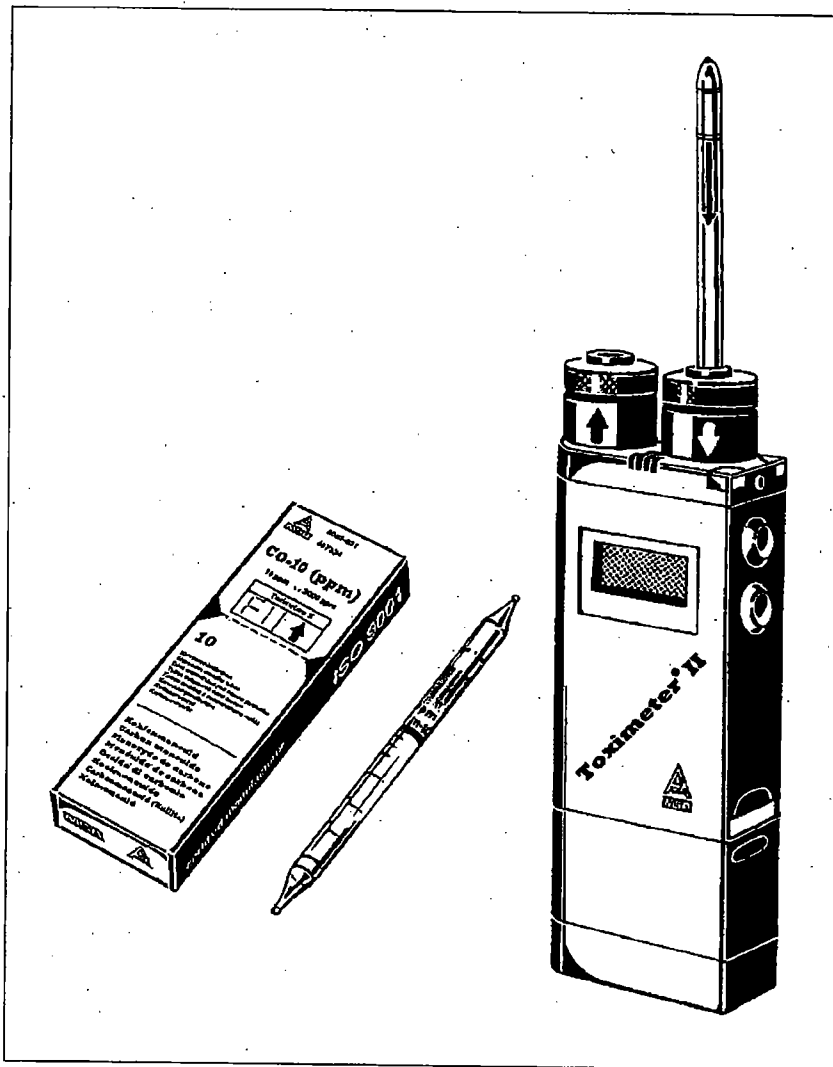


**AUER / MSA**  
**Toximeter® II**  
**P/N 655585**



Instructions for Use



5142-161 / 02

## **Notice!**

---

Like any piece of complex equipment, this product will do the job designed to do only if it is used and serviced in accordance with the manufacturer's instructions. This manual must be carefully read by all individuals who have or will have the responsibility for using or servicing the product. Before choosing and using this product, it is required to assess whether this product is suitable for the application intended. Choice and use are beyond the control of Auergesellschaft/MSA. Therefore, the liability of Auergesellschaft/MSA covers only the consistent quality of this product. The above does not alter statements regarding the warranties and conditions of sale and deliveries of Auergesellschaft/MSA.



This symbol is used in these Instructions for Use as a reference for warnings to avoid damage.

These warnings are particularly important to prevent damage to the pump and/or materials and persons.

---

## Contents

		page
1	General Remarks	4
2	Protection in explosive atmospheres	4
3	Instrument Construction	5
4	Operation	6
4.1	Charging and changing the battery pack	6
4.2	Turning the pump on	6
5	Measurement with detector tubes	7
6	Use as smoke generator	9
7	Function principles / Menu	10
8	Use as sampling pump	12
8.1	Sampling with preset of time	12
8.2	Sampling with preset of volume	12
8.3	Filling sample collection bags	12
9	Use with sampling hose	13
10	Test for leak tightness	14
11	Language choice for the menu	14
12	Cleaning and Maintenance	15
13	Technical Data	16
14	Ordering Information for spare parts and accessories	18

## General Remarks/Protection

1

### General Remarks

The battery powered and electronically controlled detector tube pump TOXIMETER® II can be used for measurements with detector tubes

- to collect samples with sample tubes
- for sample gas collection
- as pump for smoke generating tubes
- to collect samples with impingers
- for the filling of sample bags.

The TOXIMETER® II is a continuously operating pump; the term "number of strokes" known from hand-operated mechanical pumps will however be maintained.

The drawn sample volume per stroke is controlled by a differential pressure sensor and temperature compensated. The standard deviation is  $\pm 5\%$ . The sampling time per stroke depends on the flow resistance of the detector tube used.

Calibration factors (F 1 ... F 9) have been determined for AUER detector tubes. These calibration factors ensure an optimization of the measuring results.



**Never insert a tube with either end unopened into the outlet port (blue arrow), because the pressure of the pump may cause a tube to be ejected.**

**For all measurements with detector tubes and sample tubes note instructions that are included in the tube package.**

2

### Protection in explosive atmospheres

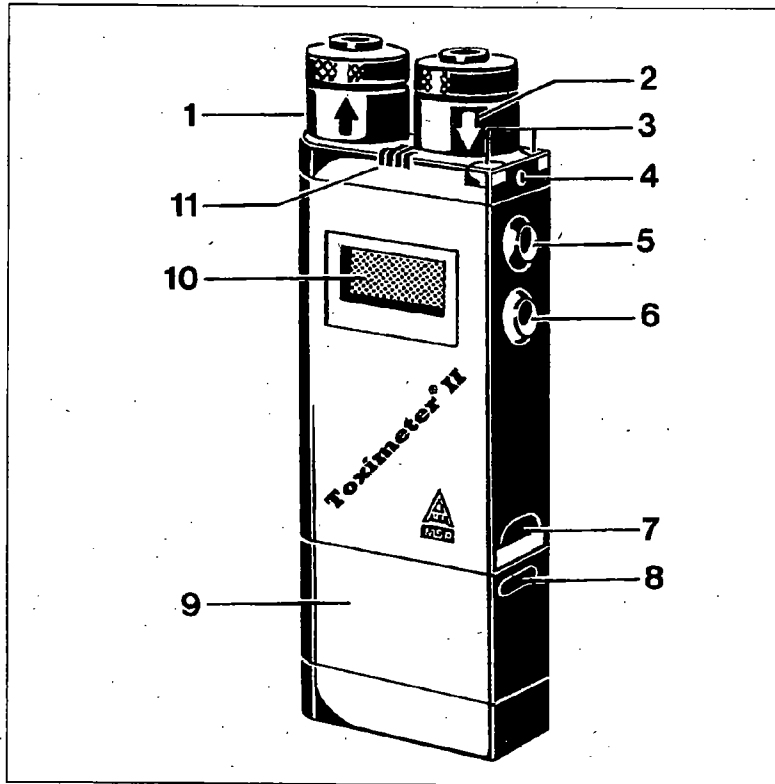
**Certificate of Conformity according to:** EN 50 014  
EN 50 020

**Protection class:** EEx ia IIC T4  
EEx ia I

**EMC:** EN 50 081-1  
EN 50 081-2

Instrument Construction

3



- 1 Tube receptacle, outlet port, blue arrow
- 2 Tube receptacle, inlet port, white arrow
- 3 Visual signal transmitter
- 4 Fixture to break off tube tips
- 5 Push button switch, black, select function
- 6 Push button switch, yellow, confirm function
- 7 Lock / unlock of battery pack
- 8 Jack for OMEGA charger
- 9 Changeable battery pack
- 10 Liquid Crystal Display
- 11 Acoustic signal transmitter

## Operation

4

### Operation

#### 4.1 Charging and changing the battery pack

Fully charge the battery pack before first use. Maximum of capacity is reached after approx. five chargings.

AUER/MSA DELTA charger: charging time approx. 3.5 h, then trickle charge.

AUER/MSA OMEGA II charger: charging time approx. 7 h, **longer charge can damage the battery pack!**

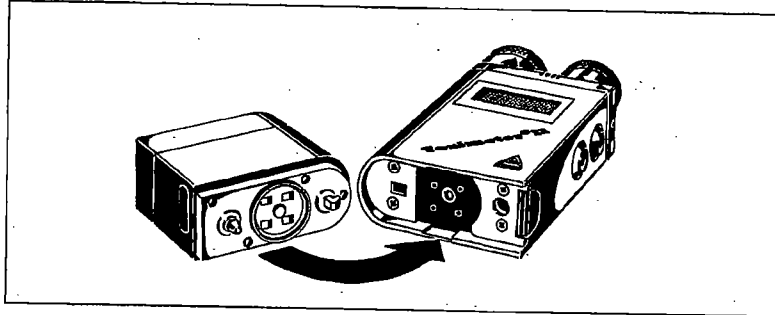
AUER/MSA OMEGA charger: charging time approx. 10 h.

The intrinsically safe battery pack can be changed in hazardous areas. The battery pack can be charged while attached to the pump or separated from it.

By pressing the lock **PRESS** the empty battery pack can be detached and replaced by a charged one.

**Before each use the charge status should be noted!**

**! Charging the battery pack in potentially explosive atmospheres is prohibited!**



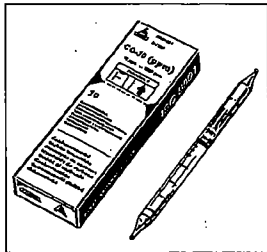
#### 4.2 Turning the pump on

The TOXIMETER® II is turned on with the **black push button**. After self-check and flushing of the flow path the main menu **DETECT** is shown. The activation of a push button switch is confirmed by an acoustic signal. The end of a measurement is indicated visually and acoustically. During the measurement a tube symbol flashes on the display.

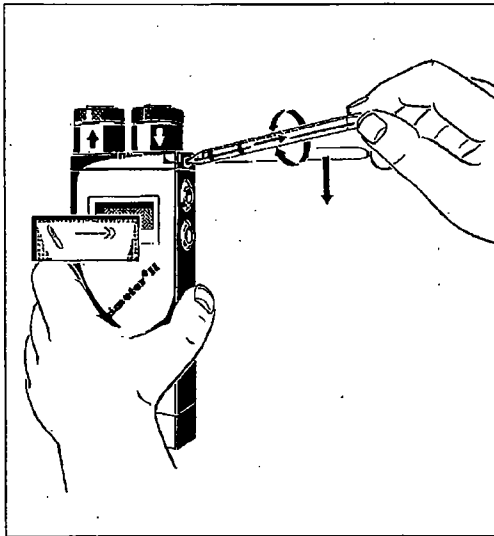
Measurement with detector tubes

Measurement with detector tubes

5

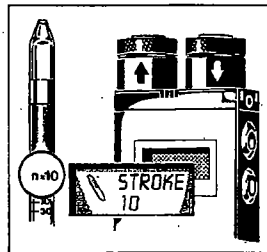
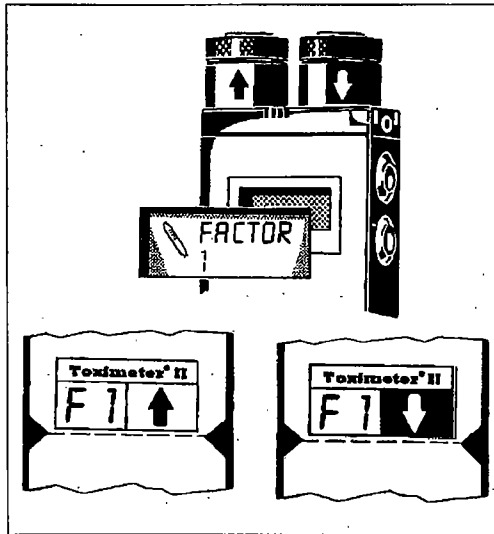


1



2

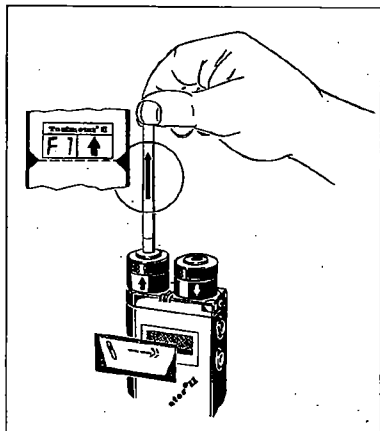
4



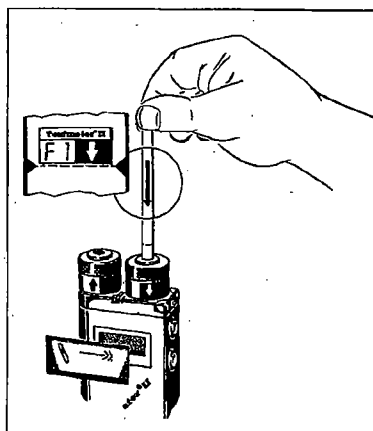
3

## Measurement with detector tubes

5



5a



5b



The port for insertion of the tubes must be examined. Failure to do so will result in destruction of the membrane of the pump and a faulty measurement.

The pump ports are clearly marked with a blue or white directional arrow. The label on the detector tube package identifies the tube port to be used by a coloured arrow.

During correct use of the detector tube the arrow on the port is in same direction as the arrow on the tube.

Break off both tips and insert firmly the tube into the inlet or outlet port.

---

**Use as smoke generator**

**Use as smoke generator**

**6**

Smoke generator tubes and cartridges to be inserted only on the outlet port of the pump.



**Use of smoke generating tubes or cartridges on the inlet port of the pump will destroy the membrane pump!**

Break off both tips and insert firmly the tube into the **outlet port (blue arrow)**.

To terminate smoke generation remove the smoke tube from the port and/or switch off pump.

# Toximeter® II

## Menu

### Alarms displayed:

Low flow / Instrument blocked



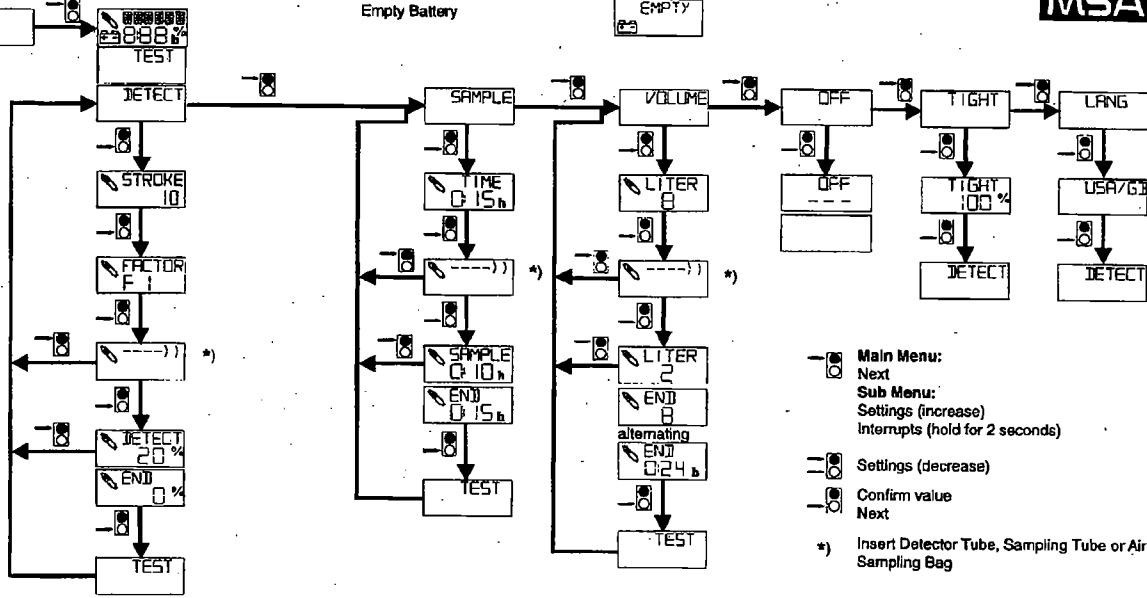
Low Battery



Empty Battery



Pump on



- Main Menu: Next
- Sub Menu: Settings (increase)
- Interrupts (hold for 2 seconds)
- Settings (decrease)
- Confirm value
- Next
- Insert Detector Tube, Sampling Tube or Air Sampling Bag

**Switch function/ DisplayFunction**



**Black switch pressed :**  
Turning instrument on  
Select main menu:  
DETECT, SAMPLE,  
VOLUME, OFF, TIGHT,  
LANG (increase value)  
Return from submenu to  
appropriate main menu  
(see table)



**Yellow switch pressed:**  
Confirmation switch: continue  
to next point in menu



**Yellow and black switch  
pressed at the same time:**  
Reduction of value in  
submenu, resp. "return".

<b>DETECT</b>	<b>Main menu: measurement with detector tubes</b>
<b>STROKE</b>	Set required number of strokes, as shown on detector tube or in instructions
<b>FACTOR</b>	Set factor, see detector tube package
<b>DETECT 20 %</b>	Shows remaining time in % to end of measurement.
<b>END 0 %</b>	Measurement completed. Remove detector tube. Return to main menu with yellow switch.

**SAMPLE**

**Main menu: Measurement with sampling tubes and preset time**

**TIME**

Set sampling time.

----->>

Insert opened sampling tube (always on inlet port - white arrow).  
Arrow on the sampling tube points towards the pump.

**SAMPLE 0:10 h**

Elapsed sampling time

**END 0:15 h**

Sampling completed, sampling time 15 minutes. Remove sampling tube and seal with plastic caps. Return to main menu with yellow switch.

**VOLUME**

**Main menu: Measurement with sampling tubes and preset volume**

**LITER**

Set sampling volume

----->>

Insert opened sampling tube (always on inlet port - white arrow).  
Arrow on the sampling tube points towards the pump.

**LITER 2**

Sample volume already collected

**END 8 /  
END 0:24 h**

Sampling completed  
Sampling volume 8 liters, sampling time 24 minutes. Both displays alternate. Remove sampling tube and seal with plastic caps. Return to main menu with yellow switch.

**OFF**

**Main menu: Turning the instrument off with "yellow switch"**

**OFF ---**

Display indication approx. 3 seconds, instrument then turns off.

**TIGHT**

**Main menu: "Leak test". Start with yellow switch**

**TIGHT 100 %**

Insert unopened tube into inlet port (white arrow). For testing the outlet port (blue arrow) close receptacle with fingertip. Readouts between 99 and 100% => pump is leaktight and usable.

**LANG**

**Main menu: Language selection**

**USA/GB**

Select language.

For use of the TOXIMETER® II as a smoke generator, or sampling with collection bags or IMPINGER see Instruction for Use.

## Use as sampling pump

---

8

### Use as sampling pump

The TOXIMETER® II can be used as a pump for active-probe sampling with sample tubes. The given volume flow is approx. 250 ml/min and ensures good adsorption for most components on the commonly used adsorption media. The flow is not adjustable. Measuring time or sample volume can be programmed.

**Note:** Sample tubes and impingers are always connected to the inlet port.  
Sample collection bags are always connected to the outlet port.  
Note memory effects.

#### 8.1 Sampling with preset time

If the hazard from certain components is to be measured over a defined time, then the sampling time can be preset. The menu point **SAMPLE** must be selected.

**Under these conditions the volume flow, with tube inserted, must be measured with a suitable instrument, e. g. OPTIFLOW or DIGICAL.**

The sampled volume **V** is the product of sampling time **t** and volume flow **V<sub>F</sub>**

$$V(L) = t (\text{min}) \times V_F (\text{L/min})$$

#### 8.2 Sampling with preset volume

The menu point **VOLUME** must be selected. Volumes up to 100 L (liters) can be set. The sampling time varies under these measurement conditions according to the flow resistance of the sampling tube used; it is approx. 3 min per liter.

**The use of a volume flow measuring instrument is not required.**  
At the end of the sampling procedure the required sampling time is shown on the display alternating with the present volume. This is also shown, if the measurement is terminated prematurely.

#### 8.3 Filling sample collection bags

Connect outlet of pump to sample bag with suitable hose and supply gas sample through the Inlet port of the pump.

### Use with sampling hose

9

For measurement at inaccessible places a 4 m long sampling hose with tube holder is available.

Break off both tips and insert firmly the tube into the receptacle to be used.

Detector tubes to be used on the **Inlet port (white arrow)** are inserted into the tube holder of the hose and the measurement is taken with the required number of strokes and appropriate factor.

Detector tubes to be used on the **outlet port (blue arrow)** are inserted into the **blue** receptacle of the TOXIMETER® II. The sampling hose is inserted into the **white** receptacle and the empty tube holder of the sampling hose is located at the place to be measured.

The sampling hose must be flushed with at least one stroke of the gas to be measured. Only after this the detector tube should be inserted into the pump and the measurement started.



Gases and vapors can lead to "memory" phenomena. Corrosive gases can destroy the membrane pump.

Before use determine risks with help of substance data. After use flush pump with plenty of fresh air.

**10**                      **Testing for leak tightness**

In the main menu selecting **TIGHT** starts a test of the leak tightness of the inlet and outlet receptacles and the pump. Place an **unopened** tube in the Inlet port (white arrow) of the pump. For testing the outlet port (blue arrow) close tightly receptacle with fingertip.

The TOXIMETER® II is leak tight and ready for use if a value of at least 99% is shown in the display.

**11**                      **Language choice for the display**

The display can be set in menu LANG to the following languages:

<b>Language</b>	<b>Display</b>
German	D
English	USA GB
French	FRA
Italian	ITA
Spanish	ESP
Danish	DK
Swedish	S
Dutch	NL

## Cleaning and Maintenance

12

- The TOXIMETER® II can be cleaned with a moist cloth. **Do not use solvents!**
- The tube port must be replaced if damaged or untight. This applies also to the O-ring seals of the port.
- A yearly exchange of the tube port, the filter and the O-rings is recommended.

**!** Before disassembling the filter system remove all glass splinters and dust from the port.

These deposits must be prevented from entering the inside of the pump.

Glass splinters and dust must be removed regularly from the port.

Unscrew port and shake out loose particles. After reassembling check leak-tightness with menu **TIGHT**.

**Note:** The sampling capacity of the pump can be checked as follows: Use a commercially available burette (resolution 1 ml; range at least 100 ml) and the soap-bubble method. Connect pump and burette by tubing connectors.

In menu **DETECT**, set 1 stroke and factor F1; the pump must draw  $(100 \pm 5)$  ml. The check can be performed on the inlet and outlet port of the pump.

**An adjustment of the sampling capacity by the user is not possible. Please contact the service department for this, as well as for other faults the pump.**

## Technical Data

13

## Technical Data

- Dimensions: Height: 194 mm  
Width: 72 mm  
Depth: 33 mm
- Weight: 580g
- Pump principle: Membrane pump. Electronic control of the stroke volume achieved by differential pressure measurement between inlet and outlet of TOXIMETER® II.  
The sampling time depends on the flow resistance of the inserted tube.  
The sampling volume per stroke is  $(100 \pm 5)$  ml with factor F1 selected.
- Menu selection: **DETECT:**  
measurement with detector tubes with number of strokes 1,2,...20; 30; 50; 70; 100; 150, 200; 250.  
**SAMPLE:**  
active sampling with sample tubes and preset time of 0:05; 0:10; 0:15; 0:30; 0:45; 1:00; 2:00;....8:00 h.  
**VOLUME:**  
active sampling with sample tubes and preset volume 1...10 L; 15; 20; 25; 30; 35; 40; 45; 50; 60; 70; 80; 90; 100 L.  
**OFF:**  
turn the pump off.  
**LANG:**  
set the language shown on the display.  
**TIGHT:**  
leak test the flow components in the pump.
- Power supply: Intrinsically safe battery pack type NC 1400, changeable in the hazardous area without tools.
- Charging time: approx. 3,5h with DELTA charger  
approx. 7 h with OMEGA II charger  
approx. 10 h with OMEGA charger
- Service life: approx. 3 years
- Operating time: approx. 8h

**Chargers are not intrinsically safe.**

---

**Technical Data**

**Ambient Conditions:** Temperature range: -10.....50 °C  
Protection class: IP 54

**13**

**Filter system:** Protected from ingressing water and dust by filter system (PTFE membrane between stainless steel sieves) located between tube receptacle and pump.

**Accuracy:** See instructions for use of appropriate detector tube.

**Housing:** Antistatic plastic material.



**Signal transmitter:** Visual by two LED's.  
Acoustic by a piezo buzzer.

**Display** Liquid Crystal Display  
8 languages can be set.

**Fault recognition/  
status signals:** Charge battery (flushing symbol shown on display). Battery empty (shown on display, pump turns off)  
No flow (shown on display and visually by two LED's,  
Status: end of measurement

**Automatic switch off:** After 10 minutes, but not at the end of a measurement (data storage).



**Ordering Information / Accessories**

**14** **Ordering Information for spare parts and accessories**

<b>Description</b>	<b>European P/N</b>	<b>US P/N</b>
Toximeter II (with battery pack 1400 NC [3.5 mm charging jack])	5142-705	655585
Detector tube receptacle TX2	5142-102	-
Filter set TX2 (stainless steel sieves, Mupor foil and O-ring gaskets for both port)	5142-706	655777
Adapter for sampling hose TX2	5142-707	655782
Sampling hose, 4 m (13 ft), with tube holder	5146-705	655780
Sealing caps for detector tubes ( 10 pcs)	5140-924	-
Battery pack 1400 NC (without 3.5 mm charging jack)	6172-750	-
Battery pack 1400 NC (with 3.5 mm charging jack)	6172-751	655779
DELTA charger	6172-760	-
OMEGA II charger	6170-724	-
OMEGA charger	6170-703	194716
Carrying case (leather)	6079-153	655781
DigiCal volume flow measuring instrument	6170-706	-
AUERDATA PR 2.0 (Info-system on hazardous substances, threshold limits, measurements)	6060-710	-

**Auergesellschaft  
Mine Safety Appliances**

**AUSTRALIA**  
MSA (AUST.) PTY. Limited  
AUS-Girraween NSW 2145  
☎ (02) 9688 0333

**BELGIUM**  
MSA Belgium  
B-2500 Lier  
☎ (03) 491 9150

**CANADA**  
MSA Canada Inc.  
Toronto  
☎ (416) 667 94 00

**DENMARK**  
ArSiMa  
DK-2730 Herlev  
☎ (45) 42 84 14 11

**DEUTSCHLAND**  
Auergesellschaft GmbH  
D-12059 Berlin  
☎ (030) 68 86-0

**ESPAÑOLA**  
MSA Española S.A.  
E-08960 Sant Just Desvern  
(Barcelona) ☎ (3) 372 51 62

**FRANCE**  
MSA France S.a.r.l.  
F-95310 Saint Quen L'Aumone  
☎ (1) 34 32 34 32

**ITALIA**  
MSA Italiana S.P.A.  
I-20089 Rozzano (MI)  
☎ (02) 825 11 51

**NEDERLAND**  
MSA Nederland B.V.  
NL-1627 LH Hoorn  
☎ (229) 250 303

**NORGE**  
Lexow A/S  
N-0137 Oslo  
☎ 22 19 68 00

**ÖSTERREICH**  
Trentini & Cie. KG  
A-2345 Brunn am Gebirge  
☎ (2236) 34 69 00

**SCHWEIZ**  
MSA Schweiz AG  
CH-Ostermündingen  
☎ (31) 939 11 11

**SOUTH AFRICA**  
BOART/MSA  
RSA-Kempton Park 1620  
☎ (011) 394-5630/47

**SWEDEN**  
AB Tegma  
S-21444 Malmö  
☎ (40) 802 00

**UNITED KINGDOM**  
MSA (Britain) Limited  
GB-Coatbridge ML5 4TD  
Scotland ☎ (0236) 42 49 66

**U.S.A.**  
Mine Safety Appliances  
Pittsburgh, PA  
☎ 1-800-MSA-2222