

MiniWarn

Personal Gas
Measurement with
Multiwarn Functions





ST-141-98

...Waste Water ...Chemical ...Oil and Gas

The requirement to continuously and simultaneously measure the concentrations of several gases arises frequently in industrial and community applications

For personal protection, the new MiniWarn has:

- a high-tech ergonomic design
- a compact size and light weight
- a vast sensor selection from one of the world's best sensor manufacturers
- the latest in solid state technology and microprocessors
- full Multiwarn capabilities including a data logger

The MiniWarn makes an ideal bodyguard during inspections, maintenance, or as a full-time personal monitor.

Every MiniWarn has 4 measurement channels, allowing the simultaneous measurement of 1-4 gases.



ST-445-98



ST-147-98

...Emergency Response ...The MiniWarn!



ST-156-98

MiniWarn. A Mini Multi



Available Options

MiniWarn comes in two variants that are both simple to operate:

- »MiniWarn B« Basic
The basics – switch-on, measure, and switch off
- »MiniWarn E« Extended
The basics, plus a 63 hour data logger

As a standard feature, every MiniWarn is equipped with an infrared interface to a PC.

The simple three-button key pad makes operation easy and uncomplicated. The high contrast LCD display, with a dirt and scratch resistant protective cover, insures good readability.

The user has the choice of 4 different, easily changeable and compatible power packs (NiMHy T4, NiCd T4, NiCd T6 and Alkaline T4/T6).

An easily attachable auto-on external pump which is powered by the instrument battery is available as an accessory.

For reading and displaying data from the »MiniWarn E« data logger, we offer the »GasVision« software package.

Sensor Options

MiniWarn has four measurement channels. These channels may be equipped with one catalytic, and at most three electrochemical sensors (DrägerSensor® XS EC or PacSensor II).

The catalytic Ex Sensor XS consists of two different measurement technologies in one housing and can measure % LEL as well as Vol. % unambiguously over the entire 0 to 100 Vol. % concentration range.*)

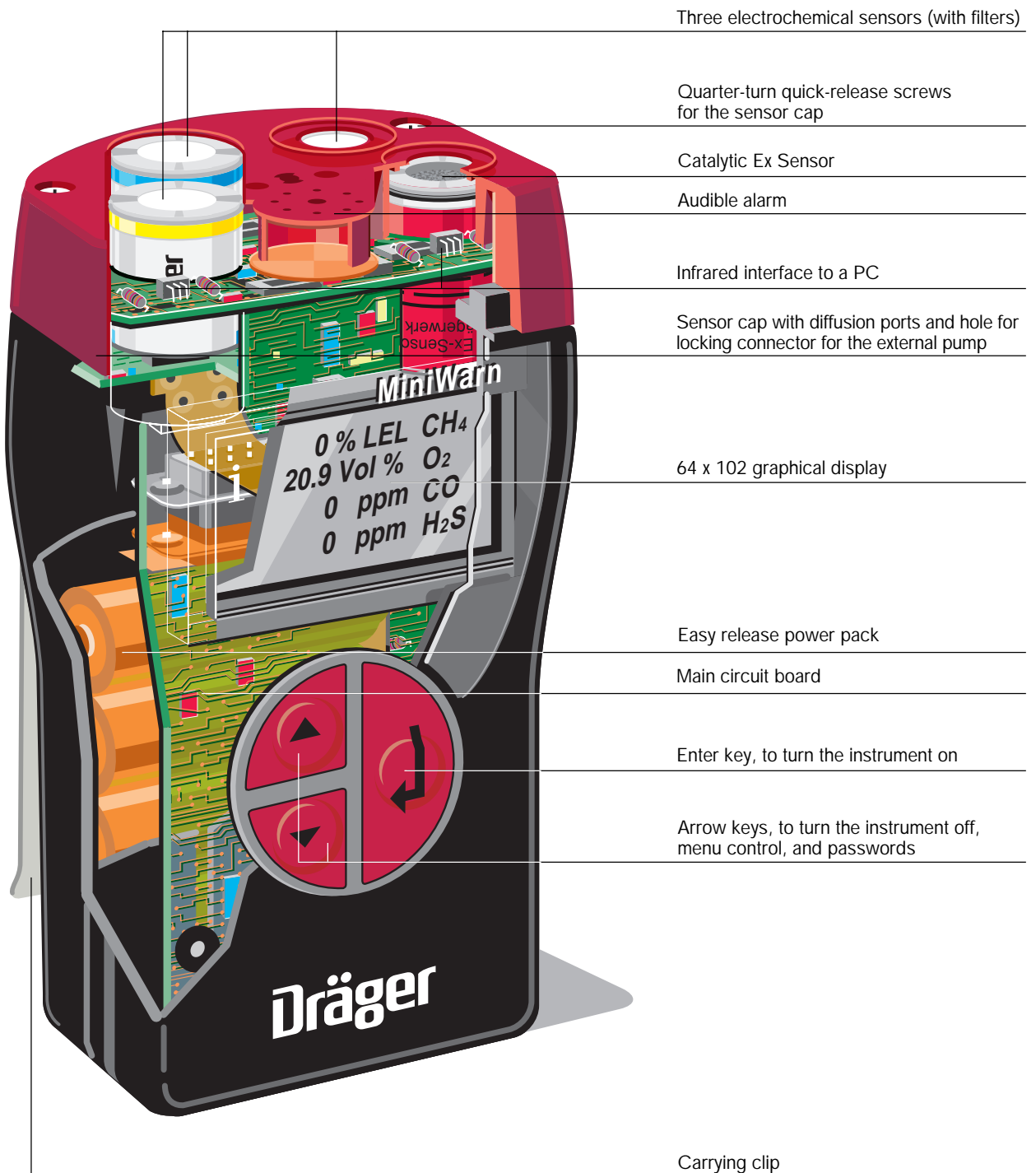
The electrochemical XS EC and PSII sensors utilize second generation »Smart« technology. They are easily installed by the user and ready to use after warming up (see the sensor data sheet). The new XS EC sensor generation requires less calibration because of improved sensor life and reduced long-time drift. Additionally, they may be equipped with filters to minimize cross sensitivity problems.

Currently more than 22 Dräger-Sensor® XS EC sensors and 6 Pac-Sensor II sensors are available for the measurement of more than 40 gases and vapors. The well-defined cross sensitivities of these sensors considerably increase the number of gas measurement possibilities. See the »DrägerSensors® An Overview« Brochure for an overview of our available sensors and their specifications.)

*) Some restrictions applicable for Vol. % measurements.



ST 675-98



Three electrochemical sensors (with filters)

Quarter-turn quick-release screws for the sensor cap

Catalytic Ex Sensor

Audible alarm

Infrared interface to a PC

Sensor cap with diffusion ports and hole for locking connector for the external pump

64 x 102 graphical display

Easy release power pack

Main circuit board

Enter key, to turn the instrument on

Arrow keys, to turn the instrument off, menu control, and passwords






Carrying clip



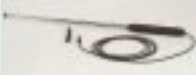
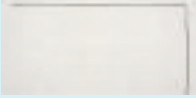






Technical Data








Environmental conditions	
- during operation	-20 °C to 40 °C, for short periods -40 °C to 55 °C, please note, operation between 40 °C and 55 °C reduces the life time of the EC sensors as well as that of the batteries. 700...1300 hPa 10 to 95% relative humidity
- recommended storage conditions	0 to 30 °C 30 to 80% relative humidity
Ingress Protection	IP 65
Operating time at 25 °C, without alarms and without pump operation, with the Ex Sensor and 3 EC Sensors, when completely charged.	
NiCd-Power pack T6	> 8 hours
NiCd-Power pack T4	> 10 hours
NiMHy-Power pack T4	>13 hours
Alkaline-batteries T4-T6	>T4/12 hours...T6/10 hours
Minimum Required Charging Frequency	at least every 3 weeks
Loudness of the acoustical alarm	> = 85 dBA at a distance of 30 cm
Pump operation	
- maximum hose length	10 m
- additional delay time: hose length in meters multiplied times	For 5 s/m a hose of 4 mm inner diameter) = additional delay time (per meter of hose used) in seconds. This is in addition to the normal sensor reaction time. See the appropriate sensor data sheet for the installed sensors and beware of the possibility of gas absorption («memory effect») in the hose. Gas absorption («memory effect») is not accounted for in the above factor.
Power contacts	4 contacts (may only be used with Dräger-approved charging equipment)
Dimensions with power pack	78 x 143 x 58 mm (width x height x depth)
Weight	approximately 450 g
CE Symbol	RFI resistance (according to Cenelec 89/336/EWG guidelines)
Ex-Approvals	
Instrument Units	
- MiniWarn with or without a Cat-Ex Sensor:	EEx iad IIC T6, BVS, TUm _{ax} = 40 °C UL Class I, Div. 1, Groups A, B, C, D Temp. Code T6
Power packs	
NiCd T6	EEx ia II C T6, -20 °C to +40 °C
NiCd T4	EEx ia II C T4, -20 °C to +55 °C
NiMHy T4	EEx ia II C T4, -20 °C to +40 °C
Alkaline Batteries	EEx ia II C T4, -20 °C to +40 °C EEx ia II C T4, -20 °C to +55 °C EEx ia II C T6, -20 °C to +40 °C (according to the brand of alkaline batteries used)

Order List

MiniWarn B 64 08 000 Multigas instrument for diffusion operation with one catalytic Cat-Ex Sensor and three electrochemical (EC) sensors, (without sensors and power pack).		ST-468-97
MiniWarn E 64 08 080 Multigas instrument for diffusion operation with one catalytic Cat-Ex Sensor and three electrochemical (EC) sensors, and data logger (without sensors and power pack).		ST-468-97
Electronics Warranty: 5 years under specified conditions		
Choices		
NiCd (T4) power pack 64 08 120		ST-466-97
NiCd (T6) power pack 64 08 180		
NiMHy (T4) power pack 64 08 133		
Alkaline power pack (T4/T6) 64 08 116		
Set alkaline batteries with Ex T6 approval (for alkaline power pack) 64 08 361		
adaptable external pump (with 5 m hose) 64 08 112		ST-401-97
Charging clip 64 08 122		ST-464-97
Power supply Europe/230 V 83 12 942		ST-462-97
Power supply UK /240 V 83 12 943		
Power Supply US/Can/ 110 V 83 13 100		
Leather Case for Instrument 64 08 134		ST-403-97
Leather Case for Pump 64 08 355		ST-509-98

DrägerSensors® XS				2-223-96
Catalytic Ex Sensor XS 68 08 280 0-100% LEL 0-100 Vol.% CH ₄				
Electrochemical DrägerSensors® XS EC (with extended calibration interval, warranty for up to 36 months)				ST-731-97
O ₂ -LS	0-25 Vol.-%	68 09 130		
CO ¹⁾	0-500 ppm	68 09 105		
H ₂ S 100	0-100 ppm	68 09 110		
H ₂ S 500	0-500 ppm	68 09 180		
NO ¹⁾	0-100 ppm	68 09 125		
NO ₂	0-20 ppm	68 09 155		
SO ₂ ¹⁾	0-20 ppm	68 09 160		
NH ₃	0-300 ppm	68 09 145		
HCN	0-50 ppm	68 09 150		
Cl ₂ ²⁾	0-10 ppm	68 09 165		
OV	0-50 ppm	68 09 115		
OV-A	0-50 ppm	68 09 522		
Odor ¹⁾	0-20 ppm	68 09 200		
CO 10000 ¹⁾²⁾	0-10000 ppm	on request		
H ₂ 2000 ¹⁾²⁾	0-2000 ppm	68 09 185		
Amine	0-100 ppm	68 09 545		
Hydride	0-1 ppm	68 09 135		
PH ₃ 500	0-500 ppm	68 09 535		
CO ₂ ²⁾	0-5 Vol.% CO ₂	68 09 175		
¹⁾ includes integrated selective filter ²⁾ inquire about availability				
PacSensors II				1-263-95
O ₂ -LS	0-25 Vol.-%	68 09 030		
CO	0-500 ppm	68 09 005		
H ₂ S	0-100 ppm	68 09 010		
CO ₂	0-5 Vol.-%	68 09 075		
Cl ₂	0-10 ppm	68 09 065		
Accessories for MiniWarn				2-934-95
Multiple power supply for connecting between 1 and 5 charging modules				
Multiple power supply Europe/220 V		83 10 558		
Multiple power supply UK/240 V		83 12 633		
Multiple power supply USA/Can/110 V		83 12 632		
Charging module		64 08 125		
Charging module (smart) for charging batteries alone		64 08 155		
Vehicle charging module mounting kit		64 08 124		
Adapter for vehicles		83 12 645		
PC Software GasVision (MS Windows® compatible) for Multiwarn II/Pac III/MiniWarn		83 14 034		
				Dattel

Infrared interface to a PC	64 08 140		51-57-98
Data logger upgrade (information upon request) (MiniWarn B to E) (must be performed by DrägerService)			
Water filter and dust filter without hose	83 13 648		5-7-97
Telescope probe (plastic)	68 01 954		2-282-95
Telescope probe (metal) – extendible	83 13 025		2-372-95
Grain probe for hexane measurement in silos	68 05 880		2-106-96
Solvent-resistant probe	68 02 279		2-286-95
Float probe 10 m	68 07 097		2-364-95
Float probe (without hose)	68 02 337		
Hose for float probe (electrically conducting, not suitable for H ₂ S)	11 80 681		
Solvent-resistant Viton hose	12 03 150		
Hand pump	68 01 933		2-361-95
Water filter with 3 m of hose	68 07 744		2-257-95
Calibration accessories			
calibration adapter for calibration with pressurized test gas cylinders	64 08 135		51-471-97
Test gas cylinder 100 ppm CO, 2 L (other test gas cylinders available upon request)	68 01 010		2-266-95

Calibration adapter for use with the calibration chamber (part 68 02 206) and calibration bottle (68 03 407)	68 09 325		5-8-97
Calibration chamber for solvents (e.g. acetone, benzene, hexane, nonane, etc.)	68 02 206		2-210-95
Calibration bottle for ampoules	68 03 407		2-116-96
Calibration adapter for ampoule calibration bottle (part 68 03 407)	68 04 620		2-283-95
Ampoules for the ampoule calibration bottle			
100 ppm CO	68 07 920		2-264-95
300 ppm CO	68 07 921		
40 ppm H ₂ S	68 08 142		
20 ppm H ₂ S	68 08 141		
50 ppm NO ₂	68 07 766		
300 ppm NH ₃	68 07 923		
4 ppm SO ₂	68 07 926		
1 ppm SO ₂	68 07 925		
100 ppm H ₂ S	68 08 143		
10 ppm NO ₂	68 07 765		
50 ppm NH ₃	68 07 924		
10 ppm SO ₂	68 07 763		
8 ppm Cl ₂	68 07 928		
10 ppm HCN	68 07 929		
SensorStation for 6 electrochemical sensors	64 08 147		5-9-97
Ampliwarn II, alarm amplifier	36 02 651		S-16-97
MiniWarn adapter for 36 02 651	on request		

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DrägerService

Dräger equipment must always be fully operational and safe. DrägerService offers a regular inspection service and is quickly available in the event of malfunction. Your equipment will be repaired and back in operation as quickly as possible. DrägerService facilitates the vital flow of information between client and manufacturer.

Dräger Expertise

Since 1889, Dräger has had an outstanding reputation for solving problems in the field of human breathing. Dräger has been deeply involved in the handling of gases, in particular hazard protection and the saving of life in medical and industrial emergencies. Many of the company's 8500 employees are active in research and innovation to ensure that the latest techniques and scientific advances are fully tested before their inclusion in new equipment.



Dräger Worldwide

The Dräger sales and service organisation is spread throughout the world. It comprises more than 25 subsidiaries and associated companies to ensure that Dräger is always within easy reach of its clients and in close contact with all important markets. Dräger's ever increasing market share demonstrates the company's international competitiveness and strength.

Dräger has subsidiaries in the following countries: Australia, Austria, Belgium, Bulgaria, Canada, China, Croatia, Czech Republic, Denmark, France, Great Britain, Hungary, Indonesia, Italy, Japan, the Netherlands, Norway, Romania, Singapore, South Korea, Slovenia, Slovakia, South Africa, Spain, Sweden, Switzerland, Yugoslavia, USA. Additionally, Dräger is widely represented in Central and South America, Africa, the Middle East, the Far East and Eastern Europe.

Dräger Quality

The Dräger Sicherheitstechnik Quality Management System has been certified i.a. according to ISO 9001 and is recognized by numerous German and international organizations.