

# CLIMATIC Test Report

**No. 120810.001internal**  
**for KISS 1U short KTGM45/mITX**

Test Laboratory: Kontron Embedded Computers GmbH  
Oskar von Miller Straße 1  
85386 Eching  
Germany

Applicant: Kontron Embedded Computers AG

Purpose of Testing: To show compliance with  
IEC 60068 PT2-1  
IEC 60068 PT2-2  
IEC 60068 PT2-14  
IEC 60068 PT2-30

Special Measurement: none  
(see section "Reference Standards"  
for identical national standards)

Note:  
The test data of this report relate only to the individual item tested.  
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Computers AG.

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## 2. Administrative Data

Equipment under test:	K.I.S.S 1U short
<u>optional Equipment under test:</u>	
Options/accessories:	None
Serial number:	None
Version of EUT:	KISS 1U MB short KTGM45/mITX
Applicant :	Kontron Embedded Computers GmbH
Contract identification:	none
Contact person:	none
Manufacturer:	Kontron Embedded Computers GmbH

Receipt of EUT:	02.08.10
Date of test:	02.08.10-12.08.10
Date of report	12.08.10

Tested by:	Robert Hölzl
Test report by:	Robert Hölzl

### 3. Summary of Test Results

The tested sample fully complies with the requirements set forth in

IEC 60068 PT2-1

IEC 60068 PT2-2

IEC 60068 PT2-14

IEC 60068 PT2-30

(see section "Reference Standards" for identical national standards)

Karlheinz Schiege

Robert Hölzl

Technical Manager

Test Engineer

## 4. Data of Operation Mode and Configuration of EUT

### Operation Mode

Special Susceptibility tests: BurnIN TestPro 6.0

Susceptibility tests: none

### Configuration of Cables of EUT

### Configuration of EUT

CPU-Board	MB KTGM45/mITX (1039-3180)
CPU:	Intel Core2Duo T9600
Hard disk drive:	1x 500GB SATA 2,5" (1035-820)
RAM	4GB DDR3 (1031-8769)
DVD-ROM:	DVD-R/RW SL (1036-6636)
VGA	on Board
Network card	on board
Power supply:	FSP270-60LE
Operating-System	WIN XP
Loadboard	2x25 Watt

## Configuration of Peripherals of EUT

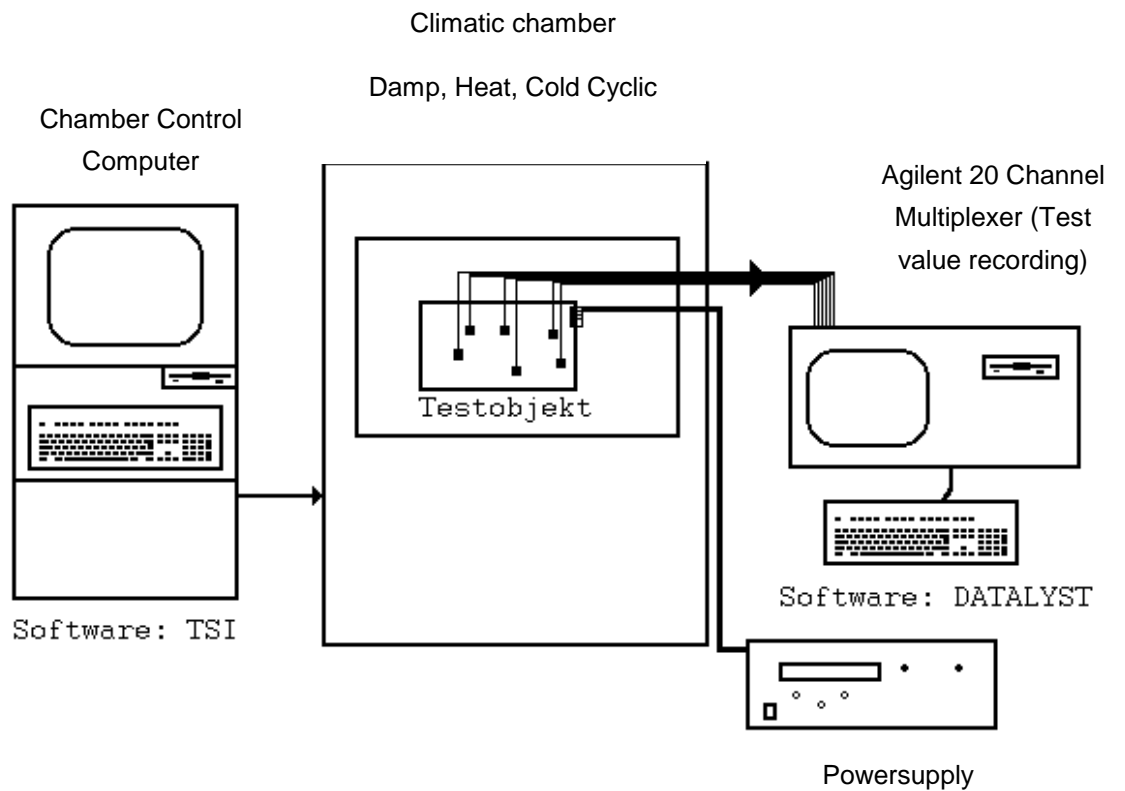
Channel Multiplexer	8 Channel
Keyboard:	Cherry
Mouse:	none
Monitor:	PM – EM – 9598.01
<u>Configuration optional</u>	none

## 5. Performed Tests and Results

Test	Classification/Result	Note
IEC 60068 PT2-1	The requirements are fulfilled	No degradation or loss of function or performance.
IEC 60068 PT2-2	The requirements are fulfilled	No degradation or loss of function or performance.
IEC 60068 PT2-14	The requirements are fulfilled	No degradation or loss of function or performance.
IEC 60068 PT2-30	The requirements are fulfilled	No degradation or loss of function or performance.

## 6. Annotations to Performed Tests and to CE certification

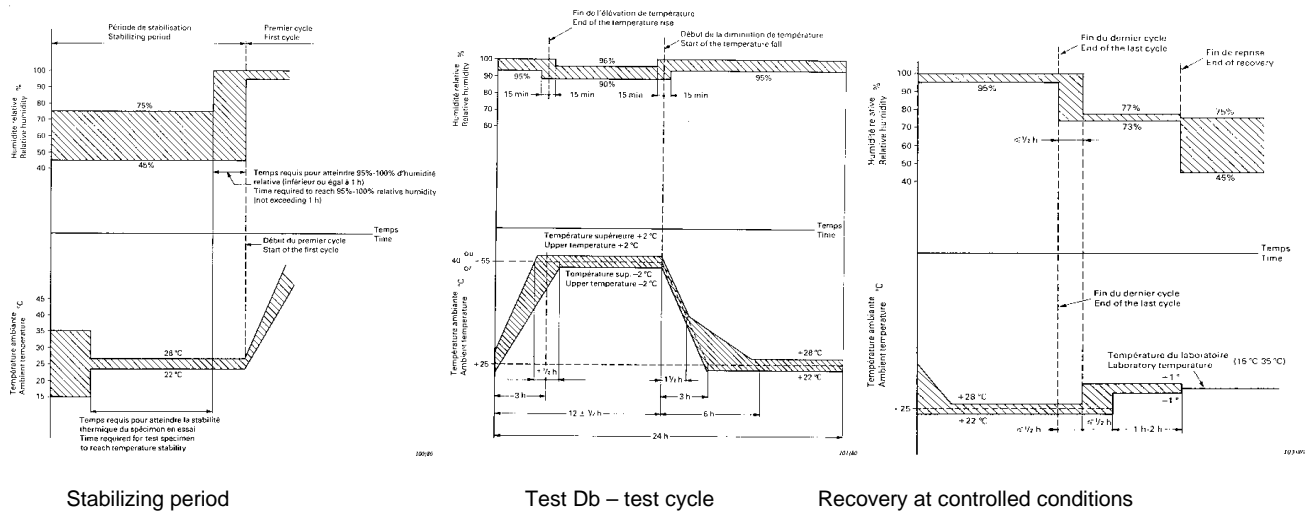
### 6.1 The Test in the Climatic Chamber





## 6.2 Basic environmental testing procedures - Test Db and guidance - damp heat, cyclic 12+12 HOUR CYCLE (IEC 60068 PT2-30)

The object of the test is to determine the suitability of components, equipment or other articles for use and/or storage under conditions of high humidity when combined with cyclic temperature changes. This test replaces the original Test D in the Publication 68-2-4 for future applications (the parameters takes from the page 14).



## 7. Referenced Regulations

(see section "Reference Standards" for identical national standards)

Regulation	Comment
IEC 60068 PT2-1 :1994	ENVIRONMENTAL TESTING - TESTS A: COLD Concerns cold tests on both non-heat-dissipating and heat-dissipating specimens.
IEC 60068 PT2-2 :1994 EN 60068 PT2-2 :1993	ENVIRONMENTAL TESTING - TESTS B: DRY HEAT Contains Test Ba: Dry heat for non-heat-dissipating specimen with sudden change of temperature; Test Bb: Dry heat for non-heat-dissipating specimen with gradual change of temperature; Test Bc: Dry heat for heat-dissipating specimen with sudden change of temperature; Test Bd: Dry heat for heat-dissipating specimen with gradual change of temperature. The 1987 reprint includes IEC No. 62-2-2A.
IEC 60068 PT2-14 :1984 EN 60068-2-14 :1999	ENVIRONMENTAL TESTING - PART 2-14 - TESTS - TEST N - CHANGE OF TEMPERATURE Determines the ability of components, equipment and other articles to withstand rapid changes of ambient temperature. The exposure times to accomplish this depend upon the nature of the specimen.
IEC 60068 PT2-30 :1980 EN 60068-2-30 :1999	BASIC ENVIRONMENTAL TESTING PROCEDURES - TEST DB AND GUIDANCE - DAMP HEAT, CYCLIC (12+12 HOUR CYCLE) Determines the suitability of components, equipment and other articles for use and/or storage under conditions of high humidity when combined with cyclic temperature changes.
Special standard	

## 8. List of Test Equipment

	Equipment Type	Model	Equipment No.	Calibration valid until	Manufacturer
✓	Climatic Chamber	VUK 04-500	PM-EM-6160-1	08.99	Heraus-Vötsch
✓	Control computer	IPLite Color	PM-EM-9599.01	not requested	KONTRON Elektr.
✓	Measuring system	34970A	PM-EM-9519.01	not requested	HP/Agilent
✓	Control computer	Laptop PP05L	8743067/000	not requested	DELL

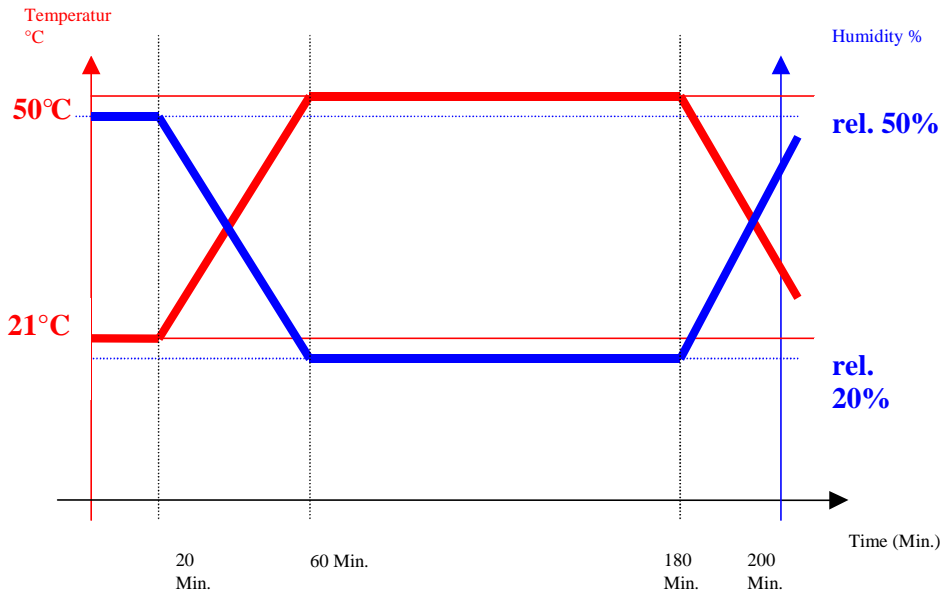
(check mark in 1<sup>st</sup> column) = tested with

## 9. Photographs of EUT and Test Setup

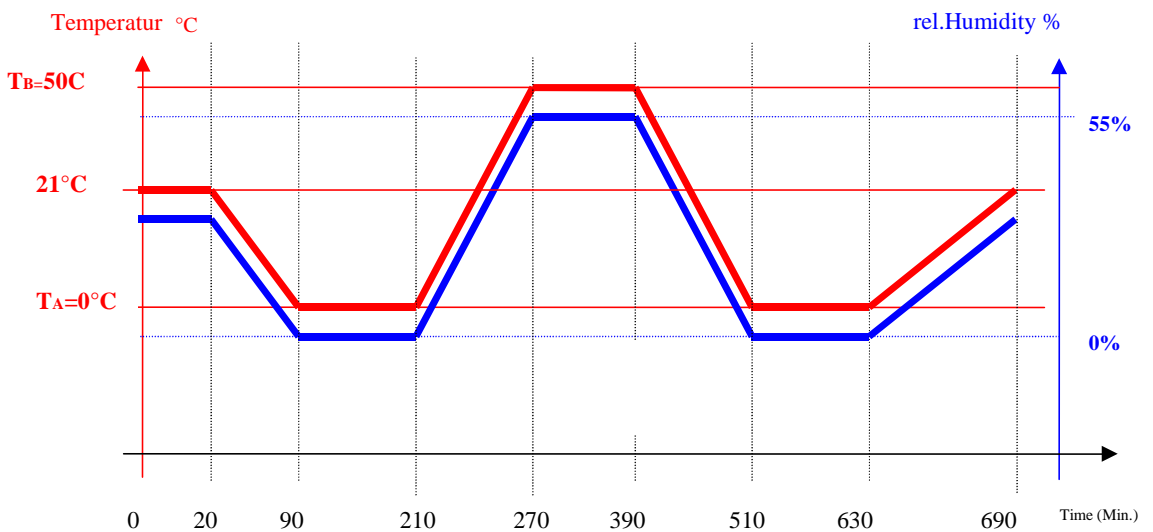
*Picture01: IEC Climatic Chamber*



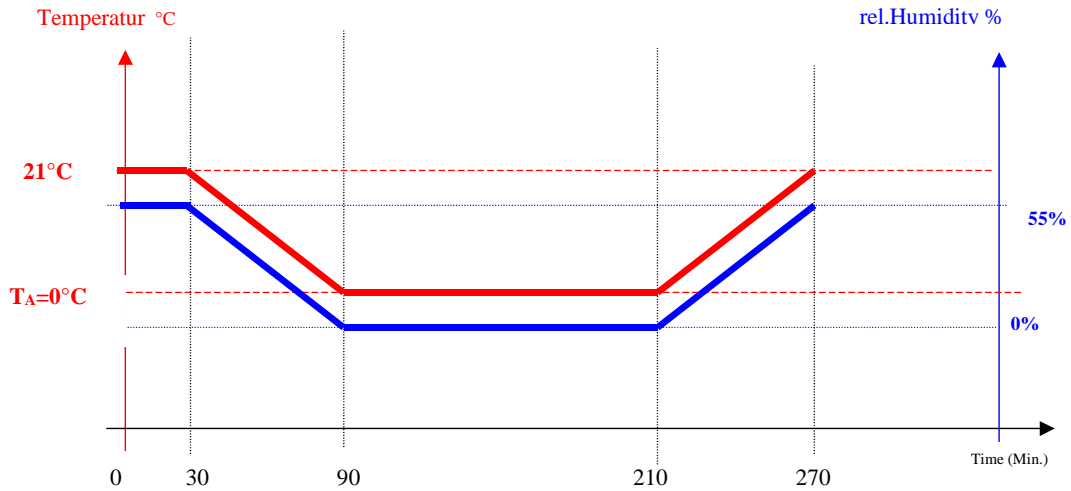
# 10. Climatic conditions to IEC 60068



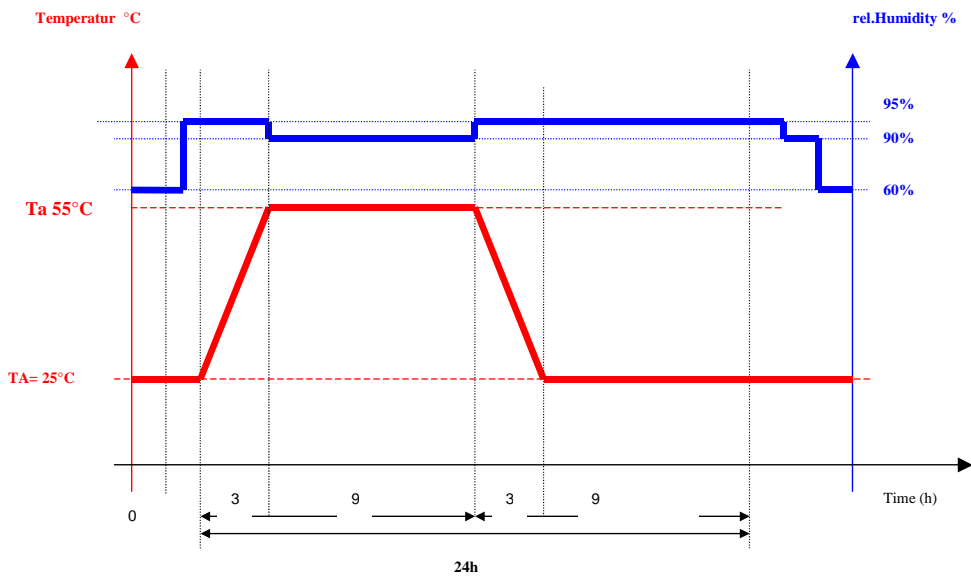
IEC 60068 PT2-2 Test Bb: Dry heat for non-heat-dissipating specimen with gradual change of temperature



IEC 60068 PT2-14 Test Nb: Change of temperature with specified rate of change



IEC 60068 PT2-1 Test Ab: Cold for non heat-dissipating specimen with gradual change of temperature



IEC 60068 PT2-30, Test Db: 12+12 Hour Cycle

## 11. Temperature measurements

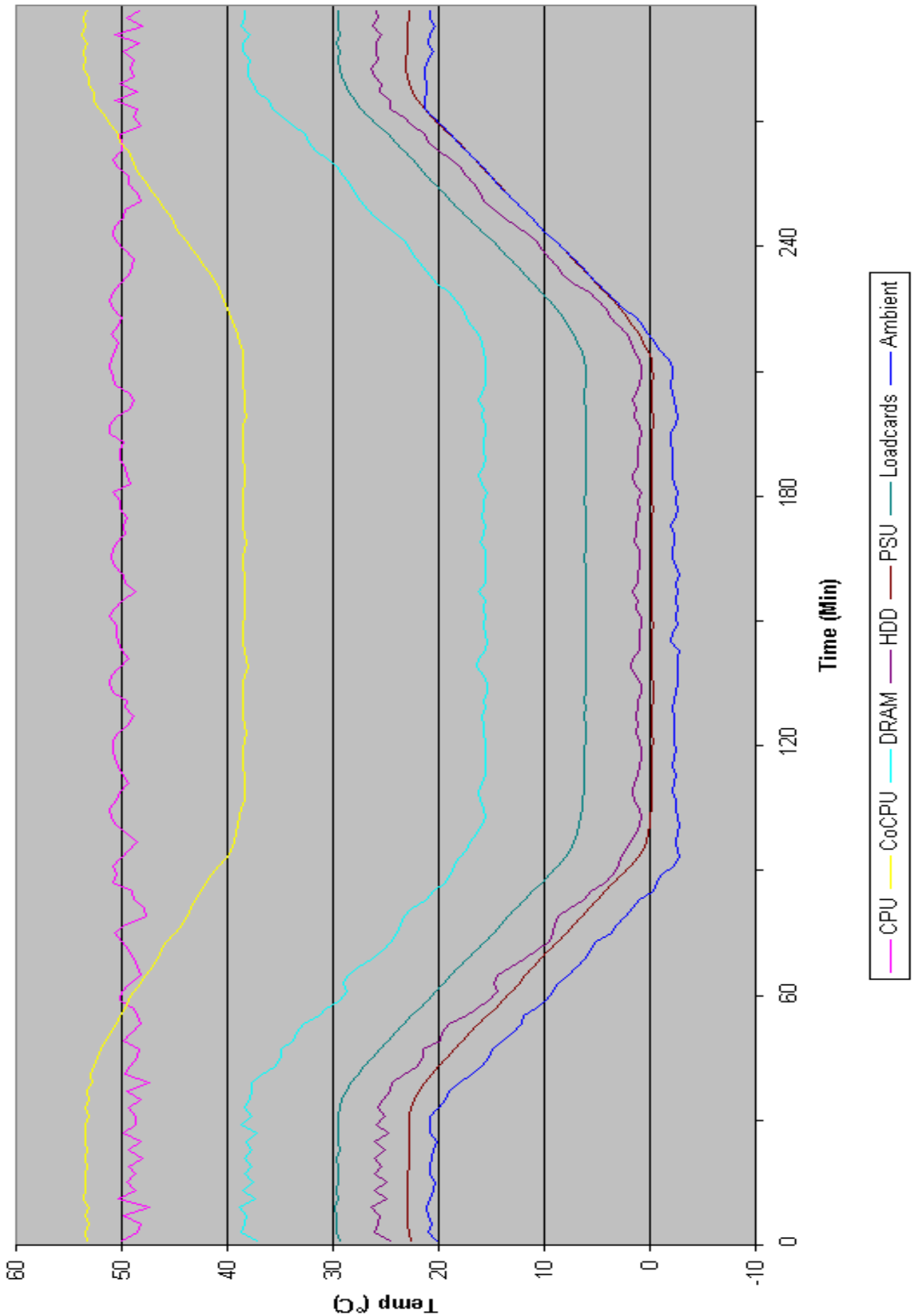
Inquiry of the temperature limits at temperature critical components.

Chosen critical components:

- CPU
- CoCPU
- HDD
- PSU
- Loadcard
- DRAM
- Inside Air

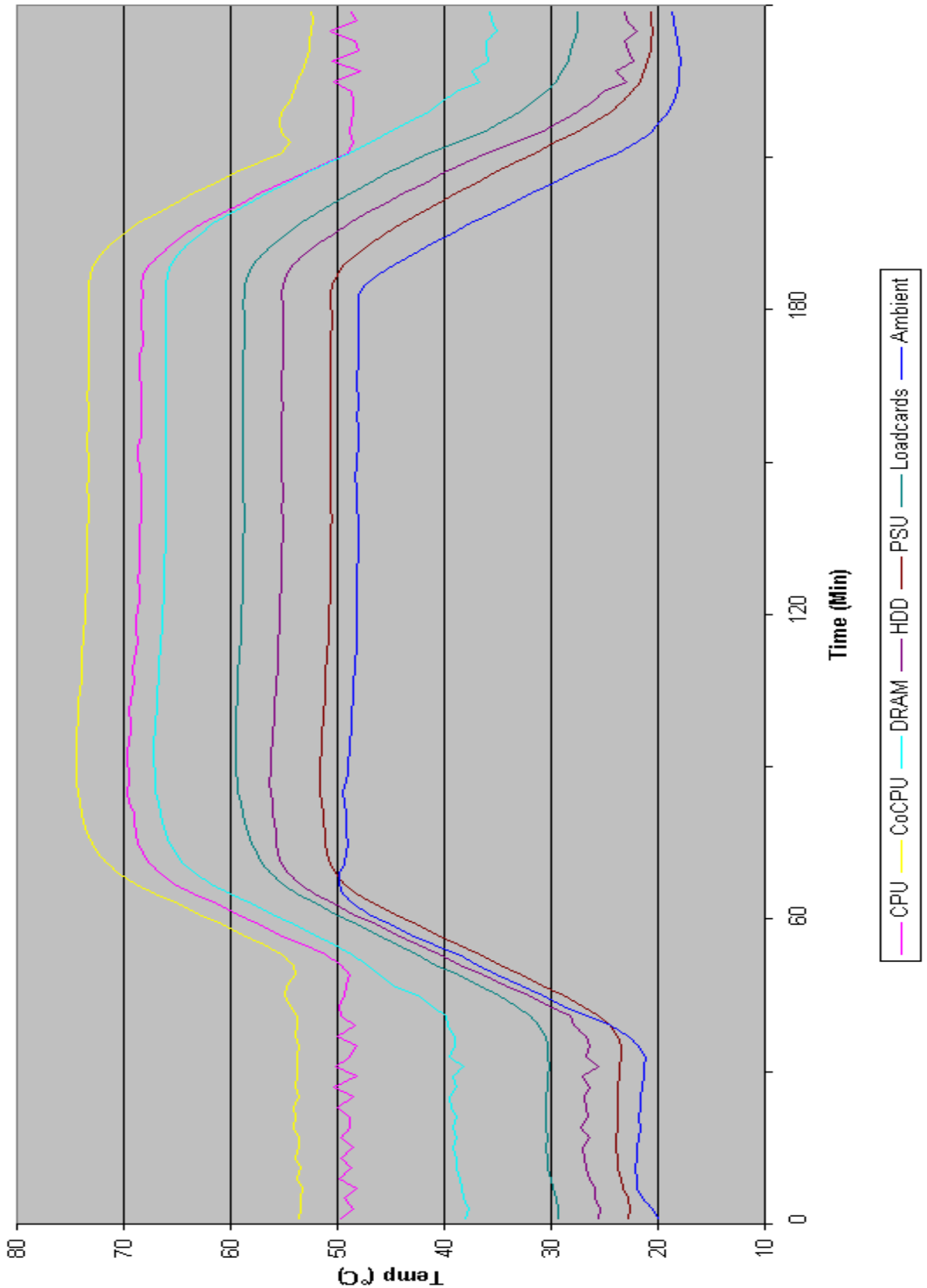
### 11.1 Temperature diagrams into dependence of the surroundings to IEC 60068 (temperature, atmospheric humidity)

PT 2-1 KISS 1U short KTGM45/mITX

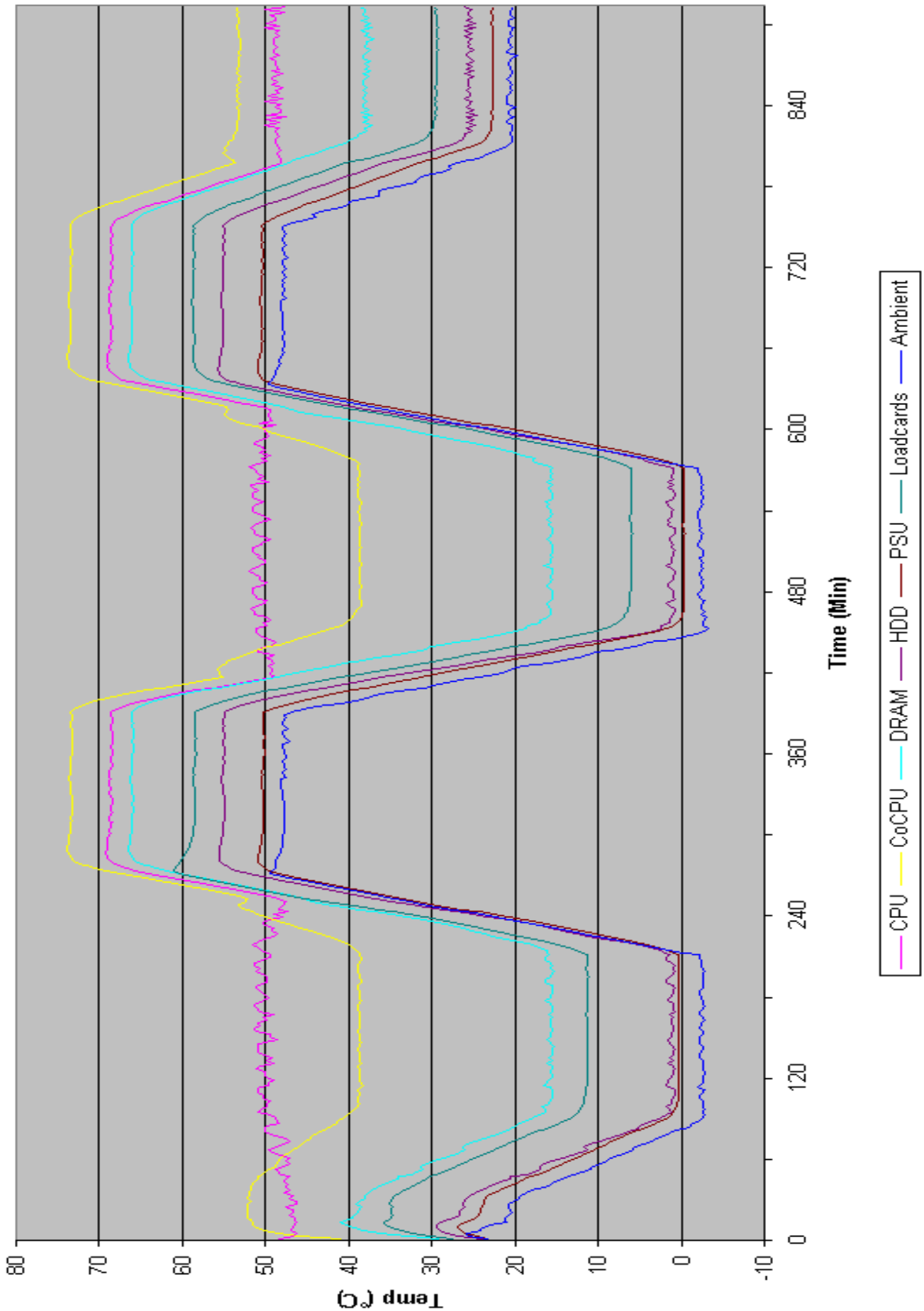




PT2-2 KISS 1U short KTGM45/mITX



PT 2-14 KISS 1U short KTGM45/mITX



## 12. View done tests

	Cycles	Operating	Non Operating	Recording	failure	Remark
PT 2-1	1	x		yes	no	
PT2-2	1	x		yes	no	
PT2-14	2	x		yes	no	
PT2-30	6		x	no	no	No Recording, because all curves are identical

## 13. Reference Standards

Tested standard	Reference Standard (identical/similar to)
IEC 60068 PT2-1	Identical with: BS EN 60068 PT2-1 DIN EN 60068 PT2-1 DIN IEC 68 PT2-1 EN 60068 PT2-1 HD 323.2.1 JIS-C0020 NEN 10068-2-1 NFC 20-701 NF EN 60068-2-1 SEN 43 16 01 SS EN 60068
IEC 60068 PT2-2	Technical Equivalent to: AS 1099:PT2BA AS 1099:PT2BB AS 1099:PT2BC AS 1099:PT2BD JIS-C8938 Identical with: BS EN 60068 PT2-2 DIN EN 60068 PT2-2 DIN IEC 68 PT2-2 EN 60068 PT2-2 HD 323.2.2 JIS-C0021 JIS C0039 NEN 10068-2-2 NFC 20-702 NF EN 60068-2-2 SEN 43 16 02 SS EN 60068

IEC 60068 PT2-14	<p>Technical Equivalent to: AS 1099:PT2N</p> <p>AS 1099:PT2NA</p> <p>AS 1099:PT2NB</p> <p>AS 1099:PT2NC</p> <p>DIN EN 60068-2-14</p> <p>JIS-C0025</p> <p>Identical with: BS 2011:PT2.1N(1985)</p> <p>BS EN 60068-2-14</p> <p>DIN IEC 60068-2-14</p> <p>DIN IEC 68 PT2-14</p> <p>EN 60068-2-14</p> <p>HD 323.2.14</p> <p>NEN 10068-2-14</p> <p>NEN EN IEC 60068-2-14</p> <p>NFC 20-714</p> <p>NF EN 60068-2-14</p> <p>SEN 43 16 13</p> <p>SS EN 60068</p>
IEC 60068 PT2-30	<p>Technical Equivalent to: AS 1099:PT2DB</p> <p>JIS-C0027</p> <p>Identical with: BS 2011:PT2.1DB(1981)</p> <p>BS EN 60068-2-30</p> <p>DIN EN 60068-2-30</p> <p>DIN IEC 60068-2-30</p> <p>DIN IEC 68 PT2-30</p> <p>EN 60068-2-30</p> <p>HD 323.2.30</p> <p>NEN 10068-2-30</p> <p>NEN EN IEC 60068-2-30</p> <p>NFC 20-730</p> <p>SS EN 60068</p>

# 14. Pictures

