

TEST REPORT IEC 61557-6 Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures Part 6: Effectiveness of residual current devices (RCD) in TT, TN and IT systems	
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Testing Laboratory	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
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Applicant's name	Uni-Trend Technology (China) Co., Ltd
Address	No 6, Gong Ye Bei 1st Road Songshan Lake National High-Tech Industrial Development Zone, Dongguan City Guangdong Province, CHINA
Test specification:	
Standard.....	IEC 61557-6:2007 (Second Edition), EN 61557-6:2007
Test procedure.....	LVD
Non-standard test method.....	N/A
Test Report Form No.	IEC61557_6A
TRF Originator	VDE Testing and Certification Institute
Master TRF	Dated 2009-12
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Test item description	Digital RCD (ELCB) Tester
Trade Mark.....	UNI-T
Manufacturer.....	Same as applicant
Model/Type reference	UT582+
Ratings	Measure: 230V 50Hz, CAT III 600V Powered: 6 x 1.5V LR6 AA battery

Testing procedure and testing location:	
<input checked="" type="checkbox"/> Testing Laboratory:	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
Testing location/ address	Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China
<input type="checkbox"/> Associated CB Laboratory:	
Testing location/ address	
Tested by (name + signature).....:	Bin Zhong / Engineer
Approved by (+ signature)	Justin He / Manager
<input type="checkbox"/> Testing procedure: TMP	
Tested by (name + signature).....:	
Approved by (+ signature)	
Testing location/ address	
<input type="checkbox"/> Testing procedure: WMT	
Tested by (name + signature).....:	
Witnessed by (+ signature).....:	
Approved by (+ signature)	
Testing location/ address	
<input type="checkbox"/> Testing procedure: SMT	
Tested by (name + signature).....:	
Approved by (+ signature)	
Supervised by (+ signature).....:	
Testing location/ address	
<input type="checkbox"/> Testing procedure: RMT	
Tested by (name + signature).....:	
Approved by (+ signature)	
Supervised by (+ signature).....:	
Testing location/ address	

List of Attachments (including a total number of pages in each attachment):

None

Summary of testing:

Tests performed (name of test and test clause):

All applicable tests

Testing location:

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China

Summary of compliance with National Differences

None

Copy of marking plate

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

1. Marking on front panel



2. Rear label

Function	Terms	Measurement Unit	Display Range	Operating Error
RCD	Test Time	Millisecond	$\Delta T = 0ms - 2000ms$	$\pm (2\% + 2LSD)$
	Residual Operating Current	Milliampere	I_a 10mA/20mA/30mA 100mA/300mA/500mA	$\pm 10\%$
VOLTS	Voltage Test	Volt	30V-600V	$\pm 3\%rdg \pm 3dgt$

⚠ Wiring Check
STOP if the wiring connection shows incorrect on LCD. Disconnect from the power source and check wiring.

⚠ WARNING ⚠
TO AVOID ELECTRICAL SHOCK, REMOVE TEST CORD BEFORE OPENING CASE.

IEC 61010-1
IEC 61010-2-030
IEC 61010-2-033
IEC 61557-1,-6
CAT III 600V IP40
6 x 1.5V LR6
F1AH250V/F2AH600V

www.uni-trend.com.cn

Test item particulars: (See IEC 61557-1 report 170920053GZU-002)	
Classification of installation and use.....:	Portable
Supply Connection.....:	None
Type of item tested	Measurement
Description of equipment function	See general information
Model and/or type reference	UT582+
Serial number	Not assigned
Rating(s)	Measure: 230V 50Hz, CAT III 600V Powered: 6 x 1.5V LR6 AA battery
Measurement (Installation) category	CAT III
Pollution degree	2
Protection class.....:	Class II
Environmental rating.....:	Standard: 0-40°C
Equipment mobility.....:	portable
Connection to mains supply.....:	None
Operating conditions.....:	continuous
Overall size of the equipment (W x D x H).....:	160mmx70.5mmx100mm
Mass of the equipment (kg).....:	About 0.5kg
Marked degree of protection to IEC 60529	IP 40
Possible test case verdicts:	
– test case does not apply to the test object..... : N/A	
– test object does meet the requirement..... : P (Pass)	
– test object does not meet the requirement..... : F (Fail)	
Testing	
Date of receipt of test item.....:	20 Jan 2019
Date (s) of performance of tests.....:	21 Jan 2019 – 18 Feb 2019
General remarks:	

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(see Enclosure #)" refers to additional information appended to the report.
"(see appended table)" refers to a table appended to the report.

Throughout this report a comma / point is used as the decimal separator.
When determining the test conclusion, the Measurement Uncertainty of test has been considered.

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The test report only allows to be revised only within the report defined retention period unless standard or regulation was withdrawn or invalid.

Manufacturer's Declaration per Sub-clause 6.2.5 of IEC60335-1:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....: Not applicable

When differences exist; they shall be identified in the General Product Information section.

Name and address of factory (ies).....: Same as applicant

General product information:

The measuring equipment is applied to testing of the effectiveness of protective measures by regular disconnections of Residual Current protective Device (RCD) in TT, TN and TI systems. It calibrates based on closed-loop control system, the output current as a feedback. When the actual output current is different from the rated current, the device will adjust accordingly. AC current between live and ground line can be outputted accurately. And its trip time quickly captured by MCU.

IEC 61557-6			
Clause	Requirement — Test	Result — Remark	Verdict
4	REQUIREMENTS		P
	The following requirements as well as those given in IEC 61557-1 shall apply.		P
4.1	Tests		P
4.1.1	Tripping tests		P
	The measuring equipment shall be capable of indicating that the residual operating current of the protective device is less than or equal to the rated residual operating current.		P
	The tests shall be carried out with a sinusoidal, or mains-derived quasi sinusoidal test current.	Mains derived test current	P
	The operating uncertainty of the calibrated test currents shall:		P
	– not exceed 0 % to +10 % of the rated residual current with the rated residual operating current as fiducial value determined in accordance with Table 1.		P
	The operating uncertainty of measurement of the residual operating current shall:		P
	– not exceed ± 10 % of the rated residual operating current as fiducial value determined in accordance with Table 1.		P
	If the measuring equipment is provided for the purpose of testing residual current protective devices of 30 mA or below		P
	– the ME-equipment shall be capable of providing a test of five times the rated residual operating current.		P
	– the test period shall be limited to 40 ms	40 ms	P
	When measuring the trip time, this limit of test period need not be applied so long as the fault voltage remains below the touch voltage limit.		P
	If the measuring equipment is capable of producing half-wave test currents, testing of residual current protective devices (RCDs) Type A:	Full wave test current	N/A
	– may alternatively be carried out using half-wave test currents according to the IEC 61008 and IEC 61009 series, IEC 60947-2 and IEC/TR 60755		N/A
	– equipment shall be able to test in both polarities.		N/A
4.1.2	Non-tripping tests		P
	When a test at 50 % or less of the rated residual operating current to test the reliability of the RCD is included:	At 50% rated residual operating current	P

IEC 61557-6			
Clause	Requirement — Test	Result — Remark	Verdict
	– minimum test period for general type RCDs shall be 0,3 s	2000 ms	P
	– minimum test period for type S RCDs shall be 0,5 s.		P
	The protective device shall not open.		P
	When a no trip test at 50 % or less of the rated residual operating current is included:		P
	– the operating uncertainty of the calibrated test current shall not exceed 0 % to –10 % of the specified no tripping test current in accordance with Table 1		P
	NOTE If the purpose of the test is to evaluate other parameters (e.g. fault voltage) the minimum test period may be shorter but not less than one cycle of the rated frequency.		—
4.2	The measuring equipment shall be capable of indicating whether the fault voltage at the rated residual current of the protective device is less than or equal to the conventional touch voltage limit. The test may be carried out with or without a probe.	There are two voltages for choose, which is UL50 and U25. When choose UL50.It will show “Uf Hi”. if fault voltage higher than 50 V When choose UL25.It will show “Uf Hi”. if fault voltage higher than 25 V	P
	NOTE Indication can be by displaying the value of the fault voltage or by the use of other clear indicators.		—
4.2.1	If a fault voltage is displayed or indicated for the residual operating current and not for the rated residual current,	Only indicate when fault voltage higher than limits, no measurement value display	N/A
	– this shall be indicated in the display or		N/A
	– shall be indicated on the measuring equipment or		N/A
	– shall be calculated according to the formulae $U_F \leq U_L \times (I_{\Delta} / I_{\Delta n})$ where U_L is the conventional touch voltage limit.		N/A
4.2.2	The operating uncertainty during the measurement of the fault voltage shall not exceed 0 % to +20 % with the conventional touch voltage limit as fiducial value, determined in accordance with Table 1.	Only indicate when fault voltage higher than limits, no measurement value display	N/A
	NOTE The internal resistance of the voltage measuring equipment should be at least 0,7 kΩ/V of the full-scale value of the measurement range. The influence of the voltage measurement on the measurement of the fault current should be taken into consideration.		—
4.3	The measuring equipment		P
	– shall be capable of measuring the trip time of residual current protective devices at the rated residual operating current or	Shows trip time	P

IEC 61557-6			
Clause	Requirement — Test	Result — Remark	Verdict
	– shall be capable of indicating the compliance with the maximum allowed trip time.		N/A
	When measuring the trip time, the operating uncertainty shall not exceed $\pm 10\%$ with the maximum permissible trip time as fiducial value and the influence quantities according to Table 1.	See form A	P
4.4	Measuring equipment with indicators the switching value of the indicators shall be the conventional true value for the calculation of uncertainties, provided nothing to the contrary is stated.		P
4.5	The operating error applies under the rated operating conditions stated in IEC 61557-1 and the following:		P
	– the protective conductor is free from extraneous voltages;		P
	– the system voltage remains constant during the measurement;		P
	– the circuit following the residual current protective device carries no leakage current;		P
	– the system voltage is within 85 % to 110 % of the nominal system voltage for which the equipment has been designed;		P
	– the resistance of the probes is within the limits stated by the manufacturer;	Testing with probe attached Max 5 Ω	P
	– sinusoidal current.		P
4.6	When testing with the rated residual operating current, the following conditions shall be met:		P
	– the current shall be switched on at a zero crossing;		P
	– the test period shall be limited to the maximum allowed trip time of the residual current protective device under test. When measuring the trip time, these limits of the test periods need not be applied.;		P
4.7	Prevention of danger during measurements by fault voltages exceeding 50 V within the system under test shall be ensured. This can be achieved as follows:		P
	– automatic disconnection in accordance with figure 1 of IEC 61010-1 when fault voltages with a magnitude $>50\text{ V}$ occur;		N/A

IEC 61557-6			
Clause	Requirement — Test	Result — Remark	Verdict
	– use of test resistances R_p adjustable in steps, or continuously, in such a manner that the test is started with a resistance that permits current of a maximum of 3,5 mA to flow when all parallel-connected circuits are included. An unambiguous detection shall be ensured, for example by means of a voltmeter, as to whether this test resistance can be varied without producing a hazardous fault voltage.	Monitor fault voltage by voltage meter	P
4.8	The user shall not be exposed to danger and the equipment shall not be damaged when the measuring equipment is connected to 120 % of the nominal voltage of the distribution system for which the measuring equipment has been designed. Protective devices shall not be activated.	See form J	P
4.9	The user shall not be exposed to danger and the measuring equipment shall not be damaged when the measuring equipment is accidentally connected for 1 min with up to 173 % of its nominal voltage. Protective devices may be activated.	See form J	P

5	MARKING AND OPERATING INSTRUCTIONS		P
5.1	Marking		P
	In addition to the marking in accordance with IEC 61557-1, the following information shall be provided on the measuring equipment.		P
5.1.1	Rated residual operating current or rated residual operating currents of the operating protective devices for which the measuring equipment has been designed	See copy of marking	P
5.2	Operating instructions		P
	The operating instructions shall state the following information in addition to the statements specified in IEC 61557-1.		P
5.2.1	Where the measuring circuit has no probe and if a possible voltage between the protective conductor and earth will influence the measurements, a warning must be included.		P
5.2.2	Where the measuring circuit uses the N-conductor as a probe, a warning shall be given to test the connection between the neutral point of the distribution system and earth before the test is started; a possible voltage between the N-conductor and the earth may influence the measurements.		P
5.2.3	A warning that leakage currents in the circuit following the residual current protection device may influence the measurements.		P

IEC 61557-6			
Clause	Requirement — Test	Result — Remark	Verdict
5.2.4	Where the fault voltage is indicated by the test equipment, a clear statement shall be given as to whether the voltage relates to the rated residual current or to the residual operating current of the protective device. If applicable, a note to fulfil the conditions of 4.2.1 shall also be included.		P
5.2.5	The earth electrode resistance of a measuring circuit with a probe shall not exceed a value to be stated by the manufacturer.		P
5.2.6	A warning that the potential fields of other earthing installations may influence the measurement.		P
5.2.7	A warning that special conditions in residual current protective devices of a particular design, for example of S-type (selective and resistance to impulse currents) shall be taken into consideration.		P
5.2.8	A warning that equipment, which is connected downstream of a residual current protective device (RCD) may cause a considerable extension of the operating time. Examples of such equipment might be connected capacitors or running motors.		P

6	TESTS		P
	In addition to IEC 61557-1 the following tests shall be executed.		P
	These tests shall be carried out at all rated residual operating currents and also, if applicable, at 50 % and 500 % of the rated residual operating current.		P
	The test circuit shall be adapted to test both at the limits of the fault voltage for which the equipment is designed and also at the appropriate $R_A = R_{Amax}$ for each range.		P
	The test circuit shall be adapted to each test method employed. The manufacturer's data shall be heeded.		P
	NOTE – $R_{Amax} = U_L / I_{\Delta n}$ where U_L is the conventional touch voltage limit; $I_{\Delta n}$ is the rated residual operating current.		—
6.1	Operation uncertainty shall be determined in accordance with Table 1		P
	In this process, the intrinsic uncertainties shall be determined under the following reference conditions:		P
	– nominal voltage of the distribution system;		P
	– nominal frequency of the distribution system;		P
	– reference temperature 23 °C ± 2 °C;		P

IEC 61557-6			
Clause	Requirement — Test	Result — Remark	Verdict
	– reference position in accordance with the manufacturer's statement;		P
	– protective conductor free from extraneous voltages;		P
	– 100 Ω resistance of the auxiliary earth electrode in a TT system.		P
	The operating error thus evaluated shall not exceed the limits specified in 4.1 to 4.3.	see Forms A to H	P
6.2	Compliance with the permissible operating error when measuring the fault voltage shall be tested for measurements with and without a probe.		P
6.3	Compliance with the conditions for the internal resistance in accordance with 4.2 shall be tested in all measurement ranges (type test).	see Form I	P
6.4	Compliance with the requirements under 4.6 and 4.7 shall be tested (routine test).	see Form J	P
6.5	The overload protection in accordance with 4.8 and 4.9 shall be tested (type test).	see Form J	P
6.6	Compliance with the tests in this clause shall be recorded.		P

IEC 61557-6			
Clause	Requirement – Test	Result – Remark	Verdict

6.1	TABLE: Operating error of Residual Current Device measurements	Form A	P
6.2	Operating error of constant current		P

Range / value	Intrinsic error			Position (E1)			Influence of Supply voltage (E2)			Temperature (E3)			Comments
	true value mA	dis-played value mA	A	- 90 ° mA	+ 90 ° mA	E1	9.9V	7.2V	E2	0 °C mA	35 °C mA	E3	
X1/10mA	10	10.26	0.26	10.23	10.24	0.24	10.19mA	10.31 mA	0.31	10.24	10.27	0.27	
X1/20mA	20	20.53	0.53	20.52	20.55	0.55	20.46mA	20.55 mA	0.55	20.48	20.53	0.53	
X1/30mA	30	30.95	0.95	30.81	30.83	0.83	30.92mA	30.98 mA	0.98	30.92	31.04	1.04	
X1/100mA	100	102.32	2.32	102.31	102.33	0.33	101.54 mA	102.78 mA	2.78	102.69	102.88	2.88	
X1/300mA	300	307.16	7.16	307.16	307.18	7.18	308.53 mA	309.32 mA	9.32	306.65	307.32	7.32	
X1/500mA	500	513.42	13.42	513.16	513.44	13.44	513.38 mA	513.52 mA	13.58	513.38	513.55	13.55	

Notes:

Intrinsic error or influence quantity	Reference conditions or specified operating range	Designation code	Requirements or tests in accordance with relevant parts of IEC 61557	Type of test
Intrinsic error	Reference conditions	A	Part 6, 6.1	R
Position	Reference position ± 90°	E ₁	Part 1, 4.2	R
Supply voltage	At the limits stated by the manufacturer	E ₂	Part 1, 4.2, 4.3	R
Temperature	0 °C and 35 °C	E ₃	Part 1, 4.2	T
Operating error	$B = \pm (A + 1,15 \times \sqrt{(E_1^2 + E_2^2 + E_3^2 + E_5^2 + E_8^2)})$	B	Part 6, 4.1, 4.2, 4.3	
A = intrinsic error	E _n = variations	R = routine test	T = type test	B [%] = ± (B / fiducial value) x 100%

Supplementary information:

IEC 61557-6			
Clause	Requirement – Test	Result – Remark	Verdict

6.1	TABLE: Operating error of Residual Current Device measurements							Form B	P
6.2	Operating error of constant current								P
Range / Value	Resistance probes (E5)				Influence of System voltage (E8)			Percentage operating error [B] %	
	mA	mA	mA	E5	195V	253V	E8		
X1/10mA	10.24	-	-	0.24	10.16 mA	10.19 mA	0.19	9.1%	
X1/20mA	20.52	-	-	0.52	20.38 mA	20.49 mA	0.49	9.4%	
X1/30mA	30.82	-	-	0.82	30.82 mA	30.88 mA	0.88	9.6%	
X1/100mA	103.32	-	-	2.32	102.13 mA	102.36 mA	2.36	8.4%	
X1/300mA	307.18	-	-	7.18	307.15 mA	307.86 mA	7.86	9.1%	
X1/500mA	513.42	-	-	13.42	513.25 mA	513.48 mA	13.48	9.6%	

Notes:

Intrinsic error or influence quantity	Reference conditions or specified operating range	Designation code	Requirements or tests in accordance with relevant parts of IEC 61557	Type of test
Intrinsic error	Reference conditions	A	Part 3, 6.1	R
Resistance of probes and aux. earth electrodes	0 to 100 x R _A but ≤ 50 kΩ	E ₅	Part 5, 4.3	T
System voltage	85 % to 110 % of the nominal voltage	E ₈	Part 6, 4.3	T
Operating error	$B = \pm (A + 1,15 \times \sqrt{E_1^2 + E_2^2 + E_3^2 + E_5^2 + E_8^2})$	B	Part 6, 4.1, 4.2, 4.3	

A = intrinsic error E_n = variations R = routine test T = type test B [%] = ± (B / fiducial value) x 100%

Supplementary information:

IEC 61557-6

Clause	Requirement – Test	Result – Remark	Verdict
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6.1	TABLE: Operating error of Residual Current Device measurements	Form C	P
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6.2	Operating error of fault voltage measurements		P
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Range / value	Intrinsic error			Position (E1)			Influence of Supply voltage (E2)			Temperature (E3)			Comments
	true value V	displayed value V	A	- 90 ° V	+ 90 ° V	E1	7.2V	9.9V	E2	0 °C V	35 °C V	E3	
X1/30mA 0°													
UL25	25.14	-	0.14	25.10	25.12	0.12	25.10V	25.12V	0.12	25.09	25.15	0.15	
UL50	50.43	-	0.43	50.42	50.43	0.43	50.32V	50.36V	0.36	50.34	50.45	0.45	
X1/30mA 180°													
UL25	25.14	-	0.14	25.12	25.15	0.15	25.11V	25.13V	0.13	25.09	25.16	0.16	
UL50	50.39	-	0.39	50.28	50.40	0.40	50.39V	50.40V	0.40	50.38	50.43	0.43	

Notes:				
Intrinsic error or influence quantity	Reference conditions or specified operating range	Designation code	Requirements or tests in accordance with relevant parts of IEC 61557	Type of test
Intrinsic error	Reference conditions	A	Part 6, 6.1	R
Position	Reference position ± 90°	E ₁	Part 1, 4.2	R
Supply voltage	At the limits stated by the manufacturer	E ₂	Part 1, 4.2, 4.3	R
Temperature	0 °C and 35 °C	E ₃	Part 1, 4.2	T
Operating error	$B = \pm (A + 1,15 \times \sqrt{E_1^2 + E_2^2 + E_3^2 + E_5^2 + E_8^2})$	B	Part 6, 4.1, 4.2, 4.3	
A = intrinsic error	E _n = variations	R = routine test	T = type test	B [%] = ± (B / fiducial value) x 100%

Supplementary information:

IEC 61557-6			
Clause	Requirement – Test	Result – Remark	Verdict

6.1	TABLE: Operating error of Residual Current Device measurements							Form D	P
6.2	Operating error of fault voltage measurements								P
Range / Value	Resistance probes (E5)				Influence of System voltage (E8)			Percentage operating error [B] %	
	5 Ω	V	V	E5	195V	253V	E8		
X1/30mA 0°									
UL25	25.09	-	-	0.09	25.12	25.14	0.14	1.9%	
UL50	50.26	-	-	0.26	50.40	50.42	0.42	2.9%	
X1/30mA 180°									
UL25	25.06	-	-	0.06	25.13	25.14	0.14	1.9%	
UL50	50.23	-	-	0.23	50.38	50.40	0.40	2.7%	
Notes:									
Intrinsic error or influence quantity	Reference conditions or specified operating range			Designation code	Requirements or tests in accordance with relevant parts of IEC 61557		Type of test		
Intrinsic error	Reference conditions			A	Part 3, 6.1		R		
Resistance of probes and aux. earth electrodes	0 to 100 x R _A but ≤ 50 kΩ			E ₅	Part 5, 4.3		T		
System voltage	85 % to 110 % of the nominal voltage			E ₈	Part 6, 4.3		T		
Operating error	B = ± (A + 1,15 x √ (E ₁ ² + E ₂ ² + E ₃ ² + E ₅ ² + E ₈ ²))			B	Part 6, 4.1, 4.2, 4.3				
A = intrinsic error	E _n = variations			R = routine test	T = type test		B [%] = ± (B / fiducial value) x 100%		
Supplementary information:									

IEC 61557-6													
Clause	Requirement – Test						Result – Remark						Verdict
6.1	TABLE: Operating error of Residual Current Device measurements											Form E	P
6.2	Operating error of tripping current measurements												P
Range / value	Intrinsic error			Position (E1)			Influence of Supply voltage (E2)			Influence of Temperature (E3)			Comments
	true value	displayed value	A	- 90 °	+ 90 °	E1	9.9V	7.2V	E2	0 °C	35 °C	E3	
	mA	mA	-	mA	mA		mA	mA	-	mA	mA	-	
X1/30mA	30.95	-	0.95	30.81	30.93	0.81	30.80	30.82	0.82	30.80	3.81	0.81	
Notes:													
Intrinsic error or influence quantity		Reference conditions or specified operating range				Designation code		Requirements or tests in accordance with relevant parts of IEC 61557				Type of test	
Intrinsic error		Reference conditions				A		Part 6, 6.1				R	
Position		Reference position ± 90°				E ₁		Part 1, 4.2				R	
Supply voltage		At the limits stated by the manufacturer				E ₂		Part 1, 4.2, 4.3				R	
Temperature		0 °C and 35 °C				E ₃		Part 1, 4.2				T	
Operating error		$B = \pm (A + 1,15 \times \sqrt{E_1^2 + E_2^2 + E_3^2 + E_5^2 + E_6^2})$				B		Part 6, 4.1, 4.2, 4.3					
A = intrinsic error		E _n = variations				R = routine test		T = type test				B [%] = ± (B / fiducial value) x 100%	
Supplementary information:													

IEC 61557-6									
Clause	Requirement – Test			Result – Remark				Verdict	
6.1	TABLE: Operating error of Residual Current Device measurements							Form F	P
6.2	Operating error of tripping current measurements								P
Range / Value	Resistance probes (E5)			Influence of System voltage (E8)				Percentage operating error [B]	
				E5	195.5V	253V	E8	error [B]	
	mA	mA	mA	-	mA	mA	-	%	
X1/30mA	30.82	-	-	0.82	30.76	30.79	0.79	9.6%	
Notes:									
Intrinsic error or influence quantity	Reference conditions or specified operating range			Designation code	Requirements or tests in accordance with relevant parts of IEC 61557			Type of test	
Intrinsic error	Reference conditions			A	Part 3, 6.1			R	
Resistance of probes and aux. earth electrodes	0 to 100 x R _A but ≤ 50 kΩ			E ₅	Part 5, 4.3			T	
System voltage	85 % to 110 % of the nominal voltage			E ₈	Part 6, 4.3			T	
Operating error	$B = \pm (A + 1,15 \times \sqrt{E_1^2 + E_2^2 + E_3^2 + E_5^2 + E_8^2})$			B	Part 6, 4.1, 4.2, 4.3				
A = intrinsic error	E _n = variations			R = routine test	T = type test		B [%] = ± (B / fiducial value) x 100%		
Supplementary information:									

IEC 61557-6													
Clause	Requirement – Test						Result – Remark						Verdict
6.1	TABLE: Operating error of Residual Current Device measurements											Form G	P
6.2	Operating error of trip time measurements												P
Range / value	Intrinsic error			Position (E1)			Influence of Supply voltage (E2)			Temperature (E3)			Comments
	true value	displayed value	A	- 90 °	+ 90 °	E1	9.9v	7.2V	E2	0 °C	35 °C	E3	
	ms	ms		ms	ms	-	ms	ms	%	ms	ms	-	
0°													
X1/30mA	27.5	28	0.5	27.5	27.6	0.5	27.4	27.5	0.6	27.3	27.5	0.7	
X5/30mA	27.3	28	0.7	27.4	27.4	0.6	27.2	27.3	0.8	27.4	27.5	0.6	
180°													
X1/30mA	17.6	18	0.4	17.5	-17.6	0.5	17.5	17.6	0.5	17.4	17.6	0.6	
X5/30mA	17.4	18	0.6	17.6	17.6	0.4	17.4	17.5	0.6	17.5	17.6	0.5	
Notes:													
Intrinsic error or influence quantity	Reference conditions or specified operating range			Designation code	Requirements or tests in accordance with relevant parts of IEC 61557				Type of test				
Intrinsic error	Reference conditions			A	Part 6, 6.1				R				
Position	Reference position ± 90°			E ₁	Part 1, 4.2				R				
Supply voltage	At the limits stated by the manufacturer			E ₂	Part 1, 4.2, 4.3				R				
Temperature	0 °C and 35 °C			E ₃	Part 1, 4.2				T				
Operating error	$B = \pm (A + 1,15 \times \sqrt{(E_1^2 + E_2^2 + E_3^2 + E_5^2 + E_6^2)})$			B	Part 6, 4.1, 4.2, 4.3								
A = intrinsic error	E _n = variations			R = routine test	T = type test				B [%] = ± (B / fiducial value) x 100%				
Supplementary information:													

IEC 61557-6			
Clause	Requirement – Test	Result – Remark	Verdict

6.1	TABLE: Operating error of Residual Current Device measurements							Form H	P
6.2	Operating error of trip time measurements								P
Range / Value	Resistance probes (E5)			Influence of System voltage (E8)				Percentage operating error [B] %	
				E5	195V	253V	E8		
	ms	ms	ms	-	ms	ms	-		
0°									
X1/30mA	27.6	-	-	0.4	27.6	27.8	0.4	6.2%	
X5/30mA	27.3	-	-	0.7	27.8	27.8	0.2	8.1%	
180°									
X1/30mA	17.6	-	-	0.4	17.8	17.9	0.2	8.8%	
X5/30mA	17.5	-	-	0.5	17.7	17.8	0.3	8.7%	
Notes:									
Intrinsic error or influence quantity	Reference conditions or specified operating range			Designation code	Requirements or tests in accordance with relevant parts of IEC 61557		Type of test		
Intrinsic error	Reference conditions			A	Part 3, 6.1		R		
Resistance of probes and aux. earth electrodes	0 to 100 x R _A but ≤ 50 kΩ			E ₅	Part 5, 4.3		T		
System voltage	85 % to 110 % of the nominal voltage			E ₈	Part 6, 4.3		T		
Operating error	$B = \pm (A + 1,15 \times \sqrt{E_1^2 + E_2^2 + E_3^2 + E_5^2 + E_8^2})$			B	Part 6, 4.1, 4.2, 4.3				
A = intrinsic error	E _n = variations			R = routine test	T = type test		B [%] = ± (B / fiducial value) x 100%		
Supplementary information:									

IEC 61557-6			
Clause	Requirement – Test	Result - Remark	Verdict

6.3	TABLE: Internal Resistance		Form I	P
	Range	R_i [Ω]		Verdict
	VOLTS	357.14k		P
	X1/2	333.3k		P
	X1	332.8k		P
	X5	334.5k		P
	AUTO RAMP	333.5k		P

Supplementary information:

IEC 61557-6			
Clause	Requirement – Test	Result – Remark	Verdict

6.5	TABLE: Overload test													Form J	P
Condition	Value test voltage (NOTE 1)	Voltage measured			Transient (NOTE 2)		Current measured			Capacitance μ F	Protective means operating Y/N	Verdict	Comments (NOTE 3)		
		V r.m.s	V peak	V d.c.	V	s	Test circuit A1/A2/A3	mA r.m.s.	mA peak					mA d.c.	
Instrument switched ON															
120 % U_N dc (+)	-	-	-	-	-	-	-	-	-	-	-	-	-		
120 % U_N dc (reverse polarity)	-	-	-	-	-	-	-	-	-	-	-	-	-		
120 % U_N ac	276	32.57	45.89	-	-	-	-	-	-	-	-	P			
173 % U_N ac	398	41.32	56.38	-	-	A1	0.0301	0.0547	-	-	-	P			
Instrument switched OFF															
120 % U_N dc (+)	-	-	-	-	-	-	-	-	-	-	-	-	-		
120 % U_N dc (reverse polarity)	-	-	-	-	-	-	-	-	-	-	-	-	-		
120 % U_N ac	-	-	-	-	-	-	-	-	-	-	-	-	-		
173 % U_N ac	-	-	-	-	-	-	-	-	-	-	-	-	-		
NOTE 1 – Indicate subclause of part 6 requirements NOTE 2 – Value of test voltage is based on U_N 120 % (Subcl. 4.5) and 173 % (Subcl. 4.6) NOTE 3 – Transient voltages must be below the limits given from Figure 1 and the capacitance below the limits from figure 2 of IEC 61010-1.															
Supplementary information:															

***** END OF REPORT *****