Model : DCO-S4

CO/Temp Sensor & Ventilation Controller
(optional CO2 sensor)

Product Description

The model DCO-S4 is a digital ventilation controller specifically designed to monitor carbon monoxide, temperature and carbon dioxide (optional) in an enclosed or semi-enclosed car parks and to regulate car-park ventilations according to these parameters. DCO-S4 is designed for easy installation and minimum maintenance during operation. It can be operated in stand-alone mode or by optional connection to larger building management systems via output analog signals, RS485 Modbus interface or wireless Zigbee connections.

Features

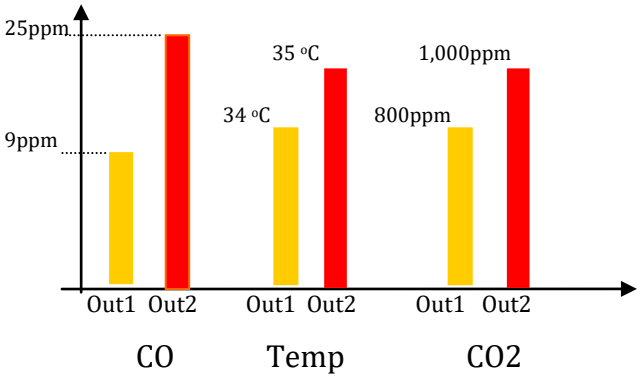
- Multi-functional sensing & controlling of CO, temperature or (optional) CO2 in ambient air with programmable control settings.
- State-of-art electrochemical sensor cell to measure CO gas in parts-per-million (ppm) and NDIR technology to measure CO2.
- Precision temperature sensor.
- Saves energy costs with flexible demand controlled ventilation (DCV) strategy.
- Two relay outputs (normally open contacts) with pre-settings (user adjustable) for complex local ON/OFF and/or stage controls.
- Temperature/CO2 control and display enable or disable function selects.
- Fail-safe design with N.C. contacts during power failure.
- Built-in System Test (ST) function.
- Long CO sensor cell life with typical maintenance interval > 1 year;
- Built-in temperature compensation on CO & CO2 measurement.
- Long CO2 sensor life with built-in automatic background correction (ABC) function.
- Optional CO, CO2 & Temp analogue output signals (0~10V or 4~20mA) for connection to remote central computer and/or alarm panel.
- Optional RS485 Modbus connection or wireless Zigbee connection to the gateway.
- Meets general sensor coverage guideline of 500 square meters per sensor.

Application

DCO-S4 is designed for enclosed and/or semi-enclosed car park ventilation applications. It can be used both to control the ventilation system and/or be a part of an alarm system.

It is well known that all automobile engines generate CO/CO2 gases and that we shall be protected against these toxic gases. By measuring the CO/CO2 levels in the car park and regulate the ventilation so as to keep the CO/CO2 level below the recommended limit, the most cost effective ventilation system maybe derived.

In tropical areas where temperature comfort can be a secondary control parameter. When the temperature in the car park has risen to a preset limit, the ventilation can be used to create the *wind effect* so as to improve the comfort level.



The CO, (CO2) or temperature set-points, whichever reaches the preset trip point activates the relay contacts. For instance, 9ppm CO (800ppm CO2) or 34 °C in temperature will trigger first relay contact at Out1; while 25ppm CO (1,000ppm CO2) or 35 °C temperature will trigger second relay contact at Out2.

Note :
DCO-S4 is designed for car-park ventilation & general measurement purposes applications only, it is not designed for safety application.

SPECIFICATIONS Telasia Model DCO-S4 - Multi CO/CO2 / Temp sensors & controllers for fixed installations

CO Measurement:

Operating principle	Electro-chemical cell
Gas sample mode	Diffusion
Response time (1/e)	Less 1 min. diffusion time
Measurement range	0 ~ 300 ppm
Output analog signal range selection	0~50 / 0 ~100 / 0 ~ 200 / 0 ~ 300 ppm (default 0 ~ 100ppm)
Accuracy	Better than +/- 5 ppm
Resolution	1 ppm
Sensor cell life expectancy	5 years

Temperature Measurement:

Operating principle	Precision semiconductor temperature sensor
Measuring range	0 to 50 ^{o}C
Accuracy	±0.75 ^{o}C
Digital resolution	0.1 ^{o}C

CO2 Measurement (optional):

Operating principle	Non-Dispersive Infrared (NDIR)
Gas sample mode	Diffusion
Measuring range	0 to 2,000ppm
Measuring interval	Every 4 seconds
Response time	2 minutes by 90%
Accuracy	± (70ppm + 3% of reading) *note 1 & 2*

General Performance:

Compliance with	EMC European Council Directive 2014/30/EU
Operating temperature range	0 to 50 ^{o}C
Operating humidity range	0 to 90% RH (non-condensing)
Maintenance interval	Yearly verification or re-calibration recommended
Storage temperature	-20 to 60 ^{o}C

Electrical:

Power input	Min. 12V DC /AC, max. 30VDC / 28 VAC
Power consumption	< 2 watts average
Wiring connections	Terminal block (see figure) , 2mm^2 maximum

Outputs:

Relay contacts	Out 1 & 2, isolated N.O. 1mA/5V up to 1A/50VAC/24VDC With default set-points *(see graph in page 1).*
Display	4 digit LCD display with ppm / ^{o}C indicator
Pushbutton	For on-board maintenance switches (refer to manual for details)

Optional Outputs:

Digital interface	RS485 Modbus or wireless Zigbee
Linear analog controller outputs	0 to 10V x 2, R_{out} < 100 ohm, R_{Load} > 5 kohm on CO, Temp & CO2 channels
	4 to 20mA x 2, R_{Load} < 500 ohm on AN1 & 2 (V/I jumper select)
D/A resolution	10 bits, 10mV / 0.016mA per step
D/A conversion accuracy	Within ± 2% of reading
Analog signal output range	CO ..... 0 – 100ppm (default setting) ..... 0 – 50ppm, 0 – 200ppm, 0 – 300ppm (jumper select) Temp ..... 0 – 50 ^{o}C CO2 ..... 0 – 2000ppm

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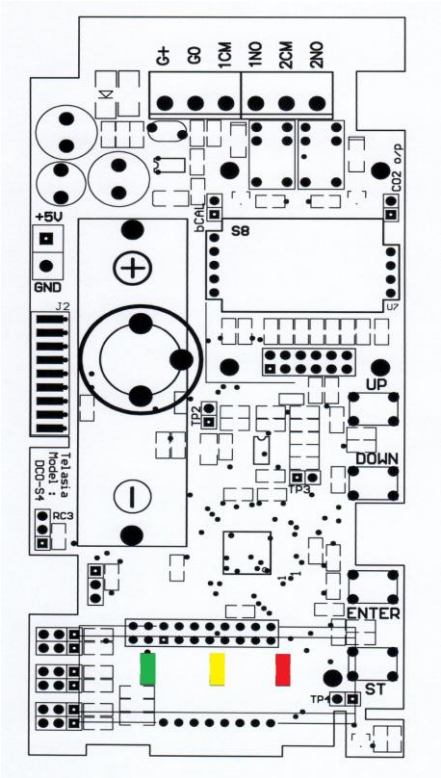
Terminal Connections:

G+	:	24VAC/DC
G0	:	System Ground
1CM	:	Relay 1 common
1NO	:	Relay 1 n.o. contact
2CM	:	Relay 2 common
2NO	:	Relay 2 n.o. contact



DCO-S4 Model Selection Guide

DCO -S4 -*X* -*Y*

Product Series

CO2 option

[ ] - (blank) without CO2 option
0 - without CO2 option
2 - with CO2 option

Output options

[ ] - (blank) no output option specified
0 - no output option specified
1 - analog signal output
2 - RS485 Modbus interface

Model Selection Table

Model	CO	Temp	CO2	Relay contacts	Analog signals	RS485
DCO-S4	Yes	Yes		2		
DCO-S400	Yes	Yes		2		
DCO-S401	Yes	Yes		2	2	
DCO-S402	Yes	Yes		2		Yes
DCO-S420	Yes	Yes	Yes	2		
DCO-S421	Yes	Yes	Yes	2	3	
DCO-S422	Yes	Yes	Yes	2		Yes

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