PRODIGY.MC System Build 31 & globcon - Version 1.10.0

System Build 31 and globcon 1.10.0 introduce:

- Groups with fade-in / fade-out
- globcon controller
- Enhancements

NOTE

To operate the new system build via globcon please update to version 1.10.0.

Groups with fade-in / fade-out

The group faders can be triggered to exectue a pre-defined fading behavior:

- fade-in level in (position of fader)
- fade-out level (fade parameters, ghost fader))
- fade-in time / fade-out time (fade parameters)
- fading shape

FADE IN	Double-click to perform fade IN to Fade-IN level
FADE OUT	Double-click to perform fade OUT to Fade-OUT level
0/0	Double-click to open Fade parameters

Fade parameters
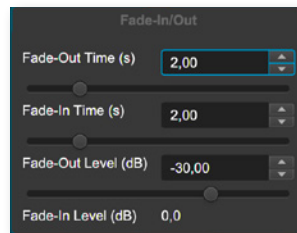
- time to fade out to Fade-OUT level
- time to fade in to Fade-IN level
- level after FADE OUT action (position ghost fader)
- level after FADE IN action (position fader)

Fading shape

The fading shape defines the fading curve.

TIP

To create a smooth crossfade between different sources you may start with equal fade times and identical target levels.

globcon controller

globcon controller is a host instance between the globcon application and standard internet browsers or hardware controllers.

globcon controller provides 12 layers with 8 faders each of and 8 function keys. The function of each element is freely assignable by any device plugin that is managed by globcon.

Up to 16 controllers can be configured, e.g. to provide individual configurations depending on the tasks of different users.

- Tutorial 1 - Introduction: https://youtu.be/C0MIECrWrDw
- Tutorial 2 - MIDI control: https://youtu.be/mgsTLfGLKss
- Tutorial 3 - OSC: coming soon

Enhancements

- Reset Device has an option to reset only live settings, without removing snapshots from the device (checkbox in confirmation popup)
- Color Picker
- New Automator Triggers/Actions
- Groups multiselection
- Online help search function

PRODIGY.MC System Build 30 & globcon - Version 1.9.0

System Build 30 and globcon 1.9.0 introduce:

- EARS® extended, adding 'Disaster Recovery'
- MADI I/O - High Speed mode added
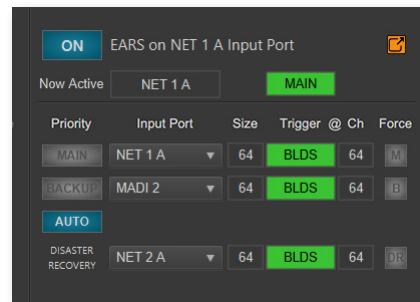- Ember+ - Levelmeter added
- Enhancements

NOTE

To operate the new system build via globcon please update to version 1.9.0.

EARS® extended, adding 'Disaster Recovery'

The Enhanced Automatic Redundancy System now offers a second fallback source to increase the level of redundancy.

If 'MAIN' and 'BACKUP' fail, a switch-over to the 'DISASTER RECOVERY' is triggered.

TIP

EARS® control of single ports can be opened in a separated floating window.

A detailed description is provided in the program help of globcon.

MADI I/O - High Speed Mode

According to the AES 10-2020 standard there is a dedicated frame type for 4 FS transmission.

Mode	1 FS	2 FS	4 FS
High Speed	48 kFrame	96 kFrame	192 kFrame
Legacy	48 kFrame	S/MUX 2	S/MUX 4

High Speed active means that the MADI frame type is always the same as the sampling frequency of a signal (48 kHz-> 48 kFrame, 96 kHz-> 96 kFrame, 192 kHz -> 192 kFrame).

In Legacy mode, which most MADI devices on the market are still exclusively using, for example a 96 kHz signal could be transmitted using 48 kFrame type (S/MUX).

Ember+ - Levelmeter added

Parameter	info/read only	info/read + change/write
Device Name / Brand		x
Firmware System Build, sub systems	x	
CPU Temperature	x	
System Temperatures	x	
PSU Status, Voltage Values	x	
Power Consumption (W and A)	x	
IP Configuration	x	
Clock Source		x
Scaling Factor (FS)		x
Sample Rate	x	
Module Type per Slot	x	
MADI Input Status, Output Config		x
Network Input Status, Output Config		x
Word Clock Input Status	x	
Video Sync Input Status	n/a	n/a
AES Input Status, SRC Control		x
Input / Output Label, Gain, Trim, Polarity, Mute, PPM Levelmeter		x
Routing Matrix		x
DSP Routing Matrix	n/a	n/a
GPI Status, Polarity		x
GPO		x
FastSRC®		x
Generator Configuration, Gain		x
Group Label, Gain, Mute		x
Summing Bus Gain, Trim, Polarity, Mute, PPM Levelmeter		x
MatMix Source Label, Gain, Pan, Mute, PPM Levelmeter	n/a	n/a
MatMix Master Label, Gain, Mute, PPM Levelmeter	n/a	n/a
Flex Channel (Label), Gain, Mute, Polarity, Time Adjust, Automix, PPM Levelmeter	n/a	n/a
Automix Label, Behaviour, Hush Wizard	n/a	n/a

Enhancements

- Snapshot recall in CONFIG Mode
  Before recall 'MUTE ALL' is activated automatically. It remains active after recall and requires to be de-activated manually (=> 'UNMUTE ALL')
- Sync Settings:
  Word Clock Out can be fixed to 1 FS or can follow the scaling factor
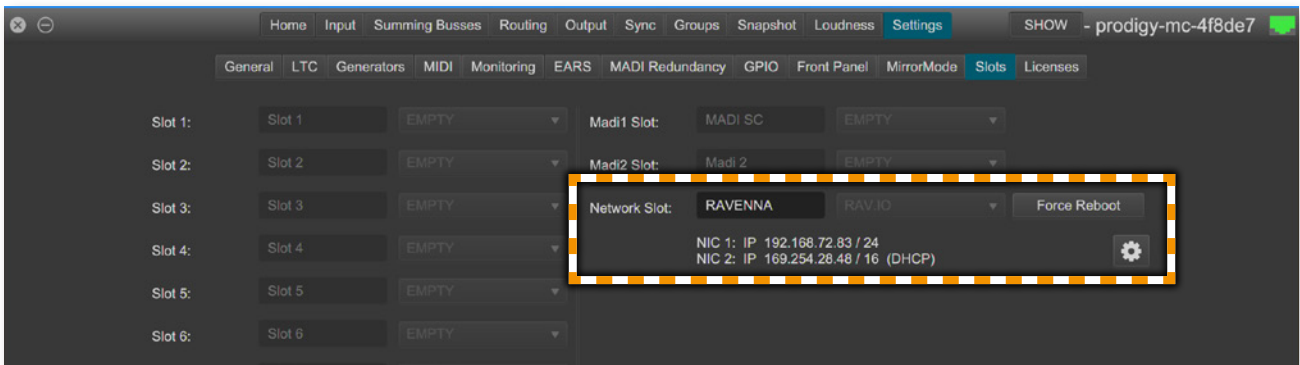
- Settings - Slots: display and configuration of IP address of RAV.IO
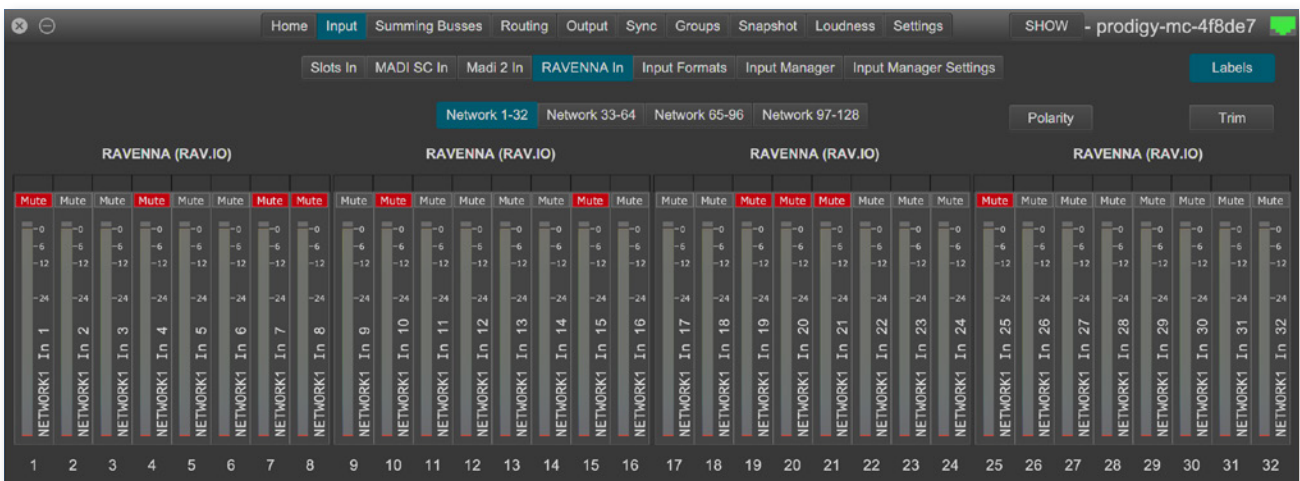
- Input: Input Mutes for all physical inputs added
- Loudness: User labels added

PRODIGY.MC System Build 28 & globcon - Version 1.8.0

System Build 28 and globcon 1.8.0 introduce:

- Summing Busses (System license Advanced or FastSRC™ license bundle)
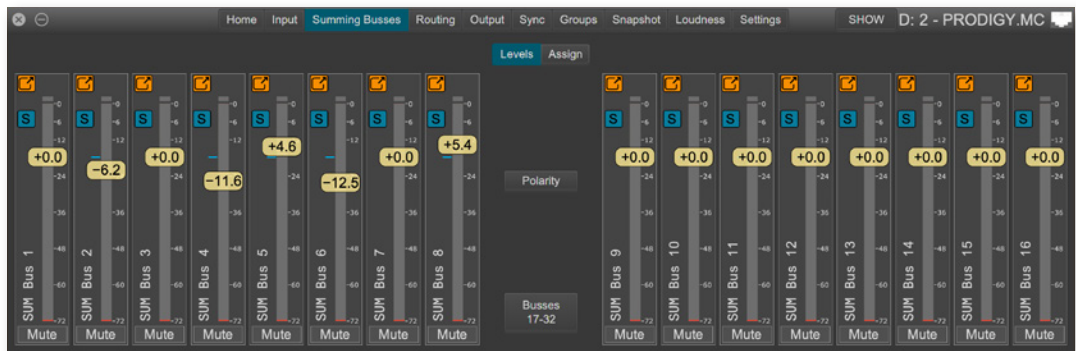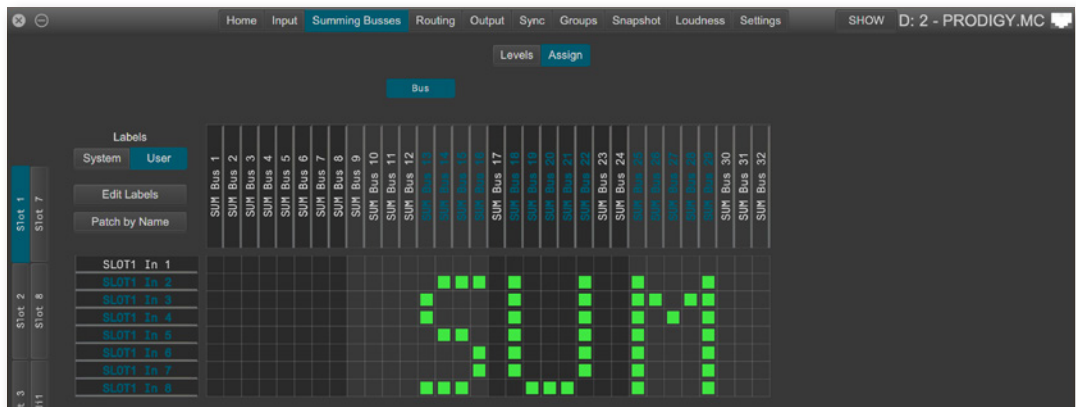- MirrorMode
- User definable slot labels

NOTE

To operate the new system build via globcon please update to version 1.8.0.

Summing Busses

32 Summing Busses provide comfortable summing of input channels, i.e. to create MixMinus signals or intercom feeds. The output level of each sum is adjustable and can be routed to any physical output in the tab 'Routing'.
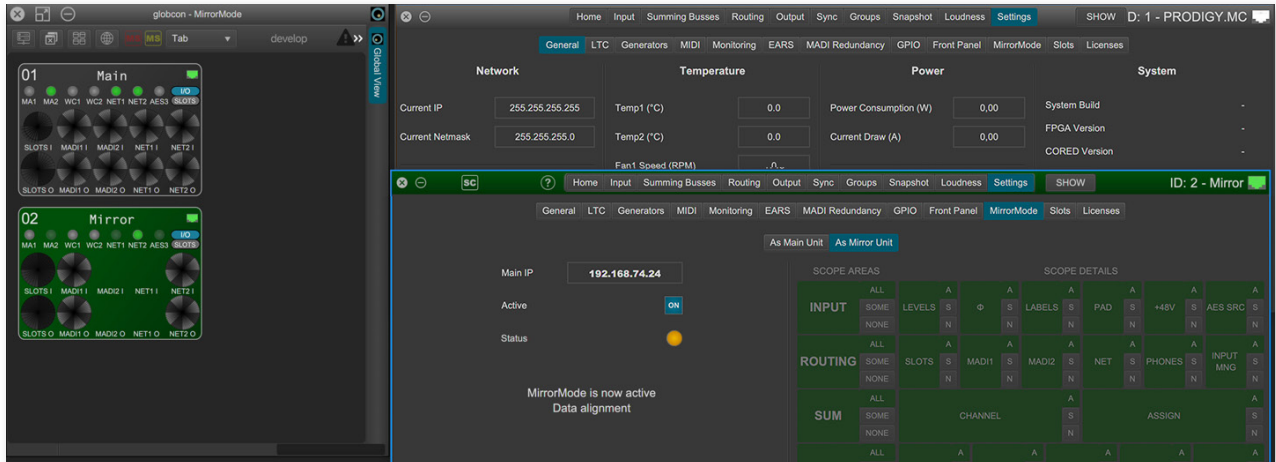

- Click and hold the button 'S' to check the sources of a summing bus.

MirrorMode

Alignment of defined parameters between a 'Main Unit' and a 'Mirror Unit'.
Device parameters of the 'Mirror Unit' are aligned with the 'Main Unit', based on a user-definable Mirror Scope.
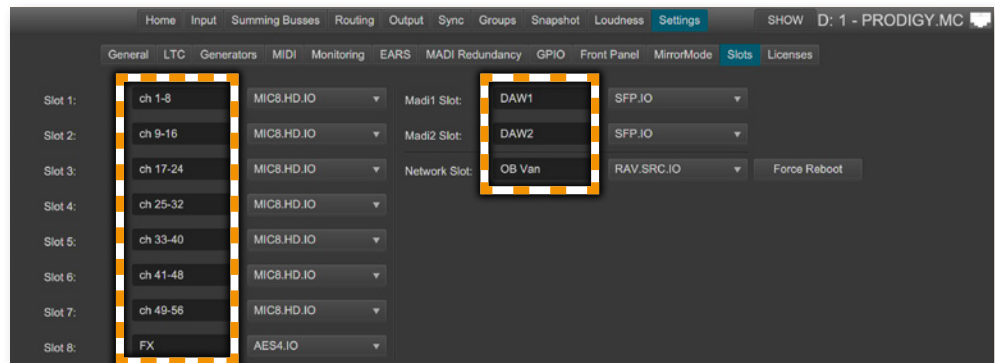

- Any number of Mirror Units is possible
- Daisy-Chaining of Mirror Units is possible - a Mirror can act as Main for another Mirror.
- Bidirectional alignment is possible, but not recommended.
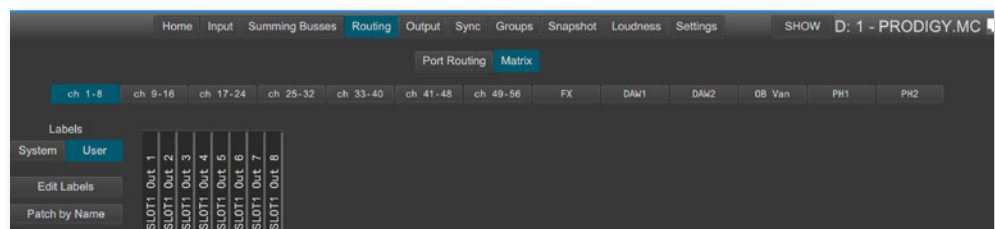
Tutorial video: https://vimeo.com/directout/prodigy-mirrormode

User definable slot labels

The slots for all modules can be labelled individually to improve the overview.

User defined slot labels applied in the routing matrix.

PRODIGY.MC System Build 27 & globcon - Version 1.7.0

System Build 27 and globcon 1.7.0 introduce:

- Input Manager
- Automatic Bypass option for FastSRC™

NOTE

To operate the new system build via globcon please update to version 1.7.0.

Input Manager

An input manager is used to define a signal source following a priority list of up to six different physical inputs. This signal source can be patched inside the Routing. Once a physical input fails the next one in the priority list is used as signal source.
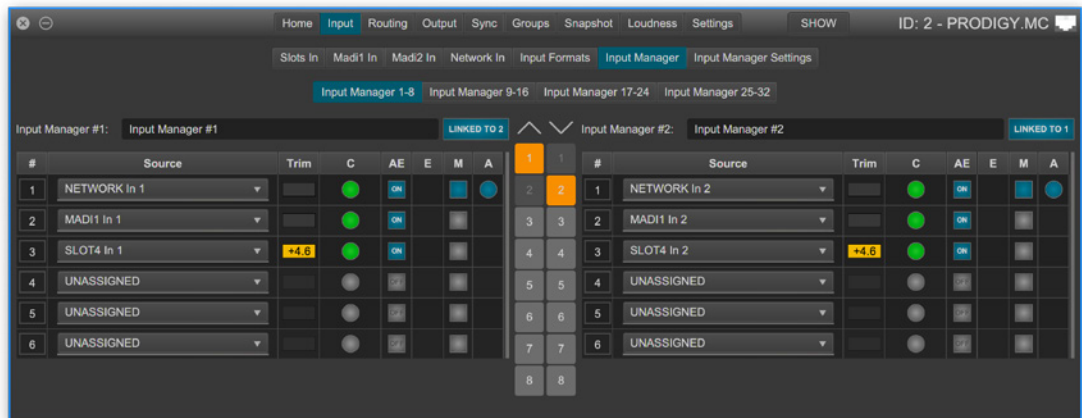

- 32 Input Managers are available.
- 2 input managers can be linked to stereo pairs.
- Sources can be moved to change the order of the priority

- Selectable criteria to switch to the 'next' source:
  - mismatch of level coherence (C)
  - signal level below adjusted threshold (Signal) - 'Silence Detection'

- Auto enable (AE) allows to revert to that signal source after a failure automatically.
- Enable (E) requires manual interaction to revert.
- Manual selection (M) overrides the automatic switch-over.
- The active source is indicated by a blue circle (A).

Coherence (C)

An algorithm monitors the signal level of each physical source. It's level is compared to the rest of sources over a certain period of time. If the level matches the source is considered as 'valid'.

- Levels can be trimmed (Trim) to match coherence and to ensure a proper switch-over.
- Auto-Trim adapts all 'lower' sources referencing the top priority source (#1).
- Manual selections allows to check every source while trimming.
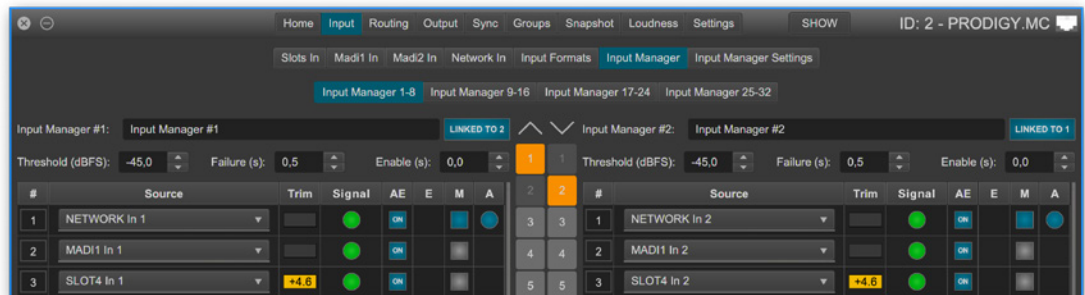
Silence (Signal)

Setting an Input Manager to 'Silence', the switch-over to the next physical input in the priority list is executed when the measured level of the input signal is below the adjusted 'threshold' longer than the 'failure' time specified. 'Enable' defines the period of time to wait before reverting to the physical input when the signal is 'back'.
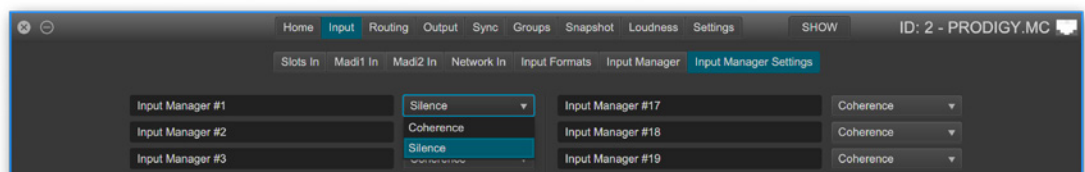
Input Manager Settings for 'Coherence' (C) or 'Silence' (Signal).

FastSRC™ - Automatic Bypass

Automatic operation of the FastSRC™ (page 25) facilitates the handling with changing signal sources at the MADI or audio network IO.
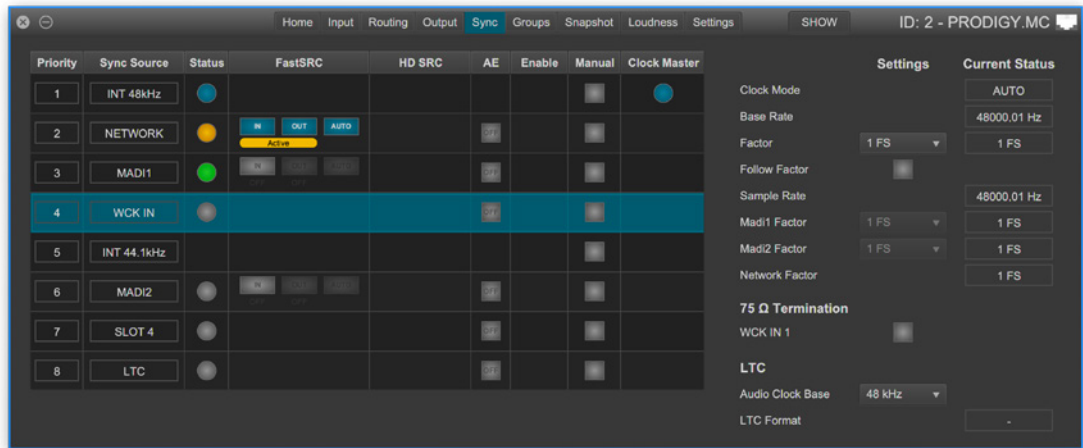
With ‚AUTO' activated sample rate conversion is applied depending from the sync state of the input signal: in sync or not in sync with the system clock.

AUTO	FastSRC™	Signal in Sync	Sample Rate Conversion	Latency added
n.a.	OFF	yes / no	inactive	no
OFF	ON	yes / no	active	< 0.15 ms
ON	ON	yes	inactive	< 0.15 ms
		no	active	
		yes again*	automatic bypass after 60 seconds	

* 60 seconds after the signal is in sync with the system clock again, sample rate conversion is bypassed.

The automatic switch-over will not change the latency (less than 0.15 ms) of the signal path.

NOTE

With HD SRC active, the FastSRC™ and the automatic bypass become inactive. HD SRC is available for the audio network modules RAV.SRC.IO, DANTE.SRC.IO and SG.SRC.IO.

PRODIGY.MC System Build 26 & globcon - Version 1.6.0

System Build 26 and globcon 1.6.0 introduce:

- license management revised
- update mode version 1.3.2
- new commands: shutdown / reboot into update mode
- support of audio network modules with SRC
- Ember+ improvements

Update Procedure

To shift your device to the current system build a two step process is necessary:

1. Update of the 'update mode' to version 1.3.2
2. Update to System Build 26

After each update a power cycle is required.

NOTE

To operate the new system build via globcon please update to version 1.6.0.

License management revised

For enhanced scalability the PRODIGY series can be ordered with different system licenses - Essential, Advanced, Unlimited. Additional single licenses can be acquired online on demand.
All devices sold before 1. April 2021 obtain the system license 'Advanced' to preserve their current feature set.
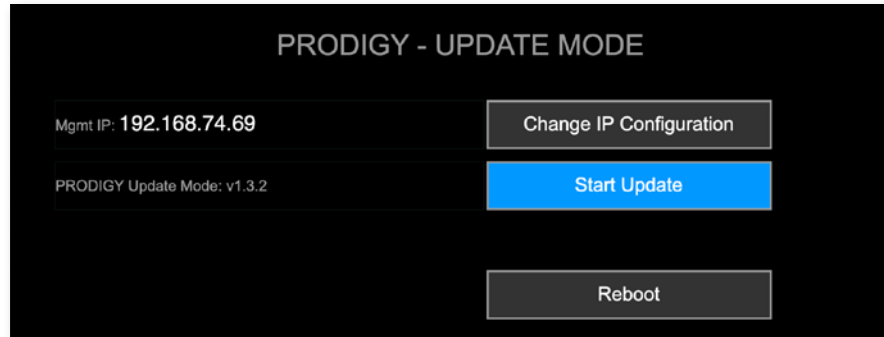The system license 'Essential' offers essential PRODIGY features while 'Unlimited' includes all current and future license options.

The license state is displayed on the front panel / browser display or in globcon.
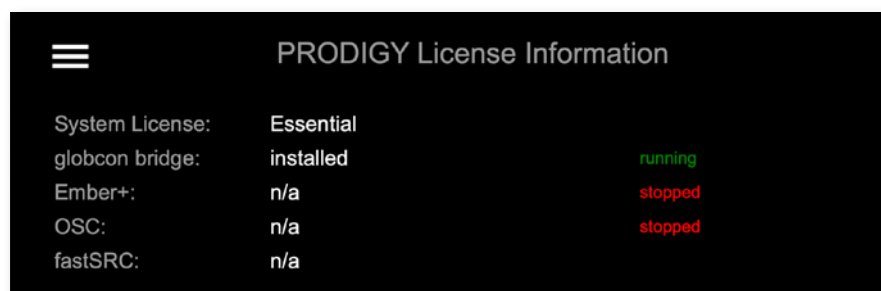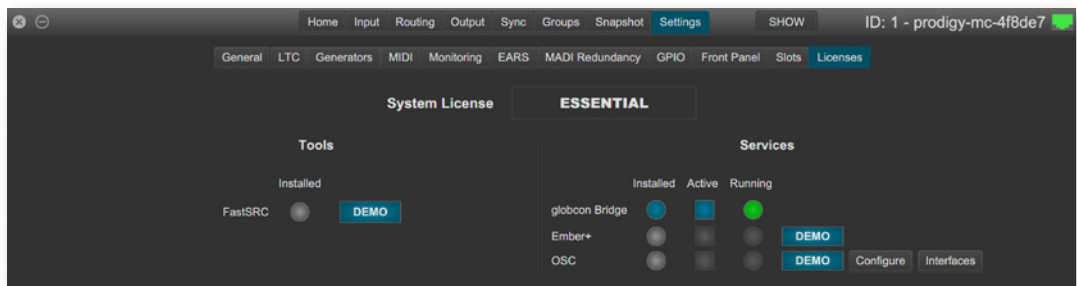
Update Mode v1.3.2

Version 1.3.2 is required for installation of system build 26 and licenses.
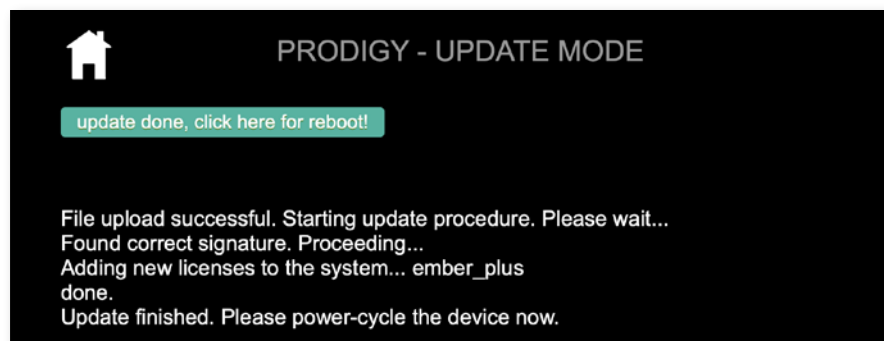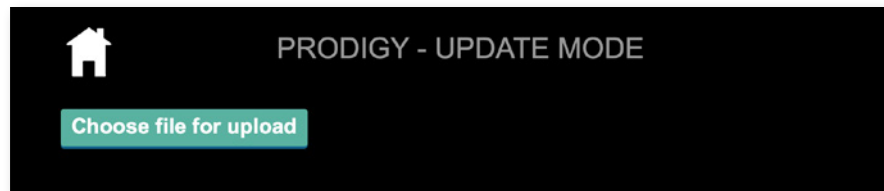

The IP address may vary in update mode when the network settings are set to DHCP.

TIP

To keep the identical IP address in both operating modes, configure the network settings manually before rebooting into update mode.


TIP

To install multiple licenses without rebooting the device in between, click on the HOME icon after the installation has been completed successfully.

New Commands: Shutdown & Reboot into update mode

To ensure proper file operation the operating system needs to be shut down before switching the device off.

To update the device it can be rebooted into update mode from the front panel instead of power-cycling the device with the HOME button pressed.
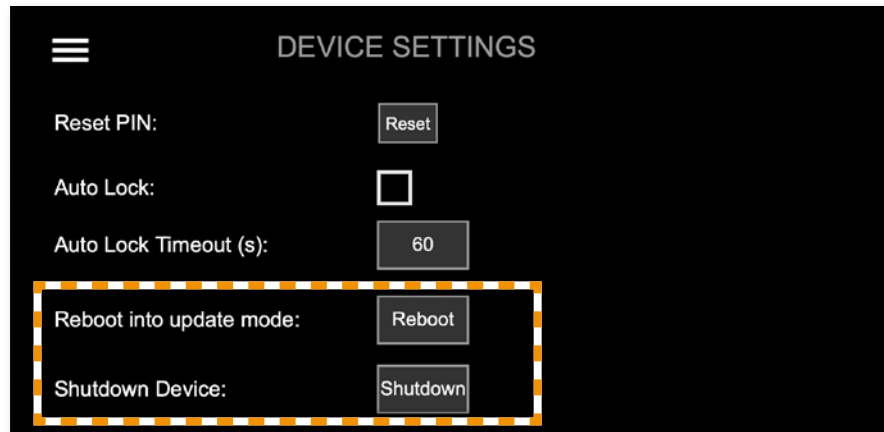
Both commands can also be used remotely via globcon or the web UI, once the feature has been activated on the front panel:
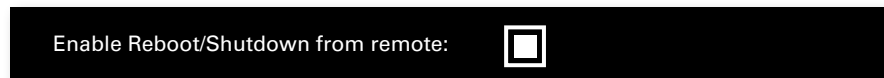
This setting is persistent and will be restored after a power-cycle or reboot.

WARNING

Enabling 'Reboot/Shutdown from remote' can be a security risk, if the management network can be accessed freely. It is disabled by default.

To use the new commands in globcon:
- activate the Configuration Mode
- go to Settings - General

You will be prompted to type 'shutdown' or 'update' to use either command.
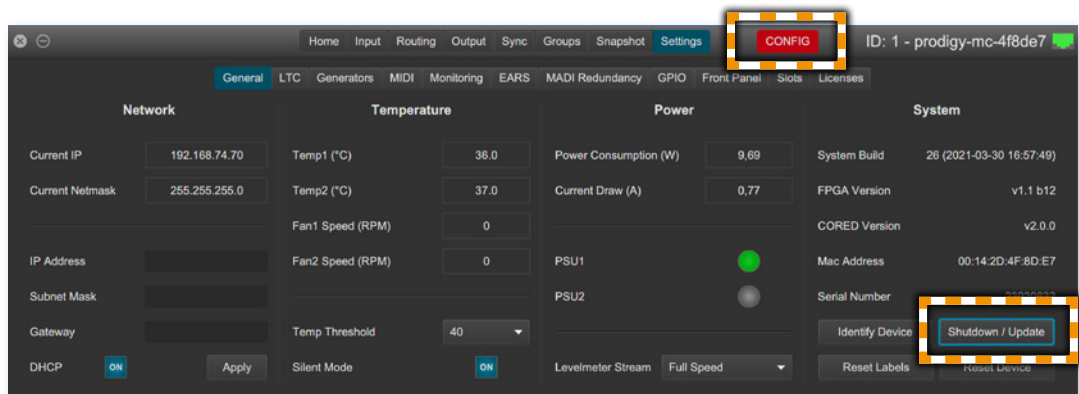
Support of new audio network modules with SRC

The audio network modules DANTE.SRC.IO, RAV.SRC.IO and SG.SRC.IO offer state-of-the-art sample rate conversion.

Ember+ improvements

The control service Ember+ is extended and now supports:

- comprehensive monitoring of device status
- routing matrix including channel labels
- input gain, pad, P48
- clock configuration / status
- Flex Channel and Sum Bus: gain, mute, polarity (PRODIGY.MP)

EMBER+ is a paid license option.

For testing purposes a demo session can be initiated after startup to activate the feature for 30 minutes.

To acquire a full license please contact your local DirectOut representative.

EMBER+ service: <MGMT IP address>, Port 9000

PRODIGY.MC - System Build 25 & globcon - Version 1.5.0

System Build 25 and globcon version 1.5.0 introduce several new features:

- Operating Modes: 'Show' and 'Configuration' via globcon
- Snapshot: persistent storage and recall from the front panel
- License Option: Remote Control - EMBER+
- License Option: Remote Control - OSC

NOTE

globcon 1.5.0 requires PRODIGY.MC System Build 25 installed.

Show Mode - Configuration Mode

globcon version 1.5.0 introduces two new operating modes:
- Show Mode
- Configuration Mode

The Show Mode allows safe operation with snapshot recall keeping the device in a coherent status.

The Configuration Mode allows to prepare the device for Show Mode and to modify the 'Configuration Settings'.

Configuration settings are the portion of PRODIGYs data structure which is snapshot 'transparent', meaning that it is not changed when a snapshot is recalled in Show Mode.

NOTE

The operating mode is a device status, not a globcon status.
At startup of the device 'Show Mode' will always be active.

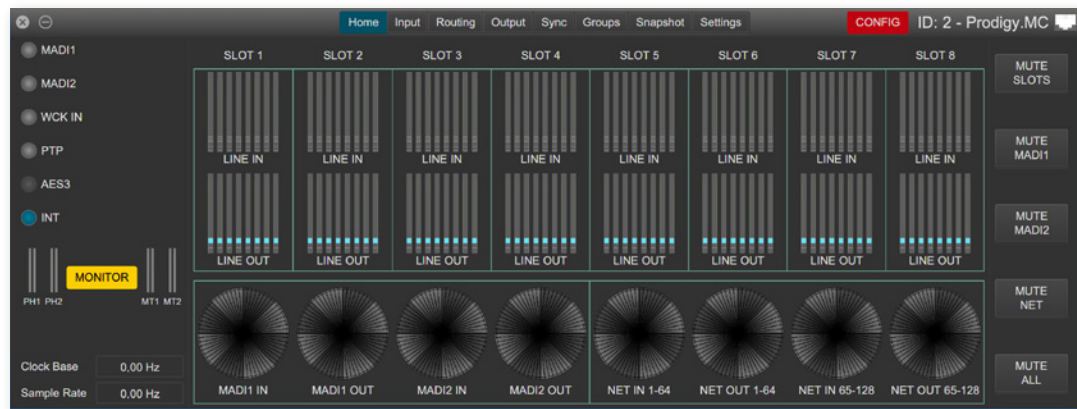### Configuration Settings
- Group membership

Comparison

		Show Mode	Configuration Mode
Snapshots			
	create / store	yes	yes
	duplicate	yes	yes
	delete	yes	yes
	recall	yes (if compliant)	yes *
	lock	yes	yes
	conform	yes	yes
Edit snapshot Data Set and Scope Set		yes	no
Change Configuration Settings		no	yes

* recall compliant and non-compliant snapshots but always with full Scope Set and intrinsic Configuration Settings (the entire data structure = total device recall).

Operating Modes - Switch-over

Configuration / Show Mode is toggled in globcon with a click on the button 'SHOW' / 'CONFIG' in the main window's upper bar of the PRODIGY device plugin. Relevant warnings pop up when changing the mode.

When the mode is changed from Configuration to Show, globcon will automatically offer the opportunity to conform non-compliant snapshotss.

NOTE

The operating mode is a device status, not a globcon status.
At startup of the device 'Show Mode' will always be active.

Snapshots are divided in two different lists:
- the upper one containing the snapshots 'recently' got non-compliant, due to the settings change happened during the last Configuration Mode session.
- the lower one containing non-compliant snapshots even before.

Non-compliant snapshots will be listed but won't be recallable once back in Show Mode.

NOTE

Locked snapshots cannot be modified or conformed.

Snapshots - Front Panel

Snapshots are now stored inside the device and can be recalled from the local display at the front panel of the device or via globcon.

Each snapshot which is created in globcon will be stored into the device.

As a snapshot can be stored within a globcon project, it is possible to reconfigure a device including snapshots via 'Push' function from globcon.

NOTE

Only compliant snapshots are listed and available for recall.

Snapshots - Compliance

compliant	Snapshot Data Set matches the Configuration Settings of the device.
non-compliant	Snapshot Data Set does not match the Configuration Settings of the device. Conform procedure required for recall in Show Mode or recall with full Scope Set in Configuration Mode, thus changing the Configuration Settings.

Snapshots - Conform

To conform a non-compliant snapshot with the current Configuration Settings, the following procedures are performed:

- Updates of Group memberships

NOTE

Conforming a non-compliant snapshot is possible in both operating modes.

Snapshots - Import / Export

Export

- globcon offers the possibility to export snapshots and save them in a separate file (right-click on the device icon).
- All snapshots are exported including their intrinsic Configuration Settings.

Import

- Imported snapshots are checked for compliance and listed accordingly.
- Non-compliant imported snapshots must be conformed if recalled in Show Mode.
- An imported non-compliant snapshot shall be recalled in Configuration Mode to align the current Configuration Settings to the intrinsic ones contained in that snapshots.

License Option: Remote Control - EMBER+

EMBER+ offers control of the configuration, the settings of the Microphone Preamps and the Routing Matrix including channel labeling, as well as monitoring the status of the device.
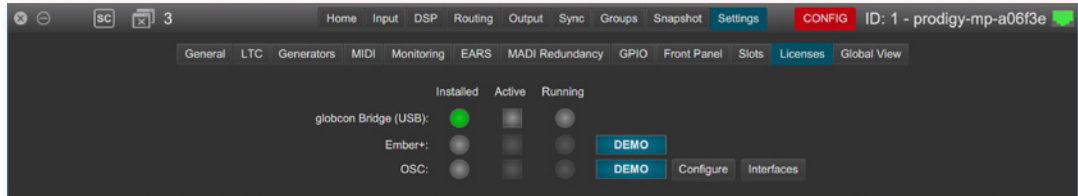
Remote Control - EMBER+ is a paid license option.

For testing purposes a demo session can be initiated after startup to activate the feature for 30 minutes.

To acquire a full license please contact your local DirectOut representative.

EMBER+ service: <MGMT IP address>, Port 9000

License Option: Remote Control - OSC

OSC (Open Sound Control) offers native control of device parameters via 3rd party software or hardware. Each single OSC action can be defined via globcon and can be stored persistently in the device.

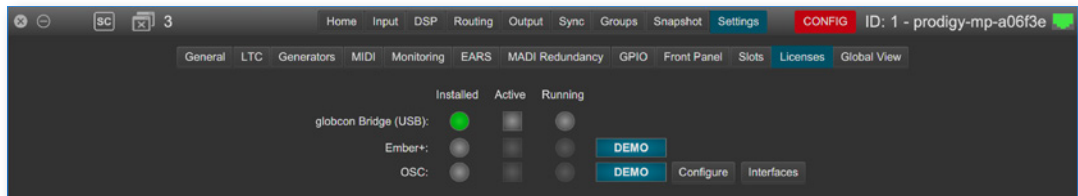Remote Control - OSC is a paid license option.

For testing purposes a demo session can be initiated after startup to activate the feature for 30 minutes.

To acquire a full license please contact your local DirectOut representative.

PRODIGY.MC - System Build 22

System Build 22 introduces several new features:

- MIDI-Matrix (incl. support for MIDI-over-MADI)
- LTC to MTC converter
- Sine wave, Pink noise and white noise generators
- FastSRC™ for MADI and audio network I/O
- EARS™ (Enhanced Automatic Redundancy Switching)
- Levelmeter

MIDI Matrix

The MIDI matrix allows to route MIDI data across different interfaces. It also enables ‚MIDI-over-MADI‘ (embedded into a MADI signal, user bit of channel 56) which is used for remote control of legacy devices such as the DirectOut ANDIAMO series.
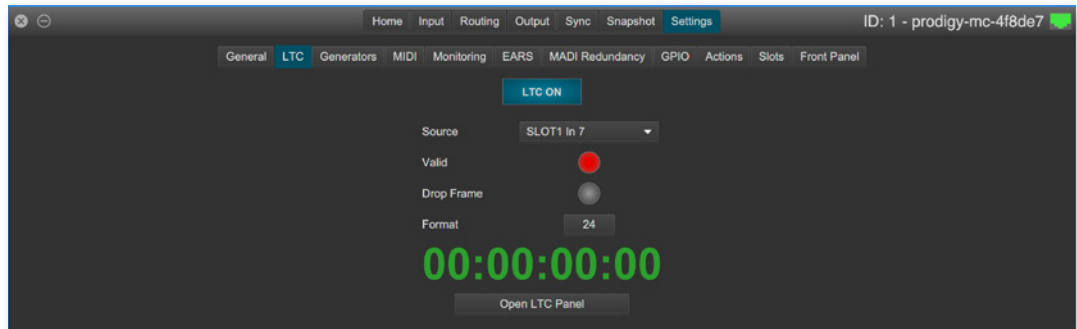
An ‘LTC to MTC’ converter offers the chance to synchronize external equipment over MTC (MIDI Timecode) with an LTC source (Linear Timecode).
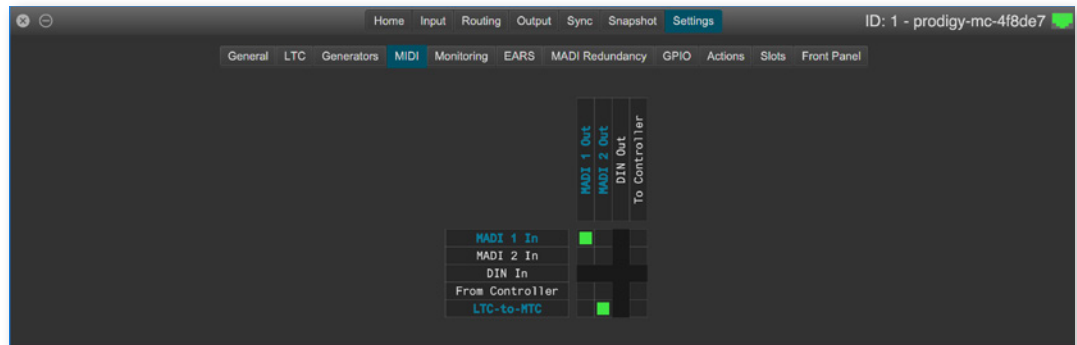
Controller is the globcon instance connected via network.

LTC to MTC Converter

PRODIGY.MC can read incoming LTC (Linear TimeCode) from any physical input to trigger events, for display or synchronization.

The LTC-to-MTC converter now offers the chance to output the incoming LTC to a device expecting MTC (MIDI TimeCode).
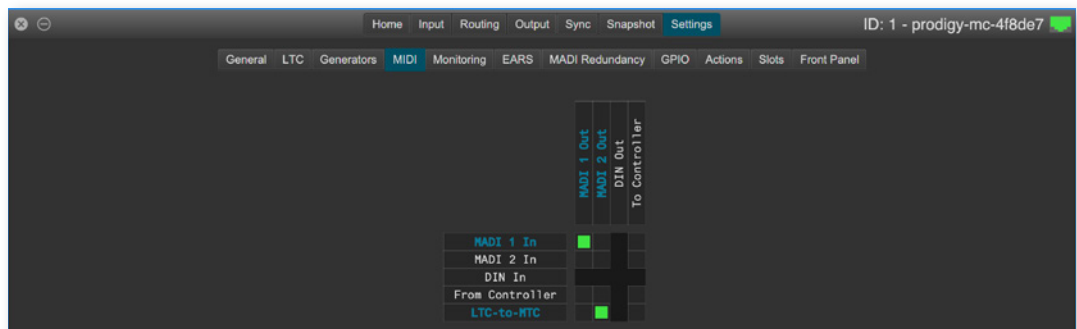
In this example LTC is read from SLOT1 Input channel 7.
The LTC is embedded as MTC into MADI 2 output and the embedded MIDI signal from MADI 1 input is routed to MADI 1 output.

Generator

Integrated signal generators are offered as sources in the tabs ‚Routing‘ and ‚DSP Routing‘.

Types:

- BLDS™ - Buffer Loop Detection Signal
- Sine Tone (2)
- White Noise (2)
- Pink Noise (2)
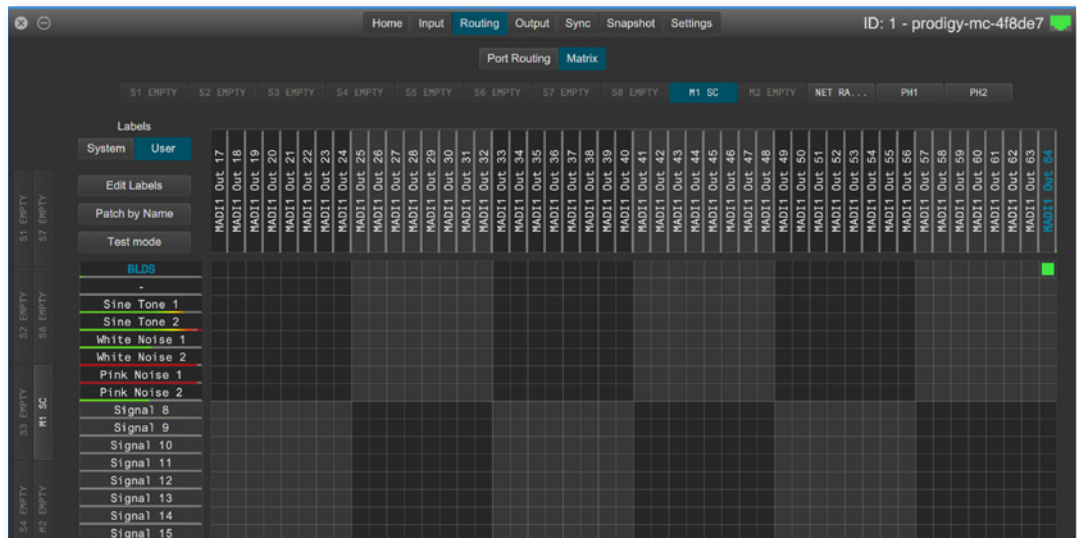
BLDS™ may be used to trigger remote devices deploying EARS™ (Enhanced Automatic Redundancy Switching).

The generators for sine tones, white noise and pink noise are adustable (level & mute) in the tab ‚Settings‘. The sine tone generators can be tuned individually.
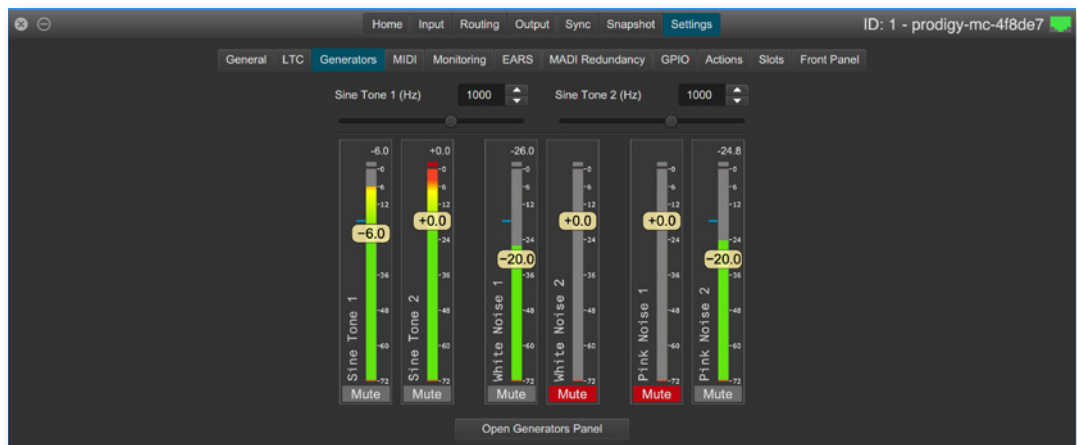
NOTE

The generators are offered in pairs and their signals are uncorellated.

FastSRC™

The FastSRC™ is a low latency sample rate converter that is available for the MADI I/Os and the audio network I/O.
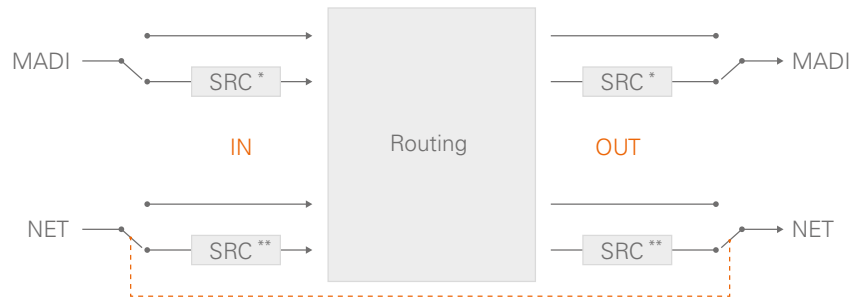
* FastSRC™   ** FastSRC™ or HD SRC

For the audio network I/O the FastSRC™ may be activated for input and output together only.

The settings for the FastSRC™ are in the tab 'Sync' or accessible on the front display of the device ('CLOCK') or via browser control.
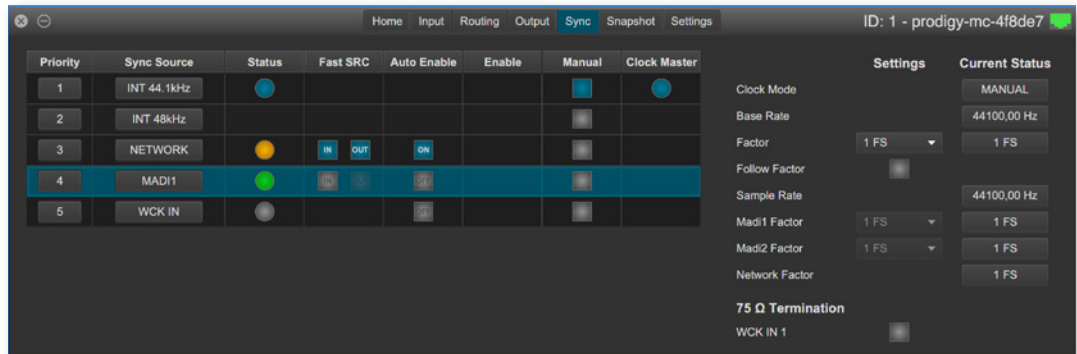
NOTE

If an input is used as clock source for the device it is neither necessary nor recommended to activate the FastSRC™.

NOTE

Since the trigger signal for EARS™ is monitored before the FastSRC™ the use of BLDS™ is possible with the FastSRC™ activated.

Channel Counts

The number of available hardware input & output channels depends on the internal sample rate of the device.

Device at 1FS

Input	Max I/O	1FS	2FS*	4FS*
MADI	64	64	32	16
DANTE.IO	64	64	32	16
RAV.IO	128	128	64	32

Device at 2 FS

Input	Max I/O	1FS*	2FS	4FS*
MADI	32	32	32	16
DANTE.IO	64	64	32	16
RAV.IO	64	64	64	32

Device at 4 FS

| Input	Max I/O	1FS*	2FS*	4FS
MADI	16	16	16	16
DANTE.IO	32	32	32	16
RAV.IO	32	32	32	32

* FastSRC™ active

TIP

The I/O channel count of converter slots (analog / AES3) is independent from the sample rate of the device and the state of the sample rate converter (AES4.SRC.IO) and therefore always at full-channel count.

Scaling Factors - MADI at higher sample rates

The input of a MADI signal will switch to 2 FS operation automatically when a 96k Frame signal has been detected. With 48k Frame signals no distinction is possible between 1 FS or 2 FS or 4 FS - so the scaling factor has to be set manually.
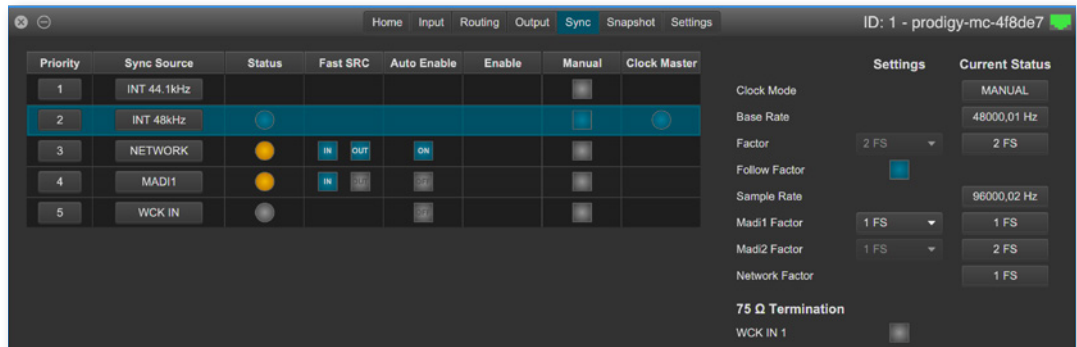
In this example the device operates at 2 FS (96 kHz) and MADI 1 input is receiving a 48k Frame signal. The input scaling factor is set to 1 FS and the FastSRC™ is active for MADI 1 input and inactive for the MADI 1 output.

Result:
- channels 1- 32 of the MADI input are sample rate converted to 96 kHz
- 32 channels at 96 kHz are output at MADI 1 output

About FastSRC™

DirectOut's FastSRC™ (FSRC) is a low latency sample rate converter for when two digital interfaces of a device must work in different clock domains.

FastSRC™ combines good sound quality with very low latency of less than 0.15 msecs and is invaluable in live sound applications and a 'life-saver' in critical situations.

High-end sample rate conversion requires noticeable processing time, so for the very best audio quality we recommend DirectOut's dedicated SRC products such as the RAV.SRC.IO, DANTE.SRC.IO or MADI.SRC.

EARS™ - Enhanced Automatic Redundancy Switching

EARS™ is a combination of DirectOut's successful BLDS™ technology and pilot-tone based switching. A logic monitors a trigger signal contained in certain audio channels of the audio network and MADI inputs.
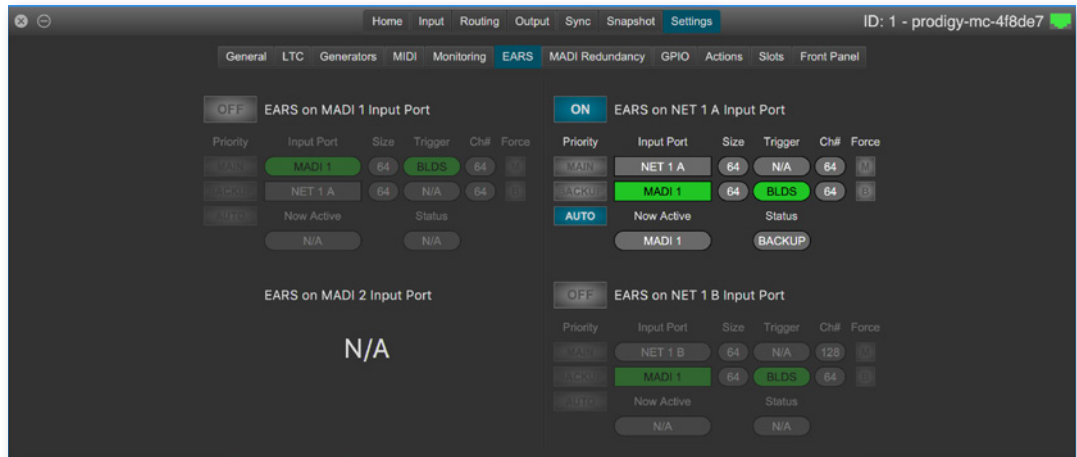
Two kinds of trigger signals are supported:
- BLDS™ (generated by the BLDS™ Generator)
- Pilot tone (audio signal with a level higher than -40 dBFS).

The trigger signal is monitored at dedicated channels ('Ch#') of the native signal - i.e. at the original sample rate - before the Fas SRC™. The EARS™ logic acts before the routing. Thus the result is used for all subsequent patches in the routing matrix.
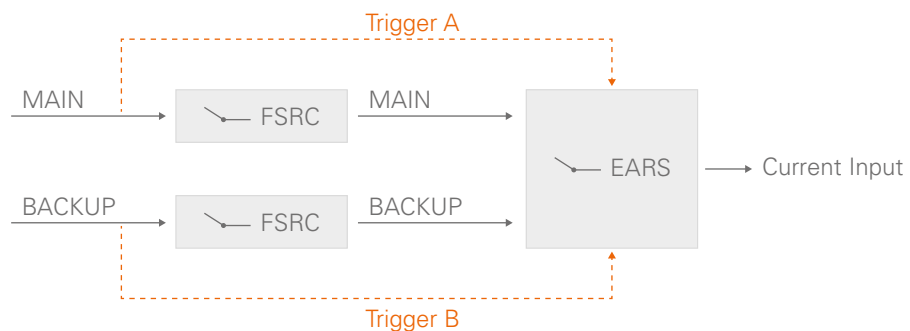
Switching by BLDS™ trigger is immediate (between two samples). The Pilot tone is evaluated for 10 ms before switching is triggered.

NOTE

Using different trigger signals for the same EARS™ logic is not recommended.

Priorities & Priority Modes

To decide which input source is used as output signal there are some choices.
Ranking:

- BLDS™ > pilot tone > no trigger signal

Three modes define the revert behavior, when a trigger signal ‚returns' after failure.

Mode	Behavior *
AUTO	Switch-over occurs only when a trigger failure is detected and a valid trigger signal is detected on the other port.
MAIN	MAIN is always selected if the trigger signal is detected on both ports.
BACKUP	BACKUP is always selected if the trigger signal is detected on both ports.

* required condition: identical trigger signals, otherwise a BLDS™ will override a pilot tone.

Force Mode

To override automatic switching temporarily, the source for the output can be forced to MAIN or BACKUP. The selection becomes available once EARS is activated.

Force Mode can be helpful if you want to stay with one system as a source while testing the second one.

Input Modes

EARS is operating in chunks of 64 channels at 1 FS.
Audio network modules dealing with 128 channels, such as the RAV.IO, are split into two logical units NET #A and NET #B.

Two input modes are offered for the MAIN port of audio network modules:

- MODE 1 - Different ports
- MODE 2 - First half / Second Half

Input Mode 2 divides the first 64 channels of a audio network module into two chunks of 32 channels each of, independent of the channel capacity of the particular module.

NOTE

MADI ports are not available for EARS™ if MADI Redundancy is active.

Example - 1 FS, NET 1 = DANTE.IO, NET 2 = RAV.IO

Module	MODE	MAIN	BACKUP
DANTE.IO	1	Dante (ch 1 - 64)	MADI 1 (ch 1 - 64) MADI 2 (ch 1 - 64) NET 1A (ch 1 - 64) NET 2B (ch 1 - 64)
DANTE.IO	2	Dante (ch 1 - 32)	Dante (ch 33 - 64)
RAV.IO [A]	1	RAVENNA (ch 1 - 64)	MADI 1 (ch 1 - 64) MADI 2 (ch 1 - 64) NET 1A (ch 1 - 64) NET 2B (ch 1 - 64)
RAV.IO [B]	1	RAVENNA (ch 65 - 128)	MADI 1 (ch 1 - 64) MADI 2 (ch 1 - 64) NET 1A (ch 1 - 64) NET 2A (ch 1 - 64)
RAV.IO [A]	2	RAVENNA (ch 1 - 32)	RAVENNA (ch 33 - 64)
RAV.IO [B]	2	n.a.	n.a.

Example - Device operating at 1 FS

Input	Factor	trigger signal ('Ch x')	signals available ('Size')
MADI	1FS	ch 64	ch 1 - 64
MADI	2FS	ch 32*	ch 1 - 32
MADI	4FS	ch 16*	ch 1 - 16
DANTE.IO	1FS	ch 64	ch 1 - 64
DANTE.IO	2FS	ch 32*	ch 1 - 32
DANTE.IO	4FS	ch 16*	ch 1 - 16
RAV.IO	1FS	ch 64 / 128	ch 1 - 64 / ch 65 - 128
RAV.IO	2FS	ch 32 / 64*	ch 1 - 32 / ch 33 - 64
RAV.IO	4FS	ch 16 / 32*	ch 1 - 16 / ch 17 - 32

Example - Device operating at 2 FS

Input	Factor	trigger signal ('Ch x')	signals available ('Size')
MADI	1FS	ch 64*	ch 1 - 32
MADI	2FS	ch 32	ch 1 - 32
MADI	4FS	ch 16*	ch 1 - 16
DANTE.IO	1FS	ch 64*	ch 1 - 32
DANTE.IO	2FS	ch 32	ch 1 - 32
DANTE.IO	4FS	ch 16*	ch 1 - 16
RAV.IO	1FS	ch 64 / 128*	ch 1 - 32 / ch 33 - 64
RAV.IO	2FS	ch 32 / 64	ch 1 - 32 / ch 33 - 64
RAV.IO	4FS	ch 16 / 32*	ch 1 - 16 / ch 17 - 32

* FastSRC™ active

Levelmeter

The refresh rate of the level metering can be adjusted to save valuable bandwidth when this is necessary (e.g. remote operation over WAN).