CEPROM

PRODUCT CERTIFICATION BODY

CEPROM ® S.A.

440240 Satu Mare, str. Fântânele, No. 23/A, Romania
tel. +40.0361.804795; fax +40.0361.804796
www.ceprom.ro ; e-mail: ceprom@ceprom.ro

CERTIFICATE OF CONFORMITY

No. 4985-CI-32026

Technical File No. *4985-CI-32026/STE09112609S*

Applicant:	**Manufacturer:**
SHANGHAI MATIS ELECTRIC CO., LTD.	***SHANGHAI MATIS ELECTRIC CO., LTD.***
Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306	*Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306*

Description of product:

Product: ***AUTO RECLOSER***

Model: ***see Annex***

Reference standards: *EN 63024:2018*

Based on our assessment we confirm that the product is in accordance with the technical requirements of the above standards and hence fulfils the technical requirements of the

Low Voltage Directive 2014/35/EU

The manufacturer shall affix the CE marking to each product that is in conformity with those described in this Certificate, after completion of the EC Declaration of Conformity and in accordance with the above directive.

The manufacturer must ensure the assessment of conformity with internal controls on the manufacture of the above product, in accordance with Annex VIII of 2006/42/EC Directive;

The assessment activity for the product described in this Certificate of Conformity was carried out in compliance with Scheme 1a, cf. EN ISO/IEC 17067:2013 with Assessment Report and doesn't belong to the products listed in Annex IV of 2006/42/EC Directive which is under harmonised European Union product legislation.

This Certificate of Conformity was issued on voluntary basis of manufacturer and is only valid for the product and configuration described (annex), in conjunction with the detailed test data and with all applicable legal requirement for the product.

Annex: ***Product identification - 2 pages***

Issuing Date: *25.09.2026*
Expiry Date: *24.09.2031*



EUROPEAN UNION
Satu Mare, Romania

GENERAL MANAGER
eng. Cristian SOPONOS

CEPROM–CERT Manager
eng. Vasile ZELE

CEPROM S.A. Satu Mare Societatea Comercială

E.S.

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ANNEX
to the Certificate of Conformity no. 4985-CI-32026

PRODUCT IDENTIFICATION

The Product:	***AUTO RECLOSER***
*model:	***MT56AS, MT56AR, MT56SD, MT56AI, MT56AW, MT56RI, MT56RW, MT56RS***
*manufactured by:	***SHANGHAI MATIS ELECTRIC CO., LTD.***
*headquarters address:	*Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306*
*place of manufacture:	*Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306*
*domain of use:	*The MT56 series auto recloser is designed to automatically reclose the associated breakers after checking the fault. It is compatible with MCB/RCCB/RCBO both from Matis and EATON and the corresponding auxiliary OF/SD .*

Technical File content:

- *General description of the equipment;*
- *Conceptual design and manufacturing drawings and schemes of components;*
- *Instruction manual;*
- *The list of standards applied;*
- *Test report;*
- *Declaration of conformity;*
- *The internal measures implemented to ensure equipment conformity with LVD.*

CEPROM-CERT Manager
eng. Vasile ZELE

CEPROM S.A. SATU MARE ROMANIA
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ANNEX
to the Certificate of Conformity no. 4985-CI-32026

PRODUCT IDENTIFICATION

The Product: ***AUTO RECLOSER***

*constructive and functional characteristics:

Model	*M.U.*	*MT56AS*	*MT56AI*	*MT56AW*	*MT56AR*	*MT56RS*
Power Supply	*V*	*AC230*	*AC230*	*AC230*	*AC230*	*AC230*
Standard Input Power	*W*	*<1VA*	*<1VA*	*<1VA*	*<1VA*	*<1VA*
Delay Time	*s*	*15/90/300*	*15/60/300*	*15/60/300*	*15/90/500*	*15/60/300*
Number of Reclosing action	*-*	*3*	*3*	*3*	*3*	*3*

Model	*M.U.*	*MT56RI*	*MT53RW*	*MT56SD*
Power Supply	*V*	*AC230*	*AC230*	*AC230*
Standard Input Power	*W*	*<1VA*	*<1VA*	*<1VA*
Delay Time	*s*	*15/90/300*	*15/90/300*	*15/60/300*
Number of Reclosing action	*-*	*3*	*3*	*1-10 adjustable*

CEPROM-CERT Manager
eng. Vasile ZELE

S.C. CEPROM S.A. SIBIU ROMANIA CEPROM CERT

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CERTIFICATE OF CONFORMITY

No. 4985-CI-32026

Technical File No. *4985-CI-32026/STE09112609S*

Applicant:	**Manufacturer:**
SHANGHAI MATIS ELECTRIC CO., LTD.	***SHANGHAI MATIS ELECTRIC CO., LTD.***
Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306	*Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306*

Description of product:

Product: ***AUTO RECLOSER***

Model: ***see Annex***

Reference standards: *EN 63024:2018*

Based on our assessment we confirm that the product is in accordance with the technical requirements of the above standards and hence fulfils the technical requirements of the

Low Voltage Directive 2014/35/EU

The manufacturer shall affix the CE marking to each product that is in conformity with those described in this Certificate, after completion of the EC Declaration of Conformity and in accordance with the above directive.

The manufacturer must ensure the assessment of conformity with internal controls on the manufacture of the above product, in accordance with Annex VIII of 2006/42/EC Directive;

The assessment activity for the product described in this Certificate of Conformity was carried out in compliance with Scheme 1a, cf. EN ISO/IEC 17067:2013 with Assessment Report and doesn't belong to the products listed in Annex IV of 2006/42/EC Directive which is under harmonised European Union product legislation.

This Certificate of Conformity was issued on voluntary basis of manufacturer and is only valid for the product and configuration described (annex), in conjunction with the detailed test data and with all applicable legal requirement for the product.

Annex: ***Product identification - 2 pages***

Issuing Date: *25.09.2026*



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Satu Mare, Romania

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eng. Cristian SOPONOȘ

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The Product:	***AUTO RECLOSER***
*model:	***MT56AS, MT56AR, MT56SD, MT56AI , MT56AW, MT56RI, MT56RW, MT56RS***
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*headquarters address:	*Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306*
*place of manufacture:	*Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306*
*domain of use:	*The MT56 series auto recloser is designed to automatically reclose the associated breakers after checking the fault. It is compatible with MCB/RCCB/RCBO both from Matis and EATON and the corresponding auxiliary OF/SD .*

Technical File content:

- *General description of the equipment;*
- *Conceptual design and manufacturing drawings and schemes of components;*
- *Instruction manual;*
- *The list of standards applied;*
- *Test report;*
- *Declaration of conformity;*
- *The internal measures implemented to ensure equipment conformity with LVD.*

CEPROM-CERT Manager
eng. Vasile ZELE



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ANNEX
to the Certificate of Conformity no. 4985-CI-32026

PRODUCT IDENTIFICATION

The Product: ***AUTO RECLOSER***

*constructive and functional characteristics:

Model	*M.U.*	*MT56AS*	*MT56AI*	*MT56AW*	*MT56AR*	*MT56RS*
Power Supply	*V*	*AC230*	*AC230*	*AC230*	*AC230*	*AC230*
Standard Input Power	*W*	*<1VA*	*<1VA*	*<1VA*	*<1VA*	*<1VA*
Delay Time	*s*	*15/90/300*	*15/60/300*	*15/60/300*	*15/90/500*	*15/60/300*
Number of Reclosing action	*-*	*3*	*3*	*3*	*3*	*3*

Model	*M.U.*	*MT56RI*	*MT53RW*	*MT56SD*
Power Supply	*V*	*AC230*	*AC230*	*AC230*
Standard Input Power	*W*	*<1VA*	*<1VA*	*<1VA*
Delay Time	*s*	*15/90/300*	*15/90/300*	*15/60/300*
Number of Reclosing action	*-*	*3*	*3*	*1-10 adjustable*

CEPROM-CERT Manager
eng. Vasile ZELE

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EU DECLARATION OF CONFORMITY

This Is Hereby Declared That Following Designated Product Complied With The Essential

Manufacturer Name: Shanghai Matis Electric Co.Ltd Address: Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306
Authorized Representative Established Within The Eu: Company Name: / Company Address: /
Product Name: Auto Recloser
Model: MT56AS, MT56AR, MT56SD, MT56AI, MT56AW, MT56RI, MT56RW, MT56RS
Trademark: Matis/Matismart
Meets All Relevant Requirements Of The Following European Directives: 2014/35/EU Low Voltage Directive
Applicable Standards: EN 63024:2018

THIS DECLARATION APPLIES TO ALL SPECIMENS MANUFACTURED IDENTICAL TO THE MODEL SUBMITTED FOR TESTING / EVALUATION. ASSESSMENT OF COMPLIANCE OF THE PRODUCT WITH THE REOUIREMENTS RELATING TO SAFETY STANDARDS LISTED ABOVE WAS PERFORMED BY MANUFACTURER.

THIS DECLARATION OF CONFORMITY IS ISSUED UNDER THE SOLE RESPONSIBILITY OF THE MANUFACTURER.

SIGNED ON BEHALF OF Shanghai Matis Electric Co.Ltd

Title and Signature: CEO 包善华 Timmy

Date and place: 2021.9.21 Shanghai

Seal: SHANGHAI MATIS ELECTRIC CO. LTD. 上海麦兜电气有限公司

CE

TEST REPORT

Report No.:	**STE09112612S**
Product:	Auto Reclosing Device(ARD)
Model No.:	**MT56AS**, MT56AR, MT56SD, MT56AI, MT56AW, MT56RI, MT56RW, MT56RS
Prepared for:	**Shanghai Matis Electric Co.Ltd**
Address:	Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306
Prepared by:	**Shenzhen STE Testing Laboratory Co., Ltd.**
Lab Location:	3/F, Building 9, Hongde Factory, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Tel. :	+86-755-2373 0717
Fax. :	+86-755-2373 0717
Website:	http://www.stecert.com

This test report may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. Any objections must be raised to STE within 15 days since the date.

TEST REPORT
EN 63024
Requirements for automatic reclosing devices (ARDs) for circuit-breakers, RCBOs and RCCBs for household and similar uses

Report Number.....:	STE09112612S
Tested by (name + signature).....:	Plum Xiao / Test engineer
Approved by (name + signature).....:	Allen Huang / Project manager
Date of issue.....:	September 20, 2026
Total number of pages.....:	30
Testing Laboratory .....:	Shenzhen STE Testing Laboratory Co., Ltd.
Address .....:	3/F, Building 9, Hongde Factory, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China
Applicant's name.....:	Shanghai Matis Electric Co.Ltd
Address.....:	Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306
Manufacturer's name.....:	Shanghai Matis Electric Co.Ltd
Address.....:	Room318-320, No.83,West Huanghu Road, Pudong, Shanghai, China 201306
Test specification:	
Standard.....:	EN 63024:2018
Test procedure.....:	Type test
Non-standard test method.....:	N/A
Test Report Form No.....:	IEC63024
Test Report Form(s) Originator.....:	OVE
Master TRF.....:	Dated 2017-01

Shenzhen STE Testing Laboratory Co., Ltd. All rights reserved.

Test item description.....:	Auto Reclosing Device(ARD)
Model/Type reference.....:	**MT56AS**, MT56AR, MT56SD, MT56AI, MT56AW, MT56RI, MT56RW, MT56RS
Trade Mark.....:	Matis/Matismart
Ratings.....:	See the label on page 3

Summary of testing:

Testing location:

Shenzhen STE Testing Laboratory Co., Ltd.

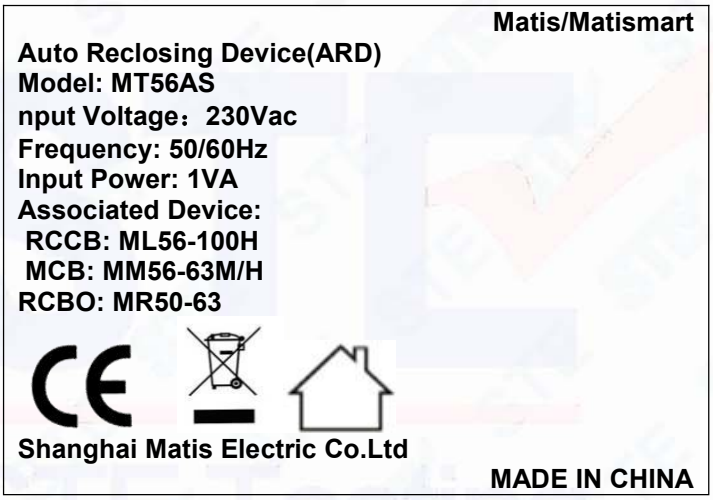
3/F, Building 9, Hongde Factory, No. 63 Yuchang Road, Niuhu Community, Guanlan Street, Longhua District, Shenzhen, China

Tests performed (name of test and test clause):

EN 63024:2018

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.



Remarks:

1. Height of CE mark is 5mm or more, height of WEEE symbol is 7mm or more, height of other marks is 5mm or more, height of letters and numerals is 2mm or more.

Test item particulars..... :	
Rated voltage (U_N)..... :	230 V
Rated impulse withstand voltage (U_{imp})..... :	1VA
Rated frequency (Hz)..... :	50/60Hz
Nature of supply ..... :	~
Type of terminal ..... :	Screw in
Classification of RCBOs functionally dependent on the line voltage:..... :	~~Yes /~~ No
Opening automatically in case of failure of the line voltage..... :	Yes /~~ No~~
- reclosing automatically when the line voltage is restored..... :	Yes /~~ No~~
- not reclosing automatically when the line voltage is restored..... :	~~Yes /~~ No
Not opening automatically in case of failure of the line voltage..... :	~~Yes~~ / No
- able to trip in a hazardous situation arising on failure of line voltage..... :	Yes /~~ No~~
- not able to trip in a hazardous situation arising on failure of line voltage..... :	~~Yes /~~ No
Possible test case verdicts:	
- test case does not apply to the test object..... :	N or N/A (Not Applicable)
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)
Testing..... :	
Date of receipt of test item..... :	August 21, 2026
Date (s) of performance of tests..... :	August 21, 2026 ~ September 20, 2026

General remarks:
"(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report. Throughout this report a ☐ comma / ☒ point is used as the decimal separator.
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided.....:	☐ Yes ☒ Not applicable
General product information 1.This product is suitable for internal use	

EN IEC 63024			
Clause	Requirement + Test	Result - Remark	Verdict
1	**Scope**		P
	This International Standard applies to automatic reclosing devices (ARDs) for household and similar uses, for rated voltage not exceeding 440 V AC, and which are intended to be used in combination with circuit-breakers, RCCBs and RCBOs, and designed either for factory assembly or for assembly on site.		P
	These devices are intended to reclose main protective devices (MPDs) such as circuit-breakers complying with IEC 60898-1 and/or IEC 60898-2, RCCBs complying with IEC 61 008-1 and/or IEC 62423, and RCBOs complying with IEC 61 009-1 and/or IEC 62423 after tripping of those devices in order to re-establish continuity of service.		P
	This document includes the following types of ARDs: – ARDs with assessment means, reclosing only if both the prospective line current and the prospective earth-fault current do not exceed given values; – ARDs with assessment means, reclosing only if the prospective line current does not exceed a given value; – ARDs with assessment means, reclosing only if the prospective earth-fault current does not exceed a given value; – ARDs that recloses without any assessment.		P
	This document does not apply to ARDs with multiple settings adjustable by means accessible to the user in normal service.		P
	Devices covered by this document are intended to be suitable for operation by uninstructed persons without the need for maintenance.		P
2	**Normative references**		**P**
3	**Terms and definitions**		**P**
4	**Classification**		**P**
4.1	According to the method of construction		P
4.1.1	ARD assembled in factory by the manufacturer.		P
4.1.2	ARD assembled on site.		N
4.2	According to the associated MPD		P
4.2.1	ARD for circuit-breakers.		P
4.2.2	ARD for RCCBs.		P
4.2.3	ARD for RCBOs.		P
4.3	According to the type of assessment means		P
4.3.1	ARD without assessment means (see Annex A).		N
4.3.2	ARD with assessment means.		P
4.3.2.1	ARD with means of assessment of the prospective residual current:		P
	a) operation blocked after assessment of an excessive residual current in the installation (see Annex B);		P
	b) remains in tripped condition after the assessment of an excessive residual current in the installation (see Annex C).		N
4.3.2.2	ARD with means of assessment of the prospective line current:		N
	a) operation blocked after assessment of an overcurrent in the installation (see Annex B);		N

EN IEC 63024			
Clause	Requirement + Test	Result - Remark	Verdict
	b) remains in tripped condition after the assessment of an overcurrent in the installation (see Annex C).		N
4.4	According to the safety means during the assessment		P
4.4.1	ARD with assessment means operating by using a method based on the limitation of the test voltage.		N
4.4.2	ARD with assessment means operating by using a method based on the limitation of the test current.		P
4.5	According to the connection to FE		P
4.5.1	ARD with FE connection for assessment means.		N
4.5.2	ARD without FE connection.		P
4.6	According to maximum number of reclosing operations		P
4.6.1	ARD with maximum number of reclosing operations declared by manufacturer and lower than or equal to 3.		N
4.6.2	ARD with maximum number of reclosing operations declared by manufacturer and higher than 3.		P
4.7	According to mechanical interlock between MPD operating means and ARD enabling/disabling system		P
4.7.1	ARD with mechanical interlock between MPD operating means and ARD enabling/disabling system.		N
4.7.2	ARD without mechanical interlock between MPD operating means and ARD enabling/disabling system.		P
5	**Characteristics**		P
5.1	**Summary of characteristics**		P
	The characteristics of the MPD standards and the following apply:		P
	– protection against external influences;		P
	– method of mounting;		P
	– method of connection;		P
	– value of rated operational voltage;		P
	– value of rated frequency;		P
	– values of operating and non-operating rated resistance to earth, if applicable;		P
	– values of operating and non-operating rated resistance between live parts, if applicable;		P
	– range of ambient air temperature.		P
5.2	**Rated quantities**		P
5.2.1	**Rated voltage**	230 V	P
	Preferred values o f rated voltage are: 1 20 V, 230 V, 400 V.		P
	Wherever in this document there is a reference to 230 V or 400 V, they can be read as 220 V or 240 V, 380 V or 41 5 V, respectively.		P
5.2.2	**Rated operational voltage (U e)**	230 V	P
	The rated operational voltage (hereafter referred to as rated voltage) of an ARD is the value of voltage assigned by the manufacturer to which its performance is referred.		P
5.2.3	**Rated frequency**	50/60 Hz	P
	The rated frequency of an ARD is the power frequency for which the ARD is designed and to which the values of the other characteristics correspond.		P

EN IEC 63024			
Clause	Requirement + Test	Result - Remark	Verdict
	Preferred values of rated frequency are: 50 Hz, 60 Hz and 50/60 Hz.		P
5.2.4	**Rated non-operating resistance to earth (R d0)**		N
	The R d0 is the rated value of resistance between live parts and earth below which the re-closing of the MPD is not permitted.		N
	The R d0 value is stated by the manufacturer under the test conditions in this product document.		N
5.2.5	**Rated operating resistance to earth (R d)**		P
	The R d is the rated value of resistance between live parts and earth above which the re-closing of the MPD is permitted.		P
	The R d value is stated by the manufacturer under the test conditions in this product document.		P
	The R d shall be rounded up to the two significant digits.		P
	The minimum R d value shall be not less than the values specified in Table 1 :		P
5.2.6	**Rated non-operating resistance between live parts (R cc0)**		N
	The R cc0 is the rated value of resistance between live parts below which the reclosing of the MPD is not permitted.		N
	The R cc0 value is stated by the manufacturer under the test conditions in this product document.		N
	The R cc0 value shall be rounded up to the two significant digits.		N
5.2.7	**Rated operating resistance between live parts (R cc)**		N
	The R cc is the rated value of resistance between live parts above which the reclosing of the MPD is permitted.		N
	The R cc value is stated by the manufacturer under the test conditions in this product document.		N
	The R cc shall be rounded up to the last two more significant digits.		N
6	**Marking and other product information**		P
6.1	**Standard marking**		P
	Each ARD shall be marked in a durable manner with all the following data:		P
	a) manufacturer’s name or trade mark;		P
	b) type designation, catalogue number or serial number;		P
	c) wiring diagram, except if the connection mode is self-evident;		P
	d) rated voltage(s) with the symbol (IEC 6041 7-5032);		P
	e) ARD or according to the IEC reference standard;		P
	f) protection degree (only if different from IP20).		N
	Moreover, the following markings shall be placed on the products or in the instruction sheets accompanying the product:		P
	g) the rated frequency; ARDs with more than one rated frequency (e.g. 50/60 Hz) shall be marked accordingly;		P
	h) the rated non-operating resistance between live parts and earth R d0 , if applicable;		N
	i) the rated operating resistance between live parts and earth R d , if applicable;		P
	j) the rated non-operating resistance between live parts R cc0 , if applicable;		N

EN IEC 63024			
Clause	Requirement + Test	Result - Remark	Verdict
	k) the rated operating resistance between live parts R cc , if applicable;		N
	l) assembling method if applicable;		P
	m) earthing system in which the devices may be used;		P
	n) “warning: before accessing active parts, disable the automatic reclosing function and switch off the main protective device” or other warning having the same meaning.		P
	o) instructions about the reset of the ARD and the need for checking the MPD and the installation in case of blocked condition.		P
	p) for ARD classifed according to 4.Z1 .2, ambient air temperature with the symbol (the value -25 included in the snow fake symbol according to ISO 7000:201 4, Figure 0027). For devices according to 4.1 .2, the information of the ambient air temperature shall not be visible after assembly.		N
	If a degree of protection higher than IP20 is marked on the device, it shall comply with it,whichever the method of installation. If the higher degree of protection is obtained only by a specific method of installation and/or with the use of specific accessories		N
	Information on how to reach the isolation of the installation shall be given in the instruction sheet accompanying the product.		P
	The information under a) and b) shall be visible when the ARD is installed		P
	The information under l) is only applicable to products classified under 4.1 .2.		N
	The information under h), i), j) and k) are only applicable to products classified under 4.3.2.		P
	For devices classified according to 4.7.2, the information under n) shall be on the product or on a label to be installed on the board close to the ARD and in a position visible after the ARD has been installed.		P
	ARDs, classified according to 4.3.1 , 4.3.2.1 a) or 4.3.2.2 a) with a reclosing time, measured according to 9.3, and higher than 2 s, shall be provided with indicating means showing the tripped condition of the MPD.		P
	ARDs shall be provided with indicating means showing the blocked condition.		P
	ARDs, classified according to 4. 3. 2. 1 b) or 4. 3. 2. 2 b) shall be provided with indicating means showing the tripped condition that is maintained after the fault detection in the installation.		N
	The blocked condition and the tripped condition shall be clearly explained by the manufacturer (e.g. by means of an adhesive label or marking, or a light indicator) and instructions shall be given about how to reset the ARD and the need for checking the MPD and the installation in case of blocked condition.		P
	Marking shall be indelible, easily legible and not be placed on screws, washers or other removable parts.		P
	Compliance is checked by inspection and by the test of 9.4.		P
	If auxiliary contacts are present, it is necessary to provide the following indication:		N

EN IEC 63024			
Clause	Requirement + Test	Result - Remark	Verdict
	– rated operational current, rated operational voltage and utilisation category if the reference standard is IEC 6201 9; or		N
	– rated current and rated voltage, if the reference standard is IEC 60947-5-1 .		N
	For additional contacts intended for communication purpose, the reference according to IEC 60950-1 shall be used.		N
	For the ARD classified according to 4.5.1 , the FE-wire or terminal shall be identified by the marking “FE”. The following colours are not permitted for the FE-wire: green, yellow, blue and green-and-yellow.		N
	The manufacturer's instruction shall state that the FE should be connected directly to the PE, and looping in is not allowed.		N
	The manufacturer shall provide the ARD power consumption data.		P
6.2	**Instructions for assembly and operation**		P
	The manufacturer shall provide adequate instructions with the ARD.		P
	If the ARD is classified according to 4.1 .2, these instructions shall cover at least the following:		N
	– reference to the type(s) and catalogue number(s), covering current and voltage ratings,number of poles, etc. of the MPD with which the ARD is designed to be assembled;		N
	– method of assembly;		N
	– need for checking operation after assembly to verify the mechanical operation;		N
	– ambient air temperature of the combination (MPD and ARD).		N
	Compliance is checked by inspection.		N
7	**Standard conditions for operation in service**		P
7.1	**General**		P
	The ARD complying with this document shall be capable of operating under the standard conditions given by the relevant MPD standard(s).		P
	For the ARD and MPD, the relevant clauses of the MPD standards apply:		P
	a) IEC 60898-1 :201 5, Clause 7 and IEC 60898-2:201 6, Clause 7, for ARDs classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0, Clause 7, for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, Clause 7, for ARD classified according to 4.2.3 (RCBOs).		P
7.2	**Conditions of installation**		P
	The ARD shall be installed in accordance with the manufacturer's instructions.		P
	The ARD classified according to 4 . 1 . 2 shall only be installed together with the circuit-breakers, RCBOs and RCCBs declared by the manufacturer.	RCCB: ML56-100H; MCB: MM56-63M/H; RCBO: MR50-63	P
7.3	**Pollution degree**		P

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Clause	Requirement + Test	Result - Remark	Verdict
	ARDs accordin g to this document are intended for an environment with pollution degree 2(only non-conductive pollution occurs except that, occasionally, a temporary conductivity caused by condensation is to be expected).	PD 2	P
8	**Requirements for construction and operation**		P
8.1	**Mechanical design**		P
8.1 .1	**General**		P
	The ARD shall be so designed and constructed that, in normal use when it is assembled with the MPD, their individual and combined performance is reliable and without danger to the user or surrounding.		P
	The ARD shall not impair safety characteristics and functions of the associated MPD.		P
	In case of an ARD classified according to 4.1 .2, this device and the MPD shall be of the same manufacturer.		P
	Compliance is checked by carrying out all the relevant tests specified.		P
	The ARD may be provided with a communication interface. Test requirements are under consideration.		P
8.1 .2	**Mechanism**		P
8.1 .2.1	The ARD shall be so designed and constructed as not to change the functional characteristic of the MPD.		P
	Compliance is checked by inspection and by the test of 9.5.1 .		P
8.1 .2.2	The ARD and the MPD shall be associated in a proper way and the association shall be made in such way to avoid uncorrected matching.		P
	Compliance is checked by inspection and with information detailed in 6.2.		P
8.1 .2.3	For devices according to 4. 7. 1 , it shall not be possible to enable the ARD if the MPD has been previously manually opened by the actuator.		N
	It is permitted that the enabling system of the ARD may also cause the closing of the MPD during the same manual operation.		N
8.1 .2.4	The ARD shall be provided with an enabling and disabling system.		P
	The enabling and disabling system shall be manufactured in such a way that it can be directly operated by the user or by means of a tool of common usage.		P
	The enabling and disabling system shall be able to correctly operate for a suitable number of operating cycles.		P
8.1 .2.5	Manual opening of the MPD shall be possible at every time.		P
	This condition is considered as fulfilled if the manual opening is not possible without the disabling of the ARD.		P
	For devices according to 4.7.1 , if the ARD is enabled, manual opening of the MPD using the actuator shall always disable the automatic reclosing.		N
	Compliance is checked by inspection and by the test of 9.5.2.	See clause 9.5.2	P
	For devices according to 4.7.2, the enabling/disabling of the ARD		P

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Clause	Requirement + Test	Result - Remark	Verdict
	shall be obtained by a separate enabling/disabling means. The enabled condition shall be clearly indicated (e.g. light indicator, mechanical indicator).		
8.1 .2.6	When the ARD is disabled:		P
	a) the MPD shall operate independently from the ARD, in particular it shall be possible to activate the test device, if any;		P
	b) it shall be possible to see the symbol (IEC 6041 7-5008) when the contacts of the MPD are in isolating condition.		P
	Compliance to the point a) is checked by manual test.		P
	Compliance to the point b) is checked by visual inspection and the dielectric tests according to 9.1 1 .	See clause 9.11	P
8.1 .2.7	**When the ARD is enabled:**		P
	For devices according to 4.7.1 :		N
	a) it shall not be possible to see on the MPD the symbol (IEC 6041 7-5008) which shows the position of the contacts;		N
	b) it shall be possible to activate the test device with the exception of ARD with a reclosing time higher than 3 s where it is not accepted;		N
	c) the marking stated in the reference standard of the MPD shall be visible with the exception of the symbol		N
	Compliance to points a) and c) is checked by visual inspection.		N
	For devices according to 4.7.2, the enabled condition shall be clearly indicated (e.g. light indicator, mechanical indicator).		N
	Compliance is checked by visual inspection.		N
8.1 .2.8	The ARD shall never perform a number of consecutive reclosing operations greater than those declared by the manufacturer within its reset time.		P
	For devices according to 4.6.1 , the maximum number of operations shall not be greater than 3.		N
	Compliance is checked by the test of 9.5.4.		N
	For devices according to 4.6.2, the maximum number of operations shall be declared by the manufacturer.		P
	Compliance is checked by the test of 9.5.4.	See clause 9.5.4	P
8.1 .3	**Clearances and creepage distances**		P
	The minimum required clearances and creepage distances are given in Table 2 which is based on the ARD being designed for operating in an environment with pollution degree 2. However,the clearances of items 2 and 4 may be reduced provided that the tests at rated impulse voltage are withstood.		P
	The values of Table 2 shall be verified for the ARD and the interface with the MPD.		P
	The insulating materials are classified into material groups on the basis of their comparative tracking index (CTI) according to 4.8.1 .2 and 4.8.1 .3 of IEC 60664-1 :2007.		P
8.1 .4	**Clearances and creepage distances for electronic circuits connected between live parts or between live parts and the earth**		P
	For electronic circuits connected between live parts, or between live parts and the earth circuit when the contacts are in the closed		P

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Clause	Requirement + Test	Result - Remark	Verdict
	position, the verification of the clearances and creepage distances is replaced by the tests of 9.6 and 9.7.		
8.1 .5	**Screws, current-carrying parts and connections**		P
	For the ARD and MPD, the relevant subclause(s) of the MPD standard(s) applies:		P
	a) IEC 60898-1 :201 5, 8.1 .4 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 8.1 .4 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 8.1 .4 for ARD classified according to 4.2.3 (RCBOs).		P
8.1 .6	**Terminals for external conductors**		P
	For the ARD and MPD, the relevant subclause(s) of the MPD standard(s) applies:		P
	a) IEC 60898-1 :201 5, 8.1 .5 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 8.1 .5 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 8.1 .5 for ARD classified according to 4.2.3 (RCBOs).		P
	The range of nominal cross-section for wires clamped to the FE terminal, if any, shall be between 1 mm 2 and 2,5 mm 2 .		N
	Compliance is checked by the tests of 9.9.		P
	In case of ARD classified according to 4. 1 . 2, if supply cables to be associated to the MPD are provided, suitable indications for preventing wrong connections shall be given.		P
8.2	**Protection against electric shock**		P
	For the ARD and MPD, the relevant subclause of the MPD standard applies:		P
	a) IEC 60898-1 :201 5, 8.2 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0, 8.2 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, 8.2 for ARD classified according to 4.2.3 (RCBOs).		P
8.3	**Dielectric properties and isolating capability**		P
	The ARD and MPD shall not influence the suitability for isolation of the MPD.		P
8.4	**Temperature rise**		P
	For the ARD and MPD, the corresponding subclause of the MPD standard applies:		P
	a) IEC 60898-1 :201 5, 8.4 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0, 8.4 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, 8.4 for ARD classified according to 4.2.3 (RCBOs).		P
8.5	**Mechanical and electrical endurance**		P
	ARD and MPD shall be capable of performing an adequate		P

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Clause	Requirement + Test	Result - Remark	Verdict
	number of cycles of operations.		
8.6	**Performance at short-circuit currents**		P
	Performances in case of short-circuit currents of the MPD shall not be influenced by the ARD.		P
	Performances of the ARD shall not be influenced by short-circuits occurring in the installation.		P
8.7	**Resistance to mechanical shock and impact**		P
	The relevant subclause of the MPD standard applies:		P
	a) IEC 60898-1 :201 5, 8.9 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0, 8.8 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, 8.8 for ARD classified according to 4.2.3 (RCBOs).		P
8.8	**Resistance to heat**		P
	The relevant subclause of the MPD standard applies:		P
	a) IEC 60898-1 :201 5, 8.1 0 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0, 8.9 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, 8.9 for ARD classified according to 4.2.3 (RCBOs).		P
8.9	**Resistance to abnormal heat and to fire**		P
	The relevant subclause of the MPD standard applies:		P
	a) IEC 60898-1 :201 5, 8.1 1 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0, 8.1 0 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, 8.1 0 for ARD classified according to 4.2.3 (RCBOs).		P
8.1 0	**Operating characteristics**		P
8.1 0.1	The ARD classified according to 4.3.1 , after tripping of the MPD, shall reclose it.		N
8.1 0.2	The ARD classified according to 4.3.2.1 , after tripping of the MPD, shall perform the prospective earth-fault current assessment, and it shall reclose only if the prospective residual current does not exceed a given value.		P
8.1 0.3	The ARD classified according to 4.3.2.2, after tripping of the MPD, shall perform the prospective line current assessment, and it shall reclose only if the line current does not exceed a given value.		N
8.1 0.4	The ARD classified according both to 4.3.2.1 and 4.3.2.2, after tripping of the MPD,shall perform both the prospective earth-fault current and line current assessment and it shall reclose only if prospective residual current and line current do not exceed a given value		N
8.1 0.5	The ARD shall never perform a number of consecutive reclosing operations greater than those declared by the manufacturer, and for devices according to 4.6.1 , the maximum number of operation shall not be greater than 3.		P

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Clause	Requirement + Test	Result - Remark	Verdict
8.1 0.6	The ARD shall operate independently of the influence of distributed capacities in the installation		P
8.1 0.7	The admissible behaviour of the ARD, depending on line voltage and on MPD condition, is described in Table 3.		P
8.1 0.8	The standing current from the FE to the protective conductor shall not exceed 1 ,0 mA under normal supply conditions.		N
8.1 1	**Assessment means for ARD according to 4.3.2**		P
8.1 1 .1	**General**		P
	ARDs according to 4 . 3 . 2 shall be so designed that the assessment shall only be performed under safe conditions for the user.		P
	The assessment shall be performed using a circuit in which one of the following protective provisions is provided.		P
8.1 1 .2	Assessment means operating by limitation of the test voltage		N
	The limitation of voltage shall be provided by a transformer with a reinforced insulation between the primary and the secondary circuit.		N
	The reinforced isolation shall be designed for a working voltage equal to 300 V for a transformer supplied by a rated voltage equal to 230 V, and 600 V for ARD for a transformer supplied by a rated voltage equal to 400 V.		N
	Compliance of the transformer is checked by the requirements of 9.7.4.		N
	The maximum voltage used to provide the assessment shall be lower than 24 V r.m.s.		N
8.1 1 .3	**Assessment means operating by limitation of the test current**		P
	The ARD shall be so designed that the steady-state current shall not exceed 1 ,0 mA AC or 2,0 mA DC. under normal operation in tripping conditions.		P
8.1 2	**Safety in blocked condition**		P
	The ARD shall be so designed that in blocked condition, the safety of the user is ensured.		P
8.1 3	**Test device**		P
	The relevant subclause of the MPD document applies:		P
	a) IEC 61 008-1 :201 0, 8.1 1 for ARD classified according to 4.2.2 (RCCBs);		P
	b) IEC 61 009-1 :201 0, 8.1 1 for ARD classified according to 4.2.3 (RCBOs).		P
8.1 4	**Ageing**		P
	The relevant subclause of the MPD document applies:		P
	a) IEC 61 008-1 :201 0, 8.1 6 for ARD classified according to 4.2.2 (RCCBs);		P
	b) IEC 61 009-1 :201 0, 8.1 6 for ARD classified according to 4.2.3 (RCBOs).		P
8.1 5	**Electromagnetic compatibility (EMC)**		P
	The ARD shall operate reliably in presence of electromagnetic disturbances and shall comply with relevant EMC requirements.		P

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Clause	Requirement + Test	Result - Remark	Verdict
9	**Tests**		P
9.1	**General**		P
	The MPD to be fitted with the ARD shall comply with its relevant product document:		P
	a) IEC 60898-1 or IEC 60898-2, as applicable for ARDs classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 for ARDs classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 for ARDs classified according to 4.2.3 (RCBOs).		P
	In addition, the following tests shall be carried out to verify the whole assembly of the MPD with the ARD (ARD and MPD) mounted as for normal use.		P
	These tests are carried out according Table D.1 , where the tests in each sequence are carried out in the order indicated.		P
9.2	**Test condition**		P
	The ARD assembled with its MPD is mounted individually according to the manufacturer's instructions and in free air, at an ambient temperature as required by the standard for the MPD unless otherwise specified.		P
	ARDs designed for installation in individual enclosures are tested in the smallest of such enclosures specified by the manufacturer.		N
	Unless otherwise specified, the ARD is wired with the appropriate cable of cross-section specified in the relevant standard of the MPD and is fixed on a dull black painted plywood board of about 20 mm thickness, the method of fixing being in compliance with the requirements relating to the indications of the manufacturer concerning mounting.		P
	Where tolerances are not specified, type tests are carried out at values not less severe than those specified in this document. Unless otherwise specified, tests are carried out at the rated voltage and rated frequency ± 5 %.		P
9.3	**Measurement of the reclosing time after the tripping of the MPD**		P
	The ARD assembled with the MPD is supplied at rated voltage.		P
	The MPD is caused to open automatically (e.g. by means of a tripping release). After the opening of the MPD, the ARD shall reclose. The test is carried out by measuring the time interval for which the supply voltage is not present downstream.		P
9.4	**Test of indelibility of marking**		P
	The test is made by rubbing the marking by hand for 1 5 s with a piece of cotton soaked with water and again for 1 5 s with a piece of cotton soaked with aliphatic solvent hexane with a content of aromatics of maximum 0,1 % by volume, a kauributanol value of 29, an initial boiling-point approximately 65 °C, a dry-point of approximately 69 °C and a density of approximately 0,68 g/cm 3 .		P
	Marking made by impression, moulding, or engraving is not subjected to this test.		N
	After this test, the marking shall be easily legible.		P
	The marking shall also remain easily legible after all the tests of this document		P
	It shall not be easily possible to remove labels and they shall show		P

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Clause	Requirement + Test	Result - Remark	Verdict
	no curling.		
9.5	**Verification of the non-influence of the ARD on the correct operation of the MPD**		P
9.5.1	**Verification of the operating characteristics of the MPD**		P
	For the ARD and MPD, the relevant subclause(s) of the MPD standard(s) applies:		P
	a) IEC 60898-1 :201 5, 8.1 .2 1 , 9.1 0.2 and 9.1 0.3 (only at the upper limit of instantaneous tripping current) or IEC 60898-2:201 6 as applicable, 9.1 0.3 (only at the upper limit of instantaneous tripping current), for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD2:201 3, 8.1 .2 1 , 9.9.2.1 , 9.9.2.2, 9.9.2.3 a), 9.1 5, for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, IEC 61 009-1 :201 0/AMD1 :201 2 and IEC 61 009-1 :201 0/AMD2:201 3,8.1 .2 1 , 9.9.1 .2 a), 9.9.1 .2 b), 9.9.1 .2 c) 1), 9.9.2.1 , 9.9.2.2 a) (only at the upper limit of instantaneous tripping current), 9.1 1 , for ARD classified according to 4.2.3 (RCBOs).		P
9.5.2	**Verification of the impossibility of the activation of the ARD when the MPD has been manually opened**		N
	This test procedure only applies to devices according to 4.7.1 .		N
	The ARD is assembled as in normal use and supplied at rated voltage. The MPD is manually opened. If the enabling and disabling system is accessible and if it is independent from the main actuator, the test is carried out by applying a force equal to 20 N to the enabling /disabling system according to the manufacturer's instruction.		N
	The force is applied for 1 min in the direction of normal actuation.		N
	During the test the ARD shall not reclose the MPD.		N
	The supply voltage is then switched off with the ARD in open position and then restored after 3 min: the ARD shall not reclose the MPD.		N
	The ARD is then reset according to the manufacturer's instruction and the test is repeated once.		N
9.5.3	**Verification of the enabling/disabling system of the ARD**		P
	The ARD assembled with the MPD is installed as in normal use and supplied at rated voltage.		P
	The test is carried out by means of 1 000 cycles of the enabling system with an operation frequency not less than 2 cycles per minute.		P
	At the end of the test, the enabling system shall be able to work correctly.		P
	The ARD being in the enabled position, the MPD is caused to open automatically (e.g. by means of a tripping release or by a residual current). It shall be reclosed automatically.		P
	The ARD being in the disabled position, the MPD is caused to open automatically (e.g. by means of a tripping release or by a residual current). The ARD being supplied as in normal use, no automatic reclosing shall occur during at least 1 min or a time given by the manufacturer.		P

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Clause	Requirement + Test	Result - Remark	Verdict
9.5.4	**Verification of the maximum number of consecutive reclosings**		P
	The MPD is caused to open automatically (e.g. by means of a tripping release or by a residual current). After the tripping and reclosing time (reclosing time may vary depending on number of reclosing operations), the ARD shall reclose and show the appropriate signal according to the manufacturer's instructions.		P
	Reclosing time should be declared by manufacturer to testing laboratory as some products may have a reclosing time up to several hours.		P
	The test is repeated for a maximum number of times as declared by the manufacturer.		P
	Each test shall be separated from the previous reclosing by an interval less than 5 s.		P
	At the end of the maximum number of consecutive reclosing operations as declared by the manufacturer, the ARD shall be in blocked condition and show the appropriate signal according to the manufacturer's instructions.		P
	The supply voltage is switched off and then restored after 3 min: the ARD shall not reclose and it shall show the appropriate signal according to the manufacturer's instructions.		P
	The maximum number of consecutive reclosing operations shall be equal to 3 for devices according to 4.6.1 or equal to the declaration of the manufacturer for devices according to 4.6.2.		P
	The ARD is then reset according to the manufacturer's instruction and the test is repeated once.		P
9.6	**Tests of creepage distances and clearances for electronic circuits (abnormal conditions)**		P
9.6.1	These tests replace the verifications of creepage distances and clearances of electronic circuits connected between live parts (phases and neutral) and/or between live parts and the earth circuit.		P
	The ARD shall not create fire and/or shock hazards under abnormal conditions likely to occur in service.		P
	The conditions under which a component is used within an ARD unit shall be in accordance with the operating characteristics marked on the component and/or given in the data provided by the manufacturer.		P
9.6.2	When the ARDs are exposed to abnormal conditions, no part shall reach temperatures likely to cause danger of fire to the surroundings of the ARD, and no live parts shall become accessible.		P
	Compliance is checked by subjecting the ARD to a heating test under fault conditions as described in 9.6.3.		P
9.6.3	Unless otherwise specified, the tests are made on ARD, connected and loaded as in normal use.		P
	Examination of the ARD and its circuit diagram will show the fault conditions that shall be applied.		P
	Generally, one separate sample is submitted for each fault condition to be tested.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Each of the following fault conditions a) to e) shall be applied in turn, one test only being carried out for		P
	a) short-circuit across clearances and creepage distances smaller than those given by curve A of Figure 1 , with the following exception. In the case of a printed-board complying with the pull-off and peel strength requirements specified in IEC 61 1 89-2, the creepage distances and clearances between conductors,one of which may be connected to one pole of the supply mains, the values resulting from Figure 1 are replaced by the values calculated from the formula:		P
	b) short-circuit across insulation coating consisting, for example, of lacquer or enamel;		P
	c) short-circuit or interruption of semiconductors devices;		P
	d) short-circuit of electrolytic capacitors;		P
	e) short- circuit or disconnection of capacitors, resistors and inductors that do not comply with the requirements of 9.7.2, 9.7.3 and 9.7.4.		P
	The temperatures resulting from the fault conditions are measured for the parts mentioned in Table 4 after steady-state has been reached, or after 4 h (whichever is the shorter time) under each of the fault conditions a) to e).		P
9.7	**Requirements for capacitors, specific resistors and inductors used in electronic circuits**		P
9.7.1	**General**		P
	These requirements apply for capacitors (see 9.7.2), specific resistors and inductors (see 9.7.3), and inductors and windings (see 9.7.4) used in electronic circuits connected between live parts (phases and neutral) and/or between live parts and the earth circuit when the contacts are in the closed position.		P
9.7.2	**Capacitors**		P
	Capacitors, – the short-circuiting or disconnection of which would cause an infringement of the requirements under fault conditions with regard to shock or fire hazard; – the short-circuiting of which would cause a current of 0,5 A or more through the terminals of the capacitor; – for suppression of electromagnetic interference,shall comply with IEC 60384 (all parts).		P
	These capacitors shall be marked with their rated voltage in volts (V), their rated capacitance in microfarads (µF) and their reference temperature in degrees Celsius (°C).		P
9.7.3	**Resistors**		P
	Resistors, the short-circuiting or interruption of which would cause an infringement of the requirements with regard to the protection against fire and electric shock in case of a defect,shall have an adequately constant value under the overload conditions prevailing in the electronic switch.		P
	These resistors shall comply with the requirements of 1 4.1 of IEC 60065:201 4.		N
	Tests already carried out on resistors and inductors complying with		N

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Clause	Requirement + Test	Result - Remark	Verdict
	IEC 60065 are not required to be repeated.		
9.7.4	**Inductors and windings**		P
	Inductors and windings shall comply with the requirements of IEC 61 558 (all parts) and the relevant parts of IEC 61 558 (all parts), as applicable.		P
9.8	**Test of reliability of screws, current-carrying parts and connections**		P
	For the ARD and MPD, the relevant subclause of the MPD standard applies: a) IEC 60898-1 :201 5, 9.4 for ARD classified according to 4.2.1 (circuit- breakers); b) IEC 61 008-1 :201 0, 9.4 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0, 9.4 for ARD classified according to 4.2.3 (RCBOs)		P
	The test is repeated on terminals for screws, current carrying parts and connection of the MPD only if they are used to connect them to ARDs and only if the cross-section area of these conductors is different, as stated in Table 5 of IEC 60898-1 :201 5, in Table 4 of IEC 61 008- 1 :201 0 or in Table 6 of IEC 61 009-1 :201 0.		P
9.9	**Test of reliability of terminals for external conductors**		P
	For the ARD and MPD, the relevant subclause(s) of the MPD standard(s) applies: a) IEC 60898-1 :201 5, 9.5 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 9.5 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0 and IEC 61 009-1 :201 0/AMD1 :201 2, 9.5 for ARD classified according to 4.2.3 (RCBOs).		P
	If types or sizes of terminals are used, which are not considered in the MPD standard a), b) or c), generic standards for terminals shall apply (for example, piercing terminals according to IEC 60998-2-3).		P
	The test is repeated on terminals for external conductors of the MPD only if they are used to connect the MPD to the ARD and only if the cross section area of these conductors is different as stated in Table 5 of IEC 60898-1 :201 5, or in Table 4 of IEC 61 008-1 :201 0, or in Table 6 of IEC 61 009-1 :201 0.		P
9.1 0	**Verification of protection against electric shock**		P
	For the ARD and MPD, the relevant subclause of the MPD standard applies: a) IEC 60898-1 :201 5, 9.6 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0, 9.6 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0, 9.6 for ARD classified according to 4.2.3 (RCBOs)		P
9.1 1	**Test of dielectric properties and isolating capability**	See appended table: Dielectric strength	P

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Clause	Requirement + Test	Result - Remark	Verdict
	The following subclauses of the standard for the MPD apply:		P
	a) IEC 60898-1 :201 5, 9.7 for ARD classified according to 4.2.1 (circuit-breakers);		P
	b) IEC 61 008-1 :201 0, IEC 61 008-1 :201 0/AMD1 :201 2 and IEC 61 008-1 :201 0/AMD2:201 3, 9.7 for ARD classified according to 4.2.2 (RCCBs);		P
	c) IEC 61 009-1 :201 0, IEC 61 009-1 :201 0/AMD1 :201 2 and IEC 61 009-1 :201 0/AMD2:201 3, 9.7 for ARD classified according to 4.2.3 (RCBOs),		P
	with the following modifications: – where the standard requires that the protective device is in open position, the test is carried out with the MPD and ARD in manually opened condition according to the manufacturer's instructions. All the other tests are carried out with the ARD in all possible conditions; – where the standard requires that the protective device is in open position, the test is carried out with the ARD in isolation condition (e.g. the symbol (IEC 6041 7-5008) is visible); – if the ARD is provided with a terminal intended for the connection of protective conductors, this is connected to the frame; – if the ARD is provided with a terminal intended for the connection of functional earthing conductors, this is not connected to the frame.		P
9.1 2	**Temperature rise**	See appended table: Heating test	P
	For the ARD and MPD, the following subclauses of the MPD standard apply, a current equal to its rated current is passed simultaneously through all the poles of the MPD and the ARD supplied as for normal use with rated voltage:		P
	a) IEC 60898-1 :201 5, 9.8 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0, 9.8 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0, 9.8 for ARD classified according to 4.2.3 (RCBOs).		P
	The test current in the MPDs may be generated at reduced voltage but the ARD shall be supplied at their rated voltage. For this reason, tests shall be made on samples specially prepared by the manufacturer or according to its instructions.		P
9.1 3	Verification of the mechanical and electrical endurance – Verification of the reclosing system of the ARD		P
9.1 3.1	**General test conditions**		P
	The ARD assembled with the MPD is installed as in normal use and supplied at rated voltage.		P
	The MPD is caused to open automatically (e.g. by means of a tripping release), and after tripping the ARD shall reclose.		P
	The operating frequency shall be 1 2 operating cycles per hour or at the highest frequency compatible with the reclosing		P

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Clause	Requirement + Test	Result - Remark	Verdict
	time and with the reset time to avoid the blocked condition.		
9.1 3.2	**Test procedure**		P
	The ARD is subjected to 500 operating cycles, each operation cycle consisting of a tripping operation of the MPD followed by a closing operation		P
9.1 3.3	**Condition of the ARD after the test**		P
	After the tests, the ARD shall not show any damage, which could impair further use.		P
	After the test, compliance with 9.5.4 is checked.		P
9.1 4	**Short-circuit test**		P
9.1 4.1	**General conditions for short-circuit test**		P
	The ARD and MPD shall be in a new and clean condition.		P
9.1 4.2	**Test circuit and test quantities**		P
	For the ARD and MPD, the relevant subclause of the MPD standard applies: a) IEC 60898-1 :201 5, 9.1 2.2 and 9.1 2.4 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 9.1 1 .2.1 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0 and IEC 61 009-1 :201 0/AMD1 :201 2, 9.1 2.2 and 9.1 2.3 for ARD classified according to 4.2.3 (RCBOs).		P
9.1 4.3	**Test procedure**		P
	For the ARD and MPD, the relevant subclause(s) of the MPD standard(s) applies: a) IEC 60898-1 :201 5, 9.1 2.1 1 .4.2, or IEC 60898-2:201 6, 9.1 2.1 1 .4.2, as applicable, for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 9.1 1 .2.4 a) for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 9.1 1 .2.3 b) for ARD classified according to 4.2.2 (RCCBs); d) IEC 61 009-1 :201 0 and IEC 61 009-1 :201 0/AMD1 :201 2, 9.1 2.1 1 .4 b) for ARD classified according to 4.2.3 (RCBOs); e) IEC 61 009-1 :201 0 and IEC 61 009-1 :201 0/AMD1 :201 2, 9.1 2.1 3 for ARD classified according to 4.2.3 (RCBOs).		P
	In case of ARDs classified according to 4.3.1 and 4.6.2, the CO operation shall be performed for a number of times equal to the maximum number of reclosing operations, and the time interval between the consecutive CO operations shall be that stated by the manufacturer with the ARD operating as in normal use.		P
	In case of ARDs classified according to 4 . 3 . 2 , the ARD shall be disabled and the MPD shall be closed manually.		P
9.1 4.4	**Condition of the ARD after the test**		P
	After the test, the ARD and MPD shall perform the following test of the relevant subclause of the MPD standard under the test conditions of Clause 9: a) IEC 60898-1 :201 5, 9.1 2.1 2.1 for ARD classified according to 4.2.1 (circuit-breakers);		P

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Clause	Requirement + Test	Result - Remark	Verdict
	b) IEC 61 008-1 :201 0, 9.1 1 .2.1 i) for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0, 9.1 2.1 2.1 for ARD classified according to 4.2.3 (RCBOs).		
9.1 5	**Resistance to mechanical shock and impact**		P
	For the ARD and MPD, the following subclauses of the MPD standard apply: a) IEC 60898-1 :201 5, 9.1 3 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0, 9.1 2 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0, 9.1 3 for ARD classified according to 4.2.3 (RCBOs).		P
9.1 6	**Test of resistance to heat**		P
	For the ARD and MPD, the following subclauses of the MPD standard apply: a) IEC 60898-1 :201 5, 9.1 4 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0, 9.1 3 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0, 9.1 4 for ARD classified according to 4.2.3 (RCBOs).		P
	In case of ARD according to 4.1 .2, the test is carried out only on the ARD part.		N
9.1 7	**Resistance to abnormal heat and to fire**	See appended table: Resistance to heat and fire - Glow wire tests	P
	For the ARD and MPD, the following subclauses of the MPD standard apply: a) IEC 60898-1 :201 5, 9.1 5 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0 and IEC 61 008-1 :201 0/AMD1 :201 2, 9.1 4 for ARD classified according to 4.2.2 (RCCBs); c) IEC 61 009-1 :201 0 and IEC 61 009-1 :201 0/AMD1 :201 2, 9.1 5 for ARD classified according to 4.2.3 (RCBOs).		P
9.1 8	**Verification of the operating characteristics**		P
9.1 8.1	**General**		P
	This verification is not performed for the ARD according to 4.3.1 .		P
9.1 8.2	**Verification of the reclosing subordinated to the measurements of the resistance to earth**		P
	a) The test circuit shall correspond to Figure 3 or Figure 4 as applicable. The resistor R1 shall be adjusted at any convenient value which leads the ARD and MPD to trip. The resistor R2 shall be adjusted to the value equal to R d . The MPD is made to trip by closing the test switch S1 , and immediately after the tripping of the ARD, the switch S1 shall be opened.The ARD shall reclose.		P
	The test is repeated three times on a pole taken at random which		P

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Clause	Requirement + Test	Result - Remark	Verdict
	shall not be the switched neutral. Each test shall be separated from the previous reclosing by an interval of at least 30 s.		
	b) The test circuit shall correspond to Figure 3 or Figure 4 as applicable. The resistor R1 shall be adjusted at any convenient value which leads the ARD and MPD to trip. The resistor R2 shall be adjusted to the value equal to R d0 . The MPD is made to trip by closing the test switch S1 , and immediately after the tripping of the ARD and MPD, the switch S1 shall be opened. The ARD shall not reclose and ARD shall show the appropriate signal according to the manufacturer's instructions.		P
	After this test, the resistor R2 is removed and the ARD classified according to 4 . 3 . 2 . 1 a) shall not reclose; the ARD classified according to 4.3.2.1 b) shall reclose according to the manufacturer's instructions.		P
9.1 8.3	**Verification of the reclosing subordinated to the measurements of the resistance between live parts**		N
	a) The test circuit shall correspond to Figure 5. The resistor R1 shall be adjusted to the value equal to R cc . The MPD is caused to open automatically (e.g. by means of a tripping release), and immediately after the tripping of the ARD and MPD, the switch S1 shall be closed. The ARD shall reclose		N
	b) The test circuit shall correspond to Figure 5. The resistor R1 shall be adjusted to the value equal to R cc0 . The MPD is caused to open automatically (e.g. by means of a tripping release); immediately after the tripping of the ARD and MPD, the switch S1 shall be closed. The ARD shall not reclose and the ARD shall show the appropriate signal according to the manufacturer's instructions.		N
	After this test the resistor R2 is removed and the ARD classified according to 4 . 3 . 2 . 2 a) shall not reclose; the ARD classified according to 4.3.2.2 b) shall reclose according to the manufacturer's instructions.		N
	The test is repeated three times on one possible combination of live parts taken at random.		N
	Each test shall be separated from the previous reclosing by the reset of the ARD.		N
9.1 8.4.1	**Verification of the reclosing subordinated to the measurements of the** **resistance between live parts to earth**		P
	The test conditions specified in 9.1 8.2 a) and 9.1 8.2 b) apply by inserting a capacitor of 1 00 nF in parallel to the resistor R2		P
	The test shall be carried out at 0,85 and 1 ,1 times the rated voltage at the following temperatures: (−5 ± 2) °C, (20 ± 2) °C, (40 ± 2) °C after the steady state is reached.		P
9.1 8.4.2	**Verification of the reclosing subordinated to the measurements of the resistance between live parts**		N
	The test conditions specified in 9.1 8.3 a) and 9.1 8.3 b) apply by inserting a capacitor of 1 00 nF in parallel to the resistor R1 .		N
	The test shall be carried out at 0,85 and 1 ,1 times the rated voltage at the following temperatures: (−5 ± 2) °C, (20 ± 2) °C, (40 ± 2) °C after the steady state is reached.		N
9.1 8.5	**Verification of the maximum current in FE under normal**		N

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Clause	Requirement + Test	Result - Remark	Verdict
	condition		
	The ARD is installed as in normal use and supplied at a voltage 1 ,1 times its rated voltage.		N
	The test circuit shall be in accordance with Figure 6. The resistor R1 shall be adjusted at a value of 1 Ω. The test current in the resistor R1 is measured by the use of an appropriate mean (e.g. oscilloscope, ammeter).		N
9.1 9	**Verification of the safety during the assessment**		P
9.1 9.1	**Verification of the limitation of the voltage**		N
	The ARD and the MPD are installed as in normal use, supplied at 1 ,1 rated voltage and without any load.		N
	The MPD is made to trip and the voltage on the load terminals of the ARD and MPD is measured by an appropriate means (e.g. oscilloscope, voltmeter) before the ARD recloses.		N
	The voltage shall not exceed 24 V r.m.s.		N
	In case of an ARD provided with an FE, the following test shall be carried out.		N
9.1 9.2	**Verification of the limitation of the test current**		P
	The ARD is installed as in normal use and supplied at a voltage 1 ,1 times its rated voltage.		P
	The test circuit shall correspond to Figure 3 or Figure 4 as applicable. The resistor R1 shall be adjusted at any convenient value which leads the ARD to trip.		P
	The resistor R2 shall be replaced by a connection of negligible value.		P
	The test current in the resistor R2 is measured by the use of an appropriate means (e.g.oscilloscope, ammeter).		P
	The test current shall not exceed 1 ,0 mA r.m.s or 2,0 mA DC.		P
	In case of an ARD provided with an FE, the following test shall be carried out.		N
	The ARD and the MPD are installed as in normal use, supplied at 1 ,1 rated voltage and without any load		N
	The MPD is made to trip. The test current in the FE is measured by the use of an appropriate means (e.g. oscilloscope, ammeter).		N
9.1 9.3	**Verification of the safety in blocked condition**		P
	The ARD is installed as in normal use and supplied at a voltage 1 ,1 times its rated voltage.		P
	The MPD shall be made to trip for the maximum number of consecutive reclosing operations as declared by the manufacturer in order to get the ARD in blocked condition.		P
	For ARDs classified as 4.4.1 , the verification is made by repeating the test of 9.1 9.1 .		N
	For ARDs classified as 4.4.2, the verification is made by repeating the test of 9.1 9.2.		P
	For ARDs classified as 4.3.1 , the relevant subclause of the MPD standard applies, without the humidity treatment: a) IEC 60898-1 :201 5, 9.7.3 for ARD classified according to 4.2.1 (circuit-breakers); b) IEC 61 008-1 :201 0, 9.7.3 for ARD classified according to 4.2.2		N

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Clause	Requirement + Test	Result - Remark	Verdict
	(RCCBs); c) IEC 61 009-1 :201 0, 9.7.3 for ARD classified according to 4.2.3 (RCBOs)		
9.20	**Verification of the operation of the test device at the limits of rated voltage**		P
	For the ARD and MPD, the relevant subclause of the MPD standard applies: a) IEC 61 008-1 :201 0, 9.1 6 for ARD classified according to 4.2.2 (RCCBs); b) IEC 61 009-1 :201 0, 9.1 6 for ARD classified according to 4.2.3 (RCBOs)		P
9.21	**Verification of ageing**		P
	The ARD and MPD are placed for a period of 1 68 h in an ambient temperature of (40 ± 2) °C and loaded with the rated current. The voltage on the electronic parts shall be 1 ,1 times the rated voltage.		P
	After this test, the ARD and MPD in the cabinet are allowed to cool down to approximately room temperature without current passing. The electronic parts shall show no damage.		P
	After the test, compliance with 9.5.4 is checked.		P
	Compliance with 9.1 8.2 or 9.1 8.3 as applicable is also checked for devices classified according to 4.3.2.		P
9.22	**Electromagnetic compatibility**	See EMC report	P
9.22.1	**General**		P
	Standard ARD electromagnetic environmental conditions are those conditions which occur in installations connected to low voltage public networks or similar installations		P
	These tests are based on IEC 61 543 and carried out with the MPD in closed position and the ARD enabled.		P
9.22.2	**Low-frequency electromagnetic phenomena**		P
	The data for the low-frequency immunity to be applied are set out in Table 5.		P
9.22.3	**High-frequency immunity**		P
	The data for the high-frequency immunity to be applied are set out in Table 6.		P
9.22.4	**Electrostatic discharges**		P
	The data for the electrostatic discharge tests to be applied are set out in Table 7.		P
9.22.5	**Electromagnetic emission of ARDs**		P
	Emission tests are required only for ARDs containing a continuously operating oscillator.They shall be carried out according to CISPR 1 4-1 .		P
9.22.6	**Performance criteria**		P
	After the test, compliance with 9.5.4 is checked.		P
	Compliance with 9.1 8.2 and/or 9.1 8.3 as applicable is also checked for devices classified according to 4.3.2		P

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Clause	Requirement + Test	Result - Remark	Verdict

	TABLE: Heating test		P
	Test Voltage (V)..... :	400V	—
	Ambient(C).. :	24.3°C	—

Thermocouple locations:	Max. temperature rise measured, Δ T (K)	Max. temperature rise limit, Δ T (K)
Terminal	28.5	65
Enclosure	4.6	60
Switch	7.7	60
Supplementary information:		

	TABLE: Dielectric strength		P
Test voltage applied between:		Test potential applied (V)	Breakdown / flashover (Yes/No)
Between the phase and the path connected together		1600VAC	No
Supplementary information:			

	TABLE: Resistance to heat and fire - Glow wiretests							P
Object/ Part No./ Material	Manufacturer / trademark	Glow wire test (GWT); (°C)						Verdict
		550	650		750		850	
			te	ti	te	ti		
Enclosure	/	--	0	0	--	--	--	P

Object/ Part No./ Material	Manufacturer / trademark	Glow-wire flammability index (GWFI), °C				GW ignition temp. (GWIT), °C		Verdict
		550	650	750	850	675	775	
--	--	--	--	--	--	--	--	--

The test specimen passed the glow wire test (GWT) with no ignition [(te – ti) ≤ 2s] (Yes/No):	Yes
If no, then surrounding parts passed the needle-flame test of annex E (Yes/No) .....:	N/A
The test specimen passed the test by virtue of most of the flaming material being withdrawn with the glow-wire (Yes/No)? .....:	No
Ignition of the specified layer placed underneath the test specimen (Yes/No).....:	No
Supplementary information:	

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Clause	Requirement + Test	Result - Remark	Verdict

- 550 °C GWT not relevant (or applicable) to parts of material classified at least HB40 or if relevant HBF
- The GWIT pre-selection option , the 850 °C GW FI pre-selection option, and the 850 °C GWT are not relevant (or applicable) for attended appliances

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Clause	Requirement + Test	Result - Remark	Verdict

APPENDED TABLE

Critical components

Object / part no.	Manufacturer / trademark	Type / model	Technical data	Standard	Mark(s) of Conformity
Plastic material	Suzhou Banleantone International Logistics CO,.Ltd	PA66	PA66	IEC/EN60998-2-1,IEC/EN60998-1	CE
Terminal block material	Foshan Huaru Copper Industry Co., Ltd	COPPER	COPPER	IEC/EN60998-2-1,IEC/EN60998-1	CE

Product Photos

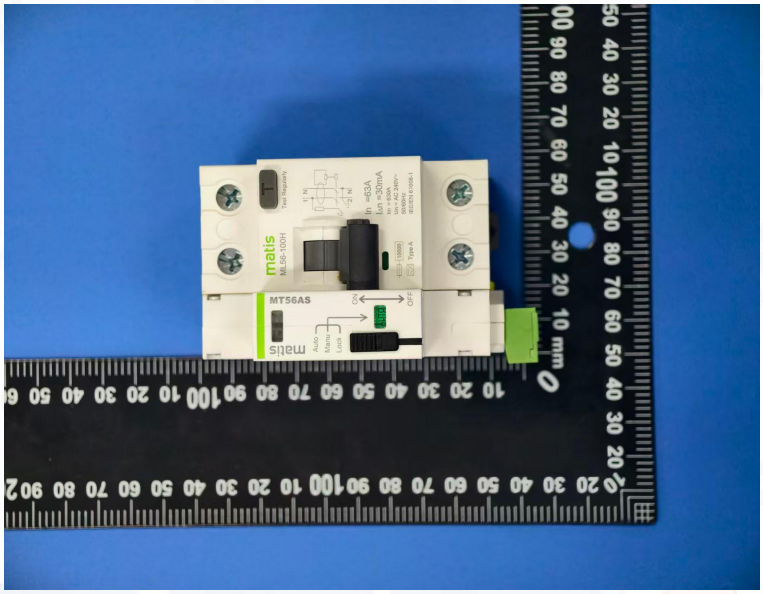


Fig. 1

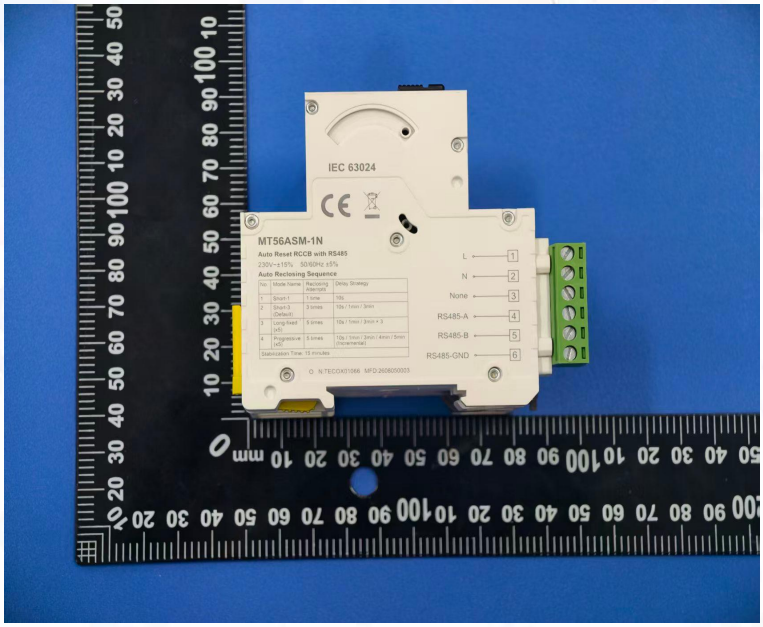


Fig. 2

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