

Oticon ♦ Sumo DM



PRODUCT INFORMATION
FITTING INFORMATION
TECHNICAL INFORMATION



Product concept

Oticon Sumo DM is a highly advanced digital Super Power BTE instrument, designed for people with severe-to-profound hearing losses.

Recognizing the diversity of this group of users, Sumo DM offers a new degree of fitting flexibility and the ability to create a personalized sound strategy for each individual client. Sumo DM has a unique ability to maximize audibility and sound comfort for your most challenging clients. Using the latest digital technology, it constantly adapts to changing sound conditions to offer a superior listening experience.

Sumo DM offers the following new advanced features:

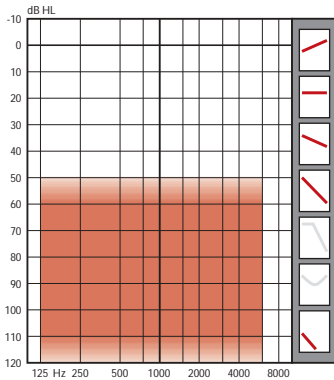
- Dynamic Feedback Cancellation – feedback elimination without gain reduction using precise digital phase cancellation.
- TriState Noise Management – combining the advanced Voice-Finder technology with a new 8-channel, modulation-based noise reduction system, it preserves the speech cues and provides an excellent balance between audibility and listening comfort, in both noisy and quiet environments.
- High Resolution Fitting – eight individual compression channels for precise frequency shaping, and separate gain and MPO adjustments for three different input levels – soft, speech and loud – in each channel.
- Sumo Identities – four Identities offering unique sound processing strategies (NL and Lin) to match each client's needs and preferences - enabling easy selection of optimal starting point for a fitting.

User benefits

- High Performance Engineering – a new design standard, not only in terms of size and ergonomics, but also performance; providing high and consistent power output with very low battery drain.

Dispenser benefits

- Highly flexible fitting
- Programmable user controls
- Advanced and effective feedback management and Dynamic Feedback Cancellation
- Intuitive and uncomplicated software
- REM-integration in Genie fitting software
- Standard Oticon programming cable (#3)



Standard features

- MPO: 140 dB SPL/Peak gain: 82 dB
- Fully digital
- Dynamic Feedback Cancellation
- Feedback Management System
- TriState Noise Management
- High resolution fitting, 8 channels and 3 input levels gain adjustments
- Four Identities for efficient fitting based on DSEsp loudness model
- Four additional linear rationales: DSL v5.0, DSL i/o (Lin), NAL-RP and POGOII+BC rationales
- Volume Control with clear markings, end stop and integrated OFF function
- Beep at preferred volume level
- Fully programmable 3-position switch with clear markings
- Up to three customizable programs
- Audible program indicators (beeps)
- Visual status indicator (LED)
- Undamped sound hook
- Programmable Telecoil
- Direct Audio Input and FM compatible
- Left/Right Identification
- Hair tone colors
- Kids translucent colors, and new "Baby Pink" and Baby Blue" opaque colors

Options and accessories

- Sound Hooks:
 - 5 dB damped
 - Pediatric hooks, damped and undamped
- Interlocking DAI and FM shoes
- Tamper resistant battery door
- Eyeglass adaptor
- CROS and BI-CROS
- External microphone (MIC 32)

Dispenser operation

Sumo DM is programmed using the Genie fitting software compatible with NOAH 2.0 and 3.0 (Genie version 6.0 update, May 2005) The cables used are the same for either programming device.

Programming shoe

- no. 390-01-320-04 (Black)
- HI-PRO cable # 3 Right (Red)
- no. 384-20-014-00
- HI-PRO cable # 3 Left (Blue)
- no. 384-20-015-01

Connecting the Programming shoe

- 1 Open the battery door on Sumo DM and slide the programming shoe into the guide as shown. Insert battery.
- 2 Close the battery door and attach the HI-PRO cable.



Do not twist the plug!



During programming, the instrument must be switched on. Check the VC to turn the aid on.



Selection Step

The Selection step includes three sub-panels:

- Hearing Instruments
 - Select the physical instrument.
- Personal Profile
 - Enhance the individual prescribed setting.
- Configuration
 - Configure the hearing instrument with program content and acoustics (e.g. vent).

Note: Using the Personal Profile and Configuration is optional but highly recommended.

Hearing Instruments

Selection of the hearing instruments can be done in two ways:

- Detection of instrument(s)
- Selection of instrument(s)

If you have the physical instrument, Detection should be used. If you do not have the instrument, Selection should be used.

Detection of Instrument(s)

The detection of hearing instruments requires that one or two Sumo DM instruments are connected. Then “Detect Instruments” can be used.

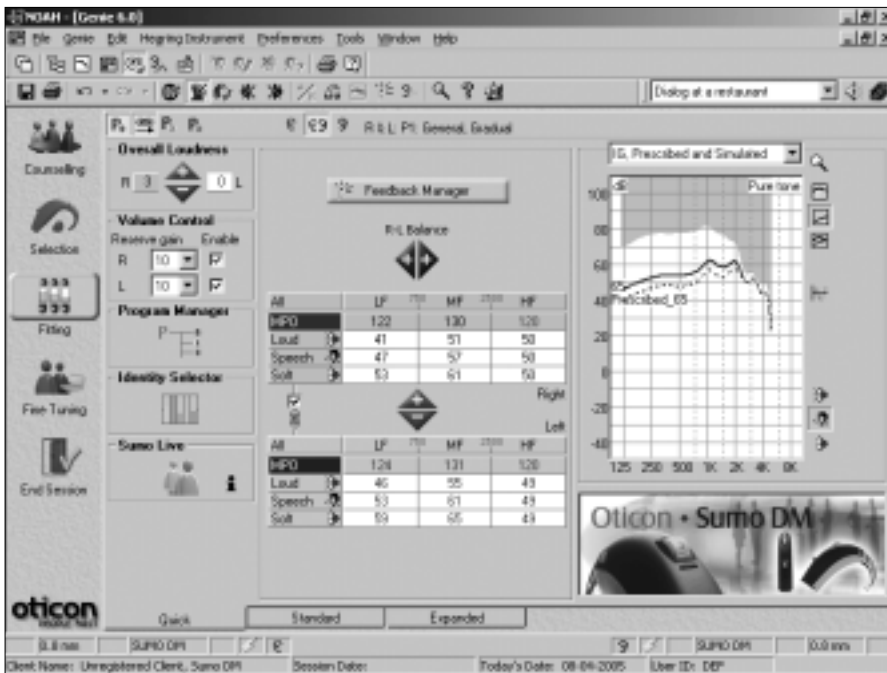
Detect Instruments

The instruments will automatically be connected when you enter the Fitting step after having used “Detect Instruments”.

Selection of Instrument(s)

The selection of hearing instruments involves 2 steps:

1. Choose “Sumo” from the Instrument list.
2. Select “BTE, DM” from the Sumo family drop-down menu.



MPO and Gain

The MPO trimmer allows flexible MPO shaping in 8 individual channels. In the Quick Panel, these 8 channels are gathered in 3 main channels: LF (channels 1,2), MF (channels 3,4,5) and HF (channels 6,7,8). The crossover frequencies are displayed on the screen. MPO values are displayed in dB HL.

All	LF 750	MF 2500	HF
MPO	124	131	120
Loud	46	55	49
Speech	53	61	49
Soft	59	65	49

Gain adjustments can be made for three input levels: Soft (50 dB), Speech (65 dB) and Loud (80 dB). Choosing the "All" trimmer will apply changes to all input levels across all channels. These changes will apply to all programs if they are linked at the tool bar and are done for P1.

Fitting Step

The Fitting step displays the controls on the selected instrument(s), and contains the tools needed for fitting.

The Fitting step consists of three panels that offer progressively greater access to adjustment parameters. The Quick panel is the simplest of the options, increasing in complexity to the Standard and the Expanded panel.

Fitting Controls:

Feedback Manager

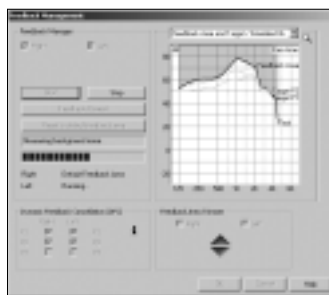
The Feedback Manager (FBM) is accessible from the Fitting step and on the toolbar.



It is recommended that you run the FBM before you make any fitting adjustments regardless if feedback is present or not. Running the FBM is a fast and effective way to maximize the available gain in each of the 8 channels. It also ensures optimal operation of the Dynamic Feedback Cancellation (DFC). Run the FBM in 2 steps:

Step 1: Run the FBM while client remains still

Step 2: Run the FBM while client moves jaw and head to cover dynamic conditions

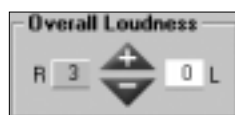


Dynamic Feedback Cancellation

Sumo DM features a Dynamic Feedback Cancellation System (DFC) that uses phase cancellation to eliminate feedback caused by dynamic situations. Unlike many other Feedback Management systems, the DFC does not reduce gain to eliminate feedback. Therefore, audibility and speech understanding are never compromised. The DFC is turned on by default and can be disabled in the FBM screen.

Overall Loudness

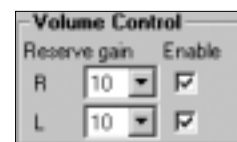
The Overall Loudness trimmer offers easy adjustment of MPO, gain and compression ratios to accommodate client perception of loudness. Each adjustment of the trimmer typically results in 2dB incremental changes in MPO and gain while headroom is maintained. Compression ratios are also adjusted for non-linear Identities. Overall loudness changes are maintained even if Identity is changed.



Volume Control

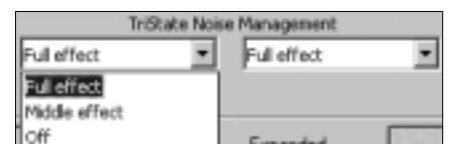
Sumo DM features a Smart Volume Control (VC) with clear markings, end stop and integrated OFF function. The VC allows your client to make gain adjustments above and below the prescribed setting.

Use the Reserve gain trimmer to set the amount of gain available to the client above the preferred / prescribed VC setting. The preferred VC setting is easily identified to the user by audible beeps and flashes of the LED Status light (optional). This trimmer also allows you to disable the VC.



TriState Noise Management

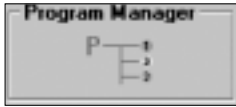
Sumo DM features a unique Voice-activated Noise Management system. In the expanded panel, it can be set to Full effect (default), Middle effect or Off.



FITTING INFORMATION

Program Manager

The Program Manager offers full flexibility to program the 3-position switch with any desired combination of M and T as well as an optional OFF position. The default programming is: M-MT-T



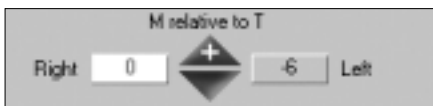
Managing programs

You can use the Program Manager to reconfigure the switch to suit individual client needs. Options include different programs for different listening environments or for comparison of Identities or rationales.

For 2 different M programs using the same Identity, click P2 then choose “Copy P1”. You can modify P2 after opening it from the tool bar.

Change T programs by choosing the appropriate program button (P2/P3) containing a telecoil function, then adjusting the MT or T response shaping by using the channel trimmers. Click “unlock” to make NL adjustment in MT or T.

The telecoil has 6 dB more gain available than the M. To boost the T in an MT program, select input level trimmers and increase gain. Then decrease the M relative to the increase of the T trimmer.



FM/DAI

When the FM/DAI shoe is connected, the T program automatically becomes “FM only” and the MT becomes “M+FM” by default through an automatic detection of the FM shoe. There is no access to telecoil when the shoe is connected. However, you can choose to disable this automatic detection to allow use of the telecoil while an FM/DAI shoe is still connected. Be aware that when the auto detect is Disabled, Telecoil will replace and override the “FM only” function.

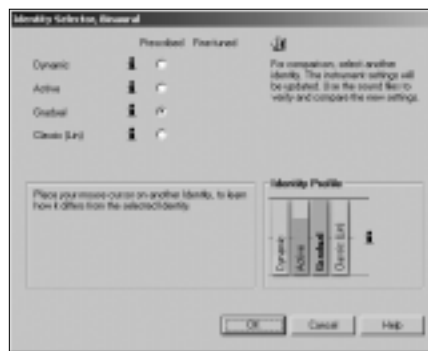
Identity selector

The Sumo DM Identities provide an effective way to prescribe varying degrees of gain, compression and noise management to address client differences in age, previous experience and auditory resolution abilities.



The Sumo DM Identity Selector is the intuitive tool for selecting Identities and is accessible from the Genie Fitting step in any general program. This tool allows you to compare and change Identities. Consider changing to a neighbor Identity if the client reports a general dissatisfaction or overall difficulties. Changing Identity will change the gain and compression characteristics.

Sumo DM features 4 unique Identities: Dynamic, Active, Gradual and Classic. Click on “i” to access Identities description.



Note: It can take up to 20 second before automatics like the TriState Noise Management will fully adapt to the environment. Therefore, care should be taken when comparing two Identities using the Identity Selector.

End Session step

To end the fitting session, go to “End Session”.



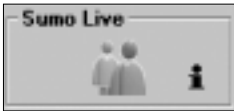
Audible and visual status indicators are set from the end-session step (see table on page 7). Loudness and frequency of beeps can be changed if needed.

The Visual Status light can be enabled or disabled here as well. For pediatric clients age 17 and below, the Status light functions are automatically enabled. To exit Genie, click the Save, Program and Exit.



Sumo Live

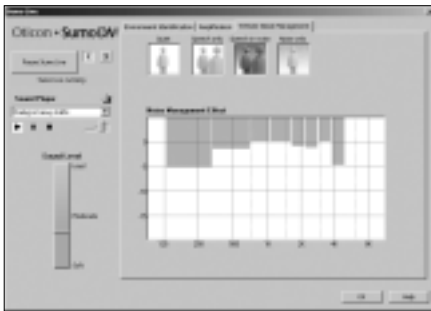
Sumo Live is accessed from the Sumo DM Fitting Panel.



It enables you to explore and explain the performance and benefits of Sumo DM in real time:

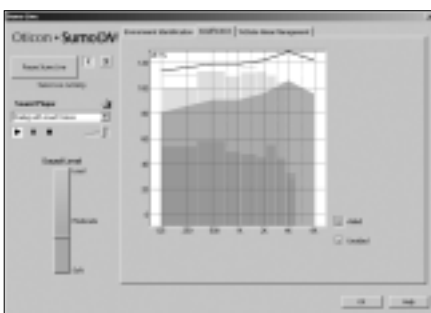
TriState Noise Management

– shows how the instrument adapts to the sound environment by applying the three noise management strategies (Speech, speech in noise and noise only).



Amplification strategy

– shows how the instrument manages gain and compression across all eight channels.




Environment Identification

– shows the intensity level of sound in each of Sumo DM's channels and if feedback is detected.

Genie Sound Studio

Genie Sound Studio is an advanced sound scene builder. In other words you can optimise a specific (sound) situation to either:

- Illustrate and explore unique product features – such as the Tristate Noise Management
- Re-construct a specific situation in which your client experiences listening challenges, enabling individualised and problem solving counselling.

The Genie Sound Studio is accessed by clicking the “Sound and Pictures”  button in the tools menu.



	Audible beeps	Visual status indicator (LED)
Instrument ready	The instrument will beep according to the program that is active, when the instrument is ready	The visual status indicator will flash according to the program that is active, when the instrument is ready
Program switch	The instrument will beep according to the program selected. <i>This feature can be disabled.</i>	The visual status indicator will flash according to the program selected <i>Follows audible beep setting</i>
VC preferred level setting	The instrument will beep when the preferred VC level is reached. <i>This feature can be disabled.</i>	The visual status indicator will flash when the preferred VC level is reached <i>This feature can be disabled.</i>
Instrument On indicator		The visual status indicator can be turned steady On, while the instrument is working. <i>The feature can be enabled or disabled. For clients below age 8, the default setting is ON.</i>
Battery low indicator	The instrument provides a series of two beeps when the battery is low.	If steady ON light is enabled, it will automatically turn OFF when Battery Low beeps are activated to indicate the battery should be changed.

Sound hooks

Sumo DM comes standard with an un-damped sound hook ensuring high gain and output in the mid frequencies. A smoother response may be obtained by using the 5 dB damped hook. Damped hooks tend to collect more moisture than ordinary hooks and may become clogged. It is recommended that they are replaced twice yearly.

Hook size	Un-damped	5 dB damped
Standard	571-01-770-04	571-05-290-02



Pediatric	571-01-780-06	571-05-270-08
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Eyeglass adaptor

Sumo DM may be adapted to most eyeglasses by using a special adaptor.

	Un-damped	5 dB damped
	571-04-170-04	571-04-180-06



Earmold information

When fitting super power instruments, the importance of a tight fitting earmold cannot be over-emphasized.

Oticon recommends the use of non-shrinking, stable impression materials such as A-Soft or A-Zilicone.

Material	40 impressions	75 impressions
A-Soft	782-50-121-08	782-50-120-07
A-Zilicone	782-50-054-07	782-50-055-08

Use of thick-walled tubing put through the earmold is recommended for the tightest possible fitting. Venting is not recommended for hearing losses above 70 dB HL.

Tamper-resistant battery door

The tamper-resistant battery door is strongly recommended when fitting children or persons of mental incapacity. Available in beige, hair tone and kids colors. (Please refer to the yellow section in the Instructions for Use).



Right and Left identification

Sumo DM comes standard with a red and a blue plate for easy identification of right and left instruments. The pre-mounted grey plate can be replaced using a pair of tweezers.



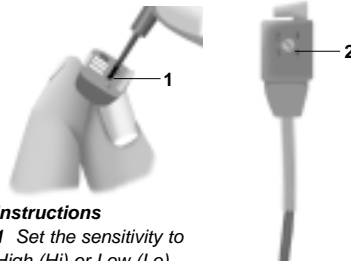
Universal DAI shoe

The universal DAI shoe for Sumo DM provides access to a variety of external sound sources such as:

- Plugged-in (AC) equipment such as radio, TV, computers, and battery-operated devices using 4.5 volts or greater (**Hi** setting)
- Battery operated equipment (<4.5 volts) such as personal stereo/MP3 players and body-worn FM (**Lo** setting)

The one shoe can be used for all DAI purposes.

DAI shoe	399-50-900-08
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Instructions

- 1 Set the sensitivity to High (Hi) or Low (Lo)
- 2 Adjust the input level control to a comfortable level (1-4)

DAI cords

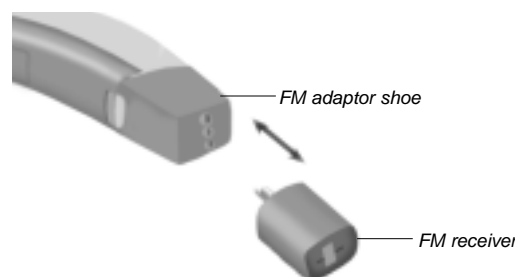
To connect audio equipment to DAI / hearing instrument, use one of the following cords:

Connection	Cord	Length	Oticon No.
	Monaural	75 cm	383-58-940-09
	Binaural (stereo)	75 cm	383-58-941-00
	Open end, monaural	100 cm	383-08-003-00
		600 cm	383-08-004-01

FM adaptor shoe

The FM adaptor shoe is used with ear level FM systems.

FM adaptor shoe	399-50-920-02
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Dedicated Lexis FM Receiver

The dedicated LE-7 receiver conveniently eliminates the need for an adaptor shoe.

Dedicated Lexis FM receiver LE-7	140-30-XXX-XX
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People first



We believe that it takes more than technology and audiology to create the best hearing instruments. That's why we put the individual needs and wishes of people with hearing loss first in our development of new hearing care solutions.