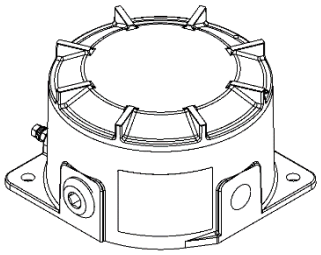
# INSTRUCTION MANUAL
## STExJ2
## Flameproof Junction Box
## For use in Flammable Gas and Dust Atmospheres



**STExJ2**

## 1) Warnings

- POTENTIAL ELECTROSTATIC CHARGING HAZARD.
- DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT.
- ALL ENTRIES M20 X 1.5MM.
- USE SUITABLE RATED CABLES AND CABLE GLANDS IF TEMPERATURE EXCEEDS AS PER STANDARDS INDICATIONS BELOW.
  FOR ATEX / IECEx STANDARDS:
  70ºC AT ENTRY OR 80ºC AT BRANCHING POINT.
  FOR NEC / CEC STANDARDS:
  60ºC AT ENTRY OR 60ºC AT BRANCHING POINT.

## 2) Marking & Rating Information

All units have a rating label, which carries the following important information:

| | |
|---|---|
| Unit Type No.: | STExJ2 |
| Max. Voltage: | 60Vdc |
| | 260Vac 50/60Hz |
| Max Power Dissipation: | 5W |

Table 1: Electrical Ratings.

### 2.1. ATEX / IECEx Ratings

| Standards |
|---|
| EN60079-0:2012+A1:2013 / IEC60079-0:2011 (Ed 6):<br>Explosive Atmospheres - Equipment. General requirements<br>EN60079-1:2014 / IEC60079-1:2014 (Ed 7):<br>Explosive Atmospheres - Equipment protection by flameproof enclosures "d"<br>BS EN 60079-31:2014 / IEC 60079-31:2013 (Ed 2):<br>Explosive Atmospheres - Equipment dust ignition protection by enclosure "t" |

| Ratings | |
|---|---|
| STExJ2 | Ex db IIC T5 Gb Ta -50°C to +70°C<br>Ex db IIC T6 Gb Ta -50°C to +65°C<br>Ex tb IIIC T85°C Db Ta -50°C to +70°C |

Certificate No. DEMKO 16 ATEX 1466X
IECEx ULD 16.0017X

Epsilon x, Equipment Group and Category: **II 2G**
**II 2D**

CE Marking
Notified Body No. **2813**

### 2.2. NEC / CEC Ratings

All models are approved for use as Visual Signal Device for use as General Signalling:

UL1638A & CSA C22.2 No 205-17

**NEC Class / Zone Ratings US Codes**

| Standards | |
|---|---|
| UL 60079-0 (Ed. 7) 04/15/2020<br>Explosive Atmospheres - Part 0: Equipment - General Requirements<br>UL 60079-1 (Ed. 7) 2015<br>Explosive Atmospheres - Part 1: Equipment Protection by Flameproof Enclosures 'd' | |
| **Ratings** | |
| STExJ2 | Class 1 Zone 1 AEx db IIC T5 Gb Ta -50°C to +70°C<br>Class 1 Zone 1 AEx db IIC T6 Gb Ta -50°C to +65°C |

Installation must be carried out in compliance with the National Electric Code.

**CEC Class / Zone Ratings Canada Codes**

| Standards | |
|---|---|
| CAN/CSA C22.2 No. 60079-0 (Ed. 4) 02/2019<br>Explosive Atmospheres - Part 0: Equipment - General Requirements<br>CAN/CSA C22.2 No. 60079-1 (Ed. 3) 2016<br>Electrical Apparatus for Explosive Gas Atmospheres - Part 1: Flameproof Enclosures 'd' | |
| **Ratings** | |
| STExJ2 | Ex db IIC T5 Gb Ta -50°C to +70°C<br>Ex db IIC T6 Gb Ta -50°C to +65°C |

Installation must be carried out in compliance with the Canadian Electric Code.

**NEC & CEC Class / Division Ratings for US / Canada, USL CNL**

| Standards | |
|---|---|
| UL1638A (Ed. 1) 2016<br>Standard for Visual Signal Appliances for General Signalling Use<br>CSA C22.2 No. 205-17 (Ed. 3) 2017<br>Signal Equipment | |
| **Ratings** | |
| STExJ2 | Class I Div 2 Group ABCD T5 Ta -50°C to +70°C<br>Class I Div 2 Group ABCD T6 Ta -50°C to +65°C |

Installation must be carried out in compliance with the National Electric Code / Canadian Electric Code.

## 2.3 DNV GL Type Approval

STExJ2 units have been tested and approved for the installation on ships in the following locations:

**Temperature**: Class A,B,C & D (all locations including open decks and masts)
**Humidity:** Class A & B (all locations)
**Vibration:** Class A (all locations except installation on machinery such as combustion engines, compressors, pumps, including piping on such machinery)
**EMC:** Class A & B (all locations including open decks and bridge)
**Enclosure:** Class A, B & C – IP56 (all locations expect submerged applications and bilges)

## 2.4 Type Approval Standards

STExJ2 units carry Type Approval by DNV GL to the following guidelines:

Class Guideline DNVGL-CG-0339:
Environmental test specification for electrical, electronic and programmable equipment and systems

## 3) Zones, Gas Group, Category and Temperature Classification

The units can be installed in locations with the following conditions:

| Area Classification | |
|---|---|
| Zone 1 | Explosive gas air mixture likely to occur in normal operation. |
| Zone 2 | Explosive gas air mixture not likely to occur in normal operation, and if it does, it will only exist for a short time. |
| Zone 21 **(ATEX / IECEx only)** | Explosive dust air mixture likely to occur in normal operation. |
| Zone 22 **(ATEX / IECEx only)** | Explosive dust air mixture not likely to occur in normal operation, and if it does, it will only exist for a short time. |
| **Gas Groupings** | |
| Group IIA | Propane |
| Group IIB | Ethylene |
| Group IIC | Hydrogen and Acetylene |
| **Temperature Classification for Gas Applications** | |
| T1 | 450ºC |
| T2 | 300ºC |
| T3 | 200ºC |
| T4 | 135ºC |
| T5 | 100ºC |
| T6 | 85ºC |
| **Dust Groupings (ATEX / IECEx only)** | |
| Group IIIA | Combustible Flyings |
| Group IIIB | Non-conductive Dust |
| Group IIIC | Conductive Dust |
| **Maximum Surface Temperature for Dust Applications (ATEX / IECEx only)** | |
| STExJ2 | 80ºC |
| **Equipment Category** | |
| 2G / 2D | |
| **Equipment Level Protection** | |
| Gb, Gc, Db, Dc | |
| **Ambient Temperature Range** | |
| -50°C to +70°C | |
| **IP Rating** | |
| IP6X to EN/IEC60079-0<br>IP66 to EN60529 | |

## 4) Special Conditions of safe use

Repair of the flame path / flameproof joints is not permitted.

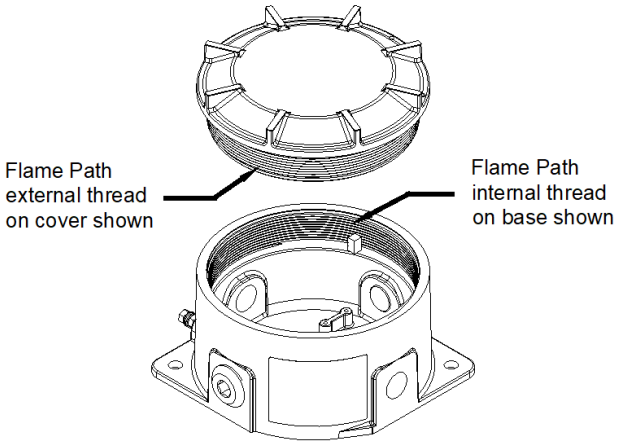



Figure 1: Flame Path.

The metallic enclosure has a non-conductive coating. These may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions that might cause a build-up of electrostatic charges on non-conducting surfaces.

## 5) Product Mounting and Access

### 5.1. Location and Mounting

The location of the junction boxs should be made with due regard to the area over which the warning signal must be visible. They should only be fixed to services that can carry the weight of the unit.

The STEx junction boxes should be securely bolted to a flat surface using 9.0mm diameter bolt holes in the base of the unit. See figure 2.

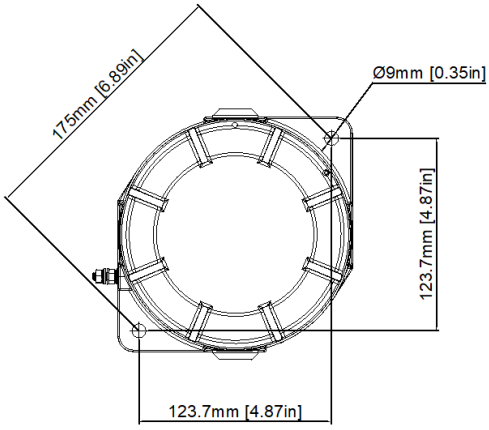



Fig. 2: Fixing Location for Junction Box.

### 5.2. Access to the Flameproof Enclosure

Warning – Hot surfaces. External surfaces and internal components may be hot after operation, take care when handling the equipment.

In order to connect cabling in the junction box it is necessary to remove the flameproof cover to gain access to the flameproof chamber. To access the Ex d chamber, loosen the M4 grub screw on the junction box cover. Open the enclosure by turning the junction box cover counterclockwise and remove the cover taking extreme care not to damage the flameproof threads in the process (see figure 3).

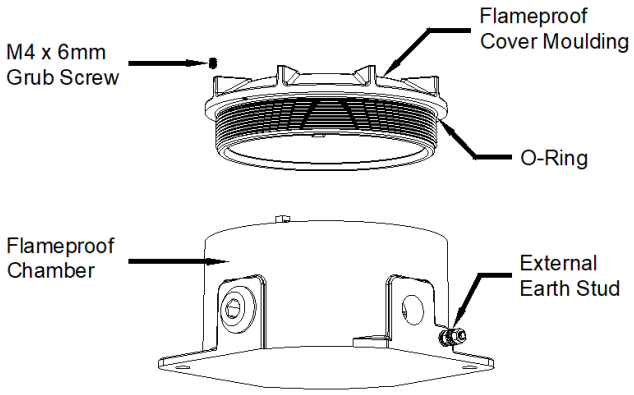



Fig. 3: Accessing the Explosion Proof Enclosure.

On completion of the installation, the flameproof threaded joints should be inspected to ensure that they are clean and that they have not been damaged during installation.

Flameproof threaded joints are not permitted to be repaired.

Ensure that the ‘O’ ring seal is in place.

When replacing the flameproof cover ensure the thread is engaged correctly. Fully tighten the cover all the way, ensure no gap is visible between the cover and base of the junction box enclosure. Tighten the M4 grub screw.

## 6) Installation Requirements

### 6.1. Installation Standards Compliance

Warning – High voltage may be present, risk of electric shock.
DO NOT open when energised, disconnect power before opening.

The beacon must only be installed by suitably qualified personnel in accordance with the latest issues of the relevant standards.

ATEX / IECEx installation standards:

EN60079-14 / IEC60079-14: Explosive atmospheres - Electrical installations design, selection and erection.

EN60079-10-1 / IEC60079-10-1: Explosive atmospheres - Classification of areas. Explosive gas atmospheres.

EN60079-10-2 / IEC60079-10-2: Explosive atmospheres - Classification of areas. Explosive dust atmospheres.

NEC Class / Zone, CEC Class / Zone, and NEC & CEC Class / Division installation standards:

National Electrical Code, NFPA 70 or CSA 22.1 Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32.

The installation of the units must also be in accordance with any local codes that may apply and should only be carried out by a competent electrical engineer who has the necessary training.

The STExJ2 is not intended for directly supporting live parts. All conductors must be suitably insulated and secured against loosening.

The Junction Box may be fitted with terminal blocks or active modules up to a power consumption of 5W. Any module fitted must be secured to the mounting bosses in the base of the junction box and must maintain a minimum gap of 10mm to all walls of the enclosure.

## 6.2. Cable Selection and Connections

When selecting the cable size, consideration must be given to the input current that each unit draws (see table 1), the number of junction boxes on the line and the length of the cable runs. The cable size selected must have the necessary capacity to provide the input current to all of the junction boxes connected to the line.

Electrical connections are to be made into the terminal blocks in the flameproof enclosure (see figure 5 and figure 6), using solid wire 0.5-4mm2 / AWG 20-12 or stranded wire, sizes 0.5-2.5mm2 / AWG 24-14. Wire insulation needs to be stripped 8mm. Wires may be fitted securely with crimped ferrules.

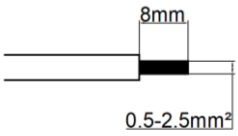



Figure 4: Wire Preparation.

Terminal screws need to be tightened down with a tightening torque of 0.45 Nm / 5 Lb-in.

**Terminal Block Options Available**

The STExJ2 can have two pre-fitted wire connectors: Terminal Block Version or DIN Rail Version.

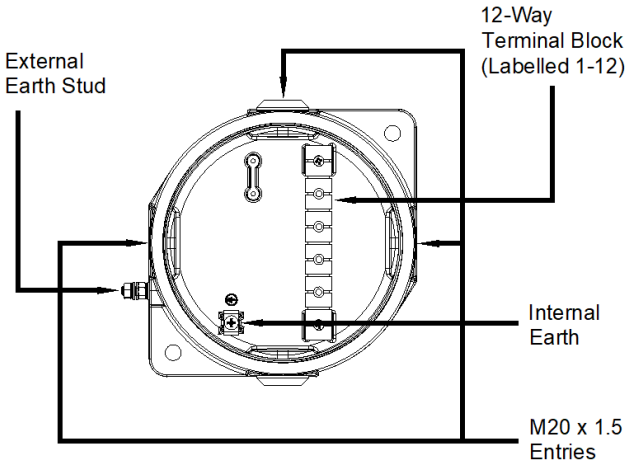



Figure 5: Terminal Block Version – STExJ2T01.

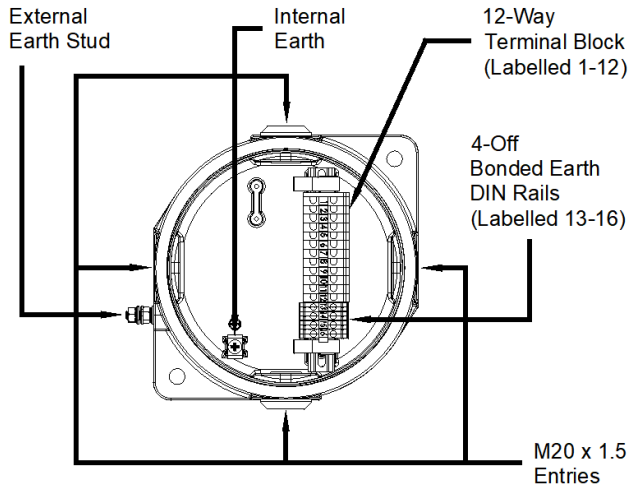



Figure 6: Terminal Block Version – STExJ2D01.

When connecting wires to the terminals great care should be taken to dress the wires so that when the cover is inserted into the chamber the wires do not exert excess pressure on the terminal blocks. This is particularly important when using cables with large cross-sectional areas such as 2.5mm².

**Earthing**

Junction box units must be connected to an earth according to EN/IEC 60079/14. The units are provided with internal and external earth terminals which are both located on the terminal chamber section of the unit (see figures 5 or 6).

Internal earthing connections should be made to the Internal Earth terminal in the base of the housing using a ring crimp terminal to secure the earth conductor under the earth clamp, or to the bonded Earth terminals of DIN rail (see figure 6). The earth conductor should be at least equal in size and rating to the incoming power conductors.

External earthing connections should be made to the M5 earth stud, using a ring crimp terminal to secure the earth conductor to the earth stud. The external earth conductor should be at least 4mm2 in size.

## 6.3. Cable Glands, Blanking Elements & Adapters

For high ambient temperatures, the cable entry and the cable branching point temperatures may exceed the following temperatures:

- For ATEX / IECEx: 70ºC at entry or 80ºC at branching point.
- For NEC / CEC: 60ºC at entry or 60ºC at branching point.

Therefore, suitable heat resisting cables and cable glands must be used with a rated service temperature at least as stated in the Instructions document of the product being used. Refer to STExB2 Xenon (D199-00-201-IS) and STExB2 LED (D199-00-401-IS) Instructions.

**Cable Glands**

The cable gland entries have an M20 x 1.5 entry thread. Only use suitably rated and certified cable glands, as per type of approval, which must be suitable for the type of cable being used and also meet the requirements of the current flameproof installation standards (see section 6.1).

**Blanking Plugs**

When only one cable entry is used the other entries must be closed with suitably rated and certified blanking plugs as per type of approval.

Any unused cable entries must be closed with suitably rated and certified blanking plugs.

**Ingress Protection**

If a high IP (Ingress Protection) rating is required, then a suitable sealing washer must be fitted under the cable glands or blanking plugs.

A minimum ingress protection rating of IP6X must be maintained for installations in explosive dust atmospheres.

For combustible dust applications, the cable entry device and blanking elements shall be in type of explosion protection and shall have an IP 6X rating.

For use in Class I Division II locations, in order to maintain the db type protection, flameproof conduit seals and/or cable glands must be used.

**Adapters**

The STExJ2 can be supplied with the following types of adapters:

M20 to ½" NPT
M20 to ¾" NPT
M20 to M25

It is important to note that stopping plugs cannot be fitted onto adapters, only directly onto the M20 entries.

Any other adapters used must be suitably rated as per the applicable standards.

If the installation is made using conduit, openings must have a sealing fitting connected as close as practical to the wall of the enclosure, but in no case more than the size of the conduit or 50mm, whichever is the lesser.

## 7) Maintenance, Overhaul and Repair

Maintenance, repair and overhaul of the equipment should only be carried out by suitably qualified personnel in accordance with the current relevant standards:

EN60079-19/IEC60079-19 Explosive atmospheres - Equipment repair, overhaul and reclamation

EN 60079-17/IEC60079-17 Explosive atmospheres - Electrical installations inspection and maintenance

Units must not be opened while an explosive atmosphere is present.

If opening the unit during maintenance operations a clean environment must be maintained and any dust layer removed prior to opening the unit.

Electrostatic charging hazard - Clean only with a damp cloth.

# EU Declaration of Conformity

| | |
|---|---|
| Manufacturer: | European Safety Systems Ltd.<br>Impress House, Mansell Road, Acton<br>London, W3 7QH<br>United Kingdom |
| Authorised Representative: | E2S Warnsignaltechnik UG<br>Charlottenstrasse 45-51<br>72764 Reutlingen<br>Germany |
| Equipment Type: | STExS1, STExS2, STExL1, STExL2<br>STExB2X05, STExB2X10, STExB2X15, STExB2X21<br>STExB2LD2, STExB2RT1<br>STExC1X05<br>STExJ2 |

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Directive 2014/34/EU: Equipment and Protective Systems for use in Potentially Explosive Atmospheres (ATEX)

| | |
|---|---|
| Notified Body for EU type Examination (Module B): | UL International Demko A/S<br>Notified Body No.: 0539<br>Borupvang 5A, 2750 Ballerup, Denmark |
| EU-type Examination Certificate (Module B): | DEMKO 16ATEX1466X |
| Notified Body for Quality Assurance Notification / Conformity to EU-type based on<br>quality assurance of the production process (Module D): | Sira Certification Service<br>Notified Body No.: 2813<br>CSA Group Netherlands B.V, Utrechtseweg 310, 6812 AR, Arnhem, Netherlands |
| Quality Assurance Notification (Module D): | SIRA 05 ATEX M342 |
| Provisions fulfilled by the equipment: | II 2G Ex db IIC T6…T3 Gb<br>II 2D Ex tb IIIC T82°C…T137°C Db<br>IP6X Dust Protection to EN60079-0 / EN60079-31 |
| Standards applied: | EN IEC 60079-0: 2018<br>EN 60079-1: 2014<br>EN 60079-31: 2014 |

Directive 2014/30/EU: Electromagnetic Compatibility Directive (EMC)

| | |
|---|---|
| Standards applied: | EN 61000-6-1:2007<br>EN 61000-6-2:2005<br>EN 61000-6-3:2007 / A1:2011 / AC: 2012<br>EN 61000-6-4:2007 / A1: 2011 |

Directive 2011/65/EU: Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

The product and all the components contained within it are in accordance with the restriction of the use of hazardous substances in electrical and electronic equipment, including amendment by Directive 2015/863/EU.

Regulation (EC) 1907/2006: Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The product and all the components contained within it are free from substances of very high concern.

Other Standards and Regulations

EN 60529:1991 / A1:2000 / A2:2013 - Degrees of protection provided by enclosures (IP code) – enclosure rated IP66

# EU Declaration of Conformity

On behalf of European Safety Systems Ltd., I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives, regulations and standards.

This Declaration is issued under the sole responsibility of the manufacturer.

Martin Streetz
Quality Assurance Manager

Document No.: DC-070_Issue_G
Date and Place of Issue: London, 03/12/2021

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