TEST REPORT

EN 60529

Degrees of protection provided by enclosures (IP code)

Report Reference No.	B2006TR9126S09
Tested by (name + signature)	Sunny Lin Test Engineer
Compiled by (name + signature)	Seven Duan Technical Leader
Approved by (name + signature)	Usher Kuang Authorised Signatory
Date of issue	Jun. 30, 2020
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Testing Laboratory	Shenzhen Bory Technology Service Co., Ltd.
Address	501, Building 10, Xinlitang Building, Gangbei Industrial Park, Huangtian Community, Hangcheng Street, Baoan District, Shenzhen, Guangdong, China.
Testing location	As above
Applicant's name	
Address	
Test specification:	
Standard	EN 60529:1991+A2:2013
Test procedure	Type approved
Non-standard test method	N/A
Test item description	SINGLE DOOR WATERTIGHT ENCLOSURE
Trade Mark	N/A
Manufacturer	
Address	
Model/Type reference	See page 3

Possible test case verdicts:

– test case does not apply to the test object.....: N/A

– test object does meet the requirement.....: P (Pass)

– test object does not meet the requirement..... : F (Fail)

Testing:

Date of receipt of test item.....: Jun. 07, 2020

Date (s) of performance of tests..... : Jun. 07, 2020 – Jun. 30, 2020

General remarks:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.
"(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.
List of test equipment must be kept on file and available for review.

General product information:

Model list:

MB-1010D250	MB-1230D200	MB-2520D150	MB-4030D170
MB-1010D300	MB-1260D250	MB-2520D200	MB-4030D200
MB-1010D400	MB-1260D300	MB-2525D140	MB-4030D210
MB-1010D800	MB-1260D320	MB-2525D200	MB-4030D250
MB-1030D200	MB-1280D250	MB-2530D140	MB-4030D260
MB-1060D200	MB-1280D260	MB-2535D100	MB-4040D140
MB-1060D250	MB-1280D300	MB-3020D150	MB-4040D200
MB-1060D260	MB-1280D320	MB-3025D100	MB-4040D250
MB-1060D300	MB-1280D380	MB-3025D140	MB-4040D260
MB-1060D320	MB-1280D400	MB-3025D150	MB-4040D300
MB-1060D400	MB-1280D450	MB-3025D170	MB-4050D140
MB-1080D250	MB-1410D300	MB-3025D200	MB-4050D200
MB-1080D260	MB-1410D500	MB-3030D140	MB-4060D140
MB-1080D300	MB-1412D300	MB-3030D150	MB-4060D200
MB-1080D320	MB-1480D260	MB-3030D200	MB-4060D260
MB-1080D380	MB-1480D300	MB-3038D150	MB-4535D180
MB-1080D400	MB-1680D300	MB-3040D140	MB-4535D210
MB-1210D250	MB-1680D400	MB-3040D200	MB-4535D280
MB-1210D300	MB-2020D100	MB-3825D180	MB-4545D250
MB-1210D400	MB-2020D120	MB-3830D150	MB-5040D100
MB-1212D250	MB-2020D140	MB-4025D200	MB-5040D140

MB-1212D300	MB-2025D140	MB-4030D140	MB-5040D150
MB-1214D300	MB-2520D140	MB-4030D150	MB-5040D170
MB-5040D200	MB-6040D250	MB-7050D250	MB-8060D400
MB-5040D210	MB-6040D260	MB-7050D260	MB-8080D140
MB-5040D250	MB-6050D140	MB-7050D320	MB-8080D200
MB-5040D260	MB-6050D150	MB-7055D250	MB-8080D250
MB-5050D140	MB-6050D200	MB-7610D300	MB-8080D300
MB-5050D170	MB-6050D250	MB-8030D200	MB-8080D320
MB-5050D200	MB-6050D260	MB-8040D140	MB-8366D185
MB-5050D210	MB-6055D140	MB-8050D280	MB-8570D200
MB-5050D260	MB-6060D200	MB-8060D140	MB-8760D230
MB-5060D200	MB-6060D250	MB-8060D200	MB-8870D290
MB-5070D150	MB-6060D260	MB-8060D230	MB-9030D150
MB-6030D200	MB-6060D300	MB-8060D250	MB-9050D150
MB-6040D140	MB-6565D425	MB-8060D260	MB-9060D220
MB-6040D150	MB-7050D140	MB-8060D300	MB-9070D150
MB-6040D200	MB-7050D200	MB-8060D320	MB-9261D225
MB-6040D230	MB-7050D230	MB-8060D380	

All Model are ideational, expect model name and appearance color. All the test carried out MB-1010D300, and comply with the requirement.

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No.	Requirement	Test Result	Verdict
5	DEGREE OF PROTECTION AGAINST ACCESS TO HAZARDOUS PARTS AND AGAINST SOLID FOREIGN OBJECTS		P
	Test condition see Clause 12+13		P
6	DEGREE OF PROTECTION AGAINST INGRESS OF WATER		P
	Test condition see Clause 14		P
10	MARKING		P
	The requirements for marking shall be specified in the relevant product standard.		N/A
	Where appropriate, such a standard should also specify the method of marking which is to be used when:		N/A
	- one part of an enclosure has a different degree of protection to that of another part of the same enclosure;		N/A
	the mounting position has an influence on the degree of protection;		N/A
	- the maximum immersion depth and time are indicated.		N/A
12	TEST FOR PROTECTION AGAINST ACCESS TO HAZARDOUS PARTS INDICATED BY THE FIRST CHARACTERISTIC NUMERAL		P
12.1	Test condition:		P
12.2	IP 0X: non protection: no test request		N/A
12.3	Acceptance conditions for first characteristic numerals		P
	Sample no.	1	P
	IP 1X: Against solid foreign objects of 50mm diameter and greater. The sphere of 50mm diameter shall not fully penetrate and adequate clearance shall be kept. Force 50N	not checked	N/A
	IP 2X: The jointed test finger of 12mm diameter, 80mm length,shallhaadequate clearance from hazardous parts. Force 10N	not checked	N/A
	IP 3X: Against solid foreign objects of 2.5mm diameter and greater. The test rode of 2.5mm diameter shall not penetrate. Force 3N	not checked	N/A
	IP 4X: Against solid foreign objects of 1mm diameter and greater. The object probe of 1.0mm diameter shall not penetrate. Force 1N	not checked	N/A
	IP 5X: Against solid foreign objects of 1mm diameter and greater. The object probe of 1.0mm diameter shall not penetrate. Force 1N	not checked	N/A
	IP 6X: Against solid foreign objects of 1mm diameter and greater.	IP 6X	P

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No.	Requirement	Test Result	Verdict
	The object probe of 1.0mm diameter shall not penetrate. Force 1N		
13	TEST FOR PROTECTION AGAINST SOLID FOREIGN OBJECTS INDICATED BY THE FIRST CHARACTERISTIC NUMERAL		P
13.1	Test condition:		P
13.2	IP 0X: non protection: no test request		N/A
13.3	Acceptance conditions for first characteristic numerals		P
	IP 1X: Against solid foreign objects of 50mm diameter and greater. The sphere of 50mm diameter shall not fully penetrate. Force 50N	not checked	N/A
	IP2X: Against solid foreign objects of 12.5mm diameter The sphere of 12.5mm diameter shall not fully penetrate. Force 30N	not checked	N/A
	IP 3X: Against solid foreign objects of 2.5mm diameter and greater. The test rode of 2.5mm diameter shall not penetrate at all. Force 3N	not checked	N/A
	IP 4X: Against solid foreign objects of 1mm diameter and greater. The object probe of 1.0mm diameter shall not penetrate at all. Force 1N		P
13.5.2	IP 5X: Dust protected. Ingress of dust is not totally prevented, but dust shall not penetrate in a quantity to interfere with satisfactory operation of the apparatus or to impair safety.	not checked	N/A
	- with or without depression.	not checked	N/A
	- depression max.: (max. 20mbar)	not checked	N/A
	- test time : (time: <8h, when 80x volume)	not checked	N/A
13.6	**Special conditions for first characteristic numeral 6**	IP6X	P
13.6.1	The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.		N/A
	Category 1 enclosures:		N/A
	The volume of the enclosure		N/A
	- If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2 hour		N/A
	- If, with a maximum depression of 2 kPa (20mbar), the extraction rate is less than 40 volumes per hour, the test is continued until 80 volumes have been drawn through, or a period of 8h has elapsed		N/A
13.6.2	IP 6X: Against ingress of solid foreign object: dust-tight		P

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No.	Requirement	Test Result	Verdict
	- depression max.: (max. 20mbar)		P
	- test time : (time: <8h, when 80x volume)		P
14	TEST FOR PROTECTION AGAINST WATER INDICATED BY THE SECOND CHARACTERISTIC NUMERAL		P
14.1	IP 0X: non protection: no test request		
14.2	Test condition:		P
	Ambient temperature	20.5°C	P
	Water temperature:	21.2°C	P
14.2.1	IP X1: Vertically falling drops shall have no harmful effects.	not checked	N/A
14.2.2	IP X2: Vertically falling drops shall have no harmful effects. Enclosure ist tested of four fixed positions of tilt. These positions are 15° on either side of the vertical in two mutually perpendicular planes.	not checked	N/A
14.2.3	IP X3: Water sprayed at an angle of 60° on either side of the vertical shall have no harmful effect.	not checked	N/A
14.2.4	IP X4: Water splashed against the enclosure from any direction shall have no harmful effect.	not checked	P
14.2.5	IP X5: Water projected in jets against the enclosure from any direction shall have no harmful effect.	IP X5	P
14.2.6	IP X6: Water projected in powerful jets against the enclosure from any direction shall have no harmful effect.	not checked	N/A
14.2.7	IP X7: Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time:	not checked	N/A
14.2.8	IP X8: Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under conditions of which shall be agreed between manufacturer and user but which are more severe than for numeral 7	not checked	N/A
14.2.9	IP X9: Water of 80 °C ± 5 °C projected in high pressure jets against the enclosure shall have no harmful effect.	not checked	N/A
14.3	Acceptance conditions:		P
	dielectric strength test		N/A
	In general, if any water has entered, it shall not:		P
	- be sufficient to interfere with correct operation of the equipment or impair safety	No water inside the housing	P
	- deposit on insulation parts where it could lead to tracking along the creepage distances		P
	- reach live parts or windings not designed to operate when wet		P

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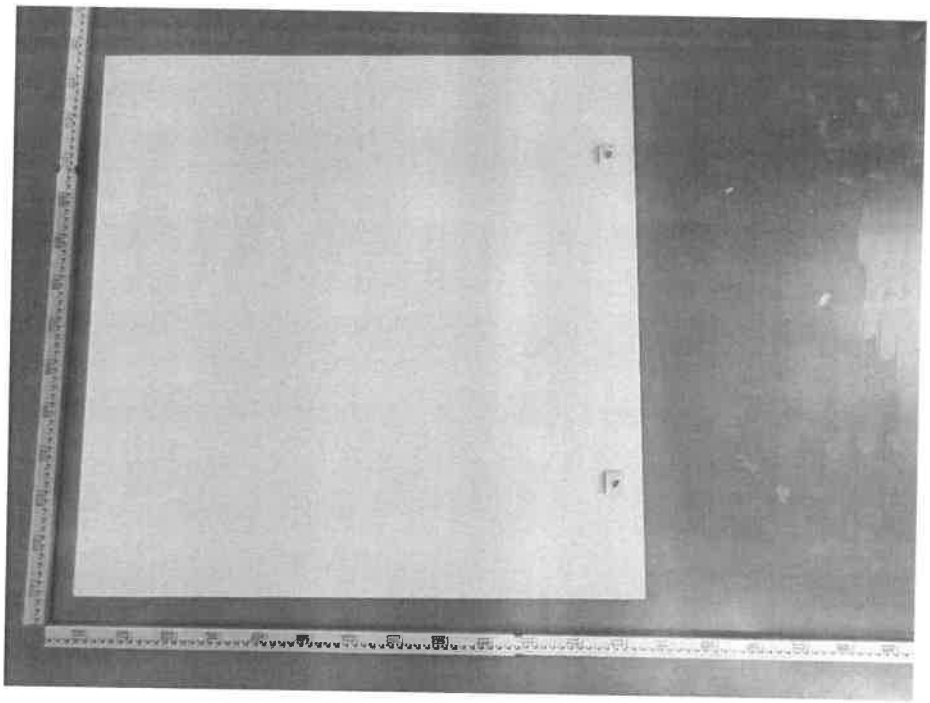
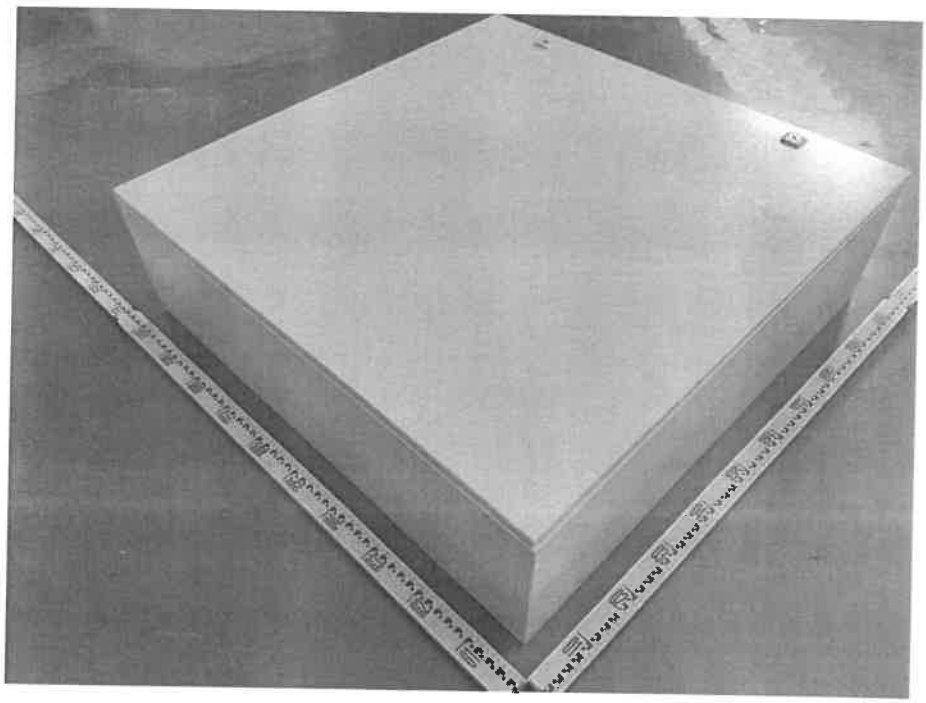
No.	Requirement	Test Result	Verdict
	- accumulate near the cable end or enter the cable if any		P
15	TEST FOR PROTECTION AGAINST ACCESS TO HAZARDOUS PARTS INDICATED BY THE OPTIONAL LETTERS (acc. to clauses 7,8)		N/A
15.3	IP XXA: Against access to hazardous parts with: the back of the hand		N/A
	IP XXB: Against access to hazardous parts with: a finger		N/A
	IP XXC: Against access to hazardous parts with:a tool		N/A
	IP XXXH: Supplementary information specific to: High-voltage apparatus		N/A
	IP XXXM: Supplementary information specific to: Motion during water test		N/A
	IP XXXS: Supplementary information specific to: Stationary during water test		N/A
	IP XXXW: Supplementary information specific to: Weather conditions		N/A

Photo document of product

Model: MB-1010D300





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