Digital ST120 Dual Thermopile
Product Information

RESEARCH AND DEVELOPMENT ANESTHETIC GAS ANALYSIS CRITICAL CARE MONITORING ATMOSPHERIC CONTROLS TEMPERATURE SENSING FIRE SUPPRESSION

PRELIMINARY

The Dexter Research ST120 Digital Dual Channel Thermopile is a digital infrared detector that facilitates ease of integration into numerous applications. Housed in a small TO-5 package, the sensor is based on Dexter's leadership in thermopile technology, and includes integrated electronics that incorporates an industry standard digital SMBus interface that supports multiple sensor applications.

The digital platform supports easy integration and provides rapid development due to the integrated amplifier, A/D, DSP, MUX, and communication protocol. Its low power budget makes it ideal for battery powered applications, including gas analysis, environmental monitoring, HVAC and smart home/building control.

Please contact Dexter Research Center's sales team for more information and to order a configuration that is perfect for you.
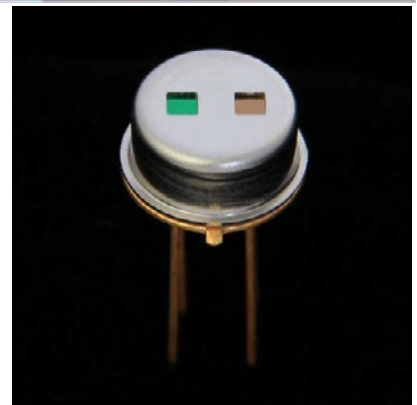
1. Features

- Digital output
- 2 wire Digital SMBus communications
- 16 Bit A-D converter
- Error check and correction (ECC) via PEC providing reliable data communication
- Software programmable amplifier
- Bus addressable multi-drop to 127 devices
- Many optical filter options: See Standard Filters and Windows on web site
- Facilitates reduced system component count
- Digital sensor in a TO-5 package
- Single and multi-channel configurations available

We've taken the analog out of your system design

Temperature
Security/Detection
Laser Power and Targeting
Gas Analysis
Fire Suppression/Detection
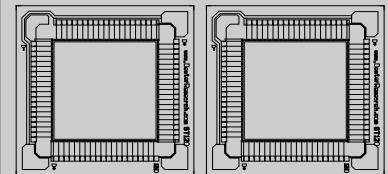
Detector circuit overlay

Superior Digital performance driven by **Dexter Research** thermopile technology.

IT ALL BEGINS HERE.
Dexter Research is ISO 9001:2008 Certified

ST120 Digital Dual Data Sheet.doc   Update: 5/2/13

Digital ST120 Dual Thermopile

Technical Specifications

Specifications apply at 23°C with Nitrogen encapsulating gas

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		1.2 x 1.2		AA	mm	Hot junction size, per element.
Element Area		1.44		A	mm^2	
Number of Junctions		80				Per element.
Number of Channels		2				Per detector package.
Digital Output	811	970	1247		Counts	With KBr window. DC, H=330μW/cm^2 (3)
Temperature Coefficient of $\Re$		-.04			%/°C	Best linear fit, 0° to 85°C (1)
Time Constant		25		τ	ms	Detector without electronics, Chopped, -3dB point (1)
Field of View		8°/60°		FOV	Degrees	See Assembly Drawings for FOV Description.
Package Type		TO-5				Standard package hole size: (2) .060" sq. holes
Operating Temperature	-40		85		°C	
Temperature Sensor	6638	6670	6707		Counts	
Temperature Coefficient of Temperature Sensor		22.9			Counts /°C	

<u>General Specifications</u>: Flat spectral response from 100nm to > 100μm. Linear signal output from 10^{-6} to 0.1W/cm^2. Maximum incident radiance 0.1W/cm^2, damage threshold ≥ .5W/cm^2

<u>Notes</u>: **(1)** Parameter is not 100% tested. 90% of all units meet these specifications. **(2)** A is detector area in cm^2. **(3)** Test Conditions: 500K Blackbody source; Detector active surface 10cm from 0.6513cm Diameter Blackbody Aperture.

Maximum Ratings

Parameter	5 Volt devices	3 Volt devices
Supply Voltage, V$_{DD}$ (over voltage)	7 V	5 V
Supply Voltage, V$_{DD}$ (operating)	5.5 V	3.6 V
Reverse Voltage	0.4 V	
Operating Temperature Range, T$_A$	-40…+85°C	
Storage Temperature Range, T$_S$	-40…+125°C	
ESD Sensitivity (AEC Q100 002)	2 kV	
DC Current into SCL	2 mA	
DC Sink Current, SDA	25 mA	
DC Source Current, SDA	25 mA	
DC Clamp Current, SDA	25 mA	
DC Clamp Current, SCL pin	25 mA	

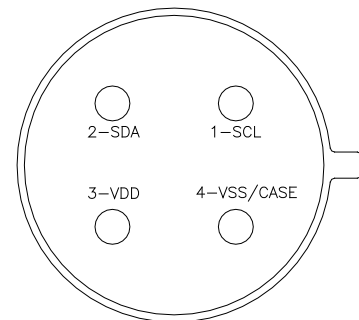Exceeding the absolute maximum ratings may affect device reliability and/or cause permanent damage.

Pin Description

Figure 4. Package Top View