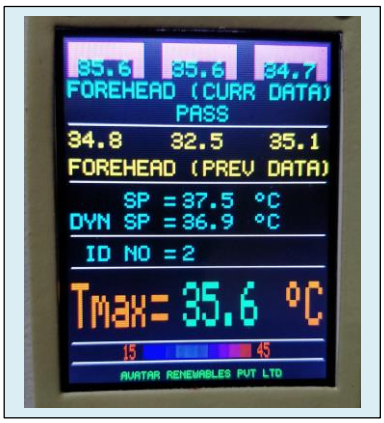
AVATAR THERMAL EYE MINI

(USER MANUAL Model TM-03-1)

This unique state of the art AVATAR product employs a **NON-CONTACT** infra-red **MEDICAL GRADE** thermal sensor (complies to ASTM E1965-98) to capture the radiated temperature emitted from a human body. The design is intended for "forehead" temperature measurement at a fixed level.



This is very handy for the firstline screening for elevated body temperature (EBT) among individuals without human intervention. However, the final assesment should be from professional medical personnel. The product is designed as plug-n-play and the powerful features of the device are listed below.

1. **A multi-processor design for powerful functions.**
2. **Three-zone temperature measurement using servo control for better capture.**
3. **Precesion real time clock (+/- 2 minutes an year).**
4. **Large 2.8" color LCD display with auto-off.**
5. **Local SD card recording/logging with time stamp and ID number**
6. **Galvanically isolated Modbus serial SLAVE interface for remote monitoring (optional remote screen).**
7. **Voice assisted instructions**
8. **LED alarm flashing at > threshold temperature.**
9. **Buzzer alert at > threshold temperature.**
10. **Additional NO/NC relay contact (rated 5 A/230VAC) for external hooter or gate-actuator**
11. **LIDAR based presence/distance sensing**
12. **Dual threshold comparison. On programmable temperature and dynamically calculated temperature threshold/set-point.**
13. **Ambient temperature compensation**
14. **100 to 230 VAC SMPS built-in power supply and low power consumption < 5 watts**
15. **Low heat generation due to dual SMPS design (high and low voltage circuits).**
16. **Micro SD card logging and can hold 65000 files**
17. **Temperature scan time = < 5 seconds**
18. **Strong powder coated steel enclosure with mounting brackets.**

INTRODUCTION

The micro SD card holds two system files “TM.cfg” and “TMINIT.cfg”. These files are essential for the device and must be present in the root directory. These are already factory set and are editable with “notepad” (only if needed).

TM.cfg → format
[temperature*10 set-point][servo delay mS][servo increment/shaft deflection][slave id]!
Eg; (default)
[375][100][20][9]!

TMINIT.cfg format
[reference ambient temperature*10][reference object temperature*10]!
This is set at factory during calibration and *no need to be changed*.

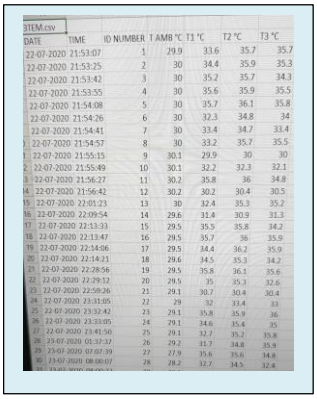
After power-on, the device will perform the initialisation routines and will arm itself for the temperature scan (“READY FOR SCAN”). The lidar senses the individual’s distance from sensor and expects a proximity range of **10 to 40 cms** from sensor. A red horizontally moving spot on the LCD will prompt the user by turning itself green if he/she is within range.

Once the individual falls within the range, the measurement is triggered. An expanding circle is shown and the individual is to level his/her eyes onto it. This is to align forehead at an optimal distance and height from sensor. The servo controlled sensor quickly captures three forehead area (zones) temperatures horizontally.

The temperature zones will then be displayed with a computed palette color with measured temperatures in ° C. Two sets of value are displayed, “CURRENT” and “PREVIOUS”. The measured temperature is compared with two references,

a) Configured temperature set-point (as provided in file TM.cfg)
b) Dynamically adjusted set-point that keeps changing (moving average) according to an individual’s temperature that “PASS” the scan. This has a bearing on the TMINIT.cfg file.

If any zone/zones exceed the threshold ie configured OR calculated dynamic set-point, an “*” is flashed on the respective zone/zones. Also, voice anouncement, RED external LED and buzzer gets activated few times. Further medical attention is necessary.



DATE	TIME	ID NUMBER	T AMB °C	T1 °C	T2 °C	T3 °C
22-07-2020	21:53:07	1	29.9	33.6	35.7	35.7
22-07-2020	21:53:25	2	30	34.4	35.9	35.3
22-07-2020	21:53:42	3	30	35.2	35.7	34.3
22-07-2020	21:53:55	4	30	35.6	35.9	35.5
22-07-2020	21:54:08	5	30	35.7	36.1	35.8
22-07-2020	21:54:26	6	30	32.3	34.8	34
22-07-2020	21:54:41	7	30	33.4	34.7	33.4
22-07-2020	21:54:57	8	30	33.2	35.7	35.5
22-07-2020	21:55:15	9	30.1	29.9	30	30
22-07-2020	21:55:49	10	30.1	32.2	32.3	32.1
22-07-2020	21:56:27	11	30.2	35.8	36	34.8
22-07-2020	21:56:42	12	30.2	30.2	30.4	30.5
22-07-2020	22:01:23	13	30	32.4	35.3	35.2
22-07-2020	22:09:54	14	29.6	31.4	30.9	31.3
22-07-2020	22:13:33	15	29.5	35.5	35.8	34.2
22-07-2020	22:13:47	16	29.5	35.7	36	35.9
22-07-2020	22:14:06	17	29.5	34.4	36.2	35.9
22-07-2020	22:14:21	18	29.6	34.5	35.3	34.2
22-07-2020	22:28:56	19	29.5	35.8	36.1	35.6
22-07-2020	22:29:12	20	29.5	35	35.3	32.6
22-07-2020	22:59:26	21	29.1	30.7	30.4	30.4
22-07-2020	23:31:05	22	29	32	33.4	33
22-07-2020	23:32:42	23	29.1	35.8	35.9	36
22-07-2020	23:33:05	24	29.1	34.6	35.4	35
22-07-2020	23:41:50	25	29.1	32.7	35.2	35.8
23-07-2020	01:37:37	26	29.2	31.7	34.8	35.9
23-07-2020	07:07:39	27	27.9	35.6	35.6	34.8
23-07-2020	08:00:07	28	28.2	32.7	34.5	32.4

The ID number is incremented for each individual measurement. If the ID is 3000, and after an individual scan, it becomes 3001. If there is a power interruption, a new file is created and then this individual ID will be 1 stored in that new file. The values are logged in the micro SD card with time stamp for future analysis. A new file with a running number is generated at **every power-on**.

Log File name → “nnnnnTEM.csv” (where “nnnnn” is from 0 to 65000)

- **A relay** contact is provided to activate an external alarm hooter or an electrically actuated gate.
- A push-button is provided at the back for factory calibration and setting.
- The display switches OFF after **10 minutes of inactivity**. It resumes, once an individual appears in front of device for scanning.

NOTES

a) Do not open enclosure, high electrical voltage present inside.
b) Avoid water, high humidity, dust and direct sunlight. Indoor or shade recommended.
c) Mount at a suitable average height so that most can level forehead within the measurement range.
d) No personal information is stored.
e) More such devices may be required, mounted at various heights depending on application.
f) An UPS is recommended.
g) An **optional remote screen** with 2.8" LCD, Buzzer, LED is also available.

AVOID REMOVING/INSERTING **SD CARD** WHILE THE POWER TO **DEVICE IS ON**. THE DATA MAY GET CORRUPTED OTHERWISE.

SPECIFICATION		
Application areas ❖ ***Offices, techno-parks, educational institutions etc.*** ❖ ***Malls, shops, work-outs*** ❖ ***Railway stations, airports***		
1	Operating voltage/power	SMPS, 110-260 VAC +/- , < 5 Watts
2	Relay contact	Internal NO/NC/COMMON, 230VAC, 5 Amps
3	Temperature sensor	Thermopile array, 18 to 42 ˚C (human body), +/- <= 0.3 °C. FDA recommended medical grade ASTM E1965-98.
4	Operating temperature	0 to 50 ˚C
5	Voice assist	5 phrases (abort, too far, temperature high, scanning in progress, scan over next please)
6	Detection range	10 to 40 CMs (about 30 CMs from sensor recommended)
7	Temperature Scan	< 5 seconds
8	Thresholds	2, One configured and the second, dynamically computed.
9	Serial communications	Modbus protocol, galvanically isolated two-wire RS485 at 19.2 K Baud
10	FOV (field of view)	5 degrees
11	Precision Real time clock	Date and time (hh:mm:sec), +/- 2 minutes per year
12	Alarm	LED flasher and Buzzer
13	Micro SD card	FAT32, Max 65000 files.
14	Data Logger	Date, time, Amb temperature, ID number, T1, T2, T3 & Max temperature.
15	Display	2.8" color LCD
16	Weight & dimension	Steel, <3 Kg, 18x18x4 CMs
17	Color	Powder coated moonshine grey

Warranty & rights : There are no user serviceable parts and AVATAR RENEWABLES PVT LTD will provide 1 year warranty from the date of purchase for any device malfunction. This warranty will cover only if the device is operated as intended and not abused. AVATAR RENEWABLES PVT LTD reserves the right to modify or change the product design and hardware as and when required. No effort shall be made by user or third-party to copy, modify or replicate the product.