

2100 ELECTRICAL TEST EQUIPMENT CALIBRATOR

INTEGRATED ELECTRICAL EQUIPMENT CALIBRATION SOLUTION



EXTENDED SPECIFICATIONS



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DECLARATION OF CONFORMITY CE

Manufacturer's Name: Transmille Ltd.
Manufacturer's Address: Unit 4, Select Business Centre
Lodge Road
Staplehurst
TN12 0QW

Declares, that the product

Product Name: Electrical Test Calibrator
Model Number: 2100
Product Options: This declaration covers all options of the above product(s)

Conforms with the following European Directives:

The product herewith complies with the requirements of the Low Voltage Directive 73/73EEC and the EMC Directive 89/336/EEC (including 93/68/EEC) and carries the CE Marking accordingly

Conforms with the following product standards:

EMC

Standard

Limit

IEC616326-1:1997+A1:1998 / EN 61326-1 :1997+A1:1998 EN55011:1991

IEC 61000-4-2:1995+A1:1998 / EN 61000-4-2:1995 Group 1 Class A

IEC 61000-4-3:1995 / EN 61000-4-3:1995 4kV CD, 8kV AD

IEC 61000-4-4:1995 / EN 61000-4-4:1995 3 V/m, 80-1000 MHz

IEC 61000-4-5:1995 / EN 61000-4-5:1995 0.5kV signal lines, 1kV power lines

IEC 61000-4-6:1996 / EN 61000-4-6:1996 0.5kV line-line, 1kV line-ground

IEC 61000-4-11:1994 / EN 61000-4-11:1994 3V, 0.15-80 MHz 1 cycle, 100%

Dips: 30% 10ms; 60% 100ms

Interrupt > 95%@5000ms

SAFETY

IEC 61010-1:1990+A1:1992+A2:1995 / EN 61010-1:1993+A2:1995

12/12/2001



Revision No: 1.1
Date :12/12/2001

Managing Director

2100 General Specifications

TRANSMILLE
Solutions In Calibration

Warm Up Time	Double the time since last used up to 20 minutes maximum	
Standard Interfaces	RS232	
Optional Interfaces	USB (Universal Serial Bus)	
Temperature Performance	Storage : -5°C to +60°C Operation : 0°C to +50°C	
Relative Humidity	Operation : <80% to 30°C, <70% to 40°C, <40% to 50°C Storage : <95%, non-condensing	
Altitude	Operation : 3000m (10,000ft) Maximum Transit : 12000m (40,000ft) Maximum	
EMC & Safety	The calibrator line input plug must be earthed See D.O.C for full details	
Line Power	Line Voltage Selectable : 110V / 230V Line Frequency : 50Hz to 60Hz Line Voltage Variation : -6% +10%	
Power Consumption	28 Watts	
Connections	PAT Testing Connection	1x IEC Plug
	LOOP & RCD Testing Connection	1x IEC Socket
	Insulation Tester Connection	1xBlack : 1xRed 4mm Low Thermal Sockets
	PAT Ground Connection	1x Blue 4mm terminal post
	RS232 Interface	1x Female 'D' type socket
RS232 Settings	Baud Rate	9600
	Parity	None
	Data Bits	8
	Stop Bits	1
Display Information	Type	Backlit Black on white film STN type
	Viewing Area	124.3mm * 34mm
	Resolution	256 * 94 dots
	Backlight Type	Cold fluorescent lamp
	Brightness	70 to 90 cd/m ²
Indicators	PAT Testing Connection	Red LED above plug
	LOOP & RCD Testing Connection	Red LED above socket
	Insulation Tester Connection	Red LED above terminals
Keyboard	Membrane type with tactile feedback	
Fuses	Loop (Live)	5A Anti-Surge
	Mains	2A
	Loop (Neutral)	5A Anti-Surge
	RCD	2A
	ACV	100mA
	PAT	1A
	Insulation Resistance	100mA
Isolation	Outputs are opto-isolated from mains earth and the RS-232 interface Maximum common mode voltage between earth and the low terminals 30 Volts ac/dc.	
Dimensions & Weights	Calibrator Only	14cm x 43cm x 46cm : 8kgs
	Calibrator in Shipping Box	58cm x 56cm x 37cm : 10.5kgs
	Calibrator in Soft Carry Case	49cm x 50cm x 19cm : 11.5kgs
	Calibrator in Hard Transit case	55cm x 56cm x 26cm : 19kgs
Warranty Period	3 Years (Parts & Labour)	
Recommended Service Interval	1 Year	
Supplied Connections	1x Serial Interface Connection 1x RCD / LOOP Adaptor Lead ; 1x 1m PAT Test Lead	
Mounting Kit (optional)	3U rack mount kit	
Case Colour	Matt Dark Grey (RAL7016)	

Due to continuous development specifications may be subject to change.

Continuity Resistance

Standard Accuracy - Relative to Calibration Standards Specifications

Range	Type	Resolution	Accuracy		
			%	±	mW
0.1Ω to 20Ω	Continuously Variable	10mΩ	1	±	25
100Ω	Fixed	10mΩ	1	±	25
1kΩ	Fixed	10mΩ	1	±	25

High Accuracy (option) - Relative to Calibration Standards Specifications

Range	Type	Resolution	Accuracy		
			%	±	mW
0.1Ω to 20Ω	Continuously Variable	10mΩ	0.25	±	25
100Ω	Fixed	10mΩ	0.25	±	25
1kΩ	Fixed	10mΩ	0.25	±	25

Continuity Current Measurement

Accuracy - Relative to Calibration Standards Specifications

Range	Load	Accuracy		
		%	±	Counts
0 to 320mA	1Ω	1.3	±	6

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Insulation Resistance

Standard Accuracy - Relative to Calibration Standards Specifications

Range	Type	Resolution	Maximum Voltage/Power ¹	Accuracy %
0Ω to 5MΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	0.3
5MΩ to 2GΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	3

High Accuracy (option) - Relative to Calibration Standards Specifications

Range	Type	Resolution	Maximum Voltage/Power ¹	Accuracy %
0Ω to 5MΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	0.1
5MΩ to 2GΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	1

Note 1 : A 5kV option is available for Insulation Testers incorporating *Active Guard*.

10GW Range (Option) - Relative to Calibration Standards Specifications

Range	Type	Resolution	Maximum Voltage/Power ¹	Accuracy %
2GΩ to 10GΩ (Option)	Continuously Variable	10kΩ	1.1kV or 1 Watt	5

Note : Can be fitted to Standard or High accuracy models

Insulation Test Voltage Measurement

Accuracy - Relative to Calibration Standards Specifications

Ranges	Current Measurement	Resolution	Accuracy		
			%	±	Counts
50V • 100V • 250V • 500V • 1kV	0.5mA • 1mA	0.1V	1	±	8

AC Voltage Output

Accuracy - Relative to Calibration Standards Specifications

Ranges	Accuracy		
	%	±	Counts
100V • 200V • 230V • 300V • 400V	0.2	±	1

RCD Time

Accuracy - Relative to Calibration Standards Specifications

Range	Resolution	Accuracy
20ms to 5s	10ms	± 0.7ms

RCD Current

Accuracy - Relative to Calibration Standards Specifications

Range	Resolution		Accuracy			
	to 200mA	to 3A	Setting	%	±	Counts
3mA to 3A	0.01mA	0.1mA	<190ms	5	±	20
			up to 5s	1.2	±	6

Additional Features	
Timing Modes	Immediate • Zero Crossing
Current Modes	½I • I • 2I • 5I
Display Modes	0° and 180° of Phase

Due to continuous development specifications may be subject to change.

Loop Resistance

Standard Accuracy - Relative to Calibration Standards Specifications

Nominal Resistance Values	Resolution	Accuracy		
		%	±	mW
0.05Ω	0.1mΩ	0.5	±	4
0.1Ω	0.1mΩ	0.5	±	4
0.22Ω	0.1mΩ	0.5	±	4
0.33Ω	0.1mΩ	0.5	±	4
0.5Ω	0.1mΩ	0.5	±	4
1Ω	0.1mΩ	0.5	±	4
5Ω	0.1mΩ	0.5	±	4
10Ω	0.1mΩ	0.5	±	4
100Ω	1mΩ	0.5	±	4
1kΩ	1mΩ	0.5	±	4

Auto Loop (Option)

The auto loop function automatically corrects for supplied loop impedance.

Maximum Correction	2Ω
Resolution	100uΩ
Accuracy	±18mΩ
Measurement Current	4A

Due to continuous development specifications may be subject to change.

PAT Earth Bond Resistance

Standard Accuracy - Relative to Calibration Standards Specifications

Nominal Resistance Values	Resolution	Accuracy		
		%	±	mW
0.05Ω	0.1mΩ	0.5	±	4
0.1Ω	0.1mΩ	0.5	±	4
0.22Ω	0.1mΩ	0.5	±	4
0.33Ω	0.1mΩ	0.5	±	4
0.5Ω	0.1mΩ	0.5	±	4
1Ω	0.1mΩ	0.5	±	4
5Ω	0.1mΩ	0.5	±	4
10Ω	0.1mΩ	0.5	±	4
100Ω	1mΩ	0.5	±	4
1kΩ	1mΩ	0.5	±	4

PAT Earth Bond Current Measurement

Range	Resolution	Accuracy		
		%	±	Counts
100mA	1mA	1.5	±	6
10A	10mA	1.5	±	6
30A	10mA	1.5	±	6

PAT Insulation Resistance

Standard Accuracy - Relative to Calibration Standards Specifications

Range	Type	Resolution	Maximum Voltage/Power ¹	Accuracy %
0Ω to 5MΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	0.3
5MΩ to 2GΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	3

High Accuracy (Option) - Relative to Calibration Standards Specifications

Range	Type	Resolution	Maximum Voltage/Power ¹	Accuracy %
0Ω to 5MΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	0.1
5MΩ to 2GΩ	Continuously Variable	10kΩ	1.1kV or 1 Watt	1

PAT Leakage Current

Range	Resolution	Accuracy		
		%	±	Counts
240uA	1uA	1.5	±	2
1mA	1uA	1.5	±	2
3mA	1uA	1.5	±	2

PAT Leakage Test Voltage

Range (RMS)	Resolution	Accuracy		
		%	±	Counts
100V to 300V	0.1V	1.5	±	9

PAT Load Testing

Range	Accuracy		
	Ohms	±	%
Short Circuit	-	-	-
Open Circuit	-	-	-
0.13kW	440Ω	±	5

PAT Flash Voltage Measurement

Class	Range	Resolution	Load Resistance	Accuracy		
				%	±	Counts
Class 1 (1.5kV)	1kV to 1.8kV	1V	600kΩ (2.5mA@1.5kV)	4	±	10
Class 2 (3kV)	2kV to 3.6kV	1V	1.2MΩ (2.5mA@3kV)	4	±	10

PAT Flash Current Measurement

Range	Resolution	Accuracy
		%
1mA to 3mA	10uA	5

Due to continuous development specifications may be subject to change.

Line Voltage Measurement

Range	Resolution	Accuracy
200V to 260V	0.1V	0.8% ± 6 Counts

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