



**QHT 24RS**

**QHT 24R**

## Features

- To measure and take control of indoor air quality
- Three noses in same unit  
Air Quality (VOC), Humidity (rH) and Temperature (T)
- Selectable outputs 0-10 Vdc, 4-20 mA or 0-5 Vdc via jumpers on pcb for all three measurements.
- Modbus RS485 Network connection, Modbus RTU at 19.2k and 9600 baud
- VOC = Volatile Organic Compounds sensor also named as a mixed gas sensor
- LCD Display show actual value for Air Quality (VOC), Humidity (rH) and Temperature (T)
- Air Quality (VOC) LCD display reading = 0 to 1000 ppm.  
0 to 99 ppm = Fine  
110 ppm = Fair  
400 ppm = Poor  
600 ppm = Bad
- Humidity LCD display reading = 0 to 100% rH
- Temperature LCD display reading = 0 to 100°C

## Applications

- Offices
- Hotels
- Meeting rooms
- Convention centres
- Schools
- Airports
- Apartments
- Stores,
- Restaurants etc.

## Detectable gases

- Cigarette smoke
- Automobile exhaust
- Breath air
- Carbon dioxide (CO<sub>2</sub>)
- Carbon monoxide (CO)
- Solvent fumes
- Alcohol fumes
- Acetone
- Acrylonitrile
- Ammonia
- Benzene
- Chlorine
- Dimethyl amine
- Ethane
- Ethylene
- Ethylene oxide
- Formaldehyde
- Hydrogen
- Hydrogen sulfide
- Isobutane
- Methane
- Methanol
- Methyl chloride
- Methylene chloride
- Methy ether
- Methyl acetate
- Methyl ethyl ketone
- n-Hexane 2
- n-Petane
- Propane
- R-11
- R-12
- R-502
- R-123
- Sulfur dioxide
- Vinyl chloride

## Ordering

Type no.	Description
<b>QHT 24R</b>	Intelligent combined sensor for Air Quality (VOC), Humidity (rH) & Temperature (T) selectable outputs 0-10 Vdc, 4-20 mA or 0-5 Vdc with Modbus and LCD display.
<b>QHT 24RS</b>	Same as QHT 24R but without set point buttons (for schools, hotels etc)

### Air Quality (VOC) reading



The reading 0-1000 ppm are corresponding to the output for 0-10 Vdc.

>This is adjustable, you can set the full scale range of all parameters by writing to the modbus registers.

### Operational functions



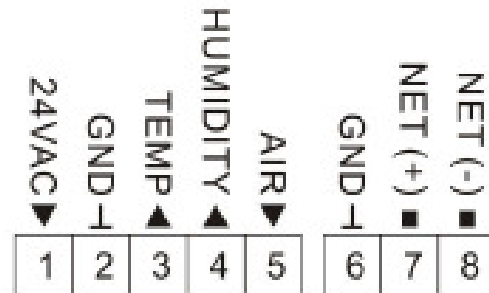
### Registers for Reading Temperature, Humidity and Air Quality

There are 4 registers to read temperature, humidity and air quality.

Address	Bytes	Description
100	2	Temperature value in °F
101	2	Temperature value in °C
102	2	Humidity Sensor Reading in percent
103	2	Air Quality Reading : 0-1000 where 1000 is equivalent to 30ppm H2 gas

### Terminal block connections

- 1 24 Vac live
- 2 Measurement neutral
- 3 Temperature output 0-10 Vdc, 4-20 mA or 0-5 Vdc
- 4 Humidity output 0-10 Vdc, 4-20 mA or 0-5 Vdc
- 5 Air Quality output 0-10 Vdc, 4-20 mA or 0-5 Vdc
- 6 Network Communication
- 7 Network Communication
- 8 Network Communication



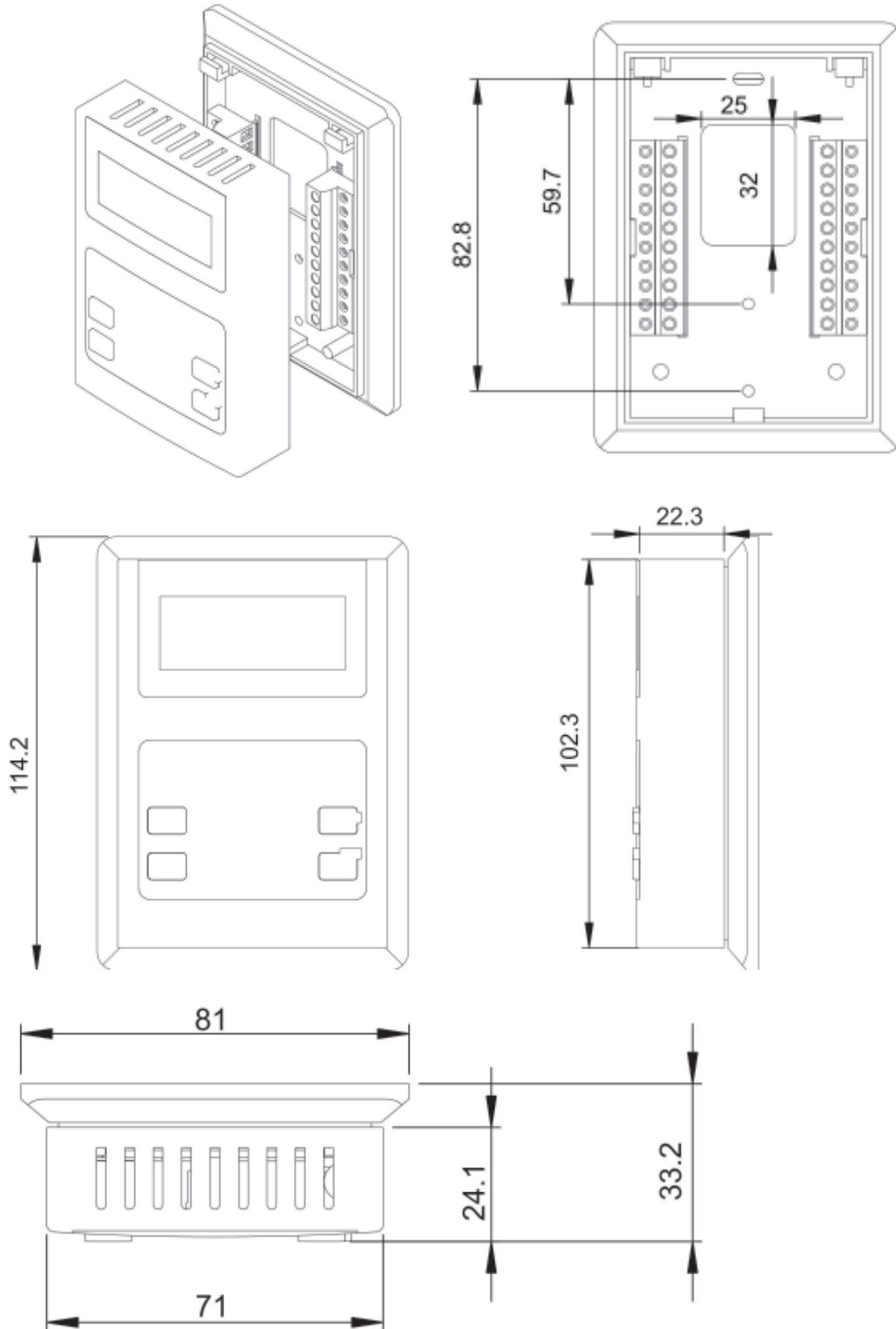
### Technical data

<b>Supply voltage</b>	12-24 Vac/dc +/-20%
<b>Power consumption</b>	55mA at 24 Vdc
<b>Operation temperature</b>	-30 to +70°C
<b>Ambient humidity range</b>	0-100% rH
<b>Material, enclosure</b>	Flame proof plastic
<b>Enclosure rating</b>	IP31
<b>Colour</b>	White
<b>Weight</b>	200 g (approx.)

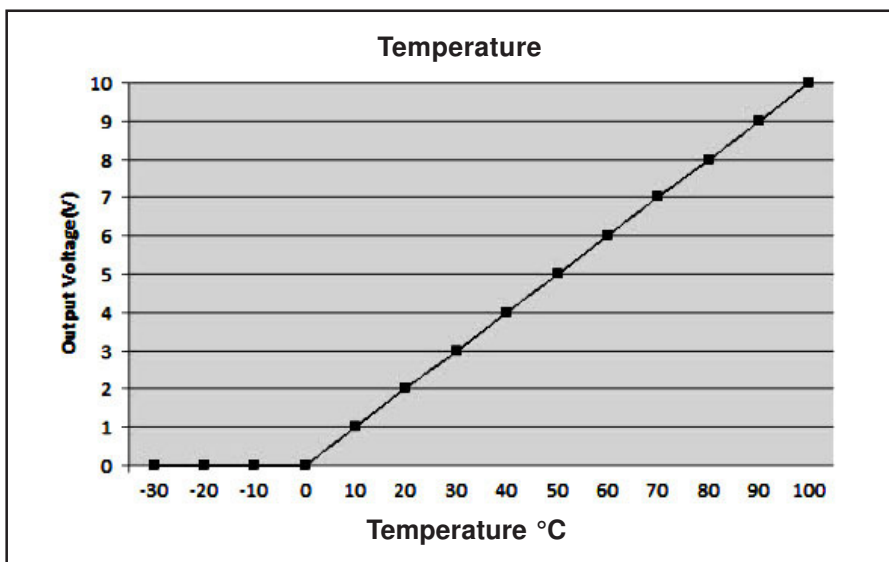
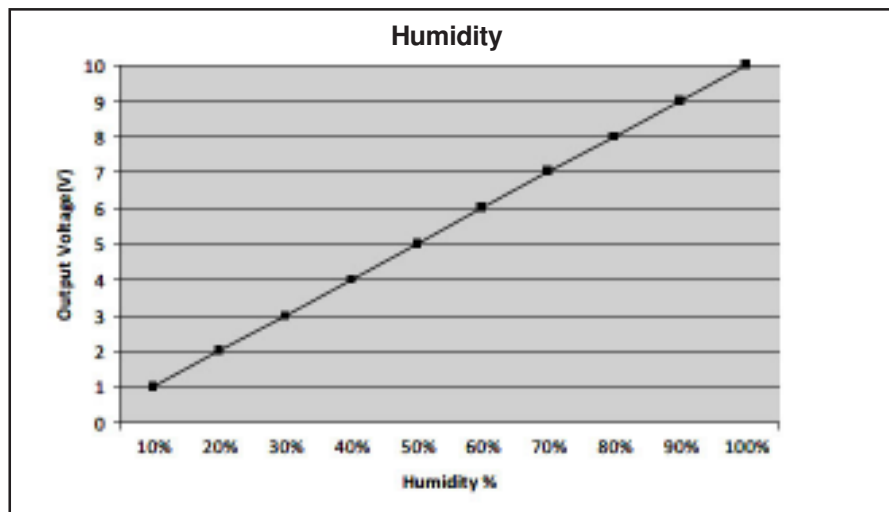
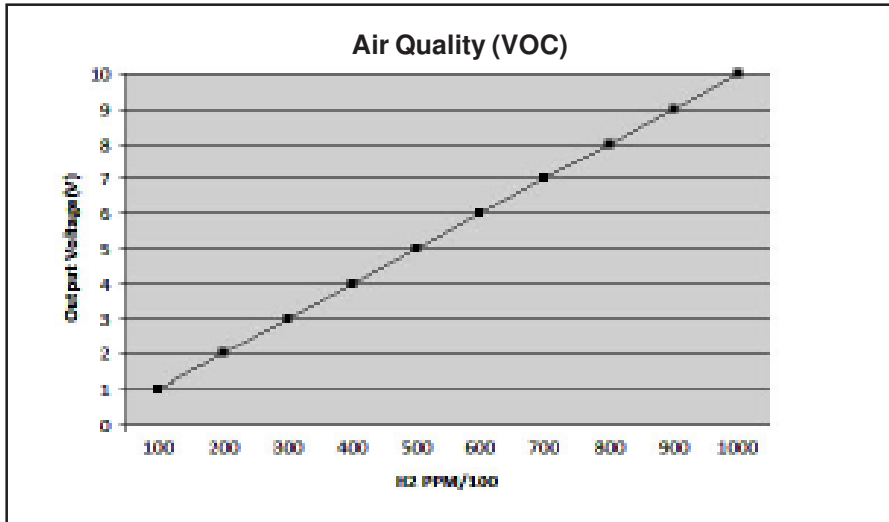
### Accuracy

The Air Quality (VOC) sensor will react differently according to the type of gas, the humidity accuracy is +/- 3% rH and temperature accuracy is +/- 0.2°C.

**Dimensions**



The analogue outputs 0-10 Vdc, 4-20 mA and 0-5 Vdc are corresponding to:  
Air Quality 0-1000 ppm, Humidity 0 to 100 % rH and Temperature 0 to 100°C.



## Modbus Registers

Air Quality Sensor uses MODBUS protocol to communicate with others. Following is a table of MODBUS Registers.

Address	Bytes	Register and Description
0 ~ 3	4	Serial Number -4 byte value. Read-only
4 ~ 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	PIC version of Humidity module
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	Base address selection. 0 = Protocol address, 1 =PLC address.
16	1	Firmware Update Register, used to show the status of firmware updates
17~99		Blank, for future use
100	2	Temperature value in °F
101	2	Temperature value in °C
102	2	Humidity Sensor Reading in percent,calibrate humidity
103	2	Air Quality Reading :0-1000 is equivalent to 0-10ppm H2 gas
111	1	temperature input select,0=internal,1=external
121	1	the units of temperature. 0 = C ,1=F
180	1	Sets the full scale voltage of the outputs; 1:0~10v;2:0~5v;3:4~20ma;
185	1	Baudrate 0 = 9.6kb/s, 1 = 19.2kb/s
193	1	temperature filter set
304	1	Humidity Sensor Reading in percent
305	2	HUmidity Sensor's frequency
312	2	Humidity Calibration, Frequency at first point
313	2	Humidity Calibration, RH at first point
314	2	Humidity Calibration, Frequency at second point (highest humidity reading)
315	2	Humidity Calibration, RH at second point
316	2	Humidity Calibration, Frequency at third point
317	2	Humidity Calibration, RH at third point
318	2	Humidity Calibration, Frequency at the fourth point
319	2	Humidity Calibration, RH at the fourth point
320	2	Humidity Calibration, Frequency at fifth point
321	2	Humidity Calibration, RH at fifth point
322	2	Humidity Calibration, Frequency at sixth point (highest humidity reading)
323	2	Humidity Calibration, RH at sixth point
324	2	Humidity Calibration, Frequency at seventh point
325	2	Humidity Calibration, RH at seventh point
326	2	Humidity Calibration, Frequency at the eighth point
327	2	Humidity Calibration, RH at the eighth point
328	2	Humidity Calibration, Frequency at ninth point
329	2	Humidity Calibration, RH at ninth point
330	2	Humidity Calibration, Frequency at the tenth point
331	2	Humidity Calibration, RH at the tenth point
332	2	the range of lower temperature set



## Modbus Registers

Air Quality Sensor uses MODBUS protocol to communicate with others. Following is a table of MODBUS Registers.

Address	Bytes	Register and Description
333	2	the range of higher temperature set
334	2	the range of lower humidity set
335	2	the range of higher humidity set
336	2	the range of lower AQ set
337	2	the range of higher AQ set
338	2	the current value of temperature output
339	2	the current of humidity output
340	2	the current of AQ output
341	2	the voltage of temperature output
342	2	the voltage of humidity output
343	2	the voltage of AQ output
344	1	the status of scrolling.0 is off ,1 is on
345	2	the level1 set
346	2	the level2 set
347	2	the level3 set