



Guide for system integrators

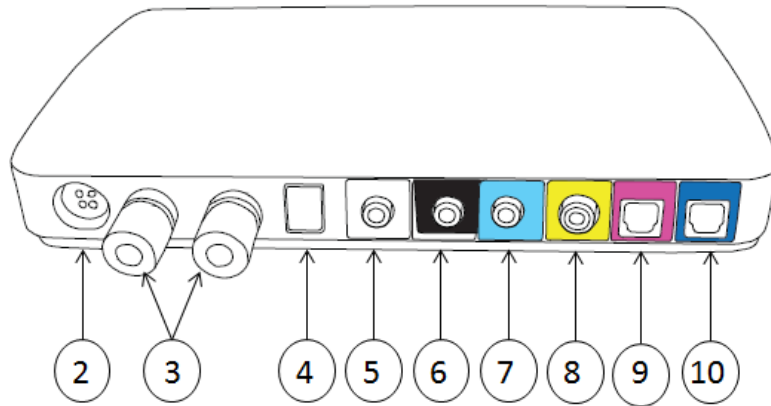
How integrate the Opalum sound system



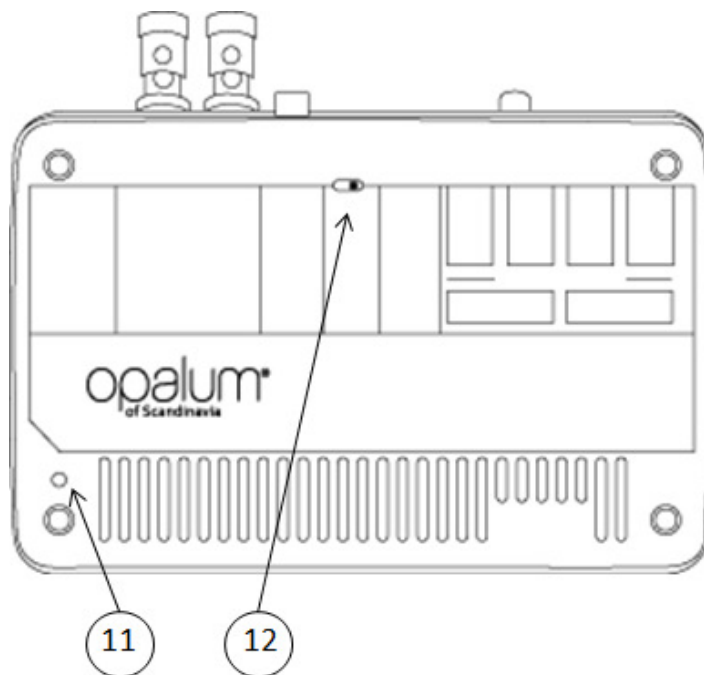
Table of contents

1.	The Control Hub	3
2.	RS232 control	4
2.1	RS232 port configuration	4
2.2	RS232 port configuration	4
2.3	RS232 port protocol	4
2.4	RS232 commands table	5

1. The Control Hub



5. Connection for controlling the system through either external IR or RS232.



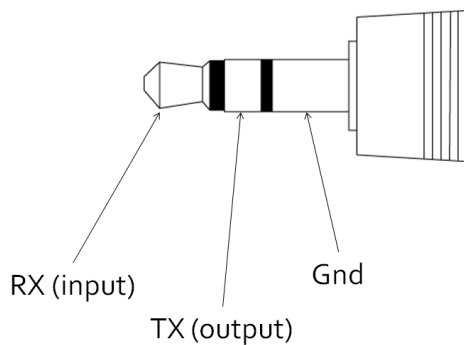
12. Switch to set if the IR/RS232 connector is used for electrical IR or RS232.

2. RS232 control

2.1 RS232 port configuration

The RS232 is located on the rear. See drawing in the very beginning of this guide, it's the input/output marked IR/RS232 shown as socket 5 in the picture.

It uses a standard 3.5mm stereo jack, with the connector as shown in the picture below. Please note that RX (input) means that this is where the control hub receives data, so you will have to connect the control system TX to this.



Connect this way:

RX (input) to control system TX

TX (input) to control system RX

GND to control system GND

Make sure to set the IR/RS232 on the bottom of the control hub is in the right position before using the RS232:

Position of slide switch (seen from bottom)	Socket function
Switch away from the speaker terminals	RS232 mode
Switch toward the speaker terminals	Electrical IR mode

2.2 RS232 port configuration

The RS232 port parameters are as follows:

- 115.200 baud
- 8 bit
- No parity
- 1 stop bit
- No flow control

2.3 RS232 port protocol

The commands send to the control hub are sent in plain ASCII and terminated by sending a carriage return <CR> (hex value 0D). All commands are acknowledged with OK on success and ER on error.

2.4 RS232 commands table

Function	Command	In hex	Description
Power ON	pwr1	70 77 72 31 0D	Turns on the hub
Power OFF	pwro	70 77 72 30 0D	Turns off the hub
Power Toggle	pwrT	70 77 72 74 0D	Toggles the power of the off. On if off and off if on
Volume Up	vol+	76 6F 6C 2B 0D	Increases the hubs output volume with 1
Volume Down	vol-	76 6F 6C 2D 0D	Decreases the hubs output volume with 1
Volume Set	vol[XX]	76 6F 6C xx 76 6F 6C 63 76 6F 6C 00 76 6F 6C 0F 76 6F 6C 5F	Changes the volume to a specific number. It accepts values from 0-63, in hexadecimal numbers. So there are 100 volume steps. Examples: vol63, sets the volume to full vol00, set the volume to zero vol0f, sets the volume to a low level vol5f, sets the volume to a high level
Source Next	src+	73 72 63 2B	Changes input source, counting up
Source Previous	src-	73 72 63 2D	Changes input source, counting down
Source Select	src[X]	73 72 63 0x 73 72 63 00 73 72 63 01 73 72 63 02 73 72 63 03 73 72 63 04 73 72 63 05	Changes the input source to a specific source. X is the source selected. Sources are: 0 toslink1 (pink LED) 1 toslink2 (blue LED) 2 coaxial (yellow LED) 3 Bluetooth (green LED) 4 analog (light blue LED) 5 mixer (white LED) Example: src4, changes to analog input
Standby Timeout Enable	sta1	73 74 61 31	Enables standby timeout, so the hub will turn off if it receives no signal for 20 minutes.
Standby Timeout Disable	sta0	73 74 61 30	Disables standby timeout, hub will never go automatically to standby.