

Test & Measurement



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2-channel Mixed Domain Oscilloscope



£10,500.00

Order code 65-4138

RHMM17 Digital Multimeter



£25.79

Order code 90-0005

Full range of Test & Measurement products available at:

www.rapidonline.com

Tektronix®

Tektronix designs and manufactures test and measurement solutions that empower engineers to create and realize technological advances with greater ease, speed and accuracy. Rapid is proud to stock a comprehensive range of Tektronix bench instruments and accessories, including oscilloscopes, multimeters, power supplies, function and signal generators. Whatever your application, Tektronix have the products and expertise to help you achieve its possibilities.



Oscilloscopes

8 out of 10 engineers around the world trust Tektronix to help them debug and test their designs faster. With the broadest portfolio of digital bench oscilloscopes available, the richest set of product features, the most extensive analysis capability and award-winning service and technical support, Tektronix oscilloscopes perform better for longer. Rapid's range includes teaching models for basic signal visualization and mixed signal, mixed domain oscilloscopes, providing engineers with excellent design and debug features, and bandwidths from 30 MHz to 1 GHz.

www.rapidonline.com/tektronix/oscilloscopes

Function and Signal Generators

Tektronix function generators create a virtually unlimited range of standard and custom signals, from sine or pulse to ideal or distorted ... and anything in between. With standard waveforms, arbitrary waveform capability and signal impairment options, these high calibre Tektronix instruments support a wide range of applications. From the AFG1000, with dual-channel operation and 125MS/s sampling rate for general purpose lab use to the AFG3000 series, with 250 MS/s and 12 different standard waveforms, all waves are covered.

www.rapidonline.com/tektronix/function-signal-generators

Bench Digital Multimeters

The Tektronix range of bench digital multimeters are offered under the Keithley brand, and are designed for bench, field service and system applications, and meet most measurement requirements. They address the needs of student laboratories for basic bench DMMs, as well as the speed and accuracy required for component, module and assembled product manufacturing testing. Instruments like the DMM4050 and DMM4020 measure voltage, resistance and current with basic VDC accuracy of up to 0.0024%. You can also use them for frequency and period measurements, and perform continuity and diode tests.

www.rapidonline.com/tektronix/digital-multimeters

Bench Power Supplies

Our range of Keithley bench DC power supplies, integrated with sensitive source meters, facilitate replication of the latest battery technologies. They give engineers opportunities to research product performance over the complete battery lifecycle, from charged to flat and new to end-of-life. They provide a variety of options for engineers:

www.rapidonline.com/tektronix/bench-power-supplies

Oscilloscopes

65801

Tektronix®

MD03 Series Mixed Domain Oscilloscopes 100MHz / 1 GHz



Having the right instruments to hand when and where you need them is critical to efficient testing and fault-finding. These Tektronix 3 Series **Mixed Domain Oscilloscopes** combine analogue waveforms, digital logic and spectrum analysis in a lightweight 5.3kg (11.7 lbs), portable package, making them the perfect choice where space is limited and high flexibility is desired.

The combination of a small instrument and a high level of integration, aids their usage for **sophisticated lab experiments as well as in the teaching** of various electronics principles. These mixed domain oscilloscopes can be fully upgraded enabling the addition of functionality over time as needs change or budgets allow.

- Mixed Domain Oscilloscopes
- 2 or 4 analogue channels
- 1 spectrum analyzer input
- 1 logic analyzer input
- Bandwidth: 100MHz, upgradable up to 1GHz
- Up to 5GS/s sample rate
- 10M record length on all channels
- >280,000 wfms maximum waveform capture rate
- Standard passive voltage probes with 3.9pF capacitive loading and 250MHz or 500MHz analog bandwidth
- Spectrum Analyzer (optional)
- Arbitrary Function Generator (optional)
- Digital Channels (optional)
- Serial Bus Decode, Triggering and Search (optional)
- Digital Voltmeter / Frequency Counter (Free with product registration): 4-digit DC, AC RMS, and DC+AC RMS voltage measurements 5-digit frequency measurements
- Please refer to the datasheet for full details of the options available
- 3-year manufacturer's warranty
- **Tektronix type MD03 series**

| Analogue channels | Bandwidth | Order code | 1+ |
|-------------------|-----------|----------------|----------|
| 2 | 100MHz | 65-3392 | 3330.00 |
| 2 | 200MHz | 65-4135 | 3980.00 |
| 2 | 350MHz | 65-4136 | 6930.00 |
| 2 | 500MHz | 65-4137 | 8840.00 |
| 2 | 1GHz | 65-4138 | 10500.00 |
| 4 | 100MHz | 65-3394 | 3980.00 |
| 4 | 200MHz | 65-4092 | 4460.00 |
| 4 | 350MHz | 65-4093 | 8360.00 |
| 4 | 500MHz | 65-4094 | 11100.00 |
| 4 | 1GHz | 65-3719 | 13900.00 |

570955

Tektronix®

TBS1000C Series 2 Channel Digital Storage Oscilloscopes 50 to 200MHz



These TBS1000C Series Digital Storage Oscilloscopes offer affordable performance in a compact design. They are designed to meet the needs of today's educational institutions, embedded design engineers, and maker community.

The instrument includes a 7-inch WVGA colour display with up to 1GS/s sample rate, bandwidths from 50MHz to 200MHz and a five-year warranty. They come with an innovative courseware system that integrates the lab exercises with step-by-step instructions for use, by the students. The HelpEverywhere® system provides useful tips and hints throughout the user interface, to make the instruments more approachable to a new user.

Key performance specifications:

- 200MHz, 100MHz, 70MHz, and 50MHz bandwidth models
- 2-channel models
- 1GS/s sample rate on all channels
- 20k point record length on all channels
- Advanced triggers include pulse, runt, and line triggers
- Five-year warranty

Key features:

- 7-inch WVGA colour display with 15 horizontal divisions that shows 50% more signal
- 32 automated measurements
- Dual window FFT with simultaneous time and frequency domain views
- Trigger frequency counter
- Pan and Zoom capability
- Multi-language user interface with support for 10 languages in the user interface and front panel overlay
- Small footprint and light weight
- Fanless design contributes to low noise operation

Connectivity:

- USB 2.0 host port on the front panel for quick and easy data storage
- USB 2.0 device port on rear panel to connect to a PC and remotely control the instrument

Education:

- HelpEverywhere® provides helpful on-screen tips for users
- Built-in oscilloscope handbook provides operating instructions and oscilloscope fundamentals
- Integrated courseware feature provides lab exercise guidance on the display
- Autoset, Cursors, and Automated measurements can be disabled to help educators to teach basic concepts to students

| Bandwidth | Order code | 1+ |
|-----------|----------------|--------|
| 50MHz | 85-1756 | 399.00 |
| 70MHz | 85-1772 | 644.00 |
| 100MHz | 85-1773 | 880.00 |
| 200MHz | 85-1774 | 880.00 |

562919

Tektronix®

TBS2xxxB Series Digital Storage Oscilloscopes



The TBS2000B Series of Oscilloscopes has a 9-inch WVGA display, 5 million point record length and 2 GS/s sample rate, capture and display significantly more signal to help you debug and validate the designs faster. Easily and confidently analyze your signals with new on-waveform cursor readouts and 32 automated measurements, each with informative tips. The TekVPI® probe interface supports traditional passive BNC probes, but also enables wide application coverage with the latest active voltage probes and current probes.

Key performance specifications

- 2 and 4 analog channel models
- 200 MHz, 100 MHz, and 70 MHz bandwidth models up to 2 GS/s sampling rate
- 5 M record length on all channels
- 5 year warranty

Key features

- 9-inch WVGA color display with 15 horizontal grids shows 50% more signal
- TekVPI probe interface supports active, differential, and current probes with automatic scaling and units
- New front-end design enables more accurate measurements
- 32 automated measurements, and FFT function for quick waveform analysis
- Search and Mark features for easy identification of events that occur in the acquired waveform
- HelpEverywhere® provides helpful on-screen tips for new users
- Built-in Scope Intro handbook provides operating instructions and oscilloscope fundamentals
- The instrument user interface and the front panel overlay is translated into 10 languages

Connectivity

- USB 2.0 host port on the front panel for quick and easy data storage
- USB 2.0 device port on rear panel for easy connection to a PC
- 10/100BASE-T Ethernet port for remote control over LAN
- Wi-Fi interface provides wireless communications capability support

Education

- Courseware function presents lab exercise guidance on the display
- Fully compatible with TekSmartLab lab management software for education
- Autoset, Cursors and Automated measurements can be disabled to help educators to teach basic concepts to students

| Bandwidth | No. of Channels | Order code | 1+ |
|-----------|-----------------|----------------|---------|
| 70MHz | 2 | 85-1783 | 1240.00 |
| 100MHz | 2 | 85-1784 | 1560.00 |
| 200MHz | 2 | 85-1789 | 2210.00 |
| 70MHz | 4 | 85-1787 | 1920.00 |
| 100MHz | 4 | 85-1791 | 2270.00 |

583521

Tektronix®

**Test & measurement solutions
By engineers, for engineers**

See our range of Tektronix Test Equipment visit www.rapidonline.com



VOLTCRAFT® DSO-1062D Digital Storage Oscilloscope 60MHz



The Voltcraft DSO-1062D 2-Channel Oscilloscope is an entry-level model in the field of digital storage oscilloscopes. The device has two channels with a bandwidth of 60MHz and a real-time sampling rate of max. 1GSa/s and a memory depth of 512kpts.

Up to 1Mpts are available if only one channel is used. The DSO-1062C is almost unbeatable value for money with its large 17.7cm 800 x 480 pixel colour display and USB host for storing data on an optional stick.

The DSO-1062D is completed by a USB interface, multilingual Help menu, extensive trigger possibilities, automatic measuring functions including FFT and standard software included in the delivery.

- 60MHz bandwidth
- 1 GS/s real time sampling rate, equivalent to 25GS/s
- Supplied with Voltcraft DSO-1062D, 2 probes (each 1:1 / 10:1), Power cord USB cable, software, detailed instruction manual (English), Quick Start Guide (Multilingual)

2 probes (each 1:1/10:1), Power cable, USB cable, Software, Detailed user manual (English), Quick instructions (Multilingual).

| Type | Order code | 1+ |
|---------------------|------------|--------|
| Voltcraft DSO-1062D | 51-5195 | 370.45 |

525206

VOLTCRAFT® DSO-1202D 2 Channel Digital Oscilloscope



The Voltcraft DSO-1202D is a 2-Channel Digital Oscilloscope with a 200MHz bandwidth. This entry level oscilloscope comes with 1GS/s real time sampling rate and 512kpts memory depth (boosted to 1Mpts when using one channel only).

It has a large 7 inch 800 x 480 colour screen and a USB port allowing data and image transfer to memory sticks. The DSO-1062D has a multilingual help menu, a wide range of trigger options, automated reading modes including FFT and with the supplied software, makes it virtually unbeatable in value for money.

What's in the Box?

2 probes (each 1:1/10:1)
Mains cable
USB cable
Software
Comprehensive user manual (English)
Quick Guide (Multilingual)

- 200MHz bandwidth
- 1GS/s real time sampling rate, equivalent to 25GS/s
- Manufacturer's part: **Voltcraft DSO-1202D**

| Type | Order code | 1+ |
|----------------------|------------|--------|
| Digital oscilloscope | 64-2969 | 518.85 |

559761

Technical specifications and datasheets

Technical specifications and datasheets
can be found at

www.rapidonline.com

VOLTCRAFT® Digital Storage Oscilloscope, MSO Series



A range of Voltcraft Digital Storage Oscilloscopes from the MSO Series. These entry level models are ideal for visualising electrical magnitudes and signals. For measurement, there are 2 mutually independent input channels for analogue signals and 16 channels for digital signals. The probes are connected to the oscilloscope via BNC connectors; the digital input takes place over one 25-pin sub-D socket.

The oscilloscopes have a large 17.7cm TFT colour monitor. At the front is a USB port for storing the data on an optional USB stick. The oscilloscopes are comfortable and easy to operate, using an intuitive menu that is user friendly.

The oscilloscopes are rounded off by a multilingual Help menu, extensive trigger options and automatic measurement functions with cursor control.

The measured signals can be stored and displayed on the monitor as a reference. Both these oscilloscopes can be connected to a computer for evaluation and control via a USB interface.

What's in the Box?

2 probes (each 1: 1/10: 1)
16-channel cable with mini gripper
USB cable
Software CD
Power cord
Operating instructions

- 2 analogue +16 digital inputs
- Sampling Rate 1GSa/s
- Integrated 16-channel logic analyzer
- Large colour TFT screen (800 x 480 pixels)
- Front USB Host
- Comprehensive, automatic measurement functions
- Screen menu with measurement display
- Broken screen for advanced displays
- Available in **60 and 100MHz options**

| Type | Order code | 1+ |
|---------------------|------------|--------|
| 60MHz Oscilloscope | 64-2857 | 443.34 |
| 100MHz Oscilloscope | 64-2858 | 529.85 |

559761

60MHz Oscilloscope Probe

Only

£18.29

Order code 85-2212
www.rapidonline.com



Rapid

VOLTCRAFT® DSO-1062D-VGA Digital Oscilloscope, 60MHz with VGA Interface



The Voltcraft DSO-1062D-VGA is an Entry-Level Digital Storage Oscilloscope with a VGA Interface for connection to a large screen or projector if required. This oscilloscope provides two channels with a bandwidth of 60MHz, a real-time sampling rate of 1GSa/s, and a memory depth of 512kpts per channel, which are available when using only one channel to 1Mpts.

The oscilloscope has a large 17.7cm (7 inch) colour display with a resolution of 800 x 480 pixels as well as WINDOWS-style interfaces and menus for easy operation.

The DSO-1062D-VGA has a multilingual Help menu, easy-to-operate buttons and multifunctional knobs. The shortcut keys help you save a lot of time in operation; the Autoset function lets you detect sine and square waves automatically; the Probe Check Wizard helps you to adjust the probe compensation and set the Probe option attenuation factor.

The oscilloscope provides context-sensitive, hyperlinks, and an index to enable you to master all operations on the device easily and quickly, improving your efficiency in production and development. It has also a VGA interface for connection to a large screen for classroom demonstration purposes.

What's in the Box?

Voltcraft DSO-1062D-VGA
2 probes (each 1: 1/10: 1)
Power cord
USB cable
Software
Detailed instruction manual (English)
Quick Guide (multilingual)

- 60MHz bandwidth
- 1GS/s real-time sampling rate, 25GS/s equivalent
- Discount set with 2 probes
- Manufacturer's part: **Voltcraft DSO-1062D-VGA**

Please Note: The oscilloscope screen is still valid when connection to a large screen is made.

| Type | Order code | 1+ |
|---------------|------------|--------|
| DSO-1062D-VGA | 52-0935 | 316.83 |

552685

VOLTCRAFT® 610-2 1-Channel Oscilloscope

The Voltcraft 610/1 is a portable 1-channel oscilloscope with a frequency bandwidth of 0 to 10MHz and sensitivity of 5mV/DIV to 5V/DIV. The oscilloscope is very easy to operate, highly reliable and its light weight design makes it very easy to carry.

This 10MHz oscilloscope has an excellent price/quality ratio and can also be used for research, education, DIY and development in the electronics and circuitry industries.

- Calibrated switch settings for vertical deviation and time base
- Adjustable focus, intensity and elongation
- 4.8 x 6cm CRT with internal raster
- Integrated trigger function (with external trigger input)
- X-Y operation and probe calibrator
- Supplied with power cable and operating instructions

Power cable - Operating instructions.

| Type | Order code | 1+ |
|-----------------|------------|--------|
| Voltcraft 610/1 | 51-5193 | 206.74 |

525204



Rapid
education

We bring
STEAM to life



SDS6062 Digital Oscilloscope with Logic Analyser 60MHz 2 Channels

The Owon SDS6062 Digital Oscilloscope with Logic Analyser 60MHz with 2-Channels is a two-channel bench top scope with a huge 10MSa record length for each channel, allowing zooming capability for investigating fast, intermittent pulses. This low-cost versatile scope samples at 500MSa/s and is packed with useful features normally only seen on higher-end DSOs, including deep memory, external, video-capable trigger, auto-measurements, auto-scaling, large 8 inch full colour LCD display, XY mode, auto-set, averaging, math functions, USB output, waveform storage, pass/fail output and a 3-year warranty.

This lightweight scope is perfect for any engineers or students desk. The USB master and slave connections make printing or storing results easy too. The sensitivity range is 2mV/div to 10V/div with maximum display of $\pm 50V$. Another really useful feature is the ability to store up to 15 waveforms for comparison with live inputs. The SDS6062 offers on-board storage, and USB output, making it an unbeatable value for use in design, maintenance and lab

applications. Also included are a USB cable, power adaptor, user manual, and the software CD.

This highly portable unit weighs less than 4lbs, and measures 340 x 155 x 70mm.

- Bandwidth: 60MHz
- Channels: Dual
- Display: 8 inch colour LCD, TFT screen, 800 x 600 pixels
- VGA output for projector, large screen, whiteboard etc, which supports standard VGA
- USB (host) direct output for saving images and data straight to USB flash drive
- USB-for communicating with computer, working with PC suite software
- LAN- for connecting to network
- Ability to store 15 waveforms
- Multiple waveform calculation function
- USB communication port
- 120/240V AC 50/60Hz, CAT II, CE
- Manufacturer's part no. **OWON SDS6062**



| Type | Order code | 1+ |
|----------------------|----------------|--------|
| Digital Oscilloscope | 85-2770 | 404.77 |

517620



SmartDS 5032E Oscilloscope

The OWON SDS5032E is a 30MHz Slim Design Oscilloscope that provides a combination of comprehensive features, speed of use and comprehensive analysis capabilities. The impressive full colour 8 inch LCD display has a high resolution 800 x 600 that makes the wave easy to read. The SDS5032E offers a 30MHz bandwidth, a sample rate of 125MSa/s in dual Channels. VGA output is included for external monitors or video projectors, making it ideal for teaching situations.

The OWON digital storage oscilloscope SDS5032E offers reliable measurement technology for a really good price.

- 8 inch LCD TFT colour display 800 x 600
- Bandwidth: 30MHz
- Sample rate: Up to 250ms/s
- Autoscale and built-in FFT

- Record length: 10K points per channel
- Store up to 15 waveforms
- 20 Automatic measurements
- USB interface, LAN
- VGA output for use of projection
- Rechargeable battery (optional)
- Light weight: 1.5kg
- Compact design
- Dimensions: 350 x 157 x 80mm
- What's in the box? Power probe, power cord, USB data cable, CD-Rom and user's manual
- Manufacturer's part: **OWON SDS5032E**

| Type | Order code | 1+ |
|---------------|----------------|--------|
| OWON SDS5032E | 85-9990 | 290.71 |

538624



4 Channel Digital Storage Oscilloscope, DS1100Z Series

A range of **Rigol High Quality 4-Channel Digital Storage Oscilloscopes (DSO)** with a real-time sample rate of up to 1GSa/s.

These high-performance and economical digital oscilloscopes are ideal for the designing, debugging and educational requirements of the mainstream digital oscilloscope market. The oscilloscopes are compact, easy-to-use and packed with useful features and functions for all measuring tasks. This high performance standard not only ensures capturing real-time instantaneous signals, but also observes details of repeated signals.

The particularly large TFT colour displays are very easy to read with the largest possible area always available for displaying signals. The signal curves, the FFT display, and other functions can be shown simultaneously on the display.

The oscilloscopes are available in two models, with or without a built-in 2 channel function/ arbitrary waveform generator.

The **Rigol DS1104Z-S-Plus (order code 64-6950)** is supplied with a built-in 25MHz bandwidth 2-channel arbitrary waveform generator.

What's in the Box?

4-Channel Digital Storage Oscilloscope
4x passive probes (150MHz)
USB cable
UK and European mains leads
Quick guide
CD (user guide and application software)

- MSO Ready
- Built-in 2 channel function/ arbitrary waveform generator (**DS1104Z-S Plus only**)
- Maximum sample rate 1GSa/s
- Vertical scale 1mV/div to 10V/div
- Innovative 'UltraVision' technology
- Up to 30,000wfms/s waveform capture rate
- 7 inch WVGA (800x480) TFT LCD display, 64 intensity grading levels
- Up to 15 off trigger functions, including various protocol triggers
- Auto measurement of 33 waveform parameters, with statistics
- Built-in FFT with a choice of window functions
- Pass/fail test function
- Built-in help facility
- Compact size, light weight, easy to use



- Available with a **bandwidth of 50, 70 and 100MHz**
- Available **with or without a built-in 2 channel function/ arbitrary waveform generator**

| Type | Order code | 1+ |
|----------------|----------------|--------|
| DS1104Z-S Plus | 64-6950 | 786.06 |
| DS1074Z Plus | 64-6951 | 485.06 |
| DS1054Z | 64-7999 | 350.07 |

561770

Frequency Counters & Function Generators



TF930 3GHz High Res Bench/Portable Universal Frequency Counter



The TF930 is a portable, battery-operated, universal counter with a large 0.5 inch 10-digit liquid crystal display (LCD). The frequency range is 0.001Hz to 3GHz and measurement functions include frequency, period, ratio, pulse width and count.

The instrument uses a high quality temperature compensated internal frequency reference which has a low aging rate and is stable to within ± 1 ppm over the full temperature range. Its short warm-up time allows accurate measurements to be made even under portable battery powered conditions.

Input A has configurable coupling (AC or DC), input impedance (1MW or 50W), attenuation (1:1 or 5:1), threshold (fully variable) and active edge and can be used for frequencies in the range 0.001Hz to >125MHz.

Input B is a nominal 50W input for frequencies in the range 80MHz to 3GHz.

An External Reference input is provided and changeover from the internal time base is automatic when an external reference standard is connected.

For frequency, period and frequency ratio functions the instrument uses a reciprocal counting technique to provide high resolution at all frequencies. 8 significant digits of answer are produced in a 1 second measurement time, 9 digits in 10s and 10 digits in 100s with a granularity of less than 2 counts in the least significant digit.

Indicators show measurement input configuration and function, measurement time and status, external reference connection, low battery and the units of the measurement which may be Hz, kHz, MHz, ns, us, ms or s.

The instrument has a USB interface which allows it to be remotely controlled using RS232 protocol via a computers USB port. The remote commands of its predecessor instrument, the TF830, are compatible with the TF930 command set. The instrument can also be powered from a standard USB port.

The instrument operates from internal rechargeable NiMH batteries which give typically 24 hours operating life. The universal AC charger supplied will recharge the batteries in less than 4 hours and can be used for continuous AC operation.

- 0.001Hz to 3000MHz frequency range
- Frequency, period, pulse width and totalise modes
- Reciprocal counting measurements
- Low pass filter, attenuator and trigger level control
- Large 10 digit LCD display with annunciators
- Operation from built-in rechargeable batteries
- Low power consumption
- Remote control and read back via USB

| Type | Order code | 1+ |
|------------------------------|----------------|--------|
| TF930 3GHz Frequency Counter | 85-1301 | 296.58 |

400366

Order online

Save time, and place your order at:
www.rapidonline.com
 24 hours a day

Tektronix®

AFG31000 Series Arbitrary Function Generators

The Tektronix AFG31000 Series is a high-performance AFG with built-in arbitrary waveform generation, real-time waveform monitoring, and the largest touchscreen on the market. Providing advanced waveform generation and programming capabilities, waveform verification, and a modern touch-screen interface, the new AFG31000 is sure to delight and simplify the job of every researcher and engineer.

Key performance specifications

- 1 or 2 channel models
- Output amplitude range 1 mV_{p-p} to 10⁻⁶ V_{p-p} into 50 Ω loads

Basic (AFG) mode:

- 25 MHz, 50 MHz, 100 MHz, 150 MHz, or 250 MHz sine waveforms
- 250 MSa/s, 1 GSa/s or 2 GSa/s sample rates 14-bit vertical resolution
- Built-in waveforms include sine, square, ramp, pulse, noise, and other frequently used waveforms
- Sweep, Burst, and Modulation modes (AM, FM, PM, FSK, and PWM)

Advanced (Sequence) mode:

- Continuous mode (optional Sequence, Triggered and Gated modes)
- 16 Mpts arbitrary waveform memory on each channel (128 Mpts optional)
- Up to 256 steps in sequence mode with loop, jump and wait events
- Variable sampling clock 1 μ Sa/s to 2 GSa/s

Key features

- Patented InstaView™ technology enables engineers to see the actual waveform at the Device Under Test (DUT) in real time, without the need of an oscilloscope and probe, eliminating the uncertainty caused by mismatched impedance
- Sequencing option adds the ability to program long, complex waveforms with up to 256 steps
- The 9-inch capacitive touch screen works like a smart phone and has short-cuts to frequently used settings
- Built-in ArbBuilder lets you create and edit arbitrary waveforms on the instrument, eliminating the need to connect to a PC



COMING SOON

- Outputs are protected from over voltage and current to minimize potential instrument damage
- Built-in Double Pulse Test application to generate voltage pulses with varying pulse widths onto the DUTs

Applications

- Advanced research
- Clock and system synchronization
- Replication of real world signals
- Component and circuit characterization and validation
- Embedded circuit design and test
- General purpose signal generation
- Double pulse test

<https://uk.tek.com/signal-generator/afg31000-function-generator>

| Type | Analog Channels | Order code | 1+ |
|--------|-----------------|----------------|----------|
| 25MHz | 1 | 85-1814 | 1800.00 |
| 50MHz | 1 | 85-1963 | 2020.00 |
| 25MHz | 2 | 85-1839 | 2800.00 |
| 50MHz | 2 | 85-1879 | 3110.00 |
| 100MHz | 1 | 85-1965 | 3620.00 |
| 150MHz | 1 | 85-1966 | 4240.00 |
| 100MHz | 2 | 85-1967 | 5110.00 |
| 150MHz | 2 | 85-1968 | 6050.00 |
| 250MHz | 1 | 85-1969 | 7840.00 |
| 250MHz | 2 | 85-1971 | 11900.00 |

586540

Tektronix®

AFG1022 25MHz and AFG 1062 60MHz Arbitrary Function Generators

The Tektronix AFG1022 and AFG1062 are Arbitrary Function Generators that provide waveform generation tools with the best price performance ratio. They offer dual-channel operation with up-to 10Vp-p output amplitude and bandwidths of 25MHz (AFG1022) or 60MHz (AFG1062).

The four run modes, 50 built-in frequently-used waveforms and the built-in 200MHz frequency counter cover most waveform generation needs in your experiment and test jobs. The 3.95-inch TFT LCD, short-cut buttons, USB interface and PC software provide the most intuitive ways to configure the instrument.

Applications: Electric and Electronics Experiments, Communications Experiments, Sensor Simulation and Functional Test.

- Dual-channel, 25MHz (AFG1022) or 60MHz (AFG1062) sine waves and 12.5MHz (AFG1022) or 30MHz (AFG1062) square/pulse wave
- 125MS/s (AFG1022) or 300MS/s (AFG1062) sampling rate and 14-bit vertical resolution enable great signal fidelity
- 1mVp-p to 10Vp-p output amplitude into 500 over the whole frequency range
- Intuitive user interface shortens the learning curve for students and other users
- 14 bits, 125MS/s (AFG1022) or 300MS/s (AFG1062) arbitrary waveforms with 8k points (AFG1022) or 1M points (AFG1062) record length
- 64 Mbyte internal non-volatile memory for arbitrary waveform storage



- Standard USB host / device for memory expansion and remote control
- Continuous, sweeping, burst, and modulation modes covers most requirements for students and other users
- Built-in 200MHz counter with 6-digit resolution
- Compact form factor for stacking on other bench instruments to save valuable bench space
- Free ArbExpress makes user defined waveform editing extremely easy
- Compatible with TekSmartLab
- Manufacturer's 5-year warranty
- **Tektronix types AFG1022 and AFG1062**

For technical specialisation visit www.rapidonline.com

| Bandwidth | Order code | 1+ |
|-----------|----------------|--------|
| 25MHz | 63-0800 | 674.00 |
| 60MHz | 64-5454 | 908.00 |

554609



DG1000Z Function Generator Frequency Generators - 30/60MHz

These **waveform generators from Rigol** are multi-functional generators that combine many functions in one, including function generator, arbitrary waveform generator, noise generator, pulse generator, harmonics generator, analogue/digital modulator and counter. As a multi-functional, high performance and portable generator, it will be a new selection in education, R&D, production, test etc.

- Innovative SiFi (Signal Fidelity): generate arb waveform point-by-point, restore signal distortionless, precisely adjustable sample rate and low jitter (200ps)
- Arbitrary waveform memory: 8Mpts (standard), 16Mpts (optional)
- Standard 2 full functional channels can be used as two independent generators

- $\pm 1\text{ppm}$ frequency stability, -125dBc/Hz phase noise
- Built-in 8 orders harmonics generator
- Built-in 7 digits/s full function frequency counter with 200MHz bandwidth
- Up to 160 built-in waveforms
- 200MSa/s sample rate, 14bits vertical resolution
- Convenient arbitrary waveform editing interface
- Versatile modulation types: AM, FM, PM, ASK, FSK, PSK and PWM
- Standard waveform summing function
- Standard channel track function
- Standard interfaces: USB Host and Device, LAN (LXI Core Device 2011)
- 3.5in TFT colour display
- Maximum output frequency: **60MHz or 30MHz**



| Max output frequency | Order code | 1+ |
|----------------------|----------------|--------|
| 30MHz | 63-2161 | 756.67 |

55384



LCR-8105G 5MHz Precision LCR Meter

The GW Instek LCR-8105G LCR meter, with a test frequency up to 10MHz, provides accuracy, versatility and high resolution for a wide range of component measurements, even including DC resistance measurement and voltage/current monitoring. The multi-step function of the **GW Instek LCR-8105G** allows on-screen programming of customized measurement sequence with pass/fail indication.

Each program includes 30 test steps and each test step can be set with selected parameters and test limits. Under multi-step operation, a tedious work routine can be done step by step automatically just at a press of a button. With graph mode the LCR-8105G displays the component impedance response either over a wide range of test frequency sweep or over a wide range of test voltage sweep in a graph chart. This gives an analysis result of either impedance vs. frequency or impedance vs. applied voltage all at a glance. GPIB and RS-232C interfaces are available as standard for instrument

control and test result display on the PC. The rich features of the GW Instek LCR-8105G easily make your measurement tasks done at a very competitive price.

The GW Instek LCR-8105G is designed to perform precision impedance measurements over a wide frequency range of 20Hz to 5MHz for the LCR-8105G. The instrument is capable of measuring 11 different parameters with 0.1% basic accuracy, which meets the precision measurement requirements of components and modules used in the RF circuits. The large LCD display with single-layer operation menu of GW Instek LCR-8105G provides users with ultimate convenience to plug and play without much learning time.

- Wide test frequency 20Hz to 10/5/1MHz
- 0.1% Basic accuracy and 6 digits measurement resolution
- Large LCD display with intuitive interface
- Full measuring functions with DUT V/I monitor
- Pass/Fail function (abs, % or delta) with judgment alarm



- DC Resistance measurement
- Multiple step mode
- Standard RS-232C/GPIB interface
- Manufacturers part no. GW Instek LCR-8105G

| Type | Order code | 1+ |
|---------------------|----------------|---------|
| Precision LCR Meter | 90-6208 | 6314.25 |

517422



GFG-8250A Function Generator

The GW Instek GFG-8250A offers a complete solution in generating signals at the 3MHz/5MHz ranges. This model is embedded with standard functions such as TTL/CMOS/ramp output, external voltage controlled frequency (VCF), and built-in 6-digit counter.

Further versatility of Logarithmic and Linear sweep is added into the GW Instek GFG-8250A. All these integrated functions and user-friendly operations of the GW Instek GFG-8250A are made to accommodate the applications in audio response testing, vibration testing, servo system evaluation, ultra sound application, etc. The GW Instek GFG-8250A Function Generator is a stable low

distortion instrument, which will generate signals in the frequency range up to 5MHz.

- Frequency range: 0.5Hz to 5MHz
- Waveforms: sine, triangle, square, ramp, TTL and CMOS output
- External Voltage Controlled Frequency (VCF) function
- Two-Steps (-20dBx2) and variable attenuator
- Built-in 6 digits counter with INT/EXT function up to 150MHz
- Manufacturers part no. GW Instek GFG-8250A

| Type | Order code | 1+ |
|---------------------|----------------|--------|
| GFG-8250A Generator | 90-6097 | 362.25 |

517308



AFG Function Generators - 5MHz/12MHz/ 25MHz

These **AFG function generators from GW Instek** are DDS (Direct Digital Synthesized) based signal generators designed to accommodate the educational and basic industrial requirements for an accurate and affordable signal source covering the output of sine, square (pulse), ramp (triangle), noise and arbitrary waveforms. The series includes 6 models in three frequency bands of 5MHz, 12MHz and 25MHz.

The 20M Sa/s sampling rate, 10-bit vertical resolution and 4k point memory provide a flexible environment for creating the specific waveform output as needed. The 0.1Hz resolution of sine, square and triangle waveforms and the 1% ~ 99% adjustable duty cycle of square (pulse) waveform are the remarkable features which greatly extend its application range in various fields. The 2100 series also offers additional features of AM/FM/FSK modulation, sweep, and frequency counter.

The user friendly interface allows waveform parameters,

including waveform type, frequency, amplitude, DC offset, modulation type and duty cycle through keypad entry and/or the knob selection - displaying the set parameters on the 3.5-inch LCD screen. also equipped with a USB device interface for remote control and waveform editing through a PC, while waveform editing software is provided to facilitate the waveform creation on the PC. After waveform editing is done, the waveform data can be downloaded from PC for signal output.

- Accurate and affordable signal source
- Frequency ranges: 0.1Hz ~ 5MHz, 0.1Hz ~ 12MHz and 0.1Hz ~ 25MHz
- Waveform parameter setting through numeric keypad entry and knob selection
- Amplitude, DC offset and other key setting information shown on the 3.5-inch LCD screen simultaneously
- AM/FM/FSK modulation, sweep, and frequency counter functions (AFG-2100 only)



- USB device interface for remote control and waveform editing
- 2100 series offers AM/FM/FSK modulation, sweep, and frequency counter
- PC arbitrary waveform editing software

Pack includes: user manual CD, quick start guide, power cord and GTL-110 test lead.

| Series | Frequency range | Order code | 1+ |
|--------|-----------------|----------------|--------|
| 2000 | 0.1Hz ~ 12MHz | 54-7239 | 248.01 |
| 2100 | 0.1Hz ~ 5MHz | 54-7241 | 269.60 |

538477

GW INSTEK

SFG-1003 DDS Function Generator



The GW Instek SFG-1003 is an economic function generator with high accuracy and high stability output, are designed based on the DDS (Direct Digital Synthesized) technology embedded in a large scale FPGA.

The 3MHz frequency range and the output waveform selection of Sine, Square, Triangle and TTL available in the GW Instek SFG-1003 adequately provide the fundamental functions to ensure high confidence in test results. The DDS technology at an affordable price gives a high value solution to the users who need a signal source for accurate but simple measurement applications.

- DDS Technique and FPGA Chip Design
- Frequency Range: 0.1Hz to 3MHz
- High Frequency Accuracy: $\pm 20\text{ppm}$
- High Frequency Stability: $\pm 20\text{ppm}$
- Max. Frequency Resolution: 100mHz
- Low Distortion Sine Wave: -55dBc , 0.1Hz to 200kHz
- Manufacturers part no. **GW Instek SFG-1003**

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| Function Generator | 90-6092 | 143.04 |

517304

GW INSTEK

3MHz Function Generator



This function generator is a stable low distortion instrument and generates signals up to 3MHz.

- Frequency range 0.3Hz to 3MHz
- Sine, triangle, square, ramp, TTL and CMOS output
- External voltage controlled frequency (VCF) function
- Duty cycle controlled with signal inversion capability
- Variable DC offset control
- Two-step (-20dB x2) and variable attenuator
- Built-in 6 digit counter with INT./EXT. function
- INT/EXT AM/FM modulation
- GCV output for synchronisation

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| Function generator | 85-2065 | 288.12 |

71555

GW INSTEK

SFG-1013 DDS Function Generator



The SFG GW Instek SFG-1013 is an economic function generator with high accuracy and high stability output, that has been designed based on the DDS (Direct Digital Synthesized) technology embedded in a large scale FPGA.

The 3MHz frequency range and the output waveform selection of Sine, Square, Triangle and TTL available in the

GW Instek SFG-1013 adequately provide the fundamental functions required to ensure high confidence in test results. The DDS technology at an affordable price gives a high value solution to the users who need a signal source for accurate but simple measurement applications.

- DDS Technique and FPGA chip design
- Frequency range: 0.1Hz to 3MHz
- High frequency accuracy: $\pm 20\text{ppm}$
- High frequency stability: $\pm 20\text{ppm}$
- Max. frequency resolution: 100mHz
- Low distortion sine wave: -55dBc , 0.1Hz to 200kHz
- Voltage display
- Manufacturers part no. **GW Instek SFG-1013**

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| Function Generator | 90-6093 | 159.50 |

517305



TG300 Series 3MHz Function Generators



The three models in the **TG300 series** include a basic function generator, a function generator with frequency counter and internal sweep generator. These models provide very high waveform quality under all conditions and represent the state-of-the-art in low-cost analogue function generators.

- 0.03Hz to 3MHz frequency range
- Fast and accurate frequency measurement
- Wide range level control with 2mV to 20V peak to peak amplitude
- Simultaneous display of frequency and amplitude
- RMS, peak to peak or DC offset amplitude display
- Very high waveform quality at all frequencies and levels
- Variable symmetry with constant frequency
- Variable DC offset with zero detent
- 1000:1 frequency change by vernier or sweep voltage
- Auxiliary TTL/CMOS output
- External seven digit 120MHz frequency counter (**TG320 and TG330**)
- Precision internal linear or logarithmic variable sweep generator (**TG330**)
- Internal or external amplitude modulation (**TG330**)
- Complies with **EN61010-1** and **EN61326**
- **Aim-TTI TG300 series**

| Type | Order code | 1+ |
|-------|----------------|--------|
| TG315 | 85-1294 | 240.13 |
| TG330 | 85-1296 | 327.94 |

74706



10MHz DDS Function Generator TG1000



The Aim-TTI TG1000 breaks new ground by offering a high quality DDS function generator at a significantly lower price. DDS (direct digital synthesis) is a technique for generating waveforms digitally using a phase accumulator, a look-up

table and a DAC. The accuracy and stability of the resulting waveforms is related to that of the crystal master clock. When correctly engineered, the DDS generator offers not only exceptional accuracy and stability but also high spectral purity, low phase noise and excellent frequency agility.

The Thurlby Thander TG1000 is particularly easy to use. All of the main information is clearly displayed on a backlit LCD with 4 rows of 20 characters. Sub menus are used for the modulation modes and other complex functions. All parameters can be entered directly from the numeric keypad. Alternatively most parameters can be incremented or decremented using the rotary encoder for quasi-analogue control.

- 0.001Hz to 10MHz or 20MHz frequency range
- 6 digits or 1mHz resolution
- 1ppm stability and 10ppm one year accuracy
- Low distortion, high spectral purity sine waves
- Internal phase continuous sweep, lin or log
- AM, FSK, gated and tone switching modes
- 5mV to 20V pk-pk from 500 or 6000
- Storage for multiple instrument set-ups
- Low cost
- Manufacturers part no. **Aim-TTI TG1000**

| Type | Order code | 1+ |
|---------------------|----------------|--------|
| 10MHz DDS Generator | 85-4531 | 447.11 |

517054



20MHz DDS Function Generator



The Aim-TTITG2000 breaks new ground by offering a high quality DDS function generator at a significantly lower price. DDS (direct digital synthesis) is a technique for generating waveforms digitally using a phase accumulator, a look-up table and a DAC. The accuracy and stability of the resulting waveforms is related to that of the crystal master clock. When correctly engineered, the DDS generator offers not only exceptional accuracy and stability but also high spectral purity, low phase noise and excellent frequency agility.

Unlike some other generators which only provide digital control of frequency, every function is digitally controlled enabling complete instrument set-ups to be stored, or full remote control to be implemented. The Aim-TTITG2000 can generate waveforms between 0.001Hz and 20MHz with a resolution of six digits and a one year accuracy better than 10ppm. The TG1000 has a 10MHz limit.

Amplitude is variable between 5mV and 20V pk-pk from a source impedance of 500 or 6000. Unlike many generators, the waveform quality remains excellent over the full amplitude range. The Aim-TTITG2000 also includes both an RS-232 interface and USB interface. These interfaces can be used for remote control of all of the instrument functions and for remotely storing instrument set-ups.

- 0.001Hz to 10MHz or 20MHz frequency range
- 6 digits or 1mHz resolution
- 1ppm stability and 10ppm one year accuracy
- Low distortion, high spectral purity sine waves
- Internal phase continuous sweep, lin or log
- AM, FSK, gated and tone switching modes
- 5mV to 20V pk-pk from 500 or 6000
- Storage for multiple instrument set-ups
- USB and RS232 Interfaces
- Low cost
- Manufacturer's part no. **Aim-TTI TG2000**

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| Function Generator | 85-4532 | 560.00 |

517055



We bring
STEAM to life

VOLTCRAFT®

DDS-3025 PC Function Generator

The Voltcraft DDS-3025 is a PC Function Generator that works in conjunction with a Windows® compatible computer with a USB interface. The DDS-3025

is a well equipped arbitrary DDS function generator with the additional advantage that the data can be stored and further processed.

The device has an output channel, and can produce arbitrary waveforms up to 25MHz and sine signals can be generated and output to 50MHz. The screen surface is modelled on a traditional function generator. The settings are made via the software.

The integrated pattern generator and frequency counter enable advanced analysis of digital systems. The power supply is via an optional USB power adaptor.

What's in the Box?

Voltcraft DDS-3025
USB cable
BNC to BNC cable
CD software
User's Guide

- 12-bit vertical resolution
- External trigger
- sync output
- Operation and setting via software
- Integration in LabView systems
- 4 digital inputs (6-bit) and 12 digital outputs (12 bits)
- Standalone function without a computer by internal memory
- ARB frequency range: 1Hz to 25MHz
- Channel type: 1
- Dimensions: 122(H) x 206(W) mm
- Distortion factor (sine): -50dBc
- Frequency range (sine): 1Hz to 50MHz
- Frequency range (square wave): 1Hz to 5MHz
- Frequency range (triangle): 1Hz to 10MHz
- Weight: 400g
- Manufacturer's part: **Voltcraft DDS-3025**

| Type | Order code | 1+ |
|-----------------------|----------------|--------|
| PC Function Generator | 64-2270 | 166.35 |

559411

VOLTCRAFT®

FG-8210 Function Generator, Frequency Generator



The Voltcraft FG 8210 function generator outputs signals from 0.1Hz up to 10MHz with different signal forms and adjustable amplitude and symmetry. The following waveforms are available sine, rectangle, triangle with DC to TTL-synchronous output, a linear wobble function, DC offset setting, and voltage-controlled frequency setting (VCF). The generator also has a frequency counter up to 100MHz.

- Signal type sine, square and triangle
- Frequency range 0.1Hz to 10MHz
- Optional calibration to ISO/DAkS
- Square wave slew rate < 120 ns
- Dimensions 240 x 90 x 270mm
- Weight 3kg

| Type | Order code | 1+ |
|---------|----------------|--------|
| FG-8210 | 55-7458 | 273.51 |

543737

VOLTCRAFT®

8202 Function Generator and Frequency Generator



The professional generator produces sine, rectangle and triangle signals. The square signal is available with CMOS-TTL and variable amplitude. The pulse width can be continuously adjusted.

- Frequency range 0.02 Hz to 2 MHz
- Frequency meter 2 to 10 MHz
- Wobble function

Power cable, BNC cable and operating instructions included.

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| Function generator | 51-1602 | 270.95 |

523690

VOLTCRAFT®

FG 250D Function Generator



The Voltcraft FG 250D function generator is easy to use and reliable for applications in the NF-range up to 250kHz. The FG 250D is suitable for testing control circuits, analogue and digital circuits, or for measuring the frequency response of LF amplifiers, filters and speakers. The amplitude of sine and triangular signals can be modified in the range from 100mV to 5Vpp. The amplitude of the rectangular signal corresponds to the TTL-level (+5V). A DC-voltage coupled output (DC) opens up many usage possibilities in digital circuits through the continuous offset setting.

- Frequency range 1Hz to 250kHz in 1Hz steps
- Sine, triangle, rectangle (TTL) settings
- LCD display
- Dimensions 225 x 73 x 212mm
- Weighs 950g

| Type | Order code | 1+ |
|---------|----------------|--------|
| FG 250D | 55-2319 | 179.43 |

540242

Decade Boxes



TEK904 Enhanced Decade Resistance Box



The Martindale TEK904 adds an extra decade at the bottom of the range and this allows resistance from 10 to over 11MΩ to be set. This is an exceptionally wide range for such a compact unit.

- Resistance: 1% grade 0.6W per resistor variable from 10 to 11.11111MΩ in 7 decades
- Typical residual (zero) resistance: <150mΩ
- Temperature coefficient: 50ppm/°C
- Operating environment: 0°C to 50°C at < 70% RH
- Dimensions: 345 x 71 x 51 mm
- Weight: 536g approx

| Type | Order code | 1+ |
|-----------------------|----------------|--------|
| Decade Resistance Box | 85-2768 | 198.70 |

526245

Bench Multimeters

65794

KEITHLEY

A Tektronix Company

DMM6500 6B=-Digit Touchscreen Multimeter



The Keithley DMM6500 is a modern bench/system DMM delivering more measurement functionality, best-in-class measurement insight, and a price that won't break your budget.

The most recognizable feature of the DMM6500 is the large 127mm (5in.) capacitive touch screen display that makes it easy to observe, interact with, and explore measurements with 'pinch and zoom' simplicity.

Beyond its display technology, the DMM 6500 superior analog measurement performance delivers 25 PPM basic DCV accuracy for one year and 30 PPM for two years, potentially allowing you to extend your calibration cycles.

The DMM6500 is equipped with all the measurement functions you would expect in a bench multimeter, so there's no need to buy additional measurement capabilities. Its 15 measurement functions, including capacitance, temperature (RTD, thermistor, and thermocouple), diode test with variable current sources, and up to 1 MS/sec digitising are now included.

The digitising function can be used for voltage or current and is especially useful in capturing transient anomalies or to help profile power events such as the operating states of today's battery operated devices. Current and voltage can be digitised with a programmable 1 MS/sec 16-bit digitizer, making it possible to acquire waveforms without the need for a separate instrument.

- 15 measurement functions including capacitance, temperature, and digitising
- Expanded measurement ranges include 10pA to 10A and 1μΩ to 100MΩ
- Large 127mm (5in.) multi-touch capacitive touchscreen with graphical display
- Large internal memory; store up to 7 million readings
- Multiple language modes: SCPI, TSP® scripting, Keithley 2000 SCPI emulation, Keysight 34401A SCPI emulation
- Two-year specifications allow for longer calibration cycles
- Standard USB-TMC and LXI/Ethernet communication interfaces
- Optional user-installable communication interfaces including: GPIB, TSP-Link®, and RS-232
- Capture voltage or current transients with 1MS/sec digitizer
- USB host port for storing readings, instrument configurations, and screen images
- Three-year warranty
- **Keithley type DMM6500**

| Type | Order code | 1+ |
|---------|----------------|--------|
| DMM6500 | 65-3289 | 904.00 |

568551

KEITHLEY

A Tektronix Company

5 1/2 Digit Digital Bench Multimeter

This **5½-digit dual-display digital multimeter** from Keithley offers a comprehensive set of capabilities, superior measurement accuracy, and high speed for a broad range of applications.

With 15 measurement functions and 7 maths functions and dual-line display capability, the 2110-240 can display two different measurements concurrently and is ideal for use by production, R&D and test engineers, scientists and students making a wide variety of measurements in portable, bench, and system applications.

At 5½ digits, this multimeter delivers up to 200 readings/s via the USB remote interface. At the fast 4½-digit setting, it reads up to 50,000 readings/s and up to 30,000 readings/s into the buffer, making it ideal for any application in which speed is critical.

- High accuracy, high speed for general purpose measurements
- 15 measurement functions including capacitance and thermocouple measurements
- Dual-line display allows concurrent measurements
- TMC-compliant USB B 2.0 interface for use with SCPI test commands
- GPIB option for use in system applications
- Includes PC software utilities for graphing and data sharing in both Microsoft® Word and Excel
- Rugged construction for durability in bench/portable applications
- Includes accessories such as start-up software, USB cable, power cable, and safety test leads
- Dimensions 305 x 252.8 x 107mm
- Manufacturer's part **2110-240**

| Mttrs part no. | Order code | 1+ |
|----------------|----------------|--------|
| 2110-240 | 52-1237 | 624.00 |

564923

KEITHLEY

A Tektronix Company

DMM7510 7B=Digit Graphical Sampling Multimeter

The Keithley Instruments Model DMM7510 is a high accuracy **7½ digit graphical sampling multimeter** that expands standard DMM functions to include high-speed digitizing and a large graphical colour touch-screen display.

The DMM offers a wide range of measurement capabilities, including 17 measurement functions. In addition to **industry-leading DC accuracies**, functions such as capacitance, 10A current, and 18-bit current and voltage digitizing are included.

Tying all these features together is the large **5-inch colour touchscreen display** that brings users an unprecedented combination of data visualization and interaction, enabling users to gain deeper insight into their measurements.

The DMM7510 provides **superior measurement accuracy** and the speed necessary for a wide range of applications, from system applications and production testing to bench-top applications. It meets the requirements for production

engineers, research and development engineers, test engineers, and scientists.

- Functions include: DC voltage
- AC voltage
- Temperature
- Continuity
- DCV ratio
- DC current
- AC current
- Frequency
- Capacitance
- Resistance (2 terminal)
- Resistance (4 terminal)
- Period
- Diode test
- Digitize voltage
- Digitise current
- **Keithley type DMM7510**

| Type | Order code | 1+ |
|----------------------|----------------|---------|
| Graphical multimeter | 65-3294 | 3590.00 |
| Graphical multimeter | 65-3294 | 3590.00 |
| Graphical multimeter | 65-3294 | 3590.00 |

570959

KEITHLEY

A Tektronix Company

5B= Digit Digital Multimeter (DMM)

The **Keithley 6485 is a 5½ Digit Digital Multimeter (DMM)** that combines current measurement instrumentation with enhanced speed and a robust design.

The **6485** has eight current measurement ranges and high speed autoranging. This cost effective instrument can measure currents from 20fA to 20mA, taking measurements at speeds up to 1000 readings per second.

The multimeter has a 10fA resolution and superior sensitivity, making it well suited for characterising low current phenomena, while its 20mA range lets it measure currents high enough for applications such as 4 to 20mA sensor loops.

Although it employs the latest current measurement technology, it is significantly less expensive than other instruments that perform similar functions, such as optical power meters or competitive picoammeters. With a price that is comparable to a general purpose DMM, the **6485** makes picoamp level measurements affordable for virtually any laboratory or production floor.

- Cost-effective low current measurement solution
- 10fA resolution
- 5½ digit resolution
- <200µV burden voltage
- Up to 1000 readings/second
- Built-in Model 485 emulation mode
- IEEE-488 and RS -232 interfaces
- Analogue output
- Manufacturer's part: **Keithley 6485**

| Type | Order code | 1+ |
|-------------------|----------------|---------|
| 6485/E Multimeter | 63-0481 | 2590.00 |

554050

Technical specifications and datasheets

Technical specifications and datasheets can be found at

www.rapidonline.com

VOLTCRAFT**Bench Multimeters CAT I 1000V, CAT II 600V LCD TFT Display**

These high quality bench digital multimeters are the ideal solution for use in the classroom, laboratory, workshop, and anywhere where precise and accurate electrical measurements are required.

The multimeters can measure True rms values for AC voltage and current, as well as DC voltage and current, resistance, continuity, frequency, capacitance, diode test and temperature. CAT I 1000V and CAT II 600V compliance also assures your safety when measuring high voltages.

The units each have a TFT LCD display with a 480 x 320 high resolution, making the display easy to read. Additional features include: RS 232 interface, and data record function.

- Full accuracy from 0°C to +50°C
- SCPI Support
- RS232 Interface
- Data record function
- Foot stand
- CAT I 1000V and CAT II 600V
- Factory calibration ensures accurate readings
- Conforms to EN 61010-1:2010 and low voltage instructions (2006/95/EC)

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------------------|----------------|--------|
| Display counts: 55000 | 65-4050 | 141.49 |
| Display counts: 60000 | 65-4051 | 339.38 |
| Display counts: 200000 | 65-4052 | 392.46 |

582781

VOLTCRAFT**VC650BT Desktop Multimeter**

The VC650BT multimeter shows actual effective measured values (True RMS) in the direct and alternating voltage and current measuring area.

The measurement functions are selected using the rotary control. The measuring range is selected automatically for all measuring functions (except for diode and continuity tests). Manual setting is possible at any time.

Polarity is automatically indicated with the prefix (-) in case of negative measured values.

The multimeter is operated with six 1.5V batteries type C or 230V/AC, 50Hz. Automatic switching off saves power if the device is not used for approx. 15 minutes. (The function is activated only when the multimeter is powered by batteries).

- Measurement of direct and alternating voltage up to 600V
- Measurement of direct and alternating current up to 10A
- Measuring impedance values of up to 40MO
- Diode test
- Please see individual specs for each of these multimeters

| Type | Order code | 1+ |
|----------------------------|----------------|--------|
| VC650BT desktop multimeter | 51-1949 | 275.41 |

524010

GW INSTEK

GDM-8245 D50000 Counts Dual Display Digital Multimeter



The GDM-8245 is an economical **bench-top DMM** equipped with a **rich set of features**. The GDM-8245 has similar functions to those of GDM-8246, but with slightly reduced DCV accuracy and no communication interface. The large 7 segment LED dual display features up to 50,000 counts and the ability to show two measurements at once: ACV plus frequency or dBm, DCV plus dBm or ACV ripple.

The GDM-8245 carries an extensive list of measurement items, DC voltage/current, AC voltage/current with true RMS, resistance, capacitance, frequency, continuity (with beeper), diode test, and dBm. Additional measurement functions, such as max/min hold, relative value, and compare, ease setup and diagnosis burdens. With great range, good accuracy and ability to accept up to 20A of current, the GDM-8245 is the perfect general purpose DMM.

- 50000 Counts Display
- Multi-Function ACV, DCV, ACA, DCA, R, C, Hz, Continuity Beeper, Diode Test, Max/Min, REL, Hold, dBm
- Dual Display Indicate ACV and Hz, or DCV(ACV) and dBm
- Manual or Auto Ranging
- ACV Measuring Frequency Up to 50kHz
- AC True RMS or AC + DC True RMS
- GW Instek Manufacturers part no. GW Instek GDM-8245

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------------|------------|--------|
| Dual Multimeter | 90-6200 | 371.70 |

517418

VOLTCRAFT®



Bench Test Equipment Bundle

Only

£1010.49

Order code 52-1350

www.rapidonline.com

Multimeters

65793

VC130-1 Digital Multimeter Class Pack of 16



VALUE CLASSPACK

A classpack of 16 Voltcraft VC130-1 Digital LCD Multimeters in a deep Grattnell's Tray with lid.

- See order code **55-9059** for full details of the Voltcraft VC130-1 Digital LCD Multimeter.
- Perfect storage solution for classroom multimeters
- Multimeters are held in place by a slotted foam sheet

VOLTCRAFT®

| Type | Order code | 1+ |
|----------------------|------------|--------|
| VC130-1 Classpack 16 | 86-1090 | 255.22 |

526194

FLUKE.

117/322 Electrician's Multimeter Combo Kit

This combo kit pairs the new Fluke 117 DMM with a Fluke 322 clamp meter for productive and effective troubleshooting in one total solution, including the new C115 durable soft carrying case for protection and easy meter transportation.

Let's look at the Fluke 117 Multimeter:

Designed by electricians. Engineered by Fluke. The compact Fluke 117 true RMS digital multimeter is optimized to help you keep commercial buildings, hospitals and schools running right.

The advanced features of the Fluke 117 helps you to get the job done, quickly and safely. Integrated non-contact voltage detection helps you identify energized circuits. The AutoV/LoZ function prevents false readings caused by ghost voltage. The Fluke 117 delivers true-rms ac voltage and current readings with 6000-count resolution. It provides min/max/average readings and measures frequency and capacitance. The battery door is easy to access, so you and your Fluke 117 can stay on the job. (For specifications, see datasheet and technical specifications).

Now for the Fluke 322 Clamp Meter:

The Fluke 322 is designed to verify the presence of load current, AC voltage and continuity of circuits, switches, fuses and contacts. These small and rugged clamp meters are ideally suited for current measurements up to 400A in tight cable compartments. The model also offers DC voltage measurements and has a higher resolution for loads below 40A. (For specifications, see datasheet and technical specifications).

What's in the box:

Fluke 117 True-RMS digital multimeter with non-contact voltage detection, Fluke 322 Compact clamp meter, TPAK Magnetic Meter Hanging Strap, TL75 Hard Point test lead set and C115 Deluxe soft carrying case with shoulder strap.

Features of the Fluke 117 Clamp Meter:

- VoltAlert technology for non-contact voltage detection
- AutoVolt automatic AC/DC voltage selection



- Low input impedance: helps prevent false readings due to ghost voltage
- Large white LED backlight to work in poorly lit areas
- True-rms for accurate measurements on non-linear loads
- Measures 10A (20A overload for 30 seconds)
- Resistance, continuity, frequency and capacitance
- Min/Max/Average with elapsed time to record signal fluctuations
- Compact ergonomic design for one-handed operation
- Compatible with optional magnetic hanger (ToolPak) for hands free operation
- CAT III 600V safety rated

Features of the Fluke 322 Clamp Meter:

- New smaller size fits easily into tight places
- Precise measurements with 1.8% basic accuracy
- Resolution up to 0.01A and 0.1V
- Measures AC current to 400A
- Measures AC volts to 600V
- Measures DC volts to 600V (Fluke 322 only)
- Resistance measurement to 4000
- Continuity for quick checking of shorts
- Automatic low battery indicator
- Display hold function
- Two year warranty

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|------------|--------|
| Fluke 117/322 Combo | 85-3499 | 337.16 |

519369

FLUKE.

175 and 179 Digital Multimeters

The Fluke 170 series sets the benchmark for general purpose multimeters. They set the standard with a combination of precision, features, ease-of-use, safety and reliability. It offers true rms AC voltage and current readings, 6000-count resolution, min-max-average recording, as well as frequency and capacitance ranges. Despite all these and many other useful features, the 170 series remains easy to use.

The ergonomic case with integrated holster protects the meter in rough and tough environments. The case does not have to be opened to change the battery, as access to the battery is via an easy to open battery door. Similarly, calibration is carried out through the front panel. Smoothing mode allows filtering of rapidly changing inputs, and manual and auto ranging make this an extremely versatile multimeter. Other features include:

- Digital display with bargraph
- Display backlight (not 175)
- Auto and manual ranging
- Temperature measurement (179 only)
- 0.09% Basic accuracy
- Test lead alert
- Unsafe voltage alert warns of voltages over 30V
- Audible continuity and diode test
- Supplied with TL75 test leads, installed 9V battery, user manuals and 80BK temperature probe (only with the 179).
- Manufacturers lifetime warranty
- Inputs protected to EN610101-1 CAT IV 600V/ CAT III 1000V
- UL, CSA, TUV listed and VDE pending

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------|------------|--------|
| Fluke 175 | 85-0130 | 283.50 |
| Fluke 179 | 85-0126 | 319.17 |

61470



- Measurement of direct and alternating voltage up to a maximum of 600V
- Measurement of direct and alternating current up to 10A
- Measuring resistance values of up to 40MO
- Continuity test (<500 acoustic)
- Diode test
- Capacity measuring up to 100µF
- Frequency measurement up to 10MHz
- Temperature measurement with internal sensor from 0°C to +50°C
- Measuring the relative air humidity from 33% to 99%
- Measuring the illumination strength up to 40 000 Lux
- Measuring the noise level of 35dB to 100dBC (for orientation measurement)
- Contact-free AC voltage detection NCV
- Supplied with multimeter, 9V block battery, safety measuring cable, wire temperature sensor, K-type adaptor, operating instructions and zip wallet for meter and probes

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|----------------------|------------|-------|
| MT-52 | 51-1601 | 71.21 |
| 500mA fuse for MT-52 | 55-2315 | 5.04 |

523689

VOLTcraft®
Digital Multimeters

Voltcraft Digital Multimeters are high quality multimeters designed for all measurement tasks in the household and for hobbies. Even professional tasks can be performed up to 600V. The VC-135 and VC-155 versions are ideal for measuring and displaying electric parameters in the range of excess voltage category III (up to max. 600 V against ground potential, pursuant to EN 61010-1). The VC-175 is a robust unit with professional data entry and automatic scaling.



| Type | Order code | 1+ |
|--------|------------|-------|
| VC-135 | 51-5416 | 15.23 |
| VC-155 | 51-5417 | 23.14 |
| VC-175 | 51-5418 | 30.86 |

525271

VOLTcraft®
MT-52 Digital Multimeter CAT III 600V

The Voltcraft MT-52 includes four environmental functions for measuring relative humidity, temperature (air and sensor measurement), linear noise level (for orientation of noise sources) and strength of illumination. Also measures DC and AC voltage up to 600V, DC and AC current up to 10A and resistance values up to 40MO.

The lighting sensor includes an IR filter that only measures the visible light range. The display can be lit if you are working in areas of poor lighting.

If the device is not operated for approximately 30 minutes, it automatically switches off. The automatic range selection is active when the auto symbol is displayed. The appropriate range of measurement is set individually for each application.

VOLTcraft®
LCR-300 LCR-Multimeter

The Voltcraft LCR-300 LCR-Multimeter is a compact digital multimeter for electronics and test applications, and the right choice for electronics, technicians and field service engineers.

- Measuring and displaying the electrical values of coils
- Measuring inductivities of up to 2000H
- Capacity measurement up to 20mF
- Measuring resistors (AC-R/DC-R) of up to 200MO
- Displaying the quality factor 'Q'
- Displaying the electrical loss factor 'D'
- Displaying the phase angle 'Ø' (0.00° to ±180.0°)

Please Note: The calibration plug OPEN referred to in the Operating Instructions, is no longer included.

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------|------------|--------|
| Multimeter | 51-5925 | 154.80 |

525569



VOLTcraft®

LCR-400 LCR Digital Multimeter

The Voltcraft LCR-400 is a CAT I Precision LCR Digital Multimeter that is ideal for measuring resistors, inductors and capacitors. The measurement functions and measuring ranges are selected using the pushbuttons. An Automatic Measuring Range selection is active in all measuring areas.



The multimeter would be ideally suited in departments of development, production or repair. The user has the option to use the automatic component recognition. This enables quick and easy operation of the device without specific component skills.

What's in the Box?

- 2 crocodile test leads
- 1 Kelvin test tweezers
- Zero Calibration Plug
- Magnetic hanging strap
- Holster
- Batteries
- Power Supply
- USB cable
- Software on CD
- Operating instructions

- USB interface
- Measuring frequency up to 100kHz
- Inductance to 20kHz
- Capacity to 20mF
- Resistance to 200 milliohms
- Basic accuracy: 0.2%
- Large display with 20,000 counts
- Automatic component recognition (LCR)
- Reference measurement with display of deviation in %
- Display of kindness factor, phase angle and loss factor
- HOLD function
- Manual component choice
- Manual switch for serial/ or parallel circuit
- Simple 2-wire measurement
- Precise 4-wire measurement at the plug terminal
- Precise 5-wire measurement with tweezers
- Dual display
- Automatic backlight
- 2 possible measuring inputs: integrated measuring terminals and test sockets
- Input calibration function for high accuracy
- Automatic shutdown
- USB interface
- Manufacturer's part: Voltcraft LCR-400

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------------|------------|--------|
| Digital Multimeter | 64-3493 | 232.88 |

560013

VOLTcraft®

MS-5 Test
Probe Set

Only

£25.20

Order code 5-5162

www.rapidonline.com

Free Delivery*

on all orders over £30 (excl. VAT) – (UK mainland only)

* See Terms & Conditions for full details



Rapid

RHMM17 Digital Multimeter

The Rapid RHMM17 digital multimeter has a highly versatile selection of ranges covering AC and DC voltage, AC and DC current, resistance, audible continuity testing, frequency, temperature, capacitance and transistor testing. Basic accuracy on the DC voltage range is $\pm(0.5\%$ of the reading \pm digit).

See Technical Details for a full listing of ranges and accuracies, visit www.rapidonline.com.

- Basic DC voltage accuracy 0.5%
- Large clear LCD display with backlight
- Low battery indicator
- Auto power off
- Display hold button
- Easy access for fuse changing
- Rubberised holster
- Red and black test probes
- K-type thermocouple temperature probe

- **Conforms to IEC61010-1**
- **RoHS, CE, EMC & LVD compliant**
- **Rapid model RHMM17**

Takes a single 9V, PP3 battery, included.

| Type | Order code | 1+ |
|-------------------|----------------|-------|
| RHMM17 multimeter | 90-0005 | 25.79 |
| Spare 250mA fuse | 90-0006 | 1.28 |
| Spare 10A fuse | 90-0007 | 1.28 |

566384

VOLTCRAFT

VC130-1 Digital Multimeter, DMM, 2000 Counts

The **Voltcraft VC-130-1** is a Digital Multimeter that is a robust unit with a manual selection range. The VC-130-1 offers something for every user, and can handle measurements up to 250V.

- Diode test
- Acoustic: Continuity tester
- Non-contact AC Voltage Detector
- hFE transistor testing (with optional adaptor)
- Hold function
- Low battery indication
- Robust housing with soft rubber protection
- Supplied with Test leads, 9V battery and manual
- Manufacturer's part: **Voltcraft VC-130-1**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------------|----------------|-------|
| Voltcraft VC-130-1 | 55-9059 | 29.09 |

547650



VOLTCRAFT

VC190 Digital Multimeter CAT III 600V True RMS 6000 Counts

The Voltcraft VC190 is a **true rms digital multimeter** that is designed for ease of use. Ideal for use by professionals and for DIY.

The unit can measure voltage DC and AC, current DC and AC, frequency, duty cycle, capacitance, resistance, temperature, acoustic continuity test, diode test. There are HOLD, MAX/MIN and PEAK functions to assist you while you are working. The True RMS measurement gives greater accuracy than conventional meters that are prone to large measurement errors.

The multimeter is easy to read and has a 6000 count display. The compact and robust body has a rubber coating



that provides lots of grip, and the stand on the rear allows you to place the unit in a position where you can read the display, keeping both hands free.

- Impedance selector switch
- Auto range
- Low-pass filter and low impedance AC voltage measurement
- Automatic display white backlight
- CAT III 600V
- Self-resetting fuse
- Factory calibration ensures accurate readings
- Low-battery indicator
- Supplied with battery, test leads, tip temperature contact probe, user manual
- **Voltcraft VC271 SE**

| Type | Order code | 1+ |
|--------------------------|----------------|-------|
| VC190 digital multimeter | 65-4049 | 46.74 |

552830

VOLTCRAFT

VC-830/850/870/880 Digital Multimeters

Voltcraft Digital Multimeters are sturdy, reliable, practical pieces of equipment safe for the user.

This professional multimeter has a patented casing construction allowing it to be opened for changing the battery and the fuses, only when the device has been disconnected from all measuring leads.

There are also a number of outstanding safety elements throughout the range, for instance, at input voltages of $> 30V$, a warning symbol appears in the display, while the unique safety concept is rounded off by a sturdy casing with sprayed soft-rubber protection. Another feature includes an optical electronic interface that can be used for measurement in the over-voltage category CAT IV 600V and CAT III 1000V approved and tested as per EN-61010 standards.

- CAT IV 600V
- Battery, test leads and user manual all included

| Type | Order code | 1+ |
|--------|----------------|--------|
| VC-830 | 51-5706 | 60.30 |
| VC-850 | 51-5707 | 94.10 |
| VC-870 | 51-5708 | 107.01 |
| VC-880 | 51-5709 | 124.56 |

552920



SEALEY

Digital Multimeter 20 Function with Thermocouple

Heavy-duty general purpose multimeter with clear and easy to read LCD display. Features data hold function, temperature probe and diode test facility.

- Features data hold function, temperature probe and diode test facility.
- Housed in rugged rubber boot with integral stand.
- Supplied with full set of leads and probes.
- Measures: AC and DC Voltage, DC Current, Resistance, Temperature, Diode/Transistor Verification Mode.
- Model No. MM20

| Type | Order code | 1+ |
|------------------------------|----------------|-------|
| Multimeter with Thermocouple | 89-4012 | 14.87 |

304424



SEALEY

MM19 7-Function Digital Multimeter with 19 Ranges

A high quality general purpose multimeter with a large (46 x 25mm), clear and easy-to-read LCD display.

The meter has 19 ranges covering 7 functions.

- High quality general purpose multimeter with a large (46 x 25mm), clear and easy-to-read LCD display
- Supplied with test leads
- Measures: DC Current, Resistance, Audible Continuity, Diode/Transistor Verification Mode
- **Sealey type MM19**

| Type | Order code | 1+ |
|---------------------|----------------|-------|
| 19 range multimeter | 89-1997 | 15.22 |

382409



Pricing

Pricing correct at time of going to press.
For up-to-date pricing visit www.rapidonline.com

EXTECH
INSTRUMENTS
A FLIR COMPANY

EX330 AC/DC Mini Digital Multimeter

The Extech EX330 is a compact multimeter with a rugged soft rubber housing. It has a temperature function plus a built-in non-contact AC voltage detector (NCV) with red LED indicator and audible beeper. The EX330 is supplied complete with stand, test leads, protective holster, batteries, general purpose bead wire temperature probe.



- Built-in non-contact AC Voltage Detector with Red LED indicator and audible beeper
- Automatic range selection
- Data Hold
- Automatic Shutdown
- Type K Temperature
- °F/°C switchable
- Basic accuracy: $\pm 0.5\%$
- Calibration possible to: ISO / DKD
- Dimensions: (W x H x D) 76 x 147 x 42mm
- Displays: 4000 counts
- Measurement range - capacity: 0.001nF - 200µF
- Measurement range - frequency: 0.001Hz - 10MHz
- Measurement range - resistance: 0.1 Ω - 40 MΩ
- Measurement range - temperature: -20°C to +750°C
- Measurement range AC: 0.1mV - 600V
- Measurement range DC: 0.1µA - 10A
- Power supply: 2x 1.5V (AAA)

Supplied with accompanying wire thermo-sensor for -20°C to +250°C, Test leads, Protective holster, 2x batteries (AAA) and manual.

| Type | Order code | 1+ |
|------------|----------------|-------|
| Multimeter | 51-8778 | 42.87 |

528477



Manual Ranging Digital Multimeter DM-830D

The ATP DM-830D is handy compact pocket sized 3½ Manual Ranging Digital Multimeter. It is ideal for use by electricians, electronic engineers, general industry and laboratories. A single positive click action rotary selection switch provides ease of use. The ATP DM-830D offers multi-function measurement capability and 220Vrms overload protection.

Note: 10A range is un-fused.

- Impact-resistant ABS plastic case
- 15mm LCD display with large digits and function indicators
- Manual Ranging via single positive click action rotary switch
- Auto Polarity indication
- Fast Blow Fuse for overload protection
- Supplied with 2 test leads and battery



| Type | Order code | 1+ |
|-------------------|----------------|-------|
| Manual Ranging DM | 90-6559 | 13.18 |

518009

Technical specifications and datasheets

Technical specifications and datasheets can be found at

www.rapidonline.com

DRAPER

Pocket Analogue Multimeter

Handy pocket analogue multimeter for use in electrical and automotive applications. Complies with IEC61010 Specifications.

Replacement probes and a crocodile clip probe set are available separately - see below.



- Measures AC and DC Voltage
 - Measures DC current
 - Measures resistance
 - 16 position rotary function and range selector
 - Recessed input terminals
 - Test probes and lead included
 - Battery check facility
- Specification:**
- DC voltage: 2.5, 10, 50, 250, 500V (acc. $\pm 5\%$ of full scale)
 - AC voltage: 10, 50, 250, 500V (acc. $\pm 5\%$ of full scale)
 - DC current: 500µA, 10mA, 250mA (acc. $\pm 5\%$ of full scale)
 - Resistance - ohms: x10, x1K (acc. $\pm 5\%$)
 - Size: 64 x 100 x 35mm
 - Battery: 1 x AA (not supplied)

| Type | Order code | 1+ |
|-------------------|----------------|-------|
| Pocket multimeter | 91-4061 | 10.45 |

311786

LCR Testers



LCR45 LCR Meter with Impedance Measurement

The Peak LCR45 is a versatile hand-held LCR analyser that can measure the value of your passive component (inductor, capacitor or resistor) and also measure the detailed impedance in a number of modes.



The LCR45 offers enhanced measurement resolution (better than 0.1µH) whilst also giving you continuous fluid measurements. Additionally, the test frequencies of DC, 1kHz, 15kHz and 200kHz can be set to automatic or manual modes.

The meter is supplied with removable gold-plated hook probes, battery and user guide. It is compatible with standard 2mm test connectors.

- Automatic or manual component type selection: Inductor, Capacitor or Resistor
- Automatic or manual test frequency selection: DC, 1kHz, 15kHz and 200kHz
- Inductance from 0.1µH to 10H
- Capacitance from 0.1pF to 10,000µF
- Resistance from 0.1Ω to 2MΩ
- Inductance measurement also shows DC winding resistance
- Display of 'Component type and values', 'Complex Impedance', 'Magnitude/Phase' and 'Admittance'
- Test frequency displayed for all measurements
- Typical accuracy of 1.5% for inductors and capacitors (see spec table for details)
- Typical accuracy of 1% for resistors
- Test lead complete with gold plated 2mm plugs and sockets
- Supplied with removable gold plated hook probes
- **Peak type LCR45**

Not designed for in-circuit use.

| Type | Order code | 1+ | 3+ |
|------------------|----------------|-------|-------|
| LCD meter + imp. | 85-2077 | 75.37 | 71.42 |

562089

abi

Linear IC Tester

The ABI LinearMaster Compact Professional is a low-cost, hand-held out-of-circuit IC tester. The LinearMaster is designed for testing analogue ICs with up to 16 pins through a ZIF socket. A range of adaptors is also available for SOIC and PLCC devices.



The LinearMaster includes a search facility for unknown ICs, loop modes for intermittent failure detection, diagnostic information for individual pins and self diagnosis for product integrity.

The unit is battery operated (4x AA/LR6) but an optional battery eliminator is available for extended use.

The ABI Compact Range is fitted with an RS-232 interface to allow connection with a computer and use with the optional software CompactLink.

CompactLink is a PC based software package that allows users to add new devices to the library and create functional tests to suit special applications.

- Simple operation
- Extensive built-in library
- Comprehensive tests
- Unknown device identification
- Diagnostic information for individual pins
- Conditional loop testing mode

| Type | Order code | 1+ |
|----------------------|----------------|--------|
| Linearmaster compact | 85-2285 | 573.30 |

31078

Bench Power Supplies

65648

Rapid

3A Switched Output Switch Mode Power Supply

A compact, switch mode power supply that offers six selectable output voltages (3, 4.5, 6, 7.5, 9, 12V), and is rated at 3A output current.



- The power supply is housed in a tough polycarbonate housing
- Output is floated ground (isolated from the mains earth)
- Offers excellent performance and reliability at a low-cost
- Overload and short circuit protection
- Ideal for a wide range of applications, and is especially suited for the educational environment
- Output is via 4mm socket/screw terminals
- Supplied with two sets of leads - one set with crocodile clips and bare ends the other with 4mm plugs and 4-way power plug adaptor
- **CE approved to EN60950, EN55011**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ | 5+ | 10+ | 50+ |
|---------------------|----------------|-------|-------|-------|-------|
| 3A Switched o/p PSU | 85-1820 | 66.73 | 59.42 | 52.69 | 49.27 |

65650

Rapid
education

 We bring
STEAM to life

Rapid

SMPS 25A/40A

A range of high power switch mode power supplies housed in a lightweight and compact enclosure with digital LED displays for voltage and current readings. Output is adjustable from 3V to 15V with the ability to fix the output at 13.8V via a slide switch on base of unit. Models are available with either 25A or 40A outputs.

- The PSUs are fully protected with overload, over temperature, over voltage (set at 16.5V) and short circuit protection as standard
- A thermally controlled, variable speed fan ensures quiet and cool operation
- CE approved to EN60950, EN55022, EN61588 (25A version) and EN5011 (40A version)

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------------------|------------|--------|
| 25A SMPS Digital display | 85-1824 | 138.54 |
| 40A SMPS Digital display | 85-1828 | 246.64 |

Rapid

10A 0-30V Triple Output Digital DC Regulated PSU

This supply has been designed for use in general electronic servicing in the laboratory, workshop and classroom. It can be used in either constant voltage with current limiting or constant current with voltage limiting modes. Features three independent outputs, two fixed voltage and one variable voltage.

- One 0-30V variable output
- One 5V 500mA output and one 12V 500mA output
- Separate digital voltmeter and ammeter
- Current limiting LED indicator
- Adjustable current control
- Overload and short circuit protection
- Robust, galvanised steel case
- Polycarbonate front panel
- Screw on connector for variable output, snap on connectors for fixed outputs
- Approved to CE, EN61558, EN55014

For technical specialisation visit www.rapidonline.com

| Type | Rating | Order code | 1+ |
|----------------|--------|------------|--------|
| Triple o/p PSU | 10A | 85-1706 | 197.58 |

Rapid

30V 2.5A Regulated Power Supply

The Rapid PS3025 is a high quality, fully regulated, power supply capable of supplying up to 30V at a maximum of 2.5 amps with additional fixed 5V and 12V outputs at 500mA.

- Ideally suited to laboratory test and educational environments
- Voltage and current outputs are individually displayed on liquid crystal displays
- Output voltage is continuously adjustable via a single control from 0 to 30V DC
- Output current limiting is fully adjustable up to 2.5A, again by a single control
- The 30V output is terminated with 4mm colour coded terminals
- The 5V and 12V outputs are terminated via a spring loaded colour coded terminal block



- All outputs are overload and short circuit protected
- The power supply is housed in a sturdy steel enclosure and is supplied with mains lead terminated with a UK mains plug fused at 5A and user instructions

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-------------------|------------|--------|
| 30V 2.5A Reg. PSU | 85-1705 | 155.79 |

VOLTCRAFT

VLP USB Series Adjustable Laboratory Power Supplies



These VOLTcraft VLP USB laboratory power supplies have 3 outputs:

- A continuously variable output via 4mm sockets
- A USB output, variable between 4 and 6.2V DC with a maximum current of 2.5A
- A processor-controlled USB output, with 3 output levels: 5V DC, 9V DC or 12V DC dependant on the device connected
- Display: 2-line, 12mm digit height, 3-digit, 7-segment green LED for voltage and current
- Display accuracy: $\pm 1\%$ voltage, $\pm 2\%$ current
- Over-voltage and over-current protection
- Good stability, low ripple
- Mains input: 230V AC, 50Hz
- Mains connector: IEC 320 C14
- VOLTcraft VLP USB series

| Type | Order code | 1+ |
|--------------|------------|--------|
| 0 to 30V, 3A | 65-3451 | 176.41 |
| 0 to 40V, 5A | 65-3466 | 223.12 |

VOLTCRAFT

VSP 2405 3x Output Remotely Controllable Variable DC Power Supply



The VOLTcraft VSP 2405 is a 3x Output Remotely Controllable Variable Switched Mode DC Power Supply. This 409W power supply features 3x outputs with setting ranges 0.1 to 40VDC (0 to 5A), 0.1 to 40VDC (0 to 5A) and 0 to 6VDC (1.5A) with fine adjustment on outputs 1 and 2 for V and I, and adjustment for V on output 3.

The outputs A and B can be switched with each other and controlled via buttons. This easily allows you to double the voltage or current. When switching the outputs in series, voltages of $>75\text{VDC}$ may be generated. The devices are connected via 4mm safety sockets.

A tracking function allows the internal series connection and parallel connection of both main outputs, enabling the output voltage or the output power of an output to be doubled at the push of a button.

What's in the Box?

- DC bench power supply
- Power cable
- User manual
- Remotely controllable with sense function

- Outputs: 3x
- Max power: 409W
- Voltage setting range(s): 0.1 to 40VDC, 0.1 to 40VDC, 0 to 6VDC
- Current setting range(s): 0 to 5A, 0 to 5A 1.5A
- PSU Technology: Switched Mode
- Type: Bench
- Remotely controllable
- Sense function
- Parallel/series wise or individual operation of the main outputs
- Manufacturer's part: VOLTcraft VSP 2405

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------|------------|--------|
| 3x Output PSU | 64-2943 | 322.40 |

VOLTCRAFT

PPS-16005, 360W Dual Output Programmable DC Power Supply



This 360W programmable DC power supply from the VOLTcraft PPS series serves as a potential free DC voltage source for the operation of low voltage consumers. The adjustable output can be adjusted on the front to 5A max. The full rated current can be achieved using the power supply's rear output. The connection is made at the front side via 4 mm safety banana jacks, at the back side via high-current screw terminal sockets.

Voltage and current can be set continuously (i.e. not in steps) via the digital control dials with coarse and fine adjustment, in order to enable a fast and precise setting. The values are displayed on a concise LC display. The current limit for constant current operation without short circuits can be preset.

Three freely programmable memory locations, with different fixed voltages and current limits can be used. In addition, the laboratory power supply can be completely remotely controlled via its USB connection.

- USB connection for remote operation
- 3 user-definable presets
- Voltage, current and output on/off can be remote controlled
- Digital double function adjustment control for rough and detailed control
- Protection from over loading
- Temperature regulated unit fans
- Programmable via USB and software provided
- 3 user-definable presets
- Outputs: 2 (front and rear)
- Max power: 360W
- Voltage setting range(s): 1V to 36V DC
- Current setting range(s): 0V to 10A
- PSU Technology: Switched Mode
- Type: Bench

Programmable bench power supply & remote control; Power cable & remote control; USB cable & remote control; Software CD & remote control input & remote control; User manual.

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|------------|--------|
| VOLTcraft PPS-16005 | 51-1918 | 222.18 |

Order online

Save time, and place your order at:
www.rapidonline.com
24 hours a day



VOLTCRAFT®

Single Output Variable DC Power Supply, Remote Control

The HPS series from Voltcraft are extremely compact thanks to their primary switched mode technology. Select from 4 operating modes: Normal, Preset, Remote Control and Set. In Normal mode, settings are made using the HPS-11530's front panel. In Preset mode, stored settings are used and the front panel becomes inactive.

- High contrast digital LCD display for voltage and current
- 3 user-defined output presets
- Remote control via external DC voltage
- Coarse and fine rotary knobs for voltage and current
- PSU Technology: Switched Mode
- Type: Bench
- Supplied with DC bench power supply, Power cable, Remote control plug connection and user manual

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------|------------|--------|
| HPS-11530 | 51-7194 | 168.56 |
| HPS-11560 | 51-7195 | 447.20 |

529030

VOLTCRAFT®

PS-1302 D, 60W Single Output Variable DC Power Supply, Linear, Bench

The PS-1302 D from Voltcraft is a basic single output bench power supply that is particularly suitable for education and hobby purposes. This linear regulated PSU offers adjustable voltage 0V to 30V and current limit 0A to 2A. Set values are displayed on the PSUs LCD display.

- Overheating protection
- Short circuit protection
- Adjustable current limiting
- Outputs: 1
- Max power: 60W
- Voltage setting range: 0V to 30V DC
- Current setting range: 0A to 2A
- Convection cooled, rear heatsink, no fans
- PSU Technology: Linear

Please order the appropriate power cable under order code 23-6446 or 35-4485.

DC bench power supply & User manual & Power cable not included, please order separately.

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|------------|--------|
| Voltcraft PS-1302 D | 51-1824 | 117.02 |

523817

Technical specifications and datasheets

Technical specifications and datasheets can be found at

www.rapidonline.com

BASETech

BT-153 Bench PSU Single Output 0-15VDC 0-3A 45W

The Basetech BT-153 is a Laboratory Power Supply which is ideal for universal use in the research, development, manufacturing, service and training fields. The power supply unit has a number of features (automatic switching between constant voltage and constant current operation, continuously adjustable output voltage and current limit).

All the connections are made via the sockets on the front of the device. All operating controls and indicators have been neatly arranged to simplify use. The corresponding power and voltage values are easily visible on the high-contrast LED display. Both the output current and output voltage are shown via the LED displays.

The control dial on the front of the device is used to set current and voltages values.

What's in the Box?

Basetech BT-153

Power cable

Operating instructions

- Finely adjustable output voltage
- Display of output voltage and current
- Overload and reverse polarity protection
- Display of output voltage and current
- Overload and reverse polarity protection
- 0 to 15V/DC/ 0 to 3A
- 45W maximum output
- Linearly-regulated
- Automatic switching between constant voltage and constant current operation
- Manufacturer's part: Basetech BT-153

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-------------------|------------|-------|
| Single Output PSU | 64-6084 | 99.75 |

561347

GW INSTEK

Multi Channel DC PSUs



These DC PSUs are available with three independent isolated outputs.

- Constant voltage and constant current modes
- Tracking operation and auto series/parallel operation
- 0.01% load and line regulation
- Low ripple and noise
- Output ON/OFF switch
- Four 0.5in three-digit LED displays
- Output voltage and current setting when output disabled
- Fan speed control circuit minimises fan noise
- Overload and reverse polarity protection
- Supplied with Instruction manual, power lead and test leads
- GW Instek GPS series

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------|------------|--------|
| 3-channel PSU | 85-1825 | 349.61 |

74715

GW INSTEK

GPS-3030 Multiple Output Linear DC Power Supply

The GW Instek GPS-3030 is a single output, 90W, linear DC power supply. The GW Instek GPS-3030 includes both analog and digital display meters with varying power outputs. The GW Instek GPS-3030 features overload and reverse polarity protection as well as high regulation and low ripple/ noise that are maintained at 0.01% and < 1mVrms, respectively.

Continuous or dynamic internal load selection accommodates applications such as pulsed current. Remote control terminals offer programming and operation from an external device.

- Light and compact design
- 0.01% High regulation
- Constant voltage and constant current operation
- Remote control for external programmability
- Internal select for continuous or dynamic load
- Low ripple and noise
- Overload and reverse polarity protection
- Series or parallel operation
- Optional European Type Jack Terminal
- Manufacturers part no. GW Instek GPS-3030

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------------|------------|--------|
| GPS-3030 DC PSU | 90-6144 | 156.97 |

517318

KEITHLEY

A Tektronix Company

Single Output Variable Bench DC Power Supply



A range of Keithley Single Output Variable Bench DC Power Supplies/ Source Measuring Units (SMU) from the 2400 Series.

These instruments have been designed specifically for test applications that demand tightly coupled sourcing and measurement. All models provide precision voltage and current sourcing as well as measurement capabilities. The instruments are true 6½-digit multimeters and highly stable DC power sources.

Their power source characteristics include low noise, precision, and readback. The multimeter capabilities include high repeatability and low noise. The result is a compact, single channel, DC parametric tester. In operation, these instruments can act as a voltage source, a current source, a voltage meter, a current meter, and an ohmmeter.

Manufacturers of components and modules for the communications, semiconductor, computer, automotive, and medical industries will find these instruments invaluable for a wide range of characterisation and production test applications.

- Five instruments in one (IV Source, IVR Measure)
- Seven models: 20 - 100W DC, 1000W pulsed, 1100V to 1V, 10A to 10pA
- Source and sink (4-quadrant) operation
- 0.012% basic measure accuracy with 5½-digit resolution
- 2-, 4-, and 6-wire remote V-source and measure sensing
- 1700 readings/second at 4½ digits via GPIB
- Pass/Fail comparator for fast sorting/binning
- Available high speed sense lead contact check function
- Programmable DIO port for automation/handler/prober control (except Model 2401)

- Standard SCPI GPIB, RS-232, and Keithley Trigger Link interfaces
- Keithley LabTracer 2.0 I-V curve tracing application software (downloadable)
- Available models: **Keithley 2400, 2401, 2410, 2420 and 2440**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------------|----------------|----------|
| 2400 Single Output | 63-0483 | 5770.00 |
| 2401 Single Output | 63-0484 | 3660.00 |
| 2410 Single Output | 63-0485 | 10400.00 |
| 2420 Single Output | 63-0486 | 10100.00 |
| 2440 Single Output | 63-0487 | 10700.00 |

554052



2231A-30-3 Triple Output Variable Bench DC Power Supply



The **Keithley 2231A-30-3** is a **Triple Channel DC Power Supply that can output a total of 195W of power**, providing the power levels needed to energise a wide range of circuits and devices for bench top work.

Two channels can supply up to 30V at 3A each; the third channel can provide up to 5V at 3A. The 2231A-30-3 does not compromise on performance or convenience features, offering the versatility and ease of use you need.

- 100nA to 6A with high accuracy
- Get three isolated, independent, and adjustable outputs in one instrument
- Output a total of 195W of power with two 30V at 3A outputs and one 5V at 3A output
- Set voltage outputs with 0.06% basic accuracy and current outputs with 0.2% basic accuracy
- Output DC power with less than 5mVp-p noise
- Display voltage and current measurements continuously from all three outputs
- Double output levels by connecting the two 30V channels in series or parallel
- Store frequently used configurations in any of 30 setup memory locations
- Turn off any output after a predetermined test time with each channel's output timer
- Control the supply from a PC with an optional USB adaptor
- Manufacturer's part: **Keithley 2231A-30-3**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|----------------------|----------------|--------|
| 2231A-30-3 DC Supply | 63-0703 | 632.00 |

554056



EL-R Series Compact Bench Linear PSUs Single Output

The **EL series** of linear PSUs have been designed to meet the need for a compact power supply that provides good performance at a low price.

- Single output models
- Power from 30W to 90W
- Voltage from 15V to 56V
- Compact design takes up minimal bench space
- Linear regulation



- Quiet operation
- Excellent line and load regulation
- Low Noise
- Good transient response
- Constant voltage and constant current modes with automatic crossover
- Coarse and fine voltage control
- Logarithmic current control enabling low currents to be accurately set
- Separate digital voltmeter and ammeter for each main output
- Current limit settings are displayed when output switch is off, enabling verification of settings
- Bright LED display with 14mm high characters and an update rate of four per second
- All outputs short circuit proof and protected against external voltages and reverse currents
- **EL302P** model features an RS-232 interface to give a basic programmable PSU
- Complies with **EN61010-1** and **EN61326**
- **Aim-TTI EL series**

For technical specialisation visit www.rapidonline.com

| Voltage | Current | Order code | 1+ |
|----------------------|---------|----------------|--------|
| Single output | | | |
| 15V | 5A | 85-2196 | 230.28 |
| 18V | 3.3A | 85-2192 | 195.34 |
| 30V | 1A | 85-2191 | 172.93 |
| 30V | 2A | 85-2193 | 189.96 |
| 30V (with RS-232) | 2A | 85-2194 | 270.60 |
| 30V | 3A | 85-2197 | 230.28 |
| 56V | 1.1A | 85-2195 | 195.34 |

74714



High Power Compact Bench Switch Mode PSUs



The **EX series** of switch mode PSUs provide high levels of power at a very affordable price. By combining switch-mode pre-regulation with linear post-regulation, performance levels comparable to an all linear design have been achieved.

- Single, dual and triple output models
- Power from 175W to 420W
- Voltage from 18V to 150V
- Compact design takes up minimal bench space
- Quiet operation
- Mixed-mode regulation
- Excellent line and load regulation
- Low Noise
- Good transient response
- High power efficiency
- Constant voltage and constant current modes with automatic crossover
- Coarse and fine voltage control
- Logarithmic current control enabling low currents to be accurately set
- Separate digital voltmeter and ammeter for each main output
- Current limit settings are displayed when output switch is off, enabling verification of settings
- Bright LED display with 14mm high characters and an update rate of four per second
- All outputs short circuit proof and fully protected against external voltages and reverse currents
- **EX-R** models feature remote sensing
- **EX355P** model features an RS-232 interface to give a basic programmable PSU
- Complies with **EN61010-1** and **EN61326**
- **Aim-TTI EX series**

For technical specialisation visit www.rapidonline.com

| Voltage | Order code | 1+ |
|----------------------|----------------|--------|
| Single output | | |
| 18V | 85-2020 | 333.32 |
| 20V | 85-2021 | 471.30 |
| 35V | 85-2018 | 305.54 |
| 35V (with RS-232) | 85-2019 | 387.08 |
| 42V | 85-2022 | 471.30 |
| Dual output | | |
| 2x 35V | 85-2023 | 446.21 |
| 2x 75V | 85-2024 | 509.44 |
| Triple output | | |
| 3x 35V | 85-2025 | 499.08 |

74713



QL564 0-56V/0-4A Single Power Supply

The Aim-TTI Single QL564 SII offers an unparalleled level of precision. Voltage and current are controlled using instrumentation quality 16-bit DACs enabling voltages to be set to 1mV resolution even at full output voltage. Indeed, the accuracy is sufficient for the QL to be used as a calibration source for some hand-held DMMs.



The Aim-TTI Single QL564 SII provides multiple ranges for increased current capability at lower voltages. The QL564 SII uses pure linear technology and offers unrivalled performance in terms of regulation, output noise and dynamics. Line and load regulation are close to the limit of measurement. Recovery time from transient current pulses is better than 50μs.

Of equal importance for critical applications in areas such as telecoms is common mode noise current (the noise current flowing between the output terminals and ground). This is less than 4μA RMS on the QL564 SII dramatically better than most other PSUs.

- Single output or triple output models
- Setting by direct numeric entry or spin wheel
- 1mV resolution at up to 56V
- Multiple ranges for increased current flexibility
- Multiple non-volatile setting memories
- OVP and OCP trips with alarm output
- Selectable remote sense terminals
- Linked-mode operation of main outputs (triple)
- Auxiliary output variable 1.00V to 6.00V at 3A (triple)
- Manufacturer's part no. **Aim-TTI QL564 SII**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------------|----------------|--------|
| QL Series QL564 | 85-4568 | 415.75 |

517071



Scales & Balances

See page 171



EL30RT 1.5-5V 2A Triple Output Supply

The Aim-TTI EL302RT has been developed from the top selling EL series. By adding four digit meters and switchable remote sensing, the Thurlby Thandar EL302RT offers much higher precision whilst retaining the simplicity of operation which many bench-top power supply users prefer.

The Aim-TTI EL302RT uses true linear regulation for the best possible performance. Excellent line and load regulation is matched by very low output noise and good transient response.

It also incorporates separate voltage and current meters on each main output with a resolution of 10mV and 1mA. The fixed resolution avoids the misinterpretation of readings that can occur with auto-ranging 3 or 3½ digit meters where the decimal point position moves as the reading changes.

Each main output of the Aim-TTI EL302RT has a DC on-off switch. This enables voltage and current settings to be viewed before the load is connected and allows multiple outputs to be controlled individually. Surprisingly, many power supplies omit this essential feature.

The Aim-TTI EL302RT uses classic analog controls for voltage and current. The large and bright displays have a fixed resolution to avoid confusion. Preset voltage and current levels are shown when the DC output switch is turned off. Remote sense is available when needed but is disabled by setting the switch to local.

- Single outputs, 30V/1A, 18V/3.3A, 56V/1.1A, 15V/5A, 30V/3A
- Single, dual or triple outputs, 30V/2A
- Independent digital voltage and current meters for each output with 4 digit resolution
- Switchable local or remote sensing
- Constant voltage or constant current operation
- Variable 1.5 to 5.0V auxiliary output at 2A (EL302RT)
- Compact design uses less bench space
- Silent fan-free cooling
- DC output switches, automatic mode indication
- Manufacturer's part no. **Aim-TTI EL302RT**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-------------------|----------------|--------|
| EL series EL302RT | 85-4566 | 340.48 |

517085



Twin 420W PowerFlex Max 60V or 20A USB/RS232/LAN CPX400DP

The Aim-TTI Twin CPX400DP is a different type of laboratory power supply designed to meet the need for flexibility in the choice of voltage and current. A conventional PSU has a fixed current limit giving a power capability that reduces directly with the output voltage. The Aim-TTI Twin CPX400DP design enables higher currents to be generated at lower voltages within an overall power limit envelope.

Each output can provide considerably higher current than a conventional PSU of the same maximum voltage and power (see power curve). Example voltage and current combinations include 60V/7A, 42V/10A, 28V/15A, and 20V/20A.

The PowerFlex regulation system used on the Aim-TTI Twin CPX400DP combines a high frequency pre regulator with a linear post regulator to give both low noise and good transient response. Each output can operate in constant voltage or constant current mode with automatic crossover and mode indication.

Separate voltage and current meters on each output give a resolution of 10mV and 10mA. The fixed resolution



avoids the misinterpretation of readings that can occur with auto ranging 3 or 3½ digit meters where the decimal point position moves as the reading changes. Coarse and fine voltage controls are provided. The current control is logarithmic enabling low current levels to be set accurately. A View Settings button enables limit settings to be checked and adjusted at any time.

Each output incorporates remote sense terminals that can be enabled or disabled at the flick of a switch. Remote sensing is essential for maintaining precise regulation at the load and true metering of the load voltage.

- PowerFlex design gives variable voltage and current combinations within a maximum power envelope
- Up to 60V and up to 20A per output (420W maximum)
- Constant voltage or constant current operation
- Low output noise and good transient response
- PowerFlex or fixed-range operation plus custom limits
- True analogue controls with digital settings locking
- Independent outputs or isolated voltage tracking (dual)
- Outputs can be wired in series or parallel for 120V or 40A
- Variable OVP trips; safety binding-post terminals
- 4 digit fixed resolution meters; selectable remote sensing
- Compact ½ rack 3U case (dual) or ¼ rack 3U case (single)
- Duplicate terminals at rear
- GPIB, RS-232, USB and LAN interfaces with LXI class C compliance
- Manufacturer's part no. **Aim-TTI CPX400DP**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------|----------------|---------|
| Twin CPX400DP | 85-4598 | 1119.11 |

517146



420W PowerFlex Single Power Supply

The CPX series is a different type of laboratory power supply designed to meet the need for flexibility in the choice of voltage and current. A conventional PSU has a fixed current limit giving a power capability that reduces directly with the output voltage. The TTI PowerFlex design of the CPX series enables higher currents to be generated at lower voltages within an overall power limit envelope.

Each output can provide considerably higher current than a conventional PSU of the same maximum voltage and power. The two outputs of the CPX400D are completely independent and electrically isolated from each other. With V-Track selected, the two outputs remain electrically isolated, but the voltage control of the Master output sets an identical voltage on the Slave output.

This enables the user to create two rails of either polarity and to reference them to different grounds if necessary (e.g. digital ground and analog ground). Alternatively the outputs can be wired in series or parallel to create a voltage capability up to 120V or a current capability up to 40A with the voltage set using a single control.

- PowerFlex design gives variable voltage and current combinations within a maximum power envelope
- Up to 60V and up to 20A per output (420W maximum)
- Constant voltage or constant current operation
- Low output noise and good transient response
- PowerFlex or fixed-range operation plus custom limits
- True analogue controls with digital settings locking
- Independent outputs or isolated voltage tracking (dual)
- Outputs can be wired in series or parallel for 120V or 40A
- Variable OVP trips; safety binding-post terminals
- 4 digit fixed resolution meters; selectable remote sensing
- Compact ½ rack 3U case (dual) or ¼ rack 3U case (single)
- Duplicate terminals at rear
- GPIB, RS-232, USB and LAN interfaces with LXI class C compliance
- Manufacturer's part no. **Aim-TTI CPX400SP**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-------------------|----------------|--------|
| PowerFlex Max 60V | 85-4599 | 759.82 |

517083



Single Power Supply 420 PowerFlex Max 60V or 20A CPX400S

The Aim-TTI CPX400S is a new single output version of the best selling CPX400 series. The ultra-compact design (quarter rack 3U) takes up minimum space for bench or system use. PowerFlex regulation enables the 420W of power to be configured to suit each specific application.

The PowerFlex regulation system used on the Aim-TTI CPX400S combines a high frequency pre regulator with a linear post regulator to give both low noise and good transient response. Each output can operate in constant voltage or constant current mode with automatic crossover and mode indication.

Separate voltage and current meters on each output give a resolution of 10mV and 10mA. The fixed resolution avoids the misinterpretation of readings that can occur with auto-ranging 3 or 3½ digit meters where the decimal point position moves as the reading changes. Coarse and fine voltage controls are provided. The current control is logarithmic enabling low current levels to be set accurately. A view settings button enables limit settings to be checked and adjusted at any time.

Each output incorporates remote sense terminals that can be enabled or disabled at the flick of a switch. Remote sensing is essential for maintaining precise regulation at the load and true metering of the load voltage.

- PowerFlex design gives variable voltage and current combinations
- Up to 60V and up to 20A per output (420W maximum)
- Constant voltage or constant current operation
- Low output noise and good transient response
- PowerFlex or fixed-range operation plus custom limits
- True analogue controls with digital settings locking
- Outputs can be wired in series or parallel for 120V or 40A
- Variable OVP trips; safety binding-post terminals
- 4 digit fixed resolution meters; selectable remote sensing
- Compact ½ rack 3U case (dual) or ¼ rack 3U case (single)
- Isolated analogue control interface
- Manufacturer's part no. **Aim-TTI CPX400S**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------|----------------|--------|
| PowerFlex Max | 85-4578 | 591.36 |

517139



Single Power Supply 0-15V/0-5A PL155

Over the years, the PL series has been steadily revised and extended. Hundreds of thousands of PL series units are currently in use across the world and it remains the laboratory power supply of choice for many organisations.

The Aim-TTI Single PL155 achieves an exceptional power density for a linear regulated power supply by offering up to 90W from a ¼ rack 3U sized casing.

This gives it an unusually small bench footprint taking up less space on a crowded bench. For rack-mount application, up to four units can be mounted into a single slot. Despite its small size and linear regulation, the Aim-TTI Single PL155 generates relatively little heat through the use of an advanced phase controlled pre-regulator.

This gives it significantly higher energy efficiency than conventional linear regulated designs, particularly when supplying lower voltages.

The internal heat-sinks use fan-assisted convection cooling in order to remove the heat with minimal fan noise.



- Single output or dual output models
- Linear regulation - for the best performance
- Ultra-compact design - uses up less space
- True Analog controls - for ease of use
- S-Lock function - instantly lock settings
- V-Span function - customise the voltage range
- Low current range and current meter averaging
- DC output switches and view limits button
- Selectable remote sense terminals
- Independent, Isolated Tracking, Ratio Tracking and True Parallel modes on dual output model
- Manufacturers part no. Aim-TTi EB2025T

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------|------------|--------|
| Single PL155 | 85-4570 | 291.20 |

517133

Source Measurement

KEITHLEY
A Tektronix Company

2450 SourceMeter Source Measure Unit 200V 1A 20W



The **Keithley 2450** is a **Single Output Variable Bench DC Power Supply/SourceMeter SMU Instrument** that truly brings Ohm's law (current, voltage, and resistance) testing right to your fingertips.

The innovative graphical user interface (GUI) and advanced, capacitive touchscreen technology allows intuitive usage, and helps to minimise the learning curve to enable engineers and scientists to learn faster, work smarter, and invent easier.

The **2450** is the SMU for everyone: a versatile instrument, particularly well-suited for characterising modern scaled semiconductors, nano-scale devices and materials, organic semiconductors, printed electronics, and other small-geometry and low-power devices.

- Capabilities of I-V systems, curve tracers, and semiconductor analyzers at a fraction of their cost
- Five-inch, high resolution capacitive touchscreen graphical user interface (GUI)
- 0.012% basic measure accuracy with 6½-digit resolution
- Enhanced sensitivity with new 20mV and 10nA source/measure ranges
- Source and sink (4-quadrant) operation
- Four Quickset modes for fast setup and measurements
- Built-in, context-sensitive front panel help
- Front panel input banana jacks; rear panel input triaxial connections
- Model 2450 SCPI and TSP® scripting programming modes
- Model 2400 SCPI-compatible programming mode
- Front panel USB memory port for data/programming/configuration I/O
- Manufacturer's part: **Keithley 2450**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|----------------|------------|---------|
| 2450 DC Supply | 63-0708 | 5080.00 |

554068

Pricing

Pricing correct at time of going to press.
For up-to-date pricing visit www.rapidonline.com

KEITHLEY
A Tektronix Company

Dual-Channel System SourceMeter SMU Instrument (3A DC, 10A Pulse)



Keithley's 2600B Series Source Measurement Units (SMU) are the industry standard current-voltage source and measurement solution for highly automated production test applications.

Both dual and single-channel models tightly integrate a precision power supply, true current source, digital multimeter (DMM), and an electronic load with pulse generating capabilities.

Keithley 2602B Dual-channel System SourceMeter SMU (3 A DC, 10 A Pulse) Product Features:

- 4-quadrant voltage/current source and measure with 6 digit resolution (2-line VFD display).
- Dual channel.
- Built-in web browser based software enables remote control through any browser, on any computer, from anywhere in the world.
- Compatibility with the Keithley IVy mobile app enables true plug & play I/V characterization and test through any Android device.
- TSP (Test Script Processing) technology embeds complete test programs for best-in-class system-level throughput.
- USB 2.0, LXI-C, GPIB, RS-232 and digital I/O interfaces.
- Software emulation for Keithley's Model 2400 SourceMeter SMU product.
- Software drivers and development/debug tools supplied.
- Source \pm DC voltage from 5 μ V to 40.4 V
- Source \pm DC current from 100 pA to 3.03 A
- Source \pm pulse current up to 10 A
- Measure \pm pulse current up to 10 A
- Measure \pm DC voltage from 100 nV to 40.8 V
- Measure \pm DC current from 100 fA to 3.06 A

| Type | Order code | 1+ |
|-------------|------------|----------|
| SourceMeter | 85-1801 | 10600.00 |

583646

VOLTCRAFT



Bench Test Equipment Bundle

Only

£1010.49

Order code 52-1350

www.rapidonline.com

Spectrum Analysers

Tektronix

RSA306B USB Spectrum Analyser



The Tektronix RSA306B uses your PC and Tektronix SignalVu-PC™ RF Signal Analysis Software to provide real-time spectrum analysis, streaming capture and deep signal analysis capabilities for signals from 9kHz to 6.2GHz. It is a low-cost, highly portable package that is ideal for field, factory or academic use.

The RSA306B offers full-featured spectrum analysis and deep signal analysis at a price unmatched by any previous offering. Using the latest in commercial interfaces and available computing power, the RSA306B separates signal acquisition from measurement, dramatically lowering the cost of instrument hardware. Data analysis, storage and replay is performed on your personal computer, tablet or laptop. Managing the PC separately from the acquisition hardware makes computer upgrades easy and minimizes IT management issues.

Key performance specifications

- 9kHz to 6.2GHz frequency range covers a broad range of analysis needs
- +20dBm to -160dBm measurement range
- Mil-Std 28800 Class 2 environmental, shock and vibration specifications for use in harsh conditions
- Fast sweeps (2 per second) over entire 6.2GHz span for quick detection of unknown signals
- Acquisition bandwidth of 40MHz enables wide-band vector analysis of modern standards
- Minimum signal duration as short as 27 μ s captured with 100% probability of intercept

Key features

- Full-featured spectrum analysis capability with included Tektronix SignalVu-PC™ software
- 17 spectrum and signal analysis measurement displays enable dozens of measurement types
- Options for mapping, modulation analysis, WLAN, LTE, and Bluetooth standards support, pulse measurements, playback of recorded files, signal survey, and frequency/phase settling
- EMC/EMI pre-compliance and troubleshooting - CISPR detectors, predefined standards, limit lines, easy accessory setup, ambient capture, failure analysis, and report generation
- DataVu-PC software enables multi-unit recording in variable bandwidths
- Real time Spectrum/Spectrogram display to minimize time spent on transient and interference hunting
- Application programming interface (API) included for Microsoft Windows environments
- MATLAB instrument driver for use with Instrument Control Toolbox
- Streaming capture records long-term events
- Tektronix 3-year warranty

| Type | Order code | 1+ |
|-----------------------|------------|---------|
| USB spectrum analyser | 85-1766 | 4220.00 |

570956

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Save time, and place your order at:
www.rapidonline.com
24 hours a day

GW INSTEK

GSP-730 Spectrum Analyzer
Bandwidth 150KHZ TO 3GHZ

This GW Instek GSP-730 spectrum analyzer bandwidth 150kHz ~ 3GHz is a high-quality piece of equipment mainly developed to fulfill the demands of RF communication educations.

Budget constraint and insufficient teaching tools are normally the two hurdles for schools to provide high-quality courses for RF communication experiments. A spectrum analyzer such as the GSP-730, featuring full functions should, along with the GRF-1300 training kit (54-6506), provide an economic turn-key solution for 3GHz RF communication experiment courses.

By connecting this GSP-730 analyzer, the GRF-1300 trainer and a PC, a tangible system is integrated for performing ongoing experiments while a lecture can be given. Using a PC, the teacher can present teaching material with PowerPoint slide and simultaneously control the GSP-730 and to perform experiments and get spectrum displays and parameter readings on the PC screen. The GSP-730 and can easily transfer current teaching materials such as the PowerPoint slides, textbook and remote control software, into electronic-teaching system.

The combination of the GSP-730 and GRF-1300 forms a fundamental training system for RF communication and telecommunication classes in universities, colleges, vocational schools, and military training centers, as well as private companies.

- Frequency range : 150kHz ~ 3GHz
- Autoset function
- Noise floor: $\leq 100\text{dBm}$
- RBW range : 30kHz, 100kHz, 300kHz, 1MHz
- ACPR/CHPW/OCBW measurement
- 3 traces in different colours
- Split window function
- Limit line function
- Remote control software
- Presentation material for training courses
- Support interface : USB device/host, RS-232C
- 5.6" TFT LCD with VGA output
- Manufacturer's part GSP-730

Pack includes: quick start manual, user manual CD and power cord.

| Type | Order code | 1+ |
|---------|------------|--------|
| GSP-730 | 54-7354 | 790.23 |

538494

Test probes

400231

Tektronix

P6015A Oscilloscope Probe Scoop
Proof 75 MHz 1000:1

The Tektronix P6015A is an Industry Standard High Voltage Probe that is ideal for heavy-duty high performance measurements of voltages over 2.5kV.

The P6015A can measure DC voltages up to 20kVRMS and pulses up to 40kV (peak, 100ms duration). The 75MHz bandwidth enables you to capture fast, high-voltage signals.

The probe uses an environmentally safe silicone compound for a dielectric and never needs refilling. Other features include a 7 to 49pF compensation range, small compensation box that fits on adjacent amplifier inputs and a readout option for use with most Tektronix digital scopes.

Applications: Power Supply Design, Design Motor Drive, Electronic Ballast, Power Semiconductors, Switch Mode Control, UPS Systems and Power Converters.

- High Voltage: 20kV DC / 40kV Peak (100ms Pulse Width)
- High Bandwidth: 75MHz
- Silicone Dielectric
- Optional 1000x Readout Coding
- Wide Compensation Range (7 to 49pF)
- Heavy-duty Versatile Ground Lead and Alligator Clip
- Manufacturer's part: Tektronix P6015A

| Type | Order code | 1+ |
|-------------|------------|---------|
| Probe scoop | 63-0747 | 2630.00 |

583444

Tektronix

TCP0150 AC/DC Current Probe



The Tektronix TCP0150 is a high performance and easy to use 150A AC/DC Current Probe designed for use and direct connection to the TekVPI™ probe interface.

This AC/DC current measurement probe provides 20MHz of frequency bandwidth with selectable range control for 25A and 150A measurement ranges. It also provides low-current measurement capability and accuracy to current levels as low as 5mA per division, important for achieving broad dynamic current range of high-level and low-level measurement signals.

Applications: Power Supplies, Semiconductor Devices, Power Inverters/Converters, Electronic Ballasts, Industrial/Consumer Electronics, Motor Drives and Transportation Systems.

- Easy to use and accurate AC/DC current measurements
- Connects directly to oscilloscopes with the TekVPI™ probe interface
- DC to 20MHz Bandwidth
- 150ARMS Maximum current capability
- 500A Peak pulse current capability
- High accuracy with typically less than 1% DC gain error
- Accurately measures current levels as low as 5mA
- Low noise and DC drift
- Provides automatic units scaling and readout on the oscilloscope's display
- Remote GPIB/USB probe control through the oscilloscope
- Split-core probe head construction allows easy connection to conductors
- Easy to degauss and autozero
- Setup controls and probe status and diagnostic indicators are provided probe hardware
- Manufacturer's part: Tektronix TCP0150

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|------------|---------|
| AC/DC Current Probe | 63-0771 | 5220.00 |

554696

Can't find what you need?

Get in touch

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GW INSTEK

High Voltage Differential Probes -
25MHz, 50MHz and 100MHz

A range of GW Instek high voltage differential probes that offers the user a selectable attenuation setting, that makes it highly versatile. This allows it to be used a broad range of applications. The probe comes with probe tip accessories for use with both small or large components in tight places.

The GW Instek high voltage differential probes also provide an over range indicator which alerts the user when the probe input exceeds the dynamic range of the probe. The GW Instek high voltage differential probes provide 25MHz, 50MHz and 100MHz bandwidth enabling users to safely make high-voltage measurements on floating circuit test.

The GW Instek high voltage differential probes convert floating signals to low-voltage ground-referenced signals that can be displayed safely and easily on any ground referenced oscilloscope.

Accessories that are included with the differential probe are: large crocodile clips, long grabber clips, test leads, BNC-BNC cable and power supply.

- Up to 1,400V Differential Voltage
- Flexible Attenuation Option, Suitable for Various Applications
- Separation design, users can easily replace the probe connector to complete a variety of test applications
- Accurately make floating measurements
- Available in 25MHz, 50MHz and 100MHz options
- Manufacturers part no. GW Instek 25MHz High Voltage Differential Probe GDP-025
- Manufacturers part no. GW Instek 50MHz High Voltage Differential Probe GDP-050
- Manufacturers part no. GW Instek 100MHz High Voltage Differential Probe GDP-100

| Type | Order code | 1+ |
|------------------|------------|--------|
| GDP-025 - 25MHz | 90-6337 | 283.50 |
| GDP-050 - 50MHz | 90-6338 | 498.75 |
| GDP-100 - 100MHz | 90-6339 | 641.55 |

517607

GW INSTEK

GLP-1A Logic Pulser

The GW Instek GLP-1A logic pulser can be used to perform in-circuit testing of TTL, CMOS, and many other logic devices at a maximum of 50MHz. The GW Instek GLP-1A is enhanced with a logic probe function with a minimum detectable pulse width of 10 ns, providing enough sensitivity for most applications.

A Short 10 sec pulse width assures that no damage will occur to circuits whilst testing. With a weight less than 50g, a non-slip grip, and an external sync input, the GW Instek GLP-1A provides comfort and reliability for various troubleshooting tasks.

- Combines a logic probe and pulser combined into one
- Operating Voltage: 4VDC to 18VDC
- Dimensions: 18(W) x 210(H) x 18(D)mm
- Weight: Approx. 50g
- GW Instek Manufacturers part no. GW Instek GLP-1A

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|------------|-------|
| GLP-1A Logic Pulser | 90-6254 | 29.40 |

517458

RVFM Logic Probe

This logic probe has a memory function which can detect the occurrence of single pulses or logic level. It can detect one shot and low repeat rate narrow pulses, which are nearly impossible to see even with a fast scope. With this probe, they are easily detectable and visible.

The probe has three LEDs, red for high logic level, green for low logic level and yellow for pulse. The intensity of the pulse LED is directly proportional to the duty cycle of the signal observed. All single pulses or pulse trains are recognised from 30ns up to 500ms.

The probe is supplied with approx. 500mm lead terminated in a red and black probe clip. In use, the red clip should be connected to the positive of the circuit under test, and the black to the negative.

- Perfect for testing TTL and CMOS
- Displays pulse presence and logic states
- Able to detect pulse to 30ns or pulse trains to 17MHz
- Input overvoltage protection
- Pulse enlargement capability allows pulse detection down to 25ns
- LED indicators indicates HI or LO logic states
- Supplied complete with power lead and comprehensive instruction manual

| Type | Order code | 1+ |
|-------------|------------|-------|
| Logic probe | 85-0695 | 45.10 |

- Cable type: 2-pin lead
- Impedance: 500
- BNC 2x IC clip probes

| Type | Order code | 1+ |
|--------------|------------|------|
| BNC to 2x IC | 51-5166 | 7.62 |

Environmental Measurement

VOLTCRAFT® PH-100 ATC pH Meter

The Voltcraft PH-100 ATC is a handy pH measuring device with a resolution of 0.01pH. Whether you want to know the pH of water in a swimming pool or in an aquarium, this clever device is for you.

Poor water quality is often the cause of fish death, poor plant growth or for failed experiments in the school and laboratory. And when the consequences of poor water quality become apparent, it's usually too late. With the Voltcraft PH 100 ATC you can check the pH in a variety of fluids quickly and reliably.

The Voltcraft Digital pH meter PH-100 ATC is a reliable and accurate pH meter for applications in swimming pools and other water storage areas for quality checking. With this measuring device, you can easily detect how acidic or alkaline a liquid is.

The device has a fast response time and low power consumption making it highly effective. With the HOLD function, you can keep the reading on the large LCD if measuring in an awkward situation. The automatic temperature compensation (ATC) ensures correct measurements over the meter's whole operating temperature range.

- Data hold
- Two-point calibration
- Automatic temperature compensation
- Supplied with pH electrode with storage solution and operating instructions
- Spare electrodes are also available 55-2341

PH-100ATC, pH-electrode with storage solution, operating instructions

| Type | Order code | 1+ |
|--------------------|------------|--------|
| Voltcraft pH Meter | 51-5153 | 109.70 |
| Spare electrode | 55-2341 | 39.72 |

VOLTCRAFT® CO-60 Air Quality Indicator

The Voltcraft CO-60 is a small, compact and easy-to-use CO2 monitor. In addition to measuring the CO2 concentration, it also measures the ambient temperature and relative humidity values that are displayed clearly on the backlit LCD screen. The air quality is indicated by LEDs using a traffic light system (green, yellow and red) for various threshold levels of CO2. The device is powered either via USB or the included AC adapter. It is ideal for long term monitoring of office buildings or anywhere where air quality is important.

- Measurement of CO2 concentration, temperature, humidity
- Simultaneous display of all measurements
- Stylish Design
- Backlit LCD display
- Air quality indicator using LED traffic lights

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------------------|------------|-------|
| Air quality indicator | 54-6387 | 95.65 |

60MHz Oscilloscope Probe

A very high quality 60MHz oscilloscope probe with switchable x1 and x10 input division ratios.

- Maximum input voltage is 600V peak or 200V rms
- Supplied with 1.4m of lead with BNC connector

| Type | Order code | 1+ |
|-------------------|------------|-------|
| 60MHz Scope probe | 85-2212 | 18.29 |

VOLTCRAFT® PVC Stackable 4mm Plug to 4mm Plug Test Leads

These Voltcraft stackable PVC measuring / test leads have PVC insulation and are particularly suitable for low voltage use.

- Stackable 4mm plug to 4mm plug lead
- Length 1m
- Available in black or red

| Type | Order code | 1+ |
|-------|------------|------|
| Black | 51-5405 | 3.41 |
| Red | 65-2928 | 2.55 |

VOLTCRAFT® BNC to 2x IC Clips 800mm

A Voltcraft BNC to 2x IC clip probes.

- One pair (red and black)
- Adaptor allows easy access to leads of through hole ICs
- Insulation at the tip fits between leads to prevent accidental shorting
- Conductor length 800mm
- Colour: Black, Red

VOLTCRAFT® PL-135 HAN Hot Wire Anemometer

Use this Voltcraft PL-135HAN anemometer to measure air temperature, airflow velocity and volume flow rate via an external, tethered telescopic hot-wire sensor with thermometer. The product is suited for all kinds of applications related to heating, air-conditioning and ventilation. The readings are shown on the LC display. When the product is connected to a computer the readings can be displayed as a graph and exported as a text document using the included software. Power is supplied via an integrated LiPo rechargeable battery.

- Dimensions 27 x 160 x 58mm
- Weighs 280g

| Type | Order code | 1+ |
|-----------------------|------------|--------|
| PL-135 HAN anemometer | 55-3597 | 142.06 |

0560 1405 405i Smartprobe Bluetooth Thermal Anemometer

The Testo 405i thermal anemometer with smartphone operation is ideal for carrying out measuring tasks in ventilation ducts. It is easy to use the anemometer to determine air velocity, temperature and volume flows. The Testo 405i is also suitable for measuring indoor air velocity. Practical when, for example, you want to locate non-airtight windows.

With the Testo Smart Probes App, you can view readings conveniently on your smartphone or tablet. You no longer have to spend ages trying to make out the display at poorly accessible points. Volume flow can also be measured easily using the App: following intuitive input of the duct cross-section, the App calculates this completely automatically.

Temperature sensor: NTC

- Measuring range: -20 to +60°C
- Accuracy: $\pm 0.5^{\circ}\text{C}$
- Resolution: 0.1°C

Velocity - Hot wire anemometer

- Measuring range: 0 to 30m/s
- Accuracy: $\pm (0.1 \text{ m/s} + 5\% \text{ of mv})$ (0 to 2 m/s), $\pm (0.3 \text{ m/s} + 5\% \text{ of mv})$ (2 to 15 m/s)
- Resolution: 0.01m/s

General

- Operating temperature: -20 to +50°C
- System requirements: iOS 8.3 or newer / Android 4.3 or newer, mobile device with Bluetooth 4.0
- Battery type: 3x AAA
- Battery life: 15 hours
- Manufacturer's warranty: 2 years
- Dimensions: 200 x 30 x 41mm
- Probe shaft length: 400mm
- Testo type 0560 1405 405i

| Type | Order code | 1+ |
|--------------------|------------|-------|
| Thermal anemometer | 85-1271 | 88.81 |

Technical specifications and datasheets

Technical specifications and datasheets can be found at

www.rapidonline.com

VOLTCRAFT®**VPT-100 Pitot Tube Anemometer**

The Voltcraft VPT-100 is a Pitot Tube Anemometer that has been designed for precise differential pressure measurement. Furthermore, the pitot tube anemometer records flow velocities of air and gases and ambient temperatures. In combination with a pitot tube, it is also possible to measure high air velocities.

The flow supply of the pitot tube anemometer is performed via a 9V block battery. The VPT-100 can be operated both indoors and outdoors.

What's in the Box?

- Pitot tube anemometer
- Angled pitot tube (diameter: 8mm, length: 210mm + 335mm)
- 2 connection hoses (length: 850mm)
- 9V Battery
- Mini-USB-/USB-cable to connect to a PC
- PC Software
- Carrying case
- Operating instructions

- Large LCD display with backlighting
- Integrated time measurement clock
- Time stamps for the values MAX, MIN and AVG
- Measurement of barometric pressure, air velocity and air flow
- Display of barometric pressure, air velocity, air flow and ambient temperature
- Mini-USB interface
- PC with USB connection
- CD-ROM with PC software
- System requirements: PC with Pentium 90 MHz or higher, 32 MB RAM, 7 Mbyte hard disc memory, Win2000/XP/Vista
- Warning message at low battery
- Manufacturer's part: **Voltcraft VPT-100**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| VPT-100 Anemometer | 64-3361 | 169.22 |

559826

**0560 4170 Vane Anemometer with Built-In Vane**

This vane anemometer from Testo allows you to measure air flow speed, volumetric flow rate and temperature simultaneously. The integrated vane makes it ideal for carrying out measurements at air inlets and outlets. The anemometer is designed to provide an **easy-to-read display** showing important data including air flow direction, air flow speed and the volumetric flow rate as well as the actual temperature.

The mean time value and average value provide information regarding the average volumetric flow rate, air flow speed and the temperature measurement.



In order to carry out the volumetric flow rate simply enter the area of the duct.

What's in the box?

Vane anemometer with integrated 100mm vane
Battery
Certificate of Conformity

- Real-time or average CFM, velocity, temperature
- True velocity measurement - no air density correction required
- Simple one hand operation
- Easy to carry and operate
- Adjustable A(K) factor (open area of grille)
- -40°F to 185°F storage temperature
- 32°F to 122°F operating temperature
- 9V battery
- 50 hours of battery life
- Weight 8oz
- Dimensions: 277 x 105 x 45mm
- ABS housing material
- 2-year warranty
- Manufacturer's part: **0560 4170**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------------|----------------|--------|
| Vane Anemometer | 57-4322 | 307.70 |

544065

VOLTCRAFT®**WA-100 ATC Conductivity Meter**

The **Voltcraft WA-100** measures conductance due to total dissolved

solids (TDS) of aqueous media and is highly accurate due to its automatic temperature compensation function.

Supplied with a conductance probe and operating instructions. Applications include determining the water quality in schools, laboratories, fish farms, aquaria, or during food production.

- Conductance range 0 to 1999µS/cm
- Resolution 1µS/cm
- Dimensions 200 x 68 x 30mm
- Weighs 270g

| Type | Order code | 1+ |
|--------|----------------|-------|
| WA-100 | 55-2141 | 69.40 |

540166

VOLTCRAFT®**WT-01 Automatic Temperature Compensating Conductivity Meter**

The **Voltcraft LWT-01** measures conductance due to total dissolved solids (TDS) of aqueous media. It can be used to check purified water or water quality in aquariums. Highly accurate due to its automatic temperature compensation function. Supplied with calibrating solution 1430µS/cm, 1 x 9V battery pack, calibrating screwdriver, storage box and operating instructions.

- Automatic temperature compensation (ATC)
- Measuring range up to 9999µS/cm
- Dimensions 158 x 40 x 34mm
- Weighs 85g

| Type | Order code | 1+ |
|--------|----------------|-------|
| LWT-01 | 55-2137 | 25.64 |

540166

VOLTCRAFT®**CM-100 CO2 Meter**

The **Voltcraft CM-100 CO2 Meter** is a portable instrument for monitoring temperature and carbon dioxide concentration in the ambient air. The measurement interval is 2 minutes and shows the permanent to current values. If the 'Set thresholds' are exceeded, there is an audible alarm. The readings for temperature and CO2 can be simultaneously read on the LCD screen.

What's in the Box?

Voltcraft CM-100
Sensor

Carry case

Operational instructions

- Long-term stable and repeatable NDIR Measuring method for CO2 - Min/Max readings memory
- Suppressible auto power-off function
- RS232 interface
- CO2 and Temperature display
- Adjustable audible alarm
- External Sensor
- Manufacturer's part: **Voltcraft CM-100**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------------|----------------|--------|
| CM-100 CO2 Meter | 64-2771 | 223.85 |

559905

**LogIT™****D106000 LogIT LED Ammeter**

These compact and tough bench ammeters (current meters) have clear and bright red coloured displays on the front of the unit and horizontal 4mm input sockets on the rear, allowing convenient use on a workbench. This arrangement allows the position of the meter within a circuit to be easily seen, with the connecting wires laying flat.



Matching Voltmeters are available separately with a green coloured display to easily distinguish between the two types of meter.

- **Ammeter range: 0 to 10 Amps** (2 decimal places)
- Accuracy: $\pm 1.5\%$
- Large bright **RED LED display**
- Display size 32 x 19mm
- 4mm input sockets mounted horizontally on rear panel
- Colour-coded 4mm input sockets mounted horizontally to allow cables to lay flat
- Tough ABS case
- Unit size 130 x 90mm
- Rear height 40mm, front height 15mm allowing perfect student viewing angle
- Powered by 2x AA batteries (included)
- SmartPower - manages internal batteries to extend life and performance
- Designed and manufactured in the UK
- **Available singly and in packs of 10**

| Type | Order code | 1+ |
|--------|----------------|-------|
| Single | 88-2665 | 38.71 |

569011

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VOLTCRAFT®

PL-110SM Solar Light Meter

The Voltcraft PL-110SM is a robust and easy to operate solar radiation measuring instrument meter to measure the level of solar radiation. This allows quick and reliable checking of the efficiency of PV and solar systems.

Just measure the solar radiation per m², multiply by the PV system's surface area and then compare to the current grid feed in. The PL-110SM is also suitable for determining the ideal location of a new system.

The PL-110SM is capable of recording the maximum/minimum value of the measured light power. The product can hold the current reading as well. The reading can be shown in either W/m² or BTU.

- Measurement of the intensity of solar irradiation
- Ideal for checking the degree of efficiency of PV-systems
- Measurement range Ptot 0 to 1999 W/m²
- Data-hold
- Robust housing with soft rubber protection
- Backlight
- Supplied with solar radiation measuring instrument, cap, 3x AAA batteries, carrying case and operating instructions

Protection for Solar-Sensor, Batteries, Carry- and retention case, User manual.

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|------------|-------|
| Radiation Measuring | 51-5150 | 44.35 |

525161

EXTECH
INSTRUMENTS
A FLIR COMPANY

PH100 pH Meter 0 - 14pH, IP57

The Extech PH100 pH meter is a robust, watertight (IP57) pH tester. Its flat, changeable measurement electrode allows measurements in liquids, semi-solids, at low flow levels, and even on surfaces. The flat electrode also eliminates electrode breakage and clogged junctions. The readings are temperature compensated for greater accuracy, and the pH and temperature are displayed simultaneously. As well as the digital pH display there is also a useful pH bar-graph for quick checks. The PH100 has an internal memory for 15 measurements. One-, two- or three-point calibration possible and the meter automatically recognizes buffer solutions. Please order pH buffers separately. Supplied with 4 x CR2032 batteries, protective cap, plastic sample cup, carrying strap and operating instructions.

- Flat pH electrode for easy cleaning
- Water-proof to IP57
- Floats in water, protected against wet environments
- Temperature 23 to 194°F (-5 to +90°C)
- Resolution 0.01pH, 0.1°C or F
- Accuracy ±0.01pH, ±1.8°F/±1°C
- Uses 4 x 3V CR3032 button batteries
- Dimensions 35.6 x 172.7 x 40.6mm (1.4 x 6.8 x 1.6in)
- Weight 110g (3.8oz)

| Type | Order code | 1+ |
|-------|------------|-------|
| PH100 | 57-6170 | 89.30 |

545616

eti

pH Meter and Kit

This pH Tester from ETI is a robust meter featuring an easy to read, LCD display indicating pH over the range of 0 to 14 pH with a resolution of 0.01 pH, and an accuracy of ±0.05 pH. The pH readings are manually temperature compensated over the range of 0 to 60°C (default 25°C). The 8000 pH meter comes with a pH electrode and powers off automatically after 10 minutes, maximising battery life. At the touch of a button, the instrument will automatically recalibrate itself when used in conjunction with pH buffer solutions.



Also available is the pH kit with an ETI 8100 Plus pH meter. The meter is easy to read and features an LCD display indicating pH over the range of -2 to 16 pH with a resolution of 0.01 pH, mV over the range of -1000 to 1000 mV and temperatures over the range of -39.9 to 149.9°C, with a resolution of 0.1°C. The pH readings are either manually or automatically temperature compensated over the range of 0 to 100°C. To automatically compensate, it is necessary to utilise a thermistor temperature probe.

pH Meter

- Interchangeable electrode
- Easy to use recalibration function
- 3 x 1.5V AAA batteries - 5000 hours (not supplied)
- 25 x 56 x 128mm
- 130g
- UK manufacturer
- 2-year manufacturer's guarantee

pH Meter Kit

- pH and temperature meter
- Robust waterproof case offering IP66/67 protection
- Manual/automatic temperature compensation
- Easy to use recalibration function
- UK manufacturer
- 2-year manufacturer's guarantee

| Meter | Order code | 1+ |
|-------------------|------------|--------|
| 8000 pH meter | 85-3174 | 92.91 |
| 8100 pH meter kit | 85-3176 | 133.13 |

561936

VOLTCRAFT®

Gamma Check Pro Geiger Counter

The Voltcraft Gamma Check Pro Geiger Counter is used for the quick indication of radioactive contamination.

The Gamma Check Pro alerts you to any radioactive contamination straightaway. The device rapidly samples the radiation dose, with readouts displayed in mSv or µSv. This allows a quick assessment of food, equipment and building materials with regard to possible radioactive contamination (readout zero-referenced against natural background radiation).

Other features include a real-time clock with automatic summer/winter time changeover and leap year display. Sampling modes include counts, count rate and radiation dose, displayed individually or all at once. Sampling periods start with 1 minute, lasting for about 100 days, or ad infinitum, and allow you to set custom radiation limits in the process.

The Gamma Check Pro auto-stores the most recent max reading (in µSv per hour), average radiation levels over the past 24 hours, and time-stamps the most recent radiation dose, counts, count rate readings.

What's in the Box?

Voltcraft Gamma Check Pro Geiger Counter
Li-ion battery
USB charging/interface cable
User manual



- Quick and easy radiation measurement
- Readouts: radiation dose, counts, count rate
- Acoustic and visual alert when exceeding the selected radiation limits
- Acoustic clicks indicate number of ionization events
- Built-in data logger and USB slot
- Number of ionisation events displayed by audible clicks
- Auto Power Off
- Displays the average number of events during chosen reading periods
- Adjustable radiation limits
- Selectable sampling time
- Enables cumulative sampling of the radiation dose over a couple of days with notification
- Manufacturer's part: Voltcraft Gamma Check Pro Geiger Counter

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------------|------------|--------|
| Gamma-Check-Pro | 64-7960 | 132.31 |

562367

GAMMA-SCOUT®

Alert - Radiation Detector wor Geiger Counter

The Gamma-Scout Alert, a Hand-Held Radiation Detector/Geiger Counter, is a general purpose survey meter for measuring and detecting ionising radiation. It can detect alpha, beta, gamma and x-ray radiation.

The Alert model also features an audible click in the presence of radiation. You can also set a radiation threshold to sound an alert.

The Gamma-Scout is a fully featured Geiger counter with a form fitting ergonomic shape. The unit has a battery indicator, multiple unit conversion, real-time dose rate and cumulative dose display functions, and programmable logging and alert functions.

Advanced functions include PC data download via USB cable and an ultra low current power circuit for extended battery life.

GAMMA-SCOUT stores all registered pulses in its internal memory and keeps them ready for you to use when desired. 32,000 Readings: For constant monitoring of the environmental data, the interval of data storage is set on a value of one per week. This equals 600 years of memory capacity.

- Determine the source of radiation leakages
- Monitor ambient radiation anomalies
- Monitor personal cumulative dose exposure
- Detect radioactive elements in metal scrap
- Check rocks from the earth for radioactivity
- For alpha, beta, and gamma rays
- Dosimeter function to show the cumulative radiation dose
- Lifetime: >117 000h at 20 pulses / min
- Interface: USB
- Manufacturer's part: Gamma-Scout Alert

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-------------|------------|--------|
| Gamma Scout | 52-0987 | 383.40 |

554212

Order online

Save time, and place your order at:
www.rapidonline.com
24 hours a day

GAMMA-SCOUT®

Standard Radiation Detector

The Gamma Scout 4016138663679 is a Standard Radiation Detector/ Geiger Counter which is ideal for the continuous measurement and recording (data storage) of radiation/ radioactivity at the measurement site. The detector is equipped with a Geiger-Müller counter tube, enabling you to detect not only gamma radiation, but alpha and beta radiation as well. The interface allows the transfer and evaluation of the measurement data onto a personal computer. Thanks to the sophisticated patented electronics with low power consumption, the built-in battery will hold power for up to 12 years.



The Radiation Detector has a measuring range from weak environmental radiation to large doses of radiation 0.01mSv/ h to 1,000mSv/ h (legal limit 20mSv per year).

What's in the Box?

Gamma Scout 4016138663679 Radiation Detector
PC-reading software on CD-ROM
USB cable
Quality certificate with serial number
Instruction manual

- For alpha, beta, and gamma rays
- Operation without battery replacement up to 12 years (depending on power consumption)
- Accompanied by new, menu-driven evaluation program under Windows® on CD
- Dosimeter function: Display the cumulative dose of radiation (radioactivity)
- Window counter (GM) self-extinguishing for Alpha, beta and gamma radiation
- Measures small changes in ambient radiation
- Selectable Pulse Count in minutes; 1 minute, 10 minutes, 1 hour, 1 day and 7 days
- Variable calibration after the dose rate
- USB interface
- Available: Gamma Scout 4016138663686 **Meter Pouch (order code 64-7557)**
- Manufacturer's part: Gamma Scout 4016138663679

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| Radiation Detector | 64-7990 | 306.15 |

562942



EL-USB-1-PRO/LCD Temperature Data Loggers

These standalone data loggers measure and store more than 32,000 (Pro model) or 16,000 (LCD model) temperature readings over a -40°C to +125°C (Pro model) or -35°C to +80°C (LCD model) measurement range.



The units are powered by a ½AA 3.6V lithium battery which allows logging for up to 2 years. Setup and downloading is completed by plugging the data logger into a PC's USB port and running the purpose designed software under Windows 2000, XP or Vista (32-bit) and Windows 7 only. Downloaded data can then be graphed, printed and exported to other applications.

See **87-6252** for calibrated version.

For further details see the FAQ at www.lascarelectronics.com.

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|----------------|--------|
| EL-USB-1-PRO Logger | 85-3529 | 124.99 |
| EL-USB-1-LCD Logger | 85-3419 | 56.99 |
| PRO + calibration | 87-6252 | 164.99 |
| LCD + calibration | 87-6251 | 96.99 |

180876



EL-USB-2-LCD Data Logger



This standalone data logger measures and stores up to 16,379 relative humidity and 16,379 temperature readings over 0 to 100%RH and -35°C to +80°C (-31°F to +176°F) measurement ranges. The user can easily set up the logger and view downloaded data by plugging the data logger into a PC's USB port and using the supplied software. Relative humidity, temperature and dew point (the temperature at which water vapour present in the air begins to condense) data can then be graphed, printed and exported to other applications.

The high contrast LCD can show a variety of temperature and humidity information. At the touch of a button, the user can cycle between the current temperature and humidity, along with the maximum and minimum stored values for temperature and humidity. The data logger is supplied complete with a long-life lithium battery, which can typically allow logging for up to 2 years.

For further details see the FAQ at www.lascarelectronics.com.

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------------------|----------------|--------|
| Lascar EL-USB-2-LCD | 85-3525 | 74.99 |
| D/logger + calibration | 87-6254 | 149.99 |

180872



HN-D Leeb Hardness Meter



When a hardness test is carried out by the Sauter HN-D Leeb hardness meter, an impact body with a tungsten carbide test tip is propelled by spring force against the surface to be tested, from which it rebounds.

Impact and rebound velocities are measured by the following method: a permanent magnet integrated into the impact body passes through a coil and induces an electric voltage during its travels back and forth. The voltages are proportional to the velocities and are processed and displayed as the hardness value 'L' by the meter.

- Built-in type D impact sensor
- Convenient for all materials
- Best suited for on-site testing of large, heavy or previously installed parts
- Handy for difficult to access test locations
- Automatic sensing and compensation for impact direction
- Ideal for material selection and acceptance tests
- Designed for one-hand operation
- High luminosity LCD display with backlight
- Selectable measuring units: Rockwell (B & C), Vickers (HV), Brinell (HB), Shore (HSD), Leeb (HL)
- Internal data memory for up to 500 measurements with date and time
- USB-PC data output
- Supplied complete with hard carrying case
- **Sauter type HN-D**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------------|----------------|--------|
| Leeb meter 0-999 | 85-4873 | 804.43 |

564646



Digital Manometer including Sensor, GMH 3161-xx Series

A range of **Greisinger Digital Manometers** for measuring the over/under pressure and pressure difference up to 2000mbar (GMH 3161-13). The remarkable zero-point stability as well as two measurement ranges ensures that you will always have the optimal measurements by automatically switching between measurement ranges.

These handy and sturdy pressure instruments with integrated relative pressure sensor and 4mm pressure connector are suitable for air and non-corrosive and non-ionizing gases.

- Relative pressure sensor for over, under or differential pressure
- Suitable for air or non-corrosive or non-ionising gases
- Auto-Off, BAT, Min-/Max-Value, Hold, Tare, Scale, Offset
- Mains Adaptor Socket, Serial Interface
- 2 Pressure Connection Ports Ø4mm
- Available models **GMH 3161-01, GMH 3161-07 and GMH 3161-13**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-------------|----------------|--------|
| GMH 3161-01 | 60-3797 | 256.33 |
| GMH 3161-13 | 60-3799 | 198.71 |

553050



TD 225-0.1US Ultrasonic Thickness Meter



The **Sauter TD 225-0.1US** is a **Thickness Gauge** that uses **Ultrasonic Waves** to exactly measure the thickness of a material. The gauge has an external sensor for those hard to reach measurement points.

The **TD 225** generates high accuracy results within a measurement range of 1.2 to 225mm with sound velocity of 500 to 9000m/sec. The measurements are then displayed on the clear to read LCD screen in either inches or mm.

The **TD 225** has a built-in RS232 port to interface with a PC.

- Uses ultrasonic waves to determine exact thickness within 0.5% of max +0.1
- External sensor for those hard to reach measurement points
- RS232 data interface for connection to PC - requires software and cable (not supplied)
- Selectable measurement units of mm and inches
- Requires 4x 1.5V AAA batteries
- Auto off function conserves battery life
- Supplied with hard carrying case
- 2 year warranty
- Manufacturer's part: **Sauter TD 225-0.1US**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------------|----------------|--------|
| Ultrasonic Meter | 85-2848 | 320.82 |

555721

Scales & Balances



ECE-N Series Bench/Platform Scales

A range of **Kern Bench Scales from the ECE Series**. These large size bench scales are uncomplicated, easy-to-use and ideal for measurements of larger objects.



The scales feature a particularly large plastic weighing plate with dimensions of 320 x 260mm. Depending on the model purchased, the scales will be able to measure up to 10, 20 or 50kg.

Despite its large plate, Kern's ECE scales are still portable and ideal for use in multiple applications. Their flat construction makes them easy to carry under the arm, and battery power allows them to be used wherever you need them.

These scales are also designed for fast response and will show a steady weight reading within 2 seconds.

What's in the Box?

ECE scales

Weighing plate plastic

- High mobility - battery powered, flat design for easy transportation
- Large-size plastic weighing plate - measures 320 x 260mm
- Fast display - shows a steady weight reading within 2 seconds
- Large-size, backlit LCD display with digit height of 21mm
- Measurements up to 50kg (depending on model purchased)
- 2 year manufacturer's warranty included
- Available models: **ECE 10K-3N, ECE 20K-2N and ECE 50K-2N**
- Manufacturer: **Kern**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------|----------------|-------|
| ECE 10K-3N | 85-5042 | 89.38 |
| ECE 20K-2N | 85-5043 | 93.44 |
| ECE 50K-2N | 85-5044 | 93.44 |

563039



Platform Scales for Parcel and Veterinary Use

A range of **Kern Platform Scales** that are perfect for weighing parcels and small livestock. These highly popular parcel and veterinary scales are available in four sizes from standard to large.



The scales come with a stainless steel weighing plate and a separate display unit connected via a cable. A wall mount is included for the display unit as standard.

The scales are extremely easy to use, with 4 key operation, and they ensure accuracy with every measurement by automatically filtering out vibrations (perfect for animals that may be restless).

- Ideal for use as Parcel/Veterinary Scales
- Stainless steel weighing plate with painted steel base
- Simple and convenient 4 key operation
- Wall mount included for the display unit as standard
- Vibration-free weighing - vibrations are automatically filtered out to ensure a stable reading
- Large-size LCD display with digit height of 25mm
- 2 year warranty included
- Available with a **weighing range of 15, 35, 60 and 150kg**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|--------------------|----------------|--------|
| Scale 5g ; 15kg | 85-2784 | 136.62 |
| Scale 10g ; 35kg | 85-2785 | 138.23 |
| Scale 0.02g ; 60kg | 85-2786 | 157.70 |
| Scale 50g ; 150kg | 85-2787 | 138.23 |

55955



Entry Level Laboratory Balance, EMB Series

A range of **Kern Entry Level laboratory Balances** with tremendous weighing performance. These balances will give a high precision verification for an affordable price. They are extremely easy to use generating high accuracy results in any application.



The density of solids and liquids can be determined in seconds, making them ideal for use in schools and universities

- Simple and convenient 2-key operation, making them ideal for use in schools and universities
- Compact lightweight design
- Large LCD display
- Mains or battery powered
- Auto-Off function saves battery life
- Tare function
- Particularly flat design
- Secure and non-slip positioning with rubber feet
- Ready for use: Batteries included
- Hook for under floor weighing
- Available with a **weighing range of 600 or 1200g**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------|----------------|--------|
| 600g Balance | 85-2717 | 159.02 |
| 1200g Balance | 85-2718 | 75.88 |

55956



EMS Series, School Balance/Precision Balance

A range of **Kern School Balances from the EMS Series**. These entry level precision balances are perfect for use in the biology, chemistry, or physics department of any school or university.



They feature a large, shock proof plastic weighing plate, ergonomically optimised key pad and non slip rubber feet.

What's in the Box?

EMS Balance
Weighing plate
Mains power supply
Windshield, only EMS 300-3
Instruction Manual

- Especially suitable for use in schools and universities
- Large, shock proof plastic weighing plate
- Particularly flat design
- Battery operation optional (9V PP3 type)
- Ergonomically optimised key pad with large keys and a high-contrast LCD display
- Secure and non-slip positioning with rubber feet
- Available models: **EMS 300-3, EMS 3000-2 and EMS 12K0.1**
- Manufacturer: **Kern**

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|------------|----------------|--------|
| EMS 300-3 | 85-5037 | 244.00 |
| EMS 3000-2 | 85-5038 | 233.47 |
| EMS 12K0.1 | 85-5039 | 198.64 |

563037



Precision Balances

The Kern PCB series is an economical alternative to premium priced balances. PCB precision scales are affordable, accurate and easy to use for all of your basic weighing needs. They are great in academic, educational and school environments.



This range of Laboratory scales and balances covers both spectrums of the requirements of the modern laboratory, whether you are in a pharmaceutical company, quality control laboratory, a university, college or school.

- Pre-tare function for manual subtraction of a known container weight
- Backlit LCD display with digit height 15mm
- Data transfer, for example to a printer or PC
- Battery operation possible; block battery (9V).
- Auto-Off function after 3 min without a change of load to preserve the batteries
- Protective working cover
- Simple adding function
- Accurate and reliable weighing
- Large LCD display
- Crafted by the oldest and most respected German precision scales company
- Easy to use, fast response
- All the features your laboratory needs
- Durable precision electronic scales for laboratory and industrial use

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-------------|----------------|--------|
| PCB 100-3 | 85-3441 | 272.00 |
| PCB 6000-1 | 85-3448 | 259.74 |
| PCB 10000-1 | 85-3450 | 244.26 |

82373



KB Series Precision Balance

These compact balances offer you extensive weighing functions which are virtually unique in this price category. User guidance step by step through Yes/No dialogue on the display.



Models have standard functions like parts counting, weighing, percentage weighing and multiple weighing units including programmable weighing unit (user defined unit not available on approved machines, units limited to legal ones).

Units also have animal weighing function, under scale weighing facility and are GLP compliant when connected to a printer.

- Net Total Weighing
- Percentage Weighing
- Animal Weighing
- Multi-unit selection
- Under scale weighing
- Level Indicator
- Adjustable Feet

| Type | Order code | 1+ |
|------------------|----------------|--------|
| Kern KB 120-3N | 85-3451 | 263.05 |
| Kern KB 240-3N | 85-3452 | 278.74 |
| Kern KB 360-3N | 85-3453 | 291.37 |
| Kern KB 1200-2N | 85-3454 | 254.47 |
| Kern KB 2000-2N | 85-3455 | 254.43 |
| Kern KB 2400-2N | 85-3456 | 259.74 |
| Kern KB 3600-2N | 85-3457 | 291.37 |
| Kern KB 10K0.05N | 85-3458 | 254.96 |
| Kern KB 10000-1N | 85-3459 | 250.91 |

525054



600g X 0.01g Precision Weighing Balance FGL-600

This ATP FGL-600 600g X 0.01g Precision Weighing Balance is housed in an impact-resistant ABS case with a 115mm stainless steel weighing pan, splash-proof membrane keypad, levelling bubble and adjustable feet. The balance can be either battery or mains powered via an AC/DC Adaptor.



- Weighs in g, oz, ct and tola
- Impact-resistant ABS case with adjustable feet
- Splash-proof membrane keypad incorporating 3 function keys
- 115mm diameter stainless steel weighing pan
- 26mm hi-contrast LCD display with backlight
- Automatic backlight when weight is placed on the pan
- Zero tracking ensures stable and repeatable readings
- Tare facility over the full range
- Overload protection to 100% over capacity
- Low battery indication
- Auto power Off after 1.5 minutes of no activity (battery powered only)
- Supplied with user guide and battery
- 2 year warranty

| Type | Order code | 1+ |
|-------------------|------------|--------|
| Precision Balance | 90-6579 | 120.96 |
| Power Adaptor | 90-6592 | 9.42 |

518029

VOLTcraft® TS-5000/1 Postal Scales

The Voltcraft TS-5000/1 postal scales are a compact and slim design with break resistant glass. The TS-5000/1 has an easy to read LCD display that has been designed for weighing objects of up to 5000g. The weight can also be displayed in ounces (oz) or pounds (lb).



The scale features tare function and automatically turns off after being idle for approximately 20 seconds.

- Tare function
- Auto power off
- Measuring units (g, oz, lb)
- Battery life and overload indicator
- Long-life lithium battery
- Measuring units: g, oz, lb
- Auto power off
- Includes long-life lithium battery
- Battery and overload indicator
- Supplied with Voltcraft TS-5000/1, Lithium battery and instructions for use

Lithium battery, Instructions for use

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------|------------|-------|
| Postal Scales | 51-5216 | 20.27 |

525277

Quick Quote

Quick quote service available online
Either click on a product and ask for
a quick quote or visit
www.rapidonline.com/quotation
for more details

Counters

70962



Tally Counter

A hand-held 4-digit tally counter in an attractive chrome-finished case. Each press of the top button increases the count by 1.



- Positive click action
- Reset to zero via thumb wheel on side
- Reset wheel can be removed to prevent unauthorised resetting

| Type | Order code | 1+ |
|---------------|------------|------|
| Tally counter | 52-3494 | 3.70 |

565613



Count Up/Down Digital Tally Counter TLD-2

The ATP TLD-2 is a Lightweight Pocket-Sized Hand-Held Digital Tally Counter that has been designed for ease of use. The ATP TLD-2 has large, easy-to-operate count buttons, an LCD display, with backlight for low light conditions and a shaped case which allows a firm and comfortable grip of the tally counter.



- MTLD-2 Count-Up/Down Digital Tally Counter - adds and subtracts 0 to 9,999
- Large count button with ± button for add/subtract
- On/Off/reset button
- Count confirmation beep or silent operation
- Maximum count 9,999
- Cannot be accidentally reset or switched off - press On/Off/reset button for 3 seconds to activate
- 15mm LCD display with backlight
- Display backlight - auto Off after 5 seconds
- Shaped case with wide 55mm head and narrower 37mm body for improved grip
- Auto power Off after 2 hours of no activity - returns to the last counted number when the counter is switched on again
- Supplied with batteries

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|-----------------------|------------|-------|
| Digital Tally Counter | 90-6552 | 13.19 |

518002

Timers

72909



Count Up/Down Timer TM-38

The ATP TM-38 Count Up/Down Timer is a simple to use count-up or count-down timer. It is ideal for the food trade, laboratories, education and industry. The ATP TM-38 is easy to program and has a high-frequency alarm on expiry of countdown times.



- 99 mins 99 secs x 1 second
- Large 20mm LCD display
- Quick and easy operation with start, stop, reset and numeral keys
- Count-down mode with alarm on expiry
- Count-down can be stopped and restarted at any point
- Memory to store last count-down time setting
- Auto repeat function for count-down
- Count up mode until stopped
- Cumulative count up function

- Count up can be paused and re-started without losing the cumulative time count
- Timer can be mounted on a magnetic surface or suspended using the strap and hook
- Impact resistant ABS case with flip-out desk stand and rear magnet
- Supplied with battery

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|------------|------|
| Count Up/Down Timer | 90-6546 | 5.33 |

517996



Electronic Clock/Timer

A simple to operate count down/count up bench timer with 11mm hi-contrast LCD display.



- High-grade ABS plastic case incorporates soft touch rubber buttons
- High-frequency sonic alarm sounds on expiry of a count-down time
- Countdown time can be memorised for repeats of the same time
- Supplied with instructions for use

Requires 1x AA battery (included).

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ | 5+ | 10+ |
|-------------|------------|-------|-------|-------|
| Bench timer | 85-1465 | 12.54 | 11.41 | 10.87 |

31037



Waterproof Countdown Timer

This water resistant countdown kitchen timer from ETI offers IP65 protection along with a large digital display and audible alarm with variable volume control allowing the user to set up to a maximum volume of 95 decibels.

The timer can be set to 99 hours, 99 minutes and 99 seconds and is suitable for all catering countdown needs. The timer incorporates magnetic pads and a keyhole slot for wall-mounting or attaching to an appliance.



- ABS plastic case
- Dimensions 130 x 89 x 22mm
- Made in the UK
- 1 year guarantee

Requires 2 x AAA batteries (supplied).

| Mfrs part no. | Order code | 1+ |
|---------------|------------|-------|
| 806-150 | 85-3217 | 14.23 |

564401



Up/Down Timer

This digital countdown/count-up cooking timer from ETI incorporates a louder than average 80 decibel audible alarm and is fully programmable, allowing the user to set cooking times up to 99 minutes and 59 seconds or 19 hours and 59 minutes. Each timer incorporates a large, clear and easy-to-read LCD display and is designed to sit on a worktop or be attached to an appliance via the magnetic pad at the rear.



- Easily programmable
- Supplied with pocket clip/foot stand
- ABS plastic case
- Made in the UK
- 1 year guarantee

Requires 1 x AAA battery (supplied).

| Mfrs part no. | Order code | 1+ |
|---------------|------------|-------|
| 806-105 | 85-3216 | 13.01 |

564398

Thermal Imaging Cameras



0560 Series Thermal Imaging Cameras

The Testo 0560 series of thermal imaging cameras includes a model suitable for every imaging task. With high resolution and image quality up to 320 x 240 pixels (increasing to 640 x 480 pixels with Testo SuperResolution), the range is ideal for all applications in contracting and industry.

8650 865

Thermal Imaging Camera

Resolution (Pixels)
160 x 120
Sensitivity (mK)
<120



Order code
85-1345
£733.95

With 160 x 120 pixels, the Testo 865 provides your ideal entry into thermography allowing you to visualise temperature differences from 0.12°C and automatically recognise hot and cold spots.

8681 868

Thermal Imaging Camera with WiFi

Resolution (Pixels)
160 x 120
Sensitivity (mK)
<100



Order code
85-1346
£1038.47

The Testo 868 has an integrated digital camera and produces 160 x 120 pixel thermal images in which temperature differences of 0.12°C are visible and includes the Testo thermography App in order to work more flexibly and send reports on site.

8712 871

Thermal Imaging Camera with Bluetooth and WiFi

Resolution (Pixels)
240 x 180
Sensitivity (mK)
<90



Order code
85-1345
£1715.18

With a resolution of 240 x 180 pixels, the Testo 871 can identify temperature differences from 0.09°C and includes a digital camera and Testo Thermography App. It can also integrate measurement values from the Testo 605i Thermohygrometer Smart Probe and the Testo 770-3 Clamp Meter via Bluetooth.

8721 872

Thermal Imaging Camera with Bluetooth, WiFi and Laser Marker

Resolution (Pixels)
320 x 240
Sensitivity (mK)
<60



Order code
85-1346
£2068.61

The Testo 872 is a professional thermal imager with 320 x 240 pixels, digital camera, laser marker and can detect temperature differences from 0.06°C as well as integrating measurement values from the Testo 605i thermohygrometer Smart Probe and the Testo 770-3 Clamp Meter.

FLUKE®



Ti300+ Thermal Imaging Camera 320 x 240 9Hz

The Fluke Ti300+ helps you to find issues before they become fully formed problems. It has the resolution and accuracy needed to clearly reveal temperature differentials or demonstrate progressive heat changes over time.

With LaserSharp™ AutoFocus, the Ti300+ ensures well focused images every time. With the touch of a button, use the built-in laser distance meter to calculate and display the distance to your designated target on the camera screen and snap the image in sharp focus to avoid inaccurate temperature readings.

Order code **85-5137**
£4740.74



FLIR ONE Pro Thermal Imaging Camera Attachments



These **FLIR ONE Pro** infra red cameras are attachments for mobile phones, both **iOS** and **Android**. Their updated design features the **OneFit** adjustable connector that gives 4mm connector adjustment, enabling the camera to fit the phone without having to remove the phone from its protective case.

The revolutionary **VividIR** image processing provides sharp thermal imaging performance, allowing you to find invisible objects faster than ever. The high resolution sensor will work up to 400°C and will measure multiple temperatures or regions of interest.

The improved **FLIR ONE** app provides powerful measurement tools and report generation capability. The video can be streamed to a smart watch for remote viewing, for even more versatility. The cameras are ideal for inspecting electrical panels, problem solving HVAC systems, finding water damage, etc.

- Choice of iOS or Android fitting cameras
- 160 x 120 Thermal resolution
- Measures temperatures up to 400°C
- FLIR MSX embosses visible edges onto thermal imagery
- 4mm Connector adjustment accommodates most cases
- Reversible connector for Android and iOS
- Automatic or manual shutter
- Multiple real-time spot meters and regions of interest

| Type | Order code | 1+ |
|-------------------|----------------|--------|
| Android USB-C | 85-3797 | 353.80 |
| iOS attachment | 85-3796 | 353.80 |
| Android USB Micro | 85-3803 | 353.80 |

56584

Thermometers

65589



Comfort Thermometer

This **therma-hygrometer** from **ETI** has been manufactured to a high standard and is the ideal instrument for achieving maximum accuracy and repeatability of a temperature reading.

The hygrometer displays both humidity and temperature in addition to indicating and recording maximum and minimum readings. There is also an analogue arrow indicator and a colour-coded bar to display either humidity comfort levels (dry, comfort and wet) or temperature comfort levels (cold, comfort and hot). Such features make this instrument ideal for monitoring both temperature and humidity in rooms, offices and factories to ensure optimum environmental conditions are maintained.

The unit is powered by 2 x 1.5V AAA batteries (not supplied) and comes housed in an ABS case, incorporating a useful foldaway stand and keyhole slot for hanging on a wall.



- Displays both humidity and temperature (10 to 99% RH/0 to 50°C)
- Max/min memory function
- With comfort level indicator
- 20 x 100 x 110mm
- 150g
- Battery life: 10,000 hours
- UK manufacturer
- 2-year manufacturer's guarantee
- Manufacturer's part **ETI 810-135**

| Type | Order code | 1+ | 25+ | 100+ |
|---------------------|----------------|-------|-------|------|
| Comfort thermometer | 85-3161 | 11.34 | 10.31 | 9.16 |

561929



Max/Min Fridge Freezer Thermometer

This fridge thermometer from **ETI** features a large LCD display, a max/min memory function to record the highest and lowest temperatures and an audible alarm.

The thermometer incorporates two temperature sensors, a remote water resistant probe with a 1m PVC lead for the appliance temperature, and an internal sensor for the room temperature.

The remote probe can be mounted onto the internal wall of the fridge using the suction pad or mounting bracket supplied.

- Programmable alarm
- Indicates temperatures between -49.9 and +69.9°C
- Housed in robust ABS case
- Foot stand for shelf mounting
- Dimensions 73 x 53 x 15mm
- Battery life 5000 hours
- 1 year warranty
- Manufacturer's part 810-210
- Requires 1x AAA battery (supplied)

| Mfrs part no. | Order code | 1+ |
|---------------|----------------|-------|
| 810-210 | 85-3207 | 12.90 |

564387

VOLTCRAFT®

IR 110-1S Infrared Thermometer

The Voltcraft IR-110-1S mini infrared thermometer is intended for non-contact measuring of temperatures of -33°C to +110°C. The IR-110-1S can also be used as a clock or a stopwatch. It is not suitable for industrial or medical use. The product is powered by a CR2032 battery.

- Small, convenient and accurate
- The ideal companion with a wide variety of optional features
- Min/Max function
- Automatic power off after 15 seconds
- Duration measuring activated
- Integrated clock
- Stopwatch
- Display of the room temperature
- Switchable between C and F
- Optics 1:1
- Measuring range -30°C to +110°C
- Integrated stopwatch

Lithium battery (CR2032), Manual.

Please Note: Use only in a dry indoor environment.

Please Note: It is not suitable for industrial or medical use.

For technical specialisation visit www.rapidonline.com

| Type | Order code | 1+ |
|---------------------|----------------|-------|
| Voltcraft IR 110-1S | 51-5190 | 19.64 |

595201

VOLTCRAFT®

K20X Digital Thermometers

These **Voltcraft K20X digital thermometers** have a measurement range from -200 to +1370°C and their very high accuracy fulfills the highest professional requirements. They have data hold, min./max. and mean value measurements. The LCD shows all channels at one glance or the T1 - T2 difference display (K202 and K204) in either °C or °F. They feature an auto power-off function for battery saving and can be powered from a mains connection socket. For the long-term monitoring of processes the K202 and K204 meters have internal storage for 16,000 measurements. Supplied with 1 (K201) or 2 (K202 and K204) K-type thermocouples (up to 200ºC), 9V battery, bag and operating instructions.

- 1, 2 or 4 temperature channels
- For K-type sensors
- 16,000-value data logger (K202 and K204)

| Type | Order code | 1+ |
|-----------|----------------|--------|
| 1 channel | 55-6088 | 39.36 |
| 2 channel | 55-6089 | 87.10 |
| 4 channel | 55-6090 | 130.67 |

543456



VS900 Infrared Laser Digital Thermometer 12:1

Detects energy emission in the infrared spectrum and converts reading into a display of temperature. Features laser pointer, data hold and auto power off. Temperature is displayed on a large 23mm LCD panel with back-lit display for use in low light areas. Temperature can be shown in either °C or °F. Powered by 9V battery (supplied).

- Model No VS900
- Accuracy: ±1.5%
- Focal Ratio: 12:1
- Temperature Range: -50°C to +400°C (-58°F to +752°F)

| Type | Order code | 1+ |
|----------------------|----------------|-------|
| VS900 IR thermometer | 89-3392 | 28.90 |

569016



Green Fill Laboratory Thermometers



These green fill laboratory thermometers are a safe alternative to traditional mercury filling.

- Moulded glass triangular top to prevent rolling
- Available in 150mm, 200mm and 300mm lengths
- 150mm thermometer is available in total immersion and the 200mm and 300mm thermometers are available in partial immersion
- Temperature range -10 to +110°C
- Clear permanent markings

| Type | Order code | 1+ |
|-------|----------------|------|
| 150mm | 85-2652 | 1.73 |
| 200mm | 85-2653 | 1.81 |
| 300mm | 85-2654 | 1.86 |

72999

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