PERIDECT

Installation Manual

Installation Manual Version 1.6

Installation Software Version 5.8

CONTENTS:

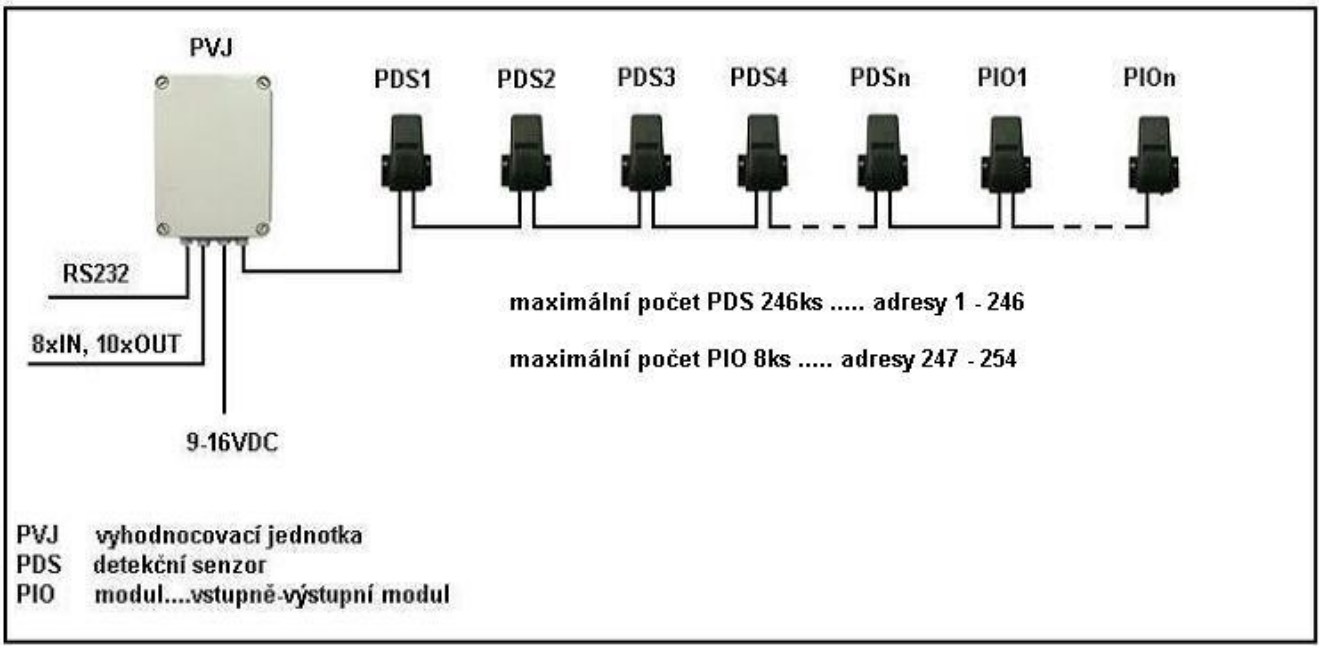
1. Equipment Description

Peridect is a perimetric detection system meant to protect against the unauthorised entry to a protected object. The system is meant for common types of fences, welded fences, chainlink fences, welded panels and the upper superstructures of brick fences. The system detects vibrations in the fence caused by mechanical impulses arising during attempts to get over or through it by climbing it, cutting it, raising it, etc. Peridect is an entirely autonomous system with fully configurable features and alarm output which enables the system to connect as a common detector to the standard EZS system.

The Peridect system is made up of an evaluation unit (PEU) to which detection sensors (PDSes) or input/output modules (PIOs) are connected with the help of a two-wire bus. The capacity of one PEU enables the connection of 246 PDSes and 8 PIO modules. The precision of the detection system is in principle with a differentiation on each individual PDS, in practice it depends on several other factors such as the type and mechanical implementation of the fence, the spacing of the PDSes from each other, the place and position situated on the fence.

2. Connection Diagram

Block Scheme:



PEU PDS1 PDS2 PDS3 PDS4 PDSn PIO1 PIOn

RS232

maximum number of PDSes 246 ….. addresses 1 – 246

8xIN, 10xOUT maximum number of PIOs 8 ….. addresses 247 – 254

9-16VDC

PEU evaluation unit
PDS detection sensor
PIO module….input-output module

3. Description and Technical Data

3.1. PEU Evaluation Unit

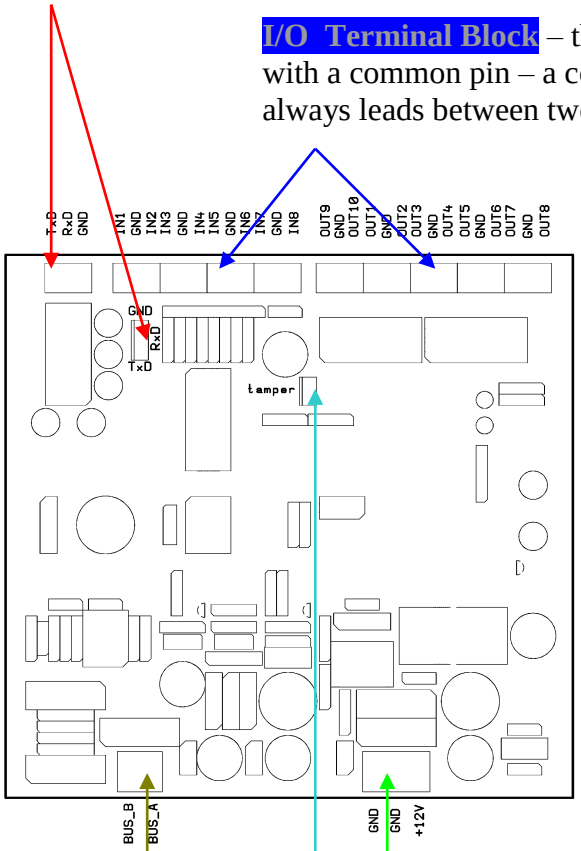
The PEU is situated in a plastic cover with an IP56 enclosure and with bushings for cable endings. In an external environment we carry out the installation of the PEU with the bushings facing down. It is possible to open the cover after unscrewing four plastic screws in the corners of the enclosure. Opening the enclosure is signalled by a microswitch. The PEU is equipped with 8 doubly balanced inputs allowing any amount of detectors and sensors to be connected. The PEU also contains 10 programmable open collector outputs that can be set to these operation modes:

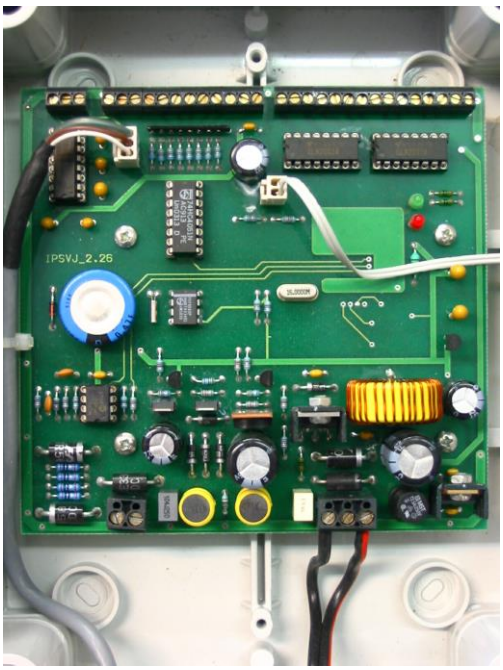
1. the signalisation of an alarm on an individual PDS or on a group of more PDSes
2. the reaction to the activity of selected PIO module input
3. the reaction to a combination of an alarm on the PDS and the activity of input on the PEU or PIO

Connecting the PEU Terminal Block:

RS 232 Terminal Block – leads in parallel to two places: as a system connector and to the block terminal with screwing pins.

I/O Terminal Block – the connection of inputs and outputs uses a connection with a common pin – a common negative pole, for a simple connection it always leads between two inputs/outputs.





Power Terminal Block – power voltage 9V – 16V DC.

Tamper Terminal Block – the connection of an external protective contact (tamper) from the assembly box or other covering.

BUS Terminal Block – for connecting the data bus with the sensors. It is necessary to adhere to the connection polarity of all the components. The individual components are electronically protected against the reversal of the polarity.

!!! Important Warning: Due to the requirements of the valid ČSN standards, output no. 1 is simultaneously used for the signalisation of a power failure. In the event of a power failure output no. 1 is always assigned to the negative pole (GND) regardless of the programming!!!

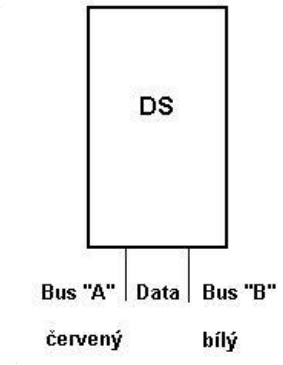
Technical Data:

Power Voltage:	9V to 16V DC.
Consumption:	200mA typical - without PDSes and PIOs connected to the bus 600mA maximum (PDSes and PIOs connected in the maximum possible amount of 246 PDSes + 8 PIOs)
Temperature Range:	-25 to +55 ^{o} C
Inputs (PEU):	8x doubly balanced (balance resistance 2×2,2kΩ)
Outputs (PEU):	10x transistor, open collector, load capacity max. 100mA
Enclosure:	IP56
Data Line:	maximum length 700m

3.2. PDS Detection Sensor

The PDS is the detecting element of the Peridect system which evaluates the impulses from the mechanic fence and passes it on to the PEU for processing. It is standardly attached to the fence using two screws and a plastic clamp. For reasons of resistance to outside weather the outlets for the cables must always be installed facing down!

Connecting a PDS:



DS

Bus “A” Data Bus “B”

red white

Data --- Bus “A” PEU
Data --- Bus “B” PEU

PDS Installation:

The detection sensors are attached to the fence using fastening clamp screws so that the grip is as stable as possible and the good transmission of mechanical vibrations from the fence to the detection sensor is guaranteed. The PDS is usually situated in the middle of the fence panel, though it is also possible to attach it in different ways in accordance with the type and the quality of the fence. Thus we recommend consulting this issue with the supplier’s technical department before installation.

For common types of fences (i.e. the dimensions of the panel are approx. 2.5 x 2 m) one PDS is situated in each panel.

After installing the PDS it is necessary to carry out the attachment of the feeder cables, preferably approx. every 25 cm. Attach the cables using binding tape so that these cables do not bump into the fence due to weather, thus increasing the probability of a false alarm being called.

When a data line has to be connected, it is necessary to dismantle one PDS and carry out the connection of the cables inside the PDS using suitable connectors, such as Scotchlok (3M). It is necessary to carry out the joint connection of the cables pursuant to the aforementioned description.

Technical Data:

Power:	from the PEU bus
Consumption:	1mA maximum
Temperature Range:	-25 to +55^{o}C
Enclosure:	IP54

Typical Applications (Examples):

- **Classic wire netting (eye 60, 80 mm, average wire approx. 1-4mm, maximum height 2.5m, maximum length 4m)**

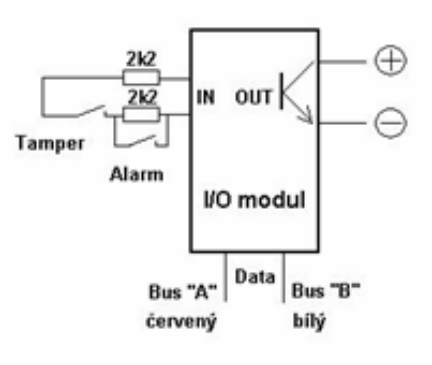
- **Welded fence lengths (wires on average 5-8 mm)**

3.3. PIO Input/Output Module

The PIO is a universal directed element with a single two-wire balanced input and one output of the open collector type with a galvanized division. It is possible to attach it anywhere on the data line.
An external power source is necessary for assigning load.

The appearance of the PIO module is identical to the PDS sensors.

Connecting a PIO Module:



I/O Module

Bus “A”	Data	Bus “B”
red		white

The input and output are implemented using wire terminals, for the output the positive field is marked red.
Data --- Bus “A” PEU
Data --- Bus “B” PEU

Technical Data:

Power:	from the PEU bus
Consumption:	2mA maximum
Temperature Range:	-25 to +55^{o}C
Enclosure:	IP54
Input:	1x doubly balanced (balance resistance 2×2,2kΩ)
Output:	1x transistor, open collector, load capacity max. 100mA

4. Configuration Software

The description and diagrams refer to SW version 5.1.

The **PSW** configuration software is used to setup the Peridect system. With the help of this software it is possible to set up the basic parameters of the system such as the number of PDSes and PIO modules, their addresses, the sensitivity of the individual sensors according to the type of fence and location, the setup of the functions and links of the programmable outputs, downloading the system journal of events from the PEU.

The configuration SW is compatible with the Windows2000 and Windows XP operating systems. The configuration SW is standardly provided along with the Peridect system.

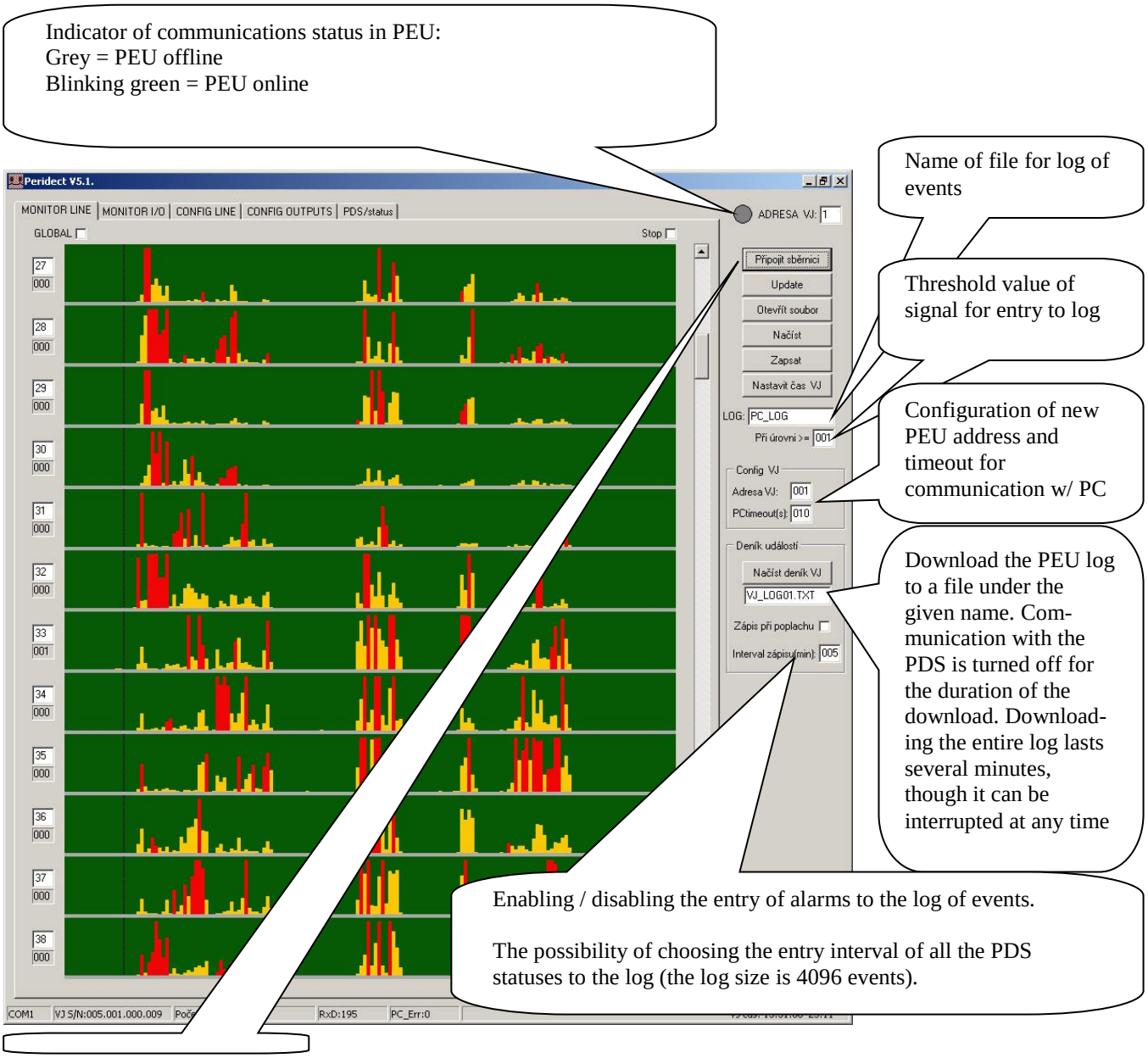
A standard RS232 interface is used for communication with the PEU (speed 57600, 8 databits, no parity, 1 stopbit).

The choice of the communication port is carried out in the config.txt file, which must be in the same directory as the PSW application. In order to change the communication port it is necessary to rewrite the COMx entry, where x is the number of the port used, just as it is registered in the operating system.

config.txt:
COM2
57600

After running the “Peridect.exe” programme a connection is made with the PEU and the programme jumps to the initial system window tab (see the diagram below). If a connection is not made, control the port settings, the cables (the correct connection of Rx and Tx) and the configured PEU address (the factory default address is 1).

4.1. Basic Software Functions

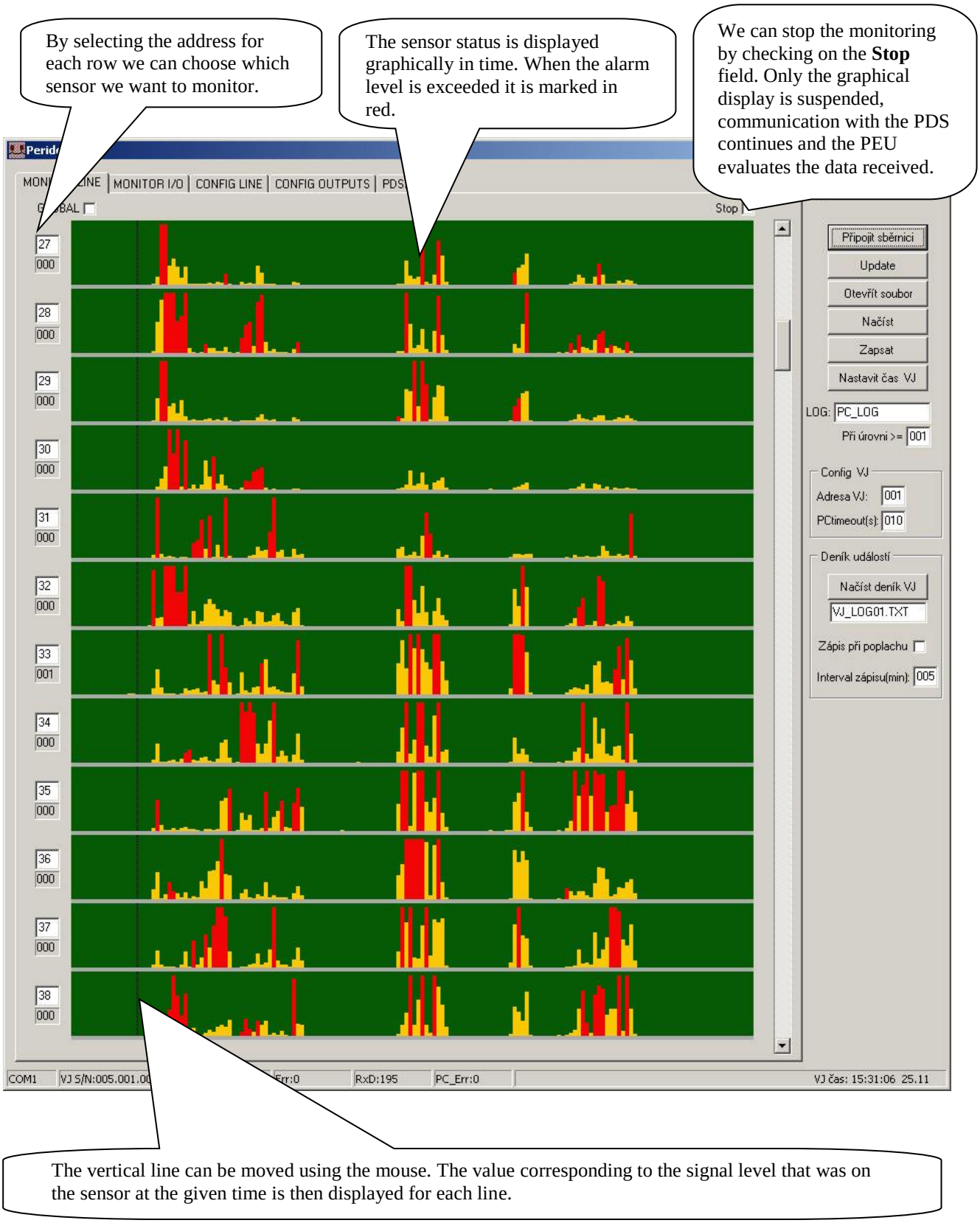


Connect / Disconnect Bus – runs or suspends the reading of information from the bus (suspending is used, for example, when analysing detected disturbances in a PDS monitor). During the period the bus is disconnected no data is accepted from any of the connected modules, to activate the communication it is necessary to carry out the connection of the bus using the same button.

Update – The reloading of all the addresses and sensor statuses. It is used, e.g. after modifications to the CONFIG LINE table, after a change of address, or after adding or removing sensors.
Open File – carries out the reading of the system parameters from the previously-saved *.bin file.
Read – reads the configuration from the PEU memory.
Write – writes the configuration to the PEU memory. A *.bin file with the configuration is saved at the same time.
Set the PEU Time – sets the actual time of the PEU according to the PC's time.

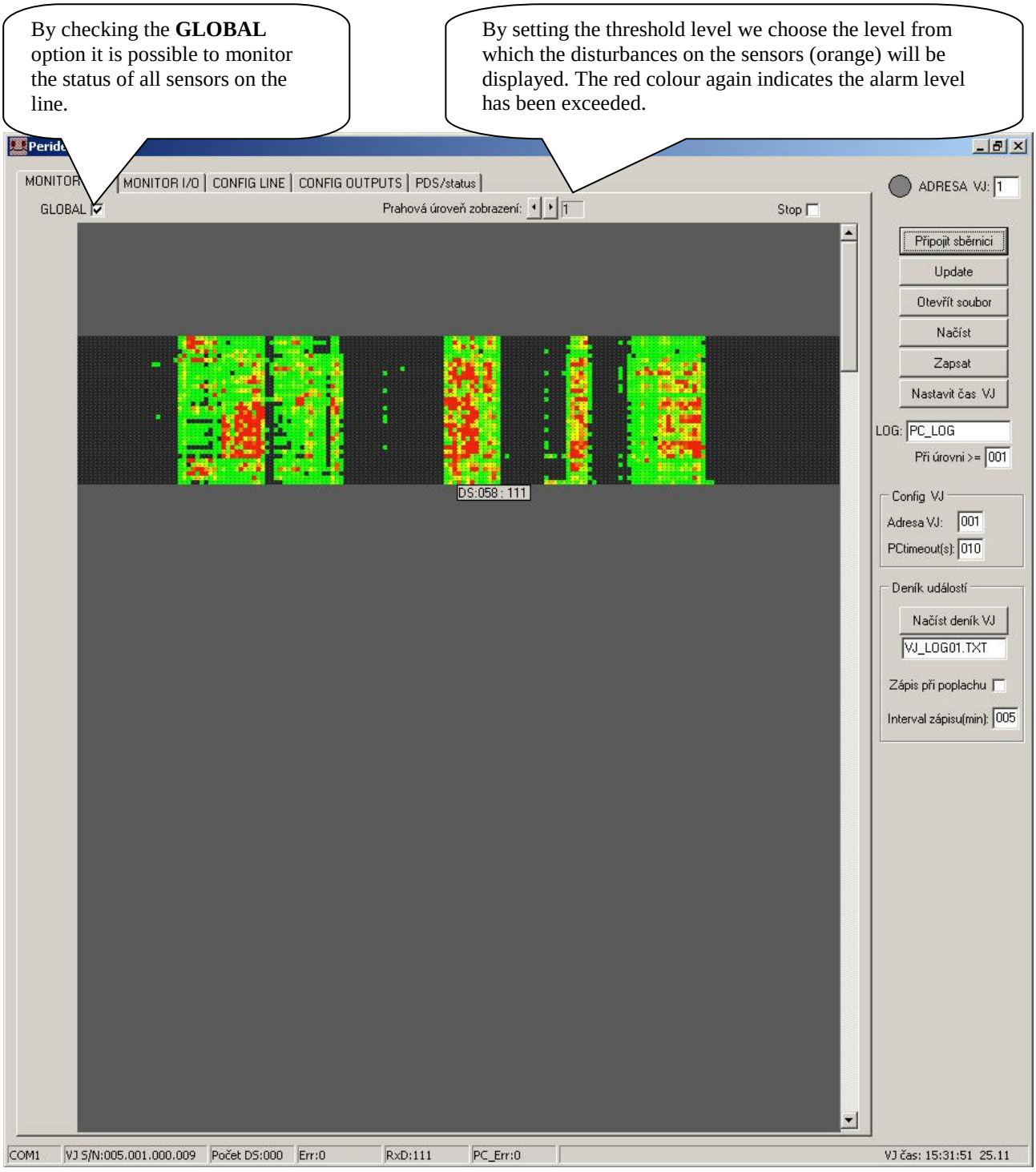
4.2. MONITOR LINE

This function is used for an online overview of events on the detection sensors.



It is possible to display the PDS sensors in any order and with an arbitrary address in the range from 1 – 246.

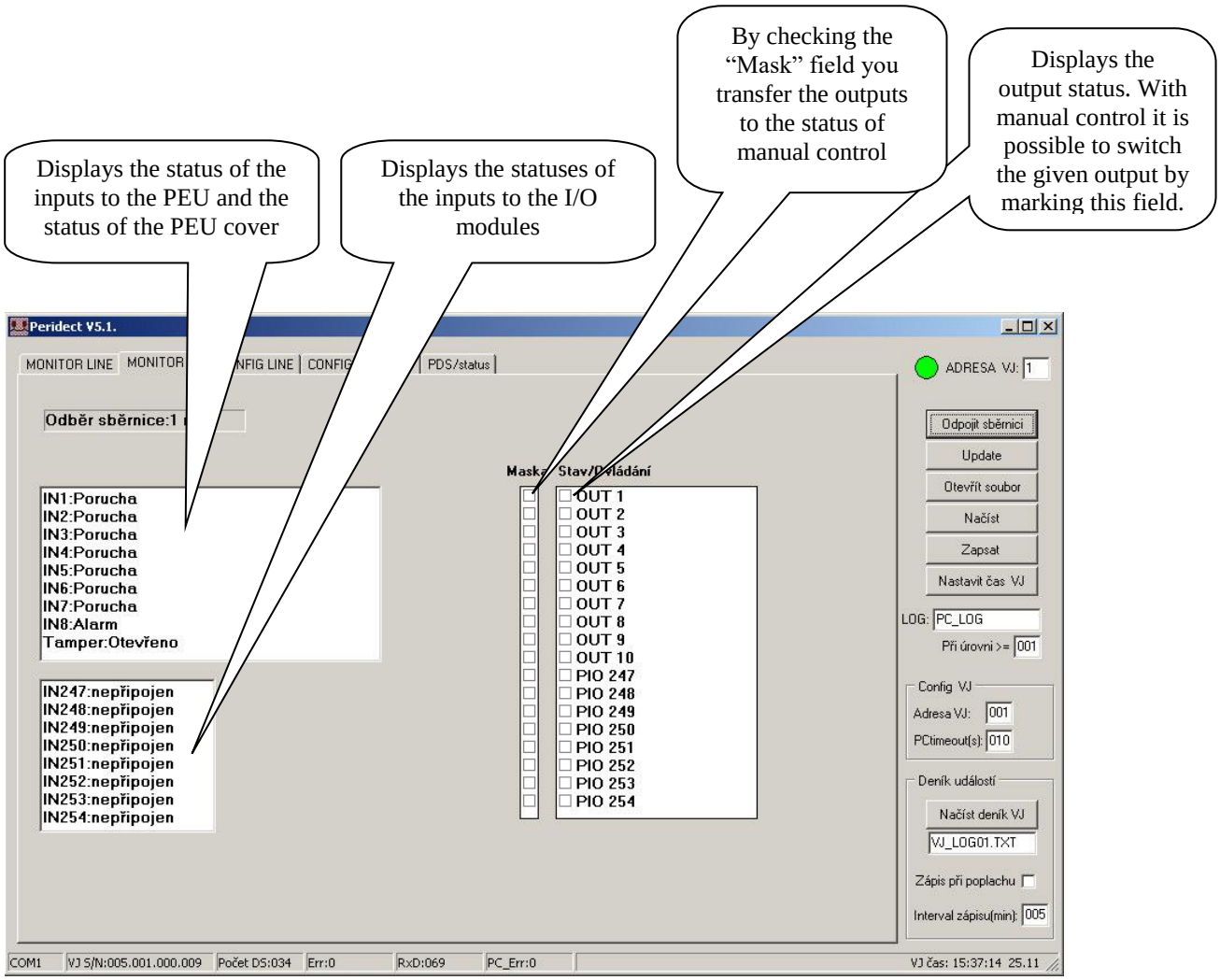
Tip: It is possible to place the cursor between the lines by clicking the mouse or using the "TAB" key.



Global monitoring displays the online status of all loaded PDSes. The sensor statuses are differentiated by colour. The sensors are displayed in order according to their addresses.

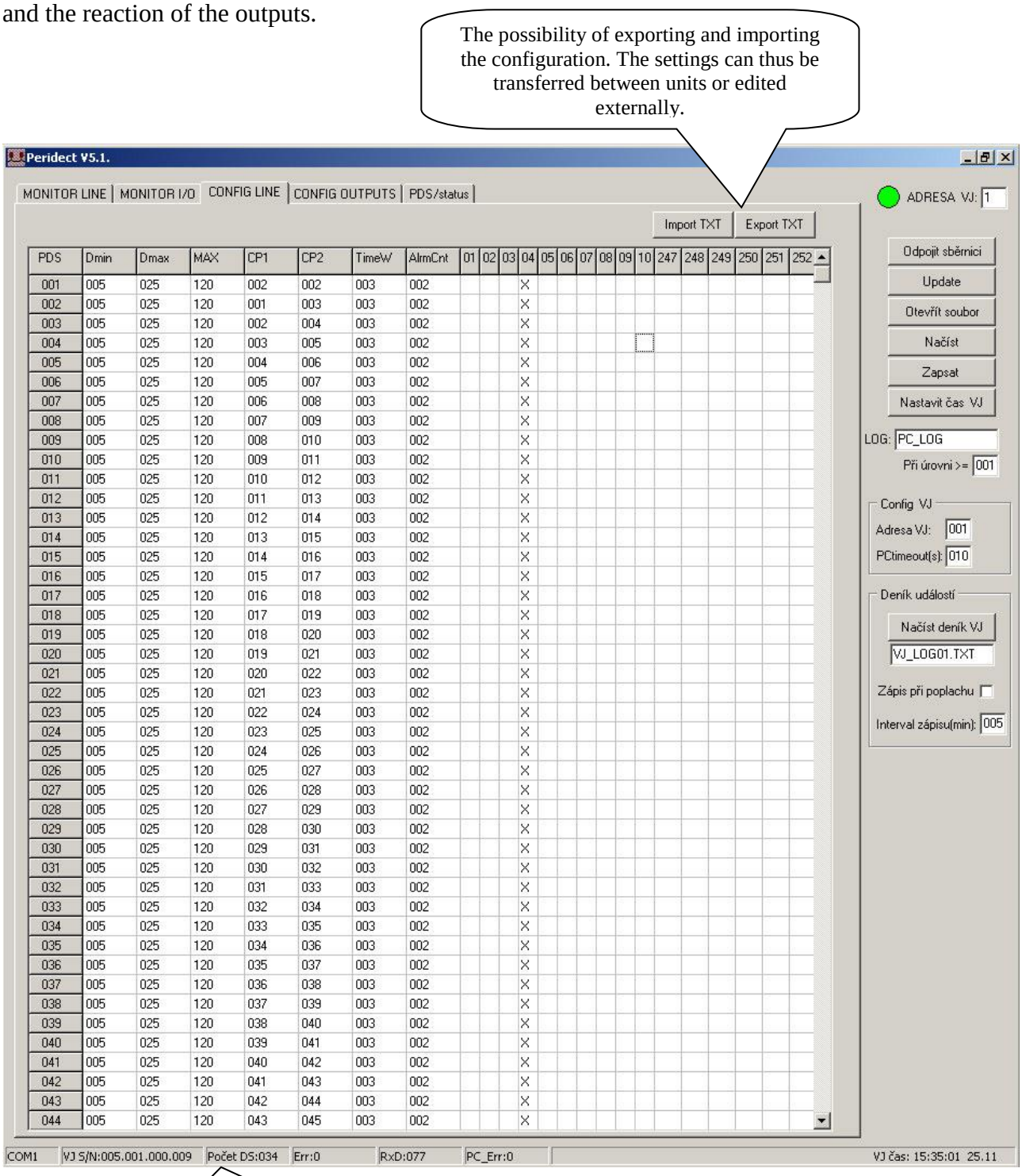
Using the mouse cursor, it is possible to display the address and current signal level at a given moment (where it is pointing).

4.3. I/O MONITOR



4.4. CONFIG LINE

The main configuration table which indicates the sensitivity of the sensors, their mutual dependency and the reaction of the outputs.



PDS	Dmin	Dmax	MAX	CP1	CP2	TimeW	AlrmCnt	01	02	03	04	05	06	07	08	09	10	247	248	249	250	251	252
001	005	025	120	002	002	003	002				X												
002	005	025	120	001	003	003	002				X												
003	005	025	120	002	004	003	002				X												
004	005	025	120	003	005	003	002				X												
005	005	025	120	004	006	003	002				X												
006	005	025	120	005	007	003	002				X												
007	005	025	120	006	008	003	002				X												
008	005	025	120	007	009	003	002				X												
009	005	025	120	008	010	003	002				X												
010	005	025	120	009	011	003	002				X												
011	005	025	120	010	012	003	002				X												
012	005	025	120	011	013	003	002				X												
013	005	025	120	012	014	003	002				X												
014	005	025	120	013	015	003	002				X												
015	005	025	120	014	016	003	002				X												
016	005	025	120	015	017	003	002				X												
017	005	025	120	016	018	003	002				X												
018	005	025	120	017	019	003	002				X												
019	005	025	120	018	020	003	002				X												
020	005	025	120	019	021	003	002				X												
021	005	025	120	020	022	003	002				X												
022	005	025	120	021	023	003	002				X												
023	005	025	120	022	024	003	002				X												
024	005	025	120	023	025	003	002				X												
025	005	025	120	024	026	003	002				X												
026	005	025	120	025	027	003	002				X												
027	005	025	120	026	028	003	002				X												
028	005	025	120	027	029	003	002				X												
029	005	025	120	028	030	003	002				X												
030	005	025	120	029	031	003	002				X												
031	005	025	120	030	032	003	002				X												
032	005	025	120	031	033	003	002				X												
033	005	025	120	032	034	003	002				X												
034	005	025	120	033	035	003	002				X												
035	005	025	120	034	036	003	002				X												
036	005	025	120	035	037	003	002				X												
037	005	025	120	036	038	003	002				X												
038	005	025	120	037	039	003	002				X												
039	005	025	120	038	040	003	002				X												
040	005	025	120	039	041	003	002				X												
041	005	025	120	040	042	003	002				X												
042	005	025	120	041	043	003	002				X												
043	005	025	120	042	044	003	002				X												
044	005	025	120	043	045	003	002				X												

Setting the Configuration of the PDS Sensors:

PDS	Dmin	Dmax	MAX	CP1	CP2	TimeW	AlrmCnt	01	02	03	04	05	06	07	08	09	10	247	248	249	250	251	252
001	005	025	120	002	002	003	002				X												

Dmin, Dmax – differential relative values for comparing the signal relative to PDS CP1 and CP2, considering the size of the detected signal on the current PDS. The dependency of the sensitivity, from the low signal values to the maximum values (excluding the "MAX" value), is separately configured for each PDS from these two values.

MAX – the value of the signal on the PDS during which the alarm conditions are automatically met – output assigned.

CP1, CP2 – PDS addresses with which the comparison of the value of the configured PDS's signal and the actual values of CP1 and CP2 are carried out within the framework of a detection algorithm.

TimeW – the length of the time window (in seconds), during which the given number of events must occur in order for the alarm to be triggered.

AlmCnt – the number of events that must be run on a given PDS during the "TimeW" time window in order for the alarm to be triggered.

01, 02, ….. 252 – It is possible to assign an arbitrary alarm output to each PDS – this output is assigned to the given PDS by checking the appropriate field. More fields can be marked using the mouse cursor and holding the left mouse button to collectively enter a common output or to assign more outputs.

Note:

If the PEU is connected to PSW online, then any change to the settings in this table has an immediate influence on the number and display of the alarm events in the "Monitor Line" monitor, meaning that it is possible to carry out a test of the detection settings with an immediate visual response before saving the settings to the PEU. The possibility of suspending the monitor line, changing the parameter and immediately graphically evaluating whether the signal impulse from the PDS is an alarm or not is also an advantageous function.

Example:

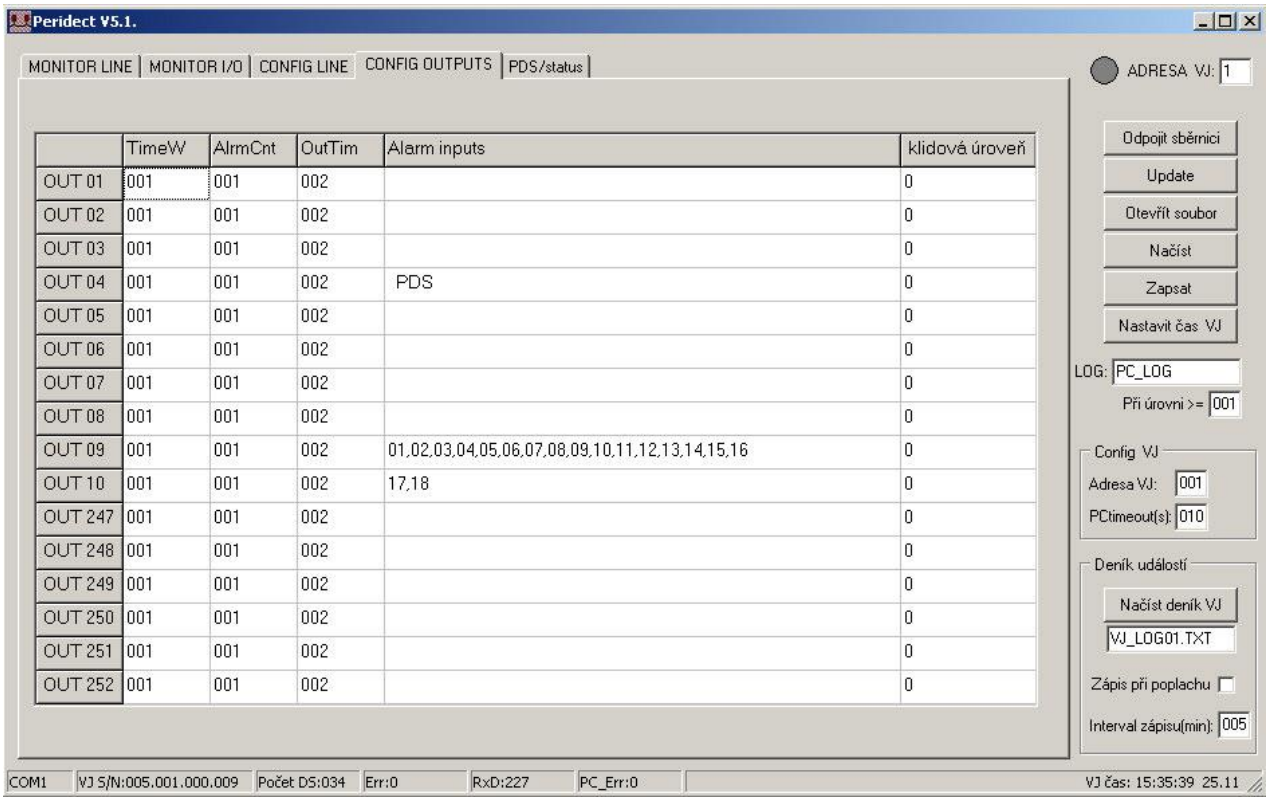
I request the basic detection sensitivity setting at a certain level of disturbance to the fence – in the mode with the PEU connected I make a test strike to the fence at the level I want to have trigger the alarm. On the monitor line tab I immediately see if an alarm is triggered with the current setting. Now I can suspend communication with the PEU and, with the help of a correction to the Dmin and Dmax values, carry out modifications so that the strike I made is displayed as triggering the alarm.

I can then set the other PDSes to these parameters as well. It is necessary to pay special attention primarily to those parts of the fence such as corner edges, gates, entrances and struts. The transmission of vibrations between the individual panels is decreased at these locations and we recommend performing a thorough test of the settings.

4.5. CONFIG OUTPUTS

In this tab the configuration of the outputs and the definition of their relations to the alarm inputs, the alarms from the PDSes, or a combination of these impulses is carried out.

Warning! The reaction of the outputs to the alarms from the sensor line is set in the table on the previous CONFIG LINE tab! In this table you can only influence the period the outputs are assigned or else set up the other loading of events for assigning the outputs.



	TimeW	AlrmCnt	OutTim	Alarm inputs	klidová úroveň
OUT 01	001	001	002		0
OUT 02	001	001	002		0
OUT 03	001	001	002		0
OUT 04	001	001	002	PDS	0
OUT 05	001	001	002		0
OUT 06	001	001	002		0
OUT 07	001	001	002		0
OUT 08	001	001	002		0
OUT 09	001	001	002	01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16	0
OUT 10	001	001	002	17,18	0
OUT 247	001	001	002		0
OUT 248	001	001	002		0
OUT 249	001	001	002		0
OUT 250	001	001	002		0
OUT 251	001	001	002		0
OUT 252	001	001	002		0

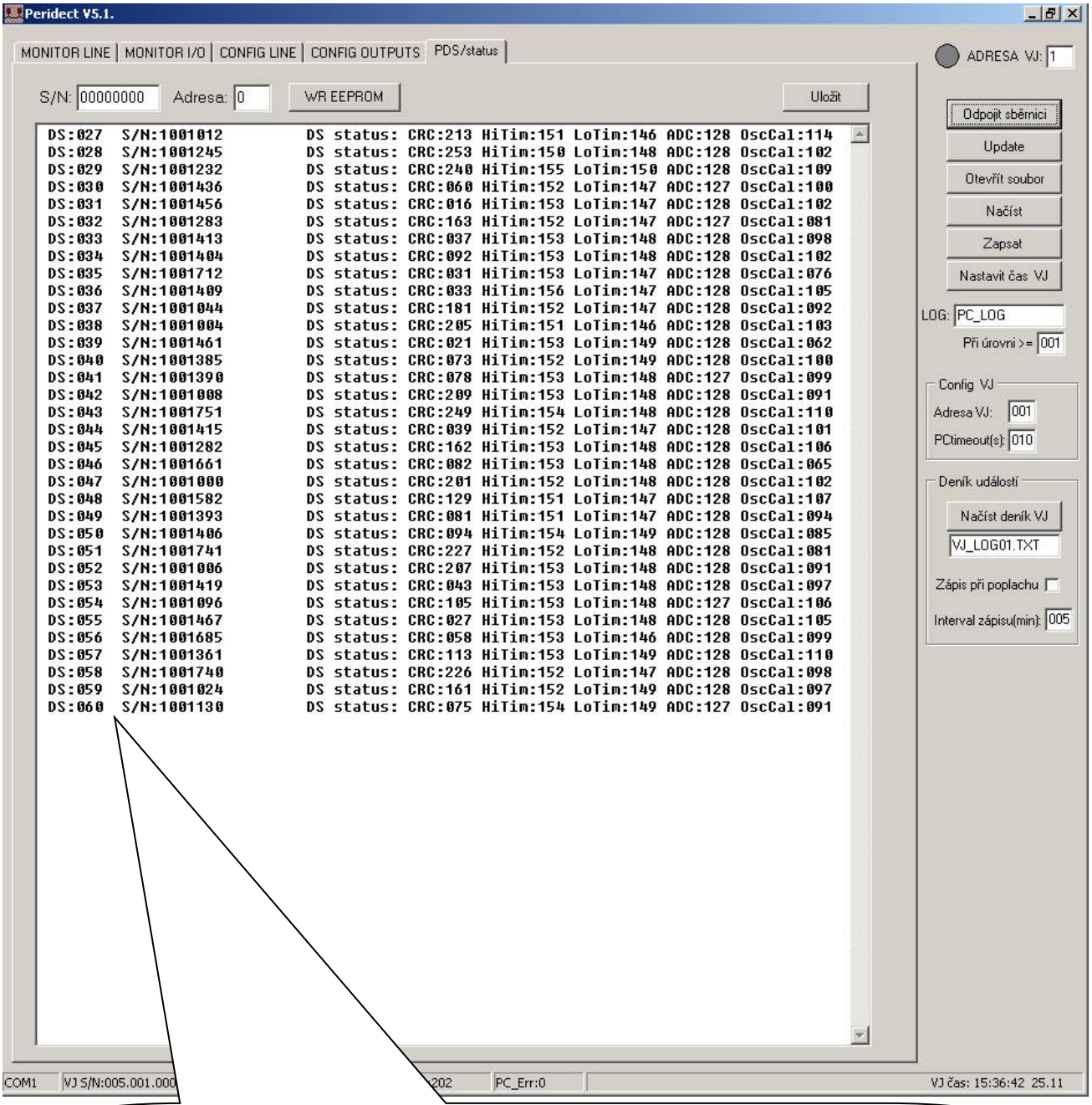
	TimeW	AlrmCnt	OutTim	Alarm inputs	klidová úroveň
OUT 01	001	001	002		0

Setting the Reaction to the Outputs:
TimeW – the length of the time window (in seconds), during which the given number of events must occur in order for an output to be assigned.
AlmCnt – indicates how many events must occur (during the time window).
OutTim – the output activation period
Rest Level – It is possible to set the output rest level (0 – unassigned, 1 – assigned)
Alarm inputs – for each output a list of events on which their assignment depends is specified here:

- PDS……means that the output reaction is already defined in the CONFIG LINE table
- 01,02,03,10,11……a list of events assigned to the given outputs – see below:
    - Event nos. 01 to 08 correspond to the alarm status of outputs 1 to 8
    - Event nos. 09 to 16 correspond to the "tamper" status of outputs 1 to 8
    - Event no. 17 indicates the tempering of the PEU case
    - Event no. 18 indicates a bus malfunction (e.g. a short circuit, disconnection or a malfunction of one of the sensors)

4.6. PDS/Status

A list of all sensors logged on to the line are displayed in this tab



Each DS sensor has its own ID number under which it is logged into the PEU, and a unique and unchanging S/N.
It is possible to reprogram the sensor ID in the range of 1 – 246, though it is necessary to adhere to the unique ID in the system. A change to the ID can be carried out by filling in the value of the requested sensor's S/N and the requested new address to the field above. By pressing the "WR EEPROM" button, the sensor address is rewritten.
The same approach is possible with the PIO module.
The DS status data is meant for service purposes.

Notes:

When running the PSW programme a file entitled ***PC_LOG_xxxx.txt*** is created in the directory from which the programme was run, with xxxx being the date the file originated (in the format DDMM).

This file is always saved at 12 midnight PC time and a new one is established for the following 24 hours.

Other files contained in the programme's directory:

VJ_RDCFG.BIN	the configuration file read from the PEU
VJ_WRCFG.BIN	the configuration file written to the PEU
DS_CONFIG.TXT	the exported text configuration file of PDS settings
VJ_LOG01.TXT	the log of events read from the PEU (the name of the file can be changed in the PSW programme)