

WN69LP Modbus RTU Protocol V1.0.0

Revision History

Version	Date	Revision Details
V1.0.0	2025/12/25	Initial Release

1. Modbus Implementation

1.1 Communication Parameters

Item	Specification (Bits)
Data Bits	8
Parity	None
Stop Bits	1
Checksum	CRC (Polynomial 0x8005)
Baud Rate	User-defined (Default: 9600 bps)

1.2 Data Frame Definition

Master Query Frame:

Wake-up Byte	Address	Function Code	Start Register Address	Number of Registers	CRC Low Byte	CRC High Byte
1 Byte	1 Byte	1 Byte	2 Bytes	2 Bytes	1 Byte	1 Byte

Slave Response Frame:

Address	Function Code	Data Length	Data Set 1	Data Set 2	Data Set N	CRC Low Byte	CRC High Byte
1 Byte	1 Byte	1 Byte	2 Bytes	2 Bytes	2 Bytes	1 Byte	1 Byte

1.3 Register Map

Register Address	Function	R/W	Description
0160 H	Slave Address	R/W	Hex value (Range: 1 to 252)
0161 H	Baud Rate	R/W	Hex value. 1: 4800, 2: 9600, 3: 19200, 4: 115200
0162 H	Auto-Report Interval	R/W	Hex value. Unit: 250ms. e.g., 3CH = $60 * 0.25 = 15s$. (Range: 1 to 16383.75s). If < 1s, auto-report is disabled (Default). Note: Measures data 1s before reporting.
0163 H	Sampling Cycle	R/W	Hex value. Unit: 250ms. e.g., F0H = $240 * 0.25 = 60s$. (Range: 2 to 16383.75s). Default: 16s. Cycle disabled if < 2s.
0164 H	Clear Rainfall	W Only	Write 0xA55A to clear rainfall registers.
0165 H	Software Reset	W Only	Write 0xA55A to trigger reset. Device will be unresponsive for 5s after acknowledgement.
0180 H	Light Intensity	R Only	Unit: lux. Value = Register * 10 (Range: 0 to 300,000 lux). FFFFH if invalid.
0181 H	UV Index	R Only	Value = Register / 10 (Range: 0 to 15). FFFFH if invalid.
0182 H	Temperature	R Only	Offset: 400. Value = (Register - 400) * 0.1 °C. e.g., 1F9H = 10.5°C; 127H = -10.5°C.

Register Address	Function	R/W	Description
0183 H	Humidity	R Only	Range: 1% to 99%. e.g., 44H = 68%.
0184 H	Avg Wind Speed	R Only	Value = Register * 0.1 m/s (Range: 0.0 to 50.0 m/s).
0185 H	Gust	R Only	Value = Register * 0.1 m/s.
0186 H	Wind Direction	R Only	Range: 0° to 359°.
0187 H	Total Rainfall	R Only	Value = Register * 0.254 mm.
0188 H	Barometric Pressure	R Only	Value = Register * 0.1 hPa. (Range: 300.0 to 1100.0 hPa).
0189 H	Battery Voltage	R Only	Value = Register * 0.01 V. e.g., 12CH = 3.00V. Updated every 60s.
018A H	VCC (External Power)	R Only	Value = Register * 0.1 V (Range: 6.0V to 24.0V). Updated every 60s.
018B H	Recent Rainfall	R Only	Value = Register * 0.254 mm.

1.4 Examples

1.4.1 Standard Operations

Example 1: Read all weather parameters (Light to Recent Rainfall).

Query: 0xFF 0x24 0x03 0x0180 0x000C 0x42 0xEE

Response: 0x24 0x03 0x18 0x06E7 0x000A 0x0296 0x003C 0x000C 0x001C
0x0096 0x008B 0x271F 0x0138 0x0078 0x0005 0x00 0xC2

Data decoded: Light=17670 lux, UVI=1.0, Temp=26.2°C, Humidity=60%, etc.

1.4.2 Special Operations (Recovery)

Use these commands if configuration is lost or baud rate is unknown.

Wake-up	Prefix	R/W Baud Rate	Device Address	CRC
0xFF	0xFDFDFD	0: Read; 1-4: Set	0: Read; 1-252: Set	2 Bytes

1.5 Error Codes

Code	Meaning	Description
01	Illegal Function	Function code is not 0x03 or 0x06.
02	Illegal Data Address	Register address out of range.
08	CRC Check Failed	Checksum mismatch.

2. Wiring Definition

Color	Description	Notes
Red	VCC	6.0V to 24.0V DC Power
Black	GND	Ground
Green	485_A	RS485 A (Non-inverting)
White	485_B	RS485 B (Inverting)

Default Slave ID: 0x24. Wake-up byte (0xFF) is not included in CRC calculations.