

Rako Bridge — 3rd Party Access Protocols

Introduction

Rako Bridges can be used to control the installation from an external device connected to either the Ethernet or the RS232 port.

RS232 (Product “WRA-232”)

The connection to the RS232 port is via a 3 pin connector. The port is configured 9600,8,N,1 (9600 Baud, 8 Bits, No Parity, 1 Stop Bit). The protocol is the same as the now obsolete RAV232/RAV232+ products and can be found in the document, 'Rako RS232 Command Summary'. <http://www.rakocontrols.com/downloads/rakors232commandsummary.pdf>

TCP/IP (Products)

In the following examples the NetBios name for the bridge is assumed to be 'rakobridge' (the default). This name can be changed using the web interface or the IP address of the bridge can be used.

Telnet

A Telnet type interface is available on port 9761. This does not require a login. The protocol is the same as detailed in the 'Rako RS232 Command Summary'. This interface is used by Rasoft and Rasoft Pro so CANNOT be used at the same time.

The interface can be used by typing:

```
telnet rakobridge 9761
```

HTTP

Requests can be made via the web interface by submitting a HTTP GET request in the following format:

```
http://rakobridge/rako.cgi?room=5&ch=4&com=3
```

The example would send Scene 1 command to room 5, channel 4.

If channel is omitted it will default to 0 meaning all channels.

A page containing the phrase "Success!" is returned.
From version 1.1.7:

Level can be set using: lev=0 to lev=255.
Events can be enabled/disabled: event=1&active=1 or active=0

XML

An XML file can be downloaded which contains information about the current installation.
NOTE: the information first requires uploading to the Bridge from Rasoft or Rasoft Pro.

<http://rakobridge/rako.xml>

An example of part of the XML file returned is shown below:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<rooms>
<Room id="4">
<Type>Lights</Type>
<Title>Default Room</Title>
<Scene id="1">
<Name>Scene 1</Name>
</Scene>
<Scene id="2">
<Name>Scene 2</Name>
</Scene>
....
<Channel id="1">
<Name>Channel 1</Name>
</Channel>
<Channel id="2">
<Name>Channel 2</Name>
</Channel>
....
</Room>
....
</rooms>
```

Scene Cache (from version 1.2.6)

The Bridge caches the scene state of up to 64 rooms. The cache indicates the last scene set. If the fade buttons are used in the room the entry is deleted from the cache. The scene cache can be obtained from the following URL

<http://rakobridge/scenes.htm>

The reply is 2 byte per room in hexadecimal:

Byte 1								Byte 2							
b7	b6	b5	b4	b3	b2	b1	b0	b7	b6	b5	b4	b3	b2	b1	b0

Scene Number	Room Number
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e.g 04041006 is room4 scene 1, room 6 scene 4

Note: The cache information can also be obtained by UDP.

UDP/IP

UDP Discover

To find a Bridge on the network send a UDP broadcast packet where the data consists of a single literal 'D'. The bridge will reply to the source IP address with:

NETBIOS \ \ Bridge MAC Address FF:FF:FF:FF:FF:FF (ASCII) \ \
Name(Ascii) r n r n

UDP packets can be sent to port 9761 with the following format:

0	1	2	3	4	5	6	n
Literal 'R'	#Bytes to follow	RoomH	RoomL	Channel	Instruction	0-7 bytes		CRC
Sum of these bytes must equal zero								

The reply is either "AOK" or "AERROR"

Scene Cache

The scene cache can be obtained by sending a literal 'Q' in the first byte. The reply is:

Literal 'C'	Bytes to follow	scene<<10+room	scene<<10+room	CRC
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The byte format is the same as the HTTP byte format in the previous section.

Status Messages

1.2.2, status messages are sent out using UDP broadcast on port 9761. The format of the status messages is the same as the command packets except the CRC does not include the bytes-to-follow byte.

0	1	2	3	4	5	6	n
---	---	---	---	---	---	---	-------	---

Literal 'S'	#Bytes to follow	RoomH	RoomL	Channel	Instruction	0-7 bytes
Sum of these bytes must equal zero						

UDP Instructions

Below is a table of available instructions for sending and for status messages.

Instruction	D0	D1	D2	D3	D4	D5	D6	D7	Description
	8	8	8	8	8	8	8	8	bits
0	0x0								off
1	0x1								fade up
2	0x2								fade down
3	0x3								sc1
4	0x4								sc2
5	0x5								sc3
6	0x6								sc4
8	0x8								Ident
12	0xC	Flags	level	RateH	RateL	decay			Level Set
13	0xD								Store
10	0xA								
15	0xF								stop
45	0x2D	Flags	String						Custom 232
46	0x2E	Flags	First Event	Last Event					Event Control
47	0x2F	Flags							Holiday
48	0x30	Flags	Macro#						Run Macro
49	0x31	Flags	Scene#	RateH	RateL	Decay			SetScene
50	0x32	Flags	Level	RateH	RateL	Accel			Fade
51	0x33	Flags	Sc/Lev	on/Up					Toggle channel
52	0x34	Flags	level	RateH	RateL	decay			set level

Below is a table of the Flags field (1 byte)

Instruction	F L A G S							
	b7	b6	b5	b4	b3	b2	b1	b0
46,47,48						0	0	stop
46,47,48						0	1	start
48						1	0	pause
48						1	1	cont
49								Def Rate
50	Def Rate							Down
51	Level	Fade						Def Rate
52								Def Rate

Example:

1. Room 7 Scene 1

0x52 'Character R for main commands

0x05 '5 Bytes after this

0x00 'Used for rooms above 256

0x07 'Room Number

0x00 'Channel 0

0x03 'Instruction 3 (Scene 1)

0xF1 'Checksum (256 - (0x05 + 0x00 + 0x07 + 0x00 + 0x03) % 256)

2. Room 3 Level

0x52 'Character R for main commands

0x07 '7 Bytes to follow

0x00 'High Room number (room / 256)

0x03 'Low Room number (room % 256)

0x01 'Channel 1

0x0C 'CAN_LEVEL

0xA3 'Channel Level (0x00 = 0%, 0xFF = 100%)

0x00 'Extra Info, not used

0x46 'Checksum (256 - (sum of previous bytes except First) % 256)