

### Fiber Optic Winding Hot Spot Temperature Measurement and Temperature Controller for Power Transformers



#### Key Features and Benefits

- Programmable Temperature Setpoints and Relays for Cooling Control and Protection
- Double PFA Teflon Jacketed, Kevlar Cabled Fiber Optic Rugged Probes™ and new Quality Probes™
- Probes Cross-compatible Between WTS-22, ThermAsset, ThermAsset2, m650 OEM Board and m600 Utility FOT Module
- Probes are Immune to RF and EMI Interference
- Ring Lug Connections Provided for all Electrical Connections
- Long Life Solid State Fluoroptic® LED Light Source, No Lamps and No Replacement
- Light Source does not degrade and lasts the life of the transformer
- No Calibration Required
- Large, Durable, Easy-to-Read LED Display
- 3000V Surge Protection per IEEE C37.90.1

#### Field Proven Since 1982

LumaSense Technologies' Winding Temperature System (WTS) products enable direct monitoring of the transformer winding hot spot and control of transformer cooling and protection. The WTS-22 represents LumaSense's 4th generation of transformer winding temperature measurement systems, incorporating knowledge gained from more than 25 years of field experience. LumaSense has worked with leading utilities in over one thousand installations around the world. This mature product and technology does not require additional manpower to maintain and operate.

The WTS-22 is based on LumaSense patented Fluoroptic® technology using a stable, inert dielectric material sensor that never requires calibration. This photoluminescent sensor is bonded directly to the end of a fiber optic probe. Our electrically inert fiber optic probes are fabricated from materials specifically tested for long term compatibility in oil filled high voltage power transformers.

The greatest benefit of the WTS system is that it provides direct, real-time and accurate measurement of the transformer winding temperature. Conventional Winding Temperature Indicators (WTI's) only simulate the temperature based on a thermal model of the transformer using transformer loading on a single phase and bulk top oil temperature. These techniques are only as accurate as the model and typically lag the "real" hotspot temperature by 5 hours.

#### Direct, Dynamic, Real Time

With easy-to-use features, including programmable alarm setpoints, logic functions and relays, the WTS-22 allows utility companies to safely manage transformer loading and more effectively control auxiliary cooling systems.

#### 3rd Generation Rugged Probes™

LumaSense Technologies' 3rd generation Rugged Fluoroptic® probes are flexible, armored and have a dual O-ring seal at the transformer tank wall interface. Made with an all-silica 200µm fiber, these probes are more flexible, stronger and more resilient than earlier generation probes.

Result: Probe installation success rate >99%.

Also available, LumaSense Quality Probes™.

# Luxtron WTS-22 Controller

## Specifications

	WTS-22 SE	WTS-22 LE
Number of Channels	4	4
Measurement Range	-30°C to +200°C	-30°C to +200°C
Accuracy	±2°C	±2°C
Analog Outputs	4 - 20 mA	0 - 1 mA
No. Programmable Relays	6 Form C	10 Form A, 8 Form B
System Fault Relay	1 Form C	System Status Relay
Digital Com. Logging	RS-232	
Operating Environment	-30°C to +65°C	
Power	Universal AC and DC (90-246 VAC/DC)	
Surge Protection	3000V (IEEE C37.90.1-1989)	
Self Diagnostic	Self Diagnostic and probe errors, available on front panel and RS-232	

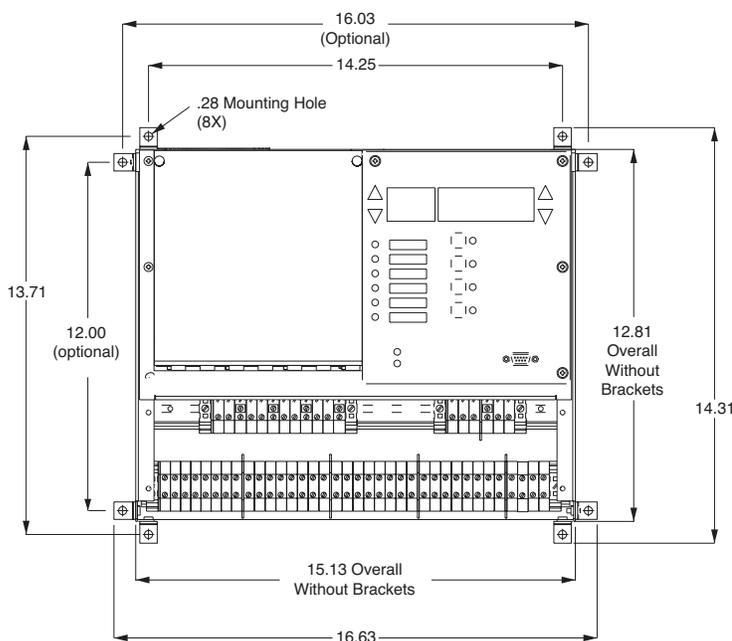
## Complete System for Easy Installation

LumaSense Technologies provides all necessary components and documentation to install a complete WTS-22 system. Clear instructions and application support are based on the experience of thousands of installations. LumaSense offers a variety of mounting configurations. Users can choose between 19" rack mount, wall mount, or a NEMA enclosure mounted WTS-22. Product offerings include all necessary accessories, such as fittings for passing fiber optic sensors through the transformer tank wall.

## Complete WTS-22 System Should Include:

- WTS 22 SE or LE Unit
- 4 Ruggedized Probes™ (Rugged or Dip-tip) or 4 Quality Probes™\*
- 4 External Fiber Optic Extensions \*
- Tank Wall Feedthrough Penetrator and Plate \*
- NEMA Enclosure \*

\*Indicates items sold separately



## Programmable Setpoints

Multiple temperature setpoints can be programmed to respond to changes in transformer winding temperature. By connecting these setpoints to internal relays within the WTS-22, users can instantly activate different cooling measures or alarms when the transformer winding reaches specific temperatures. Such precise monitoring of the windings and control of the transformer accessories extends equipment life, ensures reliable power delivery during peak loads and minimizes the event of unplanned or catastrophic failure.



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