



TEST REPORT ENVIRONMENTAL EN 60529:1991+A1:2000	
Report Reference No.	: 93702-1TRFENV
Tested by	: Cristian Simone <i>Cristian Simone</i>
Verified by	: Daniele Claudio Mapelli <i>Daniele Claudio Mapelli</i>
Date of issue	: 2007-09-28
Testing Laboratory	: Nemko Spa
Address.....	: Via del Carroccio, 4, I-20046 Biassono MI (Italy)
Testing location/ procedure	: Full application of Harmonised standards <input checked="" type="checkbox"/> Partial application of Harmonised standards <input type="checkbox"/> Other standard testing methods <input type="checkbox"/> Non-standard testing methods <input type="checkbox"/> SINAL accredited test report <input type="checkbox"/>
Testing location/ address.....	: Nemko Spa via del Carroccio, 4, I-20046 Biassono MI (Italy)
Applicant's name	: ELCO s.p.a
Address.....	: Via Marconi, 1 20065, Inzago (MI)
Test specification	
Standard	: EN 60529:1991+A1:2000
Test procedure.....	: Nemko WM L0177
Non-standard test method.....	: N/A
Test Report Form No.	: TRF EN60529
TRF Originator	: Nemko Spa
Master TRF	: 2005-04
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Test item description	: Electronic Control
Trade Mark	: ELCO
Manufacturer.....	: ELCO s.p.a
Model.....	: MCE 20-25
Ratings.....	: IP65.

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Type / Model : MCE 20-25

Equipment : Electronic Control

Applicant : ELCO s.p.a

Address : Via Marconi, 1 20065, Inzago (MI)

Manufacturer : ELCO s.p.a

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Test Result (according to the standards on page 4)	POSITIVE
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1	<u>TEST STANDARDS</u>	4
2	<u>SUMMARY</u>	4
2.1	POWER SUPPLY SYSTEM UTILISED	5
2.2	SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)	5
2.3	EUT OPERATION MODE	5
2.4	EUT CONFIGURATION	5
2.5	PERFORMANCE LEVEL	5
3	<u>TEST ENVIRONMENT</u>	6
3.1	ADDRESS OF THE TEST LABORATORY	6
3.2	ENVIRONMENTAL CONDITIONS	6
3.3	DEFINITIONS OF SYMBOLS USED IN THIS TEST REPORT	6
3.4	STATEMENT OF THE MEASUREMENT UNCERTAINTY	6
4	<u>TEST CONDITIONS AND RESULTS</u>	7
4.1	IP 6X	7
4.2	IP X5	8
5	<u>USED TEST EQUIPMENT</u>	9
6	<u>PHOTOS</u>	9

1 TEST STANDARDS

The tests were performed according to following standards:

EN 60529:1991+A1:00 Degrees of protection provided by enclosures (IP code)

Nemko WM L0177 Nemko S.p.A. Technical Procedure
Use of measuring equipment to perform standards tests

Nemko WM L1002 Measurement Uncertainty - Policy and Statement

2 SUMMARY

GENERAL REMARKS:

According to client request the E.U.T has been considered on category 2.(without depression)
The dust test was performed in a dust chamber in accordance with clauses 13.4, 13.5.2 of standard EN 60529.
The water test was been performed in accordance with clauses 14.2.5 and 14.3 of EN 60529 standard.

FINAL ASSESSMENT:

The protection requirements pertaining to the technical standards and tested operation modes are

- - fulfilled.
- o - not fulfilled.

The equipment under test

- - fulfils the protection requirements cited on page 4.
- o - does not fulfil the protection requirements cited on page 4.

Date of receipt of test sample : 2007-09-20

Testing commenced on : 2007-09-21

Testing concluded on : 2007-09-24

2.1 Power supply system utilised

Power supply voltage : 230V/50 Hz / 1 ϕ 115V/60Hz / 1 ϕ
 400V/50 Hz 3PE 400V/50 Hz 3NPE
 12 V DC Not relevant for IP test

2.2 Short description of the Equipment under Test (EuT)

The E.U.T. is a Electronic Control.

Number of tested samples: 1

Serial number: Not provided

2.3 EuT operation mode

The E.U.T was not powered during the test.

2.4 EuT configuration

- unscreened power cables

- customer specific cables

2.5 Performance level

The EUT complies with all the tests described on paragraph 4 point: if

- the test probe didn't penetrate inside the enclosure;
- the dust is not present inside the enclosure and on live parts after the IP6X test
- no water is present inside the enclosure and on live parts after the IPX5 test.

3 TEST ENVIRONMENT

3.1 Address of the test laboratory

Nemko Spa
Via Del Carroccio, 4
I – 20046 Biassono MI – ITALY

3.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>17-28°C</u>
Humidity:	<u>30 ÷ 60%</u>
Atmospheric pressure:	<u>860-1060 hPa</u>

3.3 Definitions of symbols used in this test report

- - The black square indicates that the listed condition, standard or equipment is applicable for this report.
- - The empty circle indicates that the listed condition, standard or equipment is **not** applicable for this report.

3.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to Nemko SpA Technical Procedure VML1002 and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Nemko Spa laboratory is reported:

6.2 IP Grade Protection					
6.2.1 Water Flow	The measurement uncertainty is the same defined by calibration certificates, giving the table.				
	<table border="1"> <thead> <tr> <th>Range</th> <th>Measurement Uncertainty</th> </tr> </thead> <tbody> <tr> <td>Water flow defined in EN 60529</td> <td>± 2 %</td> </tr> </tbody> </table>	Range	Measurement Uncertainty	Water flow defined in EN 60529	± 2 %
Range	Measurement Uncertainty				
Water flow defined in EN 60529	± 2 %				
6.2.2 Probe Dimension	The measurement uncertainty is the same defined by calibration certificates, giving the table.				
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Range	Measurement Uncertainty				
Probe dimensions defined in EN 60529	± 2 · 10 ⁻² · L _m /m				

This table has been extracted from the relevant Technical Procedure VML1002

4 TEST CONDITIONS AND RESULTS

4.1 IP 6X

Test probe diameter.....: 1 mm

Enclosure category.....: 2

Test Duration.....: 8h

4.1.2 Description of the test location

Test location: Nemko S.p.a. laboratory

4.1.3 Photo documentation of the test set-up



Typical setup for IP Dust test

4.1.4 Test result

The requirements are: **Fulfilled**

Test probe didn't penetrate inside the enclosure.
Dust was not present inside the enclosure and on live parts after test.

4.2 IP X5

Diameter of nozzle.....: 6,3mm
Test duration.....: 3min.
Distance of nozzle to E.U.T.....: from 2,5m to 3m
Water flow.....:12.5l/min

4.2.1 Description of the test location

Test location: Nemko S.p.a. laboratory

4.2.2 Photo documentation the test set-up



Nozzle for IP X5

4.2.3 Test result

The requirements are: **Fulfilled**

Water was not present inside the enclosure and on live parts after test.

5 USED TEST EQUIPMENT

Equipment used for testing are recorded and saved into the company archive as instruments 93702-INS.doc
It will be made available if requested.

6 PHOTOS



Fig. 1: general view



Fig. 2: in a dust test



Fig. 3: during the water test

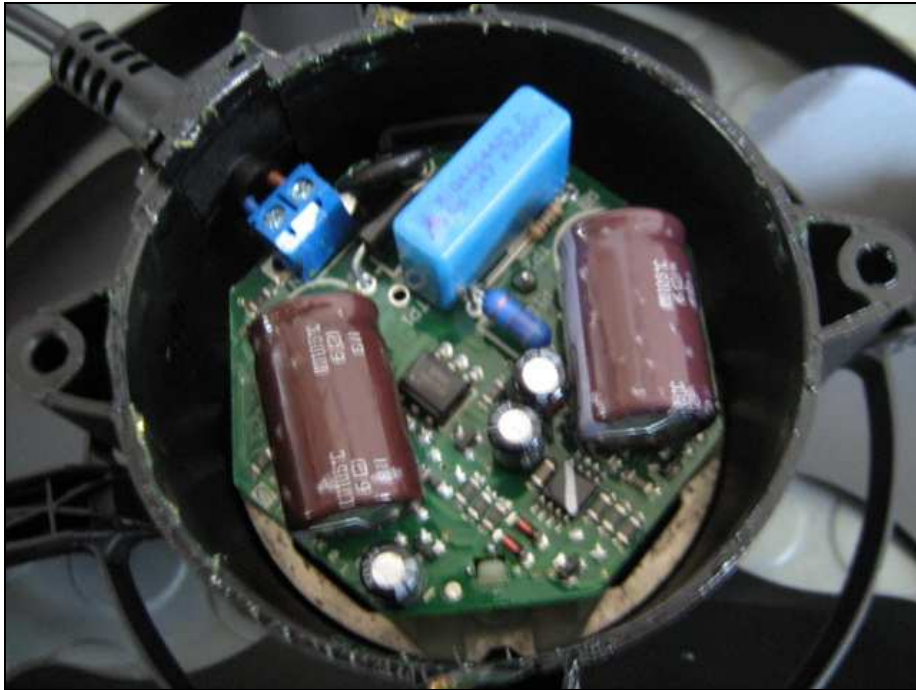


Fig. 4: internal view, after IP65 test

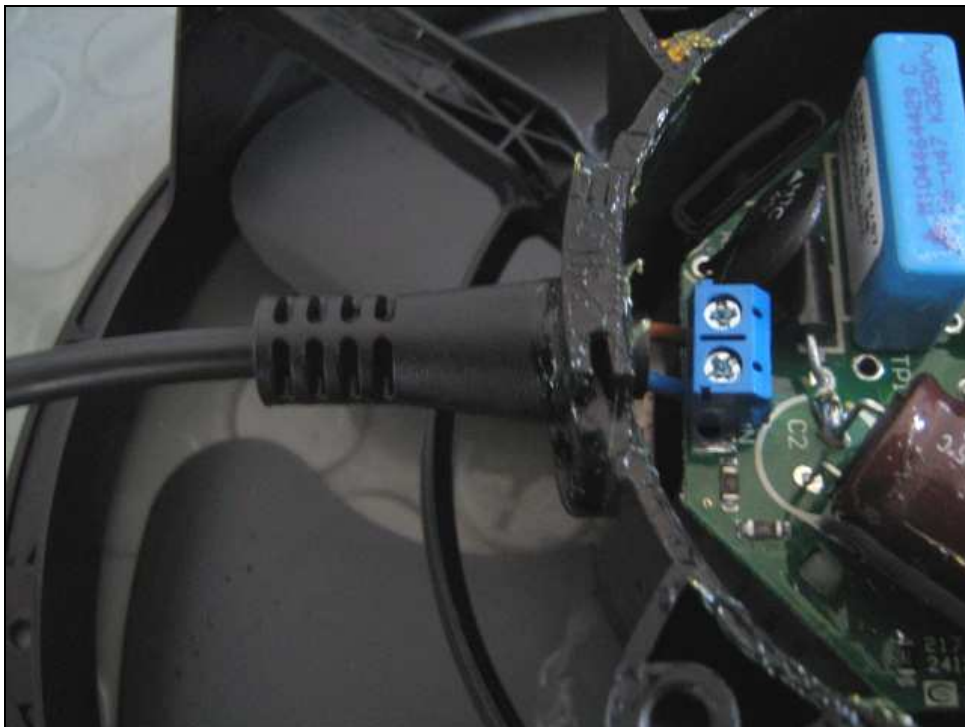


Fig. 5: internal view, after IP65 test