LONGER RS485 Protocol for BT600-2J

1. Data Format: 1start + 8data + 1even parity + 1stop, 1200bps.

This defines the data format: 1 start bit, 8 data bits, one even parity bit, and one stop bit at 1200 bits per second.

2. Command Format: flag+ addr + len + pdu + fcs.

flag: E9H is the start **flag** of a command string. Every command string is preceded with the start of E9H.

- In one command string, there is no other E9H except start **flag** E9H. When transmitting, E8H is replaced by E8H 00H, and E9H is replaced by E8H 01H except start **flag**. When receiving, E8H 00H is replaced by E8H, and E8H 01H is replaced by E9H.

addr: Pump address (i.e. Pump I.D.#.), take up 1 byte.

- The pump address can be set from 1 to 30. 31(1F) is broadcast address.
- In a command string from the control computer, if the **addr** is pump address, the corresponding pump will execute the command and respond. And if the **addr** is broadcast address, all the pumps execute the same command, and pumps don't respond.

len: Length of **pdu**, take up 1 byte.

Fcs: XOR of addr, len, pdu, take up 1 byte.

3. Pdu Format: application layer code format

3.1. Write Running Parameter

Control computer command string:

WJ Rotate speed (2 bytes) State1 (1 byte) State2 (1 byte)

Pump response:

WJ

- In a command string from the control computer, the **addr** can be pump address (1-30) and broadcast address (31). When the **addr** is pump address, the corresponding pump will execute the command and respond. When the **addr** is broadcast address, all the pumps execute the same command, and pumps don't respond.

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3.2. Read Running Parameter

Control computer command string:

RJ

Pump response:

RJ Rotate speed (2 bytes) State1 (1 byte) State2 (1 byte)

- In a command string from the control computer, if the **addr** is one pump's address (1-30), the corresponding pump will respond.

3.3. Write Pump Address

Control computer command string:

WID New pump I.D. #. (1 byte)

Pump response:

WID

- In a command string from the control computer, the **addr** can be pump address (1-30) and broadcast address (31).
- Pump address can be set one by one with broadcast address.

3.4. Read Pump Address

Control computer command string:

Pump response:

RID

- In a command string from the control computer, if the **addr** is one pump's address (1-30), the corresponding pump will respond.

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APPENDIX

1. The command characters in the **pdu** are characters from the standard ASCII character set.

Command character	W	R	J	I	D
ASCII	57H	52H	4AH	49H	44H

- 2. The most significant byte is transmitted first and the least significant byte finally when transmitting rotate speed. The max speed is 600 rpm, i.e. 0258 in hex.
- 3. State1: state byte 1.

Bit 0 - start / stop bit, 1 to start the pump, 0 to stop the pump.

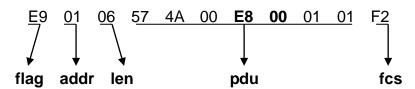
Bit 1 – prime bit, 1 to prime the pump at the max speed 50 rpm.

4. State2: state byte 2.

Bit 0 - cw / ccw bit, 1 to run cw, 0 to run ccw.

- 5. Default addr: default pump address (i.e. Pump I.D.#.): 1.
- 6. Examples
 - a. Write Running Parameter

Control computer command string:



- The above command string from control computer will set running parameter of pump 1 as follows: run cw at 232 rpm.
- When transmitting a command string, E8H is replaced by E8H 00H.

Pump response:

E9 01 02 57 4A 1E

7. DB-15 External Control Interface

Pin 2 - RS485 B

Pin 3 - RS485 A