

# Manual Supplement

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This supplement contains information necessary to ensure the accuracy of the above manual.



## Change #1, 359

On page 9, under **Specifications** add Footnote 4 to the **4181 Temperature range**:

- [4] Due to physical limitations of the product, the maximum temperature of the 4181 is limited for emissivity settings greater than 0.95. See Table 3 in section 3.5.1 of the 4180, 4181 Technical Guide for more information.

## Change #2, 365

On page 21, under **System Menu, IR Calibration**, remove:

SURFACE: <edit>

## Change #3, 510, 536

On page 11 in the French Manual, under **Caractéristiques techniques**, replace the entire table with:

### 2.1 Caractéristiques techniques










	4180	4181
Plage de température (@ température ambiante de 23 °C, émissivité de 0,95)	-15 °C à 120 °C	35 °C à 500 °C
Précision d'affichage (1)	±0,40 °C à -15 °C ±0,40 °C à 0 °C ±0,50 °C à 50 °C ±0,50 °C à 100 °C ±0,55 °C à 120 °C	±0,35 °C à 35 °C ±0,50 °C à 100 °C ±0,70 °C à 200 °C ±1,20 °C à 350 °C ±1,60 °C à 500 °C
Stabilité	±0,1 °C à -15 °C ±0,05 °C à 0 °C ±0,10 °C à 120 °C	±0,05 °C à 35 °C ±0,20 °C à 200 °C ±0,40 °C à 500 °C
Uniformité (dia. 5,0 pouces du centre de cible)	±0,15 °C à -15 °C ±0,10 °C à 0 °C ±0,25 °C à 120 °C	±0,10 °C à 35 °C ±0,50 °C à 200 °C ±1,00 °C à 500 °C
Uniformité (dia. 2,0 pouces du centre de cible)	±0,10 °C à -15 °C ±0,10 °C à 0 °C ±0,20 °C à 120 °C	±0,10 °C à 35 °C ±0,25 °C à 200 °C ±0,50 °C à 500 °C
Durée de chauffage	15 min : -15 °C à 120 °C 14 min : 23 °C à 120 °C	20 min: 35°C à 500°C
Durée de refroidissement	15 min : 120 °C à 23 °C 20 min : 23 °C à 15 °C	100 min : 500 °C à -35 °C 40 min : 500 °C à 100 °C
Durée de stabilisation	10 min	10 min
Émissivité nominale(2)	0,95	0,95
Compensation d'émissivité du thermomètre	0,9 à 1,0	
Diamètre de cible	152,4 mm (6 pouces)	
Interface informatique	RS-232	
Alimentation	115 V.c.a. (± 10 %), 6,3 A, 50/60 Hz, 630 W 230 V.c.a (± 10 %), 3,15 A 50/60 Hz, 630 W	115 V.c.a. (± 10 %), 10 A, 50/60 Hz, 1000 W 230 V.c.a (± 10 %), 5 A, 50/60 Hz, 1000 W
Fusible(s)	115 V.c.a., 6,3 A, 250 V, à fusion lente 230 V.c.a. 3,15 A, 250 V, T	115 V.c.a. 10 A, 250 V, à fusion rapide 230 V.c.a. 5 A, 250 V, F
Dimensions	356 H x 241 l x 216 p mm (14 x 9,5 x 8,5 pouces)	356 H x 241 l x 216 p mm (14 x 9,5 x 8,5 pouces)
Poids	9,1 kg (20 lb)	9,5 kg (21 lb)
Sécurité	EN 61010-1:2001, CAN/CSA C22.2 No. 61010,1-04	
(1) Pour les thermomètres à bande spectrale de 8 um à 14 um ayant une émissivité réglée entre 0,9 et 1,0.		
(2) La cible a une émissivité nominale de 0,95, cependant elle est étalonnée de manière radiométrique pour minimiser les incertitudes liées à l'émissivité.		

## Change #4, 556

On page 1, under **Introduction**, replace the first sentence in the second paragraph with:

The temperature is accurately controlled by a digital controller.

On page 2, in the **Symbols Used**, replace with:

Symbol	Description
~	AC (Alternating Current)
	Battery
CE	CE Complies with European Union directives
	Electric Shock
	Fuse
	PE Ground
	Hot Surface (Burn Hazard)
	Read the User's Guide (Important Information)
O	Off
I	On
	Canadian Standards Association
	Conforms to relevant Australian Safety and EMC standards
	The European Waste Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) mark.

On page 3, under **Safety Information**, remove the first sentence in the first paragraph.

On pages 4, 5, 6, and 7, replace the entire **Warnings** section with:

## Warnings

### Warnings

To avoid personal injury, follow these guidelines.

#### GENERAL

- Read all safety information before you use the Product.
- Do not alter the Product and use only as specified, or the protection supplied by the Product can be compromised.
- Use this Product indoors only.
- Do not keep the Product in operation and unattended at high temperatures.
- Do not use this instrument for any application other than calibration work. The instrument was designed for temperature calibration. Any other use of the instrument may cause unknown hazards to the user.
- Do not face the target towards a wall or other object. The target emits high amounts of heat and will cause objects to heat up or catch fire.
- Do not operate near flammable materials.
- Do not use the instrument if it operates abnormally. Protection may be impaired. When in doubt, have the instrument serviced.
- Before initial use, or after transport, or after storage in humid or semi-humid environments, or anytime the instrument has not been energized for more than 10 days, the instrument needs to be energized for a “dry-out” period of 2 hours. If the product is wet or has been in a wet

environment, take necessary measures to remove moisture prior to applying power such as storage in a low humidity temperature chamber operating at 50°C for 4 hours or more.

- Overhead clearance is required for the 4181. At least 1 meter (39 inches) overhead clearance is recommended. DO NOT place the instrument under a cabinet or other structure. Allow at least 15 cm (6 inches) of clearance around the instrument.
- Calibration Equipment should only be used by Trained Personnel.

#### **Burn Hazard**

- Do not touch the IR target surface or areas surrounding the target of the instrument. If the instrument is set at 100°C, the display reads 100°C, the target surface may be 100°C or greater.
- Do not turn off the instrument at temperatures higher than 100°C. This could create a hazardous situation. Select a set-point less than 100°C and allow the instrument to cool before turning it off.
- Do not operate instrument in any orientation other than vertical (target face perpendicular to installation surface). Risk of fire or burn hazard may result due to excessive heat buildup.
- The sheet metal of the instrument may exhibit extreme temperatures for areas close to the IR target surface.
- This instrument is equipped with a Block Temperature Indicator (front panel LED HOT indicator – Patent Pending). When the indicator is flashing, the instrument is disconnected from mains power and the temperature of the block is above 50°C. When the indicator is illuminated, always on, the instrument is powered and the block temperature is above 50°C.
- Temperatures above 70°C (158°F) are considered hazardous. Use extreme care when working with these temperatures. Observe all warnings and cautions given in this manual.
- The instrument can generate extreme temperatures. Precautions must be taken to prevent personal injury or damage to objects.
- The air around the instrument can reach temperatures greater than 100°C. The high temperatures present in instruments designed to operate at 300°C and higher may result in fires and severe burns if safety precautions are not observed.

#### **Electrical Hazard**

- Do not operate this instrument without a properly grounded, properly polarized power cord.
- Do not put the Product where access to the mains power cord is blocked.
- Do not use an extension cord or adapter plug.
- Do not connect the instrument to a non-grounded outlet.
- Make sure the ground conductor in the mains power cord is connected to a protective earth ground. Disruption of the protective earth could put voltage on the chassis that could cause death.
- HIGH VOLTAGE is used in the operation of this equipment. Contact an Authorized Service Center (see Section 1.6 Authorized Service Centers on page 7) for obtaining service from a qualified technician. No user serviceable parts.
- Always replace the power cord with an approved cord of the correct rating and type.
- Use only specified replacement fuses.

## Cautions

### ⚠ Cautions

To avoid possible damage to the instrument, follow these guidelines.

- Do not operate the instrument in excessively wet, oily, dusty, or dirty environments.
- Do not touch the target. Oils and salts from the skin will permanently damage the target surface at high temperatures.
- Do not use fluids to clean the target surface.
- Do not use compressed air that contains chemicals to clean the target. Oil and contaminants could contaminate the surface.
- Do not force cool the surface. The surface should not be cooled by any method other than natural convection. Forced air can often have oil or water in it. Even water can leave mineral deposits on the surface. Trying to cool the surface too quickly can also cause thermal shock to the emissive surface.
- Do not use liquid nitrogen (LN<sub>2</sub>) to quickly cool the target.
- Do not plug the instrument into 230V if the fuse holder reads 115V. This action will cause the fuses to blow and may damage the instrument.
- Do not change the values of the calibration constants from the factory set values.
- Calibration constants shall only be changed by qualified and authorized personnel. The correct setting of these parameters is important to the safety and proper operation of the calibrator.
- Protect the target against dirt and damage – scrapes and scratches. A well kept target surface, free from dirt and damage, produces better measurements. Use the target cover whenever the instrument is not in use to protect the target. Always use the target cover when transporting the instrument, but remember to never transport the instrument when the target temperature is above 50°C.
- When ice forms on the target, change the instrument set-point higher than 50°C to melt the excess ice. Do not touch the front plate (target). Change the set-point to 100°C or higher to evaporate the excess water.
- Component lifetime can be shortened by continuous high temperature operation.
- The instrument is a precision instrument. Although it has been designed for optimum durability and trouble free operation, it must be handled with care. It is important to keep the calibration well and the IR target surface clean and clear of any foreign matter.
- Always carry the instrument in an upright position. The convenient pull-up handle allows one hand carrying.
- If a main supply power fluctuation occurs, immediately turn off the instrument. Wait until the power has stabilized before re-energizing the instrument.
- Use the target cover at temperatures below ambient (25°C). If ice or liquid water forms on the target, IR thermometers will not indicate the correct temperature.

On page 7, replace the **Authorized Service Center** section with:

### **Authorized Service Centers**

Please contact one of the following authorized Service Centers to coordinate service on your product:

#### **Fluke Calibration**

(formerly Hart Scientific)

799 E. Utah Valley Drive

American Fork, UT 84003-9775

USA

Phone, U.S. (Customer Care Center): 1 (877) 355-3225

Fax: +1.801.763.1010

E-mail technical support: [support@flukecal.com](mailto:support@flukecal.com)

E-mail repair / calibration services: [service@flukecal.com](mailto:service@flukecal.com)

On page 9, in the **Specifications**, replace the **Safety** row with:

<b>Safety</b>	EC 61010-1: Overvoltage Category II, Pollution Degree 2, 2000 m
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On page 10, under **Environment Conditions**, replace the bullets with:

- Relative humidity: 80 % to 31 °C, decreasing linearly to 50 % at 35 °C.
- Indoor use only

On page 23, in the 8<sup>th</sup> paragraph replace the first sentence with:

Before using any cleaning or decontamination method except those recommend by your Authorized Service Center.

Remove the last paragraph on page 23.