RS232 Command List

PO-55F/PO-55H

Version: 1.0

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1. Communication format

Adopt RS232 communication standard, 4800, N, 8, 1, No Parity
Baud Rate: 4800, Start Bit: 1 Bit, Data Bit: 8 Bit, Parity Bit: None, Stop Bit: 1 Bit.

2. Communication points

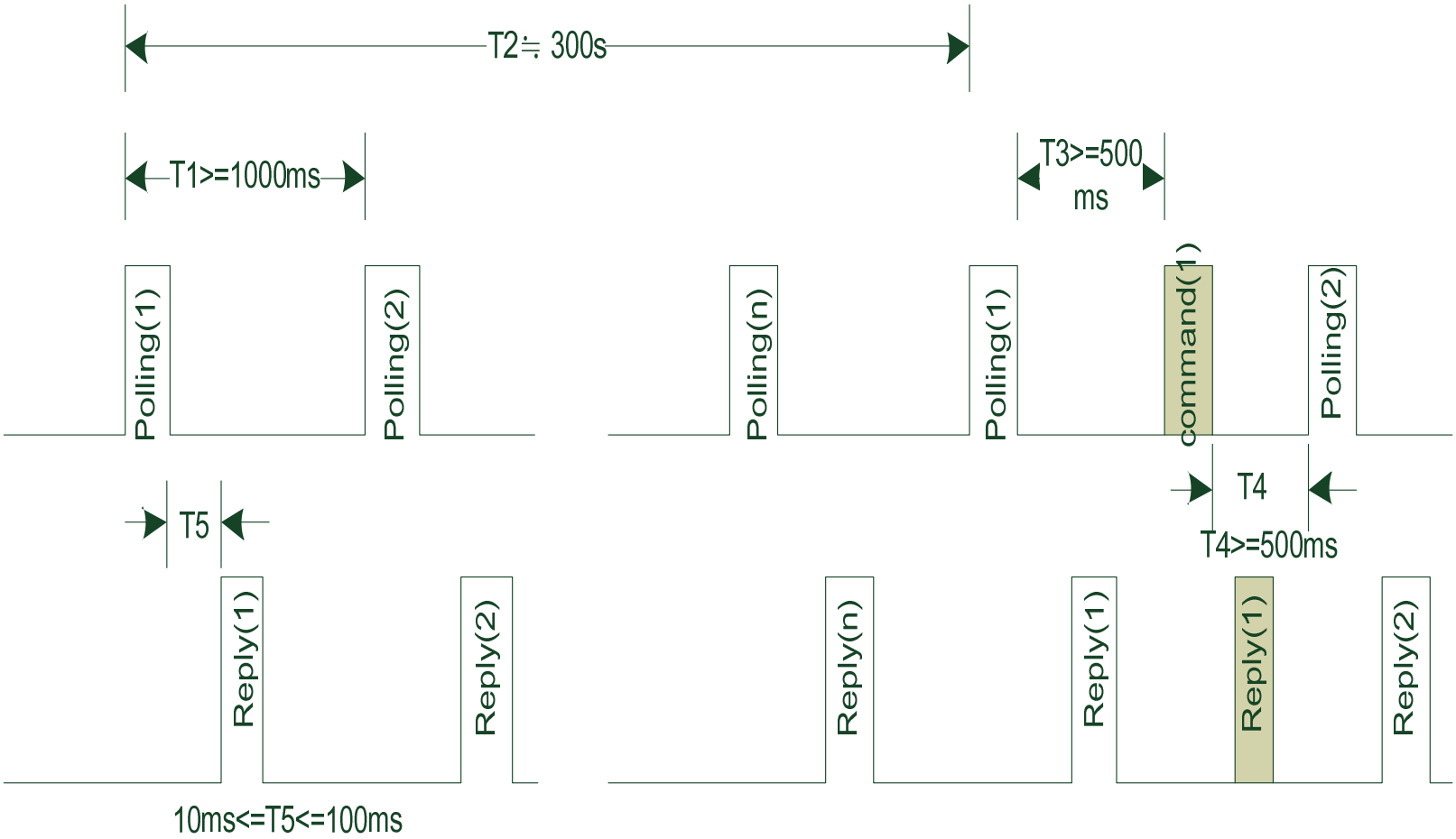
1) Adopting MODBUS RTU mode communication, the master-slave operation has no active return.
2) Packet shall be a complete single command (function).
3) The interval between packets sent by the RS232 control player should be fixed, and the polling cycle time should be fixed.

3. Communication time

3.1 Time points

1) Polling(1) to Polling(2) gap → It means T1(interval time) ≧1000ms.
2) T2 = Last Polling(1) to Next Polling(1) → T2 (Polling cycle time) shall be fixed, T2≒300 seconds
3) The RS232 control player command sent out time(T3) should be large than last Polling(1) about 500ms. → T3≧500ms, It can avoid command miss.
4) Next polling or next command by RS232 control player sent out time(T4) should be large than 500ms. It must be T4≧500ms to start next polling or next command.

3.2 TimingChart



4. Instruction format

SlaveAddr, FunctionCode, Data_Context, CRC

4.1 SlaveAddr

------ Expressed in 1 bytes; each slave device on the network must have a unique address (range from 1 to 247)

------ SlaveAddr address is used to address the slave device, initiated by the Master.

------ Address 0 is used in broadcast mode and does not require a response.

4.2 FunctionCode

------ Common function codes, such as <Table 1> as below

<Table 1>: Command function code

Command	Function code	Instructions
Read Holding Register	03H	Get the current analog output state & range
Preset Single Register	06H	Specify to set a single analog output range
Preset Multiple Regs	10H	Specify to set multiple analog output ranges
~		

4.3 Data_Context

------ Data_context contains two parts, the first part is Address code, the second part is Data code, all are represented by Word, first send high byte, then send low byte; where Data code length is based on Function Code decision, see explanation of 5 instructions.

------ Display temporarily save device decoding information, such as <Table 2> as below

<Table 2>: Temporarily save device decoding information

Addr.	Name	R/W	default	description
0h	Monitor ID	R/W	1	0: set ID to 0, and disable next uart channel 1~100: set ID to x, and enable next uart channel.(only ID=0 can be set to x)
1h	Power Status	R/W	1	0: power off. 1: power on.
2h	Volume	R/W	100	0~100: audio volume.
3h	MUTE	R/W	0	0: mute off. 1: mute on.
4h	video source	R/W	0	0: VGA 2: DVI 4: HDMI 11:DP
5h	contrast ratio	R/W	100	0~100: contrast ratio
6h	Brightness	R/W	100	0~100: brightness

7h	color termperature	R/W	0	0:6500K 1:9300K 2:11500K 3:sRGB 4:USER
8h	Anti Burn-in	R/W	0	0: Anti Burn-in OFF. 1: Anti Burn-in ON.
9h	power saving	R/W	0	0: keep no signal messgae when there is no signal source. 1: standby mode when there is no signal source.
Ah	Osd Rotation	R/W	0	0: 0 degree. 1: 90 degree. 2: 180 degree. 3: 270 degree.
Bh	Auto Dimming	R/W	0	0: manual dimming. 1: auto dimming by lux table.
Ch	Fan Control	R/W	0	0: Fan off. 1: Low Speed. 2: Middle Speed. 3: High Speed. 4: Fan control by ADC1. 5: Fan control by ADC2. 6: Fan control by on board temp sensor. High byte : Fan1 control register Low byte : Fan 2 control register

Dh	Test pattern	R/W	0	0: test pattern off 1: test pattern on
Eh	ADC value	R only	-	high byte: ADC1 value low byte: ADC2 value 0~255
Fh	Temperature value	R only	-	-127~127
10h	11500k/9300k R gain	R/W	240	0~255, 11500k/9300k red color gain
11h	11500k/9300k G gain	R/W	240	0~255, 11500k/9300k green gain
12h	11500k/9300k B gain	R/W	255	0~255, 11500k/9300k blue gain
13h	9300k/6500k R gain	R/W	240	0~255, 9300k/6500k red color gain
14h	9300k/6500k G gain	R/W	248	0~255, 9300k/6500k green gain
15h	9300k/6500k B gain	R/W	255	0~255, 9300k/6500k blue gain
16h	6500k/5800k R gain	R/W	255	0~255, 6500k/5800k red color gain
17h	6500k/5800k G gain	R/W	255	0~255, 6500k/5800k green gain
18h	6500k/5800k B gain	R/W	255	0~255, 6500k/5800k blue gain
19h	sRGB R gain	R/W	240	0~255, sRGB red color gain
1Ah	sRGB G gain	R/W	248	0~255, sRGB green gain
1Bh	sRGB B gain	R/W	255	0~255, sRGB blue gain
1Ch	User R gain	R/W	255	0~255, User red color gain
1Dh	User G gain	R/W	255	0~255, User green gain
1Eh	User B gain	R/W	255	0~255, User blue gain
1Fh	UV Inex	R	0	0~10

20h	VGA Phase	R/W	63	0~100
21h	VGA CLK	R/W	50	0~100
22h	VGA H position	R/W	50	0~100
23h	VGA V position	R/W	50	0~100
24h	VGA auto adjustment	W only	0	0: no action 1: auto adjustment
25h	OSD Horizontal	R/W	50	0~100
26h	OSD Vertical	R/W	50	0~100
27h	OSD Transparency	R/W	50	0~4
28h	OSD Timeout	R/W	5	5~60: unit is second.
29h	Language	R/W	0	0:English 1:Espanol 2:Francais 3:Feutsch 4:Italiano 5:Portugues 6:Pyccknn 7:簡體中文
2Ah	Display Size	R/W	0	0: Full Screen 1: Smart Fit 2: 4:3 3: Smart 4:3
2Bh	Reset	W only	0	0: no action 1: system reset
2Ch~2Fh	Reserved	-	-	Reserved

30h	lux table1	R/W	300	0~20000
31h	lux table2	R/W	350	0~20000
32h	lux table3	R/W	450	0~20000
33h	lux table4	R/W	600	0~20000
34h	lux table5	R/W	1200	0~20000
35h	lux table6	R/W	2400	0~20000
36h	lux table7	R/W	6000	0~20000
37h	lux table8	R/W	12000	0~20000
38h~3Fh	Reserved	-	-	Reserved
0x40h	Firmware Version	R only		Ex: Ver 1.03, high byte is 1, low byte is 3.
0x41h	Firmware Year	R only		0~9999, ex: 2017
0x42h	Firmware Month	R only		1~12
0x43h	Firmware Day	R only		1~31

4.4 CRC

------ Circular check code CRC-16 calculus, the polynomial reference is as follows:
$G(X)=X^{16}+X^{15}+...+X^{2}+^{1}$
------ When transmitting, the low byte is sent first, and then the high byte is sent;
------ CRC-16 check code calculation method:

a) The preset CRC parameter is preset to 0xffff.
b) Put the first byte data and the low byte XOR data into the CRC parameter, and the high byte data keep same range.
c) Shift the CRC parameter to the right by 1 bit, and the highest bit is 0.
d) If (c) the removed bit is 0; repeat step (c); if the bit is removed, the CRC parameter is XOR with the polynomial 0xA001
e) Repeat steps (c) and (d) until the right shift is 8 times to complete the verification process of 1 byte.
f) Repeat steps (b) through (e) for the next byte processing
g) All the characters in the communication message are calculated according to the above steps, and the high and low bytes of the CRC-16 are exchanged to be the CRC code.

5. Instruction Explanation

5.1 Read Holding Register

<Function> Get the current analog output state & range

SlaveAddr, FunctionCode(03H), Parameters, CRC

Parameters = Starting Addr+ No. of Registers

< Instructions >

Request

SlaveAddr,
FunctionCode(03H),
StartingAddrHi, StartingAddrLo,
No. of Regs Hi(N), No. of Regs Lo(N),
CRC-16Lo, CRC-16Hi

ACK Response

SlaveAddr,
FunctionCode(03H),
Byte Count(2NH),
Register Value Hi(1^{st}),Register Value Lo(1^{st}),
Register Value Hi(2^{nd}),Register Value Lo(2^{nd}),
...
Register Value Hi(N^{th}),Register Value Lo(N^{th}),
CRC-16Lo, CRC-16Hi

NAK Response

ErrorCode(0x83H),
Exception Code

< Table 3 >：03H Exception code

Exception code	Status & Statement
01H	Function code is not in the define scope
03H	No. of Regs is not in the define scope
02H	StartingAddr is not in the define scope
04H	Abnormal occur in the continuous reading

Example ：
send: 01 03 00 10 00 09 84 09
reply: 01 03 12 00 55 00 F0 00 FF 00 F0 00 F8 00 FF 00 FF 00 FF 00 FF 72 D4
send: 01 03 00 0F 00 01 B4 09
reply: 01 03 02 00 2C B9 99

5.2 Write Single Register

<Function> Specify to set a single analog output range

SlaveAddr, FunctionCode(06H), Parameters, CRC

Parameters = Register Addr+ Register Value

< Instructions >

Request

SlaveAddr,
FunctionCode(06H),
RegisterAddrHi, RegisterAddrLo,
RegisterValueHi, RegisterValueLo,
CRC-16Lo, CRC-16Hi

Response

SlaveAddr,
FunctionCode(06H),
RegisterAddrHi, RegisterAddrLo,
RegisterValueHi, RegisterValueLo,
CRC-16Lo, CRC-16Hi

NAK Response

ErrorCode(0x86H),
Exception Code

< Table 4 >：06H Exception code

Exception code	Status & Statement
01H	Function code is not in the define scope
03H	RegisterValue is not in the define scope
02H	RegisterAddr is not in the define scope
04H	Write failed or write outliers

Example ：
send: 01 06 00 10 00 55 48 30
reply:01 06 00 10 00 55 48 30

5.3 Write Multiple Register

<Function> Specify to set multiple analog output ranges

SlaveAddr, FunctionCode(10H), Parameters, CRC

Parameters = Starting Addr+ No. of Registers+Byte Count + Registers Value

< Instructions >

Request

SlaveAddr,
FunctionCode(03H),
StartingAddrHi, StartingAddrLo,
No. of Regs Hi(N), No. of Regs Lo(N),
Byte Count(2NH),
Register Value Hi(1^{st}),Register Value Lo(1^{st}),
Register Value Hi(2^{nd}),Register Value Lo(2^{nd}),
...
Register Value Hi(N^{th}),Register Value Lo(N^{th}),
CRC-16Lo, CRC-16Hi

Response

SlaveAddr,
FunctionCode(10H),
RegisterAddrHi, RegisterAddrLo,
RegisterValueHi, RegisterValueLo,
CRC-16Lo, CRC-16Hi

NAK Response

ErrorCode(0x90H),
Exception Code

< Table 5 >：10H Exception code

Exception code	Status & Statement
01H	Function code is not in the define scope
03H	No. of Regs is not defined or Byte count is not equal to 2 times No. of Regs
02H	StartingAddr is not in the define scope
04H	Write failed or write outliers

Example ：
send: 01 10 00 10 00 03 06 00 11 00 22 00 33 FB 09
reply:01 10 00 10 00 03 81 CD