Quanto Display

Quanto Touch BMS Air Quality Monitor

CO2, PM, Temp, RH,

Senseair NDIR

PM option

App set-up

4 Colour Themes

Features

- ModBus commincation
- EnOcean Connectivity to 15 devices max.
- Room occupant ventilation over ride for selected Time
- Window and Fan control
- CO2, Temperature, Humidity, VOCs
- Touch Screen Interface
- Continually updated

Description

The Quanto is a communicable controller which measures Carbon Dioxide, volatile organic compounds (VOCs), Temperature, and Relative Humidity. It's a user interface for room occupants and an invaluable aid and commissioning tool for ventilation engineers when setting up ventilation connected to a building management system.

The Quanto can set Modbus registers to the required values for damper positions and send this information to the BMS to create a customised set file for individual rooms.

A visual LED lamp array around the side of the Quanto gives an indication of Status. Calls to action messages for users can be displayed on the fascia display.

The fascia of the Quanto is available either with or without display. The Quanto can connect easily to mobile devices - telephones/tablets, and various levels of security are used to provide appropriate permissions to access the relevant settings. This access is controlled by an open or closed Modbus signal.

Not all ventilation strategies are created equal. A room may have window dampers another a forced air heat recovery system and so on. The Quanto can display a control page for whichever system is used. The fascia display then acts as a user interface to increase or decrease ventilation rates. Putting the control temporarily back in the hands of the room occupants. After a predetermined time - default 60 mins- the Quanto will return to automatic under the control of the building management system.

Specification

Power

Power Supply	24VDC
Current Consumption	200mA max

General

Dimensions	Width 115mm | Height 115mm | Depth 38mm
Weight	250grams
Display	Touch LCD Screen with LED indicators & Backlight
Mounting	Wall - Flush mounted Single pattress (minimum depth 32mm)
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Warm up Time (Initial)	30 minutes
Response Time	< 2 minutes (90% of final value)

Measurment Range

CO2	CO2: 400-5000 ppm
Temperature	0-60 °C
Humidity	0-100%
VOC	

Carbon Dioxide Sensor

CO2 Sensor 1 SenseAir Sunrise	
	Operating principle: Non-dispersive infrared (NDIR) Measured gas: Carbon Dioxide Measurement range: 0–10 000ppm Accuracy: ±30 ppm ±3 % of reading1 Operating range RH: <85 % RH Operation range °C: <50 °C Warm-up time: 0 sec Response time: 30s Power supply: 3.05 - 5.5 V Peak current: 125 mA Average current: 1-34µA Communication: I2C, UART Outputs: Digital Compliance: ANSI/ASHRAE Standard 62.1-2022, RESET Standard Grade A, WELL Building Standard® (WELL v2™) Maintenance: Maintenance free Life expectancy: >15 years
Temperature	±1°C (±0.9°F)
Humidity	±5%
VOC	±10%

Approvals, Guarantee

Approvals	Complies with CE requirements - lead free - Rohs, EMC
Guarantee	3 years

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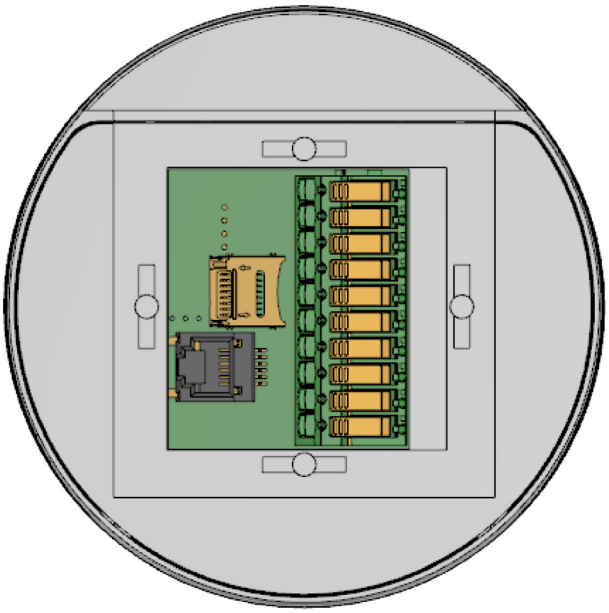
Overview

The Quanto Touch BMS is easy to operate. Simply connect the power source, turn it on, and wait for the warm-up period to complete. Once the device is ready, the CO2 concentration, temperature, humidity, and VOC readings will be displayed on the large LCD screen.

What's in the box

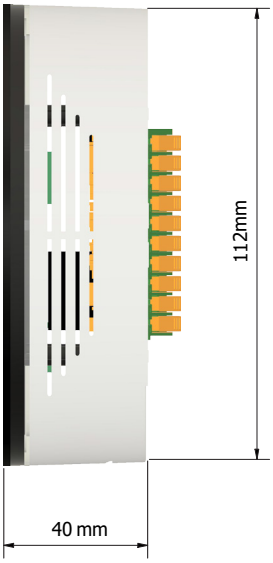
Quanto Touch

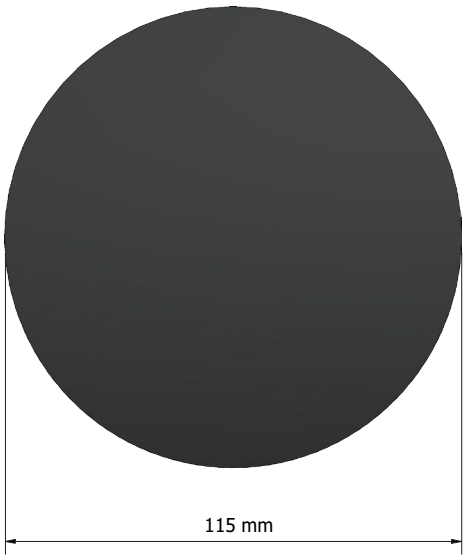


Torx Key

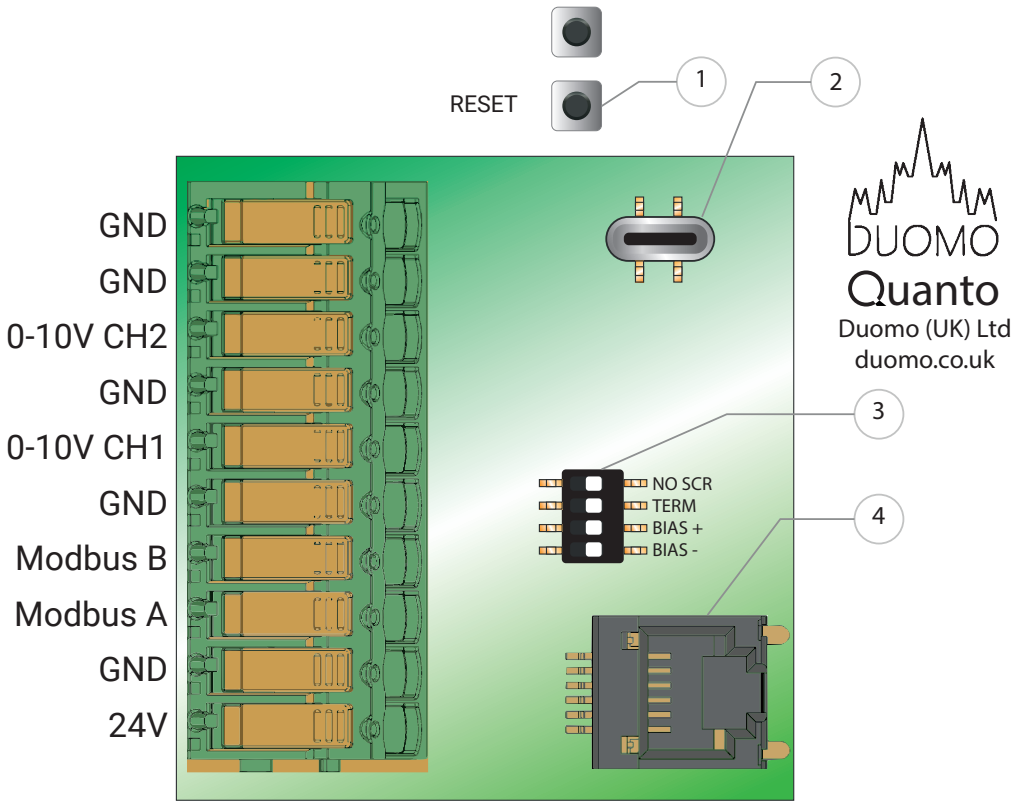
4 x bolts

Overall Dimensions (mm)





Wiring Connections



No	Description	Functionality
1	RJ11 Connector	
2	24V	
3	GND	
4	Modbus A	
5	Modbus B	
6	GND	
7	0-10V CH1	
8	GND	
9	0-10V CH1	
10	GND	
11	GND	
12	Reset 1 Button	
13	Prog 2 Button	

Operating Instructions

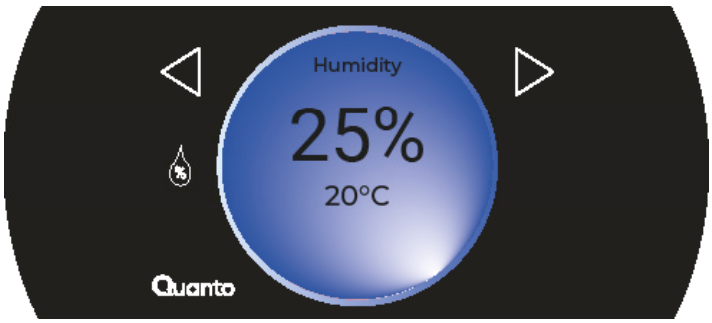
The Quanto Touch is easy to operate. As a regular user the touch screen arrows allow the user to see readings of interest and set the default screen on wake up. If any of the below screens are not displaying then contact and Engineer as this will have been deactivated. The Quanto can include screens for:

The Quanto logo can be touched to show the following details:

- Serial Number of Quanto
- IP address
- Duomo (UK) contact details

Humidity

Humidity (%)
Temperature (°C)

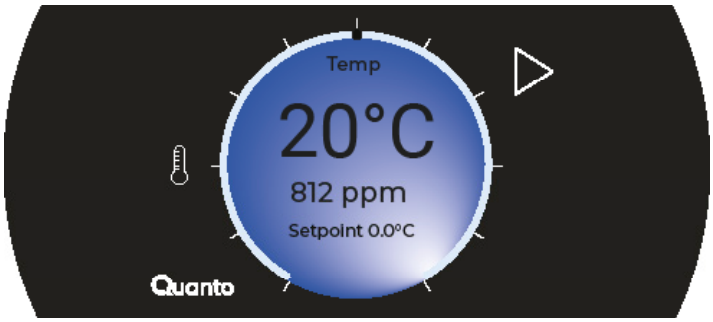


Default Screen Adjustment

Arrow buttons < > allow the default screen to be changed to suit requirements or choose reading of most interest.

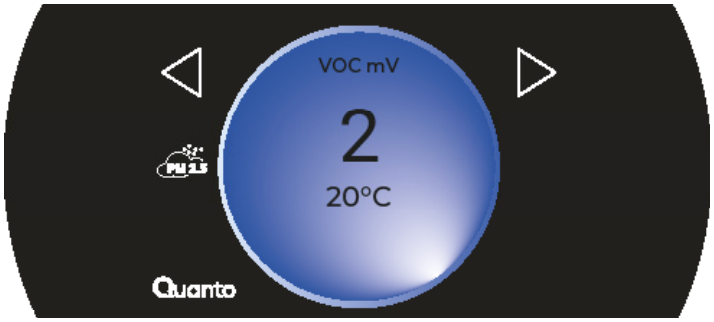
Temperature

Temperature (°C) and CO_2 reading in parts per million (ppm)



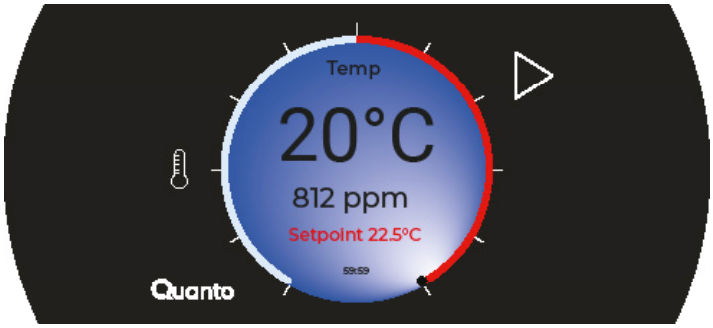
Volatile Organic Compounds (VOCs)

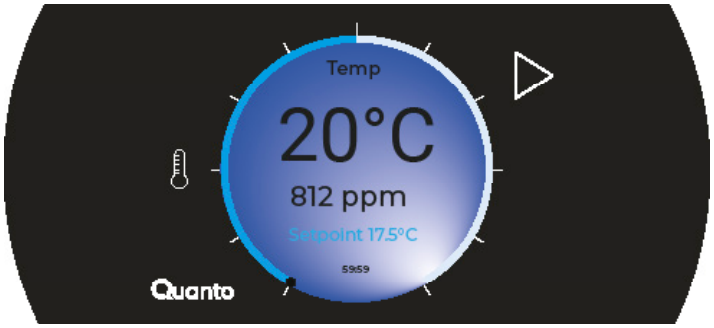
VOCs
Temperature (°C)



Temperature Setpoints:

The setpoint temperature is configured via Modbus holding register HR0. For example, a value of 2000 in HR0 corresponds to a setpoint of 20 °C. The occupant can then adjust the temperature as needed, for instance to 22.5 °C or 17.5 °C, as shown in the example below.



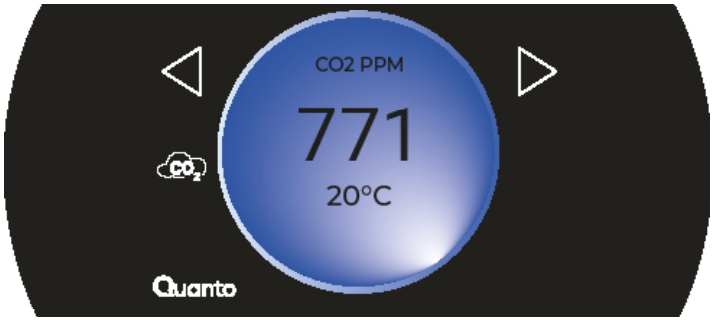


A countdown timer at the bottom of the display indicates the temperature override duration. Once this time has elapsed, the temperature setting will revert to the value set in holding register HR0.

Vent Boost Option Tap to send a Modbus register. Used to activate whichever ventilation method is selected. Default boost period is one hour, this can be adjusted during install.

CO2

CO_2 in parts per million (ppm)
Temperature (°C)

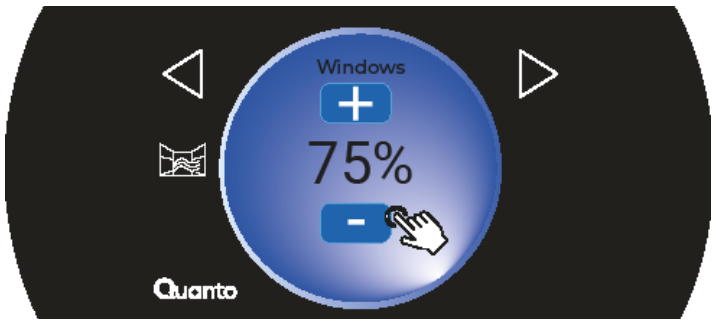


Ceiling Fan

The + and - scroll through to the desired setting.
LOW / MEDIUM / HIGH / AUTO / OFF

Windows

Tap main circle for selectable options:
AUTO / CLOSED / 25% / 50% / 75% / 100%



Logging into the Quanto Touch

There are two levels of enginneer access to allow the Quanto Touch settings, options and outputs to be tailored to site specific requirements:

- Engineer Level 1 - Access by password
- Engineer Level 2 - Highest level of access with BMS permissions via Modbus

Engineer Level 1

To access this perform the following steps:

1. Touch Quanto Logo in bottom left of screen on Quanto Display
2. Take Note of Serial Number; (For example 001E0E00)
3. Search Wi-Fi Network on Android or iOS device
4. Connect to Wi-Fi network with Quanto Serial number reference from Step 2
5. Enter password: ********** (Please contact us for default password)
6. Click Menu ≡ (Faint menu symbol at top left of black screen) to access Menu options.

There are three options available in Engineer level 1 from the Menu ≡

1. Dashboard
2. Modbus
3. Duomo

Click Menu ≡ to switch between these three options.

Dashboard

See overview of readings for:

1. Temp
2. Humidity (Hum)
3. VOC - Volatile Organic Compounds (VOCs)
4. CO2

Temperature Setpoint

The current temperature is shown and there are incremental setpoints for adjustment either up or down by 0.5°C per increment which will set a new target temperature that is sent to the BMS.

Modbus

Gives current Modbus address of the Quanto Touch. This can be changed by entering required address.

1. Address
2. Board Rate
3. Parity
4. Stop Bits

Duomo

From the Duomo Information screen, you can see contact details for technical support or general queries

Engineer Level 2

To access this level, perform the following steps:

1. From the BMS using the admin password register enter the enginneer level 2 permission value.
   IMPORTANT: Upon completion of commissioning return the admin password register value to 0.
2. Touch Quanto Logo in bottom left of screen on Quanto Display
3. Take Note of Serial Number; (For example 001E0E00)
4. Search Wi-Fi Network on Android or iOS device
5. Connect to Wi-Fi network with Quanto Serial number reference from Step 2
6. Enter password: ********** (Please contact us for default password)
7. Click Menu ≡ (Feint menu symbol at top left of black screen) to access Menu options.
   IMPORTANT: Upon completion of commissioning return the admin password register value to 0.

There are ten options available in Engineer level 2 from the Menu ≡

1. Dashboard
2. CO2
3. EnOcean
4. Modbus
5. 0-10V
6. Heat Recovery
7. UI
8. LED Ring
9. Update
10. Duomo

Click Menu ≡ to switch between these ten options.

Dashboard

See overview of readings.

1. Temp
2. Humidity (Hum)
3. VOC - Volatile Organic Compounds (VOCs)
4. CO2

Temperature Setpoint

The current temperature is shown and there are incremental setpoints for adjustment either up or down by 0.5°C per increment which will set a new target temperature that is sent to the BMS.

CO2

ABC

ABC period (in hours)

ABC Target

Calibration Mode

EnOcean

Pair Sensor

Enable Realtime Updates

Modbus

1. Address
2. Board Rate
3. Parity
4. Stop Bits

Modbus Input and Holding

Engineer Level 2 (cont'd)

0-10V

Sets the Parameter which refers to each of the two 0-10V outputs and also the min and max voltages across an adjustable range for each parameter.

Heat Recovery

This function greatly simplifies the process of tailoring the performance of the heat recovery system to the controlled space. Any changes are reflected back at the BMS and this is fixed for that sensor.

UI

Screen Brightness

Enter number between 0-100 to adjust screen brightness of Quanto Touch

Screen Timeout

Choose between options to set time screen stays active after last use

- Always On
- 1 Minute
- 2 Minutes
- 5 Minutes
- 10 Minutes

Enable or Disable Screens

Enable = This Screen **will be** visible when navigating on Quanto using < > touch buttons
Disable = This Screen **will not be** visible when navigating on Quanto using < > touch buttons

The following screens can be enabled or disabled

- Ceiling Fan Screen - with or without boost function.
- Window Screen
- Humidity
- VOC

Theme

Choose the theme colour of the Quanto Touch:

- Blue
- Bronze
- Grey
- Soft

Temperature Offset

Offset the temperature to account for the environment and use the plus (+) and minus (-) symbols to set whether the offset is positive or negative.

Messages

22 characters max on meesgaes that can be displayed on the Quanto Touch and require the user to acknowledge by tapping **OK** touch button.

There are 6 message slots that can be stored.

Use the Update Messages button to update stored message after changes.

Test Message

Test a message by tapping the appropriate message number and it should be displayed on the Quanto immediately.

LED Ring

LED Mode

Choose between the following options to immediately see the LED mode apllied to the Quanto Touch

LED Mode	Description
Off	No LEDs illuminated.
Single LED Spin	Chosen Colour in LED colour options will spin around the Quanto (Single LED illuminated at any time).
Incremental	Chosen Colour in LED colour options will spin around the Quanto (Multiple LEDs illuminated).
Flash All	Chosen Colour in LED colour options will flash from the Quanto for approximately 2 seconds then pause and repeat.
Rainbow Spin	A set Rainbow pattern will spin around Quanto Touch. Chosen Colour is ignored

LED Colours

Choose the colour for use in the above LED Mode above.

Update

Update Firmware

Allows firmware updates to be performed in the field. Please cxontact our technical department for further assistance.

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From the Duomo Information screen, you can see contact details for technical support or general queries.

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Type	Register	Name	Description	Units	Range	R/W	Default
Holding	0	Temp Setpoint	Base temperature setpoint	x100C	0-5000	RW	0
Holding	1	Humidity Setpoint	Humidity setpoint	x100 %RH	0-10000	RW	0
Holding	2	CO_2 Setpoint 1	CO_2 setpoint primary	ppm	400-5000	RW	800
Holding	3	CO_2 Setpoint 2	CO_2 setpoint secondary	ppm	400-5000	RW	1200
Holding	4	VOC Setpoint	VOC setpoint		0-65535	RW	0
Holding	5	Sleep	Reserved (unused)			RW	0
Holding	6	0-10V Ch1 Value	Current DAC output channel 1	0-255 (0-10V)	0-255	RW	0
Holding	7	0-10V Ch2 Value	Current DAC output channel 2	0-255 (0-10V)	0-255	RW	0
Holding	8	ABC Period	CO_2 ABC calibration period	hours	0-65535	RW	180
Holding	9	Stop Bits	Modbus stop bits (0=1 stop 1=2 stop)		0-1	RW	0
Holding	10	Parity	Modbus parity (0=None 1=Odd 2=Even)		0-2	RW	0
Holding	11	Baud	Modbus baud rate index (0=9600 1=14400 2=19200 3=38400 4=57600 5=115200)		0-5	RW	5
Holding	12	Address	Modbus slave address		1-247	RW	200
Holding	13	Supply Fan Min	Supply fan minimum speed		0-255	RW	0
Holding	14	Supply Fan Max	Supply fan maximum speed		0-255	RW	0
Holding	15	Extract Fan Min	Extract fan minimum speed		0-255	RW	0
Holding	16	Extract Fan Max	Extract fan maximum speed		0-255	RW	0
Holding	17	Recirc Fan Min	Recirculation fan minimum speed		0-255	RW	0
Holding	18	Recirc Fan Max	Recirculation fan maximum speed		0-255	RW	0
Holding	19	Supply Fan	Reserved (unused)			RW	0
Holding	20	ABC Calibrate Switch	Write 1 to trigger CO_2 background calibration		0-1	RW	0
Holding	21	Window Control	Window position (0-5 mapped to 0-100%)		0-5	RW	0
Holding	22	Ceiling Fan	Ceiling fan speed (0=off 1-4 speed)		0-4	RW	0
Holding	23	0-10V Ch1 Source	Ch1 input source (0=Manual 1=Temp 2=Humidity 3=CO_2 4=VOC)		0-4	RW	0
Holding	24	0-10V Ch2 Source	Ch2 input source (0=Manual 1=Temp 2=Humidity 3=CO_2 4=VOC)		0-4	RW	0

Type	Register	Name	Description	Units	Range	R/W	Default
Holding	25	Unit Type	Device type identifier		0-65535	RW	0
Holding	26	Serial $_0$	Chip ID byte $_3$ (MSB)		0-255	R	auto
Holding	27	Serial $_1$	Chip ID byte $_2$		0-255	R	auto
Holding	28	Serial $_2$	Chip ID byte $_1$		0-255	R	auto
Holding	29	Serial $_3$	Chip ID byte $_0$ (LSB)		0-255	R	auto
Holding	30	ABC Target	CO_2 ABC calibration target	ppm	400-2000	RW	400
Holding	31	Reboot Device	Write $_1$ to reboot		0-1	RW	0
Holding	32 - 46	EnOcean Device $_{0-14}$	Paired EnOcean device address ($_{15}$ slots)		0-65535	RW	0
Holding	47 - 61	EnOcean Type $_{0-14}$	Paired EnOcean device type ($_0$XA$_5$=temp $_0$XF$_6$=switch $_0$XD$_5$=contact)		0-255	RW	0
Holding	62	EnOcean Pairing	Pairing state ($_0$=idle $_1$=listening $_3$=confirm add)		0-3	RW	0
Holding	63	EnOcean Temp Address	Last detected EnOcean device address (during pairing)		0-65535	R	0
Holding	64	EnOcean Type	Last detected EnOcean device type (during pairing)		0-255	R	0
Holding	65	LED Ring Mode	LED ring pattern ($_0$=off $_1$=solid $_2$=spin $_3$=rainbow)		0-10	RW	0
Holding	66	LED Colour	LED ring colour (packed RGB)		0-16777215	RW	0
Holding	67	Brightness	Display brightness	$_{0-100}$%	0-100	RW	100
Holding	68	Screen Timeout	Screen dim timeout ($_0$=always on $_1$=$_1$min $_2$=$_2$min $_3$=$_5$min $_4$=$_{10}$min)		0-4	RW	0
Holding	69	Fan Screen Enabled	Show ceiling fan screen		0-1	RW	1
Holding	70	Window Screen Enabled	Show window control screen		0-1	RW	1
Holding	71	Airboost Enabled	Show boost button on temp screen		0-1	RW	1
Holding	72	Window Overide Enabled	Allow window override		0-1	RW	0
Holding	73	Setpoint Arc	Setpoint offset index ($_{0-10}$ maps to $_{-2.5}$ to $_{+2.5}$ centre=$_5$)		0-10	RW	5
Holding	74	Theme	Display colour theme ($_0$=Bronze $_2$=Grey $_3$=Soft)		0-3	RW	0
Holding	75	Screen On	Display power ($_0$=off $_1$=on)		0-1	RW	1
Holding	76	Banco Slider	Banco fan speed slider value		0-100	RW	0
Holding	77	Banco Unit	Banco unit/motor off ($_0$=off $_1$=on)		0-1	RW	0

Type	Register	Name	Description	Units	Range	R/W	Default
Holding	78	Banco Damper	Banco damper on/off (0=off 1=on)		0-65535	RW	0
Holding	79	Setpoint Timeout	Time before setpoint auto-resets to centre	minutes	0-120	RW	60
Holding	80	Humidity Screen Enabled	Show humidity screen		0-1	RW	1
Holding	81	VOC Screen Enabled	Show VOC screen		0-1	RW	1
Holding	82	Banco Screen Enabled	Show Banco HVAC screen		0-1	RW	0
Holding	83	Send Message	Display message index (0=none 1-6=message)		0-6	RW	0
Holding	84	WiFi Switch	Reserved (WiFi controlled by password=11)		0-1	RW	0
Holding	85	CO_2 Target	CO_2 target calibration value	ppm	400-2000	RW	400
Holding	86	Temp Offset	Temperature calibration offset magnitude	x100 C	0-500	RW	0
Holding	87	Temp AddSub	Offset direction (0=add 1=subtract)		0-3	RW	0
Holding	88	CO_2 Calibrate	Write target ppm to trigger CO_2 target calibration	ppm	0-65535	RW	0
Holding	89	Password	Admin password (2001=unlock config 11=WiFi off)		0-65535	RW	0
Holding	90	Ch1 Temp Min	0-10V Ch1 temperature scale minimum	C (whole)	0-100	RW	15
Holding	91	Ch1 Temp Max	0-10V Ch1 temperature scale maximum	C (whole)	0-100	RW	30
Holding	92	Ch1 Humidity Min	0-10V Ch1 humidity scale minimum	%RH	0-100	RW	20
Holding	93	Ch1 Humidity Max	0-10V Ch1 humidity scale maximum	%RH	0-100	RW	80
Holding	94	Ch1 CO_2 Min	0-10V Ch1 CO_2 scale minimum	ppm	0-5000	RW	400
Holding	95	Ch1 CO_2 Max	0-10V Ch1 CO_2 scale maximum	ppm	0-5000	RW	2000
Holding	96	Ch1 VOC Min	0-10V Ch1 VOC scale minimum	ppm	0-65535	RW	0
Holding	97	Ch1 VOC Max	0-10V Ch1 VOC scale maximum		0-65535	RW	500
Holding	98	Ch1 Min Voltage	0-10V Ch1 minimum DAC output (BMS alive floor)	0-255	0-255	RW	0
Holding	99	Ch2 Temp Min	0-10V Ch2 temperature scale minimum	C (whole)	0-100	RW	15
Holding	100	Ch2 Temp Max	0-10V Ch2 temperature scale maximum	C (whole)	0-100	RW	30
Holding	101	Ch2 Humidity Min	0-10V Ch2 humidity scale minimum	%RH	0-100	RW	20
Holding	102	Ch2 Humidity Max	0-10V Ch2 humidity scale maximum	%RH	0-100	RW	80

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Type	Register	Name	Description	Units	Range	R/W	Default
Holding	103	Ch_2 CO_2 Min	-10V Ch_2 CO_2 scale minimum	ppm	0-5000	RW	400
Holding	104	Ch_2 CO_2 Max	-10V Ch_2 CO_2 scale maximum	ppm	0-5000	RW	2000
Holding	105	Ch_2 VOC Min	-10V VCO Ch_2 VCO scale minimum		0-65535	RW	0
Holding	106	Ch_2 VOC Max	-10V VCO Ch_2 VCO scale maximum		0-65535	RW	500
Holding	107	Ch_2 Min Voltage	-10V Ch_2 minimum DAC output (BMS alive floor)	0-255	0-255	RW	0
Holding	108	Screen Layout	UI layout UI layout (0=Circular 1=Sidebar+Main)		0-1	RW	1
Holding	109	Has Display	Display fitted flag		0-1	RW	1
Holding	110	Has EnOcean	EnOcean radio fitted flag		0-1	RW	1
Holding	111	Has PM Sensor	$PM_{2.5}$ sensor fitted flag		0-1	RW	1
Holding	112	Has SCD_{41}	SCD_{41} sensor fitted flag		0-1	RW	0
Holding	113	EnOcean Screen Enable	(also requires reg 110 Has EnOcean = 1)		0-1	RW	0
Holding	114	IAQ Screen Enable	Display IAQ values		0-1	RW	
Input	0	Temperature	BME_{680} compensated temperature	x100 c		R	
Input	1	Humidity	BME_{680} humidity	x100 %RH		R	
Input	2	CO_2	Sunrise CO_2 concentration	ppm		R	
Input	3	VOC	Breath VOC equivalent	x100		R	
Input	4	Window Status	Current window position		0-5	R	
Input	5 - 19	EnOcean 0 - 14	EnOcean device live values (15 slots)	varies by type		R	
Input	20	Boost	Boost mode active		0-1	R	
Input	21	Commissioning Mode	BMS commissioning mode active		0-1	R	
Input	22	Max Speed Mode	BMS max speed override		0-1	R	
Input	23	Water Balancing Mode	BMS water balancing		0-1	R	
Input	24	Heat Exchanger Bypass	BMS heat exchanger bypass		0-1	R	
Input	25	Supply Fan Spped	Current supply fan speed		0-255	R	

Type	Register	Name	Description	Units	Range	R/W	Default
Input	26	Extract Fan Speed	Current extract fan speed		0-255	R	
Input	27	Recirc Fan Speed	Current recirculation fan speed		0-255	R	
Input	28	Heater Battery Valve	Heater battery valve position		0-255	R	
Input	29	Heat Exchanger Bypass Damper	Heat exchanger bypass damper position		0-255	R	
Input	30	Room Temp Adjust	Room temperature adjustment			R	
Input	31	CO_2 Measurement Period	Sunrise CO_2 measurement period	Seconds		R	
Input	32	CO_2 Fimware Rev	Sunrise CO_2 firmware revision			R	
Input	33	CO_2 Firmware Type	Sunrise CO_2 firmware type			R	
Input	34	CO_2 Measurement Mode	Sunrise CO_2 measurement mode			R	
Input	35	CO_2 Calibration Status	Sunrise CO_2 calibration status			R	
Input	36	CO_2 Error	Sunrise CO_2 error code			R	
Input	37	CO_2 Num Samples	Sunrise CO_2 number of samples			R	
Input	38	CO_2 ABC Period	Sunrise CO_2 ABC calibration period			R	
Input	39	CO_2 Meter Control	Sunrise CO_2 meter control register			R	
Input	40	CO_2 Counter	Sunrise CO_2 sample counter			R	
Input	41	Actual Setpoint	Computed setpoint (base + arc offset)	x_{100} c		R	
Input	42	Firmware Version	Firmware version number			$_{30}$R	
Input	43	SCD_{41} Temperature	SCD_{41} temperature	x_{100} c		R	
Input	44	SCD_{41} Humidity	SCD_{41} humidity	x_{100} %RH		R	
Input	45	SCD_{41} CO_2	SCD_{41} CO_2 concentration	ppm		R	
Input	46	$PM_{1.0}$	Particulate matter $_{1.0}$	ug/m$_3$		R	
Input	47	PM_{10}	Particulate matter $_{10}$	ug/m$_3$		R	
Input	48	$PM_{2.5}$	Particulate matter $_{2.5}$	ug/m$_3$		R	
Input	49	AQI	Air Quality Index (computed)		0-500	R	
Input	50	IAQ Accuracy	BSEC IAQ accuracy level		0-3	R	

Notes

DUOMO
GAS SAFETY CONTROLS

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