PRODUCT CATALOGUE
ROOM CONTROL AND MEASUREMENT

Smart Solutions for Integrated Building Systems and IoT

Senticon
SENTIENT CONTROL SOLUTIONS

ABOUT SENTICON PRODUCTS

HIGH QUALITY, SMART AND INTELLIGENT CONTROLLERS AND SENSORS

High Quality Products with Proven Value for Money
Products Designed to be Installer Friendly
Modern Technology and Innovative Approach Offers:-

- **Capital Savings** on Products - One Device Covers All Requirements
- **Installation Savings** on Easy-to-Install and Robust Products
- **Operational Energy Savings** over Traditional Systems, Integrated Multi-Trigger Occupancy Sensors Provide **10-15%** Energy Savings
- User-Friendly Interfaces for End-Users
- Accurate Comfort Control for better User Satisfaction
- Product design with Application Knowledge for User Comfort
- Compliance with Green Building Directives such as RESET® and WELL®

√ WELL BUILDING COMPLIANT √ RESET AIR COMPLIANT

LEADING WIRELESS AND IoT CONTROL SOLUTIONS

The LoraWan communications capability allows the controllers and the sensors to connect to BMS via a Private Network, or the devices can be connected to wider public IoT network.

The controllers operate completely stand-alone providing accurate and energy efficient local room control. LoraWan network is used for efficient integration to BMS. Typically to monitor the room measurements and send new setpoints and operating modes to the controllers (e.g. from Hotel Booking systems).

Senticon's unique LoraWan payload structure offers efficient uplink and downlink data communication.

OPEN STANDARD COMMUNICATION NETWORKS ARE IN OUR DNA

Senticon Team has been developing communicating network solutions for BMS since 1990s. The team has in-depth technical and practical knowledge on how to integrate distributed controls to BMS efficiently.

As a result, Senticon's room controllers and intelligent smart sensors not only integrate seamlessly via BACnet and Modbus, but also provide extended features for successful and cost effective installation of building control systems.

ASHRAE BACnet™ Modbus

MODERN, INTUITIVE AND ATTRACTIVE USER INTERFACES

Capacitive Touchscreen with High End Glass Surface

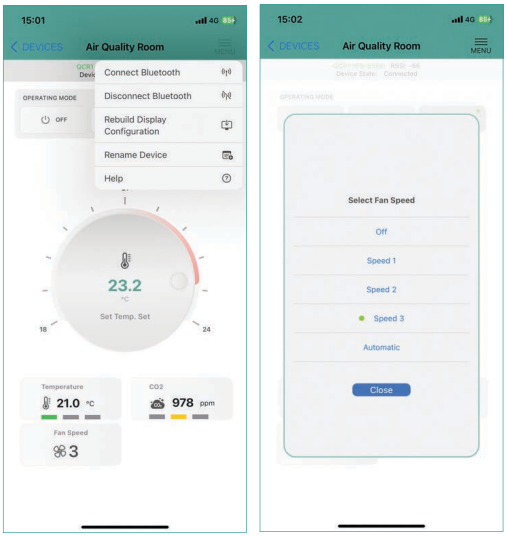
Configured to Requirements – provides Room Interface for BMS and for the Room Controllers

- Display Measurements
- Display Alarms (alarm bar / background colour)
- Display Energy and Consumption Readings from BMS
- Display Built-In Trend Graph on Smart Sensors
- Fully Customisable 5 Display Locations (values, descriptions, units)
- User Setpoint Adjustments
- Fan Speed Control
- Operating Mode and Boost Functions
- On/Off Button Overrides
- Customisable Screen Colours

SmartPhone SmartView User App (iOS)

The Senticon devices can be equipped with built-in Bluetooth providing direct access to the devices from the SmartView mobile phone application.

The application offers easy way of interrogating the building settings.



iOS Bluetooth

MODERN PERFORMANCE FUNCTIONALITY

WHY INSTALLERS PREFER SENTICON PRODUCTS

Senticon products have been designed to be easy to install with robustness and time saving features. The built-in application logic is comprehensive and designed for the real-life HVAC applications. These features guarantee success in projects.

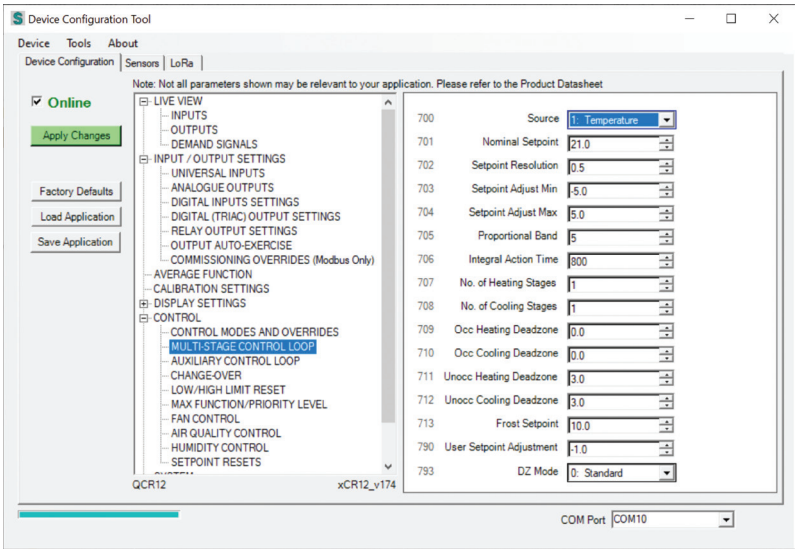
- Use one device for measurement, control, and as user interface and Modbus/BACnet/LoraWan I/O Module
- Easy application programming with Intuitive Tools
- Modbus/BACnet Network Addressing and Baud Setup via software or built-in bit switch (= can be addressed without tools)
- Easy Wiring through central wiring point (= suitable for all wall boxes including 'Euro wall boxes')
- Wireless LoraWan Variants for Retrofits / Minimised Cabling
- Supplied with QR Code for Direct Link to Data Sheets (= fast access to information)
- Multi-device backup & restore on the configuration tools
- Consistent documentation and programming tools menus
- 60V Over-voltage Protected RS485 Channel (= robust solution for installations)
- Universal input configuration automatically controlled via software (= flexibility and reduced inventory)
- BACnet MS/TP with COV Functionality (= optimise the MS/TP networks)

RANGE OF EASY-TO-USE CONFIGURATIONS TOOLS

Device Configuration Tool for Windows with Bluetooth Connection / Serial Connection to the Devices
Device Modbus Device Configuration Tool for Connection over Modbus Network (RS485)
Smart Configuration Tool App for iOS using Bluetooth Connection

- Clear and Intuitive User Interface (= fast tool adaptation and learning curve)
- Auto-device detection on connect (= template matched product model automatically)
- Common point structure for Windows, iOS Tools, Modbus and BACnet (= simplified structure, easy to follow regardless of the platform)
- Save, store, upload, download the configuration to devices (= project configuration with multiple identical devices fast)
- Plug & Play Connection with Bluetooth dongle pair to Windows (= remove hassle from Windows Bluetooth configuration, and suitable for laptops without Bluetooth)

SMARTCONFIG TOOL



DEVICE CONFIGURATION TOOL

PRODUCT CUSTOMISATION AND OEM CAPABILITIES

All of our products are manufactured in the United Kingdom. Each product is individually tested and produced to the customer specification. The production uses automated test equipment measuring the functional performance of the device and stores unique references and test results to the production database.

The production processes have been designed to be flexible to allow fast and efficient customisation to customer and OEM requirements, including:-

- Customer Logo on Product
- Customised Packaging Labelling
- QR Code Links to Customer URL
- Custom Application Programming in the Factory
- Custom Pre-Addressing in the Factory
- Product Location ID Printing and Label
- Language Translations for Text in Products
- Tailored Software for Special Applications

CUSTOM QR CODE

example logo SYSTEMS

CUSTOM LOGO

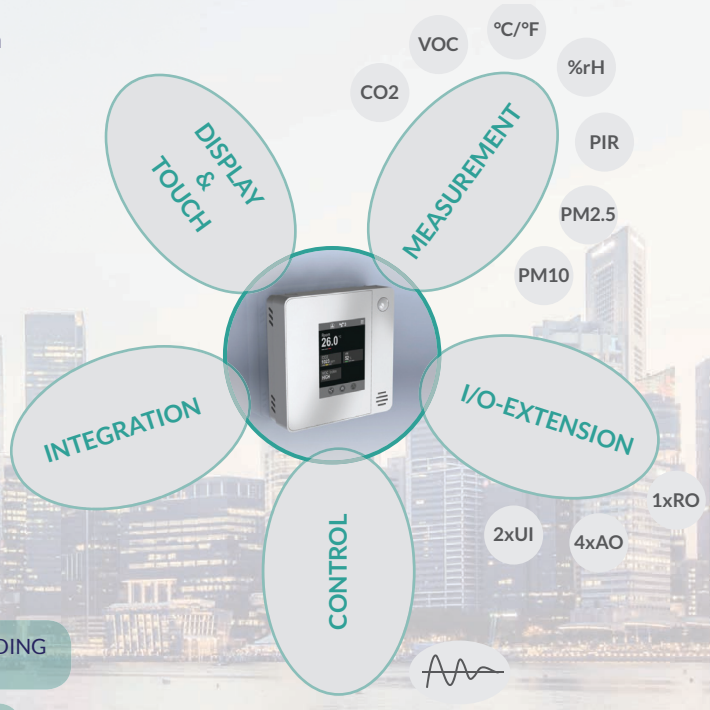
CUSTOM PACKAGING

ROOM MEASUREMENT PORTFOLIO

Smart Multi-Function Room Sensors

The Smart Multi-Sensors offer a power house solution for room measurement and control. The sensors have capabilities to operate as:-

- Accurate Combination Measurement Solution
- User interface and information display for building operation and data such as energy info
- Provide integrated hardware connectivity points for extending BMS system capabilities
- Integrate local control for effortless energy and comfort control



Multi Measurements

CO2 (Carbon Dioxide)
Volatile Organic Compounds (e.g. smells)
Total Volatile Organic Compounds (Well Building Standard and Reset Air Compliant)
Particulate Matter (e.g. smoke, fumes)
Temperature
Relative Humidity
Movement and Occupancy

√ WELL BUILDING COMPLIANT

√ RESET AIR COMPLIANT

SMART SENSOR MODEL SUMMARY TABLE

	Model	Temperature				Humidity & Temp				VOC/TVOC				CO2				PM2.5
		TER10	TER12	TER14	TER15	MER10	MER12	MER14	MER14	VER10	VER12	VER14	VER15	QER10	QER12	QER14	QER15	PMR25
MEASUREMENTS	Temperature	●				●				●				●				●
	CO2													●				○
	rH Humidity, 2% acc					●				●				○				●
	VOC									●				○				●
	PIR	○				○				○				○				○
	PM1.0/2.5/PM4/PM10																	●
I/O	Universal Inputs	●x2	●x2	●x1	●x2	●x2	●x2	●x1	●x2	●x2	●x2	●x1	●x2	●x2	●x2	●x1	●x2	
	0-10Vdc Outputs	●x4	●x4	●x3	●x4	●x4	●x4	●x3	●x4	●x4	●x4	●x3	●x4	●x4	●x4	●x3	●x4	
	Relay, 24V	○x1	○x1			○x1	○x1			○x1	○x1			○x1	○x1			
	Relay, 230V			●x1				●x1				●x1				●x1		
GENERAL	Power Supply	24Vac/dc		90-250Vac		24Vac/dc		90-250Vac		24Vac/dc		90-250Vac		24Vac/dc		90-250Vac		24Vac/dc
	Case Style	Wall	Flush, Slimline			Wall	Flush, Slimline			Wall	Flush, Slimline			Wall	Flush, Slimline			Wall
	Case Colour ○●	W, B				W, B				W, B				W, B				W, B
	Control Loop (Single Stage)	●x2				●x2				●x2				●x2				
USER INTER-FACE	LCD Display	○				○				○				○				○
	Touchscreen	○				○				○				○				○
	Traffic Light Alarm ●●●	○				○				○				○				○
	Colour Skins ●●●●○	○				○				○				○				○
	Configurable User Interface	○				○				○				○				○
COMMS	Modbus RS485 Slave (model)	●				●				●				●				●
	BACnet MS/TP Server (model)	●				●				●				●				●
	LoraWan	○				○				○				○				
	Internal Bluetooth	○				○				○				○				●

LEGEND: ● Standard ○ Option W = White Case, B = Black Case

QER10 - MER10 - VER10 - TER10

SMART AIR QUALITY (CO2, TVOC), TEMPERATURE AND HUMIDITY SENSORS

Bluetooth

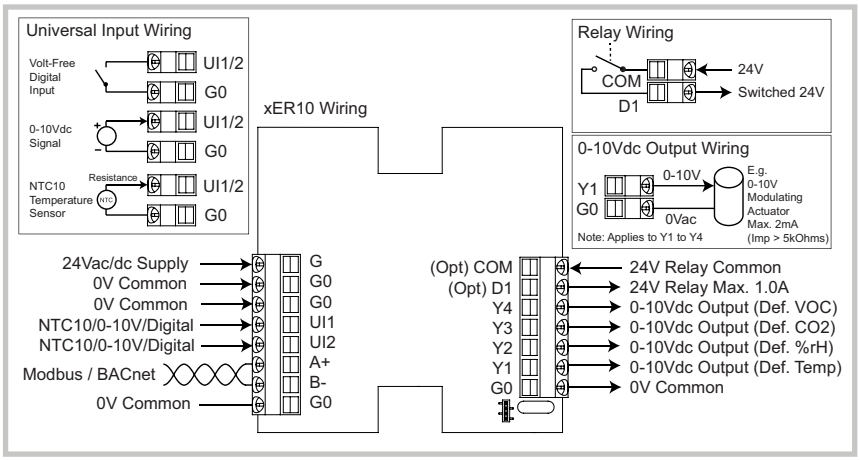
BACnet LoRaWAN Modbus

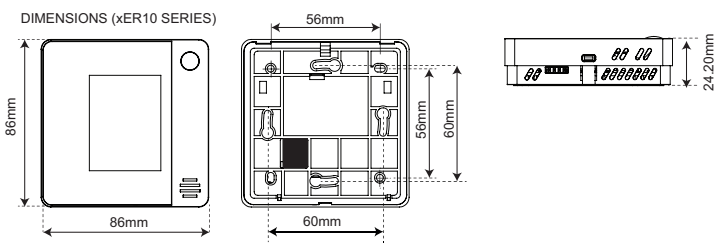
The xER10 (QER10/MER10/VER10/TER10) Series Smart Multi-Sensors have been designed for monitoring and control CO2, VOC, Temperature, Humidity and Occupancy in room spaces.
The xER10 series sensors are wall surface mounted. The sensors can have an optional colour display with high hardness glass front, and/or additional PIR sensor. Touchscreen option is available for network user interface functions and interactive sensor operations such as trending. Sensors have also integrated control loops, and can be used as network input/output module.
Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). LoraWan option allows integration wirelessly to the LoraWan systems. Programmed over serial cable or Bluetooth using PC or iOS Tools.

Technical Details Summary	
Power:	24Vac/dc, max 80mA with Touchscreen
CO2:	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C (typical accuracy +/-0.3°C, 18-24°C)
VOC/ TVOC:	Volatile Organic Compound/Total Volatile Organic Compound Range: Air Quality Index : 0..500 TVOC Ethanol: 17..4491 ug/m3 / / 9..2383 ppb TVOC Molhave (WELL Building Standard®): 23..6621 ug/m3 / 5..1326 ppb TVOC Isobutylene (RESET® Standard): 21..5482 ug/m3 / 9..2389 ppb Device to Device Variation: ±10 index points
Humidity:	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
PIR:	Occupancy Detection, Range: 5m
Inputs:	2 x Universal Inputs, NTC10, 0-10V, Digital
Outputs:	4 x Analogue 0-10Vdc Outputs, max 2mA 1 x Optional 24V Pilot Relay, max 1.0A res.
Wired Network:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load Address Setup via Bitswitch, Display or Tool
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle (PC Device Config Tool) LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px Cover Glass Hardened ≥6H
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30
Dimen-sions:	W86 x H86 x D24mm
Origin:	United Kingdom

Part Number		SKU# Number				
Product Name		**Code**	**Product Options**			
QER10	Room CO2 and Temperature Multi-Sensor, 2UI, 4AO, 24Vac/dc Supply	1000				
MER10	Room Humidity and Temperature Multi-Sensor, 2UI, 4AO, 24Vac/dc Supply, 2% Acc	1100				
TER10	Smart Room Temperature Sensor, 2UI, 4AO, 24Vac/dc Supply	1200				
VER10	Room VOC, Humidity and Temperature Multi-Sensor, 2UI, 4AO, 24Vac/dc Supply	1300				
Communications Options						
MOD	Modbus RS485, Up to 60V Protection		1			
BAC	BACnet MS/TP, Up to 60V Protection		2			
Interface Options						
	No Interface			00		
LCD	Colour Display			01		
TS	Colour Capacitive Touchscreen			02		
BLE	Bluetooth App Interface			03		
LCD-BLE	Colour Display and Bluetooth			04		
TS-BLE	Touchscreen and Bluetooth			05		
LRA	LoraWan Wireless Interface, EU868Mh			06		
LCD-LRA	Colour Display and LoraWan Interface, EU868			07		
TS-LRA	LoraWan Wireless Interface EU868 with Touchscreen			08		
Measurement Options						
	No Extra Measurements				00	
RH	Relative Humidity (QER Only)				01	
RH-VOC	Volatile Organic Compound and Humidity (QER Only)				02	
OE	Passive Infrared Sensor (PIR)				03	
RH-OE	Relative Humidity and PIR (QER Only)				04	
RH-VOC-OE	VOC, Relative Humidity and PIR (QER Only)				05	
Output Options						
	No Output Options					00
RL	24V Relay Output					01
Colour Options						
B	Black					01
W	White					02

Order Example: QER10-MOD-TS-OE-W, SKU# 1000 1 02 03 00 02





QER12 - MER12 - VER12 - TER12

SLIMLINE SMART AIR QUALITY (CO2, TVOC), TEMPERATURE AND HUMIDITY SENSORS

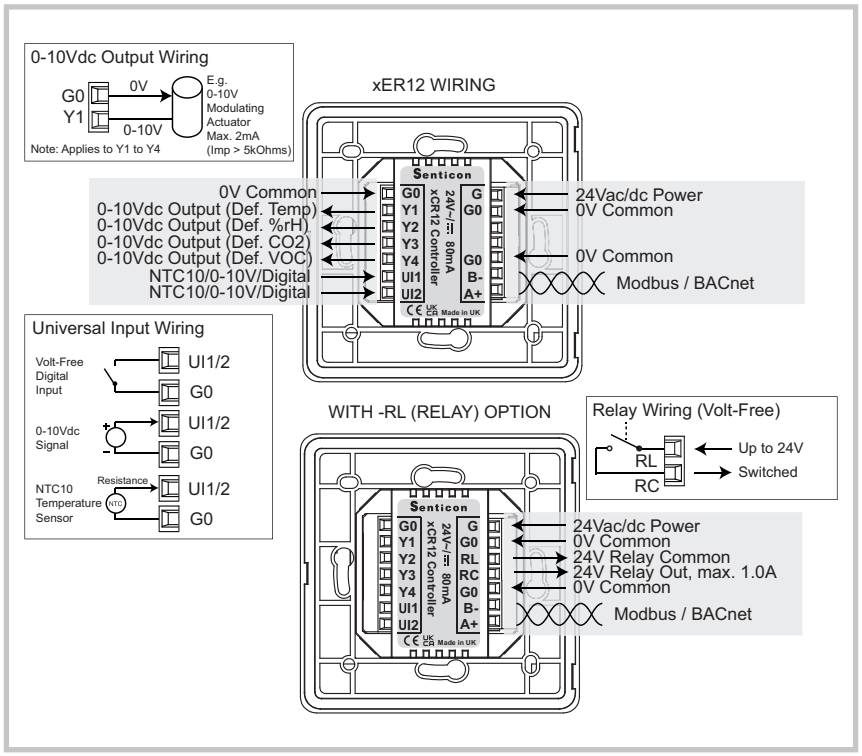
BACnet LoRaWAN Modbus

The xER12 (QER12/MER12/VER12/TER12) Series Smart Multi-Sensors have been designed for monitoring and control CO2, VOC, Temperature, Humidity and Occupancy in room spaces.
The xER12 series sensors are Slimline flush (only 13.8mm from wall) mounted to standard wall mounting boxes.
The sensors can have an optional colour display with high hardness glass front, and/or additional PIR sensor.
Touchscreen option is available for network user interface functions and interactive sensor operations such as trending. Sensors have also integrated control loops, and can be used as network input/output module.
Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). LoraWan option allows integration wirelessly to the LoraWan systems.
Programmed over serial cable or Bluetooth using PC or iOS Tools.

Technical Details Summary	
Power:	24Vac/dc, max 80mA with Touchscreen
CO2:	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C (typical accuracy +/-0.3°C, 18-24°C)
VOC/ TVOC:	Volatile Organic Compound/Total Volatile Organic Compound Range: Air Quality Index : 0..500 TVOC Ethanol: 17..4491 ug/m3 / / 9..2383 ppb TVOC Molhave (WELL Building Standard®): 23..6621 ug/m3 / 5..1326 ppb TVOC Isobutylene (RESET® Standard): 21..5482 ug/m3 / 9..2389 ppb Device to Device Variation: ±10 index points
Humidity:	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
PIR:	Occupancy Detection, Range: 5m
Inputs:	2 x Universal Inputs, NTC10, 0-10V, Digital
Outputs:	4 x Analogue 0-10Vdc Outputs, max 2mA 1 x Optional 24V Pilot Relay, max 1.0A res.
Wired Network:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle (PC Device Config Tool) LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px Cover Glass Hardened ≥6H
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30
Dimen-sions:	W86 x H86 x D13.8mm (Surface Part) W86 x H86 x D39mm (Total)
Origin:	United Kingdom

Part Number		SKU# Number				
Product Name		**Code**	**Product Options**			
QER12	Slimline Room CO2 and Temperature Multi-Sensor, 2UI, 4AO, 24Vac/dc Supply	1020				
MER12	Slimline Room Humidity and Temperature Multi-Sensor, 2UI, 4AO, 24Vac/dc, 2% Acc	1120				
TER12	Slimline Smart Room Temperature Sensor, 2UI, 4AO, 24Vac/dc Supply	1220				
VER12	Slimline Room VOC, Humidity and Tempera-ture Multi-Sensor, 2UI, 4AO, 24Vac/dc Supply	1320				
Communications Options						
MOD	Modbus RS485, Up to 60V Protection		1			
BAC	BACnet MS/TP, Up to 60V Protection		2			
Interface Options						
	No Interface			00		
LCD	Colour Display			01		
TS	Colour Capacitive Touchscreen			02		
BLE	Bluetooth App Interface			03		
LCD-BLE	Colour Display and Bluetooth			04		
TS-BLE	Touchscreen and Bluetooth			05		
LRA	LoraWan Wireless Interface, EU868Mhz			06		
LCD-LRA	Colour Display and LoraWan Interface, EU868			07		
TS-LRA	LoraWan Wireless Interface EU868 with Touchscreen			08		
Measurement Options						
	No Extra Measurements				00	
RH	Relative Humidity (QER Only)				01	
RH-VOC	Volatile Organic Compound and Humidity (QER Only)				02	
OE	Passive Infrared Sensor (PIR)				03	
RH-OE	Relative Humidity and PIR (QER Only)				04	
RH-VOC-OE	VOC, Relative Humidity and PIR (QER Only)				05	
Output Options						
	No Output Options					00
RL	24V Relay Output					01
Colour Options						
B	Black					01
W	White					02

Order Example: QER12-BAC-TS-RH-B, SKU# 1020 2 02 01 00 01



QER14/15 - MER14/15 - VER14/15 - TER14/15

SLIMLINE 230V SMART AIR QUALITY (CO2, TVOC), TEMPERATURE AND HUMIDITY SENSORS

BACnet LoRaWAN Modbus

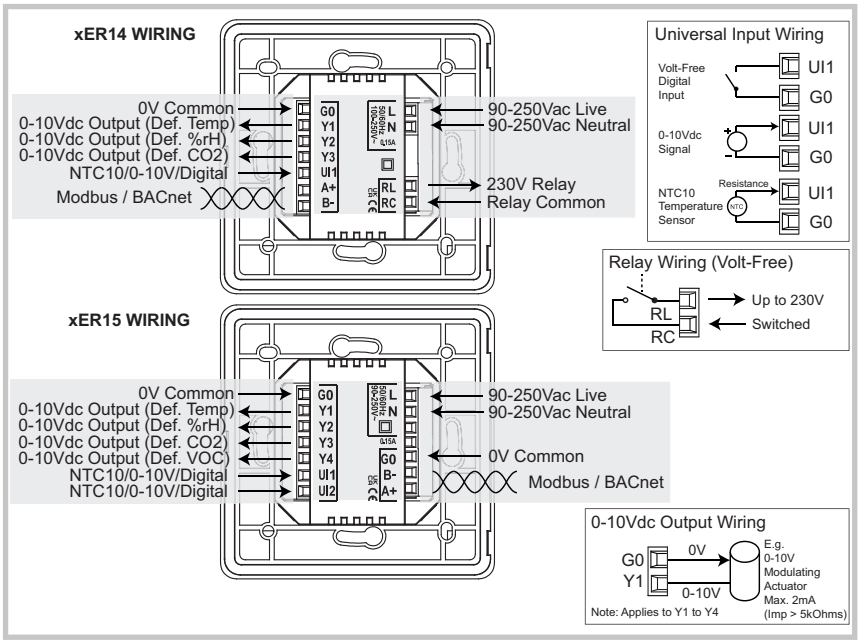
The xER14/15 (QER14/15, MER114/15, VER14/15, TER14/15) Series 230V Smart Multi-Sensors have been designed for monitoring and control CO2, VOC, Temperature, Humidity and Occupancy in room spaces. The xER14/15 series sensors are Slimline flush mounted to standard wall mounting boxes.

The sensors can have an optional colour display with high hardness glass front, and/or additional PIR sensor. Touchscreen option is available for network user interface functions and interactive sensor operations such as trending. Sensors have also integrated control loops, and can be used as network input/output module. Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). LoraWan option allows integration wirelessly to the LoraWan systems. Programmed over serial cable or Bluetooth using PC or iOS Tools.

Technical Details Summary	
Power:	90-250VAC 50/60Hz, 0.15A
CO2:	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Temperature:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C (typical accuracy +/-0.3°C, 18-24°C)
VOC/ TVOC:	Volatile Organic Compound/Total Volatile Organic Compound Range: Air Quality Index : 0..500 TVOC Ethanol: 17..4491 ug/m3 / / 9..2383 ppb TVOC Molhave (WELL Building Standard®): 23..6621 ug/m3 / 5..1326 ppb TVOC Isobutylene (RESET® Standard): 21..5482 ug/m3 / 9..2389 ppb Device to Device Variation: ±10 index points
Humidity:	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
PIR:	Occupancy Detection, Range: 5m
Inputs:	xER14: 1 x Universal Inputs, NTC10, 0-10V, Digital, xER15: 2 x Universal Inputs
Outputs:	xER14 3 x Analogue 0-10Vdc Outputs, max 2mA xER14: 1 x 230Vac Relay, max 5A res. xER15: 4 x Analogue 0-10Vdc Outputs, max 2mA
Wired Network:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load Address Setup via Bitswitch, Display or Tool
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle (PC Device Config Tool) LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px Cover Glass Hardened ≥6H
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30
Dimensions:	W86 x H86 x D24mm
Origin:	United Kingdom

Part Number		SKU# Number					
Product Name		Code	Product Options				
QER14	Slimline Room CO2 and Temperature Multi-Sensor, 1UI, 3AO, 1RO, 90-250Vac Supply	1040					
MER14	Slimline Room Humidity and Temperature Multi-Sensor, 1UI, 3AO, 1RO, 90-250Vac Supply	1140					
TER14	Slimline Smart Room Temperature Sensor, 1UI, 3AO, 1RO, 90-250Vac Supply	1240					
VER14	Slimline Room VOC, Humidity and Temperature Multi-Sensor, 1UI, 3AO, 1RO, 90-250Vac	1340					
QER15	Slimline Room CO2 and Temperature Multi-Sensor, 2UI, 4AO, 90-250Vac Supply	1050					
MER15	Slimline Room Humidity and Temperature Multi-Sensor, 2UI, 4AO, 90-250Vac Supply	1150					
TER15	Slimline Smart Room Temperature Sensor, 2UI, 4AO, 90-250Vac Supply	1250					
VER15	Slimline Room VOC, Humidity and Temperature Multi-Sensor, 2UI, 4AO, 90-250Vac Supply	1350					
Communications Options							
MOD	Modbus RS485, Up to 60V Protection		1				
BAC	BACnet MS/TP, Up to 60V Protection		2				
Interface Options							
	No Interface			00			
LCD	Colour Display			01			
TS	Colour Capacitive Touchscreen			02			
BLE	Bluetooth App Interface			03			
LCD-BLE	Colour Display and Bluetooth			04			
TS-BLE	Touchscreen and Bluetooth			05			
LRA	LoraWan Wireless Interface, EU868Mhz			06			
LCD-LRA	Colour Display and LoraWan Interface, EU868			07			
TS-LRA	LoraWan Wireless Interface EU868 with Touchscreen			08			
Measurement Options							
	No Extra Measurements				00		
RH	Relative Humidity (QER Only)				01		
RH-VOC	Volatile Organic Compound and Humidity (QER Only)				02		
OE	Passive Infrared Sensor (PIR)				03		
RH-OE	Relative Humidity and PIR (QER Only)				04		
RH-VOC-OE	VOC, Relative Humidity and PIR (QER Only)				05		
Colour Options							
B	Black					00	01
W	White					00	02

Order Example: VER14-BAC-TS-BLE-RH-B, SKU# 1340 2 05 01 00 01



QER10 - MER10 - VER10 - TER10 (0-10V ONLY)

CO2, TVOC, TEMPERATURE AND HUMIDITY SENSORS

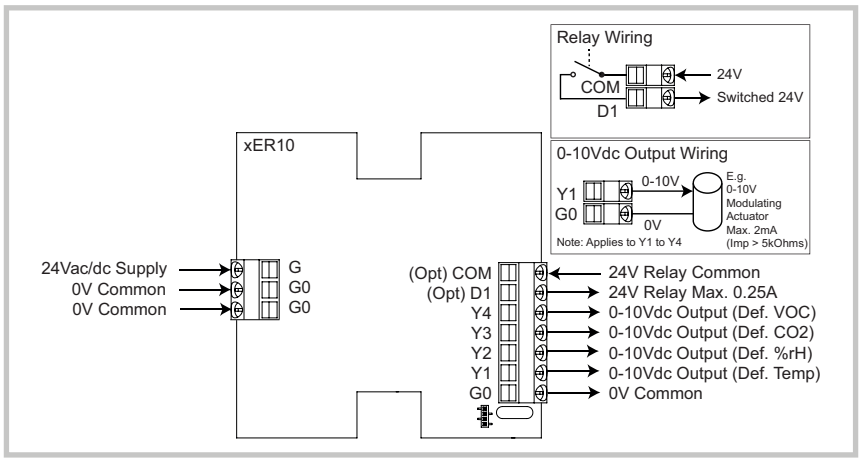
Bluetooth

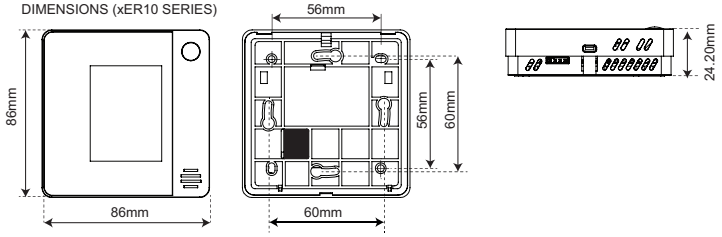
The QER10/MER10/VER10/TER10 Series Multi-Sensors have been designed for monitoring and control CO2, VOC, Temperature, Humidity and Occupancy in room spaces and have 4 x 0-10Vdc outputs for measurements. The xER10 series sensors are wall surface mounted. The sensors can have an optional colour display with high hardness glass front, and/or additional PIR sensor. Touchscreen option is available to use the sensors as setpoint adjusters.
Sensors have also integrated temperature, CO2, VOC and humidity control loops. Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). Programmed over serial cable or Bluetooth using PC or iOS Tools.

Technical Details Summary	
Power:	24Vac/dc, max 80mA with Touchscreen
CO2:	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C (typical accuracy +/-0.3°C, 18-24°C)
VOC/ TVOC:	Volatile Organic Compound/Total Volatile Organic Compound Range: Air Quality Index : 0..500 TVOC Ethanol: 17..4491 ug/m3 / / 9..2383 ppb TVOC Molhave (WELL Building Standard®): 23..6621 ug/m3 / 5..1326 ppb TVOC Isobutylene (RESET® Standard): 21..5482 ug/m3 / 9..2389 ppb Device to Device Variation: ±10 index points
Humidity:	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
PIR:	Occupancy Detection, Range: 5m
Analogue Outputs:	4 x Analogue 0-10Vdc Outputs, max 2mA
Digital Outputs:	1 x Optional 24V Pilot Relay, max 1.0A res.
Display:	Full Colour 2.4" LCD, 240x320px
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30 Hardered Glass for Display/Touch
Dimen-sions:	W86 x H86 x D24mm
Origin:	United Kingdom

Part Number		SKU# Number					
Product Name		**Code**	**Product Options**				
QER10	Room CO2 and Temperature Multi-Sensor, 4AO, 24Vac/dc Supply	1000					
MER10	Room Humidity and Temperature Multi-Sensor, 4AO, 24Vac/dc Supply, 2% Acc	1100					
TER10	Smart Room Temperature Sensor, 4AO, 24Vac/dc Supply	1200					
VER10	Room VOC, Humidity and Temperature Multi-Sensor, 4AO, 24Vac/dc Supply	1300					
Communications Options							
	0-10Vdc Analogue Outputs		0				
Interface Options							
	No Interface			00			
LCD	Colour Display			01			
TS	Colour Capacitive Touchscreen			02			
BLE	Bluetooth App Interface			03			
LCD-BLE	Colour Display and Bluetooth			04			
TS-BLE	Touchscreen and Bluetooth			05			
LRA	LoraWan Wireless Interface, EU868Mhz			06			
Measurement Options							
	No Extra Measurements				00		
RH	Relative Humidity (QER Only)				01		
RH-VOC	Volatile Organic Compound and Humidity (QER Only)				02		
OE	Passive Infrared Sensor (PIR)				03		
RH-OE	Relative Humidity and PIR (QER Only)				04		
RH-VOC-OE	VOC, Relative Humidity and PIR (QER Only)				05		
Output Options							
	No Output Options					00	
RL	24V Relay Output					01	
Colour Options							
B	Black						01
W	White						02

Order Example: QER10-W, SKU# 1000 0 00 00 00 02





PMR25

PARTICULATE MATTER, AIR QUALITY (CO2, TVOC), TEMPERATURE AND HUMIDITY SENSORS

BACnet Bluetooth Modbus

The PMR25 Series Smart Particulate Matter Multi-Sensors have been designed for monitoring Particulate Matter, VOC, Temperature and Humidity in room spaces. Optional CO2 and Occupancy detection are available.

The sensors have modern design and are mounted on the wall surface directly or to standard wall mounting boxes.

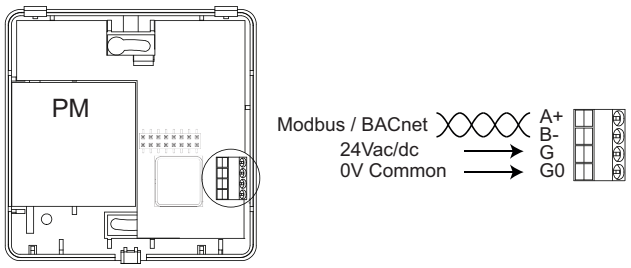
The sensors can have an optional colour display with high hardness glass front. Touchscreen option is available for network user interface functions and interactive sensor operations such as trending. Bluetooth wireless interface provides connection to Smart Phone App interface (iOS) or to PC Device Configuration Tool.

Technical Details Summary		
Power:	24Vac/dc ±10%	
Particulate Matter:	Mass Concentration Size Range:	PM1.0: 0.3 to 1.0µm PM2.5: 0.3 to 2.5µm PM4: 0.3 to 4µm PM10: 0.4 to 10.0µm
	Mass Concentration Precision:	PM1.0/PM2.5: 0 to 100 ug/m3: ±5 µg/m3+ 5% m.v. PM1.0/PM2.5: 100 to 1000 ug/m3: ±10% m.v. PM4/PM10: 0 to 100 ug/m3: ±25 µg/m3 PM4/PM4: 100 to 1000 ug/m3: ±25% m.v.
	PM2.5 Mass Concentration Calibration:	Calibrated to TSI DustTrak™ DRX 8533 Ambient Mode
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C (typical accuracy +/-0.3°C, 18-24°C)	
VOC/ TVOC:	Volatile Organic Compound/Total Volatile Organic Compound Range: Air Quality Index : 0..500 TVOC Ethanol: 17..4491 ug/m3 / / 9..2383 ppb TVOC Molhave (WELL Building Standard®): 23..6621 ug/m3 / 5..1326 ppb TVOC Isobutylene (RESET® Standard): 21..5482 ug/m3 / 9..2389 ppb Device to Device Variation: ±10 index points	
Humidity:	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)	
CO2 (Option):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.	
PIR (Option):	Occupancy Detection, Range: 5m	
Comms:	Wired: Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load	
Bluetooth:	Built-in BLE Low Energy - Configuration too/iOS	
Display:	Full Colour 2.4" LCD, 240x320px	
Touch:	Capacitive Touchscreen	
Terminals:	Rising Cage Screw Terminals, 0.2 to 1.5mm2 / 30 to 16 AWG	
Enclosure:	ABS ULV0 Plastics - White or Black, IP30 Hardered Glass ≥6H for Display/Touch	
Dims:	W86 x H86 x D24mm	
Origin:	United Kingdom	

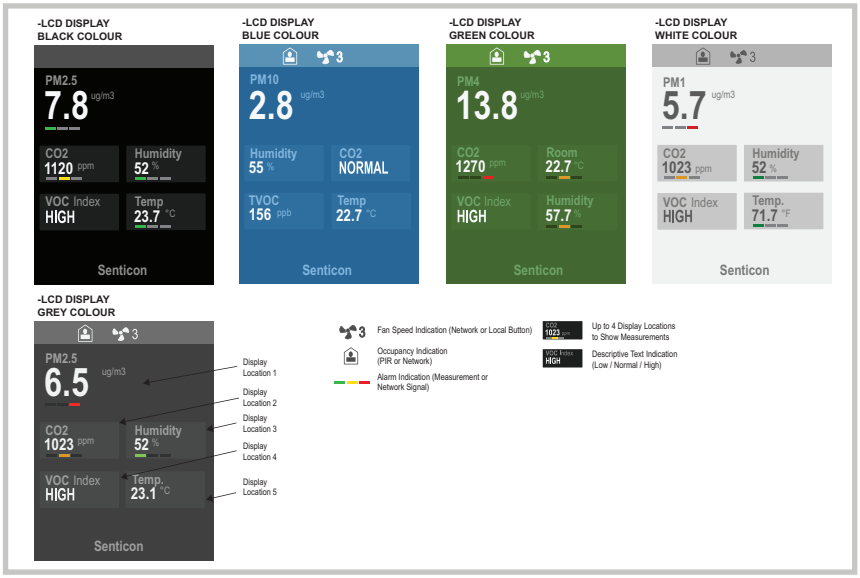
Part Number		SKU# Number					
Product Name		Code	Product Options				
PMR25	Room Particulate Matter Sensor, with Relative Humidity, Temperature and VOC, Built-In BLE, 24Vac/dc Supply	1400					
Communications Options							
MOD	Modbus RS485, Up to 60V Protection		1				
BAC	BACnet MS/TP, Up to 60V Protection		2				
Interface Options							
	No Interface			00			
LCD	Colour Display			01			
TS	Colour Capacitive Touchscreen			02			
Measurement Options							
	No Extra Measurements				00		
OE	Passive Infrared Sensor (PIR)				03		
CO2	CO2 (Carbon Dioxide) Measurement				06		
OE-CO2	CO2 Measurement and Passive Infrared Sensor (PIR)				03		
Colour Options							
B	Black					00	01
W	White					00	02

Order Example: PMR25-MOD-TS-W, SKU# 1400 1 02 00 00 02

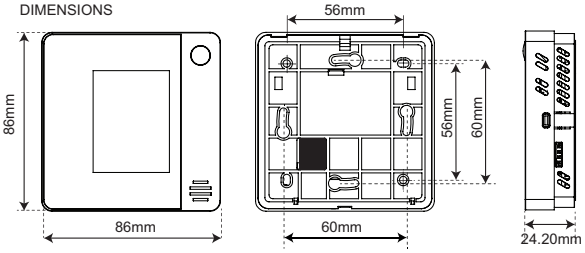
PMR25 WIRING



DISPLAY EXAMPLES (LCD and TS MODELS)



DIMENSIONS



DATA SHEET

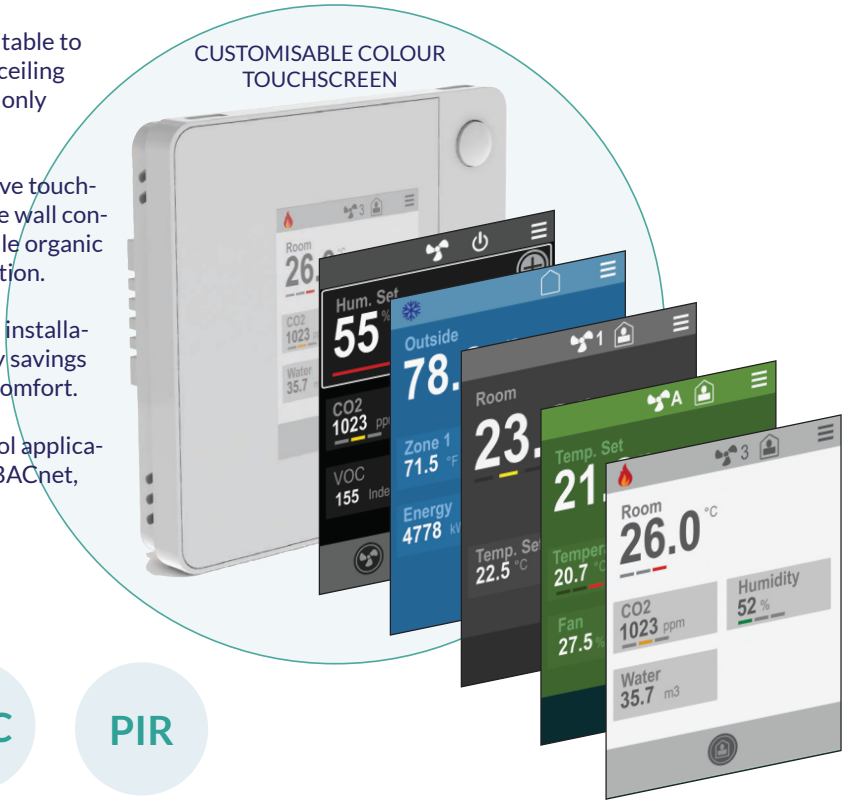
INTELLIGENT ROOM CONTROL SOLUTIONS

Senticon offer comprehensive range of room controllers suitable to most room control applications. The controllers are wall or ceiling mounted. Slimline room controllers are flush mounted with only 13.8mm height from the wall.

The wall controllers can have modern glass fronted capacitive touch-screen that is customisable to application requirements. The wall controllers provide also built-in temperature, CO2, VOC (volatile organic compounds), humidity measurements and occupancy detection.

The intergated control solutions offer significant savings on installation and maintenance costs, and provide substantilal energy savings by optimising the room operation - without compromising comfort.

The devices operate fully stand-alone with the tested control application logic, and can be fully integrated to BMS system using BACnet, Modbus or wireless LoraWan communications.



CO2 %rH °C/°F VOC PIR

Intelligent Room and FCU Controllers

Comprehensive range of colour touch-screen and colour LCD intelligent room controllers for any type of Fan Coil Unit, Chilled Ceiling/Beam and Zone Control applications.

The controllers have full connectivity to BMS and IoT via BACnet, Modbus and LoraWan. Additional integrated measurement such as CO2, VOC, humidity and occupancy provide advanced application support capabilities.

VAV Controllers

Touchscreen and Conventional LCD room controllers with intelligent application functionality from basic to advanced applications

Integrated air quality control and measurement with CO2 and VOC part of the range. Energy saving options such as built-in occupancy detection.

Accurate flow measurement and control offer energy efficient control in modern buildings.

Ceiling Mounted Room Controllers and Touchscreen Interfaces

Ceiling mounted room controller range provides central solution for easy wiring and to cover wide range applications.

The RS485 over USB-C plug&go room interfaces provide reliable connection for temperature, humidity, VOC, CO2 and occupancy measurements.

Colour touchscreen interfaces offer information display and user adjustment solution to meet even the more complex requirements.

ROOM CONTROLLER SELECTION GUIDE

Intelligent Generic, Configurable Room, Fan Coil Unit, Chilled Ceiling, Zone Damper Controllers









PRODUCT FAMILY	Series	COMPACT ROOM TEMPERATURE AND CO2 CONTROLLERS						TCR10 / QCR10 SERIES TOUCHSCREEN CONTROLLERS (TEMP/CO2/RH/VOC/PIR)											
	Model	TCR02	QCR02	TCR03	QCR03	TCR04	QCR04	TCR10	QCR10	TCR11	QCR11	TCR12	QCR12	TCR13	QCR13	TCR14	QCR14	TCR15	QCR15
GEN-ERAL	Power Supply	24VAC (DC)						24VAC/DC		24VAC (DC)		24VAC (DC)		24VAC (DC)		90-250VAC			
	Case Style	Flush (Slimline)				Surface		Surface		Surface		Flush (Slimline)							
	Case Colour ○●	W	W	W	W	W	W	W, B		W, B		W, B		W, B		W, B		W, B	
INPUTS	Universal Inputs (0-10V, NTC10/ Resistance, On/Off)	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2
	Built-In Temperature	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Built-In CO2		●		●		●		●		●		●		●		●		●
	Built-in rH Humidity							○	○	○	○	○	○	○	○	○	○	○	○
	Built-In VOC							○	○	○	○	○	○	○	○	○	○	○	○
	Built-In PIR	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
OUTPUTS	24Vac Triacs (PWM, On/Off, 3-Point Control)	2	2	2	2	2	2			4	4	2	2	2	2				
	0-10Vdc (0-10V, EC Fan 6-Way Valve)	3	3	1	1	3	3	4	4	1	1	4	4	1	1	3	3	4	4
	Relay (On/Off)			3 x 230V				○ 1x 24V				○ 1x 24V		3 x 230V		1x 230V			
CONTROL FUNCTIONS	Heating Stages	●x2	●x2	●x2	●x2	●x2	●x2	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3
	Cooling Stages	●x2	●x2	●x2	●x2	●x2	●x2	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3	●x3
	Htg/Clg Change-Over (2-Pipe)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Condensation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	EC Fan Control	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	3-Speed Fan Control			●	●									●	●				
	Dew Point Control							●rH	●rH	●rH	●rH	●rH	●rH	●rH	●rH	●rH	●rH	●rH	●rH
	High/Low Limit (Reset)							●	●	●	●	●	●	●	●	●	●	●	●
	Occupancy Control	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	VAV Max Demand	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	CO2 Control		●		●		●		●		●		●		●		●		●
	VOC Control							○	○	○	○	○	○	○	○	○	○	○	○
	Boost	○	○	○	○	○	○	●	●	●	●	●	●	●	●	●	●	●	●
	Dehumidify/Humidify							○	○	○	○	○	○	○	○	○	○	○	○
	Aux Zone Control Loop							●	●	●	●	●	●	●	●	●	●	●	●
USER INTERFACE	Capacitive Touchscreen							○	○	○	○	○	○	○	○	○	○	○	○
	LCD Display	●	●	●	●	●	●												
	Setpoint, Fan Speed Buttons	●	●	●	●	●	●												
	Fan Speed Selection	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○
	Traffic Light Alarm ●●●							○	○	○	○	○	○	○	○	○	○	○	○
	Interface Lock							○	○	○	○	○	○	○	○	○	○	○	○
	Occupancy, Boost	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Colour Skins ●●●●○							○	○	○	○	○	○	○	○	○	○	○	○
	Configurable User Interface	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
COMMS	Serial Tool	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Modbus RS485 Slave (model)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	BACnet MS/TP Server (model)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	LoraWan							○	○	○	○	○	○	○	○	○	○	○	○
	Internal Bluetooth							○	○	○	○	○	○	○	○	○	○	○	○

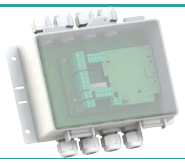
LEGEND: ● Standard ○ Option W = White Case, B = Black Case

Pressure Independent VAV Controllers

PRODUCT FAMILY					
	Series	TVR20 / QVR20 PRESSURE INDEPENDENT VAV CONTROLLERS			
	Model	TVR20	QVR20	TVR22	QVR22
GENERAL	24V Power Supply	24VAC/DC			
	Case Style	Surface		Flush (Slim-line)	
	Case Colour ○ ●	W, B		W, B	
INPUTS	Universal Inputs	● x1	● x1	● x1	● x1
	Flow / Pressure Input	● x1	● x1	● x1	● x1
	Built-In Temperature	●	●	●	●
	Built-In CO2		●		●
	Built-in rH Humidity	○	○	○	○
	Built-In VOC	○	○	○	○
	Built-In PIR	○	○	○	○
OUTPUTS	0-10Vdc (0-10V, VAV Damper, EC Fan, 6-Way Valve)	4	4	4	4
	Relay (On/Off, 24V)	○ 1 x 24V			
CONTROL FUNCTIONS	Pressure Independent VAV Control	●	●	●	●
	Heating Stages	● x3	● x3	● x3	● x3
	Cooling Stages	● x3	● x3	● x3	● x3
	Condensation	●	●	●	●
	EC Fan Control	●	●	●	●
	Dew Point Control	● rH	● rH	● rH	● rH
	Cascade Temperature Control	●	●	●	●
	Occupancy Control	●	●	●	●
	VAV Max Demand	●	●	●	●
	CO2 Control		●		●
	VOC Control	○	○	○	○
	Boost	●	●	●	●
	Dehumidify/Humidify	○	○	○	○
USER INTERFACE	Capacitive Touchscreen	○	○	○	○
	VAV Damper Flow Settings	○	○	○	○
	Fan Speed Selection	○	○	○	○
	Traffic Light Alarm ● ● ●	○	○	○	○
	Interface Lock	○	○	○	○
	Occupancy, Boost	○	○	○	○
	Colour Skins ● ● ● ● ○	○	○	○	○
	Configurable User Interface	○	○	○	○
COMMS	Serial Tool	●	●	●	●
	Modbus RS485 Slave (model)	●	●	●	●
	BACnet MS/TP Server (model)	●	●	●	●
	LoraWan	○	○	○	○
	Internal Bluetooth	○	○	○	○

LEGEND: ● Standard ○ Option W = White Case, B = Black Case

Ceiling Mounted Room Controllers

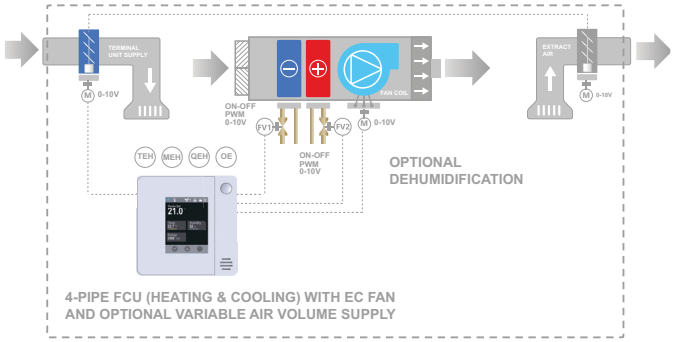
PRODUCT FAMILY							
	Series	TCR80 SERIES CEILING MOUNTED CONTROLLERS				xDR20 SERIES USER INTERACES	
	Model	TCR81	TCR82	TCR83	TCR86	TDR20	QDR20
GENERAL	24V Power Supply	AC(DC) - 24V					
	230V Power Supply	AC - 230V					
	5Vdc Power Supply					5V	
	Case Style	Ceiling (Wall)				Surface / Flush	
	Case Colour ○ ●	W	W	W	W	W, B	
INPUTS	Universal Inputs	2	4	2	4		
	Built-In Temperature					●	●
	Built-In CO2						●
	Built-in rH Humidity					○	○
	Built-In VOC					○	○
	Built-In PIR					○	○
OUTPUTS	24Vac Triacs (PWM, On/Off, 3-Point Control)	2	4	2			
	0-10Vdc (0-10V, EC Fan 6-Way Valve)	4	4	2	2		
	Relay (On/Off)			3 x 230V	6 x 24V		
CONTROL FUNCTIONS	Heating Stages	● x3	2 Zone ● x3	● x3	● x3		
	Cooling Stages	● x3	2 Zone ● x3	● x3	● x3		
	Htg/Clg Change-Over	●	● x2	●	●		
	EC Fan Control	●	● x2	●	●		
	3-Speed Fan Control			●	●		
	Condensation	●	● x2	●	●		
	Dew Point Control	●	● x2	●	●		
	High/Low Limit	●	● x2	●	●		
	Occupancy Control	●	● x2	●	●		
	VAV Max Demand	●	● x2	●	●		
	CO2 Control	●	● x2	●	●		
	VOC Control	●	● x2	●	●		
	Boost	●	● x2	●	●		
	Dehum/Humidify	●	● x2	●	●		
	Two Room Control		●				
USER INTERFACE	Capacitive Touchscreen					○	○
	Fan Speed Selection					○	○
	Traffic Light Alarm ● ● ●					○	○
	Interface Lock					○	○
	Occupancy, Boost					○	○
	Colour Skins ● ● ● ● ○					○	○
	Configurable User Interface					○	○
	No of xDR20 Interfaces	x1	x2	x1	x1		
COMMS	Serial Tool	●	●	●	●	●	●
	Modbus RS485 Slave (model)	●	●	●	●	●	●
	Senticon Bus (Modbus via RS485)	● xDR	● xDR	● xDR	● xDR		
	BACnet MS/TP Server (model)	●	●	●	●		
	LoraWan	○	○	○	○		
	Internal Bluetooth	○	○	○	○		

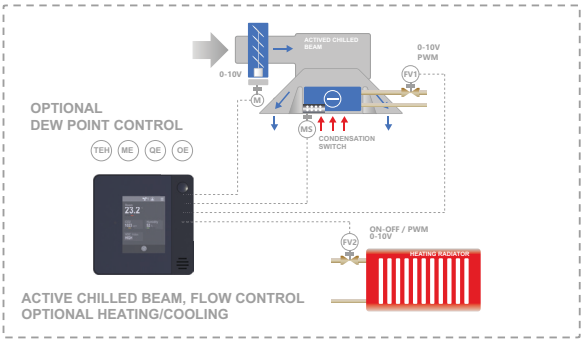
LEGEND: ● Standard ○ Option W = White Case, B = Black Case

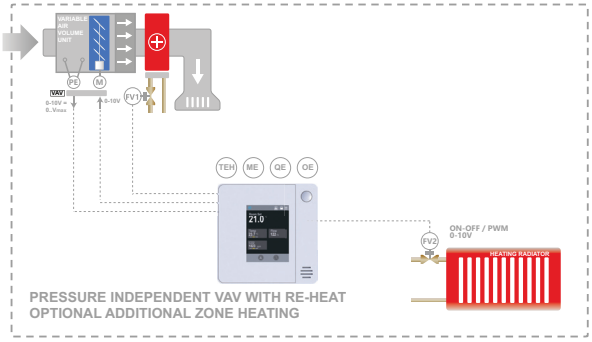
APPLICATIONS

Senticon's room controllers have flexible proven application logic. The application logic can be tailored to most room control applications fast and efficiently over the network, or using Windows / SmartApp tools.

- Multi-Stage Temperature Control with Occupied/Unoccupied/Off Modes
- Second Temperature Zone Control
- Predictive Condensation and Dew Point Calculation
- 6-Way Valve and Summer/Winter Change-Over Logic for Fan Coil Units
- Maximum Demand for Air Quality and Temperature Control
- Pressure Dependent and Independent VAV Control
- Humidify and Dehumidify Control Logic
- VOC (Volatile Organic Compound) Measurement and Control combined with CO2 offers effective changing room etc. air quality control
- Energy Efficient EC Fan Control for Fan Coil Units
- Flexible IO-combinations provide effective application usage with an added benefit of operating as BMS extension points







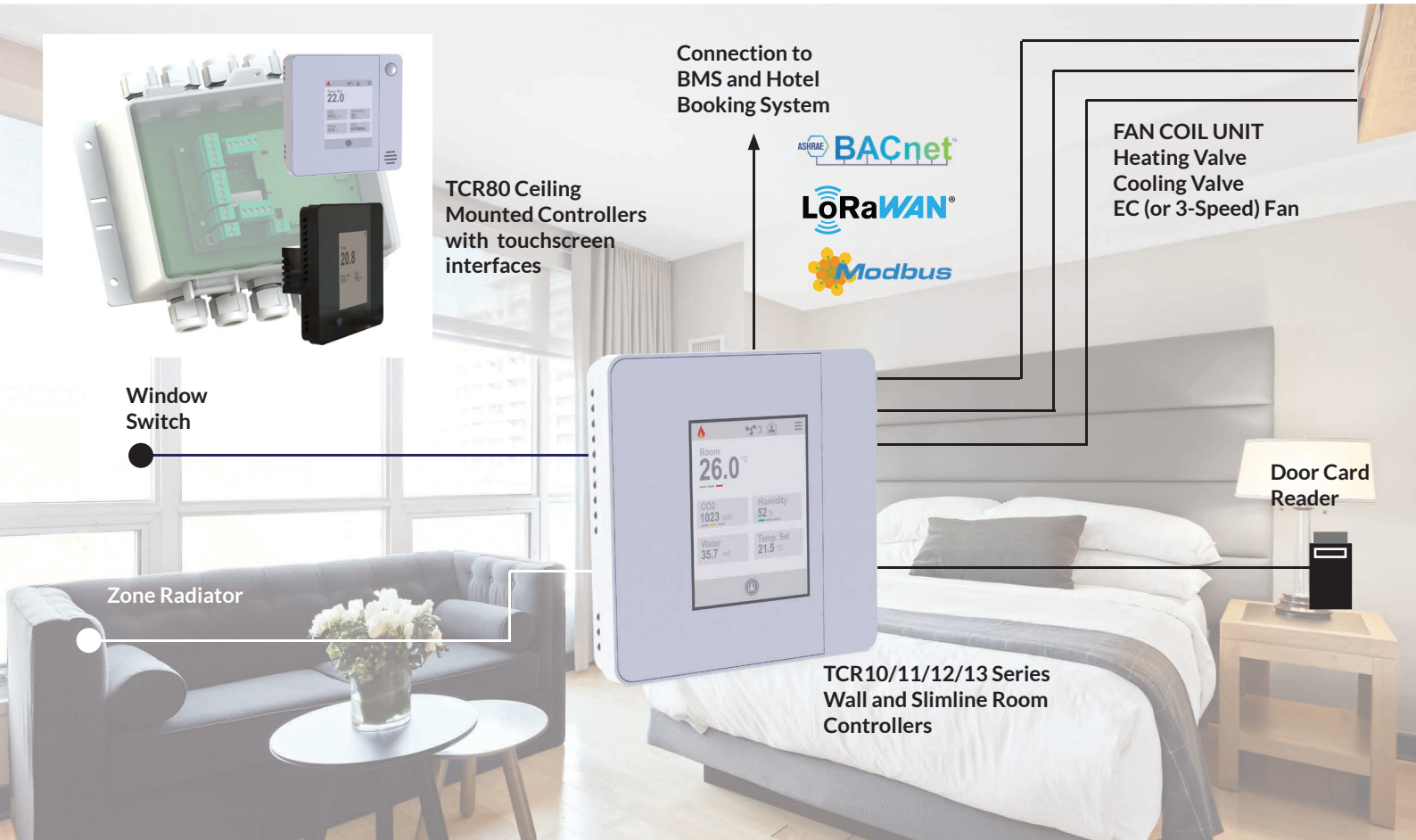
FAN COIL UNIT CONTROL

VAV TERMINAL UNIT CONTROL

ZONE HEATING AND COOLING CONTROL

CHILLED CEILING AND BEAM CONTROL

AIR QUALITY AND OCCUPANCY CONTROL



QCR10 / QCR11 - TCR10 / TCR11

INTELLIGENT TOUCHSCREEN CO2 AND TEMPERATURE CONTROLLERS (rH, VOC, PIR)

Bluetooth

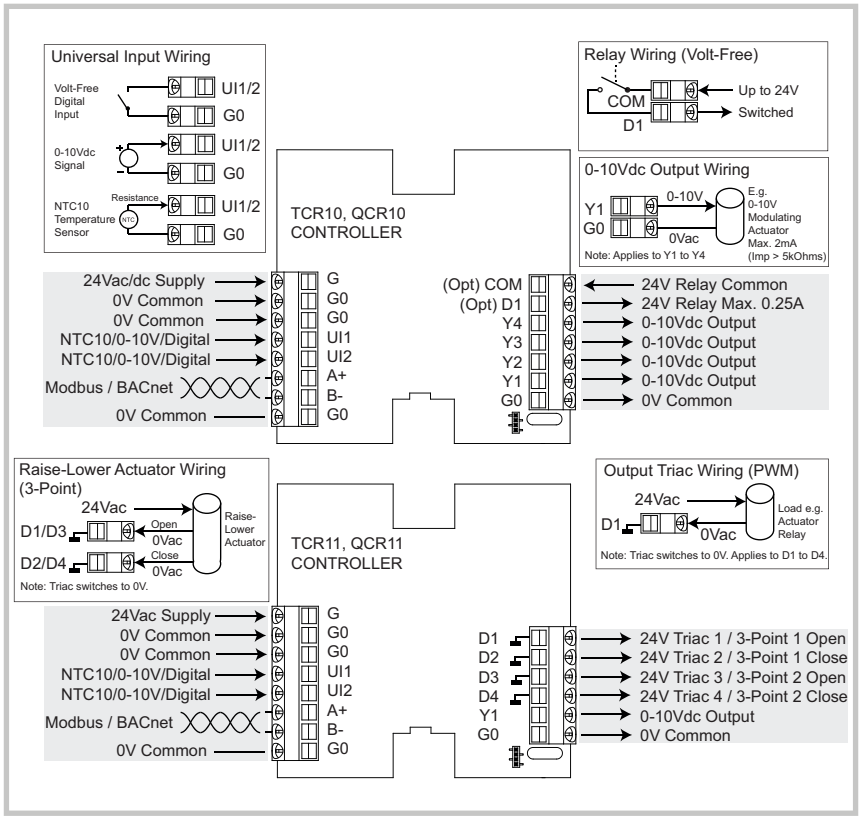
BACnet LoRaWAN Modbus

The TCR/QCR Series Controllers have been designed to be wall mounted universal temperature, air quality, humidity controllers in room spaces. The controllers are suitable for a wide range of applications and have pre-defined application logic that covers most room control heating and cooling systems such as fan coil units, chilled ceilings, zone heating etc.
The xCR10 and xCR11 series controllers are wall surface mounted. The room controllers are typically supplied with a colour touchscreen display with glass front that provides intuive user interface. An optional PIR sensor is available. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems. Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). LoraWan option allows integration wirelessly to the LoraWan systems.

Technical Details Summary	
Power:	24Vac/dc, max 80mA with Touchscreen Note: Triacs require 24Vac supply.
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2 (QCR Models):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Humidity (Option):	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
VOC (Option):	Volatile Organic Compound Range: Air Quality Index : 0..500 Device to Device Variation: ±10 index points
PIR (Option):	Occupancy Detection, Range: 5m
Inputs:	2 x Universal Inputs, NTC10, 0-10V, Digital
Analogue Outputs:	xCR10: 4 x Analogue 0-10Vdc Outputs, max 2mA xCR11: 1 x Analogue 0-10Vdc Output, max 2mA
Digital Outputs:	xCR11: 4 x 24Vac Rated Triacs, Switching to 0V, Max 1A load xCR10: 1 x Optional 24V Pilot Relay, max 1.0A
Communi-cations:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load Address Setup via Bitswitch, Display or Tool
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30 Hardered Glass ≥6H for Display/Touch
Dimen-sions:	W86 x H86 x D24mm
Origin:	United Kingdom

Part Number		SKU# Number					
Product Name		**Code**	**Product Options**				
TCR10	Room Temperature Controller, 2UI, 4AO, 24V Supply	5000					
QCR10	Room Temperature and CO2 Controller, 2UI, 4AO, 24V Supply	5100					
TCR11	Room Temperature Controller, 2UI, 1AO, 4DO, 24Vac Supply	5000					
QCR11	Room Temperature and CO2 Controller, 2UI, 1AO, 4DO, 24Vac Supply	5100					
Communications Options							
MOD	Modbus RS485, Up to 60V Protection		1				
BAC	BACnet MS/TP, Up to 60V Protection		2				
Interface and Wireless Options							
	No Interface (Blank Front)			00			
TS	Colour Capacitive Touchscreen			02			
BLE	Bluetooth App Interface			03			
TS-BLE	Touchscreen and Bluetooth			05			
LRA	LoraWan Wireless Interface, EU868Mhz			06			
TS-LRA	LoraWan Wireless Interface EU868 with Touchscreen			08			
Measurement Options							
	No Extra Measurements				00		
RH	Relative Humidity, 2% Acc				01		
RH-VOC	Volatile Organic Compound and Humidity				02		
OE	Passive Infrared Movement Sensor (PIR)				03		
RH-OE	Relative Humidity and Movement (PIR)				04		
RH-VOC-OE	VOC, Relative Humidity and PIR				05		
Output Options							
	No Output Options					00	
RL	24V Relay Output (Only on TCR10/QCR10)					01	
Colour Options							
B	Black						01
W	White						02

Order Example: TCR10-BAC-TS-B, SKU# 5000 2 02 00 00 01



QCR12 - TCR12

SLIMLINE CO2 AND TEMPERATURE TOUCH CONTROLLERS (rH, VOC, PIR)

Bluetooth

BACnet LoRaWAN Modbus

The TCR/QCR Series Controllers have been designed to be wall mounted universal temperature, air quality, humidity controllers in room spaces. The controllers are suitable for a wide range of applications and have pre-defined application logic that covers most room control heating and cooling systems such as fan coil units, chilled ceilings, zone heating etc.

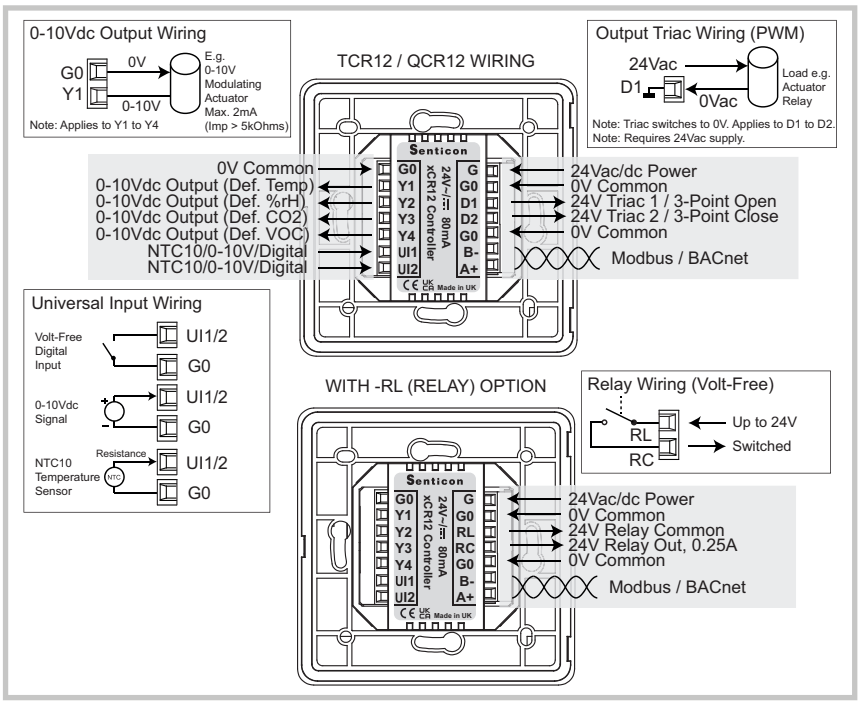
The TCR12/QCR12 controllers are Slimline flush mounted with additional IOs to standard wall mounting boxes.

The room controllers are typically supplied with a sharp colour touchscreen display with glass front that provides intuive user interface. An optional PIR sensor is available. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems. Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). LoraWan option allows integration wirelessly to the LoraWan systems.

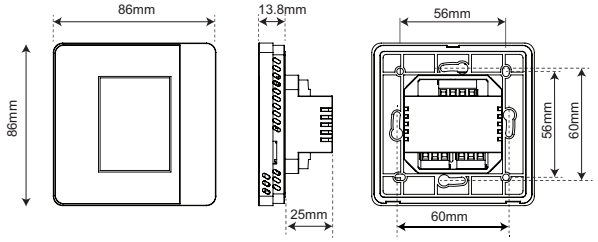
Technical Details Summary	
Power:	24Vac/dc, max 80mA with Touchscreen Note: Triacs require 24Vac supply.
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2 (QCR Models):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Humidity (Option):	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
VOC (Option):	Volatile Organic Compound Range: Air Quality Index : 0..500 Device to Device Variation: ±10 index points
PIR (Option):	Occupancy Detection, Range: 5m
Inputs:	2 x Universal Inputs, NTC10, 0-10V, Digital
Analogue Outputs:	4 x Analogue 0-10Vdc Outputs, max 2mA
Digital Outputs:	2 x 24Vac Rated Triacs, Switching to 0V, Max 1A load, OR 1 x Optional 24V Pilot Relay, max 1.0A
Communi-cations:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30 Hardered Glass ≥6H for Display/Touch
Dimen-sions:	W86 x H86 x D24mm W86 x H86 x D13.8mm (Surface Part) W86 x H86 x D39mm (Total)
Origin:	United Kingdom

Part Number		SKU# Number				
Product Name		Code	Product Options			
TCR12	SlimLine Room Temperature Controller, 2UI, 4AO, 2DO, 24VSupply	5400				
QCR12	SlimLine Room Temperature and CO2 Controller, 2UI, 4AO, 2DO, 24V Supply	5500				
Communications Options						
MOD	Modbus RS485, Up to 60V Protection		1			
BAC	BACnet MS/TP, Up to 60V Protection		2			
Interface and Wireless Options						
	No Interface (Blank Front)			00		
TS	Colour Capacitive Touchscreen			02		
BLE	Bluetooth App Interface			03		
TS-BLE	Touchscreen and Bluetooth			05		
LRA	LoraWan Wireless Interface, EU868Mhz			06		
TS-LRA	LoraWan Wireless Interface EU868 with Touchscreen			08		
Measurement Options						
	No Extra Measurements				00	
RH	Relative Humidity, 2% Acc				01	
RH-VOC	Volatile Organic Compound and Humidity				02	
OE	Passive Infrared Movement Sensor (PIR)				03	
RH-OE	Relative Humidity and Movement (PIR)				04	
RH-VOC-OE	VOC, Relative Humidity and PIR				05	
Output Options						
	No Output Options					00
RL	24V Relay Output					01
Colour Options						
B	Black					01
W	White					02

Order Example: TCR12-BAC-TS-B, SKU# 5400 2 02 00 00 01



DIMENSIONS (xCR12/xCR13/xCR14/xCR15 SERIES)



QCR13 - TCR13

SLIMLINE CO2 AND TEMPERATURE TOUCH CONTROLLERS (rH, VOC, PIR), 3 x FAN RELAYS

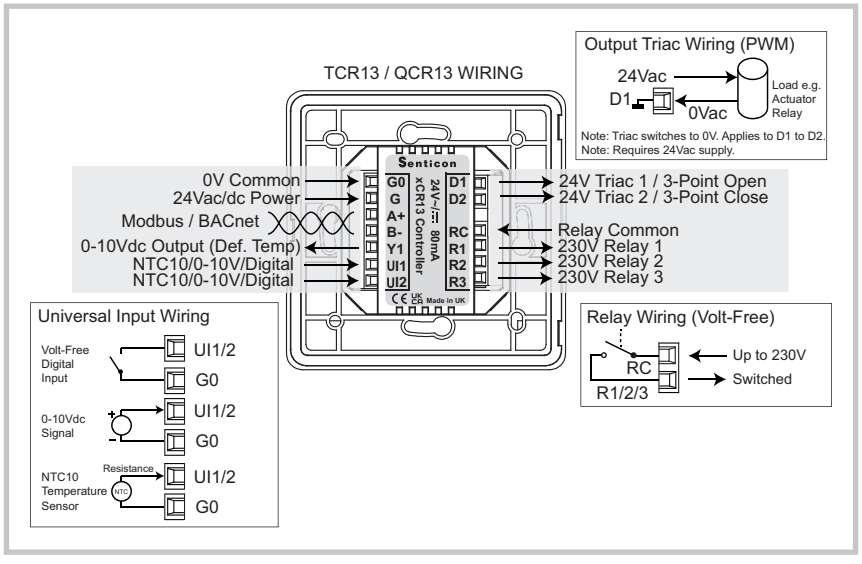
BACnet LoRaWAN Modbus

The TCR13/QCR13 Series Controllers have been designed to be wall mounted universal temperature, air quality, humidity controllers in room spaces. The xCR13 series controllers are suitable for a wide range of applications including fan coil units. The controllers have 3 x 250Vac rated relays for fan and valve control. The xCR13 controllers are Slimline flush mounted with additional IOs to standard wall mounting boxes.
The room controllers are typically supplied with a sharp colour touchscreen display with glass front that provides intuive user interface. An optional PIR sensor is available. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems. Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). LoraWan option allows integration wirelessly to the LoraWan systems.

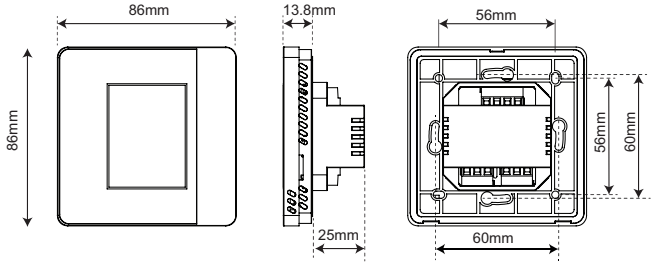
Technical Details Summary	
Power:	24Vac/dc, max 80mA with Touchscreen Note: Triacs require 24Vac supply.
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2 (QCR Models):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Humidity (Option):	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
VOC (Option):	Volatile Organic Compound Range: Air Quality Index : 0..500 Device to Device Variation: ±10 index points
PIR (Option):	Occupancy Detection, Range: 5m
Inputs:	2 x Universal Inputs, NTC10, 0-10V, Digital
Analogue Outputs:	1 x Analogue 0-10Vdc Output, max 2mA
Digital Outputs:	2 x 24Vac Rated Triacs, Switching to 0V, Max 1A load
Relay Outputs:	3 x 230Vac, max 5A (res.)
Communi-cations:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30 Hardered Glass ≥6H for Display/Touch
Dimen-sions:	W86 x H86 x D24mm W86 x H86 x D13.8mm (Surface Part) W86 x H86 x D39mm (Total)
Origin:	United Kingdom

Part Number		SKU# Number				
Product Name		Code	Product Options			
TCR13	Slimline Room Temperature Controller, 2DO, 3RO (230V), 1AO, 24V Supply	5600				
QCR13	Slimline Room Temperature and CO2 Control-ler, 2DO, 3RO (230V), 1AO, 24V Supply	5650				
Communications Options						
MOD	Modbus RS485, Up to 60V Protection		1			
BAC	BACnet MS/TP, Up to 60V Protection		2			
Interface and Wireless Options						
	No Interface (Blank Front)			00		
TS	Colour Capacitive Touchscreen			02		
BLE	Bluetooth App Interface			03		
TS-BLE	Touchscreen and Bluetooth			05		
LRA	LoraWan Wireless Interface, EU868Mhz			06		
TS-LRA	LoraWan Wireless Interface EU868 with Touchscreen			08		
Measurement Options						
	No Extra Measurements				00	
RH	Relative Humidity, 2% Acc				01	
RH-VOC	Volatile Organic Compound and Humidity				02	
OE	Passive Infrared Movement Sensor (PIR)				03	
RH-OE	Relative Humidity and Movement (PIR)				04	
RH-VOC-OE	VOC, Relative Humidity and PIR				05	
Colour Options						
B	Black					00 01
W	White					00 02

Order Example: TCR13-MOD-TS-RH-W, SKU# 5600 1 02 01 00 02



DIMENSIONS (xCR12/xCR13/xCR14/xCR15 SERIES)



QCR14 / QCR15 - TCR14 / TCR15

SLIMLINE 230V CO2 AND TEMPERATURE TOUCH CONTROLLERS (rH, VOC, PIR)

Bluetooth

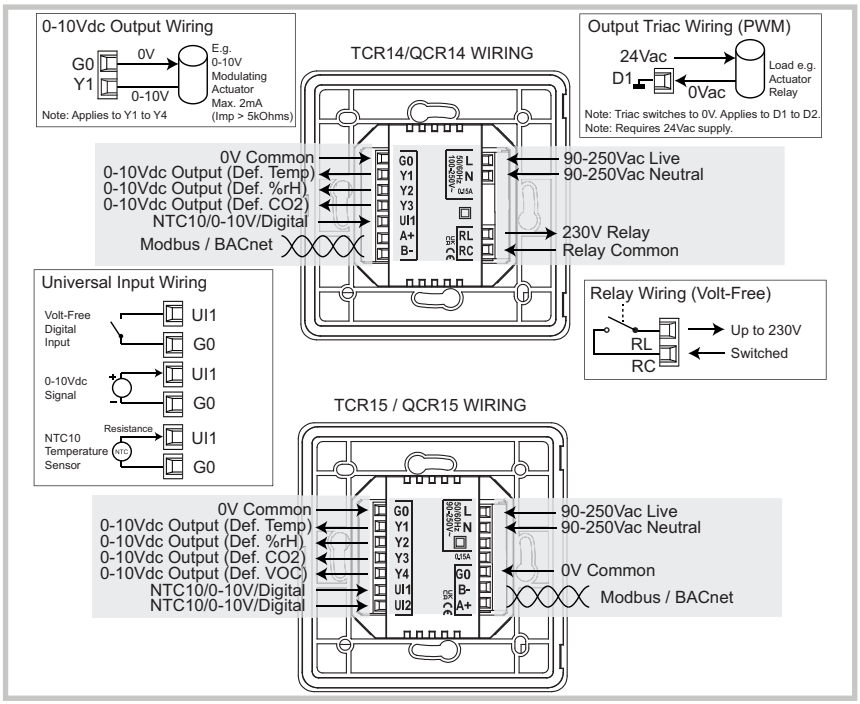
BACnet LoRaWAN Modbus

The xCR14/xCR15 Series Controllers have been designed to be wall mounted universal temperature, air quality, humidity controllers in room spaces. The controllers are supplied with 90-250V power supply. The room controllers are typically supplied with a colour touchscreen display with glass front that provides intuive user interface. An optional PIR sensor is available. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems. Optional Bluetooth wireless interface provides Smart Phone App interface (iOS). LoraWan option allows integration wirelessly to the LoraWan systems.

Part Number		SKU# Number					
Product Name		**Code**	**Product Options**				
TCR14	Slimline Room Temperature Controller, 1UI, 3AO, 1RO (230V), 90-250Vac Supply	5700					
QCR14	Slimline Room Temperature and CO2 Controller, 1UI, 3AO, 1RO (230V), 90-250Vac Supply	5750					
TCR15	Slimline Room Temperature Controller, 2UI, 4AO, 90-250Vac Supply	5800					
QCR15	Slimline Room Temperature and CO2 Controller, 2UI, 4AO, 90-250Vac Supply	5850					
Communications Options							
MOD	Modbus RS485, Up to 60V Protection		1				
BAC	BACnet MS/TP, Up to 60V Protection		2				
Interface and Wireless Options							
	No Interface (Blank Front)			00			
TS	Colour Capacitive Touchscreen			02			
BLE	Bluetooth App Interface			03			
TS-BLE	Touchscreen and Bluetooth			05			
LRA	LoraWan Wireless Interface, EU868Mhz			06			
TS-LRA	LoraWan Wireless Interface EU868 with Touchscreen			08			
Measurement Options							
	No Extra Measurements				00		
RH	Relative Humidity, 2% Acc				01		
RH-VOC	Volatile Organic Compound and Humidity				02		
OE	Passive Infrared Movement Sensor (PIR)				03		
RH-OE	Relative Humidity and Movement (PIR)				04		
RH-VOC-OE	VOC, Relative Humidity and PIR				05		
Colour Options							
B	Black					00	01
W	White					00	02

Order Example: TCR15-MOD-TS-RH-W, SKU# 5800 1 02 01 00 02

Technical Details Summary	
Power:	90-250VAC 50/60Hz, 0.15A
Temperature:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2 (QCR Models):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Humidity (Option):	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
VOC (Option):	Volatile Organic Compound Range: Air Quality Index : 0..500 Device to Device Variation: ±10 index points
PIR (Option):	Occupancy Detection, Range: 5m
Inputs:	xCR14: 1 x Universal Input, NTC10, 0-10V, Digital xCR15: 2 x Universal Inputs, NTC10, 0-10V, Digital
Analogue Outputs:	xCR14: 3 x Analogue 0-10Vdc Outputs, max 2mA xCR15: 4 x Analogue 0-10Vdc Outputs, max 2mA
Relay Outputs:	xER14: 1 x 230Vac Relay, max 5A res.
Communications:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30 Hardered Glass ≥6H for Display/Touch
Dimensions:	W86 x H86 x D24mm W86 x H86 x D13.8mm (Surface Part) W86 x H86 x D39mm (Total)
Origin:	United Kingdom



QCR04 - TCR04

CO2 AND TEMPERATURE CONTROLLERS WITH COLOUR SCREEN AND TACTILE BUTTONS

2 BUTTON

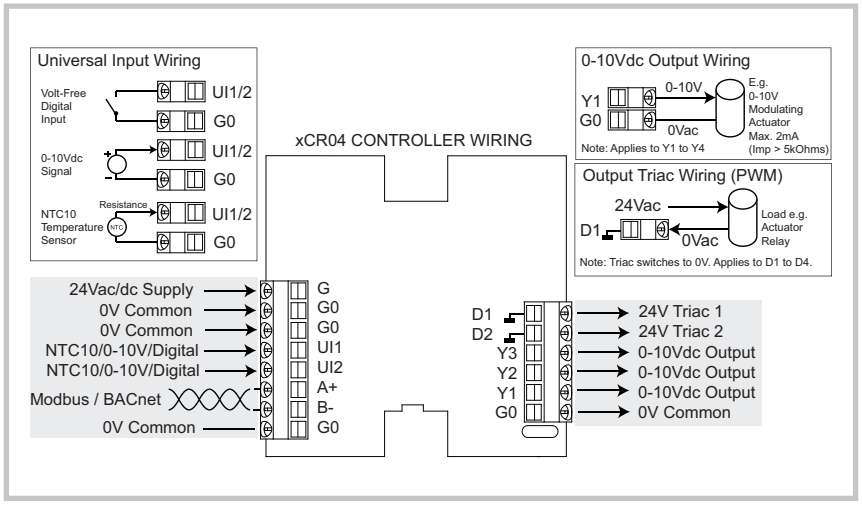
3 BUTTON

The TCR04/QCR04 Series Controllers controllers have been designed to be wall mounted temperature and air quality controllers in room spaces. The controllers are suitable for a wide range of applications and have pre-defined application logic that covers most room control heating and cooling systems such as fan coil units, chilled ceilings, zone heating etc.
The room controllers have colour LCD screen indicating the current measurement and controller operating status. The user can adjust the setpoint and fan speed through the push buttons. The controllers are mounted on the wall surface directly or to standard wall mounting boxes. The SlimLine range is mounted using the wall boxes. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems.

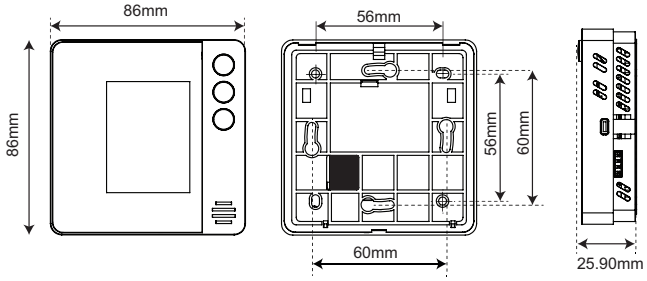
Technical Details Summary	
Power:	24Vac/dc, max 40mA with display Note: Triacs require 24Vac supply.
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2 (QCR Models):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
PIR (Option):	Occupancy Detection, Range: 5m
Inputs:	2 x Universal Inputs, NTC10, 0-10V, Digital
Analogue Outputs:	3 x Analogue 0-10Vdc Outputs, max 2mA
Digital Outputs:	2 x 24Vac Rated Triacs, Switching to 0V, Max 1A load
Communi-cations:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load Addressing via bit switch / screen / software
Display:	Full Colour 2.4" LCD, 240x320px Cover Glass Hardened ≥6H
Buttons:	2B models: 2 Tactile Push Buttons; Setpoint Up, Setpoint Down 3B models: 3 Tactile Push Buttons; Setpoint Up, Setpoint Down, Fan Speed (standard model), Operating Mode (OM models), Boost (BST models)
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30
Dimen-sions:	W86 x H86 x D24mm
Origin:	United Kingdom

Part Number		SKU# Number					
Product Name		**Code**	**Product Options**				
TCR04	Room Temperature Controller, 2UI, 3AO, 2DO, 24V Supply	4000					
QCR04	Room Temperature and CO2 Controller, 2UI, 3AO, 2DO	4100					
Communications Options							
MOD	Modbus RS485, Up to 60V Protection		1				
BAC	BACnet MS/TP, Up to 60V Protection		2				
Interface							
LCD-2B	Colour LCD Display with Two Buttons			22			
LCD-3B	Colour LCD Display with Three Buttons			23			
LCD-3B-BST	Colour LCD Display with Three Buttons, Set-point Up and Down, Boost Button			33			
LCD-3B-OM	Colour LCD Display with Three Buttons, Set-point Up and Down, Operating Mode Button			43			
Measurement Options							
	No Extra Measurements				00		
OE	Passive Infrared Movement Sensor (PIR)				03		
Colour							
W	White					00	02

Order Example: TCR04-MOD-LCD-2B-OE-W, SKU# 4000 1 22 03 00 02



DIMENSIONS



QCR02 / QCR03 - TCR02 / TCR03

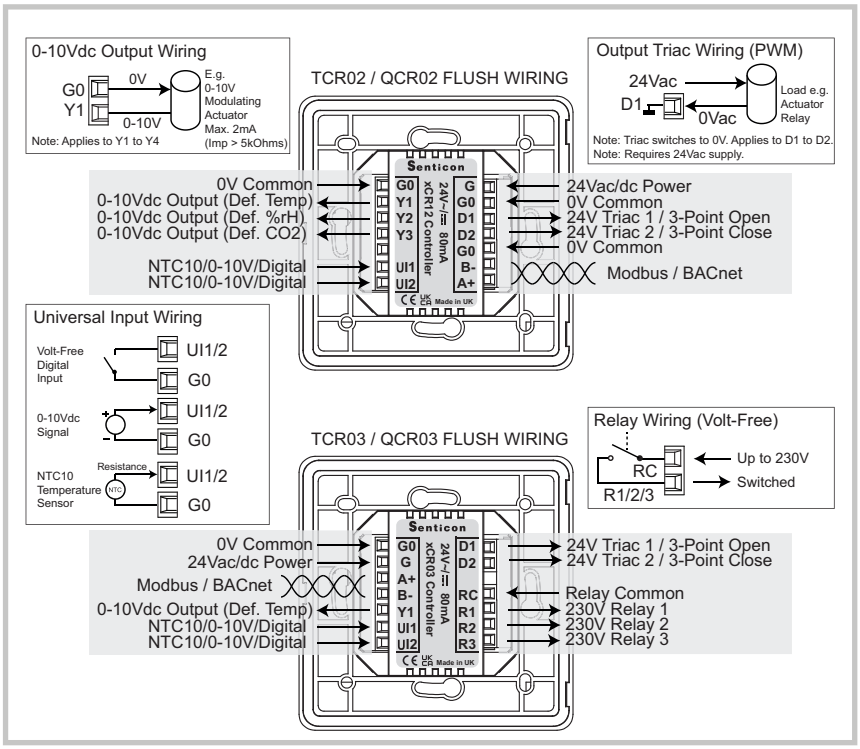
SLIMLINE CO2 AND TEMP CONTROLLERS WITH COLOUR SCREEN AND TACTILE BUTTONS

The xCR02/xCR03 Series Slimline controllers (only 13.8mm from wall) have been designed to be wall mounted temperature and air quality controllers in room spaces.
The controllers are suitable for a wide range of applications and have pre-defined application logic that covers most room control heating and cooling systems such as fan coil units, chilled ceilings, zone heating etc.
The room controllers have full colour LCD screen indicating the current measurement and controller operating status. The user can adjust the setpoint and fan speed/operating mode/boost through the push buttons.
The controllers are flush mounted to standard wall mounting boxes. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems.

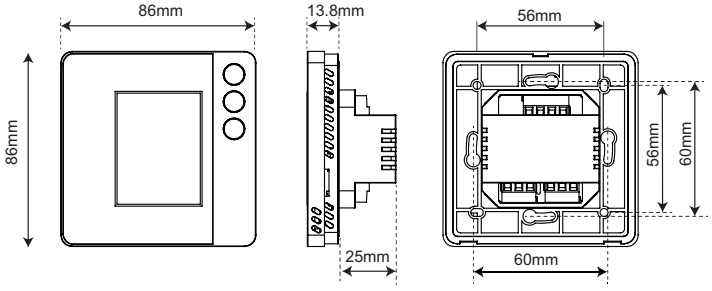
Technical Details Summary	
Power:	24Vac/dc -10%/+15%, max 40mA with display Note: Triacs require 24Vac supply.
Temperature:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2 (QCR Models):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Inputs:	2 x Universal Inputs, NTC10, 0-10V, Digital
Analogue Outputs:	xCR02: 3 x Analogue 0-10Vdc Outputs, max 2mA xCR03: 1 x Analogue 0-10Vdc Output, max 2mA
Digital Outputs:	2 x 24Vac Rated Triacs, Switching to 0V, Max 1A load
Relay Outputs:	3 x 230Vac, max 5A (res.)
Communications:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Display:	Full Colour 2.4" LCD, 240x320px Cover Glass Hardened ≥6H
Buttons:	2B models: 2 Tactile Push Buttons; Setpoint Up, Setpoint Down 3B models: 3 Tactile Push Buttons; Setpoint Up, Setpoint Down, Fan Speed (standard model), Operating Mode (OM models), Boost (BST models)
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30
Dimensions:	W86 x H86 x D24mm W86 x H86 x D13.8mm (Surface Part) W86 x H86 x D39mm (Total)
Origin:	United Kingdom

Part Number		SKU# Number				
Product Name		Code	Product Options			
TCR02	Slimline Room Temperature Controller, 2UI, 3AO, 2DO, 24V Supply	4200				
QCR02	Slimline Room Temperature and CO2 Controller, 2UI, 3AO, 2DO, 24V Supply	4300				
TCR03	Slimline Room Temperature Controller, 2UI, 2DO, 3RO, 1AO, 24V Supply	4400				
QCR03	Slimline Room Temperature and CO2 Controller, 2UI, 2DO, 3RO, 1AO, 24V Supply	4500				
Communications Options						
MOD	Modbus RS485, Up to 60V Protection		1			
BAC	BACnet MS/TP, Up to 60V Protection		2			
Interface						
LCD-2B	Colour LCD Display with Two Buttons			22		
LCD-3B	Colour LCD Display with Three Buttons			23		
LCD-3B-BST	Colour LCD Display with Three Buttons, Setpoint Up and Down, Boost Button			33		
LCD-3B-OM	Colour LCD Display with Three Buttons, Setpoint Up and Down, Operating Mode Button			43		
Measurement Options						
	No Extra Measurements				00	
OE	Passive Infrared Movement Sensor (PIR)				03	
Colour						
W	White					00 02

Order Example: QCR02-BAC-LCD-3B-W, SKU# 4300 2 23 00 00 02



DIMENSIONS (xCR02/xCR03 SERIES)



QVR20 / QVR22 - TVR20 / TVR22

INTELLIGENT TOUCHSCREEN VAV CONTROLLERS (Temperature, CO2, rH, VOC, PIR)

STANDARD SLIMLINE

Bluetooth.

BACnet LoRaWAN Modbus

The TVR/QVR Series Controllers have been designed to be wall mounted VAV (Variable Air Volume) controllers in room spaces. The controllers are suitable for both pressure independent and pressure dependent VAV control with additional control logic for zone heating or cooling. Optional built-in CO2, humidity, VOC and Occupancy (PIR) measurements and control logic can expand the control functionality and energy savings further. The controllers can also connect direct to Senticon's DPT50 Pressure Sensors.

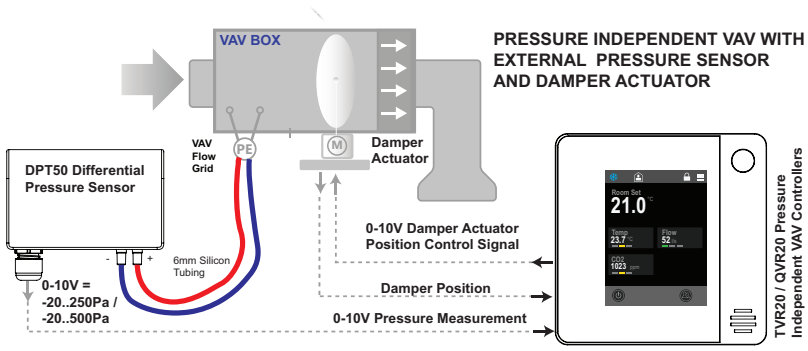
The room controllers have an optional sharp colour touchscreen display with glass front that provides intuitive user interface. An optional PIR sensor is available for occupancy mode. The controllers are mounted on the wall surface directly or to standard wall mounting boxes. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems. Wireless LoraWan adds unique functionality. Optional Bluetooth wireless interface provides Smart Phone App interface (iOS).

Technical Details Summary	
Power:	24Vac/dc, max 80mA with Touchscreen
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2 (QVR Models):	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Humidity (Option):	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
VOC (Option):	Volatile Organic Compound Range: Air Quality Index : 0..500 Device to Device Variation: ±10 index points
PIR (Option):	Occupancy Detection, Range: 5m
Inputs:	1 x Flow/Pressure Input, 0-10V 1 x Universal Inputs, NTC10, 0-10V, Digital
Analogue Outputs:	4 x Analogue 0-10Vdc Outputs, max 2mA
Digital Outputs:	1 x Optional 24V Pilot Relay, max 1.0A
Wired Network:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load Address Setup via Bitswitch, Display or Tool
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Display:	Full Colour 2.4" LCD, 240x320px Cover Glass Hardened ≥6H
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30
Dimen-sions:	xVR20: W86 x H86 x D24mm xVR22: W86 x H86 x D24mm W86 x H86 x D13.8mm (Surface Part) xVR22: W86 x H86 x D39mm (Total)
Origin:	United Kingdom

Part Number		SKU# Number					
Product Name		Code	Product Options				
TVR20	Room VAV Controller, 1FLOW, 1UI, 4AO, 24V Supply	6000					
QVR20	Room VAV Temperature and CO2 Controller, 1FLOW, 1UI, 4AO, 24V Supply	6100					
TVR22	Slimline Room VAV Controller, 1FLOW, 1UI, 4AO, 24V Supply	6400					
QVR22	Slimline Room VAV Temperature and CO2 Controller, 1FLOW, 1UI, 4AO, 24V Supply	6500					
Communications Options							
	No RS485 Communications		0				
MOD	Modbus RS485, Up to 60V Protection		1				
BAC	BACnet MS/TP, Up to 60V Protection		2				
Interface and Wireless Options							
	No Interface (Blank Front)			00			
TS	Colour Capacitive Touchscreen			02			
BLE	Bluetooth App Interface			03			
TS-BLE	Touchscreen and Bluetooth			05			
LRA	LoraWan Wireless Interface (select region)			06			
TS-LRA	LoraWan Wireless Interface with Touchscreen (select region)			08			
Measurement Options							
	No Extra Measurements				00		
RH	Relative Humidity, 2% Acc				01		
RH-VOC	Volatile Organic Compound and Humidity				02		
OE	Passive Infrared Movement Sensor (PIR)				03		
RH-OE	Relative Humidity and Movement (PIR)				04		
RH-VOC-OE	VOC, Relative Humidity and PIR				05		
Output Options							
	No Output Options					00	
RL	24V Relay Output					01	
Region Options (LoraWan)							
	Non Lora & EU868MHz LoraWan (Default)						0
US	US915MHz LoraWan						1
AS	AS923MHz LoraWan						2
IN	IN815MHz LoraWan						3
Colour Options							
B	Black						1
W	White						2

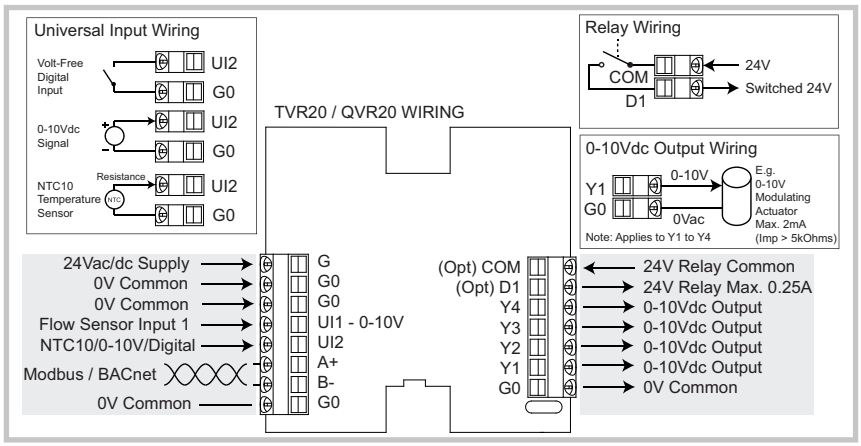
Order Example: TVR20-BAC-TS-OE-B, SKU# 6000 2 02 03 00 01

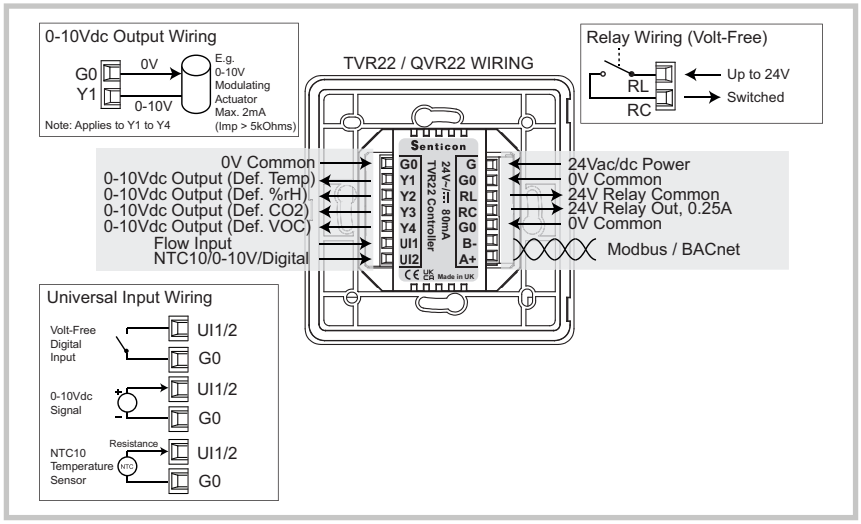
Accessories (see next page)		SKU# Number
DPT50-R3-Y1-W	Differential Pressure Sensor, Duct, Range -20..250Pa	7500 0 01 03 00 2
DPT50-R4-Y1-W	Differential Pressure Sensor, Duct, Range -20..500Pa,	7500 0 01 04 00 2



QVR20 / QVR22 - TVR20 / TVR22 ...Cont'd...

SLIMLINE TOUCHSCREEN VAV CONTROLLERS (Temperature, CO2, rH, VOC, PIR)





DPT50

DIFFERENTIAL PRESSURE SENSORS FOR VAV CONTROL

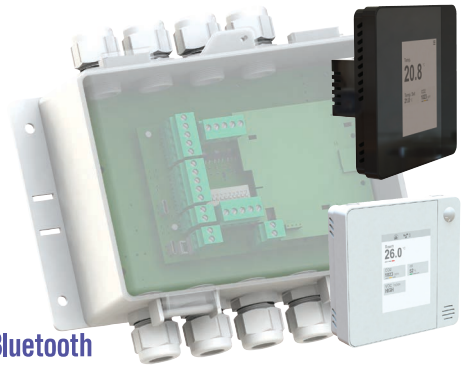
DPT50 differential pressure sensors measure air pressure in AHUs and VAV boxes. They are typically used with TVR20/22 and QVR20/22 pressure independent VAV controllers to measure air flow.
DPT50 pressure independent VAV controllers provide 0-10Vdc output tha corresponds linearly to pressure range (-20 to 250Pa or -20 to 500Pa).

Product Name		SKU# Number
DPT50-R3-Y1-W	Differential Pressure Sensor, Duct, Range -20..250Pa, Resolution 1Pa in +/- 20Pa 20 to 250 Pa 0.25% FSS, 0-10V output, AC 24 V or DC 15…35 V, Pressure Connection ø6 mm	7500 0 01 03 00 2
DPT50-R4-Y1-W	Differential Pressure Sensor, Duct, Range -20..500Pa, Resolution 0.25% FSS, 0-10V output, AC 24 V or DC 15…35 V, Pressure Connection ø6 mm	7500 0 01 04 00 2

Technical Details Summary	
Power:	24Vac +/-5%, 50/60Hz, 15..35Vdc
Pressure Range:	R3 Model: -20..+250Pa R4 Model: -20..+500Pa
Sensing Element:	Piezoresistive silicon ceramic sensor
Media:	Air or non-aggressive gasses
Accuracy:	±0.25 %FSS
Pressure Limits:	Working Pressure: 37.500 pascal Over Pressure: (R3) 75.000 pascal, (R4) 85.000 pascal Burst Pressure: (R3) 125.000 pascal, (R4) 100.000 pascal
Output:	1 x 0..10Vdc,minimum 1000 Ohm, linear
Pressure Connection:	Ø 6 mm, Optional silicone tubing
Temperature Limits:	Ambient: -25 …+70°C, Storage: -30 …+85°C
Terminals:	Rising Cage Screw Terminals, Max 1.5mm2 / 12 AWG
Enclosure:	Light Grey Plastics, IP54 or NEMA 3S
Dimensions:	W109.5 x H92.5 x D34mm

TCR81 - TCR82

CEILING MOUNTED CONTROLLERS, UP TO 2 TOUCH INTERFACES, 24V/230V



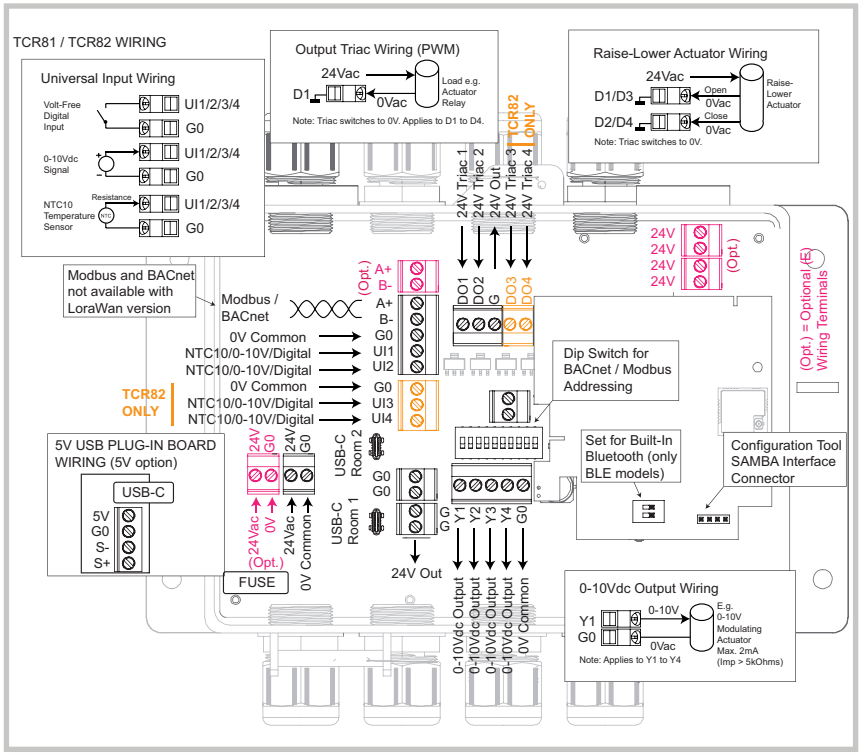
The TCR80 Series Controllers are ceiling mounted room controllers for controlling up to two rooms. The controllers have IP65 rated enclosure with cable glands and are available with 24V or 230V power supply. The controllers can be connected to up to two TDR20/ QDR20 display panels using the USB-C cables (or via 4-wires), making installation and connection simple. The built-in universal inputs can be used with cable sensors. The room interface panels have temperature measurement, setpoint, fan speed, boost function and operating mode selection (configurable). In additon the room interface panels can have optional humidity, VOC, CO2 and occupancy measurements.
The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems, or Wireless LoraWan. The controllers can be configured using Windows Configuration Tool over the USB-SERIAL or wireless Bluetooth BLE-TOOLSET. The controllers can also be configured over the Modbus/BACnet, or using iOS Mobile Phone/iPad application.

Technical Details Summary	
Power:	24V Models: 24Vac/dc -10%/+15%, 230V Models: 230Vac
Inputs:	TCR81: 2 x Universal Inputs - RI/AI/DI Selection TCR82: 4 x Universal Inputs - RI/AI/DI Selection RI = NTC10 Measurement RI = Resistive kOhms Measurement, 0.1..500kOhms, Accuracy: 0.1+/-2% kOhms of the reading (1..80kOhms), resolution 0.1 kOhms AI = 0..10Vdc Input, display resolution 0.1 Volts DI = Digital Volt-Free Input
Analogue Outputs:	4 x Analogue 0-10Vdc Outputs, max 2mA
Digital Outputs:	TCR81: 2 x 24Vac Rated Triacs, Switching to 0V, Max 1A load TCR82: 4 x 24Vac Rated Triacs, Switching to 0V, Max 1A load
Wired Comms:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Sensor Bus:	2 x USB-C Connectors for the Room Interface Panels (TDR/QDR20) Each connector provides RS485, 0V and 5Vdc Option: 5V, 0V, TX, RX Spring Loaded Terminals Block
Terminals:	Spring Loaded Push Fit Terminals, 0.2 to 2.5mm2 / 26..12 AWG, 4 x M16 and 4 x M20 Cable Glands
Enclosure:	ABS Plastics - White, IP65 Rating
Dimensions:	W220 x H140 x D75mm
Origin:	United Kingdom

Part Number		SKU# Number				
Product Name		**Code**	**Product Options**			
TCR81	Ceiling Mounted Room Controller, 2UI, 4AO, 2DO, 2 x Room Interface Unit Support	8100				
TCR82	Ceiling Mounted Room Controller, 4UI, 4AO, 4DO, 2 x Room Interface Unit Support	8200				
Communications Options						
	No Wired Communication (select for LoraWan)		0			
MOD	Modbus RS485, Up to 60V Protection		1			
BAC	BACnet MS/TP, Up to 60V Protection		2			
Wireless Communication Options						
	No Interface			00		
BLE	Bluetooth App Interface			03		
LRA	LoraWan Wireless Interface, EU868Mhz			06		
BLE-LRA	LoraWan Wirelss Interface EU868 with Touch-screen			09		
Wiring Terminal Options						
	USB-C Connector for Zone Sensors				60	
5V	5V+ Zone Sensor Communications with Screw Wiring Terminals for Zone Sensors				61	
E	Optional Extra Wiring Terminals (for looping)*				62	
5VE	Screw Wiring Terminals for Zone Sensors + Optional Extra Wiring Terminals (for looping)*				63	
Power Supply Option						
24	24V Power Supply					10
230	Passive Infrared Sensor (PIR)					11
Region Options (LoraWan)						
	Non Lora & EU868MHz LoraWan (Default)					0
US	US915MHz LoraWan					1
AS	AS923MHz LoraWan					2
Colour						
W	White					2

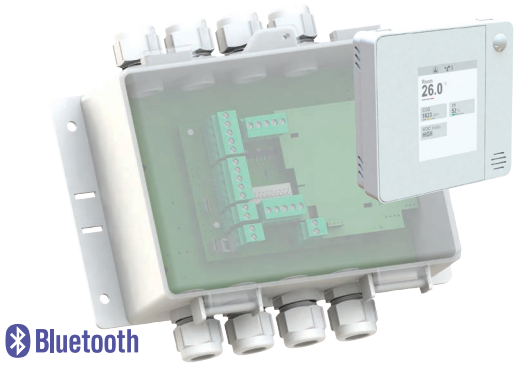
Order Example: TCR81-LRA-5V-230-W, SKU# 8100 0 06 61 11 02
Note (*): Only available with 24 models (24V power supply models)

Accessories		SKU# Number
USB-C-CAB-6	6m USB-C Male to USB-C Male for Room Interface Units, Black	8510 0 00 0005 01
USB-C-EXT-6	5m USB-C Female to USB-C Male Extension Cable, Black	8520 0 00 0006 01



TCR83

CEILING MOUNTED CONTROLLERS, 1 TOUCH INTERFACES, 24V/230V POWER, 3 FAN RELAYS



Bluetooth BACnet LoRaWAN Modbus

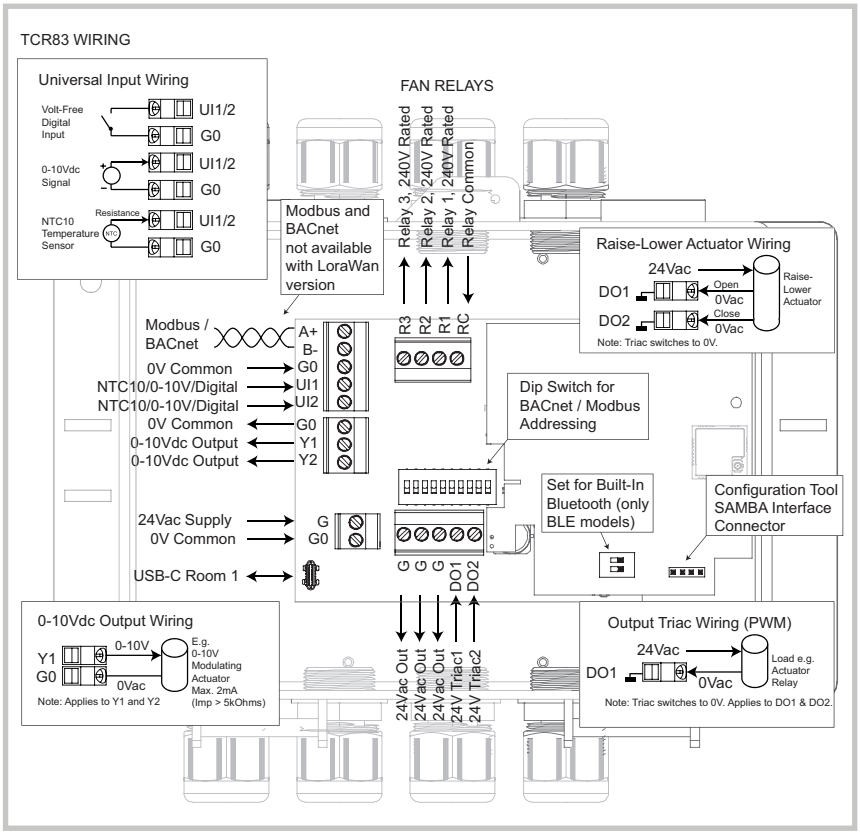
The TCR83 Series Controllers are ceiling mounted room controllers for controlling rooms with 3-speed fan coil units. The controllers have IP65 rated enclosure with cable glands and are available with 24V or 230V power supply. The controllers can be connected a TDR20/ QDR20 display panel using the USB-C cables (or via 4-wires), making installation and connection simple. The built-in universal inputs can be used with cable sensors. The room interface panels have temperature measurement, setpoint, fan speed, boost function and operating mode selection (configurable). In additon the room interface panels can have optional humidity, VOC, CO2 and occupancy measurements.
The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems, or Wireless LoraWan. The controllers can be configured using Windows Configuration Tool over the USB-SERIAL or wireless Bluetooth BLE-TOOLSET. The controllers can also be configured over the Modbus/BACnet, or using iOS Mobile Phone/iPad application.

Part Number		SKU# Number					
Product Name		Code	Product Options				
TCR83	Ceiling Mounted Room Controller, 2UI, 2AO, 2DO, 3RO, 1 x Room Interface Support	8300					
Communications Options							
	No Wired Communication (select for LoraWan)		0				
MOD	Modbus RS485, Up to 60V Protection		1				
BAC	BACnet MS/TP, Up to 60V Protection		2				
Wireless Communication Options							
	No Interface			00			
BLE	Bluetooth App Interface			03			
LRA	LoraWan Wireless Interface, EU868Mhz			06			
BLE-LRA	LoraWan Wirelss Interface EU868 with Touch-screen			09			
Zone Sensor Supply							
	USB-C Connector				60		
5V	5V+ Zone Sensor Communications with Screw Wiring Terminals				61		
Power Supply Option							
24	24V Power Supply					10	
230	Passive Infrared Sensor (PIR)					11	
Region Options (LoraWan)							
	Non Lora & EU868MHz LoraWan (Default)						0
US	US915MHz LoraWan						1
AS	AS923MHz LoraWan						2
Colour							
W	White						2

Order Example: TCR83-LRA-5V-24-W, SKU# 8300 0 06 60 10 02

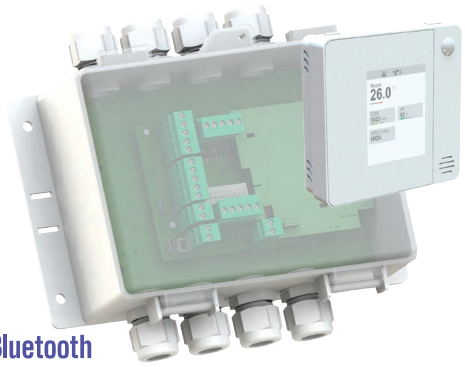
Accessories		SKU# Number
USB-C-CAB-6	6m USB-C Male to USB-C Male for Room Intrerface Units, Black	8510 0 00 0005 01
USB-C-EXT-6	5m USB-C Female to USB-C Male Extension Cable, Black	8520 0 00 0006 01

Technical Details Summary	
Power:	24V Models: 24Vac/dc -10%/+15%, 230V Models: 230Vac
Inputs:	TCR83: 2 x Universal Inputs - RI/AI/DI Selection RI = NTC10 Measurement RI = Resistive kOhms Measurement, 0.1..500kOhms, Accuracy: 0.1+/-2% kOhms of the reading (1..80kOhms), resolution 0.1 kOhms AI = 0..10Vdc Input, display resolution 0.1 Volts DI = Digital Volt-Free Input
Analogue Outputs:	2 x Analogue 0-10Vdc Outputs, max 2mA
Digital Outputs:	2 x 24Vac Rated Triacs, Switching to 0V, Max 1A load
Relay Outputs:	3 x 250VAC Relays, max switching power 90W (Fan Motor Control)
Wired Comms:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Sensor Bus:	1 x USB-C Connectors for the Room Interface Panel (TDR/QDR20) The connector provides RS485, 0V and 5Vdc Option: 5V, 0V, TX, RX Spring Loaded Terminals Block
Terminals:	Spring Loaded Push Fit Terminals, 0.2 to 2.5mm2 / 26..12 AWG, 4 x M16 and 4 x M20 Cable Glands
Enclosure:	ABS Plastics - White, IP65 Rating
Dimen-sions:	W220 x H140 x D75mm
Origin:	United Kingdom



TCR86

ENCLOSED ROOF TOP, FAN COIL AND TERMINAL UNIT CONTROLLERS, 24V



Bluetooth BACnet LoRaWAN Modbus

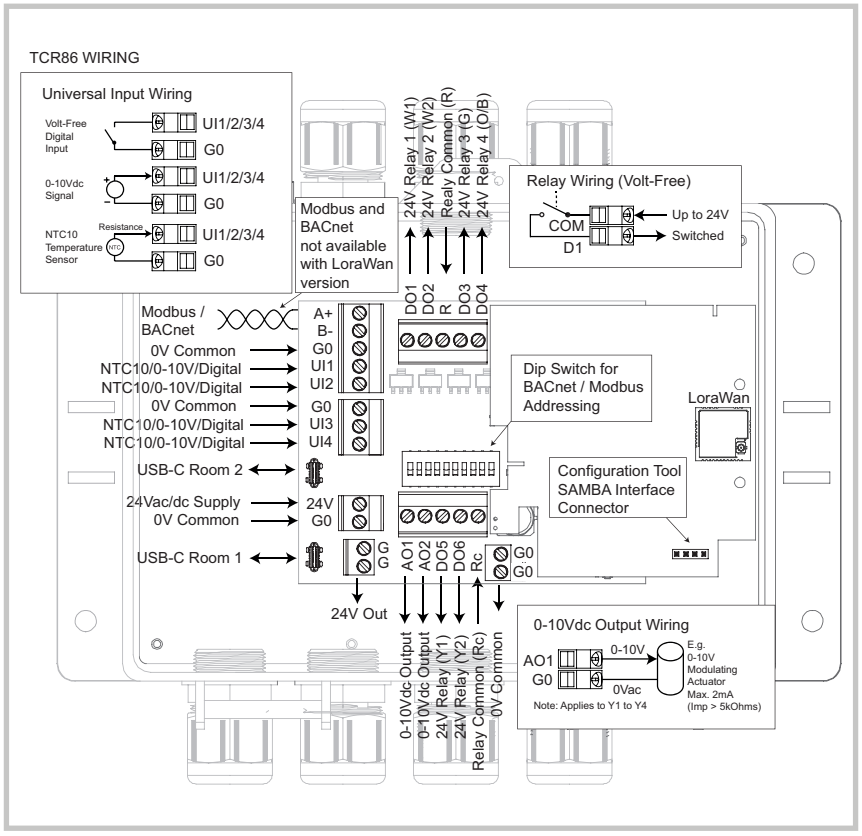
The TCR86 Series Controllers are roof top unit, fan coil unit and terminal unit controllers. The controllers have IP65 rated enclosure with cable glands and are available with 24V or 230V power supply. The controllers can be connected a TDR20/QDR20 display panel using the USB-C cables (or via 4-wires), making installation and connection simple. The built-in universal inputs can be used with cable sensors. The room interface panels have temperature measurement, setpoint, fan speed, boost function and operating mode selection (configurable). In additon the room interface panels can have optional humidity, VOC, CO2 and occupancy measurements. The controllers have built-in Modbus RTU or BACnet MS/TP communication that allow interaction to the BMS systems, or Wireless LoraWan. The controllers can be configured using Windows Configuration Tool over the USB-SERIAL or wireless Bluetooth BLE-TOOLSET. The controllers can also be configured over the Modbus/BACnet, or using iOS Mobile Phone/iPad application.

Part Number		SKU# Number				
Product Name		Code	Product Options			
TCR86	RTU, FCU and Terminal Unit Controller, 4UI, 2AO, 6DO, 1 x Room Interface Unit Support	8600				
Communications Options						
	No Wired Communication (select for LoraWan)		0			
MOD	Modbus RS485, Up to 60V Protection		1			
BAC	BACnet MS/TP, Up to 60V Protection		2			
Wireless Communication Options						
	No Interface			00		
BLE	Bluetooth App Interface			03		
LRA	LoraWan Wireless Interface, EU868Mhz			06		
BLE-LRA	LoraWan Wirelss Interface EU868 with Touch-screen			09		
Zone Sensor Supply						
	USB-C Connector				60	
5V	5V+ Zone Sensor Communications with Screw Wiring Terminals				61	
Power Supply Option						
24	24V Power Supply					10
Region Options (LoraWan)						
	Non Lora & EU868MHz LoraWan (Default)					0
US	US915MHz LoraWan					1
AS	AS923MHz LoraWan					2
Colour						
W	White					2

Order Example: TCR81-LRA-5V-230-W, SKU# 8100 0 06 60 11 02

Accessories		SKU# Number
USB-C-CAB-6	6m USB-C Male to USB-C Male for Room Intrerface Units, Black	8510 0 00 0005 01
USB-C-EXT-6	5m USB-C Female to USB-C Male Extension Cable, Black	8520 0 00 0006 01

Technical Details Summary	
Power:	24Vac/dc -10%/+15%,
Inputs:	4 x Universal Inputs - RI/AI/DI Selection RI = NTC10 Measurement RI = Resistive kOhms Measurement, 0.1..500kOhms, Accuracy: 0.1+/-2% kOhms of the reading (1..80kOhms), resolution 0.1 kOhms AI = 0..10Vdc Input, display resolution 0.1 Volts DI = Digital Volt-Free Input
Analogue Outputs:	2 x Analogue 0-10Vdc Outputs, max 2mA
Digital Outputs:	6 x 24V Rated Pilot Relays, max 0.5A load
Wired Comms:	Modbus RS485 or BACnet MS/TP, with 60V Fault Tolerance, 1/10 Unit Load
Wireless:	Bluetooth Interface to SmartPhone App or BLE USB Dongle LoraWan® Wireless Interface (EU868, US915, AS923)
Sensor Bus:	2 x USB-C Connectors for the Room Interface Panels (TDR/QDR20) Each connector provides RS485, 0V and 5Vdc Option: 5V, 0V, TX, RX Spring Loaded Terminals Block
Terminals:	Spring Loaded Push Fit Terminals, 0.2 to 2.5mm2 / 26..12 AWG, 4 x M16 and 4 x M20 Cable Glands
Enclosure:	ABS Plastics - White, IP65 Rating
Dimen-sions:	W220 x H140 x D75mm
Origin:	United Kingdom



QDR20 - TDR20

TOUCHSCREEN ROOM INTERFACES FOR TCR80 SERIES (CO2, Temp, rH, VOC, PIR)

STANDARD

SLIMLINE

Modbus

The TDR20/QDR20 Touchscreen and Slimline Touchscreen Room Displays are used together with the TCR80 series ceiling mounted room controllers. The room interfaces have colour touchscreen and integrated temperature measurement. The colour touchscreen can be used for the setpoint adjustment, changing the controller operating mode and fan speed. Configurable boost button also available. The touchsreen room displays can also have optional CO2, VOC, humidity and occupancy monitoring.
In addition the BMS can send through the TCR80 series controllers additional information such as energy or water consumption figures, or outside air temperature readings.
The interfaces are connected using RS485 over USB-C connection making wiring easy and secure. 4-wire terminal is also provided.

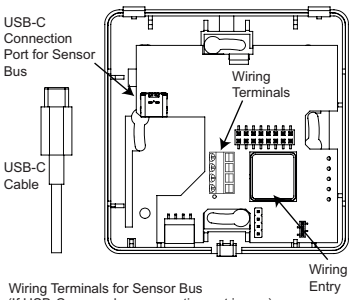
Technical Details Summary	
Power:	5Vdc via USB-C Cable or Wiring Terminals
Tempera-ture:	Range: 0..50° (32..122°F) Accuracy: ±0.5°C
CO2:	Range: 0..5,000ppm Accuracy: ±30ppm ±3.0% m.v.
Humidity (Option):	Range: 0..100%rH Accuracy: ±2%rH (within 20 to 80%rH)
VOC (Option):	Volatile Organic Compound Range: Air Quality Index : 0..500 Device to Device Variation: ±10 index points
PIR (Option):	Occupancy Detection, Range: 5m
Wired Network:	Modbus RS485 over USB-C Connection / 4-wires
Address-ing:	Via PC Device Configuration Tool, via Smart-Phone Tool, or via Display (Default Address 1)
Display:	Full Colour 2.4" LCD, 240x320px Cover Glass Hardened ≥6H
Touch:	Capacitive Touchscreen
Terminals:	Rising Cage Screw Terminals, 0.2 to 2.5mm2 / 26 to 12 AWG
Enclosure:	ABS ULV0 Plastics - White or Black, IP30
Dimen-sions:	Slimline: W86 x H86 x D13.8mm (Surface Part) Slimline: W86 x H86 x D39mm (Total) Standard: W86 x H86 x D39mm (Total)
Origin:	United Kingdom

Part Number		SKU# Number				
Product Name		Code	Product Options			
TDR20	Touchscreen Room Interface, Temperature Measurement, USB-C & 4-Wire SensorLink	2000				
QDR20	Touchscreen Room Interface, Temperature and CO2 Measurement, USB-C & 4-Wire Sensor-Link	2100				
Communications						
MOD	Modbus RS485		1			
User Interface Options						
	No Display (Blank)			00		
TS	Colour Capacitive Touchscreen			02		
Measurement Options						
	No Extra Measurements				00	
RH	Relative Humidity				01	
RH-VOC	Volatile Organic Compound and Humidity				02	
OE	Passive Infrared Movement Sensor (PIR)				03	
RH-OE	Relative Humidity and Movement (PIR)				04	
RH-VOC-OE	VOC, Relative Humidity and Movement (PIR)				05	
Mounting Options						
	Standard Wall Surface or Junction Box					00
F	Slimline Flush Mounting on Junction Box					30
Colour Options						
B	Black					01
W	White					02

Order Example: TDR20-MOD-TS-RH-OE-F-B, SKU# 2000 1 02 04 30 01

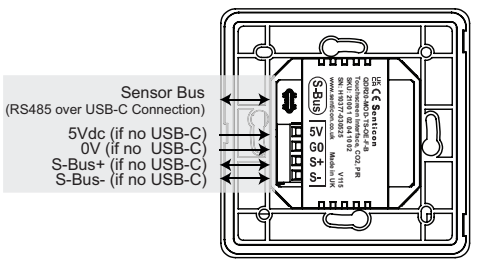
Accessories		SKU# Number
USB-C-CAB-6	6m USB-C Male to USB-C Male for Room Intrerface Units, Black	8510 0 00 0005 01
USB-C-EXT-6	5m USB-C Female to USB-C Male Extension Cable, Black	8520 0 00 0006 01

SURFACE MOUNTED STANDARD RANGE CONNECTIONS



Note: Sensor bus uses RS485 over USB-C cable (requires full USB-C cable e.g. Senticon USB-C-CAB-6)

SLIMLINE SERIES CONNECTIONS



BLE-TOOLSET / USB-SERIAL

WIRELESS AND SERIAL CONNECTORS TO CONFIGURATION TOOLS

BLE-TOOLSET

USB-SERIAL

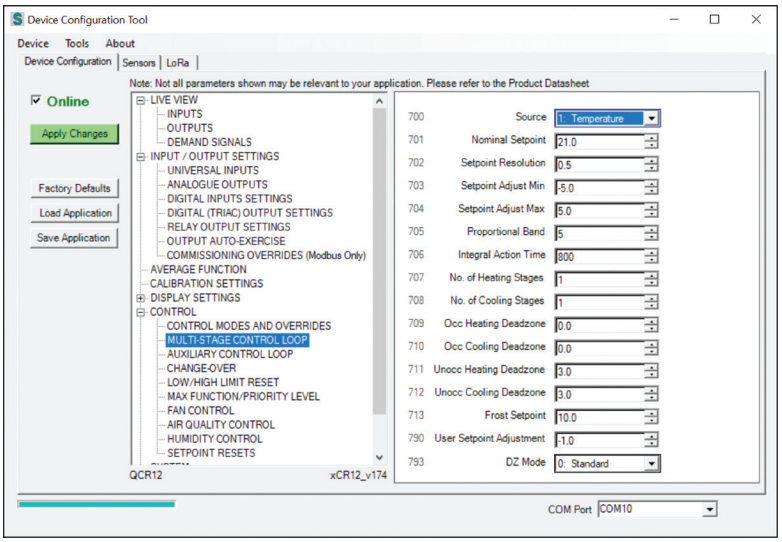
Part Number		SKU# Number
BLE-TOOLSET	USB and Device Bluetooth Dongles	9900 0 00 00 00 01
USB-SERIAL	USB to Serial Dongle for Programming with Isolation	9900 0 00 00 00 10

The BLE-TOOLSET is the Bluetooth Dongle pair that used used with the PC Device Configuration Tool software to connect it to the Senticon devices, or with the iOS Smart Configuration App to connect the App (mobile phone) to the Device using the built-in Bluetooth connection of the phone.
When used with the PC Configuration Tool software, the 'USB BLE Dongle' is connected to the USB port of the PC. The 'Device BLE Dongle' is connected to the device to it's tool socket. The BLE dongle pair will automatically establish the connection between them making the configuration easy.

The USB-SERIAL can be used for the configuration of the Senticon Devices with the PC Device Configuration Tool software. The USB-SERIAL module is plugged in to the device's configuration ports and forms and virtual COM port on the Windows PC. The PC Device Configuration Tool software then uses this COM port to communicate to the device.
The USB-SERIAL module has built-in optical isolation.The module has USB-C connection port and it comes with 2m USB-C to USB-A cable for the connection with the PC.

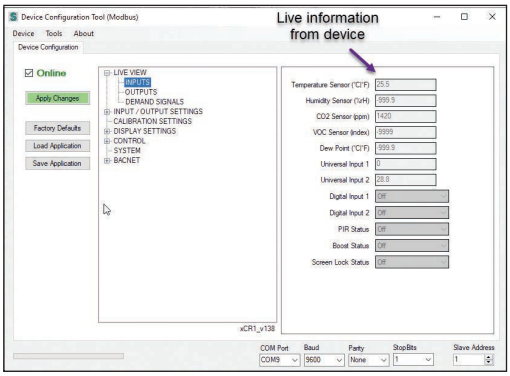
DEVICE CONFIGURATION TOOL (SERIAL CONNECTION)

The Device Configuration tool is a free-of-charge Microsoft Windows based configuration tool that can be used for the Smart Room Sensor and Intelligent Room Controller configuration. The software is connected wirelessly to the devices using two Bluetooth dongles (BLE-TOOLSET), or alternatively using USB to Serial (USB-SERIAL) converter. The tool can also be used in offline mode allowing configuration without actual device.
Using the tool the device configuration can changed to the site requirements, and a backup can be stored in the local computer. Using backups it is easy and fast to copy configuration from one device to other in case where multiple same type of devices are deployed on the project.



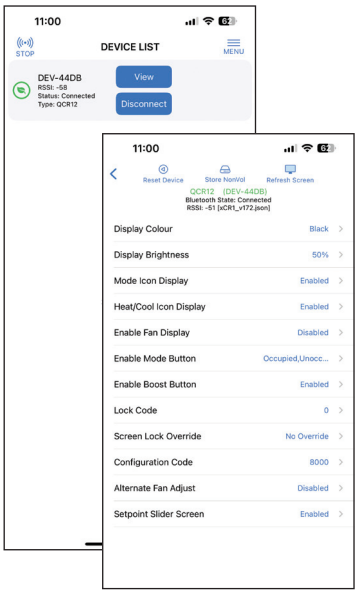
MODBUS DEVICE CONFIGURATION TOOL (via RS485 Modbus)

The Modbus Device Configuration tool is a free-of-charge Microsoft Windows based configuration tool that can be used configuring the (Modbus) devices over RS485 Modbus network. The tool uses the same json configuration file as the serial tool. Therefore there is no need to enter the Modbus registers, just connect to the devices and configure them over the communication network.



SmartConfig APP (iOS AppStore)

Senticon iOS SmartConfig can be used to configure the devices over the Bluetooth connection using iPads and iPhones. To use the tool, just either plug-in the Device BLE Dongle (part of BLE-TOOLSET), or use the built-in BLE of the device (product option).



Senticon provides advanced building controls and measurement solutions. Our products have been developed with over 100 years of design team experience in Building Management and Measurement Systems. Our controllers and smart sensors products combine aesthetics for modern buildings, accurate and comprehensive measurements, advanced control algorithms for energy savings and excellent comfort control with practicality to the installers.

Understanding the building technology and HVAC applications is the key part of our culture. Our products offer intelligent connectivity to Building Management Systems and IoT systems using industry standard open protocols such as BACnet, Modbus and LoraWan. Merging the application knowledge with in-depth networking technology understanding creates world class products that not only save energy and control well, but also look good.

LoRaWAN®

BACnet

Modbus

Bluetooth

SmartPhone App offers easy access user interface to Senticon's Controllers and Smart Sensors

Senticon
SENTIENT CONTROL SOLUTIONS