

# REFEX Non Porous pH/mV electrodes for Yokogawa flow cells and pH Instruments

REFEX manufactures a range of probes designed to be direct replacements for Yokogawa™ brand electrodes in the field. REFEX probes connect directly to Yokogawa analyzers to provide end users with enhanced measurement capabilities and extended life through utilization of the unique REFEX reference cell interface.

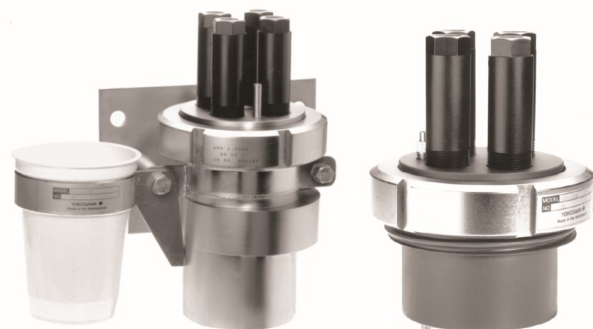
By eliminating the porous junction used by standard pH and ORP probes in favor of an advanced electrochemically active sensor body REFEX provides unmatched measurement stability. Over a decade of operational use has consistently shown that REFEX sensors suffer minimal signal drift and provide exceptionally long life in a wide variety of applications worldwide.

Compared to a ritual weekly recalibration required by many pH sensor installations, REFEX-based sensors often only require a confirmation check every 90 days.


Changing out an existing brand sensor to a REFEX probe can provide a real savings in terms of replacement parts and maintenance overhead. REFEX sensors work with all modern dual high impedance pH/ORP transmitters, particularly in difficult and demanding applications where probe failure and replacement is commonplace.


Equivalent sensors are often – but not always – direct replacements to the probe already in place.

**Try a REFEX probe in your plant and see the REFEX difference firsthand.**



**Refex Non Porous pH/mV electrodes for Yokogawa flow cells and pH Instruments continued...**

 <b>YG-5610</b>	<p><b>Specifications</b>  <b>5610 pH Glass Electrode</b>                  pH Range 0 - 12                  Temp Range 0 - 100°C                  Pressure 10 bar                  Impedance &lt;150 MΩ                  Dimension 12 x 120mm                  Connector Yokogawa Y-Cap                  Part No <b>YG-5610</b></p>	 <b>YG-5710</b>	<p><b>Specifications</b>  <b>5710 REFEX Reference</b>                  Temp Range 0 - 90 °C                  Pressure 10 bar                  Impedance &lt;50 kΩ                  Dimension 12 x 120mm                  Connector Yokogawa Y-Cap                  Part No <b>YG-5710</b></p>	 <b>YG-2001-120</b>	<p><b>Specifications</b>  <b>2001 pH/REFEX Combination</b>                  Temp Range 0 - 90 °C                  Pressure 10 bar                  Impedance &lt;50 kΩ                  Dimension 12 x 120mm                  Glass impedance &lt; 150 mΩ                  Connector Yokogawa Y-Cap                  Part No <b>YG-2001-120</b></p>
 <b>YG-Pt100/1000</b>	<p><b>Specifications</b>  <b>RTD Temperature Sensor</b>                  Resistance 100/1000Ω at 0°C                  Pressure 10 bar                  Dimension 12 x 120mm                  Connector Yokogawa Y-Cap                  Part No <b>YG-Pt100</b>  <b>YG-Pt1000</b></p>	 <b>YG-Pt2002</b>	<p><b>Specifications</b>  <b>2002 Pt ORP/Reflex</b>                  Temp Range 0 - 100 °C                  Pressure 20 bar                  Impedance &lt;100 kΩ                  Dimension 12 x 120mm                  Connector Yokogawa Y-Cap                  Part No <b>YG-Pt2002</b></p>	<p><b>Yokogawa type electrode connector</b></p> 	



**Yokogawa™ FU-20 Equivalent**  
*"all in one" pH Combination with 3/4" process fittings top/bottom*

Refex reference sensors are designed for arduous applications particularly where fouling or poisoning conditions exist. The reference uses a highly stable non-porous polymeric interface instead of a traditional porous liquid junction as used by all conventional Yokogawa™ reference electrodes. The active reference area is the whole of the outside surface of the electrode and this super large contact area means that the electrode is supremely resistant to coatings. Poisoning effects are eliminated because the polymeric reference material is conductive to ions but not porous; the reference can operate electrically but electrolyte and process fluids are not exchanged.

<b>Specifications - FU20 Equivalent Sensor</b>		
pH Range 0 - 12	Reference <50 kΩ	Drift 2 mV / Week
Temp Range 0 - 100°C	Eo Zero pH 7.0 ±15 mV	Connector Screw Terminal Ferrules
Pressure 20 bar @ 50°C	Eo Zero pH 7.0 ±15 mV	Cable Length 5m (other lengths available)

**FU20** Part No **YG-3/4"-2001-Pt1000-LE-5M**

Refex Non Porous pH/mV electrodes for **Yokogawa** flow cells and pH Instruments continued...

## Yokogawa™ Model FF20/FS20 Flow Fittings for pH/ORP (Redox) measuring loops

For liquid analysis, the sensors are usually mounted in either a flow or an immersion fitting. Therefore Yokogawa has invested considerable design and development time in producing a full range of fittings with particular emphasis on designs that reduce installation and maintenance time and consequently save operation costs.

A high degree of standardisation makes it possible to mount electrodes with DIN dimensions directly into a fitting. For most other types a mounting kit (accessory) is available. A wide choice of construction materials gives the user the optimal solution for any process considering chemical resistance, pressure and temperature specifications. The program includes fittings and subassemblies for mounting of a variety of electrodes and/or a cleaning system.

### Features

- Wide choice of construction materials
- High degree of standardisation reduces spare holding requirements
- Direct mounting of sensors with DIN dimensions
- Liquid earth pin for stable measurements
- High pressure and temperature specifications
- Chemical cleaning system as an option for 2-, 3- and 4-hole fitting
- Brush cleaning system as an option for 4-hole fitting only
- Electrolytically polished stainless steel fittings for optimal corrosion resistance.



## Yokogawa™ Equivalent Quick Reference Guide

Yokogawa™ Model	REFEX Type No	Description
SM21-AG2	YG-5610-120	12mm pH Glass Electrode
SM21-AG4	YG-5610-120	
SM21-AG6	YG-5610-120	
SM21-AL4	YG-5610-120	
SM21-AL6	YG-5610-120	
SM29-PT9	YG-7610-120	12mm Redox Electrode
SR20-AC11	YG-5710-120	12mm Reference Electrode
SR20-AC22	YG-5710-120	
SC20-AC52	YG-5710-158	
SC20-AP24	YG-5710-120	
SC20-AP26	YG-5710-120	
SR20-AS52	YG-5710-158	
SC21-AAP26	YG-2001-120	12mm pH Combination Probe
SC21-AGP26	YG-2001-120	
SC21-AGC52	YG-2001-158	
SC21-ASP23	YG-2001-120	
FU20-	EC- 3/4"2001-PT100-10M-LE	3/4" pH Comb. Probe
SM60-T2	YG-PT100	12mm Temperature Probe
SM60-T1	YG-PT1000	

**Refex** Non Porous pH/mV electrodes for **Yokogawa** flow cells and pH Instruments continued...

**Applications: In-Line and Immersion Systems**

- Potable Water Applications
- Optimized Coagulation
- Low Ionic Raw Water and Ultra Pure Water (UPW)
- All Oil & Gas Sour Water
- All Petrochemical Process Water
- Chlor-Alkali - Chlorinated and Waste Brines
- Food and Beverage - CIP and SIP
- Industrial Waste Water
- Waste Water Treatment
- Heavy Metal Processes
- Pulp and Paper

**Advantages of Refex Non Porous Electrodes**

- Protected Ag/AgCl reference half cell - REFEX barrier/interface prevents all liquid contact/exchange
- Resistant to fouling and poisoning
- Suitable for temperatures between 0...100°C
- Operates in pressures between full vacuum and 20 bar / 290 psi
- Instantaneous response to pH change
- Constant Eo zero - almost maintenance free
- Long electrode life - many times longer than all others
- Compatible with all modern pH instruments with dual high impedance inputs for pH and reference electrodes
- No diffusion potential errors in low ionic waters
- No electrolyte refilling - sealed for life