立威科技股份有限公司 Attend Technology Inc.
新北市汐止區新台五路一段75號6樓之二
6F-2, No.75, Sec.1, Xintai 5th Rd., Xizhi-Dist., New Taipei City 221, Taiwan, R.O.C.
TEL 886 2 2698 7028 FAX 886 2 2698 7078 WEBSITE www.attend.com.tw

# SPECIFICATION AND PERFORMANCE

| Series | 217B-AG01 | File | 217B-AG01_spec_2 | Date | 2016/01/28 |
|---|---|---|---|---|---|

## Scope:

This specification covers the requirements for product performance, test methods and quality assurance provisions of 217B-AG01

## Performance and Descriptions:

The product is designed to meet the electrical, mechanical and environmental performance requirements specification. Unless otherwise specified, all tests are performed at ambient environmental conditions.

## RoHS:

All material in according with the RoHS environment related substances list controlled.

| MATERIAL AND FINISH | | |
|---|---|---|
| **INSULATOR** | **Material** | High Temperature Thermoplastic |
| **CONTACT** | **Material** | Copper Alloy |
| | **Plating** | Contact Area: 30u" Pd-Ni + 2u" Gold Plating<br>Solder Tails: 100u" to 200u" Tin Plating<br>Under-Plate: 80u"~160 u" Nickel Plating |
| **SHELL OR COVER** | **Material** | Stainless Steel (SUS304-1/2H) |
| | **Plating** | 50u"~100u" Ni |
| **RATING** | Operation Voltage: 20V<br>Current Rating: 5A Max.<br>Temperature Range: -40°C to +105°C | |

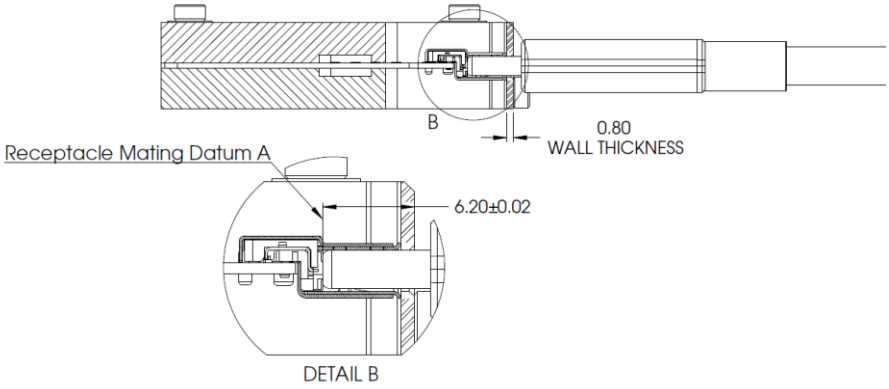
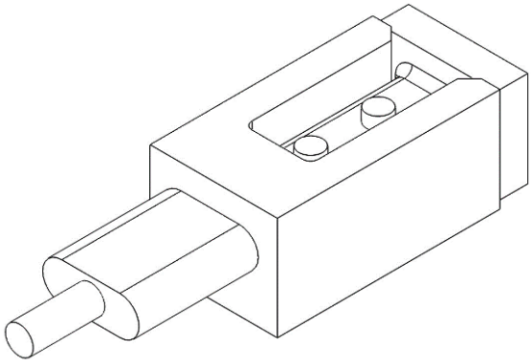
| ELECTRICAL | |
|---|---|
| **Item** | **Requirement & Test Condition** |
| Contact Resistance | 1. 40mΩ (Max) initial for VBUS, GND and all other contacts.<br>2. Maximum change (delta) of +10mΩ after environmental stresses.<br>3. Measure at 20mV (Max) open circuit at 100mA.<br><br>(EIA 364-23B) |
| Insulation Resistance | A minimum of 100MΩ insulation resistance is required between adjacent contacts of unmated and mated connectors.<br><br>(EIA 364-21) |

立威科技股份有限公司 Attend Technology Inc.
新北市汐止區新台五路一段75號6樓之二
6F-2, No.75, Sec.1, Xintai 5th Rd., Xizhi-Dist., New Taipei City 221, Taiwan, R.O.C.
TEL 886 2 2698 7028 FAX 886 2 2698 7078 WEBSITE www.attend.com.tw

| | |
|---|---|
| Dielectric Withstanding Voltage | No breakdown shall occur when 100VAC (RMS) is applied between adjacent contacts of unmated and mated connectors.<br><br>(EIA 364-20) |
| Current Rating | A current of 5.0A shall be applied collectively to VBUS pins (i.e., pins A4, A9, B4, and B9) and 1.25A applied to the VCONN pin (i.e., B5 of the plug connector) with the return path through the corresponding GND pins (i.e., pins A1, A12, B1, and B12)..<br>A minimum current of 0.25 A shall also be applied individually to all the other contacts. When the currents are applied to the contacts, the temperature rise shall not exceed 30°C at any point on the USB Type-C mated plug and receptacle under test, when measured at an ambient temperature of 25°C.<br><br>(EIA 364-70, Method 2) |

| MECHANICAL | |
|---|---|
| **Item** | **Requirement & Test Condition** |
| Mating Cycle | The durability rating shall be 10,000 cycles minimum for the USB Type-C connector family. The durability test shall be done at a maximum rate of 200 cycles per hour and no physical damage to any part of the connector and cable assembly shall occur.)<br><br>(EIA 364-09) |
| Total Insertion Force | The initial connector insertion force shall be within the range from 5N to 20N at a maximum rate of 12.5mm (0.492") per minute. This requirement does not apply when the connectors are used in a docking application<br><br>(EIA 364-13) |
| Total Withdrawal Force | The connector extraction force shall be within the range of 8 N to 20 N up to 1,000 mating cycles and within the range of 6 N to 20 N after the specified insertion/extraction or durability cycles (at a maximum rate of 12.5 mm (0.492”) per minute). This requirement does not apply when the connectors are used in a mechanical docking application.<br><br>(EIA 364-13) |
| Wrenching Strength | Perpendicular moments are applied to the plug with a 5 mm ball tipped probe for a period of at least 10 seconds when inserted in the test fixture to achieve the defined moments in four directions of up or down (i.e., perpendicular to the long axis of the plug opening) and left or right (i.e., in the plane of the plug opening). Compliant connectors shall meet the following force thresholds:<br><br>A moment of 0-0.75 Nm (e.g., 50 N at 15 mm from the edge of the receptacle) is applied to a plug inserted in the test fixture in each of the four directions. A single plug shall be used for this test. Some mechanical deformation may occur. The plug shall be mated with the continuity test fixture after the test forces have been applied to verify no damage has occurred that causes discontinuity or shorting. The continuity test fixture |

立威科技股份有限公司 Attend Technology Inc.
新北市汐止區新台五路一段75號6樓之二
6F-2, No.75, Sec.1, Xintai 5th Rd., Xizhi-Dist., New Taipei City 221, Taiwan, R.O.C.
TEL 886 2 2698 7028 FAX 886 2 2698 7078 WEBSITE www.attend.com.tw

| | |
|---|---|
| | shall provide a planar surface on the mating side located 6.20 ± 0.20 mm from the receptacle Datum A, perpendicular to the direction of insertion. No moment forces are applied to the plug during this continuity test. Figure illustrates an example continuity test fixture to perform the continuity test. The Dielectric Withstanding Voltage test shall be conducted after the continuity test to verify plug compliance.<br>  <br><br>The plug shall disengage from the test fixture or demonstrate mechanical failure (i.e., the force applied during the test procedure peaks and drops off) when a moment of 2.0 Nm is applied to the plug in the up and down directions and a moment 3.5 Nm is applied to the plug in the left and right directions. A new plug is required for each of the four test directions. An example of the mechanical failure point and an illustration of the wrenching test fixture are shown respectively.<br>  |
| Durability or Insertion/Extraction Cycles | The durability rating shall be 10,000 cycles minimum for the USB Type-C connector family. The durability test shall be done at a maximum rate of 200 cycles per hour and no physical damage to any part of the connector and cable assembly shall occur.<br>Durability – 1000 cycles (Normal) → 1500 cycles (Normal) → 2500 cycles (Reverse) → 2500 cycles (Normal) → 2500 cycles (Reverse)<br><br>(EIA 364-09) |

立威科技股份有限公司 Attend Technology Inc.
新北市汐止區新台五路一段75號6樓之二
6F-2, No.75, Sec.1, Xintai 5th Rd., Xizhi-Dist., New Taipei City 221, Taiwan, R.O.C.
TEL 886 2 2698 7028 FAX 886 2 2698 7078 WEBSITE www.attend.com.tw

## ENVIRONMENTAL

The connector interface environmental tests shall follow EIA 364-1000.01, Environmental Test Methodology for Assessing the Performance of Electrical Connectors and Sockets Used in Business Office Applications.

Since the connector defined has more than 0.127 mm wipe length, Test Group 6 in EIA 364-1000.01 is not required. The temperature life test duration and the mixed flowing gas test duration values are derived from EIA 364-1000.01 based on the field temperature per the following

| Item | Requirement & Test Condition |
|---|---|
| Temperature Life test temperature and duration | 105 °C for 72 hours |
| Temperature Life test temperature and duration for preconditioning | 105 °C for 72 hours |
| Mixed flowing gas test duration | 7 days |
| The pass/fail criterion for the low level contact resistance (LLCR) | |

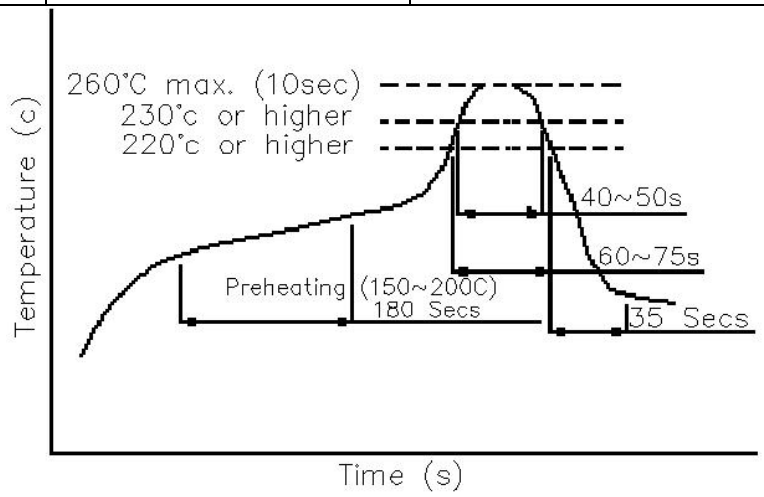
**Test groups(EIA-364-1000.01) /Amount : 5pcs**

| Description | Group1 | Group2 | Group3 | Group7 |
|---|---|---|---|---|
| Low level contact resistance | 1,4,6 | 1,4,6,8 | 1,4,6 | 2,4 |
| Durability (preconditioning) | 2 | 2 | 2 | |
| Durability | | | | 3 |
| Temperature life | 3 | | | |
| Temperature life (preconditioning) | | | 3 | |
| Reseating | 5 | 7 | | |
| Thermal shock | | 3 | | |
| Cyclic temperature & humidity | | 5 | | |
| Vibration | | | 5 | |
| Mixed flowing gas | | | | |
| Thermal disturbance | | | | |
| Thermal cycling | | | | |
| Dielectric withstanding voltage | | | | 1,5 |

立威科技股份有限公司 Attend Technology Inc.
新北市汐止區新台五路一段75號6樓之二
6F-2, No.75, Sec.1, Xintai 5th Rd., Xizhi-Dist., New Taipei City 221, Taiwan, R.O.C.
TEL 886 2 2698 7028 FAX 886 2 2698 7078 WEBSITE www.attend.com.tw

## SOLDER ABILITY

| Item | Requirement | Test Condition |
|---|---|---|
| Resistance to Soldering Heat | Without deformation of case or excessive looseness of the terminals (pin). | Temperature Endurance Connector must be able to endure 3 pass with profile of peak temperature at 260℃ for 10sec above, and Time above liquid (>217℃) for more than 60 sec. (It is temperature at component surface). |
| Solder ability | 95% of immersed area must show no voids, Pinholes | Dip solder tails into the molten solder (held at 245±5℃) up to 0.5mm from the tip of tails for 3±0.5sec) |




Lead Free Infrared Reflow Condition