

TEST REPORT

Test report no.: 1-4799_22-01-04

Testing laboratory

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Applicant

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Manufacturer

TELEDYNE FLIR
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Test Standard/s

IEC 60529	Degrees of protection provided by enclosures (IP Code) / in parts

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	**IR camera**
Model name:	**FLIR G1010**
S/N serial number:	See 7 Sample Identification
Number of tested samples:	2 / See 7 Sample Identification
Additional Information:	-

Test item

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

cn=Marc Cartarius, o=CTC advanced GmbH, ou=CTR-190829, email=marc.cartarius@ctcadvanced.com, c=DE
2023.05.02 11:05:41 +02'00'

Marc Cartarius
Lab Manager
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Test performed:

DN: cn=Jan Eric Ackermann, o=CTC advanced GmbH, ou=AKM-130422, email=jan.ackermann@ctcadvanced.com, c=DE
Datum: 2023.05.02 11:04:56 +02'00'

Jan Ackermann
Testing Manager
Environmental & Battery

1 Table of Contents

2 General Information

2.1 Notes and Disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CTC advanced GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.
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Throughout this report a point is used as the decimal separator.

2.2 Application Details

Date of receipt of order:	2022-09-16
Date of receipt of test item:	2023-04-25
Start of test:	2023-04-25
End of test:	2023-04-26

3 Test Standard/s

Test standard	Date	Test standard description
IEC 60529	2013-08	Degrees of protection provided by enclosures (IP Code) / in parts

4 Decision Rule and Declaration of Conformity

Statements of conformity in test reports are generally presented in the following form:

- PASS[*1]: The test item does meet the defined requirements
- FAIL: The test item does not meet the defined requirements
- INCONCLUSIVE: The test result cannot be clearly determined
- NOT APPLICABLE (N/A): Test is not applicable due to certain properties of the test object
- NOT TESTED (N/T): test case was not carried out

If the test case is declared as INCONCLUSIVE, N/A or N/T, the statement must be justified.
The decision whether PASS / FAIL has to be based on detailed results (if available) of calibrated measurements.
The measurement uncertainty is taken into account in accordance to ILAC-G8: 09/2019.

[*1] The verdict status of environmental simulation tests often depends on special functionality tests of the EUT/DUT (e.g. acc. customer specification). If CTC advanced GmbH is not able to perform these tests, the customers can perform the functionality tests on their own.
When the customer confirms a passed functionality test, the verdict status PASS is then assigned with the addition „PASS – functionality test(s) performed by customer“.

5 Test Environment

Temperature:	20°C ± 5°C unless otherwise specified
Relative humidity content:	in range of 35-75% r.H.
Barometric pressure:	in range of 86kPa to 106kPa

6 Test laboratories sub-contracted

None

7 Sample Identification

The devices under test were provided by the customer and were not subject to selection by the laboratory.

DUT	SN	Subjected test case
DUT01	90600069	IP5X
DUT02	90600070	IPX4

7.1 Purpose of the Test

Qualification/development tests according to the standard/s given in chapter 3.

8 Summary of Measurement Result

☒	**No deviations from the technical specifications were ascertained**
☐	There were deviations to the technical specifications ascertained

All testing services marked with * in this document are subject to the certificate annex D-PL-12076-01-01 of the listed scope of accreditation.

A summary of the results is shown in the following table.

Cl.: procedure severity	Requirement - Test Description	Verdict:	For details refer to:
IEC 60529 Edition 2.1: Degrees of protection provided by enclosures (IP Code) / in parts			
5X	Protected against access to hazardous parts with a wire / Dust-protected	**PASS**	**Chapter 9**
X4	Protected against splashing water	**PASS**	

Selected: Indicates whether a test case has been selected for execution according to the test procedure

✓ Test selected according to the requirements

✘ Test not selected according to the requirements

9 IEC 60529: Degrees of protection provided by enclosures (IP Code)

Tests performed according IEC 60529 (2013-08): Degrees of protection provided by enclosures (IP Code)

Functional tests successfully performed before and after IP tests.

9.1 First characteristic numeral IEC 60529

Degrees of protection against
- access to hazardous parts indicated by the first characteristic numeral according to clause 12 and
- solid foreign objects indicated by the first characteristic numeral according to clause 13

Designation with a first characteristic numeral implies that all test conditions are met for this numeral.

Table 1: Degrees of protection against access to hazardous parts indicated by the fist characteristical numeral

First characteristic Numeral / Additional letter	Degree of protection		
	Brief description:	Requirements:	Result:
0	Non-protected	-	-
1/A	Protected against access to hazardous parts with the back of a hand	The access probe, sphere of 50 mm ∅ shall have adequate clearance from hazardous parts	Test has not been performed
2/B	Protected against access to hazardous parts with a finger	The jointed test finger of 12 mm ∅, 80 mm length, shall have adequate clearance from hazardous parts	Test has not been performed
3/C	Protected against to access hazardous parts with a tool	The access probe of 2.5 mm ∅ shall not penetrate	Test has not been performed
4/D	Protected against to access hazardous parts with a wire	The access probe of 1.0 mm ∅ shall not penetrate	Test has not been performed
5/D	Protected against access to hazardous parts with a wire	The access probe of 1.0 mm ∅ shall not penetrate	The object probe does not penetrate
6/D	Protected against access to hazardous parts with a wire	The access probe of 1.0 mm ∅ shall not penetrate	Test has not been performed

Table 2: Degrees of protection against solid foreign objects indicated by the first characteristical numeral

First characteristic Numeral	Degree of protection		
	Brief description:	Requirements:	Result:
0	Non-protected	-	-
1	Protected against solid foreign objects of 50 mm ∅ and greater	The object probe, sphere of 50 mm ∅ shall not fully penetrate	Test has not been performed
2	Protected against solid foreign objects of 12.5 mm ∅ and greater	The object probe, sphere of 12.5 mm ∅ shall not fully penetrate	Test has not been performed
3	Protected against solid foreign objects of 2.5 mm ∅ and greater	The object probe, sphere of 2.5 mm ∅ shall not penetrate at all	Test has not been performed
4	Protected against solid foreign objects of 1.0 mm ∅ and greater	The object probe, sphere of 1.0 mm ∅ shall not penetrate at all	Test has not been performed
5	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	No visual ingress of dust detected
6	Dust-tight	No ingress of dust	Test has not been performed

9.2 Second characteristic numeral IEC 60529

Degrees of protection against ingress of water indicated by the second characteristic numeral according to clause 14

Table 3: Degrees of protection against water indicated by the second characteristical numeral

Second characteristic numeral	Degree of protection		
	Brief description:	Requirements:	Result:
0	Non-protected	-	-
1	Protected against vertically falling water drops	Vertically falling drops shall have no harmful effects	Test has not been performed
2	Protected against vertically falling water drops when enclosure tilted up to 15°	Vertically falling drops shall have no harmful effects when the enclosure is titled at any angle up to 15“ on either side of the vertical	Test has not been performed
3	Protected against spraying water	Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects	Test has not been performed
4	Protected against splashing water	Water splashed against the enclosure from any direction shall have no harmful effects	No visual ingress of water detected
5	Protected against water jets	Water projected in jets against the enclosure from any direction shall have no harmful effects	Test has not been performed
6	Protected against powerful water jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects	Test has not been performed
7	Protected against the effects of temporary immersion in water	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	Test has not been performed
8	Protected against the effects of continuous immersion in water	Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be agreed between manufacturer and user but which are more severe than for numeral 7	Test has not been performed

10 Test Equipment and Ancillaries used for Tests

To simplify the identification of the test equipment and/or ancillaries which were used, the reporting of the relevant test cases only refer to the test item number as specified in the table below.

No.	Equipment	INV. No CTC advanced	Last Calibration	Next Calibration
1	Volumetric Flowrate Meter	300005159	20.09.2022	30.09.2023
2	Test pin Ø 1.0mm	400001343	10.11.2022	09.11.2023
3	Dust Chamber small	300005014	-/-	-/-
4	Hand-held spray device	300006297	21.03.2023	31.03.2024
5	Water pump	300004832	-/-	-/-
6	Flowmeter Dust Chamber small	300005014	24.01.2023	31.01.2024
7	Stopclock	400001520	-/-	-/-

11 Observations

No other observations exceeding those reported with the single test cases have been made.