

Opalum Technical Product Description: Control HUB II

This document provides information about the features and technologies of the new Opalum HUB II. The HUB II is fully backwards compatible, meaning that all earlier sold Opalum products can benefit from the new HUB II and its features.

Bluetooth

The new Control HUB II now features high-end, no-compromise, Bluetooth connectivity. Unlike most other Bluetooth receivers, the Opalum HUB II receives and **maintains** the Bluetooth audio in the digital domain. This ensures a "bit-perfect" signal-path from source to speaker without analog artifacts such as distortion and noise.



The new HUB II accepts all standard Bluetooth audio-codecs as well as the high-end apt-X codec, which allows for wireless CD-level quality.

Remoteless operation

Since most end-users basically want as few remote controls as possible, the new HUB II features a "remoteless operation" mode. In this mode, all inputs are mixed and sent to the speakers, meaning that the end-user does not have to select a specific source to listen to it. As with the current HUB, auto-standby and auto-wake-up ensures that all Opalum systems comply with the newest power regulations, allowing the HUB II to remain powered-on and then auto-switching into stand-by when there is no signal.

IR and IR-learning

Should the end-user want to select the different sources individually, adjust the volume directly in the HUB II, or manually control stand-by/power-on, there are two easy ways to do that:

- By using a standard programmable remote
- By using any IR-remote and the HUB II's IR-learning capabilities

Increased Integration

Opalum's products are often used in commercial installations and custom A/V projects where integration with systems like Crestron, AMX, Savant, Control4, Élan, and RTI is needed. The new HUBII offers full control via RS-232 and electrical IR providing for full integration with all major A/V installation systems.

General explanation for the Opalum connection HUB II

All Opalum audio systems consist of a power supply, a control HUB II, and two active speakers.

The control HUB II serves three purposes:

- As a connection point for the sources to be connected to a system
- As provider of power to the active speakers
- As transmitter of a digital audio stream that is carried on ordinary speaker wire to the speakers. This is done at the same time as providing power for the speakers

The HUB II provides two optical digital inputs, a coaxial digital input, and an analog stereo input. The digital inputs accept uncompressed PCM audio data at 44.1 or 48 kHz data rate and the analog input accepts ordinary line level input.

The flexibility of the HUB II allows it to be connected to almost any stereo source available, and that if the source is digital, will keep the signal in the digital domain all the way through the system with no loss of signal quality.

The technology used to transmit the power, as well as digital audio signal on ordinary speaker wire, is patented by Opalum and called Opalum Actiline[®]. The technology is "bit-perfect" and extremely robust: providing uncompressed digital signal on ordinary 18 gauge cable at distances up to 200 ft., and even allows for the speakers to be daisy-chained in parallel.

Since the voltage provided for the speakers is 24 volt DC and by definition is "low voltage", running the wires inside walls can be done without violating electrical building codes. In addition, this innovative power solution eliminates the need for high-voltage power sources near the speakers as well as bulky power cords.

Actually, more than two speakers can be connected to the same HUB II - the limit is the power supply that is designed to match two speakers. However, if there is no general requirement of being able to run at full volume - for example in a commercial installation, four speakers can be connected to one HUB II.

The HUB II also features a subwoofer output with an integrated crossover. When the HUB II senses that a subwoofer is connected, a high precision 4th order digital Linkwitz-Riley low-pass filter is applied at 80 Hz to ensure a perfect integration of the sub, while the digital output to the Opalum speakers is then high-passed at 80 Hz with the same 4th order digital filter. When used in this configuration, the overall sound quality and system sound-pressure output is truly astonishing.