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| **Communication Protocol - Serial Port**  **In-between B3VDU and B3VCU** |

**Change Index.**

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| Index | Date | Amendment contents | Version | Person |
| 1 | 22 Feb 2022 | First Copy for release | 1.0.1 | Chen Yong |
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**Table of Contents**

[1 Scope 3](#_Toc109075026)

[2 Hardware Specification 3](#_Toc109075027)

[3 System Architecture 4](#_Toc109075028)

[3.1 Data package 4](#_Toc109075029)

[4 Data Format 4](#_Toc109075030)

[4.1 Key package (from VDU to HOST) 4](#_Toc109075031)

[4.2 Response of “Key Package” (From Host to VDU) 5](#_Toc109075032)

[4.3 SYSCTL (from HOST to VDU) 5](#_Toc109075033)

[4.4 SYSINFO (from VDU to HOST) 6](#_Toc109075034)

[4.5DEV Package 6](#_Toc109075035)

[4.6 Response of “DEV Package” 6](#_Toc109075036)

# 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**

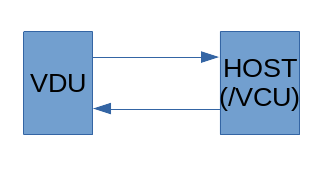
**stop bits:1 bit**

**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 characters of package between ‘$’ and ‘\*’, exclude ‘$’ and ‘\*’). It is not a necessary item. It can be empty.

Example:

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

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

# 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 |  |

This package will be send out per 100ms by the VDU. The VDU will set the “host” error bit if the response package is not received within 100ms.

## 4.2 Response of “Key Package” (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 | 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 |
| 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 package. It will continue to be send until the HOST disable it.

## 4.5 DEV Package(from HOST to VDU)

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

## 4.6 Response of “DEV Package”(from VDU to HOST)

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