

**INTEGRATED
SERVICES**

GW INSTEK

Simply Reliable



ISC's GWInstek Product Portfolio

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GWinstek Product Portfolio



OSCILLOSCOPES

- Digital Storage Oscilloscope
- Mixed-signal Oscilloscope
- Mixed-domain Oscilloscope
- Real-Time/Digital Storage Oscilloscope
- Analog Oscilloscope
- Handheld Digital Storage Oscilloscope
- Oscilloscope Education And Training Kit



SPECTRUM ANALYZERS

- 3.25GHz Spectrum Analyzer
- 3GHz Spectrum Analyzer
- 1GHz Spectrum Analyzer



SIGNAL SOURCES

- Arbitrary Function Generator
- Multi-Channel Function Generator
- Isolated Design
- True Dual Channel Arbitrary Function Generator
- USB Modular Arbitrary Function Generator
- DDS Function Generator
- Analog Function Generator
- Audio Generator
- RF Signal Generator



DC POWER SUPPLIES

- Programmable & Single Channel DC Power Supply
- Non-Programmable & Single Channel DC Power Supply
- Programmable & Multiple Channel DC Power Supply
- Non-Programmable & Multiple Channel DC Power Supply

AC POWER SOURCES

- AC + DC Power Source
- AC Power Source

DC ELECTRONIC LOADS

- DC Electronic Load



DIGITAL MULTIMETERS

- Benchtop Digital Multimeter
- Handheld Digital Multimeter
- Digital Clamp Meter

SAFETY TESTERS

- Safety Tester
- AC Ground Bond Tester
- Leakage Current Tester
- Multiplex Scanner Box

LCR METERS

- Benchtop LCR Meter
- Handheld LCR Meter

OTHER METERS

- DC Milli-Ohm Meter
- Digital IC Tester
- Precision Current Shunt Meter
- Digital Power Meter
- AC Power Meter
- Automatic Distortion Meter
- AC Millivolt Meter
- Digital & AC Millivolt Meter
- Frequency Counter
- Logic Probe & Pulsar

GWinstek Flagship DSO, MSO, MDO Products

Applications: Automotive, LED Lighting, Avionics and Semiconductor



GWinstek DSO flagship products include the GDS-3000, 500MHz; 2-channel MDO-2000A, 4-channel MDO-2000E, MSO-2000E with a 16-channel logic analyzer and economical education product GDS-1000B.

The GDS-3000 Series: The highest bandwidth is up to 500MHz, which is suitable for high-frequency circuit analysis. It is the only series that provides the power analysis function. Its analysis functions include power quality, harmonic, ripple / noise, inrush current.

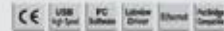
FEATURES

- 500/350/250/150MHz with 2/4 Channels
- 5GSa/s RT or 100GSa/s ET Sampling Rate
- Independent Memory for Each Channel
- Large 8-inch 800x600 Display
- Serial Bus Analysis Software for I2C, SPI and UART (Optional)
- VPO Technology
- Split Screen Function
- 3 Built-in Impedances (50Ω/75Ω/1MΩ)
- Power Analysis Software (Optional)

The MSO-2000E series: Mixed-signal oscilloscope with complete 2 + 16 or 4 + 16 channels and the standard bus analysis function is the first choice for users to analyze analog and digital signals.

MSO-2000EA is equipped with a dual channel 25MHz signal generator with the frequency response analysis function. Users can measure the gain and phase offset of the circuit of amplifiers and filters

Applications: Automotive, LED Lighting, Avionics and Semiconductor



FEATURES

- 200/100/70MHz bandwidth selections: 2 or 4 channels
- MSO-2000E equips with a 16-channel logic analyzer
- MSO-2000EA equips with a 16-channel logic analyzer and a dual channel 25MHz arbitrary waveform generator
- Real time sample rate for each channel is 1GSa/s (2-channel models); Maximum real time sample rate is 1 GSa/s (4- channel models)
- Maximum 10M memory depth and VPO waveform display technology
- Waveform update rate up to 120,000 wfms/s
- 8 " WVGA TFT LCD screen display
- Free Frequency Response Analyzer Software
- Maximum 1M FFT provides higher frequency domain resolution measurements
- High Pass, Low Pass and Band Pass Filter Functions
- 29,000 segmented memory sections and waveform search function
- I2C/SPI/UART/CAN/LIN serial bus trigger and decoding functions
- Data log function is able to track signal changes up to 100 hours
- Network storage function

GWinstek Signal Sources

AFG-3081/3051

Arbitrary Function Generator



FEATURES

- Wide Frequency Range from 1u Hz - 80/5MHZ
- 1 μ Hz Frequency Resolution throughout Full Range
- Standard Waveform : Sine, Square, Triangle, Ramp, Pulse, Noise
- Built-in AM, FM, PWM, FSK, Sweep, Burst Functions
- 16bit, 200MSA/s, 1M-Point Deep Arbitrary Waveform
- DWR (Direct Waveform Reconstruction) Capability
- Arbitrary Waveform Editing PC Software
- 4.3" High Resolution LCD Display
- USB, RS-232, GPIB Standard Interfaces

The AFG-3000 Series is an Arbitrary Waveform and Digital-Synthesized Function Generator designed for industrial, scientific research and educational applications. The series comes with a bandwidth of 80MHz for AFG-3081 and 50MHz for AFG-3051

Application: Digital Modulation

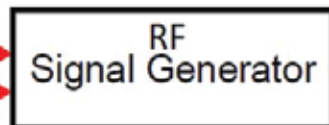
Digital Modulation has been utilized very frequently in the modern communications systems, such as Wi-Fi, Bluetooth, ZigBee, CDMA and HDTV. AFG-3081/51 have been built in the most frequently used IQ signals required by various digital modulation including ASK, MSK, FSK (2FSK, 4FSK, 8FSK), PSK (BPSK, QPSK, DQPSK, QQPSK, $\pi/4$ QPSK, $\pi/4$ DQPSK, 8PSK), APSK (16APSK, 32APSK), QAM (16QAM), 32QAM, 64QAM), etc

The following setup uses an actual ZigBee application as an example. AFG-3032/22 produce BPSK and OQPSK baseband signals required by ZigBee and transmit them to RF signal generator to produce 2.4 GHz ZigBee O-QPSK receiver test signal.



AFG-3032 / 22

Baseband
I - Q Signal







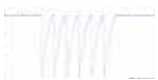






2.4G ZigBee signal generator system diagram

Automotive waveforms

In order to meet the test requirements, GWINSTEK has included some related waveforms that are commonly used in accordance with ISO16750 road vehicles - electrical conditions and electrical testing for electrical and electronic equipment and ISO7637 road vehicles - electrical disturbances from conduction and coupling.



Ignition: Ignition waveform of the automotive motor 	ISO 16750-2 SP: Automotive starting profile with ringing 	ISO 16750-2 VR: Automotive supply voltage profile for resetting 	ISO7637-2 TP1: Automotive transients arising from disconnection 	ISO7637-2 TP2A: Automotive transients arising from inductance in wiring 	ISO7637-2 TP2B: Automotive transients arising from the ignition switching off 
ISO7637-2 TP3A: Automotive transients arising from switching 	ISO7637-2 TP3B: Automotive transients arising from switching 	ISO7637-2 TP4: Automotive working profile during start-up 	ISO7637-2 TP5A: Automotive transients arising from cut-off of battery power 	ISO7637-2 TP5B: Automotive transients arising from cut-off of battery power 	

C-1100 Multi-Channel ASK/FSK Tester



GW Instek Provides All-in-One Test Solution

C-1100 is the world's first ASK/FSK communications tester and first dedicated professional tester for TPMS automatic production. It provides two signal output channels, including 315/433 MHz and LF 125 kHz and four RF input channels. The tester integrates all production tests for TPMS Sensor/Monitor. Four-channel design, a dedicated PC software and the custom-made adjustment function can increase production efficiency by three folds, and reduce equipment costs by 50%~70%.

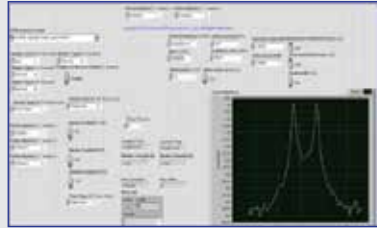
C-1100 not only tests RF Tx and Rx but also "wakes up" device. The C-1100 provides a complete PC software. In addition to the tests required for ASK/FSK, C-1100 also provides production debug analysis during production line testing, FCC, ETSI test specifications, and supports the corresponding LabVIEW program

C-1100 Multi-Channel ASK/FSK Tester

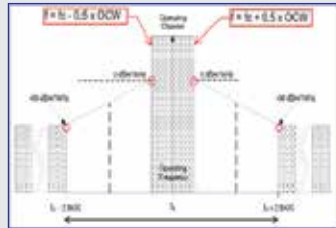
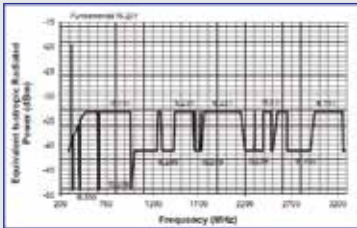
Software Support



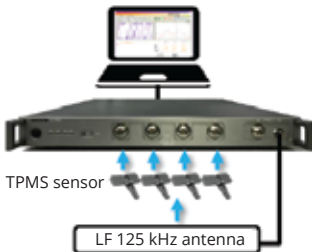
PC software with complete functionalities



Support LabVIEW Driver



Support US FCC 15.231 and European ETSI 300-220, V3.10 test regulations



C-1100 can test four TPMS Sensors simultaneously



Testing a TPMS Controller with a C-1100

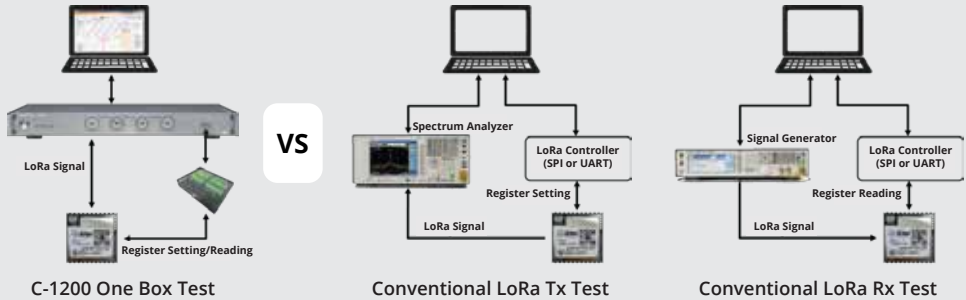
C-1200 Multi-Channel LoRa Tester



C-1200 is an One Box Tester that incorporates LoRa TX and RX tests. It provides spectrum analysis, time domain, FEI (Frequency Error Indicator), and TOA (Time On Air) for transmitter tests, and sensitivity, BER (Bit Error Rate), and PER (Packet Error Rate) for receiver tests. In addition to Sub-GHz, C-1200 also supports the 2.4 GHz bandwidth and the FSK signal test. Users can also edit the transmitted payload by themselves. When receiving data, the formats include binary, HEX, and ASCII code, which allow data transmission results to be easily confirmed.

In addition to the signaling test of the finished product, C-1201 is a transfer box connecting C-1200 to LoRa module that directly controls the DUT to perform non-signaling tests on semi-finished products through UART/SPI/I2C interfaces.

One Box Test vs. Conventional Test



C-2100, PKE/RKE Tester for Smart Car Keys



C-2100 is a PKE/RKE tester specifically integrated for the test requirements for testing and producing smart car keys. This system provides the measurement equipment required for the current main applications of smart car keys (RKE & PKE), including spectrum analyzer, RF signal generator and arbitrary waveform generator. In addition, for LF 10Hz ~ 10MHz of PKE, this system simulates the distance between the vehicle and the DUT, and supports the output capability of the three-axis antenna.

GWinstek Automotive Test Solutions

Model	Products Description
PSU 40-38	1500W 40V/38A DC Power Supply
PSW 30-36	360W Auto-Range 30V/36A DC Power Supply
PEL-3111	1050W DC Electronic Load
PEL-2004A	4-Slot Mainframe of DC Load
PEL-2040A	Single Channel DC Load module (80V, 70A, 350W)
GSP-9330	3.25GHz EMI Test Spectrum Analyzer Plus Free GKT-008 EMI Probe
GPT-9804	AC/DC/IR/GB 200VA Hi-Pot
MDO-2072EX	70MHz Mixed-Domain 5-In-One Oscilloscope
MDO 2204EX	200Mhz 4ch Mixed Domain 5-in Oscilloscope
MSO-2204EA	200MHz 4 CHS Mixed Signal Oscilloscope
GDS-3352	350MHz 2CHS Oscilloscope (5 GSa/S)
GDS-207	70MHz Portable Oscilloscope plus
GDP-040D	40MHz Dual Channel Differential Probe (Isolation)

Programmable DC Electronic Loads

PEL-2000A Series

Programmable D.C. Electronic Load

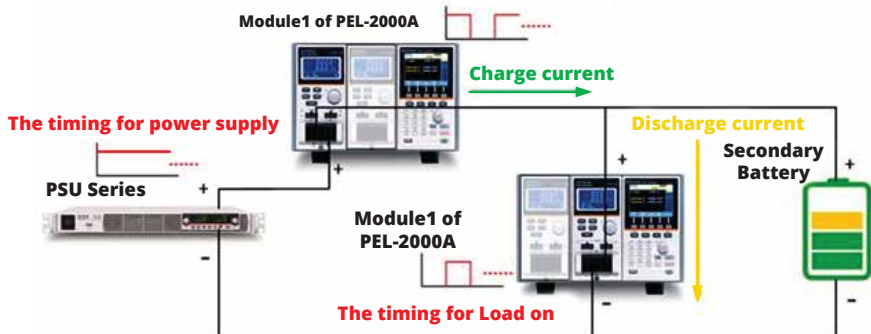


FEATURES

- Sequence Function to do High Speed Load Simulations
- Flexible Configuration with Mainframes and Plug-in Modules
- Multiple Independent Load Inputs up to 8 Channels in a Mainframe
- Parallel Connection of Inputs for Higher Load Capacity
- Program Mode to Create Work Routines for Repetitive Tests
- OPP/OCP/OVP/OTP/RVP/UVF Protections
- External Channel Control/Monitoring via Analog Control Connector
- Multiple-Interface USB Device/Host, RS-232C, and GPIB/LAN (Optional)

Application - Battery Evaluation Test

Automated testing of high-speed battery charge and high-speed discharge can be achieved by using the PEL-2000A electronic load module in series and parallel with the power supply. The automated switching operation between the module and the module of the PEL-2000A can greatly shorten the test time and increase the reliability during the measurement process while comparing with the manual operation

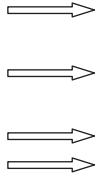


Automated Charge / Discharge Test with PEL-2000A

Application - The Output Test of PC Power Supply

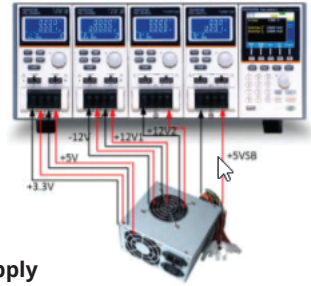
ATX Power Supply Typ. Spec.

Total Power: 596.1W	
+3.3V:	20A
+5V:	20A
-12V:	0.8A
+12V1:	17A
+12V2:	17A
+5VSB:	2.5A



Modules	Channels
PEL-2020A	PEL-2020L
	PEL-2020R
PEL-2030A	PEL-2020L
	PEL-2020R
PEL-2040A	PEL-2040
PEL-2041A	PEL-2041

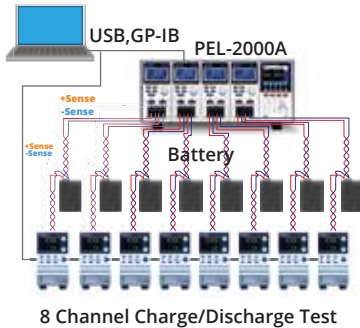
Test Diagram for ATX Power Supply



GWInstek LinkView software for Battery Charge and Discharge Test

Battery Charge & Discharge Test with LinkView

GW Instek introduces LinkView software to allow users to quickly set test instruments for the operation of charging and discharging tests on battery and super capacitor, etc. Users can define charging and discharging procedures to automatically execute procedures so as to obtain measurement results. History graphs are available & they can be exported to Excel for further analysis.



8 Channel Charge/Discharge Test



Waveform Display

Features of LinkView

- Long Term Power Monitoring of I, V, P(W)
- Support Data Logging(option) and .CSV File Exporting
- Create/Define Operation Sequence for Controlling Source/Load Behavior
- Easily Edit The Test Files Including Reading Record, Save Record and Delete Record
- Simultaneously Run Test Sequence of Each Channel & Waveform Display
- Maximum Allocation of 12 Channels for Charging & Discharging Test
- Supported Languages Include Japanese, English, Chinese(Traditional) or Chinese(Simplified)
- Data Analyzer:
 - View Chart: Supports Zoom In/Tracking of Samples
 - View Table: Summaries Testing Result for View and Each Step Includes Voltage/Current/Power/VMax/Imax/PMax/AmpHour
- Live Data Monitoring:
 - View: Self-defined Display Range/Offset Adjustable
 - Controllable Displayed Curve