

Prüfbericht-Nr.: Test Report No.:	27134408 001	Auftrags-Nr.: Order No.:	C-2016-0991	Seite 1 von 16 Page 1 of 16
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	15.12.2016	
Auftraggeber: Client:	MUTLUSAN Plastik Elektrik San. ve Tic. A.Ş.			
Prüfgegenstand: Test item:	Electrical Installation Boxes			
Bezeichnung / Typ-Nr.: Identification / Type No.:	See page 5			
Auftrags-Inhalt: Order content:	Test report			
Prüfgrundlage: Test specification:	IEC 60529-1:2001-02			
Wareneingangsdatum: Date of receipt:	16.12.2016			
Prüfmuster-Nr.: Test sample No.:	N/A			
Prüfzeitraum: Testing period:	16.12.2016 – 23.12.2016			
Ort der Prüfung: Place of testing:	See page 2			
Prüflaboratorium: Testing laboratory:	See page 2			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
23.12.2016	Ercan KIZILAY/PE		23.12.2016	Berk GÜNEY/PM
Datum Date	Name / Stellung Name / Position	Unterschrift Signature	Datum Date	Name / Stellung Name / Position
				
Sonstiges / Other:	Test reports without signature & seal are not valid.			
	The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.			
	The results given in this report belong to the received sample by vendor.			
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:	Prüfmuster vollständig und unbeschädigt Test item complete and undamaged			
* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend
	P(ass) = entspricht o.g. Prüfgrundlage(n)	F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	5 = mangelhaft
	N/T = nicht getestet			
Legend:	1 = very good	2 = good	3 = satisfactory	4 = sufficient
	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	5 = poor
				N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.				
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

TEST REPORT IEC 60529 Degrees of protection provided by enclosures (Ip code)	
Report Reference No	27134408 001
Tested by (name + signature)	Ercan KIZILAY (see cover page)
Witnessed by (name + signature)
Supervised by (name + signature).....
Approved by (name + signature)	Berk GÜNEY (see cover page)
Date of issue.....	23.12.2016
Testing Laboratory	TÜV Rheinland Uluslararası Standartlar Sertifikasyon ve Denetim A.Ş.
Address	Kozyatağı Mah. Saniye Ermutlu Sok. Çolakoğlu Plaza No:12 B Blok 34742 Kadıköy - İstanbul
Applicant's name	MUTLUSAN Plastik Elektrik San. ve Tic. A.Ş.
Address	İkitelli Organize Sanayi Bölgesi Mah.,Enkoop Cad. No:7, 34230 İstanbul
Test specification:	
Standard	IEC 60529-1:2001-02
Test procedure	Test Report
Non-standard test method.....	N/A
Test Report Form No	IEC60529A
TRF Originator.....	IMQ
Master TRF.....	Dated 2006-06
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IEC 60529			
Clause	Requirement – Test	Result	Verdict

<p>Test item description: Electrical installation boxes</p> <p>Trade Mark: MUTLUSAN</p> <p>Manufacturer: MUTLUSAN Plastik Elektrik San. ve Tic. A.Ş.</p> <p>Model and/or Type reference: See page 5</p>
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Summary of testing:

Within this test report surface mounted electrical installation boxes was tested according to:

IEC 60529-1:2001-02

Electrical installation boxes mentioned with ratings in page 4 fulfils the requirements IP X5 and IP 6X according to above mentioned standard.

IEC 60529			
Clause	Requirement – Test	Result	Verdict

Test specifications:
Test 1 IP6X:

Degrees of protection against solid foreign objects indicated by the first characteristic numeral (Dust Protected).

The test is made using a dust chamber incorporating the basic principles whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber.

The talcum powder used is able to pass through a square-meshed sieve the nominal wire diameter of which is 50µm and the nominal width of a gap between wires 75µm. The amount of talcum powder to be used is 2kg per cubic meter of the test chamber volume.

The enclosure under test is supported in its normal operating position inside the test chamber, but it is not connected to a vacuum pump. Any drain-hole normally open is left open for the duration of the test. The test is continued for a period of 8h.

If it is impracticable to test the complete enclosure in test chamber, one of the following procedures shall be applied.

TEST2 IPX5:

Degrees of protection against water indicated by the second characteristic numeral (Protected against water jets).

The samples are mounted as in normal use in the center of a wooden board having dimensions which are 17 cm in excess of those of the orthogonal projection of the appliance on the board.

Water projected in jets against the enclosure from any direction has no harmful effects.

The test is made by spraying the enclosure from all practicable directions with a stream of water from a standard test nozzle.

The conditions to be observed are as follows

- Internal diameter of the nozzle is 6,3mm
- Delivery rate. 12,5l/min+-5 %
- Water pressure is adjusted to achieve the specified delivery rate
- Core of the substantial stream: circle of approximately 40mm diameter at 2,5m distance from nozzle.
- The enclosure is tested for 1 min in each of four fixed positions of tilt. The total duration of the test is 4 min.
- Distance from nozzle to enclosure surface: between 2,5m and 3 m.

IEC 60529			
Clause	Requirement – Test	Result	Verdict

Test item particulars	: Electrical Installation Boxes
- Classification of installation and use	: Surface mounted, IP 65
- Supply Connection	: N/A
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	: 16.12.2016
Test item receipt number	:
Test item serial number.....	: N/A (engineering sample)
Date(s) of performance of tests	: 16.12.2016 – 23.12.2016
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 is used as the decimal separator.	

General product information	
The products tested are electrical installation boxes used in IP 65 conditions. In order to test all product, since the boxes have identical designs, 001 046 091119 00 17 has been tested for IP 6X and 001 046 095311 00 17 has been tested for IP X5. Only difference between these boxes are shape of covers that is not critical for safety. Boxes' type codes and ratings mentioned below.	
Type Code	Rating
001 046 091199 00 17	IP 65
001 046 071199 00 17	IP 65
001 046 095311 00 17	IP 65
001 046 075311 00 17	IP 65

IEC 60529			
Clause	Requirement – Test	Result	Verdict

Photos:

Front view (001 046 091199 00 17) :



Front view (001 046 095311 00 17) :



IEC 60529			
Clause	Requirement – Test	Result	Verdict

After IP X5 test applied front view (001 046 095311 00 17) :

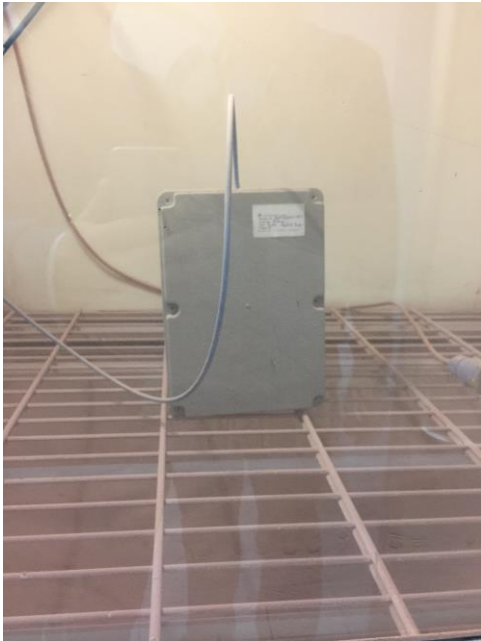


After IP X5 test applied inside view (001 046 095311 00 17) :

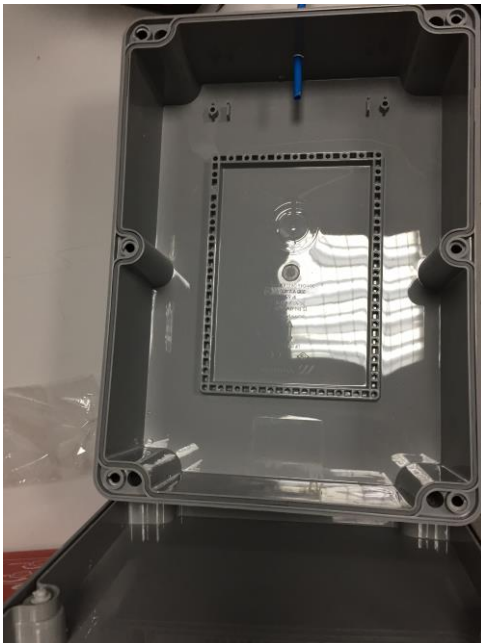


IEC 60529			
Clause	Requirement – Test	Result	Verdict

After IP 6X applied front view (001 046 091199 00 17) :



After IP 6X applied inside view (001 046 091119 00 17) :



IEC 60529			
Clause	Requirement – Test	Result	Verdict

Back view:



Top view:



IEC 60529			
Clause	Requirement – Test	Result	Verdict
5	DEGREES OF PROTECTION AGAINST ACCESS TO HAZARDOUS PARTS AND AGAINST SOLID FOREIGN OBJECTS INDICATED BY THE FIRST CHARACTERISTIC NUMERAL		—
5	The designation with a first characteristic numeral implies that conditions stated in both 5.1 and 5.2 are met.		P
	The first characteristic numeral indicates that:		—
	the enclosure provides protection of persons against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person;		P
	and simultaneously the enclosure provides protection of equipment against the ingress of solid foreign objects.		P
	An enclosure shall only be designated with a stated degree of protection indicated by the first characteristic numeral if it also complies with all lower degrees of protection.		P
	However, the tests establishing compliance with any one of the lower degrees of protection need not necessarily be carried out provided that these tests would obviously be met if applied		P
5.1	Protection against access to hazardous parts		—
	Tab. I gives brief descriptions and definitions for the degrees of protection against access to hazardous parts.		P
	Degrees of protection listed in table I shall be specified only by the first characteristic numeral and not by reference to the brief description or definition.		P
	To comply with the conditions of the first characteristic numeral, adequate clearance shall be kept between the access probe and hazardous parts		P
	The tests are specified in Clause 12.		P
	Tab. I-1 Degrees of protection against access to hazardous parts indicated by the first characteristic numeral		—
	<i>First characteristic numeral</i>	<i>Test conditions (Clause)</i>	—
	0	--	N/A
	1	12.2	N/A
	2	12.2	N/A

IEC 60529				
Clause	Requirement – Test		Result	Verdict
	3	12.2		N/A
	4	12.2		N/A
	5	12.2		N/A
	6	12.2	No access to hazardous parts by access probes	P
	<i>In the case of the first characteristic numerals 3, 4, 5 and 6, protection against access to hazardous parts is satisfied if adequate clearance is kept. The adequate clearance should be specified by the relevant product committee in accordance with 12.3.</i>		(EN 60529/A1)	P
	<i>Due to the simultaneous requirement specified in Table II, the definition "shall not penetrate" is given in Table I.</i>		(EN 60529/A1)	P
5.2	Protection against solid foreign objects			—
	Tab. II gives brief descriptions and the definitions for the degrees of protection against the penetration of solid foreign objects including dust.			P
	Degrees of protection listed in Tab II shall only be specified by the first characteristic numeral and not by reference to the brief description or definition.			P
	The protection against the ingress of solid foreign objects implies that the object probes up to numeral 2 in Tab. II shall not fully penetrate the enclosure. This means that the full diameter of the sphere shall not pass through an opening in the enclosure.			P
	Object probes for numerals 3 and 4 shall not penetrate the enclosure at all.			N/A
	Dust-protected enclosures to numeral 5 allow a limited quantity of dust to penetrate under certain conditions.			N/A
	Dust-tight enclosures to numeral 6 do not allow any dust to penetrate.			P
	<i>Note Enclosures assigned a first characteristic numeral of 1 to 4 generally exclude both regularly and irregularly shaped solid foreign objects provided that three mutually perpendicular dimensions of the object exceed the appropriate figure in column 3 of Tab. II.</i>			N/A
	The tests are specified in Clause 13.			P
	Tab. II-2 Degrees of protection against solid foreign objects indicated by the first characteristic numeral			—

IEC 60529			
Clause	Requirement – Test	Result	Verdict

	<i>First characteristic numeral</i>	<i>Test conditions (Clause)</i>		—
	0	--		N/A
	1	13.2		N/A
	2	13.2		N/A
	3	13.2		N/A
	4	13.2		N/A
	5	13.4 13.5		N/A
	6	13.4 13.6	(EN 60529/A1)	P

6	DEGREES OF PROTECTION AGAINST INGRESS OF WATER INDICATED BY THE SECOND CHARACTERISTIC NUMERAL		—
	The second characteristic numeral indicates the degree of protection provided by enclosures with respect to harmful effects on the equipment due to the ingress of water.		P
	The tests for the second characteristic numeral are carried out with fresh water. The actual protection may not be satisfactory if cleaning operations with high pressure and/or solvents are used.		P
	Tab. III gives brief descriptions and definitions of the protection for the degrees represented by the second characteristic numeral.		P
	Degrees of protection listed in Tab. III shall be specified only by the second characteristic numeral and not by reference to the brief description or definition.		P
	The tests are specified in Clause 14.		P
	Up to and including second characteristic numeral 6, the designation implies compliance also with the requirements for all lower characteristic numerals.		P
	However, the tests establishing compliance with any one of the lower degrees of protection need not necessarily be carried out provided that these tests obviously would be met if applied.		P
	An enclosure designated with second characteristic numeral 7 or 8 only is considered unsuitable for exposure to water jets (designated by second characteristic numeral 5 or 6) and need not comply with requirements for numeral 5 or 6 unless it is dual coded .		N/A

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Clause	Requirement – Test	Result	Verdict
	Enclosures for “versatile” application shall meet requirements for exposure to both water jets and temporary or continuous immersion.		N/A
	Enclosures for “restricted” application are considered suitable only for temporary or continuous immersion and unsuitable for exposure to water jets		N/A
	Tab. III-3 Degrees of protection against water indicated by the second characteristic numeral		—
	Second characteristic numeral	Test conditions (Clause)	—
	0	--	N/A
	1	14.2.1	N/A
	2	14.2.2	N/A
	3	14.2.3	N/A
	4	14.2.4	N/A
	5	14.2.5	P
	6	14.2.6	N/A
	7	14.2.7	N/A
	8	14.2.8	N/A

7	DEGREES OF PROTECTION AGAINST ACCESS TO HAZARDOUS PARTS INDICATED BY THE ADDITIONAL LETTER		—
	The additional letter indicates the degree of protection of persons against access to hazardous parts.	No additional letter	N/A
	Additional letters are only used:		—
	if the actual protection against access to hazardous parts is higher than that indicated by the first characteristic numeral;		N/A
	or if only the protection against access to hazardous parts is indicated, the first characteristic numeral being then replaced by an X		N/A
	For example, such higher protection may be provided by barriers, suitable shape of openings or distances inside the enclosure.		N/A

IEC 60529				
Clause	Requirement – Test		Result	Verdict
	Tab. IV gives access probes considered by convention as representative of parts of the human body or objects held by a person and the definitions for the degrees of protection against access to hazardous parts, indicated by additional letters.			N/A
	An enclosure shall only be designated with a stated degree of protection indicated by the additional letter if the enclosure also complies with all lower degrees of protection.			N/A
	However, the tests establishing compliance with any one of the lower degrees of protection need not necessarily be carried out provided that these tests obviously would be met if applied.			N/A
	The tests are specified in Clause 15.			N/A
	See Annex A for examples of the IP Coding.			N/A
	Tab. IV-4 Degrees of protection against access to hazardous parts indicated by the additional letter			—
	Additional letter	Test conditions (Clause)		—
	A	15.2		N/A
	B	15.2		N/A
	C	15.2		N/A
	D	15.2		N/A
8	SUPPLEMENTARY LETTERS			—
	In the relevant product standard, supplementary information may be indicated by a supplementary letter following the second characteristic numeral or the additional letter.		No supplementary letter	N/A
	Such exceptional cases shall conform with the requirements of this basic safety standard and the product standard shall state clearly the additional procedure to be carried out during tests for such a classification.			N/A
	The letters listed below have already been designated and have the significance as stated:			N/A
	Letter	Significance		—
	H	High-voltage apparatus		N/A

IEC 60529			
Clause	Requirement – Test		Verdict
	M	<i>Tested for harmful effects due to the ingress of water when the movable parts of the equipment (e.g. the rotor of a rotating machine) are in motion</i>	N/A
	S	<i>Tested for harmful effects due to the ingress of water when the movable parts of the equipment (e.g. the rotor of a rotating machine) are stationary</i>	N/A
	W	<i>Suitable for use under specified weather conditions and provided with additional protective features or processes</i>	N/A
	Other letters may be used in product standards		N/A
	The absence of the letters S and M implies that the degree of protection does not depend on whether parts of the equipment are in motion or not.		N/A
	This may necessitate tests being done under both conditions.		N/A
	However, the test establishing compliance with one of these conditions is generally sufficient, provided that the test in the other condition obviously would be met if applied		N/A
9	EXAMPLES OF DESIGNATIONS WITH THE IP CODE		—
10	MARKING		—
	The requirements for marking shall be specified in the relevant product standard.		P
	Where appropriate, such a standard should also specify the method of marking which is to be used when:	Not required	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
ZA	ANNEX ZA (NORMATIVE) Other International Publications quoted in this standard with the references of the relevant European Publications		—
	When the International Publication as been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.	(EN 60529)	P

IEC 60529			
Clause	Requirement – Test	Result	Verdict

Tables of test results:
Test1: IP6X

First characteristic numeral	Information	Result
6	Dust-protected.	Pass (No dust contamination inside the box)

Test2: IPX5

Second characteristic numeral	Information	Result
5	Protected against water jets.	Pass (No water contamination inside the box)