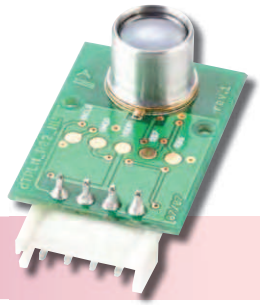
CoolEye™ - Digital Array Modules
With Integral Optics

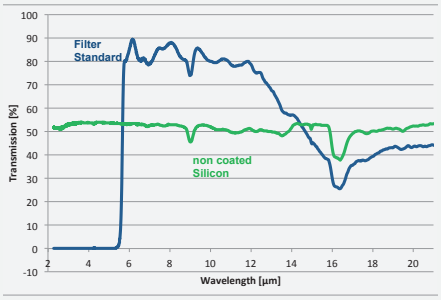


TPiL 08T 2246 L3.9, TPiL 16T 3446 L3.9 – Thermopile Line
TPiA 16T 4146 L3.9 – Thermopile Array

Applications
- Presence Detection
- Non-contact Temperature Measurement
- Temperature-dependent Switch for Alarm or Thermostatic applications.
- Household Appliances such as Microwave Ovens

Features and Benefits
- Digital SMBus interface
- Factory Calibration
- Temperature Signal
- Ambient temperature output signal
- Programmable emissivity
- Noise reduction filter

Filter



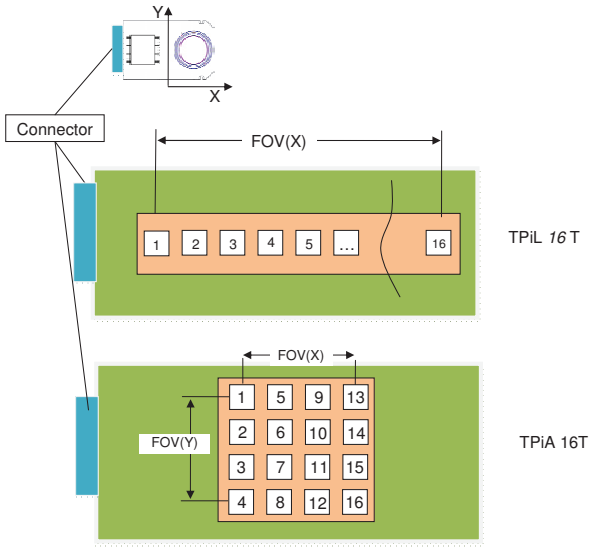
Product Description

With the CoolEye™ Family, Excelitas offers thermopile arrays in multiple configurations. All arrays are module types, with a pcb that provides the communication interface and a 6-pin connector. For Line Arrays, we offer 8-Elements and 16-Elements, with 3.9 mm focus integral lens. The spatial design provides for 4x4 elements.
All parts of the CoolEye™ Family employ the patented, ISOthermal concept and offer uniquely high-performance under thermal shock conditions.
The Thermopile Line or Array Modules consist of a 1x8, 1x16 or 4x4-element thermopile chip connected to an integrated multiplexing and signal conditioning circuit, E2PROM and microcontroller with integrated A/D converter for signal processing and interfacing. The sensor is equipped with an internal reference temperature sensor for correct target temperature determination.
The temperature accuracy achieved by digital signal processing, in combination with the numeric ambient temperature compensation algorithm, outperforms any discrete solution. The ISOthermal Sensor Module provides a digital output signal by SM Bus which represents real temperature data for each pixel. Customer-specific modifications are possible.

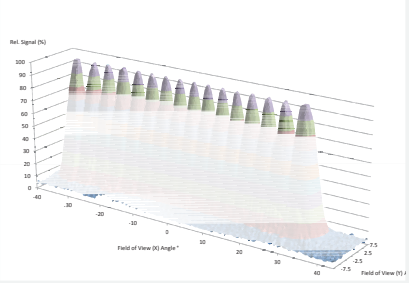
For the various object temperature ranges we offer following pre-calibrated Modules:

0...60°C: TPiL 08T 2246 L3.9 OAA060
0...60°C: TPiL 16T 3446 L3.9 OAA060
0...60°C: TPiA 16T 4146 L3.9 OAA060

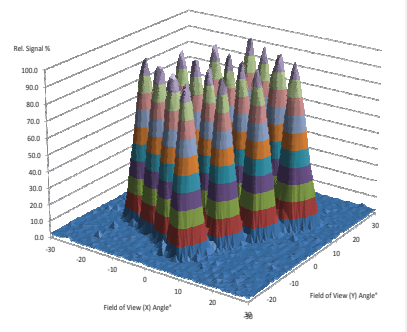
A temperature reference output is included. Upon request, the Modules can be supplied as an "OBA" version, which is calibrated but without internal temperature compensation. In this case, the customer will do the temperature compensation externally, with the use of the supplied reference output.

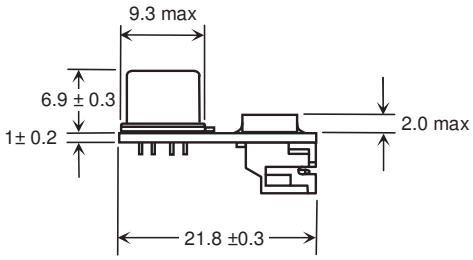


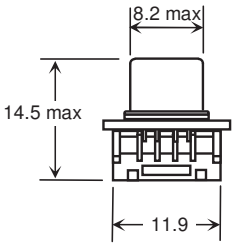
Field of View TPiL 08



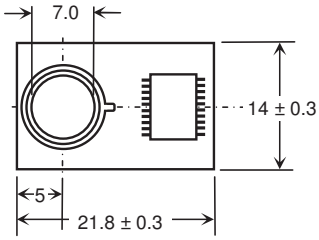
Field of View TPiL 16T

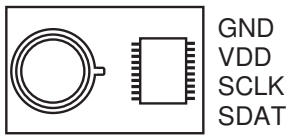






JST S 4B-PH SM4TB

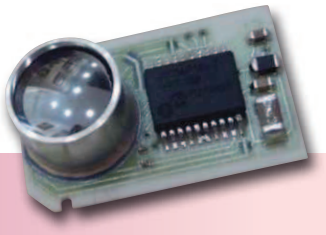




TPiL 08T 2246 L3.9, TPiL 16T 3446 L3.9, TPiA 16T 4146 L3.9

Parameter	Symbol	TPiL 08 T	TPiL 16T	TPiA 16 T	Unit	Remark
Storage Temperature Range		-40 …. +100	-40 …. +100	-40 …. +100	°C	
Operating Temperature Range		-25 …. +100	-25 …. +100	-25 …. +100	°C	
Supply Voltage	V_{DD}	4.5 …. 5.5	4.5 …. 5.5	4.5 …. 5.5	V	
Supply Current	I_{DD}	5	5	5	mA	typ.
Field of View X / L3.9	FOV_X	50	62	30	°	refer to FOV definitions
Field of View Y / L3.9	FOV_Y	NA	NA	20	°	refer to FOV definitions
Digital Interface Type		SMBus	SMBus	SMBus		
Object Temperature Accuracy		±1.5			°C	for calibration conditions
Temperature Sensing Range		0….60	100….250	0….60	°C	
Signal Refresh Time	t_{PXrefr}	250	400	400	ms	all pixels and ambient temperature

CoolEye™ –
Digital Line Array Module, 32 Pixels



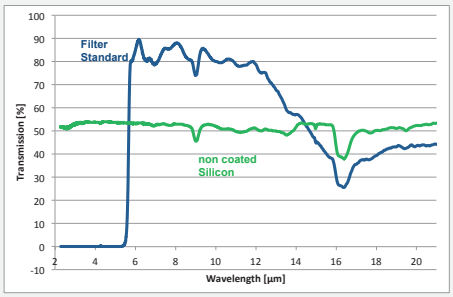
TPiL 32T 3346 L4.7 – Thermopile Line Array

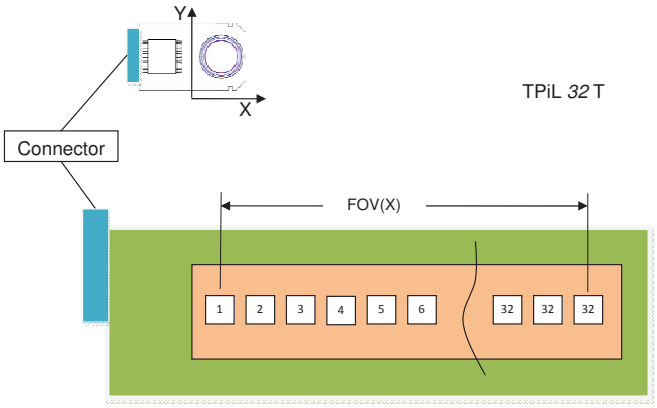
Applications
- Presence Detection
- Energy Conservation for Smart Home concepts
- Safety and High-end Alarm Applications

Features and Benefits
- Digital SM Bus interface
- Factory Calibration
- Temperature Reference Signal
- Ambient temperature output signal

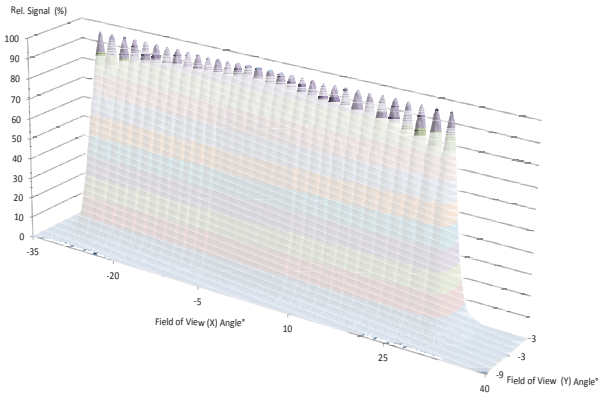
Product Description
With this new member of the CoolEye™ Family, Excelitas provides a major step forward in low resolution image sensing. The new line array offers 32 pixels in line, built- in TO-5 type housing with ISOthermal performance, and an integrated lens. The 32 pixels are connected to integrated multiplexing and signal conditioning circuits. The Thermopile Line Array Module provides a pcb which includes the array sensor, E2PROM and microcontroller with A/D converter for signal processing, and interfacing Digital SM Bus and a connector. The Array Sensor is equipped with an internal reference temperature sensor for correct target temperature determination. The temperature accuracy achieved by digital signal processing, in combination with the numeric ambient temperature compensation algorithm, outperforms any discrete solution. The ISOthermal Sensor Module provides a digital output signal by SM Bus which represents real temperature data for each pixel. Customer specific modifications are possible.
The calibrated temperature range of this new model will be 0…60°C: TPiL 32T 3346 L4.7 OAA060
A temperature reference output is included with associated temperature compensation of the module. This CoolEye™ Module may also be supplied as an “OBA060” version, calibrated to the referenced temperature range, but allowing the customer to perform ambient temperature compensation in his circuitry by applying the temperature reference signal.

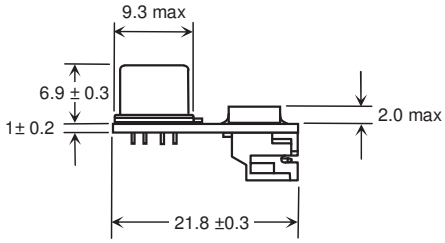
Filter

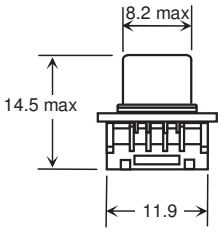




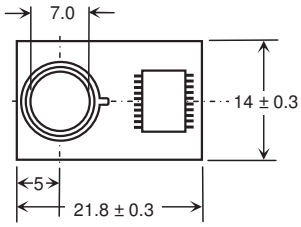
Field of View TPiL 32T

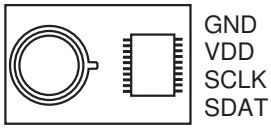






JST S 4B-PH SM4TB





TPiL 32T 3346 L4.7

Parameter	Symbol	TPiL 32 T	Unit	Remarks
Storage Temperature Range		-40 …. +100	°C	
Operating Temperature Range		-25 …. +100	°C	
Supply Voltage	V_{DD}	4.5 …. 5.5	V	
Supply Current	I_{DD}	5	mA	typ.
Field of View X / L4.7	FOV_X	59	°	refer to FOV definitions
Field of View Y / L4.7	FOV_Y	NA	°	refer to FOV definitions
Digital Interface Type		SMBus		
Object Temperature Accuracy		±1.5	°C	for calibration conditions
Temperature Sensing Range		0….60	°C	
Signal Refresh Time	t_{PXrefr}	380	ms	all pixels and ambient temperature