UNION Instruments

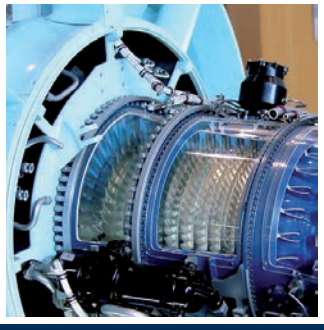
Measurement parameter

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

Applications

- Biogas
- Sewage gas plants
- Landfill sites
- Glass / ceramics
- Energy supply
- Energy generation
- Environment



INCA4001

Multi-gas analyzer

The multi-gas analyzers of the device series **INCA4001** are used to determine the gas composition

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

The multi-gas analyzers of the device series **INCA4001** are engineered for indoor installation. Condensate-free gases can be measured with or without gas pressure. The device can be designed with max. 10 sample gas inlets and 1 calibration gas inlet.

Typical measuring ranges INCA4001

Measuring module	Meas. methods	Measuring ranges	Measuring accuracy
CH_4	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CH_4	NDIR	0 – 5 Vol.-%	+/- 3% MBE[1)]
CH_4	NDIR	80 – 100 Vol.-%	+/- 1% MBE[1)]
C_{2+}	NDIR	0 – 20 Vol.-%	+/- 2,5% MBE[1)]
CO_2	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CO_2	NDIR	0 – 0,5 Vol.-%	+/- 2% MBE[1)]
CO_2	NDIR	0 – 10 Vol.-%	+/- 1,5% MBE[1)]
O_2	EC	0 – 25 Vol.-%	+/- 3% MW[2)]
O_2	paramagnetic	0 – 25 Vol.-%	+/- 1% MW[2)]
H_2S	EC	0 – 50 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 100 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 2.000 ppm	+/- 30 ppm (≤ 1000 ppm) +/- 3% MW[2)] (> 1000 ppm)
H_2S	EC-µPulse	0 – 10.000 ppm	+/- 3 ppm (≤ 25 ppm) +/- 15% MW[2)] (> 25 ppm)
H_2S	EC	0 – 10.000 ppm	+/- 3% MBE[1)]
H_2S	EC-µPulse	0 – 50.000 ppm	+/- 30 ppm (≤ 500 ppm) +/- 15% MW[2)] (> 500 ppm)
Heizwert Hi[3)]	calculated	8 – 11,5 kWh/m³	+/- 1,5% MBE[1)]
Wobbeindex Wi[3)]	calculated	10 – 14,3 kWh/m³	+/- 2% MBE[1)]
relative Dichte (SG)	acoustic	0,5 – 0,8	+/- 3% MBE[1)]

[1)] Linearity error with regard to measuring range
[2)] Linearity error with regard to measuring value

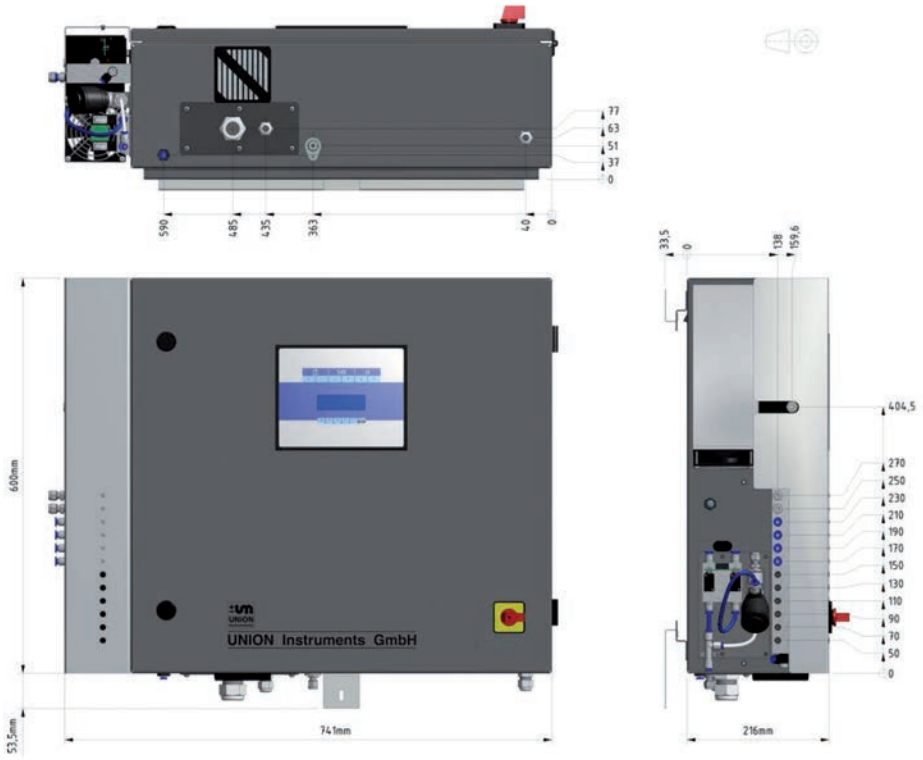
Table 1: Typical measuring ranges INCA4001

Option (T-Modelle) INCA4001

T-Modelle	con./ discont.	CH_4 [Vol.%]	CO_2 [Vol.%]	H_2S [ppm]	O_2 [Vol.%]	H_2 [ppm]	C_{2+} [Vol.%]
T030	discont.	0 – 100 disc.	-	0 – 2000 disc.	0 – 25 disc.	-	-
T045	cont.	-	-	-	0 – 5 cont.[1] (Par)	-	-
T055	cont.	0 – 100 cont.	0 – 100 cont.	-	-	-	-
T074	discont.	-	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T087	cont.	0 – 5 cont.	0 – 100 cont.	-	-	-	-
T095	cont.	0 – 100 cont.	0 – 100 cont.	-	0 – 25 cont.	-	-
T096	discont.	-	-	0 – 10.000 disc.[3]	-	-	-
T098	discont.	0 – 100 disc.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T099	cont.	0 – 100 cont.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T100	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T101	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	-	-
T107	cont.	0 – 100 cont.	-	-	-	-	-
T109	cont.	0 – 100 cont.	0 – 10 cont.	-	-	-	-
T111	cont.	0 – 100 cont.	0 – 100 cont.	0 – 2000 disc.	0 – 25 disc.	0 – 4000 disc.	-
T131	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	-	-
T133	cont.	0 – 100 cont.	0 – 100 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T137	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	0 – 4000 disc.	-
T140	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	0 – 4000 disc.	-
T141	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	0 – 4000 disc.	-
T145	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T160	discont.	0 – 100 disc.	0 – 100 disc.	0 – 50.000 disc.[3]	0 – 25 disc.	-	-
T161	cont.	0 – 100 cont.	0 – 100 cont.	0 – 50.000 disc.[3]	0 – 25 cont.	-	-
T301	cont.	80 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.
T303	cont.	0 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.

Cont. = Online measuring; discont. = min. 15 min; [1] paramagnetic; [2] 7,9µm; [3] µPulse; [4] without µPulse; [5] in N2; [6] natural gas in air; [7] calculated, [8] landfill gas

Technical data



Technical data INCA4001

Weight [kg]	up to 30
Dimensions (WxHxD) [mm]	745x630x220
Degree of protection	IP20
Power supply	100 – 240 V, 50/60 H
Max. power consumption	250 VA
Inlets of gas	
Inlets of process gas	1 – 10 pneumatic valves
Inlets of calibration gas	1
Inlets purging gas (air)	1
Gas connection	Compression fitting 6 mm
Max. gas inlet pressure	20 mbar rel.
Min. gas inlet pressure	-100 mbar rel.
Flame barrier	ATEX-certification G IIC
Rel. gas humidity	≤ 100% (condensate possible)
Condensate trap	yes
Gas cooler	yes
Cooling principal	thermoelectrical
Dewpoint	3 – 30 °C adjustable
Condensate removal	jet pump
Ambient conditions	
Operating temperature	5 – 45 °C
Humidity	0 – 95% rel. air humidity
Ambient pressure	900 – 1250 hPa (0,9 – 1,2 bar)
Storage temperature	-20 – 60 °C
Interfaces	
Relays	3
Dig. Interface	RS232
4 – 20 mA	optional
Fieldbus	optional
Remote maintenance (IP/TCP)	optional

Figure 2: Technical data INCA4001

About UNION Instruments

UNION Instruments GmbH, founded in 1919, is a specialized supplier of measuring instruments in the areas of calorimetry and gas composition. Its user and customer base includes biogas producers, the chemical industry, and energy and water suppliers. The company has its headquarters in Karlsruhe and a subsidiary in Lübeck. With 30 international distributors, UNION Instruments operates worldwide. The company's core businesses include development and production as well as maintenance, service, and support.

Our service performance

Support

The **UNION-hotline** helps to solve all inquiries and urgent issues fast and easy. Device specific concerns can be solved worldwide within minutes by direct communication via TEAMVIEWER.

Original spare parts

Original spare parts for the majority of UNION's products are on stock directly at site and ready for dispatch within a few hours.

Software

For read-out of measurement and calibration data a device-specific software is available for our clients. In addition to the graphic display of measurement data its export in several database formats is possible.

Training

UNION offers individual in-house training or on-site seminars for installation, use and maintenance of our devices even at the customer's premises. Training is individually adapted to the client's requirements.

Repair service

A global service for inspection, maintenance and repair of our devices and systems is provided directly by UNION and via its distributors.

Certification

Since 20 years we have implemented the ISO9001 system.
UNION's products are certified to ATEX and UL/CSA directives accordingly. Industrial safety **"Safety with System"** is part of UNION's company policy.

Engineering

In the last decades UNION compiled a very high level to the state of the art that covers many market segments. So a wide range of possible solution approaches is on-hand.

Calibration

As part of maintenance and service UNION provides the validation and re-calibration of measuring devices in conformity with certified custody transfer instruments and / or traceable perpendicular.

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UNION Instruments

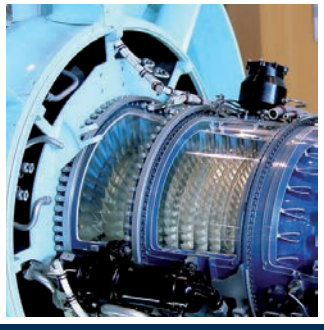
Measurement parameter

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

Applications

- Biogas
- Sewage gas plants
- Landfill sites
- Glass / ceramics
- Energy supply
- Energy generation
- Environment



INCA4002

Multi-gas analyzer

The multi-gas analyzers of the device series **INCA4002** are used to determine the gas composition

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

The multi-gas analyzers of the device series **INCA4002** are engineered for indoor installation. Condensate-free gases can be measured with or without gas pressure. The device can be designed with 1 sample gas inlet and 1 calibration gas inlet. Due to the use of a hose pump an online operation is possible.

Typical measuring ranges INCA4002

Measuring module	Meas. methods	Measuring ranges	Measuring accuracy
CH_4	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CH_4	NDIR	0 – 5 Vol.-%	+/- 3% MBE[1)]
CH_4	NDIR	80 – 100 Vol.-%	+/- 1% MBE[1)]
C_{2+}	NDIR	0 – 20 Vol.-%	+/- 2,5% MBE[1)]
CO_2	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CO_2	NDIR	0 – 0,5 Vol.-%	+/- 2% MBE[1)]
CO_2	NDIR	0 – 10 Vol.-%	+/- 1,5% MBE[1)]
O_2	EC	0 – 25 Vol.-%	+/- 3% MW[2)]
O_2	paramagnetic	0 – 25 Vol.-%	+/- 1% MW[2)]
H_2S	EC	0 – 50 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 100 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 2.000 ppm	+/- 30 ppm (≤ 1000 ppm) +/- 3% MW[2)] (> 1000 ppm)
H_2S	EC-µPulse	0 – 10.000 ppm	+/- 3 ppm (≤ 25 ppm) +/- 15% MW[2)] (> 25 ppm)
H_2S	EC	0 – 10.000 ppm	+/- 3% MBE[1)]
H_2S	EC-µPulse	0 – 50.000 ppm	+/- 30 ppm (≤ 500 ppm) +/- 15% MW[2)] (> 500 ppm)
Heizwert Hi[3)]	calculated	8 – 11,5 kWh/m³	+/- 1,5% MBE[1)]
Wobbeindex Wi[3)]	calculated	10 – 14,3 kWh/m³	+/- 2% MBE[1)]
relative Dichte (SG)	acoustic	0,5 – 0,8	+/- 3% MBE[1)]

[1)] Linearity error with regard to measuring range
[2)] Linearity error with regard to measuring value

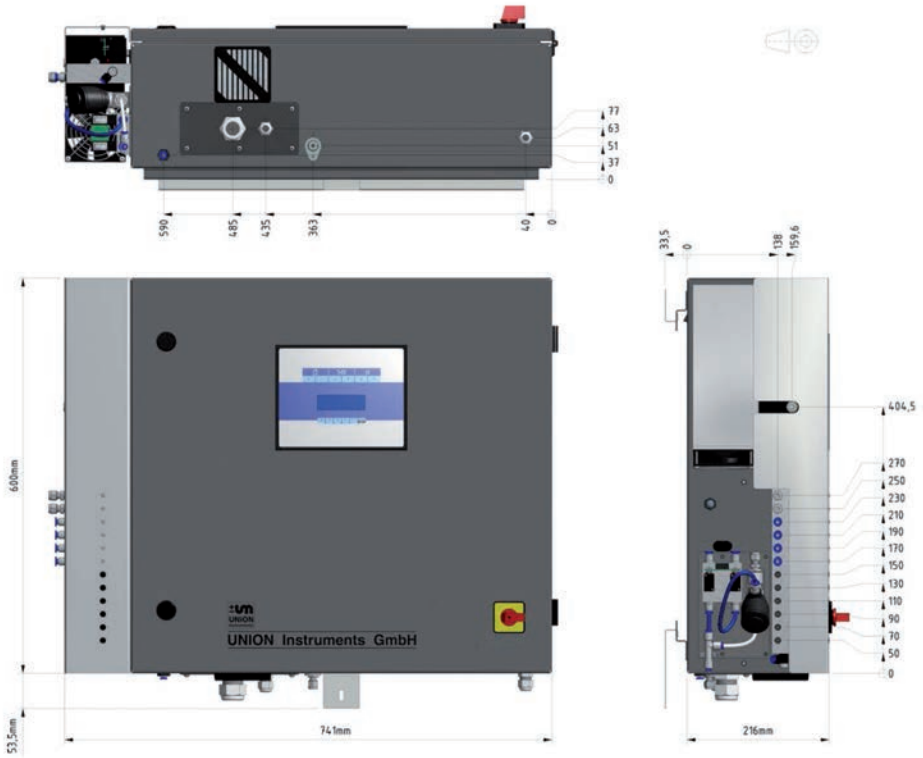
Table 1: Typical measuring ranges INCA4002

Option (T-Modelle) INCA4001

T-Modelle	con./ discont.	CH_4 [Vol.%]	CO_2 [Vol.%]	H_2S [ppm]	O_2 [Vol.%]	H_2 [ppm]	C_{2+} [Vol.%]
T030	discont.	0 – 100 disc.	-	0 – 2000 disc.	0 – 25 disc.	-	-
T045	cont.	-	-	-	0 – 5 cont.[1] (Par)	-	-
T055	cont.	0 – 100 cont.	0 – 100 cont.	-	-	-	-
T074	discont.	-	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T087	cont.	0 – 5 cont.	0 – 100 cont.	-	-	-	-
T095	cont.	0 – 100 cont.	0 – 100 cont.	-	0 – 25 cont.	-	-
T096	discont.	-	-	0 – 10.000 disc.[3]	-	-	-
T098	discont.	0 – 100 disc.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T099	cont.	0 – 100 cont.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T100	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T101	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	-	-
T107	cont.	0 – 100 cont.	-	-	-	-	-
T109	cont.	0 – 100 cont.	0 – 10 cont.	-	-	-	-
T111	cont.	0 – 100 cont.	0 – 100 cont.	0 – 2000 disc.	0 – 25 disc.	0 – 4000 disc.	-
T131	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	-	-
T133	cont.	0 – 100 cont.	0 – 100 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T137	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	0 – 4000 disc.	-
T140	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	0 – 4000 disc.	-
T141	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	0 – 4000 disc.	-
T145	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T160	discont.	0 – 100 disc.	0 – 100 disc.	0 – 50.000 disc.[3]	0 – 25 disc.	-	-
T161	cont.	0 – 100 cont.	0 – 100 cont.	0 – 50.000 disc.[3]	0 – 25 cont.	-	-
T301	cont.	80 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.
T303	cont.	0 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.

Cont. = Online measuring; discont. = min. 15 min; [1] paramagnetic; [2] 7,9µm; [3] µPulse; [4] without µPulse; [5] in N2; [6] natural gas in air; [7] calculated, [8] landfill gas

Technical data



Technical data INCA4002

Weight [kg]	up to 30
Dimensions (WxHxD) [mm]	745x630x220
Degree of protection	IP20
Power supply	100 – 240 V, 50/60 H
Max. power consumption	250 VA
Inlets of gas	
Inlets of process gas	1
Inlets of calibration gas	1
Inlets purging gas (air)	1
Gas connection	Compression fitting 6 mm
Max. gas inlet pressure	20 mbar rel.
Min. gas inlet pressure	-100 mbar rel.
Flame barrier	ATEX-certification G IIC
Rel. gas humidity	≤ 100% (condensate possible)
Condensate trap	yes
Gas cooler	yes
Cooling principal	thermoelectrical
Dewpoint	3 – 30 °C adjustable
Condensate removal	perestaltic pump
Ambient conditions	
Operating temperature	5 – 45 °C
Humidity	0 – 95% rel. air humidity
Ambient pressure	900 – 1250 hPa (0,9 – 1,2 bar)
Storage temperature	-20 – 60 °C
Interfaces	
Relays	3
Dig. Interface	RS232
4 – 20 mA	optional
Fieldbus	optional
Remote maintenance (IP/TCP)	optional

Figure 2: Technical data INCA4002

COMPETENCE IN GAS MONITORING

About UNION Instruments

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UNION Instruments

Measurement parameter

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

Applications

- Biogas
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- Landfill sites
- Glass / ceramics
- Energy supply
- Energy generation
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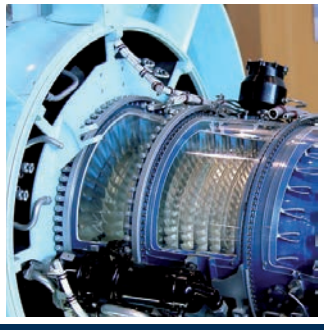


INCA4003

Multi-gas analyzer

The multi-gas analyzers of the device series INCA4003 are used to determine the gas composition

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

The multi-gas analyzers of the device series **INCA4003** are engineered for indoor installation. Condensate-free gases can be measured with or without gas pressure. The device can be designed with max. 4 sample gas inlets and 1 calibration gas inlet. Due to the use of a hose pump an online operation with 1 measuring point is possible.

Typical measuring ranges INCA4003

Measuring module	Meas. methods	Measuring ranges	Measuring accuracy
CH_4	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CH_4	NDIR	0 – 5 Vol.-%	+/- 3% MBE[1)]
CH_4	NDIR	80 – 100 Vol.-%	+/- 1% MBE[1)]
C_{2+}	NDIR	0 – 20 Vol.-%	+/- 2,5% MBE[1)]
CO_2	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CO_2	NDIR	0 – 0,5 Vol.-%	+/- 2% MBE[1)]
CO_2	NDIR	0 – 10 Vol.-%	+/- 1,5% MBE[1)]
O_2	EC	0 – 25 Vol.-%	+/- 3% MW[2)]
O_2	paramagnetic	0 – 25 Vol.-%	+/- 1% MW[2)]
H_2S	EC	0 – 50 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 100 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 2.000 ppm	+/- 30 ppm (≤ 1000 ppm) +/- 3% MW[2)] (> 1000 ppm)
H_2S	EC-µPulse	0 – 10.000 ppm	+/- 3 ppm (≤ 25 ppm) +/- 15% MW[2)] (> 25 ppm)
H_2S	EC	0 – 10.000 ppm	+/- 3% MBE[1)]
H_2S	EC-µPulse	0 – 50.000 ppm	+/- 30 ppm (≤ 500 ppm) +/- 15% MW[2)] (> 500 ppm)
Heizwert Hi[3)]	calculated	8 – 11,5 kWh/m³	+/- 1,5% MBE[1)]
Wobbeindex Wi[3)]	calculated	10 – 14,3 kWh/m³	+/- 2% MBE[1)]
relative Dichte (SG)	acoustic	0,5 – 0,8	+/- 3% MBE[1)]

[1)] Linearity error with regard to measuring range
[2)] Linearity error with regard to measuring value

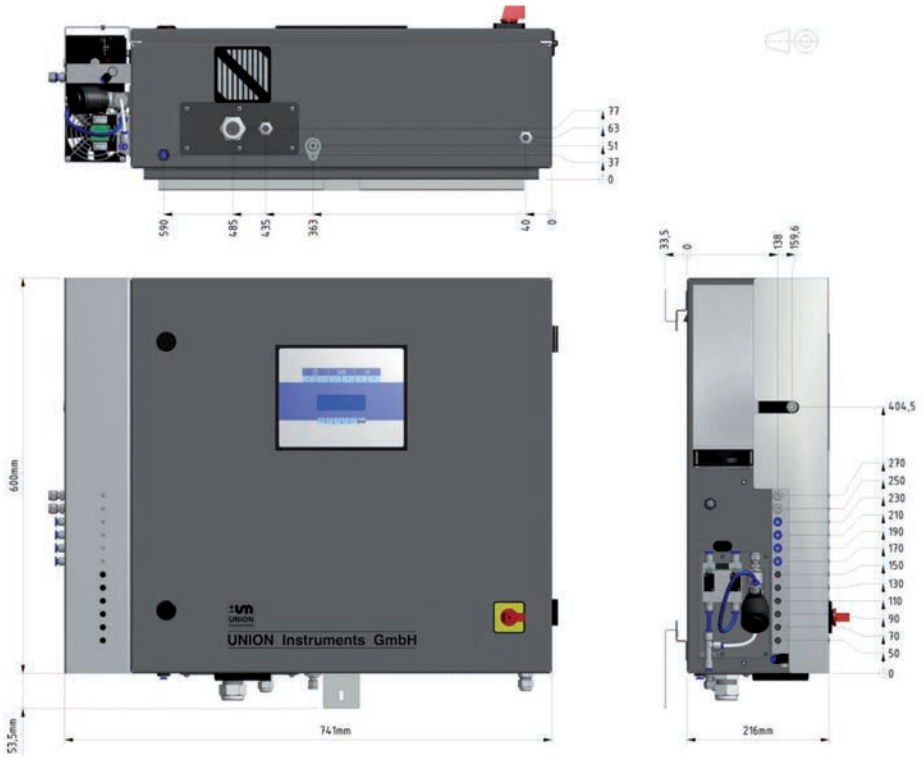
Table 1: Typical measuring ranges INCA4003

Option (T-Modelle) INCA4003

T-Modelle	con./ discont.	CH_4 [Vol.%]	CO_2 [Vol.%]	H_2S [ppm]	O_2 [Vol.%]	H_2 [ppm]	C_{2+} [Vol.%]
T030	discont.	0 – 100 disc.	-	0 – 2000 disc.	0 – 25 disc.	-	-
T045	cont.	-	-	-	0 – 5 cont.[1] (Par)	-	-
T055	cont.	0 – 100 cont.	0 – 100 cont.	-	-	-	-
T074	discont.	-	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T087	cont.	0 – 5 cont.	0 – 100 cont.	-	-	-	-
T095	cont.	0 – 100 cont.	0 – 100 cont.	-	0 – 25 cont.	-	-
T096	discont.	-	-	0 – 10.000 disc.[3]	-	-	-
T098	discont.	0 – 100 disc.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T099	cont.	0 – 100 cont.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T100	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T101	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	-	-
T107	cont.	0 – 100 cont.	-	-	-	-	-
T109	cont.	0 – 100 cont.	0 – 10 cont.	-	-	-	-
T111	cont.	0 – 100 cont.	0 – 100 cont.	0 – 2000 disc.	0 – 25 disc.	0 – 4000 disc.	-
T131	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	-	-
T133	cont.	0 – 100 cont.	0 – 100 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T137	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	0 – 4000 disc.	-
T140	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	0 – 4000 disc.	-
T141	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	0 – 4000 disc.	-
T145	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T160	discont.	0 – 100 disc.	0 – 100 disc.	0 – 50.000 disc.[3]	0 – 25 disc.	-	-
T161	cont.	0 – 100 cont.	0 – 100 cont.	0 – 50.000 disc.[3]	0 – 25 cont.	-	-
T301	cont.	80 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.
T303	cont.	0 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.

Cont. = Online measuring; discont. = min. 15 min; [1] paramagnetic; [2] 7,9µm; [3] µPulse; [4] without µPulse; [5] in N2; [6] natural gas in air; [7] calculated, [8] landfill gas

Technical data



Technical data INCA4003

Weight [kg]	up to 30
Dimensions (WxHxD) [mm]	745x630x220
Degree of protection	IP20
Power supply	100 – 240 V, 50/60 H
Max. power consumption	250 VA
Inlets of gas	
Inlets of process gas	2 – 4 electr. ball valves
Inlets of calibration gas	1
Inlets purging gas (air)	1
Gas connection	Compression fitting 6 mm
Max. gas inlet pressure	20 mbar rel.
Min. gas inlet pressure	-100 mbar rel.
Flame barrier	ATEX-certification G IIC
Rel. gas humidity	≤ 100% (condensate possible)
Condensate trap	yes
Gas cooler	yes
Cooling principal	thermoelectrical
Dewpoint	3 – 30 °C adjustable
Condensate removal	perestaltic pump
Ambient conditions	
Operating temperature	5 – 45 °C
Humidity	0 – 95% rel. air humidity
Ambient pressure	900 – 1250 hPa (0,9 – 1,2 bar)
Storage temperature	-20 – 60 °C
Interfaces	
Relays	3
Dig. Interface	RS232
4 – 20 mA	optional
Fieldbus	optional
Remote maintenance (IP/TCP)	optional

Figure 2: Technical data INCA4003

COMPETENCE IN GAS MONITORING

About UNION Instruments

UNION Instruments, founded in 1919, is a specialized supplier of measuring instruments in the areas of calorimetry, gas composition and leak testing. Its user and customer base includes biogas producers, the chemical industry, and energy and water suppliers. The company has its headquarters in Karlsruhe and subsidiaries in Lübeck as well as in Berlin . With approximately 30 international distributors, UNION Instruments operates worldwide. The company's core businesses include development and production as well as maintenance, service, and support.

Our service performance

Support

The **UNION-hotline** helps to solve all inquiries and urgent issues fast and easy. Device specific concerns can be solved worldwide within minutes by direct communication via TEAMVIEWER.

Original spare parts

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Engineering

In the last decades UNION compiled a very high level to the state of the art that covers many market segments. So a wide range of possible solution approaches is on-hand.

Calibration

As part of maintenance and service UNION provides the validation and re-calibration of measuring devices in conformity with certified custody transfer instruments and / or traceable perpendicular.

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UNION Instruments

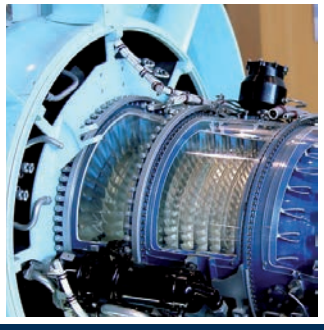
Measurement parameter

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

Applications

- Biogas
- Sewage gas plants
- Landfill sites
- Glass / ceramics
- Energy supply
- Energy generation
- Environment



INCA4004

Multi-gas analyzer

The multi-gas analyzers of the device series **INCA4004** are used to determine the gas composition

- Methane
- Carbon dioxide
- Hydrogen sulphide
- Oxygen
- Hydrogen
- Higher hydrocarbons (C_{2+})

The multi-gas analyzers of the device series **INCA4004** are engineered for indoor installation. Condensate-free gases can be measured with or without gas pressure. The device can be designed with 1 sample gas inlet for condensate-containing gas, max. 3 inlets for condensate-free gas and 1 calibration gas inlet. Due to the use of a hose pump an online operation is possible.

Typical measuring ranges INCA4004

Measuring module	Meas. methods	Measuring ranges	Measuring accuracy
CH_4	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CH_4	NDIR	0 – 5 Vol.-%	+/- 3% MBE[1)]
CH_4	NDIR	80 – 100 Vol.-%	+/- 1% MBE[1)]
C_{2+}	NDIR	0 – 20 Vol.-%	+/- 2,5% MBE[1)]
CO_2	NDIR	0 – 100 Vol.-%	+/- 1% MBE[1)]
CO_2	NDIR	0 – 0,5 Vol.-%	+/- 2% MBE[1)]
CO_2	NDIR	0 – 10 Vol.-%	+/- 1,5% MBE[1)]
O_2	EC	0 – 25 Vol.-%	+/- 3% MW[2)]
O_2	paramagnetic	0 – 25 Vol.-%	+/- 1% MW[2)]
H_2S	EC	0 – 50 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 100 ppm	+/- 3% MBE[1)]
H_2S	EC	0 – 2.000 ppm	+/- 30 ppm (≤ 1000 ppm) +/- 3% MW[2)] (> 1000 ppm)
H_2S	EC-µPulse	0 – 10.000 ppm	+/- 3 ppm (≤ 25 ppm) +/- 15% MW[2)] (> 25 ppm)
H_2S	EC	0 – 10.000 ppm	+/- 3% MBE[1)]
H_2S	EC-µPulse	0 – 50.000 ppm	+/- 30 ppm (≤ 500 ppm) +/- 15% MW[2)] (> 500 ppm)
Heizwert Hi[3)]	calculated	8 – 11,5 kWh/m³	+/- 1,5% MBE[1)]
Wobbeindex Wi[3)]	calculated	10 – 14,3 kWh/m³	+/- 2% MBE[1)]
relative Dichte (SG)	acoustic	0,5 – 0,8	+/- 3% MBE[1)]

[1)] Linearity error with regard to measuring range
[2)] Linearity error with regard to measuring value

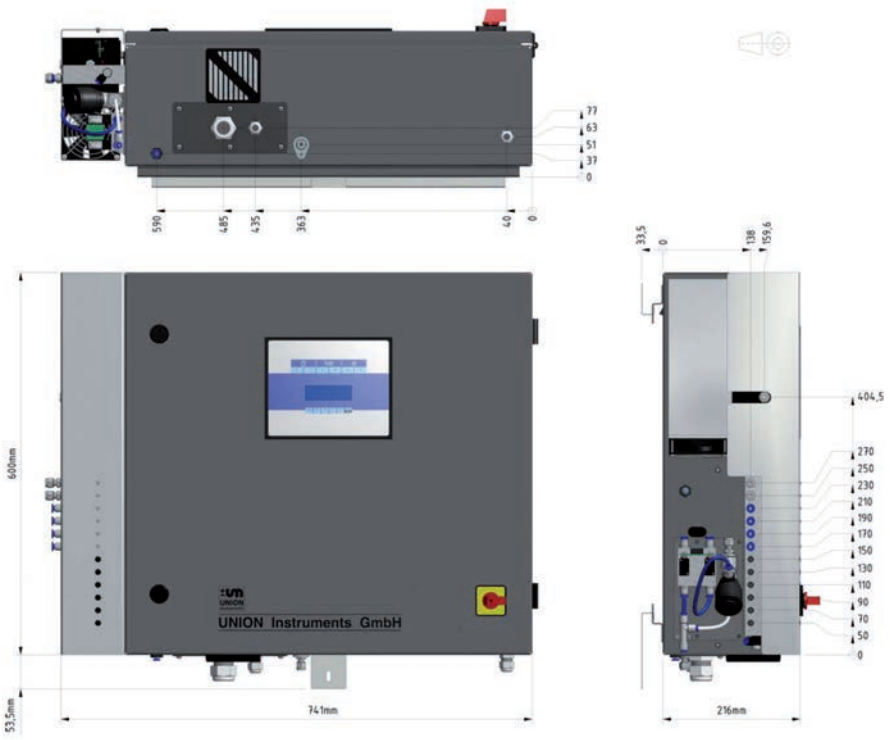
Table 1: Typical measuring ranges INCA4004

Option (T-Modelle) INCA4004

T-Modelle	con./ discont.	CH_4 [Vol.%]	CO_2 [Vol.%]	H_2S [ppm]	O_2 [Vol.%]	H_2 [ppm]	C_{2+} [Vol.%]
T030	discont.	0 – 100 disc.	-	0 – 2000 disc.	0 – 25 disc.	-	-
T045	cont.	-	-	-	0 – 5 cont.[1] (Par)	-	-
T055	cont.	0 – 100 cont.	0 – 100 cont.	-	-	-	-
T074	discont.	-	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T087	cont.	0 – 5 cont.	0 – 100 cont.	-	-	-	-
T095	cont.	0 – 100 cont.	0 – 100 cont.	-	0 – 25 cont.	-	-
T096	discont.	-	-	0 – 10.000 disc.[3]	-	-	-
T098	discont.	0 – 100 disc.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T099	cont.	0 – 100 cont.	-	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T100	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	-	-
T101	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	-	-
T107	cont.	0 – 100 cont.	-	-	-	-	-
T109	cont.	0 – 100 cont.	0 – 10 cont.	-	-	-	-
T111	cont.	0 – 100 cont.	0 – 100 cont.	0 – 2000 disc.	0 – 25 disc.	0 – 4000 disc.	-
T131	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	-	-
T133	cont.	0 – 100 cont.	0 – 100 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T137	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 disc.	0 – 4000 disc.	-
T140	discont.	0 – 100 disc.	0 – 100 disc.	0 – 10.000 disc.[3]	0 – 25 disc.	0 – 4000 disc.	-
T141	cont.	0 – 100 cont.	0 – 100 cont.	0 – 10.000 disc.[3]	0 – 25 cont.	0 – 4000 disc.	-
T145	cont.	0 – 100 cont.	0 – 10 cont.	0 – 100 disc.	0 – 25 cont.	-	-
T160	discont.	0 – 100 disc.	0 – 100 disc.	0 – 50.000 disc.[3]	0 – 25 disc.	-	-
T161	cont.	0 – 100 cont.	0 – 100 cont.	0 – 50.000 disc.[3]	0 – 25 cont.	-	-
T301	cont.	80 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.
T303	cont.	0 – 100 cont.[2] (7µm)	-	-	-	-	0 – 20 cont.

Cont. = Online measuring; discont. = min. 15 min; [1] paramagnetic; [2] 7,9µm; [3] µPulse; [4] without µPulse; [5] in N2; [6] natural gas in air; [7] calculated, [8] landfill gas

Technical data



Technical data INCA4004

Weight [kg]	up to 30
Dimensions (WxHxD) [mm]	745x630x220
Degree of protection	IP20
Power supply	100 – 240 V, 50/60 H
Max. power consumption	250 VA
Inlets of gas	
Inlets of process gas	1 x condensate containing gases
	up to 3 for dry gases
Inlets of calibration gas	1
Inlets purging gas (air)	1
Gas connection	Compression fitting 6 mm
Max. gas inlet pressure	20 mbar rel.
Min. gas inlet pressure	-100 mbar rel.
Flame barrier	ATEX-certification G IIC
Rel. gas humidity	≤ 100% (condensate possible)
Condensate trap	yes
Gas cooler	yes
Cooling principal	thermoelectrical
Dewpoint	3 – 30 °C adjustable
Condensate removal	jet pump
Ambient conditions	
Operating temperature	5 – 45 °C
Humidity	0 – 95% rel. air humidity
Ambient pressure	900 – 1250 hPa (0,9 – 1,2 bar)
Storage temperature	-20 – 60 °C
Interfaces	
Relays	3
Dig. Interface	RS232
4 – 20 mA	optional
Fieldbus	optional
Remote maintenance (IP/TCP)	optional

Figure 2: Technical data INCA4004

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