



Italia

## TEST REPORT RAPPORTO DI PROVA

### DEGREES OF PROTECTION PROVIDED BY ENCLOSURES (IP54) on X DIGIT, 99686, X PIN and X TRACK KEYBOARDS VERIFICA DEI GRADI di PROTEZIONE (IP54) su TASTIERE X DIGIT, 99686, X PIN e X TRACK

#### Customer (Richiedente):

- Dept./Firm (Ente/Società): MOTTURA SERRATURE DI SICUREZZA S.p.a.
- Mr./Mrs (Sig./Sig.ra.): Davide Bogliano
- Address (Indirizzo): Strada Antica di Francia 34  
10057 S. Ambrogio Di Torino

Test Request Form no.:

Modulo Richiesta Prova n.:

9555539

Test Report sent to:

Rapporto inviato a:

Sig. Davide Bogliano

Name and Signature of the test engineer:

Nome e Firma esecutore prova:

Mauro Allamanno

Name and Signature of the Technical reviewer:

Nome e Firma del Revisore tecnico:

Matteo Enrico  
Piacentino

Date of test samples receipt:

Data ricevimento campioni:

27/06/2017

Date of test execution:

Data esecuzione prove:

27/06/2017

Site of test execution (if different from the address in the footer):

Località esecuzione prove (se diversa dal piè pagina):

Witness to the test:

Presenti alle prove:

Sig. Davide Bogliano

I risultati del presente rapporto di prova si riferiscono esclusivamente al campione sottoposto a prova.

The test results contained in this Test report relate to the tested samples only.

E' ammessa la riproduzione integrale del presente Rapporto di prova da parte del Richiedente; la riproduzione parziale dev'essere autorizzata per iscritto dal Laboratorio.

The integral reproduction of the present Test report is allowed; the partial reproduction must be authorized in writing by the Lab.

Form: ITA\_F\_09.01E (Rev.21 – August 26, 2016)

Test report n.: CL1955539A

Revision: 00

Document name: CL1955539A\_REV00.doc

Project handler:

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|   |  |
|---|--|
| <b>1 TEST SETUP</b><br><i>SETUP DI PROVA</i>  |  |
| <b>1.1 SAMPLE IDENTIFICATION</b><br><i>SAMPLE IDENTIFICATION</i>  |  |
| <b>1.1.1 Product/material subjected to test:</b>  | Electronic devices                                     |
| <b>1.1.2 Description:</b>   | Safety keyboards                                       |
| <b>1.1.3 Level (Series product, prototype, etc.):</b><br><i>Livello (Prodotto di serie, prototipo, ecc.):</i> | Series   |
| <b>1.1.4 Part number:</b><br><i>Codice prodotto:</i>  | X DIGIT, 99686, X PIN, X TRACK                         |
| <b>1.1.5 Serial number:</b><br><i>N° Matricola:</i>   | None   |
| <b>1.1.6 Sample identification code:</b><br><i>Codice di identificazione</i>                                  | 298624   |
| <b>1.2 AUXILIARY DEVICES</b><br><i>DISPOSITIVI AUSILIARI</i>  | None   |
| <b>1.3 TEST CONFIGURATION</b><br><i>CONFIGURAZIONE DI PROVA</i>   | The Es.U.T were in power off during tests.             |
| <b>1.4 DIAGNOSTIC SYSTEM</b><br><i>SISTEMA DIAGNOSTICO</i>  | Naked eye visual internal inspection after IP54 tests. |

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## 2 TEST LIST

ELENCO DELLE PROVE

| Test Description  | Method             | Standardized | Differencies |
|---|--------------------|--------------|--------------|
| <b>2.1 TEST FOR FIRST CHARACTERISTIC NUMERAL 5 category 2 (not connected to vacuum pump)</b><br><i>PROVA PER LA PRIMA CIFRA CARATTERISTICA NUMERO 5 categoria 2 (non connesso alla pompa a vuoto)</i> | 60529:1997/A2:2014 | Yes          | None         |
| <b>2.2 TEST FOR SECOND CHARACTERISTIC NUMERAL 4</b><br><i>PROVA PER LA SECONDA CIFRA CARATTERISTICA NUMERO 4</i>  | 60529:1997/A2:2014 | Yes          | None         |

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### 3 TEST EQUIPMENT USED APPARECCHIATURE UTILIZZATE

| Description            | Manufacturer                                | Model                             | Serial no./ID          | Used in test n.: |
|------------------------|---|-----------------------------------|------------------------|------------------|
| Dust chamber           | Aster                                       | /                                 | 1246<br>02_POL         | 2.1              |
| Demineralizer          | Nobel                                       | RO201 D                           | 47822- 2016<br>102_DEM | 2.2              |
| IP test machine        | TUV Italia                                  | ND                                | 39_MIP                 | 2.2              |
| Water flowmeter        | Parker                                      | 0,2 ÷ 2 l/min                     | 24_FLU                 | 2.2              |
| Arch Ø 800 mm          | Attrezzature Tecniche<br>Speciali Galbusera | ND                                | 34_ARC                 | 2.2              |
| IP tank                | P.P.E.                                      | Tank1000                          | 23_VAS                 | 2.2              |
| Thermohygrometer       | Gemini                                      | Tinytag View2<br>TV-4500          | 673720<br>TIG_167      | 2.2              |
| Thermometer with probe | Blinky                                      | Model: SH-102<br>Code: 95885-10/0 | 1207R02745<br>TIG_168  | 2.2              |
| Digital chronometer    | Han hart                                    | Magma Pro<br>Model: 237.1952-00   | 240910<br>CRN_36       | 2.2              |
| Flexometer             | Usag  | 981 G                             | 14/576<br>FLE_179      | 2.2              |
| IP test rotary table   | Attrezzature Tecniche<br>Speciali Galbusera | 03.13-B1                          | 002646/14<br>50_PRT    | 2.2              |

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#### 4 ENVIRONMENTAL CONDITIONS

CONDIZIONI AMBIENTALI

- 4.1 **ROOM TEMPERATURE** 22 °C ± 2,3 °C  
TEMPERATURA AMBIENTE
- 4.2 **RELATIVE HUMIDITY** 45 % ± 7 %  
UMIDITA' RELATIVA

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#### 5 MEASUREMENT UNCERTAINTY

INCERTEZZA DI MISURA

Measurement uncertainties was estimated as expanded uncertainty obtained multiplying the standard uncertainty by the coverage factor k corresponding to a confidence level of about 95%. Declared uncertainties are obtained with factor k=2 except if otherwise specified.

| Measurement | Expanded uncertainty | Found in test n.: |
|-------------|----------------------|-------------------|
| Time        | ± 0,58 s             | 2.1, 2.2          |
| Water flow  | ± 0,05 l/min         | 2.2               |
| Lenght      | ± 0,5 mm             | 2.2               |
| Inclination | ± 0,35°              | 2.2               |

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#### 6 SAMPLING PLAN

PIANO DI CAMPIONAMENTO

Samples selected by the customer.

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## 7 TEST AND/OR MEASUREMENT RESULTS

*RISULTATI DELLE PROVE E/O MISURE*

### 7.1 TEST FOR FIRST CHARACTERISTIC NUMERAL 5 category 2

**(not connected to vacuum pump)**

*PROVA PER LA PRIMA CIFRA CARATTERISTICA NUMERO 5 categoria 2*

*(non connesso alla pompa a vuoto)*

#### 7.1.1 TEST OBJECTIVE

*SCOPO DELLA PROVA*

Test performed in order to verify the degrees of protection provided by the enclosures (IP5X)

#### 7.1.2 TEST DESCRIPTION

*DESCRIZIONE DELLA PROVA*

The devices under test were inserted in the dust chamber as described to CEI EN 60529:1997-06 – standard, capable to circle in suspension an amount of 2 kg/m<sup>3</sup> of talcum powder.

This powder shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 µm and the nominal width between wires 75 µm.

The percentage of the talcum powder granules is the following:

|         |             |
|---------|-------------|
| > 45 µm | : 0.5 % max |
| < 40 µm | : 99 % max  |
| < 30 µm | : 94 % max  |
| < 20 µm | : 80 % max  |
| < 10 µm | : 47 % max  |
| < 5 µm  | : 23 % max  |
| < 2 µm  | : 8 % max   |

**Test duration: 8 hours**

#### 7.1.3 TEST RESULTS

*RISULTATI DI PROVA*

At the end of test, naked eye visual internal inspections were made:

**NO POWDER WAS FOUND inside the 99686 enclosure;  
NO POWDER WAS FOUND inside the X DIGIT enclosure;  
NO POWDER WAS FOUND inside the X PIN enclosure;  
NO POWDER WAS FOUND inside the X TRACK enclosure;**

( see photo at § 9.1 ).

**The samples can be classified IP5X category 2 degree. The requirements specified in the §13.5 of the CEI EN 60529:1997 standard were satisfied.**

The criteria by which the results are expressed are given in the standards and/or in the client specification listed in paragraph 2 of this technical report.

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## **7.2 TEST FOR SECOND CHARACTERISTIC NUMERAL 4** *PROVA PER LA SECONDA CIFRA CARATTERISTICA NUMERO 4*

### **7.2.1 TEST OBJECTIVE** *SCOPO DELLA PROVA*

Test performed in order to verify the degree of protection provided by the enclosures (IPX4).

### **7.2.2 TEST DESCRIPTION** *DESCRIZIONE DELLA PROVA*

The test was performed using the oscillating tube described on Fig. 4 – CEI EN 60529: 1997-06. The oscillating tube was used with water flow rate 0.07 l/min per hole, spray  $\pm 180^\circ$  from the vertical for the total test duration of 10 min. The E.U.T was positioned on a support placed at the level of the oscillation axis of the tube.

### **7.2.3 TEST RESULTS** *RISULTATI DI PROVA*

At the end of test, naked eye visual internal inspection was made:

**NO WATER WAS FOUND inside the 99686 enclosure;  
NO WATER WAS FOUND inside the X DIGIT enclosure;  
NO WATER WAS FOUND inside the X PIN enclosure;  
NO WATER WAS FOUND inside the X TRACK enclosure.**

( see photo at § 9.1 ).

**The samples can be classified IPX4 degree. The requirements specified in the §14.3 of the CEI EN 60529:1997 standard were satisfied.**

The criteria by which the results are expressed are given in the standards and/or in the client specification listed in paragraph 2 of this technical report.

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## 8 REMARKS

### NOTE

The configuration has been supplied by the customer.

*La configurazione e' stata fornita dal cliente*

The customer is responsible for the paragraph 1.1 reported data and for the configuration of the tested E.U.T.

*Il cliente e' responsabile per i dati riportati al paragrafo 1.1 ( Identificazione campione ) e per la configurazione degli EsU.T. testati.*

The samples under test were returned to the customer.

*I campioni testati sono stati restituiti al cliente.*

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**9 APPENDIX**  
APPENDICE

**9.1 PHOTO DOCUMENTATION**  
DOCUMENTAZIONE FOTOGRAFICA

*Naked eye visual internal inspection after IP 5X category 2 test*



*Naked eye visual internal inspection after IP 5X category 2 test*



*Sample during IPX4 test*



*Naked eye visual internal inspection after IPX4 test*



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*Naked eye visual internal inspection after IP 5X category 2 test*



*Naked eye visual internal inspection after IP 5X category 2 test*



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*Sample during IPX4 test*



*Naked eye visual internal inspection after IPX4 test*



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*Naked eye visual internal inspection after IP 5X category 2 test*



*Naked eye visual internal inspection after IP 5X category 2 test*



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*Sample during IPX4 test*



*Naked eye visual internal inspection after IPX4 test*



*Naked eye visual internal inspection after IP 5X category 2 test*



*Naked eye visual internal inspection after IP 5X category 2 test*



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*Sample during IPX4 test*



*Naked eye visual internal inspection after IPX4 test*



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## 9.2 ATTACHMENTS ALLEGATI

None

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## 10 SUMMARY SOMMARIO

|           |  |           |
|-----------|--|-----------|
| <b>1</b>  | <b>TEST SETUP</b>                                  | <b>2</b>  |
| 1.1       | SAMPLE IDENTIFICATION                              | 2         |
| 1.2       | AUXILIARY DEVICES                                  | 2         |
| 1.3       | TEST CONFIGURATION                                 | 2         |
| 1.4       | DIAGNOSTIC SYSTEM                                  | 2         |
| <b>2</b>  | <b>TEST LIST</b>                                   | <b>3</b>  |
| 2.1       | TEST FOR FIRST CHARACTERISTIC NUMERAL 5 CATEGORY 2 | 3         |
| 2.2       | TEST FOR SECOND CHARACTERISTIC NUMERAL 4           | 3         |
| <b>3</b>  | <b>TEST EQUIPMENT USED</b>                         | <b>4</b>  |
| <b>4</b>  | <b>ENVIRONMENTAL CONDITIONS</b>                    | <b>5</b>  |
| 4.1       | ROOM TEMPERATURE                                   | 5         |
| 4.2       | RELATIVE HUMIDITY                                  | 5         |
| <b>5</b>  | <b>MEASUREMENT UNCERTAINTY</b>                     | <b>5</b>  |
| <b>6</b>  | <b>SAMPLING PLAN</b>                               | <b>5</b>  |
| <b>7</b>  | <b>TEST AND/OR MEASUREMENT RESULTS</b>             | <b>6</b>  |
| 7.1       | TEST FOR FIRST CHARACTERISTIC NUMERAL 5 CATEGORY 2 | 6         |
| 7.2       | TEST FOR SECOND CHARACTERISTIC NUMERAL 4           | 7         |
| <b>8</b>  | <b>REMARKS</b>                                     | <b>8</b>  |
| <b>9</b>  | <b>APPENDIX</b>                                    | <b>9</b>  |
| 9.1       | PHOTO DOCUMENTATION                                | 9         |
| 9.2       | ATTACHMENTS  | 17        |
| <b>10</b> | <b>SUMMARY</b>                                     | <b>17</b> |

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