

Single-output and dual-output power supplies

TOE 8840 – up to 160 W
TOE 8850 – up to 320 W
In-phase regulation



TOE 8852

A proven concept

has been used for the new, system-compatible single-output and dual-output power supplies of the TOE 8840 and TOE 8850 series. Exceptional specifications are achieved with a total output power of 160 W or 320 W as a result of the classical in-phase control principle. A total of 22 different models deliver voltages up to 130 V and currents up to 20 A. With a resolution of 12 bits in the voltage and current ranges, a simple and convenient user interface, and the excellent specifications, these instruments are suitable for both manual and bus-based modes.

Integrated measurements

A further significant characteristic is the high-resolution measurement of the voltage and current values; these are output on 4-digit LED displays and can be read at a high rate in bus mode. This means that additional measuring instruments are usually superfluous.

Adjustment using incremental spinwheels

The output values are adjusted with a selectable sensitivity using wear-free incremental spinwheels, thus permitting reliable and precise adjustment of the output voltage and current even after many years of service.

Remote control (option)

All instruments can be remote-controlled in analog mode as well as via GPIB and RS 232 interfaces using the SCPI command set (SCPI: Standard Commands for Programmable Instruments). The system interfaces are characterized by a high response and measuring rate. In addition, instrument driver software is available under "LabView".

Automatic calibration

Fast and convenient calibration of all output parameters is possible externally within a few minutes without any adjustment of trimmers or interventions in the instrument.

This "software calibration" can be carried out simply using the control elements or supported by a computer within a test system. The "software calibration" provides an advantage which should not be underestimated when considering the regular calibration intervals which are becoming increasingly important in quality assurance systems.

Voltage or current source

Depending on the values set for the voltage and current, each power supply can be operated as a voltage source or a current source depending on the load conditions. All outputs can be connected in parallel or series without problem.

High performance and exemplary operating characteristics

Special features

- In-phase regulation
- Adjustment of voltage and current using wear-free incremental spinwheels
- Maximum precision using μ P-controlled autocalibration
- System-compatible with GPIB and RS 232 interfaces (option)



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In-phase regulation

Special features

- In-phase regulation, thus extremely low residual ripple, below $300 \mu V_{rms}$ (depends on model)
- Sensing as standard with TOE 8850 series
Correctable voltage: 0.5 V/line
- RS 232, GPIB interface optional
- Analog interface optional, floating also possible
- Free LabView™ driver
- Electrically isolated outputs
- 19" adapter for rack mounting

Overview

	Output 1		Output 2		Power
	Voltage	Current	Voltage	Current	
Single-output power supplies					
TOE 8841-24	0- 24 V	0- 6.5 A	–	–	160 W
TOE 8841-32	0- 32 V	0- 5 A	–	–	160 W
TOE 8841-40	0- 40 V	0- 4 A	–	–	160 W
TOE 8841-64	0- 64 V	0- 2.5 A	–	–	160 W
TOE 8841-130	0-130 V	0- 1.2 A	–	–	160 W
Dual-output power supplies					
TOE 8851-16	0- 16 V	0- 20 A	–	–	320 W
TOE 8851-24	0- 24 V	0- 13 A	–	–	320 W
TOE 8851-32	0- 32 V	0- 10 A	–	–	320 W
TOE 8851-40	0- 40 V	0- 8 A	–	–	320 W
TOE 8851-64	0- 64 V	0- 5 A	–	–	320 W
TOE 8851-130	0-130 V	0- 2.5 A	–	–	320 W
TOE 8842-24	0- 24 V	0- 3.25 A	0- 24 V	0- 3.25 A	2 x 80 W
TOE 8842-32	0- 32 V	0- 2.5 A	0- 32 V	0- 2.5 A	2 x 80 W
TOE 8842-40	0- 40 V	0- 2.0 A	0- 40 V	0- 2.0 A	2 x 80 W
TOE 8842-64	0- 64 V	0- 1.2 A	0- 64 V	0- 1.2 A	2 x 80 W
TOE 8842-130	0-130 V	0- 0.6 A	0-130 V	0- 0.6 A	2 x 80 W
TOE 8852-16	0- 16 V	0- 10 A	0- 16 V	0- 10 A	2 x 160 W
TOE 8852-24	0- 24 V	0- 6.5 A	0- 24 V	0- 6.5 A	2 x 160 W
TOE 8852-32	0- 32 V	0- 5.0 A	0- 32 V	0- 5.0 A	2 x 160 W
TOE 8852-40	0- 40 V	0- 4.0 A	0- 40 V	0- 4.0 A	2 x 160 W
TOE 8852-64	0- 64 V	0- 2.5 A	0- 64 V	0- 2.5 A	2 x 160 W
TOE 8852-130	0-130 V	0- 1.2 A	0-130 V	0- 1.2 A	2 x 160 W

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In-phase regulation

Tracking function

The automatic tracking mode with dual-output power supplies means that it is possible to control the output voltage of output 2 as a function (0 % to 100 %) of output 1 with retention of all control properties.

Remote control

Command syntax in accordance with IEEE 488.2 with command set switchable between compatible TOELLNER commands and SCPI commands.

GPIB interface (option)

Interface connection in accordance with IEEE 488.1; electrically isolated from main outputs. The device address can be set as desired per menu.

Setting rate:

approx. 25 settings/s

Measuring rate:

approx. 20 measurements/s

RS 232 interface (option)

9-pin D-SUB connector; electrically isolated from the main outputs.

Transfer: half-duplex mode, asynchronous; 110 to 19200 baud adjustable per menu.

Setting rate:

approx. 20 settings/s

Measuring rate:

approx. 15 measurements/s

Additional functions

These modern, proven and exceptionally well equipped power supplies are additionally characterized by supplementary functions such as the saving of 100 instrument settings, the standby circuit for the power outputs, sense and tracking modes.

Price and performance

In addition to the exceptional specifications and characteristics, all power supplies of the TOE 8840 and TOE 8850 series have a remarkable price/performance ratio.

Common operating functions

Display of voltage and current: separately on two 4-digit displays for all single instruments; on two selectable 4-digit V/A displays for the dual instruments. Constant voltage or constant current mode is indicated by single LEDs.

Sense mode (only with the TOE 8850 series) can be selected directly. Connection to front or rear of instruments. Non-volatile memory for 100 complete instrument settings and the last setting when switching-off.

Special features

- In-phase regulation
- Operation possible as voltage source or current source
- Extremely low residual ripple
- Extremely high long-term stability
- Resistant to continuous load
- Extremely quiet
- As desktop unit with adjustable feet or for 19" mounting
- No switch-off peaks and no transients at output
- 100 complete instrument settings can be saved resistant to power failure.

Outputs

- Floating for all models
- Electrically isolated in the dual-output power supplies → series and parallel connections possible
- Safety sockets at front

Technical specifications

TOE 8841 – 160 W
TOE 8842 – 2 x 80 W

Special features

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Outputs

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- Electrically isolated in the dual-output power supplies → series and parallel connections possible
- Safety sockets at front

Technical specifications TOE 8840 series

Single-output power supplies

Model		TOE 8841-24	TOE 8841-32	TOE 8841-64	TOE 8841-130
Output data	Voltage	0 - 24 V	0 - 32 V	0 - 64 V	0 - 130 V
	Current	0 - 6.5 A	0 - 5 A	0 - 2.5 A	0 - 1.2 A
Setting resolution	Voltage	10 mV	10 mV	20 mV	100 mV
	Current	2 mA	2 mA	1 mA	1 mA
Setting accuracy	Voltage	0.1 % + 15 mV	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 100 mV
	Current	0.2 % + 10 mA	0.2 % + 4 mA	0.2 % + 2 mA	0.2 % + 2 mA
Deviation in regulation with 100 % change in load	Voltage	5×10^{-4}	5×10^{-4}	2×10^{-4}	2×10^{-4}
	Current	2×10^{-4}	2×10^{-4}	10^{-3}	2×10^{-3}
With change in line voltage ± 10 %		5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}
Regulation time with change in load from 20 % to 100 % Tolerance: 0.2 % V_{rated}		< 100 μ s	< 100 μ s	< 80 μ s	< 80 μ s
Residual ripple (10 Hz - 1 MHz)	Voltage	0.4 mV _{rms}	0.4 mV _{rms}	0.8 mV _{rms}	1 mV _{rms}
	Current	300 μ A _{rms}	200 μ A _{rms}	100 μ A _{rms}	50 μ A _{rms}
Measuring accuracy	Voltage	0.1 % + 25 mV	0.1 % + 30 mV	0.1 % + 40 mV	0.1 % + 200 mV
	Current	0.2 % + 10 mA	0.2 % + 4 mA	0.2 % + 2 mA	0.2 % + 2 mA
Temperature coefficient	Voltage	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$
	Current	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$

Dual-output power supplies

Model		TOE 8842-24	TOE 8842-32	TOE 8842-64	TOE 8842-130
Output data	Voltage	2 x 0 - 24 V	2 x 0 - 32 V	2 x 0 - 64 V	2 x 0 - 130 V
	Current	2 x 0 - 3.25 A	2 x 0 - 2.5 A	2 x 0 - 1.2 A	2 x 0 - 0.6 A
Setting resolution	Voltage	10 mV	10 mV	20 mV	100 mV
	Current	2 mA	1 mA	1 mA	1 mA
Setting accuracy	Voltage	0.1 % + 15 mV	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 100 mV
	Current	0.2 % + 4 mA	0.2 % + 2 mA	0.2 % + 2 mA	0.2 % + 2 mA
Deviation in regulation with 100 % change in load	Voltage	2×10^{-4}	2×10^{-4}	10^{-4}	10^{-4}
	Current	2×10^{-4}	5×10^{-4}	10^{-3}	2×10^{-3}
With change in line voltage ± 10 %		5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}
Regulation time with change in load from 20 % to 100 % Tolerance: 0.2 % V_{rated}		< 80 μ s	< 80 μ s	< 80 μ s	< 80 μ s
Residual ripple (10 Hz - 1 MHz)	Voltage	0.4 mV _{rms}	0.3 mV _{rms}	0.6 mV _{rms}	1 mV _{rms}
	Current	200 μ A _{rms}	100 μ A _{rms}	50 μ A _{rms}	25 μ A _{rms}
Measuring accuracy	Voltage	0.1 % + 25 mV	0.1 % + 30 mV	0.1 % + 40 mV	0.1 % + 200 mV
	Current	0.2 % + 4 mA	0.2 % + 4 mA	0.2 % + 2 mA	0.2 % + 2 mA
Temperature coefficient	Voltage	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$
	Current	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$

Technical specifications

TOE 8851 – 320 W
TOE 8852 – 2 x 160 W

Technical specifications TOE 8850 series

Single-output power supplies

Model		TOE 8851-16	TOE 8851-24	TOE 8851-32	TOE 8851-64	TOE 8851-130
Output data	Voltage	0 - 16 V	0 - 24 V	0 - 32 V	0 - 64 V	0 - 130 V
	Current	0 - 20 A	0 - 13 A	0 - 10 A	0 - 5 A	0 - 2.5 A
Setting resolution	Voltage	10 mV	10 mV	10 mV	20 mV	100 mV
	Current	10 mA	10 mA	5 mA	2 mA	1 mA
Setting accuracy	Voltage	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 20 mV	0.1 % + 100 mV
	Current	0.2 % + 20 mA	0.2 % + 10 mA	0.2 % + 10 mA	0.2 % + 4 mA	0.2 % + 2 mA
Deviation in regulation with 100 % change in load	Voltage	5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}	10^{-4}
	Current	5×10^{-5}	5×10^{-5}	10^{-4}	2×10^{-4}	5×10^{-4}
With change in line voltage ± 10 %		5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}
Regulation time with change in load from 20 % to 100 % Tolerance: 0.2 % V_{rated}		< 200 μ s	< 100 μ s	< 80 μ s	< 80 μ s	< 80 μ s
Residual ripple (10 Hz - 1 MHz)	Voltage	0.5 mV _{rms}	0.5 mV _{rms}	0.5 mV _{rms}	1 mV _{rms}	2 mV _{rms}
	Current	1 mA _{rms}	500 μ A _{rms}	500 μ A _{rms}	200 μ A _{rms}	100 μ A _{rms}
Measuring accuracy	Voltage	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 40 mV	0.1 % + 200 mV
	Current	0.2 % + 20 mA	0.2 % + 20 mA	0.2 % + 10 mA	0.2 % + 4 mA	0.2 % + 2 mA
Temperature coefficient	Voltage	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$
	Current	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$

Dual-output power supplies

Model		TOE 8852-16	TOE 8852-24	TOE 8852-32	TOE 8852-64	TOE 8852-130
Output data	Voltage	2 x 0 - 16 V	2 x 0 - 24 V	2 x 0 - 32 V	2 x 0 - 64 V	2 x 0 - 130 V
	Current	2 x 0 - 10 A	2 x 0 - 6.5 A	2 x 0 - 5 A	2 x 0 - 2.5 A	2 x 0 - 1.2 A
Setting resolution	Voltage	10 mV	10 mV	10 mV	20 mV	100 mV
	Current	5 mA	2 mA	2 mA	1 mA	1 mA
Setting accuracy	Voltage	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 20 mV	0.1 % + 100 mV
	Current	0.2 % + 10 mA	0.2 % + 10 mA	0.2 % + 4 mA	0.2 % + 2 mA	0.2 % + 2 mA
Deviation in regulation with 100 % change in load	Voltage	5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}	10^{-4}
	Current	10^{-4}	2×10^{-4}	2×10^{-4}	5×10^{-4}	10^{-3}
With change in line voltage ± 10 %		5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}
Regulation time with change in load from 20 % to 100 % Tolerance: 0.2 % V_{rated}		< 100 μ s	< 80 μ s	< 80 μ s	< 80 μ s	< 80 μ s
Residual ripple (10 Hz - 1 MHz)	Voltage	0.5 mV _{rms}	0.5 mV _{rms}	0.5 mV _{rms}	1 mV _{rms}	2 mV _{rms}
	Current	500 μ A _{rms}	300 μ A _{rms}	200 μ A _{rms}	100 μ A _{rms}	50 μ A _{rms}
Measuring accuracy	Voltage	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 40 mV	0.1 % + 200 mV
	Current	0.2 % + 10 mA	0.2 % + 10 mA	0.2 % + 4 mA	0.2 % + 2 mA	0.2 % + 2 mA
Temperature coefficient	Voltage	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$
	Current	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$	$10^{-4}/K$

General data

TOE 8840 TOE 8850

General data

Main outputs	Floating and electrically isolated from the system interface
Insulation	± 250 V against ground
Output sockets	On front of instrument with TOE 8840 On front of instrument and optionally at rear with TOE 8850. Standby-circuit of power outputs directly selectable.
Line voltage	115 V/230 V ± 10 % 47 Hz to 63 Hz
Power consumption	TOE 8840 approx. 370 VA TOE 8850 approx. 730 VA
Protective measures	Protection class 1 in accordance with DIN 57411/VDE 0411 Part 1/IEC 348
Operating temperature	0 °C to 40 °C
Storage temperature	-20 °C to 70 °C
Reference temperature	23 °C
Warm-up time	30 min
Dimensions (W x H x D)	
TOE 8840	265 x 147 x 330 mm
TOE 8850	265 x 147 x 437 mm
Weight	
TOE 8840	Approx. 8 kg
TOE 8850	Approx. 15 kg
Housing	Aluminium

Incremental spinwheel

Advantages:

- Wear-free in contrast to potentiometers
- Selection of digit for coarse/fine adjustment
- No maladjustment of setting when switched off
 - protection of device-under-test when switching on the instrument

Safety/protective measures

- Polarity reversal protection
- Resistant to reverse current
- Overtemperature protection
- Keypad locking

Ordering data/options/accessories

TOE 8840
TOE 8850



TOE 8852

Ordering data

Single-output power supplies 160 W

TOE 8841-24	Power supply	24 V/ 6.5 A
TOE 8841-32	Power supply	32 V/ 5 A
TOE 8841-40	Power supply	40 V/ 4 A
TOE 8841-64	Power supply	64 V/ 2.5 A
TOE 8841-130	Power supply	130 V/ 1.2 A

Single-output power supplies 320 W

TOE 8851-16	Power supply	16 V/ 20 A
TOE 8851-24	Power supply	24 V/ 13 A
TOE 8851-32	Power supply	32 V/ 10 A
TOE 8851-40	Power supply	40 V/ 8 A
TOE 8851-64	Power supply	64 V/ 5 A

Ordering data

Dual-output power supplies 2 x 80 W

TOE 8842-24	Power supply	2 x 24 V/ 3.2 A
TOE 8842-32	Power supply	2 x 32 V/ 2.5 A
TOE 8842-40	Power supply	2 x 40 V/ 2 A
TOE 8842-64	Power supply	2 x 64 V/ 1.2 A
TOE 8842-130	Power supply	2 x 130 V/ 0.6 A

Dual-output power supplies 2 x 160 W

TOE 8852-16	Power supply	2 x 16 V/ 10 A
TOE 8852-24	Power supply	2 x 24 V/ 6.5 A
TOE 8852-32	Power supply	2 x 32 V/ 5 A
TOE 8852-40	Power supply	2 x 40 V/ 4 A
TOE 8852-64	Power supply	2 x 64 V/ 2.5 A
TOE 8852-130	Power supply	2 x 130 V/ 1.2 A

Options

Single-output power supplies

Interfaces	
TOE 8861/015	Remote control GPIB and RS 232
TOE 8861/016	Analog remote control
TOE 8861/017	Floating analog remote control
TOE 8850/252	Output at rear (only with TOE 8850 series)

Options

Dual-output power supplies

Interfaces	
TOE 8862/016	Analog remote control
TOE 8862/017	Floating analog remote control
2 x TOE 8850/252	Output at rear (only with TOE 8850 series)

Supplied accessories

- 1 power cord
- 1 instruction manual
- 1 RS 232 interface cable*

* (only with TOE 8861/015 or TOE 8862/015 option)

Free basic driver for LabView™
at www.TOELLNER.de

The instruments of the TOE 8840 series can be equipped either with a GPIB/RS 232 or an analog remote control. Simultaneous fitting of both options is not possible.