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WAINHOUSE Research

# Evaluation of Nureva's HDL300 System

## Hands-on testing of a wall-mounted USB mic/speaker solution

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# Background

Founded in 2014 and headquartered in Alberta, Canada, privately-held Nureva is a developer of collaboration solutions and tools for the business and education markets. Nureva's co-founders, husband and wife team David Martin and Nancy Knowlton, bring decades of AV and collaboration experience to the table, having co-founded SMART Technologies (now a part of Foxconn Technology Group) in 1987.

In June 2016, Nureva announced the HDL300 system – an integrated audio solution designed for use with meeting room PCs or notebook PCs in small to medium-sized spaces.

In May 2017, Nureva commissioned Wainhouse Research (WR) to provide a third-party assessment of the HDL300. This document contains the results of our hands-on testing of this meeting room audio system.

## Reintroducing the Group Conferencing Add-On Category

Group conferencing add-on solutions typically include microphone(s), speaker(s), and audio processing systems (echo cancelling and/or noise reduction algorithms, etc.) and are intended for use in small to medium-sized meeting rooms.

These solutions solve two specific challenges:

1) The fact that meeting room PCs (meaning PCs permanently installed in meeting rooms) do not typically include meeting-room-ready mics and speakers.

2) The fact that personal devices (e.g., notebook PCs, mobile devices, etc.) were designed to support the audio needs of a single person and NOT a group. In this use case, the group add-on solution's audio is used in place of the personal device's integrated mics and speakers.

In some cases, group add-on solutions also include an integrated video camera or inputs for external cameras (e.g., a USB webcam).

## What is a Microphone Array?

Simply stated, a microphone array is the use of multiple microphones simultaneously. To be more precise, a mic array is a device or system that uses multiple microphone elements positioned at known distances from each other and digital signal processing to create software controlled, and sometimes even user configurable, pickup pattern(s).

In practice, a mic array provides high quality audio pickup in specific areas of a space (e.g., a specific person speaking), while simultaneously reducing (or even eliminating) other sound sources (e.g., room noise, others speaking, etc.).

# Understanding and Installing the HDL300

The Nureva™ HDL300 system is an audio-only group add-on solution for use with USB-capable devices like laptops and meeting room PCs. A complete HDL300 package includes the following:

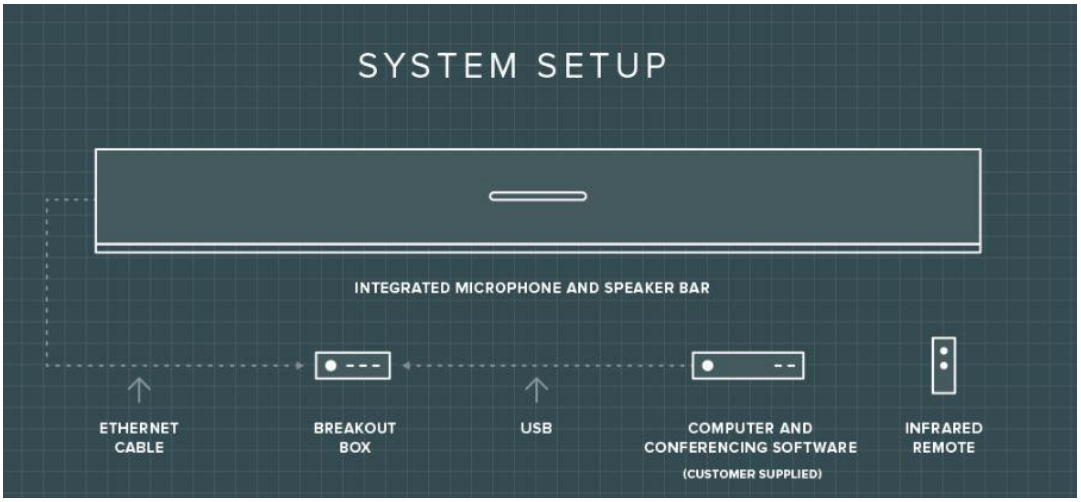
- A 60-inch-long integrated microphone and speaker bar ("the bar") with
  - Two 4-inch aluminum cone speakers
  - Twelve (12) physical microphones working as a single mic array
- A signal breakout box with wall-mount bracket
- An IR remote
- Assorted cables and power supplies

The HDL300 is sold via a network of Nureva channel partners for a list price of US $2,999.

The HDL300 bar is available in white or black (see image below), and is designed for installation on one of the meeting room walls at a height of at least 85 inches. This position provides the bar's integrated mics with a clear acoustical view of the room, allowing it to capture audio from all of the room's participants.

The HDL300 bar connects to the breakout box using the included CAT6a cable. This single cable carries power, control, and audio signals. This greatly simplifies the system installation.

The host device (meeting room PC or user's notebook PC) then connects to the breakout box using the included USB cable.




To facilitate our testing, we installed the HDL300 within our medium-sized (14' x 10') conference room. In our case, the installation took only a few minutes to complete as we were focused on creating a functional but not necessarily finished and professional installation.

For customers, the most time consuming part of installing the HDL300 will be the physical installation of the mic and speaker bar on the wall, and the proper running of the CAT6a cable between the bar and the breakout box located at the meeting room table.

# Hands-On Testing

## Connecting to the Host PC

To test the system, we connected the provided USB cable between the HDL300's breakout box and our test notebook PC (a Dell Inspiron 15 running Windows 10).

Note that the HDL300 is a true plug-and-play device. Once connected, the host PC automatically detects the HDL300 as an audio conferencing device and makes the audio in and audio out signals available to the collaboration software.

> Author's note – while we expect the majority of users will connect use a USB connection, the HDL300 also supports analog (3.5 mm) audio in and out.

## Test Calls Conducted

The WR test team then conducted a series of test calls using the following collaboration solutions (in alphabetical order) installed on our test notebook PC:

- Blue Jeans Network (BJN)
- Cisco WebEx
- Pexip Infinity Connect
- Polycom RealPresence Desktop (RPD)
- Skype for Business (SfB) via Office 365
- Zoom

We then conducted a number of test calls using a MacBook Air notebook running macOS 10.12.5.


The HDL300 includes a remote (see image at right) offering the following functions:

- Answer and end call (for SfB only)
- Microphone mute indicator in SW app (for SfB only)
- Volume up/down
- Adjust brightness of the LED on the front of the bar

We tested each of the remote functions with each of the software clients listed above, and all features worked as expected.

We also noted that the LED on the front of the bar changes color to indicate call status (white = idle, blue = in a call, red = mic mute).

### Test Call Results

Overall, we were very pleased by the HDL300's audio performance.

***The HDL300 brings a compelling combination of cost effectiveness, ease of use and strong audio performance.***

**Microphone Pick-up/Performance** – the HDL300 bar's integrated mic array provided excellent coverage throughout our meeting room. Regardless of the person's location (e.g., standing in the corner of the room facing away from the mic, or moving around the room while speaking), the mic array successfully picked up and transmitted the speech audio to the far end.

**Noise Reduction** – although the HDL300 was unable to mask or eliminate in-room ceiling HVAC noise, the outgoing audio remained intelligible throughout the testing. However, the HDL300 did an excellent job of rejecting off-axis noise, in our case the sound of people speaking outside the door of our conference room.

**Incoming Sound Quality** – the HDL300 bar's integrated speakers performed well during our testing. Although lacking a bit in bass, the bar provided more than adequate volume and solid incoming audio quality.

**Full Duplex Support** – the HDL300 passed our full duplex audio test with flying colors, supporting both incoming and outgoing audio simultaneously.

# Analysis and Opinion

The Nureva HDL300 is a well-performing USB group add-on solution from a new entrant into the enterprise audio space.

A key feature of the HDL300 is that the system's integrated mic/speaker bar is installed high on a meeting room wall. This keeps the mics off the meeting room table and out of the way.

The HDL300 is all about simplicity. Specifically, the system …

- Is very easy to install (only one cable is required between the audio bar and the breakout box)
- Requires no special software drivers thanks to its UVC support
- Has absolutely no settings to adjust
- Has no user interface other than a handheld remote with a few basic functions

We've often said that ease-of-use and simplicity trump performance every time. With the HDL300, users don't have to choose one or the other as the system does very well in both areas.

As a part of our testing, we used the HDL300's audio with both Mac and Windows PCs running a range of popular collaboration software clients. In all cases, the HDL300 performed extremely well, offering a combination of strong microphone pickup (thanks to the system's integrated mic array), powerful off-axis noise reduction, solid incoming audio quality, and full-duplex support.

With a list price of US $2,999, the HDL300 is less expensive than most of the competing mic array solutions from more well-known vendors and even includes dual integrated speakers (lacking on most mic array systems).

Overall, the HDL300 met – and in many ways exceeded – our expectations. Given our team's 50+ years of combined audio engineering experience, that is no easy task.

# Contributing Authors/Research Team

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# About Wainhouse Research

**Wainhouse Research**, www.wainhouse.com, is an independent analyst firm that focuses on critical issues in the Unified Communications and Collaboration (UC&C). The company conducts multi-client and custom research studies, consults with end users on key implementation issues, publishes white papers and market statistics, and delivers public and private seminars as well as speaker presentations at industry group meetings.

# About Nureva

(copy provided by Nureva)

**Nureva Inc.** develops collaboration solutions where content-rich ideation and problem-solving can flourish. The company focuses on delighting customers with simple, thoughtful hardware, software and services. A passion for deep customer understanding and a commitment to innovation drive the company's product road map. For more information, visit www.nureva.com.