

Test report

No. 201508150_001

Title:	IP code test
Equipment	Sepam Series 80
Reference:	See page 4
Trademark:	SCHNEIDER ELECTRIC
Manufacturer:	SCHNEIDER ELECTRIC SA
Type of tests:	IEC 60529. Degrees of protection provided by enclosure (IP code)
Customers	Stéphane YAPOIDOU / Energy Business / 3MM4
Date(s) of tests:	From 21/12/2015 to 26/12/2015
Place of tests:	L2E/VOLTA

Conclusion

The tested sample is:

- compliant with IEC 60529 standard's specifications for IP52 test on the front face only.
- compliant with IEC 60529 standard's specifications for IP20 test on the other faces.

The results obtained during the tests consigned in this test report justify the above assigned characteristics stated by the manufacturer. To declare, or not, the compliance according the standard, it was not take into account of uncertainty measurements in the test results. This document results from tests carried out on a sample. It does not prejudice the compliance of the whole manufactured products with the tested specimen.

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This reports contains: 15 pages

Grenoble 07/03/2016

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TEST SYNTHESIS

Equipment :	Protection relay
Reference :	See page 4
Trademark:	SCHNEIDER ELECTRIC

Test according	Tested parts	Level	Results
Degree of protection provided by enclosures (IP code) © IEC 60529 Ed 2.2 2013-08	Front face only	Code IP2X Protected against access to hazardous parts with a finger. Protected against solid foreign objects of 12,5 mm diameter and greater.	Pass
		Code IP5X Protected against access to hazardous parts with a wire. Dust-protected	Pass
	Other faces	Code IPX2 Protected against vertically falling water drops when enclosure tilted up to 15°.	Pass

SUMMARY

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1. CONFIGURATION OF TEST

1.1 Equipment identification

Description	Reference	Serial no.	Type	Tests
Protection relay SEPAM Series 80	59704	15195042	With mimic-based UMI	IP 52 on front face only IP20 on the other faces
CCA630	51313833F0-A0	189242	TAMURA 15431067CZ	IP 52 on front face only IP20 on the other faces
MES120	59715	15440263	/	IP 52 on front face only IP20 on the other faces

1.2 Functional mode

Before test	none
During test	none
After test	none

2. PERFORMANCE CRITERIA

The first representative numeral indicates the device's enclosure provides:

- A protection of persons against access to hazardous parts by preventing or limiting the penetration of a human body part or an object held by a person

And at the same time

- A protection of the device against penetration of solid foreign objects

Degree of protection indicated by the first characteristic numeral against :		
	Access to hazardous parts	Penetration of solid foreign objects
IP2X	The jointed test finger of 12 mm diameter, 80 mm length, shall have adequate clearance from hazardous parts.	The object probe, sphere of 12.5 mm diameter shall not fully penetrate.
IP5X	The access probe of 1.0 mm diameter shall not penetrate.	Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety.

Degree of protection indicated by the second characteristic numeral against ingress of water.

IPX2

If any water has entered, it shall not:

- Be sufficient to interfere with the correct operation of the equipment or impair safety
- Deposit in insulation parts where it could lead to tracking along the creepage distances
- Reach live parts of windings not designed to operate when wet
- Accumulate near the cable end or enter the cable if any.

3. TESTS

3.1 Tests conditions

Tests for the protection against access to hazardous parts		
		Test force :
IP2X	The jointed test finger may penetrate up to 80 mm length, but adequate clearance must be kept.	10N ± 10%
IP5X	The test rod of 1.0 mm diameter rod shall not penetrate, and a adequate clearance shall be kept.	1N ± 10%

Tests for the protection against solid foreign objects		
		Test force :
IP2X	The sphere of 12.5 mm diameter shall not fully penetrate.	-
IP5X	Testing dustproof without depression. Test duration : 8 hours	-

Tests for protection against the penetration of water				
Means			Water flow rate :	Duration of test :
IPX2	Drip box	Product tested with a tilt angle of 15°	3 ^{+0.5} ₀ mm/min	2.5 min for each position of tilt

Temperature of the water	20 °C
Temperature of the device	21,3 °C
Surface of the product (not including any seating surface)	Around 60 cm²
Duration of test :	10 min.

3.2 Test equipment

N°	Description	Codes	Manufacturer	Reference	Characteristic
HR_12	Air humidity and sensor	-	Higrotest 650		
200601	Water thermometer	IP0X	CGR	CGR	Mercury
200150	Dust chamber	IP5X	WEISS TECHNIK	ST5W625-U	250 Kg max Dim. 1.44 x 1.44 x 2.20 m
2403120	Rigid Sphere	IP2X	PTL	P10.23	Ø 12.5 mm
2009001	Jointed test finger	IP2X	PTL	P10.14	Ø 12.5 mm
IPX1	Drip box	IPX2	Aucun	Aucun	

The calibrations dates of tests equipments are available in the Hasting data base of laboratory.

3.3 Environmental conditions

Parameters	Standard requirement	Condition during test	Comments
Date: 22/02/2015			
Temperature	15°C – 35°C	21°C	
Hygrometry	25% - 75% HR	35,7%	

3.4 Results

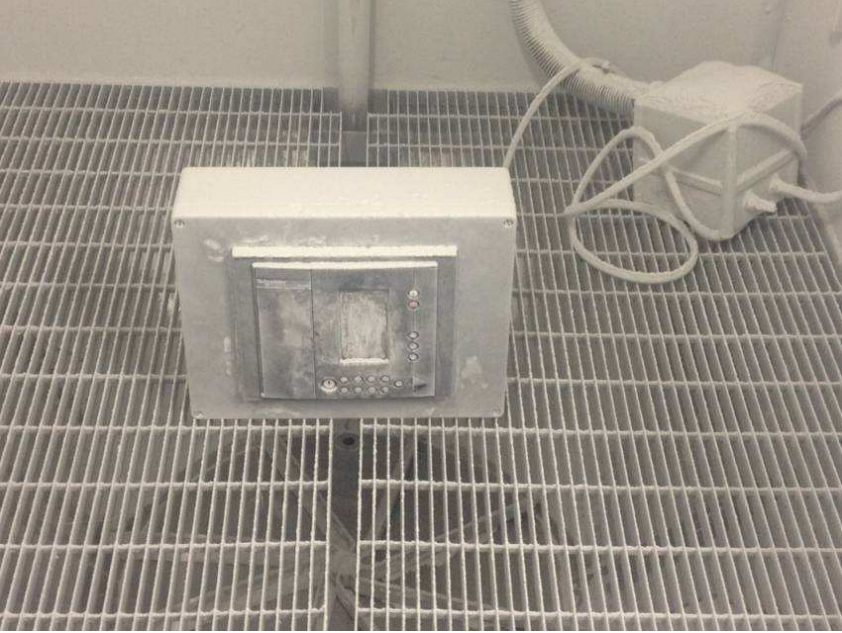
Tests	Configurations	Observations	Conclusion
IP2X	On front face only	Nothing to report.	Pass
IP5X		Just slight traces of talc.	Pass
IPX2	On the other faces	No water inside.	Pass

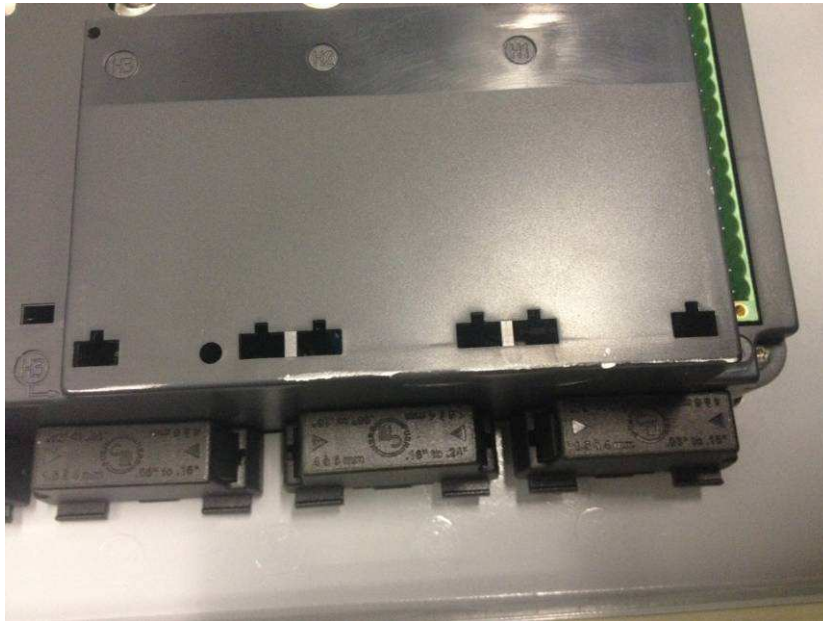
4. ANNEX 1 – UNCERTAINTY OF MEASUREMENTS

Type	Laboratory uncertainty	CISPR / IEC uncertainty
Code IP2X	In the study	Tolerances of dimensions $12,5_0^{+0,2}$ diameter Tolerance of force applied 10%
Code IP5X	In the study	
Code IPX2	In the study	Water flow rate tolerance $3_0^{+0,05}$ mm/min

5. ANNEX 2 – RESULTS WITH PHOTOS

5.1 Test IP52: on the front face only

Analysis for IP5X	
	Product in the dust chamber before 8h hours of test.
	Product in the dust chamber after 8h hours of test.



Slight traces of talc.

PASS

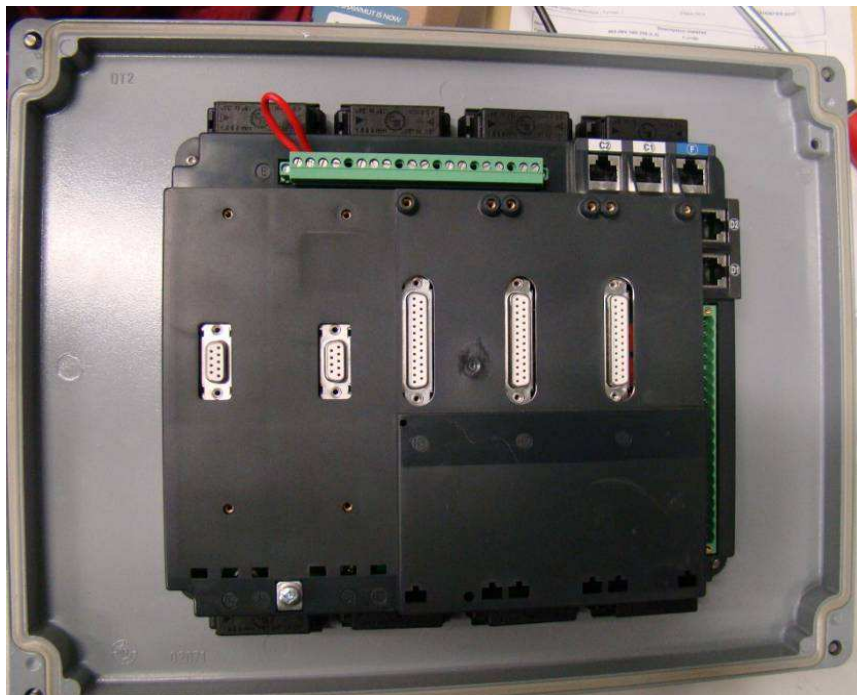
Analysis for IPX2



Product with a tilt angle of 15°



During test.



The enclosure is opened
No water inside.
PASS



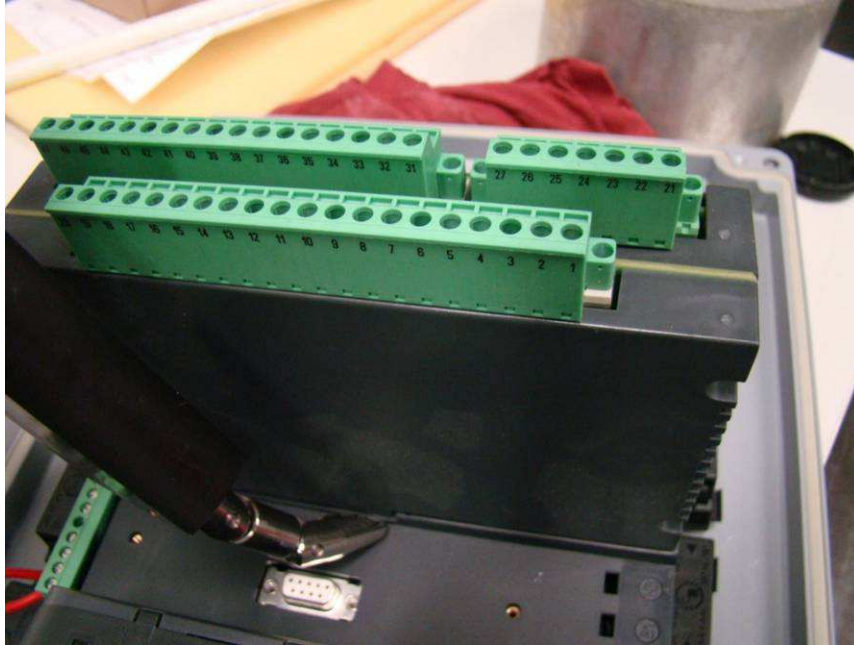
No water inside
PASS

5.2 IP20: other faces

Analysis for IP2X



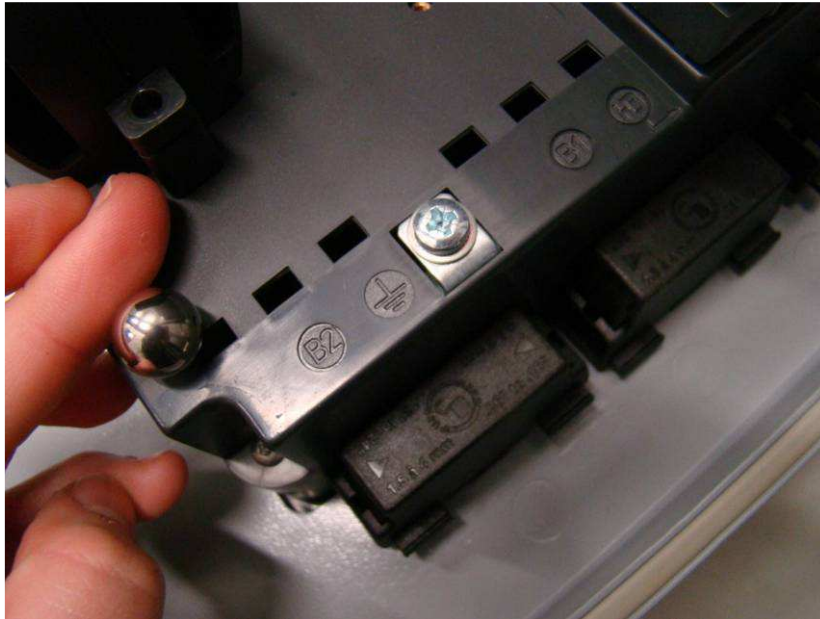
The jointed test finger doesn't
penetrate.
PASS



The test finger doesn't penetrate.

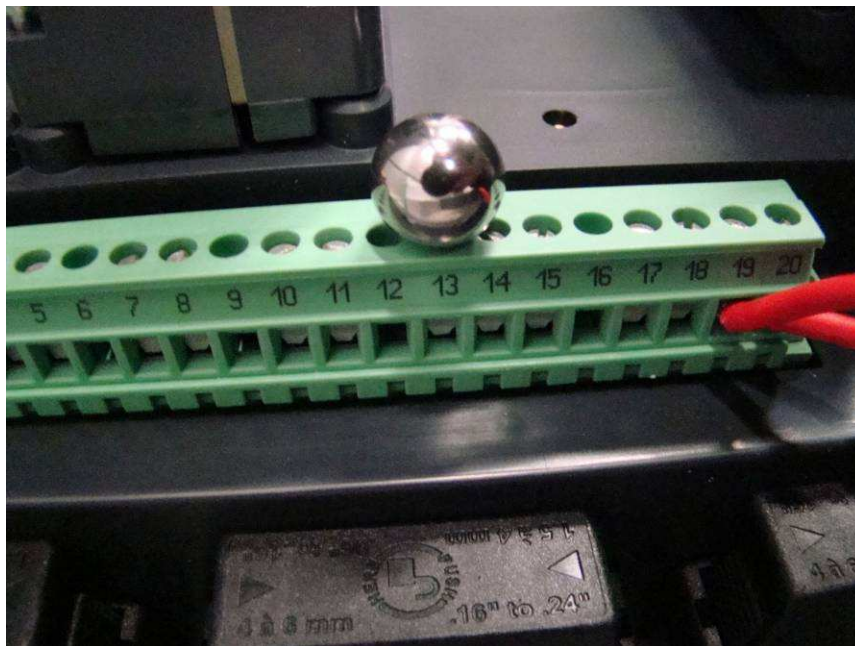
PASS



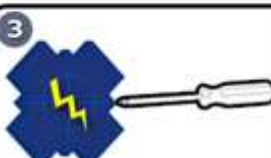
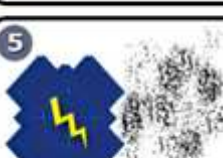


The 12,5mm diameter sphere doesn't penetrate.

PASS



6. ANNEX 3 – IP TESTS

	Protected against a solid object greater than 50mm, such as a hand		Protected against vertically falling drops of water. Limited ingress permitted
	Protected against a solid object greater than 12.5mm, such as a finger		Protected against vertically falling drops of water w/ enclosure tilted 15° from vertical. Limited ingress permitted
	Protected against a solid object greater than 2.5mm, such as a screwdriver		Protected against sprays to 60° from the vertical. Limited ingress permitted
	Protected against a solid object greater than 1.0mm, such as a wire		Protected against water splashed from all directions. Limited ingress permitted
	Dust Protected. Limited ingress of dust permitted		Protected against jets of water. Limited ingress permitted
	Dust Tight. Zero ingress of dust permitted		Protected against strong jets of water. Limited ingress permitted