

CMC 310

CMC 310: 3 Phase Current + 3 Phase Voltage Test Set



The CMC 310 is specifically designed for manual three-phase testing of protection and measurement devices. 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 which then can be operated by the PC based Test Universe software.

Operation: CMControl

Technical Data¹

Current generators		
Setting range	3-phase AC (L-N)	3 x 0 ... 15 A
	1-phase AC (L-L)	1 x 0 ... 15 A
	1-phase AC (LL-LN)	1 x 0 ... 30 A
	DC (LL-LN)	1 x 0 ... ±30 A
Power ^{2,3}	3-phase AC (L-N)	3 x 350 VA typ. at 15 A 3 x 200 W guar. at 15 A
	1-phase AC (L-L)	1 x 780 VA typ. at 15 A 1 x 440 W guar. at 15 A
	1-phase AC (LL-LN)	1 x 500 VA typ. at 30 A 1 x 350 W guar. at 30 A
Accuracy ⁴	error < 0.05 % rd. ⁵ + 0.05 % rg. ⁵ typ. error < 0.15 % rd. + 0.15 % rg. guar.	
Distortion (THD+N) ⁶	< 0.15 % typ., < 0.35 % 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	

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-phase AC (L-L)			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	

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


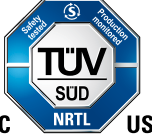
⁴ Rload: 0 ... 0.5 Ω

⁵ rd. = reading, rg. = range

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

Technical Data CMC 310 (continued)

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.
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
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
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
Vibration	IEC 60068-2-6 (20 m/s ² at 10 ... 150 Hz)
Shock	IEC 60068-2-27 (15 g/11 ms half-sine)
Safety standards, electromagnetic compatibility	
EMC	The product adheres to the electromagnetic compatibility (EMC) Directive 2004/108/EC (CE conform).
International	IEC 61326-1; IEC 61000-6-4; IEC 61000-3-2/3
USA	FCC Subpart B of Part 15 Class A
Safety	The product adheres to the low voltage Directive 2006/95/EC (CE conform).
International / USA	IEC 61010-1 / UL 61010-1
Canada	CAN/CSA-C22.2 No 61010-1-04

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)
CMControl P connection	One PoE ² Ethernet port: <ul style="list-style-type: none"> • 10/100 Mbit/s (10/100 Base-TX, auto-crossover) • IEEE 802.3af compliant (Class 2, 6.49 W)
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 over temperature
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	
VEHO3001	Upgrade from "CMC 310 with CMControl P" to "CMC 353 with CMControl P"
Upgrade to CMC 353 for tablet control	
VEHO3002	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 software	
VEHO3003	Upgrade from CMC 310 (with CMControl P or CMControl P App activation key) to CMC 353 + Test Universe software (Basic Package)

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

² PoE = Power over Ethernet