

## Frequently Asked Questions (FAQ)

**HARVEY® mx.16**

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# Configuration

## **What parameters are reloaded during system start? Start preset or the last configuration?**

The last saved parameters are always reloaded from the flash first. If a start preset is configured, it will be loaded afterwards. The device will be unmuted then, but only, if it was unmuted before the restart.

If the start presets do not include all project parameters you may have a mix of old parameters and the start preset after the restart.

## **How often are parameter changes stored in the Flash?**

Changes are stored immediately, but max. once every 10 seconds.

## **How can the current project be deleted from the device?**

Open the HARVEY Composer software. Open the cockpit → device settings. There is a button “delete” for deleting the current project on the device.

Service staff have the option of doing this via telnet.

## **Is it possible to reset a mx.16 to factory settings?**

Yes, devices with a serial number of "13-..." or larger may be reset to the factory state. Older devices may have received an upgrade in that respect by the manufacturer but that cannot be guaranteed.

To perform a factory reset the following has to be done:

1. Switch off device
2. Press the two outer buttons on the front and switch on the device while holding them
3. The display will ask for confirmation
4. Press the second button from left to initiate the factory reset.

The device will then perform the reset which may take a couple of minutes.

# GUI

## **With which operating systems is HARVEY Composer compatible?**

The HARVEY Composer needs a Microsoft Windows operating system.

The HARVEY Composer has been successfully tested with the following operating systems:

- Windows XP (SP3)
- Windows 7 Pro 32-bit
- Windows 8 Enterprise 32-bit

The HARVEY Composer needs an installed Microsoft .NET Framework 2.0:

- It has to be installed manually under WinXP, if the setup reports a missing .NET Framework 2.0.
- Windows 7 usually includes it already.
- In Windows 8 the .NET framework 3.5 (contains .NET 2.0 and NET 3.0) must be checked in the control panel under Windows system components – it is unchecked by default.

## Network Configuration (Ethernet)

### **What IP address does my mx.16 have?**

Choose Status in the main menu of the user interface. The screen which then appears shows the current network configuration. You may have to scroll down using the wheel knob to get the IP address to show up on the display.

### **What is Zeroconf?**

Zeroconf is a collection of technologies, that:

- standardize the automatic configuration of devices in the network;
- administer unique names of devices and services in the network.

### **My mx.16 appears in the GUI with an added #1, although I didn't assign the number within the name. Why?**

If several mx.16 devices with the same name are logged into the network, the conflict is solved by adding numbers to the name. The Installer should assign unique names for each device directly after the initial operation.

### **What kind of address is the IP address 169.254.x.y?**

This is an IPv4LL address (see RFC 3927). These addresses are assigned automatically by the device, if no DHCP server has been found, so that the device has an IP address at all.

IPv4LL addresses are defined to be reachable by any device in the local network. Since Windows does not always comply to that definition HARVEY Composer will configure the Windows routing service – if necessary – to make devices with IPv4LL reachable. A special HarveyRouteService is installed for that purpose to ensure HARVEY Composer has the required permissions for that task.

HARVEY Composer can find the device and its address using its built-in service discovery mechanism.

IPv4LL addressing is part of Zeroconf. ► see “What is Zeroconf?”

## What happens, if the Netmode ZeroConf is activated in the User Interface, but I don't have a DHCP server?

The mx.16 will allocate an IPv4LL IP address. The address is based on the format and the device ensures that it is unique in the local network. The PC GUI automatically creates a route in the network during the start, so that it can establish a connection to the mx.16.

► See also: „What kind of address is the IP address 169.254.x.y?“

## My mx.16 has an 169.254.x.y IP address and the GUI (HARVEY Composer) cannot connect. What can I do?

For a PC to connect to such an IPv4LL address Windows must be configured to know how to reach that special network segment. In terms of network configuration that results in a specific entry to the Windows routing table.

The GUI should establish such a route automatically, if necessary, but maybe that did not work out properly. You can check that via the *command shell* by entering the following command:

```
route print
```

Windows should then print a list of all configured routes, among others one like this:

```
169.254.0.0 255.255.0.0 10.0.10.226 10.0.10.226 30
```

If the route entry is missing, HARVEY Composer has failed in adding it during start. Possible causes are:

- a. The HARVEY Composer setup did not complete successfully,
- b. HarveyRouteService is missing the required permissions to alter the routing table.

In both cases it should help to reinstall HARVEY Composer explicitly with Administrator permissions.

In case the route entry exists, it is possible that a firewall software on the PC is blocking the connection. To narrow that down it should help to temporarily disable all local Firewall products (including the Windows Firewall service) on the PC.

► See also: „What kind of address is the IP address 169.254.x.y?“

## Audio Processing

### How much delay does HARVEY mx.16 introduce on audio signals?

- mx.16 delays signals for exactly **94 samples** (93 samples before firmware 1.2.0.0), measured between input and output clamp. Measured as a function of time this means  $93/48 \text{ kHz} = 1.937500 \text{ ms}$  (48 kHz is our sample rate). This corresponds to ca. 66 cm sound path or about one arm length.
- mx.16 with CobraNet adds two more samples, resulting in **96 samples**, totaling in 2.0 ms delay. The configurable delay in CobraNet adds to that (e.g. 1,33 ms)
- der größte Teil der mx.16-internen Verzögerung ist hardware-bedingt und kommt durch die A/D- und D/A-Wandler zustande (zusammen 77 Abtastwerte)

- The delay is the same for all channels and **is independent of the number of audio processing blocks** in the channel or sound path
- The converters (A/D and D/A over all channels) operate synchronously, thus converting at the same time within one sampling period.
- A time response compensation is structurally not necessary (comparison: Biamp's Flexmatrix calculates 0.3 ms delay for every block in the chain and has a minimum delay of 2.6 ms. It is uncertain if the converters are already included in that calculation).

As a matter of principle, the following processing blocks cause a delay depending on the settings of the user:

- Filters introduce frequency-dependent phase distortions in channels depending on the filter and settings (frequency-dependent as they are recursive filters). The distortion leads to a frequency-dependent group delay (normally in the areas of the respective cut-off or medium frequencies). These are not equalized automatically, but may be equalized or balanced manually by all-pass filters if needed.
- Dynamics cause an additional delay in their look-ahead time (L.A.) which is adjustable by the user.
- A delay block or a matrix with a crosspoint delay naturally implies a delay in the precisely configurable length.

### **How powerful is the integrated DSP?**

mx.16 has an integrated powerful 32-bit floating point DSP, incorporating performance data like 2.4 GFLOPS and 800 MMACS. For example, mx.16 is able to perform the following audio processing tasks:

- On more than 100 channels, 8-band full parametric equalizers with a choice of seven filter types for each single band (Peaking, low-pass, hi-pass, Notch, All-pass, Lo-Shelf, Hi-Shelf)
- more than 6 single mixing/switching matrices
- one dynamics processor (limiter, compressor, expander) each on more than 150 channels
- one AGC each on more than 150 channels
- one ducker each on more than 100 channels
- ...

### **How are levels adjusted? Do they include fading?**

- For every change to level gains (e.g. by setting a gain parameter via H-Net) the DSP internally fades the gain value to the newly configured value. This basic ramp is not configurable and is programmed to reach the final value within 250 ms. (=basic fade time)
- "Level" blocks have additional Fade/Wait parameters which come into effect during preset calls, only. The "Fade" parameter applies an additional user defined time to the basic fade time The "Wait" parameter defines a time which will delay the level value application/fading upon a preset call.

# Control Ports

## **At which rate are the analog control inputs (0-10V) sampled?**

Ca. 20 Hz; detailed information can be found in the manual.

## **Is it possible to induce a relative volume change by a contact input?**

There is no direct option provided to induce relative volume changes by logic event (e.g. contact input). There is an indirect way via H-Net:

- You trigger a logic-to-serial block by contact input,
- Logic-to-Serial block sends an H-Net command to the RS-485,
- The RS-485 interface must be configured so that the H-Net is enabled

The interface receives the sent command due to the implicit echo of the interface and processes the H-Net command accordingly. Any H-Net command can be sent. The entry in the logic-to-serial block of the relative volume change from stack 05, block 1 by 2 dB would look like this:

```
F0 01 07 A3 00 02 00 05 00 01 00 14 01
```

This entry may disturb another use of the RS-485. Alternatively, one might use a RS-232 loopback.

# Serial H-Net protocol

## **What is the H-Net protocol for?**

H-Net is a protocol for controlling the HARVEY product family by programmable external remote controls. For example H-Net can be integrated in media control devices and thus allows an individual design of the management of audio installations.

## **What do I need to integrate H-Net into remote controls?**

For integration you need the H-Net Integrator's Manual, including the protocol description.

## **What interfaces on the HARVEY mx.16 make using H-Net possible?**

H-Net can be used with all serial interfaces of HARVEY mx.16: RS-485, RS-232, Ethernet.

## **Which blocks can be controlled by H-Net?**

With the firmware  $\geq$  1.0.0.2 all DSP blocks except the following can be controlled by H-Net:

- Global Mute
- Master Link-Fader
- Serial-to-Logic / Logic-to-Serial

Generally: All parameters containing numbers may be controlled by H-Net

### How are the transferred numbers encoded?

All numbers are encoded and transferred in the two's complement notation. Particular attention must be paid to the display of negative values during the conversion to the binary system. Detailed information can be found in the "HARVEY mx.16 H-Net Protocol – Integrator's Manual" V1.3 or later.

### How can I find out the block and channel IDs?

First the ID display must be activated. Click on the "ID" tab on the left-hand half of the HARVEY Composer window. The grey "show control IDs" button must be "on". Then the IDs appear in the bottom right-hand corner of each block. Detailed information can be found in the "HARVEY mx.16 H-Net Protocol - Integrator's Manual" V1.3 or later.

### How are block and Channel ID in BLOCK\_H and BLOCK\_L or CHANNEL\_H and CHANNEL\_L encoded?

BLOCK\_H and BLOCK\_L or CHANNEL\_H and CHANNEL\_L stand for Block or Channel High-/Low Byte. If you want to control for example channel 3 in block 16, it would look like this:

```
...
7. Byte  BLOCK_H:    0x00
8. Byte  BLOCK_L:    0x10
9. Byte  CHANNEL_H:  0x00
10. Byte CHANNEL_L:  0x03
...
```

Due to the chosen encoding (Big-Endian) the High-Byte is assigned a value unequal to 0x00 only when block/channel IDs are greater than 255. Using hexadecimal representation helps to visualize that fact.

### Harvey does not react to H-Net-commands - why?

Two preconditions have to be met for H-Net control to work:

1. HARVEY recognizes only commands sent to its device address. Other commands are silently dropped. Modification of the device address may be done using H-Net.
2. HARVEY interprets commands only on those interfaces for which H-Net has been enabled in the Composer.

# Contact

If you have any questions that have not been answered here, please do not hesitate to contact us as follows:

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