PYROS

PORTABLE TEMPERATURE CALIBRATOR -26/+650°C

140-1H/2H **375** **650**

These innovative calibrators have been designed for on-site applications and for the severe conditions of the naval and marine sectors.

Their ease of use, compact and pratical design, make them unbeatable in industrial processes where the verification of the temperature measurement systems is a key issue for the control of the process and quality of the final product.

Reduced response time during the heating and cooling phases and rapid stabilization result in time savings in multi-point calibration operations.

Special attention was paid to lightness, compactness, and robustness achieved through the use of an aluminum body and many internal parts made of light alloy and stainless steel.

The thermal part of these calibrators is made of a metal block heated with resistors or with Peltier thermoeletric modules. The Pyros models are provided with many different inserts suitable for different size of sensors.

Each calibrator is tested at our laboratory and automatically calibrated on 5 points with traceability to our L.A.T. certified primary samples.

The many inserts available make the calibrators versatile for adapting them to the calibration of temperature sensors with the most common diameters in use; it is also possible to order inserts with special holes on request. The equipment provided as standard on each oven includes the power supply cable, the tweezers to extract the inserts, the connnection cables of the thermostats, a fuse kit, one or more of the inserts most commonly used, the instructions manual and the calibration report.

APPLICATIONS:

- Control and calibration of temperature sensors, in the laboratory and in the field, in accordance with ISO 9000 standards
- Control of thermostats
- Optimized for offshore and shipboard use

MAIN CHARACTERISTICS:

- Operating range: -26 °C (-14.8°F)÷ +650°C (1202°F)
- 4 different models
- High stability and precision
- Light weight and compactness
- Retractable handle
- Multi-hole inserts available
- Automatic ramping function
- Automatic switch test function
- RS232 connection
- Innovative tangential cooling system for Pyros 375 and 650
- Automatic selection of 115/230 V 50/60 Hz.
- DNV-GL Certification for PYROS 375-650

DNV
TAA00002BJ

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Keyboard Calibration

All Pyros can be easily calibrated from the keyboard with referability to a temperature sample.

Programmable ramps

Possibility of automatic ramps to simulate operating conditions with varying temperatures.

Interchangeable inserts

Various standard inserts available for all models, with custom design options for various types of sensors.

PYROS 140-1H and 2H

They cover a temperature range from -26 to 140 °C. The excellent performance of the Pyros 140 is due to the use of Peltier cell elements that heat and cool the thermal block made of aluminum alloy in the 1H version and copper in the 2H version. The 2H version guarantees uniformity typical of a higher-grade calibrator. The Pyros 140 1H is equipped with a DN 19 mm hole thermowell. The Pyros 2H is equipped with a thermowell with two DN 13 parallel holes 20 mm pitch.

PYROS 375

It covers a range from 10 °C above ambient temperature up to 375 °C. The calibrator is equipped with an anticorodal block that has a DN 26 mm thermowell hole into which the reduction inserts are introduced.

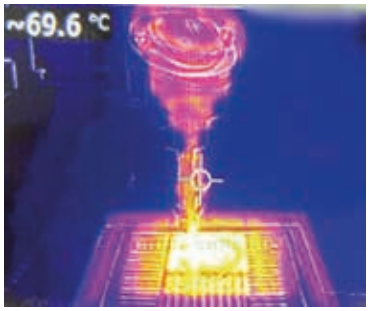
PYROS 650

It covers a range from 15 °C above ambient temperature up to 650 °C. The calibrator is equipped with a copper thermal block that has a DN 26mm thermowell hole into which the reduction inserts are introduced.

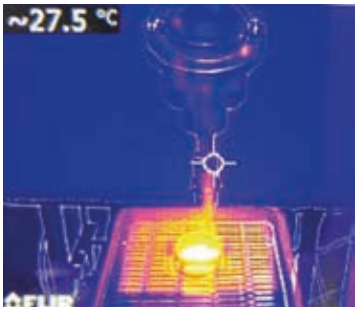
Innovative tangential cooling system for PYROS 375 and 650

In the Pyros 375 and Pyros 650 models, an innovative appliance ventilation system allows to keep the temperature on the top of the calibrator lower compared to competitors ones.
The air flow on the upper part is diverted to the rear of the appliance by tangential flow that touches the calibrator well.
As a result, the thermocouple heads, containg the compensated cable connection terminals, remain at a significantly lower temperature, greatly reducing the possible compensation errors produced by heating of the heads.

Thermographic images taken at 650°C



Heating of a probe inserted in a conventional dry-type calibrator.



Heating of a probe inserted in a Pyros 650 with tangential ventilation device

All Pyros calibrators can be equipped with a precision thermometer combined with a dedicated probe and fitted with an Accredia certificate in accordance with ISO/TEC 17025.

With this equipment, the calibrator and certified thermometer assembly becomes a complete measurement system with generation of stable temperature values with an official reference.

HD2107.1 digital thermometer with LCD display Pt100 input range -100°/+600° resolution 0.01°C up to + 199.99°C and 0.1°C in the remaining range, accuracy to one year 0.1°C.

TP4721 Pt100 probe with range -100/+500°C class AA with linearization module, length 300 mm DN 3 mm. Accuracy ± 0.2°C up to 250°C ± 0.3 over.

CERTI-TERM -20/150
Accredia certificate issued on 5 points -20/0/50/100/150°C.

CERTI-TERM 0/450
Accredia certificate issued on 5 points 0/100/200/300/450°C.

HD2108.1 digital thermometer with LCD display. Thermocouple input range -100/+800°C resolution 0.05° up to + 199.95°C and 0.1°C in the remaining range, accuracy to one year 0.1°C.

TP750.0 thermocouple probe with 0/800°C range class 1, length 300 mm DN 3 mm. Accuracy ± 0.7 in the range 0/800°C.

CERTI-TERM 0-650
Accredia certificate issued on 5 points 50/150/300/500/650°C.

COMPARATIVE TABLE

Specifications	PYROS 140-1H	PYROS 140-2H	PYROS 375	PYROS 650
Temperature range	-26°C ÷ +140°C	-26°C ÷ +140°C	T_{amb} +10°C ÷ +375°C	T_{amb} +15°C ÷ +650°C
Display accuracy*	± 0.25°C @ 100°C	± 0.25°C @ 100°C	± 0.35°C @ 375°C	± 0.5°C @ 600°C
Units of measure/Display Resolution	°C-°F/0.1°C	°C-°F/0.1°C	°C-°F/0.1°C	°C-°F/0.1°C
Mean heating time (stabilization included)	T_{amb} to 120°C approx 17 min	T_{amb} to 120°C approx 20 min	T_{amb} to 375°C approx 15 min	T_{amb} to 650°C approx 40 min
Mean cooling time (stabilization included)	from 120°C to T_{amb} approx 15 min from T_{amb} to -20°C approx 15 min	from 120°C to T_{amb} approx 17 min from T_{amb} to -20°C approx 20 min	from 375°C to 50°C approx 60 min	from 650°C to 100°C approx 70 min
Stability **	± 0.1°C	± 0.1°C	± 0.1°C	± 0.30°C
Axial uniformity ***	at -20°C ± 0.10°C at 0°C ± 0.05°C at 100°C ± 0.10°C	at -20°C ± 0.12°C at 0°C ± 0.04°C at 100°C ± 0.12°C	at 50°C ± 0.02°C at 200°C ± 0.20°C at 375°C ± 0.4°C	at 250°C ± 0.6°C at 450°C ± 0.5°C at 650°C ± 0.5°C
Radial uniformity (at 40 mm)	at 100°C ± 0.05°C	at 100°C ± 0.05°C	at 200°C ± 0.1°C at 375°C ± 0.2°C	at 450°C ± 0.15°C at 650°C ± 0.6°C
Hole diameter	1 hole dn 19 mm	2 hole dn 13 mm	26 mm	26 mm
Hole depth	104 mm	104 mm	150 mm	150 mm
Insert material	Anticorodal	Anticorodal	Anticorodal	nickel-plated brass
Switch test, voltage	On/Off 12 VDC	On/Off 12 VDC	On/Off 5 VDC	On/Off 5 VDC
Adjustable ramp function	0.1÷10°C/min	0.1÷10°C/min	0.1÷10°C/min	0.1÷10°C/min
Pc interface	RS232	RS232	RS232	RS232
Automatic calibration	on 5 points	on 5 points	on 5 points	on 5 points
Operating voltage	115/240 VAC ± 10% 50/60Hz	115/240 VAC ± 10% 50/60Hz	115/240 VAC ± 10% 50/60Hz	115/240 VAC ± 10% 50/60Hz
Electric power	80W	80W	600W	600W
Calibrator size	130x260x280 mm	130x260x280 mm	130x260x280 mm	130x260x280 mm
Calibrator weight with standard equipment	5.5 Kg	5.5 Kg	5.32 kg	6.5 kg

Type and diameter of the sensor used
PYROS 140-1H/2H e PYROS 375: probe Pt100 Ø 3 mm
PYROS 650: probe TcN Ø 6 mm

* Temperature deviation between the display and the reference probe
** Maximum temperature difference at a stable temperature over 30 minute
*** Measured for 40 mm starting from the bottom of the hole

The achievement of stabilization is confirmed by an audible signal and LED; the calibrator is stable when the temperature readout remains in a range of ±0.2°C for 6 consecutive minutes.

Retractable Handle

Cordura® Soft Bag

Code:
2TRMBAG-PYROS
Dimensions: 380X160X310 mm
Weight: 0.950 kg
Packaging dimensions:
250x500x420 mm

Practical and sturdy Cordura® bag with two side pockets for inserts, a front pocket for documents, shoulder carrying strap; particularly lightweight, it is suitable for carrying and prontecting the calibrator with its inserts.

Rigid case

Code:
2MFR526MAX5053
Dimensions: 560x430x210 mm
Weight: 5.5 kg
Packaging dimensions: 650x470x330 mm

Functional and rugged ABS water and dust-proof transport case with seals suitable for use in marine and harsh environmental conditions. Internal shockproof EPM foam with indentations for housing the calibrator, inserts and documentation. Compensation valve for the difference between internal and external pressure. Locking hooks and eyelet for padlock insertion.

HOW TO ORDER

PYROS 140-1H / PYROS 140-2H

STANDARD EQUIPMENT:

- Electric power cable
- Tweezers for insert removing
- Kit of fuses
- Thermostat connection cables
- Instruction manual
- Test report

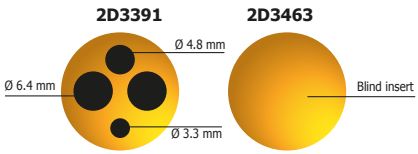
PYROS 140-1H: 1-hole calibrator
- **2D3391**: 4 holes insert
- **2D3463**: blind insert

PYROS 140-2H: 2-hole calibrator
- **2D3199-003:** 1 hole insert
- **2D3199-004:** 1 hole insert

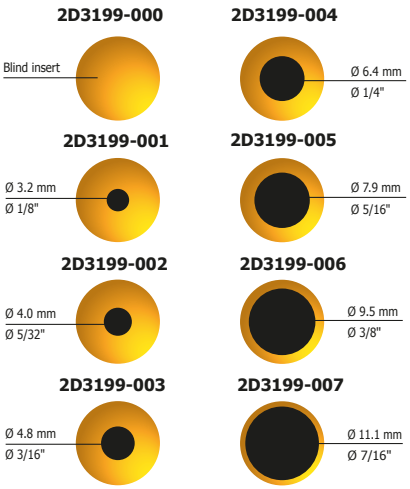
INSERT CODES:

- **2D3199-000**: blind insert
- **2D3199-001**: 1 hole insert
- **2D3199-002**: 1 hole insert
- **2D3199-003**: 1 hole insert
- **2D3199-004**: 1 hole insert
- **2D3199-005**: 1 hole insert
- **2D3199-006**: 1 hole insert
- **2D3199-007**: 1 hole insert

INSERTS FOR PYROS 140-1H:



INSERTS FOR PYROS 140-2H:



PYROS 375

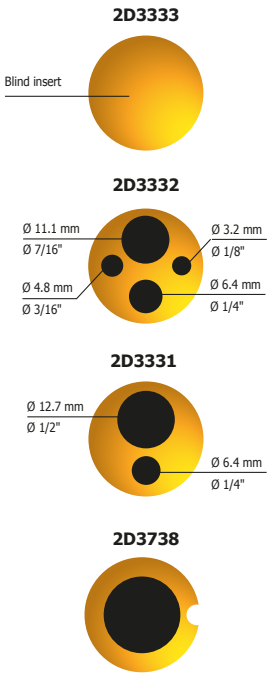
STANDARD EQUIPMENT:

- Electric power cable
- Tweezers for insert removing
- Kit of fuses
- Thermostat connection cables
- Instruction manual
- Test report
- Reduction insert **2D3332**

INSERT CODES:

- **2D3333**: blind insert
- **2D3332**: 4 holes insert
- **2D3331**: 2 holes insert
- **2D3738**: black body

INSERTS FOR PYROS 375:



PYROS 650

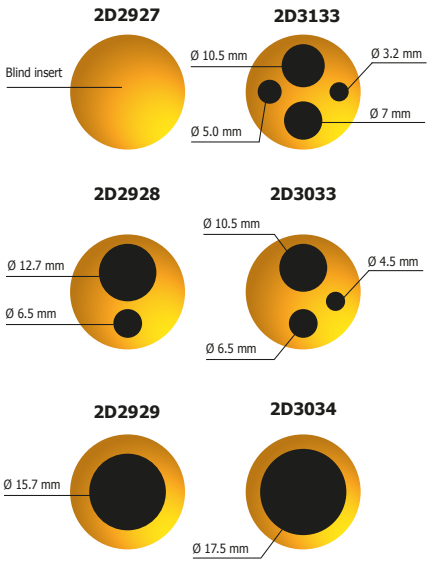
STANDARD EQUIPMENT:

- Electric power cable
- Tweezers for insert removing
- Kit of fuses
- Thermostat connection cables
- Instruction manual
- Test report
- Reduction insert **2D3133**

INSERT CODES:

- **2D2927**: blind insert
- **2D2928**: 2 holes insert
- **2D2929**: 1 hole insert
- **2D3033**: 3 hole insert
- **2D3034**: 1 hole insert
- **2D3133**: 4 hole insert
- **2D3738**: black body

INSERTS FOR PYROS 650:



CERTIFICATION:
All instruments are supplied with final testing, stability and accuracy report traceable to Accredia standards.

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