

CCM

CONTACT CURRENT METER

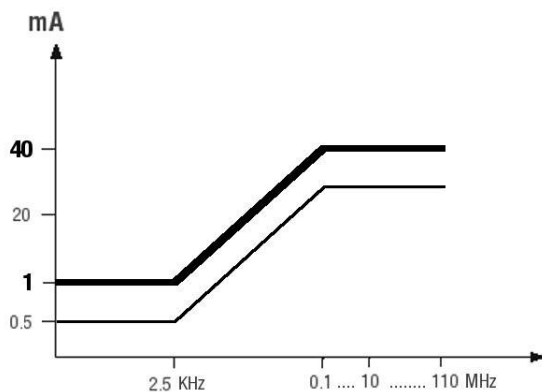
FREQUENCY RANGE 40 Hz - 110 MHz



The "Contact Current Meter" CCM allows the measurement of the contact current flowing through the human body, as it makes contact with a conductive object charged by an EM field.

This instrument can verify the compliance to the limits for the exposition to contact current for workers and general public, shown on the ICNIRP guidelines and compliant with the 2013/35/EU European Parliament directive of 26/06/2013 and the 2004/40/EC.

The display indication provides the value of the current in mA and the value percentage compared to the standard.



Frequency Range	Reference levels for Workers I_C (mA)	Reference levels for Public I_C (mA)
0 - 2,5 kHz	1	0,5
2,5 - 100 kHz	$0,4f$	$0,2f$
0,1 - 110 MHz	40	20

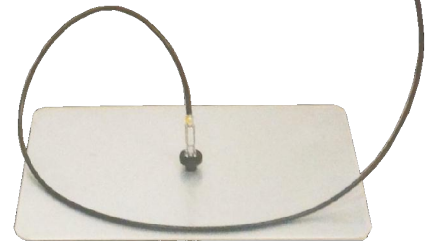


MEASUREMENT

HAND SETUP



GROUND PLANE SETUP



Contact current measurement by using the HAND setting.
The CCM measures the current flowing through the operator (human body impedance).



Contact current measurement by using the GROUND PLANE setting.
The CCM measures the current flowing through the ground plane (human body impedance simulation)

STANDARD CONFIGURATION

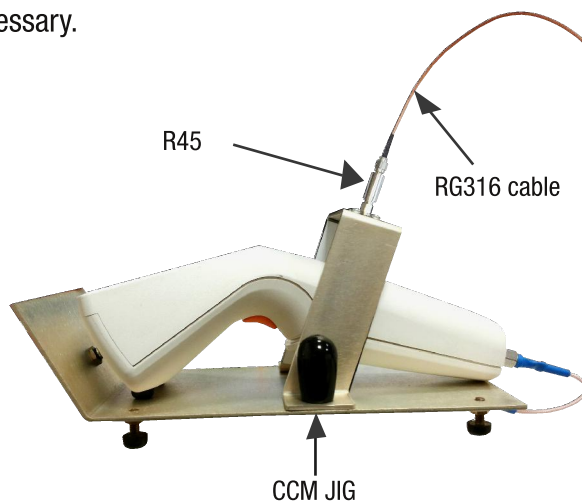
- Rigid case
- CCM/CCM-A
- 1,5 V Batteries (2 pcs)
- RG316 Cable (length 3 m) sma(M) sma(M)
- Body simulation impedance (Z-2251)
- Ground Plane plate (dimensions 360 X 239 mm)
- Ground Plane Cover
- USB cable for PC connection
- USB key with:
 - User Manual
 - Datasheet
- Calibration certificate

OPTIONS

- CCM-JIG kit including:
 - Calibration JIG
 - Standard Resistance (R45)
 - cable (length 1m) N(M)-sma(M)
- IEC-60990 body simulation impedance

CCM JIG SETUP

With this option it is possible to calibrate the CCM through signal generators in the frequency range 40 Hz 110 MHz. To verify the limit over 40 mA at 10 MHz a power amplifier is also necessary.



MEASURES STORAGE

Storing all measures, performed by the operator, in an exportable file with the CSV extension with date, time, workers value, general public value, value in the LF and HF range and type of setup used.

date time	Workers	G.Public	LF	HF	Input
GG/MM/AAAA hh:	%	%	mA	mA	from
15/01/2016 10.02	1.5	3.1	0.013	0.06	gnd
18/01/2016 13.02	50	100.1	0.014	20.03	gnd
11/02/2016 10.33	49.9	99.9	0.013	19.99	gnd
17/02/2016 16.07	50.4	100.8	0.013	20.17	hand
17/02/2016 16.10	103.2	206.5	1.032	0.06	hand
13/03/2016 08.46	103.5	207	1.035	0.06	hand
13/03/2016 10.26	103.4	206.8	1.034	0.06	hand

TECHNICAL SPECS

	CCM	CCM-A
Frequency Range	40 Hz ... 110 MHz	40 Hz ... 10 MHz
Low band	40 Hz...2.5 kHz	40 Hz...2.5 kHz
Medium band	2.5 kHz...100 kHz	2.5 kHz...100 kHz
High band	100 kHz...110 MHz	100 kHz...10 MHz
Frequency Response		
Low band (40 Hz 2.5 KHz) @ 1 mA	< ±1.5 dB	< ±1.5 dB
Medium band (2.5 KHz 100 KHz) @ 100%	< ±1.5 dB	< ±1.5 dB
High band (100 KHz 110 MHz) @ 20 mA	< ±1.5 dB	< ±1.5 dB
Measurement Range		
Low band	(40 Hz...2.5 kHz)	(40 Hz...2.5 kHz)
Level range	0.01...3 mA (ICNIRP limit 1 mA)	0.01...3 mA (ICNIRP limit 1 mA)
Damage level	100 mA	100 mA
Resolution	1 nA	1 nA
Dynamic range @ 500 Hz	50 dB	50 dB
Linearity error @ 500 Hz 0.3 ... 3mA	< ± 1 dB	< ± 1 dB
Medium band	(2.5 kHz...100 kHz)	(2.5 kHz...100 kHz)
Level range	1...300 % (ICNIRP limit 1 to 40 mA) (Ty)	1...300 % (ICNIRP limit 1 to 40 mA) (Ty)
Damage level	500 %	500 %
Resolution	1 nA	1 nA
Dynamic range @ 25 kHz	50 dB	50 dB
Linearity error @ 25 kHz 10 ... 200%	< ± 1 dB	< ± 1 dB
High band	(100 kHz...110 MHz)	(100 kHz...10 MHz)
Level range	0.4...120 mA (ICNIRP limit 40 mA)	0.4...120 mA (ICNIRP limit 40 mA)
Damage level	300 mA	300 mA
Resolution	10 nA	10 nA
Dynamic range @ 10 MHz	50 dB	50 dB
Linearity error @ 10 MHz 12 ... 120mA	< ± 1 dB	< ± 1 dB
Input signal attenuation	200 MHz -> 7 dB 300 MHz -> 18 dB 400 MHz -> 31 dB 500 MHz 3 GHz -> 45 dB	20 MHz -> 7 dB 30 MHz -> 18 dB 40 MHz -> 31 dB 100 MHz 3 GHz -> 45 dB
Measurement modes	Hand and Ground Plane	Hand and Ground Plane
Display	Graphic LCD with led backlight	Graphic LCD with led backlight
Alarm sound	Programmable level	Programmable level
Detectors	RMS	RMS
Contact tip	Tip radius 2 mm interchangeable	Tip radius 2 mm interchangeable
USB Interface	Micro USB Connector	Micro USB Connector
Standard	Directive 2004/40/EC	Directive 2013/35/UE
Operating Temperature	da 10°C a 40°C	da 10°C a 40°C
Power supply		
Battery	2 pcs Alkaline AA	2 pcs Alkaline AA
Operation Time	48 h	48 h
Dimensions	205 x 90 x 45 mm	205 x 90 x 45 mm
Weight	200 g	200 g
Recommended calibration interval	24 months	24 months
Built-in self-test	Safety front-end functionality test	Safety front-end functionality test

Subject to change without notice