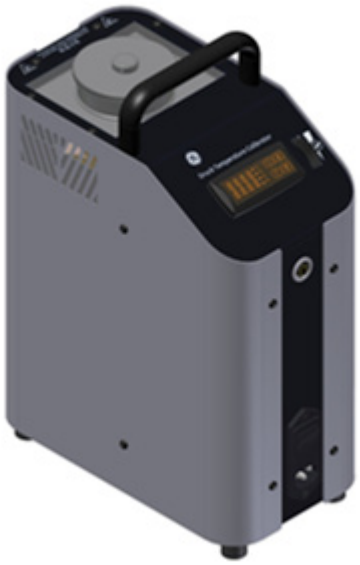
GE
Measurement & Control

Dry Block and Liquid Bath Temperature Calibrator Series



Accurate temperature measurement is essential for maintaining product quality, process efficiency, regulatory compliance and operational safety in industrial processes. High performance, stable temperature sources are the solution for achieving optimal performance of temperature sensors and process instrumentation, by providing reference temperatures for checking and calibrating these devices. The GE Dry Block and Liquid Bath Temperature Calibrators provide solutions for testing temperature devices over a range of temperatures from -35°C to 650°C (-30°F to 1200°F) with a choice of dry block and liquid bath configurations to accommodate virtually any type, shape and size of sensor.

DryTC 165 and DryTC 650

These dry block calibrators incorporate the latest metal block and electronic control technology and offer a choice of precision bored well inserts to accommodate a wide range of test devices. Two models are available:

- DryTC 165 generates temperatures from -35°C to 165°C
- DryTC 650 generates temperatures from ambient to 650°C.

Both models provide high accuracy, excellent set point stability and rapid heating and cooling times.

- Temperature range from -35°C to 650°C
- Accuracy from 0.2°C
- Stability 0.05°C
- Rapid heating and cooling
- Light weight and robust for field use
- Choice of interchangeable well inserts
- Easy to set-up and use

Dry well insertion sleeves

Dry block calibrators greatly simplify the test and calibration of process sensor heads, probes, switches and thermometers, but optimum performance relies on a good fit of the device in the well insert. To facilitate this, a range of insertion sleeves are available with hole diameters to suit the most common probes and devices.

LiquidTC 165 and LiquidTC 255

These multi-purpose calibrators combine the portability of dry block calibrators with the flexibility of liquid immersion baths to enable the testing and calibration of virtually any shape and size of devices. The calibrators can be re-configured by the user to function as a liquid bath, as an infra-red black body source and as a dry block calibrator with interchangeable inserts. The latest heating and electronic control technology, combined with continuous liquid agitation of the fluid bath, provide high accuracy and stability throughout the large homogeneous measuring zone. The calibrators are factory configured as liquid baths and are provided with a bath cover to hold up to 5 devices while reducing heat loss from the surface of the liquid medium. For transportation a leak-proof sealing cover is also provided as standard. Optionally the temperature calibrators can be configured with additional capabilities including interchangeable liquid baths, a black body source and dry block interchangeable inserts. Two models are available:

- LiquidTC 165 generates temperatures from -35°C to 165°C
- LiquidTC 255 generates temperatures from ambient to 255°C

- Temperature range from -35°C to 255°C
- Accuracy from 0.1°C
- Stability 0.05°C
- Large bath for irregular and multiple devices
- Multi-purpose – liquid bath, black body source, dry block
- Interchangeable bath – simplifies fluid changes
- Light weight and robust for field use
- Leak-proof bath cover for transportation

High capacity portable liquid bath

Standard factory configuration provides a 60 mm x 170 mm liquid bath with automatic liquid agitation.

Interchangeable liquid bath inserts

Allows the calibration media to be simply and quickly changed to suit different temperature ranges, while retaining the automatic liquid agitation.

Infra-red black body source

A specially constructed insertion sleeve provides an emissivity of 1 (black body).

Dry well insertion sleeves

For the convenience of a dry block calibrator a range of insertion sleeves are available with hole diameters to suit most common probes and devices.

Dry block and liquid bath general features

Controller OFF – disables automatic temperature control at the last set point temperature to allow the calibrator settings to be changed part way through a test.

Manual control – allows the power output of the calibrator to be adjusted to control the rate at which the calibrator reaches the set-point temperature.

Set-point memory – allows up to four set-point temperatures to be stored in memory. The test sequence can then be activated with a single key press.

Test profile – this function defines a temperature profile with a heating rate to the first set-point value, a test duration or soak time at set-point one followed by a cooling rate to a second set-point.

PC communications -the temperature calibrators are provided with an RS 485 interface allowing multiple units (up to 32) to be networked for PC control and data reading using the standard MODBUS RTU protocol. Converters to RS 232 and USB are available.

Specifications

	LiquidTC 165	LiquidTC 255	DryTC 165	DryTC 650
Ranges				
Temperature range	-35 to 155 °C (with TCL10 oil-std) 7 to 165 °C (with TCL50 oil-option)	Ambient to 255 °C	-35 to 165 °C	Ambient to 650 °C
Equivalent ranges in Fahrenheit	-30 to 310 °F 45 to 330 °F	Ambient to 490 °F	-30 to 330 °F	Ambient to 1200 °F
Heat well	Dia 60 mm/depth 170 mm (150 mm working depth)		Dia. 28 mm/depth 150 mm	
Performance				
Stability	0.05 °C			
Accuracy			0.2 °C	0.4 °C
Standard Liquid Bath	0.1 °C	0.2 °C		
DB Dry block option	0.3 °C	0.4 °C		
IR Infrared black body option	0.5 °C	0.5 °C		
Black body emissivity	0.9994			
Display				
Display range	-50°C to 165°C	0 to 255°C	-50°C to 165°C	0 to 650°C
Measurement resolution	0.01° from -9.99 to 99.99 otherwise 0.1°C			
Setting resolution	0.1°C			
Heating/cooling times	40 min (ambient to 165°C)	17 min (ambient to 255°C)	27 min (ambient to 165°C)	20 min (ambient to 650°C)
Data applies to the LiquidTC 165/255 used as a standard liquid bath. For further details, please refer to the product manual.	23 min (ambient to 165°C) 50 min (ambient to -35°C)	35 min (255°C to 50°C)	17 min (165°C to ambient) 25 min (ambient to -35°C)	60 min (650 to 100°C)
Power requirements				
Supply voltage	100 to 240 VAC 50/60 Hz			
Power consumption	400 VA nominal	1000 VA nominal	400 VA nominal	400 VA nominal
Dimensions				
Width	210 mm	150 mm	210 mm	150 mm
Height	380 + 50 mm	330 + 698 mm	380 + 50 mm	330 + 68 mm
Depth	300 mm	270 mm	300 mm	270 mm
Weight	13 Kg	7.5 Kg	11.4 Kg	7.5 Kg
Standard Features				
Controller OFF	✓			
Manual Control	✓			
Operating Service Hours	✓			
Set-point memory	✓			
Rote control °C/min	✓			
Test Profile	✓			
RS485 serial interface	✓			
Standard Accessories				
	1 lt TCL10 silicone oil	1 lt TCL10 silicone oil,		
	Magnetic stirrer, magnetic lifter, sensor basket, sealing cap, suction pump, sensor lid with 5 silicone plugs, calibration certificate, user manual and mains cable		Well insert (1 x 3.5 mm/1 x 6.5 mm/1 x 13.5 mm), insert remove tool, calibration certificate, user manual and mains cable	
	DB option includes one interchangeable liquid bath insert and one dry well insert (1 x 2 mm/3 x 3.5 mm/2 x 4.5 mm/ 1 x 6 mm).			
	IR option includes one interchangeable liquid bath insert and one black body insert.			
	Note: If DB and IR options are ordered, only one interchangeable liquid bath insert is provided.			
Interchangeable liquid bath	TCLBATH			

General Specifications

Operating temperature (full specification)
18°C to 28°C (65°F to 82°F)

Extended operating temperature (reduced specification)
0°C to 50°C (32°F to 122°F)

LiquidTC 165
Maximum temperature at 0°C ambient: XXX°C (YYY°F)
Minimum temperature at 50°C ambient: -XX°C (-YY°F)

LiquidTC 255
Maximum temperature at 0°C ambient: XXX°C (YYY°F)
Minimum temperature at 50°C ambient: -XX°C (-YY°F)

DryTC 165
Maximum temperature at 0°C ambient: XXX°C (YYY°F)
Minimum temperature at 50°C ambient: -XX°C (-YY°F)

DryTC 650
Maximum temperature at 0°C ambient: XXX°C (YYY°F)
Minimum temperature at 50°C ambient: -XX°C (-YY°F)

Ambient humidity
To 80% RH (non-condensing)

Storage temperature
-20°C to 70°C (-4°F to 158°F)

Ambient altitude
Up to 2000 metres (6560ft)

Operating environment
Indoor use only.
Not rated for use in potential explosive atmospheres

Compliance
CE marked
EMC Compliance EN61326
Electrical safety EN61010
RoHS, REACH and WEEE EU Directive Compliant

Ordering Information

DryTC 165 and DryTC 650 Product Code

DRYTC 165	Dry block temperature calibrator -35 °C to 165°C
DRYTC 650	Dry block temperature calibrator ambient to 650°C

Temperature Unit

0	°C working temperature unit
1	°F working temperature unit

Power Lead

A	EU plug
C	Australia / New Zealand plug
D	UK plug
G	South Africa / India plug
J	Japan plug
K	USA plug
R	China plug

Example:

DRYTC 165 -1- D

LiquidTC 165 and LiquidTC 650 Product Code

LIQUID TC165	Liquid bath temperature calibrator -35 °C to 165°C
LIQUID TC255	Liquid bath temperature calibrator ambient to 255°C

Temperature Unit

0	°C working temperature unit
1	°F working temperature unit

Calibration Function

0	Standard liquid bath configuration
1	Combination liquid bath (LI) and infrared (IR) functions
2	Combination liquid bath (LI) and dry block (DB) functions
3	Combination liquid bath (LI), infrared (IR) and dry block (DB) functions

Power Lead

A	EU plug
C	Australia / New Zealand plug
D	UK plug
G	South Africa / India plug
J	Japan plug
K	USA plug
R	China plug

Example:

LIQUIDTC 165 -0 -2 -K

Accessories

(Please order the following part numbers as separate line items:)

TCRS232	RS485 to RS232 converter
TCUSB	RS485 to USB converter
TCCASE1	Aluminium transit case for DryTC165 and LiquidTC165
TCCASE2	Aluminium transit case for DryTC650 and LiquidTC255
TCL10	Dow Corning 200 /CS10 silicone oil -35°C to +155°C
TCL50	Dow Corning 200 /CS50 silicone oil +25°C to +270°C
TCSTAND	Probe support stand
TCBATH	Interchangeable liquid bath for use with LiquidTC165 and LiquidTC255 with LI configuration
TCDKD	DKD accredited Calibration. Not applicable to IR option of LiquidTC165 and LiquidTC255

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