

# MURTAC

Mess- und Regeltechnik Analytische Chemie GmbH

## O N - L I N E P R O C E S S A N A L Y S E R O M T 2 0 - S X / D X N

### OMT20-SXN Singleparameter

### OMT20-DXN Multiparameter

- PC-controlled
- self test facility
- integrated database
- laboratory accuracy
- single- and multicomponents
- internal digestion/distillation



## 1. Summary

The On Line Process Analyser OMT-20-SXN has been designed as a single components wet chemistry analysing system, whereas the OMT-20-DXN allows analysis of multi-components. Controlled by a Industrial PC of robust design, the precise dosage elements ensure the execution of analyses with both laboratory accuracy and high reproducibility. The OMT-20 is suitable for installation in measuring rooms, laboratory surroundings and clean production centres. The control software is of a strictly modular and object-orientated kind.

## 2. System components

### Controlunit

- Control computer (Industrial PC without fan cooling)
- VGA LCD 10,4 " color monitor
- Service interface ( mouse/keyboard-connection )

### Analytic part

- Sample dosage
- Measuring vessel
- Reagents dosage
- Detection and electronic amplifier system
- Flush system

### Stainless Steel Housing

### Software

- Sequence control
- Calendar (Scheduler)
- Logger module
- Solving algorithm
- Data evaluation
- Service routine

## 3. System description

### Controlunit

#### **- Control computer**

The analyser is controlled by an Industrial PC, robust electronic system. The handling is done via mouse and keyboard. The program allows a free configuration of measuring sequence, measuring time and measuring cyclus. It is possible to programm the above as per requirement, daily or weekly periods in the so called „Scheduler object“.

#### **- VGA LCD 10,4" color monitor**

A 10,4" VGA TFT LCD color monitor allows the observation of the actual titration curve and of previous measurement values. Times curves are free programmable ( electronic writing device function ).

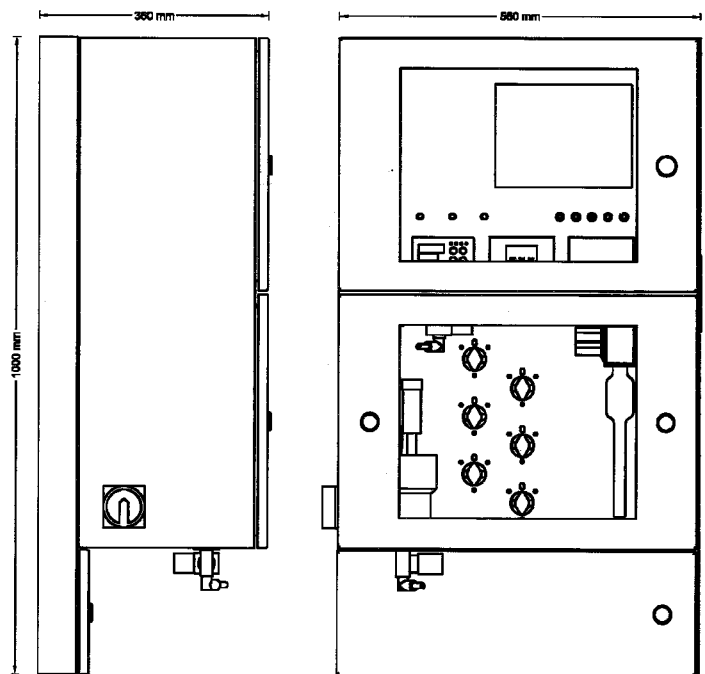
### Analytic part

#### **- Sample dosage**

The sample is taken by a membrane pump and then pumped in the the overflow vessels ( measurement vessel ).

The following possibilities of sample dosage can be offered at this time:

- Dosage loop
- Dosage pumps
- Automatic burettes ( overflow vessels )



OMT20-SX/DXN main dimensions

#### **- Measurement vessel ( overflow vessel )**

Mixing of sample with volumetrically measured reagents is carried out in the titration vessel.

Mixing of sample and reagents is done by a motor-driven stirrer. The necessary measuring sensors are positioned in the titration vessel too.

## - Detection system

Many different detection methods and therefore different kinds of sensors and electronic amplifiers can be used:

Color change, Potentiometry, Electrical Conductivity, Amperometry and Voltametry. The necessary amplifiers are specially adapted on the actual application.

## - Rinsing system

Cleaning of sampling pipes, measurement vessel and electrodes is done by means of rinsing water which is taken from the process water system by a pre-pressure controller. If necessary, an ion-exchanger can also be installed in the rinsing-water feeding device. The advantage of combined analyser - here the measuring is done alternatively in a acidic/caustic milieu, therefore no additional chemicals for cleaning process are necessary!

## - Housing

Stainless-steel box, specially constructed for easy service handling, 2 doors with sight window, protection class IP 54 (65).

## Software

### - Measurement sequence control

Determined by the absorption of the titration-macro the measurement sequence of titration is practiced. Up to customers requirements the macro is made either by Murtag or the user himself.

### - Calendar

The programm allows a free configuration of measurement periods, by a calendar function production free periods (= measure free periods) can be programmed by the user himself easily.

### - Solver algorithm

Different evaluation procedures are obtainable in the form of solver objects, of which the following are presently obtainable:

- Endpoint titrations
- Single or Multiple inflection point titrations
- Gran titration
- Fotometry
- Direct potentiometry with one-point standard addition
- Direct potentiometry with with three-point or multiple point standard addition

### - Evaluation

Evaluation is achieved by additional calibrating factors and reference graphs fed into the computer.

## - Service routine

The measurement parameters are programmed via the service interface by mouse and keyboard. Also the programming and handling of the single titration components can be achieved in case of service by this interface.

## 4) Description of the analyses procedure

Measurement can be triggered by different events, such as :

- external remote control
- software calendar function
- release by mouse and/or keyboard

Upon release of the measurement sequence, the analyser starts the sampling procedure.

After preconditioning, the sample is stored pressure less in an external vessel, from which dosage is effected. For this purpose the above-mentioned dosage systems are available and can be supplied at short notice. Dosage is carried out either directly into the measurement vessel or by flushing the sample into the device.

After this an eventual conditioning of the sample (precipitation reactions e.g.) is performed.

After conditioning of the sample, the actual analysing procedure is started.

At the end of the analysing procedure, an evaluation is furnished with adjustment factors and converted into the desired process parameters.

The measurement data obtained are now fed into the output units for external availability (4 up to 20mA, serial interfaces e.g.). Upon completion of analyses the measuring vessel is emptied and the analyses unit cleaned.

After cleaning, the analyser reverts to the stand-by mode and is then ready again to cope with new measuring requirements.

The average duration of measuring processes vary between 3 and 10 minutes per analyses.

## 5) Maintenance

Recommended maintenance intervals :

### 1. Analysing system:

- weekly:
- control at sight
  - refilling of chemicals
  - control of electrodes

monthly: - changing of electrode against  
- substitute electrode  
- cleaning and regenerating of  
the changed electrode  
- cleaning and control of  
measurement vessel

quarterly: - volume determination  
- determination of  
measurement vessels  
- control of magnetic valves  
- control of function

## 6) Technical datas:

Measuring interval:	3 up to 10 minutes (up to one hour if a digestion/distillation is performed)
Signal output:	Analog: 4 up to 20 mAmps Digital: RS232 (RS485 as an option)
Physical dimensions:	Analyser: 1000 x 560 x 360 mm ( H xW x D )
Kind of installation:	Hanging
Computer:	Industrial PC
Storage duration of measured data:	One datafile contains one month of measurement or calibration data by automatic generation of the monthly files due to the storage capacity of the local hard disk or the local electronic disk a storage time from up to 5 years could be reached
Display:	10,4 " VGA LCD - TFT color monitor
Housing:	stainless steel
power supply:	110/115/240 Volts – 50/60 Hz – fused with 6 Amps – 250 VA max
Electrical protection code:	IP 54 (65)
weight:	approx. 75 kgs, incl. chemicals approx 80 kgs
inputs :	- 2 24VAC/DC inputs for remote control - 8 optional - PS2-keyboard plug - RS 232 for mouse - RS 232 for data handling and control
outputs:	- 1 scaleable ( 0 ) 4 up to 20 mA analog signal output - 2 optional possible (per ex. for an add. measurement spot) - 3 digital switched outputs (Solid State Relais up to 240 Volts/ 3 Amps max. AC) - 1 digital switched output combined error message 240 V / 3 Amps - relais contact, galvanically divided - RS 232 for datahandling and remote control

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