

The following information is in accordance with the Essential Health and Safety Requirements (Annex II) of the EU Directive 2014/34/EU [the ATEX Directive - safety of apparatus] and is provided for those locations where the ATEX Directive is applicable.

The following information is also provided for safe product use in accordance with IEC Ex standards.

## General

- a) In common with all other electrical apparatus installed in hazardous areas, this apparatus must only be installed, operated and maintained by competent personnel. Such personnel shall have undergone training, which included instruction on the various types of protection and installation practices, the relevant rules and regulations, and on the general principles of area classification. Appropriate refresher training shall be given on a regular basis. [See clause 4.2 of IEC/EN 60079-17].
- b) This apparatus meets the requirements of electrical apparatus in accordance with IEC/EN 60079-0 and IEC/EN 60079-11.
- c) This apparatus provides protection against all the relevant additional hazards referred to in Annex II of the directive, such as those in clause 1.2.7.

## Installation

- a) Product use must comply with the appropriate European, national and local regulations, which may include reference to the IEC code of practice IEC 60079-14. In addition, particular industries or end users may have specific requirements relating to the safety of their installations and these requirements should also be met. For the majority of installations the Directive 1999/92/EC [the ATEX Directive - safety of installations] is also applicable.
- b) This apparatus is a portable electrical apparatus and may be used in a hazardous area (Zone 0, 1 or 2). No mounting or additional enclosure is required.
- c) This apparatus must not be subjected to mechanical and thermal stresses in excess of those permitted in the certification documentation, this safety information and the product specification.
- d) The apparatus must not be used where it may be attacked by aggressive substances and must be protected from excessive dust, moisture and other contaminants.
- e) The apparatus enclosure is made of 8% carbon fiber reinforced ABS plastic and the front panel is covered by a polyester film. The user must determine if the apparatus is safe for use in particular surrounding conditions.
- f) The USB connector shall only be connected to other apparatus when the FBT-6(-PA) is located in an unclassified (a.k.a. safe or non-hazardous) location.
- g) The USB port maximum non-hazardous location voltage (Um) is 250 V.



## Special Conditions For Safe Use

**The Fieldbus and USB connections of the FBT-6(-PA) shall not be connected to electrical circuits at the same time.**

**The FBT-6(-PA) does not satisfy the dielectric strength requirements of IEC 60079-11 Clause 6.3.13 . All connections must be supplied from a galvanically isolated intrinsically safe supply.**

## Inspection and maintenance

- a) Inspection and maintenance should be carried out in accordance with European, national and local regulations which may refer to the IEC standard IEC 60079-17. In addition, specific industries or end users may have specific requirements which should also be met.
- b) Access to the internal circuitry must not be made during operation or at any other time.
- c) If the outer enclosure of the apparatus needs to be cleaned, this should be done with a cloth lightly moistened by a dilute mixture of detergent in water.

## Repair

This product must not be repaired. It must be replaced by an equivalent certified product.

## Marking

Each fieldbus monitor is marked with the following information:

### IECEX

- a) Company Name, and Address (shown below)
- b) Product Number
- c) Certificate number – **IECEX ETL 17.0029X**
- d) Ex classification – **Ex ia IIC T4 Ga, Ex ic IIC T4 Gc**
- e) Ambient Temperature range – **-20C ≤ Tamb ≤ 50C**

### ATEX

- a) Company Name, and Address (shown below)
- b) Product Number
- c) Certificate number – **ITS17ATEX201941X**
- d) Ex classification – **II 1 G Ex ia IIC T4 Ga**
- e) CE mark and Notified Body Number – **0359**
- f) Ambient Temperature range – **-20C ≤ Tamb ≤ 50C**





### Notes:

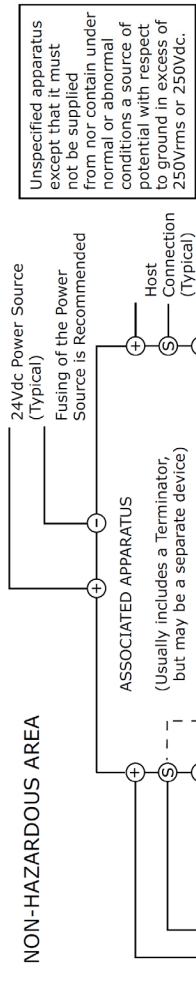
- The FBT-6(-PA) shall not be connected to the intrinsically safe circuit at the same time as the non-hazardous area circuit.
- The FBT-6(-PA) may be connected to a circuit operating at up to 32V that is not FISCO or Entity IS certified without impacting the ability to use the FBT-6(-PA) in FISCO or Entity IS circuits at some later time (cannot connect to IS and non-IS circuits at the same time).
- The "Entity" concept allows interconnections of intrinsically safe apparatus to associated apparatus, not specifically examined in such combination. The criteria for interconnection is that maximum voltage (Ui) and current (Ii) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal to or greater than the maximum voltage (Uo) and current (Io) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (Ci) and inductance (Li) of the intrinsically safe apparatus, including interconnecting wiring, must be equal to or less than the maximum capacitance (Co) and inductance (Lo) which can be safely connected to associated apparatus. If these criteria are met, then the combination may be connected.
- The FISCO Concept allows the interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (Ui), the current (Ii) and the power (Pi) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo), the current (Io) and the power (Po) which can be provided by the associated apparatus (supply unit). In addition, the maximum unprotected residual capacitance (Ci) and inductance (Li) of each apparatus (other than terminators) connected to the Fieldbus must be less than or equal to 5nF and 10mH respectively.  
In each IS Fieldbus segment only one active source, normally the associated apparatus, is allowed to provide the necessary power for the Fieldbus system. The allowed voltage (Uo) of the associated apparatus used to supply the bus must be limited to the range of 14Vdc to 17.5V d.c. All other equipment connected to the bus cable has to be passive, meaning that the apparatus is not allowed to provide energy to the system, except a leakage current of 50mA for each connected device. Separately powered equipment needs galvanic isolation to ensure that the intrinsically safe Fieldbus circuit remains passive.

The cable used to interconnect the devices needs to comply with the following parameters:

- Loop resistance R: 15...150 W/km
  - Inductance per unit length L: 0.4...1 mH/km
  - Capacitance per unit length C: 80...200nF/km
  - C' = C' line/line + 0.5 C' line/screen, if both lines are floating or
  - C' = C' line/line + C' line/screen, if the screen is connected to one line (**not recommended**)
  - Length of spur Cable: max. 30m
  - Length of trunk cable: max. 1km
  - Length of splice: max. 1m
- Terminators:**  
At each end of the trunk cable an approved line terminator with the following parameters is suitable:  
R = 90...100W  
C = 0...2.2mF.

All connections must be supplied from a galvanically isolated intrinsically safe supply.

### NON-HAZARDOUS AREA



Unspecified apparatus except that it must not be supplied from nor contain under normal or abnormal conditions a source of potential with respect to ground in excess of 250Vrms or 250Vdc.

**WARNING:**  
SUBSTITUTION OF COMPONENTS  
MAY IMPAIR INTRINSIC SAFETY

### FBT-6(-PA)

**ENTITY PARAMETERS**  
 $U_i = 24V$   
 $I_i = 250mA$   
 $C_i = 0\mu F$   
 $L_i = 0\mu H$   
 $P_i = 1.2W$

**FISCO PARAMETERS**  
 $U_i = 17.5V$   
 $I_i = 380mA$   
 $C_i = 0\mu F$   
 $L_i = 0\mu H$   
 $P_i = 5.32W$

**PROTECTION LEVEL ic PARAMETERS**  
 $U_i = 32V$   
 $I_i = 1.5A$   
 $C_i = 0\mu F$   
 $L_i = 0\mu H$   
 $P_i = 5.32W$

### HAZARDOUS AREA

Ex ia IIC T4 Gc  
Ex ic IIC T4 Gc

-20°C ≤ Tamb ≤ 50°C

This drawing describes the use of the FBT-6(-PA). It is not a reference for installing a fieldbus.



**Relcom Inc.**  
INDUSTRIAL LAN | WIRING COMPONENTS AND TESTERS  
2221 Yew Street, Forest Grove, Oregon 97116 USA

IECEX CONTROL DRAWING FOR THE  
FBT-6(-PA) FOR INTRINSICALLY SAFE  
INSTALLATIONS

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
Drawing Number: \_\_\_\_\_ Rev.: \_\_\_\_\_



- Notes:**
- The FBT-6(-PA) shall not be connected to the intrinsically safe circuit at the same time as the non-hazardous area circuit.
  - The FBT-6(-PA) may be connected to a circuit operating at up to 32V that is not FISCO or Entity IS certified without impacting the ability to use the FBT-6(-PA) in FISCO or Entity IS circuits at some later time (cannot connect to IS and non-IS circuits at the same time).
  - The "Entity" concept allows interconnections of intrinsically safe apparatus to associated apparatus, not specifically examined in such combination. The criteria for interconnection is that maximum voltage (Ui) and current (Ii) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal to or greater than the maximum voltage (Uo) and current (Io) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (Ci) and inductance (Li) of the intrinsically safe apparatus, including interconnecting wiring, must be equal to or less than the maximum capacitance (Co) and inductance (Lo) which can be safely connected to associated apparatus. If these criteria are met, then the combination may be connected.

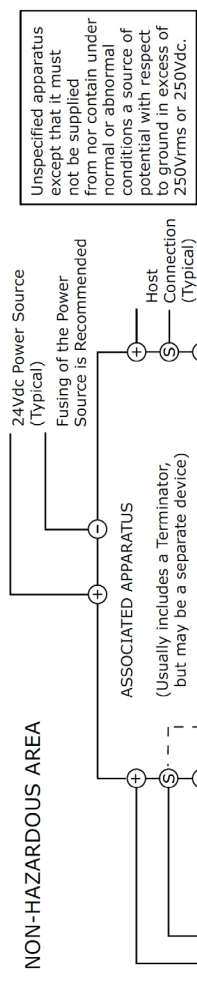
- The FISCO Concept allows the interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criterion for such interconnection is that the voltage (Ui), the current (Ii) and the power (Pi) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (Uo), the current (Io) and the power (Po) which can be provided by the associated apparatus (supply unit). In addition, the maximum unprotected residual capacitance (Ci) and inductance (Li) of each apparatus (other than terminators) connected to the Fieldbus must be less than or equal to 5nF and 10mH respectively.
- In each IS Fieldbus segment only one active source, normally the associated apparatus, is allowed to provide the necessary power for the Fieldbus system. The allowed voltage (Uo) of the associated apparatus used to supply the bus must be limited to the range of 14Vdc to 17.5V d.c. All other equipment connected to the bus cable has to be passive, meaning that the apparatus is not allowed to provide energy to the system, except a leakage current of 50mA for each connected device. Separately powered equipment needs galvanic isolation to ensure that the intrinsically safe Fieldbus circuit remains passive.

The cable used to interconnect the devices needs to comply with the following parameters:

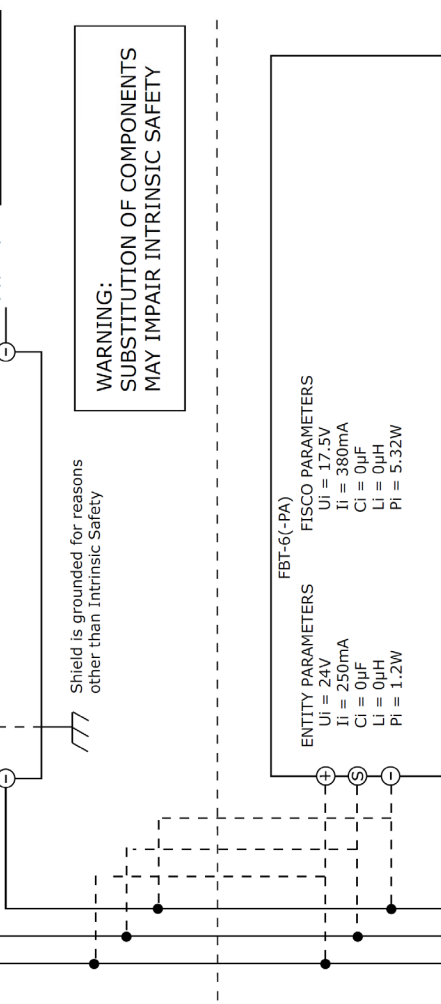
- Loop resistance R: 15...150 W/km
  - Inductance per unit length L: 0.4...1 mH/km
  - Capacitance per unit length C: 80...200nF/km
  - C' = C' line/line + 0.5 C' line/screen, if both lines are floating or
  - C' = C' line/line + C' line/screen, if the screen is connected to one line (**not recommended**)
  - Length of spur Cable: max. 30m
  - Length of trunk cable: max. 1km
  - Length of splice: max. 1m
- Terminators:**  
At each end of the trunk cable an approved line terminator with the following parameters is suitable:  
R = 90...100W  
C = 0...2.2mF.

All connections must be supplied from a galvanically isolated intrinsically safe supply.

**NON-HAZARDOUS AREA**



**HAZARDOUS AREA**



**HAZARDOUS AREA**  
II 1 G Ex Ia IIC T4 Ga

-20°C ≤ Tamb ≤ 50°C

This drawing describes the use of the FBT-6(-PA). It is not a reference for installing a fieldbus.

**Relcom Inc.**  
INDUSTRIAL LAN | WIRING COMPONENTS AND TESTERS  
2221 Yew Street, Forest Grove, Oregon 97116 USA

**ATEX CONTROL DRAWING FOR THE FBT-6(-PA) FOR INTRINSICALLY SAFE Ex Ia INSTALLATIONS**

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_  
Drawing Number: \_\_\_\_\_ Rev.: \_\_\_\_\_

