

DATA NAB MBus-WTH-LCD-ETH Wall Temp Humidity Sensor



DATA NAB MBus-WTH-LCD-ETH Wall Temp Humidity Sensor Owner's Manual

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DATA NAB MBus-WTH-LCD-ETH Wall Temp Humidity Sensor



Product Specifications:

- **Model:** MBus_WTH_LCD_ETH & MBus_WTH_LCD_ETH_EXT
- **Application:** Temperature and Humidity Monitoring
- **Output Signals:** 4-20mA, 0-5V, 0-10V
- **Communication Ports:**
 - MBus_WTH_LCD_ETH: RS485 Modbus-RTU, Ethernet Modbus TCP
 - MBus_WTH_LCD_ETH_EXT: RS485 Modbus-RTU
- **Power Supply:**
 - If not using analog output transducers: 12-24VAC/DC +/- 10%
 - If using analog output transducers: 15-24VAC/DC +/- 10%

Product Usage Instructions

Configuration:

The sensor can be configured using the buttons and LCD display.

Communication:

For MBus_WTH_LCD_ETH:

- RS485 communications port for Modbus-RTU at 19.2/9600 Baud
- Ethernet Port for Modbus TCP communication over IP

Modbus Register List:

Default RS485 Comm Parameters:

- **Baud Rate:** 115200, Data Bits: 8, Parity: None, Stop Bit: 1

The default Modbus-ID for Modbus-RTU over RS485 communication is set to 1. The default IP Address for Modbus-TCP over IP communication is 192.168.0.3. Use Function Code 3 (Read Holding Registers) to read values and Function Code 6 (Write Single Register) to write values.

Analog Output:

Analog output jumper settings:

- 1=0-10V, 2=0-5V, 3=4-20mA (Read Only)

Room Temperature and Humidity Readings

Register Addresses:

- **Room Temp Reading in DegF x10:** Register 100
- **Room Temp Reading in DegC x10:** Register 101
- **Humidity Reading in %RH x10:** Register 304

The MBus_WTH_LCD_ETH and MBus_WTH_LCD_ETH_EXT Modbus-enabled temperature and humidity sensors are designed for environment monitoring in industrial, commercial, and residential temperature & humidity applications.

Features

MBus_WTH_LCD_ETH



MBus_WTH_LCD_ETH_EXT



- The sensor can be configured using buttons & LCD Display
- High-performance digital sensors and circuits to ensure accurate measurement and temperature compensation.
- Good long-term stability and reliability
- Fast response
- Multiple output signals selectable: 4-20mA, 0-5V or 0-10V
- RS485 communications port for Modbus-RTU, 19.2/9600 Baud
- Ethernet Port for Modbus TCP communication over IP

Relative Humidity

- **Sensor:** capacitance polymer
- **Operating Temperature:** 0~50°C
- **Operating Humidity Range:** 0~98% RH (Non condensing)
- **Output:** 4-20mA, 0-5V or 0-10V, RS485 Modbus-RTU
- **Accuracy:** 5% RH (25°C, 20~80% RH)
- **Hysteresis:** < ±1% RH
- **Response time:** < 10s (25°C, in slow air)
- **Drift:** < ±0.5% RH / year

Temperature

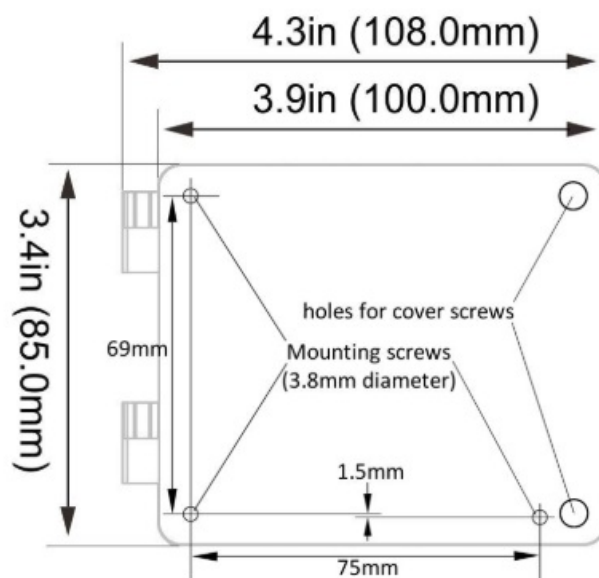
- **Sensor:** Internal 10K Thermistor
- **Operating Temperature Range:** -30~50°C (-22~122°F)
- **Output:** 4-20mA, 0-5V or 0-10V, RS 485

- **Accuracy:** $< \pm 0.5^{\circ}\text{C}$ @ 25°C

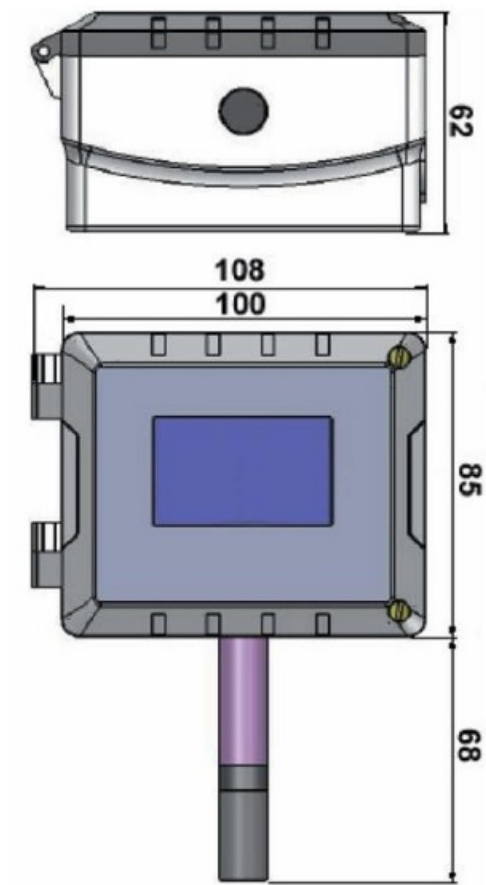
General

- **Power Supply:**
 - **If NOT using 0-10V or 4-20mA output transducers:** 12-24VAC/DC +/- 10%
 - **If using 0-10V or 4-20mA output transducers:** 15-24VAC/DC +/-10%
- **Power Consumption:**
 - **12VDC Power supply:** assume 2 watts per sensor
 - **24VAC Power supply:** assume 1VA per sensor
 - **Current Output Load:** $< 500\Omega$
 - **Display:** LCD screen for wall / outdoor mount and duct mount
 - **Display Resolution:** 0.1°C , 0.1% RH
 - **Operating Temperature:** $-30\sim 50^{\circ}\text{C}$, 0~98% RH (Non condensing) The humidity sensor only accurate from $0\sim 50^{\circ}\text{C}$.
 - **Storage Temperature:** $-30\sim 60^{\circ}\text{C}$
 - **Plastic Housing:** Flammability rating UL 94V0 file E194560
 - **Protection:** IP65

Enclosure views and Dimensions



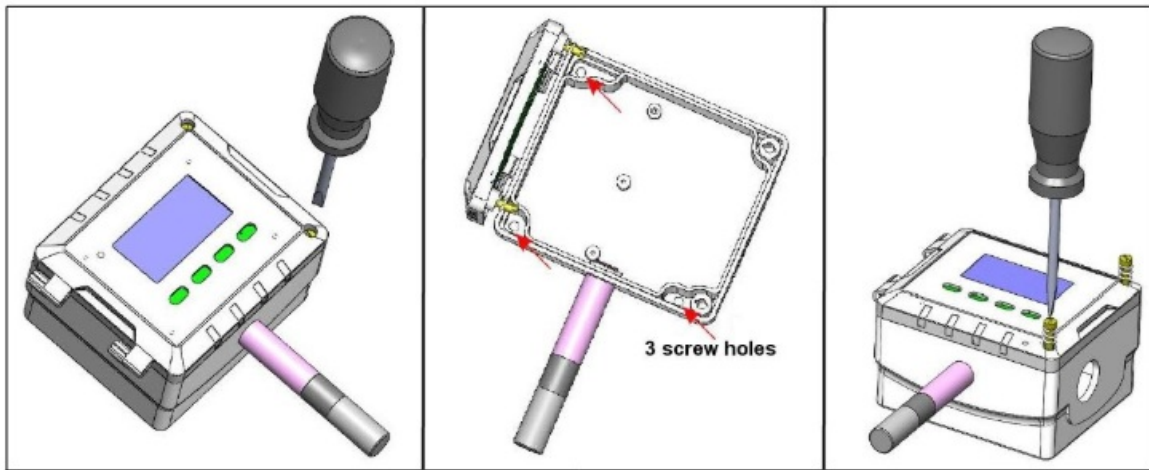
Housing Dimensions (in mm) for both models. Probe Dimensions (in mm) for MBus_WTH_LCD_ETH



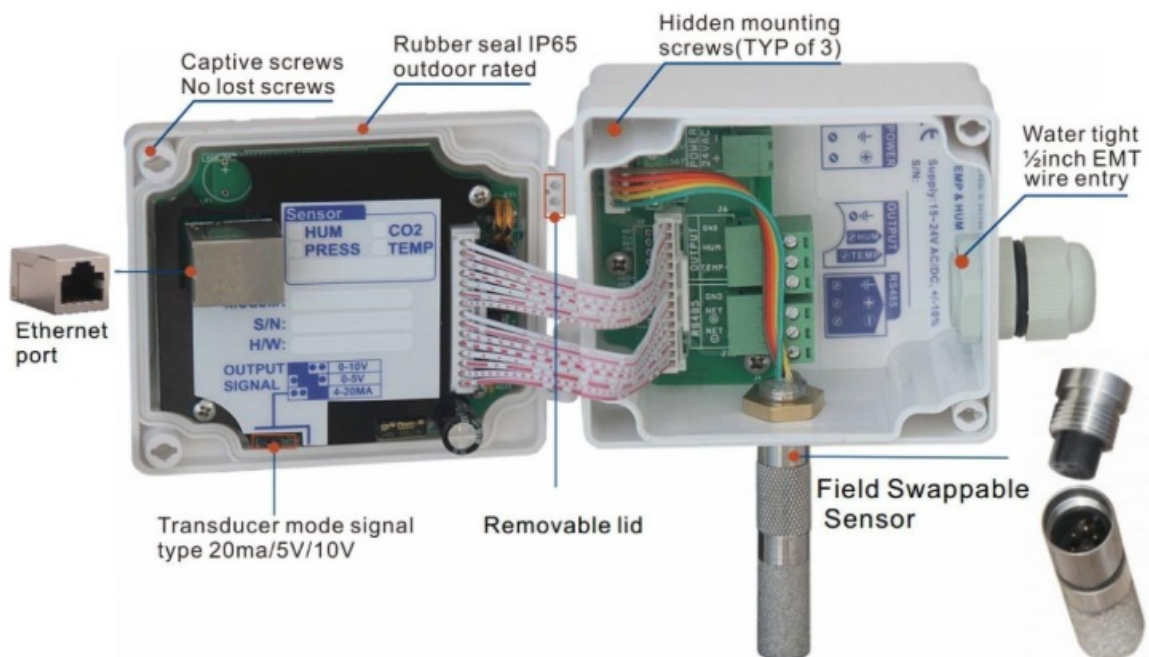
Probe Dimensions for MBus_WTH_LCD_ETH_EXT (mm)



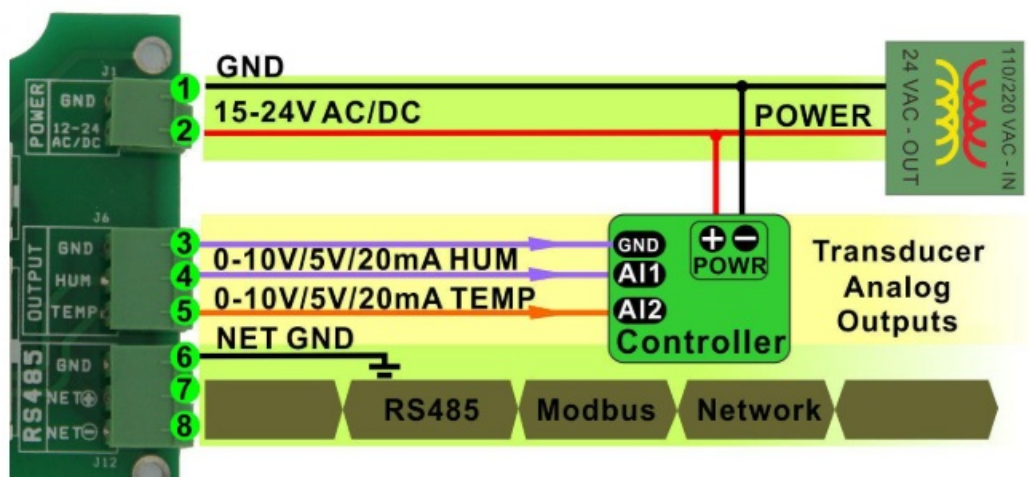
Probe Dimensions for MBus_WTH_LCD_ETH_EXT (mm)



Inside view & details



Wiring Diagram



Modbus Register List

- Default RS485 Comm Parameters: 115200 baud, 8 data bits, no parity, 1 stop bit. (configurable under “misc” LCD menu)
- Default Modbus-ID for Modbus-RTU over RS485 communication is: 1. (configurable under “misc” LCD menu)
- Default IP Address for Modbus-TCP over IP communication is: 192.168.0.3 (configurable under “misc” LCD menu)
- Use Function Code 3 (Read Holding Registers) to read values and Function Code 6 (Write Single Register) to write values.

Address	Bytes	Range	Defaults	Register & Description
0-3	4	-	-	Serial Number: Read only
4-5	2	-	-	Firmware Version: Read only
6	1	0-255	1	Modbus Device Address: You can read/change this under the LCD “Miscellaneous” menu
8	1			Hardware Revision: Read only
15	1	0-4	4	Baudrate: 0=9600baud, 1=19200baud, 2=38400baud, 3=57600baud, 4=115200baud
40-45	6	-	-	MAC Address: Read only
46	1	0-1	0	IP Mode: 0=Static, 1=DHCP
47-48	2	-	-	Upper 2 bytes of IP Address
49-50	2	-	-	Lower 2 bytes of IP Address
51-52	2	-	-	Upper 2 bytes of Subnet mask
53-54	2	-	-	Lower 2 bytes of Subnet mask
55-56	2	-	-	Upper 2 bytes of Gateway IP
57-58	2	-	-	Lower 2 bytes of Gateway IP
60	1	0-255	502	Modbus TCP Port
61-75	15	-	-	UNUSED: Mirrors registers 46-60: used as temp memory when any IP info is changed.
100	2	-	-	Room Temp Reading in DegF x10. Can be written to adjust temp calibration offset.
101	2	-	-	Room Temp Reading in DegC x10. Can be written to adjust temp calibration offset.
121	1	0-1	1	Temperature units for LCD display: 0=DegC, 1=DegF
186	1	1-3	3	Analog Output jumper setting: 1=0-10V, 2=0-5V, 3=4-20mA (Read Only)
285	2	-	-400	Temp AO Low Range (DegC x 10)
286	2	-	600	Temp AO High Range (DegC x 10)
287	2	-	0	Hum AO Low Range (%RH x 10)
288	2	-	1000	Hum AO High Range (%RH x 10)
304	2	0-1000	-	Humidity Reading in %RH x 10. This reg can be written to adjust hum calibration offset
362	1	0-255	255	LCD Backlight timeout: 0=Always Off, 255=Always On, 1-254=timeout period
370	1	0-3	-	Analog Output Auto/Manual Select. Bit0:temp, Bit1:hum. 0=Auto, 1=Manual
371	2	-	-	Temp Analog Output Manual Command (if bit0 set to 1 in Reg370)
372	2	-	-	Humidity Analog Output Manual Command (if bit1 set to 1 in Reg370)
373	2	0-1000	-	Mirrors humidity reading in Reg304 (Read only)
381-400	-	-	-	Factory Calibration points for Humidity Sensor (Read only - do not change)
401-410	-	-	-	Temperature AO voltage calibration offsets. (expert only)
411-420	-	-	-	Humidity AO voltage calibration offsets. (expert only)
421-430	-	-	-	Temperature AO Current calibration offsets. (expert only)
431-440	-	-	-	Humidity AO Current calibration offsets. (expert only)
450	-	-	-	Temperature Calibration Offset: In DegC x 10. So -10 Cal offset = Temp change of -1.0C
451	-	-	-	Humidity Calibration Offset: In %RH x 10. So +100 Cal offset = %RH change of 10%RH
452	1	0-100	5	Temperature filter (expert only)
453	1	0-100	5	Humidity filter (expert only)
482	2	-	-	Dewpoint in DegC x 10
483	2	-	-	Dewpoint in DegF x 10
1239-1242	-	-	-	RTC date parameters - 1239:year, 1240:month, 1241:day, 1242:day of week.
1243-1245	-	-	-	RTC time parameters - 1243:hour, 1244:minute, 1245:second.

For more detailed modbus register information, please email support@datanab.com

FAQ

Q: How can I change the Modbus-ID for Modbus-RTU communication?

A: You can change the Modbus-ID under the LCD Miscellaneous menu.

Q: What is the default IP mode for Modbus-TCP communication?

A: The default IP mode is Static. You can change it to DHCP under the miscellaneous LCD menu.

Documents / Resources

	DATA NAB MBus-WTH-LCD-ETH Wall Temp Humidity Sensor [pdf] Owner's Manual MBus_WTH_LCD_ETH, MBus_WTH_LCD_ETH_EXT, MBus-WTH-LCD-ETH Wall Temp Humidity Sensor, Wall Temp Humidity Sensor, Temp Humidity Sensor, Humidity Sensor, Sensor
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References

- [🌐 DataNab: Temperature & Humidity Sensors, Controllers & I/O, IP Audio – DataNab LLC](#)
- [User Manual](#)

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