RS232 SPECIFICATION

I3CONNECT CACTUS

Models: C1-65, C1-75 & C1-85

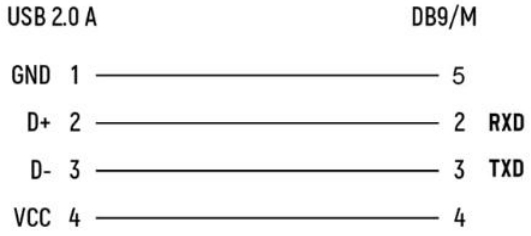
Version	Date	Changes		Author(s)
0.1	15-12-2025	Draft	P&D	Willem Jan van der Meer
0.2	30-12-2025	Command set updated and adapted to display platform	P&D	Willem Jan van der Meer
0.3	31-12-2025	Removed Screen On/Off command as it is being the same function as Backlight On/Off	P&D	Willem Jan van der Meer
0.4	14-01-2026	Picture Mode option customer renamed to Dynamic	P&D	Willem Jan van der Meer
1.0	27-01-2026	Added connection diagram USB-A – DB9M Cable	P&D	Willem Jan van der Meer

Introduction

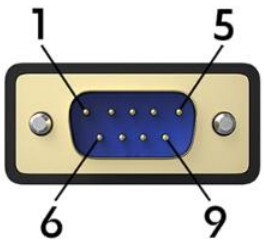
This document explains a RS232 protocol that can be used to control the i3CONNECT Cactus screen via an RS232 cable. It includes settings, the protocol format and specific commands supported and allowed values.

Protocol

USB 2.0 A (Male) - DB9 (Male) Pin Mapping



1	
2	RXD
3	TXD
4	
5	GND
6	
7	
8	
9	



Communication parameter

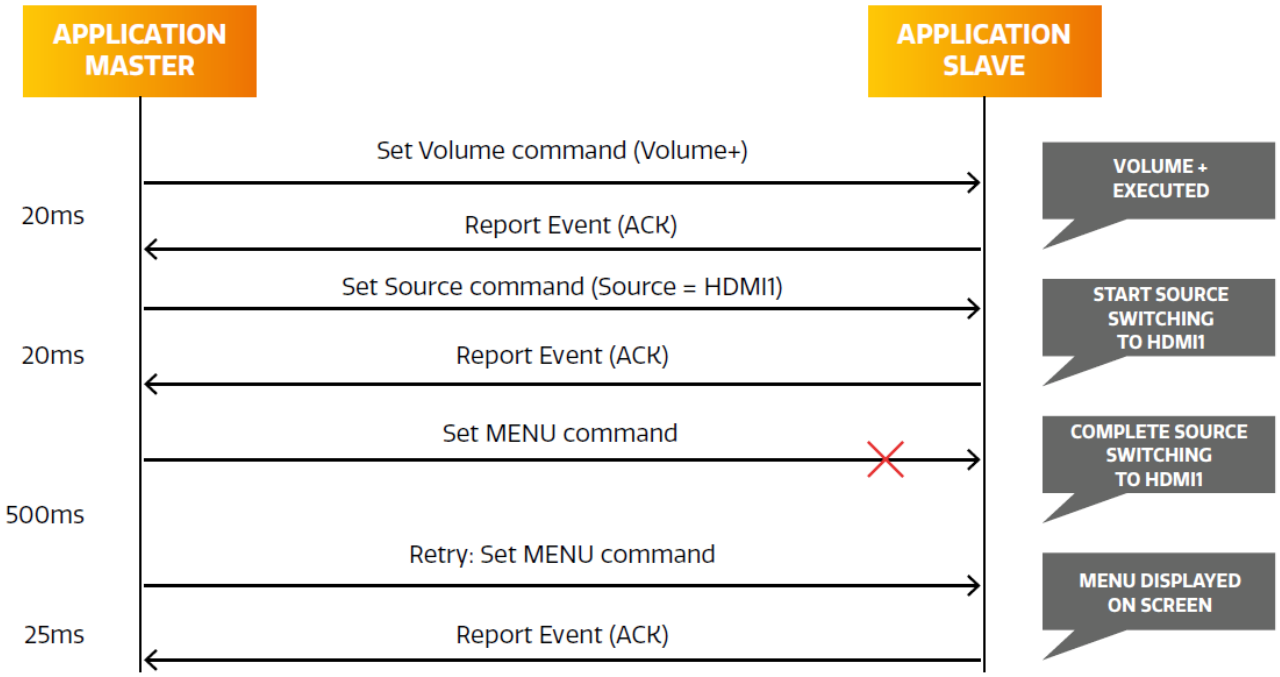
- Baud Rate: 9600bps
- Data bit: 8 bits
- Parity: None
- Stop bit: 1
- LAN: Local IP address + TCP Port 4664 (e.g. 192.168.1.2:4664)

Communication general spec

- ID should show hexadecimal value of assigned ID. This ID is set in the screen's settings menu.
- If you want to control every mechanism connected with Serial Cable regardless of its ID, set ID to « 0x00 0x00 » and send commands. Then each SET will follow commands, but it will not respond without ACK.

Communication Procedure

A new command should not be sent until the previous command is acknowledged. However, if a response is not received within 500 milliseconds, a retry may be triggered. This case is true if commands are sent during the screen busy state and the screen set decides that the processing of commands cannot be carried out. As a result, no acknowledgement will be sent. An example would be the application sends a set OSD command while the screen is still performing source switching. No fixed retry mechanism is mandated by RS232 Serial communication and it's up to the application to decide upon if a retry I needed for command integrity. Overall, no new command should be sent before receiving an acknowledgement on its previous command. If no acknowledgement is received, the application can only send the next command (or retry the failed command) after the 500ms timeout is over. The sequence diagram below illustrates the communication procedure.



Packet format specification

Basic packet format:

START	*ID*	*ID*	*SET/GET*	*COMMAND*	*DATA 1*	*DATA 2*	*DATA 3*	*END*
0x3A	0x3X	0x3X	0xXX	0xXX	0x3X	0x3X	0x3X	0x0D

- The ID digits are split and each digit is added as trailing value of the 2 bytes:

  Example ID***00***: 0x3**0** 0x3**0**, ID***49***: 0x3**4** 0x3**9**, ID***88***: 0x3**8** 0x3**8** etc

- The value digits are split and each digit is added as trailing value of the 3 bytes:

  Examples: Data value ***035***: 0x3**0** 0x3**3** 0x3**5**, Data value ***168***: 0x3**1** 0x3**6** 0x3**8**

Request and response format:

Get request:

START	*ID 1*	*ID 2*	*GET*	*COMMAND*	*DATA 1*	*DATA 2*	*DATA 3*	*END*
0x3A	0x3X	0x3X	**0x47**	0xXX	0x3X	0x3X	0x3X	0x0D

Set request:

START	*ID 1*	*ID 2*	*SET*	*COMMAND*	*DATA 1*	*DATA 2*	*DATA 3*	*END*
0x3A	0x3X	0x3X	**0x53**	0xXX	0x3X	0x3X	0x3X	0x0D

Acknowledge:

START	*ID 1*	*ID 2*	*DATA*	*END*
0x34	0x3X	0x3X	**0x2B**	0x0D

Negative acknowledge:

START	*ID 1*	*ID 2*	*DATA*	*END*
0x34	0x3X	0x3X	**0x2D**	0x0D

Note: Command and data values can be found in Command Overview chapter

Command overview (SET)

Parameter	CMD	Parameter Value	Example (ID set to 01)
Power	0x30	000: Backlight Off	3A 30 31 53 30 30 30 30 0D
		001: Backlight On	3A 30 31 53 30 30 30 31 0D
		002: Power Off	3A 30 31 53 30 30 30 32 0D
		003: Power On (only via RS232, not via LAN)	3A 30 31 53 30 30 30 33 0D
		004: Reboot	3A 30 31 53 30 30 30 34 0D
Treble	0x31	0x2D: -3~0	3A 30 31 53 31 2D 30 33 0D
		0x2B: 0~3	3A 30 31 53 31 2B 30 33 0D
Bass	0x32	0x2D: -3~0	3A 30 31 53 32 2D 30 35 0D
		0x2B: 0~3	3A 30 31 53 32 2B 30 35 0D
Balance	0x33	0x2D: -50~0	3A 30 31 53 33 2D 35 30 0D
		0x2B: 0~50	3A 30 31 53 33 2B 32 30 0D
Contrast	0x34	000 ~ 100	3A 30 31 53 34 30 35 30 0D
Brightness	0x35	000 ~ 100	3A 30 31 53 35 30 35 30 0D
Sharpness	0x36	000 ~ 100	3A 30 31 53 36 30 31 30 0D
Sound Mode	0x37	000: Movie	3A 30 31 53 37 30 30 30 0D
		001: Standard	3A 30 31 53 37 30 30 31 0D
		002: Custom	3A 30 31 53 37 30 30 32 0D
		003: Classroom	3A 30 31 53 37 30 30 33 0D
		004: Meeting	3A 30 31 53 37 30 30 34 0D
Volume	0x38	000 ~ 100	3A 30 31 53 38 30 35 30 0D
Mute	0x39	000: Off	3A 30 31 53 39 30 30 30 0D
		001: On	3A 30 31 53 39 30 30 31 0D
Video Source	0x3A	001: HDMI1	3A 30 31 53 3A 30 30 31 0D
		002: HDMI2	3A 30 31 53 3A 30 30 32 0D
		021: HDMI3	3A 30 31 53 3A 30 32 31 0D

		022: HDMI4	3A 30 31 53 3A 30 32 32 0D
		101: Android	3A 30 31 53 3A 31 30 31 0D
Aspect Ratio	0x3B	000: 16:9	3A 30 31 53 3B 30 30 30 0D
		001: 4:3	3A 30 31 53 3B 30 30 31 0D
		002: Pixel to Pixel	3A 30 31 53 3B 30 30 32 0D
Picture Mode	0x3D	000: Standard	3A 30 31 53 3D 30 30 30 0D
		001: Bright	3A 30 31 53 3D 30 30 31 0D
		002: Soft	3A 30 31 53 3D 30 30 32 0D
		003: Dynamic	3A 30 31 53 3D 30 30 33 0D
Backlight	0x3F	000 ~ 100	3A 30 31 53 3F 30 35 30 0D
Color Temp	0x40	000: Cool	3A 30 31 53 40 30 30 30 0D
		001: Standard	3A 30 31 53 40 30 30 31 0D
		002: Warm	3A 30 31 53 40 30 30 32 0D
Remote Control Command	0x41	000: Vol +	3A 30 31 53 41 30 30 30 0D
		001: Vol -	3A 30 31 53 41 30 30 31 0D
		010: Up	3A 30 31 53 41 30 31 30 0D
		011: Down	3A 30 31 53 41 30 31 31 0D
		012: Left	3A 30 31 53 41 30 31 32 0D
		013: Right	3A 30 31 53 41 30 31 33 0D
		014: Enter/OK	3A 30 31 53 41 30 31 34 0D
		020: Menu	3A 30 31 53 41 30 32 30 0D
		021: Input	3A 30 31 53 41 30 32 31 0D
		022: Back/Exit	3A 30 31 53 41 30 32 32 0D
		033: Mute	3A 30 31 53 41 30 33 33 0D
		034: Home	3A 30 31 53 41 30 33 34 0D
Remote Control	0x42	000: Enabled	3A 30 31 53 42 30 30 30 0D
		001: Disabled	3A 30 31 53 42 30 30 31 0D

Speakers	0x43	000: Disabled	3A 30 31 53 43 30 30 30 0D
		001: Enabled	3A 30 31 53 43 30 30 31 0D
No Signal Power off	0x46	000: Off	3A 30 31 53 46 30 30 30 0D
		001: 1 minute	3A 30 31 53 46 30 30 31 0D
		003: 3 minutes	3A 30 31 53 46 30 30 33 0D
		005: 5 minutes	3A 30 31 53 46 30 30 35 0D
		010: 10 minutes	3A 30 31 53 46 30 31 30 0D
		015: 15 minutes	3A 30 31 53 46 30 31 35 0D
		030: 30 minutes	3A 30 31 53 46 30 33 30 0D
		045: 45 minutes	3A 30 31 53 46 30 34 35 0D
		060: 60 minutes	3A 30 31 53 46 30 36 30 0D

Command overview (GET)

Parameter	CMD	Parameter Value	Example (ID set to 01)	Reply
Power	0x30	000: Backlight Off	3A 30 31 47 30 30 30 30 0D	3A 30 31 72 30 30 30 30 0D
		001: Backlight On		3A 30 31 72 30 30 30 31 0D
		002: Power Off		3A 30 31 72 30 30 30 32 0D
Treble	0x31	-03 ~ +03	3A 30 31 47 31 30 30 30 0D	3A 30 31 72 31 2B 30 33 0D
Bass	0x32	-03 ~ +03	3A 30 31 47 32 30 30 30 0D	3A 30 31 72 32 2D 30 33 0D
Balance	0x33	-50 ~ +50	3A 30 31 47 33 30 30 30 0D	3A 30 31 72 33 2B 35 30 0D
Contrast	0x34	000~100	3A 30 31 47 34 30 30 30 0D	3A 30 31 72 34 30 35 30 0D
Brightness	0x35	000~100	3A 30 31 47 35 30 30 30 0D	3A 30 31 72 35 30 35 30 0D
Sharpness	0x36	000~100	3A 30 31 47 36 30 30 30 0D	3A 30 31 72 36 30 31 30 0D
Sound Mode	0x37	000: Movie	3A 30 31 47 37 30 30 30 0D	3A 30 31 72 37 30 30 30 0D
		001: Standard		3A 30 31 72 37 30 30 31 0D
		002: Custom		3A 30 31 72 37 30 30 32 0D
		003: Classroom		3A 30 31 72 37 30 30 33 0D
		004: Meeting		3A 30 31 72 37 30 30 34 0D
Volume	0x38	000~100	3A 30 31 47 38 30 30 30 0D	3A 30 31 72 38 30 35 30 0D
Mute	0x39	000: Off	3A 30 31 47 39 30 30 30 0D	3A 30 31 72 39 30 30 30 0D
		001: On		3A 30 31 72 39 30 30 31 0D
Video Source	0x3A	001: HDMI1	3A 30 31 47 3A 30 30 30 0D	3A 30 31 72 3A 30 30 31 0D
		002: HDMI2		3A 30 31 72 3A 30 30 32 0D
		021: HDMI3		3A 30 31 72 3A 30 32 31 0D
		022: HDMI4		3A 30 31 72 3A 30 32 32 0D
		101: Android		3A 30 31 72 3A 31 30 31 0D
Aspect Ratio	0x3B	000: 16:9	3A 30 31 47 3B 30 30 30 0D	3A 30 31 72 3B 30 30 30 0D
		001: 4:3		3A 30 31 72 3B 30 30 31 0D
		002: PTP		3A 30 31 72 3B 30 30 32 0D

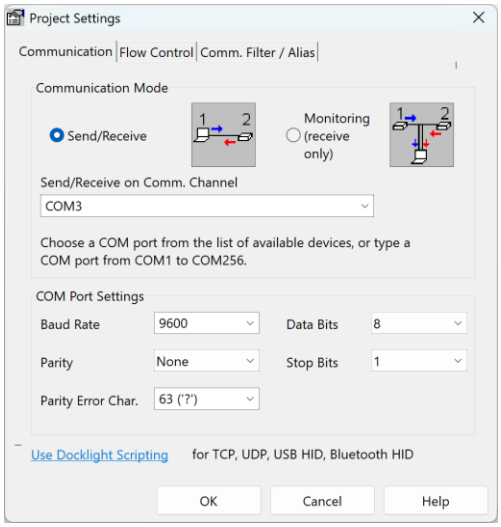
Picture Mode	0x3D	000: Standard	3A 30 31 47 3D 30 30 30 0D	3A 30 31 72 3D 30 30 30 0D
		001: Bright		3A 30 31 72 3D 30 30 31 0D
		002: Soft		3A 30 31 72 3D 30 30 32 0D
		003: Customer		3A 30 31 72 3D 30 30 33 0D
Backlight	0x3F	000~100	3A 30 31 47 3F 30 30 30 0D	3A 30 31 72 3F 30 35 30 0D
Color Temp	0x40	000: Cool	3A 30 31 47 40 30 30 30 0D	3A 30 31 72 40 30 30 30 0D
		001: Standard		3A 30 31 72 40 30 30 31 0D
		002: Warm		3A 30 31 72 40 30 30 32 0D
Remote Control	0x42	000: Enabled	3A 30 31 47 42 30 30 30 0D	3A 30 31 72 42 30 30 30 0D
		001: Disabled		3A 30 31 72 42 30 30 31 0D
Speakers	0x43	000: Disabled	3A 30 31 47 43 30 30 30 0D	3A 30 31 72 43 30 30 30 0D
		001: Enabled		3A 30 31 72 43 30 30 31 0D
No Signal Power Off	0x46	0~60	3A 30 31 47 46 30 30 30 0D	3A 30 31 72 46 30 3* 3* 0D

Appendix: Tools and testing

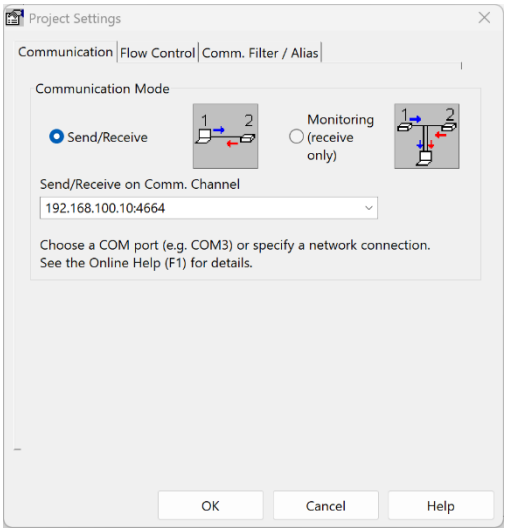
To be able to test your configuration, you can use all kind of tools. The one we recommend is Docklight (Scripting) since we made a pre-configured file that you can use with it.

Docklight can be downloaded via https://docklight.de/ and can be used without a license (free version). Only if you would like to edit and store configurations, you will need a full version. Our pre-configured files for RS232 is configured for COM3 and ID01.

Project Settings RS232:



Project Settings RS232 over IP (Docklight Scripting required):



Example screenshot with commands and communication/log window: