

Technical data CPC 100

CPC 100

Generator / Outputs

Current outputs

Range	Amplitude	t_{\max}^1	V_{\max}^2	Power_{\max}^2	f
800 A AC ³	0 ... 800 A	25 s	6.0 V	4800 VA	15 Hz ... 400 Hz
	0 ... 400 A	8 min.	6.4 V	2560 VA	15 Hz ... 400 Hz
	0 ... 200 A	> 2 h	6.5 V	1300 VA	15 Hz ... 400 Hz
6 A AC ¹⁰	0 ... 6 A	> 2 h	55 V	330 VA	15 Hz ... 400 Hz
3 A AC ¹⁰	0 ... 3 A	> 2 h	110 V	330 VA	15 Hz ... 400 Hz
400 A DC	0 ... 400 A	2 min.	6.5 V	2600 VA	DC
	0 ... 300 A	3 min.	6.5 V	1950 VA	DC
	0 ... 200 A	> 2 h	6.5 V	1300 VA	DC
6 A DC ^{4,10}	0 ... 6 A	> 2 h	60 V	360 VA	DC

2000 A AC³ with an optional current booster (CP CB2)

Voltage outputs

Range	Amplitude ⁵	t_{\max}	I_{\max}	Power_{\max}^5	f
2 kV AC ³	0 ... 2 kV	1 min.	1.25 A	2500 VA	15 Hz ... 400 Hz
	0 ... 2 kV	> 2 h	0.5 A	1000 VA	15 Hz ... 400 Hz
1 kV AC ³	0 ... 1 kV	1 min.	2.5 A	2500 VA	15 Hz ... 400 Hz
	0 ... 1 kV	> 2 h	1.0 A	1000 VA	15 Hz ... 400 Hz
500 V AC ³	0 ... 500 V	1 min.	5.0 A	2500 VA	15 Hz ... 400 Hz
	0 ... 500 V	> 2 h	2.0 A	1000 VA	15 Hz ... 400 Hz
130 V AC ¹⁰	0 ... 130 V	> 2 h	3.0 A	390 VA	15 Hz ... 400 Hz

Internal measurement of outputs (Accuracy⁶)

Output	Range	Amplitude	Amplitude	Phase
		Reading Error	Full scale Error	Full scale Error
800 A AC	–	< 0.10 %	< 0.10 %	< 0.10°
400 A DC	–	< 0.20 %	< 0.05 %	–
2 kV AC	2000 V	< 0.05 %	< 0.05 %	< 0.10°
	1000 V	< 0.05 %	< 0.05 %	< 0.15°
	500 V	< 0.05 %	< 0.05 %	< 0.20°
5 A	5 A	< 0.20 %	< 0.05 %	< 0.10°
	500 mA	< 0.05 %	< 0.05 %	< 0.10°

Inputs

Measuring inputs (Accuracy⁶)

Input	Imped.	Range	Amplitude	Amplitude	Phase
			Reading Error	Full scale Error	Full scale Error
I AC / DC ^{4,7}	< 0.1 Ω	10 A AC	< 0.05 %	< 0.05 %	< 0.10°
		1 A AC	< 0.05 %	< 0.05 %	< 0.15°
		10 A DC	< 0.03 %	< 0.08 %	–
		1 A DC	< 0.03 %	< 0.08 %	–
V1 AC ⁸	500 k Ω	300 V	< 0.05 %	< 0.05 %	< 0.10°
		30 V	< 0.05 %	< 0.05 %	< 0.10°
		3 V	< 0.10 %	< 0.05 %	< 0.10°
V2 AC ^{8,11}	10 M Ω	300 mV	< 0.15 %	< 0.05 %	< 0.10°
		3 V	< 0.03 %	< 0.08 %	< 0.10°
		300 mV	< 0.08 %	< 0.08 %	< 0.10°
V DC ^{4,7}	10 V	10 V	< 0.03 %	< 0.08 %	–
		1 V	< 0.03 %	< 0.08 %	–
		100 mV	< 0.05 %	< 0.10 %	–
		30 mV	< 0.10 %	< 0.25 %	< 0.15°
		10 mV	< 0.05 %	< 0.15 %	–

Additional features of the measuring inputs

Automatic range switching (except Amplifier test card)
Galvanically separated potential groups: I AC/DC ; V1 & V2 ; V DC
AC frequency range: 15 Hz to 400 Hz (except Amplifier test card)
Protection of I AC/DC input: 10 A very fast acting (FF) fuse⁴

Binary input for dry contacts or voltages up to 300 V DC⁷

Trigger criteria: Toggling with potential-free contacts or voltages of up to 300 V
Input impedance: > 100 k Ω
Response time: 1 ms

Output to input synchronization

	Test cards Quick, Sequencer, Ramping	Amplifier test card
Frequency range	48 Hz ... 62 Hz	48 Hz ... 62 Hz
Synchronization inputs	V1 AC (automatic range switch)	V1 AC, V2 AC, I AC (fixed to maximum range)
Input magnitude	10 % of input range full scale	
Output magnitude	5 % of output range full scale	
Settling time	100 ms after 5 % of output range full scale is reached	1000 ms after 5 % of output range full scale is reached
Signal changes	All quantities must be ramped within 20 signal periods	No changes of frequency and phase. Magnitude changes without limitation. Output follows within 250 ms
Phase tolerance	0.5 ° within the limits as specified above	



Resistance measurement

4-wire measurement with 400 A DC output and 10 V DC input

Current	Resistance	Voltage	Accuracy (full scale)
400 A	10 $\mu\Omega$	4 mV	Error < 0.70 %
400 A	100 $\mu\Omega$	40 mV	Error < 0.55 %
400 A	1 m Ω	400 mV	Error < 0.50 %
400 A	10 m Ω	4 V	Error < 0.50 %

4-wire measurement with 6 A DC output and 10 V VDC input

Current	Resistance	Voltage	Accuracy (full scale)
6 A	100 m Ω	0.6 V	Error < 0.35 %
6 A	1 Ω	6 V	Error < 0.35 %
1 A	10 Ω	10 V	Error < 0.25 %

2-wire measurement with 10 V VDC input

Current	Resistance	Voltage	Accuracy (full scale)
> 5 mA	100 Ω		Error < 0.60 %
> 5 mA	1 k Ω		Error < 0.51 %
> 5 mA	10 k Ω		Error < 0.50 %

Power supply and mechanical data

Single-phase, nominal ⁹	100 V _{AC} ... 240 V _{AC} , 16 A
Single-phase, permissible	85 V _{AC} ... 264 V _{AC} (L-N or L-L)
Frequency, nominal	50 Hz / 60 Hz
Power consumption	< 3 500 VA (< 7 000 VA for a time < 10 s)
Connection	IEC 320 / C20
Weight	29 kg / 64 lbs (case without protection cover)
Dimensions (W x H x D)	468 x 394 x 233 mm (18.4 x 15.5 x 9.2 in), cover, without handles.

Equipment reliability

Shock	IEC / EN 60068-2-27, 15 g / 11 ms, half-sinusoid, each axis
Vibration	IEC / EN 60068-2-6, frequency range from 10 Hz to 150 Hz, continuous acceleration 2 g (20 m/s ² / 65 ft/s ²), 10 cycles per axis

Environmental conditions for CPC 100 and CPC 100 accessories

Operating temperature	-10 °C ... +55 °C / +14 °F ... +131 °F
Storage temperature	-20 °C ... +70 °C / -4 °F ... +158 °F
Humidity range	5 % ... 95 % relative humidity, no condensation

All input / output values are guaranteed for one year within an ambient temperature of 23 °C \pm 5 °C / 73 °F \pm 10 °F, a warm-up time longer than 25 min. and in a frequency range of 45 Hz to 60 Hz or DC. Accuracy values indicate that the error is smaller than \pm (value read x reading error + full scale of the range x full scale error).

1. With a mains voltage of 230 V using a 2 x 6 m high-current cable at an ambient temperature of 23 °C \pm 5 °C / 73 °F \pm 10 °F.
2. The power and maximum voltage may be reduced above 60 Hz or below 50 Hz.
3. Output can be synchronized with V1 AC in Quick, Sequencer, Ramping and Amplifier test cards.
4. The inputs and outputs are protected with lightning arrestors between the connector and against the protective earth. In the event of application of energy exceeding a few hundred Joule the lightning arrestors apply a permanent short-circuit to the input / output.
5. The power and amplitude may be reduced above 200 Hz or below 50 Hz.
6. 98 % of all units have an accuracy better than specified as "typical".
7. This input is galvanically separated from all other inputs.
8. V1 and V2 are galvanically coupled but separated from all other inputs.
9. There are power restrictions for mains voltages below 190 V_{AC}.
10. Fuse-protected.
11. When using the CTRogowski test card, the 3 V V2 AC input uses an additional software based integration method. In the range of 50 Hz < f < 60 Hz, this results in a phase shift of 90 ° as well as an additional phase error of \pm 0.1 ° and an additional amplitude error of \pm 0.01 %. For frequencies in the range of 15 Hz < f < 400 Hz, the phase error is not specified, and the amplitude error can be up to \pm 0.50 % higher.