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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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# 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: 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 |  |

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 | KEYHex: 8bitsbit0: frontbit1: rearbit2: IRbit3: NUC | Response to a (KEY) packagefront:1=VCU Get “front” Keyrear:1=VCU get “rear” keyIR:1=VCU get “IR” keyNUC: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:disable1: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 |  |