Divar XF

Digital Hybrid Recorder

BOSCH

en Installation manual

Table of Contents

1   Safety

1.1   Important safety instructions

Read, follow, and retain for future reference all of the following safety instructions. Heed all warnings on the unit and in the operating instructions before operating the unit.

1. **Cleaning -** Unplug the unit from the outlet before cleaning. Follow any instructions provided with the unit. Generally, using a dry cloth for cleaning is sufficient but a moist, fluff-free cloth or leather shammy may also be used. Do not use liquid cleaners or aerosol cleaners.
2. **Heat Sources -** Do not install the unit near any heat sources such as radiators, heaters, stoves, or other equipment (including amplifiers) that produce heat.
3. **Ventilation -** Any openings in the unit enclosure are provided for ventilation to prevent overheating and ensure reliable operation. Do not block or cover these openings. Do not place the unit in an enclosure unless proper ventilation is provided, or the manufacturer's instructions have been adhered to.
4. **Water -** Do not use this unit near water, for example near a bathtub, washbowl, sink, laundry basket, in a damp or wet basement, near a swimming pool, in an outdoor installation, or in any area classified as a wet location. To reduce the risk of fire or electrical shock, do not expose this unit to rain or moisture.
5. **Object and liquid entry -** Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electrical shock. Never spill liquid of any kind on the unit. Do not place objects filled with liquids, such as vases or cups, on the unit.
6. **Lightning -** For added protection during a lightning storm, or when leaving this unit unattended and unused for long periods, unplug the unit from the wall outlet and disconnect the cable system. This will prevent damage to the unit from lightning and power line surges.
7. **Controls adjustment -** Adjust only those controls specified in the operating instructions. Improper adjustment of other controls may cause damage to the unit. Use of controls or adjustments, or performance of procedures other than those specified, may result in hazardous radiation exposure.
8. **Overloading -** Do not overload outlets and extension cords. This can cause fire or electrical shock.
9. **Power supply cord and plug protection -** Protect the power supply cord and plug from foot traffic, being pinched by items placed upon or against them at electrical outlets, and its exit from the unit. For units intended to operate with 230 VAC, 50 Hz, the power supply cord must comply with the latest versions of *IEC 60227*. For units intended to operate with 120 VAC, 60 Hz, the power supply cord must comply with the latest versions of *UL 62* and *CSA 22.2 No.49*.
10. **Power disconnect -** Units have power supplied to the unit whenever the power cord is inserted into the power source. The power cord plug is the main power disconnect device for switching off the voltage for the unit.
11. **Power sources -** Operate the unit only from the type of power source indicated on the label. Before proceeding, be sure to disconnect the power from the cable to be installed into the unit.
12. **Servicing -** Do not attempt to service this unit yourself. Opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

13. **Damage requiring service** · Unplug the unit from the main AC power source and refer servicing to qualified service personnel when any damage to the equipment has occurred, such as:
    – the power supply cord or plug is damaged;
    – exposure to moisture, water, and/or inclement weather (rain, snow, etc.);
    – liquid has been spilled in or on the equipment;
    – an object has fallen into the unit;
    – unit has been dropped or the unit cabinet is damaged;
    – unit exhibits a distinct change in performance;
    – unit does not operate normally when the user correctly follows the operating instructions.
14. **Replacement parts** · Be sure the service technician uses replacement parts specified by the manufacturer, or that have the same characteristics as the original parts. Unauthorized substitutions could void the warranty and cause fire, electrical shock, or other hazards.
15. **Safety check** · Safety checks should be performed upon completion of service or repairs to the unit to ensure proper operating condition.
16. **Installation** · Install in accordance with the manufacturer's instructions and in accordance with applicable local codes.
17. **Attachments, changes or modifications** · Only use attachments/accessories specified by the manufacturer. Any change or modification of the equipment, not expressly approved by Bosch, could void the warrantee or, in the case of an authorization agreement, authority to operate the equipment.

1.2 Safety precautions

DANGER!
High risk: This symbol indicates an imminently hazardous situation such as "Dangerous Voltage" inside the product.
If not avoided, this will result in an electrical shock, serious bodily injury, or death.

WARNING!
Medium risk: Indicates a potentially hazardous situation.
If not avoided, this could result in minor or moderate bodily injury.

CAUTION!
Low risk: Indicates a potentially hazardous situation.
if not avoided, this could result in property damage or risk of damage to the unit.

1.3 Important Notices

Accessories · Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury and/or serious damage to the unit. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer. When a cart is used, use caution and care when moving the cart/apparatus combination to avoid injury from tip-over. Quick stops, excessive force, or uneven surfaces may cause the cart/unit combination to overturn. Mount the unit per the manufacturer's instructions.

All-pole power switch · Incorporate an all-pole power switch, with a contact separation of at least 3 mm in each pole, into the electrical installation of the building.If it is needed to open the housing for servicing and/or other activities, use this all-pole switch as the main

disconnect device for switching off the voltage to the unit.

Battery replacement - For qualified service personnel only - A lithium battery is located inside the unit enclosure. To avoid danger of explosion, replace the battery as per instructions. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of the replaced battery in an environmentally friendly way and not with other solid waste. Refer all servicing to qualified service personnel.

CAUTION!
Class I Laser Product
Invisible laser radiation when open. Avoid exposure to beam.

Coax grounding:
–   Ground the cable system if connecting an outside cable system to the unit.
–   Connect outdoor equipment to the unit's inputs only after this unit has had its grounding plug connected to a grounded outlet or its ground terminal is properly connected to a ground source.
–   Disconnect the unit's input connectors from outdoor equipment before disconnecting the grounding plug or grounding terminal.
–   Follow proper safety precautions such as grounding for any outdoor device connected to this unit.

U.S.A. models only - *Section 810* of the *National Electrical Code, ANSI/NFPA No.70*, provides information regarding proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

CAUTION!
This device is intended for the use in public areas only.
U.S. federal law strictly prohibits surreptitious recording of oral communications.

Disposal - Your Bosch product was developed and manufactured with high-quality material and components that can be recycled and reused. This symbol means that electronic and electrical appliances, which have reached the end of their working life, must be collected and disposed of separately from household waste material. Separate collecting systems are usually in place for disused electronic and electrical products. Please dispose of these units at an environmentally compatible recycling facility, per *European Directive 2002/66/EC*.

Environmental statement - Bosch has a strong commitment towards the environment. This unit has been designed to respect the environment as much as possible.

Electrostatic-sensitive device - Use proper CMOS/MOS-FET handling precautions to avoid electrostatic discharge.

NOTE: Wear required grounded wrist straps and observe proper ESD safety precautions when handling the electrostatic-sensitive printed circuit boards.

Fuse rating - For security protection of the device, the branch circuit protection must be secured with a maximum fuse rating of 16A. This must be in accordance with *NEC800 (CEC Section 60)*.

Grounding and polarization - This unit may be equipped with a polarized alternating current line plug (a plug with one blade wider than the other blade). This safety feature allows the plug to fit into the power outlet in only one way. If unable to insert the plug fully into the outlet, contact a locally certified electrician to replace the obsolete outlet. Do not defeat the safety purpose of the polarized plug.

Alternately, this unit may be equipped with a 3-pole grounding plug (a plug with a third pin for earth grounding). This safety feature allows the plug to fit into a grounded power outlet only. If unable to insert the plug into the outlet, contact a locally certified electrician to replace the obsolete outlet. Do not defeat the safety purpose of the grounding plug.

Moving - Disconnect the power before moving the unit. Move the unit with care. Excessive force or shock may damage the unit and the hard disk drives.

Outdoor signals - The installation for outdoor signals, especially regarding clearance from power and lightning conductors and transient protection, must be in accordance with *NEC725* and *NEC800 (CEC Rule 16-224* and *CEC Section 60)*.

Permanently connected equipment - Incorporate a readily accessible disconnect device external to the equipment.

Pluggable equipment - Install the socket outlet near the equipment so it is easily accessible.

Power resupply - If the unit is forced to power down due to exceeding the specified operating temperatures, disconnect the power cord, wait for at least 30 seconds, and then reconnect the power cord.

Rack-mount

–   Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

–   Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

–   Mechanical loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

–   Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

–   Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).
     For detailed instructions, please refer to Section 4.2 Rack mounting.

SELV - All the input/output ports are Safety Extra Low Voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits.

Video loss - Video loss is inherent to digital video recording; therefore, Bosch Security Systems cannot be held liable for any damage that results from missing video information. To minimize the risk of lost digital information, Bosch Security Systems recommends multiple, redundant recording systems, and a procedure to back up all analog and digital information.

1.4   FCC and UL

FCC & ICES Information

(U.S.A. and Canadian Models Only)
This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to *part 15* of the *FCC Rules*. These limits are designed to provide reasonable protection against harmful interference in a **residential installation**. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If

this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

–   reorient or relocate the receiving antenna;
–   increase the separation between the equipment and receiver;
–   connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
–   consult the dealer or an experienced radio/TV technician for help.

Intentional or unintentional modifications, not expressly approved by the party responsible for compliance, shall not be made. Any such modifications could void the user's authority to operate the equipment. If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful: *How to Identify and Resolve Radio-TV Interference Problems*. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

INFORMATIONS FCC ET ICES

(modèles utilisés aux États-Unis et au Canada uniquement)

Suite à différents tests, cet appareil s'est révélé conforme aux exigences imposées aux appareils numériques de **classe B**, en vertu de la *section 15 du règlement* de la *Commission fédérale des communications des États-Unis (FCC)*, et en vertu de la norme *ICES-003 d'Industrie Canada*. Ces exigences visent à fournir une protection raisonnable contre les interférences nuisibles lorsque l'appareil est utilisé dans le cadre d'une **installation résidentielle**. Cet appareil génère, utilise et émet de l'énergie de radiofréquences et peut, en cas d'installation ou d'utilisation non conforme aux instructions, engendrer des interférences nuisibles au niveau des radiocommunications. Toutefois, rien ne garantit l'absence d'interférences dans une installation particulière. Il est possible de déterminer la production d'interférences en mettant l'appareil successivement hors et sous tension, tout en contrôlant la réception radio ou télévision. L'utilisateur peut parvenir à éliminer les interférences éventuelles en prenant une ou plusieurs des mesures suivantes:

–   Modifier l'orientation ou l'emplacement de l'antenne réceptrice;
–   Éloigner l'appareil du récepteur;
–   Brancher l'appareil sur une prise située sur un circuit différent de celui du récepteur;
–   Consulter le revendeur ou un technicien qualifié en radio/télévision pour obtenir de l'aide.

Toute modification apportée au produit, non expressément approuvée par la partie responsable de l'appareil, est strictement interdite. Une telle modification est susceptible d'entraîner la révocation du droit d'utilisation de l'appareil.

La brochure suivante, publiée par la Commission fédérale des communications (FCC), peut s'avérer utile : *How to Identify and Resolve Radio-TV Interference Problems (Comment identifier et résoudre les problèmes d'interférences de radio et de télévision)*. Cette brochure est disponible auprès du U.S. Government Printing Office, Washington, DC 20402, États-Unis, sous la référence n° 004-000-00345-4.

Disclaimer

Underwriter Laboratories Inc. ("UL") has not tested the performance or reliability of the security or signaling aspects of this product. UL has only tested fire, shock and/or casualty hazards as outlined in UL's *Standard(s) for Safety for Information Technology Equipment, UL 60950-1*. UL Certification does not cover the performance or reliability of the security or signaling aspects of this product.

UL MAKES NO REPRESENTATIONS, WARRANTIES, OR CERTIFICATIONS WHATSOEVER REGARDING THE PERFORMANCE OR RELIABILITY OF ANY SECURITY OR SIGNALING-RELATED FUNCTIONS OF THIS PRODUCT.

1.5 Bosch notices

Copyright

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Trademarks

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NOTE!

This manual has been compiled with great care and the information it contains has been thoroughly verified. The text was complete and correct at the time of printing. The ongoing development of the products may mean that the content of the user guide can change without notice. Bosch Security Systems accepts no liability for damage resulting directly or indirectly from faults, incompleteness or discrepancies between the user guide and the product described.

More information

For additional information, please contact the Bosch Security Systems location nearest you or visit our web site at: *www.boschsecurity.com*

2   Introduction

2.1   Digital video recorder for security applications

The Divar XF is a video and audio recording system that records multiple camera and audio signals while simultaneously providing live multiscreen viewing and playback.

The unit has comprehensive search and playback facilities for viewing stored video. Once configured, all recording takes place in the background without requiring operator intervention. Maximum recording rates of 30 (NTSC) and 25 (PAL) images per second, per channel, are guaranteed. The recording rate and quality are selectable per camera. Up to four internal hard disks can be used to provide various storage capacities for recording.

All models have extensive alarm handling functions and telemetry control. Alarm functions include motion detection in user-definable areas of the image on any camera input.

The unit can be easily operated and programmed via the front panel control keys, mouse, and the on-screen display menu system. Two monitor outputs provide full-screen, quad, and multiscreen viewing. Connect a KBD (Intuikey) keyboard for PTZ control and to improve the ease-of-use.

Looping auto-terminating video inputs and outputs, audio inputs and outputs, alarm inputs and outputs, and remote control connectors are on the rear panel. Two VGA connectors provide outputs for an A and a B monitor. CVBS and Y/C video outputs in either NTSC or PAL are also provided. Monitor A displays full-screen or multiscreen digital pictures that can be frozen and zoomed. Monitor B displays live full-screen or multiscreen pictures.

Use the Control Center PC-application via a network for live viewing, playback, and configuration. Five simultaneous users can control multiple Divar XFs. The Divar XF includes an authenticity check for both local and remote playback. A dedicated PC player is provided for playback of secure video files. The PC-based Configuration Tool facilitates the installation of the unit.

An SDK (software development kit) is available to integrate the Divar XF into third party management software.

2.1.1   Versions

There are various Divar XF models; 8-channel and 16-channel with DVD burner option, each with various storage capacities. Both 8-channel and 16-channel versions operate in exactly the same way except that fewer camera, audio, and alarm inputs are present, and the number of available multiscreen views differs.

Optionally, up to 8 IP cameras can be connected (in addition to the 8 or 16 analog input channels).

2.1.2   Manuals

Four manuals are supplied:
– Installation manual - a detailed description for installers on how to install the product.
– Quick Installation guide - gives a brief overview on how to set up and install the product.
– Operation manual - a detailed description for end-users on how to operate the unit.
– Control Center and Archive Player operation manual - a detailed description for end-users and administrators on how to set up and operate the Control Center and Archive Player software.

2.1.3   Features

The Divar XF has the following features:
– 8 or 16 looped-through, auto-terminating camera inputs
– 8 or 16 audio inputs

- – Support for up to eight IP cameras (optional)
- – Simultaneous recording and playback
- – Internal hard disk video storage (front replaceable)
- – On-board RAID4 (optional)
- – 10/100Base-T Ethernet port for Ethernet connection and networking
- – Two RS232 serial ports for serial communication
- – External KBD keyboard input
- – Dual monitor outputs
- – Full-screen and various multiscreen display capabilities in live and playback modes
- – Spot monitor output with sequencing, multiscreen, and OSD
- – Two audio outputs (dual mono)
- – Motion detection
- – 8 or 16 switching (alarm) inputs and 4 alarm outputs
- – Video loss detection
- – Audible alarm
- – Pan, tilt, and zoom camera control via RS485 and biphase
- – Local archiving via USB
- – Local archiving via built-in DVD burner (optional)

2.1.4   On-screen help

On-screen context-sensitive help is available for some topics. Just press the help (?) button
to see the help text associated with your current activity. Press the escape (ESC) button
to exit help.

2.2   Unpacking

Check the package for visible damage. If any items appear to have been damaged in shipment, notify the shipping company. Unpack carefully. This is electronic equipment and should be handled with care to prevent damage to the unit. Do not attempt to use the unit if any components are damaged. If any items are missing, notify your customer service representative or Bosch Security Systems sales representative. The shipping carton is the safest container in which to transport the unit. Save it and all packing materials for future use. If the unit must be returned, use the original packing materials.

2.2.1   Package contents

Check for the following items:
- – Digital Video Recorder (Divar XF 16 or Divar XF 8 unit)
- – USB mouse
- – Quick installation guide
- – Divar XF operation manual
- – Divar XF Control Center and Archive Player operation manual
- – Installation manual (this manual)
- – A 25-pin D-type switching and alarm connector board
- – A 15-pin D-type connector board (used for Biphase PTZ connections)
- – A 3-pin screw terminal connector (used for RS485 PTZ connection)
- – Power supply cord
- – Shielded network cross-over cable (for service and testing purposes)
- – Rack mounting kit
- – A CD-ROM containing the software and manuals

2.3 Installation environment

2.3.1 Mounting

The Divar XF is supplied as a desktop unit. If desired, the unit can be rack mounted using the rack mounting kit supplied with the unit.

2.3.2 Ventilation

Ensure that the location planned for the installation of the unit is well ventilated. Take note of the locations of the cooling vents in the unit's enclosure and ensure that they are not obstructed.

2.3.3 Temperature

Observe the unit's ambient temperature specifications when choosing an installation space. Extremes of heat or cold beyond the specified operating temperature limits may cause the unit to fail. Do not install the unit on top of hot equipment.

2.3.4 Power Supply

Ensure that the site's AC power supply is stable and within the rated voltage of the unit. If the site's AC power is likely to have spikes or power dips, use power line conditioning or an uninterrupted power supply (UPS).

2.4 Associated equipment

A typical system could contain the following components (not included with the unit):

- A primary monitor for multiscreen monitoring (monitor A)
- A second monitor for spot/alarm monitoring (monitor B)
- Cameras with 1 Vpp composite video outputs
- IP cameras (see datasheet for supported models)
- Amplified microphone(s)
- Audio amplifier with speaker(s)
- Video coaxial cable with BNC connectors for connecting the video signals
  Audio cable with RCA connectors for connecting audio signals.
- AC power supply outlet for the unit that allows for secure isolation (the unit has no on/off switch for security reasons)
- A KBD keyboard
- PC for Control Center and Configuration Tool applications
- Pan/tilt/zoom control units

3   Quick install

To get the unit quickly operational, make the connections described below and then enter the relevant data in the Quick install menu. The Quick install menu appears the first time the unit is started. When the relevant information is entered, the unit will be operational.
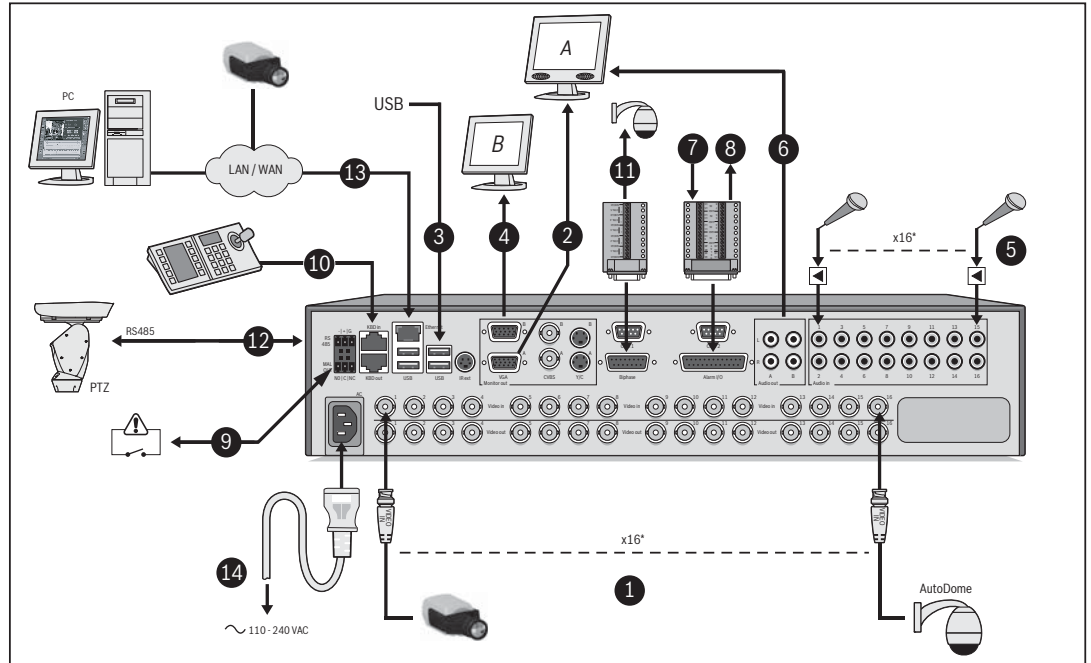
3.1   Connections

Figure 3.1   Back panel connections

3.1.1   Primary connections

1.   Connect the cameras to the BNC camera inputs (automatically terminated).
2.   Connect monitor A to the BNC, Y/C, or VGA (supporting 1280x1024) output MON A.
3.   Connect (supplied) USB mouse to a USB port.

3.1.2   Optional connections

4.   Connect monitor B to the BNC, Y/C, or VGA (supporting 1024x768) output MON B.
5.   Connect up to 16 audio signals to the RCA audio inputs.
6.   Connect the RCA audio output(s) to the monitor or an audio amplifier.
7.   Connect up to 16 (alarm) inputs (via the supplied 25-pin D-type connector board).
8.   Connect up to 4 alarm outputs (via the supplied 25-pin D-type connector board).
9.   Connect the malfunction output (via the supplied screw terminal adapter).
10. Connect an Intuikey keyboard to the KBD In socket and connect the terminator (supplied with the keyboard) to the KBD Out socket.
11. Connect a Bosch pan/tilt/zoom control unit to the Biphase port (via the supplied 15-pole D-type connector board).
12. Connect a third-party pan/tilt/zoom control unit to the RS485 port (via the supplied screw terminal adapter).
13. Connect to your network via the Ethernet port.

3.1.3   Powering up

Switch on all connected equipment.
14. Connect the power cord to the unit.

3.2   First-time use

The unit starts with a multiscreen display. The Quick install menu opens the first time the unit is used. Fill in the basic settings in the four tabs to get the unit operational. The unit begins recording automatically when the Quick install menu is closed.
To open the Quick install menu at any other time:

1.   Press the menu 🔲 button.
2.   The main menu appears on monitor A.
3.   Click Configuration and then Quick install.

Navigating
Use the supplied USB mouse. Alternatively, use the following front panel keys:

–   Use the enter ⬅ button to select a submenu or item.

–   Use the arrow ▲ ▼ ◀ ▶ buttons to move through a menu or list.

–   Use the escape (ESC) button to go back or to switch off the menu.

3.3   Quick install menu

The Quick install menu contains four tabs: International, Schedule, Recording, and Network. Navigate through these tabs using **Back** and **Next**. Click **Undo** to cancel changes made in the active tab. Click **Close** to exit the Quick install menu. Changing Quick install settings overwrites customized settings.
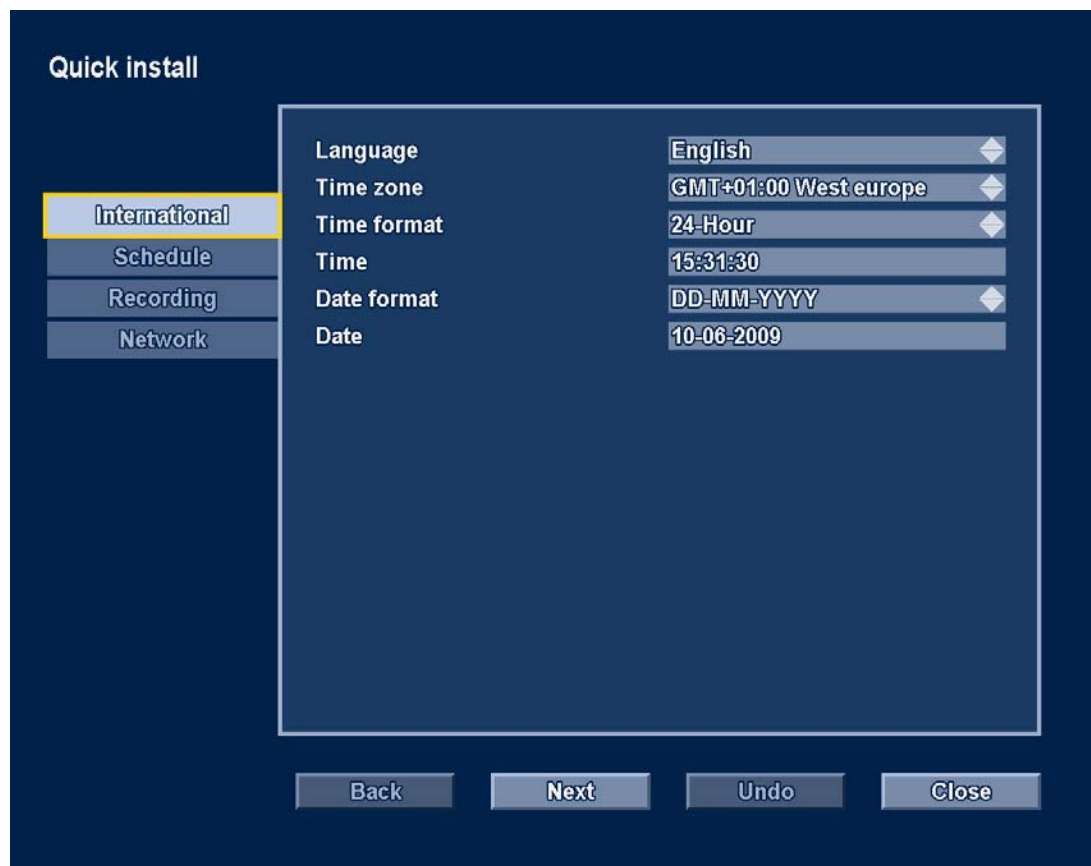
3.3.1   International

Figure 3.2   Quick install menu - International

Language	Select the language for the menu from the list.
Time zone	Select a time zone from the list.
Time format	Select either a 12 or a 24 hour clock format.
Time	Fill in the current time.
Date format	Select from three date formats which show either the month (MM), the day (DD), or the year (YYYY) first.
Date	Fill in the current date.

Click **Next** to move to the next tab.
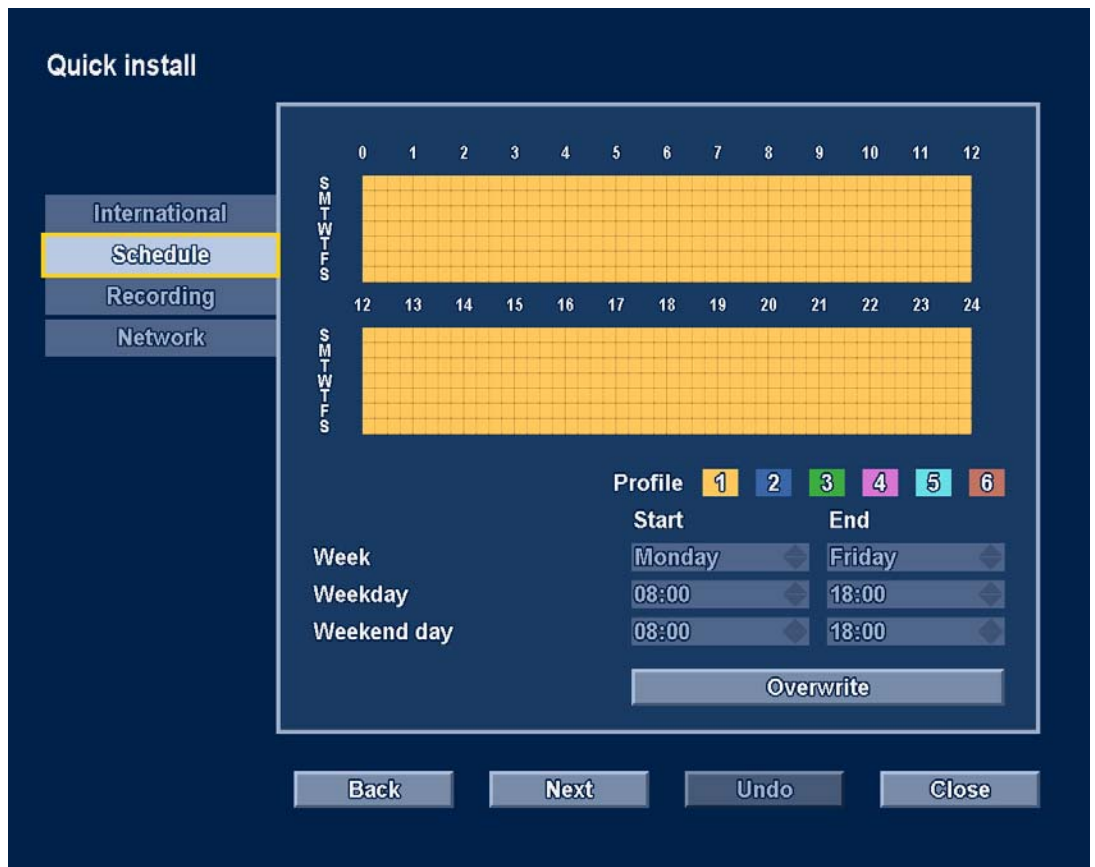
3.3.2 Schedule

Figure 3.3 Quick install menu - Schedule

A graphical representation of the currently active weekly schedule is shown. Each color represents one of the available profiles:

– Yellow - Profile 1
– Dark blue - Profile 2
– Green - Profile 3
– Pink - Profile 4
– Light blue- Profile 5
– Brown - Profile 6

Click **Overwrite** to start making changes.

– Select at which day the week should start and end.

–   Select at which time the day begins and ends on weekdays.
–   Select at which time the day begins and ends on weekends.
The graphical representation is automatically updated when settings are changed.
Click **Next** to move to the next tab.
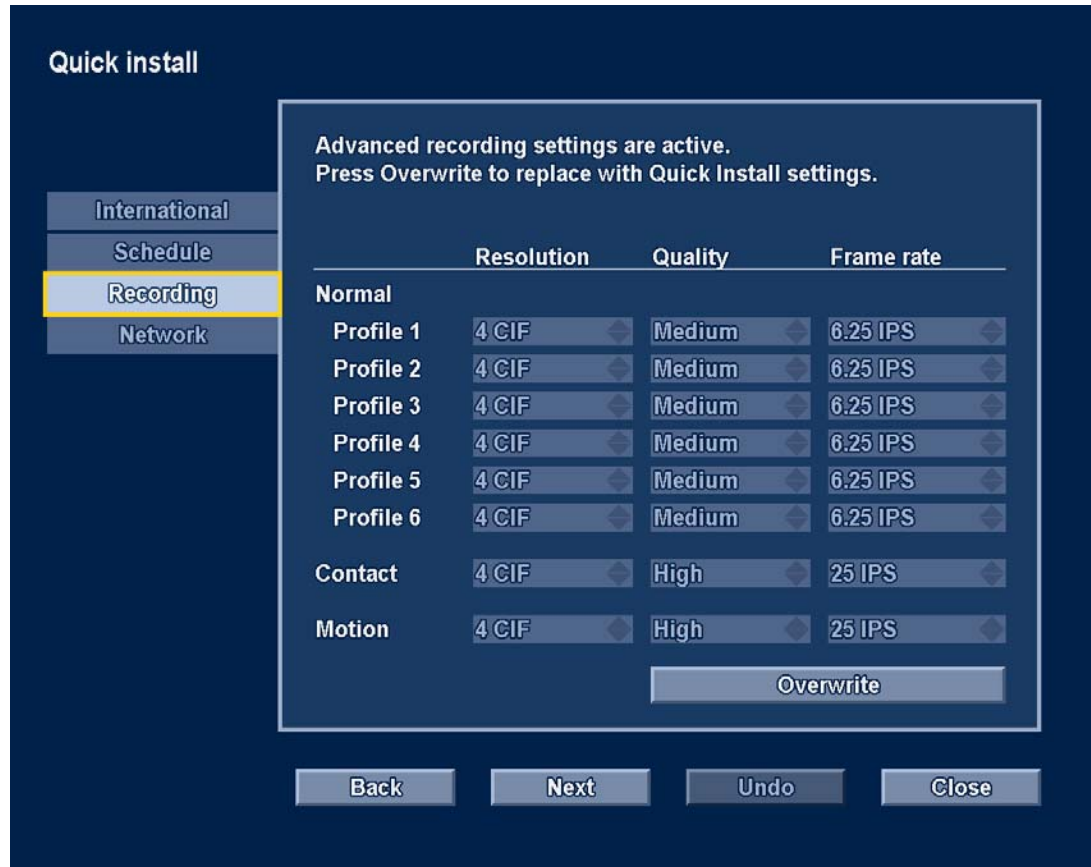
3.3.3   Recording

Figure 3.4   Quick install menu - Recording

Set the Normal recording Resolution, Quality, and Frame rate for each profile in the table. Set
the Alarm and Motion recording Resolution, Quality, and Frame rate. These settings are set for
all profiles. If advanced settings were previously made, click **Overwrite** to replace them with
Quick install settings.
Click **Next** to move to the next tab.
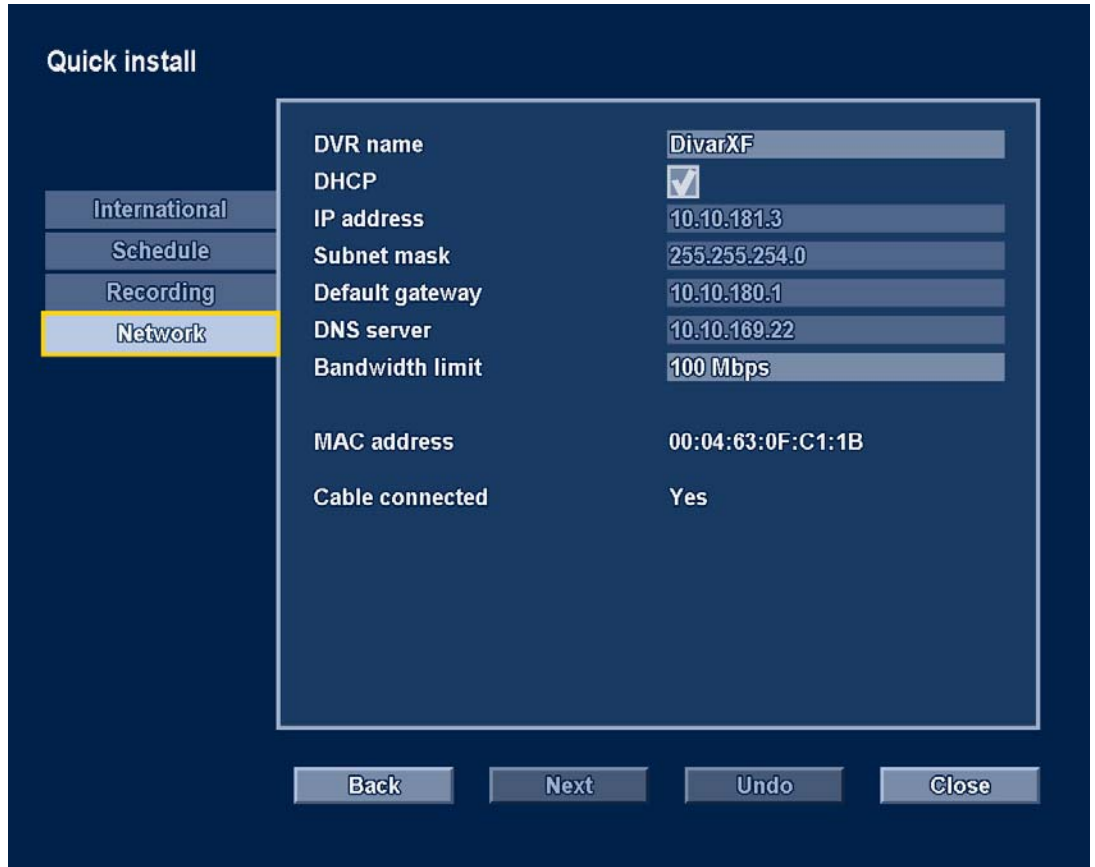
3.3.4   **Network**

Figure 3.5 Quick install menu - Network

Fill in the settings that control the behavior of the unit with respect to a network.

DVR name	Enter a DVR name to be used in the network.
DHCP	Enable DHCP to have IP address, subnet mask, and default gateway assigned automatically by the network server. The actual values are displayed.
IP address Subnet mask Default gateway DNS server	Fill in the IP, subnet mask, default gateway, and DNS server addresses when DHCP is disabled.
Bandwidth limit	Restrict the network bandwidth by entering a value between 0.1 and 100 Mbps for the bandwidth limit.
MAC address	The MAC address is read only.
Cable connected	Shows cable status.

4   Hardware setup

This chapter contains detailed information about the hardware installation and connection of external equipment to the unit. The connector types and their pin signals are described. Most of the connectors are located at the rear panel of the unit. For convenience, one USB port is located on the front of the unit to connect a mouse or memory device.

All the input/output ports are Safety Extra Low Voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits.

4.1   Desktop installation

Place the unit on a stable, flat surface. Install the two supplied silver side covers by:
1.   inserting them on each side,
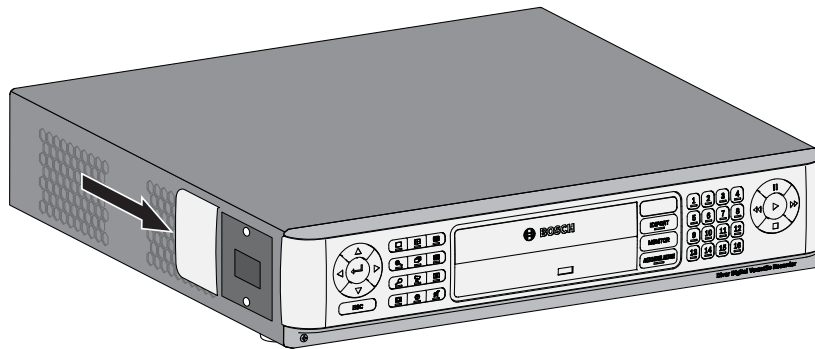2.   sliding them towards the front of the unit.

Figure 4.1   Side cover installation

4.2   Rack mounting

The unit can be mounted in a 19-inch rack. A rack mounting kit is supplied with the unit that includes two rack mounting brackets.

Mounting
1.   Remove the four cross head screws (two on each side) located near the front panel on the right and left side of the unit.
2.   Secure the supplied brackets to each side using the same four cross head screws (two on each side) that were just removed.
3.   To install several units directly on top of each other, remove the rubber feet from under the unit by prying them loose with a small screwdriver.
4.   Install the unit into the rack using the hardware supplied with the rack and following the rack manufacturer's instructions.
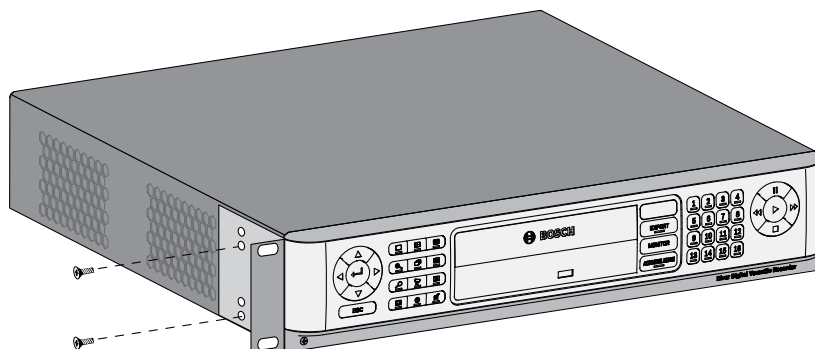

Figure 4.2   Securing the rack mounting bracket

CAUTION!

When installing the assembly into the rack, be careful not to restrict air flow around the vents located on the side panels or to exceed the recommended operating temperature.

Secure the connection cables to the rack to relieve excessive weight to the back of the unit.

4.3   Hard disk installation

Up to four hard disks can be installed in the DVR. All hard disks are accessed from the front of the unit by removing the front panel. Do not open the top cover or attempt to service the unit. No user serviceable parts inside. Refer all servicing to qualified service personnel. Improper handling or installation could void the warranty of both the hard disk and the DVR.

Note! Only genuine Bosch hard disks will work in the Divar XF. See the Bosch website or contact your local Bosch representative for available hard disks.

CAUTION!

Electrostatic discharges

Any electrostatic energy coming in contact with the hard disk or other sensitive internal parts can damage them permanently. Improper handling could void the warranty of the hard disk. When working with electrostatic sensitive devices such as a hard disk or the Divar unit, make sure you use a static-free workstation.

4.3.1   Mounting instructions

DANGER!

Electrical voltage.

Risk of electric shock.

Before installation of the hard disk, unplug the power cord of the DVR and wait for at least 30 seconds.

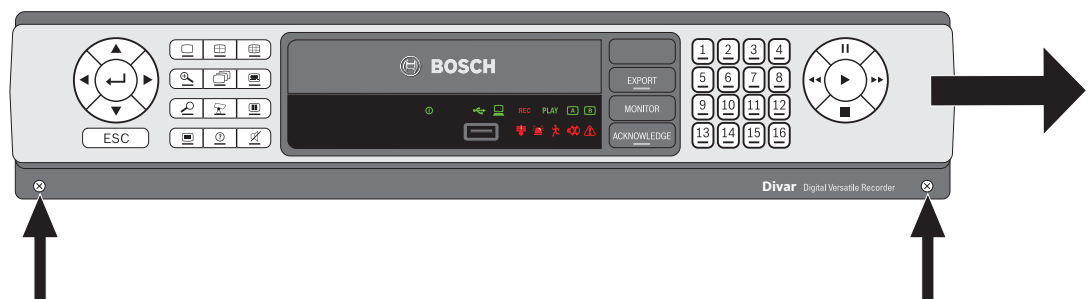**Removing the front panel**

Figure 4.3   Front panel removal

1.   Loosen the two captive cross head screws on the bottom front panel.
2.   Slide the front panel to the right until it is free.
3.   Place the front panel on top of the unit, taking care not to strain the flat cable. If there is no room on top of the unit, disconnect the flat cable and set the front panel aside.
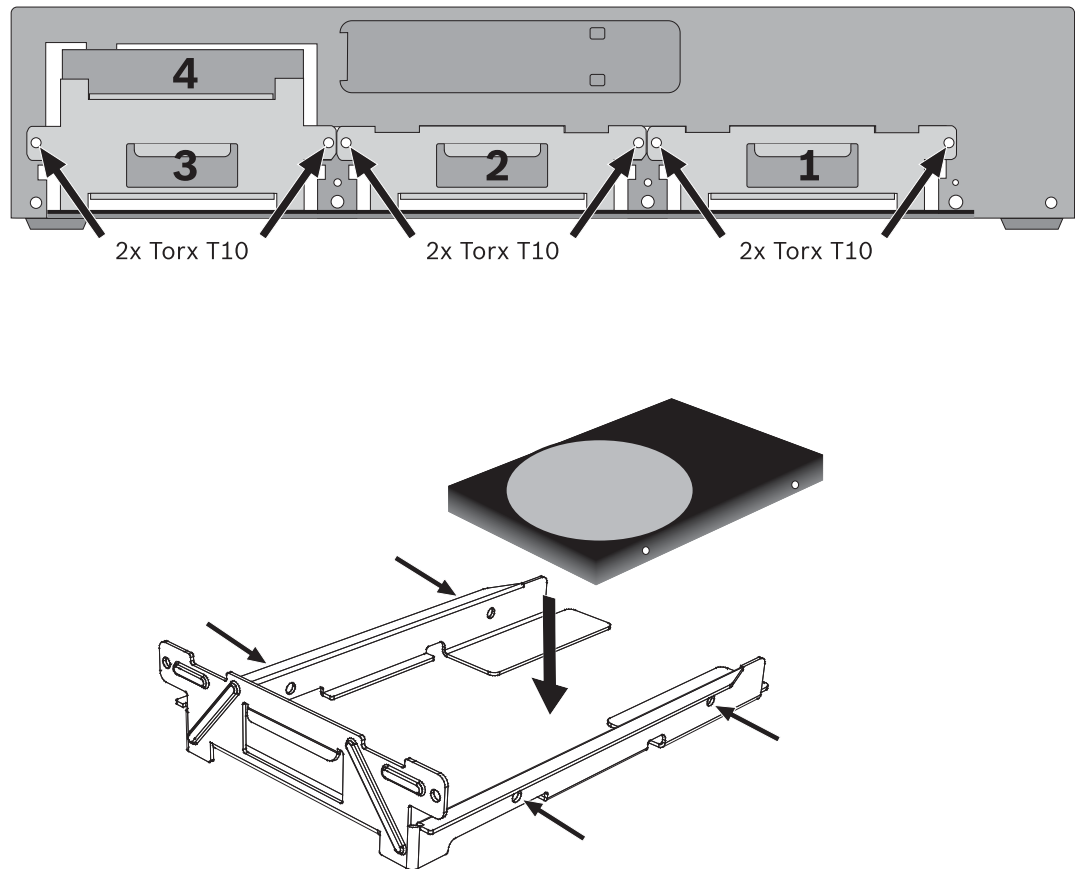
Placing a hard disk

Figure 4.4   Placing a hard disk

1.   Locate the first empty hard disk bay. It is recommended that you install the disks in order from one to four, as labeled. (Note that disks 3 and 4 are mounted in a double bay.)
2.   Unscrew the two torx T10 screws securing the selected bay. Slide the bay from the unit by pulling it forward.
3.   To replace an installed hard disk, remove the four installation screws, two per side, from the sides of the bay. Remove the hard disk.
     Mount the new hard disk into the bay with four screws, two per side (refer to the hard disk documentation).
4.   Align and slide the bay back fully into its slot in the unit.
5.   Secure the bay using the two torx T10 screws removed earlier (step 2).
6.   Repeat steps 1-5 for any additional hard disks.

Remounting the front panel

1.   When disk installation is complete, reconnect the flat cable to the front panel, if necessary.
2.   Align and slide the front panel to the left until it is in place.
3.   Refasten the two captive cross head screws to the front panel.

4.4   Camera connections

Connect cameras to the **Video in** connectors on the back of the unit using 75 ohm video coaxial cables with BNC connectors. Optionally, this signal can be looped through to other equipment via the corresponding **Video out** connector. The camera input connectors are auto-

terminating. There is no need to add a terminator to the output connector if no additional equipment is connected.

If the camera signal is looped-through to additional equipment, make sure that the end of the video line is terminated with 75 ohm termination.

The DivarXF automatically configures itself as a PAL or NTSC unit. The unit determines the standard by detecting the signal format of the first connected camera (lowest camera input number).

Specifications

Input signal: Composite video 1 Vpp, 75 ohm

Color standard: PAL/NTSC, auto-detect

Gain control: Automatic or manual gain control for each video input

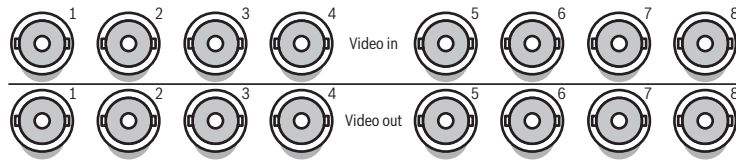Connector type: BNC looped-through, automatic termination

Figure 4.5   Eight video inputs with loop-through outputs

4.5   Audio connections

The DivarXF supports up to 16 audio inputs and 4 audio outputs. Connect using audio cable with RCA compatible connectors.

Specifications

Input signal: Mono RCA, 1 Vpp, 10k ohm
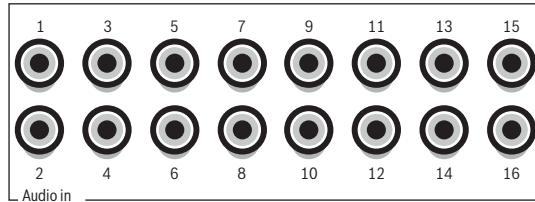
Output signal: Dual mono RCA, 1 Vpp, 10k ohm
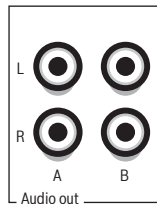

Figure 4.6   Audio input connectors

Figure 4.7   Audio output connectors

4.6   Monitor connections

Up to two monitors can be connected through the VGA, CVBS, or Y/C connections.

4.6.1   VGA

Connect the unit to one or two VGA monitors using standard VGA cable. It is advised to use 17" monitors or larger when using LCD(s).

Specifications

Output signal: VGA

Resolution: 1280 x 1024 (monitor A), 1024 X 768 (monitor B)

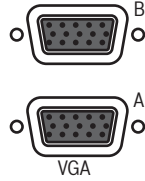Color: True color (32 bit)

Connector type: DE-15

Figure 4.8   VGA monitor connectors

4.6.2   CVBS

Connect the unit to CCTV monitors using 75 ohm video coaxial cables with BNC connectors. The unit provides a 1 Vpp CVBS signal.

If the monitor has a loop-through connection and you are not using the loop-through output, then select the 75 ohm impedance setting on the monitor. If the monitor's loop-through output is connected to an additional device, the device's termination is set to 75 ohm and the monitor's termination is set to high impedance. (Note that this is not necessary on devices with automatic termination.)

Specifications

Output signal: Composite video 1Vpp, 75 ohm, Sync. 0.3Vpp ±10%

Resolution: 720 x 576 PAL, 720 X 484 NTSC

Connector type: BNC

Figure 4.9   CVBS monitor connectors

4.6.3   Y/C

Connect the unit to a CCTV monitor with Y/C input, using a standard Y/C connection cable.

Figure 4.10   Y/C monitor connectors

4.7   **Monitor streaming connection**

To connect a monitor in a remote streaming configuration, connect the CVBS monitor output to a video input. Then connect the monitor to the corresponding loop-through connector.
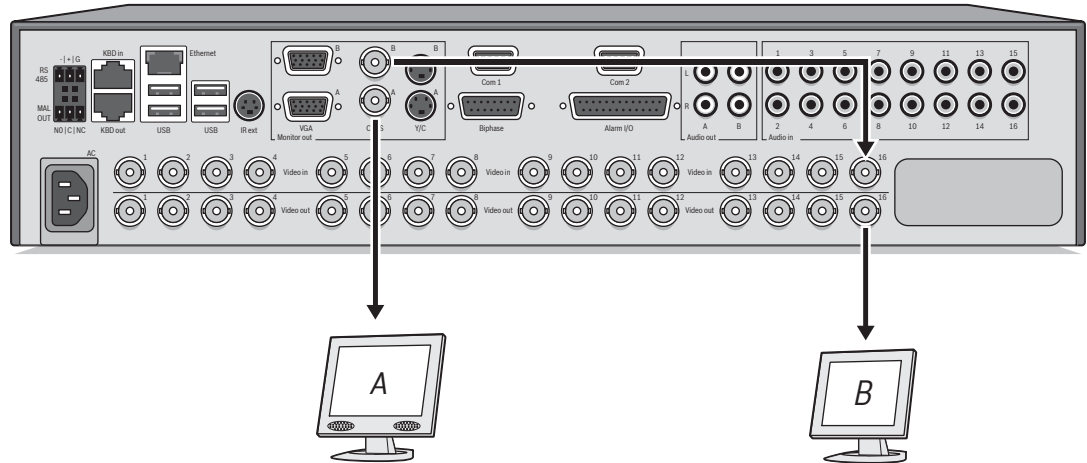
Figure 4.11   Typical monitor streaming connection

4.8   RS232 COM port connections

The RS232 COM ports are used to connect a PC to the unit for service purposes. Use a null-modem cable to connect the serial port of the PC to the unit. The Baud rate can be selected in the menu system.

Specifications

Connector type: 9-pole D-type male connector

Maximum input voltage: ±25V

Communicaton protocol: Output signals according EIA/TIA-232-F

Figure 4.12   RS232 COM port connectors

Signal name	Pin number	Description
DCD_in	1	Carrier detection signal (not used)
RX	2	RS232 receive signal
TX	3	RS232 transmit signal
N/C	4	No connection
System ground	5	System ground
N/C	6	No connection
RTS	7	RS232 request to send signal
CTS	8	RS232 clear to send signal
N/C	9	No connection

Table 4.1   RS232 console port socket

4.9   Keyboard connections

The keyboard input and output connectors are used to connect a Bosch Intuikey keyboard to one or more Divar XF units. For one unit, connect the keyboard to the **KBD in** connector. For more units, connect a cable between the **KBD out** connector of the first unit and the **KBD in** connector of the following Divar XF unit. Up to 16 Divar XF units can be connected and controlled in this manner with one keyboard.

For short distances (up to 30 m), standard 6-core telecom flat cable can be used to supply power and signal connections for the keyboard (LTC 8558/00).

For distances over 30 m between the keyboard and the DVR, the Keyboard Extension Kit (LTC 8557) must be used. This kit provides junction boxes, cables, and the appropriate power

supply for the external keyboard. The recommended cable type is Belden 8760 or equivalent.

Termination

Connect the keyboard terminator (supplied with the Intuikey keyboard) to the **KBD out** connector. If multiple Divar XF units are controlled with a single keyboard, the **KBD out** connector of the last Divar XF must be terminated.

Specifications

Communicaton protocol: RS485

Maximum signal voltage: ± 12V

Power supply: 11 - 12.6 VDC, maximum 400 mA

Maximum cable length: 30 meters (using standard 6-core telecom flat cable), or 1.5 kilometers (using Belden 8760 or equivalent in combination with the LTC 8557).

Cable type: black (cross-over) cable (supplied with keyboard)
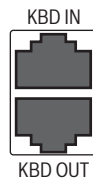
Termination: 390 ohm terminator

KBD IN

KBD OUT

Figure 4.13   Keyboard input and output connectors

Pin number	Signal
1	+12 VDC (11 V Min to 12.6 V Max, 400 mA Max)
2	System ground
3	Keyboard plus line
4	Keyboard minus line
5	System ground
6	System ground

Table 4.2   Keyboard In - RJ11 socket (KBD in)

Pin number	Signal
1	No connection
2	System ground
3	Keyboard minus line
4	Keyboard plus line
5	System ground
6	No connection

Table 4.3   Keyboard out - RJ11 socket (KBD out)

4.10   Ethernet connection

The standard RJ-45 Ethernet socket is used to connect the unit directly to a PC, IP camera, or to a network. To connect to a network hub or switch, use a straight-through network cable. To connect directly to a PC or IP camera, use the supplied cross-over network cable. Consult with your local IT personnel for the specific type of cable needed. The maximum cable length from node to node is limited to 100 meters (300 feet).

Specifications

Connection: 10/100 BaseT, IEEE 802.3

Differential signal voltage: ± 2.8 V maximum, inputs have transient overvoltage protection

Ethernet port details: EEE 802.3/802.3u - 100Base-TX/10Base-T physical layer

Auto negotiation: 10/100, full/half duplex

Cable length: 100 meters (100 ohm unshielded twisted pair cable or 150 ohm shielded twisted pair cable, category 5 or higher).

Impedance: built-in compensation for impedance matching

Indicators: ACT, 10/100

ETHERNET

Figure 4.14 Ethernet connector

Signal name	Pin number	Description
LAN_TX +	1	Ethernet transmit line plus
LAN_TX -	2	Ethernet transmit line minus
LAN_RX +	3	Ethernet receive line plus
N/C	4	No connection
N/C	5	No connection
LAN_RX -	6	Ethernet receive line minus
N/C	7	No connection
N/C	8	No connection

Table 4.4 LAN - RJ-45 Ethernet socket

4.11 RS485 port

Connect third-party controllable cameras to the unit for pan, tilt, and zoom control.

The Pelco D protocol is supported with the following baud settings:

2400 baud

1 start bit

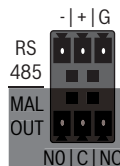8 data bits

1 stop bit

no parity

Figure 4.15 RS485 connector

Signal name	Pin number	Description
TX -	1	Data transmission
TX +	2	Data transmission
GND	3	Shield

Table 4.5 RS485 pin definition

The recommended cable diameter is AWG 28-16 (0.08-1.5 mm^2).

To communicate with the controllable camera, select a port number that is the same as the input number to which the camera is connected (e.g. configure a controllable camera to port 16 if it is connected to channel 16).

4.12 Biphase port

Use the Biphase port for connecting controllable Biphase-compatible cameras. Five Biphase outputs are provided for dome cameras and pan, tilt, and zoom control. The screw terminal connection board supplied with the unit simplifies all Biphase connections to the unit and protects the port against transient over-voltage.

Specifications

Output impedence: 128 ohm

Overvoltage protection: ±40 V maximum

Differential voltage amplitude: 1 V minimum, 2 V maximum with a characteristic load of 220 ohms connected across the differential output

Cable length: 1.5 Kilometers maximum

Recommended cable: Belden 8760

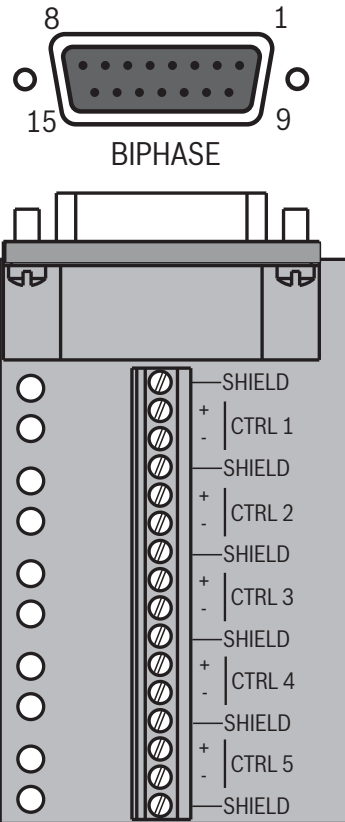Cable diameter: AWG 26-16 (0.13-1.5 mm2)

Number of loads per output: 4 maximum

Figure 4.16   Biphase port connector and connection board

Signal name	Pin number	Description
Code 1 -	1	Biphase control ch. 1 (minus)
Code 1 +	2	Biphase control ch. 1 (plus)
Shield	3	System ground/cable shield
Code 2 -	4	Biphase control ch. 2 (minus)
Code 2 +	5	Biphase control ch. 2 (plus)
Shield	6	System ground/cable shield
Code 3 -	7	Biphase control ch. 3 (minus)
Code 3 +	8	Biphase control ch. 3 (plus)
Shield	9	System ground/cable shield
Code 4 -	10	Biphase control ch. 4 (minus)
Code 4 +	11	Biphase control ch. 4 (plus)
Shield	12	System ground/cable shield
Code 5 -	13	Biphase control ch. 5 (minus)
Code 5 +	14	Biphase control ch. 5 (plus)
Shield	15	System ground/cable shield

Table 4.6   Control port - 15-pole D-type socket

To communicate with the controllable camera, select a port number that is the same as the input number to which the camera is connected (e.g. configure a controllable camera to port 16 if it is connected to channel 16).

4.13   USB connectors

Four USB connectors are located at the rear panel of the unit. For convenience, one USB port is located on the front of the unit to connect a mouse or memory device.
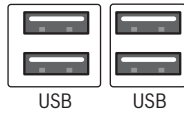

Figure 4.17   USB ports

4.14   External alarm I/O connection

Alarm inputs and outputs are supplied via a 25-pole D-type socket. The screw terminal input/output connection board supplied with the unit simplifies all alarm connections to the unit.

Connecting the inputs
Each (alarm) input line can be switched by a contact from devices such as pressure pads, passive infra-red detectors, smoke detectors, and similar devices. Wire them as either N/O or N/C. You can configure the alarm inputs as N/O or N/C in the menu system. The default is N/O. Note that inputs 9-16 will not be used on an 8-channel Divar XF.

Specifications
Alarm input impedence: Internal pull-up 10 K to +5 V
Input voltage range: -5 VDC minimum to 40 VDC maximum
Input voltage treshold: low voltage 0.8 V maximum, high voltage 2.4 V minimum
Cable diameter: AWG 26-16 (0.13-1.5 mm2)

Connecting the alarm outputs
The four alarm output relays respond to input alarms and triggers. You can configure the alarm outputs as N/O or N/C in the menu system. The relays are active for the duration of the driving event. Connect the application to the alarm output relays (resistive loads only). Do not exceed 30 Vac, 40 Vdc, 500 mA (continuous), or 10 VA on an alarm output relay's contacts.

Output number	Function
1	Alarm
2	Video loss
3	Controllable with control center
4	Controllable with control center

Table 4.7   External alarm I/O

DANGER!
Electrical voltage.
Risk of electric shock and damage to the unit.
The contacts must not be used at AC line voltages.

Specifications
Switching current (resistive): 500 mA maximum
Carrying power: 10 VA maximum
Switching voltage (resistive): 30 VAC / 40 VDC maximum
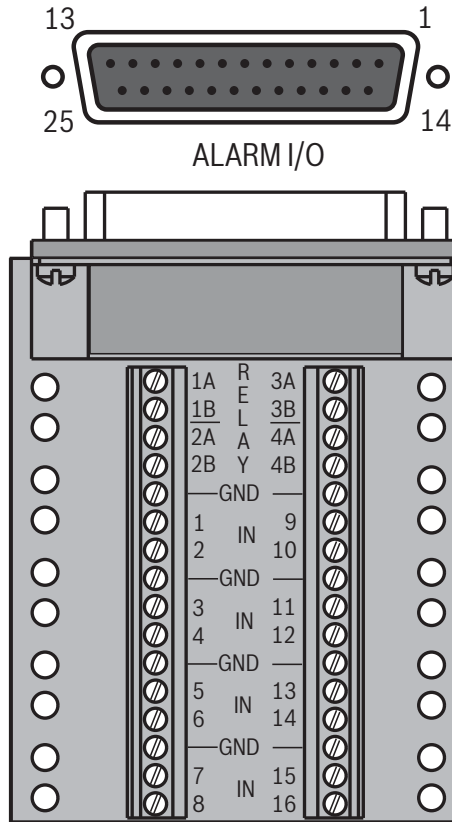Cable diameter: AWG 26-16 (0.13-1.5 mm2)

Figure 4.18   External alarm input and output connector and connection board

Signal name	Pin number	Description
Alarm_in_1	1	Alarm input 1
Alarm_in_2	2	Alarm input 2
Alarm_in_3	3	Alarm input 3
Alarm_in_4	4	Alarm input 4
Alarm_in_5	5	Alarm input 5
Alarm_in_6	6	Alarm input 6
Alarm_in_7	7	Alarm input 7
Alarm_in_8	8	Alarm input 8
Alarm_in_9	9	Alarm input 9
Alarm_in_10	10	Alarm input 10
Alarm_in_11	11	Alarm input 11
Alarm_in_12	12	Alarm input 12
Alarm_in_13	13	Alarm input 13
Alarm_in_14	14	Alarm input 14
Alarm_in_15	15	Alarm input 15
Alarm_in_16	16	Alarm input 16
Relay1_A	17	Relay 1 output pole 1
Relay1_B	18	Relay 1 output pole 2
Relay2_A	19	Relay 2 output pole 1
Relay2_B	20	Relay 2 output pole 2
Relay3_A	21	Relay 3 output pole 1
Relay3_B	22	Relay 3 output pole 2
Relay4_A	23	Relay 4 output pole 1
Relay4_B	24	Relay 4 output pole 2
System ground	25	Chassis ground

Table 4.8   External I/O - 25-pole D-type socket

4.15   Malfunction relay

The malfunction relay will be activated upon system failure. Connect using the supplied screw terminal adapter. The recommended cable diameter is AWG 28-16 (0.08-1.5 mm2).
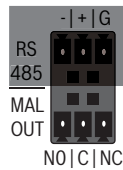

Figure 4.19   Malfunction relay output

4.16   Power supply

Power is supplied to the unit via the IEC-style socket. For security reasons, the unit has no on/off switch. This means that the unit is always powered as long as the power cable from the unit is connected to a live power socket.

Specifications:
Input Voltage: 100 - 240 VAC ±10%
Current: 0.7A - 0.3 A
Input Frequency: 50/60 Hz

Figure 4.20   Power supply socket

Signal name	Pin	Description
LIVE	Top	AC live
NEUTRAL	Bottom	AC neutral
PE	Middle	Protective Earth

Table 4.9   Power supply socket

4.17   Maintenance

Maintenance of this unit is limited to external cleaning and inspection. Refer all servicing to qualified service personnel.

DANGER!
Electrical voltage. Risk of electric shock.
Do not open the top cover or attempt to service the unit. No user serviceable parts inside.
Refer all servicing to qualified service personnel. Opening the top cover will void the warranty!

5   Operating instructions

These instructions explain the purpose of the front panel keys. The functions available can be limited by setting passwords. Some functions may also require a software license.
An administrator has access to many more functions in the menu.
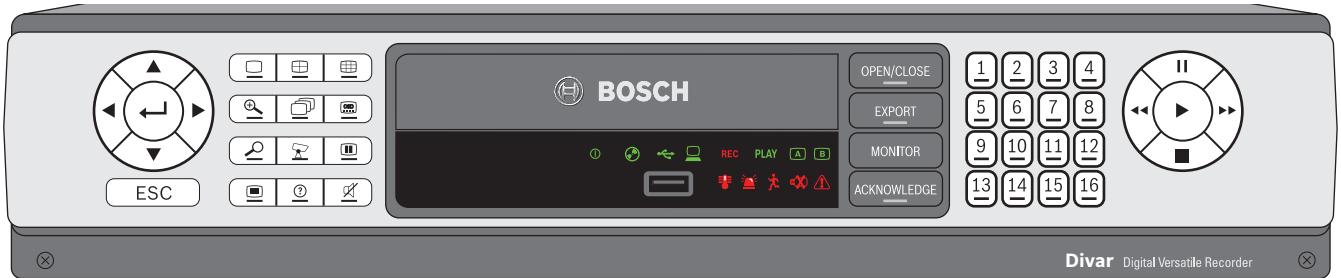
5.1   Front panel controls

Figure 5.1   Front panel controls

5.1.1   Keys

The keys on the front panel control all functions. Symbols on the keys show the functions. Inactive keys emit an audible beep when pressed.

Arrow keys:

▲ Up   ▼ Down   ◀ Left   ▶ Right
– move around through menu items or values when in menu mode
– in PTZ mode, the arrow keys can be used to control the pan, tilt, or zoom functions of the selected camera
– moves the visible area of the selected image in digital zoom mode

Enter key
– selects a submenu or menu item, or confirms selections made in menus
– the selected cameo is shown full screen when viewing video in multiscreen mode

ESC   ESC key
– press to return to previous level or to exit menu system without saving

Full screen key
– press to go to full screen mode

Quad key
– press to go to quad mode
– in quad mode, press to toggle between the enabled quad screens

Multiscreen key
– press to go to multiscreen mode
– in multiscreen mode, press to toggle between enabled 3x3 and 4x4 screens

Digital zoom key
– zooms in on the active full screen camera display

Sequence key
– view cameras in sequence on full-screen or quad displays

OSD key
– press to view date/time and camera information, date/time only, or none

Search key
– press to open the date/time search menu to look for recorded images

PTZ key
– enables either pan/tilt or pan/zoom modes

Freeze key
– in live mode, press to freeze the selected image

Menu key
– opens the menu system

Help key
– press to view help

Mute key
– press to mute audio monitoring

OPEN/CLOSE Open/Close key
– press to open or close the DVD drawer

EXPORT Export key
– press to open the export menu; an indicator light is located on the key

MONITOR Monitor key
– toggles control between monitor A or B

ACKNOWLEDGE Acknowledge key
– press to acknowledge an alarm event; an indicator light is located on the key

1 Camera keys (1-16)
– press to see a full-screen display of the analog video input
– press again to see a full-screen display of an IP camera (if connected)

Pause key
– in the playback mode, press to freeze the playback picture

Reverse key
– in live mode, press to start reverse playback of recordings for the displayed cameras
– in playback mode, press to start or speed up reverse playback
– in pause mode, press to step back one frame

Play key
– in live mode, press to resume playback from the last selected playback position
– in pause or fast forward/reverse modes, press to resume playback

Fast forward key
– in live mode, press to start playback from one minute earlier
– in playback mode, press to speed up the forward playback rate
– in pause mode, press to step forward one frame

■ Stop key
   –   while in playback mode, press to return to live mode

Note:
IP camera numbering starts at 9 on an 8-channel model and at 17 on a 16-channel model. So on a 16-channel unit with IP cameras, camera key 1 selects analog camera 1 and IP camera 17.

5.1.2   Indicators
The indicators on the front panel display light or flash to alert you of various operating conditions.

Power - lights when the unit is powered

DVD- lights when a DVD is in the unit

USB - lights when a USB memory device is connected to the unit

Network - lights when a remote user is connected to the unit

REC Record - lights when the unit is recording video

PLAY Playback - lights when the unit is in playback mode

A   Monitor A - indicates monitor A is being controlled

B   Monitor B - indicates monitor B is being controlled

Temperature - flashes when internal temperature is outside operational range

Alarm - flashes when an alarm is detected

Motion - flashes when motion is detected in a video signal

Video loss - flashes when video loss is detected for a video input

System failure - flashes when a system failure is detected

5.2   Mouse Controls
All functions controlled by the front panel can, alternatively, be accessed using the supplied USB mouse. All main DVR functions are accessible via the on-screen button panel. To display the panel (monitor A only), move the mouse pointer to the bottom left of the screen. Press ESC to remove it from the screen.
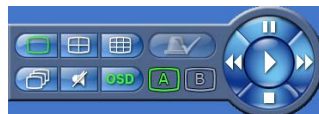
Figure 5.2   On-screen button panel

The buttons and indicators of the on-screen button panel work the same as the keys and indicators on the front panel.

5.3 Viewing pictures

The unit has two monitor outputs, A and B. The way in which these monitors display pictures depends on how the system is configured. When an alarm or motion input is detected, the camera picture with the Alarm/Motion indicator can be displayed on monitor A, B, or both. When multiple alarms or motion occur, camera pictures are combined in a multiscreen window on monitor A, B, or both.

5.3.1 Monitor A

Monitor A is the main monitor. It shows full-screen, quad, or multiscreen live or playback pictures of both analog and IP cameras. Status messages, alarms, motion, and video loss warnings are also displayed on this monitor. When the menu system is activated it is displayed on this monitor.

5.3.2 Monitor B

Monitor B displays full-screen, quad, or multiscreen live pictures of analog cameras.

Selecting a monitor to control

To control the display on monitor A:

1.   Check that the A light on the front panel is lit.

2.   If A is not lit, press the monitor MONITOR key.

To control the display on monitor B:

1.   Check that the B light on the front panel is lit.

2.   If B is not lit, press the monitor MONITOR key

5.3.3 Viewing

The drawing shows all possible views for monitor A and B. Some multiscreen views may have been disabled during set up. The Divar model and the number of connected cameras also influence the available multiscreen views.
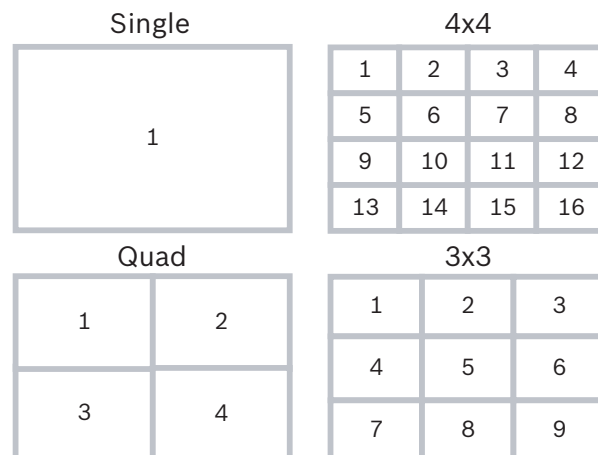
Figure 5.3   Divar XF supports single, quad, 3x3, and 4x4 screen viewing

The multiscreen modes can have different multiscreens that can be shown in sequence to display all camera pictures.

Multiscreen

To view different multiscreen displays on monitor A or B:

1. Press the multiscreen ⊞ key.
    – A multiscreen display of camera pictures appears on the active monitor.
    – The camera keys of the selected cameras light (green).
2. Press the multiscreen ⊞ key again to go to the next programmed multiscreen view.
    – If you continue to press the multiscreen ⊞ key, the unit cycles through all enabled multiscreen views.

Full-screen

To view a full-screen shot of a camera:

1. Press a camera key.
    – A full-screen shot of the analog camera you selected appears.
    – The camera key of the selected analog camera lights (green).
    – Press the camera key again to display the linked IP camera.
    – The camera key of the selected IP camera lights (orange).
2. While in multiscreen mode, press enter ⏎ to view the active cameo in full-screen.

Note:

IP camera numbering starts at 9 on an 8-channel model and at 17 on a 16-channel model. So on a 16-channel unit with IP cameras, camera key 1 selects analog camera 1 and IP camera 17.

Sequence

To view a sequence of live camera pictures of several cameras:

1. Press the sequence ⎙ key.
    – A sequence of camera pictures appears, each for a pre-programmed dwell time.
2. Press the sequence ⎙ key to stop sequencing.
    – Zooming, pressing the multiscreen key, or selecting a single camera also stops sequencing.

Cameo assignment

Assigning cameras to cameos in a multiscreen view:

1. Use the arrow keys to select a cameo.
2. Press and hold a camera key to display and assign that camera's picture in the active cameo.
3. Alternatively, right click a cameo with the mouse and choose a video input from the context menu.

The cameo assignment that you make is used in playback mode as well as in live mode.

Freeze image

Freezing a camera shot on monitor A:

1. Press the freeze ⏸ key to freeze the picture in the active cameo.
2. Press the freeze ⏸ key again to return to live viewing.
    Alternatively, right click and select **Freeze** or **Unfreeze** from the context menu using the mouse.

If you are viewing a camera picture in full-screen mode, then this picture is frozen. The zoom function can be used on a frozen picture. If you change viewing mode, any frozen pictures are released.

Zoom

To zoom in on a video image:

1. Press the zoom $\oplus$ key.
    –   The picture is enlarged by a factor of 2.
2. Use the arrow keys to select the area of the picture to be displayed.
3. Press the zoom $\oplus$ key again to zoom in further.
    –   The picture is enlarged by a factor of 4.
4. Use the arrow keys to select the area of the picture to be displayed.
5. Press the zoom $\oplus$ key again to return to a full picture and leave the zoom mode.
    Alternatively, right click and select **Zoom** or **Exit zoom** to enable or disable zoom mode
    with the mouse. While in zoom mode, click on an area of the screen to zoom in on. Use
    the scroll wheel to zoom in and out.

5.4   Live and playback

5.4.1   Live mode

The live mode is the normal operating mode of the unit where you watch live pictures from the
cameras. From live mode you can switch to playback mode or to the system menu.

5.4.2   Accessing playback functions

Access to playback functions may require a password. Discuss this with your administrator.
1. To search, use the top menu and click the search icon.
2. Choose **Event** search or **Date/time** search from the pull-down menu.

Alternatively, press the search $\mathcal{P}$ key to switch to date/time search directly.
To enter the playback mode, use one of the following keys:

–   Press the rewind ◄◄ key to start reverse playback of recordings for the displayed
     cameras.

–   Press the fast forward ►► key to start playback from one minute earlier.

–   Press the play ► key to resume playback from the last selected playback position.

Press the stop ■ key to switch back to live viewing. An alarm also switches the unit back to
live viewing.

5.4.3   Playback mode

In playback mode, the video control keys operate as follows:

–   Press the rewind ◄◄ key to start reverse playback of recordings. Pressing it again and
     again increases the display rate to a maximum before returning it back to normal speed

     again. Press the rewind ◄◄ key in the pause mode to step back one frame at a time.

–   Press the pause ❚❚ key to freeze the picture.

–   Press the fast forward ►► key to start playback of recordings. Pressing it again and
     again increases the display rate to a maximum before returning it back to normal speed

     again. Press the forward ► key in the pause mode to step forward one frame at a time.

–   Press the play ► key to resume playback.

Press the stop ■ key to switch back to live viewing. An alarm also switches the unit back to
live viewing.

5.5   Overview of the menu system

The menu gives access to several functions to help you use the unit. Access to some menu items is password protected. There are three ways of accessing the menu system:

– via the front panel keys,
– a USB mouse, or
– a Intuikey keyboard.

Slight differences in navigation and selection are only due to the differences between the keys on the unit, the keyboard and the mouse. The menu structure is the same in all cases.

The top menu consists of four main menus with drop-down submenus, a help item and an exit item.

Figure 5.4   Top menu

Search

The Search menu contains two submenus:

– Date/time - plays back video from a specific date and time.
– Events search - searches for events in a specific time frame.

These submenus can only be accessed if you have playback rights.

Export

The Export menu is used to archive a video clip to a USB memory device or DVD.

This submenu can only be accessed if you have export rights.

Configuration

The Configuration menu contains three submenus:

– Quick installation - opens a wizard to configure basic DVR settings.
– Advanced configuration - opens the configuration menu to configure all DVR settings.
– Monitor settings - opens a menu to configure the monitor output settings.

These submenus can only be accessed if you have configuration rights.

System information

The System information menu contains two submenus:

– Status - opens a menu to view status information.
– Log Book - opens a menu to view the system log.

Help

The Help function displays a help text.

Exit

Click to log off.

5.5.1   Access using the front panel keys

To open the menu, press the menu ▣ key.

–   The top menu appears on monitor A.

To move through a menu or list, use the arrow ▲ ▼ ◀ ▶ keys on the front panel.

To select a submenu or item, use the enter ↵ key.

To go back, use the escape ⌷ESC⌷ key

To open the help text, press the help ⑦ key.

To exit the menu, press the escape ⌷ESC⌷ key.

5.5.2   Access using the mouse

To open the menu, move the pointer to the top of the screen.

–   The top menu appears on monitor A.

To select a menu item, move the pointer over it and left click.

5.5.3   Access using the Intuikey keyboard

Press the Menu key to access the top menu. Use the keyboard joystick to navigate through the menu items.

To select a menu item use the enter ↵ key on the keyboard.

5.6   Search

Figure 5.5   Top menu - Search

1.   To search, enter the top menu and click **Search**.
2.   Choose **Date/time** search or **Event** search from the pull-down menu.

Alternatively, press the search 🔍 key to switch to **Date/time** search directly.

5.6.1   Date/time search

Enter the start date and time and click **OK** to start playback.

Playback of the displayed cameos starts.
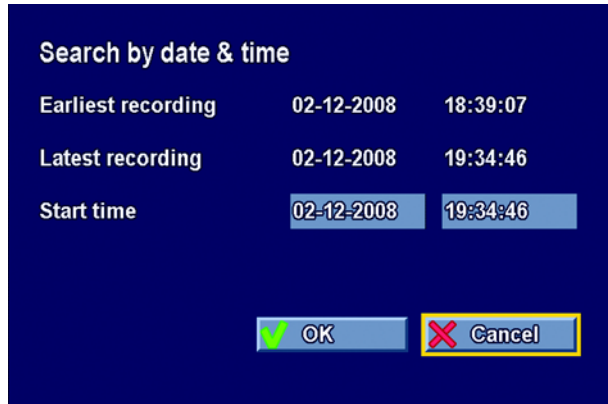
Figure 5.6   Search by date and time

5.6.2   Event search
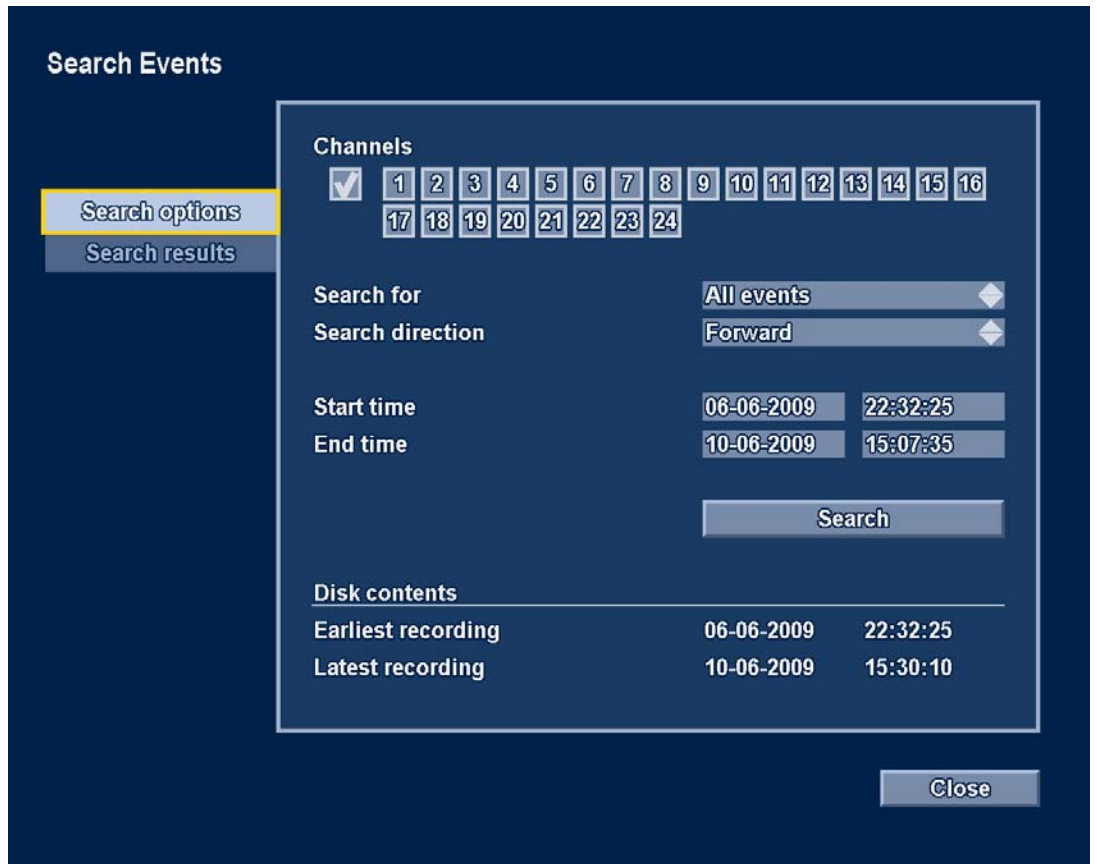
Figure 5.7   Search Events menu - Search options

Search criteria

– Under **Channels**, check the camera inputs to search for (highlight the un-numbered box to select all). The selected inputs are highlighted.
– Set **Search for** to search for alarm events, motion events, or both. Set to **All events** so that the search is not restricted by an event type.
– To set the **Search direction**, select **Forward** to search from start time to end time or **Backward** to search from end time to start time.
– Under **Start time** and **End time**, fill in date and time values to determine the time span of the search.
– Select **Search** to start the search.
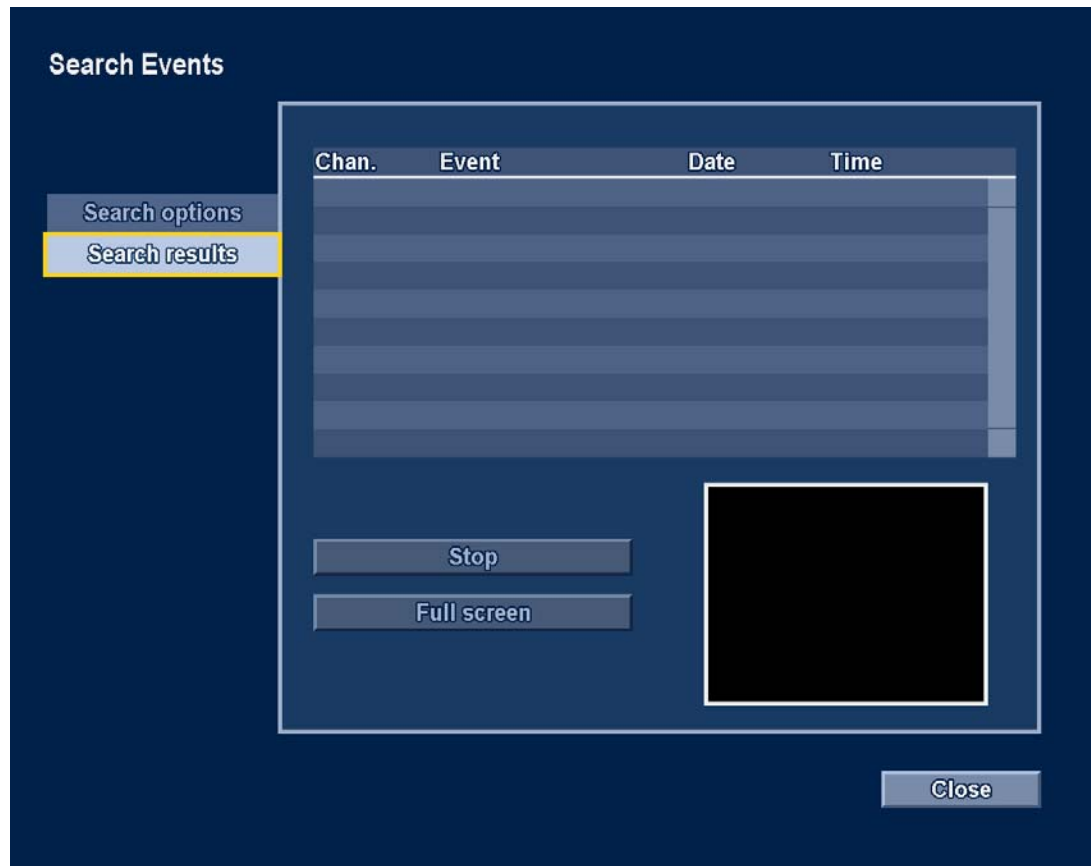
Figure 5.8 Search Events menu - Search results

Search results

– The recording fitting the filter and closest to the selected date and time is shown first.
– Use the up/down arrow keys to move through the list. The selected recording is shown in the preview window.
– Press the enter ⏎ key for a full-screen playback of the selected recording.
– Press the escape (ESC) key to return to the search menu.

5.7   **Export**

Figure 5.9   Top menu - Export video

The export menu is accessed from the top menu. It allows you to write segments of recorded video and audio to a USB storage device or recordable DVD. The main export screen shows information about the connected media and a list of the video segments to be archived.
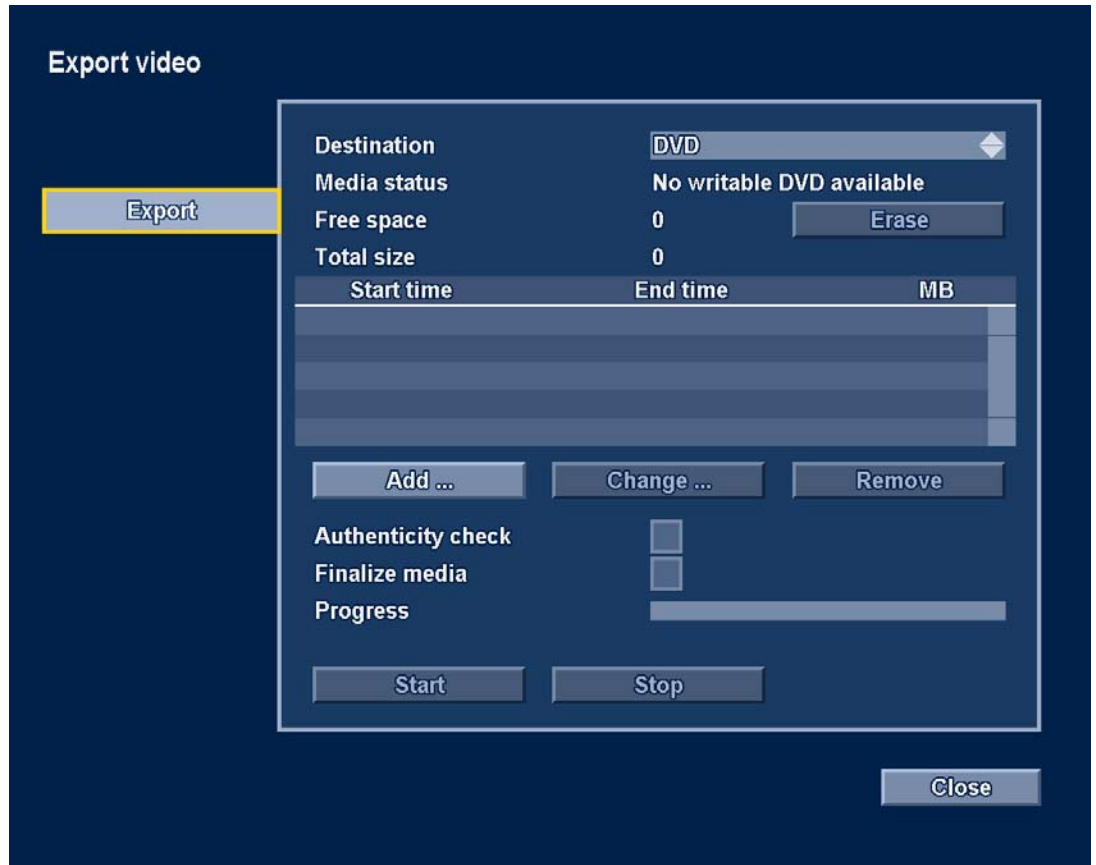
Figure 5.10   Export video menu

–   Choose a memory device from the **Destination** selection box. **Media status** displays the status of the selected memory device; **Free space** displays the available space for archiving.
Select **Erase** to empty the selected memory device.
–   A list of the video segments to be archived is displayed.
–   To add a video segment to the list, click **Add**.
–   Fill in a **Start time** and **End time** for the video segments you wish to archive.
Select the camera numbers you wish to archive (highlight the un-numbered box to select all).
Click **OK** to place the segment in the list.
1.   To add another video segment to the list, click **Add**.
1.   To change a video segment in the list, select it and click **Change**.
1.   To remove a video segment from the list, select it and click **Remove**.

The archive list is saved until archiving is carried out. Video segments that have been partially overwritten or deleted from Divar's internal hard drive(s) are removed from the list.

–   Place a check mark next to **Authenticity check** to authenticate the video segments before archiving.
–   Place a check mark next to **Finalize media** to ensure that DVD media can be read on other players.
–   Select **Start export** to write the video segments to the destination device.
–   Select **Stop export** to cancel the archiving process.
–   Select **Details** for an error report if the authenticity check or archiving is unsuccessful.

If the total size of the video segments is greater than the memory device's free space, then only the first segments that fit are archived. Those segments that are not archived remain in the list so that they can be archived to a new device.

5.8   Configuration

Figure 5.11   Top menu - Configuration

The Configuration menu is accessed from the top menu. The Configuration menu contains three submenus:

–   Quick Installation - opens a wizard to configure basic settings. For more information refer to *Section 3 Quick install, page 17*.
–   Advanced configuration - opens the advanced configuration menu to configure all settings. For more information refer to *Section 6 Advanced configuration menu, page 53*.
–   Monitor Settings - opens a menu to configure monitor settings.

5.8.1   Monitor settings

The Monitor settings submenu contains display settings for monitor A and B.

Display options
Select a transparent background to see the camera display behind the menus.
Select the color for the cameo borders (black, white or gray).

Multiscreens
Select those multiscreen views that you wish to see.
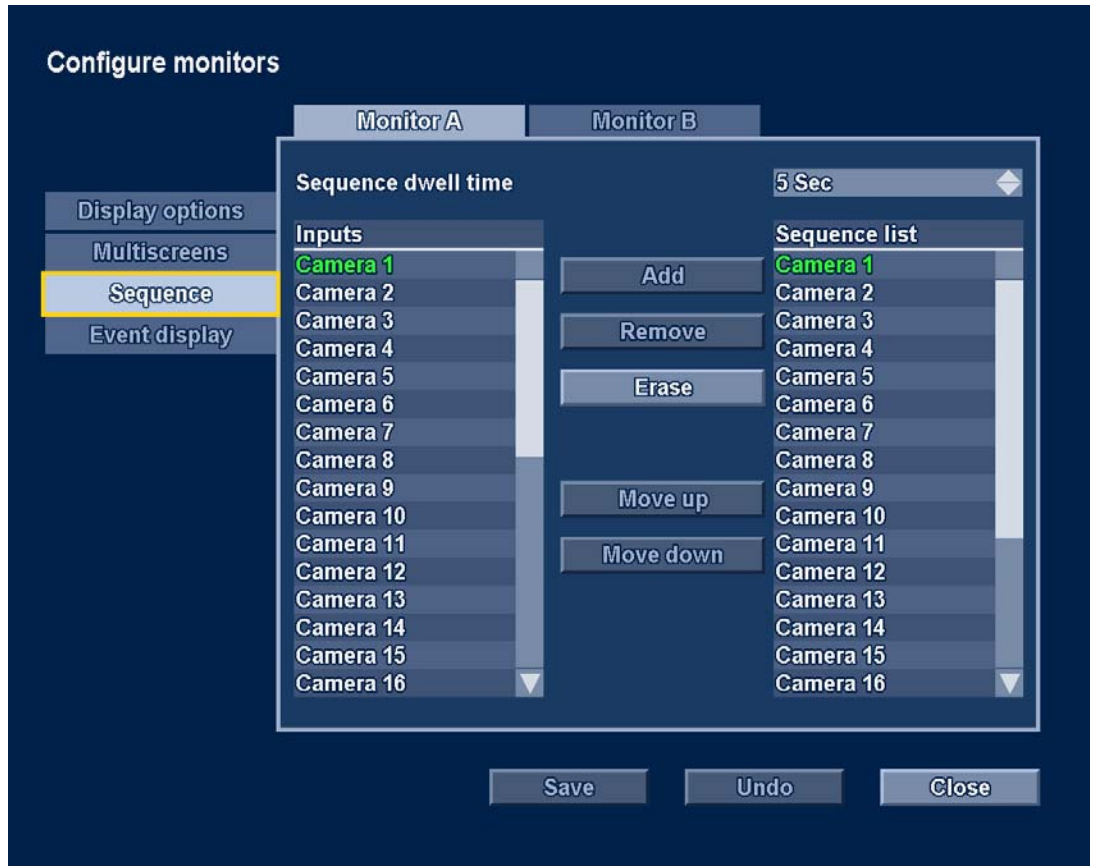
Figure 5.12   Configure monitors menu - Sequence

Sequence

Select the length of time a camera remains visible on screen in the **Sequence dwell time** field. Use the the **Add** button to move camera inputs to the sequence list. Use the **Move up** or **Move down** buttons to put them in the desired order. Use **Remove** to clear a single item from the sequence list. Use **Erase** to clear all items from the sequence list.

Event display

Check the **Contact input**, **Video loss alarm** or **Motion detection events** boxes to display these events on the screen.

Set the length of time these events remain on the screen in the **Display duration** field (non-alarm events only).

5.9   System information

Figure 5.13   Top menu - System information

The System information menu is accessed from the top menu. The System information menu contains two submenus:

–   Status - opens a menu to view status information.

– Logbook - opens a menu to view the system log.

5.9.1   Status

The Status submenu contains five tabs displaying status information.

Version Info
The version information tab displays the installed firmware version, serial number, and other version-related information for service purposes.

Storage status
The storage status tab displays information on disk size and content.
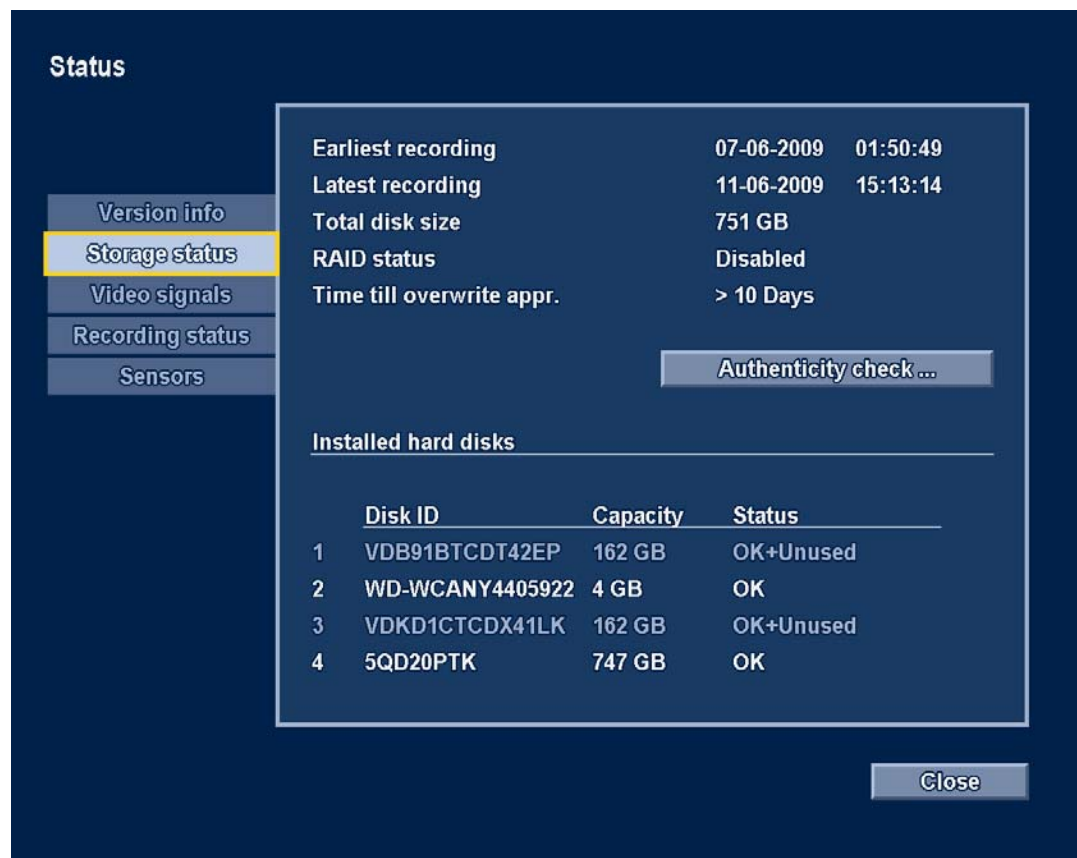
Figure 5.14   Status menu - Storage status

– Earliest recording - displays **date** and **time** of the earliest (oldest) recording on disk.
– Latest recording - displays **date** and **time** of the latest (newest) recording on disk.
– Total Disk Size - displays the total installed disk space.
– RAID status - displays enabled if the disks are used as a RAID array.
– Time till overwrite appr. - estimated time video is retained until overwriting.
– Authenticity check... - click to check authenticity of recorded audio and video.
– Installed hard disks - gives a status overview of the installed harddisks.

Video signals
The video signals tab displays the system video mode (PAL/NTSC) and video input status.

Recording status
Currently recording profile - displays current profile

Alarm recording at input - displays which inputs are in alarm recording mode

Motion recording at input - displays which inputs are in motion recording mode

Current recording status - displays video and audio recording status and mode for each input

Sensors

Displays actual temperature and voltage sensor values. If temperature levels are outside of the normal range, the displayed values are yellow. If this occurs, check that the ambient temperature is within the recommended specifications and that there is proper air ventilation. If the temperature reaches a critical level, the unit automatically shuts down. To restart the unit, disconnect the power cord, wait for at least 30 seconds, and then reconnect the power cord.

Sensor name	Lower limit	Upper limit
Processor	5 °C / 41 °F	100 °C / 212 °F
Air inlet	5 °C / 41 °F	45 °C / 113 °F
Air outlet	5 °C / 41 °F	55 °C / 131 °F
Hard disk #1	5 °C / 41 °F	55 °C / 131 °F
Hard disk #2	5 °C / 41 °F	55 °C / 131 °F
Hard disk #3	5 °C / 41 °F	55 °C / 131 °F
Hard disk #4	5 °C / 41 °F	55 °C / 131 °F

Table 5.1   Temperature sensors

Voltage level	Lower limit	Upper limit
12 Volt	10.8 V	13.2 V
5 Volt	4.7 V	5.3 V
3.3 Volt	3.1 V	3.5 V

Table 5.2   Power supply levels

5.9.2   Logbook

The logbook menu is used to display a filtered history of system events.

Logbook filter

Set various filter criteria to search in a specified time period for various system events.
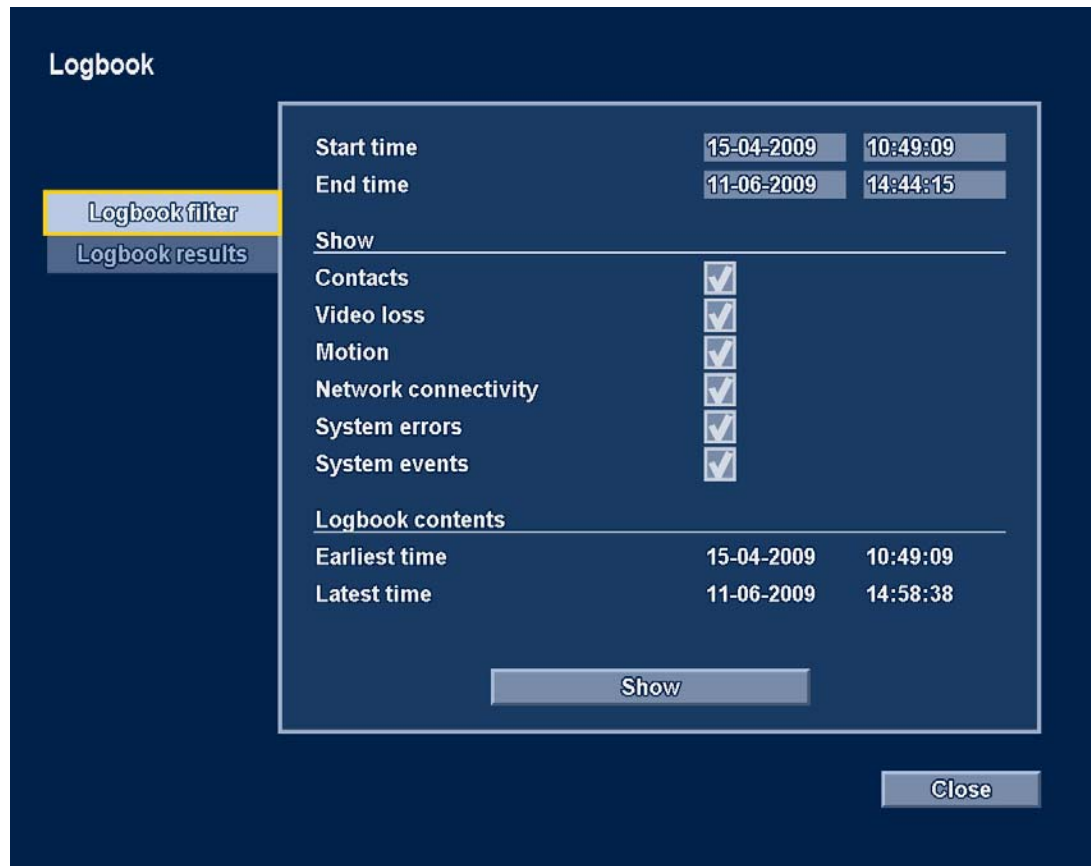
Figure 5.15   Logbook menu - Logbook filter

- Enter start and end times.
- Make a selection of which system events to show.
- Logbook contents - shows the earliest and latest available log contents.
- Show - click to show the results.

Logbook results

Shows the **Date**, **Time**, and **Event** type of various system events. A video preview screen of the selected event is shown, if applicable.

5.10   Event handling

Various types of events change the way the unit works. These events are:
- a contact input signal applied to the unit;
- motion detection in a camera signal;
- a loss of video from one of the cameras;
- an internal alert from the unit itself (i.e. disk failure, temperature alarm).

The way the unit reacts to events depends on how it is programmed.

An event can change the way the unit works and, if it is an alarm, can require a response from the user.

Background events

Events can change background tasks that a user may not notice. Unit responses that are not visible to the user are, for example, a change in recording speed, the activation of the output relay, or event logging. The unit can also be configured to record upon the activation of an event or it might change the way the camera images are displayed on the monitors without requiring user intervention.

5.10.1	**Alarms**

An alarm can cause the unit to react as follows:

- – A beeper sounds.
- – A status message is displayed.
- – An alarm icon is displayed.
- – The border around a cameo changes color to red.
- – An alarm 📢 indicator, a motion 🚶 indicator or a video loss 📢 indicator flashes.
- – The indicator on the ACKNOWLEDGE key flashes.
- – An output relay is activated.
- – The view modes on the monitors change.
- – A controllable camera might be moved to a pre-defined position.
- – Recording behavior changes.
- – The unit changes the way it operates via pre-defined profiles.

Acknowledging an alarm

Press the acknowledge key ACKNOWLEDGE to acknowledge the alarm.

- – The beeper is silent.

- – The alarm and ACKNOWLEDGE indicators are no longer lit.
- – The alarm status message disappears.
- – The last-used view mode is restored.

The alarm icon remains visible as long as the input causing the alarm is active.

If an alarm is not acknowledged, the beeper switches off after the dwell time but the alarm still needs to be acknowledged.

If auto-acknowledge is enabled, the beeper and the alarm 📢 and ACKNOWLEDGE indicators, switch off after the dwell time.

5.10.2   Contact inputs

If a contact input causes an alarm
–   Monitors A and B can display an array of pre-selected cameras.
–   Monitor A: The border around the displayed cameos is red. The alarm icon is displayed in the corresponding cameo. An alarm status message is displayed.

–   The alarm beeper sounds. The alarm 🚨 and the [ACKNOWLEDGE] indicators flash.
–   Controllable cameras might be moved to pre-defined positions.

5.10.3   Motion events

If a motion detection signal causes an event
–   Monitors A and B can switch to display the motion events.
–   The motion icon is displayed in the corresponding cameo. An alarm status message is displayed.
–   The motion 🏃 indicator on the front panel flashes.

5.10.4   Video loss alarm

If the loss of a video signal causes an alarm:
Monitor A or B can be configured to show the video loss signal.
–   One or both monitors can switch to a multiscreen view. The lost camera signal is displayed as a black cameo with the video loss message. On monitor A, the border around the camera with the video loss is red. An alarm status message is displayed.
–   The alarm beeper sounds.

–   The video loss 📹❌ and [ACKNOWLEDGE] indicators flash.

Acknowledging a video loss alarm

Press the acknowledge key [ACKNOWLEDGE] to acknowlede a video loss alarm.
       –   The beeper is silent.

       –   The video loss 📹❌ and [ACKNOWLEDGE] indicators are no longer lit.
       –   The alarm status message disappears.
       –   The last-used view mode is restored.
If the camera with video loss is visible, the black cameo and the video loss message continue to be displayed as long as there is no video present.
If an alarm is not acknowledged, the beeper switches off after the dwell time but the alarm still needs to be acknowledged.

If auto-acknowledge is enabled the beeper, and the video loss 📹❌ and [ACKNOWLEDGE] indicators, switch off after the dwell time.

6   Advanced configuration menu

Access all the parameters that are used to configure the unit via the configuration menu item
of the top menu. The large number of parameters available gives you the opportunity to
program extensive functionality. You must have administrator rights to access the
configuration menus.

The advanced configuration menu is accessed from the top menu via the configuration menu
item and gives access to all configurable items for the unit.

This menu has 11 major menu groups listed down the left side. The groups have tabs across
the top which provide access to a page where the values and functions can be selected and
changed.

Left tabs	Top tabs
International	Language Time/date Time server
Video & Audio	Channels 1-24 (depending on model)
Schedule	ScheduleExceptions
Recording	Profiles 1 to 6 Channels 1-24 (depending on model) - Normal - Contact - Motion
Contacts	—
Motion	Channels 1-8 (or 1-16 depending on model)
Event	Profiles 1 to 6 - General - Contact - Motion - Video loss
Network	Setup IP range Monitor streaming
Storage	Status Settings Service
Users	General Administrator Users 1 to 7
System	Service Serial ports Licenses Logging

6.1   International

6.1.1   Language
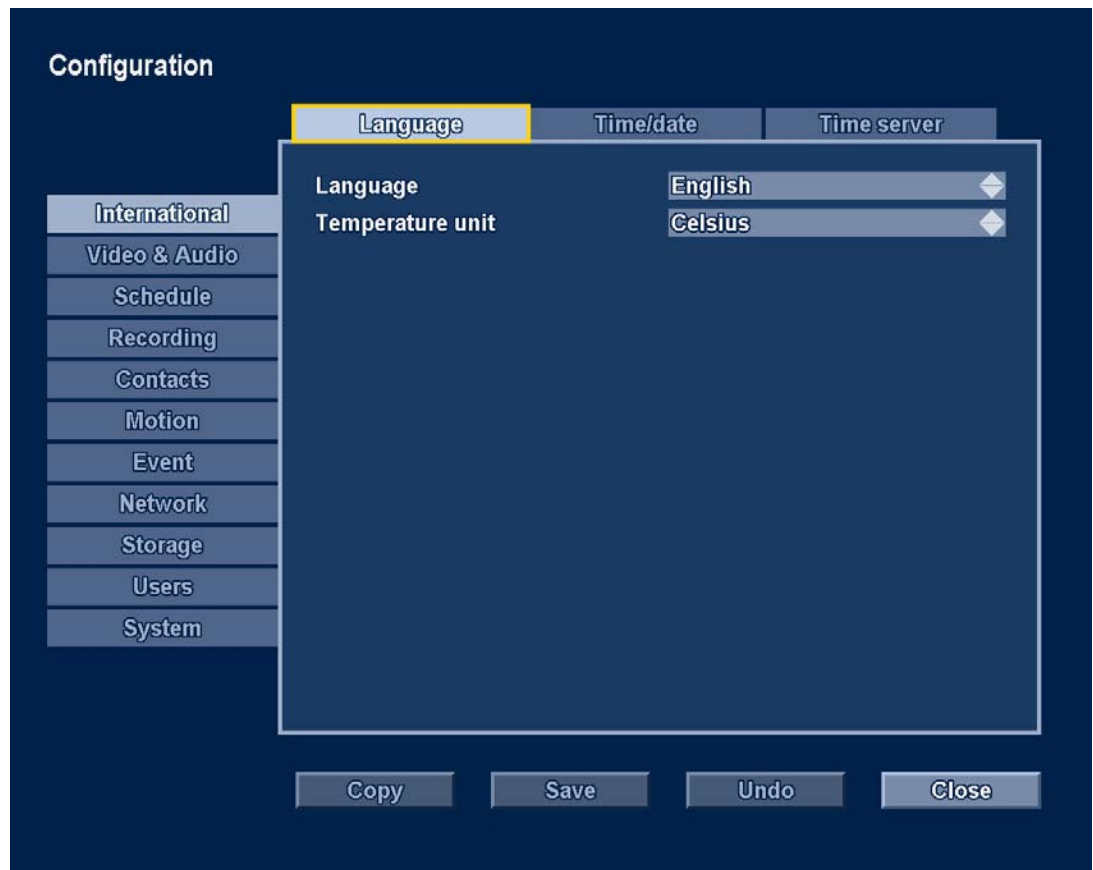
Figure 6.1   International menu - Language

–   Select your **Language** from the drop-down list.
–   Select the preferred **Temperature unit**.

6.1.2 Time/date
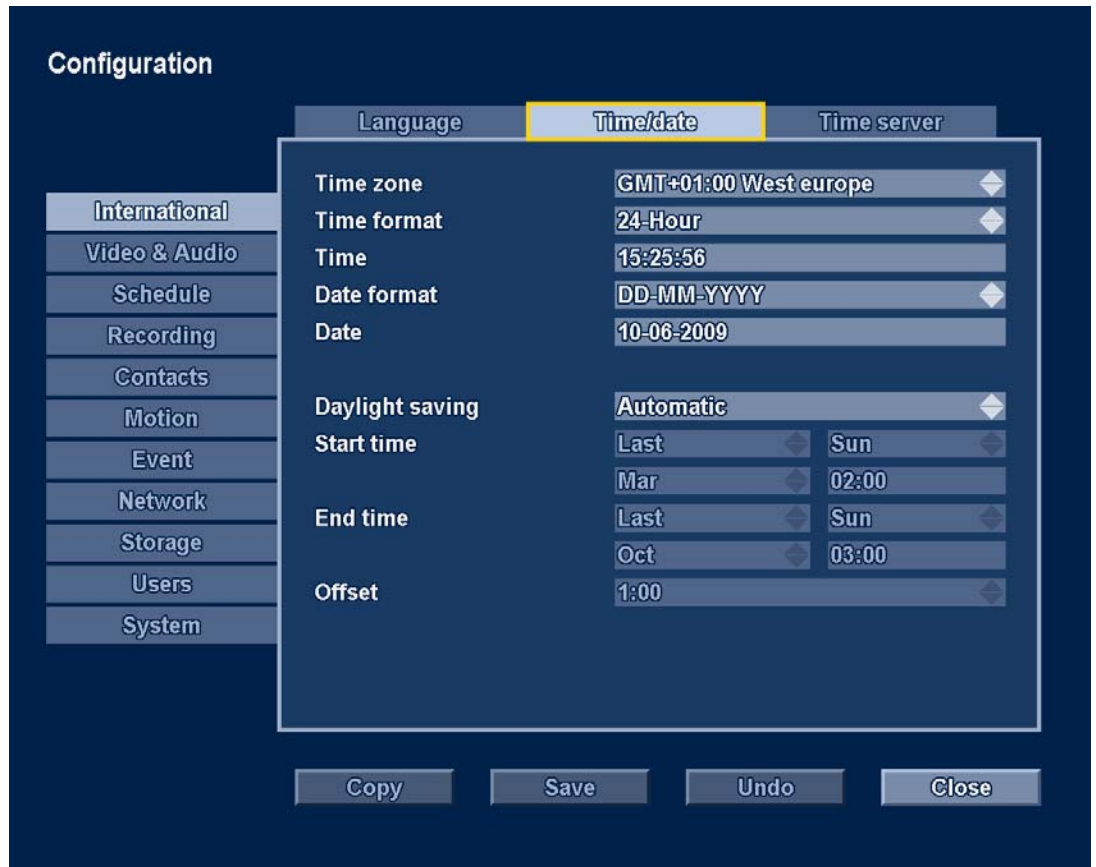
Figure 6.2 International menu - Time/date

– Select a **Time zone** from the list (daylight saving time is adjusted accordingly).
– Select either a 12-hour or a 24-hour clock **Time format**.
– Fill in the actual **Time**.
– Select a **Date format** which shows either the month (MM), the day (DD), or the year (YYYY) first.
– Enter the actual **Date**.
– Set **Daylight Saving** to Automatic to enable it. Set to Manual and fill in the day, month, and time of both **Start** and **End time**, and the **Offset** if it differs from the information associated with your time zone.
  If the actual time/date is put back by more than 10 minutes, all video content on the hard drive is deleted (a prompt is given). If put back less than 10 minutes, the clock is frozen for that allotted time. This prevents video data from being overwritten due to overlapping time stamps. If the actual time/date is put forward, the clock moves forward to the given value without further consequence.

6.1.3 Time Server

– The **Use time server** function synchronizes the time of the unit with the time of a network time server or another Divar XF unit. Fill in the IP address of the network time server. If a time server is not present on the same subnet, the Divar XF searches for a suitable time server outside its own network. Make sure the Divar XF gateway is set correctly to find the time server. Ensure that firewalls do not block NTP traffic via port 123.
– Click **Synchronize** to start time synchronization.

Automatic time synchronization (done once every four days) can only change the clock by a maximum of 10 minutes.

Note:
If you synchronize manually and the actual time is put back by more than 10 minutes, all video content on the hard drive is deleted (a prompt is given). If put back less than 10 minutes, the clock is frozen for that allotted time. This prevents video data from being overwritten due to overlapping time stamps. If the actual time/date is put forward, the clock moves forward to the given value without further consequence.

6.2   Video & Audio

Use this menu to configure the video and audio inputs. Remember, for 8-channel units IP cameras are numbered from 9 to 16; for 16-channel units IP cameras are numbered from 17 to 24.
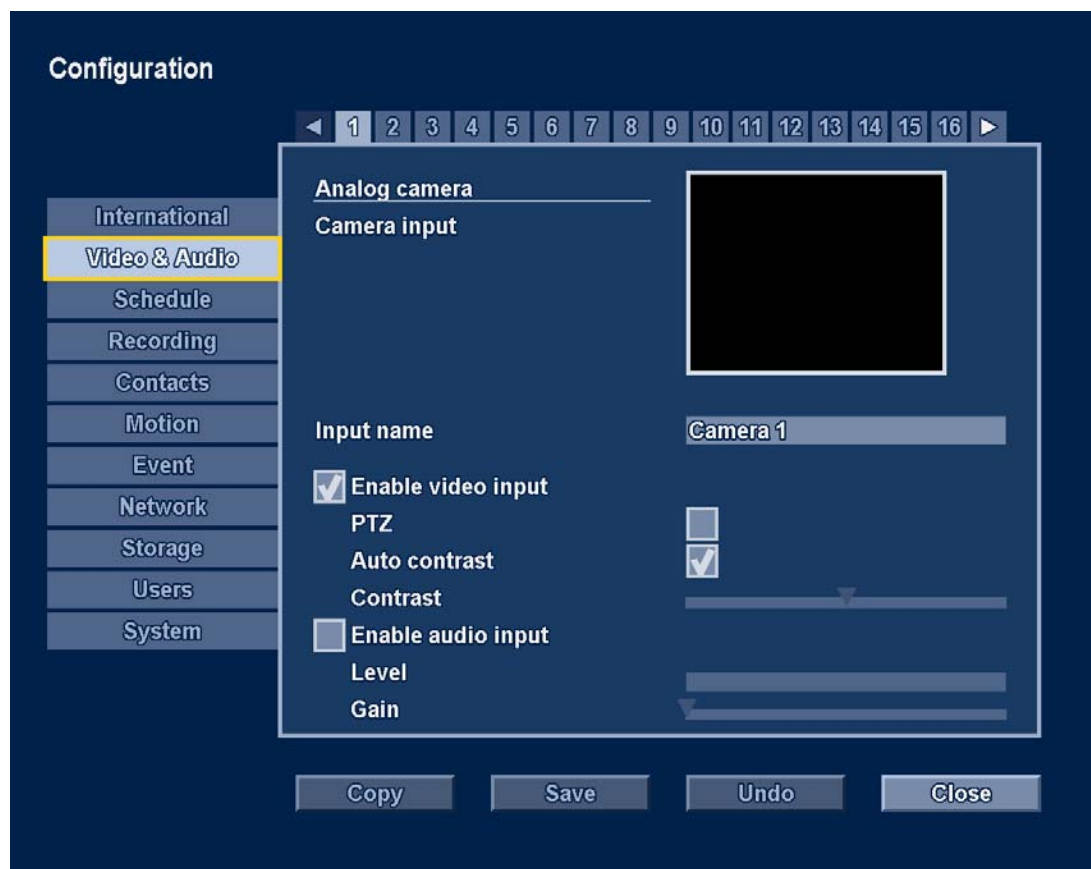
Figure 6.3   Video & Audio menu

6.2.1   Channels 1 to 8 (or 1 to 16)

The tabs 1-8 or 1-16 across the top of the menu contain the settings for each of the analog inputs.

Input name
Enter a name for the selected input. The name can be up to 16 characters long.

Enable video input
This setting enables (default) or disables the video and corresponding audio inputs.

PTZ
–   Enable PTZ when a controllable camera is connected.
–   By default, PTZ is disabled for all inputs.

Contrast
–   **Auto contrast** - enabled to let the system automatically adjust the contrast for the video input.
–   **Contrast** - can be set manually with the slider if Auto contrast is disabled.

Enable audio input
–   **Enable Audio input** when an audio source is connected.
–   The **Level** meter indicates the strength of the audio input signal.
–   Use the **Gain** slider to adjust the input sensitivity.

6.2.2   Channels 9 to 16 (or 17 to 24)

The tabs 9-16 or 17-24 across the top of the menu contain the settings for each of the IP cameras.

Note:
An IP stream must only be connected to a single channel on a single Divar. There should be no connection to any other device that could influence the settings of the IP device.

IP camera
If an IP connection has already been configured, the IP address, input type, and stream number is displayed. If a connection has already been established, a video preview appears.
1.   Click **Setup** to configure or change an IP camera connection.
     –   **IP address** - enter the IP address of the IP camera.
     –   **Input** - Choose **Camera** if the channel is connected to a camera or a single-channel encoder. Choose **Video line 1-4** if the channel is connected to a multi-channel encoder.
     –   **Stream** - enter the stream number.
     –   **Encoder profile** - Displays the encoder profile of the IP device used by the Divar XF.
     –   **Username/Password** - enter the username and password if applicable.
2.   Press **OK** to confirm settings.
It can take a few seconds to establish a successful connection, after which a video preview appears.

Input name
Enter a name for the selected input. The name can be up to 16 characters long.

Enable video input
This setting enables (default) or disables the video input.

PTZ
–   Enable PTZ when a controllable camera is connected.
–   By default, PTZ is disabled for all inputs.

Note:
Refer to the datasheet for a list of supported IP cameras and encoders.

6.3 Schedule

6.3.1 Setting the dynamic characteristics

The settings in the **Schedule** menu provide the opportunity to tap the powerful functionality of the unit. By spending some time in planning and setting up the profiles available, you can provide efficient use of resources while maintaining effective cover for most types of working situations.

The profiles are scheduled in a weekly calendar, changing the recording and event behavior at a particular day or time (for example, weekends or nights).

The six profiles that are defined in the **Recording** menu appear here.
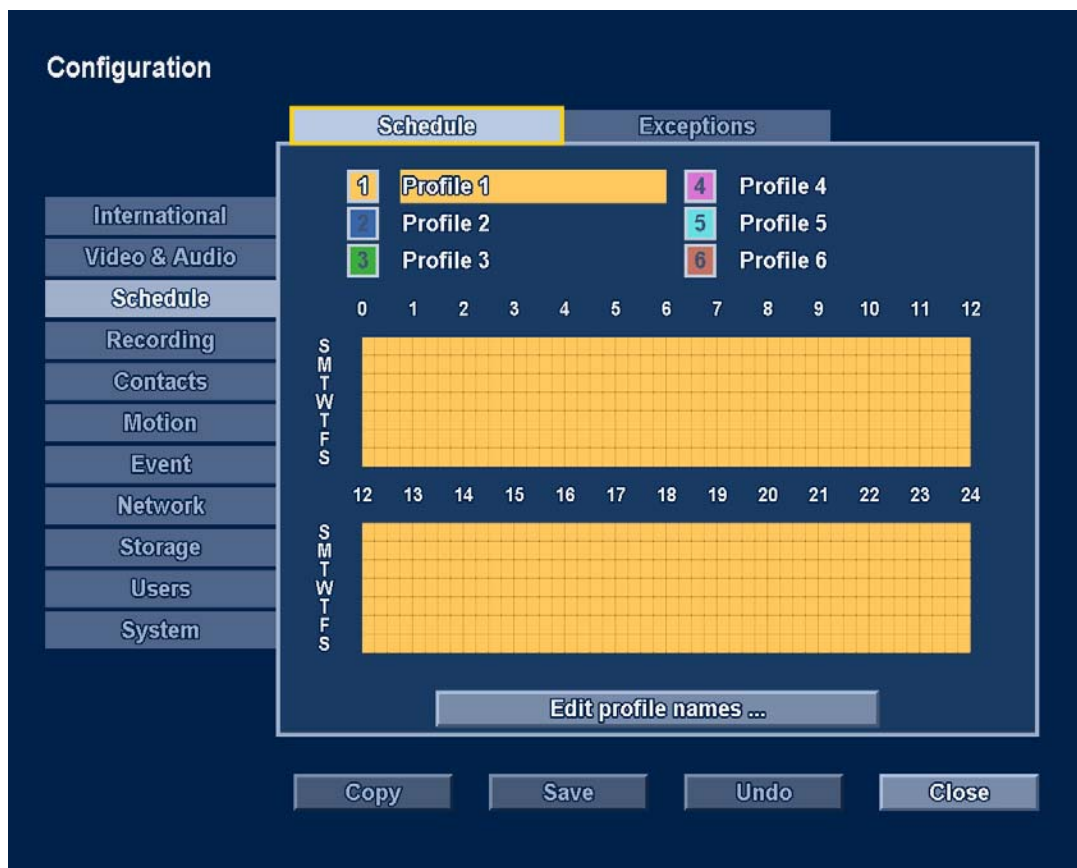
Figure 6.4 Schedule menu - Schedule

The profiles are represented by different colors in a graphical representation of the weekly schedule. The schedule can be changed by selecting a profile number and then drawing an active area in the graphical schedule.

6.3.2 Schedule

Configuration

– The use of profiles is defined in a calendar that covers one week. This calendar is then repeated for subsequent weeks.
– A profile is specified at intervals of 15 minutes for each day of the week.
– You can program exception days to change profiles for special days and holidays.

1. Select a profile number. The selected profile is highlighted.
2. Click **Edit selected profile name** to edit the name of the selected profile.

3. Move down to the schedule. Use the arrow and enter keys or mouse to draw an active area.
4. When finished, select **Save** to activate the updated schedule.

6.3.3   Exceptions
–   Up to 32 exceptions can be set that override the schedule.
–   To add an exception, select **Add**. Enter the **Date**, **Time, Duration**, and the **Profile**.
–   To edit an exception, select it and click **Change...** .
–   To remove an exception, select it and click **Remove**.

6.4   Recording

Use the **Recording** menu to configure the recording set-up for each of the six profiles.

Note:
Audio/video settings also apply to remote live network streaming.
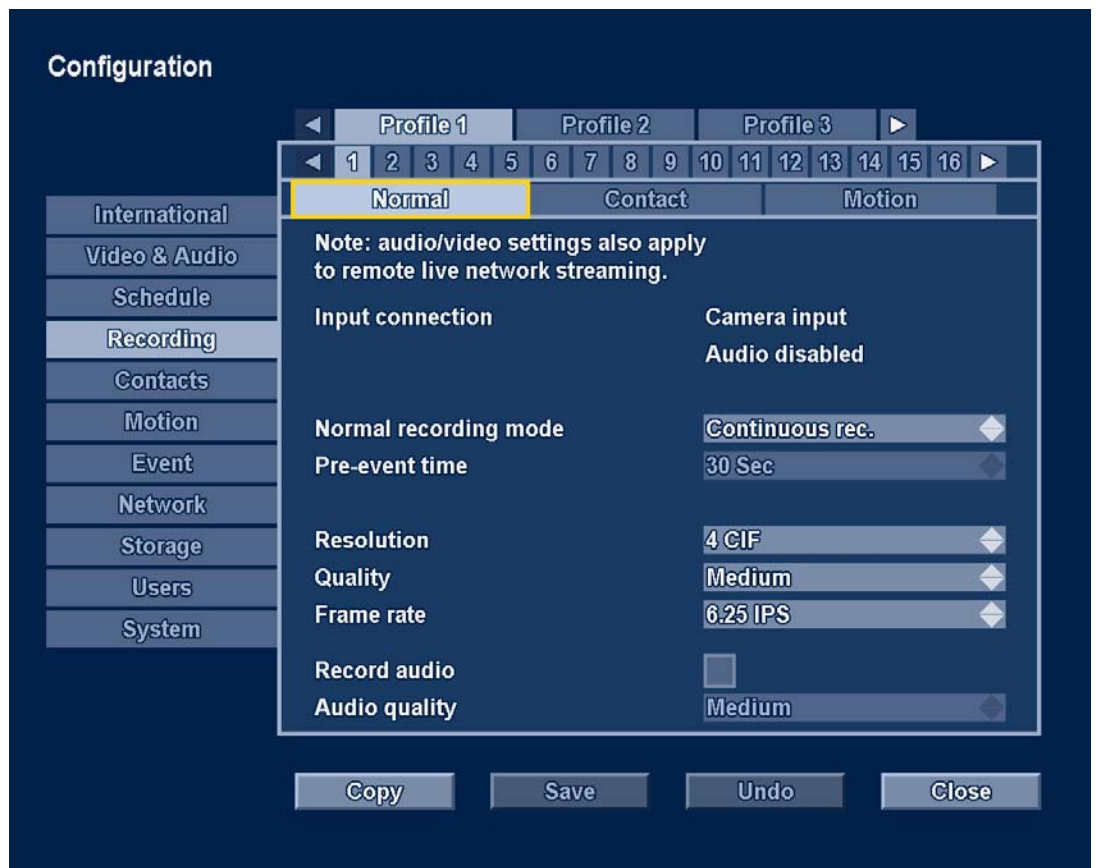
Figure 6.5   Recording menu - Normal

The recording behavior for each of the six profiles is specified in three submenus and then for each individual channel.

1. Select a profile.
2. Select a submenu for **Normal**, **Contact**, or **Motion** recording.
    –   Normal recording - the default recording mode
    –   Contact recording - activated upon an contact input event
    –   Motion recording - activated upon a motion event
3. Choose an individual input channel to configure the settings for recording its video and audio.

6.4.1   Normal
Set values for each of the following fields:
- Normal recording mode:
  - Continuous - set to record continuously
  - Event only - set to record events only
  - No Recording - set to disable recording
- Pre-Event Time:
  - set between 1 and 120 seconds (only applicable when recording **Event only**)
- Resolution:
  - set the video resolution to 4CIF (704 x 576/480 PAL/NTSC), 2CIF (704 x 288/240 PAL/NTSC), or CIF (352 x 288/240 PAL/NTSC).
- Quality:
  - set the video quality setting to High, Medium or Standard.
- Frame rate:
  - set the video frame rate to 25/30, 12.5/15, 6.25/7.5, 3.125/3.75 or 1/1 ips (images per second in PAL/NTSC).
- Record audio:
  - check to enable audio recording.
- Audio quality:
  - set the audio quality to High, Medium or Standard.

Note:
For information on bit rates, refer to ....

6.4.2   Contact
The fields have the same parameters as those under the Normal tab. Additional fields are present for contact recording.
- Contact recording:
  - **Fixed duration** - activates recording for the set duration from the start of the event.
  - **Follows + Post** - activates recording as long as the event is active and continues after the event becomes inactive for the time set in the duration field.
  - **Follows** - activates the recording only as long as the event is active.
  - **No recording**
- Set the duration time in minutes and seconds.

6.4.3   Motion
The fields have the same parameters as those under the Normal tab. Additional fields are present for motion recording.
- Motion recording:
  - **Fixed duration** - activates recording for the set duration from the start of the event.
  - **No recording**
- Set the duration time in minutes and seconds.

6.4.4   Copy
The copy recording settings function makes it easy to set up recording for all profiles and all cameras. The copy function copies content from within a single profile to other profiles. The camera inputs and the recording modes within each of these profiles can be selected.
To copy recording settings:
1. Check the **Copy multiple cameras** box if you wish to copy several camera inputs within the **From** profile.
2. Select the profile number to copy from.

3.   Highlight the profiles to copy to (highlight the un-numbered box to select all).
4.   Select the camera input(s) to be copied from, for the profile to be copied.
5.   Select the camera inputs to be copied to (hightlight the un-numbered box to select all).
6.   Check only those recording modes (**Normal**, **Alarm** or **Motion**) that you wish to copy.
7.   Click **Copy**.

6.5   Contacts

Use the **Contacts** menu to set up alarm inputs and relay outputs.
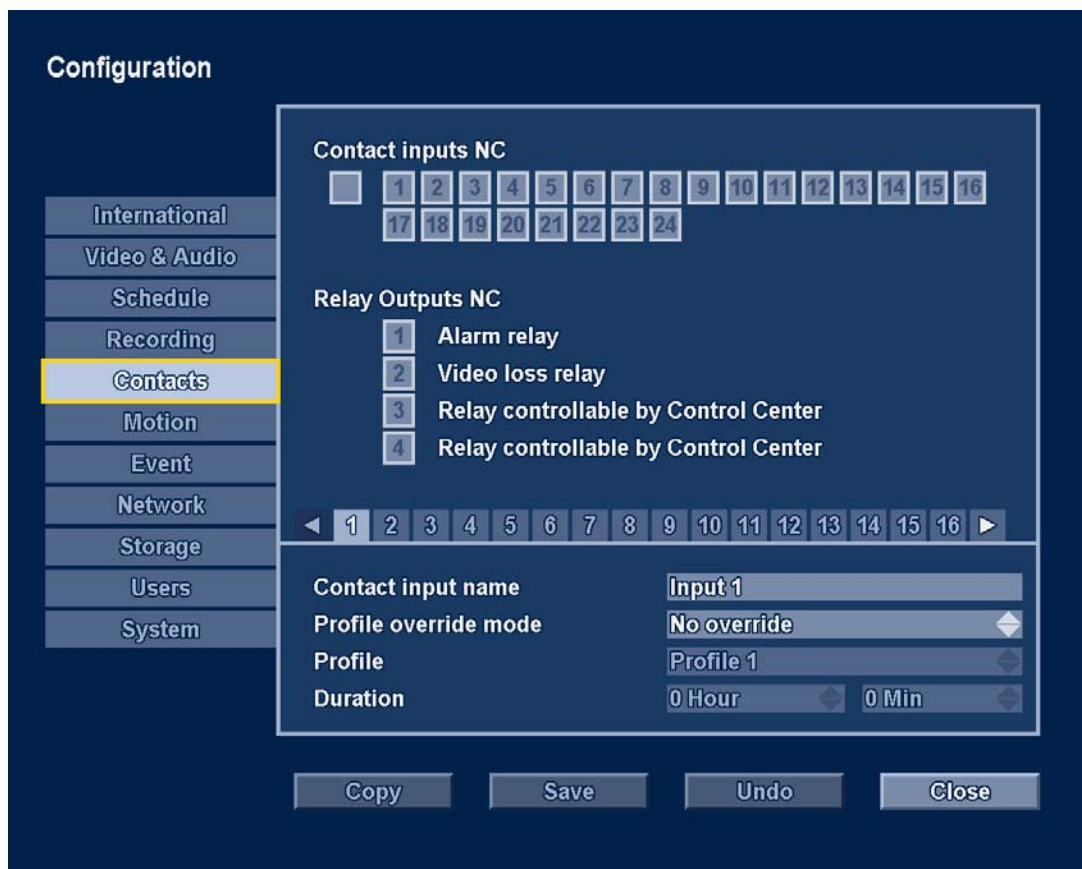
Figure 6.6   Contacts menu

6.5.1   Contact inputs

By default, all contact Inputs are Normally Open (NO). Highlight contact inputs that you wish to function as Normally Closed (NC) contacts (highlight the un-numbered box to select all).

6.5.2   Relay outputs

By default, all relay output contacts are Normally Open (NO). Highlight the relay outputs that you wish to function as Normally Closed (NC) contacts.

6.5.3   Contact input properties

Each of the 16 contact inputs can be assigned a name and a profile override mode.

Profile overrides

An alarm input can activate a profile override. There are three modes available:

–   **No override** (default)
–   **Follows**: the profile override lasts for as long as the input is active (no override duration can be set).

–   **Fixed duration**: the profile override starts when the input becomes active and continues for the time set in the override duration field.

When a profile override is selected you then choose which of the six profiles is used and the override duration.

6.6   Motion

The motion detection feature is configured by selecting the tabs for each individual analog video input. Motion detection on IP channels is possible but should be configured in the IP camera or encoder (if available).
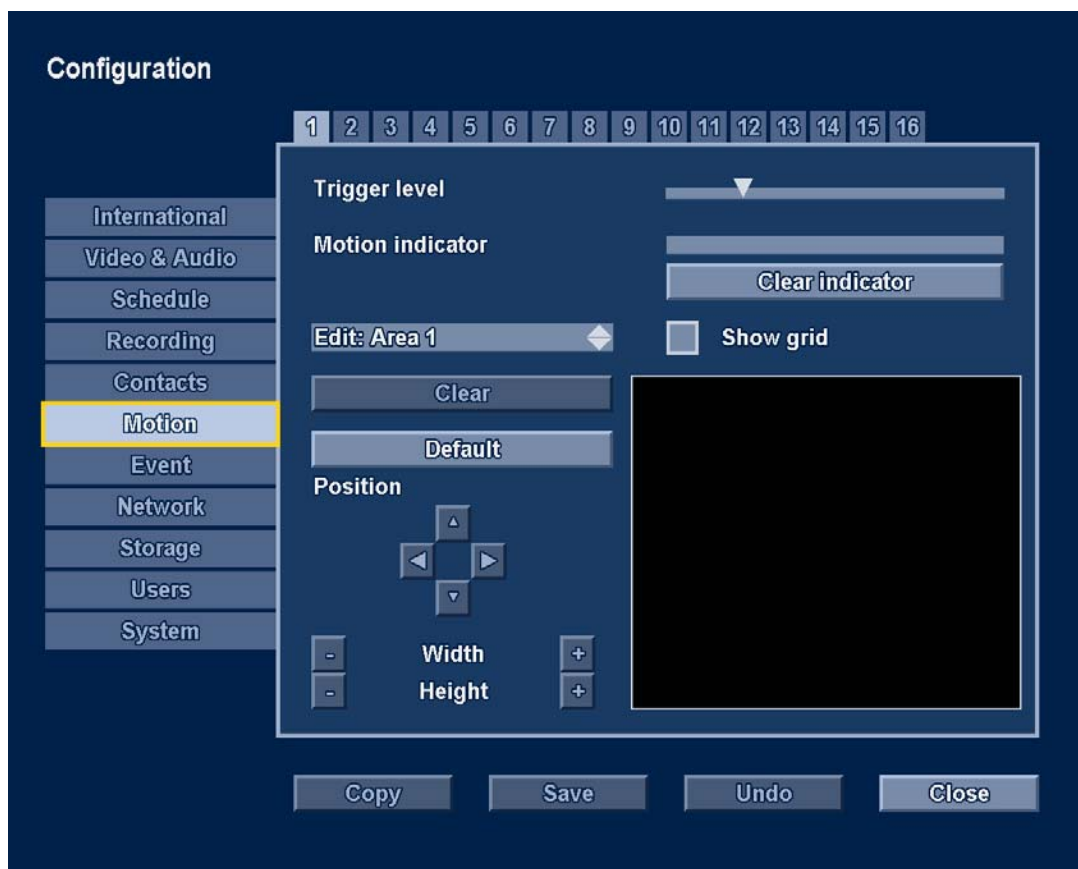
Figure 6.7   Motion menu

1.   To draw or delete an active motion detection area:
    –   Click an arrow in the **Edit:** field to select a motion area. Four areas can be drawn to detect motion in different areas of the camera image.
    –   Click **Default** to set the selected area to its default value.
    –   Click the **Position**, **Width**, and **Height** buttons to adjust the location and size of the motion area.
    –   Click **Clear** to delete the selected area.
    –   Select and define up to four areas.
2.   The **Motion indicator** indicates the total level of detected motion within the active motion areas. A red marker indicates the peak level. Select **Clear indicator** to reset the peak level.
3.   Adjust the **Trigger level** to set the motion sensitivity. If the motion indicator exceeds the trigger level, a motion event is generated.

Note:

Tips for troublefree motion detection:

– The size of a motion area influences the sensitivity in this area. A small motion area should be used to detect small objects (high sensitivity); a large area should be used to detect large objects (low sensitivity).

– Noise in the camera image can create false motion events, especially when detecting small objects. Make sure the camera has been set up correctly and enough lighting is available for the camera to obtain a noise-free image.

– Ensure that the camera is mounted so that it does not shake due to wind or other influences.

6.7   Event

Use the **Event** menu to specify the desired behavior for an active contact input, detected motion, or video loss. The general behavior of events is also set here. Each of the six profiles has a **General**, **Contact**, **Motion** and **Video loss** tab.
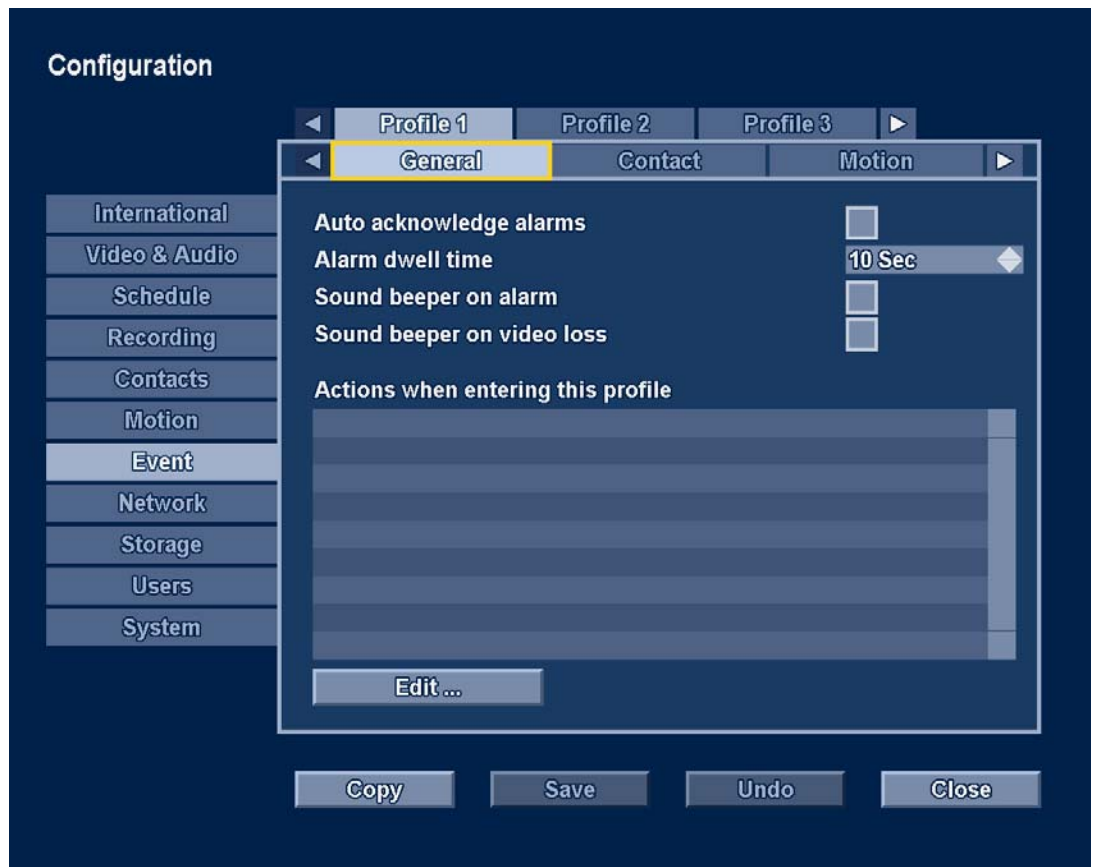
Figure 6.8   Event menu - General

6.7.1   General

Auto acknowledge alarms

– Enable when alarms should be acknowledged automatically. By default, an alarm must be manually acknowledged.

Alarm dwell time

– Set between 1 and 59 seconds to select the period during which the output relay and the beeper remain active after activation.

–   **Follows** - activates the beeper, relay, and view only as long as the event is present.

Sound beeper on alarm
–   Enable an audible warning upon an alarm.

Sound beeper on video loss
–   Enable an audible warning upon video loss.

Actions when entering this profile
Click **Edit...** to specify pre-positions for PTZ cameras when this profile is started.
–   Enter a pre-position value from 1-1023 for each of the PTZ cameras that should be moved (PTZ must be enabled for corresponding camera input).
Any actions that have been configured are listed.

6.7.2   Contact
The event behavior can be configured for each of the 16 input contacts in turn.
–   Check the **Enabled** box if the input contact should activate an event.
–   Check the **Alarm** box if the input contact should activate an alarm.

Actions
Click **Edit...** to set up **Recording**, **Monitor** and **PTZ** actions that should be carried out when this contact is active.
–   Recording: highlight the video channels to be recorded at contact recording settings when this input contact is active (highlight the un-numbered box to select all). A list of the selected channels and their recording properties is shown.
–   Monitor: highlight the video channels to be displayed on monitors A and B when this input contact is active (highlight the un-numbered box to select all).
–   PTZ: enter a pre-position value from 1-1023 for each of the PTZ cameras that should be moved (PTZ must be enabled for corresponding camera input).
Any actions that have been configured are listed.

6.7.3   Motion
The event behavior for motion detection can be configured for each video channel in turn.
–   Check the **Enabled** box if motion detection should activate a trigger.
–   Check the **Alarm** box if motion detection should activate an alarm.

Actions
Click **Edit...** to set up **Recording**, **Monitor** and **PTZ** actions that should be carried out when motion is detected.
–   Recording: highlight the video channels to be recorded at motion recording settings when motion is detected (highlight the un-numbered box to select all). A list of the selected channels and their recording properties is shown.
–   Monitor: highlight the video channels to be displayed on monitors A and B when motion is detected (highlight the un-numbered box to select all).
–   PTZ: enter a pre-position value from 1-1023 for each of the PTZ cameras that should be moved (PTZ must be enabled for corresponding camera input).
Any actions that have been configured are listed.

6.7.4   Video loss
The event behavior for video loss signals can be configured for each video channel in turn.
–   Check the **Enabled** box for each video channel if video loss should activate a trigger.

6.7.5 **Copy**

The copy event settings function makes it easy to set up a large number of events for all profiles and all cameras. The copy function copies content from within a single profile to other profiles. The camera inputs and the action types within each of these profiles can be selected. To copy event settings:

1. Check the **Copy multiple cameras** box if you wish to copy several camera inputs within the **From** profile.
2. Select the profile number to copy from.
3. Highlight the profiles to copy to (highlight the un-numbered box to select all).
4. Select the camera input(s) to be copied from, for the profile to be copied.
5. Select the camera inputs to be copied to (hightlight the un-numbered box to select all).
6. Check only those actions (**General**, **Contact**, **Motion** or **Video loss**) that you wish to copy.
7. Click **Copy**.

6.8 **Network**
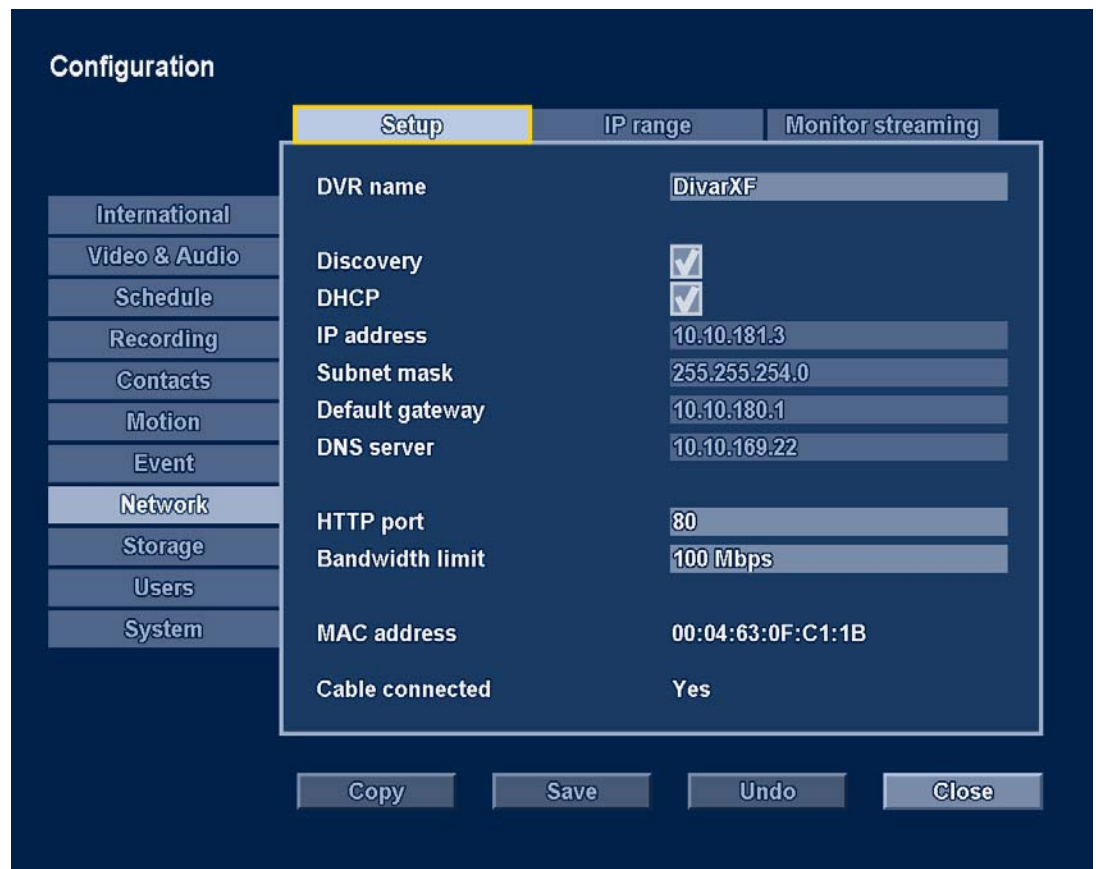
Figure 6.9 Network menu - Setup

6.8.1 **Setup**

– Enter a **DVR name** to be used on the network.
– If **Discovery** is enabled, the Control Center can carry out automatic discovery and read the IP address of the unit.
– Enable **DHCP** to have IP address, subnet mask, and default gateway assigned automatically by the network server. The actual values are displayed.

–   If DHCP is disabled, fill in the **IP address**, the **Subnet mask**, the **Default gateway**, and the **DNS Server** address. If required, change the default **HTTP port** (80) to a new value.

–   Restrict the network bandwidth by entering a Mbps value between 0.1 and 100 for the **Bandwidth limit**.

–   The **MAC address** is read only; it shows the MAC address of the DVR.

–   **Cable connected** shows the status of the physical network connection.

6.8.2   IP Range

–   Eight IP ranges can be entered to allow access.

–   Enter the same begin and end address to specify a single IP address. Enter different begin and end addresses to specify an IP address range.

6.8.3   Monitor Streaming

The remote monitor streaming function allows monitor output A and/or B to be streamed remotely via one or more of the analog video inputs. The main advantage of using this feature is that multi-screen images can be viewed remotely using just one video stream, thus requiring only a limited amount of network bandwidth and computer resources.

Each of the analog video inputs can be configured as:

–   Camera input (default).

–   Streaming output A (input is used to stream monitor output A).

–   Streaming output B (input is used to stream monitor output B).

Note:
Disable the recording of a channel used for monitor streaming in the **Recording** tab.
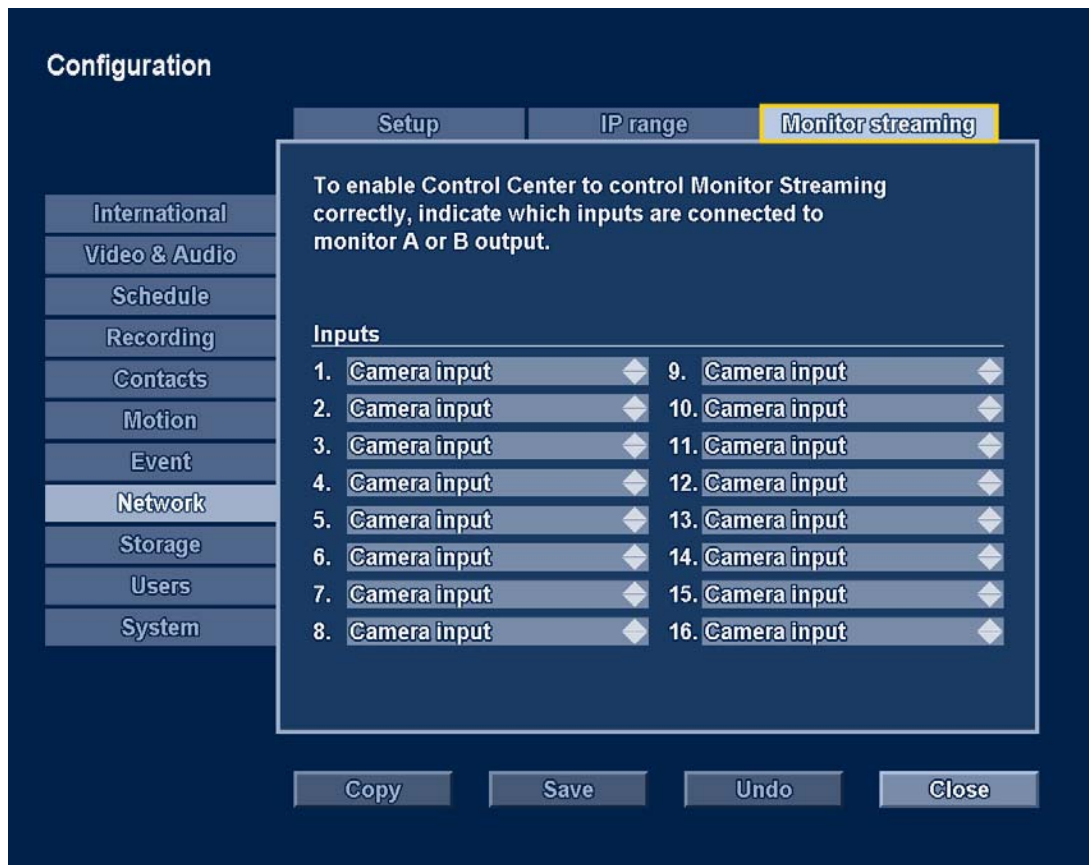
Figure 6.10   Network menu - Monitor streaming

6.9 Storage

The Storage menu gives access to information on the internal hard disk(s).

6.9.1 Status

An overview of the Installed harddisks is shown, per **Slot**:

– The **Disk ID** is shown.
The **Capacity** is shown in gigabytes.

– **Status** shows:
– OK - disk is connected and operational;
– Fail - if for some reason the disk is not working properly;
– Not found - if the disk is not connected;
– Unused - if a valid disk is found which is not used (disabled).

Any new disks found are disabled by default.

An overview of Missing harddisks is shown. If one of the disks is removed from the system, it is entered in the list of **Missing harddisks**.

– Disks that will not be reinstalled can be removed from the list by clicking **Remove selected item from list**.

6.9.2 Settings

Active disk set properties apply to the complete set of active hard disks:

– **Slot numbers** shows which hard disk slots are active.

– **Mode** indicates if the disk set is used for reading and/or writing. Click **Change** to set a different mode than displayed.

– **RAID** (Redundant Array of Independent Disks) activates a redundant storage mechanism (RAID 4) that ensures a higher reliability of recorded content. To activate the RAID function, four harddisks must be installed and a RAID license activated. While RAID 4 is active, the effective storage is equal to three times the smallest disk size. The fourth disk is used for parity information.
If any one of the four disks fail, no data is lost. Recording continues on three disks without RAID 4 protection. Once the defective disk has been replaced, the RAID set is restored (this process typically takes about 24 hours) while normal operation continues.

– **Overwrite after** - The oldest video is automatically overwritten when the disk set is full. Overwriting can be forced to a shorter time period (e.g. for legal purposes).

Installed hard disks allows hard disk specific settings:

– Click to select an individual hard disk from the list.
– Click S.M.A.R.T. details to read out the S.M.A.R.T. status of the selected disk.
– Click settings to write protect a disk and to add/remove it from the active disk set.

6.9.3 Service

– **Delete recording until...** - opens a submenu to delete video older than a specified date.

– **Delete all recordings** - will erase all video on all hard disks in use.

– **Pause recording...** - pauses all recordings for a specified period of time.

6.10 Users

6.10.1 General

– Set a default user. This user is logged in by default, e.g. after powering up the unit.

6.10.2 Administrator

– Enter a **User name** which can be up to 16 characters.

– Enter a **Password** that can be up to 12 characters.

–   Check **Allow local log on** to enable local access (always enabled).
–   Check **Allow remote log on** to enable remote access.
–   Check **Auto log off** to enable automatic log off after 3 minutes of inactivity.

6.10.3   User 1 - 7

Up to seven users can be defined with the seven tabs.
–   Enter a **User name**, up to 16 characters.
–   Enter a **Password** up to 12 characters.
–   Set different user rights by checking the various check boxes.
–   In the **Control Rights** tab, set the rights for camera viewing, camera control, camera pre-positioning, and relay control.

6.11   System

6.11.1   Service

–   Select **Restore factory defaults** to reset the settings in the menu system to their default value.
–   **Export diagnostic data** archives a system info file to a USB memory device when connected. This is for service purposes only.
–   **Export system configuration** saves a copy of the system settings to a USB memory device.
–   **Export log for exporting** saves a log file to a USB memory device containing a list of video exports.
–   **Import system configuration** will load previously saved system settings from a USB memory device.
–   **Erase log book** will delete the contents of the log book.

6.11.2   Serial ports

KBD

KBD is used to:
–   set a unique ID number between 1 and 16 if multiple Divar XF units are controlled with one keyboard.
–   set a first camera number to create a multi-Divar system (for example, Divar 1 has cameras 1 - 16; Divar 2 has cameras 17 - 32).
–   set access rights for each keyboard if multiple keyboards are used with a keyboard expander to control a Divar XF.

COM port

The COM port is used for service or integration purposes.

6.11.3   Licenses

Some optional features require a software license to be obtained before they are activated.
–   **MAC address** displays the MAC address of the DVR. The MAC address, together with a valid license number, is required to obtain an activation key via:

   https://activation.boschsecurity.com

   The license number and instructions on how to obtain the activation key can be found in the letter that is provided when purchasing a Divar XF license.
–   Installed keys lists all license keys already installed on the system.
–   Click **Install key** to enter a new license activation key.
–   Available features lists all installed optional features.

6.11.4   Logging

Select the items to be logged.

- –   **Log contacts**
- –   **Log motion**
- –   **Log remote access**

7 Using the Configuration Tool

The Configuration Tool is a software application that makes the installation and configuration of a unit faster and easier. The Configuration Tool runs on a PC that is connected to the Divar XF via an Ethernet network connection.

Although all settings can also be configured with the on-screen display menu of the Divar XF itself, the Configuration Tool offers a very user-friendly alternative. It also allows configuration settings to be saved on the PC hard disk. These can be restored later and used to configure other units.

7.1 Getting started

To use the Configuration Tool to change settings, connect the unit to a PC via a network connection. The Configuration Tool application must be installed on the PC.

7.1.1 System requirements

Operating platform: A PC running Windows XP or Windows Vista.

For the Configuration Tool, the **recommended** PC requirements are:

- Processor: Intel Pentium 4 or comparable
- RAM memory: 512 MB
- Free hard disk space: 10 GB
- Graphics card: NVIDIA GeForce 6200 or higher
- Network interface: 10/100-BaseT

7.1.2 Installing the Configuration Tool

The Configuration Tool is optionally installed on the PC when the Control Center application is installed. To install separately:

1. Insert the CD-ROM into the CD-ROM drive on the PC.
   - The installation program starts automatically.
2. If installation does not start automatically, locate the Setup.exe file on the CD and double click it.
3. Follow the instructions on the screen and select the install Configuration Tool when asked to complete the installation.

7.1.3 Starting the Configuration Tool

Network connection

To start the Configuration Tool without using the Control Center, double click the Configuration Tool icon on the desktop window to start the program. Alternatively, select the Divar XF Configuration Tool program via the Start button on the task bar and the Programs menu item. Follow the log on procedure.

To start the Configuration Tool via the Control Center, click the **Config** button in the Control Center window. This shows a CT log on dialog with all known Divar XF devices.

Offline configuration

To log on with an offline configuration, select the Divar XF version, model, the video standard, and the cameras that are connected.

7.2 How to log on

When starting the Configuration Tool via a network, the **Log on** window appears. (Click **Cancel** to discontinue log on and exit the application.)
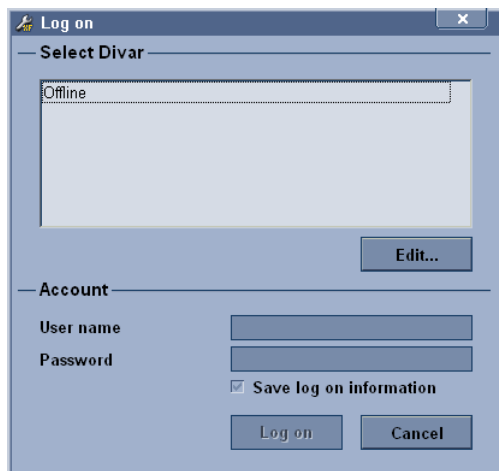
Figure 7.1 Configuration Tool - Log on window via a network

When the Configuration Tool application is started for the first time, the Divar XF list is empty. First, a Divar XF must be added to the list. To add a Divar XF to the list or to modify a Divar XF entry, click **Edit >>**.

To modify the Divar XF list

The **Edit Divar XF list** window allows you to add or delete Divar XFs from the list.
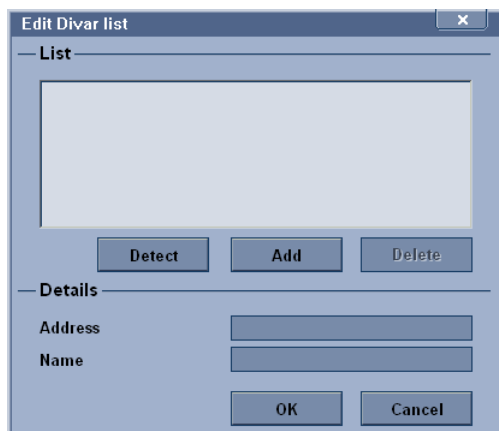
Figure 7.2 Configuration Tool - Edit Divar list

To automatically detect all enabled Divar XFs on the network:

1. Click **Detect**
   – To detect a Divar XF, Discovery must be enabled on that Divar XF.
2. Select a Divar XF and click **OK** to add the selected Divar XF to the list.

To add a Divar XF to the list:

1. Click **Add**
2. Enter the IP address or DNS name of the new Divar XF.
   – The IP address to be filled in is set in the Configuration/Network menu of the Divar XF itself.
3. Type a name in the Name box or retrieve it from the Divar XF by checking the **Retrieve from Divar XF** box.
4. Click **Add**

To delete a Divar XF from the list:

1. In the list, select the Divar XF to delete.
2. Click **Delete**
   – The selected Divar XF is removed from the list.

Log on

When starting the Configuration tool application, the **log on** window appears. (Click **Cancel** to discontinue log on and exit the application.)
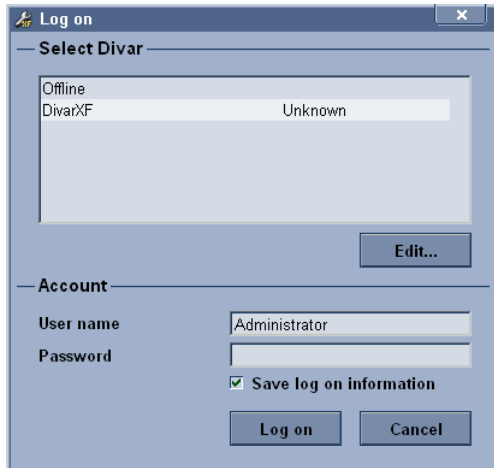
Figure 7.3   Configuration Tool - Log on window showing Select Divar list

To control a particular Divar XF:

1.   Select the Divar XFs to control by placing check marks next to them.
2.   Type user name and password.
     –   The user name and password to be filled in are set in the Configuration/Network access menu of the Divar XF itself. Check with the administrator for access rights to the unit if log on is denied.
     –   To let the system remember names and passwords on subsequent uses of the Configuration Tool, place a check mark in the **Save log on information** box.
3.   Click **Log on**.

Maximum number of users

If the maximum number of users (eight) is exceeded, a window is displayed.

7.2.1   Menu structure differences

The Configuration Tool allows access to and use of unit menu items. These menu items are explained in *Section 6 Advanced configuration menu, page 53*. Although the items are the same, the menu structure is slightly different in the Configuration Tool.

7.3   Introducing the main window

The Configuration Tool window is divided into 3 panes. The buttons in the left pane are always available. Clicking one of these buttons changes the contents of the center pane. The buttons in the top pane are control buttons that give direct access to various tasks.
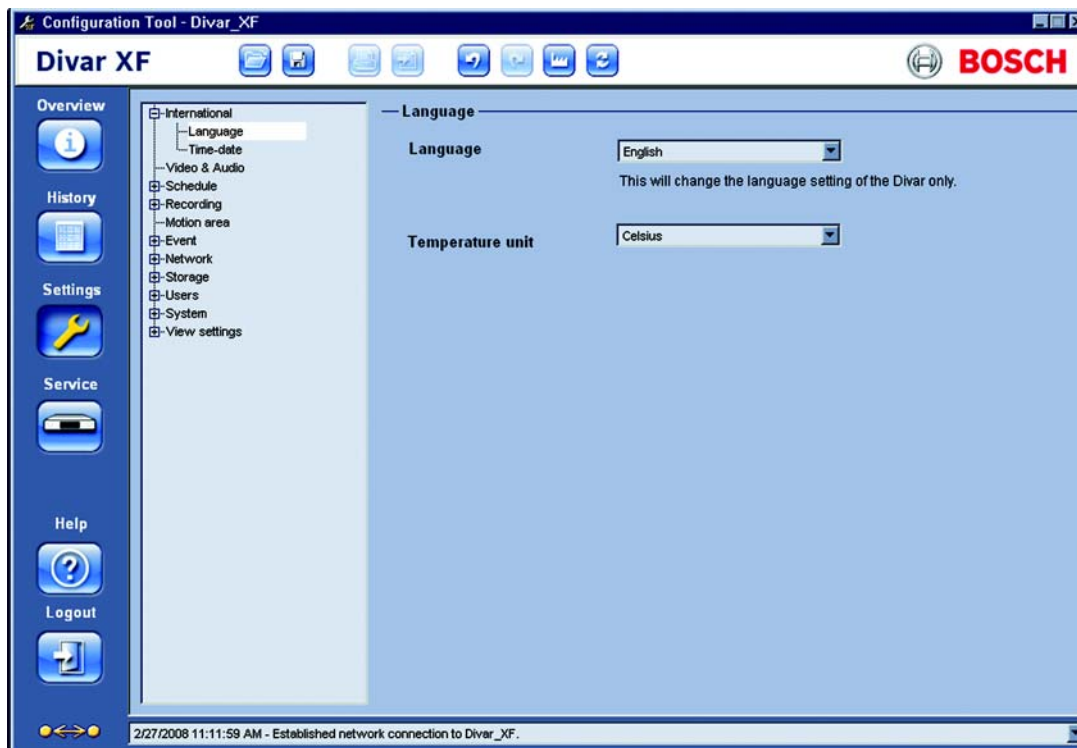
Figure 7.4 Configuration Tool - Settings window

7.3.1 Overview button

Click the **Overview** button to get general information about the Divar XF that is connected.

7.3.2 Logbook button

Click **Logbook** to display a list of events in the center pane. This list can be filtered to show only certain events.
– Fill in the date/time values to restrict the period for viewing events.
– Uncheck types of events that are to be filtered (not viewed).
The latest event is shown first.

7.3.3 Settings button

Click **Settings** to display the page for configuring the Divar XF. The menu tree structure and the selected subpage is shown in the center pane.
For more detailed information on the configuration settings, please refer to
Chapter 6 Advanced configuration menu, Page 51.

Using the Menu tree

After clicking **Settings** , the menu tree is displayed on the left of the center pane. Use this tree to navigate through the menu system.
– Click + to expand the branch structure.
– Click - to collapse it.
– Click an entry to display the parameters for that page item.
– Select the values you want for the parameters.
– These values are updated immediately.

7.3.4   Service button

Click **Service** [icon] to get a list of diagnostic messages.

7.3.5   Help button

Click **Help** [icon] at any time to get help. A dialog help window appears.

7.3.6   Logout button

To return to the Control Center application or to log on to a different unit, click **Logout** [icon].

7.4   Using the control buttons

The top pane of the main window has several buttons that allow performing common tasks quickly:

Import / Export
All settings that are set in the Configuration Tool can be saved to a file that is stored on the PC harddisk. Save as many of these files as needed, just give them different names. The settings in these files can be loaded back into the Configuration Tool either completely or in subgroups. Although these files are stored as text files and can be viewed with a text viewer, do not change or edit them as this makes them unusable.

Import

1.   Click **Import** [icon] to open a settings file.
2.   In the dialog box, select the location and name of the file to open.
3.   Select the groups of settings to load and click **OK**.
4.   The selected settings are downloaded to the unit immediately.

Export

1.   Click **Export** [icon] to save the current settings in a PC file.
2.   In the dialog box, select the location and enter a name for the file to be saved.
3.   Select the groups of settings to save and click **OK** to save the settings.

Print
To print the complete contents of the page or list when the Overview or Service page is active:

1.   Click **Print** [icon] to print the current settings.
2.   Click **OK** to print.

Save

Click **Save** [icon] to save the complete contents of the page or list when the Overview or Service page is active.

Refining settings
When selecting Import, Export, or Download, a dialog window allows a selection of three groups of settings. Select **All settings**, **All settings except** or **Only** to determine how the list is constructed.

Undo / Redo

Click [icon] to undo or [icon] to redo the last action. Up to 100 actions can be undone.

Factory Defaults

Click the **Factory Defaults** button to set all settings on the active page to their default values.

Refresh

Click **Refresh** to refresh the content of the current page settings only.

8   Menu default values

The following tables list the items of the menu system of the unit. The **Default value** column shows the values that are restored when the factory defaults item of the **System** settings menu is selected. An **N** in the **Reset** column means that this value is not reset when the factory defaults are recalled.

8.1   Quick install menu defaults

Table 8.1   Quick Install menu default values

Navigation			Setting	Default value	Reset
International			Language	English	N
			Time zone	GMT+1 West Europe	N
			Time format	24-hour	N
			Time	0:00	N
			Date format	DD-MM-YYYY	N
			Date	1-1-2008	N
			IP address	0.0.0.0	N
Schedule			Week	Monday-Friday	Y
			Week-day	08.00-18.00	Y
			Weekend-day	08.00-18.00	Y
Recording	Profile 1-6	Normal	Resolution	4CIF	Y
			Video quality	Medium	Y
			Frame rate	6.25 IPS	Y
	Contact		Resolution	4CIF	Y
			Quality	High	Y
			Frame rate	25 IPS	Y
	Motion		Resolution	4CIF	Y
			Quality	High	Y
			Frame rate	25 IPS	Y
Network	Setup		DVR Name	DIVAR XF	N
			DHCP	Enabled	N
			IP address	0.0.0.0	N
			Subnet mask	0.0.0.0	N
			Default gateway	0.0.0.0	N
			DNS server	0.0.0.0	N
			Bandwidth limit	100 Mbps	N

8.2   Monitor view settings defaults

Table 8.2   Monitor view settings default values

Navigation		Setting	Default value	Reset
Display options	Monitor A, B	Display titles	Yes	Y
		Display time/date	Yes	Y
		Transparent background	Yes	Y
		Cameo borders	Black	Y
Multiscreens	Monitor A, B	4x4	Yes	Y
		3x3 (1)	Yes	Y
		3x3 (2)	Yes	Y
		Quad 1	Yes	Y
		Quad 2	Yes	Y
		Quad 3	Yes	Y
		Quad 4	Yes	Y
Sequence	Monitor A, B	Sequence dwell time	5 Sec	Y
		Sequence list	Camera 1..16	Y
Event display	Monitor A, B	Change display on video loss	Yes	Y
		Change display on motion	Yes	Y
		Display duration	5 Sec	Y

8.3   Configuration menu defaults

Table 8.3   Configuration menu default values

Navigation		Setting	Default value	Reset
International	Language	Language	English	N
		Temperature unit	Celsius	N
	Time/date	Time zone	GMT+1 West Europe	N
		Time format	24-hour	N
		Time	0:00	N
		Date format	DD-MM-YYYY	N
		Date	1-1-2008	N
		Daylight saving	Automatic	N
		Start time (DS)		N
		End time (DS)		N
		Offset (DS)		N
	Time server	Use time server	Disabled	N
		IP address	0.0.0.0	N

Table 8.3   Configuration menu default values

Navigation				Setting	Default value	Reset
Video & Audio	1...16			Input name	Camera 1..24	Y
				Enable video input	Enabled	Y
				PTZ	Disabled	Y
				Auto contrast	Enabled	Y
				Contrast	50%	Y
				Enable audio input	Disabled	Y
				Gain	50%	Y
	17...24	Setup...		IP address	0.0.0.0	N
				Input	Camera (value 0)	N
				Stream	1	N
				Encoder profile	1	N
				User name	User	N
				Password	—	N
Schedule	Schedule			Profile 1	Always active	Y
	Exception Days			Exception Days	Empty	Y
Recording	Profile 1-6	1...24	Normal	Recording mode	Continuous	Y
				Pre-event time	30 seconds	Y
				Resolution	4CIF	Y
				Video quality	Medium	Y
				Frame rate	6.25 IPS	Y
				Record audio	Disabled	Y
				Audio quality	Medium	Y
		1...24	Contact	Contact recording	Fixed duration	Y
				Duration	30 seconds	Y
				Resolution	4CIF	Y
				Quality	High	Y
				Frame rate	25 IPS	Y
				Record audio	Disabled	Y
				Audio quality	Medium	Y
		1...24	Motion	Motion recording	Fixed duration	Y
				Duration	30 seconds	Y
				Resolution	4CIF	Y
				Quality	High	Y
				Frame rate	25 IPS	Y
				Record audio	Disabled	Y
				Audio quality	Medium	Y

Table 8.3   Configuration menu default values

Navigation				Setting	Default value	Reset
Contacts				Contact Inputs NC	None	Y
				Relay Outputs NC	None	Y
	1..24			Contact input name	Contact input 1..24	Y
				Profile override mode	No override	Y
				Profile	Profile 1	Y
				Duration	1 hour	Y
Motion	1..16			Trigger level	50%	Y
				Motion areas	All clear	Y
Event	Profile 1-6	General		Auto acknowledge alarms	Disabled	Y
				Alarm dwell time	10 seconds	Y
				Beep on alarm	Enabled	Y
				Beep on video loss	Enabled	Y
				Actions when entering profile	No actions	Y
		Contact	1...24	Enabled	1..16 enabled	Y
				Alarm	Disabled	Y
				Actions	Apply recording for NShow on Mon A	Y
		Motion	1...24	Enabled	1..16	Y
				Alarm	Disabled	Y
				Actions	Apply recording for NShow on Mon A	
		Video loss	1...24	Enabled	1..16 enabled	Y
Network	Setup			DVR Name	DIVAR XF	N
				Discovery	Enabled	N
				DHCP	Enabled	N
				IP address	0.0.0.0	N
				Subnet mask	0.0.0.0	N
				Default gateway	0.0.0.0	N
				HTTP port	80	N
				Bandwidth limit	100Mbps	N
	IP range			Begin address	0.0.0.0	N
				End address	255.255.255.255	N
	Monitor streaming			Input 1..16	Camera input	Y
Storage	Status					NA
	Settings			Override after	Disk full set	Y
	Service					NA

Table 8.3 Configuration menu default values

Navigation			Setting	Default value	Reset
Users	General		Default user	Administrator	Y
	Administrator		User name	Administrator	Y
			Password		Y
			Allow local log on	Enabled	NA
			Allow remote log on	Enabled	Y
			Auto log off	Disabled	Y
	User 1..7	Access rights	User name	User 1..7	Y
			Password	—	Y
			Allow local log on	Enabled	Y
			Allow remote log on	Enabled	Y
			Auto log off	Disabled	Y
			Allow configuration changes	Disabled	Y
			Allow playback	Enabled	Y
			Allow export	Enabled	Y
			Allow to delete recordings	Disabled	Y
		Control rights	Camera viewing rights	Enabled	Y
			Camera control rights	Enabled	Y
			Allow camera pre-positions	Enabled	Y
			Allow relay control	Enabled	Y
System	Service				NA
	Serial ports		ID	1	N
			First camera number	1	N
			Access for keyboard 1..4	Mon A + Mon B	Y
			Baud rate	38400	N
			Parity	None	Y
			Data bits	8	Y
			Stop bits	1	Y
			RTS/CTS	Enabled	Y
	Licenses				NA
	Logging		Log contacts	Enabled	Y
			Log motions	Enabled	Y
			Log remote access	Enabled	Y

9   Technical specifications

The following pages give the technical specifications of the unit.

9.1   Electrical

Voltage and Power

All models	100-240 VAC; 0.7-0.3 A, 50/60 Hz

Video

Inputs	Composite video 0.5-2 Vpp, 75 ohm, automatic termination
Outputs	1 Vpp, 75 ohm, sync 0.3 V ± 10%
Video standard	PAL/NTSC auto-detect
Resolution	720 x 576 PAL - 720 x 484 NTSC
AGC	Automatic adjustment or manual adjustment of gain for each video input
Digital Zoom	1.5 - 6 times
Compression	H.264

Audio

Inputs	Mono RCA, 1 Vpp, 10k ohm
Outputs	Dual mono RCA, 1 Vpp, 10k ohm
Sample rate	48 kHz per channel
Compression	MPEG-1 layer II

Alarm Handling

Inputs	8 or 16 configurable NO/NC max input voltage 40 VDC
Outputs	4 relay outputs, 1 malfunction relay output; configurable NO/NC max rated 30 VAC - 40 VDC - 0.5 A continuous -10 VA

Control

RS232	Output signals according to EIA/TIA-232-F, max input voltage ±25 V
Keyboard input	Conform RS485 max signal voltage ±12 V, supply 11 V-12.6 V at max 400 mA

Biphase	Impedance 128 ohm, max overvoltage protection ±40 V, max cable length 1.5 km
RS485	Conform RS485 max signal voltage ±12 V

Connectors

Video inputs	8 or 16 looping BNC, auto-terminating
Audio inputs	8 or 16 RCA
Ethernet	RJ45 shielded, 10/100 BaseT according to IEEE802.3
Monitors	BNC (2), Y/C (2), VGA D-sub (2)
Audio outputs	4 RCA
Alarm connectors	Screw terminal inputs via external PCB (supplied), cable diameter AWG 26-16 (0.13-1.5 mm2)
Malfunction relay	Screw terminal output via external adapter (supplied), cable diameter AWG 28-16 (0.08-1.5 mm2)
Biphase	Screw terminal output via external PCB (supplied), cable diameter AWG 26-16 (0.13-1.5 mm2)
RS232	DB9 male (2)
RS485	Screw terminal output via external adapter (supplied), cable diameter AWG 28-16 (0.08-1.5 mm2)
Keyboard input	RJ11 (6-pin)
Keyboard output	RJ11 (4-pin), conform RS485, 16units maximum
USB	Type A connector (5)

Storage

Hard Disks	4 front-replaceable SATA hard drives
Record Rate (IPS)	PAL: 400 total, configurable per camera: 25, 12.5, 6.25, 3.125, 1 NTSC: 480 total, configurable per camera: 30, 15, 7.5, 3.75, 1
Recording Resolution	704 x 576 PAL - 704 x 480 NTSC 704 x 288 PAL - 704 x 240 NTSC 352 x 288 PAL - 352 x 240 NTSC

Display Modes

Monitor A	Full, full sequence, quad, multiscreen, alarm call-up (live and playback, analog and IP cameras)
Monitor B	Full, full sequence, quad, multiscreen, alarm call-up (live, analog cameras only)

9.1.1 Mechanical

Dimensions (excluding cabling)	446 x 443 x 88 mm (W x D x H) 17.6 x 17.4 x 3.5 inch (W x D x H)
Weight	approx. 11 kg / 24 lbs
Rack Mount Kit (Included)	For mounting one unit in an EIA 19-inch rack.

9.1.2 Environmental

Temperature	Operating: +5 °C to +45 °C (+41 °F to +113 °F) Storage: -25 °C to +70 °C (-13° F to +158 °F)
Relative humidity	Operating: <93% non-condensing Storage: <95% non-condensing

9.1.3 Electromagnetic and Safety

EMC requirements	
USA	FCC Part 15, Class B
EU	EMC directive 89/336/EEC
Immunity	EN50130-4
Emission	EN55022 Class B
Harmonics	EN61000-3-2
Voltage fluctuations	EN61000-3-3
Safety	
USA	UL, 60950-1
EU	CE, EN60950-1
Canada	CAN/CSA - C22.2 no. E60950-1

9.1.4 Accessories (Optional)

KBD-Digital / KBD-Universal	Intuikey keyboard with joystick
Keyboard extension kit	LTC 8557
Storage	500GB storage expansion kit 1TB storage expansion kit License for RAID 4 storage
Video Manager	LTC 2605/91
IP inputs	License for 4 IP cameras License for 8 IP cameras
Biphase code translators	LTC 8782

9.1.5   Video bitrates (bps)

Resolution	Quality	Frame rate (IPS)				
		25/30	12.5/15	6.25/7.5	3.125/3.75	1
CIF	Standard	225	124	73	48	30
CIF	Medium	619	340	201	131	82
CIF	High	1013	557	329	215	135
2CIF	Standard	317	174	103	67	42
2CIF	Medium	871	479	283	185	116
2CIF	High	1425	784	463	303	190
4CIF	Standard	500	275	163	106	67
4CIF	Medium	1375	756	447	292	183
4CIF	High	2250	1238	731	478	299

Note:

The above bitrates are theoretical values. In practice, the bitrates can be up to 50% lower depending on the camera image. For the most efficient image compression, avoid camera noise by making sure that the camera has been set up correctly and enough lighting is available. In addition, ensure that the camera is mounted so that it does not shake due to wind or other influences.