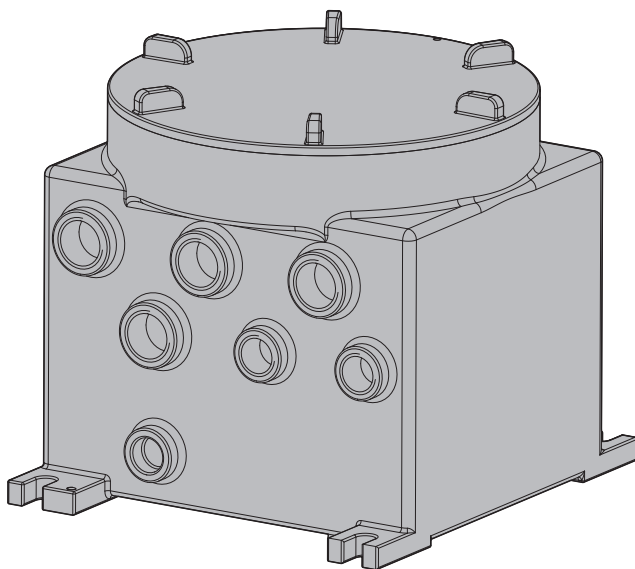


MAXIMUS MBX

Explosion-proof communication box in stainless steel

MANUAL B



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1 About this manual

Read all the documentation supplied carefully before installing and using this unit. Keep this manual and use instructions of the box within reach for subsequent consultation.

1.1 Typographical conventions



DANGER!
Explosion hazard.
Read carefully to avoid danger of explosion.



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.

3 Safety rules



Read the product Manual A before performing any operation.



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 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.
- All the cables must comply with IEC60332-1-2, IEC 60332-1-3 and IEC/EN60079-14.

2 Notes on copyright and information on trademarks

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

**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 appliance is securely anchored before supplying power.
- Any change that is not expressly approved by the manufacturer will invalidate the guarantee.
- 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 product must only be repaired by suitably trained personnel or under the supervision of VIDEOTEC personnel in accordance with the foreseen terms and conditions: IEC/EN60079-19.
- 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 (4.2 Product marking, page 9).
- Equipment intended for installation in Restricted Access Location performed 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. Remember to use screws no less than M8 (ISO261) or equivalent.

- 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.
- Make connections and tests in the laboratory before carrying out installation on site.
- For all maintenance interventions, we recommend you return the product to the laboratory that will perform all required operations.
- To comply with the main supply voltage dips and short interruption requirements, use a suitable Uninterruptable 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

MAXIMUS MBX is much more than just a simple explosion-proof junction box. In fact, it is a communication box equipped with everything needed to connect one or more IP or analogue cameras.

MAXIMUS MBX has been designed to integrate and work exclusively with the MAXIMUS range of Videotec products.

MAXIMUS MBX provides a local, low-voltage power supply. It also allows a Fast Ethernet connection, thanks to an integrated Ethernet switch equipped with 3 RJ45 ports and an SFP port for fibre optic connection. The type of SFP module can be chosen according to the installation requirements. The internal spaces are designed to make access to cables easier, and to increase user-friendliness when it comes to connection procedures. The internal board also offers the bypass for analog video signals and for all the inputs and outputs which are present in the Videotec MAXIMUS products.

MAXIMUS MBX is the complete and competitive solution for professional installation of Videotec's MAXIMUS explosion-proof products.

MAXIMUS MBX has been designed to connect a PTZ camera and its washing kit, or in alternative two fixed cameras and their washing kits. (Fig. 1, page 8 and Fig. 2, page 8).

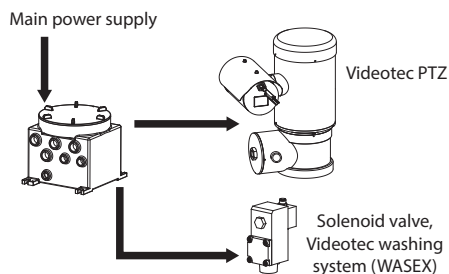


Fig. 1

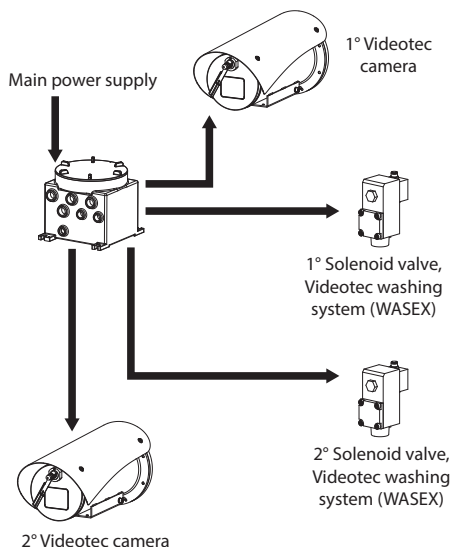


Fig. 2

4.2 Product marking

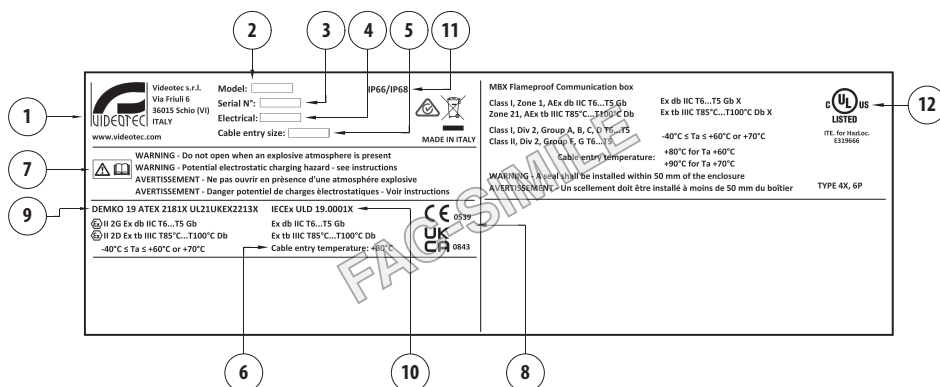


Fig. 3

1. Manufacturer's name and address
2. Model identification code
3. Serial number (the second and the third digits define the year of manufacture)
4. Electrical data: Power supply voltage (V), Current consumption (A), Frequency (Hz)
5. Type, size and number of cable entries
6. Cable input temperature (the value depends on the type of certification)
7. Important safety instructions
8. CE marking and number of accredited body to verify compliance of production
9. ATEX certification:
 - ATEX certificate number
 - Classification of the type of zone, protection method, temperature class for which use is permitted of the product according to the ATEX directive
10. IECEx certification:
 - IECEx certificate number
 - Classification of the type of zone, protection method, temperature class for which use is permitted of the product according to the IECEx directive
11. IP protection degree
12. UL certification (check with the product code if the certification is present):
 - Ambient temperature of use
 - Cable input temperature (the value depends on the type of certification)
 - NEMA Types
 - Classification of the type of zone, protection method, temperature class for which use is permitted of the product according to the UL directive

5 Product coding

MAXIMUS MBX - CONFIGURATION OPTIONS				
	Input voltage		Temperature class - Ambient temperature	
MBX	1 230Vac	M Fibre splice tray and EMC Marine filter	A T6...T5 -40/+60°C or +70°C	A
	2 24Vac		D T4 -40°C /+80°C	
	3 120Vac			

Tab. 1

MAXIMUS MBX - CERTIFICATIONS AND MARKINGS				
Part number	Certification	Marking	Ambient temperature	Cable entry temperature
MBX**AA	ATEX	⊕ II 2 G Ex db IIC T6...T5 Gb ⊕ II 2D Ex tb IIIC T85°C...T100°C Db	-40°C ≤ Ta ≤ +60°C or +70°C	80°C
	IECEX	Ex db IIC T6...T5 Gb Ex tb IIIC T85°C...T100°C Db		
	UL Hazardous Location America	Class I, Zone 1, AEx db IIC T6...T5 Gb Zone 21, AEx tb IIIC T85°C...T100°C Db Class I, Div 2, Group A, B, C, D T6...T5 Class II, Div 2, Group F, G T6...T5	-40°C ≤ Ta ≤ +60°C or +70°C	80°C with Ta = 60°C max 90°C with Ta = 70°C max
	UL Hazardous Location Canada	Ex db IIC T6...T5 Gb X Ex tb IIIC T85°C...T100°C Db X Class I, Div 2, Group A, B, C, D T6...T5 Class II, Div 2, Group F, G T6...T5		
MBX**DA	ATEX	⊕ II 2G Ex db IIC T4 Gb ⊕ II 2D Ex tb IIIC T135°C Db	-40°C ≤ Ta ≤ +80°C	90°C
	IECEX	Ex db IIC T4 Gb Ex tb IIIC T135°C Db		

Tab. 2

6 Preparing the product for use



Read the product Manual A before performing any operation.

6.1 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.

6.2 Contents

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

- Explosion-proof communication box in stainless steel
- O-ring replacement part kit, hexagon socket set screws
- Instruction manuals

6.3 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.

7 Installation



Read the product Manual A before performing any operation.

7.1 Range of use

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

7.2 Connection of the cables

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

7.2.1 Connector board description

BOARD DESCRIPTION		
Connector	Function	Terminals - Nominal section of the cables used
J1	Main power supply line	from 0.2mm ² (24AWG) up to 2.5mm ² (13AWG)
F1	Main power supply fuse	–
J6	Power supply output 24Vac	from 0.2mm ² (24AWG) up to 2.5mm ² (13AWG)
J7	Power supply output 24Vac	from 0.2mm ² (24AWG) up to 2.5mm ² (13AWG)
J8	24Vac output and auxiliary contact input	from 0.2mm ² (24AWG) up to 2.5mm ² (13AWG)
J9	24Vac output and auxiliary contact input	from 0.2mm ² (24AWG) up to 2.5mm ² (13AWG)
F2	24Vac power supply output fuse	–
J22	BNC (Video 1) IN	–
J23	BNC (Video 1) OUT	–
J26	BNC (Video 2) IN	–
J27	BNC (Video 2) OUT	–
J24	8-pole connector IN	from 0.2mm ² (24AWG) up to 1.0mm ² (17AWG)
J25	8-pole connector OUT	from 0.2mm ² (24AWG) up to 1.0mm ² (17AWG)
J10	10-pole connector IN	from 0.2mm ² (24AWG) up to 1.0mm ² (17AWG)
J11	10-pole connector OUT	from 0.2mm ² (24AWG) up to 1.0mm ² (17AWG)

Tab. 3



Stripping length of conductors: 5mm (0.19in).

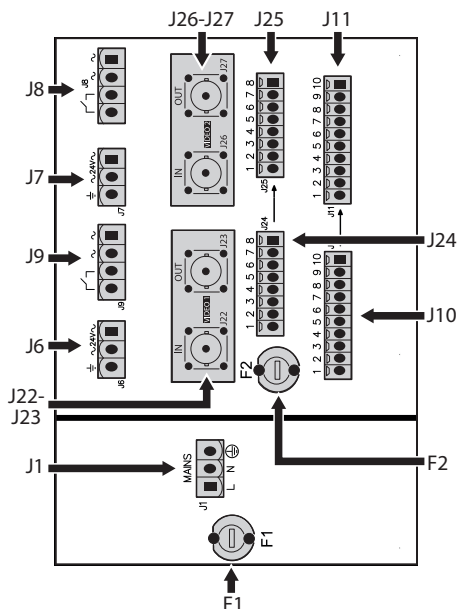


Fig. 4

7.2.2 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. (4.2 Product marking, page 9).

Connect the power supply cables to connector J1, following the polarity indicated on the screen printing. Connect the safety ground cable to connector J1 following the instructions on the screen printing (7.2.1 Connector board description, page 11).

CONNECTION OF THE POWER SUPPLY LINE	
Colour	Terminals
Power supply 24Vac	
Defined by the installer	N (Neutral)
Defined by the installer	L (Phase)
Yellow/Green	
Power supply 230Vac	
Blue	N (Neutral)
Brown	L (Phase)
Yellow/Green	
Power supply 120Vac	
Blue	N (Neutral)
Brown	L (Phase)
Yellow/Green	

Tab. 4

7.2.3 Products connection to the 24Vac power supply line

Check the requirements of the related VIDEOTEC products (7.2.10 Related products, page 15).

From the connectors board, take out the removable connectors J6, J7 and connect the 24Vac power supply cables of the devices following the polarity indicated on the screen printing (7.2.1 Connector board description, page 11).

CONNECTION OF THE 24VAC OUTPUT POWER SUPPLY LINE	
Colour	Terminals
Power supply 24Vac	
Defined by the installer	~
Defined by the installer	~
Yellow/Green	⊕

Tab. 5

7.2.4 Multi-polar connectors (relays, alarms, serial line)

Consult the installation manuals of the devices to connect for specifications on relays, alarms and serial line. Use the multi-polar 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 (7.2.1 Connector board description, page 11).

7.2.5 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 (7.2.1 Connector board description, page 11).

7.2.6 Connectors for the wash system

Consult the installation manuals of the wash system to connect for the relevant specifications. Connect the contacts of the command relay of PTZ or the cameras and the power supply cables (24Vac) of the wash system to the connectors J8 and J9 following the screen printing on the board (7.2.1 Connector board description, page 11).

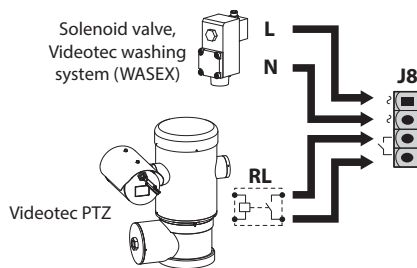


Fig. 5

7.2.7 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. 6

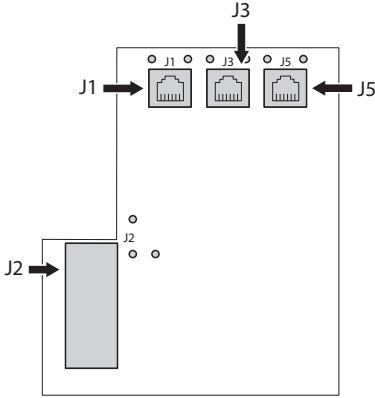


Fig. 6

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; LED off, indicates the fibre optic signal has not pinged.
- Green LED: LED on, indicates the connection speed is 100Mbps.

7.2.8 Ethernet cables connection

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. Insert the SFP module (not supplied) in Slot J2 of the switch board (7.2.7 Description of the switch board, page 14).

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

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.

7.2.9 Using the splice tray

MAXIMUS MBX is equipped with a splice tray to host the fibre optics.

Remove the screws (01) and take out the splice tray (02) (Fig. 7, page 14).

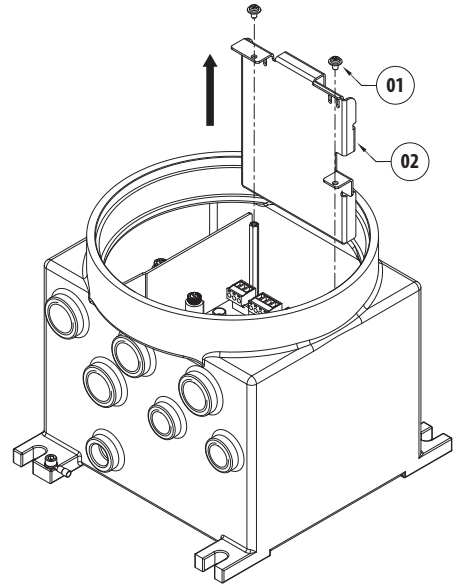


Fig. 7

Arrange the fibre optics as indicated in the figure, use the plastic clips supplied to fasten the fibre optic bundle (Fig. 8, page 15).

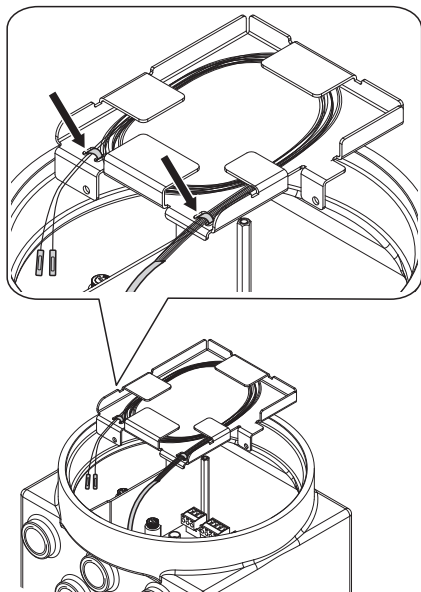


Fig. 8

Position the splice tray in place and fasten it using the specific screws (Fig. 9, page 15).

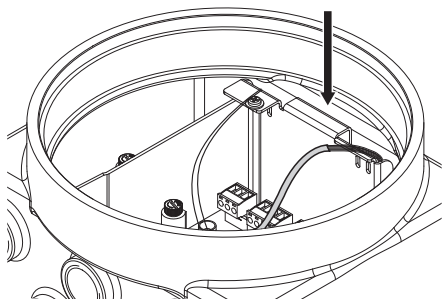


Fig. 9

7.2.10 Related products



MAXIMUS MBX exclusively supports VIDEOTEC products from the MAXIMUS range with 24Vac and WASEX with 24Vac.

Check the requirements of the device to connect in the relevant instructions manual.

7.3 Connection of the safety earthing



The ground conductor should be equal or greater in section than the section of the power supply cables.



Earth cable should be about 10mm longer than the other two, so that it will not be disconnected accidentally if pulled.

The equipment must be connected to a ground conductor (safety ground). This connection must only be performed through the power line connector (J1, 7.2.1 Connector board description, page 11).

8 Switching on



Read the product Manual A before performing any operation.

The unit is switched on by connecting the power supply.

To switch off the unit disconnect the power.

9 Maintenance



Read the product Manual A before performing any operation.

9.1 Routine maintenance (to be performed on a periodic basis)



Read the product Manual A before performing any operation.



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

9.1.1 Inspecting the cables

The cables should not show signs of damage or wear, which could generate hazardous situations. In this case extraordinary maintenance is necessary.

9.1.2 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 (7.2.1 Connector board description, page 11). The new fuses must comply with the directions given in the table.

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

Tab. 7

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 is 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



Read the product Manual A before performing any operation.



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

The product does not go on.

CAUSE

Wiring error, blown fuse.

SOLUTION

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

AlSI 316L stainless steel construction

Fastening slots: 4 x Ø11mm (0.43in)

Cable gland holes: 4 x 3/4" NPT + 2 x 1/2" NPT (on request: 4 x M25 + 2 x M20)

External dimensions (WxHxL): 220x216x240mm (8.7x8.5x9.4in)

Unit weight: 17.4kg (38.4lb)

12.2 Electrical

MAXIMUS MBX exclusively supports VIDEOTEC products from the MAXIMUS range with 24Vac and WASEX with 24Vac.

Maximum power output:

- The output power depends on the VIDEOTEC product connected.
- The maximum output power is based on the VIDEOTEC products connected to MAXIMUS MBX.
- Operating temperature from -40°C (-40°F) up to +25°C (77°F): 120W
- Operating temperature from +25°C (77°F) up to +70°C (158°F): 60W

Input voltages available:

- 230Vac±10%, 50/60Hz
- 24Vac±10%, 50/60Hz
- 120Vac±10%, 50/60Hz

Possible system configurations:

- up to 1 PTZ + 1 wash system
- up to 2 fixed cameras + 2 wash systems

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: compliant MSA

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 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 B), EN61000-6-3, 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 B), ICES-003 (Class B)

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

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

12.8 Certifications - Explosion-proof applications

ATEX (EN IEC 60079-0, EN 60079-1, EN 60079-31)

IECEx (IEC 60079-0, IEC 60079-1, IEC 60079-31)

UL listed for USA (UL 60079-0, UL 60079-1, UL 60079-31)

UL listed for Canada (CAN/CSA-C22.2 NO. 60079-0, CAN/CSA-C22.2 NO. 60079-1, CAN/CSA-C22.2 NO. 60079-31)

12.9 Certifications - Marine applications

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

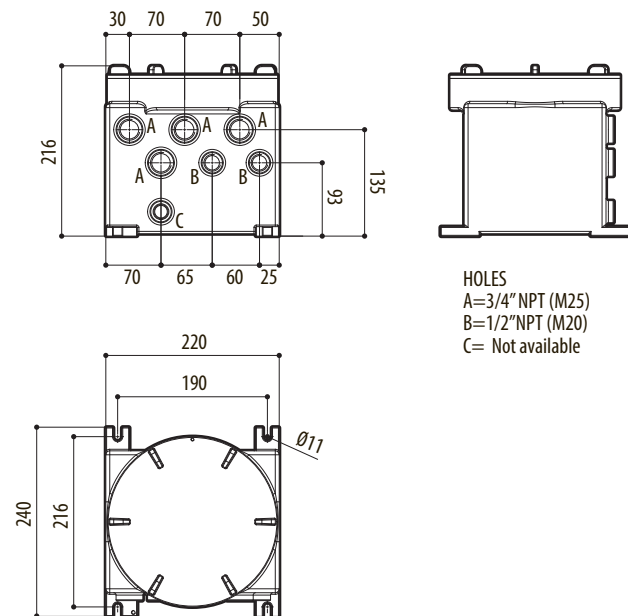
Electromagnetic compatibility: EN60945

Salty fog resistance: EN60068-2-52

13 Technical drawings



The indicated measurements are expressed in millimetres.



HOLES
A=3/4" NPT (M25)
B=1/2" NPT (M20)
C= Not available

Fig. 10 MAXIMUS MBX.



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