

TOPACC ZERO-FLUX™ DC CURRENT



The TOPACC Zero-flux™ is a high precision DC current measuring system, based on the zero-flux principle, for currents up to 6000 A. The TOPACC represents the top of the range of Zero-flux™ products and exemplifies our profound knowledge of designing and building measuring systems for extremely stringent requirements. Hitec Power Protection has over 25 years of experience in doing so.

The Topacc system has a linearity better than 2.5 ppm and has many standard features such as uninterrupted operation through power failures, automatic reset after overload and zero-current detection. The system can be switched on when the main current is already present.

The TOPACC can be used as a test and calibration device, as a control/measuring unit in a feed-back loop in high performance power supplies and amplifiers, or as a secondary DC standard reference. The special features of the Topacc have been demonstrated for many years. The system is widely used in: Nuclear research projects, Plasma physics experiments, Applied scientific research and Industrial calibration workshops.

The Topacc features

- ◆ Available for currents up to 6000 Adc. Small signal bandwidth 500 kHz.
- ◆ Linearity better than 2.5 ppm.
- ◆ 10 V output voltage at users specified rated current.
- ◆ Unique peak detection method ensures perfect operation under all circumstances.
- ◆ Exceptionally high thermal stability due to the specially made burden resistor.
- ◆ Standard temperature coefficient even less than 0.5 ppm/K (0.25 ppm/K optional).
- ◆ High accuracy and stability without the need for special temperature control devices. No warming-up time.
- ◆ True bipolar operation, ± 10 V full scale output.
- ◆ Four-wire output for minimum distortion by the load circuit.
- ◆ Calibration traceable to Nmi (Netherlands Measuring Institute).
- ◆ Saturation detection circuit with automatic reset.
- ◆ Zero-current detection.
- ◆ Uninterrupted operation through power failures up to 30 msec.
- ◆ Can be switched on with main current already present.

Specifications Topacc






Primary Circuit	rated current	up to 6000 A (bipolar)	
	permissible overcurrent	115 % of rated current (10s)	
	short-circuit current	1000 % of rated current (0.1s)	
	current slew rate	unlimited	
Output Circuit	rated voltage	± 10 V	
	maximum load current	5 mA	
	output impedance	< 10 mΩ	
	output slew rate	1.5 V/μs	
	small signal-bandwidth (< 5% of rated primary current)	0...500 kHz	
	rms value of output noise related to rated V_{out}	0... 10 Hz	< 0.1 ppm
		0... 100 Hz	< 0.3 ppm
0... 10 kHz		< 1.5 ppm	
DC accuracy	<u>offset error</u> related to rated output voltage (adjustable)		
	- initial (at 25°C)	< 2.5 ppm	
	- versus temperature	< 0.5 ppm/K (< 0.25 ppm/K optional)	
	- versus time	< 5 ppm/year	
	<u>ratio error</u> related to actual output voltage		
	- initial (at 25°C)	< 25 ppm	
	- versus temperature	< 1 ppm/K (< 0.25 ppm/K optional)	
	- versus time	< 5 ppm/year	
	<u>linearity error</u> related to actual output voltage		
		< 2.5 ppm	
Signalling		LED's + relay contacts	
	output valid	Up to 1.15 I_n	
	zero current detection	At 0.1% of I_n	
	General data	ambient temperature	measuring head 0...55°C electronics module 10...40°C

Auto reset after overload. Starts with load at power on

Available types

T06 → 0 ... 600 A, T20 → 600 ... 2000 A, T40 → 2000 ... 4000 A, T50 → 4000 ... 5000 A, T60 → 5000 ... 6000 A.

Available versions

T**-1		* 2 (Eurocard) PCB's for 3U sub-rack mounting	128.5x50.5x160 mm (3U,10HP) / 128.5x20.3x160 mm
T**-3		Supply voltages:	T06,T20,T40= ± 24Vdc / T50 = ± 32Vdc / T60 = ± 40Vdc
		* Eurocassette with 2 PCB's for 3U sub-rack mounting	128.5x106.3x160 mm (3U,21HP)
T**-5		Supply voltages:	T06,T20,T40= ± 24Vdc / T50 = ± 32Vdc / T60 = ± 40Vdc
		* 3 (Eurocard) PCB's for 3U sub-rack mounting	128.5x50.5x160 mm (3U,10HP) / 128.5x20.3x160 mm
T**-6		Supply voltages:	115 or 230 Vac (state at ordering)
		*Eurocassette with 3 PCB's for 3U sub-rack mounting	128.5x141x160 mm (3U,28HP)
T**-8		Supply voltages:	115 or 230 Vac (state at ordering)
		* Chassis for 19" rack mounting	44x483x250 mm (1H, 19")
		Supply voltages:	115 or 230 Vac (state at ordering)

Applied measuring heads

Model		Dimensions (mm)	Bore (mm)	Weight (kg)	Test Voltage (kV, 1 min)
A for T06	standard	Ø 65 H=35	25	0.3	2.5
B for T20	standard	Ø 120 H=60	50	2	2.5
	optional	145x125x150	45	3	5
E for T40, T50, T60	standard	Ø 220 H=110	65	10	2.5
	optional	225x225x180	60	15	5

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