

3212-9000

Thermal Calibration Reference Device



Calibration Procedure & Warranty Information



[youtube.com/CohuHD](https://www.youtube.com/CohuHD)
[LinkedIn.com/company/CohuHD](https://www.linkedin.com/company/CohuHD)
twitter.com/CohuHD
facebook.com/CohuHD
CohuHD.com

(858) 391-1800

Rev A

Table of Contents

Table of Contents	1
Introduction.....	2
Overview	2
Measurement Calibration Cycle of 3212-9000 Thermal Calibration Reference Device.....	2
Temperature value	3
Diagnostic Procedure.....	4
Device Calibration	4
Authoritative Measurement Organizations.....	4
US-based Calibration Centers	4
Warranty information	5

Introduction

Overview

The Thermal Calibration Reference Device 3212-9000 unit is used as a temperature reference device in conjunction with the thermographic camera to assist in the accurate temperature measurement of an individual in the field of view of the 3212-2000 camera. The duty cycle of this device is 24/7 unless otherwise specified by the system operator, taking into consideration that it requires approximately 15 min to reach a stable operating temperature. Due to the nature of the thermographic operation you must inspect this device and verify proper operating parameters yearly. Should the unit fail to operate at the correct temperature a calibration is required by a certified laboratory.

Calibration is a group of operations performed under specified conditions to determine the relationship between values indicated by measuring instruments, physical measuring tools or reference materials, and the values measured by corresponding standards. The calibration result can be assigned a measured value which can also determine the correction coefficient for the indicated value. Calibration can also determine other measurement characteristics, such as the effect of outside factors on the devices over time. The calibration result can be issued by a calibration certification or calibration report.

The expected life of the Thermal Calibration Reference Device under continuous operation in an indoor environment is three years (minimum). Proper care of the device, such as avoiding exposure to high humidity or dust, will prolong the life of the unit. The face plate (black wafer) requires monthly cleaning with a dry cloth to ensure proper operation of the heating element.

Measurement Calibration Cycle of 3212-9000 Thermal Calibration Reference Device

The 3212-9000 Thermal Calibration Reference Device is operated by daily, sometimes at a 24/7 duty cycle (continuously). After a certain period of use, accuracy will be affected by surrounding factors, such as dust, air, movement, humidity, etc., which can produce temperature deviations or “errors.” To verify whether the device shows the actual operating temperature value, the device should be inspected at a fixed period (one year from date of initial operation) and calibrated, if necessary, by an approved laboratory. Calibration results will be shown in a test report.

Temperature value

SV is the set value; PV is the indicated value. When the device turns on, PV is close to SV. The normal working state of the device is when PV is equal to SV. The measurement calibration detects deviation between the indicated value and the radiance value (Actual value).

For example: if the indicated value is 30.0°C and the calibration value is 30.1°C, then the actual temperature is 30.1°C when the device's indicated value is 30.0°C.

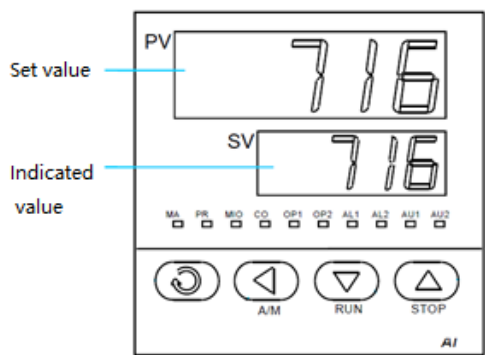


Diagram of Thermal Calibration Reference Device temperature controller

Table 1		Unit:°C
Indication	Radiance Temperature	Expression uncertainty <i>U (k=2)</i>
30.0	30.1	0.2
35.0	35.1	0.2
37.0	37.0	0.2
40.0	40.0	0.2
42.0	42.0	0.2

Diagram of calibration certification

Diagnostic Procedure

When the SV (set value) differs from the PV (indicated value), you should power down the unit for 30 minutes and then turn it on again. If the two values still do not match, it is recommended that you contact a service center to calibrate the unit.

Device Calibration

Calibration shall be performed by a national legal metrology appraisal organization whose quality management system shall meet the requirements of ISO / IEC 17025:2017 standard, or other relevant national authoritative standards.

Technical basis for calibration: calibration method of Thermal Calibration Reference Device radiation source for radiation thermometry FFR15801-2015.

Main standard measuring instruments for calibration: standard device of Thermal Calibration Reference Device radiation source / BF-50C

Measurement method: comparative method.

Authoritative Measurement Organizations

- National Institute of standards and Technology (NIST)
- German Federal Institute of physical technology (PTB)
- National Institute of Physics (NPL)
- National Research Council of Canada (NRC)

US-based Calibration Centers

Obtain a written estimate prior to sending the unit for calibration. Cost of calibration may vary.

<https://www.us.endress.com/en/service-portfolio/instrument-calibration-services>

Endress+Hauser USA

2350 Endress Place
Greenwood, IN 46143
United States

[Tel. 888-363-7377](tel:888-363-7377)

[Tel. 317-535-7138](tel:317-535-7138)

Warranty information

The 3212-9000 Thermal Calibration Reference Device is covered by a two year manufacturer's limited warranty. Costar will replace the unit if it fails completely. This limited warranty does not cover periodic (annual) recommended calibration process and procedures.

Costar Technologies ("*Costar*", "*we*", "*us*", "*our*") warrants to the original consumer/purchaser for the applicable period set forth below, that the products we sell are free from defects in material and workmanship, except as otherwise indicated below.

ANY IMPLIED WARRANTY OF MERCHANT ABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THESE PRODUCTS IS LIMITED IN DURATION TO THE WARRANTY PERIOD SPECIFIED ABOVE.

This warranty does not cover:

- a. damage to the finish of fittings or accessories caused by the use of cleaning solvents/chemicals or improper cleaning methods;
- b. damage to any products based on or resulting from installation or repair, misuse or abuse (including but not limited to, excessive operating conditions), or alteration or adjustment, whether performed by a contractor, service company or yourself;
- c. damages resulting from failure to reasonably clean, care for or maintain a product;
- d. any products we sell that have been moved or removed from their original installation site.
- e. This warranty does not cover cosmetic damage, acts of god, misuse, accidents, voltage spikes, improper connection, or improper use.

In no event will Costar be liable in contract, in tort, in strict liability or otherwise for any special, indirect, incidental or consequential damages for a breach of the Warranty or otherwise with respect to its products. The liability of Costar under the Warranty or otherwise with respect to a product shall not exceed the purchase price received by Costar from the purchaser of such product.

If you believe that a product fails to meet the above limited warranty, you should contact the place of purchase or notify us in writing prior to expiration of the applicable warranty period set forth above at the following address:

Costar Technologies
101 Wrangler Drive, Suite 201
Coppell, TX 75019

You must obtain a Return Authorization (RA) number to return any product. Please call or Email the following to obtain a RA number:

1-888-694-STAR (7827)
rmadept@costarvideo.com

All returns must be received within 30 days of the issuance of the RA number. Notification should include a description of the product, the RA number, model number and how the product fails to meet the above warranty. Upon receipt of a written claim under this limited warranty and evidence of the date of purchase or installation, and after inspection by an authorized Costar representative, at our option and in our sole discretion, we will either repair or replace the product with a Costar product of the same or similar type and size. If, as determined by Costar, repair or replacement of the product is not commercially practical or cannot be completed in a timely manner, we may elect to refund the actual purchase price paid for the product upon verification by providing a copy of your invoice, receipt or bill of sale.

COSTAR VIDEO SYSTEMS WILL NOT BE LIABLE FOR ANY OTHER LOSS OR EXPENSE(S) NOT SPECIFICALLY DESCRIBED ABOVE AND DISCLAIMS ANY LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES. COSTAR LIABILITY, IF ANY, WILL NOT EXCEED THE PURCHASE PRICE PAID FOR ANY PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSION MAY NOT APPLY.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

For more information please visit us at:

[*www.CohuHD.com*](http://www.CohuHD.com)

