

INTEGRATED SERVICES & CONSULTANCY

Experienced, Reliable and Resourceful TMI Solution Provider



AC Sources, DC Power Supplies, DAQS, AC/DC E-Loads
Battery Meters, Multi-function Programmable DSOs
Bi-Directional Regenerative Power Supplies
Hot Air Stations, Protocol Analyzers, Safety Testers
Spectrum Analysers, Logic Analyzers, MSOs
LCR Meter, Power Quality Analysis
BGA Rework Station, Soldering Stations



Total Test & Measurement Solutions

Integrated Services and Consultancy (ISC), an ESA Group Company, is a leading provider of electronic test and measuring instruments since 1993. ISC, a premier distributor partner of Good Will Instrument, GW INSTEK, has been providing high precision electrical Test & Measuring Instruments with optimal TCO -Total Cost of Ownership. Our testing solutions help engineers expertly keep pace with disruption and succeed with innovation in fast growing sectors as in Automotive, IIoT, Semiconductor, Power and many others.

DC POWER SUPPLIES



GSM-20H10

Precision source measure unit 4 quadrant operation of 210V/±1.05A/22W



PSW-Multi Series Dual-channel/Triple-channel programmable switching DC power supply



GPP-3060/6030/3650

Triple-Channel Programmable DC Power Supply



PSU-Series

Programmable Switching DC Power Supply

Sample Rate: 5GSa/s; Memory Depth: 200Mpts/CH

GDS - 3000A Series

650/350MHz DSO, 16 Channel Logic Analyzer

One Oscilloscope with Time Domain, Frequency Domain and Power Measurement



MADE TO MEASURE: GWINSTEK high performance test solutions includes over 300 products across five keylines-Oscilloscopes, Spectrum Analyzers, Signal Sources, AC / DC Power Supplies, DC Electronic Loads, Digital Multimeters, LCR Meters, Safety Testers, Other Meters, and Accessories.



GPT-12000 Series AC/DC/IR/GB Intelligent Safety Analyzer Analyze Your Safety Tests



High-Frequency LCR Meter The Smarter Way to

Characterize Component



Programmable DC Electronic Load

High Current Capacity with High Resolution can be Perfectly Fulfilled



Programmable AC/DC Power Source Uninterrupted AC+DC Transition



MFG-2000 Series

Multi-Channel Function Generator



GLC 10000

Leakage Current Tester



GDM-906X Series

Dual Measurement Multimeter Measurement Explores~Insight and Efficiency



GPM-8330/8320

Digital Power Meter Industrial Three-Phase AC Power Measurement





LATEST PRODUCTS















Acute Technology Inc., product lineup includes the TravelScope digital storage oscilloscope, TravelLogic logic analyzer, BusFinder eMMC, SD, MIPI D-PHY Protocol Analyzer, LA4000 Logic Analyzer, DG4000/TraveData Digital Pattern Generator, ADP series high-voltage differential probes, TravelBus 2 in 1 analyzer, and MSO2000/3000 Mixed Signal Oscilloscope.

Compact and light weight, they are designed for convenient portability, aiming to provide customers with convenient and efficient solutions.



MIXED SIGNAL OSCILLOSCOPE

MSO3000 Mixed Signal Oscillosc

- DSO: 4 Channels, 1 GS/s S/R, 200 MHz
- Logic / Protocol Analyzer: 16 Channels, 2 GS/s Timing Analysis, 250 MHz State
- · Data Logger (HDD / SSD Storage)
- · Total Memory: 4 Gb
- Digital Voltmeter: 3 digits · Frequency Counter: 5 digits

6-in-1 Instruments: NDAQ, DSO, DVM, Frequency Counter, Logic Analyzer, Protocol Analyzer



LOGIC ANALYZER LA4000 Logic Analyzer

- 136 channels
- · 4GHz Timing Analysis / 400MHz State Analysis
- · 32Gb Memory
- · Logic, State and Protocol triggers · Stackable with a DSO to form an MSO
- *TravelBus, TravelLogic

Ideal for applications requiring high-speed timing analysis or dealing with complex state analysis



BF7264 PRO PROTOCOL ANALYZER **BusFinder Protocol Analyzer**

- Real-time data display, post-capture waveform
- Trigger for commands or data
- · 64 channels Logic Analyzer
- · 32Gb total memory Protocol Analyzer Protocol Option: eDP1.4a, eMMC 5.1,
- MIPI D-PHY 1.2, NAND Flash, SD 3.0(SDIO 3.0), SD 4.1 (UHS-II), SGMII, UFS2.1



TS3124V DS0 TravelScope DSO

- · Record length: 128Mpts/ch
- · Channel: 4
- Sample rate: 1 GS/s
- Bandwidth: 200 MHz
- · Data Logger (HDD / SSD Storage)
- · Digital Voltmeter: 3 digits
- · Frequency Counter: 5 digits

PROTOCOL ANALYZER

BiSS-C 128 PMBus **SMBus** CAN2.0B/CAN FD LIN2.2 Profibus SPI PWM SVID DALI MDIO DP Aux RGMII UART (RS232) eSPI MIPI I3C 1.1 RMII USB PD 3 MIPI RFFE 3 RS-232 HID over I2C **USB1.1**

RS-482

ETHERNET

10BASE-T1S, MII/RMII/RGMII/GMII/SGMII

Modbus

ADP5100-B HI-VOLTAGE DIFF, PROBE : BATTERY

Hi-voltage Diff. Probe

- · Powered by Battery
- · Bandwidth: 100MHz
- · Bandwidth limit: 5MHz / Full
- · Over-range indicator
- · Over-range alarm
- · Double-layer probe cable for power insulation
- EC conformity: EN 61010-031:2002
- · Works for any grounded DSO with an BNC port



Protocol Analyzer

- · Show real-time protocol data.
- · Application timing: massive protocol data with some idles in between.



Protocol Logger

- · Like data logger, save massive data into SSD hard drive.
- · Application timing: massive protocol data.



Protocol Monitor

- · Like dash cameras, record protocol data by the device's memory only.
- Application timing: trigger event only happens in very long time.







Innovation that solves your Bluetooth® Test Challenges

- · CS RF PHY & Part H CS Layer Tests
- · HDT & higher bands ready
- BLE/Classic/802.15.4 RF PHY Tests
- Smallest, lowest power sniffer
- · Bespoke protocols on request
- Production & Development Options

- Android sniffer/coverage app
- LE Audio latency measurements
- Runs in Windows, MacOS & Linux
- · Configurable GUI & API
- · Bespoke protocols on request
- Perpetual SW Licenses no OPEX





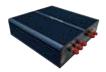
- World's smallest USB powered Protocol Analyser
- BR/EDR, BLE, Qualcomm QBHSL, MediaTek mHDTV2.0, IEEE 802.15.4, LE Audio and CS (SinMe/Dual/+++ options)
- Simultaneous RX & TX over the entire 2.4 GHz ISM band
- Live or post-capture decryption with blueSPY GUI
- Custom 2.4 GHz PHYs available upon request





- · Specifically designed for PHY Layer Testing
- · Options for BR/EDR, BLE, QBHSL, IEEE 802.15.4
- RF Spectrum Record and Playback option 3 hrs 40 mins
- C/I, blocking & intermodulation signals generated internally
- Accurate power control to -115dBm for coded PHY tests
- · Full support for in-band emissions
- · Production Line or Development options available





- Support for all CS RF-PHY test cases, including BT=2.0 modulation index & CS Layer tests via HCI
- Simple control via comprehensive GUI or Python/C dll.
- · Log of all HCI traffic and key events
- Export of raw IQ data, spectrogram or the entire capture
- · Capture of GPIO time aligned with IQ data
- Production Line or Development options available





- Audio latency measured end-to-end, between-channels or relative to on-air packets in real-time
- Audio capture and generation accurately timestamped relative to Bluetooth packets
- Measures LE Audio Presentation Delay
- · Measures SYNC between Left and Right channels









Sorensen

| Power (kW) | 12kW | 25kW | 37kW | | |
|-------------|---------------------|------|------|--|--|
| Voltage (V) | Maximum Current (A) | | | | |
| 600 | 50 | 100 | 150 | | |
| 1500 | - | 50 | 50 | | |
| 2000 | - | 50 | 50 | | |

 $\star \text{Global}$ pricing for base units without options, Incoterms Ex Works (EXW) San Diego, California, USA.

High Performance, Modular Bidirectional, Regenerative Programmable DC Power System

- Full DC source and sink capabilities with power levels from 12 kW up to 37 kW
- · Fully scalable up to 1.2 MW with parallel systems
- Available voltage ranges of 600V, 1,500V and 2,000VDC in a 4U rack chassis providing full power up to +/-150A within a single system.

The Mi-BEAM Series is designed for testing today's complex, high power electronics for the automotive, energy storage, industrial, and aerospace markets in a variety of applications. This platform covers all test needs through the product life cycle from advance research and development (R&D), to design validation, and production test requirements.









Asterion

California Instruments

High Performance Programmable AC / DC Power Source



Asterion AC Series Advanced Features

- High power density in 1U / 2U / 4U / 14U chassis up to 18kVA
- Auto paralleling for higher power
- Voltage: 0-400VAC/0- 500VDC, Current: 0-60Arms/phase, Power: 500VA - 36000VA
- Complete avionic test suites (optional)
- · Standard LXI LAN, USB and RS232, optional GPIB

Asterion AC Series Advanced Features

- · Commercial and military avionics test
- · AC power simulation
- · Frequency & voltage conversion
- IEC standards testing







High Performance Solar Array Simulation Power Supply



- ▶ 2 independent, isolated 600W channels or 1 1200W channel in 1U
- Voltage: 40 V to 220 V
- ▶ Current: 2.72A to 20A
- ▶ 2µ second shunt switching recovery
- ▶ Peak Power Tracking
- Primary and secondary over voltage and over current
- ▶ Output electronic circuit breaker
- ▶ Built in fault data recorder
- ▶ Power On Self-Test
- Active power factor correction (PFC)
- ▶ Color touch panel monitoring
- > Standard LAN interface
- ▶ Full remote control via AMETEK SAS software or SCPI commands

Example of a fully integrated Solar Array Simulator

30 channel 600W/ch 18KW total



SEQUOIA SERIES

California Instruments

PRECISION PROGRAMMABLE REGENERATIVE GRID SIMULATORS FEATURES AND CAPABILITIES

- ▶ 0 333VAC, 0 3.000A / PHASE 15KVA 1.08MVA
- Single Solution for: AC/DC Programmable Power Source, AC/DC Grid Simulator, AC/DC Resistive or Complex Electronic Load
- Dual Voltage ranges that support over voltage testing on 480V based systems
- ▶ 500uS time resolution for Transients
- Virtual Panels control software included
- Non-Linear current waveform programming during Load mode
- ▶ Phase coordination among multiple units (LKM/LKS)
- ▶ Powerful set of analog controls for PHIL and Modulation tests
- Trigger In & Out to permit extensive coordination with external systems
- ▶ Extensive Onboard diagnostics
- ▶ Digital I/O, including RS232, USB, Ethernet (GPIB optional)
- Auto-paralleling for maximum flexibility with multi-chassis configurations







MOST COMPREHENSIVE PROGRAMMABLE **POWER SOLUTIONS**

The EA-10000 series includes more than 180 devices: programmable DC power supplies EA-PS & EA-PSI, bidirectional DC power supplies EA-PSB & regenerative electronic DC loads EA-ELR.

All series come in power form factors of 2U, 3U and 4U



- EA-PSB 10000 2U
- 1.5 kW and 3 kW
- Up to 750Vdc & up to 120 Adc ■ Parallel up to 192 kW



- Power 30 kW
- 0 80 V up to 0 2000 V
- 0 40 A up to 0 1000 A



- EA-PSB 10000 4U
- 15 kW to 30 kW
- Up to 2.000Vdc
- Parallel up to 1.92 MW



EA Advantages

- High power Density
- Output voltage up to 2000V
- Power output up to 30 kW
- Paralleling up to 2MW
- High efficiency up to 96% Autoranging
- Arbitary waveform and function generator
- Digital control, Anybus
- Low FMC



Programmable DC Power Supplies



Programmable DC Electronic Loads (Conventional and regenerative)

INTERFACES, PORTS / SOFTWARE

- Extensive portfolio of interfaces: Analog, USB CAN, CANopen, DeviceNet, RS232, EtherCAT, Ethernet 1 and 2 port, Profinet 1 and 2 port, Modbus 1 and 2 port, Profibus, USB-Host
- Operating software EA-Power Control: Monitor and control up to 20 devices simultaneously. Set and actual values in one graphic
- Software EA-Battery Simulator: Simulates Li-Ion

Reliable, Precise & Efficient Power Supplies for ATE Systems

EA-10000 SERIES

Wide range of improved DC power supplies and electronic loads

EA POWER RACKS

- ■19" cabinet system with up to 1.92 MW
- Systems with programmable laboratory power supplies, electronic loads with energy recovering and bidirectional laboratory power
- Optionally available: Emergency stop (machine standards EN60204-1) Grid monitor (ENS) and insulation monitor Stainless steel water cooling Copper busbar for DC output
- Special construction for various applications

Laboratory Power Supply & Electronic Load EA-PSB 10000, EA-PSI 10000, EA-ELR 10000



Air-cooled



Water-cooled



Up to 1.92MV in a rack system







HEATING SYSTEM

JBC provides the Most Efficient Soldering System which leads to quality improvement & an efficiency increase.



HEAT MANAGEMENT

Thanks to both Sleep & Hibernation Modes, tip life increase exponentially.



INCREASE PRODUCTIVITY

Use Quick Cartridge Extractor to change quickly & safely without switching the station off.

High Precision —

NANO REWORK SOLUTIONS



— High Power —

RMSE COMPLETE REWORK STATION





SMD Rework System

The ideal solution for your entire rework tasks.

Includes Hot Air Station, Preheater with PCB Support, and Rework Arm.



JBC Preheater Range

For rework on multi-layered PCBAs and/or large ground planes in order to avoid thermal shock and facilitate soldering as well as desoldering processes.



ADJUSTABLE TWEEZERS RANGE

Provide the highest precision when soldering or reworking SMD components.



Preheaters



Fume Extractors



Tip Cleaners



Auto Feeder





Automation



ELEVATE YOUR EFFICIENCY, EMBRACE AND EXPERIENCE THE FUTURE OF REWORK, TODAY!

BGA/SMT REWORK STATIONS

PDR designs, manufactures, and distributes IR Rework Stations, Industrial X-Ray Inspections Systems, and IR Thermal Test equipment for the electronics component and PCB assembly industry.

PDR isn't just a brand, it's a revolution delivering unmatched control and effortless execution.

At the forefront of SMD rework technologies, PDR are working with many of the world's top names in:

- · Electronic Manufacturing
- Defence
- Automotive
- Medical
- · Research & Development



PDR IR-E3

- Advanced Focused IR component heating
- · Quartz IR PCB preheating with up to 3 zones
- Split Beam prism system for simultaneous PCB/component viewing
- · Precision Components Pick & Placement up to 10um
- · Precision PCB handling
- · Component Nest/Flux Application Facility
- · Closed Loop Non-Contact Temperature Sensing
- Advanced Automatic Thermal Process Control
- Reflow Process Observation Camera
- PCB Forced Air Cooling

FOCUSED INFRARED

What you see you heat. No collateral damage. Instantaneous control.



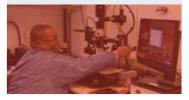
PLACEMENT TECHNOLOGY

Our placement technology allows every operator to achieve the same standard of quality.



INTELLIGENT SOFTWARE

One profile to rework nearly all applications.







X-RAY INSPECTION SYSTEMS

ULTRA HIGH-PERFORMANCE HIGH RESOLUTION IMAGE QUALITY COMPACT X-RAY SYSTEMS

Founded in 1998, PDR Xray Systems has become a world leader in providing high quality industrial X-Ray solutions to specifically address the needs of the Semiconductor, PCBA, Medical Device, Government, and NDT communities.

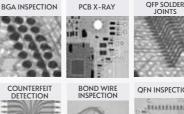
Noted for high image quality and affordability, PDR XRAY Systems is the product of Engineering Teams formerly associated with GenRad, Teradyne, and Nicolet Xray Imaging Systems. This overarching expertise in the field of X-ray technologies has led to the development of superior performance PXI technology that forms the backbone of each PDR X-Ray system.

PDR's 90kV X-ray and I30kV X-ray systems are engineered with high-quality materials and craftsmanship and X-ray safety standards exceeding the most stringent requirements for industrial safety. All X-ray non-destructive inspection systems built by PDR are equipped with a suite of X-ray image processing tools and features that incorporate cutting-edge technologies to insure that your X-ray system delivers quality X-ray images and the power of analytic tools required for a successful X-ray program.



PDR GFNX-130P

- · BGA Inspection/Analysis
- · Counterfeit Inspection
- Porosity/Voiding Detection
- Medical Device Inspection
- Wire Bond Inspection
- LED Inspection
- Less Than I uSv/hr (0.1 mR/hr) USFDA 21 CFR-1, J-1000, 1020.40











OPTICAL INSPECTION SYSTEMS

Eyepiece-less Stereo 3D Microscopes

MANTIS

LYNX EVO







3 - 15x Magnification

Ergonomic Working

Digital Image Capture

2.7 - 240x Magnification

Easy

HD Image Capture























DIGITAL INSPECTION SYSTEMS

2D Digital Inspection Systems

MAKROLITE 4K





Ultra HD **Exceptional resolution**

EVO CAM II



0.8 - 750xMagnification

Large

PC control option

VECAM



Wi-Fi Screen sharing Field of View

Wide Touch screen Compatible

DIGITAL INSPECTION SYSTEMS

3D Digital Inspection Systems

DRV-Z1



6.1 - 93xMagnification

> Easy 3D Digital View

Share Live 3D View



WE MEASURE GLOBALLY

MULTI-FUNCTION METER



INSULATION RESISTANCE METER



EARTH RESISTANCE & RESISTIVITY METERS



POWER QUALITY ANALYZER



FAULT LOOP
IMPEDANCE METER



RCD METER



PAT - TESTER



MICRO OHM METER



THERMAL IMAGER CAMARA



CORONA CAMERA



CABLE LOCATORS



PHOTOVOLTAIC METERS



VOLTAGE & PHASE ROTATION TESTER



MULTIMETER & CLAMP METER



LUX-METER



HIPOT / VLF



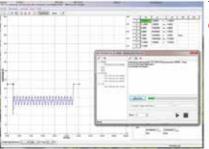


DC and Arbitrary Power Supplies Arbitrary & Function Generators 4-Quadrant and Broadband Amplifiers Special Instruments

Comprehensive Test Bench For Automotive Testing

TOELLNER offers flexible solutions for on-board network simulation and testing of components, e.g. for the automotive and avionics industries. The Software WaveControl provides waveforms and controls the TOELLNER system components at the test station, which can be individually tailored to your requirements. Using a DAQ-Card, any signal waveform can be provided with Arbitrary Power Supplies or 4-Quadrant Amplifiers with outputs from 160 W to 5200 W. For fast interruptions, TOELLNER offers electronic switches with switching times below 500 ns.

WaveControl Software includes a comprehensive library of waveforms supporting these standardized automotive industry tests:



The Software WaveControl provides

- Extensive Waveform Libraries for Normative Tests, e.g.
 - LV 124, LV 148
 - VDA 320
 - VW 80000-1
 - VW 82148
 - GMW 3172
 - MBN 10615
 - ISO 16750-2
 - BMW GS 95024-2-1
 - BMW GS 95026
- Import & Export of recorded Data
- Visual Generation of individual Waveforms
- Sequence Controlling and Timing
- Electronic Switch for short interruptions up to 60V / 100A; tr / tf < 500 ns
- 4-Quadrant-Power-Supply up to \pm 100 V / \pm 40A; > 100 kHz, 320W / 1kW, modularly expandable up to 6.4 kW / 20 kW
- Arbitrary Power Supply up to 100 V / 320 A, AC-superimposition up to 70 kHz, 320 W / 1 kW up to 5.2 kW / 16 kW
- Software to create arbitrary waveforms, an extensive library of normative waveforms included
- All instruments can also be used individually



GWINSTEK

GWInstek Data Acquisition Systems



FEATURES

- · Large 4.3"TFT color display
- 3-slot mainframes with built-in 6 1/2 digit DMM
- Basic 0.0035% DCV accuracy
- 5 selectable switch modules
- Up to DC 600V / AC 400V voltage measurement (DAQ-909 module)
- Up to 450 channel/s scan rate
- Up to 100 kilo points internal memory
- · Measures and converts 14 different input signals:
- Temperature with thermocouple, RTDs and thermistor; dc/ac volts; 2and 4-wire resistance; frequency and period; dc/ac current and capacitance; direct strain and bridge strain
- USB storage support to copy/log data in standalone operation
- · Interface: Digit I/O, LAN, USB host/device and mini GPIB(optional



Data Acquisition

Multiplexer

Mainframe



| Range | -200 °C to 1820 °C | -200 °C to 600 °C | 80 °C to 150 C | 100mV to 300V | 100mV to 600V | 100μA to 2A | 1μΑ το 24 |
|------------|---------------------|-------------------|----------------|---------------|---------------|--------------|------------|
| Resolution | 0.002 °C to 0.01 °C | 0.002 °C | 0.01 °C | 0.1μV to 1mV | 0.1μV to 1mV | 1000A to 1μA | 1РА то 1µА |
| Accuracy | 0.2 °C | 0.06°C | 0.01 °C | 0.05% | 0.0035% | 0.10% | 0.05% |



| Range | 100Ω to $1000\text{M}\Omega$ | 100Ω to $1000\text{M}\Omega$ | 1nF to 100µF | 3Hz to 300kHz | |
|------------|-------------------------------------|-------------------------------------|--------------------|---------------|--|
| Resolution | $0.1\text{m}2$ to 1000Ω | $0.1mo$ to 1000Ω | 0.0001nF to 0.01μF | | |
| Accuracy | 0.01% | 0.01% | 2% | | |



Battery Simulation, Battery Testing (Charge/Discharge) Battery Internal Resistance & Battery Health Monitoring, BMS Testing Electric Power Train Testing, LV 123, LV 124/LV 148, ISO 16750-2

EMC EMI Pre Compliance Testing

Solar Power Simulation & Invertor Testing, Fuel Cell Testing AC Grid Simulation, AC/DC Charging Station & OBC Testing

Power Quality Testing, Electrical Safety Testing, Thermal Imaging CAN/CAN FD, 10 Base T1-S, I2C, RS-232/482, Modbus, Profibus, SMBus **Data Logging & Analysis, Optical & Digital Inspection**

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