

A revolution in Analyzers with touch-screen display



EXAxt 450

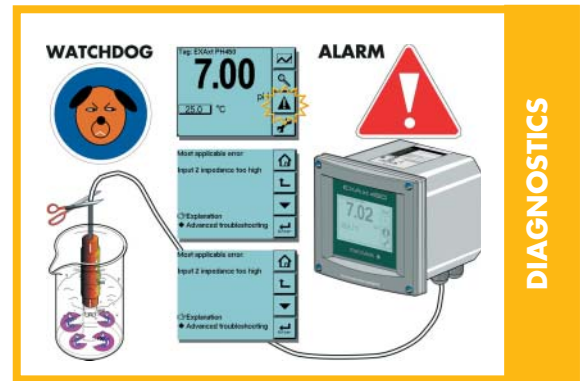
PH450G pH and Redox (ORP) analyzer
SC450G Conductivity/Resistivity Analyzer
ISC450G Inductive Conductivity Analyzer

Bulletin 12A01A01-01E

www.yokogawa.com/an/

DIAGNOSTICS

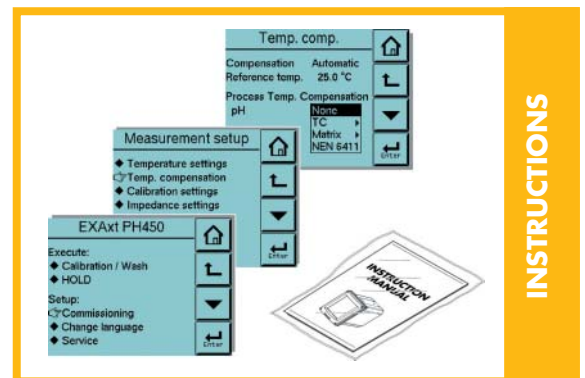
- Naturally EXAxt 450 features self-diagnostics. The watchdog timer checks continuously the integrity of the signal processing and firmware routines
- However the reliability and stability of the electronics are still high compared with the sensor characteristics
- Yokogawa monitors the sensors in-line to prevent process control problems when sensor failure occurs or when sensor fouling might result in measuring errors



DIAGNOSTICS

INSTRUCTIONS

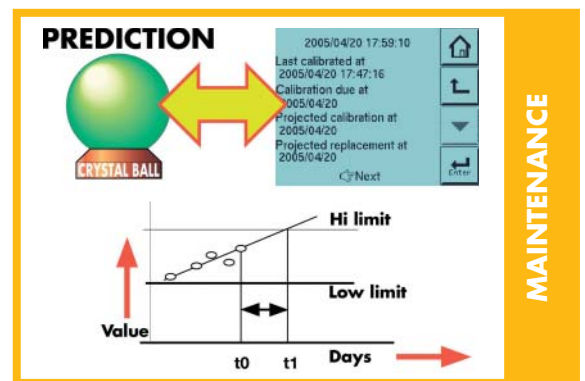
- The concept of EXAxt 450 is based on the assumption that the user has no time or interest to study Instruction Manuals when servicing the electrochemical analyzers
- Therefore all information about configuration, calibration, and troubleshooting is shared with the user on-line in plain English
- This avoids wasting time for the operator or maintenance technician; it also guarantees error-free maintenance and thus better accuracy and reliability of the analysis
- By the way: In addition to plain English the user can choose German, French, Italian or Spanish



INSTRUCTIONS

MAINTENANCE

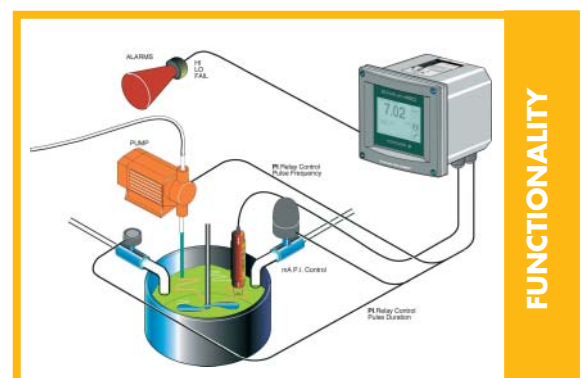
- EXAxt makes maintenance of the electrochemical analyzer very easy with the on-line instructions and the touchscreen operation
- How nice would it be to predict the need for maintenance or calibration in the future to allow scheduled maintenance without the risk of downtime by unexpected failure
- EXAxt stores the calibration result of the last five calibrations to predict when the sensor drift exceeds the selected limits
- In addition to this, the diagnostic variables are logged, and based on this information a prediction is made as to when the sensor needs maintenance to prevent measuring errors occurring



MAINTENANCE

FUNCTIONALITY

- EXAxt 450 comes as a complete electrochemical analyzer with full Indication-Alarm-Controlling capabilities
- The graphical LCD shows up to three dynamic variables and trend graph of the primary variable
- The two current outputs can be used to transmit process variables or controller output
- The four SPDT contacts can be configured as HI/LO contact output, but also as control output to solenoids or metering pumps
- The output can be pulse length or pulse frequency controlled by the powerful PID control function



FUNCTIONALITY



PHARMACEUTICAL

The pharmaceutical industry demands high product reliability and stability. Any drift in the electrochemical analysis may indicate a deviation from the strict specifications of reagents or products. Accurate and traceable calibration of the electrochemical sensors and instruments is mandatory.

The combination of Yokogawa instrumentation and Yokogawa/Hamilton sensors meet the expectations of this industry. All Conductivity analyzers meet the requirements that are specified in USP <645> first issued with USP23.

Time	Temp (°C)	Conductivity (mS/cm)
10:00:00	15.0	1.722
10:01:00	15.0	1.722
10:02:00	15.0	1.722
10:03:00	15.0	1.722
10:04:00	15.0	1.722
10:05:00	15.0	1.722
10:06:00	15.0	1.722
10:07:00	15.0	1.722
10:08:00	15.0	1.722
10:09:00	15.0	1.722
10:10:00	15.0	1.722
10:11:00	15.0	1.722
10:12:00	15.0	1.722
10:13:00	15.0	1.722
10:14:00	15.0	1.722
10:15:00	15.0	1.722
10:16:00	15.0	1.722
10:17:00	15.0	1.722
10:18:00	15.0	1.722
10:19:00	15.0	1.722
10:20:00	15.0	1.722
10:21:00	15.0	1.722
10:22:00	15.0	1.722
10:23:00	15.0	1.722
10:24:00	15.0	1.722
10:25:00	15.0	1.722
10:26:00	15.0	1.722
10:27:00	15.0	1.722
10:28:00	15.0	1.722
10:29:00	15.0	1.722
10:30:00	15.0	1.722



BREWERY

In modern breweries the repeatability of the product is the most important characteristic of quality. Strict process control is mandatory to assure this constant quality.

Protection against contamination by microorganism is one of the major concerns in the Biotechnological process. This results in clean processing and well-controlled CIP processes. A good control of the CIP (Cleaning in Place) is necessary to combine effective cleaning with effective use of chemicals.

With in-line cleaning there is an inherent risk of contamination of the product by possible malfunctioning of the cleaning processes and therefore accurate process analyzers are a must for quality monitoring.

EXAxt 450 meets all the requirements from this industry for their needs for electrochemical analysis.



Model ISC450G Inductive Conductivity Analyzer

The new EXAxt ISC450G has been designed to meet the highest market requirements of today's industry. This analyzer is unique as it will no longer be the uncertainty factor of your quality demands, but instead will bring you to a higher level.

The EXAxt will help you and guide you as the unique Human Machine Interface (HMI) will not only present you reliable process data, but diagnostics, trends, logbooks and step by step calibration routines to become your friend in analytical measurement and help you gaining that higher level of quality. The instrument is easy to set up, very intuitive and can be used without the need of an instruction manual.

Features:

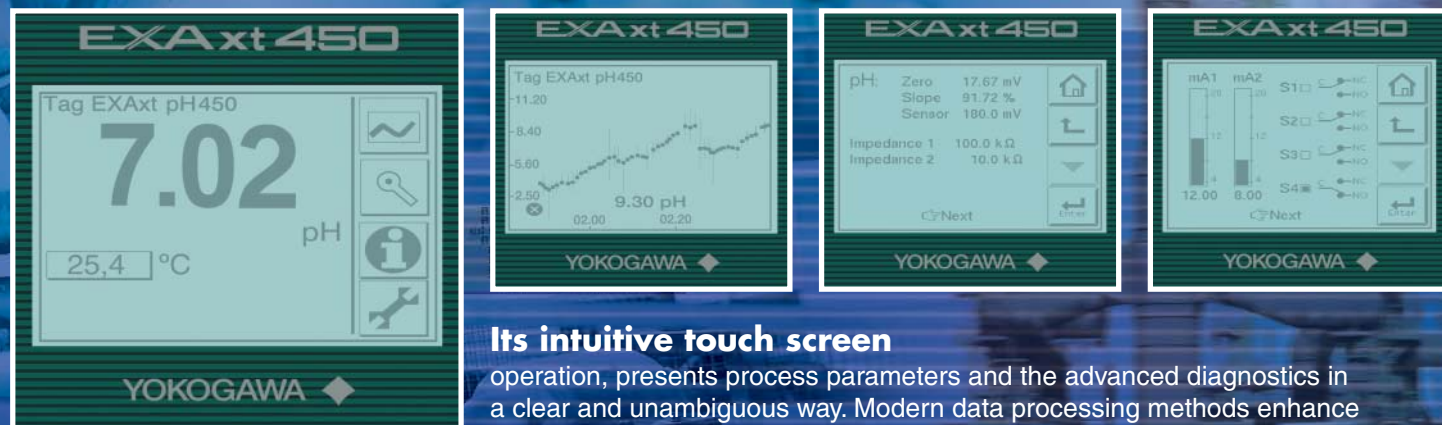
- Preloaded calibration methods according to OIML recommendations
- Preloaded matrices for most common electrolytes
- Accuracy of 0.5% plus 1 $\mu\text{S}/\text{cm}$ from 0 to 2000 mS/cm with one cell constant
- Two ranges with two temperature compensation methods can be used for different fluids measured with the same sensor.



ISC40 Inductive Conductivity sensors & fittings

The intuitive touch screen virtually eliminates the need for an instruction manual.

The trend graph helps diagnose problems and view sensor performance over time.



Its intuitive touch screen

operation, presents process parameters and the advanced diagnostics in a clear and unambiguous way. Modern data processing methods enhance the ability to provide on-line monitoring, trending, logging of process events, and controlling to allow for rapid intervention in demand and changes in the process dynamics.

Features of the EXAxt Series:

- Touchscreen operation
- Unique intuitive HMI menu structure in 8 languages
- Intelligent step by step calibration routines
- Unique problem solving guidance
- Predefined buffer solutions
- Various temperature compensation algorithms
- Full P, PI, PID control on all outputs
- Two mA-outputs and four SPDT relay contacts with display indicators
- HART(R) Communications
- Process data trending up to 2 weeks
- Extensive logbooks for event storage

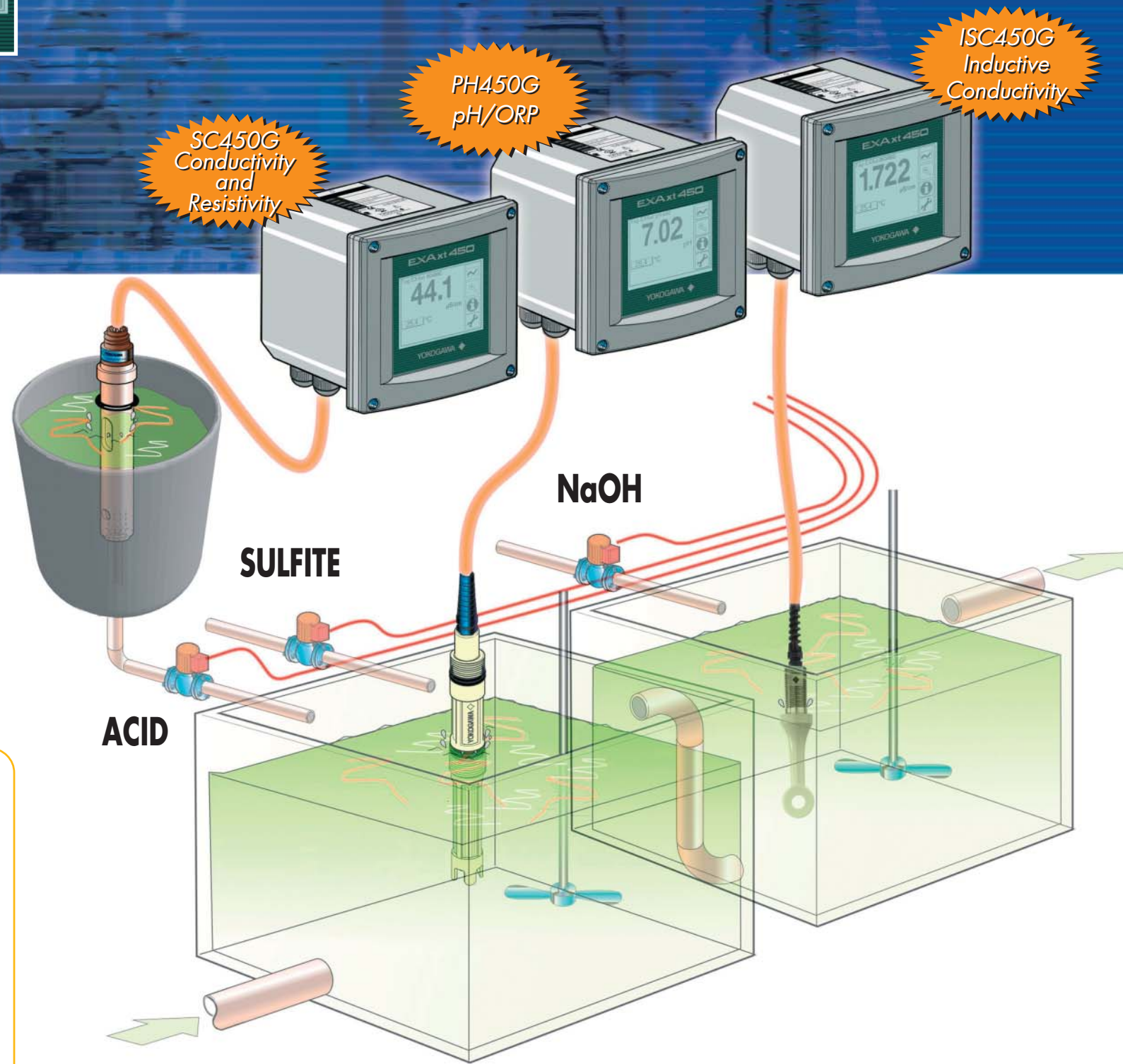


Model PH450G pH and Redox (ORP) analyzer

The PH450G offers the best accuracy in the industry by combining the pH measurement with advanced temperature compensation functionality, preloaded calibration standards and stability checks. The PH450G is a true multivariable analyzer that combines pH with Temperature and ORP (Redox) measurement and all these measurements can be utilised through the different output functions: two mA current outputs, four independent SPDT contact outputs and HART. Both DD and DTM files are available for direct connection to HART Handheld terminal, HIM monitor and Pactware PC configurator.



Single and combination pH / ORP electrodes



Note: Illustration not actual product.

Features:

- Advanced Temperature compensation methods include NEN6411 algorithm as best fit for ultra pure water analysis
- Three preloaded sets of buffer tables cover most commonly used pH calibration practices
- Capable of analyzing pH, ORP or rH and Temperature measurements at the same time with the same sensor
- Full PID control possible for both acid and alkaline addition simultaneously
- Supports many temperature compensation elements and sensor types

POWER GENERATION

Regardless on how electricity is generated: water quality is essential.

EXAxt 450 is especially suitable for this industry by the dedicated functionality. PH450G offers NEN6411 Temperature compensation methods for accurate pH analysis of the boiler feed water, the condensate and the steam quality. SC450G offers Cation, Morpholine and Ammonia temperature compensation functions for accurate Conductivity measurement of all water streams in the water-steam circuitry.

ISC450G offers the wide range ability and high accuracy of the ISC450G and the corresponding sensors. Naturally dedicated algorithms for concentration control of the regeneration chemicals are standard. The efficient use of regeneration chemicals and rinsing water requires the accuracy offered by these analyzers.



PULP AND PAPER

The Pulp and Paper industry requires hassle free measurements. The analyzers must be able to operate trouble free for extended periods in a rough environment with a minimum of maintenance.

PH450G is especially suitable for the many pH and ORP control loops in the pulp and paper processing.

SC450G is the best assurance for reliable monitoring of the condensate lines to protect the steam boilers.

ISC450G is the ideal instrument to monitor the many effluent streams and the concentration control of the various liquor streams.



Model SC450G Conductivity / Resistivity Analyzer

The EXAxt SC450G is designed to combine the superior functionality of the Yokogawa EXA series with the ease of use offered in pocket computers (PDA). Truly unique is the EXAxt 450 series Human Machine Interface.

The high resolution graphical display and the touch screen operation make all information visible to the operator. Configuration with the touch screen is as easy as operating a PDA. Simply choose the language of choice and on screen instructions assure that the best configuration for the application is obtained.

Features:

- Supports 2-electrode and 4-electrode sensors for high accuracy
- Automatic compensation of cable resistance by 4-wire measurement
- Cell condition monitoring eliminates risk of errors by cell fouling
- Advanced temperature compensation techniques for all pure water applications and concentration measurements in standard units
- USP<645> functionality present in all configurations including resistivity mode
- 0.5% of reading accuracy over the full range of 6 decades



2-electrode and 4-electrode conductivity sensors

HARDWARE



HARDWARE

- The electronics are housed in a rugged cast Aluminum housing.
- The environmental protection meets IP66/ NEMA4X and is certified by KEMA
- Access to the spacy wiring compartment is easy through the hinged front door
- Touchscreen and Display are well protected by the polycarbonate flexible window
- The unit is ideally suited for Field and Panel mounting

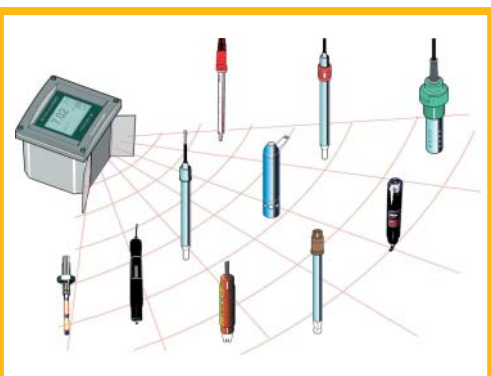
COMMUNICATIONS



COMMUNICATIONS

- All dynamic variables are transmitted through HART to the HOST computer or to any PC
- Configurations can be downloaded or uploaded with the EXAxt Configurator that is supplied free of charge through Internet
- Remote configuration of the many functions and interrogation of the many diagnostic data can be done through Pactware. Downloaded free of charge by Yokogawa customers.

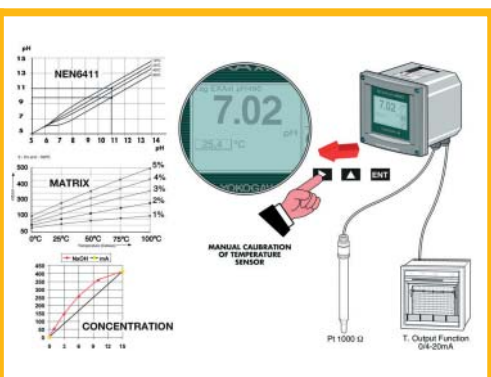
OPEN ARCHITECTURE



OPEN ARCHITECTURE

- Compatibility is the keyword for the EXAxt 450 series
- All units are compatible with Yokogawa sensors, stocked by customers as spare parts.
- The EXAxt 450 series are also compatible with most commercially available sensors making them suitable as plant standard electrochemical analyzers
- For example up to 6 different temperature compensation elements are supported: already accurately calibrated

COMPENSATION



COMPENSATION

- Electrochemical analysis results are often influenced by other process variables. These uncontrolled variables result in poor process control, especially when the user is unaware of the influence
- EXAxt 450 delivers accurate compensation of these variables to assure accurate process control

Examples

- Compensation of temperature on pH or ORP values: NEN6411 for strong electrolytes; MATRIX or TC for other applications
- Compensation of non-linearity on conductivity measurements
- Matrix compensation of temperature for Conductivity measurement

THE NEW EXAxt 450 SERIES

- The trend graph helps diagnose problems
- View sensor performance over time
- Its intuitive touch screen

The EXAxt 450 Series analyzer is another fine example of Yokogawa raising the benchmarks of innovation and quality. Yokogawa has refined its expertise in pH and conductivity measurement and control into this new and innovative product. It is packed with features designed to reduce commissioning time, minimize plant down time and simplify operation and maintenance. It's intuitive touch screen operation, presents process parameters and the advanced diagnostics in a clear and unambiguous way.

