



# HAFFMANS PACKAGE ANALYZERS

# DELIVER THE HIGHEST QUALITY IN EVERY PACKAGE

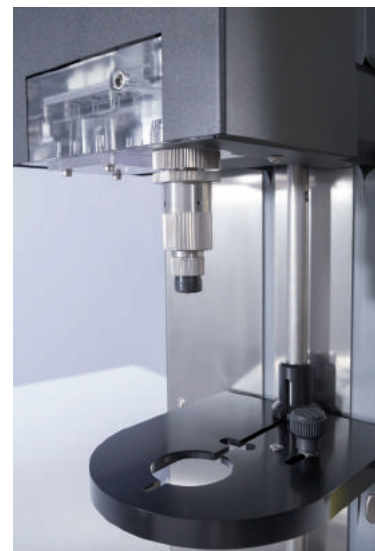
Haffmans' Package Analyzers provide the ultimate solutions for quality control in filled and sealed bottles and cans. Using differentiated optical oxygen ( $O_2$ ) measurement along with standard or selective carbon dioxide ( $CO_2$ ) measurement, Haffmans' Package Analyzers help you gain immediate insight into the performance of your filling operation.

Carbon dioxide and oxygen are crucial gases to monitor in order to determine packaged product quality and consequently the market success of a beer or beverage. Very low  $O_2$  levels and a consistent  $CO_2$  content in the packaged product are vitally important to achieve reliable quality and high flavor stability during the product's shelf-life. For these reasons, breweries and soft drink manufacturers are looking for more sophisticated methods to monitor the  $O_2$  and  $CO_2$  levels during production and in the filled package.

Haffmans' package analyzers meet this challenge in a single measurement step. Unlike conventional methods, Haffmans' package analyzers provide a differentiated measurement of Headspace Oxygen (HSO), Dissolved Oxygen (DO) and Total Package Oxygen (TPO). This detailed information enables you to better pinpoint any  $O_2$  pickup and optimize the filling area quickly and efficiently. No sample preparation is required for the measurement, and product losses are minimal as the product remains in the package and is not consumed by the instrument.

The Haffmans' package analyzer family is now even more specialized. One method during packaging is the use of nitrogen ( $N_2$ ) during filling instead of  $CO_2$ . When  $N_2$  is used the existing  $CO_2$  measuring methods are insufficient as the  $N_2$  in the filled package interferes with the dissolved  $CO_2$  content measurement. This can result in a product that is not compliant with established  $CO_2$  levels.

Pentair Haffmans' Package Analyzer, type c-TPO Selective with selective  $CO_2$  measurement provides the advanced technology needed for this application.



Piercer



Integrated Flow Control



Gas Supply

# PRODUCT TYPES

## BENEFITS

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- Assure high quality beer and beverages in every package
  - prevents inferior product entering the market
- Save time and money, and maximize ROI
- Automated measurement with no sample preparation required
- All-in-one measurement: HSO, DO, TPO and CO<sub>2</sub>
  - reduces process downtime
  - prevents product losses
  - low maintenance

## SCOPE OF SUPPLY

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- Automatic Inpack TPO/CO<sub>2</sub> Meter
- Main cable
- Service set with piercers and sealing rubbers
- Software set (CD + Interface cable)
- Instruction manual

## OPTIONS

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- Certificate of measurement
- PET bottle holder
- Barcode reader

## APPLICATIONS

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- Ideal for breweries and soft drink process plants:
  - Laboratory
  - Packaging department

## HAFFMANS TPO

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### FOR O<sub>2</sub> MEASUREMENT

Haffmans TPO package analyzer provides differentiated measurement of Headspace Oxygen (HSO) and Dissolved Oxygen (DO), and determines the Total Package Oxygen (TPO). Beyond traditional TPO measurement (DO x Z) the HSO plus DO are used to measure the O<sub>2</sub> content in the liquid and gas phases. This results in a more specific identification of the O<sub>2</sub> source, which can be in either during production (DO) or filling (HSO).



## HAFFMANS c-TPO

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### FOR O<sub>2</sub> AND CO<sub>2</sub> MEASUREMENT

In addition to the differentiated O<sub>2</sub> measurement described above, Haffmans c-TPO package analyzer provides CO<sub>2</sub> measurement according Henry's Law.



## HAFFMANS c-TPO SELECTIVE

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### FOR O<sub>2</sub> AND SELECTIVE CO<sub>2</sub> MEASUREMENT

Haffmans c-TPO Selective is the ideal package analyzer for breweries that use N<sub>2</sub> assisted filling instead of CO<sub>2</sub>, or inject N<sub>2</sub> into the beer during packaging. The Haffmans c-TPO Selective provides accurate insight in real CO<sub>2</sub> values, when using gasses other than CO<sub>2</sub> in the production process. Selective CO<sub>2</sub> measurement is achieved using Henry's Law in combination with optical technology.



## TECHNICAL SPECIFICATIONS

HAFFMANS TPO		HAFFMANS c-TPO		HAFFMANS c-TPO SELECTIVE	
<b>PARAMETERS</b>					
TPO, HSO, DO, Headspace Volume, Temperature, Pressure		TPO, HSO, DO, Headspace Volume, Temperature, Pressure CO <sub>2</sub>		TPO, HSO, DO, Headspace Volume, Temperature, Pressure CO <sub>2</sub> Selective CO <sub>2</sub>	
<b>MEASURING RANGE</b>					
TPO:	∞	TPO:	∞	TPO:	∞
HSO:	0.00 - 4.18 % (V/V)	HSO:	0.00 - 4.18 % (V/V)	HSO:	0.00 - 4.18 % (V/V)
DO (LHO):	0.000 - 2.000 ppb (w/w)	DO (LHO):	0.000 - 2.000 ppb (w/w)	DO (LHO):	0.000 - 2.000 ppb (w/w)
DO (WLO):	0.0 - 45 mg/l	DO (WLO):	0.0 - 45 mg/l		
Headspace volume:	0.0 - 500 ml	Headspace volume:	0.0 - 500 ml	Headspace volume:	0.0 - 500 ml
Temperature:	-5.0 - 40.0 °C	Temperature:	-5.0 - 40.0 °C	Temperature:	-5.0 - 40.0 °C
Pressure:	0.00 - 5.00 barg	Pressure:	0.00 - 5.00 barg	Pressure:	0.00 - 5.00 barg
		CO <sub>2</sub> :	2.0 - 15.0 g/l	CO <sub>2</sub> :	2.0 - 15.0 g/l
				CO <sub>2</sub> fraction:	0 - 100 %
<b>ACCURACY</b>					
O <sub>2</sub> sensor LHO		O <sub>2</sub> sensor LHO		O <sub>2</sub> sensor LHO	
Oxygen content:	+/- (0.002%+2%m.v.)	Oxygen content:	+/- (0.002%+2%m.v.)	Oxygen content:	+/- (0.002%+2%m.v.)
DO value:	+/- (1 ppb + 2%m.v.)	DO value:	+/- (1 ppb + 2%m.v.)	DO value:	+/- (1 ppb + 2%m.v.)
O <sub>2</sub> sensor WLO		O <sub>2</sub> sensor WLO			
Oxygen content:	+/- (0.002%+5%m.v.)	Oxygen content:	+/- (0.002%+5%m.v.)		
DO value:	+/- (0.1 mg/l + 5%m.v.)	DO value:	+/- (0.1 mg/l + 5%m.v.)		
Temperature:	+/- 0.2 °C	Temperature:	+/- 0.2 °C	Temperature:	+/- 0.2 °C
Pressure:	+/- 0.02 bar	Pressure:	+/- 0.02 bar	Pressure:	+/- 0.02 bar
		CO <sub>2</sub> :	+/- 0.1 g/l	CO <sub>2</sub> :	+/- 0.1 g/l
				CO <sub>2</sub> fraction:	+/- 1 %
<b>TPO CALCULATION</b>					
Differentiated: TPO = HSO + DO					
Uhlig: TPO = DO * Z					
<b>MEMORY CAPACITY</b>					
Products: 100					
Measurements: 400					
<b>BOTTLE DIMENSIONS</b>					
Height: 90 mm - 440 mm					
Diameter: 55 mm - 200 mm					
<b>CAN DIMENSIONS</b>					
Height: 80 mm - 195 mm					
Diameter: 50 mm - 73 mm					
<b>POWER SUPPLY</b>					
Voltage: 80 - 240 V/AC					
Frequency: 50 - 60 Hz					
<b>INTERFACE</b>					
USB, Barcode reader					
<b>DIMENSIONS</b>					
L*W*H; min: 550*330*680 mm					
L*W*H; max: 550*330*1120 mm					
<b>WEIGHT</b>					
40 kg					



### HAFFMANS BV

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