

## Velodyne MicroVee X



# Mini active subwoofer with Class A/B amplification

► The MKII version of the mini subwoofer caused a big surprise, and now Velodyne wants to raise the bar even higher with the MicroVee X. AV-Magazin has tested how the "X-factor" makes itself felt.

The hour of the subwoofer had already come when loudspeakers were supposed to be ever slimmer, preferably completely compact. How this came about is a more complex issue, because many people who are primarily interested in sound have also taken a liking to more discreet sound transducers - in a way, you can't get rid of the ghosts that you yourself have called. The trend towards soundbars with external subwoofers, however, has also brought a dilemma further into

focus that concerns the bass cubes themselves: space and set-up priorities often dictate "down-sizing", but with subwoofers this is a particularly difficult matter. After all, reproducing very low frequencies requires above all a lot of diaphragm area, which in turn naturally determines the dimensions of a woofer. The laws of physics have to be bent in order to meet the conflicting demands of compact dimensions and bass volume as far as possible.

Velodyne, as a subwoofer specialist and pioneer of the first hour, dealt with how to optimise the sound performance of subwoofers quite early. Since the company was founded in 1983 by David Hall, Velodyne has introduced several technologies in

### Key Facts: Velodyne MicroVee X

- Active subwoofer
- 165 mm carbon-fibre drivers
- 2x 165 mm passive radiators
- Closed cabinet
- LFE input
- Line input stereo
- Speaker-level input
- Internal crossover switchable
- 300 W continuous power
- 800 W impulse power
- Automatic switch-on/switch-off



the course of its research and development, such as servo control and the external room correction system SMS-1, which measures up to three woofers. Last, but not least, Velodyne introduced the first remote-controlled subwoofers to the market in 1996 with the FSR models. The development project to realise maximum performance with minimal enclosure bore its first fruits in 2007: The MicroVee started in a spectacularly compact format to expand the bass reproduction of a speaker ensemble. It seemed doubtful that it would be suitable for more than a small desktop system, but experience proved otherwise. With the MicroVee X, the German-American company has now introduced the third generation of the mini subwoofer, and it will be interesting to see whether there has been any improvement over its predecessor, the MicroVee MKII. We have tested the MicroVee X extensively in a stereophonic set-up.

### Design and Technology

The enclosure of the new MicroVee is the same as that of the MicroVee MKII, consequently the "X-cube" also has an edge length of 23 centimetres - that's hardly more than the width of a DIN A4 sheet of paper. In relation to the size of the drivers, the MicroVee X's enclosure therefore has little internal volume, and this circumstance demands special attention, even though the enclosure has no reflex tuning: Moving air cannot escape inside a closed construction anyway, but a small enclosure is more easily excited to vibrate. The driver placement and arrangement of the MicroVee X does



**The MicroVee X is available in high-gloss black and white lacquer. The wave profile on the sides and top not only looks attractive, it also gives the cabinet even more stability (Image credit: Velodyne Acoustics)**

its part to avoid compression effects and cabinet vibrations, but more on that in a moment. The be-all and end-all in the case of a closed subwoofer remains a stable cabinet, which is why the engineers continue to rely here on the extremely robust construction that has already proven itself in the predecessor.

It includes a circumferential aluminium profile and an aluminium baffle, with all parts having a high wall thickness. The rear connection terminal is also made of aluminium; here, too, the material thickness ensures particularly high torsional rigidity. Avoiding resonances, however, is only half the battle: The enclosure must be hermetically sealed so that defined pressure conditions prevail. To achieve this, the connector panel and the chassis are precisely fitted;

then the joints are sealed on the inside. The characteristic wave pattern on the cabinet surfaces adds an attractive design accent, but also serves to additionally stiffen the cabinet.

### Signal processing

Digital signal processing is handled by a DSP from Analog Devices; it realises all adjustable parameters and also offers protection against overdriving. The algorithm gently limits the level to avoid abrupt "holes". While the predecessor used a Class D module, the amplification stage of the MicroVee X is built discretely in Class A/B topology: Four 180-volt MOSFET power transistors provide a remarkable 34 amps of current



**The diaphragm of the 165 mm active driver is made of carbon fibre to achieve the best possible weight/stiffness ratio (Image credit: Velodyne Acoustics)**

and enable a sovereign output power of 300 watts - during impulse peaks, the power amplifier can release up to 800 watts of power. The power supply is generously dimensioned and is fed by a fast switching power supply with two 650 volt MOSFETs with a current delivery capacity of 17 amps.

An active 6.5" driver is responsible for power delivery; its drive system is equipped with a powerful double ferrite magnet. The second key feature of the current evolutionary stage is the diaphragm: instead of the aluminium diaphragm used up to now, the new chassis has a diaphragm made of carbon fibre mesh, which is particularly resistant to partial vibrations. The air moved by the active driver excites two laterally positioned 6.5" passive radiators, whose diaphragms are also made of carbon fibre mesh. First and foremost, they considerably increase the effective sound-radiating area, but in addition, they also relieve the cabinet through their movement.

### Features

- LFE input
- Stereo high level input RCA
- Speaker level inputs
- Remote control
- Phase switching
- Stepless low pass setting
- Stepless level setting
- Internal crossover switchable
- Automatic switch-on/switch-off
- Stereo high level output RCA

### Features and Sound

The MicroVee X comes with a small remote control that fits comfortably in the hand and is clearly laid out. It allows you to



The small remote control fits perfectly in your hand and allows you to adjust the level and reverse the phase



The scope of delivery also includes a wired IR receiver. If the subwoofer is placed under cover, it enables interference-free reception of the signals from the remote control (Image credit: Velodyne Acoustics)



On the rear panel, the level and phase can be adjusted and the bypass for the internal crossover and the automatic switch-off can be activated or deactivated (Image credit: Velodyne Acoustics)

switch the phase and control the volume of the subwoofer from the comfort of your sofa. If the MicroVee x is placed under cover, you can connect the wired IR receiver to the subwoofer, which is also included. In most cases, it should be possible to position the receiver's eye in such a way that there is a line of sight to the listening position. On the back of the unit, the phase reversal can also be switched with a small button; in addition, the automatic switch-off can be set here.

A rotary control above the connection panel is used to set the frequency of use continuously between 40 and 200 Hz, whereby the DSP performs the low-pass with a slope of 12 dB per octave. The level can be adjusted with the help of two small buttons on the unit; next to them are four LEDs that signal the set level. In fact, however, the level setting is more finely graduated: Only after the fifth press of a "volume" button on the unit or on the remote control does another LED light up or go out.

### Ready for home cinema and stereo

When it comes to connecting a subwoofer to different components, be it within a surround system or a stereo system, the available connections sometimes limit the possibilities. With the MicroVee X, however, there are no problems, because it is fully equipped on the connection side. For use in a multi-channel system, the LFE channel is the ideal solution. In this case, the LFE output of an AV receiver is connected to the LFE input of the MicroVee X. In this case, the receiver is used for the LFE output. In this case, the receiver is responsible for bass management, but depending on the internal circuitry of the subwoofer, double filtering may occur. To avoid this, the MicroVee X allows you to switch between its internal



The diaphragms of the 165 mm passive radiators on the sides are also made of carbon fibre (Image credit: Velodyne Acoustics)

crossover and "Subwoofer Direct" mode with two buttons on the back.

The MicroVee also has speaker-level inputs, which are helpful when the subwoofer is to be integrated into a system with a purist stereo amplifier that has neither a subwoofer output nor a preamp output. In this variant, the speaker cables are connected from the outputs of the amplifier to the speaker-level inputs of the MicroVee X, with a second pair of speaker cables leading to the speakers as before. The Velodyne's speaker terminals accept only bare stranded wire, which should be carefully twisted to make the best possible contact. When used with amplifiers that have a preamp output, the RCA high level inputs are the better way to go: a conventional stereo RCA cable runs from the preamp output to the woofer's high level inputs and its internal crossover takes care of bass management.

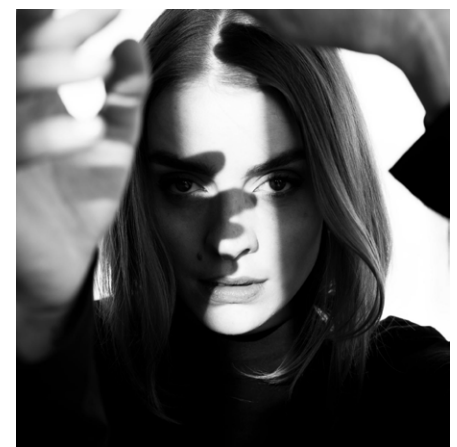
In addition, the MicroVee X has a feature for particularly ambitious users: a high-level output enables additional subwoofers to be connected. While the predecessor only had a mini-jack output for this purpose, the MicroVee X offers a pair of RCA sockets.

### Listening

Regarding their placement, subwoofers generally allow a great deal of freedom because low frequencies are difficult to locate and spread quite freely. Nevertheless, it is advisable to keep a small distance between the MicroVee X's side passive diaphragms and furnishings or walls, so that the passive drivers do not excite them to vibrate. Otherwise, all that's needed is careful adjustment of the input frequency and level so that the subwoofer doesn't become unduly prominent - with a little practice, this is quickly done in the case of the new Velodyne. For our listening tests, we chose the slim FS 407 floorstanding speakers from Elac as playing partners, which already lay a solid foundation and play very agile and precise down to their lower limit range. It quickly became obvious that it doesn't necessarily take a room calibration to blend in a subwoofer perfectly: The MicroVee X merges completely with the speakers and the room at an operating frequency of 45 Hertz and moderate level (one illuminated LED).

The best way to check this is with handmade music that is not bass-heavy,

because when there is more atmosphere, instruments sound richer and still as if they were made of one piece, then the point is hit. The MicroVee X provides an impressive example of this with the current EP "Frost"



On "Frost" by Eydis Evensen, the MicroVee X provides an impressive example of how subwoofers can enrich even a small acoustic line-up: It lets the concert grand piano really breathe and simply brings more atmosphere into the performance

by the Icelandic pianist Eydis Evensen: the concert grand piano breathes deeply together with its whole body and can be experienced with its entire sound volume, while deep octaves are finely graduated. At the same time, the tonal balance remains intact and the instrument's body is drawn even more vividly - exactly as it should be. With an intense techno track like "Deeper" from the album "She Sleeps" by Deborah de Luca, the performance of the small MicroVee X is definitely that of a large woofer, it provides the extra kick for abyssal bass lines and delivers them as dry as a bone - great fun!

### Sound

- Deep, powerful bass
- Precise & finely nuanced reproduction
- High level stability

### Characteristics

Active subwoofer, 165 mm carbon-fibre drivers, 2x 165 mm passive radiators, closed cabinet, LFE input, line input stereo, speaker-level input, internal crossover switchable, 300 W continuous power, 800 W impulse power, Class A/B power amplifier, stepless low pass setting, stepless level setting, phase switchable, automatic switch-on/switch-off

### Verdict

The third generation of the MicroVee is also impeccably manufactured, and with its stylish design, the mini-woofer blends seamlessly into modern living environments. In addition to the speaker-level inputs and the LFE/RCA input, there is even an RCA high-level output that can be used to connect additional subwoofers in line. The MicroVee X also comes with a handy remote control. In terms of sound, Velodyne has outdone itself: The MicroVee X has immense assertiveness and loses none of its precision even at very high levels. The X-factor comes into play especially with sound colours: The MicroVee X can differentiate tonal shades extraordinarily finely and therefore enrich sophisticated stereo systems as well as home cinema systems. ◀

Review by Marius Donadello  
Translation by the author

### Technical specifications and general information\*

Distributor	Audio Reference GmbH, Hamburg
Manufacturer	Velodyne Acoustics GmbH, Hamburg
Model	MicroVee X
Product category	Active subwoofer
Price	1,290 EUR
Warranty	3 years electronic, 5 years drivers (registration required)
Delivery scope	Mains cable 2 m, remote control, driver cover, wired IR sensor, instruction manual, warranty claim card
Finishes	Black high gloss, White high gloss
Principle	Active, closed cabinet, 2 passive radiators
Input	1x speaker-level inputs, 1x stereo RCA input / LFE
Output	1x stereo RCA output / LFE
Drivers	1x 165 mm (6,5 in) carbon fibre mesh cone 2 x 165 mm (6,5 in) carbon fibre mesh cone passive radiators
Frequency response	38 Hz - 120 Hz (+/- 3 dB)
Power output	300 Wrms, 800 watts impulse
Amplification	Class A/B
Low pass crossover	Stepless setting, 50 - 200 Hz (12 dB / octave)
Dimensions (W x H x D)	230 x 230 x 250 mm (with grill)
Weight	9 kg

\*Manufacturer's information

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Highlight

## Velodyne MicroVee X

Audio Reference

+49 40 53320359

www.audio-reference.de

Product category: Active subwoofer

Weighting: Sound quality 60%, Features 20%, Workmanship 20%

0% 100%

Sound quality

superb

Features

very good – superb

Workmanship

very good – superb

Price

1,290 EUR

Class

Top class

Price-performance

very good

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Velodyne MicroVee X  
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