

**scientific**<sup>®</sup>

*Since 1963*



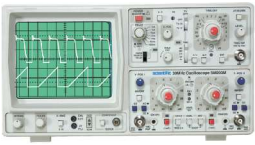
- ✓ Reliability
- ✓ Repeatability
- ✓ Performance
- ✓ Value

- Test & Measuring Instruments
- Power Supplies
- EMI & EMC Solutions
- Electrical Test Instruments

**2019-20**

Compact Catalogue

## Oscilloscopes / DSOs / MSOs



**Analog Oscilloscopes**  
30MHz, Dual Channel  
1mV Sensitivity, 2/4 trace  
Built in Frequency Counter



**DSO : SMO1000 Series**  
50 -100MHz Dual Channel  
RTS 1GSa/s, Memory 2Mpts  
PC Interfacing Software



**DSO : SMO1000E Series**  
100 / 200MHz Dual Channel  
RTS 1GSa/s, Memory 14Mpts  
Serial Decode/Trigger Function



**DSO/MSO : SMO1204E**  
200MHz, Four Channels, 1GSa/s  
Serial Decode, MSO Function,  
Bode plot, AWG, Web Control



**DSO/MSO : SMO1000A Series**  
100 / 200MHz with and without FG  
RTS 1GSa/s, Memory 14Mpts  
16 Channel Logic Input



**DSO/MSO : SMO2000X Series**  
70-300MHz, 2/4 Channels with FG  
RTS 2GSa/s, Memory 140Mpts  
16 Channel Logic Input



**DSO/MSO : SMO2000X-E Series**  
200 /350MHz, 2 Channels  
RTS 2GSa/s, Memory 28Mpts  
16 Channel Logic Input, Bode plot



**Handheld DSO**  
60-200MHz, Dual Isolated Channels  
RTS 1GSa/s, Memory upto 1Mpts  
Built in DMM

## Function/ Arbitrary Waveform Generators



**Function Generators**  
2/3/5/10MHz, Upto 20Vpp  
Internal Sweep Generator  
Built in Frequency Counter



**Arbitrary Waveform Generator**  
5 to120MHz, 1/ 2 Channels  
Sampling Rate upto 1.2GSa/s  
16 bit Vertical Resolution



**Arbitrary Waveform Generator**  
Upto 500MHz, 2 Channels  
Sampling Rate upto 2.4GSa/s  
16 bit Vertical Resolution



**Pulse Rider PG-1000 Series**  
2 / 4 Channel  
< 70 ps rise / fall time  
Output from 200mVpp to 500mVpp

## Digital Multimeters



**Hand Held Multimeters**  
3½ & 4½ Digital Display  
True RMS, Auto / Manual Ranging  
PC Interfacing Software



**Bench Top 4½ DMM**  
22000 Count Dual Display  
True RMS, Auto / Manual Ranging  
PC Interfacing Software



**Bench Top 5½ & 6½ DMM**  
Programmable True RMS  
240,000 & 2,200,000 Counts  
PC Interfacing Software



**Digital Power Meter**  
AC, DC, Power & Harmonic Analysis  
Voltage : 5V-600V  
Current : 10mA-40A

## LCR Meters & Impedance Analyzers



**Hand Held LCR Meter**  
L,C,R,|Z|,DCR,D,Q,θ,ESR  
Accuracy : 0.1%  
Test Freq :100,120Hz,1,10,100kHz



**Bench Top LCR Meters**  
L,C,R,|Z|,G,B,D,Q,θ,ESR  
Accuracy : 0.2%  
Test Freq : 100Hz - 25kHz



**Precision LCR Meters**  
L,C,R,|Z|,|Y|,X,B,G,D,Q,θ,DCR  
Accuracy : 0.05%  
Test freq : 100kHz-2MHz



**Impedance Analyzer**  
L,C,R,Q,Tan Delta,Z,θ  
Accuracy : 0.1%  
Test Freq : 1µHz-50MHz

## Spectrum Analyzers/EMC Precompliance Setup



**Spectrum Analyzers :**  
9kHz to 2.1 / 3.2GHz  
-161dBm DANL , Min. 10Hz RBW  
EMC Pre-compliance



**LISN**  
Upto 1500A,  
9kHz to 30MHz/150MHz  
CISPR16 / MIL461 / CISPR25



**Near Field Probe Set**  
DC-6GHz  
Preamplifier available  
For debugging application



**Transient Pulse Limiter**  
DC-200MHz  
10/20dB attenuation  
Output without Clipping 100dBμV

## Network Analyzers



**Compact & Full Size VNA**  
Freq. Range : 9kHz-18.0GHz  
Two/Four Ports  
Meas Speed : 100μs/point  
Upto 500001 meas point per sweep



**Cobalt Series**  
Freq. Range : 0.1MHz-20.0GHz  
Two/Four Ports  
Meas Speed : 10μs/point  
Upto 500001 meas point per sweep



**CobaltFX Extender Series**  
Freq. Range : 50GHz-110.0GHz  
Two/Four Ports  
Meas Speed : 10μs/point



**1 Port VNA / Reflectometer**  
Freq. Range : 1MHz-18GHz  
Single Port,  
S<sub>11</sub> as log magnitude DFT, Smith & more  
100001 measurement point / sweep

## Power Analyzers



**PPA500/1500 Series**  
Basic Accuracy 0.05%  
BW : DC-500kHz  
Sampling rate : 1MSa/s, No gap



**PPA3500 Series (6 Channels)**  
Basic Accuracy 0.04%  
BW : DC-1MHz  
Sampling rate : 1MSa/s, No gap

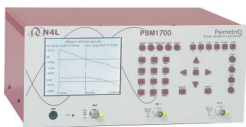


**PPA4500**  
Basic Accuracy 0.03%  
BW : DC-2MHz  
Sampling rate : 2.2MSa/s, No gap



**PPA5500**  
Basic Accuracy 0.01%  
BW : DC-2MHz  
Sampling rate : 2.2MSa/s, No gap

## Frequency Response Analyzers



**PSM1700**  
Freq. Range : DC-1MHz  
Basic Accuracy : 0.02dB, 0.02°  
Built in : LCR Meter, Vector Voltmeter, True RMS Voltmeter, Power Meter, Harmonic Analyzer in all PSM series



**PSM1735**  
Freq. Range : DC-35MHz  
Basic Accuracy : 0.01dB, 0.01°



**PSM3750**  
Freq. Range : DC-50MHz  
Basic Accuracy : 0.01dB 0.025°



**SFRA45**  
Freq. Range : 5Hz-45MHz  
Basic Accuracy : 0.02dB 0.05°  
Compliance to IEC 60076-18

## Data Loggers



**GL100 Series**  
Compact Handheld  
Temp./RH/Volt/Acc/  
CO<sub>2</sub>/Illuminance  
Wireless LAN option



**GL240/GL840 Series**  
10/20 Channels (Expandable upto 200)  
Upto 10ms Sampling interval  
7" Wide Colour LCD  
LAN, USB, SD Card



**GL980/GL2000 Series**  
Multifunction I/P on isolated 4/8 Ch  
Voltage : 10mV to 1000V  
Can be used as an X-Y recorder  
Software real time data capture



**GL7000 Series**  
Sampling Speed upto 1MSa/s  
4/8/112 channels expandable upto 1120 channels  
High Voltage 1000V  
Memory capacity upto 64GB SSD

## Power Supplies



**PSD3000 Series**  
0-30V DC, 0-5A DC  
Upto 195W, Single/Dual/Multiple  
Tracking Outputs



**PSD3210**  
0-32V DC / 0-10A DC  
320W, Single Output  
Load & Line Regulation : 0.01%



**PSD3210-2**  
2 x 0-32V DC / 2 x 0-10A DC  
640W, Dual Output  
Load & Line Regulation : 0.01%



**PSD4000 Series**  
0-32V DC / 0-3A DC  
Single/Dual/Trippl Output  
Load & Line Regulation : 0.01%

## Programmable DC Power Supplies



**PSD7000 Series :**  
0-32V / 0-5A DC  
Single / Multiple Output  
Arbitrary Function,  
USB, LAN, PC Software



**DCX / DCA Series : 400W**  
0-600V / 0-40A DC, Multi Ranging  
Power Arbitrary Function  
RS232, RS485, USB, Analog  
6 Units in single 19" rack



**DCX / DCA Series : 800W**  
0-1000V / 0-80A DC, Multi Ranging  
Power Arbitrary Function  
RS232, RS485, USB, LAN, Analog  
Single Phase, Rack Mount, 1U



**PS / PSA Series : 1600W**  
0-1000V / 0-80A DC  
Power Arbitrary Function  
RS232, RS485, USB, LAN, Analog  
Single Phase, Rack Mount, 1U



**ES150/300 Series : 150W/300W**  
0-300V / 0-10A DC,  
Analog Interface,  
Arbitrary Function, Remote Control,



**SM800 Series : 800W**  
0-400V / 0-80A DC  
Analog Interface,  
Arbitrary Function, Remote Control



**SM1500 Series : 1500W**  
0-400V / 0-100A DC, Auto Ranging  
Analog Interface, Arbitrary Function  
Single Phase, Rack Mount, 2U



**SM3300 Series : 3300W**  
0-660V / 0-220A DC, Auto Ranging  
Built in Ethernet with sequencer  
Single/Three Phase, Rack Mount, 2U



**SM6000 Series : 6000W**  
0-600V / 0-400A DC  
Analog Interface, Arbitrary Function  
Three Phase, Rack Mount, 4U



**SL Series : 1.5kW to 8kW**  
0-1000V / 0-250A DC  
Rack-mount, 1U  
Isolated Analog, RS232, Remote Interface Software, IVI Drivers for integration into variety of Programs



**XR Series : 2kW to 10kW**  
0-10000V / 0-600A DC  
Rack-mount, 2U



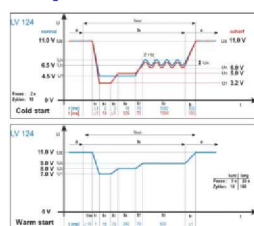
**TS Series : 5kW to 45kW**  
0-4000V / 0-2700A DC  
Rack-mount, 3U to 9U

## Programmable HW Power Supply



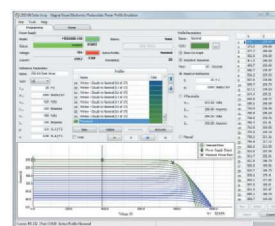
**MS & MT Series : 30kW to 2000kW+**  
0-4000V / 0-24000A DC  
Floor Standing Cabinet

## Automotive Test as per LV124 & LV148



Automatic Voltage & Current Profile calculation with ref. parameters  
Auto sequencing through power profiles at user defined rates  
Graphical profile view, Customized Data logging, Curve Import & Export

## PV Solar Simulator Software



## Battery Chargers



70W-1800W  
Intelligent charger for Li-Ion /  
Lead Acid / AGM / VRLA Batteries

## Regenerative Bi-Directional Power Supplies

For Electrical & Hybrid Vehicles Testing



**SM15K Series**  
Voltage Range : 0-1500V  
Current : -90 to 90A  
Wattage : 15kW Source & Sink  
Sink Power fed back into the grid



**GSS Series**  
Voltage : 0-1500V  
Current :  $\geq \pm 3000A$   
Wattage :  $\pm 20kW$  to  $\pm 192kW$   
Configurable upto MW range

## Grid Emulator 4 Quadrant PS



**GE-AC&DC Series**  
7.5-200kVA / 6.75kW-160kW  
AC Output : 25-277Vrms, p-n  
43-480Vrms, p-p  
Upto 230Arms per phase, 10-400Hz

## 4 Quadrant Voltage / Current Amplifier



**4-Quadrant Voltage & Current Amplifier**  
Freq. Range : DC-1MHz, 100V /  $\mu s$   
Voltage :  $\pm 75Vpk$ , Current :  $\pm 40A$   
Upto 1200W Source, 800W Sink

## Programmable AC Power Source



**AC Power Source**  
Power: 500W-5000W  
Voltage: 150VAC / 300V AC  
Current: upto 46A

## AC&DC Regenerative Electronic Loads



**EL-AC&DC Series**  
Power : 7.5-200kVA / 6.75-160kW  
AC Output : 1 phase : upto 690Arms  
3 phase : upto 230Arms

## DC Electronic Loads



**SME1700 Series**  
Power: 150W-300W  
Voltage: 0-120 to 0-500Vdc  
Current: 0-15 to 0-60 Adc



**ALX/ARX/WRX Series**  
Power: 1.25kW-100kW+  
Voltage: 0-200 to 0-1000 Vdc  
Current: 0-15 to 0-1040 Adc

## High Precision Power Supplies



**PTNhp Series**  
Output Voltage upto 600V  
Current upto 5000A  
Stability < 10ppm



**PNChp Series**  
Output Voltage upto 300kV  
Current upto 10A  
Stability < 10ppm



**PHNhp Series**  
Output Voltage upto 60kV  
Current upto 40A  
Stability < 10ppm



**PNC3p Series**  
Output Voltage upto 60kV  
Current upto 10A  
Stability < 10ppm

## Magnet Power Supplies



**PCU Series**  
Output Voltage upto 50V  
Current upto 340A  
Wattage upto 15KW  
Current Stability = 6ppm over 8 Hr

## Capacitor Charging Power Supplies



**PNCcap Series**  
Voltage upto 60kV  
Charging Capacity upto 3000J/S  
Stability < 100ppm

## High Voltage Cassette Power Supplies



**LNCE Series**  
Power upto 30W  
Voltage upto 20kV  
Current upto 100mA



**NCE Series**  
Power upto 60W  
Voltage upto 30kV  
Current upto 600mA

## Impulse Winding Testers



**SME1200 Series (1 / 4 / 8 Channels)**  
 Impulse Voltage : 100V-10kV  
 Comparison Methods : 4  
 Sampling Rate :40/100MSa/s

## Winding Component EST Tester



**SME1150 Series**  
 Six in one comprehensive analysis  
 Hipot, DC Voltage, IR Test, Impulse Winding,  
 DC low Resistance, Inductance Test Analysis

## Automatic Transformer Tester



**SME6030 Series**  
 LCR + Transformer Test System  
 Test Frequency : 20Hz – 200kHz  
 Accuracy : 0.1%

## DC Resistance Meter



**SME1400 Series**  
 Range 0.1μΩ to 110MΩ  
 Accuracy : 0.01%  
 Temperature Compensation

## Hipot Testers



**SME1190 Series**  
 Output Voltage upto 5kV AC / 6kV DC  
 AC / DC / IR Tester,  
 Leakage Current : 100mA  
 As per EU Standard EN50191



**SME1110 / 1120 Series**  
 Output Voltage upto 5kV AC / 6kV DC  
 1 / 4 / 8 Channel, AC / DC / IR Tester  
 Leakage Current : 10mA / 20mA



**HT Series**  
 AC/DC Hipot upto 20kV  
 Current upto 1A  
 Portable & Rugged

## Insulation Resistance Meters



**SME1202 Series**  
 Test Voltage : 1V-1000V  
 Resistance : 100kΩ-10TΩ  
 Test Current : 1nA -1mA

## Safety Testers

### Impulse Testers as per IEC 60950



**Mega Pulse PF65**  
 Impulse Voltage : 10kV  
 Compliant to IEC60950, 60065 & 62368-1  
 4MΩ load selector



**Mega Pulse 1.2x50-7PF39**  
 Impulse Voltage : 2kV-7kV  
 Voltage Waveform : 1.2x50μs  
 Compliant to IEC60950, 62368-1 & ITU-T



**Mega Pulse 10x700-7PF39**  
 Impulse Voltage : 2kV-7kV  
 Voltage Waveform : 10x700μs  
 Compliant to IEC60950, 62368-1

### Capacitor Discharge Testers



**CDT Series**  
 Test Voltage :90Vrms-270Vrms  
 Test Current : 8A-16A  
 Test time range : 0.5-10s

## Ground Bond Testers



AC Output, 25A / 300A Constant Current  
 to Ground Circuit with Resistance 0 to 0.1W  
 Virtual Voltage Sense Circuit  
 High Efficiency  
 Safety Agency Requirements

## Leakage Current Networks



**LCB Series**  
 Leakage Current Box,  
 Compliant to IEC60990 fig. 1,2,3,4,5,6 & UL  
 IEC60950, IEC61010, IEC60335,  
 IEC60065 etc.

## Lab Power Amplifiers



**LPA01/LPA400**  
 O/P Power : 1MHz  
 O/P Consumed : upto 800Vpp  
 Isolate : BNC

## Selective Level Meters



**Freq Range 5Hz-5MHz**  
 Single / Dual Freq SLM  
 Built in SG, LCR Meter, OSC  
 VSWR Meter, FRA

## EMI Recivers



**TDEMI X Series**  
 Freq: 10Hz-40GHz  
 Full Compliance to CISPR16  
 Modes of Operation : EMI Rx, RT EMI Rx,  
 Spectrum Analyzer, RT SA, Oscilloscope  
 Real time BW: Max. upto 325MHz



**FFT 3010 & 3030**  
 Freq: 9kHz-300MHz  
 Full Compliance to CISPR16  
 Real time BW : 5MHz  
 6dB Bandwidth: 200Hz,9kHz,120kHz

## Antennas



**Horn Antenna**  
 Freq. upto 40GHz  
 Double Ridged Linear Polarized  
 Application : Emission measurement  
 & Immunity Testing



**Biconical Antenna**  
 Freq upto 1GHz  
 50 ohm connector  
 Application : Emission measurement  
 & Immunity Testing

## Line Impedance Stabilization Network



**Single phase / 2 wire**  
 16A-100A / 200A  
 As per CISPR 16-1-2  
 Freq : 9kHz-30MHz



**Three phase / 4 wire**  
 32A-400A  
 As per CISPR 16-1-2  
 Freq : 9kHz-30MHz



**MIL / DO160 Standard**  
 25A-1500A  
 As per MIL 461E/F, DO160  
 Freq: (9kHz)150kHz-30MHz(100MHz)



**Automotive Standard**  
 25A-800A  
 As per CISPR 25 / ISO7637  
 Freq : 100kHz-150MHz

## Test Solution for Non RF Conducted Immunity



**Surge Generator**  
 As per IEC 61000-4-5, IEC 60  
 Surge voltage pulse : 1.2/50µs  
 Amplitude : upto 20kV  
 Surge Current Pulse : 8/20µs,  
 Amplitude : upto 10kA



**Burst Generator**  
 As per IEC61000-4-4  
 2MHz single spike to continuous burst  
 5000 pulses/sec, 500/package  
 RS232 Interface



**ESD Simulator**  
 Upto 16.5kV-30kV  
 Fixed & Changeable RC modules  
 For Commercial Automotive, & MIL  
 Application (Automotive)



**Voltage Interruption Simulator**  
 As per IEC61000-4-11, IEC61000-4-293  
 AC, AC+DC Ramp function selection  
 Interrupted in any phase for a defined time  
 Voltage dips between rated & variable voltage

## Test Solution for RF conducted Immunity



According to IEC / EN 61000-4-6  
 10kHz to 230MHz with 75W amplifier  
 Extensive additions for immunity tests,  
 CDN accessories coupling & decoupling  
 devices available

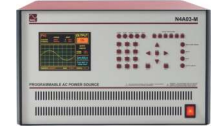


Synthesizer & Interface Unit  
 Power Amplifier  
 A comprehensive Range of CDNs

## Harmonic & Flicker Test Equipments



Harmonic and Flicker Analyzer setup  
 with Clean power source and software  
 Fully compliant to IEC61000-3-2,  
 IEC61000-3-3, IEC61000-3-11,  
 IEC61000-3-12



3kVA / 6kVA Single phase,  
 18 / 30 / 67 / 100kVA Three phase  
 Fully compliant to IEC61000-3-2,  
 IEC61000-3-3, IEC61000-3-11,  
 IEC61000-3-12

## Standards Covered :

### Emission:

IEC61000-6-3  
 IEC61000-6-4

### Harmonic & Flicker

IEC61000-3-2  
 IEC61000-3-3  
 IEC61000-3-11  
 IEC61000-3-12

### Immunity: Non RF

IEC61000-4-2 IEC61000-4-12  
 IEC61000-4-4 IEC61000-4-16  
 IEC61000-4-5 IEC61000-4-17  
 IEC61000-4-8 IEC61000-4-18  
 IEC61000-4-9 IEC61000-4-28  
 IEC61000-4-11 IEC61000-4-29  
 IEC61000-4-13 IEC61000-4-34

### Immunity: RF

IEC61000-4-3  
 IEC61000-4-6

### Military standards:

MIL461E/F  
 MIL704  
 DO160

### Automotive standards:

CISPR25  
 ISO10605  
 ISO7637  
 ISO11452  
 LV123/124/148

## Soldering & Rework Tools



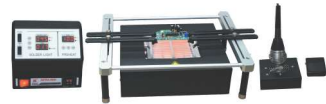
**LF389D/LF399D**  
60W/80W Soldering Station  
Temperature Range 150-480°C  
ESD Safe



**LF8800**  
100W Soldering / Desoldering Station  
Temperature Range 150-480°C  
ESD Safe



**LF853D**  
100W/600W SMD Rework Station  
Temperature Range 100-480°C  
ESD Safe



**IR860**  
150W/650W SMD/BGA Rework Station  
Temperature Range 45-350°C  
ESD Safe

## Industrial & Laboratory Work Benches



## Probes & Accessories

Switchable Probes  
x1/x10, x1/x100, upto 300MHz



High Voltage Probe  
x1000, 15kV



High Voltage Probe  
x1000, 40kV



16 Channel Logic Probe



Active Probe  
x10, 1.2GHz



Near Field Probe Set



50 Ohms Termination



Active Differential Probes  
DC-100MHz / upto 7000V



Current Probes  
Upto 70Arms / 200App



Current Probes  
Upto 500Arms / 750App



HV Probes



Transient Limiter



AC Current Clamp  
1A to 3000A



AC / DC Current Clamp  
50A to 5000A



High Frequency Current Shunt  
3A/6A/10A



High Frequency Current Shunt  
100A / 200A



High Frequency Current Shunt  
500A



AC Current Transducer



Transimpedance Amplifier



Power Adaptor



Single Phase Breakout Box



Ultra Low Capacitance Probe  
DC-2MHz



Injection Transformer  
1kHz-35MHz



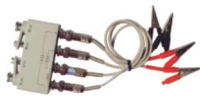
Phase Controlled Inrush Switch  
10Arms 300A peak



4 Terminal Kelvin Test Leads



4 Terminal Test Leads  
for Transformer



SMD Test Fixture



4 Terminal Test Fixture



SMD Kelvin test tweezers



Glided Shorting Plate



# scientific®

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