



GPS-9020

Series

AC/DC Withstand & Insulation Tester



Three Tests, Sixteen Steps, One Pass.

A bench safety tester for production lines and compliance work. AC withstand to 5 kV, DC withstand to 6 kV and insulation resistance to 10 GΩ, run individually or chained into a single automatic sequence so a unit is proved in one pass rather than three.

Test plans hold up to 16 steps and ten plans can be stored, each step carrying its own function, voltage, limits, ramp and dwell. Rise, test and fall times are set independently from 0.1 to 999.9 seconds, and results appear step by step in a list at the end of the run.

The high-voltage stage is a controllable sine generator into a linear power amplifier with closed-loop output regulation, so waveform distortion stays below 3% and load regulation within $\pm(2\% + 5\text{ V})$ from no load to full. Output frequency is selectable 50 or 60 Hz independently of the supply.

Protection is layered: arc detection over nine sensitivity levels, upper and lower current limits, a short-circuit trip, and a ground fault interrupter that ends the test within 0.3 s if more than 0.5 mA finds its way to the chassis.

KEY FEATURES

- ACW 5 kV / 20 mA · DCW 6 kV / 10 mA · IR 1 kV
- Insulation 0.02 MΩ to 10 GΩ
- 10 test plans, up to 16 steps each
- Rise, test and fall 0.1 to 999.9 s, set separately
- Arc detection, nine levels, 2.8 to 20 mA
- GFI trips at 0.5 mA to chassis, output off in 0.3 s
- 5-inch colour touchscreen · Handler and RS-232C

IDEAL FOR

- Production line safety testing with pass/fail
- Appliance, transformer and component compliance
- Incoming and outgoing quality inspection
- Automated lines via Handler (PLC) and SCPI
- R&D, where ramp and dwell need fine control

MODEL RANGE

Model	AC withstand	DC withstand	Insulation	Part number
GPS-9020A	✓	—	—	869020
GPS-9020AD	✓	✓	—	869068
GPS-9020ADI	✓	✓	✓	869164

All three share the same case, display, interfaces, timing and protection. They differ only in which of the three tests is fitted, and the function cannot be added later, so specify with the order.

MEASUREMENT RANGES AND ACCURACY

Parameter	Range	Resolution	Accuracy
AC withstand voltage, all models			
Output voltage	0.050 to 5.000 kV	1 V	±(2% rdg + 5 digits)
Test current	0.001 to 20.00 mA	0.001 / 0.01 mA	±(2% rdg + 5 digits)
Frequency	50 or 60 Hz	—	±0.1%
Output waveform	Sine	—	Distortion below 3% into a resistive load
Load regulation	No load to full load	—	±(2% rdg + 5 V)
DC withstand voltage, GPS-9020AD and 9020ADI			
Output voltage	0.050 to 6.000 kV	1 V	±(2% rdg + 5 digits)
Test current	0.1 µA to 10.00 mA	0.1 µA / 0.01 mA	±(2% rdg + 5 digits)
Insulation resistance, GPS-9020ADI			
Output voltage	0.050 to 1.000 kV	1 V	±(1% rdg + 2 digits)
Measuring range	0.02 MΩ to 10 GΩ	—	See the accuracy note below
Current range	Auto, or 1 µA to 5 mA fixed	—	Fixed ranges speed the test up

Insulation accuracy depends on test voltage. At 500 V and above, 1 MΩ to 1 GΩ is ±(5% rdg + 5 digits) and 1 to 10 GΩ is ±(10% rdg + 5 digits). Below 500 V, 0.1 MΩ to 1 GΩ is ±(10% rdg + 5 digits) and the 1 to 10 GΩ band is indicative only, with no accuracy specified. Auto ranging adds range-switching time, so a test takes at least 1 second.

TIMING AND PROTECTION

Parameter	Setting
Voltage rise time	0.1 to 999.9 s, or off
Test time, ACW	0.2 to 999.9 s, or unlimited
Test time, DCW and IR	0.1 to 999.9 s, or unlimited
Voltage fall time	0.1 to 999.9 s, or off
DC charge wait, DCW	0.1 to 999.9 s, or off
Arc detection levels	1 to 9, corresponding to 20, 18, 16, 14, 12, 10, 7.7, 5.5 and 2.8 mA
Discharge	Automatic after test · fixed 0.2 s, sufficient to bring 1 µF at 6 kV down to 30 V

Rise, test and fall are set per step, so a plan can ramp gently into a capacitive load and still dwell briefly. Setting fall to off cuts the output at the end of the step, which leaves the unit charged.

GENERAL SPECIFICATIONS

TEST PLANS

10 plans stored internally, up to 16 steps each · every step carries its own function, voltage, upper and lower limits, timing and arc level · results listed step by step

JUDGEMENT

Upper and lower current limits with HI FAIL and LOW FAIL · short-circuit trip at twice rated output, 1.5 times peak on AC · arc detection · PASS, FAIL and TEST status lamps and beeper

INTERFACES

Handler (PLC) 25-way, with START, STOP, TEST, PASS, FAIL and +24 V at up to 1 A · RS-232C, 8 data bits, 1 stop bit, no parity, 1200 to 115200 baud, SCPI command set

POWER

110 V or 220 V AC ±10%, selected by a rear panel switch · 300 VA maximum · fuse 5 A slow-blow at 110 V, 3 A at 220 V

DIMENSIONS · WEIGHT

293.8 × 130 × 447.9 mm with the handle fitted · 246 × 112 × 422.3 mm without · about 8 kg · adjustable four-position carry handle

IN THE BOX

Withstand voltage test lead · withstand voltage earth lead · RS-232 interface cable · mains lead · two 3 A slow-blow fuses · printed user manual

DISPLAY AND CONTROL

5-inch colour LCD with touch, 32-bit ARM processor · keypad and cursor keys · English or Chinese menus · administrator and operator accounts, operator changes are not saved

GROUND FAULT INTERRUPTER

Detects current returning through the chassis. Above 0.5 mA the instrument ends the output within 0.3 s and displays GFI. Can be switched off, but is worth leaving on

FILE STORAGE

10 files in internal non-volatile memory, or to a USB memory stick through the front panel port · recall the last file or file 0 at power-on

ENVIRONMENT

Operating 10 to 40 °C at 10 to 80% RH · specified 18 to 28 °C at 65% RH or below · storage 0 to 50 °C · altitude to 2000 m

DUTY CYCLE

Above 6 mA AC or 3 mA DC, limit output to 1 minute and rest at least as long again. Below 4 mA AC or 2 mA DC the instrument runs continuously

WARRANTY

1 year, subject to product registration with GPS LTD · service and calibration available