



Digital
Barriers



Elevated Body Temperature System - Deployment Guide

Date: 30th April 2020

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WARNING REGARDING CONDITIONS OF USE

This Device is not FDA cleared or approved for medical diagnosis of illness or symptoms of illness.

Device is intended to be used only:

- i. for triage purposes to perform initial body temperature measurement.
- ii. where an elevated body temperature measurement is confirmed in the context of use with secondary evaluation methods (e.g., non-contact infrared thermometer (NCIT) or clinical grade contact thermometer); and
- iii. where such devices do not create an undue risk in light of the public health emergency.

Per U.S. Food and Drug Administration (“FDA”) guidance (“Enforcement Policy for Telethermographic Systems During the Coronavirus Disease 2019 (COVID-19) Public Health Emergency” (April 2020)):

- i. the Device should not be solely or primarily relied upon to diagnose or exclude a diagnosis of COVID-19, or any other disease.
- ii. public health officials, through their experience with the Device in the particular environment of use, should determine the significance of any fever or elevated temperature based on the skin Telethermographic temperature measurement.
- iii. the system and technology should be used to measure only one subject’s temperature at a time; and
- iv. visible thermal patterns are only intended for locating the points from which to extract the thermal measurement.

RECORD OF CHANGES

This is a controlled document and will be uncontrolled once issued; additional controlled copies can be obtained through the issuing authority. In the event of copying locally, including electronically, each document should be marked 'Uncontrolled Copy'. Full issues and page amendments are identified on this page. Any proposals for change should be forwarded, in writing, to the issuing authority.

Issue	Date	Detail of Changes	Amended by
Draft 1v1	15 Apr 2020	Initial Issue (Draft)	Kevin Peters
Issue 1v2	16 Apr 2020	Minor Corrections & Up Issued	Kevin Peters
Issue 1v3	18 Apr 2020	Minor Corrections & Title Change	Kevin Peters
Issue 1v4	21 Apr 2020	Minor Corrections	Kevin Peters
Issue 1v5	30 April 2020	Minor Corrections and Figure Additions	Derek Peay

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INTRODUCTION

1 This Deployment Guide is intended as both an Illustrated Parts List and a physical Equipment Set-up Guide for the Elevated Body Temperature System; it is broken down into two parts as follows:

- 1.1 Illustrated Parts List.
- 1.2 Equipment Set-up Guide.

Illustrated Parts List

2 This chapter will list some or all the parts comprising the system concerned, but only those parts given a Part or Reference Number will normally be available as replacement parts. Should there be a requirement for an item not assigned a number, this should be highlighted through the DB Support Chain quoting the Support Publication Number, Item Number, Figure Reference and Item Name. Where a manufacturer's reference is known, this should be quoted.

Quantities

3 The figure in the "Number of" column specifies the quantity required for the unit concerned; it does not indicate the quantity required for replacement.

Annotations

4 The following annotations are used in this publication:

- 4.1 **NI.** When appearing in the "Fig Item" column indicates that the item is not illustrated.
- 4.2 **NP.** When appearing in the Product Code or Part Number column indicates that the item may be illustrated, but is not available from stock as replacement item, i.e. it is a Non-Provisioned item.
- 4.3 **NA.** When appearing in the Product Code / Part Number column, indicates that no Product Code or Part Number has been allocated.
- 4.4 **Ref.** In the 'Number of' column indicates that the item is listed for reference purposes only.

Indentations

5 Items are listed in a logical assembly/disassembly order and are indented by the 'Dot System' in which each 'dot' depicts the relationship of the item to the main assembly.

MAIN ASSEMBLY

Attaching parts for main assembly.

- . FIRST LEVEL OF BREAKDOWN (Sub-assembly or detail part of main assembly).
 . Attaching parts for first level.
- .. SECOND LEVEL OF BREAKDOWN (Sub-sub-assembly or detail part of Sub-assembly).
 .. Attaching parts for the second level.
- ... THIRD LEVEL OF BREAKDOWN (Sub-sub-sub assembly or detail part of Sub-sub-assembly).
 ... Attaching parts for third level.

System Parts List

6 Figure 1 illustrates each system component (LRUs only) whilst Table 1 details all the parts comprising the system concerned.

 <p>Item 1</p>	 <p>Item 2</p>	 <p>Item 3 3a 3b</p>
 <p>Item 4</p>	 <p>Item 5</p>	 <p>Item 6</p>
 <p>Item 7</p>	 <p>Item 8 8b</p>	 <p>Item 9</p>
 <p>Item 10</p>	 <p>Item 11 11a</p>	 <p>Item 12</p>
 <p>Item 13</p>	 <p>Item 14</p>	 <p>Item 15</p>

Figure 1: Elevated Body Temperature System (LRUs) Equipment

Figure 1 Item	Item Name	Product Code	Part No.	No. of	Remarks
0	ELEVATED BODY TEMPERATURE SYSTEM EQUIPMENT (COMPLETE)	TBA	TBA	1	-
1	. THERMAL/OPTICAL CAMERA	RCF-FD384H	TBA	1	-
2	. THERMAL/OPTICAL UCM CABLE	CA-UCM-D-05	TBA	1	-
3	. ELEVATED BODY TEMPERATURE SENSOR TROLLEY	CF-FD384H-STAND	TBA	1	
3a	. . ELEVATED BODY TEMPERATURE SENSOR TROLLEY LAPTOP MOUNT PLATE	NA	NA	1	
3b	. . ELEVATED BODY TEMPERATURE SENSOR TROLLEY CAMERA MOUNT PLATE	NA	NA	1	
4	. THERMAL/OPTICAL CAMERA EXTENSION MOUNT	TBA	TBA	1	-
5	. THERMAL BLACKBODY TEMPERATURE REFERENCE	TBA	TBA	1	-
6	. BLACKBODY TRIPOD	TBA	TBA	1	-
7	. BLACKBODY TRIPOD EXTENSION MOUNT	TBA	TBA	2	-
12	. BLACKBODY PSU CABLE (BARE END)	TBA	TBA	1	-
8	. LAPTOP	RCF-FD384H-C2	TBA	1	-
8b (NI)	. . LAPTOP PSU	NA	NA	1	-
9	. USB TO ETHERNET ADAPTER	TBA	TBA	1	-

10	. USB MEMORY STICK (64GB)	TBA	TBA	1	-
11	. EQUIPMENT ENCLOSURE BOX	RCF-FD384H-DB- INTERFACE	TBA	1	-
11a (NI)	. ENCLOSURE BASE FIXINGS (BOLTS / NUTS)	TBA	TBA	3	-
12	. ENCLOSURE PSU CABLE (UK PLUG)	TBA	TBA	1	-
13	. ENCLOSURE TO LAPTOP PSU CABLE	TBA	TBA	1	-
14	. HDMI CABLE (3 METRE)	TBA	TBA	1	-
15	. ETHERNET CABLE (3 METRE)	TBA	TBA	1	-

Table 1: Elevated Body Temperature System Equipment (LRUs) Parts List

Equipment Set-up Guide

7 This section details how to construct the equipment from scratch into a system ready for operation - ensure each step is carried out in the order shown; it is broken down into the following sub-sections:

- 7.1 Construct the Elevated Body Temperature Trolley.
- 7.2 Mount the Thermal/Optical Camera.
- 7.3 Fix the Interface Equipment Enclosure Box.
- 7.4 Deploy the Thermal BlackBody Temperature Reference.
- 7.5 Connect the Equipment (Wiring).
- 7.6 Deployment Suggestions.

Construct the Elevated Body Temperature Trolley

8 Table 2 details how to construct the Elevated Body Temperature trolley.

Step	Description	Image Guide
1	Follow the instructions as per the provided manufacturers guidelines ¹	N/A

Table 2: Construct the Elevated Body Temperature Trolley

Mount the Thermal/Optical Camera

9 Table 3 details how to mount the Thermal/Optical Camera.

¹ To ease construction a Phillips PH2 Screwdriver, a 10mm Hex Socket (with associated ratchet or driver) and a Flat head Screwdriver (size 5) is advisable.








Step	Description	Image Guide
1	Separate the Thermal/Optical Extension Mount into its two parts	
2	Fix the upper part into the underside of the Thermal/Optical Camera.	
3	Fix the lower part onto the bolt on the Elevated Body Temperature Trolley Camera Mounting Plate	
4	Slide both parts of the mount back together.	
5	Supplied rod extension may require installer to remove larger thread cap in order to reduce the thread to 1/4" x 20 to match the THERMAL/OPTICAL thread.	
6	Adjust the Thermal/Optical so it is facing forwards and tighten the locking thread.	
7	Attach the cable clamp so there is no strain on the cable bend and utilising the Cable Management system ensure the Thermal/Optical Camera cable is clamped along the length of the trolley.	

Table 3: Mount the Thermal/Optical Camera

Fix the Interface Equipment Enclosure Box

10 Table 4 details how to fix the Interface Equipment Enclosure Box.


Step	Description	Image Guide
1	Remove the lid of the Interface Enclosure	N/A
2	Line up the shown mounting points with the holes in the Trolley Base	
3	Attach the Interface Enclosure to the trolley using the provided bolts / nuts.	

Table 4: Fix the Interface Equipment Enclosure Box

Deploy the Thermal BlackBody Temperature Reference

11 Table 5 details how to deploy the BlackBody Sensor.







Step	Description	Image Guide
1	Separate one of the BlackBody Tripod Extension Mounts into its two parts	
2	Fix the Upper part into the underside of the Black Body.	
3	Separate the other BlackBody Tripod Extension Mounts into its two parts	
5	Fix the lower part to the top of the Tripod	
6	Slide both parts of the Extension Mounts back together and connect both mounts together.	
7	Adjust the BlackBody to face towards the Thermal/Optical Camera.	

Table 5: Deploy the Thermal BlackBody Temperature Reference

Connect the Equipment (Wiring)

12 Table 6 details how to Connect the equipment's wiring together.

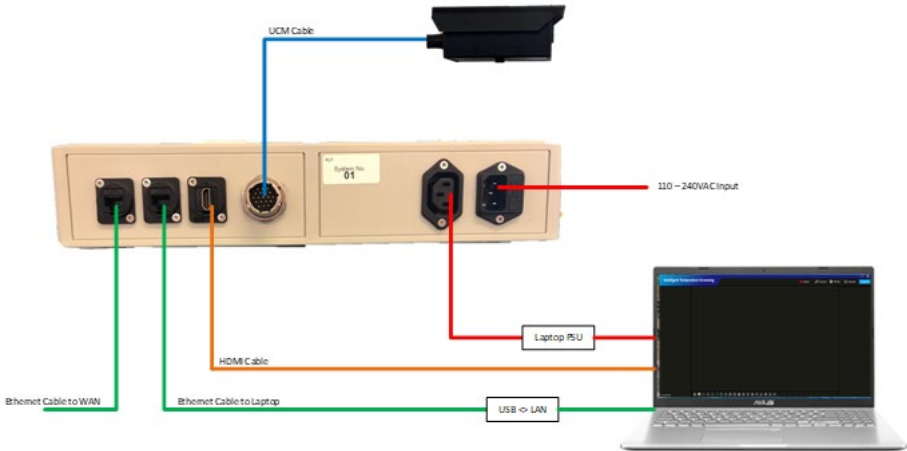

Step	Description	Image Guide
1	Connect the Equipment Interface Box to the supplied cables.	 <p>The diagram shows a tan-colored Equipment Interface Box with several ports. A blue UCM Cable is connected to the top. A red power cord labeled '110-240VAC Input' is plugged into the right side. An orange HDM Cable connects the box to a laptop. A green USB to LAN cable also connects to the laptop. Two green Bhemet Cables are connected to the left side of the box, labeled 'Bhemet Cable to WAN' and 'Bhemet Cable to Laptop'. A white Laptop PSU is connected to the box and the laptop.</p>
2	Connect the BlackBody to a suitable Mains Supply.	 <p>The diagram shows a white rectangular BlackBody device. A red power cord labeled '110-240 VAC' is connected to the top of the device, representing a mains supply.</p>

Table 6: Connect the Equipment (Wiring)

Deployment Suggestions

13 The following sections lists various suggestions to optimise the deployment of the Elevated Body Temperature system; laid out as follows:

- 13.1 General.
- 13.2 Thermal/Optical Camera.
- 13.3 BlackBody Temperature Reference Sensor.
- 13.4 Typical Deployment Scenario.

General

14 The system should be deployed indoors in a relatively stable ambient temperature.

15 Any quick changes in temperature will impact on the BlackBody's ability to regulate its surface temperature. This will have an impact on the accuracy of the system.

16 Should there be no alternative to deploying the System outdoors, then protection from the environment - i.e. container/ten - should be implemented.

17 Avoid areas that have high temperature objects in the Thermal/Optical FoV, if any are present, utilisation of the Software's Shielding Tool will negate their impact.

18 Avoid placing directly at an outside entrance, force personnel to walk through a channel first before screening (as shown at Figure 2). This will allow enough time to reduce the outside conditions impact of their skin temperature.

Thermal/Optical Camera

19 The Thermal/Optical Camera should be deployed 3 to 16 feet from the people to be screened.

20 For best performance, the Thermal/Optical Camera should be approx. head-height of the people to be screened; this will minimise the angle of incidence from Thermal/Optical Camera to faces.

BlackBody Temperature Reference Sensor

21 The Black Body should be deployed towards the top of the Field of View (FOV) of the Thermal/Optical camera in an area that will not be obstructed.

22 It should also be deployed as close to the screening range as physically possible i.e. if the screening range is 13 feet, the BlackBody should be deployed approx. 13 feet away from the Thermal/Optical Camera.

23 Avoid areas with high air flow. This may impact on the BlackBody's ability to maintain its set regulated temperature.

Typical Deployment Scenario

24 Figure 2 illustrates a suggested layout allowing optimization of the deployed system, with associated notes below that.

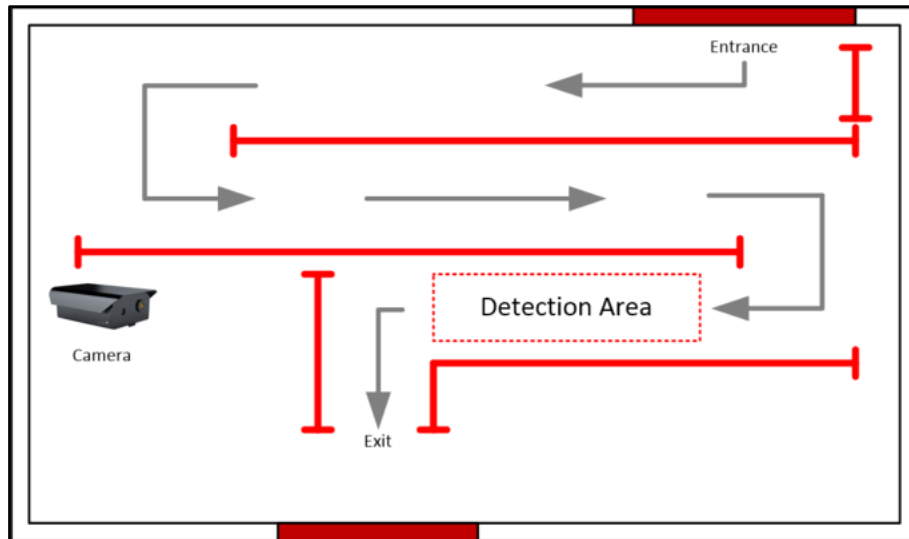


Figure 2: Suggested Deployment Layout

24.1 Personnel Movement. The above deployment includes a forced channel that the individuals must walk through. This ensures a compliant pose when walking towards the camera, whilst also providing time for the individuals skin temperature to stabilize thereby reducing the impact of the outside environment.

24.2 Camera Placement. The Thermal/Optical Camera Guide Belt (Rail) ensures personnel cannot get too close to the cameras as any measurements closer than the desired range will not be accurate. Any measurement too far away will read lower than actual temperature - any too close will read higher, both scenarios potentially raising false alerts.

24.3 BlackBody Placement. The BlackBody should be deployed within the camera's Field of View and ideally at above head height - as shown at Figure 3.

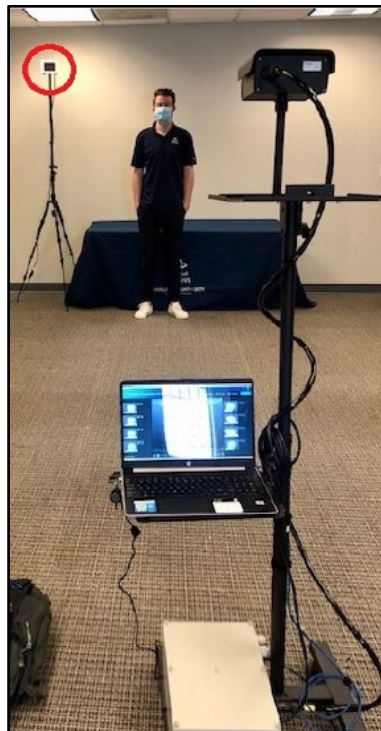


Figure 3: BlackBody Placement