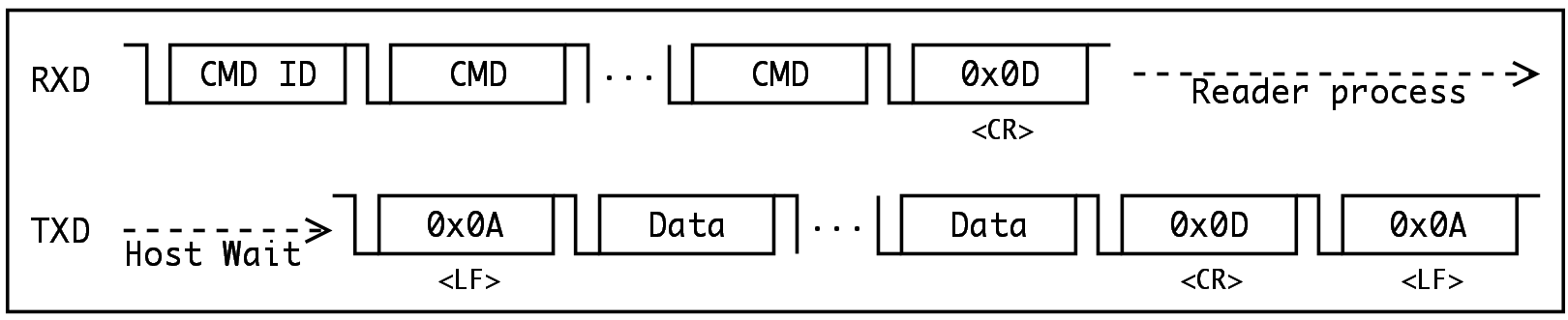
# INTERFACE CHARACTERISTICS

**🡺UART interface(USB TO UART)**

The Host send command and wait for reader return message, the UART parameter as follows:

* Baud Rate: 38400 (default)
* Data Bits: 8 bit
* Stop Bits: 1 bit
* Parity Bit: none

****

**Figure 1 UART Communication**

# ASCII PROTOCOL COMMANDS

Command and return message is transmitted as **ASCII** format. All command is start with a command character and arguments (if any, in **hexadecimal** units) and stop with a <CR>(0x0D hex), and return message is start with a <LF>(0x0A hex) , command first character and stop with a <CR><LF>.

If command is none match, return message will be <LF>X<CR><LF>.

Ex.

PC or Host: <LF>S<CR>

Reader return message: <LF>S01234567<CR><LF>

**🡺 RFID Command Overview**

|  |  |  |  |
| --- | --- | --- | --- |
| Command\* | Return Message\*\* | Description | |
| V | Vxxyy,<message>  xx: major version number  yy: minor version number  <message>: other info. | display reader firmware version | |
| S | S01234567  01234567 is reader ID | display reader ID | |
| Q | Q<none or EPC>  <none or EPC>  none: no tag in RF field  EPC: PC+EPC+CRC16 | | display tag EPC ID |
| R<bank>,<address>,<length>  <bank> memory bank  0: reserved  1: EPC  2: TID  3: USER  <address> start address  0 ~ 3FFF  <length> read word length  1 ~ 1E | R<none or read data> or <error code>  <none or read data>  none: no tag in RF field  <Error code>  0: other error  3: memory overrun  4: memory locked  B: Insufficient power  F: Non-specific error | | read tag memory data |
| W<bank>,<address>,  <length>,<data>  <bank> memory bank  0: reserved  1: EPC  2: TID  3: USER  <address> start address  0 ~ 3FFF  <length> write words length  1 ~ 1E | W<none or <OK>> or <error code>  <none or <OK>>  none: no tag in RF field  <OK>: written ok  <error code>  0: other error  3: memory overrun  4: memory locked  B: Insufficient power  F: Non-specific error  Z00~Z1F: words write  3Z00~3Z1F: error code and words write | | write data to tag memory |
| K<password>,<recom>  <password> kill password  00000000~FFFFFFFF  <recom> recommissioning  0~7 | K<none or <OK>> or  <error code>  <none or <OK>>  none: no tag in RF field  <OK>: kill ok  <error code>  0: other error  3: memory overrun  4: memory locked  B: Insufficient power  F: Non-specific error | | kill tag |
| L<mask>,<action>  <mask> lock mask  000~3FF  <action> lock action  000~3FF | L<none or <OK>> or  <error code>  <none or <OK>>  none: no tag in RF field  <OK>: lock ok  <error code>  0: other error  3: memory overrun  4: memory locked  B: Insufficient power  F: Non-specific error | | lock memory |
| P<password>  <password> access password  00000000~FFFFFFFF | P | | set access password for R W L command, one time use |
| U | U<none or EPC>  <none or EPC>  none: no tag in RF field  EPC: PC+EPC+CRC16 | | Multi-TAG read EPC |
| G1  G0  G2 | G1  G0  G2 | | Start command logging  End command logging  Run logging commands  For external TACT switch function |
| T<bank>,<bit address>,<bit length >,<bit data >  <bank> memory bank  0: reserved  1: EPC  2: TID  3: USER  <bit address> start bit address  0~3FFF  <bit length > select bit length  1~60  <bit data > select bit mask data | T | | Select matching tag |
| N0,00  read RFID Reader power  N1, <value>  set RFID Reader power (-2~25dBm)  <value> 00~1B | N<value>  <NULL> | | Read/Set RFID Reader power level |
| N4,00  read Regulation  N5, <value>  set Regulation  <value> 01~08  01: US 902~928  02: TW 922~928  03: CN 920~925  04: CN2 840~845  05: EU 865~868  06: JP 916~921  07: KR 917~921  08: VN 918~923 | N<value>  <value>  01: US 902~928  02: TW 922~928  03: CN 920~925  04: CN2 840~845  05: EU 865~868  06: JP 916~921  07: KR 917~921  08: VN 918~923 | | Read/Set Frequency Range |
| N6,00  get GPIO configuration  N7,<value>  set GPIO configuration  <value>mask and setting  mask: first digi 4+2+1  4: pin10  2: pin11  1: pin14  setting: second digi 4+2+1  4: pin10 out  2: pin11 out  1: pin14 out | N<value>  <value>  4+2+1  4: pin10 out  2: pin11 out  1: pin14 out | | get/set GPIO input/output configuration |
| N8,00  read GPIO pins  N9,<value>  write GPIO pins  <value>mask and setting  mask: first digi 4+2+1  4: pin10  2: pin11  1: pin14  setting: second digi 4+2+1  4: pin10 high  2: pin11 high  1: pin14 high | N<value>  <value>  4+2+1  4: pin10 high level  2: pin11 high level  1: pin14 high level | | read/write GPIO pins |
| UR:  U<slot Q>, R<band>,<address>, <length>  Slot Q: 0~10  <bank> memory bank  0: reserved  1: EPC  2: TID  3: USER  <address> start word address  0 ~ 3FFF  <length> read word length  1 ~ 1E | U<EPC>,R<DATA> or <error code>  EPC= PC+EPC+CRC16  DATA= read data  Error code:  0: other error  3: memory overrun  4: memory locked  B: Insufficient power  F: Non-specific error | | Multi-Band data read with EPC for multi-Tag read |
| QR:  Q , R<band>,<address>,<length>  <bank> memory bank  0: reserved  1: EPC  2: TID  3: USER  <address> start word address  0 ~ 3FFF  <length> read word length  1 ~ 1E | Q<EPC>,R<DATA> or <error code>  EPC= PC+EPC+CRC16  DATA= read data  Error code:  0: other error  3: memory overrun  4: memory locked  B: Insufficient power  F: Non-specific error | | Multi-Band data read with EPC for single-Tag read |
| NA,<value>  setting UART Baud Rate  <value>  0: 4800  1: 9600  2: 14400  3: 19200  4: 38400  5: 57600  6: 115200  7: 230400 | N<value>  <value>  0: 4800  1: 9600  2: 14400  3: 19200  4: 38400  5: 57600  6: 115200  7: 230400 | | Setting UART Baud Rate.  After getting the reply,Baud Rate will be changed |

\*command is start with <LF> stop with <CR>

\*Return Message is start with <LF> stop with <CR><LF>

**Example:**

1. Read TID memory bank, start address at 0, read 4 words length, TID data is 0x1234567890

**Host send: <LF>R2,0,4<CR>**

Hex format: 0A 52 32 2C 30 2C 34 0D

**Reader message: <LF>R123456789ABCDEF0<CR><LF>**

Hex format: 0A 52 31 32 33 34 35 36 37 38 39 41 42 43 44 45 46 30 0D 0A

1. Write USER memory bank, start address at 12, write 2 word length, write data is 0xAAAABBBB

**Host send: <LF>W3,C,2,AAAABBBB<CR>**

Hex format: 0A 57 33 2C 43 2C 32 2C 41 41 41 41 42 42 42 42 0D

**Reader message: <LF>W<OK><CR><LF>**

Hex format: 0A 57 3C 4F 4B 3E 0D 0A