AxxonSoft

«Intellect» software system

Detector Pack: User's Manual

Version 1.1

Moscow 2012

ITV ИНТЕЛЛЕКТ. ТЕХНОЛОГИИ. ВИДЕО.

axxon Video Surveillance and Security Solutions

Contents

CONTENTS **2**

1 INTRODUCTION **3**

1.1 General information **3**

1.2 Purpose of the document **3**

1.3 Purpose of the detector pack **3**

2 SOFTWARE AND HARDWARE REQUIREMENTS **4**

2.1 Computer and operating system requirements **4**

2.2 Camera requirements **4**

3 STAFFING REQUIREMENTS **5**

4 GENERAL DESCRIPTION OF THE DETECTOR PACK **6**

4.1 Structure of the detector pack **6**

4.2 Functionality of the «Queue length detector» module **6**

4.3 Functionality of the «People counter detector» module **6**

5 INSTALLING THE DETECTOR PACK **7**

5.1 General information on installing the detector pack **7**

5.2 Installing the detector pack **7**

5.2.1 Description of the detector pack installation files 7
5.2.2 Installation 7
5.2.3 Repair 10
5.2.4 Removal 12

6 CONFIGURING THE «QUEUE LENGTH DETECTOR» AND «PEOPLE COUNTER DETECTOR» MODULES 15

6.1 Configuring the «Queue length detector» module **15**

6.2 Configuring the «People counter detector» module **18**

7 OPERATING THE «QUEUE LENGTH DETECTOR» AND «PEOPLE COUNTER DETECTOR» MODULES. 24

7.1 Operating the «Queue length detector» module **24**

7.1.1 Obtaining traffic information in the area of interest 24
7.1.2 Generating a report on the traffic in the area of interest 24

7.2 Operating the «People counter detector» module **24**

7.2.1 Obtaining information on number of visitors 24
7.2.2 Generating a visitor report 25

1 Introduction

1.1 General information

1.2 Purpose of the document

The *Intellect software system – Detector pack: Operator's Manu*al contains the information necessary to install and operate the additional software modules that are part of the *Intellect* software system detector pack.

The structure of this document allows the user to skim the information contained on the detector pack and to select, depending on the level of training, topics of interest for a more detailed study. Chapters in the manual - or the informational or reference content – each have their own underlying structure.

The *Introduction* Chapter is intended as a general introduction to this document.

The chapter on *Software and hardware requirements* states the requirements for computers in which the applicable modules that are part of the detector pack will be installed.

Requirements for staff working with modules comprising the detector pack are provided in the *Staffing requirements* chapter.

The chapter on the *General description of the detector pack* describes the modules comprising the detector pack.

Recommendations for users and administrators to install, repair and remove the detector pack are described in detail in the chapter on *Installing the detector pack*.

Information on configuring the **Queue length detector** and the **People counter detector** modules is provided in the chapter on *Configuring the "Queue length detector" and "People counter detector" modules*.

Information on operating the **Queue length detector** and the **People counter detector** modules is provided in the chapter on *Operating the "Queue length detector" and "People counter detector" modules.*

1.3 Purpose of the detector pack

The following detector pack modules are intended for integration and use with *Intellect*:

1. **Queue length detector**.
2. **People counter detector**.

The installation and functionality of these modules are shown in the appropriate sections (see the chapter on the *General description of the detector pack*).

2 Software and hardware requirements

2.1 Computer and operating system requirements

The computer and operating system requirements for the modules that are part the detector pack correspond to the same requirements for that of *Intellect* (see the *Intellect system Administrator's Manual*).

2.2 Camera requirements

The requirements for the cameras that will work with the modules that are part of the detector pack are listed in Tab. 2.2—1.

Tab. 2.2—1 Camera requirements

Module	Camera requirements
Queue length detector	The camera must be rigidly fixed. People in the video image should be visually distinguishable. The camera is pointed downward (ideally, the camera is pointed vertically downward). Allowable size of a person: the area of a rectangle around the person as a percentage of the picture area is between 0.0025 and 0.1.
People counter detector	The camera must be rigidly fixed. People in the video image should be visually distinguishable. The camera is pointed downward (ideally, the camera is pointed vertically downward). Allowable size of a person: the area of a rectangle around person as a percentage of the picture area is between 0.1 and 0.6.

Note. In general, the requirements listed in Tab. 2.2—1 are not mandatory. However, if these requirements are not met, the accuracy of the detector decreases.

The remaining camera requirements for the detector pack modules correspond to similar requirements for *Intellect* (see the *Intellect system Administrator's Manual*).

3 Staffing requirements

For the use of the *Intellect*-based detector, there are the following roles:

1. administrator;
2. operator.

In particular cases a person can perform the functions of both the administrator and operator. The main duties of the administrator are:

1. upgrading, configuring and monitoring the performance of the system hardware;
2. installing, upgrading, configuring and monitoring the performance of the system and basic software;
3. installing, configuring and monitoring the application software.

The administrator must have a high level of qualifications and practical experience in the implementation of the installation, configuration and administration of software and hardware used in the software package. The structure of the system provides the ability to control all functionality available by a single administrator, and also allows for the sharing of the administrative responsibility among multiple operators. The main duties of the operator are as follows:

1. work with the system's graphical user interface;
2. optimization of the PC for the tasks needed using the functionality provided in the system.

The system operator should have experience working with PC's based on Microsoft Windows operating systems at the level of a skilled user, and easily carry out basic operations.

4 General description of the detector pack

4.1 Structure of the detector pack

The *Intellect* detector pack is comprised of 2 independent software modules:

1. The **Queue length detector** module.
2. The **People counter detector** module.

The basic version of *Intellect* includes the software platform for the installation of these modules.

4.2 Functionality of the «Queue length detector» module

The **Queue length detector** module is designed to carry out the following functions:

1. Count the number of people waiting in line within a certain time interval.
2. Record the number of people waiting in line in a database.
3. Plot the crowding in an observed area.

4.3 Functionality of the «People counter detector» module

The **People counter detector** module is designed to carry out the following functions:

1. Count visitors in an observed area.
2. Record incidence of visitor entries into an observed area in a database.
3. Record incidence of visitor exits from an observed area in a database.
4. Generate reports in the number of visitors to an observed area.

5 Installing the detector pack

5.1 General information on installing the detector pack

The installation of the detector pack takes place in the following order:

1. Install *Intellect* (see the *Intellect system Administrator's Manual*).
2. Install the detector pack (see the chapter on *Installation*).

5.2 Installing the detector pack

5.2.1 Description of the detector pack installation files

Detector pack installation files on CD-ROM (see Fig. 5.2—1).

Fig. 5.2—1 CD-ROM with the detector pack installation files

The installation files contain the installation program and the necessary software components to install the detector pack on the computer.

Only an administrator can install the detector pack.

5.2.2 Installation

To install the detector pack, the following steps must be carried out:

1. Insert the CD-ROM with the detector pack installation files into the CD/DVD drive. A window will open showing the contents of the disc (Fig. 5.2—2)

Fig. 5.2—2 Contents of the CD-ROM

2. Run **Setup.exe**, which will start the detector pack installation.

As a result, a window will appear with the message **Welcome to the Detector Pack v.1.0.0 Setup Wizard** (Fig. 5.2—3).

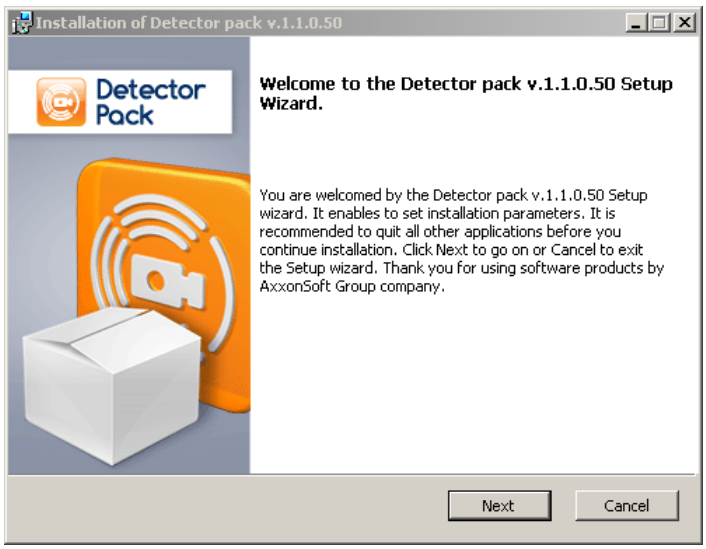

Fig. 5.2—3 Installation setup window

3. Click **Next** (Fig. 5.2—3).

The **License agreement** window will appear (Fig. 5.2—4).

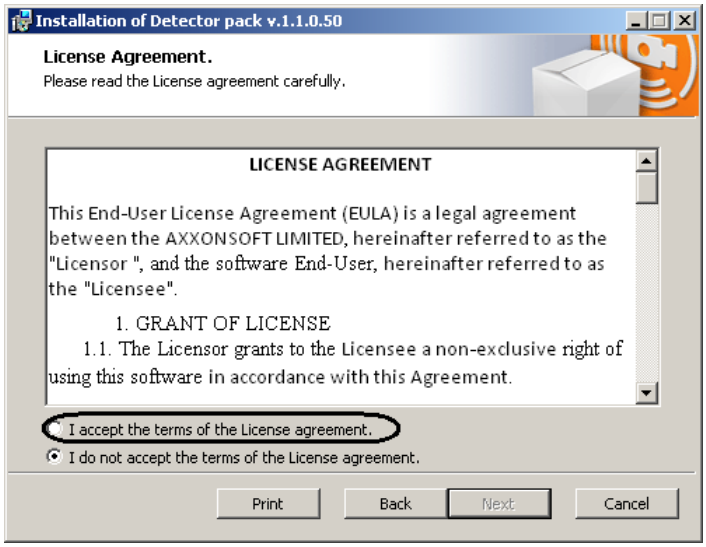

Fig. 5.2—4 License agreement window

4. After reading the license agreement, agree with the terms of the agreement by clicking on the check box stating **I accept the terms of the License agreement**, otherwise the installation of the software system will be discontinued (Fig. 5.2—4).
5. Click **Next** (Fig. 5.2—4).

The **Ready to install** window will appear (Fig. 5.2—5).

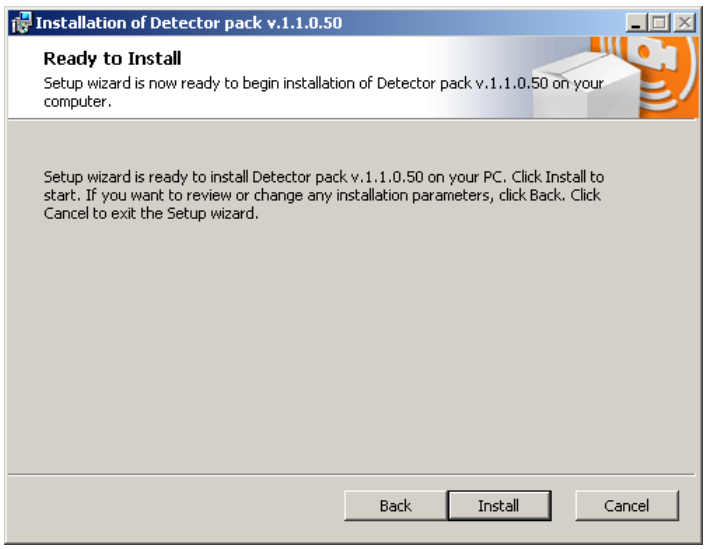

Fig. 5.2—5 Ready to install window

6. Click **Install** (Fig. 5.2—5).

As a result, the **Detector pack installation process** window will appear (Fig. 5.2—6)

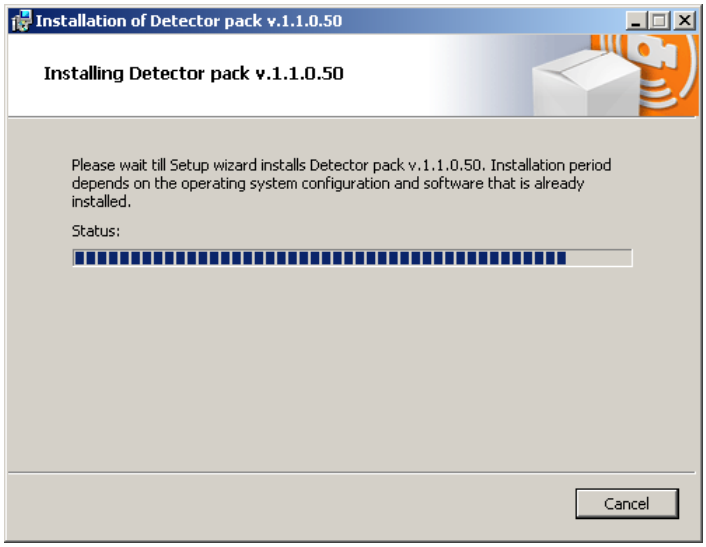

Fig. 5.2—6 Detector pack installation process window

After installing all components, the **Installation complete window** will appear (Fig. 5.2—7)

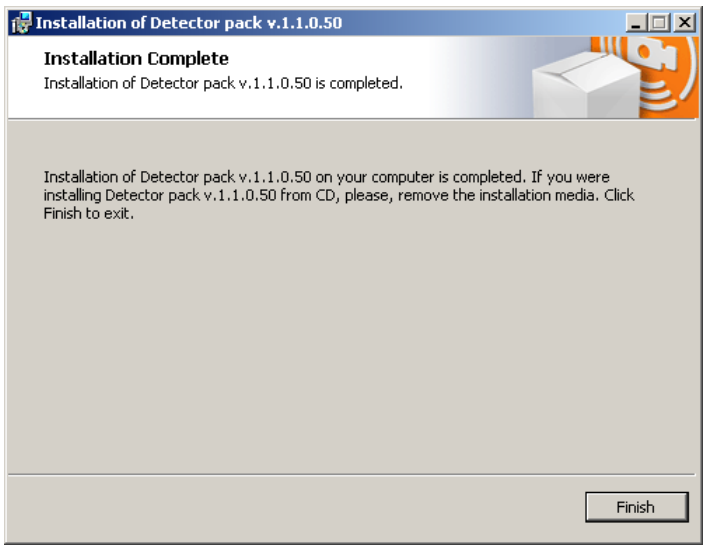

Fig. 5.2—7 Installation complete window

7. Click **Finish** (Fig. 5.2—7).

The detector pack installation in complete.

5.2.3 Repair

To repair the detector pack, the following steps must be carried out:

1. Insert the CD-ROM with the detector pack installation files into the CD/DVD drive. A window will open showing the contents of the disc (Fig. 5.2—8)

Fig. 5.2—8 Contents of the CD-ROM

2. Run **Setup.exe**, which will start the detector pack installation.

As a result, the **Select action** window will appear (Fig. 5.2—9).

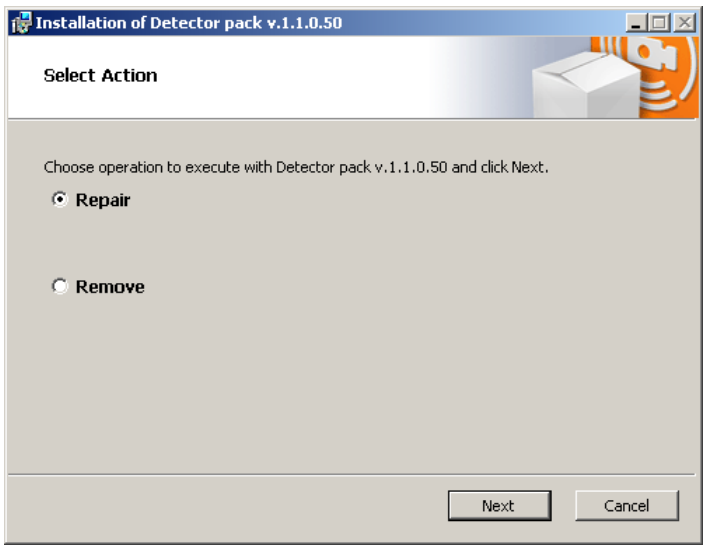

Fig. 5.2—9 Select action window

3. Select **Repair** (Fig. 5.2—9).
4. Click **Next** (Fig. 5.2—9).

The **Detector pack repair process** window will appear (Fig. 5.2—10).

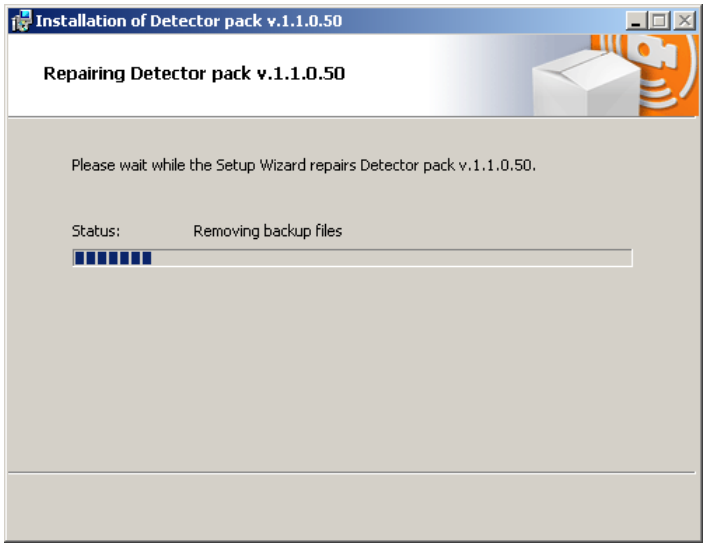

Fig. 5.2—10 Repair process window

After installing all components, the Repair complete window will appear (Fig. 5.2—11).

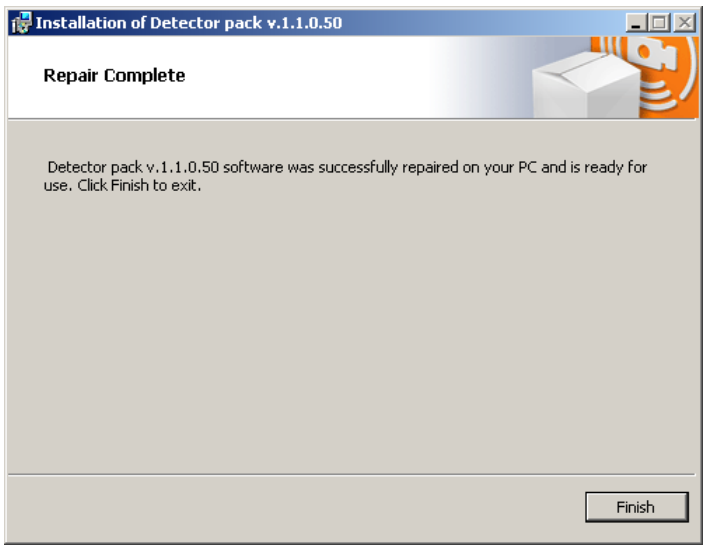

Fig. 5.2—11 Repair complete window

5. Click **Finish** (Fig. 5.2—11).

The detector pack repair is complete.

5.2.4 Removal

To remove the detector pack, the following steps must be carried out:

1. Insert the CD-ROM with the detector pack installation files into the CD/DVD drive. A window will open showing the contents of the disc (Fig. 5.2—12).

Fig. 5.2—12 Contents of the CD-ROM

2. Run **Setup.exe**, which will start the detector pack installation.

As a result, the **Select action** window will appear (Fig. 5.2—13).

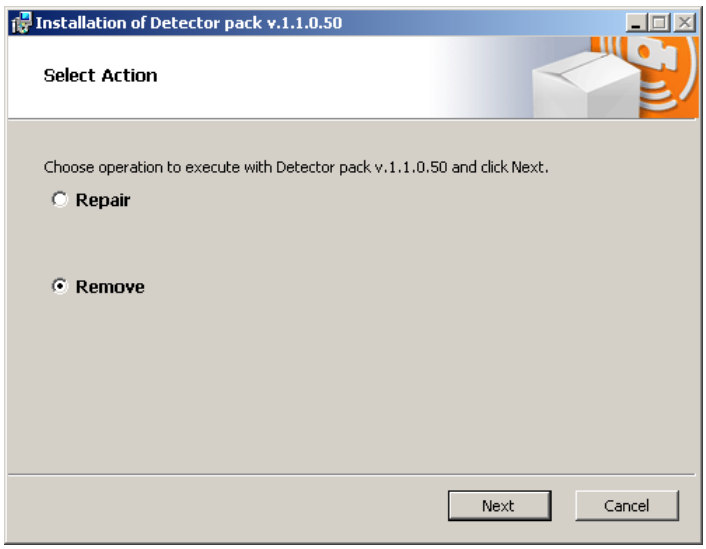

Fig. 5.2—13 Select action window

3. Click **Remove** (Fig. 5.2—13).
4. Click **Next** (Fig. 5.2—13).

The **Detector pack removal process** window will appear (Fig. 5.2—14).

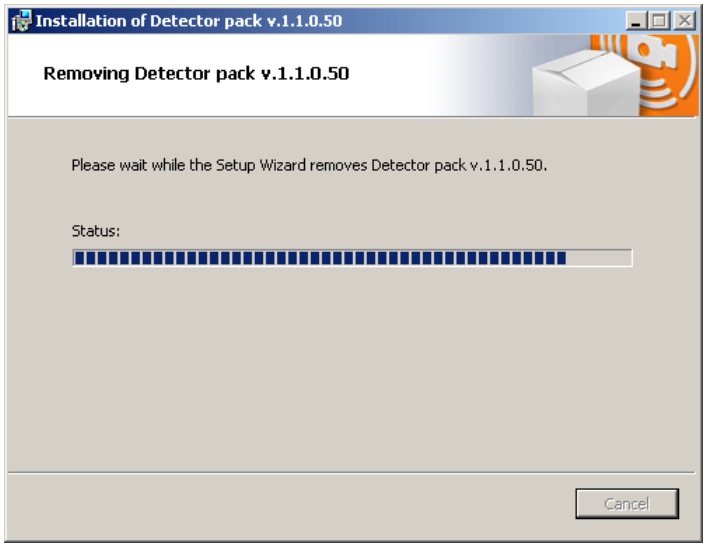

Fig. 5.2—14 Removal process window

*Note. To cancel the detector pack removal process, click **Cancel** (Fig. 5.2—14).*

Upon the deletion of the files, a message will appear stating that the detector pack was removed (Fig. 5.2—15).

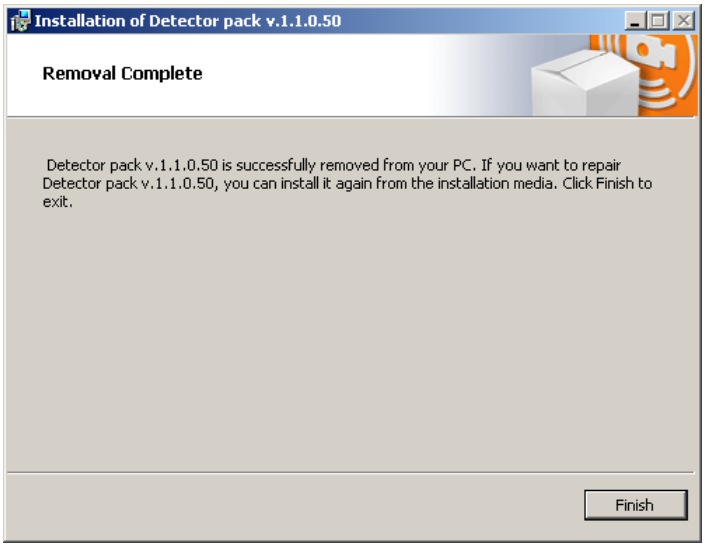

Fig. 5.2—15 Detector pack removal complete window

5. Click **Finish** (Fig. 5.2—15).

The detector pack removal is complete.

6 Configuring the «Queue length detector» and «People counter detector» modules

6.1 Configuring the «Queue length detector» module

The **Queue length detector** module can be configured using the **System settings** menu, under the **Hardware** tab, on the **Queue Length Detection** control panel, using the **Camera** settings (Fig. 6.1—1).

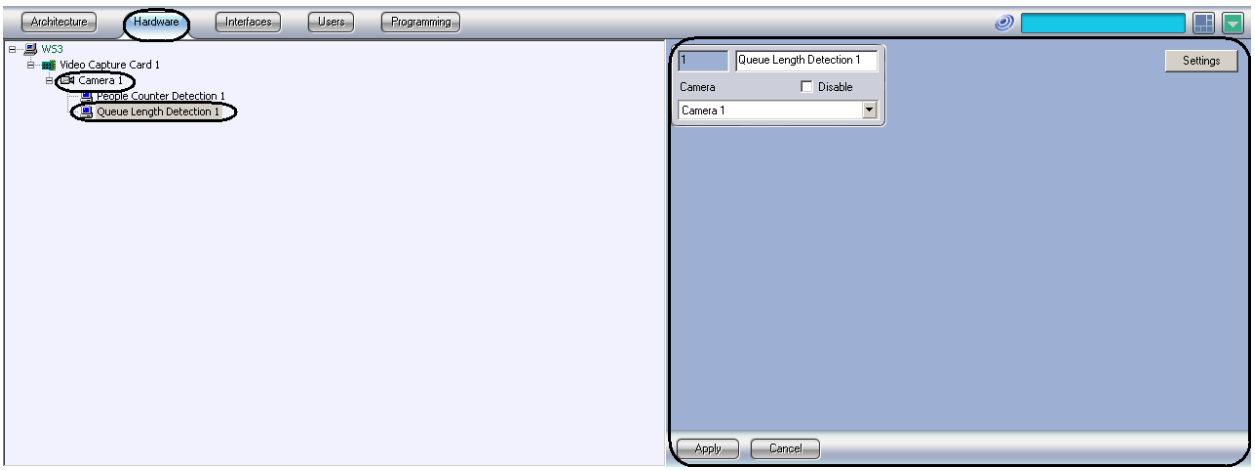

Fig. 6.1—1 Queue Length Detection menu

The **Queue length detector** module is set up as follows:

1. Go to the **Queue Length Detection** control panel (Fig. 6.1—2).

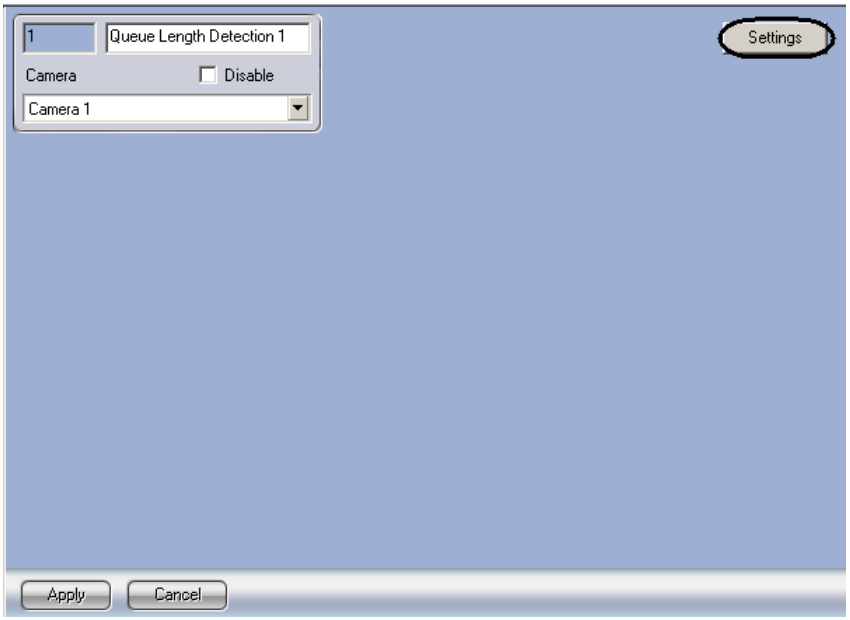

Fig. 6.1—2 Queue Length Detection control panel

2. Click **Settings** (see Fig. 6.1—2).

The **Detector settings** window will appear (Fig. 6.1—3).

Fig. 6.1—3 Detector settings window

3. Specify the area of interest and the approximate size of people in the video image:
   - 3.1 Click **Stop video** to capture the video image (see Fig. 6.1—3, **1**).
   - 3.2 Click **Area of interest** (see Fig. 6.1—3, **2**).
   - 3.3 Using the left mouse button select the four corners of the area on the captured video image (see Fig. 6.1—3, **3**) to be analyzed (Fig. 6.1—4, **1**). Only one area may be so designated. If a second area is specified, then the first area will be deleted. Upon selection of the area the remaining part of the video image will be dimmed.

Note. To remove a selected area, click the  *next to the* ***Area of interest*** *button.*

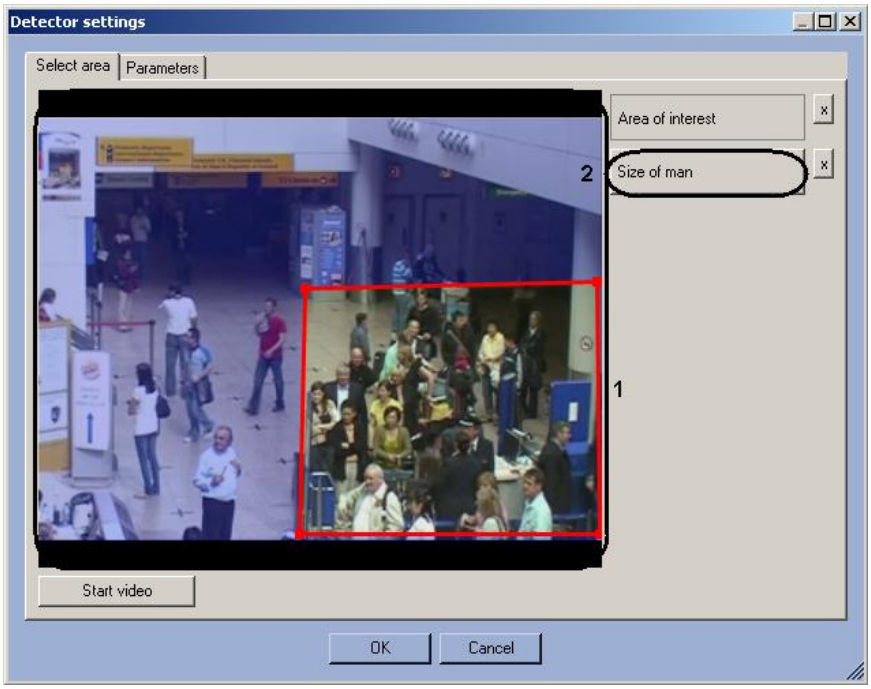

Fig. 6.1—4 Setting area of interest

3.4 Click **Person size** (see Fig. 6.1—4, **2**).

3.5 On the captured video image (see Fig. 6.1—4, **1**) specify the approximate size of a person. To do this use the left mouse button to specify a rectangular area (Fig. 6.1—5, **1**).

Note. To remove the person size, click the x *next to the* ***Person size*** *button.*

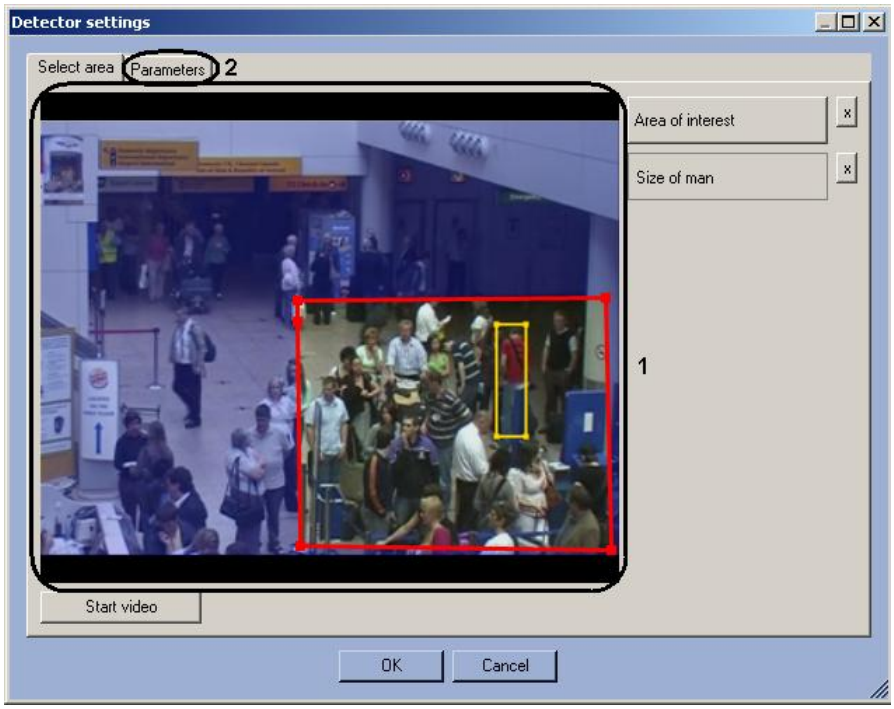

Fig. 6.1—5 Specify person size

4. Set the module parameters:

4.1 Go to the **Parameters** tab (see Fig. 6.1—5, **2**).

4.2 Set the detection sensitivity field in a range from 0 to 1 with up to two decimal places (Fig. 6.1—6, **1**).

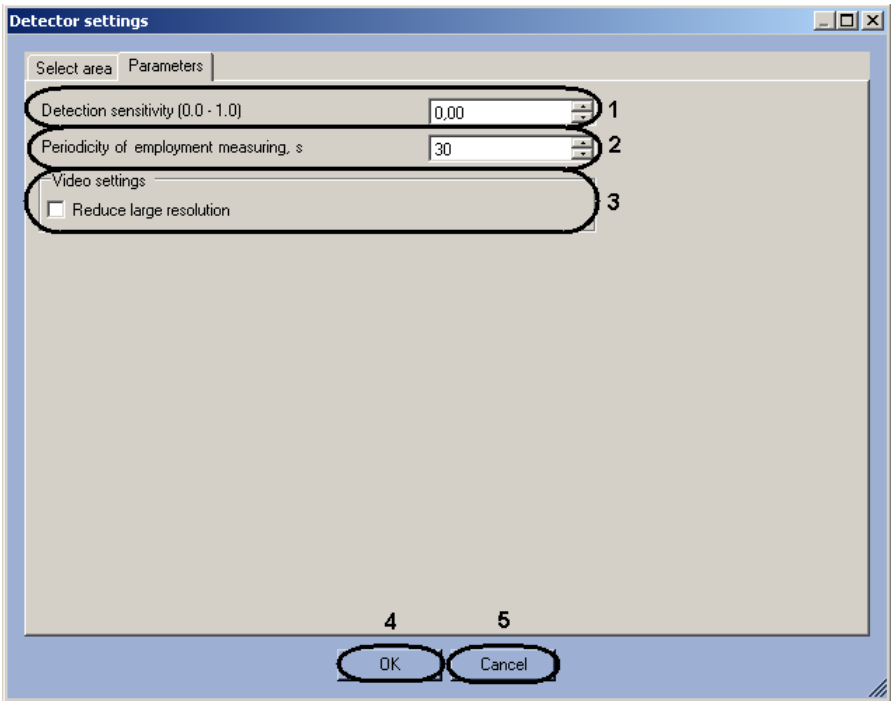

Fig. 6.1—6 Configuring the Queue length detector module parameters

4.3 In the **Period of activity sensing** field, enter a time period in seconds for counting the number of persons in the observed area (see Fig. 6.1—6, **2**).

4.4 If you want to count the number of persons in the observed area in reduced resolution, check the box **Reduce large resolution** (see Fig. 6.1—6, **3**).

5. Click **OK** to save changes and return to the control panel of the **Queue length detector** (see Fig. 6.1—6, **4**).

*Note. To return to the control panel of the **Queue length detector** without saving changes, click **Cancel** (see Fig. 6.1—6, **5**).*

6. On the **Queue length detector** control panel, click **Apply**.

Configuring the **Queue length detector** module is complete.

6.2 Configuring the «People counter detector» module

The **People counter detector** module can be configured using the **System settings** menu, under the **Hardware** tab, on the **People counter detector** control panel, using the **Camera** settings (Fig. 6.2—1).

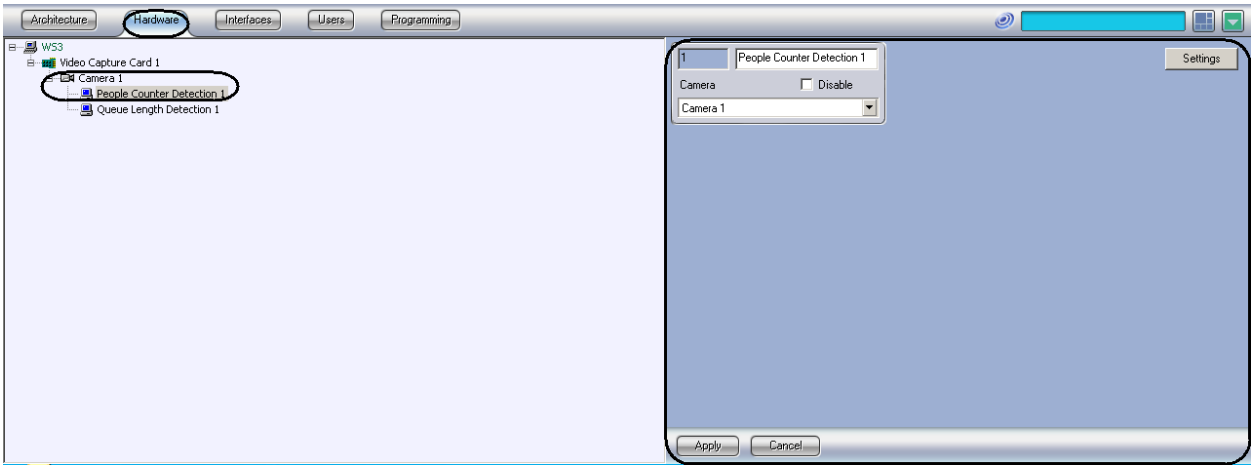

Fig. 6.2—1 People counter detector menu

The **People counter detector** module is set up as follows:

1. Go to the **People Counter Detection** control panel (Fig. 6.2—2).

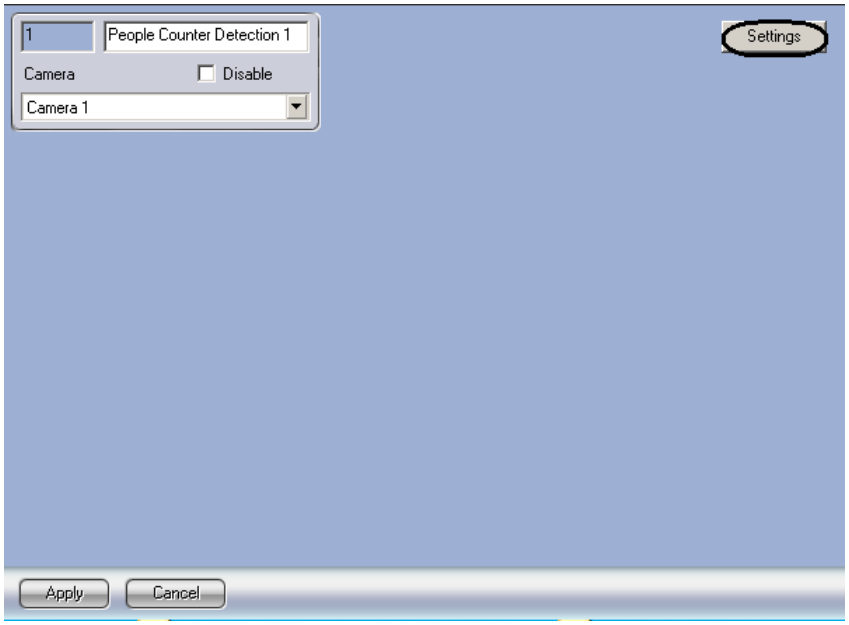

Fig. 6.2—2 People counter detector control panel

2. Click **Settings** (see Fig. 6.2—2). The **Detector settings** window will appear (Fig. 6.2—3).

Fig. 6.2—3 Detector settings window

3. Specify the area of interest and the approximate size of people in the video image:
   3.1. Click **Stop video** to capture the video image (see Fig. 6.2—3, **1**).
   3.2. Click **Area of interest** (see Fig. 6.2—3, **2**).
   3.3. Using the left mouse button select the four corners of the area on the captured video image (see Fig. 6.2—3, **3**) to be analyzed (Fig. 6.2—4). Only one area may be so designated. If a second area is specified, then the first area will be deleted.

Note 1. To remove a selected area, click the  *next to the* ***Area of interest*** *button.*

Note 2. The area of interest is divided into two sections - 1 and 2. If an object moves from sector 1 to sector 2, it is logged as the entry of a visitor; if the visitor moves from sector 2 to sector 1, it is logged as an exit.

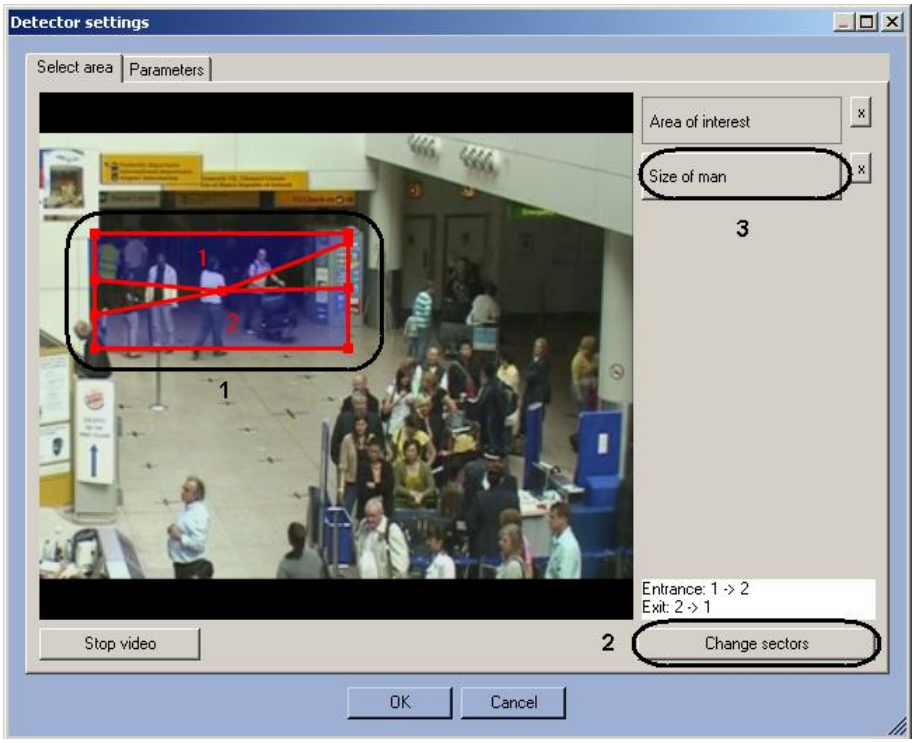

Fig. 6.2—4 Setting the area of interest

3.4. Set the desired size, shape and position of the sectors in the area of interest by moving their boundaries (see Fig. 6.2—4, **1**).

3.5. If you want to swap sectors 1 and 2, click **Change sectors** (see Fig. 6.2—4, **2**).

4. Set the approximate person size as follows:

4.1. Click on **Person size** (see Fig. 6.2—4, **3**).

4.2. On the captured video image set the approximate person size. To do this, use the left mouse button to select a rectangular area (Fig. 6.2—5, **1**).

Note. To remove the person size, click the x *next to the* ***Person size*** *button.*

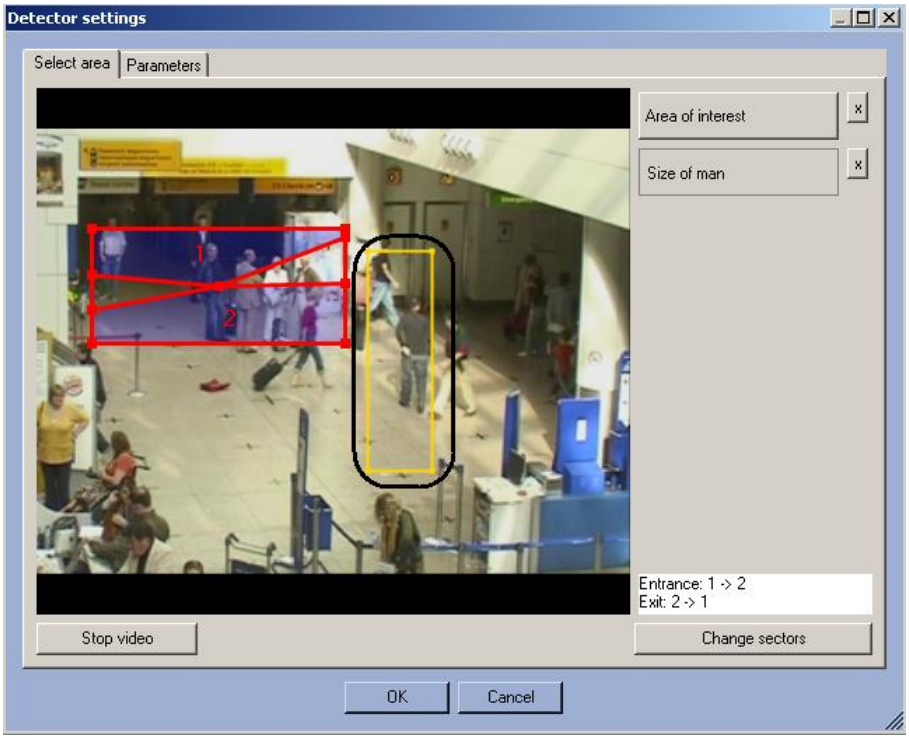

Fig. 6.2—5 Specify person size

5. Setting the module parameters:

   5.1. Go to the **Parameters** tab in the **Detector settings** window (Fig. 6.2—6, **1**).

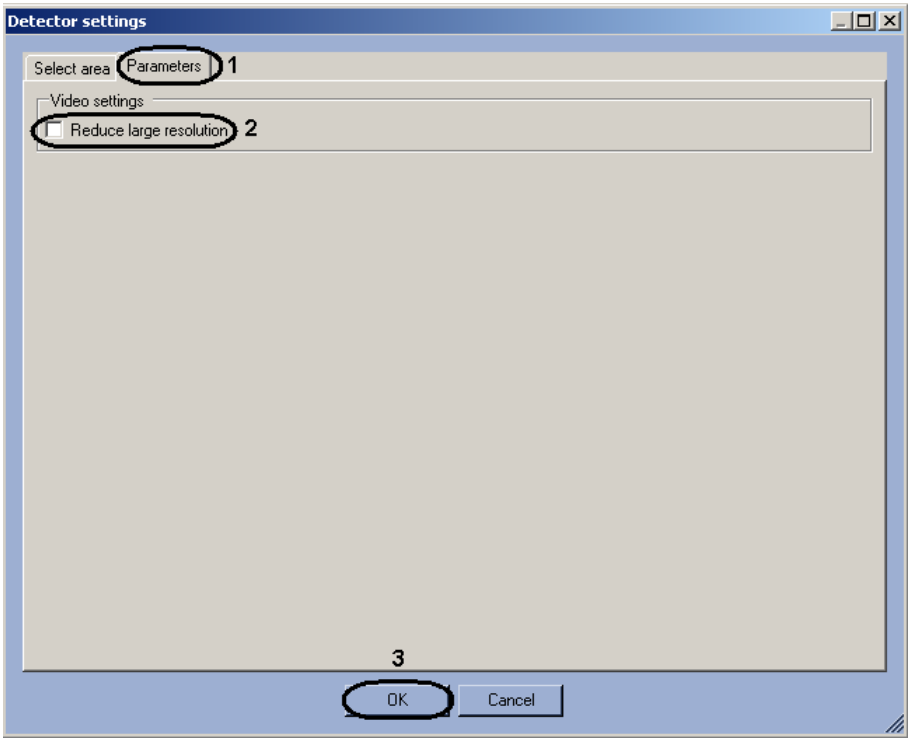

Fig. 6.2—6 Configuring the People counter detector module parameters

   5.2. If you want to count the number of persons in the observed area in reduced resolution, check the box **Reduce large resolution** (see Fig. 6.2—6, **2**).

6. Click **OK** (see Fig. 6.2—6, **3**).

Configuring the *People counter detector* module is complete.

7 Operating the «Queue length detector» and «People counter detector» modules

7.1 Operating the «Queue length detector» module

7.1.1 Obtaining traffic information in the area of interest

As reported in the **Event log** interface at specified intervals by the **Queue length detector** module (Fig. 7.1—1).

Source	Event	Partition	Add. info	Date	Time
Camera 1	Alarm	Region 1		12-05-12	10:22:46
Queue Length Detection 1	Queue full		0	12-05-12	10:23:17
Queue Length Detection 1	Queue full		0	12-05-12	10:23:27
Queue Length Detection 1	Queue full		5	12-05-12	10:23:37
Queue Length Detection 1	Queue full		15	12-05-12	10:23:47
Queue Length Detection 1	Queue full		19	12-05-12	10:23:57
Queue Length Detection 1	Queue full		22	12-05-12	10:24:07
Queue Length Detection 1	Queue full		24	12-05-12	10:24:17
Queue Length Detection 1	Queue full		25	12-05-12	10:24:27
Queue Length Detection 1	Queue full		25	12-05-12	10:24:37
Queue Length Detection 1	Queue full		24	12-05-12	10:24:47
Queue Length Detection 1	Queue full		24	12-05-12	10:24:57
Queue Length Detection 1	Queue full		26	12-05-12	10:25:07
Queue Length Detection 1	Queue full		25	12-05-12	10:25:17

Fig. 7.1—1 Displaying traffic information in the area of interest

Each line item contains information about the number of people in the area of interest at that moment in time (see Fig. 7.1—1).

*Note. For more information on working with the **Event log** interface, see the Intellect system Administrator's Manual.*

7.1.2 Generating a report on the traffic in the area of interest

Reports on the traffic in the area of interest is generated via the web-based *Report System*.

All necessary information is provided in the *web-based Report System User's Manual.*

7.2 Operating the «People counter detector» module

7.2.1 Obtaining information on number of visitors

The **People counter detector** module provides entries onto the **Event log** when visitors pass through the area of interest (Fig. 7.2—1).

Source	Event	Partition	Add. info	Date	Time
Camera 1	Alarm	Region 1		12-05-12	10:29:35
People Counter Detection 1	Visitor exit			12-05-12	10:30:40
People Counter Detection 1	Visitor exit			12-05-12	10:30:43
People Counter Detection 1	Visitor exit			12-05-12	10:30:52
People Counter Detection 1	Visitor entrance			12-05-12	10:31:19
People Counter Detection 1	Visitor exit			12-05-12	10:31:42
People Counter Detection 1	Visitor entrance			12-05-12	10:31:43
People Counter Detection 1	Visitor exit			12-05-12	10:32:03
People Counter Detection 1	Visitor exit			12-05-12	10:32:15
People Counter Detection 1	Visitor entrance			12-05-12	10:32:32

Fig. 7.2—1 Displaying visitor entry and exit events

When a visitor moves from sector 1 to sector 2, it is logged as **Visitor entry**; if the visitor moves from sector 2 to sector 1, it is logged as **Visitor exit**.

*Note. For more information on working with the **Event log** interface, see the Intellect system Administrator's Manual.*

7.2.2 Generating a visitor report

Visitor reports are generated via the web-based *Report System*.

All necessary information is provided in the *web-based Report System Users's Manual.*