

## WALK-THROUGH METAL DETECTORS

*HI-PE PLUS • PMD2 PLUS*

*SMD600 PLUS*

*02PN20 • PMD3 PLUS*

Installation, Use  
and Maintenance Manual

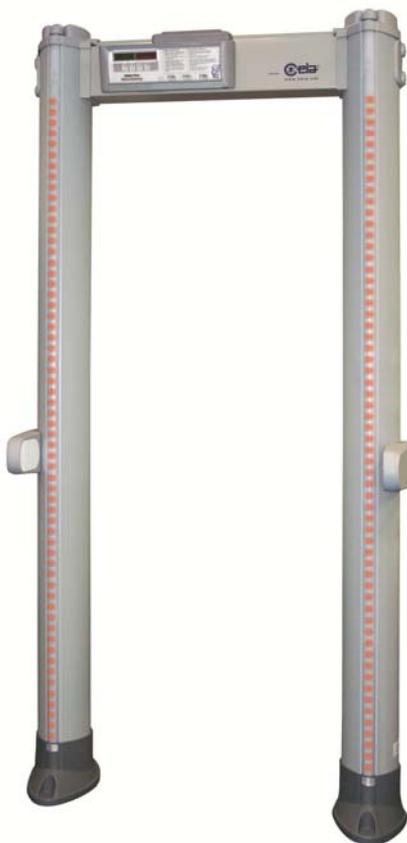
### Contents of the booklet

This manual contains all necessary information for a correct installation, use, programming and maintenance of the described device(s).

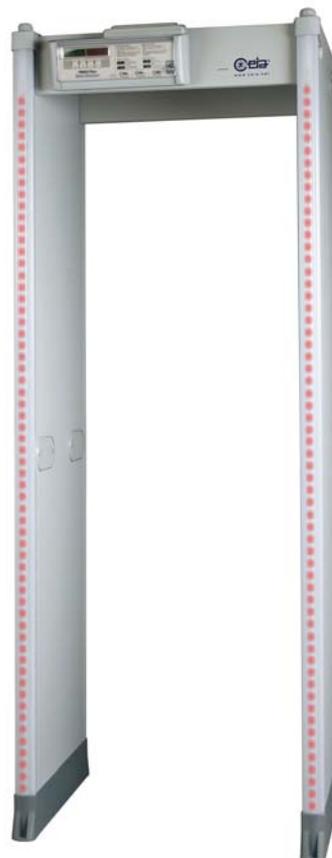
These devices share the same structure and operation but, thanks to accurate design solutions, each model offers the best cost/performance ratio for its specific application.

### Options

Some functions/parts indicated as options in this manual are included as default in high-level models.



*Elliptic shape model*



*Panel shape model*

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# 1 INSTALLATION, USE AND SAFETY INFORMATION



READ THESE INSTRUCTIONS BEFORE WORKING WITH THE DEVICE

## General warnings

- Turnstiles.us cannot be held responsible for any damage resulting from procedures which are not expressly indicated in this manual, or from any lack of attention, either partial or total, of the procedures described therein.
- Read this manual carefully before installing, operating or carrying out maintenance on the device. Keep the manual in a safe place for future reference, and in perfect condition.
- Follow the instructions contained in this manual for all operations relating to installation, use and maintenance of the device.
- All personnel operating with or performing operations on the device must have an adequate preparation and shall know the procedures described in this manual.
- Observe current regulations regarding electrical and personal safety for both the operator and the installer when installing the device.
- Any modification to the configuration setup by Turnstiles.us is forbidden and voids all warranties and certifications.
- This manual must accompany the device described therein in the case of change of ownership, and until the device is broken up.
- Due to its inherent natural construction the archway may be subjected to slight deformation. A maximum 8 mm overall curvature of the antenna still ensures unchanged performances.

## Correct Use of the Device

A Metal Detector is a unit that reacts to the metal masses present on people in transit.

As part of the normal screening process, people are required to walk through the detector archway. A complete analysis requires a complete passage through the archway.

## Forbidden use of the Device

Any use different from that described in this manual is forbidden.

## Operating limits

Refer to the 'Specifications' section.

## Installation warnings

- Observe current regulations regarding electrical and personal safety for both the operator and the installer when installing the device.
- Choose the installation site carefully. Avoid placing the device in locations where it may be directly exposed to sunlight, in unventilated areas or in places that are close to sources of heat. In addition, avoid places that are subject to vibrations, dust, humidity, rain and excessively high or low temperatures.
- Installation must be carried out by qualified personnel. Given the dimensions of the device, it is requested that the installation site be kept clear while work is carried out to facilitate setting it up and to avoid any harm to third parties.
- Position the device as far away as possible from sources of electromagnetic interference such as transformers or motors.
- When installation is completed, the detector must be anchored to the ground in a stable manner and not subject to vibrations (use expansion screws inserted through the anchoring holes in the base of the panels). All connecting cables between the gate and the power supply or other external devices must be properly fixed and protected so as to achieve the best performance from the detector and avoid accidental injury to people who might trip over them.
- Handle the device with care and without excessive force during installation, use and maintenance.
- Before powering up the device, check that the mains power supply voltage corresponds to the voltage shown on the device's electrical specifications plate. Verification that the power supply conforms to the specified values plate and to the regulations in force is the total responsibility of the customer.
- The device should be connected to the mains voltage only after all the connections required for full installation have been carried out.
- The device must be connected to a power supply circuit fitted with a switch or other device which allows the power to be cut off.
- If the device is to be powered via an external autotransformer to regulate the voltage, ensure that the common terminal of the autotransformer is connected to the neutral of the power-supply circuit.
- The power-supply plug must only be inserted into a socket fitted with an earth/ground connection.

Any break in the safety conductor, either inside or outside the device, or disconnection of the earth/ground safety terminal, will render the device dangerous. Intentional cutting or disconnection is strictly forbidden.

- Whenever there is any suggestion that the level of protection has been reduced, the device should be taken out of service and secured against any possibility of unintentional use, and authorised service technicians should be called.  
The level of protection is considered to have been reduced when:
  - the device shows visible signs of deterioration;
  - the device does not operate correctly;
  - the device has been stored for a long period in sub-optimal conditions;
  - the device has suffered mechanical or electrical stress (shocks, bumps, etc.);
  - the device has suffered severe stress during transport;
  - the inside of the device has come into contact with liquids
- Always remove the plug by hand when disconnecting the power supply cable, never by pulling on the cable.
- If the power-supply adapter is not waterproof: place it in a ventilated position where it is protected from water (rain, condensation, liquid detergents)! There is a risk of electric shocks for people and damage to the equipment.
- This device contains electrical and electronic components, and may therefore be susceptible to fire. Do not install in explosive atmosphere or in contact with inflammable material. Do not use water or foam in the case of fire when the device is powered up.
- To avoid damage due to lightning, fit the power supply line with appropriate surge suppressors.
- Do not use in an explosive atmosphere. Avoid contact with inflammable or explosive material!

## Medical Safety Information

The Metal Detectors comply with regulatory requirements for human exposure to electromagnetic fields. The manufacturer submits its devices to testing by bodies qualified to check compliance with the emission limits of the main standards currently in force (documentation available on request). General information on use: the electromagnetic field emitted by devices is extremely weak, with amplitude comparable with that of the earth. However, the manufacturer cannot exclude that this device may affect personal medical electronic devices, depending on their functionality or their restrictions on use. Any recommendation or directive issued by medical personnel or medical equipment manufacturers relating to electromagnetic fields must therefore be implemented. If for any reason a person about to pass through the detector shows fear or refuses to undergo the inspection, it is recommended that the inspection be carried out using an alternative method.

For further information on standard procedures to be followed for inspection of people with implanted medical devices using a metal detector, please consult the ASTM F2401-04 standard 'Standard Practice for Security Checkpoint Metal Detector Screening of Persons with Medical Devices' or other relevant directives.

Turnstiles.us is not responsible for direct or indirect harm to people or things due to incorrect use of the Metal Detector.

## Use warnings

- The final user is responsible for selecting the appropriate security level/sensitivity for their application. After this selection has been made, and programming has been adjusted accordingly, it is also the final user's responsibility to verify calibration using the test object(s) appropriate to the level of security selected. Additionally, this test should be carried out periodically (at least daily) to insure no changes have occurred in the equipment. Reference Standards on this argument include documents ASTM C 1270-97 and ASTM C 1309-97. The execution of the test and its result shall be recorded. In case of a negative result, the equipment should not be used.
- The final user is responsible for determining and implementing the appropriate inspection procedures and for the training of personnel involved in carrying them out.
- The information contained in this manual is provided only as a technical reference for use and maintenance, and does not contain operational procedures. For further information on standard procedures to be followed for inspection of people using a metal detector, please consult the guidelines entitled 'The Appropriate and Effective Use of Security Technologies in U.S. Schools' by the National Institute of Justice or other relevant directives.
- Handle the device with care and without excessive force during use.

- In case of damage to the Power Supply Unit, input and output cables included, the unit should be returned to qualified Technical Assistance Centre or directly to Turnstiles.us for proper repair or replacement. Do not open, tamper with or attempt to repair the power supply unit or any other part of the device.
- If the device is stored for a long period in temperatures outside the operating range, wait for the temperature of the detector to come back within that range before switching on
- Whenever there is any suggestion that the level of protection has been reduced, the device should be taken out of service and secured against any possibility of unintentional use, and authorised service technicians should be called.  
The level of protection is considered to have been reduced when:
  - the device shows visible signs of deterioration;
  - the device does not operate correctly;
  - the device has been stored for a long period in sub-optimal conditions;
  - the device has suffered mechanical or electrical stress (shocks, bumps, etc.);
  - the device has suffered severe stress during transport;
  - the inside of the device has come into contact with liquids.
- Always remove the plug by hand when disconnecting the power supply cable, never by pulling on the cable.
- The standard power-supply adapter is not waterproof: place it in a ventilated position where it is protected from water (rain, condensation, liquid detergents)! There is a risk of electric shocks for people and damage to the equipment.
- This device contains electrical and electronic components, and may therefore be susceptible to fire. Do not install in explosive atmosphere or in contact with inflammable material. Do not use water or foam in the case of fire when the device is powered up.
- Do not use in an explosive atmosphere. Avoid contact with inflammable or explosive material!
- Models with protection covers: make sure that a switch or other device which allows the power to be cut off can be easily operated, as the main switch of the device is not directly accessible.

### Maintenance warnings

- Carry out the periodic maintenance regularly (see section on Maintenance).
- Do not wash the device with water, liquid detergents or chemical substances. Use a slightly moist, non-abrasive cloth for cleaning.
- The device must be disconnected from all power sources before undergoing any maintenance or cleaning, and before being moved.
- Read the chapter 'Maintenance' carefully before calling the service centre. Whatever the problem, only specialised service personnel authorised to work with security equipment should be called.

### Symbols

	The device is marked with this symbol whenever the operator or the maintenance personnel, in order to avoid possible damage, have to refer to the present manual. The same symbol appears in the booklet at points where warnings or particularly important instructions are given - instructions that are vital to a safe and correct use of the device.
	The device is marked with this symbol in those areas where a dangerous amount of voltage is present. Only specialised maintenance personnel should make adjustments in these areas.
	This sign in the manual indicates tips for optimising the device's performance.
	This symbol printed on the packaging identifies operations that can be properly carried out after reading the related section of the present manual.

### Acronyms used in this document

MD	Metal Detector
FAT	Factory Acceptance Test Report: verification of the equipment compliance to the customer requirements at the end of the manufacturing process

### Revisions

Code	Firmware Version	Date	Author	Reference	Changes
FI060K0092v1000	DF1B1000	2014-04-30	DTP-BC	-	First edition
FI060K0092v1100	DF1B1000	2014-09-19	DTP-BC	-	Added parameters LBI, EN, RAV, RAT; OTS executable at user level, according to UP setting.
FI060K0092v1110	DF1B1000; DF1B1100	2014-12-05	DTP-BC	-	Panel models: assembly of options. Spare parts codes. Software codes.
FI060K0092v1200	DF1B1000; DF1B1100	2014-12-21	DTP-BC	-	Description of protection degrees. Notes for stabilizing plates. Battery operation time.

- Any damaged parts of the device should be replaced by original components only.
- Important advice regarding any batteries incorporated in the device.
  - When replacing: use OEM spare parts or batteries with equivalent electrical/mechanical characteristics.
  - Do not open batteries: they may contain a small quantity of potentially dangerous substances.
  - Do not short-circuit the contacts: serious risk of burning and breakage!
  - Do not dispose of battery in fire: danger of explosion!
- Any maintenance or repair involving the device being opened while powered should be avoided as far as possible: if this becomes inevitable, the operation must be carried out only by qualified personnel who are fully aware of the risks involved.

### Disposal warnings

- Disposal of parts with environmental impact: follow the regulations in force in the country where the device is being used.
- **Important advice regarding any batteries incorporated in the device.** When replacing: use OEM spare parts or batteries with equivalent electrical/mechanical characteristics. Do not dispose of used batteries in general rubbish bins; use public battery collection facilities as per local regulations, or return them to a Turnstiles.us. If the equipment is to be disposed of, remove the batteries and dispose of them separately.

### Harmlessness to Magnetic Media

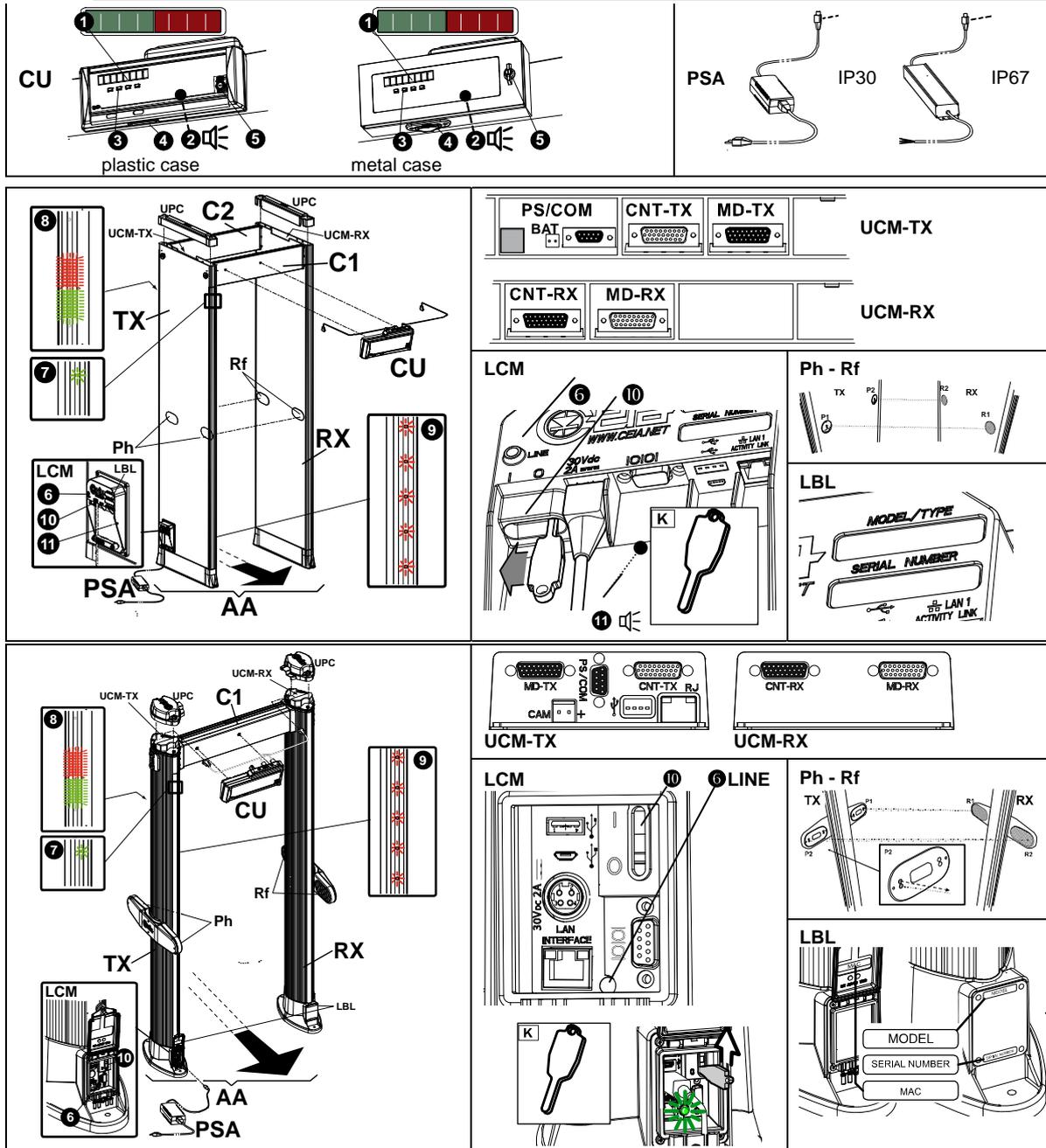
The device is safe for items carried by people including all common magnetic media such as magnetic cards floppy disks and tapes (conforming to NIST - NBS 500-101 'Care and Handling of Computer Magnetic Storage Media').

### Warranty conditions

The warranty on all products, extended to the period agreed with the Sales Department, is applicable to goods supplied from our factory, and for every constituent part thereof, with the exception of the batteries and the card reader. Any form of tampering with the device, and in particular opening its container, is strictly forbidden and will invalidate the warranty.

## 2 DESCRIPTION

### 2.2 Composition



#### CU - Control Unit

The control unit, available in plastic casing or metal casing, is designed to be attached directly to the crossbar of the archway. An embedded Infra-Red interface allows the use of an accessory remote control unit which acts as the control unit keypad. It includes also a BLUETOOTH™ interface for wireless connection to a PC for service operations. Parts of the control unit:

- ① 8-digit alphanumeric display, divided into two sections, the left part is green and the right one is red.
- ② sounder
- ③ keypad for status reading and programming
- ④ slot of the chip card reader
- ⑤ security lock of the front panel

## PSA - Power Supply Adapter

**Standard version:** protection degree: IP30 (IEC60529).

Input voltage: 100-240 V~, -10% / +15%. Dimensions: 145mm x 76mm x 45mm (LxWxH). Weight: 0,9 kg. Cable length: input side: 3m. output side: 2m. Available input plugs: CEE, UL 15P, UL I5-15P, UK.

**OPTION** **Metal case sealed version:** protection degree: IP67 (IEC60529). Input voltage: 100...240V ~, -10/+15%, 47...63 Hz. Dimensions: 210mm x 68mm x 40mm (LxWxH). Weight: 1.3 kg. Cable length: input side: 2m; output side: 2m. The input side cable is not fitted with plug, to allow passing it inside conduits.

## AA - Archway

The archway consists of two treated panels or columns containing the windings and the connectors to the control unit. A special protective boot renders the base of the archway waterproof, and therefore fully insulated even in the event of wet floors.

Parts of the archway **AA**:

- TX** Transmitter antenna
  - UPC** upper protection cover
  - LCM** Lower Connection Module with on/off switch
  - UCM-TX** Upper Connection Module of TX antenna
  - Ph** Photocells for transit counting (options on column version). Two versions available: 2-beam (standard) and 4-beam (high precision).  
The photocell system is composed of two photocell modules (**P1**, **P2**), built into the Transmitter Antenna, and two retroreflectors (**R1**, **R2**), built into the Receiver Antenna. They allow counting of people passing through the archway.
  - LBL** Label with reference data:
 

MODEL/TYPE	Model
SERIAL NUMBER	Serial Number
MAC	address (with Ethernet interface only)
- RX** Receiver antenna
  - UPC** upper protection cover
  - UCM-RX** Upper Connection Module of RX antenna
  - Rf** Reflectors for transit counting (options on column version)
- C1** crossbar fitted with holes for mounting the control unit
- C2** crossbar without holes (panel shape version)
- K** ON/OFF special key

## Indicators and commands located in the archway

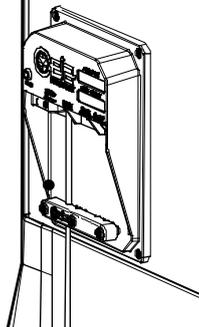
- 6** **LINE** power indicator (lit on when I/O switch is set to 'I').
- 7** additional power indicator
- 8** entry pacing lights: green light – enter the archway; red light - wait
- 9** zone indication light bar: in case of an alarm, the bar indicates the position of the metal mass intercepted inside the archway.
- 10** **I / O** Anti-tamper on/off switch, activated using special key **K**
- 11** low battery sounder (only with emergency battery option)

## Connections located in the archway

- LCM** Lower Connection Module:
  - 30Vdc** power-supply input connector
  - |0|0|** 9-pin serial communication port (pin1: reserved, +30Vdc output; pin2: data in; pin3: data out; pin5: ground; all other pins: reserved)
  - LAN** Ethernet port (only with Web Server and Logger option)
  -  type-A host USB port (only with Web Server and Logger option)
  -  micro-B device USB port (reserved, only with Web Server and Logger option)
- UCM-TX** Upper Connection Module of TX antenna:
  - MD-TX** control unit-antenna connections
  - CNT-TX** auxiliary connector (for advanced functions)
  - PS/COM** serial communication port and power supply input (identical to **|0|0|** port)
  - BAT** emergency battery connector (panel shape version only)
  - RJ** Ethernet port (with Web Server and Logger option installed, column-shape only)
  - USB port (with Web Server and Logger option installed, column-shape only)
  - CAM** supply output for accessory devices (with Ethernet option installed, column-shape only)
- UCM-RX** Upper Connection Module of RX antenna:
  - MD-RX** control unit-antenna connections
  - CNT-RX** auxiliary connector (for advanced functions)

**[OPTION]** Emergency batteries Code: APSM2Plus/P (panel shape version only)

Two emergency batteries, included inside the Lower Connection Module, switch in automatically and allow the independent operation in the event of mains power down. Typical operating time in battery mode is 30 minutes (time varying with the presence of accessories and options). The batteries recharge automatically when the metal detector is connected to the AC power supply and switched on. Recharge time is about 8 hours. The module provides an audible 'flat battery' signal activated when the battery charge goes below the operational limit of the device (signal endurance: about 12 hours).

**[OPTION]** Web Server and Logger

Code: APSIM2Plus/P or APSIM3Plus/P (panel shape version); APSIM2Plus/E or APSIM3Plus/E (column shape version).

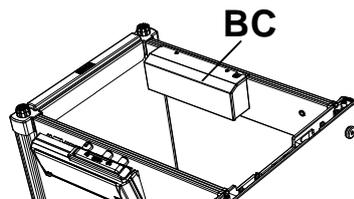
This module provides the following additional functions:

- Built-in 10/100 base T Ethernet LAN interface
- Web server for set-up and remote data log
- Real/Time clock with battery backup
- Non-volatile Memory for Metal Detector events storage.
- wireless Wi-Fi interface (APSIM3Plus version only)
- support of NetID system (APSIM3Plus version only)

**[ACCESSORY]** Long Life Crossbar Battery Back-Up (panel-shape version only)

Code: 55681. This Battery Pack (BC in the figure) can be attached to the crossbar of the archway. Two 9Ah batteries switch in automatically and allow the independent operation in the event of mains power down. Typical operating time in battery mode is 9 hours (time varying with the presence of accessories and options). The batteries recharge automatically when the metal detector is connected to the AC power supply and switched on. The battery charger is included in the Lower Connection Module and provides an audible 'flat battery' signal activated when the battery charge goes below the operational limit of the device (signal duration: about 12 hours).

REMARK: this option is not available for the Weather Resistant and Water Proof configurations.

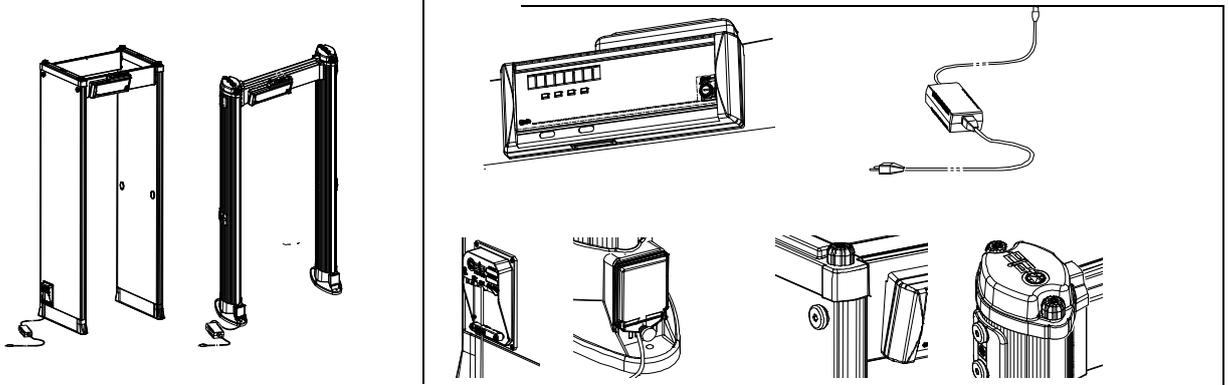


**Configurations with different protection degrees**

**Standard Configuration**

Intended use: indoor use.

The standard configuration is based on a control unit in plastic case and a power supply adapter for indoor use only.



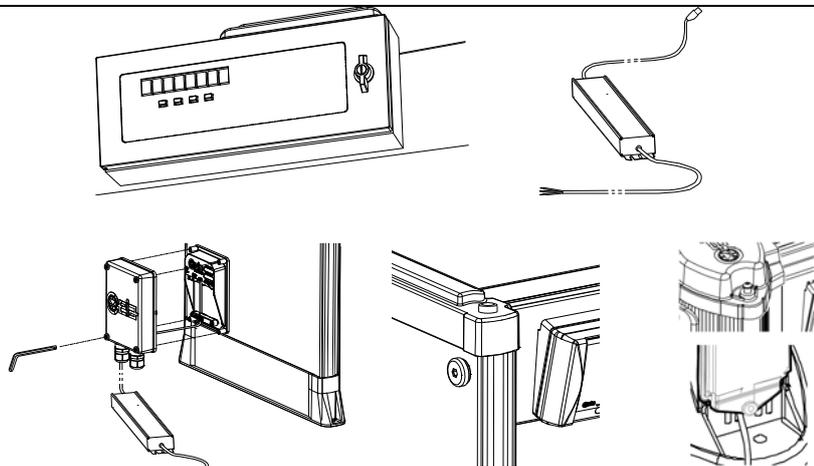
**OPTION] Versions with protection covers**

**Anti-Vandalism Configuration**

Intended use:  
• indoor use

This option includes a stainless steel control unit and a water proof power supply adapter in metal case.

Connections of power supply and antenna are also protected by covers equipped with screws requiring tools for removal.

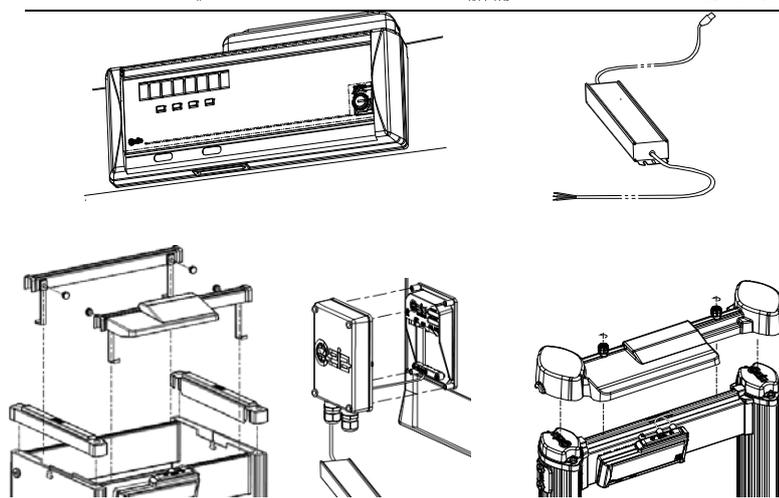


**Weather Resistant Configuration**

Intended use:  
• sheltered use

This configuration is intended for upgrading the standard version to outdoor applications according to IEC 60950-22.

This kit includes shelters, crossbar, protection covers for power supply and waterproof power supply adapter.



**IP65 Configuration**

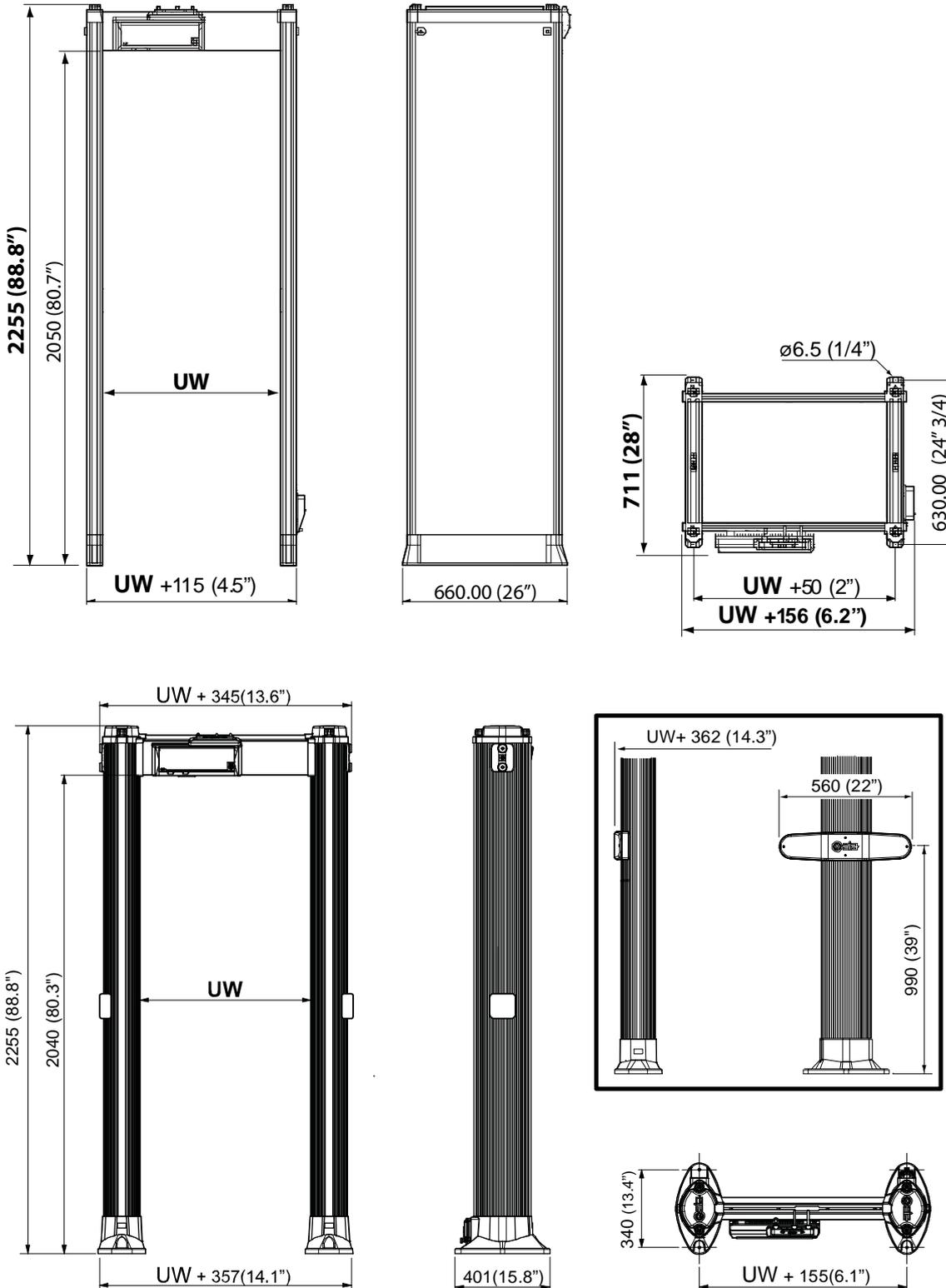
Intended use:  
• outdoor sheltered permanent installations, or  
• outdoor non-sheltered short-term installations (single event entrance).

This configuration provides IP65 Control Unit, IP 67 Power Supply Adapter, anti-vandalism protections and a weather proof archway structure compliant with IEC 60950 Standard, Part 22. All archway connections are also protected by covers equipped with screws requiring tools for removal. Special covers, designed to protect the gate against the exposure to water arriving from any direction, allow the WTMD to operate in severe environmental conditions.

### 2.3 Specifications

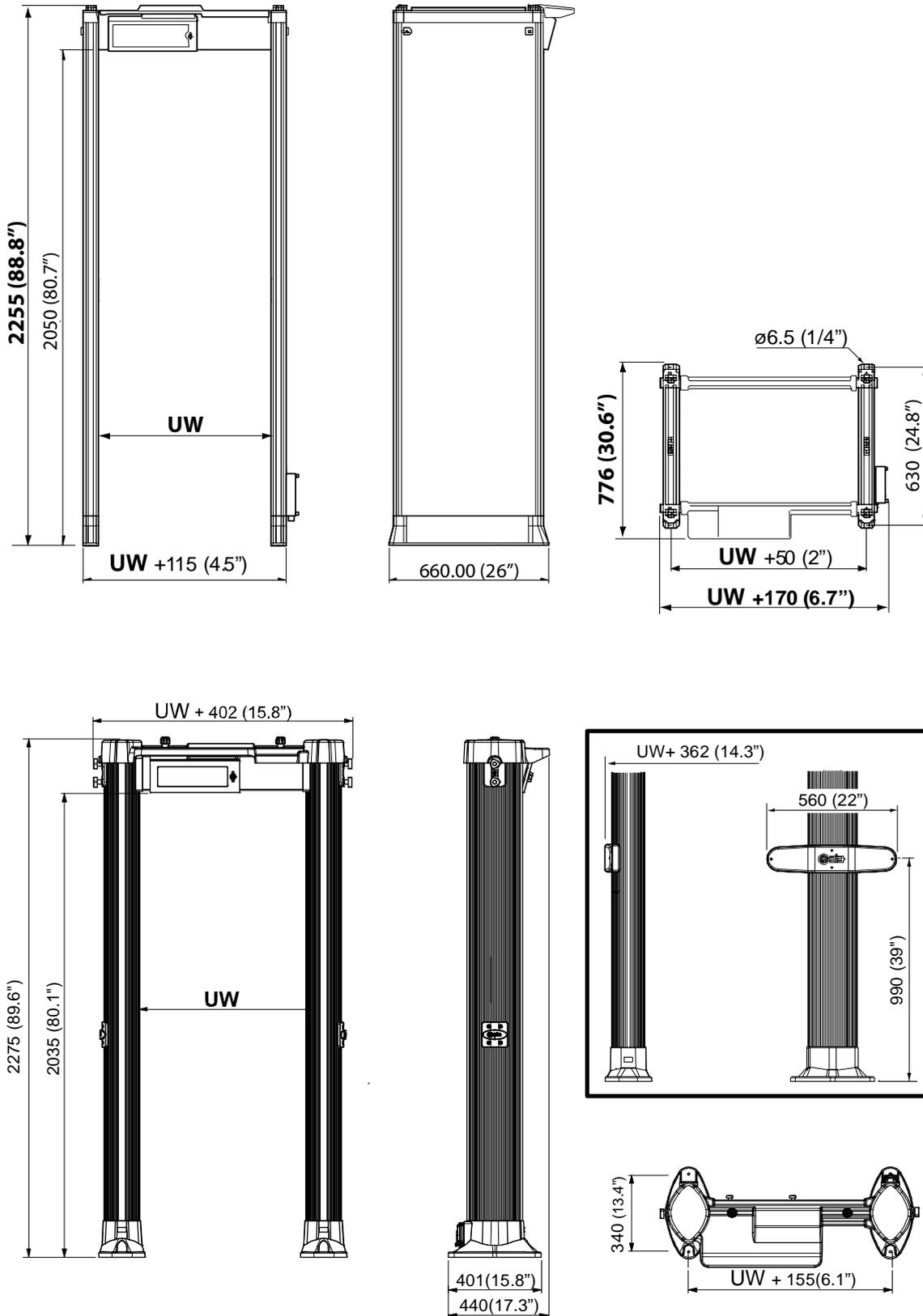
Power Supply: 100...240V~ -10/+15%, 47...63Hz, 40VA typical (consumption can vary according to accessories/options installed). Installation category: II (IEC61010-1); Pollution degree : 2 (IEC61010-1).  
 Operating temperature: -20°C to +70°C (on demand: -37°C to +70°C); Storage temperature: -37°C to +70°C  
 Relative humidity: 0 to 95% (without condensation)

*Standard Version*



Dimensions: UW = 720mm (**OPTION**) : 760mm or 820mm (panel shape version); 820mm (column shape version)

Version with protection covers



Dimensions:  $UW = 720\text{mm}$  (OPTION) : 760mm or 820mm (panel shape version); 820mm (column shape version))

### 3 INSTALLATION

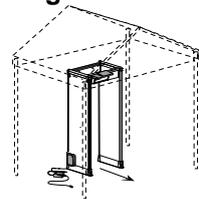


Before proceeding to install the device read the warnings and instructions in this section and in the paragraph 'Installation, use and safety information' carefully. Please note that Turnstiles.us is not responsible for any damage that may result from installations that do not follow these guidelines.

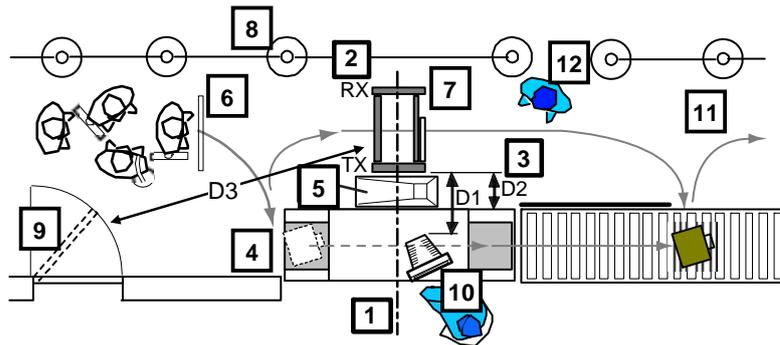
#### 3.1 Preliminary layout inspection and positioning

##### General Rules

- **Transit requirements** The Metal Detector will be positioned, according to the requirements dictated by the transit, in such a way as to allow the maximum flow of people and observance of the rules for installation.
- **Minimum distances - Electrical and mechanical compatibility** Move any possible source of electrical/electronic interferences in general away from the metal detector probe: the distance depends on the type and power of the device and on the setting of the Metal Detector. The following examples describe some relevant aspects related to the presence of an X-Ray Unit installed close to the Detector.
- **Choosing the installation place according to the equipment protection degree.**  
Standard and Anti-Vandalism configuration: indoor applications.  
Weather resistant configuration: this configuration can be applied in outdoor sheltered installation where occasional rain can occur.  
IP65 configuration This configuration can be applied in outdoor sheltered permanent installations or outdoor non-sheltered short-term installations (single event entrance).



##### 3.1.1 Examples of possible sources of interference



Typical Layout of Access Point equipped with an X-Ray Unit

Sensitivity Level/ Object Size Class	Recommended minimum distance		
	D1 Radiating source (ex.: CRT monitor, switch-mode power supply)	D2 Large fixed metal mass (ex.: X-Ray Unit, metal furniture, metal wall)	D3 Large moving metal mass (ex.: metal door, metal cart)
Large Object Size	60 cm (2 ft)	40 cm (1.3 ft)	100 cm (3.3 ft)
Medium Object Size	100 cm (3.3 ft)	70 cm (2.3 ft)	150 cm (5 ft)
Small Object Size	150 cm (5 ft)	100 cm (3.3 ft)	200 cm (6.6 ft)



All numeric distances indicated in this paragraph are indicative and depend on the detection performance required by the specific application and on the nature or extent of the source of interference.

The X-ray unit is in the immediate vicinity of the MD and may provide several sources of interference:

- the monitor (electrical interference)
- the conveyor belt motor (electrical interference)
- the mechanical components of the conveyor belt (mechanical interference). Example: metal side-panel not firmly fixed.

The higher the required security level is, the stronger the influence of the above mentioned sources might be.

##### 1 MD centring with respect to the X-ray unit

Centre the MD with respect to the X-ray unit, as illustrated in the figure.

When the Metal Detector is centered with respect to the areas where luggage and metal personal effects are deposited or recovered, these objects are unlikely to move close to the device and cause alarms.

## 2 MD orientation

The archway must be positioned with the TX antenna on the side of the X-ray unit. This layout places the RX antenna - that is most sensitive part of the archway - as far as possible away from the potential sources of electrical interference contained into the X-ray unit (mainly the monitor and the conveyor belt motor).

NOTE: with this configuration, the power supply socket for the MD must be on the X-ray unit side.

## 3 Distance between the MD and the X-ray unit

Check the distance between the TX panel and the X-ray unit (refer to table 'Recommended minimum distance' above).

## 4 X-ray unit anchoring

The X-ray unit must be firmly anchored to the floor to prevent its mechanical parts from vibrations.

## 5 Sources of vibration:

- **Strong gusts of air:** remove the cause (f. i., a door slam), if possible. EVA procedure (see EVA programming command) can be carried out to compensate vibrations.
- **Objects, panels or furniture in direct contact with the MD:** no objects, panels or furniture shall be placed in direct contact with the MD.

## 6 Sources of vibration: Unstable Floor

The MD gate shall be anchored to a stable floor. Avoid installing on wood or metal platforms unless necessary. In this latter case, contact CEIA for additional information

## 7 Anchoring the MD to the floor



ATTENTION: this step must be performed only once the setting and the environmental interference level have been tested and found to be compatible. Refer to 'Anchoring the MD to the floor' section for details.

The MD must be firmly anchored to the floor.

## 8 'Fixed' metal masses

Any large object positioned close to the MD shall be only made of plastic or other non-metallic material (refer to table 'Recommended minimum distance' above).

## 9 Moving metal objects

Doors or other large structures made of metal shall be kept far from the MD (refer to table 'Recommended minimum distance' above).

## 10 Low-power Electrical/Electronic Devices

The distance between the MD RX antenna and electric/electronic devices should be greater than 1 m (3.3 ft).

## 11 High-power electrical conductors and Electrical/Electronic Devices

These sources should be as far as possible from the MD RX antenna.

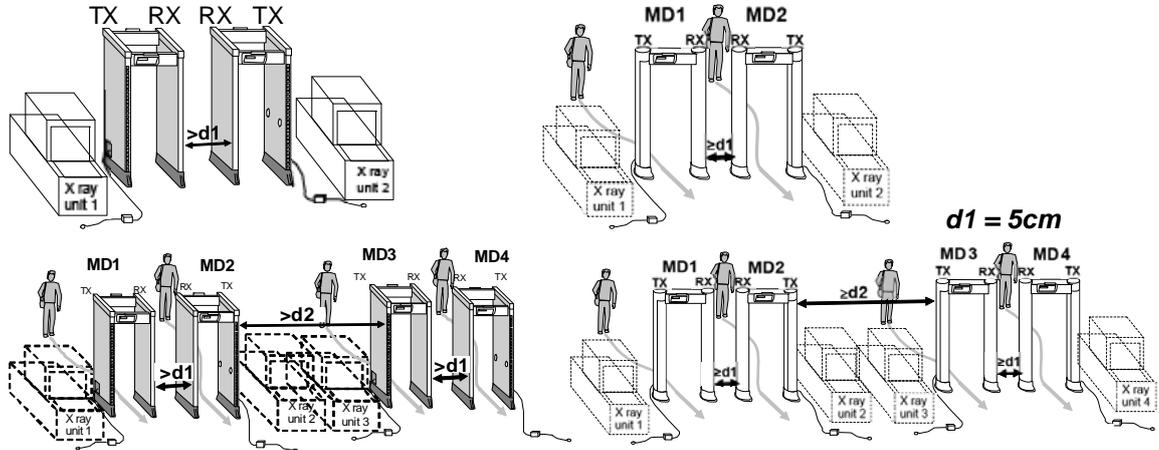
## 12 Distance between the MD and the Security Screener in charge

The position predisposed for the Security Screener in charge should not cause the MD to detect his own metal objects (i.e. transceivers). Suggested distance is 0.5 m (20') minimum.

### 3.1.2 Multiple installation

In case of the installation of multiple units it is necessary to respect the following rules, in order to synchronize each unit with the other ones.

- Place the MDs following the sequence: TX-RX - RX-TX - TX-RX ...
- Ensure that the distances ('d1' and 'd2' in the figure below) between the MDs are not less than the minimum required.



$d1 = 15\text{cm}$ ,  $d2 = 100\text{ cm}$

- Enter programming and set a different channel (CH) on each MD, according to its position (this can be performed during the OTS procedure, see the following steps).

## 3.2 Installation procedure overview

### Personnel needed

Two qualified installers or more and one authorised Security Representative

### Knowledge required

- Some MD working parameters: refer to the 'Programming' section
- Operating requirements established by the Security Authority

### Components needed

- Unpacking: Scissors and Pliers
- Phillips screwdriver n.1
- Kit C.E.I.A. FGA & TFV ( )
- Metal-free clothes (Clean Tester): Tracksuit, Gym shoes, No metal personal effects (metal cases, metal watch, ...)
- Anchoring to the floor by means of screws: drill, ratchet tightener (socket wrench) , expansion anchor with Nr. 12-24 (or M6) screw
- Tools for Verification of the Calibration (reference test pieces, ...)

## 3.3 Assembly



Please note that Turnstiles.us is not responsible for any damage that may result from installations that do not follow these guidelines.

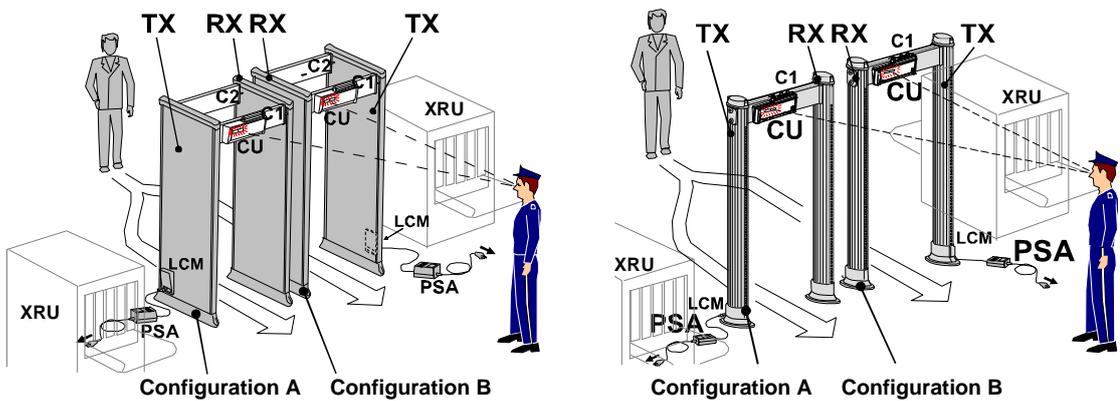
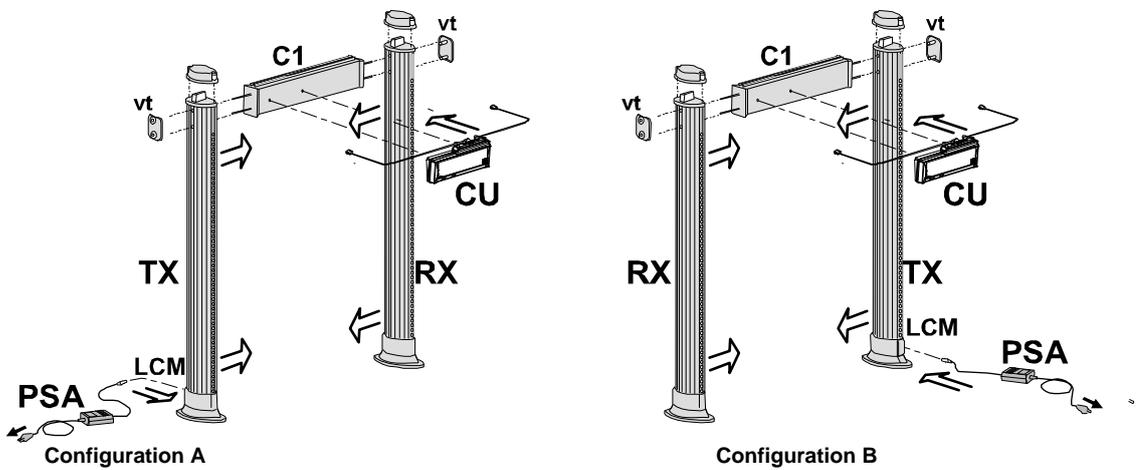
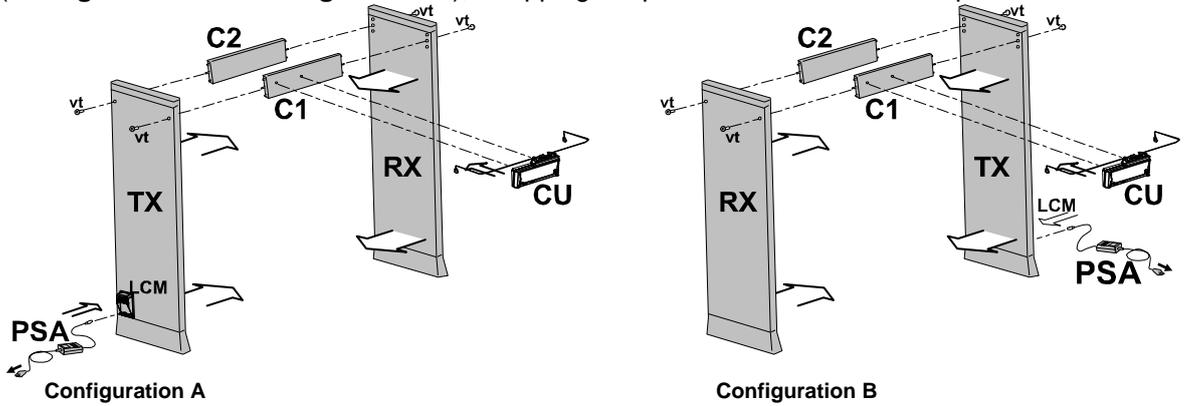


**Holes** It is strictly forbidden to make holes in the Metal Detector antenna or to insert screws in positions, or of lengths, not expressly indicated by Turnstiles.us. Damage due to such actions is not covered by the product warranty.

### 3.3.1 Assembly rules

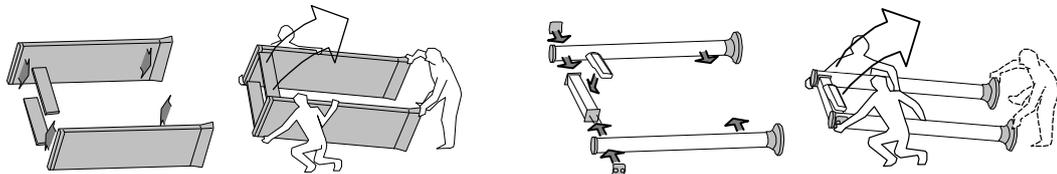
- The control unit **CU** has to be mounted on the crossbar on the exit side of the gate, as it provides the screener with the alarm signals.
- The crossbar **C1**, fitted with holes for mounting the control unit **CU**, must be placed so that the control unit is located on the exit side of the gate.

- The part **TX**, including the lower connection panel **LCM**, must be placed facing the available power supply outlet.
- According to the previous rules, the archway can be assembled in two different configurations (**Configuration A** or **Configuration B**), swapping the position of the TX and RX parts.

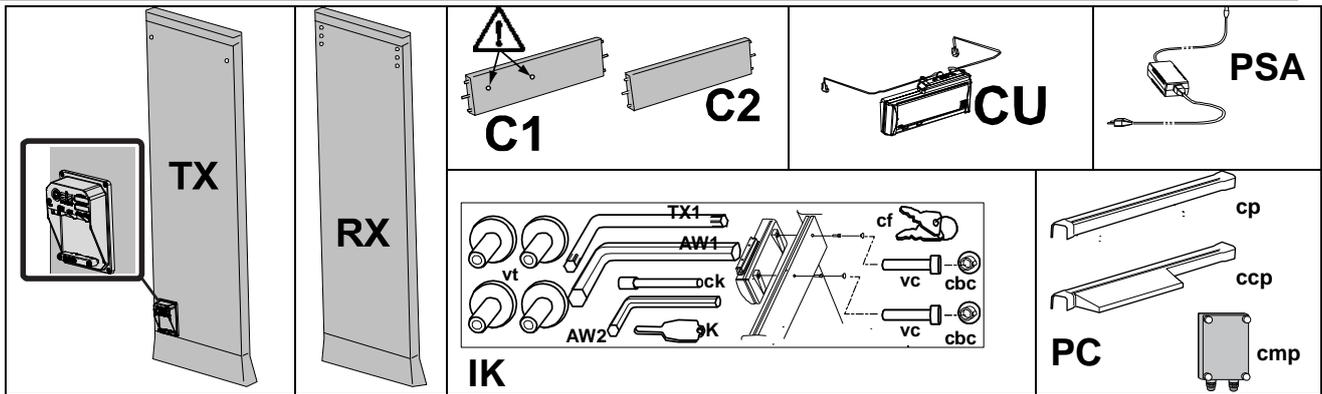


**Typical application fitted with two Metal Detectors and two X-Ray Units**

 It is recommended that the archway is assembled on the floor, in horizontal position. Whenever needed, and specifically when lifting up the assembled archway from the floor and moving it to the final location, two or more people are mandatory.



**3.3.2 Assembly Procedure of the Panel-Shape Version**



- TX** TX antenna
- RX** RX antenna
- C1** Crossbar fitted with holes for mounting the control unit
- C2** Crossbar without holes
- CU** Control unit
- PSA** AC/DC power supply adapter

- IK** Installation kit:
- AW1** Allen wrench for crossbar
- AW2** Allen wrench for control unit
- cbc** cap for crossbar fixing holes
- cf** key of control unit lock
- ck** screwdriver for upper connectors
- K** on/off key
- vc** control unit mounting screw
- vt** crossbar fixing screw

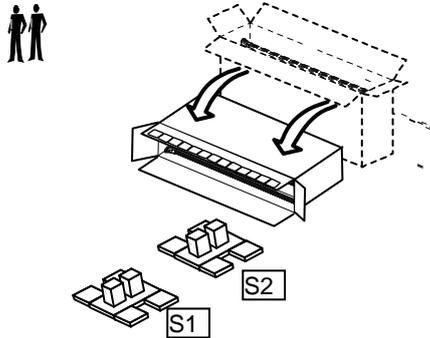
- PC** Protection covers:
- cmp** protection cover of the lower connection module
- ccp** protection cover of CU control unit and C1 crossbar
- cp** protection cover of C2 crossbar

*Pictures of main components*

**Positioning the panels**

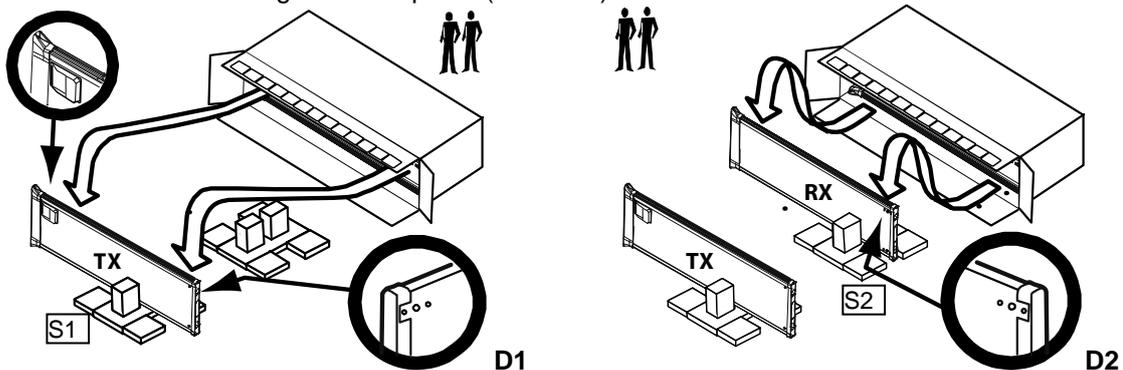
Tilt down the packaging containing the archway panels.

Place **s1** and **s2** spacers on the floor as illustrated in the figure below.



Extract the upper panel (TX) from the packaging and place it on the **s1** spacer, making sure that its internal side is facing the packaging. The internal side of each panel is identified by the three holes in the cross-bar mounting area (detail **D1**).

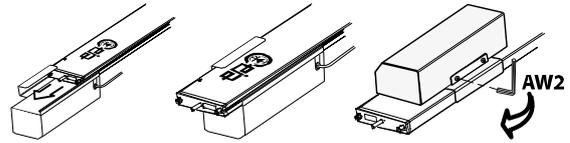
Extract the lower panel (RX) from the packaging and place it on the **s2** spacer, making sure that its internal side is facing the other panel (detail **D2**).



**Attaching the crossbars**

**ATTENTION!** The crossbars must be attached to the panels, according to the suitable configuration.

**[OPTION]** Version with Long Life Crossbar Battery Back-Up: attach the Battery Compartment to the C2 crossbar, before assembling it with the panel.

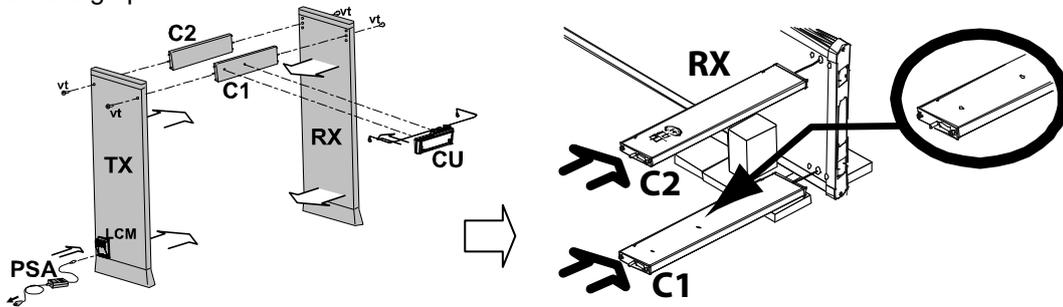


Extract the crossbars from the packaging.

**Configuration A** (with TX panel on the left when facing the exit side)

Attach the C1 crossbar with holes to the lower part of the panel, taking care that the logo is facing the floor.

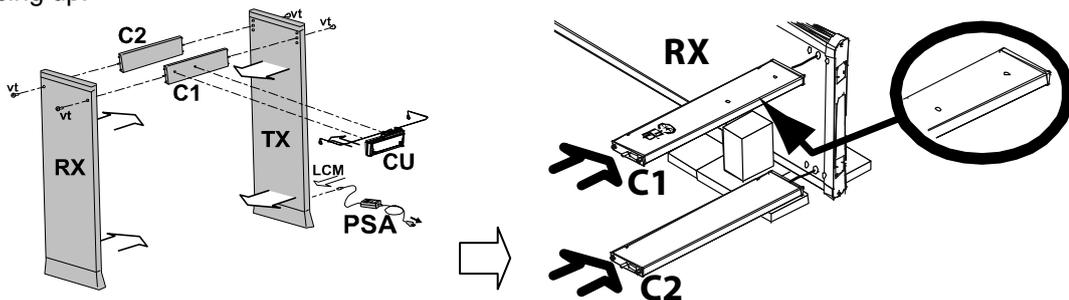
Attach the C2 crossbar with no holes to the upper part of the panel, making sure that the logo is facing up.



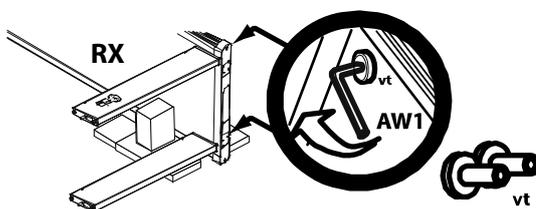
**Configuration B** (with TX panel on the right when facing the exit side)

Attach the C2 crossbar with no holes to the lower part of the panel, taking care that the logo is facing the floor.

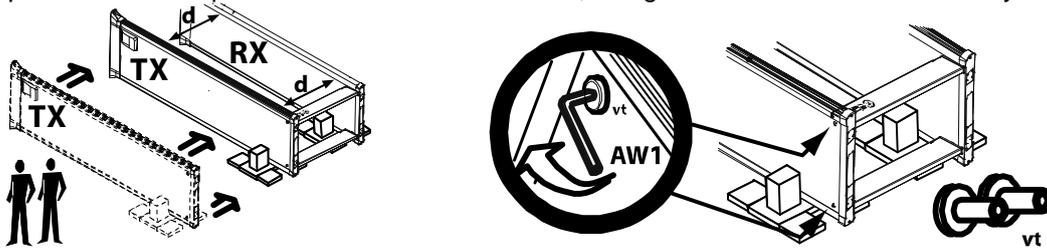
Attach the C1 crossbar with holes to the upper part of the panel, making sure that the logo is facing up.



Secure the crossbars to one of the panels, using vt screws and AW1 Allen key (included in the installation kit). Tightening torque: 10 Nm.



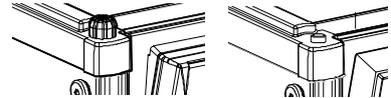
Approach the other panel and attach the crossbars, using **vt** screws and **AW1** Allen key.



**Attaching the control unit**

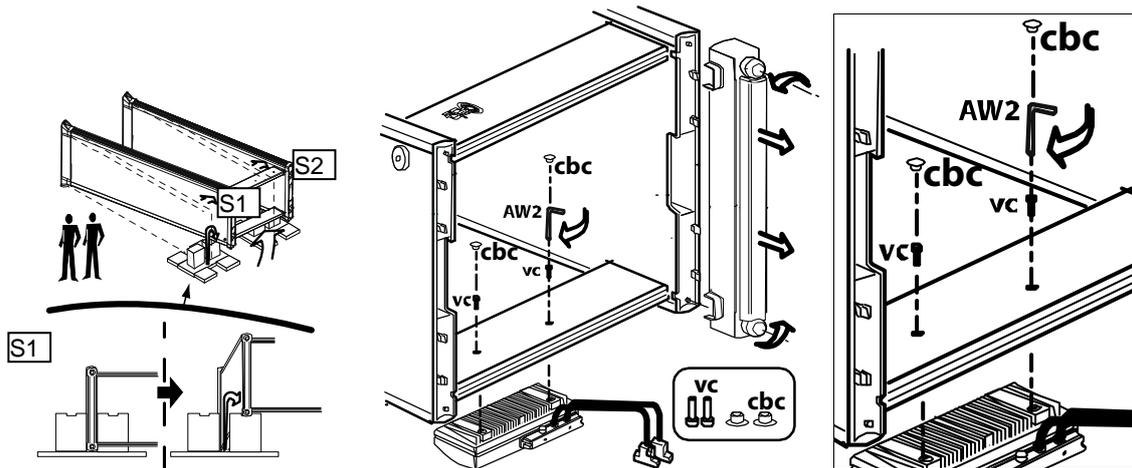
Remove the protection caps of the panels, to access the inner connectors.

**[OPTION] NOTE:** the protection caps of the standard protection degree configuration are fitted with locking knobs. For higher protection degrees, the knobs are replaced by screws: use Allen key **AW2** or **TX1** to free them.



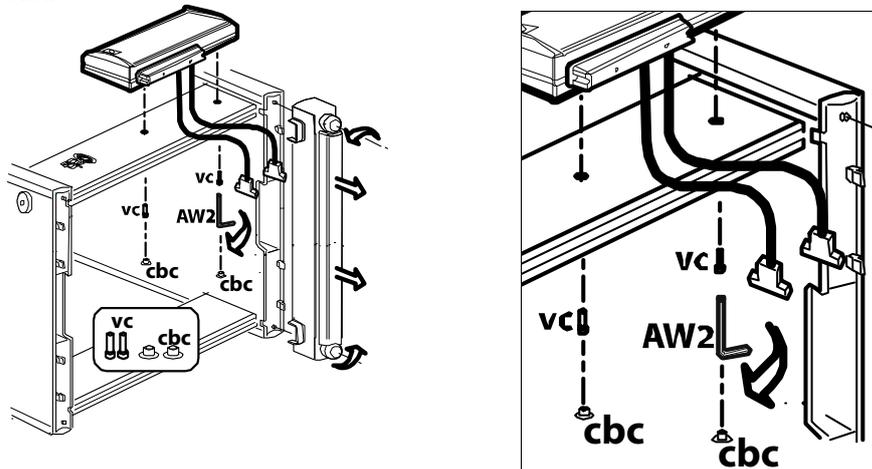
**Configuration A**

Lift the archway, placing it on the supports **s1** and **s2**. Attach the control unit to the lower crossbar, using **vc** screws and **AW2** Allen key (included in the installation kit). Tightening torque: 1.2 Nm. Cover the entry side of the fixing holes with the **cbc** caps.



**Configuration B**

Attach the control unit to the upper crossbar, using **vc** screws and **AW2** Allen key (included in the installation kit). Cover the entry side of the fixing holes with the **cbc** caps. Tightening torque: 1.2 Nm.



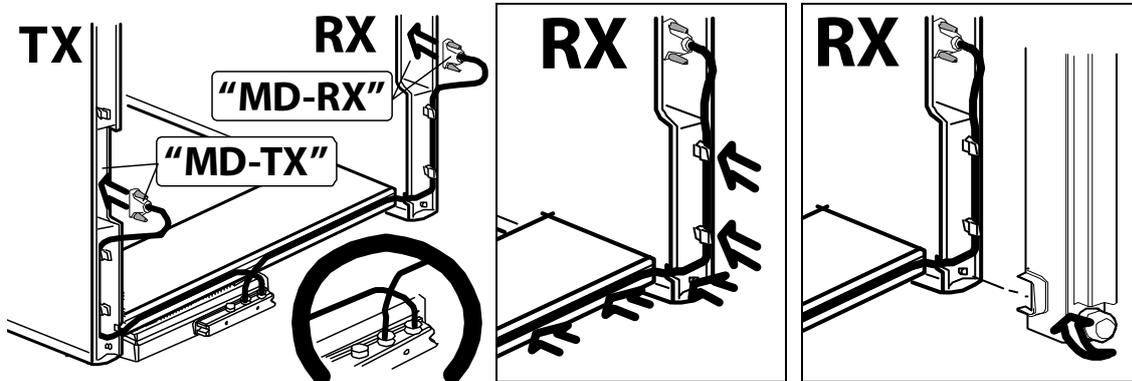
**Connecting the control unit**

Connect the cables coming from the control unit to the panels, taking care to match the labels of each cable connector with the corresponding panel connector.

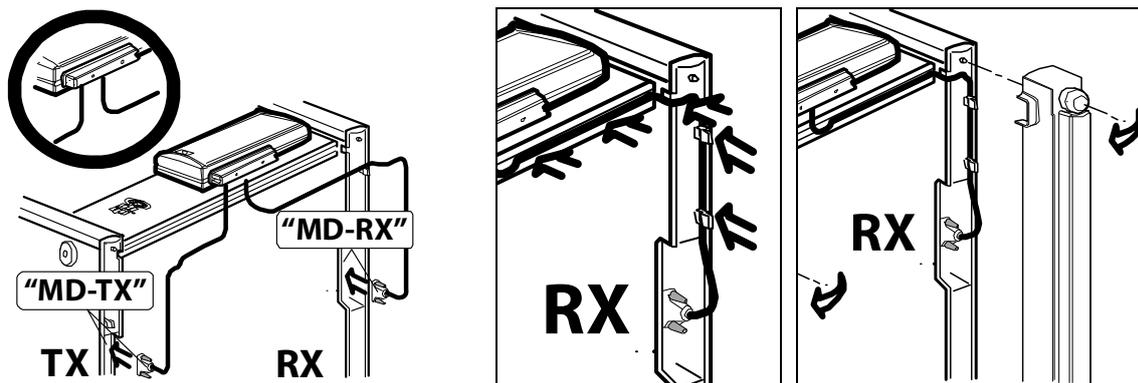
Lock the cable connectors, using the short screwdriver **cK** included into the installation kit. Insert the cables into the crossbar groove. Fix the cables in position using the clips on the panels. Wind the cable in excess, if necessary. Remount the protection caps.



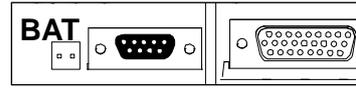
**Configuration A**



**Configuration B**



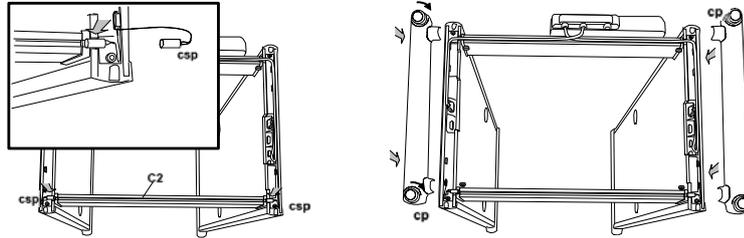
**[OPTION]** Version with Long Life Crossbar Battery Back-Up  
Connect the cable coming from the battery compartment to the 2-pole connector (BAT) located close to the 9-pole D-Sub "PS/COM" connector of the TX panel.



**[OPTION]** Version with protection covers

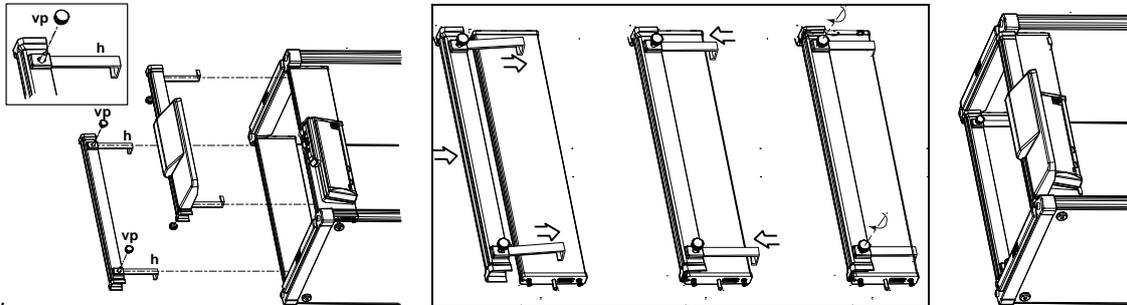
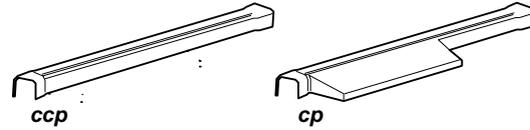
Insert caps **csp** into the grooves of the panels, located close to the crossbar **C2**. Each cap is secured by a short cord to a cable clip.

Remount covers **cp**.



Attach the protection cover **ccp** of the crossbar C1, using the hooks **h** and the knobs **vp**, taking care to push it towards the panel covers **cp**.

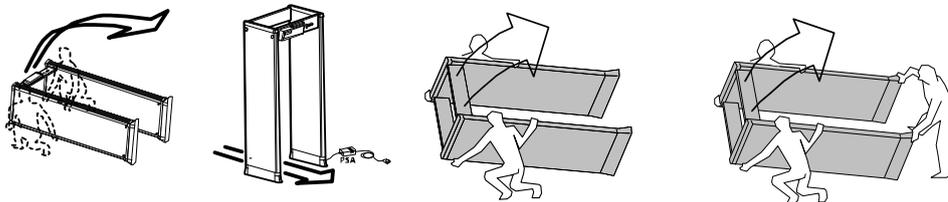
Attach the protection cover **tp** of the crossbar C2, using the hooks **h** and the knobs **vp**, taking care to push it towards the panel covers **cp**.



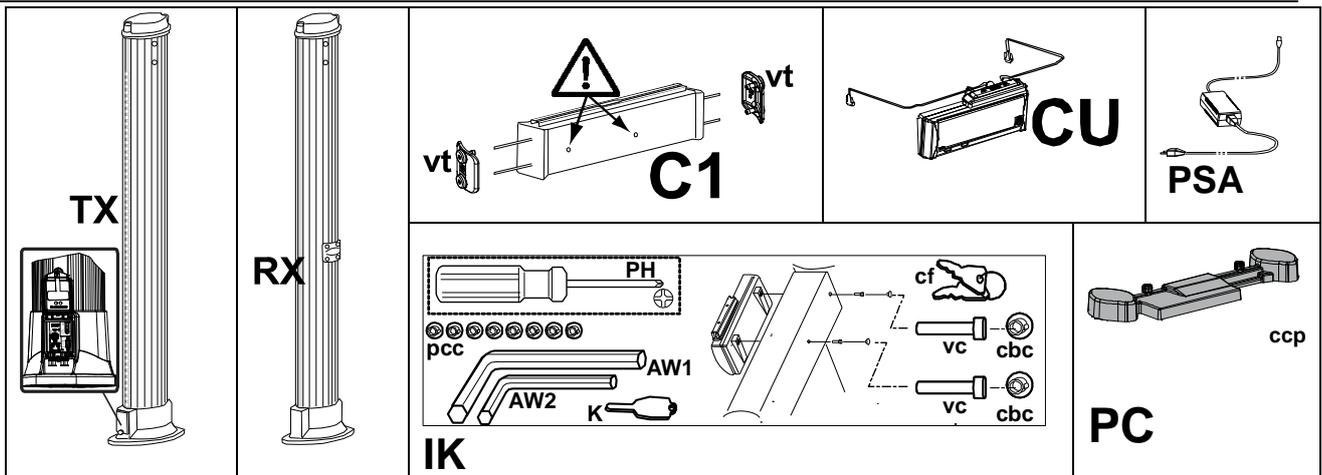
**Lifting the archway up**

Lift up the assembled archway from the floor.

Remark: it is mandatory that this operation is performed by two or more people!



**3.3.3 Assembly Procedure of the Column-Shape Version**



- TX** TX antenna
- RX** RX antenna
- C1** Crossbar fitted with holes for mounting the control unit
- vt** crossbar fixing screw
- CU** Control unit
- PSA** AC/DC power supply adapter

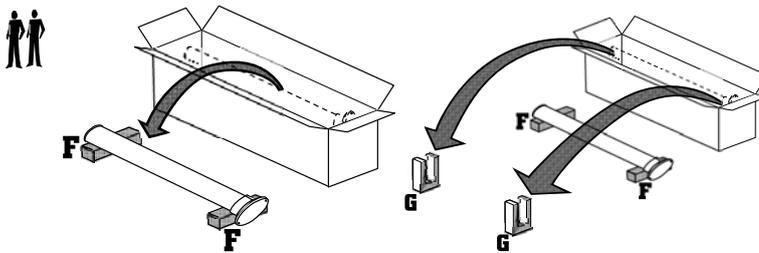
- IK** Installation kit:
  - AW1** Allen wrench for crossbar
  - AW2** Allen wrench for control unit
  - cbc** cap for crossbar fixing holes
  - cf** key of control unit lock
  - ck** screwdriver for upper connectors
  - K** on/off key
  - pcc** cap for photocell connections cover
  - PH** Phillips screwdriver (photocell)
  - vc** control unit mounting screw

- PC** Protection covers:
  - ccp** protection cover of CU control unit and C1 crossbar

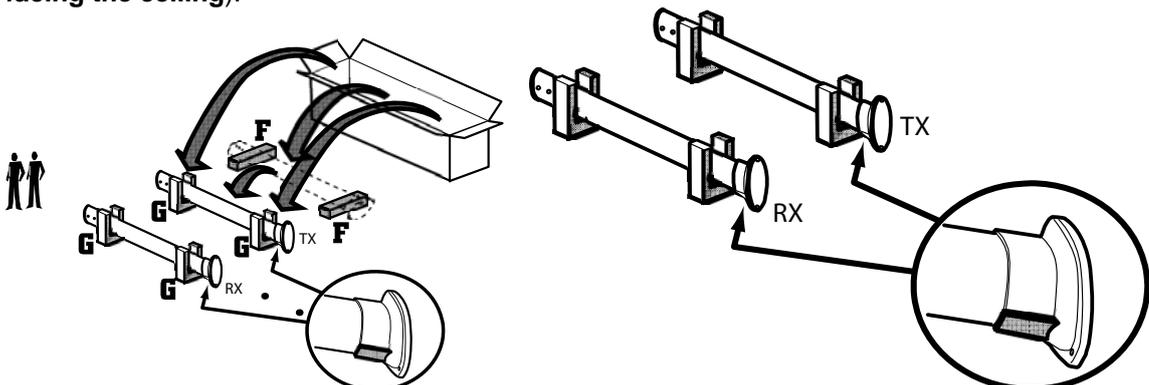
*Pictures of main components*

**Positioning the columns**

Place **F** spacers on the floor as illustrated in the figure below. Extract one column from the packaging and place it on the **F** spacers. Extract **G** supports from the packaging and place them on the floor as illustrated in the figure below. Place the column on the **G** supports.

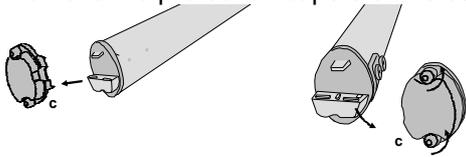


Extract the second column from the packaging and place it on the **F** spacers. Extract **G** supports from the packaging and place them on the floor. Place the TX - RX columns as illustrated in the figure below (**connection module of the base facing the ceiling**).



**Attaching the crossbar**

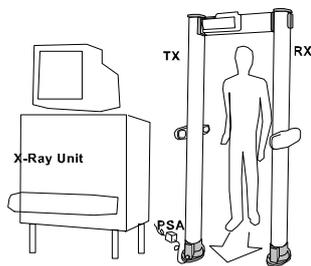
Remove the protection caps **c** of the columns, to access the inner connectors.



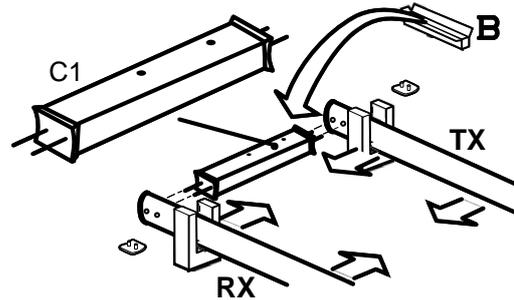
**ATTENTION!** According to the suitable configuration, the crossbar must be oriented so that the archway assembly can be performed in the easiest way.

**Configuration A** (with TX column on the left when facing the exit side).

Place the crossbar as illustrated in the figure below (holes for the control unit close to the TX column). Insert the crossbar guide pins into the holes on the inside of the column.

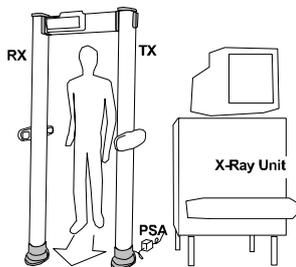


**Configuration A**

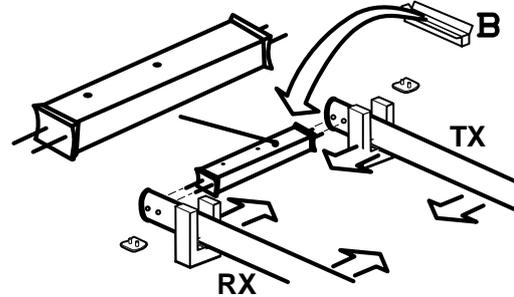


**Configuration B** (with TX column on the right when facing the exit side).

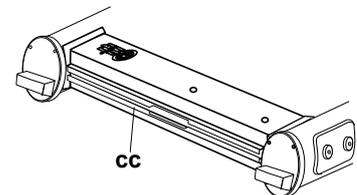
Place the crossbar as illustrated in the figure below (holes for the control unit close to the RX column). Insert the crossbar guide pins into the holes on the inside of the column.



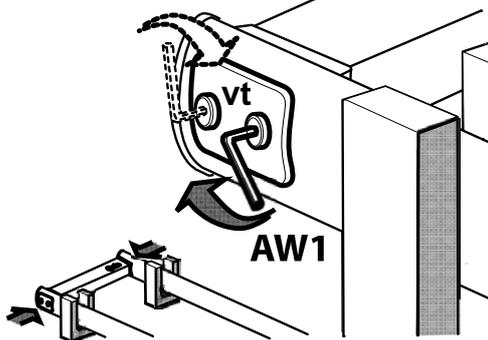
**Configuration B**



**Note:** Mount the crossbar with the groove **cc** at the top.

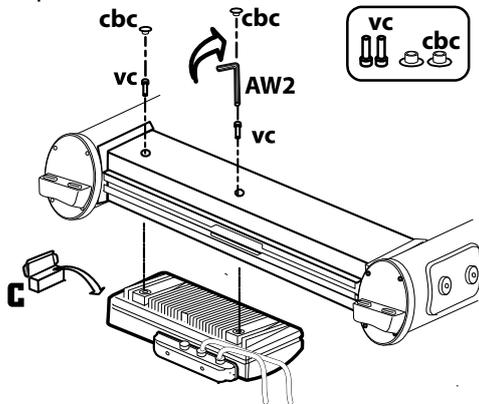


Secure the crossbar with the knobs **vt**, using the **AW1** Allen key (Tightening torque: 10 Nm).

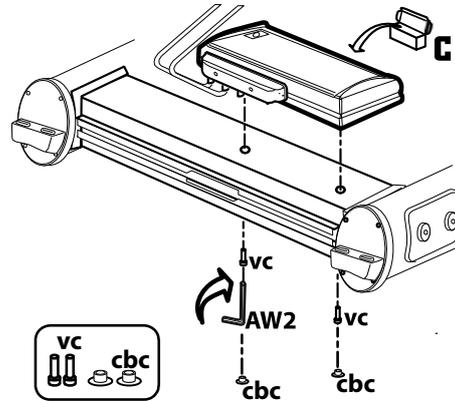


**Attaching the control unit**

Attach the control unit to the crossbar, using **vc** screws and **AW2** wrench (included in the installation kit). Tightening torque: 1.2 Nm. Cover the entry side of the fixing holes with the **cbc** caps



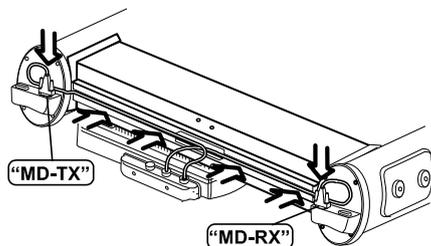
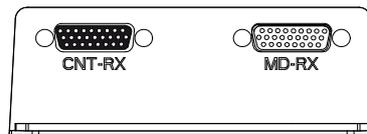
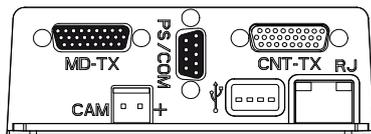
**Configuration A**



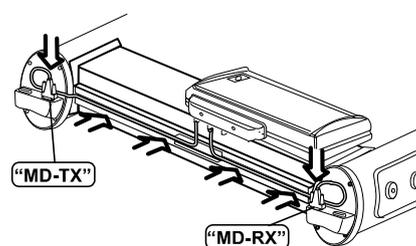
**Configuration B**

**Connecting the control unit**

Connect the cables coming from the control unit, as illustrated in the figure below. Connect each cable to the column connector, winding the cable in excess, if necessary.

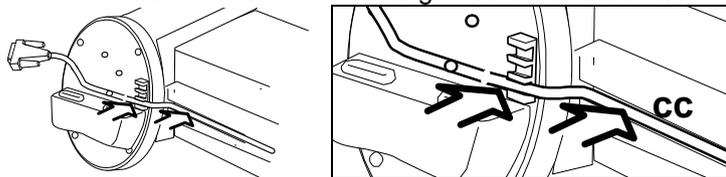


**Configuration A**



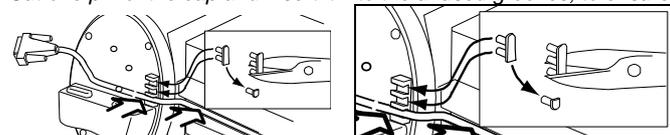
**Configuration B**

Insert the cables into the crossbar groove **cc** and fasten it to the column.



**[OPTION] Water Proof Version**

Cut one pin of the cap and insert it into the unused grooves, to ensure the sealing of the connections compartment.



Remount the upper protection caps of the columns.



### Lifting the archway up

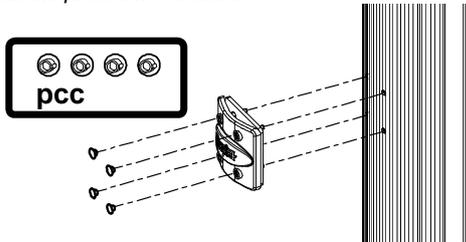
Lift up the assembled archway from the floor.

Remark: it is mandatory that this operation is performed by two or more people!

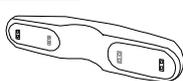


### Cover for photocell connections

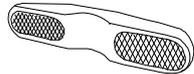
This cover protects the connections pre-arranged for the optional transit counter. This cover must be removed only to install the photocell modules.



### [OPTION] Version with photocells: mounting the photocells



Photocells



Reflectors



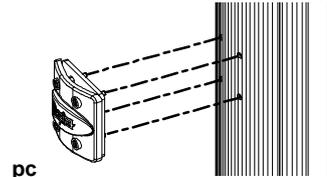
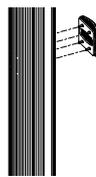
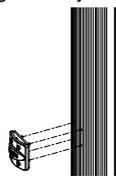
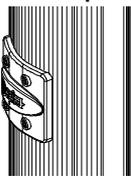
PH2



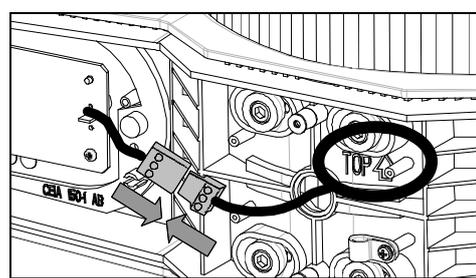
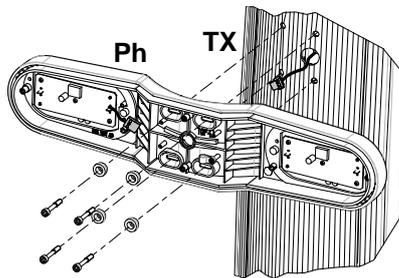
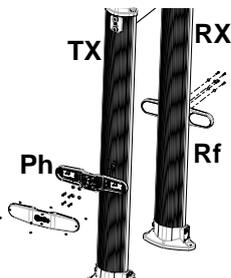
AW

Phillips screwdriver and Allen wrench (included in the installation kit)

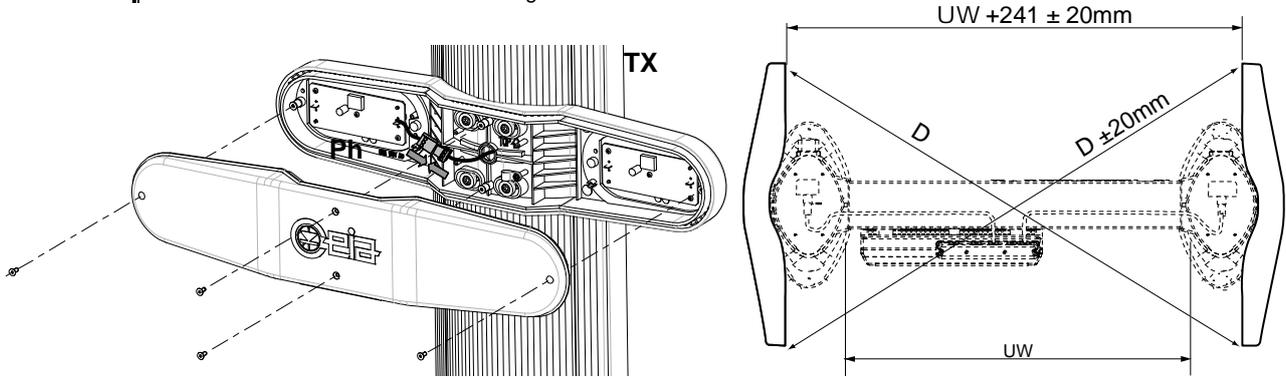
Remove the pc cap using AW key.



- Open the Ph photocell module using a PH2 cross-head screwdriver.
- Pass the cable from the TX column through the central hole in the internal part of the Ph module and fix it to the TX column using the AW Allen wrench provided (**TOP arrow up!**).
- Attach the photocell module connector to the cable coming from the TX column.
- Open the Rf reflector module using the PH2 cross-head screwdriver.
- Fix the internal part of the Rf reflector module to the RX column using the AW Allen wrench.



- To ensure that the **Ph** and **Rf** modules are parallel, make certain that the measurements in the figure below are not exceeded.
- Close the **Ph** photocell module using the PH2 cross-head screwdriver.
- Close the **Rf** reflector module using a PH2 cross-head screwdriver.



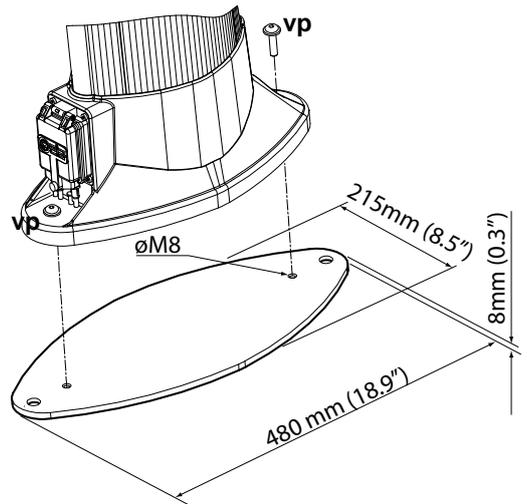
**[ACCESSORY] Stabilizing plates**



In case of removable applications, these plates maintain the archway stability and, acting as an adapter, allow the archway to be easily relocated. In order to prevent the archway from tipping over in case of bumps, the stable anchoring to the ground is anyway mandatory.

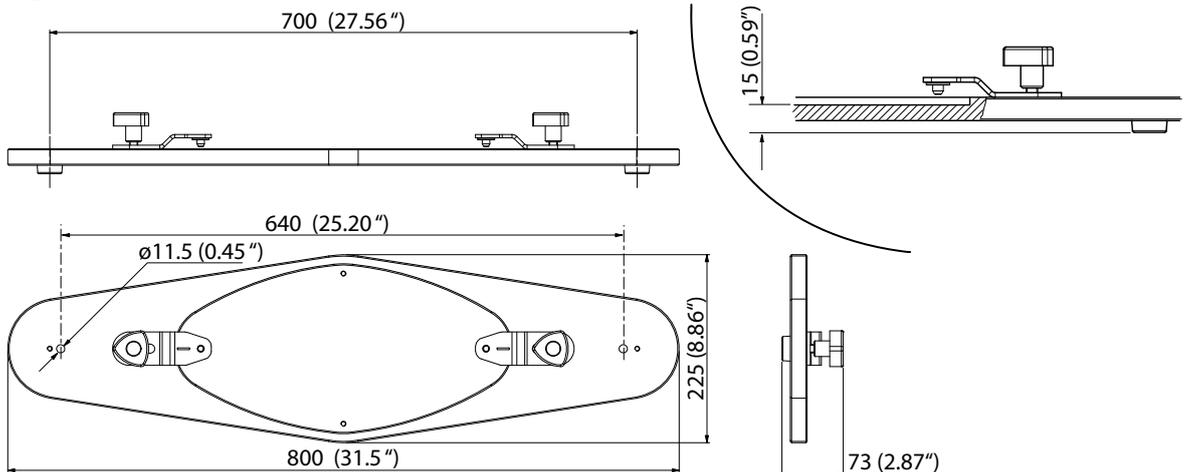
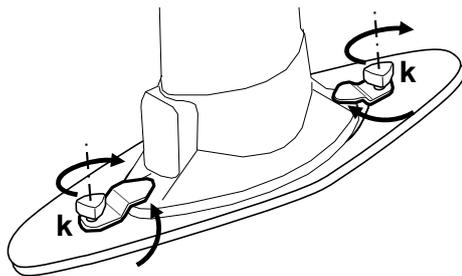
**Metal version**

- **Attaching the plates to the archway**
  - Anchor the archway to the plates by fully tightening screws **vp**.



**Plastic version** (especially suitable for uneven floor)

- **Attaching the plates to the archway**
  - Anchor the archway to the plates by fully tightening knobs **k**.



### 3.4 Power Supply Connection



**WARNINGS**

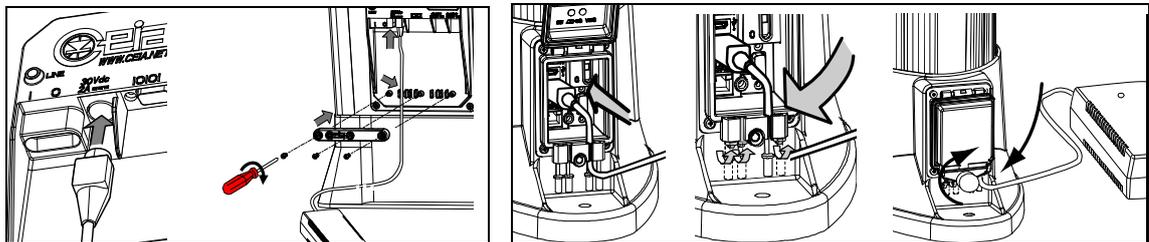
Check that the voltage supplied by the mains corresponds to the detector's supply voltage: this is indicated on the device's power supply adapter and on the factory test sheet at the end of this booklet. Use of the wrong voltage can seriously damage the Metal Detector.

A protection switch should be connected up between the mains supply and the Power Supply Unit. The external grounding line should conform to standards and should not in any case have a resistance greater than 3 Ohm.

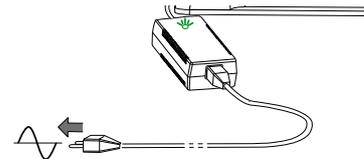
All connecting cables between the gate and the power supply or other external devices must be properly secured and protected so as to achieve the best performance from the detector and avoid accidental injury to people who might trip over them.

**Lower Connection Module**

- Insert the connector into the '30Vdc' socket in the connection panel.
- **Panel Version:** secure the cable by attaching the strain relief.
- **Column Version:** insert the cable into the corresponding groove. Place the unused caps into the other grooves and close the connections compartment



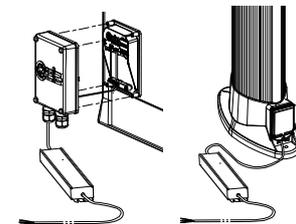
- Connect the AC/DC adapter to the mains socket: the LED power indicator on the adapter, if present, will light up.



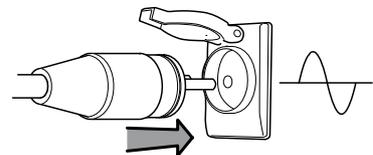
**OPTION] Version with protection covers**

- Operate as described in the previous step, but passing the output cable of the AC/DC adapter through one of the strain reliefs present on the protection cover.
- Connect the input cable of the AC/DC adapter to the mains. **NOTE:** the input cable is not fitted with plug, to allow it to pass inside conduits; carry out the wiring ensuring that the overall protection degree of the system is not decreased.

Wire colour	Function
Brown	Line
Blue	Neutral
Green Yellow	Protection Ground



*On demand, the input cable is fitted with a removable watertight plug. In case of outdoor installation, connect it to a receptacle with the same protection degree. Watertight plug and connector must be fully engaged so no gap is visible between mating surfaces. Improper engagement voids watertight integrity and may result in shock hazard if exposed to water/mud/snow. Take care that the overall protection degree of the system is not decreased.*

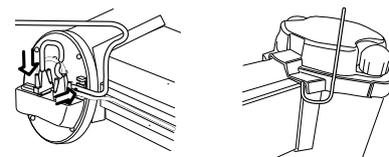


**Upper Connection Module**

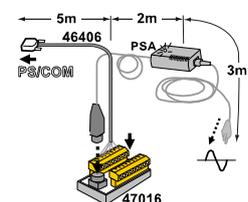
Use an accessory **cable extension**, fitted with a 9-pole male sub-D connector and a 4-pole female plug. This cable allows the AC/DC adapter to be connected to PS/COM port located on top of the TX antenna. Insert the cable into one unused groove and make it exit from the protection covers keeping it close to the TX antenna.

Code:

64228, 10m-length extension cable; 68346, 20m-length extension cable



**Note:** use Top Power Extension Adapter, code 46650, if all connections available on PS/COM port are necessary.

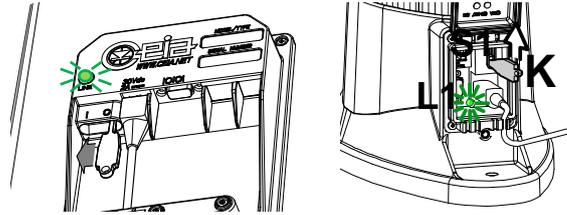


### 3.5 First Power On and Setup

#### 3.5.1 Power On Sequence

##### Switching on the MD

The ON/OFF switch is located on the lower connection module, at the bottom. Insert the **K** key into the slot and slide it from '0' to 'I' position. The '**LINE**' (L1) power indicator located on the lower connection module should light up.



**NOTE:** to switch off the WTMD insert the key into the slot and slide it from 'I' to '0' position.

At the end of the start-up, the message 'ready for use'  will appear.

#### 3.5.2 OTS (One-Touch Self-Installation)

The Metal Detector is equipped with an automatic function that guides the installation through a complete and thorough procedure, ensuring that all essential steps are performed. At the end of this, the following objectives are attained:

- making sure that the Metal Detector is working properly;
- environmental compatibility is assessed;
- provide means for helping through possible interferences compensation

During the procedure use the  ENTER key to confirm a selection or go to the next step; use the UP  and DOWN  keys to change a numeric value or an answer ('Y' - yes to N'- no and vice versa). In the following any operator's action is indicated between '<' and '>'.



**OTS function can be executed also at user level:** in this case, the functions disabled through UP command are automatically skipped.

##### 3.5.2.1 OTS Procedure

Enter programming and run OTS command. The following messages appear on the Control Unit Display:

- Run OTS  to continue PROG to exit 
- LED BARS LEDs On  <check>   
**Light Bar Verification:** all the light bars must be completely activated.
- DISPLAY  Pixels On  <check>   
**Control Unit Display Verification:** the display should be completely on.
- 'PHOTOCEL  Engage EachPhot  <photocell engagement>   
**Verification of the Photocells:** cover the photocells in sequence.

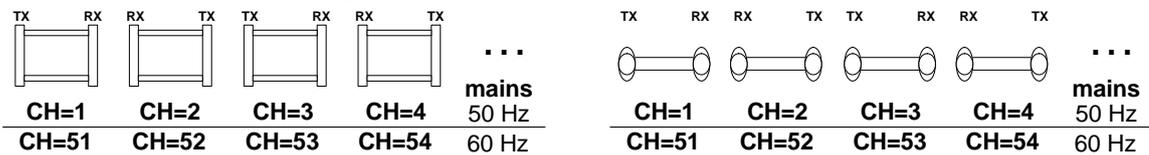
-  no photocells engaged
-  entry side photocell engaged
-  intermediate entry side photocell engaged \*
-  intermediate exit side photocell engaged \*
-  exit side photocell engaged



\* Intermediate photocells appear only if high precision version is installed.  
In case photocells are not installed this step is automatically skipped.

- SUPPLY VOLTAGE  VIN OK   
**Input Power Supply Verification:** the reading on the display should be between 22V and 37V. If the message 'VIN FAIL' appears the mains voltage is outside the correct range (refer to 'Specifications' section): change to a more suitable power supply source. Otherwise, replace the power supply adapter.
- SECURITY LEVEL  Press arrows to Select  <check>     
**Selection of the Security Level:** the current IS or LD setting is displayed. Change it , if necessary (refer to the FAT report provided with the equipment).

- CHANNEL SELECT.   
**Selection of the Operating Channel:**  
 AutoCS ? Y  < channel search >  to perform an automatic search in case of a single installation (no other MDs within a range of 15m).  
 AutoCS ? N  CH    to set the operating channel (CH) manually, in case of a multiple installation. Setting of CH parameter for up to 4 MDs:

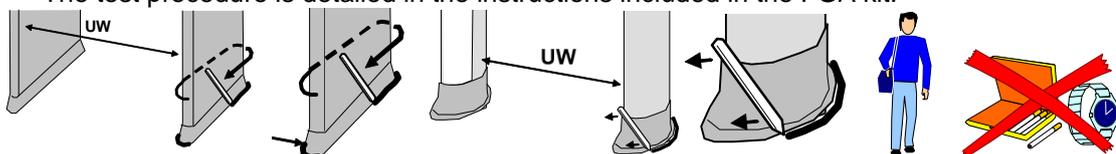


- ALARM VOLUME SELECT.  AV     
**Selection of the Alarm Volume.**
- MINIMUM VOLUME SELECT.  MV     
**Selection of the Minimum Volume** (lower limit for alarm volume adjustment).
- ALARM TONE SELECT.  AT     
**Selection of the Alarm Tone.**
- ALARM DURATION SELECT.  AD     
**Selection of the Alarm Duration.**
- GATE DIR SELECT.  Transit inbound  GD=1 Y  <inbound transit>   
**Selection of the Transit Direction:** pass through the gate along the desired **inbound direction**.



To repeat the step, change 'Y' to 'N', using the arrow keys and press ENTER key to confirm.  
 In case photocells are not installed set GD parameter to enable the pacing lights on the outbound (unsecure) side of the archway.

- FLOOR ADJUST.  Run FGA? Y  <FGA procedure > FGA OK  
**FGA Adjustment of Gain at ground level** (this step requires the FGA-TFV kit be available).
  - Ensure that the passage width (UW in the figure below) of the gate is correct (refer to the 'Specifications' section).
  - Mark the position of the archway on the floor (for instance by tracing the outline of the panels with a felt-tip pen).
  - The operator must carry out the test without wearing any metal objects!
  - The test procedure is detailed in the instructions included in the FGA kit.



- **TECHNIC FUNCT. VERIFIC.**  Run **TFV?Y**  <TFV procedure > **TFV OK**  
**TFV Technical Functionality Verification** (this step requires the FGA-TFV kit be available)
  - Archway and operator's condition are as for the FGA step.
  - The test procedure is detailed in the instructions included in the TFV kit.



FGA Adjustment and TFV Technical Functionality Verification steps are automatically skipped in case the specific model or the customized configuration does not support these features.

- **ENVIRON ADJUST.**  Run **ENA?Y**  <noise adjustment>  <noise verification>  
**Evaluation and Compensation of Environmental Interferences:** the equipment measures the noise level due to possible interference sources of an electrical nature only present in the environment and changes the settings, if necessary, to minimise it. At the end of the process, the message 'ENA END' appears, together with the result (example: 'COVERAGE 100% NOISE < 20%'). The procedure ends with a noise verification. The noise measurement phase can be prolonged indefinitely to capture a non-repetitive interference.



This step is automatically skipped if a customized security level is selected (see also IS parameter) or the specific detector model does not support the ENA function.

- **GENERAL NOISE**  <general noise measurement>   
**General Environmental Noise Measurement:** the equipment starts measuring the noise level due to possible interference sources present in the environment, both of a mechanical and an electrical nature. Pass through the MD in the following configuration:
  - Eliminate personal metal effects;
  - Actuate the whole access system;
  - Activate any electrical devices that may cause interference;
  - Subject the objects and furniture in the access system to normal and above-normal stress (hit the furniture, drop a piece of luggage heavily onto the X-ray unit belt, ... );
  - Subject the floor to normal and above-normal stress (walk heavily, change direction, ...).



In case of strong gusts of air or wind **EVA function** can be useful to compensate archway vibrations. If repetitive movements of innocuous big metal objects (f.i. a metal trolley) can occur near the archway **SENT parameter** can be adjusted to avoid false alarms (only if photocell modules are installed).

During the test verify the noise level shown on the display:

0...3	acceptable interference level.
4...8	above normal interference level: the equipment is operational, but a corrective action on any possible interference source around the MD is recommended.
>8 or alarm indication	unacceptable interference level: the equipment is NOT operational: a corrective action on any possible interference source around the MD is required.

- **ELECTR. NOISE**  <electromagnetic noise measurement>   
**Environmental Electromagnetic Noise Measurement:** the equipment starts measuring the noise level due to possible interference sources present in the environment, of an electrical nature only. Activate any electrical devices that may cause interference (motors, monitors, ...) and verify the noise level shown on the display:

0...3	acceptable interference level.
4...8	above normal interference level: the equipment is operational, but a corrective action on any possible interference source around the MD is recommended.
>8 or alarm indication	unacceptable interference level: the equipment is NOT operational: a corrective action on any possible interference source around the MD is required.

- **OTS END**   
**End of the OTS procedure**



**Excessive Environmental Interferences:** in case ENA step results in a coverage less than 100% and/or an excessive noise level is indicated by EN/GN functions, the installation compatibility should be improved. Apply the following countermeasures:  
 - Carry out a corrective action on any possible interference source around the MD (see 'Preliminary Layout Inspection and Positioning' section).

- Change working channel CH, if applicable .
- Swap the TX and RX antennas positions.
- Rotate the archway.
- Move the archway in a different position

After each one of the above mentioned countermeasures repeat ENA step (enter programming and run the OTS command, skipping all configuration and functionality steps): the ENA process will likely achieve a better result.

### 3.6 Final Verifications

#### 3.6.1 Verification of the Calibration

This step has to be carried out on the basis of any specific detection requirements established by the customer.



Besides FGA function **LC command** can be useful to compensate field non-uniformity due to metal reinforcement inside the floor.

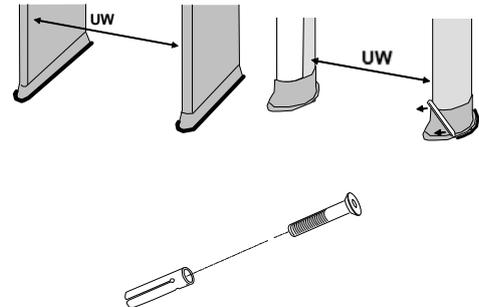
#### 3.6.2 Anchoring the MD to the floor



**ATTENTION:** this step must be performed only once the setting and the environmental interference level have been tested and founded to be compatible. For safety reasons, anchoring the unit to the floor is mandatory. Anchoring methods shall be agreed prior to proceeding with the following steps.

##### Marble or tiled floors or Carpeted floor - Anchoring with screws

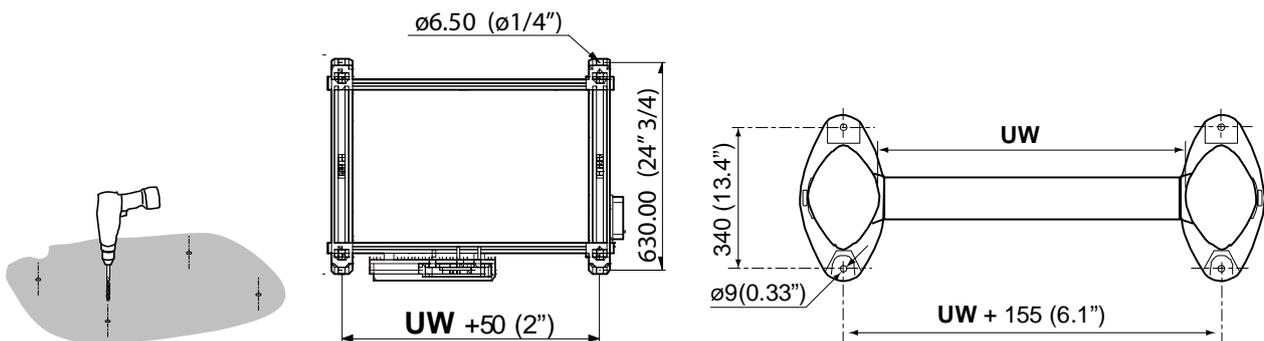
- Ensure that the usable width **UW** of the archway is correct (720mm; options: 760mm or 820mm).
- Ensure that the archway is in the position identified during the previous steps.
- Use an expansion plug with Nr. 12-24 (or M6) screw.



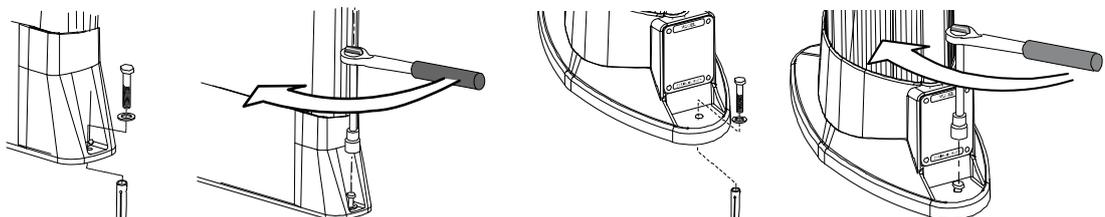
**NOTE**

If the floor cannot be drilled, use silicone adhesive. In any case, at the end of installation the MD must be stable and not subject to accidental movements or falls.

- For each anchor hole, drill a guide hole of  $\varnothing 6\text{mm}$ .
- Increase the diameter of each guide hole with a drill bit the right size for the plug to be used.



- Insert the plugs in the holes.
- Position the MD so that the anchoring holes correspond to the holes that have been drilled
- Anchor the archway to the ground by tightening the screws completely.



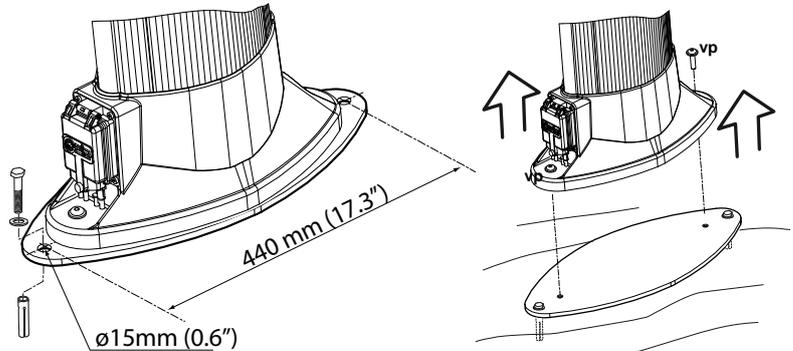
### 3.6.3 Anchoring with stabilizing plates



In case of removable applications, these plates maintain the archway stability and, acting as an adapter, allow the archway to be easily relocated. In order to prevent the archway from tipping over in case of bumps, the stable anchoring to the ground is anyway mandatory.

#### Metal version

- **Anchoring the plates to the floor**
  - Drill the holes according to the illustration
  - Anchor the plate to the floor using expansion plugs.



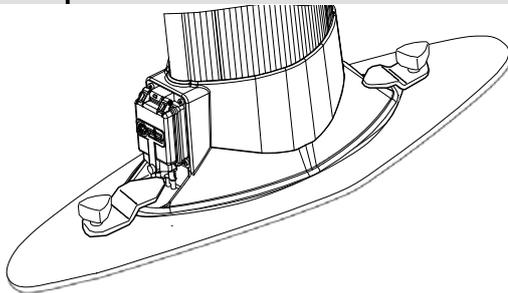
**REMARK: RELOCATION**

In case of repetitive relocations, we advise that the archway be detached from the plates, leaving them anchored to the ground for re-use. In fact, metal screws **vp** allow several assembly/disassembly operations with higher reliability with respect to the anchors

#### Plastic version (mobile use, especially suitable for uneven floor)



**WARNING!**  
User shall take all appropriate precautions to prevent the gate from tipping over due to bumps or mechanical exertion.



## 3.7 Personalisation

### 3.7.1 Settings check

If required by the specifications of the Security Authority change the programming setting to refine the operating mode. Enter programming as **Superuser**, entering the password if necessary. The factory settings is stated by the 'FAT' form supplied with the equipment.

### 3.7.2 Verification of the User Access Level

Enter the UP command Scroll all the functions by pressing ENTER. Check that the functions enabled by the UP command are exactly those listed in the FAT form. In the case of mismatch, change the value from Y (accessible) to N (excluded) or vice versa (by pressing UP key).

### 3.7.3 Protecting operational parameters by password

#### Definition of a password at user level

Enter programming at user level and define a new password by means of NP command as indicated by the authorised Security Representative.

#### Definition of a password at superuser level

Enter programming at superuser level and define a new password by means of NP command as indicated by the authorised Security Representative.

## 4 PROGRAMMING

### 4.1 Programming levels

Access to the programming phase may be controlled by a **password** or be unprotected. There are different programming levels:

**User level**, accessed by entering the 'user password':

- The terminal displays the '>' prompt; in local programming the display shows 'U' on the left:  

- The user can define his/her own password using the NP function..
- Only some of the functions are available to the user (these are selected by the super-user using the UP function). The user is usually the operator in charge for screening operations.

**Super-user level**, accessed by entering the 'super-user password':

- In remote programming, the terminal displays the '#' prompt; in local programming the display shows 'S' on the left: 
- The super-user can define his/her own password using the NP function.
- The super-user can also decide **which functions are available to the user** (function UP).
- The functions necessary to install and use in common applications are available to the super-user.



At each programming level, only the password relating to that same level can be modified.

**The equipment is usually delivered from CEIA with a password already set for super-user level, while user level access is unprotected.**

**We recommend changing the password immediately after installation and at intervals thereafter, to prevent access to programming by unauthorized persons.**

### 4.2 Time out

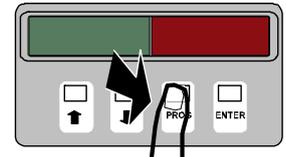
The programming session will be terminated automatically if no commands are entered for a period of **2 minutes**.

### 4.3 Local programming

Use the keypad on the inside panel of the control unit.

The  key is used to enter and exit the programming phase.

The  (increase) and  (decrease) keys are used to choose the function and select the data to enter; confirmation is via the  key.



#### 4.3.1 Access to the local programming phase using the password

Starting from normal operation, enter the password using the built-in keypad (local programming) or the terminal keyboard (remote programming).

- The password is made up of 6 letters or numbers.
- Press PROG  key: 6 dashes will appear on the display: -----  
The first dash flashes to indicate the position of the cursor.
- Insert the password by activating the UP  and DOWN  keys to select the characters and then pressing the ENTER  key to confirm.
- After entering the last character, the programming phase starts. If the password is not recognized, the password must be re-entered.



If a mistake is made, the display returns to the normal operation sign .

#### 4.3.2 Free access to local programming phase without password

To avoid having to use a password, the code '-----' (six dashes) must be assigned to the password. This can be done at both user and super-user level using the NP function. In this case, simply press the PROG  key and then the ENTER  key to access the programming phase, as the string of six dashes shown on the display corresponds to the password.



**ATTENTION!** If both levels (user and super-user) have free access, any subsequent programming request is at super-user level.

---

### 4.3.3 Command execution in local programming

---

The  (increase) and  (decrease) keys are used to choose the function and select the data to enter; confirmation is via the ENTER  key.

- **Executable commands.** Some functions are purely **commands** and do not have a value assigned to them. In this case the function is activated by pressing ENTER . Some commands also require confirmation before execution.
- **Read only parameters.** Other functions are parameters whose values are altered while the metal detector is in use (e.g. the alarm counter). In this case the current value can be read (**status request**) by pressing ENTER . To exit from the command press ENTER  once more.
- **Read/write parameters.** The remaining parameters can be both visualised and modified by the operator (the parameter can therefore function as a **status request** or as a **command**). The current value of the parameter is visualised on the display to the right of the function code. Any modification of the value is activated by pressing ENTER .

---

### 4.3.4 Exit from local programming

---

At the end of the session, press PROG  key.

---

## 4.4 Remote programming

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As well as from the keyboard, CEIA Metal Detectors can be programmed remotely from a PC station, so allowing direct access to each programming function.

---

### 4.4.1 Connections

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- **Serial communication:** focus on the **MD** upper/lower box used for the power supply connection; locate the serial port (labelled '**|O|O|**' or **PS/COM**'); connect the **PC COM** port to the MD serial port, placing the power supply and serial communication cables together, in order to avoid loops. **ATTENTION:** in order to avoid any damage to the PC's interface, make sure that the cable does not include a connection to pin 1 (use of CEIA connection cable code 54567 is highly recommended).
- **Communication through other types of connection:** Ethernet interface or Bluetooth™ interface, if available, can be used to connect the unit.

---

### 4.4.2 Access to the remote programming phase using the password

---

- After powering up the terminal and Metal Detector (wait the end of the initial warming up period), enter the password by means of the terminal keyboard (no echo of the typed characters is provided).
- If the password is recognised, the programming phase prompt will appear (> for user level, # for super-user level). Otherwise the password must be re-entered. After the 5<sup>th</sup> failed attempt to enter the password, the device will pause for 10 seconds to avoid any computerised search for the password by ill-intentioned persons.

---

### 4.4.4 Free access to remote programming phase without password

---

Simply press ENTER key to access the programming.

---

### 4.4.5 Command execution in remote programming

---

- Everything entered via the terminal keyboard will be displayed on the monitor.
- The delete key (BACKSPACE) can be used to correct any possible input errors.
- **The command will be executed once the carriage return key has been pressed (ENTER) .**
- The syntax for the commands is strict. If any non-valid syntax is entered, an error message will be sent by the device. Either upper or lower case characters can be used to enter commands.

---

### 4.4.6 Exit from remote programming

---

At the end of the session, enter the PE command (Programming End, see below).

## 4.5 Description of the commands



To see the standard values and the full list of the commands available at user level see the Factory Acceptance Test report (\* : enabled command).  
The reception signal parameters determine for the most part the Metal Detector's detection capability (just consider the sensitivity adjustment). If any variation is to be implemented, it must be checked for compatibility with security specifications.

### 4.5.1 Summary of the parameters according to their function

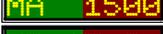
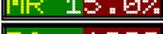
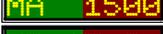
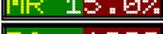
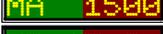
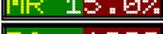
Installation parameters ..... CH, IS, LD, NP, OTS, PE  
 Detection capability parameters ..... LD, LC, SE, SENT  
 Audio alarm indication parameters ..... AD, AT, AV, MV  
 Visual alarm indication parameters ..... AD, MTI  
 Zone alarm indication parameters ..... LBI, ZL  
 Random alarm parameters ..... AP, RAT, RAV  
 Statistics parameters ..... AC, CR  
 Access to controls parameters ..... NP, UP  
 Communications parameters ..... BTE, NETV, WIE  
 Service & Troubleshooting parameters .... AVS, EN, EVA, SC, CH, OTS  
 Periodic performance test parameters ..... OFV  
 Information parameters ..... WHO, HE, PT

### 4.5.2 Description of the commands



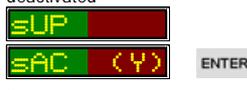
T (Type): C= command R= status request

**NOTE** Functions available in remote mode only. All functions are available both in local mode and in remote mode, with the exception of commands HE, PE, PT, WHO which can be executed in remote mode only.

Code	Meaning	Range	T	Description																																																	
AC	Number of alarms detected	0-9999999	R	<p><i>Equipment fitted with photocells only. Only inbound transits</i></p> <p>Number of alarms detected</p> <p>In local programming the values are scrolled by pressing the UP arrow key .</p> <table border="0"> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>number of passages through the antenna</td> </tr> <tr> <td></td> <td></td> <td>the total number of passages with alarm</td> </tr> <tr> <td></td> <td></td> <td>the alarms/passages ratio as a percentage</td> </tr> <tr> <td></td> <td></td> <td>number of passages with alarm due to a metal mass</td> </tr> <tr> <td></td> <td></td> <td>metal alarms/passages ratio</td> </tr> <tr> <td></td> <td></td> <td>number of passages with random alarm</td> </tr> <tr> <td></td> <td></td> <td>random alarms/passages ratio</td> </tr> </table> <p>Example of remote-mode display, setting AP= 10 (10%):</p> <table border="0"> <tr> <td>AC</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>TOTAL</td> <td>METAL</td> <td>RANDOM</td> <td></td> </tr> <tr> <td>P</td> <td>10000</td> <td>10000</td> <td>10000</td> <td>number of passages</td> </tr> <tr> <td>A</td> <td>2350</td> <td>1500</td> <td>1000</td> <td>number of alarms</td> </tr> <tr> <td>R.R</td> <td>23.5</td> <td>15.0</td> <td>10.0</td> <td>percentages</td> </tr> </table> <p>NOTE: MA, MR, RA, RR and RANDOM column are not provided if AP=0. See also: AP, CR.</p>						number of passages through the antenna			the total number of passages with alarm			the alarms/passages ratio as a percentage			number of passages with alarm due to a metal mass			metal alarms/passages ratio			number of passages with random alarm			random alarms/passages ratio	AC						TOTAL	METAL	RANDOM		P	10000	10000	10000	number of passages	A	2350	1500	1000	number of alarms	R.R	23.5	15.0	10.0	percentages
																																																					
		number of passages through the antenna																																																			
		the total number of passages with alarm																																																			
		the alarms/passages ratio as a percentage																																																			
		number of passages with alarm due to a metal mass																																																			
		metal alarms/passages ratio																																																			
		number of passages with random alarm																																																			
		random alarms/passages ratio																																																			
AC																																																					
	TOTAL	METAL	RANDOM																																																		
P	10000	10000	10000	number of passages																																																	
A	2350	1500	1000	number of alarms																																																	
R.R	23.5	15.0	10.0	percentages																																																	
AD	Alarm duration	0-5	C, R	<p>It selects the alarm duration, in seconds, using two different ranges.</p> <p>in this case the display provides the same indications as for Proportional Alarm Indication:</p> <table border="0"> <tr> <td>0</td> <td>reset time = 0.3s</td> </tr> <tr> <td>1, 2, 3, 4 and 5</td> <td>reset time = 1s, 2s, 3s, 4s and 5s</td> </tr> </table>	0	reset time = 0.3s	1, 2, 3, 4 and 5	reset time = 1s, 2s, 3s, 4s and 5s																																													
0	reset time = 0.3s																																																				
1, 2, 3, 4 and 5	reset time = 1s, 2s, 3s, 4s and 5s																																																				
AP	Probability of random alarm for inbound transits	0-100 (%)	C R	<p><i>Equipment fitted with photocells only.</i></p> <p>Selects the probability of random alarms (in percentage), for transits along the inbound direction (defined by the GD parameter).</p> <p>See also GD parameter.</p>																																																	
AT	Metal Mass Alarm tone	0-44	C R	<p>This parameter sets the tone of the metal alarm sound.</p> <p>During local programming, the device provides an audible signal using the selected tone.</p>																																																	
AV	Metal Mass Alarm volume	0-9	C R	<p>This parameter sets the volume of the alarm sound:</p> <p>0 (disconnected alarm) 9 (maximum volume).</p> <p>During local programming, the device provides an audible signal using the selected sound.</p>																																																	
AVS	Anti-vibration System	NO, YES	C R	<p>It enables/disables the embedded Anti-Vibration System. This system compensates the environmental mechanical vibrations acquired using the EVA command (see below).</p>																																																	

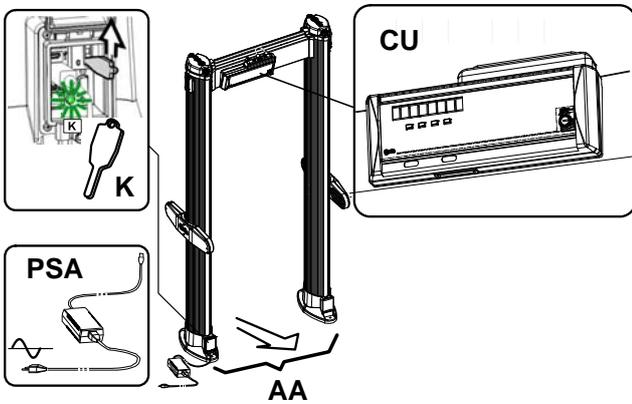
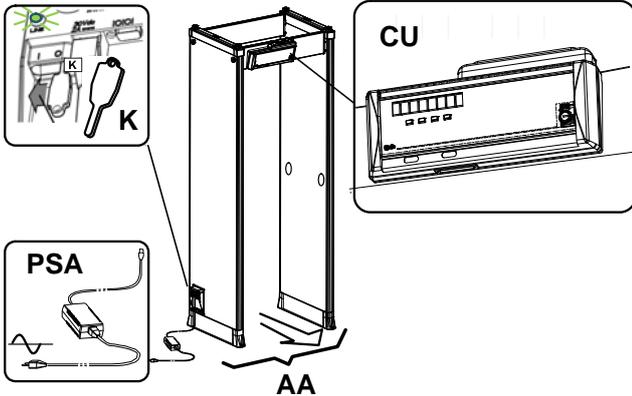
Code	Meaning	Range	T	Description
				See also the acquisition procedure described in the 'Maintenance' section.
BTE	BlueTooth Enabling	NO, YES	C R	BLUETOOTH™ Enabling. NO the BLUETOOTH™ interface is disabled. YES the BLUETOOTH™ interface is enabled: the detector can communicate with a PC equipped with a compatible interface.
CH	Transmission channel	0 - 99	C R	Transmission channel. Select a proper channel to synchronize a multiple installation or to reject environmental electrical interference. 0 - 49 for 50Hz power supply. 50 - 99 for 60Hz power supply.
CR	Alarm counter reset	-	C	<i>Equipment fitted with photocells only.</i> Alarm counter reset. This command requests confirmation. NOTE: there are two counters, one at operator level and one at supervisor level: only the counter at the current level of programming is reset.
EN	Environmental electromagnetic noise measurement	NO, YES	C	Displays the value of the electromagnetic environmental noise. This function is activated by pressing the ENTER key: the numeric values will then appear on the right, from 0 to 99, continually updated. To end measurement, press any key.  NOTE: if both GN and EN functions are activated, function EN has priority. NOTE: the function is terminated automatically after 2 minutes.
EVA	Environmental vibration acquisition	-	C	It activates the procedure for acquiring the environmental mechanical vibrations; this procedure is described in detail in the 'Maintenance' section.  See also the AVS parameter.
HE	HELP	-	R	<i>Function available in remote mode only.</i> This selects a display of the meaning of the available programming functions. The read-out will give the correspondence table (function – function code). The * character indicates that the command is enabled at user level (see the UP command).
IP	IP Address	xxx.xxx.xxx.xxx	R	<i>Command available only if a network adapter APSIM is installed.</i> Read only function. Current IP address of the WTMD. It is displayed in two steps. Ex.: IP address 192.168.0.101: IP 192.168 .0.101
IS	International Security Standard	1-30	C R	Selects a security level corresponding to an international standard. During normal operation the current Security Level is displayed by pressing the  key.  NOTE: in remote programming, an IS status request provides the complete list of available settings and the current value. Example: #IS <enter> NILECJ1 NILECJ2 : : CURRENT SETTING: NILECJ2  NOTE: If the selected setting has been modified affecting detection capability, an additional 'MODIFIED' indication appears. If the current setting does not correspond to any Security levels pre-memorised in factory, a 'NO SET' message is provided. If an LD user-defined setting is selected, a previous IS setting is disabled. This also is signalled through the message 'NO SET':  The available Security Levels are listed in detail in the 'Factory Acceptance Test Report' form included.
LBI	Alarm indication enabling at the entry side LED bar	ON OFF	C R	Alarm indication enabling at the entry side LED bar. ON the entry side LED bar provides an indication in case of an alarm OFF the entry side LED bar does not provide an indication in case of an alarm.  NOTE: the entry and exit sides of the archway are defined by the GD parameter.
LC	Uniformity coefficient of the electromagnetic field emitted by the antenna - ground level	-20,...,-1, 0, 1,...,20	C R	Uniformity coefficient of the electromagnetic field emitted by the antenna at ground level. It allows the sensitivity equalization, due to metal reinforcement bars located inside the floor  -20 maximum field attenuation 0 no change (standard) +20 maximum field increment  This command is available on certain probe models only.
LD	Loading user-defined settings	0-19	C R	Loading of a setting predefined according to the customer's requirements. Besides the IS settings, which are compliant to security international standards, the LD settings can be used to select special operating modes specified by the customer.  NOTE: in remote programming, an LD status request provides the complete list of the available settings and the current name. Example: #LD 0<enter> <i>selection of LD=0 setting</i> #LD <enter>

Code	Meaning	Range	T	Description
				0       SETTING0 1       SETTING1 2       ----- : 19      -----   CURRENT SETTING: SETTING1  NOTES If the selected setting has been modified affecting detection capability, an additional 'MODIFIED' indication appears. If the current setting does not correspond to any LD setting, a 'NO SET' message is provided. If an IS factory-defined setting is selected, a previous LD setting is disabled. This also is signalled through the message 'NO SET'. Upon customer's request some LD sets can be factory preprogrammed.
MTI	Metal Type Indication	NO, YES	C R	This parameter enables or disables the Metal Type Indication (Met-Identity). NO     the alarm message is normal . YES    in addition to the alarm message, the equipment can provide, on the display, the type of metal detected. <b>Ferr</b> ferrous metal; <b>NoFe</b> diamagnetic metal
MV	Minimum alarm volume	0-9	C R	This determines the minimum value of the AV and RAV parameters. 0 (disconnected alarm) 9 (maximum volume).
NETV	Network Visibility	NO, YES	C R	<i>Command available only if a network adapter APSIM is installed.</i> This parameter enables/disables the access to the equipment via an Internet browser. The factory default setting is YES. Once completed the network configuration this parameter can be set NO, to prevent unauthorized access to the unit via web. In this condition, the function must be adjusted via local programming, if necessary. NOTE: when NETV is set to NO, the unit management through the NetID System Applications is still available.
NP	New password	XXXXXX  X = any alpha-numeric character	C	This selects a new password to allow access the programming phase. The password must be made up of 6 characters (either upper or lower case). The password is displayed to facilitate entry. Once the new password has been entered, it will be effective immediately. ATTENTION! For security reasons, once a password has been entered it will no longer be possible to read it. Should the access code be forgotten, assistance will be required from C.E.I.A. personnel.
OFV	Functionality check at operator level	-	C	Activates the OFV test. For details of the procedure see the instructions included in the OFV kit.
OTS	One-Touch Self-Installation	-	C	This command starts the self-installation wizard. The self-installation procedure consists of a sequence of tests and adjustments, regarding the following aspects: operation of the signalling devices; relevant electrical parameters; archway configuration; and the electromagnetic compatibility with the installation site.
PE	Programming end	-	C	<i>Function available in remote mode only.</i> This command ends programming. It will be executed automatically if no commands are entered for a period of 2 minutes.
PT	Parameter table	-	R	<i>Function available in remote mode only.</i> Displays the values of the operating parameters. The serial number of the device appears at the top. The character * indicates that the command is enabled at user level (see command UP).
PV	Firmware version	-	R	Firmware version.
RAT	Random-Alarm tone	0-44	C R	<i>Equipment fitted with photocells only.</i> It selects the type of acoustic alarm: - continuous sounds - sweep sounds - pulsed sounds - multi-tone sounds During local programming, the device provides an audible signal using the selected sound.
RAV	Random-Alarm volume	0-9	C R	<i>Equipment fitted with photocells only.</i> Random-Alarm volume. 0 (disconnected alarm) 9 (maximum volume) During local programming, the device provides an audible signal using the selected sound.
SC	Self-diagnosis	-	R	<i>Function available in remote mode only.</i> Displays the status of the Metal Detector: SC OK               device operating properly SC BATT           battery operation SC GATE           antenna fault SC RX ERR        faulty reception section STB               equipment in Stand-by mode PHOTERR         photocells malfunction PASSVIOL         incorrect transit DETEVIOL         transit with not ready detector  If one of the device's components is faulty, a message will be displayed (in descending order of priority). For more details see the "Maintenance" section.  N.B.: The self-diagnosis device is permanently active, and any indication of malfunction is given automatically on the display.

Code	Meaning	Range	T	Description
SE	Sensitivity of the Metal Detector	-100 .. 0..99	C R	Selection of the Metal Detector Sensitivity : -100: minimum sensitivity, detection of large metal masses 99: maximum sensitivity, detection of small metal masses
SENT	Sensitivity of the Metal Detector without transit	0...100	C R	<i>Function available with photocells option only.</i>  Percentage of the sensitivity threshold applied when no transit is in progress.
SN	Serial number	-	R	Serial number of the equipment.
UP	Selects the commands that can be accessed by the user	Y,N	C	<p><i>Command not accessible at user level.</i></p> <p>Selects the commands that can be accessed by the user. The command codes will be displayed followed by an indication in brackets of the current status: (Y) = activated, (N) = deactivated</p>  <p>::</p> <p><i>Local programming</i></p> <p>The status of each command is changed by pressing the  or  keys. If you do not wish to change the state of the command you need only press  and the display will scroll to show the following command. Press the  key to interrupt the selection procedure</p> <p><i>Remote programming</i></p> <p>The state of each command is changed by entering the opposite value to the current one to the right of the # character. If the user does not wish to change the command state, he/she can simply press ENTER, and the cursor will move on to the following command. Press '.' to interrupt the selection procedure.</p>
WHO	Who am I?	U S	R	<p><i>Function available in remote mode only.</i></p> <p>This function reports the current access level when programming through MDScope utility.</p> <p>U user level S super-user level</p>
WIE	WiFi Enabling	NO, ADHC, CLNT, AP	C R	<p><i>Command available only if a network adapter APSIM with wireless capability is installed.</i></p> <p>NO the WiFi interface is disabled. ADHC the WiFi interface is enabled: the unit is set to operate in a 'ad hoc' network (only for service operations). CLNT the WiFi interface is enabled: the unit is set to operate as a CLIENT and requires an access point available. AP the WiFi interface is enabled: the unit is set to operate as an ACCESS POINT itself.</p>
ZL	Lateral zone	NO, YES	C R	<p><i>Function not available in very high sensitivity models.</i></p> <p>This parameter enables or disables the horizontal zone alarm indication: NO (the horizontal zone alarm indication is disabled. The vertical zone indication is supplied using both exit light bars): YES (the horizontal zone alarm indication is enabled).</p>

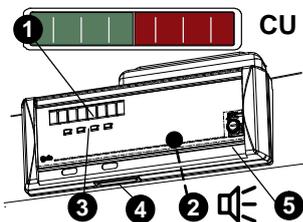
**5 USE**

**5.1 DESCRIPTION**



**CU Control Unit**

- ❶ **display**: it is divided into two parts, a green section and a red section;
- ❷ **alarm sounder**;
- ❸ **keypad**;
- ❹ **chip card reader**;
- ❺ **front panel security lock**



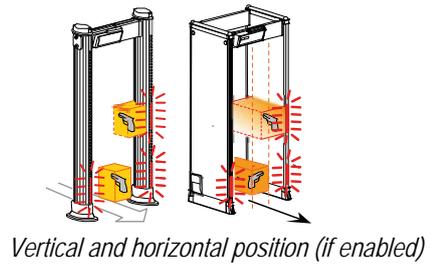
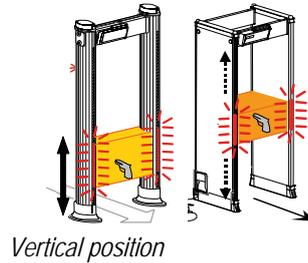
**AA Archway Antenna**

**Ph** photocells for transit counting

**APSM** lower connection module

- ❸, ❹ **power indicator** ;
- ❸ **entry pacing lights** (entry side): GREEN: transit allowed; RED: busy, transit not allowed;
- ❹ **zone alarm indication** (exit side): in case of alarm, a group of LEDs lights up to

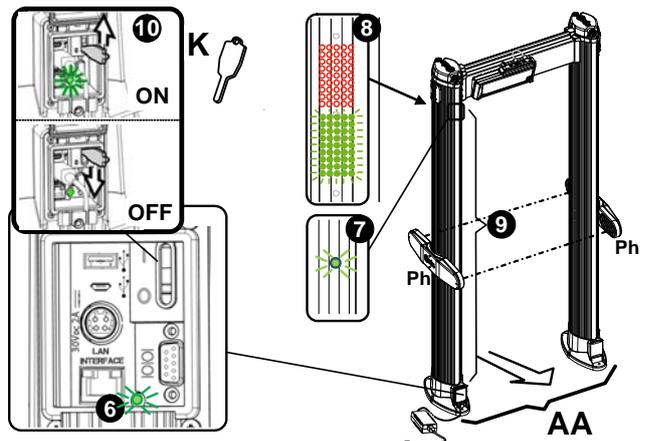
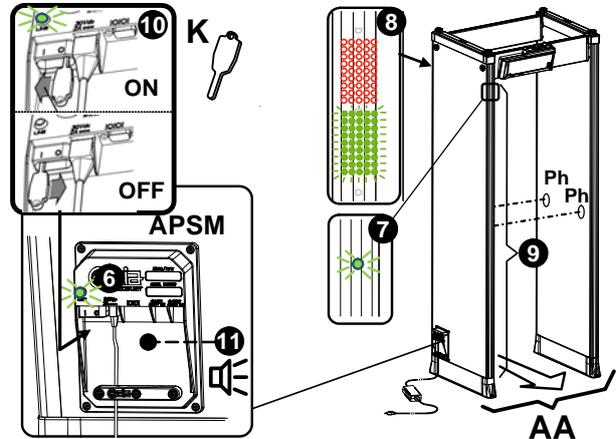
pinpoint the position of the detected object(s);



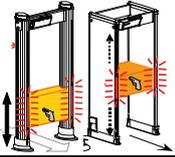
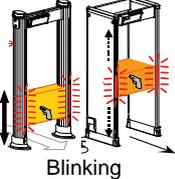
- ❿ ON/OFF switch
- ⓫ **low battery indicator** (if battery is installed).

**PSA** AC/DC Power Supply Adapter

**K** ON/OFF key



## 5.2 SIGNALS

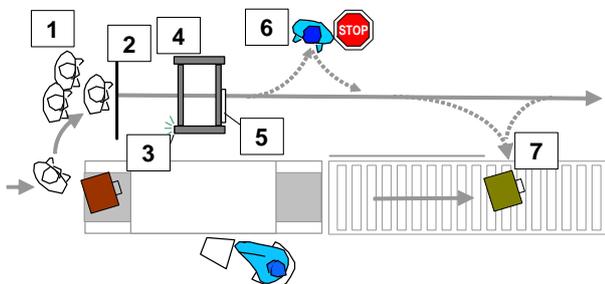
	Display ①	Sounder ②	Luminous bar ③
READY		off	OFF
Transit with NO ALARM	  	off	OFF
Transit with ALARM	   	ON	
Large metal mass		ON pulsed	
Random Alarm		ON	OFF

Other Alarm indications. Metal Type Indication:  
**Ferr**: ferrous metal; **NoFe**: non-ferrous metal.

**NOTE:** signals may be different according to the equipment setting.

## 5.3 OPERATION

### 5.3.3 Transit management



- 1: Line of people waiting to be inspected
- 2: Waiting line
- 3: Entry pacing lights
- 4: Metal Detector archway
- 5: Metal Detector control unit
- 6: Screener
- 7: Luggage recovery area

*Installation with an X-ray unit*

- **As part of the normal screening process, people are required to perform a complete passage through the archway.**
- Instruct the people to deposit their **hand-luggage, bags, coats, cellular phones, cameras, calculators and spectacle cases** on the X-ray conveyor belt or in special containers, maintaining a distance of at least one meter from the Walk-Through Metal Detector archway.
- **Allow only one person at a time to walk through the unit.** During a transit the red entry

pacing light indicates to people standing in front of the archway they must wait until it becomes free again.

- **If the alarm of the Walk-Through Metal Detector is not activated, no further search is required.**
- On the contrary, **an alarm state upon a person's transit**, which is the result of metal objects carried by that person that are above the alarm threshold, requires further action in order to clear the cause(s) of the alarm. This secondary screening, which may also make use of other different devices such as Shoe Analyzers, Hand Held Metal Detectors or other WTMD, shall be performed according to local Security Authority procedures taking into account that:
  - The indication given through light bars that illuminate where the presence of an object is detected is solely meant to help screeners establish the cause of an alarm and not as determiner of the number of objects in transit. For example, the removal of an object pinpointed by a light at waist level cannot exclude the presence of another object placed nearby.
  - In fact, the presence of multiple objects above the threshold limit which are carried by any person can only be excluded through a final transit to be performed through the WTMD without alarm condition or through appropriate secondary search procedures.



**NOTE** When the equipment is not used for a prolonged period, switch it off and protect it with the accessory cover code 64395 (Elliptic model only).

### 5.3.4 Sources of interference

- The Walk-Through Metal Detector creates a magnetic field which extends inside and around the archway. Because of this, the unit is sensitive not only to metal masses carried by people in transit, but also to masses of metal which may be located in close proximity and are subject to movements. During operation, make sure that:
  - Large movable metal objects such as baggage carts or wheelchairs are kept one meter (three feet) away from the archway.
  - Other large metal structure such as control barriers that are meant to be stable during operation, do not provoke alarm signals.
  - Do not allow waiting people to come closer than one meter (three feet) from the entrance of the unit.
- Ensure that only one person enters the unit at a time.
- Do not allow the Walk-Through Metal Detector to be used as an unattended public walk-through access.
- Instruct the people to walk through the center of the archway so that they do not bump into the

structure. Prevent any impact with the archway, in order to avoid possible false alarms.

- Do not move the Walk-Through Metal Detector unit.

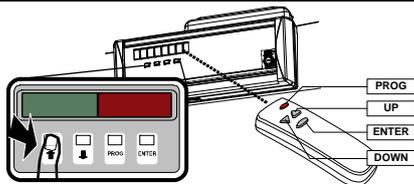
### 5.3.5 Calibration

The equipment is calibrated under close supervision of the Security Authority according to the Security Levels in use. This calibration is approved by a Security Authority representative, which is sole responsible for selecting the appropriate security level/sensitivity for its application. It is also the Security Authority representative's responsibility (or the screener in charge, if allowed by the Security Authority requirements) to verify calibration periodically (at least daily) using the test object(s) appropriate to the level of security selected, to insure no changes have occurred in the equipment.

The execution of the test and its result shall be recorded. In case of a negative result, the equipment should not be used.

**REMARK:** the current security level is shown at start-up on the control unit display and can be visualized at any moment, by pressing  key.

## 5.4 Keypad /IR Remote Control



IR Remote Control is an accessory.

### 5.4.1 Status reading

-  Display the current security level (**IS**) and the transit counters (inward transits **CI**, outward transits **CO**).
-  Test of audio and visual alarm signals.

### 5.4.2 Programming

Enter/exit the programming mode.

-  Increase a value or scroll up a list.
-  Decrease a value or scroll down a list.
-  Confirm a selection or execute a command.

#### 5.4.2.1 Example of programming procedure

##### Alarm Volume / Alarm Tone adjustment

- Press the PROG key to enter the programming phase.
- Six dashes will appear on the display (password prompt).
- Enter the password (up to 6 letters or numbers). Insert each character of the password by pressing the arrow keys to select it and then pressing the ENTER key to confirm. Note: each confirmed character is replaced by a star ('\*').

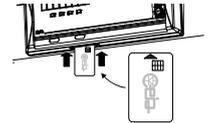
**NOTE** If no password has been defined, simply press the ENTER key and go to the next step.

- The programming phase starts: the last used command will appear.
- Press the arrow keys to select the AV (Alarm Volume) or AT (Alarm Tone) function, if a different one is displayed.

- Press the ENTER key to change the AV setting: the acoustic alarm is activated.
- Press the arrow keys to change the current value.
- Press the ENTER key to confirm the new value.
- Press the PROG key to exit from the programming phase.

### 5.4.3 Chip card

Each chip card executes a single command/selection.



**Command:** insert the chip card until it is recognized (a message appears on the display), then remove it.

**Selection:** insert the chip card and remove it at the proper selection.

#### List of the main available chip cards:

Command	Function	Code
AV	Alarm volume	3538
AT	Alarm Tone	3539
AC	Alarm counter	3540
CR	Counter reset	17866
OFV	OFV procedure	26952
TFV	TFV procedure	26953
FGA	FGA procedure	26954
CC	Setting backup	57074

**REMARK:** when the chip card is inserted, the unit is not operating: do not use the chip card during the screening procedures!

**NOTE:** Control unit in metal case: keep closed the slot when not in use.



## 5.5 Battery Operation

### Panel models only

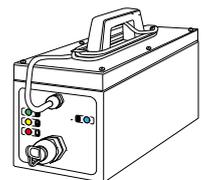
Two embedded battery set are available on request:

- **0.8 Ah:** built-into APSM Connection Box; operating time: 30 minutes, depending on the configuration;
- **9.0 Ah:** installed on the cross-bar; operating time: 5 hours, depending on the configuration.

Emergency batteries switch in automatically (message  **B**) in the event of a mains failure. APSM sounder  is activated when battery is completely discharged. The batteries recharge automatically when the metal detector is switched on.

### Either Panel or Column models: external battery pack MBSU-2

This accessory is a portable device for providing power to Metal Detectors in outdoor applications or when AC line can be unavailable. It allows 8 hours of independent operation when mains power is not available (depending on the configuration). Recharging takes place automatically when mains voltage is present.



**REMARK** Observe the recommendations of the instructions for use provided with the unit. if not used for an extended period of time. In particular, perform a complete recharge cycle every two months.

## 5.6 How to Access the Web Server

The optional Ethernet interface provides some Web Server & Logger features available via a generic internet browser such as statistical data of transits and real time status of each device networked.

### Procedure

- **Access using CEIA Device Discovery utility.**
  - Download the **CEIA Device Discovery** utility (a .zip file) at the address [www.ceia.net/swdownload](http://www.ceia.net/swdownload) entering the following data:  
program name: **CeiaDeviceDiscovery**, password (case sensitive): **9iok4ed**
  - Extract the application contained in the .zip file to the desktop.
  - No installation procedure is required: simply run the application **CeiaDeviceDiscovery.exe**.
  - Select the device within the list provided: the home page of the device web server will appear.
- **Alternative access method**
  - If CEIA Device Discovery utility is not available, type the Metal Detector IP address (default: 192.168.0.1) or its hostname, in DHCP mode only (default: 'CEIA-<serial number>') in the URL field.
- **Login.** A login box appears, reporting the Metal Detector name and the Network Hostname of the device. Enter a valid programming password of the WTMD.
- Press **SEND** to submit the password: the device status is acquired and a summary window reporting the Metal Detector name and the device status appears.
- The menu of the available functions is displayed on the left. Press 'Help' for detailed information.

## 5.7 Self-diagnosis messages

RX ERR GATE Rx GATE Tx x: 1,2,...	<b>Fault:</b> discontinue equipment use and contact a technician.
WAIT	<b>Temporary adjustment phase:</b> wait for normal functioning indication.
MAINS ER or B	<b>Emergency battery operation:</b> reconnect to the mains power supply as soon as possible.
 Display OFF	<b>Power supply absent:</b> reconnect to the mains power supply.
PHOT ERR	<b>Dirty photocells:</b> clean the photocells with a non-abrasive cloth. <b>Prolonged photocell activation:</b> free the photocell beam. <b>Fault in the photocells:</b> contact a technician.
PASSVIOL	<b>Transit of a person through the gate along a prohibited direction:</b> verify the reason of the transit.
PASSINVA	Wrong chip card password.
DATAERRO	Replace the chip card. Do not extract the card until the message 'REMOVE' appears on the display.
WRONVERS CARD INVA CARDUNRE	Use a compatible chip card.

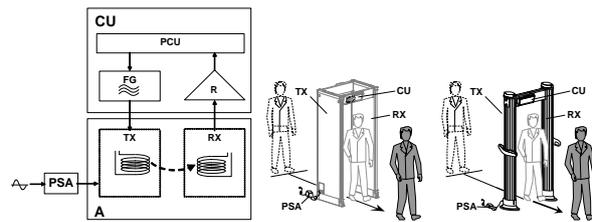
<b>LOADING</b>	Metal detector busy during data transfer from a chip card: wait.
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## 5.8 NIJ Standard required information

### Operating principle

A **Metal Detector** is a unit that reacts to the metal masses present on people in transit. The Metal Detector comprises:

- a **control unit CU**, made up of :
  - a variable magnetic **field generator FG**
  - a **receiver R**
  - a **processing and control unit PCU**, which determines if the variation of the received signal is due to metal masses in transit of a certain shape, volume or composition
- a **transceiver antenna A** in the form of an archway, made up of :
  - a transmitter part **TX**
  - a receiver part **RX**
- a **power supply adapter (PSA)**



Block diagram of a metal detector

As part of the normal screening process, people are required to walk through the detector archway. A complete analysis requires a complete passage through the archway.

The equipment is calibrated by maintenance technicians according to the Security Responsible Authority requirements: therefore, an alarm is given (by means of various signals) if a person walks through the unit carrying more metal than the standard amount specified by the Security Responsible Authority.

Normal quantities of keys, coins, belt buckles and other personal objects are discriminated and do not give any alarm.

Furthermore, the Metal Detector could also give an alarm signal if people walk through carrying other sizeable metallic objects, such as cellular phones, multimedia players.

### Summary of the Operating Features

#### GENERAL FEATURES

- 20 High Precision localization zones
- Chip Card capability for fast, simple, and secure programming
- Random alarm capability programmable from 0% to 100%
- Continuous self-diagnostic system
- No periodic re-calibration and preventive maintenance required
- Access to the front panel protected by hardware key and two levels of passwords

#### ALARM SIGNALLING

**Alarm visual signals** Multi-zone archway LED bar for 'height on person' localization; light bars with selectable entry/exit and pacing indication  
Green and red metering signals proportional to the mass of the detected target

**Audio signals** 10 selectable continuous and pulsed tone plus 34 special tones; 10 selectable sound intensities ranging from 0 to 90 dBa at 1m

#### TYPE OF SIGNALLING

**Visual** Fixed or proportional to the mass in transit - visible from 6m under lighting of 4000lux

**Visual zone indication** 2, 4, 8 or 20 independent zones selectable

#### PROGRAMMING

Local Programming by Control Unit alphanumeric display and keyboard  
Programming and chip card access protected by user and super-user passwords.

### Detector capabilities

The walk-through metal detector is calibrated in order to detect, on people in transit, metallic objects according to the following classification:

#### Object Size Classes

- NIJ 0601.02 Standard • Large Object Size
- NIJ 0601.02 Standard • Medium Object Size
- NIJ 0601.02 Standard • Small Object Size
- Loss Prevention in industrial/general purpose application.
- Other samples as required by the customer.

If the detector is calibrated to the Large Size Object class normal quantities of keys, coins, belt buckles and other personal objects are discriminated and do not give any alarm. Furthermore, the walk-through metal detector could also give an alarm signal if people walk through carrying other sizeable metallic objects, such as cellular phones, players, pagers or other noticeable objects.

## 6 MAINTENANCE

### 6.1 Suggested Maintenance Schedule

Operation	Tools required	Execution		Period
		Operator	Technician	
General cleaning.	A slightly moist, non-abrasive cloth.	•		4 months
Visual check that all components of the metal detector are undamaged.	-	•		4 months
Visual inspection of connectors and power supply cables.	-		•	4 months
Floor anchoring inspection: ensure that the archway is firmly anchored to the floor. *	-		•	4 months
Cross-bars inspection: ensure that the cross-bar screws are properly tightened.	Supplied Allen Key N°8		•	4 months
Control unit inspection: ensure that the mounting screws are properly tightened.	Supplied Allen Key N°5.		•	4 months
Verification of the visual indicators.	-	•		<ul style="list-style-type: none"> <li>• Daily (mandatory)</li> <li>• At shift changes</li> <li>• In case of doubt of proper operation</li> </ul>
Operator-level functionality test.	OFV kit or Test piece specified by the Security Standard in use.	•		<ul style="list-style-type: none"> <li>• Daily (mandatory)</li> <li>• At shift changes</li> <li>• In case of doubt of proper operation</li> </ul>
Technical-level functionality test.	TFV&FGA kit.		•	6-12 months
Verification of the calibration. Re-certification of the calibration	Test piece specified by the Security Standard in use.		•	12 months (mandatory)
Battery replacement.	Supplied Allen Key N°5 2 batteries.		•	Recommended: 3 years (maximum: 5 years)

### 6.2 Diagnosis

#### Generic Messages

Display Message	Sounder	Possible cause	Recommended action
FAULT RX ERR		fault in the receiving section.	<ul style="list-style-type: none"> <li>• Check the choice of transmission channel (function CH) if more than one metal detector is installed (see related para. in 'Installation' section).</li> <li>• replace the control unit .</li> </ul>
FAULT GATE rx  FAULT GATE tx  x : 1, 2, ...		connecting cable damaged or disconnected.	<ul style="list-style-type: none"> <li>• check the connections between control unit and antenna (GATE rx: check the RX antenna; GATE tx: check the TX antenna).</li> <li>• check that no nails or screws have been driven into the antennas without prior consultation with the technical department</li> <li>• replace the connecting cable.</li> </ul>
		Damaged control unit.	Replace the control unit.
		Damaged antenna.	Replace the antenna.
PROG	-	Loading of data via the LD or IS commands from an unprogrammed memory cell.	Use a pre-programmed memory cell.
WAIT		Metal detector not operative.	Temporary adjustment phase following to the modification of either the receiving or the transmitting parameters (e.g.: channel 'CH'): wait for normal functioning indication.

Display Message	Sounder	Possible cause	Recommended action
WAIT		Metal detector busy.	Message given during functionality tests or adjustment of gain: wait.
MAINS ER		Mains voltage absent.	Reconnect to the mains power supply.
B	-	Mains voltage absent.	Reconnect to the mains power supply.
off		Mains voltage absent and emergency batteries discharged.	Reconnect the mains power supply. Verify the batteries.
off LINE light on	-	System in stand-by mode.	Turn on the unit by using the MDO command.
QFV FAIL TFV FAIL FGA FAIL		Failure of functionality tests or adjustment of gain at ground level.	Message given during functionality tests or adjustment of gain: repeat the test correctly.
QFV NOIS TFV NOIS FGA NOIS		Excessive electromagnetic noise.	Message given during functionality tests or adjustment of gain: remove the source of interference.
REP		Sample transit was wrong or did not happen.	Message given during functionality tests: repeat the transit.
PHOT ERR	pulsed	Dirty photocells.	Clean the photocells with a non-abrasive cloth.
		Fault in the photocells.	One or more photocells are always active: identify it/them by means of the OTS procedure (if applicable) and replace it/them.
		Wrong photocell connection.	Check photocells connections.
DETEVIOL		A person attempts to pass through the detector when it is not in the ready state.	Manage the incorrect transit as required by the security specifications.
PASSVIOL		Transit of a person through the gate along a prohibited direction.	Verify the reason of the transit. Refer to the ATD function.

**Messages related to the Chip Card use**



When a self-diagnosis message appears using a chip card, try at first to perform again the operation completely and correctly. If the self-diagnosis message appears again, carry out the recommended action listed in the following table.

Display Message	Possible cause	Recommended action
PASSINVA	Chip card with wrong password.	Set the correct chip card password (see CP command).
DATAERRO	Defective chip card.	Replace the chip card.
	Chip card removed from reader too soon.	Do not extract the card until the message 'REMOVE' appears on the display.
WRONVERS	Chip card not compatible with the software configuration of the metal detector.	Use a compatible chip card.
CARDINVA	Chip card not compatible with the software-hardware configuration of the metal detector or blank chip card.	Use a compatible chip card.
	Fault in the chip card reader.	Replace the control unit.
CARDUNRE	Blank chip card.	Use a compatible chip card.
	Fault in the chip card reader.	Replace the control unit.
LOADING	Metal detector busy during data transfer from a chip card.	Wait completion of the process.

**6.3 Troubleshooting**

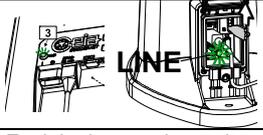


Before analysing possible faults, please check:

- that the connectors are properly connected
- that the operating parameters have the correct values (see the test check-sheet included at the end of the manual).

There follow some indications regarding possible causes of malfunction and check procedures to be carried out in order to restore the metal detector to its correct operational status.

Fault/Symptom	Possible cause	Recommended action
Alarm signalling or high noise level (>  ) without transit of a metal mass.	Environmental compatibility problem.	Verify the compatibility of the installation (see "Preliminary layout inspection and positioning").
Display off.	Control unit fault.	• Check all the power connections (mains cable, control unit - TX antenna connecting cable) .

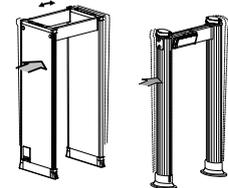
Fault/Symptom	Possible cause	Recommended action
		<ul style="list-style-type: none"> <li>• If the power supply voltage is present at the control unit, replace the control unit.</li> <li>• If the LED power indicator lights up only when the control unit is disconnected, replace the control unit.</li> </ul>
	Fault in the supply section.  IOP card	<ul style="list-style-type: none"> <li>• Check all the power connections (mains cable, control unit - TX antenna connecting cable) .</li> <li>• Check that the LED LINE on the lower connection module is on.</li> <li>• If the LED LINE is off, replace the external PSA power adapter.</li> <li>• If the LED LINE is on, replace the internal card of the lower connection module .</li> </ul>
Model with emergency batteries	Flat batteries.	Connect the equipment to the mains supply and recharge the batteries.
Display off	Malfunction of IOP card.	<ul style="list-style-type: none"> <li>• Check the battery voltages. Replace damaged batteries.</li> <li>• Replace the internal card of the lower connection module .</li> </ul>
	System in stand-by mode (if supported).	Turn on the unit by using the MDO command (if supported).
Model with photocells: no passage detection.	malfunction of the photocells.	<ul style="list-style-type: none"> <li>• Wrong programming of GD function: repeat OTS procedure.</li> <li>• Dirty or defective photocell: check with the OTS procedure. If necessary, replace it.</li> </ul>
During OTS procedure: ENA coverage <100% EN readout > 3	Excessive environmental electrical noise.	Run ENA step of OTS procedure after each one of the following countermeasures: <ul style="list-style-type: none"> <li>• Carry out a corrective action on any possible interference source around the MD (see 'Preliminary Layout Inspection and Positioning' section).</li> <li>• Change working channel CH, if applicable.</li> <li>• Swap the TX and RX antennas positions.</li> <li>• Rotate the archway, if it is possible.</li> <li>• Move the archway in a different position, if it is possible.</li> </ul>
No target detection at ground level	Low sensitivity at ground level	<ul style="list-style-type: none"> <li>• Start OTS procedure and carry out FGA step.</li> <li>• Increase LC parameter setting.</li> </ul>
Excessive sensitivity at ground level (f.i.: detection of shoes).	Excessive sensitivity at ground level	<ul style="list-style-type: none"> <li>• Start OTS procedure and carry out FGA step.</li> <li>• Decrease LC parameter setting and verify target detection.</li> </ul>
False alarms generated by mechanical vibrations.	Mechanical vibrations due, for instance, to floor oscillations, strong gusts of air or wind.	Carry out EVA procedure.
False alarms generated by repetitive movements of innocuous large metal objects.	Large metal objects (f.i. a metal trolley) moving near the archway.	Decrease SENT parameter until no false alarms occur (models with photocell modules installed).
<b><i>If the Metal Detector still does not operate properly, discontinue it and contact our Service Department for assistance.</i></b>		

NOTE: antenna and control unit can be replaced with corresponding spare parts, with no need of balance or loss of performance.

### 6.6.3 Procedure for compensating the environmental vibrations , EVA command

Scope of this procedure is to acquire and compensate the interferences generated by mechanical vibrations caused by floor oscillations and strong gusts of air or wind.

- Execute EVA programming command.
- When the 'PUSH' message appears on the display, gently press the side of the archway, making it oscillate (Remark: excessive force used during EVA procedure will NOT result in a more successful adjustment).
- As the device completes acquiring the applied vibration, the message 'OK/EVA' appears on the display.



**ATTENTION!** This acquisition procedure must be carried out for all Security Levels in use. Select any other IS setting in use and repeat the acquisition procedure.

**REMARK** the application of the EVA compensation can be disabled through AVS command. This can be used in the following cases:

- In case the equipment is moved to a new location not subject to mechanical vibration.
- To verify the effective improvement resulting from the EVA procedure (Floor)

## 6.7 Spare parts



Please quote the equipment serial number with every order for components!

### Panel-shape models

Models	PMD2PLUS/PZ Rev.1.000	HIPEPLUS/PZ Rev.2000	SMD600PLUS/PZ Rev.1.002	02PN20/PZ Rev.1.001	PMD3PLUS/PZ Rev.1.000
Description	Code	Code	Code	Code	Code
Plastic case control unit with connecting cables	64824	64083	61013	64962	67561
Metal case control unit with connecting cables	64286	64084	61016	64963	67562
Front cover with lock of Plastic case control unit	24873	24873	24873	24873	24873
Installation kit for Plastic case control unit	49961	49961	49961	49961	49961
Installation kit for Metal case control unit	49962	49962	49962	49962	49962
Keys of the keypad (4)	29415	29415	29415	29415	29415
RX antenna (adapted for photocells installation) *	54379	66334	63494	51787	51769
TX antenna (adapted for photocells installation) *	54380	66333	63493	54428	51771
Electronic cards of the antenna dual colour archway LED bar	45401	63496	63496	45401	45401
720mm cross-bar with holes	55639	55639	55639	55639	55639
720mm cross-bar without holes	55640	55640	55640	55640	55640
760mm cross-bar with holes	55652	55652	55652	-	-
760mm cross-bar without holes	55653	55653	55653	-	-
820mm cross-bar with holes	55641	55641	55641	-	-
820mm cross-bar without holes	55642	55642	55642	-	-
Upper cable protection cap of the panel with knobs	45663	45663	45663	45663	45663
Upper cable protection cap of the panel with screws	55154	55154	55154	55154	55154
Round photocells module	32716	32716	-	-	-
Standard 2 beam oval photocells module	-	-	46113	-	-
High precision 4 beam oval photocells module	-	-	46112	46112	46112
Protection caps for Lower connection module	55155	55155	55155	55155	55155
Protection caps for 720mm crossbars and control unit	55644	55644	55644	55644	55644
Protection caps for 760mm crossbars and control unit	55654	55654	55654	-	-
Protection caps for 820mm crossbars and control unit	55645	55645	55645	-	-
Lower connection module	55637	55637	55637	-	-
Emergency battery option: Lower connection module with Pb 0.8Ah battery	APSM2plus/P	APSM2plus/P	APSM2plus/P	APSM2plus/P	APSM2plus/P
Pb 12V-0.8Ah battery	19	19	19	19	19
Emergency battery and Ethernet option – Lower connection module with Pb 0.8Ah batteries	APSM2plus/P APSM3plus/P	APSM2plus/P APSM3plus/P	APSM2plus/P	APSM3plus/P	APSM3plus/P
Long Life Crossbar Battery Back-Up option	55681	55681	55681	55681	55681
Battery compartment with batteries	49510	49510	49510	49510	49510
Pb 12V - 9Ah battery	36891	36891	36891	36891	36891
100-240V - , 100W IP67 Power supply adaptor	48092	48092	48092	48092	48092
100-240V - , 80W Power supply adaptor	44041	44041	44041	44041	44041
Cable for Power supply adaptor, CEE plug	1559	1559	1559	1559	1559
Cable for Power supply adaptor, UL plug	1574	1574	1574	1574	1574
Cable for Power supply adaptor, UL L5-15P twist lock plug	49040	49040	49040	49040	49040
Cable for Power supply adaptor, UK plug	1570	1570	1570	1570	1570

### Column-shape models

Models	PMD2PLUS/EZ Rev.1.004	02PN20/EZ Rev.1.001	PMD3PLUS/EZ Rev.1.000
Description	Code	Code	Code
Plastic case control unit with connecting cables	64888	64966	67552
Metal case control unit with connecting cables	64889	64967	67553
Front cover with lock of Plastic case control unit	24873	24873	24873
Installation kit for Plastic case control unit	45315	45317	45317
Installation kit for Metal case control unit	45316	45318	45318
Keys of the keypad (4)	29415	29415	29415
RX antenna (adapted for photocells installation) *	54358	52859	52165
TX antenna (adapted for round photocells installation) *	54359	52961	52166
Electronic cards of the antenna dual colour archway LED bar	45401	45401	45401
720mm cross-bar with holes	45156	45156	45156
820mm cross-bar with holes	45226	-	-
Cross-bar locking unit (1 piece)	24878	24878	24878
Upper cable protection cap of the panel with knobs	45417	45417	45417
Upper cable protection cap of the panel with screws	55668	55668	55668
Round photocells module	46982	-	-
High precision 4 beam oval photocells module	-	56109	56109
Installation kit for Plastic case control unit and photocells	45317	45317	45317
Installation kit for Metal case control unit and photocells	45318	45318	45318
Protection caps for 720mm crossbars and control unit	54113	54113	54113
Protection caps for 820mm crossbars and control unit	55667	-	-
Ethernet option	APSIM2plus/E	APSIM3plus/E	APSIM3plus/E
100-240V - , 100W IP67 Power supply adaptor	48092	48092	48092
100-240V - , 80W Power supply adaptor	44041	44041	44041
Cable for Power supply adaptor, CEE plug	1559	1559	1559
Cable for Power supply adaptor, UL plug	1574	1574	1574
Cable for Power supply adaptor, UL L5-15P twist lock plug	49040	49040	49040
Cable for Power supply adaptor, UK plug	1570	1570	1570

\* specify the options to include with the order. Example: TX antenna with photocells:

- code of the TX Antenna
- code of the Lower connection module (panel shape only)
- code of the Kit of photocells
- code of the Electronic cards of the antenna archway LED bar (2 pieces).