

## Probe Quality Certificate

Probe: HI7698194 SN: K3594590 Software version: 1.01

Description: Digital probe with three connections for pH (ORP), EC and DO sensors and integral temperature sensor

Hanna Instruments certifies that this instrument has been produced, calibrated and tested to meet all applicable Hanna Instruments procedures, using standards and reference instruments, the accuracy of which is traceable to the National Institute of Standards (NIST) in the USA or to internationally acceptable national physical standards. The standards and reference instruments used in calibration and testing are supported by a calibration system which meets requirements of ISO 9001. The following tests have been performed according to the test instruction WP7698194, Rev.0.6.

The results are listed below:

External references devices\*: mV: SN US36095802 (HP, 34401A)  
Ω: SN 06111204 (resistors box, IET)

Factory calibration: mV (pH): 2022.06.06 mV (ORP): 2022.06.06  
EC: 2022.06.06 DO: 2022.06.06  
°C: 2022.06.07

Tests performed using reference devices:

Temperature:	RES [Ω], 0.1%:	32650	10000	3603	
	Tolerance [°C]:	0.00 ± 0.10	25.00 ± 0.10	50.00 ± 0.10	
mV (pH input):	Reading [°C]:	0.00	25.00	50.00	Passed
	Ref. mV*:	-500.0	-177.5	177.5	500.0
mV (ORP input):	Tolerance [mV]:	± 0.2	± 0.1	± 0.1	± 0.2
	Reading [mV]:	-500.0	-177.5	-0.0	177.5
mV (ORP input):	Ref. mV*:	-1900.0	1900.0		500.0
	Tolerance [mV]:	± 1.0	± 1.0		
EC (with simulator):	Reading [mV]:	-1900.2	1900.0		Passed
	EC [μS/cm]:	1403	2000	x	
EC (with simulator):	EC [mS/cm]:	x	x	12.80	
	Tolerance [μS/cm]:	± 4	± 4	x	
DO (@ 20 °C) [with simulator]:	Tolerance [mS/cm]:	x	x	± 0.04	
	Reading [μS/cm]:	1405	2000	x	Passed
DO (@ 20 °C) [with simulator]:	Reading [mV]:	0	45	12.81	Passed
	Tolerance [%]:	0.0	100.0 ± 1.0		
DO (@ 20 °C) [with simulator]:	Reading [%]:	0.0	100.0		Passed

\*) All external references are periodically checked and are used only if one inside certification interval; HP – not performed; RES = Resistance value

Calibration and testing criteria have been met.

Date: 2022.06.07

QC Inspector: Coman Andrei/Engineer

[Name / Title of Signatory]

Signature:

Electrode Quality Certificate

Electrode: HI/698194-3      Parameter: EC      SN: K81139      Recommended for: HI98194

Description: EC sensor with screw type connector

Hanna Instruments certifies that this electrode has been produced, calibrated and tested to meet all applicable Hanna Instruments Procedures, using standards and reference instruments, the accuracy of which is traceable to the National Institute of Standards (NIST) in the USA or to internationally acceptable national physical standards. The standards and reference instruments used in calibration and testing are supported by a calibration system which meets requirements of ISO 9001.

Standard Reference Materials:      EC:      SRM 999 [NIST]

Tests performed using reference devices:

EC (@ 25 °C):		Offset (air) [µS/cm]:	0
		Tolerance [µS/cm]:	+1
		Reading [µS/cm]:	0
		EC (standard) [mS/cm]:	12.88
		Tolerance [mS/cm]:	10.30 - 15.46
		Reading [mS/cm]:	13.95
		Standard time [s]:	< 5
		Tolerance [s]:	+1
EC response time (12.88mS/cm - 5.00 mS/cm)*:			Passed

\*) Evaluated for 90 % of step; NP = not performed

Quality control and testing criteria have been met.

Date: 2022.06.21      QC Inspector: Szigyarto N./Engineer

(Name / Title of Signatory)

Signature:



## Electrode Quality Certificate

Electrode: HI7698194-2      Parameter: DO      SN: K76168      Recommended for: HI98194

Description: DO sensor with screw type connector

Hanna Instruments certifies that this electrode has been produced, calibrated and tested to meet all applicable Hanna Instruments Procedures, using standards and reference instruments, the accuracy of which is traceable to the National Institute of Standards (NIST) in the USA or to internationally acceptable national physical standards. The standards and reference instruments used in calibration and testing are supported by a calibration system which meets requirements of ISO 9001.

Standard Reference Materials:

DO:      Certified Zero Oxygen Solution

Tests results listed below:

DO @ 25 °C:	100% saturation (air) [%]:	100.0
	Tolerance [%]:	90.0 - 120.0
	Reading [%]:	103.0
	0% saturation (Zero oxygen solution) [%]:	0.0
	Tolerance [%]:	±10.0
	Reading (after 1 minute) [%]:	2.0
	Slope tolerance [%]:	85.0 - 120.0
	Slope calculated [%]:	101.0

NP = not performed.

Quality control and testing criteria have been met.

Date: 2022.06.16

QC Inspector: Szigarto N./Engineer

(Name / Title of Signatory)

Signature:





# Electrode Quality Certificate

Electrode: HI7698194-1      Parameter: pH/ORP      SN: K75470      Recommended for: HI98194

Description: pH/ORP sensor with screw type connector

Hanna Instruments certifies that this electrode has been produced, calibrated and tested to meet all applicable Hanna Instruments Procedures, using standards and reference instruments, the accuracy of which is traceable to the National Institute of Standards (NIST) in the USA or to internationally acceptable national physical standards. The standards and reference instruments used in calibration and testing are supported by a calibration system which meets requirements of ISO 9001.

Standard Reference Materials:

External/Internal Reference Devices\*:      pH: 1851, 186g, 191d [NIST]  
 ORP: Certified ORP Standard Solution  
 KΩ/MΩ: SM#148047ADH [Megohmmeter]

Tests performed using reference devices:

mV pH (@ 25 °C):		Offset (7.01 pH) [mV]:	0.0
		Tolerance [mV]:	±10
		Reading [mV]:	2.7
		Slope (4.01 pH) [mV]:	177.5
		Tolerance [mV]:	170.4 - 177.5
		Reading [mV]**:	172.8
		Standard value [mV]**:	234
		Tolerance [mV]:	±10
		Reading [mV]:	237
		Standard time [s]:	<1
		Tolerance [s]:	1
		Glass Impedance (@ 25 °C):	50 -150
		Reference impedance (@ 25 °C):	Maximum value [KΩ]: 10

\*) All references are periodically checked and are used only if are inside certification interval; NP = not performed.  
 \*\*) Offset compensated.  
 \*\*\*) Value taken from certificate.  
 \*\*\*\*) Evaluated for 90 % of step.

Quality control and testing criteria have been met.

Date: 2022.06.20

QC Inspector: Coman Andrei/Engineer

[Name / Title of Signatory]

Signature:

# Instrument Quality Certificate

Instrument: H1981.94      SN: 07250019101      Software version: 1.08

Description: Multiparameter Waterproof Meter

Hanna Instruments certifies that this instrument has been produced, calibrated and tested to meet all applicable Hanna Instruments procedures, using standards and reference instruments, the accuracy of which is traceable to the National Institute of Standards (NIST) in the USA or to internationally acceptable national physical standards. The standards and reference instruments used in calibration and testing are supported by a calibration system which meets requirements of ISO 9001. The following tests have been performed according with the reference from the QC Procedure of the meter.

The results are listed below:

A. Functionality tests	Reference	Result
A.1. Switch On/Off test	5.	Passed
A.2. LCD test	5.1.	Passed
A.3. Sound test	5.2.	Passed
A.4. Keyboard test	5.3.	Passed
A.5. Real time clock test	5.4.	Passed
A.6. EEPROM test	5.5.	Passed
A.7. Measurement test (pH, ORP, EC, DO, T)	5.6.	Passed
A.8. USB Port test	5.7.	Passed
A.9. Power consumption test	5.8.	Passed
A.10. Factory calibration test	6.	Passed
B. Aesthetic Control	Reference	Result
B.1. Visual Inspection	4.	Passed
B.2. Labeling and Marking	4.	Passed

Calibration, functionality test, aesthetic control and packing have been met.

Date: 2022.06.21      QC Inspector: Tudor Coman / Engineer  
[Name / Title of Signatory]  
Signature: 