



# SureFire II™ Electrical High Tension Igniter type HTSS Instruction Manual



## 1. INTRODUCTION

This Instruction Manual contains a description of the type **HTSS** High Tension Spark and Sense Igniter construction, operation principle and the instructions for installation, start-up and service, including the industrial health & safety recommendations.

The type **HTSS** igniter is a reliable and effective source of ignition for natural and forced draught gas igniters and pilots as well as small capacity gas burners. It is designed to ignite a mixture of gaseous fuels with air.

Typical fuel gases for **HTSS** igniter are: Natural gas, Propane, LPG or refinery waste gases. In case of other gases, e.g.: high hydrogen content gas, low calorific value gas or wet and dirty gas consult Fireeye.

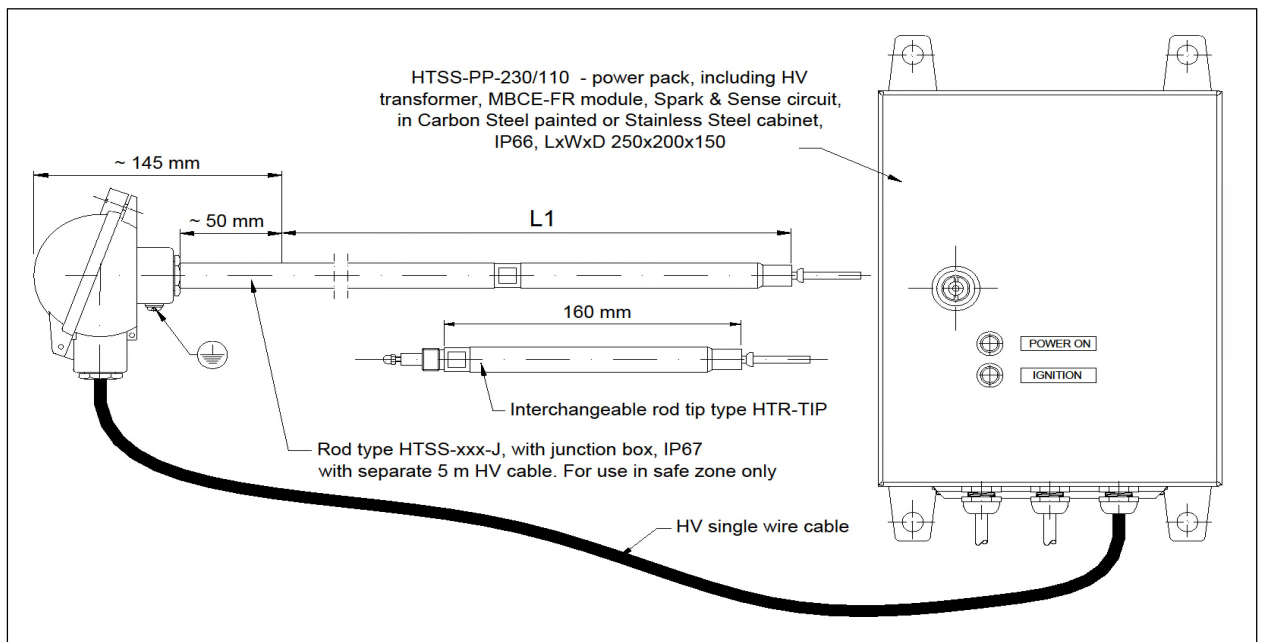
The igniter is made of high quality materials, and its components are rigorously checked and tested prior to dispatch.

Familiarization with the following instructions will reduce the possibility of equipment failure to a minimum and ensure safe operation.

## 2. OPERATION PRINCIPLE AND TECHNICAL SPECIFICATION

This HTI (High Tension Igniter) igniter is the ignition element of intermittent and continuous (pilot) operation gas igniters. Both safe and hazardous area Zone 1 HTI versions are available.

**FIGURE 1.** High Tension Igniter type HTSS.



The **HTSS** igniter can be used in gas pilots (igniters) which can accept a 16 mm diameter rod, with coaxial electrode arrangement e.g. with the **SP-32-NG/PG-FD** , **SP-32-NG/PG-ND** and **SP-48-NG/PG-ND** gas pilots offered by Fireye.

The igniter produces a continuous electric arc of energy allowing the ignition of air-gas mixture on gas pilots. It can be used as igniter only (power pack without **MBCE-110/230FR** module) or as a "Spark & Sense" igniter (with **MBCE-110/230FR** module plugged in the wiring base inside power pack).

The igniter function is activated with a 24 VDC triggering signal from the burner management system (terminals 3, 4 on Fig. 3 and 4). Once energized, the "Ignition" indication LED on the enclosure door will light. The 24VDC control signal from the Burner Management System operates an internal relay which powers the HV ignition transformer, which in turn creates an 8000 VAC spark at the igniter tip. After the trial for ignition, the control signal is switched off, the relay changes state to allow ionization detection to indicate presence of flame. In case another triggering voltage is needed e.g. 110 or 230VAC contact Fireye.

This signal from the ionization rod can be used directly by the burner management system, or optionally can be connected to an internal Fireye **MBCE-110/230FR** flame sensor module in HTSS power pack, which will provide an isolated Flame Relay signal. In both operation modes the **HTSS** control box must be permanently powered with 110/230VAC which is confirmed by "Supply ON" indication LED.

The **MBCE-110/230FR**, also provides a 4-20 mA signal to display flame intensity (see the Fireye Bulletin No MBCE-1001). Be aware that for proper ionization measurement a pilot body should be properly connected (grounded) to the ionization circuit terminals in power pack (see Fig. 3 or 4).

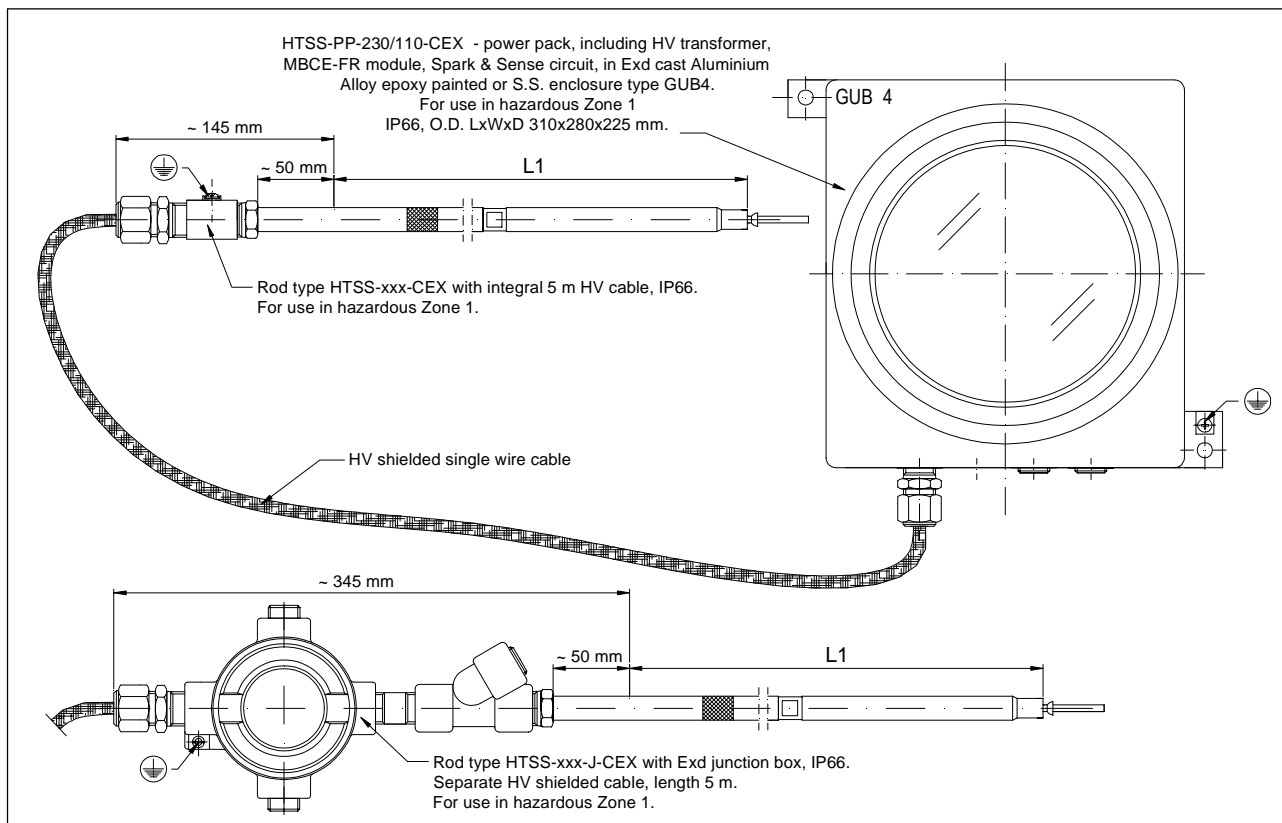
The igniter consists of an igniter rod to be inserted in the gas igniter, a 5 metre HV cable and a power pack box containing high-voltage ignition transformer and the burner controller module, as described above.

### Power Packs

The igniter rod is powered by an HV transformer (output 8 000 VAC at 15 mA) which is built into the power pack. The transformer is powered from a 110 or 230 VAC source at 50/60Hz.

Power pack for use in safe area has Part No **HTSS-PP-xxx** (xxx = 110 or 230 VAC). It is mounted in IP66, lockable cabinet (CS powder coated or as an option SS). The cabinet has 2 door mounted LED's showing: "Supply ON" and "Ignition". P/N includes: the door key, 4 pcs. of mounting lugs and a gland for HV cable.

**FIGURE 2. High Tension Igniter type HTSS for hazardous Zone 1**



Power pack for use in Zone 1 hazardous area applications has Part No **HTSS-PP-xxx-CEX** (xxx = as above). It is enclosed in the ATEX Exd (detailed marking in p. 4) cast aluminum or as an option stainless steel enclosure type GUB4, which houses the power pack components (see Figure 2) with 4 - 6 cable entry holes ½" NPT. The status diodes "SYSTEM" and "FLAME" on **MBCE** module are visible through the cover enclosure window. The GUB4 enclosure has threaded holes to fit correct Ex glands for the power and control cables. P/N includes one Exd gland for HV cable and 4 pcs Exd stop plugs, other glands are not in the scope of delivery.

### Rods

The rod of the **HTSS-type** ignition device has a insertion length "L1" in range of 0.65 to 3.15 metres. This means that the rod can be inserted into the gas igniter not more than L1.

This length corresponds with **SP-32-NG/PG-FD-xxx**, **SP-32-NG/PG-ND-xxx** and **SP-48-NG/PG-ND-xxx** gas pilot reference insertion length "L" indicated in P/N as "-xxx" in metres. L range is 0.5 to 3.0 m and length  $L1 = L + 0.15$  m.

The **HTSS** rod comprises 2 parts:

- the basic part of rod of the required length is constructed of stainless steel outer tube (16 mm OD) with centrally positioned electrode ended with an internal spring loaded connector, designed to receive the replaceable tip,
- the replaceable **HTSS** tip is 160 mm long with a further 40mm electrode tip, used for "sensing" the flame. On tip's central electrode there is a special spherically shaped plate which ensures correct position of the electrical arc in the air-gas mixture flow, between electrode and the outer tube edge and thereby provides effective ignition.

When the voltage from the transformer is applied to the **HTSS** rod the electric arc is generated on the tip and the gas-air mixture on gas igniter/pilot nozzle should be ignited.

3 versions of the ignition rod are available:

- Part No **HTSS-xxx-J** ( xxx = length in metres - see p. 12 ORDERING INFORMATION) - with junction box IP67, replaceable tip, for use in safe area only, separate 5 m HV cable included
- Part No **HTSS-xxx-CEX** (xxx = as above) - with an integral 5 m - long shielded HV cable (no j. box) connected with the rod via IP66 gland, replaceable tip, ATEX certificate for use in hazardous Zone 1,
- Part No **HTSS-xxx-J-CEX** (xxx = as above) - with Exd junction box, IP66, replaceable tip, ATEX certificate for use in hazardous Zone 1, separate 5 m shielded HV cable included.

The basic part of explosion-proof rod **HTSS-xxx-CEX** and **-J-CEX** is constructed such that the rear section of the outer tube is potential-free, thus ensuring that there is no potential source of ignition in an explosive atmosphere during normal igniter operation. There is also a grounding screw on the end of the rod or junction box which must be connected to the protective grounding system of the installation (see Fig. 3).

The **HTSS-xxx-J** rod outer tube is not potential free so it must be grounded via grounding screw to the burner control ionization circuit grounding point (terminal 11 on Fig. 3 and 4). This rod is for use in safe area only.

### Cables

The cable used in the safe zone is single wire conductor. It is connected to the phase output of the transformer's secondary circuit (see Fig. 3)

Ignition cable for use in hazardous areas is of the shielded single-wire type. The shield is connected to the outer part of the igniter rod tube (zero) and the central wire to the ignition electrode. Inside the power pack enclosure the shield is connected to the grounding terminal and the central conductor to the phase output of the transformer's secondary circuit (see Fig. 4).

**Note: The maximum length of the ignition cable should not exceed 5 m, due to a significant decrease in the energy of the electric arc.**

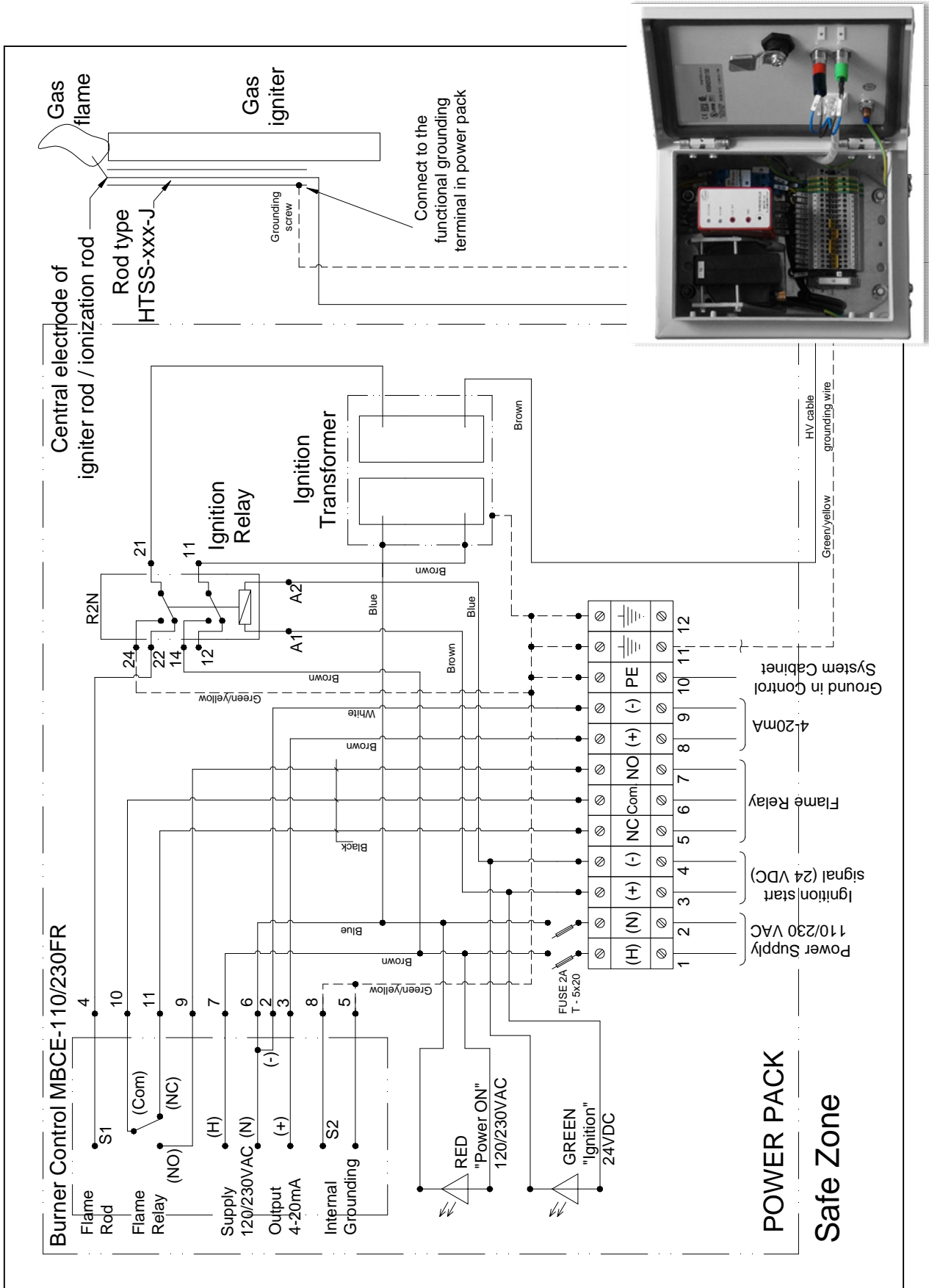
### Application features

The design of the unit provides a very stable electric arc and repeatable ignition.

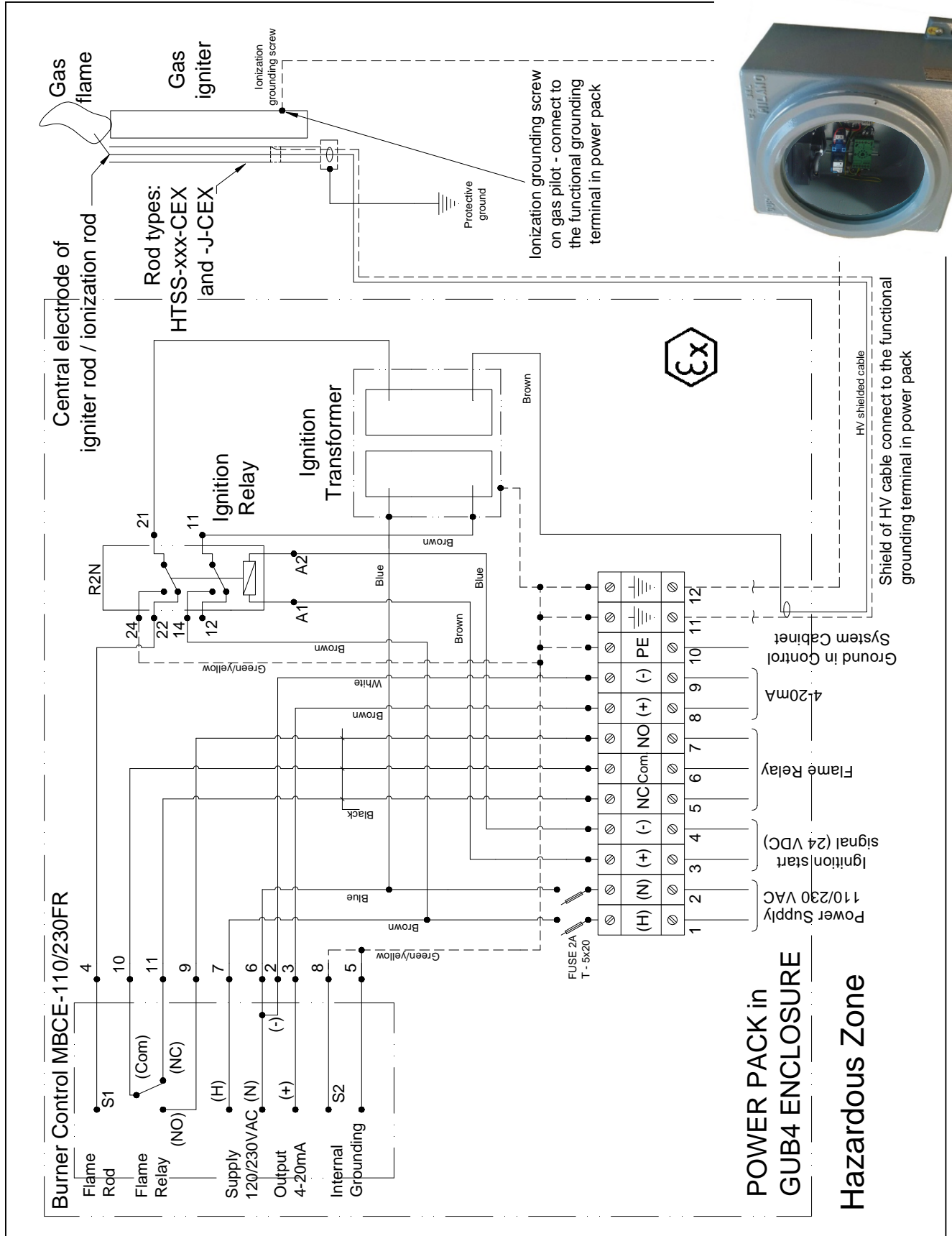
The use of interchangeable tip and no adjustable parts ensures long operation with low maintenance costs.

This type of igniter rod design provides trouble-free reliable performance in gas applications, which are relatively clean. Heavy dust, humidity, oil and dirt caused by combustion products in the combustion chamber may cause problems with HT igniters. Fireye recommends High Energy for these applications.

FIGURE 3. Electric wiring diagram of High Tension Igniter type HTSS for use in Safe Zone



**FIGURE 4.** Electric wiring diagram of High Tension Igniter type HTSS for use in Hazardous Zone





### Basic principles on the HTSS igniter use

Igniter tip location should be in the area of the air-gas mixture, as close as possible to the nozzle of the gas burner. Rod tip position adjustment in each type of gas pilot (igniter) is described in the gas pilot Instruction Manuals.

After ignition of a gas pilot **SP-32-NG/PG-FD**, **SP-32-NG/PG-ND** or **SP-48-NG/PG-ND** types offered by Fireye, the **HTSS** rod does not require retraction due to the fact that its tip is located in a low energy primary pilot flame zone. Consequently, it does not overheat, as it is partially protected from the more aggressive influence of the combustion chamber environment.

In other applications, consult Fireye and be aware of the possible need to retract the igniter rod once the main flame is established, to prevent overheating.

Fireye offers coaxial retraction systems, refer to SF-2001 High Energy Igniter tech bulletin, which also shows the retractor options.

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### 3. TECHNICAL DATA

|   |   |
|---|---|
| Power supply voltage; current   | 230/110 VAC (50/60 Hz); 0,5/1,0 A (230/110 VAC)               |
| Transformer output voltage, current   | 8000 VAC, 15 mA   |
| Ignition control signal   | 24 VDC  |
| Method of operation   | electrical arc  |
| Operation rating  | 100%  |
| Operating temperature, Ingress Protection rating:   |   |
| – power pack P/N <b>HTSS-PP-xxx</b> and <b>-CEX</b>   | -40°C ÷ +65°C, IP66   |
| – rod P/N <b>HTSS-xxx-J</b>   | -40°C ÷ +100°C, IP67 (junction box)                           |
| – rod P/N <b>HTSS-xxx-CEX</b> and <b>-J-CEX</b>   | -40°C ÷ +80°C, IP66 (cable entry or junction box)             |
| Available rod insertion length L1   | 0.65 ÷ 3.15 m   |
| Tip working length  | 160 mm  |
| Rod and tip outer diameter, outer tube material   | 16 mm, 316 SS   |
| Length of HV cable  | 5 m   |
| Flame monitoring (optional): <b>MBCE-110/230FR</b> flame rod module (see Bulletin No MBCE-1001) |   |
| – operation mode: continuous  |   |
| – functional safety: suitable for installations up to and including SIL2 (Exida's FMEDA report) |   |
| Weight of power pack, material:   |   |
| – P/N <b>HTSS-PP-xxx</b>  | 6 kg, Carbon Steel powder-coated or option Stainless Steel    |
| – P/N <b>HTSS-PP-xxx-CEX</b>  | 20 kg, Cast Aluminium powder-coated or option Stainless Steel |

- Notes:**
- 1. If the above parameters are different than those required please contact Fireye**
  - 2. For Imperial Units please refer to the Appendix 2 Unit Conversion Table**
  - 3. Device comply with the requirements of the European Directive 2011/65/EU (RoHS 2)**

**MARKING:** The **HTSS** igniter was independently tested and evaluated by the EMC Accredited Laboratory. Assessment of compliance of the device with the essential requirements of the European directive no. 2014/30/EU was carried out. Declaration of Conformity was issued and igniter was CE marked accordingly.

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### 4. HAZARDOUS ZONE ATEX CERTIFIED SUBASSEMBLIES:

- 4.1 Igniter rods type **HTSS-xxx-CEX** and **HTSS-xxx-J-CEX**:  
ATEX Certificate, marking: II-/2G Ex d IIC T4 Gb, II -/2D Ex t IIIC 135°C Db
- 4.2 Power pack P/N **HTSS-PP-xxx-CEX** enclosure type GUB4, IP66:
  - a) ATEX Certificate, marking: Ex II 2G Exdb IIC T4-T6; Ex II 2D Ex tb IIIC T85°C, T100°C, T135°C
  - b) IECEx Certificate, marking: Ex db IIC T6, T5, T4; Ex tb IIIC T85°C, T100°C, T135°C

## 5. MOUNTING OF THE IGNITION DEVICE

- 5.1 The power supply should be connected in accordance with the igniter's schematic diagram of the power pack board and igniter wiring diagram separate for standard power pack and rod for use in safe zone (see Fig. 3) and separate for explosion proof versions of power pack and rod application in safe zone (see Fig. 4), with particular attention to the correct grounding to the plant grounding system which is different for each zone and following the local codes.
- 5.2 During the rod mounting and aiming the conditions and recommendations mentioned in p. 2 should be observed.
- 5.3 For general use (other than in **SP-32-NG/PG-FD**, **SP-32-NG/PG-ND** or **SP-48-NG/PG-ND** gas pilot types offered by Fireeye), the use of a guide tube with a diameter of 1" and utilization of a retractor for the **HTSS** rod should be considered. The tube must allow the rod tip to reach the correct position in primary combustion zone to ignite the fuel-air mixture and ensure correct operating temperature and tip protection. For long **HTSS** rods, a guide tube should ensure that there is no more than 700 mm of unsupported rod in the combustion chamber.

When **HTSS** ignition rod is being used in high temperature applications:

- always use retractor with min. stroke 300 mm to pull the tip back inside the guide tube,
  - increase the guide tube length the way that rod tip hides completely in guide tube when retracted,
  - use purging of the tube to cool the rod.
- 5.4 Mounting of the igniter in a retractor: the igniter's rod should be placed inside the guide pipe and fixed in the retractor clamps. Mounting of the igniter in a retractor must be done so as to enable adjustment of the rod tip position relative to the burner's nozzle. See retractor Instruction Manual and burner manufacturer recommendations.
  - 5.5 The guide tube should not be placed in the flame.
  - 5.6 The power pack enclosure should be positioned as close to the burner as possible to reduce cable lengths, as energy is lost with increasing cable length. The control box must be in a location where the temperature does not exceed its max. operating temperature. The box should be mounted with cable glands at the bottom, to reduce moisture as well as dust and dirt ingress.
  - 5.7 ATEX Certificate condition of safe use of igniter rods types **HTSS-xxx-CEX** and **-J-CEX**: The length of the rod and the manner of its installation should ensure that the temperature of the outer surface of the rod located in the hazardous area does not exceed 120°C.
  - 5.8 Choose the correct glands depending on the hazardous zone rating. Mounting of ATEX glands should be carried out in accordance with their mounting instructions. After installation, check if the gland is correctly tightened.
  - 5.9 The cable should be placed away from any hot elements to minimize the possibility of damage.
  - 5.10 When installing in a hazardous area it is absolutely necessary to observe all ATEX regulations and recommendations.

**NOTICE: MAKE SURE TO CONSULT THE MANNER OF MOUNTING THE IGNITER WITH THE PRODUCT MANUFACTURER/DISTRIBUTOR.**

## 6. OPERATING INSTRUCTIONS

### **INDUSTRIAL HEALTH AND SAFETY ISSUES. STORAGE, HANDLING, TESTING:**

- 6.1 The igniter, unless mounted on the burner, should be stored in a dry place, protected against mechanical damage.
- 6.2 The rod should be transported with care, avoiding impact against other objects or bending. The rod should not be lifted by its ends to ensure no damage to rod, tip and connections.

- 6.3 Prior to starting the igniter it is necessary to check the condition of the cable and glands for mechanical damage and make sure that the boxes (enclosures) are properly closed and glands are tightly fixed.
- 6.4 Powering the igniter's circuit should only be done after complete assembly of the rod, tip and only when fitted in its operation-ready position at the burner. Check the proper insertion length L1 inside the gas igniter as well as the position of igniter rod tip against the gas nozzle - follow the gas pilot Manual.
- 6.5 Check the correct grounding of the igniter housings and circuit. Powering the rod outside a burner should only be done to test its operation.
- 6.6 The igniter supply should have effective grounding. Correct connection of the grounding of the igniter should be checked first, then the line can be connected.
- 6.7 Do not open the ATEX Exd enclosures in a hazardous area without a permit for Zone de-classification.
- 6.8 Do not touch, lift, carry the igniter rod or power pack when the igniter is energized or is not disconnected from a potential source of electrical power.
- 6.9 Once assembled, the igniter can undergo the functional test. The rod should be positioned clear of equipment, flammable materials and personnel. If these conditions are met, power can be applied.
- 6.10 Do not disconnect rod tip, HV cable and grounding cables when the equipment is energized or is not disconnected from potential source of electrical power supply.
- 6.11 Never use water to wash igniter components when it is connected to source of electrical power.

#### **IGNITER OPERATION:**

- 6.12 During the burner start-up the main voltage 110/230VAC can be applied to the power pack, provided that correct igniter installation has been executed, the wiring and correct grounding have been verified, as well as the correct assembly of the igniter has been inspected (according the burner documentation). When main voltage is applied the "Supply ON" LED should light on power pack doors. In GUB4 enclosure, on MBCE module the "SYSTEM" diode is visible through the cover window. If not, please refer to p. 8 TROUBLESHOOTING.
- 6.13 After applying the 24VDC control voltage to the power pack, for ignition triggering, the electric arc should be visible on the rod tip and the "Ignition" LED should light up (on safe area power pack doors). Check the presence and repeatability of electrical arc on the rod tip.
- 6.14 No other sparking should be visible on rod connections, grounding points and cable glands. Should that be the case, de-energize igniter immediately and follow the p. 8 instructions.
- 6.15 In the case of no arc present during energizing please refer to p. 8.
- 6.16 If, after correct assembly, arc is strong and stable but the igniter does not light the fuel, check gas settings and the presence of gas at the nozzle. If the fuel settings are within the recommended range and during the Trial for Ignition the fuel is present at the nozzle the rod position should be adjusted to ensure that the electric arc is in the correct location. After moving the rod in new position the test of ignition should be repeated.
- 6.17 If the flame is present, rod tip is in proper position, but there is no flame confirmation at MBCE module refer to p. 8.
- 6.18 It is recommended to ignite the burner at a low gas flow and with a limited quantity of combustion air. It is further recommended to use shut-off valves with a slow opening and fast closing capability.
- 6.19 In the case of use on gas pilot, without protected pilot primary combustion zone, a retractor is required to pull the igniter back from the flame zone and its tip is completely hidden into the guide pipe (stroke min. 300 mm).
- 6.20 Handling of the igniter rod during the burner operation may only be done wearing protective gloves - see below.





**NOTICE:** DO NOT PERFORM ANY MODIFICATIONS TO THIS EQUIPMENT AND NEVER USE UNAUTHORIZED SPARE PARTS AS THIS WOULD RESULT IN A BREACH OF THE ATEX CERTIFICATES CONDITIONS AND COULD PROVE HAZARDOUS TO YOUR HEALTH AND LIFE !

## 7. PERIODICAL MAINTENANCE AND REPAIRS

The equipment manufacturer recommends a thorough inspection of the igniter every six months if possible to ensure long life and reliability.

**CAUTION, DANGER HIGH VOLTAGE !**  
CUT OFF THE CONTROL BOX POWER SUPPLY, THEN DISCONNECT THE IGNITER'S HV CONNECTION CABLE. STRICTLY FOLLOW THE RULES OF ELECTRICAL EQUIPMENT MAINTENANCE IN SAFE AND HAZARDOUS AREAS!

### INSPECTION OF THE IGNITER'S ROD:

- 7.1 Disconnect the power source and then disconnect the HV cable and disassemble the igniter's rod from the igniter/burner following the above safety rules. Unscrew the rod's tip.
- 7.2 Check the condition of the rod tip, central electrode, the ceramic insulator and tip thread joint. The parts must be clean, not burnt, ceramic not broken and should not bear any traces of high temperature influence, erosion or mechanical damage. If the rod's tip is damaged, it must be replaced. Clean the tip and remove all traces of erosion and overheating.
- 7.3 In case of rod type **HTSS-xxx-J** and type **HTSS-xxx-J-CEX** – open the junction box cover and check the condition of the cables and terminals. The inside of box and cables must be clean and should not bear any traces of mechanical or thermal damages. In case of water ingress traces check the condition of box gasket and tightness of glands. Clean if necessary. Check the rod surface for mechanical damages or bending. In case of considerable damages, it must be replaced.
- 7.4 In the case of the rod type **HTSS-xxx-CEX** - unscrew the gland on the end of the rod and check the condition of the gland, cable and sealant inside only in case if there is evidence of possible damage, overheating, short circuit inside. The parts must be clean, not cracked and should not bear any traces of mechanical or thermal damages. Check the rod surface for mechanical damages or bending. In case of considerable damages, it must be replaced. Clean if necessary.
- 7.5 In the event of any damage that may affect the safety and the rod performance - replace or return the part to the manufacturer for repair.
- 7.6 Removal of the igniter rod and disconnection of the tip may only be done wearing protective gloves due to the presence of hot surfaces.

**NOTICE:** DURING THE DEVICE OPERATION AND INSPECTION THE ROD TIP SHOULD BE HANDLED WITH CARE; DO NOT THROW OR BEND THE ROD, AVOID HITTING AGAINST OTHER OBJECTS.

### INSPECTION OF THE POWER PACK:

- 7.7 Disconnect the power source and disconnect the HV cable.
- 7.8 Open the door of the power pack box or unscrew the Exd power pack enclosure cover and check the condition of connections on the power pack board terminals as well as the condition of glands. Check electrical components on the board - HV transformer, MBCE module, flame relay and other components for excessive wear and burn marks.

### INSPECTION OF THE HV CABLE:

- 7.9 Check for nicks or kinks. Make sure the cable entry glands are not loose.



**NOTICE:** DURING THE INSPECTION HANDLE THE CABLE GLANDS WITH CARE. PROTECT FROM HITS AND DIRT.

**NOTICE:** BEFORE THE GUARANTEE PERIOD EXPIRATION ANY REPAIRS OR PART REPLACEMENT MAY ONLY BE CARRIED OUT BY AN AUTHORIZED SERVICE OR UNDER ITS CONSENT.

## 8. TROUBLESHOOTING. ELIMINATION OF DEFECTS.

- 8.1 If the main voltage is present and when control voltage 24VDC is applied: no electrical arc is generated at the rod's tip when there is correct voltage at the HV ignition transformer input and output terminals (if it can be measured), perform the following:
- Disconnect the power source.
  - Check the condition of the cable and electric connections for possible mechanical damage.
  - Check the condition of the tip and it's screw joint for possible mechanical damage that could cause internal electrical breakdown as in p. 7.2.
  - Follow the guidelines in points 7.3, 7.4 respectively.
  - After opening the door of the power pack box or unscrewing the Exd power pack enclosure cover, check visually electrical connections on the board, check HV transformer and other components for burn marks. In the case of excessive wear or burn marks replace the component.
  - Assemble the igniter, connect the power supply and grounding, make the functional test.
  - If no arc is generated after the above measures have been taken, replace the original rod tip, reconnect the power source and make the functional test again, following the rules in this manual.
  - If again no arc is generated, replace the complete rod, and further the cable (if separate) and repeat the functional test each time.
  - If still no arc is generated, replace the HV transformer and further complete power pack and repeat the functional test each time.
  - After every step assembly the igniter, reconnect the power supply/grounding and make the functional test again.
- 8.2 If the main voltage is present and when control voltage 24VDC is applied: the sparking is visible in other places: on rod connections, grounding points and cable glands, perform the steps as above especially looking for bad connections, cracked cables, rods, bad grounding connections. Try to identify and correct/replace faulty part. Repeat functional test after every component replacement following the rules in this manual.
- 8.3 If the main voltage is present and when control voltage 24VDC is applied: no electrical arc is generated at the rod's tip and there is no voltage at the HV ignition transformer input, perform the following:
- After opening the power pack box, check the presence of main supply and control voltage on the ignition relay terminals, check the parameters at different points of the circuit. Replace any failed component.
  - Check visually electrical connections on power pack board, terminals and condition of components. In the case of excessive wear or burn marks replace the component.
  - Assemble the igniter, connect the power supply and carry out the functional test following the rules in this manual, repeat functional test after every component replacement.
- 8.4 If the main voltage is applied and there is no supply on **MBCE** module, follow the steps:
- After opening the power pack box, check the presence of power supply on the power pack terminals.
  - Check the 2 A fuse and, if necessary replace it.

- c) Check visually electrical connections on power pack board, terminals, especially the wiring of the **MBCE** module, ignition relay. Check condition of components. In the case of excessive wear or burn marks replace the component.
  - d) Measure the input parameters on the module base terminals and at different points of the circuit, also on ignition relay. In case of correct voltage present on wiring base, replace the complete module, replace also any other failed component.
  - e) Assemble the igniter, connect the power supply and carry out the functional test following the rules in this manual, repeat functional test after every component replacement.
- 8.5 If there is no flame confirmation on flame safeguard module and the rod is in correct position in gas igniter and also flame is present there, perform the steps as in p. 8.1 a) to e), in particular perform measurements and check connections of a pilot body to the ionization circuit (see Fig 3 or 4). Try to identify and replace faulty part by performing the steps as above. If still there is no flame confirmation replace the **MBCE** module.
- 8.6 For any services and troubleshooting of **MBCE-FR** module refer to Fireye Bulletin No MBCE-1001.
- 8.7 For any services and troubleshooting of **SP-32-NG/PG-FD**, **SP-32-NG/PG-ND** or **SP-48-NG/PG-ND** gas pilot refer to Fireye Bulletins No SF-200, SF-300 or SF-500.
- 8.8 If, after all above measures have been taken, the **HTSS** igniter does not work properly, contact the manufacturer's service department.
- 8.9 Before any changes in igniter circuit, replacing components always disconnect the supply.
- 8.10 Before performing any functional tests connect the grounding and only then connect supply.
- 8.11 Each time before installation check the connection cable for mechanical damages.
- 8.12 Igniter operation-consumable parts and suggested spare parts quantity:
- rod tip - one for 4 igniters,
  - HV transformer 230VAC/8000VAC or 110VAC/8000VAC - one for 8 igniters,
  - HV cable for safe or hazardous area, 5 m long - one for 8 igniters
- Complete list of igniter spare parts Part Numbers is in Table 5.
- 8.13 During the guarantee period any repairs must be carried out by the manufacturer service department, or the user, upon the service's notification and consent.
- 8.14 Replacement of the consumables can be user-performed only after expiration of the guarantee.

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## 9. STORAGE

**HTSS** electrical high tension igniter should be stored in a clean, dry place and in its original packaging if possible.

In the case of long length rods always keep them in a horizontal position by supporting both ends and in the middle. The igniter should also be protected from contamination using the original packaging or wrapping it with foil.

Storage over 30 days: relative humidity of no more than 85%, temperature below 50°C.

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## 10. ORDERING INFORMATION

Before ordering, please provide the data as in Appendix 1.

The Tables below show examples of the Part Numbers every 0.5 metre, power packs and spare parts for HTI igniter type **HTSS**.

### Part Number coding sample:

**HTSS-0.5-J** - means **HTSS** rod for the **SP-32-NG/PG-FD-0.5**, **SP-32-NG/PG-ND-0.5** or **SP-48-NG/PG-ND-0.5** gas pilot of insertion length 0.5 metre. This HTI rod has real insertion length of 0.65 m to the ignition point (see p. 2). The additional length of 150 mm allows the igniter to pass through the active end of Fireye gas igniters (pilots).



If the igniter is to be used for general use (not in **SP-32-NG/PG-FD**, **SP-32-NG/PG-ND** or **SP-48-NG/PG-ND** Fireeye gas pilots), please take into account the real insertion length of rod to the spark point, in any calculation.

**HTSS** igniters can be ordered in size increments of 0.1 metre lengths, from 0.5 to 3.0 metres.

**Table 1: High Tension Rod, Spark & Sense, for safe area with junction box, replaceable tip and separate 5 m HV cable**

| Part No    | Description  |
|------------|--|
| HTSS-0.5-J | HT Rod, S&S, for SP-32, SP-48 gas pilots of 0.5 m insertion length (0.65 mtr insertion to spark point) |
| HTSS-1.0-J | HT Rod, S&S, for SP-32, SP-48 gas pilots of 1.0 m insertion length (1.15 mtr insertion to spark point) |
| HTSS-1.5-J | HT Rod, S&S, for SP-32, SP-48 gas pilots of 1.5 m insertion length (1.65 mtr insertion to spark point) |
| HTSS-2.0-J | HT Rod, S&S, for SP-32, SP-48 gas pilots of 2.0 m insertion length (2.15 mtr insertion to spark point) |
| HTSS-2.5-J | HT Rod, S&S, for SP-32, SP-48 gas pilots of 2.5 m insertion length (2.65 mtr insertion to spark point) |
| HTSS-3.0-J | HT Rod, S&S, for SP-32, SP-48 gas pilots of 3.0 m insertion length (3.15 mtr insertion to spark point) |

**Table 2: High Tension Rod, Spark & Sense, for hazardous Zone 1 with replaceable tip and integrated 5 m HV cable**

| Part No      | Description  |
|--------------|--|
| HTSS-0.5-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 0.5 m insertion length (0.65 mtr insertion to spark point) |
| HTSS-1.0-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 1.0 m insertion length (1.15 mtr insertion to spark point) |
| HTSS-1.5-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 1.5 m insertion length (1.65 mtr insertion to spark point) |
| HTSS-2.0-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 2.0 m insertion length (2.15 mtr insertion to spark point) |
| HTSS-2.5-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 2.5 m insertion length (2.65 mtr insertion to spark point) |
| HTSS-3.0-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 3.0 m insertion length (3.15 mtr insertion to spark point) |

**Table 3: High Tension Rod, Spark & Sense, for hazardous Zone 1 with junction box, replaceable tip and separate 5 m HV cable**

| Part No        | Description  |
|----------------|--|
| HTSS-0.5-J-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 0.5 m insertion length (0.65 mtr insertion to spark point) |
| HTSS-1.0-J-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 1.0 m insertion length (1.15 mtr insertion to spark point) |
| HTSS-1.5-J-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 1.5 m insertion length (1.65 mtr insertion to spark point) |
| HTSS-2.0-J-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 2.0 m insertion length (2.15 mtr insertion to spark point) |
| HTSS-2.5-J-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 2.5 m insertion length (2.65 mtr insertion to spark point) |
| HTSS-3.0-J-CEX | HT Rod, S&S, for SP-32, SP-48 gas pilots of 3.0 m insertion length (3.15 mtr insertion to spark point) |

**Table 4: High Tension Igniter: Power Packs, Flame Sensor Modules**

| Part No         | Description  |
|-----------------|--|
| HTSS-PP-230     | HTI Power Pack, S&S, 230VAC, IP66, for safe area, EXCLUDING MBCE-FR                      |
| HTSS-PP-110     | HTI Power Pack, S&S, 110VAC, IP66, for safe area, EXCLUDING MBCE-FR                      |
| HTSS-PP-230-CEX | HTI Power Pack, S&S, 230VAC, IP66, for hazard. area, in Exd enclosure, EXCLUDING MBCE-FR |
| HTSS-PP-110-CEX | HTI Power Pack, S&S, 110VAC, IP66, for hazard. area, in Exd enclosure, EXCLUDING MBCE-FR |
| MBCE-230FR-1    | Flame Sensor Module, Flame Rod, 230VAC   |
| MBCE-110FR-1    | Flame Sensor Module, Flame Rod, 110VAC   |

**Table 5: High Tension Igniter: Spare Parts**

| Part No       | Description  |
|---------------|--|
| HTR-TIP       | HTSS rod interchangeable tip, 160mm long                     |
| TX-230-8000   | HV transformer 230VAC/8000VAC                                |
| TX-110-8000   | HV transformer 110VAC/8000VAC                                |
| HT-REL-24     | HV ignition relay 12A for 24VDC                              |
| HT-CAB-5      | 5 metres standard HT cable, for use with HTSS-xxx-J rod      |
| HT-CAB-10     | 10 metres HT cable, for use with HTSS-xxx-J rod              |
| HT-CAB-5-CEX  | 5 metres shielded HT cable, for use with HTSS-xxx-J-CEX rod  |
| HT-CAB-10-CEX | 10 metres shielded HT cable, for use with HTSS-xxx-J-CEX rod |



**APPENDIX No 1**

**Proposal Data Sheet**

SureFire II™ HTI - Electrical High Tension Igniter  
 types: HTSS-xxx-J, HTSS-xxx-CEX and HTSS-xxx-J-CEX

Please provide the following data before placing the Order for HTSS igniter:

|    |   |                                     |      |
|----|---|-------------------------------------|------|
| 1. | <b>Information about End User</b>   |                                     |      |
|    | – Plant Name:   | .....                               |      |
|    | – Owner:  | .....                               |      |
|    | – Country:  | .....                               |      |
|    | – Localization (address):   | .....                               |      |
| 2. | <b>Insertion length:</b>  |                                     |      |
|    | – Insertion length “L” of gas pilot:<br><i>rod for SP-32, SP-48 Fireye gas pilots<br/>(see Instruction Manuals)</i>     | <b>L=</b> .....                     | [m]  |
|    | – Insertion length “L1” of igniter rod:<br><i>rod for general use (other than SP-32, SP-48<br/>pilots) (see Fig. 1)</i> | <b>L1=</b> .....                    | [m]  |
| 3. | <b>The hazardous zone application:</b><br><i>enclose detailed zone classification</i>                                   | <b>YES</b> <input type="checkbox"/> |      |
| 4. | <b>Required Ingress Protection Level:</b>   | <b>IP</b> .....                     |      |
| 5. | <b>The operating temperature range:</b>   | ..... ÷ .....                       | [°C] |
| 6. | <b>Special power pack enclosure material:</b><br><i>stainless steel for aggressive atmospheres</i>                      | <b>YES</b> <input type="checkbox"/> |      |

APPENDIX No 2

UNIT CONVERSION TABLE

| Quantity         | Metric Units                           | Imperial Units                                       |                                 |
|------------------|--|--|---------------------------------|
| Length           | 1 millimetre [mm]                      | x 0.003281 = foot [ft; ']                            | x 0.03937 = inch [in; "]        |
|                  | 1 metre [m]                            | x 3.281 = foot [ft; ']                               | x 39.370 = inch [in; "]         |
| Volume           | 1 cubic metre [m <sup>3</sup> ]        | x 35.315 = cubic foot [cu. ft]                       |                                 |
| Air flow rate    | 1 cubic metre/hour [m <sup>3</sup> /h] | x 0.589 = standard cubic feet/min [SCFM]             |                                 |
| Weight           | 1 kilogram [kg]                        | x 2.2046 = pound [lb]                                |                                 |
| Pressure         | 1 kilopascal [kPa]                     | x 6.895 = pound square inch gauge [psig]             | x 4.015 = inch H <sub>2</sub> O |
| Power (capacity) | 1 kilowatt [kW]                        | x 293.1 = million BTU/hr [mmBTU/Hr]                  |                                 |
| Temperature      | Deg. Celsius [°C]                      | <i>Formula: °C x 1.8 + 32 = Deg. Fahrenheit [°F]</i> |                                 |



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## NOTICE

When Fireeye products are combined with equipment manufactured by others and/or integrated into systems designed or manufactured by others, the Fireeye warranty, as stated in its General Terms and Conditions of Sale, pertains only to the Fireeye products and not to any other equipment or to the combined system or its overall performance.

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## WARRANTIES

FIREYE guarantees for *one year from the date of installation or 18 months from date of manufacture* of its products to replace, or, at its option, to repair any product or part thereof (except lamps, electronic tubes and photocells) which is found defective in material or workmanship or which otherwise fails to conform to the description of the product on the face of its sales order. **THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES AND FIREYE MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED.** Except as specifically stated in these general terms and conditions of sale, remedies with respect to any product or part number manufactured or sold by Fireeye shall be limited exclusively to the right to replacement or repair as above provided. In no event shall Fireeye be liable for consequential or special damages of any nature that may arise in connection with such product or part.



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