ethermVIEW™

LIQUID CRYSTAL THERMOGRAPHIC ANALYSIS TOOL

ethermVIEW™ is a high resolution liquid crystal thermography system for cost effective temperature measurement of electronic circuit boards, micro circuits, hybrid components and integrated circuits.

SYSTEM COMPONENTS

- High performance, solid-state, color camera with macroscopic optic
- Stable, flicker-free white light source
- IEEE Firewire
- Thermochromic Liquid Crystal (TLC) materials supplied in an easy to use kit (TLC-100)
- ethermVIEW™ image processing software system, thermSOFT™
- Transformer supplied for international units
- Four calibrations will be performed at ATS free-of-charge for the first year.
- Lifetime technical support

CHARACTERISTICS

zoom 7000 (Unit can be supplied with either zoom 7000 or 7010)

- Designed to examine PCBs and other large objects.
- 5" to 12" with close-up lens, 2' to 4' without close-up lens working distances with crossed-polarized, on-axis lighting and viewing provided by a flexible fiber optic ring light.
- Nominal Field of View Range
  4.3 x 3.2 mm to 11.9 x 8.9 mm high magnification and close up lens
  22.7 x 21.1 mm to 48.6 x 36.5 mm high magnification without close up lens
  25.9 x 19.4 mm to 11.9 x 8.9 mm low magnification and close up lens
  136.1 x 97.2 mm to 291.6 x 213.8 mm low magnification without close up lens
- Resolution: 0.013 mm

zoom 7010

- Designed to examine PCBs and other large objects.
- 0. 7" to 12" working distance with crossed polarized, on axis and viewing provided by a flexible fiber optic ring light
- Field of view with close up lens

W.D.	High Mag	Low Mag
7"	7.36 x 5.52	74.40 x 55.80
8"	9.12 x 6.84	92.80 x 69.60
9"	10.96 x 8.22	111.20 x 83.40
10"	12.48 x 9.36	126.4 x 94.80
11"	13.92 x 10.44	140.80 x 105.60
12"	16.80 x 12.60	170.40 x 127.80

- Resolution: 0.023 mm

DIMENSIONS (L X W X H)
25.4 x 25.4 x 61.0 cm
(10 x 10 x 24")

MAGNIFICATION
8X—30X
Resolution 0.013mm

MEMORY REQUIRED
128MB

STORAGE
1GB

WEIGHT
16.5 kg (36 lbs)

POWER
115V (Transformer can be supplied)

TLC-100

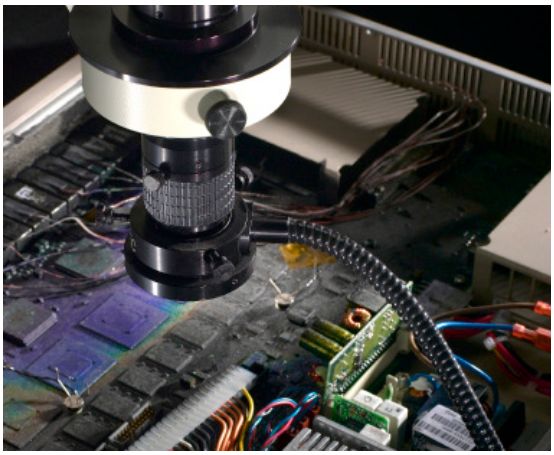

Transformer


Macro lens

What is Liquid Crystal Thermography? (LCT)

ethermVIEW™ is a high resolution liquid crystal thermography system for cost effective temperature measurement of electronic circuit boards, micro circuits, hybrids, components and integrated circuits.

ethermVIEW™ system uses the color response of thermochromic liquid crystals (TLC) for the purpose of temperature measurement. Liquid crystals reflect incident light at the visible wave length based on the temperature of the surface to which they are applied.



APPLICATIONS

- Locate hot spots and defects
- IC thermal design and verification
- Accurate temperature measurement on hot spots on mini and micro circuits, components, modules, and PCBs
- State-of-the-art thermal analysis of devices
- Comparative failure analysis

Comparisons between IR and thermVIEW system

Infrared (IR)	ThermVIEW
Full system	Most desirable for spot. Can be used for full system (not practical).
Full board, must know emissivity, thus treat surface with an agent (black paint or powder)	Full board, must paint the board with black ink and liquid crystal.
Full component, must know emissivity, thus treat surface with an agent (black paint or powder)	Full component. must paint the board with black ink and liquid crystal.
Can be used for chip/part measurement. The constraints are on emissivity, spatial resolution (max is 5 micron) and temperature averaging in the field of view.	Ideal for die and part measurements. Must treat the surface with paint and LC. Capable of measuring down to 1 micron with ultrazoom

	IR Thermography	LC Thermography	Remarks
Test specimen surface treatment	No*	Yes	*IR also needs to paint the device with a black ink for a known emissivity
Steady state measurement	Yes	Yes	
Transient measurement	Yes	Yes	
Non-evasive measurement	Yes (**emissivity dependent)	No	**must know the emissivity for the IR system
PC based	Yes	Yes	
Software for image analysis and acquisition	Yes	Yes	
Effect of ambient temperature	Yes†	No	†to the level that may impact specimen temperature
Video imagery	Yes	Yes	
Compactness and transportability	Yes	Yes	
Resolution			
Temperature	+/- 2°C	+/- 0.1°C	
Price			
Base System	$45,000 - 70,000	$15,000§	§estimate

*price subject to change

Does the chip or the board get destroyed as the result of ink/LC application?

» No, ink and LC can be washed off with de-ionized water.

Can one reuse the LC treated surface?

» Yes, as long as the surface is kept in a clean environment.

How often do I need to calibrate?

» Typically every time the LC is applied to a new surface - a good measurement practice.

Are liquid crystals harmful?

» No, but we do not recommend consuming them.

Can you use it for board level measurement?

» Yes, LC can be used for any surface that can be treated with LC and trackable lighting.

Can you mix different liquid crystal compounds?

» Yes, however, it will be difficult to determine the temperature because the same colors,reflecting a temperature, will appear repeatedly as the surface is heated.

RoHS COMPLIANT