

User Manual

IPH300

Full HD HDMI over IP Extender



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Version: IPH300_2020V1.2

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated till March, 2020. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



SAFETY PRECAUTIONS

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

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1. Product Features

- Full HD HDMI over IP extender Kits.
- Supports resolution up to 1920x1080p.
- HDCP compliant.
- H.264 and TCP/IP protocol.
- Video data takes up 40Mbps of bandwidth when transmitted over IP
- Low-latency: 30 ~ 50 msec.
- Supports point-to-point, point-to-multipoint and multipoint-to-multipoint applications.
- The advanced management system controls all devices in LAN uniformly.
- Low power consumption.

2. Package List

Items	Q'ty	Remarks
IPH300E Encoder	1	84.4mm(L) x 50.6mm(W) x 19.5mm(H)
Power Adaptor	1	DC output: 5V/1A AC input: 110V ~ 220V, 50/60Hz
User Manual	1	

Items	Q'ty	Remarks
IPH300D Decoder	1	84.4mm(L) x 50.6mm(W) x 19.5mm(H)
Power Adaptor	1	DC output: 5V/1A AC input: 110V ~ 220V, 50/60Hz
User Manual	1	

Note: Please contact your distributor immediately if any damage or defect in the components is found.

3. Specification

IPH300E Encoder	
Video Input	(1) HDMI
Video Input Connector	(1) Type-A female HDM
HDMI Input Resolution	Up to 1920x1080p@60Hz
Control	(1) ETHERNET
Control Connector	(1) RJ45
IPH300D Decoder	
Video Output	(1) HDMI
Video Output Connector	(1) Type-A female HDMI
HDMI Output Resolution	Supports 1920x1080(Full-HD,1080p), 1680x1050(WSXGA), 1280x1024(SXGA), 1280x720(HD,720p), 1024x768(XGA), 800x600(SVGA) and 640x480(VGA) (Progressive only—1080p,720p,480p and etc; 60Hz/50Hz)
Control	(1) ETHERNET
Control Connector	(1) RJ45
General	
Transmission Distance (Point-to-Point)	UTP Cable: 100m ~120m
External Power Supply	DC output: 5V/1A AC input: 110V ~ 220V, 50/60Hz
Power Consumption	Encoder:1.55W (Max); Decoder: 1.28W (Max)
Operation Temperature	-10°C ~ +55°C
Storage Temperature	-25°C ~ +70°C
Relative Humidity	10%-90%
Dimension (W*H*D)	50.6mm x 19.5mm x 84.4mm

Net Weight	Encoder/Decoder: 55g
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4. Panel Description

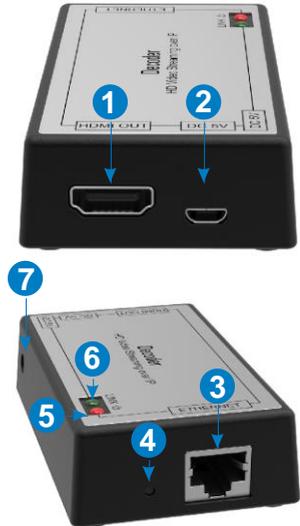
4.1 Encoder (Tx)

- ① **HDMI IN:** Type-A HDMI port to connect HDMI source device.
- ② **DC 5V:** Micro-USB port for external 5V DC power supply
- ③ **ETHERNET:** RJ45 port to connect to the decoder.
- ④ **Factory Reset.**
- ⑤ **POWER LED:** The LED illuminates red when power is applied.
- ⑥ **LINK LED:** The LED blinks green when the encoder and the decoder communicate successfully each other with video/audio data.
- ⑦ **DC 5V:** DC jack for external AC power supply 110V ~ 220V,50/60HZ



4.2 Decoder (Rx)

- ① **HDMI OUT:** Type-A HDMI port to connect HDMI display device.
- ② **DC 5V:** Micro-USB port for external 5V DC power supply
- ③ **ETHERNET:** RJ45 port to connect to the encoder.
- ④ **Factory Reset.**
- ⑤ **POWER LED:** The LED illuminates red when power is applied.
- ⑥ **LINK LED:** The LED blinks green when the encoder and the decoder communicate successfully each other with video/audio data.
- ⑦ **DC 5V:** DC jack for external AC power supply 110V ~ 220V,50/60HZ

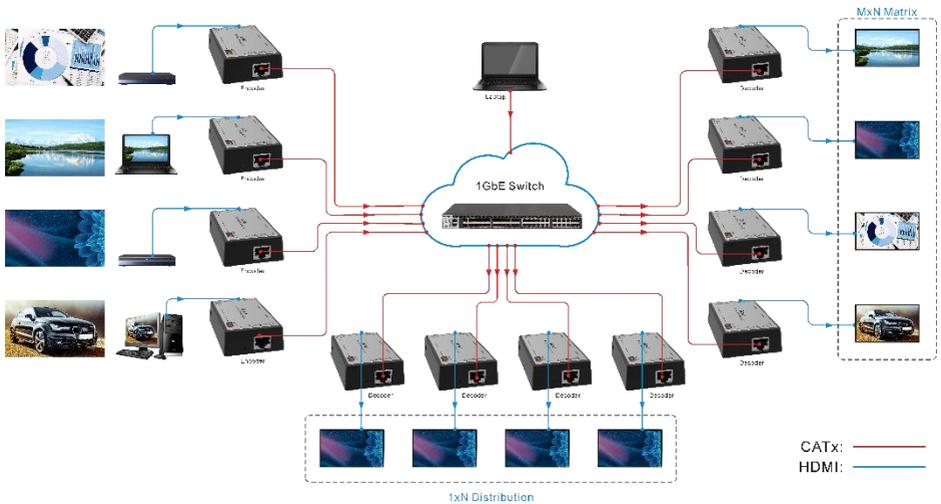


5. System Connection

Usage Precautions

- Make sure all components and accessories included before installation.
- System should be installed in a clean environment with proper temperature and humidity.
- All of the power switches, plugs, sockets, and power cords should be insulated and safe.
- All devices should be connected before power on.

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The product is connected on standard Ethernet (Internet) network. (Refer to the picture above).

- 1) IPH300E encoder (Tx) is connected via HDMI cable to HDMI output port of video source devices like PC and set-top-box.
- 2) IPH300D decoder (Rx) connects to monitor/TV via HDMI cable as well.
- 3) The encoder and decoder are connected via Ethernet cable (UTP or fiber optic cable) directly or through the step of Ethernet switches in- between.
- 4) "PWR" LED light is on when power is supplied.
- 5) "Link" LED light (green) is blinking when the encoder and the decoder communicate successfully each other with video/audio data.

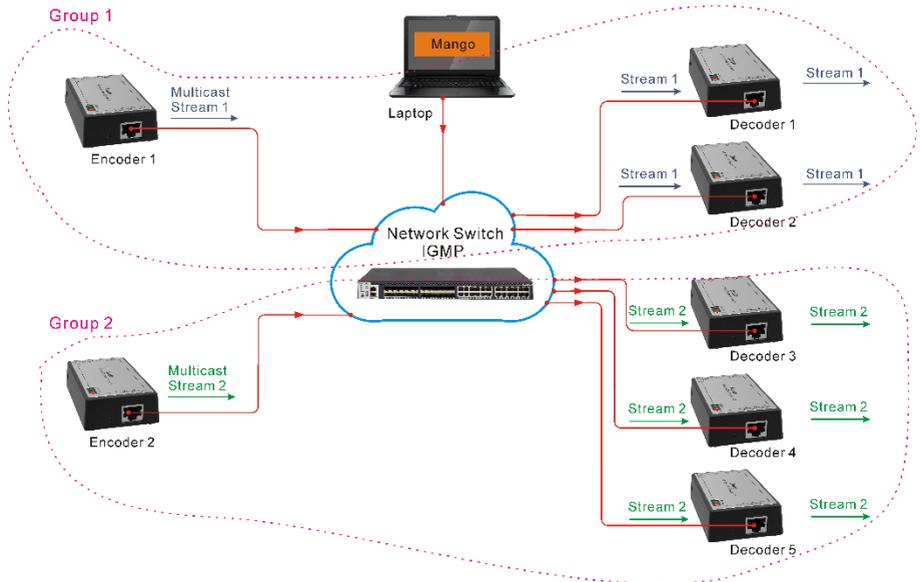
6. Operation of Mango

The Mango is the program that searches, detects, shows, and configures the Encoder/Decoder devices through Ethernet network.

Requirement: Windows computer.

All devices are connected through L2 switch which supports IGMP feature for 1-to-many connection - one Encoder sends video to many Decoders.

6.1 Construction Structure of Mango and Encoder/Decoder devices

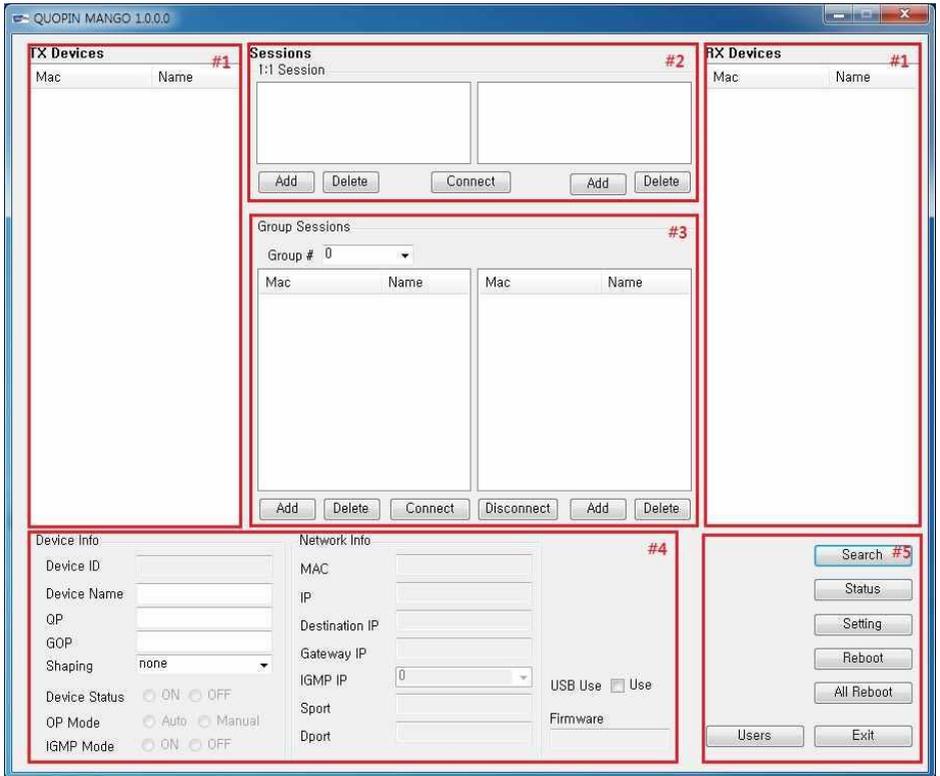


- 1) Connect a computer to the Ethernet network to which Encoders (T1, T2 ...) and Decoders (R1, R2 ...) are connected.
- 2) Run Mango program on the computer.

Note: All devices should be located in the same network of same subnet address. Mango does not support those devices out of the network - different subnet address.

6.2 Features of Mango

Once you run Mango program on your computer, there pops up a window as below. There are 5 sections mainly: #1 ~#5 in the below picture.



#1 on the left and right sides: Shows Tx (encoder) devices on the left and Rx (decoder) ones on the right.

#2 is the section for building up 1-to-1 session connection.

#3 is the section for building up group of 1-to-many connection - **grouping**.

#4 shows information of a device you click on in any section of #1 ~ #4.

#5 shows buttons of operation administering device configuration.

6.3 Default Operation - Automatic

Every device is released set as the “Auto” (automatic) mode when manufactured. You can confirm this in ‘Op Mode’ in #4 section of the Mango program window. In this “Auto” mode, the Tx and Rx devices communicate in 1-to-1 connection. A Tx device is designated to transmit video/audio to its destination IP address.

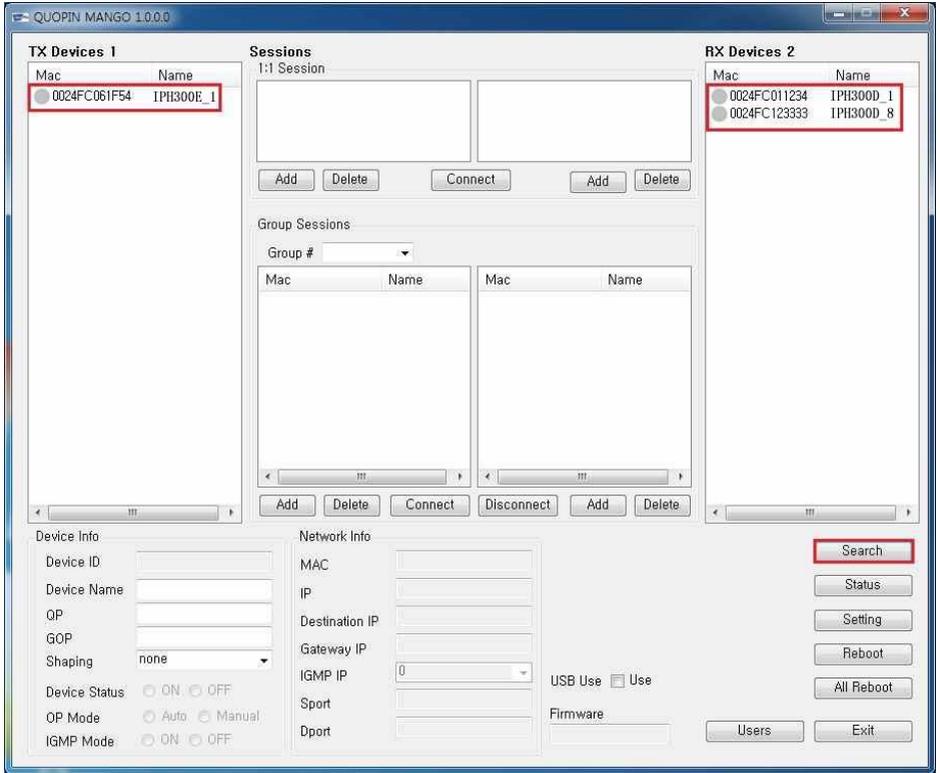
[Table] Default Network Value Set (Ex.- Default Values) - 1:1 Unicast

Network Value Set	Encoder (Tx)	Decoder (Rx)
Source IP	192.168.0.248	192.168.0.249
Source MAC (factory value)	MAC#1	MAC#2
Source Port No.	10000	10000
Destination IP	192.168.0.249	192.168.0.248
Destination Port Number	10000	10000
Gateway IP	192.168.0.1	192.168.0.1

In case that you want make multiple 1-to-1 connections and/or multiple 1-to-many (1: N) group connections in a single network, you first change those devices’ operation mode (OP) to “Manual”. Refer to the section 6.7.

6.4 Searching Devices

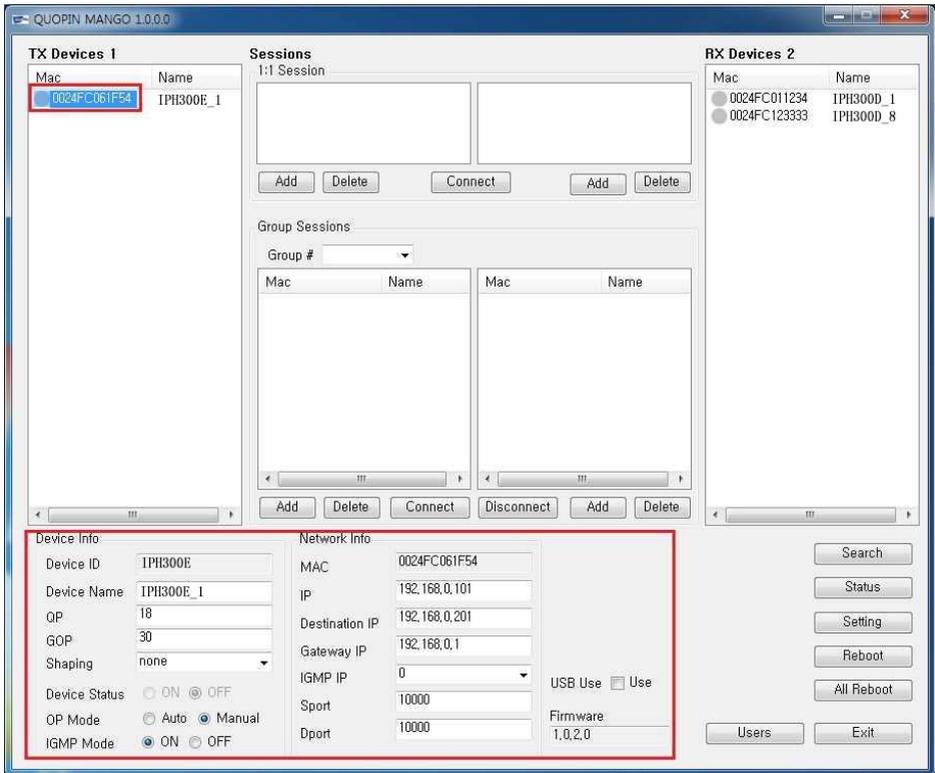
Click "Search" button.



In 3 seconds, you will find devices connected to the network. All devices connected to the same subnet will be shown. They are listed in the Tx and Rx section box with their own unique MAC address.

6.5 Device Information

Click MAC field of the searched device. Then, you can find its device information (Device Info) and its network configuration (Network Info).



- **Device ID (Product Model):** Product model name of the device.
- **Device Name:** User can change this name as he likes for his convenience's sake.
- **QP (Quantized step Parameter):** Value ranges 0 ~ 51. The lower it is, the better video quality it transmits and the higher bandwidth is occupied. This parameter hold effect only in Tx devices. Value between **18 ~ 25** is recommended.
- **GOP (Group Of Picture):** Value ranges 1~60. It means the sum of one (1) I-frame and the number of the continuous P-frames following to this I-frame. 30 means 29 P-frames are transmitted after one I-frame is transmitted. I-frame is a full picture of a frame and P-frame holds the changes in the image from the previous frame. This parameter holds effect only in Tx devices. Value between **1 ~ 30** is recommended.
- **Shaping:** It limits the maximum output bandwidth on 1-second basis from Tx devices.
- This parameter holds effect only in Tx devices.

- **Device Status:** It says about the device status - whether or not the device is transmitting (Tx) / receiving (Rx) video. User cannot change this status - read only.

Note: *It is important to know that user cannot configure the device while the device status is "ON". Only in "OFF" status can user change its configuration.*

- **Op Mode:** There are two modes of operation for the device.
 - ✓ Auto: Device runs on its own on the basis of its configuration.
 - ✓ Manual: In this mode, devices send or receive video/audio only when the operator commands through Mango- "connect", "disconnect".
- **IGMP Mode (Grouping):** 1-to-many connection mode
 - ✓ ON: 1-to-many (1: N) session connection mode.
 - ✓ OFF: 1-to-1 (1:1) session connection mode.
- **MAC:** Device's MAC address.
- **IP:** Device's IP Address
- **Destination IP:** Counterpart device's IP address with which the device will make session.
- **Gateway IP:** Gateway IP in the network.
- **IGMP IP (Group #):** Group number of 1-to-many (1: N) devices.
- **SPORT:** The device's Source Port number.
- **DPORT:** Destination Port number of the counterpart device with which the device will make session.
- **USB Use:** It says whether the device will allow users to use USB devices. This holds effect for those products with USB ports.
- **Firmware:** Firmware version of the device.

6.6 Other Buttons

- **Setting:** It saves the configuration values for the selected device.
- **Reboot:** It reboots the selected device.
- **All Reboot:** It reboots all devices in the network.
- **Users:** It pops up a window where the administrator can add Mango operators by creating new ID and password.
- **Exit:** It shut down Mango program.

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The screenshot displays the QUOPIN MANGO 1.0.0.0 web interface. It features three main sections: TX Devices, Sessions, and RX Devices. The TX and RX sections each have a table with columns for Mac and Name, and buttons for Add and Delete. The Sessions section includes a 1:1 Session table with Add, Delete, and Connect buttons, and a Group Sessions section with a Group # dropdown and a table with Mac and Name columns, plus Add, Delete, Connect, and Disconnect buttons. At the bottom, there are Device Info and Network Info sections with various input fields and radio buttons. A red box highlights a vertical menu on the right side containing buttons for Search, Status, Setting, Reboot, All Reboot, Users, and Exit.

6.7 Operation Guidelines

Unless user applies the Tx and Rx devices as 1-to-1 connection in its original default setting, I would like to give your customers guidelines regarding Mango-M program usage:

- 1) Change operation mode (“Op mode”) to “Manual” (default is “Auto”), save (“Setting”) and reboot (“Reboot”).
- 2) Configure devices, if necessary as it is required, about IP addresses, Grouping mode, Group #, and etc.
- 3) Save (“Setting”) and reboot (“Reboot”).
- 4) Install the devices to the target field network.
- 5) Confirm the connections are correct in the target field network. If not correct, check and correct the configuration setting values for the devices.

Note: Please don't forget the devices are set as “Manual” mode. If there are power supply failure even temporarily, the devices in “Manual” mode will not send/receive video and wait for the operator to command “Connection” again via Mango.

In case you want to fix the connection and run the devices all the time when the electric power is supplied, "Auto" mode is recommended for the devices.

- 6) Change operation mode ("Op mode") to "Auto", save ("Setting") and reboot ("Reboot") for the devices via Mango.

Once devices are installed and running (green bullet ) as "Auto" mode in the field network, if an operator wants to change their connection and grouping, the device is to be disconnected first and changed to "Manual" mode first. You cannot change setting values for the running device (connection indicated by green bullet ) until it is disconnected.

- 7) Disconnect running devices (green bullet ) via Mango. The bullet turns to grey () .
- 8) Change "Op mode" to "Manual" from "Auto", promptly save ("Setting") and reboot ("Reboot").
- 9) Change configuration and save ("Setting").

Note: Please note that you have set devices as "Manual" mode finally.

You will come to know that mode change from "Auto" to "Manual" and vice versa needs "save" and "reboot" operation in a row.

6.8 Configuration & Operation

6.8.1 Configure One-by-One before Installation

If you want make multiple 1-to-1 connections and/or multiple 1-to-many (1:N) group connections in a single network through switches, you have to change all devices' IP addresses to be unique.

It is recommended that:

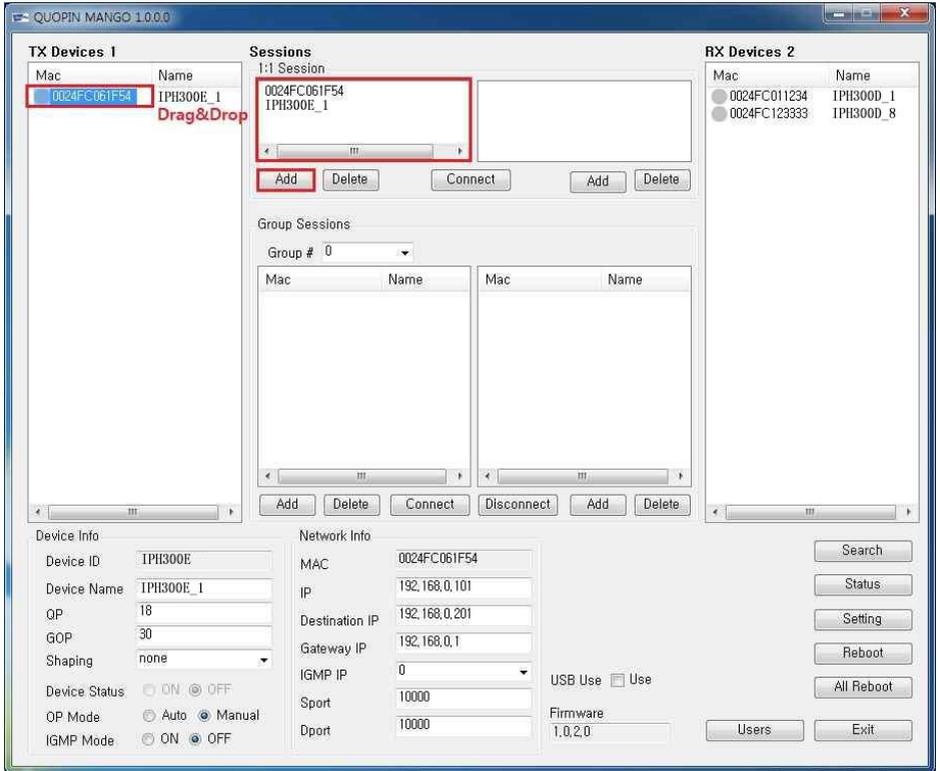
- You configure devices one by one as you encoder/decoder's Ethernet port and computer's LAN port via UTP cable. Run Mango on your computer, and;
- Change device's operation mode to "Manual", save ("Setting" button), and reboot ("Reboot" button);
- Install devices to the network.

Be sure that those devices for which you want to build connection are in 'Manual' mode. If the device is in 'Auto' mode, you have to change it to "Manual" mode, save ("Setting" button) and reboot ("Reboot" button).

6.8.2 1-to-1 (1:1) Session Build

1) Select a Tx device;

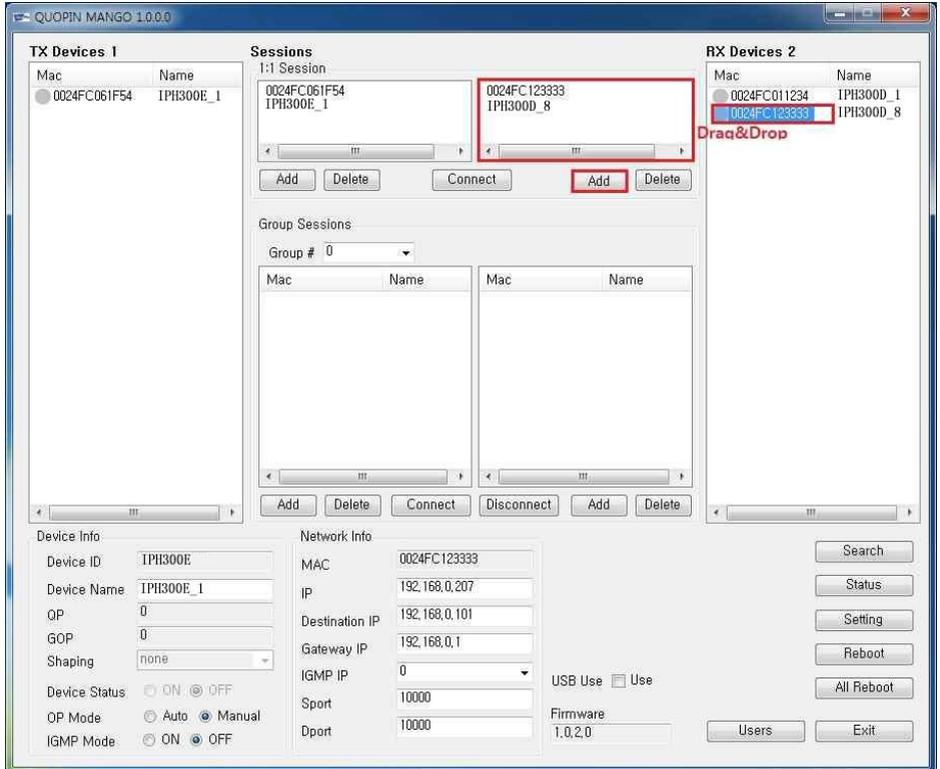
Drag and drop it into the left “1:1 Session” box, or click “Add” button on the left.



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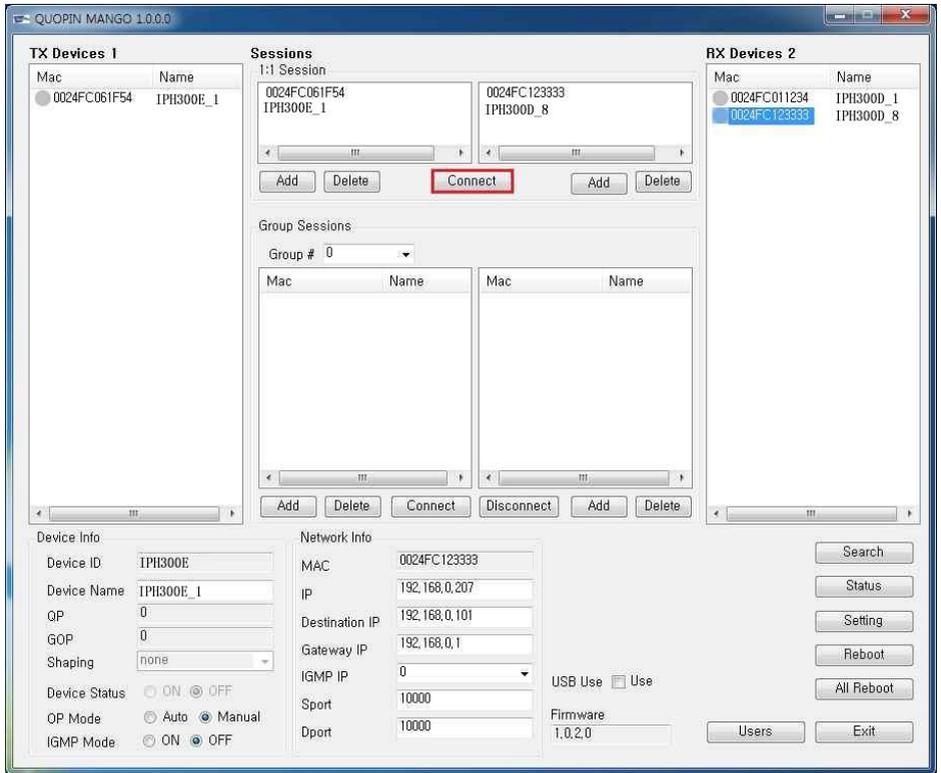
2) Select a Rx device;

Drag and drop it into the right '1:1 Session' box, or click 'Add' button on the right.



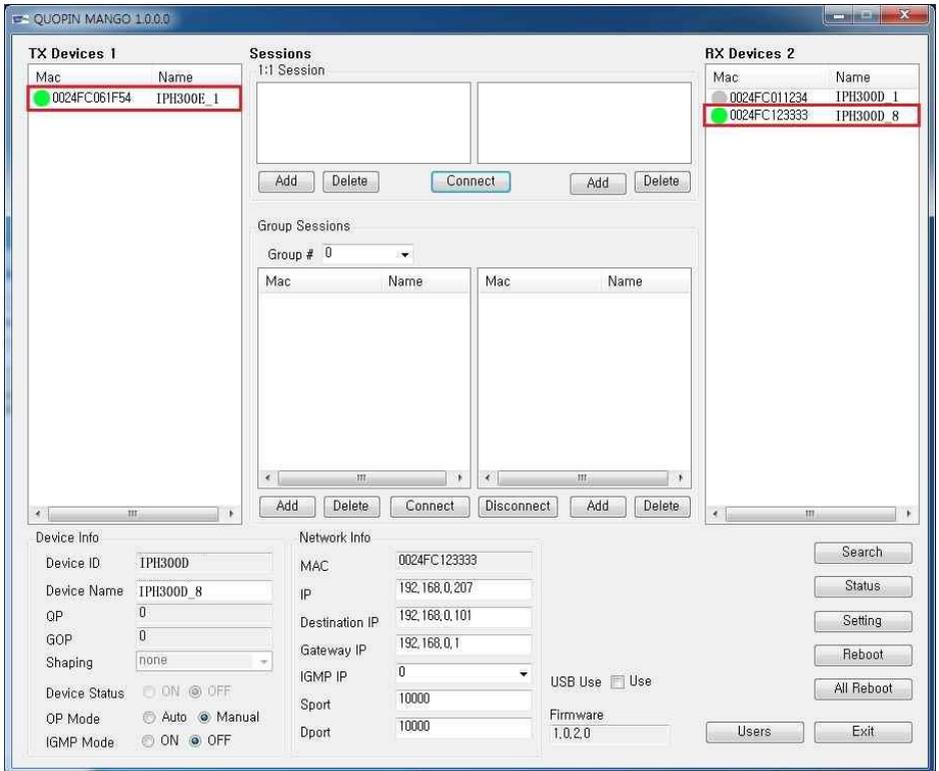
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3) Click the “Connect” button.



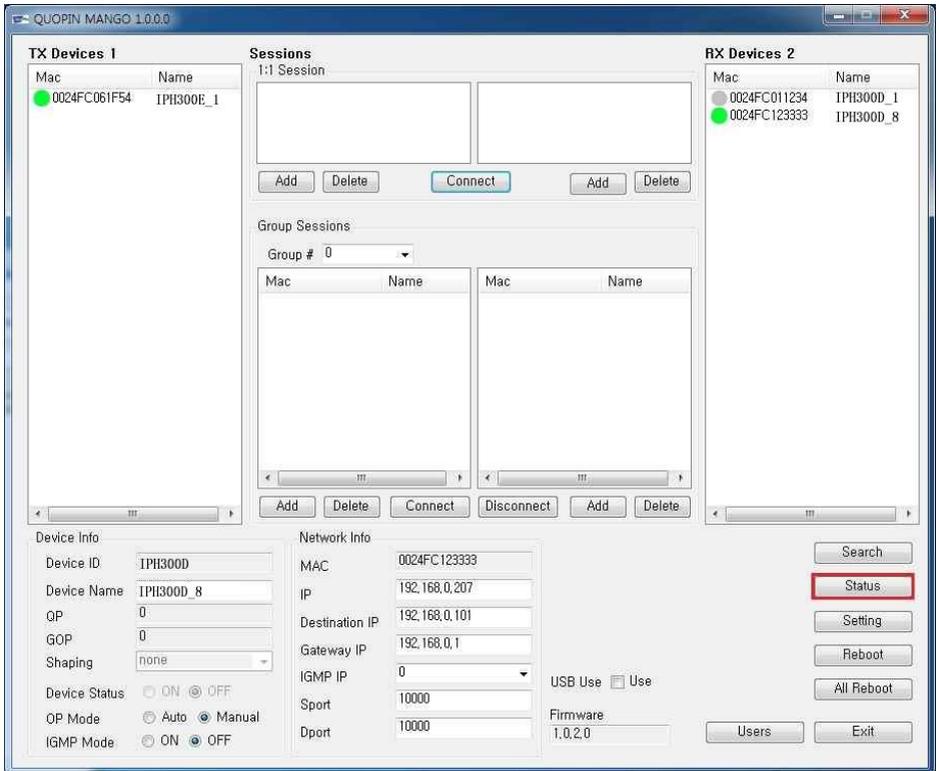
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- 4) If the session builds successfully, the device status becomes “ON” and status icon lights on green.

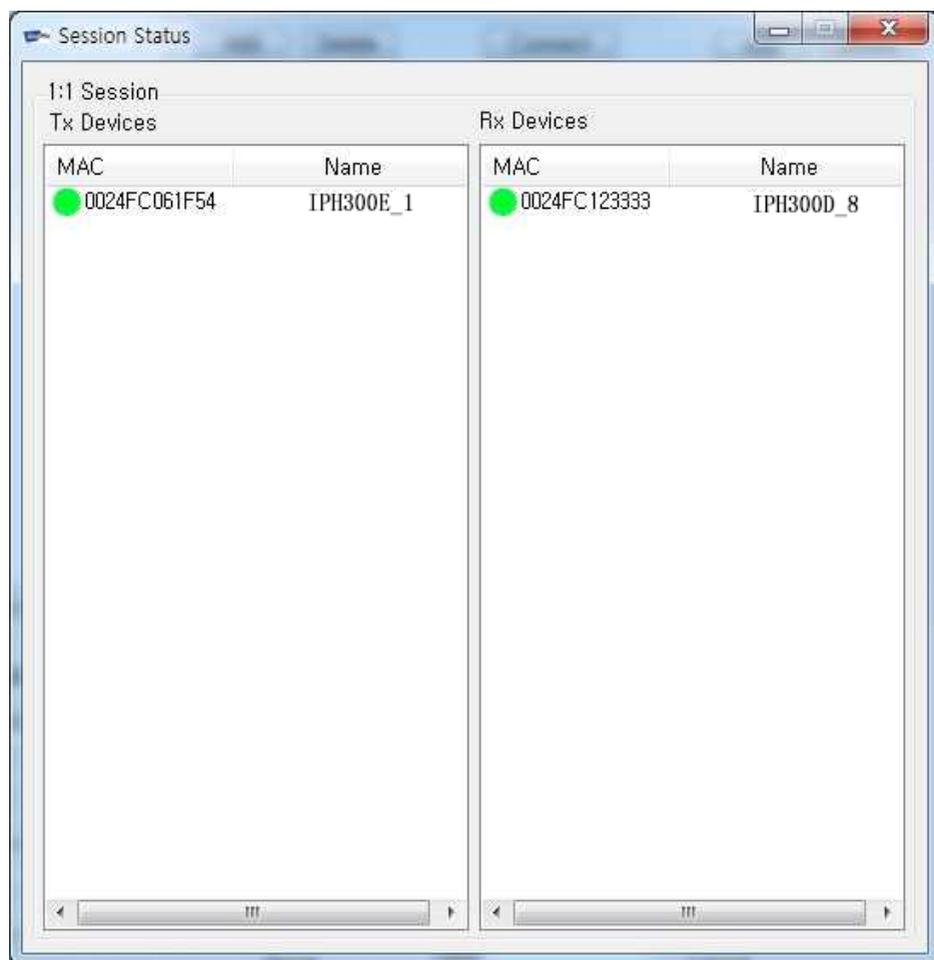


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- 5) You can check the 1:1 session status by clicking “Status” button, which pops up a following window.



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The screenshot shows a window titled "Session Status" with a 1:1 session configuration. It displays two columns of device information: Tx Devices and Rx Devices. Each column has a table with MAC and Name columns. A green dot next to each MAC address indicates a successful connection.

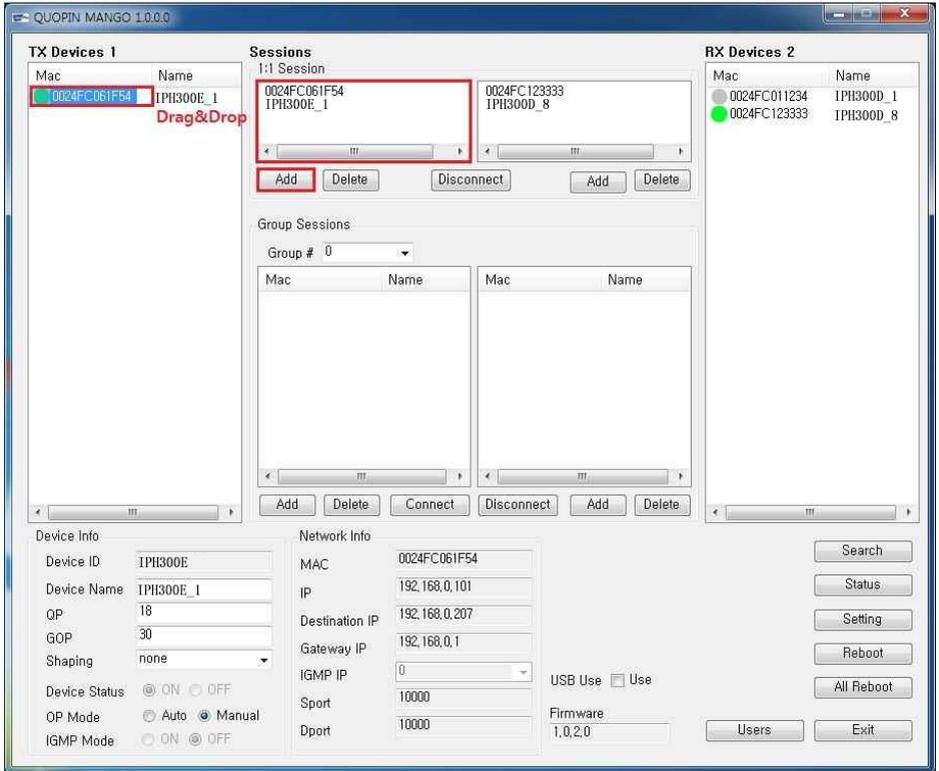
Tx Devices		Rx Devices	
MAC	Name	MAC	Name
0024FC061F54	IPH300E_1	0024FC123333	IPH300D_8

6.8.3 1-to-1 (1:1) Session Disconnect

1) Select a Tx device;

Drag and drop it into the left “1:1 Session” box, or click “Add” button on the left.

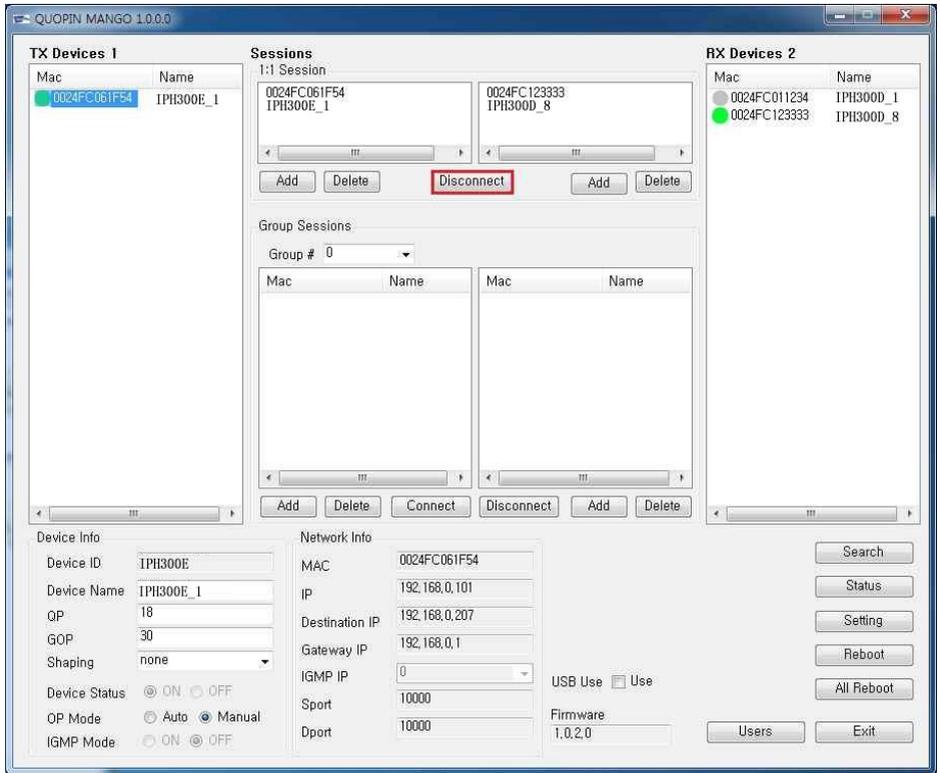
Then, automatically the counterpart Rx device is shown on the right box.



Note: You can first select the Rx device before Tx selection, and drag it to the right 1:1 Session box or click “Add” button on the right. Then, the counterpart Tx device is listed in the left 1:1 Session box automatically.

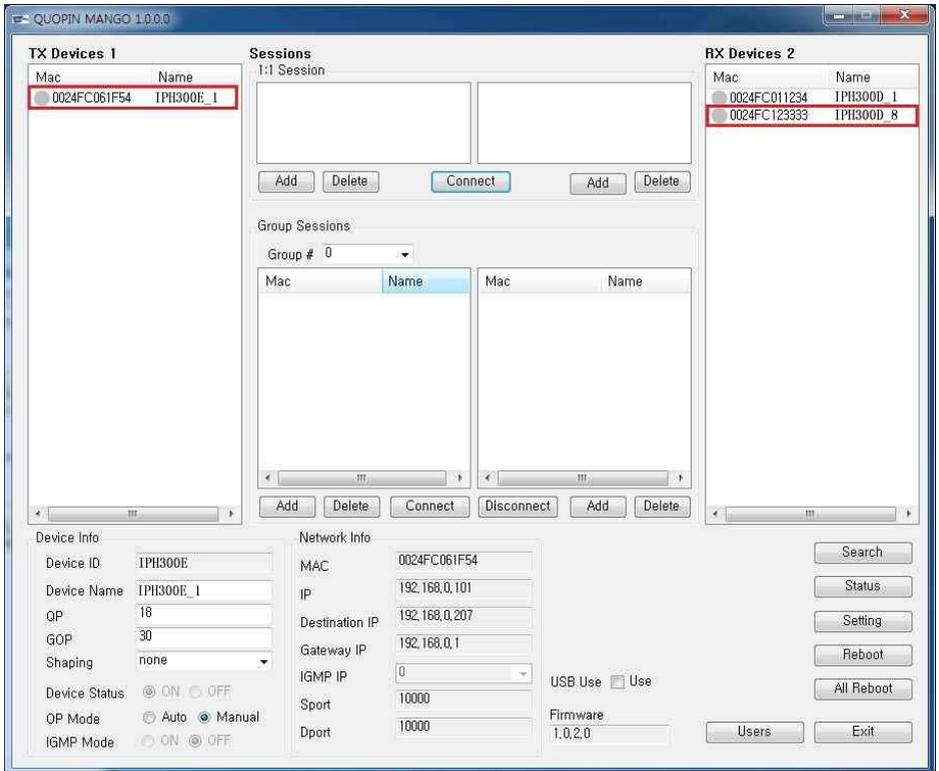
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2) Click the “Disconnect” button.



Full HD HDMI over IP Extender

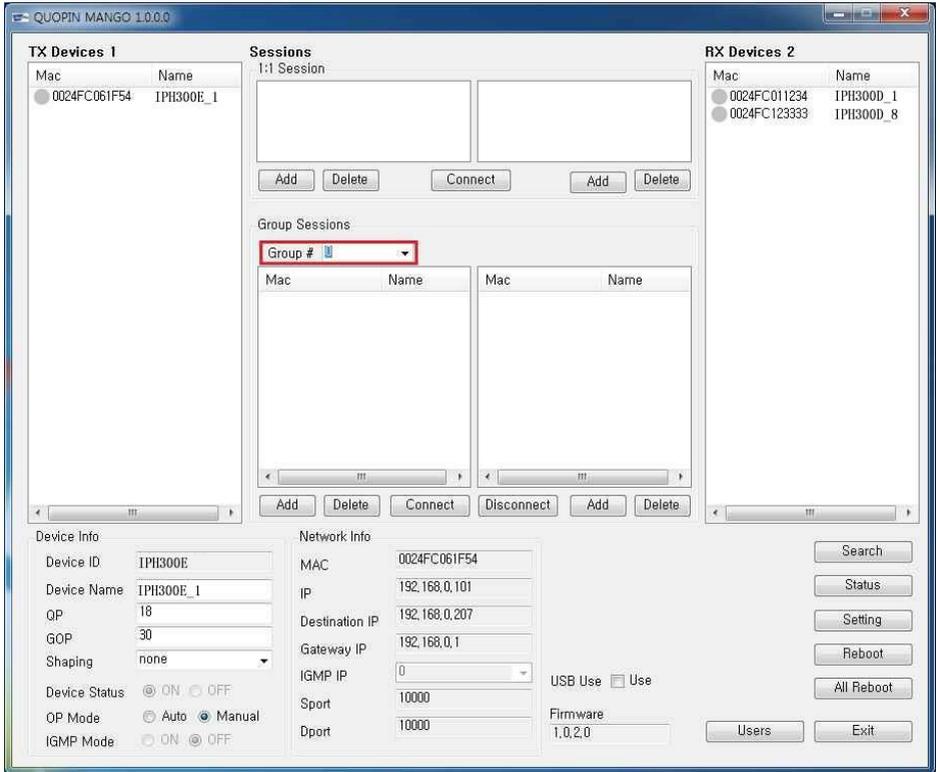
- 3) If the session disconnects successfully, the device status changes to "OFF" and the device status icon light off as gray.



6.8.4 1-to-Many (1: N) Session Connection (Grouping)

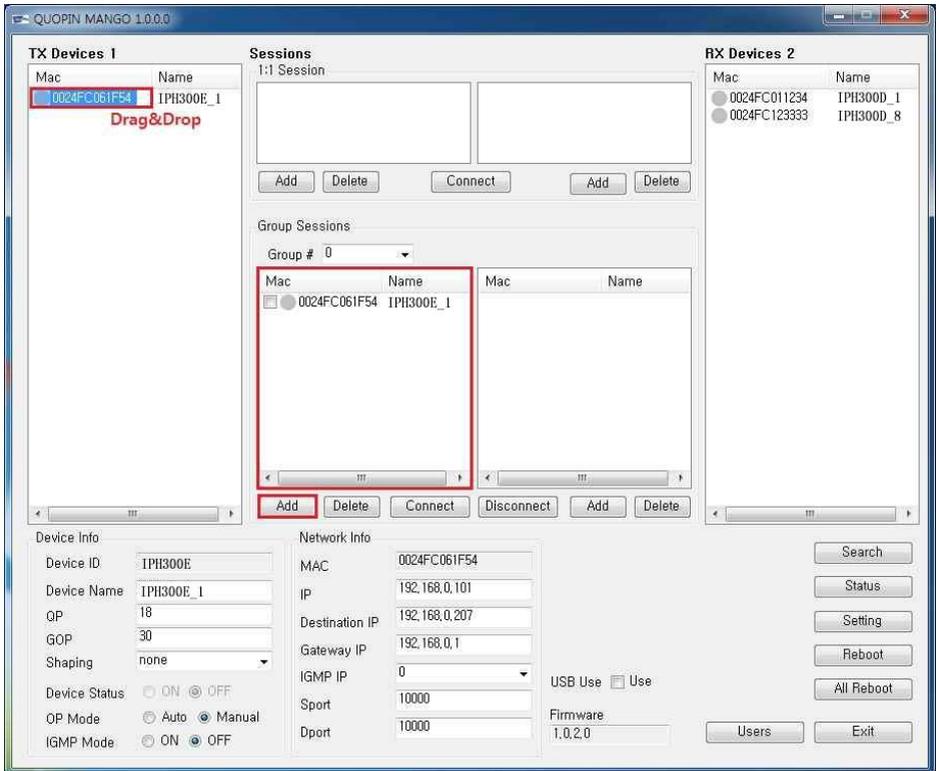
Up to 10 groups (sessions) can be built.

- 1) Select a group #: 0~9 in this example, group 0 is selected.



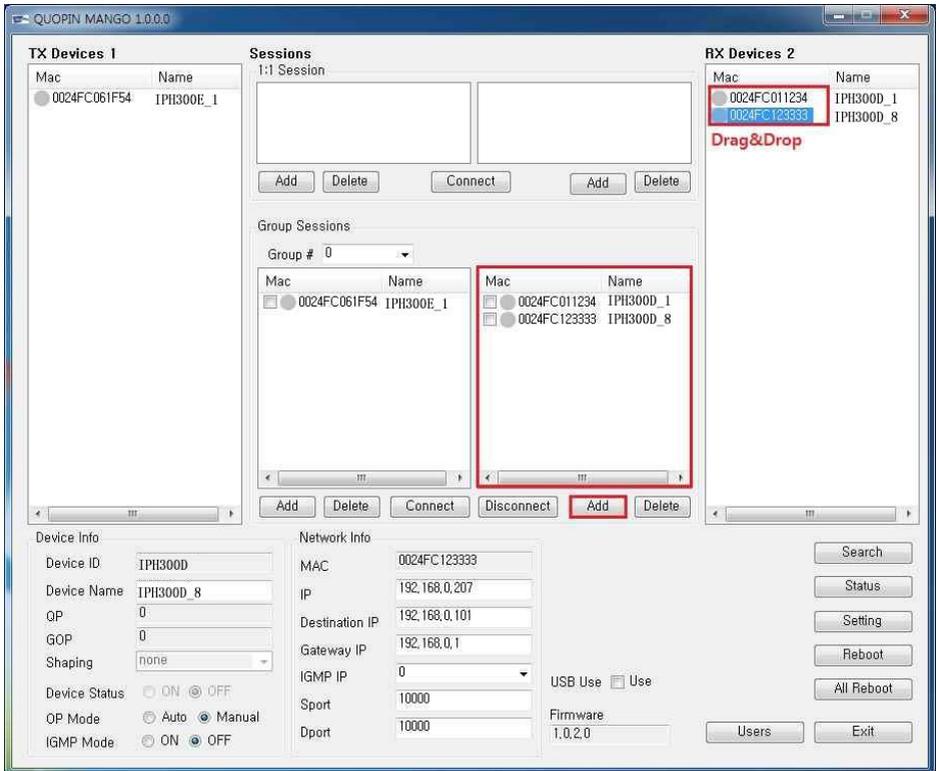
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- 2) Select a Tx device, drag and drop it into the left Group Sessions box, or click “Add” button on the left.



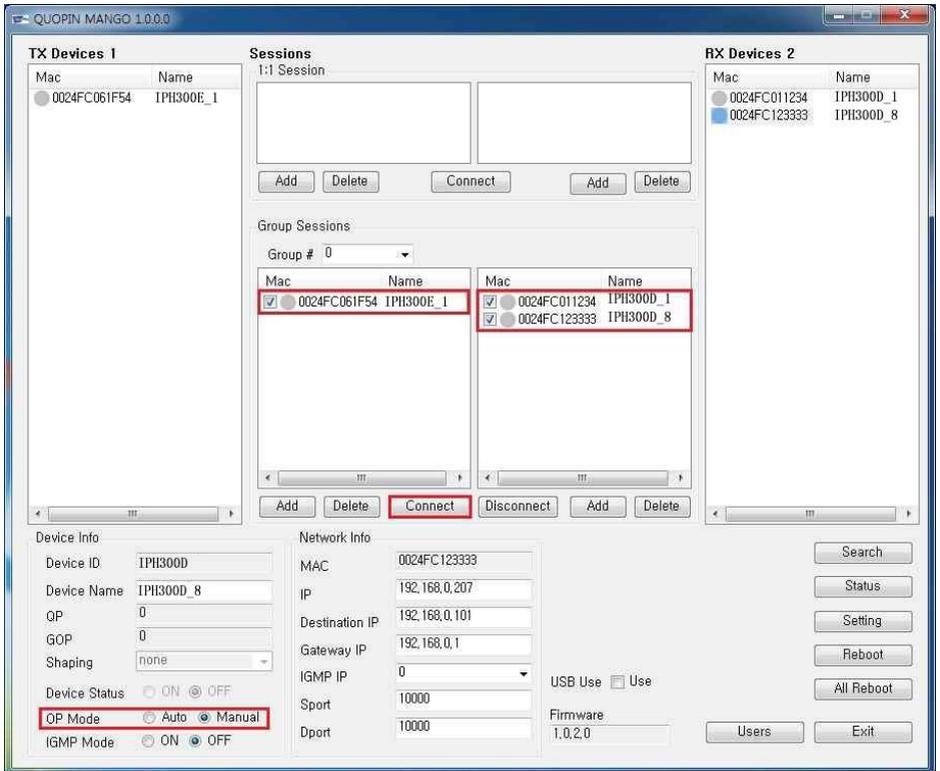
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- 3) Select an Rx device, drag and drop it into the right Group Sessions box, or click “Add” button on the right.



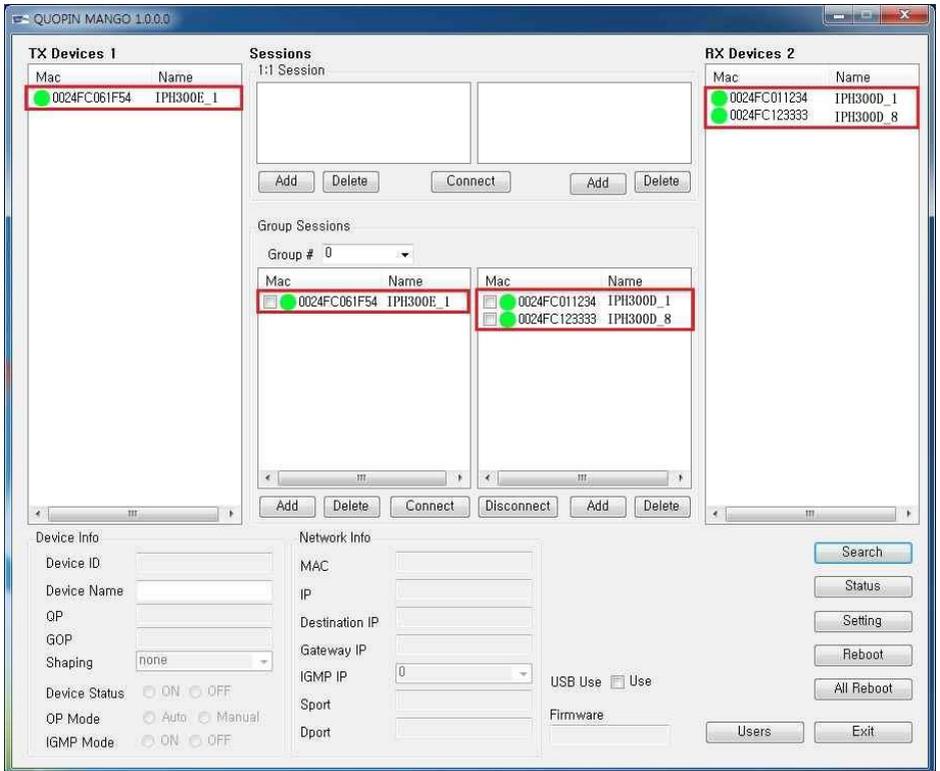
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- 4) Check a Tx and Rx devices, and click “Connect” button. Be sure that all the devices are in “Manual” mode.



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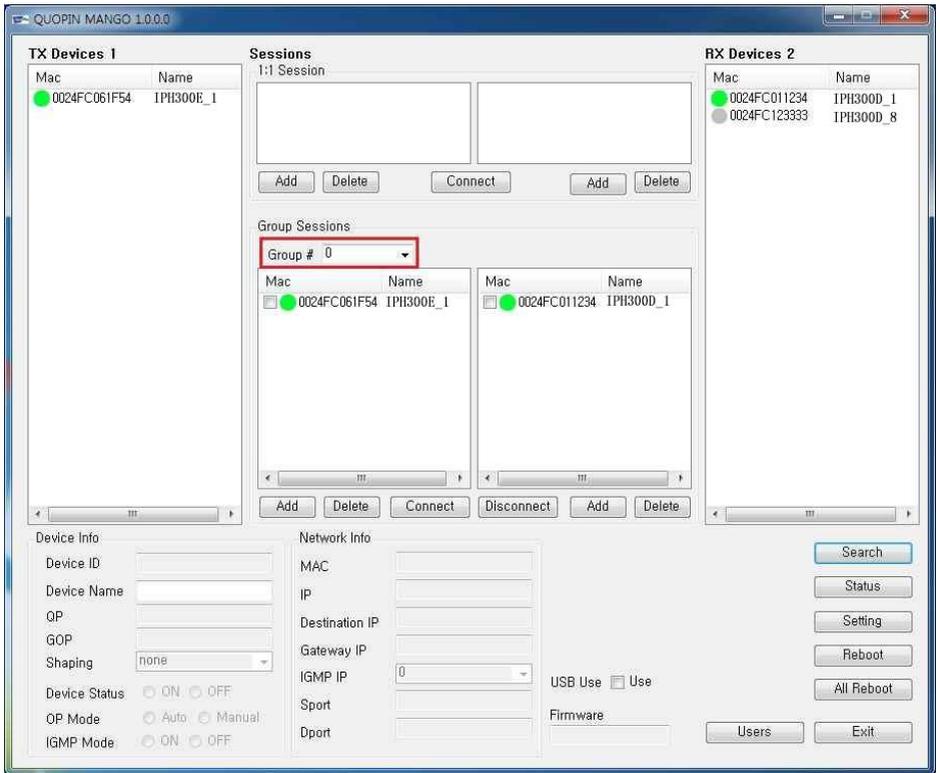
- 5) The following picture shows the session connects successfully. Those device statuses turns to “ON” and status icons light on green.



6.8.5 Add a Rx Device to a Group Session

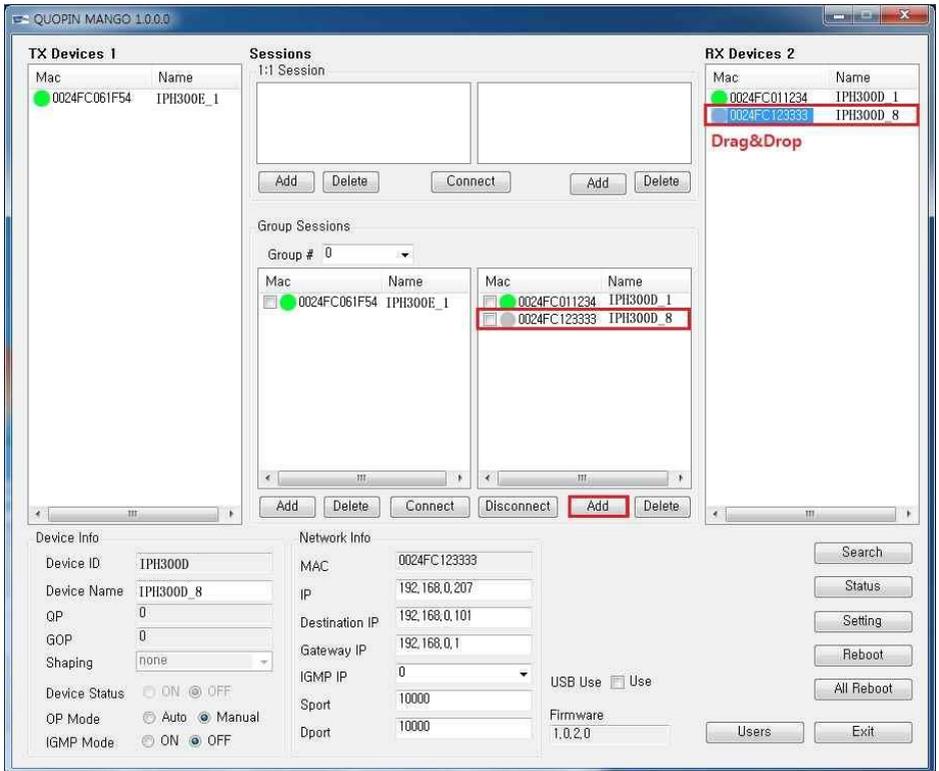
While the 1: N session is alive, you can add an Rx device to this session (group).

- 1) Select the group to which you want to add the Rx device.



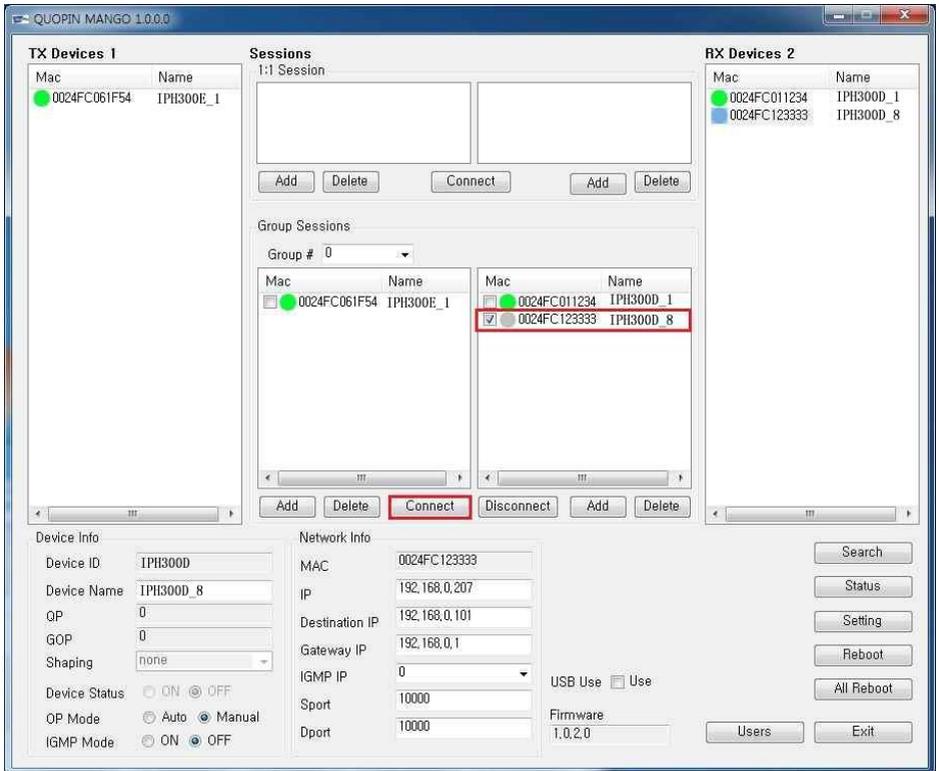
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- 2) Select the Rx device in the Rx Devices box on the right, and drag & drop it into the right box in the Group Sessions, or you can click “Add” button on the right below Group Sessions boxes.



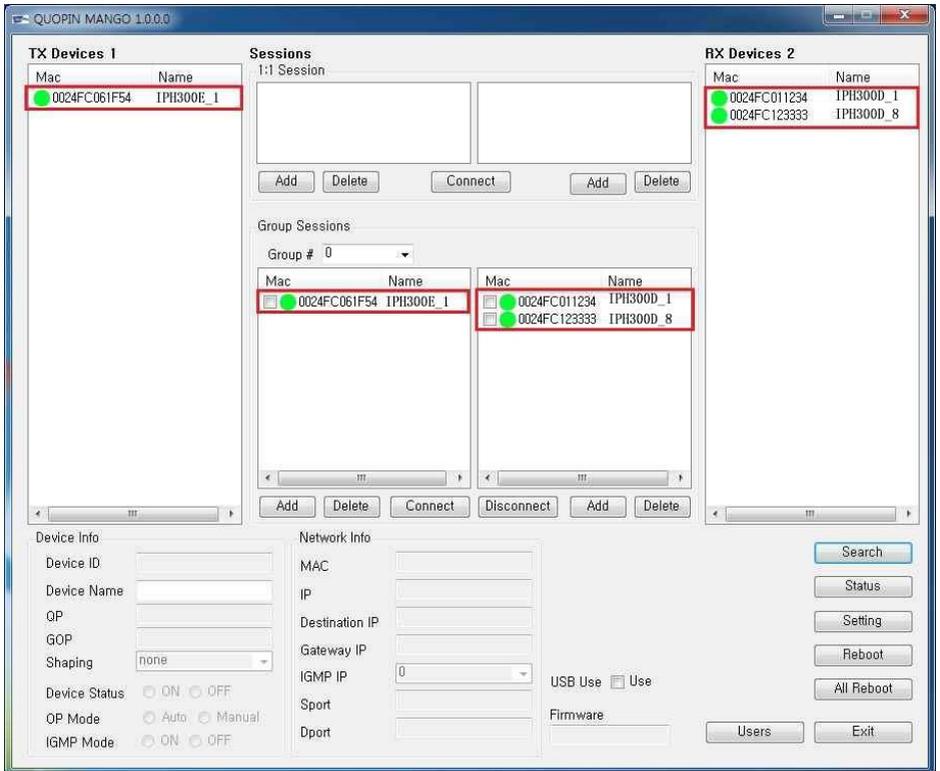
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- 3) Check the Rx device, and then click the “Connect” button. You can check several Rx devices concurrently, connect (“Connect” button) to add them too.



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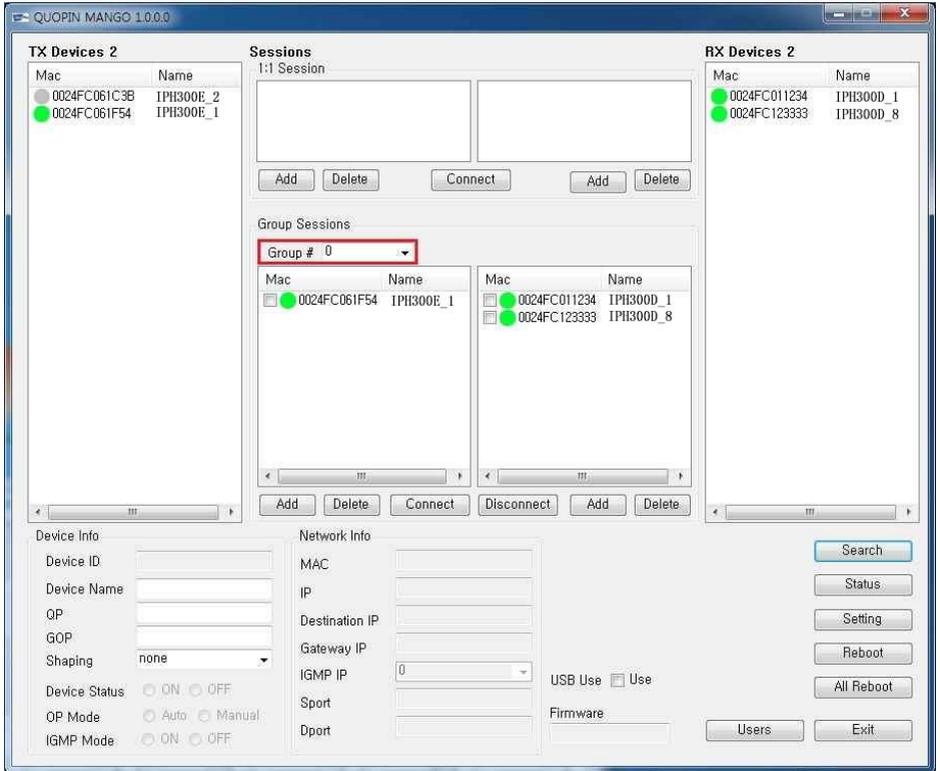
- 4) When the session connects successfully, the device status turns to “ON” and status icon lights on green.



6.8.6 Changing Tx Device While 1: N Session Is Alive

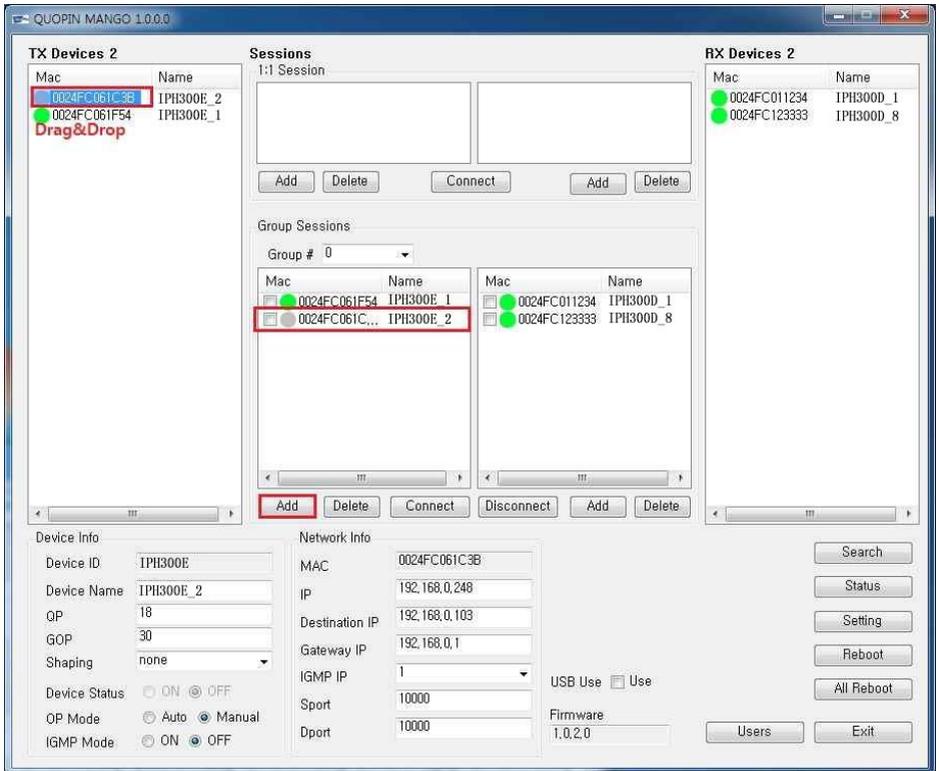
You can change the Tx device in 1-to-N session.

- 1) Select the group session for which you want to change Tx device.



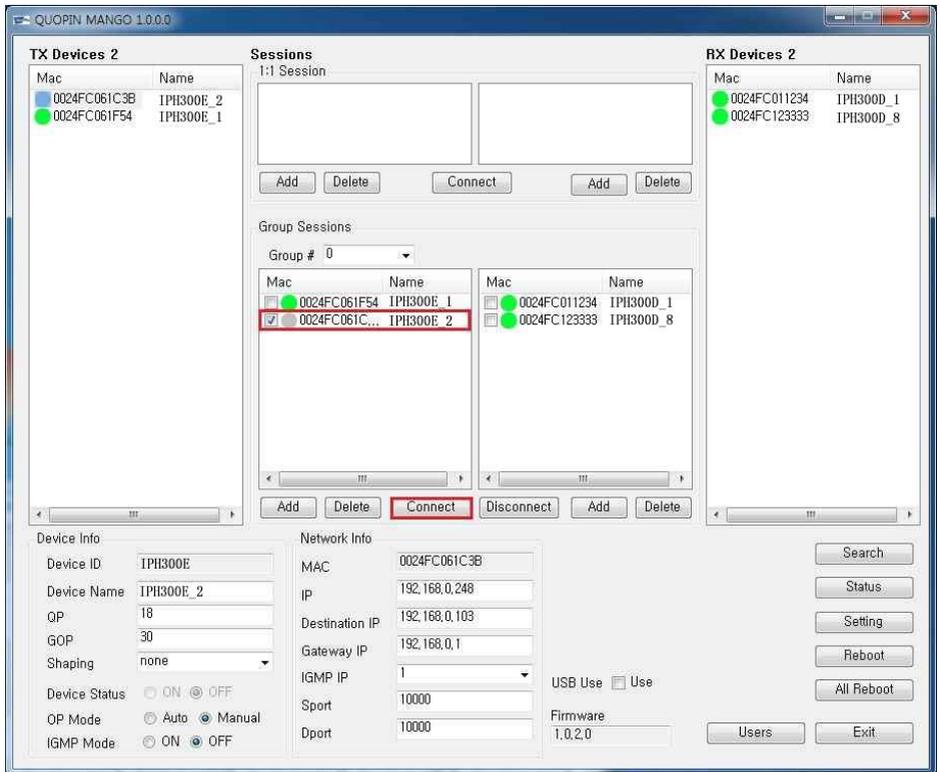
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- 2) Select a new Tx device in the Tx Devices box, drag and drop it into the left Group Sessions box, or click "Add" button on the left below Group Sessions box.



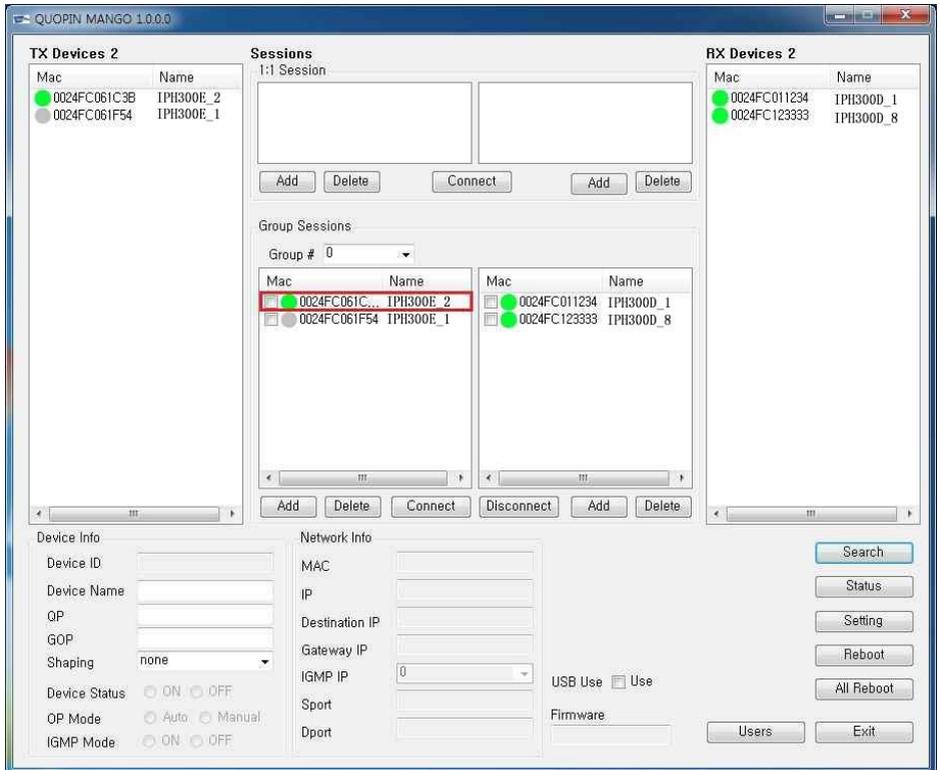
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3) Check the newly added Tx device, and click “Connect” button.



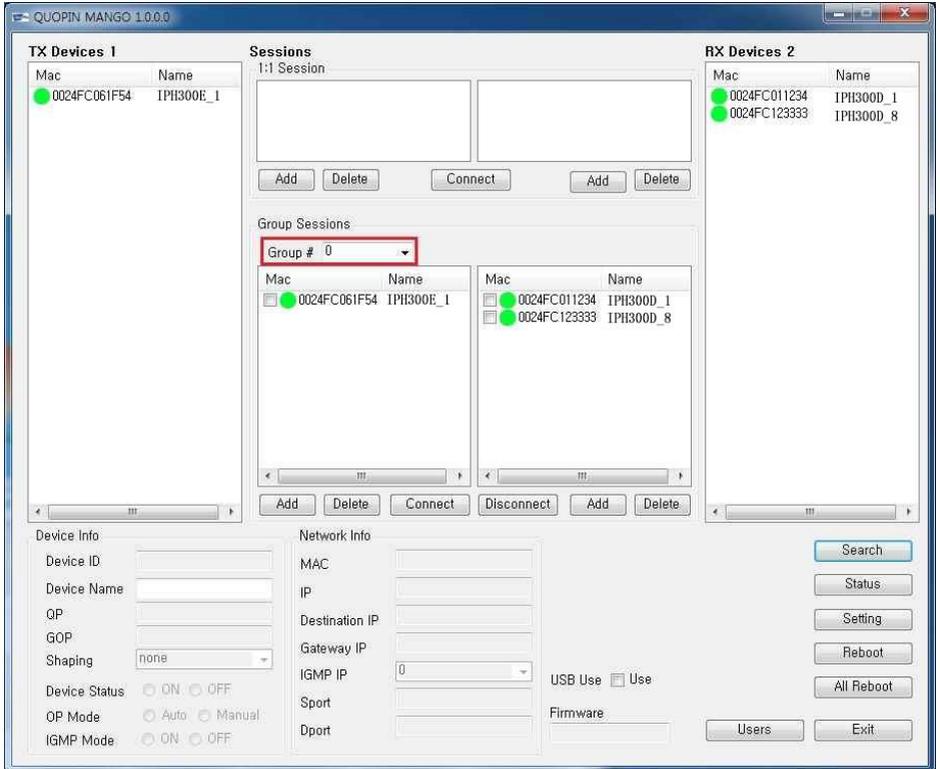
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- 4) If the session successfully connects, you can see that Tx device has changed to a new one.



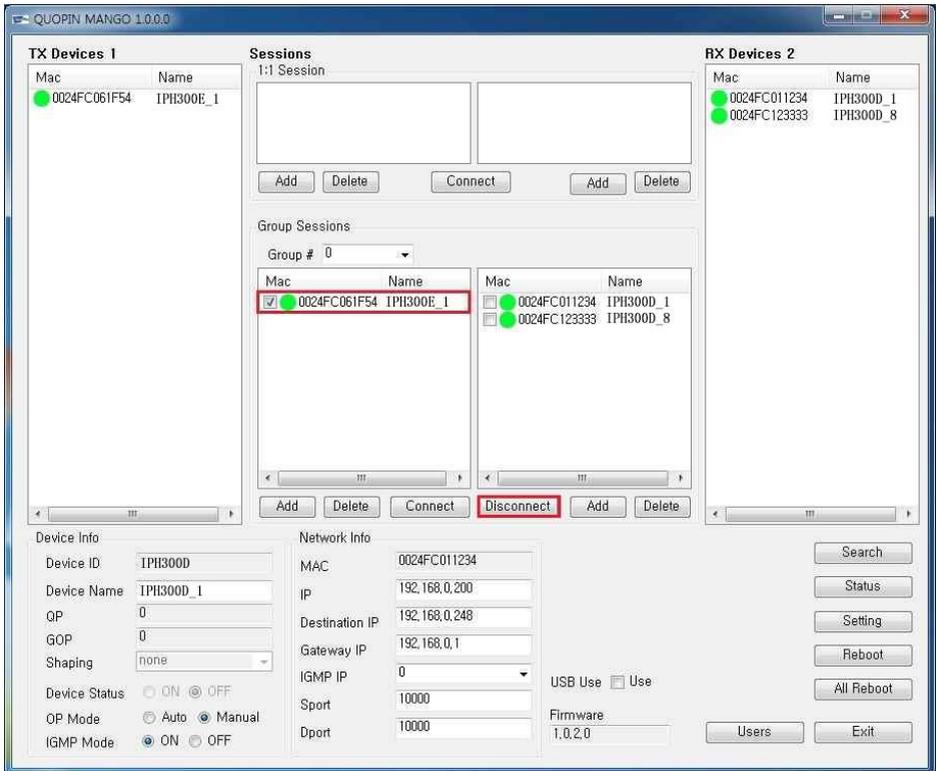
6.8.7 Disconnecting 1: N Session Group

1) Select the group of which session you want to disconnect.



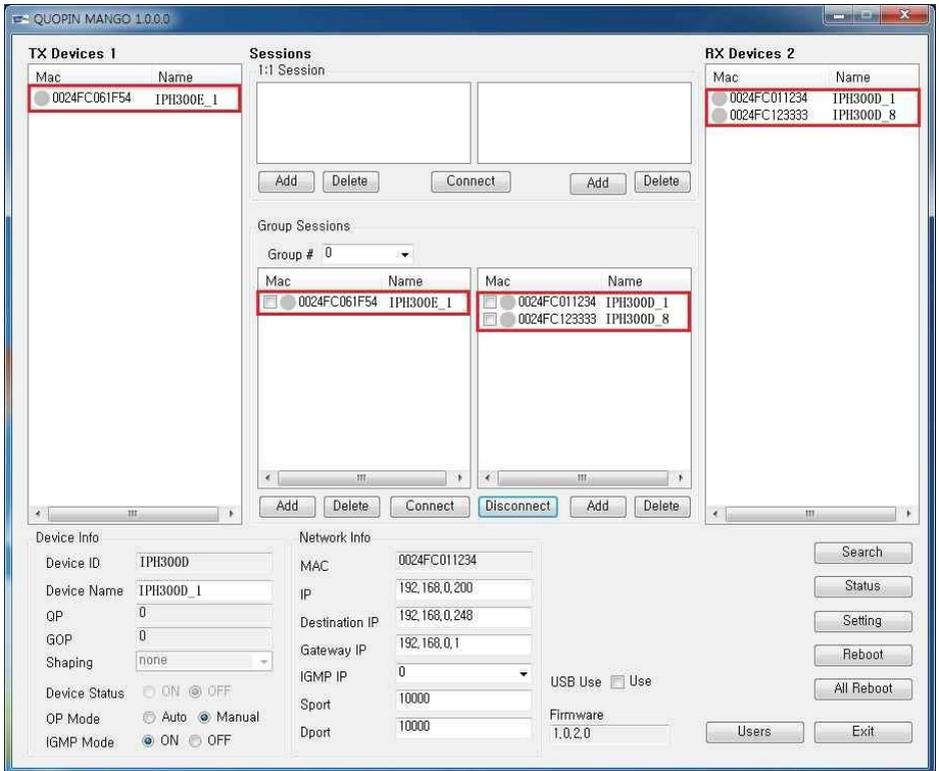
Full HD HDMI over IP Extender

- 2) Check the Tx device that is transmitting video in the group session, and click “Disconnect” button. Be sure that all devices should be in “Manual” mode (“Op”) to get disconnected.



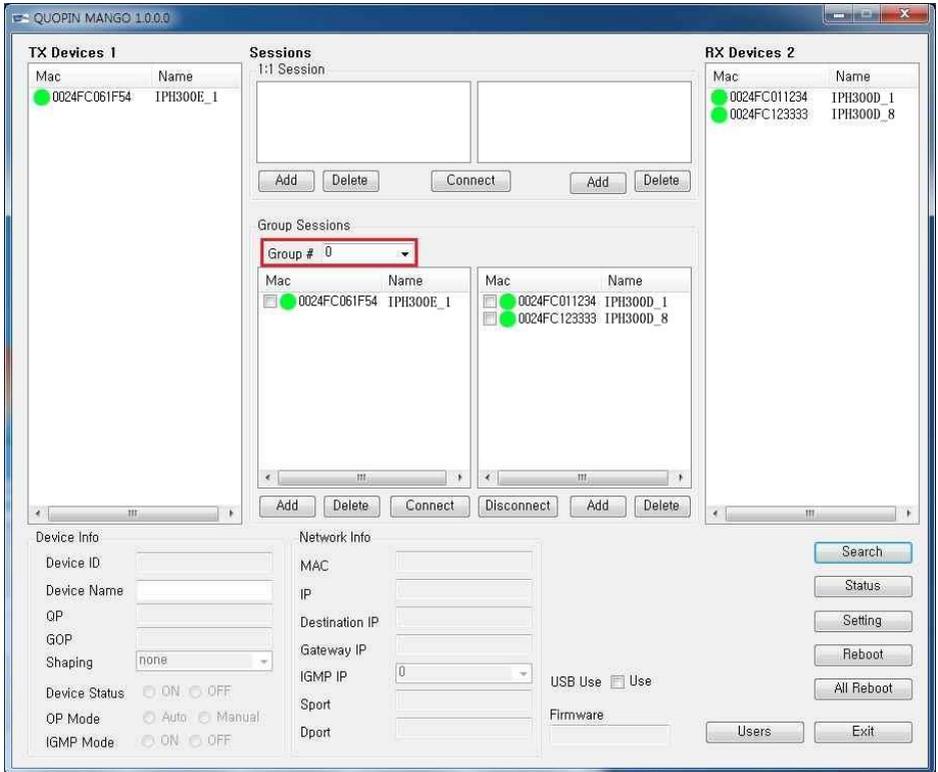
Full HD HDMI over IP Extender

- 3) Once the session disconnects successfully, the device status becomes “OFF” and the status icon turns to gray.



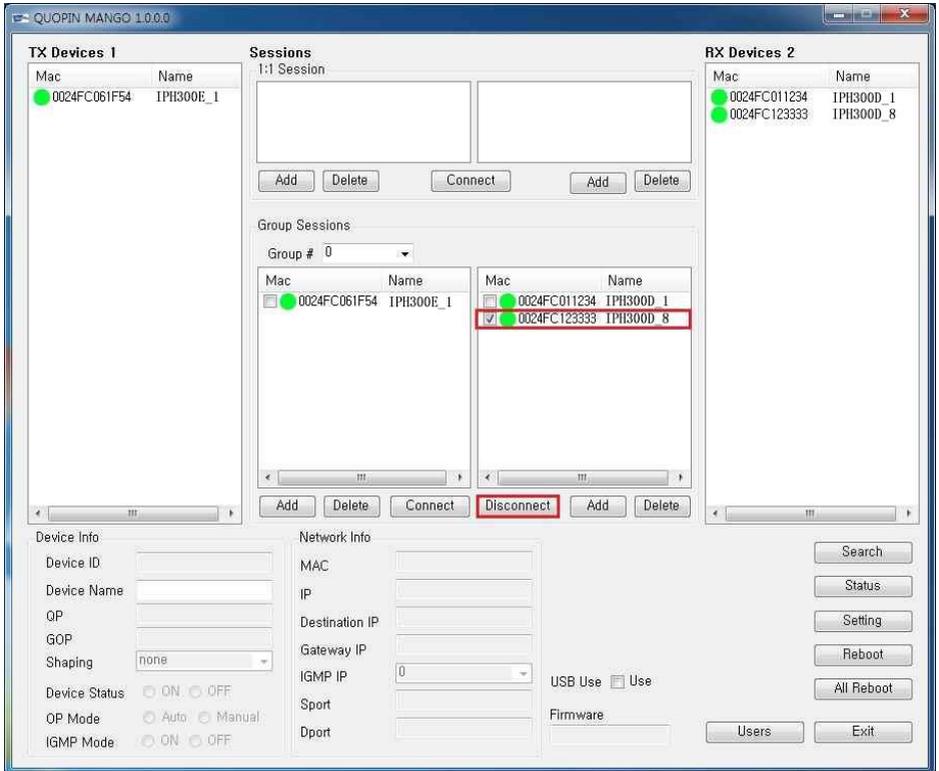
6.8.8 Disconnecting a Certain Rx Device from a 1: N Session Group

1) Select the session group from which you want to disconnect a certain Rx device.



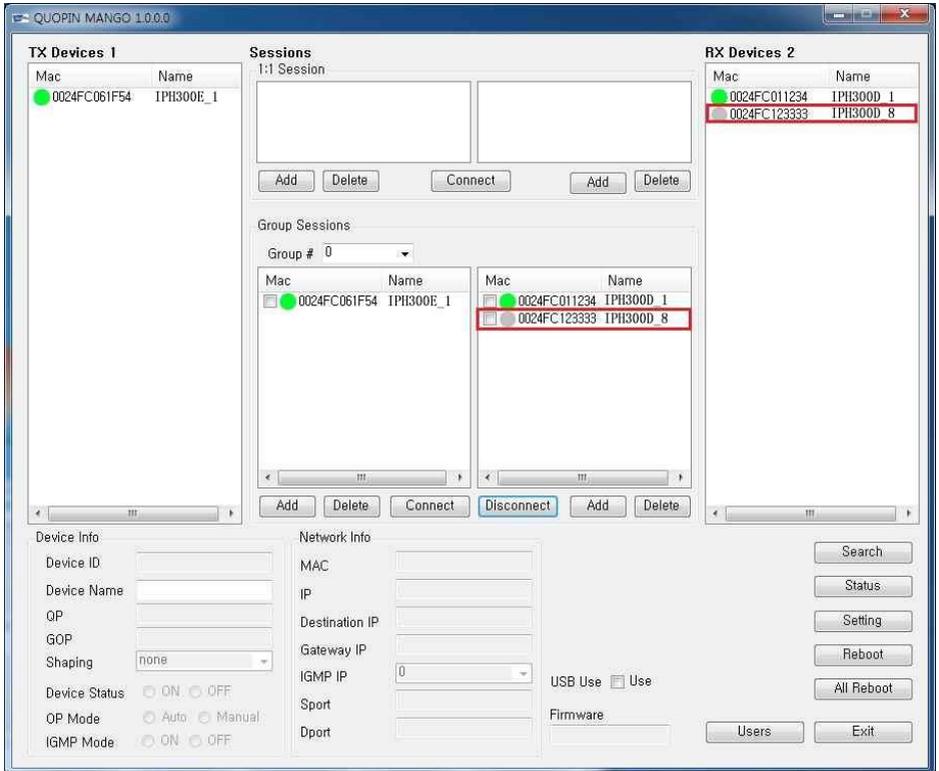
Full HD HDMI over IP Extender

- 2) Check the Rx device to be disconnected and click “Disconnect” button below Group Sessions box.



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- 3) If it disconnect the Rx device successfully, its status becomes “OFF” (“Device Status”) and the status icon turns to gray.



6.9 Registering Mango Users

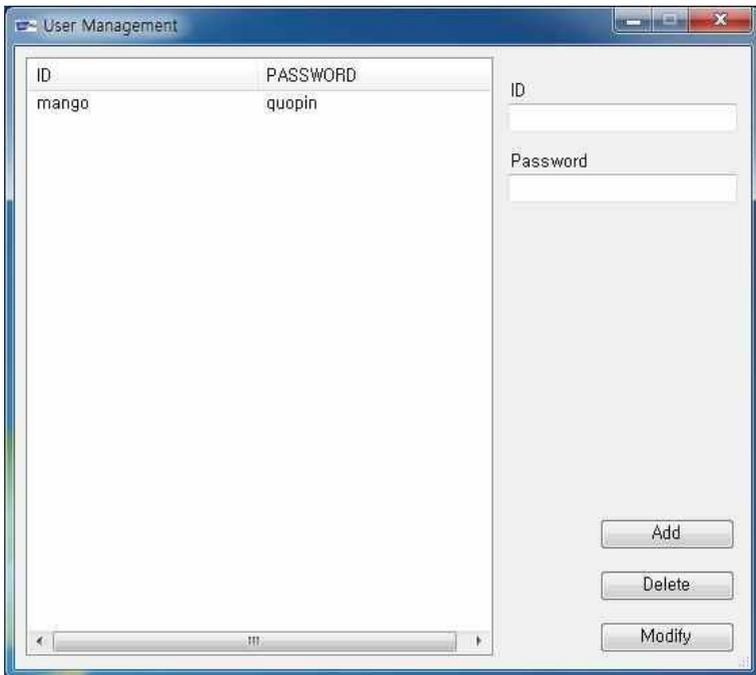
User can log in to access Mango program via designated ID and password. When you run Mango on your computer, there pops up the following login window. The initial ID and password are:

ID: mango

Password: quopin



Once you log in successfully, click "Users" button, then, the following window pops up to add, delete, and modify users.



7. Customer Service

The return of a product to our Customer Service implies the full agreement of the terms and conditions hereinafter. These terms and conditions may be changed without prior notice.

1) Warranty

The limited warranty period of the product is fixed three years.

2) Scope

These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

3) Warranty Exclusion

- Warranty expiration.
- Factory applied serial number has been altered or removed from the product.
- Damage, deterioration or malfunction caused by:
 - ✓ Normal wear and tear.
 - ✓ Use of supplies or parts not meeting our specifications.
 - ✓ No certificate or invoice as the proof of warranty.
 - ✓ The product model showed on the warranty card does not match with the model of the product for repairing or had been altered.
 - ✓ Damage caused by force majeure.
 - ✓ Servicing not authorized by distributor.
 - ✓ Any other causes which does not relate to a product defect.
- Shipping fees, installation or labor charges for installation or setup of the product.

4) Documentation

Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defect has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of distributor.

Remarks: Please contact your local distributor for further assistance or solutions.