**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 |

Table of Contents

[1 Scope 4](#__RefHeading___Toc728_1544117860)

[2 Hardware Specification 4](#__RefHeading___Toc388_589498302)

[3 system architecture 4](#__RefHeading___Toc453_589498302)

[3.1 Data package 4](#__RefHeading___Toc460_589498302)

[3.2 Communicaite mechanism 4](#__RefHeading___Toc462_589498302)

[4 Data Format 5](#__RefHeading___Toc390_589498302)

[4.1 Key package(from VDU to HOST) 5](#__RefHeading___Toc394_589498302)

[4.2 Response of “Key Pacakge”(From Host to VDU) 5](#__RefHeading___Toc396_589498302)

[4.3 SYSCTL(from HOST to VDU) 6](#__RefHeading___Toc398_589498302)

[4.4 SYSINFO(from VDU to HOST) 6](#__RefHeading___Toc400_589498302)

[4.5 DEV Package 6](#__RefHeading___Toc5027_1605989181)

[4.6 Response of “DEV Package” 7](#__RefHeading___Toc400_5894983021)

# 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.

# Hardware Specification

**Physical link:TIA/EIA-422**

**baudrate:115200 bits/s**

**data bits:8 bits**

**stop bits:1 bit**

**parity: no**

**flow contorl:no**

**mode: duplex**

# **system architecture**

VDU

HOST

(/VCU)

## **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 neccesary item. It can be empty.

Example:

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

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

## Communicaite mechanism

* VDU continuse 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”.

# **Data Format**

## Key package(from VDU to HOST)

|  |  |  |
| --- | --- | --- |
| **item** | **value** | **description** |
| $PKGID | $KEY |  |
| PAR1 | Integer: 0 to 255 | Package No |
| PAR2 | Hex: 8bitsbit0: frontbit1: rearbit2: IRbit3: NUCbit7: NUC mode(note: front and rear cannot be 1 at the same time in the package.) | Key (bit0-bit3)0=released1=pressedNUC mode:0=auto1=development |
| PAR3 | Hex: 32bitsBit0: memorybit1: logdatabit2: snsorbit3: currentbit4: temperaturebit5: pwm0bit6: pwm1bit7: keypadbit8: video outbit9: video in0bit10: video in1bit11: osdbit12: serialbit13: host | System error bits.0: PASS1: Fail |
| PAR4 | Integer | System Power On timer(unit:s) |
| \*CHK | checksum |  |

## 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 | KEYHex: 8bitsbit0: frontbit1: rearbit2: IRbit3: NUCbit7: IR Mode | Response to a (KEY) packagefront:1=VCU Get “front” Keyrear:1=VCU get “rear” keyIR:1=VCU get “IR” keyNUC:1=VCU get “NUC” keyIR Mode:1=IR ON 0=IR OFF |
| PAR3 | String | Osd variant name |
| \*CHK | checksum |  |
|  |  |  |

## **SYSCTL**(from **HOST** to **VDU**)

|  |  |  |
| --- | --- | --- |
| **item** | **value** | **description** |
| $PKGID | $SYS |  |
| PAR1 | 0:disable1:enable | System information output enable |
| \*CHK | checksum |  |

## **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.

## **DEV Package**

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

## Response of “**DEV** Package”

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