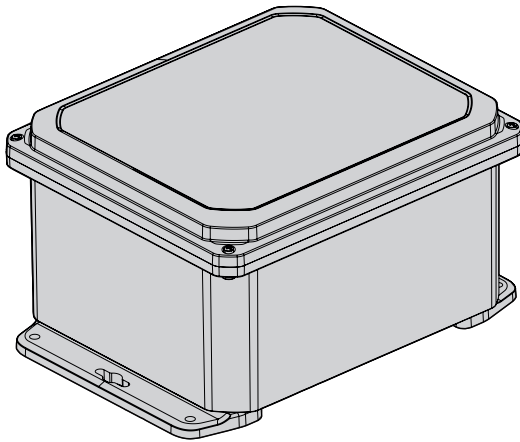




# COMB

Communication box in polycarbonate





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# 1 About this manual

Read all the documentation supplied carefully before installing and using this product. Keep the manual in a convenient place for future reference.

## 1.1 Typographical conventions



**DANGER!**  
**High level hazard.**  
**Risk of electric shock. Disconnect the power supply before proceeding with any operation, unless indicated otherwise.**



**CAUTION!**  
**Medium level hazard.**  
**This operation is very important for the system to function properly. Please read the procedure described very carefully and carry it out as instructed.**



**INFO**  
**Description of system specifications.**  
**We recommend reading this part carefully in order to understand the subsequent stages.**

## 2 Notes on copyright and information on trademarks

The mentioned names of products or companies are trademarks or registered trademarks.

## 3 Safety rules



**DANGER!**  
**High level hazard.**  
**Risk of electric shock. Disconnect the power supply before proceeding with any operation, unless indicated otherwise.**

- Before starting any operation, make sure the power supply is disconnected.
- A power disconnect device must be included in the electrical installation, and it must be very quickly recognizable and operated if needed.
- Be careful not to use cables that seem worn or old.
- The electrical system to which the unit is connected must be equipped with a 16A max (20A max for North America) automatic bipolar circuit breaker. The minimum distance between the circuit breaker contacts must be 3mm (0.1in). The circuit breaker must be provided with protection against the fault current towards the ground (differential) and the overcurrent (magnetothermal).
- This equipment is not suitable for use in locations where children are likely to be present.

**CAUTION!****Medium level hazard.**

**This operation is very important for the system to function properly. Please read the procedure described very carefully and carry it out as instructed.**

- Make sure the product is to be secured to building before operation.
- Any change that is not expressly approved by the manufacturer will invalidate the warranty.
- For technical services, consult only and exclusively authorized technicians.
- Comply with all the national standards during the device installation.
- The product can be installed in any position.
- All disconnected wires must be electrically isolated.
- The manufacturer declines all liability for damage to any of the apparatus mentioned in this handbook, when resulting from tampering, use of non-original spare parts, installation, maintenance and repairs performed by non-authorized, non-skilled personnel.
- This is a Class A product. In a domestic environment this product may cause radio interference. In this case the user may be required to take adequate measures.
- All cable glands, or other gadget of cable entry, must be UL certified to maintain certification, in any case adequate to the degree of tightness you want to maintain.
- For damage to any parts, repair or replacement must be done by, or under supervision of VIDEOTEC.
- Whenever replacing the parts as indicated, always use VIDEOTEC original spare parts and meticulously follow the maintenance instructions supplied with every spare parts kit.
- Use adequate personal protective equipment during installation.
- Never, under any circumstances, make any changes or connections that are not shown in this handbook. Improper use of the appliance can cause serious hazards, risking the safety of personnel and of the installation.
- Use only original spare parts. Non-original spare parts could cause fire, electrical discharge or other hazards.
- Connect the device to a power source corresponding to the indications given on the marking label. Before proceeding with installation make sure that the power line is properly isolated.

**INFO**

**Description of system specifications.  
We recommend reading this part carefully  
in order to understand the subsequent  
stages.**

- For handling there are no particular instructions. It is recommended, to assigned staff, to carry out operation observing the common rules of accident prevention.
- Make sure that all precautions for personal safety have been taken.
- Before proceeding with installation, check the supplied material to make sure it corresponds to the order specification by examining the identification labels (4.4 Product marking label, page 9).
- The equipment is intended for installation in a Restricted Access Area by specialist technical staff.
- Since the user is responsible for choosing the surface to which the unit is to be anchored, we do not supply the fixing devices for attaching the unit firmly to the particular surface. The installer is responsible for choosing fixing devices suitable for the specific purpose on hand. Use methods and materials capable of supporting at least 4 times the weight of the device.
- Installation category (also called Overvoltage Category) specifies the level of mains voltage surges that the equipment will be subjected to. The category depends upon the location of the equipment, and on any surge voltage protection provided. Equipment in an industrial environment, directly connected to major feeders/short branch circuits, is subjected to Installation Category III. If this is the case, a reduction to Installation Category II is required. This can be achieved by use of an insulating transformer with an earthed screen between primary and secondary windings, or by fitting UL listed Surge Protective Devices (SPDs) from live to neutral and from neutral to earth. Listed SPDs shall be designed for repeated limiting of transient voltage surges and the following rated operation conditions: Type 2 (SPDs permanently connected to the power network and intended for installation on the load side of the service equipment); Nominal Discharge Current (In) 20kA min. For example: FERRAZ SHAWMUT, STT2240SPG-CN, STT2BL240SPG-CN rated 120Vac/240Vac, (In=20kA). Maximum distance between installation and reduction is 5m.
- To comply with the main supply voltage dips and short interruption requirements, use a suitable Uninterruptible Power Supply (UPS) to power the unit.
- The manufacturer declines all responsibility for any damage caused by an improper use of the appliances mentioned in this manual. Furthermore, the manufacturer reserves the right to modify its contents without any prior notice. The documentation contained in this manual has been collected and verified with great care. The manufacturer, however, cannot take any liability for its use. The same thing can be said for any person or company involved in the creation and production of this manual.

## 4 Identification

### 4.1 Product description and type designation

COMB is a communication box equipped with everything necessary to connect one or more IP or analogue cameras and the relevant washer.

COMB provides low voltage, local power supply. Furthermore, it allows Fast Ethernet connection, thanks to the integrated Ethernet switch equipped with three RJ45 ports and a SFP port for connection via fibre optic. The internal board also offers a double bypass of the analogue video signals and a double bypass for the I/O signals with multipolar connectors. The internal spaces are designed to make access to cables easier, and to increase user-friendliness when it comes to connection procedures.

COMB operation is guaranteed for the following system configurations:

- A VIDEOTECH PTZ camera with or without the relevant VIDEOTECH washer.

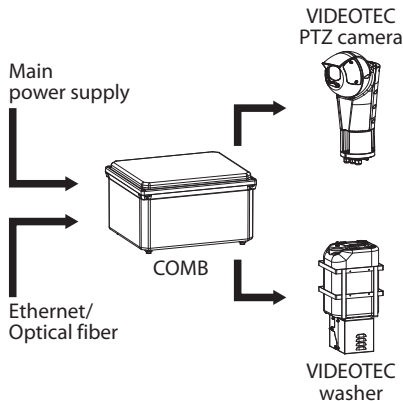


Fig. 1

- One or two VIDEOTECH fixed cameras with or without the relevant VIDEOTECH washers.

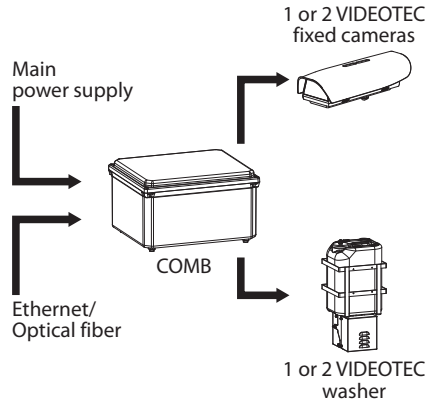


Fig. 2

- A VIDEOTECH PTZ camera and a VIDEOTECH fixed camera without washers.

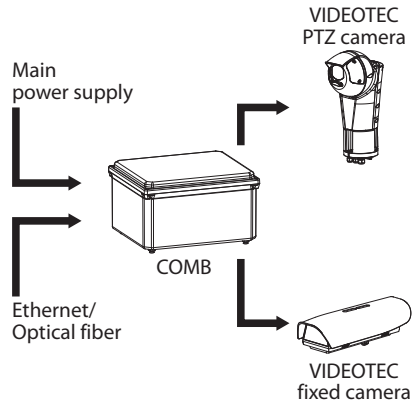


Fig. 3



## 4.2 Product overview

The main parts of the product are illustrated below:

1. Box.
2. Cover.
3. Fixing flanges.

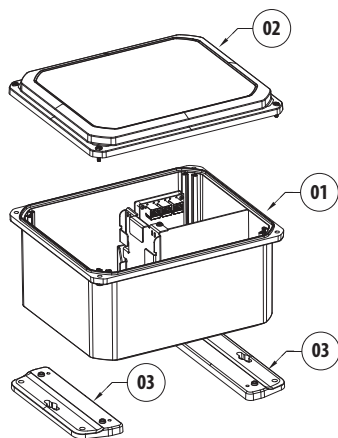


Fig. 4

## 4.3 Range of use

Operating temperature: from  $-40^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$ ) up to  $+70^{\circ}\text{C}$  ( $158^{\circ}\text{F}$ ).

## 4.4 Product marking label

See the label attached to the product.

### 4.4.1 Checking the markings

Before proceeding further with installation, make sure the material supplied corresponds to the order specification by examining the marking labels.

Never, under any circumstances, make any changes or connections that are not shown in this handbook. Improper use of the appliance can cause serious hazards, risking the safety of personnel and of the installation.

## 4.5 Model identification

COMB - CONFIGURATION OPTIONS				
	Input voltage			Revision
COMB	1	from 220Vac up to 230Vac	00	A
	2	24Vac		
	3	from 120Vac up to 127Vac		

Tab. 1.

## 5 Preparing the product for use

### 5.1 Unpacking

When the product is delivered, make sure that the package is intact and that there are no signs that it has been dropped or scratched.

If there are obvious signs of damage, contact the supplier immediately.

When returning a faulty product we recommend using the original packaging for shipping.

Keep the packaging in case you need to send the product for repairs.

### 5.2 Contents

Check the contents to make sure they correspond with the list of materials as below:

- Communication box
- Instruction manuals
- Fixing flanges
- Cable ties (3)
- Bolts and screws

### 5.3 Safely disposing of packaging material

The packaging material can all be recycled. The installer technician will be responsible for separating the material for disposal, and in any case for compliance with the legislation in force where the device is to be used.

## 5.4 Product opening



**During product opening and closing operations, be careful not to damage the cover gasket.**

Unscrew the 4 screws and remove the cover.

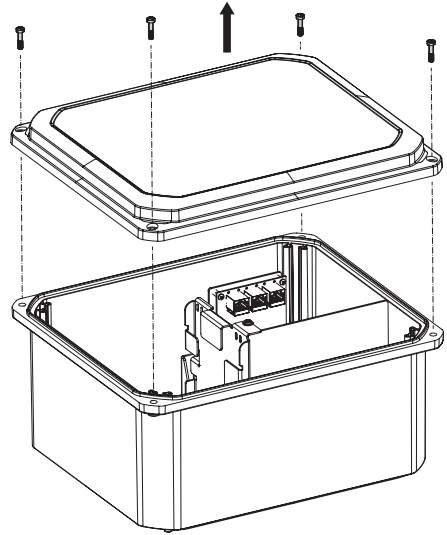


Fig. 5

## 5.5 Cable entry

**⚠ To maintain the IP degree of protection of the product, use cable glands with adequate IP.**

**⚠ To maintain UL certification, the cable glands used must be UL certified.**

**⚠ All the cable glands must be suitable for the use conditions and installed correctly.**

The product is supplied without drilling. It is suggested to perforate the box on the short side indicated in the figure (Fig. 6, page 11).

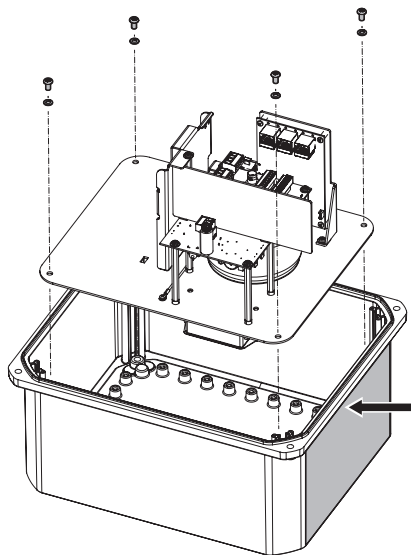


Fig. 6

Before perforating the box, remove the internal block (01) composed of a support plate, connectors board, switch board, transformer and splice tray.

To remove the internal block (01), unscrew the four fastening screws (02).

Hold the board division plate (03), lift the internal block (01) and remove the box (04) (Fig. 7, page 11 and Fig. 8, page 11).

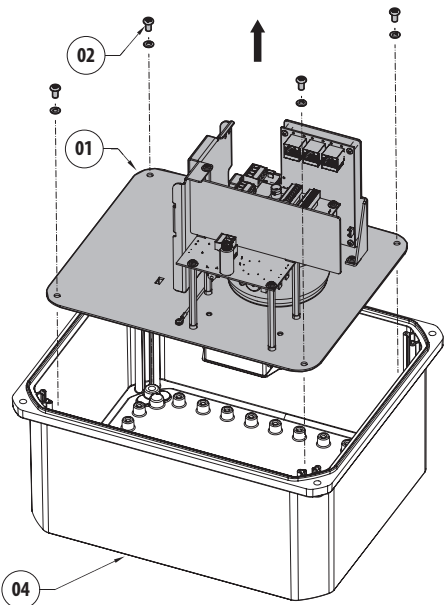


Fig. 7

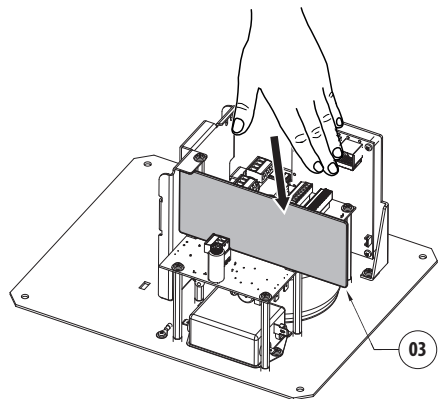


Fig. 8

The last pages of this manual provide two examples of the templates for correct perforation (DRILLING TEMPLATE - A, DRILLING TEMPLATE - B).

Based on the desired configuration, you are advised to use one of the perforation templates in the manual.



**If you want to connect a product from the NXPTZ or NXPTZ SERIES2 range to COMB, you must make a 32mm diameter hole in the box.**

Once the desired hole is made, assemble the cable glands (not supplied) and holding the board division plate (03) re-insert the internal block (01) in the box (04). Fasten the support plate of the internal block (01) with the previously removed screws (02) (Fig. 9, page 12).



**Pay attention to the fixing. Tightening torque: 2Nm.**

**Do not apply threadlocker.**

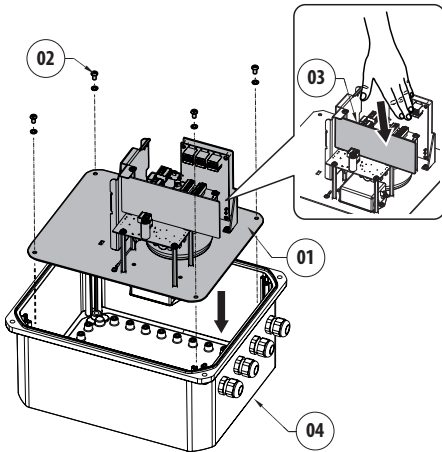


Fig. 9

## 5.6 Fixing flanges assembly

Assemble the fixing flanges as illustrated in the figure, using the screws supplied.



**Pay attention to the fixing. Tightening torque: 2Nm.**

**Do not apply threadlocker.**

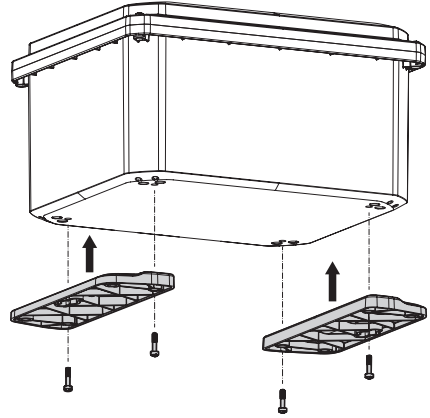


Fig. 10

## 5.7 Product closure



**During product opening and closing operations, be careful not to damage the cover gasket.**

Verify that there is no dirt or debris.

Close the cover with the four screws.



**Pay attention to the fixing. Screws tightening torque: 1.3Nm.**

**Do not apply threadlocker.**

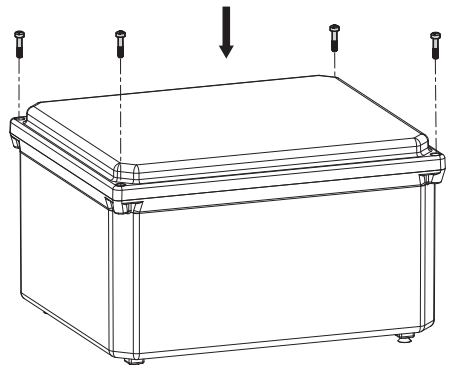


Fig. 11

# 6 Installation

**⚠ Before installing the product, remove the transparent blue protective film from the cover.**

## 6.1 Connection of the cables

Once the cover is removed, you can access to a board with removable connectors and to a switch board with three RJ45 connectors and a SFP slot.

### 6.1.1 Connector board description

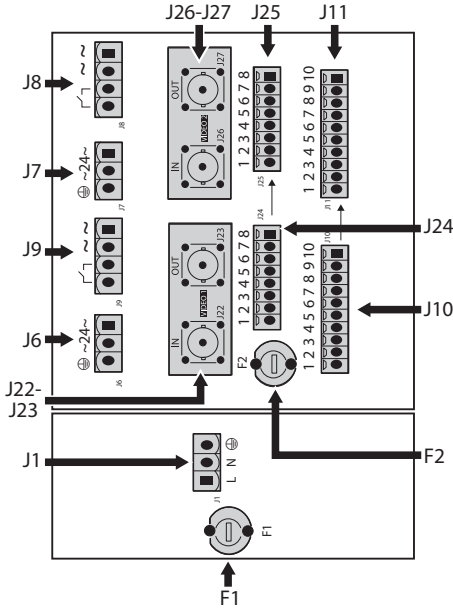


Fig. 12

BOARD DESCRIPTION		
Connector	Function	Terminals - Nominal section of the cables used
J1	Main power supply line	from 0.2mm <sup>2</sup> (24AWG) up to 2.5mm <sup>2</sup> (13AWG)
F1	Main power supply fuse	-
J6	Power supply output 24Vac	from 0.2mm <sup>2</sup> (24AWG) up to 2.5mm <sup>2</sup> (13AWG)
J7	Power supply output 24Vac	from 0.2mm <sup>2</sup> (24AWG) up to 2.5mm <sup>2</sup> (13AWG)
J8	24Vac output, for washer and command relay input from the VIDEOTEC camera	from 0.2mm <sup>2</sup> (24AWG) up to 2.5mm <sup>2</sup> (13AWG)
J9	24Vac output, for washer and command relay input from the VIDEOTEC camera	from 0.2mm <sup>2</sup> (24AWG) up to 2.5mm <sup>2</sup> (13AWG)
J22	BNC (Video 1) IN	-
J23	BNC (Video 1) OUT	-
J26	BNC (Video 2) IN	-
J27	BNC (Video 2) OUT	-
F2	24Vac power supply output fuse	-
J24	8-pole connector IN (the contacts of connector J24 correspond to the contacts of connector J25)	from 0.2mm <sup>2</sup> (24AWG) up to 1.0mm <sup>2</sup> (17AWG)
J25	8-pole connector OUT (the contacts of connector J24 correspond to the contacts of connector J25)	from 0.2mm <sup>2</sup> (24AWG) up to 1.0mm <sup>2</sup> (17AWG)
J10	10-pole connector IN (the contacts of connector J10 correspond to the contacts of connector J11)	from 0.2mm <sup>2</sup> (24AWG) up to 1.0mm <sup>2</sup> (17AWG)
J11	10-pole connector OUT (the contacts of connector J10 correspond to the contacts of connector J11)	from 0.2mm <sup>2</sup> (24AWG) up to 1.0mm <sup>2</sup> (17AWG)

Tab. 2

**⚠ Length of conductor stripping: 5mm.**

## 6.1.2 Connection of the main power supply line



**CAUTION! TNV-1 installation type. The installation is type TNV-1, do not connect it to SELV circuits.**

Depending on the version, the device can be provided with different power supply voltages. The power supply voltage is indicated on the product identification label (4.4 Product marking label, page 9).

Connect the power supply cables to connector J1, following the instructions on the screen printing. Connect the safety earthing cable to connector J1, following the instructions on the screen printing (6.1.1 Connector board description, page 13).

CONNECTING THE POWER SUPPLY	
Colour	Terminal contact
<b>Power supply from 220Vac up to 230Vac</b>	
Blue	N (Neutral)
Brown	L (Phase)
Yellow/Green	⊕
<b>Power supply 24Vac</b>	
Defined by the installer	N (Neutral)
Defined by the installer	L (Phase)
Yellow/Green	⊕
<b>Power supply from 120Vac up to 127Vac</b>	
Blue	N (Neutral)
Brown	L (Phase)
Yellow/Green	⊕

Tab. 3

## 6.1.3 Products connection to the 24Vac power supply line

Connect the 24Vac power supply cables of the devices (PTZ or fixed camera) to the connectors J6 and J7. (6.1.1 Connector board description, page 13).

CONNECTION OF THE 24VAC OUTPUT POWER SUPPLY LINE	
Colour	Terminal contact
<b>Power supply 24Vac</b>	
Defined by the installer	~
Defined by the installer	~
Yellow/Green	⊕

Tab. 4

## 6.1.4 Multipolar connectors (relays, alarms, serial line)

Consult the installation manuals of the devices to connect for specifications on relays and alarms. Use the multipolar connectors, on the connectors board, to transfer the signals from the devices to the main system, considering the contacts of the connector J24 correspond to the contacts of the connector J25 and the contacts of the connector J10 correspond to the contacts of connector J11 (6.1.1 Connector board description, page 13).

## 6.1.5 BNC connectors (analogue video)

Consult the installation manuals of the devices to connect for specifications on analogue video signals. Use the BNC connectors, on the connectors' board, to transfer signals from the devices to the main system considering the connector J22, replica J23 and J26 replica J27 (6.1.1 Connector board description, page 13).

### 6.1.6 Connectors for the washer (WASNX)

Consult the installation manual of the washer for the relevant specifications. Connect the command contacts relay of the VIDEOTEC PTZ or fixed cameras and the power supply cables (24Vac) of the washer according to the diagram below (Fig. 13, page 15).

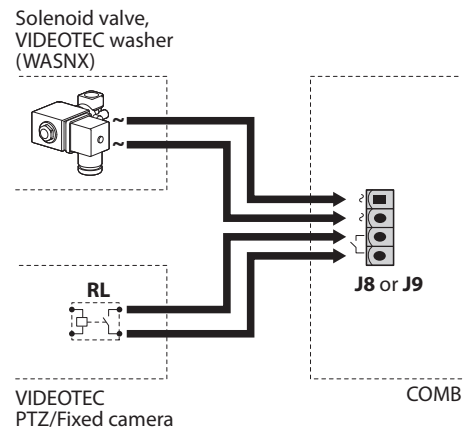


Fig. 13

### 6.1.7 Connectors for the washer (WASPT)

Consult the installation manual of the washer for the relevant specifications. Connect the command contacts relay of the VIDEOTEC PTZ or fixed cameras and the power supply cables (24Vac) of the washer according to the diagram below (Fig. 14, page 15).

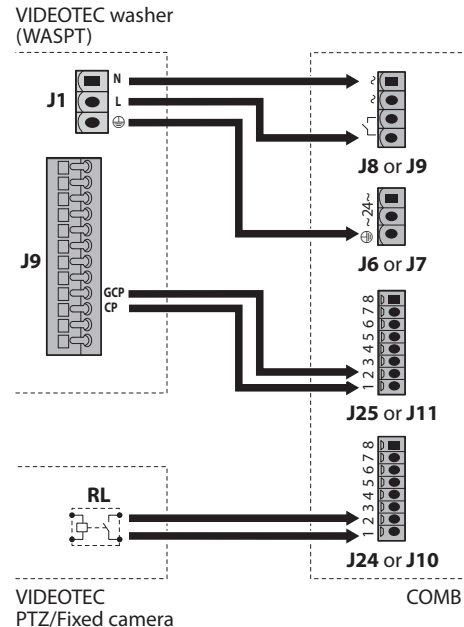


Fig. 14

## 6.1.8 Description of the switch board

### DESCRIPTION OF THE SWITCH BOARD

Connector	Function
J1	RJ45 Ethernet Connector
J3	RJ45 Ethernet Connector
J5	RJ45 Ethernet Connector
J2	SFP connector

Tab. 5

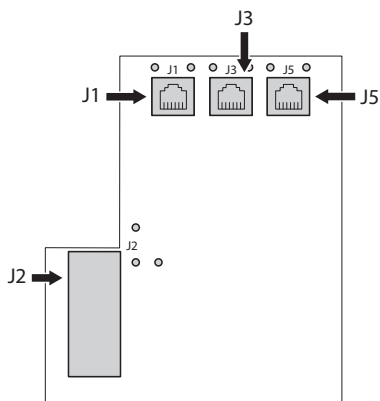


Fig. 15

Operation of the RJ45 connectors is signalled by the relevant two LEDs:

- Yellow LED: LED on, indicates the connection is enabled.
- Green LED: LED on, indicates the connection speed is 100Mbps; LED off, indicates the connection speed is 10Mbps.

Operation of the SFP connector is signalled by the relevant three LEDs:

- Yellow LED: LED on, indicates the connector is enabled.
- Red LED: LED on, indicates the fibre optic signal has pinged;
- Green LED: LED on, indicates the connection speed is 100Mbps.

## 6.1.9 Ethernet cables connection

The devices to connect can be connected indifferently to the RJ45 ports and/or to the SFP module.

The switch board can manage up to 3 RJ45 ports and is equipped with a slot for SFP modules.

Connect the Ethernet cables to ports RJ45, J1, J3, J5 connectors. Insert the SFP module (not supplied) in Slot J2 of the switch board (6.1.8 Description of the switch board, page 16).

Consult the SFP module manual for the relevant specifications.

**i** VIDEOTEC has tested various types of SFP modules. For further information please contact the VIDEOTEC service center.

Consult the installation manuals of the devices to connect for specifications on the Ethernet cable.

## 6.1.10 Using the splice tray

COMB is equipped with a splice tray to host the fiber optics.

Remove the screws (01) and take out the splice tray (02) (Fig. 16, page 16).

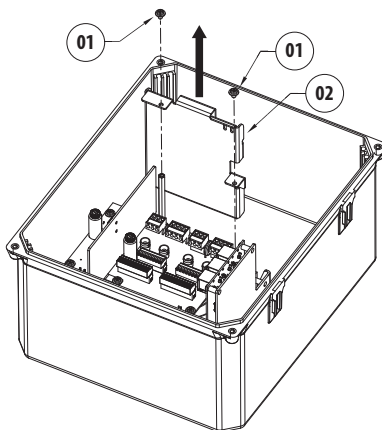


Fig. 16



Arrange the fibre optics as indicated in the figure, use the nylon ties supplied to fasten them (Fig. 17, page 17).

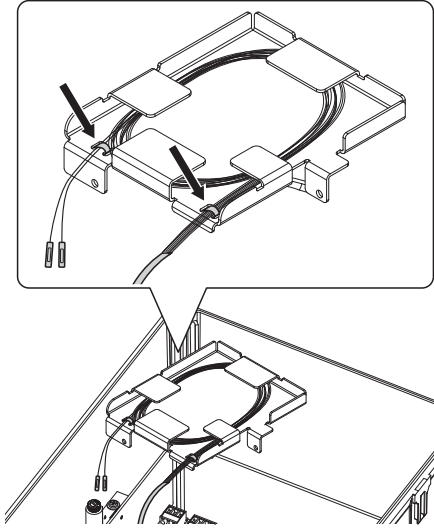


Fig. 17

Position the splice tray in place and fasten it using the previously removed screws (Fig. 18, page 17).

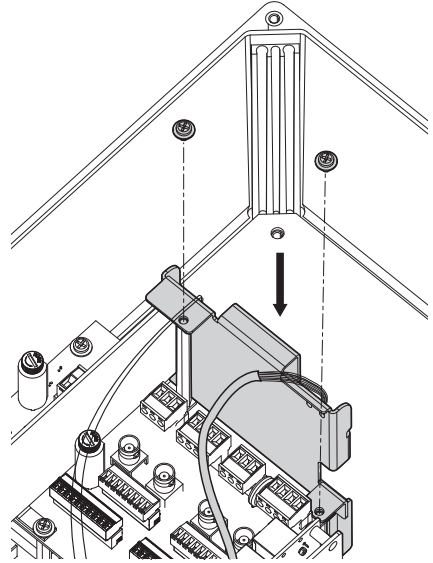


Fig. 18



**Apply threadlocker in the fastening screws (Loctite 243®).**



**Pay attention to the fixing. Screws tightening torque: 1.6Nm.**

## 7 Switching on

The unit is switched on by connecting the power supply.

To switch off the unit disconnect the power.

## 8 Maintenance

### 8.1 Fuses replacement



**CAUTION! For continued protection against risk of fire, replace only with same type and rating of fuse. Fuses must be replaced only by service personnel.**

If necessary, the connector board's fuses can be replaced (6.1.1 Connector board description, page 13). The new fuses must comply with the directions given in the table.

FUSES REPLACEMENT		
Supply voltage	Fuse (F1)	Fuse (F2)
from 220Vac up to 230Vac, 50/60Hz	T 4A H 250V 5x20	T 8A H 250V 5x20
24Vac, 50/60Hz	T 8A H 250V 5x20	T 8A H 250V 5x20
from 120Vac up to 127Vac, 50/60Hz	T 4A H 250V 5x20	T 8A H 250V 5x20

Tab. 6

## 9 Cleaning



**Frequency will depend on the type of environment in which the product is used.**



**Avoid ethyl alcohol, solvents, hydrogenated hydrocarbide, strong acid and alkali. Such products may irreparably damage the surface.**

Cleaning should be done with mild soap diluted with water.

## 10 Information on disposal and recycling

The European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE) mandates that these devices should not be disposed of in the normal flow of municipal solid waste, but they should be collected separately in order to optimize the recovery stream and recycling of the materials that they contain and to reduce the impact on human health and the environment due to the presence of potentially hazardous substances.



**The symbol of the crossed out bin marked on all products to remember this.**

The waste may be delivered to appropriate collection centers, or may be delivered free of charge to the distributor where you purchased the equipment at the time of purchase of a new equivalent or without obligation to a new purchase for equipment with size smaller than 25cm (9.8in).

For more information on proper disposal of these devices, you can contact the responsible public service.

## 11 Troubleshooting



**Contact the VIDEOTEC technical service or an authorized support centre if the problems listed below persist or you have any other issues that are not described here.**

When contacting VIDEOTEC for assistance please provide the serial number and the identification code of the model.

### PROBLEM

CAUSE

SOLUTION

### The product does not go on.

Wiring error, blown fuse.

Make sure the connections are correct. Check the continuity of the fuses and replace them with the indicated models should they fail.

## 12 Technical data

### 12.1 Mechanical

Material: Polycarbonate

Attachment points: 6, diameter 8.4mm (0.33in)

External dimensions (WxHxL): 368.3x195.4x285.5mm (14.5x7.7x11.2in)

Cable glands not supplied with the product

Splice tray to host the fiber optics included in the product

Unit weight: 6.6kg (14.5lb)

### 12.2 Electrical

COMB exclusively supports VIDEOTEC products with 24Vac.

Input voltages available:

- from 220Vac up to 230Vac  $\pm 10\%$ , 50/60Hz
- 24Vac  $\pm 10\%$ , 50/60Hz
- from 120Vac up to 127Vac  $\pm 10\%$ , 50/60Hz

Output voltage: 24Vac, 50/60Hz, 200VA (120VA max UL 62368-1)

Possible system configurations:

- A VIDEOTEC PTZ camera with or without the relevant VIDEOTEC washer.
- One or two VIDEOTEC fixed cameras with or without the relevant VIDEOTEC washers.
- A VIDEOTEC fixed camera and a VIDEOTEC PTZ camera without washers.

### 12.3 Network

4 channels unmanaged ethernet switch:

3 RJ45 ports

- Ethernet connection: 10BASE-T/100BASE-T

1 SFP port (SMALL FORM FACTOR PLUGGABLE)

- Ethernet connection: 100BASE-FX
- Supply voltage: 3.3V
- Standard: MSA compliant

The SFP module (not supplied by VIDEOTEC) must meet the following requirements:

- Laser: Class 1, complies with EN60825-1
- UL/IEC 60950-1 or UL/IEC 62368-1 Certification

### 12.4 Analogue video

2 bypass for analog video signals with BNC connectors

### 12.5 I/O interface

2 bypass for I / O signals with multi-pin connectors

### 12.6 Environment

For indoors and outdoors installation

Operating temperature: from -40°C (-40°F) up to +70°C (158°F)

Relative humidity: from 5% up to 95%

### 12.7 Certifications

Electrical safety (CE): EN60950-1, IEC60950-1, EN62368-1, IEC62368-1

Electromagnetic compatibility (CE): EN50130-4, EN55032 (Class A), EN61000-6-4, EN61000-3-2, EN61000-3-3

RoHS (CE): EN50581

Outdoor installation (CE): EN60950-22, IEC60950-22

Vibration test: EN50130-5, EN60068-2-6

UL certification (UL60950-1, CAN/CSA C22.2 No. 60950-1-07, UL62368-1, CAN/CSA C22.2 No. 62368-1-14): cULus Listed

Electromagnetic compatibility (North America): FCC part 15 (Class A), ICES-003 (Class A)

IP protection degree (EN/IEC60529): IP66, IP67, IP68, IP69

IK protection degree: IK10

Level of protection Type (UL50E): 4X, 6P

EAC certification

KC certification (Only for code COMB100A)

### 12.8 Certifications - Railway applications

Compliance to railway application standard: EN50121-4 (the product requires the filter accessory SURGEPR)

## 12.9 Certifications - Marine applications

Lloyd's Register Marine Type Approval certification:  
Test Specification Number 1 (ENV1, ENV2, ENV3,  
ENV5)

Electromagnetic compatibility: EN60945

Salty fog resistance: EN60068-2-52

## 13 Technical drawings



The indicated measurements are expressed in millimetres.

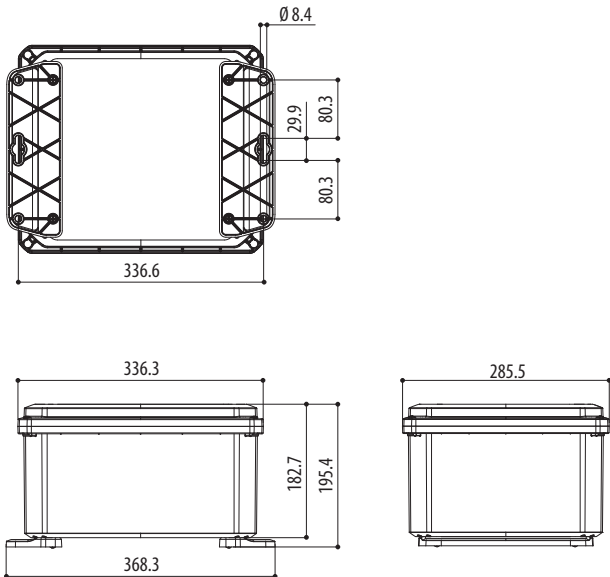


Fig. 19 COMB.



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