



BIOGAS

ANALYTIC

EQUIPMENT

PRONOVA
Analysentechnik GmbH & Co. KG

Biogas analyser
Biogas analytical systems
Digester analysis
Gas warning
Equipment

Development
Production
Sales
Service

PRODUCT CATALOGUE

SSM 6000



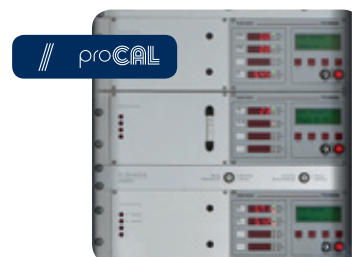
SSM 6000 ECO



SSM 6000, table unit



SSM 6000 Classic



Version SSM 6000 19"



Condensate pre-separator accessories

Using the SSM 6000

The SSM 6000 was developed specifically for the analysis of biogenic process gases, such as biogas, sewage gas and landfill gas. It is designed for on-site plant use, capable of meeting regular process control requirements and unites the high-quality sensor technology used for continual gas analysis with multi-stage gas conditioning technology. If used to full capacity, all main gas types can be recorded: methane, hydrogen sulphide, oxygen, carbon dioxide and hydrogen. Analysis is fully automatic, appearing at variable time intervals (at 8-hour intervals, for example). Continuous measuring of individual types of gases is also optionally possible. The SSM 6000 is easy to operate, equipped with a clear display and a data logger with history function where all measured data is stored together with the precise recording time.

proCAL and automatic calibration

The proCAL method developed by PRONOVA enables even greater long-term stability for methane and carbon dioxide measurements. Thanks to additional automatic one-point calibration of all other measuring channels, the SSM 6000 is setting new standards in long-term stability.

SSM 6000 Classic

A multi-channel measuring device with an integrated gas conditioning unit for analysing methane, oxygen, carbon dioxide and hydrogen and for high concentrations of hydrogen sulphide. The device is designed for both discontinuous and continuous operation for up to four internal measuring points.

SSM 6000 LT

The SSM 6000 LT has been developed to carry out easy, cost-effective routine inspection. Although based closely on the SSM 6000 Classic, the standard version features neither a gas cooler nor the load-limit function for measuring hydrogen sulphide concentration. Its standard measuring range is hence 1,000 ppm hydrogen sulphide.

SSM 6000 ECO

Single channel measuring device for monitoring hydrogen sulphide at desulphurisation plants or methane levels at CHPs with a view to their continuous control.

SSM 6000 Lab

A special version of the SSM 6000 that has been designed specifically for labor applications. The SSM 6000 Lab device is specialised for measuring smallest sample volumes.

TECHNICAL SPECIFICATIONS:

Measuring ranges:

CH ₄ :	0 to 100 Vol%
CO ₂ :	0 to 100 Vol%
O ₂ :	0 to 25 Vol%
H ₂ S:	0 to 5,000 ppm SSM Classic
H ₂ S:	0 to 1,000 ppm SSM LT
H ₂ :	0 to 1,000 ppm

others on request

Resolution:

CH ₄ :	0.1 Vol%
CO ₂ :	0.1 Vol%
O ₂ :	0.1 Vol%
H ₂ S:	1 ppm
H ₂ :	1 ppm

Display: LED display for measuring values and LC display

Communication: RS232, Profibus DP option

Operating temperature: +5 to +40 °C

Power supply: 85 to 264 VAC, 47 to 63 Hz

Protection class: IP 20

Dimensions and weight: 300 x 400 x 200 mm,
approx. 13 kg (Classic 4K)

Art. No.	
1102	SSM 6000 Classic (CH ₄ , H ₂ S)
1103	SSM 6000 Classic (CH ₄ , H ₂ S, O ₂)
1104	SSM 6000 Classic (CH ₄ , H ₂ S, O ₂ , CO ₂)
1106	SSM 6000 LT (CH ₄ , H ₂ S)
1107	SSM 6000 LT (CH ₄ , H ₂ S, O ₂)
1108	SSM 6000 LT (CH ₄ , H ₂ S, O ₂ , CO ₂)
1126	SSM 6000 ECO (H ₂ S)
1131	SSM 6000 ECO (CH ₄)
1006	Condensate pre-separator
OPTIONAL SSM 6000 LT and Classic	
1110a	H ₂ (measuring range 1,000 ppm)
1117	Another measuring point (max. 4 pcs.)
1118	Sample gas cooler
1120	Profibus DP interface
1122	Continuous measurement (except for H ₂ S)
1127	19" table unit
1129	19" subrack
1130	Design Lab
others on request	

SSM 6000 Outdoor



SSM 6000 outdoor application

Biogas analyser for outdoor installation

- Integration gas analyser SSM 6000 (see data sheet) for monitoring and registration of gases from biogas plants, wastewater treatment plants and landfills
- Measurement of the methane, hydrogen sulfide and optionally the oxygen, carbon dioxide and hydrogen concentration
- High accuracy and stability by proCAL
- Calibration with test gas earlier than one year
- Gas preparation with various filter systems and optional sample gas cooler
- Wall-mounted enclosure for outdoor installation
- Optional housing heating

TECHNISCHE DATEN:

Measuring components:	CH ₄ , H ₂ S option O ₂ , CO ₂ , H ₂
Housing dimensions (W x H x D):	600 x 800 x 300 mm
Housing color:	RAL 7035
System housing:	GPR cabinet with front door and window
Protection:	IP 56
Ambient temperature:	-20°C to +40°C



Art. No.

0000 SSM 6000 Outdoor

BIOGAS ANALYSER

SSM 6000
Trace gas analyser for H₂S

SSM 6000 trace gas analyser for measuring hydrogen sulphide in the ppb range: to protect adjacent facility components (e.g. catalytic converters) from H₂S. Highly sensitive analysis system with a cycle time of approximately two to five minutes (depending on the application). Optionally available: additional oxygen trace gas analyser with a measuring range of 10 ppm O₂, complete with installed pipes on mounting plate.

TECHNICAL SPECIFICATIONS:

Measuring range H ₂ S:	0 to 2,000 ppm
Detection limit H ₂ S:	5 ppb
Resolution H ₂ S:	1 ppm
Display:	LED display for measuring values and LC display
Communication:	RS232, Profibus DP option
Operating temperature:	+5 to +40 °C
Power supply:	85 to 264 VAC, 47 to 63 Hz
Protection class:	IP 20
Dimensions and weight:	300 x 400 x 200 mm
others gas modes on request	

Art. No.

0000 SSM 6000 Trace gas analyser H₂S

SSM 6000 Compact



Compact analysis system for measuring at different measuring points during the processing of biogas to bio-methane. The analysis system consists of two SSM 6000 gas analysers: one for measuring the crude gas and one for measuring the clean gas. Additional measuring points are optionally available.

Measuring crude gas

- Continuous or intermittent measurements of methane CH_4 , carbon dioxide CO_2 , and oxygen O_2
- Intermittent measurements of hydrogen sulphide H_2S
- Wall-mount housing for indoor installations

Measuring clean gas

- Continuous measurement of methane CH_4 , carbon dioxide CO_2 , and oxygen O_2
- Continuous measurement of hydrogen sulphide with dilution and moisture
- Wall-mount housing for indoor installations

Options include:

- Measurement of hydrogen H_2
- FA flow alarm
- Fan monitoring
- LA humidity alarm
- Additional measuring points
- Condensate pre-separator

TECHNISCHE DATEN:

Measuring ranges for crude gas:

CH_4 :	0 to 100 Vol. %
CO_2 :	0 to 100 Vol. %
O_2 :	0 to 25 Vol. %
H_2S :	0 to 5,000 ppm SSM 6000 Classic
H_2S :	0 to 1,000 ppm SSM 6000 LT
H_2 :	0 to 1,000 ppm
others on request	

Measuring ranges for clean gas:

CH_4 :	0 to 100 Vol. %
CO_2 :	0 to 10 Vol. %
O_2 :	0 to 5 Vol. % or 0 to 2 Vol. % at N_2 -calibration
H_2S :	0 to 25 ppm
H_2 :	0 to 4,000 ppm
others on request	

Resolution for crude gas:

CH_4 :	0,1 Vol. %
CO_2 :	0,1 Vol. %
O_2 :	0,1 Vol. %
H_2S :	1 ppm
H_2 :	1 ppm

Resolution for clean gas:

CH_4 :	0,1 Vol. %
CO_2 :	0,01 Vol. %
O_2 :	0,01 Vol. %
H_2S :	0,1 ppm
H_2 :	1 ppm

Display: LED display for measuring values and LC display

Communication: RS232, Profibus DP option

Operating temperature: +5 to +40 °C

Power supply: 85 to 264 VAC, 47 to 63 Hz

Protection class: IP 20

Dimensions and weight: 300 x 400 x 200 mm,
approx. 13 kg (Classic 4K)

Art. No.

0000 Biogas, biogas feed-in
SSM 6000 Compact

BIOGAS, BIOGAS FEED-IN

SSM 6000 19"



Biogas analytical system for automatic monitoring of methane, carbon dioxide, oxygen, hydrogen sulphur, hydrogen and water steam concentrations at biogas refinement plants for feeding biogas into the natural gas network.

- Measurement at three different places
- Redundant oxygen measurement for higher safety
- Hydrogen and hydrogen sulphur monitoring as an extension for the process gas chromatograph (PGC)
- Additional process measurements
- Three-tier sample gas conditioning with compressor cooling and several filter systems
- Status modules for monitoring and displaying the operating status

TECHNICAL SPECIFICATIONS:

System housing:	Steel sheet cabinet with door window
Housing dimensions:	(W x H x D) 800 x 2150 x 600 mm
Protection:	IP 20
Housing colour:	RAL 7035
Measuring components:	CH_4 , CO_2 , O_2 , H_2 , H_2S and H_2O

Art. No.

0000 Biogas, biogas feed-in
SSM 6000 19"

Biogas, add-on for calibratable measurement H₂S special version for high H₂ concentrations



Version fitted into wall-mounted cabinet: SSM 6000 as 19" rack unit

Design similar to SSM Compact

- Compact system for indoor installations
- Dilution mechanism for continual measurements from H₂S
- Moistening mechanism (external)
- Additional process measurements
- Optional methane, carbon dioxide and oxygen measurements
- Optional flow monitoring
- Optional fan monitoring



Version SSM 6000 Compact



TECHNICAL SPECIFICATIONS:

Measuring ranges:

CH ₄ :	0 to 100 Vol%
CO ₂ :	0 to 100 Vol%
O ₂ :	0 to 25 Vol%
H ₂ S:	0 to 25 ppm
H ₂ :	0 to 1,000 ppm
others on request	

Resolution:

CH ₄ :	0.1 Vol%
CO ₂ :	0.1 Vol%
O ₂ :	0.1 Vol%
H ₂ S:	0.1 ppm
H ₂ :	1 ppm

Display: LED display for measuring values and LC display

Communication: RS232, Profibus DP option

Operating temperature: +5 to +40 °C

Power supply: 85 to 264 VAC, 47 to 63 Hz

Protection class: IP 20

Dimensions and weight: 300 x 400 x 200 mm

Design similar to SSM 6000 19"

Biogas measuring system for automatic monitoring of hydrogen sulphur and hydrogen concentrations at biogas refinement plants as an extension for the process gas chromatograph (PGC).

For applications dealing with high concentrations of hydrogen H₂ (e.g. > 1 % vol.), a special version with a cross-sensitivity option is available. Thus it is possible to reliably measure the hydrogen sulphide (H₂S) despite the presence of hydrogen. This is useful for monitoring H₂S limits when bio-methane is being supplied into the public gas grid.

- Status module for monitoring and displaying the operating status
- Gas preparation with several filter systems
- Dilution system for continuous measurement of H₂S
- Optional methane, oxygen or carbon dioxide measurement
- Wall-mounted housing for indoor installation

TECHNICAL SPECIFICATIONS:

System housing:	Steel sheet wall cabinet with door window
Housing dimensions:	(W x H x D) 600 x 750 x 600 mm
Protection:	IP 44
Housing colour:	RAL 7035
Measuring components:	H ₂ , H ₂ S, optional CH ₄ , CO ₂ , O ₂

Art. No.

0000 Biogas, add-on for calibratable measurement
SSM 6000 as 19" rack unit

0000 Biogas, add-on for calibratable measurement
Design similar to SSM 6000 Compact

FOS/TAC 2000



A device used to automatically measure the FOS/TAC (volatile organic acids and buffer capacity) at biogas plants. With an automatic titrator, the plant operator can simply identify the FOS/TAC content with a minimum of effort and with high degree of repetition precision. The fully automatic system reduces operator errors to a minimum and enables a high repeatability rate. This is important because the most recent result must always be evaluated in light of the previous results.

TECHNICAL SPECIFICATIONS:

FOS:	1 to 10 g _{org.acid} / kg _{Substrate}
TAC:	5 to 20 g _{CaCO₃} / kg _{Substrate}
FOS/TAC:	0.05 to 2.0 [l]
Measuring principle:	pH measurement
Precision:	+/- 0.01 pH
Sample volume:	approx. 5 g of filtrate
Protection:	IP 20 according to DIN 40 050
Dimensions:	approx. 405 x 290 x 160 mm
Weight:	approx. 7.5 kg

Art. No.

2000 FOS/TAC 2000

2001 Case for FOS/TAC 2000

SPARE AND WEAR PARTS

1998	1 pc. Titration solution, 1.0 l
1999	1 pc. Titration solution, 5.0 l
3012	1 pc. Buffer solutions pH 4, 100 ml
3013	1 pc. Buffer solutions pH 7, 100 ml
3014	1 pc. Buffer solutions pH 4, 1.0 l
3015	1 pc. Buffer solutions pH 7, 1.0 l
3022	1 pc. Refill solution with filler syringe 3 mol/l KCl, 100ml
1940	1 pc. pH-electrode with ceramic diaphragm, liquid electrolyte 3 mol/l KCl

GAS WARNING

Gas alarm series GW-S/-S4



Compact, freely programmable gas alarm station with wall-mounted housing and display for connecting up to 2 or 4 sensors. The evaluation unit allows various types of gases to be monitored. The gas alarm station features a display which shows in alternation different measurement points and 3 operating levels: measurement level, parameter level and service level. Alarms and faults can be assigned to the potential-free relay outputs and external functions can be activated (horn, etc.).

TECHNICAL SPECIFICATIONS:

Sensor inputs:	4-20 mA (gas sensor)
Alarm limits:	2 max.
Outputs:	4 voltage-free relay contacts
Display:	LED
Power supply:	230 VAC, max. 20 VA
Operating temperature:	-10 to +40 °C
Housing and protection class:	Wall mounted IP 54 (EN 60529)
Dimensions and weight:	195 x 160 x 137 mm, 1.3 kg
Connectable sensors:	400, 500, 600, 700 and 800 series

Art. No.

1900 Gas alarm series GW-S
for 2 gas sensors max.1901 Gas alarm series GW-S4
for 4 gas sensors max.

Gas alarm series GW-SK



Compact, freely programmable gas alarm station with a wall-mounted housing and display for connecting up to 6 sensors. The evaluation unit allows various types of gases to be monitored. The gas alarm station features a display which shows in alternation different measurement points and 3 operating levels: measurement level, parameter level and service level. Alarms and faults can be assigned to the potential-free relay outputs and external functions can be activated (horn, etc.).

TECHNICAL SPECIFICATIONS:

Sensor inputs:	4-20 mA (gas sensors)
Alarm limits:	4 max.
Outputs:	6 voltage-free relay contacts
Display:	LED
Power supply:	24 VDC, max. 30 W
Operating temperature:	-10 to +40 °C
Housing and protection class:	Standard rail DIN 43880 IP 30 (EN 60529)
Dimensions and weight:	105 x 75 x 90 mm, 650 g
Connectable sensors:	400, 500, 600, 700 and 800 series

Art. No.

1902 Gas alarm series GW-SK
for 6 gas sensors max.

Gas sensors for GW-S/-S4/-SK



Series 400 (semiconductor), 500 (heat tone), 600 (electro-chemical) and 700 (infrared) sensors for connection to GW-S and GW-S4 gas alarm devices. The gas sensors are connected to the corresponding evaluation unit. The sensors are suitable for use in dusty and dirty environments.

Art. No.

1903	Gas sensor 400 ST not calibrated
1904	Gas sensor 500 ST-H₂S not calibrated
1905	Gas sensor 500 ST not calibrated
1906	Gas sensor 510 Ex not calibrated (EX II 2G EEx d IIC T6)
1907	Gas sensor 600 ST-O₂ not calibrated
1908	Gas sensor 600 ST-CO not calibrated
1909	Gas sensor 700 ST-CO₂ not calibrated
1910	Calibration costs per alarm and measuring point
	other equipment available on request

TM 40, ISE 40, LF 40, AM 40



Measures pH, redox, ion concentrations, conductivity and dissolved gases

These measuring devices offer the advantages of a mobile field unit together with the precision and comfort of a laboratory instrument: with high measurement accuracy, a multifunction graphic display, integrated data logger and heavy-duty IP65 housing. The important GLP functions – such as date/time, primary measured value, secondary measured value (including the physical units), temperature and device number – are transmitted and recorded in the data file. The devices for O₂, pH, ISE and LF have an automatic temperature compensation feature.

TECHNICAL SPECIFICATIONS:

Measurement range:

TM 40	pH: 0 to 14; -1,999 to 1,999 mV;
ISE 40	0.1 to 100 g/l;
LF 40	LF: 0 to 200 µS/cm; 0 to 2,000 µS/cm;
	0 to 20 mS/cm; 0 to 500 mS/cm;
	automatic measuring range switch-over;
	TDS: 0 to 200 mg/l; 0 to 2,000 mg/l;
	0 to 20 g/l; 0 to 500 g/l;
	Salinity: 0 to 70 g/kg;
AM 40	O ₂ : 0 to 200 %; 0 to 20 mg/l

Resolution:

TM 40	0.01 pH; 1 mV
ISE 40	0.1 mg/l
LF 40	0.1 µS; 1 µS; 0.01 mS; 0.1 mS
AM 40	1 %; 0.01 mg/l,
	Temperature: 0.1 °C

Precision:

TM 40	+/- 0.02 pH; +/- 1 mV
LF 40	+/- 1% to 200 mS
AM 40	+/- 1 %; +/- 0.01 mg/l

Display: graphic LCD, 128 x 64 px, back-lit

Communication port: USB, electrical/galvanic isolation

Data logger: 4,000 data records

Power supply: 3 x AA, IEC R6, LR6, 1.5 V

Protection degree: IP65

Dimensions and weight: 200 x 95 x 40 mm, approx 290 g

Art. No.	
7130	TM 40 Set
7140	ISE 40 Set
7120	LF 40 Set
7110	AM 40 Set
Each measuring device is delivered in a set with probe/electrode, solutions and spare parts (AM 40) in a case	

KM 3000



KM 3000 multi-parameter measuring system

The KM 3000 multi-parameter controller has a modular bus structure; it provides excellent functionality, maximum operational reliability, outstanding ease, and a wide range of customized configuration options. The KM 3000 offers a complete system solution for any application where multiple parameters need to be detected on-line, and where these measurements need to be transmitted and evaluated very reliably. It also is capable of documenting and controlling processes.

TECHNICAL SPECIFICATIONS:

Parameters:	max. of 16: pH, redox, conductivity, CO ₂ , O ₂ , ISE (NH ₄ ⁺ , NO ₃ ⁻ , K, Cl, F, etc.)
Display:	5.7" touchscreen
Data logger:	Approx. 100,000 parameter sets
Analogue outputs:	4 x 0(4) to 20 mA
Relay outputs:	4 x potential-free outputs, max. 3 A, 250 VAC
Interface:	USB, RS285, RS485
Power supply:	115/230 VAC, 48 to 63 Hz or 15 to 30 VAC/DC
Housing:	Wall mount, in aluminium
Protection degree:	IP65 (EN 60529)
Dimensions:	240 x 240 x 120 mm



Art. No.	
KM 3000	Multi-parameter controller base unit
MVM 2210	pH measuring module 0 to 14 pH, without electrode
MVM 2216	ISE measuring module NH ₄ ⁺ , NO ₃ ⁻ , etc., without electrode
MVM 2220	Conductivity transmitter 0 to 20 mS / cm, without electrode
GSM 3000	GSM/GPRS modem
Others available on request	

MV 50xx-Serie



MV 50xx single-channel measuring transducer

The MV 50XX series of measuring transducers is perfect for taking stationary measurements directly at the measuring point in the open field. The measuring transducer is simple and intuitive to use. It also maintains the essential functionality with maximum operational reliability and safety. Each MV 50XX features a large OLED display and plain-text menu navigation. The software also enables you to configure, calibrate, view and record measured values at your PC using a standard USB port.

- Areas of use:
- Water treatment
 - Water-quality monitoring systems
 - Process monitoring
 - Process control

- Special features:
- Cost-effective measurement of process variables
 - Easy to use (plain text menus)
 - Simultaneous temperature measurements and compensation
 - 2 scalable analogue outputs and 2 relay outputs
 - USB interface and PC software
 - Firmware update via USB
 - IP65 field housing

TECHNICAL SPECIFICATIONS:

Parameters:	1 x pH, redox, conductivity, CO ₂ , O ₂ , ISE (NH ₄ ⁺ , NO ₃ ⁻ , K, Cl, F, etc.)
Display:	graphic OLED, 128 x 64 pixels with plain text menu
Data logger:	4,000 parameter sets
Analogue outputs:	2 x 0(4) to 20 mA, or 0 to 5 V
Control outputs:	2 limit switch contacts, CO contact, max. 250 V AC / 5 A; PID controller, bi-directional (pulse length or analogue controller)
Interface:	USB (optional RS-232)
Power supply:	100 to 240 V AC, 18 to 36 V DC
Housing:	Aluminium housing for wall mount
Protection degree:	IP65
Dimensions:	160 x 130 x 70 mm

Art. No.	
MV 5010	pH measuring transducer 0 to 14 pH
MV 5020	LF measuring transducer 0 to 20 mS/cm
MV 5016	ISE measuring transducer NH ₄ ⁺ , NO ₃ ⁻ etc.
MV 5030	O ₂ measuring transducer 0 to 20 mg/l
MV 5050	CO ₂ measuring transducer 0 to 3,000 mg/l

GAS ANALYSIS EQUIPMENT

BIOGAS ANALYSIS EQUIPMENT

WATER ANALYSIS EQUIPMENT

AGRICULTURAL EQUIPMENT



PRONOVA

– Supplies key products for the control and optimisation of biogas plants:

- The SSM 6000 for online biogas analysis, now with even greater long-term stability thanks to proCAL.
- The FOS/TAC 2000 for evaluating the most important substrate variables: levels of volatile organic acids (FOS) and buffer capacity (TAC).

– Is a leader in the biogas analysis since the company produced the first gas analyser specially developed for biogas plants in 1998. Thousands of systems from the SSM family are installed around the globe. PRONOVA also supplies solutions for special and new applications, such as the preparation of biogas for feed-in into natural gas grids.

– Has taken over the expertise of AEG and is now active in many areas of gas analysis. As part of a company group, PRONOVA still offers agricultural measuring equipment under the iRAS® Water analysis equipment und STELZNER® Agricultural measuring.



– Manufactures application-specific analytical systems, analysers and sensors, components for gas analysis and gas detection.

– Is the competent partner for analysis technique certified under DIN/ISO 9001.



– Has access to a wide range of technologies due to its practical experience in the corresponding applications:

- Infrared spectroscopy
- Electrochemistry
- Heat conduction
- UV spectroscopy
- Paramagnetism
- Catalytic combustion
- Photoionization
- Optical chemistry
- Laser technology
- Semiconductors
- Chemiluminescence
- Flame ionisation
- Chromatography

– Offers cost-efficient solutions for all applications based on decades of experience.

– Supplies equipment for the following fields:

- Stack gas
- Process gas
- Biogas
- Special applications

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