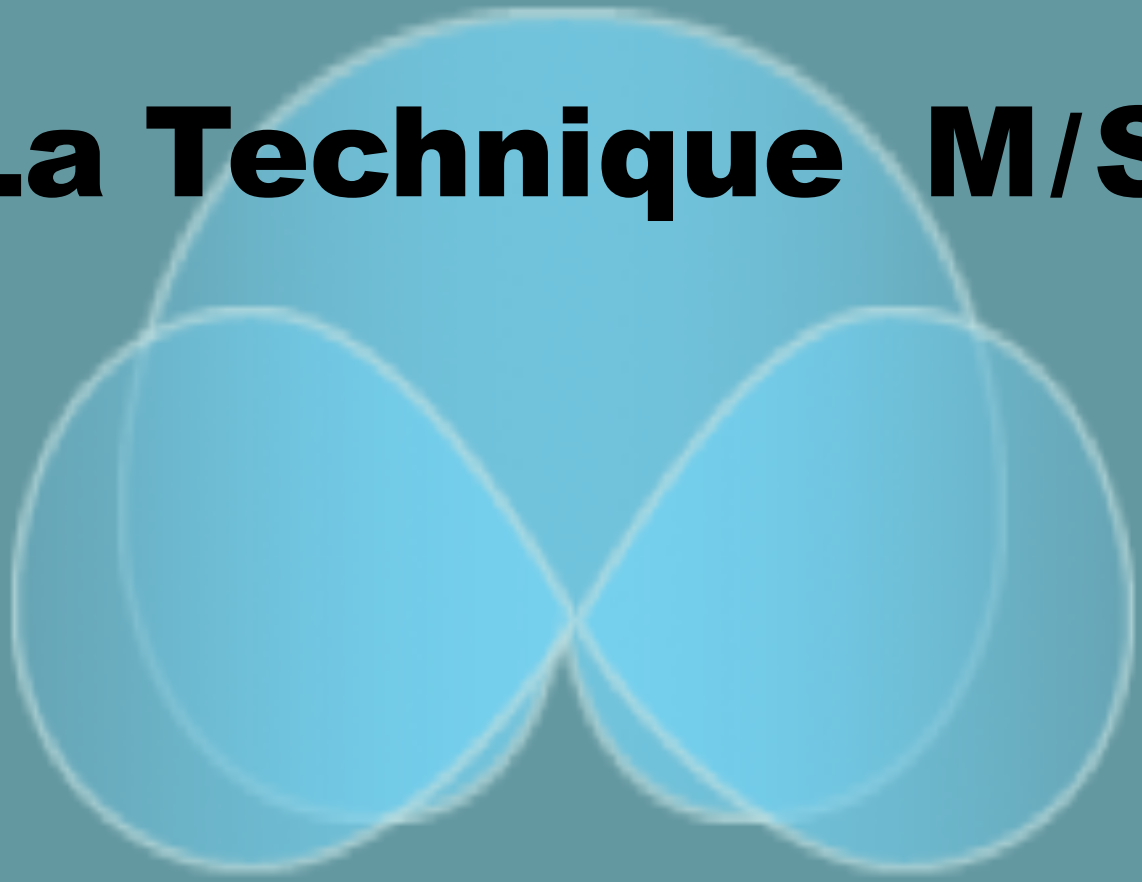
https://www.lesonbinaural.fr

La Technique M/S



Bernard Lagnel
Novembre 2018

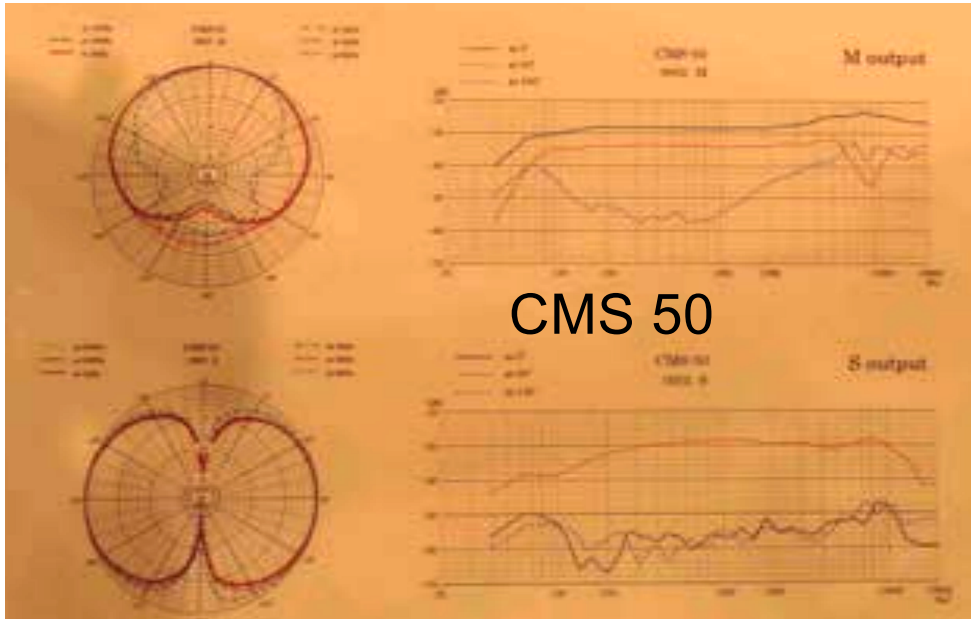
MICROS POUR UN ENREGITREMENTS M/S

sanken

CMS 50



https://www.lesonbinaural.fr/EDIT/DOCS/sanken_CMS_50.PDF



CCM 8



CCM 4

SCHOEPS Mikrofone



DÉCODAGE D'UN ENREGITREMENT M/S

DONNÉES
* Caractéristique du micro FRONTAL
0,500
Différence de sensibilité entre le micro FRONTAL et le micro Bi
0,0 dB

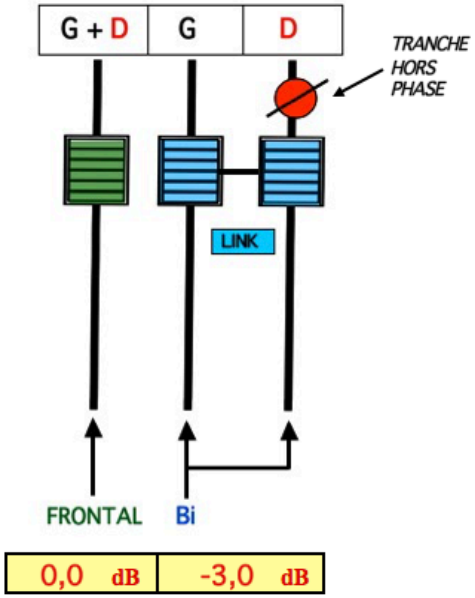
VALEURS *MODIFIABLES*

RÉSULTATS	
1/2 Angle de prise de son utile	1/2 Angle mécanique fictif du couple
48 °	55 °
1/2 Angle maximum de prise de son en PHASE	Perte de gain du à la sommation
80 °	-1,9 dB
Atténuation à l'avant 0° du couple	Atténuation à l'arrière 180° du couple
-2,7 dB	-324 dB

* NOTE .
Caractéristiques des micros :

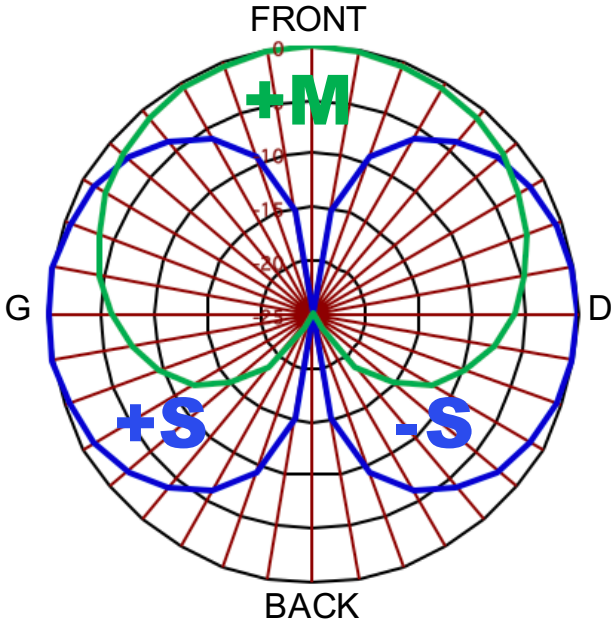
Micro OMNI = 1
Micro INFRA ≈ 0,660 (-10 dB arrière)
Micro CARDIO = 0,5
Micro SUPER ≈ 0,375 (-12 dB arrière)
Micro BI = 0

MATRIÇAGE

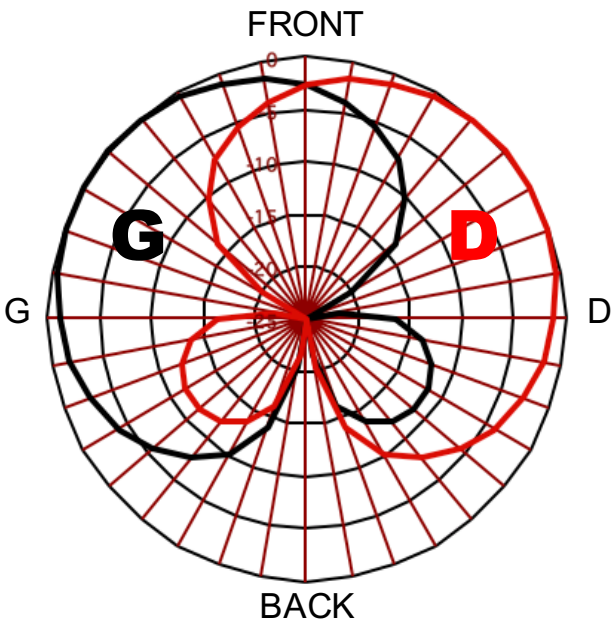


VALEURS POTS *MODIFIABLES*

AVANT MATRIÇAGE



APRÉS MATRIÇAGE

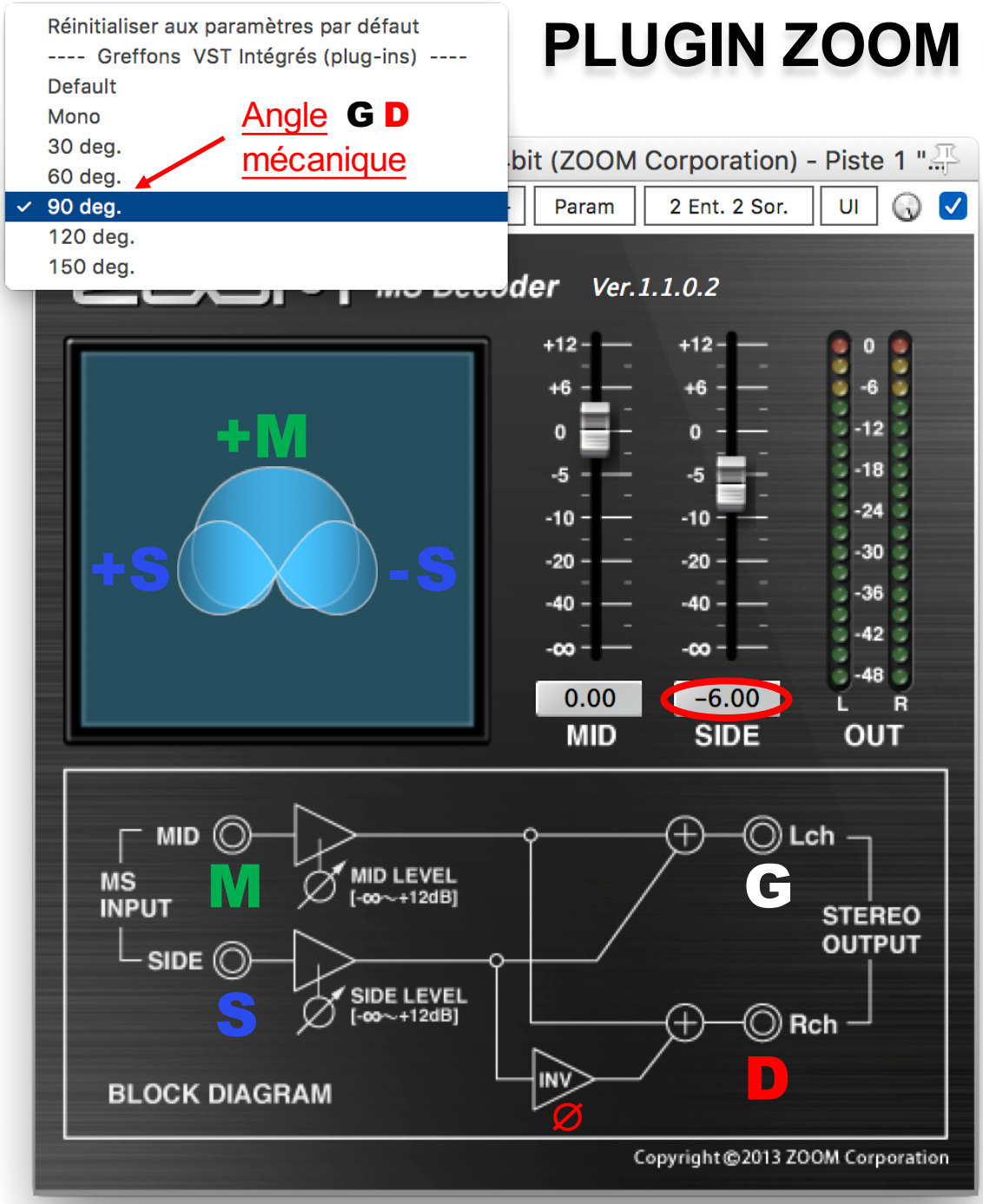


https://www.lesonbinaural.fr/EDIT/EXCEL/

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PLUGIN ZOOM M/S Decoder

Ver.1.1.0.2



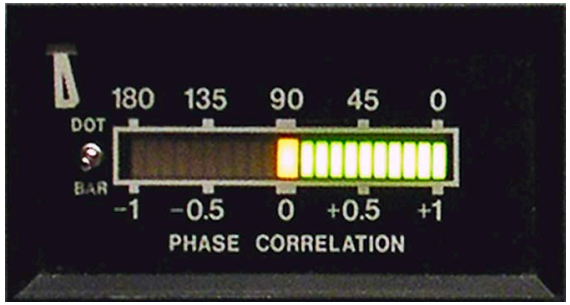
Plug VST

Gratuit

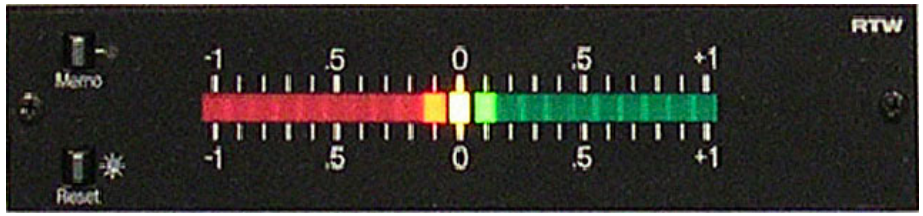
https://www.zoom-na.com/fr/products/field-video-recording/field-recording/h6-handy-recorder/downloads

radiofrance

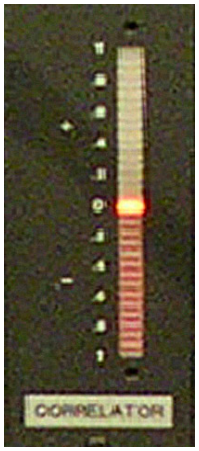
LES CORRÉLATEURS DE PHASE ANALOGIQUES À RADIO FRANCE :



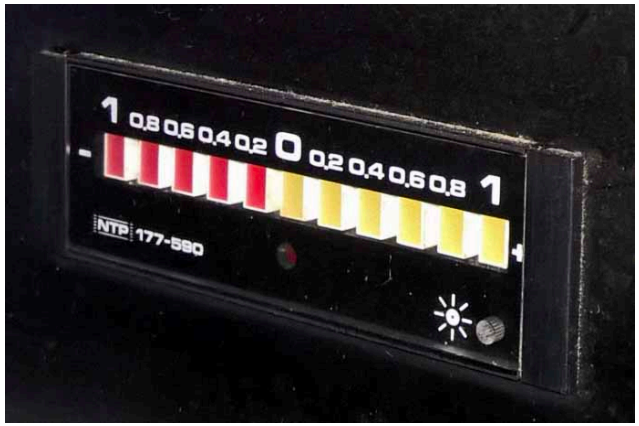
Console NEVE série 55



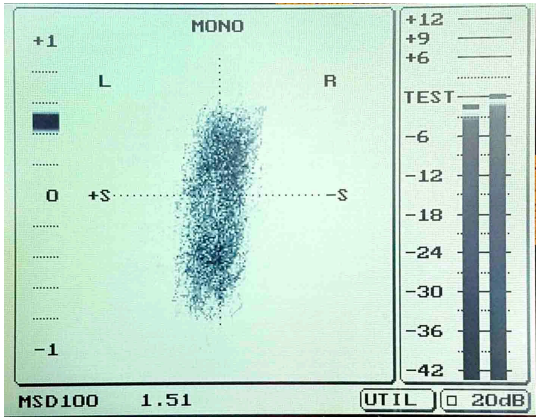
RTW 1260c (1 s d'intégration)



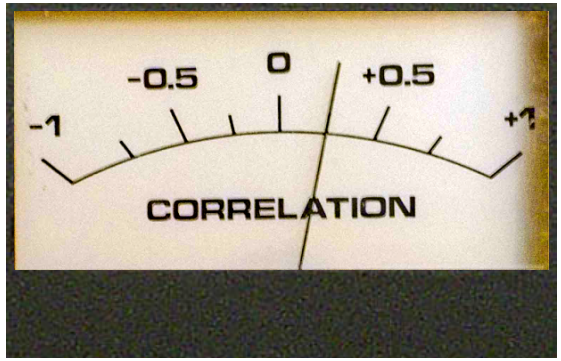
STUDER
(console 962)



NTP 177-590
(console DIGITEC UPS 6500)

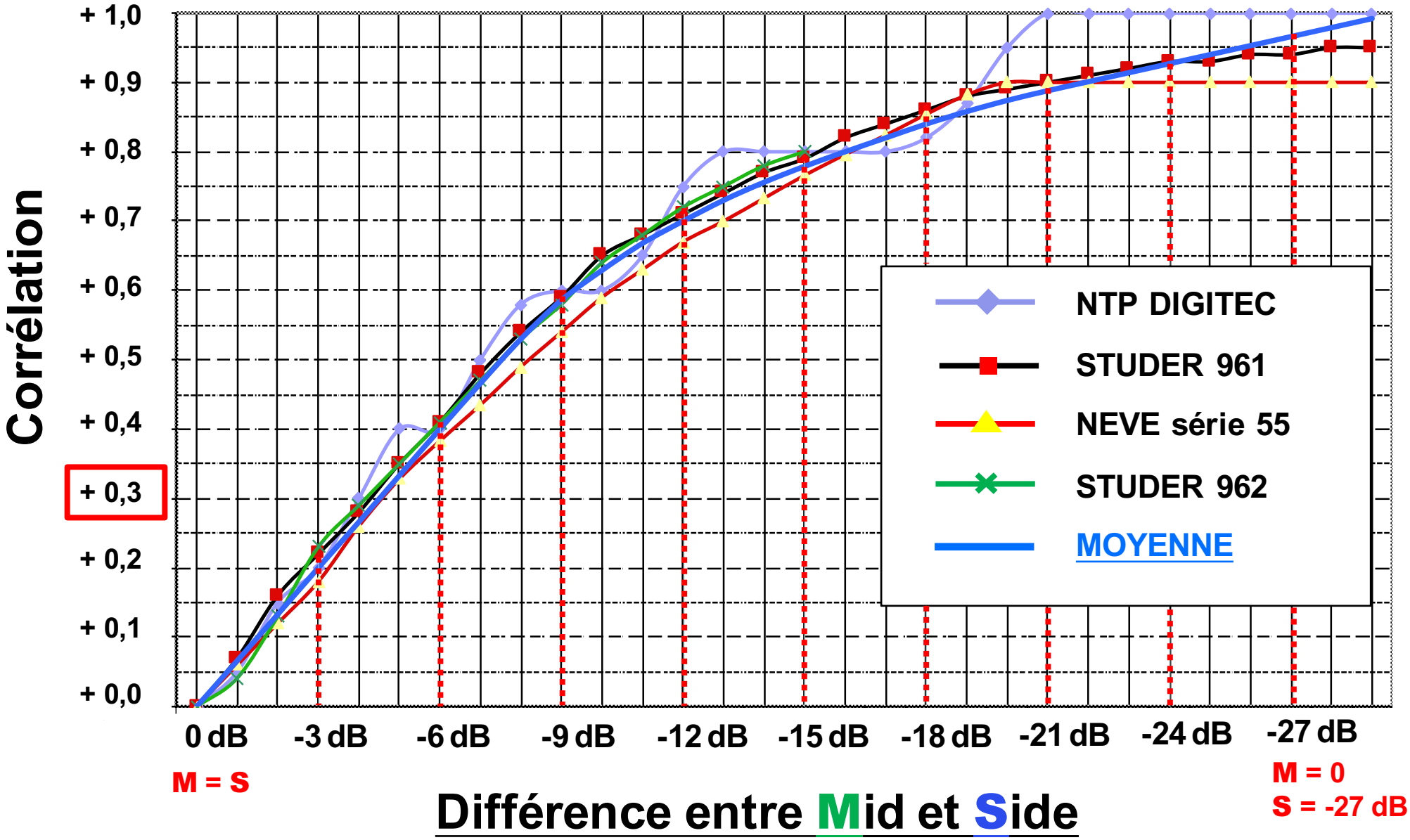


Dk-Audio MSD 100
(0,5 s ou 5 s d'intégration)

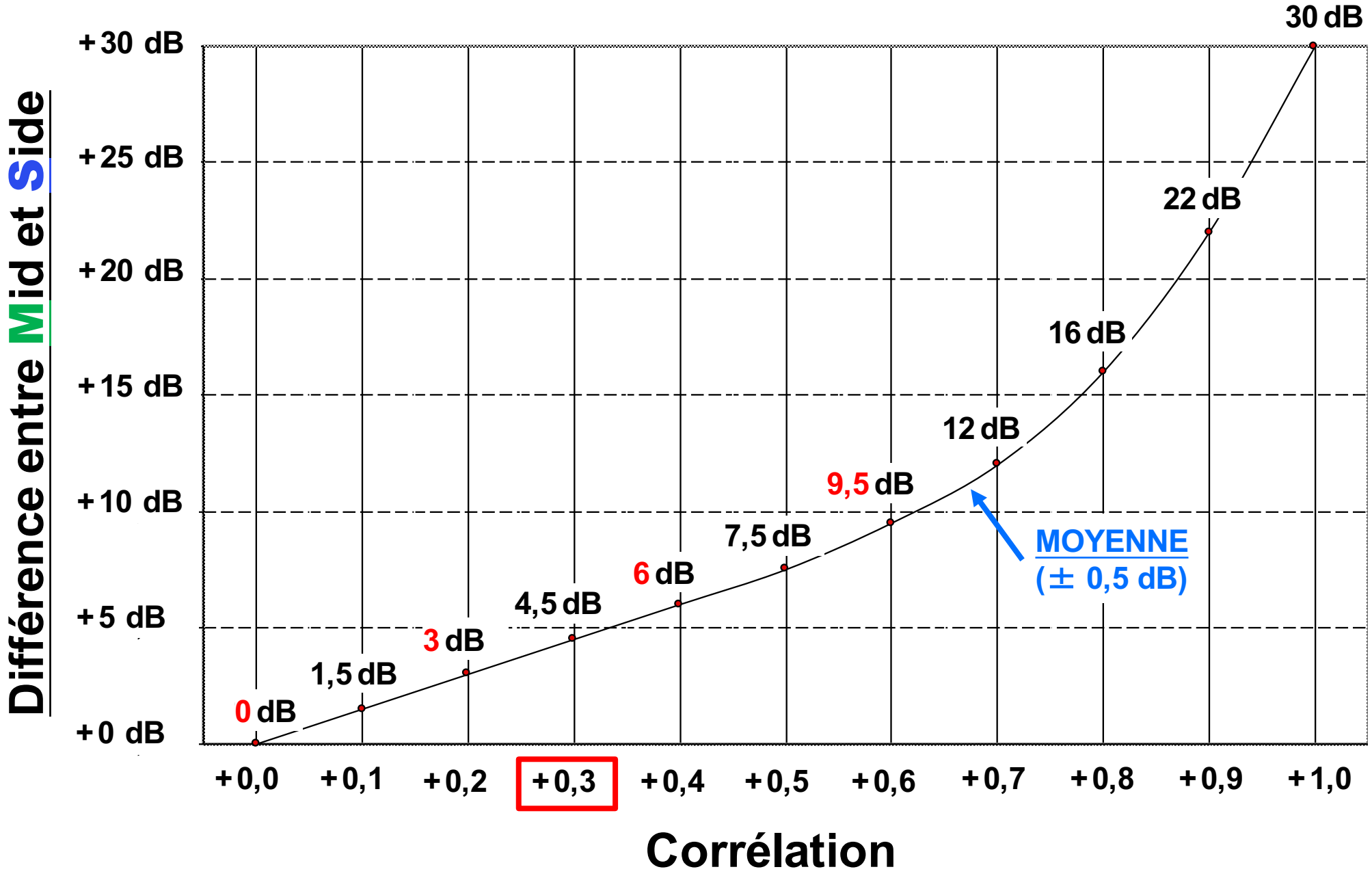


STUDER (console 961)

Mélange d'un Bruit Rose en phase Mid avec un autre Bruit Rose en opposition de phase Side

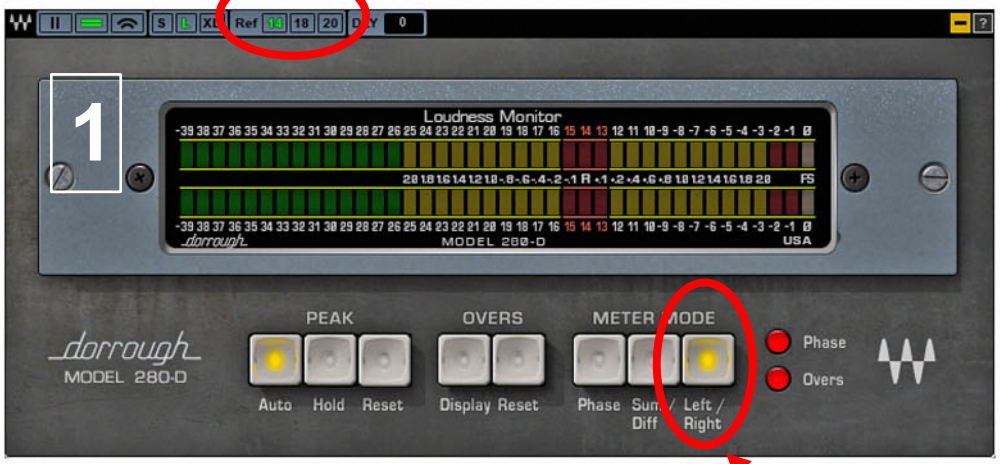


Mélange d'un Bruit Rose en phase Mid avec un autre Bruit Rose en opposition de phase Side

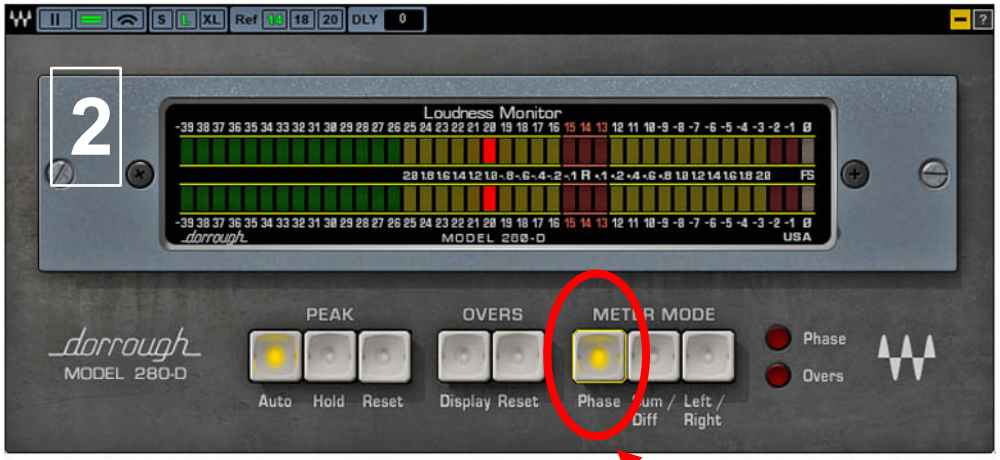


Le Plug-in Waves ***Dorrough*** *Stéréo* utilisé comme **Phasemètre** :

Choisir Réf. 14



Mode Left / Right

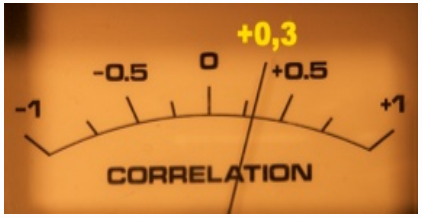


Passer en Mode Phase

https://www.waves.com/plugins/dorrough-stereo

Caractéristiques Techniques :

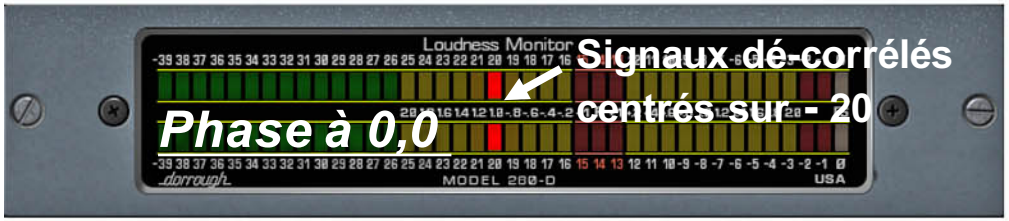
- Temps d'intégration ≈ 500 ms
- Seuil de sensibilité pour une réponse exacte ≈ - 32 dBFS (Affichage de la même valeur pour des écarts max de 32 dBFS d'IDL)
- Réponse linéaire de la phase et non logarithmique comme sur la plupart des *Phasemètres Plug-ins*…
- Phasemètre Plug-in comparable aux phasemètres analogiques du siècle dernier…

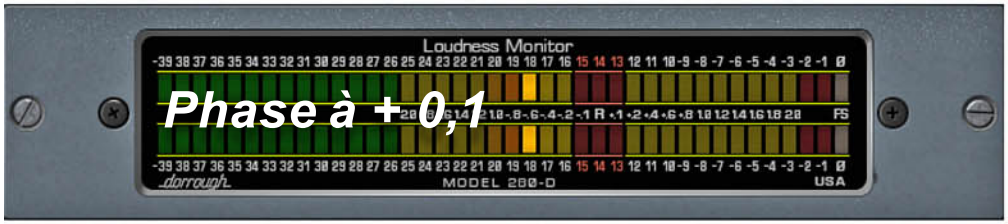


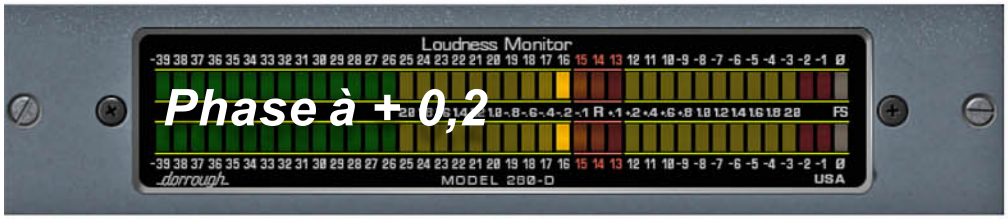
+ 0,3 = répartition Stéréo homogène

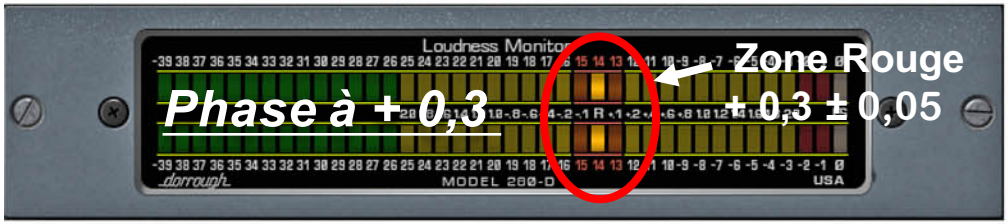
Étude psycho acoustique faite à Radio France sur du *bruit rose* : (valable pour la musique classique et les ambiances)

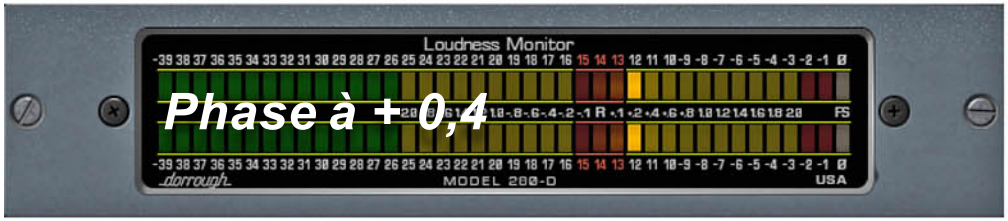
Indications **linéaires** de la phase sur le Plug-in *Waves* ***Dorrough*** *Stéréo :*

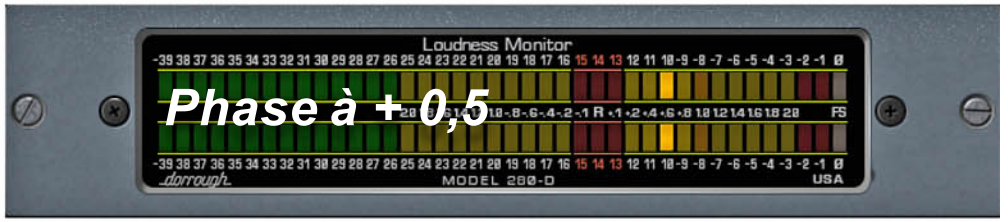


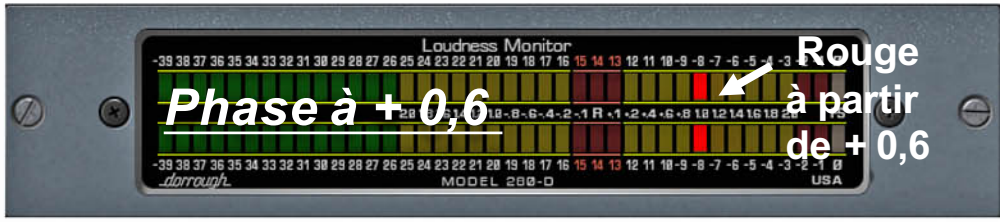


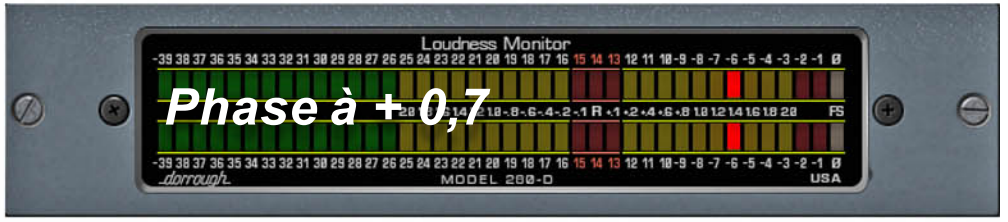


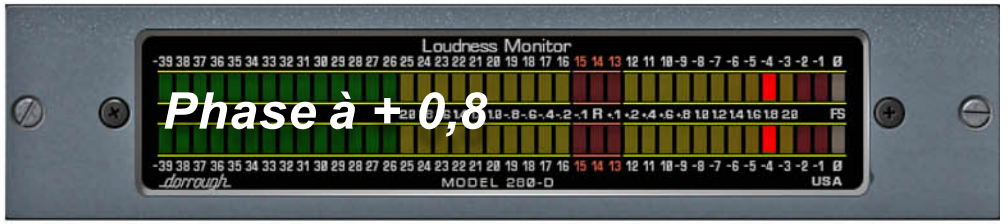


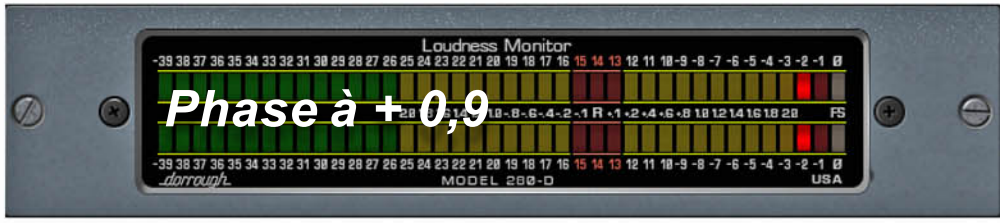


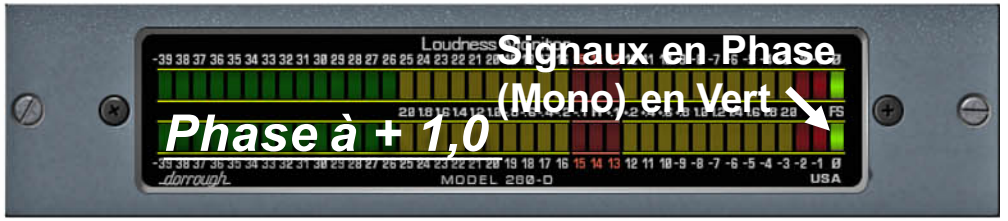


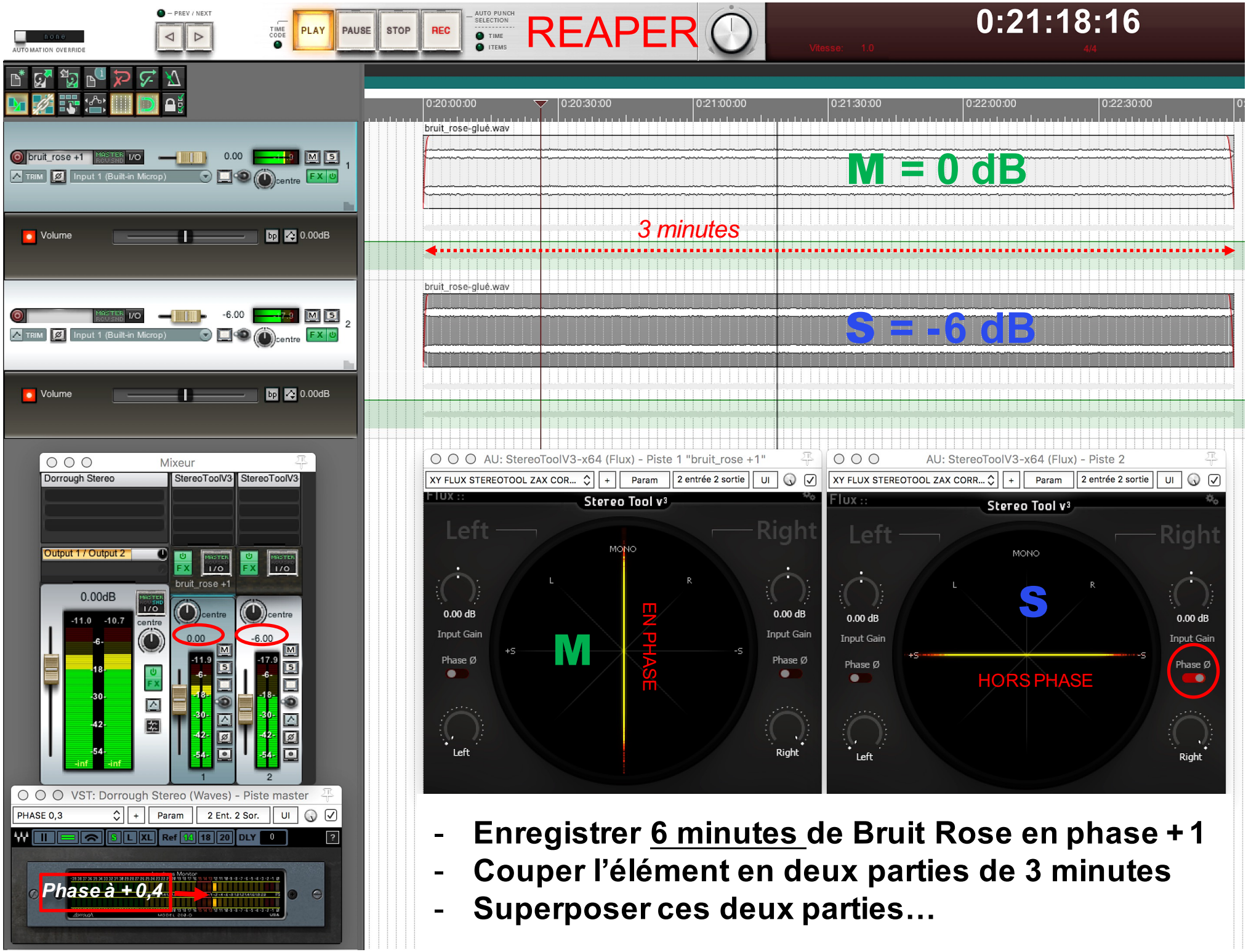












- **Enregistrer 6 minutes de Bruit Rose en phase +1**
- **Couper l'élément en deux parties de 3 minutes**
- **Superposer ces deux parties…**

Sur le site lesonbinaural.fr > Écoutes en son binaural 3D > Sons Techniques :



Bruit Rose Stéréo
de la Dé-corrélation à la Mono

Le niveau est constant à 0 LU sur toute la plage.

Le phasemètre stéréo ? : ici

ATTENTION Corrélation : Incrémentation de + 0,1 toutes les minutes.

+ 0,0 = Dé-corrélation (G ≠ D) de 0 s à 59 s
+ 0,3 = de 3 mn à 3 mn 59 s
+ 1,0 = Mono (G = D) de 10 mn à 10 mn 59 s

0:00 / 0:00

10 min 59 sec

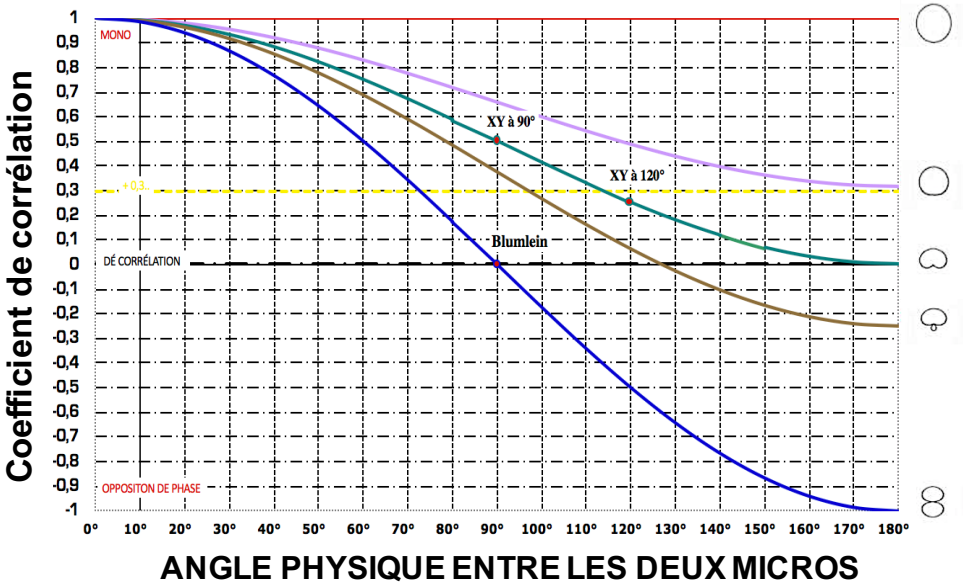
En **.WAV**

24 Bit / 48 KHz

Télécharger

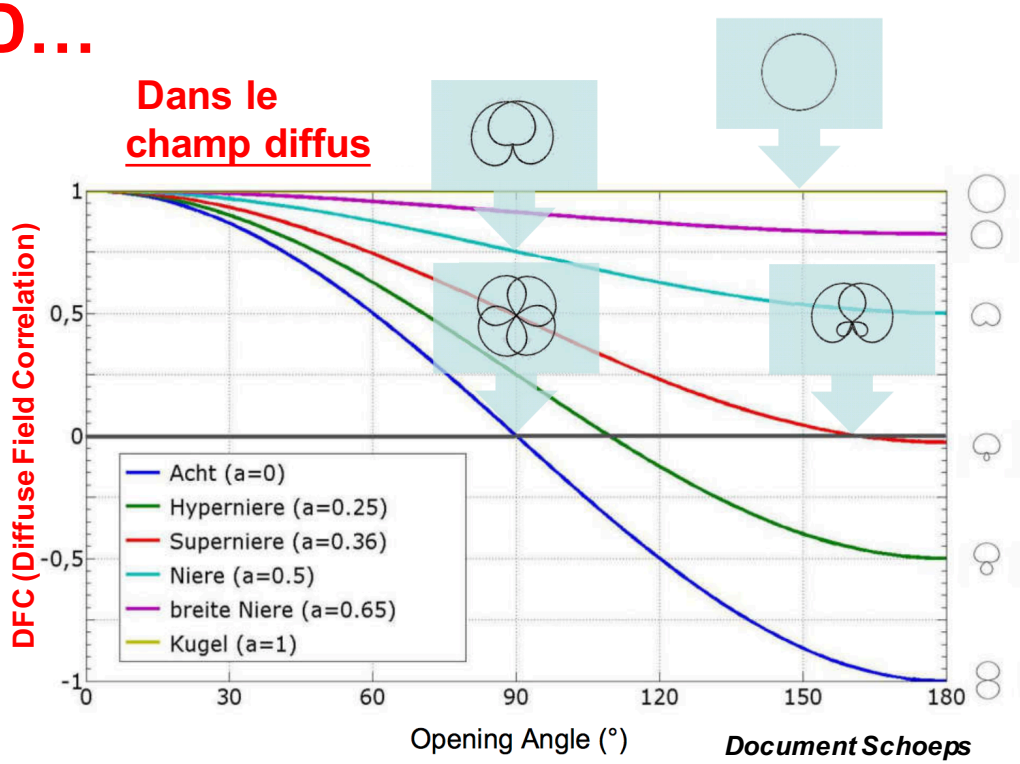
La Stéréo en ILD…

Dans le champ direct



ANGLE PHYSIQUE ENTRE LES DEUX MICROS

Dans le champ diffus



Opening Angle (°)

Document Schoeps

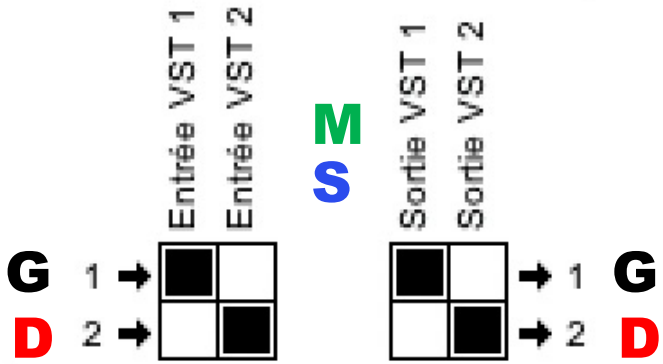
Sound with a soul Voxengo

https://www.voxengo.com/product/msed/

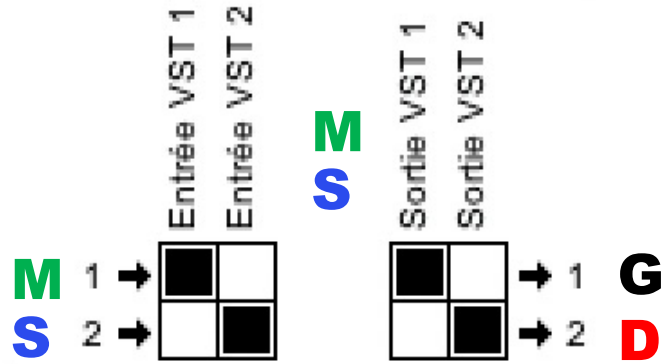
Gratuit

WIDTH avec le Plugin *VOXENGO MSED*

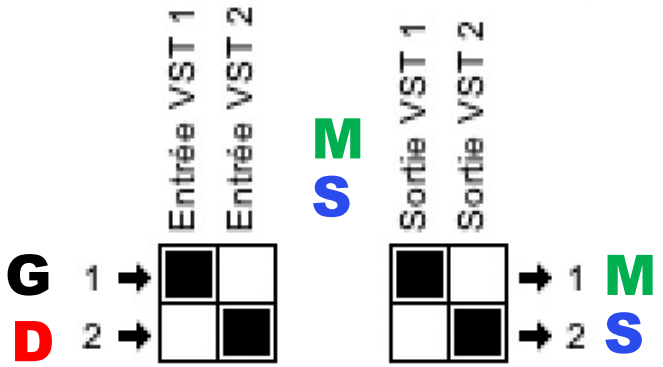












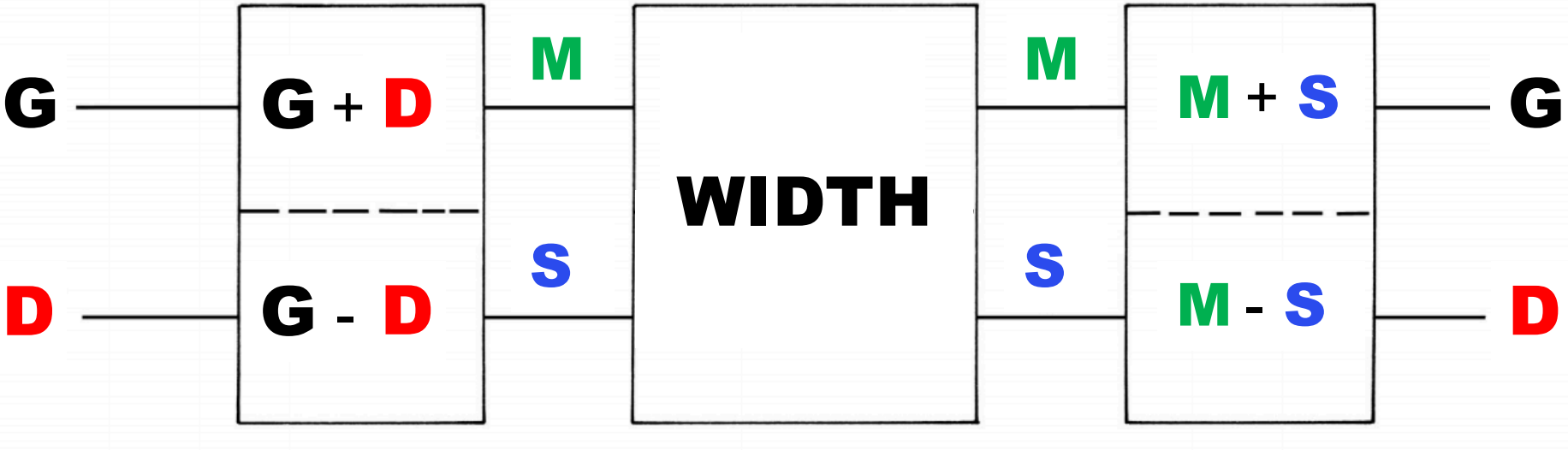
PARAMÈTRES du Plugin *VOXENGO MSED*

Le sélecteur « **Mode** » spécifie quel mode de traitement doit être utilisé :

- Le mode « **Inline** » effectue l'encodage, le traitement, ainsi que le décodage, de manière séquentielle.
- Le mode « **Décode** » active le décodage M/S (le signal M/S à l'entrée est converti en signal gauche/droite).
- Le mode « **Encode** » active le mode de codage M/S (le signal d'entrée gauche/droite est converti en signal M/S).

- Le commutateur « **Ch Swap** » permute les canaux d'entrée lorsqu'il est activé.
- Le commutateur « **Flip 180** » vous permet d'inverser la phase du signal dans les deux canaux de 180 degrés. Un tel retournement ne permute pas les canaux.
- Le paramètre « **Mid Gain** » permet de régler le gain du canal central (en décibels).
- Le commutateur « **Mid Mute** » peut être utilisé pour couper le canal central.
- Le paramètre « **Side Gain** » permet de régler le gain du canal latéral (en décibels).
- Le commutateur « **Side Mute** » peut être utilisé pour couper le canal latéral. Notez que vous pouvez faire glisser le bouton « **Mid Gain** » ou « **Side Gain** » avec le bouton droit de la souris pour activer le réglage inversement lié des deux boutons.
- Le paramètre « **Mid Pan** » règle le panoramique stéréo du canal central.
- Le paramètre « **Side Pan** » permet de régler le panoramique stéréo du canal latéral.
- L'indicateur de gauche est la **corrélation stéréo**, d'une moyenne de 500 ms.
- L'indicateur de droite est la **balance stéréo** en décibel gauche/droite, moyenne de 500 ms.

MODE INLINE


G
D
G + D
G - D
M
S
WIDTH
M
S
M + S
M - S
G
D


?
Presets
A
B
A ▸ B
MSED
Parameters
MID MUTE
SIDE MUTE
CH SWAP
FLIP 180
Mid Gain
Side Gain
Mid Pan
Side Pan
Mode
INLINE
0.0
0.0
0.0
0.0
-1.00
-0.50
0.00
0.50
1.00
-9.0
-6.0
-3.0
0.0
3.0
6.0
9.0

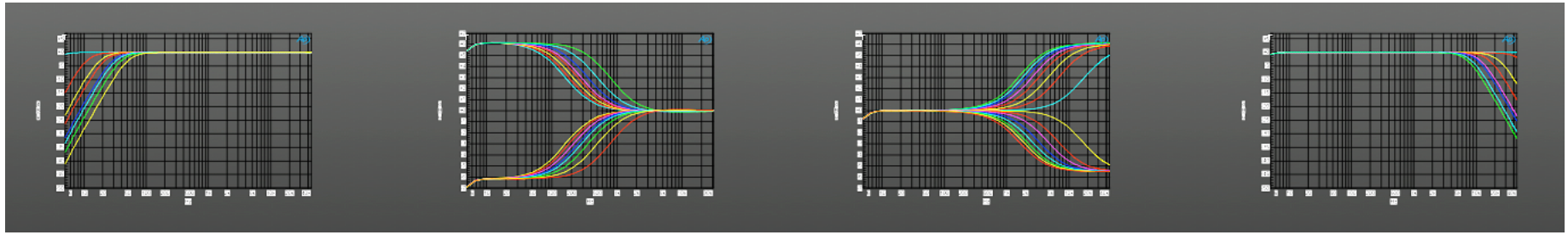

REAPER
PLAY
PAUSE
STOP
REC
0:20:36:28
bruit_rose-glué.wav
M = 0 dB
3 minutes
bruit_rose-glué.wav
S = -6 dB
bruit_rose +1
Input 1 (Built-in Microp)
Volume
0.00dB
-6.00
VST: Dorrough Stereo (Waves) - Piste master [5/5]
Phase à +0,0
M
S
AU: StereoToolV3-x64 (Flux) - Piste 1 "bruit_rose +1"
AU: StereoToolV3-x64 (Flux) - Piste 2
Stereo Tool v3
Left
Right
MONO
EN PHASE
HORS PHASE
Input Gain
Phase Ø
Mixeur
MSED
Dorrough Stereo
StereoToolV3
Output 1 / Output 2
VST: MSED (Voxengo) - Piste master
Channel Flip
Presets
Parameters
MID MUTE
SIDE MUTE
CH SWAP
FLIP 180
Mid Gain
Side Gain
Mid Pan
Side Pan
Mode
INLINE
MODE INLINE
S = + 6 dB

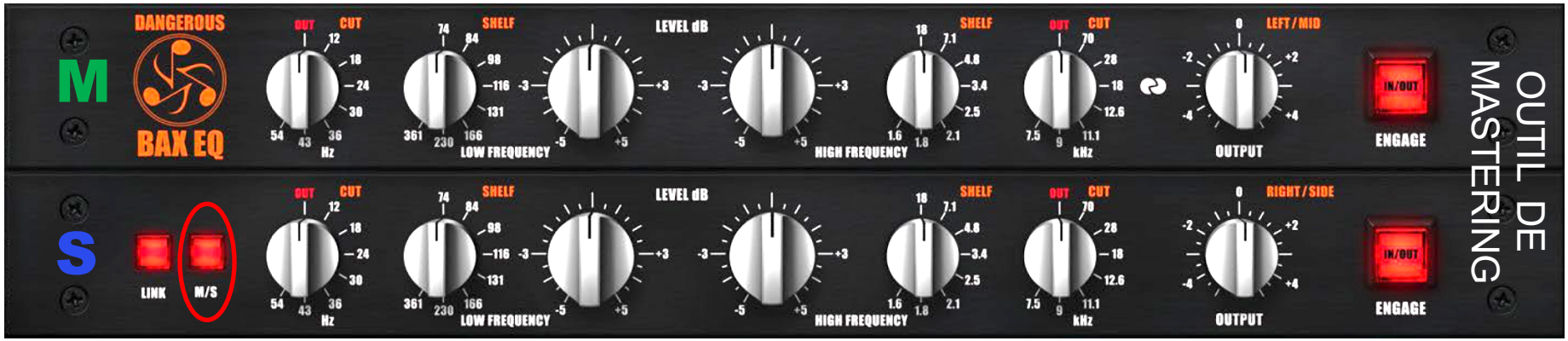
https://dangerousmusic.com/product/bax-eq/

EQ Plugin INLINE

https://www.youtube.com/watch?v=xPDEdtzed7U







https://www.plugin-alliance.com/en/products/dangerous_bax_eq.html

Annexes :

SCHOEPS Mikrofone

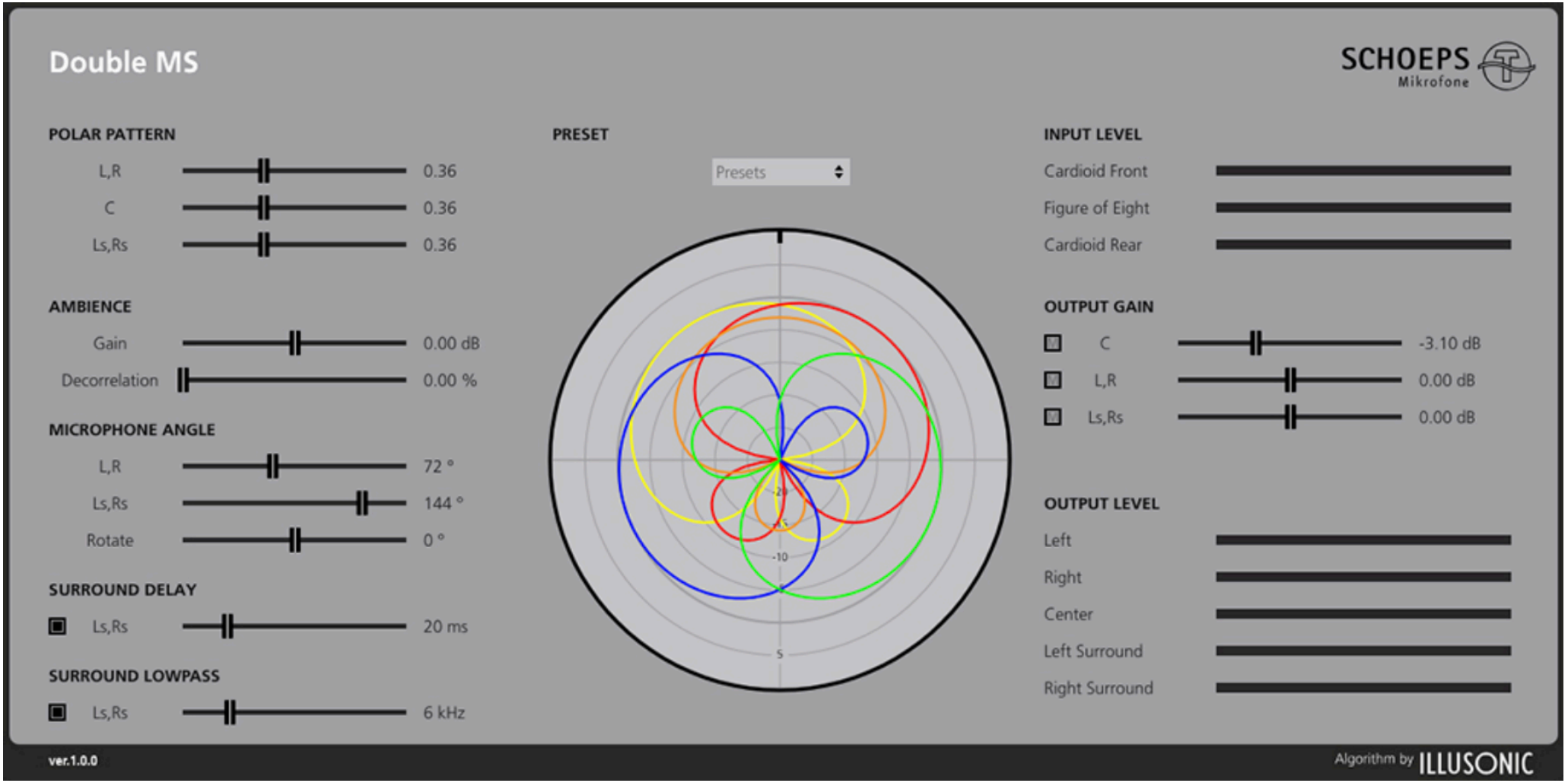
PLUGIN ALLIANCE

14/11
2018

https://www.plugin-alliance.com/en/products/schoeps_double_ms.html

PLUG-IN DOUBLE MS TOOL

MATRICES INTUITIVES SUR MESURE



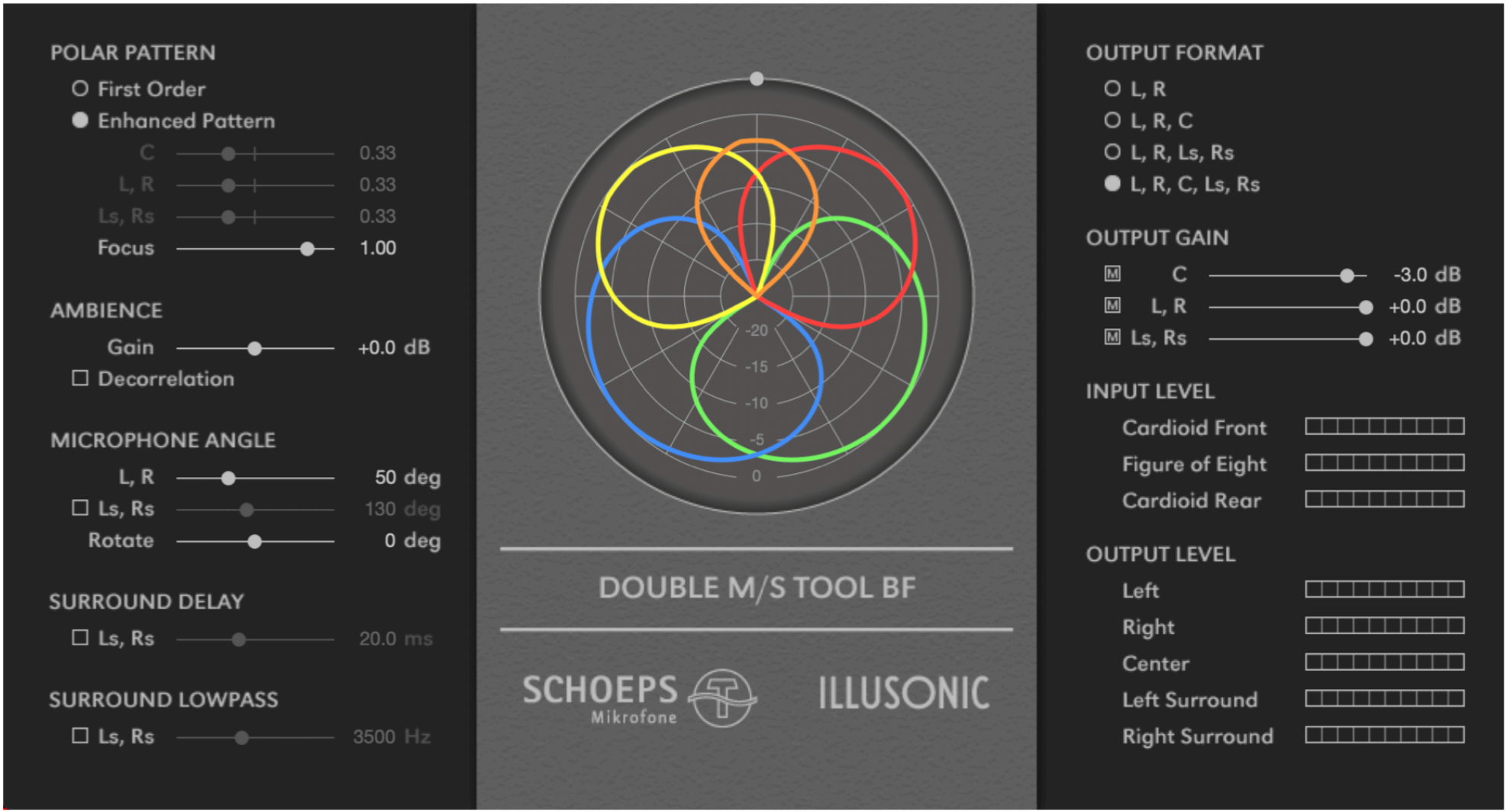
• **Polar Pattern:** Ajustez le motif polaire du canal central, de la paire stéréo L / R et de la paire stéréo Ls / Rs. Vous pouvez passer en douceur entre 0 (taille de huit) et 1 (Omni). Vous pouvez également créer facilement différentes configurations de microphone coïncidentes, de X / Y à Blumlein. Les préréglages sont un bon point de départ.
• **Gain d'ambiance:** ajuste la quantité d'énergie sonore diffuse contenue dans l'enregistrement de -10 dB à 10 dB. Le gain d'ambiance affecte directement les signaux d'entrée et modifie donc tous les canaux simultanément. Ce curseur de contrôle peut être utilisé pour ajouter plus de son de salle à un enregistrement sans ajouter de réverbération artificielle. Dans cet algorithme, le son diffus contenu dans les signaux d'entrée est extrait puis augmenté ou diminué.
• **Décorrélation:** ajustez la quantité de décorrélation, qui est appliquée uniquement à l'énergie sonore diffuse, de 0 % à 100 %. La fonction de décorrélation affecte directement les signaux d'entrée et modifie donc simultanément tous les canaux. Cette commande peut être utilisée pour améliorer l'enveloppement d'un enregistrement.
• **Angle du microphone:** angle d'ouverture entre la paire stéréo L / R et la paire stéréo Ls / Rs.
• **Rotation:** ajuste la rotation de l'ensemble de la configuration du microphone virtuel de -180° à 180°. Le canal central indiquera exactement cet endroit. Ceci peut être utilisé pour compenser le placement sous-optimal du microphone ou la conception du son.
• **Surround Delay:** retarde le signal de la paire stéréo Ls / Rs de **10 ms à 100 ms**. Ceci peut être utilisé pour optimiser la localisation avant / arrière et augmente la zone d'écoute. Vous pouvez activer / désactiver le délai en appuyant sur le carré noir.
• **Surround High Cut:** c'est un filtre haut de gamme de premier ordre avec un gain de -10 dB. Vous pouvez régler la fréquence de coupure de 2 kHz à 20 kHz. Le filtre est appliqué aux signaux surround pour simuler une perte de haute fréquence due à la dissipation de l'air. Vous pouvez activer / désactiver en appuyant sur le carré noir.
• **Indicateurs de niveau d'entrée:** Il reflètent le niveau des signaux d'entrée Double MS.
• **Output Gain:** vous pouvez régler le gain de sortie pour L / R, Ls / Rs et le canal C de -10 dB à +10 dB. Le niveau est également représenté dans le graphique polaire. En appuyant sur M dans le carré noir, vous pouvez désactiver ou réactiver des groupes de canaux de sortie spécifiques.
• **Indicateurs de niveau de sortie:** les indicateurs de niveau de sortie indiquent le niveau des signaux décodés que le plug-in transmet au DAW.

SCHOEPS Mikrofone

https://schoeps.de/wissen/dokumente-downloads/plugins-software.html

DOUBLE MS TOOL BF (2012)

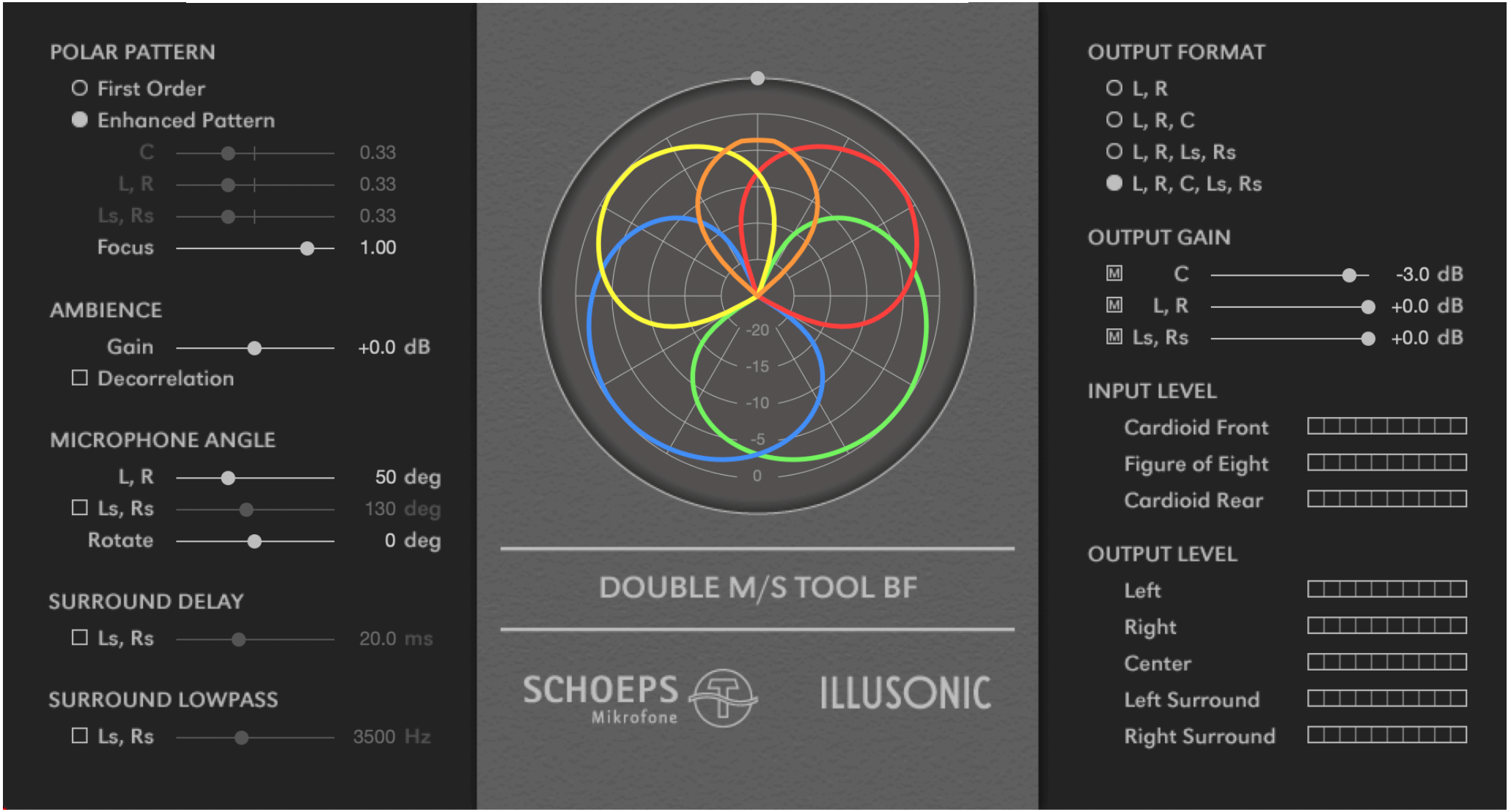
PLUG-IN SURROUND POUR RTAS, VST, AU



• **Polar Pattern:** Ajustez le diagramme polaire du canal central, de la paire stéréo L / R et de la paire stéréo Ls / Rs. Vous pouvez passer en douceur entre 0 (huit) et 1 (Omni). **Beamforming:** Enhanced Pattern amélioré pour une plus grande directivité et séparation des canaux.
• **Gain d'ambiance:** ajuste la quantité d'énergie sonore diffuse contenue dans l'enregistrement de -10 dB à 10 dB. Le gain d'ambiance affecte directement les signaux d'entrée et modifie donc tous les canaux simultanément. Ce curseur de contrôle peut être utilisé pour ajouter plus de son de salle à un enregistrement sans ajouter de réverbération artificielle. Dans cet algorithme, le son diffus contenu dans les signaux d'entrée est extrait puis augmenté ou diminué.
• **Décorrélation:** Vous pouvez activer / désactiver en appuyant sur le carré noir.
La fonction de décorrélation affecte directement les signaux d'entrée et modifie donc simultanément tous les canaux. Cette commande peut être utilisée pour améliorer l'enveloppement d'un enregistrement.
• **Angle du microphone:** angle d'ouverture entre la paire stéréo L / R et la paire stéréo Ls / Rs.
• **Rotation:** ajuste la rotation de l'ensemble de la configuration du microphone virtuel de -180° à 180° . Le canal central indiquera exactement cet endroit. Ceci peut être utilisé pour compenser le placement sous-optimal du microphone ou la conception du son.
• **Surround Delay:** retarde le signal de la paire stéréo Ls / Rs de **1 ms à 50 ms**. Ceci peut être utilisé pour optimiser la localisation avant / arrière et augmente la zone d'écoute. Vous pouvez activer / désactiver le délai en appuyant sur le carré noir.
• **Surround High Cut:** c'est un filtre haut de premier ordre. Vous pouvez régler la fréquence de coupure de 1 kHz à 20 kHz. Le filtre est appliqué aux signaux surround pour simuler une perte de haute fréquence due à la dissipation de l'air. Vous pouvez activer / désactiver en appuyant sur le carré noir.
• **Indicateurs de niveau d'entrée:** Il reflètent le niveau des signaux d'entrée Double MS.
• **Output Gain:** vous pouvez régler le gain de sortie pour L / R, Ls / Rs et le canal C de - ∞ dB à 0 dB. Le niveau est également représenté dans le graphique polaire. En appuyant sur M dans le carré noir, vous pouvez désactiver ou réactiver des groupes de canaux de sortie spécifiques.
• **Indicateurs de niveau de sortie:** les indicateurs de niveau de sortie indiquent le niveau des signaux décodés que le plug-in transmet au DAW.

Beamforming : Enhanced Pattern

Le Beamforming aussi appelé filtrage spatial, formation de faisceaux ou formation de voies est une technique de traitement du signal utilisée dans les réseaux d'antennes et de capteurs pour l'émission ou la réception directionnelle de signaux. Wikipédia



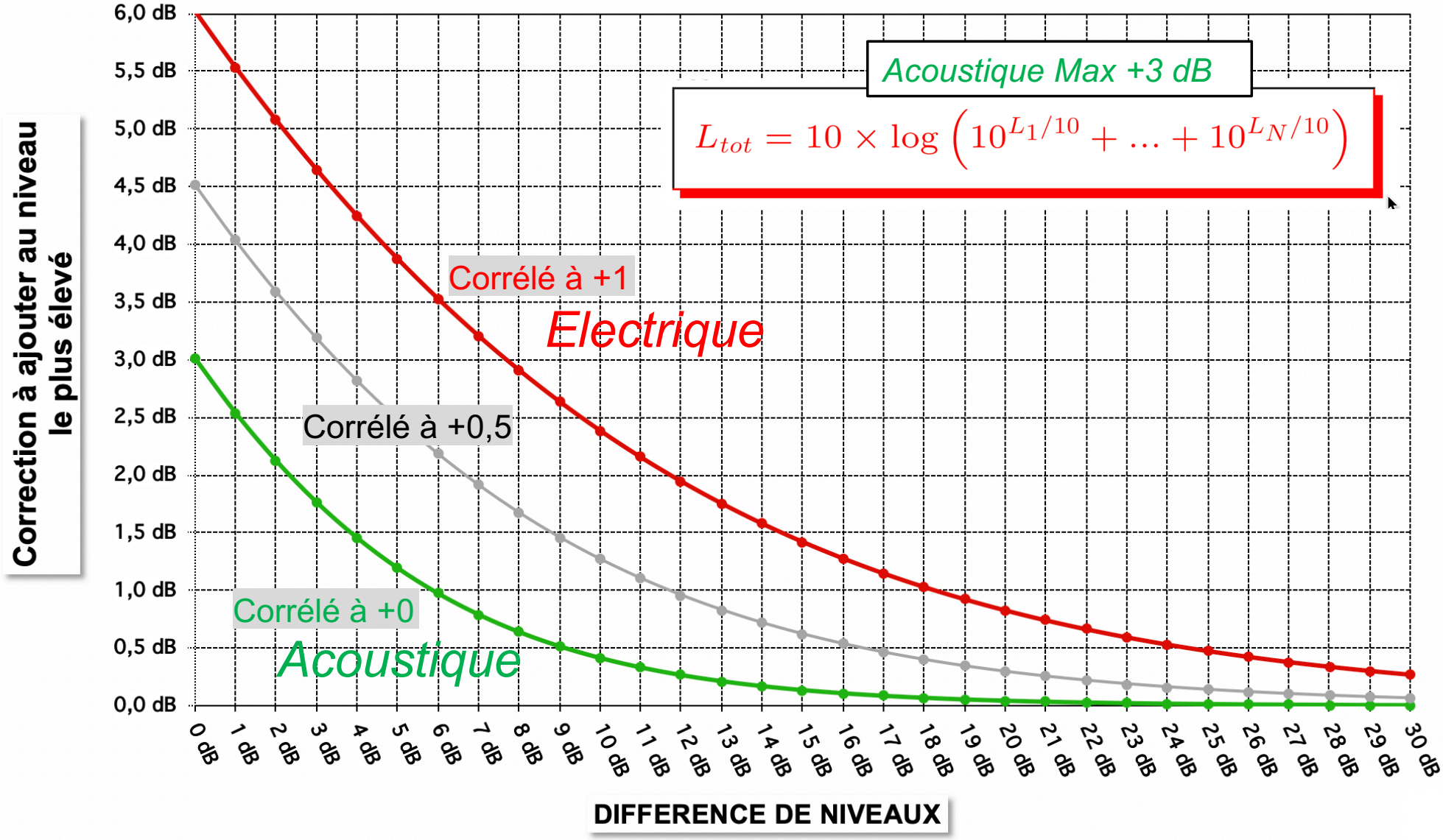
AES Dublin 2019
Paper Session P14

P14-2 Décodage au format B basé sur la formation de faisceaux adaptatifs - *Alexis Favrot* , Illusonic GmbH - Uster, Suisse; *Christof Faller* , Illusonic GmbH - Uster, Zurich, Suisse; EPFL - Lausanne, Suisse

Les signaux au format B peuvent être décodés en signaux avec une directivité de premier ordre. Pour le décodage stéréo et multicanal, il serait souhaitable d'avoir plus de séparation des canaux que ce qui est réalisable au premier ordre. DirAC (codage audio directionnel) et HARPEX (expansion des ondes planes à haute résolution) permettent une séparation des canaux plus élevée en utilisant un modèle paramétrique au format B pour estimer les ondes planes et le son diffus, et les rendre de manière adaptative. Une limitation est que les modèles à ondes planes et diffuses sont trop simples pour représenter des signaux complexes au format B. Nous proposons un décodeur au format B, où chaque canal est généré par un formateur de faisceau adaptatif indépendant au format B. Chaque faisceau est généré indépendamment des autres faisceaux, contournant la limitation lors de l'utilisation d'un modèle de signal au format B unique.

https://www.lesonbinaural.fr/EDIT/DOC/favrot_faller.PDF

Addition des niveaux



SCHOEPS CLASSICS

1989 - Le système stéréo compact

WSR / KCY / RCY / VST / VMS



Le système portable M / S a été publié en 1989 avec le préamplificateur à matrice M / S VMS 52/32 pour la connexion de deux microphones à alimentation fantôme (pas uniquement SCHOEPS). 1990 suit la version miniaturisée VMS 02 IB avec son câble stéréo KCY 250/5 l pour deux capsules Colette.

Aperçu des composants du système stéréo compact:

VMS 52 UB - préamplificateur à matrice M / S pour microphones à alimentation fantôme P48 (1989)
VMS 32 UB - préamplificateur à matrice M / S pour microphones à alimentation fantôme P12 (1989)
VMS 42 UB - préamplificateur avec matrice M / S pour microphones alimentés en T T12 (1993)

WSR 150 - panier stéréo avec suspension élastique pour deux capsules Colette (1990)
Windjammer - cache en fourrure (1990)
KCY 250/5 l- Câble stéréo actif 5 m avec prise miniature (1990)
VMS 02 IB - Préamplificateur avec matrice M / S pour KCY uniquement, avec sortie moniteur pour casque (1990)
RCY 350/700/1200 - Extension de tube pour deux capsules Colette (1992)
VST 62 IU - En alternative au VMS 02 IB, ce préamplificateur stéréo permettait la connexion directe d'un KCY / RCY à une console de mixage ou à des enregistreurs portables avec P48 (1992)

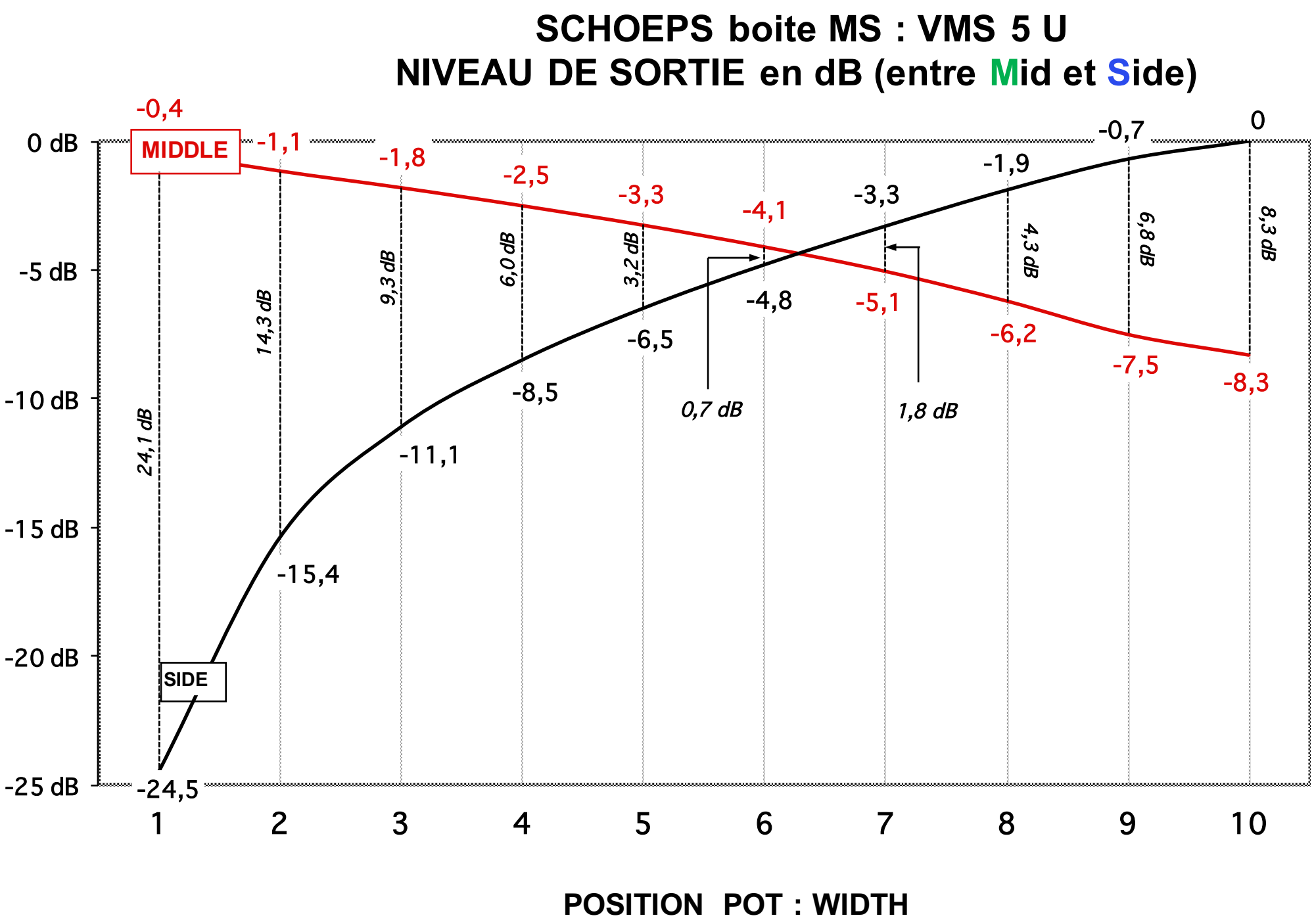
VMS 5U - la combinaison d'un VMS 52 UB et d'un VMS 02 IB avec les spécifications communes des deux (2000).

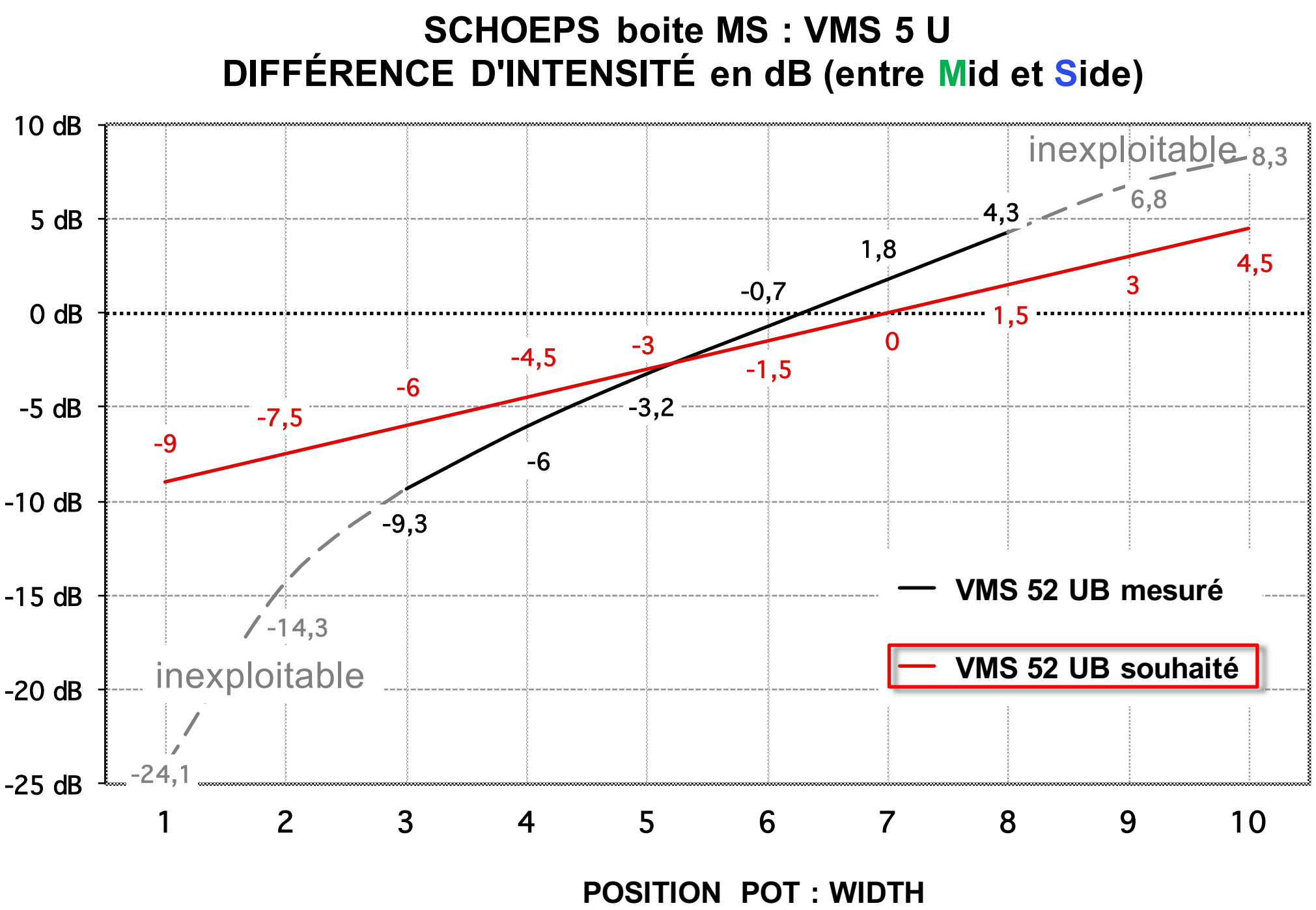
SCHOEPS Mikrofone

Schoeps VMS 5 U

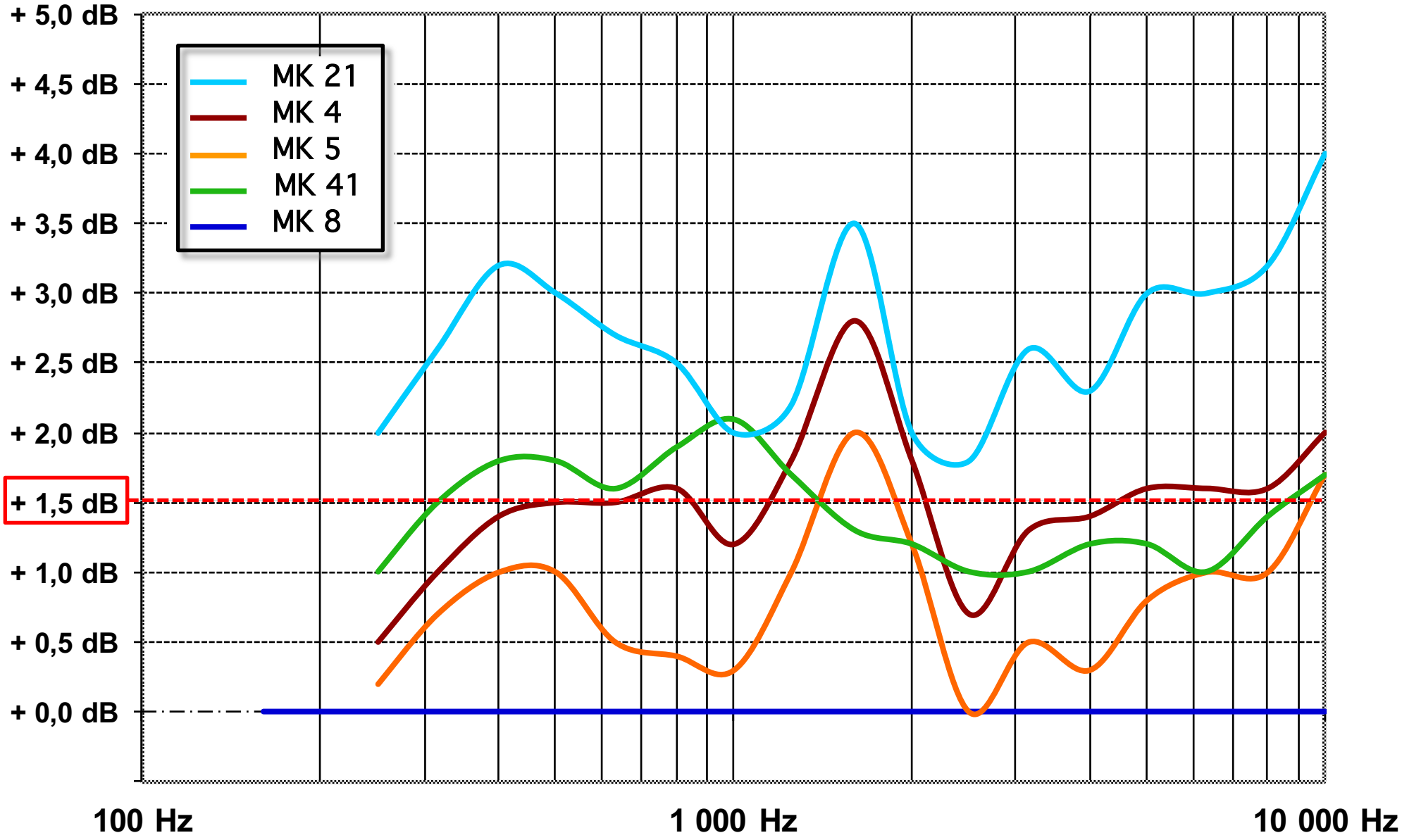


- réponse en fréquence : 20 Hz à 80 kHz (-3 dB)
- deux filtres de basses : 20 Hz permanent et 150 Hz commutable
- matrice MS déconnectable
- commutateur d'inversion G/D pour MS
- l'alimentation 48 V fantôme est déconnectable (important pour la postproduction en MS)
- entrées : XLR-3F (symétrique) et entrée spéciale pour Câble Actif KCY du Système Modulaire Colette
- sorties : XLR-3M (symétrique), raccordement sans problème à des entrées asymétriques sans perte de niveau
- fonctionnement sur 6 piles ou accumulateurs internes, ou sur accumulateur / secteur externe
- sécurité de fonctionnement en cas de coupure du secteur par commutation automatique et sans parasitage sur les piles ou accumulateurs internes
- afficheur de charge des piles et DEL d'avertissement de sous-tension
- sécurité anti-décharge : arrêt automatique de l'appareil avant la décharge complète des piles / accumulateur
- sortie casque avec réglage du niveau d'écoute
- commutateurs et douilles à contact or pour une plus grande longévité
- boîtier noir entièrement métallique (alu)


SCHOEPS boite MS : VMS 5 U
NIVEAU DE SORTIE en dB (entre Mid et Side)
0 dB
-5 dB
-10 dB
-15 dB
-20 dB
-25 dB
MIDDLE
SIDE
-0,4
-1,1
-1,8
-2,5
-3,3
-4,1
-4,8
-5,1
-6,2
-7,5
-8,3
-0,7
0
-1,9
-3,3
-6,5
-8,5
-11,1
-15,4
-24,5
24,1 dB
14,3 dB
9,3 dB
6,0 dB
3,2 dB
0,7 dB
1,8 dB
4,3 dB
6,8 dB
8,3 dB
1
2
3
4
5
6
7
8
9
10
POSITION POT : WIDTH


SCHOEPS boite MS : VMS 5 U
DIFFÉRENCE D'INTENSITÉ en dB (entre Mid et Side)
10 dB
5 dB
0 dB
-5 dB
-10 dB
-15 dB
-20 dB
-25 dB
1
2
3
4
5
6
7
8
9
10
POSITION POT : WIDTH
inexploitable
8,3
6,8
4,3
1,8
-0,7
-3,2
-6
-9,3
-14,3
-24,1
inexploitable
4,5
3
1,5
0
-1,5
-3
-4,5
-6
-7,5
-9
VMS 52 UB mesuré
VMS 52 UB souhaité

COURBES DE RÉPONSE DE DIFFÉRENTS MICROS SCHOEPS COMPARÉS AU MK 8



Mesures RADIO FRANCE

VMS 5 U
User's Manual



Microphone preamplifier with phantom powering,
M/S matrix and headphone output,

with special input for Schoeps active Y-cable

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Control layouts:

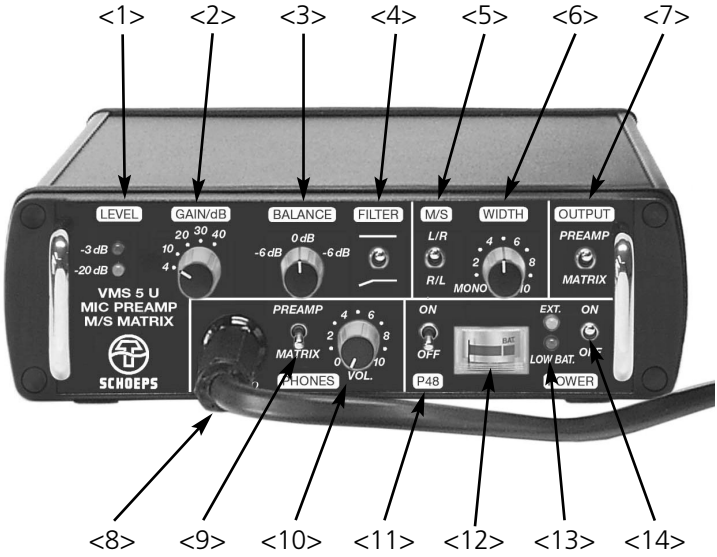
Front:

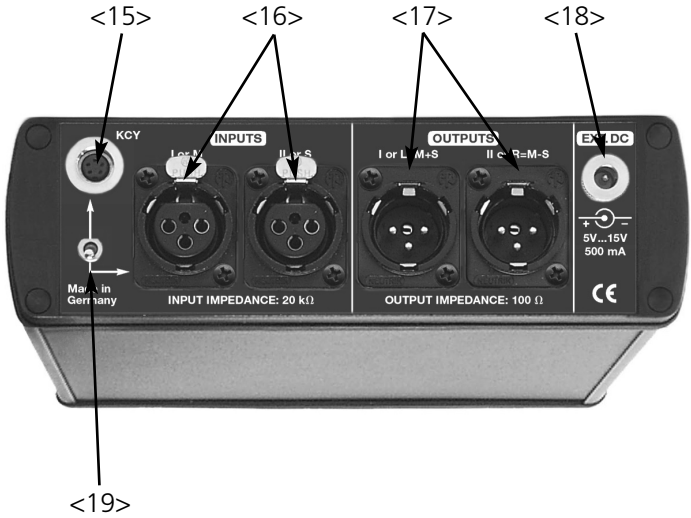
<1> Signal level indicators
<2> Preamp gain control
<3> Left/Right balance control
<4> Switch for low-cut filter
<5> Channel assignment switch (for M/S)
<6> Stereo width control (for M/S)
<7> Main output selector
<8> Headphone jack
<9> Headphone output selector
<10> Headphone level control
<11> Phantom power switch
<12> Battery level meter
<13> External power indicator (yellow); low-battery warning (red)
<14> On/Off switch

Rear, as seen from above*:

<15> Input for SCHOEPS active Y-cable
<16> Balanced XLR microphone inputs
<17> Balanced XLR line outputs
<18> Input for external power supply
<19> Input selector switch

* The connectors and labels on the rear of the VMS 5 U are "upside-down" with respect to the front of the unit. This simplifies its use, since the unit does not need to be turned around sideways to read the labels.


<1>
<2>
<3>
<4>
<5>
<6>
<7>
LEVEL
GAIN/dB
BALANCE
FILTER
M/S
WIDTH
OUTPUT
-3 dB
-20 dB
20 30 40
10
4
0 dB
-6 dB
-6 dB
L/R
R/L
4 6
2 8
MONO 10
PREAMP
MATRIX
VMS 5 U
MIC PREAMP
M/S MATRIX
SCHOEPS
PREAMP
MATRIX
0 2 4 6 8 10
VOL.
PHONES
ON
OFF
P48
BAT.
EXT.
LOW BAT.
ON
POWER
<8>
<9>
<10>
<11>
<12>
<13>
<14>


<15>
<16>
<17>
<18>
KCY
INPUTS
I or L
II or S
OUTPUTS
I or L M+S
II or R=M-S
EXT. DC
5V...15V
500 mA
Made in
Germany
INPUT IMPEDANCE: 20 kΩ
OUTPUT IMPEDANCE: 100 Ω
CE
<19>

The VMS 5 U is designed for indoor and outdoor professional recording applications. Its features include:

– 48 Volt phantom powering
– Special input for SCHOEPS active Y-cable
– Switchable M/S matrix
– Frequency range: 20 Hz - 80 kHz (-3 dB)
– Headphone output, switchable (before or after the M/S matrix)
– Can be operated from internal batteries or external power
– Automatic "glitch-free" switchover to battery powering if the AC supply is interrupted
– Rechargeable batteries are automatically protected from extreme discharge
– Durable, high-quality switches and connectors (gold-plated contacts)
– Lightweight, robust all-metal housing

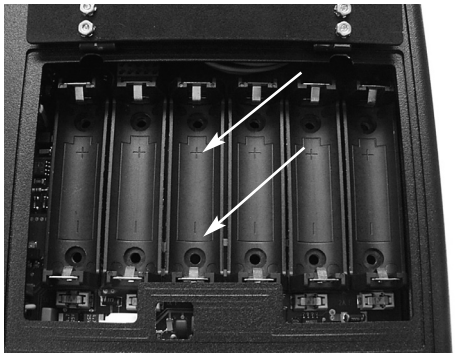
1. Inserting batteries

The VMS 5 U operates from six AA (LR 6) cells (included). Primary cells (preferably alkaline) can be used, or rechargeables such as NiCd or NiMH.

To insert batteries, turn the unit off and open the battery compartment on the underside by turning the slotted button in the lid (perhaps with the aid of a coin) one quarter turn in either direction.

Please note:

The orientation of the batteries is shown on the battery holders:



All batteries must go in the same direction!



Make sure that the battery contacts are kept clean. If necessary, clean the contacts with a pencil eraser.

After inserting batteries, close the battery compartment lid and lock it by turning the slotted button a quarter turn in either direction until it clicks into place.

When the unit is first turned on, there will be a four- to five-second delay before it is ready for use. This is necessary so that the unit can function reliably even with relatively low-powered AC supplies.

Watch the battery level with special care when using rechargeable batteries; as they lose their charge, their voltage will often drop off quite rapidly.

What happens if ...

... a battery is inserted the wrong way? The resulting voltage will be too low to operate the unit. If several batteries (cells) are put in backwards, an internal fuse may burn out and need replacing. An emergency replacement is provided within the unit. Both fuses (designated "2A F") are accessible within the battery compartment by using a pair of regular pliers; see the diagram on the lid of the battery compartment.

We recommend using alkaline batteries because they have the greatest capacity and the longest shelf life. Zinc-carbon batteries and rechargeable batteries (NiCd or NiMH) will not power the unit for as long a time (see "Specifications" at the end of this manual).

We strongly advise against mixing different types of batteries or batteries of differing "ages" together. Rechargeables should all be of the same type and capacity as one another; all batteries should be changed and/or charged together as a set. This is to avoid the risk of one or more cells (those of lower capacity) being too deeply discharged; even "sealed" alkaline cells can leak corrosive chemicals, while rechargeable batteries can undergo voltage reversal and be permanently damaged. Further, operation time would be reduced unnecessarily.

Though it may seem obvious that only new batteries in good condition should be used, we are obliged to warn against the use of weak or damaged batteries, to avoid harming the circuitry of the VMS 5 U.

What should be done if the unit does not work with a new set of batteries? Turn the unit off, then wait half a second and turn it back on.

If the "LOW BAT." LED lights briefly but then goes out, the batteries are simply too weak; the charge is enough to turn the unit on initially, but then an automatic shutoff takes effect.

Please note: If the unit is not used for a prolonged period, the batteries should be removed to prevent possible damage by leaking.

2. Battery level meter / LOW BAT

Powering with internal batteries / rechargeables

The battery level meter (<12> in the photo on page 3) shows the state of the internal batteries. At the start of a recording the needle should always be in the green zone of the meter. If it is

not, the batteries need to be changed, or recharged if they are NiCd/NiMH types. When running on internal batteries, the borderline between the red and green zones is at about 7 Volts; at this level the "LOW BAT" LED begins to flash. With high-capacity rechargeable batteries (1300 mAh) there should be approximately a 10-minute interval before the unit shuts itself off automatically.

External powering

When the unit is externally powered (and only then!) it is acceptable if the battery indicator <12> is in the red zone. It is calibrated for internal battery powering, and its reading will be offset slightly when external powering is used: the boundary between red and green will be at 7.5 Volts while the far end of the green region will be at 10 Volts. When the indicator is near the left end of the red region the unit will no longer function.

The "LOW BAT" LED <13> will begin to blink at around 7,5 Volts, but can be ignored with external powering.

3. Automatic shutoff

The unit will turn itself off if the voltage of the internal batteries falls beneath the limit of proper functioning. This avoids overly deep discharge of the batteries, which could otherwise lead to chemical leakage or, in the case of rechargeable batteries, life-shortening damage and possible cell reversal.

To turn the unit back on after an automatic shutoff, turn the power switch off and then on again, and/or replace the batteries as needed.

When the unit is powered externally, the automatic shutoff circuit is disabled so that a brief interruption in external power will not cause a prolonged shutdown in the absence of internal batteries. However, a minimum of 5.2 Volts (externally) must be supplied for the unit to continue operating.

4. External powering

The VMS 5 U can be powered by external batteries or AC power adapters through a socket on the back of the unit. The 5.5 mm/2.1 mm coaxial power plug is a commonly available part, and is found on AC power adapters of many kinds.

We generally recommend using the SCHOEPS mains adapter VMS 5 DC. If another type or external batteries are used, please note the following hints:

The voltage at the socket may be anywhere between 5.5 and 15.5 Volts DC.

Recommendation: voltage and current (approximate):

6 V, 500 mA
8 V, 400 mA
9 V, 350 mA
10 V, 300 mA
12 V, 300 mA
15 V, 250 mA

Note the polarity of the DC power connector: the positive pole of the power supply must be connected to the center contact of the external powering socket (<18> on page 3). The unit will not be harmed by reverse polarity, but will not operate; a protective diode will prevent current from flowing.

If a sufficient external DC voltage is connected to the external powering socket of the unit, the "EXT" LED (<13> on page 3) will light, even if the unit is turned off; it is strictly an indication of available powering, not of the unit's on/off status. In this mode of operation, any batteries inside the unit will neither be charged nor discharged.

If for any reason the external powering should drop below the minimum required voltage (e.g. loss or reduction of AC power), the unit will immediately switch over to battery power, assuming of course that batteries of sufficient voltage are in the unit; the yellow LED will then go out. This automatic switchover will occur without any disturbance in the audio signal.

The "LOW BAT" LED <13> will blink when the input voltage is less than or equal to about 7.5 Volts, but this can be ignored unless the battery indicator is at the low end of the red region.

The meter is calibrated with reference to internal batteries and will "under-read" slightly with external power sources.

If too high a voltage is applied to the external powering socket, the internal 0.5 A fast-blow fuse will burn out. It is accessible through the battery compartment; a spare fuse is provided within the unit. The locations of both the actual and the spare fuse are shown in the drawing on the inside of the battery compartment lid. A pair of regular pliers (not "needle-nose") can be used to facilitate changing the fuse.

By maintaining separate grounds for audio signals and for powering, the supply regulation circuitry of the VMS 5 U permits the sharing of a common power source with other equipment, without the risk of ground loops.

Notes on operation with an AC power supply

Any AC power supply that will deliver at least 7 V at 500 mA in actual use and an open-circuit voltage of no more than 16 V will be suitable. For example, the SCHOEPS AC power supply VMS 5 DC (input = 230 VAC, equipped with "Euro plug") delivers a stabilized 12 Volts DC.

Please note: Different countries use different AC voltages. Always make sure that your power supply is appropriate for the AC voltage where you are.

Notes on operation with external batteries

The batteries should have a nominal voltage of 6 to 12 Volts and a capacity of at least 500 mAh. A 6-Volt set of gelled lead-acid rechargeable batteries

with a capacity of 3.5 Ah can power the VMS 5 U for about 12 hours.

9-Volt transistor radio-type batteries have excessive internal resistance and insufficient capacity; they cannot be used.

Please note: When running on external batteries, during any longer pauses (or at the end of a recording) the unit should be switched off and the external batteries disconnected. Simply turning the unit off would not prevent draining the external batteries, since a residual current of about 40 mA is drawn from any external power source. And disconnecting the external power connector without switching the unit off would cause a switchover to any internal batteries, drawing the full operating current from them.

5. Connecting microphones

The VMS 5 U can be used with 48 Volt phantom powered microphones or with microphone capsules and the active Y-cable of the SCHOEPS "Colette" series. A switch (<19> on page 3) on the back of the unit selects one of these two types of inputs.

If the setting of this switch must be changed while the unit is in use, please lower the headphone volume level or remove your headphones temporarily.

Connecting 48-Volt phantom powered studio condenser microphones

For the highest-quality, lowest-noise recordings, use condenser microphones with a sensitivity of at least 8 mV/Pa.

Turn the unit off and connect the microphones to the inputs (<16> on page 3) on the back of the unit. The input selector switch <19> must be in its downward position (pointing to the words "Made in Germany"). The "P48" switch <11> must be in the "ON" position for phantom powered microphones. Then the unit can be powered on.

For ordinary stereo recordings (not M/S), channel I is usually the left channel while channel II is usually the right. For M/S recordings, the "mid" microphone (e.g. a forward-facing cardioid or supercardioid) should be connected to channel I, while the "side" (figure-8) microphone should connected to channel II.

Connecting SCHOEPS microphones with an active Y cable

If the recording environment is relatively free of interfering signals, it is also possible to use an unbalanced cable such as the SCHOEPS KCY 250/5I. An input for this type of cable is available on the back of the unit <15>.

To use this input, turn the unit off, attach the cable to the VMS 5 U and attach two SCHOEPS Colette-series capsules to the cable. The input selector switch <19> must be in the "KCY"

position. Now you can turn the unit on.

For ordinary stereo recordings (not M/S), the cable marked in red should carry the right channel signal; it should carry the signal from the "side" (figure-8) capsule in M/S recording.

6. Setting the preamp gain

When recording, the GAIN control <2> should be set as high as possible for the sake of a good signal-to-noise ratio. It is set correctly if the red LED of the signal level indicator <1> lights up only rarely and very briefly during the loudest passages to be recorded. Setting the gain any higher will pose a danger of overload distortion.

When using the VMS 5 U for dematrixing after recording, the GAIN control should be set to 4 or 10 dB again by observing the yellow and red LEDs.

Please note: Phantom power should be turned off when dematrixing after recording. Please remove headphones or turn the headphone volume control to its lowest setting when turning off phantom powering.

7. Balance setting

To compensate for a possible difference in the sensitivity of the microphones, the Balance knob <3> can be used to adjust the relative gain of the two channels. When microphones of equal sensitivity are used, the balance control should normally remain at its center detent setting.

In M/S recording, the Balance setting controls the ratio of mid to side signal and thus will affect the stereo image width and the maximum recording angle.

8. Signal level indicators

The two LEDs <1> serve as a rough indication of signal levels; they always indicate the higher level of the two channels. The yellow LED can and should be lit very frequently, but if the red LED is lit at all it should be seldom and only quite briefly.

9. Low-cut filter

A 20 Hz high-pass filter with a slope of 18 dB/octave is active at all times. It suppresses infrasonic interference, but is otherwise nearly inaudible in its effect.

An additional, "soft" low-cut filter (150 Hz, 6 dB/octave) can be activated by switching the "FILTER" toggle switch to the down position, in order to reduce wind and solid-borne noise even further, or to compensate for the bass boost which directional microphones exhibit when used close to sound sources ("proximity effect"). But this filter should be used only when needed since it has a distinctly audible effect.

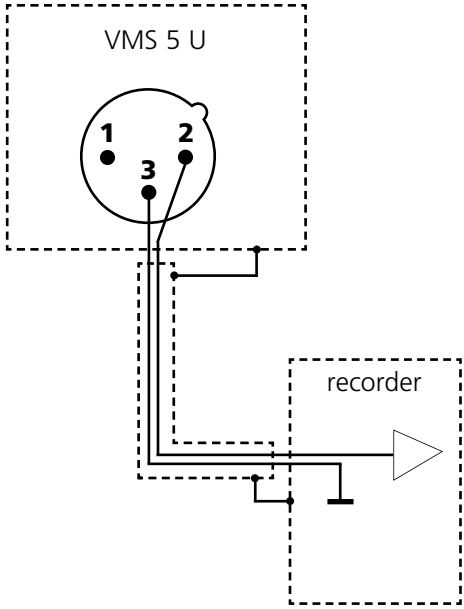
10. Connecting the outputs

For A/B, X/Y or ORTF recordings the task of the VMS 5 U is to amplify and filter the signals presented to its inputs, and to deliver the result to the outputs <17>. For this purpose the "Output" switch (<7> on page 3) must be in its "Preamp" setting.

For M/S recordings there are two possibilities. The M and S signals can be sent through the matrix and the resulting L and R signals recorded ("Output" switch in the "Matrix" position), or the M and S signals can be recorded directly, and dematrixed in subsequent playback (switch in the "Preamp" position). Dematrixed L and R signals can be monitored while the M and S signals are being recorded.

If possible, the equipment to which the main outputs of the VMS 5 U are connected should have balanced inputs for best possible rejection of hum and radio-frequency interference. Not all recorders offer balanced inputs, but with short cables (less than a few meters) this is generally not so critical. If you need to connect the output of the VMS 5 U to an unbalanced input, the best way is to connect pin 2 of the VMS 5 U's output to the "hot" contact of the input, while the shield of the cable to the recorder's inputs should be connected both to pin 1 and the housing of the XLR connector at the VMS 5 U's outputs.

With equipment whose circuit ground is not directly connected to its chassis ground, the risk of interference can be lessened by using shielded, two-conductor cable. As before, pin 2 of the VMS 5 U's output should be connected to the "hot" contact of the input, while the circuit ground will be carried by pin 3 of the output, and the cable shield will then merely connect the two component housings with one another.



Connecting the VMS 5 U to an unbalanced input

11. Connecting headphones

Any stereo headphones with an impedance of 32 to 2,000 Ohms can be connected to the headphone output of the VMS 5 U. Headphones with a miniature plug can be used with a commonly available adapter.

The headphone output is used for monitoring; a switch <9> selects either the unaltered "PREAMP" signals (e.g. for A/B, X/Y or ORTF-style recording) or the "MATRIX" outputs (left and right signals derived from an M/S recording setup).

Please note: When turning phantom power on or off, or when setting the input selector switch, please turn the headphone volume control to its minimum setting.

In the interest of hearing conservation, do not monitor at high sound levels. Prolonged listening through headphones at high levels can damage your hearing more severely than listening at what may seem like the equivalent level on loudspeakers.

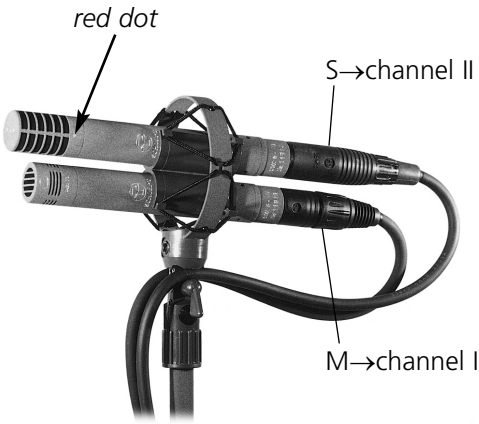
12. M/S recording / WIDTH

M/S is used primarily when recording sound for film or television, but is also useful for music recording. Its advantage is that the stereo image can be adjusted after the recording has been made, in post-production.

The principle of M/S: As with other stereo recording techniques (A/B, X/Y, ORTF, "Blumlein" etc.) two microphones are used, of which one (the "side" or "S" channel) must have a figure-8 directional pattern; the other microphone (the "mid" or "M" channel) may have any desired pattern. The two microphones are placed one directly above the other, but while the M-channel microphone is aimed at the sound source, the S-channel microphone is aimed 90° to the left (see illustration, top of page 12). Thus the two microphones do not directly pick up the left and right channel playback signals; instead, these signals are derived by means of a sum-and-difference matrix circuit such as the one in the VMS 5 U. The left channel playback signal is formed by adding M+S, while the right channel playback signal is formed by subtracting M-S. This works because the two lobes of a figure-8 microphone's pattern are in opposite polarity to one another.

The result is as if two "virtual microphones" had been aimed symmetrically with respect to the main axis of the actual M-channel microphone. The directional pattern of these "virtual microphones" depends on the actual pattern of the M-channel microphone as well as on the setting of the "WIDTH" control <6>, which determines the relative gain applied to the M and S signals fed into the matrix.

The "WIDTH" control sets the width of the stereophonic image. The useful



One possible way to set up an M/S microphone arrangement*:*
top: cardioid as M microphone
bottom: S microphone (figure-8)



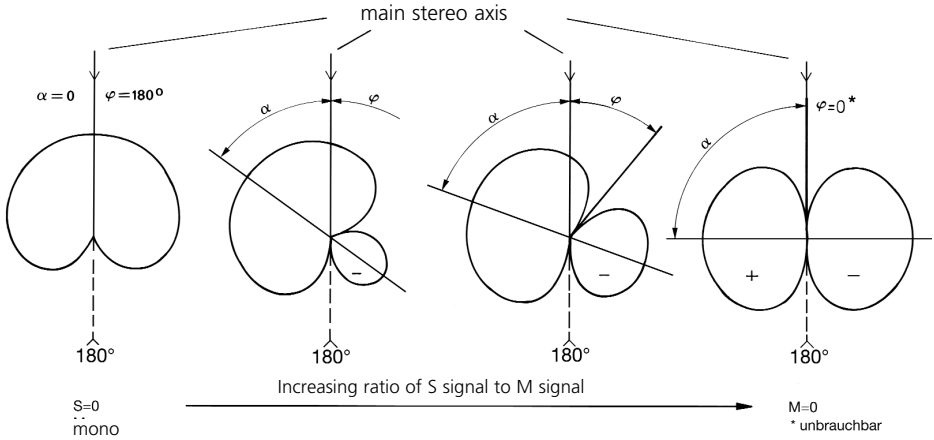
The MK 8 as viewed from the front, when the microphone is used horizontally as shown.

range of settings will depend on the type of microphone used for the M channel; the broader its directional pattern, the farther the "WIDTH" control can be turned up. This control also affects the recording angle – the widest arc, as viewed from the microphones' position, which may be picked up without creating ambiguity as to the location of sound sources. In general, the greater the directionality of the M-channel microphone, the narrower the recording angle will be (see the diagrams on the opposite page).

The farther the "WIDTH" control is turned up, the greater will be the angle between the "virtual microphones." The recording angle, on the other hand, will become narrower. Any sound sources located beyond that angle (near the edges) will be picked up out of phase, and will seem to jump over to the channel opposite from where they were in reality.

The optimal WIDTH control setting depends on the directional pattern of the microphone being used for the M channel, the relative sensitivity of the two microphones, and the recording environment. Setting "4" would be a suggested starting point.

In M/S recording, the WIDTH control and the balance setting both control the relationship of M to S, thus affecting the stereo image width and the recording angle as well. When using



"Virtual microphones" in an M/S recording, showing the left channel result (M+S) when a cardioid is used for the M-channel microphone

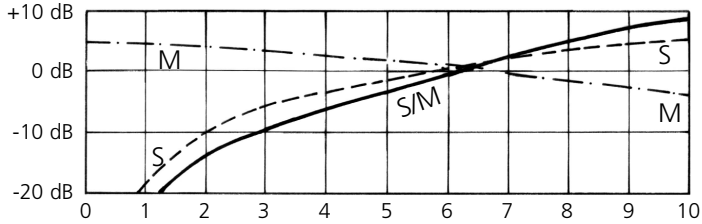
(unusable)

φ = one-half the recording angle,
α = one-half the angle between the two "virtual microphones"

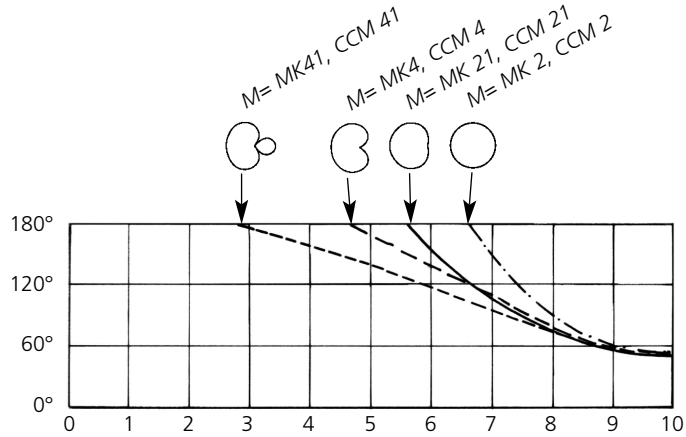
Extreme settings of the WIDTH control can lead to unexpected and possibly undesirable results. A sound source that is moving from left to right, for example, will normally be heard in a steadily decreasing degree in the left-channel output signal. But if that sound source crosses past the null in the polar diagram of the left-channel "virtual microphone" (see above), its presence in the left-channel output signal will begin to increase again. This will cause it to be located incorrectly within the stereo image. The signal will also be out of phase, which can cause further problems: in a Dolby Surround recording, for example, this sound source could be audible in the surround-channel loudspeakers.

microphones of equal sensitivity, the BALANCE knob should normally be at or near its center setting. If microphones of unequal sensitivity are used, the BALANCE control should be set so as to compensate for as much as possible of the difference; otherwise the WIDTH control may not offer a useful range of settings.

The BALANCE control is calibrated to the sensitivity of Schoeps microphones, with a cardioid as the "M" channel microphone of reference. When using a Schoeps super-cardioid for the "M" channel, the default setting of the BALANCE control would be 2 dB to the left of the normal center setting.



Effect of the WIDTH control on the gain applied to "M" and "S" signals



Effect of the WIDTH control on the recording angle, for various types of "M"-channel microphones

13. M/S dematrixing in post-production

If the M and S channels of an M/S recording are recorded directly, they can be dematrixed afterward by the VMS 5 U to produce left- and right-channel signals. The recorded signals can simply be fed into the inputs (with phantom power turned off!) and the OUTPUT switch set to the "MATRIX" position. The stereo image width can then be adjusted with the WIDTH control. Typically the GAIN knob <2> would be set to the 4 dB or 10 dB position.

This capability is especially valuable because monitoring a live recording over headphones may not allow the engineer to find an optimal setting for the stereo image width as it would be reproduced through loudspeakers.

In addition to experimenting with various width settings, it can sometimes be very useful to equalize the M and S channels separately. For example, boosting the frequencies below 100 Hz in the M channel prior to dematrixing can increase the sense of spaciousness in a recording without upsetting the accuracy of its overall stereo imaging (not recommended for LP recordings, or where there is excessive low-frequency noise or "room rumble").

14. M/S side inversion switch

Whenever a pair of microphones is suspended overhead, the sense of left and right can become reversed. In M/S recording with the "M/S side inversion switch" <5> the output channel assignments can be corrected if this should occur.

15. Technical Specifications

Inputs

Switchable between two XLR-3 sockets and a special input for the SCHOEPS KCY "active cable."

XLR inputs are balanced and transformerless; the 48 Volt phantom powering is switchable (for subsequent M/S dematrixing).

Input impedance: 20 kOhm

Recommended min imum sensitivity of microphones at XLR inputs: 8 mV/Pa

Maximum input level for <0.5% THD:
at 4 dB gain setting: 14 dBV ($5V_{rms}$)
at 20 dB gain setting: -2.2 dBV (780 mV_{rms})

Preamplifier gain settings: 4, 10, 20, 30 or 40 dB

Overall performance specifications of VMS 5 U with SCHOEPS CMC 64 (cardioid):

Equivalent noise level: 25,5 dB (CCIR, qps);
15 dB (A-weighted)

Maximum sound pressure level:
(at 4 or 10 dB gain): limited by CMC microphone amplifier to 132 dB
(at 20 dB gain): 130 dB
(at 30 dB gain): 120 dB
(at 40 dB gain): 109 dB

Level indicators: -20 dB, -3 dB

The "Balance" potentiometer permits compensation for differences in microphone sensitivity.

A polarity inversion switch permits rapid change of channel assignments in M/S recording.

Outputs

The outputs are impedance-balanced, transformerless and are switchable between the amplified microphone signals and the decoded M/S stereo signals.

Output impedance: 100 Ohm

Maximum output level for <0.5% THD:
18 dBV (8 V_{rms})

Recommended load impedance: 2 kOhm or greater

Headphone output

Switchable; either the amplified microphone signals (=left/right for A/B recordings, or mid/side for M/S) or the decoded M/S stereo signals can be monitored.

Headphone impedance: 32 - 2,000 Ohms

Headphone socket: ¼" stereo phone jack

Filters

An infrasonic filter (20 Hz, 18 dB/oct.) is permanently active. In addition, a low-cut filter (150 Hz, 6 dB/oct.) can be switched on.

The upper frequency limit is 80 kHz.

Powering

An internal filter/regulator circuit which generates and stabilizes the supply voltages permits a wide range of input voltages (5.5 V to 15.5 V).

Operation with internal batteries (possibly rechargeable)

Number and type of cells: 6 x AA (also called LR6)

Recommended primary cell type: Alkaline

Recommended rechargeable cell type: NiMH

A user-replaceable fuse protects against reversing the polarity of the batteries.

Battery life with alkaline cells: ca. 8.5 hours

Battery life with rechargeable batteries:
ca. 3 hours (700 mAh NiCd)
ca. 5 hours (1100 mAh NiMH)
ca. 5,5 hours (1300 mAh NiMH)

ca. 7 hours (1600 mAh NiMH)
ca. 12 hours (3400 mAh gelled lead acid battery (external))

A voltage indicator displays the battery voltage within the unit.

A warning LED will begin to blink if the voltage falls beneath a critical value (time remaining at that point with most higher-capacity rechargeable batteries: at least 10 minutes).

The unit will shut itself off automatically to help prevent damage from draining the batteries completely.

External powering

An appropriate AC power adapter is available (model VMS 5 DC). Other adapters offering a regulated output voltage of 6 Volts DC (at 500 mA) to 15 Volts DC (at 250 mA) can also be used. Under no circumstances should an open-circuit voltage of 16 V be exceeded; otherwise a fuse inside the VMS 5 U will blow. (See page 7.)

Coaxial socket, 5.5/2.1 mm diameter

Reverse polarity will not damage the unit, though it will not operate.

If external powering is present, any internal batteries are automatically disconnected (indicated by yellow LED "EXT."). This protects the batteries from being discharged unintentionally.

The battery voltage indicator displays the level of any external powering.

External powering with outboard rechargeable battery: nominal 6 – 12 V; we recommend gelled lead-acid batteries (6 V, 3400 mAh type = 12 hours of operation).

Parallel operation of a VMS 5 U along with one or more other pieces of equipment from a single power supply is generally possible, because of the internal voltage regulation.

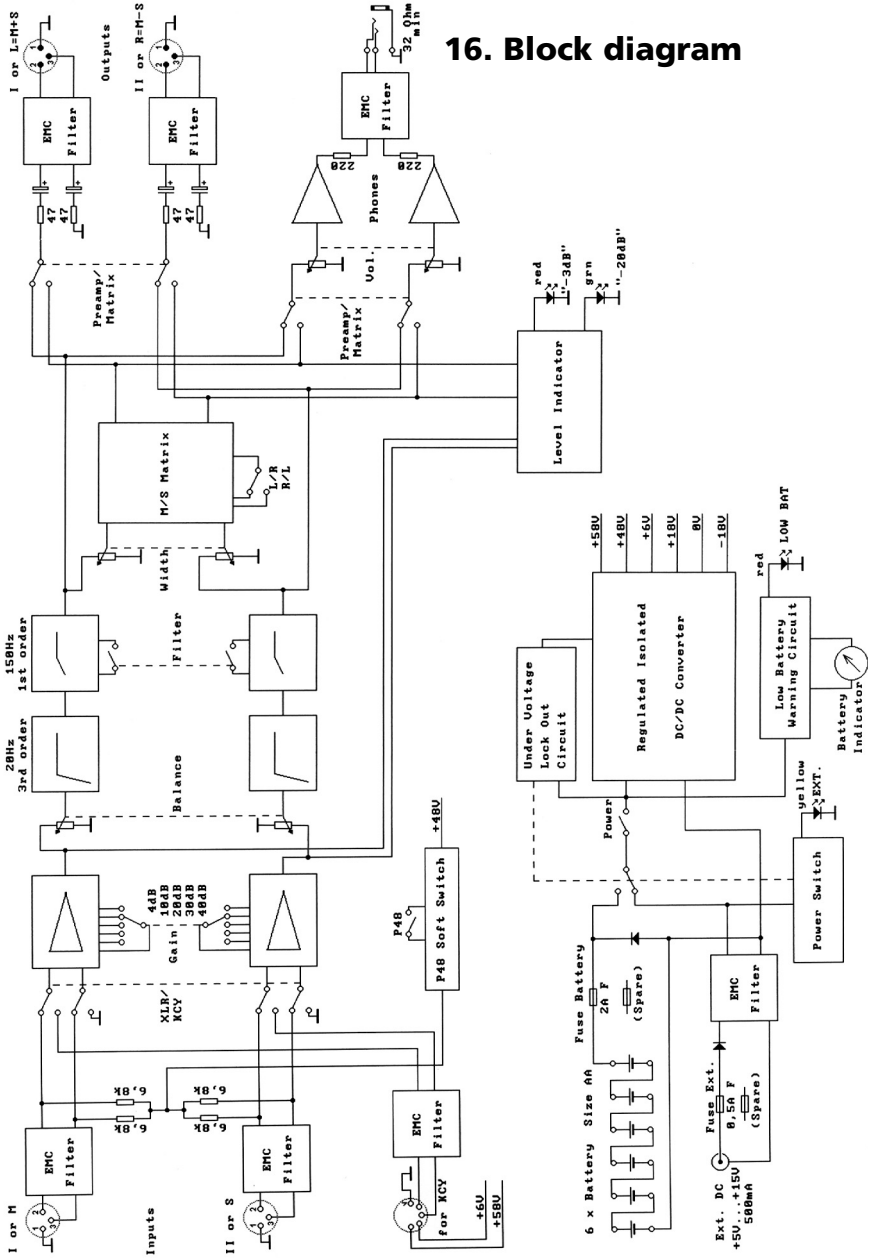
Robust, black aluminum case.

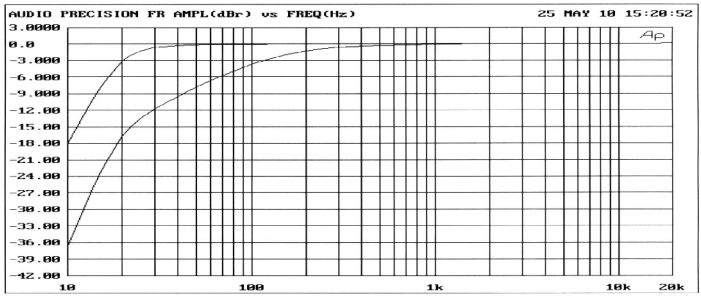
Overall measurements: (W × H × D):
162 mm × 60 mm × 172 mm
(approximately 6-2/3" × 2-1/3" × 6-3/4")

Weight (with batteries): 1.1 kg (approximately 2 lb. 7 oz.)

These specifications are subject to revision and correction without notice.

16. Block diagram





Frequency response curves: above: without low-cut filter; below: with low-cut filter

17. Important information

The VMS 5 U was designed for professional applications in indoor and outdoor recording, but should be used only in a dry place (e.g. not in the rain, since that could cause a hazardous condition for the user as a result of AC powering). Apart from that potential hazard there is also the risk of water damage to the unit itself.

Do not operate the unit in strong, direct sunlight because of the risk of overheating internal batteries. The allowable temperature range is -20° C to + 50° C.

The headphone volume levels which can be achieved with this unit can, with prolonged use, cause lasting damage to one's hearing. Please monitor only at the minimum necessary levels.

Cables: Use only shielded cable with at least 90% shield coverage. All SCHOEPS cables fullfill this requirement.

Declaration of conformity

For the VMS 5 U we herewith declare that it complies with the directive 89/336/EWG on EMC (electromagnetic compatibility) of the EC council.

This product is not subject to further directives.

For the judgement of this product in respect of EMC the following standards are applicable:
EN 55103–1, EN 55103–2

The manufacturer accepts full responsibility for this declaration.

18. Warranty

We guarantee our products for a period of twenty-four months, except for cables, batteries and cells (including rechargeable batteries and cells) and any other products of other manufacturers for which SCHOEPS is only the reseller; for these products the period of guarantee is six months. The guarantee period begins on the date of purchase. Please provide your bill of sale in all cases as proof of guarantee; without it, repairs will be undertaken only at the owner's expense.

We reserve the right to satisfy all warranty requirements regarding defects of workmanship or materials by means of repair or partial or complete replacement of the unit, at our sole discretion.

Excluded from this guarantee are defects due to misuse (e.g. incorrect operation; mechanical damage), abuse or "acts of God." This guarantee is nullified in the event of tampering by unauthorized persons or agencies.

To secure your rights under this guarantee, send the unit with all included accessories and proof of purchase, at your expense, either to SCHOEPS (if you are a customer in Germany), or to our representative (if you are a customer outside of Germany).

In exceptional cases you can, by prior arrangement with SCHOEPS, send a unit directly to us from a foreign country. But since any return shipment to a foreign customer must be prepaid, this would be slower especially when the conditions for service under guarantee are not met; all payment must then be carried out before the repaired item could be returned to the customer.

This guarantee does not affect any contractual agreements which may exist between the buyer and seller of the equipment.

This guarantee is world-wide.



CE

Subject to change without notice
010102

SCHOEPS Mikrofone

Double M/S: *WSR DMS LU, Splitterbox, Matrix box*







Doppel-MS-System

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Aufnehmen mit "DMS-Splitter"	4
Schaltplan DMS-Splitter	7
Doppel-MS mit "MDMS U"	8
Aufnehmen ohne Box	10
Nachbearbeitung	12
Surround Plug-in	13

Bedienungsanleitung

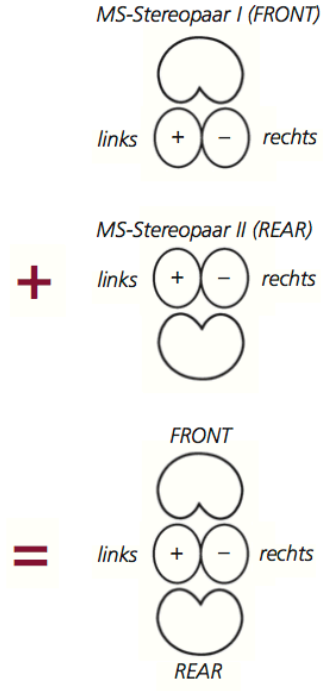
Double M/S System

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Double M/S – operating principle	2
Double M/S with "DMS-Splitter"	3
Recording with "DMS-Splitter"	4
Circuit Diagram of DMS-Splitter	7
Double M/S with "MDMS U"	8
Recording without any box	10
Post Production Dematrixing	12
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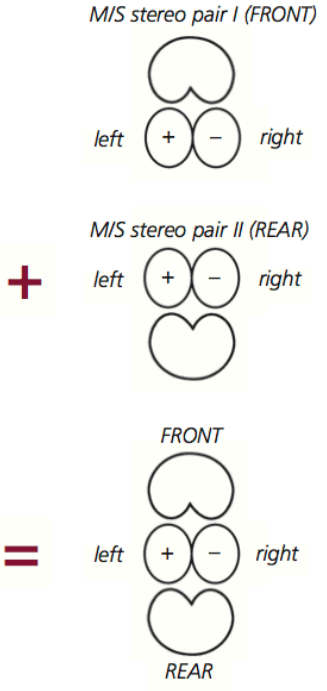
User Guide

"Doppel-MS" erhält man durch die Erweiterung der bekannten MS-Stereotechnik um ein zusätzliches Mikrofon (siehe Abb. unten). Zu einer MS-Stereoanordnung für vorne, bestehend aus einer Niere oder Superniere für das Mittensignal und einer Acht für das Seitensignal, kommt eine weitere (Super)-Niere, die zusammen mit der vorhandenen Acht ein zweites Stereosystem darstellt. Den Center-Kanal erhält man direkt durch das Mitten-Mikrofon des nach vorne gerichteten Systems. Ein solches Doppel-MS-System gestattet für beide MS-Mikrofonpaare die bekannten Einstell- und Nachbearbeitungsmöglichkeiten der Zweikanal-MS-Technik.



Doppel-MS von oben gesehen (zur besseren Übersichtlichkeit nicht übereinander (koinzident) gezeichnet).

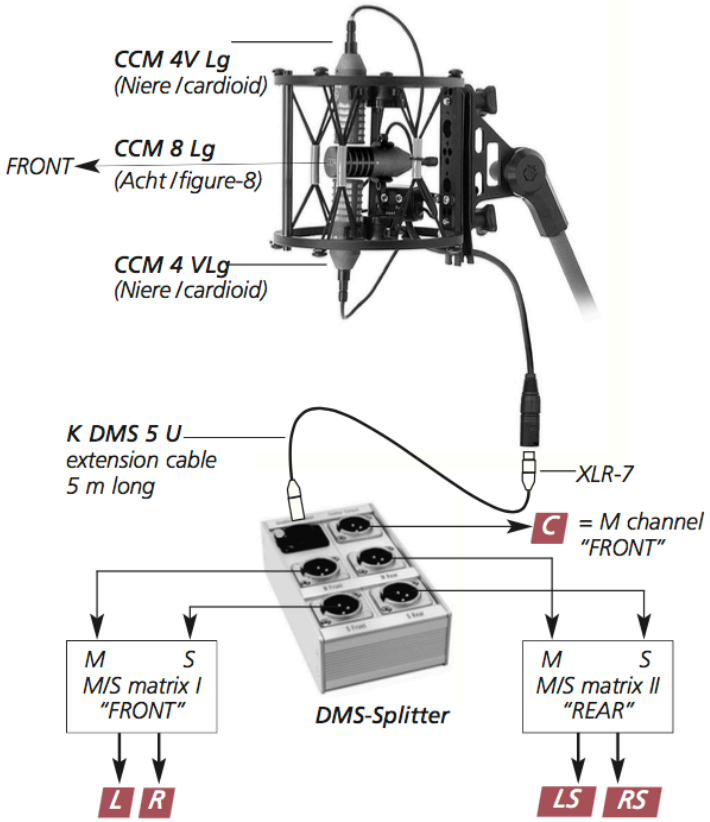
"Double M/S" is an improved version of the well-known M/S stereo recording technique. In addition to a front-facing cardioid or supercardioid "mid" microphone and a figure-8 "side" microphone, a rear-facing directional microphone is set up (see illustration at right). The front- and rear-facing microphones share the signal of the figure-8 microphone so as to form two complete, back-to-back M/S systems. One M/S system then provides the three front channels (the center channel signal being provided directly by the mid microphone of the front system), while the other system provides the two surround channels. An arrangement of this kind allows flexible processing of the stereo surround image width and post-production adjustment for both of the M/S pairs.

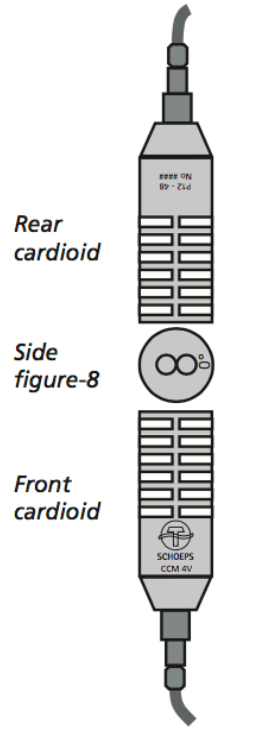


Double M/S viewed from top; for reasons of clarity, not drawn one above the other (coincident).

Die elektrisch passive DMS-Splitterbox vereinfacht das Anschließen der Doppel-MS-Einheit an die Eingänge von Vorverstärkern mit Phantomspeisung und Matrix (z.B. 2× VMS 5 U) oder eines Mischpults. Sie teilt die Signale der drei Mikrofone auf fünf Ausgänge (den Center-Kanal und zwei MS-Paare) auf. Eine Entkopplung verhindert, dass die nach vorne weisende Niere und die Acht (das sind die beiden Mikrofone, deren Signal jeweils zweifach benötigt wird) doppelt gespeist werden. Das würde sie zwar nicht zerstören, aber sie würden nicht mehr arbeiten.

The DMS splitter box is a passive device that simplifies connecting a double M/S microphone array to the phantom-powered inputs of preamplifiers or mixers that contain matrixing circuitry (e.g. 2 × SCHOEPS VMS 5 U). It divides the three signals into five (the center channel plus the front- and rear-facing M/S pairs), and prevents the two microphones which serve dual functions from being powered twice. An overlap would not destroy the microphones, but they simply would not work.





Doppel-MS-Mikrofon-Anordnung, von vorne gesehen.

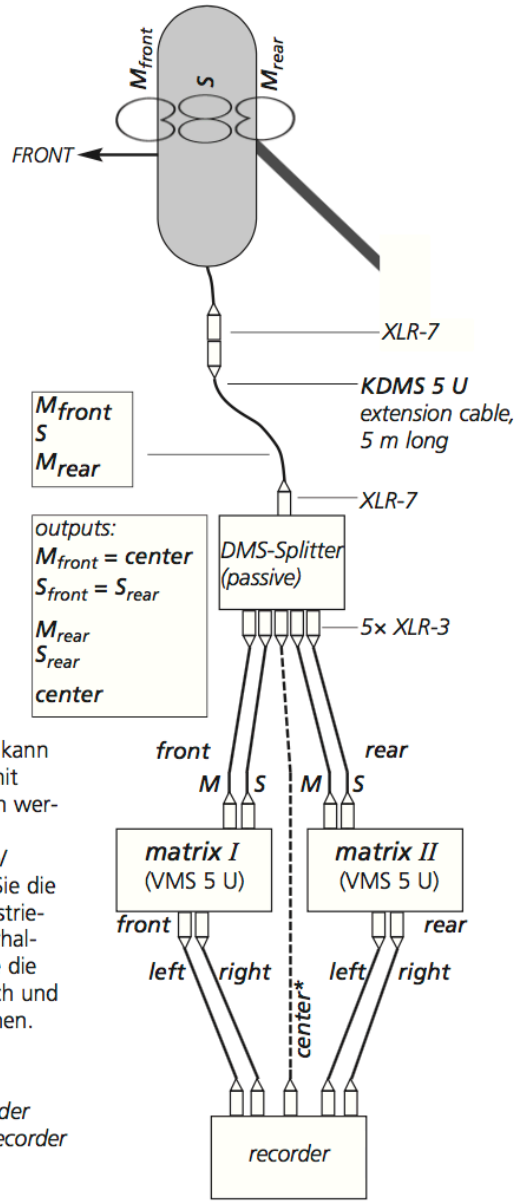
Double M/S microphone setup as seen from the front.

Beachten Sie: *Damit alle Ausgangssignale vorhanden sind, muss wenigsten an M_{front}, S_{front} und M_{rear} die Phantomspeisung anliegen.*

Note: *Only when phantom power is connected to the outputs M_{front}, S_{front} and M_{rear}, all output signals will be present.*

Matrizierung während der Aufnahme mit zwei Matrizen (direkte Aufnahme der Surround-Kanäle)

Dematrixing on location with two matrices (Recording the surround channels directly)



Statt mit zwei Matrizen kann die Matrizierung auch mit einem PC vorgenommen werden.

Unter ww.schoeps.de/dmsplugin.html haben Sie die Möglichkeit sich zu registrieren, um ein PlugIn zu erhalten, mit dessen Hilfe Sie die drei Kapselsignale einfach und intuitiv dekodieren können.

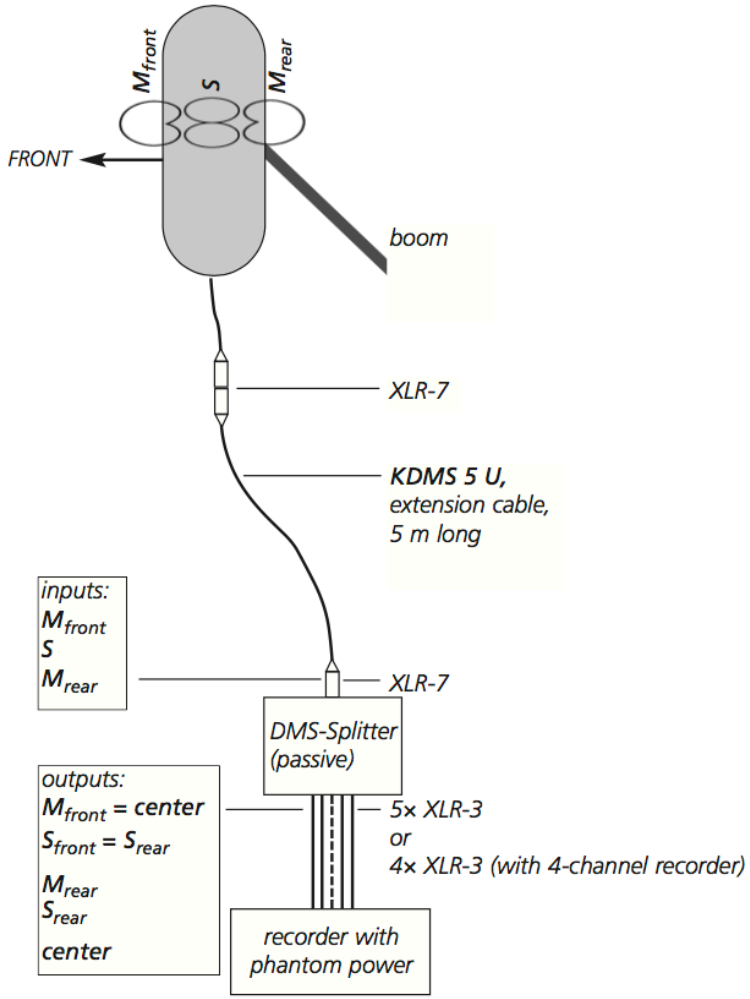
* *nur bei 5-Kanal-Recorder*
* *only with 5-channel recorder*

Instead of two matrices also a PC can be used for dematrixing.

A "Double M/S" VST plug-in for Windows can be obtained by filling in a registration form at www.schoeps.de/dmsplugin.html. This plug-in supports simple, intuitive decoding of the three microphone signals.
For further information see page 13ff.

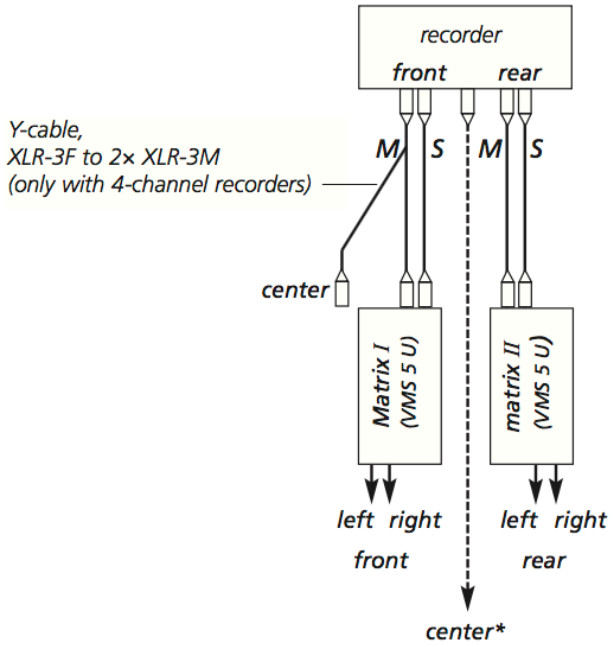
Aufnahme der unmatrizierten Signale für die spätere Bearbeitung

Recording the signals without dematrixing for post-production



Matrizierung nach der Aufnahme mit zwei Matrizen

Post production dematrixing with two matrices

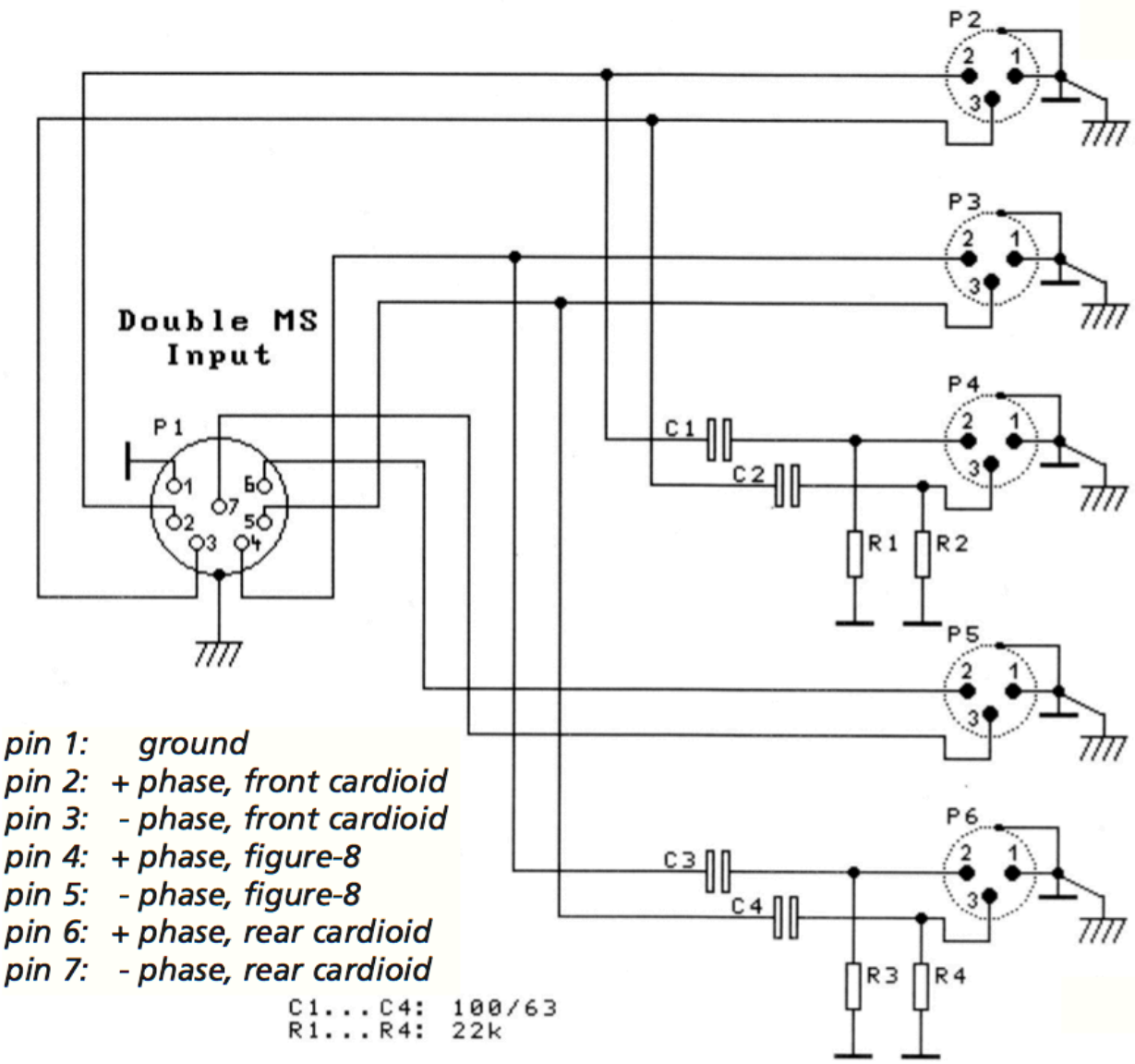


Die Matrizierung kann auch mit Hilfe eines PC vorgenommen werden. Unter ww.schoeps.de/dmsplugin.html haben Sie die Möglichkeit sich zu registrieren, um ein PlugIn zu erhalten, mit dessen Hilfe Sie die drei Kapselsignale einfach und intuitiv dekodieren können. Siehe hierzu auch Seite 13ff.

** nur bei 5-Kanal-Recorder*
** only with 5-channel recorder*

The dematrixing process can also be carried with a PC.

A "Double M/S" VST plug-in for Windows can be obtained by filling in a registration form at www.schoeps.de/dmsplugin.html. This plug-in supports simple, intuitive decoding of the three microphone signals. For further information see page 13ff



pin 1: ground
pin 2: + phase, front cardioid
pin 3: - phase, front cardioid
pin 4: + phase, figure-8
pin 5: - phase, figure-8
pin 6: + phase, rear cardioid
pin 7: - phase, rear cardioid

C1...C4: 100/63
R1...R4: 22k

M front
to the "M" input of the "front" matrix

S front
to the "S" input of the "front" matrix

Center Output

M rear
to the "M" input of the "rear" matrix

S rear
to the "S" input of the "rear" matrix

SCHOEPS Mikrofone

Die Verwendung der SCHOEPS-Matrix M DMS U ist der in jeder Hinsicht einfachste und eleganteste Weg zu den Surroundsignalen. Diese kleine stabile Box enthält qualitativ hochwertige Übertrager, die eine passive Dekoder-Matrix bilden. Die Mikrofonsignale werden direkt in die 5.0 Surround-Signale L / R / C / LS / RS umgeformt. Ein Schalter erlaubt eine zweite Betriebsart mit nur vier Ausgangskanälen – ohne Center.

Die Matrix-Parameter sind so gewählt, dass die resultierenden 5 (bzw. 4) virtuellen Mikrofone optimal angeordnet sind (siehe Abbildung links unten) und unerwünschte Artefakte vermieden werden. Beide Einstellungen bieten folgende Eigenschaften:

– minimale Überlappung (Übersprechen)
– optimale Balance der virtuellen Mikrofone (Supernieren) in allen Richtungen
– ausgewogene 360°-Lokalisation
– optimale 360°-Konstanz des Gesamtpegels
– minimale Aufnahme über die rückwärtige Keule (< -11dB)

Die Einstellungen wurden nach intensiven Praxistests bei Atmo-Aufnahmen, TV-Shows, Theater- und Musikaufnahmen vorgenommen. Generell bieten die unverändert belassenen Ausgangssignale der M DMS-Matrix die bestmöglichen Resultate.

Bei unseren Untersuchungen wurden weitere Möglichkeiten erprobt, die Arbeitsweise des Doppel-MS-Sets in Konzerthallen und anderen typischen Vorne- / Hinten-Anordnungen zu optimieren. Zum Beispiel kann eine zusätzliche Verzögerung der Surroundkanäle die Wahrnehmung der Räumlichkeit verbessern und fehlerhafte Lokalisation durch eine breitere Hörzone vermeiden. Des weiteren können die DMS-Signale durch weit voneinander aufgestellte Raum-Mikrofone ergänzt werden um das räumliche Bild zu verbessern.

Die Phantomspeisung wird nur an drei der vier bzw. fünf Ausgänge benötigt.

Hinweis: Die Koeffizienten des M DMS U wurden für eine nach vorne weisende SCHOEPS-Niere gewählt. Wird diese – wie bei den ande-

The SCHOEPS M DMS U matrix is, in all respects, the simplest and most elegant way to obtain surround signals. This small, sturdy box contains high-quality transformers forming a passive decoder matrix. Microphone signals are converted directly into 5.0 L / R / C / LS / RS surround signals. A second, switchable mode supplies four signals with no center-channel output.

The matrix parameters have been chosen so that the resulting signals correspond to an optimal arrangement (as shown at left) while avoiding unwanted artifacts. Both settings have the following characteristics:

– minimal overlap (crosstalk)
– optimal pickup balance in all directions
– well-balanced 360° localization capability
– optimal constancy of total levels across 360°
– minimal pickup via the rear lobe (< -11 dB)

The matrix settings were determined through extensive practical testing, including ambient recordings, television shows, and theatrical and musical performances. In general the best possible results will be those obtained by using the output signals of the M DMS matrix directly.

Our investigations also considered other ways to optimize the functioning of the double M/S sets in concert halls and other typical settings in which surround recordings must maintain a fundamental front-back distinction. For example, delaying the surround-channel signals can improve the perception of spaciousness and avoid localization errors throughout a wider listening area. As a further measure to improve the spatial impression, the double M/S array can be augmented with more distantly-placed room microphones.

Phantom powering is required on only three of the inputs to which the M DMS is connected.

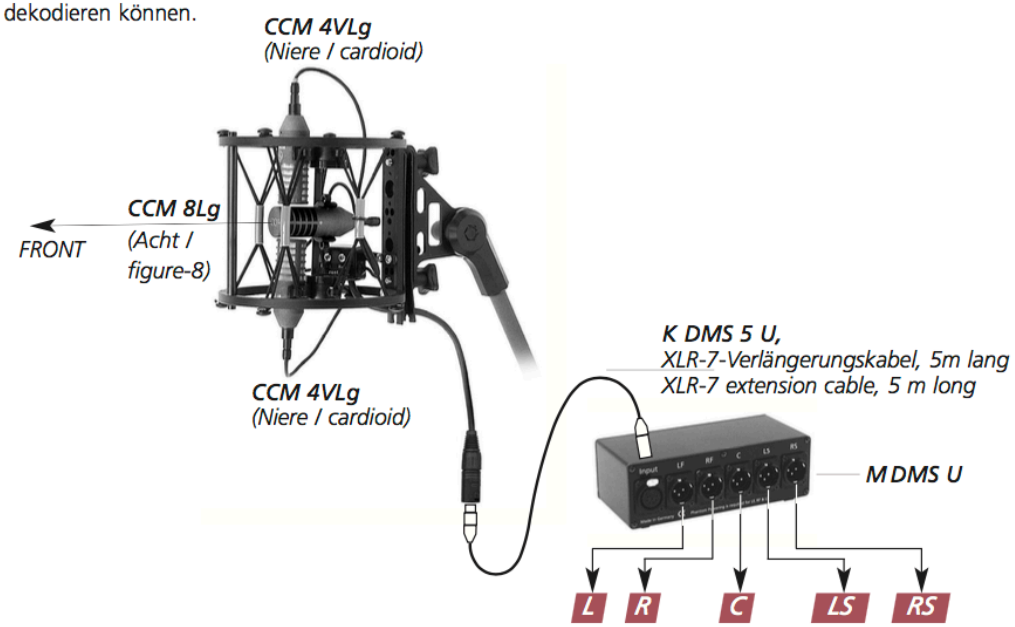
Note: The coefficients of the M DMS U have been set for use with a front-facing SCHOEPS cardioid microphone. Unfortunately, the supercardioid or shotgun alternatives of the other Double M/S sets would not produce suitable

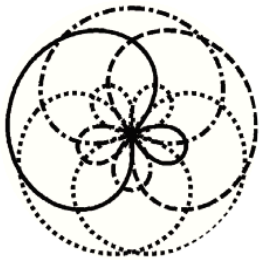
ren Sets – durch eine Superniere oder das Rohr-Richtmikrofon ersetzt, führt dies nicht zu zufrieden stellenden Ergebnissen.

Unter ww.schoeps.de/dmsplugin.html haben Sie die Möglichkeit sich zu registrieren, um ein PlugIn zu erhalten, mit dessen Hilfe Sie die drei Kapselsignale einfach und intuitiv dekodieren können.

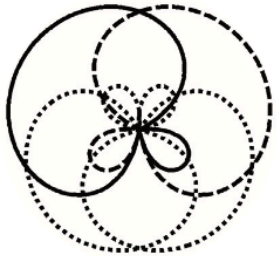
results with this arrangement.

A "Double M/S" VST plug-in for Windows can be obtained by filling in a registration form at www.schoeps.de/dmsplugin.html. This plug-in supports simple, intuitive decoding of the three microphone signals.





"Surround"



"Ambience & Stereo"

M DMS U: virtuelle Mikrofone, die sich nach der Matrizierung aus den Signalen der angeschlossenen Mikrofone ergeben in den Betriebsarten "Surround" (5 Kanäle, Abb. links) und "Ambience & Stereo" (4 bzw. 2 Kanäle, Abb. rechts)

The directional patterns which are effectively created by matrixing the output signals from the M DMS in "Surround" mode (above left) and in "Ambience and Stereo" mode (above right)

Liste de prix HT Novembre 2018

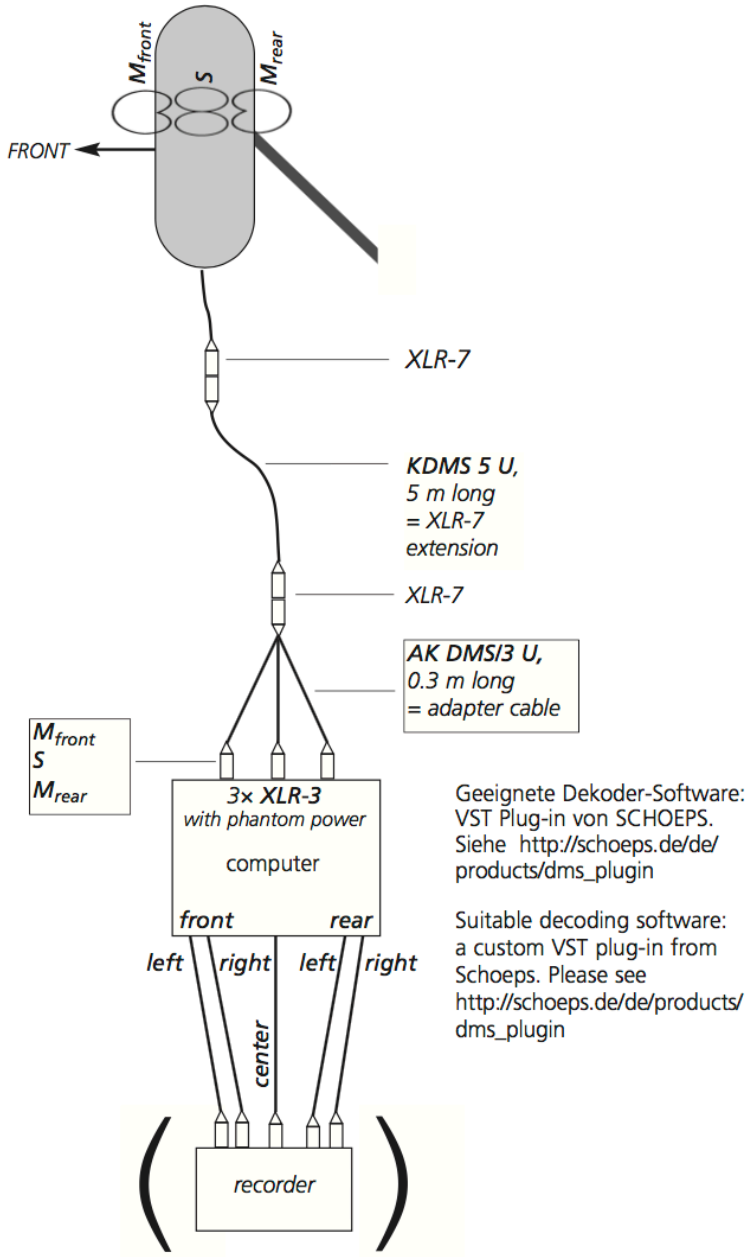
AK DMS/3U 135€

K DMS 5U 118€

M DMS U Matrice 390€

Matrizierung vor Ort mit Plug-In

Dematrixing on Location with Plug-In

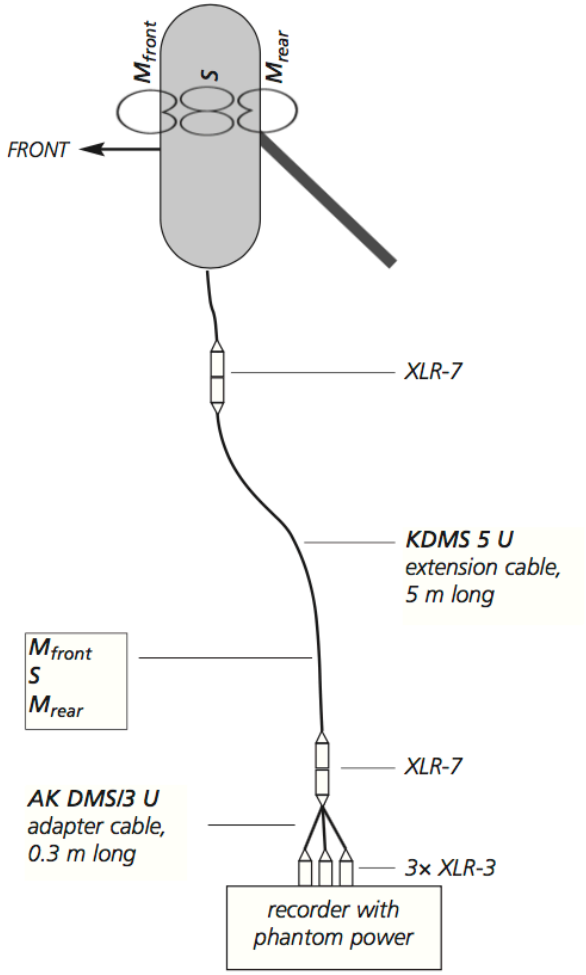


Geeignete Dekoder-Software: VST Plug-in von SCHOEPS. Siehe http://schoeps.de/de/products/dms_plugin

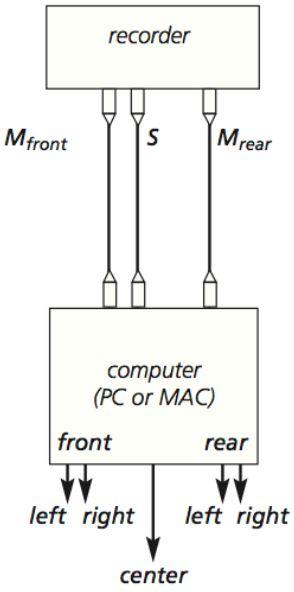
Suitable decoding software: a custom VST plug-in from Schoeps. Please see http://schoeps.de/de/products/dms_plugin

Aufnehmen für spätere Nachbearbeitung

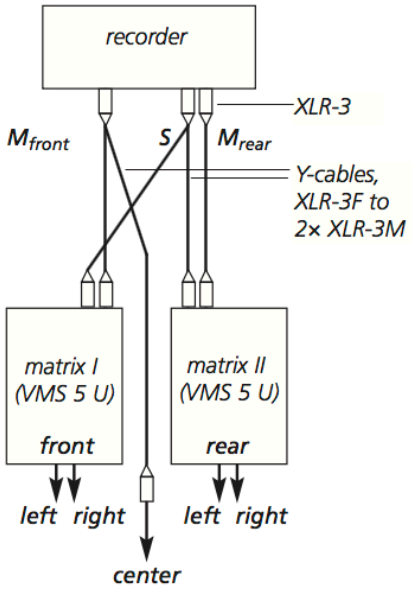
Recording for post-production dematrixing



... mit Plug-In / ... with plug-in



... mit zwei Matrizen / ... with two matrices



Um das Dekodieren intuitiv und flexibel zu gestalten, ist das auf den nächsten Seiten beschriebene, kostenlose VST Plug-in für Sequencer Software zum Herunterladen auf der SCHOEPS Web site verfügbar. Schauen Sie unter http://schoeps.de/de/products/dms_plugin

To make this decoding process flexible and intuitive, a custom VST plug-in for sequencer software is available for download on the SCHOEPS Web site. It is described on the following pages. Please see http://schoeps.de/de/products/dms_plugin

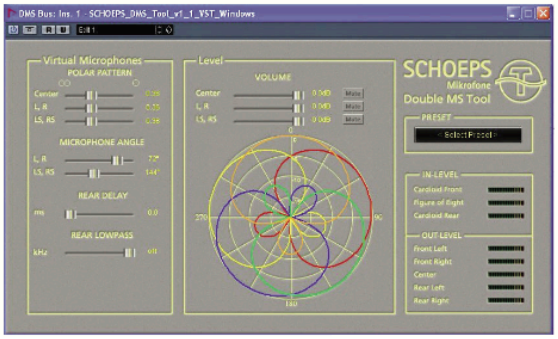
Surround Plug-in für RTAS Mac, VST Windows/Mac

- dekodiert die drei Doppel-MS Signale zu einem 5.0 Surround Signal
- kostenfrei erhältlich
- benötigt einen mehrkanalfähigen Software-Host

Surround Plug-in for RTAS Mac, VST Windows/Mac

- decodes the three Double M/S signals to a 5.0 mix
- available for free
- requires a multi-channel software host

Das „Double M/S Tool" von SCHOEPS erlaubt das maßgeschneiderte, intuitive Matrizieren der drei Signale des Doppel-MS-Systems.



The SCHOEPS "Double M/S Tool" plug-in enables customized, intuitive decoding of the three signals of the Double M/S system.

Systemvoraussetzungen und Installation

VST Windows / Mac: Das VST- Plug-In wird in einem Sequencer-Programm verwendet, das über ein Steinberg-VST-Interface verfügt. Die Host Software muss über ein Mehrkanal-VST-Interface verfügen, wie z.B. Sequoia, Samplitude (beide ab Version 9.0), Cubase, Nuendo, Wavelab, Audio Mulch.

VST ist ein registrierter Handelsname von Steinberg Media Technologies GmbH.

RTAS Mac: verwenden Sie den TRAS Installer. Die Installations-Prozeduren führen Sie und fragen Sie nach den relevanten Pfaden. Dieses Mehrkanal-Plug-In kann nur auf Digidesign Pro Tools HD-Systemen einwandfrei laufen.

Credits

Das Plug-In wurde von Schoeps konzipiert und entwickelt. Das VST Windows-Plug-In wurde von mit Hilfe des Instituts für Hörtechnik und Audiologie (IHA) der Fachhochschule Oldenburg / Ostfriesland / Wilhelmshaven, erstellt. Das VST- und RTAS-Mac-Plug-In wurde erstellt mit Hilfe des Instituts für Musikwissenschaft / Musikinformatik der Hochschule für Musik (HfM) in Karlsruhe.

System requirements and installation

VST Windows/Mac: The VST plug-in is used in a sequencer program offering a Steinberg VST interface. The host software has to offer a multichannel VST interface such as Sequoia, Samplitude (both from v9.0), Cubase, Nuendo, Wavelab, Audio Mulch. VST is a registered trademark of Steinberg Media Technologies GmbH RTAS Mac: Use the RTAS installer. The installation procedures will guide you and ask for the relevant paths. This multichannel plug-in can run properly only Digidesign Pro Tools HD systems.

Credits

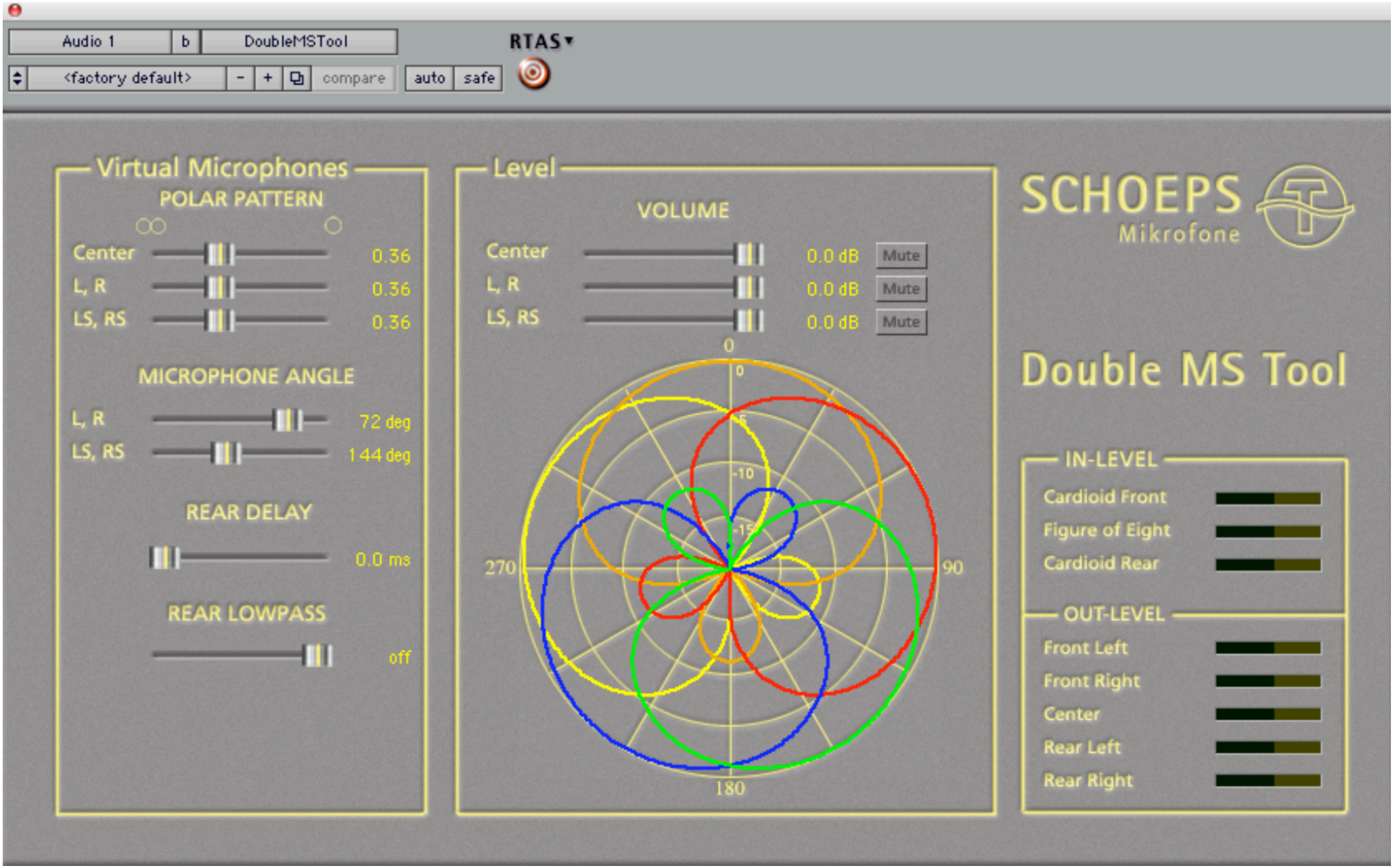
The plug-in was designed and developed by SCHOEPS. The VST Windows plug-in was created with the help of the IHA at the University of Applied Sciences Oldenburg/ Ostfriesland/ Wilhelmshaven; the VST and RTAS Mac plug-in was created with the help of the Institut für Musikwissenschaft/ Musikinformatik at the HfM Hochschule für Musik Karlsruhe.

Disclaimer

The software is made available on an "as is" basis only, without any warranty or indemnity

SCHOEPS Mikrofone

2011



Disclaimer

Die Software wird zur Verfügung gestellt „wie gesehen", d.h. ohne Garantie oder Haftung irgendeiner Art. Sie dürfen diese Software ohne Erlaubnis weder dekompilieren, verändern noch anpassen. Sie dürfen sie ferner ohne die Genehmigung von der Firma Schoeps weder kopieren noch in Verkehr bringen.

Anwendung

Nach der Aufnahme der drei Doppel-MS-Signale (nach vorne gerichtete Niere, Acht, nach hinten gerichtete Niere) auf drei Spuren in einem Sequencer-Programm, können diese durch das Plug-In in einen 5.0 Mix matriziert werden. Die Dekodierung erfolgt intuitiv, weil die resultierenden Polardiagramme der „virtuellen Ausgangssignale" in Echtzeit angezeigt werden. Jede Änderung eines Parameters ist sofort als eine Änderung im Polardiagramm erkennbar. Auch das Audio-Signal ändert sich ohne Unterbrechungen in Echtzeit. Das ermöglicht die schnelle und komfortable Optimierung der Einstellungen.

Das Plug-In ist für die Verwendung von SCHOEPS-Mikrofonen in einer Doppel-MS-Anordnung zugeschnitten: Es ist an die Empfindlichkeiten der KompaktMikrofone CCM 4V (Niere) und CCM 8 (Acht) bzw. der entsprechenden Kapseln MK 4V und MK 8 angepasst. Darüber hinaus dient eine eingebaute Entzerrung für die Acht der Angleichung der Frequenzgänge der beiden Mikrofone bzw. Kapseln.

Ein- und Ausgangskanäle:

- Eingang 1 (L): CCM / MK 4V (Niere, nach vorne weisend)
- Eingang 2 (R): CCM / MK 8 (Acht, 0°-Achse – vom Betrachter aus gesehen – nach links weisend)
- Eingang 3 (C): CCM / MK 4V (Niere, nach hinten weisend)
- Ausgang 1, 2: L, R
- Ausgang 3, 4: C, -
- Ausgang 5, 6: LS, RS

Bedien-Elemente:

- „Polar pattern" (Polar Diagramm) der Aus-

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Application

After recording the three Double M/S signals (front cardioid, figure-8, rear cardioid) to three tracks in a sequencer program, they can be decoded by the plug-in to a 5.0 mix. Decoding is intuitive because the resulting polar diagrams of the virtual "output channels" are displayed in real time.

Any change of a parameter is visible on the spot as a change of the polar diagram. The audio signal also changes in real time without interruptions, allowing settings to be optimized in a quick and comfortable way.

The plug-in is customized for the use of SCHOEPS microphones in a Double M/S setup. It has been tailored to the sensitivities of the CCM 4V and CCM 8 compact microphones (cardioid, figure-8) or the corresponding capsules MK 4V and MK 8. The built-in equalization is furthermore designed to match the CCM/ MK 8.

Input and output channels:

- Input 1 (L): CCM / MK 4V front (cardioid)
- Input 2 (R): CCM / MK 8 (figure-8, positive phase left)
- Input 3 (C): CCM / MK 4V rear (cardioid)
- Output 1, 2: L, R
- Output 3, 4: C, -
- Output 5, 6: LS, RS

Control elements:

- "Polar pattern" of the output channels C, L/R and LS/RS. It is continuously adjustable between 0 (= figure-8) and 1 (= omni)
- "Microphone angle" between the resulting output microphones L/R and LS/RS. It is continuously adjustable between 0° and 90°
- "Rear delay" of the LS/RS channels in order to avoid localization errors. It is continuously adjustable between 0 ms and 50 ms
- "HF roll off" of the LS/RS channels to avoid

gangskanäle C, L/R und LS / RS. Es ist kontinuierlich zwischen 0 (= Acht) und 1 (= Kugel) einstellbar.
- „Microphone angle" (Mikrofonwinkel) zwischen den resultierenden (virtuellen) Ausgangs-Mikrofonen L / R und LS / RS. Er ist kontinuierlich einstellbar zwischen 0° und 90°.
- „Rear delay" (Verzögerung) der LS /RS-Kanäle um Lokalisationsfehler zu vermeiden. Es kann kontinuierlich von 0 bis 50ms eingestellt werden.
- „HF roll off" (Höhenabsenkung) der LS / RS-Kanäle zur Vermeidung von Lokalisatonsfehlern. Ein Tiefpass erster Ordnung (6dB/Okt.) ist kontinuierlich einstellbar zwischen 0dB und „off".
- Volume" für die Kanäle C, L / R, LS / RS – kontinuierlich einstellbar zwischen 0dB und „off".
- „Mute" für die Kanäle C, L / R, LS / RS.
- „Presets": Erlaubt das schnelle Aufrufen von Hersteller-Voreinstellungen sowie das Abspeichern und Laden von Anwender-Einstellungen.
- Anzeige der Polardiagramme der Ausgangs-Kanäle: Fünf farblich unterschiedliche Polardiagramme machen die resultierende Richtwirkung sichtbar. Sie hören stets genau das, was Sie sehen.
- Peak meter zur Kontrolle der Funktion und der Pegel der drei Ein- und fünf Ausgangskanäle.

Einer der Nachteile konventioneller MS-Aufnahmen ist die gegenseitige Abhängigkeit des Öffnungswinkels und des Polardiagramms: Wenn der Öffnungswinkels verändert wird, ändert sich auch das Polardiagramm und umgekehrt. In diesem Doppel-MS-Tool vermeidet die Signal-Bearbeitung automatisch dieses Artefakt. Alle Parameter können unabhängig voneinander verändert werden. Das macht dieses Plug-In auch für Zweikanal-Aufnahmen interessant. Hierdurch wird die Vielseitigkeit koinzidenter Aufnahmen eindrucksvoll unter Beweis gestellt. Die Arbeit mit dem Plug-In ist intuitiv und erfordert keine Übung.

localization errors—a first-order low pass of (6 dB/oct.), continuously adjustable between 1 kHz and "off"
- "Volume" for the C, L/R, LS/RS channels - continuously adjustable between 0 dB and "off"
- "Mute" for the C, L/R, LS/RS channels
- "Presets": Enables quick recall of factory presets as well as saving and loading of user settings
- Display of the polar diagrams of the output channel: Five polar diagrams in distinct colors make the resulting directivity characteristics visible. You always hear what you see.
- Peak meter to control the function and the level of the three input and five output channels

One of the shortcomings of conventional M/S recording is the mutual dependency of opening angle and polar pattern: When the opening angle is varied, the polar pattern is also changed and vice versa. In the Double M/S Tool the signal processing automatically avoids this artifact; all parameters may be varied independently. This also makes the plug-in interesting for two-channel recording. Thus the diversity of coincident recording is optimally demonstrated. Use of the plug-in is intuitive, and does not require training.

Änderungen und Irrtümer vorbehalten.

Subject to change without notice.
Not responsible for errors or omissions.

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Schall Technik

CE

Merci de votre attention

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Mail : **b.lagnel@gmail.com**