



DBC-A Series

Advanced Dry Block Temperature Calibrators



A Dry Block and a Process Calibrator in One.

Six dry-block calibrators covering -45°C to 1210°C between them, each with an electrical measurement front end built in. The block provides the temperature and the same instrument reads the sensor under test, so an RTD, thermocouple, transmitter or temperature switch is calibrated end to end without a separate reference thermometer on the bench.

Standard reference channels for PRT and thermocouple sit alongside multifunction channels measuring mA, mV, V and resistance, with a 24 V loop supply for two-wire transmitters. Temperature field stability reaches $\pm 0.02^{\circ}\text{C}$ on the low-temperature models, and soaking blocks are interchangeable with the aperture pattern specified at order.

An automatic verification option runs the routine unattended, calculating out-of-tolerance results and exporting records and certificates.

KEY FEATURES

- Six models spanning -45°C to 1210°C
- Built-in reference PRT and thermocouple channels
- mA, mV, V and Ω measurement with a 24 V loop supply
- Temperature field stability to $\pm 0.02^{\circ}\text{C}$
- Automatic verification and certificate export *
- USB device and USB host • 5.7-inch touchscreen

IDEAL FOR

- Accredited and in-house calibration laboratories
- Loop calibration of temperature transmitters
- Pharmaceutical and food validation with traceable records
- Chemical, petrochemical and power plant maintenance
- Research institutes and metrology teaching

TECHNICAL SPECIFICATIONS

	Low temperature			Medium temp.	High temperature	
Model	DBC-A150A	DBC-A150B	DBC-A150C	DBC-A650	DBC-A1200A	DBC-A1200B
Temperature range	–20 to 150 °C	–30 to 150 °C	–45 to 150 °C	50 to 650 °C	300 to 1200 °C	100 to 1210 °C
Heating time	30→100 °C: 20 min 30→150 °C: 40 min			30→300 °C: 7 min 30→400 °C: 12 min 30→650 °C: 25 min	30→1200 °C: 75 min	
Display accuracy	≤±0.1 °C			≤±0.35 °C to 400 °C ≤±0.5 °C 400–650 °C	≤±1.2 °C	
Insertion depth	160 mm			150 mm	135 mm	
Soaking block diameter	36 mm	32 mm		32 mm	39 mm	
Temperature field stability	≤±0.02 °C			≤±0.05 °C	≤±0.2 °C	
Horizontal temperature field	≤±0.05 °C			≤±0.05 °C	≤±0.25 °C	
Vertical temperature field	≤1 °C within 30 mm of the base of the soaking block					
Electrical channels	5 measurement channels 2 standard, 3 multifunction				6 measurement channels 2 standard, 2 multifunction, 2 detected TC + current	
Maximum power	300 W			1200 W	3000 W	
Net weight	13 kg			11 kg	11 kg	
Gross weight	23 kg			18 kg	18 kg	
Dimensions (w × d × h)	310 × 190 × 340 mm			250 × 150 × 310 mm		
USB interface	USB device and USB host, fitted as standard on every model					

Accuracy figures apply at an ambient of 23 ± 5 °C and are valid once the block has been stable at the set point. The temperature range is fixed at manufacture. Soaking block apertures are specified at time of order.

ELECTRICAL MEASUREMENT

Standard RTD channel	4-wire constant current commutator, true ohm · ITS-90, CVD, IEC-751 · 0 to 400 Ω · ±0.002 Ω at 0 to 50 Ω, ±40 ppm of reading at 50 to 400 Ω · resolution 1 mΩ · temperature coefficient ±1 ppm of reading per °C (0 to 8 °C or 38 to 50 °C)
Standard TC channel	Types S, R and B · -18 to 18 mV · ±(0.005% of reading + 2 μV) · temperature coefficient 5 ppm FS per °C
Built-in cold junction	0 to 50 °C · ±0.2 °C · Pt100 sensor
Detected channel, mV and TC	MINI-TC interface · 13 types: S, R, K, B, N, E, J, T, C, D, G, L, U · -75 to 75 mV · ±(0.01% of reading + 8 μV) · resolution 1 μV · cold junction ±0.35 °C over 0 to 50 °C
Detected channel, Ω and RTD	2, 3 and 4-wire constant current commutator, true ohm · Pt10 to Pt1000, Cu10 to Cu100, Ni100, Ni120 and others · 0 to 400 Ω and 0 to 4000 Ω · ±0.002 Ω at 0 to 25 Ω, ±80 ppm of reading at 25 to 4000 Ω · 2-wire adds 50 mΩ · resolution 1 mΩ (400 Ω), 10 mΩ (4000 Ω)
Detected channel, current	-30 to 30 mA · ±(0.01% of reading + 2 μA) · input impedance below 10 Ω · temperature coefficient 5 ppm FS per °C
Detected channel, voltage	-30 to 30 V and -12 to 12 V auto ranging · ±(0.01% of reading + 0.6 mV) · input impedance above 1 MΩ · temperature coefficient 5 ppm FS per °C
Multifunction channel	mA, mV, V and Ω measurement in 2, 3 and 4-wire · 24 V DC output · switch measurement · HART transmitter *. On the DBC-A1200A and DBC-A1200B the multifunction channels also measure RTD and TC.
Switch, transmitter and loop	Mechanical and electronic temperature switches · current, voltage and HART * temperature transmitters · loop supply 24 V DC ±0.5 V, maximum load current 60 mA

Electrical measurement figures are specified at an ambient of 23 ± 5 °C. Functions marked * are optional; see the order codes below.

OPTIONAL FUNCTIONS

Quote the order code with the instrument. Optional functions are enabled at manufacture and cannot be added in the field.

Order code	Optional function
DBC-A-SCAL	Self-calibration of temperature parameters against an external standard PRT connected to the standard resistance channel
DBC-A-EXTS	External standard temperature control
DBC-A-OKSC	One-key self-calibration of the internal temperature control sensor
DBC-A-HART	HART temperature transmitter calibration
DBC-A-AVER	Automatic verification: set the parameters and the instrument runs the task, flags out-of-tolerance results, saves them and exports records and certificates
DBC-A-DREC	Verification data recording and export, up to 250 sensors and 2500 records
DBC-A-SOFT	Temperature verification and calibration system software, with user rights management, instrument management and custom certificate templates



WHAT'S IN THE BOX

- DBC-A main unit, temperature range as ordered
- Interchangeable soaking block, aperture pattern as ordered
- Insert removal tool
- Mains lead
- Aluminium transit case
- User manual and warranty details

POWER · 220 V AC $\pm 10\%$, 45 to 60 Hz, single phase

INSTALLATION · Operate upright only · leave clearance above the well for probe access

CERTIFICATION · Traceable calibration certificate available on request

GENERAL SPECIFICATIONS

Code	Item	Part Number
DBC-A150A	Advanced dry block temperature calibrator, $-20\text{ }^{\circ}\text{C}$ to $150\text{ }^{\circ}\text{C}$	810150
DBC-A150B	Advanced dry block temperature calibrator, $-30\text{ }^{\circ}\text{C}$ to $150\text{ }^{\circ}\text{C}$	810151
DBC-A150C	Advanced dry block temperature calibrator, $-45\text{ }^{\circ}\text{C}$ to $150\text{ }^{\circ}\text{C}$	810152
DBC-A650	Advanced dry block temperature calibrator, $50\text{ }^{\circ}\text{C}$ to $650\text{ }^{\circ}\text{C}$	810650
DBC-A1200A	Advanced dry block temperature calibrator, $300\text{ }^{\circ}\text{C}$ to $1200\text{ }^{\circ}\text{C}$	811200
DBC-A1200B	Advanced dry block temperature calibrator, $100\text{ }^{\circ}\text{C}$ to $1210\text{ }^{\circ}\text{C}$	811201

Soaking blocks with custom apertures can be supplied to order. Please quote the host part number when enquiring.

DISPLAY

5.7-inch TFT colour LCD · full touch operation · Chinese and English

RESOLUTION

$0.1\text{ }^{\circ}\text{C}$ / $0.01\text{ }^{\circ}\text{C}$ / $0.001\text{ }^{\circ}\text{C}$

COMMUNICATION

USB device and USB host

PROTECTION

Load short circuit, load open circuit and sensor protection

POWER SUPPLY

220 V AC $\pm 10\%$, 45 to 60 Hz · 110 V AC to order

OPERATING

$0\text{ }^{\circ}\text{C}$ to $50\text{ }^{\circ}\text{C}$, below 95% RH non-condensing

CONTROL PRECISION

0.1% · temperature unit $^{\circ}\text{C}$ or $^{\circ}\text{F}$

WARRANTY

1 year (subject to product registration)