

TEST INSTRUMENTS

- OSCILLOSCOPE
- LCR METER
- SIGNAL GENERATOR
- DISTORTION METER
- SPECTRUM ANALYZER
- AND MORE...

STUDENT OSCILLOSCOPE

CQ 5005 

Features

- .5MHz single channel
- .Sensitivity 50mV
- .Easy to operate
- .Low cost, high performance
- .Signal input with binding post



CQ5005

| Technical Data | | CQ5005 |
|------------------------|--|---|
| CRT | Type | 3" round |
| | Display area | 8 × 10div (1div=6mm) |
| | Potential | 1.3kV |
| Vertical System | Sensitivity | 5mV/div ± 10% |
| | Width of band (-3dB) | DC:0~5MHz AC:10Hz~5MHz |
| | Input impedance | 1MΩ ± 3% 40pF ± 5pF |
| | Input coupling | DC, AC |
| | Max. input voltage | 400V (DC + ACpeak) |
| | Attenuator | 1 / 1, 1 / 10, 1 / 100, 1 / 1000 |
| Horizontal system | Sweep time | 10Hz~10kHz 4 steps and fine control |
| | Trigger | INT (positive or negative) |
| X - Y operation | Sensitivity | 100mV/div ± 10% |
| | Width of band (-3dB) | 10Hz~500kHz |
| | Input impedance | 1MΩ ± 3% 60pF ± 5pF |
| Power source | 110~127 VAC ± 10%, 220~240VAC ± 10% 50Hz ± 2Hz, 60Hz ± 2Hz | |
| Dimensions (W × H × D) | 130mm × 195mm × 300mm | |
| Weight | 3kg | |
| Other | Accessories | One operation manual, one fuse, one power cable, two test leads |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

STUDENT DUAL CHANNEL OSCILLOSCOPE

CQ5010X 

Features

- .10MHz dual channel (Y and y)
- .Y channel magnification ($\times 5$)
- .TV synchronizing, X-Y operating
- .Easy to operate
- .High performance, sensitive 5mV/div
- .Electrical encoder switch to make high stability



CQ5010X

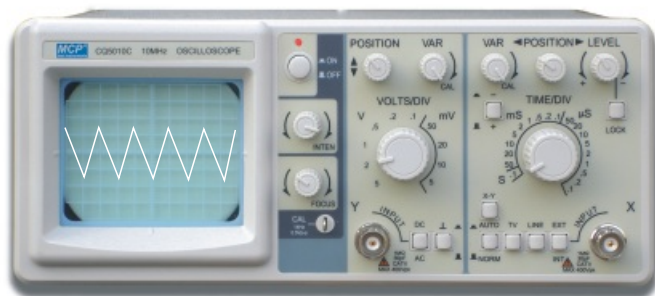
| Technical Data | | CQ5010X |
|--------------------------------------|----------------------|---|
| CRT | Type | 3" round |
| | Display area | 8 \times 10div (1div=6mm) |
| | Potential | 1.3kV |
| | Lighting color | Green |
| Vertical System | Sensitivity | 5mV/div~20V/div $\pm 3\%$, Y $\times 5$ MAG |
| | Width of band (-3dB) | DC: 0~10MHz AC: 10Hz~10MHz |
| | Input impedance | 1M Ω $\pm 3\%$ 30pF ± 5 pF |
| | Input coupling | DC, GND, AC |
| | Max. input voltage | 400V (DC + ACpeak) |
| | Trimming ratio | 2.5 : 1 |
| Horizontal system | Sweep time | 0.1s/div~0.1 μ s/div $\pm 3\%$ |
| | Trimming ratio | 2.5 : 1 |
| Trigger system | Mode | AUTO, NORM, TV |
| | Source | INT(Y, y, ALT), LINE, EXT |
| | Polarity | "+" or "-" |
| | Trigger sensitivity | INT: 1div, EXT: 3div, TV: 2div |
| External trigger input | Input impedance: | 1M Ω $\pm 3\%$ 25pF ± 5 pF |
| | Max. input voltage: | 160V (DC+ACpeak) |
| X-Y operation | Sensitivity | X: 0.5V/div Y: 5mV/div~5V/div |
| | Width of band (-3dB) | DC: 0-1MHz AC: 10Hz - 1MHz |
| | Phase difference | $\leq 3^\circ$ (DC ~ 50kHz) |
| Calibration | Source | 1kHz $\pm 2\%$ 0.5Vp-p $\pm 2\%$ square wave |
| Power source | | 110~127 VAC $\pm 10\%$, 220~240VAC $\pm 10\%$ 50Hz ± 2 Hz, 60Hz ± 2 Hz |
| Dimensions (W \times H \times D) | | 140 \times 196 \times 290mm |
| Weight | | 3kg |
| Other | Accessories | One operation manual, one fuse, one power cable, two probes |

SINGLE CHANNEL OSCILLOSCOPE

CQ5010C/5010D

Features

- .Electrical encoder switch to make high stability
- .10MHz single channel
- .TV synchronizing, X-Y operating
- .Easy to operate
- .High performance, sensitive 5mV/div
- .New novel appearance



CQ5010C



CQ5010D

| Technical Data | | CQ5010C/CQ5010D |
|------------------------|------------------------|--|
| CRT | Type | 3" round |
| | Display area | 8 × 10div (1div=6mm) |
| | Potential | 1.3kV |
| | Lighting color | Green |
| Vertical System | Sensitivity | 5mV/div~5V/div ±3% |
| | Width of band (-3dB) | DC: 0~10MHz AC: 10Hz~10MHz |
| | Input impedance | 1MΩ ±3% 30pF ±5pF |
| | Input coupling | DC, GND, AC |
| | Max. input voltage | 400V (DC + ACpeak) |
| | Trimming ratio | 2.5 : 1 |
| Horizontal system | Sweep time | 0.1s/div~0.1 μs/div ±3% |
| | Trimming ratio | 2.5 : 1 |
| Trigger system | Mode | AUTO, NORM, TV |
| | Source | INT, LINE, EXT |
| | Polarity | "+" or "-" |
| | Trigger sensitivity | INT: 1div, EXT: 3div, TV: 2div |
| | External trigger input | Input impedance: 1MΩ ±3% 25pF ±5pF Max. input voltage: 160V (DC+ACpeak) |
| X-Y operation | Sensitivity | X: 0.5V/div Y: 5mV/div~5V/div |
| | Width of band (-3dB) | DC: 0-1MHz AC: 10Hz - 1MHz |
| | Phase difference | ≤3° (DC ~ 50kHz) |
| Calibration | Source | 1kHz ±2% 0.5Vp-p ±2% square wave |
| Power source | | 110~127 VAC ±10%, 220~240VAC ±10% 50Hz ±2Hz, 60Hz ±2Hz |
| Dimensions (W × H × D) | | 225 × 91 × 290mm, 140 × 196 × 290mm |
| Weight | | 3kg |
| Other | Accessories | One operation manual, one fuse, one power cable, one probe |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

CQ50 SERIES DUAL CHANNEL OSCILLOSCOPE

CQ5020/5030



Features

- .High sensitivity 1mV/div
- .Wide vertical range 20V/div
- .20MHz/30Mhz dual channel
- .TV synchronization
- .Z axis input
- .Vertical mode triggering
- .Ch1 output



Technical Data

CQ5020/CQ5030

| | | | | |
|------------------------|--------------------------|--|------------|-------------------------|
| CRT | Type | 6" rectangle, internal graticule, 0%, 10%, 90% and 100% marks | | |
| | Display area | 8 × 10div (1div=10mm) | | |
| | Accelerating voltage | 1.9kV(CQ5020) 2kV (CQ5030) | | |
| | Intensity and focusing | Continuously adjustable at front panel | | |
| | Trace rotation | Adjusted at the front panel | | |
| Vertical System | Sensitivity and accuracy | 5mV/div~20V/div ±3% 1mV/div~2mV/div ±5% 12 calibration steps in 1-2-5 sequence, ×5 MAG only CH1 | | |
| | Trimming ratio | ≥2.5:1 | | |
| | Width of band (-3dB) | DC(AC 10Hz) ~20MHz (CQ5020)/30MHz (CQ5030) | | |
| | Rise time | ≤ 17.5ns (CQ5020) ≤12ns (CQ5030) | | |
| | Input impedance | Approx. 1MΩ ±3% 30pF ±5pF | | |
| | Input coupling | DC, GND, AC | | |
| | Max. input voltage | 400V (DC + ACpeak) at 1kHz or less | | |
| Horizontal system | Vertical mode | CH1, CH2, DUAL (CHOP, ALT), ADD, CH2 inverse | | |
| | CH1 signal output | 25mV/div 50Ω 20Hz~10MHz(-3dB) | | |
| | Sweep time | 0.2 μs/div~0.2s/div 19steps in 1-2-5 sequence | | |
| | Sweep accuracy | ±3%, ±5% at ×10MAG | | |
| | Trimming ratio | ≥2.5:1 | | |
| Trigger system | Sweep magnification | ×10MAG | | |
| | Max sweep time | 20ns/div | | |
| | Mode | AUTO, NORM, TV | | |
| | Source | VERT-MODE, CH1, EXT, LINE | | |
| X - Y operation | Coupling | AC | | |
| | Polarity | "+" or "-" | | |
| | Trigger sensitivity | | 10Hz~10MHz | 10MHz~20MHz 20MHz~30MHz |
| | | INT | 0.5div | 1.5div |
| | | EXT | 0.2 | 0.8 0.2 |
| Axis Z | External trigger input | Input impedance: 1MΩ ±3% 25pF ±5pF Max. input voltage: 400V | | |
| | Input | X-axis: CH1, Y-axis: CH2 | | |
| | Sensitivity & accuracy | 5mV/div~20V/div ±3%, 1mV/div~2mV/div ±5% | | |
| | Width of band (-3dB) | Axis X: CQ5020: DC ~ 500kHz CQ5030: DC ~ 1MHz | | |
| | Phase difference | ≤3° or less from DC to 50kHz | | |
| Other | Sensitivity | 5V | | |
| | Polarity | Negative going input increase intensity | | |
| | Input impedance | 20kΩ ~30kΩ | | |
| | Usable frequency range | DC-2MHz | | |
| | Max input voltage | 30V (DC + AC peak) | | |
| Calibration | Signal | 1kHz 0.5Vp-p square wave | | |
| Power source | | 110~127 VAC ±10%, 220~240VAC ±10%, 50Hz ±2Hz / 60Hz ±2Hz | | |
| Dimensions (W × H × D) | | 316mm × 132mm × 410mm | | |
| Weight | | 7.8kg | | |
| Accessories | | One operation manual, one fuse, one power cable, two probes | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

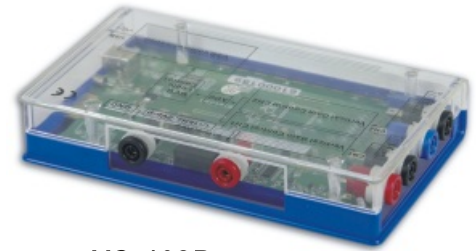
ACCESSORY

VO-102B



Features

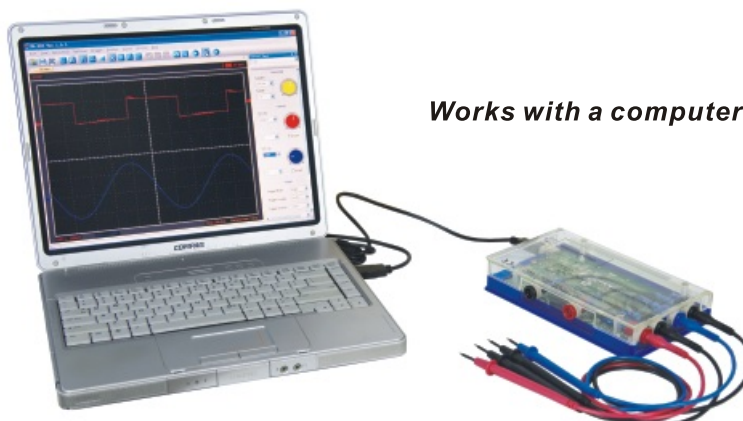
- .10MHz bandwidth 2CHs, 48MSa/s real-time sample rate
- .Safety 4mm input socket
- .Colored two pairs of multimeter probe
- .USB2.0 interface, no external power source required, easy to use
- .Excellent transparent design with functional block diagram
- .Double insulation
- .Carried easily
- .Operating system: Windows NT, Windows 2000, Windows XP, Windows VISTA, Windows 7



VO-102B

Specifications

| | |
|--|--|
| Max. sample rate (real-time sampling): | 48MSa/s |
| Channels: | 2 channels (4 safety 4mm input sockets) |
| Bandwidth: | 10MHz (-3dB) |
| Vertical resolution: | 8 bits/channel |
| Vertical sensitivity and accuracy: | 20mV~5V/div 8 step in 1,2,5 sequence $\pm 3\%$ |
| Vertical mode: | Ch1, CH2, Dual, ADD |
| Max. input voltage: | 35V (DC+AC peak) |
| Input coupling: | DC |
| Input impedance: | 1M Ω 25pF |
| Memory depth: | 1M/CH |
| Time base range: | 1ns-9000s, 39 Steps |
| Offset level: | ± 4 divisions |
| Offset increments: | 0.02 |
| Math: | +, -, \times , \div , FFT |
| Trigger mode: | Auto, normal and single |
| Trigger slope: | +/- |
| Trigger level adjustable: | Yes |
| Trigger source: | CH1, CH2 |
| Cursor measurement: | Time/frequency difference, voltage difference |
| Interface: | USB 2.0 |
| Power source: | USB |
| Dimensions (W×H×D): | 180×35×108 mm |
| Weight: | 0.25kg |



Works with a computer

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

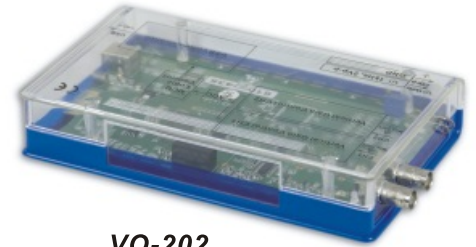
ACCESSORY

VO-202



Features

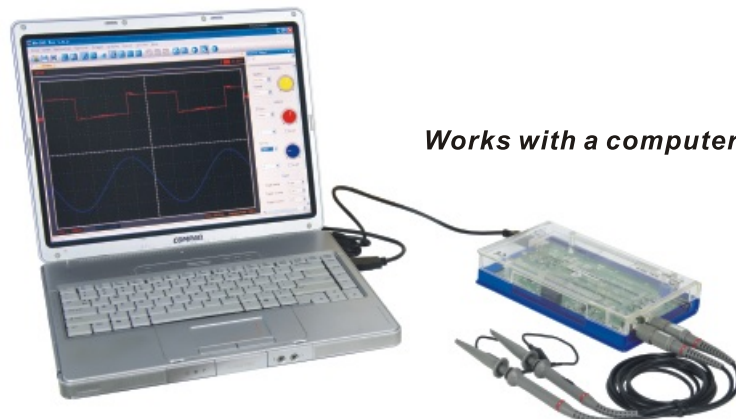
- .20MHz bandwidth 2CHs, 48MSa/s real-time sample rate
- .USB2.0 interface, no external power source required, easy to use
- .Excellent transparent design with functional block diagram
- .2Vp-p, 1KHz probe calibration output
- .20 measurement functions, be suitable for technical application
- .Intensity, invert, addition, subtraction, multiplication, division, X-Y plot, FFT
- .Waveform save: text file, jpg/bmp graphic file, MS excel/word file
- .Channel extensible by multiunit connecting to one computer
- .Labview\ VB\ VC\ builder second design kit
- .Operating system: Windows NT, Windows 2000, Windows XP, Windows VISTA, Windows 7



VO-202

Specifications

| | |
|--|--|
| Real-time sampling (real-time sampling): | 48MSa/s |
| Channels: | 2 Channels (2 BNC input sockets) |
| Bandwidth: | 20MHz (-3dB) |
| Vertical resolution: | 8 bits/channel |
| Vertical sensitivity and accuracy: | 20mV~5V/div 8 step in 1,2,5 sequence $\pm 3\%$ |
| Vertical mode: | Ch1, CH2, Dual, ADD |
| Max. input voltage: | 300V (DC+AC peak) |
| Input coupling: | DC |
| Input impedance: | 1M Ω 25pF |
| Memory depth: | 1M/CH |
| Timebase range: | 1ns-9000s, 39 Steps |
| Offset level: | ± 4 divisions |
| Offset increments: | 0.02 |
| Math: | +, -, \times , \div , FFT |
| Trigger mode: | Auto, normal and single |
| Trigger slope: | +/- |
| Trigger level adjustable: | Yes |
| Trigger source: | Ch1, CH2 |
| Cursor measurement: | Time/frequency difference, voltage difference |
| Interface: | USB 2.0 |
| Power source: | USB |
| Dimensions (W×H×D): | 180×35×108 mm |
| Weight: | 0.25kg |



Works with a computer

DIGITAL ULTRA PHOSPHOR OSCILLOSCOPE

DQ2000Y



NEW

Features

- 1GSa/s sampling rate
- 2 or 4 channel mode
- 8 inch wide rectangle color LCD with WVGA(800x480) resolution
- Waveform capture rate up to 50,000wfms/s
- Memory depth 28Mpts per channel
- 1mV/div~20V/div wide range
- 256 level intensity grading
- 65,000 frames for waveform record and replay
- Support serial bus trigger and decoding
- Interface: USB Host, USB Device, LAN, AUX out



DQ2102Y

| Technical Data | | DQ2072Y | DQ2074Y | DQ2102Y | DQ2104Y | DQ2202Y |
|-------------------|---|---|-------------|-------------|-------------|-------------|
| Display | Type | 8" rectangle colour LCD | | | | |
| | Backlight intensity | 300nit (cd/m ²) | | | | |
| | Display resolution | 800 horizontal×480 vertical pixels | | | | |
| | Display contrast | Adjustable | | | | |
| Vertical system | Channels | 2 | 4 | 2 | 4 | 2 |
| | Sensitivity | 1mV / div~20V / div | | | | |
| | Vertical resolution | 8bit | | | | |
| | Width of band (-3dB) | 70MHz | 70MHz | 100MHz | 100MHz | 200MHz |
| | Rise time | ≤5ns | ≤5ns | ≤3.5ns | ≤3.5ns | ≤1.8ns |
| | Single-shot band width | 70MHz | 70MHz | 100MHz | 100MHz | 200MHz |
| | Input coupling | DC, GND, AC | | | | |
| | DC gain accuracy | ±3% | | | | |
| Horizontal system | SEC/DIV range | 5ns~50s/div | 5ns~50s/div | 5ns~50s/div | 5ns~50s/div | 2ns~50s/div |
| | Sampling rate range | 250MSa/s (4CH) ,500 MSa/s (2CH) , 1GSa/s (1CH) | | | | |
| | Waveform capture rate | 50,000 wfms/s | | | | |
| | Waveform interpolation | (Sinx)/x | | | | |
| | memory depth | 28Mpts per channel | | | | |
| | Sampling rate and delay time accuracy | ±50ppm over any ≥1ms time interval | | | | |
| | Delta time measurement accuracy | Single ±(1 sampling interval time+50ppm×rdg+0.6ns) Average ±(1 sampling interval time+50ppm×rdg+0.4ns) | | | | |
| | Mode | Auto, Normal, Single | | | | |
| Trigger system | Type | Edge, Alternate, Runt, Time Out, Nth Edge, Delay, Duration, Setup/Hold, Pulse Width, Slope, Video, Pattern, RS232/UART,I2C,SPI | | | | |
| | Bus decode (optional) | RS232/UART,I2C,SPI | | | | |
| | Hold off range | 100ns ~ 10s | | | | |
| Math | +, -, × ÷, FFT, logical operations, editable advanced operations | | | | | |
| Acquire Input | Acquisition mode | Sampling, peak detection, high resolution, envelope, and average | | | | |
| | Input coupling | DC, GND, AC | | | | |
| | Input impedance | 1MΩ ±2%/ 20pF±3pF | | | | |
| | Probe attenuation factor | 0.001×, 0.01×, 0.1×, 1× 10×, 100×, 1000× | | | | |
| | Max. input voltage | 300V(DC+AC peak, 1MΩ) | | | | |
| | Channel CMR | Better than 40: 1 | | | | |
| Measurement | Interchannel time delay | 150ps | | | | |
| | Cursor | Voltage difference (ΔV) between cursors Time difference (ΔT) between cursors Reciprocal of ΔT in Hz (1/ΔT) | | | | |
| | Auto-measure | Peak-Peak, Amplitude, Maximum, Minimum, Top, Bottom, Mean, Middle, Cycle Mean, RMS, Cycle RMS, Area, Cycle Area, Overshoot, Preshoot, Frequency, Cycle, Rise Time, Fall Time, Positive Pulse, Negative Pulse, Positive Duty Ratio, Negative Duty Ratio, Delay A->B \overleftrightarrow{f} , Delay A->B \overleftrightarrow{t} , Delay B->A \overleftrightarrow{f} , Delay B->A \overleftrightarrow{t} | | | | |
| | Number of measurements | Display up to 5 measurements at the same time | | | | |
| | Measurement statistics | Average, Max, Min, standard deviation, number of measurements | | | | |
| Frequency Counter | Hardware 6-bit counter (selectable channels) | | | | | |
| I/O | Standard | USB Host, USB Device, LAN, AUX OUT | | | | |
| | Optional | LA Module, WaveGen Module, DMM Module | | | | |
| Calibrator signal | 10Hz, 100Hz, 1kHz, 10kHz; ≈3Vpp | | | | | |
| Power source | 100~ 240VACrms, 50Hz/60Hz; 50VA Max | | | | | |
| Dimensions | 336(W) × 164(H) × 105(D)mm | | | | | |
| Weight | 3.5kg | | | | | |
| Accessories | Operation manual, power cord, USB cable, probe×2(×4), software CD-ROM | | | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

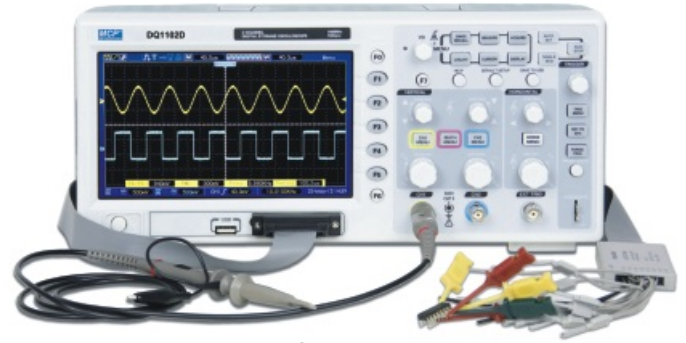
MIXED SIGNAL OSCILLOSCOPE

DQ1000D SERIES



Features

- .Support logic analyzer and oscilloscope
- .1GSa/s sampling rate and 50GSa/s equivalent sampling rate
- .1024k recording length
- .7" wide screen 64k color TFT display
- .USB-host for save and update



DQ1102D

| Technical Data | | DQ1062D | DQ1102D | DQ1202D |
|---------------------------------|---------------------------------------|--|--------------------------|--------------------------|
| Channels | | 2 channels oscilloscope+ 16 channels logical analyser | | |
| Sampling rate | | 1GSa/s | | |
| Equivalent sampling rate | | 25GSa/s | | |
| Display | Type | 7" wide screen 64k color TFT LCD | | |
| | Display resolution | 800 horizontal × 480 vertical pixels | | |
| | Display contrast | Adjustable (16 gears) with the progress bar | | |
| | Sensitivity | 2mV/div~5V/div | | |
| Vertical system | Vertical resolution | 8 bit | | |
| | Width of band (-3dB) | DC (AC 10Hz) ~ 60MHz | DC (AC 10Hz) ~ 100MHz | DC (AC 10Hz) ~ 200MHz |
| | Selectable analog bandwidth limit | 20MHz | | |
| | Rise time | ≤5.8ns | ≤3.5ns | ≤1.8ns |
| | DC gain Accuracy | ±4%(2mV/div~5mV/div) | ±3%(10mV/div~5V/div) | |
| | DC measurement accuracy | ±(3%Rdg.+0.1div+1mV)(10mV/div~5V) ±(3%(Rdg.+vertical position)+0.2div+1%(vertical position) (2mV/div~200mV/div, +2mV; 200mV/div~5V/div, +50mV) | | |
| | SEC/DIV range | 2ns~40s/div, at 2-4-8 increment | | |
| | Waveform interpolation | Sin(x)/x | | |
| | Recording length | 1024k | | |
| | Sampling rate and delay time accuracy | ±50ppm (any time interval ≥1ms) | | |
| Delta time measurement accuracy | Single: | ±(1 sampling time interval + 100ppm×Rdg. + 0.6ns) | | |
| | Average values: | ±(1 sampling time interval + 100ppm×Rdg. + 0.4ns) | | |
| Trigger system | Mode | Auto, normal, single | | |
| | Type | Edge, pulse, video, alternate, slope, over time | | |
| | Hold off range | 100ns~10s | | |
| Math | | +, -, ×, ÷ | | |
| | | FFT | | |
| Acquire input | Input coupling | DC, GND, AC | | |
| | Input impedance | 1MΩ ±2%, 20pF ±3pF | | |
| | Probe attenuation | 1×, 10×, 100×, 1000× | | |
| | Max. input voltage | 300V (DC+AC peak) | | |
| Measurement | Cursor | Voltage difference (ΔV) between cursors Time difference (ΔT) between cursors Reciprocal of ΔT in Hz (1/ΔT) | | |
| | Auto-measure | Vrms, Vavg, Vp-p, Vmax, Vmin, Vtop, Vmid, Vamp, Period, Freq, Rise, Fall, +Width, -Width, +Duty, -Duty, Delay, FRF, FFR, LRR, LRF, LFF | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

MIXED SIGNAL OSCILLOSCOPE

| Technical Data | | DQ1062D | DQ1102D | DQ1202D | |
|--------------------|---|--|--|---------|--|
| I/O | Standard | USB(D), USB(H) | | | |
| | Options | LAN | | | |
| Calibrator | Output voltage | 5V($\geq 1M\Omega$ load) | | | |
| | Output frequency | 1kHz | | | |
| Logical analyzer | Input channel | D0~D15 | | | |
| | Max. input impedance | 200k (C=10P) | | | |
| | Max. sampling rate | 500MHz | | | |
| | Recording length | 512k | | | |
| | Max. input voltage | $\pm 60V$ | | | |
| | Logic threshold range | $\pm 8V$ | | | |
| | Compatible input | TTL, CMOS, ECL | | | |
| | Cursors | Voltage difference (ΔV) between cursors Time difference (ΔT) between cursors Reciprocal of ΔT in Hz ($1/\Delta T$) | | | |
| | Measurement | Period and Frequency | | | |
| | Record position | RefA RefB | | | |
| | Trigger mode | Edge | D0~D15 select slope (rising or falling edge) | | |
| | | Pulse width | D0~D15 select pulse polarity (positive or negative pulse), trigger when ($=$, \neq , $>$, $<$), trigger pulse width | | |
| | | Code-type | D0~D15 select code-type (H, L, X) | | |
| Duration | | D0~D15 select persist time and trigger when (data terminate, data start, and data delay) | | | |
| Queue | | D0~D15 select specific data index (0~3) and code-type (H, L, X) | | | |
| Repeat | | D0~D15 select code-type (H, L, X) and repeat times | | | |
| Power source | | 100~120VACrms ($\pm 10\%$), 45~440Hz; 30VA Max; CAT II | | | |
| | | 120~240VACrms ($\pm 10\%$), 45~66Hz; 30VA Max; CAT II | | | |
| Dimensions (W×H×D) | 315×142×110mm | | | | |
| Weight | 2.1kg | | | | |
| Accessories | Operation manual, power cord, USB cable, probe×2, software CD-ROM, logic analyzer probe | | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

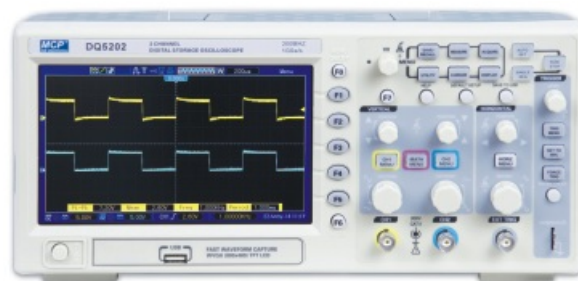
DIGITAL STORAGE OSCILLOSCOPE

DQ5000 SERIES



Features

- 1GSa/s sampling rate
- 7 inch wide rectangle colour LCD
- 32 kinds of automatic measurement function
- FFT function
- Auto-setting for quick setup and waveform acquisition
- Advanced cursor modes: manual, auto and track
- 40k memory length



DQ5202

| Technical Data | | DQ5072 | DQ5102 | DQ5202 |
|-------------------|---|--|-----------------------|-----------------|
| Display | Type | 7" rectangle colour LCD | | |
| | Display resolution | 800 horizontal×480 vertical pixels | | |
| | Display contrast | Adjustable | | |
| Vertical system | Sensitivity | 2mV / div~10V / div | | |
| | Vertical resolution | 8bit | | |
| | Width of band (-3dB) | 70MHz | 100MHz | 200MHz |
| | Rise time | ≤5ns | ≤3.5ns | ≤1.7ns |
| | Single-shot band width | 70MHz | 100MHz | 200MHz |
| | Input coupling | DC, GND, AC | | |
| | DC gain accuracy | ±3% (10mV/div~5V/div) | ±4% (2mV/div~5mV/div) | |
| Horizontal system | SEC/DIV range (at 2-4-8 sequence) | 4ns/div~80s/div | 4ns/div~80s/div | 2ns/div~80s/div |
| | Sampling rate range | 1GSa/s | | |
| | Waveform interpolation | (Sinx)/x | | |
| | memory depth | 40k | | |
| | Sampling rate and delay time accuracy | ±50ppm over any ≥1ms time interval | | |
| Trigger system | Delta time measurement accuracy | Single ±(1 sampling interval time+100ppm×rdg+0.6ns) Average ±(1 sampling interval time+100ppm×rdg+0.4ns) | | |
| | Mode | Auto, Normal, Single | | |
| | Type | Edge, Pulse Width, Video, Slope, Overtime, Alternate trigger | | |
| Math | Hold off range | 100ns ~ 10s | | |
| | | +, -, ×, ÷ FFT | | |
| Acquire Input | Acquisition mode | Normal, Peak Detect, Average | | |
| | Input coupling | DC, GND, AC | | |
| | Input impedance | 1MΩ ±2% 20pF ±3pF | | |
| | Probe attenuation | 1×, 10× | | |
| Measurement | Supported probe attenuation factor | 1×, 10×, 100×, 1000× | | |
| | Max. input voltage | 300V(DC+AC peak, 1MΩ) Voltage difference (ΔV) between cursors Time difference (ΔT) between cursors Reciprocal of ΔT in Hz (1/ΔT) | | |
| | Cursor | Frequency,Period,Mean,Pk-Pk,Cycil RMS,Min.,Max.,Rise time,Fall time,+Pluse width -Pulse width,Delay1-2Rise,Delay1-2Fall,+Duty,-Duty,Vbase,Vtop,Vmid,Vamp Overshoot,Preshoot,Preiod Mean,Preiod RMS,FOVShoot,RPRESshoot,BWIDTH FRF,FFR,LRR,LRF,LFR,LFF | | |
| I/O | Auto-measure | | | |
| | Standard | USB(H) | | |
| Calibrator signal | Output voltage | 5V (≥1MΩ load) | | |
| | Output frequency | 1kHz | | |
| Power source | 100~120V, 45Hz~440Hz; 121~ 240V, 45Hz~66Hz; 30VA Max; CAT II | | | |
| Dimensions | 313(W) × 108(H) × 142(D)mm | | | |
| Weight | 2kg | | | |
| Accessories | Operation manual, power cord, USB cable, probe×2, software CD-ROM | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

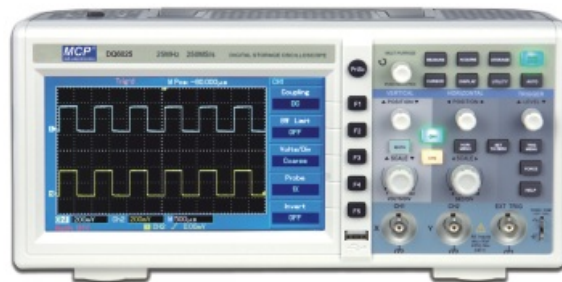
DIGITAL STORAGE OSCILLOSCOPE

DQ6000 SERIES



Features

- 250MSa/s~1GSa/s sampling rate
- 7 inch wide rectangle colour LCD
- One key print screen
- 1mV/div~20V/div wide range
- FFT function
- Auto-setting for quick setup and waveform acquisition
- Advanced cursor modes: manual, auto and track
- Optional logic analyzer (DQ6052E, DQ6102E)



DQ6025

| Technical Data | | DQ6025 | DQ6052 | DQ6052E | DQ6102E |
|-------------------------------|---|---|----------------------|------------------------|-------------|
| Display | Type | 7" rectangle colour LCD | | | |
| | Backlight intensity | 300nit (cd/m ²) | | | |
| | Display resolution | 800 horizontal×480 vertical pixels | | | |
| | Display contrast | Adjustable | | | |
| Vertical system | Sensitivity | 1mV / div~20V / div | | | |
| | Vertical resolution | 8bit | | | |
| | Width of band (-3dB) | 25MHz | 50MHz | 50MHz | 100MHz |
| | Rise time | ≤14ns | ≤7ns | ≤7ns | ≤3.5ns |
| | Single-shot band width | 25MHz | 50MHz | 50MHz | 100MHz |
| | Input coupling | DC, GND, AC | | | |
| | DC gain accuracy | ±5% (1mV/div~2mV/div) | ±4% (5mV/div) | ±3% (10mV/div~20V/div) | |
| | SEC/DIV range | 10ns~50s/div | 5ns~50s/div | 2ns~50s/div | 2ns~50s/div |
| Horizontal system | Sampling rate range | 250MSa/s | 500MSa/s | 1GSa/s | 1GSa/s |
| | Waveform interpolation | (Sinx)/x | | | |
| | Record length | 2×512k | 2×512k | 2×7.5M | 2×7.5M |
| | memory depth | 12.5k per channel | | 32k per channel | |
| | Sampling rate and delay time accuracy | ±50ppm over any ≥1ms time interval | | | |
| | Delta time measurement accuracy | Single ±(1 sampling interval time+50ppm×rdg+0.6ns) Average ±(1 sampling interval time+50ppm×rdg+0.4ns) | | | |
| | Trigger system | Mode | Auto, Normal, Single | | |
| Type | | Edge, Pulse Width, TV (only for DQ6025) | | | |
| Hold off range | | 100ns ~ 1.5s | | 80ns ~ 1.5s | |
| Math | | +, -, ×, ÷ | | | |
| | | FFT | | | |
| Acquire Input | Acquisition mode | Sampling, peak value sampling and smoothness sampling | | | |
| | Input coupling | DC, GND, AC | | | |
| | Input impedance | 1MΩ ±2% 20pF±3pF | | 1MΩ ±2% 24pF±3pF | |
| | Probe attenuation factor | 1×, 10×, 100×, 1000× | | | |
| | Max. input voltage | 400V(DC+AC peak, 1MΩ) | | | |
| | Channel CMR | Better than 40: 1 | | | |
| | Interchannel time delay | 150ps | | | |
| Measurement | Cursor | Voltage difference (ΔV) between cursors | | | |
| | | Time difference (ΔT) between cursors Reciprocal of ΔT in Hz (1/ΔT) | | | |
| | Auto-measure | Max, Min, High, Low, Middle, Pk-Pk, Ampl, Mean, CycMean, RMS, CycRMS, Area, CycArea, Overshoot, Pre-shoot, Period, Frequency, Rise, Fall, +Width, -Width, +Duty, -Duty, RiseDelay, FallDelay, Phase, FPP, FRF, FFR, FFF, LRF, LRR, LFR, LFF, total 34 types of parameter measurements (DQ6025, DQ6052 only 26 types of above) | | | |
| I/O | Standard | USB(OTG); Pass/Fail (except DQ6052); USB logic analyzer (optional for DQ6052E, DQ6102E) | | | |
| | Channels | 16 | | | |
| | Sample rate | 250MSa/s | | | |
| | Memory depth | 128k×2 | | | |
| | Max. input voltage | ±40Vpp | | | |
| | Min. voltage swing | 1.2Vpp | | | |
| USB logic analyzer (optional) | Logic level supported | TTL, CMOS, ECL | | | |
| | Output voltage | 3V (≥1MΩ load) | | | |
| | Output frequency | 1kHz | | | |
| Power source | 100~240VACrms, 45Hz~440Hz; 50VA Max; CAT II | | | | |
| Dimensions | 306(W) × 147(H) × 122(D)mm | | | | |
| Weight | 2.2kg | | | | |
| Accessories | Operation manual, power cord, USB cable, probe×2, software CD-ROM | | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

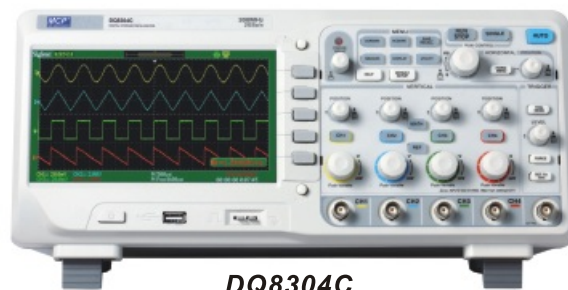
ACCESSORY

FOUR CHANNEL DIGITAL STORAGE OSCILLOSCOPE

DQ8000C SERIES

Features

- .4 channel oscilloscope
- .2GSa/s sampling rate and 50GSa/s equivalent sampling rate
- .1024k recording length, 24k memory depth
- .7" color TFT-LCD display
- .USB-host/device



DQ8304C

| Technical Data | | DQ8074C | DQ8104C | DQ8204C | DQ8304C |
|--------------------------|---------------------------------------|---|------------------------|--------------------------------------|------------------------|
| Channels | | 4 | | | |
| Sampling rate | | 2GSa/s (4 channels total) | | | |
| Equivalent sampling rate | | 50GSa/s | | | |
| Display | Type | 7" TFT-color LCD | | | |
| | Back light intensity | 300 nit | | | |
| | Display resolution | 480 horizontal × 234 vertical pixels | | | |
| | Sensitivity and accuracy | 2mV/div~5V/div | | | |
| Vertical system | Vertical resolution | 8 bit | | | |
| | Width of band (-3dB) | DC (AC 5Hz) 0 ~ 70MHz | DC (AC 5Hz) 0 ~ 100MHz | DC (AC 5Hz) 0 ~ 200MHz | DC (AC 5Hz) 0 ~ 300MHz |
| | Selectable analog bandwidth limit | 70MHz | 100MHz | 200MHz | 300MHz |
| | Rise time | ≤5.0ns | ≤3.5ns | ≤1.7ns | ≤1.2ns |
| | DC gain accuracy | ±4%(2mV/div) ±3%(5mV/div~5V/div) | | | |
| | DC measurement accuracy | ±(3%+0.2div+2mV)(2mV/div~100mV/div) | | ±(3%+0.2div+100mV)(200mV/div~5V/div) | |
| Horizontal system | SEC/DIV range (at 1-2-5 increment) | 1ns~50s/div | | | |
| | Waveform interpolation | Sin(x)/x, linear | | | |
| | Recording length | 1024k | | | |
| | Memory depth | 24k (Max.) | | | |
| | Sampling rate and delay time accuracy | ±50ppm (any time interval ≥1ms) | | | |
| Trigger system | Mode | Auto, normal, single | | | |
| | Type | Edge, pulse width, video, slope, alternate | | | |
| | Hold off range | 20ns~10s | | | |
| Math | | +, -, ×, ÷ FFT (Hanning, Hamming, Blackman, Rectangle) | | | |
| Acquire input | Input coupling | DC, GND, AC | | | |
| | Input impedance | 1MΩ ±2% 18pF±3pF | | | |
| | Probe attenuation | 1×, 10× | | | |
| | Supported probe attenuation factor | 1×, 5×, 10×, 50×, 100×, 500×, 1000× | | | |
| | Max. input voltage | 400V (DC+AC peak) | | | |
| Measurement | Cursor | Voltage difference (ΔV) between cursors Time difference (ΔT) between cursors Reciprocal of ΔT in Hz (1/ΔT) | | | |
| | Auto-measure | Vpp, Vmax, Vmin, Vamp, Vtop, Vbase, Vavg, Mean, Crms, Vrms, ROVshoot, FOVshoot, RPRESshoot, Rise time, Fall time, Freq, Period, +Wid, -Wid, +Dut, -Dut, BWid, Phase, FRR, FRF, FFR, FFF, LRR, LRF, LFR, LFF | | | |
| | Saving waveforms | 20 groups of waveforms and 20 setups | | | |
| | I/O | USB(D), USB(H), LAN, Pass/Fail out | | | |
| Calibrator | Output voltage | 3V (≥1MΩ load) | | | |
| | Output frequency | 1kHz | | | |
| Power source | | 100~240VACrms, 45~440Hz; 50VA Max; CAT II | | | |
| Dimensions (W×H×D) | | 358×118×156mm | | | |
| Weight | | 4.5kg | | | |
| Accessories | | Operation manual, power cord, USB cable, probe×4, software CD-ROM | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

HAND HOLD DIGITAL STORAGE OSCILLOSCOPE

DQ3000CL/DL SERIES



NEW

Features

- .Digital oscilloscope and multimeter, 2 in 1
- .Compact design for easy carrying
- .High performance battery for long time operate
- .3.5 inch TFT display with high resolution



DQ3025CL

| Technical Data | | DQ3025CL | DQ3050CL | DQ3025DL | DQ3050DL |
|-------------------|------------------------------------|--|-----------------|------------------|-----------------|
| Bandwidth | | 25MHz | 50MHz | 25MHz | 50MHz |
| Channel(s) | | 1 | 1 | 2 | 2 |
| Sample | Real time | 200M Sa/s | 200M Sa/s | 250M Sa/s | 250M Sa/s |
| Acquisition mode | | Real time, peak detect, averaging | | | |
| Display | Type | 3.5" TFT display | | | |
| | Resolution | 320×240 | | | |
| | Backlight intensity | 300 nit | | | |
| | Backlight brightness | Adjustable | | | |
| Input | Input coupling | DC, AC, GND | | | |
| | Input impedance | 1MΩ ±2%, 20pF±3pF | | | |
| | Probe attenuation factor | 1×, 10×, 100×, 1000× | | | |
| | Max. input voltage | 300V (DC+AC peak) | | | |
| Horizontal system | Time base range | 10ns/div~50s/div | 5ns/div~50s/div | 10ns/div~50s/div | 5ns/div~50s/div |
| | Time base accuracy | ±50ppm | | | |
| | Waveform interpolation | Sin(x)/x | | | |
| | Recording length | 3.5M | | | |
| | Storage depth | 12k | | | |
| | Delta time measurement accuracy | single: ±(1 sampling interval time + 50ppm×rdg + 0.6ns) 16 average: ±(1 sampling interval time + 50ppm×rdg + 0.4ns) | | | |
| Vertical system | Resolution | 8 bits | | | |
| | Sensitivity | 5mV/div~20V/div | | | |
| | Rise time | ≤14ns | ≤7ns | ≤14ns | ≤7ns |
| | Low frequency response | ≤10Hz (at the input BNC port) | | | |
| | DC gain accuracy | ±4%(5mV/div), ±3%(10mV~20V/div) | | | |
| | Delta voltage measurement accuracy | ±(3%Rdg+0.05div) | | | |
| Trigger | Trigger mode | Auto, normal, single | | | |
| | Type | Edge, pulse width, video, slope | | | |
| | Hold off range | 100ns~1.5s | | | |
| Measurement | FFT | Hanning, Hamming, Blackman, Rectangular | | | |
| | Cursor | Voltage difference (ΔV) between cursors | | | |
| | | Time difference (ΔT) between cursors | | | |
| | Auto-measure | Vrms, Varg, Vp-p, Vmax, Vmin, Vtop, Vhigh, Vlow, Vmid, Vamp, Period, Freq, Rise, Fall, +Width, -Width, +Duty, -Duty, Delay | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

HAND HOLD DIGITAL STORAGE OSCILLOSCOPE

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

| Technical Data | DQ3025CL | DQ3050CL | DQ3025DL | DQ3050DL |
|----------------------------------|---|--|---|----------|
| Digital multimeter characterizes | Resistance | 400 Ω , 4k Ω , 40k Ω , 400k Ω , 4M Ω , 40M Ω | | |
| | Accuracy | $\pm(1.2\%+5\text{digits})$ $\pm(1.5\%+5\text{digits})(40M)$ | | |
| | DC voltage | 400mV, 4V, 40V, 400V | | |
| | Accuracy | $\pm(1\%+5\text{digits})$ | | |
| | AC voltage (45Hz~400Hz) | 400mV, 4V, 40V, 400V | | |
| | Accuracy | $\pm(1.2\%+5\text{digits})$ | | |
| | DC current | 400 μ A, 4000 μ A, 40mA, 400mA, 10A (10A use Ext. convertor) | 400 μ A, 4000 μ A, 40mA, 400mA, 4A (4A use Ext. convertor) | |
| | Accuracy | $\pm(1.2\%+5\text{digits})(\mu\text{A})$ $\pm(1\%+5\text{digits})(\text{mA})$ $\pm(1.5\%+5\text{digits})(10A)$ | $\pm(1.2\%+5\text{digits})(\mu\text{A})$ $\pm(1\%+5\text{digits})(\text{mA})$ $\pm(1.5\%+5\text{digits})(4A)$ | |
| | AC current (45Hz~400Hz) | 400 μ A, 4000 μ A, 40mA, 400mA, 10A (10A use Ext. convertor) | 400 μ A, 4000 μ A, 40mA, 400mA, 4A (4A use Ext. convertor) | |
| | Accuracy | $\pm(2\%+5\text{digits})(\mu\text{A})$ $\pm(1.5\%+5\text{digits})(\text{mA})$ $\pm(2.5\%+5\text{digits})(10A)$ | $\pm(2\%+5\text{digits})(\mu\text{A})$ $\pm(1.5\%+5\text{digits})(\text{mA})$ $\pm(2.5\%+5\text{digits})(4A)$ | |
| | Capacitance | 51.2nF, 512nF, 5.12 μ F, 51.2 μ F, 100 μ F | | |
| | Accuracy | $\pm(3\%+5\text{digits})$ | | |
| | On/off | \checkmark ($\leq 75\Omega$) | | |
| | Diode | \checkmark (0V~1.5V) | | |
| Power source | AC: 100~240VACrms, 45~440Hz, CAT II DC: 7.4V/3600mA battery (8 hours) | | | |
| Dimensions(W×H×D) | 199×118×49mm | | | |
| Weight | 0.9kg | | | |
| Accessories | Operation manual, adapter, probe×1 (CL series), probe×2 (DL series), multimeter pen×2 current-voltage convertor module×1, USB cable | | | |



Oscilloscope mode



Multimeter mode

AUDIO GENERATOR

F8-LG100

Features

- .DDS technology design, ultra-low power consumption
- .Frequency range: 0.01Hz~30kHz
- .High frequency accuracy: $\pm 1 \times 10^{-6}$
- .High frequency stability: $\pm 1 \times 10^{-6}$
- .Max frequency resolution: 0.01Hz
- .Low distortion sine wave: <0.8%
- .Audio input and power output
- .Optional USB interface



F8-LG100

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

Technical Data

| | | |
|---------------|----------------------|--|
| Main output | Output frequency | 0.01Hz ~ 30kHz |
| | Output waveforms | Sine, Square, Triangle |
| | Frequency accuracy | $\pm 5 \times 10^{-6}$ |
| | Frequency resolution | 0.01Hz |
| | Frequency stability | $\pm 1 \times 10^{-6}$ |
| | Output amplitude | 0.2~20Vp-p (no load) |
| | Amplitude accuracy | $\pm 10\%$ (1kHz, 20Vp-p) |
| | Impedance | $50 \Omega \pm 10\%$ |
| | DC offset | $\pm 5V$ (no load) |
| | Display | 3 digits LED for frequency display |
| Sine wave | Distortion factor | $\leq 0.8\%$ (at 1kHz) |
| Square wave | Rise or fall time | $\leq 5 \mu s$ |
| Triangle wave | Linear | $\geq 98\%$ 100Hz~100kHz |
| Audio input | Frequency range | 20Hz~20kHz |
| | Voltage gain | 0~40dB |
| | Power output | $\geq 1.5W$ (4Ω load) $\geq 3W$ (8Ω load) |
| VCF | Input voltage | 0~5V |
| | Input impedance | $10k \Omega \pm 10\%$ |
| | Frequency change | 0 to the current set of frequency value |
| Power output | Output amplitude | $\geq 20Vp-p$ (no load) $\geq 18Vp-p$ (10Ω load) |
| | Output impedance | $\leq 4 \Omega$ |
| | Output current | $\geq 0.6A_{rms}$ |
| Power supply | | 110~127 VAC $\pm 10\%$, 220~240VAC $\pm 10\%$, 50Hz $\pm 2Hz$ / 60Hz $\pm 2Hz$ |
| Dimensions | | 240(W) \times 90(H) \times 170(D)mm |
| Weight | | 1.5 kg |

DIGITAL UHF MILLIVOTMETER

MV1912 MV1913



Features

- .Wide measure frequency and voltage
- .Multi parameter display
- .Standard RS232 interface

| Technical Data | | MV1912 | MV1913 |
|-----------------------|----------------------|--------------------------------|--|
| Input channel | | 1 | 2 |
| Frequency range | | 5Hz~3MHz | |
| Voltage range | | 100uVrms~400Vrms 6steps | |
| | dB test range | -80dB~52.4dB(0dB=1Vrms) | |
| | dBm test range | -77dBm~54.25dBm(0dBm=1mW,600Ω) | |
| Counter (MV1913 only) | Frequency range | | 5Hz~3MHz |
| | Voltage range | | 10mV~400Vrms |
| | Attenuator | | 1/100 |
| | LPF | | 100kHz,30dB |
| | Gate | | 100mS |
| | Display | | 5 digits |
| | Time base | | 5×10^{-5} |
| | Measurement accuracy | | 100Hz~100kHz $\pm 2\%$, ± 8 digits, 50Hz~500kHz $\pm 3\%$, ± 10 digits, 10Hz~2MHz $\pm 4\%$, ± 15 digits, 5Hz~3MHz $\pm 6\%$, ± 20 digits (1kHz reference) |
| Input resistance | | 10MΩ | |
| Input capacitance | | ± 30 pF | |
| Interface | | RS232 | |
| Dimensions(W×H×D) | | 210×80×230mm | |
| Weight | | 2kg | |



MV1912



MV1913

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

PULSE GENERATOR

PG1005



Features

- . Separate TTL/CMOS output
- . Complement and one shot function
- . Output amplitude from 0.5V to 10V
- . Pulse width range from 100ns to 10s
- . 50 Ω output impedance
- . 400 Ω input impedance for TRIG/GATE



PG1005

| Technical Data | | PG1005 |
|------------------|---------------------------------|---|
| Main output | Output frequency | 0.5Hz ~ 5MHz |
| | Period | 100ns~10s |
| | Pulse width and spacing control | 100ns~10s in eight ranges |
| | Accuracy | ±5% |
| | | ±15% at Max. range |
| | Output amplitude | 0.5V~10V |
| | Amplitude accuracy | ±5% |
| | Duty cycle | 1~10 ⁸ continuously adjustable |
| | Rise/fall | 30ns |
| Operating mode | Impedance | 50 Ω |
| | Jitter | 0.1%+50ps |
| Trig./gate input | Operating mode | Normal, trig., gate, one shot |
| | TTL & DC input | >2.4Vp-p, >40ns |
| | Sine wave input | >1.7Vrms, <10MHz |
| | Input impedance | 400 Ω |
| TTL/CMOS output | Input amplitude | ±10V |
| | Fan out | 40 TTL loads |
| | Sink | 60mA at 0.8V |
| | Rise/fall | 20ns |
| Sync. output | Amplitude | >2.4V |
| | Fan out | 10 TTL loads |
| | Sink | 16mA at 0.8V |
| Power supply | Rise/fall | 20ns |
| | | 110~127 VAC ±10%, 60Hz ±2Hz |
| Dimensions | | 220~240VAC ±10%, 50Hz ±2Hz |
| Weight | | 265(W) × 110(H) × 300(D)mm |
| | | 1.5 kg |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

MULTI-FUNCTION COUNTER

SP10B / SP100B

Features

- Under the control of MCU
- Equal accuracy measure
- Measure speed: 20 times/s
- High performance, low Price, high reliability
- Speical apply to crystal with PPM FM
- PPM measure F₀ preset able
- Channel A has LP filter and ×20 attenuator function
- .10 LED display (8 data, 2 exponent)



SP10B

| Technical Data | SP10B / SP100B |
|---------------------|--|
| Function | Measure frequency, period, totalize, self-calibrate, PPM |
| Frequency range | 1Hz ~ 10MHz (SP10B) 1Hz ~ 100MHz (SP100B) |
| Period range | 100ns ~ 1s (SP10B) 10ns ~ 1s (SP100B) |
| Totalize capacity | 10 ⁸ -1 |
| Sensitivity | 40mVrms (1Hz ~ 10Hz) 20mVrms (10Hz - 10MHz / 100MHz) |
| Input impedance | 1MΩ / 40pF |
| Couple mode | AC |
| Measure error | ±Time Base accuracy ± Trigger error × Measured frequency (or Period) ±digits |
| Time base stability | ±5 × 10 ⁻⁶ /d |
| Power source | 110 ~ 127VAC±10%/220 ~ 240VAC±10%, 50Hz±2Hz/60Hz±2Hz |
| Dimensions (W×H×D) | 210 × 80 × 230mm |
| Weight | 1.8kg |

SP1500A / 1500B / 1500C SP2500B / 3000B / 3000C



SP1500B

| Technical Data | SP1500A | SP1500B | SP1500C | SP2500B | SP3000B | SP3000C |
|---------------------|--|--------------|------------------|--------------|--------------|--------------------------|
| Function | Measure frequency, period, totalize self-calibrate | | | | | |
| Frequency range | 1Hz ~ 1.5GHz | 1Hz ~ 1.5GHz | 0.005Hz ~ 1.5GHz | 1Hz ~ 2.5GHz | 1Hz ~ 3.0GHz | 0.005Hz ~ 3.0GHz |
| Period range | 10ns ~ 1s | | | | | |
| Totalize capability | 10 ⁸ -1 | | | | | |
| Sensitivity | 40mVrms (1Hz ~ 10Hz) 20mVrms (10Hz ~ 100MHz) 30mVrms (100MHz ~ 3GHz) | | | | | |
| Input impedance | 1MΩ / 40pF (Channel A) 50Ω (Channel B) | | | | | |
| Input voltage | 20mVrms ~ 250Vp-p (Channel A) 30mVrms ~ 1Vrms (Channel B) | | | | | |
| Couple mode | AC | AC | AC/DC | AC | AC | AC/DC |
| Trigger level | 0V | 0V | 0V | 0V | 0V | -2.5V~+2.5V |
| Measure error | ±Time base accuracy ± Trigger error × Measured frequency (or Period) ±LSD | | | | | |
| Time base stability | ±5 × 10 ⁻⁵ /d | | | | | ±1 × 10 ⁻⁶ /d |
| Power source | 110 ~ 127VAC±10%/220 ~ 240VAC±10%, 50Hz±2Hz/60Hz±2Hz | | | | | |
| Dimensions (W×H×D) | 230 × 92 × 230mm | | | | | |
| Weight | 1.8kg | | | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

MULTI-FUNCTION COUNTER

SP3312



Features

- .High performance 150MHz clock, frequency resolution 9 digits/s, time interval resolution 7ns
- .Apply high performance AVR CPU, LSI and CPLD device, high reliability
- .Channel C: 9GHz maximum
- .Automatic limit testing for frequency measurement
- .Math testing for frequency measurement
- .Statistics (include mean, maximum, minimum, delta, rel, PPM, stand deviance, Allan variance) for frequency measurement
- .Save and store 9 different measurement state setups
- .RS232C and centronics printer interface
- . 4.3-inch TFT color LCD display



SP3312

| Technical Data | SP3312 |
|-------------------------|---|
| Function | Measure frequency, time interval (average), period, frequency ratio, totalize, PW (average), duty cycle (average), phase (average), self-calibrate and etc. |
| Measure frequency range | 0.1mHz~150MHz(Channel A & Channel B) |
| Extend frequency | 100MHz~1.5GHz(Channel B for SP3312 V) |
| Channel C | 100MHz~500MHz(SP3312 I) 100MHz~1.5GHz(SP3312 II) 100MHz~2.5GHz(SP3312 III) 100MHz~3GHz (SP3312 IV) 1.5GHz ~ 9GHz (SP3312 V) |
| Input voltage | 30mVrms ~ 1.5Vrms (100MHz below) 50mVrms ~ 1.5Vrms (100MHz ~ 1.5GHz) 30mVrms ~ 1Vrms (1.5GHz ~ 9GHz) |
| Period range | 20ns/10ns ~ 7000s |
| Time interval range | 20ns ~ 7000s, 7ns resolution |
| Phase range | 0 ~ 359° |
| PW range | ≥20ns,(cycle<100s) |
| Duty cycle range | 1 ~ 99%,(cycle<100s) |
| Measure accuracy | ±7 × 10 ⁻⁹ /Gate time (s) |
| Frequency resolution | 9 digits/Gate time (s) |
| Totalize capacity | 1 × 10 ¹² |
| Couple mode | Channel A, B: AC / DC Channel C: AC |
| Input impedance | 1MΩ / 45pF or 50Ω |
| Time base stability | ≤ ±1 × 10 ⁻⁸ /d |
| Power supply | 110 ~ 127VAC ± 10% / 220 ~ 240VAC ± 10%, 50Hz ± 2Hz / 60Hz ± 2Hz |
| Dimensions (W×H×D) | 265 × 105 × 375mm |
| Weight | 3 kg |

POWER SUPPLY

TEST INSTRUMENT

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METER

MACHINE

ACCESSORY

MULTI-FUNCTION COUNTER

SP3389 

Features

- .High performance 150MHz clock, frequency resolution 8 digits/s, time interval resolution 20ns
- .Apply high performance AVR CPU, LSI and CPLD device, high reliability
- .Channel C: 9GHz maximum
- .Automatic limit testing for frequency measurement
- .Math testing for frequency measurement
- .Statistics (include mean, maximum, minimum, delta, rel, PPM, stand deviance, Allan variance) for frequency measurement
- .Save and store 9 different measurement state setups
- .RS232C and centronics printer interface



SP3389

| Technical Data | SP3389 |
|-------------------------|---|
| Function | Measure frequency, time interval (average), period, frequency ratio, totalize, PW (average), duty cycle (average), phase (average), self-calibrate and etc. |
| Measure frequency range | 0.14mHz~50MHz(Channel A) / 0.14mHz~100MHz(Channel B) |
| Channel C | 100MHz~500MHz(SP3389 I) 100MHz~1.5GHz(SP3389 II) 100MHz~2.5GHz(SP3389 III) 100MHz~3GHz (SP3389 IV) |
| Input voltage | 30mVrms ~ 1.5Vrms (100MHz below) 50mVrms ~ 1.5Vrms (100MHz ~ 1.5GHz) 30mVrms ~ 1Vrms (1.5GHz ~ 9GHz) |
| Period range | 20ns/10ns ~ 7000s |
| Time interval range | 40ns ~ 7000s, 20ns resolution |
| Phase range | 0 ~ 359° |
| PW range | ≥20ns, (cycle<100s) |
| Duty cycle range | 1 ~ 99%, (cycle<100s) |
| Measure accuracy | ±2× 10 ⁻⁸ /Gate time (s) |
| Frequency resolution | 8 digits/Gate time (s) |
| Couple mode | Channel A, B: AC / DC Channel C: AC |
| Input impedance | 1MΩ / 45pF or 50Ω |
| Totalize capacity | 0 ~ 1 × 10 ¹² |
| Time base stability | ≤ ±1 × 10 ⁻⁸ /d |
| Power supply | 110 ~ 127VAC±10%/220 ~ 240VAC±10%, 50Hz±2Hz/60Hz±2Hz |
| Dimensions (W×H×D) | 255 × 100 × 370mm |
| Weight | 3 kg |

POWER SUPPLY

TEST INSTRUMENT

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METER

MACHINE

ACCESSORY

MULTI-FUNCTION COUNTER

SP3382 SERIES



Features

- .Measure frequency up to 26.5GHz
- .Dynamic and wide measure range
- .High accuracy and high performance
- .Advanced design, compact and plastic die-casting
- .Reliability MTBF>8000h
- .3.5" QVGA color LCD and soft keys
- .Automatic and manual frequency measurement
- .USB interface and GPIB optional



SP3382

| Technical Data | | SP3382 I/II/III/IV/V/VI | |
|-------------------------------------|--|---|--------------|
| CH A | | | |
| 1M Ω impedance | | | |
| Measure frequency range | | 10Hz~80MHz | |
| Resolution | | 1Hz, 10Hz, 100Hz, 1kHz, 10kHz, selectable and 9 digits/s | |
| Input sensitivity | | 25mV _{rms} (-20dBm) | |
| Max. input level | | 1V _{rms} (+13dBm) | |
| Damage level | | 3V _{rms} (+23dBm) | |
| 50 Ω impedance | | | |
| Measure frequency range | | 60MHz~3GHz | |
| Resolution | | 1Hz, 10Hz, 100Hz, 1kHz, 10kHz | |
| Input sensitivity | | 25mV _{rms} (-20dBm) \leq 3GHz 40mV _{rms} (-15dBm) $>$ 3GHz | |
| Max. input level | | 1V _{rms} (+13dBm) | |
| Damage level | | 3V _{rms} (+23dBm) | |
| CH B | | | |
| Measure frequency range | | 2GHz~9GHz | SP3382 I |
| | | 2GHz~12.4GHz | SP3382 II |
| | | 2GHz~18GHz | SP3382 III |
| | | 2GHz~20GHz | SP3382 IV |
| | | 2GHz~22GHz | SP3382 V |
| | | 2GHz~26.5GHz | SP3382 VI |
| Input sensitivity | | \leq -25dBm | 2GHz~12.4GHz |
| | | \leq -20dBm | 2GHz~20GHz |
| | | \leq -15dBm | 2GHz~26.5GHz |
| Max. input level | | +7dBm | |
| Damage level | | +20dBm | |
| Input SWR | | \leq 3 | |
| Time base | | 10MHz | |
| Frequency stability | | 1 \times 10 ⁻⁶ /day | |
| Power supply | | 110~127 VAC \pm 10%, 220~240VAC \pm 10% 50Hz \pm 2Hz, 60Hz \pm 2Hz | |
| Dimensions(W \times H \times D) | | 255 \times 170 \times 370mm | |
| Weight | | 3kg | |

POWER SUPPLY

TEST INSTRUMENT

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MULTI-FUNCTION COUNTER & FUNCTION GENERATOR

POWER SUPPLY

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MACHINE

ACCESSORY

SG1638B

Features

- .Three waveforms: sine, triangle, square
- .6 ranges of frequency, up to 2MHz



SG1638B

Technical Data

| | | |
|---------------|----------------------|--|
| Main output | Output frequency | 0.2Hz ~ 2MHz |
| | Output waveforms | Sine, Square, Triangle |
| | Output impedance | 50 Ω ±10% |
| | Output amplitude | ≥20Vp - p (1MΩ Load); ≥10Vp - p (50Ω Load) |
| | Output attenuation | 20dB / 40dB |
| | Attenuation accuracy | ±3% |
| Sine wave | Distortion factor | ≤2% (≤2100kHz) |
| | Frequency response | ±0.5dB (≤100kHz) ±1dB (>100kHz) |
| Square wave | Rise or fall time | 100ns (5Vp-p 1MHz) |
| Triangle wave | Linear | 98% (≤100kHz) 95% (>100kHz) |
| Power supply | | 110~127 VAC±10%, 220~240VAC±10%, 50Hz±2Hz / 60Hz±2Hz |
| Dimensions | | 225(W) × 105(H) × 195(D)mm |
| Weight | | 2kg |

FC1024A

Features

- .8 digits LED display
- .Measure range up to 2.4GHz (channel B)
- .Low pass filter for low frequency measuring
- .Two channels input



FC1024A

Technical Data FC1024A

| | |
|--------------------|---|
| Function | Measure frequency, period |
| Frequency range | 10Hz~100MHz (channel A) 100MHz~2.4GHz (channel B) |
| Period range | 100ns~1s (channel A) |
| Sensitivity | 35mV (1~20Hz) |
| | 20mV (20Hz~100MHz) |
| | 30mV (100MHz~2.4GHz) |
| Max input voltage | 250V (channel A), 1/20 attenuation 30mVrms~1Vrms (channel B) |
| Input impedance | 1MΩ (channel A) 50Ω (channel B) |
| Channel A LPF | -3dB bandwidth about 100kHz |
| Channel A att. | 0dB/20dB |
| Couple mode | AC |
| Measure error | ±time base error±trigger error±LSD |
| Gate time | 1s, 10s |
| Power source | 220V±10%, 50Hz±5% |
| Dimensions (W×H×D) | 230 × 85 × 240mm |
| Weight | 1.5 kg |

FUNCTION GENERATOR

SG1634N, SG1638N, SG1640N & SG1642N



Features

- .Multi waveforms: sine, triangle, square, pulse and etc.
- .50Hz sine output
- .TTL output and single output(SG1634N & SG1638N)
- .DC offset and symmetry continuously adjustable
- .VCF input
- .Built-in 6 digits counter up to 15MHz (SG1638N & SG1642N)
- .Power output function (SG1642N)
- .Microphone input(SG1642N)
- .TTL and CMOS outputs (SG1640N)
- .Sweep outputs (SG1640N)



SG1640N



SG1634N



SG1638N



SG1642N

Technical Data

| | | | | | |
|--|----------------------------|--|---------------------|------------------------|--|
| Main output | Output frequency | 0.2Hz ~ 2MHz | | | |
| | Output waveforms | Sine, Square, Triangle, Ramp, Pulse and etc. | | | |
| | Output impedance | 50Ω ±10% | | | |
| | Output amplitude | ≥20Vp-p (1MΩ Load); ≥10Vp-p (50Ω Load) | | | |
| | Output attenuation | 0dB / 20dB / 40dB | | | |
| | Attenuation accuracy | ±3% | | | |
| | DC offset | 0~±10V (1MΩ Load); 0~±5V (50Ω Load) | | | |
| Sine wave | Duty cycle | 20% ~ 80% | | | |
| | Distortion factor | ≤2% (≤100kHz) | | | |
| | Frequency response | ±0.5dB (≤100kHz) ±1dB (>100kHz) | | | |
| Square wave | Rise or fall time | 100ns (5Vp-p 1MHz) | | | |
| Triangle wave | Linear | 98% (≤100kHz) | 95% (>100kHz) | | |
| | Rise or fall time | ≤50ns | | | |
| TTL output | Low level | ≤0.4V | | | |
| | High level | ≥3.5V | | | |
| | Impedance | 100Ω | | | |
| VCF | Input voltage | 0~5V | | | |
| | Input impedance | 10kΩ ±10% | | | |
| Counter (SG1638N, SG1640N & SG1642N) | Display | 6 digits | | | |
| | Frequency range | 1Hz ~ 15MHz | | | |
| | Input impedance | 10kΩ ±10% | | | |
| | Sensitivity | 200mVrms | | | |
| | Gate time | 10s (≤8kHz) | 1s (8kHz to 200kHz) | 0.1s (200kHz to 15MHz) | |
| | Resolution | 0.1Hz/1Hz | | | |
| | Accuracy | ≤1%±1 digit | | | |
| Power output (SG1642N) | Max. input voltage | 50Vp-p | | | |
| | Output amplitude | 20Vp-p (20Ω) | 10Vp-p (4Ω) | | |
| | Output impedance | 4Ω | | | |
| CMOS output (SG1640N) | Protection | Short circuit; Resist input voltage: ±35V(1 min) | | | |
| | Rise or fall time | ≤50ns | | | |
| | Low level | ≤0.6V | | | |
| | High level | 4V~15V | | | |
| Sweep (SG1640N) | Input impedance | 2KΩ | | | |
| | Sweep mode | Lin./log | | | |
| | Sweep time | 10ms~5s | | | |
| Power supply | Sweep rate | 100:1 | | | |
| | | 110~127 VAC±10%, 220~240VAC±10%, 50Hz±2Hz / 60Hz±2Hz | | | |
| Dimensions | 225(W) × 105(H) × 195(D)mm | | | | |
| Weight | 1 kg / 3 kg (SG1642N) | | | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

DDS FUNCTION GENERATOR

SG1000 SERIES

Features

DDS technology design, ultra-low power consumption

- .Frequency range: 0.1Hz~3MHz(SG1003)
- 0.1Hz~5MHz(SG1005)
- 0.1Hz~8MHz(SG1008)

- .High frequency accuracy: $\pm 1 \times 10^{-6}$
- .High frequency stability: $\pm 1 \times 10^{-6}$
- .Max. frequency resolution: 100mHz
- .Low distortion sine wave: <0.3%
- .Through the keyboard input frequency set value
- .Voltage display



SG1003

Technical Data

SG1003/SG1005/SG1008

| | | |
|-----------------|----------------------|---|
| Main output | Output frequency | 0.1Hz~3MHz(SG1003) 0.1Hz~5MHz(SG1005) 0.1Hz~8MHz(SG1008) |
| | Output waveform | Sine, square, triangle |
| | Frequency accuracy | $\pm 5 \times 10^{-6}$ |
| | Frequency resolution | 100mHz |
| | Frequency stability | $\pm 1 \times 10^{-6}$ |
| | Output amplitude | 0.2~20Vp-p |
| | Amplitude accuracy | $\pm 10\%$ (1kHz, 20Vp-p) |
| | Impedance | 50 Ω $\pm 10\%$ |
| | Attenuator | -40dB, 0dB |
| | DC offset | $\pm 10V$ |
| | Display | 6 digits LED display |
| | Output control | ON/OFF selector |
| | Sine wave | Distortion factor |
| Triangle wave | Linear | $\geq 98\%$ 100mHz~100kHz |
| | | $\geq 95\%$ 100kHz~1MHz |
| Square wave | Duty cycle | 10%~90% |
| | Rise or fall time | $\leq 25ns$ |
| TTL/COMS output | TTL level | $\geq 3Vp-p$ |
| | Output capability | 20TTL load |
| Power supply | CMOS level | 3~13.5Vp-p |
| | | 110~127VAC $\pm 10\%$ / 220~240VAC $\pm 10\%$, 50Hz $\pm 2Hz$ / 60Hz $\pm 2Hz$ |
| Dimensions | | 300(W) \times 110(H) \times 265(D)mm |
| Weight | | 1.5kg |

DDS FUNCTION GENERATOR

MPF2005B/2010B/2015B/2020B

Features

- .Using Direct Digital Synthesis(DDS) technology
- .3.5" TFT display
- .2mV Output Amplitude for Small Signal
- .1 μ Hz~20MHz frequency range for main waveforms
- .100MHz equal-accuracy frequency counter(optional)
- .32 kinds of output waveform
- .Pulse duty cycle resolution up to 1%
- .Burst mode with a continuous phase adjustment function
- .Optional CHB output
- .RS232 interface (optional)
- .Optional arbitrary waveform



MPF2010B

| Technical Data | | MPF2005B/2010B/2015B/2020B | |
|-------------------------------------|-------------------------|---|-------------------------------------|
| Main output | Output frequency | 1 μ Hz ~ 5MHz(MPF2005B) 1 μ Hz~10MHz (MPF2010B) 1 μ Hz ~ 15MHz(MPF2015B) 1 μ Hz~20MHz (MPF2020B) | |
| | Output amplitude | 2mVp-p~20Vp-p 1 μ Hz ~ 10MHz(1M Ω) 2mVp-p~15Vp-p 10MHz ~ 15MHz(1M Ω) 2mVp-p~8Vp-p 15MHz ~ 20MHz(1M Ω) | |
| | Output wave | sine, square, pulse, DC and etc. | |
| | Output modulation | single frequency, sweep frequency, FM, FSK, PSK, Burst | |
| | Wave length | 1024 points | |
| | Wave accuracy | 8bits | |
| | Sampling rate | 100Ms/s | |
| | Frequency resolution | 1 μ Hz | |
| | Frequency accuracy | $\leq \pm 0.00005\%$ | |
| | Amplitude resolution | 20mVp-p(>2V); 2mVp-p(<2V) | |
| | Amplitude accuracy | $\leq \pm (1\% + 2mV_{rms})$ | |
| | Amplitude flatness | $\pm 5\%$ (f<10MHz); $\pm 10\%$ (f>10MHz) | |
| | Offset range | $\pm 10V$ | |
| | Offset resolution | 20mVdc | |
| | Offset error | $< \pm (1\% + 20mVdc)$ | |
| | FM modulation deviation | Max.20% | |
| | PM modulation range | 0~ 360.0° | |
| | Phase resolution | 1° | |
| | Sine wave | Harmonic distortion | -40dBC(<1MHz) -35dBC(1MHz~20MHz) |
| | | Distortion factor | $\leq 1\%$ (20Hz~200kHz) |
| Square wave | Rise time | $\leq 35ns$ | |
| | SYMM. | 1% ~ 99% adjustable | |
| TTL output | Rise or fall time | $\leq 20ns$ | |
| | Low level | $< 0.3V$ | |
| Sweep | Sweep mode | Lin./log. Up and down | |
| | Sweep time | 100ms~600s | |
| | Output frequency | 10mHz~1MHz | |
| CHB output | Impedance | 50 Ω | |
| | Output amplitude | 50mVp-p~20Vp-p (1M Ω) | |
| | Output waveform | sine, square, triangle, ramp, ladder and etc. 32waveforms | |
| | Frequency resolution | 1 μ Hz | |
| | Frequency accuracy | $\leq \pm (0.00001\%)$ | |
| | Amplitude resolution | 20mV | |
| Counter(Optional) | Wave length | 1024 points | |
| | Wave accuracy | 8bits | |
| | Frequency range | 1Hz ~ 100MHz | |
| | Input amplitude | 100mVp-p~20Vp-p | |
| Power output (Optional) | Max. power | 7W (8 Ω), 1W (50 Ω) | |
| | Max. voltage | 22Vp-p | |
| | Frequency range | 1Hz~200kHz | |
| Power supply | | 110 ~ 127VAC $\pm 10\%$ /220 ~ 240VAC $\pm 10\%$, 50Hz $\pm 2Hz$ /60Hz $\pm 2Hz$ | |
| Dimensions(W \times H \times D) | | 260 \times 110 \times 385mm | |
| Weight | | 3.5 kg | |

POWER SUPPLY

TEST INSTRUMENT

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MACHINE

ACCESSORY

DDS FUNCTION (ARBITRARY) GENERATOR

WPF10/WPF30/WPF60/WPF10S/WPF30S/WPF60S

Features

- .Dual channels function/arbitrary waveform generator and frequency sweeper
- .125 MSa/s sampling rate and 14-bit vertical resolution per channel
- .Output of 5 standard waveforms, built-in 48 kinds of arbitrary waveform
- .1 μ Hz~10M/30M/60M frequency range for main waveform
- .10Hz~1.5GH equal-accuracy frequency counter
- .Multi modulation function: AM, DSB - AM, FM, PM, FSK, ASK, PWM, pulse train and logarithm/linear sweep
- .Standard USB(H), optional USB(D), GPIB and LAN interface
- .Various input and output: waveform output, synchronous signal output, external modulation input, external benchmark 10 MHz clock input, external trigger input, internal trigger output



WPF60

| Technical Data | | WPF10/WPF10S | WPF30/WPF30S | WPF60/WPF60S |
|-------------------|-------------------------|---|--|--|
| CH1,CH2 | Output frequency | Sine: 1 μ Hz~10MHz Square: 1 μ Hz~10MHz Ramp: 1 μ Hz~300kHz Pulse: 1 μ Hz~5MHz Arbitrary: 1 μ Hz~5MHz | Sine: 1 μ Hz~30MHz Square: 1 μ Hz~25MHz Ramp: 1 μ Hz~300kHz Pulse: 1 μ Hz~10MHz Arbitrary: 1 μ Hz~5MHz | Sine: 1 μ Hz~60MHz Square: 1 μ Hz~30MHz Ramp: 1 μ Hz~300kHz Pulse: 1 μ Hz~15MHz Arbitrary: 1 μ Hz~5MHz |
| | Output amplitude | 0.5mVp-p~10Vp-p (50 Ω load) (f \leq 5MHz) 0.5mVp-p ~ 5Vp-p (50 Ω load) (f \leq 30MHz) 0.5mVp-p ~ 2.5Vp-p (50 Ω load) (f > 30MHz) 1mVp-p~20Vp-p (1M Ω load) (f \leq 5MHz) 1mVp-p ~ 10Vp-p (1M Ω load) (f \leq 30MHz) 1mVp-p ~ 5Vp-p (1M Ω load) (f > 30MHz) | | |
| | Output wave | sine, square, ramp, pulse, triangle, arbitrary 48 kinds equipped waveforms and 5 kinds custom waveforms | | |
| | Output modulation | AM, DSB - AM, FM, PM, FSK, ASK, PWM | | |
| | Wave length | 4k points | | |
| | Wave accuracy | 14bits | | |
| | Sampling rate | 125MSa/s | | |
| | Frequency resolution | 1 μ Hz | | |
| | Frequency stability | \pm 1ppm | | |
| | Amplitude resolution | 0.1mVp-p | | |
| | Amplitude accuracy | \leq 1%+1mVp-p (1kHz) | | |
| | Amplitude flatness | \pm 0.3dB (relative to 100kHz sine wave, 5Vp-p) | | |
| | Offset range | \pm 10V (1M Ω load)/ \pm 5V (50 Ω load) | | |
| | Offset accuracy | \pm (1%+5mV) | | |
| | AM modulation depth | 0% ~ 120% | | |
| | FM modulation deviation | Max. 50%, 10 μ Hz resolution | | |
| | PM modulation range | 0~ 360.0 $^\circ$, 0.1 $^\circ$ resolution | | |
| | FSK/ASK | 2mHz~50kHz (50% duty cycle square) | | |
| | PWM | 500 μ Hz~20kHz | | |
| | Sine wave | Harmonic distortion | -60dBC (DC~1MHz), -53dBC (1MHz~5MHz) -35dBC (5MHz~25MHz), -32dBC (25MHz~60MHz) | |
| Distortion factor | | \leq 0.2% (DC~20kHz, 1 Vp-p) | | |
| Square wave | Rise time | \leq 12ns (10% ~ 90%, \leq 10Vp-p) | | |
| | SYMM. | 20% ~ 80% (1uHz~10MHz), 40% ~ 60% (10MHz~20MHz), 50% (>20MHz) | | |
| Triangle wave | Linearity | < 0.1% of peak output (typical, 1 kHz, 1 Vp-p, Symmetry 100%) | | |
| | Symmetry | 0~100% | | |
| Sweep | Sweep time | 1ms~500s | | |
| | Sweep mode | line/log | | |
| Burst | Alternation | 1 μ s~500s | | |
| | Burst count | 1~1000000 cycle | | |
| | Burst mode | single, internal, external | | |
| Pulse | Wave width | 20ns~999999s, 1ns resolution | | |
| | Over shoot | < 5% | | |
| | Rise time | \leq 7ns (10% ~ 90%, 1 kHz, 1 Vp-p) | | |

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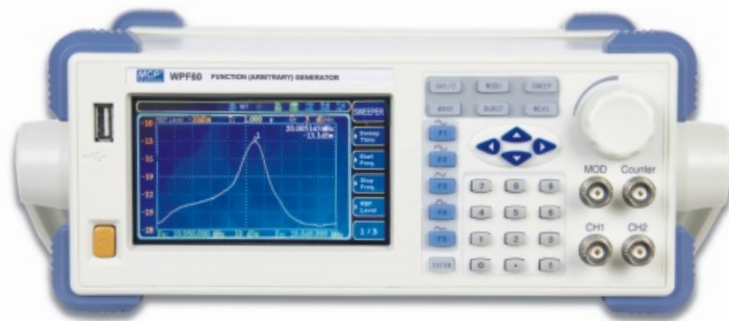
METER

MACHINE

ACCESSORY

DDS FUNCTION (ARBITRARY) GENERATOR

| | | | | |
|-----------------------|--------------------------------------|--|---------------|---------------|
| Sine wave | Harmonic distortion | -60dBC (DC~1MHz), -53dBC (1MHz ~5MHz) -35dBC (5MHz ~25MHz), -32dBC (25MHz ~60MHz) | | |
| | Distortion factor | ≤0.2 % (DC~20kHz, 1 Vp-p) | | |
| Square wave | Rise time | ≤12ns (10% ~ 90%, ≤10Vp-p) | | |
| | SYMM. | 20% ~ 80% (1uHz ~10MHz), 40% ~ 60% (10MHz ~20MHz), 50% (>20MHz) | | |
| Triangle wave | Linearity | <0.1% of peak output (typical, 1 kHz, 1 Vp-p, Symmetry 100%) | | |
| | Symmetry | 0~100% | | |
| Sweep | Sweep time | 1ms~500s | | |
| | Sweep mode | line/log | | |
| Burst | Alternation | 1 μs~500s | | |
| | Burst count | 1~1000000 cycle | | |
| | Burst mode | single, internal, external | | |
| Pulse | Wave width | 20ns~999999s, 1ns resolution | | |
| | Over shoot | <5% | | |
| | Rise time | ≤7ns (10% ~ 90%, 1 kHz, 1 Vp-p) | | |
| Arbitrary | Waveform length | 4k points | | |
| | Amplitude resolution | 14 bits | | |
| | Sample rate | 125 MSa/s | | |
| | Jitter (RMS) | 8ns | | |
| | Non-volatile memory | 5 waveforms | | |
| Frequency sweeper | | WPF10S | WPF30S | WPF60S |
| | Sweep range | 10KHz~10MHz | 10KHz~30MHz | 10KHz~60MHz |
| | output power | +20dBm~-30dBm | | |
| | dynamic range | +20dBm~-60dBm | | |
| | frequency resolution | 1 μ Hz | | |
| | Sweep time | 100mS~100S | | |
| | Marker | 2pcs | | |
| Interface | USB (H), optional USB (D), LAN, GPIB | | | |
| Power supply | 100~240 V AC, 45~440Hz, CAT II, 50VA | | | |
| Dimensions(W × H × D) | 250 × 120 × 310mm | | | |
| Weight | 2.5 kg | | | |



Frequency sweeper Mode

POWER SUPPLY

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MACHINE

ACCESSORY

DDS FUNCTION (ARBITRARY) GENERATOR

XPF4080/XPF4120/XPF4160



Features

- Respective dual channels function/arbitrary waveform generator
- Sine wave output up to 160MHz, full-band resolution of 1 μ Hz
- Pulse waveform up to 50MHz (or 40MHz), adjustable time of rising, falling and duty ratio
- Sampling rate of 500MSa/s and vertical resolution of 16bit
- 6-bit high-precision frequency meter compatible with TTL level signal
- Arbitrary wave storage of 8~32M points, 7GB non-volatile waveform storage
- Multi modulation function: AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, OSK, PWM, QAM, SUM
- 16bit digital arbitrary wave (TTL level) DARB
- 16th Harmonic Generation Function
- Protocol output: I2C, SPI, UART (TTL level)
- 8 Inch high-resolution TFT color LCD, WVGA(800 \times 480)
- Standard interface: USB Host, USB Device, LAN, 10MHz clock source input/output
- Frequency sweep and burst output
- Easy-to-use multi-functional knob and numeric keypad



XPF4120

| Technical Data | XPF4080 | XPF4120 | XPF4160 |
|-------------------------|---|---|---|
| Output frequency | Sine: 1 μ Hz~80MHz | Sine: 1 μ Hz~120MHz | Sine: 1 μ Hz~160MHz |
| | Square: 1 μ Hz~30MHz | Square: 1 μ Hz~40MHz | Square: 1 μ Hz~50MHz |
| Output amplitude | Ramp: 1 μ Hz~2MHz | Ramp: 1 μ Hz~3MHz | Ramp: 1 μ Hz~4MHz |
| | Pulse: 1 μ Hz~30MHz | Pulse: 1 μ Hz~40MHz | Pulse: 1 μ Hz~50MHz |
| Output wave | Arbitrary: 1 μ Hz~20MHz | Arbitrary: 1 μ Hz~30MHz | Arbitrary: 1 μ Hz~40MHz |
| | Harmonic: 1 μ Hz~40MHz | Harmonic: 1 μ Hz~60MHz | Harmonic: 1 μ Hz~80MHz |
| Output modulation | White noise: 80MHz BW (-3dB) | White noise: 120MHz BW (-3dB) | White noise: 160MHz BW (-3dB) |
| | 1mVp-p ~ 10Vp-p (50 Ω load) (f \leq 20MHz) | 1mVp-p ~ 5Vp-p (50 Ω load) (f \leq 80MHz) | 1mVp-p ~ 2.5Vp-p (50 Ω load) (f \leq 120MHz) |
| Output modulation | 1mVp-p ~ 1Vp-p (50 Ω load) (f \leq 160MHz) | 1mVp-p ~ 20Vp-p (1M Ω load) (f \leq 20MHz) | 1mVp-p ~ 10Vp-p (1M Ω load) (f \leq 80MHz) |
| | 1mVp-p ~ 20Vp-p (1M Ω load) (f \leq 20MHz) | 1mVp-p ~ 10Vp-p (1M Ω load) (f \leq 80MHz) | 1mVp-p ~ 5Vp-p (1M Ω load) (f \leq 120MHz) |
| Output modulation | 1mVp-p ~ 10Vp-p (1M Ω load) (f \leq 80MHz) | 1mVp-p ~ 5Vp-p (1M Ω load) (f \leq 120MHz) | 1mVp-p ~ 2Vp-p (1M Ω load) (f \leq 160MHz) |
| | 1mVp-p ~ 5Vp-p (1M Ω load) (f \leq 120MHz) | 1mVp-p ~ 2Vp-p (1M Ω load) (f \leq 160MHz) | |
| Output wave | Sine, Square, Ramp, Harmonic, Pulse, Noise, DC, Arbitrary, 7 types of standard waveform, not less than 160 types of built-in arbitrary waveform | | |
| Output modulation | AM, FM, PM, ASK, FSK, PSK, BPSK, QPSK, OSK, PWM, SUM, QAM | | |
| Frequency resolution | 1 μ Hz | | |
| Frequency stability | \pm 50ppm(90days), \pm 100ppm(1 year) | | |
| Amplitude resolution | 1 μ Vp-p | | |
| Amplitude accuracy | \leq 1%+1mVp-p | | |
| Amplitude flatness | f \leq 10MHz: \pm 0.1dB, f \leq 80MHz: \pm 0.2dB, f \leq 120MHz: \pm 0.4dB, f \leq 160MHz: \pm 0.8dB | | |
| Offset range | \pm 10V (1M Ω load)/ \pm 5V (50 Ω load) | | |
| Offset accuracy | \pm (2% of offset setting + 0.5% of amplitude+2mV) | | |
| AM modulation depth | 0% ~ 120% | | |
| FM modulation deviation | Max.50%, 10 μ Hz resolution | | |
| PM modulation range | 0~ 360.0°, 0.1° resolution | | |
| FSK/ASK/PSK | 2mHz~1mHz (50% duty cycle square) | | |
| BPSK/QPSK | 2mHz~50kHz | | |
| PWM | Oscillation time: 8ns~200s, keying frequency: 2mHz~1MHz | | |
| OSK | 0~100% | | |
| SUM | -60dBC (DC~1MHz), -55dBC (1MHz ~10MHz) | | |
| Sine wave | Harmonic distortion | | -50dBC (10MHz ~100MHz), -40dBC (100MHz ~160MHz) |
| | Distortion factor | | \leq 0.2% (DC~20kHz, 1 Vp-p) |
| Square wave | Rise time | < 7ns | < 6ns |
| | SYMM. | 1% of period + 4ns | |
| Square wave | Overshoot | < 2% | |
| | Jitter | 1ns + 100ppm of period | |

POWER SUPPLY

TEST INSTRUMENT

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MACHINE

ACCESSORY

DDS FUNCTION (ARBITRARY) GENERATOR

| | | XPF4080 | XPF4120 | XPF4160 |
|-----------------------|---|---|----------------|----------------|
| Triangle wave | Linearity | <1% of peak output (typical, 1 kHz, 1 Vp-p, Symmetry 100%) | | |
| | Symmetry | 0~100% | | |
| Sweep | Sweep time | 1ms ~ 500s ±0.1% | | |
| | Sweep mode | line/log | | |
| Pulse | Frequency range | 1 μ Hz ~ 30MHz | 1 μ Hz ~ 40MHz | 1 μ Hz ~ 50MHz |
| | Pulse width | 10ns~2000s, 1ns resolution | | |
| | Variable edge | 7ns~10s | 6ns~10s | 5ns~10s |
| | Overshoot | <2% | | |
| | Jitter | 1ns + 100ppm of period | | |
| Burst | Type | Count(1~50,000 periods), infinite, gated | | |
| | Initial and stop phas | -360° ~ +360° | | |
| | Internal cycle | 1 μ s ~ 500s ±1% | | |
| | Gate source | External trigger | | |
| Arbitrary | Trigger source | Manual, external or internal | | |
| | Waveform length | 8~32M points | | |
| | Amplitude resolution | 16 bits | | |
| | Sample rate | 500 MSa/s | | |
| | Rising/falling time (1Vp-p) | <7ns | | |
| | Jitter (RMS) | 6ns+30ppm | | |
| | Non-volatile memory | 7GB | | |
| Harmonic | Harmonic number | ≤16 | | |
| | Harmonic type | Even harmonic, odd harmonic, all harmonics, user-defined | | |
| Counter | Frequency range | 100mHz~800MHz | | |
| | Frequency resolution | 7 digits/s | | |
| | Input level | TTL compatible (200mVpp ~ 9Vpp) | | |
| | Trigger level | 0~2.5VDC | | |
| | Accuracy | ±51ppm | | |
| SPI protocol output | Waveform length | 1~512 bytes | | |
| | Clock frequency | 10kHz~40MHz | | |
| | Sending mode | Single manual trigger, continuous trigger | | |
| I2C protocol output | Continuous trigger time interval | 0~2.5VDC | | |
| | SPI Waveform length | 1~512 bytes | | |
| | Clock frequency | 10kHz~1MHz | | |
| | Sending mode | Single manual trigger, continuous trigger | | |
| | Continuous trigger time interval | 1ms~10s | | |
| UART protocol output | Address | Send 7-bit/10-bit I2C address | | |
| | SPI Waveform length | 1~1K bytes | | |
| | Baud rate | 110, 300, 1200, 2400, 4800, 9600, 19200, 38400, 56700, 115200, 230400, 460800, 921600, user-defined | | |
| | Data bit | 4 bits, 5 bits, 6 bits, 7 bits, 8 bits | | |
| | Sending mode | Single manual trigger, continuous trigger | | |
| DARB | Continuous trigger time interval | 1ms~10s | | |
| | Stop bit | 1 bit, 2 bits | | |
| | Check bit | No check bit, odd, even | | |
| | Waveform length | 1~1K bytes | | |
| | Sampling rate | 1S/s ~ 40MS/s | | |
| QAM | Sending mode | Single manual trigger, continuous trigger (no time interval) | | |
| | Waveform resolution | Maximum 16 bits | | |
| | QAM mode | QAM4, QAM8, QAM16, QAM32, QAM64, QAM12, QAM256 (built-in constellation modulation) | | |
| | Modulation source | Built-in PN code, Pn7, Pn9, Pn11, Pn15, Pn17, Pn21, Pn23, PN25 | | |
| Interface | Chip rate | 2mHz~100kHz | | |
| | Amplitude | 10mVpp~10Vpp(50Ω) | | |
| Power supply | USB Host(maximum 32G), USB Device, LAN, 10MHz clock source input, 10MHz clock source output | | | |
| Dimensions(W × H × D) | 100~240VACrms, 50/60Hz, CAT II 300V | | | |
| Weight | 336 × 164 × 108mm | | | |
| | 2.5 kg | | | |

POWER SUPPLY

TEST INSTRUMENT

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MACHINE

ACCESSORY

DDS FUNCTION (ARBITRARY) GENERATOR

UPF1.5  

Features

- Two outputs (major and minor)
- Using Direct Digital Synthesis(DDS) technology
- 1 μ Hz~60MHz frequency range for main waveforms
- 100MHz equal-accuracy frequency counter
- Arbitrary setting of start and stop for frequency sweep output
- More than 50 kinds of output waveform(arbitrary is optional)
- 4.3" TFT colour display
- Standard USB(H), USB(D)



UPF1.5-20

| Technical Data | UPF1.5-5 | UPF1.5-10 | UPF1.5-20 |
|-------------------------------------|---|--|--|
| Channel | CHA major and CHB minor | | |
| Channel Bandwidth | CHA: 5MHz CHB: 2.5MHz | CHA: 10MHz CHB: 5MHz | CHA: 20MHz CHB: 10MHz |
| Sampling Rate | 125MS/s | | |
| Vertical Resolution | 14 bits | | |
| Waveform | Sine wave, square wave, triangle wave, pulse wave, oblique wave, noise, arbitrary wave (16 groups) | | |
| Scan Mode | Linear, logarithmic and external scanning | | |
| Modulation Type | single, internal, external | | |
| Output | | | |
| Output Impedance | 50 Ω /high resistance | | |
| Amplitude Range | CHA: 1mVpp~10Vpp (50 Ω) CHB: 50mVpp~1.5Vpp (50 Ω) | CHA: 1mVpp~10Vpp (50 Ω) CHB: 50mVpp~1.5Vpp (50 Ω) | CHA: 1mVpp~10Vpp (50 Ω , \leq 10MHz) CHA: 1mVpp~5Vpp (50 Ω , \leq 20MHz) CHB: 50mVpp~1.5Vpp (50 Ω) |
| Accuracy (1kHz Sine wave) | Amplitude setting value of 1% + 2 mV | | |
| DC Offset Range | -5Vpp~5Vpp(50 Ω) (AC+DC) -10Vpp~10Vpp(high resistance)(AC+DC) | | |
| Offset Precision | Offset set value of + 1% + Amplitude set value of 0.5% + 2 mV | | |
| Amplitude Resolution | 1mV | | |
| Amplitude Flatness | <100kHz | 0.1dB 100kHz~10MHz | 0.2dB |
| Sine Wave | | | |
| Frequency Range | CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz | CHA: 1 μ Hz~10MHz CHB: 1 μ Hz~5MHz | CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz |
| Resolution | 1 μ Hz | | |
| Harmonic Distortion (Typical Value) | (CHA):Test condition : Output Power 0dBm (CHA):DC~20kHz -55dBc (CHA):20kHz~1MHz -50dBc (CHA):1MHz~10MHz -40dBc | | |
| THD | (CHA):DC~20kHz, 1Vpp<0.2% | | |
| Square Wave / Pulse Wave | | | |
| Frequency Range | CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz | CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz | CHA: 1 μ Hz~5MHz CHB: 1 μ Hz~2.5MHz |
| Rise / fall Time | (CHA):<24ns (Typical value 1kHz, 1Vpp) | | |
| Overshoot (Typical Value) | (CHA):<2% | | |
| Duty Cycle | (CHA):0.01%~99.99% | | |
| Minimum Pulse Width | (CHA): \geq 80ns | | |
| Triangular Wave / Ramp Wave | | | |
| Frequency Range | 1 μ Hz~400kHz | | |
| Non-linearity | 1% \pm 2 mV (typical value :1kHz,1Vpp; symmetry:50%) | | |
| Symmetry | 0~100.0% | | |

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DDS FUNCTION (ARBITRARY) GENERATOR

| Technical Data | UPF1.5-5 | UPF1.5-10 | UPF1.5-20 |
|------------------------------------|---|------------------|------------------|
| Arbitrary Wave(CHA) | | | |
| Frequency range | 1 μ Hz~ 1MHz | 1 μ Hz~ 2MHz | 1 μ Hz~ 2MHz |
| Internal storage (fixed) | 16 group AbsSine, AmpALT, AttALT, Gaussian Monopulse, GaussPulse, SineVer, StairUd, Trapezia, LogNormal, Sinc, ECG, EEG, exponential rise, exponential decline, Lorentz, D-Lorentz | | |
| AM Modulation(CHA) | | | |
| Carrier Wave | Sine wave, Square wave, Ramp wave, Arbitrary wave | | |
| Source | Internal / external (front panel BNC) | | |
| Modulated Wave | Sine, Square wave, rising Ramp wave, falling oblique wave, noise, Arbitrary wave | | |
| Modulation Frequency | 2mHz~50kHz | | |
| Modulated Wave | 0~120% | | |
| FM Modulation(CHA) | | | |
| Carrier Wave | Sine wave, Square wave, Ramp wave, Arbitrary wave | | |
| Source | Internal / external (front panel BNC) | | |
| Modulated Wave | Sine, Square wave, rising oblique wave, falling oblique wave, noise, Arbitrary wave | | |
| Modulation Frequency | 2mHz~50kHz | | |
| Frequency offset | 2.5MHz | 5MHz | 10MHz |
| PM Modulation(CHA) | | | |
| Carrier Wave | Sine wave, Square wave, Ramp wave, Arbitrary wave | | |
| Source | Internal / external (front panel BNC) | | |
| Modulated Wave | Sine, Square wave, rising oblique wave, falling oblique wave, noise, Arbitrary wave | | |
| Modulation Frequency | 2mHz~50kHz | | |
| Phase offset | 0~360° | | |
| ASK/FSK/PSK Modulation(CHA) | | | |
| Carrier Wave | Sine wave, Square wave, Oblique wave, Arbitrary wave | | |
| Source | Internal / external (front panel BNC) | | |
| Modulated Wave | 50% duty cycle of Square wave | | |
| Modulation Frequency | 2mHz~100kHz | | |
| PWM Modulation(CHA) | | | |
| Carrier Wave | Pulse wave | | |
| Source | Internal / external (front panel BNC) | | |
| Modulated Wave | Sine, Square wave, rising oblique wave, falling oblique wave, noise, Arbitrary wave | | |
| Modulation Frequency | 2mHz~20kHz | | |
| Width Offset | 0~49.99% of Pulse width | | |
| Sweep frequency(CHA) | | | |
| Carrier Wave | Sine wave, Square wave, Oblique wave | | |
| Type | Linear and logarithmic | | |
| Scan time | 1ms~500s \pm 0.1% | | |
| Trigger Source | Manual, internal and external | | |
| Frequency meter | | | |
| Input Level | Compatible with TTL | | |
| Input frequency | 100mHz~100MHz | | |
| Frequency Resolution | 6Bit / second | | |
| Coupling Mode | DC | | |
| Power supply | 100V~240VACrms, 50Hz/60Hz | | |
| Dimensions (W×H×D) | 265mm×110mm×320mm | | |
| Weight | 4.1kg | | |

POWER SUPPLY

TEST INSTRUMENT

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MACHINE

ACCESSORY

DDS FUNCTION (ARBITRARY) GENERATOR

UPF25/UPF60/UPF80/UPF120

Features

- Two same function outputs
- Using Direct Digital Synthesis(DDS) technology
- 1 μ Hz~120MHz frequency range for main waveforms
- 100MHz equal-accuracy frequency counter
- Arbitrary setting of start and stop for frequency sweep output
- More than 50 kinds of output waveform(arbitrary is optional)
- 4.3" TFT colour display
- Standard USB(H), USB(D)and optional LAN interface



UPF60

| Technical Data | | UPF25 | UPF60 | UPF80 | UPF120 | |
|-------------------------------------|--|---|--|---|---|---|
| CH1,CH2 | Output frequency | Square: | 1 μ Hz ~ 25MHz | 1 μ Hz ~ 60MHz | 1 μ Hz ~ 80MHz | 1 μ Hz ~ 120MHz |
| | | Ramp: | 1 μ Hz~5MHz | 1 μ Hz~60MHz | 1 μ Hz~70MHz | 1 μ Hz~80MHz |
| | | Pulse: | 1 μ Hz~400kHz | 1 μ Hz~3MHz | 1 μ Hz~4MHz | 1 μ Hz~5MHz |
| | | Arbitrary: | 500 μ Hz~5MHz | 1 μ Hz~20MHz | 1 μ Hz~25MHz | 1 μ Hz~30MHz |
| | Output amplitude | | \leq 10MHz: 1mVpp~10Vpp; (50 Ω , UPF25) | | \leq 20MHz: 1mVpp~10Vpp; (50 Ω) | |
| | | | \leq 25MHz: 1mVpp~5Vpp; (50 Ω , UPF25) | | \leq 60MHz: 1mVpp~5Vpp; (50 Ω) | \leq 120MHz: 1mVpp~2Vpp; (50 Ω) |
| | Output wave | Sine, Square, Ramp, Burst, Noise, DC, Arbitrary Harmonic, Expression (UPF60/80/120) | | | | |
| | Output modulation | AM, FM, PM, ASK, FSK, PWM, PSK BPSK, QPSK, OSK, SUM, DSB-AM, QAM (UPF60/80/120) | | | | |
| | Wave length | 2pts~8kpts | | 8pts~16Mpts | | |
| | Wave accuracy | 14bits | | 16bits(Symbol included) | | |
| | Sampling rate | 125MSa/s | | 1.28GSa/s (320MSa/s, 4 times interpolation) | | |
| | Frequency resolution | 1 μ Hz | | | | |
| | Frequency stability | \pm 50ppm (90 days); \pm 100ppm (1 year) | | | | |
| | Amplitude resolution | 1 μ Vp-p | | | | |
| | Amplitude accuracy | \leq 1%+2mVp-p | | | | |
| | Amplitude flatness | \pm 0.1dB (<200kHz); \pm 0.2dB (200kHz~60MHz) | | | | |
| | Offset range | \pm 10V (High Resistance)/ \pm 5V (50 Ω load) | | | | |
| | Offset resolution | \pm (1%+5mV) | | | | |
| | AM modulation depth | 0% ~ 120% | | | | |
| | FM modulation deviation | Max.50% | | | | |
| | PM modulation range | 0~ 360.0° | | | | |
| | FSK/ASK | 2mHz~100kHz (50% duty cycle square) | | | | |
| PWM | 2mHz~50kHz | | | | | |
| Sine wave | Harmonic distortion | DC~100kHz -60dBc | | DC~1MHz -60dBc | | |
| | | 100kHz ~1MHz -50dBc | 1MHz ~10MHz -55dBc | | 10MHz ~40MHz -50dBc | |
| | THD | <0.2%(DC~20kHz, 1Vpp) | | | | |
| Square wave | Rise time | <24ns | | | <4ns | |
| | Duty Ratio | 0~100.00% | | | 0.001%~99.999% | |
| Sweep | Sweep time | 1ms~500s | | | | |
| | Sweep mode | line/log | | | | |
| Burst | Alternation | 1 μ s~500s | | | | |
| | Burst count | 1~50000 cycle | | | | |
| | Burst mode | single, internal, external | | | | |
| Pulse | Wave width | 20ns~2000s | | | | |
| | Over shoot | <2% | | | | |
| Counter(UPF25 only) | Frequency range | 100mHz ~ 200MHz | | | | |
| | Frequency resolution | 6 digits/s | | | | |
| Interface | USB (H), USB (D), LAN (optional only for UPF60/80/120) | | | | | |
| Power supply | 100~240 V AC, 45~440Hz, CAT II, 50VA | | | | | |
| Dimensions(W \times H \times D) | 305 \times 93 \times 230mm | | | | | |
| Weight | 4.2 kg | | | | | |

POWER SUPPLY

TEST INSTRUMENT

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MACHINE

ACCESSORY

HG1500/HG1500D RF GENERATOR

Feature

- Composed with RF signal generator, high-quality audio signal generator and FM stereo signal generator
- Internal/External AM (0 ~ 30%), FM(0~10%), FM stereo
- Frequency monitor output for EXT frequency counter (HG1500)
- Built-in frequency counter (HG1500D)



HG1500



HG1500D

| Technical Data | | HG1500/HG1500D | |
|-----------------------------------|--|--|----|
| RF signal generator | Frequency | 100kHz ~ 150MHz (Harmonic 450MHz) | |
| | Range & accuracy | 100 ~ 330kHz | 5% |
| | | 320 ~ 1060kHz | 5% |
| | | 1 ~ 3.5MHz | 5% |
| | | 3.3 ~ 11MHz | 6% |
| | | 10 ~ 35MHz | 6% |
| 34 ~ 150MHz | 8% | | |
| | Int. & Ext. modulation | AM, FM | |
| | Internal modulation | 1kHz audio signal | |
| | External modulation | Input resistance less than 600 Ω Input amplitude less than 2.5V | |
| Audio signal generator | Output amplitude | 0 ~ 50mVrms, attenuation 20dB | |
| | Frequency | 1kHz ± 10% | |
| | Distortion | < 1% | |
| | Output amplitude | Micro-volt to 1Vrms | |
| FM stereo signal generator | Frequency | 88 ~ 108MHz | |
| | External modulation | Input resistance less than 600 Ω Input amplitude less than 15mV | |
| Frequency monitor output (Hg1500) | Frequency | Same as RF signal generator | |
| | Level | ≥ 50mVrms | |
| | Frequency range | 10Hz ~ 100MHz (EXT L) 100MHz ~ 1.3GHz (EXT H) | |
| Frequency counter (HG1500D) | Sensitivity | ≤ 100mVrms | |
| | Max. input voltage | 3Vrms | |
| | Accuracy | ± (0.005% Rdg ± 1 digit) | |
| | Input impedance | 1M Ω (Ext. L) 50 Ω (Ext. H) | |
| Power source | 110 ~ 127VAC ± 10% / 220 ~ 240VAC ± 10%, 50Hz ± 2Hz / 60Hz ± 2Hz | | |
| Dimension (W × H × D) | 220 × 160 × 240mm | | |
| Weight | 4kg | | |

RF SIGNAL GENERATOR

RG1480 SERIES



Features

- . Frequency range extend from 250 kHz up to 4 GHz
- . Variety modulation: AM, FM, PM and Pulse modulation
- . Wide output power range: -127dBm ~ +13dBm (-136dBm available)
- . Superior phase noise: 115dBc/Hz@20kHz
- . Convenient and agility sweep output: frequency sweep and amplitude sweep variety combination
- . Applied low frequency function source: sine wave, square wave, triangle wave, sawtooth wave
- . Color display: 7" TFT 800x480
- . Multi interface: USB, LAN, GPIB



RG1484II

| Technical Data | RG1483 | RG1484II |
|--------------------------------------|------------------|---------------|
| Frequency | | |
| Frequency range | 250kHz ~3GHz | 250kHz ~4GHz |
| Frequency resolution | 0.1Hz | |
| Internal reference oscillator | | |
| Stability | < ±0.1ppm | |
| Aging | < ±1ppm/year | |
| Time base reference output | | |
| Frequency | 10MHz | |
| Amplitude | >0.35Vrms | |
| Connector | BNC female, 50 Ω | |
| EXT reference input | | |
| Frequency | 10MHz | |
| Amplitude | 0.5~2Vrms | |
| Connector | BNC female, 50 Ω | |
| Amplitude | | |
| Output power range | -127 ~ +13dBm | -127 ~ +13dBm |
| Amplitude resolution | 0.01dB | |
| Amplitude accuracy | ≤ ±1dB | |
| VSWR | ≤1.8 | |
| Spectrum purity | | |
| Harmonic | ≤-30dBc | |
| Non-harmonic | ≤-50dBc | |
| SSB phase noise | -115dBc/Hz | -115dBc/Hz |
| Residual FM | 10Hz peak | 10Hz peak |
| Modulation | | |
| AM | depth | 0~100% |
| | resolution | 0.1% |
| | error | 5%+0.002 |
| | mf | 20Hz ~20kHz |
| | distortion | ≤2% |
| FM | deviation | 20Hz~100 kHz |
| | resolution | 1% |
| | error | 5%+0.002 |
| | mf | 20Hz ~80kHz |
| | distortion | ≤1% |

POWER SUPPLY

TEST INSTRUMENT

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ACCESSORY

RF SIGNAL GENERATOR

| Technical Data | | RG1483 | RG1484II |
|--------------------------------------|-----------------|---|------------|
| PM | depth | 0 ~ 10rad (mf < 10 kHz), 0 ~ 5rad (mf > 10 kHz) | |
| | error | 5%+0. 2rad | |
| | mf | 20Hz ~80kH | |
| | distortion | ≤1.5% | |
| Pulse modulation | SSB phase noise | -115dBc/Hz | -115dBc/Hz |
| | rise/fall time | 50ns | 50ns |
| | pulse period | 1us ~ 2s | |
| | pulse width | 400ns~1s | |
| | resolution | 100ns | |
| | On/Off | 80dB | 80dB |
| External modulation | input level | AM,FM, PM: 1Vp-p PulseModulation: ≥1.5Vp-p (400ns~1s) | |
| | input frequency | AM,FM: 20Hz~20kHz PM: 300Hz~20kHz | |
| Input and output | | | |
| RF output | | 50 Ω N type | |
| EXT reference input | | 50 Ω BNC | |
| Trigger input | | sine wave, square wave ≥2.5Vp-p | |
| Trigger output | | pulse wave | |
| Sweep output | | sawtooth wave 1~3.5V | |
| Pulse output | | same as pulse modulation, low≤0.8V/ high≥2.4V | |
| Low frequency function source | | sine wave, triangle wave, sawtooth wave 20Hz~100kHz/0~3Vp-p square wave 20Hz~20kHz/0~3Vp-p pulse wave 50ms~20us/0~3Vp-p | |
| Interface | | USB, LAN, GPIB | |
| Power Source | | AC 110V/220V±10%, 50Hz /60Hz | |
| Weight | | 10kg | |
| Dimension (W×H×D) | | 426mm×133mm×450mm | |

POWER SUPPLY

TEST INSTRUMENT

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MACHINE

ACCESSORY

RF SIGNAL GENERATOR

RG9015/RG9030



NEW

Features

- .Signal frequency up to 3GHz
- .High Amplitude precision
- .Output power up to +10dBm
- .Versatile modulation AM/FM/φM/ASK/PSK/FSK
- .Pulse modulation 160s to 200ms
- .Up-conversion with external if signal input
- .Internal modulation source: sine wave, square wave, triangle wave, sawtooth wave
- .USB/LAN interface with SCPI commands
- .Low power consumption, light weight and compact shape



RG9030

| Technical Data | | RG9015 | RG9030 | |
|---------------------------------|---------------------------|----------------------------------|---|--|
| Frequency | Frequency range | 100kHz~1.5GHz | 100kHz~3.0GHz | |
| | Frequency resolution | | 1Hz | |
| | Frequency standard | | 10MHz | |
| | Frequency stability | | ±0.5ppm | |
| | Aging rate | | ±1ppm/year | |
| Spectrum purity | Internal reference output | | 10MHz, +2dBm | |
| | Harmonic | | ≤-30dBc | |
| | Non-harmonic | | ≤-50dBc | |
| | SSB phase noise | $f = 300\text{MHz}$ | -100dBc/Hz@10kHz; -115dBc/Hz@100kHz | |
| | | $f = 1\text{GHz}$ | -90dBc/Hz@10kHz; -105dBc/Hz@100kHz | |
| Amplitude | Output power range | | -120dBm~+10dBm | |
| | Amplitude resolution | | 0.01dB | |
| | Amplitude accuracy | | +10dBm~-80dBm: ≤±0.5dB +80dBm~-120dBm: ≤±1dB | |
| Level set | VSWR | | ≤1.8 | |
| | ALC dynamic range | | 50dB | |
| | Level set time | | ≤5ms(ALC On) | |
| | Maximum back power | | 1W | |
| Sweep function | Sweep mode | frequency, amplitude, frequency | | |
| | Sweep type | Step, list | | |
| | Repeating | single, continuous | | |
| | Step type | linear variation | | |
| | Sweep points | Step sweep | 2~65535 | |
| | | List sweep | 2~16383 | |
| | Sweep time | 20ms ~ 50s | | |
| Trigger type | Auto, external | | | |
| Internal modulation source (LF) | Waveform | Sine, square, triangle, sawtooth | | |
| | Frequency range | sine | 0.1Hz ~ 1MHz | |
| | | square | 0.1Hz ~ 20kHz | |
| | | triangle, sawtooth | 0.1Hz ~ 100kHz | |
| | Resolution | 0.01Hz | | |
| Output voltage range | 200mVp-p ~ 1.0Vp-p | | | |
| Resolution | 1mV | | | |
| Analog modulation | AM | Depth | 0~100% | |
| | | MF | 20Hz~1MHz | |
| | FM | deviation | 5MHz | |
| | | MF | 20Hz~1MHz | |
| | φM | deviation | 0~360° | |
| | | MF | 20Hz~1MHz | |

POWER SUPPLY

TEST INSTRUMENT

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ACCESSORY

RF SIGNAL GENERATOR

| Technical Data | | ELD8630-II | ELD8630-III |
|------------------------|--------------------------|--------------------------------------|--|
| Analog modulation | Rise/fall time | 100ns (10%/90%) | |
| | Pulse period | range | 200ns ~ 160s |
| | | resolution | 100ns |
| | Pulse width | range | 100ns~(160s-100ns) |
| | | resolution | 100ns |
| On/Off | 70dB | | |
| Trigger type | auto, external, manual | | |
| I/Q digital modulation | Modulation source | internal | external, internal |
| | Modulation bandwidth | external | ≤20MHz |
| | | internal | ≤20MHz |
| | External data import | Arb | |
| | Internal data | ASK/2FSK/4FSK/8FSK 2PSK/4PSK/8PSK | ASK/2FSK/4FSK/MSK GMSK BPSK/π/2-DBPSK QPSK/OQPSK/π/4-QPSK π/4-DQPSK/8PSK π/8-D8PSK/16QAM 32QAM/64QAM/128QAM |
| Forming filter | Gauss, RC, RRC | | |
| Port and interface | Input | BNC, 50Ω | external if signal input, external pulse modulation input, 10MHz reference input |
| | | BNC, 1kΩ | external trigger input |
| | Output | N, 50Ω | RF output |
| BNC, 50Ω | | LF output | |
| Interface | USB2.0、LAN10/100 Base-T | | |
| Power Source | AC 110V~240V, 50Hz /60Hz | | |
| Weight | ≤5kg | | |
| Dimension (W×H×D) | 265mm×110mm×20mm | | |

POWER SUPPLY

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HF SIGNAL GENERATOR

HG1462 SERIES



Feature

- .4.3 " TFT colour LCD display
- .DDS, CPLD modulation and digital modulation technology
- .SMT technology with high stability
- .External standard frequency input for higher frequency accuracy in whole band
- .Arbitrarily stored and recalled for carrier frequency level, or modulation
- .1GHz frequency counter (optional)
- .Pulse modulation (optional)
- .Standard RS-232 interface and optional GP-IB interface



HG1462

Technical Data

HG1462 (A/B/C)

| | HG1462 (A/B/C) | |
|----------------------|---|--|
| RF signal generator | Frequency | 100kHz~150MHz(HG1462) 100kHz~250MHz(HG1462A) 100kHz~350MHz(HG1462B) 100kHz~450MHz(HG1462C) |
| | Resolving capability | 1Hz |
| | Frequency accuracy | ±2.5ppm |
| | Frequency converted time | <100ms (within 100Hz if final frequency) |
| | Internal standard frequency | TCXO 10.000MHz |
| | External frequency input (internal and external frequency switching automatically) | Frequency: 10MHz Amplitude: 0.3Vrms~1Vrms (50 load) |
| | Output level | -117dBm~+13dBm (≤250MHz) -117dBm~+10dBm (>250MHz) Can reach to -127dBm |
| | Resolving capability | 0.1dB |
| | Output impedance | 50Ω |
| | SWR | <1.5 (frequency of carrier wave > 300kHz, level < -6dBm) |
| | Level smoothness | ±1dB (output level = +4dBm; frequency > 400kHz) ±2dB (output level = +4dBm; frequency > 250MHz) |
| | Attenuation precision | ±2dB (output level < -105dBm, frequency < 200MHz) |
| | Harmonic | <-30dBc (output level ≤ +4dBm) |
| | Non harmonics | <-40dBc (output level ≤ +4dBm, frequency departure of carrier wave ≥ 5kHz) |
| Sub harmonics | <-40dBc (output level ≤ +4dBm) | |
| Residual FM | <100Hz | |
| Frequency modulation | Deviation | 0~100kHz |
| | Resolving capability | 100Hz |
| | Accuracy | ±5% ±50Hz |
| | Modulation frequency | internal 1kHz or 400Hz |
| Amplitude modulation | Distortion | <5% |
| | Carrier frequency | ≥1.5MHz |
| | Depth | 0~70% (output level ≤ +4dBm, frequency ≤ 75MHz) 0~50% (output level ≤ +4dBm, frequency > 75MHz) (can be establish to 100%) |
| | Resolution | 1% (modulation degree ≥ 10%) 0.1% (modulation degree < 10%) |
| | Accuracy | ±(1.5%+7% set value) |
| | Modulation frequency | Internal 1kHz or 400Hz; external: 20Hz to 10kHz |
| | Distortion | <5% |
| | Surplus AM | <0.1% |

HF SIGNAL GENERATOR

| Technical Data | | HG1462 (A/B/C) |
|-------------------|--|--|
| FSK | Modulation signal | External TTL level |
| | FSK modulation frequency | <25kHz (100kHz~20MHz) <50kHz (20MHz~75MHz) <2kHz (75MHz~450MHz) |
| | Sweep frequency | 10ms~1000ms |
| | Sweep step | 10ms |
| | Frequency range | 0.1MHz~75MHz, 75MHz~140MHz, 140MHz~260MHz, 260MHz~360MHz, 360MHz~450MHz |
| Modulation source | Impedance | 600Ω (BNC) |
| | Internal modulation source output | Frequency: 1kHz or 400Hz; Amplitude:1Vpk |
| | External modulation source input | Amplitude:0~1Vpk |
| Interface | RS-232 (standard), GP-IB (optional) | |
| Power source | 110 ~ 127VAC±10%/220 ~ 240VAC±10%, 50Hz±2Hz/60Hz±2Hz | |
| Dimensions(W×H×D) | 250×120×400 mm | |
| Weight | 3kg | |

POWER SUPPLY

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HF SIGNAL GENERATOR

HG2461 SERIES



Features

- .Signal frequency up to 600MHz
- .DDS Technology provides for a superior signal with low distortion and high stability
- .Both RF output and function output
- .3.5" QVGA color LCD and soft keys
- .Produced by SMT, smart metal case
- .1 μ Hz frequency resolution
- .RS 232 interface and USB, GPIB optional
- .Versatile modulation
AM, FM, PM, FSK, PSK, Sweep, Burst
- .Variety of waveforms
Sine, square, pulse, triangle, ramp



HG2461 I

Technical Data

HG2461 I/II/III/IV/V

| RF output (output A) | | 100 μ Hz~80MHz | HG2461 I |
|---------------------------|----------------------|--|---|
| Frequency range | | 100 μ Hz~110MHz | HG2461 II |
| | | 100 μ Hz~150MHz | HG2461 III |
| | | 100 μ Hz~200MHz | HG2461 IV |
| | | 100 μ Hz~300MHz | HG2461 V |
| | | 100 μ Hz~600MHz | HG2461 VI |
| | Frequency resolution | | 1 μ Hz |
| | | 1Hz | >80MHz |
| Frequency stability | | $\leq 5 \times 10^{-6}$ | |
| RF output level | | -127dBm~+13dBm | |
| RF output resolution | | 0.1dB | |
| Attenuator accuracy | | ± 2 dB | |
| Output impedance | | 50 Ω , VSWR<1.5 | |
| Spectral purity | Harmonic | <-30dBc | (output level \leq +4dBm) |
| | Non harmonic | <-40dBc | (output level \leq +4dBm, deviation>5kHz) |
| | Sub harmonic | <-40dBc | (output level \leq +4dBm) |
| | Residual FM | <100Hz | |
| AM Modulation | Frequency | int. 100mHz~10kHz | |
| | | ext. 20Hz~10kHz | |
| | Depth | 0~120% | (fc \leq 80MHz, level \leq +4dBm) |
| | | 0~80% | (fc>80MHz, level \leq +4dBm) |
| FM Modulation | Resolution | 0.1% | |
| | Frequency | int. 100 μ Hz~10kHz | (fc \leq 80MHz) |
| | | int. 100 μ Hz~1kHz | (fc>80MHz) |
| | Deviation | fc/2 | (fc \leq 80MHz) |
| | | 1 μ Hz~100kHz | (fc>80MHz) |
| Pulse Modulation (option) | Resolution | 100Hz | |
| | Carrier frequency | \geq 9kHz | |
| | Frequency | ext. DC~10MHz (TTL level) | |
| | Rise and fall | <15nS | |
| FSK Modulation | On/Off | >65dB | |
| | F1, F2 range | 100 μ Hz~80MHz | (FSK rate<10kHz) |
| | | 80.000001MHz~120MHz | (FSK rate<2kHz) |
| | | 120.000001MHz~200MHz | (FSK rate<2kHz) |
| | | 200.000001MHz~300MHz | (FSK rate<2kHz) |
| Control mode | | internal and external (TTL level, low-F1, high-F2) | |

POWER SUPPLY

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HF SIGNAL GENERATOR

| Technical Data | | HG2461 I/II/III/IV/V | |
|--|--|--|--|
| PSK Modulation | Carrier frequency | <80MHz | |
| | P1, P2 range | 0~360° | |
| | Resolution | 0.1° | |
| | Alternation | 0.1ms~800s | |
| | Control mode | internal and external (TTL level, high-P2, low-P1) | |
| Burst Modulation | Carrier frequency | <80MHz | |
| | Burst count | 1~10000 cycle ($\leq 800 \cdot f_c$) | |
| | Alternation | 0.1ms~800s | |
| | Control mode | internal | |
| | | single external (TTL level) | |
| Sweep | Sweep rate | 1ms~800s (lin., $f_c \leq 80\text{MHz}$) | |
| | | 100ms~800s (log., $f_c \leq 80\text{MHz}$) | |
| | Stepping time | 10ms~800s ($f_c > 80\text{MHz}$) | |
| | Frequency range | 100 μ Hz~80MHz | |
| | | 80.000001MHz~120MHz | |
| | | 120.000001MHz~200MHz | |
| | Sweep mode | 200.000001MHz~300MHz | |
| lin. and log. ($f_c \leq 80\text{MHz}$) Stepping ($f_c > 80\text{MHz}$) | | | |
| MOD Signal output | Frequency | 100mHz~10kHz | |
| | Waveform | sine | |
| | Amplitude | 5Vp-p $\pm 2\%$ | |
| | Impedance | 620 Ω | |
| Function output (output B) | | | |
| Frequency range | 100 μ Hz~2MHz | | |
| Resolution | 100 μ Hz | | |
| Accuracy | $\pm 5 \times 10^{-6}$ | | |
| Amplitude (sine) | 100mVp-p~6Vp-p (high impedance) | | |
| | 50mVp-p~3Vp-p (50 Ω) | | |
| Resolution | $\pm 0.1\text{mVp-p}$ | | |
| Accuracy | $\leq 5\% \pm 5\text{mVp-p}$ ($f \leq 100\text{kHz}$) | | |
| Distortion | 1% (2Vp-p, 1kHz) | | |
| Impedance | 50 Ω | | |
| Waveform | Sine, square, triangle, ramp, pulse (rise and fall time $\leq 500\text{nS}$) | | |
| A/B sine phase range | 0.0~360.0° | | |
| Power supply | 110~127 VAC $\pm 10\%$, 220~240VAC $\pm 10\%$ 50Hz $\pm 2\text{Hz}$, 60Hz $\pm 2\text{Hz}$ | | |
| Dimensions(W×H×D) | 255×170×370mm | | |
| Weight | 4kg | | |

POWER SUPPLY

TEST INSTRUMENT

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DC ELECTRONIC LOAD

ELD8600 SERIES



NEW

Features

- .Four working functions: CV/CC/CR/CP
- .Nine working modes: CVH/CVL/CCH/CCL/CRH/CRM/CRL/CPV/CPC
- .Voltage and current test function
- .Four parameters display
- .Complete protection
- .Two type terminals



ELD8630-I

| Technical Data | ELD8615-I | ELD8630-I | ELD8630-II | ELD8630-III |
|----------------------|---|---------------------------------|---------------------------------|--------------------------------|
| Rated Value | | | | |
| Power | 150W | 300W | 300W | 300W |
| Voltage | 0~150V | 0~150V | 0~150V | 0~500V |
| Current | 0~30A | 0~30A | 0~60A | 0~15A |
| Mov | 1.5V | 0.82V | 1.2V | 3.8V |
| CV Model | | | | |
| Lower range | | 0~30V | | |
| Resolution | | 10mV | | |
| Accuracy | | $\pm(0.05\%+0.02\%FS)$ | | |
| Higher range | 0~150V | 0~150V | 0~150V | 0~500V |
| Resolution | | 100mV | | |
| Accuracy | | $\pm(0.05\%+0.025\%FS)$ | | |
| CC Model | | | | |
| Lower range | 0~3A | 0~3A | 0~6A | 0~1.5A |
| Resolution | | 10mA | | |
| Accuracy | | $\pm(0.1\%+0.1\%FS)$ | | |
| Higher range | 0~30A | 0~30A | 0~60A | 0~15A |
| Resolution | | 100mA | | |
| Accuracy | | $\pm(0.1\%+0.15\%FS)$ | | |
| CR Model | (Input voltage and current $\geq 5\%$ full range) | | | |
| Lower range(VH CRL) | $\approx 0.06 \sim 9 \Omega$ | $\approx 0.06 \sim 6 \Omega$ | $\approx 0.04 \sim 6 \Omega$ | $\approx 0.03 \sim 36 \Omega$ |
| Resolution | $150 \mu \Omega$ | $100 \mu \Omega$ | $100 \mu \Omega$ | $600 \mu \Omega$ |
| Accuracy(Z) | | $\pm(0.5\%+0.5\%FS)$ | | |
| Middle range(VH CRM) | $\approx 9 \sim 900 \Omega$ | $\approx 6 \sim 600 \Omega$ | $\approx 6 \sim 600 \Omega$ | $\approx 36 \sim 3600 \Omega$ |
| Resolution | $1.8 \mu s$ | $2.7 \mu s$ | $2.7 \mu s$ | $0.45 \mu s$ |
| Accuracy(Y) | | $\pm(1\%+1\%FS)$ | | |
| Higher range(VH CRH) | $\approx 90 \sim 4000 \Omega$ | $\approx 60 \sim 4000 \Omega$ | $\approx 60 \sim 4000 \Omega$ | $\approx 360 \sim 4000 \Omega$ |
| Resolution | $0.20 \mu s$ | $0.30 \mu s$ | $0.30 \mu s$ | $0.051 \mu s$ |
| Accuracy(Y) | | $\pm(1.5\%+1.5\%FS)$ | | |
| Lower range(VL CRL) | $\approx 0.06 \sim 1.8 \Omega$ | $\approx 0.06 \sim 1.12 \Omega$ | $\approx 0.04 \sim 1.12 \Omega$ | $\approx 0.3 \sim 2.4 \Omega$ |
| Resolution | $29 \mu \Omega$ | $18 \mu \Omega$ | $18 \mu \Omega$ | $38 \mu \Omega$ |
| Accuracy(Z) | | $\pm(0.5\%+0.5\%FS)$ | | |
| Middle range(VL CRM) | $\approx 1.8 \sim 180 \Omega$ | $\approx 1.12 \sim 112 \Omega$ | $\approx 1.12 \sim 112 \Omega$ | $\approx 2.4 \sim 240 \Omega$ |
| Resolution | $9.0 \mu s$ | $15 \mu s$ | $15 \mu s$ | $6.8 \mu s$ |
| Accuracy(Y) | | $\pm(1\%+1\%FS)$ | | |
| Higher range(VL CRH) | $\approx 18 \sim 2000 \Omega$ | $\approx 11.2 \sim 2000 \Omega$ | $\approx 11.2 \sim 2000 \Omega$ | $\approx 24 \sim 2000 \Omega$ |
| Resolution | $1.0 \mu s$ | $1.6 \mu s$ | $1.6 \mu s$ | $0.78 \mu s$ |
| Accuracy(Y) | | $\pm(1.5\%+1.5\%FS)$ | | |

POWER SUPPLY

TEST INSTRUMENT

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DC ELECTRONIC LOAD

| Technical Data | ELD8615-I | ELD8630-I | ELD8630-II | ELD8630-III |
|--------------------------|--|-----------------------------------|------------|-------------|
| CP Model | (Input voltage and current $\geq 5\%$ full range) | | | |
| Lower range | | 0~100W | | |
| Resolution | | 10mW | | |
| Accuracy | | $\pm(1\%+0.1\%FS)$ | | |
| Higher range | 100~150W | 100~300W | 100~300W | 100~300W |
| Resolution | | 100mW | | |
| Accuracy | | $\pm(1\%+0.1\%FS)$ | | |
| Current Measure | | | | |
| Lower range | 0~3A | 0~3A | 0~6A | 0~1.5A |
| Resolution | | 10mA | | |
| Accuracy | | $\pm(0.1\%+0.1\%FS)$ | | |
| Higher range | 0~30A | 0~30A | 0~60A | 0~15A |
| Resolution | | 10mA | | |
| Accuracy | | $\pm(0.1\%+0.15\%FS)$ | | |
| Voltage Measure | | | | |
| Lower range | | 0~30V | | |
| Resolution | | 10mV | | |
| Accuracy | | $\pm(0.05\%+0.02\%FS)$ | | |
| Higher range | 0~150V | 0~150V | 0~150V | 0~500V |
| Resolution | | 100mV | | |
| Accuracy | | $\pm(0.05\%+0.025\%FS)$ | | |
| Power Measure | (Input voltage and current $\geq 10\%$ full range) | | | |
| Lower range | | 0~100W | | |
| Resolution | | 10mW | | |
| Accuracy | | 1%+0.1%FS | | |
| Higher range | 100~150W | 100~300W | 100~300W | 100~300W |
| Resolution | | 100mW | | |
| Accuracy | | 1%+0.1%FS | | |
| Power Source | | AC115V/AC230V $\pm 10\%$,48~63Hz | | |
| Weight | 5.2kg | 6.7kg | 6.7kg | 6.7kg |
| Dimension (W×H×D) | 215mm×89mm×412mm | | | |

| Technical Data | ELD8660-I | ELD8660-II | ELD8660-III |
|--------------------|-----------|-------------------------|-------------|
| Rated Value | | | |
| Power | | 600W | |
| Voltage | 0~150V | 0~150V | 0~500V |
| Current | 0~60A | 0~120A | 0~30A |
| Mov | 0.9V | 1.6V | 4.2V |
| CV Model | | | |
| Lower range | | 0~30V | |
| Resolution | | 10mV | |
| Accuracy | | $\pm(0.05\%+0.02\%FS)$ | |
| Higher range | 0~150V | 0~150V | 0~500V |
| Resolution | | 100mV | |
| Accuracy | | $\pm(0.05\%+0.025\%FS)$ | |
| CC Model | | | |
| Lower range | 0~6A | 0~12A | 0~3A |
| Resolution | | 10mA | |
| Accuracy | | $\pm(0.1\%+0.1\%FS)$ | |
| Higher range | 0~60A | 0~120A | 0~30A |
| Resolution | | 100mA | |
| Accuracy | | $\pm(0.1\%+0.15\%FS)$ | |

POWER SUPPLY

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| Technical Data | ELD8660-I | ELD8660-II | ELD8660-III |
|--------------------------|------------|---------------------------|-------------|
| CR Model | | | |
| Lower range(VH CRL) | ≈0.02~3Ω | ≈0.015~1.5Ω | ≈0.15~18Ω |
| Resolution | 50 μΩ | 25 μΩ | 300 μΩ |
| Accuracy(Z) | | ±(0.5%+0.5%FS) | |
| Middle range(VH CRM) | ≈3~300Ω | ≈1.5~150Ω | ≈18~1800Ω |
| Resolution | 5.4 μs | 10 μs | 0.90 μs |
| Accuracy(Y) | | ±(1%+1%FS) | |
| Higher range(VH CRH) | ≈30~4000Ω | ≈150~4000Ω | ≈180~4000Ω |
| Resolution | 0.20 μs | 1.2 μs | 0.10 μs |
| Accuracy(Y) | | ±(1.5%+1.5%FS) | |
| Lower range(VL CRL) | ≈0.02~1.6Ω | ≈0.015~0.3Ω | ≈0.15~1.2Ω |
| Resolution | 9.6 μΩ | 4.8 μΩ | 19 μΩ |
| Accuracy(Z) | | ±(0.5%+0.5%FS) | |
| Middle range(VL CRM) | ≈0.6~60Ω | ≈0.3~30Ω | ≈1.2~120Ω |
| Resolution | 27 μs | 54 μs | 14 μs |
| Accuracy(Y) | | ±(1%+1%FS) | |
| Higher range(VL CRH) | ≈6.0~2000Ω | ≈3.0~2000Ω | ≈12~2000Ω |
| Resolution | 3.0 μs | 6.1 μs | 1.5 μs |
| Accuracy(Y) | | ±(1.5%+1.5%FS) | |
| CP Model | | | |
| Lower range | | 0~100W | |
| Resolution | | 10mW | |
| Accuracy | | ±(1%+0.1%FS) | |
| Higher range | | 100~600W | |
| Resolution | | 100mW | |
| Accuracy | | ±(1%+0.1%FS) | |
| Current Measure | | | |
| Lower range | 0~6A | 0~12A | 0~3A |
| Resolution | | 10mA | |
| Accuracy | | ±(0.1%+0.1%FS) | |
| Higher range | 0~60A | 0~120A | 0~30A |
| Resolution | | 100mA | |
| Accuracy | | ±(0.1%+0.15%FS) | |
| Voltage Measure | | | |
| Lower range | | 0~30V | |
| Resolution | | 10mV | |
| Accuracy | | ±(0.05%+0.02%FS) | |
| Higher range | 0~150V | 0~150V | 0~500V |
| Resolution | | 100mV | |
| Accuracy | | ±(0.05%+0.025%FS) | |
| Power Measure | | | |
| Lower range | | 0~100W | |
| Resolution | | 10mW | |
| Accuracy | | 1%+0.1%FS | |
| Higher range | | 100~600W | |
| Resolution | | 1000mW | |
| Accuracy | | 1%+0.1%FS | |
| Power Source | | | |
| | | AC115V/AC230V±10%,48~63Hz | |
| Weight | | | |
| | | 9kg | |
| Dimension (W×H×D) | | | |
| | | 215mm×89mm×507mm | |

LCR METER

BR3812C



Features

- .Max. Testing frequency 7.8kHz
- .Measuring parts type auto detect
- .Serial and parallel connection
- .Compact casing design



BR3812C

| Technical Data | | BR3812C | |
|---|-----------------------------|---------------------|--|
| Measuring range | L | 100Hz | 1 μH~9999H |
| | | 1kHz | 0.1 μH~999.9H |
| | | 7.8kHz | 0.01 μH~99.99H |
| | C | 100Hz | 100pF~200mF |
| | | 1kHz | 10pF~20mF |
| | | 7.8kHz | 0.5pF~2mF |
| | | R | N/A |
| Q | N/A | 0.01~999 | |
| D | N/A | 0.01%~999% | |
| Measuring accuracy | L | 100Hz | $\pm [1\mu H + 0.5\%(1+L/2000H + 2mH/L)](1+1/Q)$ |
| | | 1kHz | $\pm [0.1\mu H + 0.5\%(1+L/200H + 0.2mH/L)](1+1/Q)$ |
| | | 7.8kHz | $\pm [0.01\mu H + 0.5\%(1+L/10H + 0.04mH/L)](1+1/Q)$ |
| | C | 100Hz | $\pm [1pF + 0.5\%(1+1000pF/Cx + Cx/1000\mu F)](1+Dx)$ |
| | | 1kHz | $\pm [0.1pF + 0.55\%(1+100pF/Cx + Cx/100\mu F)](1+Dx)$ |
| | | 7.8kHz | $\pm [0.01pF + 0.5\%(1+20pF/Cx + Cx/4\mu F)](1+Dx)$ |
| | R | N/A | $\pm [1 M\Omega + 0.5\%(1+R/2M\Omega + 2\Omega/R)](1+Q)$ |
| | Q | 100Hz, 1kHz | $\pm [0.5 + 0.25(Qx + 1/Qx)]\%$ |
| | | 7.8kHz | $\pm [0.5 + 0.30(Qx + 1/Qx)]\%$ |
| | D | 100Hz, 1kHz | $\pm 0.010(1+Dx^2)$ |
| 7.8kHz | | $\pm 0.015(1+Dx^2)$ | |
| Measuring signal level | 0.4Vp-p±10% (no load) | | |
| Measuring speed | 200ms | | |
| Working temperature and relative humidity | 0℃~40℃, ≤85%RH | | |
| Power supply | 220V±10%, 50Hz±5% | | |
| Dimensions (W×H×D) | 330×100×310 mm ³ | | |
| Weight | 3.3kg | | |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

LCR METER

BR4822



NEW

Features

- .Max. Testing frequency 10kHz
- .Measuring parts type auto detect
- .Serial and parallel connection
- .Compact casing design



BR4822

| Technical Data | | BR4822 | |
|---|-----|-----------------|---------------------------------|
| Measuring range | L | 100Hz/120Hz | 0~1000.0H |
| | | 1kHz | 0~100.00H |
| | | 10kHz | 0~999.99mH |
| | C | 100Hz/120Hz | 0~20.000mF |
| | | 1kHz | 0~999.99 μ F |
| | | 10kHz | 0~100.00 μ F |
| | | R | N/A |
| Q | N/A | 0~9999 | |
| D | N/A | 0~9.999 | |
| θ | N/A | -179.9° ~179.9° | |
| Measuring accuracy | | | 0.2% |
| Equivalent mode | | | Series, Parallel |
| Auto LCR function | | | Manual, Auto |
| Correction | | | Short, Open |
| Tolerance mode | | | 1%,5%,10%,20% |
| Output Impedance | | | 100Ω |
| Measuring signal level | | | 0.1Vrms,0.3Vrms,1.0Vrms |
| Measuring speed | | | 10meas/sec, 5meas/sec,2meas/sec |
| Working temperature and relative humidity | | | 0°C~40°C, ≤75%RH |
| Power supply | | | 220V±10%, 50Hz±5% |
| Dimensions (W×H×D) | | | 215mm×88mm×232mm |
| Weight | | | 1.5kg |

POWER SUPPLY

TEST INSTRUMENT

EDU. INSTRUMENT

METER

MACHINE

ACCESSORY

DISTORTION METER

DTM4120/DTM4121 SERIES



Features

- .Auto range and distortion measurement
- .Build in extremely low distortion oscillator (DTM4120)
- .100%~0.01% Distortion range
- .10Hz~109kHz (imbalance) Frequency range
- .400Hz, 1kHz, 10kHz 3spot frequency



DTM4120

| Technical Data | DTM4120/DTM4121 | | | |
|------------------------|---|--|--------------------|--|
| Distortion measurement | Distortion range | 20Hz~20kHz: | 30%~0.01% | |
| | | 10kHz~109kHz: | 30%~0.03% | |
| | | 300Hz~5kHz: | ±7% full scale | |
| | Accuracy | 20Hz~20kHz: | ±10% full scale | |
| | | 10Hz~109kHz: | ±15% full scale | |
| | | 300Hz~5kHz: | 0.015% | |
| Residual distortion | 20Hz~20kHz: | 0.025% | | |
| | 10Hz~109kHz: | 0.035% | | |
| | 300Hz~5kHz: | 0.015% | | |
| Input level | 50mV~100V(DTM4120) | | | |
| | 50mV~300V(DTM4121) | | | |
| Voltage range | 300 μV~300V (DTM4120 needs an attenuator for >100V) | | | |
| | Accuracy ±5% full scale | | | |
| AC voltage measurement | Residual noise | ≤0.5dB | | |
| | | 5Hz~300kHz: | ≤1dB | |
| | | at 300V: | 20Hz~20kHz: ≤0.5dB | |
| | 10Hz~100kHz: | | ≤1dB | |
| | Frequency range | | 5Hz~300kHz | |
| | Residual noise | | 50 μV | |
| Max. S/N | | 120dB | | |
| Input impedance | | 100kΩ//100pF | | |
| Oscillator (DTM4120) | Frequency range | | 10Hz~109kHz | |
| | Accuracy 0.05%±1Hz | | | |
| | Distortion | 300Hz~5kHz | 0.005% | |
| | | 20Hz~20kHz | 0.015% | |
| | | 10Hz~109kHz | 0.07% | |
| | Output voltage | | 3Vrms (1MΩ load) | |
| Output impedance | | 600Ω | | |
| Power supply | | 110~127VAC±10%/220~240VAC±10%, 50Hz±2Hz/60Hz±2Hz | | |
| Dimension (W×H×D) | | 350×120×340mm | | |
| Weight | | 5kg | | |

POWER SUPPLY

TEST INSTRUMENT

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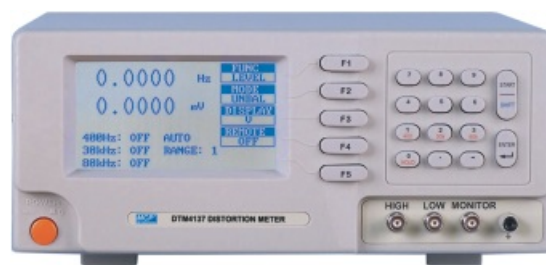
METER

MACHINE

ACCESSORY

DISTORTION METER

DTM4137 SERIES



DTM4137

Features

- .Auto range and LED display
- .100%~0.005% Distortion range
- .10Hz~150kHz (imbalance), 10Hz~100kHz (balance)
- .Frequency range
- .Measurement function: distortion, S/N, SINAD, voltage_(RMS), frequency

| Technical Data | DTM4137 | |
|--|--|--|
| Fundamental frequency range | Imbalance: | 10Hz~150kHz |
| | Balance: | 10Hz~100kHz |
| Input level | 50mV~300V | |
| | 300mV~300V, 20Hz~100Hz: | 100%~0.03% |
| Distortion range | 300mV~300V, 100Hz~100kHz: | 100%~0.01% |
| | 300mV~300V, 100kHz~150kHz: | 100%~0.03% |
| | 20Hz~20kHz: | ±0.5dB |
| Accuracy | 10Hz~150kHz: | ±1dB |
| | Distortion less than 0.03%: | ±2dB |
| | Input impedance | 100k Ω//100pF |
| Remains distortion and noise (Input level ≥1Vrms) | 20Hz~20kHz: | ≤0.0055% |
| | 10Hz~50kHz: | ≤0.0092% |
| | 50kHz~110kHz: | ≤0.0125% |
| | 100kHz~150kHz: | ≤0.016% |
| Display accuracy (%) | 10%~100%: | 0.1% |
| | 1%~9.99%: | 0.01% |
| | 0.1%~0.099%: | 0.001% |
| | <0.1%: | 0.0001% |
| Display accuracy (dB) | 0.01dB | |
| AC voltage measurement | Voltage range | 300 μV~300V |
| | Frequency range | 10Hz~750kHz (imbalance), 10Hz~300kHz (balance) |
| S/N measurement | S/N measurement range | 0~99.99dB |
| | Frequency range | 10Hz~750kHz |
| SINAD measurement | SINAD measurement range | 0dB~80dB |
| | Frequency range | 10Hz~150kHz (imbalance), 10Hz~100kHz (balance) |
| Power supply | 110~127VAC±10%/220~240VAC±10%, 50Hz±2Hz/60Hz±2Hz | |
| Dimension (W×H×D) | 350×120×340mm | |
| Weight | 5kg | |

POWER SUPPLY

TEST INSTRUMENT

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ACCESSORY

TRANSISTOR CURVE TRACER

QT4810 SERIES

Features

- Clear feature curves
- Double cluster display circuit for multiple current amplification
- Max. step potential source output is up to 2V/STAGE
- Conjugation function for the parallel FET



QT4810A

| Technical data | | QT4810A |
|---|--|--|
| Deflection coefficient of vertical axis | Scope of collector current(I_C) | 20 μ A/div~1A/div, divided into 15 grades, error is not more than $\pm 3\%$ 0.2 μ A/div~1A/div, divided into 6 grades |
| | Reversal drain current of diode(I_R) | 2 μ A/div~10 μ A/div, error is not more than $\pm 3\%$ 0.2 μ A/div~1 μ A/div, error is not more than $\pm 10\%$ |
| | | 0.2 μ A/div, interfere ≤ 0.5 V/div |
| | Base current or base voltage | 20mV/div, error $\leq \pm 3\%$, deflection multiplying factor $\times 0.5$, error $\leq \pm 10\%$ |
| Deflection coefficient of horizontal axis | Scope of collector voltage | 0.05V/div~500V/div divided into 10 grades, error $\leq \pm 3\%$ |
| | Scope of drain current voltage of diode | 100V/div~500V/div divided into 3 grades, error $\leq \pm 5\%$ (for matching 5kV test floor) |
| | Scope of base voltage | 0.05V/div~2V/div, divided into 6 grades, error $\leq \pm 3\%$ |
| | Base current or base source voltage | 0.1V/div, error $\leq \pm 3\%$ |
| Step signal | Scope of step current | 1 μ A/STAGE~0.1A/STAGE, divided into 16 grades, error $\leq \pm 5\%$ |
| | Scope of step voltage | 0.05V/STAGE~2V/STAGE, divided into 6 grades, error $\leq \pm 5\%$ |
| | Stage number per cluster | 4~10 stages continuously adjustable |
| | Step zeroing | Not less than ± 1 DIV |
| | Step number per second | 200 (commercial frequency: 50Hz) |
| | Step polarity | Positive or negative |
| Collector sweep supply | Step form | Continuous or single cluster |
| | Max. current or power of sweep supply each grade | 0~5V grade: 10A |
| | | 0~20V grade: 2.5A |
| | | 0~100V grade: 0.5A |
| Dissipation resistance | 0~500V grade: 0.1A | |
| | 0~500k Ω , divided into 11 ranges 2.5~100k Ω , divided into 6 ranges 10 Ω ~500k Ω , error $\leq \pm 10\%$ 0.5 Ω ~2.5 Ω , error $\leq \pm 20\%$ | |
| Power source | 220VAC $\pm 10\%$, 50Hz ± 2 Hz | |
| Dimensions(W \times H \times D) | 240 \times 330 \times 480mm | |
| Weight | 13.5kg | |

POWER SUPPLY

TEST INSTRUMENT

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METER

MACHINE

ACCESSORY

DIGITAL STORAGE TRANSISTOR CURVE TRACER

QT4818A

Features

- .Store characteristic curves and panel setting parameters
- .Programmable test conditions ,measured results PC stored
- .Three cursor measurement modes: point, line, window
- .Two cluster characteristic curves display simultaneously for compare and pairing
- .Screen read out β , gm, Vce, Ic, breakdown voltage, leakage current and other parameters
- .Repeat and single measurement
- .Self-checking function
- .7 Inch high-resolution TFT color LCD
- .Standard interface: USB, RS232, LAN



QT4818A

| Technical data | | QT4818A |
|---|----------------------------------|---|
| Deflection coefficient of vertical axis | Collector current (Ic) range | 1uA/div~2A/div |
| | Cursor accuracy | ≤2% Rdg+0.1 vertical scale grid |
| Deflection coefficient of horizontal axis | Collector voltage (Vce) range | 50mV/div ~500V/div |
| | Step voltage (Vbe) range | 50mV~5V/div |
| | Step voltage (Vbe) accuracy | ≤0.1 horizontal scale grid |
| Step signal | Number | 10 steps |
| | Polarity | positive, negative |
| | Bias voltage range | 0 ~ ±20V |
| | Current scope | 1uA~0.2A/div (at 1-2-5 sequence) |
| | Maximum current | 2A |
| Collector | Voltage scope | 100mV~2V/div (at 1-2-5 sequence) |
| | Maximum voltage | 40V |
| | Output current | 5A |
| Interface | Peak voltage | 10V/100V/500V/3KV |
| | Source type | Full wave /DC / AC, positive / negative |
| Power source | USB Host, USB Device, RS232, LAN | |
| Dimensions(W×H×D) | 220VAC±10%, 50Hz±2Hz | |
| Weight | 375×390×230mm | |
| | 30kg | |

UMC4110



Features

- . Four different unit in one casing
- . 10MHz function generator
- . 0~30V/0~3A power supply
- . 1~2.7GHz frequency counter
- . 11 functions digital multimeter



UMC4110

Function generator unit

| | |
|------------------------------------|---|
| Output waveforms | Sine, square, triangle, ramp, pulse, TTL, CMOS |
| Output frequency | 0.2Hz~10MHz in 8 ranges |
| Output impedance | 50 Ω ±10%/600 Ω ±10% |
| VCF input voltage | -5~+5VDC |
| Output attenuation | -20dB, -40dB, -60dB |
| Output amplitude | 200mVp-p~20Vp-p (1M Ω), 100mVp-p~10Vp-p (50 Ω) |
| DC offset | -10V~+10V(1M Ω), -5V~+5V(50 Ω) |
| Sine wave distortion factor | <0.8% (at 1kHz) |
| Square wave rise or fall time | <20ns (10Vp-p, 2MHz) |
| Symmetry | 20%~80% |
| Triangle wave linear | >90%(≤100kHz) |
| TTL, CMOS output rise or fall time | <30ns (1kHz) |
| TTL output level | >3V |
| Sweep time | 10ms~5s |
| Sweep mode | Lin./Log. |
| Sweep ratio | 2 |
| Internal modulation | FSK: 0~5% frequency deviation |
| 1kHz modulation frequency | FM: 0~5% modulation deviation AM: 0~100% modulation depth |
| External modulation | FM: 0~5% modulation deviation |
| input amplitude:0~2V | AM: 0~100% modulation depth |
| input impedance:100k Ω | |
| input period:10ms~5s | |
| Frequency stability | ±0.1%/min |
| Frequency display | Range: 0.200Hz~2000kHz Digit: 5 (10.000Hz~20000kHz), 4 (0.200Hz~9.999Hz) |
| Amplitude display | Digit: 3 Unit: Vp-p, mVp-p, Vrms, mVrms |

Frequency counter unit

| | CH-A | CH-B |
|----------------------|--|---------------|
| Frequency range | 1Hz~100MHz | 100MHz~2.4GHz |
| Period range | 100ns~1s | |
| Input sensitivity | 35mV(1~20Hz) 20mV(20Hz~100MHz) | 30mV |
| Max. input voltage | 25V | 1Vrms |
| LPF | -3dB at 100kHz | |
| Attenuation | -20dB | |
| Gate time | 1s, 10s | |
| Input impedance | 1M Ω | 50 Ω |
| Couple mode | AC | |
| Measurement accuracy | ±time base error, ±trigger error, ±LSD | |

POWER SUPPLY

TEST INSTRUMENT

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METER

MACHINE

ACCESSORY

UNIVERSAL MEASURING CENTER

Power supply unit

CH1

| | | | |
|---------------------|---|-----------------|-----------------|
| Output voltage | Fixed 5V | Fixed $\pm 15V$ | 0~30V |
| Output current | 2A | 1A | 0~3A |
| Ripple & Noise | <2mVrms | <2mVrms | <1mVrms |
| Load regulation | 0.1% \pm 70mV | 0.1% \pm 50mV | 0.1% \pm 40mV |
| Line regulation | 0.1% \pm 30mV | 0.1% \pm 30mV | 0.1% \pm 20mV |
| Max. output current | 2.2A | 1.2A | 3.3A |
| Display accuracy | Voltmeter: $\pm(1\%+2\text{digits})$ Ampmeter: $\pm(2\%+2\text{digits})$ | | |

Digital multimeter unit

Range

Resolution

Accuracy

| | | | |
|-----------------------|---|--|-------------------------------|
| DC voltage | 200mV/2V/20V/200V/1000V | 10uV/0.1mV/1mV/10mV/0.1V | $\pm(0.05\%+3\text{digits})$ |
| AC voltage | 200mV/2V/20V/200V/750V | 10uV/0.1mV/1mV/10mV/0.1V | $\pm(0.8\%+80\text{digits})$ |
| DC current | 20mA/200mA/2A/20A | 1uA/10uA/0.1mA/1mA | $\pm(0.35\%+10\text{digits})$ |
| AC current | 200mA/2A/20A | 10uA/0.1mA/1mA | $\pm(0.8\%+80\text{digits})$ |
| Resistance | 200 Ω /2k Ω /20k Ω /200k Ω /2M Ω /20M Ω | 10m Ω /0.1 Ω /1 Ω /10 Ω /100 Ω /1k Ω | $\pm(0.15\%+5\text{digits})$ |
| Diode test | | ✓ | |
| On/Off buzzer | | ✓ | |
| OV OC protection | | ✓ | |
| Input resistance | | 10M Ω | |
| AC frequency response | | 40Hz-50kHz | |
| Max. display | | 19999 | |

Power supply: 110~127VAC \pm 10%/220~240VAC \pm 10%, 50Hz \pm 2Hz/60Hz \pm 2Hz
 Dimensions(W×H×D): 70×165×360(mm)
 Weight: 12.5kg

POWER SUPPLY

TEST INSTRUMENT

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METER

MACHINE

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