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	MV RMU	<b>GSM001</b> <b>ADDENDUM 2</b> <b>06/2020</b>

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## MV RMU SWITCH DISCONNECTOR


Revision	Data	List of modification
ADDENDUM 2	15.06.2020	Protective coating and environmental testing

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## 1 SCOPE

This addendum defines the additional requirements for the protective coating to be applied to the MV switchboard, GSM001 type, to be used by Global Infrastructure and Networks Companies if required. Two levels of protective coating are foreseen and SF6 gas manometer is added to the equipment whenever it may be necessary and not foreseen in original specification.

## 2 LIST OF COMPONENTS

Each Country, when adopting this standard, shall indicate the codes for which it is required and the protection level chosen.

## 3 REFERENCE STANDARDS

The below listed reference documents shall be intended in the in-force edition at the contract date (amendments and *errata corrigé* included). Unless otherwise specified, these documents are valid until the new editions replace them. The terms used in this document are according to the standards listed below.

Standards
IEC 60068-2-52
ISO 12944
IEC 60815-1
ISO 2409

## 4 SERVICE CONDITIONS

According point "5 OPERATIONAL CONDITIONS" of GSM001 standard.

## 5 TECHNICAL CHARACTERISTICS

According point "6 RATED CHARACTERISTICS" of GSM001 standard

## 6 CONSTRUCTION CHARACTERISTICS

### 6.1 Protective coating

Paragraph "13 PROTECTIVE COATING" of GSM001 shall be replaced as below described.

#### 6.1.1 Basic protection


The carpentry in ferrous material shall have an epoxy or polyurethane anticorrosive protection system painting, with an average expected durability according to ISO 12944 and a class of corrosivity C3.

Technical characteristics protective coating:

PAINT THICKNESS $\mu$	COLOR RAL-F2	TEST PROCEDURE TABLE	DURABILITY CLASS
60	GRAY N. 7030	C3	MEDIUM

Table 1 - Technical characteristics protective coating

As an alternative it is possible to use pre-galvanized steel type EN 10142 with coating thickness > 200 [g / m<sup>2</sup>] with the exception of the terminal compartment door and frontal panel.

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The ferrous parts of the operating controls shall be protected by an electrolytic coating of 12 µm of zinc, or alternatively in stainless steel.

Mounting nuts and bolts and small accessories, unless otherwise specified, shall be protected with electrolyte zinc Fe III Zn EN ISO 4042.

The verification of the protective cell coating and of the entire equipment must be as prescribed in the standard 62271-304 level 1.

### 6.1.2 High protection

In case of installation in high pollution environment ENEL requires the following optional requirements:

- Degree of protection for the operating devices (even with the operating lever inserted) IP51 (see Table 3 for the standard requirement)
- Protective coating with class of corrosivity C5M-H according to ISO 12944
- Environmental testing: according standard IEC 60068-2-52 with method 6. At the end verification of functionality shall be made according 62271-304 level 1.

Alternative solutions/tests to demonstrate the equivalent suitability in this kind of environment can be proposed by the manufacturer and are subject to Enel approval.

PAINT THICKNESS µ	COLOR RAL-F2	TEST PROCEDURE TABLE	DURABILITY CLASS
60	GRAY N. 7030	C5-M	HIGH

Table 2 - Technical characteristics protective coating

## 6.2 Manometer

Paragraph "16 MANOMETER" of GSM001 shall be replaced as below described.


A pressure gauge shall be installed to measure SF6 pressure, for type codes indicated by each Country and reported in Table 5.

The pressure gauge must not be removable and, under normal conditions, the pressure indication must be between 25% and 75% of the area marked as safe. The area marked as safe must be green RAL 6017 and the other area must be red RAL 3000.

The pressure gauge shall be mounted on the front of the panel and shall be clearly visible under normal operating conditions.

## 7 TESTING

In addition to the tests described in paragraph "22 TESTING" of GSM001 following tests shall be performed in order to demonstrate effectiveness of protective coating painting procedure applied.

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## 7.1 Type tests

Test	Reference	
Check painting requirements (C3M/C5M-H)	ISO 12499	12499-6
Verification of the protective coating	ISO 2409	LEVEL 0 (it is applicable to all RMU codes!)
Tests for the verification in humid atmosphere	IEC 62271-200	62271-304 LEVEL 1 (it is applicable to all RMU codes)
Environmental testing	IEC 60068-2-52	METHOD 6 (it is only applicable for "high degree of protection" RMU)
Environmental testing	IEC 62271-304	LEVEL 1 (it is applicable to all RMU codes)
Control of the degree of protection (IP51)	IEC 62271-200	Par. 6.7

**Table 3 – Type test**


## 7.2 Routine tests

Test	Reference	Sample
Visual inspection		B
Dry-film tickness	ISO 2808	B
Verification of the protective coating	ISO 2409	LEVEL 0
Control of the degree of protection (IP51)	IEC 62271-200	Par. 6.7

**Table 4 – Routine test**

Routine tests indicated in previous table shall be carried out by the supplier on all the samples prepared for the delivery. For each piece belonging to the prepared batch, the supplier shall produce a test report with the results of the tests.

According point "22.5 Routine tests plan" of GSM001 the additional routine tests shall be repeated by the supplier, under Enel surveillance, on a sample chosen according letter B.


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## 8 ANNEX A

### Protection C3M

Type Code	DESCRIPTION	EDESUR	ENEL DISTRIBUÇÃ RIO	ENEL DISTRIBUÇÃ CEARÁ	ENEL DISTRIBUÇÃ GOIÁS	ENEL DISTRIBUÇÃ SÃO PAULO	ENEL DISTRIBUCION CHILE	ENEL DISTRIBUCION PERU'	ENEL DISTRIBUCION COLOMBIA
		C3M	C3M	C3M	C3M	C3M	C3M	C3M	C3M
GSM001/6	MV RMU 2LE+1T 24kV - 16kA PROTECTION C3M	0109-0317					6812277	6812277	
GSM001/7	MV RMU 3LE+1T 24kV - 16kA PROTECTION C3M	0109-0385					6803572		
GSM001/9	MV RMU 3LE 24kV - 16kA PROTECTION C3M						140276	6803572	
GSM001/10	MV RMU 1LE 24kV - 16kA PROTECTION C3M	0109-0315	6816017			315998			6811626
GSM001/11	MV RMU 2L+1T 24kV - 16kA PROTECTION C3M	0109-0184							6812277
GSM001/15	MV RMU 1L 24kV - 16kA PROTECTION C3M	0109-0178	6816018						6812278
GSM001/16	MV RMU 1T 24kV - 16kA PROTECTION C3M	0109-0180	6816019			315997	140275		6803572
GSM001/21	MV RMU 1LE 24kV - 20kA PROTECTION C3M		T140044						
GSM001/26	MV RMU 1T 24kV - 20kA PROTECTION C3M		T140043						
GSM001/30	MV RMU 1LE 36kV - 16kA PROTECTION C3M		T140023			316294			
GSM001/31	MV RMU 2L+1T 36kV - 16kA PROTECTION C3M	0109-0185							
GSM001/34	MV RMU 1L 36kV - 16kA PROTECTION C3M	0109-0179							
GSM001/35	MV RMU 1T 36kV - 16kA PROTECTION C3M	0109-0181	T140042			316295			
GSM001/40	MV RMU 1LE 36kV - 20kA PROTECTION C3M		T140041						
GSM001/45	MV RMU 1T 36kV - 20kA PROTECTION C3M		T140038						

Table 5

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Protection C5M-H

Type Code	DESCRIPTION	EDEL DISTRIBUCÃO RIO	EDEL DISTRIBUCÃO GOIÁS	EDEL DISTRIBUCÃO CEARÁ	EDEL DISTRIBUCION PERU'
		C5M-H	C5M-H	C5M- H	C5M- H
GSM001/6	MV RMU 2L+1T 24kV - 16kA PROTECTION C5M-H				140175
GSM001/10	MV RMU 1LE 24kV - 16kA PROTECTION C5M-H		T140062		
GSM001/16	MV RMU 1T 24kV - 16kA PROTECTION C5M-H		T140064		
GSM001/21	MV RMU 1LE 24kV - 20kA PROTECTION C5M-H		T140063		
GSM001/26	MV RMU 1T 24kV - 20kA PROTECTION C5M-H		T140065		

Table 6