**Hauptwerk V: Convolution Reverb Reference Sheet**

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**Reverb**:

* Reverb in a general sense is the conservation of sound energy, as perceived by a listener in a given environment.
* In the context of Hauptwerk, reverb refers to computer-generated convolution reverb applied to samples.
* Convolution reverb uses digital models to recreate the acoustical sound environment of a given physical space.
* These models create the perception of hearing the virtual instrument as it might sound in the virtual space from the perspective of player/listener.

**Impulse Reverbs (IRs)**

* Impulse Reverbs are virtual reverberation models, created using software that measures the time delay and sound levels of an impulse from a source to a set of microphones.
* Sound samples taken onsite are used to create a digital impression of that acoustic space.
* These IR virtual models can be imported by software, and applied to an input signal.
* The result provide the musician and/or listener with the impression of a sound produced within that space.

**Reverb Terminology**

* Reverberation Time (RT, T20, T30): Total length of sustained reverb
* Early Decay Time (EDT): Initial falloff of sound. Shorter = clarity
* Clarity (C50, C80): Ratio of early sound to sustained reverb

**Microphone Placement**  
The placement and types of microphones during the sampling process can create a vastly different impression within a given space. A variety of techniques used result in a different reverb, stereo and surround effects:

**Cardio/ORTF:** Front/direct mics (close/dry)  
**IRTf:** Stereo cross (audience perspective)  
**Rear/IRTr:**  Rear-facing mics (bounce)  
**Omni:** Separated pairs of omnidirectional mics (stereo separation)  
**Omni-W:** Widely-separated pairs of omnidirectional mics (enhanced stereo separation)

**Hauptwerk V: IR Naming Convention**  
Sonus Paradisi, Church, St. Maximin, omni 25m LR (5.7s)

1. Producer of IR  
2. Name/type/geographic location of church sampled  
3. Microphone technique used  
4. Distance of microphone to sound source (in meters)  
5. Position of sound source  
6. Approximate RT in seconds

**Hauptwerk V: Choosing Appropriate Convolution Reverb IRs**

* As a general rule, smaller organs are usually in smaller spaces, with shorter reverb time
* Larger organs require larger virtual spaces with correspondingly longer reverb times
* Style of the organ and the church also matters: Baroque vs. Gothic or Modern Architecture

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| **Sonus Paradisi Hauptwerk IR Models** | | | |
| *Model Type* | *Church Modelled* | *ID* | *RT* |
| **Small Church** | Rabštejn nad Stelou (CZ) | Rab43 | 4 sec |
| PE:  Pedal, HW: Hauptwerk, RP: Ruckpositiv | | | |
| **Medium Baroque Church (High Dome)** | St. Zedislava, Jablonné (CZ) | Jab57 | 5.7 sec |
| Echo: Surround (bounce) of dome | | | |
| **Medium Gothic Church** | St. Mary Madeleine Church, St. Maximin (FR) | StMax57 | 5.7 sec |
| LR: Positif, LRw: GO/Pedale | | | |
| **Large Romanesque Church (High Clarity)** | St. Etienne, Caen (FR) | CN55 | 6.0 sec |
| PO: Positif, PE: Pedale, GO: Grande Orgue, RE: Recit, GA: Organ Gallery, NA: Nave | | | |
| **Large Gothic Church (High Clarity)** | St. Barbora, Kutná Hora (CZ) | Bhk58 | 6.0 Sec |
| Huge open space, but with reverb dampened and high clarity | | | |
| **Gothic Cathedral (w/Transept)** | Sedlec Monastery, Kutná Hora (CZ) | Khs80 | 8.0 Sec |
| Long reverb time, Strong bass response | | | |