temperature

JOFRA™

Best dry-block on the market!

Reference Temperature Calibrator
RTC-700

High accuracy
Down to ±0.11°C using the external reference sensor. 4-wire True-Ohm-Measurement technology is used.

Excellent stability to 0.008°C

Wide temperature range
RTC-700 from 33 to 700ºC (91 to 1292ºF)

Improved temperature homogeneity
NEW Triple-zone

Unique active triple-zone block ensures good temperature homogeneity in the calibration zone.

Patent pending!

DLC Dynamic Load Compensation
Perfect temperature uniformity in the insert, even when calibrating large sensors or many sensors at a time.
B and C models only

Display indicator for temperature uniformity
Shows the degree of temperature uniformity in the insert when using the new DLC technology.
B and C models only

Intelligent reference sensors
JOFRA reference sensors are supplied with intelligent plugs, holding the calibration data (coefficients) of the reference sensor. This is a truly plug'n'play calibration system.

USB communication
All RTC calibrators communicate via an easy-to-use USB port.

Time-saving
Super high speed cooling.

Patent pending!

EURAMET
Best performing dry-block with regard to the EURAMET/cg-13/v.01 guideline for testing of dry blocks.

ISO 9001 Manufacturer

Specification Sheet, SS-RTC700

AMETEK continues to develop new techniques to improve performance, accuracy, convenience and functionality of the well-known JOFRA calibration products. By doing so, we maintain our position as the leading worldwide manufacturer of temperature dry-block calibrators.

We are proud to introduce our new high temperature model RTC (Reference Temperature Calibrator), which is no exception to the above and even more sophisticated than any existing calibrators.

The RTC offers many new fantastic features, such as:
- Patent pending DLC, Dynamic Load Compensation system, for perfect temperature uniformity in the insert
- Unique intelligent sensors for plug'n'play connection
- USB connector for communication
- Easy-to-read color VGA display with perfect overview of the actual status
- Intuitive, fast and user-friendly navigation
- Lightweight and easy to carry around
- New functional carrying case design with integrated trolley
- New multi-hole insert kits covering all the most used sensor sizes
- High profile design and the well-known long lasting JOFRA quality

The new RTC calibrator comes in three different models – A, B, and C.
- RTC-A reference temperature calibrator
- RTC-B reference temperature calibrator with input for reference sensor, DLC sensor and sensors-under-test
- RTC-C reference temperature calibrator with input for reference sensor and DLC sensor

AMETEK®
CALIBRATION INSTRUMENTS

JOFRA™

NEW Triple-zone

Unique temperature performance

The RTC series of calibrators provides precision temperature calibration of sensors, whatever the type or format. This is accomplished through an innovative active triple-zone heating technology.

The RTC-700 features our new active triple-zone heating technology. Each heating zone is independently controlled for precision temperature calibration. The homogeneity in the lower part is close to that of a laboratory liquid bath. The two lower zones ensures optimum heat dissipation throughout the entire calibration zone. The upper zone compensates for heat loss from the sensor-under-test and from the open top. This design also eliminates the need for extra insulation of sensors-under-test and makes it possible to calibrate liquid-filled and other mechanical sensors.
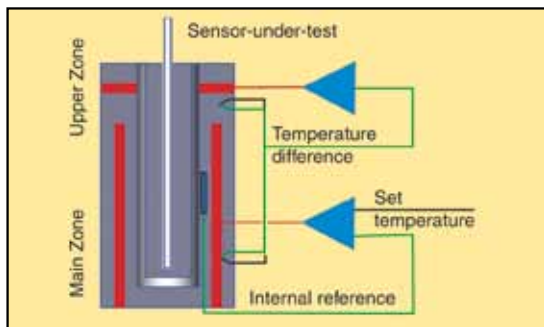

DLC - Dynamic Load Compensation

Patent pending!

To bring our well documented active dual-zone technology to an even higher level, we have developed the patent pending new DLC system.

This newly developed unique feature makes it possible to perform top calibration specifications without being affected by the actual load e.g. many sensors or very big sensors.

A new DLC sensor, Dynamic Load Compensation sensor, has been specially developed for this purpose.

The RTC-700 features the active triple-zone temperature control which improves the homogeneity in the well by adjusting the temperature in the top of the well to the same temperature as in the bottom. The triple-zone keeps this difference at a minimum.
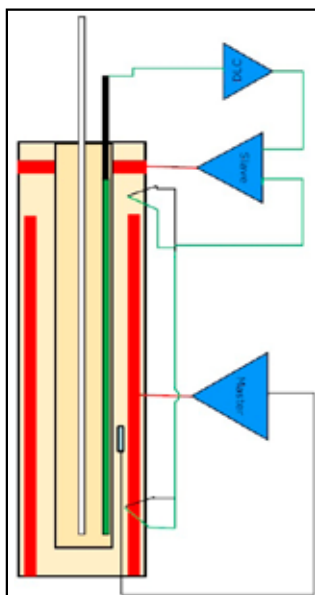
The new DLC sensor improves the homogeneity even more by controlling the homogeneity not only in the well, but also inside the insert, where the sensors-under-test are placed during calibration. The DLC sensor measures the temperature homogeneity in the insert and provides feedback to the active triple-zone system, which now compensates the temperature difference to a minimum inside the insert. In this way, the DLC function makes the homogeneity independent of the different loads of the insert.

Based on the new DLC functionality, the RTC is the best performing dry-block calibrator on the market, when being calibrated and tested according to the globally accepted EURAMET/cg-13/v.01 guideline for calibration and testing of dry-blocks.

The DLC system comprises a special differential temperature sensor designed especially for the RTC. The sensor is placed in the insert and connected to the calibrator. When the DLC function is enabled, the calibrator will automatically equalize the temperature homogeneity inside the insert on top of the normal temperature control and stabilization.

DLC - User advantages

Calibrating with DLC sensor gives the following advantages:
1. Calibration of several sensors simultaneously
2. Calibration of thick sensors
3. Gives TSL (Thermo Sensitive Length) independency. It is no longer necessary to know the TLS of the sensor
4. Compensates for sensor production tolerances like the PT100 element being mounted in various positions in the sensor
5. Trouble free and full acuracy calibration of sensors with PT100 elements up to 60 mm length
6. The DLC indicator proves that the dual-zone is active an functioning well
7. Proves that the calibrator is working perfect. The DLC value will be very close to 0.00 when the calibrator only is loaded with DLC sensor and an external reference sensor
8. Together with the stability indication, the DLC indicates when the calibration values can be read

DLC Sensor
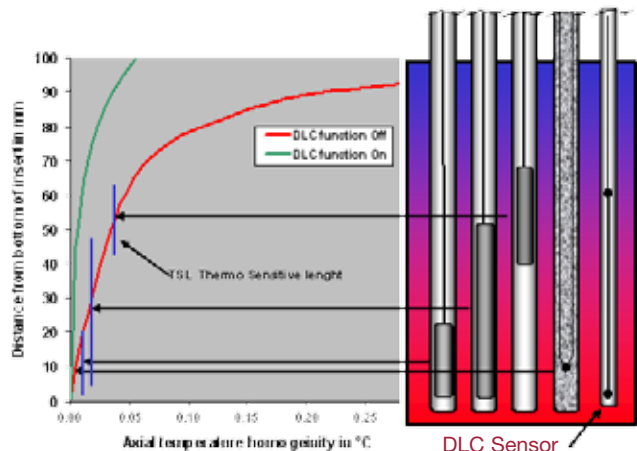
Axial temperature curves for a RTC calibrator with and without the DLC functionality activated

NEW!

USB connector for communication

Another new RTC feature is the USB connection that facilitates easy communication with JOFRACAL. The USB connection also supports easy download of future firmware upgrades.

The new USB connection provides fast and easy access to all laptops without the need of RS-232 to USB converters.

Future-proof through e.g. a flash capability for easy firmware upgrades as well as already integrated LAN communication, SD-card slot and USB host connectors for future use.

Intelligent reference sensors

The JOFRA STS-200 intelligent reference sensors as well as the new DLC sensor are all containing all individual calibration data regarding the sensor.

Firstly, this means that the time-consuming coefficient downloading sequence with risk of errors is no longer necessary. Secondly, the user can change the reference sensor and be up and running immediately. Time saving and convenient.

With the intelligent sensors, AMETEK has eliminated a source of error and the system is now giving a fail-safe plug'n'play calibration system.

Unique reference sensors

The new STS-200 reference sensors and the DLC sensors have been specially designed. They are both angled 90˚ and have been customized to fit the calibrator so they are only slightly higher than the top of the RTC calibrator.

The unique design makes it possible to calibrate threaded sensors and sensors with connection heads without any problems.

Easy to carry

A calibrator is carried from one job to another. Therefore, it is essential that it is easy to carry.

We have thoroughly included the weight issue in our design and have developed new design techniques that have made the RTC calibrator easy to carry around without compromising its quality, durability and functionality.

Long inserts for accurate calibration

The new extended insert length increases the maximum possible diameter of the sensor under test to 16 mm. Switch test of long bulb sensor can be carried out with very high accuracy.

Fast temperature calibration

Based upon our new developed heating block the RTC-700 is able to perform a unique combination of high speed and high accuracy.

Time is money! This is why all the new RTC calibrators have an increased calibration speed compared to all other calibrators. The implication is savings in both production downtime and general calibration costs.

New multi-hole insert kits

Two special multi-hole insert kits have been developed to comply with calibration of almost any sensor diameter without having to buy numerous inserts.

The first kit is a metric insert kit consisting of only four inserts covering all diameters from 3 to 13mm. The other is an imperial insert kit consisting of only three inserts covering six different sizes from ⅛" to ½".

All inserts have holes for both metric and imperial STS reference sensors and DLC sensor.

With this new insert kit in the carrying case, the user is now able to calibrate all commonly known sensor sizes.

These new insert kits are part of the JOFRA lightweight strategy.

Wide temperature range

The RTC-700 can perform calibration over a very wide temperature range starting from 33°C and up to 700°C (91 to 1292°F). This makes it possible to perform calibration jobs over a range of 667°C (1232°F) with only one calibrator.

Easy-to-read color display and user-friendly navigation

The new 5.7" full color VGA display is very easy to read. The main temperatures, like SET, READ, TRUE and SUT (Sensor under test), are always displayed at all stages of the programming or calibration procedure.

The navigation is menu-driven and very logical and intuitive to use. The display shows any important information needed for the current function in use. The communication windows pop up and are followed by discrete sound messages.

The display is very bright and the main information can easily be read from a distance.

The large display contains many detailed information at a glance, such as:

• Up to five temperature readings simultaneously
• Stability status
• Load compensation status
• Real time clock
• Serial number of reference sensor
• Sensor-under-test status

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Special designed carrying case

NEW!

AMETEK has designed an all-in-one-handle carrying case.

We have now made it possible to store both the STS reference sensors and DLC sensors in the carrying case with an optimum physical protection. There are compartments for inserts to cover all sensor under test dimensions and compartments for the new integrated support rod set, wires, manuals, certificates, plugs, insert tools etc.

All compartments are specially designed to hold one of the above mentioned items. This makes it very easy to keep track of any accessories.

For optimum protection of the calibrator and the accessories, the compartments are designed to hold the accessories fixed during transportation.

Integrated support rod

NEW!

The new integrated support rod is part of the reduced weight philosophy. It is lightweight and very easy to mount on the RTC. Two fixing holes are integrated in the calibrator where the support rods can be mounted. Even though weight has been reduced with 50% the support rod is very firmly positioned.

MVI - Secure temperature stability

MVI stands for ''Mains power Variance Immunity''.
Unstable mains power is a major contributor to on-site calibration inaccuracies. Traditional temperature calibrators often become unstable in production environments where large electrical motors, heating elements, and other devices are periodically cycled on or off. The cycling of supply power can cause the temperature regulator to perform inconsistently, leading to both inaccurate readings and unstable temperatures.

The RTC calibrators all employ the MVI functionality, thus avoiding such stability problems.
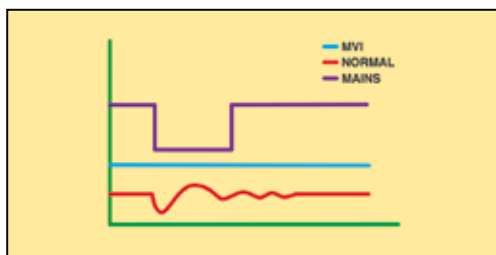
Highest accuracy *(B & C model only)*

The RTC series calibrators may be supplied with a built-in reference thermometer to be used with an external reference sensor only B & C models. This feature allows the instrument to perform calibrations on-site, while maintaining a high accuracy.

A special 90° angled external reference sensor has been designed to accommodate calibration of sensors with a transmitter head, top connector or similar arrangement. The user can decide whether to read the built-in reference sensor or the more accurate angled reference sensor from the large, easy-to-read LCD display of the calibrator. The external sensor and the internal sensor readings are independent of one another.

SET-Follows-TRUE *(B & C model only)*

Available on B and C models only, the "SET-Follows-TRUE" makes the instrument tune in until the temperature reading of the external reference "TRUE" meets the desired "SET" temperature. This feature is important when it is critical that the temperature of the calibration zone matches the desired temperature when measured with accurate external reference sensors.

Reading of sensor-under-test *(B model only)*

Model B of the RTC is equipped with a built-in accurate measuring circuit for sensor-under-test (input), which enables measurement of virtually any type of temperature sensors including: Resistance thermometers (RTD), thermocouples (TC), transmitters, milliamps (mA), voltage (V) and thermostats

The RTC calibrators can be user-programmed from the keyboard for fully automatic sensor calibrations. Once the unit is programmed, the instrument is self-operating and performs the configured calibration routine. All calibration data are stored and can be read in the display.

Switch test *(B model only)*

Users may perform a thermoswitch test and find "Open", "Closed" and the hysteresis (deadband) automatically. The instrument retains the last twenty test results.

Auto-stepping

Up to 20 different temperature steps may be programmed including the hold time for each step. Upon completion of an auto step routine, the user can easily read the results for the sensor-under-test on the RTC display. Results from twenty auto-step calibrations are stored.

The "Set temperature" feature allows the user to set the exact desired temperature with a resolution of 0.001°.

Enhanced stability

A stability indicator shows when the RTC calibrator has reached the desired temperature and is stable. The user may change the stability criteria for the external reference and the sensor-under-test quickly and simply. The stability criterion is the user's security of a correct calibration. A count-down timer is displayed next to the temperature read-out.

Instrument setups

The RTC series allows the user to store up to ten (10) complete instrument setups. You may store all sorts of information including temperature units, stability criteria, use of external reference sensors, resolutions, sensors-under-test (SUT), conversions to temperature, display contrasts, etc. The setup may be recalled at any time.

Maximum and minimum temperature

From the setup menu, the user can select the maximum and minimum temperature limit for the calibrator. This function prevents damage to the sensor-under-test caused by excessive temperatures and it helps reducing sensor drift from exposures of too high temperatures. This feature can be locked with an access code.

Silent Operation

The RTC calibrator can be programmed to run in silent operation. This function is an advantage if calibrating in a laboratory or in an office. If used in silent operation the calibrator is not using its full speed potential.

As found/As left *(B model only)*

When running a calibration initiated from a work order, the user can select the calibration as an As Found or an As Left calibration.

SYNC output

A synchronization output signals when the instrument is stable and may be used with ancillary devices such as video recorders, digital cameras or as an input to a data logging device. The SYNC output may be useful for automating and documenting your calibrations when calibrating external reading devices.

Calibration of indication devices

When calibrating an indicating device in the work order mode, users may key in the results during or after the test. Using the "Calibration info" function, the user may view the complete calibration task, including the "Scenario" before the calibration takes place.

Calibration of up to 24 sensors
with JOFRA ASM

Using the RTC series together with the ASM, Advanced Signal Multi-scanner, offers a great time-saving automatic solution to calibrate multiple temperature sensors at the same time. The ASM series is an eight channel scanner controlled by the JOFRACAL software on a PC. Up to 3 ASM units can be stacked to calibrate up to 24 sensors at a time. It can handle signals from 2-, 3- and 4 wire RTD's, thermocouples, transmitters, temperature switches and voltage.

JOFRACAL calibration software

JOFRACAL is a highly versatile calibration software that is supplied together with the RTC calibrators. The software ensures easy calibration of all kind of temperature sensors, such as RTD´s, thermocouples, transmitters and thermoswithes. Furthermore, it can be used for pressure calibration i.e. pressure gauges and pressure switches. JOFRACAL integrates with all JOFRA calibration instruments. As for temperature calibrators, it is the whole range of temperature calibrators. Regarding pressure calibrators, it integrates with DPC-500, HPC and IPI pressure calibrators. JOFRACAL also has full integration with the series of signal calibrators.

JOFRACAL can also be used for manual calibrations, as it can be set up to accept manual entry of calibration data together with other liquid baths, ice points or dry-block heat sources.

The calibration data collected can be stored on a PC for later recall or analysis. The RTC calibrator stores the calibration procedure and can be taken out to the process site without bringing a personal computer.

This allows the RTC calibrator to:
- Operate as a stand-alone instrument, using advanced calibration routines without the assistance of a personal computer on site. The work order functionality
- Prevent unauthorized changes to a calibration routine. Personnel who are not authorized to alter a calibration routine cannot do so

Once all calibrations are completed, the data may be uploaded to the JOFRACAL for printing of certificates. The data collected may be stored on the personal computer for later recall or analysis.

JOFRACAL offers extended output formats of the captured calibration data such as PDF file format and ASCII/semicolon separated text format for further processing and calculation of data in spreadsheets and word processors.

Hardware requirements
- INTEL® PENTIUM® II 1.4 GHz processor
- 128MB RAM (256MB recommended)
- 80MB free disk space on hard disk (120MB recommended) prior to installation
- Standard VGA (800x600, 256 colors). 1024x768 recommended
- USB input device for installation of program
- 1 free USB and 1 free RS-232 serial port
- Microsoft Windows® XP, Microsoft Windows® Vista
- System fonts; MS San Serif and Arial

JOFRA™

FUNCTIONAL SPECIFICATIONS

Temperature range

@ ambient temp. 0°C/32°F: ....10 to 700°C/32 to 1292°F
@ ambient temp. 23°C/73°F: ......33 to 700°C/91 to 1292°F
@ ambient temp. 40°C/104°F: ..50 to 700°C/122 to 1292°F

Accuracy (model B & C) with external STS ref. sensor

RTC-700 B & C (33 to 660°C) .... ±0.11°C/±0.2°F
Relative to reference standard. Specifications by use of the external JOFRA STS-200 reference sensor

Accuracy with internal reference sensor

RTC-700 A, B & C .... *±0.29°C/±0.52°F
* Accuracy 33 to 660ºC is including calibration uncertainty.
Accuracy 660 to 700°C ± 0.29°C exclusive calibration uncertainty.
RTC-700 is delivered calibrated in 660 to 700ºC with calibration uncertainty ±1.4ºC

Stability

@ 33 to 125°C/91 to 257°F .... ±0.008°C/±0.015°F
@ 125 to 425°C/257 to 797°F .... ±0.015°C/±0.027°F
@ 425 to 700°C/797 to 1292°F .... ±0.02°C/±0.036°F
Measured after the stability indicator has been on for 15 minutes.
Measuring time is 30 minutes.

Axial homogeneity @ 60 mm

@ temp. range 33 to 100°C.....................................±0.10°C
@ temp. range 100 to 420°C...................................±0.25°C
@ temp. range 420 to 700°C...................................±0.40°C
@ temp. range 91 to 212°F ....±0.18°F
@ temp. range 212 to 788°F ....±0.45°F
@ temp. range 788 to 1292°F ....±0.72°F

Resolution (user-selectable)

All temperatures .... 1°, 0.1°, 0.01° or 0.001°

Heating time

33 to 700°C/91 to 1292°F .... 45 minutes

Cooling time

700 to 100°C/1292 to 212°F .... 43 minutes
100 to 50°C/212 to 122°F .... 17 minutes
50 to 33°C/122 to 91°F .... 20 minutes

Time to stability (approx.)

RTC-700 .... 10 minutes

Immersion depth

RTC-700 .... 200 mm/7.9 in

INPUT SPECIFICATIONS

All input specifications apply to the dry-block of the calibrator running at the respective temperature (stable plus an additional 20 minute period).

All input specifications are valid for RTC-700.

RTD reference input (B & C models only)

Type.................. 4-wire RTD with true ohm measurements[1]
F.S. (Full Scale) .... 400 ohm
Accuracy (12 months) ...... ±(0.0012% rdg. + 0.0005% F.S.)

RTD Type	Temperature		12 months	
	°C	°F	°C	°F
Pt100 reference	-50	-58	±0.008	±0.015
	0	32	±0.008	±0.015
	155	311	±0.011	±0.019
	320	608	±0.014	±0.024
	420	788	±0.015	±0.027
	700	1292	±0.020	±0.036

Note 1: True ohm measurement is an effective method to eliminate errors from induced thermoelectrical voltage

DLC sensor input (B & C models only)

Type	Temperature		12 months	
	°C	°F	°C	°F
DLC 700 input	33	91	±0.015	±0.027
	155	311	±0.013	±0.024
	420	700	±0.011	±0.020
	700	1292	±0.010	±0.018

RTD sensor under test input (B model only)

F.S. (range) .... 400 ohm
Accuracy (12 months)................. ±(0.002% Rdg.+0.002% F.S.)
F.S. (range) .... 4000 ohm
Accuracy (12 months) ....±(0.005% Rdg.+0.005% F.S.)
2-wire .... add 50 mOhm

RTD Type	Temperature		12 months	
	°C	°F	°C	°F
Pt1000 α = 385	-50	-58	±0.064	±0.115
	0	32	±0.073	±0.131
	155	311	±0.076	±0.136
	320	608	±0.088	±0.158
	700	1292	±0.121	±0.217
Pt500 α = 385	-50	-58	±0.115	±0.191
	0	32	±0.127	±0.228
	155	311	±0.142	±0.255
	320	608	±0.145	±0.260
	700	1292	±0.185	±0.333
Pt100 α = 385	-50	-58	±0.025	±0.045
	0	32	±0.026	±0.046
	155	311	±0.030	±0.054
	320	608	±0.035	±0.063
	420	420	±0.039	±0.070
	700	1292	±0.049	±0.088

Above mentioned input accuracies are for the most common used sensor types. The reference manual holds information for 17 extra RTD types.

Thermocouple input

Range .... ±78 mV
F.S. (Full Scale) .... 78 mV
Accuracy (12 months) .... ±(0.005% Rdg. + 0.005% F.S.)

TC Type	Temperature		12 months*	
	°C	°F	°C	°F
E	-50	-58	±0.09	±0.17
	0	32	±0.06	±0.11
	155	311	±0.06	±0.11
	320	608	±0.07	±0.12
	650	1202	±0.08	±0.14
J	-50	-58	±0.10	±0.18
	0	32	±0.08	±0.14
	155	311	±0.09	±0.16
	320	608	±0.09	±0.16
	650	1202	±0.09	±0.17
K	-50	-58	±0.14	±0.24
	0	32	±0.10	±0.19
	155	311	±0.11	±0.20
	320	608	±0.11	±0.20
	650	1202	±0.13	±0.23
T	-50	-58	±0.15	±0.26
	0	32	±0.10	±0.18
	155	311	±0.08	±0.15
	320	608	±0.08	±0.15
	400	752	±0.08	±0.14
R	-50	-58	±1.30	±2.35
	0	32	±0.78	±1.40
	155	311	±0.47	±0.84
	320	608	±0.40	±0.73
	650	1202	±0.39	±0.70
S	-50	-58	±0.98	±1.76
	0	32	±0.78	±1.40
	155	311	±0.49	±0.89
	320	608	±0.45	±0.81
	650	1202	±0.41	±0.73
B	250	482	±1.57	±2.83
	320	608	±1.19	±2.14
	650	1202	±0.67	±1.21
N	-50	-58	±0.20	±0.35
	0	32	±0.15	±0.27
	155	311	±0.13	±0.23
	320	608	±0.13	±0.23
	650	1202	±0.13	±0.23
U	-50	-58	±0.13	±0.24
	0	32	±0.10	±0.18
	155	311	±0.08	±0.14
	320	608	±0.08	±0.14

* Excl. CJC accuracy ±0.3°C / ±0.54°F

Transmitter supply

Output voltage..24VDC ±10%
Output current.. Maximum 28 mA

Transmitter input mA (B model only)

Range .... 0 to 24 mA
Accuracy (12 months) ....±(0.005% Rdg. +0.010% F.S.)

Voltage input VDC (B model only)

Range .... 0 to 12 VDC
Accuracy (12 months) ....±(0.005% Rdg. +0.010% F.S.)

Switch input (B model only)

Switch dry contacts
Test voltage...Maximum 5 VDC
Test current ....Maximum 2.5 mA

Mains specifications

Voltage ....115V (90-127) / 230V (180-254)
Frequency, non North American ....50 Hz ±5, 60 Hz ±5
Frequency, North American deliveries ....60 Hz ±5
Power consumption (max.) ....1150 W

Communication interface

Serial data interface ....USB 2.0 device port
Serial data interface ....USB 2.0 host double port*
LAN..................................... Ethernet MAC 10/100 Base-T*
SD.. SD slot*
* for future expansion

Miscellaneous

Operating temperature......................0 to 40°C/32 to 104°F
Storage temperature .... -20 to 50°C/-4 to 122°F
Humidity ....0 to 90% RH
Protection class IP-10

PHYSICAL SPECIFICATIONS

Weight

Instrument ....11.3 kg/24.9 lb
Carrying case ....11.0 kg/24.3 lb
Instrument in Carrying case ....24.3 kg/53.6 lb
Instrument in packaging..............................16.3 kg/36.0 lb
Instrument in Carrying case & packaging....27.3 kg/60.2 lb

Dimensions (LxWxH)

Instrument .... 362x171x421 mm
Carrying case .... 470x350x600 mm
Instr. & Carrying case............................. 470x350x600 mm
Instr. & packaging .... 442x251x481 mm
Instr., Carrying case & packaging........... 550x430x660 mm

INSERTS

Insert dimensions

RTC-700 outer diameter ....29.8 mm/1.17 in
RTC-700 inner diameter............................25.6 mm/1.01 in
RTC-700 length ....210 mm/8.27 in

Weight of non-drilled insert (approx.)

RTC-700...1060 g/37.3 oz

PREDRILLED INSERTS FOR RTC-700

All predrilled inserts have holes for:
4 mm reference sensor • ¼" reference sensor • 4 mm hole for DLC sensor
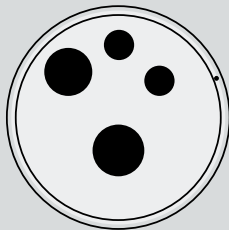
Single Hole Insert

Spare part no. for predrilled inserts with reference holes		
	Instrument	
Sensor diameter	Insert code [1]	RTC-700 A/B/C
3 mm	003	127148
4 mm	004	127149
5 mm	005	127150
6 mm	006	127151
7 mm	007	127152
8 mm	008	127153
9 mm	009	127154
10 mm	010	127155
11 mm	011	127156
12 mm	012	127157
13 mm	013	127158
14 mm	014	127159
15 mm	015	127160
16 mm	016	127161
Package of the above inserts	SMM	127162

Spare part no. for predrilled inserts with reference holes		
	Instrument	
Sensor diameter	Insert code [1]	RTC-700 A/B/C
1/8 in	125	127164
3/16 in	187	127165
1/4 in	250	127166
5/16 in	312	127167
3/8 in	375	127168
7/16 in	437	127169
1/2 in	500	127170
9/16 in	562	127171
5/8 in	625	127172
Package of the above inserts	SIM	127173

Note 1: Use the insert code, when ordering a JOFRA standard insert together with the RTC calibrator

UNDRILLED INSERTS FOR RTC SERIES
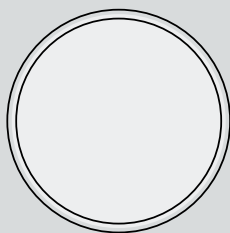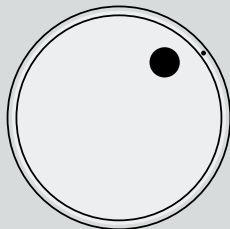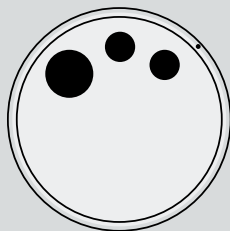
Inserts, undrilled incl. insulation plugs		
		Instrument	
Inserts	Insert code[1]	RTC-700 A/B/C
5-pack, undrilled inserts with no holes	UN1	127197
5-pack, undrilled inserts with hole for DLC sensor	UN2	127198
5-pack, undrilled inserts with 2 holes for STS reference sensors (4mm & ¼") and 1 hole for DLC sensor	UN3	127199

Note 1: Use the insert code, when ordering a JOFRA standard undrilled insert together with the RTC calibrator
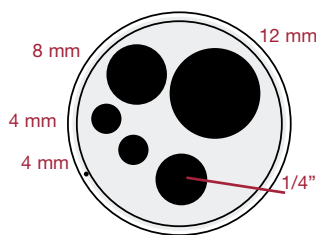
UN1

UN2

UN3

JOFRA™

MULTI-HOLE INSERTS FOR RTC-700 - METRIC (mm)

Spare part no. for multi-hole inserts - metric (mm)		
	Instrument	
Insert type	Insert code[1]	RTC-700 A/B/C
Multi-hole type 1	M01	127200
Multi-hole type 2	M02	127201
Multi-hole type 3	M03	127202
Multi-hole type 4	M04	127203
Multi-hole type 7	M07	127244
Multi-hole type 8	M08	127245
Multi-hole type 9	M09	127246
Set of 4 Metric Multi Inserts, 3mm to 13mm (Incl. 127203, 127244, 127245, 127246)	SM	127252

Note 1: Use the insert code, when ordering a JOFRA standard multi-hole insert together with the RTC calibrator
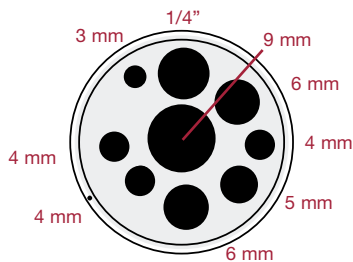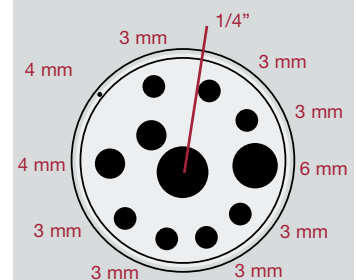

Multi-hole M04

Multi-hole M08
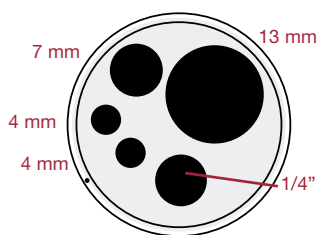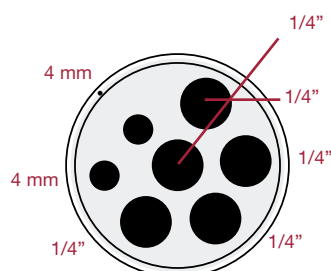

Multi-hole M07
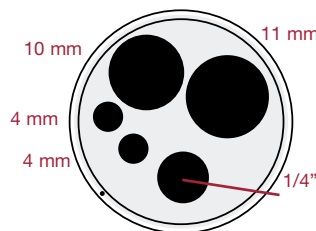
Multi-hole M09
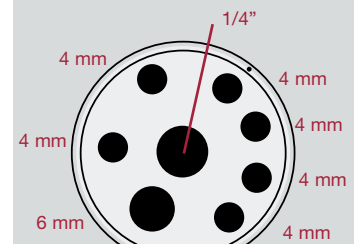
Multi-hole M01
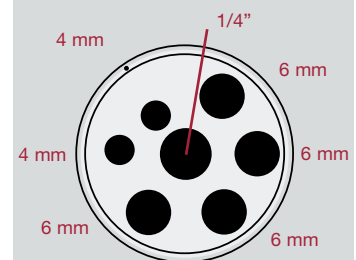
Multi-hole M02

Multi-hole M03

MULTI-HOLE INSERTS FOR RTC-700 - IMPERIAL (INCH)

| Spare part no. for multi-hole inserts - imperial (inch)		
	Instrument	
Insert code	Insert code[1]	RTC-700 A/B/C
Multi-hole type 5	M05	127204
Multi-hole type 6	M06	127205
Multi-hole type 10	M10	127249
Set of 3 Imperial Multi Inserts, 1/8 to 1/2 inch (Incl. 127170, 127205, 127249)	SI	127254

Note 1: Use the insert code, when ordering a JOFRA standard multi-hole insert together with the RTC calibrator

Multi-hole M05
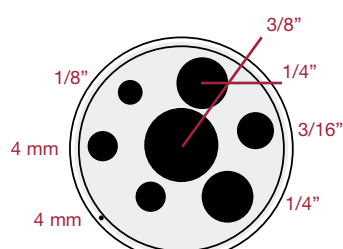
Multi-hole M06
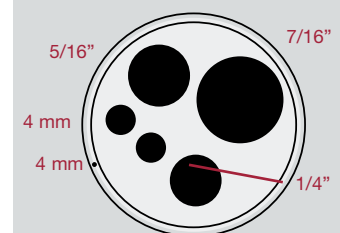
Multi-hole M10

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STANDARD DELIVERY

Model A, B and C:
- RTC dry-block calibrator (user specified)
- Mains power cable (user specified)
- Traceable certificate - temperature performance
- Tool for insertion tubes
- Heat shield
- JOFRACAL
- USB cable
- Manual

Model B instruments contain the following extra items:
- Test cables (2 x red, 2 x black)
- Traceable certificate - input performance for reference sensor and DLC sensor
- Traceable certificate - input performance for sensor-under-test inputs (RTD, mA, mV, TC)

Model C instruments contain the following extra items:
- Traceable certificate - input performance for reference sensor and DLC sensor

ACCESSORIES

125066	Extra fixture for sensor grip
125067	Extra sensor grip
122771	Mini-Jack connector for stable relay output
120516	Thermocouple Male Plug - Type J - Black
120517	Thermocouple Male Plug - Type K - Yellow
120514	Thermocouple Male Plug - Type N - Orange
120515	Thermocouple Male Plug - Type T - Blue
120518	Thermocouple Male Plug - Type R / S - Green
120519	Thermocouple Male Plug - Type Cu-Cu - White

FUNCTIONAL COMPARISON

	Model A	Model B	Model C
Triple-zone heating block	•	•	•
MVI - Mains Variance Immunity (or similar)	•	•	•
Stability indicator	•	•	•
Automatic step function	•	•	•
USB communication	•	•	•
Display resolution 0.001°	•	•	•
Programmable max. temperature	•	•	•
SYNC output (for external recording device)	•	•	•
Calibration of short sensors in special insert		•	•
External precision reference sensor input		•	•
External precision DLC reference sensor input		•	•
"SET" follows "TRUE"		•	•
Load compensation functionality		•	•
Input for RTD, TC, V, mA		•	
4-20 mA transmitter input incl. 24 VDC supply		•	
All inputs scalable to temperature		•	
Automatic switch test (open, close and hysteresis)		•	
Download of calibration work orders from PC		•	
Upload of calibration results (as found & as left)		•	

Model A

Model B

Model C

ORDERING INFORMATION

Order number	Description
	Base model number
RTC700	RTC-700 Series, 33℃ to 700℃ (91℉ to 1292℉)
	Model version
A	Basic model, without input
B	Full model, incl. DLC sensor input, Reference sensor input, Sensor-under-test input
C	Middle model, incl. DLC sensor input, Reference sensor input
	Power supply (US deliveries 60 Hz only)
115	115VAC
230	230VAC
	Mains power cable
A	European, 230V
B	USA/Canada, 115V
C	UK, 240V
D	South Africa, 220V
E	Italy, 220V
F	Australia, 240V
G	Denmark, 230V
H	Switzerland, 220V
I	Israel, 230V
	Insert type and size
NON	No insert selected (standard)
UNX	1 x Undrilled Insert (Please see Insert selection for code)
XXX	1 x Single hole insert (Please see Insert selection for code)
MXX	1 x Multi hole insert (Please see Insert selection for code)
SIX	Set of 3 Imperial multi hole inserts. Covering holes from 1/8" to 1/2"
SMX	Set of 4 Metric multi hole inserts. Covering holes from 3mm to 13mm
SIM	Set of 9 Imperial inserts. Covering holes from 1/8" to 5/8"
SMM	Set of 14 Metric inserts. Covering holes from 3mm to 16mm
	Dynamic Load Compensation (B & C models only, optional)
DLC	DLC sensor
	STS Reference sensor (B & C models only, optional)
R4	STS-200 Ref. sensor. Dia. 4mm. Length 227mm (STS200A970EH)
R5	STS-200 Ref. sensor. Dia. 1/4". Length 227mm (STS200B970EH)
	Calibration Certificate
F	Traceable Callibration Certificate (standard)
H	Accredited Calibration Certificate
EA	Full EURAMET Calibration Certificate
FS	Traceable System Calibration Certificate (B & C model only)
HS	Accredited System Calibration Certificate (B & C model only)
EAS	Full EURAMET System Calibration Certificate (B & C model only)
EASD	Full EURAMET System Calibration Certificate with DLC (B & C model only)
	Accessories
CT	Solid Protective Carrying case with trolley
SR	Support rod set
TR	Solid Protective Carrying case with trolley & Support rod set
	Sample order number
RTC700 B 230 A SM DLC R4 EA CT	JOFRA RTC-700 B with 230VAC, EU power cord, set of metric inserts, DLC, STS-200 ref. sensor, full EA temp. calibration certificate, and carrying case with trolley.

OPTIONS

NEW!

Carrying Case - Option CT

With our new special designed carrying case it is now possible to store both reference and DLC sensor and 5 inserts in the case with an optimum physical protection. With improved integrated trolley system for easy and safe transportation.

Support rod set - Option SR

Support rod for sensors to be mounted on all JOFRA RTC dry-block calibrators. Holds the sensor under test in its position, while calibrating. Includes 2 sensor grips and 2 fixtures for sensor grips.

AMETEK Calibration Instruments
is one of the world's leading manufacturers and developers of calibration instruments for temperature, pressure and process signals as well as for temperature sensors both from a commercial and a technological point of view.

JOFRA Temperature Instruments
Portable precision thermometers. Dry-block and liquid bath calibrators: 5 series, with more than 25 models and temperature ranges from -90° to 1205°C / -130° to 2200°F. All featuring speed, portability, accuracy and advanced documenting functions with JOFRACAL calibration software.

JOFRA Pressure Instruments
Convenient electronic systems ranging from -25 mbar to 1000 bar (0.4 to 15,000 psi) - multiple choices of pressure ranges, pumps and accuracies, fully temperature-compensated for problem-free and accurate field use.

JOFRA Signal Instruments
Process signal measurement and simulation for easy control loop calibration and measurement tasks - from handheld field instruments to laboratory reference level bench top instruments.

JOFRA / JF Marine Instruments
A complete range of calibration equipment for temperature, pressure and signal, approved for marine use.

FP Temperature Sensors
A complete range of temperature sensors for industrial and marine use.

M&G Pressure Testers
Pneumatic floating-ball or hydraulic piston dead weight testers with accuracies to 0.015% of reading.

M&G Pumps
Pressure generators from small pneumatic "bicycle" style pumps to hydraulic pumps generating up to 1,000 bar (15,000 psi).

...because calibration is
a matter of confidence

AMETEK®
CALIBRATION INSTRUMENTS

AMETEK Denmark A/S
Gydevang 32-34 | 3450 Allerød | Denmark
T: +45 4816 8000 | ametek@ametek.dk

Sales & Service:
Europe, Asia, Africa, Middle East and South America

AMETEK Mansfield & Green *(North America)*
T: +1 800 527 9999 | cal.info@ametek.com

AMETEK Singapore Pte. Ltd. *(Singapore)*
T: +65 6 484 2388 | aspl@ametek.com.sg

AMETEK Inc. Beijing Rep. Office *(China)*
T: +86 10 8526 2111 | jofra@ametek.com.cn

AMETEK GmbH *(Germany)*
T: +49 2159 9136 510 | info.mct-de@ametek.de

AMETEK Calibration Instruments *(UK)*
T: +44 (0) 1243 833 302 | jofra@ametek.co.uk

www.jofra.com