



IDLV-4100PM

Professional DVB Processor and Trans-Modulator

IDLV-4100PM

Professional DVB
Processor and
Trans-Modulator
User Manual

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Notices

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WARRANTY

This warranty does not cover parts which may become defective due to misuse of the information contained in this manual.

Read this manual carefully and make sure you understand the instructions provided. For your safety, be aware of the following precautions.

WARNING! IMPORTANT SAFETY INSTRUCTIONS

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING

- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- To avoid explosion danger, do not dispose of batteries in an open fire.

CE MARK FOR EUROPEAN HARMONISED STANDARDS

The CE mark which is attached to these products means it conforms to EMC Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC).

IMPORTANT INFORMATION

- Should you experience a problem with this unit, please refer to the trouble shooting section of this user manual.
- Please retain the original packaging, should it be necessary at some stage to return the unit.

Disposal of Old Electrical and Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service, or the shop where you purchased the product.

COPYRIGHTS

Television programmes, movies, video tapes, discs, and other materials may be copyrighted. Unauthorized recording of copyrighted material may be against the copyright laws in your region. Also, use of this product with cable television transmissions may require authorization from the cable television operator or transmitter/owner.

- The supplied AC power cable must be used to power this product. If the power cord becomes damaged,

VENTILATION

- Do not expose the product to high temperatures, such as placing it on top of other product that produce heat or in places exposed to direct sunlight or spot lights.
- The ventilation slots on top of the product must be left uncovered to allow proper airflow into the unit. Do not stand the product on soft furnishings or carpets. Do not stack electronic equipments on top of the product.
- Do not place the product in a location subject to extreme changes in temperature. The temperature gradient should be less than 10 degrees C/hour.
- Place the product in a location with adequate ventilation to prevent the build-up of heat inside the product. The minimum ventilation space around the unit should be 7 cm. The ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, table cloth, curtains, etc.

POWER SOURCES

- The product is not disconnected from the AC power source (mains) as long as it is connected to the power outlet or wall socket, even if the product is turned off.
- If the product will not be used for a long period of time, disconnect it from the AC power outlet or wall socket.

Before Using the Device

Thank you for purchasing the IDLV-4100PM series.

This User Manual is written for operators/users of the IDLV-4100PM Professional Digital TV Processor and Trans-modulator to assist in installation and operation. Please read this user manual carefully before you proceed to install and use the device

FOR YOUR SAFETY

This equipment is provided with a protective earthing ground incorporated in the power cord. The main plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor, inside or outside the device, is likely to make the device dangerous.

Do not remove the covers of this equipment. Hazardous voltages are present within this equipment and may be exposed if the covers are removed. Only Inverto trained and approved service engineers are permitted to service this equipment.

No operator serviceable parts inside. Refer servicing to Inverto trained and approved service engineers.

For the correct and safe use of the device, it is essential that both operating and servicing personnel follow generally accepted safety procedures in addition to the safety precautions specified in this manual.

Whenever it is likely that safety protection is impaired, the device must be made in-operative and secured against unintended operation. The appropriate servicing authority must be informed. For example, safety is likely to be impaired if the device fails to perform the intended measurements or shows visible damage.

WARNINGS

- The mounting environment should be relatively dust free, free of excessive vibration and the ambient temperature between 0C° to 40C°. Relative humidity of 20% to 80% (non-condensed) is recommended.
- Avoid direct contact with water.
- Never place the equipment in direct sunlight.
- The outside of the equipment may be cleaned using a lightly dampened cloth. Do not use any cleaning liquids containing alcohol, methylated spirit or ammonia etc.
- For continued protection against fire hazard, replace line fused only with same type.
- Air intake for cooling is achieved via holes at the side of the device and the fans inside. The air flow should not be obstructed. Therefore, the device has to be placed on a flat surface, leaving some space at the sides of the device.
- When in operation, the internal temperature should not exceed the limit of 70C°.

1. General

There are various models of IDLV-4100PM addressing different market requirements:

OPTIONS LIST

Model No. Function	IDLV-4100PM-ST	IDLV-4100PM-S2T	IDLV-4100PM-CT	IDLV-4100PM-DT	IDLV-4100PM-TT
IP Output	•	•	•	•	•
IP Input	•	•	•	•	•
DS3 Input/Loop through				•	
DVB-S Input	•				
DVB-S2 Input		•			
DVB-C Input			•		
DVB-T Input					•
PCMCIA Slot	•	•	•	•	•
ASI Input/Output	•	•	•	•	•
RF OUT	•	•	•	•	•
LAN control	•	•	•	•	•

Where the '•' sign stands is a standard option.

2. Features

- Comply with MPEG-2 (MP@ML) and DVB-S/-C/-T/S2 standards
- Support multiple Input/loop through methods such as QPSK, ASI, DS3
- Support various CA systems such as Ideto, Viaccess, NDS, etc
- Status display and parameters settings on LCD
- LAN control based on SNMP protocol, HTTP interface or HDMS PC software tool
- DS3 is compatible with multiple network adaptation protocols such as of Bacro, Huawei
- Support ASI output-original TS or processed TS (1+1Backup)
- Editing of PSI/SI table
- Support IP input/output
- Teletext VBI, EBU subtitle and DVB subtitle
- Upgradeable through LAN
- Auto-save when power off

3. Installation

3.1 UNPACKING

Open the packaging box. Check if all accessories are in the box according to the packing list, and if the device has any visible damage. Check that the power cord is suitable for the country where the device will be used. Please contact the agent if there is any damage or accessory missing.

3.2 OPERATING VOLTAGE

Do not connect AC power until you have verified that the line voltage is correct and the proper fuses are installed. The power supply of the device supports a wide-range of power signals. It is suitable for supply voltages of 100-240 Vac -10% +6% at 50/60 Hz nominal. Please make sure the supply voltage is within the specified range.

3.3 POWER-ON THE DEVICE

Make sure the device is mounted into a 19" EIA rack properly and firmly, and the signal cables are well connected before applying power to the device. The main socket and fuse are located at the rear panel of the device. Power the device and switch it on. The POWER LED will light. After the device is powered on, check if the following message presents on the display on the front panel:

IDLV-4100PM (factory default unit-name) IP: 10.10.60.148 (factory default IP Address for LAN access)

If no message is presented or there is no light on the display, the device is defective and has to be returned for servicing.

POWER REQUIREMENT	
Input voltage	90-250 Vrms auto select
Frequency	47 to 63 Hz
Power	50 VA max. / 30 VA typical.
Current	110 V/0.27A or 240 V/0.125A typical

3.4 POWER SUPPLY

The power cord connects to an IEC main socket, which is located at the rear side of the device. A standard power cord with a European DIN 49441 two pin main plug is supplied with the device.

3.5 THE FUSES

The line fuse is located in a small container beside the power connector on the rear panel. To check the fuse, insert the tip of a screwdriver in the slot at the middle of the container where there is a little tap. Then, pull out the fuse gently. The fuse should be attached to the line module and cannot be removed. The fuse size should be 5 by 20 mm, rate T 2.0A, 250 V (UL and IEC approved).

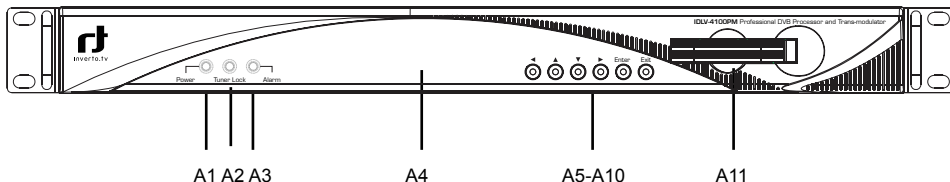
3.6 CONNECTING THE DEVICE

Always use the specified cables supplied for signal integrity and compliance with EMC requirements. Connect the input signal to the TUNER IN port on rear panel. The ASI OUT port may be connected to other devices. The RF OUT port can be connected to your digital video broadcast network.

It is recommended to switch off and unplug the power cord when the device is not used for long duration of time. The reboot interval should be more than 5 seconds.

4. Control Panel and Interfaces

4.1 FRONT PANEL DIAGRAM



- A1 Power** Power indicator, green light means power is ON
A2 Tuner lock Tuner lock indicator, Green light means signal is locked; No light means no input signal or wrong settings of the reception parameters..
- A3 Alarm** Alarm indicator
A4 LCD 2 × 20 character LCD
A5-A10 buttons <LEFT> <UP> <DOWN> <RIGHT> <ENTER> <EXIT> buttons
 <UP> <DOWN> buttons are used to up/down pages of menu or increase/decrease value when edit numbers
 <LEFT> <RIGHT> buttons are used to move cursor
 <ENTER> button is used to enter sub menu or confirm operation
 <EXIT> button is used to return previous menu or cancel operation
- A11 Common Interface** PCMCIA Conditional Access Module (CAM) slots

4.2 LED INDICATORS

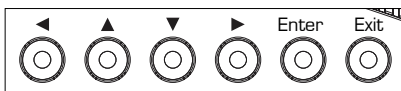
There are 3 LED-indicators:

- Power:** Status of the power supply
 Green: the power is turned on
 Off : the power is turned off
- Tuner lock:** Status of the tuner
 Green: the incoming signal is locked by the tuner.
 Off : there is no input signal or the signal is unlocked
- Alarm:** Status of source signal, which includes IP input, Tuner input signal and DVB-ASI TS input.

4.3 LCD DISPLAY

The 2 x 20 character LCD display shows all the required information about the selected parameters. The top row of the LCD shows the selected parameter. The bottom row indicates the present values and how these can be adjusted.

4.4 OPERATION BUTTONS



The parameters are grouped in three menus:
 -the Inputs, which provides access to inputs parameters
 -the Outputs, which provides access to output parameters
 -the Systems, which provides access to general system management parameters and device operating status.
 When the symbols '->' shown at the right side of the second row indicate that the user can use <ENTER>-to navigate into sub-menus.

The 6 keys on the front panel allow you to navigate the information provided on the LCD and change parameters when the device operates under local control.

The **ENTER** key is used to enter the main menu or a sub-menu. Inside a menu, **ENTER** is used to select the parameter on the bottom line and to change its value. It also ends the input of new alphanumeric values and confirms the changes.

The **▲** and **▼** keys are used to select between the main menus, sub-menus or programs. When a parameter is selected inside a menu, they are also used to change its value. You may scroll through character positions using the **◀** and **▶** keys. The **EXIT** key is used to exit a menu without any action taking place

4.5 COMMON INTERFACE

There are two Common Interface slots. You can insert up to two different CAM modules for descrambling.

4.6 REAR PANEL & DEVICE CONNECTION

Always use the specified cables supplied for signal integrity and compliance with EMC requirements.

The rear panel is directly related to the input and output options fitted. The figure below shows a typical rear panel.



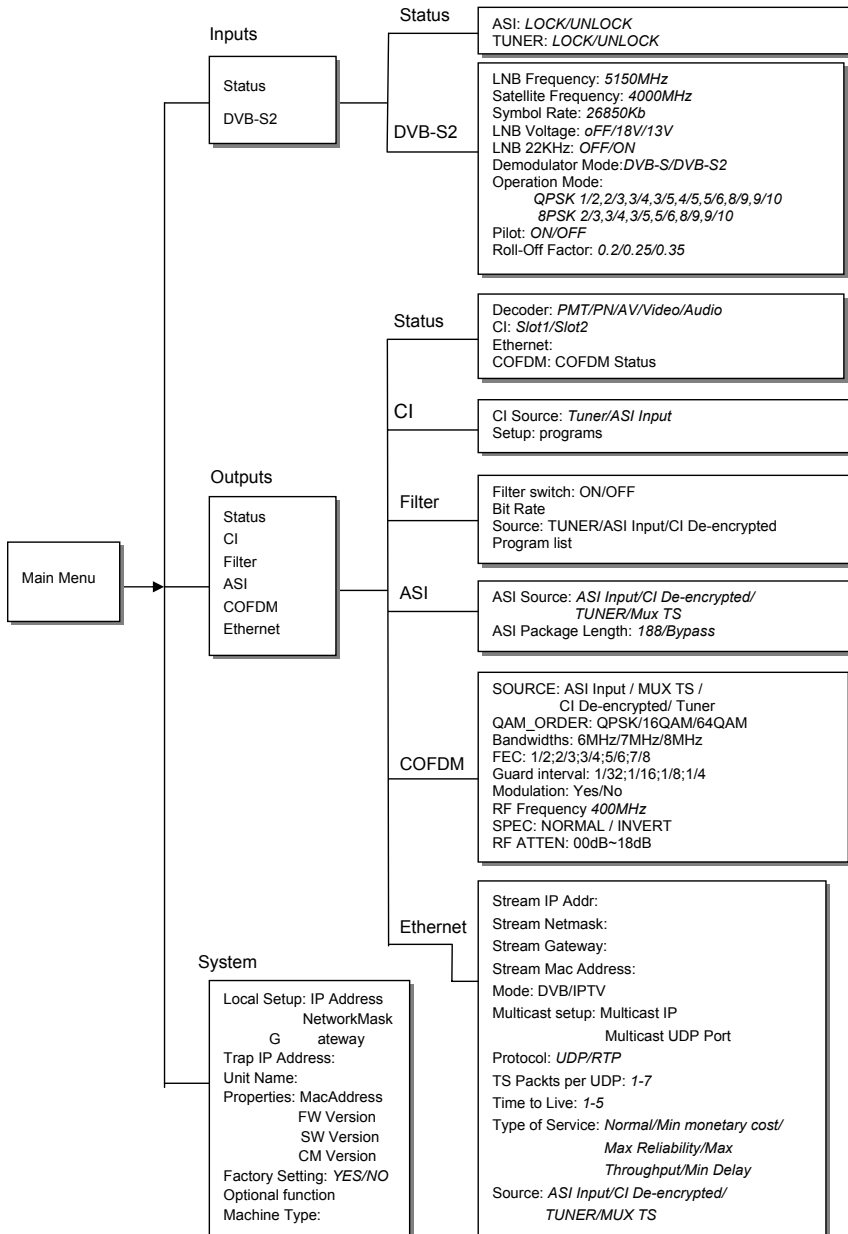
B1	RF Out	RF signal output port
B2	TS/IP	IP input/output port
B3	RS-232	Serial port for printing information
B4	LAN Control	LAN port for software update
B5	ASI In	ASI input port
B6,B7,	ASI OUT	Signals over ASI output port; B7 and B6 outputs are identical.
B8	Loop-through	Tuner loop through signal
B9	TUNER IN	Tuner input signal
B10	Power socket	AC 90~250V input

Note:
This RS-232 interface is a 9-pins female sub-D connector that is only used for factory software upgrade and configuration. You should not connect any cable to the RS-232 connector, as this may cause damage the device.

5. Menu Structure and Operation

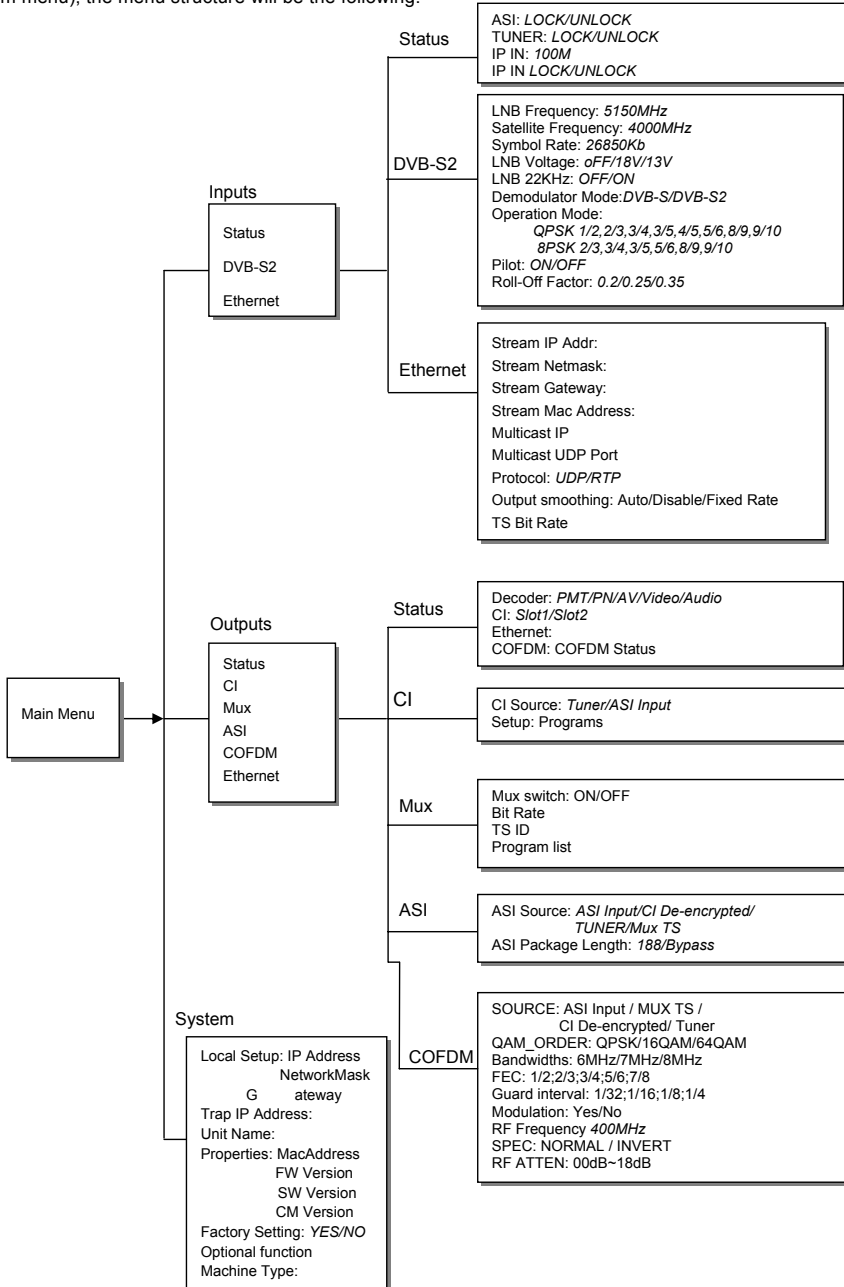
5.1 IDLV-4100PM-XT SERIES

Note: the IP interface is set to Output and the Filter function is enabled (fixed under optional function of the System menu), the menu structure will be the following:

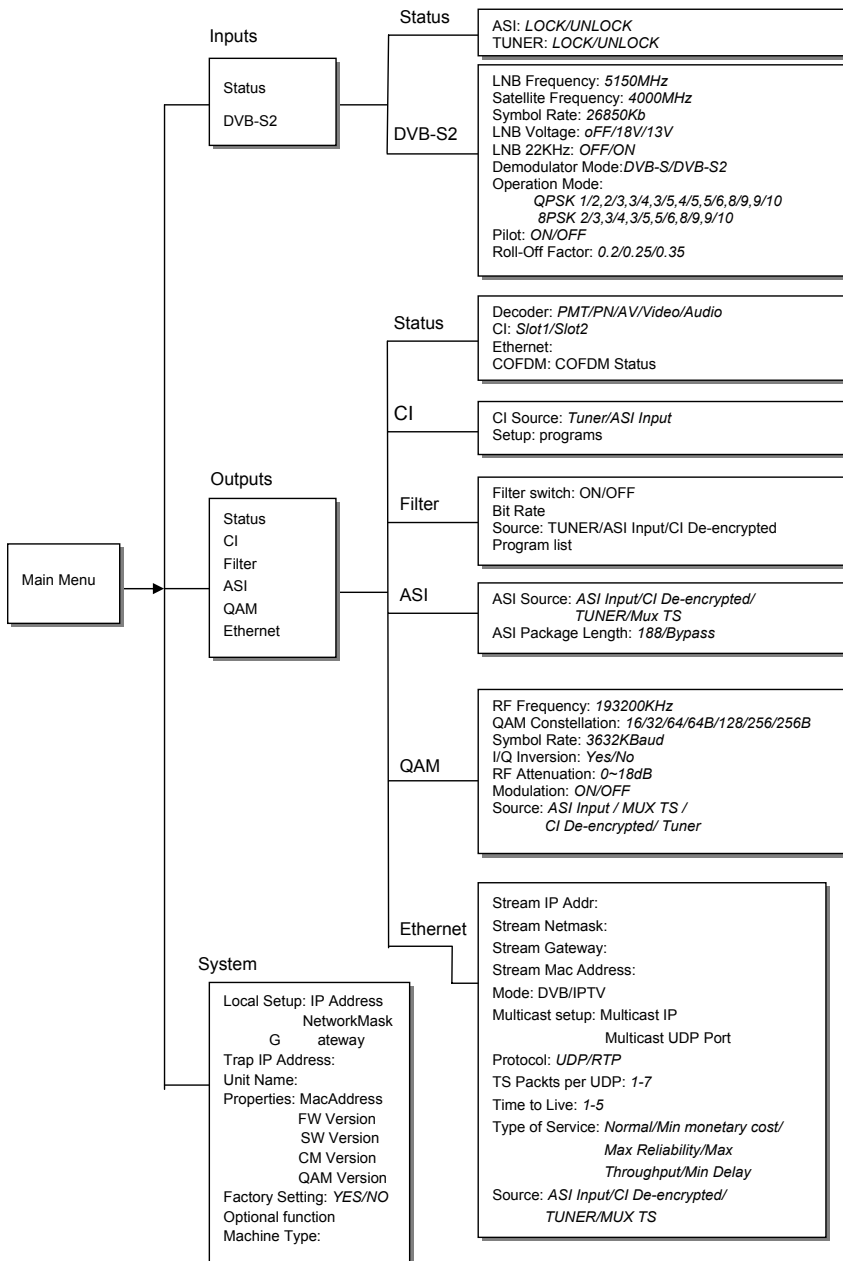


MENU OPERATION

When the IP interface is set to Input and the Muxr function is enabled (fixed under optional function of the System menu), the menu structure will be the following:

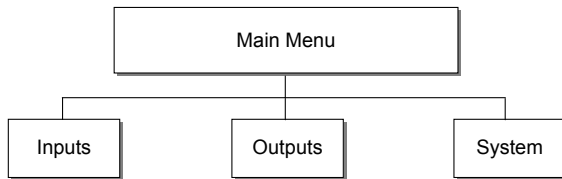


5.2 IDLV-4100PM-XC SERIES:



5.3 MENU OPERATION

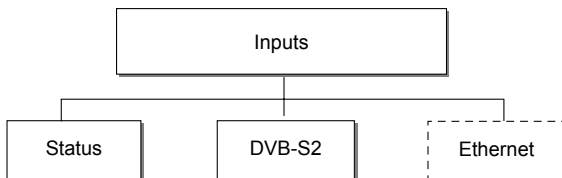
The front panel LCD display will show bootup information after power is switched on. When booting is completed, the first line will display the product model and the second line will display the IP address of the device. Press the **ENTER** button to enter the main menu:



- (1) Input Setup Set input parameters
- (2) Output Setup Set output parameters
- (3) System Set system parameters

5.4 INPUTS MENU

There are three options: Status, DVB-S2 and Ethernet (if IP port is configured as Input):



5.4.1 Status Menu

It contains two options, ASI and TUNER, to show the status of signal input:

ASI: When signal from ASI input port is locked, it will display package format and code rate; if signal is not locked, it will show Unlock.

TUNER: When signal from tuner input port is locked, it will display package format and code rate; if signal is not locked, it will show Unlock.

If Extend Board Type is set as "IP IN" in Optional Function of System menu, there will be one more option appeared: IP IN

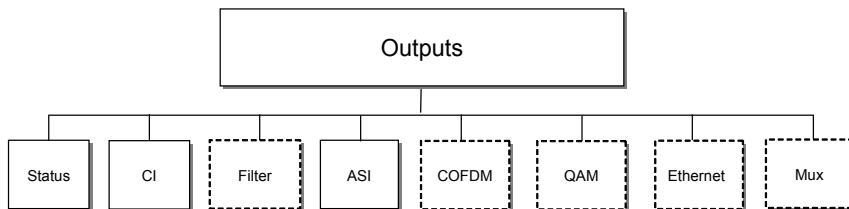
IP IN: When signal from IP input port is locked, it will display package format and code rate; if signal is not locked, it will show Unlock.

5.4.2 DVB-S2 Menu

There are 9 options to set DVB-S2 parameters. After signal is locked, the TUNER LOCK indicator on front panel will turn green.

- LNB Frequency: Input LNB frequency
- Satellite Frequency: Input downstream frequency of satellite
- Symbol Rate: Input symbol rate of satellite
- LNB Voltage: LNB power voltage. OFF/18V/13V selectable
- LNB 22KHz: 0 or 22K switch. Can select OFF/ON
- Demodulator Mode: Can select DVB-S/DVB-S2
- Operation Mode: Can select QPSK 1/2,2/3,3/4,3/5,4/5,5/6,8/9,9/10
8PSK 2/3,3/4,3/5,5/6,8/9,9/10
- Pilot: Can select ON/OFF
- Roll-Off Factor: Can select 0.2/0.25/0.35

5.5. OUTPUTS MENU



5.5.1 Status Menu

It shows information of COFDM, CI and Ethernet

COFDM: Shows COFDM status

CI: Shows information of CI cards in Slot1/Slot2

Ethernet: Shows information of TS/IP port

5.5.2 CI Menu

It contains two options, CI Source and Setup, to set parameters of CI

CI Source: Set signal source - select TUNER or ASI Input

Setup: Press buttons to select the program which is expected to be descrambled; Press ENTER button to select; then after pressing the EXIT button, the display will show "Confirm changed", then select "YES"

0-xxxxx show program name whose signal source is ASI

1-xxxxx show program name whose signal source is TUNER

2-xxxxx show program name whose signal source is TS/IP

3-xxxxx undefined

5.5.3 Filter Menu

(This menu becomes available only when the Filter Function is set to "Filter" under the Optional Function of the System menu)

User can set the filtering function parameters:

Filter Switch: Select ON or OFF of filter switch.

Bit Rate: Set the bit rate

Source: it includes TUNER, ASI Input, or CI De-encrypted.

Program list: select programs which user wants to filter

5.5.4 ASI Menu

It contains two options, ASI Source and ASI Package Length, to set parameters of ASI

ASI Source: Select signal source, includes CI De-encrypted, TUNER, ASI Input or Mux TS

ASI Package Length: Can select 188 or Bypass

5.5.5 COFDM Menu (For IDLV-4100PM-xT series)

It contains nine options to set parameters of COFDM

SOURCE: Select input signal source, includes ASI Input, MUX TS, CI De-encrypted or Tuner

QAM-Order: Set COFDM modulation modes, includes QPSK/16QAM/64QAM

Bandwidths: Set bandwidths. Can select 6/7/8M

FEC: Set FEC parameters. Can select 1/2; 2/3; 3/4; 5/6; 7/8

Guard interval: Can select 1/32; 1/16; 1/8; 1/4

Modulation: Set carrier parameter. Can select ON/OFF

RF frequency: Set RF frequency. The range is 48MHz~862MHz

SPEC: Set frequency spectrum. Can select NORMAL or INVERT

RF ATTEN: Set RF attenuation. The range is 00dB~18dB

5.5.6 QAM Menu (For IDLV-4100PM-xC series)

It contains seven options to set parameters of COFDM

SOURCE: Select input signal source, includes ASI Input, MUX TS, CI De-encrypted or Tuner

RF frequency: Set RF frequency. The range is 48MHz~862MHz

QAM Constellation: Set QAM Constellation, includes 16/32/64/64B/128/256/256BQAM

Symbol Rate: Set symbol rate.

I/Q Inversion: Can select Yes or No

RF Attenuation: The range is 00dB~18dB

Modulation: Set carrier parameter. Can select ON/OFF

5.5.7 Ethernet Menu

(This menu becomes available only when the IP interface (Extend Board) is set to "IP out" under Optional Function of the System menu) It includes Stream IP Addr, Stream Netmask, Stream Gateway, Stream Mac

Address, Mode, Multicast setup, Protocol, TS Pkts Per UDP, Time To Live, Type of Service and Source

Stream IP Addr: IP address of signal source

Stream Netmask: Netmask of signal source

Stream Gateway: Gateway of signal source

Stream Mac Address: Mac address of signal source

Mode: DVB or IPTV

Multicast setup: Multicast IP Addr: IP address of multicast

Multicast UDP Port: UDP port of multicast

Protocol: Can select UDP or RTP

TS Pkts Per UDP: the TS packets number per UDP. Can select 1~7

Time To Live: The quantity of effective routers. The range is 1~5

Type of Service: Can select Normal, Min Monetary Cost, Max Reliability, Max Throughput and Min Delay

Source: Output signal source. Can select ASI Input, CI De-encrypted, TUNER and Mux TS

5.5.8 Mux Menu

(This menu becomes available only When set Filter Function is set to "Mux" in Optional Function of the System menu) It contains four options to set parameters of Mux function

Mux Switch: Select ON or OFF of mux switch.

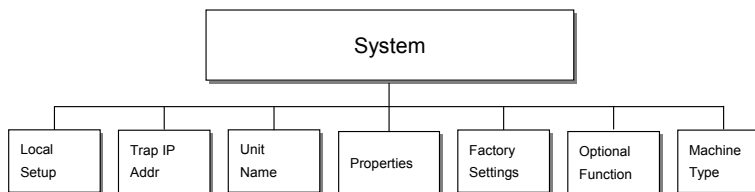
Bit Rate: Set the bit rate

TS ID: set TS ID.

Program list: select programs which user wants to mux

5.6 SYSTEM MENU

There are seven sub-menus:



5.6.1 Local Setup: parameters of local device

IP Address: IP address of this device

Network Mask: Network mask of this device

Gateway: Gateway of this device

5.6.2 Trap IP Addr: SNMP trap IP address

5.6.3 Unit Name: Name of this device

5.6.4 Properties:

MAC Address: show MAC address of this device

FW Version: MCU software version

SW Version: FPGA software

QAM Version (IDLV-4100PM-xC series only)

5.6.5 Factory Setting: Recover to factory default setting

5.6.6 Optional Function: Set IP function and Filter/Mux function

Extend Board Type: Set type of extend board. The menu structure of 4100PM will be changed when select different types: No Exist/IP IN/IP OUT

Filter function: Disable/Filter/Mux. The menu structure of 4100PM changes accordingly.

5.6.7 Machine Type: show machine type

6. Technical Specifications

RF Output

Output frequency range	48~860 MHz
Output frequency adjustment	Min. step 10 kHz
Output level	95~120 dB μ V
Output level adjustment	Min. step by 1 dB
Output impedance	75 Ω , F-type
Output return loss	12 dB min.
Spurious rejection	60 dBc min.
Output frequency accuracy	VHF: \pm 5 kHz, UHF: \pm 10 kHz

DVB-C QAM Modulation

Constellation	J.83A, 16, 32, 64, 128, 256QAM	J.83B: 64 or 256QAM
Symbol rate	2~7.2MS/s	
MER	36dB min.	
Spectrum inversion	Inverted or Normal (selectable)	

DVB-T COFDM Modulation

Constellation	QPSK, 16-QAM, 64-QAM
FFT mode	2K
Guard interval	1/4, 1/8, 1/16 or 1/32
FEC code rate	1/2, 2/3, 3/4, 5/6 or 7/8
Bandwidth	6MHz, 7MHz or 8MHz
Effective bit rate	3.732~31.67 Mbps
TPS auto-generation	Yes
Spectrum inversion	Inverted or Normal (selectable)
SFN	not support

Built-in re-multiplexer

Input PID range	0x0000~0x1FFF
Output PID range	0x0000~0x1FFF
PSI/SI generating	Auto or Manual
PID filter selection	Service name or PID number
Hierarchy	not support

DVB-S2 8PSK/QPSK Demodulation

Input frequency range	950~2150MHz
Input level	-69~25dBm
Input impedance	75 Ω
Connector	F type, female
Symbol rate	2~45 MSps(SCPC or MCPC)
Rolling off factor	0.35 for QPSK 0.35, 0.25, 0.2 for DVB-S2
Punctured rate	DVB-S2
	QPSK:1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10
	DVB-S2 8PSK:3/5, 2/3, 3/4, 5/6, 8/9, 9/10
	DVB-S:1/2, 2/3, 3/4, 5/6, 6/7, 7/8
	0, 13V, 18V (selectable)
	0/22K (selectable)
	DiSEqC 1.0

LNB power supply

0/22K

DiSEqC

DVB-C QAM Demodulation

Input frequency range	50M~860MHz
Input impedance	75 Ω , IEC-female(7/8MHz) or F-female(6MHz)
Symbol rate	1~7MS/s (PAL), 1~6MS/s (NTSC)
Constellation	J.83A: J.83B:
Tuner bandwidth	6MHz/7MHz/8MHz factory option
FEC code rate	1/2, 2/3, 3/4, 5/6 or 7/8, K=7
Input signal level	-15~15dBmV

DVB-T COFDM Demodulation

Input frequency range	174~230MHz, 470~860MHz
Input impedance	75 Ω , IEC-female
Input symbol rate range	4.98~31.67Mbps (8MHz bandwidth)

Constellation	QPSK, 16-QAM, 64-QAM
Tuner bandwidth	6, 7 or 8MHz factory option
Input signal level	-20~-75dBm
FFT mode	2K/8K, auto-detected
Guard interval	1/4, 1/8, 1/16 or 1/32, auto-detected
FEC code rate	1/2, 2/3, 3/4, 5/6 or 7/8, auto-detected
DS3 Input	
Input impedance	75Ω, BNC
Max. input bit rate	44.736Mbps
Loop through output impedance	75Ω, BNC
Max. output bit rate	44.736Mbps
Format	Unframed or framed Framing according to G.804/G.752(DS3)
TS over IP I/O	
Connector	RJ45, 10/100M
Max. bit rate	70Mbps
Transport protocol	UDP/RTP, support for unicast or multicast
Control protocol	IGMPv2
I/O Interface on Rear Panel	
Tuner input/output	1×input, 1×loop through output
RS-232	1×9-pin D-sub male
Ethernet control port	1×RJ45 for Network management
TS over IP input or output	1×RJ45, TS over IP (optional)
ASI input	1×BNC ,75Ω
ASI output	2×BNC ,75Ω (one for back-up)
RF output	1×F-type ,75Ω
Management	
Ethernet Connector	RJ45 ,10/100M, for NMS and software upgrade
Protocol	SNMP, TCP/IP, HTTP
Front panel control	LCD display and keypad
General	
Operating temperature	0-45°C
Storage temperature	-20~70°C
Humidity	<85%
Power supply	AC 90V~260V 50Hz/60Hz
Dimension	44mm×483mm×460mm
Weight	6Kg

7. Accessories

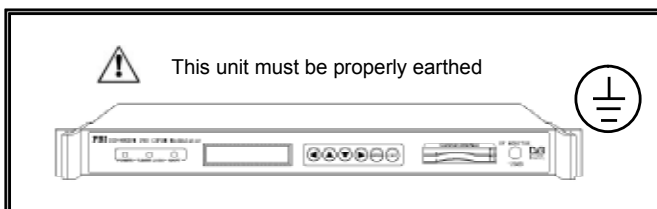
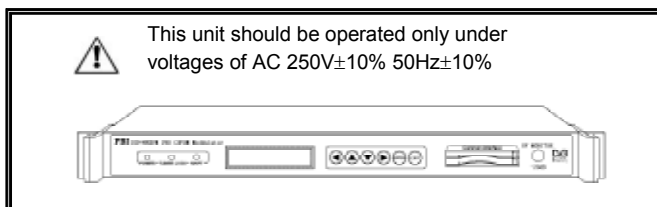
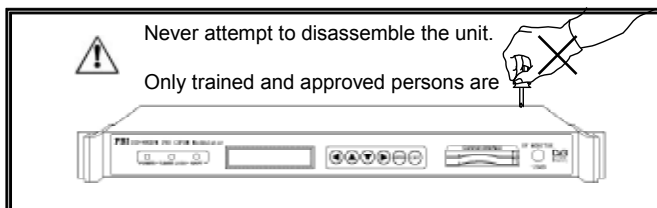
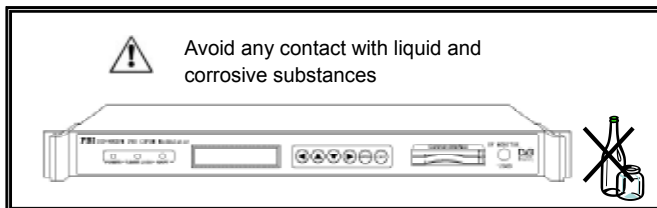
- 1x Power cord
- 1x User Manual
- 1x CD with the HDMS PC software tool
- 1x ASI cable
- 2x XLR connector

8. Safety



CAUTION!

Unauthorized maintenance or the use of non-approved replacements may affect the equipment specification and invalidate any warranties.



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