



**Measures Wobbe Index,
Combustion Air Requirement
(CARI) and
Calorific Value of Natural Gas
and Fuel Gases**

WIMCompas

combustion parameter analyzer system

basic



- Fast response ($T_{90} < 10 \text{ sec}$)
- High accuracy and repeatability
- Automatic calibration
- Insensitive to ambient temperature fluctuations
- Suitable for outdoor installation
- Effective measuring range 0-100% FS
- Output in MJ/Nm³, kcal/Nm³ and BTU/SCF
- Minimal maintenance
- Flameless analyser
- Residual oxygen content principle
- Rugged design
- Remote operation by TCP/IP
- Optional MODBUS RTU (RS485)
- Optional specific gravity output

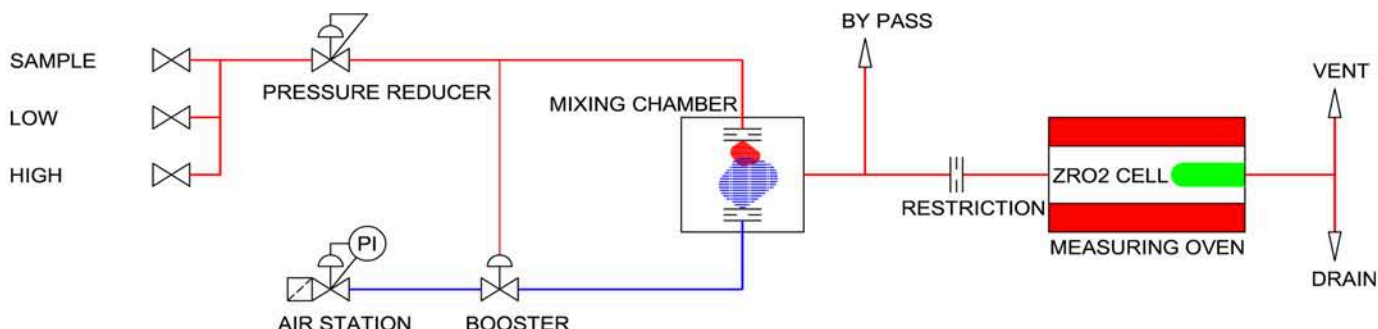


INTRODUCTION

The WIM COMPAS™ series is the latest addition to the Hobré Instruments portfolio of process analysers for Wobbe Index, Heating Value/BTU and Combustion Air Requirement Index. Designed and manufactured in our factory in The Netherlands the WIM COMPAS™ builds on more than 20 years of success of the WIROX, WIM 9600 and WIM 9900 series. Offering unmatched reliability, speed of response, accuracy and supported by profound application knowledge the WIM COMPAS™ is the best choice for measuring gas combustion parameters.

PRINCIPLE OF OPERATION

Sample gas is continuously mixed with combustion air under controlled conditions followed by catalytic combustion in an electrically heated furnace. The residual oxygen content in the flue gas is measured with an accurate and reliable zirconium oxide sensor. In the control unit following combustion parameters are calculated from the oxygen signal and the (optional) density signal: Wobbe Index, Combustion Air Requirement Index (CARI), Calorific Value (or BTU) and specific gravity.



TYPICAL APPLICATIONS

Natural gas blending and storage. The speed of response and the high accuracy and repeatability of the WIM COMPAS™ are providing many customers with a perfect signal for the feed forward control of gas blending operations as well as monitoring the quality of gas delivered to the grid including LNG regasification.

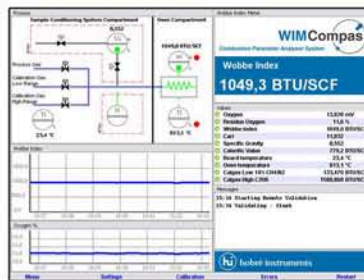
Fired heaters. Besides speed of response the availability of the CARI signal is a key benefit of the WIM series. Whereas the Wobbe Index is an excellent indication for the thermal load of a furnace, for air/fuel ratio control the CARI is a much better parameter. This is particularly the case when hydrogen, carbon monoxide and olefins are present in the fuel gas.

Gas turbine control. Gas turbines are sensitive to rapid changes in gas composition; besides poor fuel economy and a reduced lifetime, improper control also results in higher CO and NOx emissions. The WIM provides the Wobbe Index, Heating Value and Specific Gravity in seconds. Optionally also CO2, N2 and Heat Ratio are available.

Steel industry and biogas. Dirty and wet gases are common in steel and biogas monitoring applications.

The WIM COMPAS™ sample handling system is kept at elevated temperature to prevent condensation and the hot section is resistant to significant sulfur levels.

Flare gas and sour gas monitoring. A special version of the WIM measures flare gas in accordance with USA Rule 1118 and is capable of dealing with very high sulfur levels. The method closely follows ASTM-4891 and complies with expected new EPA Flare Emissions 40 CFR regulations.



The WIM COMPAS™ **F** has a full-color graphical user interface.

The **BASIC** version offers an ethernet connection to view the graphical user interface on a remote computer.

WIM COMPAS™ is available in **BASIC** and **F** version. Please consult factory for other applications and options including outputs for hydrogen and total sulfur in fuel gas, CO2 emission from fuel gas and the integrated gas chromatograph option.





WIM Compas™ Basic

Specifications

Service	Natural Gas, Fuel Gas, Flare Gas, Biogas, BFG, COG, etc.
Measuring principle	Residual Oxygen Method
Sample wetted parts	SS316, Inconel and Platinum
Installation	General Purpose Area

Measuring ranges

Wobbe Index	50 MJ/Nm ³ span in 0 – 100 MJ/Nm ³ range
Accuracy	± 0,4% of measured value for natural gas
Repeatability	± 0,2% of FS or ±100 kJ (which ever is higher)
Drift	< ±0,05% or ±50 kJ per day (which ever is higher)
Response time	T90 < 10 seconds (includes lag time and rise time)
CARI *	span of 15 in 0 – 25 range
Calorific Value (SG cell option) **	span of 50 MJ/Nm ³ in 0 – 120 MJ/Nm ³ range
Specific Gravity cell (SGU option)	Updated signal (every 10 seconds, Hobré SG cell)
SG range	0 – 3
SG accuracy	< ± 0,5% of Full scale
Response time	< 20 seconds to T90

* CARI = Combustion Air Requirement Index

** Response time CV signal depends on type SG cell

Outputs

Local HMI	2-line LCD display with 7 function keys
Analogue outputs	2 off isolated 0/4 – 20 mA (optionally up to 4)
Digital outputs	- 2 off relay SPDT malfunction, calibration status - 8 off 24VDC 1A or volt free, service selectable
Digital input	Start calibration, Start validation
Communication	Remote control via TCP/IP incl. software for remote operation
Communication option	MODBUS RTU via RS485

Utilities

Power supply	115/230 VAC, 50/60 Hz
Power consumption	650 VA max
Instrument air	10 NI/min at 3 barG minimum 50 NI/min for vortex cooler option
Sample flow	± 1 NI/min
Sample pressure	1,5 – 5 barG for standard version 0 – 1,5 barG requires pump option

Installation

Mounting	Wall mounting
Dimensions (HxWxD)	1000 x 800 x 400 mm
Weight	± 80 kg (depending on options installed)
Enclosure protection	IP65 design
Ambient temperature range	5 – 45°C standard version Optional -20 – +60°C





Order code	WIM Compas™ Basic
P	P version (sample pressure > 1,5 barg)
LP	LP version with one pump, incl. fast loop (sample pressure < 1,5 barg)
115	Power supply 115 VAC, 50/60 Hz
230	Power supply 230 VAC, 50/60 Hz
0	No specific gravity cell
SGU	Hobré specific gravity cell
2	2 analog outputs
4	4 analog outputs
0	No serial communication
M	Modbus RTU via RS485
0	No fast loop inside the analyser
F	Fast loop installed inside analyser
0	Standard temperature range 5 - 45°C
H	Heated electronics for low ambient temperature (down to -20°C)
C	Vortex cooler for high ambient temperature (up to 60°C)
HC	Version for ambient temperature range -20 up to +60°C
1	Analyser suitable for wall mounting
2	Analyser mounted on free standing frame (SS304)
3	Analyser mounted on free standing frame with sunroof

For more options please refer also to our brochure "WIM COMPAS F"

