

ANT-1774 User Manual V1.1

Firmware: 3.1.2, PC Control Application: 10514



Applicable to all ANT-1774 with various mezzanine board variants



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ANT-1774 – User's Manual

1. Overview

1.1 Description

ANT-1774 is a Dual Channel SD/HD H.264/5 Encoder.



1.2 Architecture

Consists of Main board + 2 optional video receiver addon modules

1.3 Interfaces

- 2 x camera ports, each may accommodate Video Receiver Addon Module, which may receive one of the following inputs:
 - HDSDI
 - > Analog
 - HDMI
- 2 x USB 2.0 ports **Do not connect to a PC or powered USB port as this will damage the unit**
- 1 x microphone
- 1 x Line Out
- 1 x Ethernet port

USB ports are powered and intended to connect to external memory. This feature will be supported in future Firmware releases

- 1 x SD Card
- 1 x RS232



1.4 Block Diagram



1.5 Functionality

- Any combination of dual video input out of the available addon modules
- Mic audio capture
- Line out audio
- H.265 or H.264 video encoding up to 2 x 1080p60 each
- AAC audio encoding
- Dual RTP in Unicast/Multicast or RTSP streaming
- 2D Forward Error Correction ("FEC")
- Bi-Directional UDP to Serial support
- Dual stream recording on SD card (recording stream parameters can be different from streaming parameters)
- Control via RS232 and Ethernet using API and Windows control application

1.6 Others

- Power In: 5V
- Max power consumption while streaming dual HDSDI inputs @1080p60: 3.75W
- Dimensions: 25.4 x 50.8mm
- Weight with 2 addon modules: 16g



2. Control Application ("App")

Controls the ANT-1774 over Ethernet or RS232. Available for Windows platforms.

Men Mercury Nano ver 1.0.5.13 File Interface Connect Test Config	uration UDPRS
Maris Read Config. Save Co	nfig. Start Stream Stop Stream
Interface Camera RS232 Fixed UDP Moving	Auto Start IAD UDPRS Mode
RTSP Stream 11 (HDMI) Sensor 1 Input	RTSP Stream 12 (HD SDI) Sensor 2 Input
Stream Resolution	Stream Resolution
Bit Rate (kbps)	Bit Rate (kbps)
Update Frame Rate (fps)	Update Frame Rate (fps)
Encoder Format	Encoder Format
Audio Record	Audio Record
OCBR OVBR	CBK OVBK
Save Network Configuration Static IP	FECL:
CIPEC Error UDPRS Destination IP	
Not Connected	

2.1 App to Board Interfaces Definition

Select "Interface" button to define the interface details.

- U X		
ion UDPRS		
Start Stream Stop Stream		
uto	Setup	×
Start RTSP	Settings Port	~
RTSP Stream 12 (HD SDI)	Baud rate	115200 ~
Sensor 2 Input	Data bits	8 ~
	Stop bits	None V
Stream Resolution	Panty Elaw control	None V
Update 🗸	Plow control	
Bit Rate (kbps) Update GOP Update Frame Rate (fps) Update Encoder Format Audio Record O CBR VBR	Mess UDP Con UDP Configurat My IP 192.168.0.	0K Cancel
FECL:	Mercury IP 192.168.0. Source Port 8070 Destination 6767 Save	245 Port
	ion UDPRS Start Stream Stop Stream uto Start Mode TSP Stream 12 (HD SDI) Sensor 2 Input Stream Resolution Update GOP Update Frame Rate (fps) Update Encoder Format CBR Not Connected FEC L :	ion UDPRS Start Stream Stop Stream Uto Start RTSP AD UDPRS Mode CTSP Stream 12 (HD SDI) Sensor 2 Input Stream Resolution Update GOP Update GOP Update Frame Rate (fps) Update Encoder Format C CBR VBR Mot Connected FEC L:

For RS232 select the correct comm port and "OK".

For UDP enter PC IP (My IP) and boards IP (Mercury IP). Both addresses should be within the same subnet range.

Unless there're port conflicts leave the Source and Destination Port default values and "Save".

2.2 Connect PC and Board

Check the RS232 or UDP box and select the "Connect" bottun.



A successful conection will:

- Indicate connected and READY
- Automatically read and display the board's setup configuration

Notes:

- In the previous version it was necessary to use "Read Config"
- In the previous version it was nessary to "Save Config" if any parameter has been changed, on this version the App automativcally saves only modified parameters when "Start Stream" is selected

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2.3 Define Configuration

Mm Mercury Nano ver 10513	- D X
File Interface Connect Test Conf	figuration UDPRS
Maris Read Config.	Create Default Recording
Interface Camera R5232 Fixed UDP Moving	Board RTP Open Configuration File Update Configuration File
RTSP Stream 11 (HD SDI)	Create Default Configuration file
Sensor 1 Input	Sensor 2 Input
HD SDI 720P60 V	Analog NTSC 480P60 🗸
Stream Resolution	Stream Resolution
Update 1280 x 720 V	Update 720 x 500 V
Bit Rate (kbps) Update 2000	Bit Rate (kbps) Update 2000
GOP	GOP
Update 30 Erame Rate (frs)	Update 30 Erame Rate (fns)
Update 60	Update 60
Encoder Format	Encoder Format
H.265 ~	H.265 ~
Audio Record	Audio Record
● CBR ○ VBR	● CBR ○ VBR
Save Network Configuration Static IP	192.168.0.245 192.168.0.254 Connected
FEC FEC+%: 41 FEC D :	4 FECL: 6
FEC Error UDPRS Destination IP	192.168.0.20 READY
RTP PKt. Size 1250 Subnet Mask	255.255.255.0
UDP Connected	

2.3.1 Create Default

Sets the board to its default parameters (Factory Default).

2.3.2 Recording

The ANT-1774 enables 4 separated encoders, 2 for streaming and 2 for recording.

The recording parameters consist of:

- Resolution ≤ Input Source resolution
- Bitrate from 10Kbps to 102.4 Mbps
- GOP
- Frame Rate ≤ Input Source frequency (frame rate)

Marie	Recording Configuration	- 🗆 X	
	Recording Sensor 1 Stream 11 Resolution 720 x 576 ✓ Bit Rate (kbps) 4000 GOP 30 Frame Rate (fps) 🗊	Recording Sensor 2 Stream 12 Resolution 720 x 576 Bit Rate (kbps) 4000 GOP 30 Frame Rate (fps) 30	
	Close		

2.3.3 Board

Board's assembly configuration should be defined once when first using it.

The "Assembly Option Auto Detect" seatches and detects the video receiver modules assembled on the board and their physival location Channel 11 or Channel 12. It can be any combination of 2 inputs (if 2 were assembled) out of HDMI, HDSDI and Analog.

Mass Board Configuration - - X Mass Board Configuration - - X Mass Board Configuration - - -		
Board Mercury Mercury Nano Assembly Option	Board Mercury Mercury Nano Assembly Option Chi 11 Chi 12 O HD SDI O HD SDI O Analog O Analog O HDMI O HDMI	Board Mercury Mercury Nano Assembly Option Chi 11 Chi 12 ● HD SDI OHD SDI O Analog ● Analog O HDMI OHDMI
Please Wait !	Assembly Option Auto Detect	Assembly Option Auto Detect
Save	Save Save	
Close Close Close		

Use "Save" button upon search completion.



2.3.4 RTP

RTP configuration can be defined separately for each channel as follows:

- Session Type Unicast or Multicast
- Destination IP PC IP address for Unicast
- Input Port Unicast/Multicast port number
- Multicast IP Multicast IP address

Maris RTP Configuration	– 🗆 X	
RTP Stream 11	RTP Stream 12	
Session Type	Session Type Multicast	
Destination IP 192.168.0.20	Destination IP 192.168.0.20	
Input Port 1234	Input Port 5698	
Multicast IP 225.1.1.1	Multicast IP 225.1.1.1	
Create SDP File	Create SDP File	
Multicast IP must be in the range : 224.0.0.0 - 239.255.255.255		
Close		

"Create SDP File" creates SDP file to be used for RTP playback on VLC. The file is placed on the App directory.



2.3.5 Configuration File Management on PC

, modified (using Control application), saved on PC and copied back to board (using Burn application).

All these actions should be done when Control application isn't connected to the board.

2.3.5.1 Open Configuration File

Open a configuration file on PC. Such file can be created on PC using "Create Default Configuration File" or read from board to using Burn application.

The configuration parameters will appear on the Control application and can be modified.





2.3.5.2 Update Configuration File

Updates the Conrol application modified parameters in current configutration file.

File can be uploaded to board using Burn application

2.3.5.3 Create Default Configuration File

Creates default configuration file on PC.



2.4 Channels Definition

The ANT-1774 support 2 channels simulatneously, defined as Channel 11 and Channel 12.

2.4.1 Input Source Definition

Following assembly configuration, video input source should be defined. It can be done manualy if source resolution and frequency is known or automatically using the IAD (Input Automatic Detection) check box.

For each channel select any source definition out of the available list and then mark the IAD. The correct source definition will apper in a fes seconds.



2.4.2 Encoding Parameters

Encoding parameters for each cahnnel consist of:

- Stream Resolution ≤ Input Source resolution
- Bitrate from 10Kbps to 102.4 Mbps
- GOP
- Frame Rate ≤ Input Source frequency

Each parameters can be defined before streaming starts or can be modified on-the-fly using the "Upadte" button, which isn't saved in configuration setup.

2.4.3 Other Streaming Parameters

Other parameters can be defined using the related check box:

- H.264 or H.265
- CBR or VBR
- Enable/Disable integrated audio
- Enable/Disable simultaneous recoding according to "Configuration/Record" setup

2.5 Network Parameters

Network parameters consist of: xvcx

- IP addresses:
 - Static IP board's IP address
 - GW IP Gateway IP address
 - UDPRS UDP to RS232 IP address
 - Subnet Mask
- MTU maximum transmition unit
- RTP Packet Size
- 2D Forward Error Correction ("FEC") Parameters:
 - FEC enable/disable
 - FEC D value automaticaly changes FEC %
 - FEC L value automaticaly changes FEC %
 - FEC bitrate load % automaticaly sets equivalent D & L creating FEC % as close as possible to the selected % value
 - FEC Errore enable/disable generates stream errors for testing

A change in IP address should be followed by "Save Network Configuration".

MTU can be change on-the-fly.

RTP Packet Size and FEC Parameteres can't be changed during streaming.



2.6 Streaming & Recording

2.6.1 Streaming

The ANT-1774 can stream 2 channels simultaneously. It may stream RTSP or RTP in Unicast or Multicast.

Streaming modes include, RTSP or RTP 11 or RTP 12 or RTP 11 + 12 or RTP 11 + FEC or RTP 12 + FEC



"Start Streaming" button initiates the pre-selected streaming mode.

Mercury Nano ver 1.0.5.13	- 🗆 X	
N A suite	guration UUPIKS	
IVIARIS Read Config. Save C	onfig. Start Stream Stop Stream	
Interface Camera R5232 Proved UDP Moving	Auto	
RTSP Stream 11 (HD SDI)	RTSP Stream 12 (Analog)	
Sensor 1 Input	Sensor 2 Input	
HD SDI 720P60 V	Analog PAL 576P50 🗸	
Stream Resolution	Stream Resolution	
Update 1280 x 720 V	Update 720 x 500 V	
Bit Rate (kbps)	Bit Rate (kbps)	
GOP	GOP	
Update 30	Update 30	
Frame Rate (fps)	Frame Rate (fps)	
Encoder Format	Encoder Format	
H.265 V	H.265 ~	
Audio Record	Audio Record	
● CBR ○ VBR	● CBR ○ VBR	
Save Network Conferention State 19	92.168.0.245	
MTU 1500 GW IP 1	92, 168, 0, 254 Connected	
	FECU: 6	
FEC Error LIDERS Destination IP 1	92.168.0.20 DEADY	
RTP PKt. Size 1250 Subnet Mask 255.255.255.0		
UDP Connected Streaming		

Men Mercury Nano ver 1.0.5.13	- 0 ×
File Interface Connect Test Configuratio	n UUPRS
Viaris Read Config. Save Config.	Start Stream Stop Stream
Interface Camera Aut R5232 Proted UDP Moving	to Start RTP 11 + RTP 12 IAD UDPRS Mode
RTSP Stream 11 (HD SDI) RT	SP Stream 12 (Analog)
Sensor 1 Input S	ensor 2 Input
HD SDI 720P60 V	Analog PAL 576P50 🗸
Stream Resolution	Stream Resolution
Update 1280 x 720 v	Update 720 x 500 V
Bit Rate (kbps)	Bit Rate (kbps)
GOP	GOP
Update 30	Update 30
Frame Rate (fps)	Frame Rate (fps)
Encoder Format	ncoder Format
H.265 V	4.265 ~
Audio Record	Audio Record
● CBR ○ VBR ④	CBR OVBR
Save Network Configuration Static IP 192.168.	0.245
MTU 1500 GW IP 192.168.	0.254 Connected
FEC FECHSVE 41 FECDE 4 FE	G(): <mark>6</mark>
FEC Error UDPRS Destination IP 192.168.	0.20 READY
RTP PKt. Size 1250 Subnet Mask 255.255.	255.0
UDP Connected	Streaming





Neptune Player or VLC may be used to initiate the stream in RTSP or receive the stream in RTP. Only Neptune Player supports the FEC. See Neptune Player user's manual.

Only single channel can be streamed with FEC.

When using RTP 11 + FEC or RTP 12 + FEC the FEC is automatically enabled and it can be disabled or enabled on-the-fly using the FEC check box.

"Stop Stream" button stops the current streaming session.

2.6.2 Recording

Recording can be initiated only when the Record is checked, SD card is inserted and board is in streaming mode.

Click on Green circle in order to start reording, circle becomes Red. Click on Red circle in order to stop recording, circle becomes Green.



Notes:

- On previous version RTP streaming was activated by clicking on the RTP11 and/or RTP12 after "Start Streaming".
- On previous version FEC was activated/deactivated from FEC check box only



2.7 File Functions

System utilities including:

- Exit from App
- About App info
- Exit Board Application stops board firmware running in order to enable new firmware burning
- Get Firmware Version show board's firmware version details
- Start Keep Alive enables keep alive messages through connecting interface
- Stop Keep Alive disables keep alive messages
- Reboot Board- restarts the board
- Clear UI clears all App parameter fields, "Read Config" should be used to display parameters again
- Enable Debug Mode Enables debug messages on terminal
- Disable Debug Mode Disable debug messages on terminal
- Disable Protection this feature has been already deleted, instead there will be a feature, which enables/disables log file information







2.8 Test

Tests connectivity for the following:

- RS232 RS232 connection exists?
- UDP UDP connection exists?
- Burn monitors if burning is still in process?
- RS232 + UDP RS232 + UDP connection exists?

Main Mercury Nano ver 1.0.5.13	- 🗆 ×	
File Interface Connect Test Con	figuration UDPRS	
Maris Read Conf Test F	Stream Stop Stream	
Interface Camera Test E RS232 Fit Test E UDP Moving	Soth RTP 11 + RTP 12	
RTSP Stream 11 (HD SDI)	RTSP Stream 12 (Analog)	
Sensor 1 Input	Sensor 2 Input	
HD SDI 720P60 ~	Analog PAL 576P50 V	
Stream Resolution	Stream Resolution	
Update 1280 x 720 V	Update 720 x 576 ~	
Bit Rate (kbps)	Bit Rate (kbps)	
Update 2000	Update 2000	
GOP	GOP	
Update 30	Update 30	
Update 60	Update 50	
Encoder Format	Encoder Format	
H.265 ~	H.265 ~	
Audio Record	Audio Record	
● CBR ○ VBR	● CBR ○ VBR	
	· · · · · · · · · · · · · · · · · · ·	
Save Network Configuration Static IP	192.168.0.245	
MTU 1500 GW IP	192.168.0.254 Not Connected	
FEC FEC+%: 41 FEC D :	4 FECL: 6	
FEC Error UDPRS Destination IP	192.168.0.20 READY	
RTP PKt. Size 1250 Subnet Mask 255.255.255.0		
UDP Connected		

2.9 UDPRS

Enables/Disables the UDP to RS232 function

