

# Terahertz Control Unit

## T-Ray® 5000 TCU52nm

The T-Ray® 5000 Control Unit is appropriate for use in industrial, non-destructive testing, and scientific applications. It monitors and controls all aspects of THz generation and detection. It delivers precisely controlled optical signals to the terahertz transmitters and receivers, or the T-Gauge® Sensor Heads, enabling them to generate and receive terahertz signals. Measured data are processed within the Control Unit at a rate of up to 1 kHz, making the T-Ray® 5000 one of the fastest terahertz systems available.

The data generated by the T-Gauge® Sensor Heads and processed by the T-Ray® 5000 Control Unit enable multiple measurements of a product simultaneously.

One T-Gauge® Sensor can measure the basis weight, caliper thickness, multi-layer thicknesses, density and moisture content of a sample in a single pass.

Attached to a separate transmitter and receiver, the T-Ray® 5000 Control Unit can perform spectroscopic measurements as well as transmission and reflection imaging.

The T-Ray® 5000 Control Unit and accessories are linked with robust connection points and interfaces appropriate for industrial environments. Adequate connections are provided to allow seamless integration with most QC systems or experimental applications. The industry-standard interface connections make integration with the T-Gauge® Sensor straightforward.

### APPLICATIONS

- Industrial process control: commercial roofing; foam density; coating thickness; plastic extrusion; asphalt shingles
- Nondestructive materials inspection: aircraft; packaged goods; radome inspection; spacecraft; pipeline repairs
- Converting applications: paper coating; multilayer films; tire
- Scientific applications: Terahertz Imaging (transmission and reflection); Time Domain Spectroscopy



### KEY FEATURES

- Compact enclosure
- Mates to fiber coupled sensor head
- Integrated data processor
- Standard monitor and USB connections
- Digital inputs available for measurement control

### BENEFITS

- Easy to install
- Integrates with web scanners and robots
- Provides measurements in engineering units
- Does not require specialty monitor or keyboard
- Triggers for bin boundaries or data tagging



Parameter	Specification	Units	Comments
Maximum measurement range	12, 25, 50 or 100	mm	Will vary with material measured
Measurement rate	100 and 1000	Hz	Determined by measurement range
External monitor connection	VGA		
A/D dynamic range	16	bit	
Operating temperature range	0 - 50	°C	20 - 90% RH non-condensing
Current required	< 4	Amps	110/240 VAC, 50/60 Hz self-sensing
Size (W x H x D)	17.5 x 21.5 x 7.5	in	Minimum size
Weight	18.2	kg	
USB ports	4		
Ethernet ports	3		2 independent IP addresses
Digital interface	16		Inputs and outputs
Encoder inputs	6		High speed

**ORDERING INFORMATION**

**Included**

- US standard line cord

**Typical Configuration**

- Terahertz Controller
- Umbilical (5, 10, or 30 m)
- Online transceiver
- Wall, shelf or rack mount
- T-Ray® Basic Software

**Industry Leading Regulatory Compliance**

The T-Ray 5000 intelligent TCU has been certified by Underwriters Laboratories has received the CE mark, is fully compliant with FDA CDRH laser safety regulations, and has been tested to meet FCC part 18 regulations.



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