

EURO DUCT CO2/VOC/RH/TEMP MODBUS

4-in-1  Modbus

THAD-Series

PRODUCT INSTALLATION DATA



GENERAL

The Euro Duct 4-in-1 combination sensors provide for accurate simultaneous measurement of CO₂, VOC, Relative Humidity, and Temperature. A digital output signal is provided via Modbus RTU (RS-485).

The Tasseron Air Quality combination duct sensor is built with high quality, high accuracy components that will deliver long life span, low drift, and the ability to select many functions in the field.

Built into the IP65 Euro enclosure, this duct sensor features a stainless steel sensing probe with a 100 micron filter for dust protection. Included M16 cable compression fitting and 1/2" NPT conduit adapter make installation neat and easy.

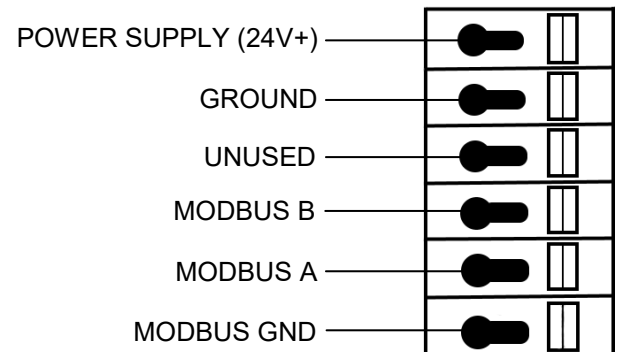
FEATURES

- 64 available addresses - selectable with on-board DIP switch
- 4 framing options - selectable with on-board DIP switch
- 6 selectable baud rate options plus Autobaud(late availability)
- Accepts AC or DC power supply
- Tool free wiring using quick connect spring terminals
- CO₂ Measurement from 0-5000ppm
- VOC Index value on a scale of 1-100
- RH Accuracy of $\pm 3\%$
- Temperature measurement from $-40...70^{\circ}\text{C}$ ($-40...158^{\circ}\text{F}$)

SPECIFICATIONS

Power supply	15-35 VDC 24 VAC ($\pm 20\%$) 45-66Hz
Output Signals	5mA maximum (0.18VA)
Connection	Quick Connect spring terminals, 16-22AWG / 0.35-1.5 mm ²
Wiring	5-wire
Cable Entry	1/2" NPT or M16 cable gland
Media Types	For use with non-corrosive, non-ionic gases such as conditioned air or other dry gases.
CO ₂ Accuracy	30ppm $\pm 3\%$ measured value
RH Accuracy	$\pm 3\%$ Relative humidity
Temp Accuracy	$\pm 0.7^{\circ}\text{C}$
VOC Index	1-100 index points
Housing material	PC/ABS, UL94 V-0
Mounting	Direct (screw) to duct
Operating Temp	$-5...+55^{\circ}\text{C}$ ($23...131^{\circ}\text{F}$)
Transport/Storage Temp	$-20...60^{\circ}\text{C}$ ($-4...140^{\circ}\text{F}$)
CO ₂ Warm-up time	5 mins
Protection class	NEMA4X/IP65, UV/weather resistant
Approvals	CE / RoHS
Warranty	5 year limited

WIRING



CONFIGURATION

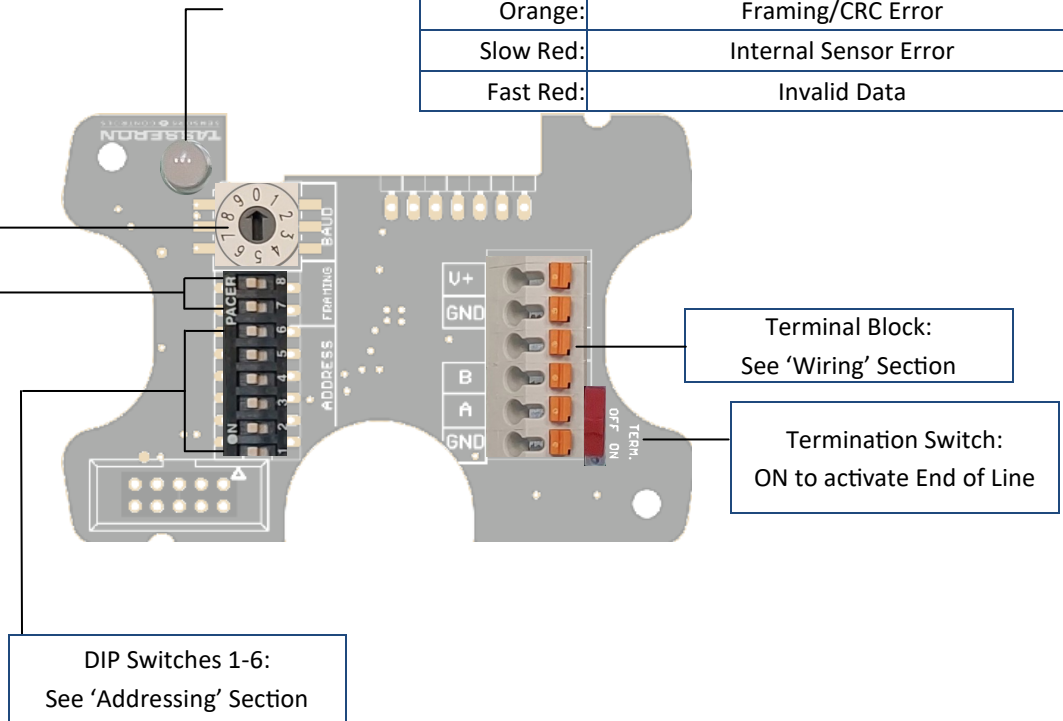
Rotary DIP - Baud Rate

0	Disabled
1	9600
2	19200
3	38400
4	57600
5	76800
6	115200
7	Disabled
8	Disabled
9	Disabled

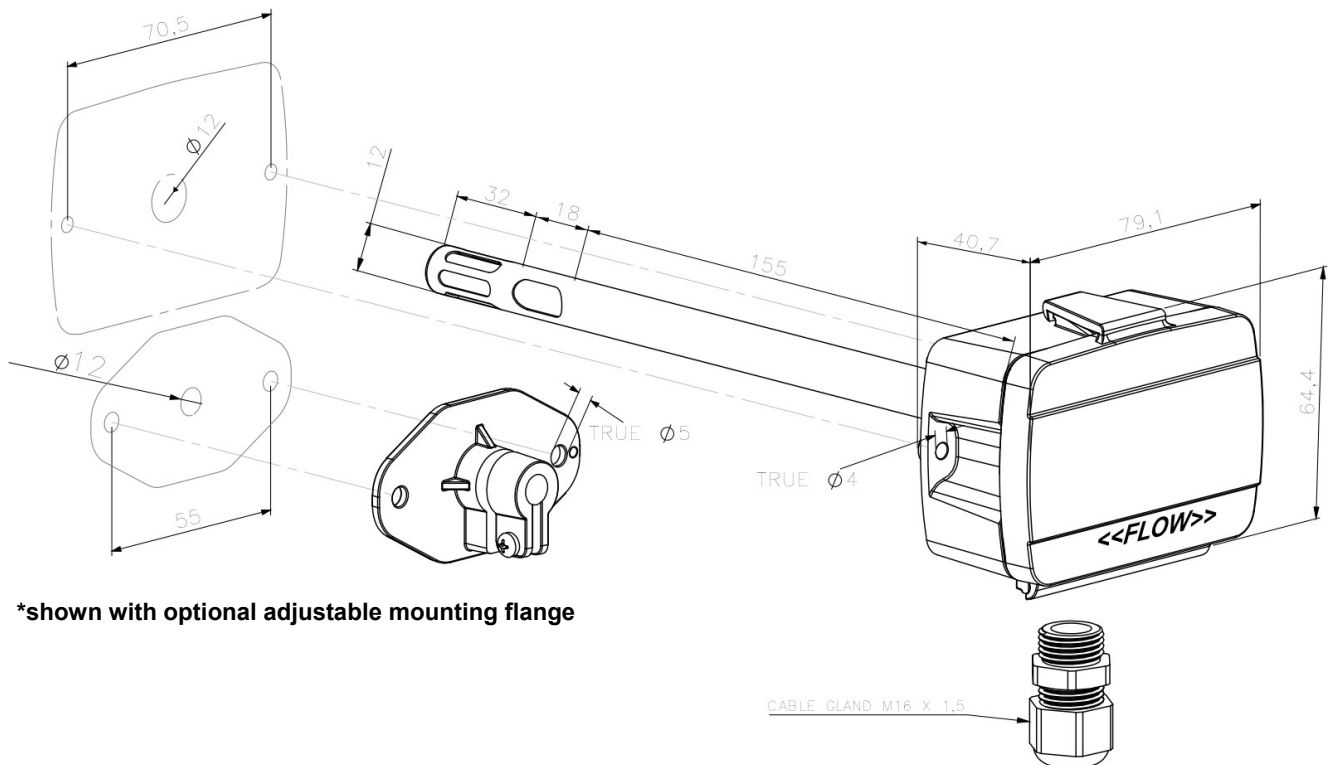
7	8	Framing
Off	Off	8—N—1
Off	On	8—N—2
On	Off	8—E—1
On	On	8—O—1

Framing = (Data bits—Even/Odd/No Parity—Stop Bits)

Status LED	Slow Green:	Bus connection OK, Not being polled
	Fast Green:	Bus connection OK and polling
	Orange:	Framing/CRC Error
	Slow Red:	Internal Sensor Error
	Fast Red:	Invalid Data



DIMENSIONS AND MOUNTING (dimensions in mm)



*shown with optional adjustable mounting flange

REGISTER MAP

Standard Address	Relative Address	Description	Format	Scaling Factor	Range	Default	Reset	Units	Remarks
<i>Function 05 - Write Single Coil</i>									
0x0001	0x0000	Reset CO2 Sensor	bit	0/1		0	0	Off/On	
0x0002	0x0001	Reset VOC Sensor	bit	0/1		0	0	Off/On	
0x0003	0x0002	Reset RH/T Sensor	bit	0/1		0	0	Off/On	
0x0004	0x0003	Auto Self Calibrate CO2	bit	0/1		1	Previous	Off/On	
0x0005	0x0004	Auto Self Calibrate VOC	bit	0/1		-	-	Off/On	Late Availability
0x0006	0x0005	-	bit	0/1		-	-	Off/On	'-' = no function
0x0007	0x0006	-	bit	0/1		-	-	Off/On	
0x0008	0x0007	Force Recalibrate CO2	bit	0/1		0	0	Off/On	
0x0009	0x0008	Restart VOC Index	bit	0/1		-	-	Off/On	
<i>Function 06 - Read Input</i>									
3x0001	0x0000	CO2 (raw)	int16_t	1	350-5000	0	0	ppm	
3x0002	0x0001	CO2 (filtered)	int16_t	1	350-5000	0	0	ppm	*1
3x0003	0x0002	VOC (raw)	int16_t	1	1	-	500	-	
3x0004	0x0003	VOC (filtered)	int16_t	1	1	-	500	-	*1
3x0005	0x0004	Temperature (raw)	int16_t	0.1	-400..700	0	0	°C	
3x0006	0x0005	Temperature (filtered)	int16_t	0.1	-400..700	0	0	°C	*1
3x0007	0x0006	RH (raw)	int16_t	0.1	0-1000	0	0	%RH	
3x0008	0x0007	RH (filtered)	int16_t	0.1	0-1000	0	0	%RH	*1
<i>Function (03/06=R/W) Holding</i>									
4x0001	0x0000	Local Temp Offset	uint16_t	0.1	0-100	20	Previous	°C	
4x0002	0x0001	Forced Recalibrate value	uint16_t	1	400-600	420	Previous	ppm	
4x0003	0x0002	Bus Message	uint16_t	1	0-65535	0	0		
4x0004	0x0003	Bus Communication Error	uint16_t	1	0-65535	0	0		
4x0005	0x0004	Slave Exception Error	uint16_t	1	0-65535	0	0		
4x0006	0x0005	Slave Message	uint16_t	1	0-65535	0	0		
4x0007	0x0006	Slave No Response	uint16_t	1	0-65535	0	0		
4x0008	0x0007	Slave NAK	uint16_t	1	0-65535	0	0		
4x0009	0x0008	Slave Busy	uint16_t	1	0-65535	0	0		
4x0010	0x0009	Bus Character Overrun	uint16_t	1	0-65535	0	0		
4x0011	0x000A	Uptime	uint16_t	1	0-59	0	0	Secs	
4x0012	0x000B	Uptime	uint16_t	1	0-59	0	0	Minutes	
4x0013	0x000C	Uptime	uint16_t	1	0-23	0	0	Hours	
4x0014	0x000D	Uptime	uint16_t	1	0-65535	0	0	Days	
4x0015	0x000E	CO2 Sample Interval	uint16_t	1	2-30	8	Previous	Secs	Unchangeable
4x0016	0x000F	CO2 Temp Offset	uint16_t	0.01	0-1000	300	Previous	°C	Unchangeable
4x0017	0x0010	Sensor Health	uint16_t			0	0		*2

*1 - Filter algorithm parameters TBD

*2 - 0x01 RH sensor non-responsive; 0x02 Temp Sensor unresponsive; 0x04 CO2 sensor unresponsive; 0x08 VOC Sensor unresponsive; 0x10 RH value at or near limits for ≥5 mins; 0x20 Temp sensor at or near limits for ≥5 mins; 0x40 CO2 value at or near limits for ≥20 minutes

ADDRESSING

Base Address: 100

0-OFF, 1=ON

DIP SWITCH Position LEFT to RIGHT						Modbus Address
1=2 ⁵	2=2 ⁴	3=2 ³	4=2 ²	5=2 ¹	6=2 ⁰	
0	0	0	0	0	0	= 100
0	0	0	0	0	1	= 101
0	0	0	0	1	0	= 102
0	0	0	0	1	1	= 103
0	0	0	1	0	0	= 104
0	0	0	1	0	1	= 105
0	0	0	1	1	0	= 106
0	0	0	1	1	1	= 107
0	0	1	0	0	0	= 108
0	0	1	0	0	1	= 109
0	0	1	0	1	0	= 110
0	0	1	0	1	1	= 111
0	0	1	1	0	0	= 112
0	0	1	1	0	1	= 113
0	0	1	1	1	0	= 114
0	0	1	1	1	1	= 115
0	1	0	0	0	0	= 116
0	1	0	0	0	1	= 117
0	1	0	0	1	0	= 118
0	1	0	0	1	1	= 119
0	1	0	1	0	0	= 120
0	1	0	1	0	1	= 121
0	1	0	1	1	0	= 122
0	1	0	1	1	1	= 123
0	1	1	0	0	0	= 124
0	1	1	0	0	1	= 125
0	1	1	0	1	0	= 126
0	1	1	0	1	1	= 127
0	1	1	1	0	0	= 128
0	1	1	1	0	1	= 129
0	1	1	1	1	0	= 130
0	1	1	1	1	1	= 131
1	0	0	0	0	0	= 132
1	0	0	0	0	1	= 133
1	0	0	0	1	0	= 134
1	0	0	0	1	1	= 135
1	0	0	1	0	0	= 136
1	0	0	1	0	1	= 137
1	0	0	1	1	0	= 138
1	0	0	1	1	1	= 139
1	0	1	0	0	0	= 140
1	0	1	0	0	1	= 141
1	0	1	0	1	0	= 142
1	0	1	0	1	1	= 143
1	0	1	1	0	0	= 144
1	0	1	1	0	1	= 145
1	0	1	1	1	0	= 146
1	0	1	1	1	1	= 147
1	1	0	0	0	0	= 148
1	1	0	0	0	1	= 149
1	1	0	0	1	0	= 150
1	1	0	0	1	1	= 151
1	1	0	1	0	0	= 152
1	1	0	1	0	1	= 153
1	1	0	1	1	0	= 154
1	1	0	1	1	1	= 155
1	1	1	0	0	0	= 156
1	1	1	0	0	1	= 157
1	1	1	0	1	0	= 158
1	1	1	0	1	1	= 159
1	1	1	1	0	0	= 160
1	1	1	1	0	1	= 161
1	1	1	1	1	0	= 162
1	1	1	1	1	1	= 163