

Test Report

No: U151092E1

Designation of equipment under test: Thermostatic radiator valves iTRV

Test Laboratory

for

**"Safety of Electrical Equipment and
Industrial Low-Voltage Devices
as well as Environmental Tests"**

accredited by

DAkKS Deutsche Akkreditierungsstelle GmbH

in compliance with DIN EN ISO/IEC 17025

under

Reg. No. D-PL-17186-01-03

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The test results indicated in this report refer exclusively to the equipment under test specified below. It is not permitted to transfer the results to other systems or configurations.

Testing body: PHOENIX TESTLAB GmbH
Königswinkel 10

D-32825 Blomberg

Applicant: Micropelt GmbH
Emmy-Noether-Str. 2

D-79110 Freiburg

Order number: 15-111092

Type of test: Degrees of protection provided by enclosure

Test base: EN 60529:1991 + A1:2000 + A2:2013

Equipment under test: Thermostatic radiator valves iTRV

Manufacturer: Micropelt GmbH
Emmy-Noether-Str. 2
D-79110 Freiburg

Date equipment was received: 23 February 2015

Customer represented during the test by the following person(s): ---

Place of testing: PHOENIX TESTLAB GmbH, Blomberg

Date of testing: 25 February 2015

Test result: Test requirements and conditions are present in the following chapters.

The test requirements are **confirmed** by the EUT.

Blomberg, 26 March 2015



Testengineer: Andreas Rubart



Authorized reviewer: Matthias Zelt

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1 Test specifications and test conditions

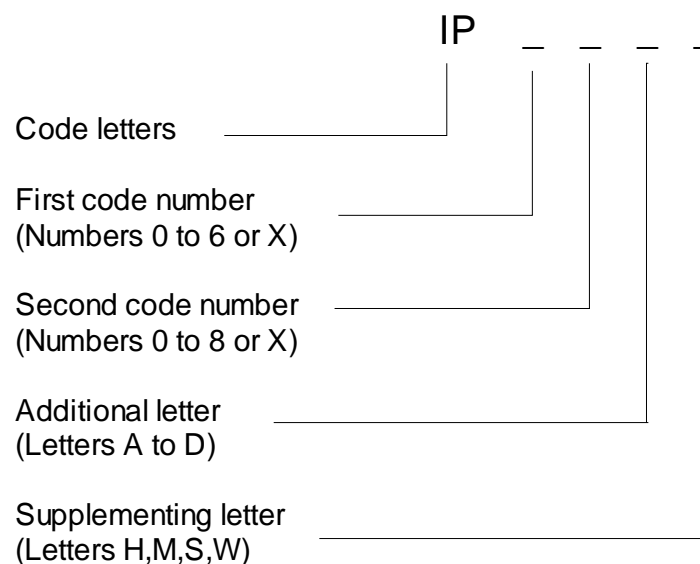
1.1 Degrees of protection provided by enclosure, IP code

Basis: DIN EN 60529: 1991 + A1:2000 + A2:2013

The IP code describes a system for classifying the degrees of protection provided by the enclosures of electrical equipment. The object of this standard is to give, definitions of degrees of protection provided by enclosure of electrical equipment as regards:

- protection of persons against access to hazardous parts inside the enclosure;
- protection of the equipment inside the enclosure against ingress of solid foreign objects;
- protection of the equipment inside the enclosure against harmful effects due to the ingress of water.

Arrangement of the IP code



Where a characteristic numeral is not required to be specified, it shall be replaced by the letter “X”. Additional letters and/or supplementary letters may be omitted without replacement.

Table 1: Components of the IP code and their meanings

Code letters	IP	Meaning for the protection of equipment	Meaning of the protection of persons
		<i>Against ingress of solid foreign objects</i>	<i>Against access to hazardous parts with</i>
First code	0	non protected	non protected
	1	≥ 50 mm diameter	back of hand
	2	≥ 12,5 mm diameter	finger
	3	≥ 2,5 mm diameter	tool
	4	≥ 1,0 mm diameter	wire
	5	dust-protected	wire
	6	dust-tight	wire
		<i>Against ingress of water with harmful effects</i>	
Second code	0	non protected	
	1	vertically dripping	
	2	dripping (15° tilted)	
	3	spraying	
	4	splashing	
	5	jetting	
	6	powerful jetting	
	7	temporary immersion	
	8	continuous immersion	
	9	spraying under pressure	

Schärfegrad der Prüfung:

Sample	Degrees of protection
1	IP 4X

Table 2: Specification of the IP 4X test

Test equipment:	Probe 1mm Ø
Force:	1 N

2 Test performance and test results

2.1 Test performance

The IP 4X test is attempted with a fixed probe of 1 mm Diameter to penetrate the sample. The 1.0 mm object probe is pressed with a predetermined force of 1 N against every opening of the housing.

The protection is satisfactory if the full diameter of the specified probe does not pass through an opening.

2.2 Test results

Legend: **P** ⇒ Pass
 F ⇒ Fail

2.2.1 Degrees of protection against access to hazardous parts and against solid foreign objects indicated by the first characteristic numeral (EN 60529)

First Code	Protection against access to dangerous parts	Protection against ingress of solid foreign objects	Status
4	The test wire of 1.0 mm diameter shall not penetrate and adequate clearance must be maintained.		P

The degree of protection IP 4X test is confirmed.

3 List of measurement equipment

Measurement equipment	PM No.
Sphere of 50 mm Ø	490046
Sphere of 12,5 mm Ø	490047
Finger of 80 mm Ø	490035
Test rod of 2,5 mm Ø	490040
Test wire 1,0 mm Ø	490039

Note: The QM-Manuel of PHOENIX TESTLAB regulates the calibration of the measuring equipment. All listed measuring equipment is traceable calibrated according to national or international standards. Measurement uncertainty is calculated according to GUM.

4 Pictures

Picture 1: Sample with access probes



Picture 2: Sample



Picture 3: Sample back site



Picture 4: Locked USB port under the label



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