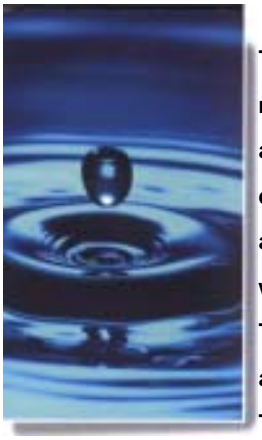
Protoc TL Range

On line TOC analysers for
ultra pure water monitoring applications

Pollution
& Process
Monitoring



The new range of PROTOC TL TOC analysers offer a highly reliable, fast and accurate way of measuring TRACE LEVEL contamination in ultra pure water on-line and in real time. Developed and manufactured by Pollution & Process Monitoring Ltd (PPM) - one of Europe's most experienced companies in the field of TOC-based water quality analysis - PROTOC TL analysers are capable of monitoring in a range from 0-500PPB, with results typically delivered in 4-5 minutes with a repeatability of 1-2%.

The range is supported by a comprehensive choice of reporting options, multiplexing facilities and inputs/outputs.

Typical applications include:

THE PHARMACEUTICAL INDUSTRY

Today, the old 'oxidisable substances test' is virtually unacceptable.. Already ruled out in America, Europe is preparing to adapt American best practice and switch to TOC-based monitoring and analysis. The PROTOC TL range offers an unrivalled choice of on-line monitoring options, together with an innovative laboratory analysis option. Entirely compatible with both Sucrose and the more challenging 'Systems suitability solutions', all PROTOC TL instruments come with documentation to support IQPQOQ requirements.

PROTOC TL instruments offer an ideal solution for all trace level monitoring requirements in the industry, including monitoring and validating ring main continuous de-ionised UHQ water, water for injection and CIP (clean in place). Unlike some other forms of analysis currently available, PROTOC TL instruments are not prone to interference and errors caused by certain inorganic carbons, and remain unaffected by cleaning agents.

SEMI-CONDUCTOR MANUFACTURE

The PROTOC TL range sets new standards of reliability and performance for the on-line monitoring of trace level contaminants in clean water used in the manufacture of semi-conductors. Additionally, it is now possible to measure much higher levels of contaminants safely and effectively as well as economically.

PROTOC TL instruments are ideally suited for the RO membrane stage of clean up. Using PROTOC's multiplexing capabilities, or a SPYDER and WEB system, it is now possible to identify individual membrane failure. This means that individual membranes can be replaced rather than complete banks, offering significant time and cost savings.

CONDENSATE RETURN

Even PPB contamination in cooling water can lead to serious damage to a cooling system. Equally, recirculated boiler water with the faintest traces of oil can cause serious or even irreparable damage to plant. The PROTOC TL range offers a fast and accurate way of detecting contaminants at PPB level in real time, allowing effective action to be taken. The instruments can be interfaced both to alarm and divert systems, as required.

PRINCIPLE OF OPERATION

PROTOC TL instruments use an ultra-violet promoted persulphate oxidation to continuously determine the concentration of organics present in the sample.

When a sample containing organic compounds is mixed with a persulphate solution, (enhancing the ultra-violet oxidation of hard-to-oxidise compounds and thus speeding up the reaction), and then exposed to ultra-violet radiation, it is quickly oxidised to CO_2 as shown in the following formula:

$$\text{ORGANICS} + S_2O_8 \xrightarrow{\text{UV LIGHT}} CO_2 + SO_4$$

The sample flows continuously into the analyser unit. Here, in the case of TOC, the sample is acidified with a sodium persulphate/phosphoric acid solution and sparged with gas to remove inorganic carbon. Passing through a liquid/gas separator, the sample flows into the reaction chamber where it is exposed to ultra-violet light. The UV radiation, together with the persulphate, completely oxidises the organic carbon to CO_2. Gas is then added to the reaction chamber to act as a carrier for the CO_2.

After passing through another liquid/gas separator, the gas is dried further by a permeation dryer prior to entering a special miniature non-dispersive high sensitivity infrared detector, which measures the CO_2 concentration.

THE PROTOC TL 100 ANALYSER

An ideal low-cost on-line analyser for single-stream monitoring applications.

Outputs:

4-20mA, high and low alarms.

Multiplexing:

Single stream only.

Features:

Low cost trend monitoring, manual calibrate and clean.

Options:

LCD display of measured value.

THE PROTOC TL 200 ANALYSER

An enhanced version of the PROTOC TL 100 analyser with the additional benefits of a graphical display, as well as auto-zero and auto-cleaning.

TGD:

Trend graphic display and menu programming.

Outputs:

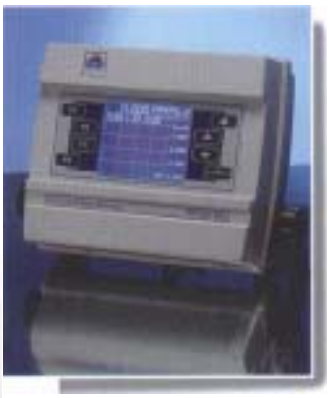
0-1V/4-20mA/high & low alarms.

Features:

Self-clean, auto-zero, graphical display (24hrs/last hour of data)

Options:

Over range protection, floor/wall mount IP65 enclosures, acid/alkalis cleaning cycle, TC/TOC RS-232/RS-485 serial ports.



THE PROTOC TL ANALYSER

Capable of multiplexing up to six streams, the PROTOC TL analyser is a flexible, powerful and economic solution far applications requiring on-line multi-paint analysis.

CPU:

Programmable microprocessor

Outputs:

0-1V/4-20mA/ alarms including utilities

Multiplexing:

Up to six streams (Individual outputs).

Features:

Self-clean, auto-zero, intelligent programming unit (CPU), hard copy of results/calibration verification and computation of organic loading (flow meter required)

Options:

Over range protection, floor/wall-mount IP65 enclosures, acid/alkalis cleaning cycle, IC/TOC/TOC by difference. RS-232/RS-485 serial ports

PROTOC TL SPYDER AND WEB SYSTEM

For larger installations where multi-point continuous an-line monitoring is desirable, the innovative new PROTOC TL SPYDER and WEB system offers a powerful and economic solution. One PROTOC SPYDER TL can control and monitor up to eight PROTOC TL WEB analyser units from a central control point. Each economical WEB unit can multiplex up to two streams or economical 100% single stream continuous monitoring, while the new SPYDER TL can be interfaced with a PC or on-site SCADA system.

Features:

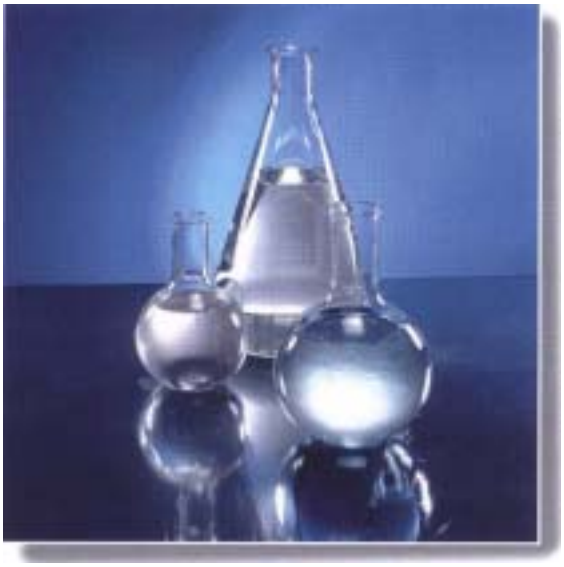
As Protoc TL but without printer

Utility alarms

Data storage logging

Options:

As Protoc TL



OFF-LINE LABORATORY ANALYSIS

For applications requiring highly accurate and reliable analysis of trace level contaminants in water samples using the TOC method, the LABTOC TL analyser is the ideal solution. With a measurement range from 0-500PPB, repeatability of 1-2% and a typical across the board analysis time of 4-5 minutes, the LABTOC utilises the same chemistry as the PROTOC TL range and is supplied with documentation to support IQPQOQ requirements.

Processor: Windows™-based software

Analysis: Single run or 48/90-place carousel

Calibration: Multi-point calibration using automatic serial dilution saved to file with infinitely variable range selection without hardware change.

Quality Control: Intermittent QC triggering calibration,

Multiple Run: Reporting SD, RSD, mean value,

Automation: Unattended operation and auto-standby

Interrupt: Pause batch analysis for single run.

Features: Automatic acidification of samples, menu driven software inc. note pad reporting

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ADDITIONAL INPUTS

The Spyder and Web system allows data logging of optional inputs for conductivity. Resistivity and Temperature. The Protoc CPU allows tests to be carried out on up to six streams by just one monitor offering considerable cost savings

DIRTY WATER APPLICATIONS

Pollution & Process Monitoring are one of Europe's most experienced providers of instrumentation and systems for water pollution monitoring applications in industry. The company offers o wide choice of options, including a full range of PROTOC instruments and SPYDER/WEB systems with relevant PPM (parts per million) ranges for 'dirty' water applications in addition to its 'clean' water analysis systems. Please contact us for more information.

CUSTOMER SERVICE

Pollution & Process Monitoring Ltd are specialists in water monitoring instrumentation and can offer instruments or complete monitoring systems customised to meet individual company and industrial applications.
The company also offers a full instrumentation and customer familiarisation package, as well as an optional, comprehensive maintenance agreement.

Pollution and Process Monitoring Ltd is committed to a policy of continuous research and development. The right is therefore reserved to change specifications without notice in the interest of ongoing product development.

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