

SPL-5 MKII

audio limiter

&

sound level logger

Manual



DATEQ
audio technologies

Due to the nature and functionality of this product, it should only be used and installed by professional and certified installers. It is not intended for use or resale by consumers. The manufacturer does not support consumer use.

Safety instructions

1. All safety instructions, warnings and instructions for use must be read first become.
2. All warnings marked on the device must be followed.
3. The instructions for use must be followed.
4. Keep the instruction manual for future reference.
5. The device should never be used in the immediate vicinity of water; prevent the possibility of ingress of water and moisture.
6. The appliance should only be placed or mounted in the locations recommended by the manufacturer manner.
7. The appliance must be placed or mounted in such a way that nothing hinders proper ventilation stands.
8. The device should never be placed in the immediate vicinity of heat sources such as parts of heating installations, stoves and other heat-producing equipment (including amplifiers) are placed.
9. Only connect the device to the correct mains voltage using the manufacturer's power supply recommended cables, as described in the user manual and/or stated on the connection side of the device.
10. The device may only be connected to a legally approved (edge) earthed mains connection.
11. The mains cable or the mains voltage cable must be laid in such a way that it cannot reasonably be walked on or that no objects can be placed on or against it that could damage the cable. Special consideration should be given to the point where the cable is attached to the appliance and where the cable is attached to the mains connection.
12. Prevent foreign objects and liquids from entering the device.
13. The appliance should be cleaned as recommended by the manufacturer.
14. The mains power cable or mains power cord should be used if the appliance is not used for a long period of time used, unplugged from the mains supply.
15. In all cases when after an incident there is a risk of unsafe operation of the device, such as:
 - after the mains cable or mains power cord has been damaged
 - after foreign objects or liquids (including water) have entered the device
 - after the device has been dropped or the housing has been damagedafter noticing a change in the operation of the device, it must be checked by authorized technical personnel.
16. The user must not carry out any work on the device other than that described in the user manual.



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Introduction

The SPL5 MK2 is a sound pressure limiter that stores sound pressure data for a minimum period of 180 days. Other data, such as switching on, exceeding the maximum level and any (attempted) sabotage are also registered.

The configuration software allows the SPL-5 MK2 to be read and adjusted. At the time of release, the device supports Windows 7 and newer. Normally, users can only view settings and logs. To adjust the settings, an additional password and a license file are required. To connect to the SPL-5 MK2 you need a Windows computer with USB support. If the SPL-5 MK2 is connected to a local network or the internet, it is possible to read the limiter remotely.

This keeps managing and checking the equipment quick and clear!

The limiter uses a measuring microphone to determine the current sound pressure in the room. When this level threatens to become too loud, the limiter will regulate the level slightly. In this way, the level always remains within the permissible limits.

The special calendar functions allow you to allow different sound levels over the course of a day and a year.

With the special SRL-1 circuit breaker you can connect an external warning lamp and disconnect the power supply, for example the DJ booth monitor. This way, sound can always be played at the maximum permitted sound level, without affecting the sound quality.

Installation

The limiter is installed between the sound source (for example, the mixing desk, the preamplifier, etc.) and the amplifier. See figure 1.

Figure 1: Installation of the SPL-5 MK2

Before adjustment, the power amplifiers are set to maximum power. The limiter will attenuate the signal as necessary. As soon as the limiter has been adjusted, the pre-set limit can in principle no longer be exceeded. Should this happen, the signal will automatically be slightly weakened, so that the total sound pressure remains within the preset standard.

Connections

To prevent the connections from being changed after the limiter has been adjusted and sealed, the limiter's connections are no longer accessible after sealing. To access the limiter connections, remove the right (sealable) cover.

Now loosen bolt (A) with a Torx screwdriver (see drawing). Now remove the 4 torx screws (B) from the top cover. Now the lid can be removed. First lift the front slightly, then slide the cover back. The connection plate of the limiter is now visible.

The SPL5 MK2 is equipped with balanced inputs and outputs. This type of connection guarantees good sound quality, even over longer distances. Once the device has been adjusted, a cover is placed over the connections, so that making adjustments afterwards is no longer possible. When the cover is removed, the SPL5 MK2 will register this. The limiter can then only be reactivated using the key.

microphone input; XLR 3-pin female

Pin	Function	Description
1	Mass	Audio Earth
2	Audio +	Power and audio
3	Audio -	Power and audio

Table 1: Microphone input connections

Audio inputs left and right; XLR 3-pin female

Pin	Function	Description
1	Mass	Audio Earth
2	Audio +	Audio in phase
3	Audio -	Audio out of phase

Table 2: Audio input connections

Audio outputs left and right; XLR 3-pin male

Pin	Function	Description
1	Mass	Audio Earth
2	Audio +	Audio in phase
3	Audio -	Audio out of phase

Table 3: audio output connections

USB port; USB B female

Pin	Function	Description
1	VCC +	Power supply
2	Dates -	Dates
3	Dates +	Dates
4	GND	Soil

Table 4: USB connections

Network port; RJ45 female

Pin	Function	Description
1	TX-D+	Dates
2	TX-D -	Dates
3	RX-D+	Dates
4		Not used
5		Not used
6	RX-D -	Dates
7		Not used
8		Not used

Table 5: Network connections

signaling connector; DB-25 female

Pen	Function	Input/output
1	External attenuator	In
2	Reduction signalling	Out; 15V/ 5mA max.
3	Overload signalling	Out; 15V/ 5mA max.
4	Live OK signalling	Out; 15V/ 5mA max.
5	Warning signalling	Out; 15V/ 5mA max.
6	Level OK signalling	Out; 15V/ 5mA max.
7	Safe sound pressure signalling	Out; 15V/ 5mA max.
8	External display	In out
9	Microphone +	In
10	Left audio in +	In
11	Right audio in +	In
12	Left audio out +	Out
13	Right audio out +	Out
14...17	Digital ground (use at signaling outputs)	
18...20	Analog ground (use at the audio inputs and outputs)	
21	Microphone -	In
22	Left audio in -	In
23	Right audio in -	In
24	Left audio out -	Out
25	Straight audio out -	Out

Table 6: DB25 connections

External display; Jack 3 pin female

Pen	Function	Description
SL	Mass	Data Earth
Tip	Data TX	Send data
Ring	Data RX	Receive data

Table 7: External display connections

Microphone input

Connect the supplied measuring microphone here. The connection cable of the microphone can be extended with standard microphone cable. Pay attention to the polarity! If the microphone is connected incorrectly, it will not work. The limiter will give an error message, and the sound will come through strongly attenuated.

The microphone should be mounted in such a way that it can pick up both the sound from the loudspeakers and the sound from the room. If the maximum permitted level is very low, the microphone can be placed closer to the loudspeakers. This reduces the influence of ambient noise.

Audio Inputs

Balanced inputs for the audio from the mixing console. If the mixing console only has unbalanced outputs, pins 1 and 3 in the XLR connector must be used

transferred. The signal from the mixing console can now be connected to pin 2, and the ground to pin 1.

For longer cabling, it is recommended not to connect pin 1. In this case, only connect pins 2 and 3.

Audio outputs

Connect the power amplifiers here. If the power amplifiers do not have balanced inputs then they can be connected between pin 2 (signal) and pin 1 (ground).

External attenuator

This input can be used to lower the maximum sound pressure using an external potentiometer. By connecting a linear 10 kOhm potentiometer between pin 1 (wiper) and pin 14, the maximum sound pressure can be temporarily reduced.

This can be useful, for example, to reduce the sound pressure behind the bar. It is also possible to have the sound pressure decrease automatically when the terrace doors are opened in the summer.

Alerts

Reduction signalling

An indication can be connected to this output that indicates that the limiter has attenuated the sound pressure. This output has the same function as the reduction LED on the front of the device (Audio reduction).

Overload signalling

This output indicates that the signal is being overdriven somewhere in the limiter. This can be the audio input or the measuring microphone. This output has the same function as the overload LED on the front of the device (Overload).

Live OK signalling

This output is active as long as the device does not sanction. A solid-state relay can be connected to this output, which switches off the power supply of the (live) stage. When a live band exceeds the maximum set sound pressure, the limiter will go into sanction mode and automatically switch off the power supply. After a predetermined time, the sanction mode will end automatically.

Warning signaling Level OK, Safe sound pressure

These outputs give an impression of the current sound pressure compared to the pre-set maximum:

- The warning output becomes active as soon as the current sound pressure exceeds the preset maximum.
- Level OK indicates that the sound pressure is below the maximum, but approaching the maximum allowable level (0...12dB room).
- Safe indicates that the sound pressure is more than 12dB below the maximum allowable

border is located.

These indicators can be placed near the disc jockey or live band so they have an idea of the sound level.

External

Display This is the data connection to the optional SPL-D2 **MKII**, SPL-D3 or SPL-EXT3. The external display can also be connected directly to the display port of the SPL5 MK2. A 6.3mm Stereo Jack cable must be used for this.

10 11 12 13 14 15

10. Microphone:

3-pin XLR connector for a DCM-5 microphone.

11. Audio input:

Connection for XLR audio left and right to the limiter.

12. Audio output:

Connection for XLR audio left and right from the limiter.

13. Signal connector:

Sub-D 25 connector for connecting external signaling, audio in and out and microphone.

14. Link:

Link connection for external display SPL-D2 MK2, SPL-D3 or SPL-EXT3.

15. Ethernet:

Ethernet connection for an IP connection to the configuration software via a network.

Technical specifications

General

Inputs Mic

(measurement microphone).....XLR-3 female. Can only be used with the included DCM-5 measurement microphone.

Line (left and right).....XLR-3 female. Electronically balanced.

Input Sensitivity.....+18dBu maximum Input

Impedance.....50kOhm Commom Mode

Suppression.....>86dB

Outputs

Line (left and right).....XLR-3 male. Electronically balanced.

Output Impedance.....50Ohm

General

Audio

Frequency Response.....20Hz.. 22kHz @ -1dB Signal-to-Noise Ratio.....>100dB THD+N (IEC-A)<0.02%

Limiter

Sound Threshold.....50.. 120dBA (resolution 1dB)

Output correction.....-50...0dB (resolution 1dB)

Microphone correction.....-30...+12dB (resolution 1dB)

Maximum control range setting.....-6...-50dB (resolution 0.5dB)

Memory 180

days *sound

pressure data and events are stored for up to 180 days or when the internal memory becomes full.
After this, the oldest data will be automatically deleted.

Standardization

EU: Measuring chain built to work according to specifications of IEC-61672-1 class 2 Measuring chain

France: built to work according to specifications of NFS 31-122-1-2017 and decree 2017-1244 Measuring chain built to work according

BE: to specifications of VLAREM-II cat. 1, Cat. 2 and cat.3 Measuring chain built to work according to specifications

THE: of DIN 61672, DIN 60651 and DIN 15905-5

External signalling

External attenuator.....0...-20dB (e.g. 10 kOhm lin potentiometer)

Signaling and switching outputs.....15V/ 5mA max.

Power

supply Voltage range.....100... 240VAC/ 50Hz Power consumption15W

Dimensions and weight

Front483mm x 45mm (W x H) = 19inch/ 1U Cabinet

depth.....175mm

Weight.....3.2kg

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Configuration

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Configuration introduction

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Installation

The SPL-5 MK2 configuration software is compatible with the following operating systems:

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

Apple OSX, Linux and other operating systems are not supported. Minimum screen resolution 1400 1050 pixels.

Always use the latest software and firmware versions; these can be found at www.dateq.nl.

Configuration

This chapter describes the configuration and system settings of the SPL-5 MK2.

The settings are normally only changed during installation. You can save all settings in a backup file for later use or restore the original settings after changes.

Connecting the computer

You connect the display to a computer using a standard USB-A to USB-B cable. After connecting the SPL-5 MK2 to your computer, the standard Windows drivers will be loaded. You do not need additional drivers, these are present in Windows.

Installing the standard Windows drivers the first time can take several minutes depending on your operating system.

Configuration license

You normally only use the configuration software to view settings and read audio logs. You do not need a license or password to view or export data. You do need a license and a password to adjust settings and for the first installation.

The installation license is only issued to authorized professional audio installers. If you have an SPL limiter and need to adjust settings, please contact your local distributor or installer. You can find the nearest supplier on the page with sales points on the Dateq website: www.dateq.nl.

Each installation license is linked to a specific installation company and is not transferable to third parties. The installation license contains all company and contact details; these are stored in the SPL limiter during configuration.

Unlock the limiter

Before you can make changes, you must enter the license password. The password is stored in the license file SPL5.DSR.

The license file SPLD5.DSR must be copied to the folder containing the software.

If no valid license can be found, you will be notified in the software.
Note: You must install a valid license file before starting the software.

Live

The live view allows you to monitor the current measurements on the SPL-5 MK2. These measurements are displayed in green or red.

The status LEDs of the front panel of the limiter are also displayed so that the current status of the limiter is immediately visible.

Limiter configuration

Configuration of sound parameters.

Mode

- Live Limiter and recorder •
Line Limiter and recorder

In Live mode, the limiter will include the measured microphone signal in the control of the outgoing signal.

In Line mode the limiter will only register the microphone signal and not include it in the control of the outgoing signal. In this mode the limiter operates on the line signal (input threshold)

Limiter settings

Maximum dBA: 50dB to 125dB.

Maximum dBC: 50dB to 125dB.

Input threshold: -50dB to 0dB.

Output attenuation: -60dB to 0dB.

Maximum reduction: 60dB to 0dB.

Certification date

The limiter will continue to work until this date. After this date 'certification invalid' will appear in large on the display. It also appears on every export of the log files.

The limiter will attenuate the outgoing signal by 18dB. The limiter configuration must be checked by the installer.

Microphone settings

Microphone correction: -30dB to +12dB.

Microphone sensitivity: 3.7mV/Pa (typical)

Sanction Settings

Time to Sanction: 10 to 360 seconds.

Penalty time: 10 to 360 seconds.

The timer for sanction starts counting as soon as the overload led turns on.

!! Changes to the settings take effect immediately.

Time slots

Time slots allow you to set different dB values during a week. Three time slots per day are possible per display. In a time slot, the maximum allowed value is reduced by the set amount of dB.

You set the time and date manually by synchronizing the time on the display with the time on the connected computer.

Bypass calendar

The bypass calendar is set for the days when the SPL5 does not have to function as a limiter. The incoming signal passes through the limiter without attenuation. Set equalizer values remain active.

7 bypass moments can be entered.

display

The values can be shown in different places in the display.

Limiter display:

top left, top right, bottom left and bottom right. The appearance of the display can be adjusted as desired.

Leq-1:

Maximum: 50 to 125dB, default 85

Leq filter: ANSI A, ANSI C or Flat, standard A

Leq calculation: 1 to 60 seconds and 1 to 60 minutes

Leq-2:

Maximum: 50 to 125dB, default 85

Leq filter: ANSI A, ANSI C or Flat, standard C

Leq calculation: 1 to 60 seconds and 1 to 60 minutes

Leq-1 and 2 change in name in all pages (and screen) to the chosen values.

For example, LAeq2m or LCeq15m.

External

Display: Type: Off, SPL-D2 MK2, SPL-D3 or SPL-EXT3.

Show: dB(A), dB(C), dB, Leq-1, Leq-2, default dB(A)

Bar: fast VU, slow VU, reduction, standard fast VU.

Optional external displays:

SPL-D2, SPL-D3 and SPL-EXT3.

Firmware update

Select the latest firmware version and click Update. The system then searches for a valid update. If valid firmware is found, the derating meter on the front of the limiter will turn into a chaser (bootloader mode) and the firmware will be updated.

Note:

Some Windows versions do not fully support bootloader mode. If the progress bar doesn't start and the limiter is in bootloader mode, unplug the USB cable and plug it back in. The update starts after you reconnect the cable.

Settings

With 'Save settings' you can make a backup of the current device settings.
With 'Load settings' you can restore previously saved settings.
With 'Restore factory settings' you can restore all factory settings. All previous settings will be lost.

Network settings

Displays the current settings of the SPL5. These can be modified and become active after forwarding to the SPL5. Note, the limiter will restart after changing network settings!

TCP port 20108.

Device

Show the serial number of the device.

History

The SPL-5 MK2 keeps track of all measured values and stores them encrypted in its internal memory. It is not possible to change sound data measured with the SPL-5 MK2; attempts to do so result in a defective unit that can only be repaired at the Dateq service desk.

Choose Date:

Allows you to choose the date you want to inspect.

Display Graph:

Allows you to select which metrics to view through a check box.

Zoom:

Here you can use the scroll wheel of your mouse to zoom in and out on the chosen measurement areas.

Print:

Allows you to print the graph that is displayed (including zoom) to your printer.

Export:

allows you to export all measurement data for the selected day to a comma-separated file (CSV format).

Product Support

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

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