

Equipment built-in function instruction

Version: V 1.0.12

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Definitions and Declarations

- A. The numbers in this paper are represented by hexadecimal except that they are represented by adding (DEC) after hexadecimal numbers
- B. An integer is represented by a high-order byte before the low-order byte
- C. None in the body of the following agreement means empty, and this field needs to be skipped
- D. XX in the following documents represents an unfixed dynamic value

Instruction description

CMD_HW_VER

Describe

Get device hardware version number

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: 00
DATA	none
CHK	XX

Data domain

Nothing

Response data domain

The data returned successfully are as follows:

Explain	Length (bytes)
Hardware version number	< 32(dec)

Example

→ AA BB 00 04 00 00 00 00 BF

← AA BB 00 15 00 00 00 00 00 54 36 2D 42 42 2D 30 30 2D 30 32 20 56 31 2E 30 BA

CMD_REBOOT

Describe

Device system restart

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: 01
DATA	none
CHK	XX

Data domain

Nothing

Response data domain

Nothing

Example

→ AA BB 00 04 00 00 00 01 BE

← AA BB 00 05 00 00 00 01 00 BF

CMD_GET_FLASH_SIZE

Describe

Gets the size of the device user memory (in bytes)

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: 02
DATA	none
CHK	XX

Data domain

Nothing

Response data domain

The data returned successfully are as follows:

Explain	Length (bytes)
Size in memory	2

Example

→ AA BB 00 04 00 00 00 02 BD

← AA BB 00 07 00 00 00 02 00 04 00 BA

CMD_READ_FLASH

Describe

Read out the memorized data from the internal memory of the device

Command message

Domain	Value	
STX	AA	
INX	XX	
LEN	LH: 00 LL: 06	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 03	
DATA	LEN	1byte
	ADR	1byte
CHK	XX	

Data domain

LEN: Length of memory to read

ADR: Starting address of memory to read

Response data domain

The data returned successfully are as follows:

Explain	Length (bytes)
In-memory data	LEN

Example

Read 4 bytes from address 6 in memory

→ AA BB 00 06 00 00 00 03 04 06 BC

← AA BB 00 07 00 00 00 03 00 B0 B1 BE

CMD_WRITE_FLASH

Describe

Write data to device memory for memory

Command message

Domain	Value
--------	-------

STX	AA	
INX	XX	
LEN	LH: 00 LL: XX	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 04	
DATA	LEN	1byte
	ADR	1byte
	RAM	XX
CHK	XX	

Data domain

- LEN: Length of write data (bytes)
- ADR: Write data, starting address in memory
- RAM: Data to be written

Response data domain

Nothing

Example

Write 4 bytes to address 6

→ AA BB 00 08 00 00 00 04 04 06 B0 B1 B4

← AA BB 00 05 00 00 00 04 00 BA

CMD_SET_DEVADDR

Describe

Set the unique address number of the device

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 08

DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 05	
DATA	ADR	4byte
CHK	XX	

Data domain

ADR: To set the address code of the device

Response data domain

Nothing

Example

Set the device address number to 51000

→ AA BB 00 08 00 00 00 05 00 00 C7 38 49

← AA BB 00 05 00 00 00 05 00 BB

CMD_GET_DEVADDR

Describe

Get the address number of the current device

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: 06
DATA	none
CHK	XX

Data domain

Nothing

Response data domain

ADR: 4 Byte Device Address Code

Example

→ AA BB 00 04 00 00 00 06 B9

← AA BB 00 09 00 00 00 04 00 00 00 C7 38 49

CMD_SET_BAUDRATE

Describe

Set or update the communication baud rate of the device (usually only for serial ports)

Serial port device default factory setting is 115200

Command message

Domain	Value	
STX	AA	
INX	XX	
LEN	LH: 00 LL: 08	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 07	
DATA	BaudRate	4byte
CHK	XX	

Data domain

BaudRate: To set the baud rate of the device

Response data domain

Nothing

Example

Set the device communication baud rate to 9600

→ AA BB 00 08 00 00 00 07 00 00 25 80 11

← AA BB 00 05 00 00 00 07 00 B9

CMD_SET_DEV_PWD

Describe

Set the password of the device, this function is suitable for some models, in order to meet the needs of internal encryption and decryption

Command message

Domain	Value	
STX	AA	
INX	XX	
LEN	LH: 00 LL: XX	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 08	
DATA	Password Address	1 Byte
	Password Length	1 Byte
	DevPwd	Xbyte
CHK	XX	

Data domain

Password Address: The address of the password locate, start from 0 to 31.

Password Length: The length of the password, from 1 to 32

DevPwd: Device password to be set, valid range of length is 1~32, usually multiple of 8

Response data domain

Nothing

Example

Set device password 16 bytes, 01~10

→ AA BB 00 16 00 00 00 08 00 10 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 A5

← AA BB 00 05 00 00 00 08 00 B6

CMD_CRYPT

Describe

Do a encrypt or decrypt with key get from device's password from 16 to 32 bytes.

[NOTE: This function only some of products support, details console to the manufacture please]

Command message

Domain	Value	
STX	AA	
INX	XX	
LEN	LH: 00 LL: XX	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 09	
DATA	fEn_De	1 Byte
	Algorithm	1 Byte
	Iv	8 Byte
	Source_Data	Xbyte
CHK	XX	

Data domain

fEn_De: The flag convey whether Encrypt or Decrypt, 0-Decrypt, 1-Encrypt

Algorithm: Which algorithm select, which means:

- 0 – DES ECB
- 1 – DES CBC
- 2 – 3DES ECB
- 3 – 3DS CBC
- 4 – AES ECB
- 5 – AES CBC

Iv: Initial Vector data.

Source Data: The data for encrypting or decrypting, data length should be multiple of 8

Response data domain

The data encrypted or decrypted.

Example

→ AA BB 00 1E 00 00 00 09 01 03 00 00 00 00 00 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F 10 B6

← AA BB 00 05 00 00 00 09 00 C0 C1 C2 C3 C4 C5 C6 C7 C8 C9 CA CB CC CD CE CF B7

CMD_REP_GET_UPDATA

Describe

The host linked to the device sends the instruction once after receiving the data automatically reported by the device. When the device receives the instruction, it does not reply.

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: F0
DATA	none
CHK	XX

Data domain

Nothing

Response data domain

Nothing

Example

→ AA BB 00 04 00 00 00 F0 4F

CMD_SET_ID_OBJ_RESP

Describe

Set the feedback action of the device after the target object is identified, and set some prompt behavior, such as beep, LED light indication, etc.

Command message

Domain	Value	
STX	AA	
INX	XX	
LEN	LH: 00 LL: 10	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: F1	
DATA	bWaitForHostResp	1byte
	fGreenLedPowerState_ObjCome	1byte
	iGreenLedFlashDelay_ObjCome	2byte
	iBeepDelay_ObjCome	2byte
	fGreenLedPowerState_ObjLeave	1byte
	iGreenLedFlashDelay_ObjLeave	2byte
	iBeepDelay_ObjLeave	2byte
	bReportData_ObjLeave	1byte
	fPollingMode	1byte
	iLoopPollingInterval	4byte
CHK	XX	

Data domain

BWaitForHostResp: 1 byte, wait for server response after data upload (receive response before executing other prompts)

bGreenLedPowerState_ObjCome: 1 byte, controls the green light status when the target is identified as entering

iGreenLedFlashDelay_ObjCome: 2 bytes, controls the duration of the green light flash when the target is recognized as entering (value 0 does not flash)

iBeepDelay_ObjCome: 2 bytes, control how long the beep lasts when the target is recognized as entering (value 0 is no sound)

iGreenLedPowerState_ObjLeave: 1 byte, control green light status when recognizing target leaving

iGreenLedFlashDelay_ObjLeave: 2 bytes, controls the duration of the green light flash when the target is identified as leaving (value 0 does not flash)

iBeepDelay_ObjLeave: 2 bytes, identifies how long the buzzer keeps ringing when the target leaves (value 0

is not ringing)

bReportData_ObjLeave: 1 byte, identifies whether to report data when the target leaves (identifying data is empty, additional data needs to be set)

fPollingMode: 1 byte, the mode of polling, one-shot when set to 0, and loop mode when set to 1

iLoopPollingInterval: 4 bytes, the interval time (as ms) when the polling mode set to loop mode.

Response data domain

Nothing

Example

There is no need to wait for the host to respond when reporting (00h)

Green light on when target enters (01h)

Green light does not flash when target enters (0000h)

Beep maintained at 100ms when target entered(0064h)

When the target leaves, the green light goes out (00h)

Green light does not flash when the target leaves (0000h)

Beep silently when the target leaves (0000h)

Do not report data when the target leaves (00h)

One-shot polling mode(00h)

Interval time when loop polling set to 5000ms (00001388h)

→ AA BB 00 15 00 00 00 F1 00 01 00 00 00 64 00 00 00 00 00 00 00 00 13 88 A1

← AA BB 00 05 00 00 00 F1 00 4F

CMD_GET_ID_OBJ_RESP

Describe

Gets the feedback action of the device, such as buzzing sound, LED light indication, etc., that has been set up to recognize the target object.

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: F2

DATA	none
CHK	XX

Data domain

Nothing

Response data domain

BWaitForHostResp: 1 byte, wait for server response after data upload (receive response before executing other prompts)

bGreenLedPowerState_ObjCome: 1 byte, controls the green light status when the target is identified as entering

iGreenLedFlashDelay_ObjCome: 2 bytes, controls the duration of the green light flash when the target is recognized as entering (value 0 does not flash)

iBeepDleay_ObjCome: 2 bytes, control how long the beep lasts when the target is recognized as entering (value 0 is no sound)

iGreenLedPowerState_ObjLeave: 1 byte, control green light status when recognizing target leaving

iGreenLedFlashDelay_ObjLeave: 2 bytes, controls the duration of the green light flash when the target is identified as leaving (value 0 does not flash)

iBeepDelay_ObjLeave: 2 bytes, identifies how long the buzzer keeps ringing when the target leaves (value 0 is not ringing)

bReportData_ObjLeave: 1 byte, identifies whether to report data when the target leaves (identifying data is empty, additional data needs to be set)

fPollingMode: 1 byte, the mode of polling, one-shot when value 0, and loop mode when value 1

iLoopPollingInterval: 4 bytes, the interval time (as ms) when loop polling mode.

Example

→ AA BB 00 04 00 00 00 F2 4D

← AA BB 00 16 00 00 00 F2 00 00 01 00 00 00 64 00 00 00 00 00 00 00 00 00 13 88 A1

CMD_SET_REP_RODATA_PAG

Describe

Set the form of the data package when Auto-reporting

Command message

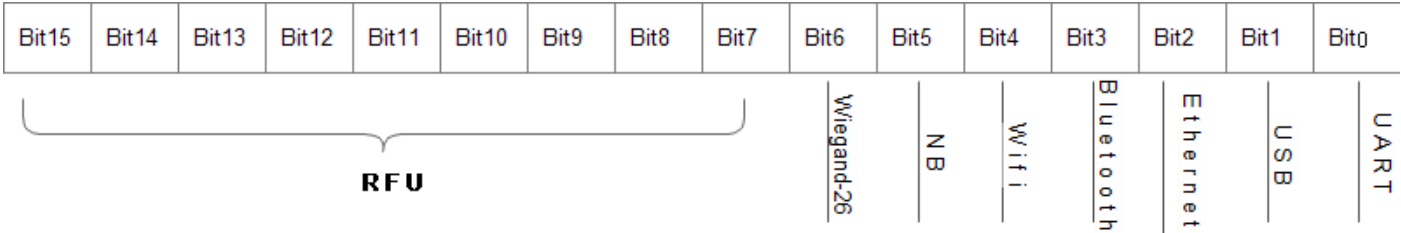
Domain	Value
--------	-------

STX	AA	
INX	XX	
LEN	LH: 00 LL: 07	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: F3	
DATA	TYPE	1byte
	PORT	2byte
CHK	XX	

Data domain

TYPE: 1 byte, in the form of a packet,
00->Raw Data type (RAW, default)
01->Http type
02->Emulated Keyboard type
03->MQTT type

PORT: 2 bytes, destination port for data package upload, 16 bits do not correspond to a specific port flag, flag 1 enabled port for purpose, flag value 0 ignored, port defined as follows:



For example, if both port USB and Bluetooth are enabled to be reported, set a value of 0x000A

Response data domain

Nothing

Example

→ AA BB 00 07 00 00 00 F3 02 00 02 F6
← AA BB 00 05 00 00 00 F3 00 F6

CMD_GET_REP_RODATA_PAG

Describe

Get the packet format when the packet is reported

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: F4
DATA	none
CHK	XX

Data domain

Nothing

Response data domain

TYPE: 1 byte, see CMD_SET_REP_RODATA_PAG

Example

→ AA BB 00 04 00 00 00 F4 F0

← AA BB 00 05 00 00 00 F4 00 F1

CMD_READ_FLASH_EX

Describe

Read out the memorized data from the internal memory of the device, this is a extend function, only part device support.

Command message

Domain	Value	
STX	AA	
INX	XX	
LEN	LH: 00 LL: 06	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 0A	
DATA	LEN	2byte
	ADR	2byte
CHK	XX	

Data domain

LEN: Length of memory to read

ADR: Starting address of memory to read

Response data domain

The data returned successfully are as follows:

Explain	Length (bytes)
In-memory data	LEN

Example

Read 4 bytes from address 4096 in memory

→ AA BB 00 08 00 00 00 0A 00 04 10 00 AD

← AA BB 00 09 00 00 00 0A 00 B0 B1 B2 B3 B8

CMD_WRITE_FLASH_EX

Describe

Write data to device memory for memory, this is a extend function, only part of device support.

Command message

Domain	Value
--------	-------

STX	AA	
INX	XX	
LEN	LH: 00 LL: XX	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 0B	
DATA	LEN	2byte
	ADR	2byte
	RAM	XX
CHK	XX	

Data domain

LEN: Length of write data (bytes)

ADR: Write data, starting address in memory

RAM: Data to be written

Response data domain

Nothing

Example

Write 4 bytes to address 4096

→ AA BB 00 0C 00 00 00 0B 00 04 10 00 B0 B1 B2 B3 A8

← AA BB 00 05 00 00 00 0B 00 B5

CMD_SET_LOCTIME

Describe

Set (Update) the time local running, only part of device support.

Command message

Domain	Value
STX	AA
INX	XX
LEN	LH: 00

	LL: XX	
DEVICE	DH:XX DL: XX	
CMD	CH: 00 CL: 0C	
DATA	TIME	7~8 Byte
CHK	XX	

Data domain

TIME: Time for setting, format as below:

{YH YL MM DD hh mm ss} or {YH YL MM DD hh mm ss tl}

which means:

YH: High Byte of Year

YL: Low Byte of Year

MM: Month

DD: Date

hh: Hour

mm: Minute

ss: Second

tl: Tenth of Second

Response data domain

Nothing

Example

Setting time as 2023/11/27 14:38:55

→ AA BB 00 0B 00 00 00 0C 07 E7 0B 1B 0E 26 37 53

← AA BB 00 05 00 00 00 0C 00 B2

CMD_GET_LOCTIME

Describe

Get the time local running, only part of device support.

Command message

Domain	Value
STX	AA

INX	XX
LEN	LH: 00 LL: 04
DEVICE	DH:XX DL: XX
CMD	CH: 00 CL: 0D
DATA	none
CHK	XX

Data domain

none

Response data domain

See TIME parameter in CMD_SET_LOCTIME

Example

→ AA BB 00 04 00 00 00 0D B2

← AA BB 00 0C 00 00 00 0D 00 07 E7 0B 1B 0E 26 37 55