V·C·P
Ventilation Control Products

Intelligent combined sensor for
Air Quality (VOC) + Humidity (rH) + Temperature (T)
with analogue outputs, Modbus and LCD display

QHT 24R
QHT 24RS   Jan.16

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_2)
• 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
QHT 24R	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.
QHT 24RS	Same as QHT 24R but without set point buttons (for schools, hotels etc)

OneTemp
pty ltd
MEASURE I CONTROL I RECORD
www.onetemp.com.au
1300 768 887

Intelligent combined sensor for
Air Quality (VOC) + Humidity (rH) + Temperature (T)
with analogue outputs, Modbus and LCD display

QHT 24R
QHT 24RS   Jan.16

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

AQ value displayed/
Adjust:
AQ level 1/2/3
Temperature unit C/F
Display scrolling On/Off

Humidity value displayed/
Adjust:
AQ level 1/2/3
Temperature unit C/F
Display scrolling On/Off

Temperature value displayed/
Move in the menu

Enter in the menu/
Move in the menu

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

VCP
Ventilation Control Products

Intelligent combined sensor for
Air Quality (VOC) + Humidity (rH) + Temperature (T)
with analogue outputs, Modbus and LCD display

QHT 24R
QHT 24RS   Jan.16

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

24VAC ▼	GND ⊥	TEMP ▲	HUMIDITY ▲	AIR ▼	GND ⊥	NET (+) ■	NET (-) ■
1	2	3	4	5	6	7	8
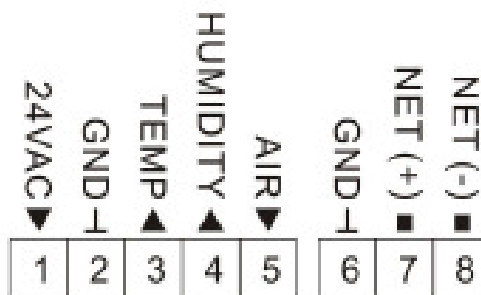
Technical data

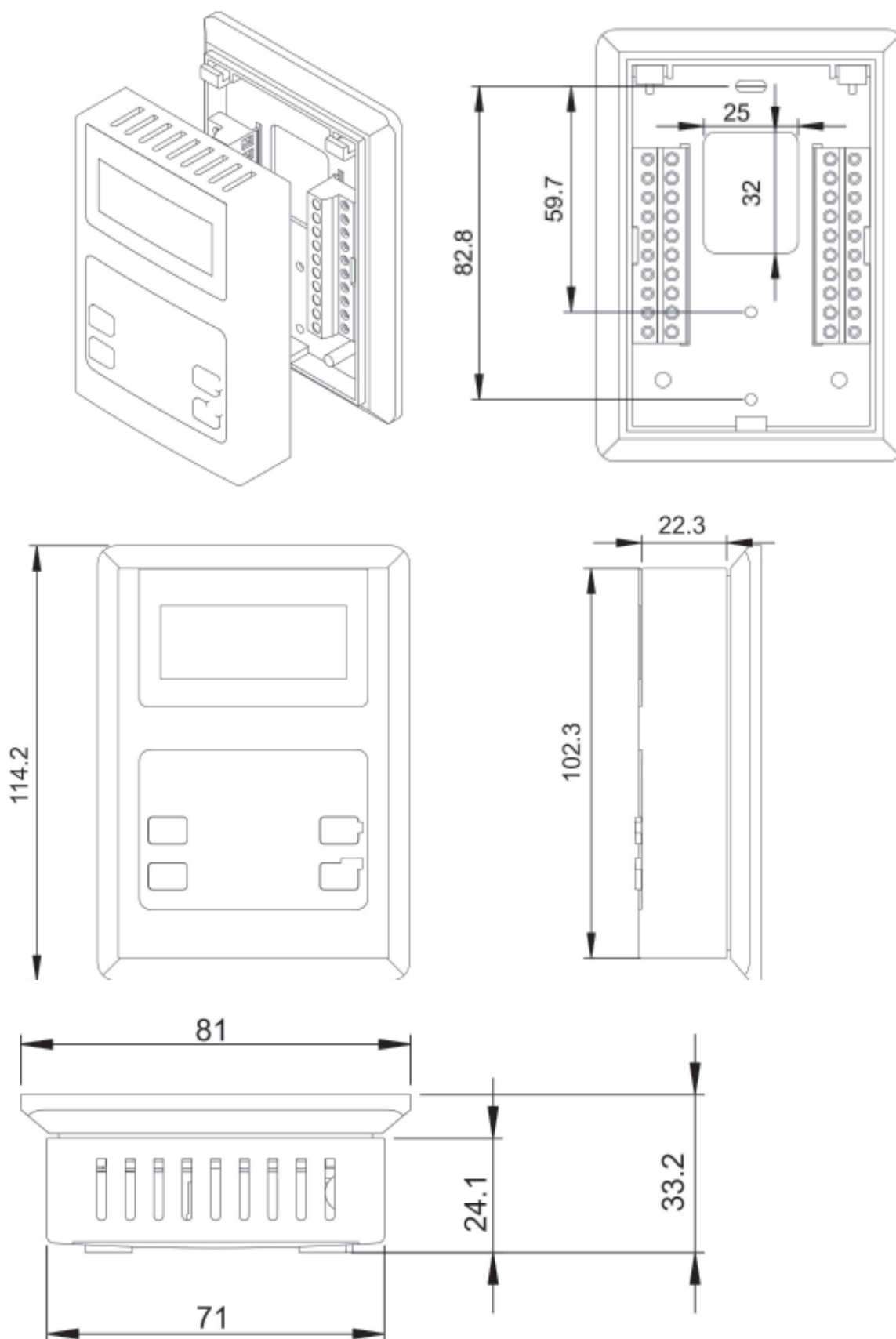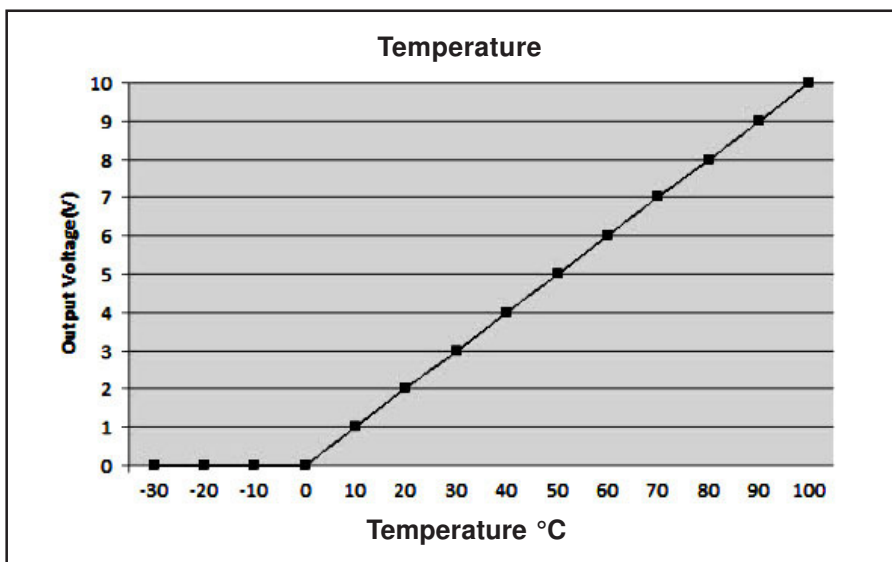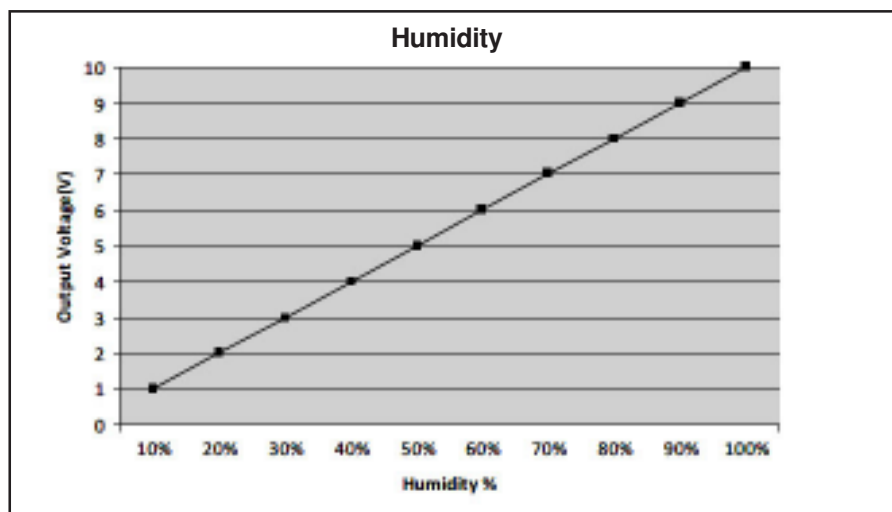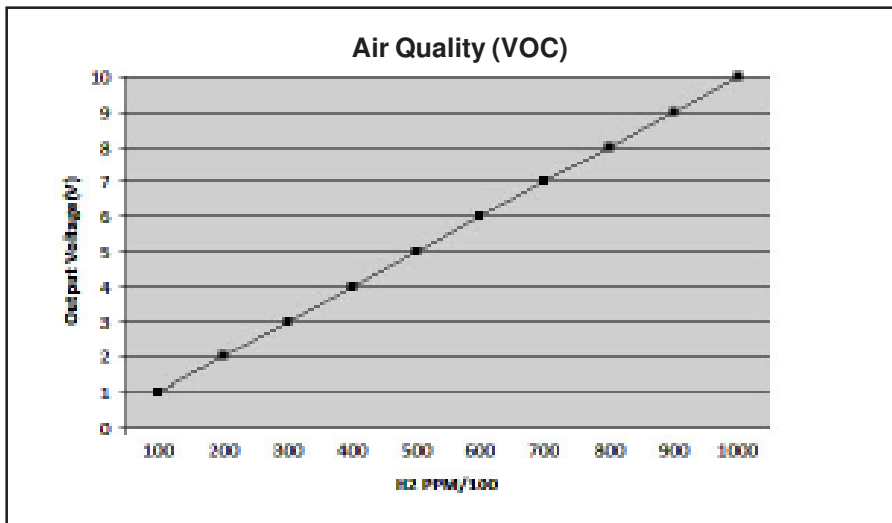|	
Supply voltage	12-24 Vac/dc +/-20%
Power consumption	55mA at 24 Vdc
Operation temperature	-30 to +70°C
Ambient humidity range	0-100% rH
Material, enclosure	Flame proof plastic
Enclosure rating	IP 31
Colour	White
Weight	200 g (approx.)

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.

V·C·P
Ventilation Control Products

Intelligent combined sensor for
Air Quality (VOC) + Humidity (rH) + Temperature (T)
with analogue outputs, Modbus and LCD display

QHT 24R
QHT 24RS   Jan.16

Dimensions

V·C·P
Ventilation Control Products

Intelligent combined sensor for
Air Quality (VOC) + Humidity (rH) + Temperature (T)
with analogue outputs, Modbus and LCD display

QHT 24R
QHT 24RS   Jan.16

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.

Air Quality (VOC)

Output Voltage (V) vs *H2 PPM/100*

Humidity

Output Voltage (V) vs *Humidity %*

Temperature

Output Voltage (V) vs *Temperature °C*

Intelligent combined sensor for		
Air Quality (VOC) + Humidity (rH) + Temperature (T)	**QHT 24R**	
with analogue outputs, Modbus and LCD display	**QHT 24RS**	Jan.16

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,1external
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

V·C·P
Ventilation Control Products

Intelligent combined sensor for
Air Quality (VOC) + Humidity (rH) + Temperature (T)
with analogue outputs, Modbus and LCD display

QHT 24R
QHT 24RS   Jan.16

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 humidty output
340	2	the current of AQ output
341	2	the voltage of temperature output
342	2	the voltage of humidty 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

OneTemp pty ltd
MEASURE | CONTROL | RECORD
www.onetemp.com.au
1300 768 887