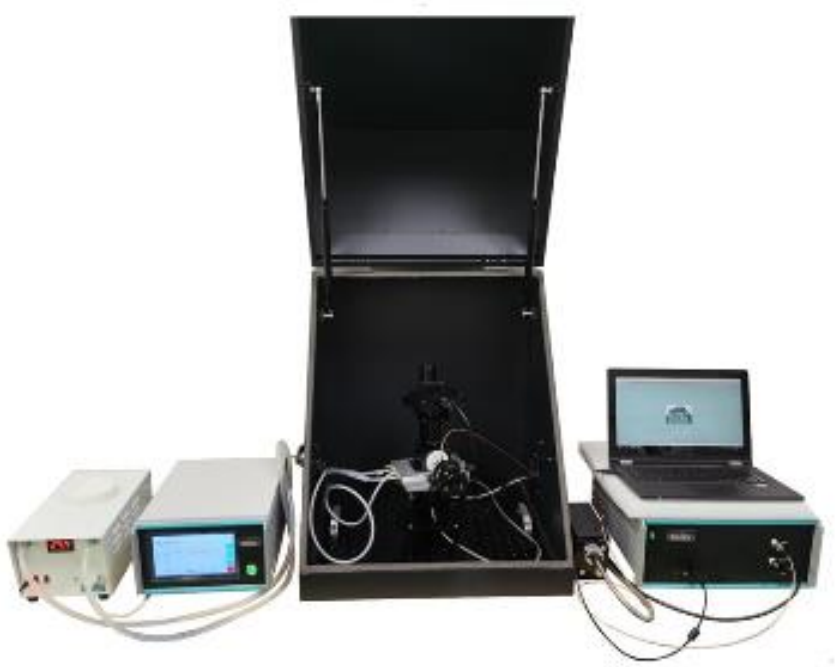
INSTEC®

Focus on Excellence

ALCT-EO1 system



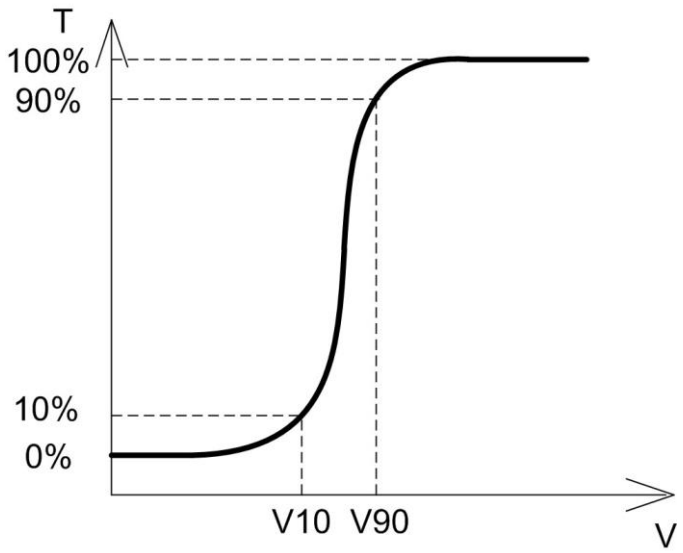
Instec's Automatic Liquid Crystal Testing System (ALCT-EO1) provides a full range of liquid crystal electro-optic property measurements including transmittance-voltage curve and optical switching time. The system supports anisotropic nematic liquid crystal materials with either positive or negative modes.

The ALCT-EO1 is compatible with all Instec LC cells, holders, optical accessories, and temperature-controlled stages.

Measurements

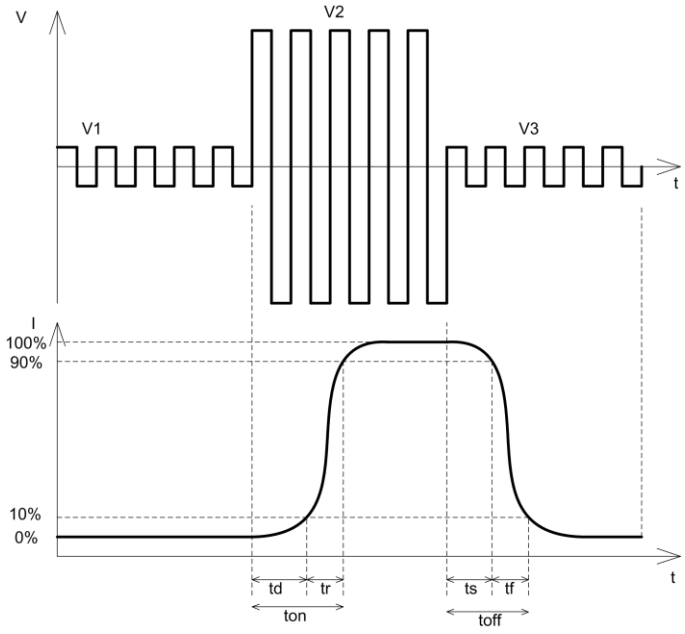
Transmittance-Voltage Curve

- Transmittance at different voltage amplitudes, V10-V90



Switching Time

- Response time of sample transmittance following voltage modulation



System Components

The following components and accessories are included in the ALCT-EO1 standard scope of delivery unless explicitly marked as optional components or accessories.

ALCT-EO1 controller

- Digital-to-analog converter: 16 bit DA converter, 500KHz sample rate, supports both standard and user defined waveforms
- Analog-to-digital converter: 16-bit AD converter, 2MHz sample rate

Light measuring devices

- PD04: fast photo detector with large dynamic measurement range

Light sources

- H-150: light source with halogen lamp
- S-3000(W) (optional): LED light source
- S-5000(optional): High power LED light source

Software

- WinLC2 Application: Configuration and control of the ALCT-EO1 controller, including definition and management of measurement sequences, evaluation and representation of measurement results
- InstecApp(optional): temperature control with programmable command sequences

Temperature control (optional)

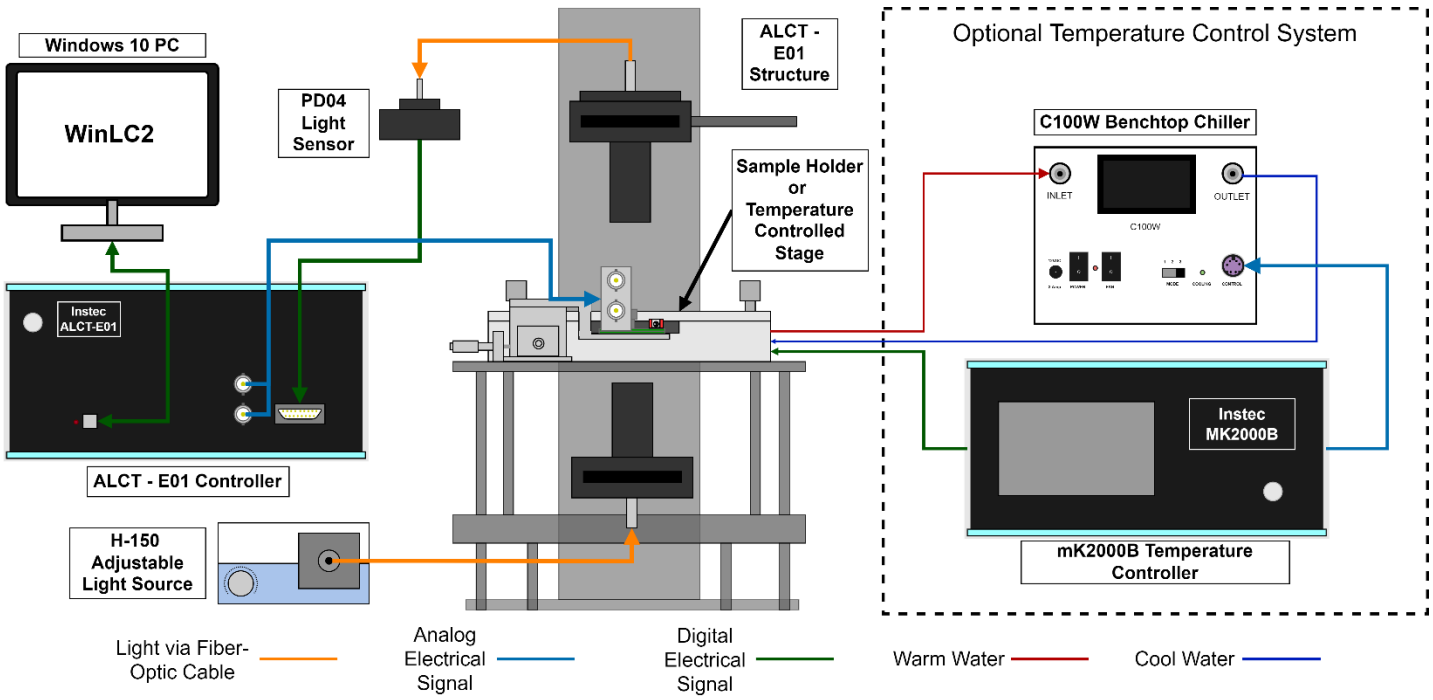
- TS102-LC1: Thermo Electric Cooler temperature control device, temperature range -30 °C to +120 °C
- MK2000: Precision temperature controller with 0.01°C stability and resolution.

Polarizer (optional)

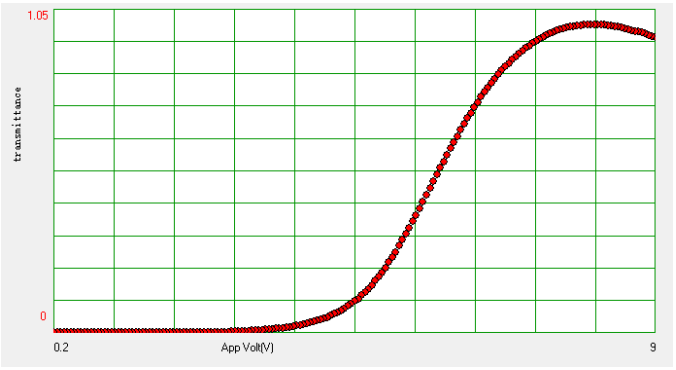
- Option A: contrast ratio > 2000:1 at 540 - 630 nm
- Option B: contrast ratio > 300:1 at 540 - 630 nm

www.instec.com sales@instec.com +1-303-444-4608

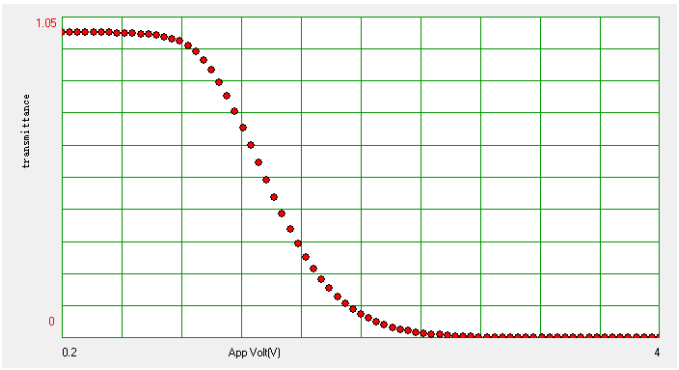
System Diagram



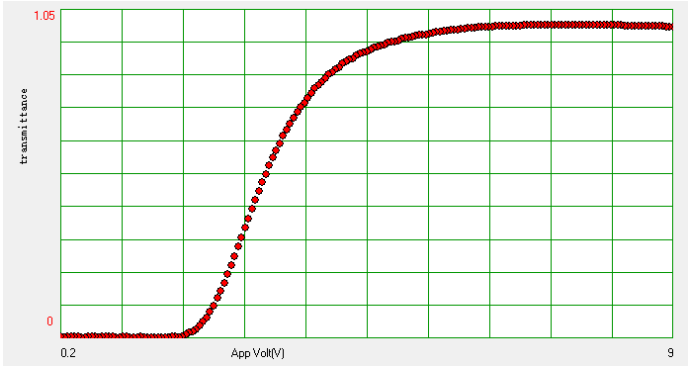
Measurement Examples



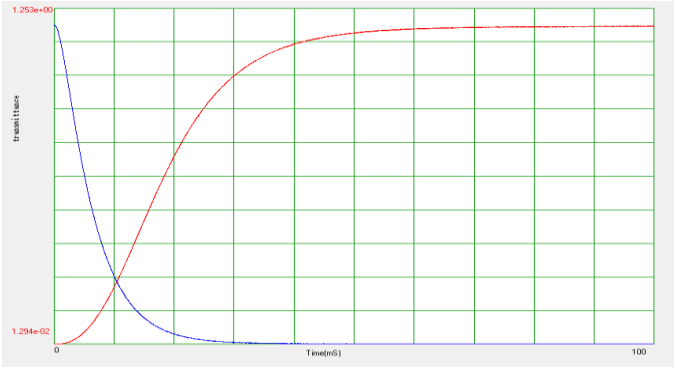
Threshold Voltage (VT) curve for IPS LC Cell



Threshold Voltage (VT) curve for TN LC Cell



Threshold Voltage (VT) curve for VA LC cell



Switching time of an IPS cell
(Red → Switching On, Blue → Switching Off)

Technical data

ALCT-EO1	
Input & Output	
Output Wave	DC to 2KHz, Voltage 0 to ±10V (optional ±95V)
Output Update Rate	500KHz
Output Resolution	16bit
Input Resolution	16bit
Input Sample Rate	2MHz
Photo Detector	
Photo Gain	x1, x10, x100, x1K, x10K, x100K, x1M, x10M
Dark Voltage	< 5mV (x1 - x100K)
Dark Noise	< 5mV
Response Time	20us (x1)
Contrast Ratio Without Polarizer	$1.6x10^6$
Contrast Ratio with Polarizer (option A)	2000:1 (540 - 630nm)
Contrast Ratio with Polarizer (option B)	300:1 (540 - 630nm)
Measurement Range	
V10	0.5 -8V, ±10mV
V50	0.5 -8V, ±10mV
V90	0.5 -10V, ±10mV
Switching Time	0.1ms -10s

Delivery List

The following components are included with the ALCT-E01 system:

1. ALCT-EO1 mechanism
2. Photo detector PD04
3. ALCT-EO1 Controller
4. Light source H-150
5. Standard dark fabric cover (rigid dark-box upgrade available)
6. LCH liquid crystal sample holder
7. Software: WinLC2
8. Temperature control system (optional)

Optical setup with Dark Fabric Cover Optical setup with Dark Fabric

Optical setup with Rigid Dark Box Upgrade

www.instec.com sales@instec.com +1-303-444-4608