

# LS28 RS232 Interface Commands

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The LS28 can be controlled via an RS232 interface. The connector is a female DB9 with Pin 2 TX out, Pin 3 RX in and Pin 5 ground. The serial settings are 9600 baud, 8 data bits, 1 stop bit, no parity and no handshaking.

All commands are shown in the table below. The unit echoes back all characters as they are received. A command line is terminated with a line feed (0x0A). Carriage returns may be present (0x0D) and are ignored. Commands that take numerical values as a parameter are shown as minimum and maximum values between parentheses, i.e. the volume level (0 to 103). Commands ending in a question mark are status inquiries; they will return the current value of the requested item.

If a command is accepted the response will be ACK --> along with either an echo of the request or the current value.

If a command is not accepted the response will be NACK-> along with an echo of the request.

All responses are terminated with carriage return and linefeed (0x0D 0x0A).

The response may be multiline for some status requests.

After the POWER ON command is issued the unit will be in warm up. During this time the unit will be muted. If a MUTE OFF command is received during this time the response will be ACK--> MUTE ON. The request to come out of mute is remembered and the unit will unmute when the warm up time is over.

When the unit is in the POWER OFF mode some commands will return NACK-> as they cannot be performed when the unit is off.

As the input buffer is small commands should only be sent one at a time.

Below is a table of all commands:

RS232 Command	Action
POWER ON	Turns on the unit
POWER OFF	Turns off the unit
POWER TOGGLE	Toggles the power state
MUTE ON	Turns on the mute
MUTE OFF	Turns off the mute
MUTE TOGGLE	Toggles the mute state
MONO ON	Turns on mono mode
MONO OFF	Turns off mono mode
MONO TOGGLE	Toggles mono mode
INVERT ON	Turns on invert mode

INVERT OFF	Turns off invert mode
INVERT TOGGLE	Toggles invert mode
VOLUME UP	Increases the volume level one step
VOLUME DOWN	Decreases the volume level one step
VOLUME SET (0 to 103)	Set the volume level to the specified number
BALANCE RIGHT	Moves the balance setting one step right
BALANCE LEFT	Moves the balance setting one step left
BALANCE SET (-22 to 22)	Set the balance setting, -22 full left, 0 center, 22 full right
DISPLAY UP	Moves the display setting one step forward in the display brightness loop
DISPLAY DOWN	Moves the display setting one step backward in the display brightness loop
DISPLAY SET (1 to 7)	Set the display to the specified value, 1 dimmest, 7 brightest
DISPLAY DIM	Sets the display to the dimmest level
DISPLAY NORMAL	Sets the display to normal level
INPUT UP	Moves one step forward through the input loop
INPUT DOWN	Moves one step backward through the input loop
INPUT SET BAL1	Directly selects the input specified
INPUT SET BAL2	Directly selects the input specified
INPUT SET BAL3	Directly selects the input specified
INPUT SET BAL4	Directly selects the input specified
INPUT SET SE1	Directly selects the input specified
INPUT SET SE2	Directly selects the input specified
INPUT SET SE3	Directly selects the input specified
INPUT SET SE4	Directly selects the input specified
PROCESSOR SET BAL1	Turns processor mode on and selects the input specified
PROCESSOR SET BAL2	Turns processor mode on and selects the input specified
PROCESSOR SET BAL3	Turns processor mode on and selects the input specified
PROCESSOR SET BAL4	Turns processor mode on and selects the input specified
PROCESSOR SET SE1	Turns processor mode on and selects the input specified
PROCESSOR SET SE2	Turns processor mode on and selects the input specified
PROCESSOR SET SE3	Turns processor mode on and selects the input specified
PROCESSOR SET SE4	Turns processor mode on and selects the input specified
PROCESSOR SET OFF	Turns processor mode off

INPUT NAME <i>ORIGINAL_NAME NEW_NAME</i>	Sets the displayed name for an input. Valid characters are A-Z, 0-9, -/ and space. Names can be up to 8 characters long. But as the font is variable pitch long names may be truncated on the display.
ENTER	Press the enter button
MENU	Press the menu button
SET FACTORY DEFAULTS	Restores the remembered settings to the factory default values
STATUS ALL ?	Returns the status of the all the settings except renamed inputs
POWER ?	Returns the power state
MUTE ?	Returns the mute state
INPUT ?	Return the original name of the current input selection
MONO ?	Returns the mono mode
INVERT ?	Returns the invert mode
BALANCE ?	Returns the balance setting
VOLUME ?	Returns the volume level
DISPLAY ?	Returns the display brightness setting
PROCESSOR ?	Returns the processor status
VERSION ?	Returns the firmware version

**Sent on initial AC power application to unit:**

```
LS28 Version 1.00
STATUS ALL
POWER OFF
INPUT BAL1
MUTE ON
VOLUME 0
BALANCE 0
MONO OFF
INVERT OFF
DISPLAY 4
```

**Example of some commands and responses:**

```
POWER ?
ACK--> POWER ON

INPUT ?
ACK--> INPUT BAL1

VOLUME SET 20
ACK--> VOLUME 20
```

**An Invalid request, no space between ALL and ?:**

STATUS ALL?  
NACK-> STATUS ALL?

**Multiline responses:**

STATUS ALL ?  
ACK--> STATUS ALL  
POWER ON  
INPUT BAL1  
MUTE ON  
VOLUME 0  
BALANCE 0  
MONO OFF  
INVERT OFF  
DISPLAY 4