MTB blackbodies

Precision medium temperature area blackbodies

Fig1. Photo of MTB blackbodies (MTB-12D blackbody, MTB-2D blackbody, CMTB controller, and laptop)

Fig 2. Photo of MTB-12D blackbody in horizontal configuration

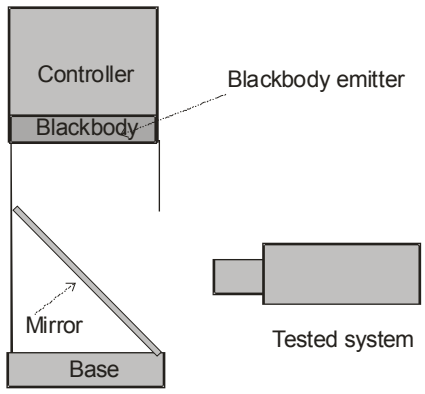

Fig 3. Block diagram of a large blackbody in horizontal configuration

Note: In case of ultra large area MTB blackbodies Inframet recommends to use such blackbodies working in horizontal configuration (emitter plane is horizontal) when radiation emitted by the blackbody emitter is reflected by a large mirror in direction of tested imager. This solution reduces influence of air fluctuations and improves significantly temperature uniformity.

BASIC INFORMATION:

MTB series blackbodies are ultra precision, area blackbodies designed to simulate medium temperature targets. Radiator temperature is controlled using a thin, area heating element. Absolute temperate of the blackbody radiator can be regulated from near ambient temperature to 550°C. Emitter area can vary from 50×50 mm to 300x300 mm (option 500x500 mm) depending on model.

The MTB blackbodies are unique on the market due ultra temperature resolution (0.01°C), very good temporal stability, emissivity, temperature uniformity, and temperature uncertainty. All these features makes MTB series blackbodies an ideal choice for standard blackbodies to be used as temperature standards in national standard laboratories or in top industrial laboratories.

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SPECIFICATIONS OF STANDARD VERSIONS

Model	MTB-2D	MTB-4D	MTB-6D	MTB-12D
Aperture	50× 50 mm	100× 100 mm	150× 150 mm	300× 300 mm
Total temperature range	ambient+5°C to +550°C	ambient+5°C to +550°C	ambient+5°C to +550°C	ambient+5°C to +550°C
Recommended temperature range[1]	+100°C to +550°C	+100°C to +550°C	+100°C to +550°C	+100°C to +550°C
Set point and resolution	0.01ºC	0.01ºC	0.01ºC	0.01ºC
Emissivity	0.96±0.01	0.96±0.01	0.96±0.01	0.96±0.01
Temperature uncertainty	0.07ºC or 0.002(T-25) ºC	0.07ºC or 0.002(T-25) ºC	0.07ºC or 0.002(T-25)ºC	0.07ºC or 0.002(T-25)ºC
Temperature uniformity[2]	<0.002x(T-25) ºC	<0.005x(T-25) ºC	<0.01x(T-25) ºC	<0.01x(T-25) ºC
Heating rate[3]	10°C/minute	9°C/minute	8°C/minute	7°C/minute
Cooling rate[4]	4°C/minute	4°C/minute	3°C/minute	3°C/minute
Settling time[5]	<10 min	a)<15 min	a)<20 min	a)<25 min
Regulation stability	0.05ºC	0.08ºC	0.08ºC	0.1ºC
Computer control	RS-232 (USB 2.0)	RS-232 (USB 2.0)	RS-232 (USB 2.0)	RS-232 (USB 2.0)
Power supply	115-230VAC 50/60Hz	115-230VAC 50/60Hz	115-230VAC 50/60Hz	230VAC 50/60Hz
Operating temperature	+5°C ÷ +45°C	+5°C ÷ +45°C	+5°C ÷ +45°C	+5°C ÷ +45°C
Storage temperature	–10°C ÷ +60°C	–10°C ÷ +60°C	–10°C ÷ +60°C	–10°C ÷ +60°C
Power voltage	AC 230/110V	AC 230/110V	AC 230V	3Phase 230/400VAC 3phase 120/208VAC
Power consumption	400W	700W	1200W	Up to 6200W
Dimensions	325x220x250	360×370×260mm	410×360×280mm	About 480×470×350mm[3]
Mass[6]	About 12 kg	About 25 kg	About 35 kg	About 67 kg

*specifications are subject to change without prior notice

[1] Stabilization time significantly increases at temperatures below recommended temperature range

[2] Temperature uniformity is defined as uncertainty of temperature spatial distribution. Measurements are done for blackbodies working in vertical configuration. Temperature uniformity can be improved in horizontal configuration.

[3] Approximate value at 200ºC to 400ºC temperature range

[4] Approximate value at 400ºC to 200ºC temperature range

[5] Settling time is to getting 0.5°C temporal standard uncertainty from the desired temperature

[6] Mass and dimensions are bigger in case of blackbodies in horizontal configuration.

MAX TEMPERATURE:

Typical maximal temperature is 550°C (option: 600°C). If such temperature is not needed then max temperature can be reduced to 350°C and better temperature uniformity can be achieved.

Commercial code: MTB – xD where x is approximate size in inches. MTB- 2D means MTB blackbody of 50x50mm emitter.

Version 2.5

CONTACT: Tel: +48 604061817 Fax: +48 22 3987244 Email: info@inframet.com

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