



---

# FB2485H



## DATA SHEET

rev. 2.1  
12 February 2021

---

Kernel Sistemi  
Kernel Sistemi s.r.l. , via Vignolese n. 1138  
41126 Modena - ITALY  
Tel. 059 469 978 - Fax 059 468 874  
[www.kernelgroup.it](http://www.kernelgroup.it)



## INDEX

<b>1</b>	<b>HARDWARE CHARACTERISTICS.....</b>	<b>3</b>
1.1	Introduction.....	3
1.2	Electric Characteristics.....	3
1.3	Mechanics Characteristics.....	3
1.4	Size.....	4
1.5	Connections.....	4
1.6	Dip-switches.....	5
1.7	Connection Types.....	6
<b>2</b>	<b>OPTICAL FIBER.....</b>	<b>8</b>
2.1	OFC Network features.....	8
2.2	Optical Fiber Cable.....	8
2.3	Optical Fiber Connector.....	9
<b>3</b>	<b>CONTACTS.....</b>	<b>10</b>

# 1 HARDWARE CHARACTERISTICS

This chapter describes the hardware characteristics of FB2485H :

## 1.1 Introduction

FB2485H is a RS485 connection to a optical fiber interface which allow to extend directly the optical fiber data bus. The optical fiber maximum distance checked is 500 mt. 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 COM 1 which will be converted in optical fiber can be only RS485.

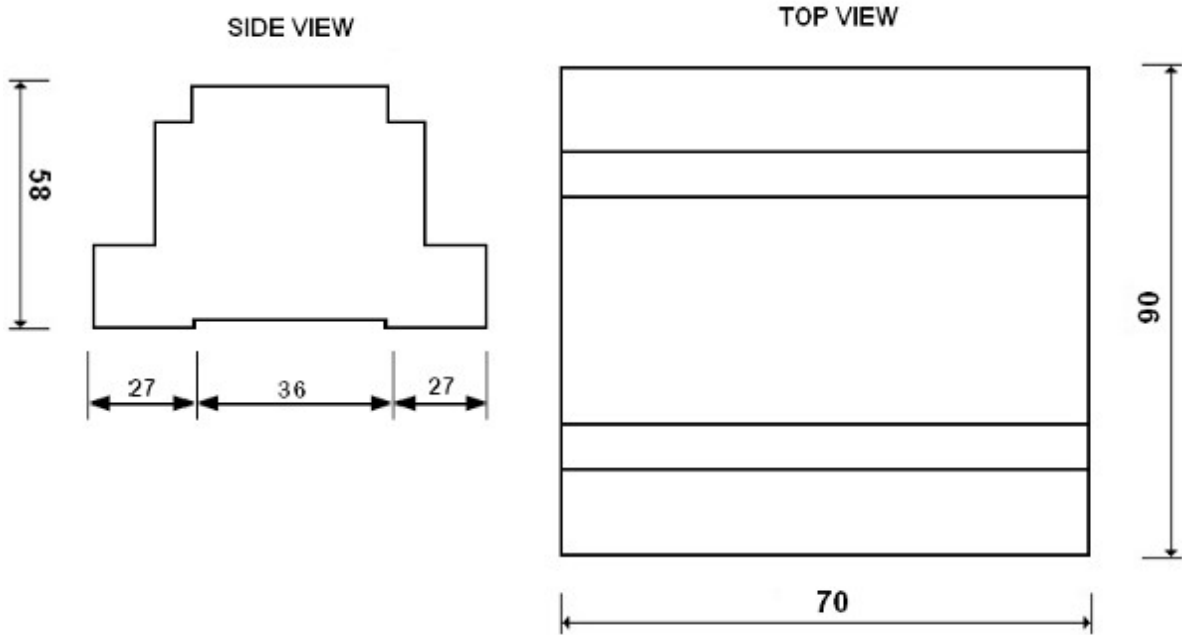
## 1.2 Electric Characteristics

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

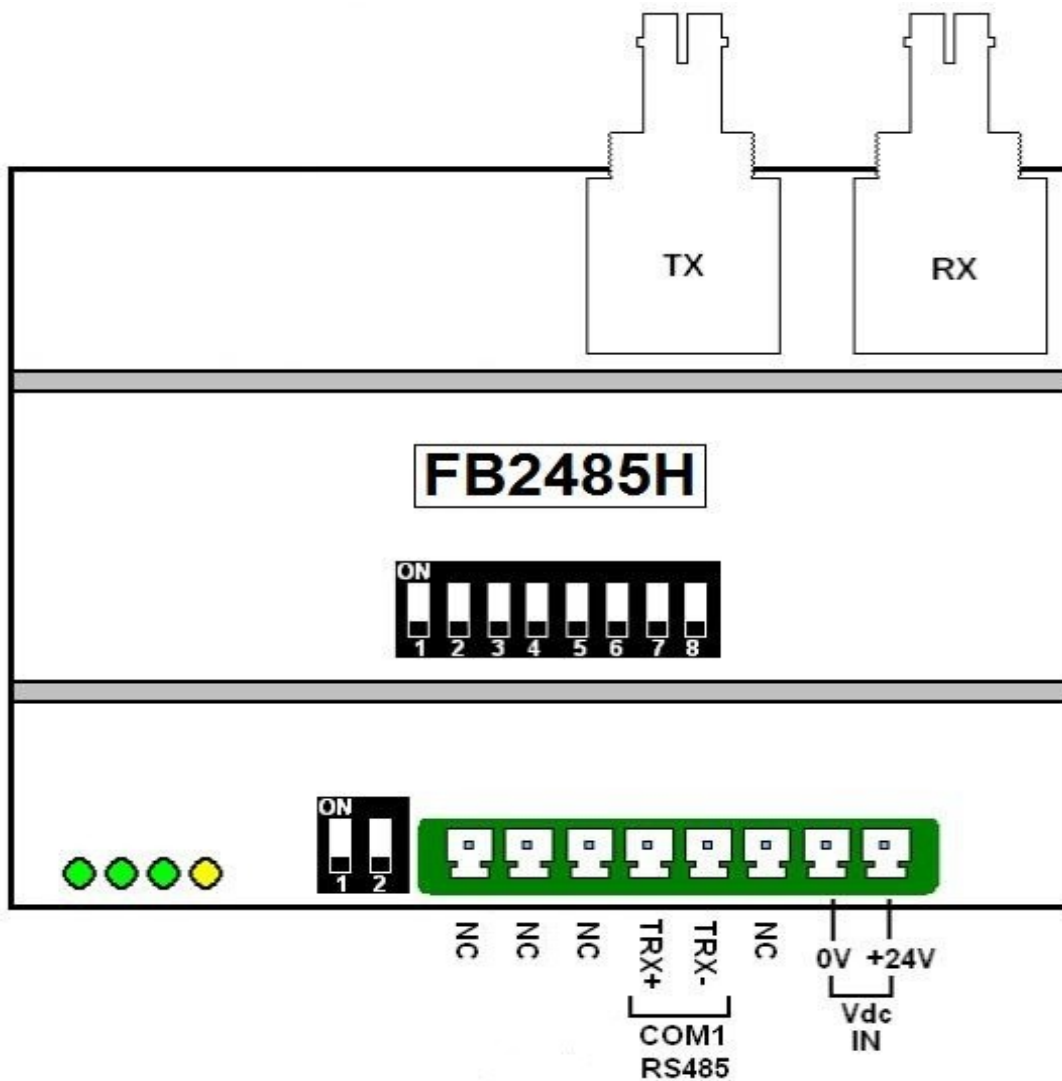
## 1.3 Mechanics Characteristics

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
Settings	Defined by 8 dip-switches
Size	70 x 90 mm, Depth 58 mm

### 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 FB cover, which allow to select baud rate, parity, bit stop, bit number and other settings :

**BAUD RATE**

00	2400
01	4800
10	9600
11	19200

**BIT STOP** OFF = 1  
ON = 2

**BIT NUMBER** OFF = 7  
ON = 8

**PARITY**

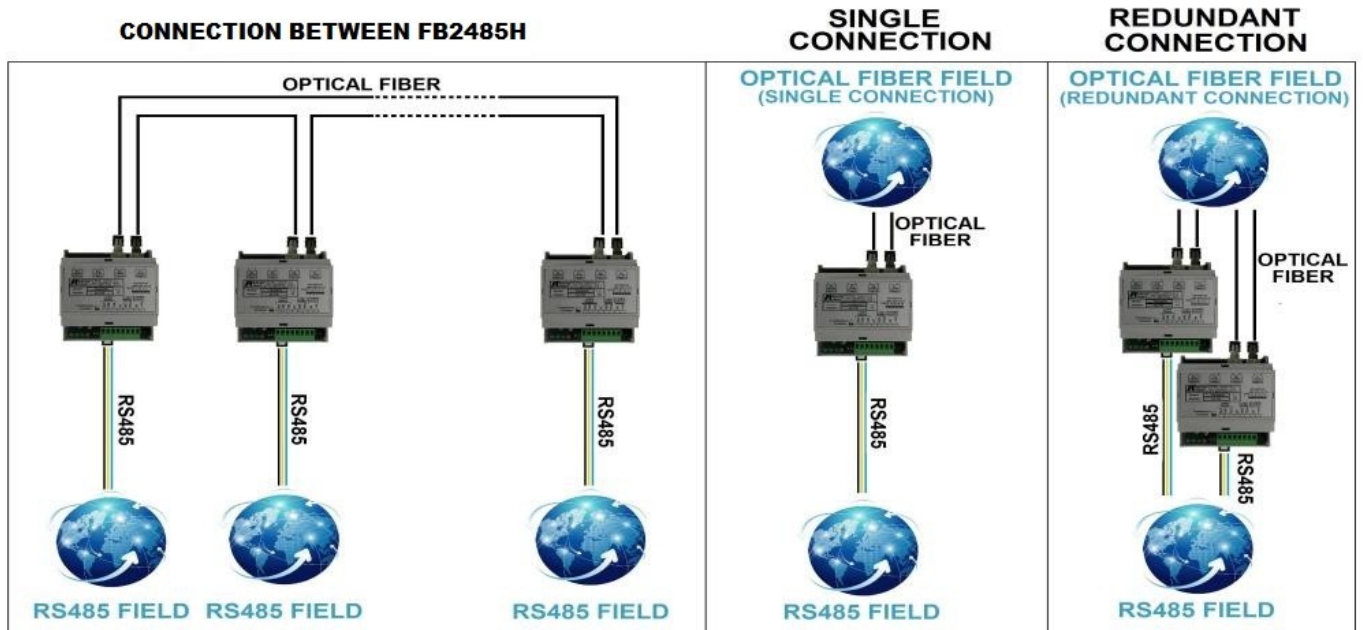
00	NONE
01	EVEN
10	ODD

**CONNECTION TYPES**  
0 = SINGLE / DOUBLE RING  
1 = MULTIDROP

**REPEAT**  
0 = OFF  
1 = ON

### 1.7 Connection Types

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

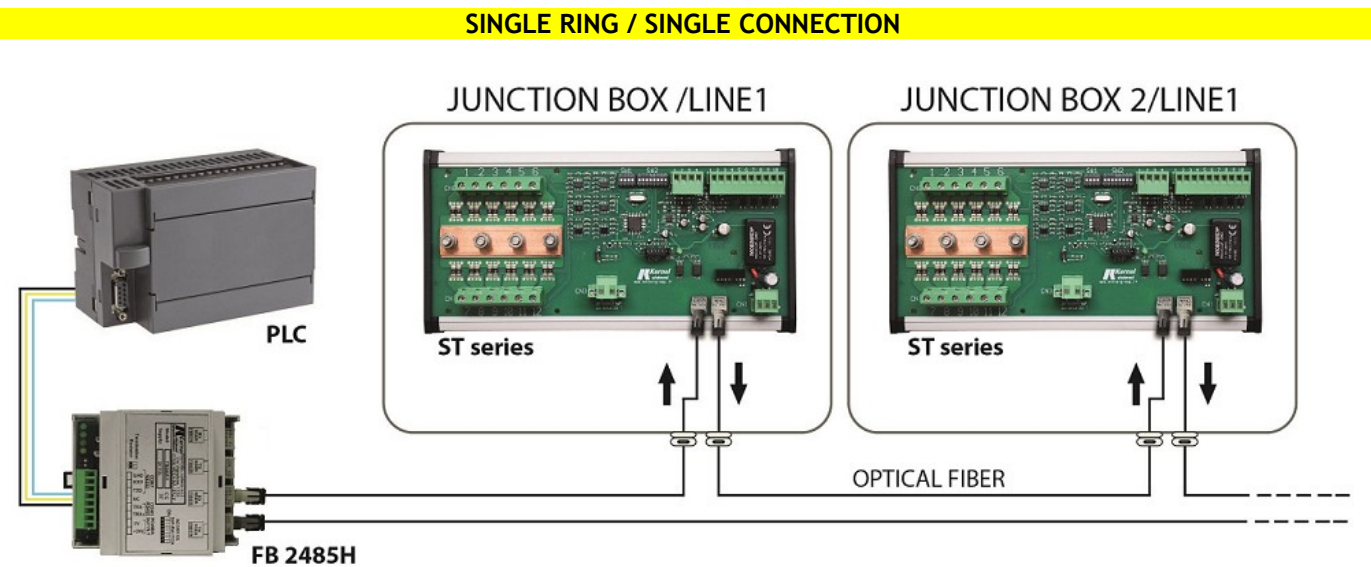


The second and third connection types (SINGLE RING connection and REDUNDANT connection) are often used, in PV field, with Kernel Sistemi string monitoring boards which has optical fiber connectors on board.

As for the “REDUNDANT connection”, There are 2 types of connections :

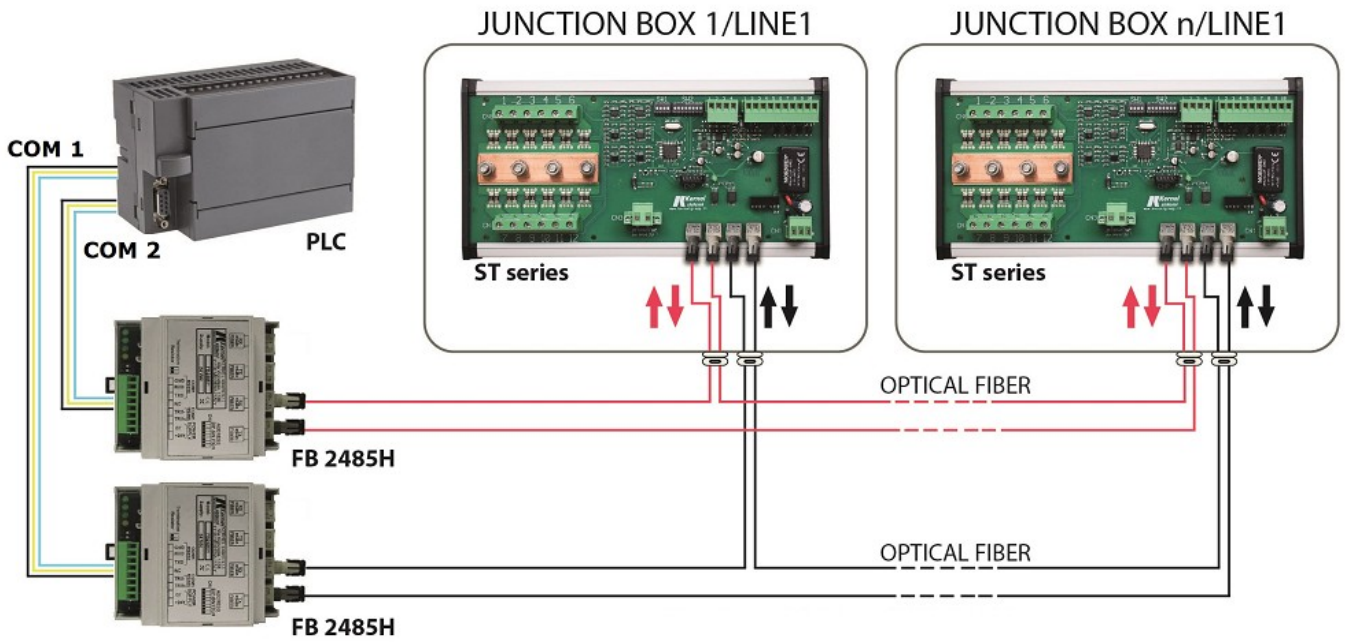
1. “Double Ring or Double Connection” [Redundant]
2. “Multidrop Connection” [Redundant]

The final result is as schematized here below :



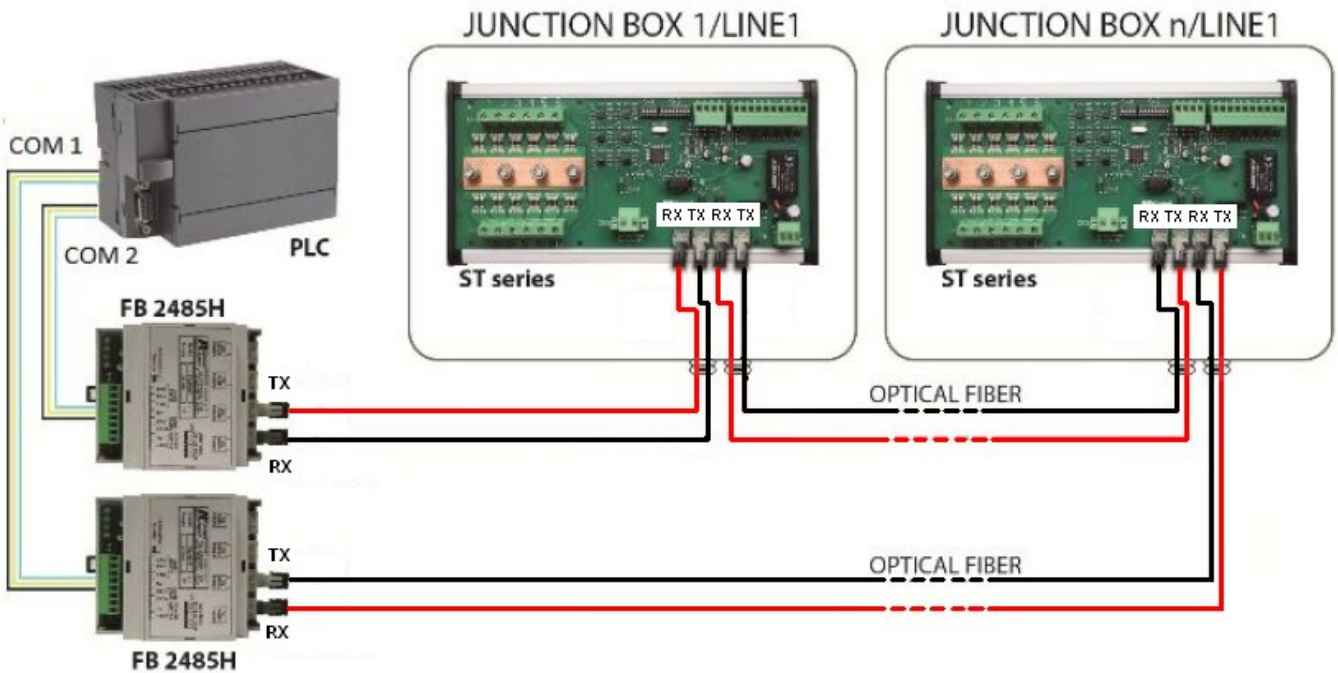
Protocol = MODBUS or IEC 60870-5-101

**DOUBLE RING / DOUBLE CONNECTION [REDUNDANT]**



Protocol = MODBUS or IEC 60870-5-101

**MULTIDROP CONNECTION [REDUNDANT]**



Protocol = MODBUS or IEC 60870-5-101

## 2 OPTICAL FIBER

### 2.1 OFC Network features

The characteristics of the fiber optic network achievable with the KERNEL SMUs with OFC interface on board are the following :

Max number of SMU that it's possible to connect in one network	256
Maximum distance between 2 consecutive SMUs	2 - 3 KM if the "fiber / connector" connections are correct
Recommended fiber optic features	Multimode OM2 class or higher 50/125 $\mu\text{m}$ or 62.5/125 $\mu\text{m}$
Connectors features	ST

#### IMPORTANT

The optical signal is regenerated internally to each SMU so that, each SMU retransmits the optical signal at the maximum power.

So the first SMU, connected to the FB2485H converter, receives the same level of optical signal that receives the last SMU of the network.

#### IMPORTANT

### 2.2 Optical Fiber Cable

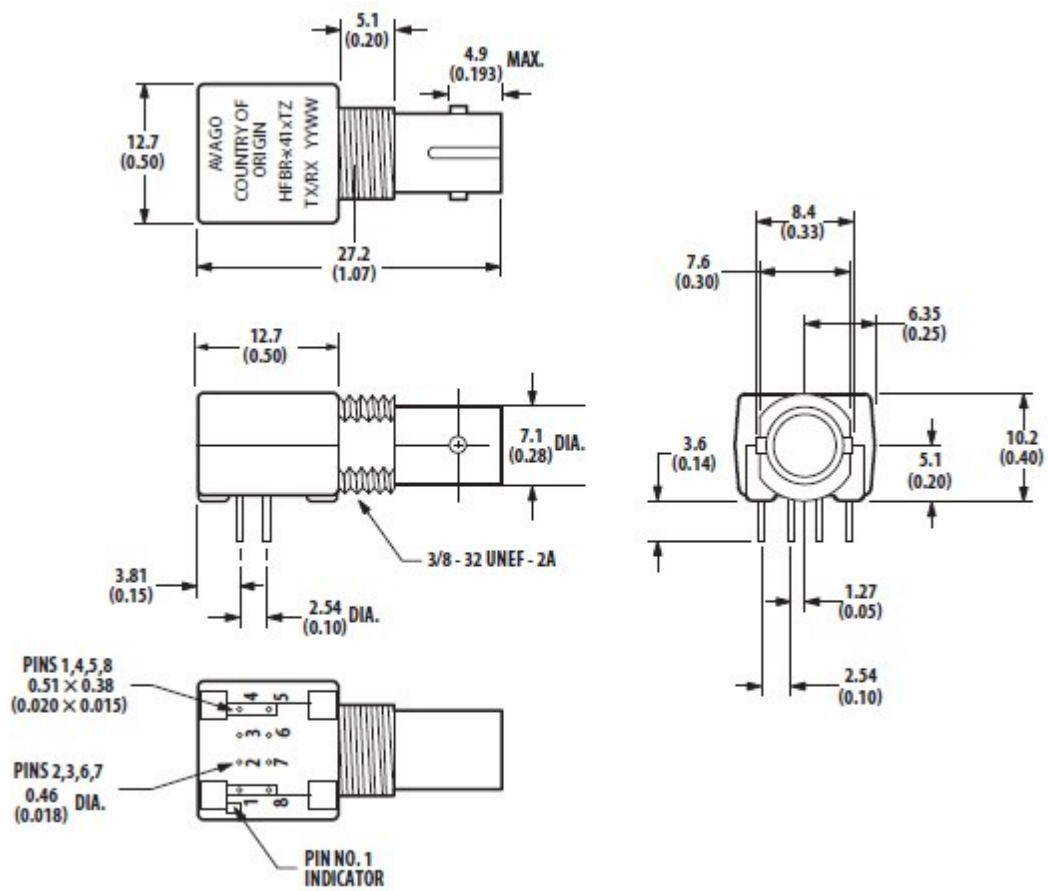
The optical fiber cable which is necessary to the connection, must be a compatible cable :

Optical Fiber	Compatible with : 50/125 $\mu\text{m}$ 62.5/125 $\mu\text{m}$ 100/140 $\mu\text{m}$ 200 $\mu\text{m}$ Plastic-Clad Silica (PCS) Fiber
In Compliance with standard	OM1, OM2, OM3, OM4



### 2.3 Optical Fiber Connector

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



Dimensions in mm (inches)

## 3 CONTACTS

### GENERAL

Tel: 059 469978  
website: [www.kernelgroup.it](http://www.kernelgroup.it)  
e-mail: [info@kernelgroup.it](mailto:info@kernelgroup.it)

### COMMERCIAL

Sig.ra Linda Mammi  
Tel: 059 469978 Int. 207  
e-mail: [sales@kernelgroup.it](mailto:sales@kernelgroup.it)  
Skype: mammi.kernel

### ADMINISTRATION

Sig.ra Paola Morandi  
Tel: 059 469978 Int. 201  
e-mail: [amministrazione@kernelgroup.it](mailto:amministrazione@kernelgroup.it)  
Skype: morandi.kernel

### PURCHASING and PRODUCTION

Sig. Stefano Catuogno  
Tel: 059 469978 Int. 204  
e-mail: [produzione@kernelgroup.it](mailto:produzione@kernelgroup.it)  
Skype: catuogno.kernel

### TECHNICAL OFFICE

Sig. Alessandro Muratori  
Tel: 059 469978 Int. 205  
e-mail: [alessandro.muratori@kernelgroup.it](mailto:alessandro.muratori@kernelgroup.it)  
Skype: muratori.kernel

Support  
Tel: 059 469978 Int. 209  
e-mail: [support@kernelgroup.it](mailto:support@kernelgroup.it)  
Skype: support.kernel

Sig. Morisi Luca  
e-mail: [luca.morisi@kernelgroup.it](mailto:luca.morisi@kernelgroup.it)  
Skype: morisi.kernel

Kernel Sistemi s.r.l. , via Vignolese n. 1138  
41126 Modena - ITALY  
Tel. 059 469 978 - Fax 059 468 874  
[www.kernelgroup.it](http://www.kernelgroup.it)