data formats

It supports the PQDIF common standard data exchange format specified in IEEE 1159 and the IEEE Comtrade transient data exchange format for power systems.

Basic Parameters

Dimensions	144×144×196mm	Resolution	800×480	Switch input	2 optical coupled isolation inputs, 24V internal stimulus or DC220/110 external stimulus
Weight	About 2.5kg	Ethernet interface	One	Switch output	2 relay outputs, electric shock load (resistive load: AC250V 8A), switching voltage (400VAC/300VDC)
Screen size	5 inches	Serial port	one	Input voltage	4-channel voltage, 57.74V, 100V and 230V nominal values, 460V maximum measurable voltage.
Sampling rate	25.6K	Frequency	50Hz	Input current	4-channel current, 5A nominal value, 10A maximum current.
Storage	8G TFcard	Wiring mode	3P3W/3P4W	Power supply	AC: 85~265VAC; DC: 120~370VDC
CMRR	>60dB	Insulation resistance	≥5MΩ	Environment	-20℃ ~ +70℃ operating temperature, less than 90rh% humidity

Measurement Items

Voltage	RMS value, average value, half-cycle RMS value	Power	Active power, reactive power, apparent power, power factor, displacement power factor
Current	Frequency	Voltage harmonics	THD, 1~63th harmonics, 0~49th interharmonics, 2k~9kHz higher frequency harmonics
Frequency	RMS value, average value, half-cycle RMS value	Current harmonics	THD, 1~63th harmonics, 0~49th interharmonics, 2k~9kHz higher frequency harmonics
Fluctuation	PST, PLT, fluctuation	Harmonic power	1~63th harmonics

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