

## DUOX SYSTEM TENDER SPECS FROM FERMAX

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## 1. INTRODUCTION

The DUOX System shall be a completely digital system with non-polarised two wire technology.

DUOX offers maximum installation simplicity that enables the transmission of all signals: power, audio and data at maximum capacities.

The system shall have completely digital transmission in order to avoid any possible interference in the installation.

The Video Entry System shall be suitable for visual monitoring of the entrance. The communication shall be duplex between the monitors inside the apartment with the panel at the entrance.

Calls to an indoor station (monitor) inside an apartment shall be possible by dialling the corresponding flat number on the outdoor panel or alternatively by searching for the tenants details which are stored in the built-in directory of the Panel.

The residents or the Guard unit are alerted by a ringtone and the terminal shall automatically display the image of the video camera built into the entrance Panel. During the conversation, by pressing the door lock button on the terminal shall open the electric lock connected to the entrance Panel in order to allow the visitor in.

In case of digital panels with keypad, the door lock at the entrance shall also be opened by entering a secret code in the entrance Panel.

The system shall provide private communications (conversation privacy) with a maximum conversation time of 90 seconds.

The audio communication between the different elements of the installation shall be duplex: panels, guard units and homes. That is, communication can be established between the homes and guard units from the different panel models. Communication can be established from guard units to the homes and the panel.

The Duox panels will work also with the Duox System technology. Installed in the access area of the building, the panel allows communication with residence, door opener function, calls to the guard, etc.

The Duox telephones will work with the Duox System technology. Audio terminals that have been installed in the homes, permit communication with the outdoor panel / guard unit and opening the door.

The Duox system shall require the installation of a line adaptor for the proper adjustment of the transmission line.

The Duox system shall be operated using 18Vdc power supplies for different installations panels and telephones. Must be installed in combination with a filter to avoid perturbations to the rest of the signals.

### **System Overview.**

The system shall include the following equipment:

- Flush or Surface mount type, outdoor Video Entrance Panel.
- Power Supply + Filter
- Audio or video apartment terminals.
- Line adaptors

Additional devices:

- Relay
- Regenerator 1 output
- Regenerator 2 outputs
- Regenerator Multichannel

The apartment terminals require simple programming via the street panel. A call code is assigned to each terminal (telephone / monitor) using this method.

### **Technical Specifications.**

- Power Supply: 18 Vdc + Filter
- 2 Wires without polarity.
- Private communication. Secret conversation.
- Maximum distance from the first access point to the furthest apartment: 2500 m.
- The system allows the following cables, bearing in mind that the different performance will be achieved according to the technical documentation of the system:
  - Parallel (2 x 1.0mm<sup>2</sup>)
  - Twisted pair
  - UTP CAT5
  - 2-wire bell
  - 4+N cable

### **Characteristics and functions.**

The DUOX system shall allow the use of 6 digit house terminal addresses, which means it can be developed installations up to 999.999 apartments. This provides extra flexibility when numbering terminals in each country's established numbering system.

The DUOX amplifier can be configured for the operation as a general entrance, block entrance or sub-block entrance:

General Entrance:

- A panel configured as General Entrance allows for calling all existing homes in the installation.
- The system can manage up to 10 General Entrances with 10 Guard Units and 10 Duox panels.

Block entrance:

- A panel configured as Block Entrance allows for calling all existing homes in the block.
- The system can manage up to 99 Blocks of 10 Panels and 10 Guard Units in each.

Sub-Block entrance:

- A sub-block is part of a block which you may want to sub-divide for organisational purposes. It may be a building, a storey in a building or a housing complex area.
- A panel configured as Sub-Block Entrance allows for calling all existing homes in the defined area assigned to this sub-block.
- The system can manage up to 99 Sub-Blocks of 10 Panels in each.

Each apartment has the capacity to install up to 3 terminals (telephones or monitors).

Upon receiving a call, an acoustic confirmation tone (call tone) sounds and the phone picked-up remains active, while the others are disabled. The user is put into communication with the device having made the call (panel/guard unit) and may open the door if called from a panel.

The system makes it possible to manage from 1 to 999999 apartments:

- Calls from Button Panels: 99
- Calls from Keypad panels (Direct panel or Digital panel):
  - Sub-Block: 99.
  - Block: 9.999.
  - General Entrance: 999.999.

These call code digits are optionally organised as follows: BBSSNN:

- BB: indicates the Block number, (from 00 to 99).
- SS: indicates the sub-Block number, (from 00 to 99).
- NN: indicates the sub-block's house number, (from 00 to 99).

You do not have to segregate the installation according to this hierarchy since the system adapts to the installation's needs by programming it accordingly. Each panel shall also have a different number on each block, sub-block or general entrance, which goes from 0 to 9.

Panels with an address "0" in each block allow for communication with telephones when picked-up if the communication line is free. Communication is established with the "0" panel of the block corresponding to the telephone. If you do not want this feature do not assign this address to any panels.

## 2. DOOR ENTRY PANEL

### General

Flush or surface wall mounted audio/video outdoor shall be installed at the designated entrances.

The outdoor station shall include a microphone and loudspeaker. Volume control adjustments shall be included in one single amplifier module. This module shall be easily removable for replacement operations. Audio amplifier module shall be provided with door lock terminals to release door lock mechanism directly without adding additional power supply. Operating voltage shall be 18Vdc. Audio module shall allow for connecting a voice synthesizer module wherein a speech shall advice to close the door.

Panel shall be ready to accommodate a camera module when video outdoor panels are required.

The panel shall include folding hinges to wire the electrical connections easily. The terminals shall remain hidden once the box is mounted allowing the panel to be hinged in any direction.

The front face of the Panel shall include the following components in the same sequence as mentioned below:

- Speaker Grill for Audio conversation
- Camera Lens with 6 LED lights



Following shall be the specifications for the Audio amplifier of the Entrance panel:

- Operating voltage : 18VDC
- Amplifier power towards street : 2W
- Amplifier power towards home : 0,15W
- Volume Control : separate volume control for speaker and microphone
- Voice synthesis
- Free potential relay for door.
- Card-holder light buttons panel: LEDs for lighting of card-holders
- Back-light buttons: LEDs for lighting of keypad buttons
- Possibility to include visual indications for persons with hearing disabilities.
- Operating Temperature range, Humidity: -10 ~ +60°C, 90% RH max.
- Microphone type : Electret – 2poles

The Video camera module of the Entrance panel shall have the following specifications:

- Power Supply: 18V DC.
- Consumption:
  - In standby: 100 mA
  - Audio active: 500 mA.
  - Card holder module LED illumination: 35mA.
- IP Panel 43 (IP 54 for Marine style)/ IK Panel 07 (IK 09 for Marine style)
- Electronical zoom (9 different areas).
- Camera angle view: 92° (H), 70° (V)
- Lighting: 6 LEDs crown.
- Audio power apartment-street panel direction: 2W
- Audio power street panel-apartment direction: 0.15W
- Volume can be regulated in both directions.
- Operating Temperature range, Humidity: -10 ~ +60°C, 90% RH max.
- Optional 12 Vdc-250mA Output (maximum 500mA for 100 seconds).

### Styles of panels

Panels shall be available in different designs and materials. Three different styles shall be available.

## Cityline Panels



The CityLine Duox panel shall work with the Duox System technology. Installed in the access area of the building, it allows communication with residence, door opener function, calls to the guard, etc.

CityLine is the series of "continuous profile" street panels for buildings. This panel model is very robust, luxurious and of a high aesthetic and functional quality. This design includes, in the video door entry system version, the audio and video functions in a single module. It includes a COLOUR camera with lighting and a regulation system via the keypad to adjust the camera's focal point. It stands out for its curved-convex profiles.

They are manufactured in aluminum and are highly-weather resistant. It incorporates new materials like the chromed zamak in keypads and push-buttons.

There are 9 continuous profile sizes called series, all of them the same width, but with different heights.

Each series is comprised of a wide range of solutions:

- With simple and double buttons.
- With keypad.
- With graphical display and keypad.
- With the option of include a card reader, OneToOne module, proximity reader and fingerprint reader.

In order to install a panel, you first need to install a box onto the wall, onto which the panel will then be fitted. There are two box models: flush and surface boxes. The flush-mounted boxes are manufactured in aluminum and zamak and have folding hinges to facilitate wiring the panel.

You can combine two or more panels, provided they are of the same series. To fit them perfectly, a set of separators must be used between the flush-mounted boxes.

For those cases where you cannot or do not want to make a hole in the wall for the flush-mounted box (marble or stone façades, etc.), we recommend you to use a surface-mounted box. Its depth is just 33mm, and is designed to combine perfectly with the panel's aesthetics. They are manufactured in aluminum and chromed zamak. Separators are not necessary if several panels are combined. Once the panel is installed, it is fastened with tightening screws which are completely hidden by covers at the top and bottom trim. These are Allen screws.

### Skyline panels



The SkyLine Duox panel shall work with the Duox System technology. Installed in the access area of the building, it allows communication with residence, door opener function, calls to the guard, etc.

The SKYLINE electronic video door-entry panel is a robust and elegant panel noted for its durability, beauty, resistance and reliability. This design includes, in the video door-entry system version, the audio and video functions in a single module. It includes a COLOUR camera with integrated lighting and a regulation system via the keypad to adjust the camera's focal point.

SKYLINE is the line of electronic and video door-entry street panels with a continuous profile and modular composition. They are manufactured in aluminum and are highly-weather resistant. It incorporates new materials like chromed zamak in the closings, keypads and buttons.

Anodized brushed Aluminum Panel. Aluminum does not rust easily and brushed anodized finish does not leave fingerprint stains so easy to keep clean. A full aluminum finish ensures a strong and durable product, yet light weight.

Pushbuttons made of Zamak (an alloy of zinc, aluminum, magnesium and copper) for excellent durability properties. Zamak does not chip or peel or tarnish with age.

Additionally, contacts inside pushbuttons are gold plated for excellent conductive properties. Gold is also rustproof.

The range of panels is composed of frames of 8 different sizes into which the different modules can be easily fitted. The frames allow for coupling a determined number of modules: buttons, card holder, camera, amplifier, keypad, etc. There are two module sizes: V and W. The W modules are double the size of the V modules.

The module's sizes are:

- Module V 105.2 x 47.5 mm (width-height).
- Module W: 105.2 x 95 mm (width-height).

The panel's assembly is very easy. Once having chosen the combination of modules depending on the number of homes, they are fit into the panel's frame.

The fastening system consists of a slight pressure from the interior to the exterior. Finally, the different modules are joined via easy to plug connectors that are included in the modules themselves.

It is possible to combine two or more panels, provided they are of the same series, for greater button capacity and accessories.

Some of the modules that fit into the frame are:

- With simple and double buttons.
- With keypad.
- Graphical display (TFT 3.5") and keypad
- With the option of include a card reader, OneToOne module, proximity reader and fingerprint reader.

In order to install a panel, you first need to install a box onto the wall, onto which the panel will then be fitted. There are two box models: flush and surface boxes. The flush-mounted boxes are manufactured in aluminum and zamak and have folding hinges to facilitate wiring the panel.

You can combine two or more panels, provided they are of the same series. To fit them perfectly, a set of separators must be used between the flush-mount boxes for every two panels installed.

When you cannot or do not want to make a hole in the wall for the flush-mounted box (marble or stone façades, etc.), we recommend you use a surface-mounted box. Its depth is just 33mm, and is designed to combine perfectly with the panel's aesthetics. They are manufactured in aluminum and chromed zamak. Separators are not necessary if several panels are combined. Once the panel is installed, it is fastened with tightening screws which are completely hidden by covers at the top and bottom trim. These are Allen screws (An Allen key tool is included on Skyline Frames).

#### Available modules:

- Amplifier
  - Ref. 7390: Audio Duox W Module
  - Ref. 7391: Video Duox W Module
- Button modules
  - Ref. 7371: 8 204 W Duox Buttons
  - Ref. 7372: 4 202 V Duox Buttons
  - Ref. 7376: 2 201 V Duox Buttons
  - Ref. 7367: 4 104 W Duox Buttons
  - Ref. 7368: 2 102 V Duox Buttons
  - Ref. 7375: 1 101 V Duox Buttons
- Digital modules
  - Ref. 7450: Digital Duox W Graphical Display
  - Ref. 7457: Digital Duox W Keypad for Graphical Display
  - Ref. 7439: Direct Duox W Keypad
- Informative and complementary modules (common in different technologies)
  - Ref. 7448: ONE-TO-ONE V Module
  - Ref. 7445: Card holder W module
  - Ref. 7444: Card holder V module
  - Ref. 7443: Metallic complement W
  - Ref. 7442: Metallic complement V
- Access control modules (common in different technologies)
  - Ref. 7438: Memokey W. module
  - Ref. 7453: Access control W Keypad Module
  - Ref. 6936: Fingerprint reader W Module
  - Ref. 7440: Proximity Reader Module V

#### Marine Panels



Fermax Marine line of panels are made in stainless steel.

Marine is Fermax Vandal Resistant panel model manufactured in 2.5 mm thick stainless steel, with straight lines that highlight the quality of the steel, cutting-edge technology and resistance to even the most corrosive, humid and dangerous environments.

The Marine Duox panels work with the Duox System technology. Installed in a building's entrance area, it allows communication with residence, a door opener function, calls to the guard, etc.

The video door-entry panels include a COLOUR camera with lighting and a regulation system via the keypad to adjust the camera's focal point.

There are 3 continuous profile sizes called the ST series, all of them the same width, but with different height and capacities.

In order to install a panel, you first need to install a box in the wall, onto which the panel will then be fitted. There are two box models: flush built-in and surface boxes.

The flush-mounted box is metal and is attached to the wall by means of self-expanding screws and plugs, to avoid warping.

You can combine two or more panels, provided they are of the same series. To fit them perfectly, a set of separators must be used between the flush-mount boxes for every two panels installed.

The panel is attached to the flush-mounted box by means of vandal-proof safety screws made of stainless steel, which can only be removed using the special key supplied.

When you cannot or do not want to make a hole in the wall for the flush-mounted box (marble or stone façades, etc.), we recommend you use a surface-mounted box. Its depth is just 55mm, and is designed to combine perfectly with the panel's aesthetics.

Stainless steel flat sheet outdoor panel.

SS Panel is 2.5mm thick, and is AISI 316 grade outdoor durable stainless steel for maximum resistance against corrosion, humidity and moisture. Steel back box shall come with steel bolts for very secure mounting on any secure concrete wall.

Front panel screws shall be flush security screws which cannot be opened except with a special tool. Super toughened transparent Perspex covers front of camera and digital displays to prevent malicious damage.

Specially extruded stainless steel rims around all pushbuttons shall prevent tampering with pushbuttons, jamming them or removing them with a tool.

### **Models of panels**

For each one of the three previous described styles (City, Skyline and Marine), three types of models shall be available.

### **Pushbutton panel:**

The call buttons are injected zamak with a chrome finish, in line with the curved profile of the panel. Watertight for the outdoors.

Includes special gold-plated contacts that provide greater durability.

Calls to residences are made by pressing the corresponding call button, which generates an acoustic confirmation signal and then makes the call.

The amplifier emits a confirmation sound when the call button is pressed.

The buttons include a polycarbonate card holder (front access) to put up a label with the name of the owner and the door number. Integrated illumination allows you to view the cardholders, even in complete darkness.

They are metal and rounded in shape, in line with the curved profile of the panel.

#### **Functions:**

**Door lock-release:** Duox panels include a relay that allows you to open the door. This relay is timed and programmable. The lock-release time can be programmed from 1 to 99 seconds.

You can also install an entrance hall button to open the door. This is timed and programmable. The lock-release button time can be programmed from 1 to 99 seconds.

**Door Sensor:** Duox panels include a sensor that allows for the installation of a contact to be able to detect if the door is left open. This sensor can be

programmed, even though it is initially deactivated. The lock sensor time can be programmed from 00 to 99 seconds.

**Tamper:** Duox panels include the option of connecting tamper devices to avoid vandalism. If this device is installed and the panel is tampered with, a warning alarm sounds.

**Voice synthesizer:** Upon opening a door from a residence, guard unit or entrance hall button, an acoustic message sounds informing about the door open status and requesting the visitor to close it after entering.

**Informative Screen optional:** The Duox amplifier allows you to connect to an informative screen: OneToOne Module.

This module is designed for the hearing impaired. It displays the status of the panel at all times with 4 LED icons. These icons symbolize:

- Call: Lights up when someone is calling the house.
- Conversation: The receiver has been picked up in the house and it indicates the commencement of a conversation.
- Lock-Release: Entry has been authorized and the building's door has been opened.
- Channel Busy. This is only lit up in the module if a second panel has been installed.

### **Direct panel (Panel with keypad):**

The call to the apartment is made by entering the apartment's number on the numeral keypad followed by the bell key. When pressing any key, it shall be generated an acoustic confirmation signal and the call shall be produced.

The keypad buttons are injected chrome zamak. Inside they are developed in polycarbonate that provides the transparency to view the lit digits. The Call buttons are watertight for outdoors.

#### **Functions:**

**Door lock-release:** Duox panels include a relay that allows you to open the door. This relay is timed and programmable. The lock-release time can be programmed from 1 to 99 seconds.

You can also install an entrance hall button to open the door. This is timed and programmable. The lock-release button time can be programmed from 1 to 99 seconds.

You can enable a lock-release code for all residents. This code is 4 digits. It is programmable and not activated by default.

**Door Sensor:** Duox panels include a sensor that allows for the installation of a contact to be able to detect if the door is left open. This sensor can be programmed, even though it is initially deactivated. The lock sensor time can be programmed from 00 to 99 seconds.

**Tamper:** Duox panels include the option of connecting tamper devices to avoid vandalism. If this device is installed and the panel is tampered with, a warning alarm sounds.

**Voice synthesizer:** Upon opening the door from the apartment, the guard unit or entrance hall button, a message sounds informing of the doors status and requesting that the visitors close it after entering.

**Information Screen optional: OneToOne Module.** This module is designed for the hearing impaired. It displays the status of the panel at all times with 4 LED icons. These icons symbolise:

- Call: Lights up when someone is calling the house.
- Conversation: The receiver has been picked up in the house and it indicates the commencement of a conversation.
- Door lock-release: Entry has been authorized and the building's door has been opened.
- Channel busy: This is only lit up in the module if a second panel has been installed.

### **Digital panel. Panel with Graphical display (TFT 3.5") and keypad:**

The Duox digital panel with graphical display module shall allow to search and view the neighbour listing (electronic directory) using the browsing buttons (arrow keys). It also informs about the communication status.

Calling a home can be done in two ways:

- By entering the corresponding code assigned to a home + the 'bell' key.
- By searching the user in the electronic directory (browsing buttons) and, once found, pressing the 'bell' key.

The browsing buttons also allow navigating in the program menu.

Functions:

**Door lock-release:** Duox panels include a relay that allows you to open the door. This relay is timed and programmable. The lock-release time can be programmed from 1 to 99 seconds.

You can also install an entrance hall button to open the door. This is timed and programmable. The lock-release button time can be programmed from 1 to 99 seconds.

In panels with the keypad+ graphical display you can enable up to 10.000 door opening codes for residents. Codes can be 4, 5 or 6 digits. These can be programmed via the electronic directory (display). They are initially not active.

**Door Sensor:** Duox panels include a sensor that allows for the installation of a contact to be able to detect if the door is left open. This sensor can be programmed, even though it is initially deactivated. The lock sensor time can be programmed from 00 to 99 seconds.

**Tamper:** Duox panels include the option of connecting tamper devices to avoid vandalism. If this device is installed and the panel is tampered with, a warning alarm sounds.

**Voice synthesizer:** Upon opening the door from the apartment, the guard unit or entrance hall button, a message sounds informing of the doors status and requesting that the visitors close it after entering.

**Graphical display:**

- 10.000 Users identified by name and apartment number with the corresponding identifier for access control.
- Managed from a PC and connected through RS-485.
- The user list is sorted by name.
- There is a field for addition information per each user.
- A user can be set as invisible so its information will not be shown.
- Panel status information and icons.
- Image viewing and customized images optional.
- Possibility to connect Wiegand-26 and Data Clock protocol readers.
- Call mapping is allowed, digits and letters can be combined.
- Directory keys and possibility of using the keyboard in alphanumeric mode.
- Calls to certain apartments/users can be restricted.
- Optional combination with press button panels (max. 8 press buttons).

### **3. APARTMENT TERMINALS**

The system must provide the following terminals to be installed in the apartments. These devices can be telephones (audio systems) or monitors (video systems).

#### **TELEPHONES**

##### **Loft telephones**

A home telephone with an integrated design, in line with new trends and life styles, simple and functional, exuding quality and fine design. Its pure lines, technology and options make this piece of equipment a perfect, elegant addition to any household.

It is made of high-impact ABS plastic, with a texturized, easy-to-clean finish and ultraviolet protection for greater resistance to light.

It comes with a handset, along with a curled cable with telephone type connectors at the ends. The handset includes a microphone and 16 Ohm speaker.

There are different models with one or various soft-touch buttons.

The terminal includes a magnet in the receiver that permits the earpiece to attach to the base.

This limits the earpiece from falling when being hung-up, avoiding damage to the wall and to the installation.

An easy to mount wall installation. Surface screws.

Audio terminals. Installed in the homes, permits communication with the outdoor panel and opening the door.

The telephones can have the following frontal buttons (depending on the model):

- The lock-release/call guard unit button (key icon)
- F1 and F2 additional functions buttons:
  - F1 button (printed F1).
  - F2 button (printed F2).

The LOFT Duox telephones work with the Duox System technology.

With regards to the model (available buttons/internal terminals), it can have different features. Following models:

### **Loft Basic Plus Telephone**

Characteristics:

Audio communication:

- Secret conversation. The conversation is private, no other terminal can hear it.
- Communication can be established with the street panel and the Guard unit.
- Upon receiving a call tone rings on the telephone and upon picking up the phone the user is communicated with the device making the call (panel/guard unit).

- The communication facility will automatically terminate after 90 seconds, or at any time by hanging up the phone.

#### Functions:

- **Auto-Start:**  
This function is possible with the panel in the same block; if the panel is in standby and programmed as "0"; and if there is a conversation channel available.  
The auto-start function is always used on the panel from the same block configured as "0", except where a call is received from another panel. Once the conversation is over, auto-start will activate on the secondary panel for 15 seconds. After this time it will do so on the "0" panel in the same block.
- **Door lock-release (Lock-release button / key icon):**  
When a call is received from the street panel, you can open the door at any time, by pressing the lock-release button.  
While in conversation with the Entry Panel (telephone picked-up), pressing it will activate the open door.  
Upon receiving the call (telephone hung-up) if the phone is not answered you have 30 seconds to open the door.
- **Call the guard unit (Lock-release button / key icon):**  
This is done by pressing the button when the telephone is in standby and hung-up. The call to reception is made to the reception that is activated for the block in which the telephone is, sounding a beep when the confirmation is received from this reception.
- **Ringtone selection:**  
Call Ring tone Selection. The telephone allows you to select different ringtones for calls from the entry panels and calls made from reception.
- **Doorbell Connection:**  
You can directly connect the home (door bell) to the phone, (this doorbell substitutes the ding-dong of the home's front door).  
The doorbell's melody is fixed and can't be changed. It is different than those selected for the street panel or guard unit.
- **Activation of a light or ring tone with the call:**  
You can connect devices that allow you to listen to a call in another part of the house or for it to light up when it sounds.

- **Call Volume Regulation:**  
This allows you to regulate the call tone volume (via a programming device).

### Technical Specifications

- Power Supply: 18V DC.
- Consumption:
  - In standby: <20 mA.
  - Maximum: 300 mA.
- Each apartment has the capacity to install up to 3 phones.
- The apartment terminals require simple programming via the panel. A call code is assigned to each terminal (telephone) using this programming method.
- Operating Temperature: - 5 °C, + 40 °C
- Telephone address: 6 decimal digits.
- Loudspeaker 1.75" 16 Ohm.
- Electret microphone (dynamic resistance, 50 Ohm)



### Loft Extra Telephone

#### Characteristics:

- Audio communication.
- Secret conversation. The conversation is private, no other terminal can hear it.
- Communication can be established with the street panel and the Guard unit.
- Upon receiving a call tone rings on the telephone and upon picking up the phone the user is communicated with the device making the call (panel/guard unit).
- The communication facility will automatically terminate after 90 seconds, or at any time by hanging up the phone.

## Functions:

- **Auto-Start:**  
This function is possible with the panel in the same block; if the panel is in standby and programmed as "0"; and if there is a conversation channel available.  
The auto-start function is always used on the panel from the same block configured as "0", except where a call is received from another panel. Once the conversation is over, auto-start will activate on the secondary panel for 15 seconds. After this time it will do so on the "0" panel in the same block.
- **Door lock-release (Lock-release button / key icon):**  
When a call is received from the street panel, you can open the door at any time, by pressing the lock-release button.  
While in conversation with the Entry Panel (telephone picked-up), pressing it will activate the open door.  
Upon receiving the call (telephone hung-up) if the phone is not answered you have 30 seconds to open the door.
- **Call the guard unit (Lock-release button / key icon):**  
This is done by pressing the button when the telephone is in standby and hung-up. The call to reception is made to the reception that is activated for the block in which the telephone is, sounding a beep when the confirmation is received from this reception.
- **Ringtone selection:**  
Call Ring tone Selection. The telephone allows you to select different ringtones for calls from the entry panels and calls made from reception.
- **Doorbell Connection:**  
You can directly connect the home (door bell) to the phone, (this doorbell substitutes the ding-dong of the home's front door).  
The doorbell's melody is fixed and can't be changed. It is different than those selected for the street panel or guard unit.
- **Activation of a light or ring tone with the call.**  
You can connect devices that allow you to listen to a call in another part of the house or for it to light up when it sounds.
- **Call Volume Regulation:**  
This allows you to regulate the call tone volume via a potentiometer located on the side of the phone.

- Muting ring tone (do not disturb function):  
There is a potentiometer to regulate the call (located on the side of the phone). If at the minimum position, the call is disconnected. The disconnection is indicated by a lit LED.  
The disconnection option affects all ring tones generated by the telephone.
- F1 and F2 additional functions buttons:  
It has 2 buttons for additional functions
  - F1 button:
    - From the telephone you can activate a Duox auxiliary relay connected to a F1/P terminal for an extra function such as the landing light, alarm activation, etc.
    - You can set an external panic button so when it activates it transmits the panic command via the bus to the reception.
  - F2 button:
    - You can activate an auxiliary device connected to the bus via a Duox relay.

#### Technical Specifications

- Power Supply: 18V DC.
- Consumption:
  - In standby: <20 mA.
  - Maximum: 320 mA.
- Each apartment has the capacity to install up to 3 phones.
- The apartment terminals require simple programming via the panel. A call code is assigned to each terminal (telephone) using this programming method.
- Operating Temperature: - 5 °C, + 40 °C
- Telephone address: 6 decimal digits.
- Loudspeaker 1.75" 16 Ohm.
- Electret microphone (dynamic resistance, 50 Ohm)

#### Citymax Telephone

Citymax telephones are extra-flat and are designed in high impact-resistance ABS plastic with a mirror-like finish that easy to clean and with ultraviolet protection for greater resistance to light.

Its applied industrial design and components of the highest quality come

together to make a robust and reliable telephone that will please both the professional and user.

It comes with a receiver, along with a curled cable with telephone type connectors at the ends. The receiver includes a microphone and a 16 Ohm speaker.

An easy to mount wall installation. Surface screws.

This model is available with 1 soft-touch button.

The telephone has a frontal open-door/guard unit call button (key icon).

Audio terminals. Installed in the homes, permits communication with the outdoor panel and opening the door.

#### Characteristics:

- Audio communication.
- Secret conversation. The conversation is private, no other terminal can hear it.
- Communication can be established with the street panel and the Guard unit.
- Upon receiving a call tone rings on the telephone and upon picking up the phone the user is communicated with the device making the call (panel/guard unit).
- The communication facility will automatically terminate after 90 seconds, or at any time by hanging up the phone.

#### Functions:

- Auto-Start:  
This function is possible with the panel in the same block; if the panel is in standby and programmed as "0"; and if there is a conversation channel available.  
The auto-start function is always used on the panel from the same block configured as "0", except where a call is received from another panel. Once the conversation is over, auto-start will activate on the secondary panel for 15 seconds. After this time it will do so on the "0" panel in the same block.
- Door lock-release (Lock-release button / key icon):  
When a call is received from the street panel, you can open the door at any time, by pressing the lock-release button.  
While in conversation with the Entry Panel (telephone picked-up), pressing it will activate the open door.

Upon receiving the call (telephone hung-up) if the phone is not answered you have 30 seconds to open the door.

- Call the guard unit (Lock-release button / key icon):  
This is done by pressing the button when the telephone is in standby and hung-up. The call to reception is made to the reception that is activated for the block in which the telephone is, sounding a beep when the confirmation is received from this reception.
- Ringtone selection:  
Call Ring tone Selection. The telephone allows you to select different ringtones for calls from the entry panels and calls made from reception.

#### Technical Specifications:

- Power Supply: 18V DC.
- Consumption:
  - In standby: 16 mA.
  - Maximum: 280 mA.
- Each apartment has the capacity to install up to 3 phones.
- The apartment terminals require simple programming via the panel. A call code is assigned to each terminal (telephone) using this programming method.
- Operating Temperature: - 5 °C, + 40 °C
- Telephone address: 6 decimal digits.
- Loudspeaker 1.75" 16 Ohm.
- Electret microphone (dynamic resistance, 50 Ohm)



## MONITORS

### Loft monitors

Audio and video stations shall be provided with a handset, as well as coiled cord with telephone plug connectors. Handset includes Electret Microphone and 16 Ohm Speaker.

Terminals shall be made of high impact ABS resin with and ultraviolet protection for greater resistance to light. The Monitors shall be included with a back connector plate, suitable for surface wall mounted installations. Desktop mounting shall be possible by using the optional desktop support connectors.

All audio and video terminals front face shall be provided with the following indicators / soft touch buttons:

- Red colour LED powered monitor indicator.
- Lock release button: once the communication is established with the outdoor panel, the door lock shall be opened by pressing this button. When the Terminal is in standby mode, pressing this button shall call the guard unit.
- Pushbutton for manual activation of panel cameras when the monitor is in standby mode (operation depending on the type of installation).
- Pushbuttons F1 for additional functions: activation of second light, alarm relays etc., via Duox relay.
- Brightness and Contrast Controls.
- Colour Control.
- Mute Option.

All audio and video terminals shall have the following technical specifications:

- 4 selectable call tones.
- Option for connecting an additional door bell pushbutton.
- Possibility to connect call extension or lights and bells switch.
- Stand by circuit for immediate appearance of image (2 ~ 3 seconds).
- 3.5" Diagonal Flat Screen (TFT).
- Resolution: Horizontal 320 TV Lines, Vertical 240 TV Lines.
- Operating voltage: 18 Vdc.
- Consumption: 25 mA (stand-by), 250 mA (active)
- Operative temperature range, humidity: -5°C ~ +40°C, 90%
- Dimensions: 203 (W) x 220 (H) x 60 (D) mm.



### iLoft monitors

Audio and video stations shall be provided without handset. Hands-free communication. It shall enable duplex communication with outdoor panel and door opening. Monitors shall include Electret Microphone and 16 Ohm Speaker.

Terminals shall be made of high impact ABS resin and ultraviolet protection for greater resistance to light. The monitors shall be able to add a polished methacrylate surface mask in different colours: transparent, silver, black & gold. Pushbuttons shall be lined up at the bottom of the screen for easy reach and usage.

The Monitors shall be suitable for surface and flush mounted installations, including back plate or flush box respectively. Desktop mounting shall be possible by using the optional desktop support connectors.

All audio and video terminals front face shall be provided with the following indicators / soft touch buttons:

- 3 signal LEDs:
  - Blue: calling/in communication.
  - Green: automatic open function on.
  - Red: do not disturb function – volume off
- Lock release button: once the communication is established with the outdoor panel, the door lock shall be opened by pressing this button. When the Terminal is in standby mode, pressing this button shall call the guard unit.
- Pushbutton for opening/closing communications or manual activation of panel when the telephone is in standby mode (operation depending on the type of installation).
- Pushbutton for manual activation of panel cameras when the monitor is in standby mode (operation depending on the type of installation).

- Pushbuttons F1 for additional functions: activation of second light, alarm relays etc., via Duox relay.

All video terminals shall have the following technical specifications:

- OSD menu for user-friendly configuration & settings.
- Mute option.
- Sequential volume control.
- Audio level settings. Colour, brightness and contrast control.
- 5 selectable call tones.
- Option for connecting an additional door bell pushbutton.
- Possibility to connect call extension or lights and bells switch.
- Totally hands-free operation. Once the outdoor panel-home channel is activated, communication is simultaneous (half-duplex).
- Optional change from hands-free to press-to-talk, useful in very noisy surroundings.
- Stand by circuit for immediate appearance of image (2 ~ 3 seconds).
- 3.5" Diagonal Flat Screen (TFT).
- Resolution: Horizontal 320 TV Lines, Vertical 240 TV Lines.
- Operating voltage: 18 Vdc.
- Consumption: 25 mA (stand-by), 250 mA (active)
- Operative temperature range, humidity: -5°C ~ +40°C, 95%
- Dimensions:
  - Flush mounting: 131 (W) x 197 (H) x 58 (D) mm.
  - Emerges 13 mm from wall once embedded.
- Surface mounting: 131 (W) x 197 (H) x 35, 2 (D) mm.



## Veo Monitors

Audio and video stations shall be provided with a handset, as well as coiled cord with telephone plug connectors. Handset includes Electret Microphone and 16 Ohm Speaker.

Terminals shall be made of high-impact ABS plastic. Texturized finish for easy cleaning and ultraviolet protection to get more resistance to the light. The Monitors shall be included with a back connector plate, suitable for surface wall mounted installations. Desktop mounting shall be possible by using the optional desktop support connectors.

All audio and video terminals front face shall be provided with the following indicators / soft touch buttons:

- Red colour LED powered monitor indicator.
- Lock release button: once the communication is established with the outdoor panel, the door lock shall be opened by pressing this button. When the Terminal is in standby mode, pressing this button shall call the guard unit.
- Pushbutton for manual activation of panel cameras when the monitor is in standby mode (operation depending on the type of installation).
- Pushbuttons F1 for additional functions: activation of second light, alarm relays etc., via Duox relay.

All audio and video terminals shall have the following technical specifications:

- 4 Selectable call tones.
- Volume Control (Mid/High status).
- Brightness and Contrast Controls.
- Colour Control.
- Mute Option.
- Option for connecting an additional door bell pushbutton.
- Possibility to connect call extension or lights and bells switch.
- Stand by circuit for immediate appearance of image (2 ~ 3 seconds).
- 4.3" Diagonal Flat Screen (TFT).
- Resolution: Horizontal 480 TV Lines, Vertical 272 TV Lines.
- Operating voltage: 18 Vdc.
- Consumption: 25 mA (stand-by), 230 mA (active).
- Operative temperature range, humidity: -5°C ~ +40°C, 90%.
- Dimensions: 200 (W) x 200 (H) x 44 (D) mm.  
Extra-thin profile protrudes 23mm from the wall, 44mm with handset.



## 4. ACCESSORIES

### POWER SUPPLY UNITS + FILTER

The DUOX system is operated with 18V dc power sources for the different panels in the installation and residential terminals. They must be installed jointly with a device (filter) that keeps the power from disrupting the other signals.



### Technical Specifications

- Power Supply: 18V DC.
- Operating Temperature: - 5 °C, + 50 °C
- Humidity (maximum condensation): 95%

The System shall be operated by using separate power supply units:

- 12Vac/dc for Intercom lock release connection
- 18Vdc for Intercom Video.

All power transformers inputs shall operate on 100 ~ 240VAC, 50 ~ 60Hz.  
There shall be no direct local power supply (230Vac) requirements for any of the system products.

The power supply are provided with status LED indicators for ON and OVERLOAD conditions.

There shall be different models:

- A. Input 100-240V  
Output 18Vdc, 3.5Amps  
DIN 6 mounting
- B. Input 100-240V  
Outputs 18Vdc, 1.5Amps  
DIN 6 mounting
- C. Input 240V  
Output 18Vdc + 12Vac, 1.5Amps  
DIN 10 mounting
- D. 1 Input 100V  
2 Outputs 18Vdc + 12Vac, 1.5Amps  
DIN 10 mounting

The power supply units shall have the provision for mounting either directly to the wall or on a DIN rail.



**LINE ADAPTOR**

The DUOX system shall require the installation of adaptor devices to adjust the transmission line for the homogenization of the impedance avoiding any reflection that may provoke disturbances in the transmitted signal. This device placed in strategic points of the installation minimises this effect.

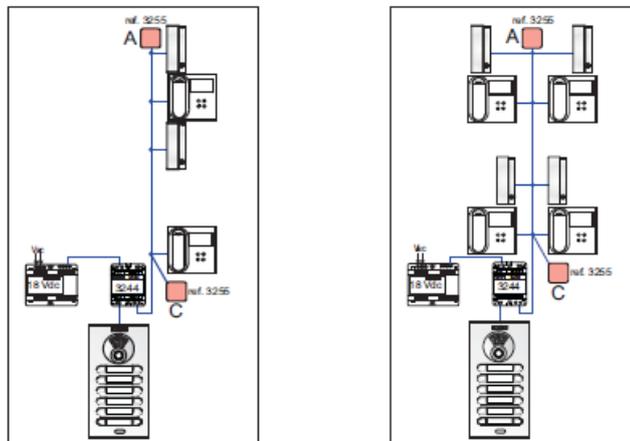
The Line adaptor Ref.3255 is a small device that must normally be installed in at the beginning and at the end of the riser.



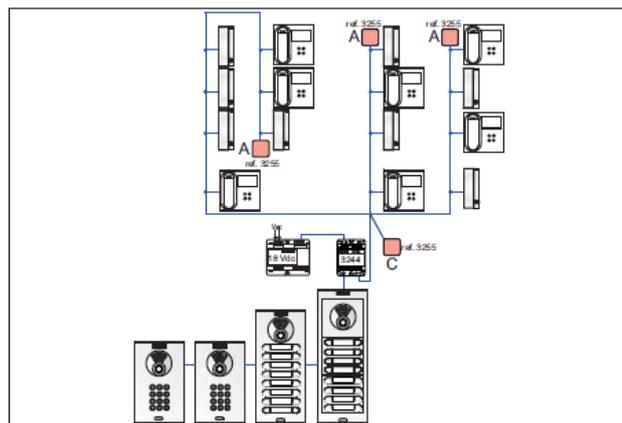
Different installation examples:

Buildings.

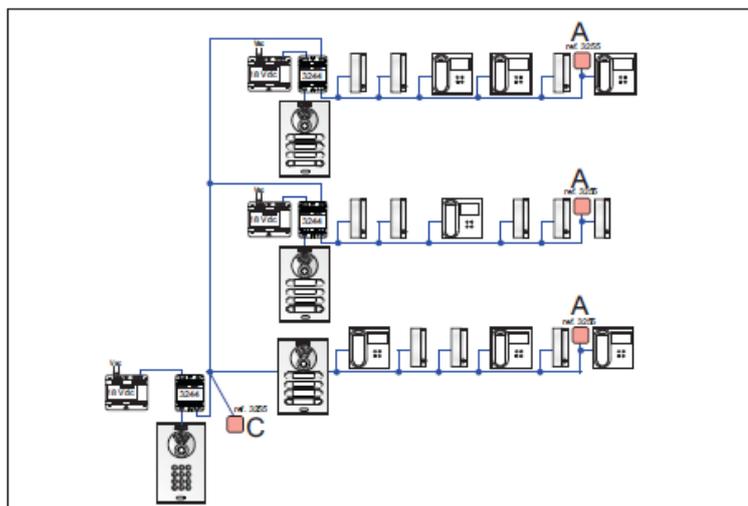
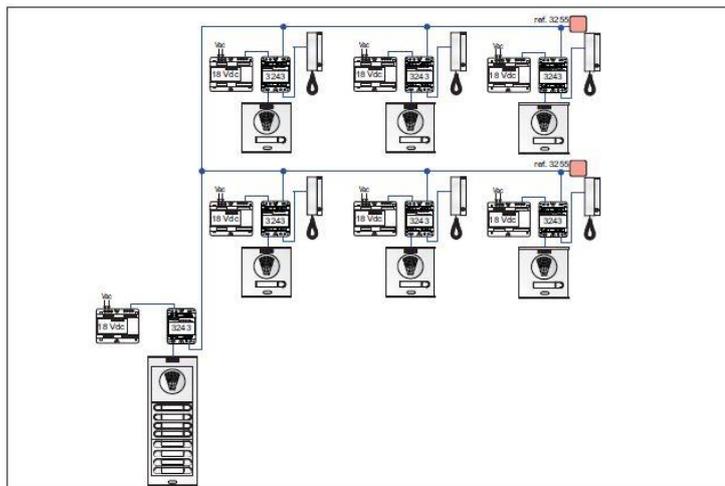
Cascade installation / Floor level distribution installation.



Multiple entrances and risers



Residential entrances



### Technical Specifications:

- Power Supply: Does not require power.
- Operating Temperature: - 10°C, + 55 °C
- Relative Humidity: 5-95%, condensation
- Level of IP protection: 30
- Level of IK protection: 04
- External controllers to adapt the line: Pin strip with two positions and without a Jumper.

### REGENERATOR 1 OUTPUT

This is an intermediary device in an audio / video DUOX installation.

Its main functions are:

- To regenerate the signal to increase the distance and / or loads (monitors/telephones) in a riser.
- To create complex topologies: Several risers, derivations and bifurcations.

- To isolate between sections (electrical and signal isolation).



### Features:

- Regeneration:**  
 This device is capable of completely regenerating the Duox signal (attenuation and deformation) that travels within the cable. This allows an increase in distances from the point (location) and quantity of loads (telephones/monitors) in which the riser is installed, since it amplifies and regenerates the signal. It is useful when we need to reach distances longer than 300 m.  
 It regenerates the signal in both directions, making it work bi-directionally.
- Electrical and Signal isolation:**  
 The regenerator provides insulation between the two sections that the device is connecting (input and output). If for example there is a short circuit in one of the sections, the other section is not affected. In this case the device indicates the short-circuit via the signal LED.  
 The regenerator insulates also with regards to signal against reflections.
- Power Supply:**  
 The regenerator is powered from the Duox bus, but if there are devices (panels/terminals) on both sides a supply set (Power supply unit + Filter) shall be necessary at each section.  
 In that case, we will be able to power up to 1 Panel (entrance) and 40 terminals with only this supply unit.  
 In case that there is no device in the bus between two regenerators, no supply set is necessary in that section.
- Regenerators concatenation:**  
 Up to 5 devices can be concatenated in cascade. There is no limitation in parallel connection, as far as the quality signal is good enough.

### Technical Specification:

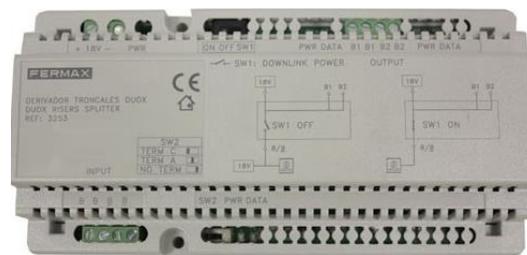
- Power Supply: 18V DC.

- Consumption:
  - In standby: 170 mA.
  - Call: 200 mA.
- Operating Temperature: - 5 °C, + 40 °C
- The regenerator also has a Line Adaptor integrated in one of its outputs, which can be optionally used (it can be used as A, C or not used).

## REGENERATOR 2 OUTPUTS

This is an intermediary device in an audio / video DUOX installation.  
Its main functions are:

- To regenerate the signal to increase the distance and / or loads (monitors/telephones) in a riser.
- To create complex topologies: Several risers, derivations and bifurcations.
- To isolate between sections (electrical and signal isolation).



## **Features:**

- Regeneration:
 

This device is capable of completely regenerating the Duox signal (attenuation and deformation) that travels within the cable. This allows an increase in distances from the point (location) and quantity of loads (telephones/monitors) in which the riser is installed, since it amplifies and regenerates the signal. It is useful when we need to reach distances longer than 300 m.

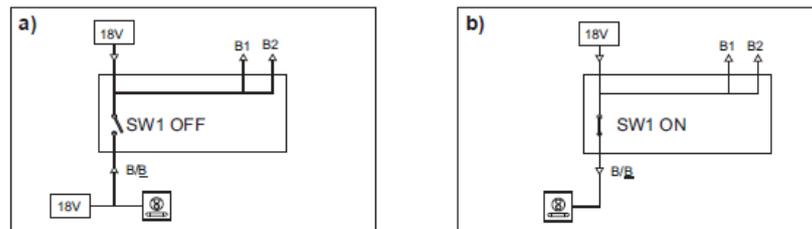
It regenerates the signal in both directions, making it work bi-directionally.
- Electrical and Signal isolation:
 

The splitter provides insulation between the three sections that the device is connecting (input and two outputs). If for example there is a short circuit in one of the risers, the other risers are not affected. In this case the device indicates which riser is short circuited via the signal LED.

The regenerator insulates also with regards to signal against reflections.

- **Signal distribution:**  
This detects through which riser the signal arrives and distributes this information to the other two risers.
- **Power Supply:**  
It allows the connection of an external power supply unit (without needing to incorporate a filter), so that the device insulates the power from the bus and powers the output risers with the local supply.  
The power can be received locally in two ways:
  - Powering only risers mode: In this mode the power reaches each of the risers.
  - Powering risers + panels mode: This way the power reaches each of the risers and also the panels (in case the panel does not have local power).

It is possible to power up to 1 Panel (entrance) and 40 terminals with only this PSU.



- **Regenerators concatenation:**  
Up to 5 devices can be concatenated in cascade. There is no limitation in parallel connection as far as the quality signal is good enough.

**Technical Specification:**

- Power Supply: 18V DC.
- Consumption:
  - Consumption only risers mode:
    - In standby: 71 mA.
    - Active: 91 mA.
  - Consumption risers + panels mode:
    - In standby: 73 mA.
    - Active: 93 mA.
- Operating Temperature: - 5 °C, + 40 °C
- The regenerator also has a Line Adaptor integrated in one of its outputs, which can be optionally used (it can be used as A, C or not used).

**MULTICHANNEL REGENERATOR**

This is an intermediary device in an audio / video DUOX installation.  
Its main functions are:

- To create an additional communication channel between the panel and the terminals, isolating the corresponding interior block (building, villa, apartment...) from the rest of the installation in terms of communication channels.
- To regenerate the signal to increase the distance and / or loads (monitors/telephones) in a riser.
- To create complex topologies: If there are several risers, derivations, and bifurcations.
- To isolate between sections (electrical and signal isolation).



### Features:

- **Regeneration:**  
This device is capable of completely regenerating the Duox signal (attenuation and deformation) that travels within the cable. This allows an increase in distances from the point (location) and quantity of loads (telephones/monitors) in which the riser is installed, since it amplifies and regenerates the signal. It is useful when we need to reach distances longer than 300 m.  
It regenerates the signal in both directions, making it work bi-directionally.
- **Electrical and Signal isolation:**  
The regenerator provides insulation between the two sections that the device is connecting (input and output). If for example there is a short circuit in one of the sections, the other section is not affected. In this case the device indicates the short-circuit via the signal LED.  
The regenerator insulates also with regards to signal against reflections.
- **Power Supply:**  
The regenerator is powered from the Duox bus, but if there are devices (panels/terminals) on both sides a supply set (Power supply unit + Filter) shall be necessary at each section.  
In that case, we will be able to power up to 1 Panel (entrance) and 40 terminals with only this supply unit.

- Regenerators concatenation:  
Up to 5 devices can be concatenated in cascade. There is no limitation in parallel connection as far as the quality signal is good enough.

### Technical Specification:

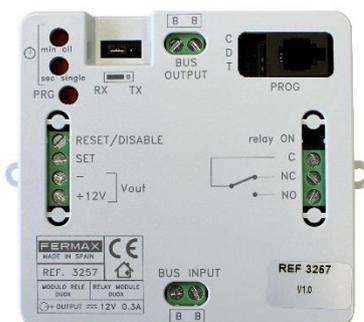
- Power Supply: 18V DC.
- Consumption:
  - In standby: 180 mA.
  - Active: 213 mA.
- Operating Temperature: - 5 °C, + 40 °C
- The regenerator also has a Line Adaptor integrated in one of its outputs, which can be optionally used (can be used as A, C or not used).

### RELAY

The DUOX Relay shall allow to use dry contacts connected at any point in the bus, with various operating and activation modes to be configured:

- Relay activation using commands generated from the residential terminals, entry panels or guard units.
- External activation using buttons, additional external switches, etc.

The DUOX relay can be installed in any part of the DUOX bus. You can install one or several relays: by apartment, block or installation.



### Technical Specifications:

- Power supply: 18 Vdc (non-polarised, via the BUS INPUT or BUS OUTPUT).
- Consumption:
  - \* On standby: 28 mA.
  - \* Maximum: 64 mA (without power in the output and without the programmer connected).
- Operating temperature: [0, 40°C].
- (+12V): Auxiliary voltage output 12Vdc (300 mA max).

- Dry contact relay:
- C: common.
- NC: normally Closed.
- NO: normally Open.
- \* Maximum current 3A.
- \* Maximum voltage 300VAC or 60VDC.

