



EX-TEC[®]

HS 680/660/650/610

Series

Type/model	• HS 680: 064 01 • HS 660: 064 11 • HS 650: 064 21 • HS 610: 064 31
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Certificates

Certificate	TÜV 07 ATEX 553353 X • II 2G Ex db eb ib IIB T4 Gb basic device without leather bag for: ◦ CH₄, C₃H₈, C₄H₁₀, C₉H₂₀, H₂S, CO • II 2G Ex db eb ib IIC T4 Gb basic device with leather bag for: ◦ CH₄, C₃H₈, C₄H₁₀, C₉H₂₀, H₂S, CO, H₂ BVS 09 ATEX G 001 X, PFG 08 G 002 X • applies to Warning %LEL and Warning ExTox applications for CH₄, C₃H₈, CO₂, O₂, CO, H₂S
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Device data

Dimensions (W × D × H)	approx. 148 × 57 × 205 mm (5.83 × 2.24 × 8.07 in) approx. 148 × 57 × 253 mm (5.83 × 2.24 × 9.96 in) with supporting bracket
Weight	approx. 1000 g (35 oz), depending on equipment

Features

Display	monochrome, 320 x 240 pixel
Buzzer	• frequency: 2.4 kHz • volume: 80 dB (A) / 1 m (3.28 ft)
Signal light	red
Pump	• vacuum: > 250 mbar • volume flow: typically 50 l/h ±20 l/h ◦ inspection above ground, measuring in bar holes, gas measuring, plants applications: approx. 50 l/h ◦ structure, warning applications: approx. 30 l/h ◦ application ethane analysis when sampling: approx. 50 l/h • pump error (F100) depending on volume flow: ◦ ≤ 20 l/h F100 certain ◦ > 20 l/h – ≤ 35 l/h F100 possible
Interface	USB
Memory	8 MB
Control	• ON/OFF key • 3 function keys • Jog dial
Sensor	HS 680 • IR and SC for flammable gases (CH₄, C₃H₈, C₄H₁₀) • IR for CO₂ optional: • EC for O₂, H₂S, CO HS 660 • IR and SC for flammable gases (CH₄, C₃H₈, C₄H₁₀) • IR for CO₂ optional: • EC for O₂, CO HS 650 • IR for flammable gases (CH₄, C₃H₈, C₄H₁₀) • IR for CO₂ optional: • EC for O₂, H₂S, CO HS 610 • IR for flammable gases (CH₄, C₃H₈, C₄H₁₀) • IR for CO₂ optional: • EC for O₂

Operating conditions*

Operating temperature	-20 – 40 °C (-4 – 104 °F)
Humidity	5 – 90% r.h., non-condensing
Atmospheric pressure	900 – 1100 hPa
Pressure at gas inlet	max. 100 mbar
Protection rating	IP54
Position of use	any

*Optional sensors can affect the operating conditions of the device.

Storage conditions

Storage temperature	-25 – 60 °C (-13 – 140 °F) temperatures above 40 °C (104 °F) reduce the service life of the sensors
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Power supply

Power supply	4 cells, type Mignon AA, optionally: • rechargeable batteries: NiMH • disposable batteries: Alkaline
Operating time, typical	at least 8 h
Charging time	approx. 3 h (complete charge), depending on capacity
Charging temperature	0 – 35 °C (32 – 95 °F)
Charging voltage	12 V DC (max. 1 A)

Data transmission

Communication	USB
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Gas types

Default	CH ₄
Optional	C ₃ H ₈ • HS 680/660/650/610: % vol. • HS 680/660: ppm • HS 680/650: % LEL C ₄ H ₁₀ • HS 680/660: ppm • HS 680/650: % LEL

Sensors

Note:

probes increase the stated response times.

Methane CH₄, propane C₃H₈, butane C₄H₁₀ (Warning %LEL and Warning ExTox applications)

Type	infrared sensor		
Use	HS 680/650		
Measuring range	0 – 100% LEL		
Resolution	• CH ₄ :	0.05% vol.	
	• C ₃ H ₈ , C ₄ H ₁₀ :	0.02% vol.	
Response times	• CH ₄ :	t ₅₀ < 8 s	t ₉₀ < 14 s
	• C ₃ H ₈ , C ₄ H ₁₀ :	t ₅₀ < 9 s	t ₉₀ < 17 s
Warm-up time	< 30 s		
Temperature range	-20 – 40 °C (-4 – 104 °F)		
Measuring error	according to EN 60079-29-1 • CH ₄ : ±1% LEL (short-term stability) ±4% LEL (long-term stability) • C ₃ H ₈ : ±1% LEL (short-term stability) ±1% LEL (long-term stability)		
Interference, known	all hydrocarbons C _x H _y		
Lifetime, expected	5 years		
Adjustment	test gas concentration: • zero point: hydrocarbon-free, clean air • CH ₄ : 2.20% vol., utilisable 1.00 – 4.00% vol. • C ₃ H ₈ : 1.00% vol., utilisable 0.85 – 1.50% vol. • C ₄ H ₁₀ : 1.00% vol., utilisable 0.50 – 1.30% vol.		

Methane CH₄, propane C₃H₈ (Gas measuring application)

Type	infrared sensor		
Use	HS 680/660/650/610		
Measuring range	0 – 100% vol.		
Resolution	• 0.1% vol. (0 – 9.9% vol.) • 1% vol. (10 – 100% vol.)		
Response times	• CH₄: t₅₀ < 9 s • C₃H₈: t₅₀ < 11 s	t ₉₀ < 17 s	t ₉₀ < 22 s
Warm-up time	< 30 s		
Temperature range	-20 – 40 °C (-4 – 104 °F)		
Measuring error	±3% vol. (according to EN 60079-29-1)		
Interference, known	all hydrocarbons C _x H _y		
Lifetime, expected	5 years		
Adjustment	test gas concentration: • zero point:: hydrocarbon-free, clean air • CH₄: 100% vol., utilisable 20 – 100% vol. • C₃H₈: 100% vol., utilisable 20 – 100% vol.		

Carbon dioxide CO₂ (Warning ExTox application)

Type	infrared sensor		
Use	HS 680/650		
Measuring range	0 – 5% vol. • lower limit: 0.02% vol.		
Resolution	0.02% vol.		
Response times	t ₉₀ < 20 s		
Decay times	t ₁₀ < 14 s		
Warm-up time	< 30 s		
Temperature range	-20 – 40 °C (-4 – 104 °F)		
Measuring error	as per EN 45544: ±0.04% vol. (long-term stability)		
Zero point deviation	0.04% vol.		
Interference, known	none		
Humidity	5 – 90% r.h., non-condensing • short term: 0% r.h.		
Lifetime, expected	5 years		
Adjustment	test gas concentration: • zero point: carbon dioxide-free, clean air • CO₂: 2.00% vol., utilisable 2.00 – 5.00% vol.		

Carbon dioxide CO₂ (Measuring in bar holes application)

Type	infrared sensor
Use	HS 680/660/650/610
Measuring range	0 – 30% vol.
Resolution	1% vol.
Response times	t ₉₀ < 20 s
Warm-up time	< 30 s
Temperature range	-20 – 40 °C (-4 – 104 °F)
Measuring error	±1% vol.
Interference, known	none
Humidity	5 – 90% r.h., non-condensing • short term: 0% r.h.
Lifetime, expected	5 years
Adjustment	test gas concentration: • zero point: carbon dioxide-free, clean air • CO ₂ : 20% vol., utilisable 10 – 30% vol.

Oxygen O₂

Type	electrochemical sensor
Use	HS 680/660/650/610
Measuring range	0 – 25% vol.
Resolution	0.1% vol.
Response times	t ₉₀ < 15 s
Warm-up time	up to 90 s
Temperature range	-20 – 40 °C (-4 – 104 °F)
Measuring error	±3 %, minimum ±0.3 % vol. (±3 digit)
Drift	< 2% within 3 months
Interference, known	none
Humidity	5 – 90% r.h., non-condensing • short term: 0% r.h.
Lifetime, expected	3 years
Adjustment	test gas concentration: • zero point: ◦ oxygen-free air ◦ 100% vol. N ₂ ◦ 100% vol. CH ₄ • O ₂ : 20.9% vol., e.g. clean air

Carbon monoxide CO

Type	electrochemical sensor	
Use	HS 680/650	
Measuring range	0 – 500 ppm • lower limit: ◦ 0 – 100 ppm: 4 ppm ◦ > 100 ppm: 11 ppm	
Resolution	1 ppm	
Response times	t ₉₀ < 30 s	
Decay times	t ₁₀ ≤ 25 s	
Warm-up time	up to 90 s	
Temperature range	-20 – 40 °C (-4 – 104 °F)	
Measuring error	• ±3 %, minimum ±3 ppm (±3 digit) • Long-term stability as per EN 45544 ◦ test gas: ≤ 4% of measured value ◦ zero point (fresh air): ≤ 1 ppm	
Drift	< 10% within 6 months	
Zero point deviation	• 0 – 100 ppm: 3 ppm • > 100 ppm: 13 ppm	
Interference, known	at 20 °C (68 °F) • C ₂ H ₂ 100 ppm: approx. 90 ppm CO • C ₂ H ₄ 100 ppm: approx. 96 ppm CO • Cl ₂ 15 ppm: approx. 1 ppm CO • H ₂ 200 ppm: approx. 30 ppm CO • H ₂ S 50 ppm: approx. 1 ppm CO • NH ₃ 50 ppm: approx. 0 ppm CO • NO 50 ppm: approx. 15 ppm CO • SO ₂ 20 ppm: approx. 0 ppm CO	
Humidity	15 – 90% r.h., non-condensing • short term: 0% r.h.	
Lifetime, expected	3 years	
Adjustment	test gas concentration: • zero point: clean air • CO: 40 ppm, utilisable 10 – 150 ppm	

Hydrogen sulphide H₂S

Type	electrochemical sensor
Use	HS 680/650
Measuring range	0 – 100 ppm • lower limit: 1 ppm
Resolution	1 ppm
Response times	t ₉₀ < 30 s
Decay times	t ₁₀ < 27 s
Warm-up time	up to 120 s
Temperature range	-20 – 40 °C (-4 – 104 °F)
Measuring error	• ±3 %, minimum ±3 ppm (±3 digit) • long-term stability as per EN 45544 ◦ test gas: ≤ 12% of measured value ◦ zero point (fresh air): ≤ 1 ppm
Drift	< 10% within 6 months
Zero point deviation	2 ppm
Interference, known	at 20 °C (68 °F) • CO 200 ppm: approx. 5 ppm H₂S • H₂ 100 ppm: approx. -2 ppm H₂S • NO 50 ppm: approx. 10 ppm H₂S • NO₂ 200 ppm: approx. -3 ppm H₂S • SO₂ 20 ppm: approx. 3 ppm H₂S
Humidity	15 – 90% r.h., non-condensing • short term: 0% r.h.
Lifetime, expected	> 3 years
Adjustment	test gas concentration: • zero point: clean air • H₂S: 40 ppm, utilisable 10 – 100 ppm

Methane CH₄, propane C₃H₈

Type	gas-sensitive semiconductor	
Use	HS 680/660	
Measuring range	0 – 1% vol.	
Indication range	0 – 1.5% vol.	
Resolution	• 0 – 10 ppm: 1 ppm • 10 – 100 ppm: 2 ppm • 100 – 999 ppm: 20 ppm • 0.10 – 1.0% vol.: 0.02% vol. (200 ppm)	
Response times	CH ₄ : t ₉₀ < 7 s	
Warm-up time	approx. 1 min	
Measuring error	±30%	
Interference, known	all flammable gases	
Lifetime, expected	5 years	
Adjustment	test gas concentration: • zero point: hydrocarbon-free, clean air • CH₄: ◦ 10 ppm ◦ 100 ppm ◦ 1000 ppm ◦ 1.0% vol. • C₃H₈: ◦ 10 ppm ◦ 100 ppm ◦ 1000 ppm ◦ 1.0% vol.	

Ethane-detector

Type	gas chromatograph	
Use	HS 680/660	
Gases, separable	CH ₄ , C ₂ H ₆ , C ₃ H ₈	
Sensor, used	gas-sensitive semiconductor	
Measuring range	0 – 12000 ppm	
Separating capacity	25 ppm	
Resolution	1 ppm	
Measurement time	4 min	
Warm-up time	approx. 1 min	
Measuring error	±30%	
Lifetime, expected	5 years	
Test gases	gas mixture:	1% vol. CH ₄ / 100 ppm C ₂ H ₆ in synth. air

Diensten van EURO-INDEX

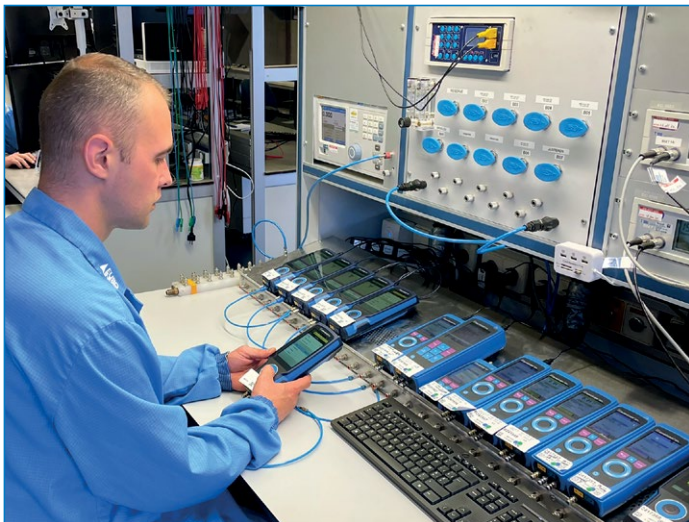
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EURO-INDEX is van de meeste merken in het assortiment een Geautoriseerd Service Centrum. Dit betekent dat uw instrumenten worden behandeld door technici die zijn opgeleid door de fabrikant en beschikken over de juiste gereedschappen en software. Er worden uitsluitend originele onderdelen toegepast en de garantie van uw instrument blijft intact, net als de certificering (ATEX, EN50379, etc.).

Kalibratielaboratorium

Ons service- en kalibratielaboratorium is BELAC-geaccrediteerd volgens de norm EN-ISO/IEC 17025. De accreditatie geldt voor grootheden en meetbereiken zoals vermeld in de gewaarmerkte bijlage met certificaatnummer [760-CAL](#).



KWS®

KWS® is een kalibratieformule voor uw test- en meetinstrumenten met periodiek onderhoud en kalibratie tegen vaste, lage kosten. Uw kalibratiecertificaten zijn digitaal beschikbaar via Mijn KWS (gratis webportaal en app) en door de QR-code te scannen op de kalibratiesticker van het instrument.

Verhuur van meetinstrumenten

Er zijn diverse situaties waarbij huren handig is:

- U heeft tijdelijk extra toestellen nodig.
- Uw eigen meetinstrument wordt onderhouden en/of gekalibreerd.
- U moet een eenmalige meting verrichten.

EURO-INDEX Academy

- Trainingen, infosessies en workshops
- Demonstratie- en instructievideo's
- Application notes



Servicebalie



Onderhoud, reparatie en kalibratie



Trainingen en seminars



Kalibratielaboratorium

Wijzigingen voorbehouden EURO-INDEX® VL 26001



BELGIË
Leuvensesteenweg 607
1930 Zaventem
T: 02 - 757 92 44
sales@euro-index.be
www.euro-index.be

NEDERLAND
Rivium 2e straat 12
2909 LG Capelle a/d IJssel
T: +31 - (0)10 - 2 888 000
verkoop@euro-index.nl
www.euro-index.nl

