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# FB2485H



## DATA SHEET

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# 1 HARDWARE CHARACTERISTICS

This chapter describes the hardware characteristics of FB2485H / FB2485HH :

## 1.1 Introduction

FB2485H is a RS485 or RS232 connection to a optical fiber interface which allow to extend directly the optical fiber data bus. The optical fiber maximum distance checked is 800 m. The optical fiber great advantage is that it don't suffer electromagnetic interferences, so the needs to retransmit the signals is almost nil. This means a great noise immunity due to the FB2485H's galvanic isolation. As write above the COM1 which will be converted in optical fiber can be RS485 or RS232 (it depends on where is connected on the terminal block).

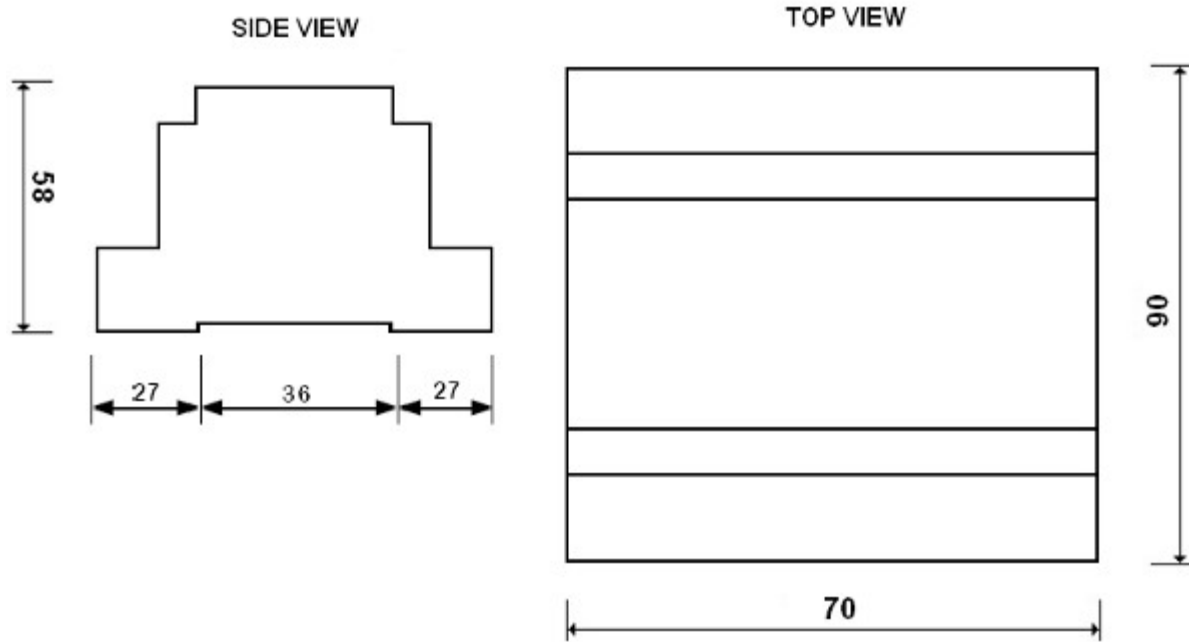
## 1.2 Electric Characteristics

ELECTRIC CHARACTERISTICS	
Power supply voltage	24 Vdc +/- 10 %
Maximum Permitted Power Supply	27 Vdc
Current Consumption	under 50 mA
Microprocessor	Hitachi H8/2145

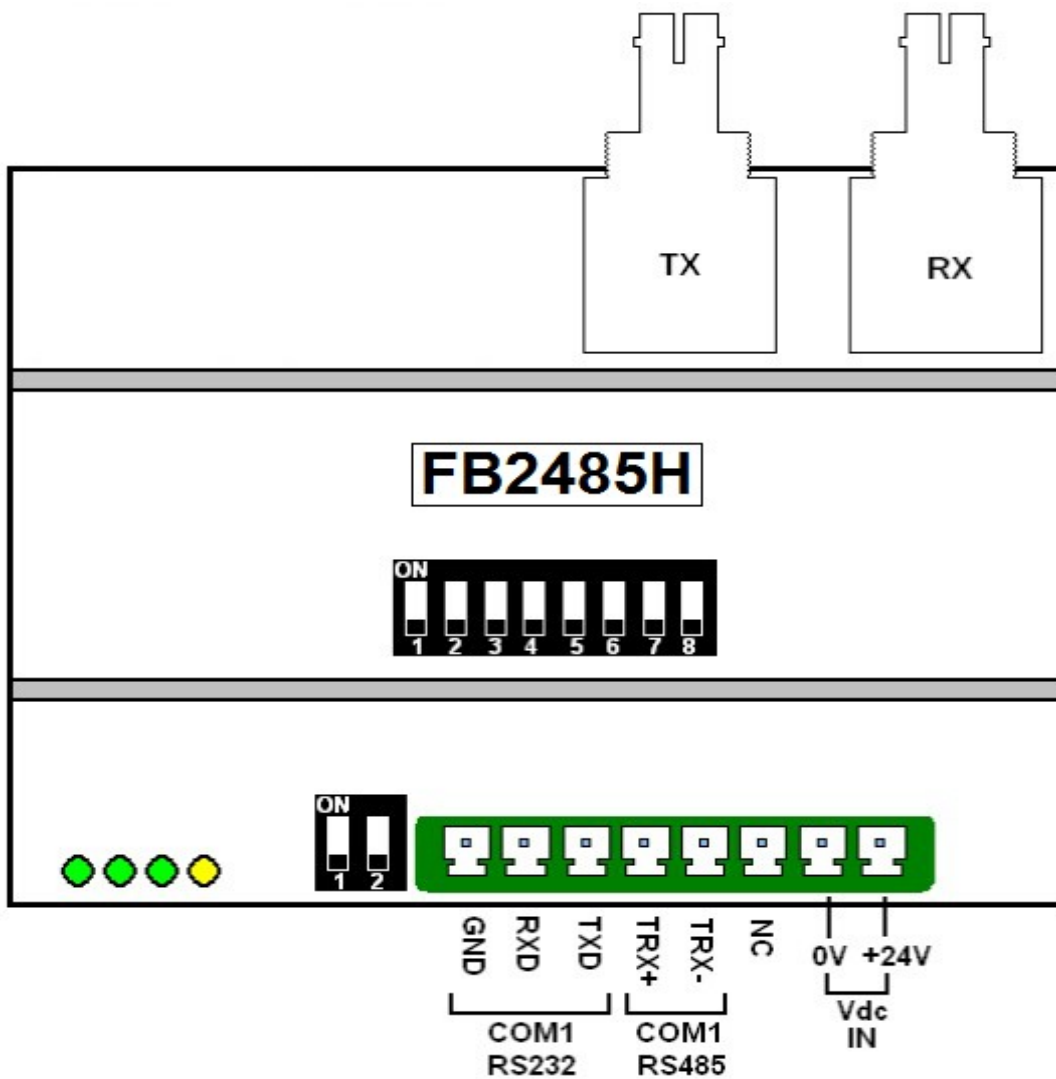
## 1.3 Mechanics Characteristics

MECHANICS CHARACTERISTICS	
Temperature Range	From -10 ^C to +70^C
Humidity Range	From 10 % to 90 % (non-condensing)
Operating Atmosphere	Without corrosive gas
Noise Immunity	According to rules in force
Front Protection	IP20
Fixing System	On din bar into electric switchboard
Weight	160 g
Addressing	Defined by 8 dip-switches
Optical Fiber	62.5 / 125 μm
Size	70 x 90mm, Depth 58mm

### 1.4 Size



### 1.5 Connections



### 1.6 Dip-switches

The FB2485H allow to set a termination resistance of 120 Ω, if it's necessary, on the RS485. To do this is necessary switch-on the both dip-switches on the terminal block side. The default position is OFF.



There are also eight dip-switches under the FBA cover, which allow to select baud rate, node address and communication protocol :

0 0 0	test
0 0 1	2400
0 1 0	4800
0 1 1	9600
1 0 0	19200
1 0 1	38400
1 1 0	57600
1 1 1	115200

Stop

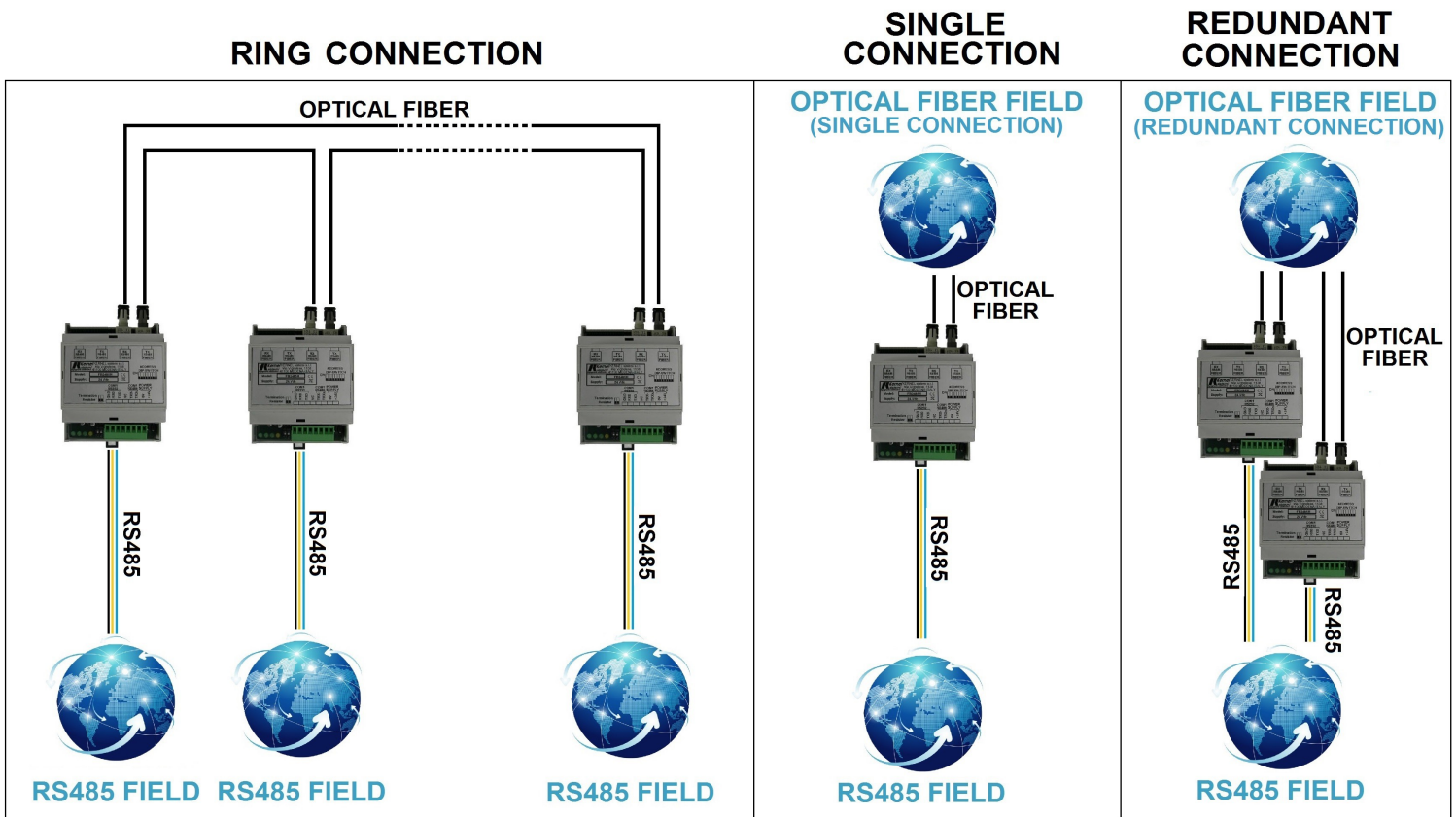
Bit number

0 0	none
0 1	even
1 0	odd

ON= Ring connection  
OFF= 4 wires connection

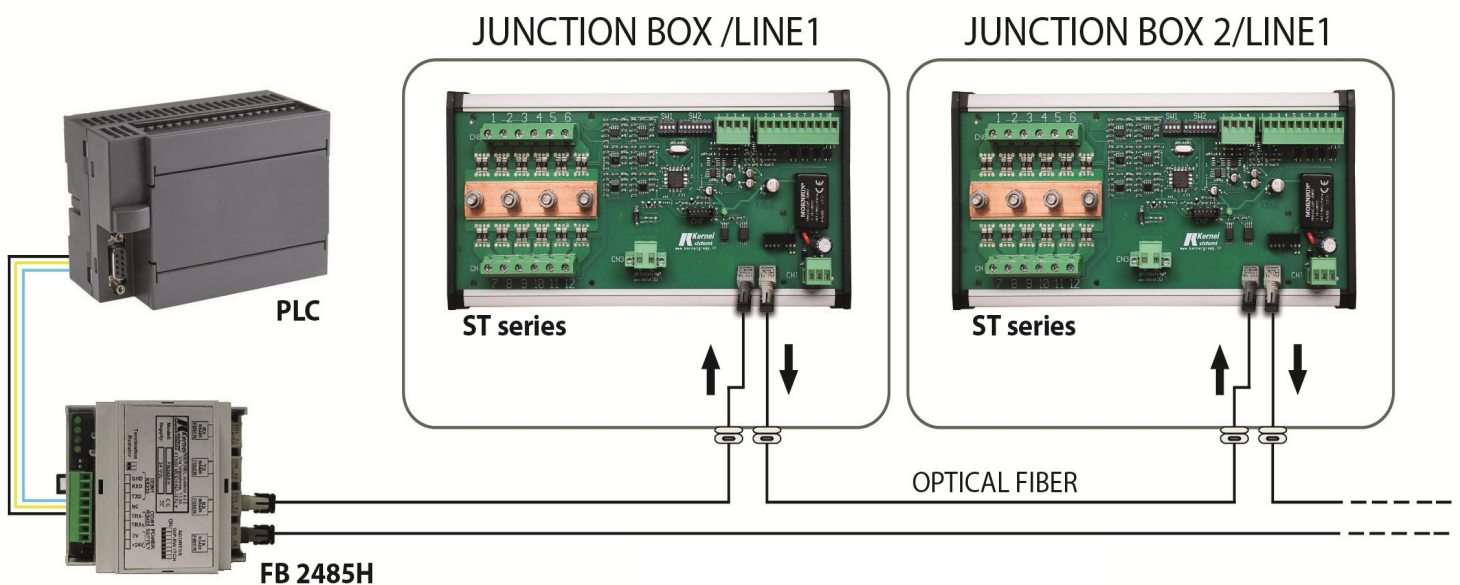
### 1.7 Connection Types

Is possible connect the FB module with three different configurations as below:

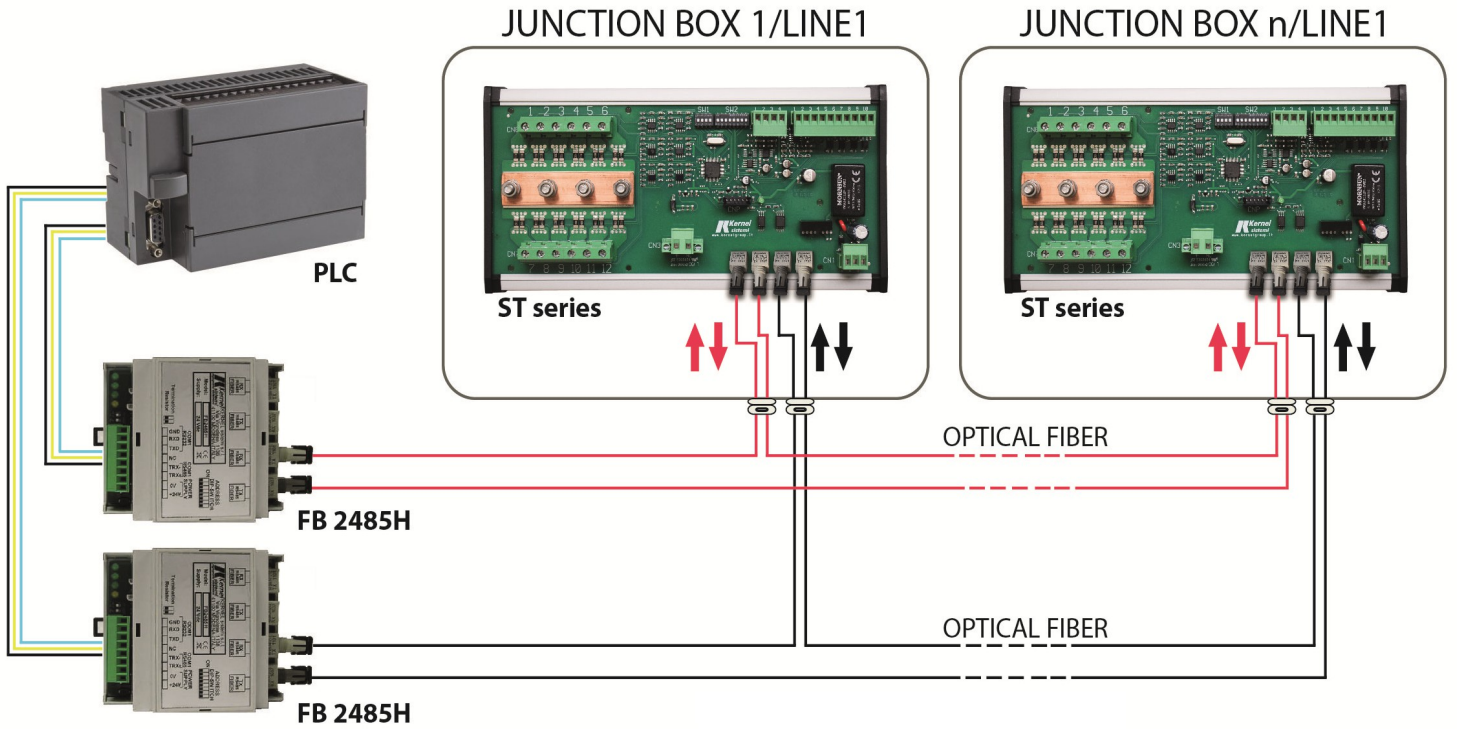


The second and third connection types (single connection and redundant connection) are often used, in PV field, with Kernel Sistemi string monitoring boards which has optical fiber connectors on board, the final result is as schematized here below:

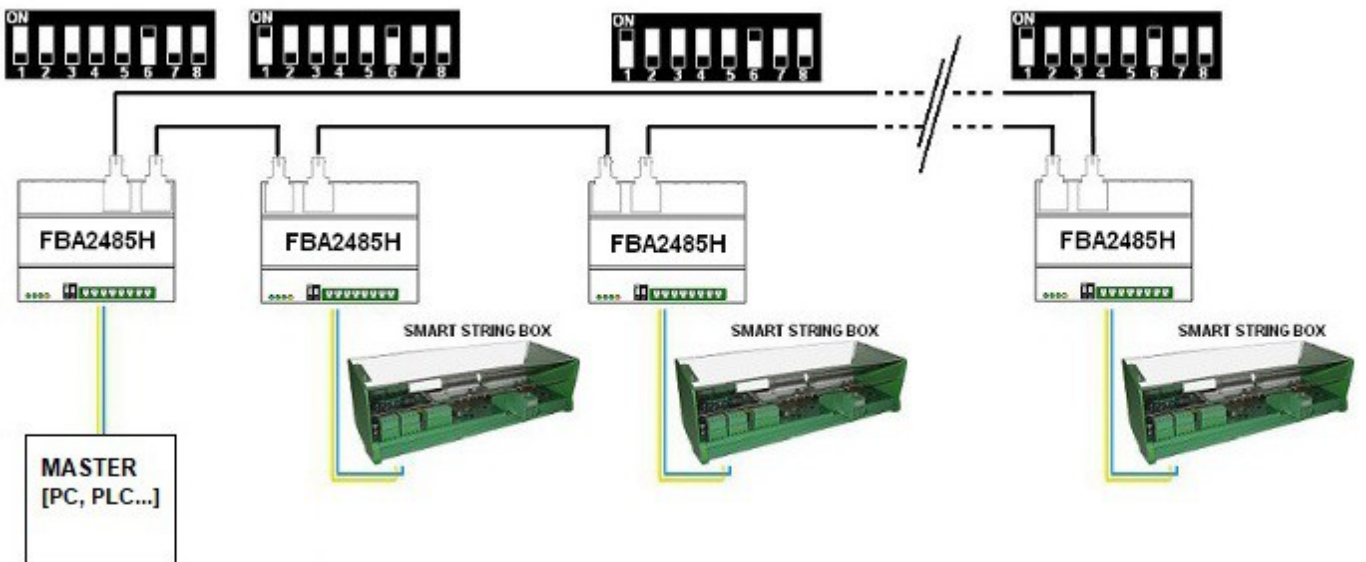
#### SINGLE CONNECTION



REDUNDANT CONNECTION



RS485 NETWORK WITH OPTICAL FIBER CONVERSION

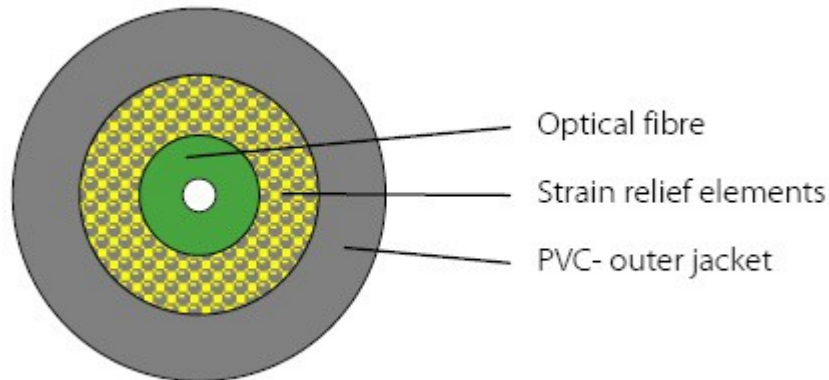


With this configuration each module must have the dip-switch number 1 on ON position, except the FBA2485H used on the master node which must have the dip-switch number 1 on OFF position (as in the picture above). Obviously in a configuration like this one, it is necessary **keep attention to the maximum optical fiber length (400m)**, specially if as in the picture above, the return back optical fiber which comes back from the last module until the master module, has a length equal to the sum of all the used optical fiber cable length.

## 2 OPTICAL FIBER

### 2.1 Optical Fiber Cable

The optical fiber cable which is necessary to the connection, must be a G50/125 cable, and it must have the following characteristics :



#### Composition

##### Cable's core :

Glass optical fiber TB900L, outer diameter 0.9mm, green colour (G50/125).  
Kevlar coating.

##### Outer coating :

Polyvinylchloride (PVC) with a 0.5 mm thickness more or less, colour black.  
Outer diameter approximately 2.8 mm.

#### Applications and outdoor installations

- Cable suitable for outdoor installation without ducts
- Cable suitable for installation in ducts and e tubes and usable also for interconnections
- Cable suitable for connectors direct assembly

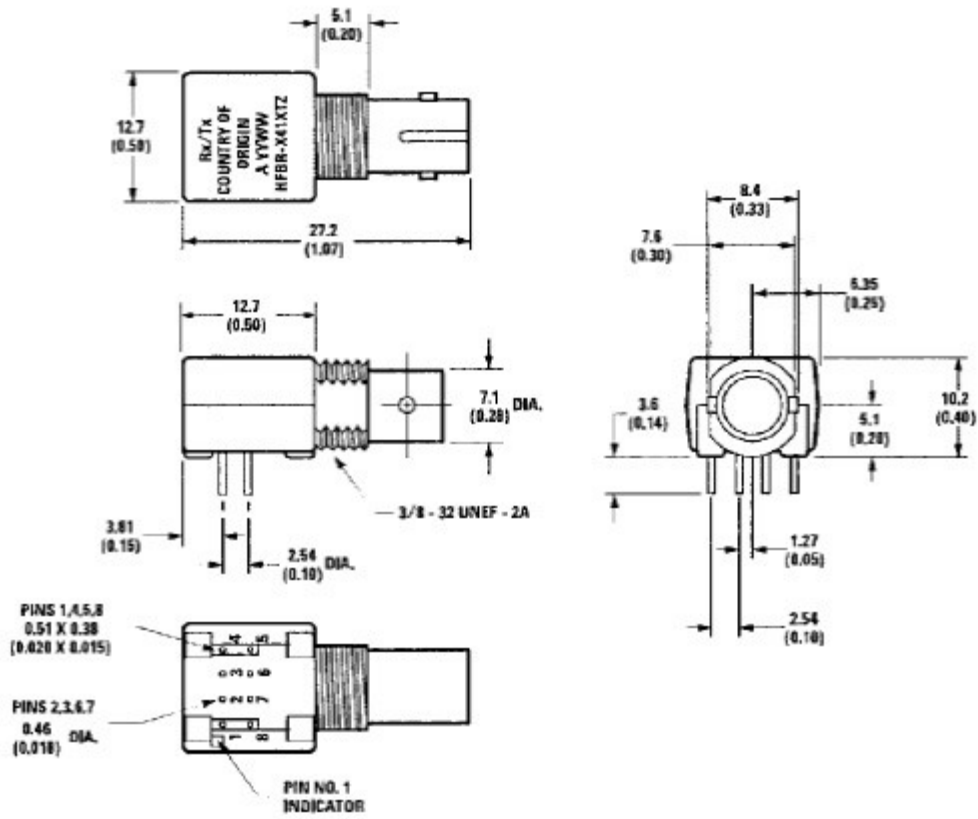
#### Transmission characteristics

Optical fiber G50/125  $\mu\text{m}$  (compliant the standard IEC 60793-2-10 type A1a.1) with optical core with diameter of 50  $\mu\text{m}$   $\pm$  2.5  $\mu\text{m}$  and optical coating with diameter 125  $\mu\text{m}$   $\pm$  2  $\mu\text{m}$   
Acrylate primary coating, diameter 245  $\mu\text{m}$   $\pm$  10  $\mu\text{m}$   
Maximum attenuation values: 850 nm 2.7 dB/Km – 1300 nm 0.8 dB/Km (cablated fiber)

### 2.2 Optical Fiber Connector

Here are indicated the characteristics of the optical fiber connector on the FB2485H :





## 3 CONTACTS

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