



EpiSmart[®] ECP

EpiSmart[®] ECP is an advanced temperature sensor for Top-Side Temperature Control (TTC) in deposition process systems (e.g. epitaxial growth systems). It consists of a base unit and, depending on the reactor, up to five measurement heads. Typically, one measurement head per heater zone is installed.

Features

Temperature

- Emissivity-corrected temperature sensing for top-side temperature control (TTC) of Si- and GaAs-based processes (also III/V on Si)
- Standard temperature range (950 nm \pm 5 nm): 400 °C to 1200 °C *
- Low temperature variant (975 nm \pm 25 nm): 350 °C to 1000 °C *
- \pm 1 °C if calibrated with AbsoluT
- Up to 5 metrology heads per system
- Daisy chained measurement heads

* Note that the effective temperature range strongly depends on the viewport design.

Benefits

- Direct control of true wafer temperature improves process reproducibility
- Substantial reduction of process time through tight control of temperature ramps
- Suitable for reactors with gap adjustment

**Communication /
Integration**

EtherCAT data stream:

- Raw temperature (no emissivity correction)
- Emissivity-corrected temperature
- Emissivity
- Status information (validity, measurement head temperature, gain stages, serial numbers, firmware versions)

Additional data available in the configuration software:

- Raw temperature (counts)
- Raw reflectance (counts)
- Calibrated reflectance

**Measurement
specifications**

Sampling area:

- Reflectance measurement: ~ 1.3 mm diameter (at the beam exit of the measurement head)
- Temperature sensing: ~ 3 mm spot diameter (at the lower end of the viewport tube)

Measurement frequency:

- 500Hz temporal resolution
- 5 rpm to 60 rpm

Materials:

- Silicon, Patterned silicon, GaAs, GaN growth on Si

Operating conditions

- Ambient temperature at the measurement head: 20 °C to 50 °C **
- Maximum allowed viewport temperature: 55 °C

**Power supply
specifications**

- Supply voltage: 24 V
- Typical current: 0.4 A
- Max. current: 1 A

**Size (L x W x H) and
weight of parts**

- Measurement head: 102 x 70 x 175 mm, appr. 900 g
- Controller base unit ***: 194 x 56 x 107 mm, appr. 530 g
- EtherCAT bridge ***: 100 x 52 x 70 mm, appr. 150 g

** High temperature version available on request

*** Controller and EtherCAT bridge designed for top-hat rail mount

Specifications are subject to further technical development and may differ from those given in the data sheet. In certain cases, performance may be limited by reactor type and/or growth conditions. Please consult our technical sales team to see how LayTec metrology can best serve your specific application.

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