

Quick Lock USB 3.0 Micro-D IP68 Qualification Test

March 1, 2018



1. Product Description

- 1.1 **Assembly P/N:** A90020-610 & A90002-601
- 1.2 **Connector Descriptions:** 1-meter USB Quick Lock Jumper & Board-mount Mate

2. Test Description

- 2.1 **Purpose:** Qualify environmental sealing of Omnetics Quick Lock USB 3.0 connectors.
- 2.2 **Method:** Subject connectors to water immersion testing at a depth of 2 meter (6.56ft) for a duration of 120 minutes or until failure is observed.

3. Test Summary

- 3.1 **Visual Examination:** Specimens examined for water ingress after testing.
- 3.2 **Insulation Resistance:** Test Method EIA-364-21, 100 MΩ minimum.
- 3.3 **Dielectric Withstanding Voltage:** Test Method EIA-364-30B sea level, 100 VAC.

4. Test Results

Water Immersion of Quick Lock USB 3.0 Micro-D Connectors @ 2 meters (6.56ft)				
Sample ID	Duration (Min)	PSI	IR @ 250 VDC (100 MΩ min)	DWV @ 100 VAC (Pass/Fail)
A	Initial	0	29.28 GΩ	Pass
	5	2.9	24.95 GΩ	Pass
	30	2.9	33.23 GΩ	Pass
	60	2.9	28.23 GΩ	Pass
	120	2.9	22.59 GΩ	Pass
B	Initial	0	363.1 GΩ	Pass
	5	2.9	407 GΩ	Pass
	30	2.9	288.8 GΩ	Pass
	60	2.9	231.8 GΩ	Pass
	120	2.9	166.6 GΩ	Pass
C	Initial	0	62.7 GΩ	Pass
	5	2.9	49.0 GΩ	Pass
	30	2.9	48.6 GΩ	Pass
	60	2.9	40.7 GΩ	Pass
	120	2.9	40.0 GΩ	Pass

5. Test Procedure

5.1 Specimen: Three mated pairs of USB 3.0 connectors (A90020-610 & A90002-601). The A90020-610 specimens should be cut in half for a cable length of 18” long. The contact tails on A90002-601 (panel mount) should be trimmed flush with the insulator and sealed with silicone adhesive to prevent liquid from entering the contacts and causing electrical breakdown.

The free end of the cable jacket should be stripped back 1.0” and the individual wires is stripped 0.30”. An even distribution of wires should be collected into two separate groups (TABLE 3.1-1) that are to be twisted and tinned together.

Twisted Wire Groups			
Group A		Group B	
Position #	Color	Position #	Color
1	Red	2	White
3	Green	4	Black
5	Blue	6	Yellow
7	Ground	8	Purple
9	Orange	-	-

TABLE 3.1-1: Twisted and tinned groups

5.2 Test Procedure. Connect tinned wire groups from the in-line connector to terminal block, located on cap of the pressure chamber. The connector should be free-hanging on the cap of the chamber and mate the connector together. The water in the chamber is mixed with ultra violet tracers to allow for any leak paths to be traced under ultra violet light.

Initial measurements of the Dielectric Withstanding Voltage (DWV) at 100 VAC and Insulation Resistance (IR) at 250 VDC are taken and recorded before exposing the connector to the water solution in the chamber.

Carefully submerge the mated connector in the water on the chamber by lowering the cap. Secure the cap and slowly pressurize the chamber to 2.85 psi to simulate the pressure under water at a depth of 2 meter (6.56ft).

Test the dielectric withstanding voltage for breakdown at 100 VAC and insulation resistances at 250 VDC at 30 minutes, 60 minutes, and 120 minutes.

Once the test is completed, remove the connector from the test chamber and wipe all exterior surfaces of the connector assembly dry. Unmate the connectors and visually examine for any signs of water ingress under the ultra violet light.

6. Test Equipment

Equipment Name	Manufacturer	Model #	I.D. #	Last Calibration	Next Calibration
Megohmmeter	AEMC	1050	OMN #445	06/02/17	06/02/18
Hipot Tester	Slaughter	2550	OMN #668	06/02/17	06/02/18
Pressure Chamber	Omnetics	N/A	N/A	N/A	N/A

TABLE 4-1: List of test equipment