



Digital Sensor Communication
SENCOM

Bulletin 12A01S01-01E

www.yokogawa.com/an/

YOKOGAWA 

SENCOM System

SENCOM is the first generation of Yokogawa digital sensors for pH and ORP measuring systems. Our engineers have combined Yokogawa's application proven process sensor line with the innovative capabilities of digital data communication. The SENCOM smart sensor design provides improved maintenance management and diagnostics to further enhance the simplicity and reliability Yokogawa has always provided. In addition, digital sensors offer the ability to do all sensor maintenance and calibrations in the laboratory which can reduce operating costs (shorter process downtime) and improve process safety issues.

SENCOM sensors maintain specific measurement and calibration data on an integrated chip along that is an integral part of the sensor. This data can be exchanged between the sensor and either a process transmitter (FLXA202/FLXA21), or a laboratory PC using the SENCOM SPS24 data management software. Using calibration and diagnostic data from the sensor, the SPS24 data management system provides technicians with the tools to predict maintenance and calibration frequency, estimate sensor life and project life expectancy. Calibration data can be downloaded or uploaded to and from the SENCOM Sensor to the FLXA202/FLXA21 analyzer allowing for true plug and go field installation.

Data stored in the sensor includes:

- Calibration Values (Asymmetry, Slope, Temperature Offset)
- Sensor Status Signals (e.g. Glass Impedance Detection)
- Reference Junction Resistance
- Sensor details (Model, Serial Number, Production Manufacturing Date)

SENCOM sensors can be calibrated in the laboratory, or at the process site using the analyzer buffer calibration function instead of stored data from the sensor. When the sensor is connected to the SPS24 data management software, the calibration data is downloaded into the SPS24. The available calibration methods using SMART Sensors and FLXA202/FLXA21 analyzer are:

- pH: Manual/Automatic: Zero/Slope, Zero/Slope/ITP (3 point), Zero/Slope 1,2 (3 point)
- ORP: Manual 1, 2 (point)
- Temperature

The FLXA202/FLXA21 analyzer can be used with either an analog sensor or the new digital SENCOM. The FLXA202/FLXA21 must have the appropriate sensor module installed matching the sensor type to be used. This allows users to keep lower stock levels of analyzers and simply stock the different sensor modules.



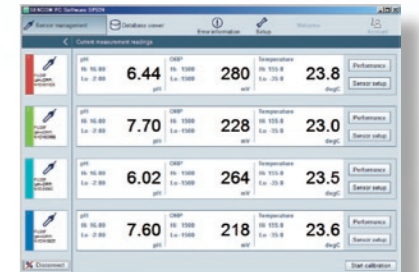
Operation Benefits and Features

- Simple maintenance by replacement of "pre-calibrated" sensors
- Ability to calibrate up to 4 sensors at one time
- Monitor sensor aging in real-time with the Sensor Wellness feature
- Reference impedance measurement for early detection of diaphragm clogging
- Predictive calibration/maintenance using advanced sensor diagnostics
- Reliable K8S connector (IP67) for installations in heavy industrial environment
- No need for sensor configuration at the transmitter, pre-configure in the lab for auto upload
- Simple database management system for tracking up to 100 different serial numbers
- Individualized password protected user accounts
- Reliable transfer of digital signals without disturbance of external sources
- CE compliant
- IECEx, ATEX, FM, CSA, TIIS compliant



SENCOM SPS24 Data Management

The new SENCOM PC Software, SPS24, offers a unique means to optimize the performance of pH/ORP sensors for enhanced reliability and process safety. The software allows the operator to monitor pH/ORP sensor performance, calibrate and configure various parameters. The SPS24 can communicate and keep track of data for up to 100 different SENCOM sensors and allows for manual input of data of traditional pH/ORP sensors. Simply connect your SENCOM sensor via Interface Box and USB port to your PC and get access to intuitive analysis, sensor configuration, calibration information and documentation applications.



The SPS24 allows complete control of the procedure during a pH/ORP sensor calibration, ensuring the highest accuracy every time by allowing the user to either re-use or discard a sensor based on the real-time sensor information before reinstallation into the process. The calibration information is collected and can be managed, analyzed and documented consistently to satisfy regulatory documentation requirements. The SPS24 PC Software offers various data export possibilities to guarantee protection of sensor history information in order to manage the sensor over its entire life cycle.



Note: These displays are images

Collects Key Performance Information

Actual sensor data/status is read directly from the sensor to the PC.

Simple Calibration and Process Setup

Quick sensor configuration allows the SENCOM to be setup before connection to the FLXA202/FLXA21. This sensor information is then transferred to the FLXA202/FLXA21 when it is connected.

Same Easy Calibration Procedure

Simply connect the SENCOM sensor to the PC via Interface Box/USB port and perform calibration using one of the built in buffer tables (NIST/DIN 19266, DIN 19267, US) or user programmable table.

Sensor Diagnostics

Can use the calibration results to perform in-depth analysis of each sensor.

Comprehensive Database

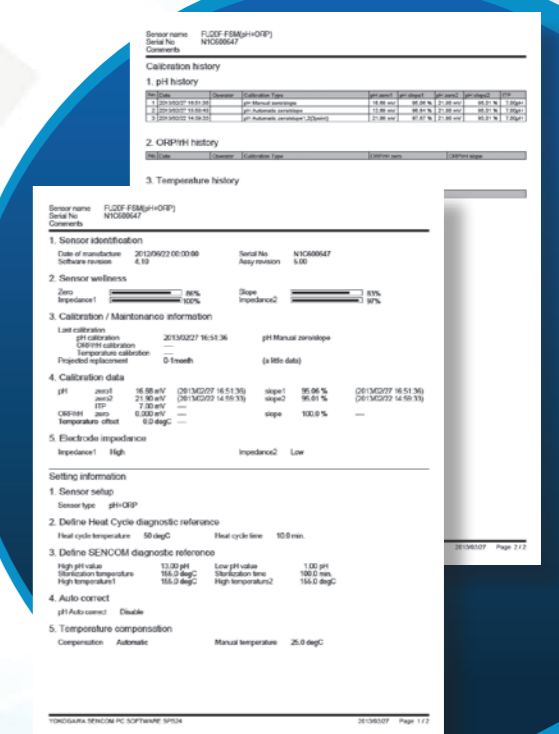
All SENCOM sensor operations are recorded in the database and can be exported for further data management and trend analysis.

Field Calibration Protocols

When a sensor has been calibrated in the field using a FLXA202/FLXA21, that calibration data will be stored in the SENCOM for uploading to PC database.

Information Protection

The SPS24 provides password protected user accounts to allow verification of calibration data.



GENERAL SPECIFICATIONS

FU20F pH/ORP SENCOM Sensor	
Operating range:	pH; 0 to 14 ORP; -1500 to 1500 mV rH; 0 to 100
Temperature range:	Dome shape; -10 to 105 °C (14 to 221 °F) Flat surface : 15 to 105 °C (59 to 221 °F)
Pressure range:	0 to 1 MPa (0 to 142 PSIG)
Conductivity :	> 50 µS/cm
Reference system:	Ag/AgCl with saturated KCl
Temperature element:	Pt1000 to IEC 751
Wetted parts:	Sensor body; PPS 40GF (Ryton™ with glass filing) Measuring sensor; G-glass and AR-glass Reference junction; Porous PTFE Earth pin; Solid Platinum O-ring: Fluoro rubber (FKM)
Combination converter:	FLXA202/FLXA21 PC (SPS24 SENCOM PC Software)
Weight:	Approx.0.15 kg (sensor body only)
Digital communication:	Bi-directional digital communication (RS 485) with limited MODBUS support
Data rate:	9600 b/s (8bit, Even, STOP 1)
Output function:	pH, temperature compensated pH, ORP, pH compensated ORP, rH, temperature, junction resistance value, sensor details, sensor calibration data, sensor status signals
Response time pH:	t90 < 15 sec. (for 7 to 4 pH step)
Stabilization time pH:	< 2 min. (for 0.02 pH unit during 10 sec.)

Refer to the GS 12B06J03-04E-E for detailed specification.

SPS24 SENCOM PC Software

Performance	
Measurement Parameter:	pH: digital SENCOM sensor
pH Calibration:	(GET FROM FLXA202 or FLXA21 GS)
Sensor field calibration:	YES
Sensor database:	YES
Database Backup:	YES
Interface Box	
Communication for PC	USB
Communication SENCOM	RS-485
PC Requirements	
Processor:	Intel Core2 Duo CPU E7500 or higher for Windows 7
RAM:	Min 2GB for Windows 7
Screen Resolution:	XGA (1024 x 768) or higher
Hard disc:	Min 100MB available space (depends on quantity of data to save)
Interface:	Up to 4 x USB
Operating system:	Windows 7

Refer to the GS 12A01S02-01E for detailed specification.



Synaptic Business Automation creates sustainable value by connecting everything in our customers' organization. To realize this, Yokogawa integrates its business and domain knowledge with digital automation technologies, and co-innovates with customers to drive their business process transformation.

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