

# **I32**

# **RS232 protocol**

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## Description

This document describes the RS232 protocol used to control the I32 device.

## Command structure

Commands are sent to the device using the following format, where each field is one byte sent to the device:

<STX> <command> <variable> [<value>] <DLE> <ETX>

The <command> can be either 'W' for write or 'R' for read. The variable table that follows specifies which variables supports which <command> types.

If verbose is active, the device will send replies on the following format either when a command is received or when the variable in question is changed on the device.

<STX> <variable> [<value>] <DLE> <ETX>

Note that the <value> field can contain several bytes of data for certain commands.

## Command special chars

<STX> = 0x02

<DLE> = 0x10

<ETX> = 0x03

Write = 0x57 (ASCII: W)

Read = 0x52 (ASCII: R)

## Escape sequence

If any variable or value byte is equal to <DLE>, this byte must be sent twice to avoid confusing this with end of message.

## Protocol settings

Baud rate: 4800

Bits: 8

Stop bits: 1

Parity: None

## Example

The specific variables and commands will be defined later, here are examples on what the commands looks like in bytes.

Command to toggle verbose setting. Command is write, variable is 13 (0x0d) and value is 0.

0x02 0x57 0x0xd 0x00 0x10 0x03

# Variables

## Commands sent to device

Function	Cmd	Variable	Values	Description	Command sequence
Operate/Standby	W	1	0 = Toggle	Toggles standby mode for device.	0x02 0x57 0x01 0x00 0x10 0x03
Operate/Standby	W	1 + 128	0 = Standby, 1 = Operate	Sets device in standby or operate state.	Standby: 0x02 0x57 0x81 0x00 0x10 0x03 Operate: 0x02 0x57 0x81 0x01 0x10 0x03
Main input	W	2	-1 (0xff) = Previous, 1 (0x01) = Next	Selects next or previous input on device.	Previous: 0x02 0x57 0x02 0xff 0x10 0x03 Next: 0x02 0x57 0x02 0x01 0x10 0x03
Main input	W	2 + 128	1 = IN1 2 = IN2 3 = IN3 4 = IN4 5 = IN5 6 = MEDIA 7 = DIG1 8 = DIG2 9 = DIG3 10 = DIG4 11 = PC 12 = BT	Selects specific input on device.	0x02 0x57 0x82 0x0X 0x10 0x03 X = 1,2,3,4,5,6,7,8,9,a,b,c
Volume control	W	3	-1 (0xff) = Decrease, 1 (0x01) = Increase	Either increases or decreases volume by one step.	Decrease: 0x02 0x57 0x03 0xff 0x10 0x03 Increase: 0x02 0x57 0x03 0x01 0x10 0x03
Volume control	W	3 + 128	0 to 79	Sets volume on device.	0x02 0x57 0x83 0xXX 0x10 0x03, XX = 00 to 4f
Balance	W	4	-1 (0xff) = step left, 1 (0x01) = step right	Modifies volume balance settings	Step left: 0x02 0x57 0x04 0xff 0x10 0x03 Step right: 0x02 0x57 0x04 0x01 0x10 0x03
Balance	W	4 + 128	1 to 19	Sets specific balance setting. Value 10 means centered. Lower values adjusts balance to the left.	0x02 0x57 0x84 0xXX 0x10 0x03 XX = 01 to 13
Mute control	W	9	0 = Toggle	Toggles mute on device.	0x02 0x57 0x09 0x00 0x10 0x03
Mute control	W	9 + 128	0 = Disable, 1 = Enable	Enabled or disables mute on device.	Disable: 0x02 0x57 0x89 0x00 0x10 0x03 Enable: 0x02 0x57 0x89 0x01 0x10 0x03

Dim	W	10	0 = Cycle	Cycles through the different dim levels on device.	0x02 0x57 0x0a 0x00 0x10 0x03
Dim	W	10 + 128	0 = Off 1 = Low 2 = Mid 3 = High	Selects a specific dim level on device.	0x02 0x57 0x8a 0x0X 0x10 0x03 X = 0,1,2,3
Verbose	W	13	0 = Toggle	Toggles verbose mode on device. When verbose is active, device will respond to commands and inform about changes to variables.	0x02 0x57 0x0d 0x00 0x10 0x03
Verbose	W	13 + 128	0 = Disable, 1 = Enable	Enables or disables verbose mode on device.	Disable: 0x02 0x57 0x8d 0x00 0x10 0x03 Enable: 0x02 0x57 0x8d 0x01 0x10 0x03
Menu	W	14	0 = Toggle menu	Enters or leaves menu of device.	0x02 0x57 0x0e 0x00 0x10 0x03
Menu	W	14 + 128	0 = Exit, 1 = Back, 2 = Enter	Allows closing of the menu or stepping into or out of a submenu if the menu is active.	Exit: 0x02 0x57 0x8e 0x00 0x10 0x03 Back: 0x02 0x57 0x8e 0x01 0x10 0x03 Enter: 0x02 0x57 0x8e 0x02 0x10 0x03
Remote command	W	15	See table of IR commands.	Sends an IR command to the device, which will be treated as if the IR remote control has been used to send the command.	0x02 0x57 0x0f 0xXX 0x10 0x03
IR input select	W	18	0 = Toggle	Toggles IR input source on device between front and back.	0x02 0x57 0x12 0x00 0x10 0x03
IR input select	W	18 + 128	0 = Front, 1 = Back	Selects either front or back as current IR input source on device.	Front: 0x02 0x57 0x92 0x00 0x10 0x03 Back: 0x02 0x57 0x92 0x01 0x10 0x03
Recall factory settings	W	19	0 = Factory reset	Performs a factory reset, restoring default values and restarting the device.	0x02 0x57 0x13 0x00 0x10 0x03
Name of manufacturer	R	21	0	Reads manufacturer name from the device.	0x02 0x52 0x15 0x00 0x10 0x03
Name of model	R	22	0	Reads model name from device.	0x02 0x52 0x16 0x00 0x10 0x03
Version	R	23	0	Reads current software version from device	0x02 0x52 0x17 0x00 0x10 0x03
Input name	R	20	0	Reads current input name from device.	0x02 0x52 0x14 0x00 0x10 0x03
Input name	R	20 + 128	See "Main input" for values	Reads specified input name from device.	0x02 0x52 0x94 0x0X 0x10 0x03 X = 1,2,3,4,5,6,7,8,9,a,b,c
BT visible	W	24	0 = Toggle	Toggles bluetooth visibility setting.	0x02 0x57 0x18 0x00 0x10 0x03

BT visible	W	24 + 128	0 = Disable, 1 = Enable	Sets bluetooth visibility setting.	Disable: 0x02 0x57 0x98 0x00 0x10 0x03 Enable: 0x02 0x57 0x98 0x01 0x10 0x03
BT auto-connect	W	25	0 = Toggle	Toggles bluetooth auto-connect setting.	0x02 0x57 0x19 0x00 0x10 0x03
BT auto-connect	W	25 + 128	0 = Disable, 1 = Enable	Sets bluetooth auto-connect setting.	Disable: 0x02 0x57 0x99 0x00 0x10 0x03 Enable: 0x02 0x57 0x99 0x01 0x10 0x03
BT unpair	W	27	0 = Unpair	Makes the bluetooth device unpair and forget all previously connected devices.	0x02 0x57 0x1b 0x00 0x10 0x03
BT name	R	28	0	Reads current bluetooth name from device.	0x02 0x52 0x1c 0x00 0x10 0x03

## Replies received from device

Note that these replies are only sent if verbose is set on the device.

Function	Variable	Values	Description	Reply sequence
Operate/Standby	1	0 = Standby, 1 = Operate	Standby state of the device.	Standby: 0x02 0x01 0x00 0x10 0x03 Operate: 0x02 0x01 0x01 0x10 0x03
Main input	2	1 = IN1 2 = IN2 3 = IN3 4 = IN4 5 = IN5 6 = MEDIA 7 = DIG1 8 = DIG2 9 = DIG3 10 = DIG4 11 = PC 12 = BT	Active input.	0x02 0x02 0x0X 0x10 0x03 X = 1,2,3,4,5,6,7,8,9,a,b,c
Volume control	3	0 to 79	Active volume.	0x02 0x03 0xXX 0x10 0x03, XX = 00 to 4f
Balance	4	1 to 19	Current volume balance	0x02 0x04 0xXX 0x10 0x03, XX = 01 to 13
Mute control	9	0 = Disable, 1 = Enable	Mute state	Disable: 0x02 0x09 0x00 0x10 0x03 Enable: 0x02 0x09 0x01 0x10 0x03
Dim	10	0 = Off 1 = Low 2 = Mid 3 = High	Active dim mode.	0x02 0x0a 0x0X 0x10 0x03 X = 0,1,2,3
Verbose	13	0 = Disable, 1 = Enable	Verbose state. Note that if verbose is disabled no reply will be sent, even if verbose was just disabled by a command.	Disable: 0x02 0x0d 0x00 0x10 0x03 Enable: 0x02 0x0d 0x01 0x10 0x03
Menu	14	0 = Exit, 1 = Back, 2 = Enter	Describes change to menu status.	Exit: 0x02 0x0e 0x00 0x10 0x03 Back: 0x02 0x0e 0x01 0x10 0x03 Enter: 0x02 0x0e 0x02 0x10 0x03
Remote command	15	0	Generic response to actions from buttons or IR	0x02 0x0f 0x00 0x10 0x03

			commands that doesn't have specific RS232 reply.	
IR input	18	0 = Front, 1 = Back	Active IR input source.	Front: 0x02 0x12 0x00 0x10 0x03 Back: 0x02 0x12 0x01 0x10 0x03
Name of manufacturer	21	Name as string	Manufacturer name as response to read command.	0x02 0x15 [0xXX ... 0xXX] 0x10 0x03
Name of model	22	Name as string	Model name as response to read command.	0x02 0x16 [0xXX ... 0xXX] 0x10 0x03
Version	23	Version and date as strings	Software version and date as response to read command.	0x02 0x17 [0xXX ... 0xXX] 0x10 0x03
Input name	20	Name as string	Name of input requested in read command.	0x02 0x14 [0xXX ... 0xXX] 0x10 0x03
BT visible	24	0 = Disable, 1 = Enable	Active bluetooth visibility setting.	Disable: 0x02 0x18 0x00 0x10 0x03 Enable: 0x02 0x18 0x01 0x10 0x03
BT auto-connect	25	0 = Disable, 1 = Enable	Active bluetooth auto-connect setting.	Disable: 0x02 0x19 0x00 0x10 0x03 Enable: 0x02 0x19 0x01 0x10 0x03
BT unpair	27	0	Response to BT unpair command.	0x02 0x1b 0x00 0x10 0x03
BT name	28	Name as string	The name identifier for the bluetooth module as response to a read command.	0x02 0x1c [0xXX ... 0xXX] 0x10 0x03

## ***IR commands available for RS232***

<b>IR Function</b>	<b>Value (dec)</b>	<b>Value (hex)</b>	<b>Description</b>
Toggle standby	12		Toggles standby
Standby	1	01	Sets standby
Operate	2	02	Clears standby
Arrow up	30	1E	Next input
Arrow down	31	1F	Previous input
Arrow left	9	09	Volume down
Arrow right	8	08	Volume up
Mute	49	31	Toggle mute
Dim	10	0A	Cycle dim mode
Balance	26	1A	Enter balance mode
Menu	0	00	Toggle menu
Setup	7	07	Toggle menu
Select	43	2B	Selects item in menu
Return	48	30	Leaves currently active submenu in menu
Input 1	60	3C	Selects IN1
Input 2	61	3D	Selects IN2
Input 3	62	3E	Selects IN3
Input 4	63	3F	Selects IN4
Input 5	3	03	Selects IN5
Input +10, Input 0	47, 24	2F, 18	Selects MEDIA
Input +10, Input 1	47, 60	2F, 3C	Selects DIG1
Input +10, Input 2	47, 61	2F, 3D	Selects DIG2
Input +10, Input 3	47, 62	2F, 3E	Selects DIG3
Input +10, Input 4	47, 63	2F, 3F	Selects DIG4
Input +10, Input 5	47, 3	2F, 03	Selects PC
Input +10, Input 6	47, 4	2F, 04	Selects BT