SDI-MV
User Manual

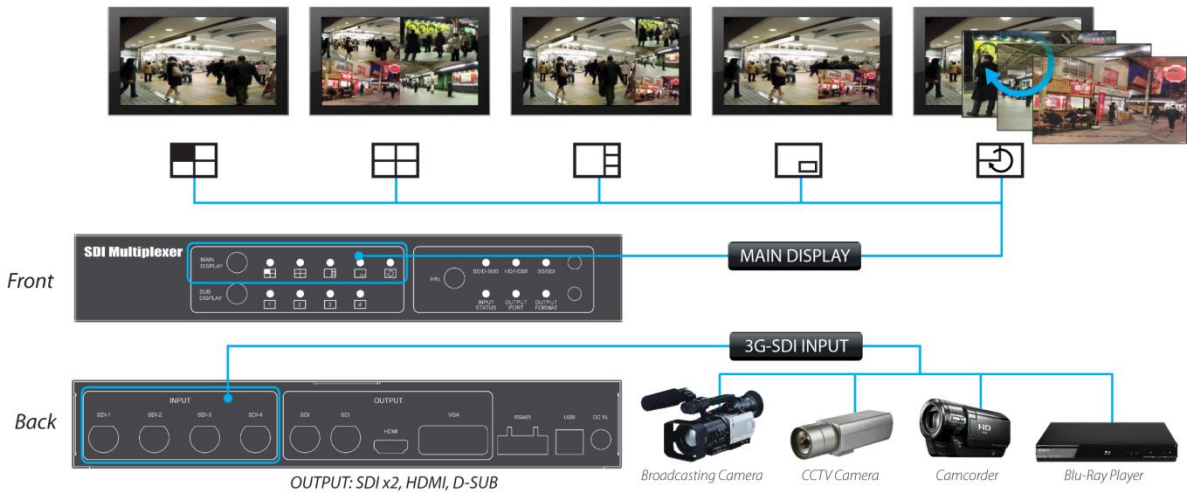
Ver 1.3 5/2014

Index

MULTIVIEWER QUAD SDI BOX

Feature

- Allow up to four different SDI sources to be display in multiplex style in one monitor
- Independent scaling with anti-aliasing
- Supports HD formats:
  - 720p50 & 60
  - 1080i50 & 60
  - 1080p24, 25, 30, 50 & 60
- Support 525i & 625i SD D1 format
- Support up to 7.1ch of audio output
- Auto 3G/HD/SD-SDI detection
- HDMI 1.3 supported
- SDI compliant outputs
- D-Sub output
- Firmware is upgradable in the field using the integrated USB port
- The converter is Plug-and-Play

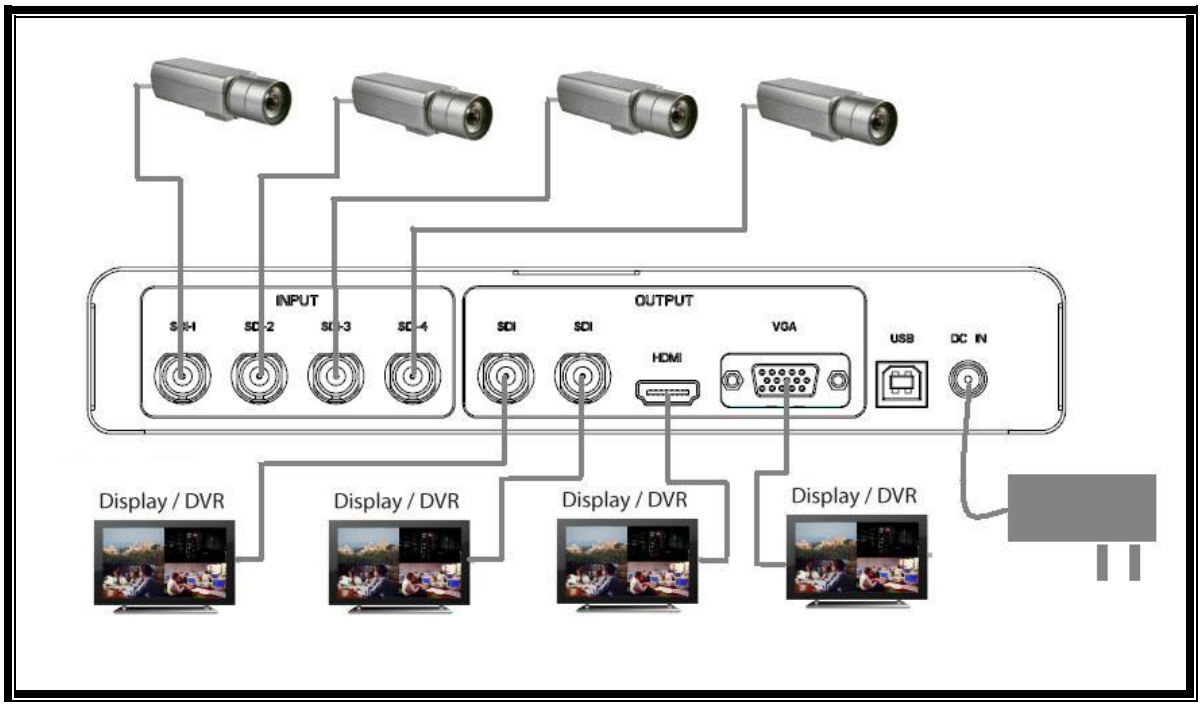


Package Contents

The SDI MUX BOX package contains the following items:

- User Manual x 1
- DC Adapter x 1
- SDI MUX Box 1

Install Diagram



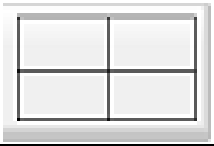
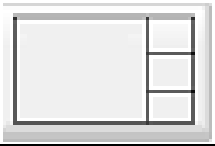
Front Panel

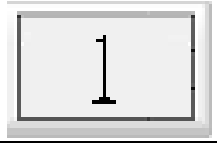
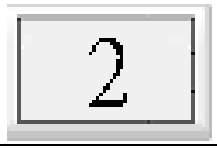
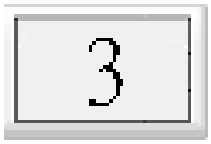
NO	Component	Function
1	Display Mode/ Main Channel	Select Display mode (Main-5 mode) and Main channel
2	Main Channel LEDs	The LEDs is indicate Main Channel
3	Menu/Enter	Menu
4	Format LEDs	The LEDs is indicate output format (VGA, HDMI and SDI)
5	Output Port LED	The LEDs is indicate output port R: SDI/HDMI G:VGA/HDMI
6	Function Buttons	Select output port/Output Format

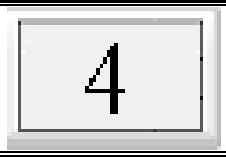
Rear Panel

NO	Component	Function
1	SDI Input Port x4	From your SDI Source plug into these ports
2	SDI Output Port x 2	From your SDI Display Device plug into these ports
3	HDMI Output Port	Form your HDMI Display device plug into these ports
4	VGA Output Port	From your VGA Display device plug into these ports
5	RS485 Connector	Control HDMI MUX Box
6	USB Port	Upgrade firmware/Control SDI MUX Box
7	Power Jack	The Power adapter plug into here.

Display Mode

MAIN DISPLAY MODE	DESCRIPTION
	One of each is Displayed on the full screen.
	Four Channels is Displayed on the full screen. Sound is muted.
	Main Channel is displayed on Left side windows at the same time as other channels are displayed on right side window. Sound is usually from the main channel only.
	Main Channel is displayed on the full screen at the same time as other channels are displayed in inset windows. Sound is usually from the main channel only.
	One of each is sequence displayed on the full screen.

SUB DISPLAY MODE	DESCRIPTION
	Display Channel 1 video and audio on the full screen
	Display Channel 2 video/audio and full screen window
	Display Channel 3 video/audio and full screen window



Display Channel 4 video/audio and full screen window

Specifications

DESCRIPTION	
Support Video Resolution	SD – 720 x 480 i (NTSC) / 720 x 576 i (PAL) HD– 1280 x 720 50p/60p/59.94p 1920 x 1080 50i/60i/59.94i 1920 x 1080 24p/25p/30p/29.97p/23.97p 3G– 1920 x 1080 50p/60p/59.94p
Output Format	HDMI : 720x480 59i/720x480 59p/1280x720 59p/ 1920x1080 59i/1920 x 1080 59p (Default : 1920 x 1080 59p) VGA : 800x600 60Hz/1024x768 60Hz/ 1280x1024 60Hz/1600x1200 60Hz/ 1920x1080 60Hz (Default : 1920x1080 60Hz) SDI : SD-SDI(SMPTE 259M) HD-SDI(SMPTE 292M) 3G-SDI (SMPTE 424M / SMPTE 425M)
SDI Format	SD-SDI, HD-SDI & 3G-SDI
Audio Support	7.1ch/5.1ch/Stereo,
Coaxial Cable Type	RG6/RG59(75Ω)
Cable Length Performance	3G: 120m of RG6/ 100m of RG59 HD: 200m of RG6/ 140m of RG59 SD: 400m of RG6/ 280m of RG59 *1 RG6: CANARE L-5CFB Cable / RG59: Belden 9275 Cable *2 Cable Length Performance: Depending on SDI Signal and Cable Quality
Input	4 x BNC [SDI]
Output	2 x BNC [SDI] 1 x HDMI

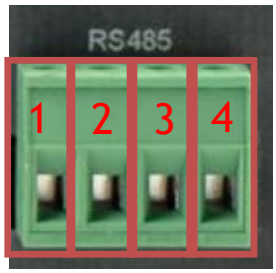
	1 x D-Sub
BNC Connector	3G 75 Ω inter-locked socket
HDMI Connector	TYPE A [19-pin female]
USB Connector	USB B-Type
Display Mode	5
Housing	SECC
Dimension	L:235.9mm x W145.8mm xH:40.2mm
Power Source	Power Adapter: AC 100 ~ 240 V/DC (+6 ~ 15 V)
Operation Temperature	0~50°C [32~114°F]
Storage Temperature	-20~+60°C

RS485 Commands

Parameters of RS485:

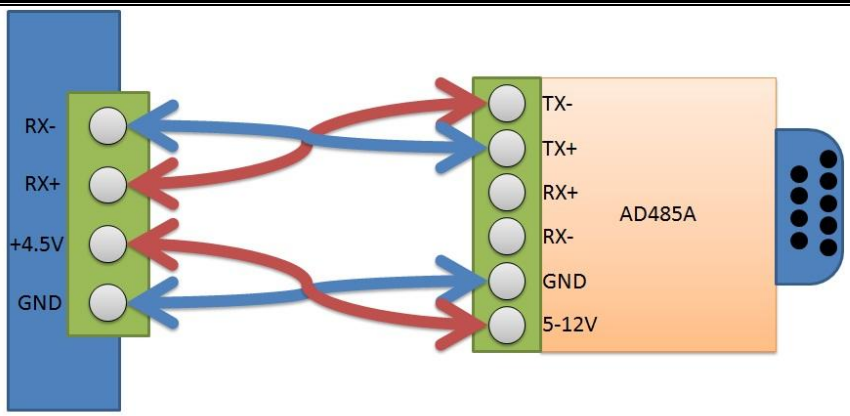
Command Set	Command
Baud Rate	115200 kbps
Data bits	8
Start bit	1
Stop bit	1
Parity	Non Parity

RS485 Pin Define



1	GND
2	Power +5V
3	RX-
4	RX+

RS485 connector of diagram



Command List:

<table>
<tr><th>Command Set</th><th>Packet</th><th>Inquiry Packet</th><th>Command Set</th></tr>
<tr><td>Main Display</td><td>81 10 04 01 0p FF</td><td>81 01 10 FF</td><td>p = Mode Number (1 to 4)</td></tr>
<tr><td>Sub-Display</td><td>81 20 04 01 0p FF</td><td>81 01 20 FF</td><td>p = Sub Channel (Max is 12 in some Mode)</td></tr>
<tr><td>Audio Source</td><td>81 30 04 01 0p FF</td><td>81 01 30 FF</td><td>p = 1 ~ 4 Audio Channel Source
p = 5 (Default)</td></tr>
<tr><td>Audio Mute</td><td>81 40 04 01 0p FF</td><td>81 01 40 FF</td><td>p = 0 Un-Mute
p = 1 Mute</td></tr>
<tr><td>Output Port</td><td>81 50 04 01 0p FF</td><td>81 01 50 FF</td><td>p = 1 VGA / HDMI
p = 2 SDI / HDMI</td></tr>
<tr><td>Output Format</td><td>81 60 04 01 0p FF</td><td>81 01 60 FF</td><td><table><tr><th></th><th>SDI/HDMI</th><th>VGA/HDMI</th></tr><tr><td>p = 0</td><td>720x480 i59</td><td>800x600 p60</td></tr><tr><td>p = 1</td><td>720x480 p59</td><td>1024x768 p60</td></tr><tr><td>p = 2</td><td>1920x1080 i59</td><td>1280x1024 p60</td></tr><tr><td>p = 3</td><td>1280x720 p59</td><td>1600x1200 p60</td></tr><tr><td>p = 4</td><td>1920x1080 p59</td><td>1920x1080 p59</td></tr></table></td></tr>
<tr><td>Picture Adjust</td><td>81 70 0p 0r 0s FF</td><td>81 01 qq FF</td><td>p = 1 Brightness
p = 2 Contrast
p = 3 Hue
p = 4 Saturation
p = 5 Default, rs : don’t care</td></tr>
</table>

			rs: Value (0x00 to 0xFF)
Hardward Reset	81 80 04 01 02 FF	81 01 80 FF	Hardware Reset
Func Button	81 90 04 01 0p FF	81 01 90 FF	p = 0 Un-Locked p = 1 Locked
SUB Channel POS	81 A0 04 0p aa bb cc dd ee gg hh ii FF	81 01 A0 FF	P = Sub- Channel (0 : Sub CH 1 , 1 : Sub CH 2) aa : H Pos of High Byte bb : H Pos of Low Byte cc : V Pos of High Byte dd : V Pos of Low Byte ee:H Size of High Byte(Set Default : 0x00) gg: H size of Low Byte(Set Default : 0x00) hh:V Size of High Byte(Set Default : 0x00) ii: V size of Low byte(Set Default : 0x00) ex: 81 A0 04 00 00 F0 00 F0 01 68 00 F0 FF H Pos : 0x00F0 (240) V Pos : 0x00F0 (240) H Size : 0x0168 (360) V Size : 0x00F0 (240)

Inquiry Command List:

<table>
<tr><th>Command Set</th><th>Command</th><th>Inquiry Packet</th><th>Command Set</th></tr>
<tr><td>Main Display</td><td>81 01 04 01 02 FF</td><td>81 01 0p FF</td><td>p = Mode Number (1 to 4)</td></tr>
<tr><td>Sub-Display</td><td>81 02 04 01 02 FF</td><td>81 0a 0b 0c 0d 0e 0f 0g 0h 0i 0j FF</td><td>a : subchannel of Mode 1
b : subchannel of Mode 2
c : subchannel of Mode 3
d : subchannel of Mode 4
e : subchannel of Mode 5
f : subchannel of Mode 6
g : subchannel of Mode 7
h : subchannel of Mode 8
i : subchannel of Mode 9
j : subchannel of Mode 10 (don’t care)</td></tr>
<tr><td>Audio Source</td><td>81 03 04 01 02 FF</td><td>81 01 0p FF</td><td>p = 1 ~ 4 Audio Channel Source
p = 5 (Default)</td></tr>
<tr><td>Audio Mute</td><td>81 04 04 01 02 FF</td><td>81 01 0p FF</td><td>p = 0 Un-Mute
p = 1 Mute</td></tr>
<tr><td>Output Port</td><td>81 05 04 01 02 FF</td><td>81 01 0p FF</td><td>p = 1 VGA / HDMI
p = 2 SDI / HDMI</td></tr>
<tr><td>Output Format</td><td>81 06 04 01 02 FF</td><td>81 01 0p FF</td><td><table><tr><th></th><th>SDI/HDMI</th><th>VGA/HDMI</th></tr><tr><td>p = 0</td><td>720x480 i59</td><td>800x600 p60</td></tr><tr><td>p = 1</td><td>720x480 p59</td><td>1024x768 p60</td></tr></table></td></tr>
</table>

			p = 2 : 1920x1080 i59 / 1280x1024 p60 p = 3 : 1280x720 p59 / 1600x1200 p60 p = 4 : 1920x1080 p59 / 1920x1080 p59
Picture Adjust	81 07 04 0p 02 FF	81 01 rs FF	p = 1 Brightness p = 2 Contrast p = 3 Hue p = 4 Saturation rs = Adjust Value (0x00 to 0xFF)
Input Format	81 08 04 0p 02 FF	81 aa bb cc dd ee gg hh FF	p = Source Index (1 to 4) aa : H active of HIGH BYTE bb : H active of LOW BYTE cc : V active of HIGH BYTE dd : V active of LOW BYTE ee : V Frequency(I : 60/59) gg : V Freqeqncy(f : .94/.98) hh : Scan type (interlace / progressive) ex: 81 07 80 04 38 3B 5E 01 FF H active = 0x0780 (1920) V active = 0x0438 (1080) V freq(I) = 0x3B (59) V freq(f) = 0x5E (94) ➔ 59.94 Scan Type : 0x01 (Progressive) ⇨ 1920x1080 59.94p ⇨ H active and V active is zero, the channel is No signal.
Firmware Rev.	81 09 04 01 02 FF	81 pq rs FF	pqrs = FW Version (0101 = 0.1.0.1)
Func Button	81 0A 04 01 02 FF	81 01 0p FF	p = 0 Un-locked p = 1 locked
Sub Channel POS Info	81 0C 04 0p 02 FF	81 aa bb cc dd ee gg hh ii FF	P : Subchannel (0 : Sub CH 1 / 1 : Sub CH 2) aa : H Pos of High Byte bb : H Pos of Low Byte cc : V Pos of High Byte

			dd : V Pos of Low Byte ee : H Size of High Byte gg : H size of Low Byte hh : V Size of High Byte ii : V size of Low byte ex: 81 03 84 01 CC 01 68 00 F0 FF H Pos : 0x0384 (900) V Pos : 0x01CC (460) H Size : 0x0168 (360) V Size : 0x00F0 (240)

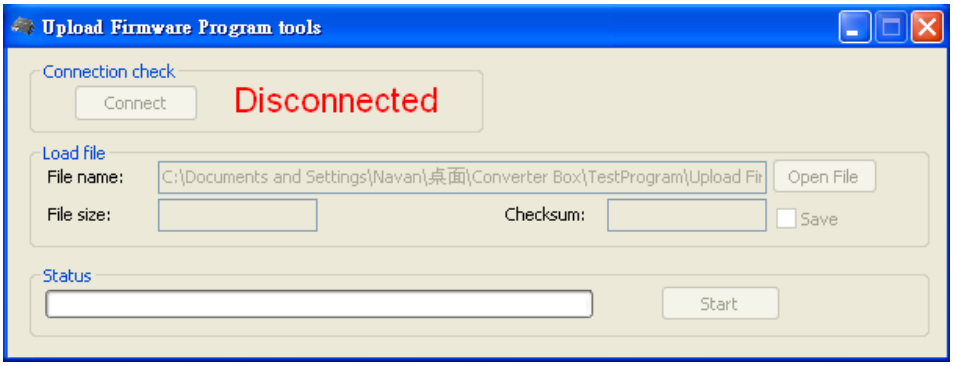
Firmware Upload

- Firmware is upgradable in the field using the integrated USB port

How to Firmware upgrade:

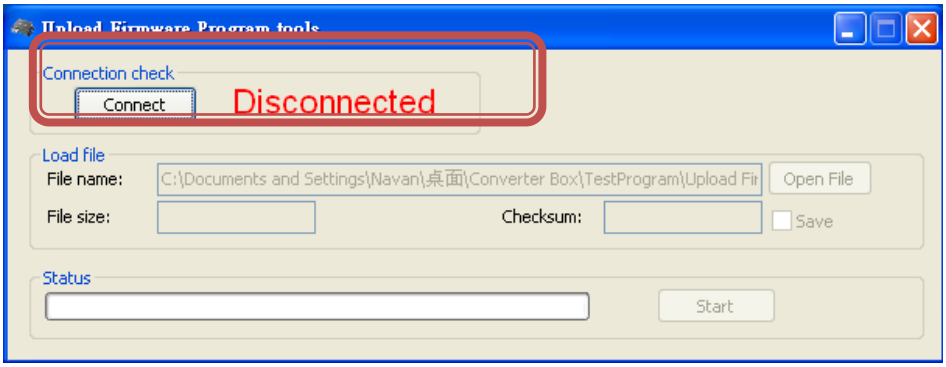
Step 1.

Open Upload Firmware Program tools.exe and connect box to PC by USB Cable.



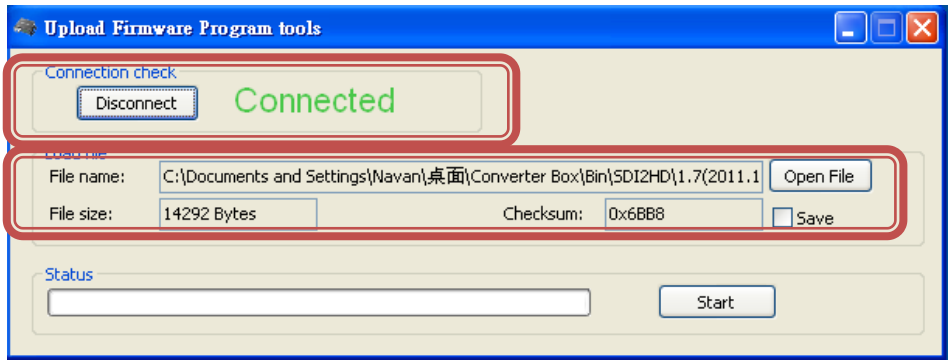
Step 2.

Plug and un-plug “DC adapter” to power on/off the converter box (the connection check status will be changed to “Connect”)



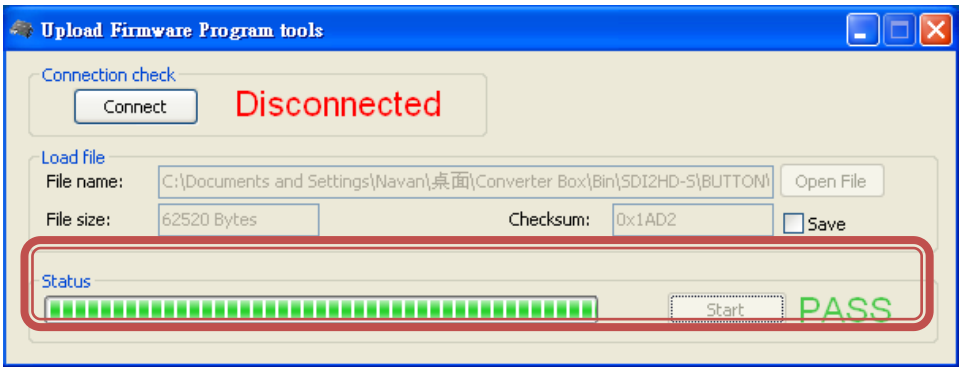
Step 3.

Plug and un-plug “DC adapter” again (the connection check status will be changed to “Connected”) and Please click the Open File button to select the firmware bin file.



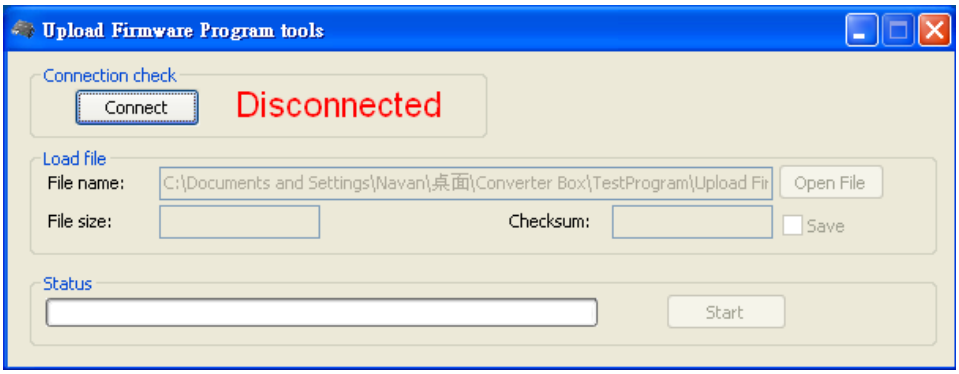
Step 4.

Please click “Start’ Button to proceed with new firmware programming. The PASS message will appear when the procedures finished.



Step 5.

Close Upload Firmware Program tools



Update List

Data	Version	Command
2012.12.07	V1.0	FW:0.1.0.9 1. Add function Button lock 2. Modify RS485 command.
2013.02.03	V1.1	1. Moidfy RS485 of Bundrate (115200 bps) 2. Moidfy RS485 of output format command
2013.02.19	V1.2	1. Moidfy RS485 Command
2013.03.27	V1.3	1. Modify RS485 Command(Displayinfo/ Input Format) 2. Add PIP Pos Command.