Calibration certificate No.: 18200162

Model: CE MultiTesterXA - MI 3394 Date: 22. 08. 2018

Serial No.: 18200162 Performed By: Tine Živič Signature

Date Placed In Service: _____ Due Date: _____ *

Metrel Recommended Cal Interval: 12 months

* The due date may be established (by the customer) by adding the "Recommended Cal Interval" to the "Date Placed In Service."

No.	Function		Reference	Low limit	Reading	Uncertainty	High limit
1	**Outlook, keys, communication**				**PASS**		
2	**Power**	Voltage - power supply	115 V	110,5 V	**115,2**	0,7 V	119,5 V
			230 V	223 V	**230**	1 V	237 V
		Current	5 mA	0 mA	**5**	1 mA	10 mA
			70 mA	63 mA	**70**	1 mA	77 mA
			350 mA	335 mA	**358**	2 mA	366 mA
			2 A	1,94 A	**2,04**	0,01 A	2,06 A
			10 A	9,70 A	**10,08**	0,06 A	10,30 A
		Power (active)	1,15 W	1,04 W	**1,17**	0,01 W	1,26 W
			80,5 W	76,5 W	**81,7**	0,5 W	84,5 W
			460 W	437 W	**461**	3 W	483 W
3	**Continuity**	**25 A**	0 Ω	0,00 Ω	**0,00**	0,01 Ω	0,02 Ω
			0,1 Ω	0,08 Ω	**0,10**	0,01 Ω	0,12 Ω
			10 Ω	9,78 Ω	**10,01**	0,06 Ω	10,22 Ω
		Test current at 0,1 Ω		25 A	**26,2**	0,3 A	
		10 A	0 Ω	0,00 Ω	**0,00**	0,01 Ω	0,02 Ω
			0,5 Ω	0,47 Ω	**0,50**	0,01 Ω	0,53 Ω
			19 Ω	18,60 Ω	**18,98**	0,11 Ω	19,40 Ω
		Test current at 0,5 Ω		10 A	**10,5**	0,1 A	
		4 A	0 Ω	0,00 Ω	**0,00**	0,01 Ω	0,02 Ω
			1,2 Ω	1,16 Ω	**1,20**	0,01 Ω	1,24 Ω
			90 Ω	87,3 Ω	**89,7**	0,5 Ω	92,7 Ω
		Test current at 1 Ω		4 A	**4,2**	0,02 A	
		200 mA	0,1 Ω	0,08 Ω	**0,10**	0,01 Ω	0,12 Ω
			5 Ω	4,88 Ω	**4,97**	0,03 Ω	5,12 Ω
			90 Ω	87,3 Ω	**89,2**	0,5 Ω	92,7 Ω
		Test current at 8 Ω		200 mA	**208**	1 mA	
4	**Insulation resistance**	**50 V**	0 MΩ	0 MΩ	**0,00**	0,01 MΩ	0,02 MΩ
			10 MΩ	9,48 MΩ	**9,97**	0,06 MΩ	10,52 MΩ
			80 MΩ	64,0 MΩ	**77,9**	0,5 MΩ	96,0 MΩ
		100 V	80 MΩ	64,0 MΩ	**78,7**	0,5 MΩ	96,0 MΩ
		250 V	180 MΩ	162,0 MΩ	**174,5**	1,1 MΩ	198,0 MΩ
		500 V	0 MΩ	0 MΩ	**0,00**	0,01 MΩ	0,02 MΩ
			10 MΩ	9,68 MΩ	**9,97**	0,06 MΩ	10,32 MΩ
			180 MΩ	162,0 MΩ	**175,9**	1,1 MΩ	198,0 MΩ
		1000 V	0 MΩ	0 MΩ	**0,00**	0,01 MΩ	0,02 MΩ
			10 MΩ	9,68 MΩ	**9,97**	0,06 MΩ	10,32 MΩ
			180 MΩ	162,0 MΩ	**175,9**	1,1 MΩ	198,0 MΩ
	Open circuit voltage		***1047***	1000 V	**1050**	3 V	1100 V
	Test current at 1 MΩ			1,00 mA	**1,05**	0,01 mA	1,10 mA
	Short circuit current			1,00 mA	**1,34**	0,01 mA	2,00 mA

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Metrel Certificate of Calibration Practices

The Metrel Quality System is certified by BVQI according to Quality standard ISO 9001 : 2008, Certificate No. SL21120Q. The Metrel hereby certifies that the above instrument was calibrated in accordance with applicable Metrel calibration procedures during the manufacturing process. These processes are ISO 9001 controlled and are designed to assure that the instrument will meet its published specification.

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The policies and procedures at this facility comply with EN ISO/IEC 17025.

Environmental conditions: Temperature: 23 °C ± 5 °C
Relative humidity: 10 % to 75 %

Calibration Procedure: "Name of Model / Type"

Uncertainty: The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by coverage factor k = 2, which for a nominal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA Publication EA-4/02.

Edo Reven
Chief Executive Officer

Janko Mole
Head of Calibration Laboratory

Calibration certificate No.: 18200162

Model: CE MultiTesterXA - MI 3394 Date: 22. 08. 2018

Serial No.: 18200162 Performed By: Tine Živič Signature

No.	Function		Reference	Low limit	Reading	Uncertainty	High limit
5	**Insulation resistance S-measurement**	**50 V**	0 MΩ	0 MΩ	**0,00**	0,01 MΩ	0,02 MΩ
			10 MΩ	9,48 MΩ	**9,72**	0,05 MΩ	10,52 MΩ
			80 MΩ	64,0 MΩ	**70,2**	1 MΩ	96,0 MΩ
		100 V	80 MΩ	64,0 MΩ	**78,9**	1 MΩ	96,0 MΩ
		250 V	180 MΩ	162,0 MΩ	**176,5**	1 MΩ	198,0 MΩ
		500 V	0 MΩ	0 MΩ	**0,00**	0,01 MΩ	0,02 MΩ
			10 MΩ	9,68 MΩ	**9,96**	0,05 MΩ	10,32 MΩ
			180 MΩ	162,0 MΩ	**181,3**	1 MΩ	198,0 MΩ
		1000 V	0 MΩ	0 MΩ	**0,00**	0,01 MΩ	0,02 MΩ
			10 MΩ	9,68 MΩ	**9,89**	0,05 MΩ	10,32 MΩ
			180 MΩ	162,0 MΩ	**175,8**	1 MΩ	198,0 MΩ
6	**Substitute leakage current**		0 mA	0 mA	**0,02**	0,01 mA	0,03 mA
			1 mA	0,92 mA	**1,01**	0,01 mA	1,08 mA
			5 mA	4,72 mA	**4,97**	0,03 mA	5,28 mA
			19 mA	18,02 mA	**18,95**	0,11 mA	19,98 mA
	Open circuit voltage			35,0 V	**45,3**	0,3 V	50,0 V
7	**Substitute leakage current S-measurement**		0 mA	0 mA	**0,01**	0,01 mA	0,03 mA
			0,99 mA	0,91 mA	**1,00**	0,01 mA	1,07 mA
			4,83 mA	4,56 mA	**4,83**	0,03 mA	5,10 mA
8	**Touch leakage current**		0 mA	0 mA	**0,00**	0,01 mA	0,03 mA
			0,99 mA	-0,06 mA	**1,01**	0,01 mA	+0,06 mA
			4,84 mA	-0,17 mA	**4,86**	0,03 mA	+0,17 mA
			16,87 mA	-0,53 mA	**16,87**	0,1 mA	+0,53 mA
9	**Differential leakage current**		0 mA	0,00 mA	**0,01**	0,01 mA	0,05 mA
		Change L-N	0 mA	0,00 mA	**0,00**	0,01 mA	0,05 mA
		I_{LOAD} ~ 10 A	0 mA	0,00 mA	**0,06**	0,01 mA	0,25 mA
		Change L-N	0 mA	0,00 mA	**0,00**	0,01 mA	0,25 mA
			1 mA	0,92 mA	**1,00**	0,01 mA	1,08 mA
		Change L-N	1 mA	0,92 mA	**1,00**	0,01 mA	1,08 mA
			5 mA	4,80 mA	**5,00**	0,03 mA	5,20 mA
			19 mA	18,38 mA	**18,95**	0,1 mA	19,62 mA
10	**PE leakage current**		0 mA	0,00 mA	**0,00**	0,01 mA	0,03 mA
			0,99 mA	-0,06 mA	**1,00**	0,01 mA	+0,06 mA
			4,83 mA	-0,17 mA	**4,82**	0,03 mA	+0,17 mA
			16,77 mA	-0,53 mA	**16,64**	0,1 mA	+0,53 mA

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Edo Reven
Chief Executive Officer

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Head of Calibration Laboratory

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No.	Function			Reference	Low limit	Reading	Uncertainty	High limit
		Setting		Output		Indicated		
11	**HV AC**	100 V	Voltage	**103** V	Uout - 3	**103**	1 V	Uout + 3
			Current	**1,3** mA	Iout - 0,3	**1,3**	0,1 mA	Iout + 0,3
		1000 V	Voltage	**1032** V	Uout - 30	**1025**	5 V	Uout + 30
			Current	**12,9** mA	Iout - 0,7	**12,7**	0,1 mA	Iout + 0,7
		2500 V	Voltage	**2565** V	Uout - 75	**2600**	15 V	Uout + 75
			Current	**32,1** mA	Iout - 1,3	**31,4**	0,2 mA	Iout + 1,3
		5000 V	Voltage	**5128** V	Uout - 150	**5210**	30 V	Uout + 150
			Current	**64,1** mA	Iout - 2,2	**63,9**	0,5 mA	Iout + 2,2
			Current	**5,2** mA	Iout - 0,5	**5,3**	0,1 mA	Iout + 0,5
			Current	**1,0** mA	Iout - 0,3	**1,2**	0,1 mA	Iout + 0,3
			Current	**0** mA	0	**0,0**	0,1 mA	0,3
	Tripout time at 5 kV			Open --> 130 mA		**PASS**		
	< 30 ms			Open --> short		**PASS**		
		Setting		Output		Indicated		
12	**HV DC**	500 V	Voltage	**521** V	Uout - 15	**520**	1 V	Uout + 15
			Current	**6,51** mA	Iout - 0,35	**6,50**	0,03 mA	Iout + 0,35
		2500 V	Voltage	**2610** V	Uout - 75	**2650**	25 V	Uout + 75
			Current	**0,17** mA	Iout - 0,04	**0,17**	0,01 mA	Iout + 0,04
		6000 V	Voltage	**6327** V	Uout - 180	**6380**	60 V	Uout + 180
			Current	**6,36** mA	Iout - 0,34	**6,36**	0,03 mA	Iout + 0,34
			Current	**1,26** mA	Iout - 0,09	**1,24**	0,01 mA	Iout + 0,09
			Current	**0,42** mA	Iout - 0,05	**0,41**	0,01 mA	Iout + 0,05
			Current	**0** mA	0	**0,00**	0,01 mA	Iout + 0,03
	Tripout time at 6 kV			Open --> 12 mA		**PASS**		
	< 30 ms			Open --> short		**PASS**		
13	**Discharging time**	Socket		1 s	0,7 s	**1,0**	0,1 s	1,3 s
				5 s	4,5 s	**4,9**	0,1 s	5,5 s
		Terminals		1 s	0,7 s	**0,9**	0,1 s	1,3 s
				5 s	4,5 s	**4,8**	0,1 s	5,5 s

All results in accordance with technical specification.

Reference instruments:

No.	Instrument	Type	Certificate No.	Due
1	Calibration System	9100, Wavetek	18C01351	31. 07. 2019

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