



## Dry Block Calibrators (high temperatures) T-350P / T-650P / T-1200P

- The T-350P, T-650P and T-1200P Dry Block Calibrators perform functions that would require three different types: a dry block, standard thermometer and a calibrator for RTDs, TCs, mA, mV, ohms and thermostats.
- Model T-1200P generates temperature from 50 °C up to 1200 °C. The T-350P and T-650P models generate from ambient temperature to 350 °C and 650 °C respectively.
- Stability of  $\pm 0.05$  °C for the T-350P and T-650P and  $\pm 0.1$  °C for the T-1200P model.
- Internal regulated 24 Vdc power supply and mA input for 2-wire transmitters.
- Optional temperature measurement and control by external probe with Callendar-Van Dusen coefficients for the models T-350P and T-650P.
- Completely automatic calibration with or without the use of a computer.
- Documenting capabilities: connection with computer and ISOPLAN® calibration software.
- The T-1200P allows the use as a black body target for infrared thermometers.

The T-350P, T-650P and T-1200P models control temperature over an insert in order to calibrate thermocouples, thermoresistances, glass thermometers, thermostats etc. Besides that, the T-1200P model may work as a black body source. Besides providing high accuracy temperature values, they also allow the measurement of signals generated by the thermocouples, thermoresistances and thermostats, which are being calibrated. This is possible due to an embedded calibrator specific for these types of signals, including 4-20 mA. They incorporate the function of dry block, standard thermometer and calibrator for RTD and TC sensors, besides mA reading.

With the optional purchase of a probe (only for T-350P and T-650P) to be connected to the external input, the calibrator controls the temperature using as reference a sensor inserted in the same measurement zone of the sensors under calibration increasing the accuracy and decreasing set point errors and loading effects.

They present a wide range of programming resources, allowing them to perform automatic calibration of the sensors, with or without the use of a computer.

With ISOPLAN® it is possible to register sensors and instruments of the factory, generate work orders, create and print calibration certificates and reports, i.e., it brings all the advantages of computer data management to the calibration environment.

### Technical Specifications

	T-350P	T-650P	T-1200P
<b>Operating Range:</b> ambient temperature: 23 °C	from ambient temperature to 350 °C	from ambient temperature to 650 °C	50 °C to 1200 °C
<b>Accuracy:</b> Internal reference with external probe with external thermometer	± (0.1 °C + 0.1% of reading) ± 0.07 °C ± 0.05 °C	± (0.1 °C + 0.1% of reading) ± 0.10 °C ± 0.05 °C	± 1.9 °C * --- ± 0.75 °C
<b>Resolution:</b>	0.01 °C	0.01 °C	0.1 °C
<b>Stability:</b>	± 0.05 °C	± 0.05 °C	± 0.1 °C
<b>Heating Time:</b>	10 min (50 °C to 350 °C)	15 min (50 °C to 650 °C)	45 min (100 °C to 1200 °C)
<b>Cooling Time:</b>	12 min (350 °C to 100 °C)	22 min (650 °C to 200 °C)	5h (1200 °C to 200 °C)
<b>Temperature Uniformity:</b>	± 0.05 °C		± 0.2 °C
<b>Weight:</b>	7.0 kg	8.0 kg	8.7 kg
<b>Power Supply:</b>	110 or 220 Vac, 50/60 Hz		
<b>Electric Power:</b>	500 W	1000 W	2300 W
<b>Unit / Temperature Scales:</b>	°C, °F or K / IPTS-68 or ITS-90, user selectable		
<b>Display:</b>	Graphic vacuum fluorescent with contrast adjustment		
<b>Well Diameter x Depth:</b>	Ø 32 mm x 124 mm		Ø 34 mm x 130 mm
<b>Dimension (HxWxD):</b>	250 x 180 x 270 mm		300 x 180 x 270 mm
<b>Warranty:</b>	1 year, except for rechargeable battery		

\* Calibration with insert IN10 one hole ¼"

### Electrical Input Ranges Specifications

Input Ranges	Resolution	Accuracy	Remarks
<b>millivolt</b> -150 to 150 mV -500 to -150 mV 150 to 2450 mV	0.001 mV 0.01 mV 0.01 mV	± 0.01 % FS ± 0.02 % FS ± 0.02 % FS	R <sub>input</sub> > 10 MΩ auto-range
<b>mA</b> -5 to 24.5 mA	0.0001 mA	± 0.02 % FS	R <sub>input</sub> < 160 Ω
<b>resistance</b> 0 to 400 Ω 400 to 2500 Ω	0.01 Ω 0.01 Ω	± 0.01 % FS ± 0.03 % FS	excitation current 0.9 mA auto-range
<b>Pt-100</b> -200 to 850 °C / -328 to 1562 °F	0.01 °C / 0.01 °F	± 0.1 °C / ± 0.2 °F	IEC-60751
<b>Pt-1000</b> -200 to 400 °C / -328 to 752 °F	0.1 °C / 0.1 °F	± 0.1 °C / ± 0.2 °F	IEC-60751
<b>Cu-10</b> -200 to 260 °C / -328 to 500 °F	0.1 °C / 0.1 °F	± 2.0 °C / ± 4.0 °F	MINCO 16-9
<b>Ni-100</b> -60 to 250 °C / -76 to 482 °F	0.1 °C / 0.1 °F	± 0.2 °C / ± 0.4 °F	DIN-43760
<b>TC-J</b> -210 to 1200 °C / -346 to 2192 °F	0.1 °C / 0.1 °F	± 0.2 °C / ± 0.4 °F	IEC-60584
<b>TC-K</b> -150 to 1370 °C / -238 to 2498 °F	0.1 °C / 0.1 °F	± 0.2 °C / ± 0.4 °F	IEC-60584
<b>TC-T</b> -200 to -75 °C / -328 to -103 °F -75 to 400 °C / -103 to 752 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	± 0.4 °C / ± 0.8 °F ± 0.2 °C / ± 0.4 °F	IEC-60584
<b>TC-B**</b> 250 to 500 °C / 482 to 932 °F 500 to 1200 °C / 932 to 2192 °F 1200 to 1820 °C / 2192 to 3308 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	± 1.5 °C / ± 3.0 °F ± 1.0 °C / ± 2.0 °F ± 0.7 °C / ± 1.4 °F	IEC-60584
<b>TC-R**</b> 300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F	± 0.7 °C / ± 1.4 °F	IEC-60584
<b>TC-S**</b> -50 to 300 °C / -58 to 572 °F 300 to 1760 °C / 572 to 3200 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	± 1.0 °C / ± 2.0 °F ± 0.7 °C / ± 1.4 °F	IEC-60584
<b>TC-E*</b> -270 to -150 °C / -454 to -238 °F -150 to 1000 °C / -238 to 1832 °F	0.1 °C / 0.1 °F 0.1 °C / 0.1 °F	± 0.3 °C / ± 0.6 °F ± 0.1 °C / ± 0.2 °F	IEC-60584
<b>TC-N</b> -20 to 1300 °C / -4 to 2372 °F	0.1 °C / 0.1 °F	± 0.2 °C / ± 0.4 °F	IEC-60584
<b>TC-L*</b> -200 to 900 °C / -328 to 1652 °F	0.1 °C / 0.1 °F	± 0.2 °C / ± 0.4 °F	DIN-43710

FS= Full Scale

Accuracy values are valid within one year and ambient temperature range from 20 to 26 °C. Outside these limits add 0.001 % FS / °C, taking 23 °C as the reference temperature. For thermocouples with internal cold junction compensation, add a cold junction compensation error of ± 0.2 °C or ± 0.4 °F.

### Order Code



### Power Supply

1 - 110 Vac      2 - 220 Vac

### Included Insert

Choose among the inserts listed below. Unless specified, the accompanying insert is IN06.

**Optional:** BB - Black Body Insert (only for T-1200P)

(\*) Not applicable to T-1200P.

(\*\*) Not applicable to T-350P and T-650P.

### Accessories

Inserts:	Holes	T-350P	T-650P	T-1200P
IN01	1x 3/4"	06.04.0011-00	06.04.0021-00	06.04.0031-00
IN02	1x 1/2"	06.04.0012-00	06.04.0022-00	06.04.0032-00
IN03	1x 6.0 mm and 3x 1/4"	06.04.0013-00	06.04.0023-00	06.04.0033-00
IN04	3x 6.0 mm and 1x 1/4"	06.04.0014-00	06.04.0024-00	06.04.0034-00
IN05	4x 6.0 mm	06.04.0015-00	06.04.0025-00	06.04.0035-00
IN06	2x 6.0 mm and 2x 1/4"	06.04.0016-00	06.04.0026-00	06.04.0036-00
IN07	1x 6.0 mm 1x 8.0 mm and 1x 3/8"	06.04.0017-00	06.04.0027-00	06.04.0037-00
IN08	1x 6.0 mm 1x 3.0 mm and 2x 1/4"	06.04.0018-00	06.04.0028-00	06.04.0038-00
IN09	Without hole, to be drilled by the client	06.04.0019-00	06.04.0029-00	06.04.0039-00
IN10	Others, under ordering	06.04.0020-00	06.04.0030-00	06.04.0040-00

**Serial communication:** Modbus® RTU Protocol (RS-232/RS-485).

**Included Items:** carrying case, strap, insert (selectable), container for steel balls\*, tiny steel balls\*, insert extractor tool, test leads, insulation\*\*, manual and power cord.

**Optional Accessories:**

Temperature Sensors: 1/5 DIN A Probe - Order Code: 04.06.0007-21.

Angular Probe (up to 660 °C) - Order Code: 04.06.0009-21

Communication Interface - Order Code: 06.02.0002-00