Flame Scanner Developed by ITS
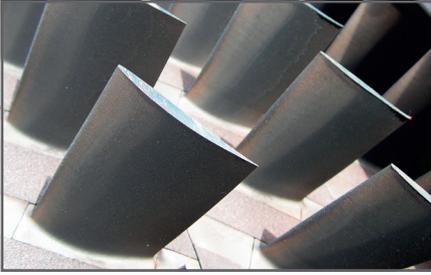
Reliability Is a Matter of Quality

Accurate and Reliable

Economy Is Born from Durability

The Flame Scanner is a key element in all safety systems for industrial heavy-duty gas turbines. It is one of the most expensive consumable parts on which the reliable operation of a gas turbine depends.

Its main area of application is flame detection in combustion procedures including the potentially dangerous "flame off" situation. If unnoticed, a "flame off"- event may lead to great damage or even an explosion caused by the continuous supply of fuel to the gas turbine. The risk is especially heightened during the start-up or shut-down procedure of the gas turbine.

A dependable monitoring of the flame is therefore vital for a safe working environment.

ITS Flame Scanner

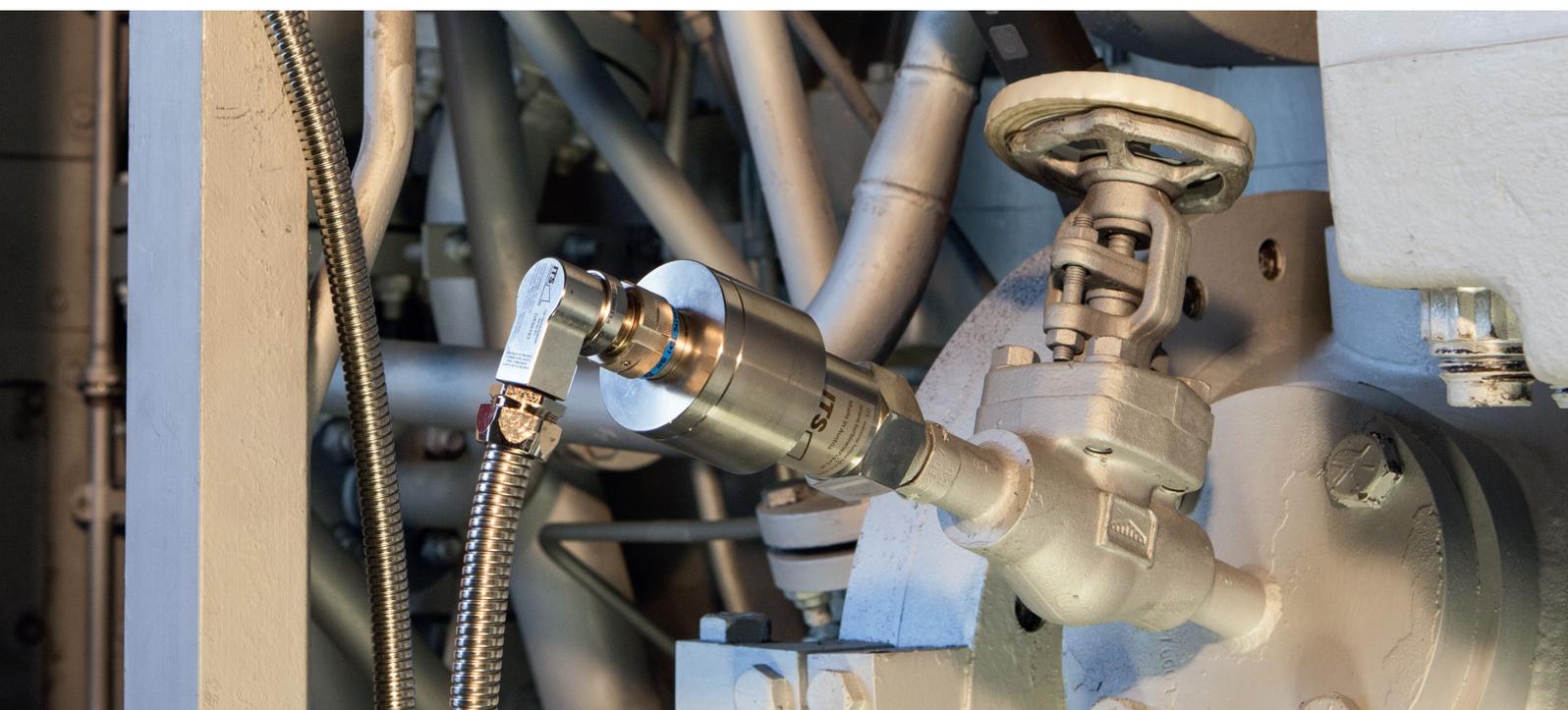**Precision Combined with Long-Term Stability**

Years of dedicated research and development from our experienced field service personnel, control and technical advisors have culminated in the Flame Scanners of ITS.
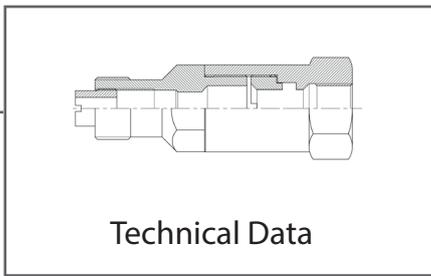
Designed for the safe operation of General Electric Frame 1, 3, 5, 6, 7 and 9 industrial gas turbines, the Flame Scanners rely on proven technologies to provide an accurate flame analysis.

The Flame Scanner is reputable for its maximum flexibility, user friendliness and well proven reliability, thereby maximizing the cost effectiveness for the customer by increasing the longevity of the gas turbine.

Learn more about the Flame Scanners from ITS:

www.flamescanner.net

Technical Data

ITS 967X7179M - Series

Produced with Devotion

Manufacturer   ITS Industrial Turbine Services

Sensor	UV Flame Scanner
Housing	1.4571 stainless steel
Window	Fused Silica
Mounting	3/4´´ internal NPT
Cable characteristics	Material: PTFE, cover color: orange
	Lead colors: GRN (GND), BLK (+), YEL (-)
Lead length	4.9m (16ft ± 1ft) or 18.6m (61ft ± 1ft)
Working Temperature	-40°C (- 40°F) to 177°C (350°F)
Int. Protection Marking	IP68
Pressure sealing	Against 21bar (300psi) at 316°C (600°F) continuously
Average Spectral Sensitivity	190 - 290nm
Sensitivity	$250cpm = 10^{-13}W/cm^2$ λ:200nm
Output	Pulse $275sec^{-1} \pm 25sec^{-1}$, continuous flame > 15Hz
Background	$< 5min^{-1}$
Response Time	< 200ms
Power Requirements	260 - 350VDC from amplifier, recommended 325VDC ± 25VDC
Discharge starting Voltage	< 260VDC
Sensor Vibration	Continuous vibration of up to 0.7in/sec @ 200Hz and up to 0.35in/sec @ 500Hz or equivalent of 2.5g acceleration.

RoHS COMPLIANT   AUSTRIA MADE IN AUSTRIA   CE ⟨Ex⟩ **II 3 G EEx d IIC T3 Gc**
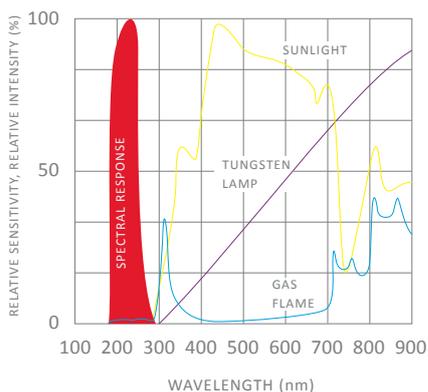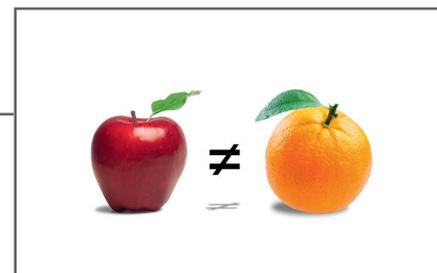
TÜV AUSTRIA   In consultation with TÜV Austria

Succesful and Cost Effective

The Proven Can Always Be Improved

NOTE: Neither structural changes nor mechanical or electrical modifications are necessary to mount the ITS Flame Scanners!

The dimensions of the ITS Flame Scanners fit to the OEM part, compatible with the original cooling system.

Compared to the OEM part, the temperature stability, spectrum range, measurement sensitivity and lifetime have been significantly increased.

Short delivery time combined with lower inventory costs, make them a long term economic and reliable alternative to the OEM.

Designation Chart for Comparison

ITS 967X7179M372 Flame Scanner - 4,9m (16ft) cable lenght

GE Part No.:

261A1812P010 - Replaced by 261A1812P012
261A1812P012 - 4.9m (16 ft) cable lenght

Honeywell Part No.:

LG1093AA04 - Replaced by LG1093AA24
LG1093AA24 - 4,9m (16 ft) cable lenght
LG1093AA34 - 4,9m (16 ft) cable lenght
LG1093AA44 - 4,9m (16 ft) cable lenght

ITS 967X7179M379 Flame Scanner - 18,6m (61ft) cable lenght

GE Part No.:

261A1812P003 - Replaced by 261A1812P013
261A1812P004 - Replaced by 261A1812P013
261A1812P005 - Replaced by 261A1812P013
261A1812P006 - Replaced by 261A1812P013
261A1812P007 - Replaced by 261A1812P013
261A1812P008 - Replaced by 261A1812P013
261A1812P009 - Replaced by 261A1812P013
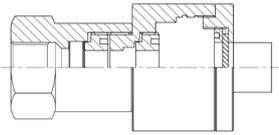261A1812P011 - Replaced by 261A1812P013
- - -
261A1812P013 - 18,6m (61ft) cable lenght
- - -
261A1812P014 - 18,6m (61ft) cable lenght
- - -
261A1812P015 - 18,6m (61ft) cable lenght

Honeywell Part No.:

- - -
- - -
- - -
- - -
- - -
- - -
LG1093AA05 - Replaced by LG1093AA26
LG1093AA06 - Replaced by LG1093AA26
LG1093AA25 - 12,8m (42ft) cable lenght
LG1093AA26 - 18,6m (61ft) cable lenght
LG1093AA35 - 12,8m (42ft) cable lenght
LG1093AA36 - 18,6m (61ft) cable lenght
LG1093AA45 - 12,8m (42ft) cable lenght
LG1093AA46 - 18,6m (61ft) cable lenght

Technical Data

ITS 184X0254M - Series

Our Dedication

Manufacturer **ITS Industrial Turbine Services**

Sensor	Silicon Carbide (SiC) photodiode
Housing	1.4571 stainless steel
Window	Fused Silica
Mounting	3/4´´ internal NPT
Connector Electrical	MIL-DTL 38999 Series III
	038999/27Y-15-05PN 1041 B Thread
Average Spectral Sensitivity	210 - 380nm
Sensitivity	> 4mA @ $1x10^{10}$ photons/in^2/sec. @ 308nm
Output	4 - 20mA DC current loop @ 24VDC
Response Time	< 20ms
Power Requirements	12 - 30VDC or 12 - 35VDC reverse polarity protection
Pinout	A(-), B(+), C(GND)
Temperature Range	-30°C (-22°F) to 150°C (302°F)
	up to 235°C (455°F) with water cooling
Temperature at Mounting	Max. 427°C (800°F)
Int. Protection Marking	IP68
Process Pressure	Up to 28bar (400psi)

RoHS COMPLIANT   AUSTRIA MADE IN AUSTRIA   CE ⟨Ex⟩ **II 1G EEx ia IIC T3/T2* Ga**
CE ⟨Ex⟩ **II 3G EEx nA IIC T3/T2* Gc**
*Temperature code T2 with Water Cooling
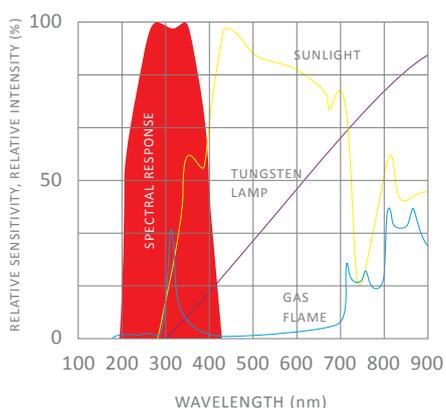System part no. ITS 184X0251M621 only

TŪV AUSTRIA   In consultation with TÜV Austria

Innovative and Progressive

Intelligent Evolution

ITS Flame Scanners with Silicon Carbide (SiC) photodiode are compatible with a wide range of industrial fuels, such as natural gas, kerosene, diesel, oil and mixtures of these.

In addition to the flame ON / OFF display, the data output provides real-time information on flame intensity as required for combustion and burner management systems.

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

Designation Chart for Comparison

ITS 184X0254M-Series Flame Scanner

GE Part No.:	Reuter-Stokes Part No.:
362A1052P-Series	RS-FS-9001
121T9685P-Series	RS-FS-9004

Water Cooling System
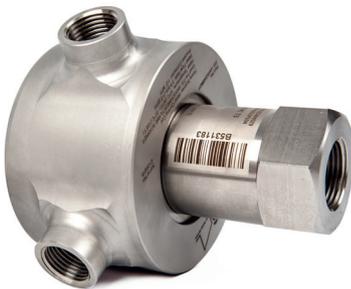
Developed from Our Customers' Needs

Water Cooling System

Depending on the model of the gas turbine, the temperature within the turbine package can quickly cause the flame detector to reach its operational limits.

ITS however, provides a Water Cooling System for preventing these dangerous operational faults. The highly efficient **Water Cooling Coil**, **ITS 184X0251M621**, significantly reduces the risk of overheating and therefore allows your Flame Scanner to function effectively for a longer period of time.

The ITS Water Cooling Coil covers a larger surface of the Flame Scanner than its predecessor from the original manufacturer which enables it to resist the maximum range of its designed temperature. Consequently the electronic components are always kept at an optimum operational temperature.

It is noteworthy that the ITS Flame Scanner is compatible with all water cooling systems, whereas the Water Cooling System by ITS is compatible with the Industrial Turbine Services Flame Scanner **ITS 184X0254M-Series** only.

Water Cooling Coil

This part was purposely designed to be robust and durable corresponding to the requirements of heavy-duty gas turbines.

ITS Industrial Turbine Services is the first in its field to develop and manufacture this specific product to ensure a high level of temperature resistance, combined with an extended lifetime.

The Flame Scanner **Water Cooling Coil ITS 184X0251M621** will circulate water in a temperature range of 10°C (50°F) to 57°C (135°F) making it possible for the Flame Scanner to work up to an ambient temperature of 235°C (455°F). The uncooled Flame Scanner has a working range of -30°C (-22°F) to 150°C (302°F).

For the water supply, a standard 1/2" NPT thread is used as it is available on the turbine normally. The water flow rate is 3.8l/min (1.0US gpm) to 5.7l/min (1.5US gpm) for each Flame Scanner.

Cable Protection

Developed from Our Customers' Needs

Flame Scanner Cable Protection System

Vibration or careless maintenance personnel cause the vast majority of damages pertaining to the cables connecting the Flame Scanner to the junction box.

Broken or abraded connection cables can cause many issues regarding the flame monitoring process. It can hamper the effectiveness and accuracy, or even the functionality of the flame scanning system.

Therefore we have anticipated the needs of our customers by producing a metal hose, covering the entire length of the cable from the Flame Scanner to the junction box.

All parts are made out of stainless steel, increasing the sustainability of the entire application.

The fittings and protective tube used by the **Flame Scanner Cable Protection System ITS 184X0251M921** meet the international industrial standards.

Protected Cable Assembly

The **Flame Scanner Cable ITS 184X0251M911** comes with a stainless steel 90° MIL grade connector, ensuring optimal linkage between the Flame Scanner and the Protection Hose.

On the backside of the plug you will find the necessary data and safety instructions meticulously imprinted with laser engraving.

ITS
Industrial Turbine Services

Cable ITS 184X0251M - Series

Connects what Should Be Connected

ITS Flame Scanner Cable

This cable is used between the Flame Scanner and junction box. It is equipped with a 90° connector made of stainless steel. The **Flame Scanner Cable ITS 1840251M421** is a replacement for the OEM's existing version with the rubber covered connector.

A female plug according to the MIL-DTL-38999 Series III 038999/27Y-15-05PN 1041 B Thread standard is used for mounting the cable to the Flame Scanner. The service voltage of this part is 12 to 35VDC and can withstand a temperature range of -30°C (-22°F) to 260°C (500°F). The connection to the protective tubing is a standard M16x1 internal thread.

NOTE: With this type of cable you have the prerequisites to use the ITS Flame Scanner Protection System.

Spare Part Flame Scanner Cable

Besides the improved **Flame Scanner Cables ITS 184X0251M911** or **ITS 184X0251M421** we also offer an equivalent to the OEM parts with rubber overmold.

The first meter of the cables are also covered with a kink protection.

All the necessary data and statutory safety instructions are printed on a label near to the plug.
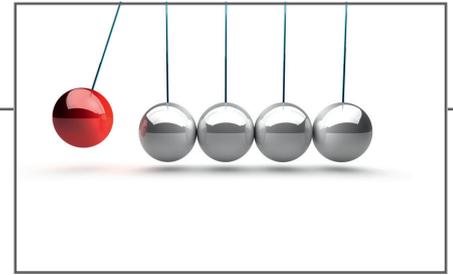
NOTE: The Cable Protection System provided by ITS is not applicable to these type of cables!

ITS Part No.:	OEM Part No.:	Cable Length	Connector Type
ITS 184X0251M242	GE362A1053P020	12.2m (40 ft)	90° connector
ITS 184X0251M240	GE362A1053P021	18.3m (60 ft)	90° connector
ITS 184X0251M244	GE362A1053P022	24.4m (80 ft)	90° connector
ITS 184X0251M241	GE362A1053P023	30.5m (100 ft)	90° connector
ITS 184X0251M249	GE362A1053P024	15.2m (50 ft)	90° connector

Scanner Accessory Parts - Sets

Perfect Teamwork

Flame Scanner Set - Cable Protection

Wearout of the cable between the Flame Scanner and the junction box is caused by vibration and recurring maintenance procedures. With our **Flame Scanner Set - Cable Protection ITS 184X0251M921**, the cable is reliably protected and future damages can effectively be avoided.

The stainless steel hose is particularly advantageous as it protects the cable from the junction box to the Flame Scanner.

Our standard set includes 3 meters of cable protection, but can be ordered according to the needs of the customer. With our sets you can be sure of the efficient protection of your cable.

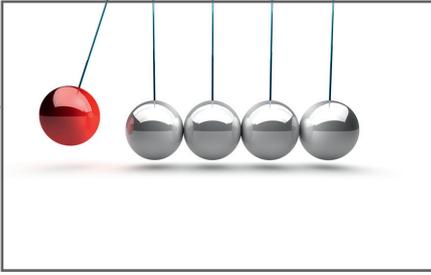## Flame Scanner Set - Water Cooling and Protection

Our **Water Cooling and Protection System ITS 184X0251M941** is a long-lasting top-of-the-range product to retain a constant temperature for the electronic components that are used within the flame scanning device.

All of our products have been well tested in daily use with multiple gas turbines and their environment, in special accordance with our **Flame Scanner ITS 184X0254M-Series**.

This set includes:

1x Stainless steel 90° connector with the cable ITS 184X0251M421
1x Spirally-wound metal protective conduit (3 Meter) ITS 184X0251M461
1x Fitting set (consisting of 2 parts) ITS 184X0251M481
1x Water Cooling Coil Set ITS 184X0251M621
1x Flame Scanner ITS 184X0254M029

ITS
Industrial Turbine Services

Scanner Accessory Parts - Sets

Perfect Teamwork

Flame Scanner Set - Conversion

This **Conversion Set ITS 184X0251M961** fits perfectly if you want to switch to a modern flame scanning technology and simultaneously increase the protection for the Flame Scanner Cable.

All of the parts are compatible with one another making it profitable to purchase as a set. They come all packed together, are easy to assemble and the risk of having missed an important part is eliminated.

Our Bestseller - Conversion Premium

The advantage of taking our all-inclusive package **Conversion Premium ITS 184X0251M981** lies in the fact, that all of the pieces fit effortlessly together as they are literally manufactured from one another.

With this set you have done everything you possibly can to bring your flame scanning system up to date with the latest technology.

This set is all inclusive and it comes with:

1x Conversion Module with detachable front display ITS 184X0251M521
1x Stainless steel 90° connector with the cable ITS 184X0251M421
1x Spirally-wound metal protective conduit (3 Meter) ITS 184X0251M461
1x Fitting Set (consisting of 2 parts) ITS 184X0251M481
1x Water Cooling Coil Set ITS 184X0251M621
1x Flame Scanner ITS 184X0254M029

Upgrade and Spare Parts

Developed from Our Customers' Needs

Flame Scanner Technology Upgrade

The **ITS 184X0251M521 Conversion Module** determines the signal provided by the Flame Scanner with a SiC photodiode into information readable for the MARK V Gas Turbine control system. This allows you to get more accurate information about the quality of the combustion as well as the health of your gas turbine.

The Conversion Module makes it possible to use modern flame scanner technology on proven gas turbine control systems such as the MARK V.

Metal Protective Conduit

This **Stainless Steel Cable Hose ITS 184X0251M461** is especially important because of its resistant nature. Experience shows us that unprotected cables are prone to great damage causing a series of reactions that can reduce the availability of the gas turbine.

ITS Industrial Turbine Services has therefore recognized the need for such a product and has developed a tensile, heat resistant product which can carry heavy mechanical loads.

Fitting Set

This is part of the Flame Scanner Cable Protecting System and is used in combination with the Protective Conduit Hose. The **Fitting Set ITS 184X0251M481** consists of two assemblies. One for the connector on the Flame Scanner side and one to connect to the junction box.

More information at: **www.flamescanner.net**

ITS
Industrial Turbine Services

We Know Turbines

A Continuous Story of Success

ITS - Industrial Turbine Services GmbH

ITS is an international provider of new systems and solutions for operators of industrial gas turbines, developing new ideas for the automation and visualization of gas turbine processes.

Innovative products and worldwide customer satisfaction has turned ITS into a thriving company that ensures its international success through flexibility, creative thinking and exclusive quality.

Our History

2001
The foundation of Industrial Turbine Services GmbH Austria
Since its foundation ITS is a center of excellence for all matters concerning industrial gas turbines.

2003
The start of development of UV flame scanning devices
ITS responded to the increasing need of high quality, reliable and rapidly available equivalent for the OEM Parts.

2010
The expansion of the Flame Scanner product range
Development and successful market introduction of the new ITS Flame Scanner with SiC technology.

Flame Scanner from ITS Recommended

Flame scanners from all well known manufacturers have been tested by the renowned technical University of California, Berkeley USA.

The Flame Scanner developed and produced by Industrial Turbine Services GmbH has been mentioned as a recommendation!

Reliability Builds Confidence

A Look into Our List of Customers

ITS Flame Scanners - Worldwide Success

Flame Scanners made by ITS have been used successfully for years worldwide. Thousands of Flame Scanners from ITS have been installed on 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 credible evidence of our company's commitment to quality and is working proof of the reliability of our product.

Know-How and Experience

Contacting Us Gives You the Advantage

Scan to import our contact information into your mobile device.

ITS - Industrial Turbine Services GmbH

Fabriksplatz 1
4662 Steyrermühl
AUSTRIA

Phone: 0043 (0) 7613 / 44 9 74 - 0
Fax: 0043 (0) 7613 / 44 9 74 – 20

E-Mail: office@turbineservices.at

ITS - Industrial Turbine Services GmbH

Germaniastraße 28
45356 Essen
GERMANY

Phone: 0049 (0)201 / 43 728 - 0
Fax: 0049 (0)201 / 43 728 - 28

E-Mail: office@turbineservices.at

ITS - Industrial Turbine Services Sdn. Bhd. (754803-V)

No. F-03-06, Block F, Puchong Prima Business Centre
Jalan Prima 5/3, Persiaran Prima Utama,
Taman Puchong Prima, 47150 Puchong, Selangor
MALAYSIA

Phone: 0060 / (3) / 8060 3178
Fax: 0060 / (3) / 8060 7178

E-Mail: info@turbineservices.asia

Your local dealer

More information at:

www.flamescanner.net

Innovation leads Success

ITS
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