Application manual

Signal Generator SG-200

Configurator

v1.2 / v1.3 / v5.0

Version 00

LUTZE TRANSPORTATION powered by Amphenol

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Content

1 Introduction

This application manual is part of the Signal Generator SG-200:

Art.-Nr. **827000**, Type **SG-200 16TE PI (Plug In)**
Art.-Nr. **827001**, Type **SG-200 16TE FM (Flange Mounting)**
Art.-Nr. **827002**, Type **SG-200 16TE FM (Flange Mounting) – Customized configuration**
Art.-Nr. **8270xx**, Type **SG-200 16TE FM (Flange Mounting) – Customized configuration**

It contains important information about the handling and safety.

- To avoid hazardous situations, read the manual before installing the product and using it. This applies to every person who is getting in touch with the product. Trained employees and experts, especially qualified persons who have worked with similar products before, have to read and understand the manual as well.

Store the manual at a handy place. If selling, renting or in case of a divestiture pass the manual to the authorize person.

Read and understand these instructions before installing, operating, or maintaining the equipment.

Before using the device, please read these operating instructions to avoid possible dangers and to ensure proper use.

CAUTION

Risk of injury and damage to property due to non-observance of the operating instructions.

Always read these operating instructions before planning the system in order to avoid or reduce risks and damage.

NOTICE

These operating instructions contain important information on safety, commissioning, operation, maintenance and disposal of the device.

Always keep the document at hand. This applies until the device is disposed of. Pass on the operating instructions if the device is sold, distributed or loaned.

You can also find these operating instructions at
***www.luetze-transportation.com*.**
In the search field, enter either the product name or the product number.

1.1 About this instruction manual

These instructions provide information on how to handle the products throughout its entire product life cycle, from delivery to disposal.

Further documents apply in addition to this operating manual.

If you have suggestions for improving this document, please contact *Lütze Transportation GmbH*.

2 Product Overview

2.1 General

The digital signal generator SG-200 is a parameterizable, two-channel digital signal generator for warning signals in public transport vehicles. The signal generation can be activated via 12 or 15 control inputs. It has a digital high-performance output stage with 200 W output power and a second power output stage with 25 W output power (Class D). The device can reproduce up to 16 arbitrary warning signals as well as voice announcements. The memory is large enough to store up to 512 different signals or announcement sequences, which are assigned to the corresponding control inputs via a parameter field.

827000 – SG-200 16TE PI (Plug In) - version

(Former PICASO article number: 506310000010)

827001* – SG-200 16TE FM (Flange Mounting) – version

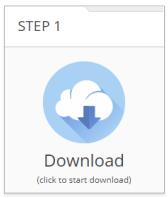
(Former PICASO article number: 506310000110)

**Also valid for customized configurations like 827002, 82700x, …*

3 Preparing configuration

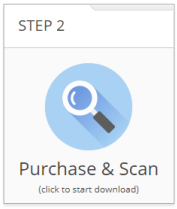
3.1 Preparatory actions

3.1.1 **Step 1:** Here you can download the USB device drivers

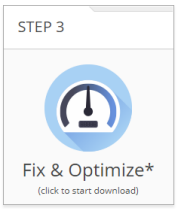


1. http://www.ftdichip.com/Drivers/VCP.htm

3.1.2 **Step 2:** Purchase and Scan



3.1.3 **Step 3:** Fix and Optimize



4 Operation

4.1 Starting

1. Make sure that the USB device cable is not connected.
2. Connect the SG-200 to power supply. The LEDs on the front turn on for a short moment.
3. After 5 seconds approx. connect the USB cable to the PC.
4. If the USB device driver is not yet installed, the Windows operating system will start the installation process. See advice in chapter **Fehler! Verweisquelle konnte nicht gefunden w erden.**.
5. Set up the correct COM port number with the Windows hardware dialogue.
6. Start the SG-200 Configurator. The device configuration screen appears:

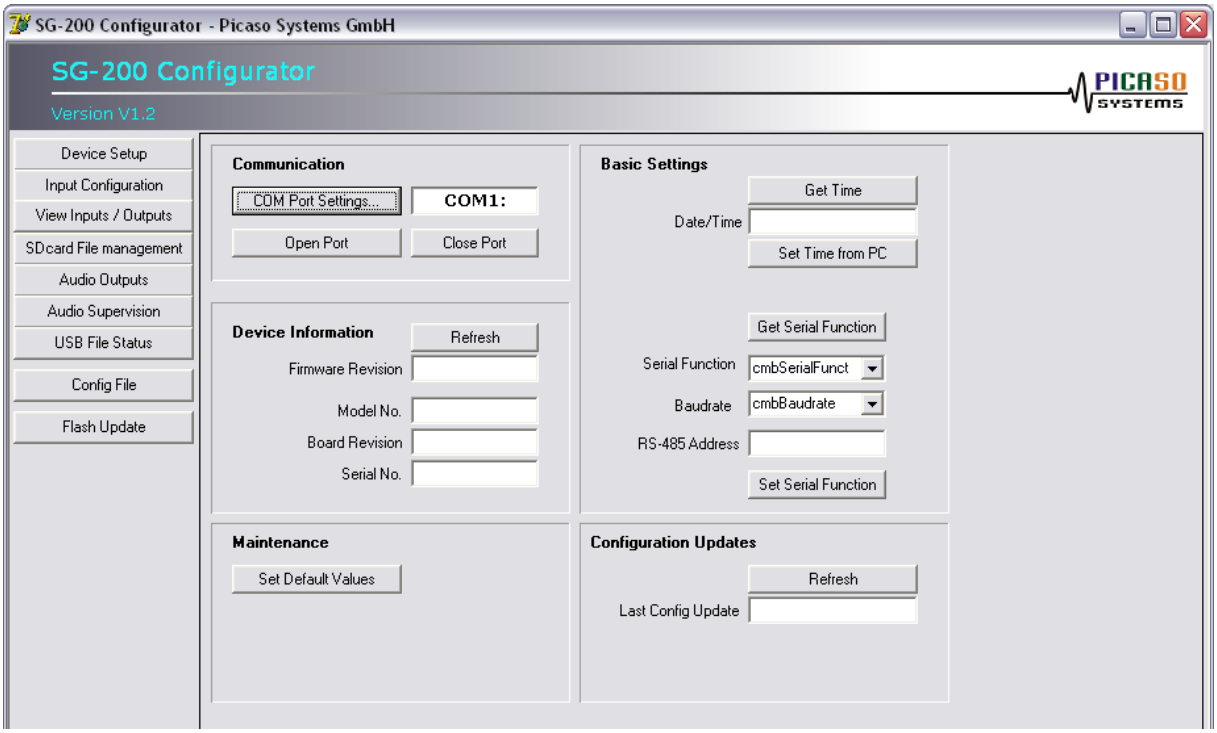


Image 1 - Device Configuration Screen

4.2 Configure Service Interfaces

1. Open the dialogue “COM Port Settings ...“
2. Select the Port assigned in step 5 (the other settings in this dialogue have no signification). Confirm with “OK”.
3. Click on “Open Port“. The connection with the SG-200 is now established.

On first start of the application, an INI file is created with the selected parameters. These parameters are loaded automatically the next time the Configurator is started. If the virtual COM Port has changed in the meantime, the following error message appears:

The new port settings can be adjusted after clicking “OK” the application starts, and new parameters can be set.

4.3 Device Configuration

Menu “Device Configuration”

4.3.1 Retrieve Device Information

Click on “**Refresh**”. The following data is displayed:

Firmware Revision	Current firmware version of the SG-200 controller
Model No	“3031” for SG-200 controller
Board Revision	PCB version of the unit
Serial No.	Consecutive manufacturing number

NOTICE	**The data concerning the hardware are stored in a read-only memory.**

4.3.2 Set Date and Time

- Select “**Get Time**” to display the current date and the time of the SG-200 controller.
- Transmit the PC time to the SG-200 controller with ”**Set Time from PC**”

4.3.3 Definition of the Serial Interface

- “Get Serial Function“ retrieves the currently present values
  “Serial Function“ defines the function of the serial interface as described below.
- Transmit the current values to the SG-200 controller with “**Set Serial Function**“.

4.3.3.1 RS-232 Monitor

Activates the monitor at the RS-232 interface with the adjusted Baud rate. The field “RS-485 Address“ is not relevant.

The monitor functions available are described in *chapter 1*.
The jumper J1 on the back side of the board must be closed, J9 and J10 stay open.

4.3.3.2 RS-485 Monitor

Activates the monitor at the RS-285 interface with adjusted Baud rate. The field “RS-485 Address“ requires a 2-character HEX value as a device address.

The monitor functions available are described in *chapter 1*.
The jumper J9 on the back side of the board must be closed, J1 and J10 stay open.

4.3.3.3 IBIS Slave

Activates the IBIS slave at the IBIS interface with the adjusted Baud rate. The field “RS-485 Address“ is not relevant.

The monitor functions available are described in *chapter 2.*
The jumper J10 on the back side of the board must be closed, J1 and J9 stay open.

4.3.4 Date of the last Configuration Update

A click on “**Refresh**“ displays date and time of the last modification of the configuration.

4.3.5 Maintenance Functions

“**Set Default Values**”: Resets all configuration settings to the basic values. A list with all these basic values can be found in the *addendum, chapter 5.1*.

4.4 Control Inputs

Menu “**Input Configuration**“

With this dialogue, all parameters are adjusted which define the behavior of the digital control inputs.

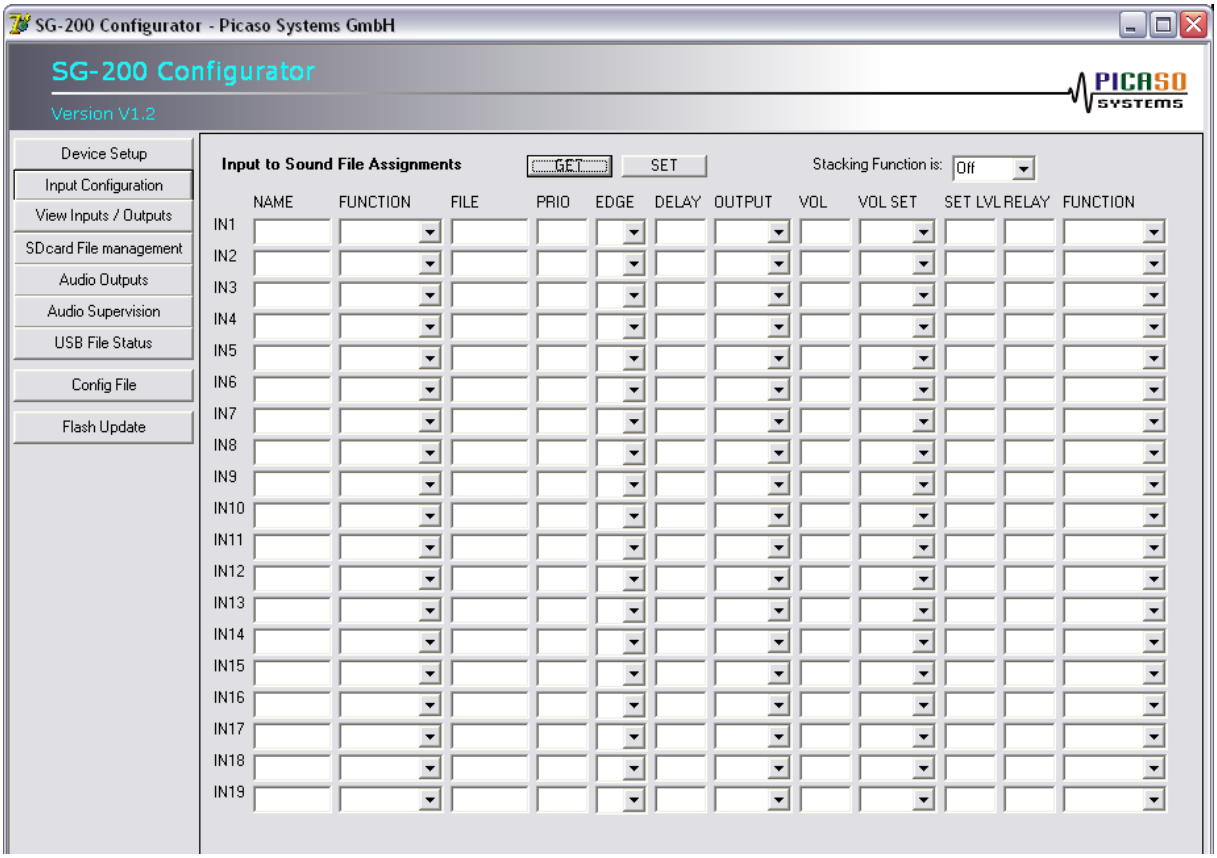


Image 2 - Control Inputs

4.4.1 Getting and Setting Parameters

Get the current values with ”**GET**“
Send the adjusted settings to the SG-200 controller with ”**SET**“

4.4.2 Control Inputs

INPUT	Name of the control input. 12 characters max
FUNCTION	(Inactive): input has no function Play Sound: active input starts audio playback Level Red: input activates the level reduction (see 4.6.2).
FILE	File name of the assigned audio file on the SD card. 8-character max., input without file extension
PRIO	Priority of the control input. Values 0...8, 0 has the lowest, 8 has the highest priority. This parameter is relevant with active stacking function only.
EDGE	Increasing edge: activating the input starts the audio playback. Falling edge: de-activation of the input starts the audio playback. Duration: audio playback if the input is active. The file is played in loop mode.
DELAY	Delay between activating the input and start of the audio playback. Values are entered in 100ms steps, between an area of 0...65535
OUTPUT	Audio output where the audio file is emitted: None – no audio output 1 – Audio emission at output 1 2 – Audio emission at output 2
VOL	Level of the audio signal. Value range 0…-127dB
VOL SET	additional level reduction None - not active Input - Active, if a control input with „Level Red“ is configurated and activated. Timed - Active, if time is between the adjusted area (see 4.6.2).
SET LVL	Degree of the level reduction, activated through control input. Value range 0…-127dB
RELAY	Number of the relay output that is activated by the control input, according to the adjusted FUNCTION values (values 1..4).
FUNCTION	Function of the relay output: (none) - no function Follow Input - output active, if assigned input is active. Follow Audio - output active, if assigned audio file is played. Both – output active, if the assigned control input is activated. Output de-activated if the audio file ends or input is de-activated, depending on which event is later.

4.4.3 Stacking Function

If the stacking function is activated, the table “**Input Stack Status**“ shows the status of the multiple activations in real time mode.

Monitoring the Control Inputs and Outputs
Menu “**View Inputs / Outputs**”.

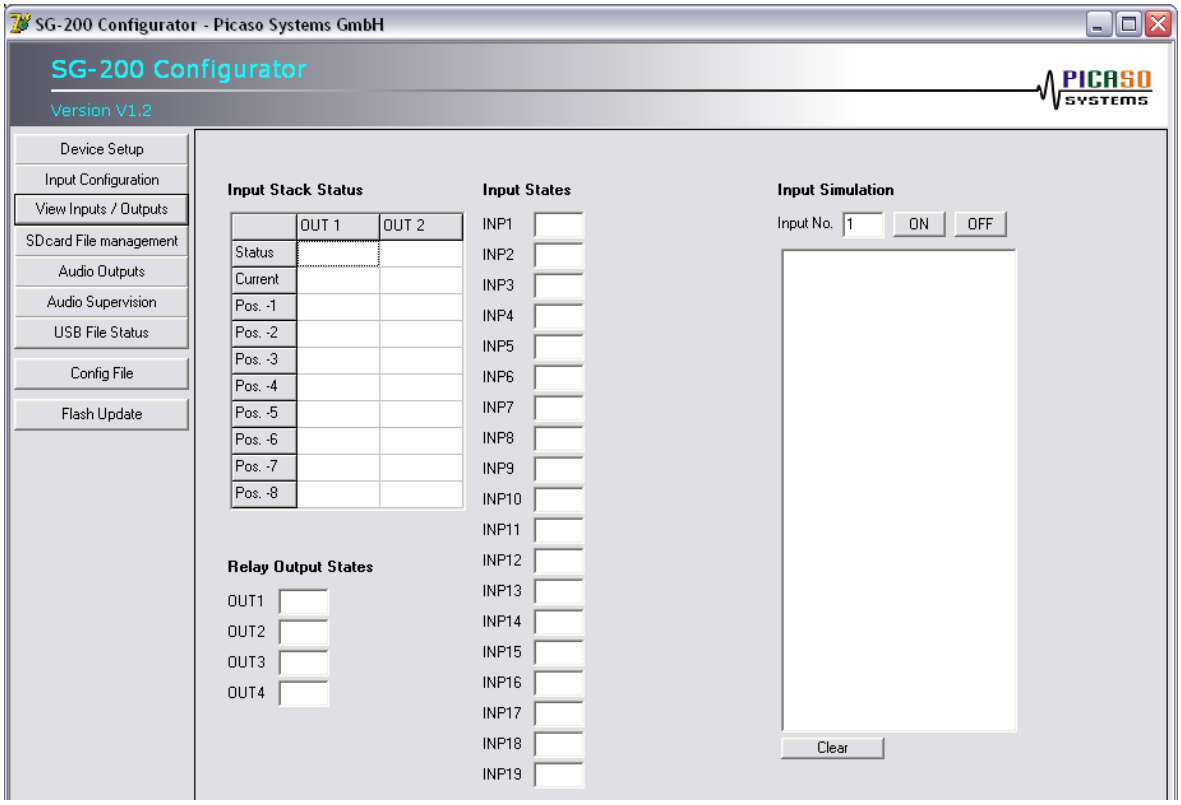


Image 3 - Monitoring Inputs and Outputs

4.4.4 Status of the Control Inputs

“Input States”
White: Input inactive
Yellow: Input triggered; time delay active
Red: Input active

4.4.5 Stacking Function

“Input Stack Status”
Displays the currently active and stored control inputs for each of both audio outputs
Status: Idle | Single | Stacked
Current: Current active control input
Pos. X: Stored control inputs

4.4.6 Status of the Relay Outputs

“Relay Output States”
White: Output inactive
Red: Output active

4.4.7 Simulation of Input Activations

In the box **“Input No.**”, the number of the control input can be entered.

- “**ON**“ activates the corresponding control input
- “**OFF**“ de-activates the corresponding control input

4.5 File Management of the SD Card

Menu “**SDcard File Management**”

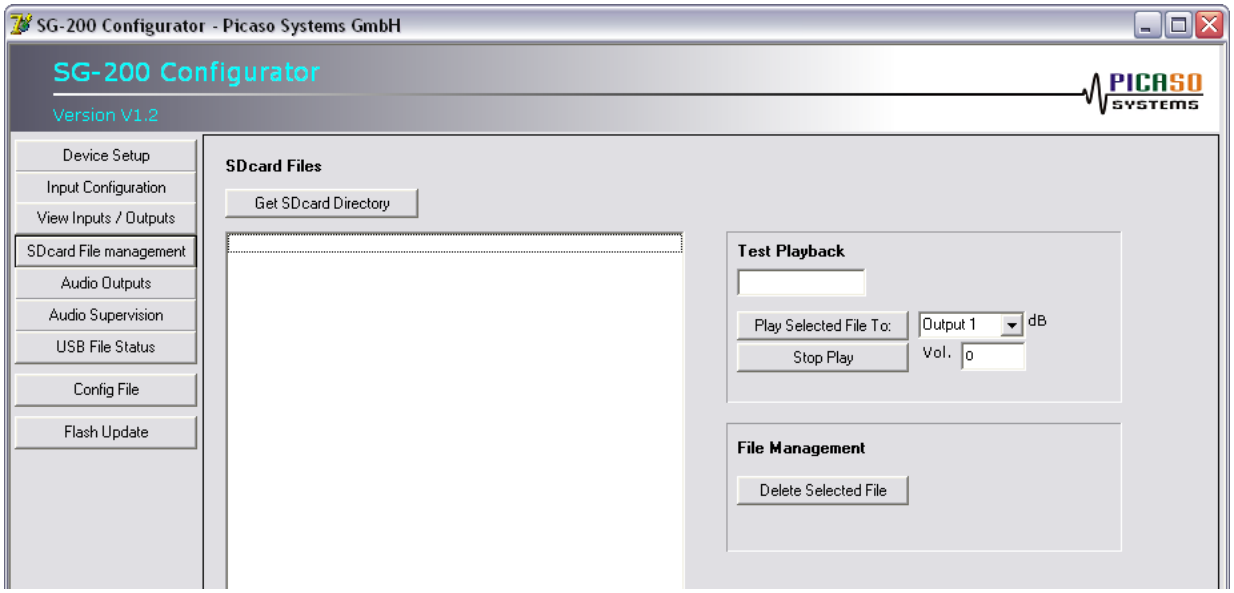


Image 4 - File Management of the SD Card

4.5.1 Retrieve Table of Contents

“**Get SDcard Directory**” displays all data on the SD card of the SG-200 controller, alphabetically sorted
Format:
File name
Size in Bytes
Date and time of the last file modification (Modified Date)

4.5.2 Delete Files

1. Refresh directory.
2. Select file in the list.
3. Click on ”**Delete Selected File**“

4.5.3 Test Function

1. Refresh directory
2. Select file in the list
3. Select output (1 or 2)
4. Set output level (0...-127dB)
5. Click on “**Play Selected File**“
6. Playback of the audio file can be stopped by pressing “**Stop Play**”

4.6 Audio Outputs

Menu “**Audio Outputs**”

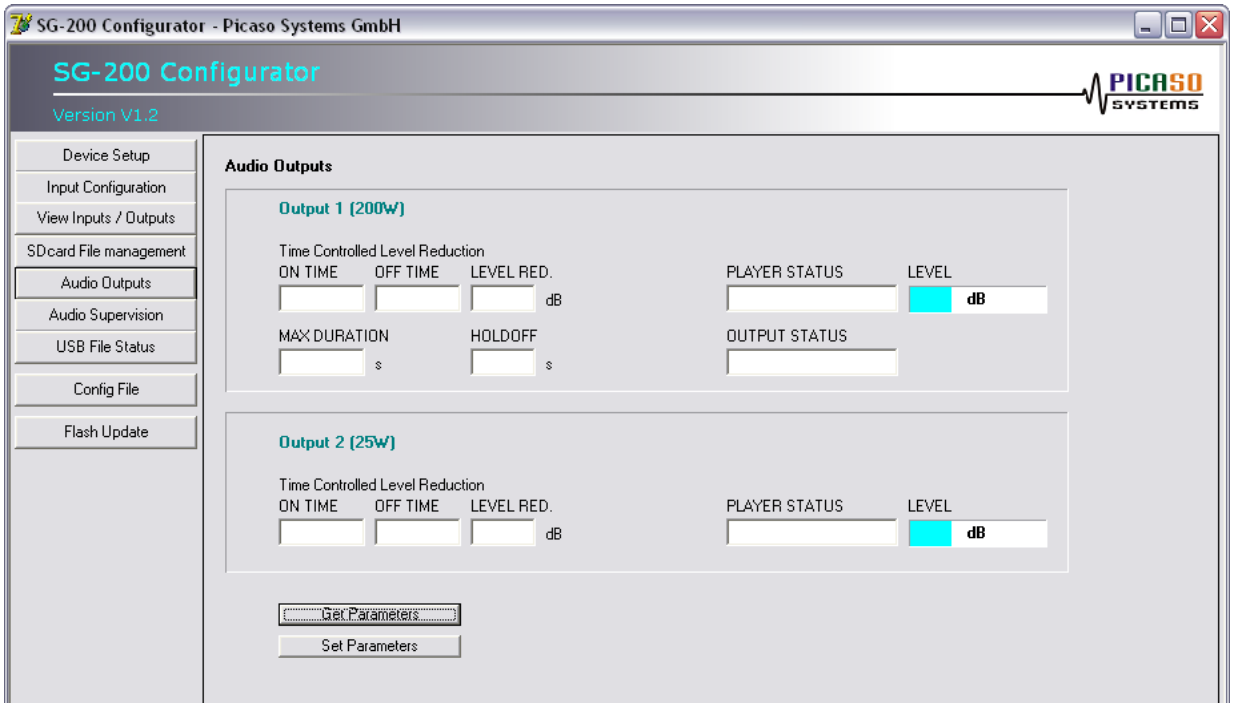


Image 5 - Audio Outputs

4.6.1 Retrieve and Set Parameters

- “**Get Parameters**“ retrieves the current values
- “**Set Parameters**“ sends the adjusted values to the SG-200 controller

4.6.2 Parameters for Both Outputs

ON TIME: Day time, when the time-controlled level reduction is activated

OFF TIME: Day time, when the time-controlled level reduction is de-activated

LEVEL RED: Degree of the time-controlled level reduction in dB, values 0...-127dB

PLAYER STATUS: Status of the DSP for its audio output
Init xxx – initialized, no audio output possible
Idle – waits for activation
Playing xxx – plays selected audio file

LEVEL: Currently adjusted output level in dB. This value is the total of:
- Basic level (VOL, see 4.4.2)
- input-controlled level reduction, if active (VOL SET, see 4.4.2)
- time-controlled level reduction, if within time area (see above)

4.6.3 Additional Parameters for Output 1

MAX DURATION: Maximum activation time in seconds. Values 0...10.0.
The value 0 de-activates monitoring

HOLDOFF: Blocked period after maximum signal time is reached. Values 0...10.0s

OUTPUT STATUS: Idle: no audio emission
Active: audio is emitted
Hold off: blocking time is active, no audio emission possible

4.7 Audio Diagnosis

Menu “Audio Supervision”

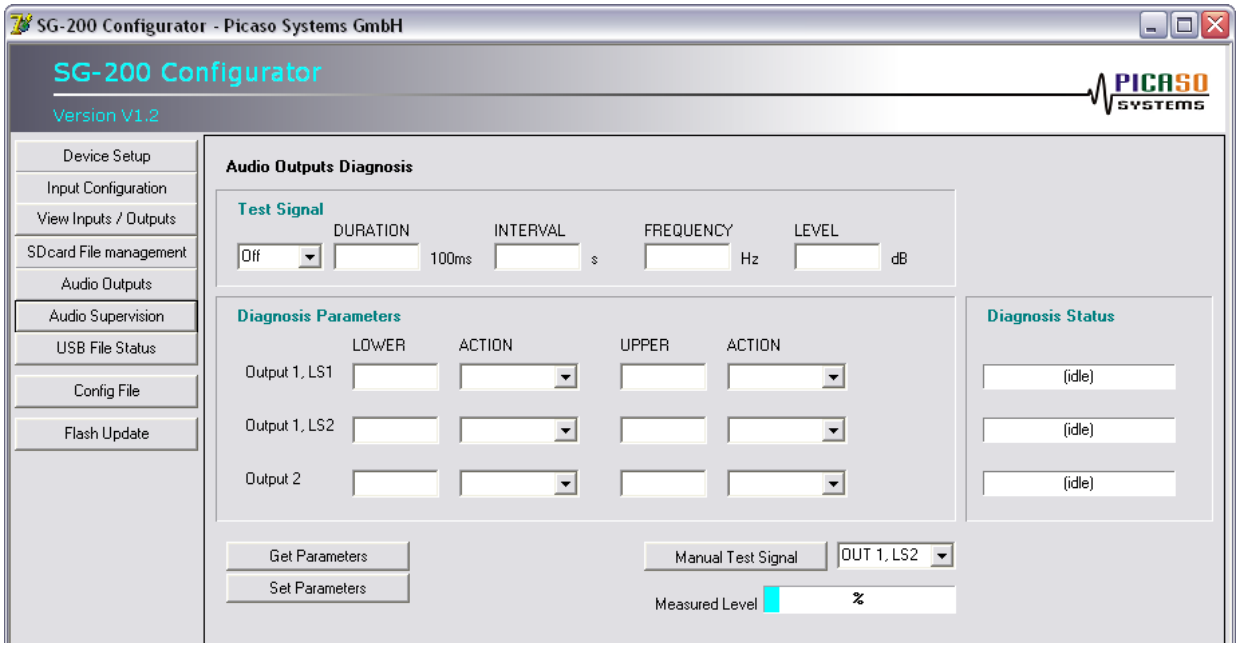


Image 6 - Audio Diagnosis

4.7.1 Retrieve and Set Parameters

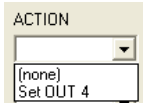
- “**Get Parameters**“ retrieves the current values
- “**Set Parameters**“ sends the adjusted values to the SG-200 controller

4.7.2 Test Signal

FUNCTION:	OFF – Diagnosis function is switched off ON – Diagnosis function is activated
DURATION:	Duration of the periodical test signal in 100ms
INTERVAL:	Duration of break between the test signal activations in seconds. Values 0...10.0s
FREQUENCY:	Frequency of the test signal in Hz. Values 5000...20000 (output frequency is just almost exact)

4.7.3 Diagnosis Parameters

For each output the following monitoring parameters are defined:



LOWER:	lower threshold in % of the maximum level. If falling below, the corresponding function is activated
ACTION:	(none) – no action on threshold underrun Set OUT 4 – output 4 is activated
UPPER:	Upper threshold in % of the maximum level. On overrunning, the corresponding function is released
ACTION:	(none) – no action on threshold overrun Set OUT 4 – output 4 is activated

4.7.4 Diagnosis Indication

"**Diagnosis Status**"
Shows the measured value of the automatically released test signal, in % of the maximum level.

4.7.5 Test Function

- "**Manual Test Signal**" – The in 4.7.2 defined test signal is emitted at the selected output while this button remain selected.
- „**Measured Level**" – The currently measured level is shown in % of the maximum value in real time, while the manually released test signal is active. (refresh interval 100ms).

4.8 Status of File Upload via USB

Menu "**USB File Status**"

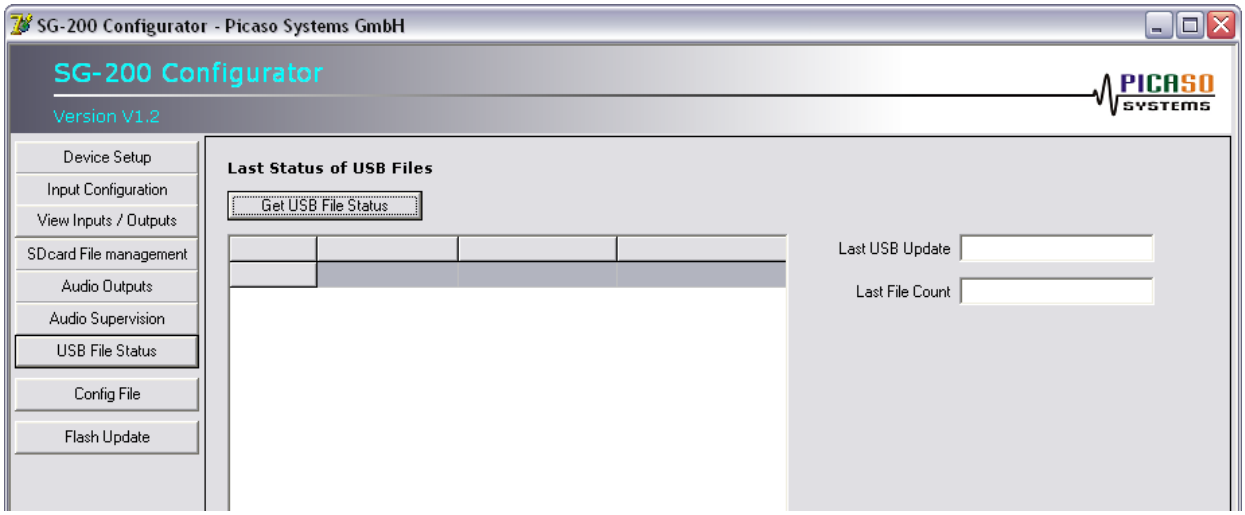


Image 7 - Status of the File Upload via USB

4.8.1 Refresh List

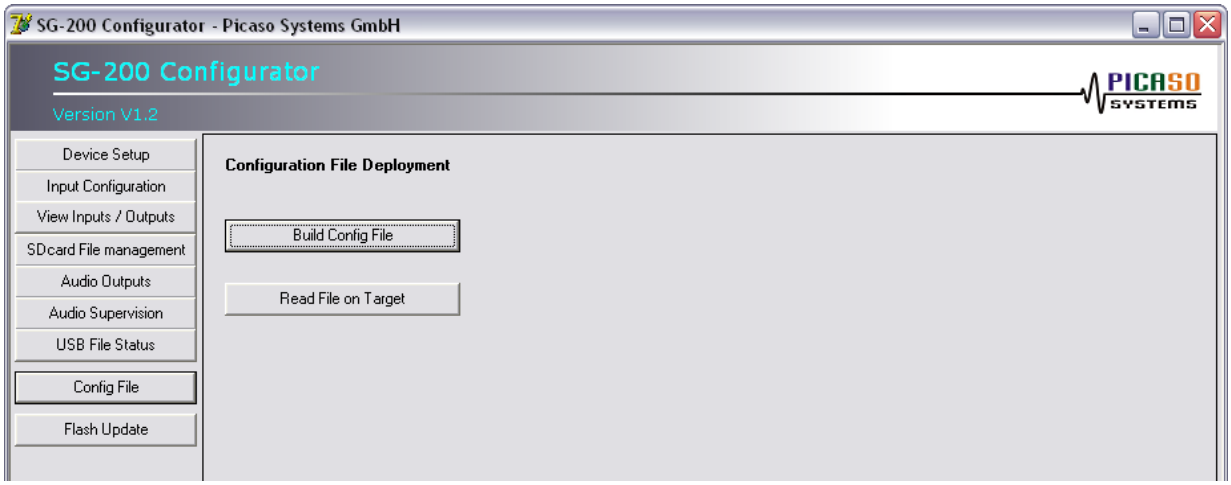
"**Get USB File Status**" shows the files, the corresponding status as well as date and time of the last update

4.8.2 Update Status

"No Action"	File is present on the SD card but with newer date as on the USB drive.
„Added"	File is not present on the SD card and has been copied from the USB drive.
„Updated"	File was on the SD card and has been overwritten with the newer file on the USB drive
„Failed"	Error accessing SD card or USB drive

4.9 Create Configuration File

Menu “**Config File**”



4.9.1 Build Configuration File

“Build Config File” creates a text file with all current parameters set in the SG-200 Configurator. After execution of this command, the name of the file to be created and its location are required.

Then all input fields are checked and, if necessary, error messages are displayed.

If all parameters are valid, the file is created.

NOTICE	**The file must be stored with the name** **„sg200.cfg“** **so, the SG-200 controller will recognize and accept it.** .

4.9.2 Syntax of the Configuration File

The syntax is described in the *addendum in section 5.2*

4.9.3 Download of the Configuration File into the SG-200 controller

After inserting the USB drive, the configuration file is recognized automatically by the SG-200 controller. It is then copied into the SD card if it is newer than the one on the SD card and activated immediately.

If there is a syntax error in the configuration file, the original configuration is restored after power off/power on of the controller.

The reading process from the SD card to the controller can be forced with the command ”**Read File on Target**“.

NOTICE	**The configuration file can be implemented directly into the SD card during production.** In this case it must be activated with the command „Read File on Target“.

4.10 Loading New Firmware

Menu „**Flash Update**“

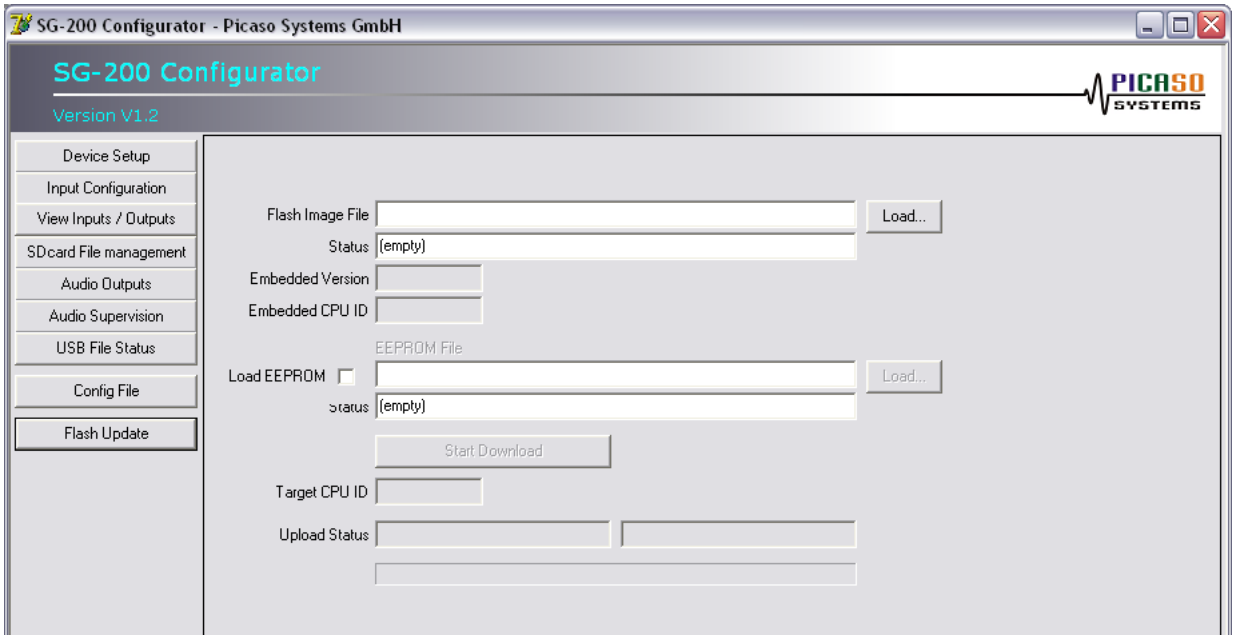


Image 8 - Loading Firmware

4.10.1 Reading the Firmware File

1. The firmware file is Intel-Hex formatted (*.hex). Press “Load“ at “Flash Image File“ and open the corresponding file.

2. From firmware release V3.1 on, the CPU identifier and the firmware version are included in the Hex file.
   These data appear after retrieving with “Embedded Version“ and ”**Embedded CPU ID**“.

3. After correct loading of the file, the status box shows: ”**File Loaded, xxxxx Bytes**“.

4.10.2 Reading the EEPROM File

Also, the EEPROM file comes in the Intel-Hex Format (*.eep).

For viewing click on “**Load EEPROM**“, press “**Load**“ at “**EEPROM File**“ and open the corresponding file.

After correct loading, the status box shows: “**File Loaded, xxxxx Bytes**“.

4.10.3 Loading Firmware

1. Execute command ”**Start Download**“.

2. ”**Upload Status**“ displays ”**Bootloader activated**“.

3. After 1s approx. it changes to ”**Connecting to Target**“.
   Now the communication with the boot loader on the controller is started.

4. If the connection with the boot loader has been established, the field shows “**Target CPU ID**“ the CPU identifier on the SG-200 controller board.

NOTICE	**If this identifier does not match with the one loaded under 4.10.1, the user is asked whether he still wants to load the firmware.** This case could arise if an older version than V3.1 shall be loaded.

5. Then the download process starts. After successful download the status is confirmed with ”**Finished ok**“.

4.10.4 Restart after Firmware Download

A restart of the SG-200 controller after a firmware download is not necessary, the new firmware is started automatically.

However, the Configurator must be restarted since the firmware loading de-activates the virtual COM-Port.

5 Addendum

5.1 Basic Values of the Configuration Parameters

The following values are set with the function “Set Default Values“ *(see also chapter 6.3 Device Configuration).*

5.1.1 Basic Configuration

Serial Function:	(none)
Baud rate:	19200
RS-485 Address:	01

5.1.2 Control Inputs

NAME:	„Input1“ ... „Input 16“, „Switch 1“ ... „Switch 3“
FUNCTION:	Play File
FILE:	„1“ ... „19“
PRIO:	0
EDGE:	⊓
DELAY:	0
OUTPUT:	2
VOL:	0
VOL SET:	None
SET LVL:	0
RELAY:	1
FUNCTION:	(none)
Stacking Function:	Off

5.1.3 Audio Outputs

ON TIME: 00.00
OFF TIME: 00.00
LEVEL RED: 0
MAX DURATION: 0 (signal duration unlimited)
HOLDOFF: 0

5.1.4 Audio-Diagnose

5.1.4.1 Test signal

FUNCTION: Off
DURATION: 1
INTERVAL: 10
FREQUENCY: 5000
LEVEL: -16

5.1.4.2 Diagnosis Parameters

Values apply to all 3 outputs
LOWER: 0
ACTION: (none)
UPPER: 1
ACTION: (none)

5.2 Syntax of the Configuration File

5.2.1 General Syntax

Each parameter setting is stored in one text line. The parameter values are separated by a comma (in those cases when the length is variable) or with fix format.

[<Parameter>]<Values><CR>

5.2.2 Parameter Settings

5.2.2.1 Header

[HDR]SG-200 Controller Configuration File

Just for information, is not evaluated by the controller.

5.2.2.2 Device Configuration

[DEV]FFBBBBAA

FF: Function
00: (none)
01: RS-232 Monitor
02: RS-405 Monitor
03: IBIS Slave

BBBB: Baud rate as 4-digit Hex figure

AA: RS-485 Device address, as 2-digit Hex figure

5.2.2.3 Control Inputs, Global Settings

[INP]0,SS

SS: 00: Stacking off
01: Stacking on

5.2.2.4 Control Inputs 1..19

[INP]EE,NNNNNNN,P,FFFFF,O,VV,S,AA,K,DD,G,R,U

EE: Input No. (1..19)

NNNNNN: Name of the control input (12 characters max.)

P: Priority (0..8)

FFFFF: File name without file extension (8 characters max.)

O: Audio output
0: no audio emission
1: output 1, LS1
2: output 1, LS2
3: output 2

VV: Basic level as 2-characters Hex figure, in intervals of 0.5dB

S: Function of the level reduction
0: none
1: input-controlled
2: time-controlled

AA: Degree of the input-controlled level reduction as 2-character Hex figure, in intervals of 0.5dB

K: Function of the control input
0: no function
1: audio emission
2: activate level reduction

DD: Delay time as 1- to 5-characters decimal figure (0..

G: Edge
0: 
1: 
2: 

R: Relay-No. (1..4)

U : Relay-Function
0: no function
1: follow input
2: follow audio
3: follow both

5.2.2.5 Audio Outputs

[AUD]11.11-22.22:L1,00,MM,HH 33.33-44.44:L2,00,0000

11.11:	Start time (HH.MM) of the reduction, output 1
22.22:	End time (HH.MM) of the reduction, output 1
L1:	Degree of the time-controlled level reduction for output 1, as 2-characters Hex figure, in intervals of 0.5dB
00:	(not used, always 00)
MM:	Maximum signal duration for output 1, as 2-characters Hex figure
HH:	Blocking time for output 1, as 2-characters Hex figure
33.33:	Start time (HH.MM) of the reduction, output 2
44.44:	End time (HH.MM) of the reduction, output 2
L2:	Degree of the time-controlled level reduction for output 2, as 2-characters Hex figure, in intervals of 0.5dB
00:	(not used, always 00)
0000:	(not used, always 00)

5.2.2.6 Test Signal

[TST]EDDDDIIIIFFFFLL

E:	Function
0:	Test signal de-activated
1:	Test signal active
DDDD:	Signal duration, as 4-digit Hex figure (1...1000), in intervals of 100ms
IIII:	Interval between two test signal triggering, as 4-digit Hex figure (1...100), in intervals of 100ms
FFFF:	Frequency, as 4-digit Hex figure (5000...20000)
LL:	Signal level, as 2-digit Hex figure, in intervals of 0.5dB

5.2.2.7 Diagnosis Parameters

[DIA]NLLLLA1UUUUA2

N:	No. of the audio outputs
1:	output 1, LS1
2:	output 1, LS2
3:	output 2
LLLL:	Lower threshold value, as 4-digit Hex figure in per mill (per thousand) of the maximum measured value
A1:	Action when value falls under the lower threshold value, as 2-digit Hex figure
00:	no action
01:	activate relay 4
UUUU:	Upper threshold value, as 4-digit Hex figure in per mill (per thousand) of the maximum measured value
A2:	Action when value exceeds the upper threshold value, as 2-digit Hex figure
00:	no action
01:	activate relay 4

6 Service

For general questions about the product or repair requests, please contact us:

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7 Revision history

Version	Revision	Date
00	New document	2025-05-08

Subject to technical changes. These operating instructions must be kept for further use!