

# DVAS



Security Systems

EN | Instruction Manual  
Digital Video Array

# BOSCH

## Important Safeguards

1. **Read, Follow, and Retain Instructions** - All safety and operating instructions should be read and followed before operating the unit. Retain instructions for future reference.
2. **Heed Warnings** – Adhere to all warnings on the unit and in the operating instructions.
3. **Attachments** - Attachments not recommended by the product manufacturer should not be used, as they may cause hazards.
4. **Installation Cautions** - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only manufacturer-recommended accessories, or those sold with the product. Mount the unit per the manufacturer's instructions. Appliance and cart combination should be moved with care. Quick stops, excessive force, or uneven surfaces may cause the appliance and cart combination to overturn.
5. **Cleaning** - Unplug the unit from the outlet before cleaning. Follow any instructions provided with the unit. Generally, using a damp cloth for cleaning is sufficient. Do not use liquid cleaners or aerosol cleaners.
6. **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.
7. **Damage Requiring Service** - Unplug the unit from the main AC power source and refer servicing to qualified service personnel under the following conditions:
  - When the power supply cord or plug is damaged.
  - If liquid has been spilled or an object has fallen into the unit.
  - If the unit has been exposed to water and/or inclement weather (rain, snow, etc.).
  - If the unit does not operate normally, when following the operating instructions. Adjust only those controls specified in the operating instructions. Improper adjustment of other controls may result in damage, and require extensive work by a qualified technician to restore the unit to normal operation.
  - If the unit has been dropped or the cabinet damaged.
  - If the unit exhibits a distinct change in performance, this indicates that service is needed.
8. **Replacement Parts** - When replacement parts are required, the service technician should use replacement parts specified by the manufacturer, or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electrical shock, or other hazards.
9. **Safety Check** - Upon completion of servicing or repairs to the unit, ask the service technician to perform safety checks to ensure proper operating condition.
10. **Power Sources** - Operate the unit only from the type of power source indicated on the label. If unsure of the type of power supply to use, contact your dealer or local power company.
  - For units intended to operate from battery power, refer to the operating instructions.
  - For units intended to operate **with External Power Supplies**, use only the recommended approved power supplies.
  - For units intended to operate with a limited power source, this power source must comply with EN60950. Substitutions may damage the unit or cause fire or shock.
  - For units intended to operate at 24 VAC, normal input voltage is **24 VAC**. Voltage applied to the unit's power input should not exceed 30 VAC. User-supplied wiring, from the 24 VAC supply to unit, must be in compliance with electrical codes (Class 2 power levels). Do not ground the 24 VAC supply at the terminals or at the unit's power supply terminals.
11. **Coax Grounding** - If an outside cable system is connected to the unit, ensure that the cable system is grounded. 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.
12. **Grounding or Polarization** - This unit may be equipped with a polarized alternating current line plug (a plug with one blade wider than the other). 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, try reversing the plug. If the plug still fails to fit, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the polarized plug. Alternately, this unit may be equipped with a 3-wire grounding plug (a plug with a third pin, for grounding). This safety feature allows the plug to fit into a grounding power outlet only. If unable to insert the plug into the outlet, contact an electrician to arrange replacement of the obsolete outlet. Do not defeat the safety purpose of the grounding plug.
13. **Lightning** - For added protection during a lightning storm, or when this unit is left unattended and unused for long periods of time, unplug the unit from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power line surges.

**For Indoor Product**

1. **Water and Moisture** - Do not use this unit near water - for example, in a wet basement, in an unprotected outdoor installation, or in any area classified as a wet location.
2. **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.
3. **Power Cord and Power Cord Protection** - For units intended to operate with 230VAC, 50Hz, the input and output power cord must comply with the latest versions of IEC Publication 227 or IEC Publication 245.  
Power supply cords should be routed so they are not likely to be walked on or pinched. Pay particular attention to location of cords and plugs, convenience receptacles, and the point of exit from the appliance.
4. **Overloading** - Do not overload outlets and extension cords; this can result in a risk of fire or electrical shock.

**For Outdoor Product**

**Power Lines** - An outdoor system should not be located in the vicinity of overhead power lines, electric lights, or power circuits, or where it may contact such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching power lines or circuits, as this contact might be fatal. U.S.A. models only - refer to the National Electrical Code Article 820 regarding installation of CATV systems.

**For Rack-Mount Product**

1. **Ventilation** - This unit should not be placed in a built-in installation or rack, unless proper ventilation is provided, or the manufacturer's instructions have been adhered to. The equipment must not exceed its maximum operating temperature requirements.
2. **Mechanical Loading** - Mounting of the equipment in a rack shall be such that a hazardous condition is not achieved due to uneven mechanical loading.

**WARNING:**

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

**NOTE:** Grounded wrist straps must be worn and proper ESD safety precautions observed when handling the electrostatic-sensitive printed circuit boards.

**CAUTION: Lithium Battery**

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

**Safety Precautions****CAUTION**

RISK OF ELECTRIC SHOCK. DO NOT OPEN!



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**



This symbol indicates the presence of uninsulated "dangerous voltage" within the product's enclosure. This may constitute a risk of electric shock.



The user should consult the operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Attention: Installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.



Power Disconnect. Units with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position. The power cord is the main power disconnect for all units.

## FCC & ICES INFORMATION

### (U.S.A. and Canadian Models Only)

This device complies with part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules and ICES-003 of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and radiates radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his expense.

Intentional or unintentional changes or modifications, not expressly approved by the party responsible for compliance, shall not be made. Any such changes or 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.

**WARNING:** This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures.

## Sécurité

	<b>ATTENTION</b> RISQUE D'ÉLECTROCUTION. NE PAS OUVRIR!	
<b>ATTENTION : POUR ÉVITER TOUT RISQUE D'ÉLECTROCUTION, N'ESSAYEZ PAS DE RETIRER LE CAPOT (OU LE PANNEAU ARRIÈRE). CET APPAREIL NE CONTIENT AUCUN COMPOSANT SUSCEPTIBLE D'ÊTRE RÉPARÉ PAR L'UTILISATEUR. CONFIEZ LA RÉPARATION DE L'APPAREIL À DU PERSONNEL QUALIFIÉ.</b>		
	Ce symbole signale que le produit renferme une « tension potentiellement dangereuse » non isolée susceptible de provoquer une électrocution.	
	Ce symbole invite l'utilisateur à consulter les instructions d'utilisation et d'entretien (dépannage) reprises dans la documentation qui accompagne l'appareil.	
	Attention : l'installation doit exclusivement être réalisée par du personnel qualifié, conformément au code national d'électricité américain (NEC) ou au code d'électricité local en vigueur.	
	Coupeure de l'alimentation. Qu'ils soient pourvus ou non d'un commutateur ON/OFF, tous les appareils reçoivent de l'énergie une fois le cordon branché sur la source d'alimentation. Toutefois, l'appareil ne fonctionne réellement que lorsque le commutateur est réglé sur ON. Le débranchement du cordon d'alimentation permet de couper l'alimentation des appareils.	

## Sicherheitshinweise

	<b>VORSICHT</b> ELEKTRISCHE SPANNUNG. NICHT ÖFFNEN!	
<b>VORSICHT: UM EINEN ELEKTRISCHEN SCHLAG ZU VERMEIDEN, IST DIE ABDECKUNG (ODER RÜCKSEITE) NICHT ZU ENTFERNEN. ES BEFINDEN SICH KEINE TEILE IN DIESEM BEREICH, DIE VOM BENUTZER GEWARTET WERDEN KÖNNEN. LASSEN SIE WARTUNGSARBEITEN NUR VON QUALIFIZIERTEM WARTUNGSPERSONAL AUSFÜHREN.</b>		
	Das Symbol macht auf nicht isolierte „gefährliche Spannung“ im Gehäuse aufmerksam. Dies kann zu einem elektrischen Schlag führen.	
	Der Benutzer sollte sich ausführlich über Anweisungen für die Bedienung und Instandhaltung (Wartung) in den begleitenden Unterlagen informieren.	
	Achtung! Die Installation sollte nur von qualifiziertem Kundendienstpersonal gemäß jeweils zutreffender Elektrovorschriften ausgeführt werden.	
	Unterbrechung des Netzanschlusses. Geräte mit oder ohne Netzschalter haben Spannung am Gerät anliegen, sobald der Netzstecker in die Steckdose gesteckt wird. Das Gerät ist jedoch nur betriebsbereit, wenn der Netzschalter (EIN/AUS) auf EIN steht. Wenn das Netzkabel aus der Steckdose gezogen wird, ist die Spannungszuführung zum Gerät vollkommen unterbrochen.	

## Precauciones de Seguridad

	<b>ATTENZIONE</b> PERICOLO DI SCOSSA ELETTRICA. NON APRIRE.	
<p><b>PRECAUCIÓN: PARA DISMINUIR EL RIESGO DE DESCARGA ELÉCTRICA, NO RETIRE LA CUBIERTA (NI LA PARTE POSTERIOR). NO EXISTEN PIEZAS DE RECAMBIO EN EL INTERIOR DEL EQUIPO. EL PERSONAL DE SERVICIO CUALIFICADO SE ENCARGA DE REALIZAR LAS REPARACIONES.</b></p>		
	Este símbolo indica que existen puntos de tensión peligrosos sin aislamiento dentro de la cubierta de la unidad. Estos puntos pueden constituir un riesgo de descarga eléctrica.	
	El usuario debe consultar las instrucciones de funcionamiento y mantenimiento (reparación) en la documentación que se suministra con el aparato.	
	Atención: la instalación la debe realizar únicamente personal cualificado de conformidad con el National Electric Code o las normas aplicables en su país.	
	Desconexión de la alimentación. Las unidades con o sin interruptores de encendido/apagado reciben alimentación eléctrica siempre que el cable de alimentación esté conectado a la fuente de alimentación. Sin embargo, la unidad sólo funciona cuando el interruptor está en la posición de encendido. El cable de alimentación es la principal fuente de desconexión de todas las unidades.	

## Sicurezza

	<b>ATTENZIONE</b> PERICOLO DI SCOSSA ELETTRICA. NON APRIRE.	
<p><b>ATTENZIONE: PER RIDURRE IL RISCHIO DI SCOSSE ELETTRICHE NON RIMUOVERE LA COPERTURA (O IL PANNELLO POSTERIORE). L'UNITÀ NON CONTIENE COMPONENTI INTERNI RIPARABILI DALL'UTENTE. PER QUALSIASI INTERVENTO, RIVOLGERSI A PERSONALE TECNICO QUALIFICATO.</b></p>		
	Questo simbolo indica la presenza di "tensione pericolosa" non isolata all'interno del contenitore del prodotto. Ciò comporta un potenziale rischio di scosse elettriche.	
	Si consiglia di consultare le istruzioni operative e di manutenzione (interventi tecnici) contenute nella documentazione fornita con il dispositivo.	
	Attenzione: l'installazione deve essere effettuata esclusivamente da personale tecnico qualificato in conformità con il National Electrical Code o con le normative locali vigenti.	
	Scollegamento dell'alimentazione. Le unità dotate o sprovviste di interruttori ON-OFF vengono alimentate quando si inserisce il cavo nella presa dell'alimentazione. L'unità è tuttavia in funzione solo quando l'interruttore ON-OFF si trova nella posizione ON. Il cavo di alimentazione costituisce il dispositivo di scollegamento dell'alimentazione principale per tutte le unità.	

## Veiligheidsmaatregelen

	<b>VOORZICHTIG</b> GEVAAR VOOR ELEKTRISCHE SCHOK. NIET OPENEN!	
<p><b>VOORZICHTIG: OPEN DE BEHUIZING OF DE ACHTERKANT VAN HET APPARAAT NIET. ZO VERMINDERT U HET RISICO OP ELEKTRISCHE SCHOKKEN. IN HET APPARAAT BEVINDEN ZICH GEEN ONDERDELEN DIE U ZELF KUNT REPAREREN. LAAT SERVICE EN ONDERHOUD UITVOEREN DOOR GEKwalificeerd personeel.</b></p>		
	Dit symbool geeft aan dat er binnen in het apparaat ongeïsoleerde, gevaarlijke spanning aanwezig is die mogelijk elektrische schokken kan veroorzaken.	
	De gebruiker dient de bedienings- en onderhoudsvorschriften te raadplegen in de documentatie die werd meegeleverd met het apparaat.	
	Attentie: het apparaat mag alleen door gekwalificeerd personeel worden geïnstalleerd. De installatie dient in overeenstemming met de nationale elektrische richtlijnen of de van toepassing zijnde lokale richtlijnen te worden uitgevoerd.	
	Spanning uitschakelen. Apparatuur met of zonder aan-uitschakelaar staat onder spanning zolang de stekker is aangesloten op de wandcontactdoos. De apparatuur is uitsluitend in werking als de aan-uitschakelaar aan staat. Het netsnoer is de "hoofdschakelaar" voor alle apparatuur.	

## Medidas de Segurança

	<b>UWAGA</b> NIEBEZPIECZEŃSTWO PORĄZENIA PRĄDEM ELEKTRYCZNYM. NIE OTWIERAĆ!	
<p><b>CUIDADO: PARA REDUZIR O RISCO DE CHOQUE ELÉCTRICO, NÃO RETIRE A TAMPA (OU A PARTE POSTERIOR). NO INTERIOR, NÃO EXISTEM PEÇAS QUE POSSAM SER REPARADAS PELO UTILIZADOR. REMETA A ASSISTÊNCIA PARA OS TÉCNICOS QUALIFICADOS.</b></p>		
	Este símbolo indica a presença de "tensão perigosa" não isolada dentro da estrutura do produto, o que pode constituir risco de choque eléctrico.	
	O utilizador deve consultar as instruções de funcionamento e manutenção (assistência) nos documentos que acompanham o aparelho.	
	Atenção: a instalação deve ser executada apenas por técnicos qualificados da assistência, de acordo com o código eléctrico nacional ou os códigos locais aplicáveis.	
	Corte de corrente. As unidades com ou sem interruptores ON-OFF (ligar/desligar) recebem corrente sempre que o fio de alimentação está introduzido na fonte de alimentação; contudo, a unidade apenas está operacional quando o interruptor ON-OFF está na posição ON. O fio de alimentação destina-se a desligar a corrente em todas as unidades.	

## Zasady Bezpieczeństwa

	<b>UWAGA</b> <b>NIEBEZPIECZEŃSTWO PORAŻENIA PRADEM ELEKTRYCZNYM. NIE OTWIERAĆ!</b>	
<p><b>PRZESTROGA: ABY ZMNIJSZYĆ RYZYKO PORAŻENIA ELEKTRYCZNEGO, NIE NALEŻY ZDEJMOWAĆ POKRYWY GÓRNEJ (ani tylnej). WEWNĄTRZ URZĄDZENIA NIE MA ŻADNYCH ELEMENTÓW, KTÓRE MOGĄ BYĆ NAPRAWIANE SAMODZIELNIE PRZEZ UŻYTKOWNIKA. SERWIS NALEŻY ZLECAĆ WYKWALIFIKOWANYM PRACOWNIKOM OBSŁUGI.</b></p>		
	<p>Ten symbol wskazuje na obecność niez izolowanego „niebezpiecznego napięcia” we wnętrzu urządzenia. Napięcie to grozi porażeniem elektrycznym.</p>	
	<p>Użytkownik powinien zapoznać się z instrukcjami obsługi i konserwacji (serwisu), zamieszczonymi w dokumentacji towarzyszącej urządzeniu.</p>	
	<p>Uwaga: Instalacja może być wykonywana wyłącznie przez wykwalifikowanych pracowników obsługi, zgodnie z zasadami kodeksu National Electrical Code lub innych obowiązujących norm.</p>	
	<p>Odlączenie zasilania Niezależnie od wyposażenia w wyłącznik zasilania, prąd do urządzenia jest doprowadzany zawsze, gdy przewód zasilania jest podłączony do źródła zasilania; jednak urządzenie działa tylko wtedy, gdy wyłącznik zasilania jest włączony. Przewód zasilania jest głównym wyłącznikiem zasilania we wszystkich urządzeniach.</p>	

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## 1 PRODUCT INTRODUCTION

DVAS Series Digital Video Array is a high speed, fault tolerant RAID subsystem design. It uses a mid-plane design to eliminate the problems associated with cable interconnects. Unlike conventional RAID products, the DVAS Series disk array uses ATA disk drives to store RAID data, rather than high cost SCSI or Fiber Channel disks. Its advanced electronic soft-start technology makes hot-swappable ATA drives very reliable.

### 1.1 Models

Model	Number of DVRs Connected	Allocation of Storage
4 Hard Drive Model	1 DVR (Channel 0)	100% to Host Port 0
8 Hard Drive Model	1 DVR (Channel 0)	100% to Host Port 0
14 Hard Drive Model	2 DVRs (Channel 0 + Channel 1)	50% to Host Port 0 50% to Host Port 1

### 1.2 Accessories

The DVAS includes a controller board, power supply, SCSI cable, and specified number of hard disks.

Item	Type#
Controller Board	ACCCB
Power Supply	ACCP5
Hard Disk Assembly (160 GB or 300 GB)	(ACCDC016M or ACCDC030M)
SCSI cable	SCSIVHD50

### 1.3 Features

- RAID 5 Protection with up to 3.9 Terabytes of Video Storage
- Up to 14 Hot-swappable Disk Drives
- 19-in 3U Rack-mount Chassis
- Hot Spare and Automatic Rebuild
- Modular Design for Easy Service, with Optional Redundant Power Supply and Controller Board
- Web-based GUI with *Quick Configuration* page
- Dual Host Capability, Providing Storage for Two (2) DVRs
- Auto-terminating SCSI Ports
- ATA Mid-plane Design, for Added Reliability

## 2 UNPACKING

### 2.1 Safety Concerns

- Computer components and disk drives are sensitive to static charge. Take precautions to divert any electrostatic charge from your person before and while handling the components with your hands or any tools.
- Before removing Controllers or Power Supplies, ensure that the system is powered down and disconnected from the main socket.
- Ensure correct lifting methods are used when handling the DVAS Series disk array. Special care should be taken when removing the DVAS Series disk array from its packaging and positioning it in the required location.
- When installing DVAS Series disk array as a rack-mounted component, ensure that all fixtures are secure. All bolts and screws should be fully tightened. Failure to comply with this may result in the unit not being fully supported in the rack and could lead to the product dropping out of rack or falling onto other rack components.
- EMC Regulations require that all data and network cables be the shielded type. Special care should be taken to ensure that the network cable is shielded and that the shield is connected at both ends.



**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC SENSITIVE  
DEVICES

#### WARNING:

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

**NOTE:** Grounded wrist straps must be worn and proper ESD safety precautions observed when handling the electrostatic-sensitive printed circuit boards.



#### CAUTION: Lithium Battery

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

On receipt of your DVAS Series disk array, ensure that no damage has been sustained in transit and that you have received the following items:

- DVAS Chassis with Controller Board and Power Supply/Fan Assembly Installed
- Hard Disk Assemblies<sup>1</sup> (ACCDC016M or ACCDC030M)
- Blank Panels<sup>1</sup> (ACCBP)
- SCSI Cable (SCSIVHD50)
- Power Cords (2; America and European types)
- Mounting Hardware
- This Instruction Manual

<sup>1</sup>The supplied quantity is dependent upon the model purchased. The number of Hard Disk Assemblies and blank panels should total 14.

NOTE: For proper cooling of the unit, blank panels must be installed.

The shipping carton is the safest container in which to transport the unit. Save it and all packing materials for future use.



Figure 1 Components

## 2.2 Serviceable Parts

This product has no user serviceable parts. Any attempts to remove this product's cover may result in loss of warranty. If the unit ever needs repair service, contact the nearest Bosch Security Systems, Inc. Service Center for a return authorization number and shipping instructions.

## Service Centers

U.S.A.: Phone: 800-366-2283 or 408-956-3895  
 fax: 800-366-1329 or 408-956-3896  
 e-mail: NationalServiceCenter@ca.slr.com  
 Canada: 514-738-2434  
 Europe, Middle East & Asia Pacific Region:  
 32-1-440-0711

For additional information, see [www.boschsecuritysystems.com](http://www.boschsecuritysystems.com).

## 3 PHYSICAL COMPONENTS

### 3.1 Power Supplies

#### 3.1.1 Insertion

Pull the handle of the Power Supply Unit (PSU) so that it is at 90° to the main PSU unit. Line up the PSU with the guide rails in the DVAS Series. Insert the PSU gently until it comes to a halt, then close the handle and secure it in place with the attached screw.

#### 3.1.2 Removal



Turn off the power switch. Disconnect the power cord, loosening the cable clamp if necessary. Loosen the screw on the power supply by turning it counterclockwise. Pull out the handle of the PSU so that it is 90° to the chassis. While supporting the weight of the PSU during removal, use the handle to pull the power supply free from the chassis.



If your DVAS has the dual redundant power supply option, it is permissible to remove and replace a faulty power supply while the unit is operational. Only remove a power supply from a working unit if it is faulty and a replacement is on-site. Removing a PSU when no replacement is immediately available may result in overheating and shutdown. When removing a faulty power supply, be sure to remove the correct one; faulty power supplies have no green status LED illuminated on the rear panel.

## 3.2 RAID Controller

### 3.2.1 Insertion

A RAID controller should not be inserted while the unit is powered on. Shut down before replacing a faulty RAID controller.

Insert the RAID controller into its slot, lining up the metal runners with the internal guides. Firmly push the RAID controller fully into the chassis until the side clips click into place.

### 3.2.2 Removal



Power down before removing a faulty controller.

Push the controller side clips inward (towards each other). While supporting the weight of the unit, use the handles to pull the controller free from the unit.

## 3.3 Hard Drive Assemblies

### 3.3.1 Insertion

Align the disk carrier with an available disk slot. Ensure that the handle is open and the carrier push button is toward the bottom of the chassis. Push the disk carrier until fully inserted, then close the handle and push in the carrier button to secure the chassis in place.

### 3.3.2 Removal

Do not remove a disk while in operation within a RAID set, as this will cause the RAID set to degrade. Only remove a disk marked as bad by the GUI and having an amber LED illuminated beneath it. To remove a disk, push the button on the disk carrier, releasing the handle. Gently pull the bottom of the handle toward you and wait for ten seconds for the disk to stop spinning, then continue sliding the disk out of the chassis.



Disk drives are sensitive to static electricity and physical shock. Observe proper ESD precautions and handle with care.

## 4 PRODUCT OVERVIEW

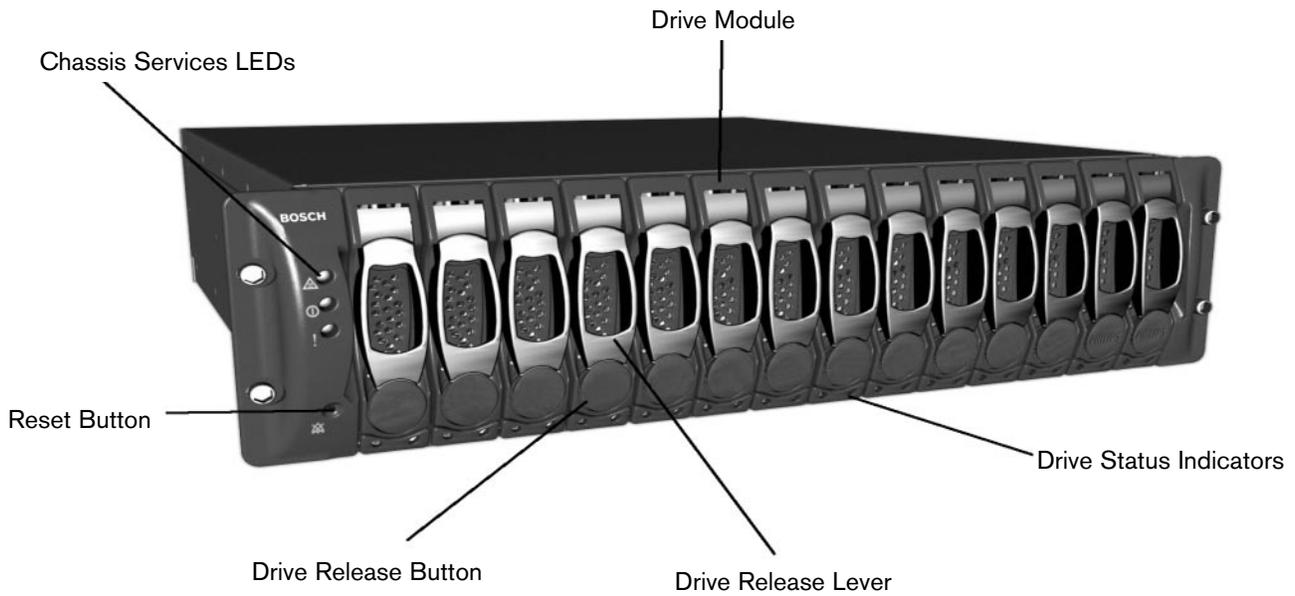


Figure 2 DVAS Front

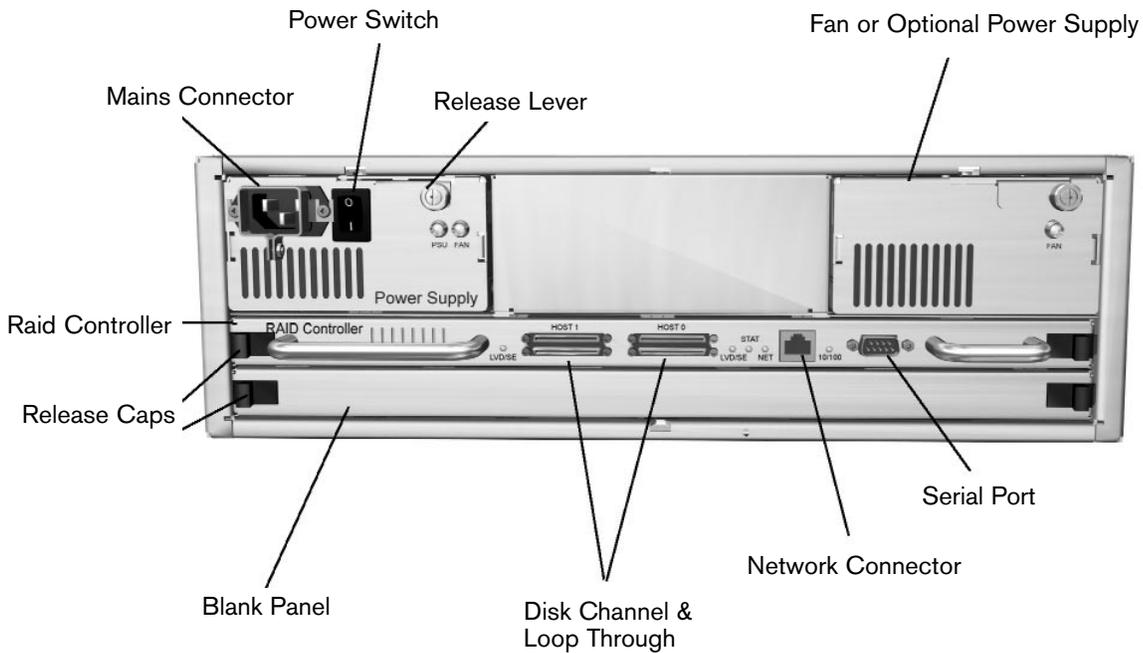


Figure 3 DVAS Rear

## 5 LED DISPLAY

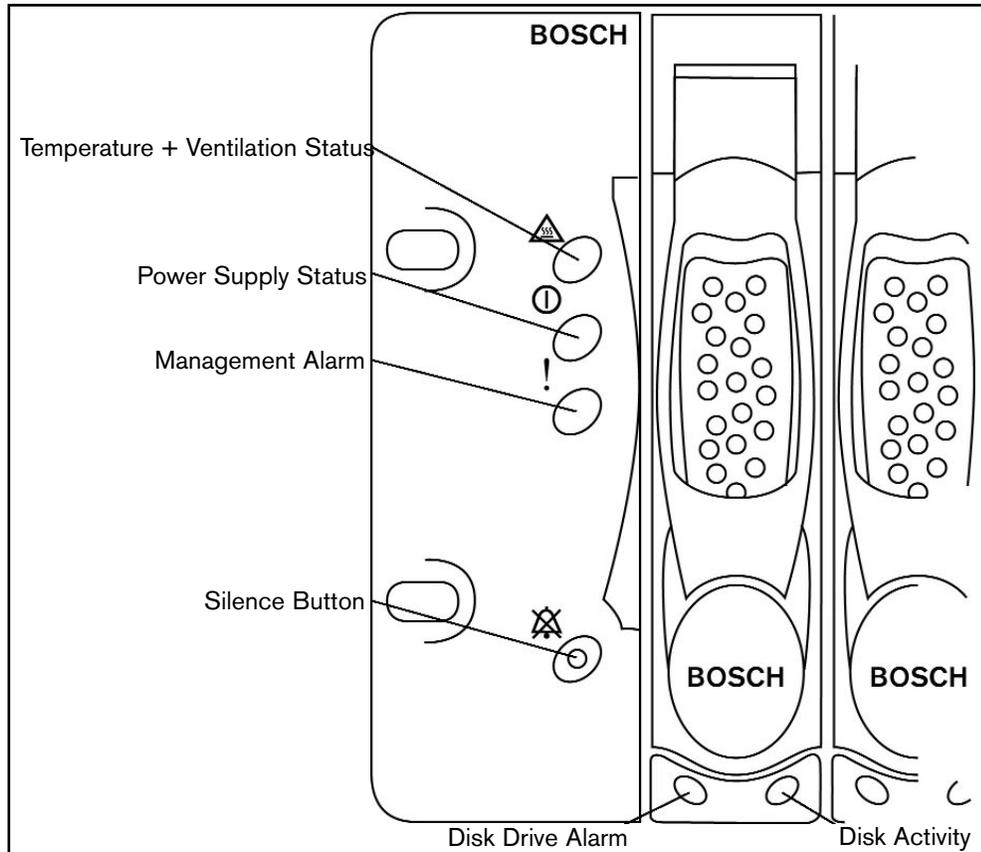


Figure 4 LED Display

### 5.1 Status Indicators

LED	Status
<b>Temperature and Ventilation Status</b>	<p>GREEN LED indicates that blowers are operating at an acceptable RPM, and the internal temperature sensors are within acceptable limits.</p> <p>Alternating GREEN and RED LED indicates a predicted blower failure, or rapid temperature increase.</p> <p>RED LED indicates that a blower has failed, or the unit is too hot; an audible alarm will also sound.</p>
<b>Power Supply Status</b>	<p>GREEN LED indicates both power supplies are functional.</p> <p>RED LED indicates either power supply has failed; an audible alarm sounds. In this case, the LEDs on each power supply should be examined to determine which has failed.</p> <p><b>IMPORTANT:</b></p> <ul style="list-style-type: none"> <li>Inadvertently removing the functional, surviving power supply will result in system failure and possible data loss.</li> <li>A failed power supply or blower should be replaced as quickly as possible. Do not remove the failed power supply until a replacement is on hand. Continued operation with a failed power supply or blower will result in a dramatic, irreversible reduction in system life.</li> </ul>
<b>Management Alarm</b>	<p>GREEN LED indicates normal status.</p> <p>RED LED indicates a RAID controller board error.</p>
<b>Silence Button</b>	Insert a paper clip to silence the audible alarm, or to confirm creation of a RAID set.
<b>Disk Drive Alarm</b>	AMBER LED indicates that a drive is suspected to be bad.
<b>Disk Drive Activity</b>	GREEN LED indicates that an installed drive is in a 'ready' state. During activity, the LED will flicker.

## 6 BEFORE YOU BEGIN

Ensure the following:

- Installation environment is less than 40°C.
- The front drive bays and rear ventilation panels are not obstructed.
- Main Power is sufficient to handle the load of the system.
- Rack is properly grounded.

Tips for Rack-mounting:

- Remove the power supplies and hard disk canisters to make the system lighter.
- Request assistance to lift the unit into the rack.
- Do not to trap fingers or items of clothing.
- Ensure all fixtures are secure and bolts and screws are fully tightened.

### 6.1 Basic Installation Steps

1. Attach the SCSI cable from the DVR to the DVAS.

If only one DVR is connected to the DVAS, ensure that the cable is connected to Channel 0. Refer to **SECTION 4.0, PRODUCT OVERVIEW**.

2. Attach the power cord(s) to the disk array and apply power to the unit.

If an audible alarm is heard, the DVAS unit does not have a RAID group configured, or no disks are present.

3. Wait one minute and apply power to the DVR unit.
4. Configure the DVR for archiving (see DVR instruction manual).
5. Depending upon the model purchased, the DVAS unit is preconfigured.

For your convenience, DVAS disk arrays are shipped with drives preconfigured for RAID.

These configurations suit most applications, but if not, or to use additional features, you must set up the network connection and access the GUI. See **SECTION 6.2, Setting up the Network Connection**.

Use the GUI interface to:

- Add a Hot Spare.
- Add Drive(s) (if storage is expanded, the entire RAID must be reconstructed).
- Change the allocation of storage (only applicable if two DVRs are connected to a single DVAS).
- Monitor the DVAS system.
- Use the e-mail alert feature (warnings and error messages can be e-mailed to a specified address).
- Attach two DVRs to a DVAS0416 or a DVAS0816 unit (see *Quick Configuration* page).
- Attach only one DVR to a DVAS1416 (see *Quick Configuration* page).

### 6.2 Setting up the Network Connection

To use the web-based GUI, perform the following:

1. Attach a network cable from the DVAS's Ethernet port to a network. A simple crossover cable can be used from a PC to the DVAS's Ethernet port.
2. Access any computer on the network.

If no crossover cable was used to connect the unit to a network, the network's subnet mask may not allow access to this IP address without some reconfiguration. Access the DVAS Series disk array via a shell or DOS prompt on the host computer and enter the following command.

Windows®:

```
route add 10.11.12.13 mask 255.255.255.255 <workstation IP number>
```

Linux:

```
/sbin/route add 10.11.12.13/32 gw <workstation IP number>
```

Solaris:

```
route add 10.11.12.13 mask 255.255.255.255 <workstation IP number>
```

Where <Workstation IP number> refers to the IP address of the workstation being used. The DVAS Series disk array's web interface is now accessible via a standard browser (Netscape or Internet Explorer).

Model	Number of DVRs Connected	Allocation of Storage
4 Hard Drive Model	1 DVR (Channel 0)	100% to Host Port 0
8 Hard Drive Model	1 DVR (Channel 0)	100% to Host Port 0
14 Hard Drive Model	2 DVRs (Channel 0 + Channel 1)	50% to Host Port 0; 50% to Host Port 1

### 6.3 Manually Setting the IP Address

Using a web browser program (Netscape or Internet Explorer), type the unit's IP address in the URL and press **GO** (the default IP address is 10.11.12.13).



Figure 5 Setting the IP Address

When the login page is displayed, click **Login** to continue; by default, no user name or password is required.

From this *Main* page, click **System**, located at the middle of the left-hand side of the screen.

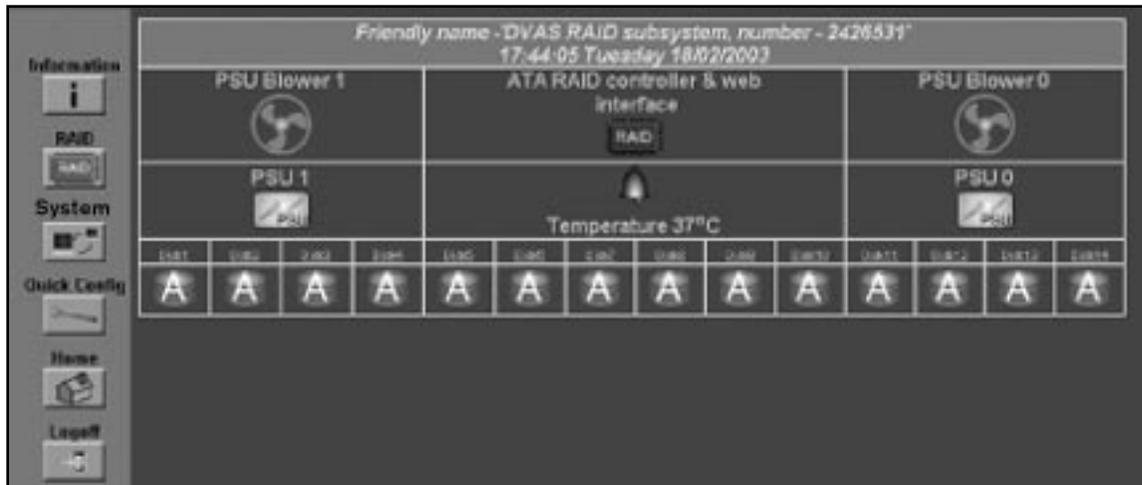


Figure 6 System Setting

Then select the *Net Settings* tab.

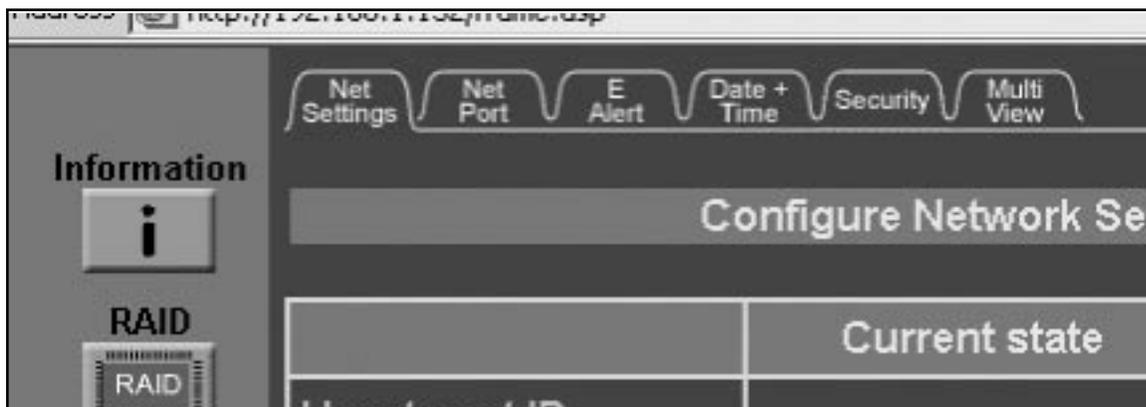


Figure 7 Net Settings

By default, the *Net Settings* new page requests a user name and password:

User name = ADMIN

Password = PASSWORD

The main frame will change to the *Network Settings* page. Insert the new settings into the text boxes.

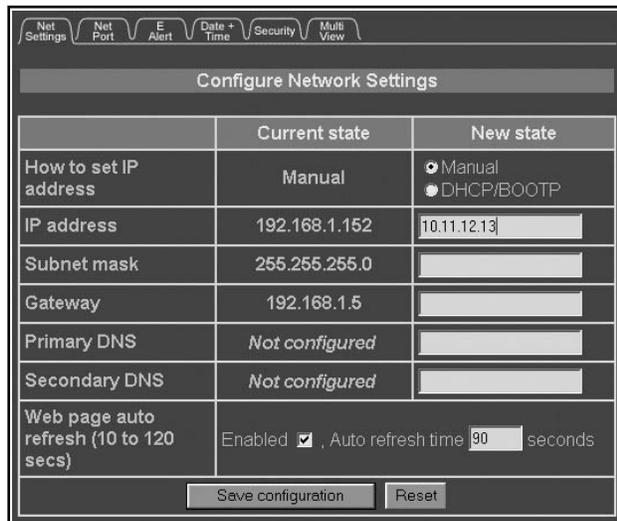


Figure 8 Network Settings

**How to Set IP Address**

Decide whether to use DHCP (Dynamic Host Configuration Protocol), or a manually set IP address. Use the radio buttons to select the desired value. If choosing DHCP, no further values are required. It is recommended that you have your DHCP server reserve a static IP for your DVAS Series disk array.

**IP Address**

If setting up the network manually, enter a free IP address into the text box.

**Subnet Mask**

Type the appropriate subnet mask for the class of your network. In most cases 255.255.255.0 is fine, but Bosch recommends contacting your IT administrator for further assistance.

**Gateway**

Type the IP address of your Internet gateway here.

**Primary/Secondary DNS**

Type the IP address of both the Primary and Secondary DNS into the text boxes.

**Web Page Auto Refresh**

Determines whether the web pages should be reloaded at a specified interval, to show any changes to the system on-screen. If desired, ensure that the **Enabled** box is checked. A value (number of seconds) must be specified, to indicate the frequency of refreshing the web page.

When all settings have been updated, press **Save Configuration**.

Restart the system to activate these changes.

**6.4 Quick Configuration**



**THIS PROCESS CLEARS ALL DATA!**

The DVAS can be fully configured with the **Quick Config** function. To access this function, click **Quick Config**, in the left-hand menu of the main web page.

When the *Quick Config* page loads, select one of two configurations by clicking on one of the page tabs at the top of the page. Configuration options are:

- 1 DVR CONFIG: Select if your unit is to be used with a single DVR.
- 2 DVR CONFIG: Select if you wish to attach two DVRs to the unit.

The selected *DVR Config* tab displays the status of the configuration, identifying the settings to be configured.

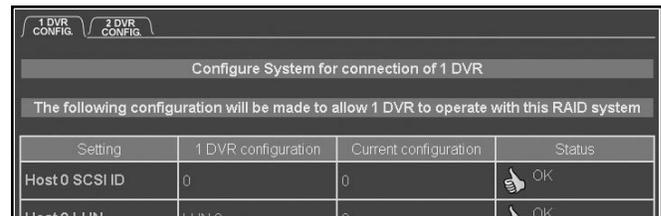


Figure 9 DVR Config

The status column (on the right side) will display either *OK*, or *Needs Configuring*. If all settings report *OK*, there is no need to continue. To continue with the automatic configuration, scroll to the bottom of the *Quick Config* window.

Check the check box and click *Quickstart configure for (x) DVR*.

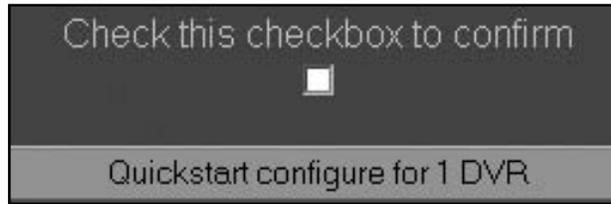


Figure 10 Quick Config Confirmation

*Quick Config* adjusts the settings required to configure the disk array to work with 1 or 2 DVRs. If prompted for a system reboot, manually cycle the power switches. Once the system reboots, *Quick Config* has finished.

## 6.5 Setting Up SCSI Interfaces

The DVAS Series disk array's SCSI settings are preconfigured to work with Bosch DVRs, without any adjustments.

To accommodate future products, the SCSI settings may be altered. This section explains each setting.

To change the SCSI setting select **System** on the DVAS Series disk array's main page.



Figure 11 SCSI Interfacing

Select the *SCSI* tab to access the SCSI settings.

When the *Configure SCSI* page is loaded in the main frame, use the drop down menus to select the new setting for the SCSI host channels.

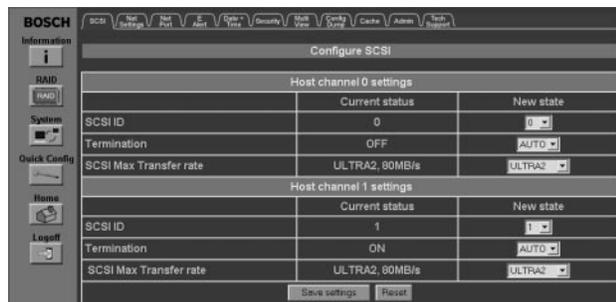


Figure 12 SCSI Settings

### SCSI ID

Use the drop down menu to choose the desired ID.

### Termination

**AUTOMATIC** is the default setting and will work with all Bosch DVRs.

### SCSI Max Transfer Rate

Defines the maximum speed of the SCSI bus. The default setting for the DVAS is **Ultra2**. This setting should only be changed if the DVR specifies a different setting.

Click **Save Settings** to save these settings.

Power cycle the unit so the new Network and SCSI settings are applied.

## 6.6 Creating a RAID Set

As stated earlier, the DVAS is shipped with drives preconfigured for RAID. However, if any of the following occurs, you must create a RAID set.

- New drives have been added, and are to be part of the RAID set.
- The RAID set was destroyed (this could happen if two or more drives failed at the same time).

To create a RAID set, the default volume and RAID set must be deleted. To do this, click **RAID**, on the left-hand side of the main page, and select the *Delete Volume* tab from the top bar.

The configured volumes will be listed. Click the radio button of the volume to be deleted, then **Delete Volume**. Respond to the confirmation message as it appears.

When the new page is displayed, click **Delete Array**. Click the radio button of the array to be deleted, then click **Delete RAID Array**.

NOTE: Only one array can be deleted at a time.

When prompted, confirm the deletion by clicking the tick box in the center of the screen, then **Confirm Delete Command**. To cancel the command, click **CANCEL Delete**.

Select the *Add Array* tab.

Use the tick boxes to select the drives to be used in the array.

NOTE: Unused disks are not automatically used as spares.

### Select RAID Level

Choose the RAID level that best suits your application via the drop down menu.

### Select Stripe Size

Current DVRs require a stripe size of 64KB, although future products may require a different setting. Use the drop down menu to select the desired stripe size for the array.

Once all settings are complete, press **Create RAID Set** to continue.



Figure 14 Creating a RAID Set

The RAID set will begin building. Array construction can take several hours to complete. Monitor the progress from the *Progress* page by clicking **Information**, at the left-hand side of the page. Select the *Progress* tab to show an overview of all utilities running on the array.

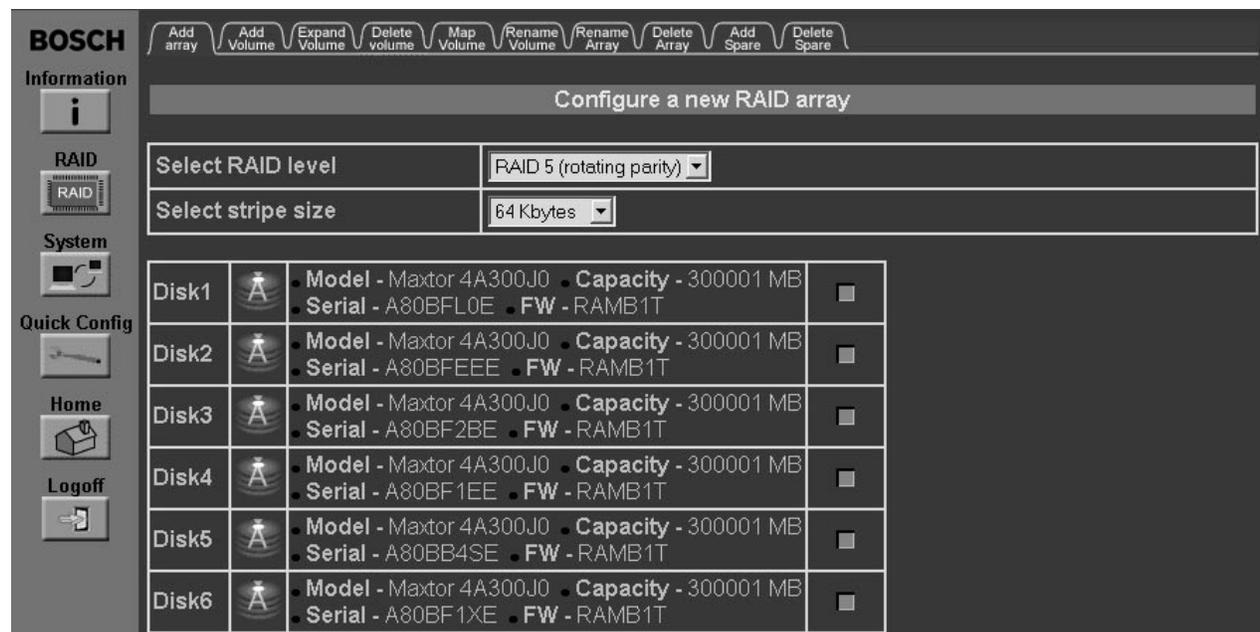


Figure 13 Configuring a RAID Array

**Stages of Array Mapping:**

- **Array Construct:** Writes the RAID stripes to disk.
- **Array Verify:** Verifies that data can be read from each block of the array.

Dependant on disk capacity, it can take up to six hours to create a RAID Set.

**6.7 Adding and Mapping a Volume**

NOTE: It is recommended to use the *Quick Configuration* page for adding and mapping volumes. This section may be used for future DVRs requiring more sophisticated volume mapping.

New arrays must be partitioned, via *ADD VOLUME*. A maximum of 16 volumes can be created (with a maximum of eight volumes per channel). Once a volume has been created, it must be mapped to a LUN or LUNs, and Host Channel or Channels.

To create a volume, click **RAID**, at the left-hand side of the main page, then select the *Add Volume* tab.

**Reserve an optional free space area at the beginning of the new volume for future expansion of a previous volume.** A volume can only be expanded in this way. Data on a volume must be sequential; it is not possible to add data on an array unless it directly follows the volume.

**Select logical unit number (LUN) for new volume on host 0/1.** Use the drop down menu to define the LUN for each volume, on one or both Host Channels.

A LUN can only be accessed by one DVR.

To confirm your choices, select the *Add Volume* tab. To create more than one array, enter this page again using the left-hand menu.

Once the volumes have been created and mapped, restart the computer to access the DVAS Series disk array.

Create Logical Volume	
Enter the name for the new volume	<input type="text"/>
Enter the size of the new volume in Mega bytes (MB)	<input type="text"/> MB
Reserve an optional free space area at beginning of the new volume for future expansion of a previous volume.	<input type="text"/> MB
Select logical unit number (LUN) for new volume on host 0	UNMAPPED ▾
Select logical unit number (LUN) for new volume on host 1	UNMAPPED ▾
<input type="button" value="Create Volume"/> <input type="button" value="Reset"/>	

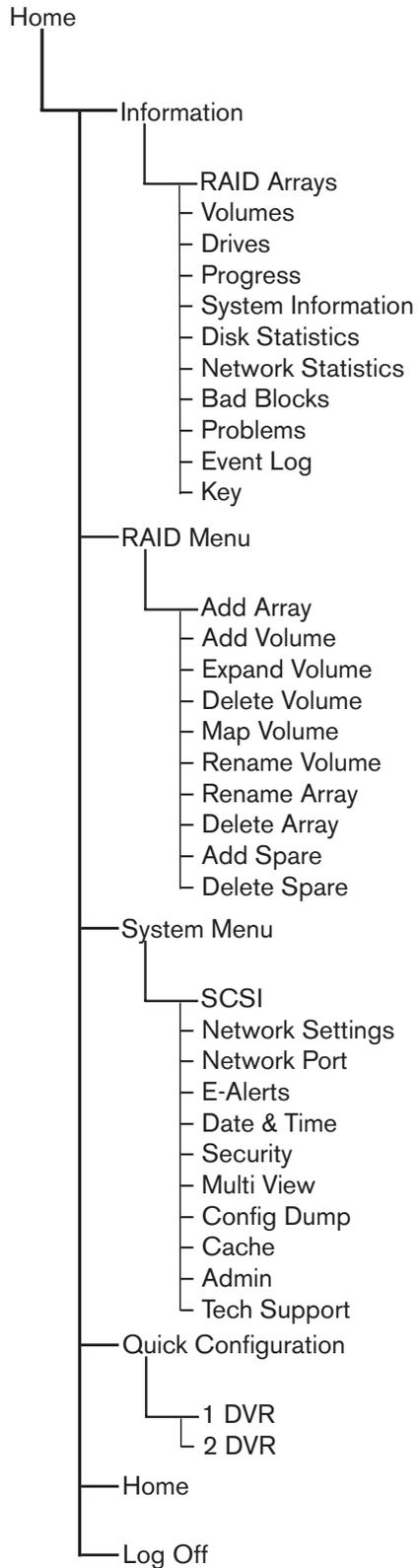
Figure 15 Creating Volume

**Enter the name for the new volume** to define the friendly name of the volume, for use in the GUI.

**Enter the size of the new volume in Megabytes (MB).** You may create one volume that is the maximum size of the array, or a number of volumes. The remaining free space on the array is shown at the bottom of the screen.

## 7 Bosch GUI (Graphic User Interface)

### 7.1 Menu Tree



## 7.2 Information Menu

Click **Information** to view various information. No edit capability is available from this view.

Use the tabs to access the various pages.

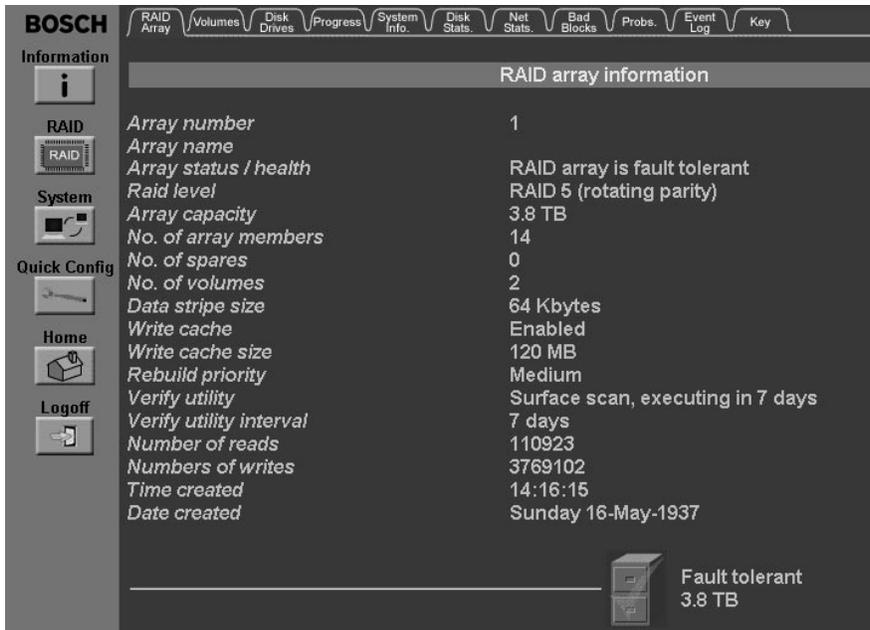


Figure 16 Information Menu

## 7.3 RAID Array

This page provides information on the created array.

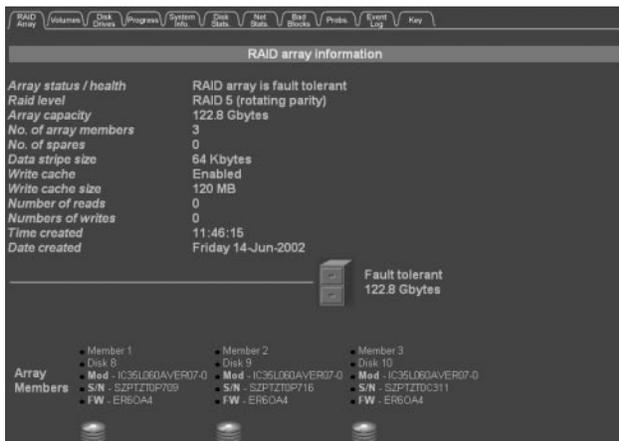


Figure 17 RAID Array Information

Available Information:

Information	Description
Array Number	Reference number, normally given in order of creation.
Array Name	User-defined label for array.
Array Status / Health	Current health value. Fault Tolerant/Not Fault Tolerant/Critical/Offline.
RAID Level	Displays the RAID level of the array.
Array Capacity	Displays array capacity in Gigabytes (GB).
No. of Array Members	Displays the number of disks in the array.
No. of Spares	Displays total number of spares for the array.
No. of Volumes	Displays total number of configured volumes for the array.
Data Stripe Size	Displays stripe size for the array.
Write Cache	Displays whether write caches are enabled or disabled.
Write Cache Size	Displays the amount of write cache.
Rebuild Priority	Displays the user-definable rebuild rate.
Verify Utility	Displays the time and type of the next scheduled array verification.
Verify Utility Interval	Displays frequency of verification.
Time Created	Displays the time of the array creation.
Date Created	Displays the date of the array creation.

You may need to scroll the browser to the right to see all of the disks.

### 7.4 Volumes

This page provides information on the volumes within the created array.



Figure 18 Volume Array

Available Information:

Information	Description
Volume Name	User-defined name for the volume.
Volume Capacity	Size of the volume in Megabytes; [Gigabytes in brackets].
Percentage of Total Array Used	Displays the percentage of the entire array capacity that's used by the volume.
Host 0/1 Target ID: LUN	Displays the SCSI ID and LUN of the array, on both host channels.
Volume Serial Number	Displays the volume serial number, which may be required for some SCSI tasks.
Volume Creation Time	Displays the time of volume creation.
Volume Creation Date	Displays the date of volume creation.

### 7.5 Drives

This page provides extended information about the ATA disks installed within the array.

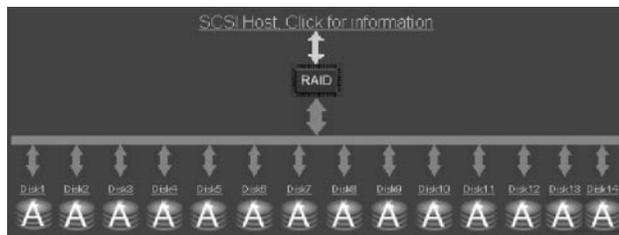


Figure 19 Drive Array

Click on a drive to view its information.



Figure 20 Drive Information

Available Information:

Information	Description
Status	Displays ownership status.
Capacity	Displays raw capacity of disk drive.
Model	Displays manufacturer's drive model number.
Serial Number	Displays serial number of the drive.
Firmware	Displays current firmware level of drive.
R/W Transfer Retries	Displays number of transfer retries (normally 0).
R/W Media Retries	Displays number of media retries (normally 0).

R/W Transfer Retries and R/W Media Retries can indicate problems with a disk. Retries are generally not harmful, but more than ten retries in a 24-hour period are cause for concern, particularly if one or two disks consistently have a higher retry count than the others. Contact technical support for further guidance.

### 7.6 Progress

This page shows the progress of certain array utilities. The following progress is viewable on this screen:

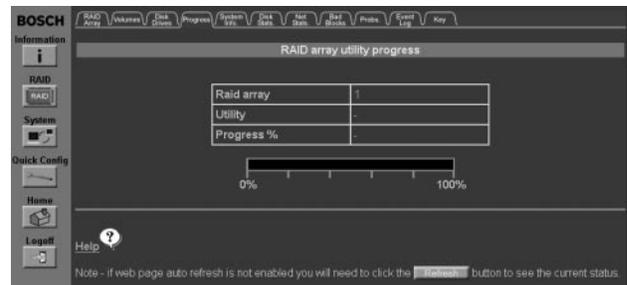


Figure 21 Array Utilities

- Array Construct (create)
- Array Verify
- Array Reconstruct (rebuild)
- Consistency check

## 7.7 System Information

This page provides information regarding non-disk hardware.

Element	Information	Status
Cooling	PSU Blower0, RPM - 3500	OK
Cooling	PSU Blower1, RPM - 2789	OK
Cooling	Controller Blower0, RPM - 2122	OK
Power	PSU0 state	OK
Power	PSU1 state	OK
Voltage	12V Rail is at 11.43V	OK
Voltage	5V Rail is at 4.98V	OK
Voltage	3V3 Rail is at 3.25V	OK
Voltage	CPU core is at 1.65V	OK
Voltage	Battery is at 2.88V	OK
Temperature	Controller is 36°C	OK
Temperature	Battery is 34°C	OK
Charge Mode	Battery is not charging	OK
Time	11:41:07	-
Date	Tuesday 02/01/2001	-
Firmware revision	4p12	-
Serial number	002405F8	-
Write cache	248 MB	Enabled
SCSI host 0 ID	0	-
SCSI host 1 ID	0	-
SCSI host 0 termination	ON	-
SCSI host 1 termination	ON	-
SCSI host 0 max rate	ULTRA160, 160MB/s	-
SCSI host 1 max rate	ULTRA160, 160MB/s	-
Ethernet address	00-04-02-D0-05-F8	-
How to set IP addresses	Manual	-
HTTP IP address	192.168.1.152	-
Subnet mask	255.255.255.0	-
Gateway IP address	192.168.1.5	-
Primary DNS IP address	<i>Not configured</i>	-
Secondary DNS IP address	<i>Not configured</i>	-

Figure 22 System Information

Available Information:

This page may help with troubleshooting.

Information	Description
Cooling	Displays the status of the blowers.
Power	Displays the status of the power supplies.
Voltage	Displays Rail, CPU, and Battery voltages.
Temperature	Displays controller and battery temperature.
Charge Mode	Displays battery charging mode.
Time	Displays current time.
Date	Displays current date.
Firmware version	Displays the firmware version.
Web GUI version	Displays the version of the WEB GUI.
Write Cache	Displays the write cache amount and status.

## 7.8 Disk Statistics

The page shows information on the disks in the system.

Disk Statistics							
Disk Number	IOs			Transfer Retries		Media Retries	
	Read	Write	Others	Read	Write	Read	Write
Disk1	1156838	1279331	1883849	0	0	0	0
Disk2	1150111	1268646	1883849	0	0	0	0
Disk3	1137899	1273777	1883849	0	0	0	0
Disk4	1136745	1268276	1883849	0	0	0	0
Disk5	1130432	1266596	1883849	0	0	0	0
Disk6	1121335	1271105	1883849	0	0	0	0
Disk7	1110126	1264787	1883849	0	0	0	0
Disk8	1105860	1260875	1883849	0	0	0	0
Disk9	1109764	1270816	1883849	0	0	0	0
Disk10	1109483	1268127	1883849	0	0	0	0
Disk11	1107950	1265222	1883849	0	0	0	0
Disk12	1102857	1261336	1887945	0	0	0	0
Disk13							
Disk14							

Figure 23 Disk Statistics

Each disk displays its Reads, Writes, Others, Transfer Retries, and Media Retries. If a disk is generating errors, it may fail sometime in the future. RAID 5 configurations should distribute reads and writes evenly among all of the drives.

Available Information:

Information	Description
IOs	Displays the number of requested IOs by the host system. The individual figures represent each request. Note that a single request may be up to 255 blocks long.
Transfer Retries	Displays the number of failure instances due to a problem between the RAID controller and the ATA disk; normally 0.
Media Retries	Displays the number of failure instances due to bad surface media on the hard disk; normally 0, although a moderate amount of retries is acceptable.
Read	Number of host reads.
Write	Number of host writes.
Other	Number of accesses to RAID configuration and/or GUI information (event log, etc.) on the disk.

## 7.9 Network Statistics

This page provides information about the network link. If you are having problems with the network, this page may be helpful.

Transmitted		Packets
Successful		309458
Collisions		924
FIFO errors		0
Carrier errors		0
Window errors		144
Other errors		0
Received		Packets
Successful		290097
Overflow errors		0
FIFO errors		0
Length errors		0
CRC errors		155
Frame errors		140
Other errors		0

Figure 24 Network Statistics

### Available Information:

Information	Description
Collisions	Counter of packet collisions when two network devices transmit at the same time.
FIFO errors	Counter of DMA (Direct Memory Access) transfer errors when loading the FIFO (First In First Out buffer) on the Network IC.
Carrier errors	Counter of errors from the data carrier signal due to being outside the limits or lost during transfer.
Window errors	Counter of times the Network IC runs out of FIFO space.
Overflow errors	Counter of times the Network IC runs out of FIFO space.
Length errors	Counter of packets less than 64bytes or greater than 1518bytes.
CRC errors	Counter of packets with bad CRC (cyclic redundancy check); count increases when a packet containing corrupt data is received.
Frame errors	Counter of frame alignment errors caused by a frame without the correct number of bytes, but still within the length limit.

## 7.10 Bad Blocks

Bad blocks are sections of the disk that data can no longer be read from or written to. A DVAS array automatically remaps single bad blocks to a spare blocks portion of the disk when using a parity-protected RAID level. However, if two bad blocks are discovered at once, that block of data is lost. This is most likely to happen during a rebuild, or when one disk is missing and another disk has a media error. In general, bad blocks are unlikely to occur.

This page shows the number of bad blocks for each drive. If there are bad blocks present, their location can be viewed by clicking **Details** (in the right-hand column).

Discovered bad blocks			
Disk No.	Total number of bad blocks	Newly discovered bad blocks	Bad block details
Disk 1	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 2	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 3	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 4	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 5	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 6	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 7	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 8	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 9	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 10	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 11	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 12	0 blocks - 0 Kbytes	0 blocks - 0 Kbytes	<a href="#">Details</a>
Disk 13			<a href="#">Details</a>
Disk 14			<a href="#">Details</a>

Figure 25 Bad Blocks

## 7.11 Problems

This page summarizes any problems encountered by the DVAS. In normal circumstances, this page should be empty.

Number	Description
1	RAID array is in a critical / degraded state (insert a spare disk to rebuild)

Figure 26 DVAS Problems

## 7.12 Key

The key is a legend of all symbols used in the Bosch web interface.

## 7.13 Event Log

This page displays controller events (disk information, RAID status changes, power supply status changes, network events, etc.).

Events are placed in chronological order, newest first. The event log can be saved as text by highlighting, copying, and pasting into notepad, or by clicking **Download Event Log and Config Dump** on the event log page.

**BOSCH** RAID Array Volumes Disk Drives Progress System Info. Disk Stats. Net Stats. Bad Blocks Probs. Event Log Key

**Information**

**RAID**

**System**

**Quick Config**

**Home**

**Logoff**

**Event log**

- No date filter
- Show events from last day
- Show events from last week
- Show events from last month
- Show event type icons
- Show whole log
- Show warnings and errors
- Show warnings, errors and system events

Download event log and config dump Show log

```

0000: 19-Dec-2003 at 20:51:43:(S): Surface scan for RAID set 1 has timed out
0001: 16-Dec-2003 at 15:42:50:(I): Surface scan for RAID set 1 has started
0002: 10-Dec-2003 at 06:46:28:(S): websTimeout: -957797 0 1071038788
0003: 09-Dec-2003 at 15:11:51:(I): Surface scan for RAID set 1 has finished
0004: 07-Dec-2003 at 14:10:28:(S): Surface scan for RAID set 1 is switching to 636/min
0005: 05-Dec-2003 at 22:30:12:(I): Surface scan for RAID set 1 has started
0006: 01-Dec-2003 at 22:08:02:(I): RAID set 1 started: level 5 with chunk size 64 Kbytes using 14 disks
0007: 01-Dec-2003 at 22:08:02:(S): cachesize 110100480, write_buffers 240
0008: 01-Dec-2003 at 22:08:01:(S): Network: IP address configured as 10.11.12.13
0009: 01-Dec-2003 at 22:08:01:(I): Network:fixed link speed=10 duplex=half established
0010: 01-Dec-2003 at 22:08:01:(I): IDE inquiry disk 1: Model Maxtor 4A300J0 , Firmware RAMB1T

```

Figure 27 Event Log

## 8 RAID MENU

This page is used to create or alter settings related to the RAID array. To access the *RAID* page, click **RAID**, on the left-hand side of the main screen.

### 8.1 Add Array

To create RAID arrays, from the *Add Array* tab, select the drive(s) to be used by clicking the appropriate check box(es). Arrays can only be built when there are at least three disks. Disks allocated as spares cannot be used without first being deleted.

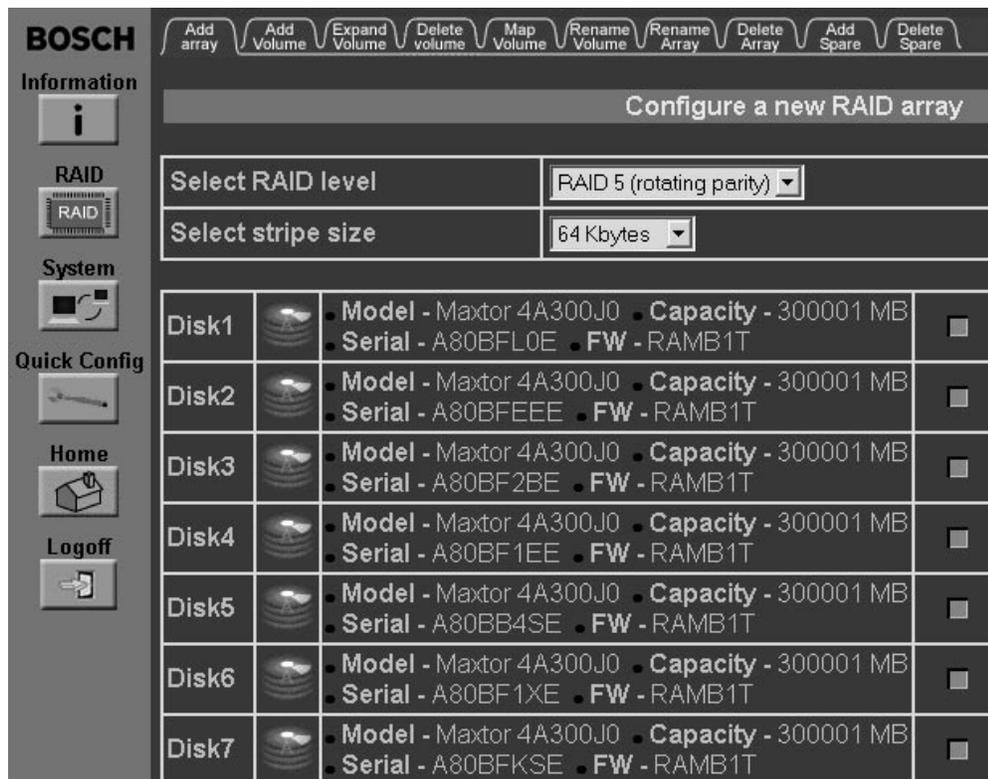


Figure 28 Configuring an Array

#### Select RAID Level

Allows selection of the RAID level for the array. Currently, RAID 0, 4, and 5 are available. Most server applications will work best with RAID 5. RAID 4 is suitable for lots of sequential transactions, but is not the ideal choice for server environments. RAID 0 is for users who need speed, not redundancy.

#### Select Stripe Size

Stripe size for the array designates the amount of data written to a single disk, before moving on to the next. Sequential access benefits from a smaller stripe size, whereas random access benefits from a larger stripe size. Bosch DVRs require 64KB.

Click **Create RAID Set** to continue. The RAID set will start to build. Array construction can take several hours to complete. Monitor the progress via the *Progress* tab, by clicking **Information**, at the left-hand side of the page. Select the *Progress* tab to show an overview of all utilities running on the array.

#### Stages of Array Mapping:

- Array construct: Writes RAID stripes to disk.
- Array verify: Verifies that data can be read from each block of the array.

Depending on disk capacity, it can take up to six hours to create a RAID Set.

## 8.2 Add Volume

To add a volume, you must have an array create free space available. To create an array, first click the radio button of the array, from the top of the page.

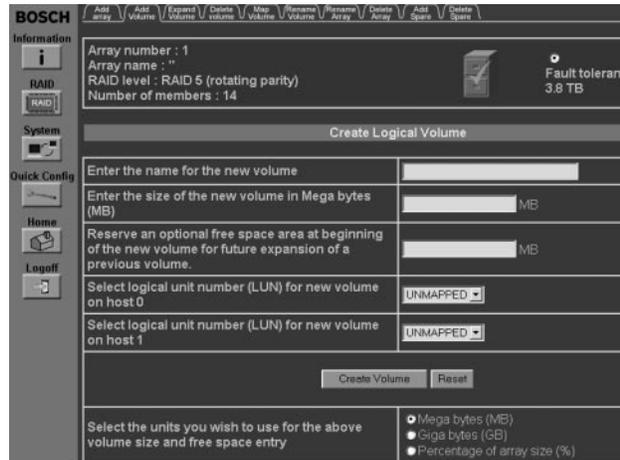


Figure 29 Creating a Volume

Once the array has been selected, scroll to view the amount of space available for each array. With this knowledge, use the following information to define the volume parameters.

### Enter the Name for the New Volume

### Enter the Size of the New Volume in Megabytes (MB)

Defines the size of the new volume in Megabytes.

### Reserve an Optional Free Space Area at Beginning of the New Volume for Future Expansion of a Previous Volume

Defines the amount of free space to be reserved for expansion of the previous volume.

### Select Logical Unit Number (LUN) for New Volume on Host 0/1

Defines the LUN for each volume on either or both Host Channels. Use the drop down menu to select each LUN.

A specified LUN can only be accessed by one DVR.

To confirm your choices click **Create Volume**.

## 8.3 Expand Volume

To expand the capacity of a volume, a volume must have been created, with free space available before the beginning of the next volume. If you only have a volume with free space, this is acceptable.

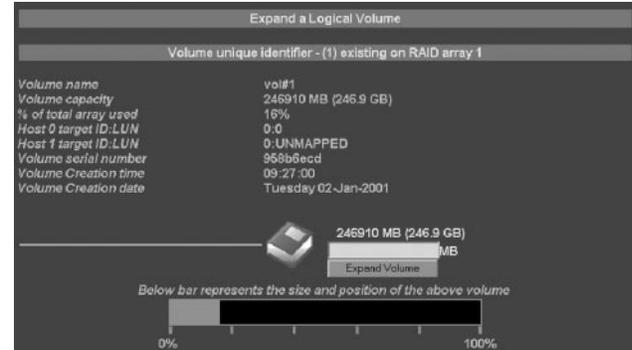


Figure 30 Expanding a Volume

Enter the amount of MB to expand the volume by. Click **Expand Volume** to advance to the confirmation page. Select the check box, then click **Confirm Expand Command** to continue.

## 8.4 Delete Volume

Deleting a volume destroys all data on the volume. Use this command only if you are sure you wish to delete this information.

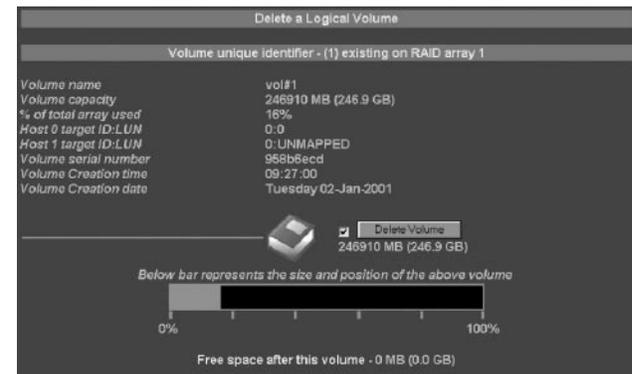


Figure 31 Deleting a Volume

Check the box of the volume to be deleted, then click **Delete Volume** to continue. Confirm by selecting the check box, then click **Confirm Delete Command**.

## 8.5 Map Volume

Although this page is functional, it is recommended to use the *Quick Config* page.

To be accessed, each volume must be mapped to a LUN on at least one host channel. If you failed to map a volume when it was created, or want to change the mapping, use this page.

Volume Details	Host Channel 0 LUN (SCSI ID 0)	Host Channel 1 LUN (SCSI ID 1)
 VolID(1), Name : 'DVR#1' On array : 1 Capacity : 1949573 MB, 1949.5 GB	LUN 0	UNMAPPED
 VolID(2), Name : 'DVR#2' On array : 1 Capacity : 1949573 MB, 1949.5 GB	UNMAPPED	LUN 0

Figure 32 Mapping Logical Volumes

Use the drop down menus for each volume to select the LUN for each Host Channel. A maximum of eight LUNS can be applied per channel. Selecting **UNMAPPED** causes inaccessibility of the selected LUN over that channel. Click **Save Settings** to confirm changes.

Changes are made immediately, so changing the LUN of a volume already in use could create a problem with the DVR.

## 8.6 Rename Volume

This page is used to supply a user-friendly name for a volume.

Volume Details	New name
 VolID(1), Name : 'DVR#1' On array : 1 Capacity : 1949573 MB, 1949.5 GB Host0 target ID : 0, LUN 0	DVR#1
 VolID(2), Name : 'DVR#2' On array : 1 Capacity : 1949573 MB, 1949.5 GB Host1 target ID : 1, LUN 0	DVR#2

Figure 33 Renaming a Volume

To change the name of a volume, simply type the new name into the text box and click **Save Settings** to continue.

### 8.7 Rename Array

Use the *Rename Array* tab to change the user-defined name of each configured array.

To rename an array, enter the new name of the array in the text box and click **Save Settings**.

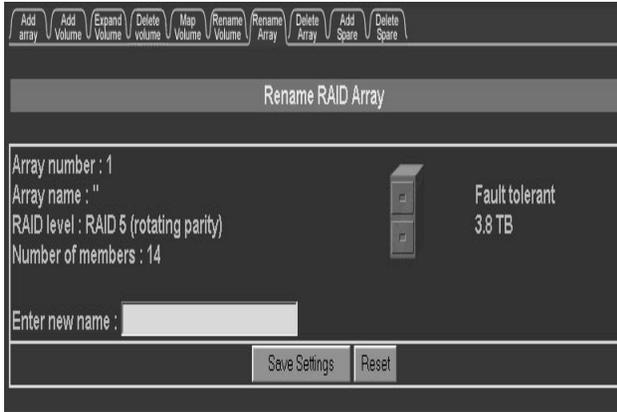


Figure 34 Renaming an Array

### 8.8 Delete Array

Use the *Delete Array* tab to delete an entire array. This feature (and others) can be disabled via the *GUI Mode* tab of the *System Settings* menu. An array can only be deleted when all volumes configured on it have been deleted.



Figure 35 Deleting a RAID Array

To delete an array, click the radio button of the array to be deleted, then click **Delete RAID Array**. Note that only one array can be deleted at a time. When prompted, confirm the deletion by clicking the tick box in the center of the screen, then click **Confirm Delete Command**. To cancel, click **Cancel Delete**.

### 8.9 Add Spare

Use the *Add Spare* tab to configure a hot spare, which is a disk used to rebuild data when a RAID disk fails.

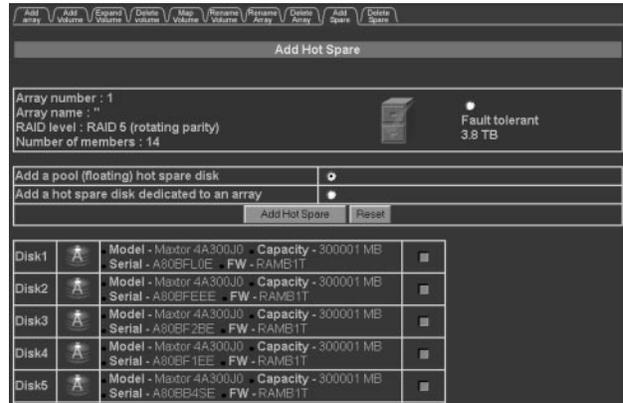


Figure 36 Adding a Hot Spare

The two types of hot spares are pool spares and dedicated spares. Pool spares can be used to rebuild any array in the event of a disk failure. A dedicated spare is only used to rebuild the array that it is dedicated to.

To add a pool spare, click the radio button adjacent to the text *Add a pool (floating) hot spare disk*, then scroll down and click the tick button of the unused disk to be added as a spare. Click **Add Hot Spare**.

To add a dedicated spare, click the radio button adjacent to the text *Add a hot spare disk dedicated to an array*. Click the radio button of the array to add a dedicated spare to, then scroll down and click the tick button of the unused disk to be added as a spare. Click **Add Hot Spare**.

### 8.10 Delete Spare

Use the *Delete Spare* tab to change the status of the drive from spare to unused.

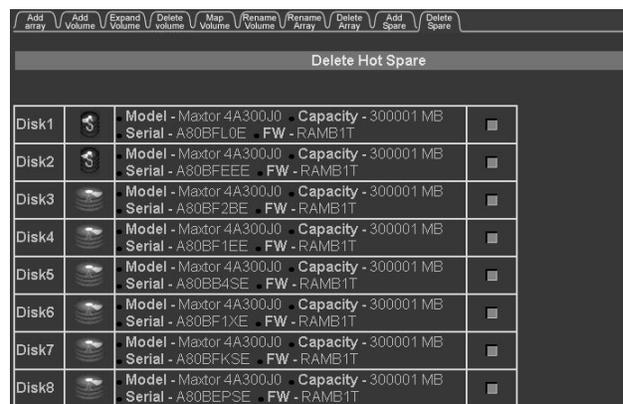


Figure 37 Deleting a Hot Spare

To delete the spare status of a drive, click the check box associated with the spare drive. Once the desired drive(s) have been selected, click **Delete Hot Spare**.

## 9 SYSTEM MENU

The *System Menu* page permits access to the pages that define the DVAS Series disk array connection to the network.

### 9.1 SCSI Settings

*Quick Configuration* automatically configures these settings.

Refer to the applicable DVR manual for recommended SCSI settings.

Use this page to alter the behavior of the SCSI Host Channels.

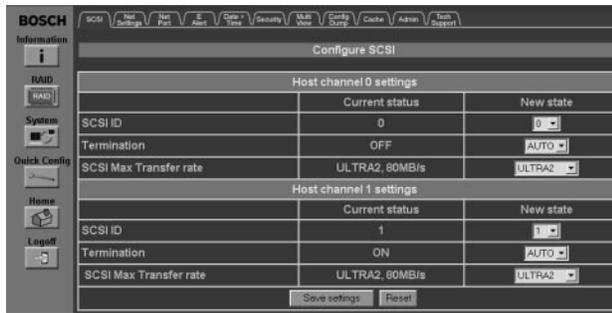


Figure 38 Configuring SCSI

#### SCSI ID

Allows alteration of the SCSI ID of the DVAS array. For most operating systems, the default SCSI ID of 0 is fine. All SCSI IDs on a bus must be different, so ensure that the selected ID does not conflict with another device ID on the bus. Use the pull down menu to choose the desired ID.

#### Termination

By default, termination is set to *AUTOMATIC*, to automatically determine whether termination is required.

#### SCSI Max Transfer Rate

Defines the maximum speed of the SCSI bus. The default setting is *Ultra2*. Click **Save Settings** to save these settings.

To apply the new Network and SCSI setting, cycle power to the unit.

### 9.2 Network Settings

The *Net Settings* tab permits alteration of the properties of the DVAS Series disk array's network connection. Enter any new settings into the text boxes on the right-hand side of the page, then click **Save Configuration** to apply them.

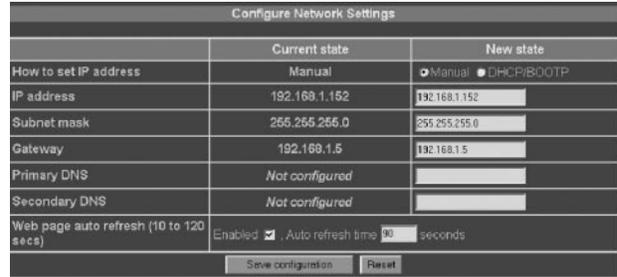


Figure 39 Configuring Network Settings

#### How to Set IP Address

Use the radio buttons to select either DHCP (Dynamic Host Configuration Protocol), or to manually set IP address. If DHCP is chosen, no further values are required.

#### IP Address

If manually setting up the network, enter a free IP address into the text box. The current IP address may be acceptable.

#### Subnet Mask

Set the subnet mask that fits your network class. In most cases, 255.255.255.0 is fine. Enter the new subnet mask into the text box.

#### Gateway

Enter the IP address of your Internet gateway into this text box.

#### Primary/Secondary DNS

Enter the IP address of both your Primary and Secondary DNS into the text boxes.

#### Web Page Auto Refresh

Identifies whether the web pages should be reloaded at a selected interval to show any system changes on-screen. Check **Enabled** to use this function and specify a value (in seconds) for frequency of web page refreshing.

When all settings have been updated, click **Save Configuration**. Restart the system so the changes take effect.

### 9.3 Network Port

Use this page to alter the speed and duplex mode of the Network port.

The DVAS Series disk array has a 10/100Base-T Ethernet port that can be used in various modes. Use the drop down menu to select the required mode.

Mode Selections are:



Figure 40 Network Port Settings

- Auto negotiate network speed and duplex
- Auto negotiate network speed with fixed full duplex
- Auto negotiate network speed with fixed half duplex
- Fixed to 100Megabits Full Duplex
- Fixed to 100Megabits Half Duplex
- Fixed to 10Megabits Full Duplex
- Fixed to 10Megabits Half Duplex

If the DVAS Series disk array is connected to a switch, you may use full duplex. Half duplex will work properly with hubs and switches, but may run a little slower. Only use 100Megabits if you are sure you have 100Megabits networking. If unsure about your network, use **Fixed to 10Megabits Half Duplex**.

Click **Save Network Port Setting** when finished. To enable the settings, restart the DVAS Series disk array.

### 9.4 E-Alert

The DVAS Series disk array has the capability of sending an e-mail to a specified e-mail address, in the event of a warning or error condition.

In warning conditions, the DVAS Series disk array operation continues as normal, but an event has occurred, indicating potential future difficulties.

Examples are:

- Higher than normal internal temperature
- Network IP address change dictated by a DHCP server (you need to use a new network address to access the Web Monitor)

Error conditions denote events that significantly reduce the security of the system. Examples are:

- Failure of a data disk
- Loss of data due to errors on matching parts of two or more disks
- Failure of a power supply

SCSI   Net Settings   Net Port   E Alert   Date + Time   Security   Mail View   Config Dump   Cache   Admin   Tech Support

#### E - Alert Settings

Sender email address	ateboyaccount@yourdomain.com
SMTP email server	
Recipient email address	sysadmin@yourdomain.com
ATA RAID system friendly name	DVAS RAID subsystem, number - 2623418
When to send	Do not send email alarms
Send automatic status emails	Disabled

Save E - Alert Settings    Reset

#### Test E - Alert Settings

Send test email now    to sysadmin@yourdomain.com

Figure 41 E-Alert Settings

#### Sender E-mail Address

This is the e-mail address assumed by the DVAS Series disk array.

#### SMTP E-mail Address

This is the address or name of your mail server. If DNS is correctly set up, enter the name of your mail server either manually or via DHCP.

#### Recipient E-mail Address

Enter an e-mail address for the DVAS to send e-mail to; typically the address of an administrator.

### ATA RAID System-friendly Name

This aids in determining the location of a DVAS Series disk array that has sent e-mail. This feature is useful for users with many systems, and is a friendly name relating to the location or use of the unit.

### When to Send

Indicates the circumstances causing an e-mail to be sent. The possible options are:

- **Don't Send E-mail Alarms**  
This setting is only recommended for users who do not wish to receive *any* e-mails from the unit. Only an audible alarm will occur in case of a problem.
- **Send E-mail Alarms for Errors Only**  
This setting is suitable for most users.
- **Send E-mail Alarms for Warnings and Errors**  
This setting is ideal for expert users. Use the drop down menu to choose the desired option.
- **E-alert Settings**  
Send automatic status e-mails. Set to either **Enabled** or **Disabled**.

Click **Save E-alert Settings** to confirm the new settings. Reload this page and use **Send Test E-mail Now** to verify that the configuration works.

## 9.5 Date and Time

It is important to correctly set the subsystem's date and time. E-mails sent from a DVAS Series disk array are time stamped. To accurately gauge the time of an event, the time/date must be correct.

Figure 42 Time and Date Configuration

Enter the date and time in the following format:

Date: **dd/mm/yyyy**

Time: **hh:mm:ss**

Time zone: (relative to GMT) via the drop down menu.

**Time Server IP address for auto time and date configure** allows selection of a time server manually, or from the preconfigured list.

**Time Server time and date format.** Select via drop down box.

**Set system time and date by the time server every 24 hours** defines whether the time server is updated daily.

Once all settings have been entered, click **Save Settings** to apply them.

## 9.6 Security

**WARNING:** Resetting the factory defaults also resets the password to the factory default, PASSWORD, which should be changed immediately to a secure password.

The DVAS offers two levels of menu security; *User* and *Administrator*. The USER account allows browsing of many of the information pages and verification of general product status. ADMIN access allows alteration of settings and entry to boot mode. By default, the password login for ADMIN is turned on. The default passwords for USER and ADMIN are PASSWORD. Default passwords and usernames must be entered in UPPERCASE.

**WARNING:** The DVAS should be connected only to secure networks. To guard against accidental or malicious tampering of the DVAS, the ADMIN password should be set to something impossible to guess.

Figure 43 Password Configuration

Available Information:

Information	Description
Current ADMIN / USER Login Password Requirement	Displays whether security is enabled.
Change ADMIN / USER Login Password Requirement to	Use the radio buttons to select the security mode for either ADMIN or USER.
Login User Name is Fixed to	Both USER and ADMIN user names are fixed (cannot be altered).
Password	Type the new password in the text box.
Write	Number of host writes.
Confirm Password	

When the new USER / ADMIN settings have been entered, press the relevant **Set \_\_\_ Password** button. Only alter one user at a time.

## 9.7 Cache Settings

DVAS Series disk array has a write cache memory, which is normally enabled. The cache memory holds data being written to disk, enabling the controller to confirm that a command is complete before data is physically written. A battery backup protects cached data for up to three days in the event of a power failure during an unfinished write operation. The DVAS Series disk array controller automatically completes any unfinished write operations once power has been restored, provided the cached data is available.

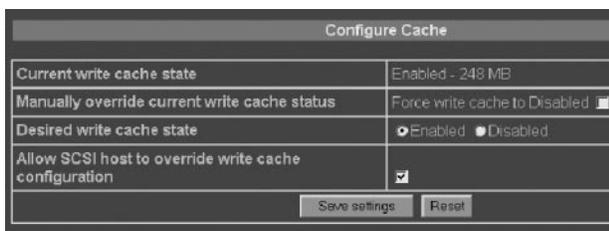


Figure 44 Cache Configuration

### Current Write Cache State

Shows how cache is currently being used.

### Manually Override Current Write Cache Status

Check this box to force the cache on or off without rebooting.

### Desired Write Cache State

Use these radio buttons to select the preferred write cache state; Enabled or Disabled.

### Allow SCSI Host to Override Write Cache Configuration

Some SCSI commands force write cache not to be used. Check the box to override this.

Once the required changes have been made, click **Save Settings** to continue.

## 9.8 System Administration

The **ADMIN** tab allows muting and resounding of the audible alarm when there is a problem, and clearing events that require manual responses from the problem page.

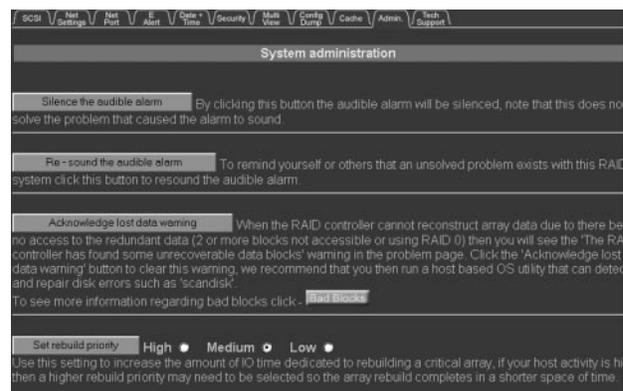


Figure 45 System Administration

- Silence the Audible Alarm**  
 Click this button to silence the audible alarm. If this does not solve the problem that caused the alarm to sound, click the red X at the top right of the window to examine the *Problems* page.
- Re-sound the Audible Alarm**  
 Click this button to restart the alarm if there is a fault present.
- Acknowledge Lost Data Warning**  
 When the RAID controller cannot reconstruct array data due to lack of access to the redundant data (two or more blocks not accessible, or two disks failed), the following warning displays: *The RAID controller has found some unrecoverable data blocks.* To clear this warning, click **Acknowledge Lost Data Warning**. For information regarding bad blocks, click **Bad Blocks**.

- **Set Rebuild Priority**  
Use this setting to increase the amount of IO time dedicated to rebuilding a critical array. If host activity is high, a higher rebuild priority may be needed so the array rebuild completes in a shorter time period.
- **Set Verify Utility**  
Set either Surface Scanning or Parity Scrub for the next array verify utility, once the utility interval has expired. Surface Scanning uses very little array IO time, whereas Parity Scrub uses much more. Surface scanning ensures that all data blocks on all array disks are readable. Parity Scrub reads all array data and ensures parity (redundant) data is intact. Any parity inconsistencies will be corrected. Both utilities will correct (where possible) unreadable blocks, by using the parity data to rebuild missing data onto a remapped block.

Click **Execute Verify Utility NOW** to force the selected array utility to run now.

- **Set Verify Utility Execute Interval**  
Use the above settings to set the internal time between verify cycles, or click **Execute verify utility NOW** to start the selected verify utility.

#### **Disable Dangerous Commands**

Confirm, and click **Disable Dangerous Commands**, to put the GUI into this mode. In this mode, any configuration commands that will cause data loss or result in loss of host communications are not permitted.

#### **Read Only**

Confirm and click **Read Only**, and no configuration of the ATA RAID system is permitted.

- **Reboot Controller**  
Click **Reboot Controller** to reboot the ATA RAID controller. While rebooting, configured arrays and volumes are not accessible from the attached host system(s). Before using this function, it is advised to cease all host IO. It may also be necessary to reboot the host system(s) once the RAID controller has rebooted.

- **Set Spare Mode**  
**Inserted Disks Automatically used as Hot Spares**  
Any disk not belonging to a RAID array will be used as a hot spare/rebuild disk. A hot spare disk must be at least the same capacity as the smallest RAID array member.

Inserted disks must be manually configured as hot spares. No newly inserted disk or existing unused disk will be used as a rebuild disk. The disk must first be configured as a hot spare, so it can be used by a degraded/critical array.

## **10 LOG OFF**

Terminates browser session. This concludes the Menu Tree.

## 11 Additional Information

### 11.1 Required Components

- (1) Slide Kit and Mounting Hardware
- (1) Pair Accuride Slide Rails

### 11.2 Rail Kit Installation

Step 1. Remove inner slide rail as shown in FIGURE 46. Press down on latch to release.

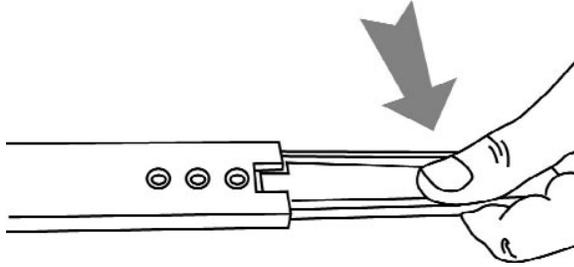


Figure 46 Remove Slide Rail

Step 2. Attach inner slide rail to chassis using 3 x 8300047 M4 screws, as shown in FIGURE 47.

NOTE: When attaching the extended brackets, first attach them loosely. Adjust the length to fit the cabinet, and then tighten.

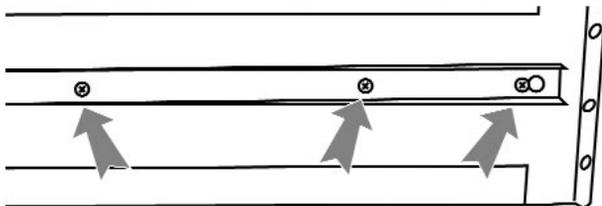


Figure 47 Attach Rail to Chassis

Step 3. Attach left and right rear (long) extended brackets to the outer rail using 2 x 8300045 M4 screws, 2 x 8300045 washers, and 2 x 8300044 nuts for each bracket (FIGURE 48).

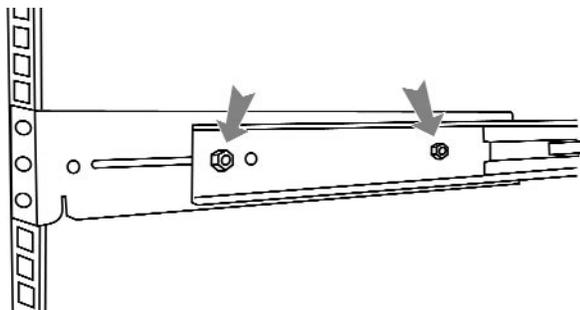


Figure 48 Attach (Long) Extended Brackets

NOTE: Make sure the flange is on the bottom edge.  
Step 4. Attach left and right front (short) extended brackets to the outer rail using 2 x 8300045 M4 screws, 2 x 8300045 washers, and 2 x 8300044 nuts for each bracket (FIGURE 49).

NOTE: Make sure the flange is on the bottom edge.

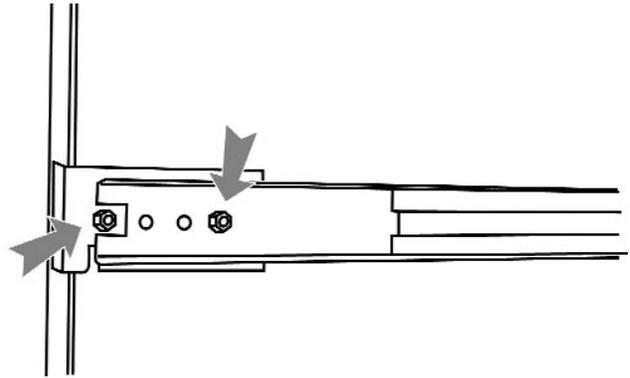


Figure 49 Attach (Short) Extended Brackets

Step 5. Attach outer rail to chassis using 4 x M6 x 12 screws and cage nuts per rail, 2 at each end.

Step 6. Slide chassis into outer rail, carefully making sure the chassis is level with the slide as in FIGURE 50 (it's easier if the drives and power supplies are removed).

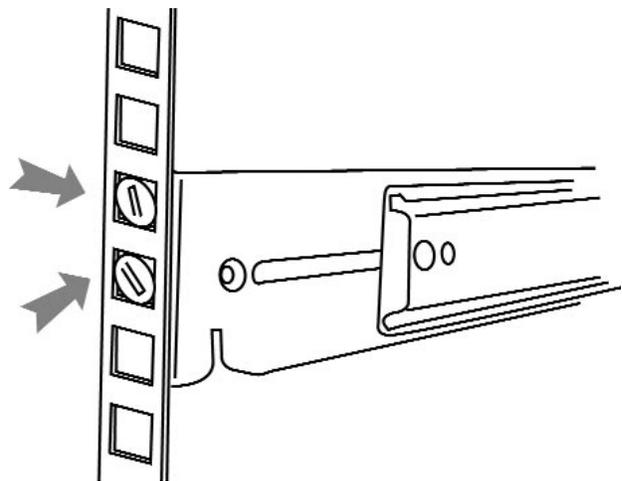


Figure 50 Attach Outer Rail and Slide Chassis in

## 12 DVAS Series Disk Array Technical Specifications

### Physical Specifications

Information	Description
Height	132mm [5.16in] 3U
Width	483mm [18.87in]
Depth	521 mm [20.35in]
Depth Including power supply handles	537mm [20.98in]
Approximate weight	32kg (including drives + packaging)

### Power and Cooling

Information	Description
Power Supplies	1 x 450W or 2 x 450W load sharing
Cooling	2 x Radial blowers in power supplies and one blower in each controller

### Communication

Information	Description
Interface	10/100 Base-T Ethernet RJ-45
Protocols	TCP/IP, HTTP, SMTP and FTP GUI HTML, supports most standard Internet browsers  E-mail sent via SMTP at failure or warning event

### Data Interfaces

Information	Description
Hard Disk Interface	ATA/100 (14 channels)
Host Channel Interface	Ultra 160 SCSI (two channels)

## 13 Troubleshooting

### Web Interface Problems

Problem	Solution
<p>Nothing happens when I type the assigned DVAS IP address into my web browser.</p>	<ul style="list-style-type: none"> <li>Verify that the system is responding.</li> <li>Verify that the IP address is saved, and you can connect to the DVAS. The best way to establish communication with the DVAS Series disk array is by using a ping utility. Different operating systems have different ping utilities, but they are all very similar. Microsoft® will be used for the purpose of this guide.</li> </ul> <p>Open a DOS window and retreat to the root level of the C drive (or the drive containing the Operating System). To do this, type the following: <code>cd \</code></p> <p><code>C:/&gt; ping 192.168.225</code></p> <p>(Replace the above IP address with that of the DVAS Series disk array.)</p> <p>If the ping is successful, a response similar to the one below will be generated.</p> <p>Reply from 192.168.1.225: bytes=32 time=10ms TTL=30  Reply from 192.168.1.225: bytes=32 time&lt;10ms TTL=30  Ping statistics for 192.168.1.225:  Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  Approximate round trip times in milliseconds:  Minimum = 0ms, Maximum = 10ms, Average = 2ms</p> <p>If you have a successful reply, but cannot access the home page, consult technical support.</p> <p>If no reply is returned, verify that the IP address is correct. If using DHCP, verify that DHCP has allocated an address to the unit.</p>
<p>When using the menus I am prompted to provide a user name and password.</p>	<ul style="list-style-type: none"> <li>This indicates that security is turned on. The user name ADMIN and password PASSWORD (both uppercase) permits access to any page, unless the password has been changed.</li> </ul>
<p>The default user name and password are not responding.</p>	<ul style="list-style-type: none"> <li>The login is case sensitive; both username and password are in UPPERCASE. If still unable to login, the user name and password may have been changed from the factory settings. To cancel this, the unit must be returned to its factory settings. Restoring factory settings will not harm your data.</li> <li>To restore the factory settings, follow the instructions below. If only resetting the IP address, skip Steps 8 and 9. <ol style="list-style-type: none"> <li>Make a note of the product's serial number, as it will be needed later.</li> <li>Turn off the system.</li> <li>Turn power back on while depressing the alarm silence button for more than ten seconds, then release.</li> <li>Depress the button again.</li> <li>The exclamation light should now flash red.</li> <li>Release the button for two seconds and depress it again.</li> <li>After a few seconds the power light will flash red.</li> <li>Release the button for two seconds and depress it again.</li> <li>After a few seconds, the fan light will flash red.</li> <li>Release the button and cycle power to the unit.</li> </ol> </li> </ul> <p>The above steps reset DVAS Series disk array to Gleaning mode, which means that an IP address can be set manually.</p> <ol style="list-style-type: none"> <li>To set an IP address, access a command line, either in a DOS or UNIX compatible computer that is connected to the same network as the DVAS Series disk array.</li> <li>You must first add an entry to the ARP (Address Resolution Protocol) table of this computer. The entry should be the desired IP address of the DVAS Series disk array, followed by the MAC address (serial number).  Example: If the MAC address of the DVAS is 00:04:02:D0:00:FD, and the required IP address is 192.168.1.201, you would type the following at either a DOS prompt, or a UNIX console: <code>arp -s 192.168.1.201 00-04-02-d0-00-fd</code>  <code>arp /a</code></li> <li>The current ARP table will be displayed. Ensure that the DVAS has been added. Ping the IP address you have specified, as in: <code>ping 192.168.1.201</code></li> <li>When the DVAS Series disk array receives the first packet, it will set the IP address that it has received. This means that the first few packets should timeout. It may take up to thirty seconds for the IP address to be saved. It is not necessary to reboot the DVAS for the IP address to take effect.</li> </ol> <p>NOTE: This only saves the IP address, not other important settings such as the subnet mask, gateway, and DNS server addresses. It is important to alter these settings via the GUI interface.</p> <p>The passwords and security should now be set to the default.</p>

## Start-up Problems

Problem	Solution
The system beeps at power up.	<ul style="list-style-type: none"> <li>Beeping does not mean that the unit is broken. If e-mail is enabled, check the inbox. This will likely provide a clear explanation of the problem.</li> <li>Current problems can also be found via the GUI interface; click the red X in top right-hand corner of the home page, or check the lights on the unit.</li> </ul>
LED/Icon	Indication
Power Icon	<ul style="list-style-type: none"> <li>Normally Green.</li> <li>If Red, verify that both power supplies have power, and are switched on. If a power supply has failed, the LED on the power supply will not be illuminated, although the blower should still be powered from the surviving power supply.</li> </ul>
Fan LED	<ul style="list-style-type: none"> <li>Normally Green.</li> <li>If Red, one or more blowers have failed. There are two blowers in the rear of the unit. The two power supplies have embedded blowers. It is possible for the blower to fail, and the power supply continues to work. This will not be apparent by looking at the LED. You can Determine if the blower has failed via the web GUI.</li> </ul>
Exclamation Mark LED	<ul style="list-style-type: none"> <li>Normally Green.</li> <li>If Red, the RAID controller has failed, or has a problem. This does not necessarily mean that the controller must be replaced. This LED may indicate other faults, such as missing disks or battery errors. Use the web interface to discover the exact nature of the problem.</li> </ul>
Disk Drive LEDs	<ul style="list-style-type: none"> <li>During activity, the Green LED(s) will flicker (on the front panel, corresponding to the disk drive(s)).</li> <li>If a failure occurs, the LED in the shape of an exclamation mark will illuminate in Amber.</li> </ul>
Resolving Problems	
The Bosch Interface indicates that a disk has failed, and my data is still online.	<ul style="list-style-type: none"> <li>Determine which disk has failed by its Amber exclamation mark on the front LED panel. Extract the faulty disk and insert a blanking panel into its slot.</li> <li>Contact the dealer to obtain a replacement as soon as possible, as the array may be in a critical state. When the replacement module arrives, verify that no damage has occurred during transit. Insert the new disk into the empty slot. The DVAS Series disk array will detect the new disk, and rebuild to it if the array is critical. If you already had a spare disk, the DVAS Series disk array will assign the new disk as a spare too.</li> </ul>
A power supply has failed, but the system is still operational.	<ul style="list-style-type: none"> <li>Do not remove the faulty power supply! If a power supply fails, the surviving power supply will continue to power the blower in the failed power supply. Removing a power supply drastically reduces airflow in the chassis. Contact your dealer regarding a replacement power supply (ACCPS). Only remove the failed power supply when the replacement arrives.</li> </ul>
The RAID controller has failed.	<ul style="list-style-type: none"> <li>If a RAID controller fails, the data is inaccessible. Your data is safe on the disks until a replacement controller arrives. Data in write cache will be lost if a controller fails.</li> <li>Leave the controller in place.</li> </ul>
<b>Contact your dealer for assistance with other inquiries.</b>	

## 14 Firmware Update Instructions

The DVAS Series disk array is controlled by firmware that resides in the controller flash memory (ROM). Upgrades to provide improved operation capabilities may be issued by Bosch from time to time, in the form of e-mail or similar means.

The firmware file is downloaded to the DVAS Series disk array via FTP (file transfer protocol), and can be downloaded from any computer that supports FTP, on the same network as the DVAS Series disk array. Microsoft Windows® 98/NT/2000 and Unix systems, for example, support FTP, which is conventionally activated from a command line (MS-DOS window in NT systems). Due to the DVAS Series disk array FTP restrictions, we recommend this method be used for security and memory space reasons.

Downloading does not affect the operation of the DVAS Series disk array, and can be carried out at any convenient time during system operation. It is recommended that the host system be shut down to cease RAID array read/write activity. A DVAS Series disk array restart is required to activate the new firmware. Verify the firmware version by accessing the *Information MENU* > *HARDWARE*, via the web user interface.

Before actually beginning the firmware update, READ the following carefully. If these instructions are not followed, the DVAS Series disk array may be rendered unusable and the RAID array will not be available to the host computer system.

DO NOT switch the DVAS Series disk array off during a firmware update process. This will likely render the DVAS Series disk array unusable.

If unsure about the state of the firmware update, wait at least ten minutes (from the start of sending the new firmware), for the update to complete.

Wait five minutes before accessing the event log. Do not continually click the event log link, as it is a large web page that will slow down the firmware update process. It is recommended that you access the event log every 30 seconds or so after the initial five minutes.

DO NOT switch the DVAS Series disk array off until the *Microcode Updated OK* message is posted at the top of the event log. If the web interface is not accessible, wait at least ten minutes before switching the DVAS Series disk array off.

Here are some example messages from the controller's event log BEFORE the firmware update completes.

```
0036: 0055R, 0000-00:10:10: Microcode Updated OK
0037: 0055R, 0000-00:08:08: Microcode extents, Start
      Addr 0x10000, End Addr 0x148938
0038: 0055R, 0000-00:08:08: Microcode S-record file
      verified OK
0039: 0055R, 0000-00:08:05: Starting microcode
      update
```

**Remember - DO NOT switch the DVAS Series disk array off until *Microcode Updated OK* appears in the event log shown above.** The controller event log is stored on disk, so at least one disk must be installed in the DVAS Series disk array for the firmware update to proceed.

### Controller Update Procedure

To begin the controller firmware update, first copy the new firmware file from Bosch, onto the machine where you intend to run FTP.

1. In a command line window, go to the directory (folder) where the firmware resides, and type:

```
ftp <IP address>
```

When prompted for a user name, type **ADMIN** in upper case. The password is required (if not changed, the default password is **PASSWORD**).

2. Now type:

```
put <filename>
```

where the *filename* is the name of the update file supplied by Bosch.

You may have to change the local directory from within FTP if you are not already in the directory of the new firmware file. To do this, use a command such as:

```
lcd <newfirmwarefilepath>
```

(local change directory to the location of the new firmware file).

3. The download process includes storing the data on the DVAS Series disk array, and will take five to ten minutes. When the update has finished, a message *Transfer OK. firmware update successful* should appear.
4. Confirm that the update has succeeded by entering the Web Monitor, and selecting the *Event Log* page in user mode. The message, *Microcode Updated OK* should be visible near the top of the log.
5. The new firmware will take effect at the next DVAS Series disk array power up.

**Windows 98 timeout**

If this procedure is followed on Windows 98 systems (and possibly other systems), the FTP process in Windows 98 will time out during Step 3. This occurs after all data has been transferred to the DVAS Series disk array, but before the storage process (flash update) is complete. In this case, the *Transfer OK* message will not appear, although the download should have completed successfully.

After at least five minutes from the start of Step 2, check the log to ensure that the update has been successful. If so, the update will take effect at the next restart (Step 5).

## Appendix A Servicing Removable Components

### Power Supply Unit (PSU)

#### Insertion

Pull the handle of the PSU so it is at 90° to the main PSU unit. Line up the PSU with the guide rails on the DVAS. Insert the PSU gently until it comes to a halt, then close the handle and secure it in place with the screw (included).

#### Removal

Turn off the power switch. Disconnect the power cord, loosening the cable clamp if necessary. Loosen the screw on the power supply by turning it counter-clockwise. Pull out the handle of the PSU so that is 90° to the chassis. While supporting the weight of the PSU, use the handle to pull the power supply free from the chassis.

If your DVAS has the dual redundant power supply option, a faulty power supply may be removed and replaced while the unit is operational. Only remove a power supply from a working unit if it is faulty and a replacement is on-site. Removing a PSU when no replacement is immediately available may result in overheating and shutdown. Ensure that the correct PSU is removed; the faulty power supply will not have a green status LED illuminated on its rear panel.

### RAID Controller

#### Insertion

A RAID controller should not be inserted while the unit is powered on. If exchanging a faulty RAID controller, schedule a shutdown before replacing it.

Insert the RAID controller into its slot, ensuring that the metal runners line up with the internal guides. Firmly push the RAID controller fully into the chassis until the side clips click into place.

#### Removal

Do not remove a faulty controller while power is on; power must be disconnected.

Push the side clips securing the controller inwards (toward each other). While supporting the weight of the unit, use the handles to pull the controller free from the unit.

### Hard Drive Assemblies



Disk drives are sensitive to static electricity and physical shock. Observe proper ESD precautions and handle with care.

#### Insertion

Line the disk carrier up to an available disk slot. Be sure the handle is open, and the carrier push button is toward the bottom of the chassis. Push the disk carrier in until it is fully inserted. Close the handle and push in the carrier button to secure it in place.

#### Removal

Removing a disk while in operation within a RAID set will cause the RAID set to degrade. Only remove a disk which has been marked as bad by the GUI, with an Amber LED illuminated beneath it. To remove a disk, push the button on the disk carrier to release the handle. Gently pull the bottom of the handle toward you and wait ten seconds for the disk to stop spinning. Continue sliding the disk out of the chassis.



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