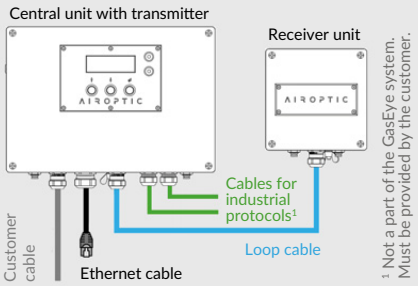
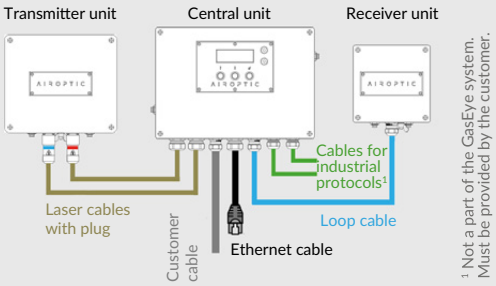
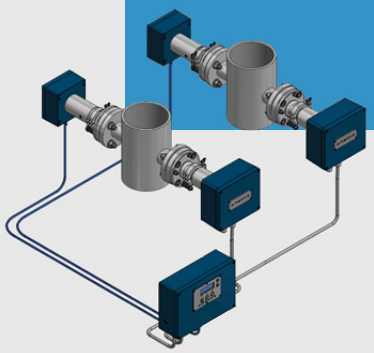
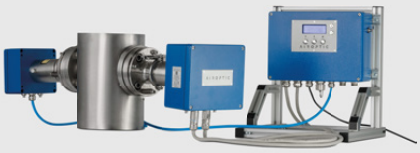
Configuration







GasEye™ Cross Duct SG - Single gauge analyzer



GasEye™ Cross Duct MG - Multi gauge analyzer

GasEye™ Cross Duct MG MP Multi gauge multi point

	TRANSMITTER	RECEIVER	CENTRAL UNIT
DIMENSIONS w x h x l [mm]:	330 x 230 x 350	160 x 160 x 330	330 x 230 x 110
WEIGHT [kg]:	15	13	16
EQUIPMENT:	display with status indicators, power indicator,4 cable glands, Ethernet socket, purging fittings	1 cable gland, purging fittings	

MATERIALS

HOUSINGS:	protection IP 66, coated aluminium, RAL 5010 (optional RAL 7040)
PROCESS INTERFACE:	stainless steel 316 with quartz or sapphire window, standard flanges DN50PN16, DN65PN10 easy to clean or 2”150 lbs. Optional other DN, ANSI, JIS sizes available.
PURGING TUBES:	inside diameter: 38 mm, length: 400mm (optional other dimensions), stainless steel 316 (optional PFA coating)
PROCESS GASKETS:	reinforced graphite

GasEye™ Webserver Remote access capability

No special software requirements – works on any device – just plug in IP66 rated Ethernet cable (included in the delivery) to the device.

- Perfect tool for remote diagnostics/remote commissioning/remote service
- Easy access to parameters, measurements and spectra
- 3 access levels (password protected)

ANALYTICAL PERFORMANCE

LIMIT OF DETECTION (LOD)	from 0.01 ppmv*m
PRECISION	LOD or 1% of the measured value, whichever is larger
ACCURACY	LOD or 2% of the measured value, whichever is larger
CALIBRATION	up to 50 g/Nm^3 depending on the process
ZERO DRIFT AND SPAN DRIFT	negligible

MEASUREMENT CONDITIONS

PROCESS GAS TEMPERATURE	0 °C to 1500 °C
PROCESS GAS PRESSURE	0.7 - 2.0 barA up to 40 barg special application
MAXIMUM PATH LENGTH	up to 25 meters

CLIMATIC CONDITIONS

AMBIENT TEMPERATURE	-30°C to +60°C
AMBIENT PRESSURE	800 – 1200 hPa
AMBIENT HUMIDITY	RH < 99%, non-condensing

DYNAMIC PERFORMANCE

WARM-UP TIME:	approx. 5 minutes
MINIMUM RESPONSE TIME (T90)	100 milliseconds

ELECTRICAL CHARACTERISTICS

POWER INPUT	24 VDC NOMINAL (19 – 30 VDC)
POWER CONSUMPTION	< 15VA (< 25VA IF ATEX)

PROCESS PURGING (IF NECESSARY)

PURGING GAS	instrument air or N2
PROCESS PURGE FLOW RATES	5 – 50 l/min
SENSOR PURGE FLOW RATES	0.2 – 7 l/min

TECHNICAL SPECIFICATION

OUTPUTS	4 x analog output 4 – 20 mA (gas concentration, process transmission, 2 x AUX) – easy user selection via DIP switch between active/passive mode
	8 x digital output
INPUTS	4 x analog input 4 – 20 mA (process temperature and pressure, 2 x AUX) – easy user selection via DIP switch between active/passive mode
	1 x RTD (PT100/PT1000) – easy user selection via DIP switch between PT100/PT1000 and 2-/3-/4-wires
	8 x digital input
LOCAL USER INTERFACE	Human Machine Interface (HMI) – LCD backlight display located on the transmitter housing lid
	Ethernet port: a) WebServer – system configuration and data acquisition via web browser b) Windows based program – GasEye logger for real-time data acquisition c) remote service and diagnostics
OPTIONAL	Modbus (TCP/IP), Modbus RTU, Profinet, Profibus

ADDITIONAL BUILD-IN FEATURES

AUTOMATIC GAIN CONTROL (AGC)	AGC ensures correct gas measurement even at high dust loads resulting in loss of optical transmission down to 0.5%. AGC operates fully automatic with no need for manual adjustment of the signal gain under any process conditions.
SELF-CALIBRATION FEATURES	internal reference gas compartment is used for closed loop control of the zero and span drift

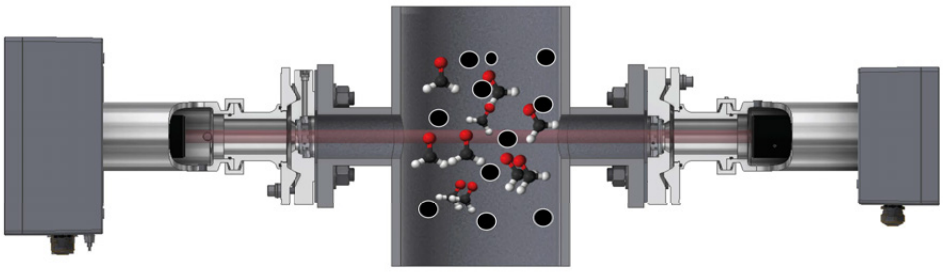
SAFETY

LOW VOLTAGE DIRECTIVE (LVD) 2014/35/EU	PN-EN 60825-1:2014-11 – Safety of laser products – Part 1: Equipment classification and requirements PN-EN 61010-1:2011 – Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE (EMC) 2014/30/UE	Emission: EN 55016-2-1:2014+A1:2017, EN 55016-2-3:2017+A1:2019 Immunity: EN 61000-4-2:2009, EN 61000-4-3:2006 + A1:2008 + A2:2010, EN 61000-4-4:2012, EN 61000-4-5:2014 + A1:2017, EN 61000-4-6:2014, EN 61000-4-29:2000
QPS CERTIFICATION Certificate No. LR3167-1	Explosion protection (optional version): Class I, Div 2, Groups ABCD T6/T4 Class I, Zone 2, AEx op is op pr pzc IIC T6/T4 Gc Ex op is op pr pzc IIC T6/T4 Gc Class II, Div 2, Groups FG T85°C/T135°C Zone 22, AEx op is op pr pzc IIIB T85°C/T135°C Dc Ex op is op pr pzc IIIB T85°C/T135°C Dc CSA 60079-0-19: 4th Ed., CSA 60079-2-16: 2nd Ed., CSA 60079-28-16: 1st Ed., UL 60079-0: 7th Ed., UL 60079-2: 6th Ed. UL 60079-28: 2nd Ed. • T6/T85°C: -30°C ≤ Tamb ≤ 59°C (remote purge system location) • T6/T85°C: -30°C ≤ Tamb ≤ 40°C (local purge system location) • T4/T135°C: -30°C ≤ Tamb ≤ 59°C (local purge system location)
ATEX DIRECTIVE 2014/34/EU Certificate No. KDB 20ATEX0003X	Explosion protection - ATEX Zone 1/21 (optional version): GasEye Cross Duct Ex1: II 1/2G Ex pxb op is IIC T6 Ga/Gb II 1/2D Ex pxb op is IIIC T85°C Da/Db GasEye Cross Duct Ex1 IS: II 1/2G Ex pxb ia op is IIC T6 Ga/Gb II 1/2D Ex pxb ia op is IIIC T85°C Da/Db GasEye Cross Duct Ex1 ET and GasEye Cross Duct Ex1 ET IS: II 1/2G Ex db eb h ia ib op is pxb q IIC T4 Ga/Gb II 1/2D Ex h ia ib op is pxb q tb IIIC T135°C Da/Db EN IEC 60079-0:2018, EN 60079-2:2014, EN 60079-11:2012, EN 60079-26:2015, EN 60079-28:2015
IECEX CERTIFICATION Certificate No. IECEx KDB 19.0004X	Explosion protection - IECEx Zone 2/22 Ex op is pzc IIC T6 Gc Ex op is pzc IIIC T85°C Dc IEC 60079-0:2017 IEC 60079-2:2014 IEC 60079-28:2015

MULTI COMPONENTS

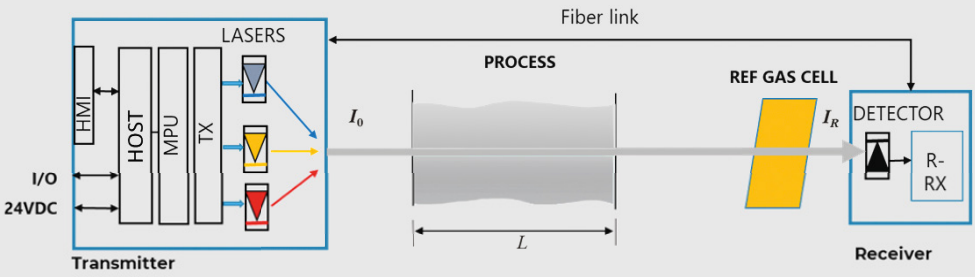
CO + O2
CO + CO2
CO + CH4
H2S + O2
HCHO + H2O
HCOOH + CO
HCL + H2O
NH3 + H2O
NO + NH3
NO + NO2
CO + CH4 + O2
CO + O2 + H2O + CH4 C2H2
+ C2H4 + C2H6
SO2 + HCL + NH3 + H2O SO2
+ HCL + NO + H2O
SO2 + HCL + CO + H2O
CUSTOM – MULTI COMPONENTS

COMPONENT	LOW RANGE	LIMIT OF DETECTION	HIGH RANGE
ACETYLENE – C2H2	0 – 1/10 ppmv	0.01 ppmv*m	0 – 100 vol%
AMMONIA – NH3	0 – 5/50 ppmv	0.1 ppmv*m	0 – 100 vol%
CARBON DIOXIDE – CO2	0 – 1/10 ppmv	0.0005 ppmv*m	0 – 100 vol%
CARBON MONOXIDE – CO	0 – 1/10 ppmv	0.02 ppmv*m	0 – 100 vol%
ETHANE – C2H6	0 – 1/10 ppmv	0.01 ppmv*m	0 – 100 vol%
ETHANOL – C2H5OH	0 – 10 / 1000 ppmv	0.1 ppmv*m	0 – 1000 ppmv
ETHYLENE – C2H4	0 – 1 / 10 ppmv	0.01 ppmv*m	0 – 100 vol%
FORMALDEHYDE – HCHO	0 – 1 / 10 ppmv	0.005 ppmv*m	0 – 1000 ppmv
FORMIC ACID – HCOOH	0 – 100 / 1000 ppmv	0.1 ppmv*m	0 – 10 vol%
HYDROGEN – H2	0 – 10 vol%	1 vol%*m	0 – 100 vol%
HYDROGEN CHLORIDE – HCL	0 – 1 / 10 ppmv	0.01 ppmv*m	0 – 10 vol%
HYDROGEN CYANIDE – HCN	0 – 1/ 10 ppmv	0.01 ppmv*m	0 – 1000 ppmv
HYDROGEN FLUORIDE – HF	0 – 1/ 10 ppmv	0.01 ppmv*m	0 – 1000 ppmv
HYDROGEN SULPHIDE – H2S	0 – 200 ppmv/	2 ppmv*m	0 – 50 vol%
ISO-BUTANE – C4H10	0 – 10 / 1000ppmv	0.1 ppmv*m	0 – 100 vol%
ISO-PENTANE – C5H12	0 – 10 / 1000ppmv	0.1 ppmv*m	0 – 100 vol%
METHANE – CH4	0 – 1/ 10 ppmv	0.005 ppmv*m	0 – 100 vol%
N-BUTANE – C4H10	0 – 10 / 1000 ppmv	0.1 ppmv*m	0 – 100 vol%
NITRIC OXIDE – NO	0 – 10 / 5000 ppmv	0.01 ppmv*m	0 – 50 vo%
NITROGEN DIOXIDE – NO2	0 – 50 / 5000 ppmv	1 ppmv*m	0 – 50 vol%
OXYGEN – O2	0 – 1 vol%	100 ppmv*m	0 – 100 vol%
PROPANE – C3H8	0 – 1 / 1000 ppmv	0.01 ppmv*m	0 – 100 vol%
SULPHUR DIOXIDE – SO2	0 – 100/5000 ppmv	1 ppmv*m	0 – 50 vol%
SULFUR TRIOXIDE – SO3	0 – 100 / 5000 ppmv	2 ppmv*m	0 – 50 vol%
WATER – H2O	0 – 1 ppmv	0.05 ppmv*m	0 – 100 vol%
CUSTOM COMPONENT	xxx ppmv	xxx ppmv*m	xxx vol%



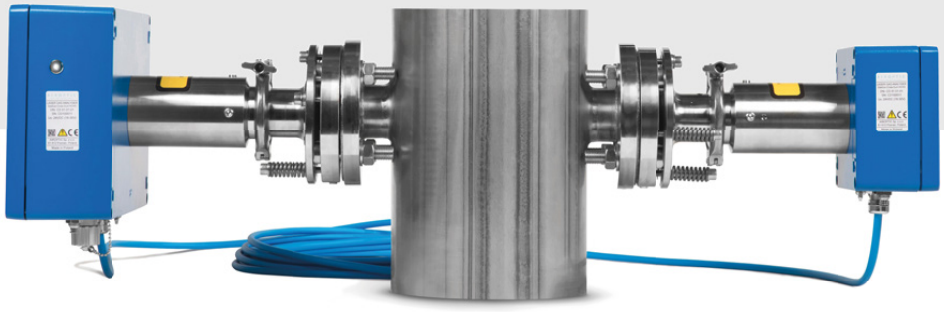
GasEye™ Cross Duct

GasEye™ Cross Duct is a single or multi-laser analyzer that utilizes tunable diode laser (TDL) absorption spectroscopy. The central unit sends a laser light through the process which is detected by the receiver unit mounted on the opposite side of the process. When a gas of interest is present in this process, it will absorb the laser light. The optical power detected in the receiver unit will depend on the concentration of the gas, temperature, pressure, and optical pathlength according to Beer-Lambert law. In the GasEye™ Cross Duct analyzer, the laser wavelength is specifically chosen to match the fingerprint region of the particular gas of interest and is being continuously scanned over the absorption line(s). Since full spectral information is recovered with very high spectral resolution the analyzer remains immune to foreign gas broadening and is immune to cross-interferences from dust and any other gas constituents in the process. GasEye™ Cross Duct by design can operate in several wavelength regions from Near-Infrared to Mid-Infrared.



Calibration

Each GasEye™ analyzer is equipped as standard with auto-calibration features for real time monitoring of system status. The reference signal from a reference gas always present is the measurement path ensures correct measurement even in most demanding conditions. This feature removes necessity to perform calibration on-site and keeps your overall maintenance effort low. Proven-in-use: verified in several millions of operating hours with failure rates fulfilling SIL2.



Features

Multigas capability: lasers with different wavelengths in the NIR and MIR range can be combined into one measuring head enabling the measurement of several gases with one analyzer.

- Real time sensing: response time below 0.1 second
- High selectivity: automatic compensation for interference effect from other constituents in the gas sample
- High sensitivity: detection limit below 0.1 ppmv per meter
- In-situ monitoring: direct in the process, no sample preparation
- Maintenance free: equipped with a self-calibrating feature, no field calibration necessary
- Robustness: IP66 enclosure, suitable for outdoor and indoor installations and harsh environments
- Insensitive to dust and smoke in the measured process: up to 50 g/m3
- ATEX, IECEx, cQPSUS version available

Application fields

POWER/CEMENT/ INCINERATION PLANTS

Combustion optimization
CO/O2/CH4/H2O
DENOX (SCNR + SCR)
NO/NO2/NOx/NH3/H2O
DESOX (WET + SEMI DRY)
SO2/HCL/HF/O2/H2O

PRODUCTION/ STORAGE/ TRANSPORTATION OF NG, LNG, H2

H2 /HC/CO2/H2O/H2S
PSA HCOOH/HCHO/NH3
CO/CO2/CH4
H2O/H2S + CO/H2

REFINERY & PETROCHEMICAL

Hydrogen recycle
Acetylene converter
Catalytic reforming
Cracking, flaring
Ethylene production
Sulfur recovery unit
Olefins

CHEMICAL PLANTS

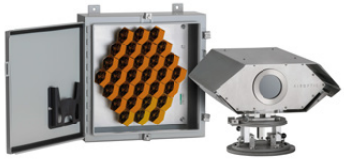
Acid plant SO3/SO2
Chlorine dryer H2O in chlorine
Fertilizers plant
NO/NO2/NH3
Coke production
HCN/C6H6/NH3/SO2/H2S/O2

Other products

GasEye™ Extractive 19” rack

GasEye™ Extractive wall mounted cabinet IP66

GasEye™ Open Path



AIROPTIC™
REAL TIME GAS ANALYZERS

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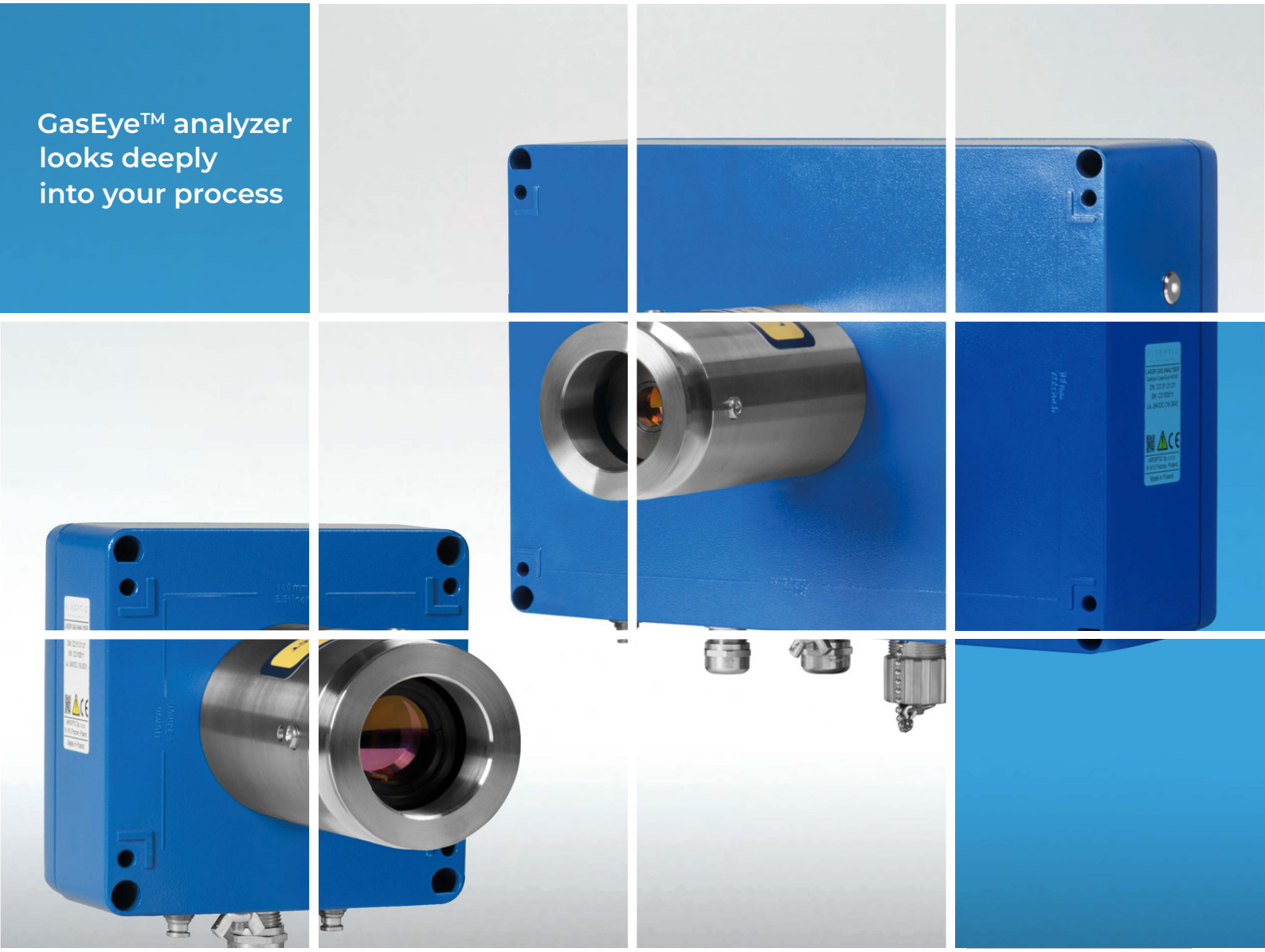
AIROPTIC™

REAL TIME GAS ANALYZERS

GasEye™ analyzer looks deeply into your process



GasEye™ single and multigas cross duct analyzer

TDLS - Tunable Diode Laser Spectometer