SPL-D3
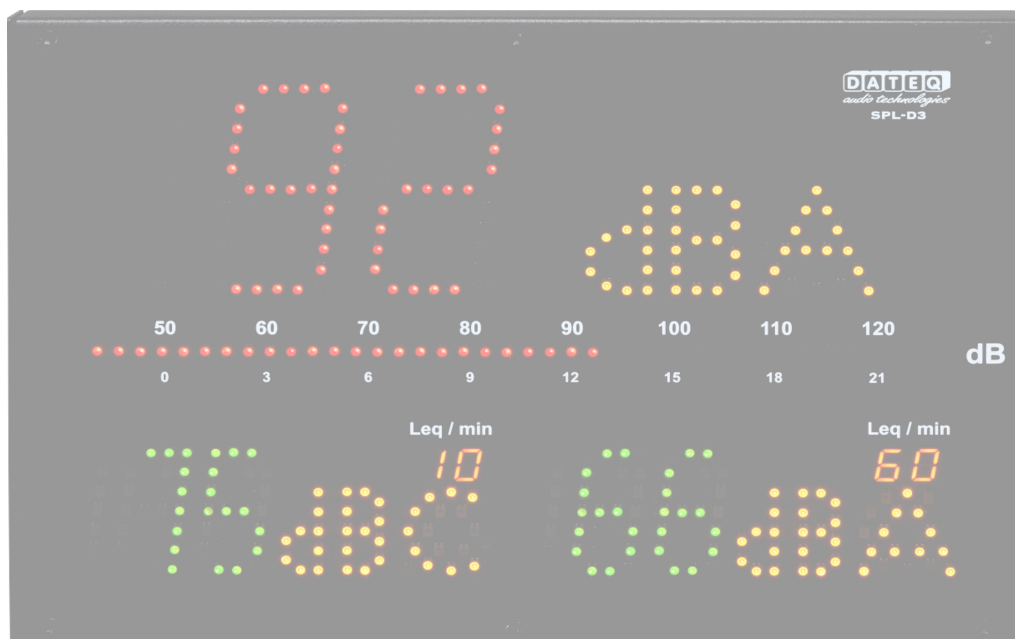
MULTI COLOR DISPLAY
&
SOUND LEVEL LOGGER

Manual

Due to the nature of this product and it's designed functionalities it is considered to be used and installed solely by professional and certified installers and is not intended for consumer usage or resale. Consumer use is not supported by the manufacturer.

Safety instructions

1. All safety instructions, warnings and operating instructions must be read first.
2. All warnings on the equipment must be heeded.
3. The operating instructions must be followed.
4. Keep the operating instructions for future reference.
5. The equipment may never be used in the immediate vicinity of water; make sure that water and damp cannot get into the equipment.
6. The equipment may only be installed or fitted in accordance with the manufacturers recommendations.
7. The equipment must be installed or fitted such that good ventilation is not obstructed in any way.
8. The equipment may never be installed in the immediate vicinity of sources of heat, such as parts of heating units, boilers, and other equipment that generates heat (including amplifiers).
9. Connect the equipment to a power supply of the correct voltage, using only the cables recommended by the manufacturer, as specified in the operating instructions and/or shown on the connection side of the equipment.
10. The equipment may only be connected to a legally approved earthed mains power supply.
11. The power cable or power cord must be positioned such that it cannot be walked on in normal use, and objects that might damage the cable or cord cannot be placed on it or against it. Special attention must be paid to the point at which the cable is attached to the equipment and where the cable is connected to the power supply.
12. Ensure that foreign objects and liquids cannot get into the equipment.
13. The equipment must be cleaned using the method recommended by the manufacturer.
14. If the equipment is not being used for a prolonged period, the power cable or power cord should be disconnected from the power supply.
15. In all cases where there is a risk, following an incident, that the equipment could be unsafe, such as:
    - if the power cable or power cord has been damaged
    - if foreign objects or liquids (including water) have entered the equipment
    - if the equipment has suffered a fall or the casing has been damaged
      if a change in the performance of the equipment is noticed

    Appropriately qualified technical staff must check it.
16. The user may not carry out any work on the equipment other than that specified in the operating instructions.

Index

Introduction

The SPL-D3 is an advanced audio level display that stores the sound level samples for at least twelve months. The sound level samples can be viewed using the configuration software or externally stored through on a USB FAT32 drive. Other important data is also stored like powering up, sanctions or possible tampering.

Using the configuration software the SPL-D3 can be read out and adjusted.
On release Windows 7 platforms and later are supported. All users can only view settings and logging. To adjust configuration settings an additional password and license file is required. To connect to the SPL-D3 a windows computer with USB support is required.

The SPL-D3 uses a measurement microphone to determine the actual sound level. When measurement shows the sound levels are about to exceed, the display will change from green to orange and red when levels are actually exceeded.

The special calender functions allow for different sound levels during the day and year.

With the special SRL-1 circuit breaker an external warning light can be connected along the the main power supply for example the DJ booth monitor. This way the maximum sound level is always insured without touching the sound quality.

Productondersteuning

Voor vragen over de SPL limiter serie, accessoires en andere producten kunt u contact opnemen met:

DATEQ Audio Technologies
De Paal 37
1351 JG Almere
Nederland

Telefoon: 036 – 5472222
E-mail: info@dateq.nl
Internet: www.dateq.nl

Installation

The SPL-D3 is installed apart from the audio source (a mixing desk for example) and the speakers and amplifier.
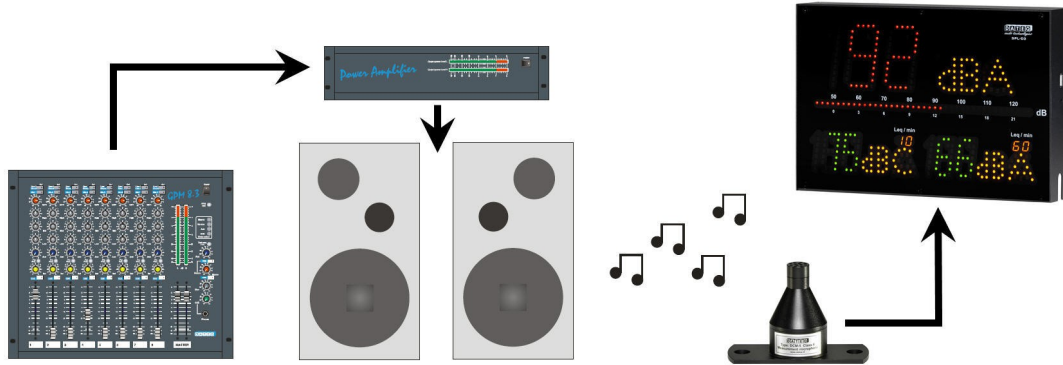

Image 1: Installing the SPL-D3

After installation and calibrating the SPL-D3, the SPL-D3 will show all measured values in green, orange or red within +/-1,5dB.

Connections

Microphone input; XLR 3-pin female

Pin	Function	Description
1	Ground	Audio ground
2	Audio +	Supply and audio
3	Audio -	Supply and audio

Table 1: microphone connections

USB port; USB-B female

Pin	Function	Description
1	VCC +	Supply
2	Data –	Data
3	Data +	Data
4	GND	Ground

Table 2: USB connections

Network port; RJ45 female

Pin	Function	Description
1	TX-D +	Data
2	TX-D –	Data
3	RX-D +	Data
4		Not in use
5		Not in use
6	RX-D –	Data
7		Not in use
8		Not in use

Table 3: Network connections

USB port; USB-A female

Pin	Function	Description
1	VCC +	Supply
2	Data –	Data
3	Data +	Data
4	GND	Ground

Table 4: USB connections

Link;
Jack 3-pens female

Pin	Function	Description
SL	Ground	Data ground
Tip	Data TX	Data send
Ring	Data RX	Data receive

Table 5: Display link connections
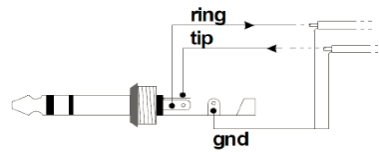
Microphone input
Connect the supplied measuring microphone here. The wiring of the microphone can be lengthened with standard microphone cable. Pay attention to the polarity of the wiring. If the microphone is wrongly connected it won't work. The limiter will give an error message, and the volume will be extremely reduced.
The microphone should be installed so that it 'hears' both sound from the speakers as well as the sound from the crowd in the room. The microphone can be placed closer to the speakers when the maximum allowed level is very low. This reduces the effects of background noises.

Link
This is the data connection with the optional SPL-5MK2, SPL6 or SRL1 stage relay. For this a stereo 6.3mm jack cable is required.

Operation

1. Display 1:
   Shows the actual measured dB value in green, orange or red.

2. Filter weight:
   Shows the used filter weight in dBA, dBC or dB (no filter).

3. VU/Reduction bar:
   Shows the actual fast PPM level in dB.
   Linked to the SPL-5MK2 or SPL6 the VU meter can also be used to show selected Leq or reduction level of the limiter.

4. Displays 2 and 3:
   Shows the actual measured dB value in green, orange or red.
   Both displays can be selected with an independent value/ filter.

5. Leq/min:
   Shows the used time frame for Leq. In this example 10 minutes for display 2 and 60 minutes for display 3.

6. USB-A connection:
   Allows an external FAT32 drive to export measurement data from past 30 days.

7. Push button:
   Allows to export measurement data to external FAT32 drive, display SPL-D3 IP address or reset the SPL-D3 IP address.

8. Seal:
   Allows to seal the cable cover using two M4 screws and a cable seal.

9. Microphone:
   3 pin XLR connection for DCM-5 microphone.

10. Link:
    Link connection for data link with SRL-1 stage relay, SPL-5MK2 or SPL6.

11. USB:
    USB-B connection for configuration with a windows computer.

12. Ethernet:
    Ethernet connection for IP link to internal webserver and remote report server*
    *Ethernet connection is disabled is first release firmware. Check www.dateq.nl for firmware update and current available futures.

13. Power:
    Power connection, 24 volt, advised 1 amp (24 Watt) Normal operation 0.5 amp (12 Watt).

14. USB:
    USB-A connection for data dump on external FAT32 drive.

15. Control button:
    Control button for dump of 30 day measurement data on external FAT32 drive.
    Future functionalities; show and reset IP address.

16. Seal:
    2x M4 DIN seal screws for sealing the cable cover.

17. VESA 50:
    Standard VESA 50 mount for wall mount, M4, max length 12mm.

18. Standard:
    Standard mounting bracket provided with the SPL-D3, M4, max length 12mm
    Standard mounting bracket for M10 G-hook mounting. M4, max length 12mm

19. Safety mount:
    M5 DIN screw for mounting an extra safety cable. Max screw length: 12mm

Technical specifications

Inputs

Mic (Measurement microphone)   XLR-3 female. Use only the original DCM-5 microphone.

Common

Audio
>   Frequency response 30Hz...16kHz @ -1,5dB
>   Signal/ noise ratio   >90dB

Memory
>   4GB SDHC
>   365 days * sound pressure information (resolution 1 minute)

External memory
>   Up to 32Gb FAT32 USB drive
>   30 days * sound pressure information (resolution 1 minute) export in .CSV format.

Norm
>   EU: Measurement chain designed to comply according specifications
>   IEC-61672-1 class 2
>   France: Measurement chain designed to comply according specifications
>   NFS 31-122-1-2017 and decrét 2017-1244
>   BE: Measurement chain designed to comply according specifications
>   VLAREM-II Cat.1, Cat.2 and Cat.3
>   DE: Measurement chain designed to comply according specifications
>   DIN-61672, DIN-60651 and DIN15905-5

Power supply
>   Supply voltage   24 volt
>   Power usage (max)   24 Watt
>   Power usage (normal operation)   12 Watt

Dimensions and weight
>   Front   282mm x 192mm
>   Depth 55mm
>   Weight   2.8kg

Sound level data and event logging are stored for maximal 365 days or less when memory is full. The memory system will delete and override oldest data first.

SPL-D3

Multi Color Display
&
Sound level logger

Configuration

Notes

Index

Introduction configuration

The SPL-D3 is an advanced audio level display that stores the sound level samples for at least twelve months. The sound level samples can be viewed using the configuration software or externally stored through on a USB FAT32 drive. Other important data is also stored like powering up, sanctions or possible tampering.

Using the configuration software the SPL-D3 can be read out and adjusted.
On release Windows 7 platforms and later are supported. All users can only view settings and logging. To adjust configuration settings an additional password and license file is required. To connect to the SPL-D3 a windows computer with USB support is required.

The SPL-D3 uses a measurement microphone to determine the actual sound level. When measurement shows the sound levels are about to exceed, the display will change from green to orange and red when levels are actually exceeded.

The special calender functions allow for different sound levels during the day and year.

With the special SRL-1 circuit breaker an external warning light can be connected along the the main power supply for example the DJ booth monitor. This way the maximum sound level is always insured without touching the sound quality.

Installation

The SPL-D3 configuration software is complaint with the following operating systems:

- Windows XP
- Windows 7
- Windows 8
- Windows 10

Apple OSX, Linux and other operating systems are not supported. Minimum display resolution 1400 * 1050 pixels.
Web based configuration, readout and reporting will be supported in future firmware release and therefor is not implemented in this manual.
Always use the latest software and firmware release that can be found at www.dateq.nl.

Configuration

In this chapter the configuration and system settings for the SPL-D3 are explained. These settings normally are made once on installation. All made settings can be stored in a backup file for later use or restoring the original settings after changing.

Connecting the computer

The computer is connected to the display using a a standard USB-A to USB-B cable. After connecting the SPL-D3 to your computer the standard windows drivers will be loaded. No extra drivers are needed, they are included in your windows operating system.

On first connection installation of the standard windows drivers can take several minutes depending on your operating system.
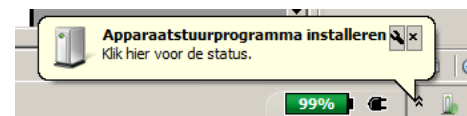
Configuration license

The configuration software are commonly only used to view settings and read sound sample logging. For viewing or exporting no license or password is required. Changing settings, including first installation an installer license and password is requirer.

The installer license is only granted to certified professional audio installers. When you own an SPL limiter and settings need to be changed, you need to contact your local distributor or installer. The closest supplier can be found at the Dateq selling points part of the website: www.dateq.nl.

This SPL-D3 is last configured at:	29-01-2020 10:58
By certified installer:	Dateq B.V. - Almere - The Netherlands - www.dateq.nl

An installer license is linked and registered to the installing company and can not be transferred to third parties. The installer license contains all company and contact details, that will be stored into the SPL limiter during configuration.

Unlocking the limiter

Before changes can be made the license password must be entered.
This password is linked and stored within the license file
SPLD3.DSR.

The license file SPLD3.DSR must be copied into the folder that contains the software.

SPLD3.DSR	1-7-2016 11:02	DSR-bestand
SPL-D3.exe	17-1-2020 12:26	Toepassing

If no valid license is detected the software will display this.
Please note; a valid license file must be installed <u>before</u> starting the software.
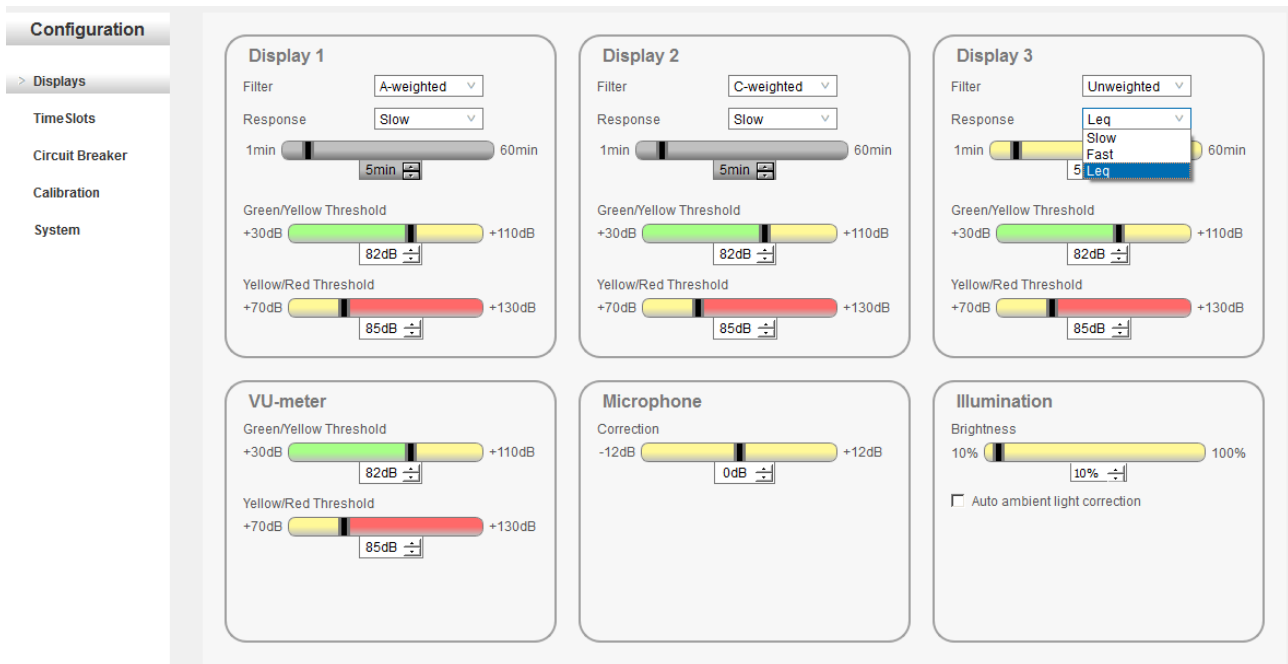
No license file found

Live

The live view of the software allows to monitor the SPL-D3 current measurements.
These displays follow in color of the actual display in green orange and red.

Display configuration

The manual configuration of sound level parameters.

Displays
All three displays can be set to different frequency responses, times and colors.
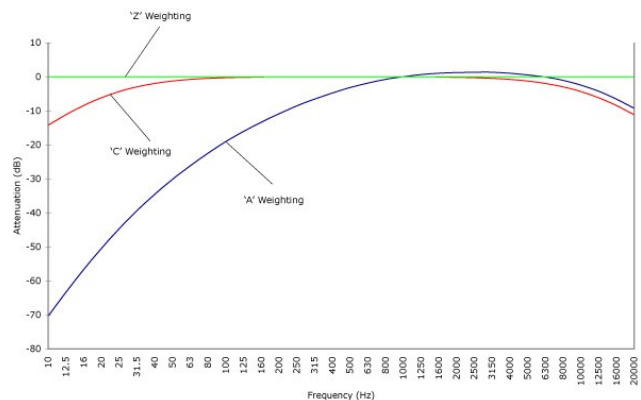
Frequency filters:
- A-weight filter
- C weight filter
- Unweighted Flat filter (Z)

Response times:
- Fast   (125mS)
- Slow   (1000mS)
- Leq   (1000mS ~ 60 minutes)

Colors:
- Green   30 – 110dB
- Orange   70 – 130dB
- Red   70 – 130dB

Note the minimum and maximum settings of the color change follow on green/orange and orange/red threshold.

Frequency (Hz)	63	125	250	500	1k	2k	4k	8k	16k
A-weighting (dB)	– 26.2	– 16.1	– 8.6	– 3.2	0	+ 1.2	+ 1.0	-1.1	– 6.6
C-weighting (dB)	– 0.8	– 0.2	0	0	0	– 0.2	– 0.8	– 3.0	– 8.5
Z-weighting (dB)	0	0	0	0	0	0	0	0	0

VU meter
The VU meter shows the actual dB value, unweighted (Z) in Fast response time (125mS). The green orange and red threshold points can be set in:

- Green   30 – 110dB
- Orange   70 – 130dB
- Red   70 – 130dB

Microphone
The Microphone correction can be used to adjust for the placement of the microphone and the actual official measurement point.
Microphone correction -12dB till +12dB

Illumination
Brightness of the display can be adjusted between 10% and 100% or set to automatic ambient light correction. Default the illumination is set to 50%.

Time slots

The time slots allow different dB values during the week. Three slot's a day are available, for each display. The slot reduces the maximum allowed value by the selected amount of dB.
Changes are automatically stored.
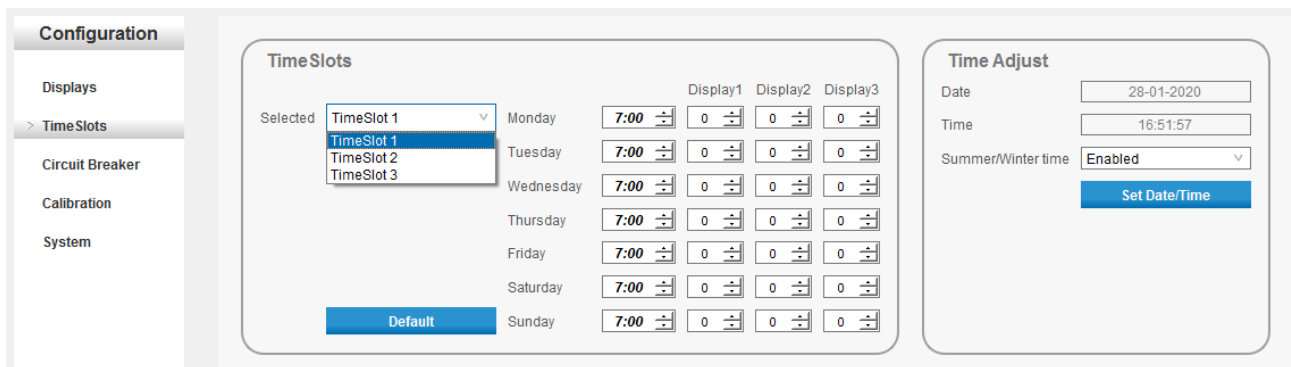
The time and date are set manually by synchronizing the display time to the connected computer time.

Circuit breaker
The SRL1 circuit breaker can be linked to SPL-D3 to act as a warning or cut power on overshooting the maximum set dB level. The source of the dB value can be selected to one of the three displays. Sanction level shows the maximum level, corresponding with the orange/red threshold setting. This can be dB fast, slow or Leq, depending on the setting of the display.
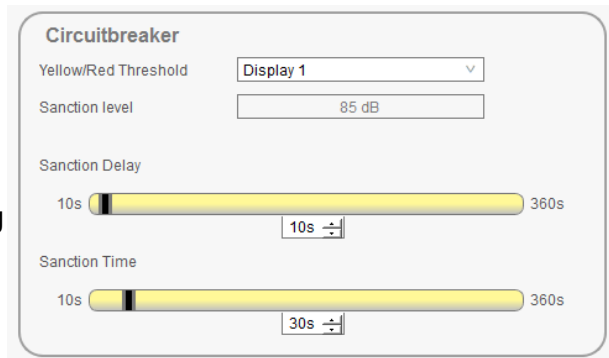
Sanction delay timer starts running on overshooting the maximum set dB value. During the sanction delay timer the SRL-1 starts blinking the warning light. When the timer runs out the sanction time starts and the SRL-1 switches of it's main power relay. After sanction the main power relay will be switched on again to restore power.

Calibration
The calibration allows to test all display LED's and to calibrate the used microphone.

LED test:
Tests all LED's in green, Orange and Red.

Microphone:
Use a standard approved class 2 calibrator at 94dBA and click on Microphone. The microphone will now be calibrated to the applied reference source and be internally recalculated to mV/pA.

System
The system page allows to update firmware, backup and restore settings and read the serial number of the unit.
Language selection and IP settings will be supported in future software and firmware.

Firmware update:
Select latest release firmware and click on update.
The system will check for a valid update.
When a valid firmware is found the display will show E3 (bootloader mode) on the large display and update the firmware.

Note;
Some windows builds do not fully support the bootloader mode. When the progress bar does not start and the display is in E3; disconnect the USB cable and reconnect it again. The update starts running after reconnecting.

Settings:
Save settings allows a backup of the current device settings.
Load settings allows to restore previous saved settings.
Restore to factory default allows to restore all settings to factory default. All previous settings will be lost.

Device:
Shows the serial number of the device, along with the physical hardware address (MAC address) of the ethernet connection. These hare hardware programmed and can not be changed.
In future update the IP address will be added.

Language:
Shows the current software language. Select to change the language of the software.

Language

Language   Englisch   ∨

History

The SPL-D3 logs all measured values and stores these encrypted into it's internal memory. Attempts to alter measured sound sample data within the SPL-D3 is prevented and will result in a defective unit that can only be restored at the Dateq service desk.
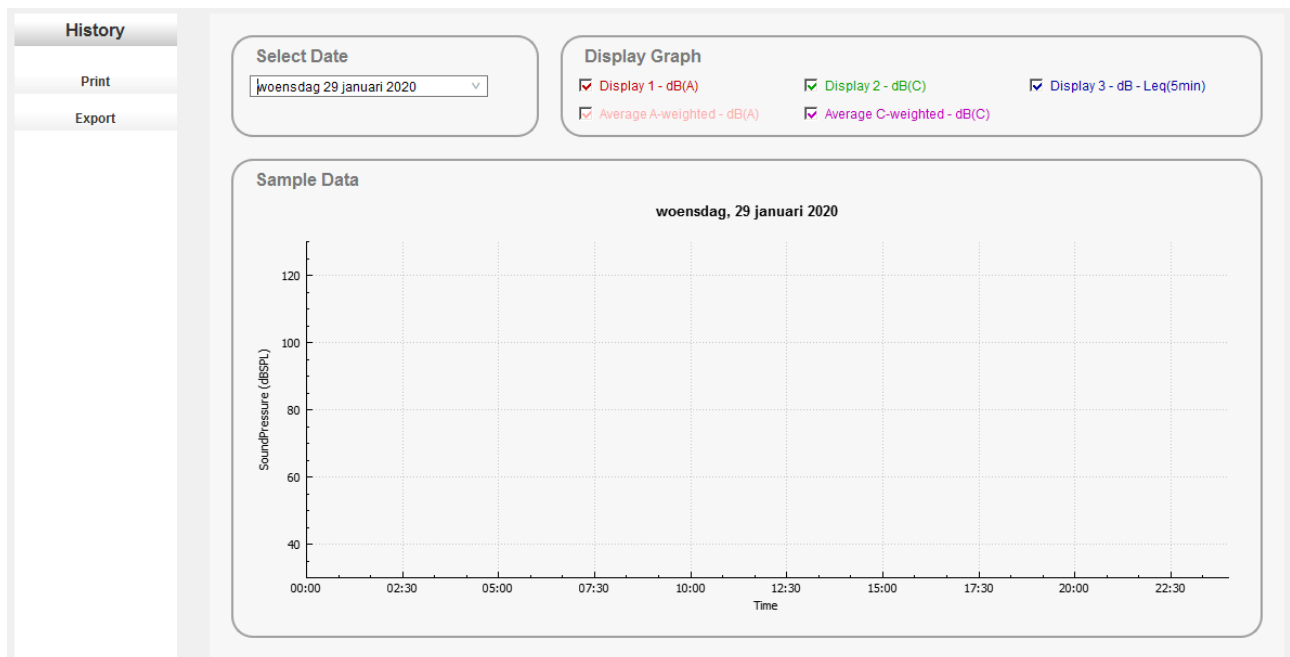
Select date:
Select the date that needs to be inspected.

Display Graph:
Select the checkbox of measurement value(s) that needs to be displayed.

Zoom:
Use the scroll wheel of your mouse to zoom in and out of selected measurement areas.

Print:
Print the current graphic view (including zoom) to your printer.

Export:
Export all measurement data from the selected day to comma separated file.

Certificate of calibration

Calibrated equipment details

Instrument manufacturer: Dateq B.V.
Instrument type: SPL-D3
Description: Sound level display and recorder

Serial number: __ __ __ __ __ __ __ __ __ __

Production code: __ __ __ __ __ __ __ __ __ __

Calibration code: __ __ __ __ __ __ __ __ __ __

Calibration procedure

The instrument with above serial number has been calibrated using techniques were applicable for calibration procedures as described in the latest revision of International standards: IEC61672-1 - IEC61672-2 - IEC60651 - IEC60804 - IEC61260 - IEC60942 - IEC61252 - ANSIS1.4 - ANSIS1.11 - ANSIS1.43- AFNOR class 2a and 2b NFS 31-122 - décret 98-1143, DIN45680_1997 and VLAREM II CAT1, CAT2 and CAT3. All calibration procedures were carried out by substituting the microphone capsule with a suitable electrical generated acoustical signal.

Calibration standard

The instrument with above serial number detailed in this document was calibrated to match the calibration and testing laboratory standard and design specifications as used by Dateq B.V.

Calibration equipment:
Audio line signal source: Audio precision portable one plus
Audio microphone signal source: Audio precision portable one plus
Audio microphone signal source: Brüel & Kjær sound level calibrator
                                       Type: 4230 sn:1102808
Audio microphone signal reference: Brüel & Kjær Class 1 sound level meter
                                       Type: 2232 sn:1777899
Microphone type: Dateq DCM-5
Microphone reference type: Brüel & Kjær Class 1 measurement microphone
                                       Type: 4176 sn:1770346

Calibrated by: _____

Calibration date: Thursday, 16 January 2020
Certification print: 3:19:10 PM

This calibration certification is valid for 12 months from the date above.

Calibration certification was granted in laboratory setup. Installed devices may need independent manual recalibration depending on local environment, microphone placement or local law. This certificate may be used for reference purposes only.

DECLARATION OF CONFORMITY

acc.to art.10.1 EMC directive 89/336/EEC

We,   **DATEQ Audio Technologies B.V.**
de Paal 37
1351 JG ALMERE
THE NETHERLANDS

hereby declare, exclusively to our responsibility, that this product

Type: SPL D3   **Serialnrs.: 60-XXXX**

to which this declaration applies, is in accordance with the following harmonized European norms

EN 50081-1 and EN 50082-1

According to the regulations of the EMC-directive 89/336/EEG, amended by directive 91/263/EEG, 92/31/EEG and 93/68/EEG.

EN 60065

According to the regulations of IEC 65: 1985 + A1: 1987 + A2: 1989 + A3: 1992, mod. Ratification: 1993-07-06
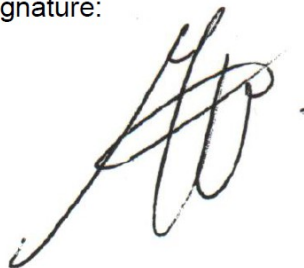
Almere, January 7th 2020   Managing director

stamp: signature:

DATEQ
audio technologies
De Paal 37
1351 JG Almere
tel. 036-5472222, fax 036-5317776

Product support

For questions about the SPL series limiters, accessories or other products contact Dateq at:

Dateq Audio Technologies B.V.

De Paal 37	Phone:	(036) 54 72 222
1351 JG Almere	E-mail:	info@dateq.nl
The Netherlands	Internet:	www.dateq.nl