

Arbitrary power supplies

TOE 8805 to
TOE 88165

160 W to 5200 W



TOE 8815

Arbitrary power supplies for generation of any voltage and current characteristics with an output power from 160 W to 5200 W. With exceptionally versatile and user-friendly software.

In addition to many predefined standard impulses for the automotive and avionics industries, the arbitrary power supplies of the TOE 8805 to TOE 88165 series additionally offer the option for generating completely optional waveforms. You can thus generate test voltages which perhaps may only be defined in the future.

They also provide dips and drops, load dump impulses, and many versions of complex voltages.

A comprehensive library of curves typical in vehicles provide the user with a reliable and versatile test instrument.

A further operating mode of these extremely universal arbitrary units is the simulation of wiring system ripple as encountered in vehicles or aircraft.

Ripples with frequencies from 20 Hz up to more than 70 kHz can be superimposed on the test curves or on a pure DC voltage.

All models starting with the TOE 8825 are of modular design and consist of an intelligent control unit and boosters connected in parallel.

In these extremely universal units, the major features of a high-speed power supply have been optimally combined with those of an arbitrary function generator.

Software

The software included in the scope of delivery is extremely versatile, allows intuitive use, and permits generation of almost any waveforms within a very short time. Direct data importing from digital oscilloscopes and data recording equipment is also possible without problem.

Furthermore, the software has a library with standard curves from global vehicle manufacturers which is continuously updated.

Output voltage

0 -16 V to 0 -100 V

Output current

0 to 1.6 A to 0 to 320 A

Output power

160 W to 5200 W

Special features

- Generates any voltage and current characteristics
- Imports real-time signals from digital storage oscilloscopes or data recording systems
- Very high rise and fall rates of the output voltage: approx. 2 V/μs
- Brief load currents up to 1000 A
- User-friendly software
- GPIB and analog interfaces included as standard
- Vehicle electrics ripple:
AC superimposition 4 V_{pp}
20 Hz to 70 kHz
- Internal sink function
Brief load sink: 1000 W to
16000 W, depends on model

Arbitrary power supplies



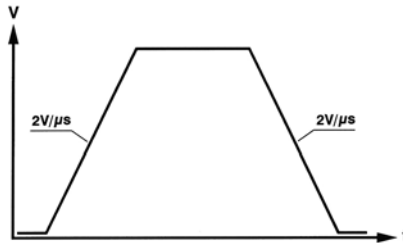
TOE 8815

**TOE 8805 to
TOE 88165**

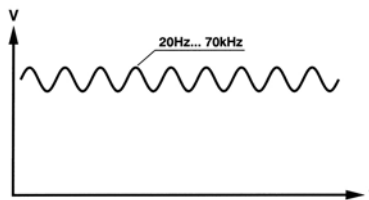
160 W to 5200 W

Special features

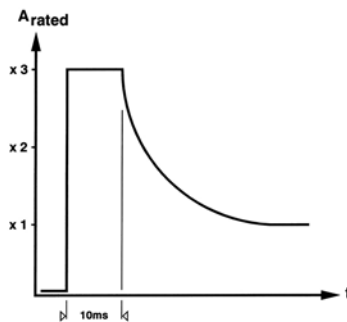
- Extremely high rise and fall rates of the output voltage: approx. $2 \text{ V}/\mu\text{s}$
- GPIB and analog interfaces included as standard
- Vehicle electrics ripple:
AC superimposition 4 V_{pp}
20 Hz to 70 kHz
(TOE 8815 to TOE 8865)
20 Hz to 50 kHz
(TOE 8885 to TOE 88165)
- Brief load current:
 $3 \times I_{\text{rated}}$ for approx. 10 ms
(max. 1000 A)
- Internal sink function
Brief load sink:
1000 W to 16000 W,
depends on model



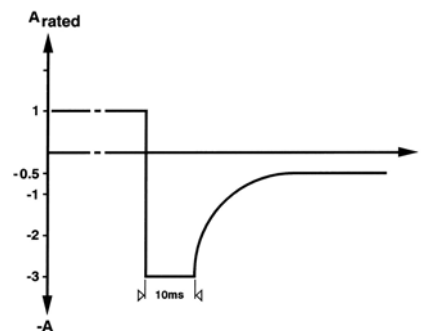
Rise and fall rates with
TOE 8805 to TOE 88165



Vehicle electrics ripple with
TOE 8810/107 option



Brief load current $3 \times I_{\text{rated}}$
TOE 8810/103 option



Brief load sink
TOE 8810/107 option

Arbitrary power supplies

TOE 8805 to
TOE 88165

160 W to 5200 W



TOE 8885

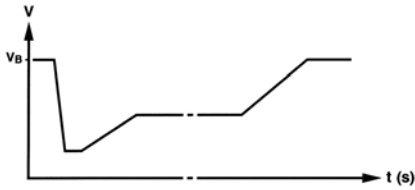
Overview

Output voltage

XX = voltage version	0 - 16 V	0 - 18 V	0 - 20 V	0 - 24 V	0 - 32 V	0 - 40 V	0 - 48 V	0 - 64 V	0 - 80 V	0 - 100 V	Power
TOE 8805-xx	0 - 10 A	0 - 9 A	0 - 8 A	0 - 7 A	0 - 5 A	0 - 4 A	0 - 3.5 A	0 - 2.5 A	0 - 2 A	0 - 1.6 A	160 W
TOE 8815-xx	0 - 20 A	0 - 18 A	0 - 16 A	0 - 14 A	0 - 10 A	0 - 8 A	0 - 7 A	0 - 5 A	0 - 4 A	0 - 3.2 A	320 W
TOE 8825-xx	0 - 40 A	0 - 36 A	0 - 32 A	0 - 27 A	0 - 20 A	0 - 16 A	0 - 14 A	0 - 10 A	0 - 8 A	0 - 6.4 A	640 W
TOE 8835-xx	0 - 60 A	0 - 54 A	0 - 48 A	0 - 42 A	0 - 30 A	0 - 24 A	0 - 21 A	0 - 15 A	0 - 12 A	0 - 10 A	960 W
TOE 8845-xx	0 - 80 A	0 - 72 A	0 - 64 A	0 - 56 A	0 - 40 A	0 - 32 A	0 - 28 A	0 - 20 A	0 - 16 A	0 - 13 A	1280 W
TOE 8855-xx	0 - 100 A	0 - 90 A	0 - 80 A	0 - 70 A	0 - 50 A	0 - 40 A	0 - 35 A	0 - 25 A	0 - 20 A	0 - 16 A	1600 W
TOE 8865-xx	0 - 120 A	0 - 110 A	0 - 100 A	0 - 80 A	0 - 60 A	0 - 50 A	0 - 40 A	0 - 30 A	0 - 25 A	0 - 20 A	1920 W
TOE 8885-xx	0 - 160 A	0 - 145 A	0 - 130 A	0 - 110 A	0 - 80 A	0 - 65 A	0 - 55 A	0 - 40 A	0 - 32 A	0 - 26 A	2560 W
TOE 88105-xx	0 - 200 A	0 - 180 A	0 - 160 A	0 - 135 A	0 - 100 A	0 - 80 A	0 - 70 A	0 - 50 A	0 - 40 A	0 - 32 A	3200 W
TOE 88115-xx	0 - 220 A	0 - 200 A	0 - 180 A	0 - 150 A	0 - 110 A	0 - 90 A	0 - 77 A	0 - 55 A	0 - 45 A	0 - 36 A	3600 W
TOE 88125-xx	0 - 240 A	0 - 215 A	0 - 195 A	0 - 160 A	0 - 120 A	0 - 96 A	0 - 80 A	0 - 60 A	0 - 48 A	0 - 40 A	3840 W
TOE 88145-xx	0 - 280 A	0 - 250 A	0 - 225 A	0 - 190 A	0 - 140 A	0 - 115 A	0 - 95 A	0 - 70 A	0 - 56 A	0 - 45 A	4480 W
TOE 88165-xx	0 - 320 A	0 - 285 A	0 - 260 A	0 - 215 A	0 - 160 A	0 - 130 A	0 - 110 A	0 - 80 A	0 - 64 A	0 - 52 A	5200 W

e.g.: 0 - 24 V, 0 - 56 A, 1280 W: TOE 8845-24

ISO 7637-2
Pulse 4



Start pulse

Arbitrary function

The arbitrary power supplies are equipped with an integral curve memory. They are thus able to execute entered curves autonomously, even without a PC connection. A burst function defines the number of desired curve sweeps.

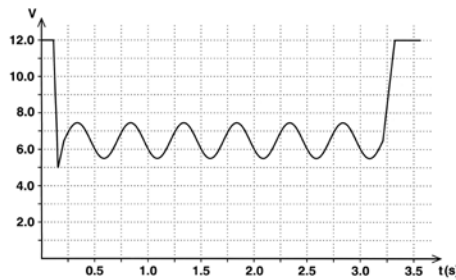
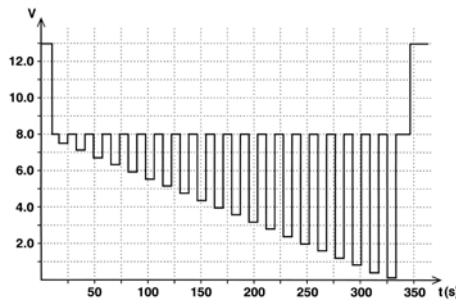
Application examples

- Simulation of standard test pulses in accordance with ISO 7637-2, ISO 16750, DIN 40839
- Starting processes in vehicles (cranking)
- Simulation of real starting processes recorded in vehicles
- Troubleshooting with real recorded signals
- Line voltage ripple
- Dips and reset response
- Ramp-type rise and fall
- Determination and development of own specifications for developments
- Defined charging processes for batteries

Arbitrary function

TOE 8805 to TOE 88165

Curve is loaded via GPIB interface into the device-internal arbitrary memory.



Technical specifications

Number of steps	1000
Step data	Voltage, current, step time
Step time	200 μ s to 100 s
Curve triggering	Manual, via GPIB or TTL signal
Number of sweeps	1 to 255 or ∞

Software for curve generation

TOE 8805 to TOE 88165



TOE 8815

The new and extremely powerful software is used to generate freely-selectable waveforms. Both voltage and current waveforms can be generated.

Oscilloscope signals recorded in a vehicle can be read in directly and subsequently simulated. It is then possible to simulate, for example, voltage dips during the starting process and also noise voltages on the vehicle electrics rapidly and without problem.

Standardized test pulses from DIN 16750 or ISO 7637, such as load dump test pulses (also clipped), jump starts, reset response, and manufacture-specific test curves, can be simulated. These are included in the scope of delivery.

New and future versions of manufacturer-specific test curves can be generated rapidly and without problem.

Standard test pulses

A comprehensive library of waveforms with predefined standard curves from ISO 7637-2, ISO 16750 as well as manufacturer standards are included in the scope of delivery. These include the most important manufacturer pulses from Daimler, BMW, VW, Peugeot, Renault, etc. All components of these pulses can be changed as desired, without requiring an update liable to charges. You can therefore have new and future manufacturer versions available immediately without any waiting period. Your own modifications and adaptations are thus possible.

Curve input

Curves can be generated within a short time using an easy-to-use GUI. No programming knowledge is required. Linear rise/fall as well as signal superimpositions such as sine, triangle, square and e-functions are possible. A table with numerical values is simultaneously generated parallel to the graphic input. Curve values can also be adapted and entered here in a convenient manner.

Data import

ASCII files can be read in using the import function. In this manner, oscilloscope signals from all well-known manufacturers can be imported without data adaptation.

It is thus also possible to import Excel tables which have been saved as CSV files. These real curves can be additionally varied using drag-and-drop. It is then possible e.g. to simulate the statuses of batteries.

Technical specifications

TOE 8805 to TOE 88165

Technical specifications

Output voltage	0 - 16 V	0 - 18 V	0 - 20 V	0 - 24 V	0 - 32 V
Resolution	1 mV	1 mV	2 mV	2 mV	2 mV
Setting accuracy	0.025 % + 10 mV	0.025 % + 10 mV	0.025 % + 10 mV	0.025 % + 10 mV	0.025 % + 10 mV
Measuring accuracy	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV	0.1 % + 10 mV
Monitor voltage 0 to 10 V, accuracy 0.1 % +	10 mV	20 mV	20 mV	20 mV	20 mV
Voltage stabilization					
Change in load 0 to 100 %	$2 \times 10^{-5} + 2 \text{ mV}$	$2 \times 10^{-5} + 2 \text{ mV}$	$2 \times 10^{-5} + 2 \text{ mV}$	$2 \times 10^{-5} + 2 \text{ mV}$	$2 \times 10^{-5} + 2 \text{ mV}$
Change in line voltage $\pm 10\%$	5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}	5×10^{-5}
Change in temperature	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$	$10^{-4}/\text{K}$
Residual ripple V_{pp} (bandwidth 1 MHz)	2.0 mV _{rms}	2.0 mV _{rms}	1.0 mV _{rms}	1.0 mV _{rms}	1.0 mV _{rms}
Drift within 8 hours	10^{-4}	10^{-4}	10^{-4}	10^{-4}	10^{-4}
Regulation time with change in load from 20 % to 100 % and setting to within 0.2 % V_{rated}	< 600 μs	< 600 μs	< 300 μs	< 300 μs	< 300 μs
Setting time of output voltage with change in setpoint, C = off (no-load/rated load)					
0 V to V_{rated} , t_r (10 to 90 %) typ.	< 10 μs	< 11 μs	< 12 μs	< 15 μs	< 20 μs
V_{rated} to 0 V, t_f (90 to 10 %) typ.	< 10 μs	< 11 μs	< 12 μs	< 15 μs	< 20 μs
External voltage control					
Control voltage 0 to 10 V	0 - 16 V	0 - 18 V	0 - 20 V	0 - 24 V	0 - 32 V
Accuracy	0.1 % + 10 mV	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 20 mV	0.1 % + 20 mV
Cut-off frequency (-3 dB), C = off, typ.	3.5 kHz	3.5 kHz	3.5 kHz	3.5 kHz	3.5 kHz



TOE 8815

0 - 40 V	0 - 48 V	0 - 64 V	0 - 80 V	0 - 100 V
5 mV 0.025 % + 10 mV 0.1 % + 10 mV 30 mV	5 mV 0.025 % + 20 mV 0.1 % + 20 mV 30 mV	5 mV 0.025 % + 20 mV 0.1 % + 20 mV 30 mV	5 mV 0.025 % + 20 mV 0.1 % + 20 mV 30 mV	10 mV 0.025 % + 20 mV 0.1 % + 20 mV 40 mV
$2 \times 10^{-5} + 2 \text{ mV}$ 5×10^{-5} $10^{-4}/K$ $1.0 \text{ mV}_{\text{rms}}$ 10^{-4}	$2 \times 10^{-5} + 2 \text{ mV}$ 5×10^{-5} $10^{-4}/K$ $1.0 \text{ mV}_{\text{rms}}$ 10^{-4}	$2 \times 10^{-5} + 2 \text{ mV}$ 5×10^{-5} $10^{-4}/K$ $1.0 \text{ mV}_{\text{rms}}$ 10^{-4}	$2 \times 10^{-5} + 2 \text{ mV}$ 5×10^{-5} $10^{-4}/K$ $1.0 \text{ mV}_{\text{rms}}$ 10^{-4}	$2 \times 10^{-5} + 2 \text{ mV}$ 5×10^{-5} $10^{-4}/K$ $1.0 \text{ mV}_{\text{rms}}$ 10^{-4}
< 200 μs	< 200 μs	< 200 μs	< 200 μs	< 200 μs
< 25 μs < 25 μs	< 30 μs < 30 μs	< 40 μs < 40 μs	< 50 μs < 50 μs	< 60 μs < 60 μs
0 - 40 V 0.1 % + 30 mV 3.5 kHz	0 - 48 V 0.1 % + 30 mV 1.5 kHz	0 - 64 V 0.1 % + 30 mV 1.5 kHz	0 - 80 V 0.1 % + 30 mV 1.5 kHz	0 - 100 V 0.1 % + 30 mV 1.5 kHz

Technical specifications

TOE 8805 to TOE 88165

Technical specifications

Output voltage	Up to ≤ 5 A	Up to ≤ 10 A	Up to ≤ 20 A	Up to ≤ 40 A	Up to ≤ 80 A
Resolution	1 mA	1 mA	2 mA	2 mA	5 mA
Setting accuracy	0.1 % + 10 mA	0.1 % + 10 mA	0.1 % + 20 mA	0.1 % + 40 mA	0.1 % + 80 mA
Measuring accuracy	0.1 % + 10 mA	0.1 % + 10 mA	0.1 % + 20 mA	0.1 % + 40 mA	0.1 % + 80 mA
Monitor voltage 0 to 10 V	0 - I_{rated}	0 - I_{rated}	0 - I_{rated}	0 - I_{rated}	0 - I_{rated}
Accuracy	0.1 % + 10 mA	0.1 % + 10 mA	0.1 % + 20 mA	0.1 % + 40 mA	0.1 % + 80 mA
Current stabilization					
Change in load 0 to 100 %	2×10^{-4}	2×10^{-4}	2×10^{-4}	2×10^{-4}	2×10^{-4}
Change in line voltage ± 10 %	10^{-4}	10^{-4}	10^{-4}	10^{-4}	10^{-4}
Change in temperature	$2 \times 10^{-4}/K$	$2 \times 10^{-4}/K$	$2 \times 10^{-4}/K$	$2 \times 10^{-4}/K$	$2 \times 10^{-4}/K$
Residual ripple I_{rms} (bandwidth 1 MHz)	0.5 mA _{rms}	1 mV _{rms}	1 mV _{rms}	1 mV _{rms}	1 mV _{rms}
Drift within 8 hours	5×10^{-4}	5×10^{-4}	5×10^{-4}	5×10^{-4}	5×10^{-4}
Setting time of output current with change in setpoint, C = off (no-load/rated load)					
0 A to I_{rated} , t_r (10 - 90 %) typ.	< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms
V_{rated} to 0 A, t_f (90 - 10 %) typ.	< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms
External current control					
Control voltage 0 to 10 V	0 - I_{rated}	0 - I_{rated}	0 - I_{rated}	0 - I_{rated}	0 - I_{rated}
Accuracy	0.4 % + 10 mA	0.4 % + 10 mA	0.4 % + 20 mA	0.4 % + 40 mA	0.4 % + 80 mA
Cut-off frequency (-3 dB), C = off, typ.	3.5 kHz	3.5 kHz	3.5 kHz	3.5 kHz	3.5 kHz



TOE 8815

Up to ≤ 120 A	Up to ≤ 160 A	Up to ≤ 200 A	Up to ≤ 260 A	Up to ≤ 320 A
10 mA	10 mA	20 mA	20 mA	20 mA
0.1 % + 100 mA	0.1 % + 100 mA	0.1 % + 120 mA	0.1 % + 130 mA	0.1 % + 160 mA
0.1 % + 100 mA	0.1 % + 100 mA	0.1 % + 120 mA	0.1 % + 130 mA	0.1 % + 160 mA
0 - I _{rated}	0 - I _{rated}	0 - I _{rated}	0 - I _{rated}	0 - I _{rated}
0.1 % + 100 mA	0.1 % + 100 mA	0.1 % + 120 mA	0.1 % + 130 mA	0.1 % + 160 mA
2 x 10 ⁻⁴	2 x 10 ⁻⁴	2 x 10 ⁻⁴	2 x 10 ⁻⁴	2 x 10 ⁻⁴
10 ⁻⁴	10 ⁻⁴	10 ⁻⁴	10 ⁻⁴	10 ⁻⁴
2 x 10 ⁻⁴ /K	2 x 10 ⁻⁴ /K	2 x 10 ⁻⁴ /K	2 x 10 ⁻⁴ /K	2 x 10 ⁻⁴ /K
1 mV _{rms}	2 mV _{rms}	2 mV _{rms}	2 mV _{rms}	2 mV _{rms}
5 x 10 ⁻⁴	5 x 10 ⁻⁴	5 x 10 ⁻⁴	5 x 10 ⁻⁴	5 x 10 ⁻⁴
< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms
< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms	< 0.2 ms
0 - I _{rated}	0 - I _{rated}	0 - I _{rated}	0 - I _{rated}	0 - I _{rated}
0.4 % + 100 mA	0.4 % + 100 mA	0.4 % + 120 mA	0.4 % + 150 mA	0.4 % + 160 mA
2.0 kHz	2.0 kHz	2.0 kHz	2.0 kHz	2.0 kHz

General data

TOE 8805 to TOE 88165

Display

Voltage/current Separately on two 5-digit displays

Address IEEE device address or memory address

Memory for instrument settings

Memory locations 100 complete instrument settings for power supply mode and one setting in the non-volatile memory for the instrument status when switching off

Arbitrary function

Interpolation points 2 to 1000

Interpolation point data Voltage, current and step size

Step size 200 μ s to 100 s and ∞ , separately adjustable for each interpolation point

Sequence mode Continuous or burst with 1 to 255 sweeps

Triggering Manually on keypad, remote-controlled by bus command, or external trigger (TTL)

Saving 1 complete function sequence with the data for 1000 interpolation points is saved in the internal non-volatile memory; external saving of function sequences on SRAM memory card according to JEIDA 4.0 standard with max. capacity of 2 MB

IEEE bus control

Interface standard Electrically isolated; in accordance with IEEE 488.1

Software standard In accordance with IEEE 488.2

Device address 0 to 30

Measuring rate > 8 measurements/s for voltage and current, > 12 measurements/s for voltage or current

Setting times

Voltage/current < 50 ms

Capacitor < 2 s (because of charging and discharging)

Power supply memory < 150 ms for storage; < 50 ms (< 2 s with capacitor switching) for recalling

Relay matrix < 30 ms

Arbitrary function < 30 ms for start < 30 ms for stop < 5 s for linear curve calculation, dependent on number of interpolation points < 200 ms for direct interpolation point storage < 50 ms for direct interpolation point recalling

Memory card < 5 s for storage; < 5 s for recalling

Other < 60 ms

Relay matrix

Trigger Manually on keypad or remote-controlled by IEEE bus command

Number of relays 4 relays with one NO contact each

Contact rating ≤ 10 W; ≤ 200 V and ≤ 0.5 A

Options

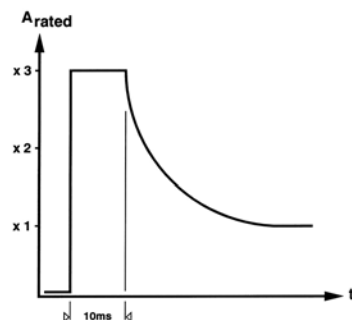
TOE 8805 to TOE 88165

Various options available for the TOE 8805 to 88165 arbitrary power supplies.

All options are used for specific adaptation of the arbitrary power supplies to the respective task. They can be fitted individually, and sometimes together.

TOE 8810/103

Brief load current $3 \times I_{rated}$. Units equipped with this option deliver three times the rated current for approx. 10 ms.



Brief load current with TOE 8810/103 option

Vehicle electrics ripple / AC superimposition

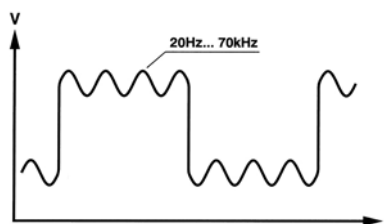
The TOE 8810/107 option permits simulation of vehicle electrics ripple in the frequency range from 20 Hz to 70 kHz with an amplitude of $4 V_{pp}$. Since this AC voltage is fed from an external signal generator, you can superimpose sine, triangle or square signals on the saved test curves or also on a pure DC voltage.

TOE 88107/107 M (only TOE 8815 to 88165)

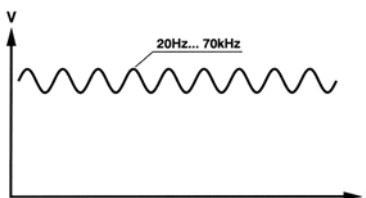
Permits vehicle electrics ripple / AC superimposition in the frequency range from 20 Hz to 70 kHz and is simultaneously a brief load sink of 1 kW (for master device).

TOE 8810/107 B

Like TOE 8810/107 M, but for booster devices. The brief load sink power per booster is approx. 1 kW.



Vehicle electrics ripple with TOE 8810/107 option

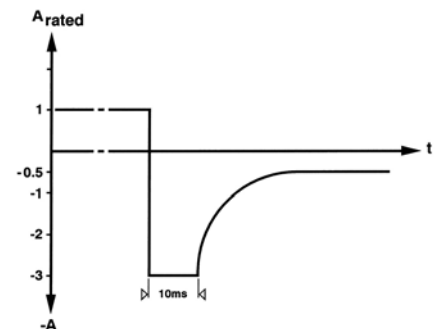


Vehicle electrics ripple with TOE 8810/107 option

Sink mode

The TOE 8810/107 option is able in sink mode to rapidly discharge large capacitances. A sink current is briefly reached in the process which corresponds to three times the source current of the arbitrary power supply.

The TOE 8815-32 model, for example, provides a continuous output power of 320 W. A maximum brief load sink power of approx. 1000 W is achieved with the TOE 8810/107 option; a capacitance of 10000 μF can be discharged in this case from 14 V to 4 V in 3 ms.



Brief load sink TOE 8810/107 option

Mechanical designs

TOE 8805 to TOE 8825



TOE 8805
160 W output power
Dimensions:
½ 19" x 3 HU x 400 mm (W x H x D)
Weight: approx. 9 kg



TOE 8815
320 W output power
Dimensions:
19" x 3 HU x 400 mm (W x H x D)
Weight: approx. 18 kg



TOE 8825
640 W output power
Dimensions:
19" x 6 HU x 400 mm (W x H x D)
Weight: approx. 36 kg

Mechanical designs

TOE 8835 to TOE 88125 TOE 88145 to TOE 88165



TOE 8885

TOE 8835 to TOE 88125

960 W to 3840 W output power

These units are supplied in a mobile 19" rack (LabMobil); 15 HU to 37 HU. Weight 110 kg to 320 kg. The models starting at TOE 8845 have a power-on module to limit the inrush current.



TOE 88145

TOE 88145 to TOE 88165

4480 W to 5200 W output power

These units are supplied in two mobile 19" racks (LabMobil); 2 x 26 HU. Weight 2 x 210 kg to 2 x 230 kg. These units have a power-on module to limit the inrush current.

General data/accessories/options

TOE 8805 to TOE 88165

Supplied accessories

- 1 power cord
- 1 instruction manual
- 1 memory card 128 KB
- Arbitrary software
- Software driver LabView

General data

Power output	Floating and electrically isolated, standby/execute directly switchable
Output terminals	TOE 8805, TOE 8815: at front, and parallel at rear TOE 8825, TOE 8835, TOE 8845, TOE 8855, TOE 8865, TOE 8885, TOE 88105, TOE 88125, TOE 88145, TOE 88165: at rear
Insulation	± 250 V against ground
Line voltage	115 V/230 V ± 10 %, 47 Hz to 63 Hz
Power consumption	TOE 8805: approx. 360 VA TOE 8815: approx. 750 VA TOE 8825: approx. 1500 VA TOE 8835: approx. 2250 VA TOE 8845: approx. 3000 VA
Line voltage	400 V ± 10 %, 47 Hz to 63 Hz, 3-phase
Power consumption	TOE 8855: approx. 3750 VA TOE 8865: approx. 4500 VA TOE 8885: approx. 6000 VA TOE 88105: approx. 7500 VA TOE 88115: approx. 8250 VA TOE 88125: approx. 9000 VA TOE 88145: approx. 10500 VA TOE 88165: approx. 12000 VA
Protective measures	Protection class 1 in accordance with DIN 57411/VDE 0411 Part 1
Line fuse	115 V: T 4 L; 230 V: T 2.5 L for TOE 8805 115 V: T 8 L; 230 V: T 4 L for each 320 W of output power in accordance with IEC 127-2/III, DIN 41662
Operating temperature	0 °C to 40 °C
Reference temperature	23 °C
Storage temperature	-20 °C to 70 °C
Warm-up time	Approx. 30 min

Dimensions in mm

TOE 8805 216 x 132 x 437 mm (W x H x D), height with feet 147
TOE 8815 to TOE 8865 434 x 134.5 x 437 mm (W x H x D)
for each 320 W of output power
TOE 8805: 19" system: system-compatible with ½ 19", 3 HU
TOE 8815 - TOE 88165; system-compatible with 19", 3 HU for each 320 W of output power

Housing

Aluminium

Weight

TOE 8805: approx. 9 kg
TOE 8815 to TOE 88165: approx. 18 kg for each 320 W of output power

Options

TOE 8810/103

Brief load current $3 \times I_{rated}$

TOE 8810/107 M (only TOE 8815 to TOE 88165)

External superimposition and brief load sink (master)

TOE 8810/107 B

External superimposition and brief load sink (booster)

TOE 9101

USB GPIB controller

TOE 9009

GPIB 488 cable, 2 m

TOE 9502

19" adapter, 3 HU for single installation, TOE 8805-xx

TOE 9508

19" adapter, 3 HU parallel installation set for 2 x 8805-xx

TOE 9512

19" adapter, 3 HU for TOE 8815-xx to TOE 8825-xx



TOE 9101 USB GPIB controller

Ordering data

TOE 8805 to
TOE 88165



TOE 8885

Ordering data

Voltage version	16 V	18 V	20 V	24 V	32 V	40 V	48 V	64 V	80 V	100 V	Output power
TOE 8805	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	160 W
TOE 8815	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	320 W
TOE 8825	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	640 W
TOE 8835	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	960 W
TOE 8845	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	1280 W
TOE 8855	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	1600 W
TOE 8865	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	1920 W
TOE 8885	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	2560 W
TOE 88105	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	3200 W
TOE 88115	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	3600 W
TOE 88125	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	3840 W
TOE 88145	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	4480 W
TOE 88165	-16	-18	-20	-24	-32	-40	-48	-64	-80	-100	5200 W

Ordering example

TOE 8865-32 | 0 - 32 V, 0 - 60 A, 1920 W