FKK

PH CATALOG 2023

FKK

Contents

Corporate profile

Address	11 Tsutsumisoto-cho Kisshoin Minami-ku, 601-8399 Kyoto, JAPAN TEL: 075-314-8760 FAX: 075-314-4167
Establishment	1954/02
Capital	1,0000000 JPY
CEO	Kazuo KAWATA
Employees	130 (2023/06)
Main sites	Head Office (Kyoto), Fukuchiyama plants (2 plants), Suzhou plant
Representative offices	Tokyo, Osaka, Sendai, Fukuoka, Nagoya
Branch	Suzhou (China)
Certification	TUV Sud ISO 9001 TUV Sud ISO 14001

Corporate philosophy

FKK strives to contribute to today's environmental challenges via solutions and systems to save energy. We are constantly looking for innovative and smarter solutions and achieve our goal through customer's satisfaction. We are building harmony between people, foster a supportive and dynamic workplace, and deal sincerely with all tasks and people we encounter. We achieve this through strong principles to ensure a sustainable and responsible prosperity, considering human, human development and its relation with environment as the center of our business strategy.

Environment and CSR

In a world where our natural environment is more and more endangered by human activity, FKK have always been committed to limit impact on nature. Considering the environmental protection as an essential purpose, in compliance with environmental standards (ISO 14001, REACH and RoHS) FKK designs and develops solutions that are more respectful of nature. In 2019 FKK signed Global compact initiative and started SDGs program, in 2022 FKK vision 2030 started with installation of 115kW of solar power on the roof of Kyoto headquarter covering 60% of the site power consumption.

Quality

FKK gain the satisfaction and trust of customers by drawing on unique technology and skills. We take customer's point of view all the time and constantly improving customer experience, responsiveness and the ability to take effective action. FKK put the quality management system (ISO 9001) to effective use and use modern technology to enhance quality, production level and employees well being.

History

1954.02: Foundation of Fuji Kogyo in Kyoto, Japan
1957.02: Production of spark plug for agricultural machinery
1970.02: First production of igniters for oil burner
1985.02: The headquarter moved to South Kyoto, Kawata Genjiro becomes president of the group
1988.04: New factory built in Fukuchiyama
2003.02: Establishment of Shanghai subsidiary
2005.05: Obtained ISO 9001 certification
2006.02: Award of the best top 300 Japanese SME from the Japanese Ministry of Industry
2006.02: Award for the Best 21st century's SME from Kyoto prefecture
2007.06: Obtaining the ISO 14001 certification. Fuji Industries becomes FKK Corporation, a new headquarters is built
2010.02: New plant in Fukuchiyama
2011.07: Production of igniters and busbar for fuel cell appliances. International development start
2012.08: Partnership bind in UK, Belgium and Russia
2013.01: Fukuchiyama ignition electrode plant is automated
2014.07: Foundation of Suzhou FKK Corporation
2015.07: TUV certification of all biomass alumina ceramic igniter products
2019.10: PSx series ceramic igniter for biomass and wood pellet reached a cumulated sales of 1M pcs.
2020.07: European distribution network is consolidate, H&S Sensortecnik GmbH appointed as new EU distributor
2022.10: FKK initiated vision 2030, a plan to reduce CO2 by more than 50% by 2030, starting with solar panel on HQ roof.

Ver. 2023/06/01 Rev.0 EN

International network

FKK Corporation Japan
Head Office

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Minami-ku, 601-8399 Kyoto, Japan

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FAX +81(0)75-314-4167

FKK Corporation Japan
Fukuchiyama plant

160, Shogako, Yokocho Haishi,
620-0955 Fukuchiyama, Japan

TEL +81(0)77-323-9902
FAX +81(0)77-323-9903

Suzhou FKK Corporation

Building 7, Wanhe Industrial Square, No.39 Wahne Road, Changshu Economic & Technological Development zone, 215537 Changshu, Jiangsu, China
TEL +86(0)512-5295-5760
FAX +86(0)512-5295-5761

Europe General distributor

H&S Sensortechnik GmbH
Jagern 62,
A-4761 Enzenkirchen, Austria

TEL +43 7762 43 705 - 0
FAX +43 7762 43 705 - 50
office@hs-sensortechnik.at
www.hs-sensortechnik.at

South Korea General distributor

Samson Global Co.,Ltd.
Rm.509 Byoksan 3-cha 271 Digital-ro
Guro-go, 08381 South Korea

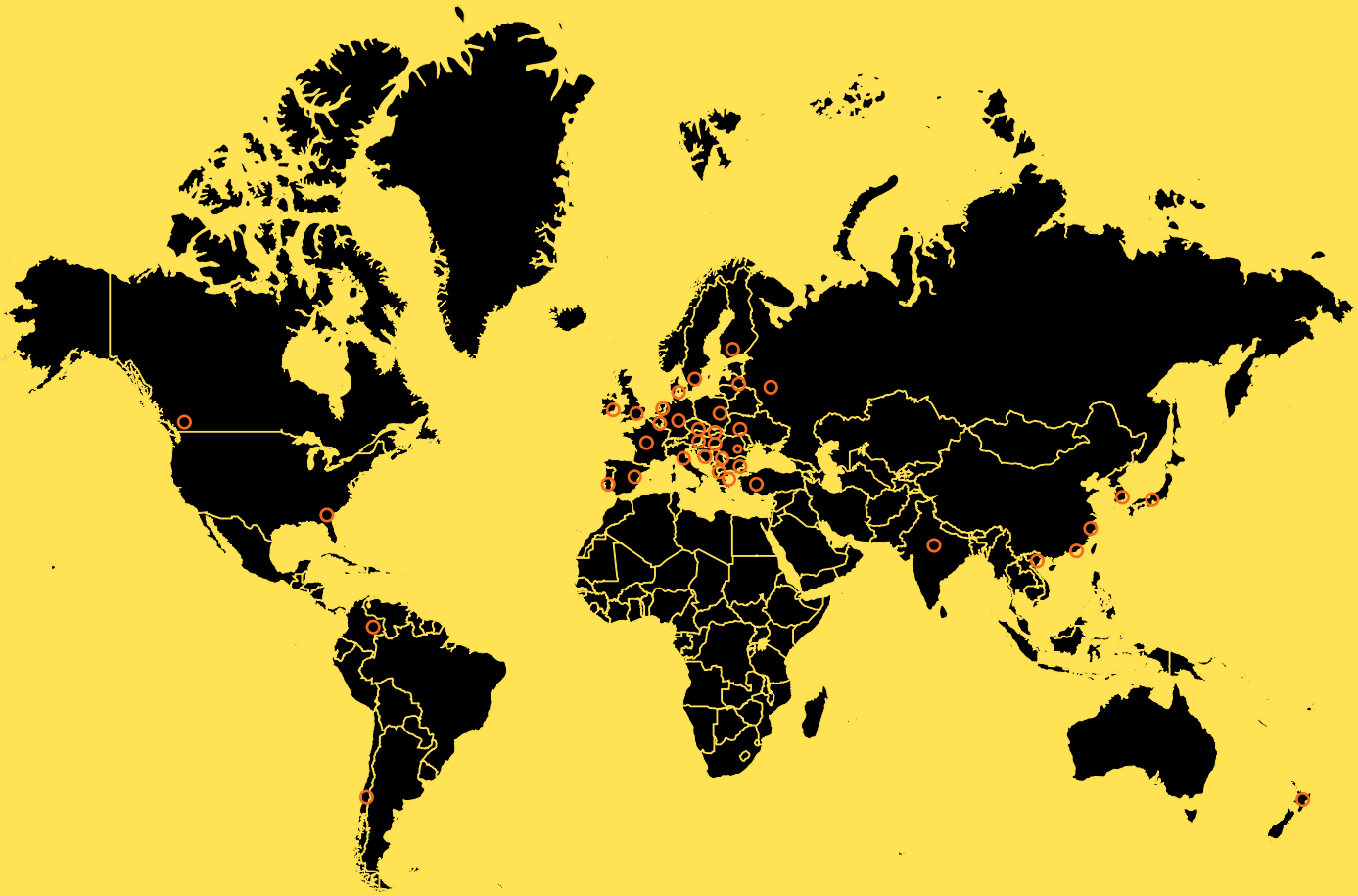
TEL (+82) 02 - 895 - 6011
FAX (+82) 02 - 2025 - 1115
www.samson-global.com

Russia General distributor

FKK Corporation Russia
Reshetnikova str.15, office 118, St. Petersburg,
196105, Russia

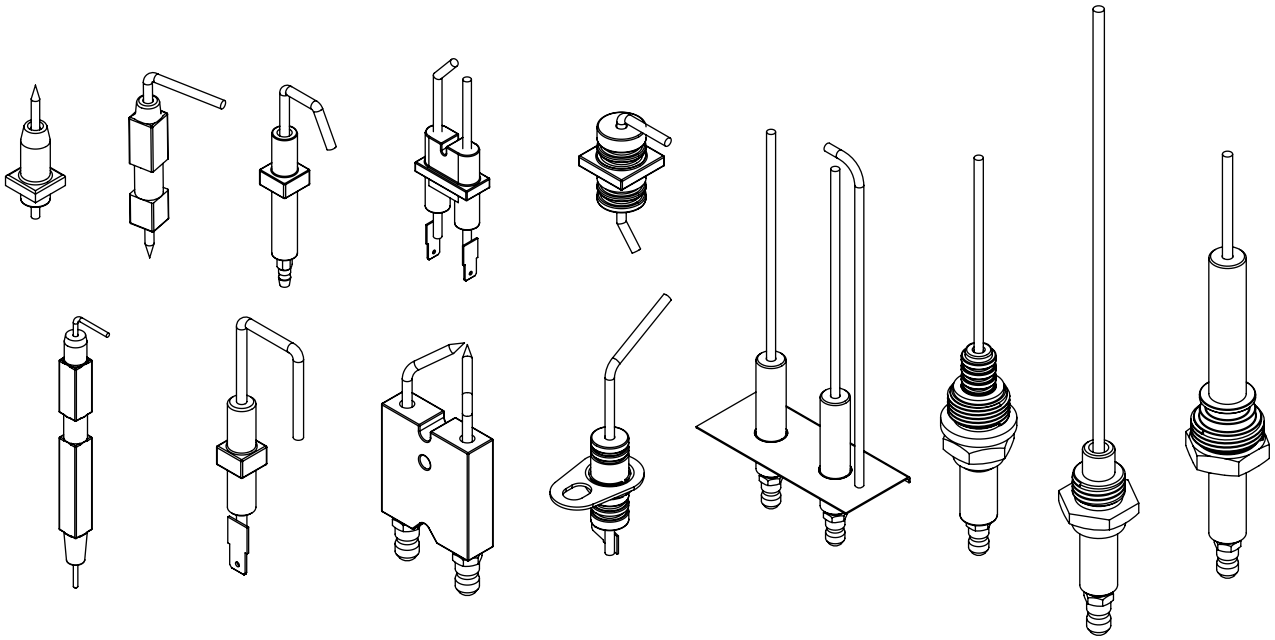
TEL +7 812 360 83 45
FAX +7 812 709 08 43
dt@fkk-corporation.ru - www. fkk-corporation.ru

FKK is exporting products worldwide. If you need information on distributors, do not hesitate to contact us.



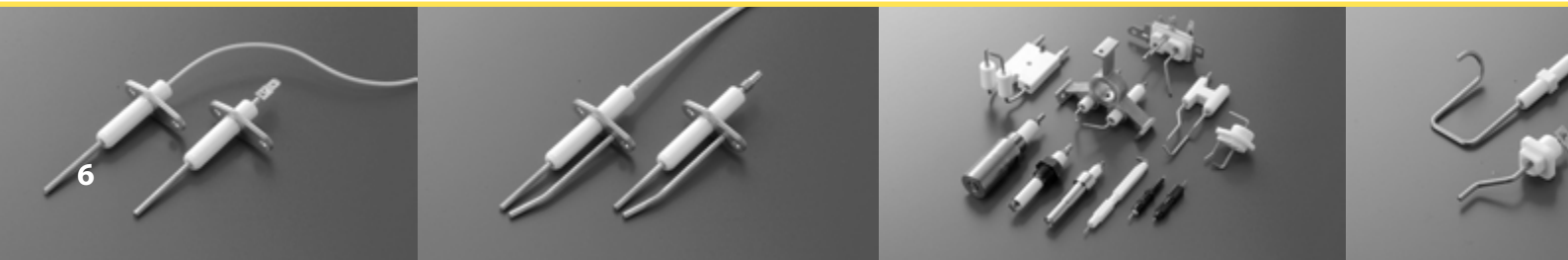
Plug Heater line up

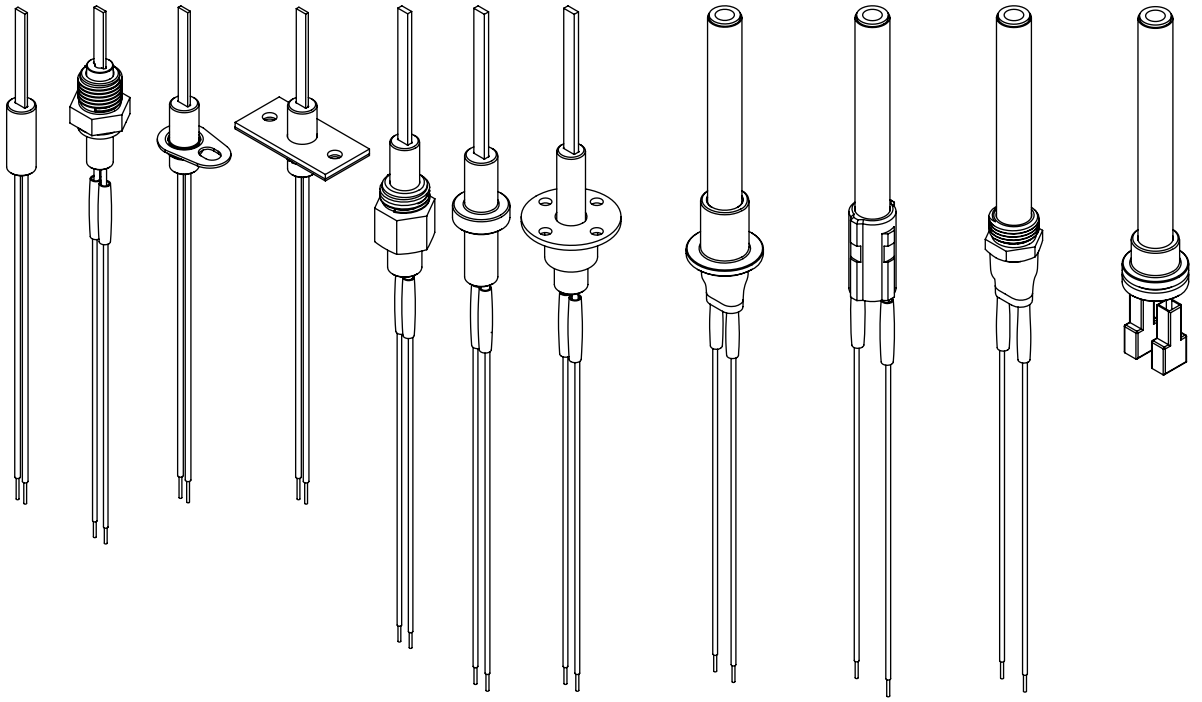
Products presentation

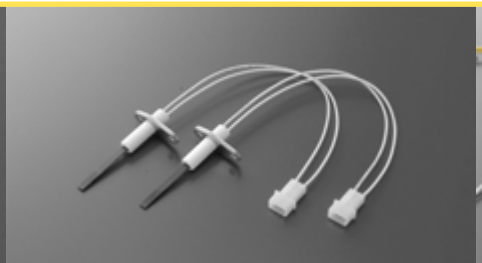
	Ignition Electrode		Ionization electrode and flame sensor rod		Spark rod
Product type	Ignition electrode Simple	Ignition electrode Assembly	Flame sensor rod	Ionization rod with fitting	Industrial size spark rod
Materials	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fitting available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fitting available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fitting available	Alumina 90~99.9% Kanthal, Hitachy SYTT, Stainless steel, Steel All connector and fitting available
Application	Cooktop/water heater	Water heater	Cooktop/Burner	Burner	Industrial
Possible size (mm)	All lengths possible from 30 to 1800 mm, all electrode diameters possible				
Range of temperature	600 to 1400 °C				
Image					

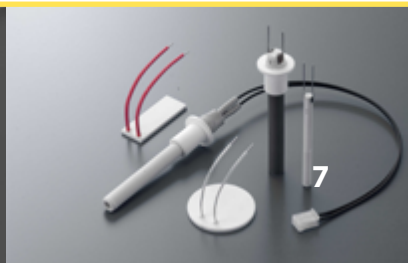
TO THE ESSENCE
OF HEAT

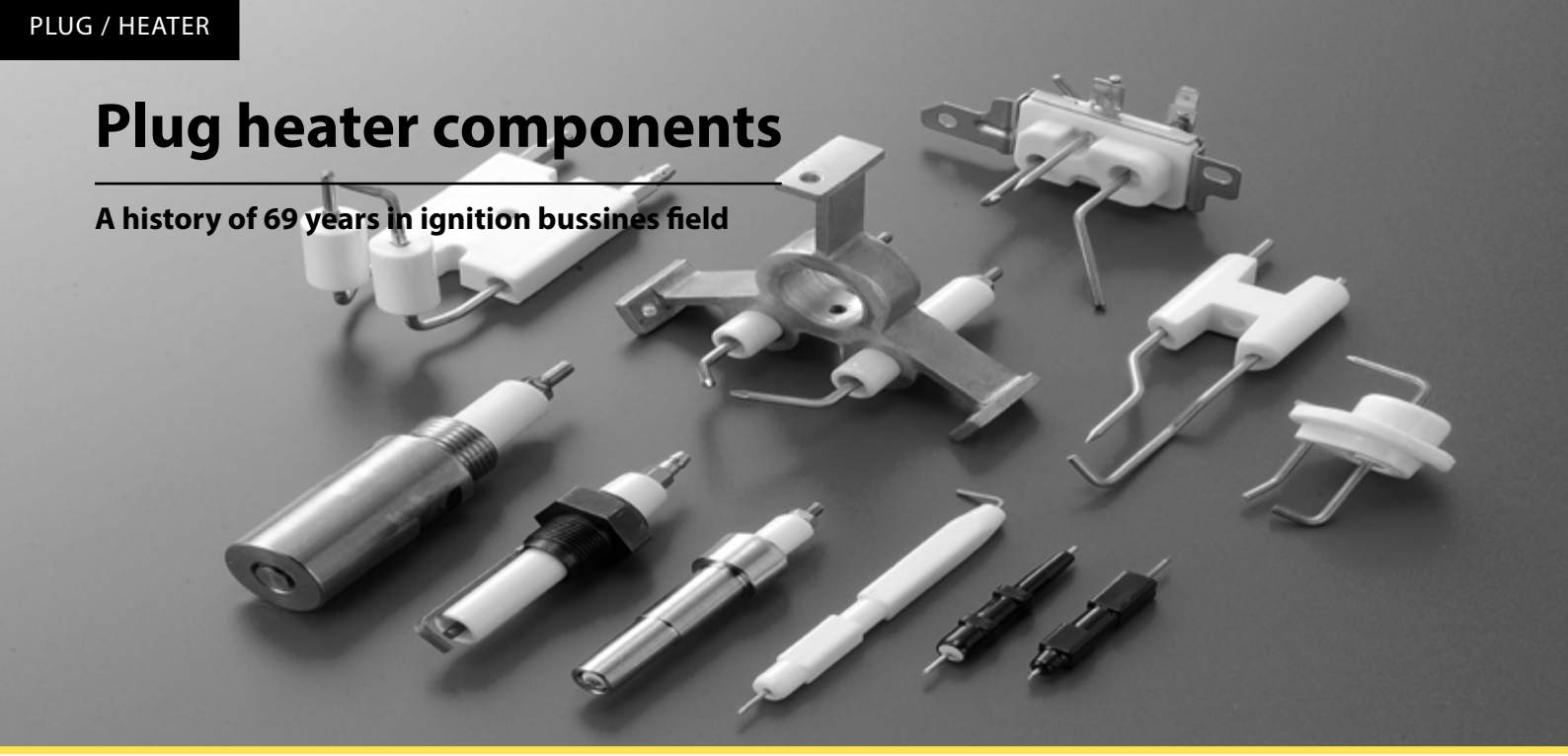
Ignition or sensing components are essential in the design of heating applications. Seeking efficiency of ignition is our job, revolutionize industry is our goal.



	Hot Surface Igniter (plate type)		Hot Surface Igniter (rod type)	
Product type	Silicone Nitride Igniter 1000~1380°C	Silicone Nitride Igniter 1200~1400°C	Biomass wood pellet /chips/log igniter 300W	Biomass wood pellet /chips/log igniter 240W
Materials	Silicone Nitride Body Alumina 90~99.9% All connector and fitting available	Silicone Nitride Body Alumina 90~99.9% All connector and fitting available	Metalized Alumina 92% Body Alumina 90~99.9% All connector and fitting available	Alumina 92% Body Alumina 90~99.9% All connector and fitting available
Application	Boiler/Burner ignition Hydrogen flame sensor	Burner /Gas Reformer	Stove/Boiler/Burner	Stove/Boiler/Burner
Features	High speed 6s to 1000 °C 1000~1380 °C	High temperature 90000 hrs at 1350 °C	High temperature and long rated life 100/120/220~240V	Long rated life Design for 120V market
Range of temperature	1000~1380 °C	1200~1400 °C	970~1050 °C	950~970 °C
Image				
Special order	OK	OK	OK	OK





Plug heater components

A history of 69 years in ignition bussines field

Every day in Asia, Europe or America, FKK is present in the lives of millions of peoples around the world through boilers, water heaters and stoves components.

In Japan, FKK Corporation has led the way in designing and manufacturing high quality components for over 69 years.

Today, FKK Corporation with its new assembly line offers engineering solutions for production of divers ignition components for natural gas, hydrogen, biomass and other renewable energy appliances ignition and heat detection systems.

If your application requires an electrode or sensing rod, we can provide one of our model or design it and produce it for you.

Products

- ignition electrodes
- single electrodes
- double electrodes
- blocks of electrodes
- electrode assemblies
- single or multiple pole ignition electrode
- flame monitoring pole
- flame sensor rods
- ionisation electrodes
- ceramics hot surface igniter
- double plan igniter
- pellet stove igniter
- cathode and anode
- spark plug
- interference suppressors
- temperature sensors
- advanced ceramics

Applications

Natural Gas	Bath heater / gas water heating equipment Furnace/burner heating equipment Boiler Industrial heating Equipment
Renewable energy	Biomass-wood pellet stove/boiler/burner igniter Stirling engine ignition electrode MCHP Fuel Cell SOFC/PEFC burner igniter Fuel Cell reformer components Hydrogen direct combustion components

Automated line

Better. Faster.

A part of standard production is fully automated. Automaziation have been implemented to increase quality while reducing cost for customers. Workers can now concentrate on increasing tailor made products quality.

Ignition electrodes production process

1 Insulation Testing

100% tested.

All ceramic body are tested before the begining of the production.
Robot tester apply 15KV for few seconds inside the ceramic body.

2 Cropping

Fast.

Kanthal, SYTT Hitachi Metal, FCHW made electrode are cropped automatically.

3 Bending

High quantity.

Bending machine perform the bending of the electrode from 1 to 4 bending points.

4 Sealing

Precision and speed.

Automatic dispenser quickly and precisely seal the electrode and ceramic insulator with ceramic cement sealant.

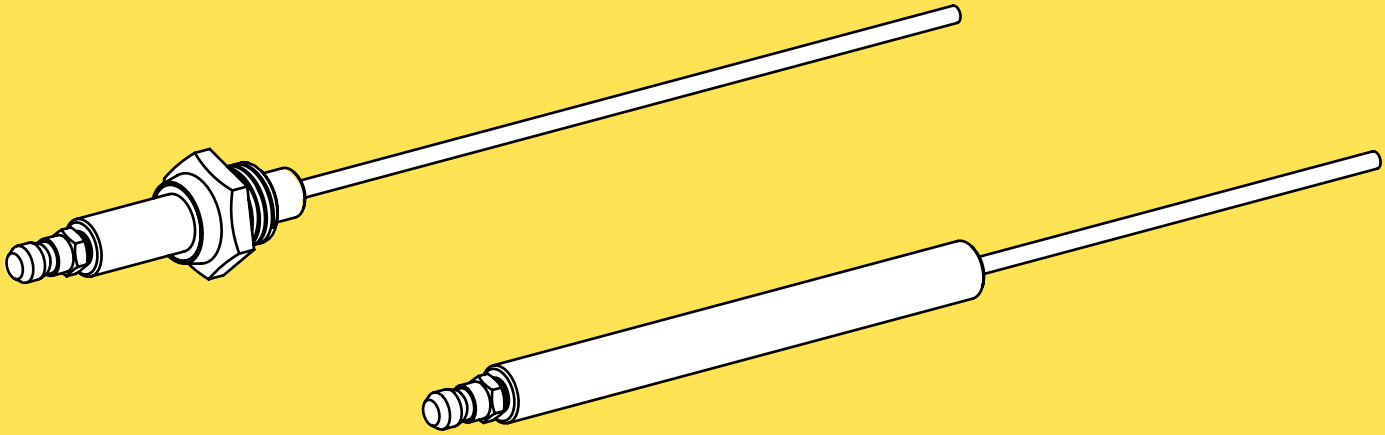
5 Sintering

High heat process.

After sealing process the trail go to oven to solidy the sealant.

Ignition and sensing electrodes

Ignition electrodes and flame sensor rods



Ignition electrodes used for the ignition and temperature control in gas and solid combustion equipment, work on the principle of ignition by high voltage flashover.

FKK Corporation ignition electrodes, flame sensor rods and assemblies come in over infinite configurations.

If your application requires an electrode or sensing rod, we can provide one of our model or design it and produce it for you.

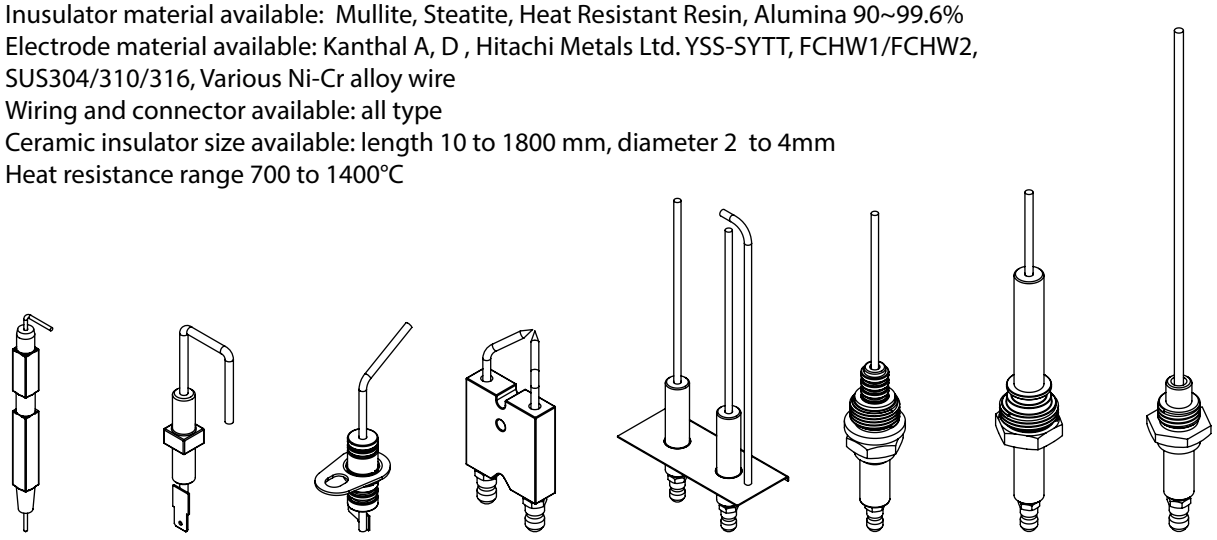
Applications

Natural gas	Gas boiler / water heating equipment Furnace/burner heating equipment Table stove / Table top burner Commercial kitchen equipment Commercial burner Industrial burner equipment
Hydrogen	Hydrogen direct combustion burner Hydrogen direct combustion boiler Fuel cell system ignition and flame detection

1. **High sparking efficiency**
2. **Long rating life**
3. **High quality**
4. **Moisture resistant**
5. **From small quantity**

Specifications

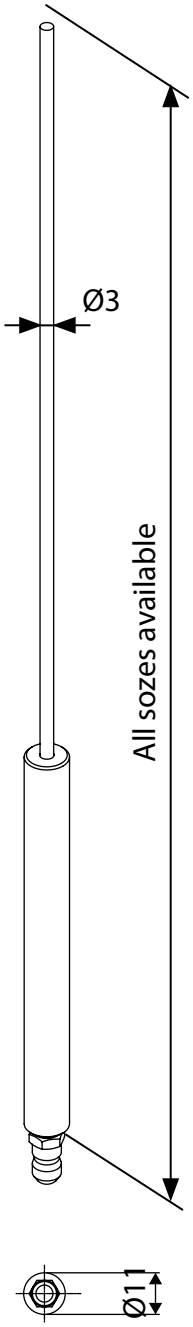
- Inusulator material available: Mullite, Steatite, Heat Resistant Resin, Alumina 90~99.6%
- Electrode material available: Kanthal A, D , Hitachi Metals Ltd. YSS-SYTT, FCHW1/FCHW2, SUS304/310/316, Various Ni-Cr alloy wire
- Wiring and connector available: all type
- Ceramic insulator size available: length 10 to 1800 mm, diameter 2 to 4mm
- Heat resistance range 700 to 1400°C

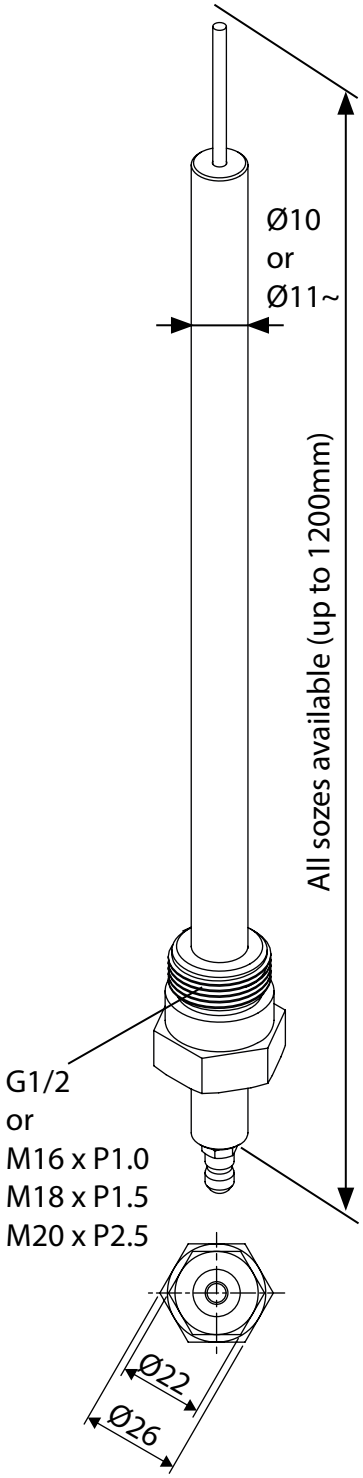


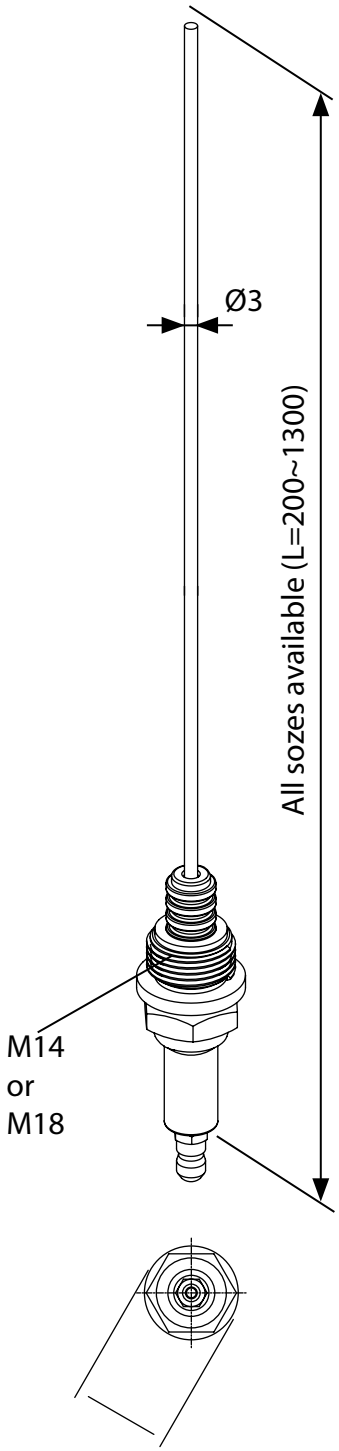
Overview of ignition and sensing electrodes

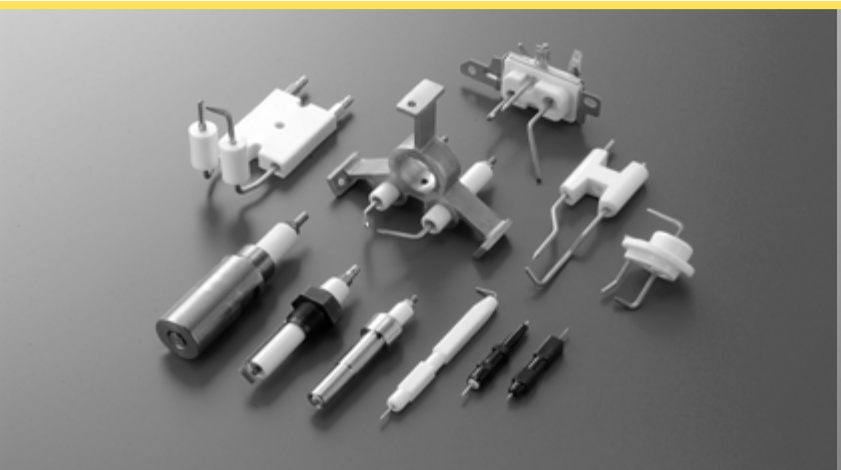
A variety of industrial ignition and sensing rods are possible

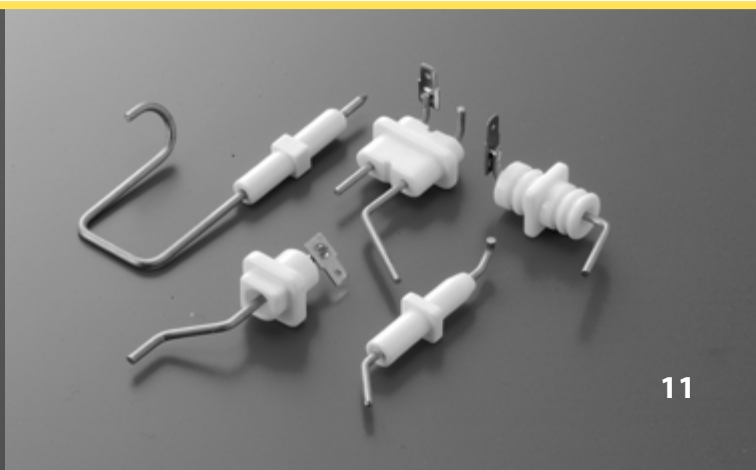
Unit (mm)







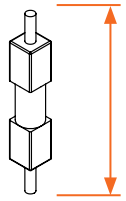




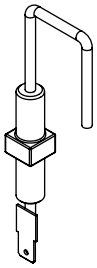
Ignition and sensing electrodes

Ignition electrodes and flame sensor rods products range

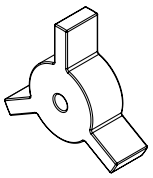
Line up



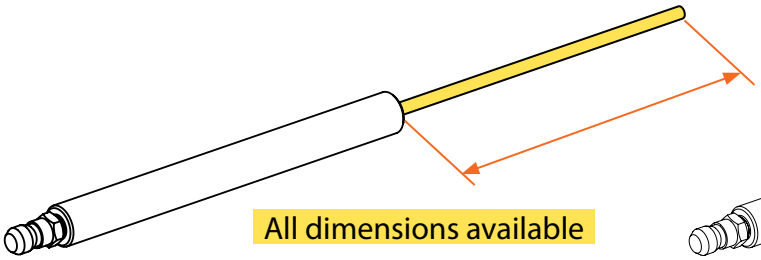
All sizes and shapes available



Simple electrode

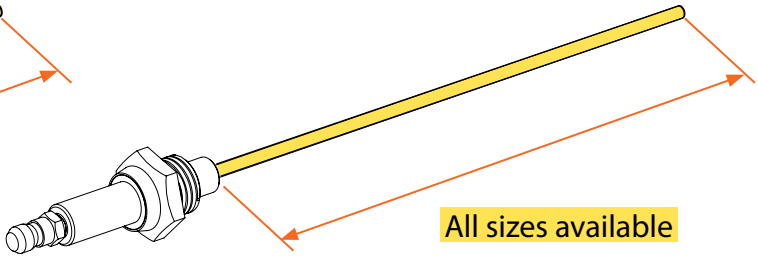


Spacer and ceramic parts



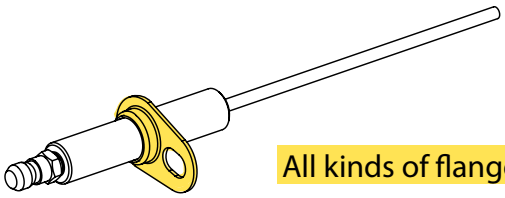
All dimensions available

Sensing / ionization electrode



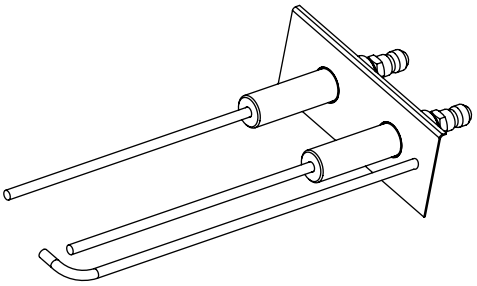
All sizes available

Threaded ignition / sensing electrode



All kinds of flanges

Electrode with flange

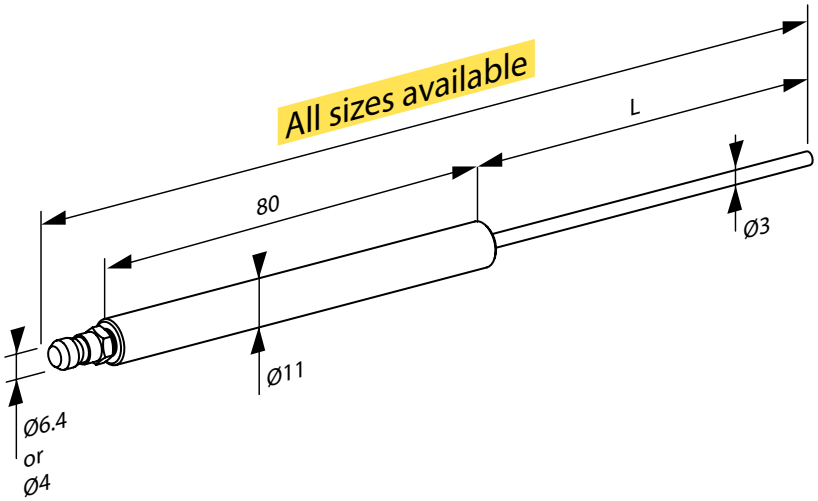


Electrode assembly

Standard products available

Rod Electrode

Ignition rod

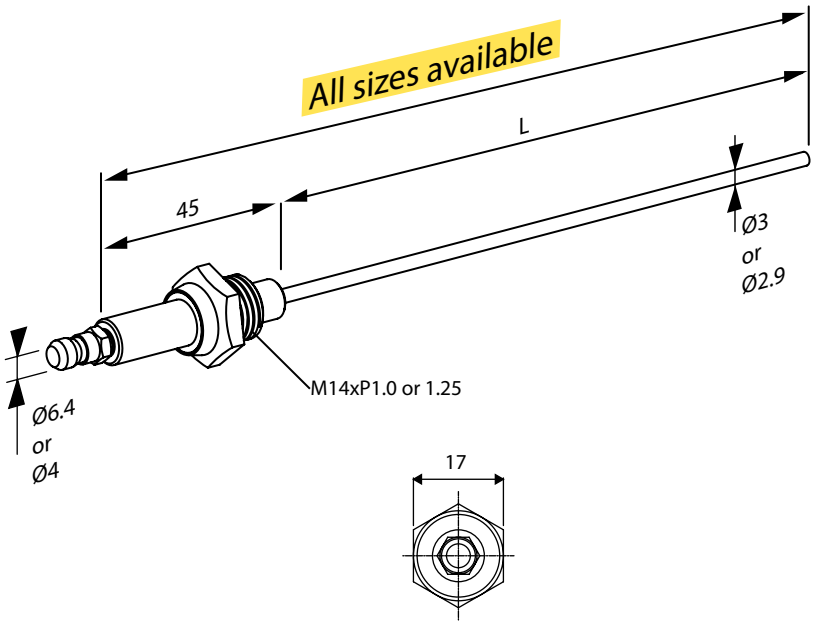


Unit (mm)

M14 Spark Plug

M14xP1.0 or P1.25

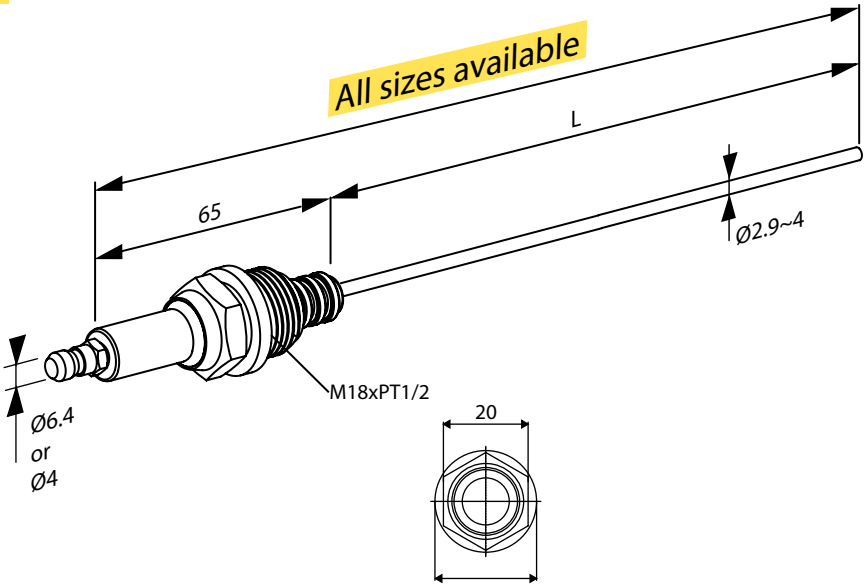
Electrode material
Ø3 SUS304
Ø3 SYTT
Ø2.9 Kanthal A1
Ø2.9 Kanthal DSD



M18 Spark Plug

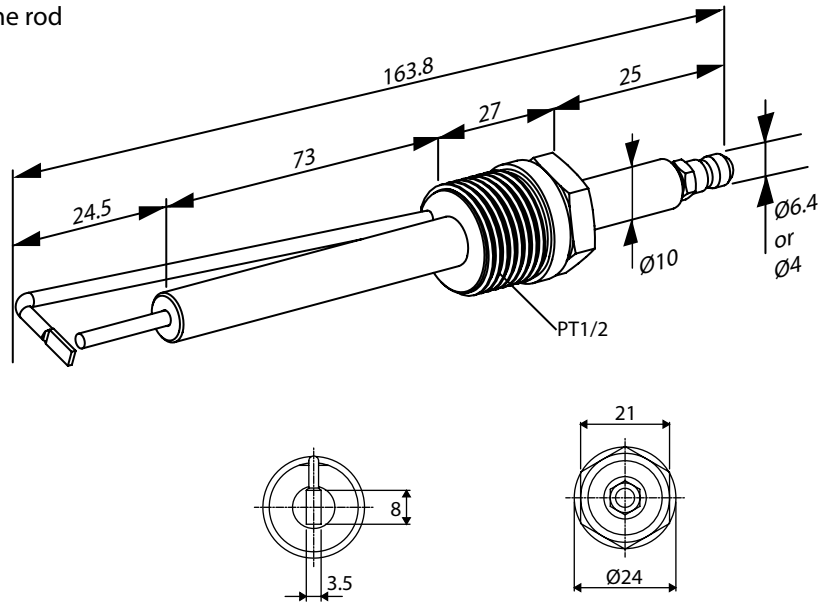
M18xPT1/2

Electrode material
Ø3 SUS304
Ø3 SYTT
Ø2.9 Kanthal A1
Ø2.9 Kanthal DSD



PT1/2 Spark Plug

PT1/2 Spark plug with flame rod



Unit (mm)

Biomass hot surface ignition

Wood pellet, wood chips and biomass hot surface igniter

1. 50s to 1000°C
2. Non aging
3. Made in Japan

Introducing the PSx® series ceramic biomass igniters range, an advance in ignition technology for solid fuels.

FKK Corporation specialises in ceramic hot surface igniters and has many years of experience of working closely with customers to develop bespoke solutions for innovative appliances manufacturers. We are a trusted supplier of hot surface igniter products to many biomass/pellet stoves, burners and boilers manufacturers.

These advanced igniters are simply the best for lighting wood pellet and biomass burners. They use only a fraction of the energy required by hot air fans and ignition blowers and will light all fuel types. Ideal for wood pellets, wood chips, log, corn, maize, etc.

With a considerably higher temperature, around twice that of traditional metal sheathed products, ignition times are reduced to as little as 60 seconds. This makes them significantly more economical in use.

All our range can be customized to fit perfectly in your appliance.

Ceramic ignition technology benefits

- Time to ignition 60~90 seconds
- Long lasting (nearly non aging)
- Tested to 150,000 cycles, 40 years of market feedback and enhancement
- A fraction of the energy consumption compared to conventional igniter
- Reduce appliance particles emission due to short ignition phase
- Easy to install and retrofit
- Fits any steel tube with an inner diameter of ≥18mm
- 1000°C at steady-state temperature
- Cannot overheat even with blower failure
- Available in 100V / 120V / 230V AC
- Fully electrically insulated with no exposed electric contacts
- Impervious to oxidation and corrosion
- Ignite wood pellet, wood chips, split logs, straw and other biomass
- Comply with RoHS, REACH, CE regulation
- UL certified wiring possible (200 to 500°C heat resistant wire)

Systems

- Wood pellet stove
- Wood pellet boiler
- Wood pellet burner
- Wood pellet BBQ/grill
- Wood chips burner
- Straw burner
- Other biomass burner

Certification

- TUV Rheinland - EN 60335
- TUV Rheinland - RoHS

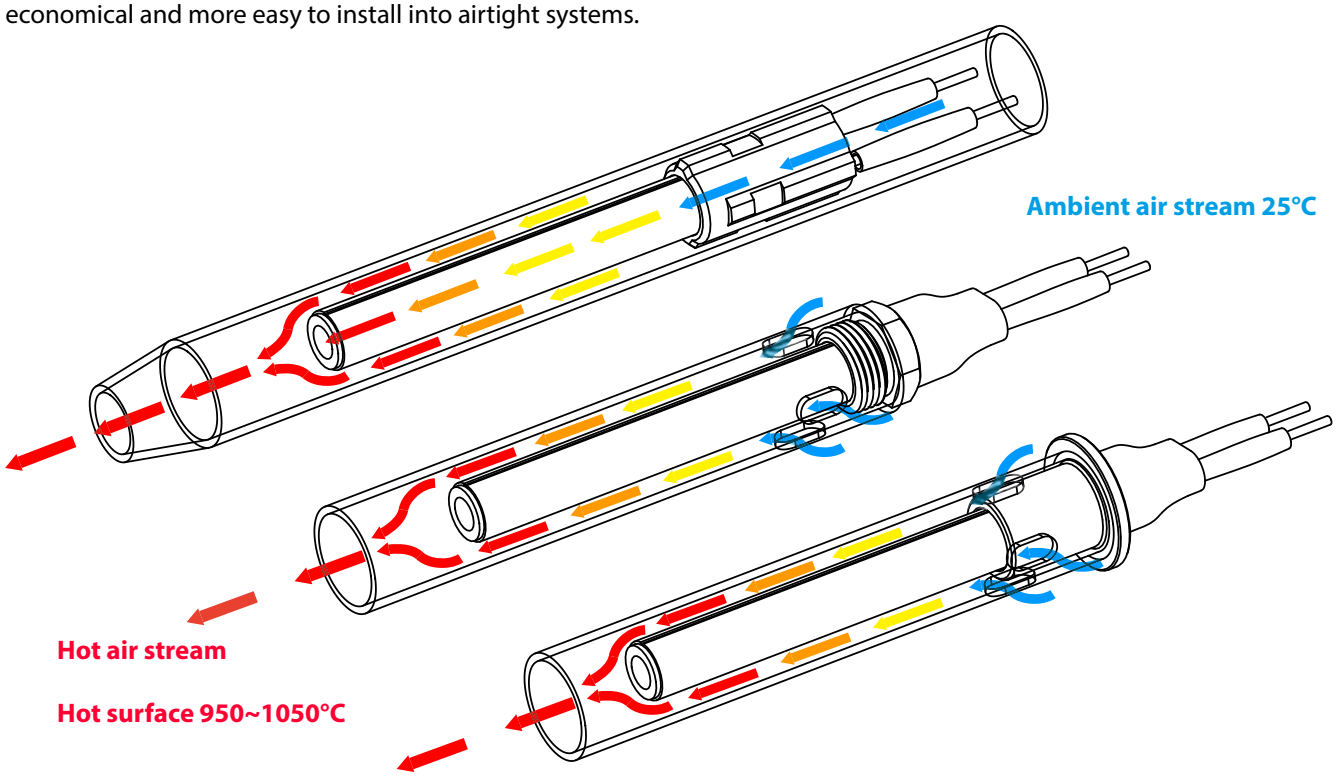
A revolutionary way to ignite biomass

Faster, better, stronger.

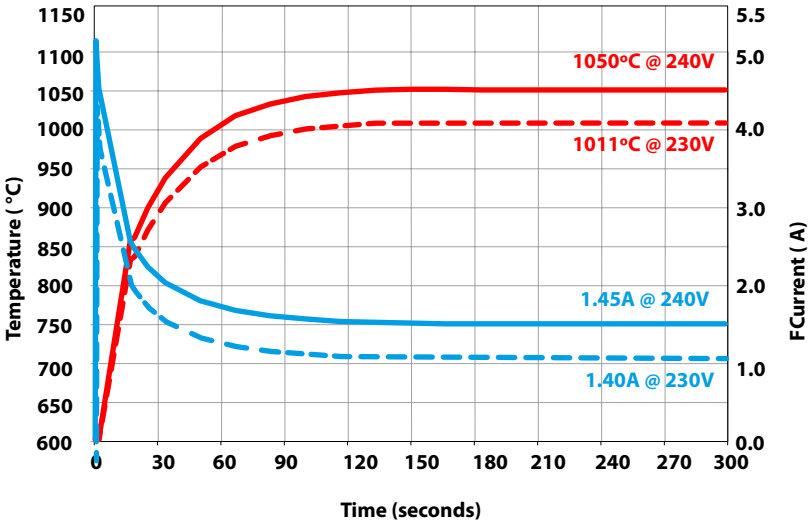
PSx series igniters revolutionize biomass heating appliances ignition process. FKK developed several types to fit in every appliances.

Tubular radiant structure type (Blowing air system: PSx-2 /PSx-7) ceramic igniters have a through hole that let air through the heating element body. With this structure, ignition performance can be increase by 1.4 times compare to metal cartridge heater.

Hermetic radiant structure type (PSx-1 / PSx-6) ceramic igniters heat the surround air for indirect ignition of pellet. These models are economical and more easy to install into airtight systems.

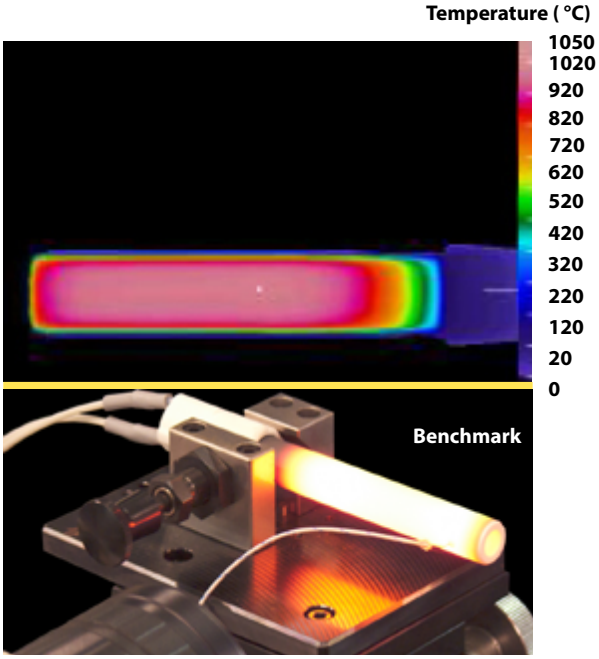


Rising surface temperature



Nominal resistance: 44.64Ω
Inrush current: 5.05A (@240V/50Hz)
Current: 1.45A (@240V/50Hz)

Heat distribution



Psx series igniters line up

A simple and efficient solution for biomass ignition

Application

Igniters suitable for ignition of biomass, wood pellet, wood chips, wood log, for stoves, boilers and burners.

Features

- Tested to 150,000 ON/OFF cycles.
- Fast ignition time (60~90s to ignite pellet according to burner)
- Totally customizable solution, many design available
- 240W and 300W type
- Available in 100V, 120V , 230V
- Wiring available in UL or CE certified version

Line up

PSx-1

26mm ceramic flange
Hermetic radiant type

PSx-2

17.7 mm ceramic bushing
Tubular structure type (Blowing air)

PSx-3 / 4

No flange, perfect retrofit solution
Blowing air or radiant type available

PSx-6 / 7

HEX 17 threaded bushing
Hermetic or Tubular structure type (Blowing air)

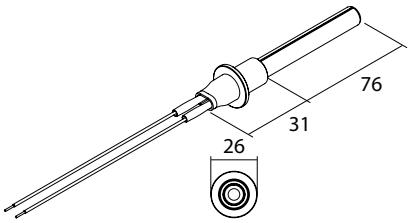
All drawings and data-sheets are available for download at : www.plug.fkk-corporation.com/en/download
Scan the QR code to go directly to the related page.
Pellet igniter catalogs are also available in BG, CN, CZ, DE, DK, ES, EN, FR, GR, IT, JP, KR, NL, PL, RU, SE, TR languages.

Line up

Unit (mm)

300W Class - Black coating alumina heaters (B)

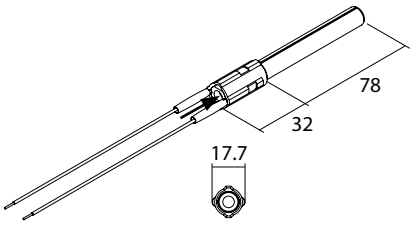
PSx-1-240-B



300W - 1000ºC

Hermetic system

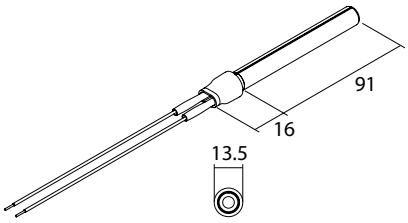
PSx-2-240-B



300W - 1000ºC

Blow through system

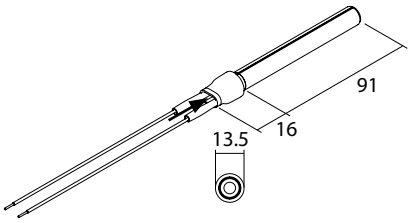
PSx-3-240-B



300W - 1000ºC

Hermetic system

PSx-4-240-B

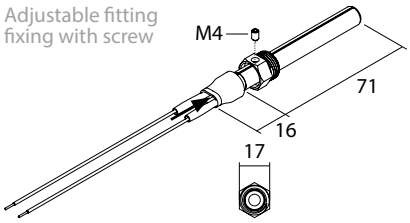


300W - 1000ºC

Blow through system

PSx-5-240-B

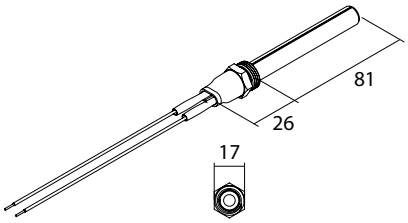
Adjustable fitting fixing with screw



300W - 1000ºC

Blow through system

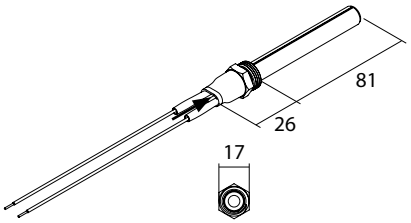
PSx-6-240-B



300W - 1000ºC

Hermetic system

PSx-7-240-B

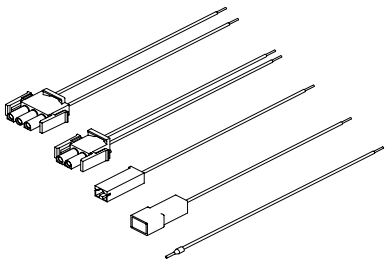


300W - 1000ºC

Blow through system

Custom models

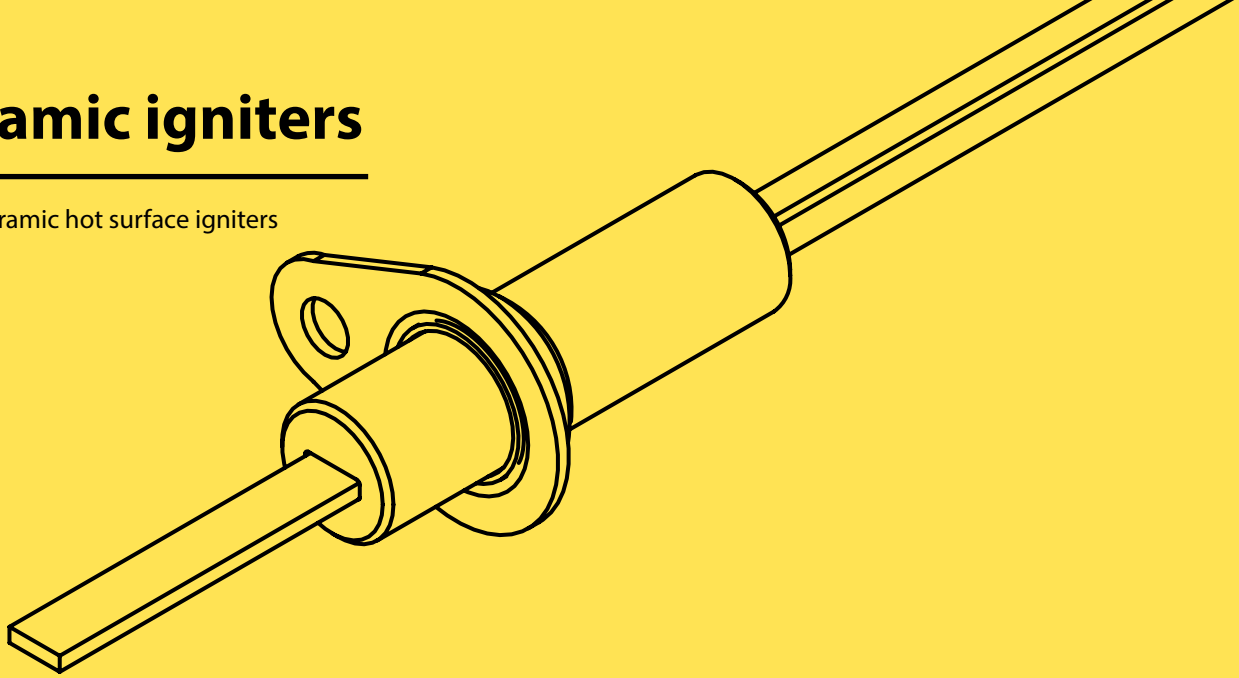
From 500 pcs all models can be customized with the cables and connectors of your choice.



Type	Reference	Flange type	Heater length (mm)	Available voltage (V)	Cable length (mm)
300W	PSx-1-240-B	Ceramic 26mm	107	230V	350mm *All lengths and connectors type available upon request.
	PSx-2-240-B	Ceramic bushing 17.7 mm	110	230V	
	PSx-3-240-B	Flange less - Retrofit	107	230V	
	PSx-4-240-B	Flange less - Retrofit	107	230V	
	PSx-5-240-B	G3/8" bushing - Retrofit	107	230V	
	PSx-6-240-B	G3/8" bushing 17mm	107	230V	
	PSx-7-240-B	G3/8" bushing 17mm	107	230V	
240W	PSx-1-120-W	Ceramic 26mm	107	120V	
	PSx-2-120-W	Ceramic bushing 17.7 mm	110	120V	
	PSx-4-120-W	Flange less - Retrofit	107	120V	
	PSx-7-120-W	G3/8" bushing 17mm	107	120V	

SiN ceramic igniters

Silicone nitride ceramic hot surface igniters



FKK Corporation producing OEM custom order ceramic silicon nitride hot surface igniters for natural gas and hydrogen energy-efficient equipments. FKK Corporation is now one of the world's leading manufacturer of ceramic hot surface igniters for compact boilers and tankless water heater as well as Fuel Cell SOFC/PEFC and hydrogen direct combustion appliances, covering Asia, America and Europe.

Features

1 Long lifespan.
While standard igniters only last 2 or 3 years, FKK hot surface igniters are made to last at least 90000 hours (nearly 10 years) according to Japanese standard and made to be very resistant in all conditions (high humidity, freezing temperatures, strong vibrations, etc.). We are the unique maker in the world to be able to design SiN igniters with average life greater than 90,000 hours in continuous operation at nearly 1400°C.

2 High temprature, high constraint.
FKK ceramic hot surface igniters can reach 1400°C. However, due to perfect sealing process, lead wire junction temperature do not exceed 150°C. You can miniturize your system, make it safer and prolonged the rated life of other components.

3 Very fast.
Rising temperature is faster: up to 1000°C in 6 seconds.

4 Highly efficienct.
High-watt density discharge allow high thermic efficiency.

5 Superior in many ways.
Highly resistant to mechanical strength, high temperature strength and thermal shock.Excellent electrical insulation, dielectric strength and thermal shock resistance.

6 No noise.
Contrary to spark electrode, ceramic igniters generate no electromagnetic interference so it can be safely use in systems and applications sensitive to electromagnetic noise.

Material

- Silicone Nitride Si_3N_4

Range of temperature

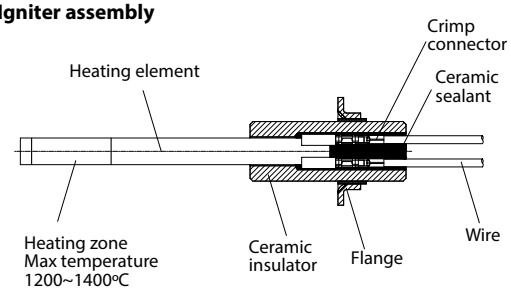
- 1100~1400 °C

Applications

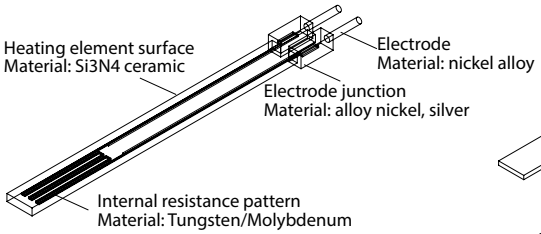
- Gas furnace, burner, kiln
- Gas or hydrogen water heater, boiler or other heating equipment
- SOFC, PEFC Fuel Cell MCHP burner and re-former unit
- Gas reforming to H2
- H2 Post gas combustion
- Laboratory equipment
- Biomass boiler secondary combustion
- Hydrogen combsution
- Flame detection in H2 combustion burner

How hot surface igniters are made

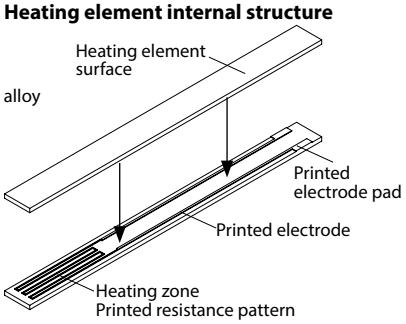
Igniter assembly



Heating element external structure



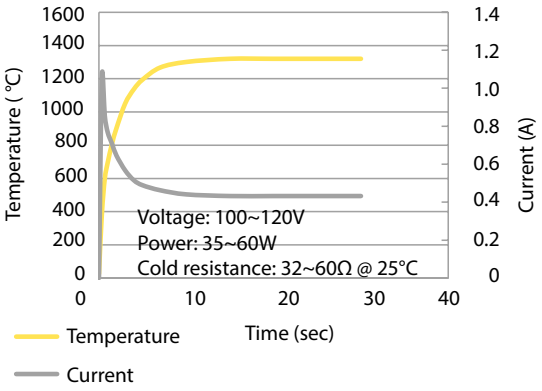
Heating element internal structure



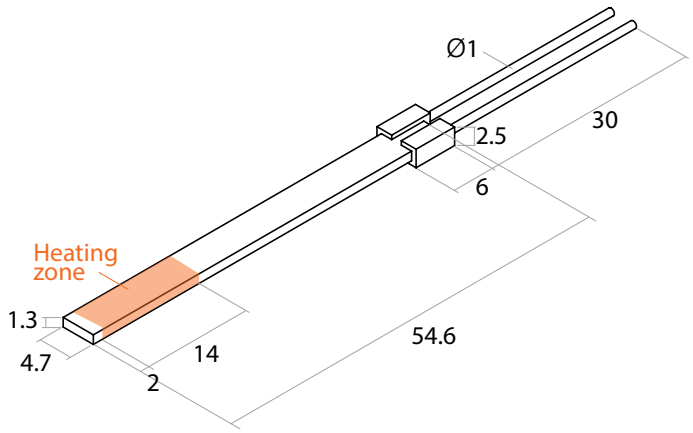
Heating element standard line up

Unit (mm)

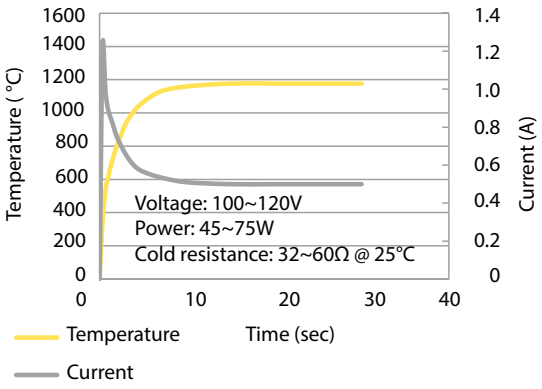
FJT-15 heating element



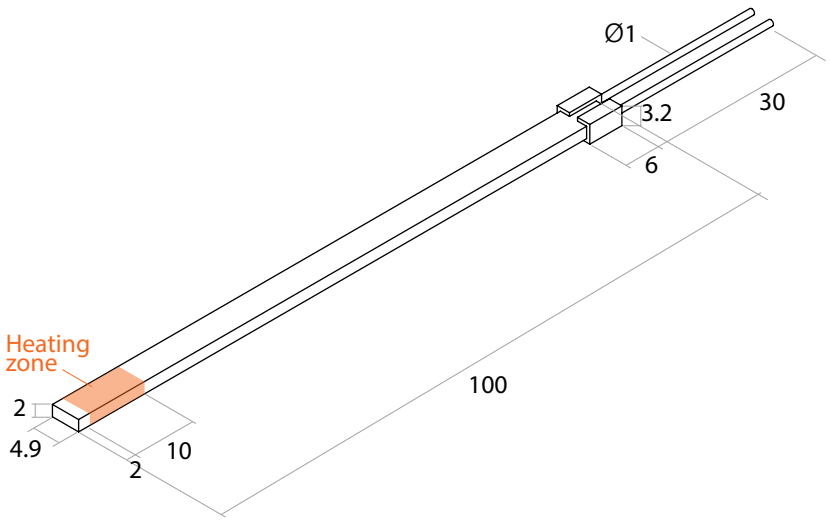
Heating element 54.6 mm

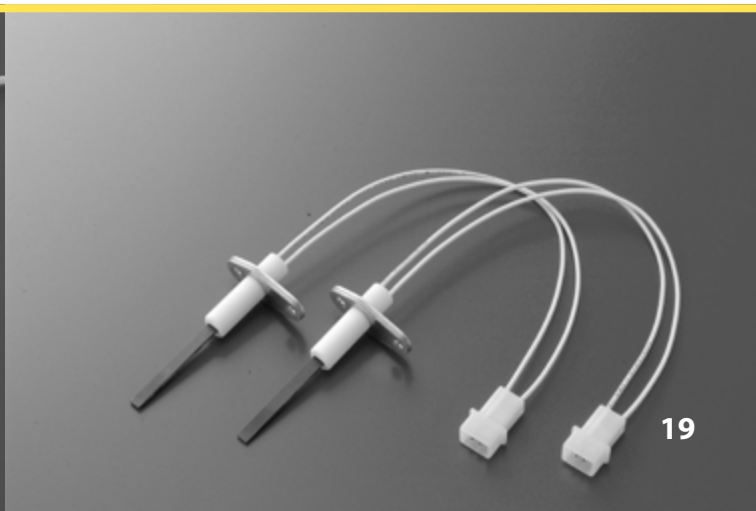


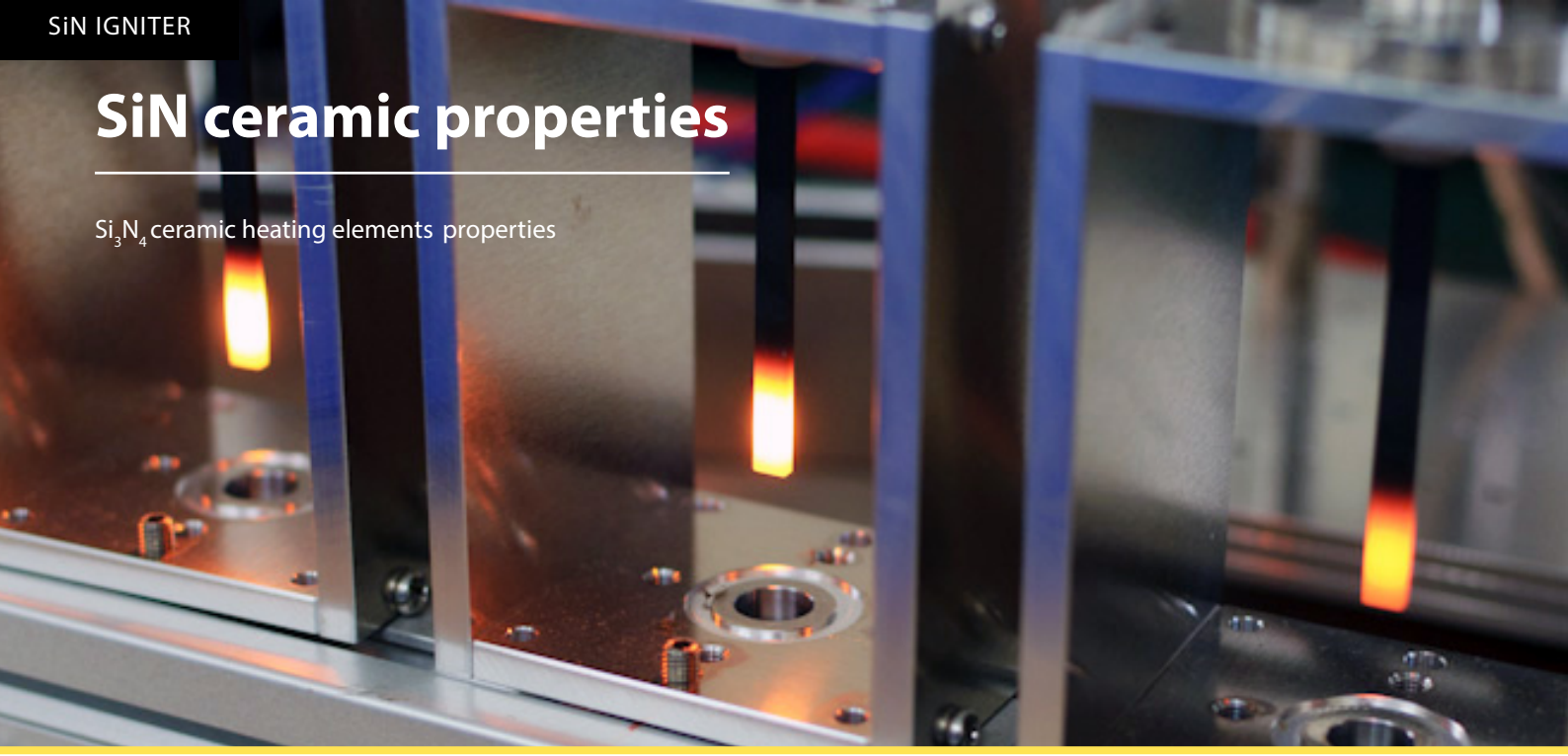
FJT-100 heating element



Heating element 100 mm







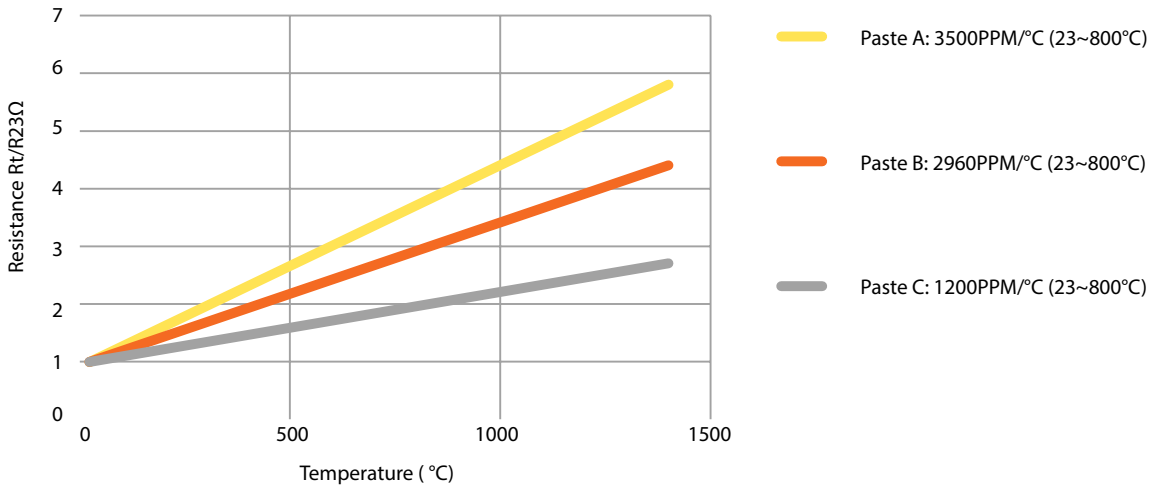
SiN ceramic properties

Si_3N_4 ceramic heating elements properties

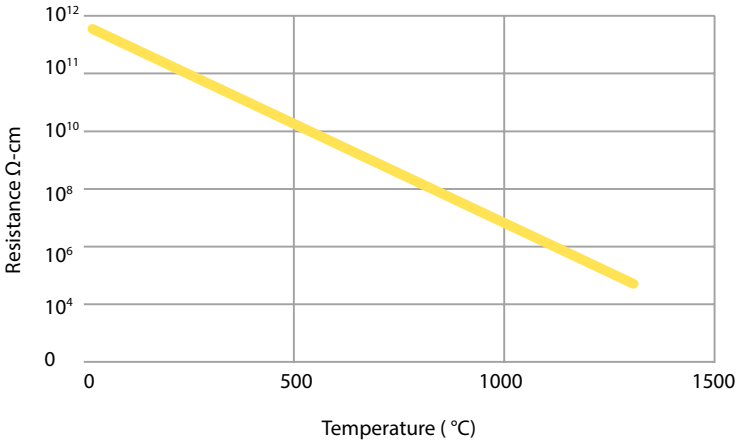
Mechanical and Thermal Properties

Items	Unit	Material SN362
Maximum temperature	°C	1400
Typical temperature	°C	1200
Thermal conducticity	w/mk	31
Linear expansion coefficient	/°C(40-800°C)	$3.7x10^{-6}$
Vickers hardness (500g load)	GPa	17.1
Bending strength	MPa	900
High-temperature strength (Flexural strength at 800°C)	MPa	900
Thermal shock resistance	°C	900

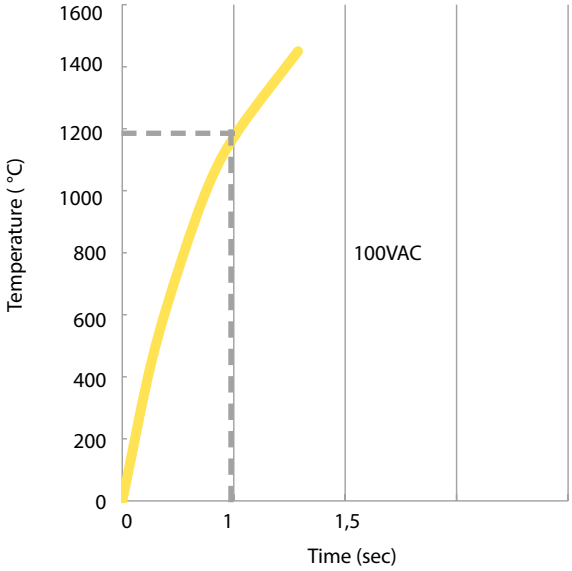
Temperature coefficient of resistance (TCR)



Resistance

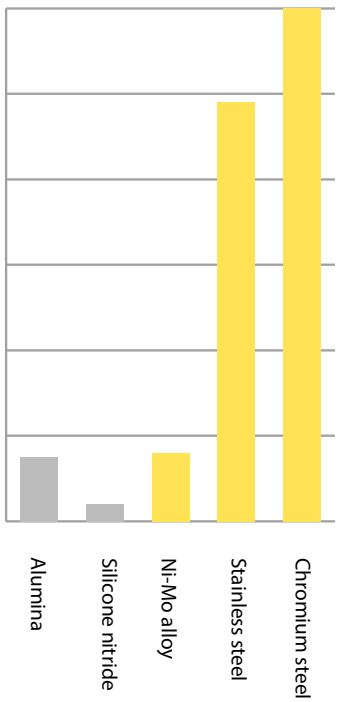


High speed type

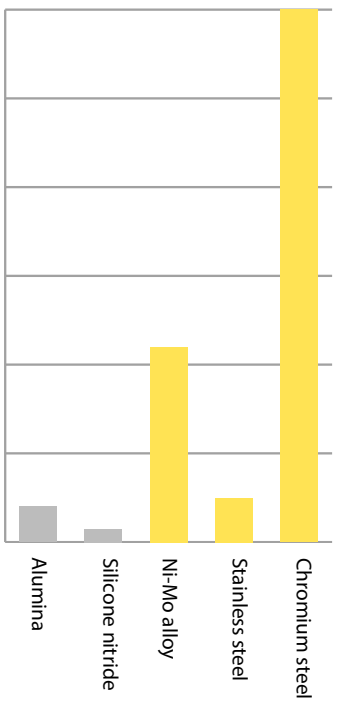


Chemical characteristics (nitric acid resistance)

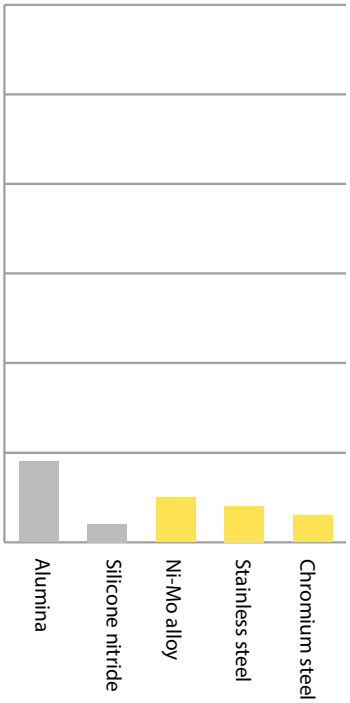
Corrosion Loss - 60% H_2SO_4



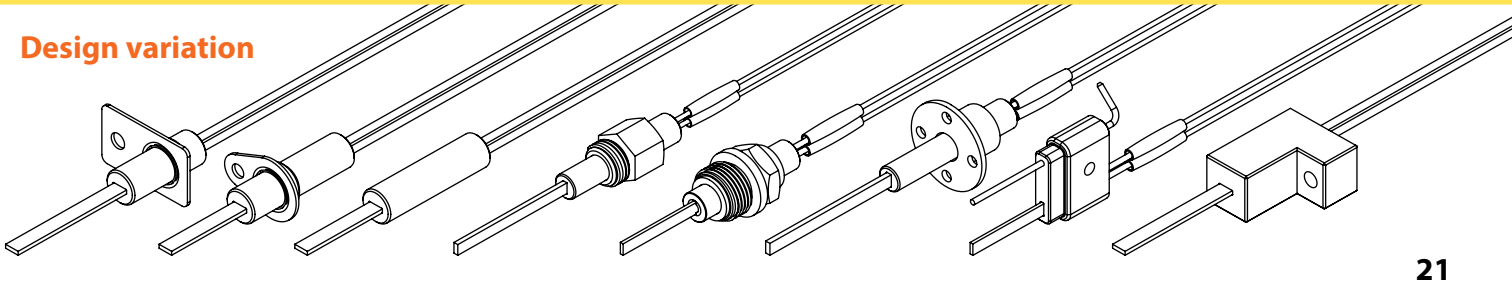
Corrosion Loss - 60% HNO_3



Corrosion Loss - 60% NaOH



Design variation



SNx series igniters line up

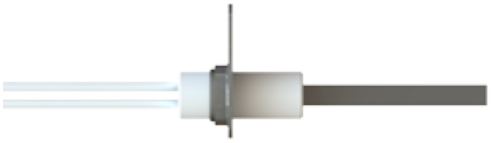
Silicone nitride ceramic hot surface igniters standard products

Features

- High temperatue1200~1400°C
- 1000°C in 6 seconds
- High resistance to thermal shock (600~900°C)
- Designed for over 90000h of powering
- 80~120V , 220~240V (also possible according to volume)
- Totally customizable solution, many designs available upon request

All drawings and data-sheets are available for download at:
www.plug.fkk-corporation.com/en/products/sin-ceramic-igniter
Scan the QR code to go directly to the related page.

Most popular models



SNx-10

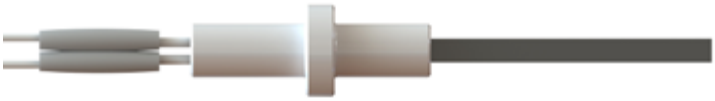
30mm elliptic metal flange
1200°C type

SNx-11

D10.5 x L28 mm ceramic body
1200°C type

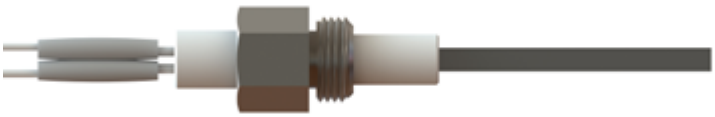
SNx-3

D14 x L30 mm ceramic body
1200°C type



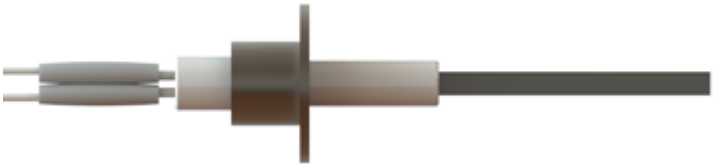
SNx-4

D19mm x L50mm ceramic body
1300°C type



SNx-5

HEX M16 threaded bushing
1300°C type



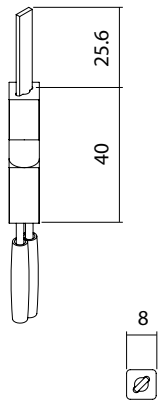
SNx-6

32mm round metal flange
1300°C type

Line up

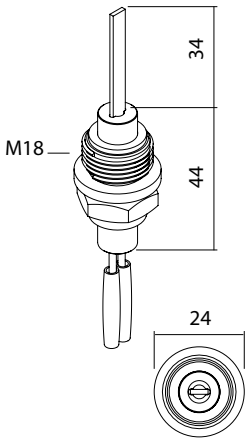
Unit (mm)

SNx-1



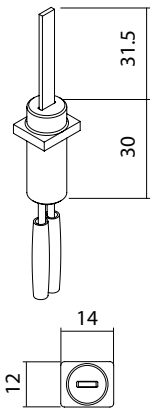
35~60W - 1200°C

SNx-2



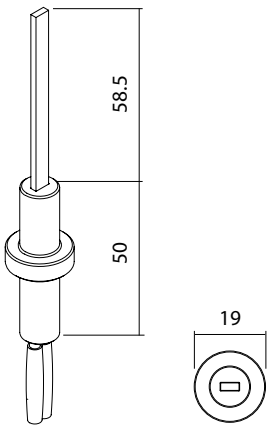
35~60W - 1200°C

SNx-3



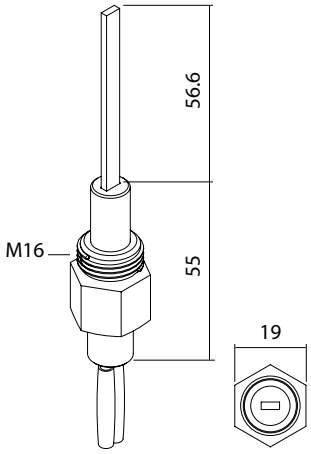
35~60W - 1200°C

SNx-4



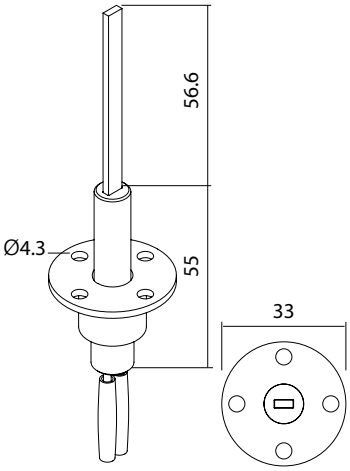
45~75W - 1300°C

SNx-5



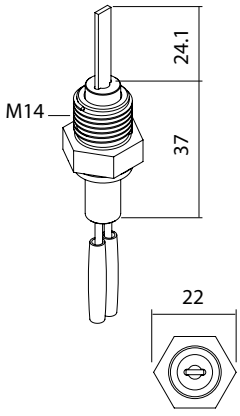
45~75W - 1300°C

SNx-6



45~75W - 1300°C

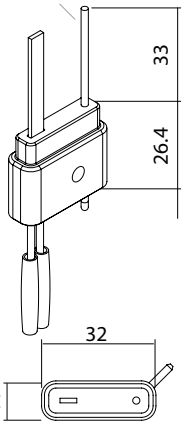
SNx-7



35~60W - 1200°C

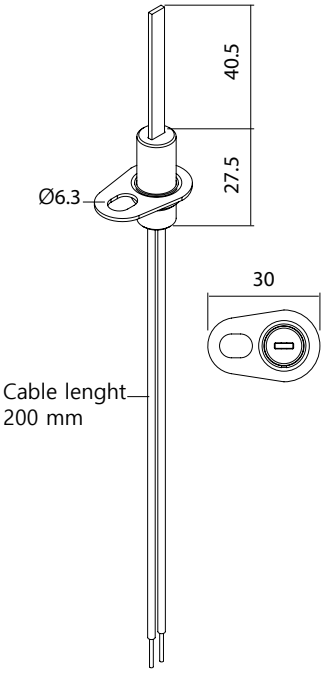
SNx-8

Built-in flame sensor rod



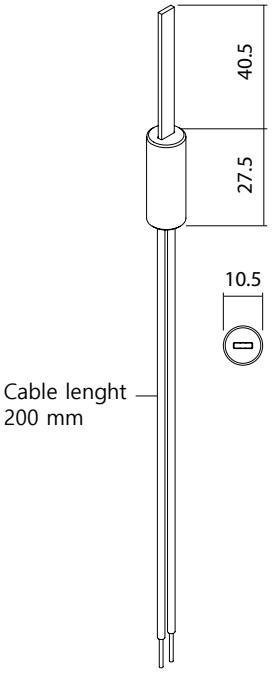
35~60W - 1200°C

SNx-10



35~60W - 1200°C

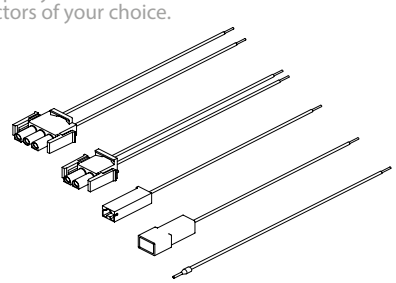
SNx-11



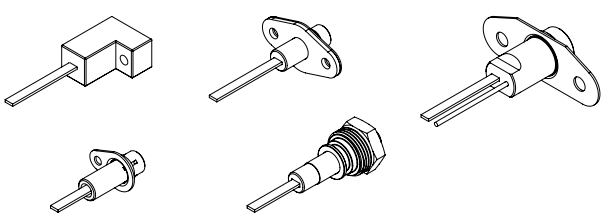
35~60W - 1200°C

Custom models

From 5000 pcs/year all models can be customized with the cables and connectors of your choice.



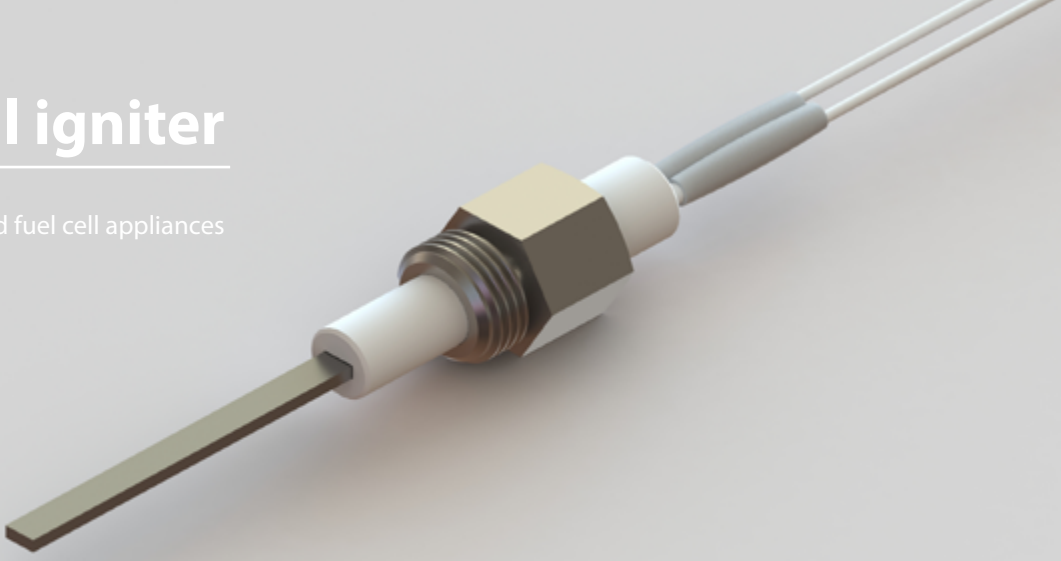
From 10000 pcs/year order made ceramic insulator body and metal bushing models are possible. A large variety of shapes can be produce upon request.



* Please note that ceramic heating elements are not customizable for projects with annual quantity below 150000 pcs.

H2 / Fuel cell igniter

Si3N4 igniter for H2 burner and fuel cell appliances

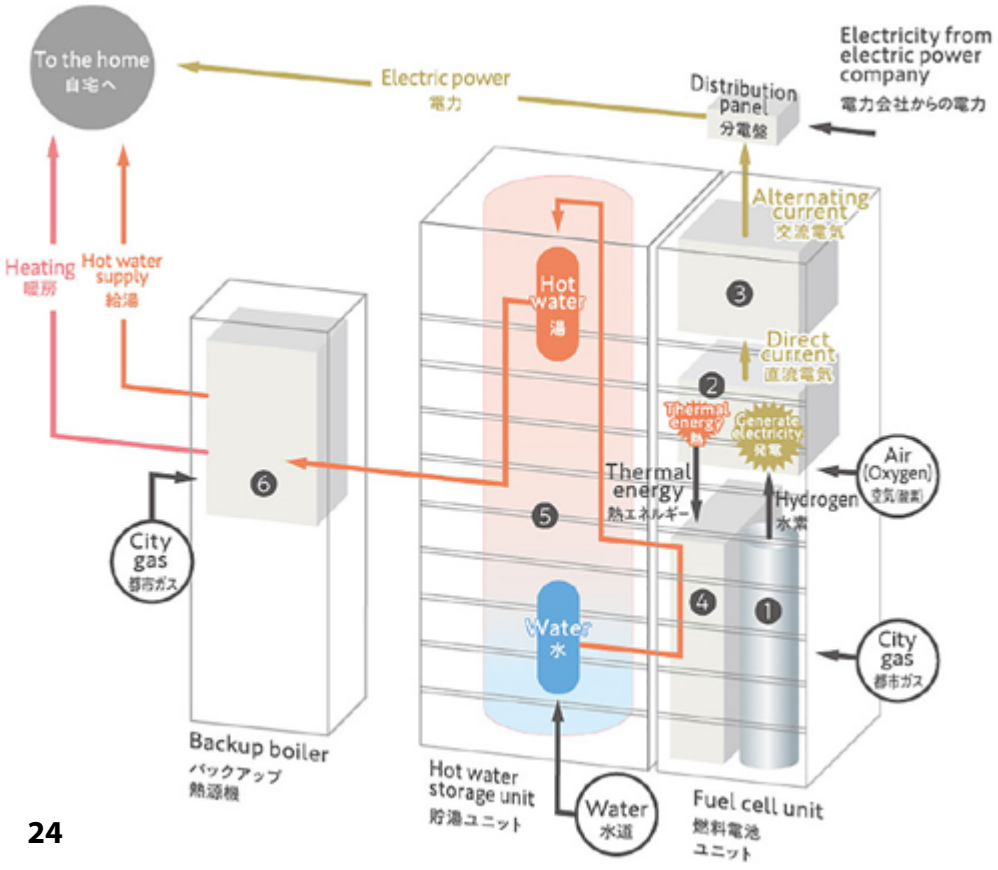


1. 30s to 1400°C
2. Long rating life

FKK provides all the major Japanese Fuel cell appliances and H2 combusstion burner manufacturers as well well as abroad H2 systems maker with advanced silicon nitride ceramic igniters allowing long rated life (up to 90000 hours), high reliability, high temperature (up to 1300°C) and good sealing properties. With high temperature performance, fuel cell system manufacturers save energy on reforming unit, start-up burner gas pre heating operation, off-gas burner exhaust gas combustion and allow more simple design. In addition these igniters are also able to monitor flame in H2 burner through PTC resistance signal.

Worldwide customers make the choice for these reasons

- High reliability and quality: over 90000 hours (nearly 10 years) of rated life, Japanese quality.
- Very high temperature: 1350°C, 1000°C in less than 6s.
- High pressure resistance and very low temperature at lead wire junction (below 100-200°C)
- Power rating: 45-75 Watt.
- Competitive cost: by providing major fuel cell makers, we achieved high cost/quality performance.
- Long experience in fuel cell industry (12 years of production).
- Can also be use as temperature sensor or flame sensor by using PTC property of the heating element.



Systems

- Micro CHP : SOFC / PEFC
- Fuel cell back-up power
- Hydrogen burner
- H2 reforming unit
- Hydrogen burner
- H2 ready gas furnace/boiler

Application

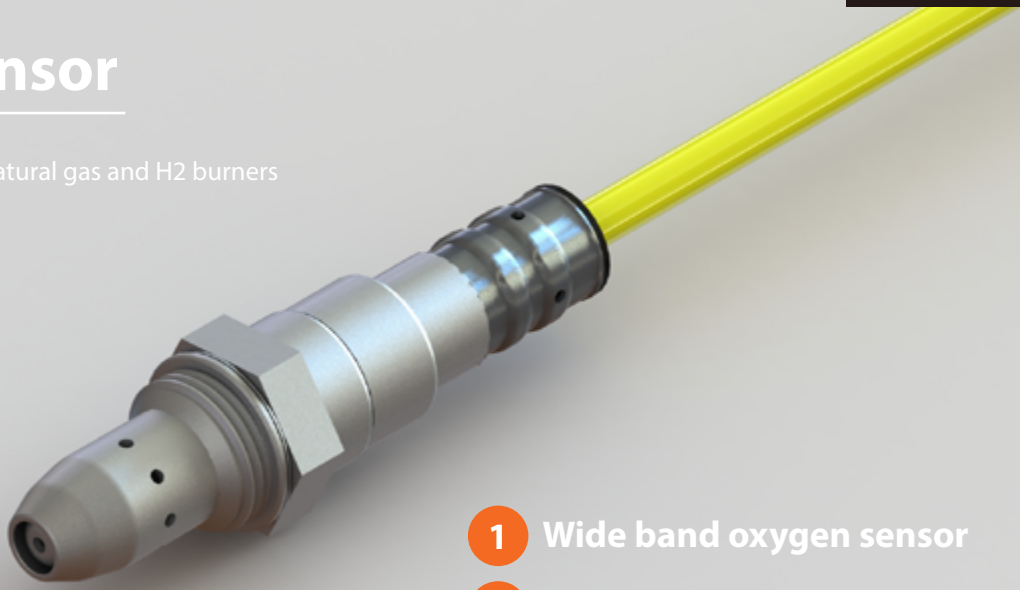
- Igniter for gas pre-heating
- Igniter for start-up burner
- Igniter for off-gas burner
- Igniter for cathode air preheater
- Igniter for SOFC/PEFC reformer high temperature burner
- Flame sensor in 0~100% H2 mix
- High temperature sensor

References

- Osaka gas Ene- Farm
- Panasonic Ene-Farm
- Toshiba Fuel cell
- Honda fuel cell

A/F oxygen sensor

Oxygen sensor for optimization of natural gas and H2 burners



1 Wide band oxygen sensor

2 All in one solution

Together with DENSO company, FKK bring an all in one solution of oxygen sensor to optimize the efficiency of natural gas or hydrogen combustion buners. This wide band signal lambda oxygen sensor come with a micro-controller specially developped by DENSO for the burner/heating market.

What is the role of A/F sensor?

A/F sensors is a devices for air-fuel ratio control in burner. It measures the concentration of oxygen contained in the exhaust gas from the burner and issues a signal to achieve the optimal combustion state. In order to detect the air-fuel ratio contained in the exhaust gas over the entire range, by applying a voltage to the sensor element, a current corresponding to the oxygen partial pressure and the unburned gas partial pressure can be obtained and thus the best air-fuel ratio (lambda) can be determined.

Wide band oxygen sensor technology benefits

- Detects a wide range of air-fuel ratios (up to 21% oxygen) in exhaust gas
- Long rating life
- Equipped with integrated heater to works at all exhaust gas temperatures
- Resistant to oxidation and corrosion
- Achieves high water resistance performance with element protection layer
- Compliant with RoHS and REACH standards

Application

- Small to large gas burners
- Small to large gas boilers
- industrial gas furnace/burner
- Other uses

All drawings and data-sheets are available for download at :
www.plug.fkk-corporation.com/en/download
Scan the QR code to go directly to the related page.

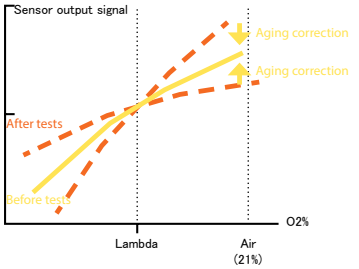
Particularity of DENSO sensor

DENSO's A/F sensor employs technology cultivated in automotive industry and provides customers with high accuracy and high reliability even in harsh environments such as high temperatures.

In order to use the A/F sensor, an IC chip called ASIC is required for the control part, so we provide a set of sensor + extension cable + control module in order to ease the development, calibration and usage.

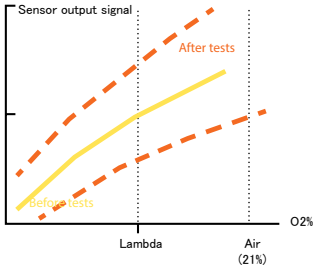
The unique sensor structure developed by DENSO achieves higher accuracy and reliability than other companies. High accuracy of stoichiometric output and original correction algorithm can reduce the influence of deterioration over time.

DENSO sensor



Thanks to the controller auto-calibration algorithm, the sensor accuracy remain the same all along the lifespan.

Other sensors



The stoichiometric point quickly deviate from initial value due to aging deterio-ration without correction.

FKK corporation

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