

Communication Protocol of Serial Port between B3VDU and B3VCU

Revision History

Name	Date	Reason For Changes	Version
Chen Yong	Feb 22, 2022	Initial draft	1.0.1
Chen Yong	Jul 14, 2022	NUC mode	1.0.2
Chen Yong	Aug 18, 2022	OSD Variant	1.0.3

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1 Scope

This document stipulates communication protocol of serial port in-Between B3VDU and B3VCU. This document will be used as a guideline to serial port communication of B3 VDU and B3VCU according to the technical specification requirement.

2 Hardware Specification

Physical link:TIA/EIA-422

baudrate:115200 bits/s

data bits:8 bits

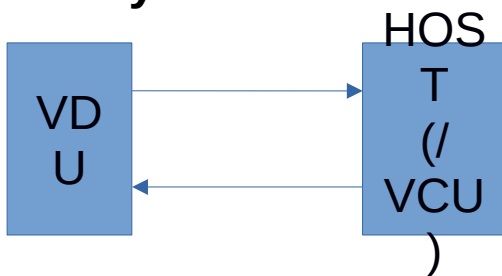
stop bits:1 bit

parity: no

flow control:no

mode: duplex

3 system architecture



3.1 Data package

header	Package ID	parameters	tail	Checksum	End symbol
\$	Ascii code	Ascii code. Insert ',' between parameters	*	2 HEX ascii	\r or \n or \0 or (any combination)

checksum: the two HEX character as the checksum of the package.(the sum of all chracters of package between '\$' and '*', exclude '\$' and '*'). It is not a neccessary item. It can be empty.

Example:

\$KEY,123,0A,01234567*10\0

\$KEY,123,0A,01234567*\r\n\0

3.2 Communicait mechanism

- VDU continue to send "Key package" per 100 ms.
- VDU will set the HOST error bit if it does not receive the response package of "Key package" within 100ms.
- VDU can recieve the "sysctl" command pacakge.

- VDU will start or stop sending “sysinfo pacakge” per 500ms based on the “sysctl” command.
- VDU can recieve the “dev” command package.
- VDU will send the device information back in the Response of “dev Package”.

4 Data Format

4.1 Key package(from VDU to HOST)

item	value	description
\$PKGID	\$KEY	
PAR1	Integer: 0 to 255	Package No
PAR2	Hex: 8bits bit0: front bit1: rear bit2: IR bit3: NUC bit7: NUC mode (note: front and rear cannot be 1 at the same time in the package.)	Key (bit0-bit3) 0=released 1=pressed NUC mode: 0=auto 1=development
PAR3	Hex: 32bits Bit0: memory bit1: logdata bit2: snsor bit3: current bit4: temperature bit5: pwm0 bit6: pwm1 bit7: keypad bit8: video out bit9: video in0 bit10: video in1 bit11: osd bit12: serial bit13: host	System error bits. 0: PASS 1: Fail
PAR4	Integer	System Power On timer(unit:s)
*CHK	checksum	

4.2 Response of “Key Pacakge”(From Host to VDU)

item	value	description
\$PKGID	\$KEYA	Acknowledge of package ‘KEY’

PAR1	Integer: 0 to 255	Equal to the PKGNO of the response package
PAR2	KEY Hex: 8bits bit0: front bit1: rear bit2: IR bit3: NUC bit7: IR Mode	Response to a (KEY) package front:1=VCU Get “front” Key rear:1=VCU get “rear” key IR:1=VCU get “IR” key NUC:1=VCU get “NUC” key IR Mode:1=IR ON 0=IR OFF
PAR3	String	Osd variant name
*CHK	checksum	

4.3 SYSCTL(from HOST to VDU)

item	value	description
\$PKGID	\$SYS	
PAR1	0:disable 1:enable	System information output enable
*CHK	checksum	

4.4 SYSINFO(from VDU to HOST)

item	value	description
\$PKGID	\$SYSA	
PAR1	float	Power current(unit: 0.001A)
PAR2	float	Cpu temperature (unit: 0.001C)
PAR3	Integer: 0 - 100	Cpu usage percentage(unit:%)
PAR4	Integer: 0 – 100	Mem usage percentage(unit:%)
*CHK	checksum	

This data package will be send per 500ms when HOST enable the information output in the SYSCTRL pacakge. It will continue to be send until the HOST diable it.

4.5 DEV Package

item	value	description
\$PKGID	\$DEV	
PAR1	Integer: 0 to 255	Package No
*CHK	checksum	

4.6 Response of “DEV Package”

item	value	description
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\$PKGID	\$DEVA	
PAR1	string	System Version
PAR2	string	Serial No
PAR3	string	Manufacturing date
*CHK	checksum	