Leider steht dieses Datenblatt zur Zeit nur in englischer Sprache zur Verfügung.

SPECIFICATION of THERMOPILE INFRARED SENSOR UNIT

TSEA 01-M

MODEL NO. : TSEA 01-M	DRAWING NO. :	REV : 1.0		May 8, 2002
PART NO. :				

1. SCOPE

This specification describes a Thermopile Infrared Sensor Unit for non-contact temperature measurement

2. TYPE of UNIT

2.1. TYPE NAME
Thermopile Infrared Sensor Unit

2.2. MODEL NO.
TSEA 01-M

3. DIMENSIONS

See Fig. 1.
Production Lot No. is put on a Unit.

4. GENERAL CHARACTERISTICS

Table 1

PARAMETER	STANDARD
4.1. Thermopile Sensor	TS 105-5
4.2. Optics	Cr-plated Mirror
4.3. Outputs	Thermopile Signal Output (for Incident Infrared Energy Detection) Thermistor Signal Output (for Ambient Temp. Detection) * Both analog outputs are supplied individually.
4.4. Time Constant	Typ. 50 msec. (+/-) 50 %
4.5. Circuit Configuration	See Fig. 2
4.6. Detection Area	See Fig. 3
4.7. Directivity	See Fig. 4
4.8. Detecting Temperature Range	0 ~ 100 deg Celsius
4.9. Accuracy	Within (+/-) 2 deg Celsius
4.10. Operating Temperature	0 ~ 60 deg Celsius
4.11. Storage Temperature	-20 ~ 80 deg Celsius

5. ELECTRICAL CHARACTERISTICS

Table 2

PARAMETER	CONDITION	STANDARD
5.1. Thermopile Signal Output	Object Temp. : 50 deg Celsius (Emissivity = 1.0) Ambient Temp. : 20 degrees Celsius Distance : 300 mm	2.070 V (+/-) 3 %
5.2. Temperature Characteristics of Thermopile Signal Output	Object Temp. : 0 ~ 100 deg Celsius (Ambient Temp. : 0 ~ 40 deg Celsius)	See Data 1
5.3. Thermistor Signal Output	Ambient Temp. : 20 deg Celsius	0.484 V (+/-) 3 %
5.4. Temperature Characteristics of Thermistor Signal Output	Ambient Temp. : 0 ~ 40 deg Celsius	See Data 2
5.5. Reference Voltage	25 degrees Celsius	1.225 V (+/-) 1 %

5.6. Supply Voltage	Single Power Supply	5 ~ 16 V (Maximum Rating : 18 V)
5.7. Current Consumption	+Vs = 5 V Supply	Max. 5 mA
5.8. Output Current	Short Circuit to Ground	Max. 60 mA

6. MEASUREMENT METHOD

6.1. Thermopile Signal Output

See Fig. 5.

7. NOTES

7.1. Design restrictions/precautions

For outdoor applications, be sure to apply suitable supplementary optical filter, drip-proof and anti-dew construction. This Unit is designed for indoor use.

In cases where secondary accidents due to operation failure or malfunctions can be anticipated, add a fail safe function to the design.

7.2. Usage restrictions/precautions

To prevent Unit malfunctions, operational failure or any deterioration of its characteristics, do not use this Unit in the following, or similar, conditions.

7.2.1 In rapid environmental temperature changes.
7.2.2 In strong shock or vibration.
7.2.3 In a place where there are obstructing materials (Glass, Fog, etc.) through which infrared rays cannot pass within detection area.
7.2.4 In fluid, corrosive gases and sea breeze.
7.2.5 Continual use in high humidity atmosphere.
7.2.6 In field of static electricity or strong electromagnetic waves.
7.2.7 Exposed to direct wind from a heater or air conditioner.

7.3. Handling and storage restrictions/precautions

To prevent Unit malfunctions, operational failure, appearance damage or any deterioration of its characteristics, do not expose this Unit to the following or similar, handling and storage conditions.

7.3.1. Vibration for a long time.
7.3.2. Strong shock.
7.3.3. Static electricity or strong electromagnetic waves.
7.3.4. High or Low temperature and humidity for a long time.
7.3.5. Corrosive gases or sea breeze.
7.3.6. Dirty and dusty environments that may contaminate the optical window.

Unit troubles resulting from misuse, inappropriate handling or storage are not the manufacturer's responsibility.

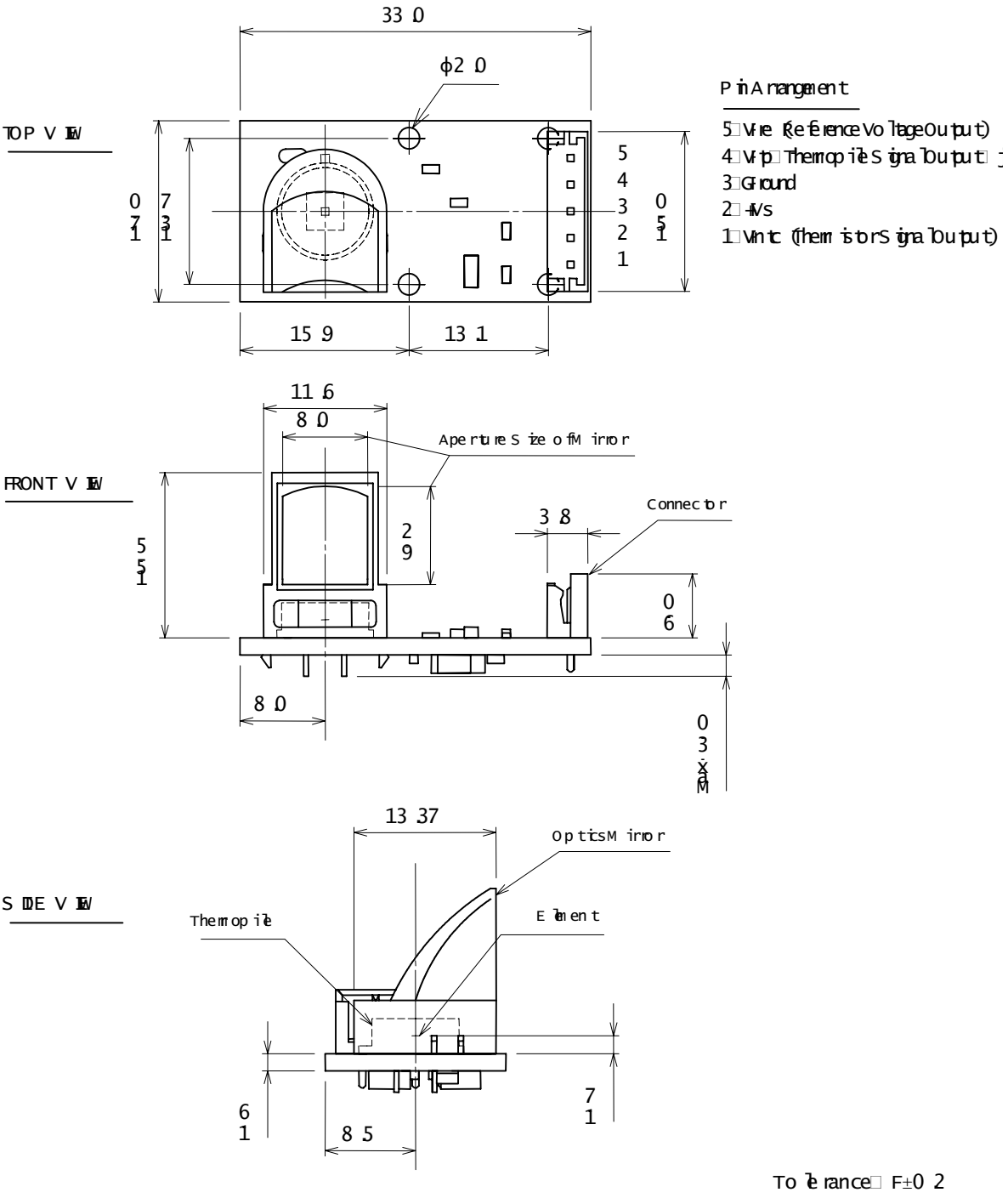
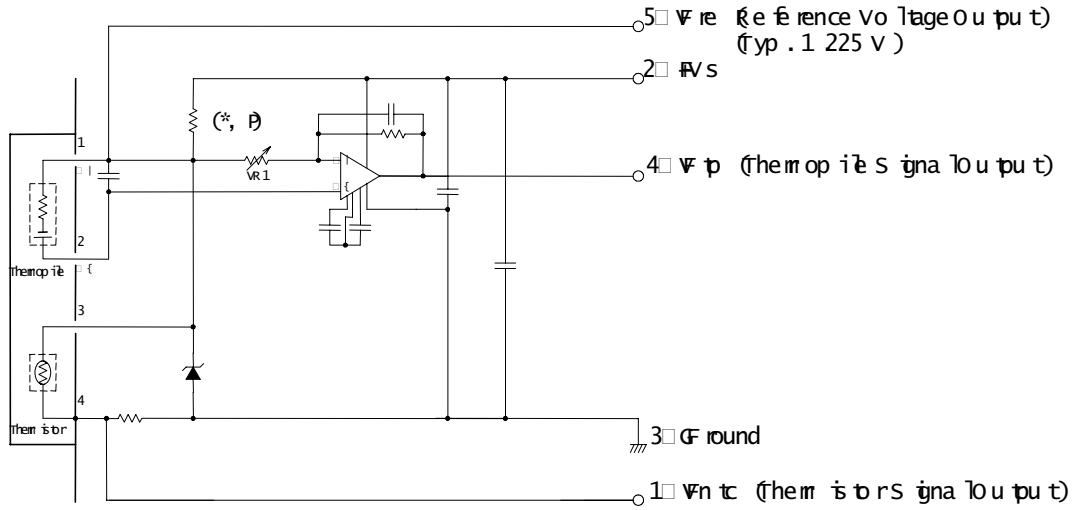


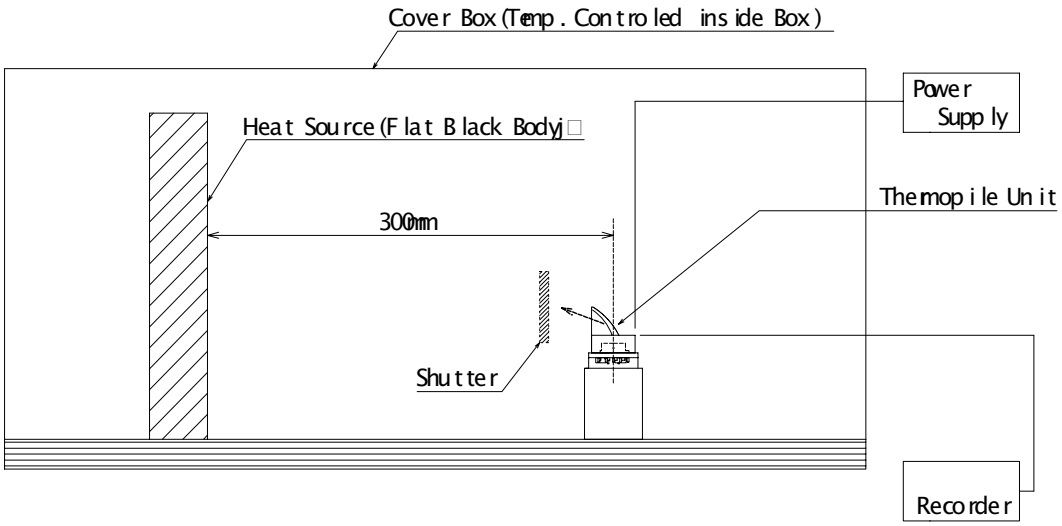
Fig. 1 : Dimensions, units in mm

MODEL NO. :	DRAWING NO. :	REV :		May 8, 2002
TSEA 01-M		1.0		
PART NO. :				



(*1) Thermopile Signal Output of Unit is calibrated by VR1 at outgoing inspection, Do not touch VR1.

Fig. 2 : Circuit Configuration



Distance : 300 mm
Supply Voltage : 5 V
Reference Voltage : Typ. 1.225 V

* Thermopile Signal Output .... Shutter On/Off
Shutter On(Open) : Infrared Incidence
Shutter Off(Close) : Infrared Cut-off

Fig. 5 : Test Set-up Block Diagram

MODEL NO. :	DRAWING NO. :	REV :		May 8, 2002
TSEA 01-M		1.0		
PART NO. :				

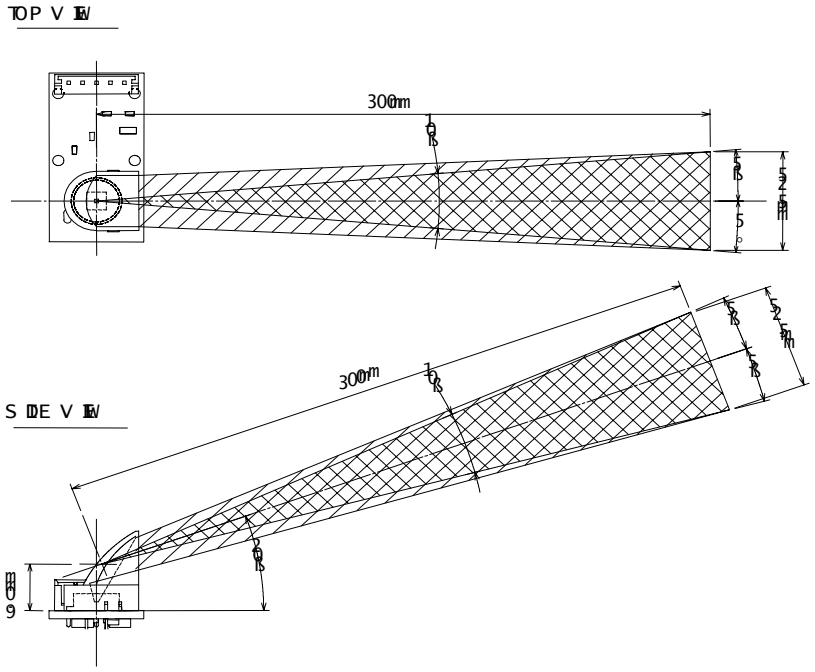


Fig. 3 : Detection Area

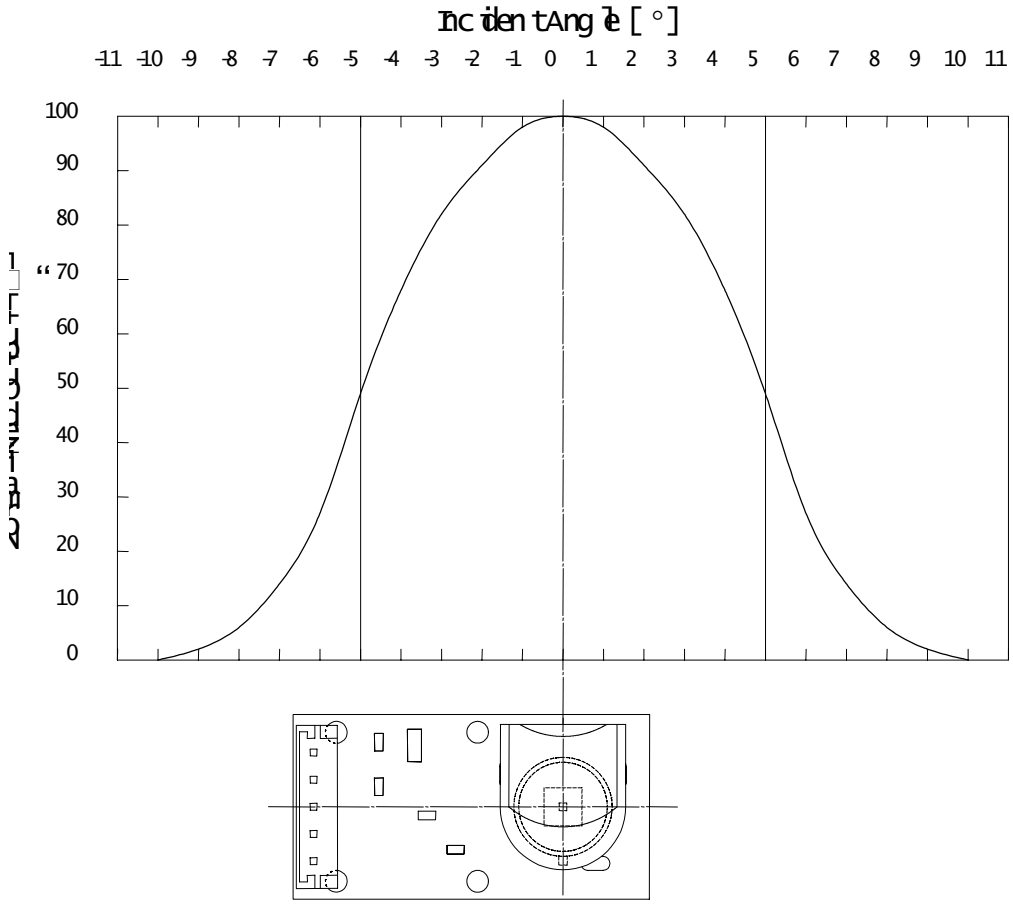
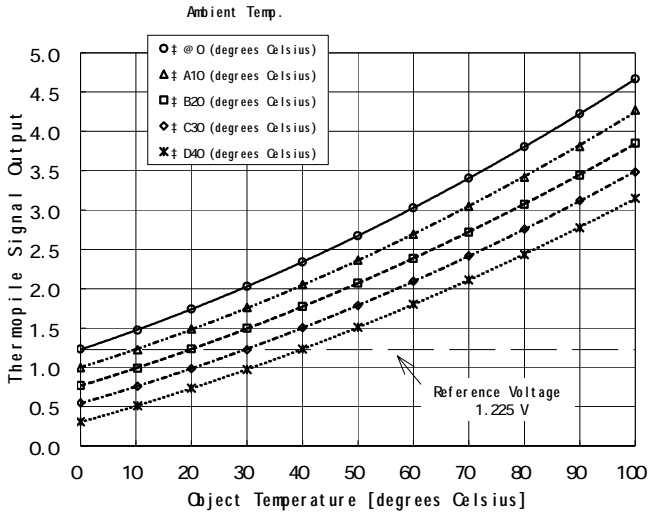


Fig. 4 : Directivity

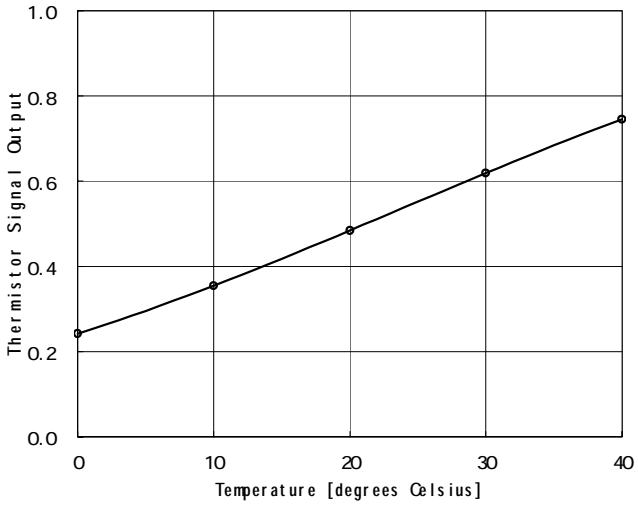
MODEL NO. :	DRAWING NO. :	REV :		May 8, 2002
TSEA 01-M		1.0		
PART NO. :				



Ambient Temp. (degrees Celsius)	Typical Thermopile Signal Output for Object Temp. (degrees Celsius j[V]										Data
	0	10	20	30	40	50	60	70	80	90	100	
0	1.231	1.471	1.739	2.028	2.339	2.673	3.027	3.404	3.803	4.223	4.665	| › |‡
10	0.996	1.223	1.489	1.760	2.052	2.363	2.694	3.044	3.415	3.805	4.269	-- ‡
20	0.767	0.987	1.232	1.496	1.774	2.070	2.385	2.718	3.070	3.441	3.851	-- -- ‡
30	0.547	0.759	0.983	1.221	1.502	1.787	2.091	2.415	2.758	3.121	3.482	-- ‡- ‡
40	0.305	0.510	0.732	0.970	1.230	1.511	1.802	2.110	2.435	2.776	3.149	-- -- ‡

* Distance : 300 mm

Data 1 : Temperature Characteristics of Thermopile Signal Output



Temp. [degrees Celsius]	0	10	20	30	40	Data
Typical Thermistor Signal Output [V]	0.242	0.355	0.484	0.619	0.746	| › |

* Reference Voltage : Typ. 1.225 V

Thermistor

Resistance : Typ. R = 100 kohm (at 25 [deg Celsius])

Beta Value : 3955K (+/-) 0.5 % (T1/T2 : 0/50 [deg Celsius])

Data 2 : Temperature Characteristics of Thermistor Signal Output

** If you need numerical data of each condition, please ask HL Planar Temperature Conversion Table or arithmetic program etc are available.

MODEL NO. :	DRAWING NO. :	REV :		May 8, 2002
TSEA 01-M		1.0		
PART NO. :				