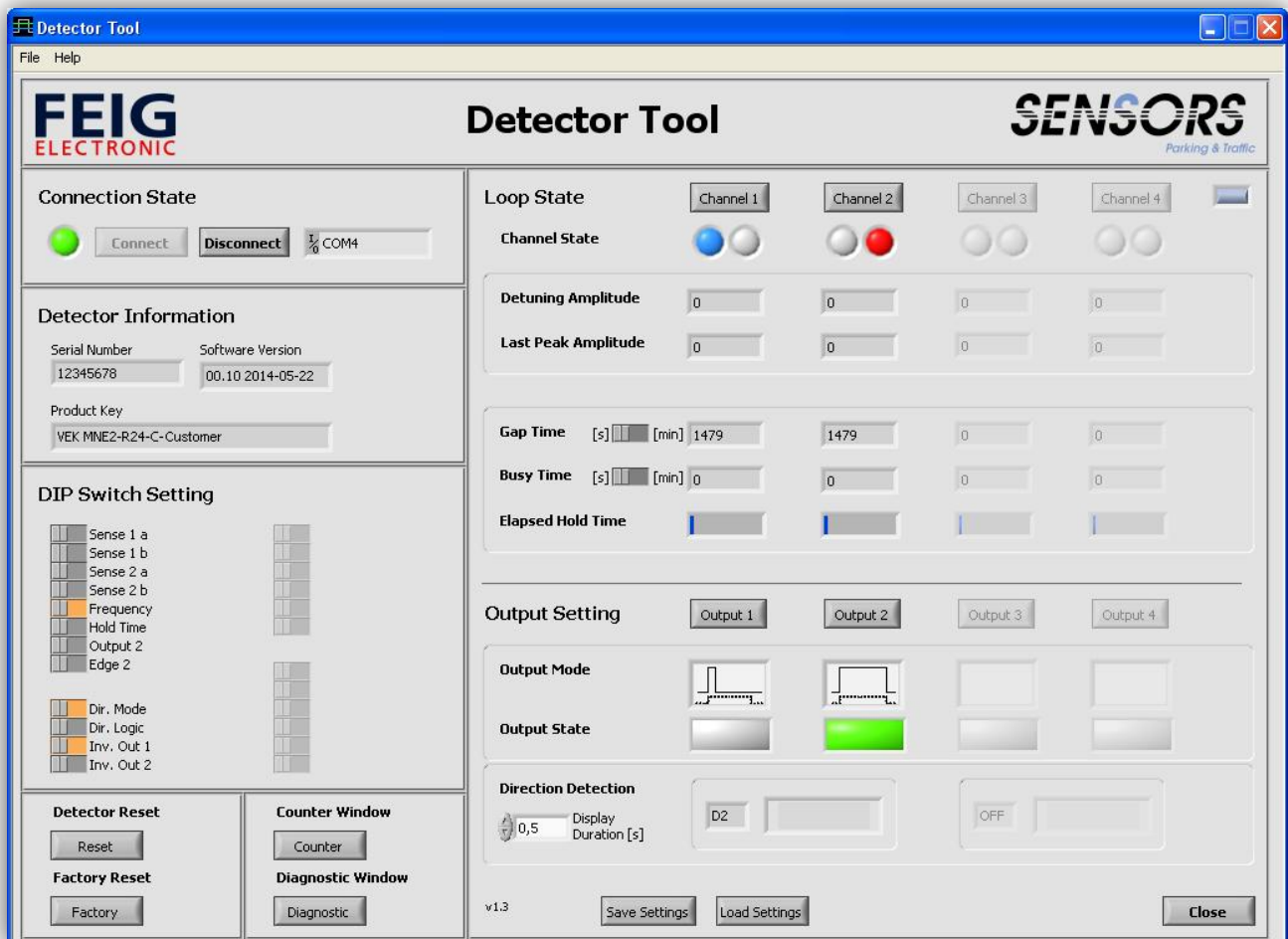


VEK MNEx Detector Tool

Operating instructions

Detector Tool



10.09.2015

Detector_Tool_VEK_MNEx_Operating Instructions_150910_ENG.docx

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1. START THE PROGRAM

Start the program with a double-click on the file **Detector Tool** (see symbol on the right →)

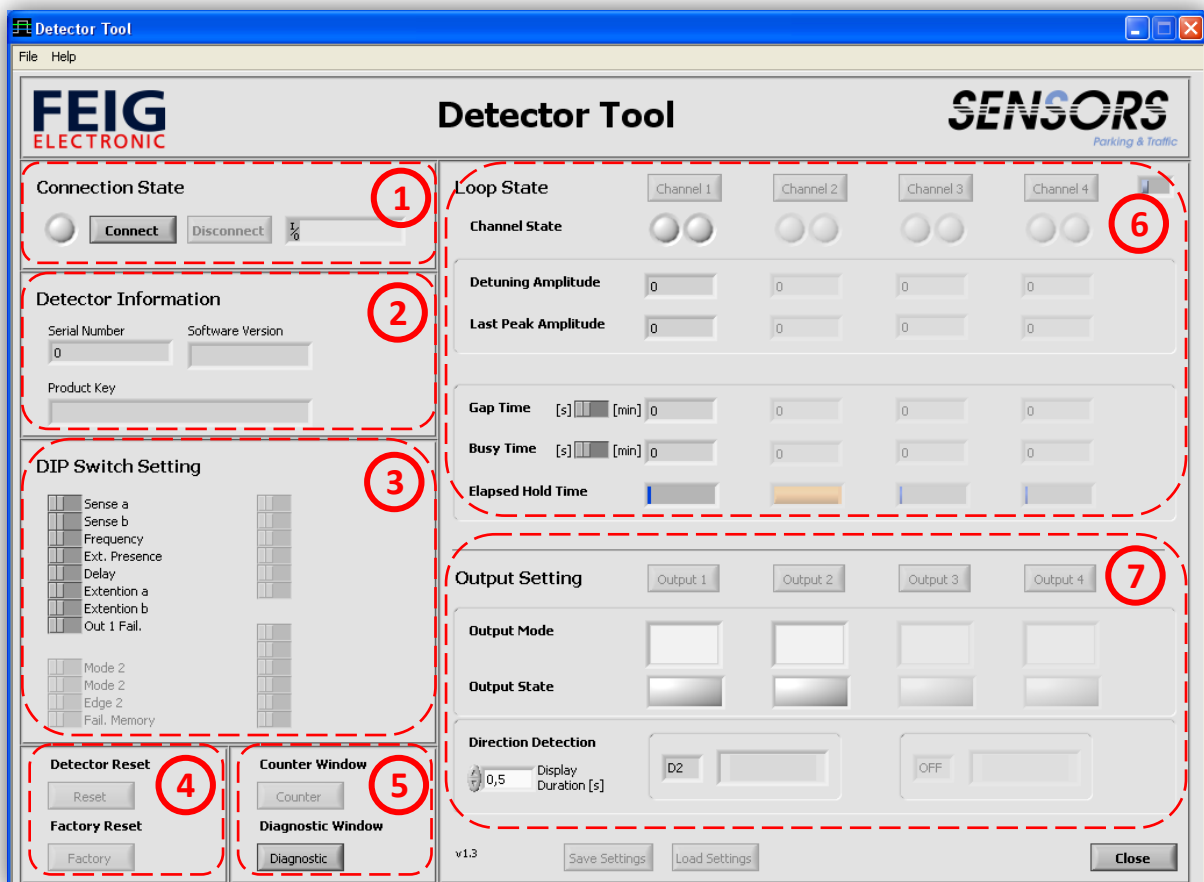


Detector Tool

To use the program, a detector (e.g. VEK MNEx) must be connected to the computer via a USB interface. Please read this instruction manual to learn how to connect and use the detector.

2. MAIN WINDOW


When the program starts, the following user interface appears. To improve the description, the main window is divided into several zones:





All the adjusted values are stored in an INI-file with a single click on **Save Settings** located in the lower section of the Detector Tool. To load previously stored adjustments into the program, click on **Load Settings**.

The other zones are described in the following chapters:

2.1. ZONE 1 (Connection State)

The current connection status of the attached detector may be examined in the first zone with the heading **Connection State**. If the LED is green  and indicator

 is followed by a COM-port (e.g. COM 4) the program has successfully been connected. A grey LED  indicates that the unit is not connected to any equipment. In this case, the search for connected detectors starts with a **click** on **Connect**. The program normally connects automatically and becomes operational when a detector is located.

If an automatic connection does not take place, you can deactivate the automatic search and manually select a COM-port. For this purpose, open the **Connection** in the menu bar and deactivate **Auto connect**. A click on Connect then permits you to manually selection the required COM-port.

Click on **Disconnect** to remove the connection between computers and detector.



2.2. ZONE 2 (Detector Information)

Detector Information


Serial Number	Software Version
12345678	00.10 2014-05-22
Product Key	
VEK MNE2-R24-C-Customer	


Here the current information is displayed, such as serial number (**Serial Number**), **Software Version** and the product key (**Product Key**) of the connected detector.

The product key includes the following:

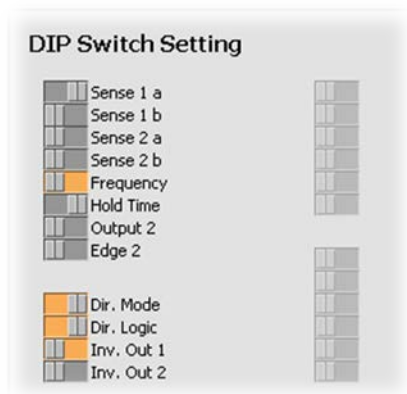
VEK MNE	2	-	R	24	-	C	X	-	Customer
Product name	Channel quantity (1 or 2)		Relay	Supply voltage (24 V or 230 V)		Version of back panel	Additional Information (optional)		Perhaps customer name for custom specific versions

2.3. ZONE 3 (DIP Switch Settings)

All the virtual DIP-switches  on the left represent DIP-switches on the detector. If a DIP-switch is modified on the detector, it changes in the Detector Tool as well.

If a DIP-switch is overwritten by an adjustment of the program (USB-overwrite), then its background color changes from grey to orange . That is, the hardware settings do not match the settings of the program. A click on an orange switch can again reset the overwrite setting on the software side.

The functions of the DIP-switches, i.e. the descriptions to the right of it, are defined individually for each detector.



2.4. ZONE 4 (Detector Reset/Factory Reset)

This lists the different types of RESET. A click on **RESET** under **Detector** **RESET** executes the detector reset.

If you click on Factory under **Factory Reset**, the detector settings are reset to factory settings. All previously entered settings are deleted or reset to their standard values.

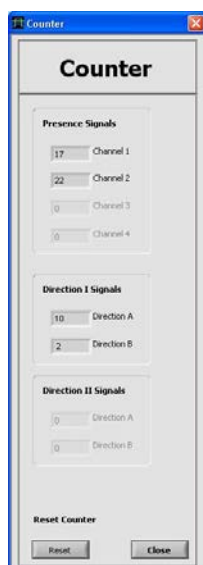


2.5. ZONE 5 (Counter Window/Diagnostic Window)



These two Buttons provide access to the windows of an extensive analysis. The following two chapters explain the operation of the windows.

2.5.1. Counter Window



Each channel has its own counter. If, for example, a signal is detected on channel 1, the counter is incremented by 1.

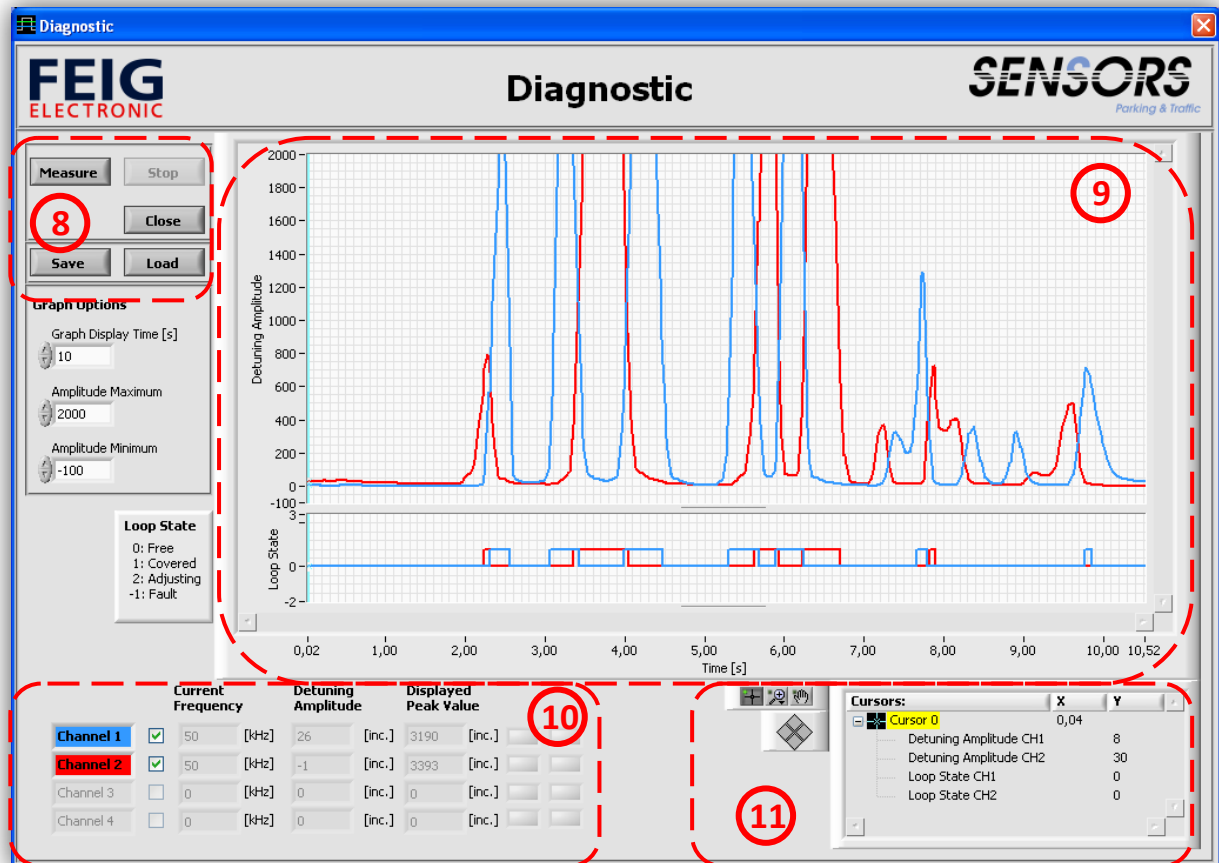
The same applies to the travelling directions (Direction). Depending upon which direction was recognized, the counter with either **direction A** or for **direction B** is incremented by 1.

This only works for a two-channel detector.

2.5.2. Diagnostic Window

This window is intended to provide diagnostic purposes to the inputs on the detector. The option exists to analyze and evaluate the graphs with certain tools. In addition, the recorded data may be saved for subsequent analysis.

If a detector is connected, the recording starts as soon as the window is opened.



The different zones (8-11) are described below.

ZONE 8

Description	Explanation
Stop	The recording is stopped.
Measure	Start a new recording (NOTE! If the recording is continued, then the previous measurement is discarded if no manual storage took place beforehand → Save)
Close	Close the diagnostic window. (ATTENTION: If the Diagnostic window is closed, then the previous measurement is discarded if no manual storage took place beforehand → Save)
Save	Save the current recording (CSV file).
Load	Load an existing recording (CSV file).

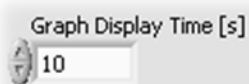
ZONE 9

This visualizes the detuning of each channel. The **blue** graph shows channel 1 (Channel 1) and the **red** graph channel 2 (Channel 2). The upper zone (**Detuning Amplitude**) of the graph shows the pure detuning value. If the maximum deflection of the y-axis displayed is to be increased (if for example, the peaks of the graph are cut off), then the **maximum amplitude** and **minimum amplitude** of the y-axis must be adjusted on the left of the graph.

By clicking the right mouse key on the graph, further adjustments and indicator options are displayed.

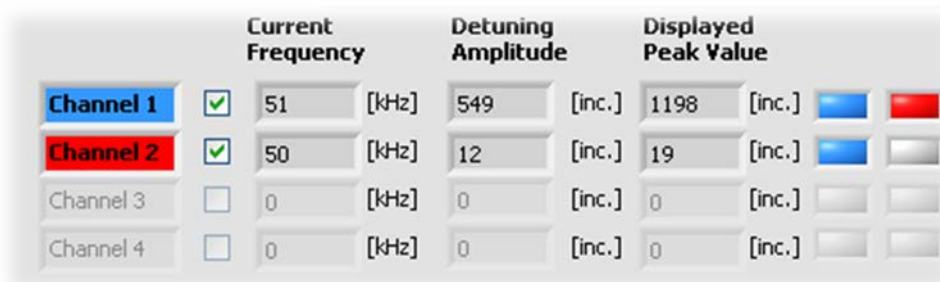
Value	Description
0	Loop free
1	object detected
2	Loop adjusting
-1	Loop error

The lower zone (**loop State**) indicates, in which time interval the condition of the detector was active. The following signal excursions are possible:





The **Graph Display Time [s]** (min 1s/max. 60 s) adjusts the maximum time interval (in seconds) for which the graph is displayed (x axis).

ZONE 10



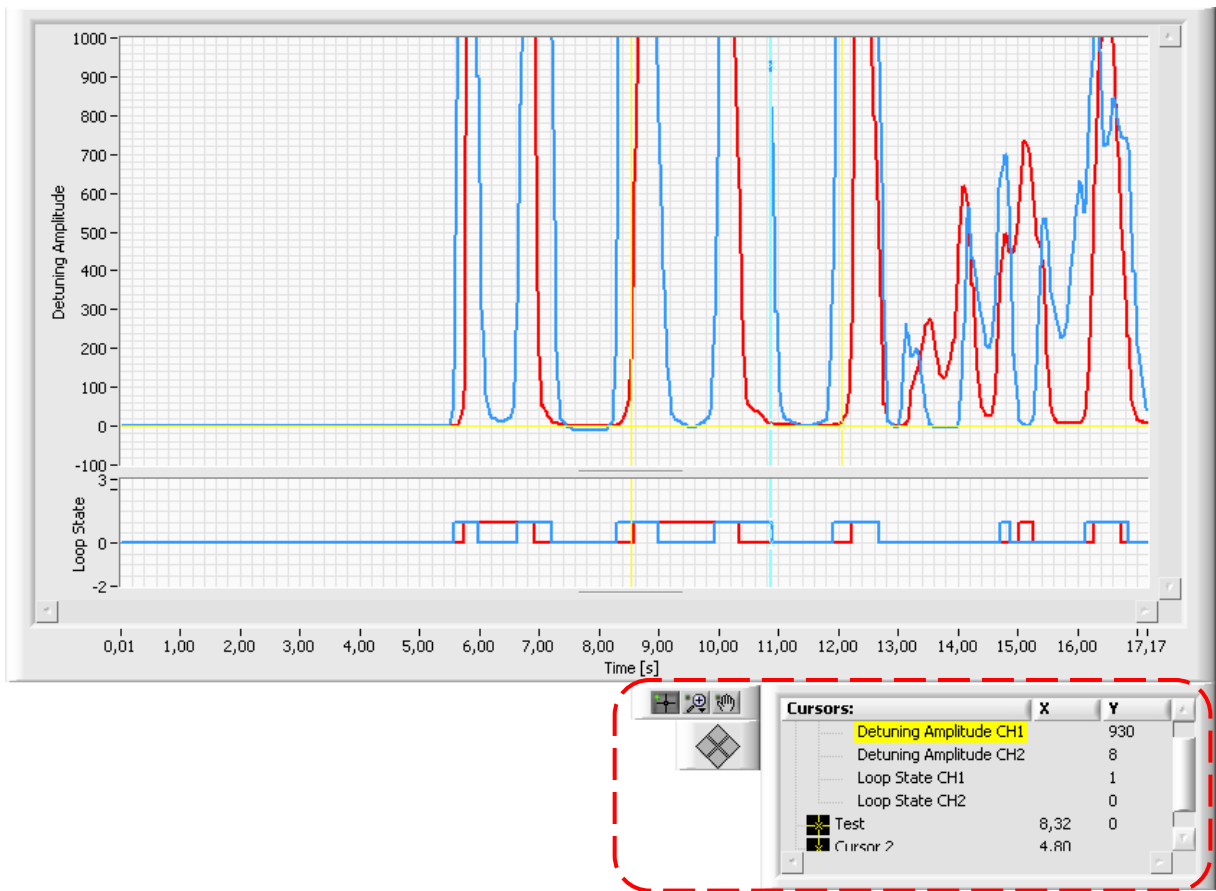
Zone 10 shows the active channels. Here you can turn on/off the appearance of each channel (tick-mark next to the channel name ☒). The following table explains the other functions of the columns:





Description	Explanation
Current Frequency	current frequency (in kHz)
Detuning Amplitude [inc.]	current detuning of this channel
Displayed Peak Value [inc.]	maximally indicated detuning in the displayed time interval






Behind each channel 2 LEDs are displayed ( ). These correspond to the LEDs at the detector and are turned on in parallel with them. You can take the respective flashing patterns and their significance from the detectors manual.

ZONE 11

This zone is only displayed, when the recording has been stopped (**Stop**).

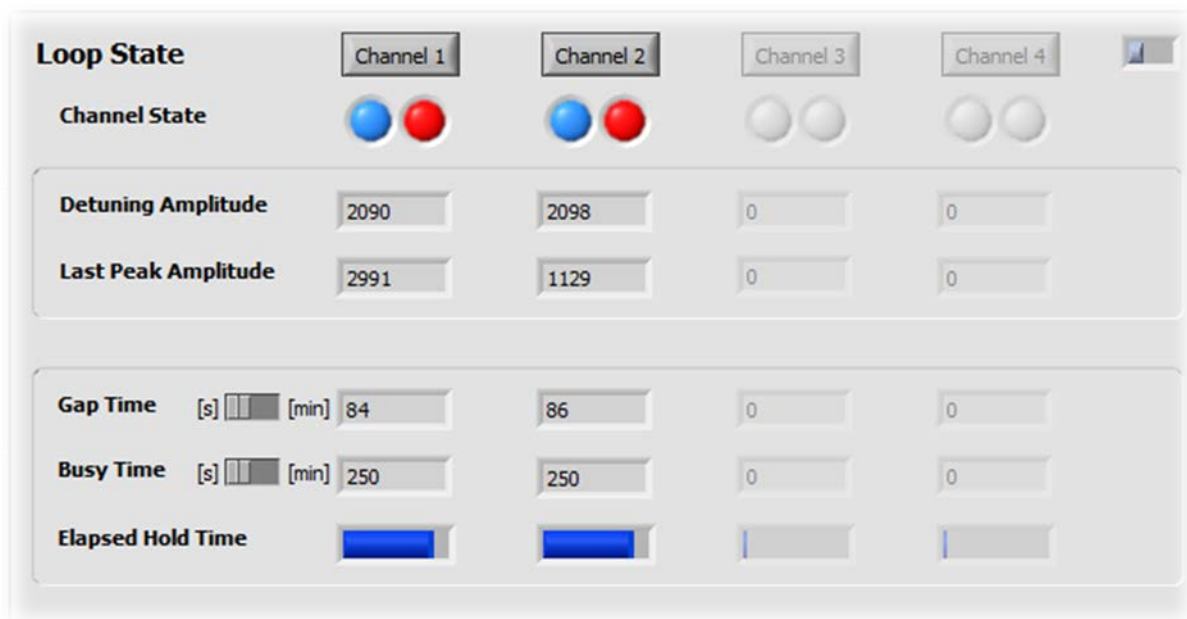


The tools     in the marked zone are used to measure the recorded graph. The table below describes the operation of the tools:

Description	Explanation
 Cursor tool	Manual shifting of individual cursors
 Zoom tool	Different methods to zoom in or out of the graph 
 Free hand movement	Free hand movement of the graph.
 Control symbol	Gradual navigation of the selected cursor.



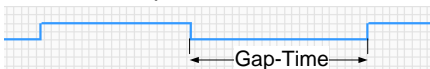
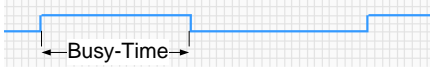


By clicking the right mouse key in this zone, additional settings are displayed. Among others, cursors may be generated and deleted in this area. Use the right mouse key directly on a cursor to display specific settings for this particular cursor. In this case, specific characteristics like the color may be configured.

2.6. ZONE 6 (Loop State)



This contains a virtual display of all channels. Each column represents a channel and its characteristics. Click on the respective channel name (**Channel x**) at the start of the column to displayed additional adjustments (see 2.6.1 Input Configuration).

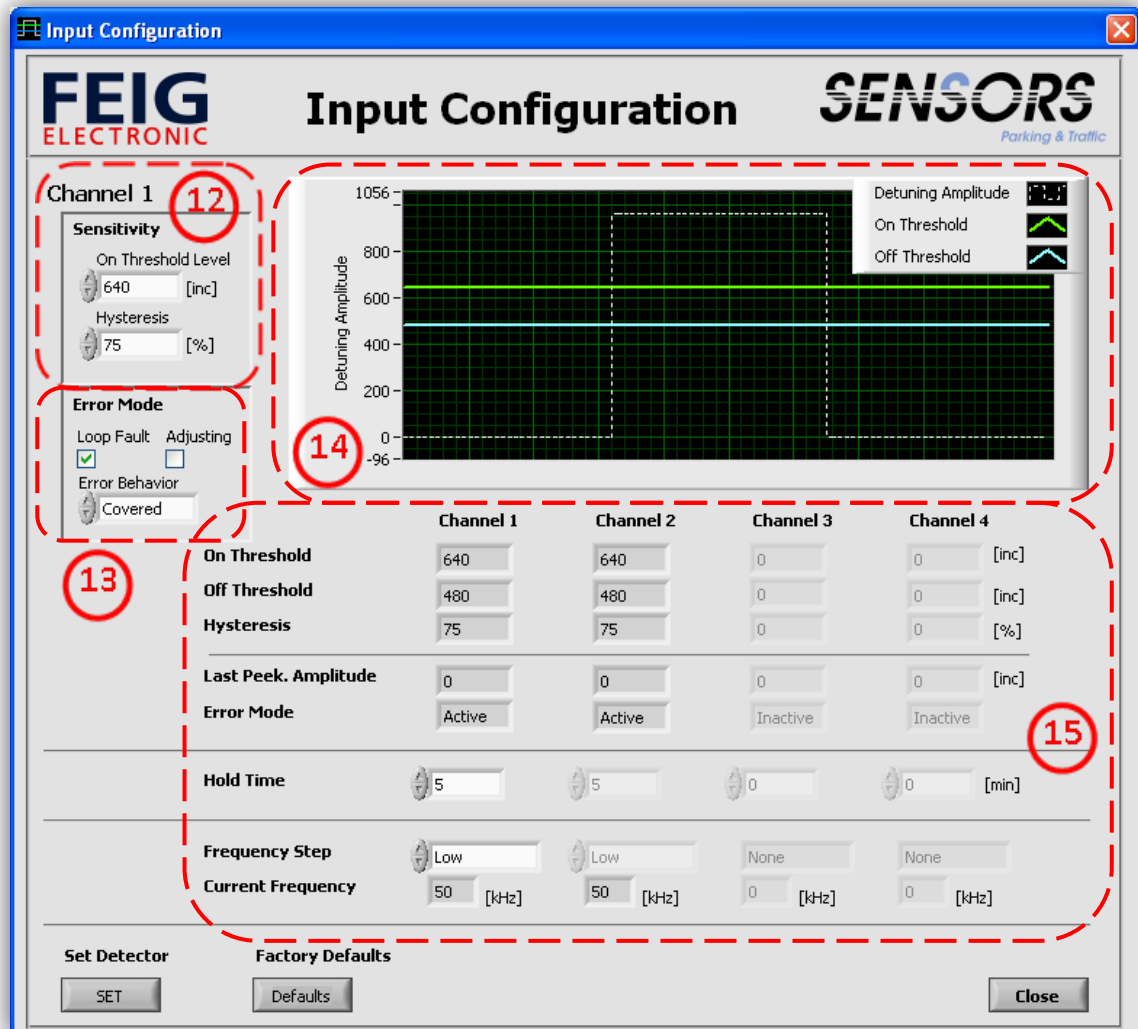
The following table explains further lines and their meaning:

Description	Explanation
Channel State	This displays 2 LED's ( ) each corresponds to a LED on the detector. You can find the respective flashing patterns and their significance in the detectors manual.
Detuning Amplitude	Current detuning
Last Peak Amplitude	Last peak value of detuning
Gap Time	The time that has passed between the last two recordings or the time since the loop was free. 
Busy Time	The time, when the loop has last detected an object, until it was released again or the time for which the loop has currently been active. 
Elapsed Hold Time	When the loop is detecting an object, the blue field begins to be filled.  . When it is completely filled, the loop starts to adjust itself. (timeout of the selected holding time) The holding time is specified in the Input Configurations (see 2.6.1 Input Configuration) of each individual channel. If the Hold Time is set to infinity, (Hold Time = 0) the field color becomes orange  .

2.6.1. Input Configuration

This window is accessed with a single click on the channel name (**Channel x**) in the main window. In the window **Input Configuration**, the channel-specific settings for each individual channel may be entered and their current values examined.

By changing a parameter it will be saved with a single click on **Set**. A click on **Defaults** sets the parameters to their standard values. Here, only the values of the selected channel are set to standard. At the top left of zone 12 the currently selected channel is displayed.



ZONE 12 (Sensitivity)

This defines the sensitivity of the channel. I.e. from which threshold values a loop is regarded as being detecting an object or as free.

<i>Description</i>	<i>Explanation</i>
On Threshold level	The On Threshold Level of the channel
Hysteresis	The percentage portion of the On Threshold Level that the Off Threshold should use to adjust itself. This Off Threshold may be examined in ZONE 15 .

ZONE 13 (Error Mode)

Here you may configure, which errors will be intercepted and how they should be handled. These errors are intercepted when a check mark is set next to Loop **Fault** and/or **Adjusting**.

<i>Description</i>	<i>Explanation</i>
Loop Fault <input checked="" type="checkbox"/>	Error output for loop open or loop shorten
Adjusting <input checked="" type="checkbox"/>	Error output if the channel adjusts itself
Error Behavior	Here you specify how the output should handle one of the errors described above. You can decide between two actions: Covered → condition in case of error: like object detected Free → condition in case of error: loop free

ZONE 14

This graph visualizes all the settings that were made in the **Input Configuration** window. Here you cannot make changes. The zone is used exclusively to illustrate the selected values.

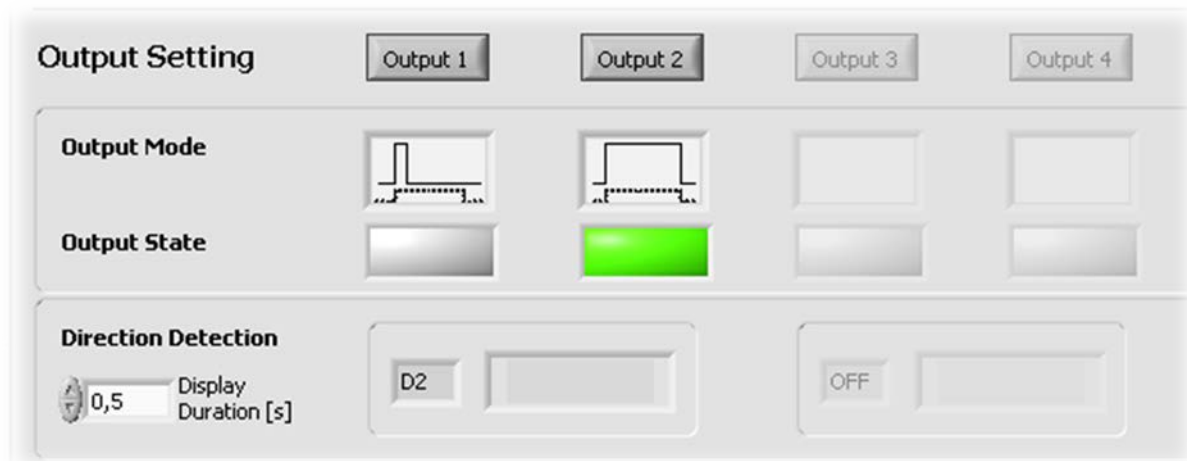
The green line in the graph indicates the currently selected **On Threshold** of this channel. The blue line indicates the **Off Threshold**, which results from the adjusted hysteresis (see [ZONE 12](#)).

ZONE 15

Here, the values in [ZONE 12](#) and [ZONE 13](#) are listed again. In addition, the **Off Threshold Level** is calculated and indicated here with the aid of the hysteresis and the **On Threshold**. The following table describes all the rows:

<i>Description</i>	<i>Explanation</i>
On Threshold	The On Threshold of the channel, which has to be exceeded by the detuning value, to detect an object on the loop
Off Threshold	The Off Threshold of the channel, which has to be fall below by the detuning value, to detect a free loop state
Hysteresis	The percentage portion of the On Threshold Level that the Off Threshold should use to adjust itself. This Off Threshold can be defined in ZONE 15 .
Last Peek Amplitude	Last detuning peak value
Error Mode	Active → at least one error mode was selected in ZONE 13 Inactive → no error mode was selected in ZONE 13
Hold Time	The hold time, for which the channel remains continuously active until it calibrates itself again. (0 = infinite Hold Time). The currently expired hold time is visualized in the main window (see 2.6 ZONE 6 (Loop State))
Frequency Step	Low → Low loop frequency High → High loop frequency None → No loop frequency (channel is permanently switched off)
Current Frequency	The current loop frequency may be changed with Frequency Step

2.7. ZONE 7 (Output Settings)



Everything here concerns the outputs of the connected detector. If you click on the respective name of the output (**Output x**), a window appears with additional adjustment options (see 2.7.1 Output Configuration).

The following table describes the different rows and their operation:

Name	Explanation
Output Mode	The currently selected output mode defined with the Output Configurations (see ZONE 16 (Output Mode))
Output State	Status indication of the output: <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; background-color: grey; margin-right: 5px;"></div> <div>→ output relay inactive</div> </div> <div style="display: flex; align-items: center;"> <div style="width: 20px; height: 10px; background-color: green; margin-right: 5px;"></div> <div>→ output relay active</div> </div>
Direction Detection	<p>Recognition display of the direction. The field Display Duration can adjust, how long the recognized direction is to be displayed in seconds.</p> <hr/> <p>The field on the side displays the actually used direction logic (e.g. D2). On the right side of the direction logic is the recognized direction displayed:</p> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; padding: 5px 0;"> <div>A: 1 → 2</div> <div>direction A, from loop 1 to 2</div> </div> <div style="display: flex; justify-content: space-between; padding: 5px 0;"> <div>B: 2 → 1</div> <div>direction B, from loop 2 to 1</div> </div>

2.7.1. Output Configuration

Here you can control the output behavior and -timing of the channels.

Each column represents an output. Only settings for the chosen channel, by clicking on **Output 1** or **Output 2** in the main window, can be made.

Additionally in this window the logic for direction recognition can be set.

When a change is made, it must be stored by clicking **Set**.

FEIG ELECTRONIC Output Configuration SENSORS
Parking & Traffic

Output Mode	Output 1	Output 2	Output 3	Output 4
Signal Shape	Pulse	Presence	OFF	OFF
Pulse Timing	Entry	Entry	Entry	Entry
Direction Logic	OFF	OFF	OFF	OFF
Signal Behavior	Not Inverted	Not Inverted	Not Inverted	Not Inverted
Assigned	Channel 1	Channel 2	Channel 1	Channel 1

Output Timing

	Output 1	Output 2	Output 3	Output 4
On Delay	0 [ms]	0 [ms]	0 [ms]	0 [ms]
Off Delay	0 [ms]	0 [ms]	0 [ms]	0 [ms]
min. Signal Duration	200 [ms]	200 [ms]	0 [ms]	0 [ms]

Direction Logic

Direction Logic 1

D2

1 2

Direction Logic 2

OFF

3 4










SET Defaults Close

Simply click on the button **Defaults** to reset the changes of this channel to their standard settings. After confirming the security request with **Yes**, the settings of this channel are changed to their standard values.

ZONE 16 (Output Mode)

This zone is used to configure the output mode. The lower/dashed line (---) represents the status of the loop, the upper continuous line (___) represents the output.

The following table provides a detailed description:

Description		Explanation	
Signal Shape	Presence		As long as an object is detected, the output is connected as well.
	General Fault		Irrespective if the loop is free or not, the output is used to signalize loop errors on both channels.
	ON		The output is permanently switched on.
	OFF		The output is permanently switched off.
	Pulse		Only a short impulse is sent to the output, irrespective of how long the channel remains active. (further settings available under Pulses Timing)
Pulse Timing	Active only if Pulse is selected as Signal Shape !		
	Entry		Output pulse, when the loop is detecting an object
	Leave		Output pulse, when the loop is free
Direction Logic		If this field is turned ON , the direction logic set in ZONE 18 (Direction Logic) is used for the output.	
Signal Behavior	Here the output signal may be inverted. Example:		
	Not Inverted:		Inverted:
Assigned	If the Direction Logic is set to OFF , the channel set here uses the output logic that is defined before. If the Direction Logic is set to ON , the direction ($A \rightarrow B$, $B \leftarrow A$, $A \& B$) is defined here to which the output must react.		

ZONE 17 (Output Timing)

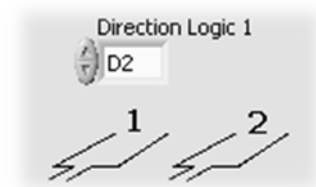
This is where the output timing is configured. The following table provides a detailed description of the rows:

<i>Description</i>	<i>Explanation</i>
On Delay [ms]	On delay (100 ms steps)
Off Delay [ms]	Off delay (100 ms steps)
Min. Signal Duration [ms]	The minimum time that the output remains active. (100 ms of steps)

ZONE 18 (Direction Logic)

Here you can select the logic for direction recognition.

You can determine the function of the respective logic from the operating instructions of the detector.



3. Notes

[illegible]