

Measure what you see.

# temp-gard 6p temp-gard 12p



Manual

---

temp-gard

## Manual



Patent pending

255 021 547 E 1103

### **BYK-Gardner GmbH**

Lausitzer Str. 8  
D-82538 Geretsried  
Germany

Tel. 0-800-gardner  
(0-800-4273637)  
+49-8171-3493-0  
Fax +49-8171-3493-140

### **BYK - Gardner USA**

9104 Guilford Road  
Columbia, MD 21046  
USA

Phone 800-343-7721  
301-483-6500  
Fax 800-394-8215  
301-483-6555

[www.byk.com/instruments](http://www.byk.com/instruments)

---

Dear customer,  
thank you for having decided for a BYK-Gardner product. BYK-Gardner is committed to providing you with quality products and services. We offer complete system solutions to solve your problems in areas of color, appearance and physical properties. As the basis of our worldwide business, we strongly believe in total customer satisfaction. Therefore, in addition to our products, we offer many VALUE-ADDED services:

- Technical Sales Force
- Technical & Application Support
- Application and Technical Seminars
- Repair & Certification Service

BYK-Gardner is part of the Additives and Instrument Division of ALTANA AG, a leading supplier of additives for coatings and plastics. Together, we offer complete and unique solutions for you, our customer.

Thank you for your trust and confidence. If there is anything we can do better to serve your needs, do not hesitate to let us know.

Your BYK-Gardner Team

---

**Table of contents**

<b>1. System description and Delivery notes .....</b>	<b>5</b>
<b>2. Power supply .....</b>	<b>7</b>
<b>3. Controls.....</b>	<b>8</b>
<b>4. Getting started.....</b>	<b>9</b>
<b>4.1 Starting the temp-gard logger .....</b>	<b>9</b>
<b>4.2 Finishing the Measurement.....</b>	<b>10</b>
<b>4.3 Transferring Data .....</b>	<b>10</b>
<b>4.4 Temperature control.....</b>	<b>11</b>
<b>4.5 Heatsinks.....</b>	<b>11</b>
<b>4.6 Special Notes on the Thermal Barrier .....</b>	<b>11</b>
<b>5. Main menu.....</b>	<b>14</b>
<b>5.1 Start/Stop .....</b>	<b>14</b>
<b>5.2 Temperature profile .....</b>	<b>15</b>
<b>5.3 Actual values .....</b>	<b>15</b>
<b>5.4 Setup.....</b>	<b>15</b>
<b>6. Setup .....</b>	<b>16</b>
<b>6.1 Measurement Parameters.....</b>	<b>16</b>
6.1.1 Number of Probes .....	16
6.1.2 Measurement Time .....	16
6.1.3 Trigger.....	17
6.1.4 Measurement Interval .....	17
6.1.5 Unit.....	17
<b>6.2 Instrument.....</b>	<b>18</b>
6.2.1 Display time.....	18
6.2.2 Time/Date.....	18
6.2.3 Language .....	19
6.2.4 Info .....	19
<b>7. Technical Data .....</b>	<b>20</b>
<b>8. Cleaning and Maintenance .....</b>	<b>21</b>
<b>9. Service and Certification .....</b>	<b>22</b>

Table of contents

---

Service .....	22
<b>10. Copyright .....</b>	<b>24</b>

## 1. System description and Delivery notes

The temp-gard temperature recorder system measures and saves object and air temperature during the cure process. Documentation and analysis of temperature profiles is made easy with the included tempchart software: all you need to control and optimize your baking process.

The temp-gard data logger comes in two configurations, 12 temperature probe connections or 6 probe connections. The data logger has a new innovative design with a large color graphics display and USB memory stick connection for easy data transfer.

temp-gard system:

- USB memory stick interface provides easy data transfer for in the field or in plant locations
- Long battery life using 2 standard AA alkaline batteries
- Large color screen for numerical or graphical display of data
- Robust thermal barrier made of stainless steel with safe high temperature insulation
- High accuracy guarantees long-term reliable results
- Light weight easy to carry thermal barrier

### **Hardware Requirements:**

Operating system: Windows® 2000 or higher

Excel® version: 2002 or higher VBA

Memory: min. 256 MB RAM (recommended 512 MB)

Hard disk capacity: min. 100 MB

Monitor resolution: XGA (1024 x 768) or higher

Disk drive: CD-ROM or DVD

Interface: USB-port

temp-gard 12p	PT-3319
temp-gard 6p	PT-3317

Comes complete with:

temp-gard datalogger instrument

temp-chart software

1 Thermal barrier

1 Set of heat sinks

1 Probe for air temperature, magnet, 3m (PT-3131)

1 Interface cable to PC

2 AA Alkaline batteries

Operating manual

Certificate

Carrying case

Object temperature probes magnet, 3m (PT-3125)

for:

-temp-gard 6p 5 object probes

-temp-gard 12p 11 object probes

## 2. Power supply

Before operating the instrument for the first time, please read the operating manual and take particular notice of the Safety Instructions.

### Powering the instrument:



To operate the instrument, the battery compartment must be fitted with two 1.5-V AA(LR6) batteries.

Open the battery compartment with a philips screwdriver and insert the batteries.

 Ensure that the batteries are correctly oriented in the compartment according to the (+) and (-) marks.

Use only alkaline batteries (AA /LR6)!

Close the lid and tighten the screw again.

### 3. Controls



#### Measurement unit

- 1 Enter Button: Switch on  
Select function  
Start / Stop a measurement
- 2 esc Button: takes you one level up
- 3 UP / Down Button: ▲ ▼: Navigation
- 4 USB Port 1: Transfer via cable
- 5 USB Port 2: Transfer via USB-Stick
- 6 Temperature probe connection ports

## 4. Getting started

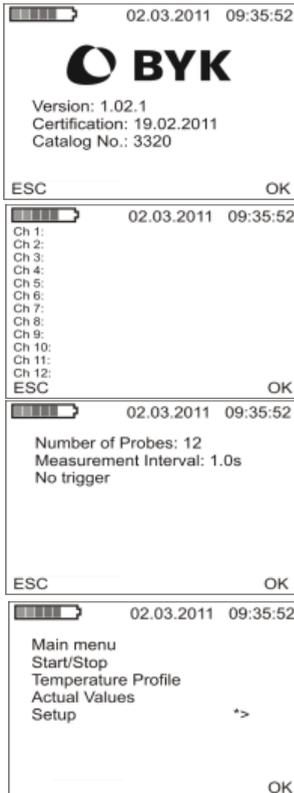
You can start a measurement

- with temp gard as data logger
  - according to the standard settings for the measurement parameters
  - change of the measurement parameters in the setup menu measurement parameters
- by loading an Organizer

The measurement with the temp-gard as a data logger is described in the following.

The measurement with an organizer loaded is described in the temp-chart manual.

### 4.1 Starting the temp-gard logger



When the temp-gard logger is switched on, the status of the setup settings will be displayed:

Screen 1: Firmware version, Certification and Cat. No.

Screen 2: Ch xx: Probe name, press OK

Screen 3: No. of Probes – Measurement interval – Trigger

Screen 4: Menu Connect the thermocouple probes to the temp-gard instrument.

Start the measurement by pressing the start/stop key.

**Note:** Make sure that the thermal barrier and the heat sinks have cooled down completely after the previous measurement.

Make sure that the heat sinks are inserted in both halves of the thermal barrier.

Place the temp-gard in the lower part of the thermal barrier.

Make sure that all gaskets are clean and without defects.

Place the temperature probe cables side by side on the gasket of the thermal barrier and lock the box with the upper part.

Attach the thermocouple probes to the object.

Secure all cables and make sure that they cannot get tangled up when travelling through the oven. Place the thermal barrier inside the object and make sure there is enough free space for the thermocouple probes, the cables and the thermal barrier.

## 4.2 Finishing the Measurement

### **Attention!**

All parts can be hot after the measurement! Remove the hot thermal barrier from the object wearing appropriate protective clothing (protective gloves). Open the thermal barrier and press the start/stop key of the data logger to stop the measurement.

## 4.3 Transferring Data

To transfer the measurement data, connect the USB stick to the temp-gard logger. Data will be automatically saved on the USB-Stick.

With Organizers loaded:

If there are organizers on the stick, the selection menu „Configuration Files“ appears and a selection must be met. With „No Configuration“ the already loaded Organizer remains in the Instrument and the data are sent to the stick. If another organizer is loaded, the data in the Instrument are deleted.

#### 4.4 Temperature control



On the inside of the battery compartment lid are two thermo-sensitive stickers. They react at a exceeded temperature of 60°C (140°F) respectively 65°C (149°F). When these temperatures are exceeded, the color of the stickers turn to black. If the temperature has exceeded 65°C (149°F) please return the instrument to the manufacturer for verification.

#### 4.5 Heatsinks

It is very important that the heatsinks are shaken from time to time while they are cooling down. This serves a better mixture of the different components.

Maximum duration time:

at 100°C (212°F) up to 8.5 hours

at 200°C (392°F) up to 2.5 hours

at 250°C (482°F) up to 2.0 hours

#### 4.6 Special Notes on the Thermal Barrier

All parts can be hot after the measurement.

Remove the hot thermal barrier from the belt wearing appropriate protective clothing (protective gloves). Open the thermal barrier and press the start/stop key of the data logger.

Cooling Down the Protective Parts:

Place hot thermal barriers on heat-resistant spacers, a ceramic fiber blanket or refractory material to ensure uniform cooling. Placing a hot thermal barrier directly onto a cold surface may

cause the housing to deform due to the different cooling rates of the surfaces.

Do not remove the cover before the thermal barrier is in place.

Since the heat absorbed by the thermal barrier continues to affect the temperature of the heat sink and data logger, remove these parts from the thermal barrier as soon as the test is completed. Allow them to cool down before further use. In most cases cooling overnight is sufficient.

Always take the heat sinks out of the thermal barrier. Shake the heat sinks to find out whether the cooling agent has changed from solid to liquid state. If the cooling agent is still in a solid state, the heat sinks need to cool down for 8 hours at a temperature lower than +10 °C. If the cooling agent has remained solid, it is sufficient to cool down the heat sinks for 8 hours at a temperature lower than +20 °C.

Make sure that mechanically damaged heat sinks don't leak.

Contact BYK-Gardner if the heat sink phase change material leaks. It is a non-toxic waxlike substance that dries hard powdery white and has a slight acidic smell. Wait until it is dry before scraping off any material that has leaked onto the surface of the barrier.

The cooling agent is a non dangerous substance or no dangerous mixture in the sense of the EUROPEAN UNION guideline 67/548/EWG or 1999/45/EG.

Examine the cooled thermal barrier and heat sinks for damage before storing in a dry environment to avoid the ceramic insulation absorbing water.

Check the thermal barrier's seals and closing mechanism, rectify any damage before further use.

temp-gard Data Loggers

Store in a dust free environment. Remove batteries when storing for more than two to three weeks.

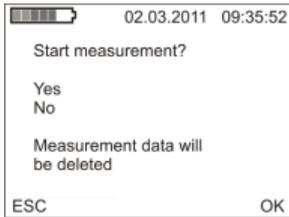
Return to BYK-Gardner annually for calibration.

## 5. Main menu

The Main menu contains the items:

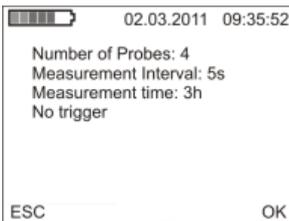
Start / Stop	Start / Stop a measurement
Temperature Profile	Display of temperature curve
Actual values	Displays the actual temperature data of the connected probes
Setup	Definition of measurement and instrument parameters

### 5.1 Start/Stop



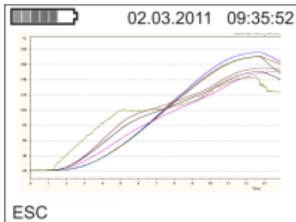
To start the measurement, place the cursor on the Start/Stop position of the display and press the OK button. Choose Yes with the cursor and press the OK button.

The measurement starts.



In the display you are informed about the measurement configuration.

## 5.2 Temperature profile



Temperature profile displays the histogram of the actual measurement.

## 5.3 Actual values

Measurement Values	
Ch 1 21.3°C	Ch 7 -*.°C
Ch 2 19.5°C	Ch 8 -*.°C
Ch 3 22.8°C	Ch 9 -*.°C
Ch 4 19.8°C	Ch 10 -*.°C
Ch 5 -*.°C	Ch 11 -*.°C
Ch 6 -*.°C	Ch 12 -*.°C

Actual values displays the actual temperature values of the connected probes.

## 5.4 Setup

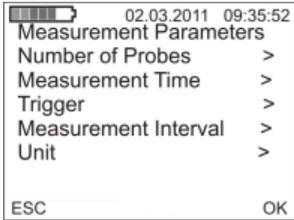


In the setup menu you can choose between the setup of the Measurement parameters or Instrument.

The asterisk in the menu item allways leads you to the language selection.

## 6. Setup

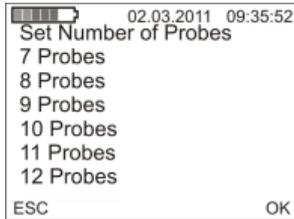
### 6.1 Measurement Parameters



You can set:

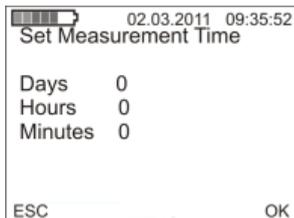
- Number of Probes
- Measurement time
- Trigger
- Measurement Interval
- Unit

#### 6.1.1 Number of Probes



Select the number of probes you are going to use. Select the number with the cursor and press the OK button.

#### 6.1.2 Measurement Time

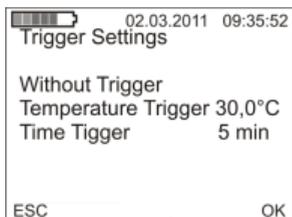


Select the total duration of the measurement.

Days  
Hours  
Minutes

Select the appropriate by clicking on it and set the time according to your measurement necessities.

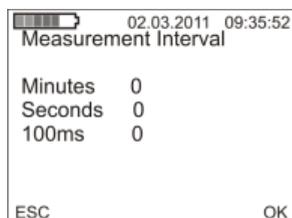
### 6.1.3 Trigger



You can choose between temperature and time trigger. That means that the measurement will start after a preselected temperature or time is reached. Click on the appropriate and choose the interval with the cursor.

For a measurement without trigger choose „Without Trigger“.

### 6.1.4 Measurement Interval



You can set the measurement interval in minutes, seconds and 100 milliseconds.

Click on the appropriate to set the interval.

### 6.1.5 Unit



Select the unit:

Celsius

Fahrenheit

## 6.2 Instrument



In the instrument menu you can choose:

Display time  
Time/Date  
Language  
Info

### 6.2.1 Display time



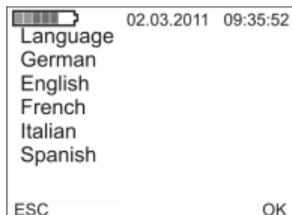
You can set the time interval after which the instrument shuts down automatically.

### 6.2.2 Time/Date



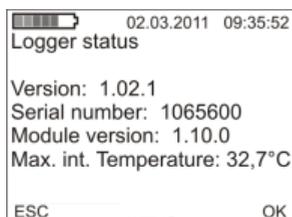
Here you can set Time and Date.

### 6.2.3 Language



Choose the Language

### 6.2.4 Info



This menu displays the following information about the device:

- Version
- Serial number
- Module version
- Maximum internal temperature

## 7. Technical Data

Accuracy	+/- 0.5 °C
Resolution	0,10 °C from 0 – 400 °C 0.18 °F from 32 – 752 °F
No. of Channels	6 or 12
Memory	20,000 readings per channel
Sampling interval	0.1 sec up to 24 hrs
Temperature Range	0 – 400 °C (32 – 752 °F)
Battery Capacity	0.5 sec interval = 50 hrs
Display Color	79 x 60 mm (3.1 x 2.4 in)
Interface	USB 2.0
Thermal Barrier	255 x 215 x 135 mm 10 x 8.5 x 5.3 in
Weight	3.56 kg (7.82 lbs)
Maxium Duration	at 100 °C – 8.5 hrs at 200 °C – 2.5 hrs at 250 °C – 2.0 hrs

## 8. Cleaning and Maintenance

- **Do not use any acetone for cleaning the unit!** The instrument housing is resistant to a number of solvents, but cannot be guaranteed to withstand all chemicals. You should therefore use a soft, moist cloth for cleaning. For cleaning excessive dirt, use propanol.
- Do not attempt to make any repairs yourself! If a malfunction occurs on your measuring device, our Customer Service department will be happy to help you as quickly as possible.

### Examination

- Always take the heat sinks out of the thermal barrier. Shake the heat sinks to find out whether the cooling agent has changed from solid to liquid state. If the cooling agent is still in a solid state, the heat sinks need to cool down for 8 hours at a temperature lower than +10 °C. If the cooling agent has remained solid, it is sufficient to cool down the heat sinks for 8 hours at a temperature lower than +20 °C.
- Make sure that mechanically damaged heat sinks don't leak.
- temp-gard Data Loggers

Store in a dust free environment. Remove batteries when storing for more than two to three weeks.

Return to BYK-Gardner annually for calibration.

- Thermocouple Probes

### General:

Lifting or removing the probes by the cables will damage the cables and connectors.

Examine cables, and replace any probes found to have damaged insulation.

## 9. Service and Certification

### Service

Besides the repair of your instrument we offer the following additional services:

#### **First diagnosis on the telephone or by e-mail**

Call us or send us an e-mail and we will try to solve your problem. If this is not successful, please send us the instrument for repair.

#### **Preventive maintenance, calibration, and recertification**

For precautionary reasons we recommend regular preventive maintenance. We carry out this preventive maintenance automatically when you send us your instrument for maintenance and recertification. We clean the optics, check all functions, test and, if required, adjust the measured values by using reference standards. You will receive a certificate, which includes the retraceability to international standards.

#### **Loaners**

During the period of repair we furnish you with a loaner on request and availability.

#### **Maintenance agreement**

In case you want to make sure that the necessary maintenance is being done on a regular basis and on time, we recommend a maintenance agreement.

#### **Extended warranty contracts**

Furthermore, you can request an extended warranty contract for additional 12 months.

Ordering information:

SE-3300	Extended Warranty -one year additional
---------	--

	gradienten- ofen	gradienten- ofen II	Grant-ICI Recorder	byko-track 4/6	temp-gard	Leitfähigkeits- Meßgerät
<b>Vertragstyp</b>	1	1	1	1	1	1
Lampenwechsel						
Kalibrierung	X	X	X	X	X	X
Reinigung der Glasplatte	X	X				
Reinigung der Heizbank	X	X				
Reinigung der Innenteile	X	X	X	X	X	X
Reinigung der Lüfter	X	X				
Reinigung der Optiken						
Reinigung der Säulen	X					
Reinigung der Spindel	X					
Überprüfung auf Öldichtigkeit						
Überprüfung der elektr. Funktionen	X	X	X	X	X	X
Überprüfung der Geometrien/Optik						
Überprüfung der Leistungsaufnahme	X	X				
Überprüfung der mech. Funktionen	X	X	X		X	X
Überprüfung der Spannung/Meßfrequenz	X	X	X	X	X	X
Überprüfung der Meßfühler/-aufnehmer			X	X	X	X
Überprüfung der Mikroskopeinrichtung						
Überprüfung der Normgeschwindigkeit			X			
Überprüfung der Pendel						
Überprüfung der Pendeljustage						
Überprüfung der Schnittstellen	X	X		X	X	
Überprüfung der Stromversorgungseinheit	X	X	X	X	X	X
Überprüfung der Taktzeiten				X	X	
Überprüfung der Temperaturwerte	X	X	X	X	X	
Überprüfung der Zählleinrichtung						
Überprüfung des Druckkopfes	X					
Überprüfung des Enthaltungszusatzes						
Überprüfung des Ölstandes						
Überprüfung mit Mastergeräten			X	X	X	X
Vermessung der Fühler			X	X		X
Anzahl der jährlichen Wartungen	1	1	1	1	1	1
Berechnung der Ersatzteile	X	X	X	X	X	X
Berechnung der Verschleißteile	X	X	X	X	X	X

## 10. Copyright

This instruction manual is an important part of this instrument. It contains essential information about setting up, placing in service and use. If you pass the device on to another user, please ensure that the instruction manual is included with the instrument. The manual must be studied carefully before working with the equipment. Please contact your regional service office if you have any questions or require additional information about the device.

The technology and fittings are based on state-of-the art optic and electronic technology. New developments and innovations are constantly being integrated into the equipment. Thus, the diagrams, dimensions, and technical data used in this manual may have changed as a result of adapting the device to new information and improvements.

© Copyright 2011 BYK-Gardner GmbH  
All rights reserved

No portion of the software, documentation or other accompanying materials may be translated, modified, reproduced, copied or otherwise duplicated (with the exception of a backup copy), or distributed to a third party, without prior written authorization from BYK-Gardner GmbH. In any case, this requires the prior written consent of BYK-Gardner.

BYK-Gardner GmbH offers no guarantee that the software will function without error or that the functions incorporated therein can be executed in all applications and combinations selected by you.

No liability other than as provided by law is assumed for direct or indirect damage sustained in association with the use of the instrument, the software or documentation.

BYK-Gardner GmbH reserves the right to update the software and written documentation without prior notice.

255 021 547 E 1103