SABS

TEST REPORT APPLIANCES LABORATORY

SANS 62053-21:2018Electricity metering equipment (a.c)Particular requirementsPart 21		
Report reference No	APP-220121-00001	
Compiled/Approved by	Mr. KA Thekisho	
(printed name and signature)	Technical Signatory	
Checked by	Ms. Ms Mkhize	
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(printed name and signature)	Manager - Technical	
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Date of issue	4-May-22	
Total number of pages	14	
Applicant.....:	WEBILL(PTY)Ltd	
Address.....:	147 North Reef Rd ,Bedfordview	
Sample Submitted by:	Customer	
Condition of Sample	The sample received was in a good test condition	
Date of Sampling	N/A	
Sample receipt date.....:	7-Dec-21	
Test start date.....:	27-Jan-22	
Test completion date.....:	3-May-22	
Statement of conformity.....:	The sample tested complied with the requirements of SANS 62053-21:2018.	
SABS Laboratory Decision Rule.....:	Where the addition of the measurement uncertainty to the calculated test results leads to an inconclusive statement of conformity, but the result is within the pass criteria of the specification, the outcome shall be stated as compliance.	
Test requested as per quotation.....:	**SANS 62053-21:2018**	
Test Standard used.....:	SANS 62053-21:2018	
Test Report Form No. :	SANS 62053-21	
TRF originator. :	SABS Commercial SOC Ltd	
Master TRF :	dated 2021-05	
Test item description :	Single phase meter	
Trademark :	WEBILL(PTY)Ltd	
Manufacturer :	Collectric	
Country of Origin.....:	South Africa	
Model and/or type reference :	M190RSF	
Rating(s) :	230V 50 Hz 20(80) A	

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The acceptance of a sample for test and the issue of a test report are subject to SABS' Conditions of Test, which are the following:

1. If published or reproduced by the client, a test report shall be reproduced in full, i.e. the reproductions shall contain the printed as well as the typed parts of the report, nothing excerpted.
2. A test report relates only to a sample submitted for the actual test. It furnishes or implies no guarantee whatsoever in respect of a similar sample that has not been tested by the SABS.
3. This test report does not imply that the user has obtained pre-approval to apply the SABS certification mark nor does it imply approval by SABS, of the quality and/or performance of the sample that has been tested. No person may falsely claim or declare that any commodity, product or service complies with a South African National Standard or other publication of the SABS.
4. While every endeavour will be made to ensure that a test is representative and accurately performed, and that a report is accurate in the quoted results and conclusions drawn from the test, in terms of the Standards Act, SABS or its officers shall not be liable for anything done or omitted in good faith when error made in carrying a test.
5. The results enclosed within this Test report apply to the sample as received.
6. Declaration of interest: By signing this Test report, the Technical Signatories/Test Officers hereby declares that there is no conflict of interest with the aforementioned customer.

Possible test case verdicts:	
Pass	P
Fail	F
Not Applicable	N/A
Not Tested	N/T
Pass and subcontracted at accredited lab	_P
Fail and subcontracted at accredited lab	_F
Pass and subcontracted at non-accredited lab	_P*
Fail and subcontracted at non- accredited lab	_F*
Pass - Witnessed test	#P
Fail - Witnessed test	#F
Fail - Test done at Manufacturer's plant	&P
Pass - Test done at Manufacturer's plant	&F

Exclusions:

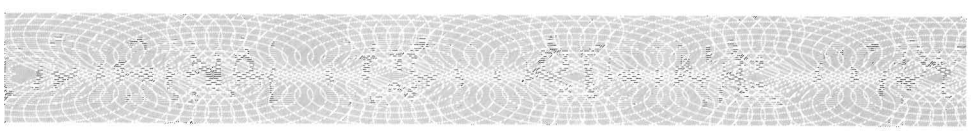
Reference specification	*Test description*	*Laboratory*	*Test Report No*	*Verdict*
IEC 62052-11 Clause 5.2.2.2	Shock test	Gerotek (Vibration)	17450	_P
IEC 62052-11 Clause 5.2.2.3	Vibration test	Gerotek (Vibration)	17450	_P
IEC 62052-11 Clause 5.4	Terminal material ISO 75-2	SABS Rubber and Plastics	2116/Pr 12	_P*
IEC 62052-11 Clause 7.5.2	Protection against penetration of dust and water	SABS EPT	EPT-220214-00006	_P
IEC 62052-11 Clause 7.5.2	Electrostatic discharge	Gerotek (EMC)	17225	_P
IEC 62052-11 Clause 7.5.3	Immunity to electromagnetic RF fields	Gerotek (EMC)	17225	_P
IEC 62052-11 Clause 7.5.4	Fast transient burst	Gerotek (EMC)	17225	_P
IEC 62052-11 Clause 7.5.5	Immunity to conducted disturbances	Gerotek (EMC)	17225	_P
IEC 62052-11 Clause 7.5.6	Surge immunity test	Appliances Lab	17225	
IEC 62055-31 Clause 7.9	Load switch tests	Yadav	YML/2021-2022/1800/1/1732	_P

Throughout this report a point is used as the decimal separator.

Results marked "Not SANAS Accredited" in this report are not included in the SANAS Schedule of Accreditation for this

Results marked "Subcontracted Test" in this report are not included in the SANAS Schedule of Accreditation for this laboratory

Test samples are received from the client. SABS Appliances lab does not do sampling.



Clause	Requirement – Test	Result/Remark	Verdict
4	**Standard electrical values:** Note: Unless otherwise specified, clause references are to SANS 62055-31and SANS 62052-11		
	Standard reference voltage: The meter shall meet the requirements as stated in table 1 of SANS 62052-11.	Complied	**P**
	Standard current: The meter shall meet the requirements as stated in table 2 of SANS 62052-11.	Complied	**P**
	Standard reference frequency: The meter shall meet the requirements as stated in clause 4.3 of SANS 62052-11.	Complied	**P**
5	**Mechanical requirements** Note: Clause references are SANS 62055-31 and SANS/ IEC 62052-11		
	General Mechanical Requirements: Meters shall be designed and constructed in such a way as to avoid introducing any danger in normal use and under normal conditions.	Complied	**P**
	Case: The meter shall have a case which can be sealed in such a way that the internal parts of the meter are accessible only after breaking the seal(s).	Complied	**P**
	Spring Hammer test: Meter case and terminal cover do not sustain damage which could affect the function of the meter and if it is not possible to touch live parts. Slight damage which does not impair the protection against indirect contact or the penetration of solid objects, dust and water is acceptable	Complied	**P**
	Shock test: Meter shall show no damage or change of the information and shall operate correctly in accordance with the requirements of the relevant standard. Refer to Gerotek (Vibration) test report no. 17450	Complied	**_P**
	Vibration test: Meter shall show no damage or change of the information and shall operate correctly in accordance with the requirements of the relevant standard. Refer to Gerotek (Vibration) test report no. 17450	Complied	**_P**
	Window: If the cover is not transparent, one or more windows shall be provided for reading the display and observation of the operation indicator, if fitted. These windows shall be of transparent material which cannot be removed undamaged without breaking the seal(s).	Complied	**P**
	Terminals and terminal blocks: Terminals may be grouped in (a) terminal block(s) having adequate insulating properties and mechanical strength. In order to satisfy such requirements when choosing insulating materials for the terminal block(s), adequate testing of materials shall be taken into account. The material of which the terminal block is made shall be capable of passing the tests given in ISO 75-2 for a temperature of 135 °C and a pressure of 1,8 MPa (method A). Refer to SABS Rubber and Plastics test report no. 2116/Pr 12	Complied	**_P***
	Terminal cover: The terminals of a meter, if grouped in a terminal block and if not protected by any other means, shall have a separate cover which can be sealed independently of the meter cover. The terminal cover shall enclose the actual terminals, the conductor fixing screws and, unless otherwise specified, a suitable length of the external conductors and their insulation.	Complied	**P**
	Clearance and creepage distances: The clearance and creepage between a) any terminal of a circuit with a reference voltage over 40 V and b) earth, together with terminals of auxiliary circuits with reference coltages below or equal to 40 V shall not be less than the relevant values indicated in Tables 3a and 3b.	Complied	**P**

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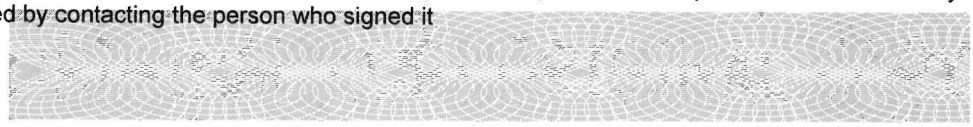

Clause	Requirement – Test	Result/Remark	Verdict
	Insulating encased meter of protective class II: A meter of protective class II shall have a durable and substantially continuous enclosure made wholly of insulating material, including the terminal cover, which envelopes all metal parts, with the exception of small parts, for example, name-plate, screws, suspensions and rivets.	Complied	P
5,8	**Resistance to heat and fire:** The terminal block, the terminal cover and the meter case shall ensure reasonable safety against spread of fire. They should not be ignited by thermal overload of live parts in contact with them.	Complied	P
5,9	**Protection against penetration of dust and water:** Any ingress of dust and water shall be only in a quantity not impairing the operation of the meter. An insulation test according to 7.3 shall be passed. Refer to SABS EPT test report no. EPT-220214-00006	Complied	_P
5.10	**Display of measured values:** The information can be shown either by an electromechanical register or an electronic display. In the case of an electronic display the corresponding non-volatile memory shall have a minimum retention time of four months. In the case of multiple values presented by a single display it shall be possible to display the content of all relevant memories. When displaying the memory, the identification of each tariff applied shall be possible and, for automatic sequencing displays, each display of register for billing purposes shall be retained for a minimum of 5 s.	Complied	P
5,11	**Output device:** The meter shall have a test output device capable of being monitored with suitable testing equipment. Output devices generally may not produce homogeneous pulse sequences.	Complied	P
5,12	**Marking of Meter:** Note: Clause references are to SANS/ IEC 62052-11		
	Name of manufacturer or trade mark: **WEBILL(PTY)Ltd**	Complied	P
	Designation of type and space for approval mark: **M190RSF**	Complied	P
	Number of phases and the number of wires: **single phase, 2 wires**	Complied	P
	Serial number and year of manufacture: **Marked**	Complied	P
	Reference voltage: **230V**	Complied	P
	Current marking: **20(80) A**	Complied	P
	Reference frequency: **50 Hz**	Complied	P
	Meter constant: **1000 imp/kWh**	Complied	P
	Accuracy class index: **2**	Complied	P
	The sign of the double square for meters of protective class 2: **Marked**	Complied	P
	Connection diagrams and terminal markings **Marked**	Complied	P
	IP Rating **54**	Complied	P

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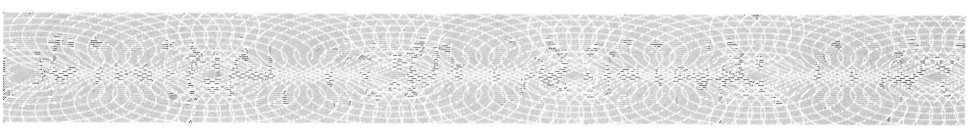

Clause	Requirement – Test	Result / Remark	Verdict
6	**Climatic conditions :**Note: Clause references are to SANS/ IEC 62052-11		
6,1	**Temperature range:** The temperature range of the meter shall be as shown in Table 5.	Complied	**P**
6,2	**Relative humidity:** The meter shall be designed to withstand the climatic conditions defined in Table 6.	Complied	**P**
6.3.1	**Dry Heat Test:** The meter shall show no damage or change of the information and shall operate correctly after the test.	Complied	**P**
6.3.2	**Cold test**: The meter shall show no damage or change of the information and shall operate correctly after the test.	Complied	**P**
6.3.3	**Damp Heat Cyclic test**: The meter shall show no damage or change of the information and shall operate correctly after the test. An insulation test according to 7.3, except that the impulse voltage shall be multiplied by a factor of 0,8.	Complied	**P**
6.3.4	**Protection against solar radiation:** The test the meter shall be visually inspected. The appearance and, in particular, the legibility of markings shall not be altered. The function of the meter shall not be impaired.(Applicable to outdoor meters only).	Not Applicable	**N/A**
7	**Electrical requirements** Note: Clause references are to SANS 62052-11		
7,1	**Power consumption:** The meter meets the requirements for direct connected meters.		
	Voltage circuits: Specified = 3W and 10VA		

	Phase 1	Phase 2	Phase 3		
Voltage (V)	**230,05**	**N/A**	**N/A**	Complied	**P**
Burden (VA)	**7,64**	**N/A**	**N/A**	Complied	**P**
Power (W)	**1,154**	**N/A**	**N/A**	Complied	**P**
Current circuit:Specified = 4VA	**4**	**N/A**	**N/A**		
Measured (VA)	**0,382**	**N/A**	**N/A**	Complied	**P**

	Influence of supply voltage:		
	Voltage range		
7.1.1	Voltage ranges from –20 % to –10 % and +10 % to +15 % the limits of variation in percentage errors are three times the values given in table 8 of SANS 62053-21.Below 0,8 *U*n the error of the meter may vary between +10 % and –100%.	Complied	**P**
7.1.2	**Voltage dips and short interruptions:** Voltage dips and short interruptions shall not produce a change in the register of more than x units and the test output shall not produce a signal equivalent of more than x units.	Complied	**P**
7,2	**Influence of Heating:** The requirements given in 7.2 of SANS 62052-11:2003 shall apply Under rated operating conditions, electrical circuits and insulation shall not reach a temperature which might adversely affect the operation of the meter.	Complied	**P**
7,2	**Influence of short time overcurrents:** After the voltage circuits have been energized at reference voltage for at least 2 h for class 1 and 1 h for class 2, without any current in the current circuits, the maximum current shall be applied to the current circuits. The meter error shall be measured at unity power factor immediately after the current is applied and then at intervals short enough to allow a correct drawing to be made of the curve of error variation as a function of time. The test shall be carried out for at least 1 h, and in any event until the variation of error during 20 min does not exceed 0,2 %.	Complied	**P**
7,3	**Influence of self–heating:** The requirements given in 7.3 of SANS 62053-21:2003 shall apply. The variation of error due to self-heating shall not exceed the values given in Table 4.	Complied	**P**

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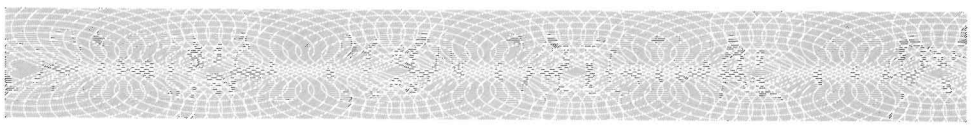

Clause	Requirement – Test	Result/Remark	Verdict
7,4	**Insulation** Note: Note: Clause references are to SANS 62052-11.		
	Impulse voltage test: The meter and its incorporated auxiliary devices, if any, shall be such that they retain adequate dielectric qualities under normal conditions of use, taking into account the effects of the climatic environment and different voltages to which they are subjected under normal conditions of use.	**Complied**	**P**
	AC voltage test: The meter and its incorporated auxiliary devices, if any, shall be such that they retain adequate dielectric qualities under normal conditions of use, taking into account the effects of the climatic environment and different voltages to which they are subjected under normal conditions of use.	**Complied**	**P**
8	**Electromagnetic compatibility (EMC)**		
	Compatibility requirements Note: Clause references are to SANS 62052-11.		
	Electrostatic discharge: The application of the electrostatic discharge shall not produce a change in the register of more than *x* units and the test output shall not produce a signal equivalent to more than *x* units. During the test, a temporary degradation or loss of function or performance is acceptable. Refer to Gerotek (EMC) test report no. 17225	Complied	**_P**
	Electromagnetic RF fields, Test with current. During the test, the behaviour of the equipment shall not be perturbed and the variation of error shall be within the limits as specified in the relevant standards. Refer to Gerotek (EMC) test report no. 17225	Complied	**_P**
	Electromagnetic RF fields, Test without any current: The application of the RF field shall not produce a change in the register of more than *x* units and the test output shall not produce a signal equivalent to more than *x* units. During the test, a temporary degradation or loss of function or performance is acceptable. Refer to Gerotek (EMC) test report no. 17225	Complied	**_P**
	Fast transient burst: During the test, a temporary degradation or loss of function or performance is acceptable; nevertheless the variation of the error shall be within the limits as specified in the relevant standard. Refer to Gerotek (EMC) test report no. 17225	Complied	**_P**
	Conducted disturbance induced by radio frequency fields: During the test, the behaviour of the equipment shall not be perturbed and the variation of the error shall be within the limits as specified in the relevant standards. Refer to Gerotek (EMC) test report no. 17225	Complied	**_P**
	Damped oscillatory waves test: During the test the behaviour of the equipment shall not be perturbed and the variation in error shall be within the limits as specified in the relevant standards. Only for transformer operated meters.	Not Applicable	**N/A**
	Surge immunity – line to load: line to load: When tested in accordance with 6.5.2, it is acceptable if the meter clamps the voltage or if flash-over occurs. The meter shall be functional after the test and the load switch shall operate correctly when power is restored to the meter.	Complied	**P**
	Radio interference suppression: The test results shall comply with the requirements given in CISPR 22. Refer to Gerotek (EMC) test report no. 17225	Complied	**_P**

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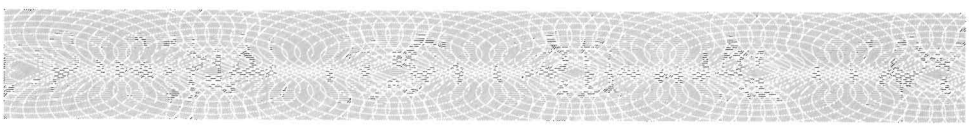

Clause	Requirement – Test	Result / Remark	Verdict
8	**Accuracy requirements**		
8,1	**Limits of error due to variation of the current (8.1)** When the meter is under the reference conditions given in 8.5, the percentage errors shall not exceed the limits for the relevant accuracy class given in Tables 6 and 7. Refer to Annexure A.	Complied	P
8,2	**Limits of error due to influence quantities**		
	Limits of error due to ambient temperature variation: The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8. Refer to Annexure A.	Complied	P
	Limits of error due to voltage variation (±10%): The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8. The results obtained are given in Annex 1.	Complied	P
	Limits of error due to frequency variation (±2%): The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8. The results obtained are given in Annex 1.	Complied	P
	Reversed phase sequence: The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8. Only applicable to three phase meters.	Not Applicable	N/A
	Voltage unbalance: The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8.Only applicable to three phase meters.	Not Applicable	N/A
	Accuracy test in the presence of harmonics: The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8	Complied	P
	Tests of the influence of odd harmonics and sub-harmonics : The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8.	Complied	P
	Tests of the influence of d.c. and even harmonics: The variation in percentage error when the meter is subjected to the test waveform given in Figure A.2 and when it is subjected to the reference waveform shall not exceed the limits of variation given in Table 8.	Complied	P
	Continuous magnetic induction of external origin: The additional percentage error due to the change of influence quantities with respect to reference conditions, as given in 8.5, shall not exceed the limits for the relevant accuracy class given in Table 8.	Complied	P
	Initial start-up of the meter: The meter shall be functional within 5 s after the reference voltage is applied to the meter terminals.	Complied	P
	Testof no-load condition: When the voltage is applied with no current flowing in the current circuit, the test output of the meter shall not produce more than one pulse. For this test, the current circuit shall be open-circuit and a voltage of 115 % of the reference voltage shall be applied to the voltage circuits.	Complied	P
	Starting: The meter shall start and continue to register at the starting current values (and in case of polyphase meters, with balanced load) shown in Table 9.If the meter is designed for the measurement of energy in both directions, then this test shall be applied with energy flowing in each direction.	Complied	P
	Meter constant: The relation between the test output and the indication in the display shall comply with the marking on the name-plate.	Complied	P

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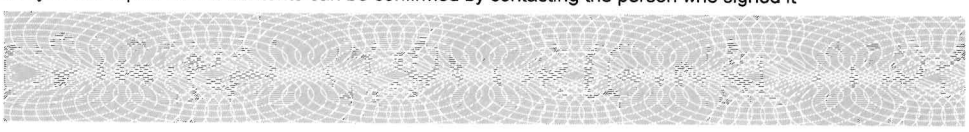

EQUIPMENT LIST			
Description	SABS NO/Serial No.	Equipment status	Uncertainty value
Kocos-3 phase measurement test system	PP&E0005684	Calibrated	± 0.02%
Digital power meter	91HA33796	Calibrated	±0.05%
Digital Vernier caliper	52862	Calibrated	±0.02 mm
Universal spring Hammer	14748	Calibrated	±0.025 J
Digital Oscilloscope	27WZ0W337	Calibrated	±0.5%
Energy reference standard	PP&E0040188	Calibrated	±0.15%
3 phase measurement test	PP&E0034506	Calibrated	±0.03%
Digital Multimeter	67140959	Calibrated	±0.5%
Climatic chamber	PP&E0051134	Calibrated	Verified

Notes to report

This meter has disconnection capabilities (internal load switch) and therefore is classified as an ED (energy dispenser). The meter was tested and complied with he requirements of clause 7,9 of IEC 62055-31,and results reported in report YML/2021-2022/1800/1/1732.

b) Uncertainty of measurement for accuracy testing: ±0.15% of the error

c) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2 which for a normal distribution corresponds to a coverage probability of approximately 95%

ANNEX 1	
Test	Table reference
Limits of error due to variation of the current (Clause 8.1 of SANS IEC 62053-21) at:	
a) 1.0PF	1
b) 0.5PF	1
c) 0.8PF	1
Limits of error due to influence quantities (Clause 8.2 of SANS IEC 62053-21)	
d) Voltage variation	2
e) Frequency variation	3
f) Influence of ambient temperature variation at 1.0PF	4
g) Influence of ambient temperature variation at 0.5PF	5
h) Influence of self-heating	6
i) Heating	7

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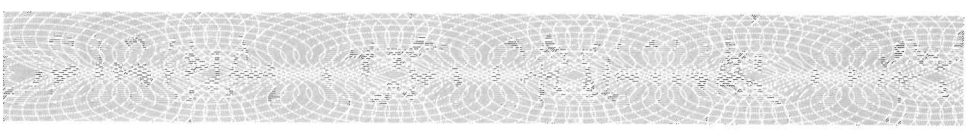

Table 1: Influence of current variation

M190RSF

Current (A) at 230V 50 Hz	Power factor	Measured error (%)	Limit	Result
1,00	1,0	-0,583	2,5	Pass
2,00		-0,407	2,0	Pass
20		-0,202	2,0	Pass
80		-0,039	2,0	Pass
2,00	0.5 inductive	-1,321	2,5	Pass
4,00		-1,126	2,0	Pass
20		-0,978	2,0	Pass
80		-0,818	2,0	Pass
2	0.8 capacitive	-0,819	1,5	Pass
4		-0,685	1,0	Pass
20		-0,59	1,0	Pass
80		-0,412	1,0	Pass

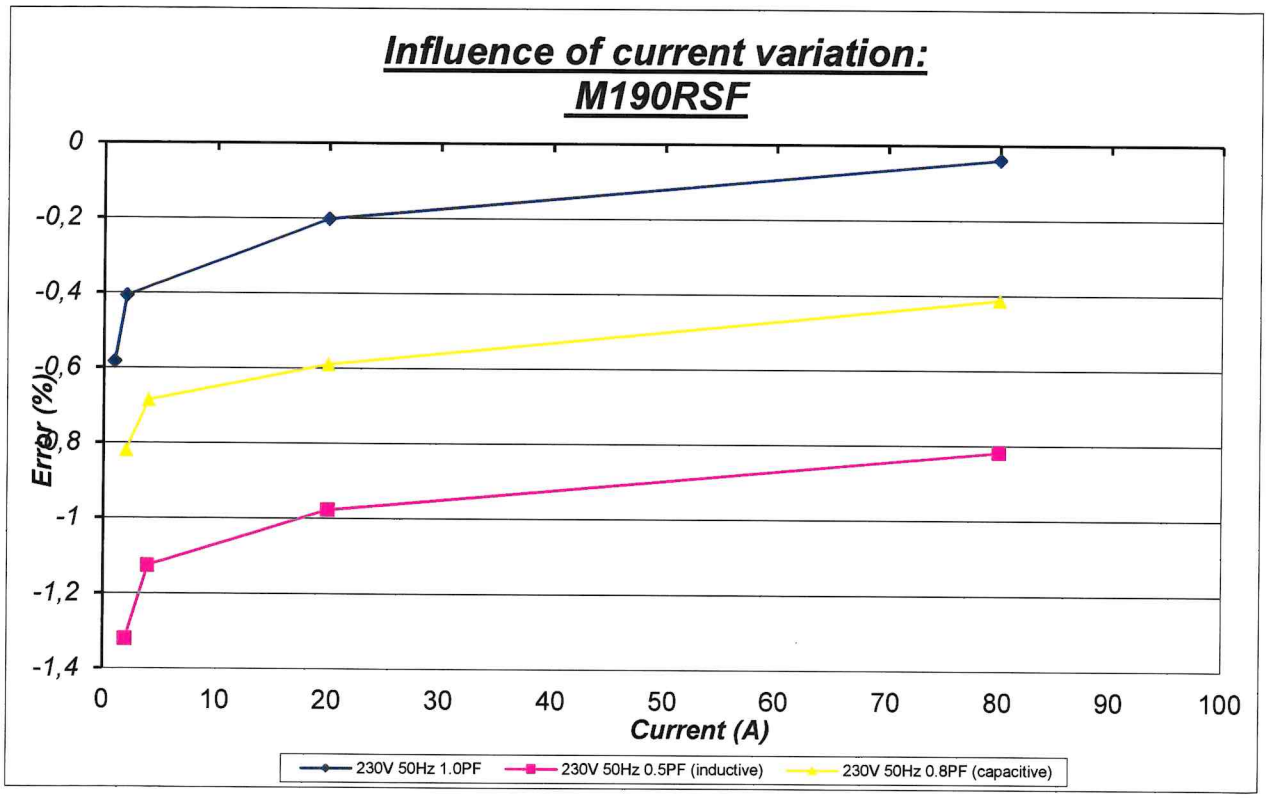

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Table 2: Influence of voltage variation

M190RSF

Current (A) at 184V 1.0PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
1,00	-0,132	0,529	3	Pass
20	-0,039	0,212	3	Pass
80	0,108	0,192	3	Pass
Current (A) at 207V 1.0PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
1,00	-0,306	0,355	1	Pass
20	-0,139	0,112	1	Pass
80	0,005	0,089	1	Pass
Current (A) at 253V 1.0PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
1,00	-0,762	0,101	1	Pass
20		0,154	1	Pass
80	-0,224	0,14	1	Pass
Current (A) at 264.5V 1.0PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
1,00	-0,821	0,16	3	Pass
5	-0,562	0,311	3	Pass
80	-0,393	0,309	3	Pass

Current (A) at 184V 0.5PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
2,00	0,594	-0,543	1,5	Pass
20	0,544	-0,281	1,5	Pass
80	0,673	-0,230	1,5	Pass
Current (A) at 207V 0.5PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
2,00	0,372	-0,321	0,5	Pass
20	0,406	-0,143	0,5	Pass
80	0,561	-0,118	0,5	Pass
Current (A) at 253V 0.5PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
2,00	-0,089	0,140	0,5	Pass
20	0,109	0,154	0,5	Pass
80	0,324	0,119	0,5	Pass
Current (A) at 264.5V 0.5PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
2,00	-0,168	0,219	1,5	Pass
20	-0,072	0,335	1,5	Pass
80	0,188	0,255	1,5	Pass

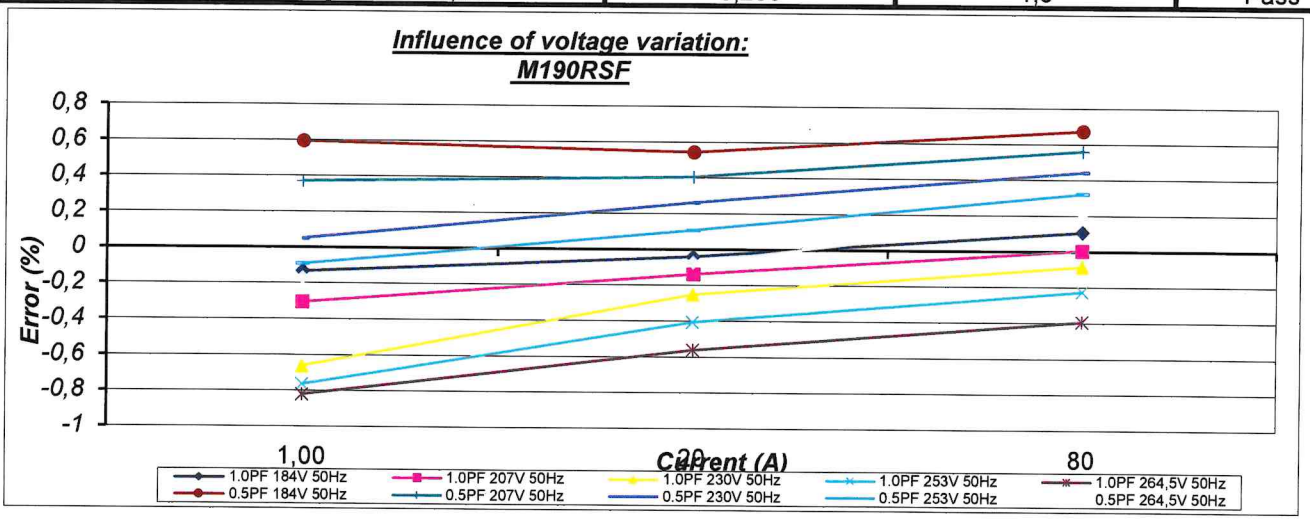

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Table 3: Influence of frequency variation

M190RSF

Current (A) at 230V 1.0PF 49Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
0,25	-0,587	0,074	0,8	Pass
5	-0,336	0,085	0,8	Pass
100	-0,144	0,06	0,8	Pass
Current (A) at 230V 1.0PF 50 Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
1,00	-0,661			
20	-0,251	-	N/A	N/A
100	-0,084			
Current (A) at 230V 1.0PF 51Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
0,25	-0,716	0,055	0,8	Pass
5		0,046	0,8	Pass
100	-0,059	0,025	0,8	Pass
Current (A) at 230V 0.5PF 49Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
2,00	-0,011	0,062	1	Pass
20	0,256	0,007	1	Pass
80	0,424	0,019	1	Pass
Current (A) at 230V 0.5PF 50Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
0,25	0,051			
5	0,263	-	N/A	N/A
100	0,443			
Current (A) at 230V 0.5PF 51Hz	Measured error (%)	Calculated variation (%)	Limit of variation	Result
0,25	0,084	-0,033	1	Pass
5	0,306	-0,043	1	Pass
100	0,458	-0,015	1	Pass

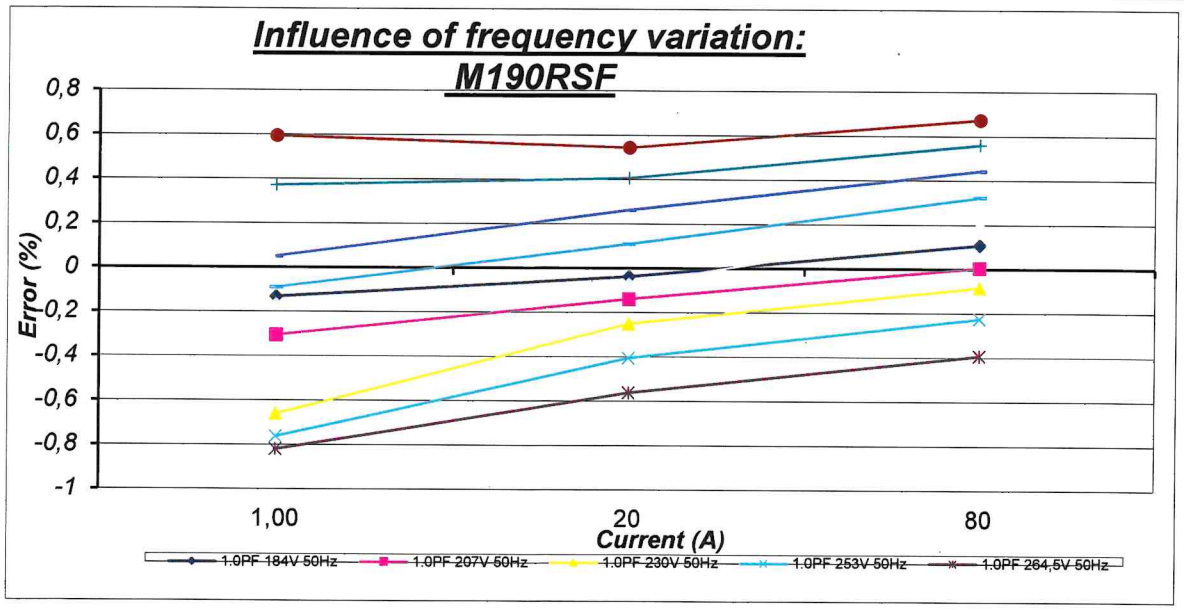

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Table 4: Influence of Ambient Temperature Variation 1 Pf
M190RSF
The mean temperature coefficient at 1.0 PF is -0,01817

	Temperature (°C)								
Current (A)	-10	0	10	13	23	33	35	45	55
0,5	0,28	0,13	-0,1	-0,22	-0,45	-0,62	-0,67	-0,85	-0,89
5	0,45	0,22	-0,05	-0,1	-0,31	-0,51	-0,52	-0,71	-0,72
100	0,66	0,41	0,15	0,05	-0,17	-0,4	-0,43	-0,62	-0,63

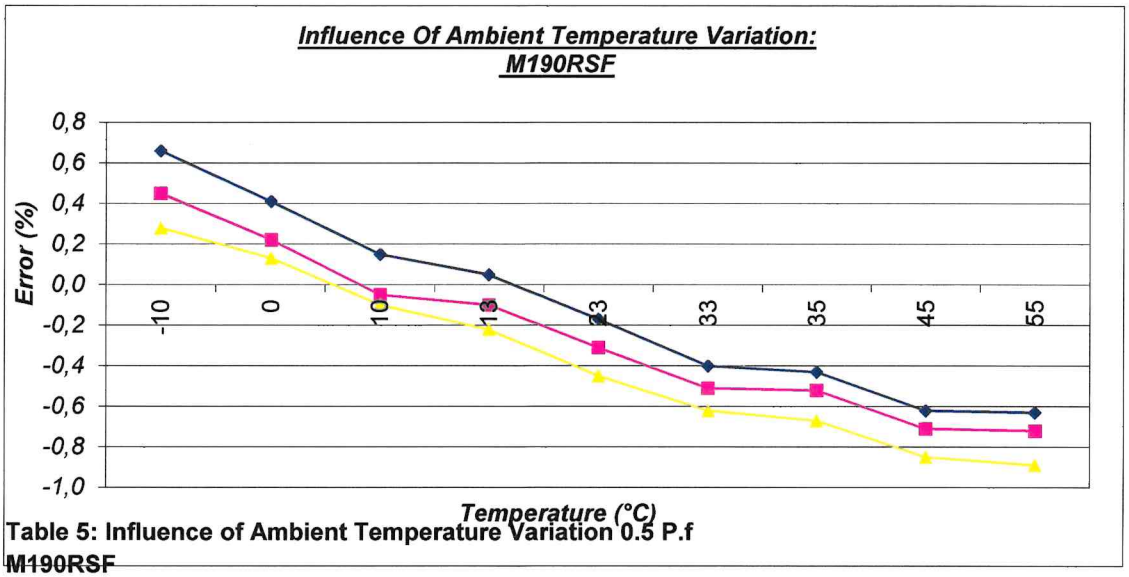

Table 5: Influence of Ambient Temperature Variation 0.5 P.f
M190RSF
The mean temperature coefficient at 0.5 PF is -0,01838

	Temperature (°C)								
Current (A)	-10	0	10	13	23	33	35	45	55
1	1,309	1,147	0,88	0,8	0,6	0,39	0,38	0,13	0,14
5	1,292	1,075	0,86	0,77	0,55	0,39	0,34	0,2	0,16
100	1,468	1,255	0,98	0,89	0,68	0,36	0,45	0,25	0,23

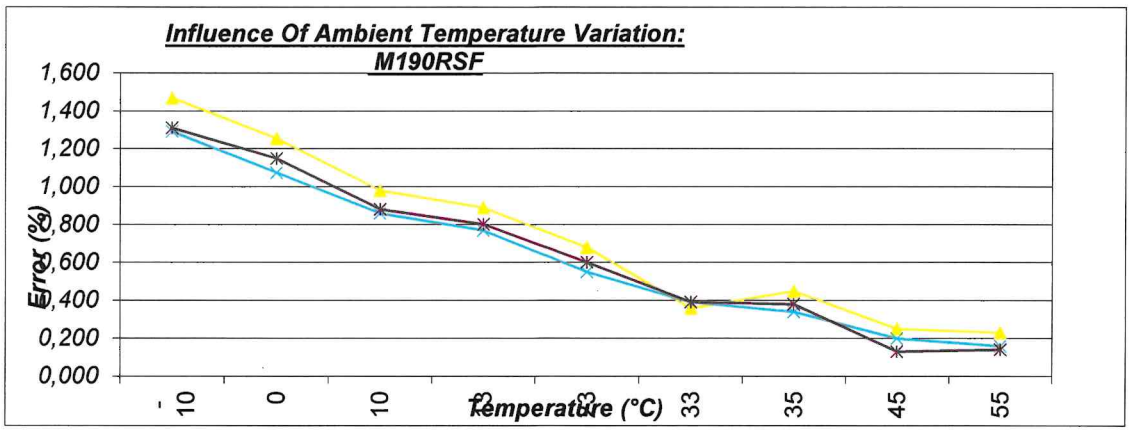

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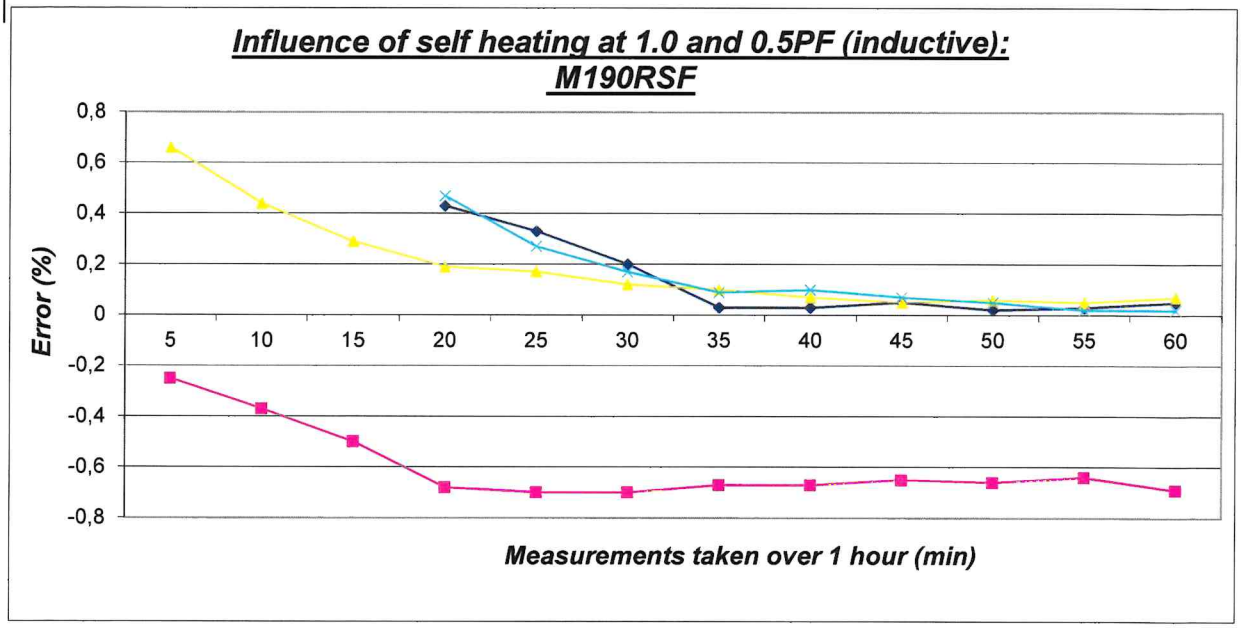
Table 6: Influence of Self Heating at 1.0 and 0.5 PF (Inductive)
M190RSF

Time (min)	5	10	15	20	25	30	35	40	45	50	55	60
Measured error at 1,0 PF	-0,25	-0,37	-0,5	-0,68	-0,7	-0,7	-0,67	-0,67	-0,65	-0,66	-0,64	-0,69
Variation in 20 min at 1,0 PF	-	-	-	0,43	0,33	0,2	0,03	0,03	0,05	0,02	0,03	0,05
Measured error at 0,5 PF	0,66	0,44	0,29	0,19	0,17	0,12	0,1	0,07	0,05	0,06	0,05	0,07
Variation in 20 min at 0,5 pf	-	-	-	0,47	0,27	0,17	0,09	0,1	0,07	0,05	0,02	0,02



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Annex 2

Photo 1: Meter Label

Photo 2: Meter

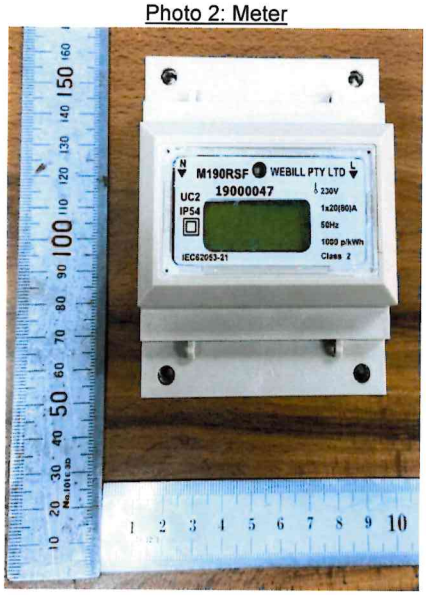


Photo 3: Internal view 1

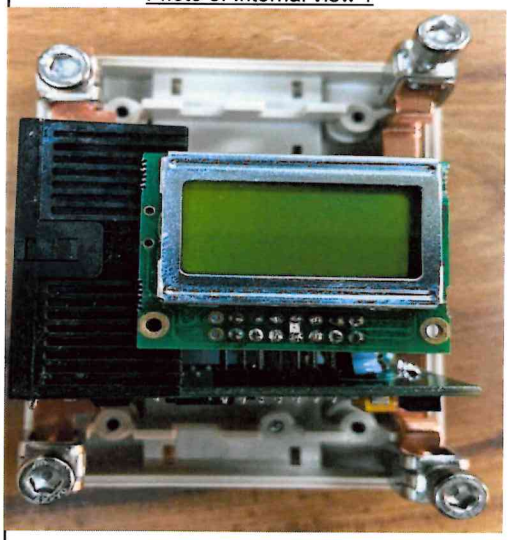
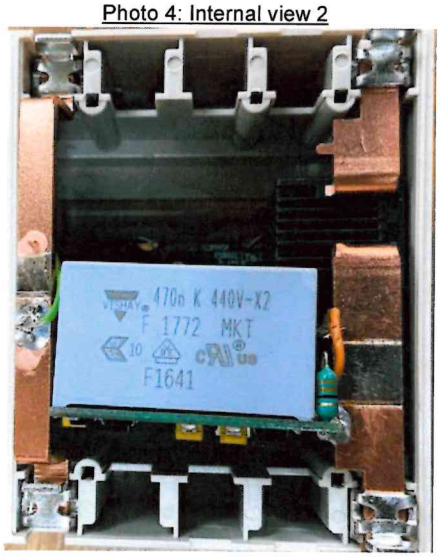


Photo 4: Internal view 2



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