

# General Use Plastic and Glass pH and Reference Electrodes



**Fast—95 % response in less than one second (bulb-type only)**

**Combination or half cell designs**

**Single or double junction construction**

**Choose between sealed and re-fillable models**

**Choose between glass and plastic body models**

## ***Combination or Separate Electrodes?***

Sensorex makes both separate and combination electrodes. The convenience of handling one combination electrode as compared to using separate pH and reference electrodes has been well established in laboratory and portable pH measurements. The price of Sensorex combination electrodes is much less than the total price of the separate electrodes. Individual half cell electrodes are used only for special purposes.

## ***Glass or Plastic Body Electrodes?***

Sensorex makes both body types and both provide the identical excellent pH measurement. Traditionally, pH electrodes have been made of all glass construction, but today's plastics allow pH electrodes to be constructed with sturdy and chemically resistant epoxy or premium ULTEM bodies. The recessed protected design of the Sensorex plastic body electrodes extends over the measuring surface, ensuring that the pH glass bulb is virtually unbreakable.

## ***Single or Double Junction Reference?***

Most pH measurements can be made with single junction reference electrodes. However, materials such as heavy metals, proteins and sulfides can precipitate at the junction. Double junction designs use a buffering salt such as KNO<sub>3</sub> in the lower chamber contacting the sample, and preventing these reactions. They are also useful for pH measurement of tris buffers. Both combination or separate reference electrodes are available from Sensorex.

## **Specifications**

<b>pH Range</b>	0-14 (Na <sup>+</sup> error at >12.3 pH)
<b>Response</b>	95% in 1 second (bulb-type only) 95% in 5 seconds (flat-type only)
<b>Isopotential Point</b>	pH 7.00 (0 mV)
<b>Offset</b>	+/- 0.20 pH
<b>Span</b>	97% of theoretical or higher

### How do I choose the appropriate laboratory electrode for my use?

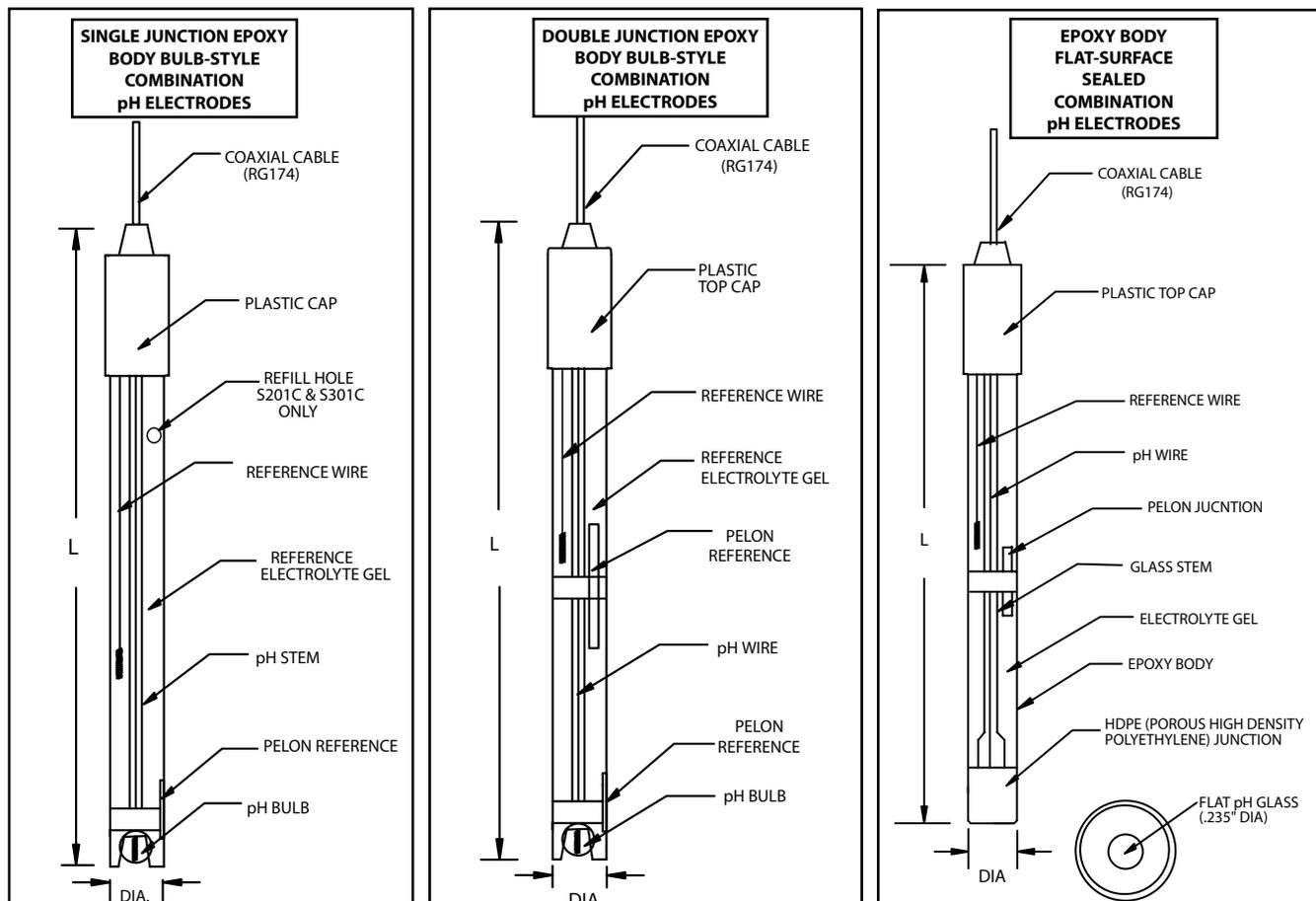
OR: Select by electrode type you currently use:

- Combination pH or ORP
- Sealed or re-fillable reference
- Epoxy or glass body
- Dimension required Length and diameter (12mm dia x 150mm L is most common)
- Separate pH or ORP half-cell/separate reference half -cell

APPLICATION	SENSOREX PART NUMBER		
	Glass Body	Epoxy Body	pHASE
Standard Lab use	SG201C	S200C	N/A
Field use	Epoxy a better choice	S200CD	N/A
Biological Samples, proteins,...	SG201CIT - Best Choice SG360CD	S200CIT - Best Choice S350CD	S1021CD
Fluoride in acidic conditions	Not available	S350CDHF S450CDHF	N/A
Low ionic conditions	Not available	S200CD-LC	S1021CD*
Viscous samples	SG360CD	S450CD	S1030CD
Test tubes and small diameter containers	SG901C, SG900C SG900CIT(Calomel Free)	S900C, SG900CIT	N/A
Tall flasks, deep reactors,...	SG301C, SG300C SG300CIT(Calomel Free)	S300C, SG300CIT	N/A
Meats, cheeses, jellies and other viscous foods	Not recommended	S450CD or S175CD Spear tip	N/A
Varying temperatures from sample to sample	Not recommended	Not recommended	All pHASE
High pH (up to 14pH)	Any model	Any model	Any model
Mixed aqueous/organic solvents	SG201CD, SG360CD	Not recommended	SG1030CD SG1041CD
Samples containing Heavy metals	SG200CD	S200CD	S1021CD
Paints	Not recommended	S450CD	S1030CD
Soil samples	Not recommended	S450CD	N/A
Surface measurements (agar plates, electrophoresis gels,...)	SG360CD	S350CD, S450CD	S1030CD
Dairy product (milk, yogurt, cheese)	SG360CD	S350CD, S450CD	SG1041CD
Photographic	SG200CD	S200CD	S1021CD SG1041CD
Beer, wine and other liquors	SG201C	S200C	S1021CD

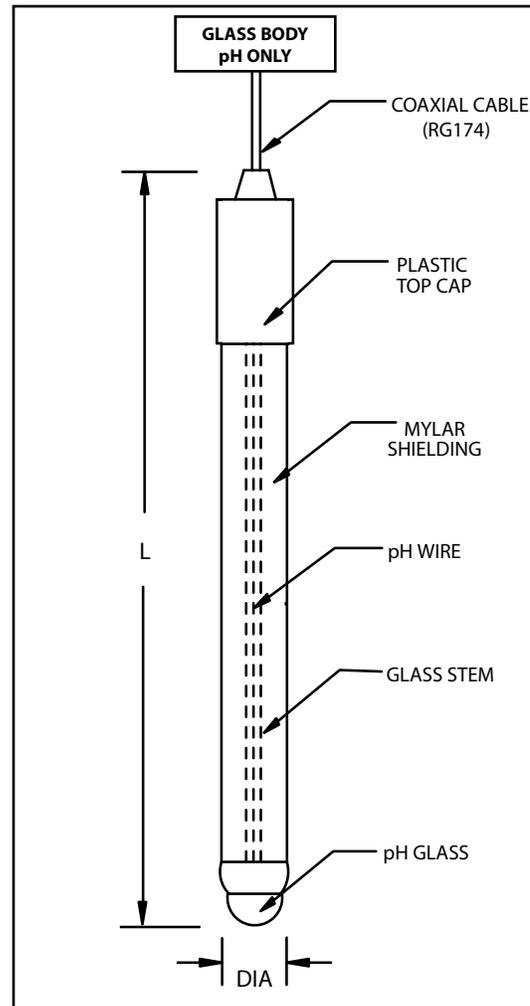
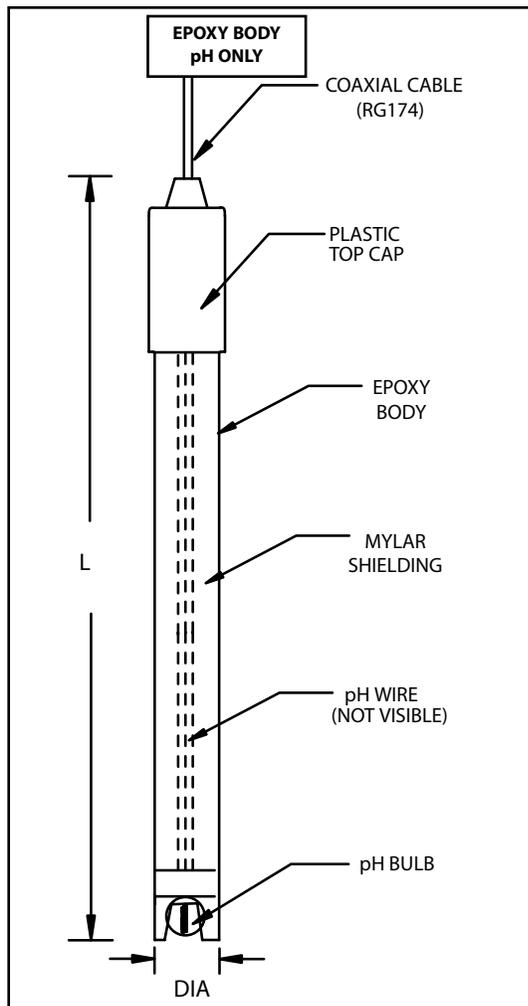
## EPOXY BODY COMBINATION pH ELECTRODES

MODEL No.	SIZE				REFERENCE		REF No.		JUNCTION MATERIAL	REF SOLN	GLASS SHAPE
	Inches		mm		Sealed	Refillable	Single	Double			
dia	L	dia	L								
S900C	1/4	6	6	150	X		X		Pellon	3.5M KCl	Bulb
S100C	3/8	3.5	9.5	90	X		X		Pellon	3.5M KCl	Bulb
S120C	3/8	3.5	9.5	120	X		X		Pellon	3.5M KCl	Bulb
S700C	3/8	6	9.5	150	X		X		Pellon	3.5M KCl	Bulb
S300C	3/8	12	9.5	300	X		X		Pellon	3.5M KCl	Bulb
S301C	3/8	12	9.5	150		X	X		Pellon	3.5M KCl	Bulb
S300CD	3/8	12	9.5	300	X			X	Pellon	3.5M KCl	Bulb
S200C	1/2	6	12	150	X		X		Pellon	3.5M KCl	Bulb
S201C	1/2	6	12	150		X	X		Pellon	3.5M KCl	Bulb
S200CD	1/2	6	12	150	X			X	Pellon	3.5M KCl/ KNO <sub>3</sub>	Bulb
S350CD	1/2	6	12	150	X			X	HDPE/ Pellon	3.5M KCl/ KNO <sub>3</sub>	Flat
S450C	9/16	4.5	15	115	X		X		HDPE/ Pellon	3.5M KCl	Flat
S450CD	9/16	4.5	15	115	X			X	HDPE/ Pellon	3.5M KCl	Flat



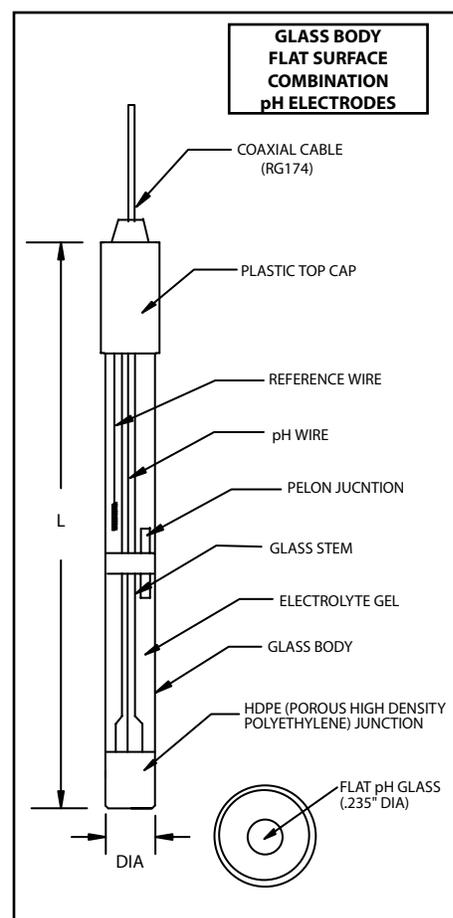
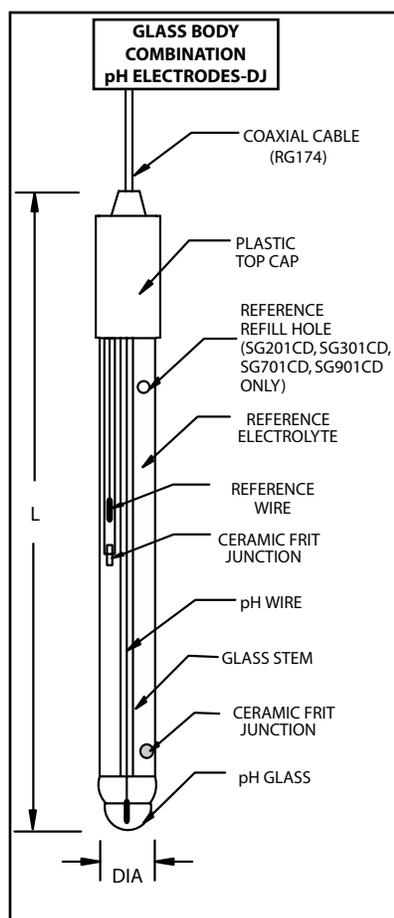
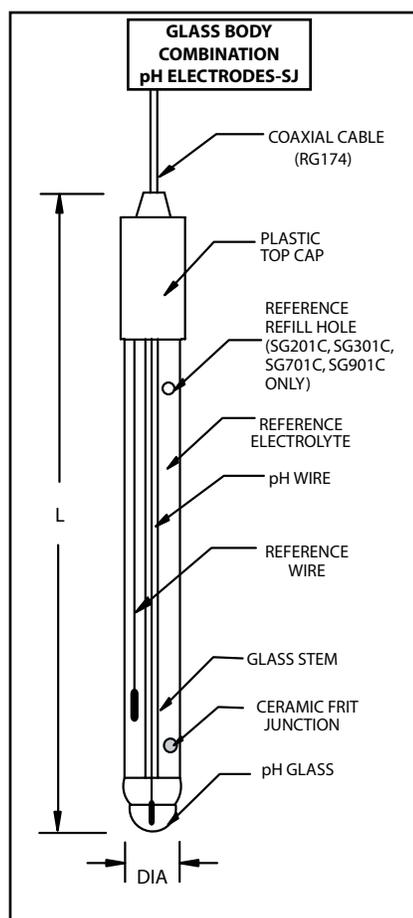
## GLASS AND EPOXY BODY MEASURING pH HALF-CELL ELECTRODES

MODEL No.	SIZE				BODY		
	Inches		mm		Glass	Epoxy	
	dia	L	dia	L			
Obsolete 9/2009	SG900G	1/4	6	6	150	X	
Obsolete 9/2009	SG700G	3/8	6	9.5	150	X	
	S700G	3/8	6	9.5	150		X
	SG200G	1/2	6	12	150	X	
	S200G	1/2	6	12	150		X
Obsolete 9/2009	SG300G	3/8	12	9	300	X	



## GLASS BODY COMBINATION pH ELECTRODES

MODEL No.	SIZE				REFERENCE		REF No.		JUNCTION MATERIAL	REF SOLN	GLASS SHAPE
	Inches		mm		Sealed	Refillable	Single	Double			
	dia	L	dia	L							
SG900C	1/4	6	6	150	X		X		Ceramic	3.5M KCl	Hemi
SG901C	1/4	6	6	150		X	X		Ceramic	3.5M KCl	Hemi
SG700C	3/8	6	9.5	150	X	Obsolete 9/2009	X		Ceramic	3.5M KCl	Hemi
SG701C	3/8	6	9.5	150		X	X		Ceramic	3.5M KCl	Hemi
SG300C	3/8	12	9.5	300	X		X		Ceramic	3.5M KCl	Hemi
SG301C	3/8	12	9.5	150		X	X		Ceramic	3.5M KCl	Hemi
SG300CD	3/8	12	9.5	300	X			X	Ceramic x2	3.5M KCl KNO <sub>3</sub>	Hemi
SG200C	1/2	6	12	150	X		X		Ceramic	3.5M KCl	Hemi
SG201C	1/2	6	12	150		X	X		Ceramic	3.5M KCl	Hemi
SG200CD	1/2	6	12	150	X			X	Ceramic x2	3.5M KCl/ KNO <sub>3</sub>	Hemi
SG360CD	1/2	6	12	150	X			X	HDPE/ Pellon	3.5M KCl/ KNO <sub>3</sub>	Flat



All electrodes are supplied with 30 inch cable and a BNC connector. Many other optional connectors are available for an additional charge.

## GLASS AND EPOXY BODY REFERENCE ELECTRODES

MODEL No.	SIZE				REFERENCE		REF No.		JUNCTION MATERIAL	REF SOLN	BODY TYPE	
	Inches dia	L	mm dia	L	Sealed	Refillable	Single	Double			Glass	Epoxy
SG900R	1/4	6	6	150	X	Obsolete 9/2009			Ceramic	3.5M KCl	X	
SG901R	1/4	6	6	150		Obsolete 9/2009			Ceramic	3.5M KCl	X	
SG900RD	1/4	6	6	150	X	Obsolete 9/2009		X	Ceramic x 2	3.5M KCl	X	
SG901R	1/4	6	6	150		Obsolete 9/2009			Ceramic	3.5M KCl	X	
S700R	3/8	6	9.5	150	X		X		Ceramic	3.5M KCl		X
S700RD	3/8	6	9.5	150		X	X		Ceramic x2	3.5M KCl/ KNO <sub>3</sub>		X
SG200R	1/2	6	12	150	X		X		Ceramic	3.5M KCl	X	
SG200RD	1/2	6	12	150	X			X	Ceramic x2	3.5M KCl KNO <sub>3</sub>	X	
SG201R	1/2	6	12	150		X	X		Ceramic	3.5M KCl	X	
SG201RD	1/2	6	12	150		X		X	Ceramic x2	3.5M KCl KNO <sub>3</sub>	X	
S200R	1/2	6	12	150	X		X		Ceramic	3.5M KCl		X
S201R	1/2	6	12	150		X	X		Ceramic	3.5M KCl		X
S200RD	1/2	6	12	150	X			X	Ceramic/Wood	3.5M KCl/ KNO <sub>3</sub>		X
S201RD	1/2	6	12	150		X		X	Ceramic/Wood	3.5M KCl/ KNO <sub>3</sub>		X

