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Raytek Thermalert Series

# TX

Datasheet




## Highlights

- Wide temperature range from -18 to 2000°C
- Simple, two-wire installation for simultaneous 4-20 mA and digital output
- Wide choice of optics
- Special models for glass and plastics applications
- Rugged accessories for harsh industrial environments
- Optional stainless steel versions
- Advanced signal processing
- Install up to 15 sensors on a single multidrop network
- Windows software for remote configuration and monitoring
- For use in potentially explosive atmospheres with intrinsically-safe ratings for dust and gas

## Electrical Specifications

| | |
|---|---|
| **Outputs** | |
| Analog | 4-20 mA, max. loop resistance 700 Ω |
| Digital (Smart models) | HART® to RS232 (with optional adapter) |
| Alarm (Smart models) | 24 V / 150 mA; adjustable setpoints, deadband, normally open/closed settings |
| **Power Supply** | 12 - 24 VDC ±20% (Standard models)<br>24 VDC ±10% (Smart models) |

## General Specifications

| | |
|---|---|
| **Environmental Rating** | IP65 (IEC529) |
| **Ambient Temperature** | |
| without cooling | 0 to 70°C |
| with air cooling | up to 120°C |
| with water cooling | up to 175°C |
| with ThermoJacket ™ | up to 315°C |
| **Storage Temperature** | -18 to 85°C |
| **Relative Humidity** | 10 to 95%, non-condensing |
| **Shock** | IEC 68-2-27, 50 G, 11 ms, any axis |
| **Vibration** | IEC 68-2-27, 3 G, any axis, 11 – 200 Hz |
| **Dimension** | 187 mm L x 42 mm diameter |
| with cooling jacket | 187 mm L x 60 mm diameter |
| **Weight** | 330 g |
| with cooling jacket | 595 g |

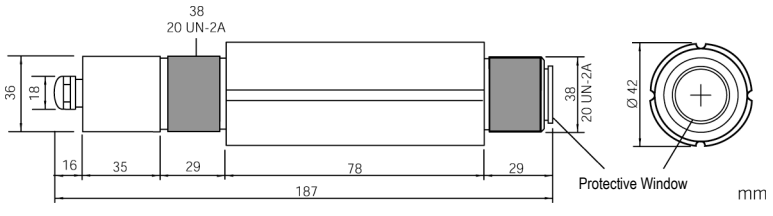
## Measurement Specifications

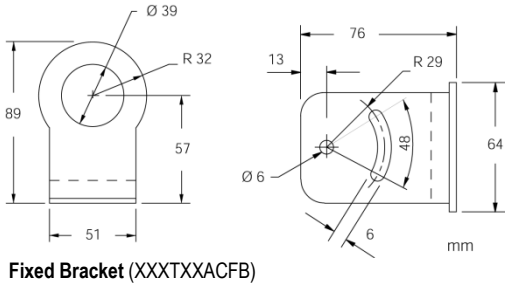
| | | |
|---|---|---|
| **Temperature/Spectral Ranges** | | |
| LT/LTP (Low Temp.) | -18 to 500°C | 8 to 14 µm |
| MT (Medium Temp.) | 200 to 1000°C | 3,9 µm |
| HT (High Temp.) | 500 to 2000°C | 2,2 µm |
| G5 (Glass) | 250 to 1650°C | 5,0 µm |
| P7 (Plastic) | 10 to 360°C | 7,9 µm |
| **Optical Resolution**[1] | | |
| LT, MT, G5, P7 | 33 : 1 | |
| LTP | 15 : 1 (Fresnel optics) | |
| HT | 60 : 1 | |
| **System Accuracy** | ±1% or ±1,4°C [2, 3] | |
| **Repeatability** | ±0,5% or ±0,7°C [3] | |
| **Temperature Resolution** | | |
| LT | 0,1°C | |
| all other models | 1°C | |
| **System Response Time**[4] | | |
| HT | 100 ms | |
| all other models | 165 ms | |
| **Emissivity** | adjustable: 0,10 to 1,00 | |
| **Signal Processing** | | |
| Standard model | emissivity | |
| Smart model | emissivity, °C/°F, advanced peak / valley hold, averaging, background radiation compensation | |

[1] 90% energy, standard focus optics
[2] at ambient temperature 23°C ± 5°C
[3] whichever is greater
[4] 95% value

## Sensor and Fixed Bracket

Each sensor comes with a fixed bracket, a mounting nut, and an operator's manual. All models have 4 to 20 mA output.



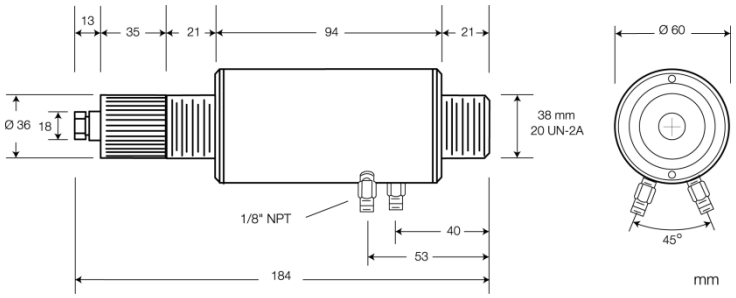

**Fixed Bracket** (XXXTXXACFB)

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## Options

Options must be specified at time of order.

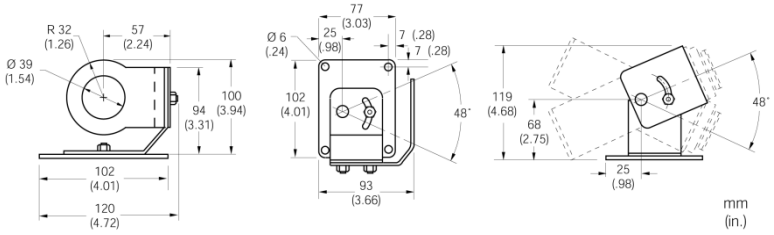
- Manufacturer's calibration certificate based on NIST/DKD probes (XXXTXCERT)
- Intrinsically-Safe Ratings
  EX II 2G Ex ib IIC T4 Gb (gases/vapors)
  EX II 2D Ex ibD IIIC T135°C Db (dusts)
  TXS models (…IS4), TXS models in stainless steel (…IS5)
- Water/Air Cooled Housing incl. Air Purge Collar (...W), optional in stainless steel



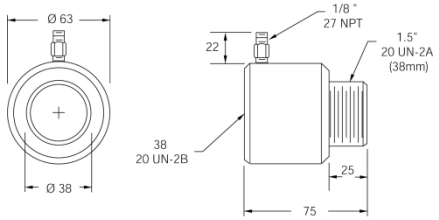

## Accessories

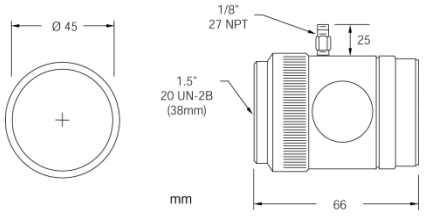
- Sighting Viewer Tool (XXXTXXACSV)
- Protective Window according to spectral range (XXXTXACTW…)
- ThermoJacket: extra rugged cast metal housing for thermal/mechanical environmental protection (RAYTXXTJ3M), see also ThermoJacket datasheet

**Adjustable Bracket** (XXXTXXACAB)




**Air Purge Collar**
(XXXTXXACAP)

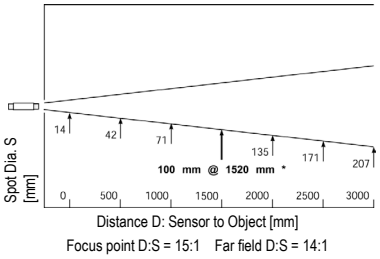



**Right Angle Mirror** for measuring targets at right angles to sensor axis (XXXTXXACRA)

## Optical Specifications

Standard Focus: LTP models

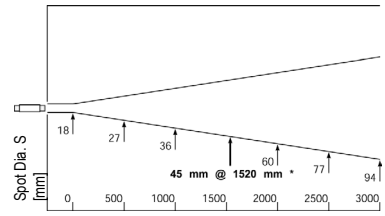



Focus point D:S = 15:1 Far field D:S = 14:1

| Close Focus Option CF | |
|---|---|
| D (mm) | S (mm) |
| 0<br>**50**<br>500 | 10<br>**7,5***<br>115 |
| D:S = 7:1, Far Field = 4:1 | |

**focus point*

Standard Focus: LT, MT, G5, P7 models




Focus point D:S = 33:1 Far field D:S = 30:1

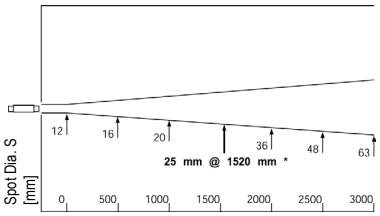
| Close Focus Option CF1 | |
|---|---|
| D (mm) | S (mm) |
| 0<br>**76**<br>500 | 16<br>**2,5***<br>92 |
| D:S = 30:1, Far Field = 5:1 | |

| Close Focus Option CF2 | |
|---|---|
| D (mm) | S (mm) |
| 0<br>**200**<br>450 | 17<br>**6,4***<br>32 |
| D:S = 32:1, Far Field =10:1 | |

**focus point*

*Close Focus not available for G5 and P7*

Standard Focus: HT models




Focus point D:S = 60:1 Far field D:S = 42:1

| Close Focus Option 1 | |
|---|---|
| D (mm) | S (mm) |
| 0<br>**76**<br>500 | 11<br>**1,3***<br>66 |
| D:S = 60:1, Far Field = 7:1 | |

| Close Focus Option 2 | |
|---|---|
| D (mm) | S (mm) |
| 0<br>**200**<br>450 | 11<br>**3,4***<br>22 |
| D:S = 60:1, Far Field =14:1 | |

**focus point*

## Remote Communication Kit

Required for smart models, the kit (XXXTXACRCK) includes the HART/RS232 adapter and the Windows DataTemp Multidrop software package. One kit serves multiple sensors. Requires RS232 serial port and Windows 2000/XP/Vista/Win7.

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