RAID Subsystem DVA-12T

DVA-12T iSCSI Premium Series

BOSCH

en Quick Installation Guide

Table of Contents

1   Precautions

- The system is heavy even without disks installed. At least two (2) people will be required to install the subsystem.
- The rack cabinet into which this subsystem will be installed must support overcurrent protection and must not be overloaded by the modules installed. Other requirements, such as ventilation airflow, rack stabilizing features, electrical earth, and electrical distribution, must comply with the technical specifications listed in the documentation that came with this product.
- All subsystems must be mounted with and supported by the rails provided and secured in position by the four screws in the front side flanges. In no instance is a subsystem to be mounted by the front side flanges only as this will result in the deforming of the subsystems chassis causing unacceptably high pressures and/or /torques to be applied to internal components resulting in various failure modes.
- Equipment racks must be grounded.
- System Integrators should ensure that any integrated storage solution that includes this product has been tested and proved to meet government regulations and codes for subjects including safety, fire, and electrical.
- Make sure you have a soft, clean surface to place your subsystem before working on it. Placing the system on a rough surface during servicing may damage the chassis finish.
- Do not remove any module or component item from its anti-static bag until you are ready to install it. Pick up and hold modules by their edges or canister. Avoid touching PCBs and connector pins.
- Observe all standard ESD prevention methods, e.g., wear an anti-static wristband to prevent static electricity from damaging the electric components.
- The RAID subsystem can be front- or rear-mounted in a variety of 19–inch-wide (48.26 cm) racks. The slide rail mounting kits are optional.
- Because hard drives are prone to damage due to shock and vibration during operation, all equipment should be installed in an equipment rack prior to powering up any subsystems or DVR's in the rack. If equipment is added, removed, or rearranged in an equipment rack DVR's and subsystems should be power down prior to this work.
- All disks should be removed from the subsystem prior to assembly in a rack. Only after all equipment is installed in a rack should the disks be installed/reinstalled.
- Hard drives must always be grasped on the drive carrier surfaces and not by the drive surfaces (it is most critical to avoid contact with the printed circuit board or rear connectors).   Contacting the hard drive on the connector or PCB may result in ESD damage which will yield various immediate or latent failures.
- Drives must not be stacked on top of each other without their protective clamshells. Due to the magnetic components within drives, stacking them directly on top of each other can result in erasing the programmable ICs.
- When replacing components insert them as gently as possible while assuring full engagement. Vibration or shock can damage hard drives in the affected unit or other units in the rack. Hard drives are very sensitive to shock and vibration, especially while in operation and should always be handled very carefully.
- After all equipment is installed in a rack dress the power and data cables such that power cables are not resting against data (SCSI, IP, RS232) cables.

2   Delivery Status

The subsystems are shipped with drives pre-configured for RAID 5. The configuration is suitable for the most configurations. The factory default settings are shown below.

2.1   RAID Settings

	DVA-12T	
Number HDD	4	12
RAID	RAID 5	RAID 5
Spare	no	no
Stripe Size	16	16
Partitions	16	31
Size of Partition (est.)	86 GB	163 GB
Assigned Disk Space	470000 MB	470000 MB
SCSI Channel	0	0
SCSI IDs	0	0
LUN	0, 1, 2, . . . 15	0, 1, 2, . . . 30

Table 2.1   Factory Default settings DVA-12T

2.2   System Settings

Menu	DVA-12T
Configuration Parameters/Communication	
LAN 0/LAN 1	Static IP Address
IP Address LAN 0	192.168.0.100
Subnet LAN 0	255.255.255.0
IP Address LAN 1	192.168.0.100
Subnet LAN 1	255.255.255.0
Configuration Parameters/Controller	
Write-Back Cache	Enabled
Optimization	Sequential I/O
Sync Period (Sec.)	Disabled
SDRAM ECC	Enabled
Configuration Parameters/Host Side	
Maximum Queued I/O Count	256
LUNs per Host SCSI ID	32
Maximum Concurrent Host-LUN Connection	1024
Tags Reserved per Host-LUN Connection	256
Peripheral Device Type	Default 7F (no device present)
Peripheral Device Qualifier	Default (Connected)
Device Supports Removable Media	Default (Disable)
LUN Applicability	All Undefined LUNs
Cylinder/Head/Sector	Default (Variable/Variable/Variable)

Table 2.2   System settings DVA-12T

Menu	DVA-12T
Configuration Parameters/Drive Side	
Disk Access Delay Time (Sec.)	25
Drive Check Period (Sec.)	1
Auto-Assign Global Spare Drive	Enabled
SMART	Detect Only
Spindown Idle Delay Period (sec.)	Disabled
Drive Delayed Write	Enabled
Disk I/O Timeout (Sec.)	7
SAF-TE/SES Swap Device Check Period (Sec.)	30
Drive Fail Swap Check Period (Sec.)	5
Maximum Tag Count	16
Drive Motor Spin Up	N/A
Configuration Parameters/Disk Array	
Rebuild Priority	Normal
Write Verify on Normal Access	Disabled
Write Verify on LD Rebuild	Disabled
Write Verify on LD Initialization	Disabled
Maximum Drive Response Timeout (ms)	Disabled
AV Optimization	Disabled

Table 2.2　System settings DVA-12T

3   Installation Procedures

To install the subsystem use the following steps:

1. Unpack the Subsystem (see *Section 4 Unpacking the Subsystem*)
2. Install the system in the rack (see *Section 5 Rack Mounting*)
3. Install the Drive Tray (see *Section 6 Drive Tray Installation*)
4. Connect the Subsystem Cable (see *Section 7 Subsystem Cable Connections*)
5. Power On (see *Section 8 Power On*)
6. Configure the Host Computer (see *Section 9 Configuring the Host Computer via a Network*)
7. Change the IP Address (see *Section 10.1 Changing an IP Address*)
8. Change the factory default settings (see *Section 10.2 Guidelines for Setting Up a RAID*)
9. Connect a Bosch Video Server (see *Section 12 Connecting a Bosch Video Server*)

4   Unpacking the Subsystem

Check the included Unpacking Checklist and verify the model name and shipping contents against the checklist.

5   Rack Mounting

Slide rails are required for rack mounting. For rack mounting use only one of the following slide rail kits:

	DVA-12T
Slide rails for 533 mm to 724 mm deep racks (21" to 28.5")	DVA-ASRK-28A
Slide rails for 647 mm to 914 mm deep racks (25.5" to 36")	DVA-ASRK-36A

Table 5.1   Slide rail kits

> **i**
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> **NOTICE!**
> Refer to Slide Rail Kit Installation Manual for detailed information.

6   Drive Tray Installation

The Bosch DVA subsystem is delivered with pre-configured, burned-in drives. The drives are packed in separate boxes. The drives can be installed in any order.

> **CAUTION!**
> - For expansion or replacement use Bosch drives only. Order DVA-ADTK-050A (drive tray with mounted hard disk).
> - Handle hard drives with extreme care. Hard drives are very delicate. Dropping a drive onto a hard surface (even from a short distance) and hitting or touching the circuits on the drives with your tools may cause damage to the drives.
> - Insert drive trays as gently as possible.
> - Observe all ESD prevention methods when installing drives.
> - Only use screws supplied with the drive canisters. Longer screws may damage the drive.

To install a drive tray:

1. Turn the key-lock to the unlocked position. The key-lock is unlocked if the groove on its face is in a horizontal orientation.(See *Figure 6.1*)
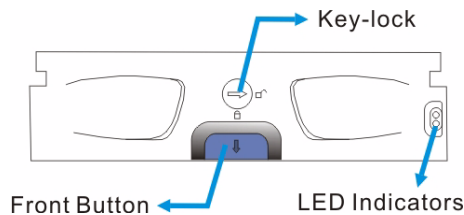

Fig. 6.1   Drive Canister Front View

2. Open the front flap on the drive tray by pushing the button on the front of the drive tray. The button is easy to access. (See *Figure 6.2*)
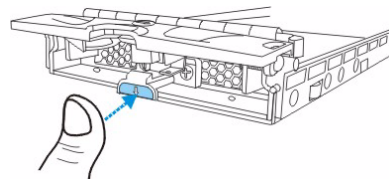
Fig. 6.2   Opening Drive Tray Front Flap

3. Line the drive tray up with the slot in which you wish to insert it. Make sure that it is resting on the rails inside the enclosure. Once the drive tray is lined up with the slot, gently slide it in. This action should be done smoothly and gently.

4. Close the front flap on the drive tray. Make sure the front flap is closed properly to ensure that the SATA connector at the back of the drive tray is firmly connected to the corresponding connector on the mid-plane board. If the front flap is not closed properly, then the connection between the HDD and the subsystem will not be secure. To lock the flap in place, turn the key-lock until the groove on its face is in a vertical orientation. (See *Figure 6.3*)
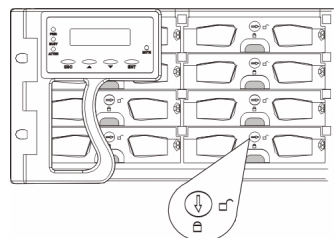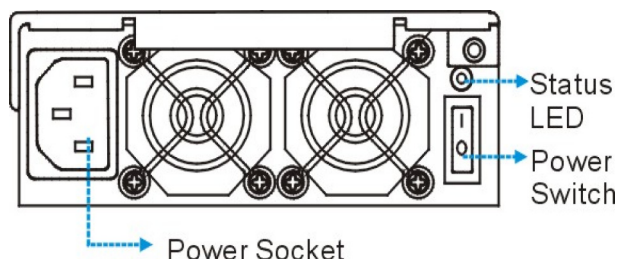

Fig. 6.3   Drive Tray Key-Lock Rotation

7   Subsystem Cable Connections

7.1   Power Cables

1. Connect the two (2) provided power cables to the power sockets on the back of the system (see *Figure 7.1*).


Fig. 7.1   Power Supply Module

2. Make sure the power source is within the correct power range (100 to 240 VAC) prior to powering on. Auto-ranging is supported by the power supply modules.
3. Plug the other end of power cords into the power source.

7.2   iSCSI Host Ports

1. The subsystem comes with two (2) RJ-45 connectors at the rear of the controller module. They can be connected to external network devices or iSCSI initiators, using standard Cat6, RJ-45 Ethernet cables. The network cables should be purchased separately (see *Figure 7.2*).
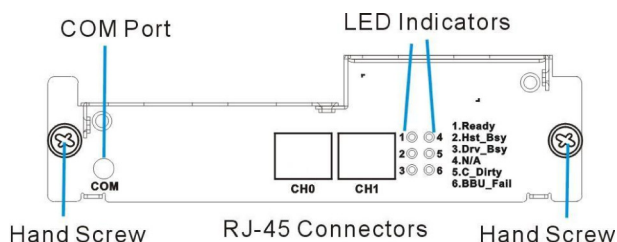
Fig. 7.2   Controller Module

2. Attach one end of Ethernet cable to the subsystem and attach the other end to the network devices or iSCSI initiators.

7.3   COM Port

The subsystem comes with one (1) COM port. The COM port is reserved for terminal emulation management. This port can be used to access firmware's embedded configuration utility. One (1) audio-jack to DB9 cable and a null modem are provided to facilitate the connection of the COM port (see *Figure 7.2*).

8   Power On

To power on the subsystem:

1.   Install all the hardware components.
2.   Make all the connections described above.
3.   Power on the network connecting devices such as the Ethernet switches.
4.   Power on the subsystem by turning on both power switches on the rear panel of PSU modules. For the location of the power switches, please see *Figure 7.1*.
5.   Power on servers or host computers.

9   Configuring the Host Computer via a Network

The first time you use the subsystem you have to set up your computer to access the subsystem.

To set up the computer:

1.   Attach a network cable from the DVA's Ethernet port (CH1) to a network.

or

Connect the computer with the subsystems's Ethernet port via a cross-over cable.

2.   Access any computer on the network.

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NOTICE!

If you do not use a cross over cable and connect the unit to a network, your network's subnet mask may not allow you to access this IP address without some re-configuration.

3.   To access the subsystem simply access a shell or a DOS prompt on your host computer, and enter the following command:

Windows	route add 192.168.0.100 <workstation IP number> mask 255.255.255.255

This procedure allows a connection to the subsystem even if your computer has different network settings.

10   Changing the Configuration via a Web Browser

10.1   Changing an IP Address

The Bosch RAIDWatch application can be used to change the IP address of the subsystem. The Bosch RAIDWatch application is pre-installed directly on the subsystems drive and can be accessed with a common standard browser. Alternatively the Bosch RAIDWatch application can be installed on a host PC (see *Section 11 Using Bosch RAIDWatch on the Host Computer*).

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> **NOTICE!**
> - If the RAID is deleted or corrupted you need to re-install the Bosch RAIDWatch application on the system. Rerun the Bosch RAIDWatch setup from your CD, select **Custom**, and then click **Stand-alone** (on Subsystem).
> - The Java Runtime Environment (JRE) 1.42 or higher is required. Using the web interface, you have to install the JRE on your PC first. The setup for the JRE is on the CD included with the product.

To change an IP address via a Web browser:
1. Open the Web browser.
2. Type the unit's IP address in the address bar, and then click the **Go** button.
   A Java Applet is loaded and the Bosch RAIDWatch application starts.
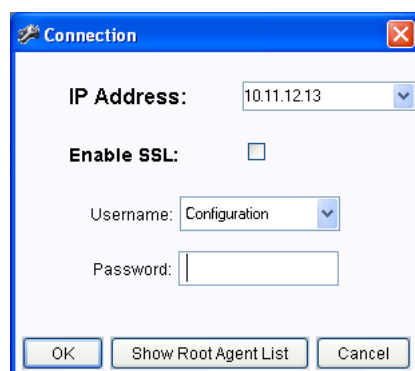

Fig. 10.1   Logon screen

3. In the **IP Address** box, type or select the IP address.
4. Select the **Enable SSL** check box if you want to use the Secure Sockets Layer (SSL) security option.
5. In the **Username** list, click **Configuration**.
6. In the **Password** box, type the password if needed (factory default: no password).
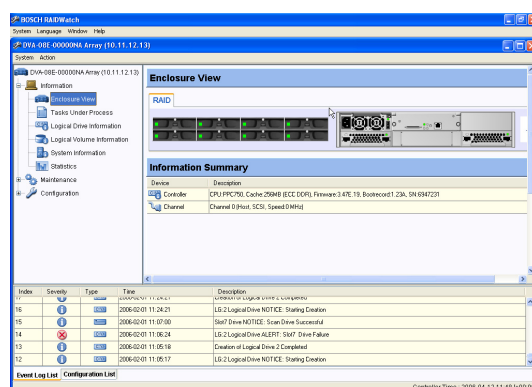7. Click **OK**. The computer opens the Bosch RAIDWatch application.

Fig. 10.2   Bosch RAIDWatch application

8.   In the navigation tree, click **Configuration**, and then click **Configuration Parameters**
9.   In the **Configuration Parameters** pane, click the **Communication** tab.
10. In the **Network Interface** pane, click **LAN 0**, and then click **Static**.
11. In the **IP Address** box, type the new IP address for LAN 0.
12. In the **Subnet Mask** box, type the new subnet mask for LAN 0.
13. In the **Network Interface** pane, click **LAN 1**, and then click **Static**.
14. In the **IP Address** box, type the new IP address for LAN 1.
15. In the **Subnet Mask** box, type the new subnet mask for LAN 1.
16. Click **Apply** to open a dialog box where you accept the changes.
17. Click **OK**.

> **i**
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> **NOTICE!**
> For security reasons we also recommend changing the passwords of the access levels for Configuration and Maintenance. In the **Configuration Parameters** pane, click the **Password** tab, and then change the passwords accordingly.
> The password for the access level Information is 1234 (default) and cannot be changed.

10.2   Guidelines for Setting Up a RAID

To change the factory default settings and the optional settings, use the following procedure.

To create a logical drive:
1.   Click the Windows **Start** button, point to **All Programs**, point to **Bosch,** and then click **Bosch RAIDWatch**. The screen opens the log on dialog box.
2.   In the navigation tree, click **Configuration**, and then click **Create Logical Drive**.
     Alternately: On the **Action** menu, click **Configuration**, and then click **Create Logical Drive**.
3.   Click the physical drives from the **Front View** pane, that are used in the Logical Drive. The **Selected Members** pane displays the disk drives slot IDs and sizes.
4.   In the **RAID Level** list, click a raid level.
5.   In the **Stripe Size** list, click a stripe size. We recommend using a stripe size of 16k.
6.   In the **Initialization** list, click **On-line** if the storage should be available immediately for the host. Or, click **Off-line** if the storage should be available after initialization is finished.
7.   In the **Write Policy** list, click **Default**.
8.   Click **OK**. The application opens a dialog box where you accept the changes.
9.   Click **OK** to create a logical drive.

To add partitions:
10. In the navigation tree, click **Existing Logical Drive**.
11. In the **Logical Drives** pane, select the logical drive you want to partition.
12. Right-click the selected logical drive, and then click **Edit Partition**. The application opens the **Edit Partition** dialog box.
13. Right-click the partition bar, and then click **Add Partition**. The application opens the **Partition Size** dialog box.
14. Type the desired capacity, and then click **OK**. Some DVRs only support a maximum capacity of 2 TB.
15. Close the **Edit Partition** dialog box.
16. In the **Write Policy** list, click **Default**.
17. In the **Password** box, type the password if needed.
18. Click **Apply**.

> **i**
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> **NOTICE!**
> For Bosch DVRs it is not necessary to create Logical Volumes.

To add host LUN mapping:

19. In the navigation tree, click **Host LUN Mapping**.
20. Right-click the **Host LUN Mapping** pane, and then click **Add LUN Map**. The application opens the **Add new LUN to host** dialog box.
21. In the Channel ID(s) box, select the Channel ID you want to use.
22. In the SCSI ID(s) box, select the SCSI ID you want to use.
23. In the LUN(s) box, select the LUNs you want to use.
24. In the **Logical Drive(s)/Volume(s) for Primary** pane, select the logical drive.
25. In the **Logical Drive(s)/Volume(s) for Primary** pane, select a partition.
26. Click **MAP LUN**.

NOTICE!

In the navigation tree you can check the drive status.

Click **Information**, and then click **Task Under Process**.

To remove a RAID:

1. In the navigation tree, click **Configuration**, and then click **Host LUN Mapping**.
2. In the **Host LUN Mapping** pane, select the configured LUN.
3. Right click the selected LUN, and then click **Remove LUN MAP**. The application opens a dialog box where you accept the changes.
4. Click **OK**. The LUN Mapping is no longer listed in the **Host LUN Mapping** pane.
   To delete Logical drives, all Host LUN Mappings must be removed.
5. In the navigation tree, click **Existing Logical Drive**.
6. In the **Logical Drives** pane, select the logical drive you want to delete.
7. Right-click the selected logical drive, then click **Delete Logical Drive**. The application opens a dialog box where you can accept the changes.
8. Click **OK**. The Logical Drive is no longer listed in the **Logical Drives** pane.

NOTICE!

For more information see Bosch RAIDWatch user manual.

11   Using Bosch RAIDWatch on the Host Computer

Bosch RAIDWatch allows you to administrate multiple subsystems from your host computer. We recommend the installation on a host computer if central management of multiple subsystems is required.

11.1   System requirements

Before starting the installation, read through the notes listed below:
- TCP/IP must be installed and running with a valid IP address assigned to a server. The server can either be used as a centralized management station, a remote client using a browser to access the array, or directly attached with a RAID subsystem using the in-band protocols.
- Your system display must be running in 256 colors or a higher mode otherwise some configuration items may not be visible. Screen size of 1024 x 768 is recommended to avoid any graphic transformation
- Check to confirm that the RAID disk arrays and controllers are installed properly. For the installation procedure, see the documentation included with the controller/subsystems.

Server Running Bosch RAIDWatch
- Computer must be a Pentium or above PC-compatible running Windows 2000/XP and Windows 2003 that supports Java Runtime 1.4.2 or higher.
- 256-color or higher mode management station monitor.
- At least one available RS-232C port is required (if connection to the controller is through the RS-232C).

Local Client Running Bosch RAIDWatch Manager
- Computer must be Pentium or above PC-compatible running Windows 2000/XP and Windows 2003 (32-bit or 64-bit) that supports Java Runtime 1.4.2 or higher.
- Remote station must be running Netscape 4.7X, Internet Explorer 6.0 or Mozilla 5.0 and Java Runtime 1.4.2 (for a particular platform).
- 256-color or higher mode management station monitor.
- At least one available RS-232C port is required (if connection to the controller is through the RS-232C).
- Windows Messaging (MAPI) for Windows 2000/XP/2003 if fax notification support is needed.
- Windows NetBEUI support for Windows 2000/XP/2003 must be enabled if network broadcast support notification is needed. Please refer to your Windows documentation for more information.
- SNMP traps service for Windows if SNMP traps notification is desired.
- TCP/IP with a valid IP assigned to each controller/subsystem.
- A fax modem that supports Hayes AT command protocol is required if using the fax event notification function. (Fax command class 2.0 and above.)
- A GSM modem is required if using the SMS short message event notification function. Bosch RAIDWatch currently supports two GSM modem models (not in the Bosch product portfolio and not distributed by Bosch):
  - Siemens TC35
  - WAVECOM Fast Rack M1206
- Under Windows 2000/XP/2003, the Java installation program, installshield.jar, only supports:
  - Netscape 4.5 (or above)
  - Microsoft Internet Explorer 4.0 (or above)

- Windows Messaging (MAPI) for Windows must be enabled if support for fax or email notification under NT is needed. Refer to your Windows documentation for more information.
- Windows NetBEUI support for Windows must be enabled if network broadcast support notification is needed. Refer to your Windows documentation for more information.

> **i**
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> **NOTICE!**
> Bosch RAIDWatch allows you to select several options during the installation process. However, it is recommended that all default combinations be retained. This installation guide only describes the installation process using the default settings.


11.2   Installing Bosch RAIDWatch on a Windows Platform

To install Bosch RAIDWatch on your host computer:

1. Before you initiate the installation process, close any other applications that are currently running. This action minimizes the possibility of encountering system errors during setup.
2. Insert the Bosch product CD or Bosch RAIDWatch installation CD into the system's CD/DVD drive.
   The Bosch RAIDWatch installer program is included on the CD-ROM that came with your subsystem. An auto-run screen provides a hot link to the installer program. (See *Figure 11.1*)
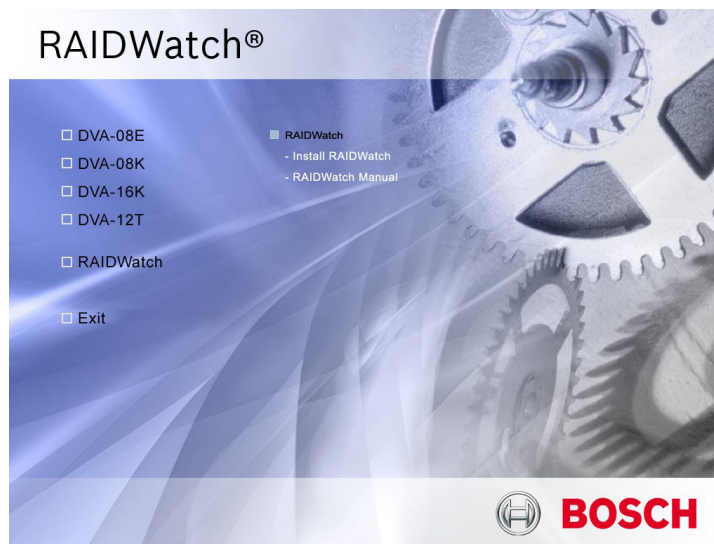
Fig. 11.1   Product Utility CD Initial Screen

3. Select the **Bosch RAIDWatch** check box, and then click **Install RAIDWatch**.
   The computer launches the installation procedure and opens a welcome screen.
4. To install Bosch RAIDWatch, click **Next**. The application opens the **License Agreement** dialog box.
5. Click **Accept** If you agree with the specified terms. The application opens a new dialog box with two installation options.
6. Click **Typical**. Selecting this option (default) allows you to install the Bosch RAIDWatch software, RAID agent, and necessary drivers on the host computer. The installation procedures described in this Quick Installation Guide are based on this selection.
   Click **Browse** and select a different directory or create a new directory. Then click **Next**.

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i	**NOTICE!** Please refer to the Bosch RAIDWatch User's Manual for details on the **Custom** option.

The installer program starts copying the application files to your system. You receive a successful installation message if the software installation procedure is successful.

7. Click **Finish**, to complete the process and exit the installation menu.
    Bosch RAIDWatch is installed on your host computer.

11.3   Changing Configuration

After installing Bosch RAIDWatch on your host computer you can change the configuration.

To change configuration:

1. Click the Windows **Start** button, point to **All Programs**, point to **Bosch**, and then click **Bosch RAIDWatch**. The screen displays the log on dialog box.
2. Change the configuration. See *Section 10.1 Changing an IP Address* and *Section 10.2 Guidelines for Setting Up a RAID*.

12   Connecting a Bosch Video Server

This instruction explains how to connect a VIP X1600, VIP X1/2, Dinion, and a Gen4 Dome.

To connect a Bosch Video Server:

1. Open the Web browser.
2. Type the unit's IP address in the address bar, and then click the **Go** button. The Web browser opens the LIVEPAGE.
3. Click the **SETTINGS** link in the upper section of the screen. The Web browser opens a new page with the configuration menu.
4. In the navigation tree, click **Recording Settings**, and then click **Storage medium**. The application opens the **Storage medium** dialog box.
5. In the **Type:** list, click **iSCSI**, and then click **Set**.
6. In the navigation tree, click **iSCSI Settings**. The application opens the **iSCSI Settings** dialog box.
7. In the **Scan iSCSI IP address:** box, type `192.168.0.100` (factory default), and then click **Scan**. The connection to the IP address will be established and the **iSCSI LUN map** pane shows the corresponding logical drives configured for the iSCSI storage device. The current user is displayed for each drive.

> **i**
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> **NOTICE!**
> As configured in the subsystem, all LUNs must be visible. If not, please check your subsystem configuration.

8. In the **iSCSI LUN map** pane, double-click a free drive (LUN).
9. Click **Set**. If the storage medium is detected successfully, a message appears.
10. Proceed with the recording settings of your Bosch Video Server. For details, please refer to the technical manual of the Bosch Video Server.