SPS electronic

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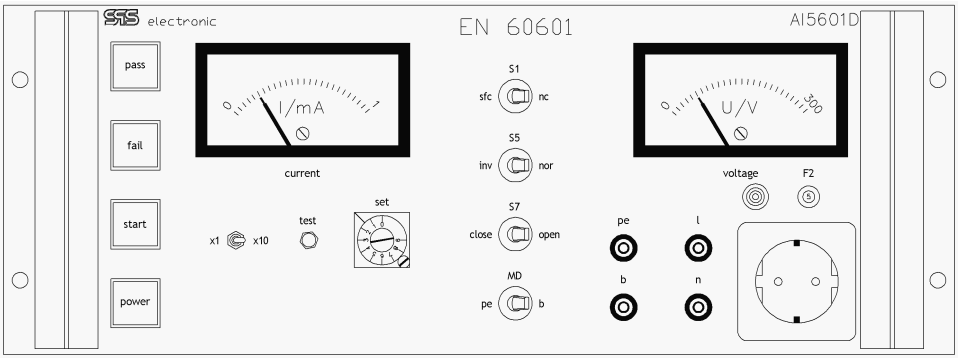
Short Manual

Leakage Current Tester AI 5601D

for leakage current measurement acc. EN 60601

Last update: 14.12.2009



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1. General

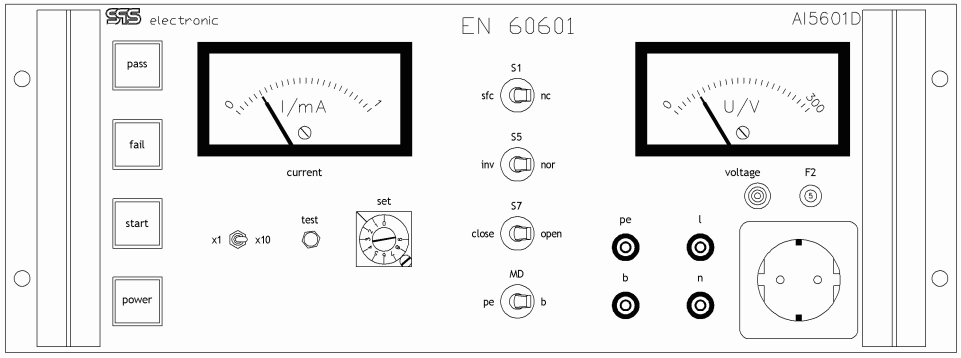
The Leakage Current Tester AI5601D is used to perform measurement of leakage current at electrotechnical devices, according to regulation EN60601 / Fig. 14.

2. Technical Data

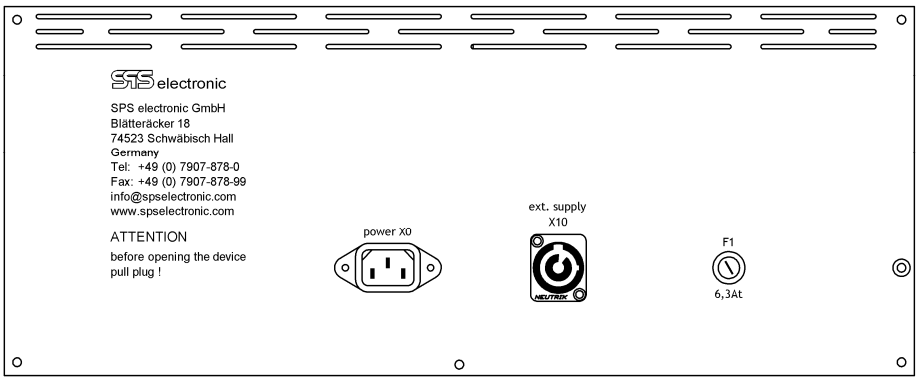
size	:	19"/ 4 HU
mains connection	:	230VAC / 50 Hz ± 5 %
DUT supply	:	230V + 10% / max. 5A
measuring range voltage	:	0 – 300 V / class 1.5
measuring range current	:	0 – 1 mA / class 1.5
		0 – 10 mA / class 1.5
outputs	:	Schuko-socket
		laboratory jacks (for 4 mm connectors)
measuring devices	:	class 1.5
accuracy	:	± 1.5 % of final value

3. Front and Rear view of Tester AI5601D

Front panel:



Rear panel:



4. Connection of the Tester AI5601D

For putting into operation, connect the tester with the mains supply 230VAC/50Hz by using the Schuko-plug (European Standard) and IEC power socket "X0".

The supply for the DUT has to be fed in by socket "ext. supply X10"

5. Connection of the DUT

The Dut is connected to the Schuko socket on the tester's front panel. Alternatively, the DUT can be connected via the laboratory jacks:

Connector at Tester	Connection point at DUT
l	L
n	N
pe	PE

When DUT is connected by laboratory jacks, there is the additional possibility to choose the reference point for the measurement. This can be either-or:

- pe protective wire of DUT
- b reference point "MD" acc. EN60601 / Fig.14

IMPORTANT:
when DUT is connected via Schuko socket, the toggle-switch "MD" must be in position "pe". Otherwise, no correct measurement is possible.

6. Switching on the Tester

The tester is switched on by pushing the lightbutton "power".

7. Setting of Tester

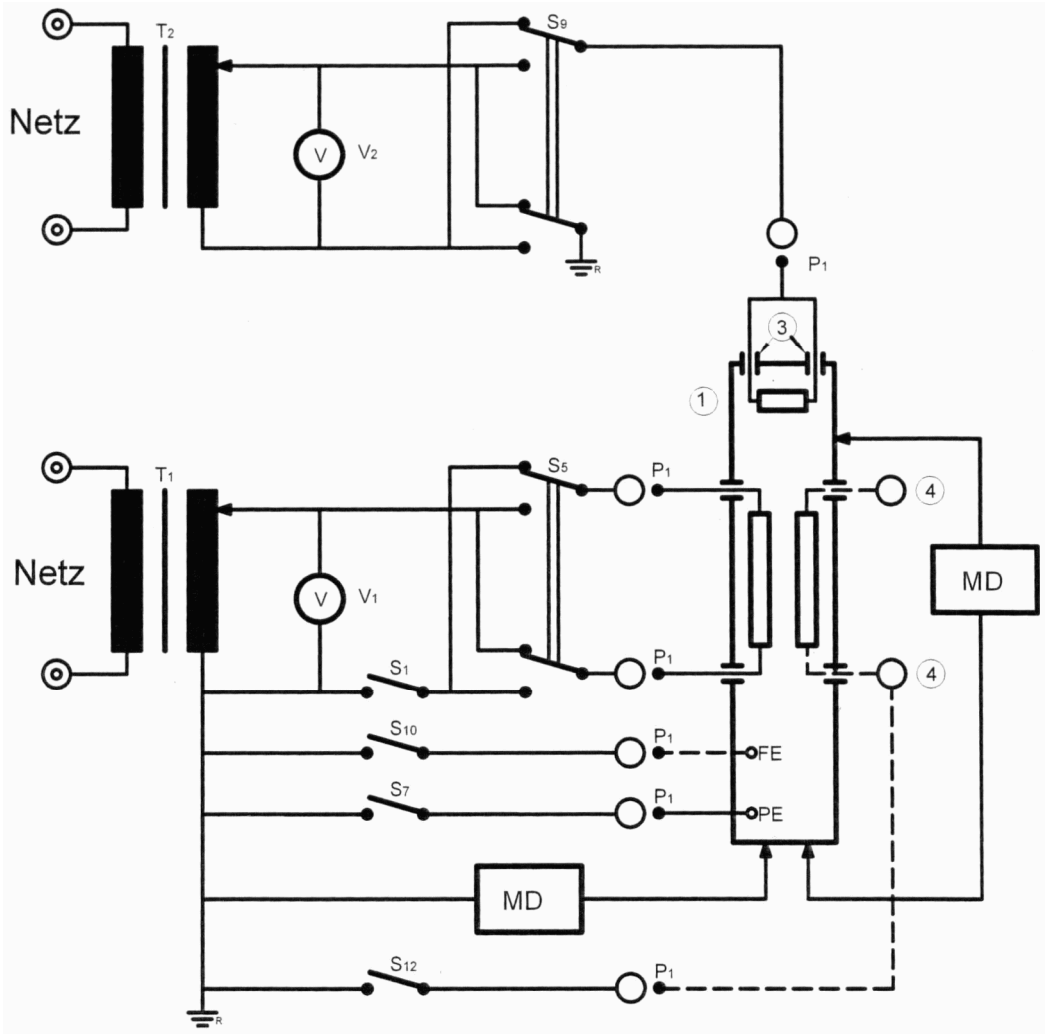
The tester is equipped with 2 analog instruments to read current and voltage. The left instrument indicates during testing the actual leakage current. For this, two current measuring ranges are available:

- 1 mA AC
- 10 mA AC

Switching of current range is done via toggle-switch "x1/x10".

The max. admissable leakage current is set via the potentiometer ("set") located below the current instrument. Press&hold the key "Test" and tune desired max. current by adjusting the potentiometer. The analog display indicates now the threshold. (When measuring range is set to x10", the scale values have to be multiplied by factor 10.)

The instrument at the right indicates the voltage applied to the DUT. The voltage instrument measures the voltage between the phases L and N. This voltage is displayed at the scale.


T2
Netz
V
V2
S9
P1
3
1
T1
Netz
V
V1
S5
P1
4
MD
S1
P1
4
S10
P1
FE
S7
P1
PE
MD
S12
P1

8. Testing operation

For testing, all settings and connections have to be established as described above. DUT and the mains supply have to be present and connected.
The test voltage can be switched on with the "start"-switch. The DUT is now supplied with voltage and is now in operation. The mains switches at the DUT (if available) have to be actuated.

Different test procedures are available to determine the leakage currents of the DUT: for this, use the toggle-switches "S1", "S5", "S7" and "MD" to activate the different testing combinations stipulated by regulation EN60601. (see figure on left page)

Sequence during testing:

- turn on tester AI5601D
- connect DUT
- press key "start" (DUT is now voltage-carrying)
- Switch the different test combinations, one after another, by using the S1/S5/S7 toggle switches. If a leakage current is above the set threshold, an error message occurs
- By release of "start" – switch the DUT is switched off again.

For more detailed testing procedures, please refer to relevant regulations describing testing especially for your product.

9. Safety

While the key "start" is activated, mains voltage is applied at the outputs of the tester and the DUT.
Please refer to the relevant regulations concerning working with mains voltage. Only skilled personnel (or trained by same) is allowed to work with this device.

Annex

A Contact address

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B Important provisions and regulations

For the protection of persons the trade associations and unions have published below literature:

- DIN EN 50191 — Installation and Operation of Electrical Installations
- DIN EN 50274 — Protection against Electric Shock – Protection against unintended direct contact of dangerous active parts
- DIN 40 008 part 3 — Safety Signs for Electrical Engineering; Warning Signs and Additional Signs
- DIN 40 050 — IP-Protective System, Protection against Contact, Foreign Matter and Water for Production Equipment
- DIN 57100 — Specifications for the Installation of Power Plants with Nominal Voltages of up to 1000 V
- BGI 891 — Establishing and operation of electrical test plants

C Terms of warranty

1. Warranty period

The warranty period is 12 months after delivery.

2. Conditions for a guarantee claim

- The Leakage Current Tester ***AI 5601D*** must have been put into operation by qualified personnel at the customer's.
- Inspections must be carried out regularly (once a year) and thoroughly (by *SPS electronic GmbH*).
- Defective or worn parts have to be replaced immediately. The operation of such parts is forbidden for safety reasons.
- Defective parts, subject to guarantee claims, have to be sent to *SPS electronic GmbH* for inspection.
- Defects occurred must be reported to *SPS electronic GmbH* immediately.

3. Beginning of guarantee period

Guarantee starts with the date of delivery note.

4. Guarantee

SPS electronic GmbH guarantees a good function of the high voltage test device, a conscientious and professional design and manufacture as well as the use of high-quality material.
All parts are being replaced free of charge if parts became defective or useless during the guarantee period due to the use of inadequate material, manufacturing faults or an imperfect engineering.

5. Excluded from guarantee

- Damages due to outside influences, above all because of handling malpractices or of local conditions.
- Damages at devices from which the serial number has been removed, destroyed or falsified.
- Wear parts, such as fuses, signal bulbs, etc.

EU-Konformitätserklärung
EU Declaration of Conformity

Wir / *we* :

SPS electronic GmbH
Steuerungs- und Prüfsysteme
Eugen-Bolz-Straße 8
D-74523 Schwäbisch Hall

erklären hiermit, dass das nachfolgend genannte Gerät den einschlägigen grundlegenden Sicherheitsforderungen der EU-Richtlinien entspricht.

declare, that the following unit complies with all essential safety requirements of the EU Directives.

Geräteart: *Description of device:*	Ableitstromtester *Leakage Current Tester*
Typ / *Type* :	AI 5601*x*

EU Richtlinien / *EU Directives:*

☐ EG Maschinenrichtlinie 2006/42/EG mit Änderungen
EC Directive for machinery 2006/42/EC with amendments

☒ EU Niederspannungsrichtlinie 2014/35/EU
EU Directive for low voltage 2014/35/EU

☒ EU Richtlinie Elektromagnetische Verträglichkeit 2014/30/EU mit Änderungen
EU Directive electromagnetic compatibility 2014/30/EU with amendments

Angewandte harmonisierte Normen:
Applicable harmonized standards:

- EN 61 000-3-2; EN 61 000-3-3; EN 55 014-1; EN 55 014-2; EN 50 191

Angewandte nationale Normen und technische Spezifikationen:
Applicable national standards and technical specifications:

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30.06.2017
Datum / date:

ppa. Dipl. Ing. Stefan Ruhl

Dieser Konformitätserklärung unterliegt grundsätzlich nur das von uns gelieferte oder in Betrieb genommene Gerät.
Für Änderungen und Erweiterungen ist der Betreiber verantwortlich und damit für die Sicherstellung der Übereinstimmung der veränderten Anlage mit der betreffenden EU-Richtlinie.

Subject to this declaration of conformity is the device as supplied or placed into operation by us.
The operator is responsible for subsequent alterations and extensions, and therefore has to ensure the altered unit complies with the corresponding EU directives.