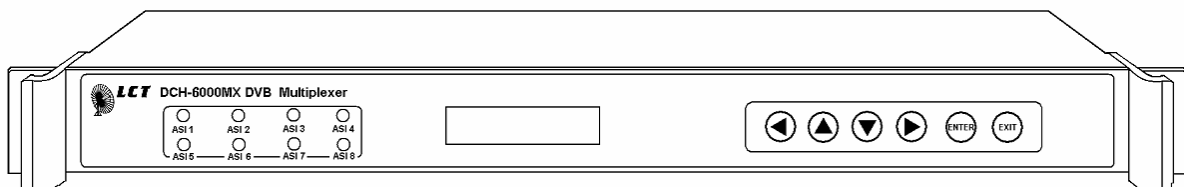# Digital TS Re-multiplexer

DCH-6000MX

User Manual

Contents

Warnings and Notices

● Please follow the below instructions. Don't connect power before you finish install ting and checking according to safe procedure.

Electrical Shock

Thoroughly check your electrical grounding and connectors prior to powering. Make sure all connectors are of the three-prong type to ensure proper grounding.

Whenever the equipment is not used for a prolong period of time, you should disconnect the power cord.

Power Disconnect

Disconnect the power cord under the following conditions

1.damage on cord and connector

2.equipment get wet or substantial moisture enter the chassis

3. Exposure to rain or water

4. equipment dropped or damaged

5.Apparent irregularity appears

Don't Open The Equipment

1. Do not try to repair by yourself.

2. Do not use unauthorized part for repair.

3. Do not open the covers of the equipment without proper factory authorization.

Avoid Moisture

Do not use this equipment in high moisture environment

No Heavy Stacking

Do not stack the equipment back to back to allow proper ventilation

No Touching with Bare Hands

Do not touch the equipment during heavy lightening condition.

Caution

1.Do not place this equipment on unstable support.

2.Do not place objects on top of the equipment to block up the ventilation opening.

3.Do not place radioactive instrument or object on top of adjacent to the equipment.

4.Provide proper room ventilation during operation of this equipment.

5.Verify with the repair engineer or authorized entity after repair is done to be sure the equipment can be put back to operation.

6.Read the operating manual prior to usage.

DCH-6000MX **TS Re-multiplexer**

1 Overview

1.1 General

DCH-6000MX is a compact and cost-effective DVB MPEG-2 TS re-multiplexer which can multiplex up to 8 ASI transport streams and deliver with 2 ASI ports (1 for redundancy). The combination of PID-packet-exchanging based technology; Ethernet remote control and 19" rack mountable chassis make it an ideal device for a wide range of re-multiplexing applications including cable and terrestrial regional head-ends.

1.2 Features

- Fully compliant with DVB ETSI 300421 standard
- Processing of up to 8 SPTS or MPTS
- SI/PSI automatic regeneration
- Service and PID packet filtering and re-multiplexing
- Up to 160Mbps Mbps MPTS/ SPTS inputs
- Output rate up to 100 Mbps
- ASI input packet length 188/204 bytes Self-adapting. Output packet length 188/204 bytes optional.
- 8 ASI inputs, 2 ASI outputs (1 for redundancy)
- Standard 19" rack 1U chassis installation
- Network remote control and software upgrade

1.3 Panels and Interface

1.3.1 Front Panel
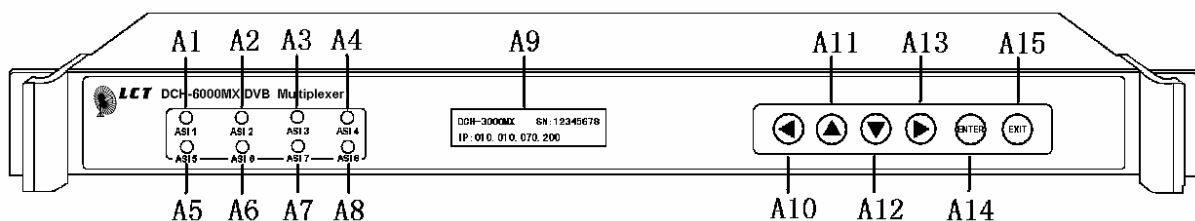
A1 A8   Indicators for ASI 1-ASI 8 Input Status, respectively

A9   2 × 24 character LCD Menu Display

A10-A13 Arrow buttons for menu navigating and parameters modifications

A14   Enter button for issuing a command or selecting an option

A15   Exit button for returning to previous menu

1.3.2 Rear Panel
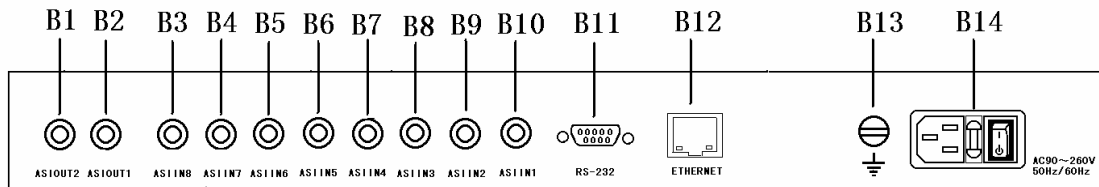
B1	ASI OUT 2
B2	ASI OUT 1
B3-B10	ASI IN 8- ASI IN 1
B11	RS-232 port for debug
B12	Ethernet port
B13	Grounding Terminal
B14	Power cord socket 90V~260ACV, 50Hz/60Hz

2 Specifications

ASI input	
ASI Input Connector	BNC female 75 Ω
ASI Input bit rate	Up to 160Mbps
Data format	Byte, Burst (self-adapting)
Packet length	188/204 bytes (self-adapting)
ASI output	
ASI Output Connector	2 ASI Output (1 for redundancy), BNC connector, 75Ω
ASI Output bit rate	≤100Mbps
Date transfer mode	Byte
Packet length	188/204 bytes (selectable)
Signal level	800mV±10%
Other	
Net weight	3Kg
Size	44mm×240mm×430mm
Running temperature	0~40
Deposit temperature	-20~70
Humidity	85%

3 Typical Application
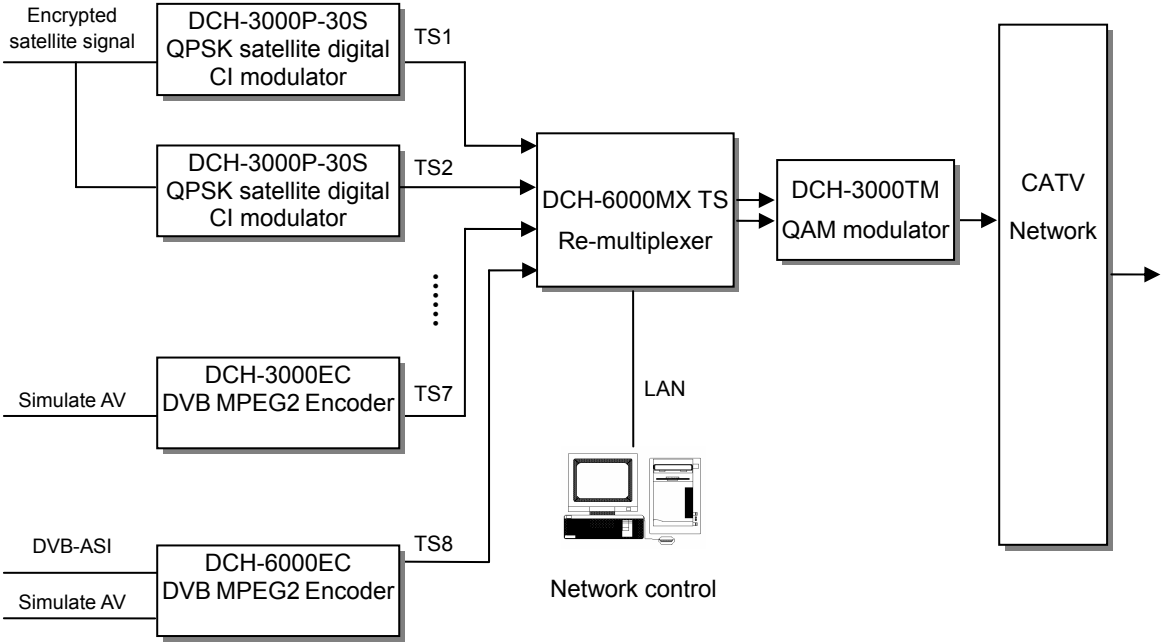
4 Menu Structure and Operation

4.1 Menu Tree

		Inputs Setup ASI 1 **016464/019860**Kbps	ASI 1 * 1/4 **CCTV-4**

Main Menu
Inputs Setup →

Inputs Setup
ASI 8 **037171/043302**Kbps

ASI 8   1/22
Service ID : fffe

Outputs Setup
Bit Rate   →

Bit Rate
*038000*Kbps

Outputs Setup
Packet Size   →

Packet Size
188 Byte

Main Menu
Outputs Setup →

Outputs Setup
Transport Stream ID   →

Transport Stream ID
00008

Outputs Setup
Outputs Program   →

ASI1 **1/7 34267** Kbps
CCTV-1

DCH-6000MX SN:**12345678**
IP.**010.010.030.058**

Main Menu
Mux   →

Unit Name
DCH-6000MX

IP Address
010.010.030.058

Network Mask
255.255.255.000

Gateway
010.010.030.001

Remote Server IP
010.010.030.023

MAC Address
00:20:aa:21:01:05

Main Menu
System   →

Factory Setting
ENTER=YES EXIT=NO

Serial Number
12345678

MCU Software Version
00.03.15

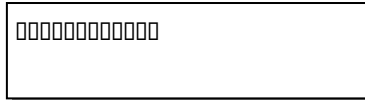FPGA Software Version
Version : **12**

Hardware Version
01.00

4.2 Menu Operation

4.2.1 Initialization

Connect the DCH-6000MX to an appropriated AC power source, turn on the power switch on the rear panel, the unit will be booted up automatically, and the LCD displays as below
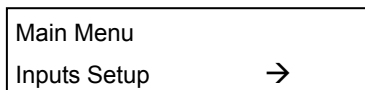
```
┌─────────────────────┐
│                     │
│                     │
└─────────────────────┘
```

The power on boot up might take several tenths of seconds. The LCD displays as below after initialization:

```
┌─────────────────────┐
│ DCH-6000MX          │
│ IP:010.010.030.058  │
└─────────────────────┘
```
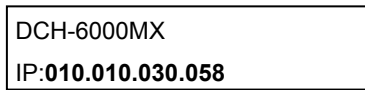
The unit name is displayed on the first row and IP on the second.

Press [ENTER] for entering the main menu then press ▲ or ▼ to navigate through the menu:

```
┌─────────────────────┐
│ Main Menu           │
│ Inputs Setup     →  │
└─────────────────────┘
```

The main menu includes four items

Inputs Setup Configuration of input parameters

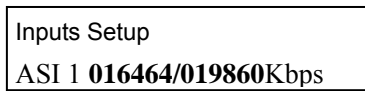Outputs Setup Configuration of output parameters

Mux mux options press [ENTER] to activate

System Configuration of system information

Press or to navigate upward and downward the menu, press ENTER to confirm the selection, press EXIT to exit the menu.

4.2.2 Inputs Setup Menu

Enter Inputs Setup menu the LCD displays as below

```
┌──────────────────────────┐
│ Inputs Setup             │
│ ASI 1 016464/019860Kbps  │
└──────────────────────────┘
```

Bit rate of each ASI input port is displayed on the second row, effective TS rate is shown on the left and total TS rate on the right.

Press or to check bit rate among ASI input ports.

Press [ENTER] to check the available services of current ASI input port. An '$' sign next to the service name indicates the program is being encrypted. Please refer to the diagram below, "1/4",as an example, indicates the service just being shown is the first of all 4 available ones. Press [ENTER] to confirm your selection and an '*' sign indicates this service has just been selected, and will be multiplexed once the multiplexing process is being activated. Press [ENTER] again to de-select the service.

```
ASI 1        *        1/4
CCTV-4
```

      Press   or   to switch channels among ASI ports and press 〖EXIT〗 to back to the previous menu. If the any service has been selected, when you back to the main menu, the below message will be displayed on the LCD:

```
Confirm Changed ?
ENTER=YES   EXIT=NO
```

Press [ENTER] to multiplex the selected services and press [EXIT] to discard.

If there is no valid ASI input found, if press ENTER and then it displays 'No Program List' as below, then it returns to the previous menu automatically.

```
ASI 1
No Program List
```

4.2.3 Outputs Setup Menu

This menu has 4 items

Bit Rate ASI output bit rate configuration

Packet Size packet size setting of ASI output

  Transport Stream ID ID setting of TS multiplexed

  Outputs Program Channel information output

  Press   or   to switch. Press [ENTER] to enter the submenu.

4.2.3.1 Bit Rate

  Enter the Bit Rate menu and the LCD displays as below

```
Bit Rate
038000Kbps
```

Output bit rate is from 100kbps to *100000*Kbps adjustable. Press◄ or ►to move the cursor and press ▲ or ▼ to change the numurical entry(ies). Press [ENTER] to confirm the numurical entry(ies).

Notice: To ensure the sum of all selected services, including some Variable Bit Rate ones, does not exceed the output bit rate actually set, it is recommended to set 1.1 times higher than the static sum of bit rates of all services selected. If the effective output bit rate exceeds the actual setting value, there will be a alarm on the root menu as below

```
DCH-6000MX
Outputs 42125Kbps Overflow
```

  where 42125Kbps indicates the effective bit rate detected of the Outputs Stream.

4.2.3.2 Packet Size

Packet Size: used for select output packet format as below

```
Packet Size
188 Byte
```

There are 2 kinds of ASI output packet format 188 Bytes and 204 Bytes. Use ▲ or ▼ to switch. Press [ENTER] to select.

Remark: The final effective output Bit rate will be reset, if the packet format is changed.

4.2.3.3 Transport Stream ID

The ID of TS stream is to distinguish from other streams in the same system . Press [ENTER] for entering, as below

```
Transport Stream ID
00008
```

The valid range of ID of TS is 0 65535. Press ◄ or ► to move cursor, press ▲ or ▼ to change the digit values and press [ENTER] to select. This example shows an ID number of 8 is set for the final TS multiplexed.

4.2.3.4 Outputs Program

The menu is used for checking the information of the services multiplexed from each input, as below

```
ASI 1   1/7    34267Kbps
CCTV-1
```

Port number of input ASI is displayed on the left of the first row. "1/7", as an example, indicates this is the first service from 7 ones on this ASI input, and effective bit rate on the right. Press ▲ or ▼ to check all the services have been multiplexed. The second row is the service name have been multiplexed.

If there is no service being multiplexed, it will display as below

```
Outputs Setup
No Program
```

4.2.4 Mux Menu

It is used to activate the multiplexing process. When complete the selecting ASI port input programs services from different ASI inputs, and the output parameters settings, press [ENTER], to activate the multiplexing process , the LCD on the front panel will display as below

```
Start to Mux
please wait…
```

It backs to the main menu, when the process is completed.

4.2.5 System Menu

There are 11 items in the menu as below

Unit Name;

    IP Address;

    Network Mask;

    Gateway;

    Remote Server IP;

    MAC Address;

    Factory Setting;

    Serial Number;

    MCU Software Version;

    FPGA Software Version;

    Hardware Version;

Press ▲ or ▼ to switch among these 11 items, and press [EXIT] to back to the previous menu.

4.2.5.1 Unit Name

It is the nicked name of the unit, an example is shown below

> Unit Name
> *DCH-6000MX*

Press [ENTER] to enter, then press ◄ or ► to move the cursor and press ▲ or ▼ to change the character values, press [ENTER] to confirm the value.

4.2.5.2 IP Address

This menu is used for the IP address setting for this DCH-6000MX, this should be an unique address on a LAN network, an example is shown as below

> IP Address
> *010.010.030.058*

Press [ENTER] to activate, and then press ◄ or ► to move the cursor and press ▲ or ▼ to change the digit values, then press [ENTER] to confirm.

4.2.5.3 Network Mask

This menu is used for the network mask setting for the LAN network connected, an example is shown as below

> Network Mask
> *255.255.255.000*

Press [ENTER] to activate, and then press ◄ or ► to move the cursor and press ▲ or ▼ to change the digit values, then press [ENTER] to confirm.

4.2.5.4 Gateway

It is used for the gateway setting for the LAN network, an example is shown as below

Gateway
010.010.030.001

Press [ENTER] to activate, and then press ◄ or ► to move the cursor and press ▲ or ▼ to change the digit values, then press [ENTER] to confirm.

4.2.5.5 Remote Server IP

It is used for the IP address setting of a computer for network management, this IP address must be the same of the IP address of the computer connected to this DCH-6000MX for remote management, an example is shown as below

Remote Server IP
010.010.030.023

Press [ENTER] to activate, and then press ◄ or ► to move the cursor and press ▲ or ▼ to change the digit values, then press [ENTER] to confirm.

4.2.5.6 MAC Address

This menu is used for checking MAC address. MAC address is factory set and every MAC address of all LCT products are unique worldwide. User is not allowed to change the value of MAC address. This sub-menu will show its MAC, and an example is shown below

MAC Address
00:20:aa:21:01:05

4.2.5.7 Factory Setting

This menu is used for recovering factory default settings of this unit as below

Factory Setting
ENTER=YES EXIT=NO

Press [ENTER] to select factory setting and [EXIT] to return to the last-level menu.

Notice: **When factory setting is selected, all user set parameters will be lost and will be recovered to the factory default ones.**

4.2.5.8 Serial Number

This menu is used for serial number checking of this machine, and an example is shown below

Serial Number
12345678

4.2.5.9 MCU Software Version

This menu is used for checking MCU version of this machine, as below

MCU Software Version
00.03.15

4.2.5.10 FPGA Software Version

This menu is used for checking FPGA version of this machine, as below

FPGA Software Version
Version : **12**

4.2.5.11 Hardware Version

This menu is used for checking hardware version of this machine, as below

Hardware Version
01.00

5 Installation and Initial use

User and installer must read this user manual thoroughly and carefully before installation and use.

- Using screw bolts to fix the unit on a 19 inches cabinet.

- Ground the unit on the grounding bolt on the rear panel with appropriated grounding wire to the appropriated grounding terminal(s).

- Connect all input and output connectors to their appropriated sources or destinations.

- Verify the AC electricity source available is within the acceptant range of that of the equipment. Connect the unit to the AC source with power cord originally dispatched, then turn on the power switch near the AC inlet on the rear panel. Please unplug when the unit if not in use for a long period, e.g. 1 week.

For your security, please take attention to the below

Do not use the equipment under strong electric field, strong magnetic field and heat sources temperature range <40 relative humidity<85%

⚠ Notice: Avoid strong magnetic and electric
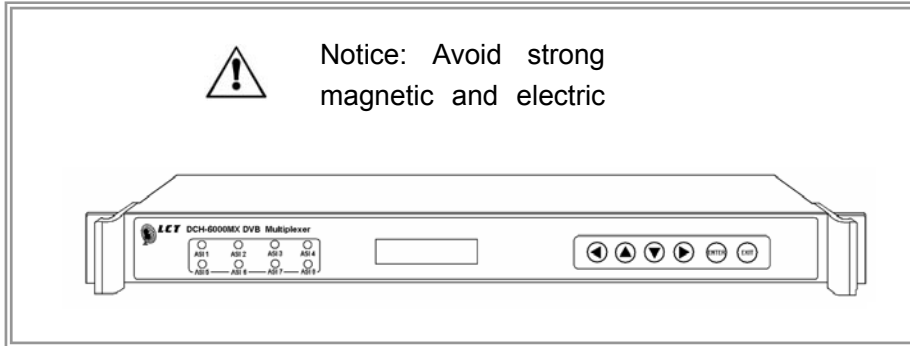
Do not expose the equipment to excessive dust, high humidity nor high temperature Do not expose the external surface to petrol, thinner or other volatile substances, such as pesticides Use soft cloth to remove dust gently.

⚠ Notice: Corrosive
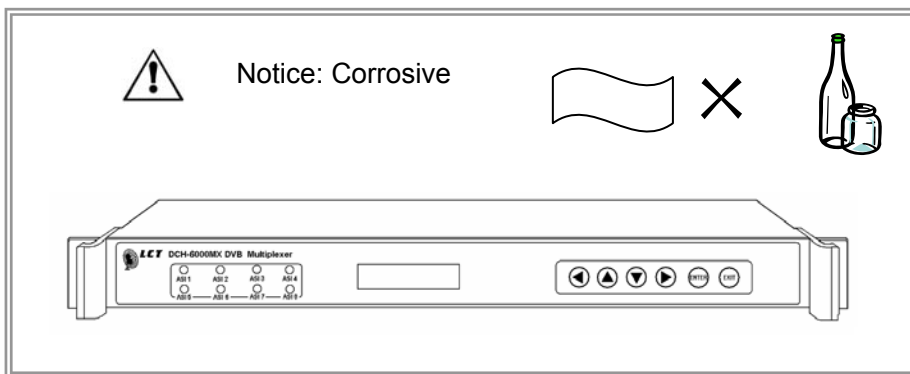
Users are not allowed to remove the top cover of the equipment. If there is any malfunction, please check the connection of the connectors and the power cord on the rear panel. If there is no any improvement, please ask for help from your supplier or service agent.

⚠ Notice: Please don't open the chassis !
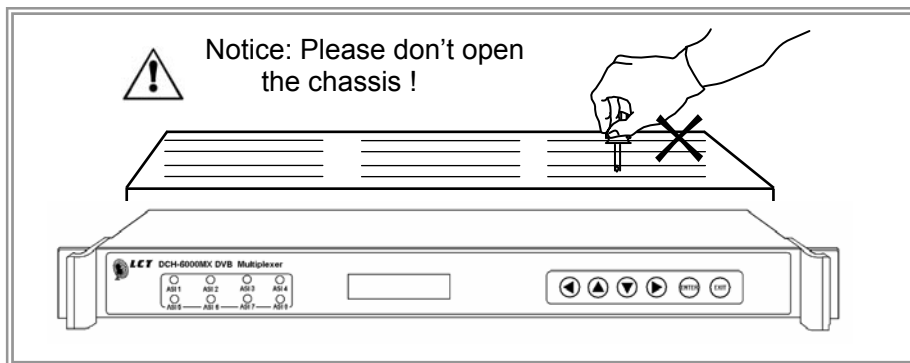
Please connect to an appropriated AC power source which meets the requirement of
this unit.
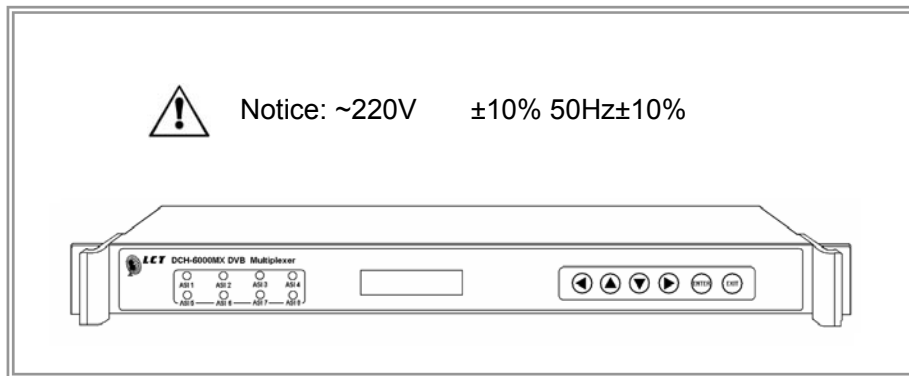
Both this unit and the CATV system connected should be well grounded to an appropriated
earth terminal(s).
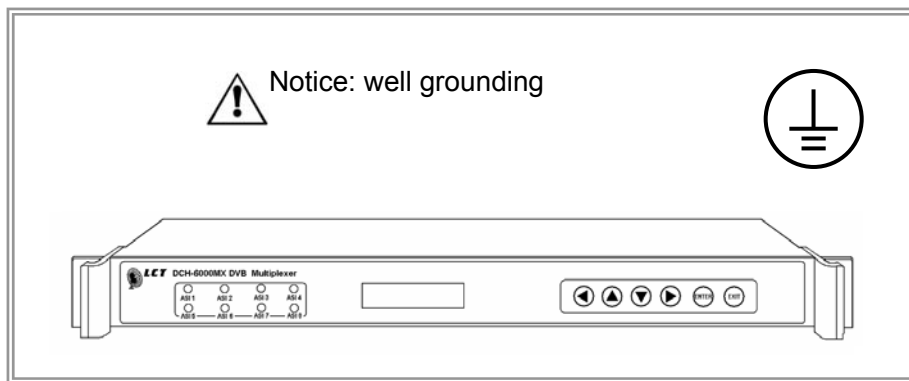
6 Accessories

The following items are dispatched originally with the equipment as the accessory parts:

a Power cord (might differs from countries),

a ASI cable,

an User manual,

a CD (includes the remote network management software and electronic file of the user
manual) ,

a Quality warrantee card .