



## SAFETY BARRIER OF INFRARED BEAMS

# ***RED BEAM***

TYPE 4 : SERIES HTB5

TYPE 2 : SERIES HTB3

Certified under the regulation:  
EN61496-1 & IEC61496-2

## MANUAL OPERATION OF ASSEMBLY

| Revise | Date       |   |
|--------|------------|---|
| 1.0    | 07/06/2004 | Preliminary version                     |
| 1.1    | 27/09/2004 | Preliminary version                     |
| 1.2    | 27/07/2005 | Update for new model / definite version |

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## 1. INTRODUCTION

The safety barrier of **H.E.C.TO** is composed of photoelectric safety system for conceived protection of machine operator, the most dangerous part of machinery. It's essentially that the systems *RED BEAM* is correctly install, and work correctly in accordance by instruction manual.

We suggest to keep safety a rule in local and in national application before to proceed an operation to use *RED BEAM*, if some part of instruction isn't included ,must be define, in case have doubt or questions, please contact the manufacturer or representative for further information regarding the product

## 2. GLOSSARY

### **MPCE(machine primary control element)**

It's about an electrical supply element which control normal movement or function directly of the machine

### **FDS (function device switch) or main switch device.**

When the component of safety device will switch 'ON' the primary circuit element or (MPCE), of the safety system is activated, then you have two circuit protection relay's combined control as main switch device.

### **OSSD (Out put signal of switching device)**

A component of safety barrier is connected in control system of the machine, when the device sense or intercept an object in their control area will pass through inactive state in to active state.

### **(Function of Interruption)**

The condition of safety barrier is to take the place automatically, is able to get complete details in fault analysis. The barrier is putting back, when the cause of defects has been deleting. It will passing through 'restart input' (manual or semi-automatic function) or either to put it back to remove immediately the fault in ( automatic function ) if the normal operation to put it back, if doesn't comport normally in automatic, restart the control machine,

### **FAULT BARRIER**

When the safety barrier detects an error the barrier will form in condition' **FAULT BARRIER"**

If the receiver is found the "defective barrier" the output contact of OSSD will open for all model among HTBRZ,HTBLRZ & HTBURZ a numeric display indicates the letter 'A' in the part of receiver blinking which means indicate the bad condition or 'fault barrier', with the suitable diagnostic program activated, you can see in keyboard of the barrier is able to provide complete detailed of fault analysis,for more details please see the paragraph in "fault barrier".

If the projector is in 'fault barrier' the projector will 'interrupt' the light emission strip will arrest including all channels, and the pointer (Led) of projector is activate or 'blinking in real time equal, (1/2 second On and 1/2 second Off.),

Is indispensable to determine in this condition which those absence of 'synchronization' in the part of receiver, in that condition which indicates in 'blinking' (asymmetric) symmetrical ( 0.5 second ON and 2 seconds OFF )every time's that Led in the projector was blinking well means a point of interruption, of strip light emission in ( Infrared ), When the barriers found in bad condition or "FAULT BARRIER" the control unit AC02 will act to deactivate the main switch device.

***When the safety Barrier was found in bad condition " Fault Barrier", the command unit AC02 deactivate the main switch device.***

### 3. CHARACTERISTICS OF THE SYSTEM

#### 3.1. System composition of HTB5 (safety level 4)

The system of Safety barrier HTB5 is composed the following

|                                       |            |                         |
|---------------------------------------|------------|-------------------------|
| • Safety Barrier type 4               |            | HTB5 xx yy (all models) |
| • Power supply                        | (optional) | HTB5 AL01               |
| • Safety relay' unit                  | (optional) | HTB5 AC02               |
| • Cable connection                    | (optional) | HTB5 CV01               |
| Projector (7 meters long)             |            |                         |
| Cable connection                      | (optional) | HTB5 CV 02              |
| Receiver (7 meters long)              |            |                         |
| • Cable connect or                    | (optional) | HTB5 CV 03RP            |
| for model HTBR5 e HTBLR5              |            |                         |
| Projector & Receiver (5 meters long)  |            |                         |
| • Accessories - connecting rod        | (optional) | HTB5 ST 17              |
| • Accessories - fixing of strap metal | (optional) | HTB5 ST 18              |
| • Accessories - cylinder in diameter  |            |                         |
| 50mm                                  | (optional) | HTB5 CP 50              |
| 40mm                                  | (optional) | HTB5 CP 40              |
| 35mm                                  | (optional) | HTB5 CP 35              |
| 30mm                                  | (optional) | HTB5 CP 30              |
| 20mm                                  | (optional) | HTB5 CP 20              |
| 14mm                                  | (optional) | HTB5 CP 14              |

#### 3.2. System composition of HTB3 (safety level 2)

The system of Safety barrier HTB3 is composed the following

|                                       |            |                         |
|---------------------------------------|------------|-------------------------|
| • Safety Barrier type 2               |            | HTB3 xx yy (all models) |
| Power supply                          | (optional) | HTB5 AC 01              |
| • Safety relay unit                   | (optional) | HTB5 AC 02              |
| • Cable connection                    | (optional) | HTB5 CV 01              |
| Projector (7 meters Long)             |            |                         |
| • Cable connection                    | (optional) | HTB5 CV 02              |
| Receiver(7 meters Long.)              |            |                         |
| • Cable connection                    | (optional) | HTB5 CV 03RP            |
| For model HTBR3, HTBLR3 &             |            |                         |
| Projector & Receiver(5 meters Long.)  |            |                         |
| Accessories - connecting rod          | (optional) | HTB5 ST 17              |
| • Accessories - Fixing of strap Metal | (optional) | HTB5 ST 18              |
| • Accessories - cylinder in diameter  |            |                         |
| or Connecting rod                     |            |                         |
| 50mm                                  | (optional) | HTB5 CP 50              |
| 40mm                                  | (optional) | HTB5 CP 40              |
| 35mm                                  | (optional) | HTB5 CP 35              |
| 30mm                                  | (optional) | HTB5 CP 30              |
| 20mm                                  | (optional) | HTB5 CP 20              |
| 14mm                                  | (optional) | HTB5 CP 14              |

**Identification data of Model Barrier :**

In description of model '**xx**' indicates useful length in **cm** while '**yy**' indicates the resolution in "**mm**". And "**rr**" is the number of beam, in a table below is indicating the different "**model Barrier**" as ff..

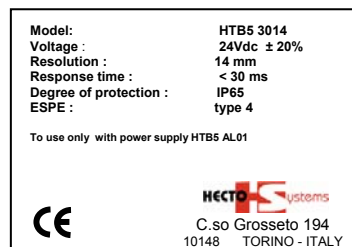
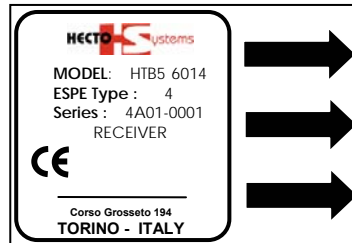
| XX → | 8     | 15     | 30     | 45     | 60     | 75     | 90     | 105     | 120     | 135     | 150     |
|------|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|---------|
| YY ↓ | 80 mm | 150 mm | 300 mm | 450 mm | 600 mm | 750 mm | 900 mm | 1050 mm | 1200 mm | 1350 mm | 1500 mm |
| 14   | •     | •      | •      | •      | •      | •      | •      |         |         |         |         |
| 20   | •     | •      | •      | •      | •      | •      | •      |         |         |         |         |
| 30   | •     | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       |
| 35   | •     | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       |
| 40   | •     | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       |
| 50   | •     | •      | •      | •      | •      | •      | •      | •       | •       | •       | •       |

| XX → | 30      | 45      | 60      | 75     | 90     | 105     | 120    | 135    | 150    |
|------|---------|---------|---------|--------|--------|---------|--------|--------|--------|
| rr ↓ | 300 mm  | 450 mm  | 600 mm  | 750 mm | 900 mm | 1050 mm | 1200mm | 1350mm | 1500mm |
| 2    | •       | •       |         |        |        |         |        |        |        |
| 3    |         | •       | •       | •      | •      | •       | •      | •      |        |
| 4    |         |         |         | •      | •      | •       | •      | •      | •      |
| XX → | 165     | 180     | 195     | 16     |        |         |        |        |        |
| rr ↓ | 1650 mm | 1800 mm | 1950 mm | 160 mm |        |         |        |        |        |
| 4    | •       | •       | •       |        |        |         |        |        |        |
| 1    |         |         |         | •      |        |         |        |        |        |

### 3.3 (ID) Identification data

In the space provided of Barrier has shown (I.D) Identification data 'sticker' where to get details

1. Manufacturer Company
2. Model Barrier
3. Element assemblies: **projector, receiver, Power supply, circuit protection relay.**
4. Serial numbers
5. Certification information of the product.



Besides indispensable to respect the procedure of assembly, projector/receiver in sense of indicated arrows in Pointer Direction of arrows must equal. To both receiver/projector, in One mistake may cause of malfunction barrier may occur.

### 3.4 Safety Systems.

The barrier has a good circuit memory to Control continuously the correct function of circuit, either projector or the receiver, in the command or control came from external scan of infrared beam radiation, In case of malfunction of Barrier, the out put control of safety system is connected to receiver to deactivate; therefore the machine in times of dangerous situation has guarantee in safety condition. The case of barrier type 4 either the receiver or projector has a good opportunity to have circuit memory in redundancy control, besides the correct signal function of barrier is also the correct function of the circuit. The disconnection or interruption of some cable connection of barrier, will bring a system to deactivate output contact therefore the machines will put in the safety condition,

### 3.5 Field Working

The System of photoelectric barrier HTB5 and HTB3 is indicates for protection, in the part of operator expose from risk, drift in a danger place. In the presence movement of machine, The different resolution of optical availability is to adapt the protection of the body, to get away from danger. They are indicates to protect which place most danger in here should access for operation (ex. movement of parts while Working) or interval repairing and maintenance of machinery. The Model with resolution 14 and 20 mm.is covers the various protection phases of the operator; protect fingers. While the other one model with resolution 35, 40, 50 are also indicates as protection of limbs (*forearm and legs*). The model long range HTBUZ and HTBURZ they are indicates to protect human body.

### 3,6 Precaution & useful limit.

1. The system protection of infrarefd barrier is work only in machinery that could able to stop/block immediately, and may not suited in other case aside from the Function of other machine can't able to block the movement immediately less than the cycle of the real time.

2. Doesn't necessary to combine a couple of barrier Receiver /Projector with circuit HTB5 AC02 in circuit protection relay, may provide in the third part, they have all output OSSD they can't used for handling direct control in moving parts of machine where the device intalled .
3. There is no other device than barrier , must supply voltage by using suited power supply HTB5 AL01 for model HTB5 HTBR5,HTBL5,HTBLR5, HTBU5 and HTBUR5 (level 4).
4. The barrier HTB5 and HTB3 can't use if the presence of excessive vapor, even dush.gas Corrosive or the gradual destructive Metal by water in environment indicated that in Maximum protection may request,
5. For essential guarantee of function in maximum limit of illumination, foreseen by laws IEC 61496-2 ensure that external rising illumination not hit directly the receiver, particularly, avoid exposure in light Fluorescent bulb In unexpectable quick starter in a high frequency,
6. Avoid in cross contact of cable wires connection with the high tension wire of machinery.
7. Avoid to work in condition that distance in here through both barrier (projector/receiver) with the variable result condition in respect to time, if also doesn't exceed over maximum distance.
8. The barrier is not suited to intercept the transparent object or little hard for infrared radiation,

### 3.7 Selection Barrier

The selection barrier is suited in specific Work, must trace in the following specification.

- Establish the three dimensional area which most dangerous.
- Determine the dimensional area there, must protected.
- Verify if that can activate in dangerous area, exclusively when to interrupt the Light beam Of barrier will function correctly,
- Check always the safety distance is sufficiently.

The distance of barrier' determines the dangerous area according the following

To Work in **Europe (See pr. EN 999)**

one of useful formulas to calculate the minimum safety distance as follows.

$$D = K \times T + C$$

Where:

**D** - The minimum safety distance is express in millimeter.

**K** - Constant millimeter per second, 200 millimeter/second

**T** - The total time response per second.

(The time response will bring to receiver - ex.0.3 sec.) + (the total time arrest in the Machine per second)

**C** - Additional distance in millimeter 8 (d+14) not less than zero '0'

**d** - Minimum object projecting or prominent.

To Work in **U.S.A (See OSHA 1910 .217)**

The useful formulas to calculate the safety distance in inches as follows...

$$D = Kx (Ts + Tr) + Dpf$$

Where:

**D** -- The minimum safety distance express in inches;

**K** -- The constant manual velocity recommended by OSHA, even 63 inches per/ sec.

**ts** -- The total time arrested or 'stop' of the machine in milliseconds.

(Included the Time arrest of all control as considered)

**Dpf** -In additional amount distance factor, distance recommended penetrate, is 3.1 inch

Therefore determine the height that place would like to protect & put the fit barrier at the same height protection with length immediately superior.

How ever in that case here the height required of the barrier, is superior in which dispensable using two barriers & two control unit. In this event, Don't install two barriers and two receivers in one over the same place, but must alternately.

Proceed the installation of sensor in one position ("**they can't hit the reflection of light beam infrared**") in that case here that infrared light generates the external rising of the receiver, could able to block the regular function of the system and will form "*inconvenience ambiance.*"

### 3.8 Principle of operation

The whole control operation of the barriers is inside the board of 'CPU' of receiver. The projector and receiver communicate both of them through connection of infrared impulsiveness.

#### Projector

After the receiver verified that there is no photo\_ sensible light element activated, is in desirable to send primary control, scan of projector, in sequence some emitter diode will access for such time.

Control Projector:

- The useful current to Power ON, must corresponded in one diode only.
- The closure connection is resend in 'CPU' the last signal,
- The passing of signal Control during in access connection activate to those not activate

In some fault function, projector will block in the real time response of device, the Projector suited a red light (Led) light emitting diode. That to unwind the ff. function,

- Always illuminate; the projector is an activate or access and its working correctly.
- blinking (0.2sec ON - 0.2sec OFF) is presence of fault signal
- blinking (0.5sec ON - 2sec OFF) in 'standby' lack of activation in the part of receiver.

#### Receiver

Before of scanning the receiver always control the condition of Phototransistor in a way that can avoid the external condition of environment that can compromise the validity of the same scan, after this control will send the projector to activate standby in such time in the last operation of signal light.

Control Receiver:

- For every light beam will pass through in condition deactivate/activate or vice versa.
- The shutting of connection from activation will resend to 'CPU' the last signal.

Beyond the interruption of beam, in some fault function, could 'block' the receiver at the real Time response of device, the receiver has a 'Led' green, yellow, and red that presents the Following function:

#### LED GREEN

- Always illuminates: the receiver is an activate or access and working correctly,
- blinking (0.2 sec. ON - 0.2 OFF) in presence of fault signal

#### LED RED

- OFF: Barrier work correctly, no beam interrupted
- ON: one or more strip of light beam are interrupted

blinking (0.2sec ON - 0.2 OFF) external condition of ambiance not fit or 'fault barrier' (Blinking combination of both Led red and yellow).

- 

#### LED YELLOW

- OFF: normal function
- ON: insufficient signal
- blinking (0.2s ON - 0.2s OFF) in presence of 'fault'

Block diagram of safety barrier operation is bringing the following explanatory;

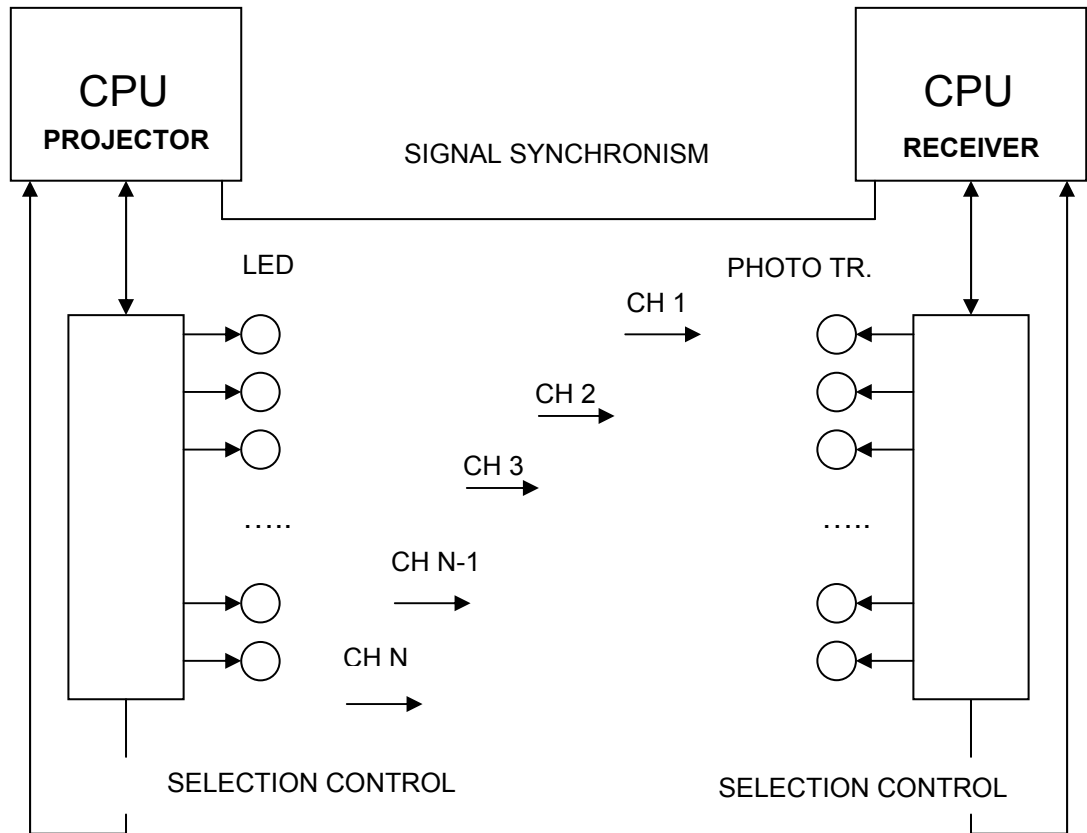


Fig. 1 – Schematic block diagram of safety barrier

**4. TECHNICAL DATA OF SAFETY BARRIER type 4HTB5**

|                                       |    |  |
|---------------------------------------|----|--|
| Course area m (FOR HTB5 & HTBR5)      | m  | 0,1 – 5,0  |
| Course area m (FOR HTBL5 & HTBLR5)    | m  | 0,3 – 17   |
| Real time response                    | ms | See the table chart  |
| Output                                |    | 2 output w/out current tension<br>Max 1A dc @ 30Vdc<br>W/ voltage protection |
| Input (not for model HTBR5 & HTBLR5)  |    | RESTART<br>MUTING<br>TEST  |
| Power supply                          | V  | 24 VDC ± 20%   |
| Input voltage                         | A  | 0,4 max  |
| Working temperature                   | °C | -10..+60 °C  |
| Degree of protection                  |    | IP65   |
| Connection                            |    | Connector 12 & 16 pole   |
| Connection (for model HTBR5 & HTBLR5) |    | Connector 5 pole   |

**5. TECHNICAL DATA OF SAFETY BARRIER Type 4 HTBU5 & HTBUR5**

|                      |    |  |
|----------------------|----|--|
| Course area m        | m  | 4,0 – 60   |
| Real time response   | ms | See the table chart  |
| Output               |    | 2 output w/out current tension<br>Max 1A dc @ 30Vdc<br>W/ voltage protection |
| Input                |    | RESTART (not for model HTBUR5)<br>MUTING<br>TEST                             |
| Power supply         | V  | 24 VDC ± 20%   |
| Input voltage        | A  | 0,8 max  |
| Working temperature  | °C | -10..+60 °C  |
| Degree of protection |    | IP65   |
| Connection           |    | Connector 12 & 16 pole   |

**6. TECHNICAL DATA OF SAFETY BARRIER Type 2 HTB3**

|                                       |    |  |
|---------------------------------------|----|--|
| Course area m (for HTB3 & HTBR3)      | m  | 0,1 – 5,0  |
| Course area m (for HTBL3 & HTBLR3)    | m  | 0,3 – 17   |
| Real time response                    | ms | See the table chart  |
| Output                                |    | 1 output w/out current tension<br>Max 1A dc @ 30Vdc<br>W/ voltage protection |
| Input (not for model HTBR3 & HTBLR3)  |    | RESTART<br>MUTING<br>TEST  |
| Power supply                          | V  | 24 VDC ± 20%   |
| Input voltage                         | A  | 0,4 max  |
| Working temperature                   | °C | -10..+60 °C  |
| Degree of protection                  |    | IP65   |
| Connector                             |    | Connector 12 & 16 pole   |
| Connection (for model HTBR3 & HTBLR3) |    | Connector 5 pole   |

## 7 TECHNICAL DATA OF SAFETY BARRIER Type 2 HTBU3 & HTBUR3

|                      |    |  |
|----------------------|----|--|
| Course area m        | m  | 4,0 – 60   |
| Real time response   | ms | See the table chart  |
| Output               |    | 1 output w/out current tension<br>Max 1A dc @ 30Vdc<br>W/ voltage protection |
| Input                |    | RESTART (not for model HTBUR)<br>MUTING<br>TEST                              |
| Power supply         | V  | 24 VDC ± 20%   |
| Input voltage        | A  | 0,8 max  |
| Working temperature  | °C | -10..+60 °C  |
| Degree of protection |    | IP65   |
| Connection           |    | Connector 12 e 16 pole   |

Model Barrier with real time response less than 15 ms.

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 814 –1514 – 3014 – 4514

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 820 – 1520 – 3020 -- 4520

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 830 – 1530 – 3030 -- 4530–6030–7530- 9030

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 835 – 1535 – 3035 – 4535 – 6035– 7535 – 9035

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 840 – 1540 – 3040  
4540 – 6040– 7540 – 9040– 10540 – 12040– 13540

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 850 – 1550 – 3050  
4550 – 6050– 7550 – 9050– 10550 – 12050– 13550 -15050

HTBU5/HTBU3 All models

Model Barrier with real time response less than 50,2 ms.

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 6014 – 7514 – 9014

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 6020 – 7520 – 9020

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 10530 – 12030 – 13530 - 15030

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 10535 – 12035 – 13535 - 15035

HTB5/HTB3 HTBR5/HTBR3 HTBL5/HTBL3 HTBLR5/HTBLR3 15040

## 8. Technical data output of safety barrier HTB5 AC02

|   |    |  |
|---|----|--|
| Power supply  | V  | 24 VDC ± 20%   |
| Input energy  | A  | 0,4 max  |
| Type of contact   |    | Contact with drive force<br>Mechanical standby: 10.000.000 handling<br>Electrical standby : 100.000 handling |
| Max.current output<br>Max.tension in operation<br>Nominal condition |    | 6A DC – AC<br>30 VDC – 440 VAC<br>6A a 250VAC<br>6A a 30VDC  |
| Working temperature   | °C | -10..+60 °C  |
| Degree of protection  |    | IP20   |

## 9. BARRIER

The barrier is composed in one projector and one receiver. The two elements are optical synchronized. All input and output are connected in the receiver and the projector is suited by own input -test.

### 9.1 Mode of Function

Manual (not valid for model HTBRZ , HTBLRZ & HTBURZ)

The activation of barrier is form in the state ( switch OFF in 'OSSD') not activate ,and its necessary to activate start input, to bring the barrier in state of OPERATION with 'OSSD' activate, if the beam will 'stop' the barrier will switch 'OFF' it needs to remove the obstacle, then push the restart to reactivate;

Semi automatic (not valid for model HTBRZ , HTBLRZ & HTBURZ )

The activation of barriers is form in the state (switch OFF in 'OSSD') not activate, and necessary to activate 'start input' to bring the barrier in state of 'OPERATION' with 'OSSD' activate, if the beam will interrupted also the barrier will stop 'OFF' in the removal of obstacle the barrier will activate in automatic function, after 2 sec. without any activation of 'start input' RESTART,

Automatic

The activation of barrier in absence of light beam interruption will form in the state of 'OPERATION' with 'OSSD' activate. If the light beam is interrupted the barrier will OFF", in the removal of obstacle the barrier is return automatically in the state of OPERATION after 2sec.

### 9.2 Output (OSSD)

The safety barrier has two outputs without tension, its open normally, when the barrier is activating in operation condition normally, and the contact points are closed. And it will use to drive a couple of safety relay's unit, if this device is not integrated in equipment of user's may be able to adapt control unit HTB5 AC02.

### 9.3 Input (not valid for model HTBRZ & HTBLRZ )

All the following input list are access in the connector of receiver, is activate to apply voltage tension +24vdc, and deactivate if there is No tension applied, for model HTB3 every input function is activate in one signal only, while the model HTB5 every input function is activate in two signal input., the input signals are must be activate or deactivate either not less than the time intervals or the time cycle of the given barrier, in the present condition of two input signals isn't consistent among of them the barrier will form in condition 'fault' for example. The activation protection 'muting' (for the barrier type 4) and persist the condition will put in the state of 'anomaly' fault.

#### 9.3.1 Input test

This input is present in the receiver and projector, it's not indispensable to activate in both element because they are both synchronized optically.

the input will use in barrier type 2 to interrupt the emission of light beam in projector, the initial of every cycle in the machine is indispensable to control the correct function of barrier (a couple projector / receiver) the barrier is able to proceed initially, in every scan of light beam to verify their own function, they have all possible to proceed externally control execution of scan that proving with interruption of infrared light beam. As the same function has also maintain for barrier type 4 to activate a double control signal,

#### 9.3.2 Input restart

In manual mode of function, in every interruption of infrared light beam or in the execution of barrier, must proceed in the activation cycle, activate the signal 'restart', in mode of semi automatic this function must be activate only when access, After the following interruption, the removal of obstacle provoke automatically to reactivate, in mode of automatic, this signal shouldn't take and must remain disconnected.

### 9.3.3 Input muting

The part of introduction to work more generically which consignment of object inside the protected area, may execute the interruption of function under supervision in consequence to deactivate the machine operator, the input muting acquit this function and their activation, you can see the signal access indicates on the screen interface in the receiver, a yellow signal lightning,

To remind the operator that has interruption of function protection, who's in charge that user's to take all precaution is obligatory, at the end should maintain in safety condition,

### 9.4 Correction sensitivity in automatic Function

The system HTB5 and HTB3 maintain constant sensitivity of the receiver irrespective of the operation distance settings, the sensitivity increase automatically, when the intensity of light received decreases on the work area, to increase the operation distance, in the presence of dust or other debris or foreign body, may be extenuate, mitigate the infrared beam,

We remind that the body exist, in essence of completely obscure in invisible radiation is resulting that are all transparent in infrared beam, in this situation the barrier isn 't able to intercept.

## 10. POWER SUPPLY AND SAFETY RELAY UNIT (AL01 o AC02)

Either projector or receiver have a Power supply in voltage tension 24dc volt  $\pm$  20%, that case here upon request, we can provide single or coupled with safety relay' unit. With primary input voltage 115 and 230 volt Ac\_alternating current. With fuse equipment unit.

***that case here is adapt power supply AL01 o AL02 is indispensable not using the output 24vdc for other purpose or to supply other equipment, every power supply can supply only one barrier.***

***ALL DEVICE UNIT TYPE 4 POWER SUPPLY IN C.C, THEY MUST PROVIDE BY INDIVIDUAL SOURCE OF POWER SUPPLY, ACCORDING TO RULE EN60742***

## 11. INSTALLATION

During installation should respect the indicated direction place, either in projector or receiver, for example if two both elements are installed vertically, the arrow direction of some element must be directly in upper or lower direction or both, this precaution has a purpose to respect the scanning of *INFRARED* light beam, aren' t exist all has a particular bond to see inclination which barrier where could be install,

### 11.1 Mechanical; design and Dimension

In the figure below they can give the size of principal dimension in the element constituent the barrier,

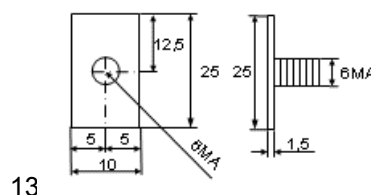
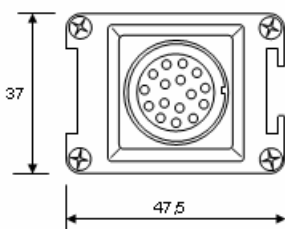


Fig 2A- eye piece connector

Fig, 2B-connecting rod HTB5 ST 17

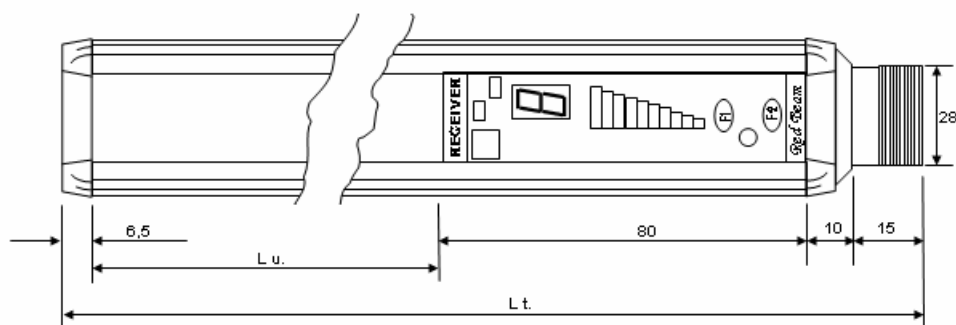


Fig. 2C – Dimension of Ricevitore/Proiettore

### 11.2 Fixing material(strap metal)

The fixing pivot in fig, 2B isn't consistent to follow regular position in place of barrier. Has the opportunity to twist the projector either receiver provided, if may request a couple of element represents in fig 3.

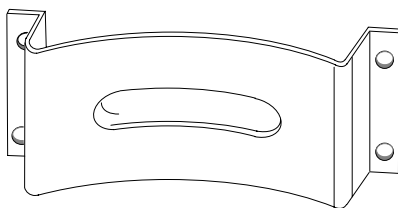


Fig. 3 – Strap metal HTB5 ST18



### 11.3 Mechanical assembly

1. Insert the "strap metal" relatively pivot and put the bolt screw in a certain hole, but don't close deeply
2. Bring the metal in HTB5 ST 18 in a distance equivalent in  $\frac{1}{4}$  (one fourth) of total the length of the receiver the operation effectively before the upper part in succeeding for the lower part (see fig. 5)
3. The same operation execute for emitter, ensure that to maintain the maximum parallel of Two front elements,
4. Follow the exact sequenze with all particular equipment (see fig 6) don't close the Connecting rod in this phase HTB5 ST 17 with consent to proceed (permit )to follow in centering of Their two elements.

Fig.5

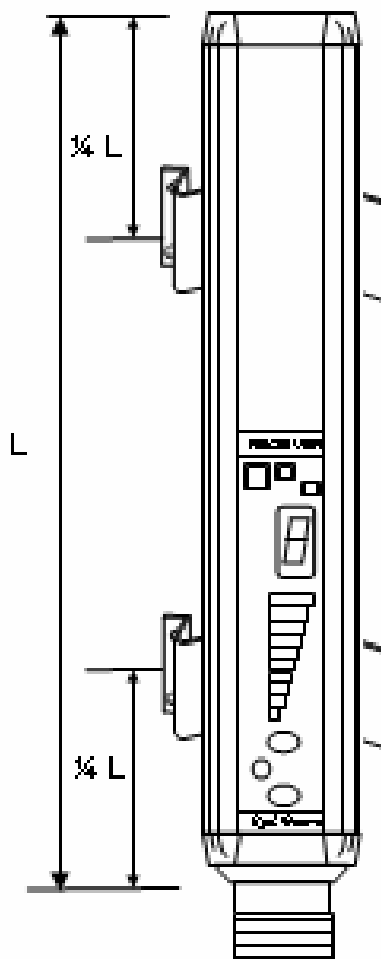
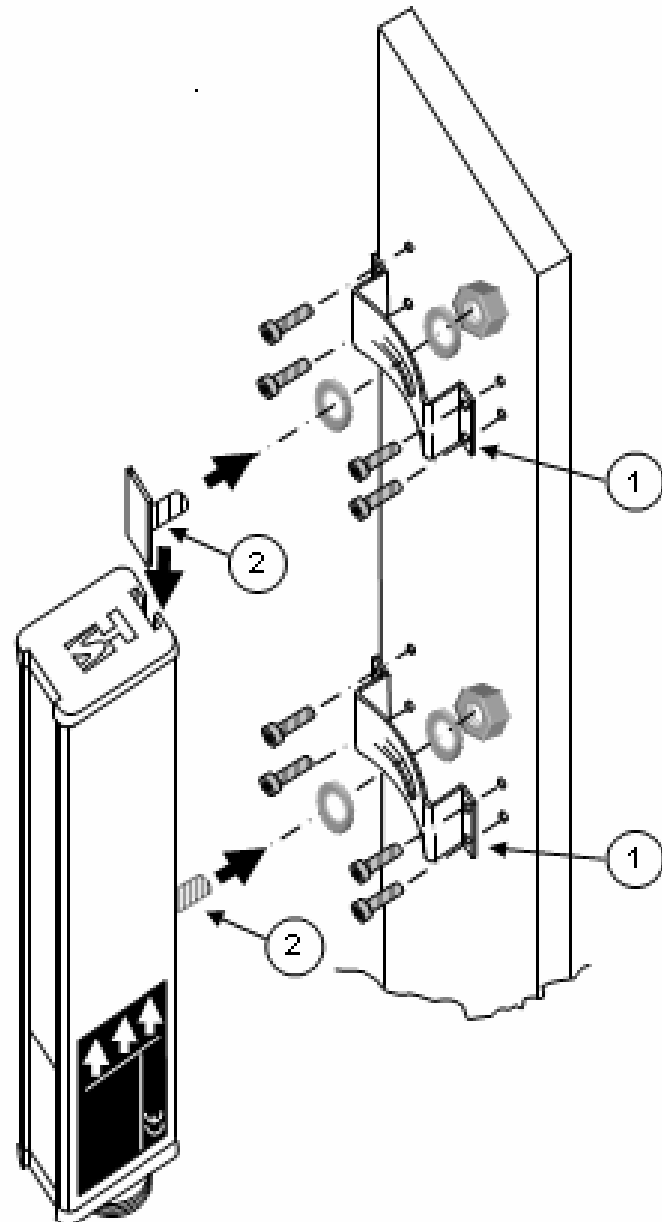


Fig.6



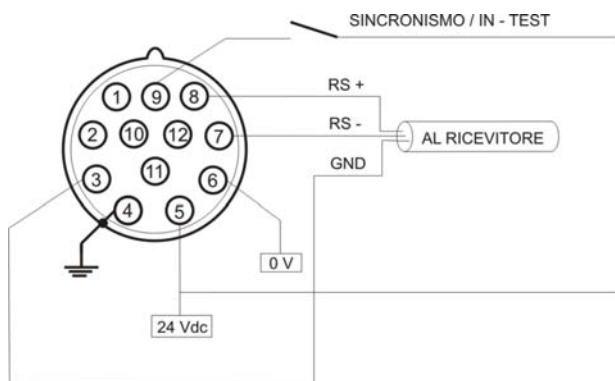
**11.4 Electrical Installation of barrier**

To guarantee of better condition, the function of barrier is indispensable to follow the electrical connection using shielded cable conductor, gauge size not inferior 0, 25 mm<sup>2</sup>. the input or output are not in use because could leave disconnected, the maximum length of connection not greater than 7 meters long, therefore we could see the mechanical characteristics and electrical cable wirings this is must consistent with the specific request by rule to see the equipment in which materials being use.

The barrier has supplied in voltage tension 24volt dc with tolerance  $\pm 20\%$  is recommended to use a proper power supply AL01 or AL02I,or else reserve the barrier a source of power supply which not divided in to other equipment,

**11.4.1 Installation of Projector**

The projector is necessary to have only one tension of power supply, in all barrier \_Type 2 it's possible to activate test by using supply tension of 24 volt dc in Pin TEST (pin 9 and also in pin 4 in case of model HTBRZ & HTBLRZ).



**Cable color coding of Projector**

*Valid for model*

**HTBZ – HTBLZ - HTBUZ**

|       |           |          |
|-------|-----------|----------|
| Pin 3 | GND       | yellow   |
| Pin 4 | earth gnd | Red      |
| Pin 5 | 24 Vdc    | Brown    |
| Pin 6 | 0 Volt    | sky blue |
| Pin 7 | RS-       | Gray     |
| Pin 8 | RS+       | White    |
| Pin 9 | In-Test   | Red      |

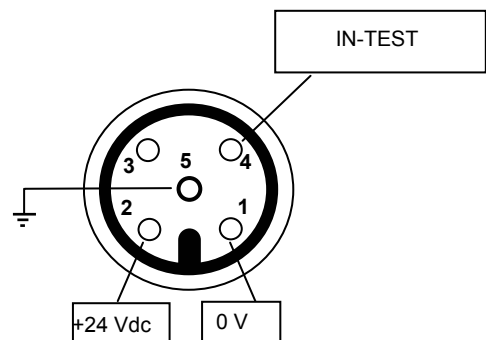
**IMPORTANT**  
**MAKE SURE THAT CABLE CONN. IS CONNECTED**  
**IN TO GROUND OR BODY CHASSIS**

**Cable color coding of Projector**

*Valid for model*

**HTBRZ – HTBLRZ**

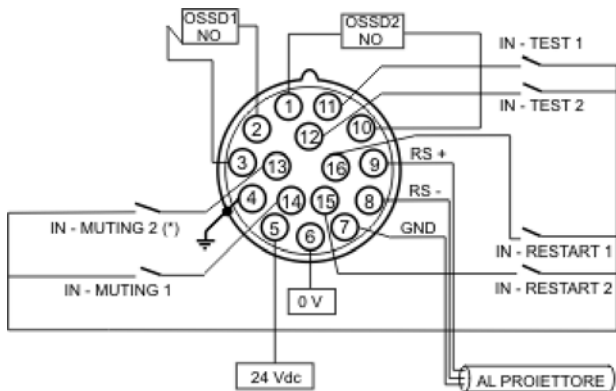
|       |               |              |
|-------|---------------|--------------|
| Pin 1 | 0 Volt        | Brown        |
| Pin 2 | 24 Vdc        | white        |
| Pin 3 | Not connected | sky blue     |
| Pin 4 | In – test     | black        |
| Pin 5 | earth gnd     | yellow/green |



**11.4.2 Installation of Receiver**

The output 'OSSD' are materializing in mechanical contact is able to support the maximum current (1amp.)one ampere with one (1)one tension operative 125 volt AC alternating current or 250 volts, some input is activate in tension 24 volt DC  $\pm$  20% the threshold signal deactivate is guarantee for value of tension inferior or less than 1,6 volt input not in use, they will keep disconnected, the impedance characteristics of some input is 10k ohm.,

**Connector receiver for model HTBZ, HTBLZ, HTBUZ & HTBURZ**



**Cable color coding for Projector**

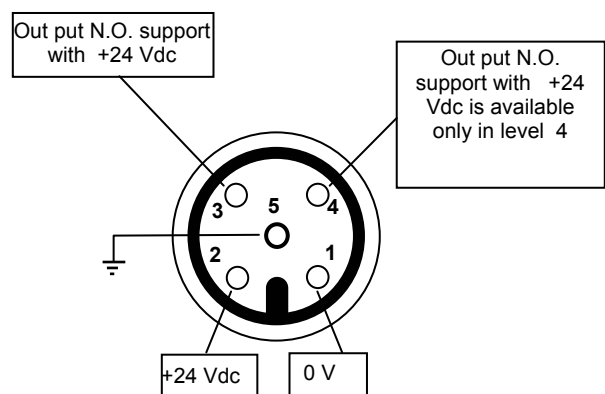
|        |              |                |
|--------|--------------|----------------|
| Pin 1  | Ossd2        | Violet         |
| Pin 2  | Ossd1        | Red            |
| Pin 3  | Ossd1        | Yellow         |
| Pin 4  | earth grnd   | Black          |
| Pin 5  | 24 Vdc       | Brown          |
| Pin 6  | 0 Volt       | Sky blue       |
| Pin 7  | GND          | Gray           |
| Pin 8  | RS-          | white/ yellow  |
| Pin 9  | RS+          | Gray/ red      |
| Pin 10 | Ossd2        | Red            |
| Pin 11 | In-Test 1    | white          |
| Pin 12 | In-Test 2    | Green          |
| Pin 13 | In-Muting 2  | Red/ Sky blue  |
| Pin 14 | In-Muting 1  | Green/ Brown   |
| Pin 15 | In-Restart 2 | white/ Green   |
| Pin 16 | In-Restart 1 | Yellow / Brown |

**IMPORTANT  
MAKE SURE THAT CABLE CONN. IS  
CONNECTED IN TO GROUND OR BODY  
CHASSIS**

**Cable color coding of Receiver**

*Valid for model  
HTBRZ – HTBLRZ*

|       |              |                |
|-------|--------------|----------------|
| Pin 1 | 0 Volt       | Brown          |
| Pin 2 | 24 Vdc       | White          |
| Pin 3 | out put n.o. | Sky blue       |
| Pin 4 | out put n.o. | Black          |
| Pin 5 | earth Ground | Yellow / Green |



How ever in these case of barrier type 4 the activation of input and the other one is deactivated or vice versa is provoke the blocking of barrier as the same time interval is declared, The output 3 & 4 they can also support 0 volt as request.

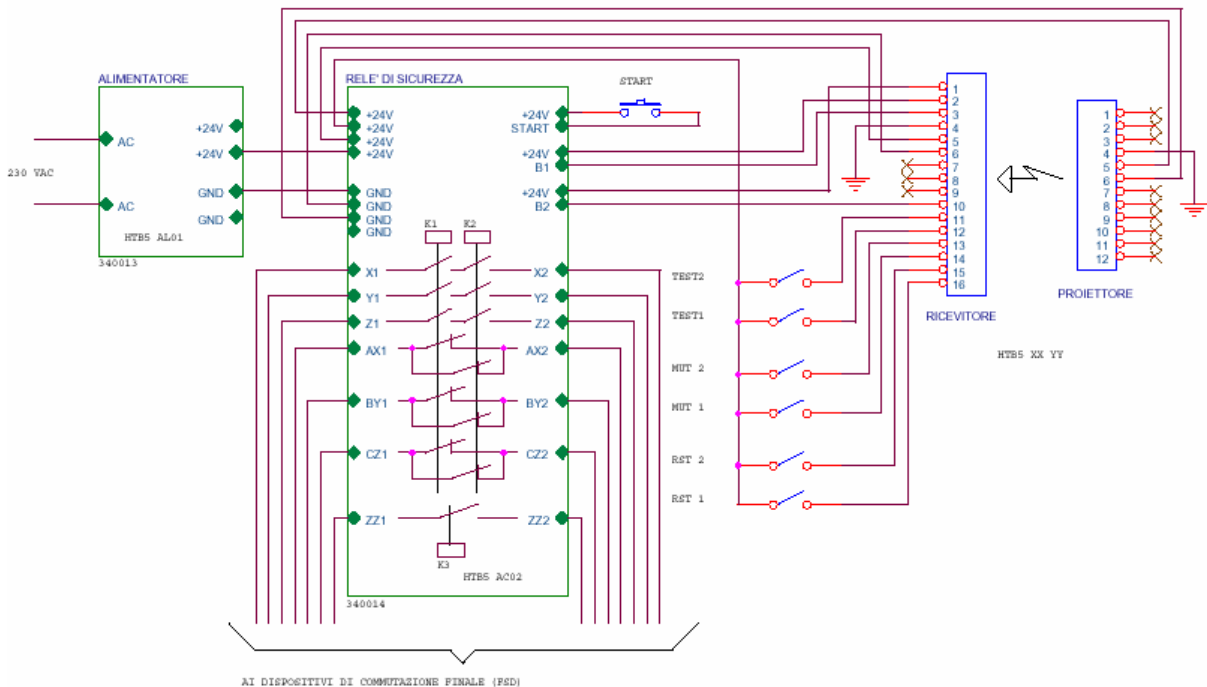
**11.4.3 Connection of RS485 (not for model HTBRZ & HTBLRZ )**

The connection of RS485 will provide optionally, but thru series connection between RS485 for both projector and receiver it may serve for synchronizing of the barrier, if may use a pair connection both of them is necessary that projector & receiver are they connected base on the table shown below.

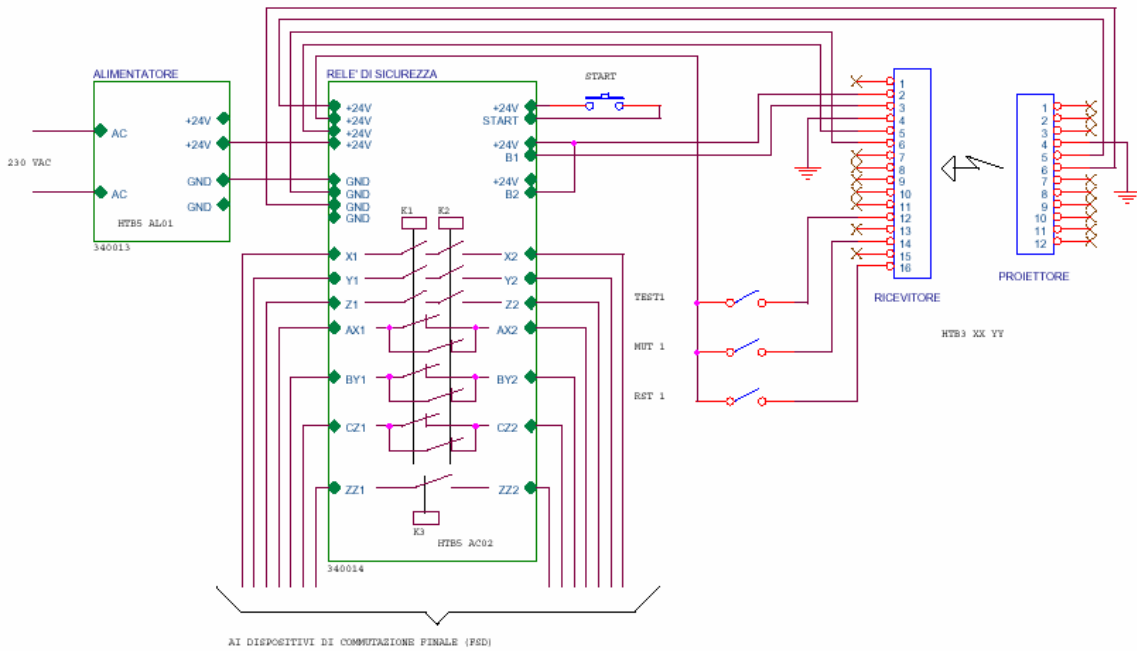
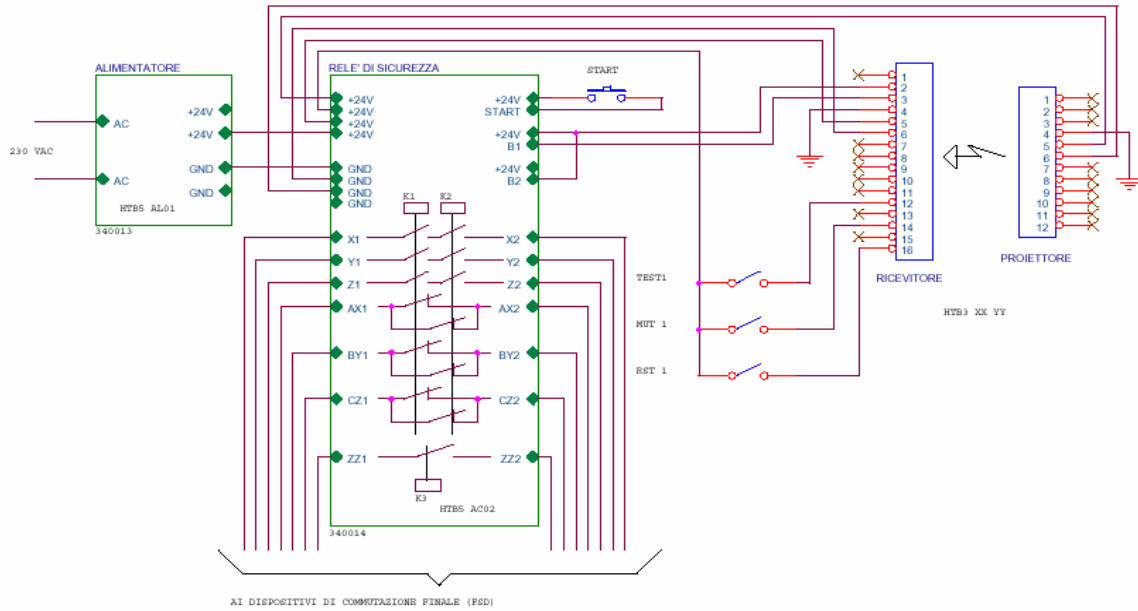
| PROJECTOR |        |             | RECEIVER |                |             |
|-----------|--------|-------------|----------|----------------|-------------|
| N° PIN    | CABLE  | DESCRIPTION | N° PIN   | CABLE          | DESCRIPTION |
| 3         | Yellow | GND         | 7        | Gray           | GND         |
| 7         | Gray   | RS-         | 8        | White / Yellow | RS-         |
| 8         | White  | RS+         | 9        | Gray / Red     | RS+         |

**11.5 Power Supply Installation with circuit protection relay (not for model HTBRZ & HTBLRZ )**

Will bring the following installation,



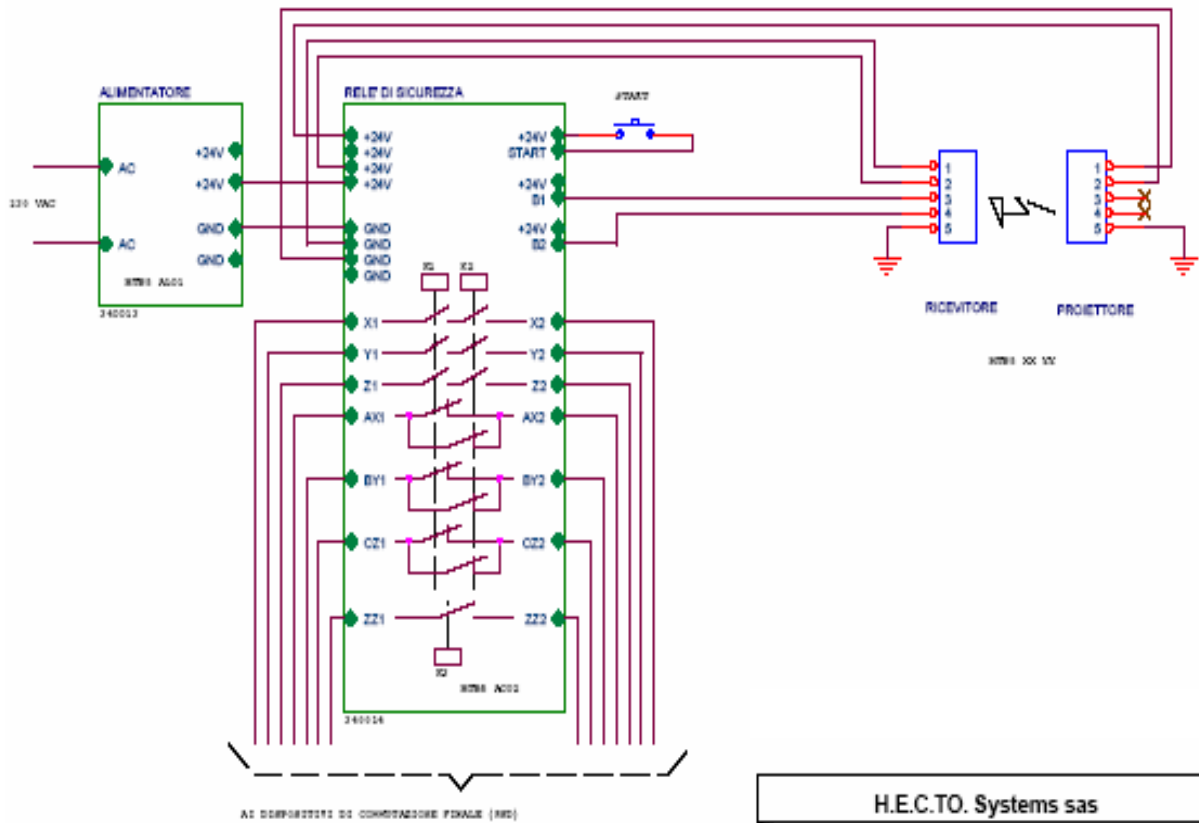
Installation of power supply HTB5 AL 01 including circuit protection relay HTB5 AC 02 with projector and receiver for model HTB5, HTBL5, & HTBU5 in schematic diagram indicated the receiver to arrange in automatic function,



Installation of power supply HTB5 AL 01 including circuit protection relay' HTB5 AC 02 with projector and receiver for model HTB3, HTBL3, & HTBU3 in schematic diagram is indicated the receiver to arrange in automatic function.

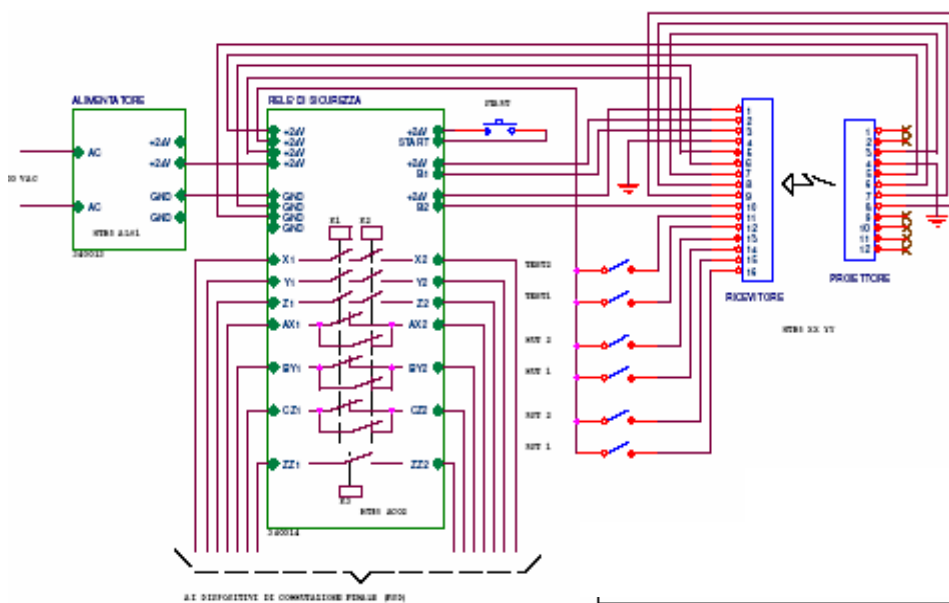
**11.6 Power Supply Installation with circuit protection relay (for model HTBRZ & HTBLRZ )**

*Will bring the following installation*



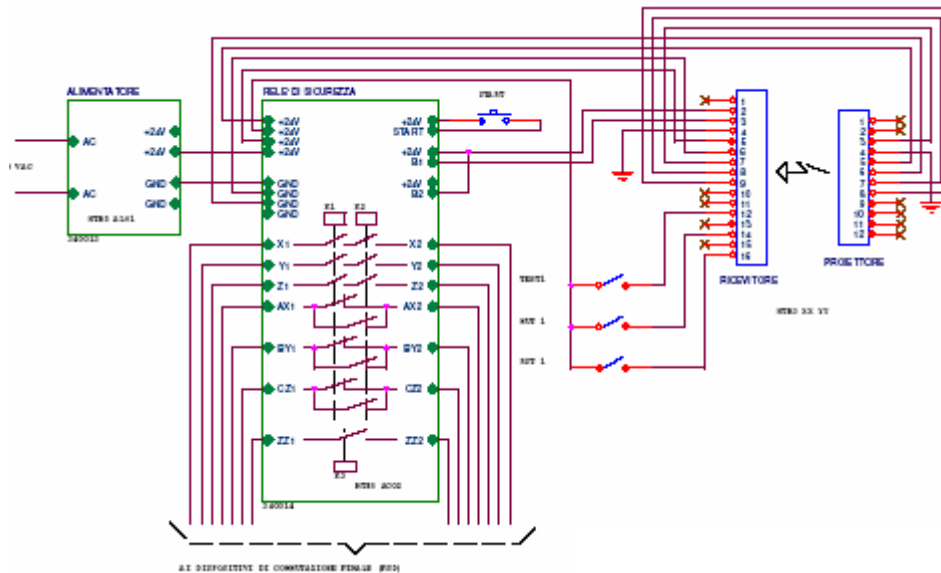
Installation of power supply HTB5 AL 01 including circuit protection relay' HTB5 AC 02 with projector and receiver for model HTBR5, HTBLR5, & HTBU5 in schematic diagram is indicated the receiver to arrange in automatic function.

**11.7 Power Supply Installation with circuit protection relay ( for model HTB5 , HTBL5, HTBU5 & HTBUR5) with synchronized between RS485**



Installation of power supply HTB5 AL 01 including circuit protection relay' HTB5 AC 02 with projector and receiver for model HTB5, HTBL5, HTBU5 & HTBUR5 in schematic diagram is indicated the receiver to arrange in automatic function. W/ synchronized between RS485

### 11.8 Power Supply Instalation with circuit protection relay (for model HTB3 , HTBL3, HTBU3 & HTBUR3) with synchronism between RS485



Installation of power supply HTB5 AL 01 including circuit protection relay' HTB5 AC 02 with projector and receiver for model HTB3, HTBL3, HTBU3 & HTBRU3 in schematic diagram is indicated the receiver to arrange in automatic function. W/ synchronized between RS485

Fig. 7

### 11.9 ADJUSTMENT OR ALIGNMENT OF BARRIER

Supplying the system, you have notice the sign 'BREAK' of the emitter element is 'blinking', until that can't communicate with the receiver element (obviously there is no obstacle in place) the two barrier will put in front of the other, the sign 'BREAK' is assume the light fixed,

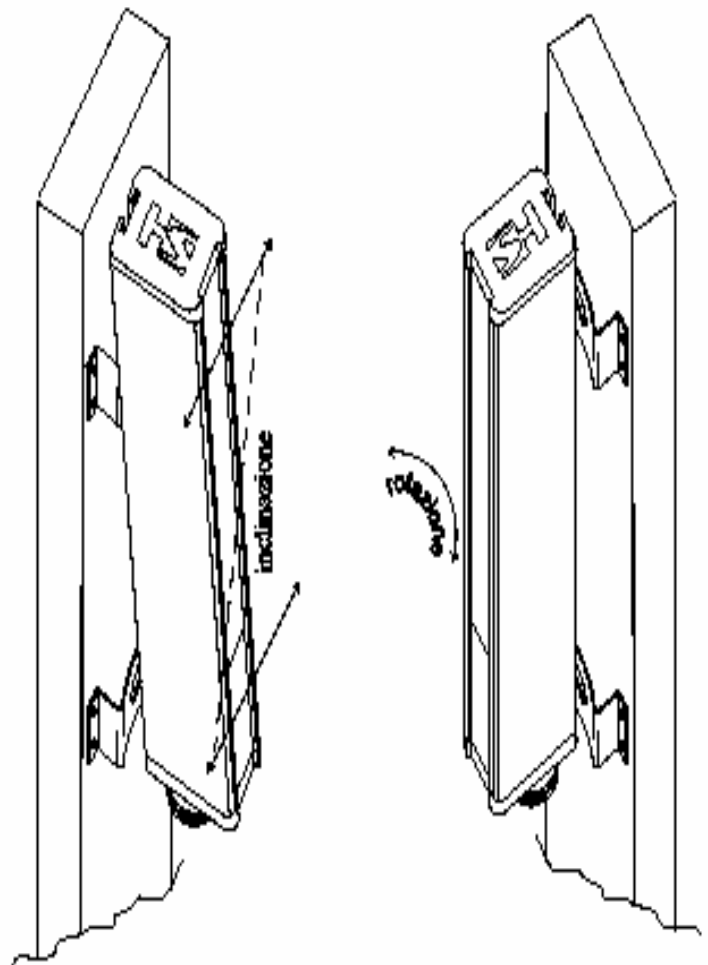
*Follow the proceedings operation:*

1 Align the two element by helping stair away ,lightning,( ) that illuminate gradually, if found the difficulty to align the barrier, try to move two barrier's ( see fig 7 ) in the center it happen, the sign will appears 'SAFE' in the place of receiver, then will shuts off-the sign 'BREAK'

to make sure that installation is correctly follows the steps that indicate in the paragraph,

### 12 FUNCTION INTERFACE OF USER'S (not for model HTBRZ, HTBLRZ & HTBRUZ)

The barrier (thereceiver) appears alphanumeric display that will indicate the status of the device in additional sign's that quick provided, with led's in the different colors, therefore we have, the ff



- 'A' Active barrier; that the barrier is working regularly and there is no-beam interruption.
- 'F' 'Fault barrier'\_ more than one light beam in a couple projector/receiver has been Interrupted,
- 'O' the barrier has been used \_in mode of semi- automatic or manual and still waiting  
The signal 'restart' occur a cycle after interruption of beam either in standby Position  
the first cycle after activating.
- '1' 'Fault blocking' \_ is encountered a mistake in the circuit, received from the selection  
analysis Of light beam.
- '2' 'Fault blocking' \_is encountered a mistake in 'micro control memory program'.
- '5' 'Fault blocking' \_is encountered a mistake in the management parameter has been used  
In 'micro processor.'
- '7' 'Fault blocking'\_ in redundancy that two circuit are working in parallel are in the state  
Malfunction of redundancy circuit.



The barrier (the receiver) is able give diagnostic fault analysis function in the area of installation operation, diagnosis and configuration, these function as reserve exclusively only for authorized person in maintenance.' there is no other way method to activate after these procedure is being occurred or activated, to execute is need to press a two bottom switch in front of receiver, to use this operation see the maintenance manual operation of barrier,Indispensable to push their switch of barrier whose technically know how for these operation function, that can activate ensure read the maintenance manual operation of barrier, and all function has protected by password.

A help control to loaded operation of barrier is possible to provide and to use the display bars place in the receiver that could see 'indicator' which beam is activate or deactivated, every segment encounter with one more area is activate in the barrier, eventually has a segment sometimes 'OFF' or 'blinking' indicates which area is working may has an obstacle or either is not in correct function.

## 12 OPERATION NOTE (USER'S GUIDE)

Once the barrier has supplied voltage and still not activate in automatic mode function, always found the device 'OSSD' deactivated. This condition could be able to 'unblock' exclusively in the sign of 'restart'. (Not for Model HTBRZ, HTBLRZ & HTBRUZ).

: Before to use the machine, ensure always that safety System has been controlled,  
 : Before to introduce or to proceed in protected area make sure that the machine always been off.  
 (Deactivated) put in the safety condition,

: Once the system is activated, the movement of the machine will arrest when the strip light  
 Beam of projector is interrupted,

The projector is equip in red light (Led) light emitting diode,

- When 'OFF', the projector isn't supplied in voltage or broken.
- Fixed 'ON', the projector is correctly synchronized and its working,
- 'ON' but blinking \_, lack of synchronism
- Rapid blinking 'ON', in state of bad condition if sensor is broken (Fault)

The receiver is equip in three lights (3) Led (red, green, and yellow) and display bars.

- Led OFF: The receiver isn't supplied in voltage or broken.
- Led green is ON: Regular function of beam not interrupted
- Led yellow is ON: Attention! \_ Function of muting is activate,
- Led red is ON: Regular \_ function but only one beam is interrupted.
- Led red, yellow and green, 'blinking'; broken sensor or environmental disturbance.
- Display yellow bar is fixed ON: \_ beams aren't interrupted.
- Display yellow bar is fixed ON: \_ either some element is shut (OFF) Means some light beams are interrupted.
- Display yellow bars are all 'ON': and 'blinking' \_, function of muting is activate.

That we remind the display bar's not present in the model HTBRZ, HTBLRZ & HTBRUZ.

The infrared beam couldn't be 'block' or only mitigate the transparent object, translucent or transparent because too much thin,' in that case here will be use an object to 'interrupt' the strip light sensor, that accept treatment of an object to obscure in infrared radiation, we remind that such aim is exist the materials that presenting the total obscuring, is invisible they are completely transparent in infrared radiation. We suggest using as an object to prove, (opachi) wood scrap or plastic material not transparent,

The strip of light will keep reliability of removing object, and we have diameter dimension at least the same resolution of accepted barrier.

## 14. MAINTENANCE

It is necessary to arrange procedure control in daily maintenance at the end, the barrier is guarantee safety level as requested, it may considered in the same purpose not only in the safety barrier, but also in condition operation in ambience make sure that correspondent which initial project.

*These program of maintenance should be elaborate respectively by laws /regulation in general application.*

#### 14.1 Maintenance daily

- 1 To set under tension the receiver is controlling the initial stage all indicators are illuminated fixed (Led)'ON' for at least 3 sec.in that case some input signal is activate ON, the led's with diff. Colors are blinking for at least 3 sec.see the table as ff.
  - Led Green → signal start is activate
  - Led Yellow → signal muting is activate
  - Led Red → signal test is activate
  
1. To set under tension the projector controlling the initial stage all indicators are illuminates fixed the red light (Led)'ON' for at least 3 sec.
  
3. Make sure that optical synchronization between projector / receiver is incorrect function, these case, after the initial test the red light place in projector is constant 'ON' indicates normal procedure operation then light beam is activate, or in that case here if ever not function correctly means (lack of optical synchronism), the red light is blinking standby' ON 'for 0, 5 sec. and 'OFF' for other 1.5 sec.
  
- 4 A single interruption, with the proper verification. some light beam is constantly shutting the green light (Led) in the receiver then switching' ON 'of red light (Led) they must temporally deactivate the output in OSSD is possible to follow controlling area of interruption of beam, and following on display are shuts off yellow bars in the receiver., (not for model HTBRZ, HTBLRZ & HTBRUZ).

If the barrier is in \_proper operation in semi \_ automatic / manual ensure that the out put 'OSSD' is not being activate when the removal of lightning bars occur but only after the 'restart' has been activate, in the case of semi - automatic function is valid only in the first cycle after activation, (not for model HTBRZ, HTBLRZ & HTBURZ ).

#### 14.2 Maintenance periodically

1. Always maintain clean sensitive parts of projector and the receiver remove dirt oil, dush, Do this operation by using the liquid that may not damage the surface area,
2. Always verify a sensible surface area if presence of “rough” or scratch in surface area that may Compromise the regular function of barrier, in this case must replace or repair the barrier.
3. Make sure that connectors are screwed deeply in sense that internal contact can't penetrate of Some type of liquid inside,
4. Verify the correct orientation of barrier by using an instrument or equipment, in case of Necessity re-aligns the projector or receiver,

### 15. IDENTIFICATION OF THE PRODUCT

It is possible to determine the model code of fit barrier by using the table shown below.

#### Single beam barrier

#### SINGLE BARRIER

The product code of single beam barrier is HTBU1.

For other reference in succeeding table:

#### Model selection

| MODEL  | MAX.DISTANCE [m] | REVISE VERSION | LEVEL |
|--------|------------------|----------------|-------|
| HTB3   | 5                | NO             | 2     |
| HTB5   | 5                | NO             | 4     |
| HTBR3  | 5                | YES            | 2     |
| HTBR5  | 5                | YES            | 4     |
| HTBL3  | 17               | NO             | 2     |
| HTBL5  | 17               | NO             | 4     |
| HTBLR3 | 17               | YES            | 2     |
| HTBLR5 | 17               | YES            | 4     |
| HTBU3  | 60               | NO             | 2     |
| HTBU5  | 60               | NO             | 4     |
| HTBUR3 | 60               | YES            | 2     |
| HTBUR5 | 60               | YES            | 4     |

**Selection of the useful length (XX):**

| MODEL  | USE HEIGHT XX [mm]/ RESOLUTION YY |       |       |       |       |       |       |        |        |        |        |
|--------|-----------------------------------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
|        | 80                                | 150   | 300   | 450   | 600   | 750   | 900   | 1050   | 1200   | 1350   | 1500   |
| HTB3   | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |
| HTB5   | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |
| HTBR3  | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |
| HTBR5  | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |
| HTBL3  | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |
| HTBL5  | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |
| HTBLR3 | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |
| HTBLR5 | 8 YY                              | 15 YY | 30 YY | 45 YY | 60 YY | 75 YY | 90 YY | 105 YY | 120 YY | 135 YY | 150 YY |

| MODEL  | USE HEIGHT XX [mm]/ BEAM NUMBER rr |                 |                 |                 |                 |                  |
|--------|------------------------------------|-----------------|-----------------|-----------------|-----------------|------------------|
|        | 300                                | 450             | 600             | 750             | 900             | 1050             |
| HTBU3  | HTBU3 30<br>rr                     | HTBU3 45<br>rr  | HTBU3 60<br>rr  | HTBU3 75<br>rr  | HTBU3 90<br>rr  | HTBU3 105<br>rr  |
| HTBU5  | HTBU5 30<br>rr                     | HTBU5 45<br>rr  | HTBU5 60<br>rr  | HTBU5 75<br>rr  | HTBU5 90<br>rr  | HTBU5 105<br>rr  |
| HTBUR3 | HTBUR3<br>30 rr                    | HTBUR3<br>45 rr | HTBU3R<br>60 rr | HTBU3R<br>75 rr | HTBU3R<br>90 rr | HTBUR3<br>105 rr |
| HTBUR5 | HTBUR5<br>30 rr                    | HTBUR5<br>45 rr | HTBUR5<br>60 rr | HTBUR5<br>75 rr | HTBUR5<br>90 rr | HTBUR5<br>105 rr |

| MODEL  | USE HEIGHT XX [mm] / BEAM NUMBER rr |                  |                  |                  |                  |                  |
|--------|-------------------------------------|------------------|------------------|------------------|------------------|------------------|
|        | 1200                                | 1350             | 1500             | 1650             | 1800             | 1950             |
| HTBU3  | HTBU3<br>120 rr                     | HTBU3<br>135 rr  | HTBU3<br>150 rr  | HTBU3<br>165 rr  | HTBU3<br>180 rr  | HTBU3<br>195 rr  |
| HTBU5  | HTBU5<br>120 rr                     | HTBU5<br>135 rr  | HTBU5<br>150 rr  | HTBU5<br>165 rr  | HTBU5<br>180 rr  | HTBU5<br>195 rr  |
| HTBUR3 | HTBUR3<br>120 rr                    | HTBUR3<br>135 rr | HTBUR3<br>150 rr | HTBUR3<br>165 rr | HTBUR3<br>180 rr | HTBUR3<br>195 rr |
| HTBUR5 | HTBUR5<br>120 rr                    | HTBUR5<br>135 rr | HTBUR5<br>150 rr | HTBUR5<br>165 rr | HTBUR5<br>180 rr | HTBUR5<br>195 rr |

## SELECTION OF RESOLUTION / BEAM NUMBER

### Resolution

A possible value of YY are: 14 – 20 – 30 – 35 – 40 – 50

### BEAM NUMBER

A possible value of rr is:

- 2 in useful height 300 - 450
- 3 in useful height 450 – 600 – 750 – 900 – 1050 – 1200 – 1350 – 1500
- 4 in useful height 750 – 900 – 1050 – 1200 – 1350 – 1650 – 1800 – 1950

## 16 SERVICE WARRANTY

### 16.1 WARRANTY PERIOD

The period of warranty is valid for 2 two years from the date of purchase of the product.

### 16.2 VALIDITY OF WARRANTY

the service warranty is offered by H.E.C.TO SYSTEMS is covered only when defective barrier occur while using normally, and its not valid for other case or application, for example if not proper used the barrier or the result of modified is not also correct, or by using the accessories not according in the specific use indicated, /or by using isn't base on the product specified,

### 16.3 DECLARATION OF WARRANTY

therefore the client must inform the HECTO Systems for the defective product during the period of warranty, HECTO SYSTEMS will decide the proper description/diagnose of the product if it is need to repair or to replace defective product,

HECTO Systems has not oblique to repair, replace, (strictly NO return NO exchange of the product) until the client has not bring back the defective product during warranty period,

Some replacement product may be new or used product but it should be the same function or equivalent as before,

## Pin color coding / CONNECTORS

## PROJECTOR

Pin 3-yellow  
Pin 4-red  
Pin 5-brown  
Pin 6-sky blue  
Pin 7-gray  
Pin 8-white  
Pin 9-red  
Pin 8- white/yellow  
Pin 9- gray/red  
Pin 10-red  
Pin 11- white  
Pin 12- green  
Pin 13- red/sky blue  
Pin 14- green/brown  
Pin 15- white/green  
Pin 16- yellow/brown

## EMITTER

Pin 1- violet  
Pin 2- red  
Pin 3- yellow  
Pin 4- black  
Pin 5- brown  
Pin 6- sky blue  
Pin 7- gray

**Cable wire characteristics:**

5 meters long standard (other size request) optional

In according to rules DIN 4700

External sheath: PVC (**autoestingente**) standard rule VDEO0482; IEC 60332/1

Working temperature: -30 °C + 80°C

Internal conductor section: 0, 25 mm<sup>2</sup>

Internal shielded conductor: 20G ohm

Internal screen: copper sock

## DECLARATION WITH STANDARD RULE

MANUFACTURE COMPANY: **H.E.C.TO. SYSTEMS sas**  
ADDRESS: **Corso Grosseto 194 - 10148 TORINO - ITALY**

HEREBY DECLARE UNDER MY RESPONSIBILITY THAT THE PRODUCT **SECURITY BARRIER** , WITH THE DIFFERENT MODEL OF EACH VERSION IS ACCORDANCE

|               |              |               |              | Protected height xx (mm)  |    |     |     |     |     |     |     |      |      |      |      |
|---------------|--------------|---------------|--------------|---------------------------|----|-----|-----|-----|-----|-----|-----|------|------|------|------|
|               |              |               |              |                           | 80 | 150 | 300 | 450 | 600 | 750 | 900 | 1050 | 1200 | 1350 | 1500 |
| <b>HTB3</b>   | <b>xx yy</b> | <b>HTB5</b>   | <b>xx yy</b> | <b>Resolution yy (mm)</b> | 14 | #   | #   | #   | #   | #   | #   | #    |      |      |      |
| <b>HTBR3</b>  | <b>xx yy</b> | <b>HTBR5</b>  | <b>xx yy</b> |                           | 20 | #   | #   | #   | #   | #   | #   | #    |      |      |      |
| <b>HTBL3</b>  | <b>xx yy</b> | <b>HTBL5</b>  | <b>xx yy</b> |                           | 30 | #   | #   | #   | #   | #   | #   | #    | #    | #    | #    |
| <b>HTBLR3</b> | <b>xx yy</b> | <b>HTBLR5</b> | <b>xx yy</b> |                           | 35 | #   | #   | #   | #   | #   | #   | #    | #    | #    | #    |
|               |              |               |              |                           | 40 | #   | #   | #   | #   | #   | #   | #    | #    | #    | #    |
|               |              |               |              |                           | 50 | #   | #   | #   | #   | #   | #   | #    | #    | #    | #    |

**xx= Protected height yy = resolution**

- RECEDING THROUGH SAFETY DEVICE IN ENCLOSED OF THE DOCUMENT IV OF MACHINE INSTRUCTION **(CE 98/37)** IS RELATIVELY RECEIVED IN ITALY WITH **D.P.R 459/96**.
- THEY ARE EXACTLY ARRANGED ENCLOSED OF THE DOCUMENT OF MACHINE INSTRUCTION **(DIRECTIVE CE 98/37)** IS RECEIVED IN ITALY WITH **D.P.R 459/96** LIKE AN EVIDENCE CERTIFICATE **NO: 0476 B1 312 10 04** CERTIFIED BY CERMET ( **NOTIFYING ORGANISM NO. C.E. 0476**) IN VIA CARIANO,23 CADRIANO DI GRANAROLO 40057 (BO).
- THEY ARE EXACTLY ARRANGED OF THE FOLLOWING MACHINE CERTIFICATE WITH ACCORDANCE BY LAW:
- CERTIFICATE OF ELECTRONICS COMPATIBILITY (CERTIFIED 89/336 CEE AND THE FOLLOWING AMENDMENTS CEE 92/31 E CEE93/68) IS RECEIVED IN ITALY WITH D.LGS 615/96 (DIRECTIVE / WITH INSTRUCTION AS CONCERN THE APPROACH OF THE LEGISLATION MEMBER OF RELATIVE STATE IN COMPATIBILITY OF ELECTROMAGNETIC).

AND ALSO DECLARE THAT:

-THE RED BEAM SYSTEM IS MANUFACTURED IN COMPLIANCE WITH STANDARD LAW

- **CEI EN 61496-1 (1998)**
- **IEC 61496-2 (1997)**
- **UNI EN 954-1 (1998)**
- **UNI EN 292-1 (1992)**
- **UNI EN 292-2 (1992)**



Copy of serial number as shown in the product

TURIN, 27/11/2005

**H.E.C.TO. Systems s.a.s.**  
**AMATO Salvatore**



