

## CO<sub>2</sub> Measurement

## CarboCheck

Non-sampling, in-line CO<sub>2</sub> measurement

### Background

As the world's leading CO<sub>2</sub> monitor and control system, CarboCheck uses the well-known saturation pressure / temperature technique for accurate, non-sampling measurement. CarboCheck can be used as a stand-alone or configured to work with a control system. The measuring system comprises the analyser / control unit, CO<sub>2</sub> sensor assembly, resistance thermometer and vacuum exhaustor.

### Principle of Operation

The CarboCheck sensor features a silicone rubber membrane, through which the dissolved CO<sub>2</sub> permeates into a sealed, evacuated chamber. The partial pressure of the gas is then measured and CO<sub>2</sub> content is displayed on the control unit. This system incorporates a vacuum exhaustor to regularly evacuate the sensor, providing continual, accurate measurement of dissolved CO<sub>2</sub>. The analyser / control unit can be linked to a carbonation system to enable fully integrated CO<sub>2</sub> measurement, injection and control.

### Features:

- ▶ Accurate to +/- 0.02 vol/vol (+/- 0.04 g/l)
- ▶ No sampling or products by-pass lines
- ▶ Hygienic fitting, can be cleaned in place
- ▶ Low maintenance requirement
- ▶ Available as single / dual channel controller or up to 4 channel monitor
- ▶ Measurement and compensation for the effect of O<sub>2</sub> and N<sub>2</sub>
- ▶ Discrete calibration for different products
- ▶ Remote start / stop control

### Benefits:

- ▶ Accurate monitoring and control of dissolved CO<sub>2</sub> levels in carbonated beverages
- ▶ Improved "right first time" carbonation figures in-line or in tank
- ▶ More efficient process control
- ▶ Reduction in re-work

### Typical Applications:

- ▶ Beer carbonation ex-filter
- ▶ Mineral waters carbonation
- ▶ Sparkling wines carbonation
- ▶ In-line CO<sub>2</sub> monitoring on brewery and soft drinks packaging lines
- ▶ Carbonation of pre-mixed drinks

### Analyser / Control Unit

Supplied in an IP65 (NEMA 4) enclosure for panel or wall mounting, the control unit can monitor up to four process streams. High and low alarms are available for each channel, as are outputs for recorders, PLCs or supervisory systems.

The analyser / control unit also provides:

- ▶ Analogue outputs of CO<sub>2</sub> temperature and pressure
- ▶ Analogue input for remote set-point
- ▶ Digital outputs for high and low level alarms
- ▶ Digital inputs for remote start, no flow
- ▶ RS422 serial communication link

### The CO<sub>2</sub> sensor

This is designed to fit in the shortened leg of a standard 3" ISS T-piece or Varivent type body. The materials contacting the liquid are food quality 316 stainless steel and silicone rubber cured to 250°C, impervious to all known CIP solutions.

### The Vacuum Exhaustor

Vacuum exhaustor is housed in a separate IP65 (NEMA 4) poly-carbonate (or optional stainless steel) enclosure. The function of the unit is to evacuate the sealed chamber of the CO<sub>2</sub> sensor at start-up to remove all gases. The cell is refreshed regularly (at a user defined interval) to maintain the accuracy of the reading.

