

## TEST CERTIFICATE

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### OBJECT:

1 (one) POWER LOGIC Circuit Monitor, four-wire three-phase, model CM 3350, No. Z1; 50 Hz; manufactured in the United States; voltage range 0 to 347 V phase-neutral, current range 0 to 10 A.

Required measurements: effect on current variation, effect on voltage variation, effect on frequency variation, reverse phases sequence, voltage unbalance, effect on waveform, according to IEC standard 60687 and confirmation of voltage readings at measuring set points requested by the client.

Test Date: From September 17 to September 21, 2001

Release Date: October 4, 2001

Client: SCHNEIDER ELECTRIC ARGENTINA S.A. – Viamonte 2850 – Caseros – Provincia de Buenos Aires.

### CONCLUSIONS:

According to the results, the monitor is compatible with the requirements for the type of measurement, voltage and energy, according to point 5: Minimum Requirements for the measurement and verification of quality for Large Users, (Appendix to ENRE Resolution 0130/1995).

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**Effect on Current variation**

According to client specifications the equipment was calibrated at 120V voltage rating, 5A rated current and 9.5A maximum current.

Applied Current (A)	Applied Phase	Power Factor	Error rate measurement
0.05	RST	1	+0.52
0.10	RST	1	+0.18
		0.5 ind	+0.05
		0.8 cap	+0.30
0.25	RST	1	0.00
		0.5 ind	-0.25
		0.8 cap	+0.10
0.50	RST	1	-0.01
		0.5 ind	-0.20
		0.8 cap	-0.10
1.0	RST	1	-0.05
		0.5 ind	-0.15
		0.8 cap	-0.15
2.5	RST	1	-0.09
		0.5 ind	-0.03
		0.8 cap	+0.05
5.0	RST	1	-0.08
		0.5 ind	0.00
		0.8 cap	-0.09
6.0	RST	1	-0.03
		0.5 ind	0.00
		0.8 cap	-0.04
8.0	RST	1	-0.03
		0.5 ind	+0.02
		0.8 cap	-0.05
9.5	RST	1	-0.10
		0.5 ind	+0.05
		0.8 cap	-0.18

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Voltage deviation:  $\pm 10\%$ 

Applied Voltage	Applied Current (A)	Power Factor	Error rate measurement
100% of Un.	0.25	1	0.00
90% of Un.			+0.03
110% of Un.			+0.04
100% of Un.	0.50	0.5 ind	-0.21
90% of Un.			-0.26
110% of Un.			-0.16
100% of Un.	5.0	1	-0.04
90% of Un.			-0.05
110% of Un.			-0.04
100% of Un.		0.5 ind	0.00
90% of Un.			0.00
110% of Un.			+0.04
100% of Un.	9.5	1	-0.10
90% of Un.			-0.09
110% of Un.			-0.01
100% of Un.		0.5 ind	+0.05
90% of Un.			+0.02
110% of Un.			+0.11

Frequency deviation:  $\pm 5\%$ 

Applied Frequency	Applied Current (A)	Power Factor	Error rate measurement
100% of Fn.	0.25	1	0.00
95% of Fn.			-0.02
105% of Fn.			+0.02
100% of Fn.	0.50	0.5 ind	-0.21
95% of Fn.			-0.19
105% of Fn.			-0.22
100% of Fn.	5.0	1	-0.04
95% of Fn.			-0.06
105% of Fn.			-0.03
100% of Fn.		0.5 ind	0.00
95% of Fn.			0.00
105% of Fn.			+0.03
100% of Fn.	9.5	1	-0.10
95% of Fn.			-0.07
105% of Fn.			-0.13
100% of Fn.		0.5 ind	+0.05
95% of Fn.			+0.04
105% of Un.			+0.09

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**Accuracy test with harmonics present.**

Voltage distortion during the test was less than 1%.

The angle refers to the angle between the fundamental and third harmonic.

The voltage circuits were energized in parallel, the current circuits in series and power factor unit, according to the standard.

Harmonic Current	Applied Current (A)	Harmonic dephasing	Error rate measurement
0	0.25	-	-0.04
10%		0°	+0.04
		180°	-0.07
0	0.50	-	-0.02
10%		0°	-0.01
		180°	+0.02
0	9.5	-	-0.06
10%		0°	-0.04
		180°	-0.05

## Reverse phase sequence

Applied Voltage	Applied Current (A)	Applied Sequence	Error rate measurement
Un	5.0	RST	-0.09
		TSR	-0.09

## Voltage unbalance

Applied Voltage	Applied Current (A)	Applied Phase	Error rate measurement
		RST	-0.08
		R	+0.07
		RS	-0.05
		S	-0.01
		ST	-0.07
		T	-0.12
		TR	-0.01

## Verification of voltage measurements

The instrument was tested between 30% and 120% voltage rating. The values measured at each point were no greater than 0.2% of voltage applied.

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**OBSERVATIONS:**

The measurements taken in order to determine the error rate of measuring devices were conducted on a ZERA power measuring contrast table, model ED-6126, with an integrated electronic pattern meter that measures electric power, which complies with IRAM standard 2414 IEC standard 736.

Room temperature during the test:  $(22.0 \pm 0.5)^\circ \text{C}$   $[71.6 \pm 0.9]^\circ \text{F}$

The results reported in this certificate reflect the conditions under which the measurements and/or tests were conducted.

The measurements involved in this report were carried out in accord with measurement standards maintained by the INTI which, according to current legislation, represent the physical units of measurement in accordance with the international system (SI) of Units.

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