

Ammonia • Bromide • Cadmium Ion Selective Electrodes



PARAMETER	AMMONIA	BROMIDE		CADMIUM	
CODE	HI 4101	HI 4002	HI 4102	HI 4003	HI 4103
Type	gas-sensing; combination	solid-state; half cell		solid-state; half cell	
Measurement Range	1M to 1X 10 ⁻⁶ M 17000 to 0.02 mg/L (ppm) 14000 to 0.016 mg/L as N	1M to 1X 10 ⁻⁶ M 79910 to 0.08 mg/L (ppm)	1M to 1X 10 ⁻⁶ M 79910 to 0.08 mg/L (ppm)	1M to 1X 10 ⁻⁷ M 11200 to 0.01 mg/L (ppm)	1M to 1X 10 ⁻⁷ M 11200 to 0.01 mg/L (ppm)
Optimum pH Range	>11	2 to 12.5	2 to 12.5	2 to 12.5	2 to 12.5
Temperature Range	0 to 40°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C
Approximate Slope	-56	-56	-56	+28	+28
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	Delrin	epoxy	PEI	epoxy	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of ammonium, ammonia in wine, beer, water, waste water and soil	determination of free bromide ions in emulsified food products, beverages, plants, soils and as an indicator for titration		used as an indicator for titrations using chelates	

CONNECTION	CONNECTION	CONNECTION	CONNECTION	CONNECTION
HI 4101 BNC	HI 4002 BNC	HI 4102 BNC	HI 4003 BNC	HI 4103 BNC

HI 4004 • HI 4104 • HI 4105 • HI 4007 • HI 4107

Calcium • Carbon Dioxide • Chloride Ion Selective Electrodes

PARAMETER	CALCIUM		CARBON DIOXIDE	CHLORIDE	
CODE	HI 4004	HI 4104	HI 4105	HI 4007	HI 4107
Type	polymer membrane; half cell	polymer membrane; combination	gas sensing; combination	solid-state; half cell	solid-state; combination
Measurement Range	1M to 3X 10 ⁻⁶ M 40080 to 0.12 mg/L (ppm)	1M to 3X 10 ⁻⁶ M 40080 to 0.12 mg/L (ppm)	1X 10 ⁻² M to 1X 10 ⁻⁴ M 440 to 4.4 mg/L (ppm)	1M to 5X 10 ⁻⁵ M 35000 to 1.8 mg/L (ppm)	1M to 5X 10 ⁻⁵ M 35000 to 1.8 mg/L (ppm)
Optimum pH Range	4 to 10	4 to 10	4.2 to 5.2	2 to 11	2 to 11
Temperature Range	0 to 40°C	0 to 40°C	0 to 40°C	0 to 80°C	0 to 80°C
Approximate Slope	+28	+28	+54	-57	-57
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	PVC	PEI/PVC	Delrin	epoxy	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of free calcium in beverages, water, and seawater		determination of carbonates as CO ₂ in water, soft drinks and wine samples	determination of free chloride ions in emulsified food products, beverages, plants, soils and as an indicator for titration	

CONNECTION

HI 4004 BNC

CONNECTION

HI 4104 BNC

CONNECTION

HI 4105 BNC

CONNECTION

HI 4007 BNC

CONNECTION

HI 4107 BNC

Cupric • Cyanide • Fluoride Ion Selective Electrodes



PARAMETER	CUPRIC		CYANIDE		FLUORIDE		
CODE	HI 4008	HI 4108	HI 4009	HI 4109	HI 4010	HI 4110	FC 301B
Type	solid-state; half cell	solid-state; combination	solid-state; half cell	solid-state; combination	solid-state; half cell	solid-state; combination	solid-state; half cell
Measurement Range	0.1M to 1X 10 ⁻⁶ M 6354 to 0.06 mg/L (ppm)		10 ⁻² M to 1X 10 ⁻⁶ M 260 to 0.02 mg/L (ppm)		1M to 1X 10 ⁻⁶ M Sat. to 0.02 mg/L (ppm)		
Optimum pH Range	2 to 12.5	2 to 12.5	>11	>11	5 to 8	5 to 8	5 to 8
Temperature Range	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C
Approximate Slope	26	26	-57	-57	-56	-56	-56
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	epoxy	PEI	epoxy	PEI	epoxy	PEI/epoxy	PEI/epoxy
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial

Possible Applications

- used as an indicator for titrations using chelates
- determination of free cyanide ions in plating baths, waste water and in plant and soil samples
- determination of free fluoride in potable water, soft drinks, wine, plants, emulsified food products, plating and pickling acids

CONNECTION	CONNECTION	CONNECTION	CONNECTION	CONNECTION	CONNECTION	CONNECTION							
HI 4008	BNC	HI 4108	BNC	HI 4009	BNC	HI 4109	BNC	HI 4010	BNC	HI 4110	BNC	FC 301B	BNC

HI 4011 • HI 4111 • HI 4012 • HI 4112 • HI 4013 • HI 4113

Iodide • Lead/Sulfate • Nitrate Ion Selective Electrodes

PARAMETER	IODIDE		LEAD/SULFATE		NITRATE	
CODE	HI 4011	HI 4111	HI 4012	HI 4112	HI 4013	HI 4113
Type	solid-state; half cell	solid-state; combination	solid-state; half cell	solid-state; combination	polymer membrane; half cell	polymer membrane; combination
Measurement Range	1M to 1X 10 ⁻⁷ M 127000 to 0.01 mg/L (ppm)		0.1M to 1X 10 ⁻⁶ M 20700 to 0.21 mg/L (ppm)		1.0M to 1X 10 ⁻⁶ M 6200 to 0.62 mg/L (ppm) 1400 to 0.4 mg/L (ppm) as N	
Optimum pH Range	2 to 13	2 to 13	4 to 7	4 to 7	3.0 to 8	3.0 to 8
Temperature Range	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 40°C	0 to 40°C
Approximate Slope	-56	-56	+25	+25	-56	-56
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	epoxy	PEI	epoxy	PEI	PVC	PEI/PVC
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of free iodide ions in emulsified food samples (iodized table salt), plants and for titration		determination of lead ions in plating baths and as an indicator for titrations		determination of free nitrate in natural waters (fresh and sea), and in emulsified food and plant samples	

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HI 4011	BNC	HI 4111	BNC	HI 4012	BNC
HI 4112	BNC	HI 4013	BNC	HI 4113	BNC

Potassium • Silver/Sulfide • Reference Ion Selective Electrodes



PARAMETER	POTASSIUM		SILVER/SULFIDE		SODIUM	REFERENCE
CODE	HI 4014	HI 4114	HI 4015	HI 4115	FC 300	HI 5315
Type	polymer membrane; half cell	polymer membrane; combination	solid-state; half cell	solid-state; combination	N/A	N/A
Measurement Range	1M to 1X 10 ⁻⁶ M 39100 to 0.039 mg/L (ppm)		Ag ⁺ 1.0M to 1X 10 ⁻⁶ M 107900 to 0.11ppm S ²⁻ 1.0M to 1X 10 ⁻⁷ M 32100 to 0.003 ppm	Ag ⁺ 1.0M to 1X 10 ⁻⁶ M 107900 to 0.11ppm S ²⁻ 1.0M to 1X 10 ⁻⁷ M 32100 to 0.003 ppm	1.0M to 1X 10 ⁻⁶ M 39100 to 0.039 ppm	N/A
Optimum pH Range	1.5 to 12.0	1.5 to 12.0	Ag ⁺ 2 to 8 S ²⁻ 12 to 14	Ag ⁺ 2 to 8 S ²⁻ 12 to 14	9.75 to 14 pH	N/A
Temperature Range	0 to 40°C	0 to 40°C	0 to 80°C	0 to 80°C	0 to 80°C	0 to 80°C
Approximate Slope	+56	+56	+56 Ag ⁺ / -28 S ²⁻	+56 Ag ⁺ / -28 S ²⁻	+57	N/A
Body O.D.	12 mm	12 mm	12 mm	12 mm	12 mm	12 mm
Insertion Length	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm
Body Material	PVC	PEI/PVC	epoxy	PEI	glass	PEI
Cable	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial	1 m coaxial
Possible Applications	determination of potassium ions in wine, waters, soils and biological samples.		as an indicator for titrations using silver nitrate. For the determination of sulfide ions in waters, paper liquors, natural waters and soils.		water, food products, soup, dairy, brines, laboratory	to complete electrical circuit and to provide stable reference voltage for ISE half cells

CONNECTION	CONNECTION	CONNECTION	CONNECTION	CONNECTION	CONNECTION
HI 4014	BNC	HI 4114	BNC	HI 4015	BNC
				HI 4115	BNC
				FC 300B	BNC
				FC 300D	DIN
				FC 300U	US standard
				HI 5315	banana