

TECHNICAL SPECIFICATIONS

HAFFMANS TPO		HAFFMANS c-TPO		HAFFMANS c-TPO SELECTIVE	
PARAMETERS					
TPO, HSO, DO, Headspace Volume, Temperature, Pressure		TPO, HSO, DO, Headspace Volume, Temperature, Pressure, CO ₂		TPO, HSO, DO, Headspace Volume, Temperature, Pressure, CO ₂ , Selective CO ₂	
MEASURING RANGE					
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 ppm (w/w)	DO (LHO):	0.000 - 2.000 ppm (w/w)	DO (LHO):	0.000 - 2.000 ppm (w/w)
DO (WLO):	0.0 - 45 mg/l	DO (WLO):	0.0 - 45 mg/l	DO (WLO):	Not applicable
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 ₂ :	2.0 - 15.0 g/l	CO ₂ :	2.0 - 15.0 g/l
				CO ₂ fraction:	0 - 100 %
ACCURACY					
O ₂ sensor LHO		O ₂ sensor LHO		O ₂ sensor LHO	
O ₂ content:	+/- (0.002%+2%m.v.)	O ₂ content:	+/- (0.002%+2%m.v.)	O ₂ 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 ₂ sensor WLO		O ₂ sensor WLO		Not applicable	
O ₂ content:	+/- (0.002%+5%m.v.)	O ₂ 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 ₂ :	+/- 0.1 g/l	CO ₂ :	+/- 0.1 g/l
				CO ₂ fraction:	+/- 1 %
TPO CALCULATION					
Differentiated: TPO = HSO + DO					
Uhlig: TPO = DO * Z					
MEMORY CAPACITY					
Products: 100					
Measurements: 400					
BOTTLE DIMENSIONS					
Height: 90 mm - 440 mm					
Diameter: 55 mm - 200 mm					
CAN DIMENSIONS					
Height: 80 mm - 195 mm					
Diameter: 50 mm - 73 mm					
POWER SUPPLY					
Voltage: 80 - 240 V/AC					
Frequency: 50 - 60 Hz					
INTERFACE					
USB, Barcode reader					
DIMENSIONS					
L*W*H; min: 550*330*680 mm					
L*W*H; max: 550*330*1120 mm					
WEIGHT					
40 kg					



HAFFMANS PACKAGE ANALYZERS



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FOOD & BEVERAGE

QUALITY MANAGEMENT

DELIVER THE HIGHEST QUALITY IN EVERY PACKAGE

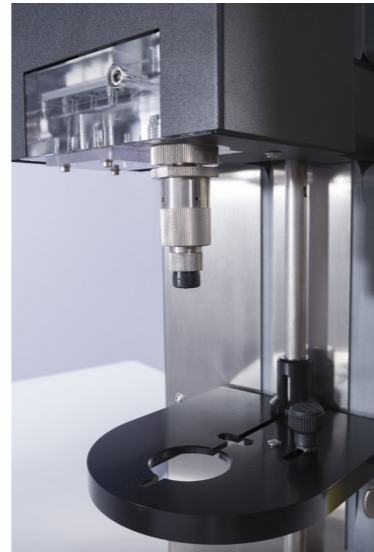
Haffmans' Package Analyzers provide the ultimate solutions for quality control in filled and sealed bottles and cans. Using differentiated optical oxygen (O_2) measurement along with standard or selective carbon dioxide (CO_2) measurement, Haffmans' Package Analyzers help you gain immediate insight into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

Carbon dioxide and oxygen are crucial gases to monitor to determine the quality and consequently the market success of packaged beer and beverages. 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 seek 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 packaging method is to use nitrogen (N_2) during filling instead of CO_2 . When N_2 is used the existing CO_2 measurement methods are insufficient as the N_2 in the filled package interferes with measuring the dissolved CO_2 content. 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

HAFFMANS PACKAGE ANALYZERS PRODUCT RANGE

BENEFITS

- Assure high quality beer and beverages in every package
 - Prevents inferior product from 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_2
 - Reduces process downtime
 - Prevents product losses
 - Requires minimal maintenance

SCOPE OF SUPPLY

- Haffmans Package Analyzer
- Mains cable
- Service set with piercers and sealing rubbers
- Software set (CD + Interface cable)
- Instruction manual

OPTIONS

- Certificate of measurement
- PET bottle holder
- Barcode reader

APPLICATIONS

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

HAFFMANS TPO

FOR O_2 MEASUREMENT

Haffmans TPO Package Analyzer provides differentiated measurement of HSO and DO, and determines the TPO. Beyond traditional TPO measurement (DO x Z) the HSO plus DO are used to measure the O_2 content in the liquid and gas phases. This results in a more specific identification of the O_2 source, which can be in either during production (DO) or filling (HSO).



HAFFMANS c-TPO

FOR O_2 AND CO_2 MEASUREMENT

In addition to the differentiated O_2 measurement described above, Haffmans c-TPO Package Analyzer provides CO_2 measurement according Henry's Law.



HAFFMANS c-TPO SELECTIVE

FOR O_2 AND SELECTIVE CO_2 MEASUREMENT

Haffmans c-TPO Selective is the ideal package analyzer for breweries that use N_2 assisted filling instead of CO_2 , or inject N_2 into the beer during packaging. The Haffmans c-TPO Selective provides accurate insight in real CO_2 values, when using gasses other than CO_2 in the production process. Selective CO_2 measurement is achieved using Henry's Law in combination with optical technology.

