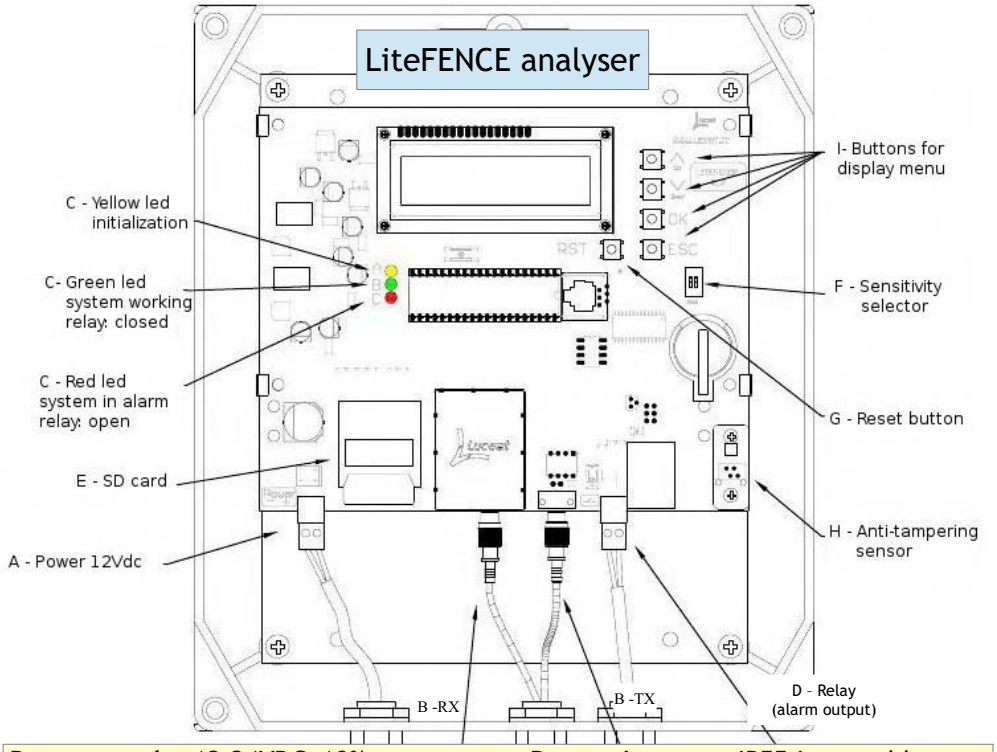
LITEFENCE

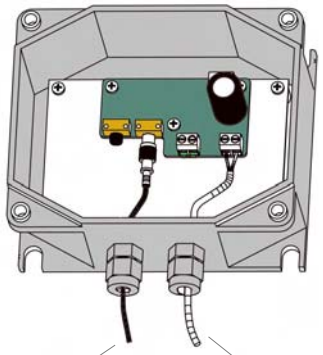
QUICK INSTALLATION MANUAL

LiteFENCE analyser



Power supply: 12-24VDC±10%
Consumption: 250mA @12VDC(2,5Wmax)
Anti-tampering sensor: optical
Certification: EMC2004/108/CE / FCC verification level part15
Optical power budget: -30dBm (250m* + 25 bolts)
Protection rate: IP55 in metal box
Alarm output: 5A/240Vac NC
Dimensions: 220 x 255 x 90 mm

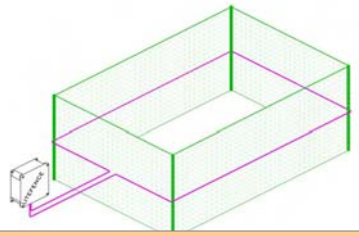
LiteFENCE transmitter



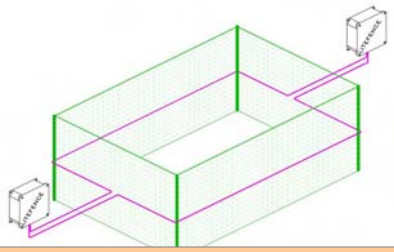
Power supply: +9/12vdc
Consumption: 80mA a 12Vdc
Protection rate: IP55 metal box
Anti-tampering: mechanical
Dimensions: 116x62x160mm
Certification: EMC2004/108/CE FCC verification level part15
Optical power budget: -30dBm (250m* + 25 bulloni)

Connection schemes

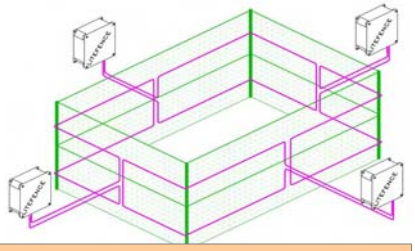
Single loop (max 250m*)



Daisy-chain connection (any perimeter distance)



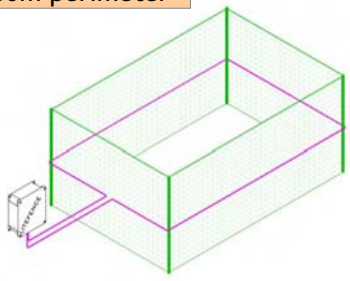
Indipendent loops (any perimeter distance)



LiteFENCE can be connected in a ring connection (indipendent) or in a daisy-chain connection.
With the LiteFENCE transmitter is it possibile to have point-to-point connections (you don't need to close the ring)
The jumper (J) is used if LiteFENCE is installed in a daisy-chain connection and you want to have separate alarm zones (i.e. several LiteFENCE and several zones NC) / one only zone (i.e. several LiteFENCE and one only single zone NC)

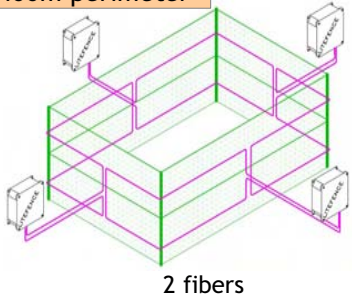
Security levels

200m perimeter



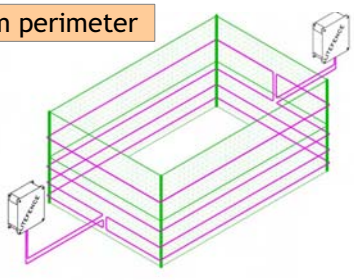
1 fiber (h 1,00m on a 2m high fence)
Anti-climbing and break-through

400m perimeter



2 fibers
(h 0,50/1,50m on a 2m high fence)
Anti-climbing and lifting

100m perimeter



4 fibers
(h 25/50/80/150cm on a 2m high fence)
Against FENCE CUTTING

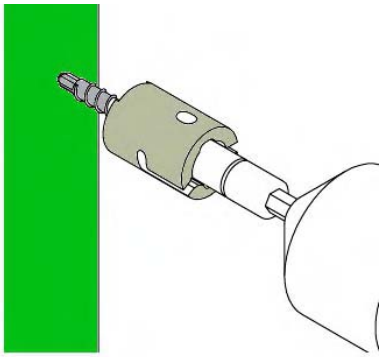
(*) reachable distance considering a correct installation with fiber attenuation <0,1 dB/m at 525nm.
Sharp curves, cable ties or mechanical stress while placing the fiber can reduce the distance

1-INSTALLATION ON CHAIN-LINK FENCES

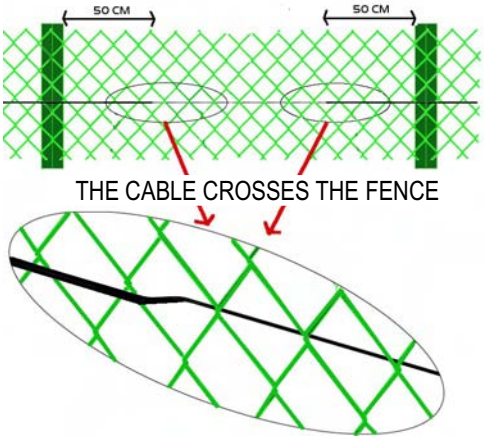
1-Screw the bolt into the pole

1 bolt every 10m

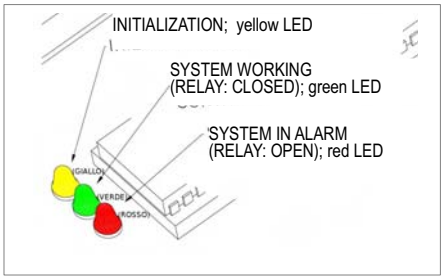
(attach only the bolt, fiber will be attached afterwards)



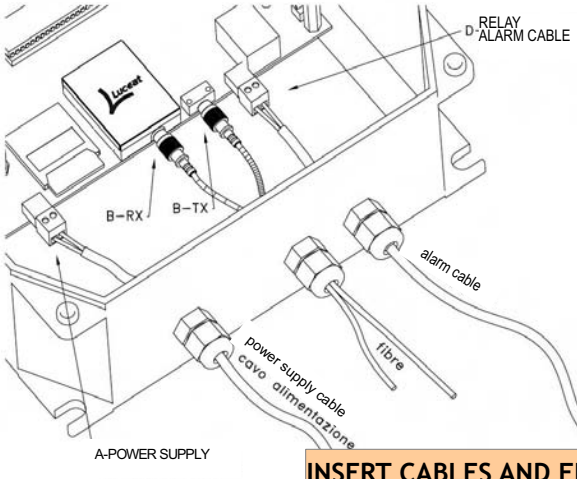
2-Sew (going in/out) the fiber in the fence



3-Connectorize the fiber and connect it to the LiteFENCE analyser



Using the power meter you will constantly monitor the connection of the system and identify the cause of any possible increase of fiber attenuation

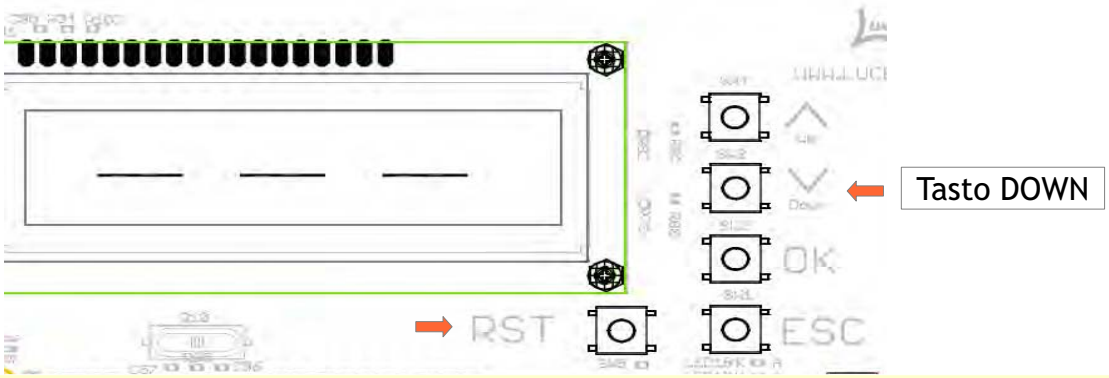


INSERT CABLES AND FIBER THROUGH THE CABLE GLANDS BEFORE YOU CONNECTORIZE THE FIBER

4- SET LITEFENCE IN POWER METER MODE

To prevent optical power loss during the bolts/cable ties installation is VERY IMPORTANT to constantly monitor the optical power of the plastic fiber

Keep the DOWN button pressed while you switch-on the system: a dashed line appears on the display



N.B.: if you want to set the system in Power Meter mode when it is already switched-on, you need to RESET the system: while you keep the DOWN button pressed, press and release the RESET button, and then release DOWN button. After few seconds a dashed line will appear.

HOW TO READ THE POWER METER DATA CORRECTLY

Plastic optical fiber is made of a polymeric material realized in such a way that it can lead the light inside and guarantee the total reflection of the input signal, to transfer all the entering light to the exit.
However, physical and technical phenomenons occurr (ties, tension bolts, eye bolts) and cause power losses along the fiber. That power loss is called attenuation.

Attenuation = optical power loss

Every meter of the installed plastic fiber introduces an attenuation resulting in: the more fiber you install, the more attenuation you introduce, and the less optical power you will get at the end of the fiber.
Optical power is measured in dBm.

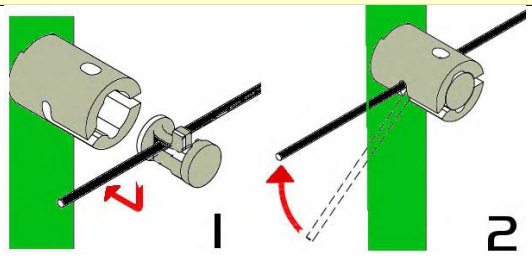
Example:

FIBER ENTRANCE
0 dBm = 0 meters

FIBER EXIT
-10dBm = 100 meters

Maximum sensitivity of Luceat systems is 30dB.
The distances mentioned take into account all common source of attenuation (25dB for 250m plastic fiber + 5dB for 25 tensioning bolt)

5-Insert the cable into the tensioning bolts



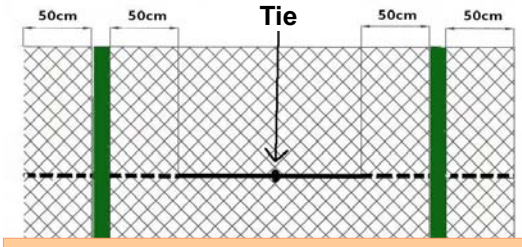
(each bolt introduces a maximum attenuation of 0.1-0.2dB, equal to about 1-2m of plastic fiber)

For the poles where no bolt is screwed:
use existing holes OR drill the pole and pass the cable through it

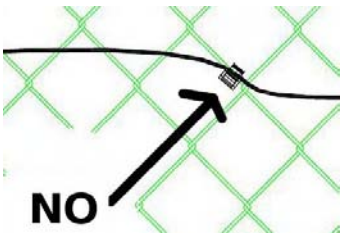
(5mm hole and 8mm flare)

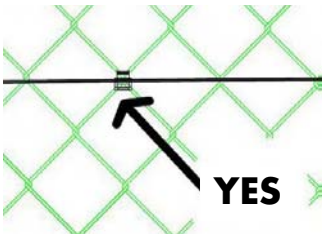
...or let the fiber pass IN FRONT of pole
(this decreases system sensitivity)

6-Fasten the cable to the mesh with a cable-tie between the poles

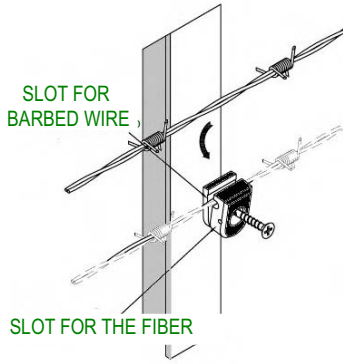
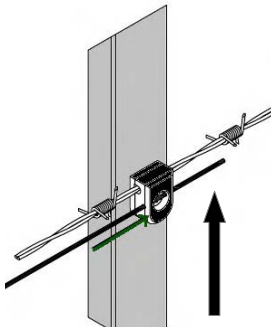
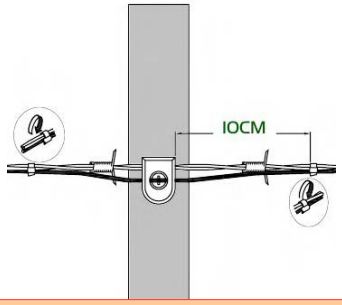


do NOT TIGHTEN too strongly

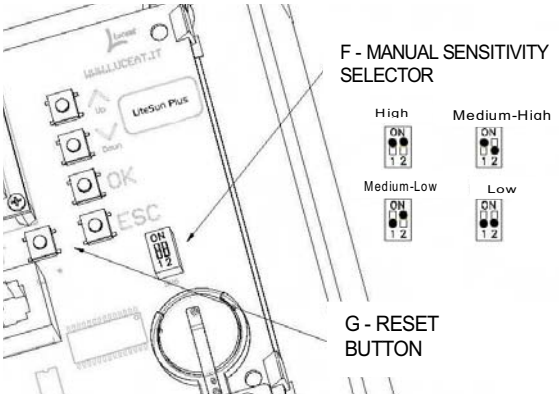




5/6bis- INSTALLATION ON BARBED WIRE

1-Hook the barbed wire with the clip to the abrbed wire arm	2-Thread the fiber into the clip hole protecting the screw from unscrewing	3-Tie the fiber to the barbed wire 10cm (before/after) the clip and every 2 arms
	 Plastic fiber	 do NOT TIGHTEN too strongly

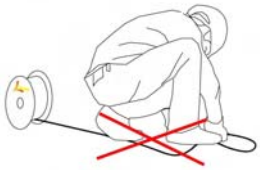
Select sensitivity



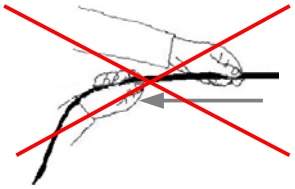
Reset after every change of sensitivity

What NOT to do

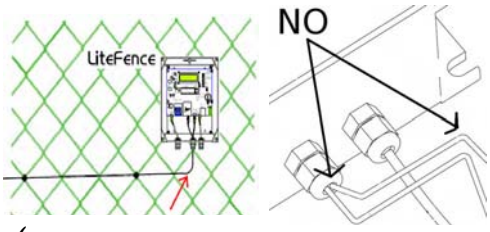
(these actions increase fiber attenuation)



(do not walk on the fiber)



(do not pull hard on the fiber)

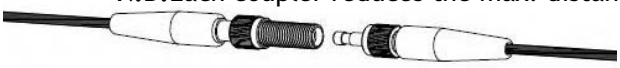


(do not make angles or sharp bendings)

Coupler

You can splice the cable mechanically

N.B. Each coupler reduces the max. distance of the system of about 20m (2dB)



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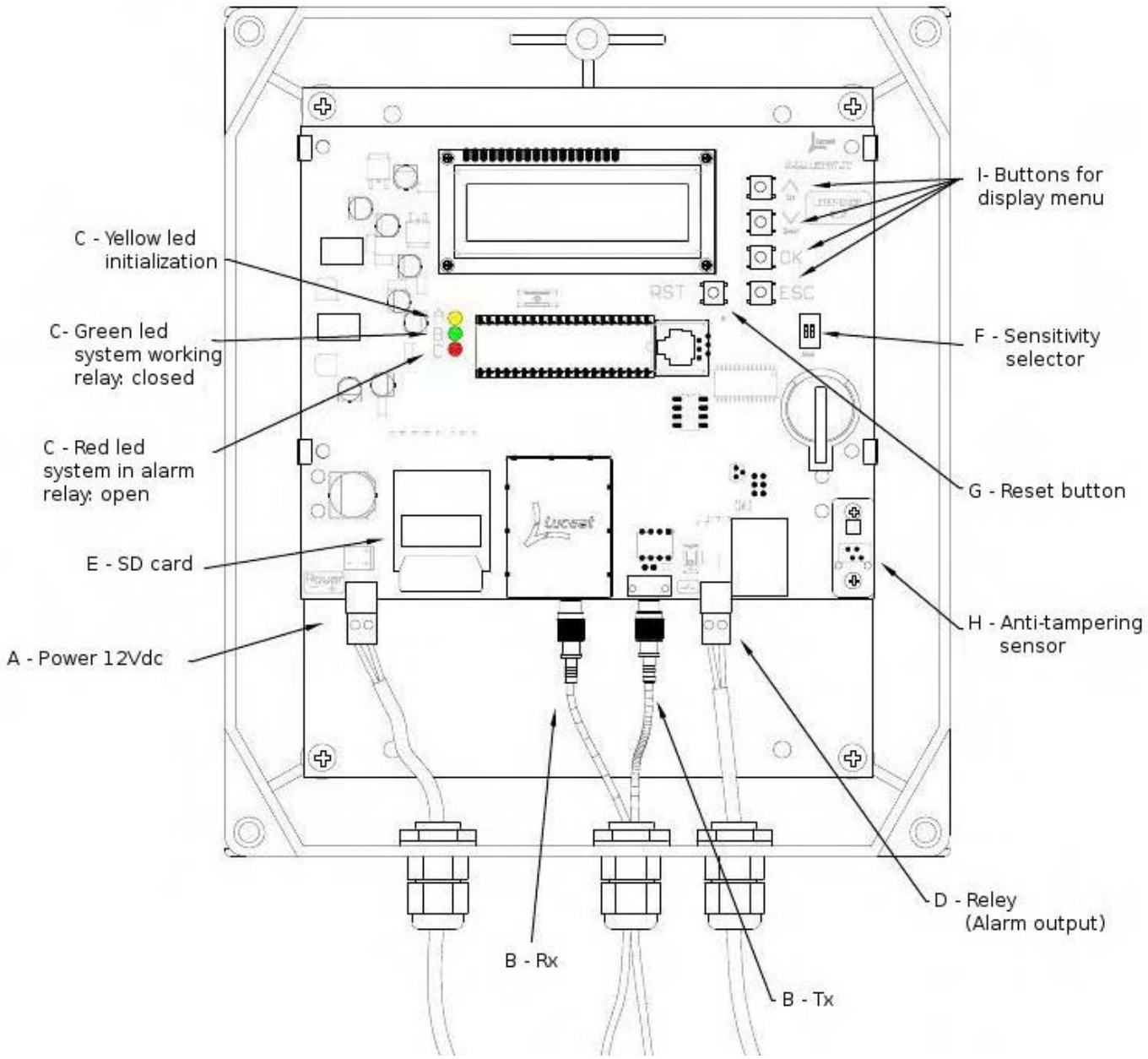
LITEFENCE

SECURITY DEVICE FOR PERIMETER PROTECTION

USER'S MANUAL

320.SIS.LSUN300F011S

LiteFence - Reference figure



LiteFence - How it works

LiteFence detects distortions for the cable LiteWire caused by intrusion attempts, both by climbing over and by lifting the mesh.

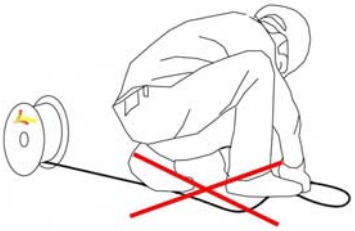
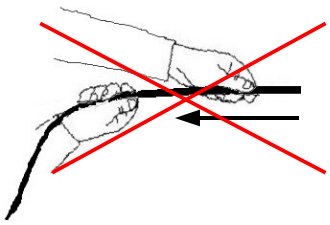
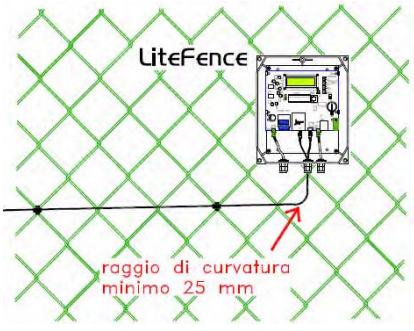
It is necessary to make sure that the cable LiteWire is placed and fastened to the mesh properly in order for LiteFence to detect bends of the mesh following to intrusion attempts.

The installation instructions in this manual will enable you to satisfy the above mentioned conditions.

It is necessary to read this manual before installing LiteFence, as most of the problems that usually occur are due to installation mistakes.

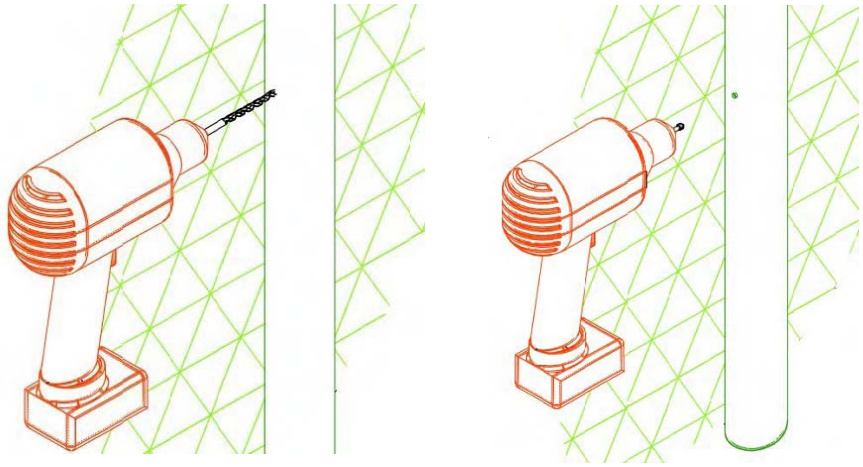
General precautions

Plastic fiber is very resistant and does not break, but bends and angles may reduce, also significantly, the maximum distance of the system

Do not tread or walk on the cable LiteWire	
Do not pull hard on the cable LiteWire	
Minimum bending radius of 25mm	

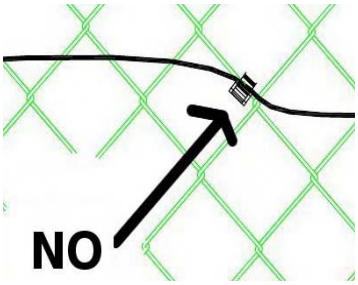
LiteFence - Installation

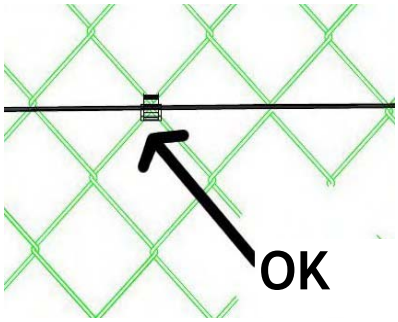
1-Drill the posts with a 5mm head and smooth with an 8mm head.

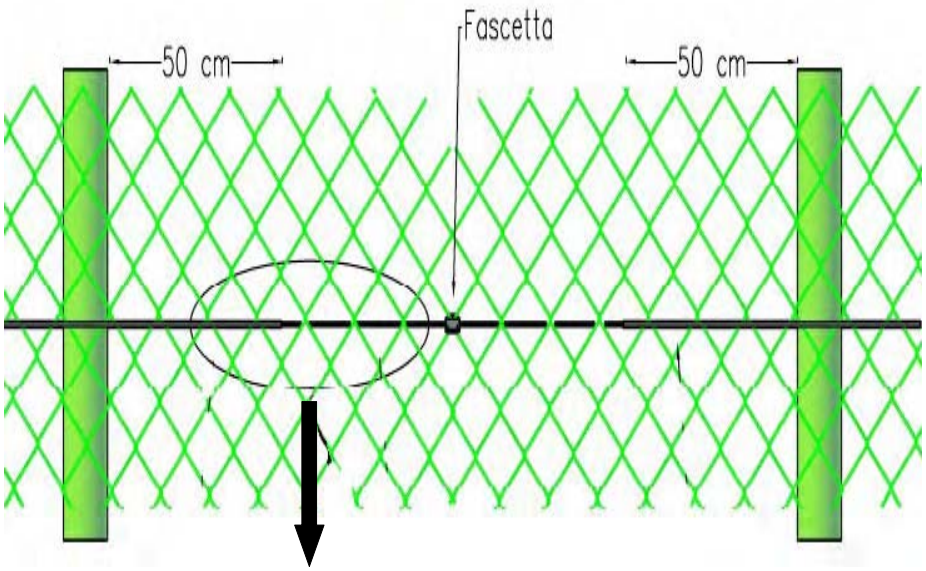


2-Insert the fiber in the holes of the posts and through the mesh, in and out, every 1m, at 50cm away from the posts.

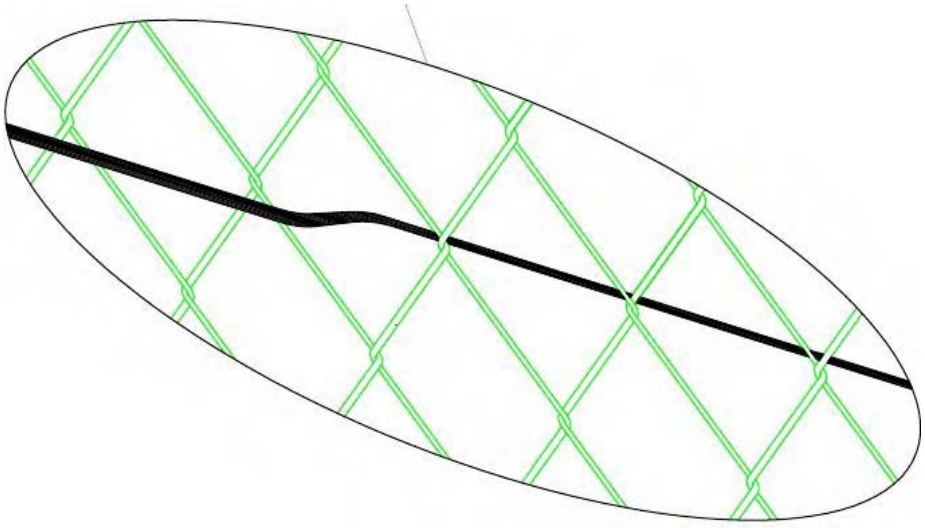
Tie the fiber to the mesh <u>only once in t</u>he middle between the two posts, as shown in the figure.







<u>The fiber goes across the mesh</u>

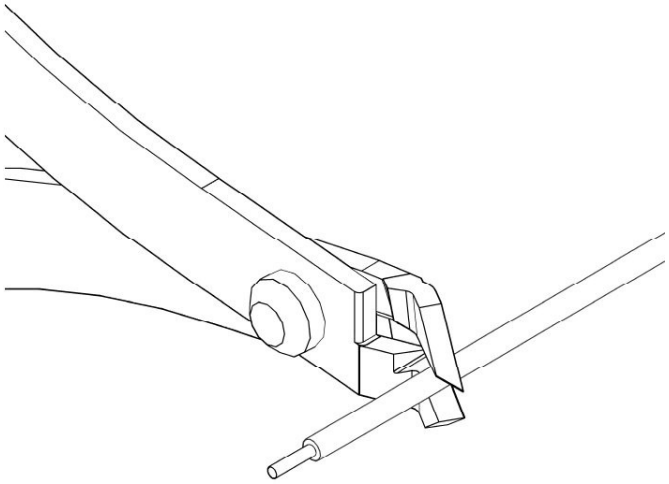
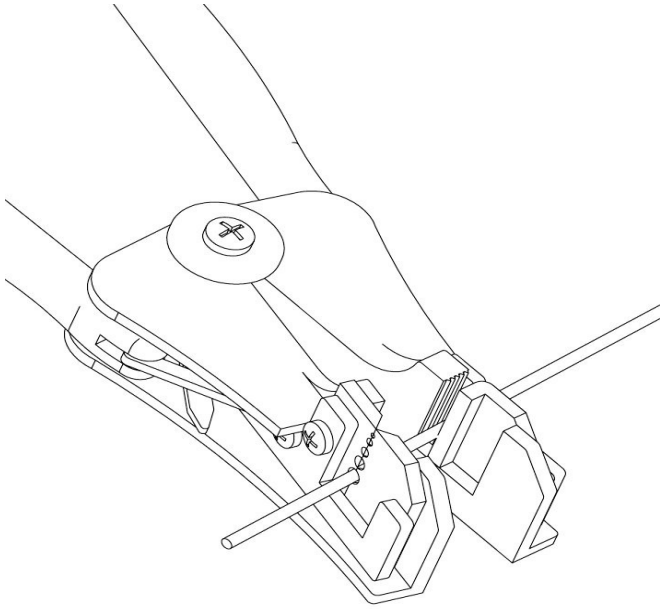


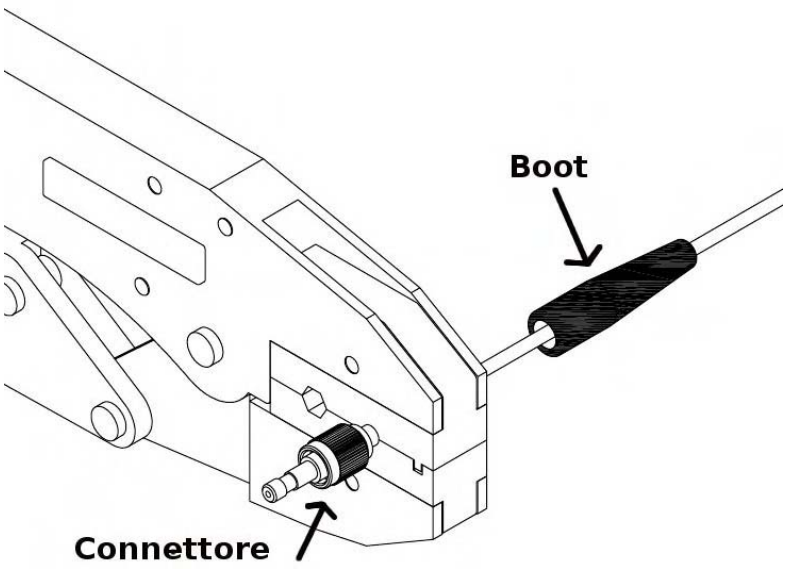
3-Connect the Litewire cable to the device LiteFence

How to connectorize Litewire

Insert the cables into the cable gland of the water tight box and crimp the connectors

All the tools to put a connector can be found in the ***Litewire connectorization kit****.*

	**1- Cut the fiber** with any cutting tool.
	**2 – Remove the jacket** Remove about 1 cm jacket. The jacket of the optical cable has a diameter of 2.2mm. The fiber has a diameter of 1 mm. **ATTENTION!** *Use a standard cable stripper with a hole of 1.0 mm or more, so you will not damage the fiber.*

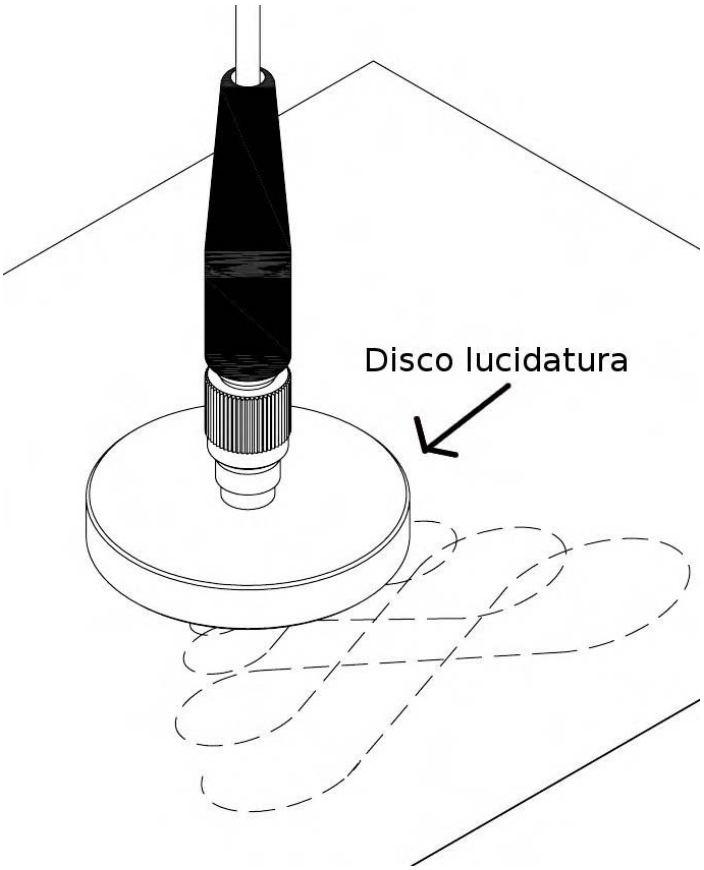


3 - Crimp the connector

Insert the protection boot.
Insert the FSMA connector onto the cable till the jacket stops against the connector; the fiber should come 2mm out of the connector
Crimp the FSMA connectors on the cable jacket.

ATTENTION

The connector must be crimped on the cable jacket and must not be crimped directly on the fiber.
The crimp tool for FSMA connectors must have a hexagonal crimping diameter of 3mm.
In case you ouse a Luceat crimp tool (SMAT.001.M22M), use the 0.122" hole.



4 - Fiber polishing

Level the fiber by polishing the connector on sand paper using the metal polishing disc.

ATTENZIONE

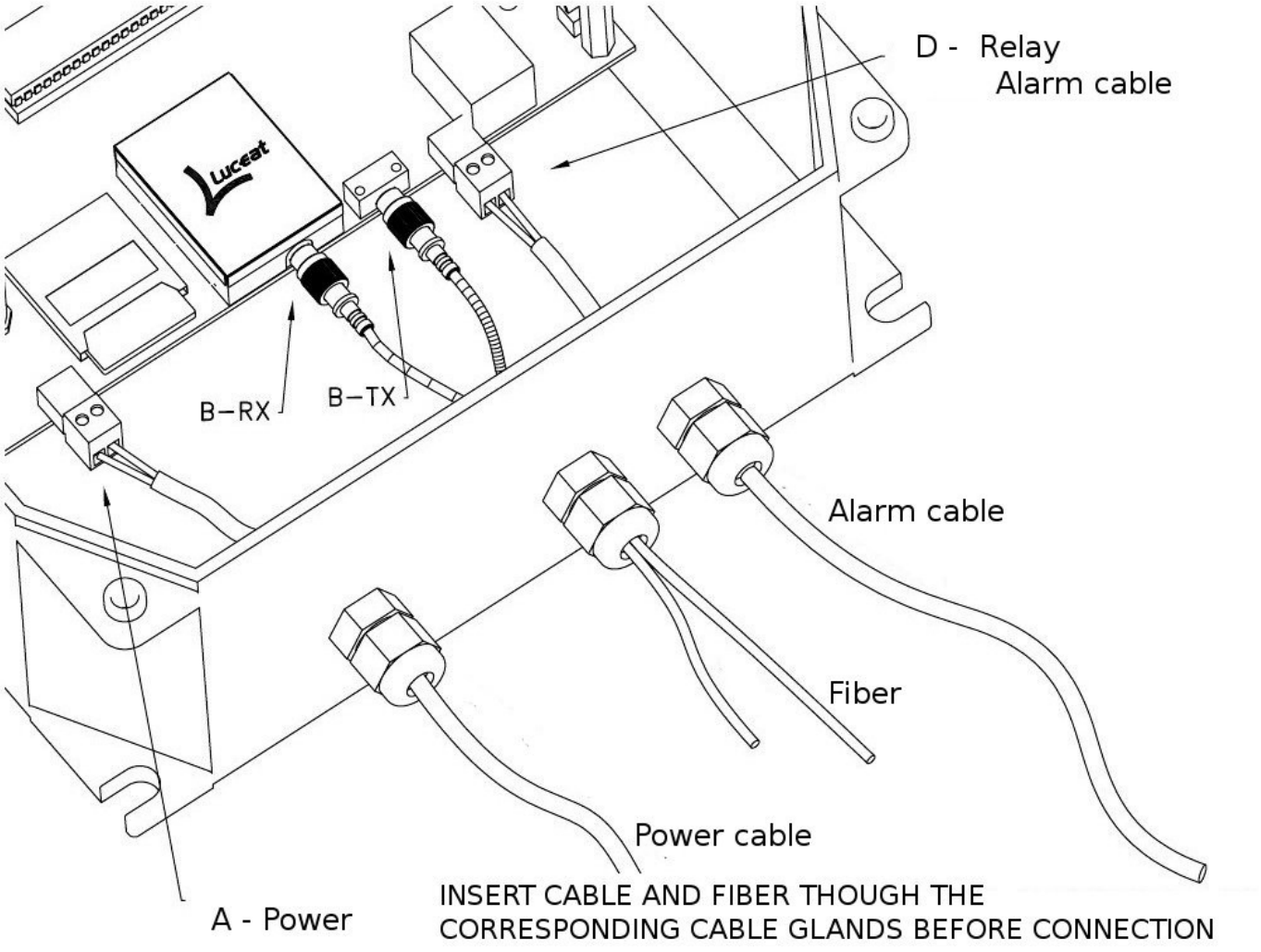
You should make some "8"-shapes with the connector on the sand pater.

1- <u>Connect the cable Litewire to the device</u>

Insert the Litewire cables through the cable glands of the water tight box, crimp the connectors and connect them to the device (B).

2-<u>Connect the alarm zone</u>

Connect the alarm zone (D) of the alarm system; in case the LiteFence devices are placed “in bus”, only the last device will be connected to the alarm system.



<u>The circuit is normally closed</u>, so the relay is closed.

<u>In case of disconnection, cable break, no power or cable bending, the circuit opens.</u>

3- Connect power supply (e.g.from the battery of the alarm system)

Connect the power supply (A)

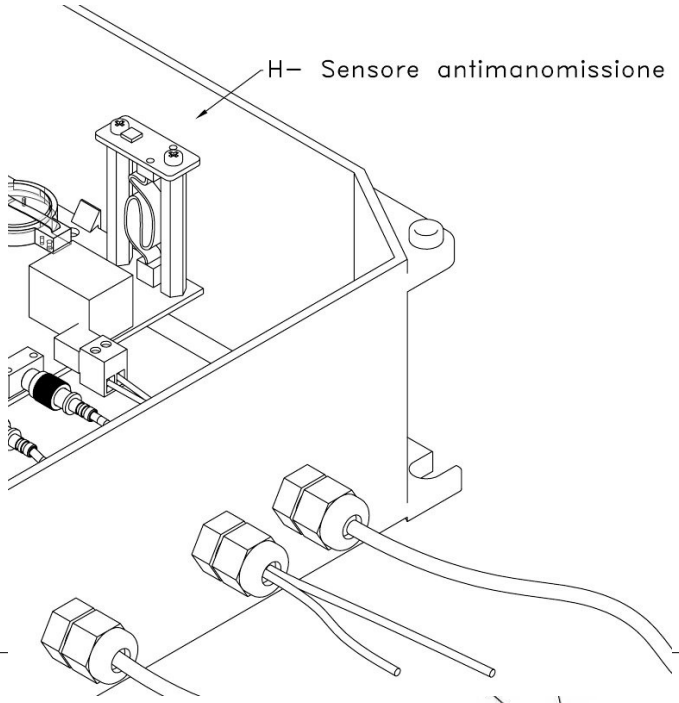
(see previous figure).

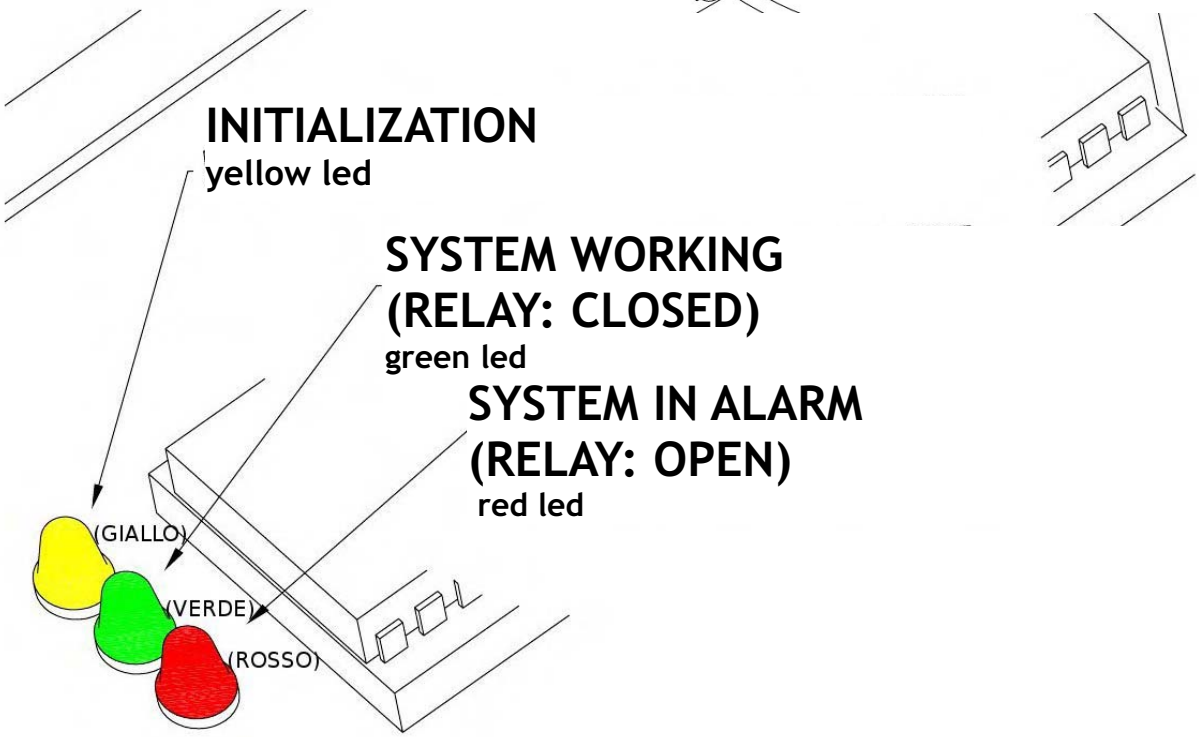
The yellow led glows for some seconds and the green led glows.

From this moment on, the transmission port(Tx) emits codified light signals which go across the plastic optical fiber and arrives at the receiving port (Rx). The device will continually control the power of the signal received.

When the device detects a difference in power, due to cable cut or bendings on the fiber, an alarm will go off.
The alarm status is shown on the display and with the glowing red led.

4- Connect the alarm relay (10A to 240VAC) to the alarm system; you can place the anti-tampering resistance in series.



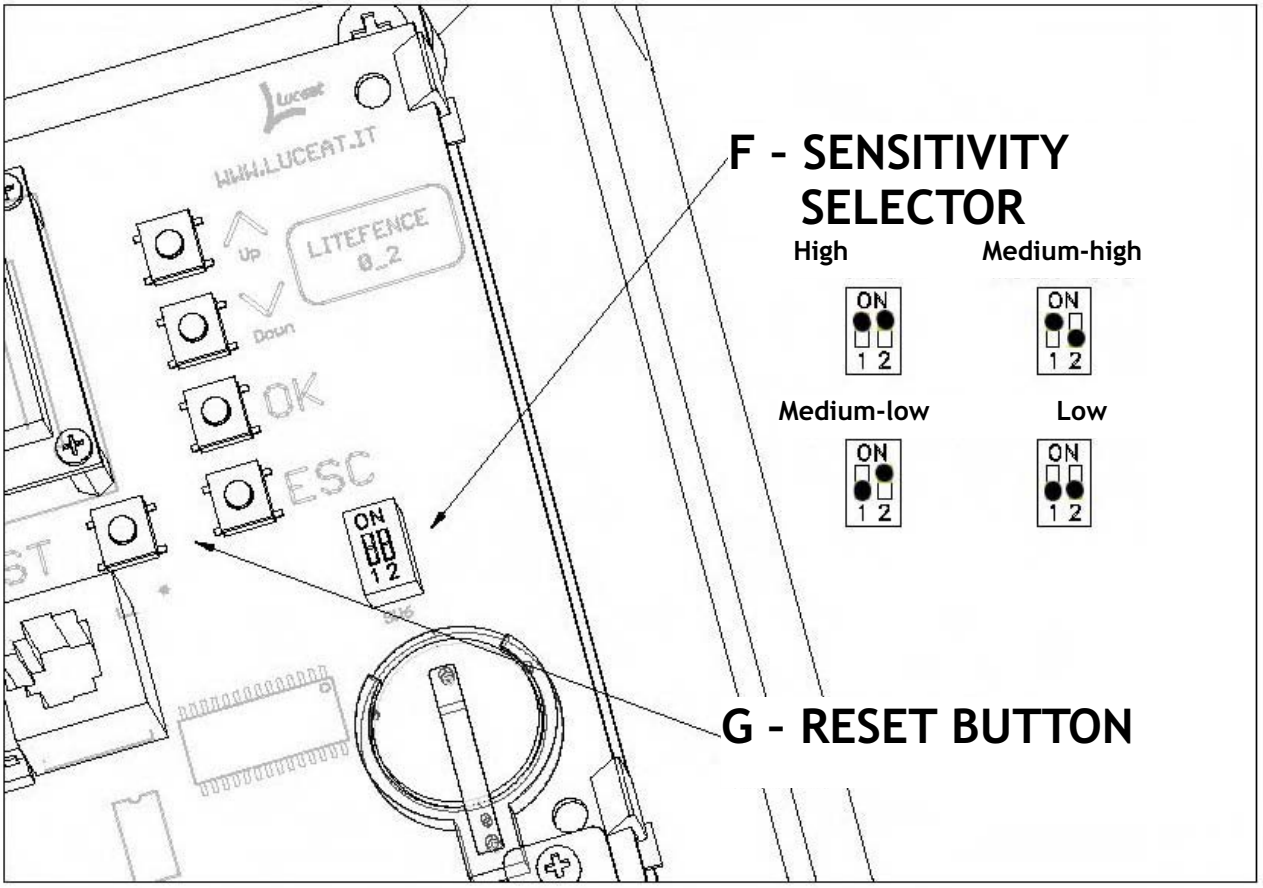


5-Sensitivity adjustment

This device has 4 sensitivity levels you can select according to your application using the selector (F).

The intermediate levels can be used to decrease the system sensitivity in case, for example, of alarms due to bad weather conditions or to increase the protection level.

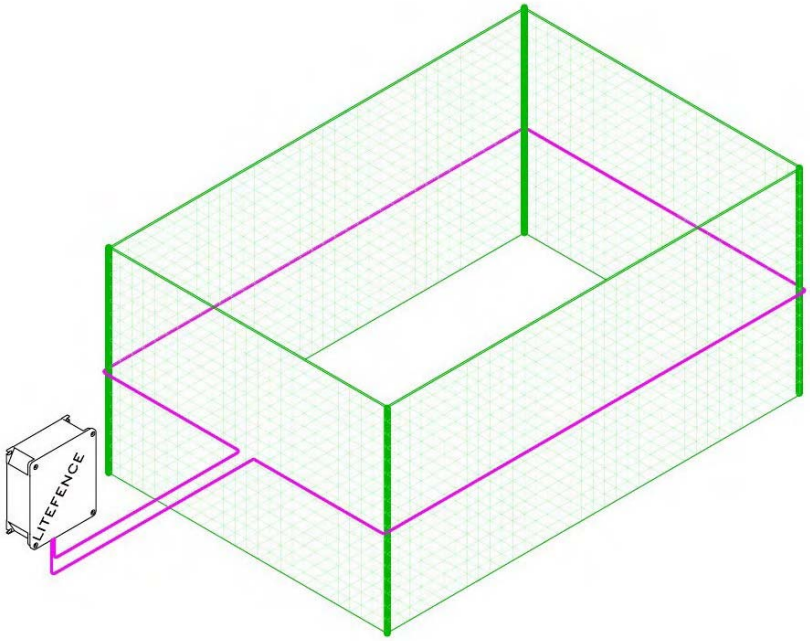
After changing sensitivity, reset the system using the reset botton(G).

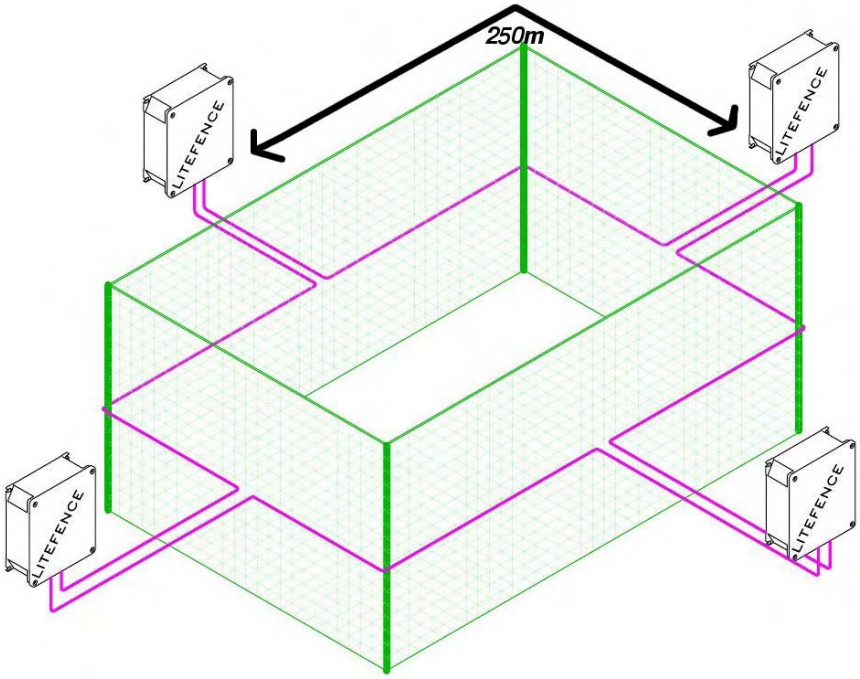


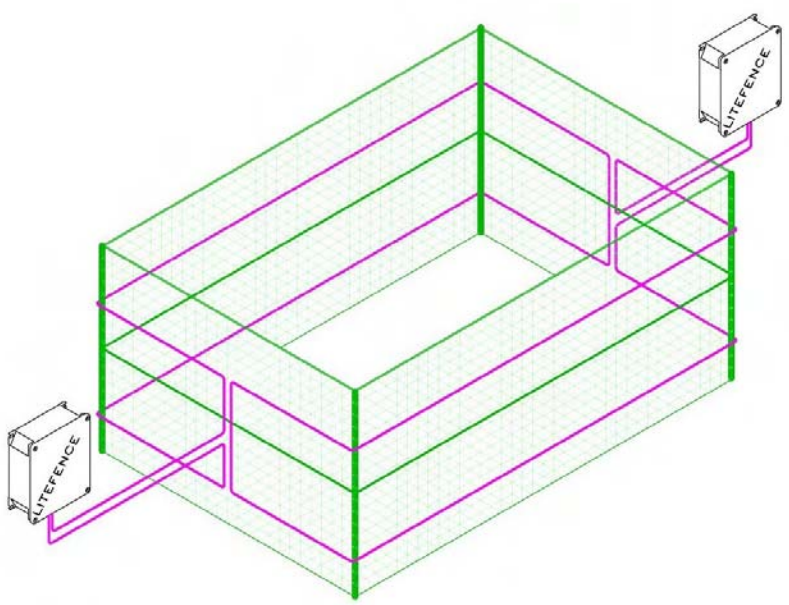
Connection with 1 fiber in place of the middle rod .

Only the upper and lower rods are present.

Loop length: max 250m





Connection with 2 fibers. **All the rods (upper, middle and lower) are present.**	**Loop length: max 250m** 

LiteFence Technical specifications

Protection rate	IP55
Transmission distance	0-250m
Optical power budget	30dB
Alarm output	5A/240 VAC
Power	12-24±10%
Operating temperature	-20˚+70˚C
Humidity	from 5 to 90%
Consumption at 12VDC	140mA
Max power	2W
Weight in IP55 box	194g
Box dimensionsIP55	220 x 255 x 90 mm
Output plastic fiber connector	F-SMA
Immunity to EMI/RFI	100,00%

Monitoring the data on light power variations

LiteFence continually logs the attenuation rates over the cable as well as alarms, recording them in an SD memory card (E). Date and time are already set.

After one month that the device has been operating, you can send the SD memory card to Luceat: we will give you free support about the most appropriate level of sensitivity that should be selected on the device. For this reason, there are 2 SD memory cards in the package.

ATTENZIONE: WARNING: the files reporting the logs can only be read by a special software of Luceat. **Do not try to open the SD memory card, as all data could be cancelled.**

ALERT "Link is too long"

LiteFence indicates when the maximum link length or the maximum attenuation rate has been reached with the following alert on the display.

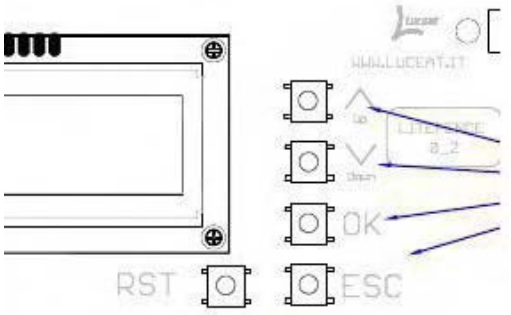
In this case, the system keeps operating correctly, but we recommend turning down sensitivity in order to avoid false alarms.

```
ATTENTION!
LINK IS TOO LONG
```

Sensitivity can be adjusted using the selector (F), as shown on page 9.

USER INTERFACE - Menu structure

LiteFence features a text interface which you can access using the button on the right of the display.



Functions:

- **Up** - menu scroll upwards
- **Down** - menu scroll downwards
- **OK** - option selection
- **ESC** - menu exit

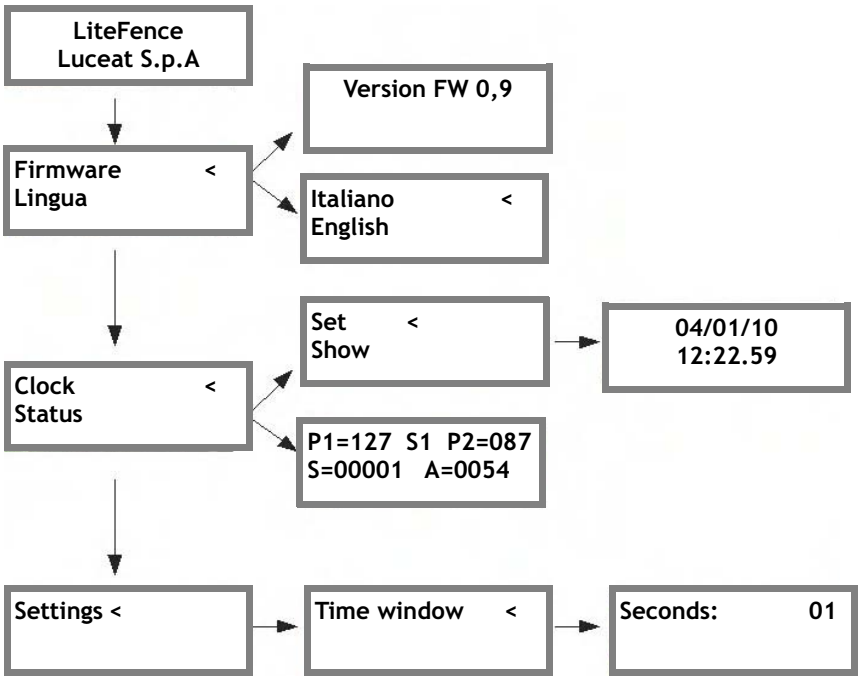
The tree structure will be explained in the next section.

Sub-menus:

- ***Firmware***: shows current firmware version
- ***Language***: language can be selected
- ***Clock***: shows date/time, which can also be set
- ***Status***: reports statistical data on how the device is working

Settings: you can set the analysis time window of the light signal attenuation. The variation of this parameter detects attenuation variations in different intervals. Rates range from 1s(default: lowest sensitivity) to 60s (highest sensitivity).

USER INTERFACE - Menu structure



In “Status” menu you can see the following parameters

• **P1 e P2 :**
Statistical data on how the device is working – they cannot be modified

•**S1: Sensitivity** set with selector(F),(see p. 8)
S1 = High sensitivity
S2 = Medium-high sensitivity
S3 = Medium-low sensitivity
S4 = Low sensitivity

• **S : Status**
S=1 Fiber not connected
S=2 Fiber connected and attenuation analysis/ initialization
S=3 Device is active

• **A: Number of alarm** reported by LiteFence
This counter can be re-set by keeping button UP pressed while switching on or while resetting the device.

Accessories

Connectors: F-SMA metal connectors (.

Litewire connectorization kit
(Crimp tool, automatic cable stripper, cutter, 10 connectors, 1000 grit sand paper, polishing disc)

Lit*ewire* connectorization kit + *Litewire* Link tester

Metal **coupler** for F-SMA splices.
Each splice also requires no.2 FSMA connectors.

Technical support

For any further information and technical support, please contact us:

E-mail : luceat@luceat.it
Internet website : www.luceat.it
Tel. +39 030 9771 125
Fax +39 030 5533158

Declaration of conformity

DICHIARAZIONE DI CONFORMITA'

No.: 01/2012

Luceat Srl.

Via Canossi, 18 - 25030 Torbole Casaglia (BS)

dichiara qui di seguito che il prodotto

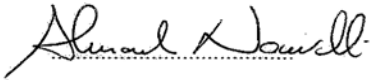
LiteFence (cod. 320.SIS.LSUN300F011S)

in base agli elementi in nostro possesso risultano in conformità a quanto previsto dalla seguente direttiva comunitaria:

Compatibilità Elettromagnetica

EMC 2004/108/CE

e che sono state applicate tutte le norme indicate qui di seguito.



(firma)

APPLIED STANDARDS

- **EN 61000-6-3: 2007 + A1: 2011**
- **EN 50130-4: 1995 + A1: 1998 + A2: 2003 or, alternatively, EN 50130-4: 2011**

WARNING!

Before installing and operating this device, read this manual and follow all instructions.

KEEP THIS MANUAL AVAILABLE FOR FURTHER REFERENCE

Technical data may change at any time and without prior notice

Complete your installation and check that everything works properly before throwing the package away.

Do not damage the void label on the device

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