Communication Protocol for Electronic Load and PC

A.Com Port Set

1. Baud Rate：9600
2. Data Bit：8
3. Stop Bit：1
4. Check：None

B.Frame Format

The length of the frame is 26 (compatible with Fab), the format is as the following：

AAH	Address	Command	Relative information of Bit 4 - 25	Check

Explanation：

1. The lock head is AAH and occupies one byte.
2. The range of the Address is 0-FEH, and occupies one byte.
3. The range of the Command is 90H-A0H and occupies one byte. The contents of the command is as the following:
    a. 90H------To set the max current, the max power and the level of the voltage.
    b. 91H------To read the current value, the voltage value, the power value and the state of the load. The state of the load includes the ON/OFF state of the load, over-voltage state, over-power state, over-heat state and mark of voltage polarity.
    c. 92H------To control the ON/OFF of the load
    d. 93H------Programming odd step1-5
    e. 94H------Programming odd step 6-10
    f. 95H------Start of programming output
    g. 96H------Stop of programming output
4. Byte 4 to byte 25 is the information contents.
5. Byte 26 is the Check and is the accumulating sum of the former 25 bytes.
6. The range of the voltage is 0-360V, and can be expressed in integer 0-360000.
7. The range of the current is 0-30A, and can be expressed in integer 0-300000.
8. The range of the power is 0-200W, and can be expressed in integer 0-2000.
9. The range of the resistance is 0-500Ω, and can be expressed in integer 0-50000.

C. Instruction of the Command

1. To set the max current, the max power and the level of the set value (90H)

Byte 1	AAH
Byte 2	Address (0—FEH)
Byte 3	Command (90H)
Byte 4	Low byte of the max current
Byte 5	High byte of the max current
Byte 6	Low byte of the max power
Byte 7	High byte of the max power
Byte 8	New address of the Load
Byte 9	Set mode of the electronic load: 1—current, 2—power, 3—resistance
Byte 10	Low byte of the electronic load set value
Byte 11	High byte of the electronic load set value
Byte 12 - 25	System Reserved
Byte 26	Check

The set values of the current, the power and the load are all expressed by two bytes. Low byte is in the front and the high byte is at the back. For example:

The current value 3589H is expressed as the following:

89H	35H

2 . To read the current, voltage, power and resistance of the electronic load (91H)

Byte 1	AAH
Byte 2	Address (0—FEH)
Byte 3	Command (91H)
Byte 4	Low byte of the current
Byte 5	High byte of the current
Byte 6	Low byte of the low character of the voltage
Byte 7	High byte of the low character of the voltage
Byte 8	Low byte of the high character of the voltage
Byte 9	High byte of the high character of the voltage
Byte 10	Low byte of the power
Byte 11	High byte of the power
Byte 12	Low byte of the max current
Byte 13	High byte of the max current
Byte 14	Low byte of the max power
Byte 15	High byte of the max power
Byte 16	Low byte of the resistance value
Byte 17	High byte of the resistance value
Byte 18	Output state of the electronic load
Byte 19 - 25	System reserved
Byte 26	Check

Output state of the electronic load is expressed by one byte and each digit unit is

defined as the following:

From High to Low

7	6	5	4	3	2	1	0

Bit 0: Being Controlled mode, 0 is for the keyboard controlling and 1 is for the PC controlling.
Bit 1: Output state. 0 is for the OFF of the output and 1 is for the ON of the output.
Bit 2: Polarity mark of the input voltage. 0 is for the right voltage polarity and 1 is for the wrong voltage polarity.
Bit 3: Over-heat mark of the input. 0 is for normal and 1 is for over-heat.
Bit 4: Over-voltage mark of the input. 0 is for normal 1 is for over-voltage.
Bit 5: Over-power mark of the input. 0 is for normal and 1 is for over-power.

Notes: The frame format of the electronic answering the PC is the same as the above format.

3. To control the output state of the electronic load (92H)

Byte 1	AAH
Byte 2	Address (0-FEH)
Byte 3	Command (92H)
Byte 4	State of the electronic load
Byte 5- 25	System Reserved
Byte 26	Check

The state of the load is expressed by one byte and the each bit unit is defined as the following:

From High to Low

7	6	5	4	3	2	1	0

Bit 0: To control the output of the electronic load. 0 is for OFF and 1is for ON.
Bit 1: To modify the controlling mode of the electronic load. 0 is for the keyboard controlling and 1 is for the PC controlling.

4. Programming Odd Step 1-5 (93H)

Byte 1	AAH
Byte 2	Address (0—FEH)
Byte 3	Command (93H)
Byte 4	Set mode of the electronic load output
Byte 5	Programming step number (Step 1-10)
Byte 6	Low byte of the output set of Odd step 1
Byte 7	High byte of the output set of Odd step 1
Byte 8	Low byte of the time of Odd step 1
Byte 9	High byte of the time of Odd step 1
Byte 10	Low byte of the output set of Odd step 2
Byte 11	High byte of the output set of Odd step 2
Byte 12	Low byte of the time of Odd step 2
Byte 13	High byte of the time of Odd step 2
Byte 14	Low byte of the output set of Odd step 3
Byte 15	High byte of the output set of Odd step 3
Byte 16	Low byte of the time of Odd step 3
Byte 17	High byte of the time of Odd step 3
Byte 18	Low byte of the output set of Odd step 4
Byte 19	High byte of the output set of Odd step 4
Byte 20	Low byte of the time of Odd step 4
Byte 21	High byte of the time of Odd step 4
Byte 22	Low byte of the output set of Odd step 5
Byte 23	High byte of the output set of Odd step 5
Byte 24	Low byte of the time of Odd step 5
Byte 25	High byte of the time of Odd step 5
Byte 26	Check

5. Programming Odd Step 6-10 (94H)

Byte 1	AAH
Byte 2	Address (0—FEH)
Byte 3	Command (94H)
Byte 4	Low byte of the output set of Odd step 6
Byte 5	High byte of the output set of Odd step 6
Byte 6	Low byte of the time of Odd step 6
Byte 7	High byte of the time of Odd step 6
Byte 8	Low byte of the output set of Odd step 7
Byte 9	High byte of the output set of Odd step 7
Byte 10	Low byte of the time of Odd step 7
Byte 11	High byte of the time of Odd step 7
Byte 12	Low byte of the output set of Odd step 8
Byte 13	High byte of the output set of Odd step 8
Byte 14	Low byte of the time of Odd step 8

Byte 15	High byte of the time of Odd step 8
Byte 16	Low byte of the output set of Odd step 9
Byte 17	High byte of the output set of Odd step 9
Byte 18	Low byte of the time of Odd step 9
Byte 19	High byte of the time of Odd step 9
Byte 20	Low byte of the output set of Odd step 10
Byte 21	High byte of the output set of Odd step 10
Byte 22	Low byte of the time of Odd step 10
Byte 23	High byte of the time of Odd step 10
Byte 24	Output mode of the programming (0 is for mono-time and 1 is for repetition.)
Byte 25	System Reserved
Byte 26	Check

6. Start of the Programming Output (95H)

Byte 1	AAH
Byte 2	Address (0-FEH)
Byte 3	Command (95H)
Byte 4 - 25	System Reserved
Byte 26	Check

7. Stop of the Programming Output (96H)

Byte 1	AAH
Byte 2	Address (0-FEH)
Byte 3	Command (96H)
Byte 4 - 25	System Reserved
Byte 26	Check