Divar 700 Series

Digital Hybrid HD Recorder / Digital Network HD Recorder

BOSCH

en Installation and Operation manual

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1 Safety

1.1 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.

1.2 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 warranty or, in the case of an authorization agreement, authority to operate the equipment.

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 2002/96/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 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

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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 more information please contact the Bosch Security Systems location nearest you or visit *www.boschsecurity.com*

2 Introduction

2.1 Digital video recorder for surveillance applications

The Divar 700 Series is a video recording system that records multiple camera 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. For analog and SD IP cameras the maximum recording rates of 30 (NTSC) and 25 (PAL) images per second, per channel, are guaranteed. For HD IP cameras recording rates of up to 60 images per second for 720p and 30 images per second for 1080p, per channel, are supported. 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 on-screen display menu system using the front panel control keys or the mouse. Connect a KBD (Intuikey) keyboard for PTZ control and to improve the ease-of-use. Full-screen, quad and multiscreen viewing is available. VGA, CVBS and Y/C video outputs in either NTSC or PAL are provided.

2.1.1 Versions

There are various Divar 700 Series models available:

Model number	Analog A/V inputs	Monitor outputs	Dual mono outputs	IP channels	DVD writer	Network ports
DHR754	16	2	2	0 (+16 optional)	Yes	2
DHR753	16	2	2	0 (+16 optional)	Yes	1
DHR751	16	2	2	0 (+16 optional)	No	1
DHR732	8	2	2	0 (+8 optional)	Yes	1
DHR730	8	2	2	0 (+8 optional)	No	1
DNR754	0	1	1	16 (+16 optional)	Yes	2
DNR753	0	1	1	16 (+16 optional)	Yes	1
DNR732	0	1	1	8 (+8 optional)	Yes	1

The optional IP channels are activated with a license.
Each of these models is available with storage capacities of either 500 GB, 2 TB, 4 TB or 8 TB. Models with 4 TB and 8 TB have four hard disks. These models can be operated in RAID-4 mode with the optional RAID-4 license. This protects against single disk failures.

Hybrid verions (DHR)

The DHR hybrid versions have looping auto-terminating analog video inputs and outputs, and audio inputs and outputs. Two VGA connectors provide outputs for an A and a B monitor. Monitor A displays full-screen or multiscreen digital pictures that can be frozen and zoomed. Monitor B displays live full-screen or multiscreen pictures. 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.

Network verions (DNR)

The DNR network versions have single VGA, CVBS and Y/C video output connectors for an A monitor. Monitor A displays full-screen or multiscreen digital pictures that can be frozen and zoomed.

2.1.2 Software

The BVC application is used via the network for live viewing and playback. The Configuration Manager application detects IP devices and configures BVIP devices. The Divar 700 Configuration Tool is used to configure the Divar 700 recorders on the network.
Seven simultaneous users can control multiple units. Authenticity checks for both local and remote playback are available. A dedicated PC player is provided for the authenticated playback of archived video files. The PC-based Configuration Tool facilitates the installation of the unit.
An SDK (software development kit) is available to integrate the unit into third party management software.

2.1.3 Firmware upgrades

Firmware upgrades are released periodically. Check the Bosch Security website for the latest version.

Note:

Configuration files that are saved before the upgrade can be imported after the upgrade.

2.1.4 Manuals

Two printed manuals are supplied:

- Quick Installation guide - gives a brief overview on how to set up and install the product.
- Installation and Operation manual (this manual) - a detailed description of how to install and operate the product.

Three additional manuals in PDF format are supplied on the CD-ROM:

- Configuration Tool operation manual - a detailed description for administrators on how to use the Configuration Tool to set up the Divar 700 Series.
- Bosch Video Client operation manual - a detailed description for end-users and administrators on how to set up and operate the Bosch Video Client software.
- Archive Player operation manual - a detailed description for end-users and administrators on how to set up and operate the Archive Player software.

2.1.5 Features

The Divar 700 Series has the following features:

- 8 or 16 looped-through, auto-terminating camera inputs (hybrid versions)
- 8 or 16 audio inputs (hybrid versions)
- Audio support for IP cameras
- Two dual mono audio outputs (hybrid versions)
- Dual monitor outputs (hybrid versions)
- Full-screen and various multiscreen display capabilities in live and playback modes
- Spot monitor output with sequencing, multiscreen, and OSD (hybrid versions)
- Optional support for up to 8 (or 16) SD or HD IP cameras on hybrid versions
- Up to 32 SD or HD IP cameras on network versions
- Simultaneous recording and playback
- Internal hard disk video storage (front replaceable by user)
- 10/100/1000Base-T Ethernet port for Ethernet connection and networking
- External KBD keyboard connection
- 8 or 16 switching (alarm) inputs and 4 alarm outputs
- Motion detection
- Video loss detection
- Audible alarm
- Pan, tilt, and zoom camera control via RS485 and biphase
- Two RS232 serial ports for serial communication
- Local archiving via USB
- Local archiving via built-in DVD writer (not all versions)
- Playback of local archive sources
- iSCSI support for external network storage
- Text input support
- Extensive search facilities, including time-based, event/alarm-based, recorded motion-based and text-based search
- On-board RAID4 (optional)

2.1.6 On-screen help

On-screen context-sensitive help is available. 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

Inspect the package for visible damage. If any items appear to have been damaged during transport, 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:

- Divar 700 Series unit
- USB mouse
- Quick installation guide
- Divar 700 Series Installation and Operation 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 700 Series 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 for hybrid version (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 Intuikey keyboard
- PC for Bosch Video Client and Configuration Tool applications
- Pan/tilt/zoom control units
- ATM/POS bridge device for integrating with ATM/POS applications over RS232C or TCP/IP socket interface

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

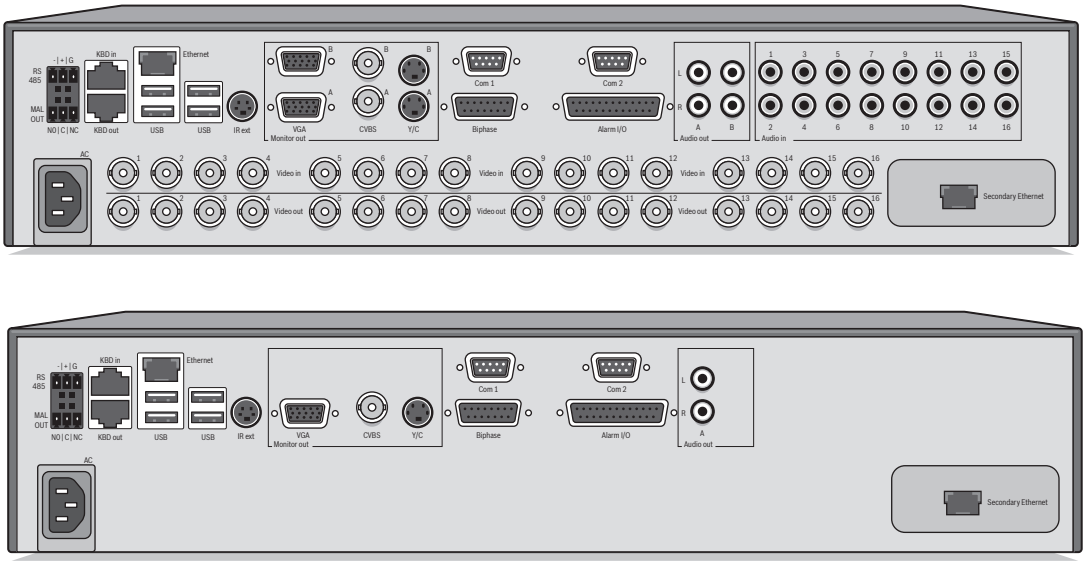

Figure 3.1 Back panel connections for hybrid and network versions

1. For hybrid versions, connect the cameras to the BNC **Video in** connectors (automatically terminated).
2. Connect monitor A to the **CVBS**, **Y/C**, or **VGA** (supporting 1280x1024) output MON A.
3. Connect the USB mouse to a **USB** port.
4. Connect monitor B to the **CVBS**, **Y/C**, or **VGA** (supporting 1024x768) output MON B*.
5. Connect up to 16 audio signals to the RCA **Audio in** connectors*.
6. Connect the RCA **Audio out** connector(s) to a monitor or an audio amplifier.
7. Connect up to 16 inputs to the **Alarm I/O** via the 25-pin connector board.
8. Connect up to 4 alarm outputs to the **Alarm I/O** via the 25-pin connector board.
9. Connect the malfunction output (**MAL OUT**) via the 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 15-pole D-type connector board).
12. Connect a third-party pan/tilt/zoom control unit to the **RS485** port (via the screw terminal adapter).
13. Connect to your network via the **Ethernet** port. (Some versions have a **Secondary Ethernet** port which can be used as a separate network connection.)
14. Connect your IP cameras to the network.

Switch on all connected equipment.

15. Connect the power cord to the unit.

3.2 First-time use

The unit first determines if camera inputs are PAL or NTSC and selects the output mode for the monitor. If only IP cameras are connected, the system defaults to PAL. The unit starts with a multiscreen display.

See *Section 4.4 Camera connections, page 27* for more details and for instructions on overriding the operating mode.

The Quick install menu opens the first time the unit is used. Fill in the basic settings in the 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 USB mouse or 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, Network, Schedule, and Recording. 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

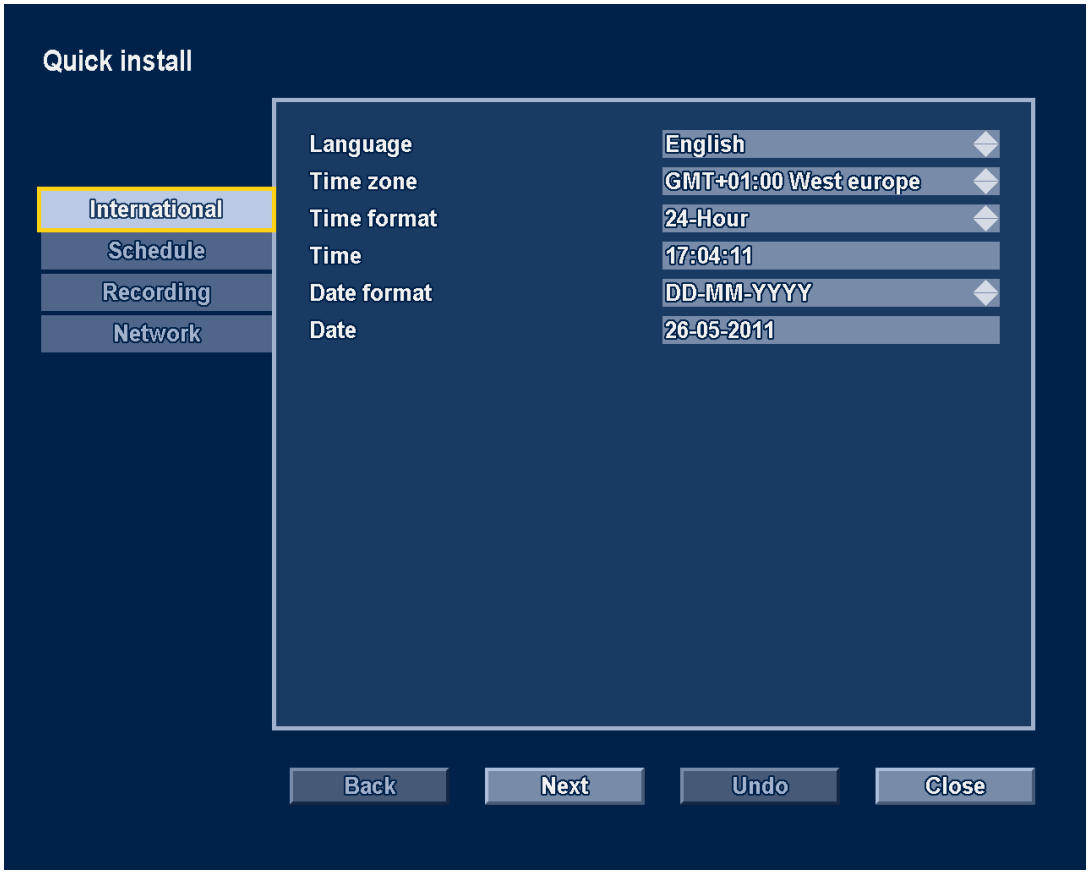

Figure 3.2 Quick install menu - International

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 a date format with month (MM), day (DD), or year (YYYY) first.
Date – Fill in the current date.

3.3.2 Schedule

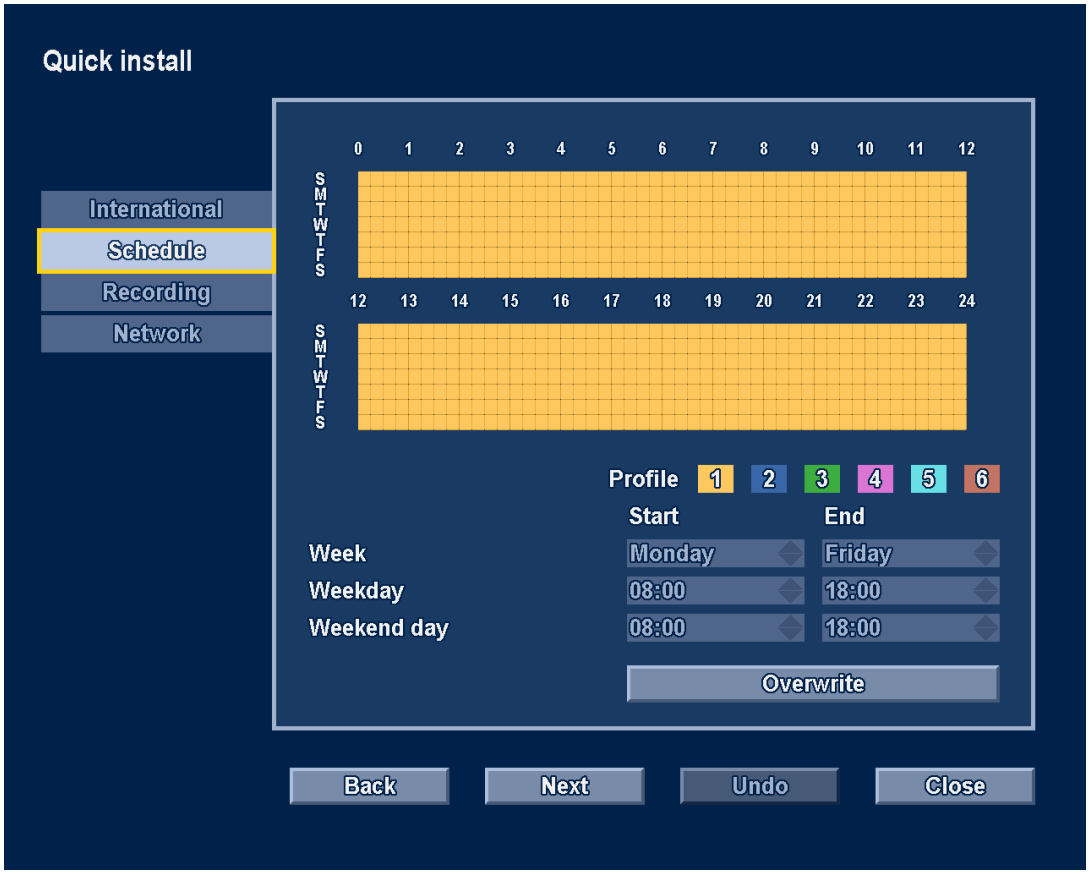

Figure 3.3 Quick install menu - Schedule

The currently active weekly schedule is shown. Each color represents an available profile:

- 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 on which day the week should start and end.
- Select when the day begins and ends on weekdays.
- Select when the day begins and ends on weekends.

The display is automatically updated when settings are changed.

3.3.3 Recording

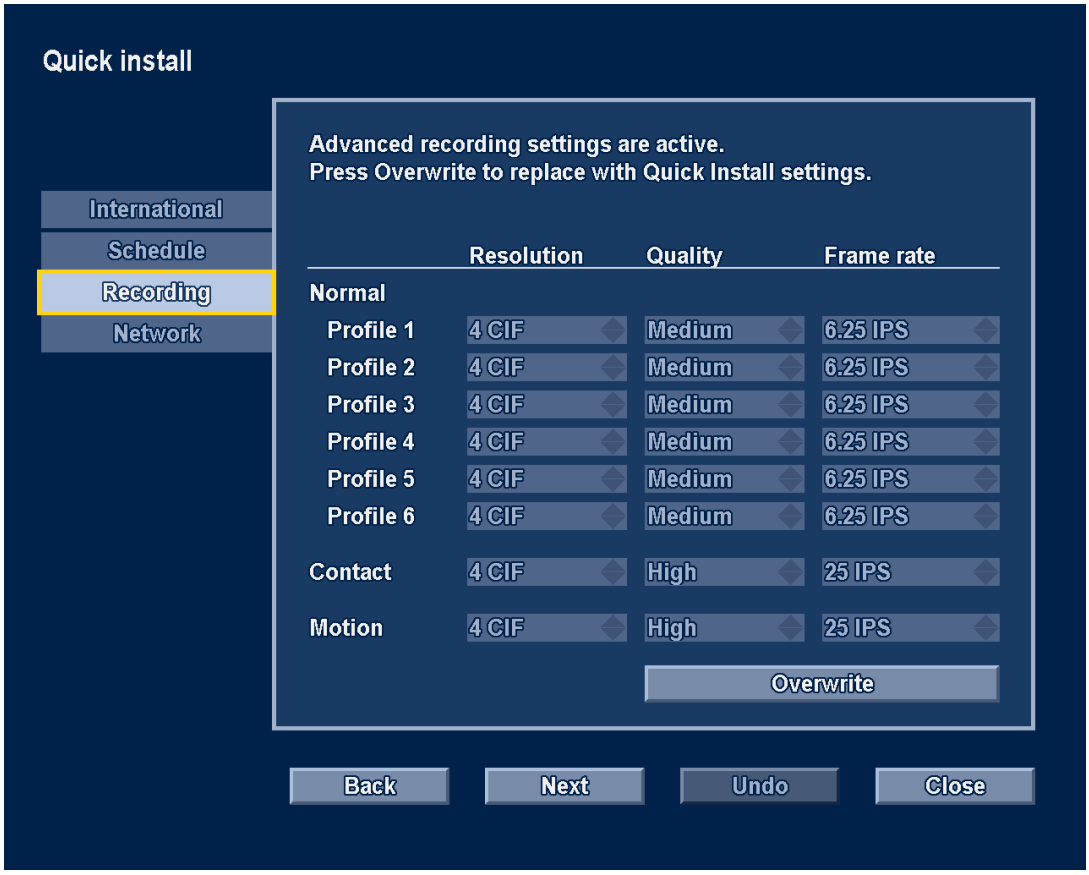

Figure 3.4 Quick install menu - Recording

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.

Note:
The resolution selection shows only CIF, 2CIF or 4CIF resolutions. When selecting one of these for a camera that supports different resolutions, the following conversions apply:

Setting	QVGA/VGA cameras	1080p/720p cameras	720p cameras
CIF	QVGA	720p	720p
2CIF	QVGA	720p	720p
4CIF	VGA	720p	720p

The recording panel shows when conversions are applied and when bitrate limitations are enforced due to bandwidth management settings.

3.3.4 Network

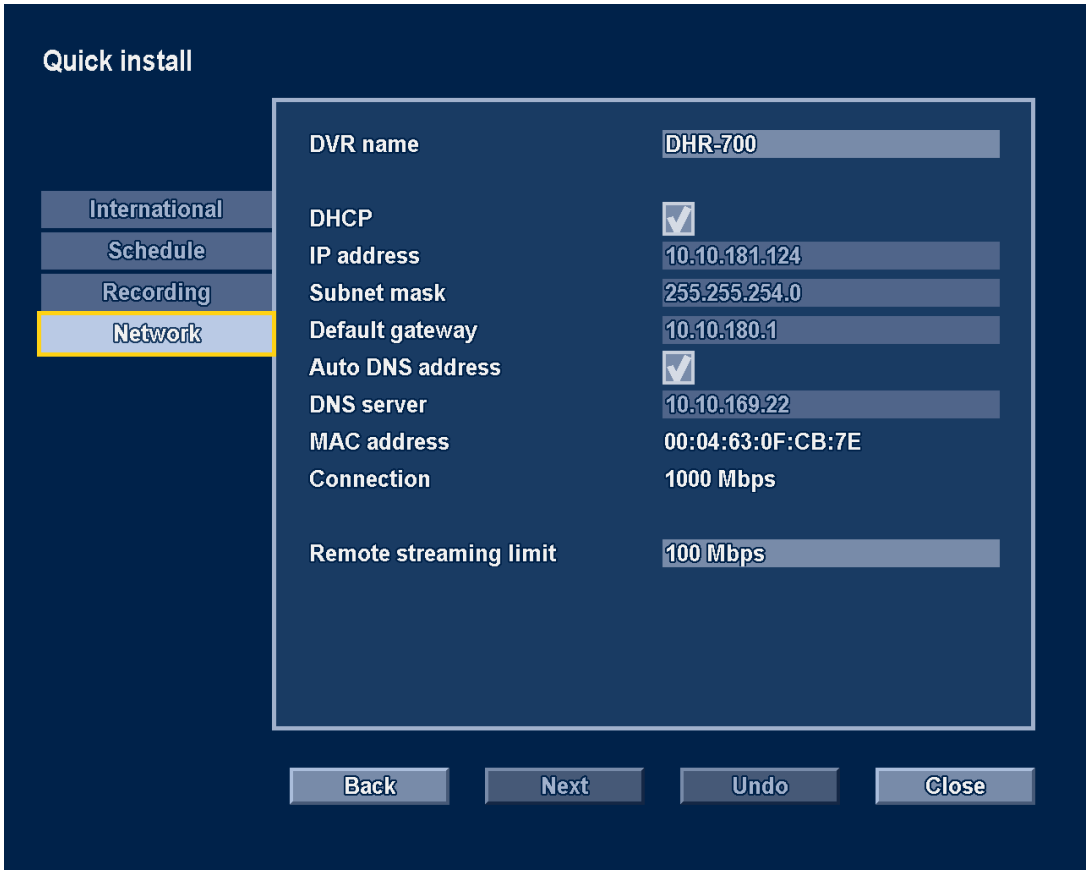

Figure 3.5 Quick install menu - Network

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

DVR name — Enter a unique DVR name to be used in the network.

DHCP — Enable DHCP to have IP address, Subnet mask, and Default gateway assigned automatically by the DHCP server of the network. The actual values are displayed.
IP address — Fill in the IP address when DHCP is not enabled.
Subnet mask — Fill in the Subnet mask when DHCP is not enabled.
Default gateway — Fill in the Default gateway when DHCP is not enabled.
Auto DNS address — Enable to have the DNS server IP address assigned automatically. The assigned address is displayed.
DNS server — Fill in the DNS server address when Auto DNS address is not enabled.
MAC address — The MAC address is read only.
Connection — Shows current network speed of the primary Ethernet connection.

Remote streaming limit — Enter a value between 0 and 1000 Mbps to restrict the network bandwidth available for streaming audio and video to all BVC workstations combined.

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, a 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 silver side covers:

1. insert a cover on each side.
2. Slide the cover towards the front of the unit.

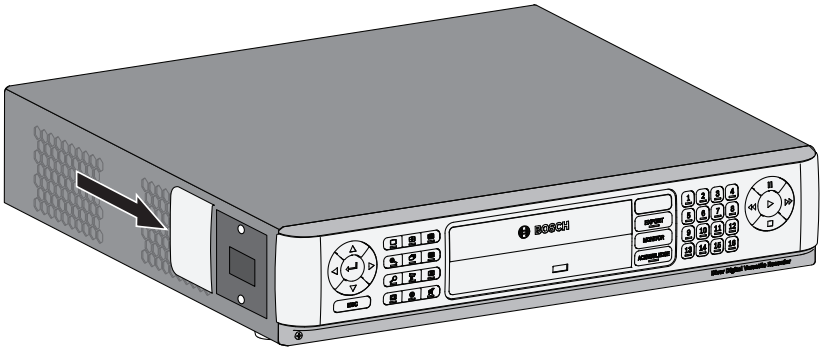

Figure 4.1 Side cover installation

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.

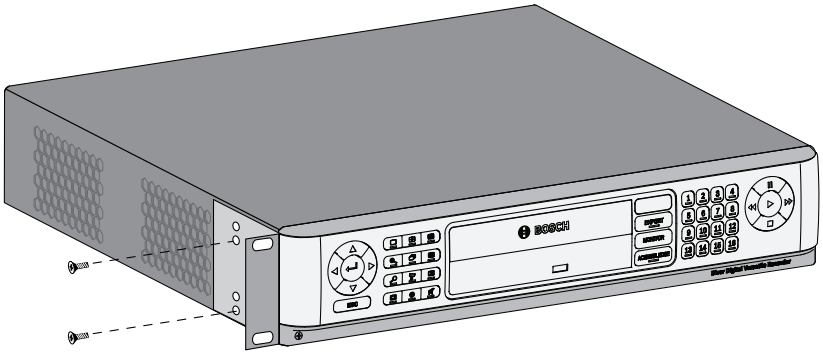

Figure 4.2 Securing the rack mounting bracket

CAUTION!
When installing the assembly into the rack, do not restrict air flow around the vents located on the side panels or 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 700 Series. See the Bosch website or contact your local Bosch representative for available hard disks.
Installing or removing hard disks does not breach the warranty conditions as long as the warranty label is not broken.

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 to 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

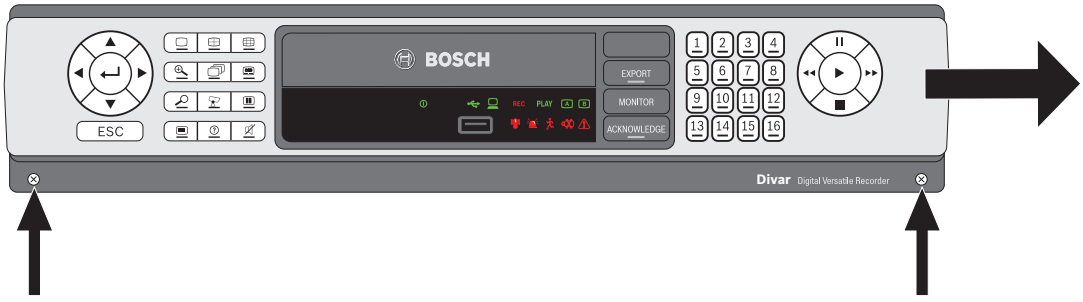

Figure 4.3 Front panel removal

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

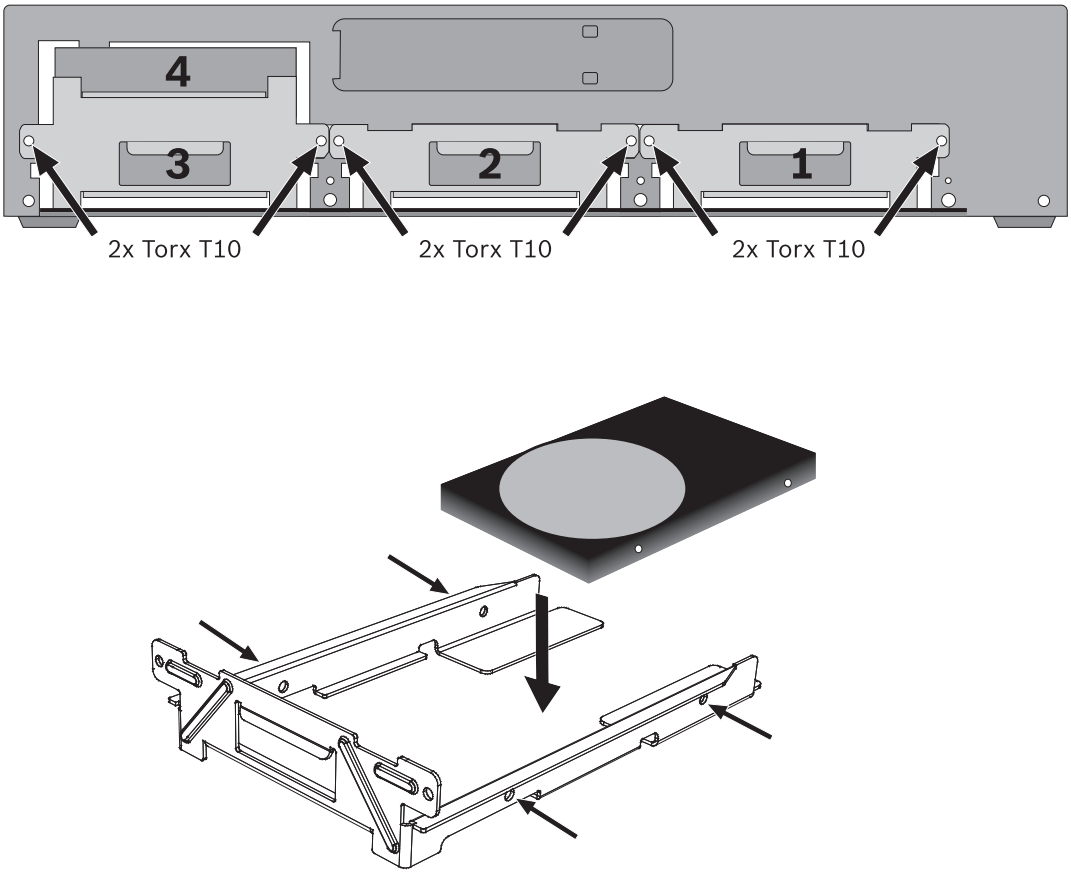

Figure 4.4 Placing a hard disk

1. Locate the first empty hard disk bay. It is recommended to 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.

The location of the hard disks is not important; the unit can determine in which bay they are installed. When installing hard disks that have recordings from another unit, the recorder detects this and puts these drives in read-only mode.

Refer to *Section 6.10 Storage, page 96* for the correct configuration procedure.

4.4 Camera connections

On hybrid units, 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 connection is terminated with 75 ohm termination.

The unit 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).
On network units, or hybrid units with no analog cameras connected, the detection process fails and the recorder configures itself as a PAL unit. In this case, no video is visible on an NTSC monitor.
To change this behaviour select a preferred video mode during start-up.

– For PAL, press the monitor and camera 1 buttons simultaneously for ten seconds during power-up.
– For NTSC, press the monitor and camera 2 buttons simultaneously for ten seconds during power-up.

The unit retains these manual settings on subsequent start-ups.

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

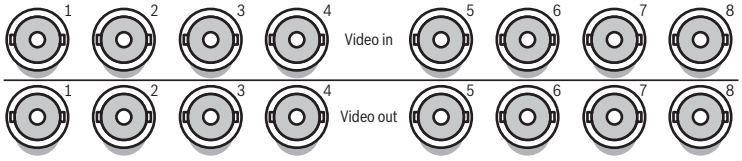

Figure 4.5 Eight video inputs with loop-through outputs

4.5 Audio connections (hybrid version only)

The unit 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

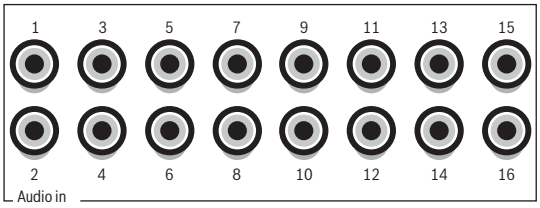

Figure 4.6 Audio input connectors

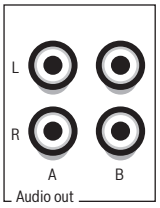

Figure 4.7 Audio output connectors

4.6 Monitor connections

On the hybrid version up to two monitors can be connected through the VGA, CVBS, or Y/C connections. A single monitor can be connected on the network version.

Note:

HD models provide HD recording but not HD local display. Use the Bosch Video Client to display live HD cameras and SD cameras with Main Profile streams, and recorded video from these cameras.

4.6.1 VGA

Connect the unit to the monitor using standard VGA cable.

Note:

17-inch or 19-inch LCD monitors with an aspect ratio of 4:3 are recommended.

Specifications

Output signal: VGA
Resolution: 1280 x 1024 (monitor A), 1024 X 768 (monitor B)
Color: True color (32 bit)
Connector type: DE-15

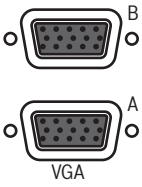

Figure 4.8 VGA monitor connectors (hybrid version)

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 without 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. (This is not necessary on devices with automatic termination.)

Specifications

Output signal: Composite video 1Vpp, 75 ohm, Sync. 0.3Vpp ±10%
Resolution: 704 x 576 PAL, 704 X 480 NTSC
Connector type: BNC

Figure 4.9 CVBS monitor connectors (hybrid version)

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 (hybrid version)

4.7 Monitor streaming connection (hybrid version)

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.

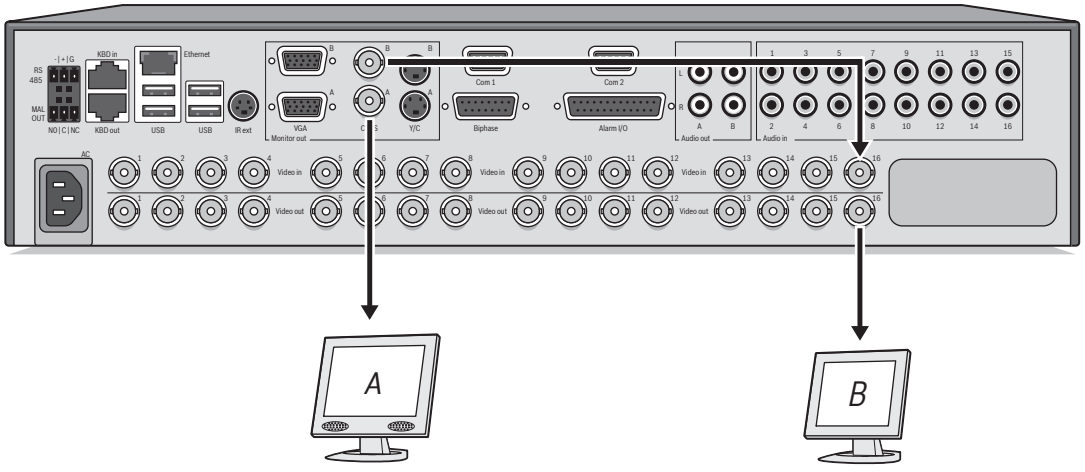

Figure 4.11 Typical monitor streaming connection (hybrid version)

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 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 unit. Up to 16 Divar 700 units can be connected and controlled in this manner with one keyboard. Additionally up to 10 Divar 2 recorder units can be operated with the same keyboard.

The following accessories are available:

- 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.
- By using a keyboard Port Expander unit (LTC 2604) up to 4 Intuikey keyboards can operate recorder units.
- With the Video Manager (LTC 2605), up tp 16 Divar recorders and up to 6 monitors can be operated from 1 to 4 separate Intuikey keyboards.

Termination

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

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(s)

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: 10/100/1000 BaseT, IEEE 802.3
Differential signal voltage: ± 2.8 V maximum, inputs have transient overvoltage protection
Ethernet port details: IEEE 802.3/802.3u - 100Base-TX/10Base-T physical layer
Auto negotiation: 10/100/1000, 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, 10/100/1000

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.)

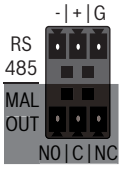

Figure 4.15 RS485 connector

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 (for example, 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 cross section: AWG 26-16 (0.13-1.5 mm^2)
Number of loads per output: 4 maximum

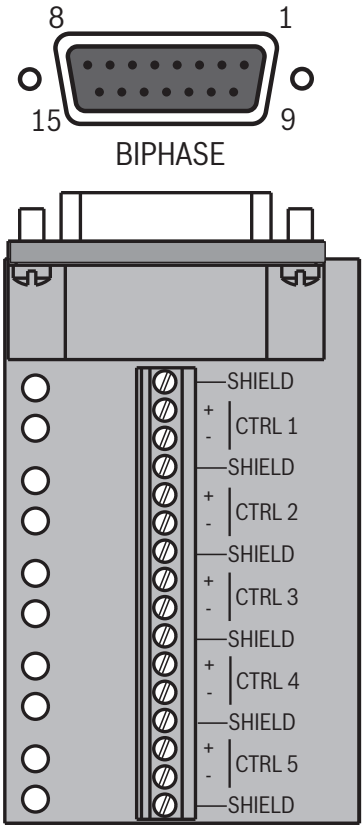

Figure 4.16 Biphase port connector and connection board

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 (for example, 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.

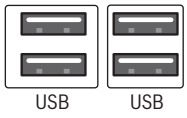

Figure 4.17 USB ports

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. Configure the alarm inputs as N/O or N/C in the menu system. The default is N/O. Inputs 9-16 have no function on an 8-channel analog unit.

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 cross section: AWG 26-16 (0.13-1.5 mm^2)

Connecting the alarm outputs

The four alarm output relays respond to input alarms and triggers. 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. Only connect resistive loads to the alarm output relays. 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 cross section: AWG 26-16 (0.13-1.5 mm^2)

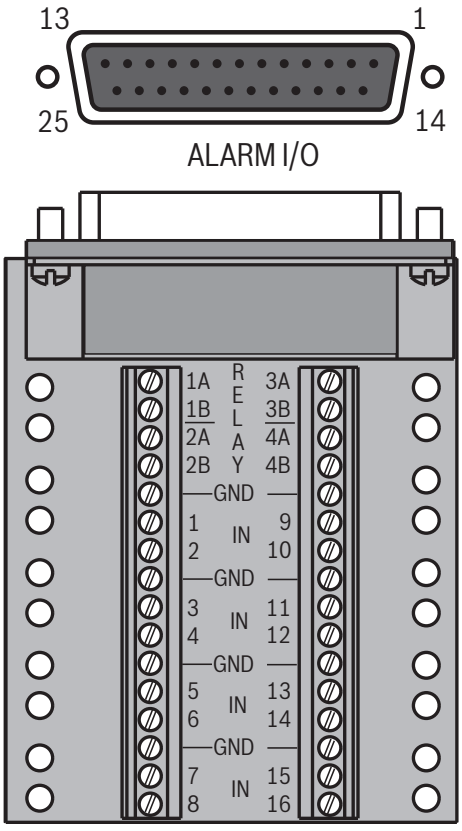

Figure 4.18 External alarm input and output connector and connection board

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 critical system errors such as, high temperatures inside the unit, excessive voltages, missing disks or disk failures. Connect using the supplied screw terminal adapter. The recommended cable diameter is AWG 28-16 (0.08-1.5 mm^2).

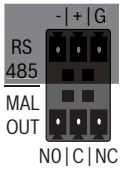

Figure 4.19 Malfunction relay output

Specifications

Switching current (resistive): 500 mA maximum
Carrying power: 10 VA maximum
Switching voltage (resistive): 30 VAC / 40 VDC maximum

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

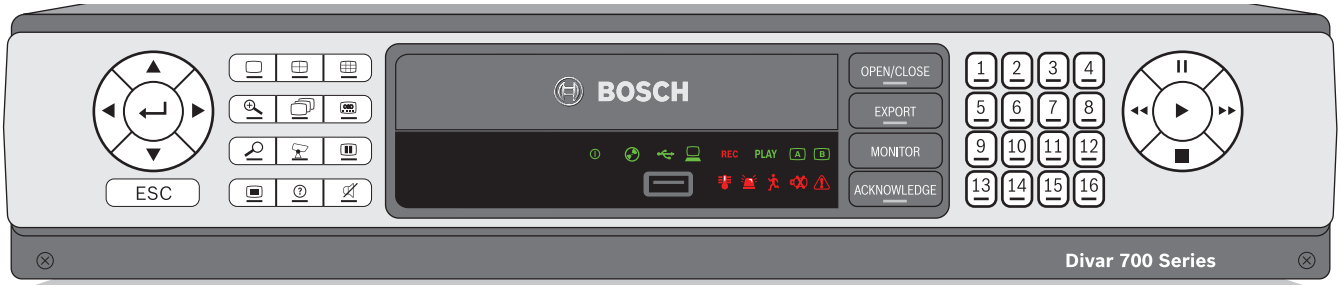

Figure 5.1 Front panel controls

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 key
- press to open or close the DVD drawer

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

Monitor key
- toggles control between monitor A or B

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

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 hybrid model and at 17 on a 16-channel hybrid model. So on a 16-channel hybrid unit with IP cameras, camera key 1 selects analog camera 1 and, when pressed again, IP camera 17.

5.1.2 Indicators

The indicators on the front panel display light or flash to alert 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.

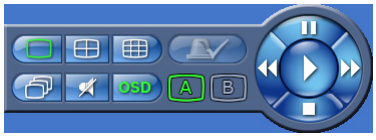

Figure 5.2 On-screen button panel

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 hybrid version 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 (hybrid version only)

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.

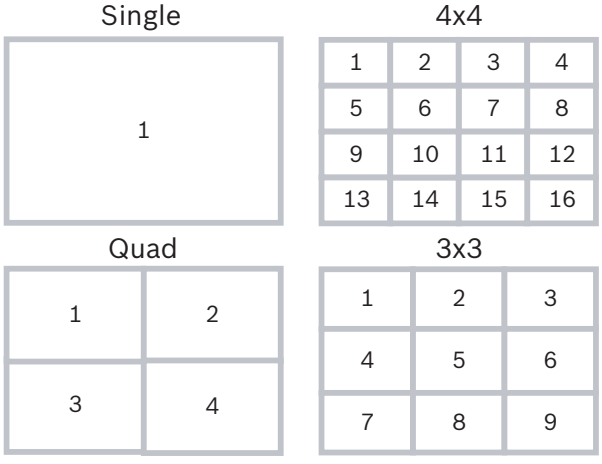

Figure 5.3 Supports single, quad, 3x3, and 4x4 screen viewing

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.
   - 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 selected analog camera 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 hybrid model and at 17 on a 16-channel hybrid model. So on a 16-channel hybrid unit with IP cameras, camera key 1 selects analog camera 1 and, when pressed again, IP camera 17.

Sequence

To view a sequence of live camera pictures (full-screen or multiscreen) 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 was made 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.

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

Zoom

To zoom in on a video image:

1. Press the zoom 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 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 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 live pictures are viewed from the cameras. From live mode, switching to playback mode or to the system menu is possible.

5.4.2 Accessing playback functions

Access to playback functions may require a password. Discuss this with the 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 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 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,
- the 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 playback rights have been given.

Export

The Export menu is used to archive a video clip to a USB memory device or DVD and to play back archived video locally.

This submenu can only be accessed if export rights have been given.

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 configuration rights have been given.

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 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 or text 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.

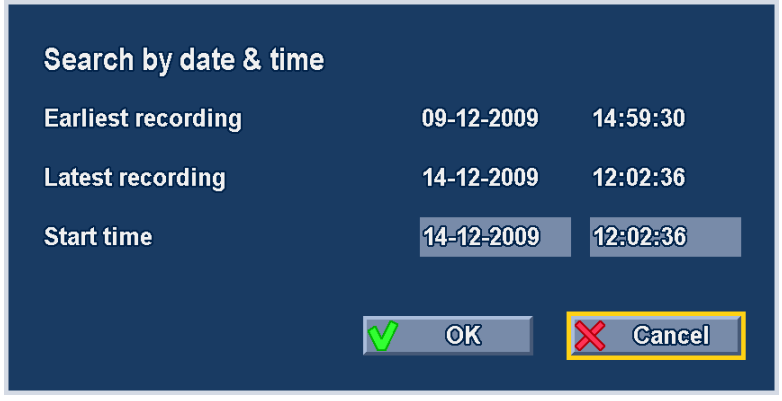

Figure 5.6 Search by date and time

5.6.2 Search

Events search criteria

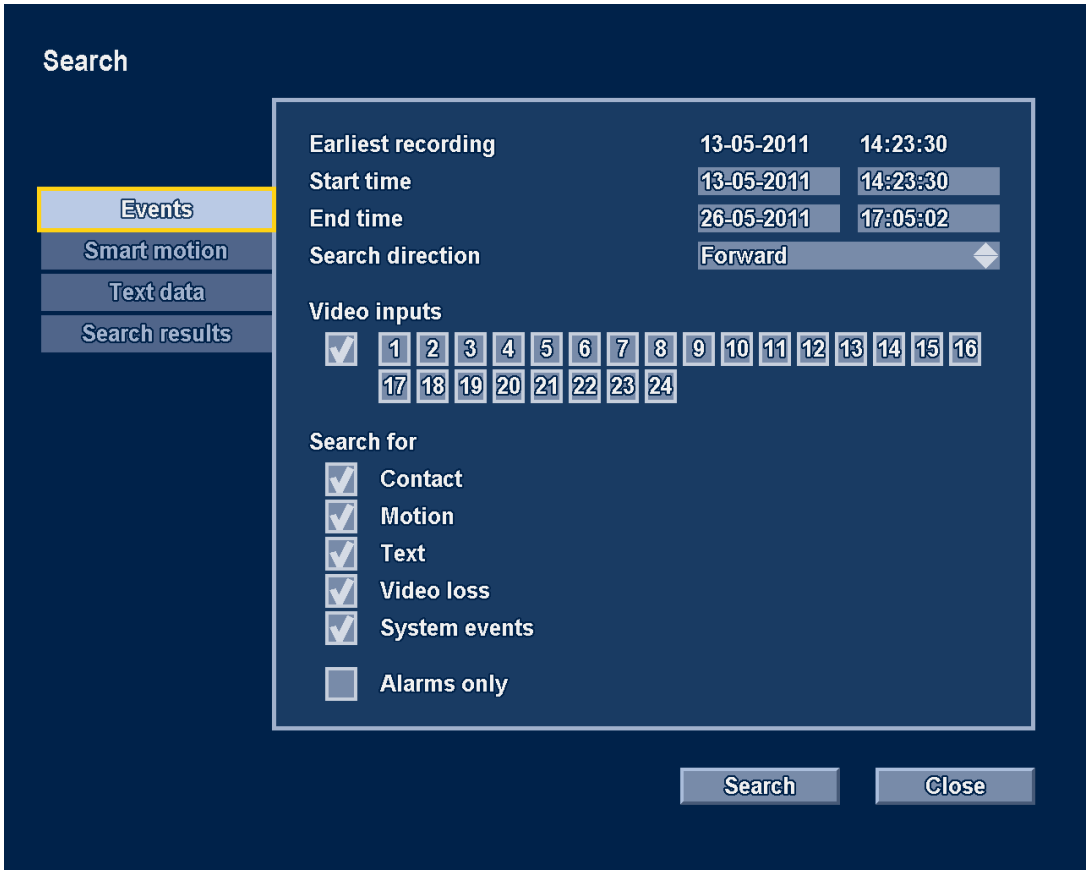

Figure 5.7 Search menu - Events

- Under **Start time** and **End time**, fill in date and time values to determine the time span of the search.
- 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 **Video inputs**, check the inputs to search for (highlight the un-numbered box to select all). The selected inputs are highlighted.
- Under **Search for** check the boxes to search for contact, motion, text, video loss and system events. Check the **Alarms only** box so that the search is restricted to alarm events.
- Select **Search** to start the search.

Smart motion search criteria

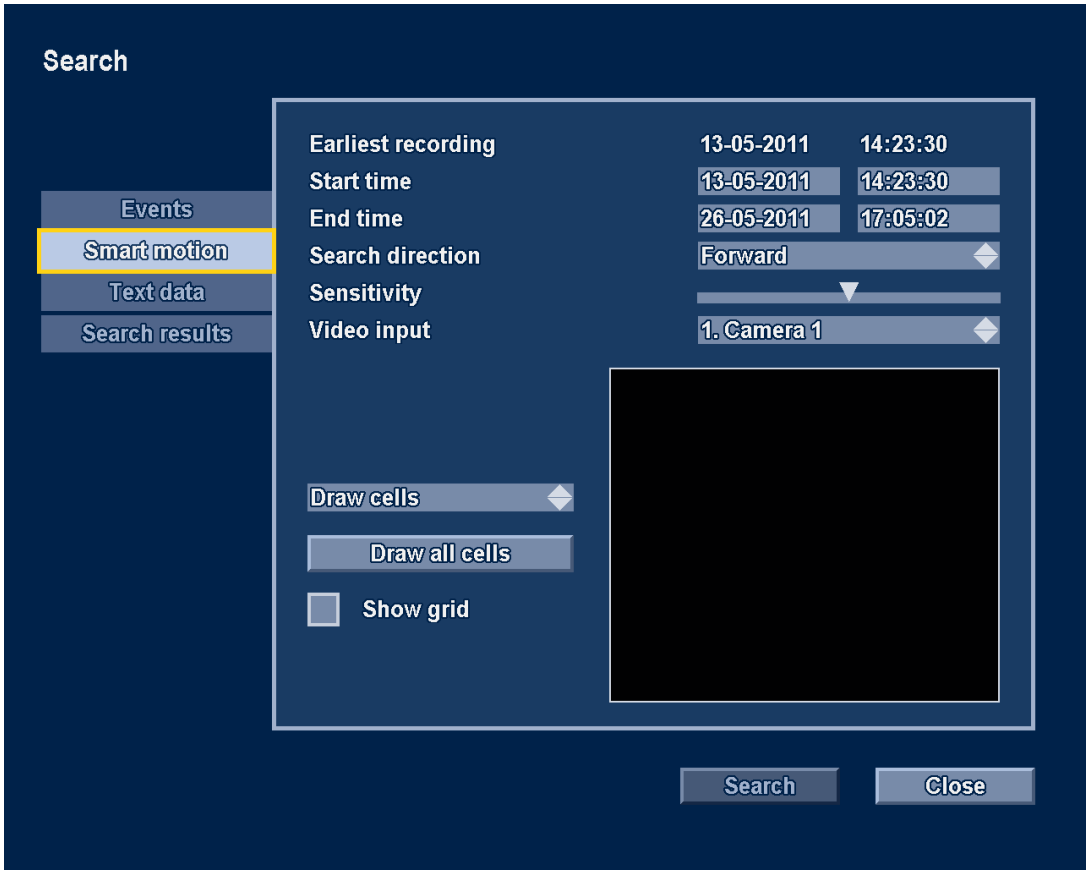

Figure 5.8 Search menu - Smart motion

1. Set the smart motion search parameters as follows:

– Under **Start time** and **End time**, fill in date and time values to determine the time span of the search.

– 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.

– Adjust the **Trigger level** slider to set the level of motion that will be detected. Sliding to the right raises sensitivity, sliding to the left lowers sensitivity. The highest value detects even the slightest motion.

– **Select the input to search using Video input**.

2. To define the motion sensitive area in the smart motion preview cameo window:
   – Select **Draw cells** and draw in the motion cameo to add or increase detection areas.
   – Select Erase cells and draw in the motion cameo to erase or reduce detection areas.
3. To activate or clear the entire area, select one of the following:
   – **Draw all cells** to activate the entire motion detection area.
   – **Erase all cells** to clear the entire motion detection area.
   – Check the **Show grid** box to outline grid zones.
4. Select **Search** to start the search.

Text search criteria

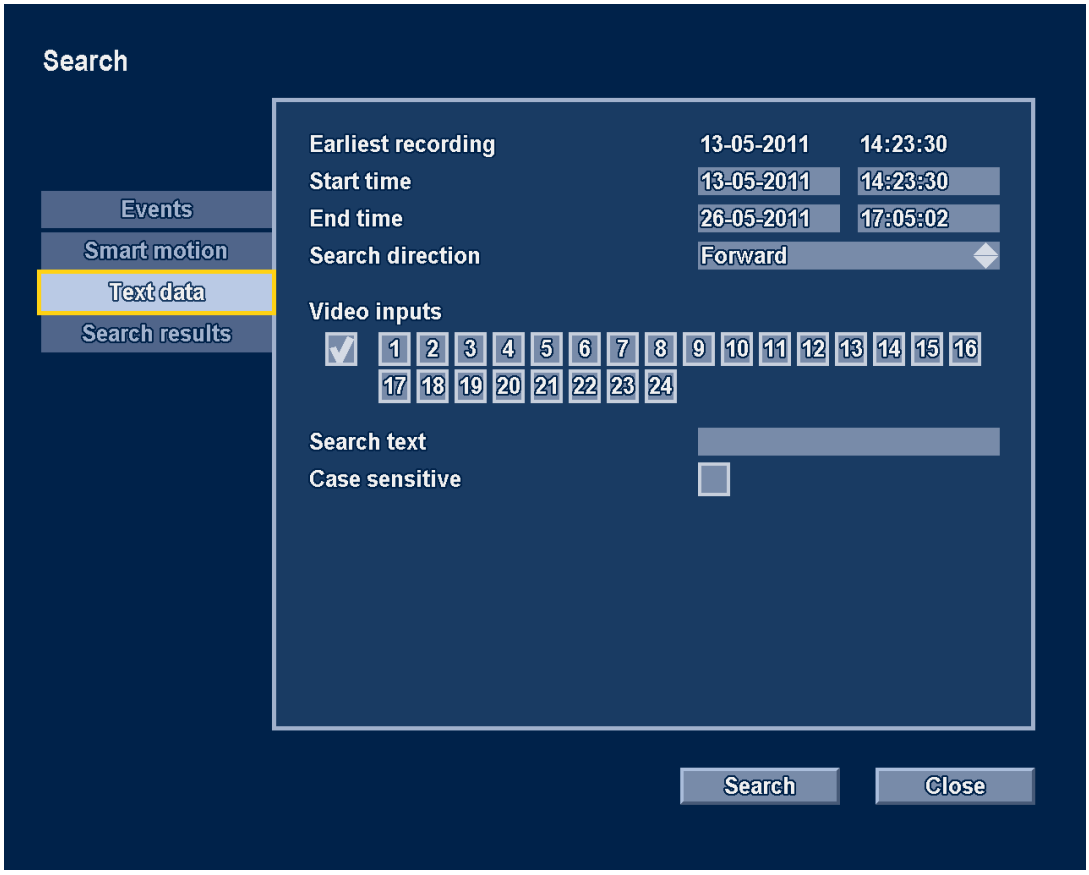

Figure 5.9 Search menu - Text data

- Under **Start time** and **End time**, fill in date and time values to determine the time span of the search.
- 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 **Video inputs**, check the inputs to search for (highlight the un-numbered box to select all). The selected inputs are highlighted.
- Under **Search text**, enter the text string to search for in the recorded text of the selected video inputs.
- Check the **Case sensitive** box to make the search case sensitive.
- Select **Search** to start the search.

Search results for text searches work the same way as for event search.

Search results

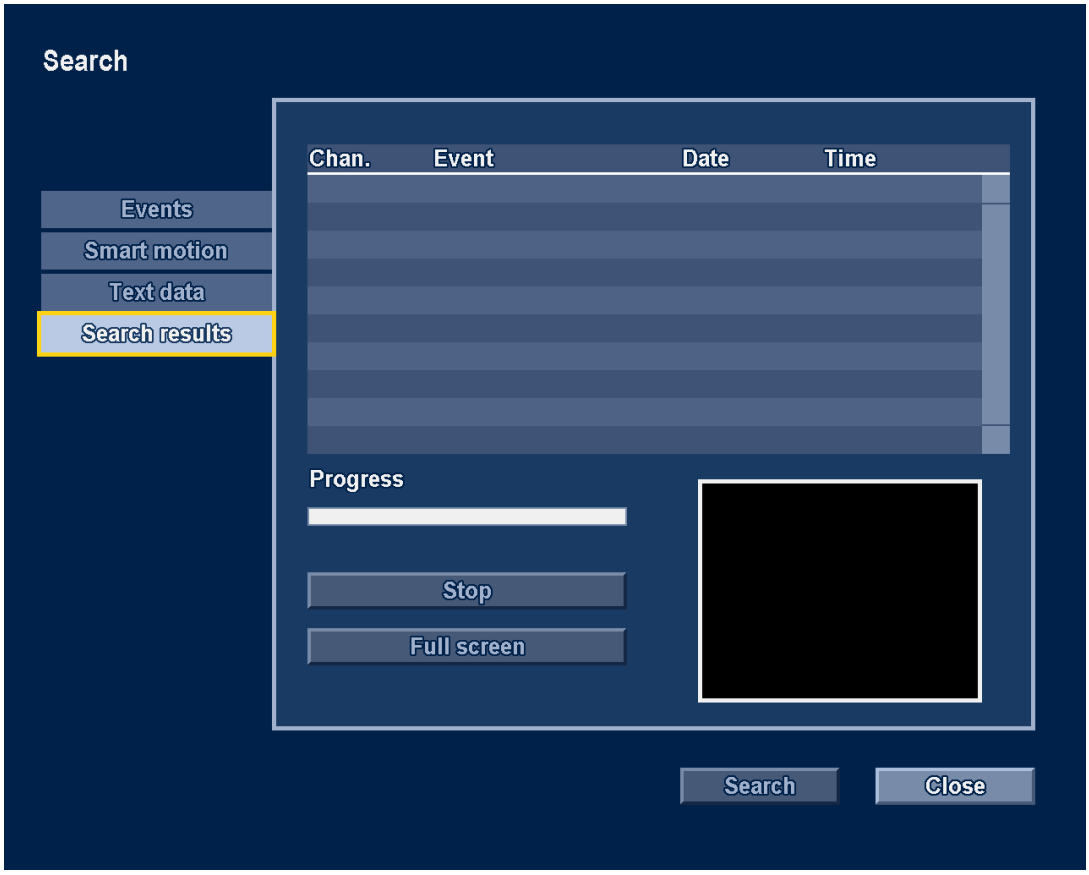

Figure 5.10 Search menu - Search results

- 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.
- Click **Full Screen** or 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 and local playback

Figure 5.11 Top menu - Export video

The export menu is accessed from the top menu. It allows writing segments of recorded video and audio to a USB storage device or recordable DVD. The playback menu allows playback of segments of recorded video and audio from the local disk set, a USB storage device or recordable DVD. Local archive playback only works with native format archives.

5.7.1 Export

The main export screen shows information about the connected media and a list of the video segments to be archived.

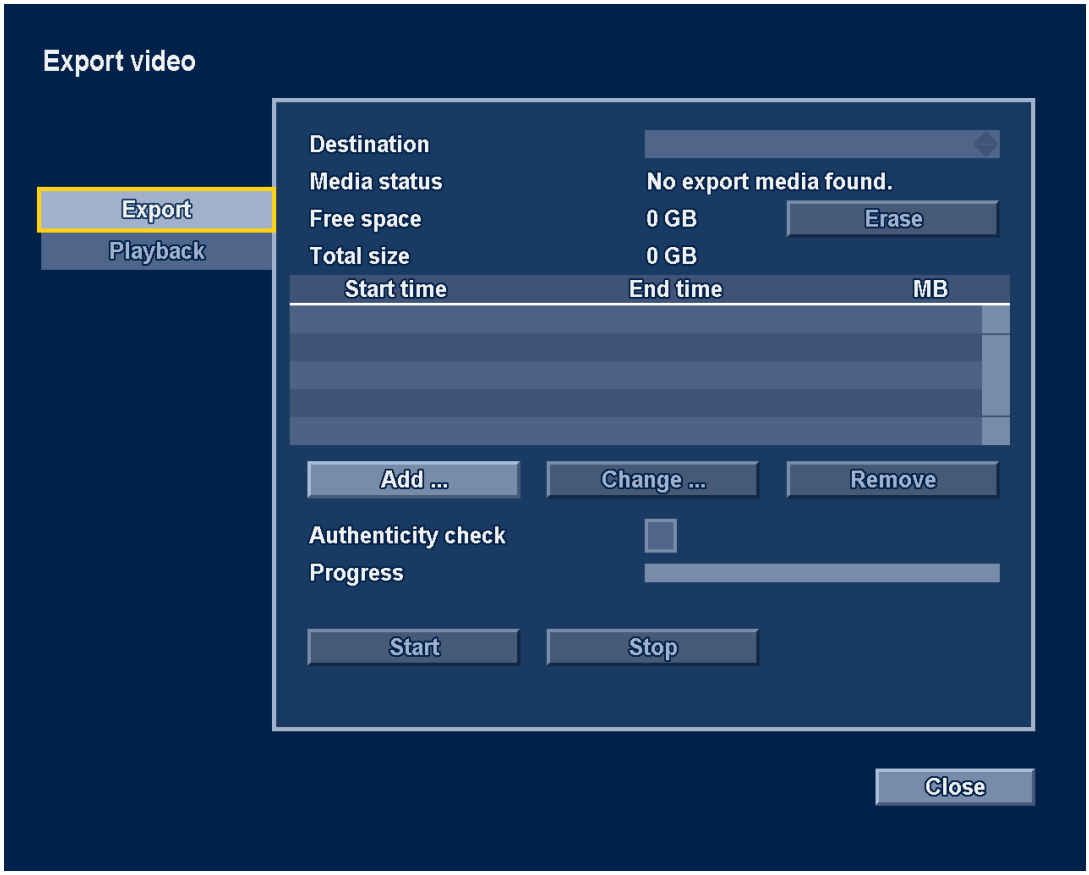

Figure 5.12 Export video menu

– Choose a media from the **Destination** selection box. **Media status** displays the status of the selected 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 to be archived.
Click **OK** to place the segment in the list.
Select the camera numbers to be archived (highlight the un-numbered box to select all).

– To add another video segment to the list, click **Add**.

– To change a video segment in the list, select it and click **Change**.
– 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 the internal hard drive(s) are removed from the list.

– Place a check mark next to **Authenticity check** to authenticate the video segments before archiving.
– Select **Start** to write the video segments to the destination media.
– Select **Stop** 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 media'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 new media.

5.7.2 Playback

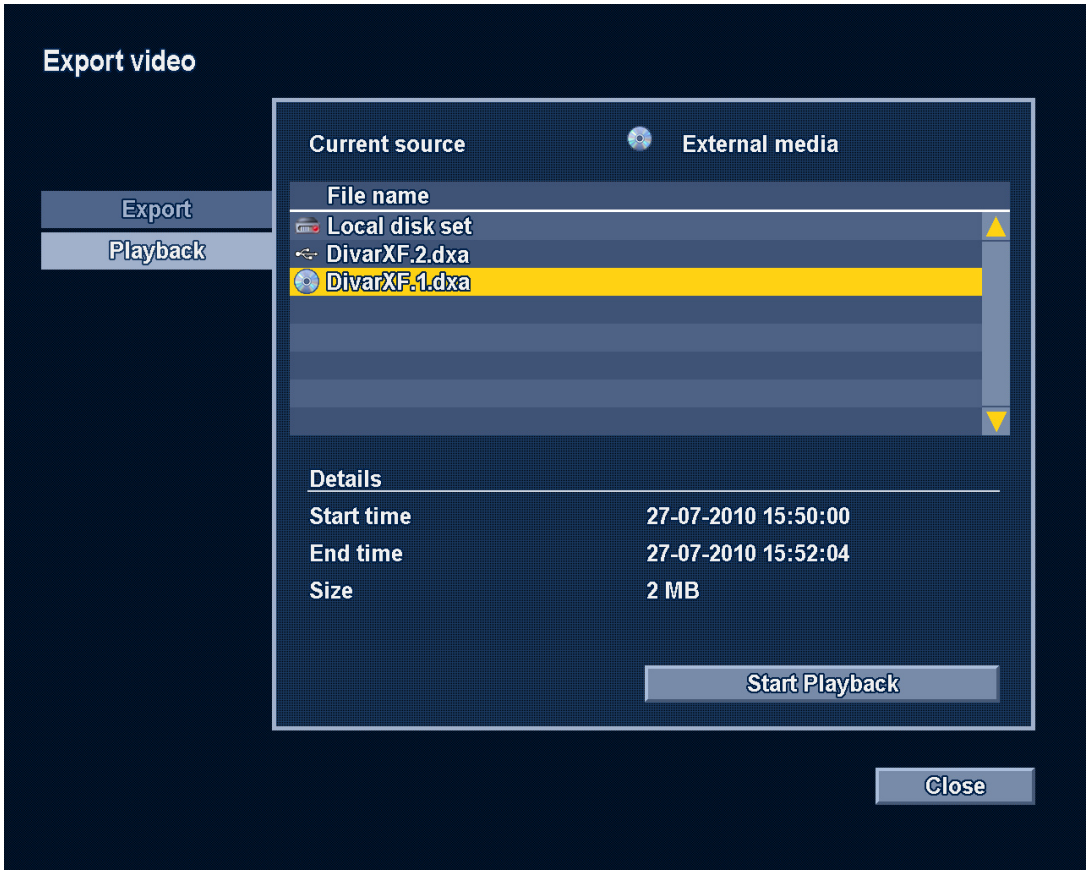

Figure 5.13 Local playback menu

By default, the unit uses the local disk set to perform playback operations. This panel allows locally attached devices with archived data to be selected as a source for playback. This feature allows verification of exported video data locally on the unit.

– **Current source** shows the device currently selected for playback.
– Select a source file name from the list.
– Select **Start Playback** to playback from the selected source.

If the selected file is on a DVD or USB source, then the file is first loaded into the unit. When the file is fully loaded, playback starts and continues to run even if you toggle to the live mode. While this playback is running no export or event search is available. Switch back to the local disk set to allow these functions.

5.8 Configuration

Figure 5.14 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*.
– Advanced configuration - opens the advanced configuration menu to configure all settings.
– 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 monitor B for hybrid models).

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).
Check the **Click to open menus** box to require a click in the top or bottom part of monitor A to open the screen menus. If left unchecked, hoovering near the top or bottom opens the menus.

Multiscreens

Select the multiscreens to be viewed.

Sequence

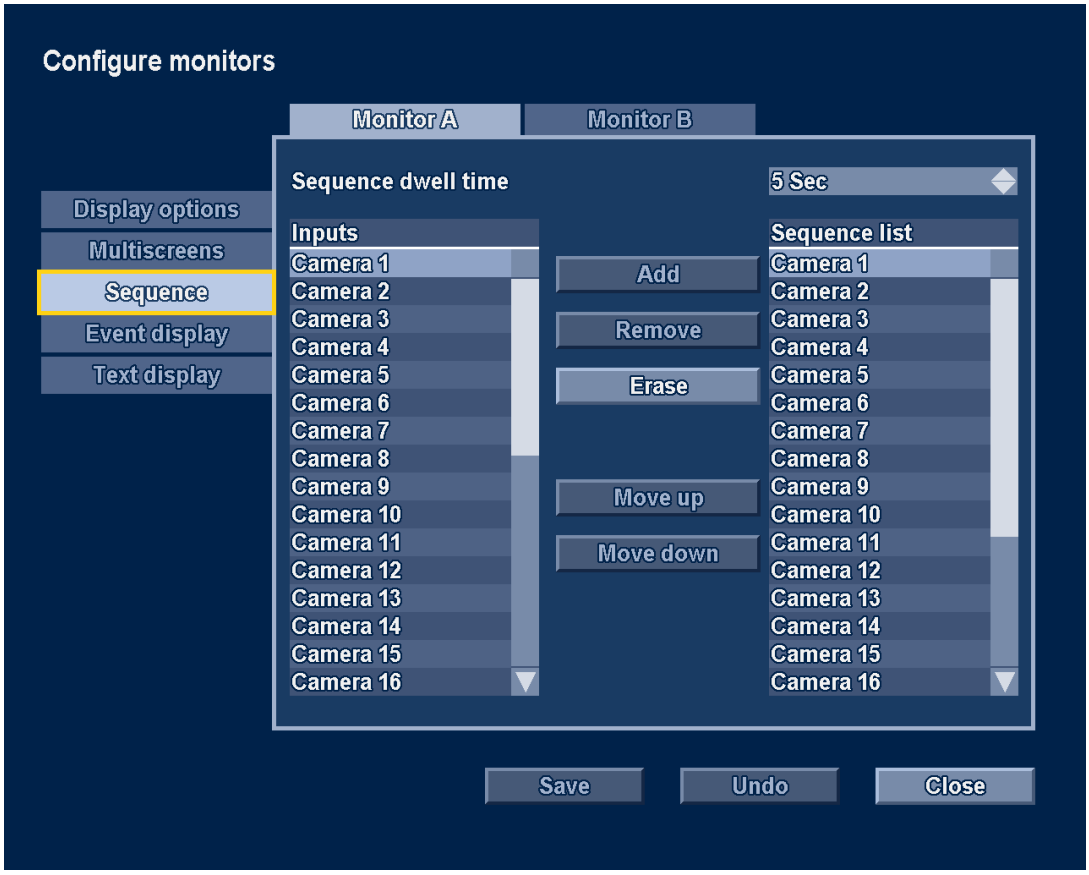

Figure 5.15 Configure monitors menu - Sequence

Select the length of time a camera remains visible on screen (1 to 60 seconds) in the **Sequence dwell time** field.
Use the the **Add** button to move camera inputs or multiscreen views 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.

Note:
When a HD camera is part of the sequence list, it is not shown during sequencing because HD camera display is not supported on the local user interface.

Event display

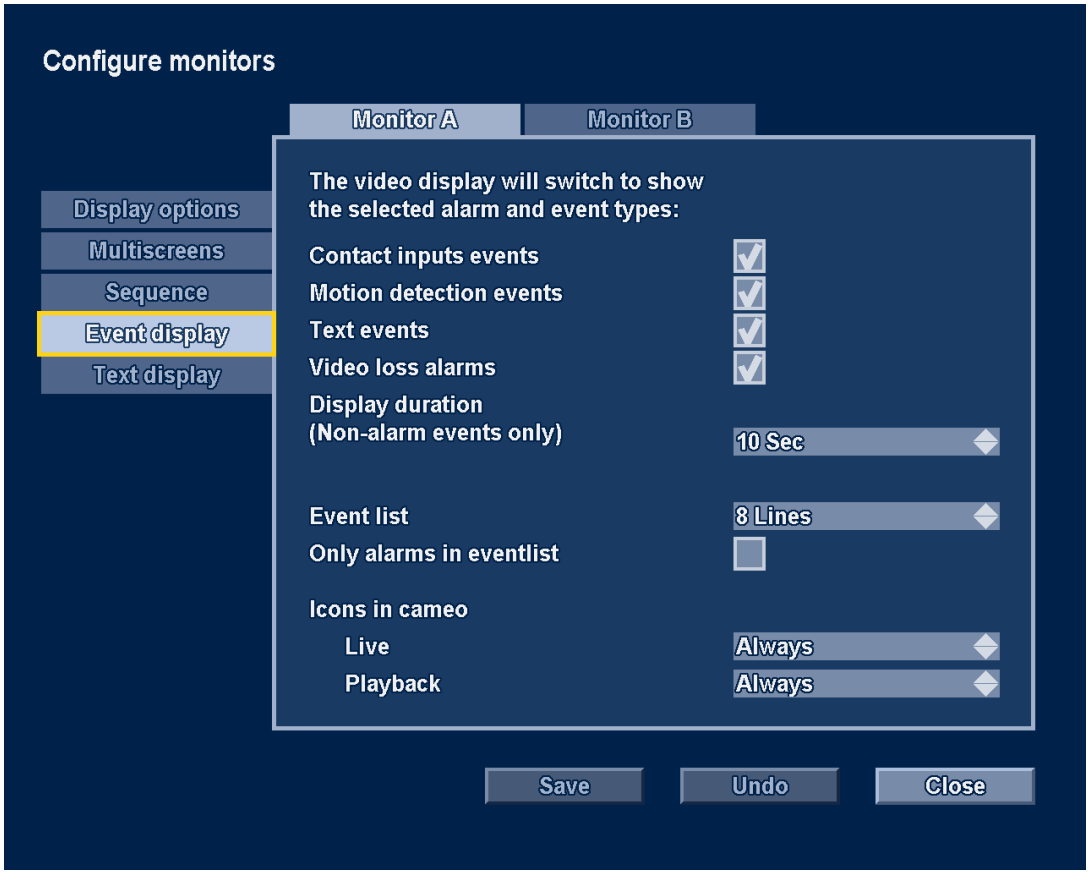

Figure 5.16 Configure monitors menu - Event display

Select the way events are displayed on both monitor A and B.

Check the **Contact inputs events**, **Motion detection events, Text events or Video loss alarms** 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).

Enter the number of lines to display in the event list and whether only alarm events should be displayed.

For live and playback modes, select to display icons in the cameos always, only on alarms or never.

Note:
A text license is required to see text events.

Text display

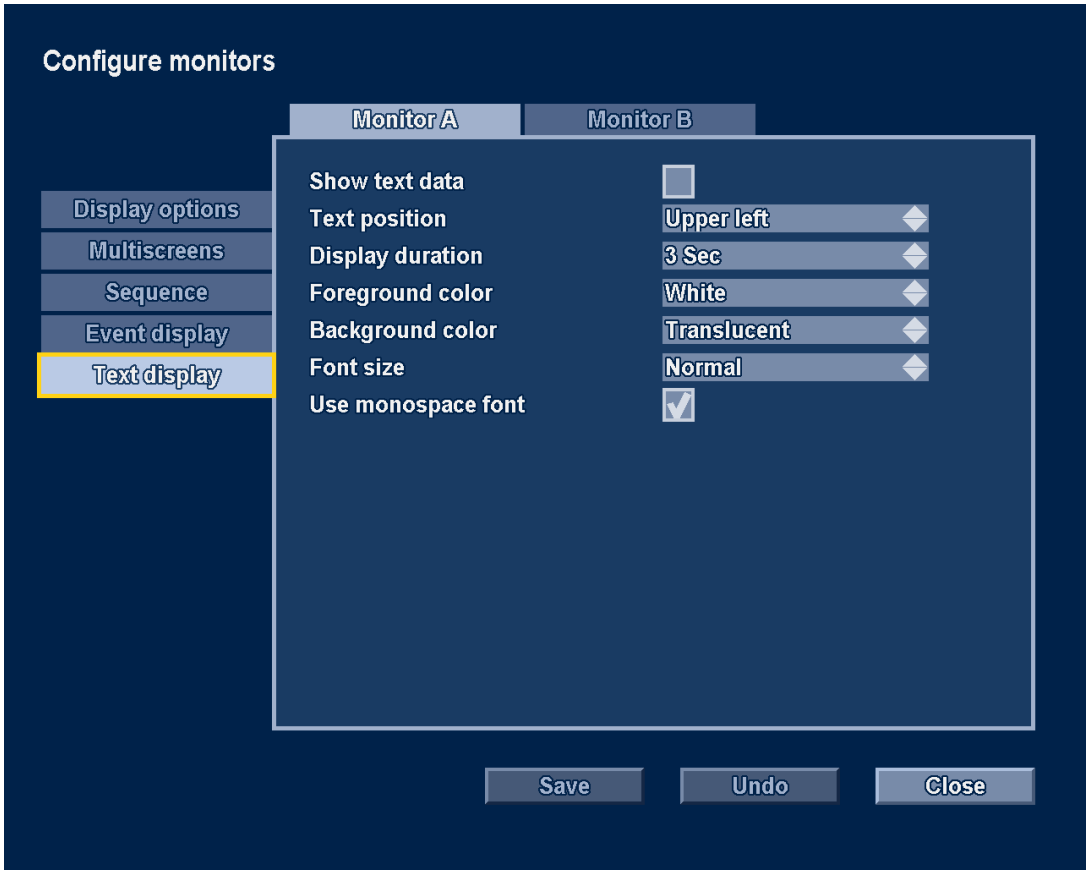

Figure 5.17 Configure monitors menu - Text display

Select the way text events are displayed on both monitor A and B.

- Enable **Show text data** to see a text data overlay on the monitor.
- Select the text position.
- Set the display duration of a text event.
- Select the text foreground color.
- Select the background color.
- Select the required font size.
- Select either monospace or proportionally spaced screen font.

Note:
To display text in live mode either right-click a camera and select Text on/off, or press and hold the OSD button to toggle text display on and off.

5.9 System information

Figure 5.18 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.

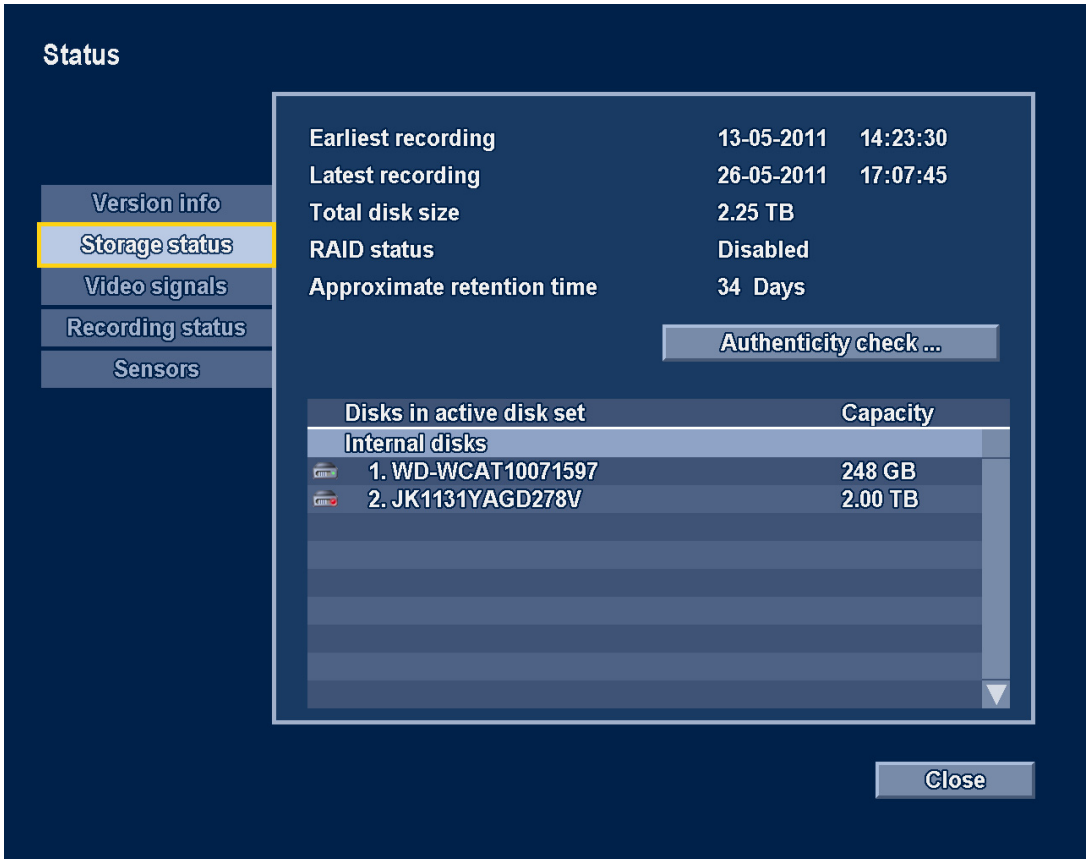

Figure 5.19 Status menu - Storage status

- 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.
- Disks in active disk set:
  - The list shows which internal disks or LUNs on iSCSI arrays are available for recording in the active disk set.
  - The disk or LUN on which recording is currently performed or scheduled is shown with a red dot. Other disks or LUNs in the disk set which are available for recording are marked with a green dot.
    When RAID is activated all 4 local drives show a red dot. iSCSI LUNs are not available for recording when RAID is activated.
  - The active disk set is selected during boot if the unit detects multiple disk sets. The active disk set can also be changed in the Storage configuration pages.

Video signals

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

Recording status

Currently active 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 mode and status 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.

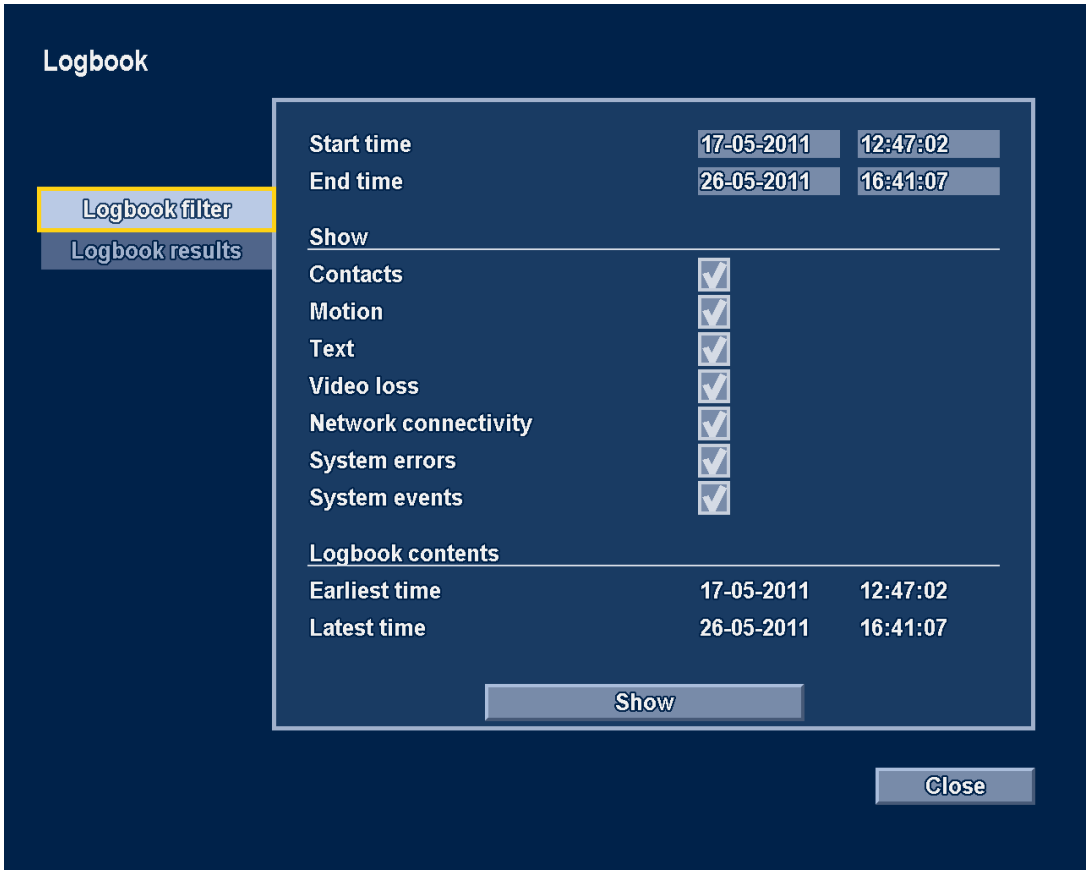

Figure 5.20 Logbook menu - Logbook filter

- 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).
- a text string sent to the unit to be recorded with one or more cameras.

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 or use the mouse to click on the on-screen button panel.
- 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 (hybrid version only) 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 (hybrid version only) 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 Text events

If a text event signal causes an event

- Monitors A and B (hybrid version only) can switch to display the text events.
- The text event icon (yellow) or text alarm icon (red) is displayed in the corresponding cameo. An alarm status message is displayed.

5.10.5 Video loss alarm

If the loss of a video signal causes an alarm:

Monitor A or B (hybrid version only) 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

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 the opportunity to program extensive functionality. Administrator rights are required 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 12 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 1-32 (depending on model) General Control
Schedule	Schedule Exceptions
Recording	Profiles 1 to 6 Channels 1-32 (depending on model) - Normal - Contact - Motion - Text
Contacts	Contact inputs NC Relay outputs NC
Motion	Channels 1-8 (or 1-16 depending on model)
Text data	Bridge Direct IP
Event	Profiles 1 to 6 - General - Contact - Motion - Text - Video loss
Network	Setup IP range Monitor streaming SNMP
Storage	Disk set Disks Service

Left tabs	Top tabs
Users	General Administrator Users 1 to 7
System	Service KBD Serial ports Licenses Logging

6.1 International

6.1.1 Language

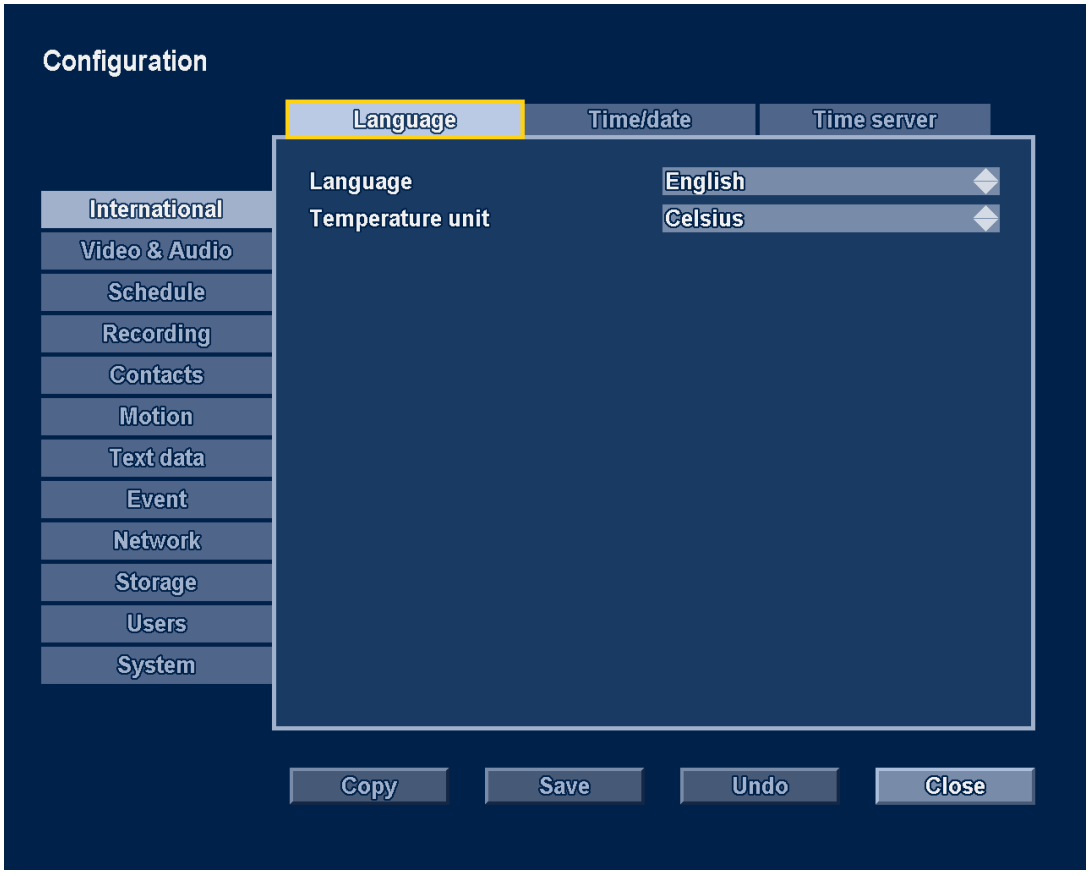

Figure 6.1 Configuration menu - International - Language

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

6.1.2 Time/date

Figure 6.2 Configuration menu - International - 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.

Note:
If synchronizing the time causes the the recorder time to be set back less than 10 minutes, the recorder clock slows down. The recording continues, but more frames are stored for each second that the recorder time advances. When the recorder time slow-down has made up for the number of minutes it was ahead, normal clock pace is resumed.
During playback of video recorded with a slowed-down clock, the playback speed appears to have slowed down.

If synchronizing the time causes the recorder time to be set back more than ten minutes, recording is suspended. The recorder clock stops until the actual time has advanced to the last recording timestamp. An alarm message is shown during this condition until the alarm is acknowledged. When the recorder time has advanced to the timestamp of the newest

recordings, the clock resumes advancing at the normal pace and normal recording behaviour is resumed.

If you want the recorder to set back the clock more than 10 minutes, but also want the unit to resume recording immediately, you should either delete all recordings manualy, or set the recorder time ahead of the latest recording time.

6.1.3 Time Server

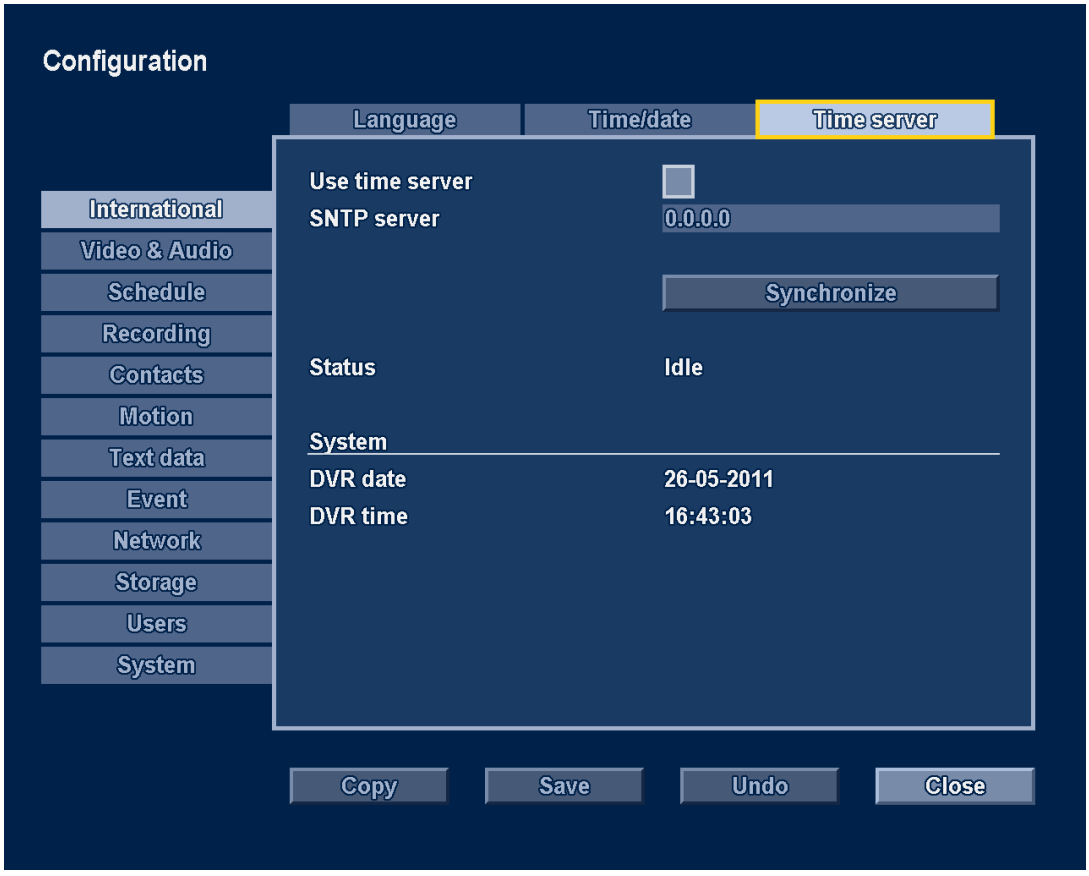

Figure 6.3 Configuration menu - International - Time Server

– The **Use time server** function synchronizes the time of the unit with the time of a network time server or another Divar unit. Fill in the IP address of the network time server. If a time server is not present on the same subnet, the unit searches for a suitable time server outside its own network. Make sure the Divar 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 hours) can only change the clock by a maximum of 10 minutes (see **Note** under Section 6.1.2 Time/date).

6.2 Video & Audio

Use this menu to configure the video and audio inputs.
On DHR 730 models tabs 1-8 are for the analog cameras. Higher tabs are for IP cameras.
On DHR 750 models tabs 1-16 are for the analog cameras. Higher tabs are for IP cameras.
On DNR 730 models tabs 1-16 are for IP cameras.
On DNR 750 models tabs 1-32 are for IP cameras.
On models with expanded memory, (revision B models) the bitrates tab follows the camera number tabs.

6.2.1 Analog Channels

The tabs 1-8 or 1-16 across the top of the menu contain the settings for each of the analog inputs on a digital hybrid recorder.

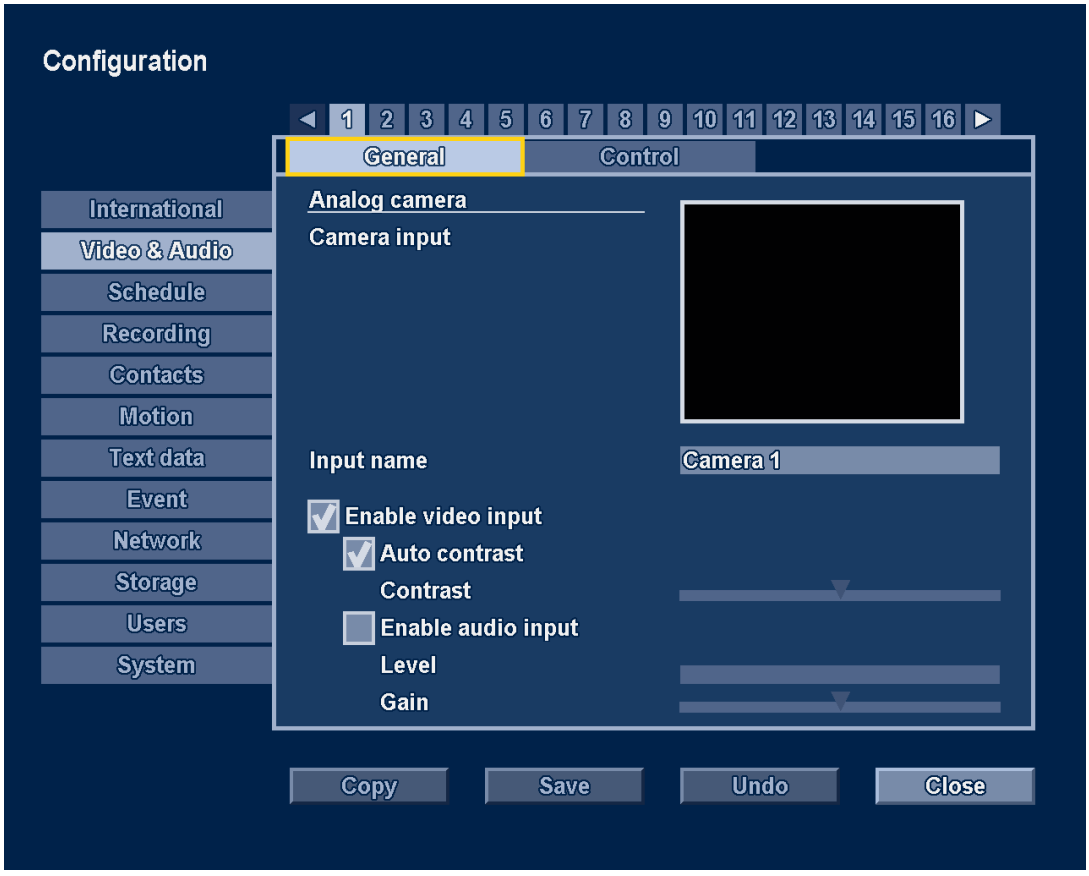

Figure 6.4 Configuration menu - Video & Audio - Analog camera

A **General** tab and a **Control** tab are available for each analog camera.

General tab

- Enter a name for the selected input. The name can be up to 16 characters long.
- The **Enable video input** setting enables (default) or disables the video and corresponding audio inputs.
- **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** 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.

Control tab

- Enable PTZ when a controllable camera is connected. By default, PTZ is disabled.
- Select protocol and device address on PTZ bus. (PTZ commands are transmitted across the RS485 and Biphase bus simultaneously. Each camera should have a unique address greater than 0.)

6.2.2 IP Channels

A **General** tab and a **Control** tab are available for each camera.

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.

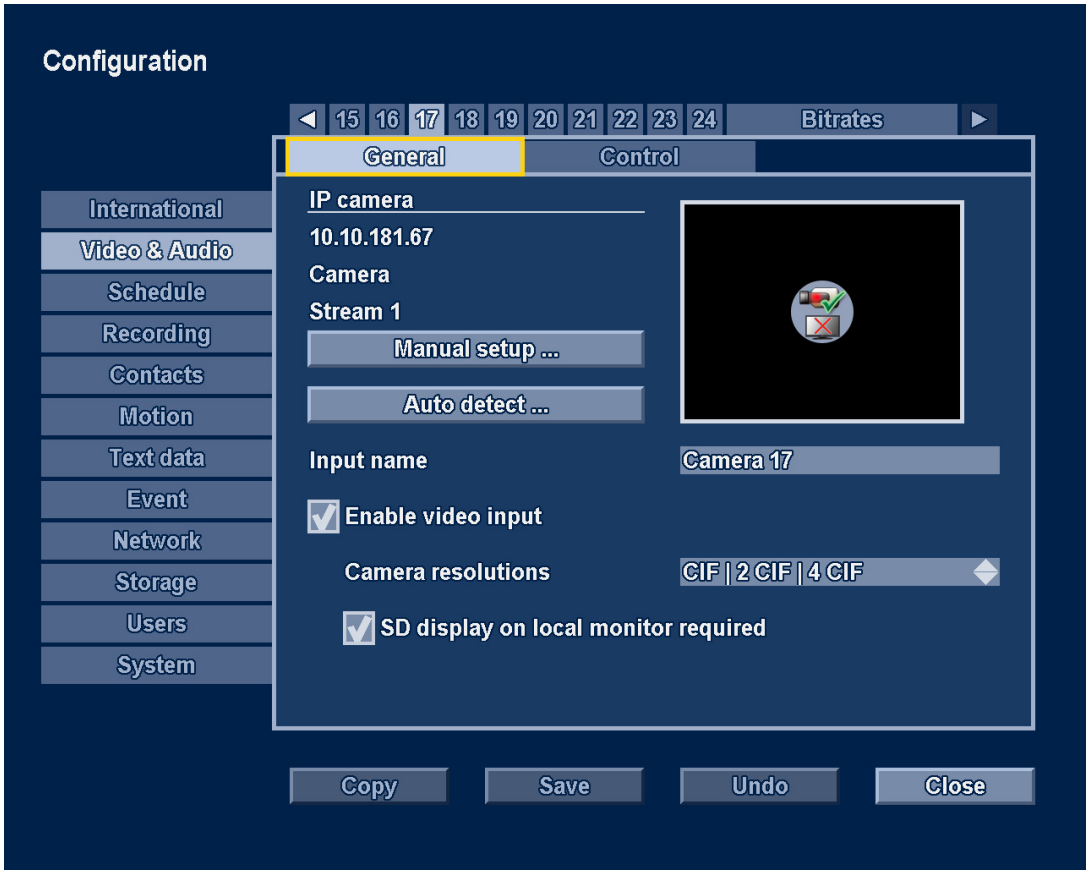

Figure 6.5 Configuration menu - Video & Audio - IP camera

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.

Note:
The Divar will overrule the encoder profile set in the camera itself if required by the following settings.

Manual setup

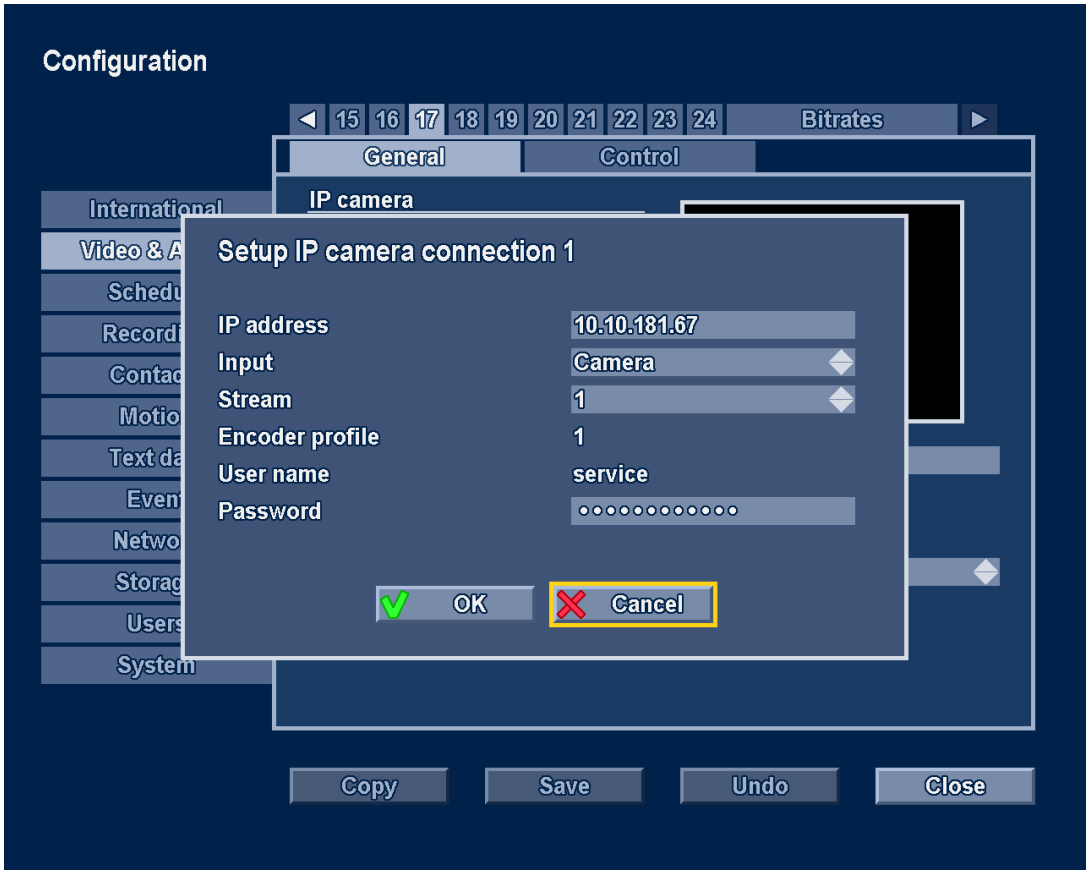

Figure 6.6 Configuration menu - Video & Audio - IP camera manual setup

1. Click **Manual setup ...** to configure or change an IP camera connection.
   - **IP address** - enter the IP address of the IP camera.
   - **Input** - Choose **Camera** for a camera or a single-channel encoder. Choose **Video line 1-4** for a multi-channel encoder.
   - **Stream** - enter the stream number.
   - **Encoder profile** - Displays the encoder profile of the IP device.
   - **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.

Auto detect

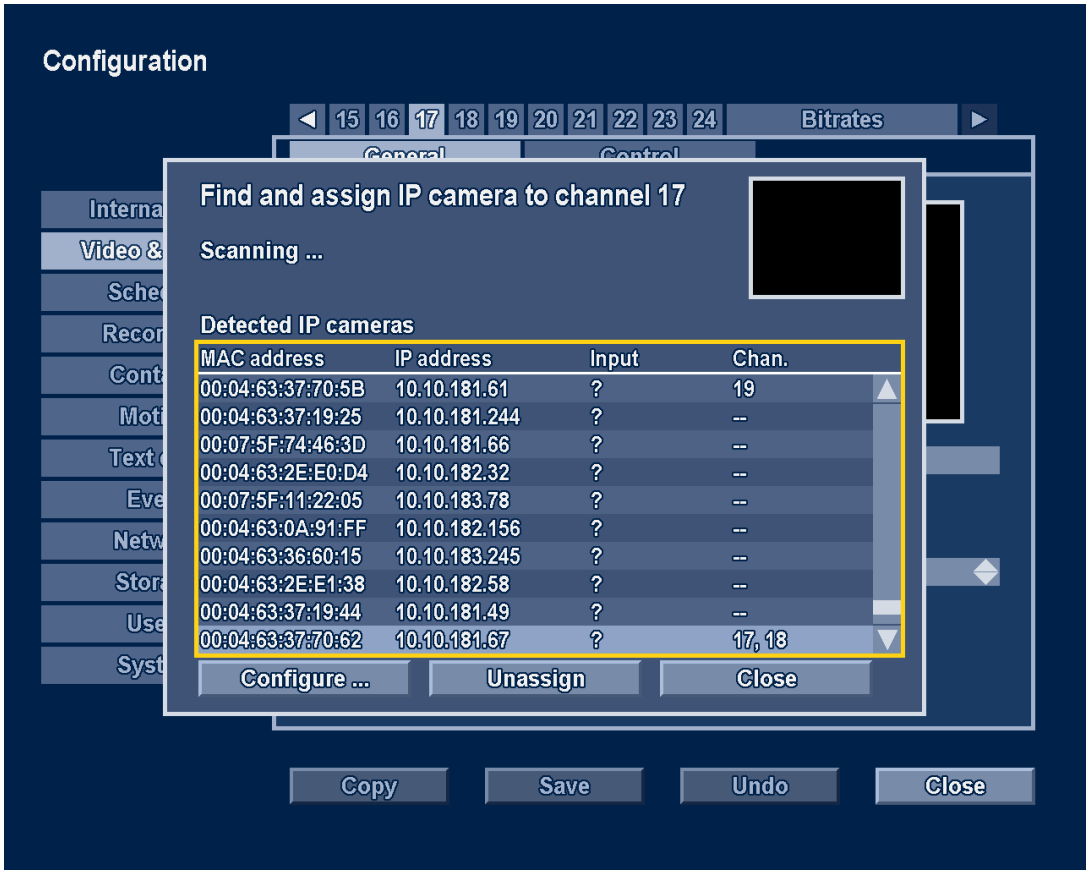

Figure 6.7 Configuration menu - Video & Audio - IP camera - Auto detect

Click **Auto detect ...** to assign a detected IP camera to the selected channel. Select **Configure ...** to change the IP parameters of the selected camera.

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.

Camera resolutions

Select a set of resolutions that match the available resolutions of the attached IP camera.

Enable SD display on local monitor

Check to limit the video streams from the camera to only those that the unit can locally decode and display. If unchecked, video from this IP camera is recorded but is not displayed locally.

Control tab

- Enable PTZ when a controllable camera is connected. By default, PTZ is disabled.
- Select a protocol and the communication parameters required for PTZ control of cameras attached to encoders.

6.2.3 Bitrates tab

Units with IP channels have a **Bitrates** tab for allocating the total available IP bandwidth to the individual cameras. DHR models with 8 or 16 IP channels have 36 Mbit/s total bandwidth available for video streams from IP cameras. DNR recorder models have 72 Mbit/s total bandwidth available. HD cameras generally require a bit rate of 2MBits/s.

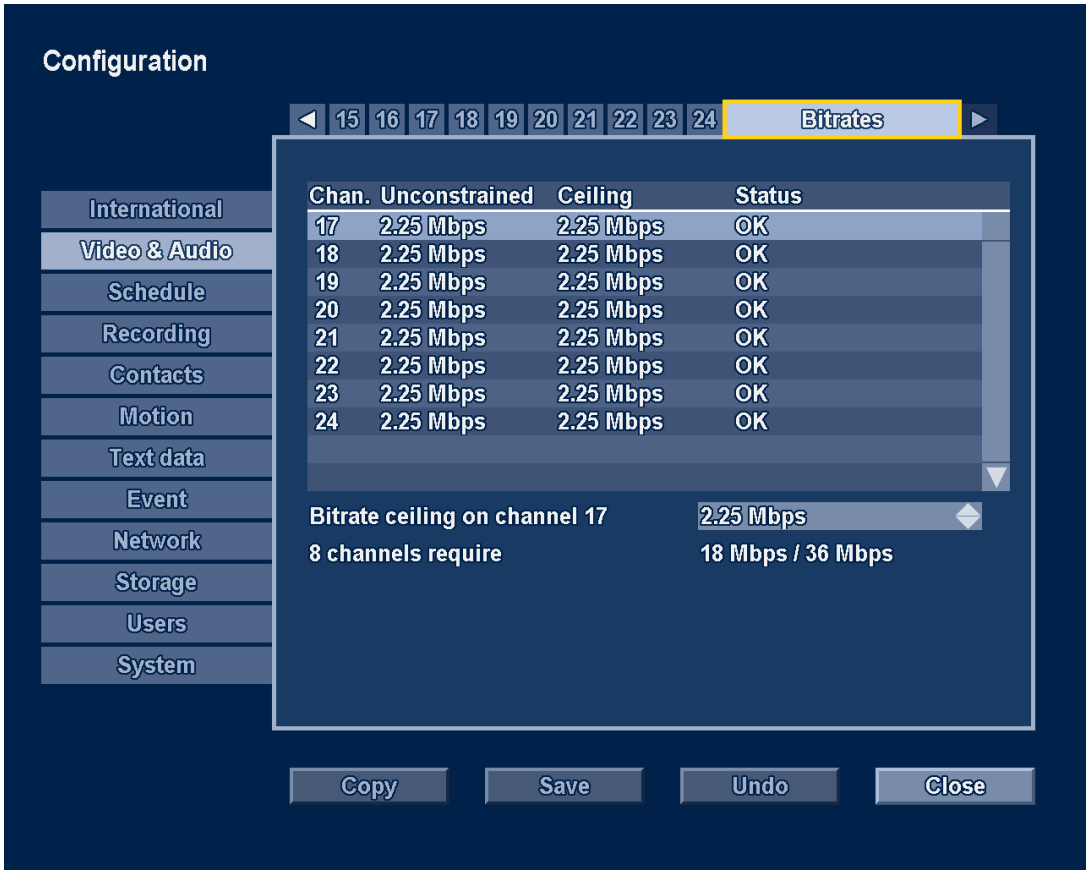

Figure 6.8 Configuration menu - Video & Audio - Bitrates tab

The **Bitrates** tab lists all IP channels with their **Unconstrained** bitrate, **Ceiling** bitrate, and **Status**.

The **Unconstrained** bitrate is maximum bitrate of camera, based on the highest camera settings for resolution, frame rate and quality in all recording profiles.

The **Ceiling** bitrate is the maximum bitrate allowed for this camera. This value can be changed as follows:

1. Click on a channel.
2. Select a value in the **Bitrate ceiling on channel xx** list box.

The Status column shows:

– **OK** when the settings for resolution, framerate and quality are honored, and no limitations apply for any of the profiles.
– **Capped to Ceiling** when the ceiling value for the camera is lower than the value calculated from resolution, framerate and quality settings in the profiles in the recording

panel. This causes the bitrate for the camera to be lower than the value set in the recording profiles.

– **No Bitstream** when the camera can not stream video data due to bitrate limitations.

If the total required bandwidth is greater than the total availble bandwidth, the unit puts cameras into the **No Bitstream** state, starting with the highest numbered IP camera.

The total required bandwidth of all cameras based on the ceiling values and the total bandwidth available in the unit is shown.

Note:
Refer to the data sheet 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 planning and setting up the profiles available, efficient use of resources is achieved that covers 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.

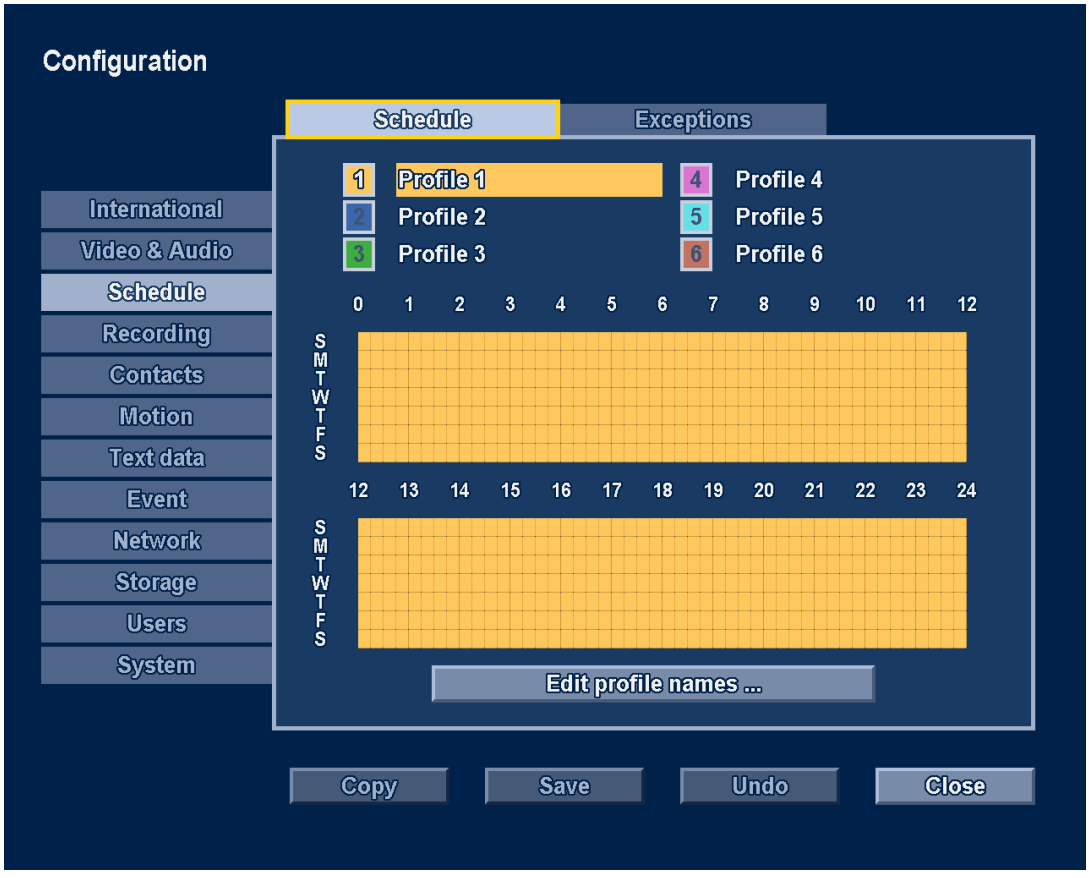

Figure 6.9 Configuration menu - Schedule

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.
- 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:
The audio/video settings in a profile also apply to the stream used for remote live viewing.

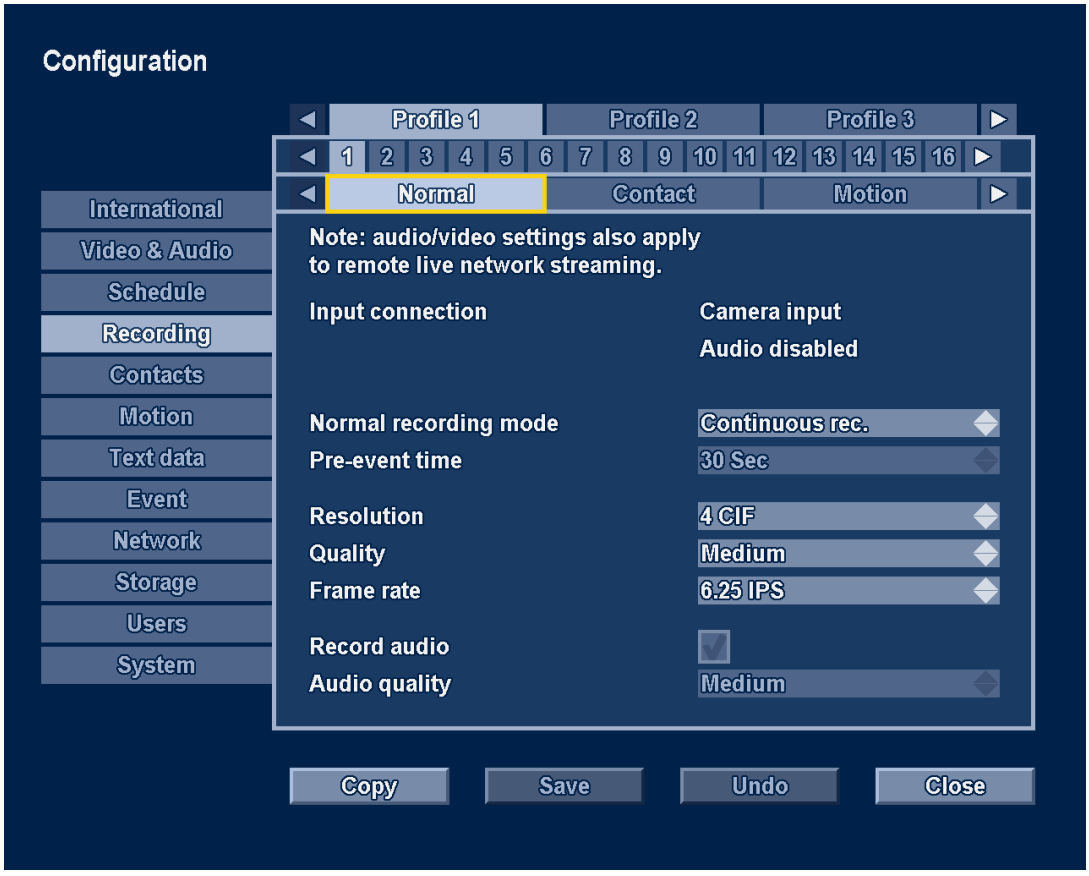

Figure 6.10 Configuration menu - Recording - Normal

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. Choose an individual input channel to configure the settings for recording its video and audio.
3. 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

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**). The recoding for the event starts this amount of time before the event occcurs.

- Resolution:
  - for analog cameras, 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).
  - for IP cameras, set the video resolutions from which to choose in the **Camera resolutions** field in the **Video & Audio** / **General** tab.
- 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). For IP cameras, the frame rate value is limited so that the resulting **Current** bitrate value does not exceed the **Ceiling** value.

For analog cameras:

- Record audio:
  - check to enable audio recording.
- Audio quality:
  - set the audio quality to High, Medium or Standard.

For IP cameras:

- The current bit rate is shown.
- The bit rate ceiling is shown.

Note:
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.

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 Text

The fields have the same parameters as those under the Normal tab. Additional fields are present for text recording.

- Text 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 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.

Note:
If **Event only** recording has been selected under the **Normal** tab, then the pre-event time also applies for contact, motion and text recordings.

6.4.5 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 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 are to be copied.
7. Click **Copy**.

6.5 Contacts

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

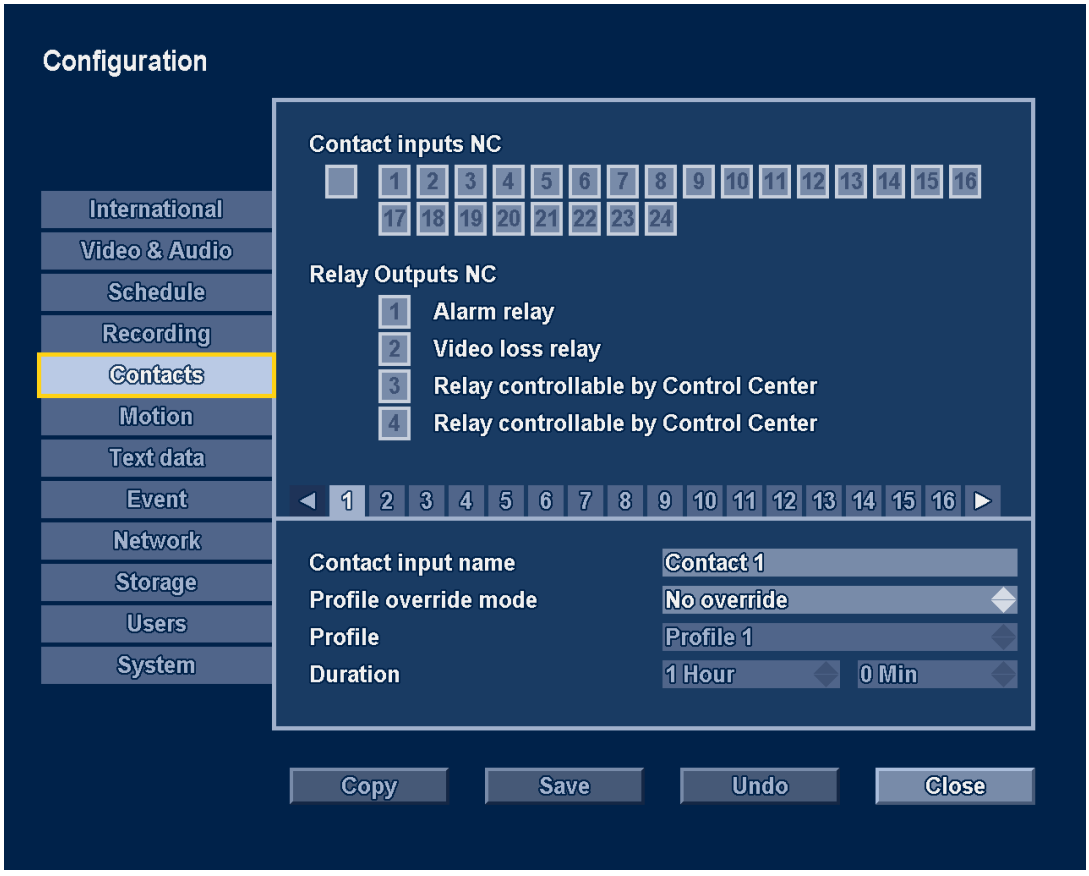

Figure 6.11 Configuration menu - Contacts

6.5.1 Contact inputs

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

Note:
If an IP camera is attached to the unit, physical contact input 1 of the IP camera is ORed with the similarly numbered physical contact input. This ORed level is used as alarm or event source. For example, if camera 3 is an IP camera then its contact input is ORed with the recorder contact input number 3. Contact inputs other than contact 1 are ignored by the recorder.

6.5.2 Relay outputs

By default, all relay output contacts are Normally Open (NO). When needed, highlight the relay outputs to function as Normally Closed (NC) contacts.

Note:
The local interface does not provide control over relay outputs on IP devices.

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, choose which Profile of the six will be used as the override profile and then set the override **Duration**.

6.6 Motion

6.6.1 Motion detection on analog cameras

The motion detection feature is configured by selecting the tabs for each individual analog video input.

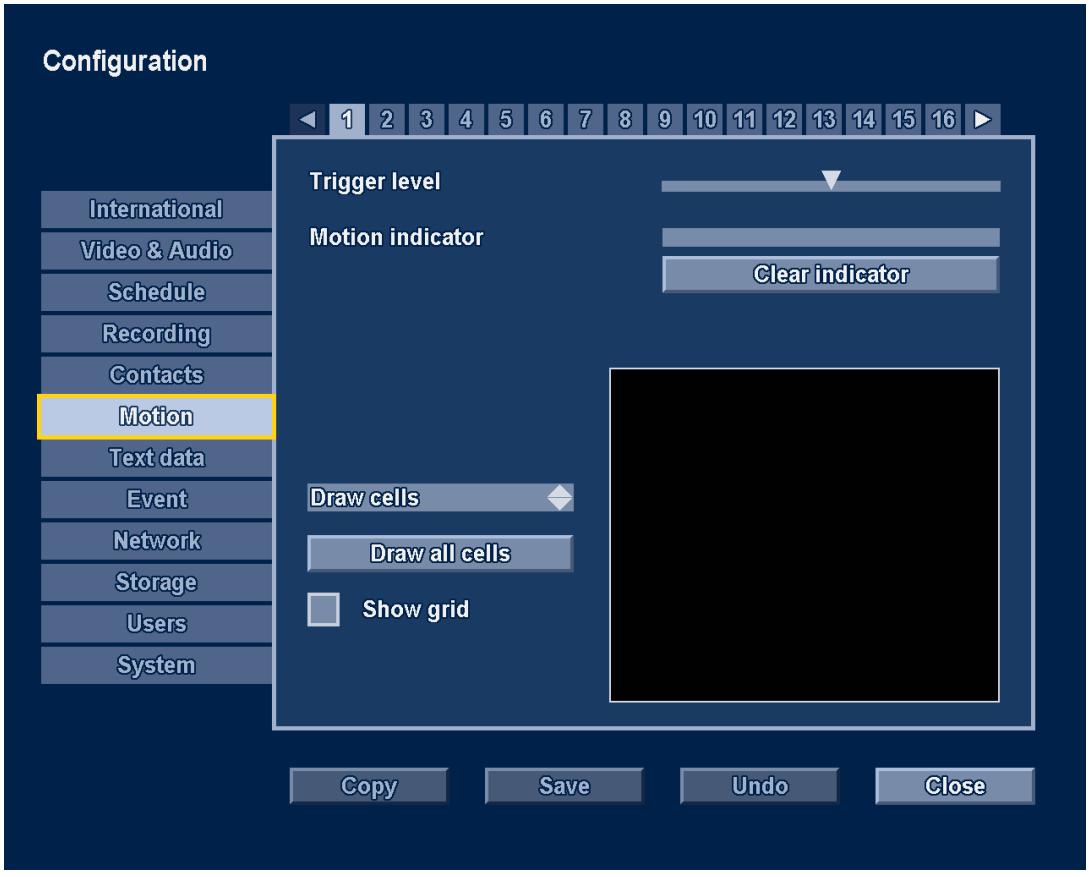

Figure 6.12 Configuration menu - Motion on analog cameras

1. Select the **Draw cells** mode next to the preview window:
   - To add cells, draw rectangles in the motion detection area.
   - To remove cells, erase rectangles from the motion detection area.
   - Select **Draw all cells** to activate motion detection for the entire preview area.
   - Select **Erase all cells** to clear motion detection for the entire preview area.
   - Check the **Show grid** box to outline grid zones.
2. Adjust the **Trigger level** slider to set the level of motion that will be detected. Sliding to the right raises sensitivity, sliding to the left lowers sensitivity. The highest value detects even the slightest motion.
3. The **Motion indicator** gives a visual indication of the activity detected.
4. Select **Clear indicator** to reset the peak level.

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.

6.6.2 Motion detection on IP cameras

With IP cameras there are two ways of performing motion detection:

– in the camera, or
– in the recorder.

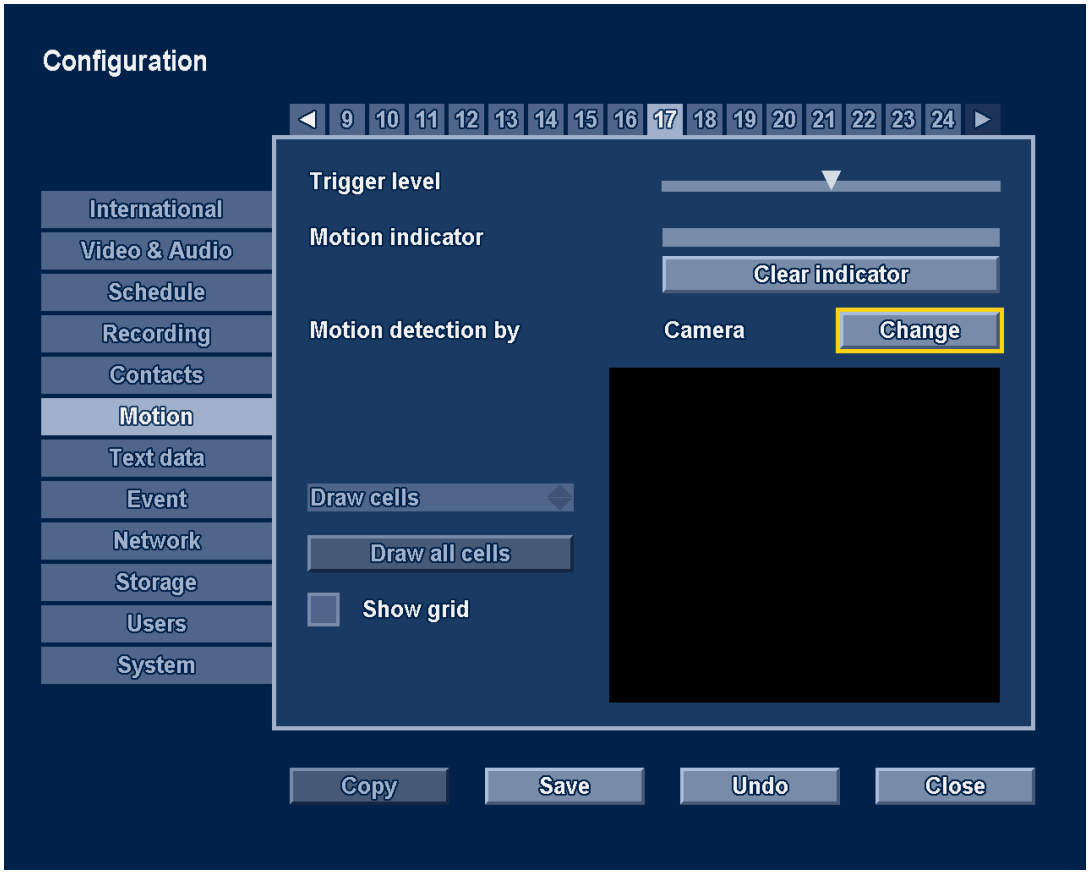

Figure 6.13 Configuration menu - Motion on IP cameras

To enable motion detection in the camera:

1. Click the **Change** button until the **Motion detection by** field shows **Camera**.
   – Now the Divar only receives a motion detected event from the camera.
2. Use the camera browser interface to select the type of motion detection algorithm (IVA or Motion+) and configure the motion detection features of the camera.

Both IVA and Motion+ events are reported to the recorder as a motion detected event. The recorder does not record IVA metadata nor support IVA-specific events such as line crossing.

To set motion detection by DVR:

1. Click the **Change** button until the **Motion detection by** field shows **DVR**.
2. Use the drawing area trigger level to configure the DVR motion detection, just as described for analog cameras.

No detection features of the camera itself are used.

Note:
The settings on this page only become effective after clicking the **Save** button.

6.7 Text data

6.7.1 Bridge

Bridges or terminals for supplying text data are configured here.

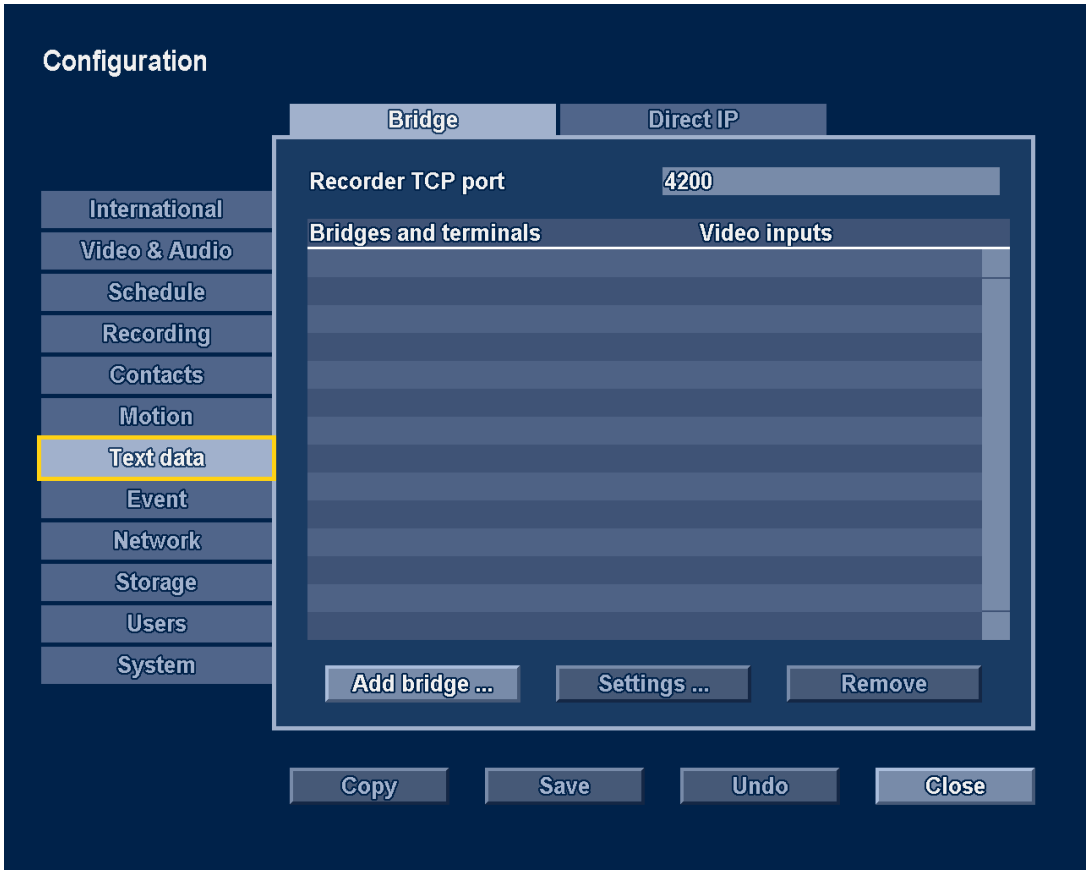

Figure 6.14 Configuration menu - Bridge text data

- **Port**: enter the port for the bridge device.
- **Add bridge**: click to enter the IP address of a bridge.
- **Settings**: click to change the settings of the selected device.
- **Remove**: select a device in the list and click **Remove** to remove it.

Note:

This optional feature requires a software license to be obtained before it is activated. See Section 6.12.4 Licenses, Page 106.

6.7.2 DirectIP

Direct IP sockets for supplying text data are configured here.

Figure 6.15 Configuration menu - DirectIP text data

DirectIP allows external systems to send text data to the Divar unit for recording with one or more cameras.

Click **Add** to define a new source system sending text data

1. Enter the source IP address of the external system that sends the text data or 0.0.0.0 to accept data from any external system.
2. Select one of the TCP ports 7100-7131 on which to listen for text data.
3. Select the codepage used by the source system to encode characters.
4. Select the camera to store the text data with.

Click on an entry in the list and select **Settings** to review and update the configuration data of the particular text source system.

Click on an entry in the list and select **Remove** to remove the selected text source system from the list.

Text data coming from a text source system can be recorded with more than one camera. Use **Add** to associate the same source system IP address and codepage to a different destination port and assigned camera. Similarly, use **Add** to associate more than one text source system with the same camera.

6.8 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**, **Text** and **Video loss** tab.

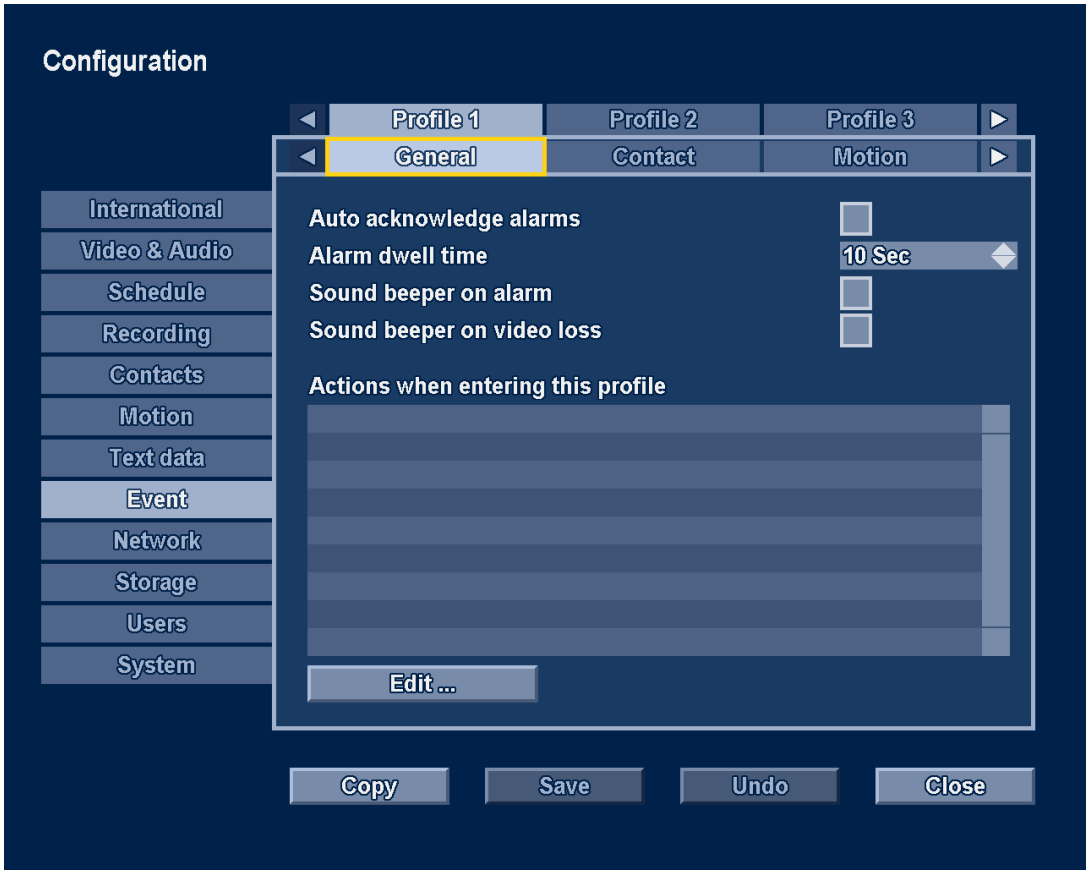

Figure 6.16 Configuration menu - Event - General

6.8.1 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 of the alarm.

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 number 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.

6.8.2 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 number 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.

6.8.3 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 an event.
– 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 number 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.

6.8.4 Text

The event behavior for text can be configured for each video channel in turn.

– Check the **Enabled** box if text should activate an event.
– Check the **Alarm** box if text should activate an alarm.

Actions

Click **Edit...** to set up **Recording**, **Monitor** and **PTZ** actions that should be carried out when text is detected.

– Recording: highlight the video channels to be recorded at text recording settings when text 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 text is detected (highlight the un-numbered box to select all).
– PTZ: enter a pre-position number 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.

6.8.5 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 an event.

6.8.6 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 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**) to be copied.
7. Click **Copy**.

6.9 Network

6.9.1 Setup - General

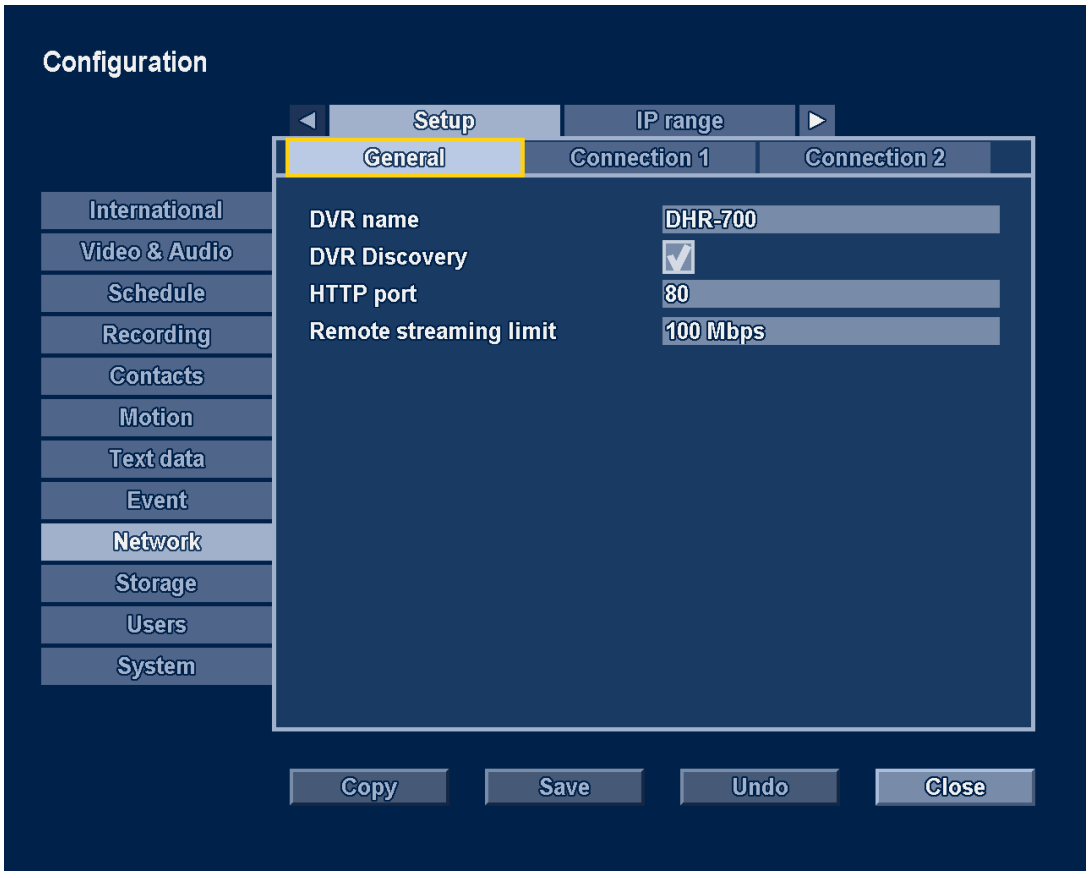

Figure 6.17 Configuration menu - Network - Setup - General

- Enter a unique **DVR name** to be used on the network.
- If **Discovery** is enabled, the unit can be automatically discovered and its IP address can be read.
- If required, change the default **HTTP port** (80) to a new value.
- **Remote streaming limit** — Enter a value between 0 and 1000 Mbps to restrict the network bandwidth available for streaming audio and video to all BVC workstations combined.

6.9.2 Setup - Connection 1

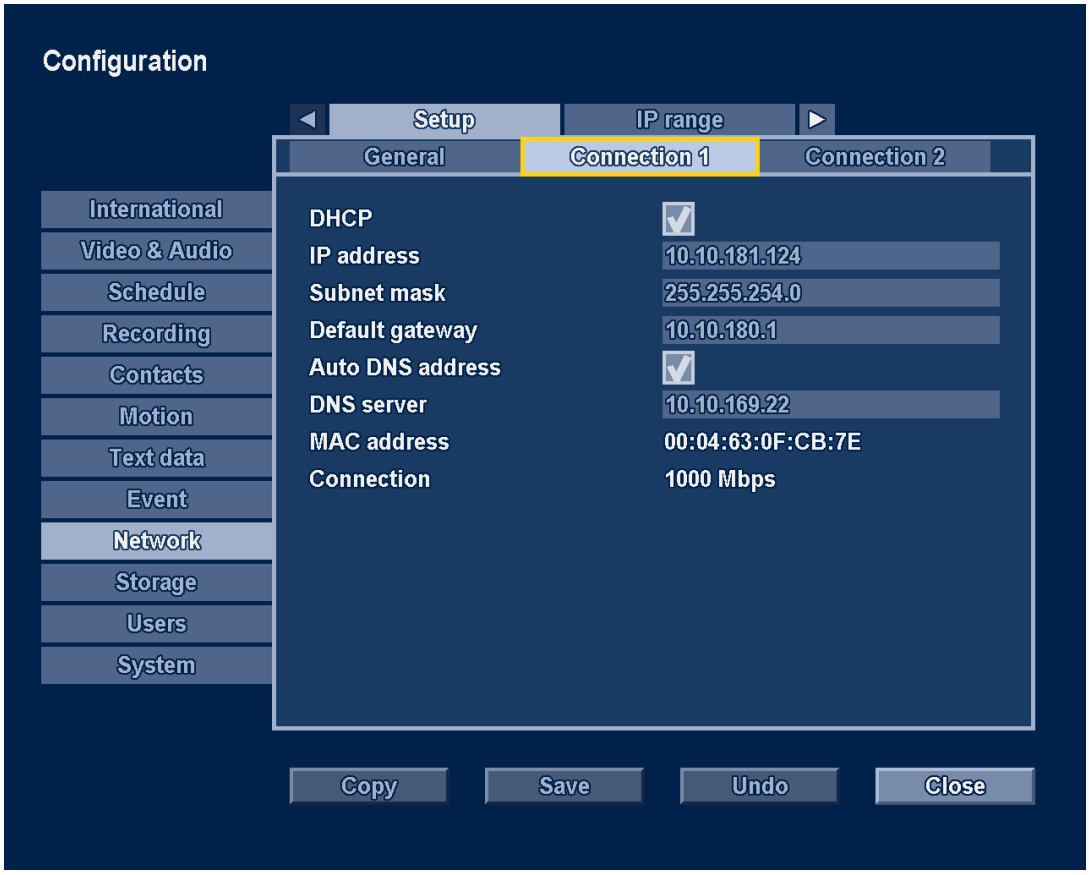

Figure 6.18 Configuration menu - Network - Setup - Connection 1

Set up the network parameters for the primary Ethernet port.

- Enable **DHCP** to have IP address, subnet mask, and default gateway assigned automatically by the network DHCP server. The actual values are displayed.
- If DHCP is disabled, fill in the **IP address**, the **Subnet mask**, and the **Default gateway** address for the recorder.
- If **Auto DNS address** is not enabled, then fill in the **DNS Server** address.
- The **MAC address** is read only; it shows the MAC address of the Ethernet adapter.
- **Connection** shows the status of the physical network connection.

6.9.3 Setup - Connection 2

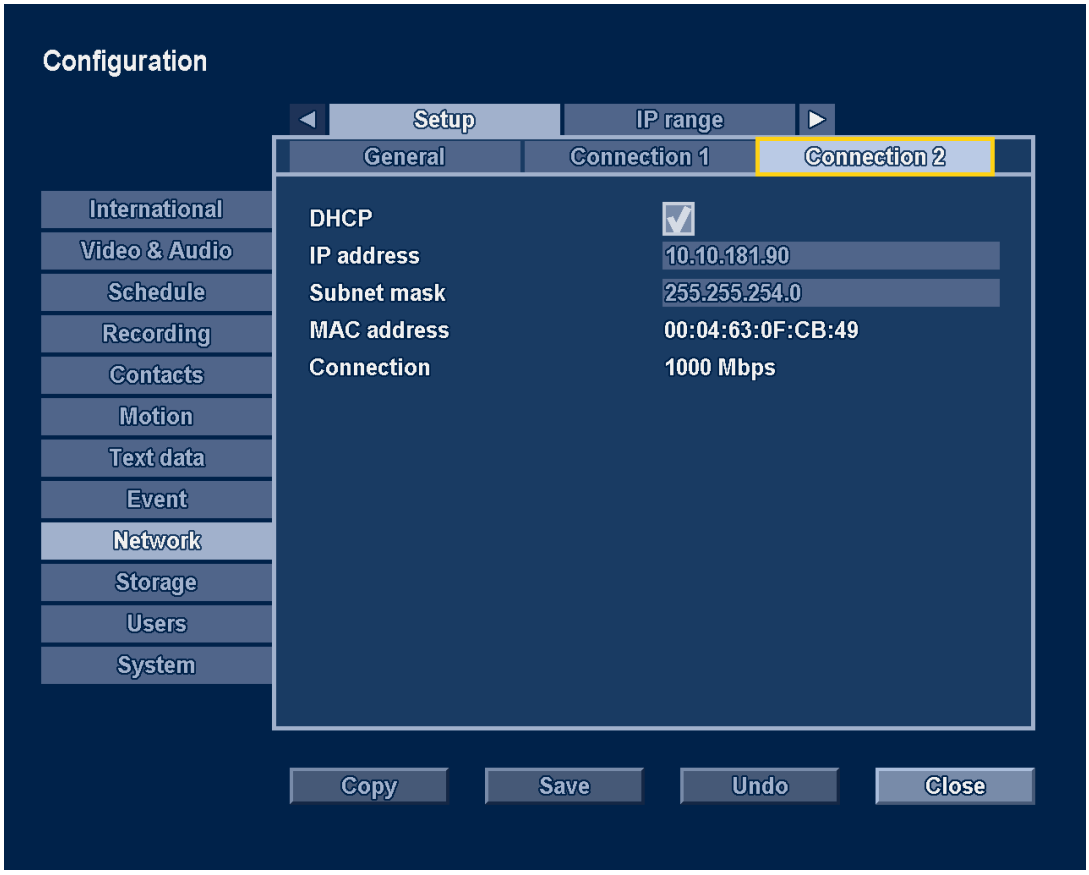

Figure 6.19 Configuration menu - Network - Setup - Connections

Set up the network parameters for the secondary Ethernet port.

- Enable **DHCP** to have IP address, subnet mask, and default gateway assigned automatically by the network DHCP server. The actual values are displayed.
- If DHCP is disabled, fill in the **IP address**, and the **Subnet mask**.
- The **MAC address** is read only; it shows the MAC address of the Ethernet adapter.
- **Connection** shows the status of the physical network connection.

Note:
The secondary network port is limited to the local subnet and does not support remote access.

6.9.4 IP Range

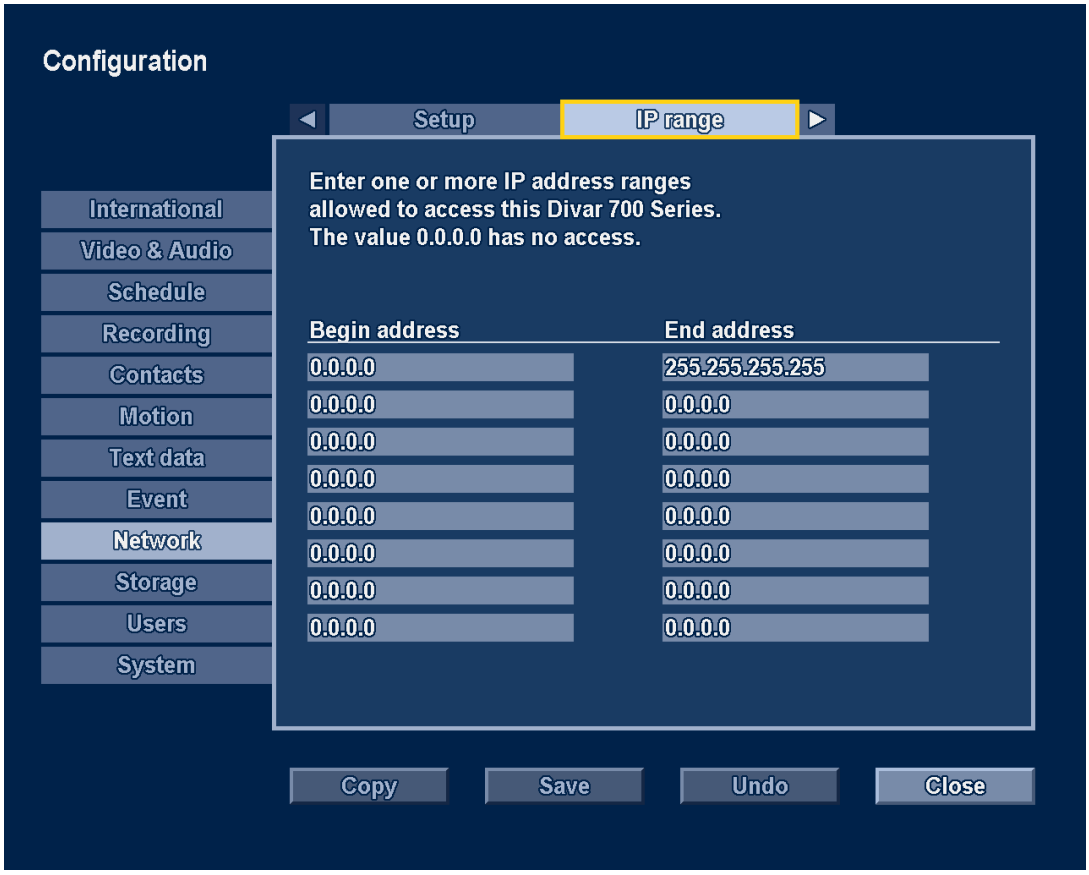

Figure 6.20 Configuration menu - Network - IP range

– 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.

Only workstations (with the Bosch Video Client or Configuration Tool) that have an IP address in one of the specified ranges can gain access to the unit.

6.9.5 Monitor Streaming

The remote monitor streaming function, which is only available on hybrid units, allows monitor output A and/or B to be streamed remotely via one or more of the analog video inputs.

Figure 6.21 Configuration menu - Network - Monitor streaming

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.

6.9.6 SNMP

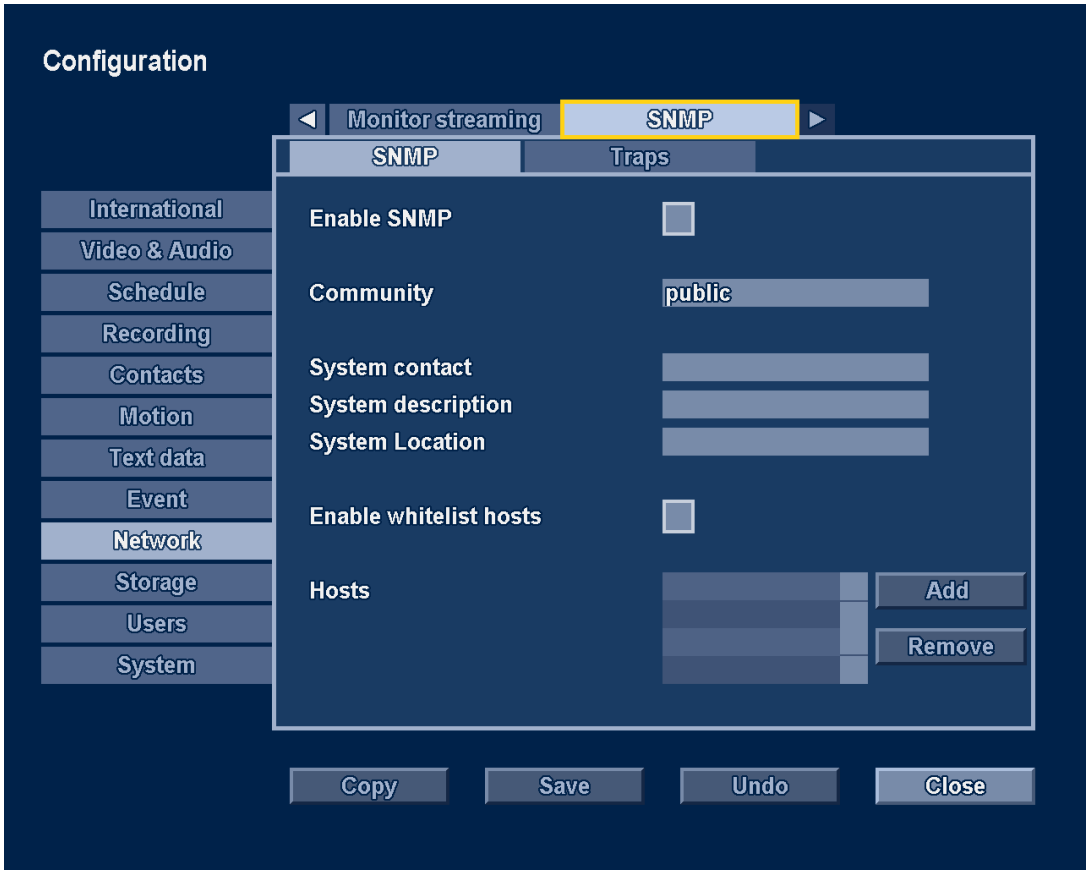

Figure 6.22 Configuration menu - Network - SNMP

SNMP

- Enable **SNMP** to activate SNMP.
- **Community** - fill in the SNMP authentication string.
- **System contact** - fill in the contact data of the administrator.
- **System description** - describe the recording system.
- **System location** - enter the location of the system.
- Enable white list host - check box to activate hosts that list IP addresses that are allowed to access the SNMP feature of the unit.
- Hosts - add or remove white list host IP addresses.

Traps

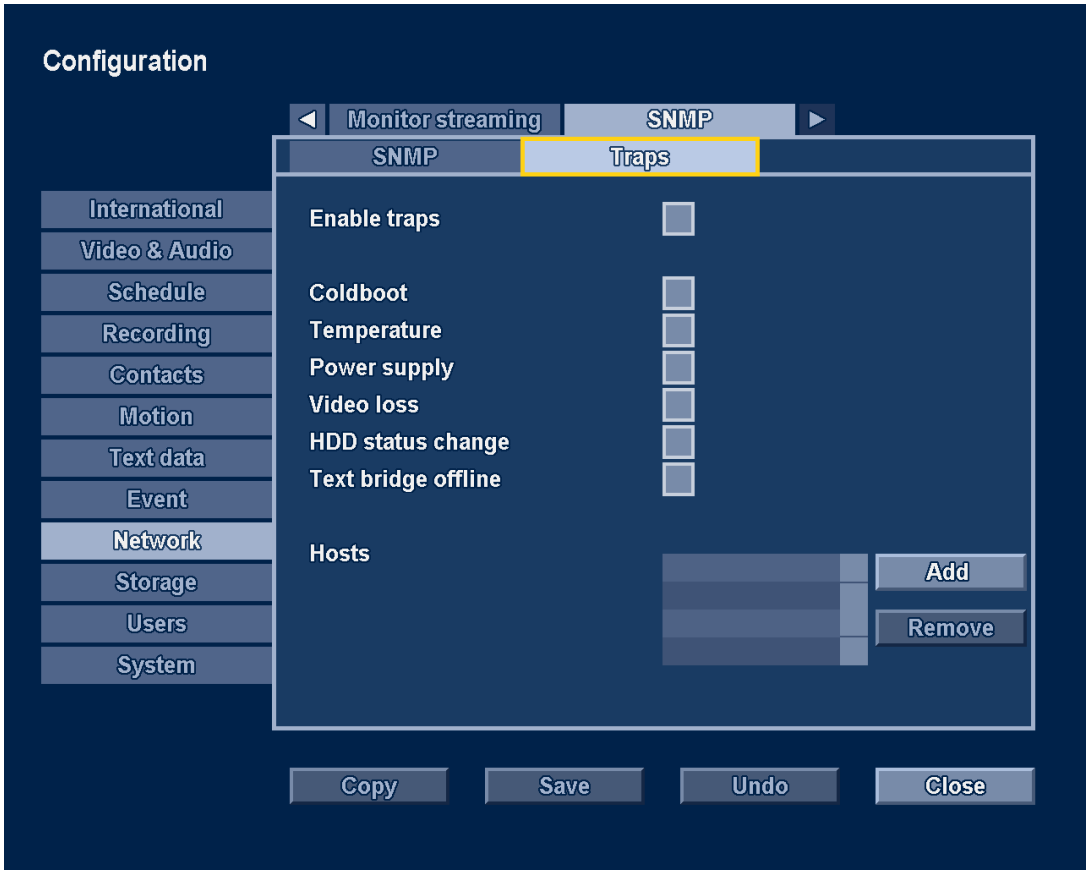

Figure 6.23 Configuration menu - Network - SNMP - Traps

Traps

- Enable **Traps** to allow traps to be sent.
- Select the traps to send: **Coldboot**, **Temperature** alarms, **Power supply** alarms, **Video loss** events, **HDD** alarms, **Text bridge** connection loss alarms.
- Hosts - add or remove host IP addresses to which the traps are to be sent.

6.10 Storage

The Storage menu gives access to information on the hard disk(s) and iSCSI storage LUNs.

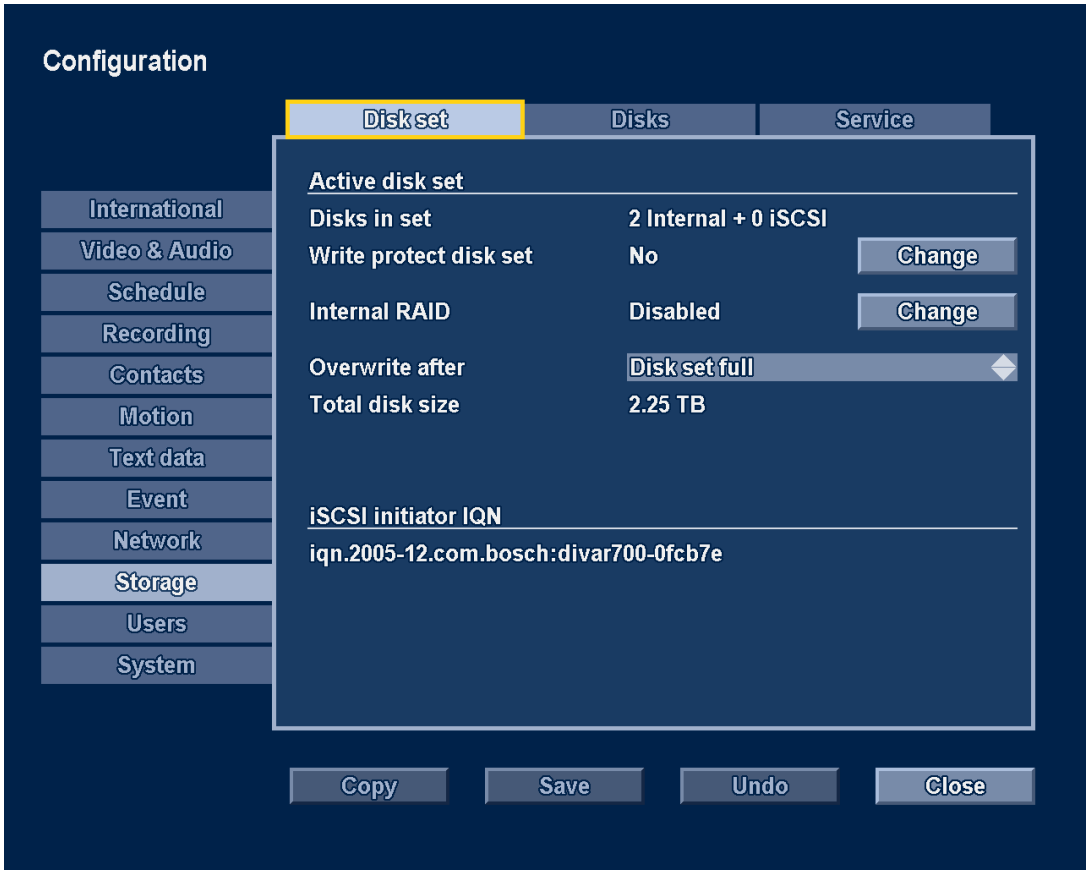

Figure 6.24 Configuration menu - Storage - Disk set

6.10.1 Disk set

A disk set consists of 1 or more disk drives and/or iSCSI LUNs. It normally is associated with a particular recorder unit. A recorder unit may recognise more than one such disk sets, but only one is the active disk set.

Selection of active disk set

Should the unit detect more than one disk set during system boot, the user is prompted to select the active disk set. Click on the disk set you want to use, and optionally check the read only box to prevent recording on that disk set. Click OK to start normal operation.
If you let the timer expire in this panel, the disk set last used for recording in the unit becomes the active disk set used in write mode. Once the active disk set is choosen, the other disk sets are ignored. You can add the drives that belong to these other disk sets to the active disk set. In this case the video on the drives is lost.

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

- **Disks in set** shows which hard disks are used.
- **Write protect disk set** indicates if the disk set is used for reading and/or writing. Click **Change** to set a different mode than displayed.
- **Internal 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 storage available for video recording is equal to three times the size of the smallest disk in the set. The fourth disk is used for parity information.
If a single disk fails, no data is lost. Recording continues on three disks without RAID 4 protection. Once the defective disk has been replaced, the data on the new disk is rebuilt (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 if required, for example, for legal purposes.
– The total disk set capacity is shown in gigabytes.

6.10.2 Disks

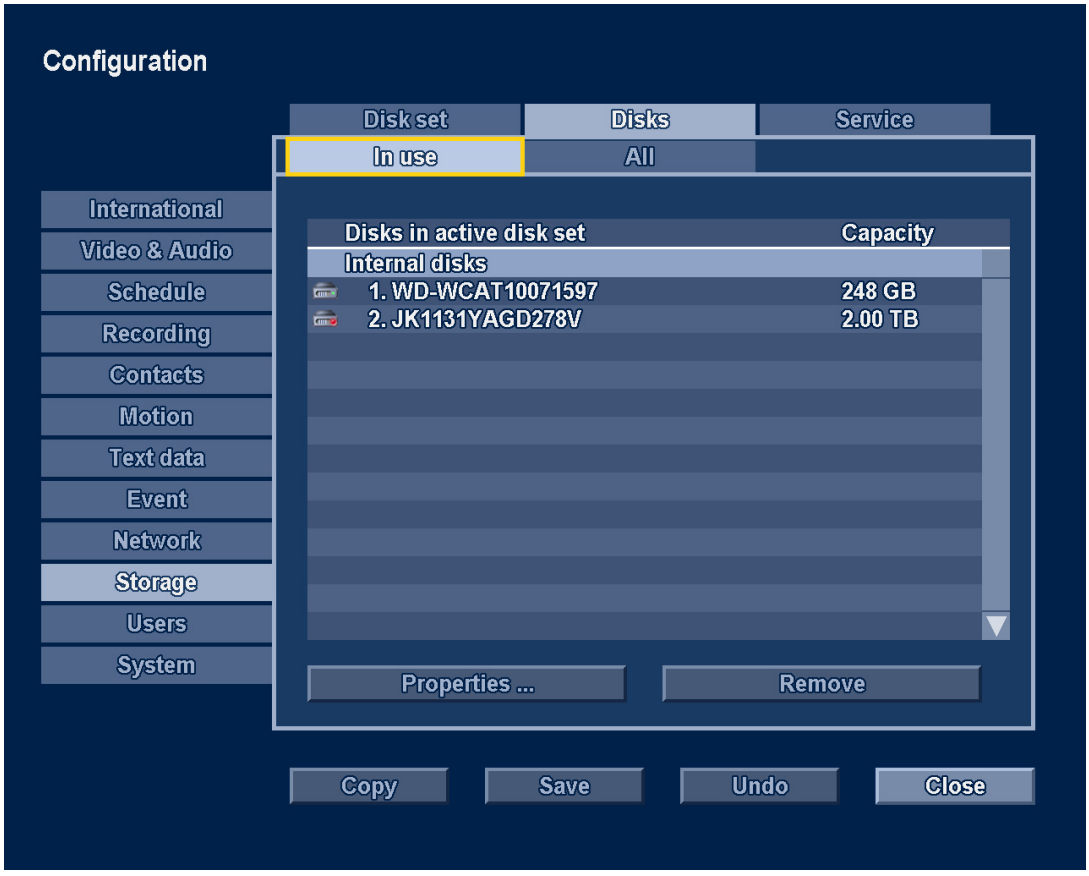

Figure 6.25 Configuration menu - Storage - Disks - In use

In use

View the properties of the disks in use in the active disk set.

– The capacity of each disk is shown in gigabytes.
– Remove disks from the active disk set by clicking **Remove**.
– Click to select an individual hard disk from the list.
  – Click **Properties** to view the status of the selected disk.

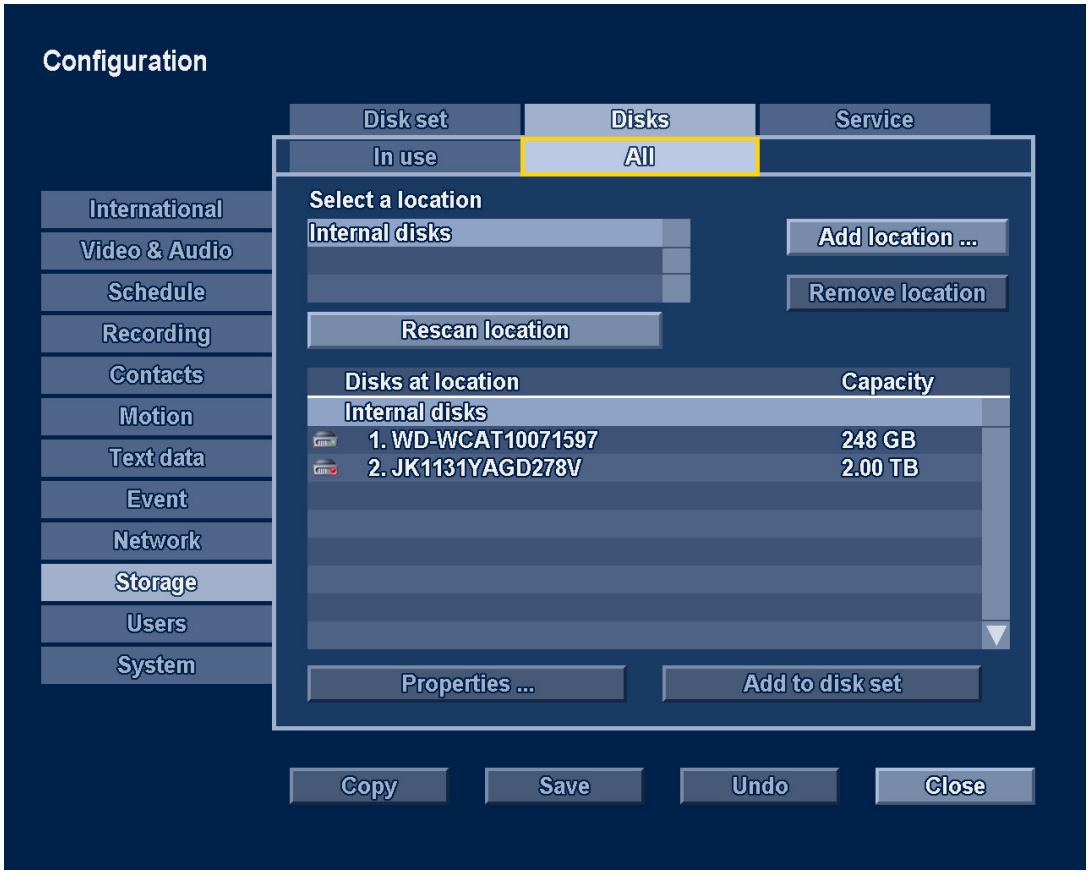

Figure 6.26 Configuration menu - Storage - Disks - All

All disks

All available disks are shown in the list.

- Select **Internal disks** to see a list of installed internal disks and their capacity in gigabytes.
- iSCSI disk locations are also shown. Locations can be added or removed from the list by clicking **Add location** or **Remove location**.
  - When **Add location** is selected, a pop-up window appears; fill in the IP address and port of the iSCSI array to be added.
- Select an individual hard disk from the list and click **Properties** to view the status of the selected disk.

6.10.3 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 the active disk set (protected drives will also be erased).
- **Pause recording...** - pauses all recordings for a specified period of time.

6.10.4 Replacing a disk

Power down the recorder and replace the faulty drive with a spare one and reboot.

The **Disk set** tab still shows 4 disks in the active disk set. In the **Disks / In use** tab the faulty drive is listed together with the 3 good drives. In the **Disks / All** tab the 3 good drives with the replacement drive are shown.

1. Remove the faulty drive from the active disk set in the **Disks / In use** tab.

2. Add the replacement drive to the active disk set in the **Disks / All** tab.
   The recorder shows a reminder that any video on the replacement drive will be lost if the drive is added to the set.
3. Click **OK** to proceed.

6.10.5 Raid 4 protection

Divar 700 series recorders have a licensed RAID 4 protection feature. When this feature is active, the recordings are safe, even if one of the hard drives should fail. The RAID feature requires 4 drives to operate. The net capacity of hard disk space available in RAID mode is 3 times the size of the smallest hard disk in the recorder. So if 4*1 TB is installed, the net capacity for recordings is 3 TB. If you have 1*500 GB and 3*1 TB hard disks, the net capacity is 3*500 GB or 1.5 TB.

Activating RAID mode.
Make sure you have installed the RAID 4 license. If the active disk set has 4 drives installed, the internal RAID option can be enabled in the **Disk set** tab by selecting **Change**. The recorder warns that all recordings will be lost. Click **OK** to continue.

When a hard disk drive fails
If one of the disk drives fail while operating in RAID 4 mode, an alarm appears: **RAID unsafe, Missing disk**.
The recorder continues to record on the three drives, and no video data is lost. However, the RAID protection feature is not operable, because only 3 drives are available. The **Disk set** tab still shows 4 disks in the active disk set. The missing disk is shown in red with a yellow icon in the **Disks / In use** tab. From the list of drives the faulty drive slot can be determined.

Setting up a new disk
Power down the recorder and replace the faulty drive with a spare one and reboot.

The **Disk set** tab still shows 4 disks in the active disk set. In the **Disks / In use** tab the faulty drive is listed together with the 3 good drives. In the **Disks / All** tab the 3 good drives with the replacement drive are shown.

1. Remove the faulty drive from the active disk set in the **Disks / In use** tab.
2. Add the replacement drive to the active disk set in the **Disks / All** tab.
   The recorder shows a reminder when the drives in the RAID set are not the same size and that any video on the replacement drive will be lost if the drive is added to the RAID set.
3. Click **OK** to proceed.

The recorder continues to show the message **RAID unsafe**. The unit also shows that **RAID building** is in progress with an indication of the percentage completed.

RAID rebuild occurs in the background while all normal recording operation continues. The rebuild can take considerable time (for big hard disks over 24 hours) but does not hamper normal recorder operations in any way.

The slot position of the hard drives is irrelevant. The unit recognizes each drive by its signature and knows to which disk set it belongs.

6.11 Users

6.11.1 General

– Set a default user. This user is logged on to the unit by default on power up.

6.11.2 Administrator

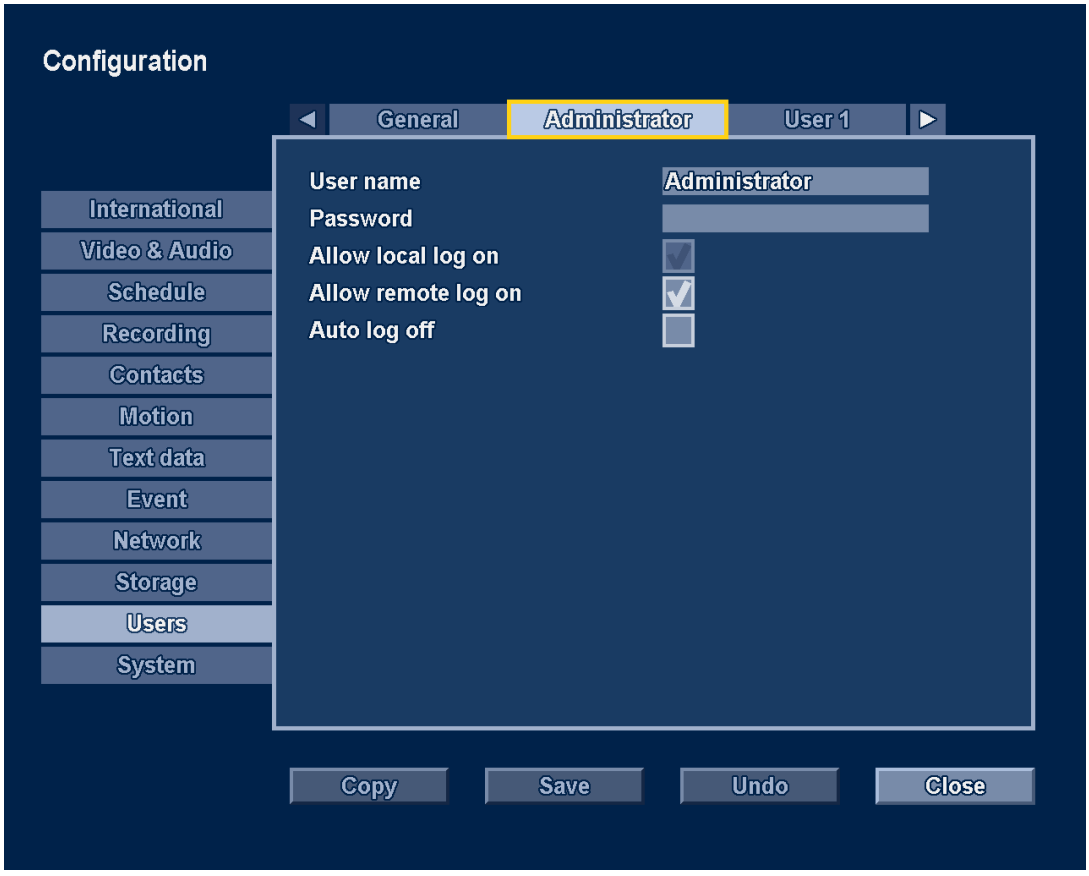

Figure 6.27 Configuration menu - Users - Administrator

– 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.

Note:
Do not use special characters (for example, &) in names.

6.11.3 Users 1 - 7

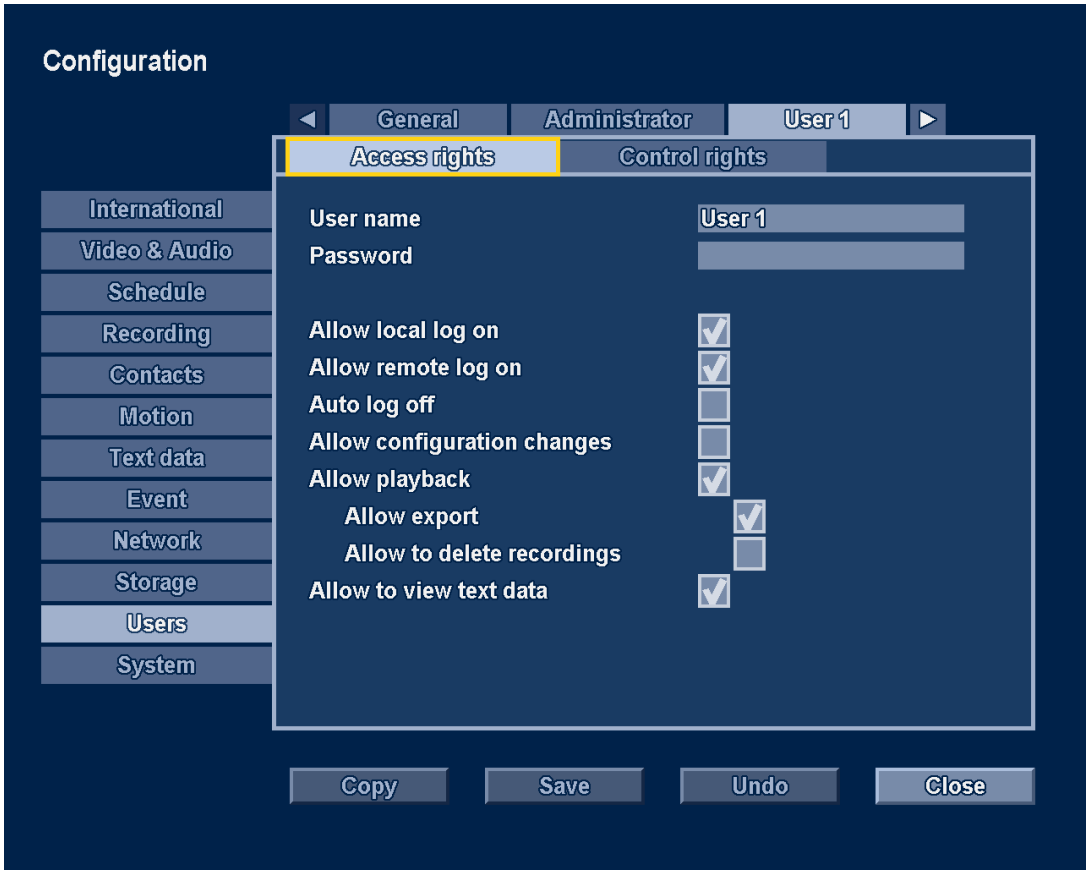

Figure 6.28 Configuration menu - Users - User 1 access rights

The access rights for 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.

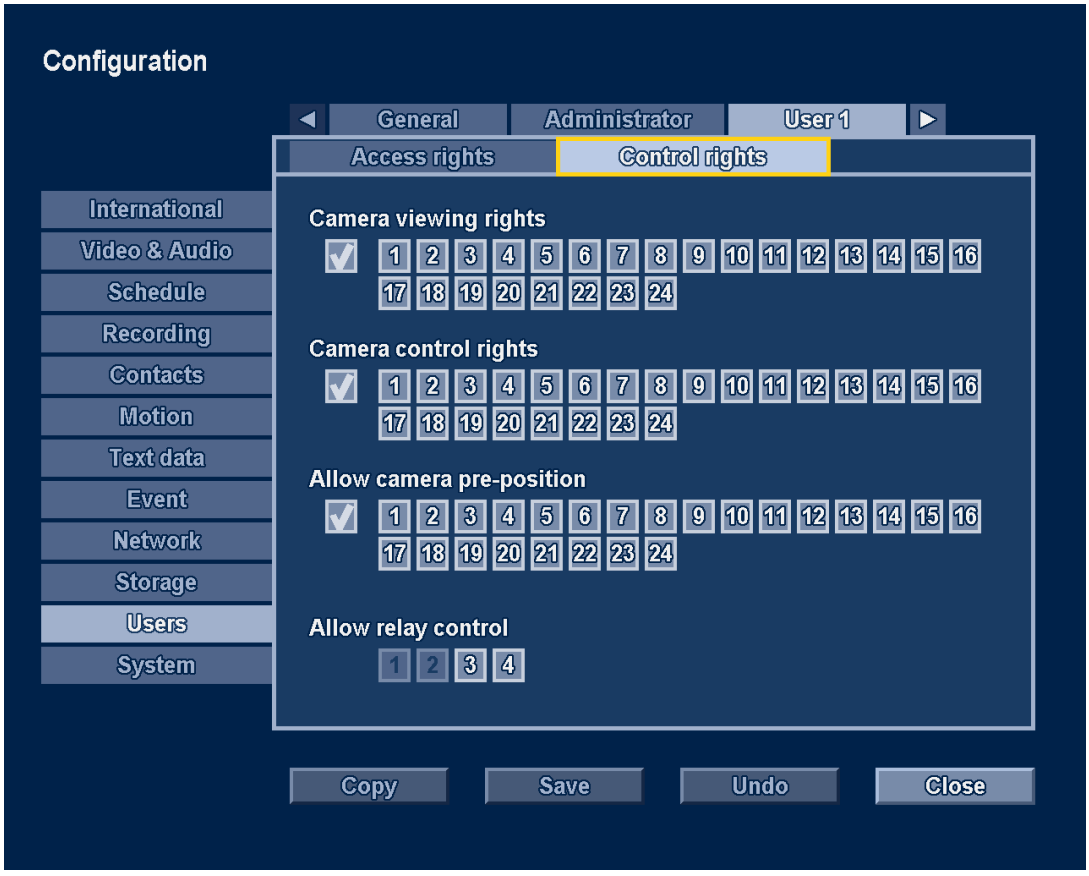

Figure 6.29 Configuration menu - Users - User 1 control rights

In the **Control rights** tab, set the rights for camera viewing, camera control, camera pre-positioning, and relay control.

6.12 System

6.12.1 Service

- Select **Restore factory defaults** to reset the settings in the menu system to their default value. (Refer to Section 7 Menu default values for a list of default values.)
- **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 containing a list of video exports to a USB memory device.
- **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.

6.12.2 KBD

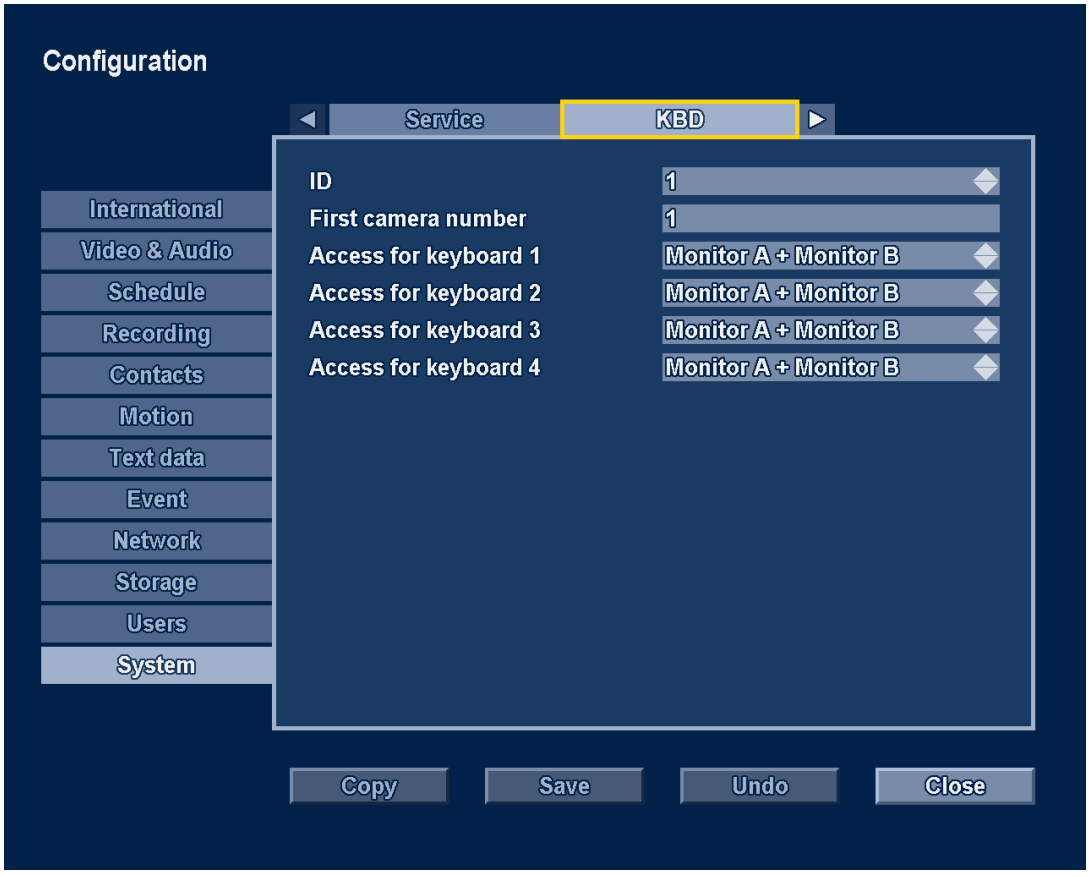

Figure 6.30 Configuration menu - System - KBD

KBD is used to:

- set a unique ID number between 1 and 16 if multiple Divar 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.

6.12.3 Serial ports

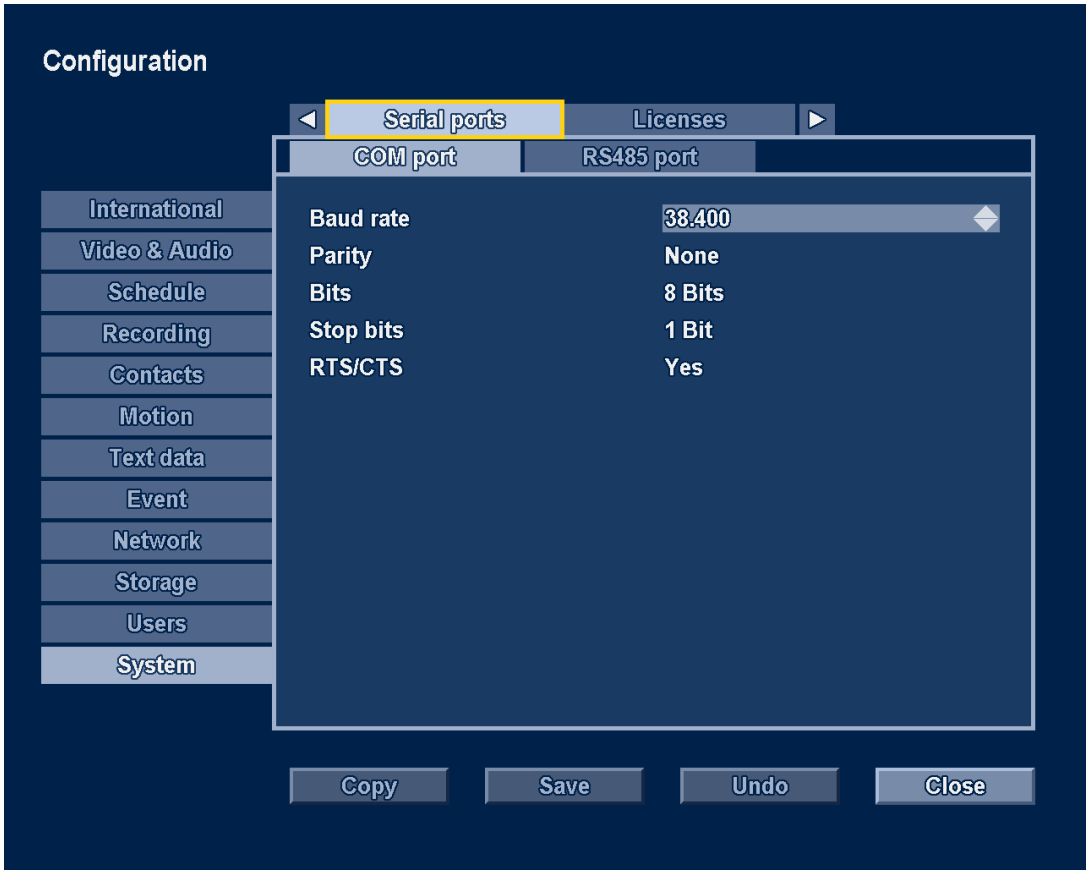

Figure 6.31 Configuration menu - System - Serial ports

COM port

The COM port is used for service or integration purposes. Set up the communication parameters required.

RS485 port

The COM port is used for service or integration purposes. Set up the communication parameters required.

6.12.4 Licenses

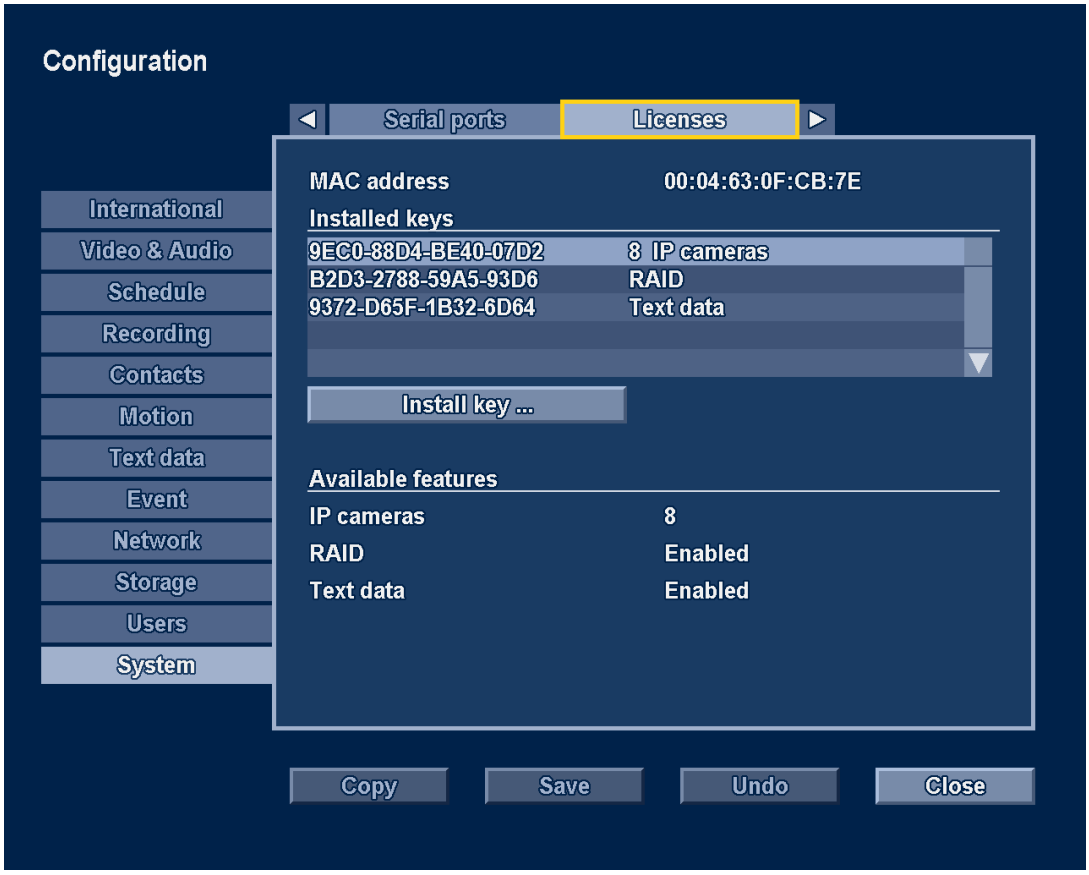

Figure 6.32 Configuration menu - System - Licenses

Some optional features require a software license to be obtained before they are activated.

- **MAC address** displays the MAC address of the unit. 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 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.

6.12.5 Logging

Select the items to be logged.

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

7 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.

7.1 Quick install menu defaults

Table 7.1 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
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 PAL/NTSC	6.25/7.5 IPS	Y
	Contact		Resolution	4CIF	Y
			Quality	High	Y
			Frame rate PAL/NTSC	25/30 IPS	Y
	Motion		Resolution	4CIF	Y
			Quality	High	Y
			Frame rate PAL/NTSC	25/30 IPS	Y
Network	Setup		DVR Name	DIVAR	N
			DHCP	Enabled	N
			Auto DNS address	Enabled	N
			Remote streaming limit	100 Mbps	Y

7.2 Monitor view settings defaults

Table 7.2 Monitor view settings default values

Navigation		Setting	Default value	Reset
Display options	Monitor A	Transparent background	Enabled	Y
		Cameo borders	Black	Y
		Click to open menus	Disabled	Y
	Monitor B	Transparent background	Enabled	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..32	Y
Event display	Monitor A, B	Contact input events	Enabled	Y
		Motion detection events	Enabled	Y
		Text events	Enabled	Y
		Video loss alarms	Enabled	Y
		Display duration	10 Sec	Y
		Event list	8 lines	Y
		Only alarms in event list	Disabled	Y
		Icon in cameo - Live	Always	Y
		Icon in cameo - Playback	Always	Y
Text display	Monitor A, B	Show text data	Disabled	Y
		Text position	Upper left	Y
		Display duration	3 Sec	Y
		Foreground color	White	Y
		Background color	Translucent	Y
		Font size	Normal	Y
		Use monospaced font	Enabled	Y

7.3 Configuration menu defaults

Table 7.3 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
Video & Audio	1...16		Input name	Camera 1..32	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...32	General	IP address	0.0.0.0	N
			Input	Camera (value 0)	N
			Stream	1	N
			Encoder profile	1	N
			User name	service	N
			Password	–	N
		Control	Enabled PTZ	Disabled	N
			Protocol	Bosch protocol	N
			Device address	17 .. 32	N
			Interface	RS485	N
			Baudrate	2400	N
			Parity	None	N
			Stop bits	1	N
	Bitrates		Channel	17 .. 32	N
			Unconstrained	2.25 Mbps	N
			Ceiling	2.25 Mbps	N
			Status	OK	N
Schedule	Schedule		Profile 1	Always active	Y
	Exception Days		Exception Days	Empty	Y

Table 7.3 Configuration menu default values

Navigation				**Setting**	**Default value**	**Reset**
Recording	Profile 1-6	1...32	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...32	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...32	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
		1...32	Text	Text 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
Contacts				Contact Inputs NC	None	Y
				Relay Outputs NC	None	Y
	1..32			Contact input name	Contact input 1..32	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

Table 7.3 Configuration menu default values

Navigation				Setting	Default value	Reset
Text data	Bridge			Recorder TCP port	4200	N
				List of bridges and terminals	Empty	N
	DirectIP			List of direct IP connections	Empty	N
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...32	Enabled	1..16 enabled	Y
				Alarm	Disabled	Y
				Actions	Apply motion recording for 1 Show mon A: 1 Show mon B: 1	Y
		Motion	1...32	Enabled	1..16	Y
				Alarm	Disabled	Y
				Actions	Apply motion recording for 1 Show mon A: 1 Show mon B: 1	N
		Text	1...32	Enabled	1..16	Y
				Alarm	Disabled	Y
				Actions	Apply text recording for 1 Show on monitor A: 1	N
		Video loss	1...32	Enabled	1..16 enabled	Y

Table 7.3 Configuration menu default values

Navigation			Setting	Default value	Reset
Network	Setup	General	DVR Name	Divar 700 Series	N
			Discovery	Enabled	N
			Remote streaming limit	100 Mbps	N
			HTTP port	80	N
		Connection 1	DHCP	Enabled	N
			Auto DNS address	Enabled	N
		Connection 2	DHCP	Enabled	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
	SNMP	SNMP	Enable SNMP	Disabled	N
			Community	Public	N
			Enable white list host	Disable	N
		Traps	Enable traps	Disable	N
			Coldboot	Disable	N
			Temperature	Disable	N
			Power supply	Disable	N
			Video loss	Disable	N
			HDD status change	Disable	N
			Text bridge offline	Disable	N
			Hosts	Empty list	N
Storage	Disk set		Write protect	Disabled	N
			Internal RAID	Disabled	N
			Override after	Disk set full	Y
	Disks				NA
	Service				NA

Table 7.3 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
			Allow to view text data	Disabled	N
		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
	KBD		ID	1	N
			First camera number	1	N
			Access for keyboard 1..4	Mon A + Mon B	N
	Serial ports	Com port	Baud rate	38400	N
			Parity	None	N
			Data bits	8	N
			Stop bits	1	N
			RTS/CTS	Enabled	N
		RS485 port	Baud rate	2400	N
			Parity	None	N
			Data bits	8	N
			Stop bits	1	N
	Licenses				NA
	Logging		Log contacts	Enabled	Y
			Log motions	Enabled	Y
			Log remote access	Enabled	Y

8 Technical specifications

The following pages give the technical specifications of the unit.

8.1 Electrical

Voltage and Power

Input voltage	100-240 VAC; 0.7-0.3 A, 50/60 Hz
Power consumption	250 W835 BTU/h

Video

Inputs (hybrid version only)	Composite video 0.5-2 Vpp, 75 ohm, automatic termination
Outputs (hybrid version only)	1 Vpp, 75 ohm, RG59, sync 0.3 V ± 10%
Video standard	PAL/NTSC auto-detect
Resolution	704 x 576 PAL - 704 x 480 NTSC
AGC	Automatic adjustment or manual adjustment of gain for each video input
Digital Zoom	1.5 - 6 times
Compression	H.264

Audio

Inputs (hybrid version only)	Mono RCA, 1 Vpp, 10k ohm
Outputs	Dual mono RCA, 1 Vpp, 10k ohm
Sample rate	24 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 (hybrid version only)	8 or 16 looping BNC, auto-terminating
Audio inputs (hybrid version only)	8 or 16 RCA
Ethernet	1 or 2 RJ45 shielded, 10/100/1000 BaseT according to IEEE802.3
Monitor	BNC, Y/C, VGA D-sub
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 720p60/50: 60/50, 30/25, 15/12.5, 7.5/6.25, 3.75/3.125, 1/1 720p30/25 or 1080p30/25: 30/25, 15/12.5, 7.5/6.25, 3.75/3.125, 1/1
Recording Resolution SD	704 x 576 PAL - 704 x 480 NTSC 704 x 288 PAL - 704 x 240 NTSC 352 x 288 PAL - 352 x 240 NTSC
Recording Resolution HD	720p60 or 720p30: 1280 x 7201080p30: 1920 x 1080

Display Modes

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

8.1.1 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.

8.1.2 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

8.1.3 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

8.1.4 Video bitrates (Kbps) for analog and IP SD cameras

		Frame rate (IPS)				
Resolution	**Quality**	**25/30**	**12.5/15**	**6.25/7.5**	**3.125/3.75**	**1**
CIF/QVGA	Standard	225	124	73	48	30
CIF/QVGA	Medium	619	340	201	131	82
CIF/QVGA	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/VGA	Standard	500	275	163	106	67
4CIF/VGA	Medium	1375	756	447	292	183
4CIF/VGA	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.

8.1.5 Video bitrates (Kbps) for IP HD cameras

		Frame rate (IPS)					
Resolution	**Quality**	**50/60**	**25/30**	**12.5/15**	**6.25/7.5**	**3.125/3.75**	**1**
720p	Standard	1000	750	330	210	160	120
720p	Medium	2400	1800	780	510	380	280
720p	High	4000	3000	1300	850	630	470
1080p	Standard	1500	1000	490	320	230	180
1080p	Medium	3600	2400	1170	770	560	420
1080p	High	6000	4000	1950	1270	940	710

8.1.6 Accessories (Optional)

Keyboard	KBD-Digital / Universal - Intuikey keyboard with joystick Keyboard extension kit (LTC 8557) Keyboard port expander (LTC 2604)
Storage	500GB, 1 TB or 2 TB storage expansion kits License for RAID 4 storage
Video Manager	LTC 2605/91
IP inputs	Licenses for 1, 4 or 8 IP cameras
ATM/POS Text	Text license
Biphase code translators	LTC 8782

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