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LUMANTEK
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PCI Adaptors
T-DMB/DAB Modulator

DMM-402/UPC-231

Reference and Installation Guide

Manual Ver 1.0



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T-DMB/DAB Modulator

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Reference and Installation Guide

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"This manual is Installation Guide for LUMANTEK PCI Adaptor Users"

All specifications and features are subject to change without notice.
For the Device Driver, you may download on the web.
Others:

Written on: Jul, 2005
Revised on: Jun 2007 (1'st)
LUMANTEK Co., Ltd Lab
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These Installation Guide includes as bellows PCI Adaptors.

1. DMM-402 (DMB Modulation PCI ADAPTER)

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Waste handling:

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Operator Safety Summary

For your protection, please read these safety instructions completely before operating the equipment and keep this manual for future reference. The information in this summary is intended for operators. Carefully observe all warnings, precautions and instructions both on the apparatus and in the operating instructions.



Equipment Markings
The lighting flash symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltages" within the product's enclosure that may be of sufficient magnitude to constitue a risk of electrical shock.

The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions within literature accompanying the equipment.

Warnings
Water and Moisture - Do not operate the equipment under or near water - for example near a bathtub, kitchen sink, or laundry tub, in a wet basement, near a swimming poor or in areas with high humidity.

Cleaning - Unplug the apparatus from the wall outlet before cleaning or polishing. Do not use liquid cleaners or aerosol cleaners. Use a lint-free cloth lightly moistened with water for cleaning the exterior of the apparatus.

Ventilation - Do not block any of the ventilation openings of the apparatus. Install in accordance with the installation instructions. Never cover the slots and openings with a cloth or other material. Never install the apparatus near heat sources such as radiator, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Grounding or Polarization - Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plus has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician.

Power-Cord Protection - Route the power cord so as to avoid it being walked on or pinched by items placed upon or against it, paying particular attention to the plugs, receptacles, at the point where the cord exits form the apparatus.

Attachments - Only use attachments as recommended by the manufacture.

Accessories - Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Lighting - Unplug this apparatus during lightning storms or when unused for long periods of time.



ISDN cables - CAUTION - to reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

Servicing - Do not attempt to service the apparatus yourself as opening or removing covers may expose you to dangerous voltages or other hazards, and will void the warranty. Refer all servicing to qualified service personnel.

Damaged Equipment - Unplug the apparatus from the outlet and refer servicing to qualified personnel under the follwing conditions:
When the power cord or plug is damaged or frayed
If liquid has been spilled or objects have fallen into the apparatus
If the apparatus has been exposed to rain or moisture
If the apparatus has been subjected to excessive shock by being dropped, or the cabinet has been damaged
If the apparatus fails to operate in accordance with the operating instruction

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1. T-DMB/DAB Modulator / Upconvertor PCI BUS

1-1. Overview

DMB Modulator PCI Adaptor is designed for OEM developer of T-DMB transmitter and provided with Driver and API reference for customer's own design application software.
DMM-402 is PCI DMB modulator and UPC-231 is PCI DMB RF Upconvertor and DMM-402 is designed to be interfaced with max 2 UPC-231. At final, DMM-402 have ability to ETI streaming (Upto 2 channel) by 2 UPC-231 at the same time with different setting of value.

1-2. DMM-402

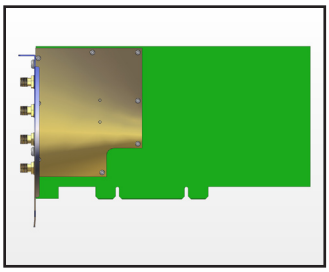
* Key Features

- DAB/T-DMB Modulator PCI BUS
- Compliant with EN 300 401 andETS 300 799
- Support to all DAB Mode I, II, III, IV modes
- Easy ETI stream play out
- High Performance modulation (MER, IF Stability, and other)
- Support device driver and API for Window 2000/XP
- Offer double I/Q SMA port
- Output Frequency : Band II, III and L-Band

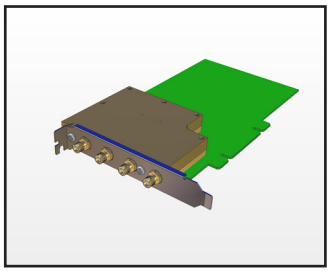
* Specification

- 2 x IQ Output Support
- Output Voltage : 1 Vp-p
- Output Impedance : 50Ω
- Connector : SMA-Connector

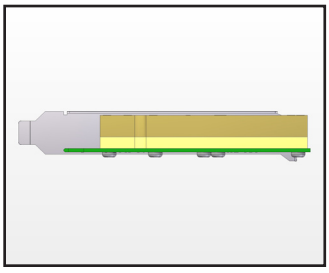
* Physical Side View



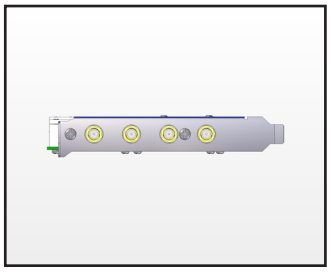
Top View



3D View



Side View



Front View

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1-3. UPC-231

* RF OUT

- **Frequency**

  Range : Band II : 87.5 MHz ~ 108 MHz
  Band III : 174 MHz ~ 250 MHz
  L Band : 1.452 GHz ~ 1.492 GHz
  Resolution : Band II / III : 1 KHz
  L Band : 100 KHz
  Accuracy : ±1 ppm

- **Level**

  Range : 0 dBm ~ -120 dBm
  Resolution : 0.5 dB
  Accuracy : ±1 dB
  Connector : SMA - Connector

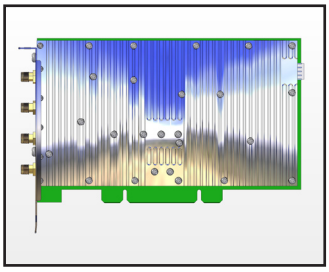
* I/Q Input

- Input Voltage : 1 Vp-p
- Input Impedance : 50Ω
- Connector : SMA-Connector
- Simultaneous Band II / III, L-Band transmission and configuration I^2C Interface - Support daisy chain configuration

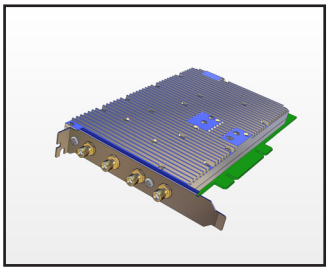
* Power Requirements

- DC 12V (640mA), DC 5V (910 mA)

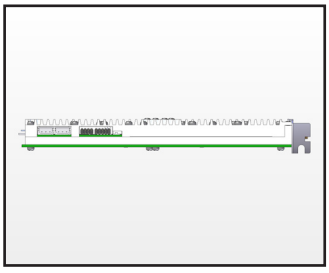
* Physical Side View



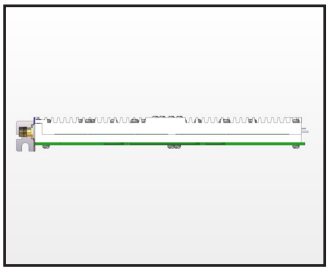
Top View



3D View



Right Side View



Left Side View

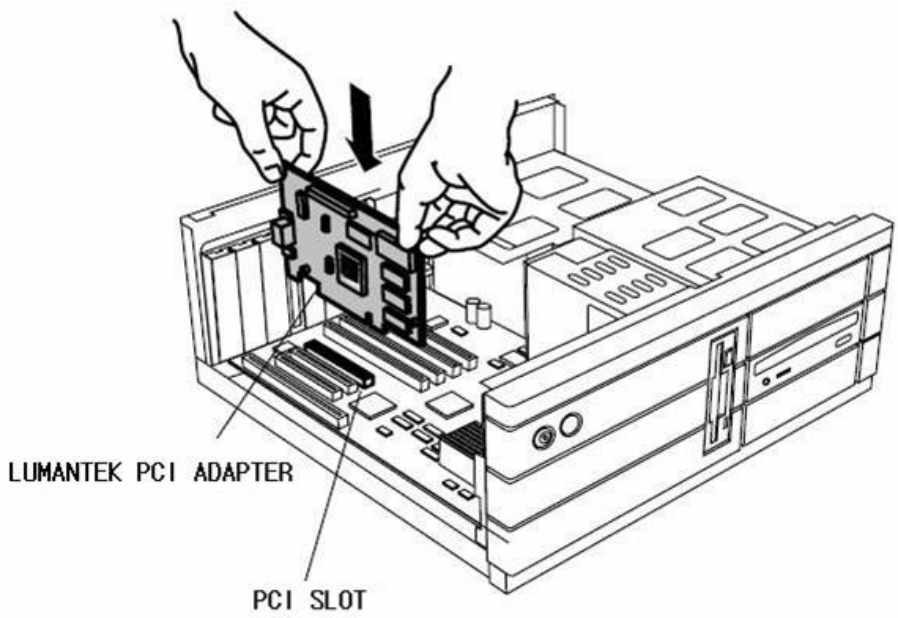
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2. PCI Adaptor Installation

Mount PCI Adaptor (DMM-402 & UPC-231) on computer and install Device Driver provided with PCI Adaptor to operate. Just insert CD (provided with PCI Adaptor) into CD-ROM driver and then you may install device driver easily to follow the request of computer dialogue box.

2-1. Hardware Installation

1. Computer power off and open the computer cover.
2. Plug in the Adaptor on PCI slot.



3. Fasten the adaptor into the bracket tightly.
4. Cover the computer cover.

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2-2. Driver Installation

1. Computer recognizes new device driver as Window starts after PCI Adaptor plug in.



2. Hardware Wizard will operate after the Adaptor is recognized on computer. To install, click “Next” menu box.

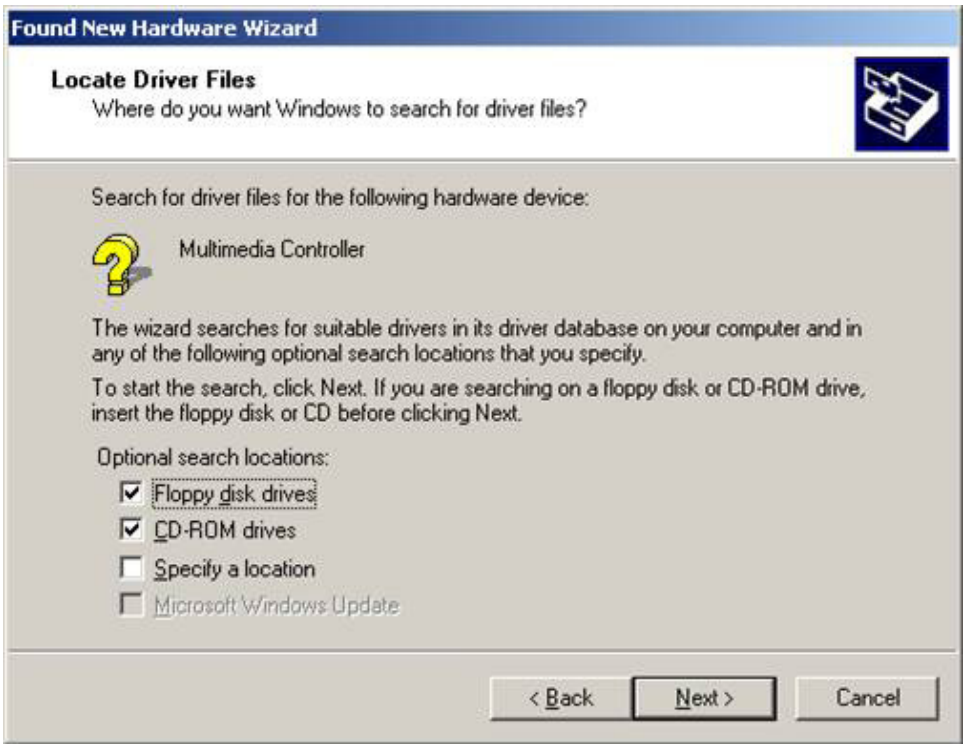


3. To install the driver provided with the Adaptor, select ‘Search for a suitable driver for my device (recommended)’ menu, then click ‘Next’ button.



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4. Device Driver is in CD-ROM provided with Adaptor, so, select 'CD-ROM drivers' and click 'Next' button



5. Select the driver location in CD-ROM using 'Browse…' button. (Egg: if the CD-ROM driver is assigned on 'G' Driver, then you may make "G:\DMB directory" and click 'OK' button.



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6. You already found out the driver on above paragraph #5 action, click 'Next' button on 'Driver Files Search Results' window.



7. Device Driver will be installed as you click 'Yes' button on 'Digital Signature Not Found' window.



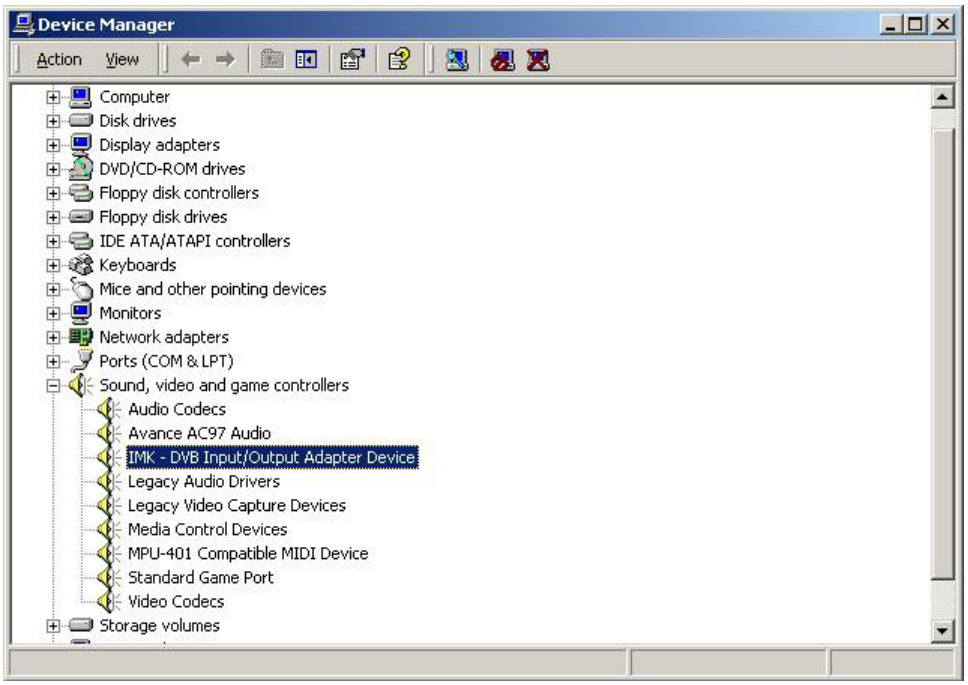
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8. This means 'IMK-DVB Input/Output Adapter Device' was installed.
   Click 'Finish' button to complete installation.



2-3. Verification of Device Driver

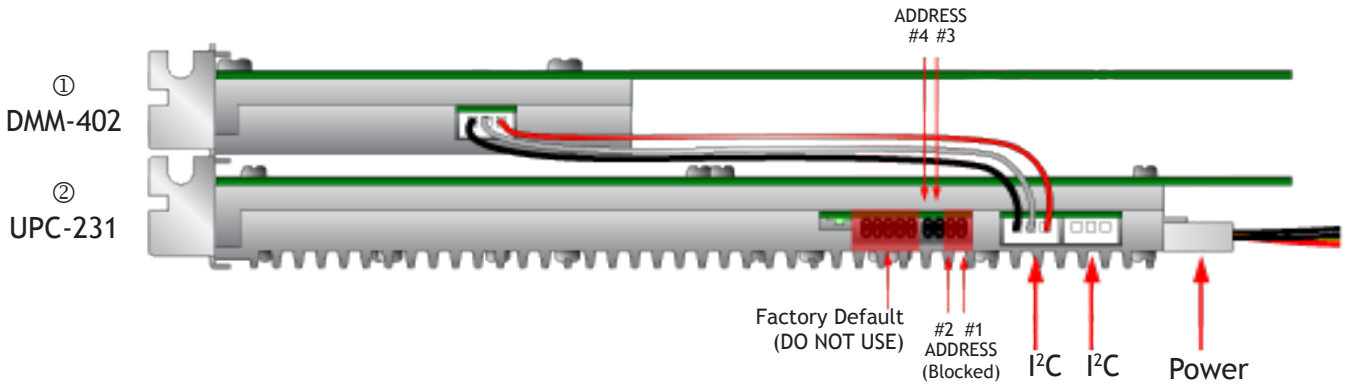
If Device Driver is installed successfully doing above action, you can see on 'Device Manager window' that 'IMK-DVB Input/Output Adaptor Device' is installed. (You may select 'Device manager' through 'Start' → 'Settings' → 'Control Panel' → 'System' → 'Hardware' → 'Device Manager.')
If "Device Manager is not assigned or collision and protection, etc." are appeared on monitor, then it means ASI Card Device Driver was not installed correctly.



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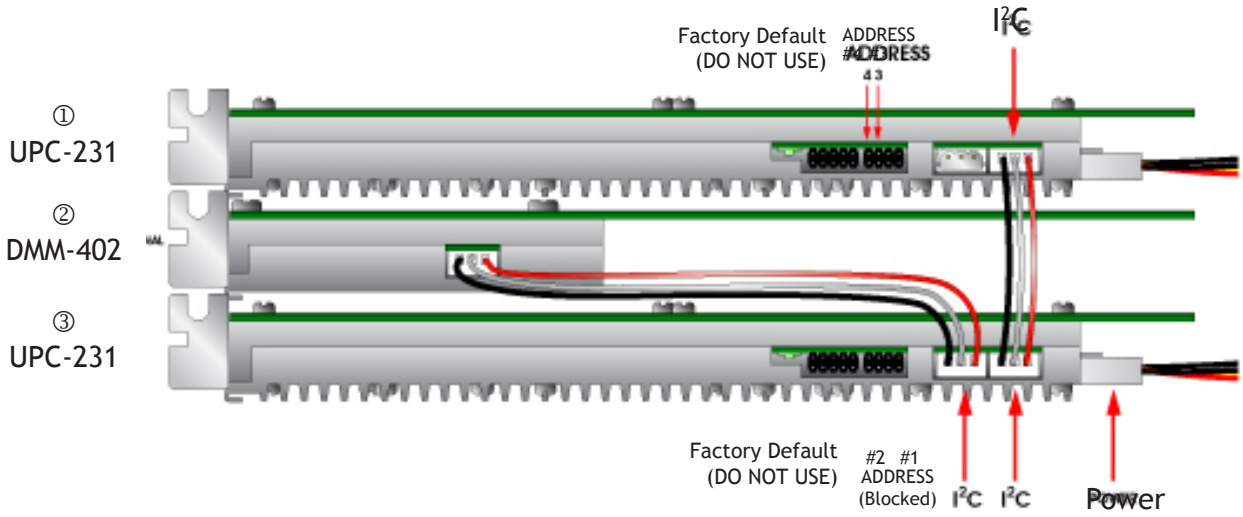
3. Cable Connecting for DMM-402 and UPC-231

3-1. 1 Channel ETI Streaming Case (1*DMM-402 and 1*UPC-231)



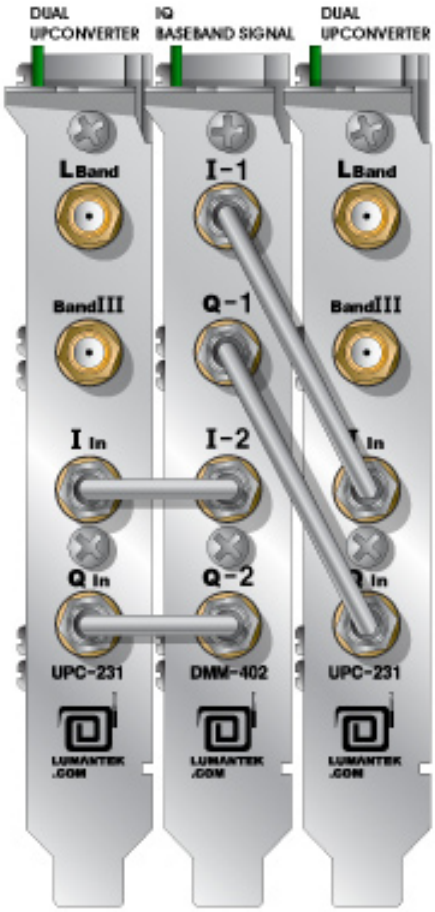
1. Connect I²C cable from card ①(DMM-402) to card ②(UPC-231).
   You could connect to whether right or left I²C socket of UPC-231
2. The left side ADDRESS jumper must leave as factory default.
   Also, do not touch jumper #1 and #2 which are blocked by tube. You could use jumper #3 or #4.
   When one UPC-231 is mounted, you have to plug in jumper at ADDRESS #3.
   (Jumper #4 is open)
3. Then, connect to 4-pin power cable which we supplied.

3-2. 2 Channel ETI Streaming case (1*DMM-402 and 2*UPC-231)



1. When you install 2 UPC-231 PCI cards with 1 DMM-402 PCI, do not set same ADDRESS on both UPC-231 PCI cards. For example, plug in one jumper at ADDRESS#3 of upper UPC-231 and plug in another jumper at ADDRESS #4 of down UPC-231.
   For the ADDRESS #1 and #2 , do not use them.
2. I²C cable from card ②(DMM-402) may be interfaced with I²C socket of any UPC-231 (card ① or card ③). Then connect any right or left connector. For example, if I²C cable is interfaced between card ②(DMM-402) and card ③(UPC-231) then another I²C cable should be interfaced between card ③(UPC-231) and card ①(UPC-231) as above picture.

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3. Then, connect to 4-pin power cable which we supplied.
4. You can connect I/Q like above, in other way you can connect I-1 / Q-1 in left side, or connect I-2 / Q-2 in right side.

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