

NH8

Network Hub

Datasheet & User Manual

Before getting started, read this manual thoroughly. If you have any doubt or suggestion, please do not hesitate to contact us!

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v1.0.1:

Supplemented paragraph 8 "Control description".

v1.0.2:

Supplemented paragraph 8 "Control description".

v1.2.0:

Changes in the circuitry for better USB identification.

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1. Features

- Easy to control
- Free multichannel soft
- USB 2.0 for connecting to a PC, RS-485 for networking up to 128 drivers

2. Applications

Multichannel control system

4. Power supply requirements

If the hub is connected to a PC via USB, no additional power supply is required. In this mode, pin 4 of connector 1 (*par. 5*) is a 5V output.

If the hub connected via RS-485 only, a 5V power supply is required.

5. Pins and control elements functions



UART connector

Wurth WR-MM 690157000872 or TE Connectivity 7-215083-8

	Pin	Description
8	1	UART RXD
	2	NC
	3	UART TXD
	4	NC
	5	NC
	6	NC
1	7	NC
	8	GND

The number on the marking near the first pin indicates the address of the driver in the network. For example, if combination of switch positions is 0000 (*par. 8, Setting the addresses of the drivers*), the address of driver number 1 is 0x01. If combination of switch positions is 0001, the address of driver number 1 is 0x09, etc.

3. Description

Non-isolated hub is designed to control up to 128 drivers. Up to 16 hubs can be networked via RS-485. USB 2.0 interface is used for connecting to a PC. UART interface is used for connecting drivers to the hub.

RS-485 connector

Wurth WR-TBL 691210910004

1 4	Pin	Description
	1	RS-485 B
	2	RS-485 A
	3	GND
	4	5V input/output

Please note that the RS-485 standard physically supports the connection of up to 32 devices, and the MODBUS RTU protocol has addresses from 1 to 255.

There must be one termination resistor on the RS-485 line between pins A and B. If there is no resistor or there is more than one resistor on the line, RS-485 communication may not work. This resistor is not installed in the hub by default; we can install it upon request.

6. Recommended operating conditions

	MIN	MAX	UNIT
Input voltage (Vin)	4.8	5.2	V
Operating temperature	-10	40	°C
UART RXD to GND	0	5	V
UART TXD to GND	0	5	V
RS-485 A to GND	0	5	V
RS-485 B to GND	0	5	V
Number of devices connected via RS-485	0	32	

7. How to get started

- 1. Unpack your Hub NH8;
- 2. Set the addresses of the drivers to be connected, by four-position switch (*par. 8, Setting the addresses of the drivers*)
- Connect your drivers to hub by UART digital control connectors;
- 4. Connect hub to computer by micro USB connector.
- If it's needed to connect more than 8 drivers, connect an additional hub via RS-485, set the addresses of the drivers;
- For correct operation of the hub, you need to install the driver for FT232 USB to RS-485 Bridge from a link below on a personal computer. Install Maiman Multisoft program (optional).

http://maiman.online/soft/



8. Control description

ATTENTION! Powering off any driver connected to hub or disconnecting any running driver may cause incorrect operation of the hub. Please merge negative input terminals of connected drivers for correct operation of the hub.

Default serial port settings:

Baud rate	Data bits	Stop bits	Parity	Flow control
115200	8	1	none	none

Setting the addresses of the drivers

Address of the drivers sets by four-position switch. For example, hub with switch combination 0000 will reserve 0x01-0x08 addresses, number 0001 - 0x09-0x10 addresses, 0010 - 0x11-0x18, etc. (Switch 1 corresponds to the least significant digit)

If not a hub, but another device is connected via RS-485, make sure that the address device connected via RS-485 does not match the address reserved by hub! For example, device with address 0002h cannot be connected to hub with reserved addresses 0001h-0008h.

MODBUS RTU commands description

Data exchange between the source and the computer is carried out only at the initiative of the computer. The list of commands may vary depending on the device model, up for new devices. To control the device, the MODBUS RTU protocol is used via the RS-485 communication line, with a maximum number of devices in the network equal to 32. The following commands are supported by the driver:

- 03h multiple reading of memory registers
- 06h single write to memory register
- 10h multiple write to memory register

Multiple read query (Code = 0x03):



Multiple read answer (Code = 0x03):



Single write query (Code = 0x06):



Single write answer (Code = 0x06):

Byte

Address	Code	Reg. Hi	Reg. Lo	Value Hi	Value Lo	CRC Lo	CRC Hi

Multiple write query (Code = 0x10):

Byte

Address	Code	Reg. Hi	Reg. Lo	Count Hi	Count Lo	CRC Lo	CRC Hi

Multiple write answer (Code = 0x10):



9. Correspondence between UART protocol and MODBUS protocol commands

Function	UART (hex)	MODBUS (hex)
Device model and version ID	0702	0001
Information about parameters that you can change (bit mask)	0703	0002
Serial number	0701	0003
State of the device (bit mask)	0700	0004
Lock status (bit mask)	0800	0005
Frequency (0.1 Hz)	0100	0006
Duration (0.1 ms)	0200	0007
Current (0.01 A)	0300	0008
Min frequency	0101	0020
Max frequency	0102	0021
Min duration	0201	0022
Max duration	0202	0023
Min current	0301	0024
Max current	0302	0025
Min NTC temp	0A05	0026
Max NTC temp	0A06	0027
Driver current maximum limit	0306	0029
Current protection level	0308	002A
Measured current	0307	0040
Measured voltage	0407	0041
Measured NTC temp	0AE4	0042
Measured PCB temp	0AF4	0043
RS SETTING	0704	0080
Calibrate current	030E	0088
Calibrate NTC B _{25/100}	OBOE	008A

TEC

TEC temperature value	0A10	0070
TEC temperature maximum	0A11	0071
TEC temperature minimum	0A12	0072
TEC temperature maximum limit	0A13	0073
TEC temperature minimum limit	0A14	0074
TEC temperature measured	0A15	0075

TEC current measured	0A16	0076
TEC current limit	0A17	0077
TEC voltage	0A18	0078
State of the TEC	0A1A	007A
Current set calibration	0A1E	007E
Internal LD NTC sensor	0A1F	007F
P coefficient	0A21	0091
I coefficient	0A22	0092
D coefficient	0A23	0093

10.Mechanical dimensions

All dimensions are in millimeters.



11.Warranty

In compliance with the provisions of Conditions limited warranty the Buyer has the right to guarantee during the one year period. The warranty period comes into effect from the shipping date.

The warranty only concerns products that are applied according requirements and for the applications specified in the manual for the product. If you want to use the products for other applications, contact us by e-mail: info@maimanelectronics.com. This warranty does not apply to damage due to incorrect use, abnormal use, or use in violation of product manual.

See the full warranty conditions on www.maimanelectronics.com/warranty.