

INFRARED SENSING MODULE

OTM-422 series

Infrared Temperature Sensing Module

OTM-422

Revision Date: 2022/08/31 (Rev.05)

The OTM-422 is an infrared thermopile sensor with a thermistor for ambient temperature compensation and with an ASIC for digital signal processing. The OTM-422 senses the thermal radiation emitted by objects and converts this to high resolution digits of temperature reading.

Features and Benefit

- Factory pre-calibrated
- Output reading in °C unit directly
- Easy to integrate

Application Examples

- High precision non-contact temperature measurement
- Home appliance with temperature control

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
Storage temperature	T _{Storage}	-40		100	°C	Avoid storage in humid environment.
Power supply	V _{Max}			6.5	V	
I/O pin	V _{SCK} V _{SDA}	-0.3		6.5	V	
ESD (Human Body Mode)	ESD _H			2	kV	
ESD (Machine Mode)	ESD _M			200	V	

Electrical and Mechanical Characteristic

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
Operating Conditions						
Operating voltage	V _D	4.5	5.0	5.5	V	
Operating current	I _D	-	2.0	-	mA	VDD = 5.0 V
Sleep current	I _{Sleep}	-	50	-	μA	VDD = 5.0 V
Wake up time	T _{Wake}		1		Sec.	
Data Communication						
Electrical interface			I2C			
Interface speed			100		KHz	
Data refresh rate			2		Hz	
Slave address			10		hex	7 bits addressing
Physical Interface						
Physical connection interface			292250-4 (AMP) connector			

Thermometer Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Remarks / Conditions
Ambient temperature range ^{**1}	T _{Amb}	-20		85	°C	The ambient temperature display range can be up to 100°C.
Object temperature range	T _{Obj}	-20		420	°C	
Resolution of T _{Amb} reading	T _{Res_amb}	-	0.01	-	°C	T _{Amb} = 25°C
Resolution of T _{Obj} reading	T _{Res_obj}	-	0.01	-	°C	T _{Amb} = 25°C
Accuracy of T _{Obj} reading ^{**1}	T _{Acc}	--	±2.0	±2% * T _{obj}	°C	Please see performance graph below.

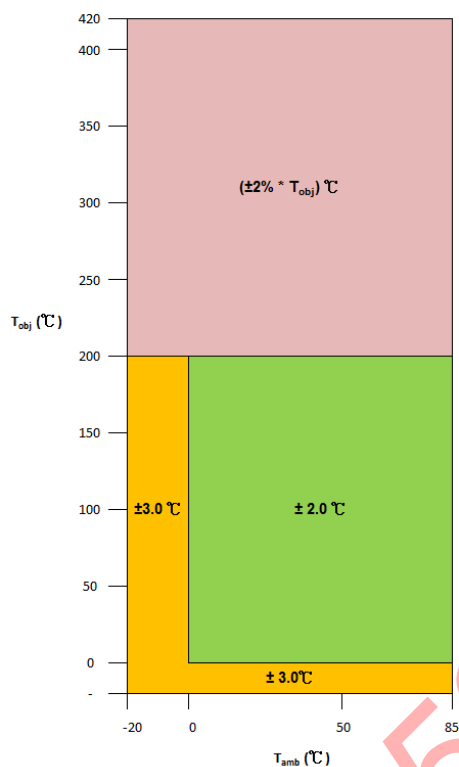
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Note

- * 1: When ambient temperature is up to 100°C, the functionality is still workable. However, if the ambient temperature is over 85°C, the object temperature accuracy is not guaranteed.

Performance Graph



Note:

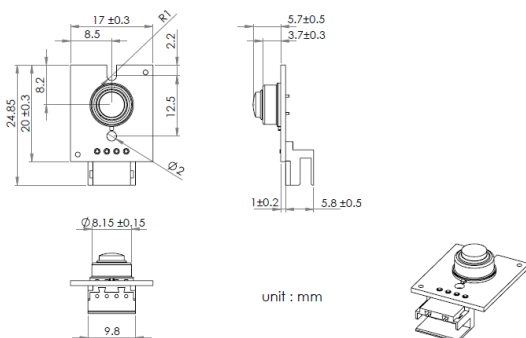
- All accuracy specifications apply under settled isothermal conditions only. Furthermore, the accuracy is only valid if the object fills the FOV of the sensor completely
- Test condition
 - Distance from sensor to blackbody: 5 cm (K05 type)
15 cm (K15 type)
25 cm (K25 type)
 - Blackbody size: 15 cm in diameter
 - Blackbody emissivity: 0.95

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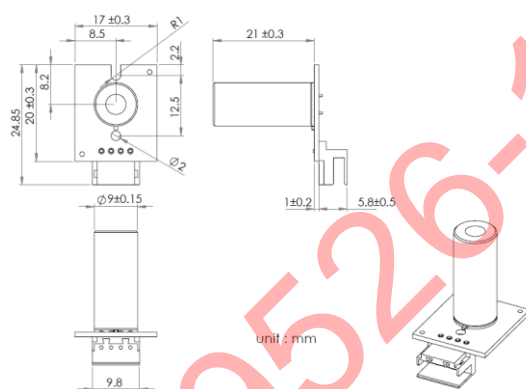
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Mechanical Drawing

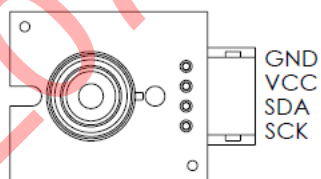
- D10 model



- D10T model



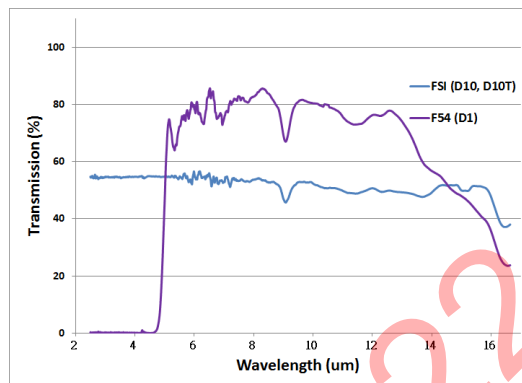
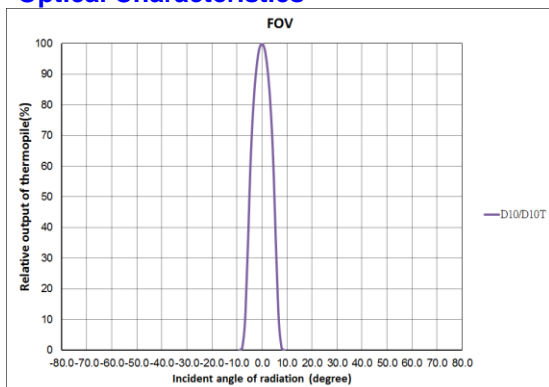
Connector Pin Assignment



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Optical Characteristics



Ordering Information

- OTM-422 D10 Kxx^{*1,2} FOV 10±3°, for general purpose application
- OTM-422 D10T Kxx^{*1,2} FOV 10±3°, for general purpose application

Note *1: K05, K15, or K25
 *2: K05 is the typical type.

Liability Policy

The contents of this document are subject to change without notice. Customers are advised to consult with Oriental System Technology sales representatives before ordering.

Customers considering the use of Oriental System Technology thermopile devices in special applications where failure or abnormal operation may directly affect human lives or cause physical injury or property damage, or where extremely high levels of reliability are demanded, are requested to consult with Oriental System Technology sales representatives before such use. The company will not be responsible for damage arising from such use without prior approval.

INFRARED SENSING MODULE**OTM-422 series****Revision History**

Version	Date	Page	Section	Revision Summary
Rev.00	2019/05/06	ALL	ALL	Initial release
Rev.01	2019/10/09	P.2	Performance Graph	Added "K05, K15, K25" test conditions.
		P.4	Ordering Information	Added "K05, K15, K25" ordering items.
Rev.02	2021/03/16	P.3	Connector Pin Assignment	Revised Pin-4 naming from "SCL" to "SCK".
Rev.03	2021/08/13	P.3	Mechanical	Revised mechanical tolerance
Rev.04	2022/02/23	P.3	Mechanical	Revised mechanical tolerance
Rev.05	2022/08/31	P.4	Ordering Information	Add Optical Characteristics FOV tolerance