

Air Quality Node

Descriptions

Air Quality Node is designed for environment monitoring and controlling in industrial, commercial and other buildings. These transmitters can be used to monitor air quality and temperature in various industrial and commercial settings. Modbus RS485/Bacnet MS/TP for direct digital reading on all models.

Highlights:

- The RS485 are hardened up for overvoltage and power supply crossed over.
- Display in degrees Fahrenheit or Celsius(connection to Bacnet).
- The LCD is a bitmap so we can show network connectivity.
- The user can configure what they want to show on the display: network activity, baud rate, protocol, etc.
- You can show a user setpoint so you can use it as a room / setpoint display.
- RS485/Bacnet MS/TP for direct digital reading on all models



AQ-N-LCD



AQ-N

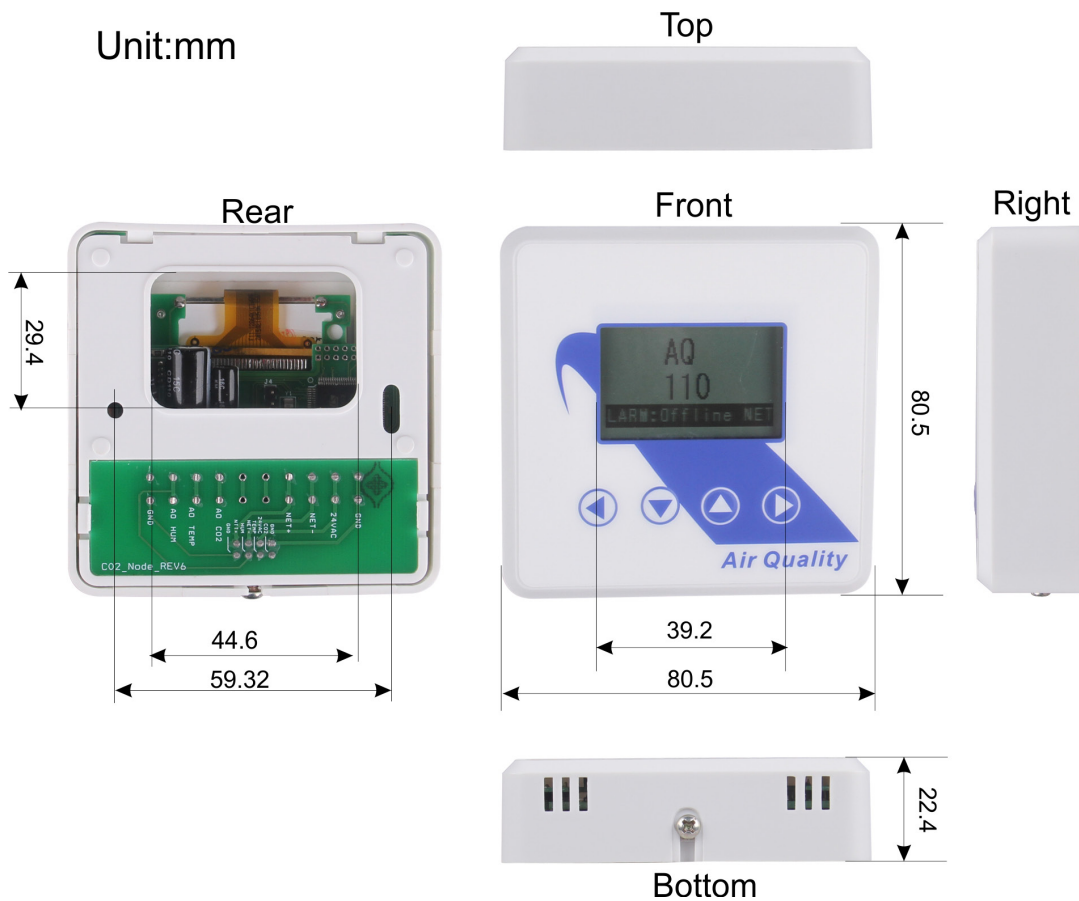
Specifications

| | | |
|----------------------------|------------------------------------------|----------------------|
| Typical Application | Wall mount indoors | |
| RS485 ports | 1 | |
| Power | 15-24V +/- 10%, AC or DC, 1 watt typical | |
| Operating Temp | -30~+60°C, 0-95% non condensing | |
| Plastic Housing | Flammability rating UL 94V0 file E194560 | |
| Display | LCD screen, Resolution 0.1°C, 0.1% RH | |
| Control Features | N/A | |
| TEMP | Sensor Type | 10K thermistor |
| | Range | -40~150°C(-60~340°F) |
| | Accuracy | < ±0.5°C @ 25°C |
| AQ | Sensor Type | TGS2600 |
| Size | 80.5 (L)x 80.5(W)x22.4(H)mm | |

Dimension

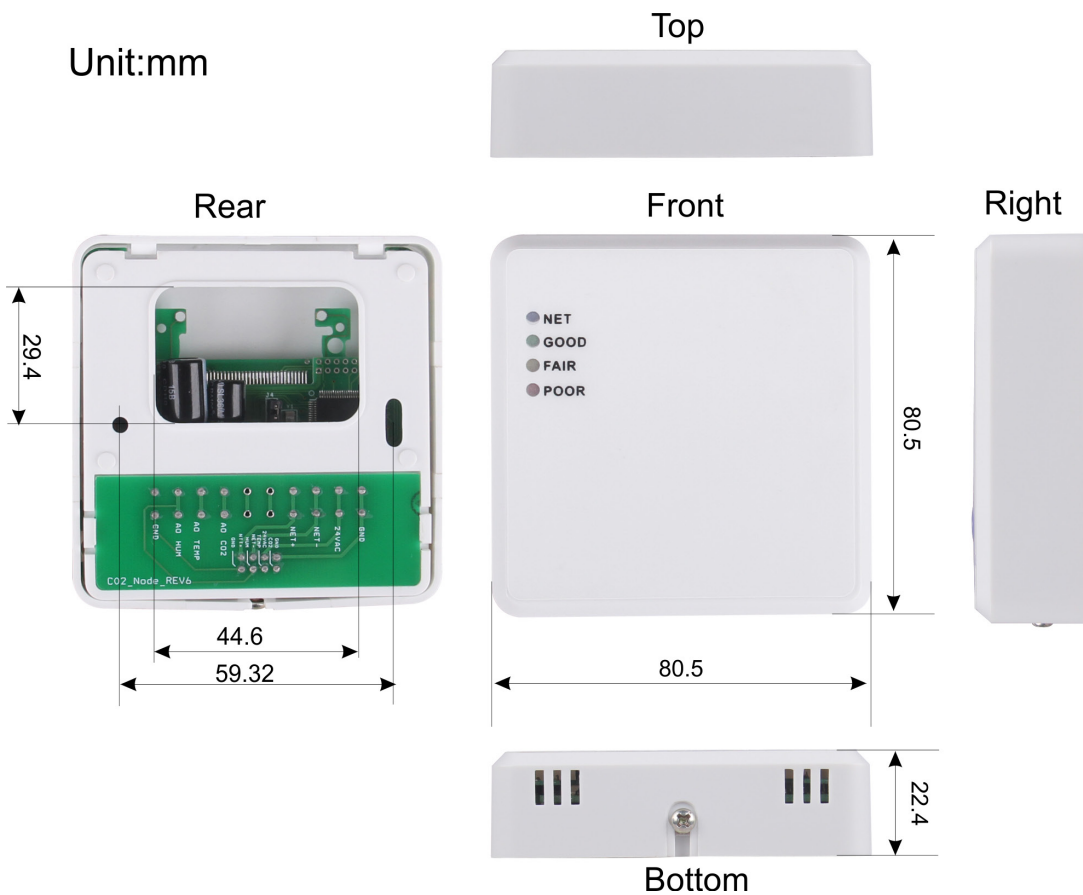
AQ-N-LCD

Unit:mm

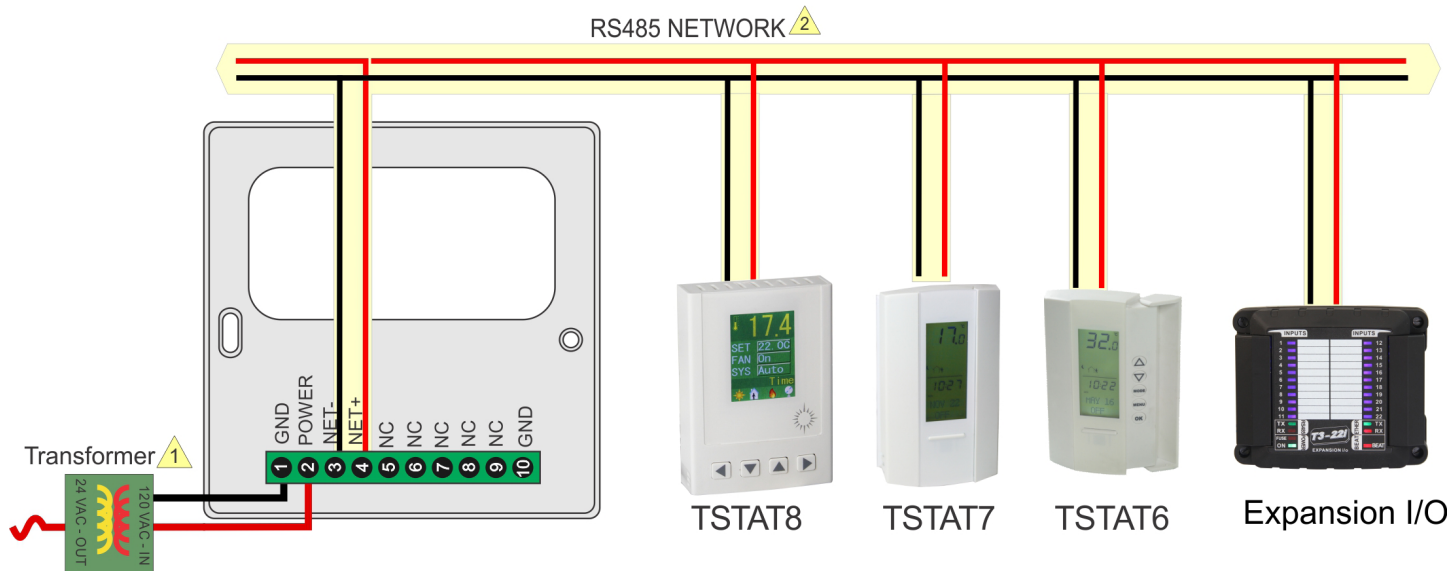


AQ-N

Unit:mm



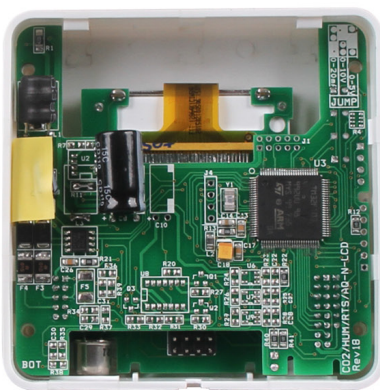
Backplate Features



- 1 Power Supply, 15 to 24V, AC or DC
- 2 RS485 Net, 18ga twisted pair typical, optional ground & shield



Rear



Rear of device



Front

Modbus Register List

| Address | Bytes | Register Description |
|----------|-------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 0 to 3 | 4 | Serial Number - 4 byte value. Read-only |
| 4 to 5 | 2 | Software Version – 2 byte value. Read-only |
| 6 | 1 | ADDRESS. Modbus device address |
| 7 | 1 | Product Model. This is a read-only register that is used by the microcontroller to determine the product |
| 8 | 1 | Hardware Revision. This is a read-only register that is used by the microcontroller to determine the hardware rev |
| 9 | 1 | PIC firmware version |
| 10 | 1 | PLUG_N_PLAY_ADDRESS, 'plug n play' address, used by the network master to resolve address conflicts. See VC code for algorithms |
| 15 | 1 | Baudrate Setting: 0 = 9600bps, 1 = 19200bps |
| 16 | 1 | Firmware Update Register, used to show the status of firmware updates |
| 17 to 99 | | Blank, for future use |
| 100 | 2 | adc value of co2 voltage output, not used, read only |
| 101 | 2 | adc value of temperature voltage output, not used, read only |
| 102 | 2 | adc value of humidity voltage output, not used, read only |
| 103 | 2 | adc value of co2 current output, not used, read only |
| 104 | 2 | adc value of temperature current output, not used, read only |
| 105 | 1 | adc value of humidity current output, not used, read only |
| 106 | 2 | adc value of on board thermistor sensor, read only |
| 107 | 2 | adc value of on board light sensor, read only |
| 108 | 2 | co2 value (ppm). It will be calibrated if write to it. |
| 109 | 2 | co2 calibration offset. User can change it to calibrate the co2 ppm. It will be changed also if user write the data to register co2 ppm |
| 110 | 1 | Delta value for eliminating the pulse ppm value. The default value is 200. |
| 111 | 2 | Filter times, make the ppm value go smooth. The default value is 5. |
| 112 | 2 | The fair alarm ppm setpoint of co2 sensor. |
| 113 | 2 | The poor alarm ppm setpoint of co2 sensor. |
| 114 | 1 | co2 alarm status: |
| | | 0b'xxxx 1xxx': co2 poor |
| | | 0b'xxxx 01xx': co2 fair |
| | | 0b'xxxx 001x': co2 good |
| 115 | 1 | the version number of humidity sensor |
| 116 | 2 | the relative humidity |
| 117 | 2 | the frequency value read from humidity sensor, read only |
| 118 | 1 | the number of calibration points of the humidity sensor |
| 119 | 2 | degree celsius temperature value of the humidity sensor |
| 120 | 2 | degree fahrenheit temperature value of the humidity sensor |
| 121 | 2 | celsius degree temperature value of the on board thermistor sensor |
| 122 | 2 | fahrenheit degree temperature value of the on board thermistor sensor |

Modbus Register List

| Address | Bytes | Register Description |
|---------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 123 | 2 | the offset for calibrating the on board thermistor sensor |
| 124 | 1 | select the temperature direct to analog output: 0: on board thermistor sensor, default setting 1: humidity sensor |
| 125 | 1 | select the temperature unit direct to analog output: |
| | | 0: degree celsius |
| | | 1: degree fahrenheit, default setting |
| 126 | 2 | Lighting value, for feature |
| 127 | 1 | analog output mode, change it by setting the jumper (J20) on the board, read only |
| 128 | 2 | the minimum value of temperature directs to the analog output |
| 129 | 2 | the maximum value of temperature directs to the analog output |
| 130 | 2 | the minimum value of humidity directs to the analog output |
| 131 | 2 | the maximum value of humidity directs to the analog output |
| 132 | 2 | the minimum value of co2 directs to the analog output |
| 133 | 2 | the maximum value of co2 directs to the analog output |
| | | e.g. co2 output: if the co2 ppm is 1000, the (minimum value, maximum value) = (0, 3000), then |
| | | 1. setting J20 to select 0V-10V output mode, so the co2 output is about $((1000\text{ppm} / (3000\text{ppm} - 0\text{ppm})) * (10\text{V} - 0\text{V})) + 0\text{V} = 3.3\text{V}$ |
| | | 2. setting J20 to select 0V-5V output mode, so the co2 output is about $((1000\text{ppm} / (3000\text{ppm} - 0\text{ppm})) * (5\text{V} - 0\text{V})) + 0\text{V} = 1.65\text{V}$ |
| | | 3. setting J20 to select 4mA-20mA output mode, so the co2 output is about $((1000\text{ppm} / (3000\text{ppm} - 0\text{ppm})) * (20\text{mA} - 4\text{mA})) + 4\text{mA} = 9.3\text{mA}$ |
| 184 | 2 | AQ value |
| 500 | 1 | co2 automatic compensation background enable or disable. 0 = Disable, 1 = Enable. |
| 501 | 2 | "Background CO2", default is 400ppm, minimum is 390, max is 500. |
| 502 | 1 | Maximum adjustment per day" default is 1ppm, max is 10 ppm, minimum is 1. |
| 503 | 1 | "Number of days to watch for minimum", default is 7 days. Max is 30 days. Minimum is 2 days. |
| 505 | 2 | co2 background calibration offset. |

Bacnet Register List

| Value | Value and Description |
|------------|-------------------------------------------------------------------------------------------------------|
| AV1 | SerialNumber LowByte |
| AV2 | SerialNumber HighByte |
| AV3 | SoftWare Version |
| AV4 | Modbus id |
| AV5 | Product Model |
| AV6 | Instance |
| AV7 | Station Number |
| AV8 | BaudRate |
| AV9 | Update |
| AV10 | Protocol switch. 0 = MODBUS,1=MSTP. |
| AV11 | Auto/Manual,Analog output auto/manual control. Bit 1 directs to temperature output, 0=Auto, 1=Manual. |
| AV12 | Dew Point |
| AV13 | Passwords |
| AV14 | Mixing Ratio, the mass of water over the mass of dry gas, [g/kg] |
| AV15 | Enthalpy of the air, [kJ/kg] |
| AV16 | Spare |
| AV17 | Temperature Offset |
| AV18~AV19 | Spare |
| AV20 | Temperature Filter |
| AV21 | Spare |
| AV22 | Temperature Unit |
| AV23 | Output Mode |
| AV24~ AV25 | Spare |
| AV26 | Minimal Range for temperature |
| AV27 | Maxium Range for temperature |
| AV28~AV30 | Spare |
| AV31 | Temperature Setpoint |
| AV32 | Spare |

| Analog Input | Analog Input and Description |
|--------------|------------------------------|
| AI1 | Spare |
| AI2 | Temperature |
| AI3 | Spare |

| Analog Output | Analog Output and Description |
|---------------|-------------------------------|
| AO1 | Spare |
| AO2 | Temperature |
| AO3 | Spare |