FLAME SCANNERS DEVELOPED BY ITS
RELIABILITY IS A MATTER OF QUALITY

ITS 967X7179M379
ITS 184X0254M029
The flame scanner is an important and integral part of safety systems for industrial heavy duty gas turbine operation. It is one of the most expensive consumable parts on which the reliable operation of a gas turbine depends.

One of its main tasks is to detect potentially dangerous "flame off" situations which occur in the event of an ignition failure. If unchecked, the supply of fuel is continually fed during "flame off" event. The results could be catastrophic, in worse case scenarios leading to an explosion, putting the safety of operators at risk or causing damage to property and equipment. Therefore, the monitoring of the flame is vital for a safe working environment, particularly during at the start-up or shut-down procedures of the gas turbine.
The Flame Scanner Systems from ITS, are the outcome of years of dedicated research and development by our experienced field service, control and technical advisors.

They have been designed for the safe operation of GE Frames 1, 3, 5, 6, 7 and 9 industrial gas turbines. They stand for maximum flexibility, user friendliness and well-proven reliability.

ITS Flame Scanners rely on proven technologies to generate an accurate flame analysis, maximising the cost effectiveness to the customer.
What makes the Flame Scanners from ITS so special? Is it our proven experience? Is it our know-how in the manufacturing of precision equipment? Is it our engineering that provides long lasting durability? Is it our optimized production processes that provide both value and quality?

Great ideas come from the synergy of the ordinary combining to make the perfect result.

Learn more about the flame scanners from ITS:

http://www.turbineservices.at/flame-scanner
1˝ NPT male
1.4571 Stainless Steel
© CE II 3 G Ex d IIC T3

3/4˝ internal NPT female
Dimensions fit to OEM part

Manufacturer

ITS Industrial Turbine Services

Sensor
UV flame scanner

Window
Quartzglass

Average Spectral Sensitivity
190 - 290nm

Sensitivity
250cpm ≡ 10⁻¹³W/cm² λ:200nm

Output
@ continuous flame > 15Hz

Response Time
background @ norm. Room/Daylight less than 5min⁻¹

Power Requirements
< 200ms

Pulse Output
260 - 350VDC from Amplifier, recomm. 325VDC +/- 25VDC

Temperature Range
275sec⁻¹ +/- 25sec⁻¹

Temperature At Mount
-28°C (-18°F) to 177°C (350°F)

Relative Humidity
427°C (800°F) Max.

Process Pressure
100%

Vibration
300psig (2.1MPa) at 315°C (600°F)

or equivalent of 2.5g acceleration

up to 18mm/sec @ 200Hz

up to 9mm/sec @ 500Hz

0.07 p-p displacement 5 to 15Hz 1g +/-0.2g 15 to 120Hz
Compared to the OEM part the temperature sensitivity, the spectrum, the measurement sensitivity and the lifetime has been significantly increased.

Neither structural changes nor mechanical or electrical modifications are necessary to mount ITS flame scanners.

Short delivery lead time combined with lower inventory costs turn them into a long term cost saving and reliable alternative.

Replace Honeywell

<table>
<thead>
<tr>
<th>GE Part Number</th>
<th>Honeywell Part Nr.</th>
<th>Description</th>
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<td>Flame scanner 42 ft (12,8m) cable</td>
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<td>LG1093AA46</td>
<td>Flame scanner 61 ft (18,6m) cable</td>
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</tbody>
</table>
EC Declaration of Conformity
EU - Equipment and protective systems intended for use in potentially explosive atmospheres

We hereby certify that the following product

Flame Scanner
Model No.: ITS 967X7179M379
(Product identification)


In consultation with TÜV Austria its10070-LUG-SDO, 2012-02-29

CE Ex d II 3 G
(Identification of regulation / standards)

ITS Industrial Turbine Services GmbH
Fabriksplatz 1, 4662 Steyrermühl
AUSTRIA
(Name / Address)

For the Manufacturer
Mark Neeb (CTO)
Thomas Finßtermann (CEO)
Ing. Jochen Burgstaller (CQO)

Date of issue: 2012-02-29
**Manufacturer**

- Sensor: Silicon Carbide photodiode
- Window: Quarzglass

**ITS Industrial Turbine Services**

- Average Spectral Sensitivity: 210 - 380nm
- Sensitivity: > 4mA @ 1x10^10 photons/in²/sec. @ 295nm
- Output: 4 - 20mA DC current loop @ 24VDC
- Response Time: < 20ms
- Power Requirements: 12 - 35VDC Reverse polarity protection
- Temperature Range: -30°C (-20°F) to 150°C (302°F)
  up to 235°C (455°F) with specified water cooling
- Temperature at Mount: 427°C (800°F) Max.
- Relative Humidity: 100%
- Process Pressure: 400psig (2.8MPa)
- Vibration: 3mm DA 10 - 40Hz, 8g continuous 40 - 2000Hz, 14g Peak
**Silicon Carbide (SiC) Photodiode**

ITS flame scanners are compatible with a wide range of industrial fuels, such as natural gas, kerosene, diesel, oil, coal, and mixtures thereof. They can continuously monitor the flame status with high temperature electronics via a view port. In addition to flame ON / OFF display, the data output provides real time information as required, for combustor/burner management systems of flame intensity.

ITS Flame Scanners are at the top end of the safety, cost effectiveness and reliability scale. All this, combined with a modern flame scanning technology, provide you with excellence in function and flexibility.

**Replace Reuter-Stokes**

<table>
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<tr>
<th>GE Part Number</th>
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<td>RS-FS-9001</td>
<td>Silicone Carbide (SiC) Photodiode</td>
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<td>362A1052P105</td>
<td>RS-FS-9004</td>
<td>Silicone Carbide (SiC) Photodiode</td>
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**Typical Spectral Response**

![Typical Spectral Response](image)

**ITS SiC Photodiode Reaction curve (Stable)**

![ ITS SiC Photodiode Reaction curve (Stable) ](image)

**ITS 184X0254M029**

INNOVATIVE AND PROGRESSIVE
EC Declaration of Conformity
EU - Equipment and protective systems intended for use in potentially explosive atmospheres

We hereby certify that the following product

Flame Scanner
Model No.: ITS 184X0254M029
(Product identification)


In consultation with TÜV AUSTRIA itsl0070-LUG-SDO, 2012-02-29

CE II 3 G Ex nL IIC T3
EN 61000-6-2:2005, EN 61000-6-4:2011
(Identification of regulation / standards)

ITS Industrial Turbine Services GmbH
Fabriksplatz 1, 4662 Steyrermühl
AUSTRIA
(Name / Address)

For the Manufacturer

Mark Neeb (CTO) Thomas Finstermann (CEO)

Date of issue: 2012-02-29

Ing. Jochen Burgstaller (CQO)
Flame scanners of ITS have been used successfully for years worldwide. So far more than 1000 Flame Scanners from ITS have been installed in gas turbines by multiple operators all over the world.

Our customers have been placing their trust in the experience and know-how of ITS for over a decade. This is the most honoured evidence of our companies commitment to quality and is working proof of the reliability of our product.