

Annex B: JQDW-8 Series TSP Transmitter Communication Protocol

The RS485/RS232 communication of this product adopts MODBUS communication protocol.

Communication protocol: (communication request in the protocol is the factory default parameters)

04 Function code Read input register

Input register address assignment and system parameters:

Memory Address	Name	Sample
00 00	TSP values	01 04 00 00 00 01 31 CA Response: 01 04 02 00 78 B9 12 0x 00 78 (120ug/m3)
00 30	Alarm symbol 00 No alarm 01 Upper limit alarm 03 Maximum limit	01 04 00 30 00 01 31 C5 Response: 01 04 02 00 01 78 F0 0x 00 01 (Upper limit alarm)
00 01	PM1.0 values	01 04 00 01 00 01 60 0A Response: 01 04 02 00 49 78 C6 0x 00 49 (73ug/m3)
00 02	PM2.5 values	01 04 00 02 00 01 90 0A Response: 01 04 02 00 5A 39 0B 0x 00 5A (90ug/m3)
00 03	PM10 values	01 04 00 03 00 01 C1 CA Response: 01 04 02 00 65 79 1B 0x 00 65 (101ug/m3)
00 04	Read >0.3um particulate matter values	01 04 00 04 00 01 70 0B Response: 01 04 02 E6 21 33 48 0x E6 21 (58913 pcs/L)
00 05	Read >0.5um particulate matter values	01 04 00 05 00 01 21 CB Response: 01 04 02 66 03 D2 91 0x 66 03 (26115 pcs/L)
00 06	Read >1.0um particulate matter values	01 04 00 06 00 01 D1 CB Response: 01 04 02 11 0B F4 A7 0x 11 0B (4363 pcs/L)
00 07	Read >2.5um particulate matter values	01 04 00 07 00 01 80 0B Response: 01 04 02 03 4A 38 37 0x 03 4A (842 pcs/L)
00 08	Read >5.0um particulate matter values	01 04 00 08 00 01 B0 08 Response: 01 04 02 00 C5 79 63 0x 00 C5 (197 pcs/L)
00 09	Read >10um particulate matter values	01 04 00 09 00 01 E1 C8 Response: 01 04 02 00 1B F9 3B 0x 00 1B (27 pcs/L)

03 Function Code Read Holding Register

Holding register address assignment and system parameters:

Memory Address	Name	Sample
00 30	Machine Address Range (001-247)	01 03 00 30 00 01 84 05 Response : 01 03 02 00 01 79 84 0x 00 01 (The machine address is : 1)
00 31	Communication baud rate (default 06) 03—1200bps; 04—2400bps; 05—4800bps; 06—9600bps; 07—19200bps; 08—38400bps; 09—57600bps;	01 03 00 31 00 01 D5 C5 Response : 01 03 02 00 06 38 46 0x 00 06(Baud rate 9600)
00 32	Serial communication format (default 03) 00 - even check; 01 - odd check; 02 - no parity, 2 stop bits; 03 - no parity, 1 stop bit;	01 03 00 32 00 01 25 C5 Response : 01 03 02 00 03 38 45 0x 00 03 (Communication format: serial format without parity, 1 stop bit)
00 60	Serial communication format (default 03)	01 03 00 60 00 01 84 14 Response : 01 03 02 00 00 B8 44 0x 00 00 (The range zero point is : 0)
00 90	Full range	01 03 00 90 00 01 84 27 Response : 01 03 02 03 E8 B8 FA 0x 03 E8 (The range zero point is : 1000)
00 C0	Alarm limit	01 03 00 C0 00 01 84 36 Response : 01 03 02 01 2C B8 09 0x 01 2C (The alarm limit is : 300 ug/m3)
01 20	Maximum limit	01 03 01 20 00 01 84 3C Response : 01 03 02 01 F4 B8 53 0x 01 F4 (Maximum limit : 500 ug/m3)
01 80	Return Difference Value	01 03 01 80 00 01 84 1E Response : 01 03 02 00 05 78 47 0x 00 05 (The return difference value is : 5 ug/m3)
01 B0	Alarm enable. 0 - not enabled; 1 - Enable the alarm.	01 03 01 B0 00 01 84 11 Response : 01 03 02 00 01 79 84 0x 00 01(Alarm enable for: Alarm enable for: 1)
00 11	Fault alarm flag Fan speed high fault - 0 Fan speed low fault - 1 Temperature too high fault - 2 Temperature too low fault - 3 Dust accumulation fault - 4 Fan failure - 5 Laser fault - 6 Sensor communication failure: - 7 Normal: - 8	01 03 00 11 00 01 D4 0F Response : 01 03 02 00 08 B9 82 0x 00 08 (Normal)

06 Function Code Writing a single holding register

Holding register address assignment with system parameters:

Memory Address	Name	Sample
00 30	Address	Note: For transmitters with address 01, change the address to 02 01 06 00 30 00 02 08 04 Response: 01 06 00 30 00 02 08 04
00 31	Baud rate 03—1200bps; 04—2400bps; 05—4800bps; 06—9600bps; 07—19200bps; 08—38400bps; 09—57600bps;	Note: The communication baud rate is changed to 38400 01 06 00 31 00 08 D9 C3 Response: 01 06 00 31 00 08 D9 C3
00 32	Serial communication format Notes: 00 - even check; 01 - odd parity; 02 - no parity, 2 stop bits; 03 - no parity, 1 stop bit;	Note: The communication format is changed to odd-check 01 06 00 32 00 01 E9 C5 Response: 01 06 00 32 00 01 E9 C5

Abnormal response:

Machine Address	Abnormal function code: (function code + 0x80)	Exception code 01 or 02 or 03 or 04	CRCL	CRCH
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Modbus exception code		
Code	Name	Meaning
01	Illegal functions	For the device, the function code received in the interrogation is not permitted
02	Illegal data address	For the device, the data address received in the interrogation is a disallowed address. In particular, the combination of register number and transmission length is invalid.
03	Illegal data values	For devices, the value of the number of disallowances contained in the data field is asked. It indicates an error in the structure of the remaining part of the combination request, such as an incorrect implied length. It in no way indicates that the data item in the register being submitted for storage has a value outside the application, since the Modbus protocol does not know the exact meaning of any particular value of any particular register.
04	Slave equipment failure	A non-recoverable error is generated when the device is attempting to perform the requested operation.