

Technical Data



CMC 310 – Compact protection test set for easy manual testing

The CMC 310 is specifically designed for manual three-phase testing of protection and measurement devices with CMControl P. The lightweight and compact design makes the CMC 310 particularly suitable for testing distribution and industrial systems. If automated testing is requested, a CMC 310 can be upgraded to a CMC 353 at any time.

Technical Data¹

Current generators		
Setting range	3-phase AC (L-N)	3 x 0 ... 32 A
	1-phase AC (L-L)	1 x 0 ... 32 A
	1-phase AC (LL-LN)	1 x 0 ... 64 A
	DC (LL-LN)	1 x 0 ... ±90 A
Power ^{2,3}	3-phase AC (L-N)	3 x 430 VA typ. at 25 A 3 x 250 W guar. at 20 A
	1-phase AC (L-L)	1 x 870 VA typ. at 25 A 1 x 530 W guar. at 20 A
	1-phase AC (LL-LN)	1 x 700 W typ. at ±40 A
		1 x 500 W guar. at ±40 A
Accuracy ⁴	Error < 0.05 % rd. ⁵ + 0.02 % rg. ⁵ typ. Error < 0.15 % rd. + 0.05 % rg. guar.	
Distortion (THD+N) ⁶	< 0.05 % typ., < 0.15 % guar.	
Resolution	1 mA	
Max. compliance voltage (L-N)/(L-L)	35 Vpk / 70 Vpk	
Connection banana sockets	4 mm (0.16 in) banana sockets (32 A continuously)	

Voltage generators		
Setting Range	3-phase AC (L-N)	3 x 0 ... 300 V
	1-phase AC (L-N)	1 x 0 ... 300 V
	1-phase AC (L-L)	1 x 0 ... 600 V
	DC (L-N)	3 x 0 ... ±300 V
Power ³	3-phase AC (L-N)	3 x 100 VA typ. at 100 ... 300 V 3 x 85 VA guar. at 85 ... 300 V
	1-phase AC (L-N)	1 x 200 VA typ. at 100 ... 300 V 1 x 150 VA guar. at 75 ... 300 V
		1 x 275 VA typ. at 200 ... 600 V 1 x 250 VA guar. at 200 ... 600 V
	DC (L-N)	1 x 420 W typ. at ±300 V
1 x 360 W guar. at ±300 V		
Accuracy	Error < 0.03 % rd. ⁵ + 0.01 % rg. ⁵ typ. at 0 ... 300 V Error < 0.08 % rd. + 0.02 % rg. guar. at 0 ... 300 V	
Distortion (THD+N) ⁶	0.015 % typ., < 0.05 % guar.	
Ranges	150 V / 300 V	
Resolution	5 mV / 10 mV in range 150 V / 300 V	
Connection	4 mm (0.16 in) banana sockets	

Generators, general		
Frequency	Range sine signals	10 ... 599 Hz
	Accuracy / drift	±0.5 ppm / ±1 ppm
	Resolution	< 5 µHz
Phase	Angle range	-360° ... +360°
	Resolution	0.001°
	Error at 50 / 60 Hz	Voltage: 0.02° typ., < 0.1° guar. Current: 0.05° typ., < 0.2° guar. ⁴

Binary inputs	
Number	6
Trigger criteria	Toggling of potential-free contacts or DC voltage compared to threshold voltage
Input characteristics	0 ... ±300 VDC threshold or potential-free
Ranges	20 V / 300 V
Resolution of threshold	50 mV (0 ... 20 V), 500 mV (20 V ... 300 V)
Sample rate	10 kHz (resolution 100 µs)
Time stamping accuracy	±0.00015 % of reading ±70 µs
Max. measuring time	Infinite
Debounce / Deglitch time	0 ... 25 ms / 0 ... 25 ms
Counting function	< 3 kHz at pulse width > 150 µs
Galvanic isolation	3 galvanically isolated groups (2+2+2)
Max. input voltage	CAT IV / 150 V, CAT III / 300 V

¹ All data specified are guaranteed, except where indicated otherwise.
OMICRON guarantees the specified data for one year after factory calibration, within 23 °C ± 5 °C (73 °F ± 10 °F) in the frequency range from 10 to 100 Hz and after a warm-up phase > 25 minutes

² Typical AC values valid for inductive loads (e.g. e/m relays)

³ Continuous operation with full output power possible for 15 minutes

⁴ Rload: 0 ... 0.5 Ω



⁵ rd. = reading, rg. = range

⁶ THD+N: Values at 50/60 Hz, > 1 A / 20 V with 20 kHz bandwidth

Counter inputs 100 kHz		
Number	2	
Max. counting frequency	100 kHz	
Pulse width	> 3 µs	
Threshold voltage	6 V	
Voltage hysteresis	2 V	
Max. input voltage	±30 V	
Isolation	SELV	
Connection	16 pin combination socket (rear side)	
Auxiliary DC supply		
Voltage ranges	0 ... 264 VDC, 0.2 A / 0 ... 132 VDC, 0.4 A / 0 ... 66 VDC, 0.8 A	
Power	Max. 50 W	
Accuracy	Error < 2 % typ., < 5 % guar.	
Trigger on overload		
Supported generators	Current generators	
Timer accuracy	Error < 1 ms	
Binary outputs, relays		
Type	Potential-free relay contacts, software controlled	
Number	4	
Break capacity AC	Vmax: 300 VAC / Imax: 8 A / Pmax: 2000 VA	
Break capacity DC	Vmax: 300 VDC / Imax: 8 A / Pmax: 50 W	
Binary outputs, transistor		
Type	Open collector transistor outputs	
Number	4	
Update rate	10 kHz	
I _{max}	5 mA	
Connection	16 pin combination socket (rear side)	
Power supply		
Nominal input voltage	100 – 240 VAC, 1-phase	
Permissible input voltage	85 ... 264 VAC	
Nominal frequency	50/60 Hz	
Permissible frequency range	45 ... 65 Hz	
Power consumption	1.7 kVA at 115 V / 2.3 kVA at 230 V	
Rated current	12 A at 115 V / 10 A at 230 V	
Connection	Standard AC socket (IEC 60320)	
Environmental conditions		
Operation temperature ¹	0 ... +50 °C (+32 ... +122 °F)	
Storage temperature	-25 ... +70 °C (-13 ... +158 °F)	
Humidity range	Relative humidity 5 ... 95 %, non-condensing	
Equipment reliability		
The product adheres to the electromagnetic compatibility (EMC) Directive (CE conform).		
EMC Emission	International / Europe	IEC/EN 61326-1, EN 55032/CISPR 32 (Class A), IEC/EN 61000-3-2/3
	North America	47 CFR 15 Subpart B (Class A) of FCC
EMC Immunity	International / Europe	IEC/EN 61326-1, IEC/EN 61000-6-5, IEC/EN 61000-6-4
	North America	UL 61010-1, UL 61010-2-030, CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-030
The product adheres to the low voltage Directive (CE conform).		
Safety	International / Europe	IEC/EN 61010-1, IEC/EN 61010-2-030
	North America	UL 61010-1, UL 61010-2-030, CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-030
Mechanical tests	International / Europe	IEC 60068-2-6 (20 m/s ² at 10 ... 150 Hz), IEC 60068-2-27 (15 g/11 ms half-sine)

¹ For an operational temperature above +30 °C (+86 °F) a duty cycle of down to 50 % may apply.

² PoE = Power over Ethernet

Miscellaneous	
Weight	13.1 kg (28.9 lbs)
Dimensions (W x H x D, without handle)	343 x 145 x 390 mm (13.6 x 5.7 x 15.4 in)
PC connection	Two PoE ² Ethernet ports: <ul style="list-style-type: none"> • 10/100/1000 Base-TX • IEEE 802.3af compliant • Port capability limited to one Class 1 (3.84 W) and one Class 2 (6.49 W) powered device USB ports: <ul style="list-style-type: none"> • USB Type-B port (PC) • USB Type-A port (Wi-Fi adapter for wireless control)
Signal indication (LED)	> 42 V for voltage and current outputs, and AUX DC
Connection to ground (earth)	4 mm (0.16 in) banana socket (rear side)
Hardware diagnostics	Self diagnostics upon each start-up
Galvanically separated groups	The following groups are galvanically separated from each other: mains, voltage amplifier output, current amplifier output, auxiliary DC supply, binary/analog input
Protection	All current and voltage outputs are fully overload and short circuit proof and protected against external high-voltage transient signals and overtemperature
Certifications	
 	
Developed and manufactured under an ISO 9001 registered system	

Ordering information

CMC 310 with CMControl P	
VE003001	CMC 310 with CMControl P

CMC 310 for tablet control	
VE003002	CMC 310 with CMControl P App activation key (for tablet control)

Upgrade to CMC 353 with CMControl P	
VEHO3002	Upgrade from "CMC 310 with CMControl P" to "CMC 353 with CMControl P"

Upgrade to CMC 353 for tablet control	
VEHO3001	Upgrade from "CMC 310 with CMControl P App activation key" to "CMC 353 with CMControl P App activation key"

Upgrade to CMC 353 with Test Universe	
VEESC1800	Upgrade from "CMC 310 with CMControl P" or "CMC 310 with CMControl P App activation key" to CMC 353 Essential