

Technical Specification

Flame Scanner Set Conversion Premium - ITS 184X0251M981

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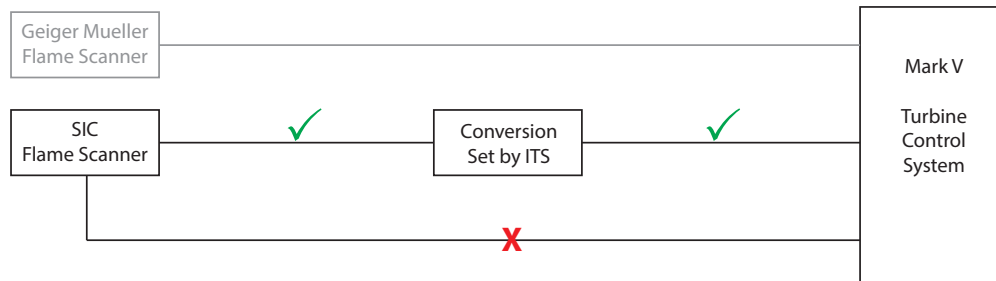
This set protects the flame scanner cable and enables the conversion from the Geiger Mueller principle scanning technology (used in GE261A1812P003 -> GE261A1812P015 etc. or in the Honeywell LG1093AA04 -> LG1093AA46 etc. flame scanners) to the modern SiC flame scanning technology that is used in the ITS 184X0254M029 flame scanner. It also reduces the thermal load with a water cooling system.

This sensor type is less sensitive to water vapor and oil haze deposits inside the turbine and prevents the emergence of false signals forwarded to the turbine control system.

Silicon carbide SiC photodetectors / photodiodes have a spectral response of approximately 210 – 380nm and are not sensitive to UV radiation outside this region. This makes them ideal detectors for monitoring the UV spectrum without the need for solar rejection filters.

SiC photodetectors are extremely durable and have been proven to withstand prolonged UV exposure in many industrial applications.

The 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 SiC flame scanner can be fixed on the turbine with the existing mounting options without changing the hardware or making other alterations. Conventional fuels can further be used without any restrictions.

This set fits perfectly if you want to switch to a modern flame scanning technology and simultaneously increase the longevity of the flame scanner cable.

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

Our Water Cooling System is especially favorable as it ensures that the temperature within the surface of the Flame Scanner, where the electronics are stored, is kept cool enough for everything to stay fully operational for longer.

All of our products have been thoroughly tested in daily use with the gas turbine and its environment and in special accordance with our Flame Scanner ITS 184X0254M029.

Depending on the manufacturer of the junction box, an adapter converting 3/8" to 1/2", 3/4" or 1" may be required.

This set includes:

- 1x Conversion Module with detachable front display ITS 184X0251M521
- 1x Stainless Steel 90° connector with 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 ITS 184X0251M621
- 1x Flame Scanner ITS184X0254M029

Flame Scanner Set - Conversion Premium ITS 184X0251M981

Parameters Flame Scanner	Details
Manufacturer	ITS Industrial Turbine Services, Austria
Housing	1.4571 Stainless Steel
Mounting	3/4" internal NPT
Connector Electrical	MIL-DTL 38999 Series III 038999/27Y-15-05PN 1041 B Thread
Sensor	Silicon Carbide Photodiode
Window	Fused Silica
Average Spectral Sensitivity	210 - 380nm
Sensitivity	> 4mA @ 1×10^{10} photons/in ² /sec. @ 308nm
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 water cooling
Temperature at Mount	Max. 427°C (800°F)
Relative Humidity	100%
Dimensions / Weight	Max. Diameter 64mm (2.520in), Length 128mm (5.039in) / 1.6kg (3.5lb)
Packaging	Foam, cardboard box, 235x110x107mm (9.252x4.331x4.213in), 0.1kg (0.2lb), sealed

This ITS Flame Scanner (replacement for GE Part Number: 362A1052P105, RS-FS-9004 etc.) with Silicon Carbide (SiC) Photodiode is compatible with a wide range of industrial fuels, such as natural gas, kerosene, diesel, oil, and mixtures thereof. It was especially developed to meet the requirements of the gas turbines' heavy duty environment. Special emphasis was placed on rapid response, accuracy, vibration resistance and durability.

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

A silicon carbide (SiC) photo diode is very sensitive to the longer wavelength components of the UV light generated through a flame. This longer wavelength light penetrates the fog of oil quite well and therefore the SiC based sensor is more sensitive to the presence of flames.

This flame sensor utilizing the SiC photo diode is being produced by ITS Industrial Turbine Services and has been successfully operated on a wide number of gas turbine installations.

Flame Scanner Set - Conversion Premium ITS 184X0251M981

Parameters Conversion Modul	Details
Manufacturer	PR Electronics
Type	Universal I/f Converter 4222
Temperature Range	-20°C (-4°F) to 60°C (140°F)
Calibration Temperature	20°C (68°F) to 28°C (82°F)
Relative Humidity	< 95% RH (non-cond.)
Protection Degree	IP20
Dimensions (HxWxD)	109 x 23.5 x 104 mm (4.3 x 0.9 x 4.1in)
Supply Voltage, Universal	21.6 - 253 VAC, 50 - 60 Hz or 19.2 - 300 VDC
Fuse	400 mA SB / 250 VAC
Max. Power Consumption	≤ 2.5 W
Signal / Noise Ratio	Min. 60 dB (0 -100 kHz)
Accuracy	Better than 0.1% of selected range
Input	RTD/TC/Ohm/potentiometer/mA/V
Frequency Output Range	0 - 25000 Hz
Min. Frequency (span)	0.001 Hz
Other Output Types	PNP/NPN/TTL
EMC/LVD/UL	EN 61326-1/EN 61010-1/UL 508

The Conversion Module is key if you want to reap the benefits of the ITS 184X0254M029 Flame Scanner technology on Mark V control systems.

It is programmable via a detachable display front. It provides process calibration, signal simulation, password protection, error diagnostics and selection of help text in several languages.

For several converters only one display module is required. This module can be moved from one device to another of the same type, and download the configuration of the first device to subsequent devices. Programming access can be blocked by assigning a password. The password is saved in the device in order to ensure a high degree of security against unauthorized modifications to the configuration.

Note: For the correct use of this part, an electric supply of 24-250VDC must be present.

Flame Scanner Set - Conversion Premium ITS 184X0251M981

Parameters Cable	Details
Manufacturer	ITS Industrial Turbine Services, Austria
Wire	18 gauge (1.13 mm), 19 x 0.226 nickel plated cooper conductor
Insulation	Teflon PTFE
Shield	Braid of nickel plated cooper, opt cov >85%
Color Code	Black - negative White - positive Green/yellow - ground
Cable Length	9.1m (30ft)
Voltage (max)	600vrms
Service Voltage	12 - 35VDC
Connector	MIL-DTL 38999 Series III, 038999/27Y-15-05PN 1041 B (Only 3 pins are used)
Cover	Stainless steel, M16 x 1.5/2, laser engraved
Backshell	90°
Temperature Range	-30°C (-20°F) to 260°C (500°F)
Weight	0.9kg (1,98lb)
Packaging	Loose, rolled and tied with cable ties

The Flame Scanner Cable, which is used between the Flame Scanner and junction box with a 90° connector made of stainless steel, is a replacement for the OEM's existing version with the rubber covered connector.

The stainless steel connector ensures the optimal linkage between flame scanner and protection hose. On the backside of the plug you will find the necessary data and safety instructions imprinted with laser engraving.

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Parameters Hose	Details
Manufacturer	ITS Industrial Turbine Services, Austria
Hose	Spirally-wound stainless steel protective conduit with interlocked profile (AGRAFF), 3/8"
Material	Stainless steel AISI 304, DW no. 1.4301
Protection Rating	IP40
Static/Dynamic Bending Radius	65/80mm (2.559/3.150in)
Outer Ø	16.5mm (0.650in)
Min. internal Ø	13.0mm (0.512in)
Temperature Range	-100°C (-148°F) to 600°C (1112°F)
Weight	0.27kg/m (1.95lb/ft)
Packaging	Loose, rolled and tied with cable ties

A standard 3 meters are supplied, but can be individually ordered according to the required length.

Parameters Fitting	Details
Material	UI511-G: nickel-plated brass UI511-EG: AISI 303, DW no. 1.4305 O-ring: NBR
Thread	M 16 x 1.5/2, 3/8"
Min. internal Ø	9.8mm (0.386in)
Temperature Range	-45°C (-49°F) to 105°C (221°F)
Weight	0.074kg (0.16lb)
Packaging	Per set in one bag

Depending on the manufacturer of the junction box, an adapter converting 3/8" to 1/2", 3/4" or 1" may be necessary. All parts correspond to the major international industrial standards.

Flame Scanner Set - Conversion Premium ITS 184X0251M981

Parameters Cooling Coil	Details
Manufacturer	ITS Industrial Turbine Services, Austria
Material	1.4571 Stainless Steel
Temperature Range	10°C (50°F) to 57°C (135°F)
Thread	1/2" NPT
Outer Ø	103mm (4.055in) without connectors
Water Flow Rate	3.8l/m (1.0US g/m) to 5.7l/m (1.5US g/m) for each Flame Scanner
Weight	1.4kg (3.1lb)
Packaging	Loose

With the ITS Water Cooling Coil more heat can be eliminated from the Flame Scanner as it connects to a larger surface on the Flame Scanner than its predecessor from the original manufacturer. The part was purposely designed for robustness and durability to correspond to the requirements in the turbine area.

Note: This cooling system is only suitable for the original ITS 184X0254M029 Flame Scanner.

Office Locations

Austria – Steyrermühl
Tel: 0043 / (0)7613 / 44974 - 0
Fax: 0043 / (0)7613 / 44974 - 20

Germany – Essen
Tel: 0049 / (0)201 43728 - 0
Fax: 0049 / (0)201 43728 - 20

Malaysia – Puchong
Tel: 0060 3 8060 3178
Fax: 0060 3 8060 7178

E-mail: office@turbineservices.at

Further information on www.turbineservices.at

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