

# 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  $-35^{\circ}\text{C}$  to  $650^{\circ}\text{C}$  ( $-30^{\circ}\text{F}$  to  $1200^{\circ}\text{F}$ ) with a choice of dry block and liquid bath configurations to accommodate virtually any type, shape and size of sensor.



The design philosophy is one of simplification, that is, simplifying the complex arts and skills of temperature calibration to provide instrument technicians with a highly accurate, yet simple to use temperature reference.

- Calibrated to EA-10/13 (European Co-operation for Accreditation Guidelines on the Calibration of Dry Block Calibrators) ensuring high accuracy without the necessity of a reference probe!
- Quick and easy touch screen setting and set point memory recall
- Dry block and liquid bath configurations with multi use options for switching between dry, liquid and infra-red well inserts
- Accommodates anything from unique probe sizes to irregular shapes and provides a massive 60mm x 170mm capacity for simultaneously testing multiple sensors

## 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 Room Temperature (RT) 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 Room Temperature (RT to 650°C)
- Accuracy from  $\pm 0.2^\circ\text{C}$
- Stability  $0.05^\circ\text{C}$
- 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 infrared 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 Room Temperature (RT) to 165°C
- LiquidTC 255 generates temperatures from ambient to 255°C
- Temperature range from Room Temperature (RT to 255°C)
- Accuracy from  $\pm 0.2^\circ\text{C}$
- Stability  $0.05^\circ\text{C}$
- 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** -An optional USB cable is available for connection to a PC.

# Specifications

LiquidTC 165

LiquidTC 255

DryTC 165

DryTC 650



## Temperature Ranges

Room Temperature (RT) to 155°C (-30° to 310°F option) with TCL 10 oil supplied 25° to 165°C (-77° to 330 °F option) with optional TCL 50 oil	Ambient to 255°C (Ambient to 490 °F option)	-35 to 165 °C (-30 to 330 °F option)	Ambient to 650 °C (Ambient to 1200 °F option)
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## Heat well

Dia 60 mm/depth 170 mm (150 mm working depth)	Dia. 28 mm/depth 150 mm
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## Measuring Zone

0 to 40 mm from the bottom of the insert

## Stability

0.05 °C

## Accuracy

0.2°C

0.4°C

Standard Liquid Bath -LI

0.2°C

0.2°C

Dry block option - DB

0.3°C

0.4°C

Infrared black body option - IR

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

## Standard Features

Controller off, manual control, operating service hours, set-point memory, rate control °C /min, test profile

## 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 + 68 mm

380 + 50 mm

330 + 68 mm

Depth

300 mm

270 mm

300 mm

270 mm

## Weight

13 Kg

7.5 Kg

12.5 Kg

7.5 Kg

## Environmental

Ambient temperature

10°C to 50°C (50°F to 122°F)

Specifications valid at 18 °C to 28 °C (65 °F to 82 °F) ambient temperature. Minimum and maximum temperatures may not be achieved over the full ambient temperature range.

Ambient humidity

To 80% rh (non-condensing)

Storage temperature

From -10°C to 60°C (14°F to 140°F)

Recommended operating environment

Indoor use. Not for use in potentially explosive atmospheres.

Compliance

EN6326 (EMC), EN61010 Oelectrical safety), EU directive (RoHS, REACH, WEEE)

## Standard Accessories

1 lt TCL10 silicone oil

1 lt TCL50 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).

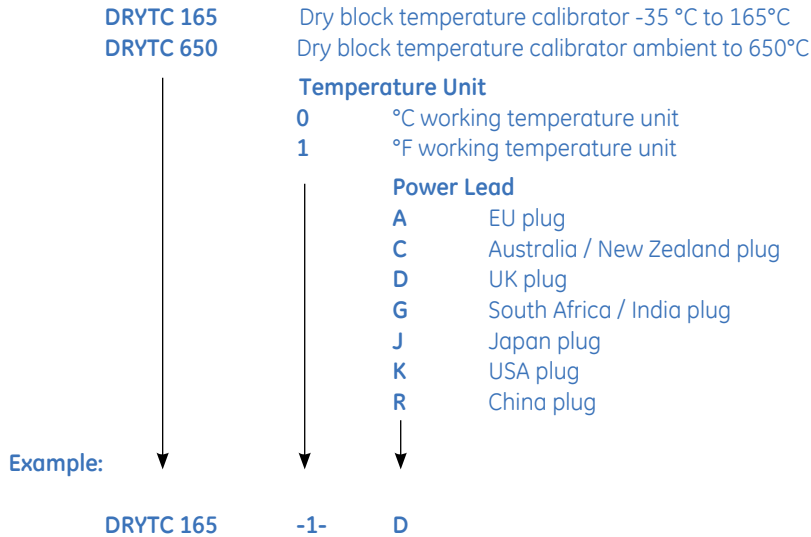
IR option includes one interchangeable liquid bath insert and one black body insert.

Note: If DB and IR options are ordered, only one interchangeable liquid bath insert is provided.

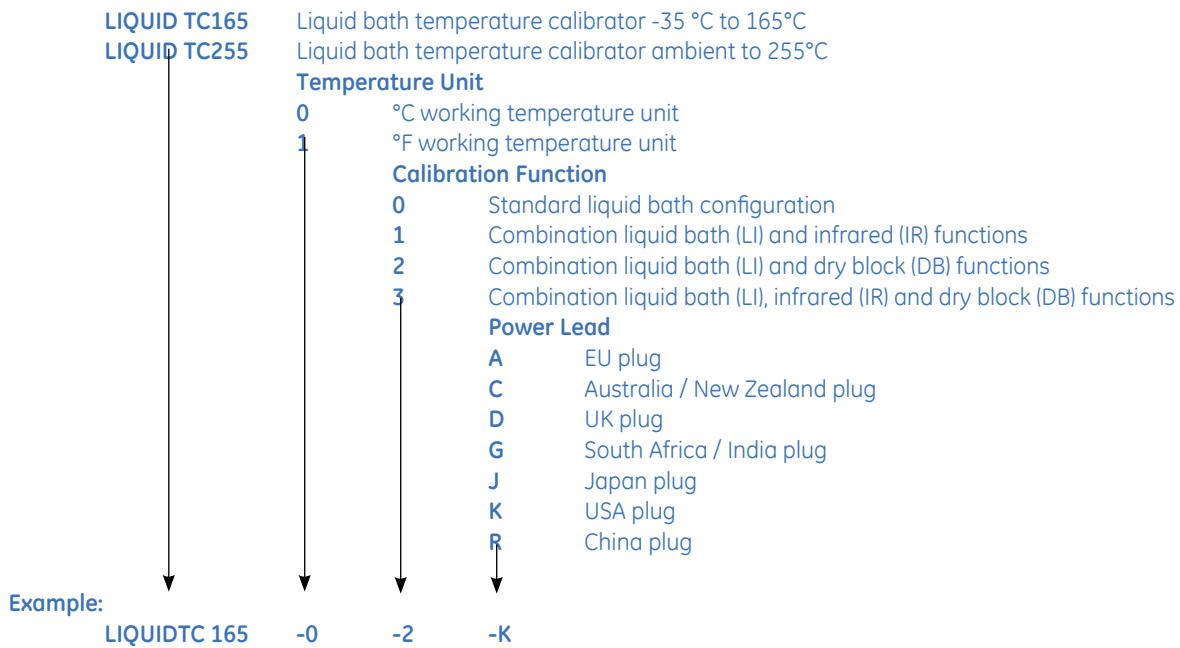


# Ordering Information

## DryTC 165 and DryTC 650 Product Code



## LiquidTC 165 and LiquidTC 650 Product Code



## Accessories

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

<b>TCUSB</b>	USB output including a cable to connect to a PC
<b>TCCASE1</b>	Aluminium transit case
<b>TCL10</b>	Dow Corning 200 /CS10 silicone oil -35°C to +155°C
<b>TCL50</b>	Dow Corning 200 /CS50 silicone oil +25°C to +270°C
<b>TCSTAND</b>	Probe support stand
<b>TCBATH</b>	Interchangeable liquid bath for use with LiquidTC165 and LiquidTC255 with LI configuration
<b>TCDKD</b>	DKD accredited Calibration. Not applicable to IR option of LiquidTC165 and LiquidTC255

# Adaptor inserts

Single bore adaptor insert for DryTC 165 and 650		
Type	GE Part number	
Length mm	DRY	150
Diameter mm		28
Bore size mm		
1.5		015 MS
2.0		020 MS
2.5		025 MS
3.0		030 MS
3.5		035 MS
4.0		040 MS
4.5		045 MS
5.0		050 MS
5.5		055 MS
6.0		060 MS
6.5		065 MS
7.0		070 MS
7.5		075 MS
8.0		080 MS
8.5		085 MS
9.0		090 MS
9.5		095 MS
10.0		100 MS
10.5		105 MS
11.0		110 MS
11.5		115 MS
12.0		120 MS
12.5		125 MS
13.0		130 MS
13.5		135 MS
14.0		140 MS
14.5		145 MS
15.0		150 MS
15.5		155 MS
16.0		160 MS
16.5		165 MS
17.0		170 MS
17.5		175 MS
18.0		180 MS
18.5		185 MS
19.0		190 MS
19.5		195 MS
20.0		200 MS
20.5		205 MS
21.0		210 MS
21.5		215 MS
22.0		220 MS
22.5		225 MS
23.0		230 MS
23.5		235 MS
24.0		240 MS
24.5		245 MS
25.0		250 MS
25.5		255 MS

Multi bore adaptor insert for DryTC 165 and 650		
Type	GE Part number	
Length mm	DRY	150
Diameter mm		28
Number of bores		
0		B 00 MS
1		B 01 MS
2		B 02 MS
3		B 03 MS
4		B 04 MS
5		B 05 MS
6		B 06 MS
7		B 07 MS
8		B 08 MS
9		B 09 MS
10		B 10 MS
11		B 11 MS
12		B 12 MS
13		B 13 MS
14		B 14 MS
15		B 15 MS
16		B 16 MS
17		B 17 MS
18		B 18 MS
19		B 19 MS

Please specify the bore sizes required from 1.5mm to 25.5 mm in increments of 0.5 mm.

## Example ordering codes:

*Use Dry 150 28 050MS to order an insert with a single 5 mm bore.*

*Use Dry 150 28 B02MS, 10 mm and 12 mm to order an insert with two bores of 10 mm and 12 mm.*

Single bore adaptor insert for LiquidTC 165 and 255		
Type	GE Part number	
Length mm	LIQ	
Diameter mm	163	60
Bore size mm		
1.5		015 AL
2.0		020 AL
2.5		025 AL
3.0		030 AL
3.5		035 AL
4.0		040 AL
4.5		045 AL
5.0		050 AL
5.5		055 AL
6.0		060 AL
6.5		065 AL
7.0		070 AL
7.5		075 AL
8.0		080 AL
8.5		085 AL
9.0		090 AL
9.5		095 AL
10.0		100 AL
10.5		105 AL
11.0		110 AL
11.5		115 AL
12.0		120 AL
12.5		125 AL
13.0		130 AL
13.5		135 AL
14.0		140 AL
14.5		145 AL
15.0		150 AL
15.5		155 AL
16.0		160 AL
16.5		165 AL
17.0		170 AL
17.5		175 AL
18.0		180 AL
18.5		185 AL
19.0		190 AL
19.5		195 AL
20.0		200 AL
20.5		205 AL
21.0		210 AL
21.5		215 AL
22.0		220 AL
22.5		225 AL
23.0		230 AL
23.5		235 AL
24.0		240 AL
24.5		245 AL
25.0		250 AL
25.5		255 AL

Multi bore adaptor insert for LiquidTC 165 and 255		
Type	GE Part number	
Length mm	LIQ	
Diameter mm	163	60
Number of bores		
0		B 00 AL
1		B 01 AL
2		B 02 AL
3		B 03 AL
4		B 04 AL
5		B 05 AL
6		B 06 AL
7		B 07 AL
8		B 08 AL
9		B 09 AL
10		B 10 AL
11		B 11 AL
12		B 12 AL
13		B 13 AL
14		B 14 AL
15		B 15 AL
16		B 16 AL
17		B 17 AL
18		B 18 AL
19		B 19 AL

Please specify the bore sizes required from 1.5mm to 25.5 mm in increments of 0.5 mm.

Example ordering codes:

*Use LIQ 163 60 035AL to order an insert with a single 3.5 mm bore.*

*Use LIQ 163 60 B03AL 7.5 mm, 9 mm and 12.5 mm to order an insert with three bores of 7.5 mm, 9 mm and 12.5 mm.*



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920-650A