Costruito in conformità con la norma Europea
Built in compliance with European standard
Erfüllt die Europäische Norm

EN 54/12

Certificazione VdS
VdS certification
VdS Zertifizierung

VdS **n° G205128**

Certificazione CE
CE Certification
CE Zertifizierung

CE **0786-CPD-20214**

Test di funzionamento possibili secondo gli standard
Test of working possible according to the standards
Funktionstest nach

EN54

Prodotto secondo la norma di rispetto ambientale
Manufactured in accordance with the regulations and respect for the environment as in
Produktion im Einklang mit allen gültigen Umweltschutzbestimmungen

2002/96/CE

Normogramma - Chart - Normdiagramm

MIE.IED-rev.02

TM

SETRONIC VERONA

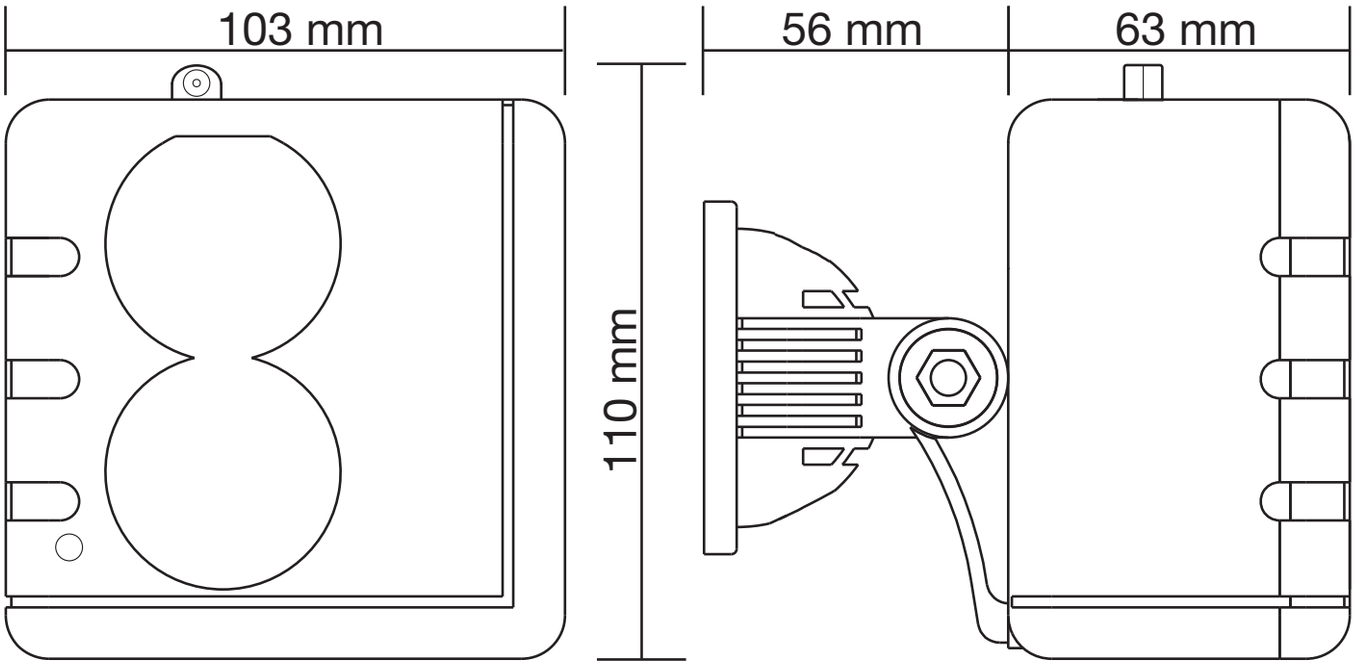
SMOKE and FIRE BEAM DETECTORS

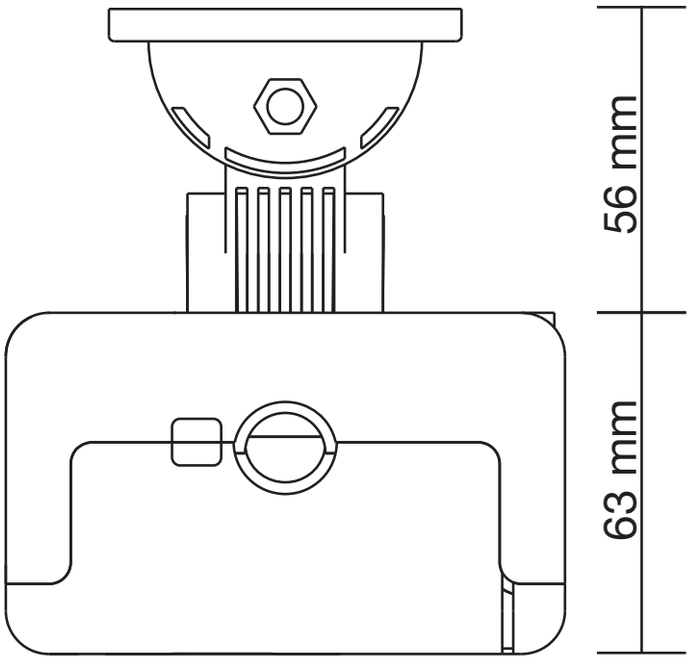
SETRONIC Verona S.r.l.
Via F. Da Levanto, 14/b - 37138 VERONA (Italy)
Tel. +39-0458347777 - Fax +39-0458347778
www.setronicverona.com - info@setronicverona.com


SETRONIC
VERONA

ECO with articulated bracket

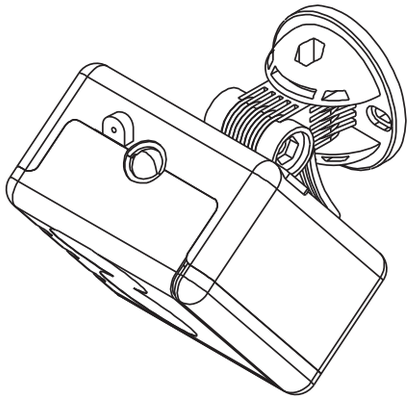
Mechanical characteristics and dimensions

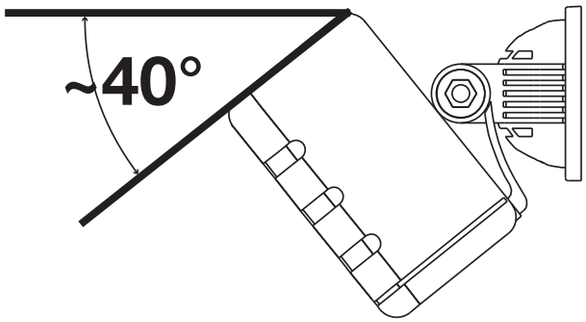


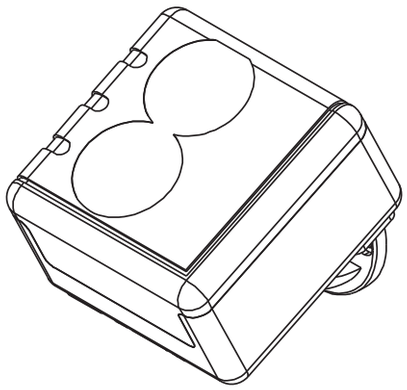


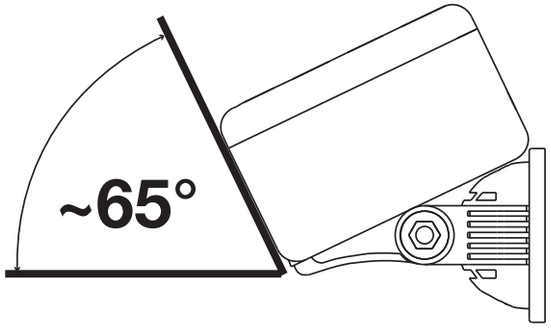
Size of ECO (or PRESS) with bracket
103mm x 110mm x 119mm
Size of ECO without bracket
103mm x 110mm x 63mm
Weight (ECO only) 360g
Weight (PRESS with bracket) 450g
Cover material
Polycarbonate
Bottom material
ABS
Background colour
white pearl RAL ~1013

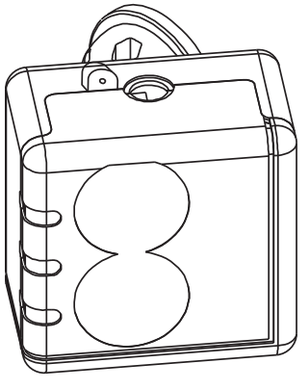
ENG

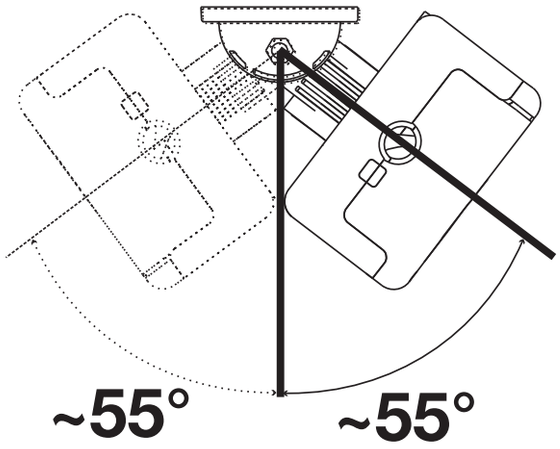


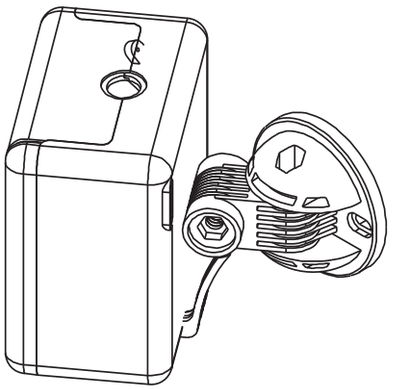








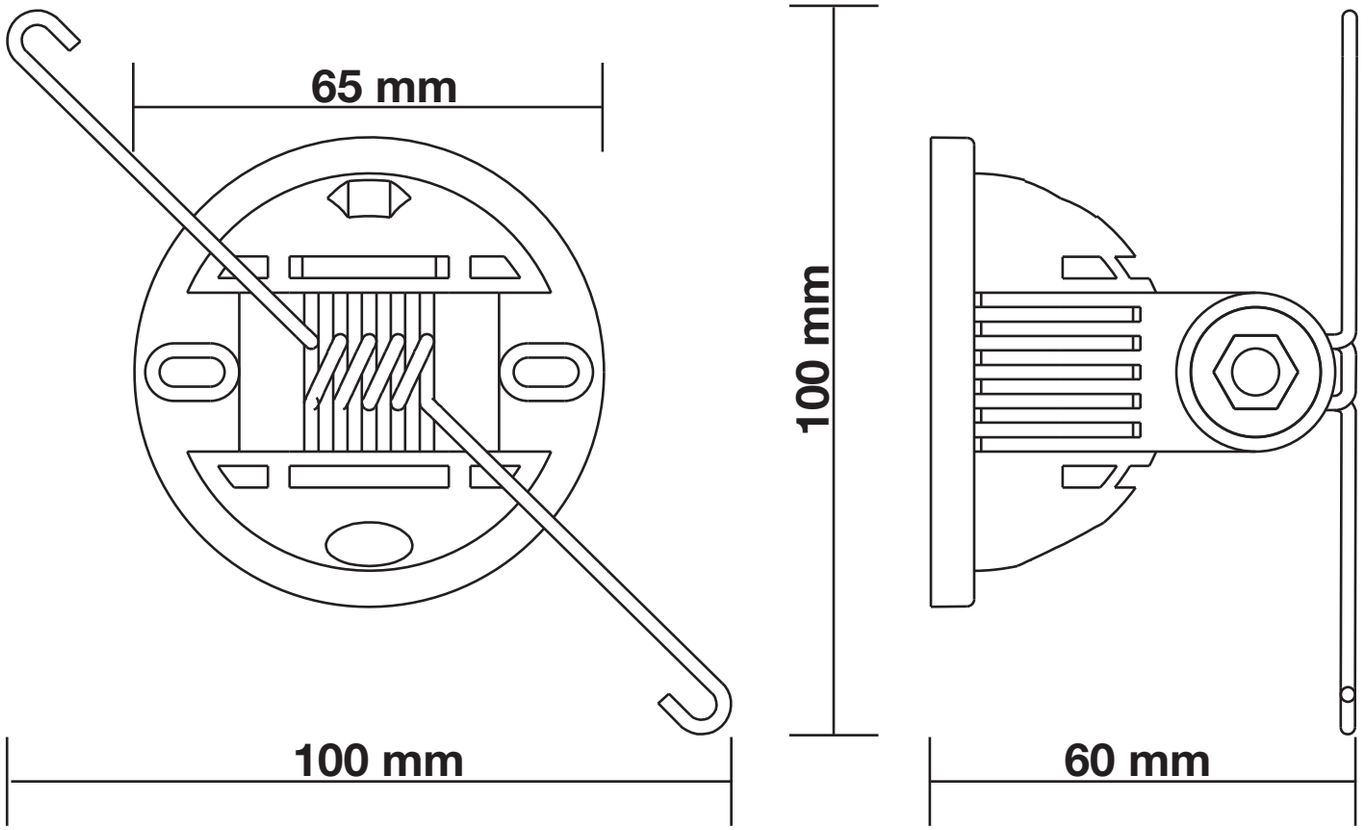


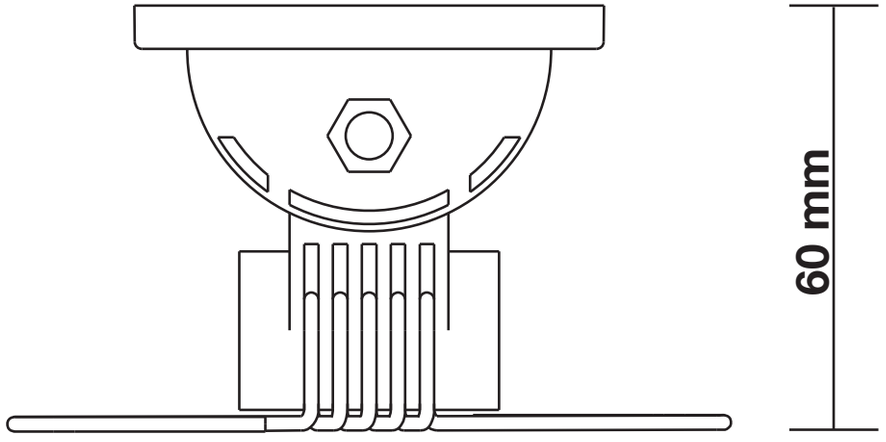


ENG

Articulated bracket for retroreflector K40

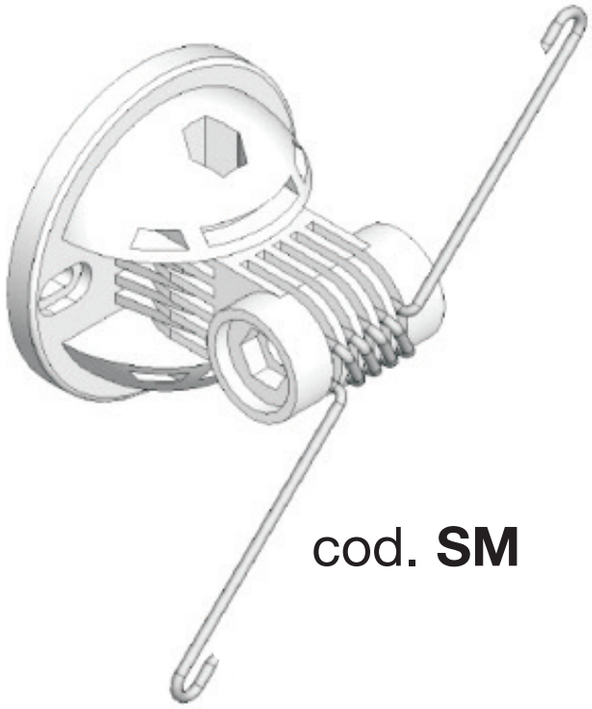
Mechanical characteristics and dimensions



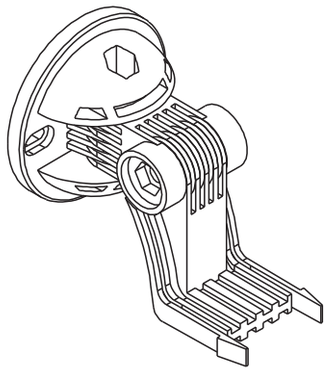


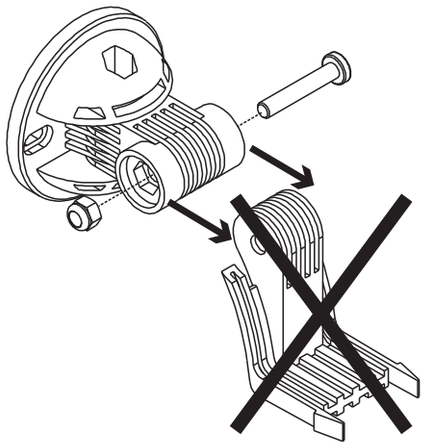
Retroreflector articulated bracket size
Ø65mm x 60mm
Weight
80g
Materials
ABS
Colour
white pearl RAL ~1013

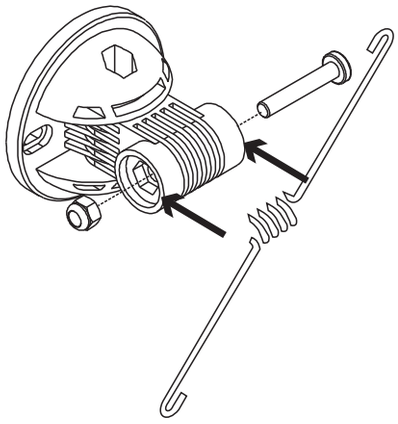
ENG

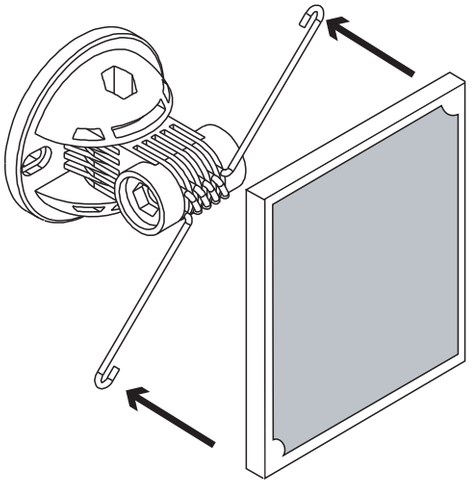


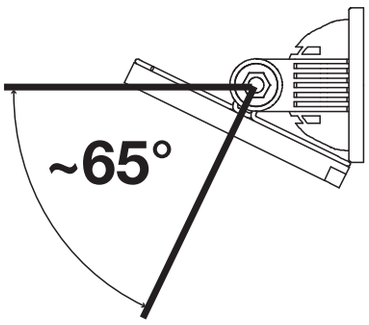
cod. **SM**

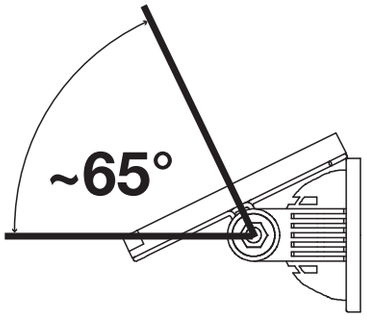


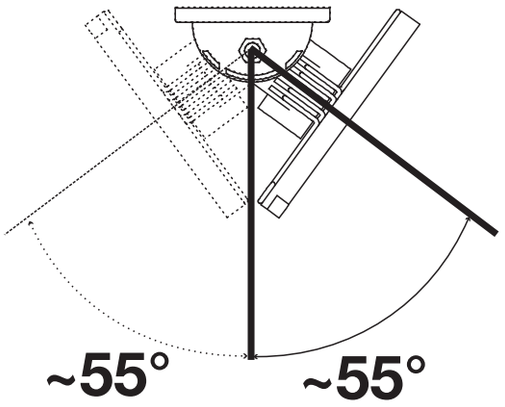








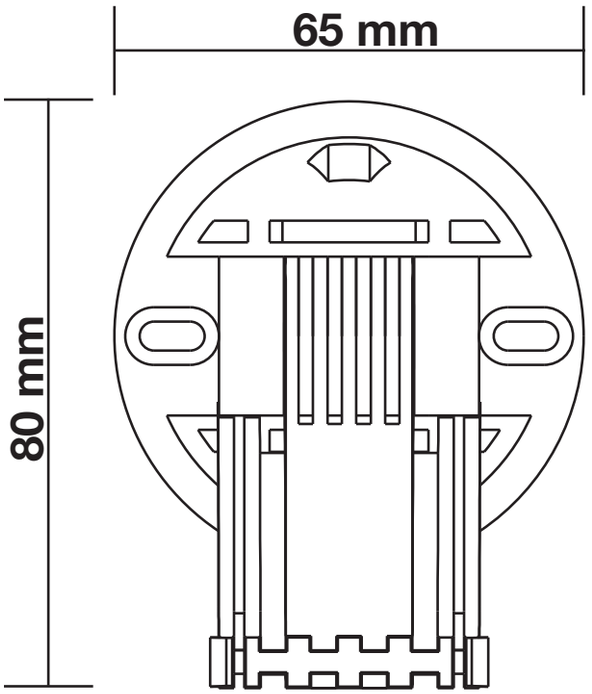


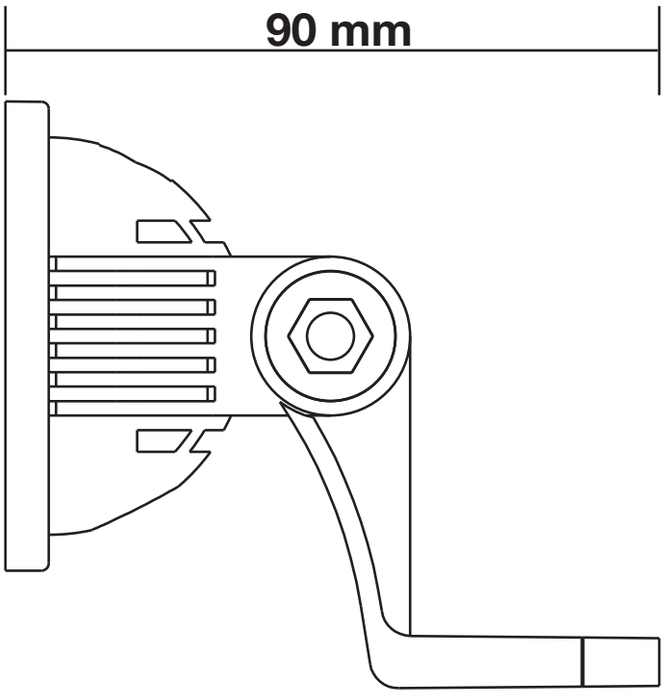


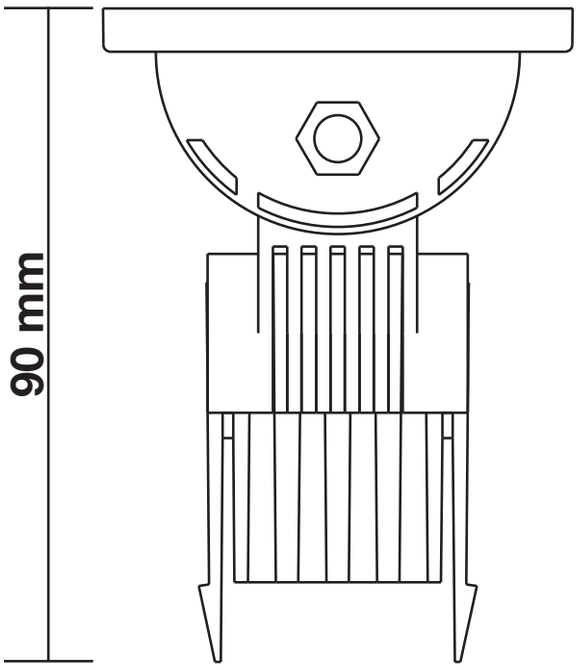
ENG

Articulated bracket for ECO

Mechanical characteristics and dimensions



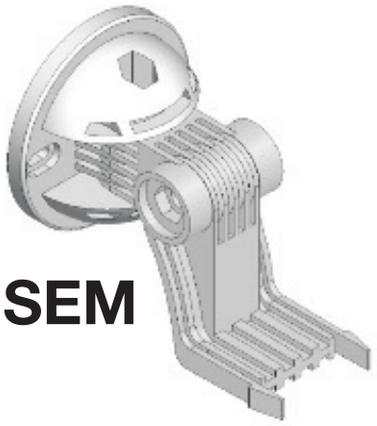


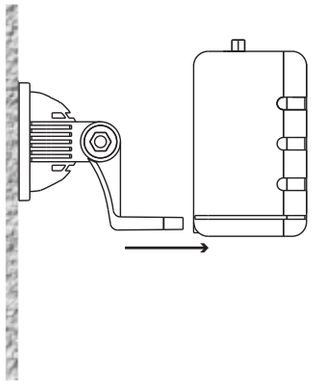


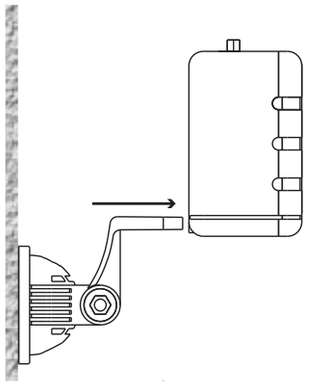
Articulated bracket size
Ø65mm x 90mm
Weight
75g
Materials
ABS
Colour
White pearl RAL ~1013

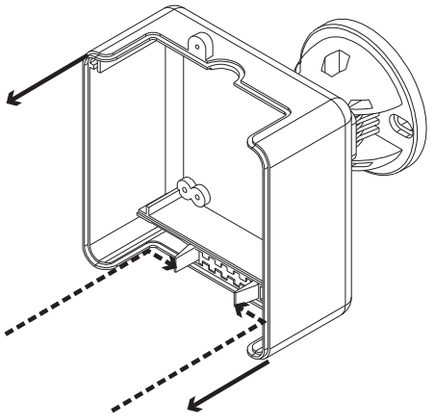
ENG

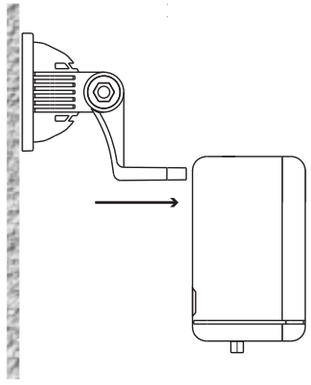
cod. **SEM**

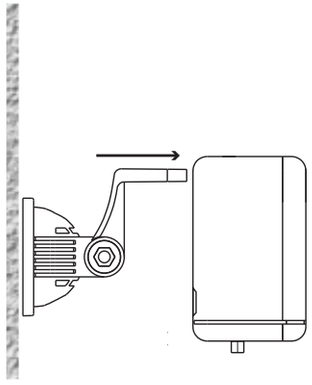


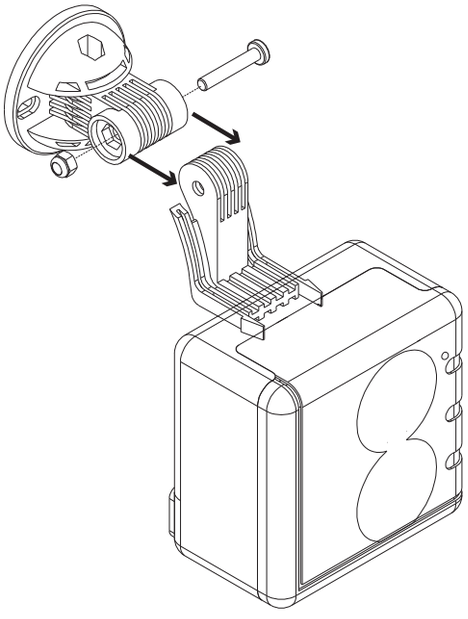


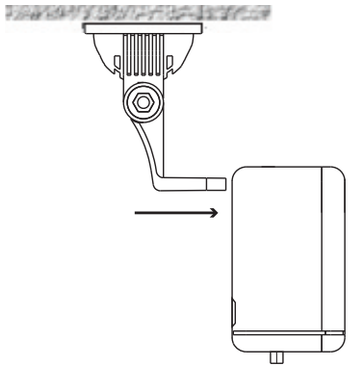


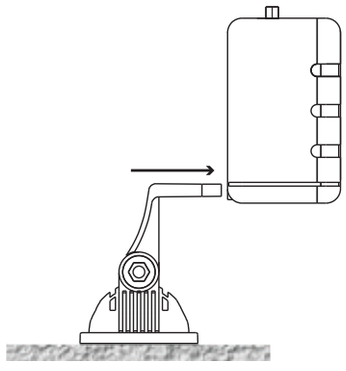












ENG

Preliminary information

Foreword

This manual is a short information booklet for the installation of ECO. The rules preliminarily considered applicable to this class of product are those provided for in the EN 54-14 insofar as they apply to the particular plan for this product's use. It is highly advisable to follow these rules in those parts that apply to the use of line detectors in general. You are also reminded that, in addition to the requirements of said regulations, the system rules provided for by national requirements must also be followed.

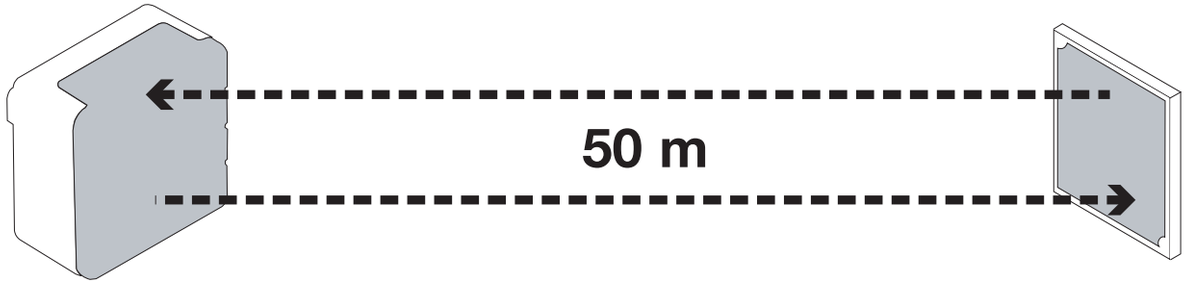
ENG

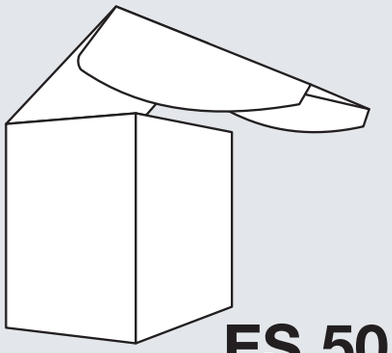
Main characteristics

- Compact product
- Ideal for buildings of artistic importance (museums, conference halls, etc.)
- Easily installed with new articulated bracket
- Multifunctional unit: Reflection or Transmitter-Receiver configuration
- Electrical supply of 12V DC to 24V DC without commutation required
- Low power absorption under all working conditions
- Innovative design
- Interface incorporated
- Standard or flush-mounted container
- Product fully compliant with environmental legislation
- Performance: up to 80 m in reflection version; up to 100m as Transmitter-Receiver

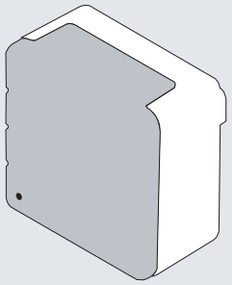
ECO ES 50

Model
ES 50
(reflection)

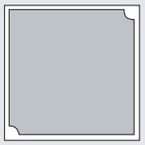




ES 50

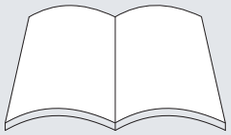


ECO (TRx)
detector

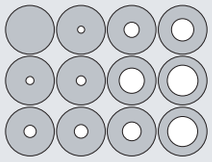


Retroreflector
K40
(100x100 mm)

Cable gland / Cap /
fixing screw



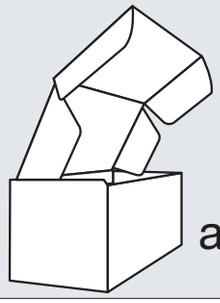
Instruction
booklet



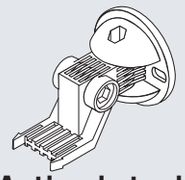
Diaphragm set
DEM

ENG

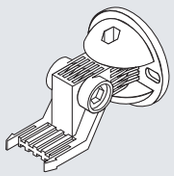
OPTIONAL



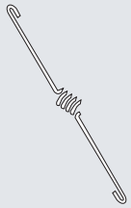
SSM
accessories



Articulated
bracket SEM



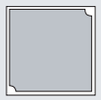
Articulated
bracket SEM



Adapter M

Reflective Unit for technical solution of minor visual impact

- *wall mounted version (without swivel)*
- *operating distance 2-20 meters*

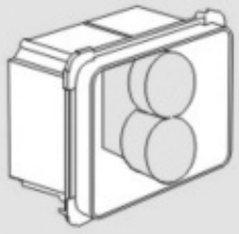


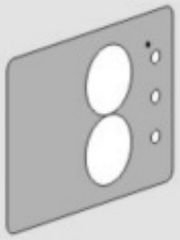
Retroreflector
K20
(50x50 mm)

ECO ES 25-I

Model
ES 25-I
(reflection
flush mounted)

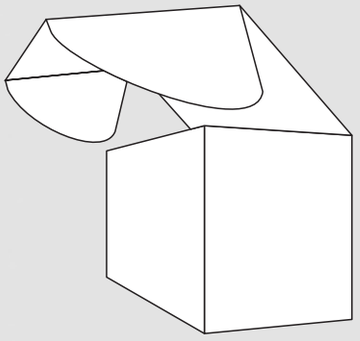
ENG

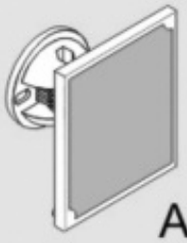

ECO (TRx)
Detector


Front panel
ECO (FEI)

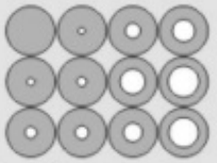

Protection
foil
(to remove)


Cap
for FEI


ES 25-I


Articulated
bracket SMK


Instruction
booklet


Diaphragm set
DEM

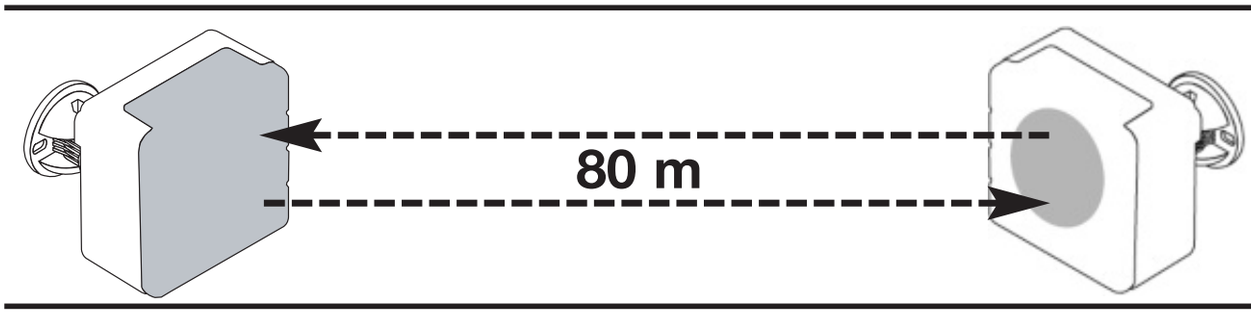
OPTIONAL


Retroreflector
K20
(50x50 mm)

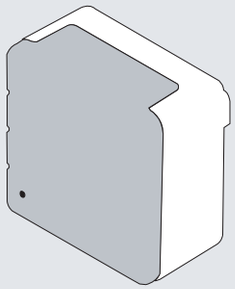
Reflective Unit for technical solution of minor visual impact

- *wall mounted version (without swivel)*
- *operating distance 2-20 meters*

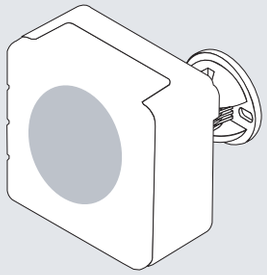
ECO ES 80



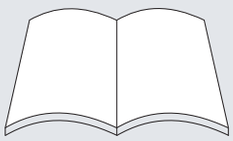
Model
ES 80
(reflection)



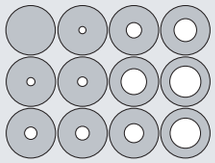
ECO (TRx)
Detector



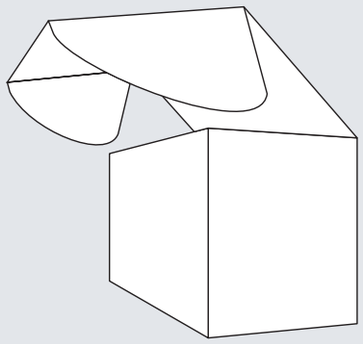
Reflector
Unit
(PRESS)

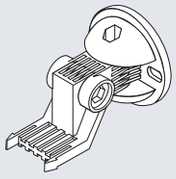


Instruction
booklet

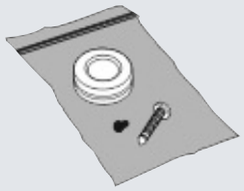


Diaphragm set
DEM





Articulated bracket SEM

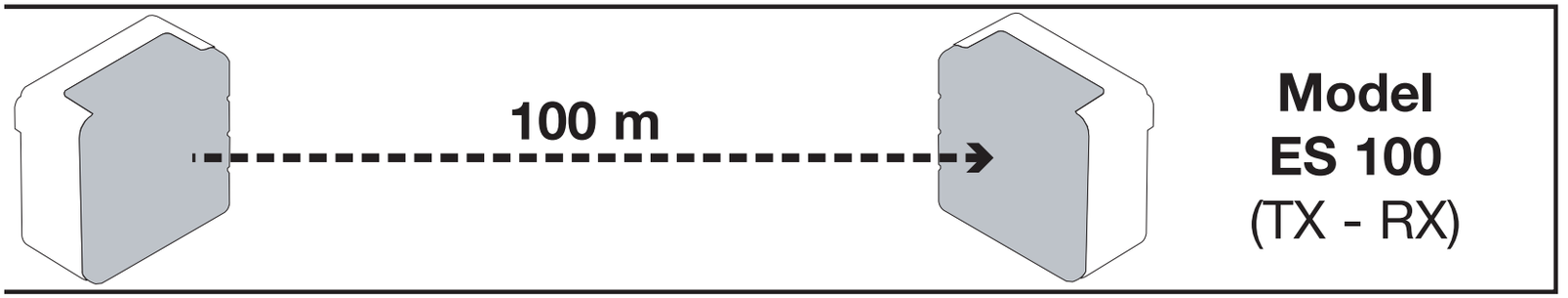


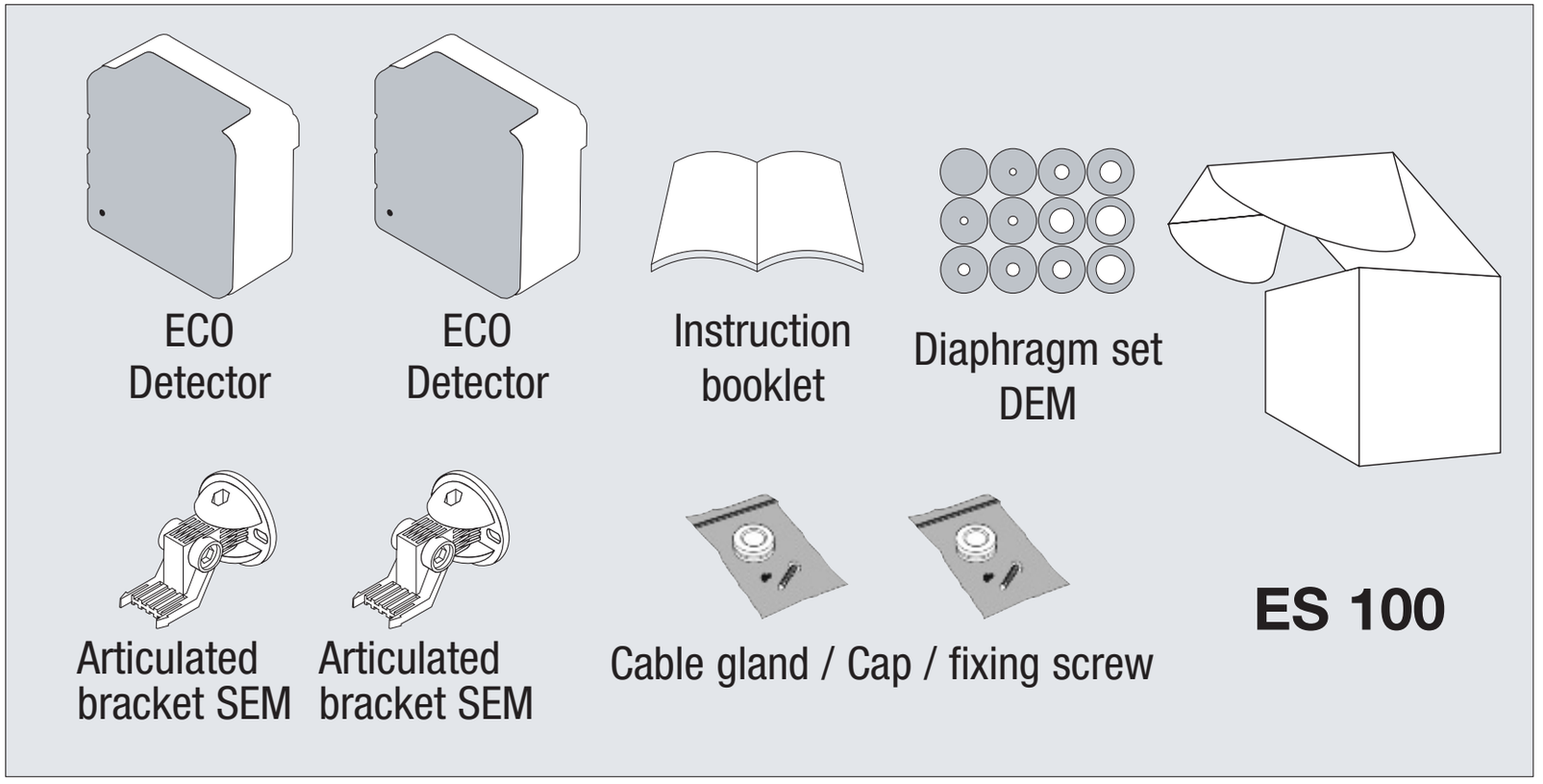
Cable gland / Cap / fixing screw

ES 80

ENG

ECO ES 100





ENG

Detector use and installation

Validity of supply terms and guarantee terms
In all circumstances Setronic Verona S.r.l.'s general supply, delivery, packaging , transport and guarantee terms apply, and the conclusion of the contract resulting in this installation of the ECO model implies acceptance of these, even if the contract was made by a distributor other than Setronic Verona S.r.l. itself.

If Setronic Verona S.r.l. learns of any installation of detectors that does not comply with the requirements, current regulations, or is in breach of the general and detailed terms of use, or the product is not maintained properly, the guarantee terms may fail to apply and, in extreme case, notice may given to immediately disable the working detectors until the regulations and requirements are adhered to.

1 Entry of wires from the field

Connections and power supply must be effected from a power supply part and from a certified and/or EN 54/2 and 4 authorised control centre, and the system must be executed in compliance with the rules stated in the national regulations.

2 Installation for the reference class

The ECO detector should be installed in buildings with electrical systems that are classified according to the level for which the detector was presented to the Competent Body concerned and as reported in the declaration of compliance. The protection rating is IP44.

Installation is not however possible in classified places or where there are toxic or noxious combustion fumes

3 Steam-free indoor installation

The ECO detector must only be installed in buildings in with walls and with a ceiling, as suitable for indoor use pursuant to regulation EN 54/12 of CEN TC72. The detector may not be used in buildings where there is water vapour mist or saturated steam, and the detector may in no case be used outdoors.

4 Vertical installation of detectors

Since it has only relatively recently been possible to install this type of detection system vertically, in such structures as towers, basilicas and bell towers, it is advisable for the customer or his system project planner first contact Setronic Verona S.r.l.'s technical office before carry out such vertical installation (Tel. +39-0458347777) for any vertical installation requirements.

5 Detector sensitivity

Since the combustible materials being worked on or stored in the space to be protected may be quite different in different cases, and since the detection depends on the physical characteristics of the start of the fire in relation to the chemical composition of the combustible material in its distillation stage, account must be taken of the following:

a. Collimation between the Transmitter unit and the Receiver may be reduced to a working surface for the optics equivalent to 1 square metre, along a distance of up to 80 m in reflection mode, and 100 m in Transmitter and Receiver mode. Under certain circumstances the detector's optic must be fitted with a suitable diaphragm for the distance between the ECO (TRX) and retroreflector or between ECO TX and ECO RX.

b. The sensitivity to be set naturally depends on the chemical compounds to be detected in case of accidental combustion.

c. The sensitivity threshold to be set also depends on the speed with which it is possible to detect the start of the fire, taking account of the warnings indicated in the described modes.

d. The conditions in a), b), c) above may be simultaneously present and all are inseparably linked to the presence of environmental disturbances that may occur in the protected area. The consequence is that the choice of detector sensitivity must be decided on after checks being carried out over a relatively long period (e.g. two weeks), a time within which there must have been no false alarms produced.

e. The occurrence of false alarms is always associated with two factors that merit the utmost attention:

- Disturbances to the ambient conditions due to the production of goods or of their handling, transportation or storage.
- The sensitivity required in relation to the type of risk in the particular case. It should be pointed out in this regard that raising the sensitivity of the detector is never the best response.

6 The use of suitable installation equipment installation

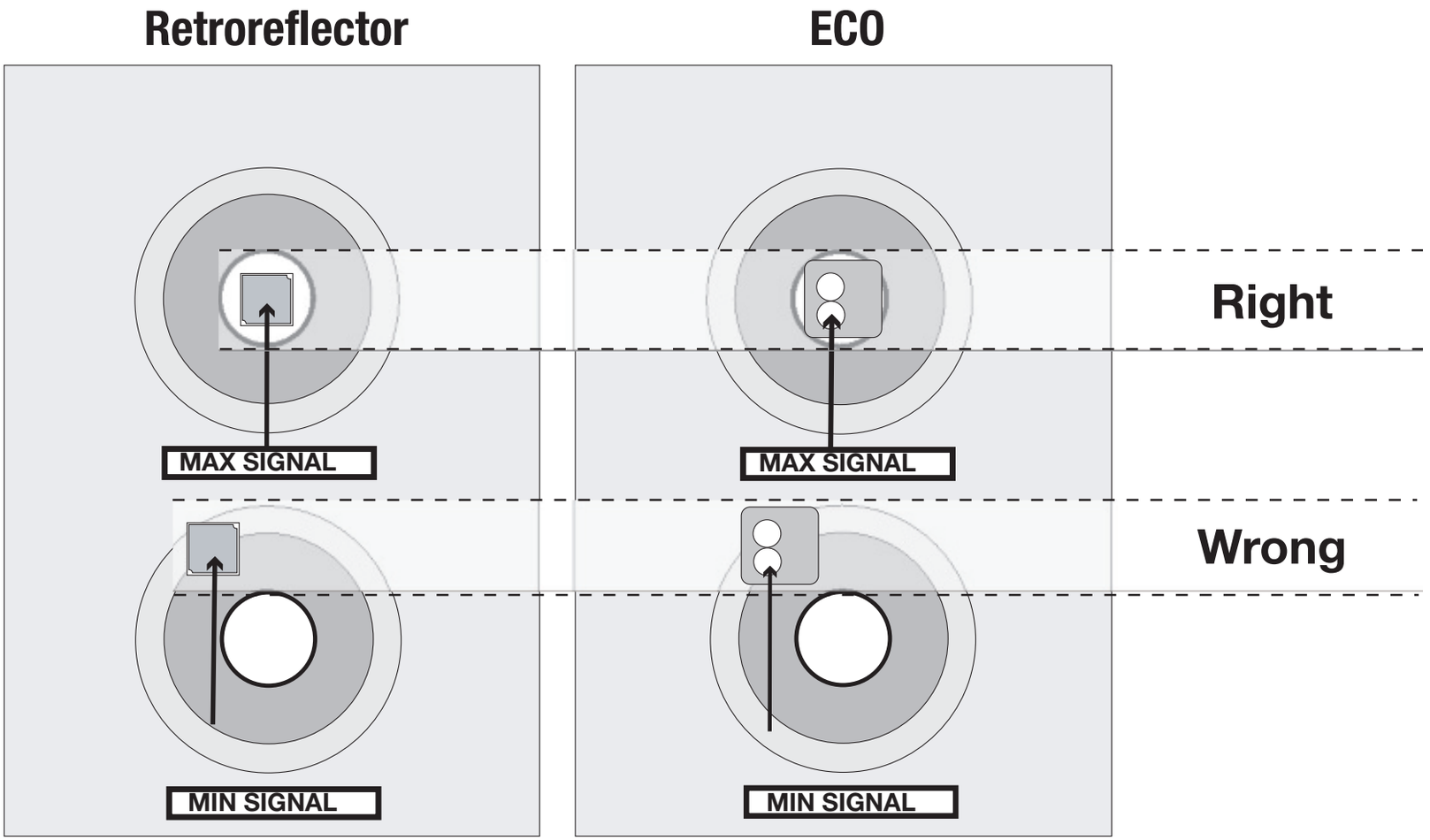
Remember that to install the two units in the three described Modes, two bore holes have to be made in the protected room's infill structures, at what are often considerable heights from the floor. Since installation must be carried out a few metres from the ground, you are reminded to take all suitable safety measures for the particular situation, using suitably certified ladders, scaffolding etc. that are also maintained in accordance with any regulations.

7 Preparation before installation

Please read this manual carefully before ascending any scaffolding to start installation work. The booklet is in pocket form, and it is advisable to take it with you onto the scaffolding so it can be consulted as required. Take with you suitable, good quality spare drill bits, wall plugs and screws so you don't have to return to the ground if any get dropped. We recommend you tie a screwdriver to your wrist to stop it falling. Make sure that no colleagues or customer factory staff pause beneath the area you are working. Place barriers around the area where the scaffolding or hoisting equipment is located. Make sure the scaffolding platform is not in front of any kind of doors or entrances to the room of installation from which staff might enter. If it is in front of any such doors, close them and put a sign outside that the door may not be opened during installation. Make sure no fork-lift trucks are being operated when you are working above ground. If you use only one wheeled scaffolding rig, take care to account at all times for its height when moving it around. In this case remove equipment and the ECO (TRX) from the scaffolding platform. Vibration could, during its movement, cause objects to fall from the platform and possibly cause you or your colleagues injury, as well as possibly cause the loss of the product itself. If you use a single wheeled scaffolding rig, take care to account at all times for its height when moving it around. It is easy to bump into lighting installations, wiring systems, ducting and busways etc. In addition to the danger to yourself, you may also be liable to pay compensation.

The distribution of the infrared light

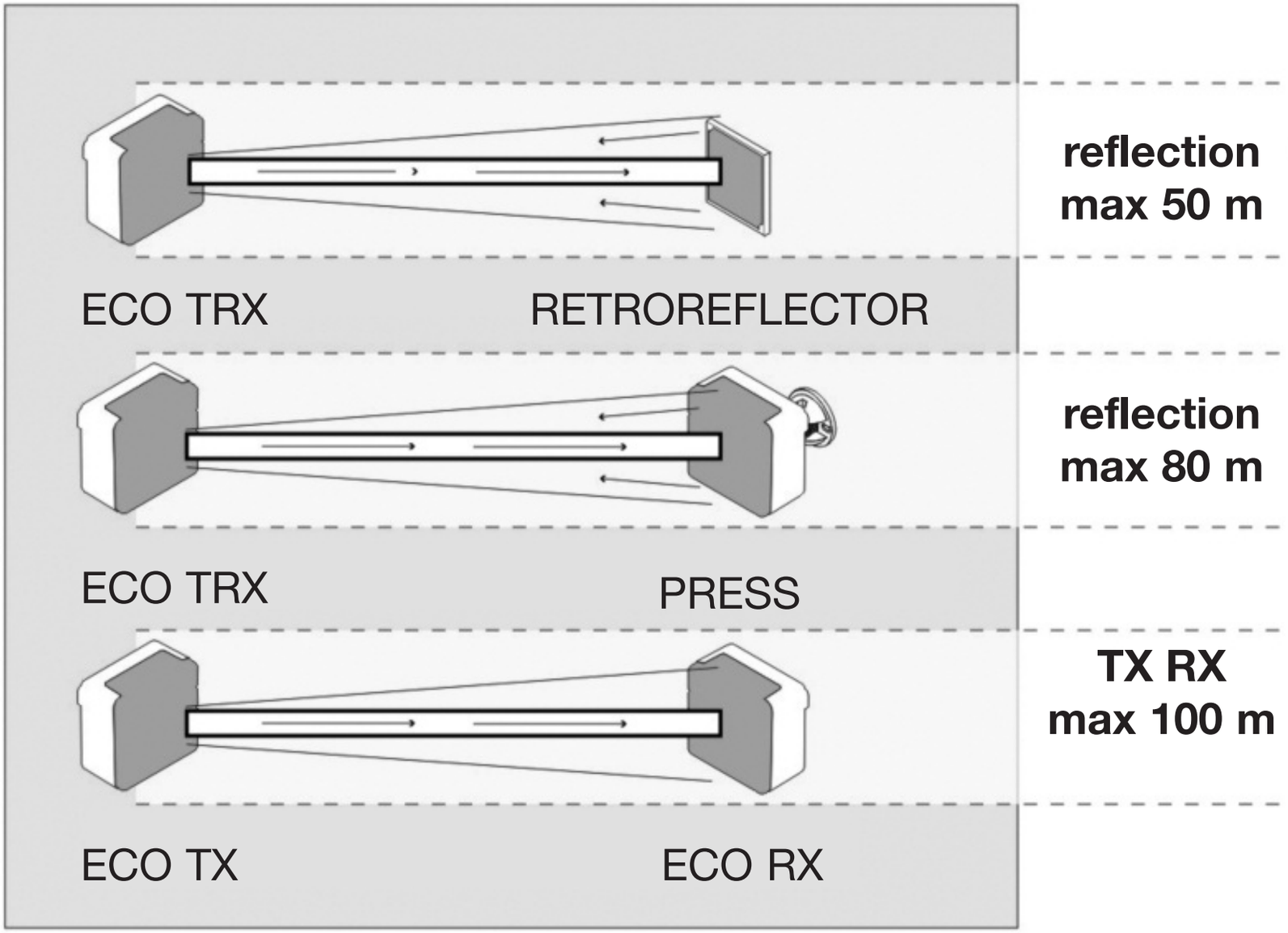
The infrared projector emits a cone of light of which only its inner part is actively necessary for the detector's working.



The figures show the active part of the infrared radiation emitted as well as that which is “virtually lost”. Even the “virtually lost”, infrared is however important where there is movement of the structure on which the Transmitter unit is mounted.

The following pictures show the reflection and receiver units' illumination conditions.

CONFIGURATION



Additional controls

Insufficient signal / fault

When the infrared signal emitted by the detector falls below a minimum level 10dB or is interrupted by an obstacle, the “fault” contact will open, rather than that of “fire alarm”.
When the correct signal level has returned or the obstacle removed the detector will return to normal working in less than one second. The detection units currently have memory retention also of fault conditions so if the detector comes immediately back into service, on removal of the obstacle it must always be checked that the control unit locally resets the fault signal, whether it be visual or sound.

Signal drop

If the carrier of the infrared signal emitted by the detector tends to diminish in time with respect to the originally set level, the system will carry out proportional adjustments over the long period. If the infrared signal drops to the preset threshold, due to an accumulation of dust or settling of the structure to which the detector is fixed, a flashing green led and the opening of the fault contact will send a maintenance request to the central control unit.

Alarm

A red Led will indicated the start of a fire detection without enabling an output. After a certain analysis time, typically 16 seconds, the red Led will start flashing and the output will be enabled to signal alarm confirmation.

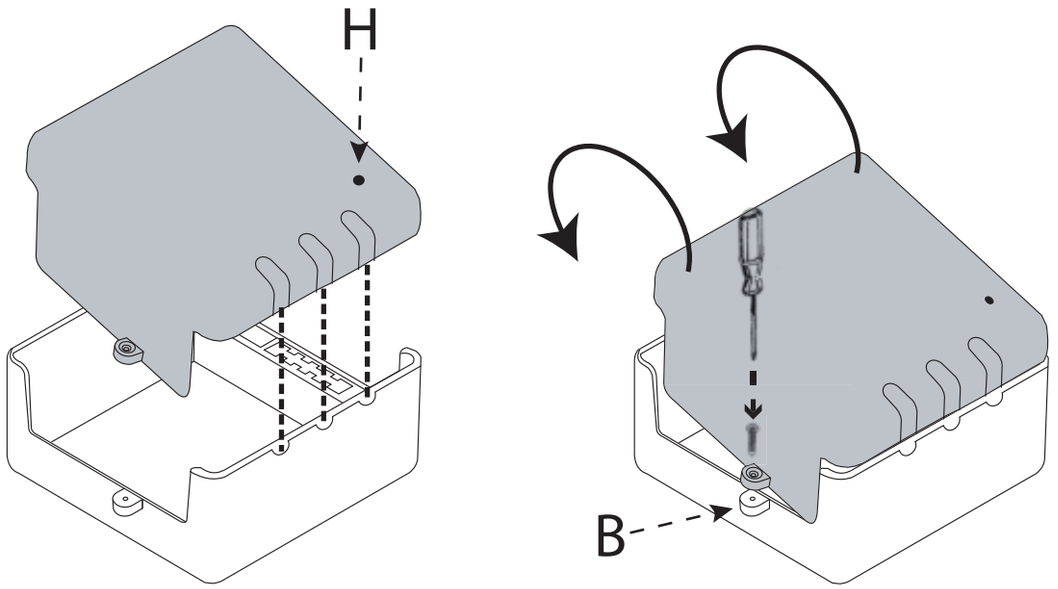
Reset

When the fire alarm has been given, the detector reset requires electrical disabling (power OFF/ON) for a time of at least one second.

Green	○ **Off:** No power ● **Continuously on:** Mains power on / Signal good ☼ **Flashing:** Signal low / Maintenance request
Yellow	○ **Off:** Signal good ● **Continuously on:** Poor signal (Fault) ☼ **Flashing:** Signal very strong (Saturation)
Red	○ **Off:** Normal working ● **On:** Pre Alarm ☼ **Flashing:** Alarm

Advice on closing the ECO detector

- Align the three grooves on the transparent cover with the correspondent grooves on the detector base.
- Press down to close completely.
- To ensure the front cover closure is present an eyelet which the possibility to insert an autothread screw.
- To preserve the dust protection, close the setting frontal hole with the provided cap.



Real or instrument function tests

It is advisable always to carry out a real scale fire simulation (where possible) to check correct positioning of the detection units in the protected building.
This must be performed in compliance with all relevant regulations.
If a real test cannot be performed, the test filters **STF4** can be used to simulate detector alarm conditions.

Height of detection units' installation

The height of the detection units' installation must be worked out in accordance with the national regulations.

Since the position of the detection units is of fundamental importance, and given that they will be installed in very types of buildings with different kinds of ceilings, great care must be taken in choosing these positions. The chart below will be of some help in this regard (III-IV).

Even this cannot however remove all possible doubts that could arise at the installation stage. The chart relates the building height to the “average” temperature that may be found under double double-pitched ceiling.

We would therefore ask you to contact our technical department if your particular situation is not covered by this manual.

Chart (III-IV)

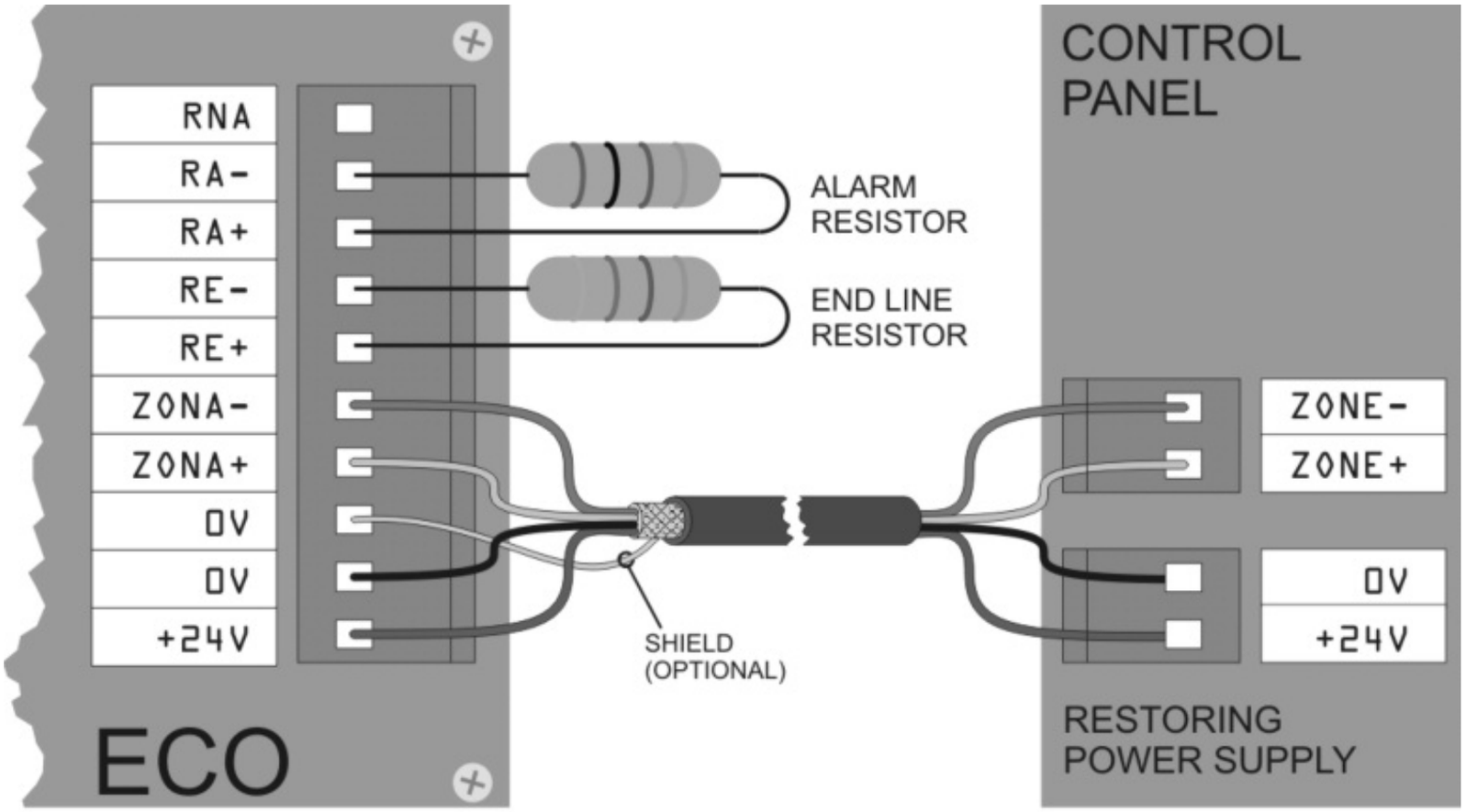
Position a ruler on the line corresponding to the temperature under the roof (column a). Line the ruler up along the dotted line corresponding the height of the building to be protected (column b). The resulting alignment indicates both the detector installation distance from the top of the roof (column c), and the theoretical width of maximum lateral cover (column d).
Remember that the regulations permit TS EN54/14 an effective maximum width of 15m.
The fact that the detector can also detect fires beyond this width, will mean that it will actually reinforce the detecting ability of the next unit and so of both.

Example

Temperature 22°C ***(column a)***, height of building 6m ***(column b)*** position of detector from top ~40cm ***(column c)*** and normalised width ***(column d)***.
It should be noted that this guide is intended to provide assistance taking account only of two variables: the temperature under the roof and the height of the building. The indications are for a building with a double sloping roof with a 20° slope, no natural or forced air ventilation or extraction, heating, air conditioning or pressure variations. Even if only one of these factors applies, the resulting height may have to be increased or reduced. Other considerations must also therefore figure in the calculations where there are a number of variables involved.

Typical connections

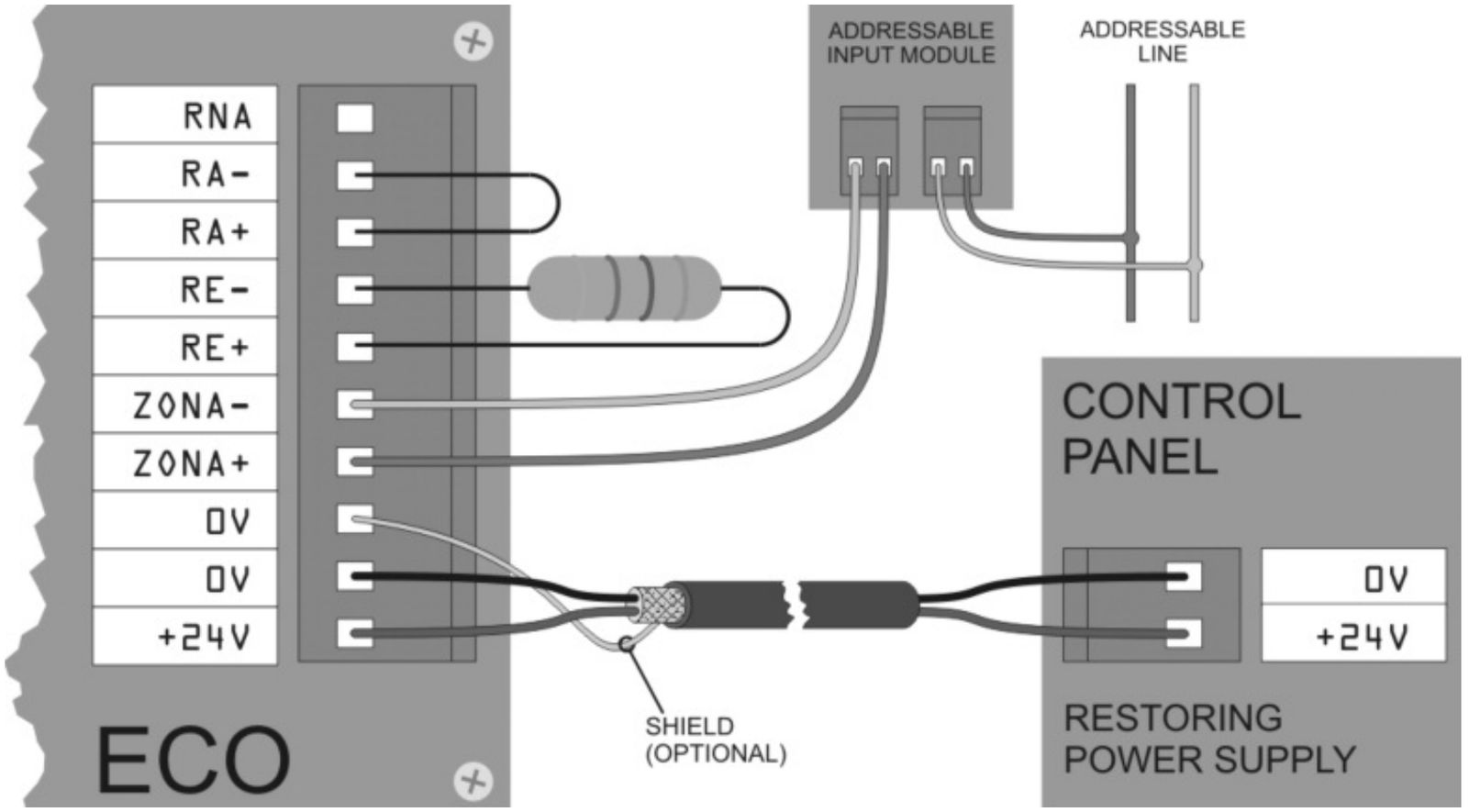
CONVENTIONAL CONTROL PANEL



To use the siutable resistor refer to value expressed in the technical specification of the Control Panel.

Typical connections

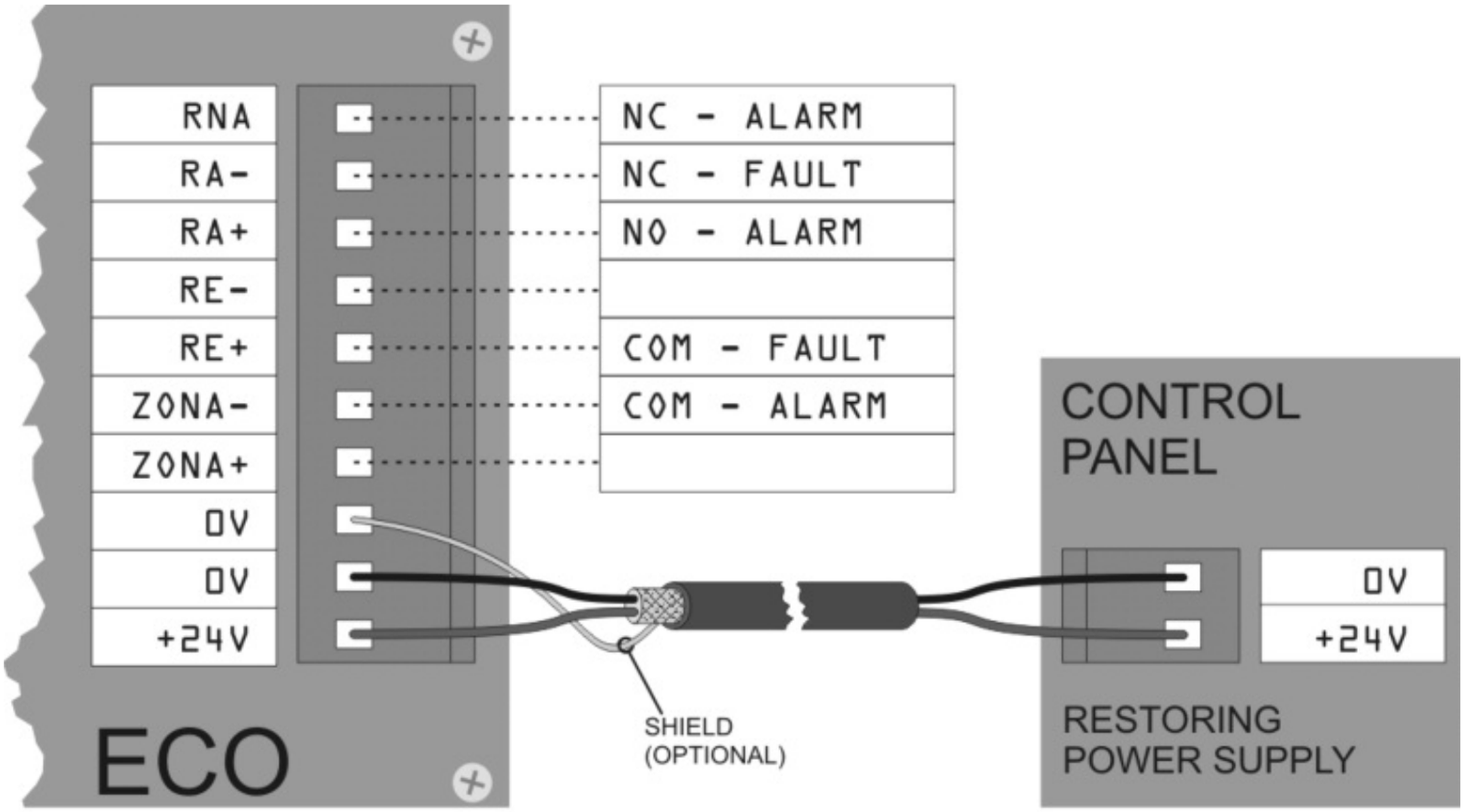
ADDRESSABLE CONTROL PANEL



To use the siutable resistor refer to value expressed in the technical specification of the Control Panel.

Typical connections

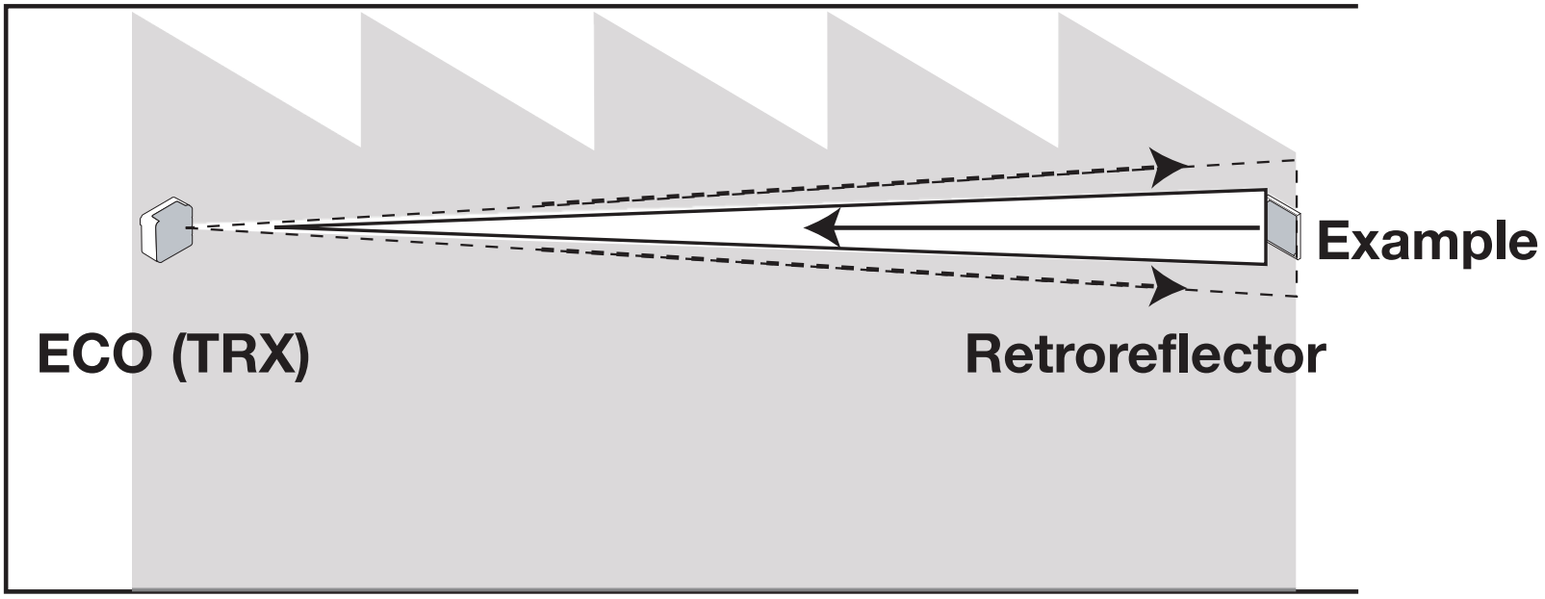
CLEAN CONTACT



To use the siutable resistor refer to value expressed in the technical specification of the Control Panel.

Reflection version (ES 50 / ES 25-I)

Installation



These instructions apply to both reflection models, standard (ES 50) and flush mounted (ES 25-I).

- Before installing the detector, check the walls or surfaces to which the ECO TRX transmitter and the retroreflecting unit or respective brackets will be attached. These must not be subject to movements or vibration when the unit is working.
- Keep the whole length of the detector's optical beam path free from obstacles.
- Do not position the detector opposite or close to light sources or direct sunlight.
- In potentially problematic situations one or more reflection devices may be needed to increase signal response. These will be used in association with a diaphragm placed on the ECO (TRX) receiver unit, and are provided as accessories.

Reflection version (ES 50 / ES 25-I)

ES 50 Reflection

ES 25-I reflection flush mounted

ENG

Reflection device for the ECO system

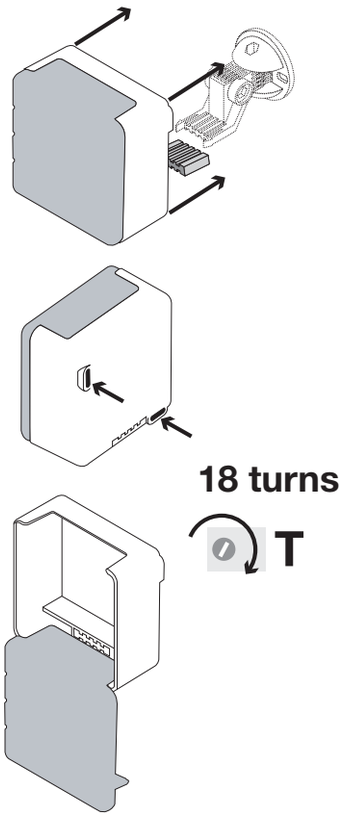
In this model, the reflection device consists of a wall-mounted retroreflector. Also available are swivel supports to apply to the ECO and the retroreflector. For the flush mounted model, only the retroreflector is moved.

See page 75 for details and codes.

Reflection version (ES 50 / ES 25-I / ES 80)

ECO installation, calibration and alignment procedure

1 If present, install the ECO's articulated bracket on the wall, insert the detector and point it towards the opposite wall. Otherwise make holes in the housing at the points that can been on the back and fasten to the wall. Position the detector so that the optics point at the opposite wall. Remove the front cover and insert it on one of the sides.



2 Turn switches S3 and S4 to ON.

3 • Remove the rubber cable holder during pre-installation.

• Extract the terminal board and connect up as indicated below.

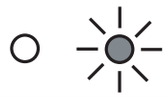
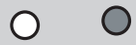
Warning: Always check the connections before switching on the power!
Fault danger!

• Insert the connected up terminal board and power up the system. The Green Led “V” will switch on.

• Turn the trimmer "T" 18 turns clockwise. Switch S1 to LO if the operating distance is between 2 and 25 m or to HI if the operating distance is between 25 m and 50 m.

ENG

4 The yellow Led “G” and green Led “V” indicate one of the following conditions:

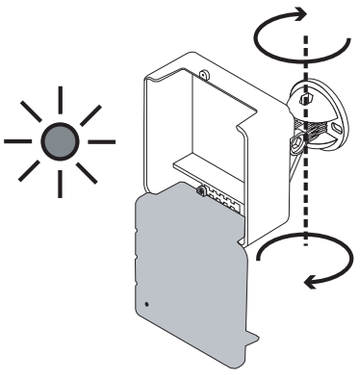
Yellow Led	*Green Led*	*Condition*	*V* *G*
ON	**ON**	The reflected infrared level is **too low;**	
OFF	**FLASHING**	The reflected infrared level is **low**;	
OFF	**ON**	The reflected infrared level is **good (Normal working);***	
FLASHING	**ON**	The reflected infrared level is **very high.**	

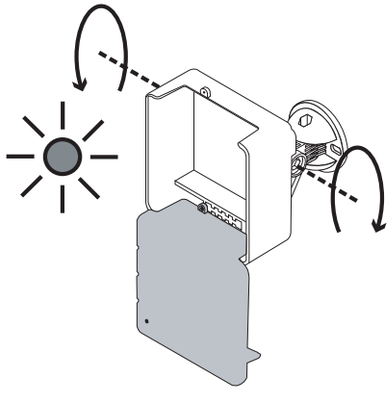
It is essential to obtain a situation where the yellow Led is flashing to have a good signal response and thus bring the detector to condition 3.

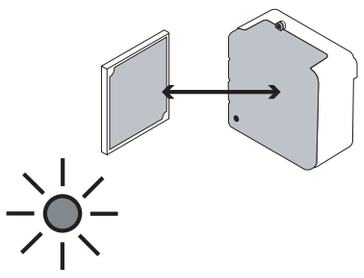
* Only in this situation must the yellow Led off not be considered as indicating an acceptable signal.

ENG

ECO installation, calibration and alignment procedure







5 If mounted on a swivel joint, align the ECO towards the retroreflector moving it in one direction at a time. Keep the vertical adjustment steady and move the device to the right and left and check the yellow Led's response.

Repeat for the vertical axis, moving the detector up and down. You must get to a position in which the yellow Led is flashing.

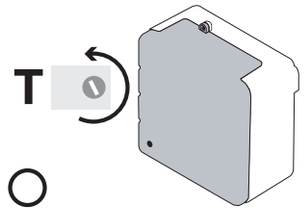
If the yellow is off, align the retroreflector up and down and/or right left until the ECO's yellow Led is flashing.

This is the required state. Tighten the screws of the articulated bracket(s).

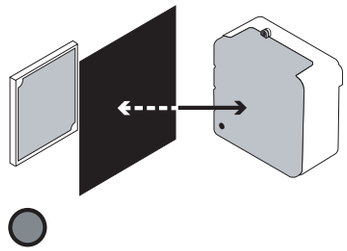
6 If the retroreflector does not have an articulated bracket search on the opposite wall the area in which the signal is strongest (yellow Led “G” flashing). When you have found the area, place and fix the retroreflector in the centre.

7 Close the front cover and fix the screw. At the end of the procedure the yellow Led must be flashing with fault contact remaining open. This condition is essential at this stage. Do not try to align the detector with a spirit level or laser pointer: just keep watching the yellow Led and follow the above instructions.

8 When both devices have been aligned, with the yellow Led flashing, close the cover and through the dedicated hole slowly turn trimmer "T" anti-clockwise until the Led stops flashing. Take care not to put your hand in the path of the signal between the transmitter and the retroreflector. When the yellow Led goes off it means that infrared signal response has been accepted by the detector. If the green led starts flashing it means that the trimmer “T” has been turned too far anti-clockwise. Position the trimmer so that the **green Led is continuously on and the yellow Led is off.**



9 Now cover the retroreflector with a card or opaque object. When you cover the retroreflector check that the yellow Led "G" on the ECO (TRX) remains continuously on. After removing the card from the retroreflector the yellow Led should be off. If not, and if the red Led "A" lights up, carefully check for the presence of any shiny or reflecting surfaces on the Infrared beam's path between the ECO (TRX) and the retroreflector. If there are any unwanted reflections along the Infrared beam's path, find a different position for both the devices or use one of the diaphragms included. Consult the table on page 102. Insert the provided cap in the setting frontal hole.



ENG

Reflection version (ES 50 / ES 25-I / ES 80)

Calibration with the UTA or ADM instrument

The ECO detector must be calibrated using a UTA control device or with the ADM adapter and a tester. The smoke sensitivity threshold is factory set at 600mV. Since background ambient noise in the space to be protected may be associated with various sensitivity levels, to avoid false alarms the correct calibration procedure must be followed using the suggested devices.

1 To insert the jack is necessary to open the cover of ECO. If the yellow led G start to blinking, set the trimmer T as for point 8 (pag 99).

2 **For ADM only:** insert the digital tester points in the instrument's boxes, observing the polarity Red = +, Black =-.
Set the tester at the scale mV DC=.

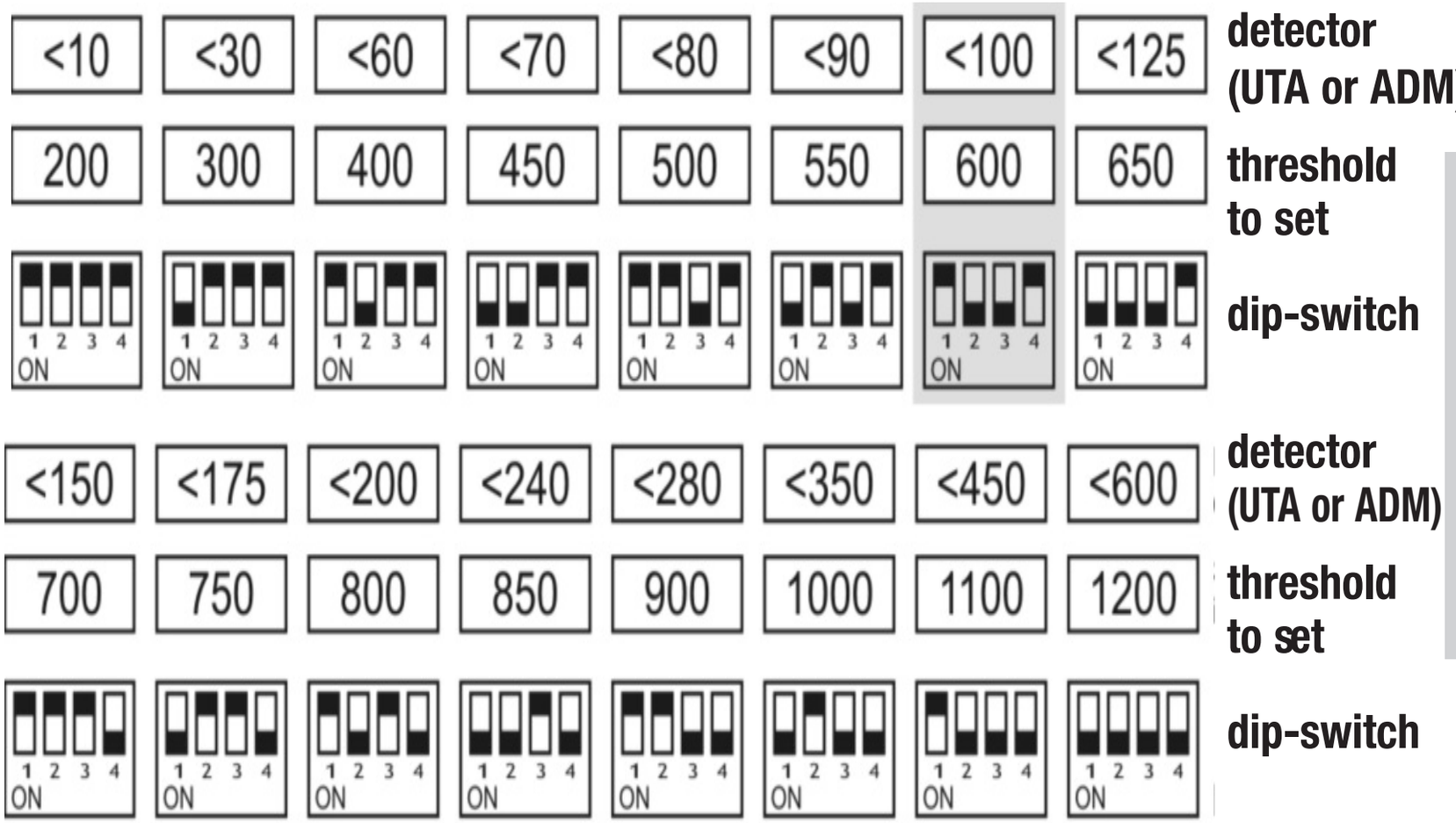
3 Insert the UTA or ADM jack in socket “J” of the ECO. Switch on the UTA or the ADM device and select the Detector function.

4 Wait a few minutes and read the peak values for the noise as shown on the display. This procedure must be carried out when all the interference factors are active (hot air ventilation, floating dust, lights etc).

5 To adjust the smoke threshold set the dip-switch “S2” levers according to the table.

6 Close the front cover of ECO and repeat the adjusting off trimmer T as for point 8 (pag 99). Insert the cap in the dedicated hole.

Warning: the relationship between the detector value and threshold to be set is indicative only. It is possible that in some installations a greater sensitivity (lower threshold) or a lower sensitivity (higher threshold). The default threshold is that shown.



ENG

Reflection version (ES 50 / ES 25-I)

Diaphragms

Diaphragm model	Max distance with "S1" **LO**	Max distance with "S1" **HI**	Max distance with "S1" **LO**	Max distance with "S1" **HI**
	with one reflector		*with two reflector*	
none	**25m**	**50m**	**30m**	**58m**
DC4000	**-**	**-**	**-**	**-**
DC4002	**-**	**2m**	**-**	**7m**
DC4004	**-**	**11m**	**2m**	**15m**
DC4006	**5m**	**15m**	**7m**	**18m**
DC4008	**8m**	**24m**	**11m**	**30m**
DC4010	**12m**	**29m**	**15m**	**35m**
DC4012	**14m**	**32m**	**18m**	**37m**
DC4014	**16m**	**35m**	**20m**	**40m**
DC4016	**18m**	**37m**	**22m**	**43m**
DC4018	**20m**	**39m**	**24m**	**47m**
DC4020	**21m**	**42m**	**25m**	**50m**
DC4024	**22m**	**45m**	**26m**	**54m**

The diaphragms, to apply behind the RX lens (see page I-II-120), are useful when:

- It is wished to install the detector more easily at a short distance (it is best to keep the switch "S1" at LO)
- If there are optical interferences between the ECO (TRX) and the retroreflector (it is advisable to set the switch "S1" to HI, and select the diaphragm with the smallest possible diameter).

If the diaphragm reduces the capacity too much and so the required distance is not reached, it will be necessary to introduce a second retroreflector.

ENG

Technical characteristics

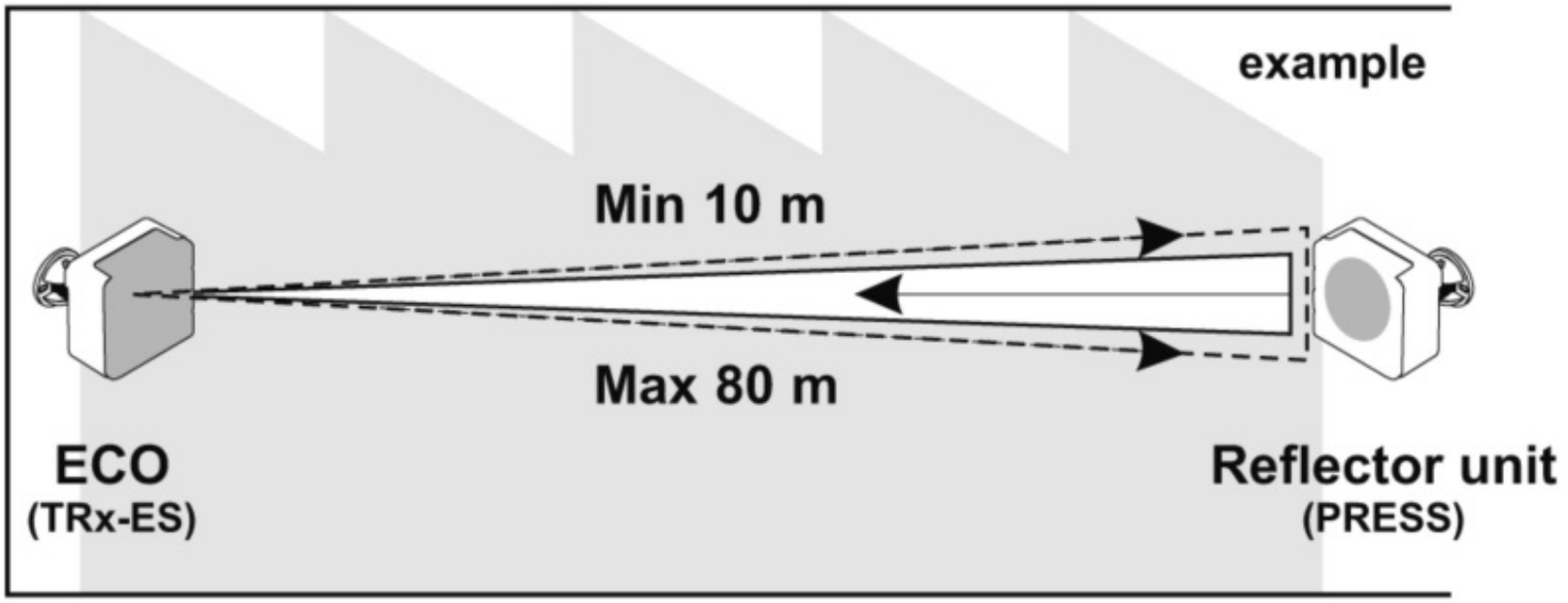
Electrical supply of 12V DC to 24V DC without commutation required.

Electrical supply tension	12V±20%		24V±20%	
Capacity regulated by switch S1	TX LO	TX HI	TX LO	TX HI
In normal working	35 mA	79 mA	19 mA	39 mA
In alarm	62 mA	95 mA	32 mA	52 mA

Contact capacity	Alarm relays 1A @ 30V; Fault OptoRelay 170mA @ 30V
Maximum cable length @24V	1000m / section 0.5mm^2; 2000m / section 1mm^2
Maximum cable length @12V	500m / section mm^2
Maximum cover	(375m^2) 15m x 25m at LO, (750m^2) 15m x 50m at HI.
Width of cover	15m (EN54/14)
Minimum operating distance	2m (with diaphragms, see table)
Maximum operating distance	50m
Temperature of working	-20°C ÷ +55°C
Storage temperature	-25°C ÷ +70°C
Relative humidity	95%
Protection rating	IP 44

Reflection version (ES 80)

Installation



ENG

We inform you that for calibration and start up you should follow the procedures indicated on pages 79 to 101 of the instruction booklet.

We also remind you that the whole path of the detectors optical beam must be kept free and unobstructed, and the device should not be installed opposite or close to light sources or direct sunlight. If this is not possible it is advisable to use the diaphragm filters as shown on the table on the following page.

Diaphragms

Diaphragm model	Max distance with “S1” **LO**	Max distance with “S1” **HI**
none	**30m**	**80m**
DC4000	**-**	**-**
DC4002	**-**	**-**
DC4004	**-**	**16m**
DC4006	**-**	**24m**
DC4008	**-**	**32m**
DC4010	**10m**	**43m**
DC4012	**11m**	**50m**
DC4014	**14m**	**58m**
DC4016	**15m**	**70m**
DC4018	**18m**	**76m**
DC4020	**19m**	**78m**
DC4024	**23m**	**80m**

The diaphragms, to apply behind the ECO RX lens (table I-II, p. 120), are useful when:

- It is wished to install the detector more easily at a short distance (it is best to keep the switch “S1” at LO)
- If there are aptical interferences between the TRx unit and the reflector unit (it is advisable to set the switch “S1” to HI, and select the diaphragm with the smallest possible diameter).

Reflection version (ES 80)

Technical characteristics

Electrical supply of 12V DC to 24V DC without commutation required.

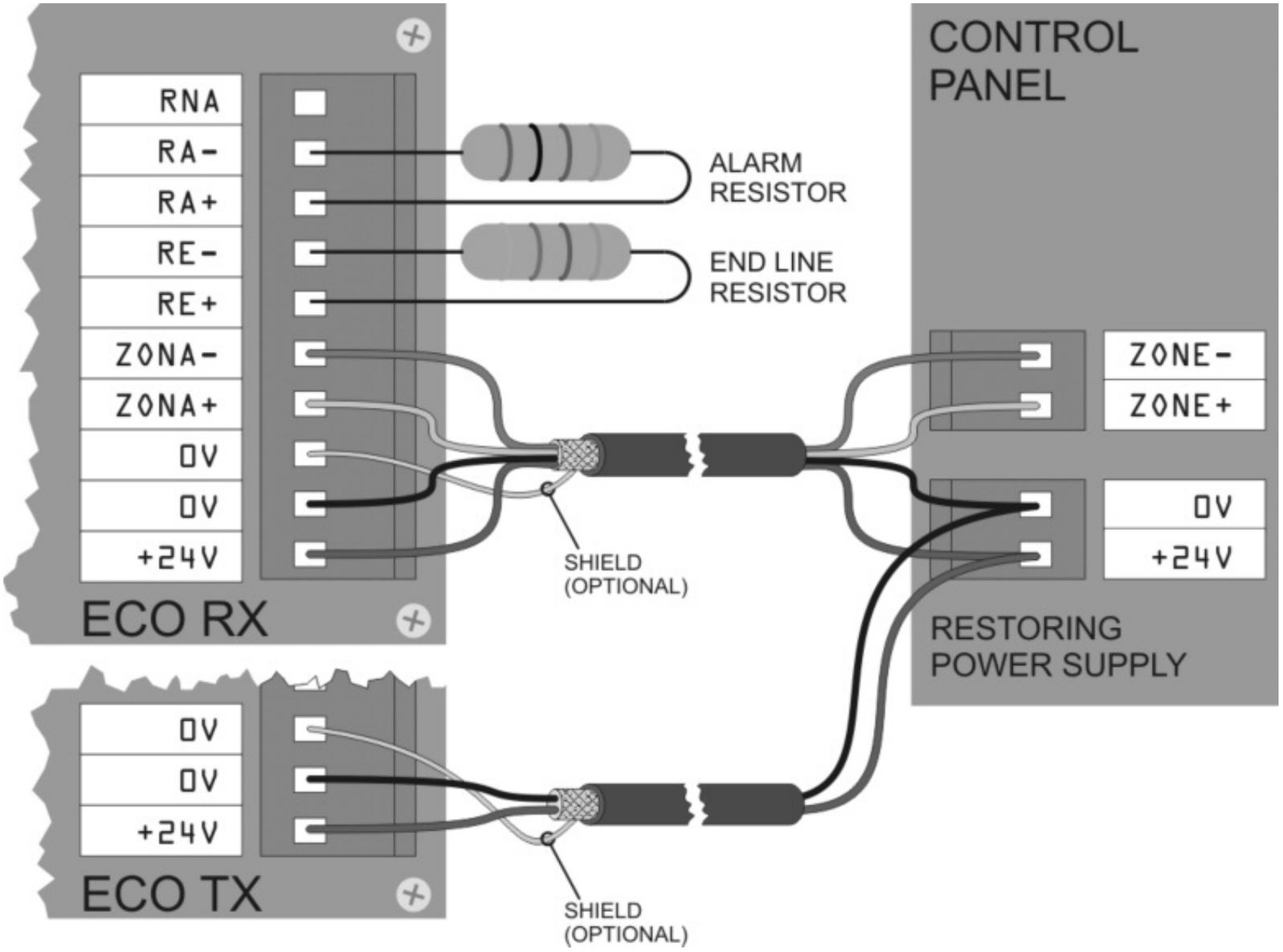
Electrical supply tension	12V±20%		24V±20%	
Capacity regulated by switch S1	TX LO	TX HI	TX LO	TX HI
In normal working	35mA	79mA	19mA	39mA
In alarm	62mA	95mA	32mA	52mA

Contact capacity	Alarm relay 1A @ 30V;
	Fault Optorelay 170mA @ 30V;
Maximum cable length @ 24V	1000m / section 0,5mm²
	2000m / section 1mm²
Minimum cable length @ 12V	500m / section 1mm²
Maximum cover	(1200m²) 15m x 80m at HI (EN54/14);
Width of cover	15m (EN54/14);
Minimum operating distance	10m;
Maximum operating distance	80m;
Temperature of working	-20°C ÷ +55°C
Storage temperature	-25°C ÷ +70°C
Relative umidity	95%
Protection rating	IP 44
For mechanical characteristics and	dimensions see page 52

ENG

Typical connections

CONVENTIONAL CONTROL PANEL

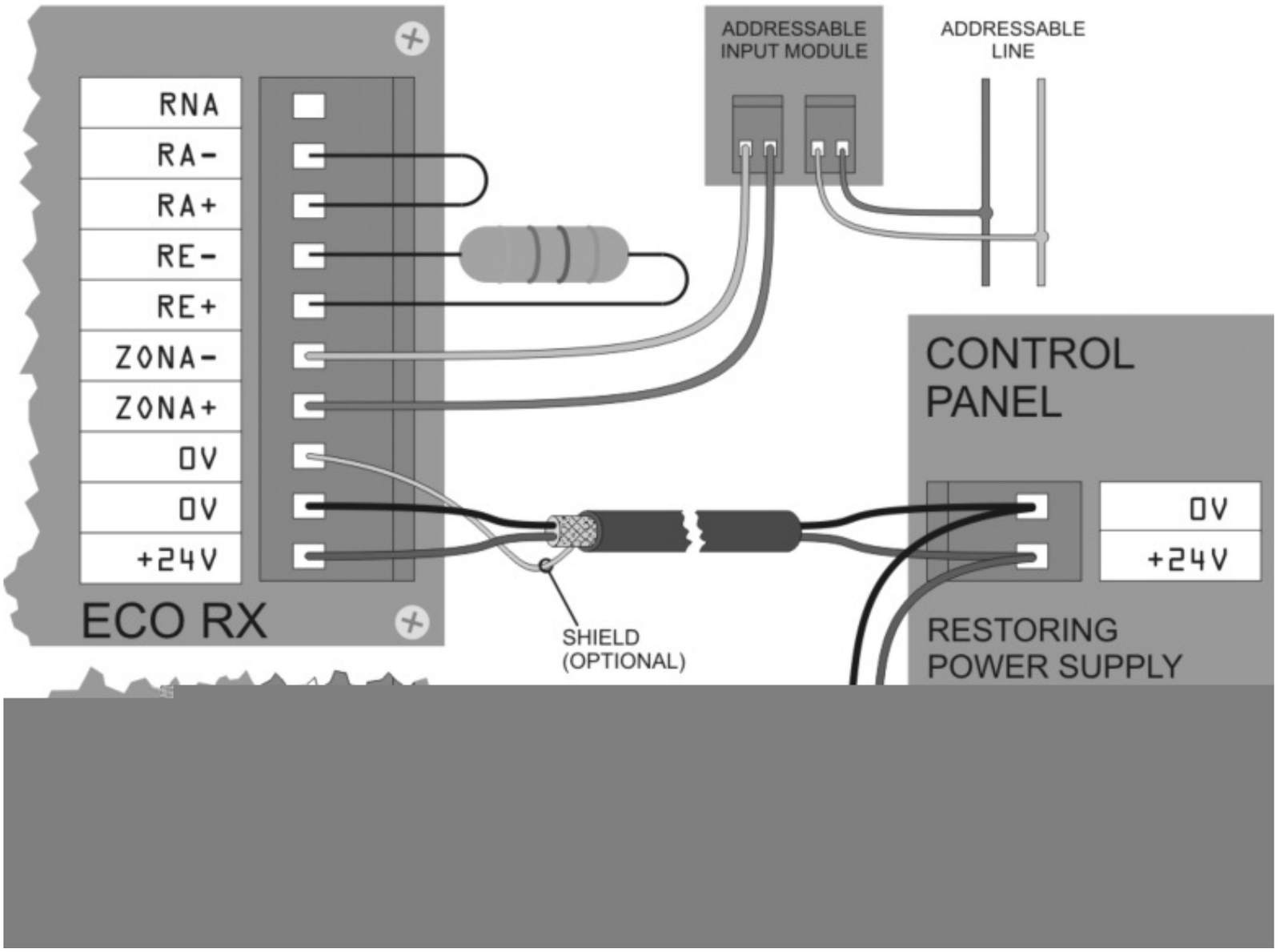


To use the siutable resistor refer to value expressed in the technical specification of the Control Panel.

ENG

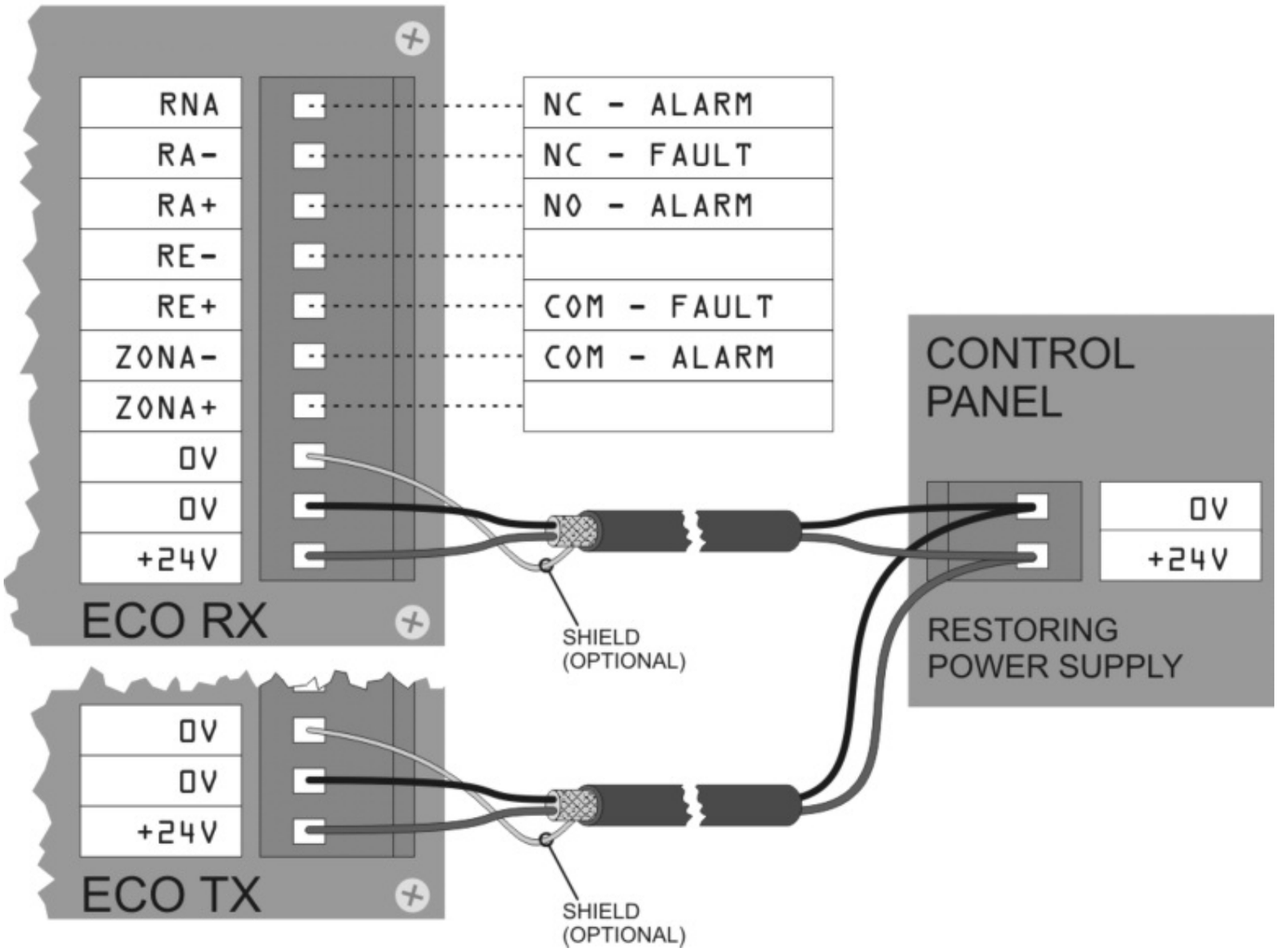
Typical connections

ADDRESSABLE CONTROL PANEL



To use the siutable resistor refer to value expressed in the technical specification of the Control Panel.

CLEAN CONTACT



To use the siutable resistor refer to value expressed in the technical specification of the Control Panel.

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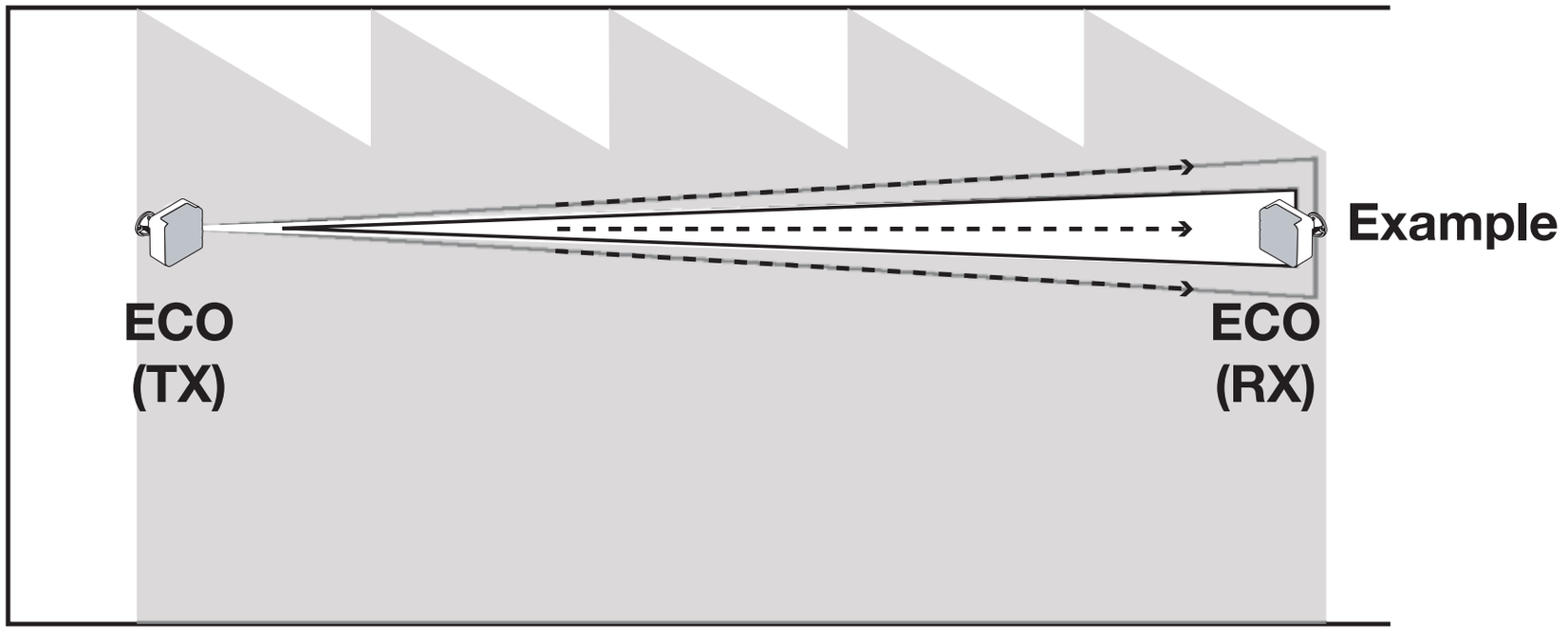
Version TX-RX (ES 100)

Installation

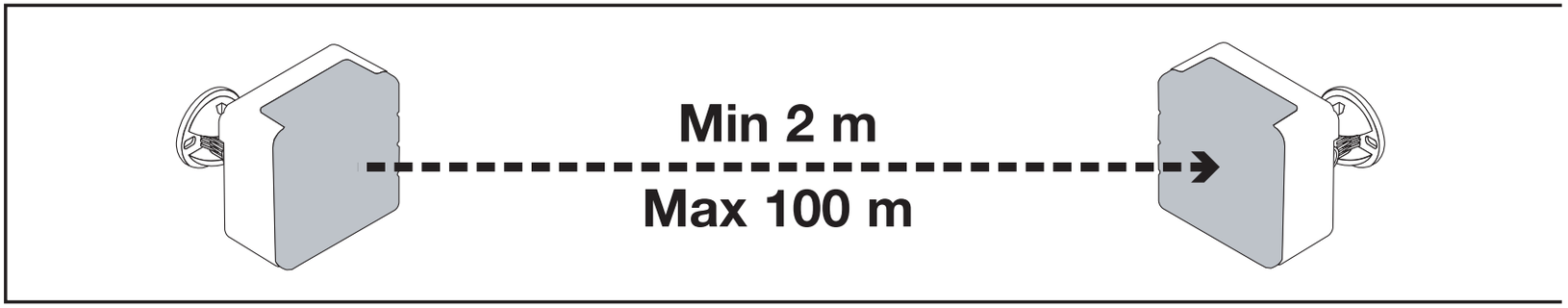


ENG

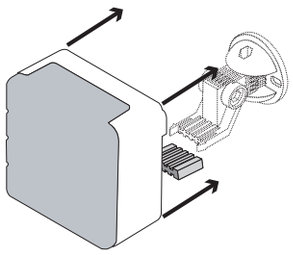
- Before installing the detector, check the walls or surfaces to which the ECO as TX and ECO as RX and respective brackets will be attached. These must not be subject to movements or vibration when the unit is working.

- Do not position the detector opposite or close to light sources or direct sunlight. In problem situations were there are strong sources of direct light, a diaphragm from the set included with the detector must be used.

ES 100 version TX-RX



ECO installation and calibration procedure



1 Install the articulated brackets for the ECO on the wall and insert the detectors.

2 Position the detectors so that the optics are pointed towards the unit on the opposite side. Remove the front covers from the detectors and insert them on one of the sides.

3 Choose which will be the Transmitter and which the Receiver.

ECO TX TRANSMITTER **4 Turn switch S3 to ON and switch S4 to OFF.**

ECO RX RECEIVER **5 Turn switch S3 to OFF and switch S4 to ON.**

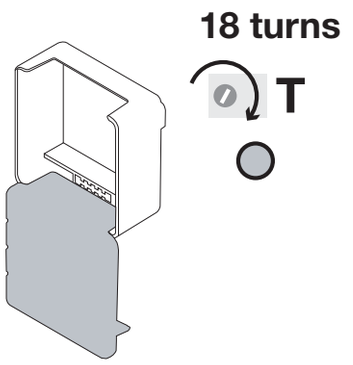
ENG

ECO installation, calibration and alignment procedure

6 Take out the terminal board and connect up to the Receiver unit as indicated. It is enough only to supply electrical power to the Transmitter unit.

Warning: Always check the connections before switching on the power!
Fault danger!

7 Insert the terminal board and switch power on to the system. The Green Led “V” will switch on. Turn the Transmitter trimmer "T" 18 turns clockwise. Switch S1 to LO if the operating distance is between 2 and 50 m or to HI if the operating distance is between 50 m and 100 m.



8 The two units now have to be mechanically adjusted for optimal optical coupling. Proceed as follows.

9 The yellow Led “G” and green Led “V” indicate one of the following conditions:

Y *G*	*Yellow Led*	*Green Led*	*Condition*
● ●	**ON**	**ON**	The reflected infrared level is **too low**;
○ 	**OFF**	**FLASHING**	The reflected infrared level is **low**;
○ ●	**OFF**	**ON**	The reflected infrared level is **good (Normal working);***
 ●	**FLASHING**	**ON**	The reflected infrared level is **very high.**

ENG

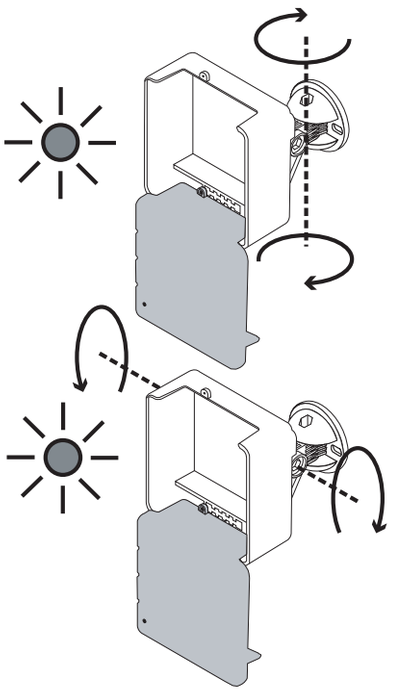
It is essential to obtain a situation where the yellow Led is flashing to have a good signal response and thus bring the detector to condition 3.

* Only in this situation must the yellow Led off not be considered as indicating an acceptable signal.

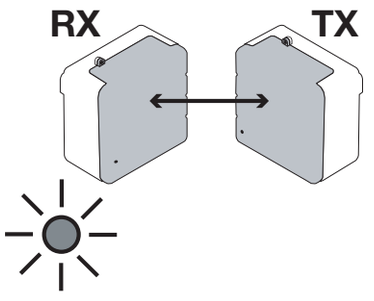
Version TX-RX (ES 100)

ECO installation and calibration procedure

10 Align the ECO RX towards the ECO TX moving it in one direction at a time. Keep the vertical adjustment steady and move the device to the right and left and check the yellow Led's response.
Repeat for the vertical axis, moving the detector up and down. You must get to a position in which the yellow Led is flashing.
If the yellow is off, align the ECO TX up and down and/or right left until the ECO RX's yellow Led is flashing. This is the required state. Tighten the articulated brackets' screws and close the cover.



11 Align the Transmitter according to the same procedure used for the Receiver.



12 Close the front cover and fix the screw. At the end of the procedure the yellow Led must be flashing with fault contact remaining open. This condition is essential at this stage. Do not try to align the detector with a spirit level or laser pointer: just keep watching the yellow Led and follow the above instructions.

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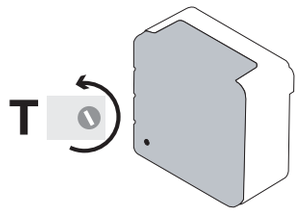
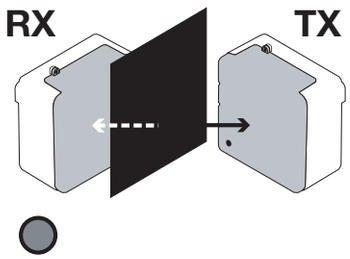


13 When both devices have been aligned, with the yellow Led flashing, on the transmitter close the cover and through the dedicated hole turn the trimmer "T" anti-clockwise until the Led stops flashing.
When the yellow Led goes off it means that infrared signal response has been accepted by the detector.
If the green led starts flashing it means that the trimmer “T” è has been turned too far anti-clockwise. Position the trimmer so that the **green Led is continuously on and the yellow Led is off.**



14 Now break the barrier with a card or other object to block the light. Check that the yellow Led on the RX stays continuously on. After removing the object the yellow Led should be off. If not, and if the yellow Led stays off, or if the red Led lights up, carefully check for the presence of any shiny or reflecting surfaces pointing towards the Receiver and, if necessary, use one of the diaphragms included. Consult the table on page 119.
Insert the provided cap in the setting frontal hole.

Version TX-RX (ES 100)

Calibration with the UTA or ADM instrument

The ECO detector must be calibrated using a UTA control device or with the ADM adapter and a tester. The smoke sensitivity threshold is factory set at 600mV. Since background ambient noise in the space to be protected may be associated with various sensitivity levels, to avoid false alarms the correct calibration procedure must be followed using the suggested devices.

1 To insert the jack is necessary to open the cover of ECO. If the yellow led G start to blinking, set the trimmer T as for point 13 (pag 115).

2 **For ADM only:** insert the digital tester points in the instrument's boxes, observing the polarity Red = +, Black = -.
Set the tester at the scale mV DC=.

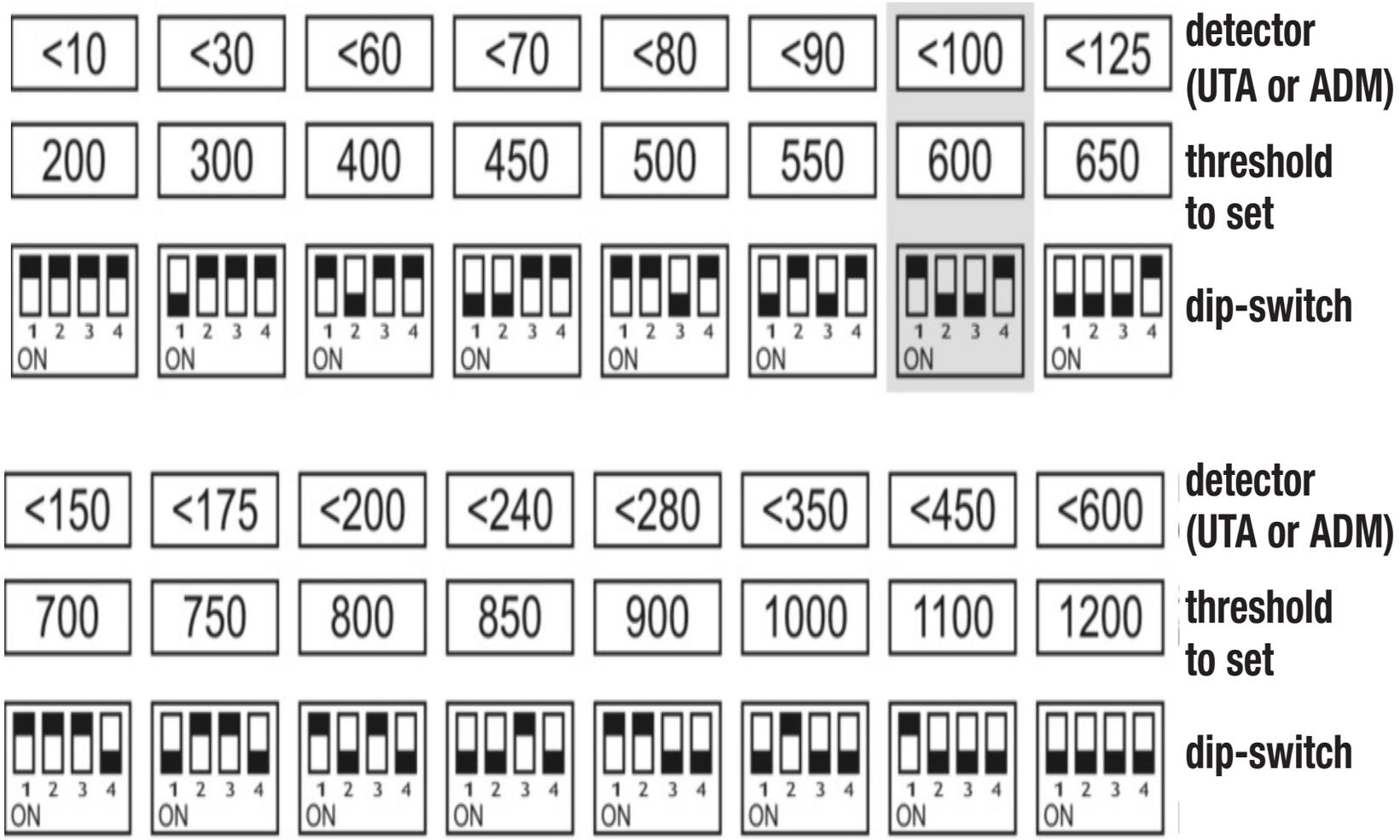
3 Insert the UTA or ADM jack in socket “J” of the ECO RX. Switch on the UTA or the ADM device and select the Detector function.

4 Wait a few minutes and read the peak values for the noise as shown on the display. This procedure must be carried out when all the interference factors are active (hot air ventilation, floating dust, lights etc).

5 To adjust the smoke threshold set the dip-switch “S2” levers according to the table.

6 Close the front cover of ECO and repeat the adjusting off trimmer T as for point 13 (pag 115). Insert the cap in the dedicated hole.

Warning: the relationship between the detector value and threshold to be set is indicative only. It is possible that in some installations a greater sensitivity (lower threshold) or a lower sensitivity (higher threshold).
The default threshold is that shown.



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Version TX-RX (ES 100)

Diaphragms

Diaphragm model	Max distance with "S1" **LO**	Max distance with "S1" **HI**
none	**50m**	**100m**
DC4000	**-**	**-**
DC4002	**3m**	**12m**
DC4004	**10m**	**25m**
DC4006	**16m**	**35m**
DC4008	**18m**	**45m**
DC4010	**20m**	**58m**
DC4012	**26m**	**67m**
DC4014	**34m**	**80m**
DC4016	**38m**	**85m**
DC4018	**40m**	**90m**
DC4020	**45m**	**95m**
DC4024	**50m**	**100m**

The diaphragms, to apply behind the RX lens on the ECO RX (see page I-II-120), are useful when:

- It is wished to install the detector more easily at a short distance (it is best to keep the switch "S1" at LO).
- If there are optical interferences between the ECO TX and the ECO RX (it is advisable to set the switch "S1" to HI, and select the diaphragm with the smallest possible diameter).

ENG

Technical characteristics

The current consuptions refer to a couple of ECO (TX and RX).

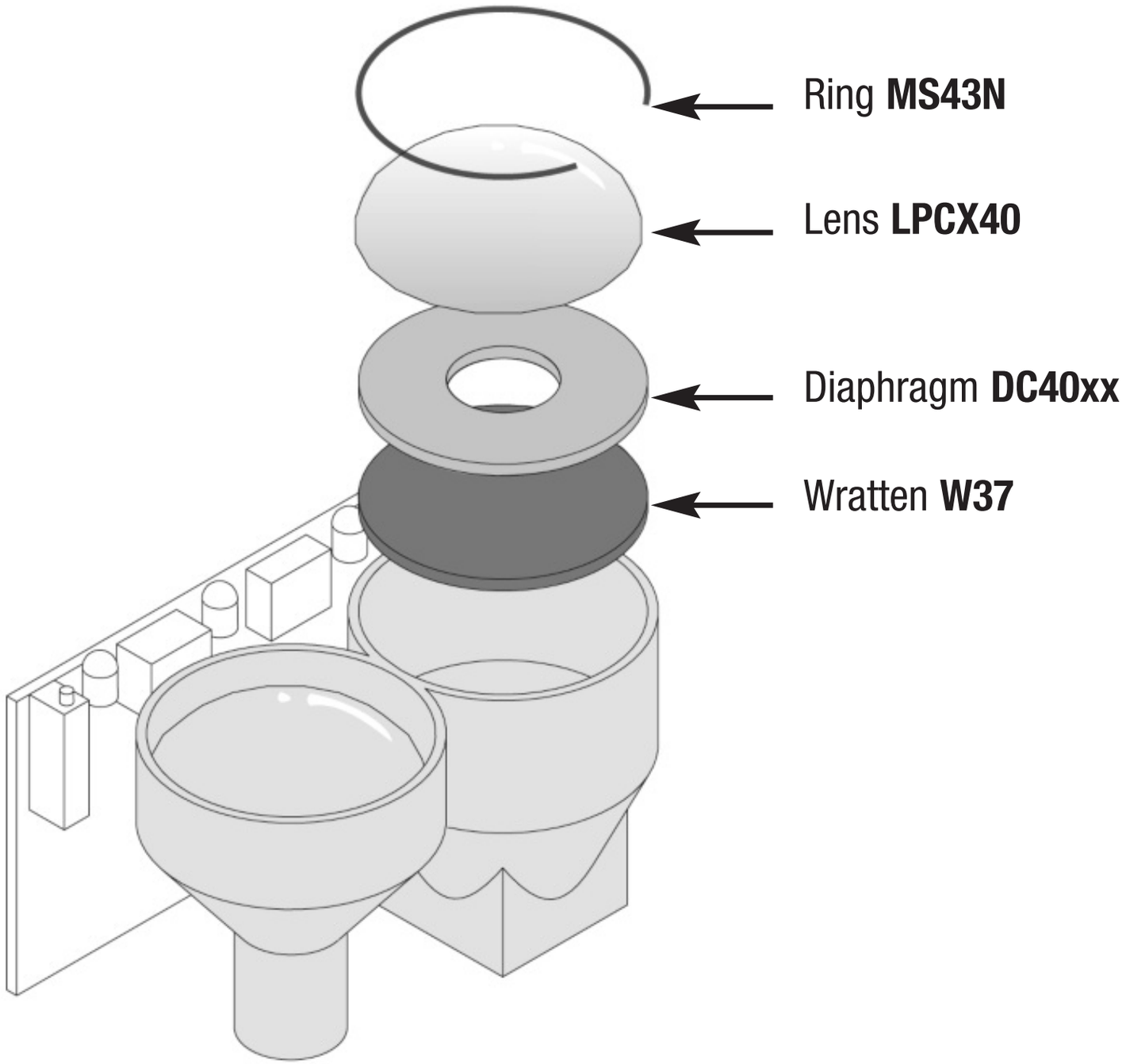
Electrical supply of 12V DC to 24V DC without commutation required.

Electrical supply tension	**12V±20%**		**24V±20%**	
Capacity regulated by switch S1	TX LO	TX HI	TX LO	TX HI
In normal working	45 mA	87 mA	26 mA	47 mA
In alarm	70 mA	105 mA	38 mA	60 mA

Contact capacity	Alarm relays 1A @ 30V; Fault OptoRelay 170mA @ 30V
Maximum cable length @24V	1000m / cross section 0.5mm^2; 2000m / section 1mm^2
Maximum cable length @12V	500m / section mm^2
Maximum cover	(750m^2) 15m x 50m at LO, (1500m^2) 15m x 100m at HI.
Width of cover	15m (EN54/14)
Minimum operating distance	2m (with diaphragms, see table)
Maximum operating distance	100m
Temperature of working	-20°C ÷ +55°C
Storage temperature	-25°C ÷ +70°C
Relative humidity	95%
Protection rating	IP 44

ENG

Diaphragms insertion



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PERIODICAL TESTING AND MAINTENANCE

SAFETY INSTRUCTIONS

Current regulations in country of use.

The products have been designed and built in compliance with the relevant European and International safety laws and regulations. In addition to the safety regulations indicated in this manual, it is also necessary to comply with any supplemental laws or regulations concerning the design, assembly, installation, working and disposal of the product as applicable in each country where the equipment is in use.

General

1) If equipment such as scaffolding, platforms and winches etc. have to be used, make sure that such devices are safe and suitable and comply with work site regulations currently in force.

2) Prevent the possibility of any activation of remote transmission.

3) Ensure that the fire conditions for the test cannot cause any damage to the system or any part of it.

4) Systems or devices owned by third parties must only be used in the presence of person responsible for these.

5) Before carrying out any tests, make sure that the plant is in a safe condition, i.e. that the fault or alarm conditions caused for the purposes of checking correct detector function do not lead to direct activation of plant such as that used to remove heat and smoke, to extinguish actual fires, or compartmentalize premises etc.

6) Warn all persons involved that there may be some smoke and noise.

7) Warn all the persons involved before testing the alarm devices; bear in mind that any panic must be avoided.

8) Before carrying out the tests, inform the centre that receives the alarm and fault signals connected to the system.

9) Always check the system, noting any changes in use in the protected area.

TESTING THE EQUIPMENT

To ensure the proper working of the line detector under all conditions, carry out basic tests to ensure the correct functioning of installations, cabling and calibration.

As specified in UNI 9795 of 04-2005 in paragraph 8.3, the tests may be carried out with type 0 fire as provided for at point 8.3.5, using suitable instruments as indicated by the manufacturer.

In the case of ECO line detectors, if it is not possible to carry out realistic tests, **STF4** test filters may be used to simulate the detector alarm condition.

The **STF4** filters must be used strictly according to the procedures indicated in the instructions, with no deviating from or approximations of these.
Incorrect use of the filter will mean that its entire purpose will fail, i.e. : “To establish whether under certain conditions the detector will switch to fire and/or fault mode“.
It is clear that this point, being a matter of vital importance, must be followed with great care at the responsibility of the installer.

a) The filter should always be used on the Receiver unit (RX)as regards the ECO ES100, and on the Transmitter/Receiver (TRX) in the case of the reflection version.
The filter should never be used on the Transmitter unit in the case of the ES100 or on the reflecting parts in the reflection system. In addition it should be used when you are certain that the detector has been correctly aligned and calibrated in accordance with the indicated procedures in this manual.

b) The filter support is a metachrylate with three specific levels of attenuation. Such areas are produced by a photographic process and are arranged as follows:
A - Attenuation of **1 dB**
B - Attenuation of **4 dB**
C - Attenuation of **8 dB**

c) The filter is particularly delicate: it cannot stand water or humidity and must not be touched with dirty fingers or cleaned with detergents or alcohol, nor must it be rubbed or bent in any way.
The provision of the simulation filter STF4 and its instruction is on request, separately from the detectors.

MAINTENANCE OF THE ECO LINE DETECTOR

Normal conditions of installation require maintenance intervals as indicated by current regulations (UNI9795 of 2005, point 9.2 UNI 11224).
These intervals, on the basis of every 5 months, may sometimes be more frequent depending on the many kinds of conditions of application of the devices, especially in industrial environments where there may be stationary dust and steam or the products of various production stages.

SIGNAL DROP

If the infrared signal carried emitted by the detector tends over times to fall in intensity, the system will carry out a proportional up rating by way of long term self-regulated compensation). If the infrared signal falls to the minimum set threshold due to the build up of dust or settling of the building structure to which the equipment is fastened, an green LED will flash locally as a warning. The consequent opening of the fault contact will send the detector control unit a maintenance request.

MAINTENANCE

The maintenance of the ECO line does not require particular equipment and is both simple and fast.

The operation is carried according to the following procedure:

1. Remove the cap (if present) on the front polycarbonate cover (or front mask on the ES25-I) of the Transmitter unit, Receiver or the Transmitter-receiver unit, depending on the model.

2. Clean the front cover (or front mask of the ES25-I) with water and/or neutral soap without the use of abrasive cloths. If the surfaces are very scratched, yellowed or significantly dimmed, they must be replaced as this may jeopardise the proper optical working of the detector.

3. Open the front cover (if present, removing the locking screw) and check the lenses are clean.

4. With a soft cloth clean the outer surface of the lenses (Transmitter, Receiver or Transmitter-receiver).

5. Close the front cover again and reposition the safety locking screw if present.

6. In the case of the ECO reflection version, check the front part of the reflector is clean, whether the K40 (ECO ES50, E.G25-I), or the prism part (ECO ES80).

7. Check for correct infrared signal, observing conformity of the LED signals.It is advisable in any case to turn signal to saturation point and repeat the alignment procedure.

8. Replace the front cover cap (if present).

9. Check the Alarm conditions, the Fault conditions and the corresponding outputs, following “Alarm Test” and “Fault Test” procedures as set forth in the chapter “Additional checks” on page 86.

Reference regulations

You are advised that as Setronic Verona constantly strives to improve its products it reserves the right to make any changes it considers necessary without prior warning. The same reservation applies to any corrections of printing errors including any corrections of incorrect details and measurements that may have erroneously found their way into this booklet.
Any recommendations made in this booklet, must be considered as replaced by any conflicting Italian or European regulations that may come into force in the future, as of the date these come into force. Since the products herein are sold outside the country in which they are manufactured, we must point out that any installation regulations in the country of installation must be followed, even where they do not accord with our suggestions. We shall consider any such regulations as having been followed in the system in which our products are used, as from the date of the order.

The guarantee terms applied by Setronic Verona S.r.l. are those established by European directive 1999/44/CE as implemented in Italian law by D.L. 2 February 2002 n. 24.

Keep this booklet close to hand for future reference.
The information contained in this booklet is available in PDF files at our website:
www.setronicverona.com