

Innovative power up to 200 W
Multitalent up to 130 V and 20 A



PERFORMANCE IN ABSOLUTE PERFECTION

200 W laboratory power supply TCE 8941

Convenient performance for your applications

The power supplies from the TOE 8941 series are suitable for applications associated with:

Research / development
Laboratory / testing / experiments
Production / test bays
Quality assurance
Service / training

200 W in compact design

The single-output power supplies from the TOE 8941 series have an extremely compact design. As a result of the high efficiency of all units, the complete output power of 200 W is available at the front via safety sockets. The power is also available at the rear via a screw-type terminal block (option).

Autoranging

Power supplies with autoranging can source their rated power over a wide and stepless range of voltage and current combinations.

Autoranging power supplies from TOELLNER have a significantly larger operating range than standard power supplies with the same output power.

Adjustment using incremental rotary encoder

The output values are adjusted with a selectable resolution on using wear-free incremental rotary encoder, guaranteeing

reliable and precise setting of all output parameters and operating functions even after many years of use.

Display

The set and measured values for voltage, current, and power as well as the menu control functions are displayed on a 2-row LCD with 20 characters/row.

Highest degree of safety

is guaranteed for your applications by comprehensive protective measures: adjustable overvoltage protection, limit function, fast power OFF switching, polarity reversal protection, resistance to reverse current, various internal electronic monitoring functions.

Innovative remote sensing circuit

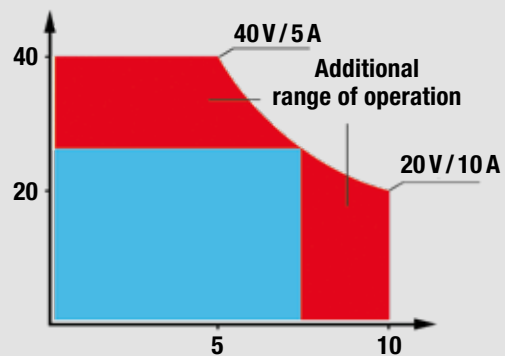
Benefit from an innovative sensing circuit which keeps the correct voltage at the input terminals of the load, additionally it protects sensitive loads if there is a break in the sensor line. The sensing inputs are available at the rear.

Adjustable output power

The possibility for directly setting the power is a further exceptional feature of this series. The output power of 200 W can then be reduced down to 5 % of the maximum output power.

Special features

- Active wide range PFC: Input voltage 85 V to 265 V, 47 to 63 Hz
- Autoranging
- Can be used as constant voltage, constant current and constant power source (CV/CC/CP)
- Outputs at front; at rear as option
- On/Off switching of the outputs
- Sensing
- Analog interfaces included as standard
- USB, LAN or GPIB interfaces as option
- Free LabView™ driver
- ½ 19" width, 2 HU design
- Parallel installation possible



Autorange TOE 8941-40

Example: TOE 8941-40 (40 V / 10 A)
compared to a standard power supply
with 200 W output power.

200 W laboratory power supply TOE 8941

Digital and analog interfaces

Digital: GPIB/USB/LAN

GPIB, USB and LAN interfaces with the following scope of functions are available for communication between PC and power supply (option):

- Adjustment of output values: voltage current, and power
- OVP and limit adjustment, autocal function, display, store, and recall settings
- Switching on/off of output voltage
- Reading of actual values as well as warning/fault states

The command syntax complies with the IEEE 488.2 standard. Standardized SCPI commands are processed.

Fast analog control

The power supplies can be controlled in analog mode; i.e. the output voltage and current can be adjusted independent of one another using externally applied control voltages. Short adjustment times for the output voltage are implemented using balanced circuitry. It is therefore possible to generate powerful and fast output signals without problem; up to approx. 700 Hz at 2 Vpp.

Interlock

By interrupting the interlock circuit, e.g. by an external emergency stop switch, the power supply output becomes deenergized directly.

Output On/Off

A convenient feature is the output switch-off function which at standby permits immediate reduction of the voltage and current values to 0 V and 0 A. When the output is activated, the set or programmed values for voltage and current are present immediately. The switchover can be carried out manually, via a remote control command from the PC, via an external TTL signal ¹⁾, or via an external switching contact ¹⁾.

1) Interlock or inhibit option required

Autocal function

The power supplies are equipped with a self-calibration function protected by a „security code“. This function can be manually executed from the menu or also remote-controlled.

Price and performance

The exceptional specifications, extraordinary features, and best possible processing quality provide the power supplies of the TOE 8941 series with an excellent price/performance ratio.

Options

- GPIB, USB and LAN interfaces
- Interlock
- Inhibit
- Power output at rear



Overview

Overview

Model	Output		Power (max.)
	Voltage	Current	
TOE 8941-20	0 – 20 V	0 – 20 A	200 W
TOE 8941-40	0 – 40 V	0 – 10 A	200 W
TOE 8941-60	0 – 60 V	0 – 7 A	200 W
TOE 8941-80	0 – 80 V	0 – 5 A	200 W
TOE 8941-130	0 – 130 V	0 – 3 A	200 W



Developed and manufactured in
GERMANY

Technical specifications

Technical specifications

Output		TOE 8941-20	TOE 8941-40	TOE 8941-60	TOE 8941-80	TOE 8941-130
Voltage		0 – 20 V	0 – 40 V	0 – 60 V	0 – 80 V	0 – 130 V
Current		0 – 20 A	0 – 10 A	0 – 7 A	0 – 5 A	0 – 3 A
Power adjustable in range		10 – 200 W	10 – 200 W	10 – 200 W	10 – 200 W	10 – 200 W
Setting resolution	Voltage	5 mV	10 mV	10 mV	20 mV	20 mV
	Current	5 mA	2 mA	1 mA	1 mA	1 mA
	Power	0.1 W	0.1 W	0.1 W	0.1 W	0.1 W
Setting accuracy	Voltage	0.1 % + 10 mV	0.1 % + 20 mV	0.1 % + 30 mV	0.1 % + 40 mV	0.1 % + 60 mV
	Current	0.2 % + 20 mA	0.2 % + 10 mA	0.2 % + 7 mA	0.2 % + 5 mA	0.2 % + 3 mA
	Power	0.4 % + 1 W	0.4 % + 1 W	0.4 % + 1 W	0.4 % + 1 W	0.4 % + 1 W
Deviation in regulation Voltage with 100 % change in load	Voltage	$10^{-4} + 5 \text{ mV}$	$10^{-4} + 5 \text{ mV}$	$10^{-4} + 5 \text{ mV}$	$10^{-4} + 5 \text{ mV}$	$10^{-4} + 5 \text{ mV}$
	Current	$5 \times 10^{-4} + 10 \text{ mA}$	$5 \times 10^{-4} + 5 \text{ mA}$	$5 \times 10^{-4} + 3 \text{ mA}$	$5 \times 10^{-4} + 2 \text{ mA}$	$5 \times 10^{-4} + 2 \text{ mA}$
With change in line voltage 85V–265V AC		<0.5 mV	<0.5 mV	<0.5 mV	<0.5 mV	<1 mV
Regulation time with change in load from 20 % auf 100 % I_{rated} Tolerance: 0.2 % V_{rated}		400 μs	400 μs	400 μs	400 μs	400 μs
Setting time of output volta- ge with change in setpoint 0 V to U_{rated} no-load/full load U_{rated} to 1 V no-load/full load		6 ms/10 ms 30 ms/8 ms	8 ms/10 ms 50 ms/10 ms	10 ms/15 ms 100 ms/25 ms	15 ms/20 ms 200 ms/50 ms	50 ms/60 ms 1,5 s/400 ms
Residual ripple (rms) 10 Hz to 10 MHz	Voltage	3 mV	3 mV	6 mV	10 mV	12 mV
	Current	12 mA	10 mA	7 mA	5 mA	2 mA
Measuring accuracy	Voltage	0.1 % + 20 mV	0.1 % + 30 mV	0.1 % + 45 mV	0.1 % + 60 mV	0.1 % + 80 mV
	Current	0.2 % + 30 mA	0.2 % + 20 mA	0.2 % + 10 mA	0.2 % + 7 mA	0.2 % + 5 mA
	Power	0.4 % + 1 W	0.4 % + 1 W	0.4 % + 1 W	0.4 % + 1 W	0.4 % + 1 W
Temperature coefficient	Voltage	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$
	Current	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$
Analog interface Control voltage (reference potential is the negative pole of the output)	0 – 5 V for 0 – 5 V for	0 – 20 V 0 – 20 A	0 – 40 V 0 – 10 A	0 – 60 V 0 – 7 A	0 – 80 V 0 – 5 A	0 – 130 V 0 – 3 A
Protection functions Adjustment range for OVP Adjustment range for limit		3 – 22 V 0 – 20 V	3 – 44 V 0 – 40 V	3 – 66 V 0 – 60 V	3 – 88 V 0 – 80 V	3 – 143 V 0 – 130 V
Resistant to feedback	Voltage	100 V	100 V	100 V	100 V	160 V
	Current	20 A	10 A	7 A	5 A	3 A

General data

General data

Output	Floating and electrically isolated
Insulation	± 250 V against ground
Analog interface	
Control voltage	0 - 5 V each for 0 - $U_{\max}$ and 0 - $I_{\max}$
Input impedance	Approx. 10 kOhm
Line voltage	85 V – 265 V, 47 – 63 Hz
Power consumption	250 VA/250 W
Protective measures	Protection class 1 in accordance with EN 61010-1
EMC	EN 61326
Operating temperature	0 °C to 40 °C
Storage temperature	- 20 °C to 70 °C
Reference temperature	23 °C $\pm$ 1 °C
Dimensions	224 x 88 x 357 mm (W x H x T)
With feet	224 x 103 x 357 mm (W x H x T)
19" system	½ 19", 2 HU
Weight	Approx. 3.5 kg
Housing	Aluminium/steel



Rear of unit
Laboratory power supply with USB interface
TOE 8941 series

Ordering data

Single-output power supplies

TOE 8941-20	Power supply	20 V / 20 A
TOE 8941-40	Power supply	40 V / 10 A
TOE 8941-60	Power supply	60 V / 7 A
TOE 8941-80	Power supply	80 V / 5 A
TOE 8941-130	Power supply	130 V / 3 A

Options

GPIO interface

TOE 8940/015	For TOE 8941-xx
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USB interface

TOE 8940/025	For TOE 8941-xx
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USB and LAN interfaces

TOE 8940/035	For TOE 8941-xx
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Output at rear

TOE 8940/251	For TOE 8941-xx
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Cables and adapters

TOE 9101	USB-GPIB adapter
TOE 9009	IEEE-488 cable, 2 m
TOE 9521	19" adapter, 2 HU asymmetric for single installation
TOE 9522	19" adapter, 2 HU parallel installation set for 2 units

Interlock/inhibit options

The interlock and inhibit control options permit external enabling or OFF/ON switching of the main output by means of a switch or a TTL signal.

Interlock option TOE 8940/101

Control via contact	Control via TTL signal	Power supply output
Close	Low	On
Open	High	Off

Inhibit option TOE 8940/102

Control via contact	Control via TTL signal	Power supply output
Close	Low	Off
Open	High	On

Supplied accessories

- 1 power cord
- 1 instruction manual

Free drivers for LabView™ at www.TOELLNER.de



19" adapter, TOE 9522

2 HU, parallel installation set for 2 units of the TOE 8941 series

Our customers

AEG
Airbus
A.M.S. Software GmbH
Alps Electric GmbH
artesyne
ASKON
Atlas Elektronik
Audi

BASF AG
Bayer AG
Behr Hella Thermocontrol
Beiersdorf AG
BENDER
Beru AG
BIOMET
Boehringer Ingelheim KG
Boombardier
Robert Bosch GmbH
B. Braun Melsungen AG
Brose Fahrzeugteile
Bugatti Engineering GmbH
Busch-Jaeger GmbH
Bühler Motor

CERN
Continental AG

Daimler AG
John Deere
Degussa Hanau
DELPHI
DeltaTech Controls
DESY
Deutsche Lufthansa AG
Diehl Avionik Systeme
Diehl GmbH & Co.
DLR
DMT
Dornier Luftfahrt GmbH
Dräger
dSpace GmbH
Du pont

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ELMOS
elster
Endress+Hauser
e-on
Eurocopter GmbH

FH Braunschweig/Wolfenbüttel
Fachhochschule Dortmund
Ferrari
FESTO
Fiat Automobile AG
Ford-Werke AG
Fraunhofer Gesellschaft
Karl Freudenberg
fuba
Fujitsu GmbH

Gidemeister Automation GmbH
GÖPEL electronic
Gossen-Metrawatt
GSI

Haas Laser GmbH
Hahn-Meitner-Institut
HARMAN/BECKER
Hauni Werke, Körber
Hella KG Hueck & Co.
Heraeus Sepatech GmbH
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PHOENIX TESTLAB
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