

Microbiological Monitoring  
fast and cost effective

# $\mu$ -Trac 4200

 Foods

 Environmental Monitoring

 Cosmetics

 Pharmaceuticals

 Biotechnology

 Sterilisation equipment

**SY-LAB**

# $\mu$ -Trac 4200

## Electrical Measurement

100 years ago G. N. Stewart reported on currents and their changes in proliferating micro-organism suspensions \*). The measurement of conductivity and/or its reciprocal value, impedance, was born. Fifty years later the first commercially available system was built in the USA and approx. 2 years after that European companies began to build impedance analysers. After initial difficulties which lay partly in the undeveloped systems as well as in the sometimes problematic matrices, SY-LAB began to develop a superior system whose versatility and application range was not only far greater than existing devices but which also gained approval from the standards authorities (DIN 10115). This experience and market requirements for product hygiene led to the development of the  $\mu$ -Trac. The  $\mu$ -Trac is a compact system which, with capacity for 21 samples and an economical price tag, meets all those analytical needs which could previously only be met with very costly equipment. Prefilled measuring cells and a broad medium range avoids the need for a complicated, extensively-equipped micro-biological laboratory and still delivers automatic and well-documented results along with numerous savings

\*) Stewart G., N. *The changes produced by the growth of bacteria in the molecular concentration and electrical conductivity of culture media*; The Journal of Experimental Medicine, Vol. IV, 235 - 247, 1899.

## Applications

### Food and drinking water

- environmental monitoring (swabs, cleaning water incl. Index- and Indicator-organisms)
- TVC determination
- sterility tests
- shelf life investigations
- examination of Biofilms (non destructive method)

### Cosmetic and pharmaceutical products

- TVC determinations
- environmental monitoring
- preservative efficacy testing
- inhibitor tests and bioassays
- sterility tests
- validation of sterility tests for antibiotic products

### Packaging machines and sterilising systems

- evaluation of sterilisation techniques
- inactivation studies
- sterility tests

### Detectable Micro-organisms

- aerobic mesophilic micro-organisms
- psychrotrophic micro-organisms
- thermophilic micro-organisms
- gram negative bacteria
- enterobacteria
- Coliforms
- E.coli
- aerobic spore formers
- yeasts and moulds

### Bio-technology

- optimisation of growth media
- activity tests of starter cultures
- kinetic assays (growth kinetics)

### Research

- strain characterisation
- metabolic investigations
- screening and characterisation of substances with antimicrobial activities
- toxicity and mutagenicity tests
- vitality studies



$\mu$ -Trac 4200  
Microbiological analyser



Powdered media for users of unfilled sterile measuring cells

## Early results

Many small companies in the food or cosmetics industries outsource their microbiological analyses because they lack an in-house laboratory and the necessary staff. The numbers of analyses required, which has been steadily increasing in recent years, along with the necessary delays due to transport and inadequate capacity of the different services and long waiting times for traditional plate results make it impossible to respond rapidly to cases of contamination. It is therefore often impractical to monitor production processes since products have already been delivered and consumed. The  $\mu$ -Trac has indisputable benefits in this area. After a short sample preparation procedure, analysis is carried out directly on site. The classification of results is displayed automatically. Measures can be taken at an early stage of production and/or products can be released earlier for consumption. This allows higher quality and a more flexible shipping strategy.

## Taking Measurements

**Sample preparation:** Direct use of liquid samples or homogenised solid samples, Place measuring cells in incubator, enter sample description via laptop keyboard, the system does everything else. The measuring cell can either be filled with nutrient medium or can be ordered pre-filled.

The results are generally available within 24 h. More heavily contaminated products are detected after only a few hours.

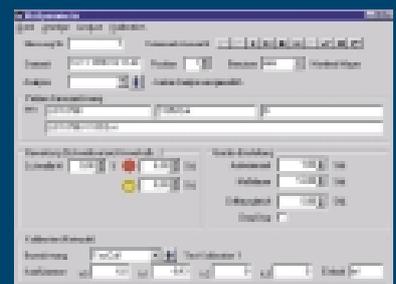


Measuring cells filled with a wide range of media



Sample ID	Media	Result	Time	Temperature	Notes
001	Yeast Extract Broth	Green	12h	37°C	Control
002	Yeast Extract Broth	Red	12h	37°C	Contaminated
003	Yeast Extract Broth	Green	12h	37°C	Control
004	Yeast Extract Broth	Red	12h	37°C	Contaminated
005	Yeast Extract Broth	Green	12h	37°C	Control
006	Yeast Extract Broth	Red	12h	37°C	Contaminated
007	Yeast Extract Broth	Green	12h	37°C	Control
008	Yeast Extract Broth	Red	12h	37°C	Contaminated
009	Yeast Extract Broth	Green	12h	37°C	Control
010	Yeast Extract Broth	Red	12h	37°C	Contaminated

Result table



Examples from the software

## Software

The user-friendly software is operated via the integrated laptop computer. The various measurement program displays give information on the measurement determined, the measurement process and the sample status. Exceeded thresholds are indicated in traffic light colours, and are therefore easily recognisable. Once set, measurement conditions or calibration curves are saved and can be referred to for processing individual samples. Extensive data processing options are integrated into the program, data can also be exported to other programs (e.g. MS Excel®, Lotus 1-2-3®), it is possible to connect to LIMS or Q-Software.

# $\mu$ -Trac 4200

## Technical Data

$\mu$ -Trac 4200 - Microbiological analyser

**Compact microbiological analyser for disposable measuring cells based on the impedance principle, direct and indirect measurement options.**

### ■ Housing

Plastic covered metal structure, keyboard and incubator protected by a plastic rollerblind. Integrated support for Laptop PC.

### ■ Metal Block Thermostat

Aluminium incubator with apertures for measuring cells, base contact, total capacity 21 samples, temperature range variable between 0 to 56°C, simple to clean via self-sealing apertures, water cooling connector.

### ■ Test tubes

20ml disposable measuring cells (polystyrol) for direct measurement, sterile, empty or pre-filled with nutrient media, indirect test tubes with 7 ml inner vessel (polyethylene) for yeast/mould measurement, 4 electrodes in stainless steel, free-standing design.

### ■ Computer

Laptop with active matrix TFT display, technical data according to actual specification.

### ■ Software, Image Display, Data Output

Easy to operate user interface, runs under Windows 95, 98, 2000, NT4 or XP Pro, continuous analysis, automated detection if a pre-set threshold value has been exceeded, quantitative and qualitative measurement, single position mode, memory for current and evaluation parameters, presentation of sample results with evaluation status in traffic light colours or curve format, transfer of results to LIMS or network, statistical functions.

Distributor:



Single or Multi DNA Testkits for Pathogens

### ■ Dimensions, Weight, Mains Voltage

400 x 440 x 535 mm (W x H x D), 20 kg  
115 or 230 V (please specify with order)

### ■ Accessories

- Sample preparation rack for up to 21 x 20 ml sample vessels
- Sample preparation rack for up to 21 x 7ml sample vessels (inner vessels)
- Circulation cooler
- Laboratory homogeniser and sample bags
- Laboratory accessories (see list)
- Carrying case with casters
- Adapter for battery operation

### ■ Consumables

- Disposable measuring cells, sterile
- Disposable measuring cells, sterile, pre-filled with nutrient media (see separate list and/or visit our website)
- Yeast/mould indirect measuring cells (limited re-usability)
- Inner vessels for yeast/mould cells, disposable



## **SY-LAB**

Geraete GmbH

Tullnerbachstr. 61-65  
A-3011 Neupurkersdorf/Austria

Tel. +43 2231 62252-0

Fax +43 2231 62193

Email: [sales@syllab.com](mailto:sales@syllab.com)

Website: [www.syllab.com](http://www.syllab.com)