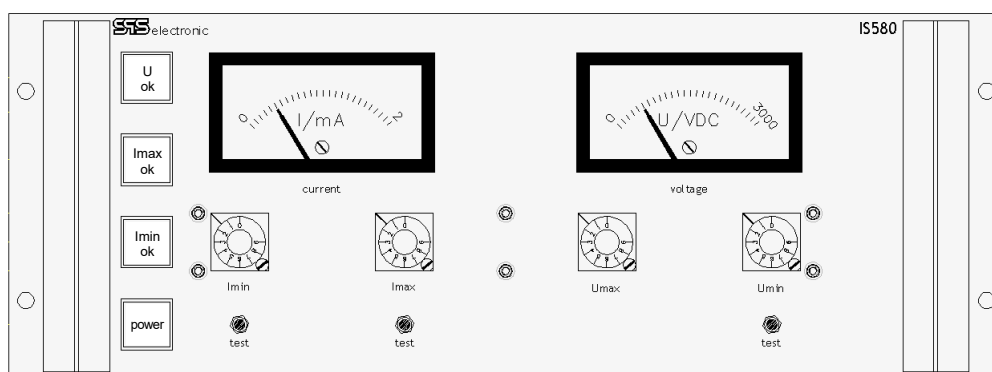


Operating Manual

Safety Tester IS 580

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1. Introduction



**The device may only be operated by trained technicians
or instructed persons!
The related safety regulations must be observed !**

1.1 Description

The guidelines for insulation measurements are specified in VDE 0413, part 1. Six of these guidelines are particularly worth mentioning:

- The measurement has to take place with DC voltage of small ripples.
- DC voltage must have at least the same value of the rated voltage of the network which can be checked.
- The insulation resistance may not fall below 1000 Ohm/V.
- The error of the indicated measuring range may not exceed $\pm 30\%$.
- The rated current must amount to at least 1 mA.
- The links must be contact-voltage-proof.

The error of $\pm 30\%$ appears as very high, however this is given by the selected measurement principle of almost all manufacturers. With the device IS 580, an electronic stabilization holds the ripples to very small values ($< 1\%$). The short circuit current is smaller than 12 mA and is thus harmless.

2. Usage

2.1 Mains Supply

The standard device is operated with a mains supply of 230V (50 Hz) (Other voltages optionally available on request). The mains voltage is supplied by the interface X0 on the device's rear panel.

2.1.1 Device Fuses

For safety reasons, the mains fuse is integrated into the plugin. The fuse is dimensioned to blow only when erroneous conditions occur.

Mains fuse: 230 V / 4.0 A , sluggish



ATTENTION !!

Before opening the device, pull plug !

2.2 External Connections

By means of the interface X2 on the rear panel, the safety tester IS580 can be operated by an external controlling unit, and the measured values can be evaluated externally.

The following signals can be set or read by the interface X2:

- start of test (PIN 2)
- OK I_{min} (PIN 4)
- OK I_{max} (PIN 5)
- OK U (PIN 6)
- external safety circuit (PIN 11, ref. potential GND, source DU [+24 VDC])

The interface X1 provides the following analogue output signals:

- U_{real} : measured voltage, normalized to 10 V
- I_{real} : measured current, normalized to 10 V, ref. potential GNA
- U_{set} : programming of test voltage, normalized to 10 V
(switching of this function by internal switch in device)

⇒ See also chapter 4: "Interface Configuration" and "Signal Diagrams".

2.3 Putting into Operation

Activate mains switch "power" on the rear panel
 ⇒ yellow signal lamp on front panel lights up.

2.4 Setting the Test Voltage

The test voltage can be adjusted by means of the potentiometer "U_{max}" on the front panel. When pressing the pushbutton "test", the adjusted voltage is indicated on the front scale. When operating via an external control unit, the test voltage can be set by feeding a signal, normalized to 10 VDC, to PIN 3 of interface X1. The value range for the test voltage is 300 – 3000 VDC (IS 580G: up to 4000 VDC).

2.5 Setting the Thresholds

The thresholds for U_{min}, I_{min} and I_{max} are set by means of the potentiometers on the front panel. When pressing the according pushbutton, the adjusted threshold is indicated on the respective scale instrument.

2.6 Contacting the DUT

The source- and sense voltages are tapped off the connectors 1 + 2 resp. 3 + 4 of interface X3, and applied to the DUT. The connectors of the high voltage interface X3 are contact proof.

2.7 Starting a Test

A test is started by applying a signal of +24 VDC to X2/2 ("start"). The test voltage then is generated and applied to the high voltage interface X3. The measured values for voltage and current are indicated by the scale instruments, and provided as analogue signals (normalized to 10 VDC) by the interface X1.



The test voltage is only generated while the start signal is present, and the external safety circuit (X2/ 9↔11) is closed !

2.8 OK Signal Lamps

As long as the thresholds for U and I are not exceeded, the signal lamps "U OK", "I_{min} OK" and "I_{max} OK" are illuminated, and OK signals are present at the PINs 4, 5 and 6 of interface X2.

If any of the measured values exceed the programmed thresholds, the according signal lamp will go out, and the according signal at X2 is cleared.

3. Device Features

- electronic stabilized voltage source
- safety current limited output voltage
- OK indication by signal lamps
- potential free error signals
- external controlling
- programmable thresholds
- contact proof high voltage connectors
- output voltage is not potential free

4. Technical Data

Mechanical data:

Dimensions:	Width / depth / height: ca. 484 / 310 / 180 mm equals 19" / 4 HU
Weight	gross: 120 N
Mains	voltage: 230 V \pm 10 % ; 115 V optionally available frequency: 50 Hz - 60 Hz power: max. 100 VA fuse: 4.0 A , sluggish

Environment:

Temperature	Operation: 15 °C – 40 °C Storage: 5 °C – 60 °C
Humidity	max. 70% (not condensing)

Voltage measurement:

Range	IS 580F: 300 – 3000 VDC / IS 580G: 400 – 4000 VDC
Scale	105°
Class	1.5
Analog output	0 – 10 V ; X1/1
Remark	electronically stabilized measuring voltage

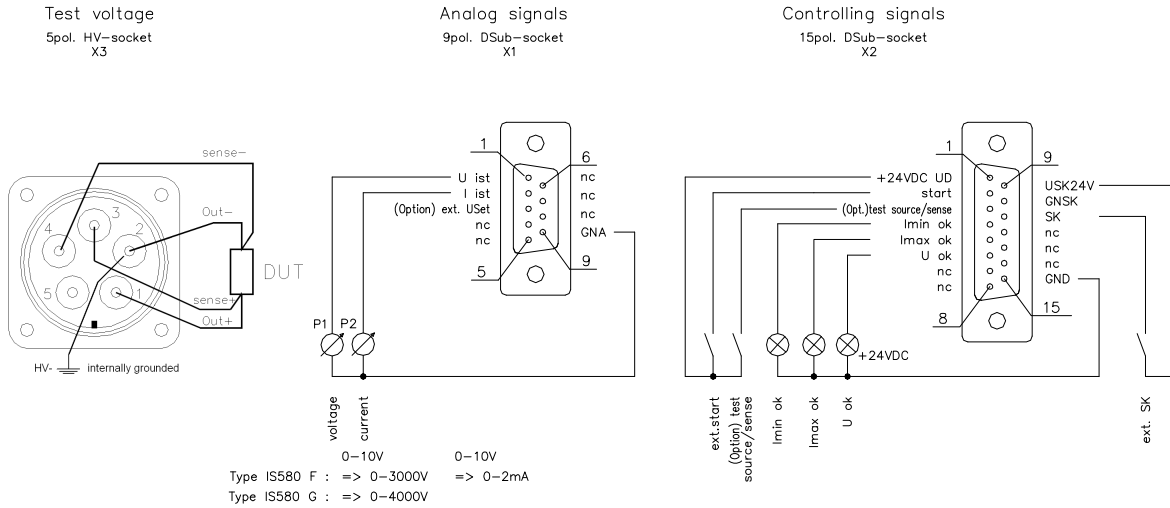
Current measurement:

Range	0 – 2 mA ; optionally 0 – 200 μ A
Scale	105°
Class	1.5
Analog output	0 – 10 V ; X1/2
Short circuit current	> 4 mADC
Remark	Safety current limited to < 12 mADC

Operating panel:

Signal lamps	"power", "U OK", "Imin OK", "Imax OK"
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4.1 Interface Configuration



**Interface X3:
(test voltages)**

PIN	Allocation
1	Out+
2	Out-
3	sense+
4	sense-
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

**Interface X1:
(analog signals)**

PIN	Allocation
1	U real
2	I real
3	(Option) USet
4-8	not used
9	GNA
10	
11	
12	
13	
14	
15	

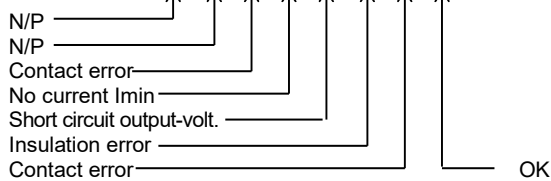
**Interface X2:
(controlling signals)**

PIN	Allocation
1	UD (+24VDC)
2	start
3	(Option) test source/sense
4	OK Imin
5	OK Imax
6	OK U
7	not used
8	not used
9	USK 24V
10	GNSK
11	SK
12-14	not used
15	GND

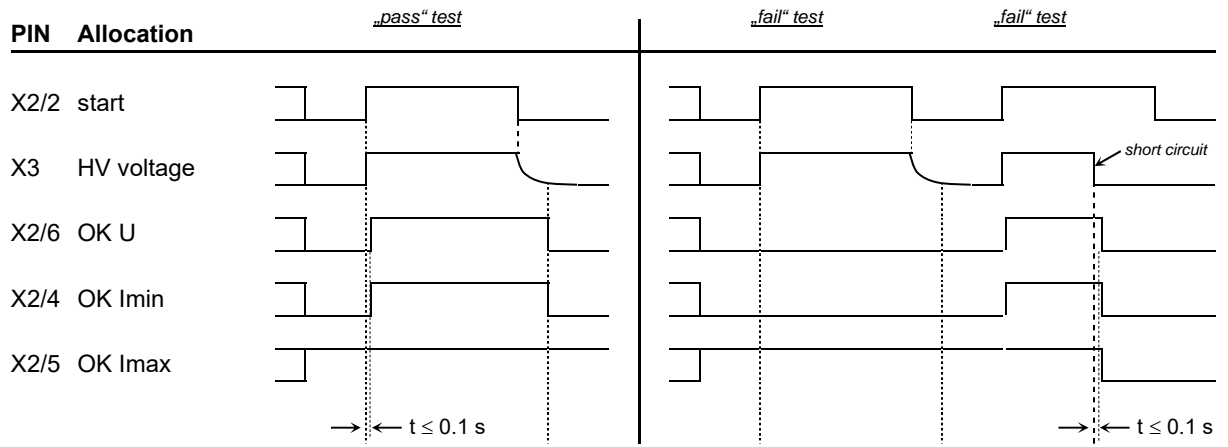
Table of error status outputs:

Start = 24V	1	1	1	1	1	1	1	1
OK Imin	0	0	0	0	1	1	1	1
OK Imax	0	0	1	1	0	0	1	1
OK U	0	1	0	1	0	1	0	1

0 = 0 V
1 = 24 VDC
N/P = not possible



4.2 Signal diagrams



EU-Konformitätserklärung

EU Declaration of Conformity

Wir / we :

SPS electronic GmbH
The Electrical Safety Test Company
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: Sicherheitstester
Description of device: Safety Tester

Typ / Type : IS 580 F / G

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:

30.06.2017

Datum / date:

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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.*