green**Machine**®

BiDi
Transport Solution

green**Machine titan**

Revision 1.0 – April 2021

LYNXTechnik **AG**®
Broadcast Television Equipment

THIS MANUAL SUPPORTS:	
titan from Revision	862
greenGUI from Revision	2.11.0

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1. Overview

The BIDI Transport package is a cost-effective bidirectional transport solution that allows transportation of video, audio, Ethernet, and GPI efficiently across two greenMachine Titan hardware devices. It is a flexible solution for applications that require an exchange of multiple signals on two single fiber links over long distance. A Master/Slave model of communication is used between the two greenMachine Titan hardware devices where one machine will act as a Master device while the other will be a Slave.

Six HD signals (1.485Gbit/s) or four 3G signals (2.97Gbit/s) or combination of signals up to 12Gbit/s with 4 external analog or digital Audio Signals and four GPIs can be transported via the fiber ports in both directions, simultaneously. The reference of one of the two greenMachines (aka the Master) is also transmitted to the other greenMachine (aka the Slave) and can be used in the remote location to synchronize cameras, as an example. A 1Gbit ethernet transport link provides easy control of the two greenMachine via greenGUI software.

For the signal transport to occur, the two greenMachine Titans need to be connected via two single-mode fiber cables (when used with transceiver SFPs) or one single-mode fiber cable (when used with the optional Bidirectional SFP modules).

The greenMachine titan hardware comes with a fully featured local control interface with an LCD which displays image previews and audio level meters of the processed video paths in addition to the graphical user interface.
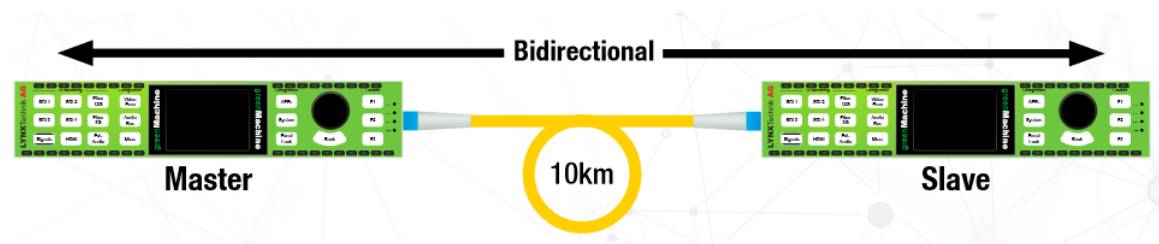
2. Operation Modes
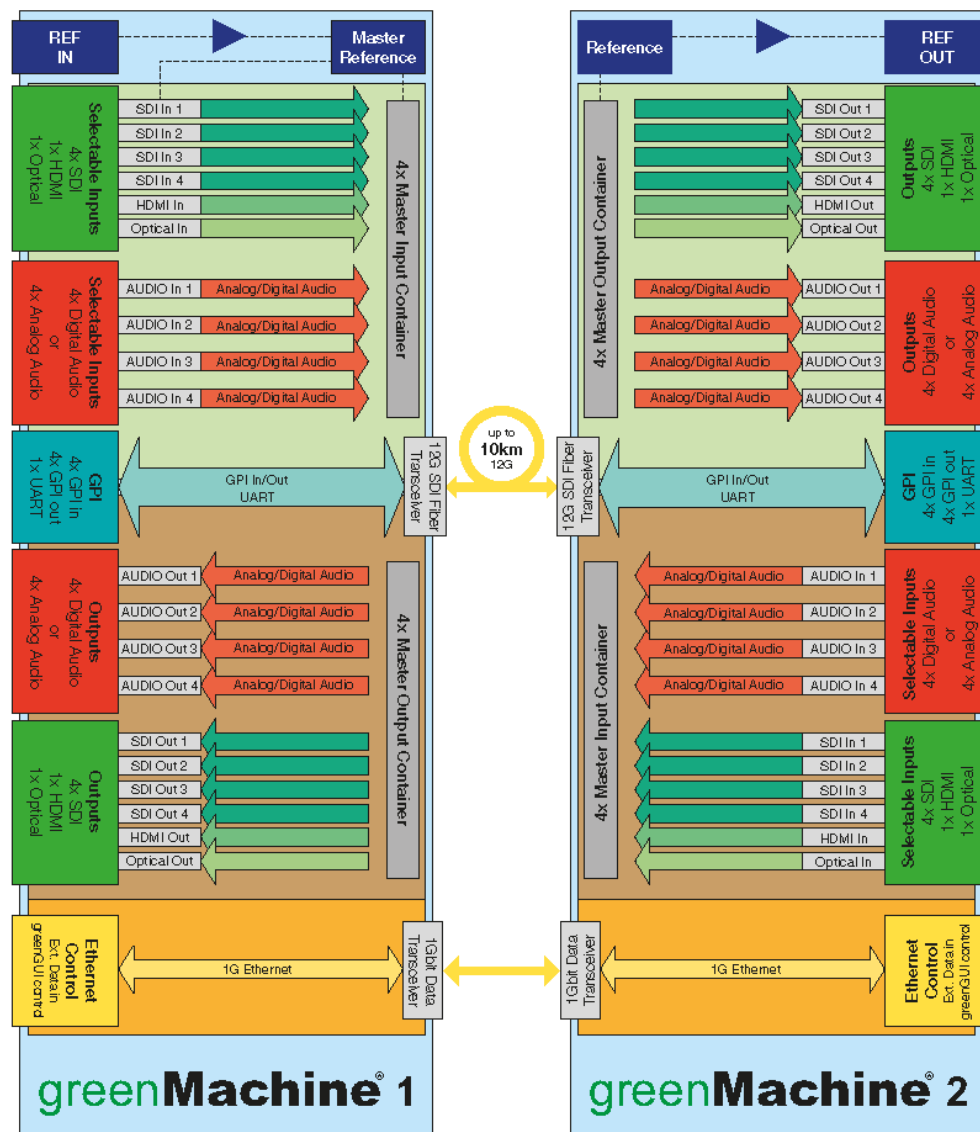
Operation Mode

2.1.   Requirements

Following are the requirements for a successful BIDI Transport setup

Hardware:
1. GreenMachine titan (2x)
2. 12Gbit SDI Bidirectional Optical Transceiver (2x)
   OH-BD-12G-1270-LC and **OH-BD-12G-1330-LC**
3. Bi-directional Gigabit Ethernet Transceiver (2x)
   OH-BD-51-1310-LC and **OH-BD-51-1550-LC**

Software:
1. Titan Firmware (Release Version)
2. greenGUI
3. BIDI Transport constellation deployed on both machines.
4. BIDI Transport Licenses (2x)

2.2.   Hardware Setup

1. Insert the Bidirectional SFPs to connect the two titans via single fiber using the 12G Fiber port.
2. Insert the Data SFPs in both titans to connect the two machines via single fiber using Ethernet Fiber port.

2.3.   Master/Slave Configuration

A Master/Slave model of communication is used between the two greenMachine titan hardware devices, where one machine will act as a Master device while the other will be a Slave. The Master device receives the Reference Signal and transmit this over fiber to reference the Slave as well.

Follow the steps below for a Master/Slave setup via greenGUI:

1. Run greenGUI
2. Select a GreenMachine (with Reference present at Input) from the Rolodex, either at Location "A" or Location "B", to be configured as the reference Master.
3. Go to Control> Main tab.
4. Zoom in and set the parameter "Reference Master" to "ON" as shown in Figure 1 below.
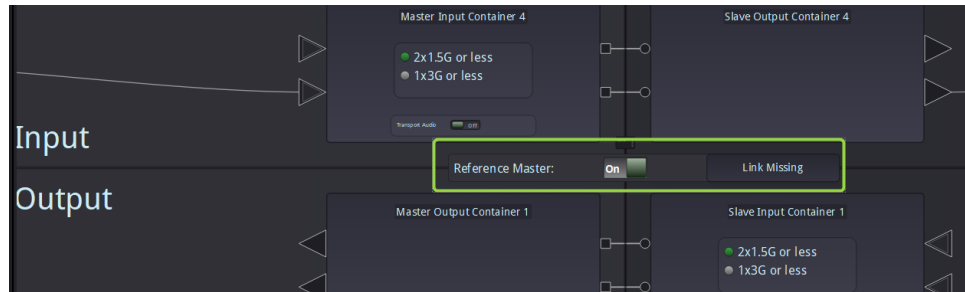
Figure 1

After Setting one of the greenMachines as a Master, the Slave configuration can only be done through the Master.

Note: Only one GreenMachine must be set to Reference Master, else transport will not work. If both machines are set to SLAVE, transport won't work either. Parameter configuration at Slave via greenGUI or font panel will not have any influence, it can only be configured through Master.

2.4. Transport configuration

Six HD signals (1.485Gbit/s) or **four 3G signals (2.97Gbit/s)** or **combination of singals up to 12Gbit/s** with 4 external analog or digital Audio Signals and four GPIs, UART can be transported via the fiber ports in both directions, simultaneously. MADI Transport is also possible using the Optical In 1.

The reference of the Master greenMachine is transmitted to the Slave greenMachine and can be used in the remote location to synchronize (e.g., cameras etc.).
A 1Gbit ethernet transport link provides easy control of the two greenMachine via greenGUI software.
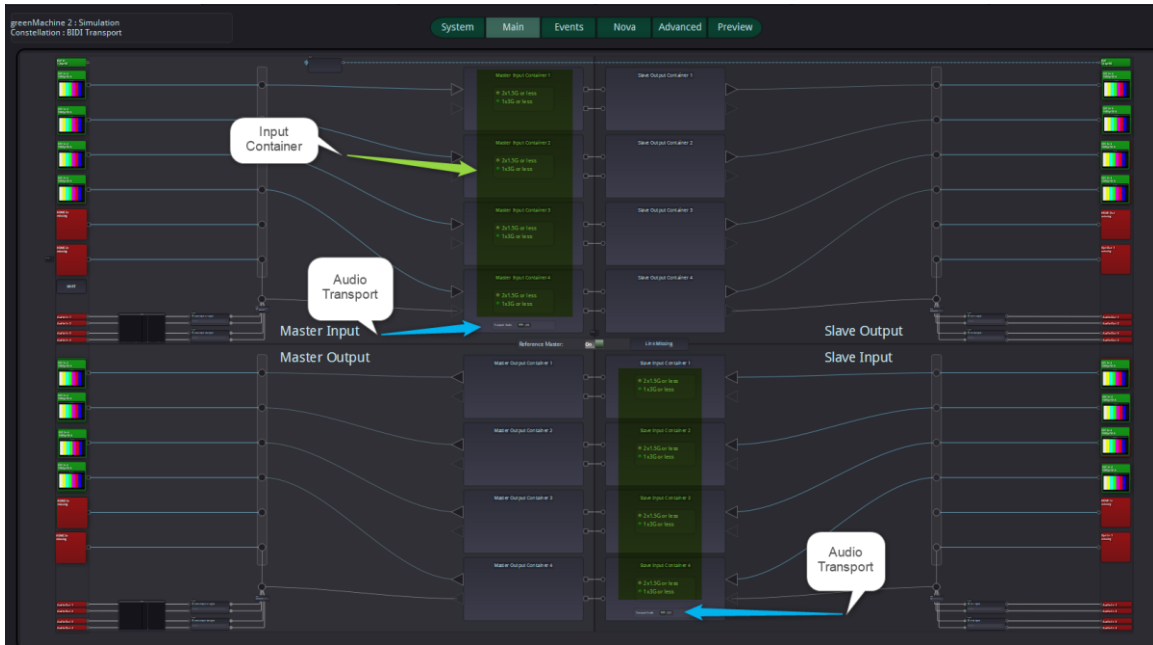
Figure 2

The signal transport configuration of both Master and Slave in BIDI Transport are done through the Master machine as shown in Figure 2. above.

Configure Input Containers and route Input Signals:

1. Run greenGUI / LynxCentraal
2. Select the GreenMachine set as reference Master (Figure 1)
3. Go to Control > Main
4. Set the Input containers to either 2x 1.5G or 1x 3G mode at both Master and Slave
5. Connect signals to the SDI/HDMI/Fiber Inputs according to the container settings.
6. Drag and route aero paths from the Input containers to the Inputs slots.

*****Note**:The Input Containers 1-4 are either set to 2x 1.5G or 1x 3G depending on the Input signal.
A container set to 2x.1.5G will not process a 3G signal properly.
For Audio Transport, an additional Parameter need to be turned on at both slave and master as mentioned in "Figure 2".
When Audio Transport is turned ON, Container 4 can only be set to 2x 1.5G and used only for for up to 1.5G transport.

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Contact Information

Please contact your local distributor; this is your local and fastest method for obtaining support and sales information.

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