

U2 ProS/Diesel /Smart/Pro NET Protocol

Version 1.7.3 Aug 2019

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Revision History

Version	Date	Author	Description
1.7.1	2018/12/05	Charles.Kuo	Add Get Ink Parameter command(87h)
1.7.2	2019/02/15	Charles.Kuo	Add FW upgrade feature(77h 、 78h 、 79h 、 7Ah 、 7Eh) 、 Get net protocol version(43h)
1.7.3	2019/8/19	Charles.Kuo	Modify the number of string table buffer from 16 to 250 Add File format of type 08h of cmd 77h Add example to cmd C9h Add cmd E2h Add cmd A7h Reserved cmd(BEh, BFh, 41h, 77h, 7Dh, C0h, C1h, 87h) Response sample of CFh

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01. Interface

-1.1- RS-485

Baud rate: 57600 BPS, start bit: 1, data bits: 8, stop bit: 1, no parity, no flow control

-1.2- Ethernet 、 WLAN 802.11

UDP communication protocol, port 8882.

UDP Header	UDP Datagram
	STX 、 LEN 、 ST# 、 CMD 、 DATA 、 CHKSUM 、 ETX

-1.3-. Protocol data format

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
0x02	####	##	##	...	##	0x03

	Identifier	Length (byte)	Description	Remark
1	STX	1	Start of text	0x02
2	LEN	2	Content length	Include: ST#, CMD, DATA
3	ST#	1	Host number	Host number in the RS485
4	CMD	1	Command code	Please refer to instruction sets
5	DATA	0...N	Data pack	
6	CHKSUM	1	Check code	Represents the last byte of the sum of LEN, ST#, CMD, and DATA by byte.
7	ETX	1	End of text	0x03

NOTE:

1. All numbers in content are 16 bits carry.
2. The " ## " in content means the number unknown or generated dynamically.
3. The "ST#" is special used for RS485, host only response to the command pack which ST# is same with itself.
4. If ST# is 0x00, all slave device will receive and process the command.

02. Communication framework

-2.1- UDP network scan

ADDR	0	1	...	42	43	44	45	46	47	...	200	201	202	203	204	205	206
HEX	CE										02	High byte	Low byte	00	CMD	CS	EXT
DEC	206			233	3	192	168	1	##		02			00	##	##	##

Confirmation mechanism which broadcast replied is: $233 + 3 * 256 = 1001$

03. PRINTER INFORMATION

-3.1- Successful return. (4Fh)

1. Function: Used to send command and return success.
2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	4F	##	03

-3.2- Error reporting. (31h)

1. Function: Printer return error reporting during communication.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	31	Error code [1]	##	03

3. Error code

Code	Description
01 h	Data pack start bit error
02 h	Unknown command
03 h	Checksum error
04 h	Data pack length error
05 h	Data pack structure error
06 h	Data pack no. error
07 h	Set U2 no. error
08 h	Data pack response time timeout
09 h	Data length beyond
10 h	Reserved
11 h	Fail to create the file
12 h	File property error
13 h	No file found
14 h	Reserved
15 h	Reserved
16 h	Cannot find the data content
17 h	Please check the printer whether supports Net Protocol

22 h	Fail to upgrade
23 h	System busy, please try later
24 h	Fail to download the string from stream
25 h	Fail to clear the buffer string
26 h	Cannot get buffer string status
27 h	Cannot get printed string no.
28 h	Parameters error
30 h	No cartridge.
40 h	Incorrect file name (model/version/too long)
41 h	Incorrect version(too old/not match)
42 h	(ANS) file is corrupted

-3.3- Get printer information. (42h)

1. Function: Get printer information.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	42	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 1E	##	42	Information [0x1C]	##	03

Information content:

Offset	Length (byte)	Description	Note
+0	4	Printer type	Printer unlock code is 65536
+4	4	Hardware version	
+8	4	Software version	
+12	4	SN	
+16	4	Area code	
+20	4	Sales code	
+24	4	Device no.	

-3.4- Get message no. (32h)

1. Function: Get current printing or just printed message number.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	32	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	32	Message no. [4]	##	03

-3.5- Get printer alarm status. (7Fh)

1. Function: Get printer alarm status.
2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	7F	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	7F	Content [2*N]	##	03

Data content:

Offset	Length (byte)	Description	Note
+0	2	Alarm 1	Normal no data, Or return alarm data.
+2	2	Alarm 2	
...	...	Alarm N	

Alarm format:

Type	Byte [0]	Byte [1] (specific details)
Printer	0x01	Reserved
Ink cartridge	0x02	Bit1: 1 Ink empty Bit2: 1 Ink low Bit3: 1 Cannot print Bit4: 1 No cartridge Bit5: Reserved Bit6: 1 Sales code error Bit7: 1 Area code error Bit8: 1 DISC error

-3.6- Print Completed Report (30h)

1. Function: After one print is completed, the printer returns a report containing the production counter.
- Note:** In order to use this function, while you are in UI's main view input 180341 with remote control to enable it and 180340 to disable it.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	30	Production counter [4]	##	03

Description:

Offset	Length(byte)	Description	Note
+0	4	Production Counter	Example: 3006

Sample: 02 00 06 00 30 46 00 00 00 7C 03 → 0x00000046 = 70 decimal

-3.7- Get net protocol version (43h)

1. Function: Get net protocol version of printer
2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	43	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	Data Pack.	CHKSUM	ETX
02	00 05	##	43	Version[3]	##	03

Version sample:

Net Protocol 1.7.2 => 02 00 05 01 43 01 07 02 53 03

-3.8- Get Printer Status (A7h) (Reserved)

1. Function: Get printer status.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	A7	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 52	##	A7	Ink Information[0x50]	##	03

Description:

Offset	Length (byte)	Description	Note(LSB ~ MSB)
+0	4	model no	LSB ~ MSB
+4	4	hw ver	
+8	4	app ver	
+12	4	Serial Number	
+16	4	Area Code	
+20	4	Sales Code	
+24	4	Device ID	
+28	2	Polling Status	Refer to cmd 7Fh
+30	8	InkParameters	
+38	34	ISD Information	Refer to cmd 86h
+72	8	Print_Status	

4. Example:

3. ECHO:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-4.3- Get printer name (D3h)

1. Function: Get printer name.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	D3	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	D3	Printer name[N]	##	03

Content:

Offset	Length (byte)	Description	Note
+0	1	Printer name's length	N
+1	N	Printer name content	Maximum 20 characters

-4.4- Get printer password status (D4h)

1. Function: Get printer password status.
2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	D4	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	D4	Password-switch [1]	##	03

NOTE: 0: disable 1: enable.

-4.5- Set printer password status (D5h)

1. Function: Enable or disable the password function.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	D5	Password-switch [1]	##	03

3. ECHO:

System will return with OK command (0x4F) if it is successful,
 System will return with ERROR command (0x31) if it is failed.

-4.6- Get password set (D6h)

1. Function: Get the set content of one of the five accounts from printer’s password setup.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	D6	Password set no. [1]	##	03

e.g. No. 3: the third group.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	D6	Password set content [2+N+M]	##	03

Content:

Offset	Length (byte)	Description	Note
+0	1	User account’s length	N
+1	N	User account’s content	Maximum 20 characters
+N+1	1	Password length	M
+N+2	M	Password content	Maximum 20 characters

e.g.: The first set account: Allen

Password: 1234

N=5 (Allen), M=4 (1234). Content will be Allen1234

-4.7- Set password set (D7h)

1. Function: Setup one user account.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	D7	Set No [1] + Password set content [2+N+M]	##	03

3. Sample:

Send: 02 00 0E 00 D7 02 05 41 6C 65 6E 04 31 32 33 34 A6 03

Set an account for **second** user, N: 05, username: **Allen**, M:04, password: **1234**

4. ECHO:

Printer will echo back the same data package when account has been set successfully.
System will return with ERROR command (0x31) if it is failed.

-4.8- Check password set (DAh)

1. Function: Check whether the input password exist and correct.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	DA	Password set content [2+N+M]	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	Data Package	CHKSUM	ETX
02	00 03	##	DA	Data package [1]	##	03

Data package content:

Offset	Length (byte)	Description	Note
+0	1	Password confirmation code	0: error user name 1: wrong password 2: correct

-4.9- Delete password set (DBh)

1. Function: Delete one user account.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	DB	Data package [1]	##	03

Data content:

Offset	Length (byte)	Description	Note
+0	1	Password no.	

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.

-4.10- Get font type (DCh)

1. Function: Get the current font type.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	DC	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	Data Package	CHKSUM	ETX
02	00 03	##	DC	Font type [1]	##	03

Description:

Offset	Length (byte)	Description	Note
+0	1	Font type	0: Arial, 1: Gothic

-4.11- Set font type (DDh)

1. Function: Set printer font type.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	DD	Font type [1]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-4.12- Get global delay (DEh)

1. Function: Get global delay value from printer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	DE	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	DE	Global delay value [2]	##	03

content:

Offset	Length (byte)	Description	Note
+0	2	Global delay value is positive integer	unit: mm

-4.13- Set global delay (DFh)

1. Function: Set the global delay value for the printer.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	DF	Global delay value [2]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-4.14- Reset system (C4h)

1. Function: Reset printer system to default.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	C4	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

05. EDITOR SETTINGS

-5.1- Get customer year (40h)

1. Function: Get custom year from printer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	40	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 05	##	40	## ## ##	##	03

Offset	Length (byte)	Description	Note
+0	1	Whether enable or not	0: disable, 1: enable
+1	2	Customer year	0~9999

-5.2- Set customer year (41h) (Reserved)

1. Function: Set custom year.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	41	Customer year information [2]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

4. Sample:

Send: 02 00 04 30 41 **CF 07** 4B 03

1999

Receive: 02 00 02 30 4F 81 03

NOTE: In printer's internal setting, custom year will be display as current year – custom year. Ex. 2018 – 1999 = 19

-5.5- Get string table (3Ch)

1. Function: Get one single string from printer string table.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	3C	String no. [1]	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	3C	String package [2+N]	##	03

String:

Offset	Length (byte)	Description	Note
+0	1	String no.	1~5
+1	1	String content length	N
+2	N	String content (maximum 100 characters)	e.g.: STRING4

-5.6- Set string table (3Dh)

1. Function: Set a single string to printer's string table.

NOTE: If you wish to change a string while it is on printing mode, please use the CAh command instead. The 3Dh command can set a string only while the string is not being printed.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	3D	String package	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

4. Sample

Send: 02 00 09 30 3D 01 05 41 41 41 41 41 C1 03

No. Length five A

Receive: 02 00 02 30 4F 81 03

-5.7- Get rollover hour (3Eh)

1. Function: Get rollover hour from printer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	3E	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	3E	Rollover hour package [2]	##	03

NOTE: Rollover hour is total 2 characters, the first is hour, the second is minute (00:00).

-5.8- Set rollover hour (3Fh)

1. Function: Set printer rollover hour.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	3F	Rollover hour package [2]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

4. Sample

Send 00 04 30 3F 00 00 73 03

Set as 00:00

Receive: 02 00 02 30 4F 81 03

-5.9- Get counter reset status (BAh)

1. Function: Get counter reset status from printer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	BA	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	BA	Status package [1]	##	03

Status package:

Offset	Length (byte)	Description	Note
+0	1	Counter reset status	0: disable, 1: enable

-5.10- Set counter reset status (BBh)

1. Function: Enable or disable counter reset.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	BB	Status [1]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-5.11- Get production counter (D2h)

1. Function: Get production counter value from printer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	D2	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	D2	Production counter [4]	##	03

Description:

Offset	Length (byte)	Description	Note
+0	4	Production counter value	e.g.: 3006

-5.12- Set production counter (E5h)

1. Function: Set production counter.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	E5	Production counter [4]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-5.13- Get counter (3Ah)

1. Function: Get the accumulative value of every kind of counter, in total 4 kinds.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	3A	Specify the counter [2]	##	03

Counter format:

Offset	Length (byte)	Description	Note
+0	1	Message no.	0: current message
+1	1	The counter type	0: production, 1: common 2: box, 3: lot

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 16	##	3A	Counter package[0x14]	##	03

Counter package format:

Offset	Length (byte)	Description	Note
+0	1	Message no.	
+1	1	Counter type	If value is 0, nothing to do with message
+2	4	Current value	
+6	4	Maximum value	e.g.: 9999999
+10	4	Minimum value	Maximum is 0
+14	1	Mode	1: number, 2: letter
+15	1	Counter digit	1~8
+16	2	Step	
+18	2	Increment value (Integer)	The value every time increment.

-5.14- Set counter (3Bh)

1. Function: Set current counter value.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 12	##	3B	Counter Package Format	##	03

NOTE: Refer to counter package format table 5.13, the 4 bytes of *current value* are not included when setting counter with 3Bh command so counter package is 16 bytes.

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.

-5.15- Get pre-zero (BCh)

1. Function: Get the pre-zero status from printer, includes counter, date, time.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	BC	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 05	##	BC	Status [3]	##	03

Status:

Offset	Length (byte)	Description	Note
+0	1	Set counter pre-zero	Total 4 types for the pre-zero format, 0: zero fill, 1: keep left, 2: keep right, 3: no zero.
+1	1	Set date pre-zero	
+2	1	Set time pre-zero	

-5.16- Set pre-zero (BDh)

1. Function: Set printer pre-zero format.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 05	##	BD	Status [3]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-5.17- Get date/time format (36h)

1. Function: Get date/time format from printer.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	36	No. [1]	##	03

NOTE: The number of the setting and read date formats starts from 1.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	36	Date/time format	##	03

Date/time format:

Offset	Length (byte)	Description	Note
+0	1	No.	The first date format number is 0
+1	1	Format length	Length is 1 byte
+2	N	Format content index	

4. Sample

Send: 02 00 03 30 36 01 6A 03 Get second date format's serial no.

Receive: 02 00 0F 30 36 01 0B 01 02 03 04 2F 15 16 17 2F 07 08 3A 03
 No. length format content

Date/time index code:

	Year				Month		Day		Hour		Minute		Second		Jewish			Weeks		Week	Month			Timing	
Icon	Y	Y	Y	Y	M	M	D	D	h	h	m	m	s	s	J	U	L	W	W	w	A	A	A	T	T
Value	1	9	9	8	1	1	2	5	1	0	4	0	0	0	3	1	5	4	6	2	D	E	C	A	M
Code	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

NOTE: Time's content can be AM or PM, changing according the real time.

-5.18- Set date/time format (37h)

1. Function: Set printer date/time format.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 ##	##	37	Date Format	##	03

NOTE: Get or set the format's no. is from 1, the first format's no. is 1.

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

06. MESSAGE AND PRINTING MANIPULATION

-6.1- Get printing status (45h)

1. Function: Get whether the printer is on printing mode or not. If yes, it will return the number of the message.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	45	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0A	##	45	Status [8]	##	03

Status:

Offset	Length (byte)	Description	Note
+0	4	The current printing message no.	If no printing, return 0.
+4	4	Reserved	

-6.2- Set printing status (46h)

1. Function: Set a specific message for printing.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	46	Message No. [4]	##	03

NOTE: If you want to stop printing, the message no. is 0.

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-6.3- Get message delay (64h)

1. Function: Get the delay value of the current message.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	64	Message No. [2]	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	64	Delay value [4]	##	03

-6.4- Set message delay (65h)

1. Function: Set the delay value of a message.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 08	##	65	Message no. and delay value [6]	##	03

Data:

Offset	Length (byte)	Description	Note
+0	2	Message No.	
+2	4	Delay value	Delay unit: 0.1 mm

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.

-6.5- Set dynamic string table (CAh)

1. Function: Send 5 strings to printer during printing or stop printing, save them in printer buffer.

NOTE: Please set "string source" option in printer's UI global string table as "default".

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	9+N	##	CA	String data [7+N]	##	03

String data:

Offset	Length (byte)	Description	Note
+0	2	Reserved	
+2	5	String 1,2,3,4,5 length, no data is 0	N = N1+N2+N3+N4+N5
+7	N	String 1~5 content	N is string 1~5 total length

3. Sample:

- Send: 02 00 0F 00 CA 00 00 03 03 00 00 00 41 41 41 41 41 41 65 03
Set string 1 and 2 each with a string of 3 characters AAA
Receive: 02 00 02 01 4F 52 03
- Send: 02 00 0C 00 CA 00 00 03 00 00 00 00 44 44 44 A5 03
Set one single string → string 1 with a string of 3 characters DDD

4. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.
Exclusive error command (0x24).

-6.6- Turn on Trigger Mode (4Ah)

1. Function: After trigger, photocell and repeat printing will have no effect. It is until the trigger printing command (4Bh) is sent out that the printer will print one sample.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	4A	Message Number [4]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-6.7- Send Trigger Printing Signal (4Bh)

1. Function: While the printer is in Trigger Mode, it will print one sample only when it received this command.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	4B	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-6.8- Upload Dynamic String Table (CFh)

1. Function: While the printer is in printing or stop state, import one set of string table, and save in printer buffer waiting for printing. The entries already printed from the dynamic string table will be removed.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	9+N	##	CF	String table info[7+N]	##	03

NOTE: In printer global string table setting, string source must be set as “external” in order to use this function.

Stream Data:

Offset	Length(byte)	Description	Note
+0	2	Reserved	
+2	5	String 1,2,3,4,5 length, no data is 0	N = N1+N2+N3+N4+N5
+7	N	String 1~5 content	N is string 1~5 total length

3. Sample

Send: 02 00 18 00 CF 00 00 0F 00 00 00 00 41 41 41 42 42 42 43 43 43 44 44 44 45 45 45 E3 03

String one as AAABBBCCDDDEEE

Response: 02 00 03 01 CF 05 D8 03

4. ECHO Format

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	00	CF	Number [1]	##	03

Parameter Description:

Offset	Length (byte)	Description	Note
+0	1	Number	The remaining number of string table buffer

In old firmware version system will return with OK command (0x4F) if it is successful. In new versions, it will follow the format described in the ECHO format table.

System will return with ERROR command (0x31) if it is failed.

Exclusive error command (0x24).

-6.9- Read String Buffer State (CCh)

1. Function: Read the remaining string table buffer space.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	CC	Parameter [1]	##	03

Parameter Description:

Offset	Length(byte)	Description
+0	1	When value=0, query the remaining number of the string table buffer When value=1, Reserved

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	00	CC	Number [1]	##	03

Description:

Offset length byte description

Note+01 the number of remaining string table buffer (0~250), 0 means no buffer space, needs to wait for printing to be completed to have space. Receiving a new dynamic string table (CFh) if it fails, then return Error command (0x31), exclusive error code (0x27).

-6.10- Clear Dynamic String Table (CBh)

1. Function: Clear all the strings from printer dynamic string buffer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	CB	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

Exclusive error code (0x25)

07. FILE MANIPULATION

-7.1- Receive document (77h) (Reserved)

1. Function: Send file to PC software.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 05	##	77	File pack [0x03]	##	03

File pack 1:

Offset	Length (byte)	Description	Note
+0	1	Type	01h: Message (*.bms) 02h: Message (*.jms) 03h: Logo (*.alg) 04h: Font (*.tpf) 05h: Setting(config.ini) 06h: Internal (internal.ini) 07h: Parameter (ink.ini) 08h: Excel (xxxx.ini)
+1	2	File no.	01 00 13: Send MSG00019.bms to PC 03 00 86: Send LOGO0134.alg to PC 04 00 01: Send the first TPF file to PC

File pack 2:

Offset	Length (byte)	Description	Note
+0	1	Type	09h: ANS file(*.ans)
+1	40(max)	File name.	u2pros01-00.01.016.0006-all.ans => 75 32 70 72 6f 73 30 31 2d 30 30 2e 30 31 2e 30 31 36 2e 30 30 30 36 2d 61 6c 6c 2e 61 6e 73

File description of type 08h:

File name must be 0001.ini ~ 9999.ini in continue sequence.

Each STRING of an INI file can has 1000 entries at most.

File format: "0001.ini" 、"0002.ini" 、"0003.ini"

STRING1 to STRING5 are mapping to section [1] to [5] respectively.

Entry 1 to entry 1000 of a STRING are mapping to 1="Your String Data" to 1000="Your String Data" respectively.

If a STRING is not used, the entry number of the STRING must be kept and the string data set as empty.
(ex:STRING3 ~ 5 in 0002.ini)

<<0001.ini>>

```
[1]
1=String1-1
2=String1-2
3=String1-3
. . .
1000=String1-1000
[2]
1=String2-1
2=String2-2
3=String2-3
. . .
1000=String2-1000
[3]
1=String3-1
2=String3-2
3=String3-3
. . .
1000=String3-1000
[4]
1=String4-1
2=String4-2
3=String4-3
. . .
1000=String4-1000
[5]
1=String5-1
2=String5-2
3=String5-3
. . .
1000=String5-1000
```

<<0002.ini>>

```
[1]
1001=String1-1001
1002=String1-1002
1003=String1-1003
. . .
1010=String1-1010
[2]
1001=String2-1001
1002=String2-1002
1003=String2-1003
. . .
1010=String2-1010
[3]
1001=
1002=
1003=
. . .
1010=
[4]
1001=
1002=
1003=
. . .
1010=
[5]
1001=
1002=
1003=
. . .
1010=
```

<<0003.ini>>

```
[1]
2001=String1-2001
2002=String1-2002
2003=String1-2003
. . .
2010=String1-2010
[2]
2001=String2-2001
2002=String2-2002
2003=String2-2003
. . .
2010=String2-2010
[3]
2001=String3-2001
2002=String3-2002
2003=String3-2003
. . .
2010=String3-2010
[4]
2001=String4-2001
2002=String4-2002
2003=String4-2003
. . .
2010=String4-2010
[5]
2001=String5-2001
2002=String5-2002
2003=String5-2003
. . .
2010=String5-2010
```

3. ECHO Format:

STX	LEN	ST#	CMD	Data Pack.	CHKSUM	ETX
02	00 06	##	77	File length [4]	##	03

System will return with ERROR command (0x31) if it is failed.

-7.2- Receive message data pack (7Dh) (Reserved)

1. Function: Send the message data pack to PC.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	02 04	##	7D	Message data package	##	03

Message data package:

Offset	Length (byte)	Description	Note
+0	2	Data pack no.	
+2	512	content	

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-7.3- Send document (78h)

1. Function: Send document from PC to printer.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 09	##	78	Document [7]	##	03

Document:

Offset	Length (byte)	Description	Note
+0	4	Length	The file's length
+4	1	type	Refer to 7.1.
+5	2	File no./File Name	

NOTE: The file type should be 0x01~0x09.

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.(error code: 0x40)

-7.4- Send message data pack (7Eh)

1. Function: Send message data pack from PC to printer.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	10 04	##	7E	Message data package Firmware data package	##	03

Message data package:

Offset	Length (byte)	Description	Note
+0	2	Data pack no.	
+2	4096	Content	

NOTE: The data package is fixed at 4096 bytes. When the actual message is less than 4096, please fill zero in the remaining data. Example: If the message file #2 size is 668 bytes, 669~4096 fill with zero

3. Example:

PC Send 0x7E command: 02 10 04 01 7E 01 00 42 4D 53 02 00 01 00 28 01
 00 00 02 01 00 00 00 C7 3E 61 02 00 00 00 00 00
 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
 00 00 00 00 00 00 0...

U2S SN 1234642 -> PC: 02 00 02 01 4F 52 03

Firmware data package:

Offset	Length (byte)	Description	Note
+0	2	Data pack no.	
+2	4096	Content + MD5 + (padding)	Padding is optional as describe previously

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
 System will return with ERROR command (0x31) if it is failed.

-7.5- Delete message (D1h)

1. Function: Delete a message from printer. Specify the message number that you wish to delete.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	D1	Message no. [2]	##	03

Message no.:

Offset	Length (byte)	Description	Note
+0	2	Message NO.	e.g.: 13 means MSG00013.bms

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
 System will return with ERROR command (0x31) if it is failed.

-7.6- Get message list (C9h)

1. Function: Check if there are 10 existing consecutive messages starting from the specified message number.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	C9	Message no. [2]	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	00	C9	Message STATUS [2] exist or not	##	03

Description:

Offset	Length (byte)	Description	Note
+0	2	Bit0 to bit9 stands for 10 messages with binary data.	e.g.: 13 said the message started, the message 13 to 22 whether exist or not.

4. Example

If the printer has msg1~7, msg9~12, but no msg8.

PC to Printer: 02 00 04 01 C9 01 00 CF 03

Printer to PC: 02 00 04 01 C9 7F 03 50 03

01 00 => 0x0001 = 1 (decimal) means first message

7F 03 => 0x037F => 0000_0011_0111_1111 (binary)

-7.7- Get FW data pack status(79h)

1. Function: Check if there is any lost firmware data package.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
-----	-----	-----	-----	--------	-----

02	00 02	##	79	##	03
----	-------	----	----	----	----

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	## ##	##	79	Lost data pack no. list [2]*N	##	03

Example: 02 00 02 01 79 7C 03 => no lost pack.

02 00 04 08 79 03 00 88 03 => lost pack. 3(0x0003)

02 00 08 05 79 0A 00 22 30 CD AB 5A 06 => lost pack. 10 \ 12322(0x3022) and 43981(0xABCD)

-7.8- Start FW upgrade(7Ah)

1. Function: Inform printer to start firmware upgrade.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	7A	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed. (error code: 0x41 \ 0x42)

08. PRINTHEAD

-8.1- Get printing configuration (63h)

1. Function: Get printing configuration from printer.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	63	Printhead no. [1]	##	03

NOTE: If printer only can use 1 printhead, the printhead no. is 01h.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0A	##	63	Parameters [8]	##	03

Parameters format:

Offset	Length (byte)	Description	Note
+0	1	Printhead no.	Similar command with getting ink information.
+1	1	Printhead mode	Current value is 01h.
+2	1	Reserved	
+3	1	Direction	0: → ABC 1: ABC ← 2: ← ABC 3: ← ABC
+4	2	DPI	

+6	1	Channel	0: Left channel enable 1: Right channel enable 2: Both channel enable
+7	1	Reserved	

-8.2- Set printing configuration (62h)

1. Function: Set printer printing configuration.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0A	##	62	Parameters [8]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-8.3- Get pre-purge (B7h)

1. Function: Get pre-purge from printer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	B7	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	B7	Pre-purge parameters [1]	##	03

Parameter content:

Offset	Length (byte)	Description	Note
+0	1	Switch & level	0: disable, not 0: enable, 1~5 level

-8.4- Set pre-purge (B6h)

1. Function: Set pre-purge printer parameters.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	B6	Parameters [1]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-8.5- Get repeat print (81h)

1. Function: Get repeat print parameters from printer.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	81	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 15	##	81	Parameters [0x13]	##	03

Parameters content:

Offset	Length (byte)	Description	Note
+0	4	Photocell type	Internal, external
+4	4	Initial delay	Unit: 0.1mm
+8	4	Repeat gap	Unit: 0.1mm
+12	4	Repeat times	
+16	1	On-off state	Enable or not
+17	1	Trigger on-off	Enable photocell or not
+18	1	Photocell reverse	Enable photocell reverse or not.

-8.6- Set repeat print (82h)

1. Function: Set repeat printing function settings.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 15	##	82	Parameters [0x13]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-8.7- Get time refresh (57h)

1. Function: Get printer time refresh function parameter.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	57	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	57	Parameters [2]	##	03

Parameters description:

Offset	Length (byte)	Description	Note
+0	1	Enable time refresh or not.	0: disable, 1: enable.
+1	1	Time refresh interval.	Range is 1~9 minutes

-8.8- Set time refresh (58h)

1. Function: Set time refresh parameters.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	58	Parameters [2]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-8.9- Clean print head (C6h)

1. Function: Start printer print head clean function. It cleans print head immediately “without trigger photocell” after sending this command.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	C6	N Times [1]	##	03

N Times description:

Offset	Length (byte)	Description	Note
+0	1	N is integer	Range:1 ~ 255

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

4. Remark

Supports ONLY “U2 Smart ONE”(7.022.0006) and newer version.

-8.10- Clean print head (C7h)

1. Function: Enable printer print head clean function. It is required to trigger photocell after sending this command.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	C7	On-off state [1]	##	03

On-off description:

Offset	Length (byte)	Description	Note
+0	1	Enable clean print head or not	0: disable, 1: enable

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

09. PHOTOCCELL

-9.1- Get photocell configuration (B9h)

1. Function: Get photocell configuration from printer.
2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	B9	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	B9	Photocell configuration [2]	##	03

Configuration description:

Offset	Length (byte)	Description	Note
+0	1	Source	0: Internal, 1: external
+1	1	Mode	0: Default, 1: Invert

-9.2- Set photocell configuration (B8h)

1. Function: Set printer photocell configuration.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	B8	Photocell configuration [2]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.

-9.3- Get encoder status (59h)

1. Function: Get printer encoder parameters setting.
2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	59	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0B	##	59	Parameters [9]	##	03

Parameters description:

Offset	Length (byte)	Description	Note
+0	1	Enable encoder or not	0: disable, 1: enable.
+1	4	Frequency	Range is 500~19200
+5	4	Encoder wheel diameter	Range is 1~1000 mm

The wheel diameter needs to divid by 10, then take one decimal value is the real diameter.

-9.4- Set encoder status (5Ah)

1. Function: Set printer encoder parameters.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0B	##	5A	Parameters [9]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.

-9.5- Get encoder status (5Bh)

1. Function: Get the status of the encoder whether is enable or not.
2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	5B	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	5B	Status [1]	##	03

Status format:

Offset	Length (byte)	Description	Note
	1	Enable or not	0: disable, 1: enable.

-9.6-Set encoder status (5Ch)

1. Function: Enable or disable encoder function.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	5C	Status [1]	##	03

Note: 5Bh and 5Ch commands are similar to 59h and 5Ah commands.

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.

-9.7- Get conveyor speed (5Dh)

1. Function: Get printer conveyor speed.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	5D	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	5D	Conveyor speed [4]	##	03

Divided the value getting from printer by 1000, it's the real time speed, the unit is m/min.

NOTE: The conveyor speed is only effective when encoder is disabled.

-9.8- Set conveyor speed (5Eh)

1. Function: Set printer conveyor speed.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	5E	Conveyor speed [4]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

10. TIME/SCREEN/SOUND

-10.1- Get system clock (34h)

1. Function: Get printer current system clock.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	34	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 09	##	34	YYMDhms [7]	##	03

Format description:

Content	Year	Month	Day	Hour	Minutes	Seconds
Symbols	YY	M	D	h	m	s
Length (bytes)	2	1	1	1	1	1
Sample	DC 07	08	14	0D	0F	3A
Actual value	2012	8	20	13	15	58

4. Sample:

Send : 02 00 02 30 34 66 03

Receive : 02 00 09 30 34 DC 07 08 14 0D 0F 3A B5 03
Y Y M D h m s

The time is 2012.08.20 13:15:58

-10.2- Set system clock (35h)

1. Function: Set printer system clock.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0A	##	35	YYMDhmsR [8]	##	03

Description:

Content	Year	Month	Day	Hour	Minutes	Seconds	Return
Symbols	YY	M	D	h	m	s	R
Length (bytes)	2	1	1	1	1	1	1
Sample	DC 07	08	14	0D	0F	3A	1
Actual Value	2012	8	20	13	15	58	1

When Return (R) is 0, printer needs to echo response but when is set to 1 no need to echo.

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-10.3- Get daylight saving (C0h) (Reserved)

1. Function: Get printer daylight saving information. Replaced by cmd (C2h).

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	C0	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	Data Package	CHKSUM	ETX
02	00 03	##	C0	Daylight saving [1]	##	03

Daylight saving:

Offset	Length (byte)	Description	Note
+0	1	Daylight saving status	0: disable, 1: American, 2: European

-10.4- Set daylight saving (C1h) (Reserved)

1. Function: Set printer daylight saving. Replaced by cmd (C3h).

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	C1	Daylight saving [1]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-10.5- Get screen brightness (D8h)

1. Function: Get printer screen brightness.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	D8	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	Data Package	CHKSUM	ETX
02	00 03	##	D8	Brightness [1]	##	03

Brightness description:

Offset	Length (byte)	Description	Note
+0	1	Brightness value	Integer, 0~10

-10.6- Set screen brightness (D9h)

1. Function: Set printer screen brightness.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	D9	Brightness [1]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-10.7- Get screen saver (B5h)

1. Function: Get printer backlight setting.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	B5	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	Data Pack.	CHKSUM	ETX
02	00 04	##	B5	Backlight time [2]	##	03

Description:

Offset	Length (byte)	Description	Note
+0	1	Backlight duration	30~1800 seconds
+1	1	Switch	0: disable, 1: enable

-10.8- Set screen saver (B4h)

1. Function: Set printer backlight time setting.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	B4	Content [2]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-10.9- Get sound status (B3h)

1. Function: Get printer sound related settings.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	B3	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	B3	Sound setting [4]	##	03

Sound description:

Offset	Length (byte)	Description	Note
+0	1	Reserved	
+1	1	Remote control key tone	0: disable, 1: enable
+2	1	Counter alarm	
+3	1	Printing beep	

-10.10- Set sound status (B2h)

1. Function: Set printer sound related settings.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 06	##	B2	Sound setting [4]	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

-10.11- Get UTC Time (C2h)

1. Function: Get printer system date/time, time zone, daylight saving.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	C2	##	03

NOTE: The number of the setting and read date formats starts from 1.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 14	##	C2	UTC+TZ+DST+R [0x12]	##	03

Description:

Offset	Length (byte)	Description	Note
+0	7	UTC Time: YYMDhms YY: Year M: Month D: Day h: Hour m: Minute(s) s: Second(s)	E2 07 08 14 0D 0F 3A => 2018/08/20 13:15:58
+7	3	Time Zone: [+/-]HM +/- : 0/1 H: 0~23 M: 0~59	00 08 2D => UTC+08:45 00 08 00 => UTC+08:00 01 0B 00 => UTC-11:00 01 09 00 => UTC-09:00
+10	1	Daylight Saving Time (DST) Setting: 0: OFF 1: Always ON 2: Auto (Refer to the next two fields)	

+11	3	Auto DST Start Date: m.w.h m[1 byte]: DST Start Month (1~12) w[1 byte]: DST Start Week Day 1: First Sunday 2: Second Sunday 3: Third Sunday 4: Fourth Sunday 5: Last Sunday 6: Last Friday 7: Saturday before last Sunday 8: Friday before last Sunday H[1 byte]: DST Start Hour (0~23)	03 02 02 => United States Start DST on March 2 nd Sunday at 02:00 03 05 01 => Germany/UK Start DST on March Last Sunday at 01:00
+14	3	Auto DST End Date: m.w.h m[1 byte]: DST End Month (1~12) w[1 byte]: DST End Week Day 1: First Sunday 2: Second Sunday 3: Third Sunday 4: Fourth Sunday 5: Last Sunday 6: Last Friday 7: Saturday before last Sunday h[1 byte]: DST End Hour (0~23)	0B 01 02 => United States End DST on November 1 st Sunday at 02:00 0A 05 02 => Germany/UK End DST on October Last Sunday at 02:00
+17	1	Command Response Control: 0: Printer will send ack. 1: Printer will NOT send ack.	

-10.12- Set UTC Time (C3h)

1. Function: Set printer system date/time, time zone, daylight saving.
2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 14	##	C3	UTC+TZ+DST+R [0x12]	##	03

Description:

Offset	Length (byte)	Description	Note
+0	7	UTC Time: YYMDhms YY: Year M: Month D: Day h: Hour m: Minute(s) s: Second(s)	E2 07 08 14 0D 0F 3A => 2018/08/20 13:15:58
+7	3	Time Zone: [+/-]HM +/- : 0/1 H: 0~23 M: 0~59	00 08 2D => UTC+08:45 00 08 00 => UTC+08:00 01 0B 00 => UTC-11:00 01 09 00 => UTC-09:00

+10	1	Daylight Saving Time (DST) Setting: 0: OFF 1: Always ON 2: Auto (Refer to the next two fields)	
+11	3	Auto DST Start Date: m.w.h m[1 byte]: DST Start Month (1~12) w[1 byte]: DST Start Week Day 1: First Sunday 2: Second Sunday 3: Third Sunday 4: Fourth Sunday 5: Last Sunday 6: Last Friday 7: Saturday before last Sunday 8: Friday before last Sunday H[1 byte]: DST Start Hour (0~23)	03 02 02 => United States Start DST on March 2 nd Sunday at 02:00 03 05 01 => Germany/UK Start DST on March Last Sunday at 01:00
+14	3	Auto DST End Date: m.w.h m[1 byte]: DST End Month (1~12) w[1 byte]: DST End Week Day 1: First Sunday 2: Second Sunday 3: Third Sunday 4: Fourth Sunday 5: Last Sunday 6: Last Friday 7: Saturday before last Sunday h[1 byte]: DST End Hour (0~23)	0B 01 02 => United States End DST on November 1 st Sunday at 02:00 0A 05 02 => Germany/UK End DST on October Last Sunday at 02:00
+17	1	Command Response Control: 0: Printer will send ack. 1: Printer will NOT send ack.	

3. ECHO command:

System will return with OK command (0x4F) if it is successful,
System will return with ERROR command (0x31) if it is failed.

11. INK CARTRIDGE

-11.1- Get DISC information (86h)

1. Function: Get ink cartridge DISC information.

2. Data package format:

STX	LEN	ST#	CMD	Print Head #	CHKSUM	ETX
02	00 03	##	86	Printhead no. [1]	##	03

Printhead no. starts from 1. e.g.: 03: Get the 3rd ink cartridge's DISC information.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
-----	-----	-----	-----	------	--------	-----

02	00 24	##	86	Information [0x22]	##	03
----	-------	----	----	--------------------	----	----

DISC information description:

Offset	Length (byte)	Description	Note
+0	1	Printhead no.	Current printer is 01h
+1	1	Ink volume	1: 42ml 2: 370ml 3: 700ml 4: 400ml
+2	1	Current ink volume	The percentage of the amount of residual ink
+3	1	Ink color	1: Black 2: Red 3: Blue 4: Green 5: Yellow
+4	1	Ink type	
+5	4	Area code	e.g.: 1
+9	4	Sales code	e.g.: 886
+13	4	DISC SN	
+17	4	Batch	
+21	1	Status	0: Normal, others are abnormal
+22	4	Used dots	
+26	8	Can be used dots	

-11.2- Get ink status (44h)

1. Function: Get ink status from printer.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	44	Data package [1]	##	03

Data package format:

Offset	Length (byte)	Description	Note
+0	1	Printhead no.	If printer only has one printhead, the code is 01h.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	##	44	Ink status [1]	##	03

Description:

Offset	Length (bit)	Description	Note
0	1	Ink empty	0: Normal, 1: Ink empty
1	1	Ink low	0: Normal, 1: Ink low
2	1	Can print or not.	0: Normal, 1: Cannot print
3	1	No cartridge	0: Normal, 1: No cartridge

4	1	Whether open the lid	0: Open, 1: cover
5	3	The last 3 bits are reversed.	

-11.3- Get ink parameter (87h) (U2 Smart only)

1. Function: Get ink parameter of specific printhead.

2. Data package format:

STX	LEN	ST#	CMD	Print Head #	CHKSUM	ETX
02	00 03	##	87	Printhead no. [1]	##	03

Printhead no. starts from 1. e.g.: 03: Get the 3rd cartridge's ink parameter.

Offset	Length (byte)	Description	Note
+0	1	Printhead no.	If printer only has one printhead, the code is 01h.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0E	##	87	Ink parameter[0x0C]	##	03

Description:

Offset	Length (byte)	Description	Note
+0	2	Voltage	
+2	2	Temperature	
+4	2	HFire	
+6	2	PWFire	Reserved
+8	2	FireDly	Reserved
+10	2	SilTime	Reserved

System will return with ERROR command (0x31) if it is not applicable for the cartridge.

Exclusive error code (0x28)

-11.4- Get ink Information (E2h)

1. Function: Get ink Information of specific printhead.

2. Data package format:

STX	LEN	ST#	CMD	Print Head #	CHKSUM	ETX
02	00 03	##	E2	Printhead no. [1]	##	03

Printhead no. starts from 1. e.g.: 03: Get the 3rd cartridge's ink information.

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 14	##	E2	Ink Information[0x12]	##	03

Description:

Offset	Length (byte)	Description	Note
+0	4	Total printable dots	LSB ~ MSB
+4	4	Consumed dots	

+8	2	Current message NO.	
+10	4	Total available prints	
+14	4	Available prints	

4. Example:

PC to Printer: 02 00 03 01 E2 01 E7 03 (8 bytes)

Printer to PC: 02 00 14 01 E2 **60 7C 81 4A** **00 00 00 00** **01 00** **55 F7 01 00** 55 F7 01 00 39 03

0x4A817C60 => 1,249,999,968

0x00000000 => 0

0x0001 => 1

0x0001F755 => 128,853

0x0001F755 => 128,853

12. U2 PRO EXCLUSIVE

-12.1- Get Temperature (E7h)

1. Function: Get the fan operating temperature range and current temperature.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	##	E7	##	03

3. ECHO format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 05	##	E7	Temperature [3]	##	03

Temperature:

Offset	Length (byte)	Description	Note
+0	1	High temperature	
+2	1	Low temperature	
+3	1	Current temperature	

-12.2- Set Fan Temperature Range (E6h)

1. Function: Set fan operating temperature range.

2. Data package format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 04	##	E6	Temperature range [2]	##	03

Temperature range format:

Offset	Length (byte)	Description	Note
+0	1	High temperature	Temperature is higher than this value, turn on the fan.
+1	1	Low temperature	Temperature is lower than this value, turn off the fan.

3. ECHO command:

Successful return OK command (0x4F),

Failed return error command (0x31).

13. CONFIGURATION PRODUCTION LINE

-13.1- Production line reset (F0h)

1. Function: Printer will start *Production Line Reset Mode*, the printer which is connected to PC with RS-485 will reset the current ST# as 0, the first printer that response to PC will be set as ST01, the second response to PC set as ST02, increasing sequentially. All printer should respond within 32 seconds.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	00	F0	##	03

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0B	##	F0	Serial no.	##	03

Description:

Offset	Length(byte)	Description	Note
+0	4	Serial Number	
+4	1	Model Code	0x0A U2D 、 0x0B U2S 、 0x1F U2Pro
+5	4	Printer Status	

4.Example

PC Link to 2 U2S (U2S 1234642 、 U2S SN 1234567)

PC Send 0xF0 command: 02 00 02 00 F0 F2 03

U2S SN 1234642 -> PC: 02 00 0B 01 F0 D2 D6 12 00 0B 00 40 00 00 01 03

U2S SN 1234567 -> PC: 02 00 0B 01 F0 87 D6 12 00 0B 01 00 00 00 77 03

-13.2- Stop production line reset (F1h)

1. Function: Stop production line reset.

2. Data package format:

STX	LEN	ST#	CMD	CHKSUM	ETX
02	00 02	00	F1	##	03

3. ECHO command:

System will return with OK command (0x4F) if it is successful,

System will return with ERROR command (0x31) if it is failed.

4.Example

PC Send 0xF1 command: 02 00 02 00 F1 F3 03

U2S -> PC: No return

-13.3- Fast Production Line Reset (F2h)

1. Function: Printer will start *Production Line Reset Mode*, the printer which is connected to PC with RS-485 will reset the current ST as 0. The 1st printer that response to PC will be set as ST01, the 2nd response to PC set as ST02, increasing sequentially. All the printers will report to PC in the specific time based on the numbers of printer. (Please check the Parameter Description for the detail of specific time.

2. Data Pack Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 03	00	F2	Parameter [1]	##	03

Parameter Description:

Offset	Length (byte)	Description
+0	1	<p>The expect reporting time is based on the numbers of printer as follow:</p> <p>0 (Default, equal to CMD F0h): 32 sec</p> <p>1 printer: 2 sec</p> <p>2 printers: 4 sec</p> <p>3~4 printers: 8 sec</p> <p>5~8 printers: 16 sec</p> <p>9~16 printers: 32 sec</p> <p>17~32 printers: 64 sec</p> <p>(Note: Each brand USB to RS485 convertor capability is different. Therefore, the number of connected units cannot be guaranteed.</p>

3. ECHO Format:

STX	LEN	ST#	CMD	DATA	CHKSUM	ETX
02	00 0B	##	F2	Serial Number.	##	03

Parameter Description:

Offset	Length (byte)	Description	Note
+0	4	Serial Number	
+4	1	Model Code	0x0A U2D 、 0x0B U2S 、 0x1F U2Pro
+5	4	Printer Status	



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