Cat. No. E31E-EN-01

SensorSupportSoftware S3

Software Description

OPERATION MANUAL

OMRON

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SECTION 1
General

1-1 Validity

These operating instructions apply only in connection with the **operating instructions of a sensor belonging to the E3NT type series.**
Read the sensor's operating instructions completely and conscientiously. All information that is important to working with sensors in the **E3NT** type series can be found in the **ABBO 0017** operating instructions.

Pay attention to all safety notes that are contained in the sensor's operating instructions.

1-2 Use

The **SensorSupportSoftware S^3** serves to set sensors in the **E3NT** type series and is only capable of operating in connection with these sensors.

1-3 Copyright

For copyright reasons, these operating instructions must not be modified, amended or shortened.

By using the **SensorSupportSoftware S^3**, you acknowledge the following provisions:

1-3-1 Proprietary right

The software and data are the property of **OMROM** or its suppliers. Sale and forwarding of the software or its data for commercial purposes are not permitted.
It is not permitted to modify, alter or shorten the software or its data. In particular, the name **OMRON** must not be removed. It is not allowed to add data within the software package.

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1-3-2 Liability

OMRON does not assume any warranty for the correctness and completeness of software and data; liability for damages resulting from defective software and data is rules out.
In all cases, **OMRON's** liability is limited to the amount that the customer has actually paid for this product.
In particular, **OMRON** does not assume any liability for damages or data loss on PCs/laptops as the result of the use of the **SensorSupportSoftware S^3** or the connection of the optical data interface.

1-4 Key to symbols

The following symbols are used in these operating instructions:


Important information


Risk of damage to the machine or material


General risk to life and limb

1-5 Abbreviations

The following abbreviations are used in these operating instructions:

- **MSR** Mirror Surface Rejection
- **BGS** Background Suppression
- **FGS** Foreground Suppression
- **COM n** Serial interface of the PC, n = 1 to 8
- **IR** Infrared
- **PC** Personal computer

1-6 Notes on use

A basic knowledge of how to operate a PC and the **WINDOWS®** user interface is presumed. The relevant manuals of Microsoft Corporation, which are supplied together with **MICROSOFT WINDOWS®** apply.

WINDOWS® and the **SensorSupportSoftware S3** can be operated by means of the PC's keyboard and using a connected mouse.

All commands and operator actions that are necessary to operate the **SensorSupportSoftware S^3** are described in these operating instructions

.


The **SensorSupportSoftware S3** can be downloaded free of charge from the Internet page **http://www.eu.omron.com**.

1-7 System requirements

The following system requirements must be met in order to be able to work with the **SensorSupportSoftware S3** in conjunction with a **sensor belonging to the E3NT type series:**

- Optical data interface E3NT-AL232 2m clipped onto the sensor
- One free serial COM port at PC or Laptop available
- Sensor's operating voltage switched on

It is possible to work with the **SensorSupportSoftware S3** without a data interface in the off-line mode.

1-7-1 PC

The **SensorSupportSoftware S3** is capable of running on a PC that possesses at least the following hardware and software features:

- At least a 586 processor (Pentium®) with a clock frequency of at least 200 MHz
- WINDOWS 95b / 98 / ME / NT from service pack 6 / 2000 / XP
- 1 CD-ROM drive
- 1 hard disk with at least 15 Mbytes free storage capacity
- At least 64 MB memory with Windows 95 / 98 / ME
- At least 128 MB memory with Windows NT / 2000 / XP
- Graphics card with a resolution of at least 640x480 pixels, at least 256 colours
- 1 free serial interface (COM1 to COM8) with a 9-pole SUB-D socket. A SUB-D-9 to SUB-D-25 adapter must be used if the PC has a serial 25-pole SUB-D socket.

SECTION 2
Safety notes

2-1 Safety notes

The sensor may only be set with the **SensorSupportSoftware** by instructed, trained and authorised specialist personnel in accordance with applicable regulations.

The sensor may only be set with the **SensorSupportSoftware** if the machine installation in which the sensor is integrated is in a safe state. That means, setting of the sensor must not trigger any hazardous states.

The manufacturer and the owner of the system must take appropriate safety measures.

SECTION 3
Program installation

3-1 Installation

Take the following steps before installing the **SensorSupportSoftware** on the hard disk:

- Check the PC in relation to the system requirements.
- Check whether you have the latest version of the **SensorSupportSoftware**. The latest version can be downloaded free of charge from the Internet page **http://www.eu.omron.com**.
- Switch on the PC and start **WINDOWS®**.
- Insert the **SensorSupportSoftware** installation CD in the CD drive and close the CD drive.
- The installation routine on the **SensorSupportSoftware** installation CD starts automatically.

  If not:
  - Start the **WINDOWS®** EXPLORER.
  - Start the **SETUP.EXE** program in the **SENSORSUPPORTSOFTWARE** directory on the CD.
- Follow the instructions in the program.
- After installation of the program, the **OMRON\SensorSupportSoftware** program folder is created on the desktop.
- The **OMRON\SensorSupportSoftware** program group contains the **SensorSupportSoftware**.

- After completing installation, remove the **SensorSupportSoftware** installation CD from the drive and archive it.

The **SensorSupportSoftware** can now be started *(see SECTION 5 Program start)*.

3-2 Deinstallation

The **SensorSupportSoftware** can be deinstalled in the **Add/Remove Programs software** in the **WINDOWS® Control Panel**.

SECTION 4
Connecting the sensor to the PC

4-1 Connecting the sensor to the PC

The sensor is connected to the PC by means of the **OMRON E3NT-AL 232 2m** data interface.

To do this, clip the data interface onto the sensor. Data is transferred between the sensor and the data interface by means of an IR communication element.

The data interface is connected to a free serial COM port of the PC (COM1 … COM8).

After the program has started, the **SensorSupportSoftware** runs an automatic interface check, including sensor selection and detection.

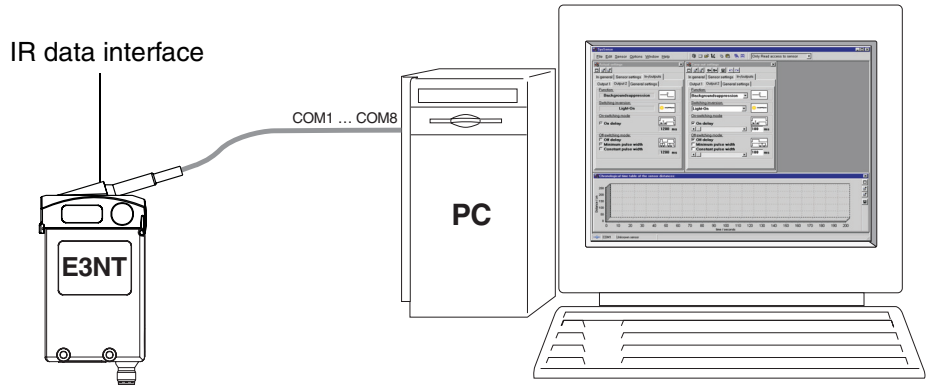


Figure 1 Connecting the sensor to the PC

Carry out the following actions:

1. Start the PC.
2. Clip the data interface onto the sensor.
3. Connect the connecting cable of the data interface to a free interface on the PC (COM1 … COM8).
4. Switch on the sensor's operating voltage.
5. Start the SensorSupportSoftware *(see SECTION 5 Program start)*.

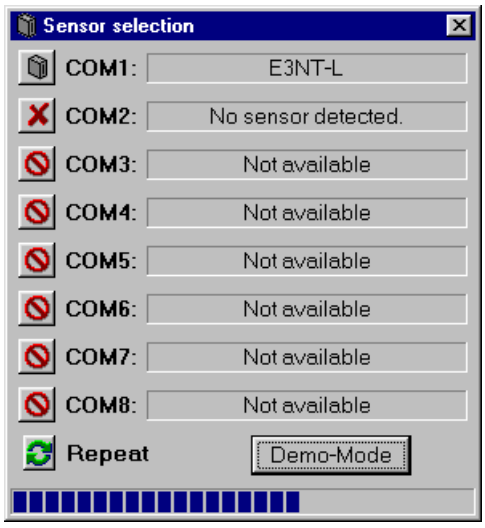
The above actions can be carried out in any order.

SECTION 5
Program start

5-1 Starting the SensorSupportSoftware

- Start the program by double-clicking the **SensorSupportSoftware** program icon in the **OMRON\SensorSupportSoftware** program group.

After the program has started, the **SensorSupportSoftware** runs an automatic interface check, including sensor selection and detection.



In this example, a sensor has been found at the serial COM1 interface. This sensor's setting is read and the **Sensor selection** window is closed.

The **Sensor selection** window stays open if several sensors are detected. In this window, the sensors found can be selected for setting by clicking the relevant **Sensor Selection** button.

Sensor Selection
The sensors found are selected for setting by clicking the Sensor Selection button.

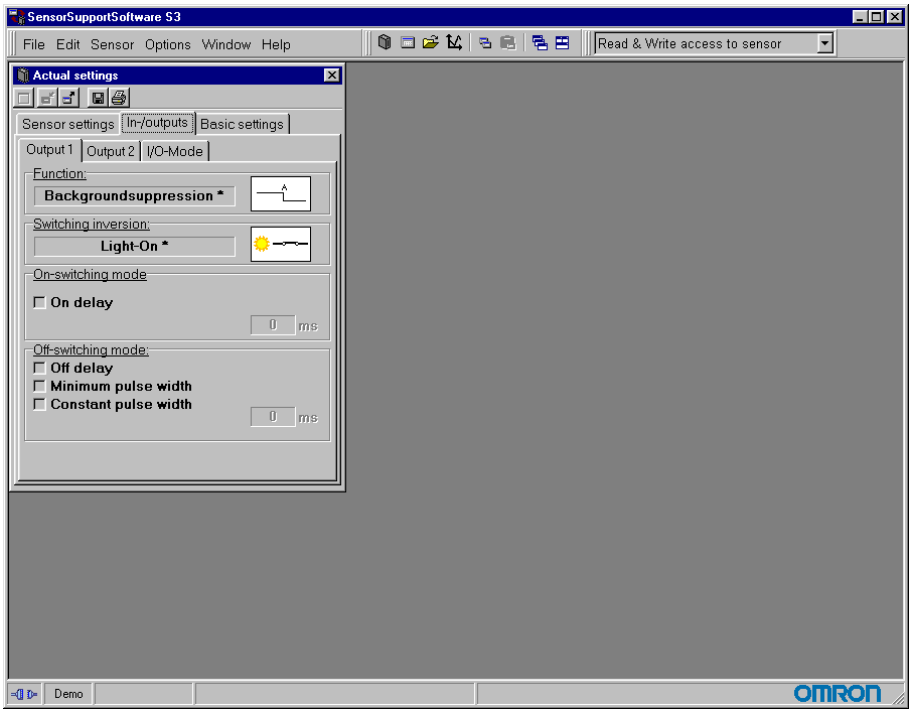
Repeat
Sensor detection can be repeated by clicking the Repeat button.

No sensor detected
Indicates that no sensor is connected to the relevant interface.

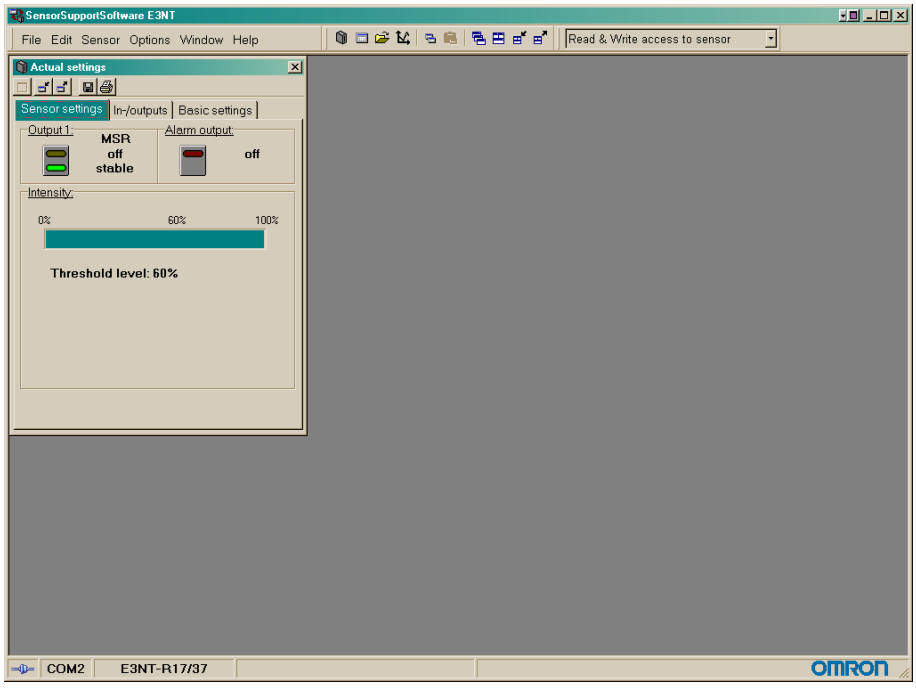
Not available
Indicates that the relevant interface is not installed or is already occupied.

The **starting screen** is displayed. The starting screen can be different to the depicted screen depending on the connected type of E3NT sensor.

E3NT-L



E3NT-R



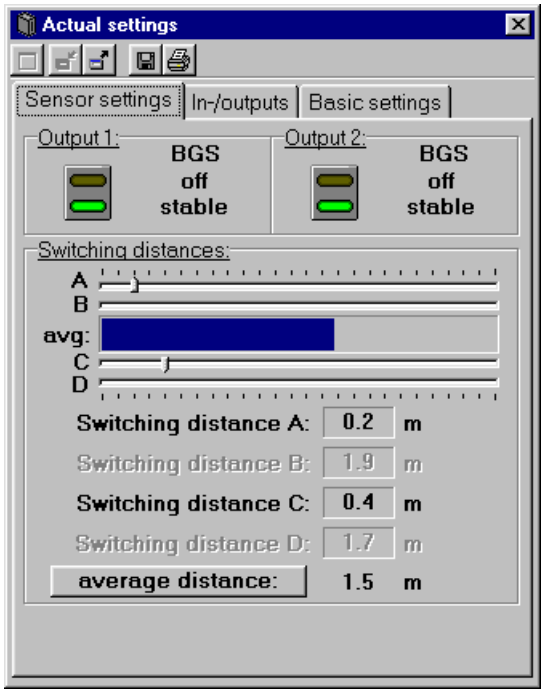
The **footer** of the **starting screen** indicates which sensor is connected to which interface and is active.

Online

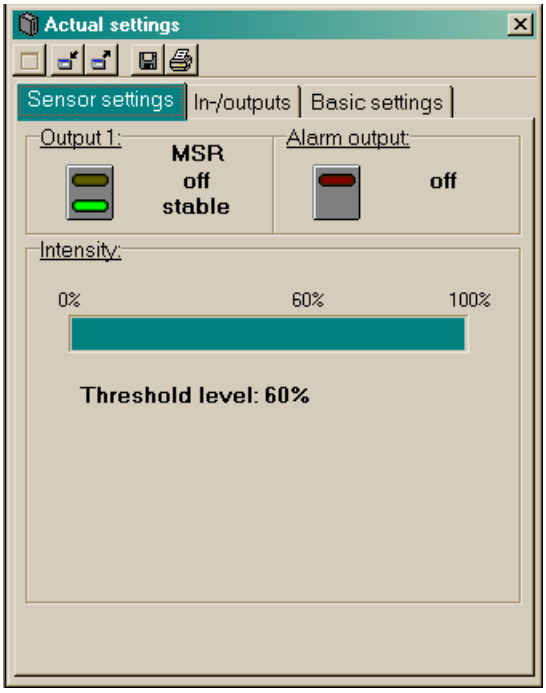
Indicates the current connection status. Communication with the sensor is possible.

Offline
Indicates the current connection status. Communication with the sensor is not possible.

The current setting of the detected/selected sensor is displayed in the **Actual Settings** window. The window of the current settings can be different to the depicted window here depending on the connected type of E3NT sensor.
E3NT-L



E3NT-R


Actual settings
Sensor settings
In-/outputs
Basic settings
Output 1:
MSR
off
stable
Alarm output:
off
Intensity:
0%
60%
100%
Threshold level: 60%

SECTION 6
Program definitions

6-1 Program control keys

The following program control keys are used in the **SensorSupportSoftware**:

Reset screen size
The active window is reseted to the full screen size.

Reduce window
The active window is displayed in a reduced size.

Expand window
The active window is displayed in an increased size.

Open file
Loads settings/diagram.

Save parameter
The current settings/diagrams in the active window or measurement protocol data are saved.

Print
The current settings/diagrams in the active window or the settings of the active window are printed.

Write to sensor
The current parameters are transferred to the sensor. This is only possible if the **Read & Write access to sensor** mode is set.

Load from sensor
The current parameters are read from the sensor.

Decrease
Reduces the value by 1.

Increase
Increases the value by 1.

Start measurement
Starts the recording of the sensor value time chart.

Pause measurement
Pauses the recording of the sensor value time chart.

Erase / restart measurement
Erases the measurement or starts it again.

2D view
Changes to 2-dimensional view of the time chart.

3D view
Changes to 3-dimensional view of the time chart.

Change page width
Increases the displayed range of the time chart.

Move one page left
Shifts the displayed range of the time chart to the left.

Move one page right
Shifts the displayed range of the time chart to the right.

Show switching distance A
Displays the setted switching distance A in the time chart.

Show switching distance B
Displays the setted switching distance B in the time chart.

Show switching distance C
Displays the setted switching distance C in the time chart.

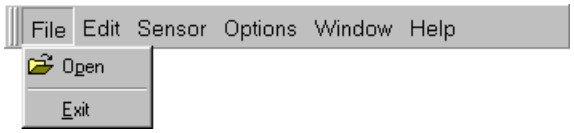
Show switching distance D
Displays the setted switching distance D in the time chart.

SECTION 7
Program operation

7-1 The main menu bar

The main functions of the **SensorSupportSoftware** can be operated in the main menu bar.

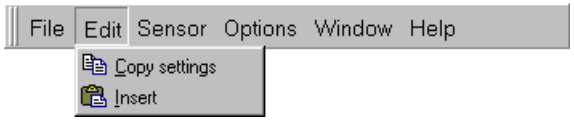
7-1-1 File menu item



Open
Opens a saved configuration file for a sensor in a new window.

Exit
Exits the **SensorSupportSoftware**.

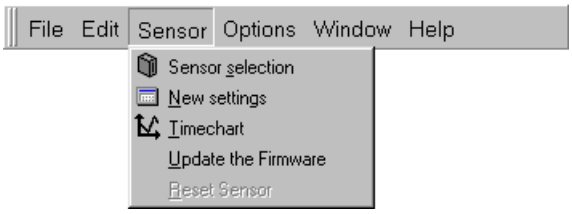
7-1-2 Edit menu item



Copy settings
Copies the marked text (in editing fields or in the text field **Application remarks**).

Paste settings
Pastes the marked text to cursor position (in editing fields or in the text field **Application remarks**).

7-1-3 Sensor menu item



Sensor selection

Starts the automatic interface check with sensor selection *(see Section 5-1 Starting the SensorSupportSoftware)*.

New settings

Opens the **New settings** window *(see Section 9-1 The program Update-Sense)*. Calling up this menu item several times opens several windows.

In this window, the parameters can be modified and can be sent to the connected sensor.

Timechart

Opens the **Timechart** window *(see Section 8-3 Display window for graphical evaluation Timechart of E3NT-L)*. Only one window can be opened.

In this window, the object's distance from the sensor can be displayed as a function of time.

Update the Firmware

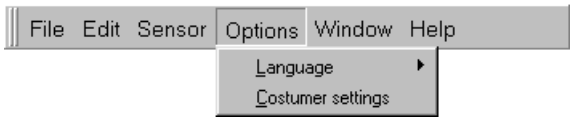
Opens the **update sense** window *(see Section 9-1 The program Update-Sense)*.

In this window, you can download a more up-to-date or a customised version of the sensor operating firmware program to the sensor.

Reset sensor

Returns the connected sensor to the factory default settings and loads the standard setting. Refer also to the **E3NT** operating instructions (ABBO 0017) in the appendix.

7-1-4 Options menu item



Language
In this menu item, you select the language version of the **SensorSupport-Software**.

Password protection
The writing of new settings to the sensor can be protected with a password. By this, unintentional modifying of the adjustments can be prevented *(see Section 7-3 Access mode)*.

7-1-5 Window menu item

Overlapping
Sorts opened windows in an overlapping arrangement.

Arrange all
Sorts opened windows in an adjacent arrangement.

7-1-6 Help menu item

SensorSupportSoftware Help
Displays the Software Description Cat.No. E30E-EN-01.

Information
Displays information about the current software version.

7-2 Task bar buttons

By means of the function buttons, functions of the main menu bar can be accessed swiftly and directly. Each function is identical to the items in the main menu bar.

Sensor selection
Starts the automatic interface check with sensor selection *(see Section 5-1 Starting the SensorSupportSoftware)*.

New settings
Opens the **New settings** window *(see Section 9-1 The program UpdateSense)*. Calling up this menu item several times opens several windows.
In this window, the parameters can be modified and can be sent to the connected sensor.

Open
Opens a a window with data of a saved configuration file (*.SSS).

Timechart
Opens the **Timechart** window *Section 8-3* and *Section 8-6*. Only one window can be opened.
In this window, the object's distance from the sensor can be displayed as a function of time.

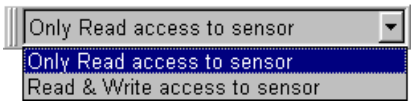
Copy setting
Copies marked text.

Paste settings
Pastes copied text.

Overlapping
Sorts opened windows in an overlapping arrangement.

Arrange all
Sorts opened windows in an adjacent arrangement.

7-3 Access mode



By way of the access mode, you can define whether data may only be read from the sensor or whether setting of the sensor is also permitted.

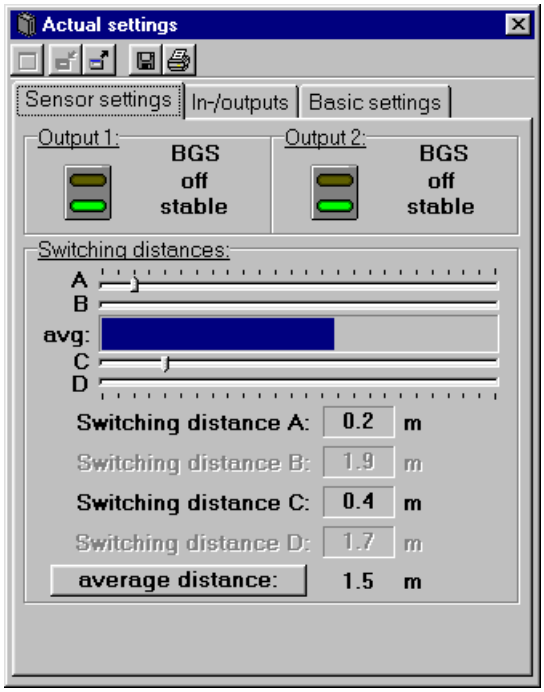
Read only access to sensor
Data may only be read from the sensor. Setting of the sensor is not permitted (the programm control key **Write to Sensor** is deactivated)

Read & Write access to sensor
Data may be read from the sensor and setting by writing to the sensor is also possible.
This function can be password-protected *(see Section 7-1-4 Options menu item)*.

SECTION 8
Description of main windows

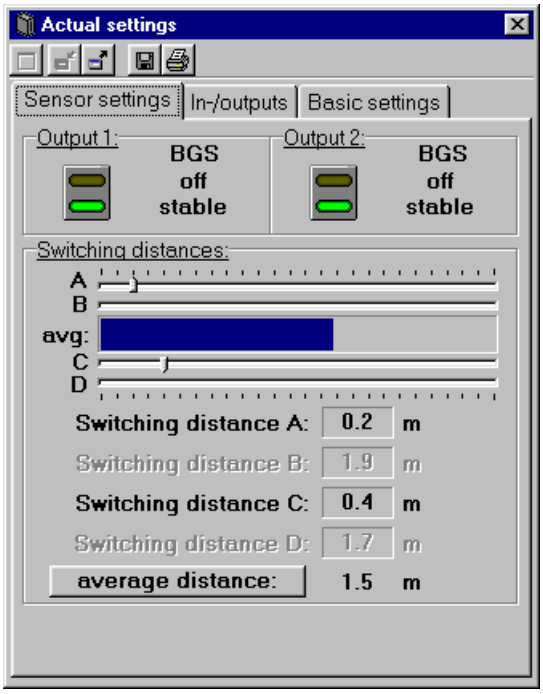
8-1 Window for display of the current sensor parameters Actual settings of E3NT-L

The **Actual settings** window displays the current setting of the selected sensor on several tabs located one behind the other. The sensor cannot be set via this window.
The window's display is constantly updated.



8-1-1 Sensor settings tab

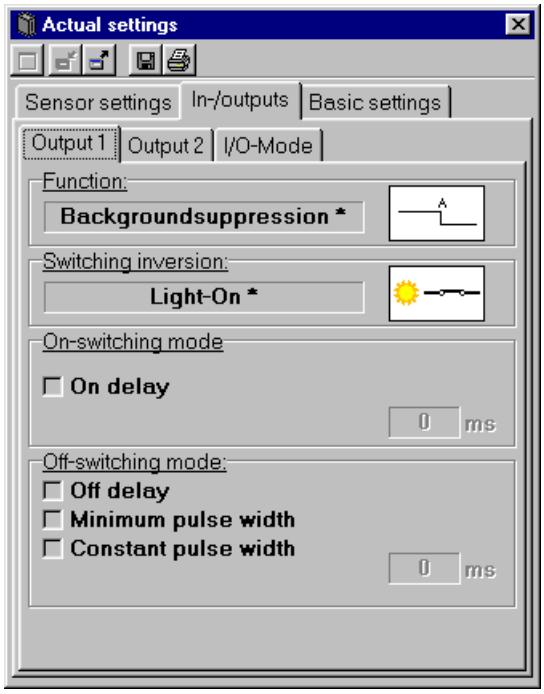
The current states of the outputs, the stability of the outputs and the setted switching points are displayed in the **Sensor settings** menu.



Actuating the key **average distance** the display changed to the **actual distance**. Also in reverse direction.

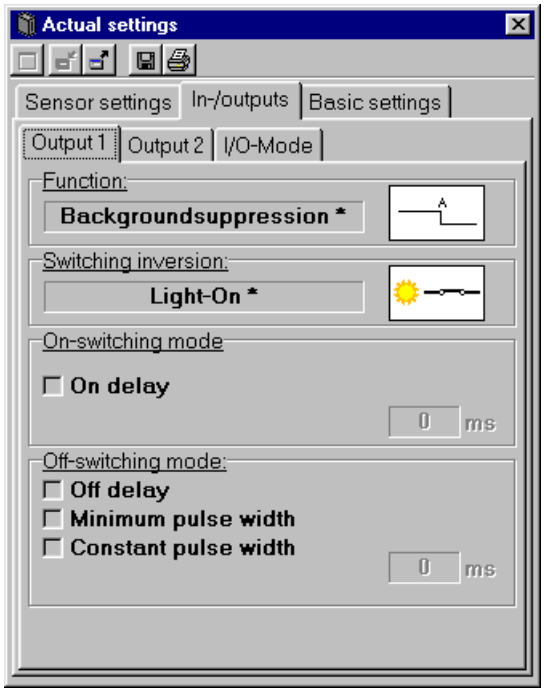
8-1-2 In-/outputs tab

In the **In-/outputs** tab, all parameters of the sensor that are related to the inputs and outputs are displayed on three submenu tabs.



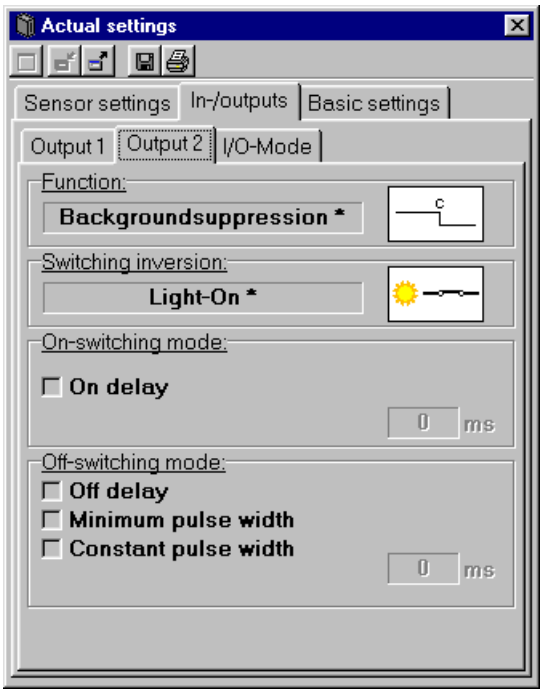
8-1-2-1 Output 1 submenu tab

The current parameters of **Output 1** are displayed in the Output 1 submenu.



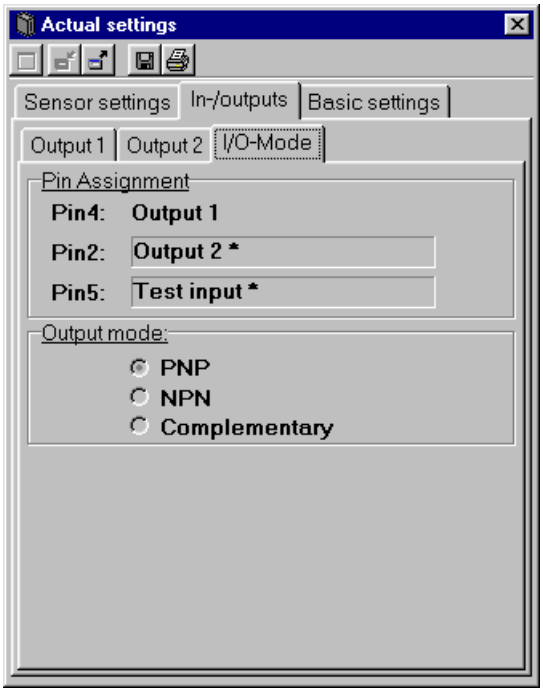
8-1-2-2 Output 2 submenu tab

The current parameters of **Output 2** are displayed in the Output 2 submenu.



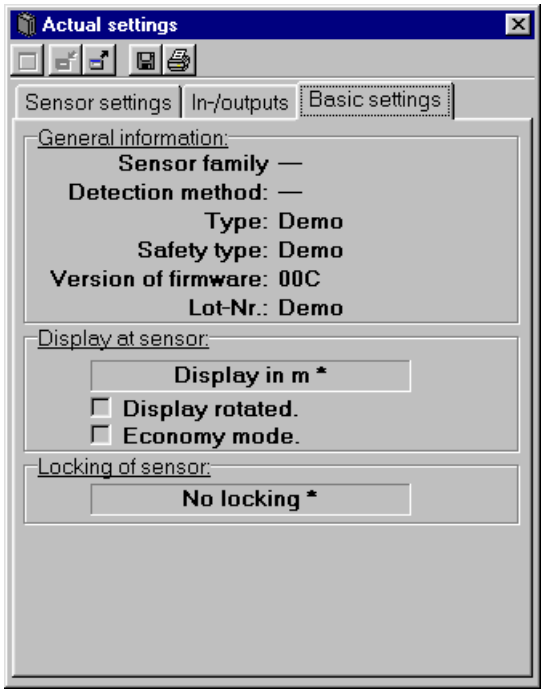
8-1-2-3 I/O-mode submenu tab

The general input/output parameters such as pin assignments and the output mode are displayed in the **I/O-mode** submenu.



8-1-3 Basic settings tab

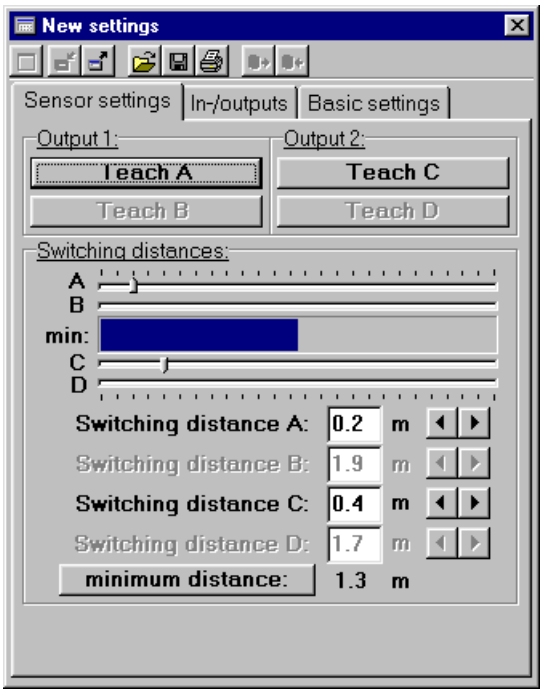
The general data of the selected sensor is displayed in the Basic settings menu.



8-2 Display window for new sensor settings New settings of E3NT-L

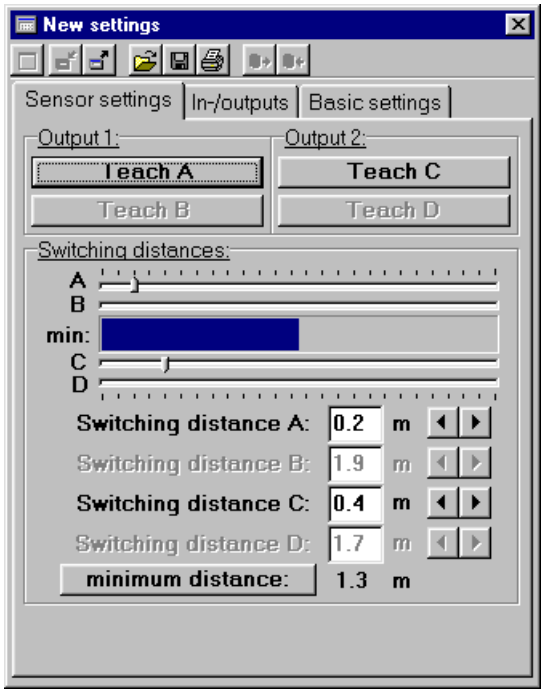
In the **New settings** window, the selected sensor can be set on several menu tabs.

In this window, parameters can be read from the sensor and can be transferred to it. Settings can be created, modified, saved to data media, read from data media and printed.

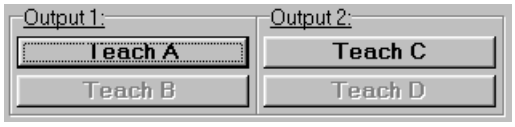


8-2-1 Sensor settings tab

In the **Sensor settings** menu, the switching points are teached or are setted in different ways.



8-2-1-1 Teaching switching points

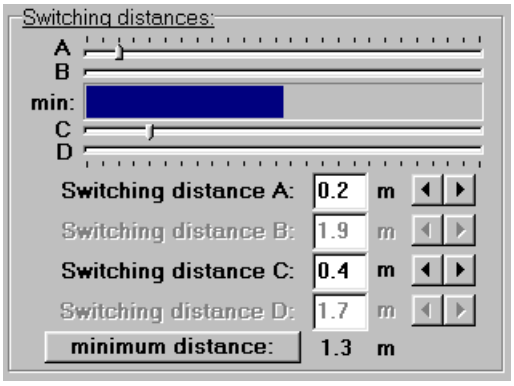


The switching points **A** to **D** are teached by clicking the teach buttons **A** to **D**. That is to say, the object distance that has been measured at the time when the teach button was pressed and is stored in the sensor as a relevant switching point after actuating the OK key.

The teach buttons **B** and **D** are only activated when the mode of the Outputs 1 or 2 is set to **window** evaluation.

The teach buttons **C** and **D** are each activated when the **Connector pin 2** function has been set to **Switching output 2** *(see Section 8-2-2-3-1 Pin assignments)*.

8-2-1-2 Setting switching points



Switching points **A** to **D** can be set in the Switching distances box.

Actuating the key **minimum distance** the display changed to the **maximum distance**. Also in reverse direction.

Switching points **B** and **D** and the sliders **B** and **D** can only be set if the mode of the Outputs 1 or 2 has been set to **window** evaluation.

The Teach buttons **C** and **D** are each activated if the Connector pin 2 function has been set to **Switching output 2** *(see Section 8-2-2-3-1 Pin assignments)*.

The distance that is currently measured by the sensor is indicated by a **bar graph** and as a numeric value under **min/max**.

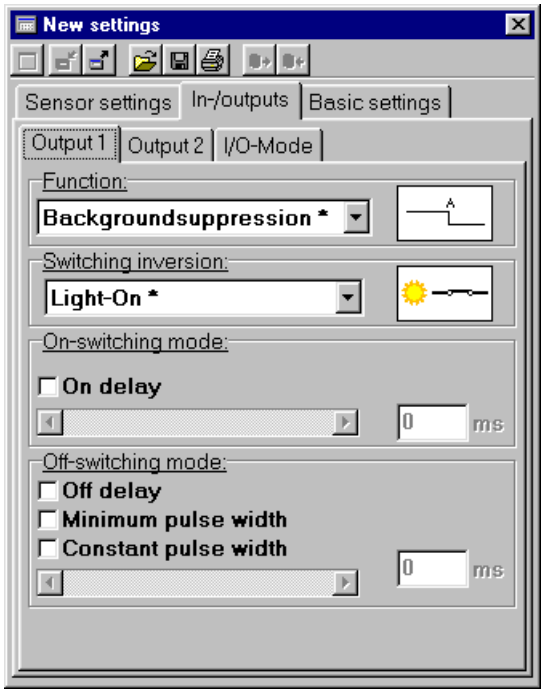
The switching points can be set in several ways:

- **By means of sliders A to D**
  The positions of the sliders can be altered by dragging with the mouse. The resulting set switching distance is displayed under the sliders as a numeric value for the relevant switching point.

- **Number input in the case of Switching distances A to D**
  When **Switching distance** is selected, the switching distance of the relevant switching point can be entered as a number. The resulting set switching distance is set on the relevant slider.
  The numeric value can be increased or reduced with the adjacent **Increment** and **Decrement** buttons.

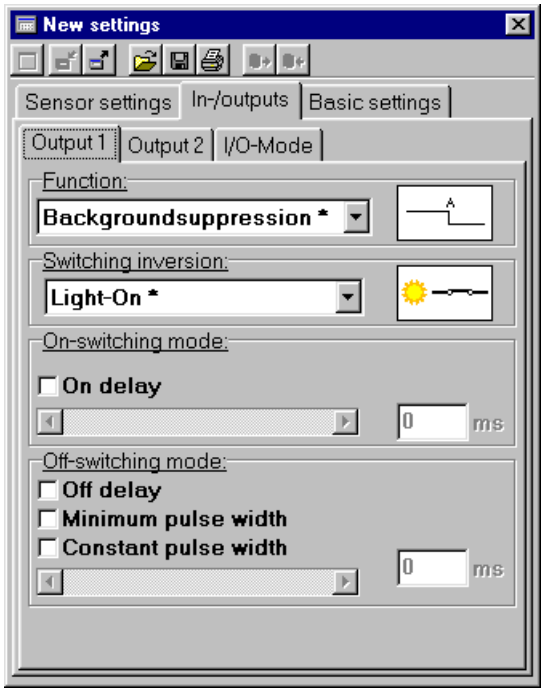
8-2-2 In-/outputs tab

In the **In-/outputs tab**, all parameters of the sensor that are related to inputs and outputs can be set in three submenu tabs.



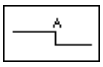
8-2-2-1 Output 1 submenu tab

The output parameters for Output 1 are set in the **Output 1** submenu.

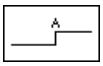


8-2-2-1-1 Function

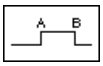
The mode of the output is set in the **Function** box:



Background suppression BGS (factory default)
The background suppression mode can be set separately for both outputs.
Measured objects are detected as from the blind zone up to the setted or teached switching point S_A Objects in the background, behind the setted or teached switching point S_A, are ignored.



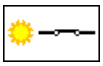
Foreground suppression FGS
The foreground suppression mode can be set separately for both outputs.
Measured objects are detected as from the setted or teached switching point S_A up to the maximum sensing distance. Objects in the foreground, between the sensor and the setted or teached switching point S_A, are ignored.



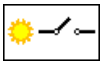
Window evaluation
The **window** evaluation mode can be set separately for both outputs.
Measured objects are only detected in the measurement window between the two setted or teached switching points (switching zone). Objects outside of this measurement window in the foreground and in the background are ignored.

8-2-2-1-2 Switching inversion

Switching inversion of the output is set in the **Switching inversion** box. This parameter can be set separately for both outputs.



Light-On (factory default)
The output is active when **one** measured object is detected.



Dark-On
The output is active when **no** measured object is detected.

8-2-2-1-3 On-switching mode

The on delay of the output is set in the **On-switching mode** box. This parameter can be set separately for both outputs.

The on delay is activated or deactivated with the **On delay** checkbox.

In the Light-On mode, the on delay is the time from detection of an object in the switching zone to activation of the relevant switching output.

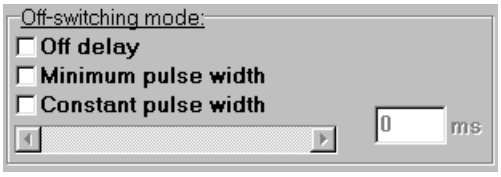
The on delay can be set in several ways:

- **By slider**
  The position of this slider can be altered with the mouse.
  The resulting set delay is displayed next to the slider as a number.
  This number can be increased or reduced with the slider's **Increment** and **Decrement** buttons.

- **With number input**
  The delay can also be entered directly as a number. The slider is adjusted accordingly.

The **On delay** cannot be activated, if **Off delay** is set to **minimum pulse width** or **constant pulse width**.

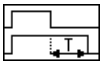
8-2-2-1-4 Off-switching mode



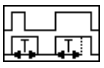
The nature and the numeric value of the output's switching response are set in the **Off-switching mode** box. This parameter can be set separately for both outputs.

The timing response described here is referred to the **Light-on** switching inversion.
The behaviour of the individual off delay modes is inverted in the **Dark-on** switching inversion mode.

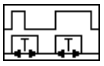
The nature of the off-switching response is chosen in **checkboxes**:



Off delay
The off delay starts as from the time when the measured object leaves the sensing zone. The output does not become inactive until the off delay has elapsed.



Minimum pulse width
After detection of a measured object, the output remains active for at least the setted off delay. If the measured object dwells in the sensing zone for longer than the setted off delay, the output becomes inactive immediately after the object leaves the sensing zone.



Constant pulse width (one shot)
After detection of a measured object, the output only remains active for the setted off delay and becomes inactive after this time has elapsed, regardless of the object's dwell time, even if the measured object dwells in the sensing zone for longer than the setted off delay.

Minimum pulse width and **Constant pulse width** are not activatable, if **On delay** is activated.

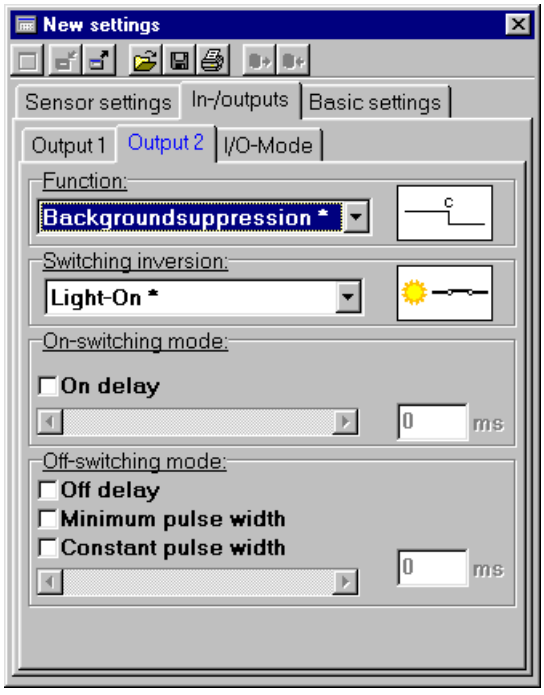
The time can be set in several ways:

- **By slider**
  The position of the slider can be varied with the mouse. The resulting set time is displayed as a number next to the slider.
  The number can be increased or reduced with the **Increment** and **Decrement** buttons of the slider.

- **With number input**
  The time can also be entered directly as a number. The slider is adjusted accordingly.

8-2-2-2 Output 2 submenu tab

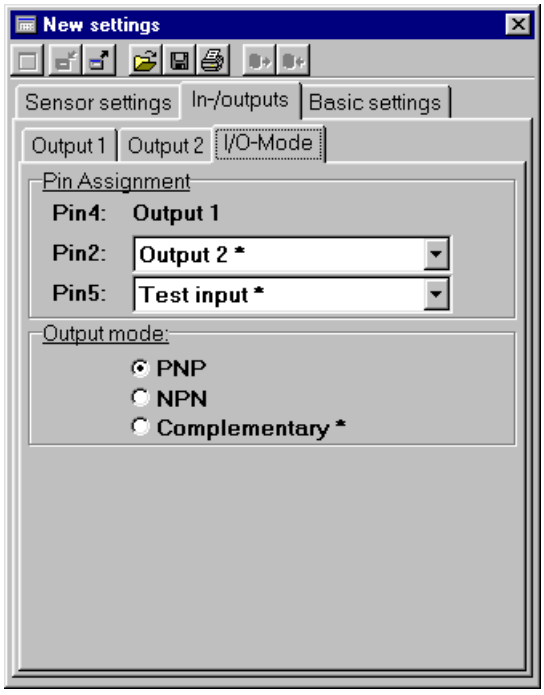
The output parameters for Output 2 are set in the **Output 2** submenu.



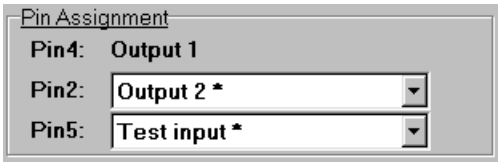
Output 2 is set in the same way as described for Output 1 *(see Section 8-2-2-1 Output 1 submenu tab)*.

8-2-2-3 I/O-Mode submenu tab

The general parameters of Outputs 1 and 2 are set in the **I/O-Mode** submenu.



8-2-2-3-1 Pin assignments



The functions of **Connector pin 2** and **Connector pin 5** are set in the **Pin Assignment** box.

In total, the sensor can be operated with a maximum of three inputs/outputs, and a maximum of two outputs is possible at the same time.
The functions of the inputs/outputs can be set in the following order:

Connector pin 4 is always defined as **Output 1 (OUT1)** and cannot be modified.

Connector pin 2 can be set as **Switching output 2 (OUT2), teaching input (TEACH)** for the switching points A and C or as the **test input (TEST)** or **trigger input (TRIG)**.

Connector pin 5 can be set as the **trigger input (TRIG)**, **teaching input (TEACH)** for the switching points A to D or as the **test input (TEST**).

- **Teaching input TEACH**
  If a signal in the operating voltage range (at least 10 V) is applied to this input, the switching point A, B, C or D is teached, depending on the settings, and analogously to the Teach buttons *(see Section 8-2-1-1 Teaching switching points)*.

- **Test input TEST**
  The emitter is deactivated if a signal in the operating voltage range (at least 10 V) is applied to this input.
  If the sensor is in the light-on state, the receiver detects the absence of the emitted light reflected by the measured object, regardless of the setted switching points.
  The output state changes.

This function can be used to test correct functioning of the sensor.

- **Trigger input TRIG**
  If a signal in the operating voltage range is applied to this input, the sensor is requested to start a measurement (object distance).

The sensor rate (response time) can be increased by the trigger function.

- **Switching outputs OUT1 and OUT2**
  The switching outputs switch when a measured object is detected and in accordance with the sensor's settings.

8-2-2-3-2 Output mode

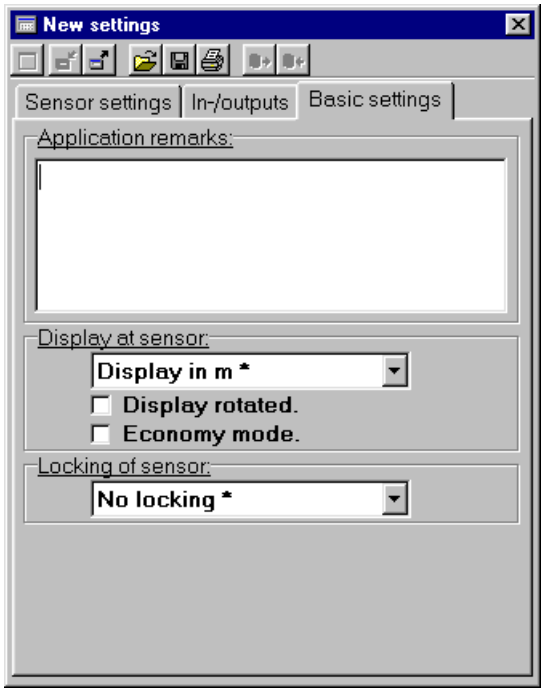
The output circuit is set in the **Output mode** box. The output circuit can be set jointly for both outputs:

- **PNP,** plus-switching, open collector
- **NPN,** minus-switching, open collector
- **Complementary,** push-pull, plus/minus-switching (factory default setting)

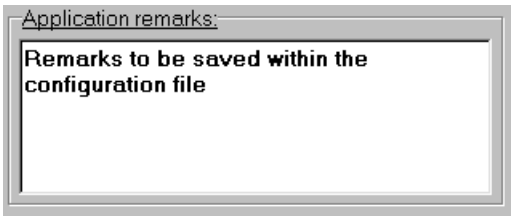
The sensor is set by default to the **push-pull output** (complementary). In this output setting, both output transistors are alternately active.
When the output circuit is set to **PNP** or **NPN**, the relevant output circuit that is currently not in use is switched off.
Both output circuits are resistant to short-circuits and are polarity-safe.

8-2-3 Basic settings tab

The general parameters of the selected sensor are set in the **Basic settings** menu.

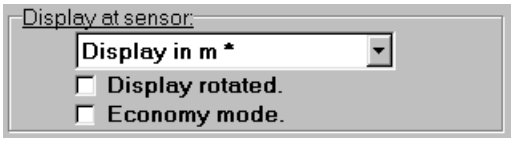


8-2-3-1 Application remarks



In the **Application remarks** box, you can enter remarks that are saved together with the settings.
When the file is read again, the remarks again appear in the **Application remarks** box.

8-2-3-2 Display at sensor



The type of display on the sensor can be set in the **Display at sensor** box.

8-2-3-2-1 Type of display

The following display formats are available for selection in the **pulldown menu** of this box:

- **Display in m**
  The current sensing distance is displayed in m on the sensor's display.

- **Display of column**
  The current sensing distance is displayed on the sensor's display as a bar graph

8-2-3-2-2 Rotating the display by 180°

- **Display rotated** checkbox
  When this checkbox is marked, the display on the sensor's display is rotated by 180°.
  This function may be useful when the sensor if fitted in certain positions.

8-2-3-2-3 Economy mode

- **Economy mode** checkbox
  When this checkbox is marked, the sensor's display mode is set to the energy saving mode.
  In the energy saving mode, the display switches off automatically approximately 5 minutes after the last time a push button has been pressed on the sensor.

8-2-3-3 Locking of sensor

The following locking modes are available for selection in the **pulldown menu** of this box:

- **No locking**
  The sensor is not locked. It can be set by push button and PC. The display on the sensor is active.

- **Keylock**
  With the key lock function, the push buttons on the sensor can be locked to prevent unintentional changing of the settings.
  The lock can be switched on and off on the sensor.
  When the key lock is active, changes can only be made after the **Minus** and Plus buttons are pressed simultaneously for 4 seconds. This temporarily suppresses the key lock. If no buttons are pressed for about 5 minutes, the key lock is automatically activated again.

- **Complete sensor locking**
  The sensor is completely locked. It cannot be set by push buttons and PC. When a button is pressed, the display always stays in the normal mode (analog value display/bar graph).

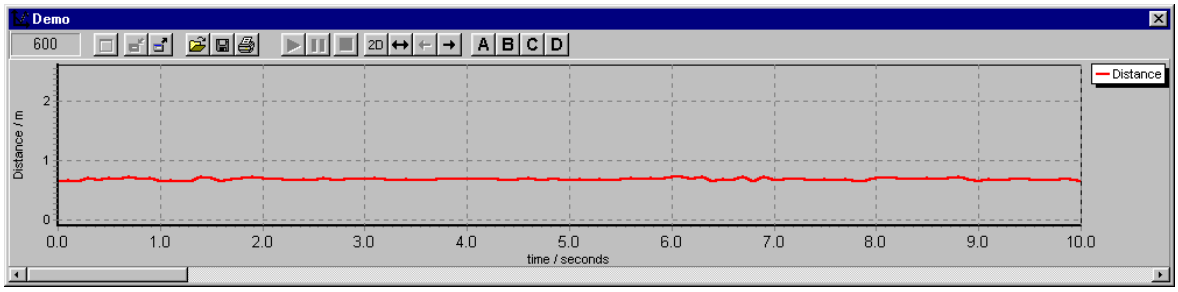
8-2-3-4 Heating (only available for E3NT-LH□□)

The following window heating modes are available for selection in the pulldown menu of this box:

- **Heating off**
  The sensor window heating is switched off.
- **Heating on**
  The sensor window heating is permanently on.
- **Automatic**
  The heating is adjusted automatically depending on the ambient temperature.

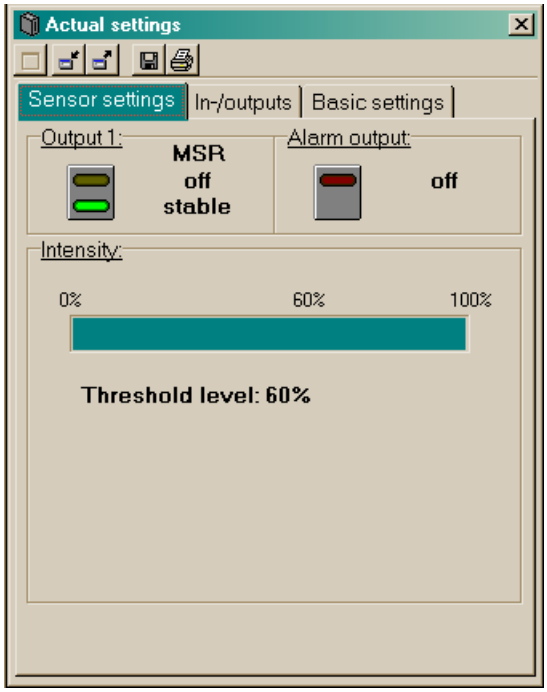
8-3 Display window for graphical evaluation Timechart of E3NT-L

In the **Timechart** window, the measured distance of the sensor is displayed graphically as a function of time.



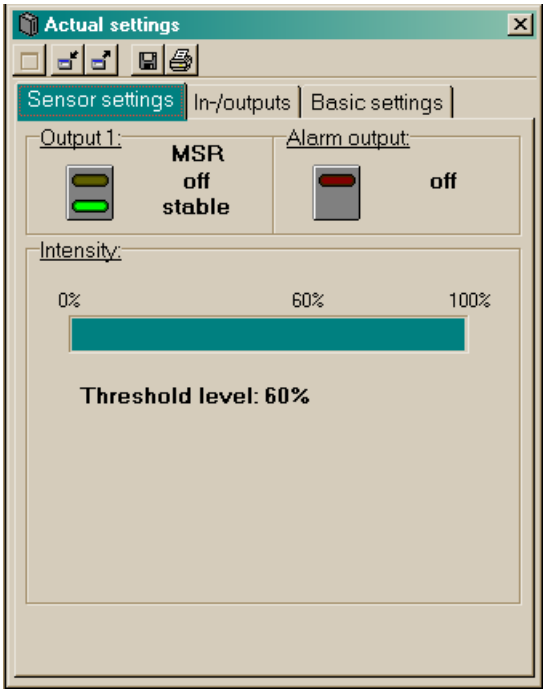
8-4 Window for display of the current sensor parameters Actual settings of E3NT-R

The **Actual settings** window displays the current setting of the selected sensor on several tabs located one behind the other. The sensor cannot be set via this window.
The window's display is constantly updated.



8-4-1 Sensor settings tab

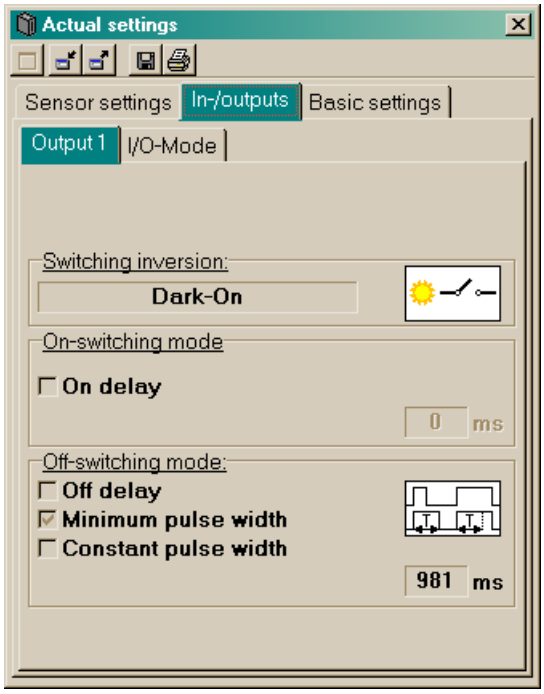
The current states of the sensor's output, the stability of the sensor output and the alarm output are displayed in the **Sensor settings** menu.



Also the received light intensity is depicted in this window.

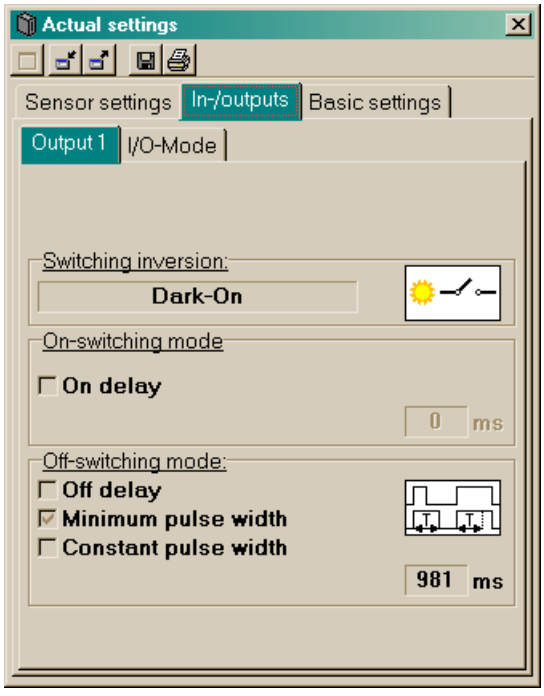
8-4-2 In-/outputs tab

In the **In-/outputs tab**, all parameters of the sensor that are related to the inputs and outputs are displayed on two submenu tabs.



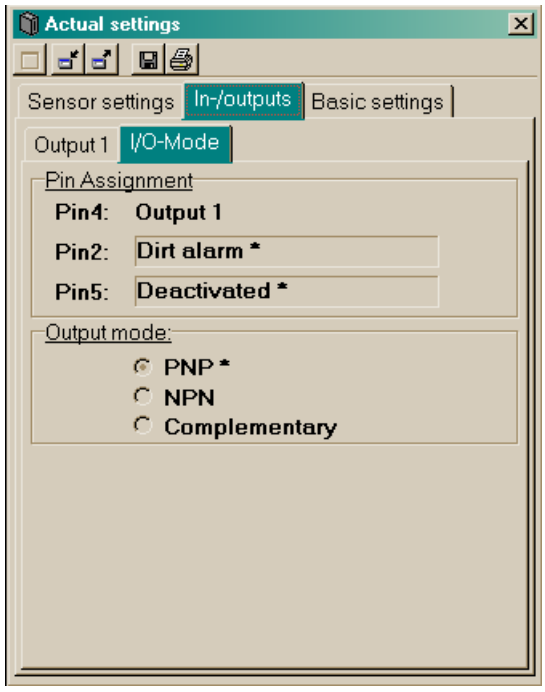
8-4-2-1 Output 1 submenu tab

The current parameters of **Output 1** are displayed in the Output 1 submenu.



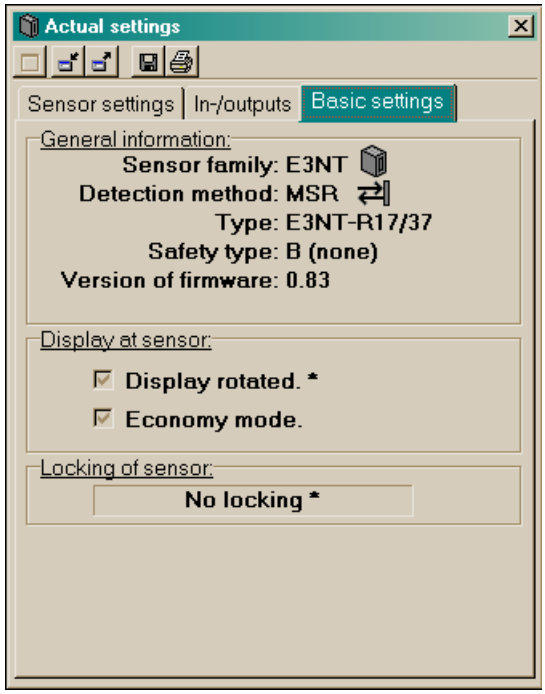
8-4-2-2 I/O-mode submenu tab

The general input/output parameters such as pin assignments and the output function are displayed in the **I/O-mode** submenu.



8-4-3 Basic settings tab

The general data of the selected sensor is displayed in the Basic settings menu.



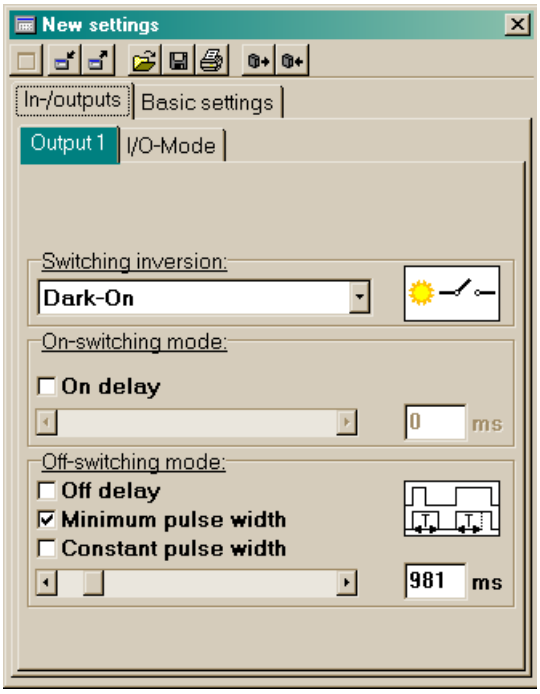
8-5 Display window for new sensor settings New settings of E3NT-R

In the **New settings** window, the selected sensor can be set on several menu tabs located behind one another.

In this window, parameters can be read from the sensor and can be transferred to it. Settings can be created, modified, saved to data media and read from data media and printed.

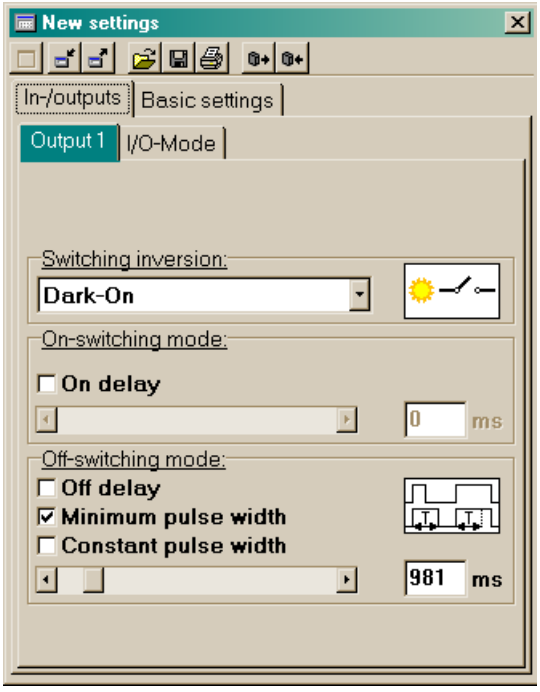
8-5-1 In-/outputs tab

In the **In-/outputs tab**, all parameters of the sensor that are related to inputs and outputs can be set in two submenu tabs.



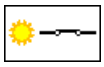
8-5-1-1 Output submenu tab

The output parameters for the Output are set in the **Output 1** submenu.

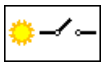


8-5-1-1-1 Switching inversion

Switching inversion of the output is set in the **Switching inversion** box.

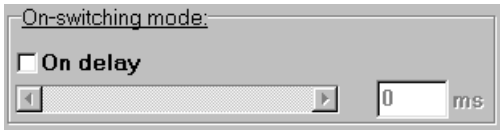


Light-On
The output is active when the light beam is received via the reflector on the receiver.



Dark-On (factory default)
The output is active when an object is interrupting the light beam between sensor and reflector.

8-5-1-1-2 On-switching mode



The on delay of the output is set in the **On-switching mode** box.

The on delay is activated or deactivated with the **On delay** checkbox.

In the Dark-On mode, the on delay is the time from detection of an object in the switching zone to activation of the switching output.

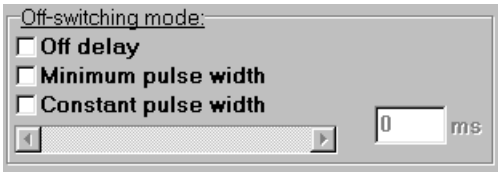
The on delay can be set in several ways:

- **By slider**
  The position of this slider can be altered by dragging with the mouse.
  The resulting set delay is displayed next to the slider as a number.
  This number can be increased or reduced with the slider's **Increment** and **Decrement** buttons.

- **With number input**
  The delay can also be entered directly as a number. The slider is adjusted accordingly.

The **On delay** cannot be activated, if **Off delay** is set to **minimum pulse width** or **constant pulse width**.

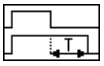
8-5-1-1-3 Off-switching mode



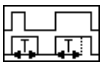
The mode and the numeric value of the output's switching response are set in the **Off-switching mode** box. This parameter can be set separately for both outputs.

The timing response described here is referred to the **Light-on** switching inversion.
The behaviour of the individual off delay modes is inverted in the **Dark-on** switching inversion mode.

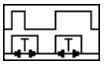
The nature of the off-switching response is chosen in **checkboxes**:



Off delay
The off delay starts as from the time when the measured object leaves the sensing zone. The output does not become inactive until the off delay has elapsed.



Minimum pulse width
After detection of a measured object, the output remains active for at least the setted off delay. If the measured object dwells in the sensing zone for longer than the setted off delay, the output becomes inactive immediately after the object leaves the sensing zone.



Constant pulse width (one shot)
After detection of a measured object, the output only remains active for the setted off delay and becomes inactive after this time has elapsed, regardless of the object's dwell time, even if the measured object dwells in the sensing zone for longer than the setted off delay.

Minimum pulse width and **Constant pulse width** cannot be activated, if **On delay** is activated.

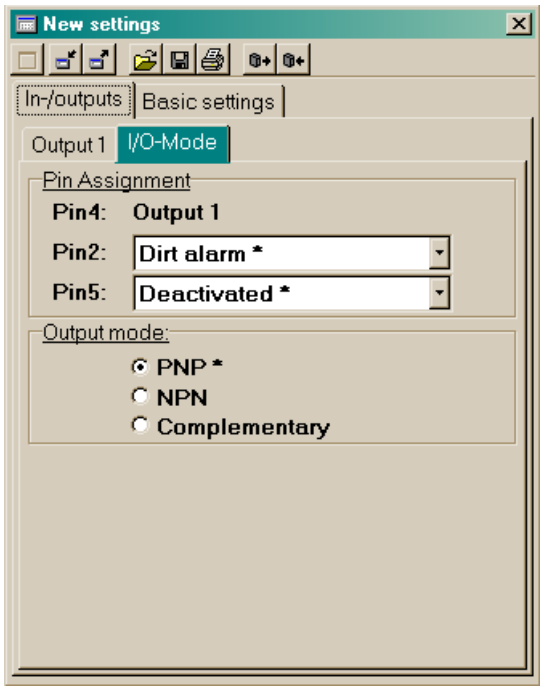
The time can be set in several ways:

- **By slider**
  The position of the slider can be varied by dragging with the mouse. The resulting set time is displayed as a number next to the slider.
  The number can be increased or reduced with the **Increment** and **Decrement** buttons of the slider.

- **With number input**
  The time can also be entered directly as a number. The slider is adjusted accordingly.

8-5-1-2 I/O-Mode submenu tab

The general parameters of Outputs 1 and 2 are set in the **I/O-Mode** submenu.



8-5-1-2-1 Pin assignments

The functions of **Connector pin 2** and **Connector pin 5** are set in the **Pin Assignment** box.

In total, the sensor can be operated with a maximum of three inputs/outputs, and a maximum of two outputs is possible at the same time.
The functions of the inputs/outputs can be set in the following order:

Connector pin 4 is always defined as **Output 1 (OUT1)** and cannot be modified.

Connector pin 2 can be set as **test input (TEST)** or **alarm output (ALARM)**.

Connector pin 5 can be set as the **test input (TEST**) or deactivated.

- **Test input TEST**
  The emitter is deactivated if a signal in the operating voltage range (at least 10 V) is applied to this input.
  If the sensor is in the light-on state, the receiver detects the absence of the emitted light reflected by the measured object.
  The output state changes.

This function can be used to test correct functioning of the sensor.

- **Alarm output ALARM**
  The outputs switch when a the sensor works in an unstable mode due to dirt on the window or other critical detection conditions (e.g. steamy and foggy environment).

8-5-1-2-2 Output mode

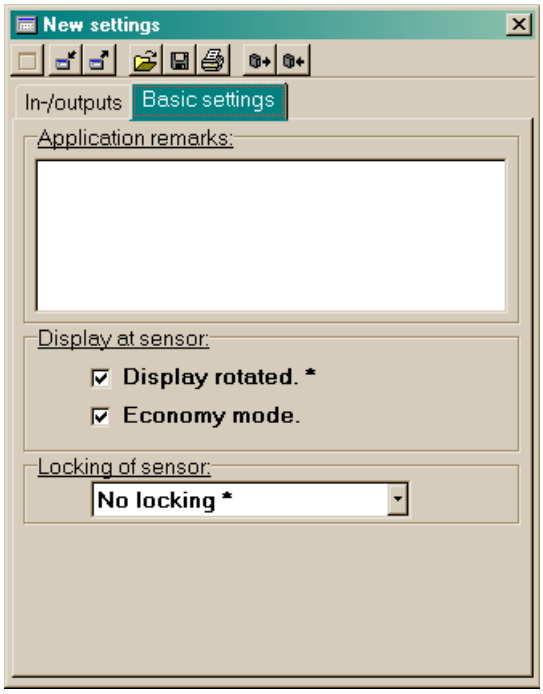
The output circuit is set in the **Output mode** box. The output circuit can be set jointly for both outputs:

- **PNP,** plus-switching, open collector
- **NPN,** minus-switching, open collector
- **Complementary,** push-pull, plus/minus-switching (factory default setting)

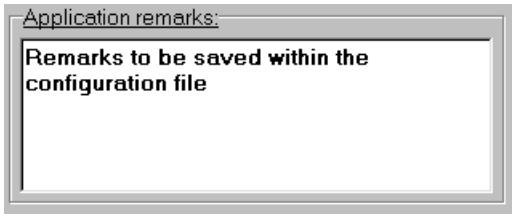
The sensor is set by default to the **push-pull output** (complementary). In this output setting, both output transistors are alternately active.
When the output circuit is set to **PNP** or **NPN**, the relevant output circuit that is currently not in use is switched off.
Both output circuits are resistant to short-circuits and are polarity-safe.

8-5-2 Basic settings tab

The general parameters of the selected sensor are set in the **Basic settings** menu.

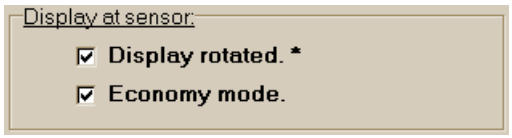


8-5-2-1 Application remarks



In the **Application remarks** box, you can enter remarks that are saved together with the settings.
When the file is read again, the remarks again appear in the **Application remarks** box.

8-5-2-2 Display at sensor



The type of display on the sensor can be set in the **Display at sensor** box.

8-5-2-2-1 Rotating the display by 180°

- **Display rotated** checkbox
  When this checkbox is marked, the display on the sensor's display is rotated by 180°.
  This function may be useful when the sensor if fitted in certain positions.

8-5-2-2-2 Economy mode

- **Economy mode** checkbox
  When this checkbox is marked, the sensor's display mode is set to the energy saving mode.
  In the energy saving mode, the display switches off automatically approximately 5 minutes after the last time a push button has been pressed on the sensor.

8-5-2-3 Locking of sensor

The following locking modes are available for selection in the **pulldown menu** of this box:

- **No locking**
  The sensor is not locked. It can be set by push button and PC. The display on the sensor is active.

- **Keylock**
  With the key lock function, the push buttons on the sensor can be locked to prevent unintentional changing of the settings.
  The lock can be switched on and off on the sensor.
  When the key lock is active, changes can only be made after the **Minus** and Plus buttons are pressed simultaneously for 4 seconds. This temporarily suppresses the key lock. If no buttons are pressed for about 5 minutes, the key lock is automatically activated again.

- **Complete sensor locking**
  The sensor is completely locked. It cannot be set by push buttons and PC. When a button is pressed, the display always stays in the normal mode (analog value display/bar graph).

8-5-2-4 Heating (only available for E3NT-RH□□)

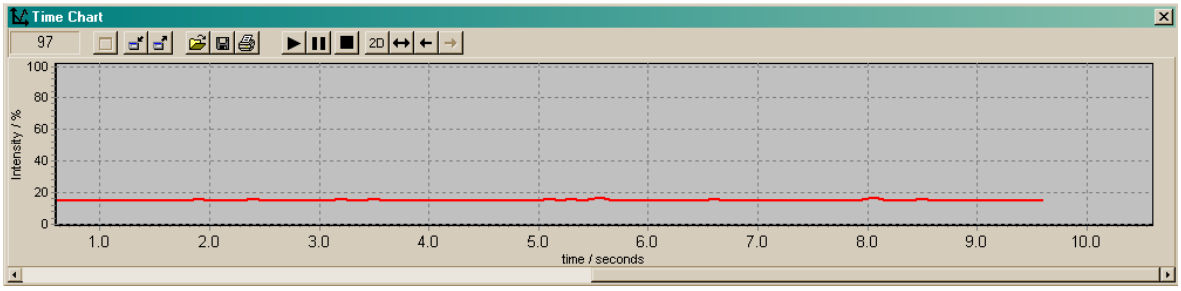
The following window heating modes are available for selection in the pulldown menu of this box.

- **Heating off**
  The sensor window heating is switched off.
- **Heating on**
  The sensor window heating is permanently on.

- **Automatic**
  The heating is adjusted automatically depending on the ambient temperature (default setting)

8-6 Display window for graphical evaluation Timechart of E3NT-R

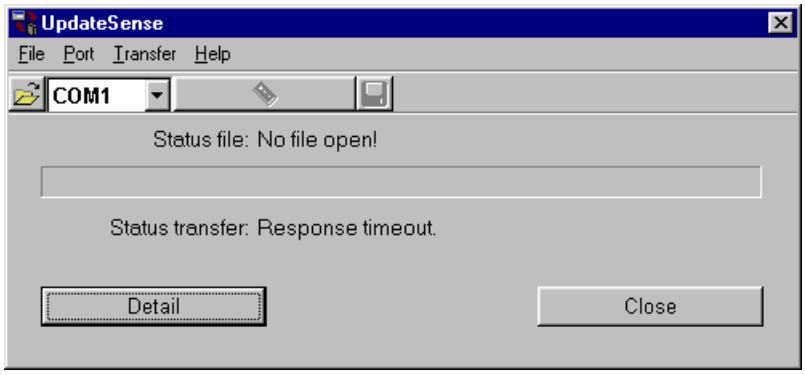
In the **Timechart** window, the measured received light intensity of the sensor is displayed graphically as a function of time.



SECTION 9
Update the sensor firmware

9-1 The program UpdateSense

The program **UpdateSense** can be used to update the sensor's operating firmware program or to load a special customised sensor program into the sensor.



The current status of the update and any error messages are displayed in the **Status** information line.

Firmware files are stored in HEX format.

The latest version of the sensor's operating firmware program can be downloaded from the Internet address **http://www.eu.omron.com**.

9-1-1 The menu bar

The functions of **UpdateSense** can be operated by way of the menu bar.

9-1-1-1 File menu item

Open file
Opens a firmware file (*.hex) for a sensor.

Save file
Saves a firmware file for a sensor.

Close program
Ends the **UpdateSense** program.

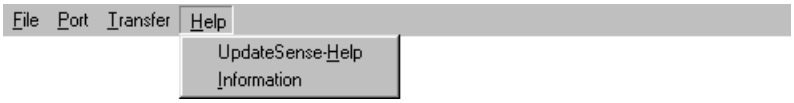
9-1-1-2 Port menu item

The interface to which the sensor is connected is selected in the **Port** menu item.

9-1-1-3 Transfer menu item

Transfer of new firmware to the sensor is started or cancelled in the **Transfer** menu item.
Loading progress is shown as a bar graph.

9-1-1-4 Help menu item



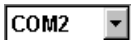
UpdateSense-Help
Displays help files about the **UpdateSense** program.

Information
Displays information about the **UpdateSense** program.

9-1-2 The function bar

Functions of the menu bar can be accessed swiftly and directly by way of the function bar.

Open
Opens a firmware file (*.hex) for a sensor.



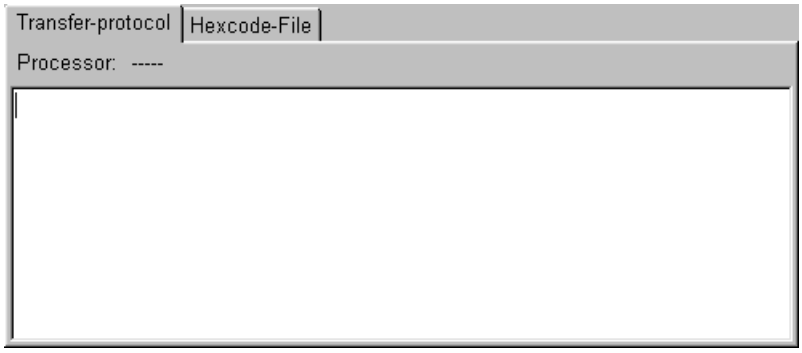
Interface pulldown menu
With the **Interface** pulldown menu, you select the interface through which the sensor is connected.

Start upload
Starts transfer of new firmware to the sensor.
Loading progress is displayed as a bar graph.

Save
Saves a firmware file for a sensor (only if **Detail** is activated).

9-1-3 Display in details

The additional **Details** window is opened when you click the **Details** button.



In this window, you can monitor the data transfer report and the firmware file (Hex file) for the update.

This information is of interest to trained product specialists only.