DCO-S3

CO/temp Sensor & Ventilation Controller

The model DCO-S3 is a digital ventilation controller specifically designed to monitor carbon monoxide and temperature in the enclosed or semi-enclosed car parks and to regulate the environment according to these two parameters. DCO-S3 is designed for easy installation and minimum maintenance during operation. It can be operated in stand-alone mode, as well as connected to larger building management systems.

- Dual functional sensing & controlling of CO & temperature in ambient air with programmable control settings
- State-of-art electrochemical sensor cell to measure carbon monoxide gas in parts-per-million (ppm)
- Precision Pt1000 temperature sensor
- Saves energy costs with flexible demand controlled ventilation (DCV) features
- Two sensor analogue outputs (0~10V or 4~20mA) for connection to remote central computer and/or alarm panel
- 100/200ppm jumper selectable output CO range.
- Two sensor relay outputs (normally open contacts) for complex local ON/OFF and/or Stage controls
- Fail-safe design with N.C. contacts during power failure
- Longer maintenance interval with internal microprocessor control and built-in self-correction algorithm (SCA). Typical maintenance interval > 1 years
- Built-in temperature compensation on CO measurement

Function

DCO-S3 is specially 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 and that we shall be protected against this toxic gas. By measuring the CO level in the car park and regulate the ventilation so as to keep the CO level below the recommended limit, the most cost effective ventilation system may be derived.

In tropical areas where temperature comfort can be a concern, temperature measurement can be the second controlling 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.

DCO-S3 is intended for wall mounting.

Measuring system
The CO concentration is measured using a new generation Electro-chemical cell to measure carbon monoxide in parts per million (ppm).

Supply voltage and output signal
The supply voltage is min. 18 V DC / 22 V AC, max. 30 V DC / 29 V AC and the standard output signal is 0….10 V or 4....20 mA.

Relay contact
DCO-S3 has two relay contacts, one for CO; another for temperature, for direct control of a fan or to give an alarm signal etc.

Setting
The CO level or temperature, whichever reaches the preset trip point, activates the relay contacts. 9ppm CO or 32°C in temperature will trigger relay contact at Out3. 25ppm CO or 34°C temperature will trigger second relay contact at Out4.

Applications
DCO-S3 is used in carparks, car repair shops, tunnels, engine test stands, shelters, loading bays, go-kart race courses and also in boiler rooms, in which carbon monoxide can escape on the basis of a leak in the exhaust system.

Technical data

Supply voltage	Min. 18 V DC / 22 V AC, max. 30 V DC / 29 V AC
Power consumption	< 1.5 W
Ambient temperature	0...45°C
Ambient humidity	0...100%RH, not condensating
Form of protection	IP20
	This product conforms with the requirements of European EMC Directive 89/336/EEC
Calibration interval	2 years with Self Calibration Algorithm (SCA) enabled
Display	4 digits LCD-display with ppm/°C indicator

CO measurement

Measuring principle	Electro chemical cell
Measuring range	0...100 ppm
Extended measuring range	101...255 ppm
Accuracy	Better than +/- 5 ppm
Response time	< 1 min diffusion time
Resolution	1 ppm

Temperature measurement

Measuring principle	Pt1000
Measuring range	0 ....50 °C
Accuracy	+/- 0.75 °C
Resolution	0.1°C

Outputs

Linear analog controller outputs	0 to 10V x 2, R_{out} < 100 ohm, R_{Load} > 5 kohm on Out 1 & Out2 4 to 20mA x 2, R_{Load} < 500 ohm on AN1 & 2 (V/I jumper select)
Relay	Out3 & 4, isolated N.O. 1mA/5V up to 1A/50VAC/24VDC

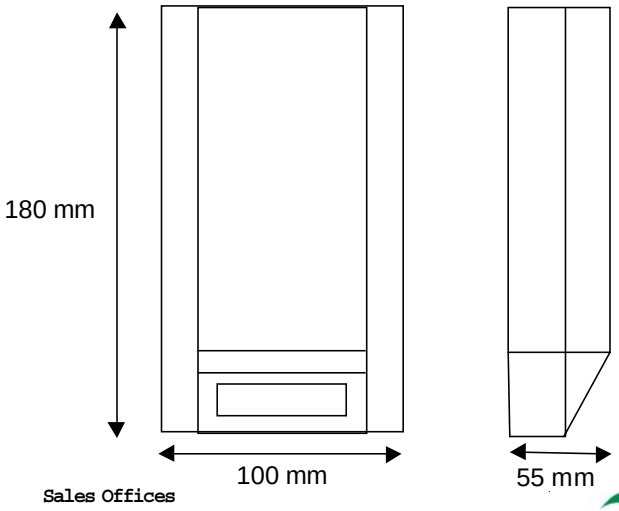
Internal Pushbuttons

Pushbutton	For on-board maintenance switches(refer to manual for detail).

Wiring and dimensions

G+	:	24 V AC/DC
G0	:	System Ground
M	:	Signal ground
AN1	:	CO output signal
AN2	:	Temp output signal
1CM	:	Relay 1 common
1NO	:	Relay 1 n.o. contact
2CM	:	Relay 2 common
2NO	:	Relay 2 n.o. contact

G0 and M are internally connected



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