User Manual

RT-1000 Multichannel Audio Module



Edited by:

RHOTHETA Elektronik GmbH Kemmelpark Dr.-Ingeborg-Haeckel-Str. 2 82418 Murnau Germany

Tel.: +49 8841 4879 - 0 Fax: +49 8841 4879 - 15

Internet: <u>www.rhotheta.de</u> E-Mail: <u>email@rhotheta.de</u>

Copyright © RHOTHETA Elektronik GmbH All rights reserved

- Issue: 2016/01/028 [Rev 1.00]
- Document-ID: 12-9-2-0021-3-1-60

Note

The manufacturer reserves the right to make modifications at any time and without previous information of the here described product.

Content

1	Ger	neral Information	4
	1.1	Front View	4
	1.2	Interfaces	4
	1.3	Control Elements	4
	1.4	Mechanical Dimensions	4
2	Net	work Configuration	5
	2.1	Introduction / Concept	5
	2.2	IP Network settings & Web Console connection to configure the In-Streamer devices	6
	2.3	IP Network settings & Web Console connection to configure the Ex-Streamer devices	10
		 2.3.1 Settings for Ex-Streamer using RHOTHETA Firmware: 2.3.2 Settings for Ex-Streamer using Standard Firmware 	11 14
3	Not	es	15

1 General Information

The RT-1000 Multichannel is already prepared to be connected, for streaming the audio signals to the Ethernet LAN (voice over IP).

For this, the RT-1000 Multichannel system requires an optional audio rack. Including an industrial audio streaming devices, a live IP audio encoder (BARIX Instreamer). To use the audio option in the DF Commander software a special Rhotheta firmware is necessary.

1.1 Front View



1.2 Interfaces

Interfaces Audio Rack							
Pos.	Interface	Connector	Description				
1	L – Audio – R	RCA	Stereo Input, 4 V _{PP} , 20 Hz – 20 kHz				
2	RS-232	DSub 9	9600 Bd, 8N1, DC Power Supply (Pin 4 – 5 V _{DC} , Pin 5 – GND)				
3	LAN	RJ45	10/100 Mb/s, Auto Link, Activity LED, Auto IP, DHCP				
4	POWER	Micro USB	5 V _{DC} /2W				
5	EAR	Kline 3,5 mm	Stereo (Headset)				

1.3 Control Elements

Contr	Control Elements Audio Rack					
Pos.	Element	Description				
1	RESET	Reset verification >10s				
		LED Red: Reset, IP Address allocation				
2	STATUS	LED green (Blinking): Data Transmission				
		LED green: Status ready, OK				

1.4 Mechanical Dimensions

Dimension	
Parameter	Value
Dimension (B x H x T)	108 x 38 x 78,7 mm

2 Network Configuration

2.1 Introduction / Concept

This BARIX In-Streamer device supports a lot of streaming modes also for custom specific conditions. The device is already pre-configured for two simultaneous streaming modes.

• BRTP: Barix extended protocol. The use of this mode is strictly recommended. It offers very fast reaction time even for short voice communication audio signals on VTS/ATC applications.

This protocol can only be used, if at the remote control site a BARIX Ex-Streamer is used. This optional additional small device is described at the next chapter.

• HTTP as Internet Radio. This stream can be decoded as example directly from the remote application with a VLC player. Because it uses larger streaming buffers, the delay times can increase up to a few seconds, which is mostly unwanted for short signals.

For additional detailed information, see also <u>www.barix.com</u> (Instreamer, Exstreamer)

2.2 IP Network settings & Web Console connection to configure the In-Streamer devices

To access the direction finder audio from remote, it is common to use static IP & Port addresses. For this the Audio device itself can be configured to a static IP address.

- The RT-1000 Multichannel Audio Rack devices are preconfigured after delivery to <u>DHCP mode</u>, or to a fixed IP address in the IP-Address Configuration file.
- If <u>NO DHCP</u> server is available and no static IP mode is configured, it can take up to 4 minutes before the IP address will be announced over the speaker.

The actual RT-1000 Multichannel Audio Rack device IP address will be announced after Power On of the Barix In-Streamer over the headphone connector near the status LED on the front side of each audio module.

A standard Web Browser/Console is the most user-friendly method available to configure the audio modules.

Network configuration:

• Start a standard web browser console and input the actual detected/static IP address of the RT-1000 Audio device.

At the example shown here, the IP address is assigned by a DHCP server to 192.168.77.232



Audio configuration:

				_				
HOME CONFIGURATION	STATUS DEFAULTS UPD/	ATE REBOOT		Inst	treamer MAC:	00:08:E1:	03:C9:A8	FW V04.03
INSTREAMER						B	EVOICE OF	SIMPLICITY
Basic Settings Advanced Settings	AUDIO SETTINGS			Help				*
Network	Input Source	Line mono -		AUDIO SETTI	NGS			
Audio	Audio Format	G.711 uLaw / 8 kHz mono	•	These setting	s define the a	udio par	ameters	
Streaming				Input source				
I/O & Senal	ADVANCED ENCODER SET	TINGS		Choose the d	esired input si	burce. Li	ine mon	o and MIC
Control & SNMP	A/D amplifier gain	-3 * dB		The options a	valiable deper	nd on th	e HW ad	cording to
Security								
				below.				
Apply Cancel				below. The Exstream to Digital circu	er 500 and Ex	streame	er 1000 l	have extern is of 32 an
Apply Cancel				below. The Exstream to Digital circu selection prov	er 500 and E) iltry which sup ides a better i	streame port inp input sig	er 1000 l ut speed inal to no	have extern Is of 32 an Dise ratio, I
Apply Cancel				below. The Exstream to Digital circu selection prov A/D gain is fix Default setting	er 500 and E) iltry which sup ides a better i ed and canno g is <i>"Line stere</i>	streame port inp input sig t be adju to"	er 1000 I ut speed nal to no usted.	have extern Is of 32 an Dise ratio, I
Apply Cancel				below. The Exstream to Digital circu selection prov A/D gain is fix Default setting	er 500 and E) iltry which sup ides a better i ed and canno g is <i>"Line stere</i>	streame port input input sig t be adju to"	er 1000 I ut speed nal to no usted.	have extern Is of 32 an Dise ratio, I
Apply Cancel				below. The Exstream to Digital circu selection prov A/D gain is fix Default setting	er 500 and E) altry which sup ides a better i ed and canno g is <i>"I ine stere</i> Instreamer 100	istreame port input input sig t be adju to? Ex 500	er 1000 I ut speed nal to no usted. Ex 1000	Ann 100/200
Apply Cancel				below. The Exstream to Digital circu selection prov A/D gain is fix Default setting Instreamer Line Mono	er 500 and Ex iltry which sup ides a better i ed and canno g is <i>"I ine sterd</i> Instreamer 100 Line Mono	streame port input input sig t be adju- t or Ex 500 Line Mono	Ex 1000 I ut speed nal to no usted. Ex 1000 Line Mono	Ann 100/200
Apply Cancel				below. The Exstream to Digital circu selection prov A/D gain is fix Default setting Instreamer Line Mono Line Stereo	er 500 and E itry which sup ides a better i ed and canno g is "Line stere Instreamer 100 Line Mono Line Stereo	streame port input input sig t be adju- to" Ex 500 Line Mono Line Stereo	Ex 1000 l ut speed nai to nu usted. Ex 1000 Line Mono Line Stereo	Ann 100/200 Line Mono
Apply Cancel				below. The Exstream to Digital circu- selection prov A/D gain is fix Default setting Instreamer Line Mono Line Stereo	er 500 and E iltry which sup ides a better i des a better i a better i a better a better ins stereo Line Mono Line Stereo -	streame port inp input sig t be adju to" Ex 500 Line Mono Line Stereo	er 1000 l ut speec nal to nu isted. Ex 1000 Line Mono Line Stereo	Ann 100/200 Line Mono
Apply Cancel				below. The Exstream to Digital circu selection prov Default setting Instreamer Line Mono Line Stereo	er 500 and E iltry which sup ides a better i de and canno) is " <i>l'ine stere</i> Instreamer 100 Line Mono Line Stereo - SPDIF oplical	streame port inpi nput sig t be adju- to" Ex 500 Line Mono Line Stereo -	Ex 1000 Insted. Ex 1000 Line Mono Line Stereo - AES- EBU	Ann 100/200 Line Mono - MIC -
Apply] Cancel)				below. The Exstream to Digital circu. selection prov A/D gain is fix Default setting Instreamer Line Mono Line Stereo	er 500 and E iltry which sup ides a better i ed and canno j is 'l ine stere Instreamer 100 Line Mono Line Stereo - SPDIF oplical SPDIF	streame port inpinput sig t be adju- to" Ex 500 Line Mono Line Stereo - -	EX 1000 lut speed nai to nu isted. EX 1000 Line Mono Line Stereo - AES- EBU Line	Ann 100/200 Line Mono - MIC -
Apply Cancel				below. The Exstream to Digital circu. selection prov A/D gain is fix Default setting Instreamer Line Mono Line Stereo -	er 500 and E) intry which sup iddes a better i dides a better i dides a better i instreamer 100 Line Mono Line Stereo - SPDIF coaxial MPEG	streame port inpinput sig t be adju- to? Ex 500 Line Mono Line Stereo - - Line Ext Ext	EX 1000 lut speed nai to nu isted. EX 1000 Line Mono Line Stereo - AES- EBU Line EXt AES-	Ann dis of 32 an oise ratio, t ann dis of 32 an oise ratio, t Ann 100/200 Line Mino - -

recommended audio settings

Streaming configuration:

HOME CONFIGURATION	STATUS DEFAULTS UPD	NTE REBOOT		Instreamer MAC: 00:08:E1:03:C9:	A8 FW V04.03
ISTREAMER				BA	
sic Settings vanced Settings	STREAMING SETTINGS			Help	-
Network	Streaming Mode	send always		STREAMING SETTINGS	
Audio Streaming	Buffer Underrun Mode (TCP)	skip - •		These settings adjust the streaming mode destinations.	e, streaming \mathfrak{r}_{\equiv}
I/O & Serial	Stream Packet Strategy	lowest latency		Streaming mode	
Control & SNMP Security	UDP Tx Source Port	0		"send always" will stream always "send on CTS" will stream depending on t	he state of th_
	SHOUTCAST/ICECAST SET	SHOUTCAST//CECAST SETTINGS			the nominat
ply Cancel	Own Name	Instreamer	"send on Level" will stream if the incoming Trigger level	audio signal	
	Radio Path	betream	For send on LCTS, send on LCTS and on Level, s		
	in and (010 as an	, and the second		Default setting is "send on CTS".	nons on men
	icy-uri / SiP user	un	Trigger level		
	icy-genre	genre		Is only used when Streaming mode is "on Level". Set to a value between -63 and 0 dB. Open the <u>Device home page</u> and look for the input per bird for the trigger value. This page refreshes itself eve	
	Shoutcast stream	public -			
	STREAMING DESTINATION	5		Default setting is "-24dB".	
	# Conn. type Enter	IP Address or Domain Nam	e Port	Pre Trigger Start	
	1 BRTP	(3030	should be sent earlier than detected. It de	efines the amo
	2 not used •		0	will be streamed before the actual trigger most useful when used in combination wit	occurred. Th h the send or
	3 not used 🔹		0	is not supported with the Streaming mode	"send alway:
	4 not used 🔹		0	Denaun sening is D millseconds.	
	# Conn. type IP #	# # #	Port	Post Trigger Play Post Trigger Play can be adjusted to prev	vent cut offs w
	5 Internet Radio 🔹 0	. 0 . 0 . 0 ;	0	should be sent longer than detected. It de the device will continue streaming after th	fines the am
	6 Internet Radio 👻 0	.0.0.0	0	cleared. This feature is normally used tog	ether with the
	7 Internet Radio 🔹 0	.0.0.0;	0	Default setting is "1024" milliseconds.	
	8 Internet Radio 💌 0	.0.0.0	0	Contact Closure	
				Defines the contact closure input (GPI) th	at controls th

Streaming Mode "send always"

Buffer Underrun Mode "skip"

Stream Packet Strategy "lowest latency"

Conn.type "BRTP"

Port "3030"

I/O & Serial configuration:

B http://192.168.77.212	Q - RdX	B Bariy Instreamer Instreamer	
HOME CONFIGURATION	STATUS DEFAULTS UF	PDATE REBOOT	Instreamer MAC: 00:08:E1:03:C9:A8 FW V04.03
INSTREAMER			BARIX THE VOCE OF SMPLICITY
Basic Settings	IO SETTINGS		Help
Network	CTS close command	c=91	I/O SETTINGS
Audio Streaming	CTS open command	c=84	This configures the command issued when the CTS signal on the serial connector is activated
I/O & Serial Control & SNMP Security	SERIAL SETTINGS Baud rate Data bits	9600 • 8 •	CTS close command Configures which command is issued when the CTS signal on the serial connector is activated (see further information below in the command description). Detail: "c=41" (calvate the sending mode)
Apply Cancel	Parity Stop bits Flow control		CTS open command Configures which command is issued when the CTS signal on the serial connector is deactivated (see further information below in the command description). Default: "c-94" (deactivate the sending mode)
	SERIAL GATEWAY Local port Destination IP		Commands Multiple commands can added using the & character- They will be executed sequentially in the order as they apear in the configuration field.
	Destination port		SENDING MODE c=84. Deactivates the sending mode. Sets a smulated CI is signal which is ored with the real CI is. This affects streaming only in the send on VO mode. c=91. Activates the sending mode. Sets a simulated CI is signal which is ored with the real CI is. This affects streaming once in the send on VO mode.

CTS close command "c=91"

CTS open command "c=84"

Serial Settings, Serial Gateway

2.3 IP Network settings & Web Console connection to configure the Ex-Streamer devices

For the remote control site audio generation, this optional additional small standalone device is the recommended solution and provided by RHOTHETA. This device (Ex-Streamer) decodes audio streams and play out the received audio signals to amplifiers or speakers. Supporting a large number of protocols, encoding methods and application specific firmware, the products can be used for Broadcast, Internet Radio, as well as VoIP applications. To use the optional audio mode of the "DF Commander" software a special RHOTHETA firmware for the Ex-Streamer is necessary.



The BARIX Ex-Streamer device is also configured with any standard web browser/console.

The IP address will be announced after Power On over the headphone connector. This can take up to 4 minutes if no DHCP server is available at the connected LAN network.

You have to "Apply" every setting page.

2.3.1 Settings for Ex-Streamer using RHOTHETA Firmware:

Basic Settings:

IP INTERCOM DESCRIPTION Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	Audio to
Description BASIC SETTINGS Help Advanced Settings Streaming Mode send on command BASIC SETTINGS BASIC SETTINGS Advanced Settings Streaming Mode send on command BASIC SETTINGS Streaming Mode St	
 "Send always" in this mode device will always stream audio to configure di oceannaism. "Send oceannaism. "Send oceannaism." "Bend oceannai	e Audio from):4444"
- reductor in this mode device with dark given in the food of the body - endoted in this mode device with dark given in the body - endoted in this mode device with dark given in the body - endoted in this mode device with dark given in the body - endoted in this mode device with the dark given in the body - endoted in the body	ect tions In- ler IP address rt

Advanced Settings – Network Settings:

C () () http://192.168.55.201/	우 ~ 월 ඊ X 🦉 Baix			
IP INTERCOM	CONTRACTORING STATUS	GLAVELS OF DATE RECOU	BARIX	Use Sonic IP
Intercom	NETWORK SETTINGS		Help	(Radiobutton)
Baix Settings Advanced Settings Network Streaming Audio Control Irlerfaces Setial Gatevars Security Apply Cencel	Use SoniclP [®] IP Address Netnass Gateway IP Address Primary DNS Alternative ENS Sysiog Address DHCP Host Name Web Server Port	• Yes Nc 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0 0 .0 .0	NETWORK SETTINGS Use SonisP If setto 'yas', the device all amounce is IP address over the audio output during device startup. Default: 'yee' P Actress Entry the 1 values of the deciled dovice IP address or g Nutber 1'92-168.0 12' for an internal LAN Default: 'y 0.0 0' Netmask Entrie the 4 values of the desired Static IP e.g.: 'y, 0.0 of the a default Netmask depending on the used P	"Yes"
	SNIMP System Name SNIMP System Location SNIMP System Contact		A Dariess *265 265,255 6" for a C dass network Default: 256,255 255 0" Cateway IP Actress Enter the 4 values of the desired Osteway IP address e.g.: *0,0,0 0" for no Cateway *192:100,0 1" for a Gateway in a LAN Note The Gateway has to besch only when connecting to other devices aver the WAN (through a router). Default: *0,0 0" Primary ENS in this field you can give the desired privacy and difermativ DNS P address to be able to connect to URLs (e.g. *	IP-Address "0.0.0.0"

Advanced Settings – Streaming Settings:



Advanced Settings – Audio (Mono):

				Encoding
C () (2 http://192.168.55.204/	,О-2СX 🛛	🖇 Barix 🛛 🗶	0 <u>2</u>	"ul aw/8 kHz/G 711)"
HOME PROFILES	CONFIGURATION STAT	IUS DEFAULTS UPDATE REBO	OT Exstreamer 100 MAC: 00:00:E1:03:06:C2 FV/ VB1.14	u a w o k i z (0.711)
IP INTERCOM			BARIX	
Intercom	AUDIO SETTINGS		Help	Volume
Basic Settings	Input Source	® Line © Mic	AUDIO SETTINGS	"50"%
Network	Encoding	uLow / 8 kHz (G.711)	Input Source Select the desired audio input source:	
Audio	Volume	50 · %	 "Line"Use Line-in for audio input. "Mie"Use mcrophone for audio input. 	
Control Interfates Serial Gateways Security	A/D Amplifier Gain	21 V dB	 "SUB (AiPhone)"Use AiPhone interface (SUB on Annunckon-200) for audio input. On selection of this audio input source, the streaming mode is set to "AiPhone ('Iaif Duples)" automatically and can 	
Apply Concel			not be changed.	
			Encoding Select desired aucio encoding, Default: PPCM/24KHz(16 bit)*.	A/D Amplifier Gain
			Volume Choose between "D%" and "r009%" in 5% steps. Default: "50%"	.0. dB
			Microphone Gain Microphone gain d5, increase if your microphone is too lamit, devices if this too toud or overdriven. Default: "21d8"	
۲. m	1		A/D Amplifier Gain A/D converter pre-amplification in dE Increase if the audio signal too faint, decrease if it's too loud or overdriven	

Advanced Settings – Audio (Stereo):



Encoding "PCM / 24 kHz (16bit)"

Volume "50"%

A/D Amplifier Gain "0" dB

Advanced Settings – Control Interface:

ROME PROFILES IP INTERCOM	P - 2 C X B	Borix X IS DEFAULTS UPDATE REBCO		TCP Control Local Port "12302"
Infercom Basic Settings Advanced Settings Advanced Setting Audio Control Interfaces Senal Gateways Security Apply Cancel 4 19	CONTROL INTERFACES TCP Control Local Port UCP Control Local Port Send IO Change to Host Send SNMP trap to Host UCP Discovery Port	1200 0 0 0 0 0 0	Help CONTROL. NTERPACES TCP Control Local Port Set the 1CP port to Islan for TCP control Interface connection. Set the 0 to disable TCP control Interface. Default "12302" UP Control Local Port Set The UP port to Islan for UDP control Interface connection. Set Tub 2003 The Control Interface Control Control Interface is connected, status changes are set to TCP remote nodar and its not sent to this configured host. Default "0.0.0.0" Set Tub 2005 To Control Set 10 Min Control Interface Set Tub 2005 To Control Interface is connected, status changes are set to TCP remote nodar and its not sent to this configured host. Default "0.0.0.0" UP Discovery Port UDP Discovery Port UDP Discovery Port UDP Discovery Port Set Tub 2005 The Set Interpact Interpact Interpact Interpact Interpact Interpact Default "72307"	UDP Control Local Port "12303"

2.3.2 Settings for Ex-Streamer using Standard Firmware

The BARIX Ex-Streamer device is also configured with any standard web browser/console.

The IP address will be announced after Power On over the headphone connector. This can take up to 4 minutes if no DHCP server is available at the connected LAN network.

You have to "Apply" every Setting page.

The Ex-Streamer will restart after any change; this can take up to 4 minutes.

HOME CONFIGURATION S STREAMING CLIE	TATUS DEFAULTS 1 ENT	Ø + ≧ Ĉ X Ø Barix Streaming Client UPDATE REBOOT Exstreamer 100	MACCORDEEF6330FC2 PW V82.24	The IP address for
Basic Settings Advanced Settings Network U Streaming Audio & Playback Priority Serial & Control G	IETWORK SETTINGS /se Sonic和 ^와 P Address /etmask iateway IP Address	© Yes No 0 0 0 0 0 255 255 0 192 158 77 1	Help NETWORK SETTINGS Use SonicIP® If set to 'yee'', the device will announce its IP address over the audio output. Default: 'yes''	preconfigured to DHCP.
VO Remote Management Security Apply Cancel V H	rimary DNS Ikernative DNS HICP Host Name Veb Server Port HTTP Proxy URL Iser Agent		PAddiasa Enter the 4 values of the desired device IP address e.g.: 10.0.0° for automatic discovery (DHCP/Bootp, IP zator, AutoP) 1722.168.0.12° for an internal LAN Default: 10.0.0° Netmask Enter the 4 values of the desired Static IP e.g.: 10.0.0° for a default Netmask depending on the used IP Address. 2552.555.0° for a C class network Default: 2755.255.0° Gateway IP Address Enter the 4 values of the desired Gateway IP address a.g.: 10.0.0° for a Gateway in a LAN Note: The Gateway has to be set only when connecting to other devices over the WAN (through a router). Default: 10.0.0°	Please input here the Gateway address if the RT-1000 Multichannel is not in the same LAN.

						×	
	3/	,P + I	🖻 🖒 🗙 🔏 Barix S	Streaming Client	× ň *	\$	
HOME CONFIGURATION STATUS DEFAULTS UPDATE REBOOT Exstreamer 100 MAC: 00:08:E1:03:0F:C2 FW VB2:24							
STREAMING CL	IENT				R A R 🚺 X		
					5 EA.	-	
Basic Settings	STREAMING CETTINGS				Help	Â.	
Advanced Settings	STREAMING SETTINGS					=	
Network	1. URL	brtp://192.168.77	232:4444		STREAMING SETTINGS		
Streaming	2. URL				1. URL 3. URL		
Audio & Playback	0.000				Up to three independent audio sources (URLs)		
Priority	3. URL				can be set. Each may contain a full address of a plavlist, file or a stream. The three entries have	а	
Serial & Control	Stream Check Period 1 seconds				different priorities, the first one has the highest		
VO	Check Period Limit	30 secon	de		priority and the last one has the lowest priority. The Bariy Eystreamer processes the sources in		
Remote Management					a loop and tries to connect to the highest priority	y	
Security	RIP delay	600 ms			source available.		
	OTDE MINING OD TIGUO				Default for 2. URL:		
Apply Cancel	STREAMING OPTIONS				"http://www.barix.com/radio.m3u"		
	USB backup	B backup play complete files * Default for 3. URL: "playlist.m."					
		1. URL	2. URL	3. URL	URL syntax		
	Refresh	once 🔫	once 💌	once 🔫	The general URL syntax is:		
	On reconnect play the	same song 🔻	same song 🔻	same song 🔻	If the protocol is omitted the file:// is assumed.		
	Playlist fails	if all items fail 🔻	if all items fail 🔻	if all items fail 🔹	User and password fields are optional and depending on the protocol the port may be		
۰ m +					specified. Refer to the manual for a full	-	

Please input here the accurate source IP address of the RT-1000 Multichannel audio module and the used Port.

3 Notes