TRANSPORT STREAM MULTIPLEXER

UC-16MX

User Manual

www.upcom.com
Operations Manual UC-MX16
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Notice

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If you have technical or editorial comments concerning this manual, please write them on photocopies of the relevant pages and send them to the documentation department or contact the Customer Service Department. This assistance will be greatly appreciated.

Manual Applicability and Symbols

This is the general operating manual for UPCOM Receivers Please make sure that the correct manual is being used by verifying part number and serial number with UPCOM technical support team or your local distributor.

Be prepared to furnish:

- Serial Number
- Exact Model Number

Symbols

The following warning and caution symbols are used throughout this manual:

- Warning: A hazard exists that may result in personal injury or loss of life.

- Caution: Failure to follow the procedures given may result in damage to the equipment.
WARNING

This equipment operates at potentially lethal voltages. Only trained, qualified personnel should operate, maintain, or service it. Only technicians thoroughly familiar with the equipment must perform Service work.

This equipment is rated for 85 to 265V. Proper power cords should be used for the country where the equipment will be operated. Power consumption should not exceed 50W.

The UC-16MX should not be operated where the unit is exposed to extremes of temperature outside the ambient range, (0°C to +45°C), precipitation, condensation or humid atmospheres above 75%.

This equipment should not be operated around excessive dust, vibration, flammable gases, corrosive or explosive atmospheres.
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UC-16MX
Transport Stream Multiplexer

1. Before Getting Started

If you need help UPCOM and its distributors stand by every product sold. If you need help please contact your local distributor or UPCOM directly at:

+1.408.329.4158

or

by e-mail:
support@upcom.com

Manual Updates

From time to time, new versions of software may require slight changes to the material presented in this document. Check inside the back cover for supplementary pages that may have been added to keep the manual up to date.

Unpacking and Inspection

Before installing the equipment. Please check the box for integrity. After unpacking, look for any missing items or damage to the equipment. If there is damage, please contact customer support immediately. Do not proceed installing the equipment if there is visible or perceived physical damage.

Warranty and RMA

UPCOM guarantees this equipment against defects in material and workmanship for a period of 3 years from date of shipment. During this period UPCOM will repair or replace products that are under warranty.

For all equipment under warranty the owner is responsible for freight to UPCOM and all related customs, tariffs, insurance, etc. UPCOM is responsible for the freight of the equipment from the factory to the owner under the same method the equipment was returned to UPCOM.

Equipment shipped back to UPCOM without a previously accepted RMA will be returned to owner’s expense.

The warranty does not cover: products with defaced serial number, damage during shipping, damage caused by lightning, power surge or installation services.
2. Introduction

The UC-16MX is a DVB Standard Transport Stream Multiplexer supports real-time video stream multiplexing and re-multiplexing. The UC-16MX can handle 16 inport ASI SPTS or MPTS and send the out through 1 or two MPTS streams.

It is compatible with the ISO/IEC-13818 standard with DVB ASI output interface.

2.1 Working principle

[Principle figure]

[Working principle explanation]

(1) The multiplexer supports 16 MPEG-2 SPTS or MPTS inputs and two MPEG-2 transport stream (MPTS) outputs. It filters out the empty packets or the unneeded packets, and changes the PID (packet identity).

(2) Obtains the PSI (Program Specific Information) and SI (Service Information) and integrates them with local data.

(3) The UC-16MX can connect with a network management software through TCP/IP protocol.
2.2 Function

- Multiplexing to SPTS (single program transport streams) or multiplexing to MPTS (multi program transport streams), MPTS supports all-chosen or part-chosen.
- Supports two different output.
- Low time delay. The delay for MPEG-2 Video program is less than 100ms.
- Providing PCR check
- Supports DVB data broadcast.
- Supports remote upgrade of the software.
- Real time monitor input status.
- Port PID monitor function, you can customize monitoring time and port.

2.3 Technique parameter

- PCR: < 100 ns
- Input interface: ASI Interface, BNC
- Input interface impedance: 75Ω
- Input interface bit rate (max): 180Mbps
- Input select PID num (max): 120
- Input program num(max): 100
- Input packet length: 188 or 204byte
- Output interface: ASI Interface, BNC
- Output interface impedance: 75Ω
- Output packed length: 188 or 204byte
- Total output rate (max): 180Mbps
- Power supply: 220VAC±10%, 50Hz
- Power: 30W
- Weight: 4Kg
- Dimension: 450*430*44 (deep*width*high) mm

2.4 Use surrounding

- Working temperature: 0~45
- Working humidity: 5~80%
- Storage temperature: -20~70
- Storage humidity: 5~90%
3 Structure

3.1 Front Panel & Dimensions

Each equipment is designed for 1U (44mm) space, machine dimensions of equipment is shown as figure 3-1.

![Figure 3-1](image-url)
3.2 Rear Panel

Figure 3-2 shows rear-panel map of equipment, port describe is shown:

1. ASI input channel (from 1 to 16), input SPTS or MPTS with DVB standard, 75ΩBNC.
2. ASI output 1, multiplex output, 75ΩBNC.
3. ASI output 2, multiplex output, 75ΩBNC.
4. The same as to ASI output 2.
5. The same as to ASI output 1.
6. RJ-45 port, network control. The customer can manage the multiplexer via any PC in the LAN or WAN.
7. RS232 port, it is used upgrade and test locally.
8. ASI ring output.
11. GND.

Note: output 1 is different or same with output 2.
4 Operation

4.1 Front Panel

- **Power**: power supply work indicator light, when green the system is normal.
- **Channel indicator light**: Display channel status. These status is shown as appendix A
- **Display screen**: Display the system state and menu setting.
- **Select key**: ▲▼▼▼, ▲▼ key is used to switch up/down menu and add/decrease number, ◄► key is used to change numbers.
- **MENU key**: enter or exit operation.
- **OK key**: make sure the operation.

4.2 UC-16MX Operation Flow

<table>
<thead>
<tr>
<th>Step</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Fifth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appliance</td>
<td>Setting network</td>
<td>Initialization</td>
<td>Logon</td>
<td>Reading information</td>
<td>Program multiplexing</td>
</tr>
<tr>
<td>Installation</td>
<td>address</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change input</td>
<td>Initialization</td>
<td>Logon</td>
<td>Reading</td>
<td>Program multiplexing</td>
<td></td>
</tr>
<tr>
<td>port transport</td>
<td>streams</td>
<td></td>
<td>information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change output</td>
<td>Logon</td>
<td>Reading</td>
<td>Modify</td>
<td></td>
<td></td>
</tr>
<tr>
<td>program parameters</td>
<td>information</td>
<td>parameters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status monitor</td>
<td>Logon</td>
<td>Reading</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>information</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4-1  UC-16MX basic operation flow
4.3 Menu Structure

Figure 4-2
Main interface shows the multiplexer running state

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01#</td>
<td>p03</td>
<td>bitrat000.0</td>
</tr>
<tr>
<td>02#</td>
<td>p04</td>
<td>bitrat000.0</td>
</tr>
</tbody>
</table>

- 01#, 02#: Outport number.
- p03, p04: Output program number
- Bitrat000.0: Outport real time output effective bitrate

For example: 01# p03 bitrat015.0, means outport 1 have three programs and output bitrate is 15Mbps

output1 number: Modify output1 number
output2 number: Modify output2 number

Network address: Setting network IP address

Version info: Display equipment version information

Master reset: Return to original parameters

Test mode: It is a kind of work mode

Keyboard lock: Setting the keyboard lock

Modify password: Setting unlock password
4.3.1 Setting the network address

Modify the multiplexer IP settings to define IP address/subnet mask/gateway.

```
Main interface
01#   P03  bitrat 000.0
02#   P03  bitrat 000.0

M216 Multiplexer
Output1 number

Use ↑↓ key then move the cursor to network address

Use ←→ key to move cursor,
Use ↑↓ key to modify number

OK

Ip Address
192.168.001.210

OK

Subnet Mask
255.255.255.000

OK

Gateway
192.168.001.001

OK

Saving network address
Wait please
```
4.3.2 Initialization

- The initialization of multiplexer deletes some Parameters of the configuration
- The initialization of multiplexer is usually used during the first installation, when the input streams must be changed or when the work status is abnormal.

1. Click “MENU”, enter into main menu.

```
UC-16 multiplexer
Output1 number
```

2. Click ↑↓ key to move ‘master reset’.

```
UC-16 multiplexer
Master  Reset
```

3. Click ‘OK’ key to enter the following figure.

```
Mater  Reset
Master  Reset  OK?
```

4. Click “OK” key to finish initialization, the interface is shown as following figure.

```
UC-16 Multiplexer
initializing
```
4.3.3 Output number

Setting Output number modifies multiplexer output number, for example setting output1 number

<table>
<thead>
<tr>
<th>01#</th>
<th>P03</th>
<th>bitrat 000.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>02#</td>
<td>P04</td>
<td>bitrat 000.0</td>
</tr>
</tbody>
</table>

Main interface

Use ↑↓ key then move Cursor to output1 number

UC-16 multiplexer
Output1 Number

Use ←→ key to move cursor,
Use ↑↓ key to modify number.

Output1 number
New number: __

OK

Return to main interface

UC-16 multiplexer
Output1 Number
4.3.4 Test mode

Note: When setting test mode, input port will select a program to send to outport and output, until you turn on the equipment again to return to original work mode.

When the equipment is in test mode the front panel keys can not be operated, the equipment returns to its normal working mode after you power cycle.
4.3.5 Keyboard Lock

Make sure operate safely by Keyboard lock

When the front panel is locked the unlock password would be needed to operate the equipment. Original unlock password is ↑↑↓↓↓↓, if you need to modify the unlock password, please look procedure ahead.
4.3.6 Modify password

- Front-panel password is necessary to operate the equipment; once you change it you will be only one to know the new password. Please keep it on a safe, known place in case you need it in the future.

Modify password: use arrows key to modify password, Input password is the same with check password.
4.3.7 Master Reset

- Once you reset the equipment, all previous settings will be lost. Please be careful with this option.
4.3.8 Version Info

Version info display the M216 version status information

01# p03 bitrat
02# p04 bitrat

Main interface

MENU

UC-16 multiplexer
Output1 number

Use ↑↓ key and move cursor to (version info)

UC-16 multiplexer
Version Info

OK

Version info
1.0

Display version information, click "menu" to return interface

Menu

Main interface
Appendix A. Alarm information

<table>
<thead>
<tr>
<th>Indicator light states</th>
<th>Input channels states</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green light shine</td>
<td>Input information locked, channels port opened</td>
</tr>
<tr>
<td>Green light twinkle</td>
<td>Input information but channels port unopened</td>
</tr>
<tr>
<td>Red light shine</td>
<td>Input bitrate overflow or input port opened but no signal input</td>
</tr>
<tr>
<td>Light dark</td>
<td>No input signal or open input port</td>
</tr>
</tbody>
</table>
## Appendix B. Noun Abbreviations

<table>
<thead>
<tr>
<th>Letter</th>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ASI</td>
<td>Asynchronous serial interface</td>
</tr>
<tr>
<td>B</td>
<td>BAT</td>
<td>Bouquet Association Table</td>
</tr>
<tr>
<td>C</td>
<td>CAT</td>
<td>Condition Access Table</td>
</tr>
<tr>
<td>M</td>
<td>MPTS</td>
<td>Multiple Programs Transport Stream</td>
</tr>
<tr>
<td>N</td>
<td>NIT</td>
<td>Network Information Table</td>
</tr>
<tr>
<td>P</td>
<td>PAT</td>
<td>Program Association Table</td>
</tr>
<tr>
<td>PCR</td>
<td>Program Clock Reference</td>
<td></td>
</tr>
<tr>
<td>PID</td>
<td>Packet Identifier</td>
<td></td>
</tr>
<tr>
<td>PMT</td>
<td>Program Map Table</td>
<td></td>
</tr>
<tr>
<td>PSI</td>
<td>Program Specific Information</td>
<td></td>
</tr>
<tr>
<td>SDT</td>
<td>Service Description Table</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>Service Information</td>
<td></td>
</tr>
<tr>
<td>SPTS</td>
<td>Single Program Transport Stream</td>
<td></td>
</tr>
<tr>
<td>TDT</td>
<td>Time and Date Table</td>
<td></td>
</tr>
<tr>
<td>TS</td>
<td>Transport_Stream</td>
<td></td>
</tr>
</tbody>
</table>