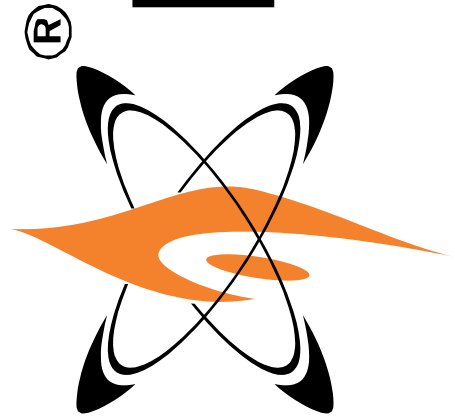


CE



ELMO.[®] S.P.A.

Active Infrared Barriers
LK-IR v.3 series
TECHNICAL MANUAL

090020682

FOREWORD

FOR THE INSTALLER:

Please follow carefully the specifications relative to electric and security systems realization further to the manufacturer's prescriptions indicated in the manual provided.

Provide the user the necessary indication for use and system's limitations, specifying that there exist precise specifications and different safety performances levels that should be proportioned to the user needs. Have the user view the directions indicated in this document.

FOR THE USER:

Periodically check carefully the system functionality making sure all enabling and disabling operations were made correctly.

Have skilled personnel make the periodic system's maintenance. Contact the installer to verify correct system operation in case its conditions have changed (e.g.: variations in the areas to protect due to extension, change of the access modes, etc...)

.....

This device has been projected, assembled and tested with the maximum care, adopting control procedures in accordance with the laws in force. The full correspondence to the functional characteristics is given exclusively when it is used for the purpose it was projected for, which is as follows:

Active Infrared Barriers

Any use other than the one mentioned above has not been forecasted and therefore it is not possible to guarantee its correct operativeness.

The manufacturing process is carefully controlled in order to prevent defaults and bad functioning. Nevertheless, an extremely low percentage of the components used is subjected to faults just as any other electronic or mechanic product. As this item is meant to protect both property and people, we invite the user to proportion the level of protection that the system offers to the actual risk (also taking into account the possibility that the system was operated in a degraded manner because of faults and the like), as well reminding that there are precise laws for the design and assemblage of the systems destined to these kind of applications.

The system's operator is hereby advised to see to the periodic maintenance of the system regularly, at least in accordance with the provisions of current legislation, as well as to carry out checks on the correct running of said system on as regular a basis as the risk involved requires, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. The user must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay.

Design, installation and servicing of systems which include this product, should be made by skilled staff with the necessary knowledge to operate in safe conditions in order to prevent accidents. These systems' installation must be made in accordance with the laws in force. Some equipment's inner parts are connected to electric main and therefore electrocution may occur if servicing was made before switching off the main and emergency power. Some products incorporate rechargeable or non rechargeable batteries as emergency power supply. Their wrong connection may damage the product, properties and the operator's safety (burst and fire).

Your Dealer:



1. GENERALS

LK-IR v.3 series active infra-red barriers offer excellent perimeter protection for windows, French windows, front doors and gates, skylights, etc. The barriers can be installed inside the rooms and between the window needing protection and the shutter; in all cases, they have to be installed in a weatherproof position.

The supplied plastic brackets facilitate fixing the individual barriers. The brackets are fixed with screws to the selected support and then the barriers will be fixed to the brackets. The brackets create a firm grip in order to prevent accidental detachment. Vertical alignment is obtained by sliding. When the setting operations have been completed, the TX and RX must be definitively secured, using the fastening element located near the connection terminal board.

The barrier models feature a different number of beams: LK-IR2 barriers feature 2 infrared beams (and digital data transmission), LK-IR4 barrier 4 IR beams, LK-IR6 barrier 6 IR beams, and LK-IR8 barrier 8 IR beams.



The general management is based on a microprocessor and allows sequential modulation and activation of the individual transmitters, synchronisation with the receiver, and the detection of interruption of one or more beams. When the protective cap of the TR and RX terminal boards is opened, the system generates a tamper alarm event sent to the terminations on the terminal board.

The IR signal consists of a pulsed, coded digital sequence to prevent barriers elusion through the illumination of the receiver with an external IR source.

Note: IR signal transmission encoding of **LK-IR v.3 series barriers** has been modified to improve barriers operating mode, therefore products of this series **are not compatible with products of the previous version LK-IR v.2.**

2. FEATURES

2.1 Electrical features

Barrier models:	LK-IR2, LK-IR4, LK-IR6 and LK-IR8 (different features in bold)	
Protection class:	IP54 with terminal board at the top, IP53 with terminal board at the bottom (See note on p.6)	
Performance level:	1st level	
	TRANSMITTER V.3 (TX)	RECEIVER V.3 (RX)
Power supply:	12V  +/- 20%	Power supply: 12V  +/- 20%
Consumption max:	12 mA LK-IR2 , 14 mA LK-IR4 , 15 mA LK-IR6 , 15 mA LK-IR8 .	Consumption max: 28 mA LK-IR2 , 28 mA LK-IR4 , 26 mA LK-IR6 , 28 mA LK-IR8 .
IR Transmission:	Digital, coded, anti-elusion type	Receiver: 2 self-adapting modules per IR beam
Selection jumpers:	For RX-TX synchronisation <i>synch wire connection required:</i> - Open = operating with synch wire - Closed = operating without synch wire (standard).	Selection jumpers: activation of alarm buzzer and internal LED indicator: - Closed = buzzer and led enabled , - Open = buzzer and led disabled .
IMPORTANT: The selections must be identical in both the TX and RX modules.		Selection dipo-switches: AND function of two adjacent beams Synch operation Fast detection of beams interruption Self-exclusion of last beam
Terminal board wirings:	Power. Tamper C - NC terminals. SYNC to RX terminals.	Terminal board wirings: Power. SYNC terminal for synch with TX. Tamper C - NC terminals. Alarm C - NC terminals (with 20Ohm contact resistance).
Terminal board selections:	TEST terminal for barrier alignment: - <i>Free terminal</i> = low-power mode for alignment (5m range.) - <i>Closed on negative</i> = high-power mode (10m range max.)	Alarm contacts: Static relay protected against external magnetic fields, I max. 200 mA@24V AC/DC
		Alarm time: rapid travel of a beam: 1s, beam self-exclusion: 6s, to the end of the cause +1s, for remaining beams when an excludable beam has already been excluded.



Barrier models:	LK-IR2	LK-IR4	LK-IR6	LK-IR8
IR beam number:	2	4	6	8
Operating range:	5m (10m with test jumper wired to power negative pole).			
IR beam aperture:	1m max			
Dimensions in mm.: W 33 x D 23 x	H 520	H 1120	H 1535	H 1975
Weight:	263g	520g	718g	900g
Operating temperature:	-10 / +45 °C guaranteed by manufacturer, 93% r.h.			
Parts supplied: fixing screws and dowels, technical manual.	2 + 2 fixing brackets	3+3 fixing brackets	4+4 fixing brackets	5+5 fixing brackets

LK-IR v.3 series barriers successfully passed the tests conducted in compliance with EMC 89/336/EEC standard; the tests were run according to the standard EN50130-4:1995 + A:1998 on immunity and standard EN50081-1:1992 on electromagnetic emissions.

LK-IR v.3 series barriers also passed tests conducted in compliance with LVD 73/23/EEC standard on electrical safety; the tests were run according to the standard EN60950:2000-06.

3. INSTALLATION

Barriers installation sequence referring to the diagram on the following page:

A = Fit the support brackets to the selected point (when installed, the barriers shall be at 90° with respect to the installing surface).

B = Attach the barrier.

C = Route the cables through.

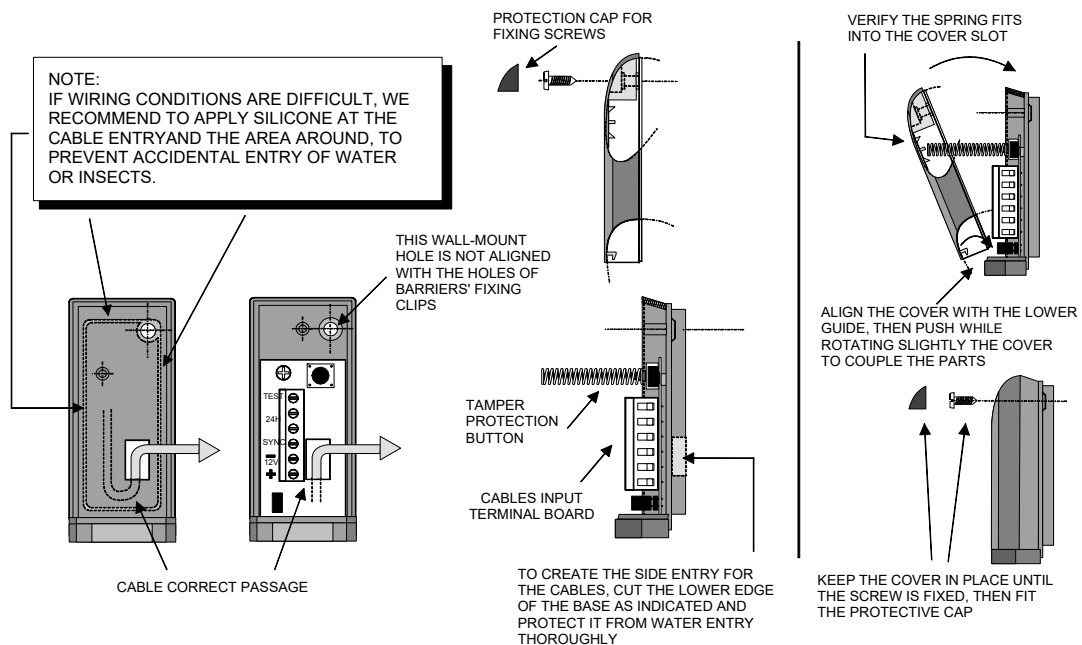
D = Power up the barrier and adjust its height to obtain the best possible alignment. If the barrier is misaligned and the synchronisation jumpers are incorrectly selected, this will cause an on-going alarm status.

E = Close TEST terminal to obtain the widest range.

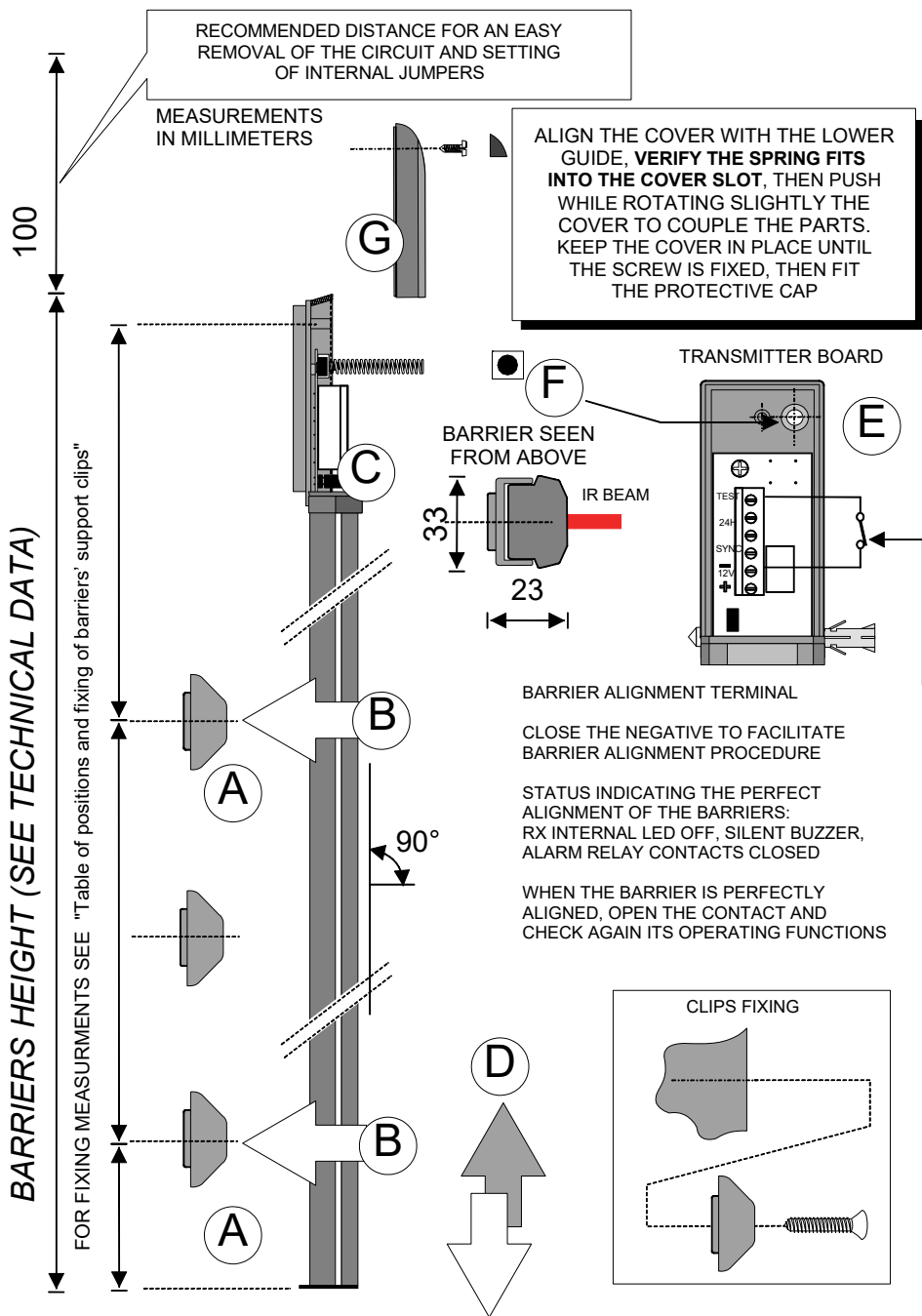
F = When you have the desired performance, drill a hole, insert the dowel, and secure the screw close to the terminal board.

G = Fit the protective cap as illustrated in the following diagram, taking care to check the snap of the Tamper microswitch.

View of cable route and cover closing procedure:



Installation measurements and procedure:



IMPORTANT:
IR signal transmission encoding of **LK-IR v.3 series barriers** has been modified to improve barriers operating mode, therefore products of this series **are not compatible with products of the previous version LK-IR v.2.**

DO NOT REMOVE FRONT AND INNER IDENTIFICATION LABELS.

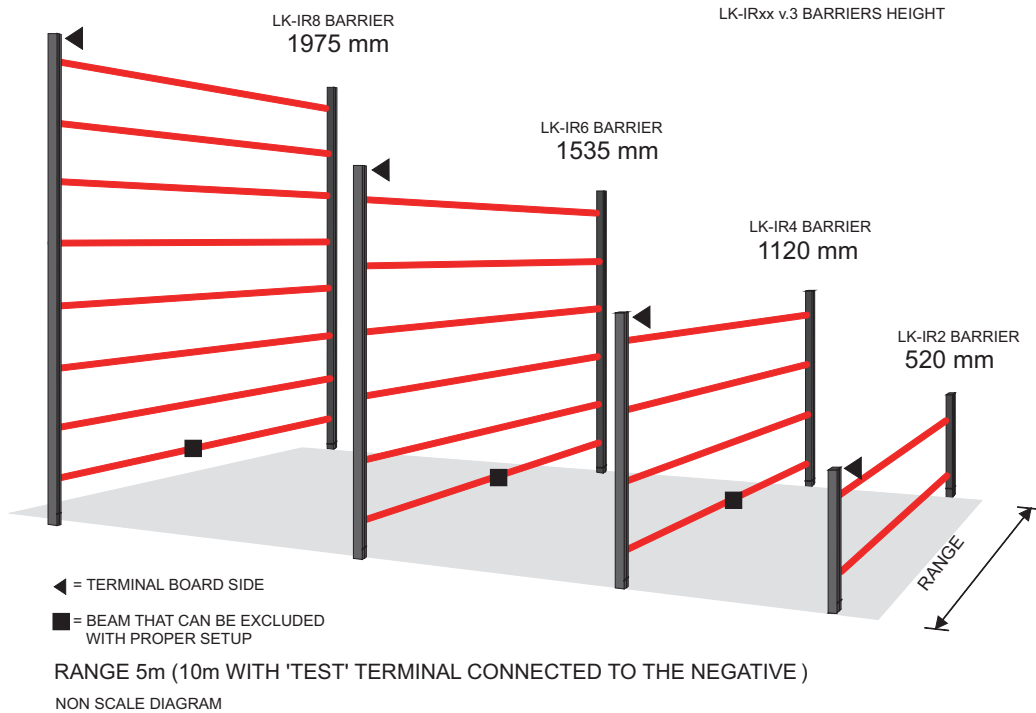


Table of positions and fixing of barriers' support clips:

Model	Supplied clips	Distance from the fixing point of cable entry to the first clip	Following distance point	Following distance point	Following distance point	Following distance point	Distance from barrier edge
LK-IR2	2+2	220	220				73
LK-IR4	3+3	347	347	347			72
LK-IR6	4+4	365	365	365	365		72
LK-IR8	5+5	380	380	380	380	380	72

Measurements in millimeters.

View of barriers:



NOTE:

If the barriers are installed with the connection terminal board at the bottom, this ensures IP53 protection class, if installed with the terminal board at the top, this ensures IP 54 protection class. In both cases, the barrier shall perfectly adhere to the flat surface.

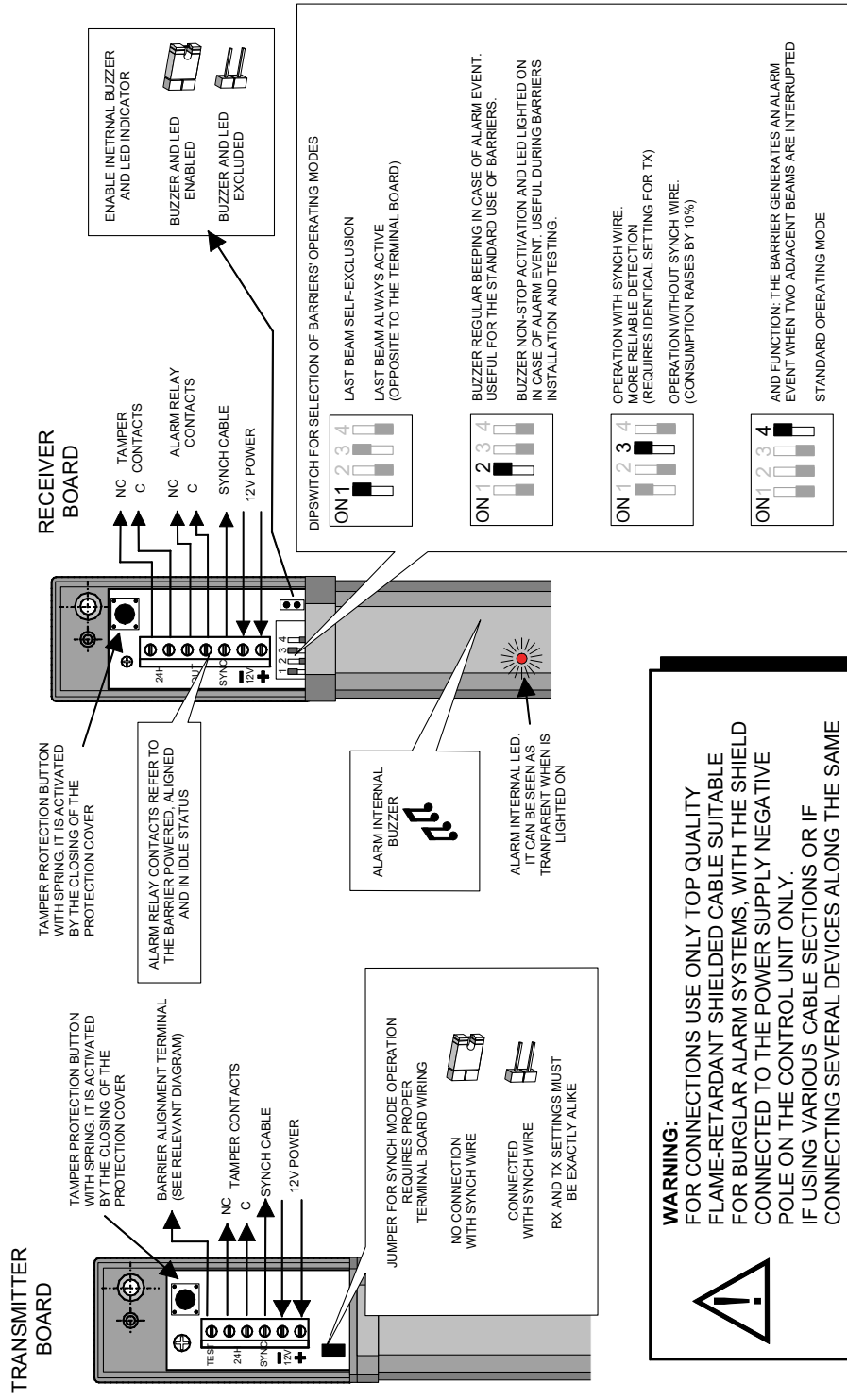
The system installer shall see to the protection of barrier cables entry in order to prevent accidental entry of water.

IMPORTANT:
barriers have been designed to, and realized for, the detection of the complete passage of people.



4. ELECTRICAL WIRING DIAGRAM

TERMINAL BOARD WIRINGS AND OPERATING MODE DIPSWITCH



Operating mode WITHOUT synchronisation wire connected

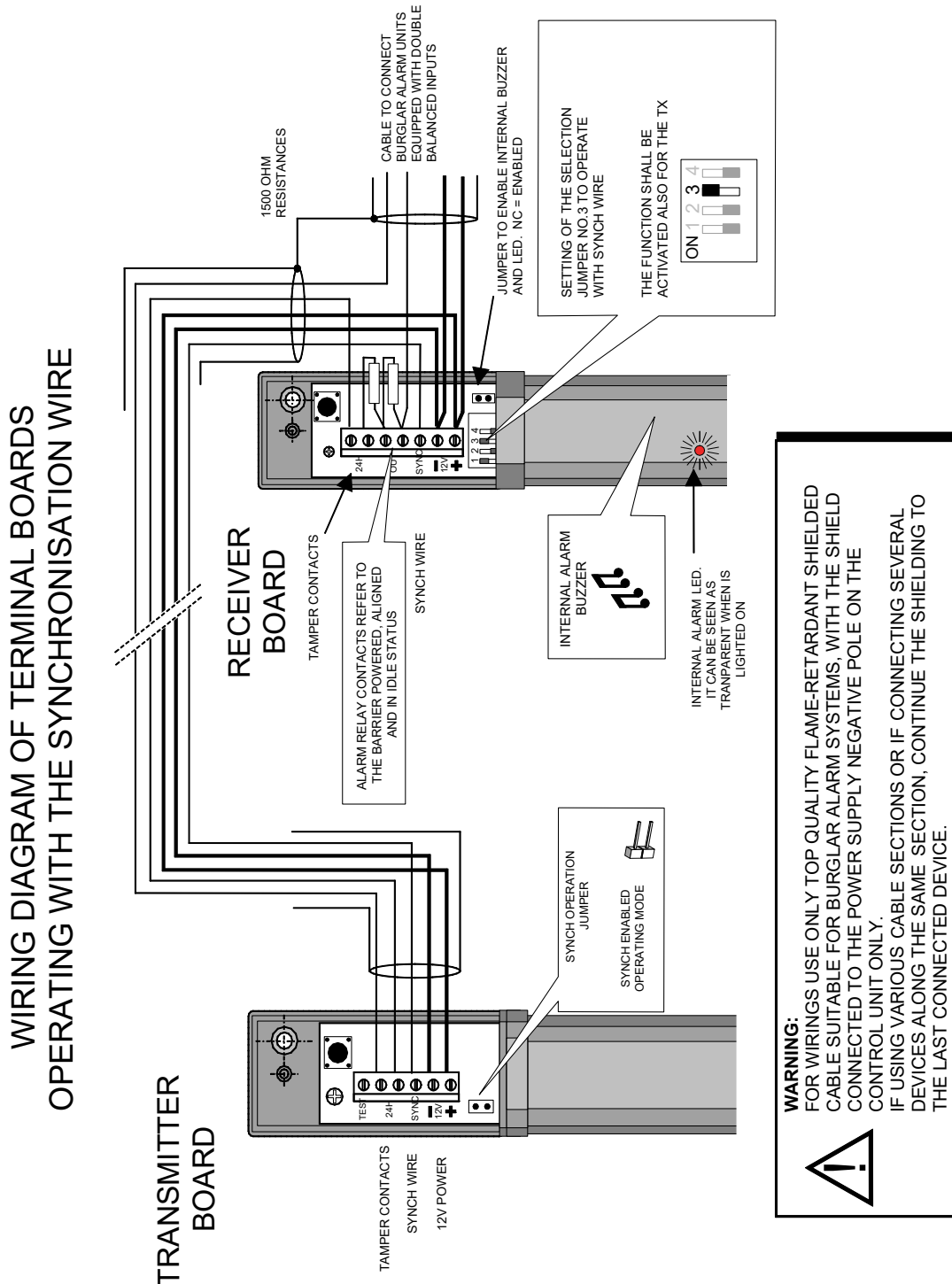
RX dipswitch no. 3 shall be set to OFF position and TX specific jumper shall be closed.

In this operating mode, a transmission procedure shall be carried out, by simultaneously lighting all the beams. Then, beams will be lighted in a repetitive sequence.



Operating mode WITH synchronisation wire connected

In this operating mode, RX barrier sends the operating data necessary for the correct management of the IR beams to TX barrier through the synchronisation wire.



NOTE: to operate with synchronisation mode, set **dipswitch no.3 to ON position** towards RX terminal board and open TX specific jumper.

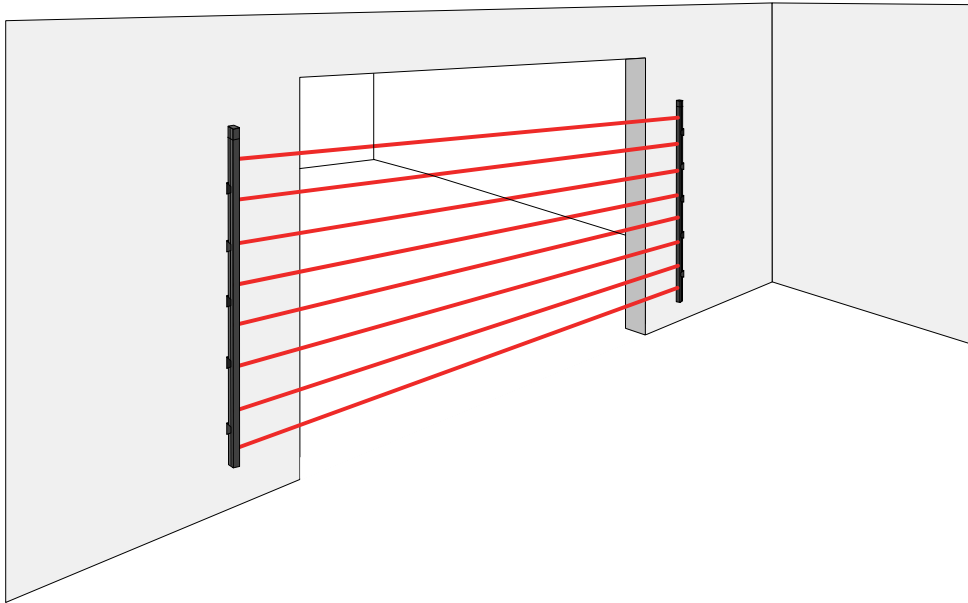
If the configuration differs or the wire is not connected, the barrier will keep the alarmed condition.

It is also possible to use the beam "exclusion" option (see "Beams exclusion" on page 11).



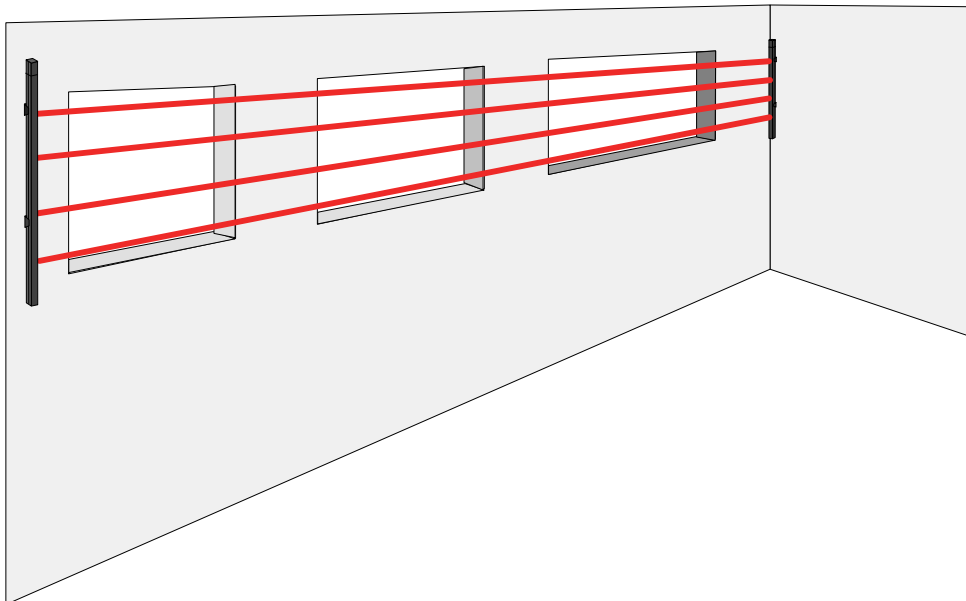
5. INSTALLATION EXAMPLES

Main entrances and gates:



NOTE: The installer shall secure the barrier at 90° with respect to the wall.

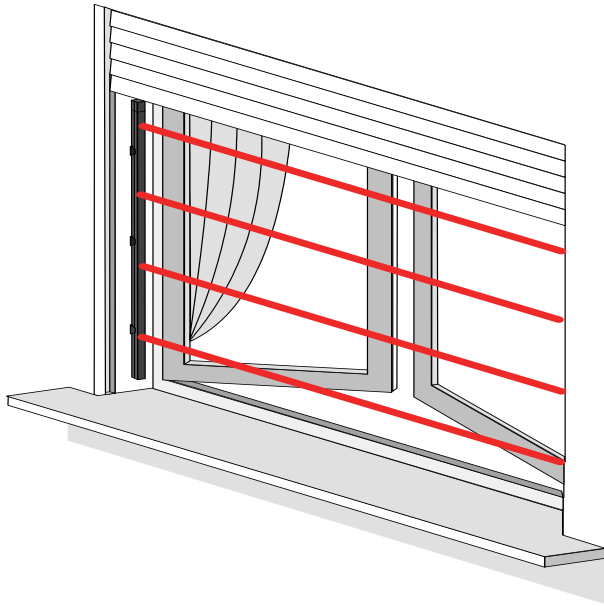
Multiple windows:

**WARNING**

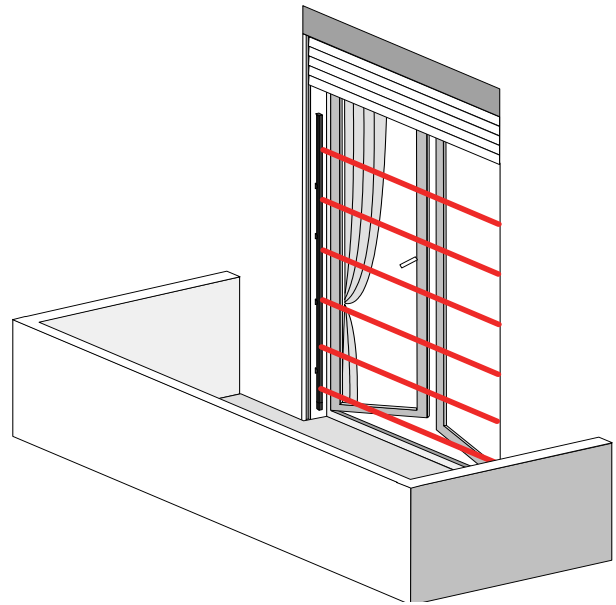
Be very careful: during installation of multiple barriers on one wall, a transmitter beam MUST NOT be detected by a different barrier receiver.



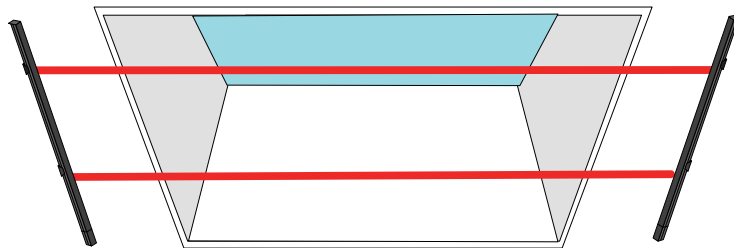
Single window:



French window:



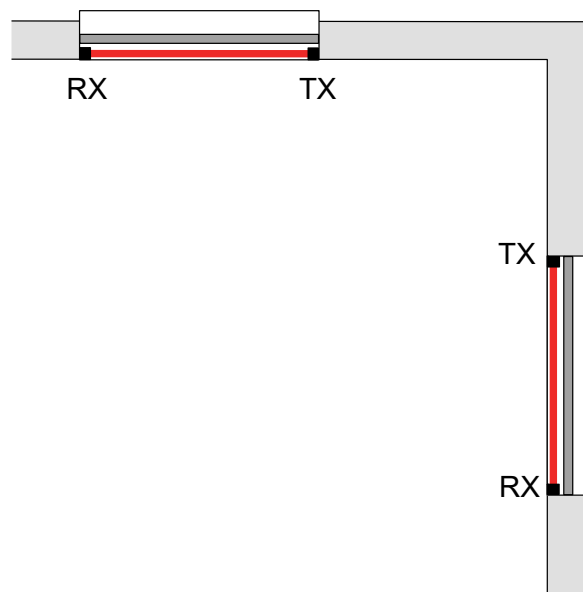
Skylights:



NOTE: The installer shall secure the barrier at 90° with respect to the wall.

- Installation recommended for two windows positioned one next to the other.

Place the transmitters as follows:



6. ALARM CONDITIONS MANAGEMENT

6.1 Alarms general detection

Alarm signals detection depends on the configuration of RX and TX dipswitches and jumpers.

The alarm is normally generated in the following cases:

- if one or more beams are interrupted;
- if the synchronising wire is disconnected/cut/etc., providing this operating mode is enabled;
- in case of an elusion attempt with a different IR source;
- if power is cut to one or both the devices.

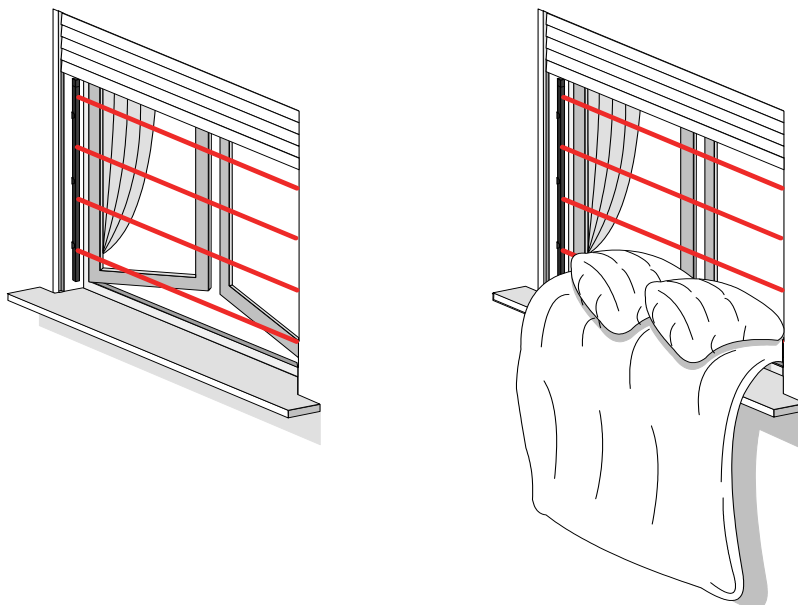
Alarm conditions are signalled in the following cases:

- opening of C - NC contacts;
- (if enabled) alarm LEDs lighted and buzzer triggered, see RX RED JUMPER status.

6.2 Beams exclusion

The barriers are equipped with the beam exclusion function, that is, the function allowing to **disable the beam opposite to the terminal board**. The function makes the barriers suitable to be used for residential protection systems and is activated with dip no.1.

For example, if a barrier is installed to protect a bedroom window, the lowest beam may sometimes be shadowed by blankets and pillows like in the following drawing:



In this case, the shadowing of the lower beam will generate an alarm signal (optical and acoustic signalling of the receiver) that will be transmitted to the control unit for relevant management.

If this condition continues for more than 6 seconds, the lower IR beam will be disabled and a possible alarm event will be managed by the other beams.

The disabled beam is promptly reinstated in the overall management of the barrier as soon as the cause for exclusion is removed.

In practice, this operating mode is particularly useful when the barrier is connected to *advanced control units series such as CP80 and subsequent series, ET8 and subsequent series, and ET8/48 and subsequent series*. These control units are equipped with the "CHIME" function which repeats the same fault signals on all system keypads.



The barriers can be disarmed during day hours, but if the "CHIME" function is enabled, the user will hear the buzzer alarm if the beam is voluntarily excluded.

At different times of the day, if the remaining beams are interrupted, this will still activate the buzzer, signaling the intrusion of a stranger through the 'OPEN' window.

NOTE: the function is not active for LK-IR2 barrier or if the barriers operate with AND mode.

6.3 Fast response to beams interruption

LK-IR v.3 series barriers are equipped with a device for beams interruption detection and analysis selectable with DIP no.2: when set to ON position, it ensures a fast response to beams interruption.

6.4 AND operating mode of adjacent beams

To avoid false alarms due, for example, to birds on windowsills or cats passing through a beam, the barriers are equipped with a function that controls the status (interrupted or not) of two adjacent beams. The function is selectable with DIP no.4.

NOTE: the beam next to the terminal board is always active, also when the barrier operates with AND operating mode.

7. DISPOSAL INSTRUCTIONS

Dispose of LK-IR2, LK-IR4, LK-IR6 and LK-IR8 barriers in compliance with current city regulations and by leaving the device in a dumping ground that is authorized for the disposal of electronic products.

If required, please contact the appropriate city office for additional information.

The materials used for this product are very harmful and polluting if dispersed in the environment.

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