

## Combined pH Electrodes

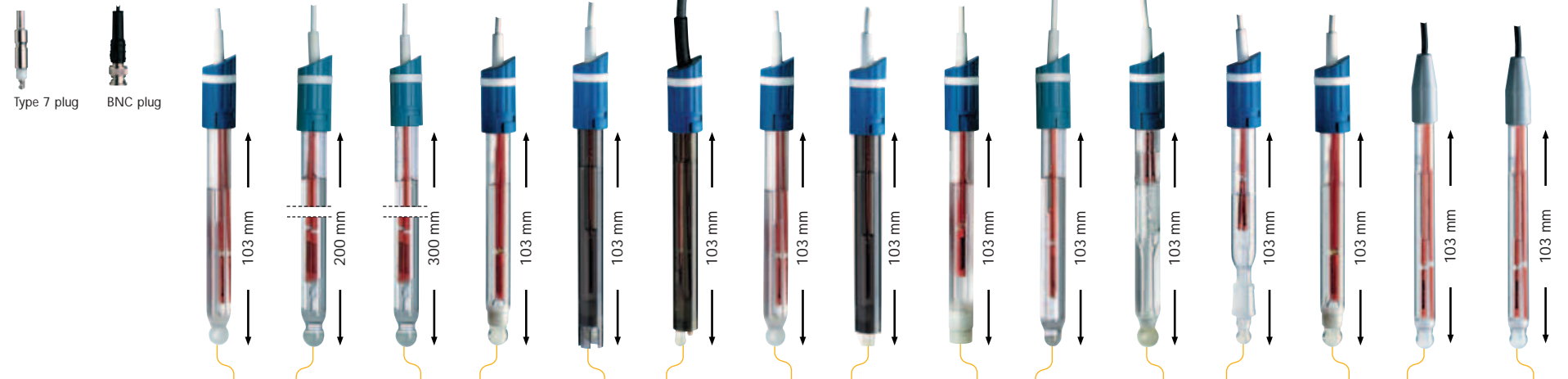
To meet your analysis needs, combined pH electrodes are available with a variety of lengths, diameters and reference systems. To discover the advantages of Red Rod reference systems, please refer to page 3.

All our electrodes are delivered with a Certificate of Conformity signed by the Total Quality Manager. This specifies the sensitivity, zero pH, response time and batch number of the electrode.

We supply a bottle of filling solution with every combined pH electrode (with the exception of the GK2401B and GK2401C, and gel-filled electrodes).

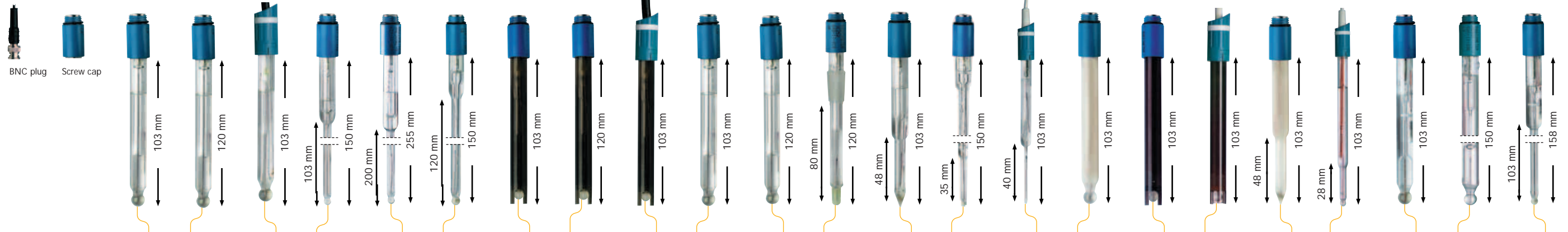
You may need a cable or plug adapter to connect your chosen electrode to your meter. Please see page 19.

## Red Rod combined pH electrodes



Applications	General purpose						Alkaline samples		Surface measurement	Soils	Cl <sup>-</sup> sensitive samples	Viscous samples	High KCl flow	Alkaline samples	General-purpose
Type	pHC2001	pHC2002	pHC2003	pHC2401	pHC2005	pHC2085	pHC2011	pHC2015	pHC2441	pHC2051	pHC2501	pHC2601	pHC2701	GK2401B	GK2401C
Part no. Type 7 -7				E16M336	E16M337									945-261	945-252
Part no. BNC -8	E16M313	E16M315	E16M334	E16M400	E16M500	E16M501	E16M317	E16M318	E16M320	E16M319	E16M321	E16M322	E16M323		
Reference system	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod	Red Rod
pH range	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 14	0 - 14	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 14	0 - 12
Temperature range	-10 - 100°C	-10 - 100°C	-10 - 100°C	-10 - 100°C	-10 - 100°C	-10 - 100°C	0 - 100°C	0 - 100°C	-10 - 100°C	-10 - 100°C	-10 - 100°C	-10 - 100°C	-10 - 100°C	0 - 100°C	-10 - 100°C
Diameter	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	9.5 mm	9.5 mm
Minimum sample depth	18 mm	18 mm	18 mm	14 mm	14 mm	14 mm	18 mm	14 mm	flat	18 mm	18 mm	18 mm	14 mm	16 mm	16 mm
Liquid junction	Porous pin	Porous pin	Porous pin	Annular ring	Porous pin	Porous pin	Porous pin	Porous pin	Annular ring	Porous pin	Double/Porous	Sleeve	Annular ring	Porous pin	Porous pin
Special features				Long		Temp. sensor									
Salt-bridge solution	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl

## Combined pH electrodes



Applications	General-purpose							Alkaline samples			Penetration	Microsamples		General-purpose Gel-filled			Penetration Gel-filled	General-purpose glass tubes					
Type	pHC3001	XC100	pHC3081	pHC3006	pHC3006L	XC111	pHC3005	XC120	pHC3085	pHC3011	XC200	XC250	pHC3031	XC161	pHC3359	pHC3101	pHC3105	pHC3185	pHC3131	pHC4000*	pHC4001*	XC601*	pHC4006*
Part no. BNC -8	E16M300	B10C100	E16M305	E16M306	E16M307	B10C111	E16M302	B10C120	E16M342	E16M324	B10C200	B10C250	E16M325	B10C161	E16M343	E16M327	E16M308	E16M329	E16M328	E16M331	E16M332	B10C601	E16M333
Part no. Screw cap -9	E16M301	B10C100	E16M305	E16M306	E16M307	B10C111	E16M302	B10C120	E16M342	E16M324	B10C200	B10C250	E16M325	B10C161	E16M343	E16M327	E16M308	E16M329	E16M328	E16M331	E16M332	B10C601	E16M333
Reference system	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Ag/AgCl	Calomel	Calomel	Calomel	Calomel
pH range	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 12	0 - 14	0 - 14	0 - 14	0 - 12	0 - 12	0 - 12	2 - 12	2 - 12	2 - 12	2 - 12	0 - 12	0 - 12	0 - 12	0 - 12
Temperature range	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	-5 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 80°C	0 - 60°C	0 - 60°C	0 - 60°C	0 - 60°C	0 - 60°C	0 - 60°C	0 - 60°C
Lower diameter	12 mm	12 mm	12 mm	6.5 mm	6.5 mm	8 mm	12 mm	12 mm	12 mm	12 mm	12 mm	10 mm	8 mm	5 mm	3 mm	12 mm	12 mm	12 mm	8 mm	5 mm	12 mm	12 mm	6.5 mm
Minimum sample depth	18 mm	18 mm	18 mm	18 mm	18 mm	18 mm	12 mm	12 mm	14 mm	18 mm	18 mm	20 mm	14 mm	8 mm	2 mm	18 mm	18 mm	18 mm	14 mm	9 mm	18 mm	18 mm	14 mm
Liquid junction	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Porous pin	Fibre	Opening	Opening	Opening	Opening	Porous pin	Porous pin	Porous pin	Porous pin
Special features			Temp. sensor	Small Ø	Long, small Ø	Long, thin	Robust	Robust	Temp. sensor		Ground joint					Robust	Temp. sensor			Small Ø			Long, small Ø
Salt-bridge solution	3 M KCl + sat. AgCl	Sat. KCl + sat. AgCl	3 M KCl + sat. AgCl	3 M KCl + sat. AgCl	3 M KCl + sat. AgCl	Sat. KCl + sat. AgCl	3 M KCl + sat. AgCl	Sat. KCl + sat. AgCl	3 M KCl + sat. AgCl	3 M KCl + sat. AgCl	Sat. KCl + sat. AgCl	3 M KCl + sat. AgCl	3 M KCl + sat. AgCl	Sat. KCl + sat. AgCl	3 M KCl + sat. AgCl	Solid gel (3 M KCl)	Solid gel (3 M KCl)	Solid gel (3 M KCl)	Solid gel (3 M KCl)	Sat. KCl	Sat. KCl	Sat. KCl	Sat. KCl

## Obtaining accurate and reproducible results: some tips

✓ Remember to make regular calibrations to ascertain the actual sensitivity of the electrode. Ideal electrode sensitivity lies within the range 97 - 100%. However, the electrode may be used within as wide a range as 95 - 103%.

✓ The calibration buffers should have the same temperature as the sample. Under normal conditions, a deviation of ±5°C between sample and calibration buffers is acceptable.

✓ It is important to clean your electrodes regularly to ensure optimal response time. The GK ANNEX Electrode Maintenance Kit is ideal for electrodes with a saturated KCl salt-bridge. See page 18.

✓ Never touch the electrode bulb with your fingers. Any grease may affect the electrode membrane and cause a drifting potential.

✓ The typical response time for a combined pH electrode is 20 s depending on the sample, sample temperature, stirring etc.

✓ The expected lifetime of a combined pH electrode is 1½ years provided that it has been correctly used and maintained.

\* These Electrodes Contain Mercury. Dispose According To Local, State Or Federal Regulations.