

# IP Matrix

VJD-8000 | VJD-7513 | VJD-7523 | VJD-7533



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# 1 Use latest software

Before operating the device for the first time, make sure that you install the latest applicable release of your software version. For consistent functionality, compatibility, performance, and security, regularly update the software throughout the operational life of the device. Follow the instructions in the product documentation regarding software updates.

The following links provide more information:

- General information: <https://www.boschsecurity.com/xc/en/support/product-security/>
- Security advisories, that is a list of identified vulnerabilities and proposed solutions: <https://www.boschsecurity.com/xc/en/support/product-security/security-advisories.html>

Bosch assumes no liability whatsoever for any damage caused by operating its products with outdated software components.

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## 2 Introduction

### 2.1 About this manual

This manual is intended for persons responsible for configuring and managing a CCTV system. This manual describes how to configure the program.

This document assumes that the reader is familiar with both the CCTV system and the other programs that are integrated into the system.

### 2.2 Conventions in this document

The symbols and notations that follow are used to draw attention to special situations:

**Notice!**

This symbol indicates special features and provides tips and information for easier, more convenient use of the software.

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Terms that you can find in the program, such as menu options, commands or text in the user interface, are written in **bold**.

### 2.3 Additional documentation

**Notice!****Read and follow the instructions in the hardware documentation**

While setting up the hardware for IP Matrix, read and follow the instructions of the hardware documentation. The documentation contains important safety messages. It is mandatory to read and understand the safety messages prior to installation of the hardware.

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**More information**

Find more information, software downloads, and documentation at: [www.boschsecurity.com](http://www.boschsecurity.com) and the respective product page.

## 3 System overview

### 3.1 General information

The IP Matrix application turns a VIDEOJET decoder configuration into a stand-alone, IP-based CCTV surveillance system.

The IP Matrix application covers many applications where in analog systems the analog CCTV matrix switch Allegiant would be used. Therefore, the IP Matrix application can be seen as the IP-equivalent to an Allegiant matrix switch systems.

#### Stand-alone mode

In operational mode, the IP Matrix application communicates over the network connections between IP cameras, encoders and decoders, controlled and operated using either a KBD-UXF or a KBD-Digital keyboard per decoder.

A network connection to a PC is not needed.

The IP Matrix application can be enhanced by recording devices that allow playback of recordings, controlled using the keyboard, if playback permission is granted.

#### Basic configuration

With a KBD-UXF or KBD-Digital keyboard, and up to four displays connected to the decoder, up to 32 cameras can be controlled without a PC being needed for operation.

#### Maximum configuration

In a maximum setup with 4 decoders, 4 operators can control up to 256 cameras using 4 independently operating keyboards.

Up to 128 cameras accumulate from the cameras supported per decoder. Additional cameras can be licensed up to a total number of 256.

#### Connected displays

Up to 2 displays per monitor can be connected to VJD-8000 and VJD-7513, and up to four displays to VJD-7523 and VJD-7533. Each display shows a monitor wall screen. Depending on the layout, the monitor wall screen shows 1 to 30 monitors identified by a unique index number in the group of 4 decoders.

#### Connected mode

A PC is only required for the setup and installation of the system or for maintenance purposes. The PC must be in the same network as the decoders.

### 3.2 Requirements

#### Requirements for configuration purposes

Hardware	Personal Computer
CPU	Dual Core, 3.0 GHz or better
RAM	Minimum 2 GB
Operating system	Windows Server 2019 Windows Server 2016 Windows 10 (64 bit)
Graphic card	DirectX 11 compatible
Ethernet card	Minimum 100 Mbps
Sound card	Recommended

Software Microsoft .NET 4.7.2

Free memory (installation) 250 MB

#### Requirements for installed software

The Configuration Manager 7.74 program or later is required.

#### Requirements for operational purpose

Make sure the following requirements are fulfilled:

- 1 to 4 ready-to-use VIDEOJET decoders with firmware 10.30 or later connected to a surveillance network (fully installed and ready for operation)
- 1 to 4 KBD-UXF or KBD-Digital keyboards (fully installed and ready for operation)
- 1 to 8 (16) displays with appropriate interface connections or adapters
  - Note:** Up to 2 displays per decoder can be connected to VJD-8000 and VJD-7513, and up to four displays to VJD-7523 and VJD-7533.
- Fixed or moving cameras connected to the surveillance network
- A PC with Configuration Manager program installed and connected to the surveillance network (only for configuration purposes)



#### Notice!

Prior to operation, the IP Matrix application must be configured using the Configuration Manager program.

## 3.3

### Functions

#### IP Matrix application

The IP Matrix application can be used to control IP-based monitoring systems.

An IP-based monitoring system consists of up to 4 decoders, up to 16 displays connected to the decoders, and up to 4 KBD-UXF or KBD-Digital keyboards controlling the monitoring system. This monitoring system can control up to 128 (256) cameras. A computer is not required.

In normal operation, the system works self-sufficient using the network connections between IP cameras, encoders and decoders. The operation is controlled by the keyboards. As part of a larger CCTV system, the IP Matrix application can be used as a satellite system.

#### Camera sequences and AUTODOME presets

The IP Matrix application supports the configuration of up to 32 predefined camera sequences. You can switch these camera sequences instead of individual cameras to monitors. These camera sequences enable cameras to be switched in a continuous sequence in accordance with a schedule.

AUTODOME cameras can be controlled as usual by using a KBD-UXF or a KBD-Digital keyboard.

Fixed AUTODOME positions can be configured in the system as virtual cameras. For detailed information, refer to the camera's manual.

#### Configuration

The IP Matrix application can be configured using the Configuration Manager 7.74 program or later.

#### Attached keyboards

If a keyboard is connected to a decoder for the first time, the keyboard is locked and must be unlocked using a PIN code.

In locked state only the **Lock/Unlock** icon lights up; all other icons or keys are dark

### Summary

The IP Matrix application provides the following main functions:

- Pure IP-based CCTV matrix system
- Up to 128 (256) cameras, 8 (16) monitors and 4 KBD-UXF or KBD-Digital keyboards
- No computer required to operate the system
- Automatic camera sequences
- Layout switching, single view and picture-in-picture
- Up to 9 favorite views with layouts and pre-defined camera connections
- Optional: playback of recordings managed by playback permission

## 3.4

### Restrictions

Observe the following restrictions when using a IP Matrix system:

- The decoder dynamically adapts its performance to high loads by skipping frames, which can cause juddering in the video stream.
- Playback is only possible from local recordings, not from recordings managed by VRM.
- A long i-frame distance leads to less exact navigation in playback mode and lower performance in playback backwards mode.



## 4 Installation

Observe the requirements of the IP Matrix application (see *Requirements*, page 6).

**Notice!**

When installing devices, observe the safety instructions given in the respective manuals.

**Installing displays**

To install displays:

- ▶ Connect up to 4 displays to the display connectors of the VIDEOJET decoder.

**Notice!**

The actual sequence of the displays can be defined during the configuration of the IP Matrix application. When setting up the displays you must not follow a certain sequence.

**Installing keyboards**

To operate the IP Matrix application, at least 1 keyboard must be connected to one of the VIDEOJET decoders.

To install keyboards:

- ▶ Connect at least 1 keyboard to one of the VIDEOJET decoders.

**Notice!**

If more than 1 keyboard is connected, all keyboards in the matrix have the same operation rights and can control the whole system.

Only 1 keyboard can be connected to a single decoder. Any additional keyboard must be connected to the next decoder without keyboard.

**Finishing hardware installation**

To finish the hardware installation:

1. After connecting the hardware components, turn on the devices.
2. On the configuration PC, start the Configuration Manager program.
3. Configure the IP Matrix application.

**Refer to**

- *Configuration*, page 10

## 5 Configuration

Before you can use the IP Matrix application, the system needs to be configured.

To configure the system:

1. Define a general password for all cameras.  
See *Defining a general password, page 10*
2. Add 1 to 4 decoders, save their IP addresses, then configure the amount of displays connected to the decoders.  
See *Adding decoders, page 10*
3. Add cameras to the IP Matrix application.  
See *Adding cameras, page 11*
4. Add camera sequences and select the cameras that belong to the sequence.  
See *Adding camera sequences, page 12*



### Notice!

If you connect AUTODOME cameras to the matrix, you can use the preset positions of the cameras as if the cameras are individual cameras. For detailed information how to define the presets, refer to manual of the respective camera.

### 5.1 Defining a general password

How to get here: Configuration Manager program > click the **My Devices** tab > click the decoder in the tree structure

All cameras in the IP Matrix application must have a common user password. This password must be entered in the Configuration Manager program.

To define a common password:

1. Start the Configuration Manager program.
2. On the toolbar, click the **My Devices** tab.
3. Click the decoder.
4. In the view pane to the right, click the **Advanced** tab.
5. In the **General password** box, enter the password that should be used for all cameras.
6. Save the password.

The password is saved and can be used to connect to the cameras.

**Note:** To display the IP Matrix page, click the IP Matrix tab.

### 5.2 Adding decoders

How to get here: Configuration Manager program > click the **My Devices** tab > click the decoder in the tree structure

At least 1 decoder is required to create an IP Matrix system. In maximum configuration, the IP Matrix system can consist of up to 4 decoders.

To add a decoder to the IP Matrix application:

1. In the view pane to the right, click the **IP Matrix** tab.
2. Click the **Decoders** tab.

The **Decoders** pane is displayed.

**Note:** If the decoder is not part of the IP Matrix system, the **IP** boxes for the IP addresses appear dimmed.

3. Click **Set this device as master** to use the decoder as master for a new IP Matrix system.  
The IP address of the new master decoder is entered automatically.  
**Note:** All settings are done through this master decoder. The master controls the other decoders in a multi-decoder matrix.
4. If necessary, up to 3 additional decoders can be added as slaves.  
To do this, enter the IP addresses of the decoders in the respective boxes.
5. In the **Displays** box, select the number of displays connected to the decoder.
6. In the **Display 1 start monitor** box, enter the number of the first monitor to be shown on display 1.
7. In the **Max monitor count** box for display 1, enter the maximum amount of monitors to be shown on display 1.  
The monitor settings control the sequence of the displays within the matrix.
8. If connected, configure displays 2, 3 and 4 accordingly.  
**Note:**
  - The value of the start monitor of the additionally configured displays must always be greater than the value of the start monitor plus the value of the maximum monitor count of the previous display.
  - You can deactivate every display that is not connected.
9. To add up to 3 additional decoders, repeat the above steps accordingly.
10. If needed, click **Show text overlays**.  
The monitor indexes and decoder IP addresses are displayed as overlays in each monitor window. This information allows you to identify the individual monitors easily and helps you to renumber monitors consecutively over the monitor wall, independent from the original mounting order of the displays.

## 5.3 Adding cameras

How to get here: Configuration Manager program > click the **My Devices** tab > click the decoder in the tree structure

To display allocated cameras:

1. In the view pane to the right, click the **IP Matrix** tab.
2. Click the **Cameras** tab.  
The **Cameras** pane with the allocated cameras is displayed.
3. If necessary, select the stream and preset for each camera or leave the default value (Stream 1, no preset).

To add a camera:

1. In the view pane to the right, click the **IP Matrix** tab.
2. Click the **Cameras** tab.  
The **Cameras** pane with the allocated cameras is displayed.
3. In the **Cameras** pane, click **Edit**.  
The **Edit camera list** dialog box is displayed, showing the available and allocated cameras.
4. Drag a camera from the **Available devices** column to the **Allocated devices** column.  
**Note:** You can select multiple cameras and drag them to the **Allocated devices** column.
5. Click **OK**.

To remove a camera:

1. In the view pane to the right, click the **IP Matrix** tab.
2. Click the **Cameras** tab.  
The **Cameras** pane with the allocated cameras is displayed.

3. In the **Cameras** pane, click **Edit**.  
The **Edit camera list** dialog box is displayed, showing the available and allocated cameras.
4. Drag a camera from the **Allocated devices** column to the **Available devices** column.  
**Note:** You can select multiple cameras and drag them to the **Available devices** column.
5. Click **OK**.

## 5.4 Adding camera sequences

How to get here: Configuration Manager program > click the **My Devices** tab > click the decoder in the tree structure

You can define a maximum of 32 independent camera sequences. The camera views are displayed in sequence.

To add camera sequences:

1. In the view pane to the right, click the **IP Matrix** tab.
2. Click the **Camera Sequences** tab.  
The **Camera Sequences** pane is displayed.
3. Click **Add** to add a new sequence.
4. In the **Duration** box, enter the duration in seconds.
5. Click the **Cameras...** icon to the right.  
The **Edit camera list** dialog box is displayed, showing the available and allocated cameras.
6. To add a camera:  
Drag a camera from the **Available devices** column to the **Allocated devices** column.  
**Note:** You can select multiple cameras and drag them to the **Allocated devices** column.
7. To remove a camera:  
Drag a camera from the **Allocated devices** column to the **Available devices** column.  
**Note:** You can select multiple cameras and drag them to the **Available devices** column.
8. Click **OK**.

## 5.5 Basic keyboard settings

How to get here: Configuration Manager program > click the **My Devices** tab > click the decoder in the tree structure

If you want to protect accessing the IP Matrix application, you must enter a numeric passcode to unlock the keyboard.

To define a passcode:

1. In the view pane to the right, click the **IP Matrix** tab.
2. Click the **General** tab.  
The **Keyboard** pane is displayed.
3. In the **Passcode** box, enter a numeric passcode that will be used to unlock the keyboard.
4. In the **Auto lock** list, select a period.  
The keyboard will be locked automatically if there is no keyboard action during that period.
5. To enable playback permission, select the **Playback** check box

## 6 Troubleshooting

For general appearance check the **Advanced** tab settings of each decoder.

Issue	Solution
Cannot access cameras.	Check the general password. All cameras must use this password as a common user password.
In a multi-decoder setup: Settings in the Configuration Manager program do not affect the IP Matrix application.	Only settings on the master decoder affect the IP Matrix application. Select the master decoder and try again.
The selected monitor is not highlighted.	Check the distance between cameos. Increase the distance if necessary.
No connections after restarting the decoder.	Enable reconnect on restart.
Not all monitors can be populated with video connections.	Check the number of decoders that defines the maximum possible connections on one decoder device. Or Your layout may provide more monitors than allowed by the maximum monitors per display.



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