

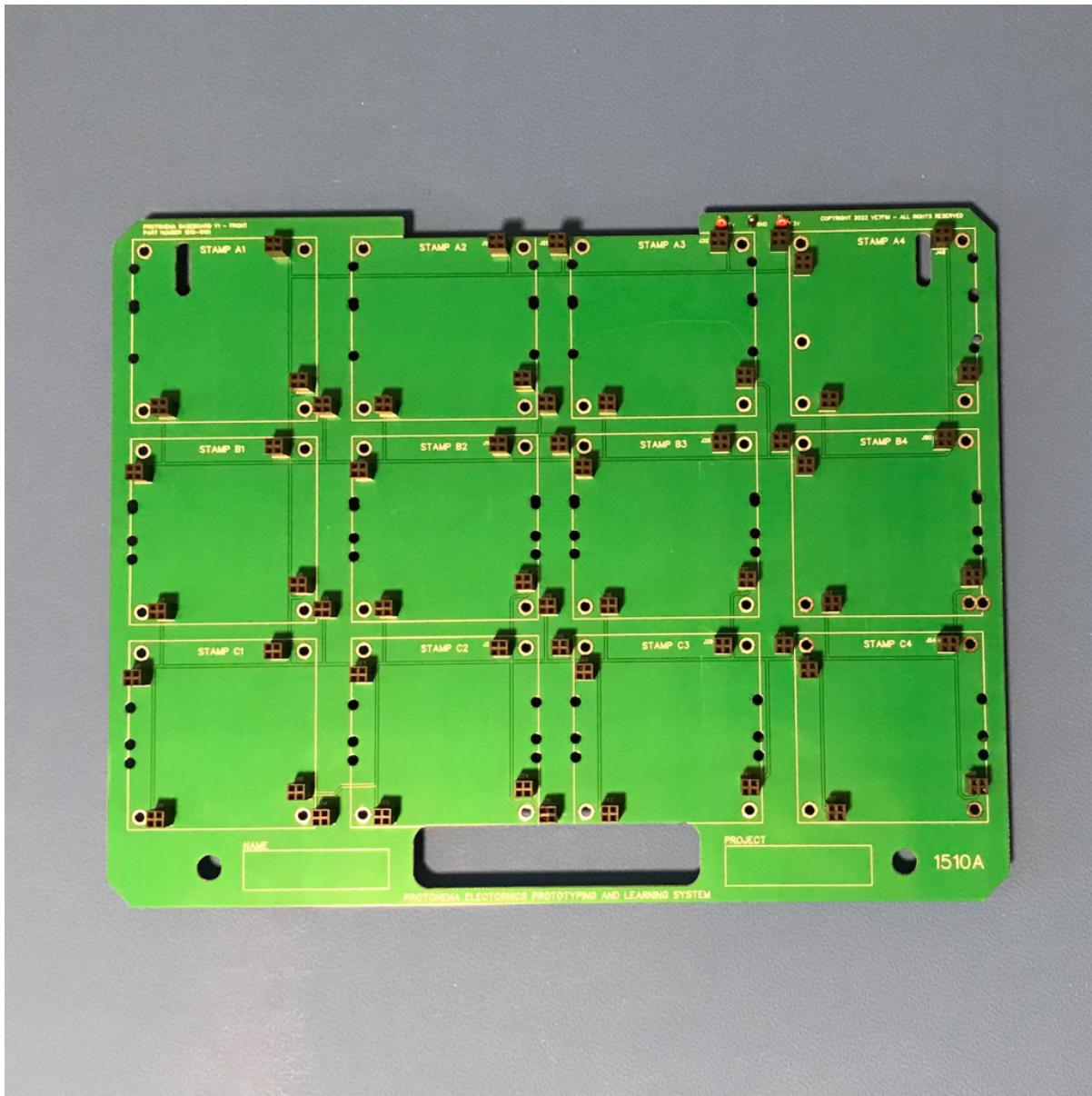
1

# ASSEMBLY INSTRUCTIONS

2

3

## 1510A Protonema Baseboard



5 Document control number: 1510-8010

6 Document date: 2022-09-04

7 Document revision: v0.2

8 ABSTRACT: This document provides instructions on how to assemble and test a 1510A Protonema baseboard. A  
9 complete bill of materials is included as an annex.

10 Suggestions and corrections should be directed to <http://www.github.com/dslik/protonema/issues>

11 Serial number: Assembly date: Assembled by:

12 USAGE

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51 Revision history

Table 1: Document Revisions

Version	Date	Change	Approver
0.1	2022-07-04	Initial draft for internal review	D. Slik
0.2	2022-09-04	Added RoHS declarations	D. Slik

# Table of contents

<b>53 I 1510A assembly instructions</b>	<b>1</b>
<b>54   Section 1: Overview</b>	<b>2</b>
<b>55   Section 2: Prerequisites</b>	<b>3</b>
56    2.1 Required safety training . . . . .	3
57    2.2 Required skills training . . . . .	4
<b>58   Section 3: Preparation</b>	<b>5</b>
59    3.1 Workspace . . . . .	5
60    3.2 Project consumables . . . . .	6
61    3.3 Project tools . . . . .	7
62    3.4 Parts preparation . . . . .	10
63      3.4.1 PCBs and PCBA . . . . .	10
64      3.4.2 Loose components . . . . .	11
65      3.4.3 Packaging materials . . . . .	13
<b>66   Section 4: Assembly</b>	<b>15</b>
67    4.1 1510A assembly . . . . .	15
<b>68   Section 5: Test</b>	<b>18</b>
69    5.1 Visual inspection . . . . .	18
70    5.2 QC final check . . . . .	19
71    5.3 QC PASS . . . . .	21
72    5.4 QC FAIL . . . . .	22
<b>73   Section 6: Packaging</b>	<b>23</b>
74    6.1 1510A packing . . . . .	23
<b>75   Section 7: Clean-up</b>	<b>26</b>
76    7.1 Consumables . . . . .	26
77    7.2 Tools . . . . .	26
78    7.3 Workspace . . . . .	28
<b>79   Section 8: Record keeping</b>	<b>29</b>
80    8.1 1510A record keeping . . . . .	29
<b>81   Section 9: Process improvement</b>	<b>31</b>
82    9.1 Feedback . . . . .	31
<b>83 II Annexes</b>	<b>32</b>
<b>84   Section 10: Printed Circuit Boards</b>	<b>33</b>
85    10.1 1510-0101 PCB . . . . .	33
<b>86   Section 11: Bill of materials</b>	<b>35</b>
87    11.1 1510A baseboard . . . . .	35
<b>88   Section 12: Reduction of Hazardous Materials</b>	<b>36</b>
89    12.1 MG Chemicals 4900 . . . . .	37
90    12.2 JLC lead-free PCB . . . . .	38
91    12.3 Connfly DS1023-2*2SF11 . . . . .	39
92    12.4 Bisco TP-104-13-02 . . . . .	40
93    12.5 Bisco TP-105-01-00 . . . . .	41
94    12.6 Cloverdale VSQBC35 . . . . .	42

# List of Figures

95	Fig. 1:	Assembly Desk . . . . .	5
97	Fig. 2:	1 pair ESD gloves . . . . .	6
98	Fig. 3:	1 spool MG Chemicals 4900 Lead Free No-Clean Wire Solder Sn96.2Ag2.8Cu0.4 (96.2/2.8/0.4) 20 AWG . . . . .	6
99	Fig. 4:	Tools Container . . . . .	7
100	Fig. 5:	Hozan F-23 components tray . . . . .	7
101	Fig. 6:	Digital multimeter . . . . .	8
102	Fig. 7:	Fine-tipped Sharpie marker . . . . .	8
103	Fig. 8:	1510-0111 v0.3 fixture . . . . .	8
104	Fig. 9:	Sissors . . . . .	9
105	Fig. 10:	1x 1510-0101 v0.4 - Baseboard PCB . . . . .	10
106	Fig. 11:	57x DS1023-2*2SF11 - 2.54mm by 2.54mm Straight 2x2P Female Headers . . . . .	11
107	Fig. 12:	2x TP-104-13-02 - Red Test Points . . . . .	11
108	Fig. 13:	1x TP-105-01-00 - Black Test Point . . . . .	11
109	Fig. 14:	6x VSQBC35 - Clear Rubber Feet . . . . .	12
110	Fig. 15:	1x QC Sticker . . . . .	13
111	Fig. 16:	1x Large size anti-static bag . . . . .	13
112	Fig. 17:	1x Packing box with foam inserts . . . . .	13
113	Fig. 18:	2x 1510A Stickers . . . . .	14
114	Fig. 19:	Roll of packing tape . . . . .	14
116	Fig. 20:	Aligned 1510-0111 fixture . . . . .	15
117	Fig. 21:	Fixtures with placed 2x2 female sockets . . . . .	15
118	Fig. 22:	Rear of 1510-0101 PCB aligned with sockets . . . . .	16
119	Fig. 23:	Rear of 1510-0101 PCB with sockets soldered down . . . . .	16
120	Fig. 24:	Rear of 1510-0101 PCB with feet mounted . . . . .	16
121	Fig. 25:	Front of 1510-0101 PCB with test points inserted . . . . .	17
122	Fig. 26:	1510-0101 PCB with test points soldered down . . . . .	17
123	Fig. 27:	Resistance measurement . . . . .	19
124	Fig. 28:	Resistance measurement . . . . .	19
125	Fig. 29:	Resistance measurement . . . . .	20
126	Fig. 30:	1510A with QC Passed sticker . . . . .	21
127	Fig. 31:	1510A with SN and QC Date . . . . .	21
128	Fig. 32:	1510A in anti-static bag . . . . .	22
129	Fig. 33:	1510A in QC Fail bin . . . . .	22
130	Fig. 34:	1510A in anti-static bag . . . . .	23
131	Fig. 35:	1510A in anti-static bag with sticker . . . . .	23
132	Fig. 36:	Example photographs of the sealed box . . . . .	24
133	Fig. 37:	1510A in box . . . . .	24
134	Fig. 38:	1510A in box with sticker . . . . .	24
135	Fig. 39:	1510A in box with sticker with serial number . . . . .	25
136	Fig. 40:	1510A in box, taped . . . . .	25
137	Fig. 41:	Clean assembly workstation . . . . .	28
138	Fig. 42:	Example of serial number on document cover . . . . .	29
139	Fig. 43:	1510-0101 PCB Front . . . . .	33
140	Fig. 44:	1510-0101 PCB Rear . . . . .	34

# List of Tables

142	Table 1: Document Revisions . . . . .	ii
143	Table 2: Safety training . . . . .	3
144	Table 3: Skills training . . . . .	4
145	Table 4: Prepare workspace . . . . .	5
146	Table 5: Assembly consumables . . . . .	6
147	Table 6: Assembly tools . . . . .	7
148	Table 7: PCBs and PCBA . . . . .	10
149	Table 8: Loose components . . . . .	11
150	Table 9: Packaging materials . . . . .	13
151	Table 10: 1510A assembly steps . . . . .	15
152	Table 11: 1510A visual inspection . . . . .	18
153	Table 12: 1510A QC final check . . . . .	19
154	Table 13: 1510A QC approval . . . . .	21
155	Table 14: 1510A QC fail . . . . .	22
156	Table 15: 1510A packaging . . . . .	23
157	Table 16: Consumables cleanup . . . . .	26
158	Table 17: Tools cleanup . . . . .	26
159	Table 18: Workspace cleanup . . . . .	28
160	Table 19: 1510A record keeping . . . . .	29
161	Table 20: 1510-0101 PCB . . . . .	33
162	Table 21: 1510A parts . . . . .	35
163	Table 22: MG Chemicals 4900 RoHS Compliance . . . . .	37
164	Table 23: JLC PCB RoHS Compliance . . . . .	38
165	Table 24: Connfly DS1023-2*2SF11 Compliance . . . . .	39
166	Table 25: Bisco TP-104-13-02 RoHS Compliance . . . . .	40
167	Table 26: Bisco TP-105-01-00 RoHS Compliance . . . . .	41
168	Table 27: Cloverdale VSQBC35 Compliance . . . . .	42

169

## **Part I**

170

# **1510A assembly instructions**

## 171 Section 1

# 172 Overview

173 This document describes the materials, processes, outcomes and verifications required to successfully assemble  
174 and test a 1510A Protonema Baseboard, a sub-component of the Protonema electronics prototyping and learning  
175 system.

176 A first-time reader should carefully review section 2 - prerequisites, and section 3 - preparation before beginning  
177 the assembly process.

178 This document serves both as instructions and as a record of the assembly of the product. When you finish each  
179 step in this document, sign your name in the "signature" box on the right to provide a record of completion.

180 When things go wrong, this document provides guidance for common issues that have been encountered in the  
181 past. When this document does not provide guidance, please contact your quality management representative,  
182 who will help you fill out an exception report. These reports help improve process quality and product quality, and  
183 these reports are incorporated into future revisions of this document.

184 Always remember: If you are unable to successfully complete these instructions, that means the processes sup-  
185 porting you (including this document) have failed you. Our processes are built for your success, and by improving  
186 our processes, we help everyone succeed.

187

## Section 2

188

# Prerequisites

189

### 2.1 Required safety training

- 190 The following safety training units must be completed before assembling this product.
- 191 By signing (or applying your stamp) on the right, you indicate that you have completed the following training:

Table 2: Safety training

Item #	Description	Signature/Stamp
2.1.1	0102-0100 - Safety reporting policies and procedures training  Key topics: Understanding policies and procedures around how to identify, contain and report a safety-related issue in the workplace, including damaged or malfunctioning equipment, leaks, spills, and other occupational hazards.	Stamp or sign here
2.1.2	0102-0101 - Material safety data sheets training  Key topics: Understanding how to read material safety data sheets (MSDS) for materials you will be handling during product assembly, how they can affect your health and the health of the environment, how to safely handle and dispose of them, and what to do if there is a spill or accidental exposure.	Stamp or sign here
2.1.3	0102-0102 - Solder handling and disposal policies and procedures training  Key topics: Understanding policies and procedures related to handling solder and solder paste, stencil cleaning, and solder disposal.	Stamp or sign here
2.1.4	0102-0105 - Electro-static discharge controls policies and procedures training  Key topics: Understanding policies and procedures related to protecting equipment and components from electro-static discharge, including clothing, protective equipment, material handling and labelling.	Stamp or sign here

## 192 2.2 Required skills training

- 193 The following skills training units must be completed before assembling this product.
- 194 By signing (or applying your stamp) on the right, you indicate that you have completed the following training:

Table 3: Skills training

Item #	Description	Signature/Stamp
2.2.1	0103-0202 - ANSI/ESD S20.20 Electro-static discharge controls  Key topics: Understanding of ESD safety, the ESD control program, equipment and personnel grounding, EPAs, packaging and marking.	Stamp or sign here
2.2.2	0103-0203 - General components handling  Key topics: Understanding of safe component handling, including reeled components, components in JEDEC trays, and loose components. Includes avoiding contamination, moisture control, and component inventory management.	Stamp or sign here
2.2.3	0103-0414 - 5040-XTS reflow station  Key topics: Safe and effective use of the 5040-XTS reflow station, including use of the pre-heater, the hot air system, and the soldering iron. Covers inspection and verification, cleaning, preferred settings and best practice techniques.	Stamp or sign here
2.2.4	0103-0301 - IPC-A-610G - Acceptability of electronic assemblies  Key topics: Covers visual acceptability requirements for electronic assemblies, including handling considerations, hardware installation, component placement, soldering, terminal connections, wiring, marking and cleanliness.	Stamp or sign here
2.2.5	0103-0302 - IPC-J-STD-001F - Soldered electrical connections  Key topics: Covers soldering materials, general soldering and assembly requirements, wire and terminal connections, through-hole mounting, surface mounting of components, cleaning process requirements, PCB requirements, coatings and product assurance.	Stamp or sign here

## 195 Section 3

# 196 Preparation

### 197 3.1 Workspace

198 Before starting assembly, check out an assembly desk for a minimum of one hour. A single unit can be assembled  
 199 in half an hour, with an additional ten minutes per additional unit.

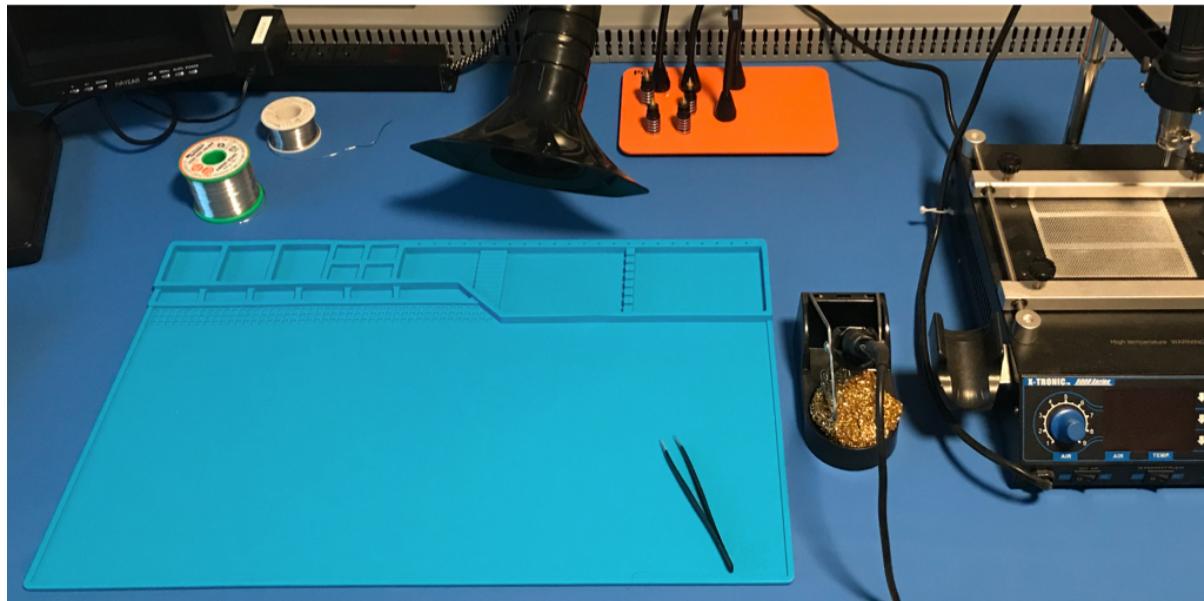


Fig. 1: Assembly Desk

Table 4: Prepare workspace

Step	Description	Signature/Stamp
3.1.1	Verify that the workspace has a clean assembly mat and anti-static mat, and that the cleaning record has been signed since last use.	Stamp or sign here
3.1.2	Verify that the HEPA fume extractor turns on, and you can feel air suction from the nozzle.	Stamp or sign here

continues on next page

Table 4 – continued from previous page

Step	Description	Signature/Stamp
3.1.3	Verify that the 5040-XTS rework station soldering iron tip is not worn down. If it is worn down, obtain a new 900M-T-I tip from the stores department.	Stamp or sign here

## 200 3.2 Project consumables

- 201 Obtain each of the below consumable items from the stores department:

Table 5: Assembly consumables

Item #	Description	Signature/Stamp
3.2.1	 <p>Fig. 2: 1 pair ESD gloves If you prefer to use your own pair of ESD gloves, make sure they are tested before use.</p>	Stamp or sign here
3.2.2	 <p>Fig. 3: 1 spool MG Chemicals 4900 Lead Free No-Clean Wire Solder Sn96.2Ag2.8Cu0.4 (96.2/2.8/0.4) 20 AWG</p>	Stamp or sign here

### 202 3.3 Project tools

- 203 Obtain a tools container labelled “1XXX Assembly Tools” from the 1XXX section of the stores supply shelf. At your  
204 assembly desk, use [Table 6](#) to verify that all the required tools are present.  
205 If any required tools are missing, return all tools and the tools container to the stores department, and obtain another  
206 tools container.



Fig. 4: Tools Container

- 207 Remove each of the following tools from the tools container, and place them on the anti-static mat of the assembly  
208 desk:

Table 6: Assembly tools

Item #	Description	Signature/Stamp
3.3.1		<span>Stamp or sign here</span>

Fig. 5: Hozan F-23 components tray

continues on next page

Table 6 – continued from previous page

Item #	Description	Signature/Stamp
3.3.2	 Fig. 6: Digital multimeter	 Stamp or sign here
3.3.3	 Fig. 7: Fine-tipped Sharpie marker	 Stamp or sign here
3.3.4	 Fig. 8: 1510-0111 v0.3 fixture	 Stamp or sign here

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Table 6 – continued from previous page

Item #	Description	Signature/Stamp
3.3.5	 Fig. 9: Scissors	Stamp or sign here

**209 3.4 Parts preparation****210 3.4.1 PCBs and PCBAs**

211 NOTICE: All PCBs and PCBAs must be handled with gloves to prevent marking with skin oils.

212 NOTICE: PCBs are removed from manufacturer packaging only when needed.

Table 7: PCBs and PCBAs

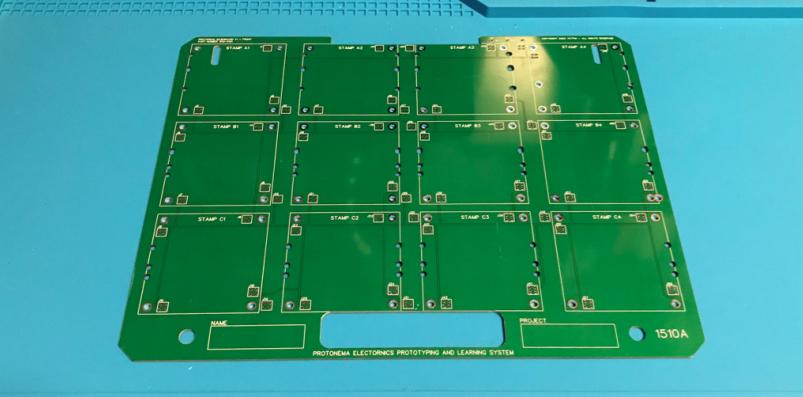
Item #	Description	Signature/Stamp
3.4.1.1	No marking required 	Stamp or sign here

Fig. 10: 1x 1510-0101 v0.4 - Baseboard PCB

### 213 3.4.2 Loose components

- 214 All loose components are stored on the shelf labelled "1XXX Components". Take the components tray and obtain  
215 the following quantities of the following parts:

Table 8: Loose components

Item #	Description	Signature/Stamp
3.4.2.1	No marking required    Fig. 11: 57x DS1023-2*2SF11 - 2.54mm by 2.54mm Straight 2x2P Female Headers	Stamp or sign here
3.4.2.2	No marking required    Fig. 12: 2x TP-104-13-02 - Red Test Points	Stamp or sign here
3.4.2.3	No marking required    Fig. 13: 1x TP-105-01-00 - Black Test Point	Stamp or sign here

continues on next page

Table 8 – continued from previous page

Item #	Description	Signature/Stamp
3.4.2.4	No marking required  Fig. 14: 6x VSQBC35 - Clear Rubber Feet	Stamp or sign here

### 216 3.4.3 Packaging materials

217 All packaging materials are stored on the shelf labelled "15XX Components". Take the packaging box and obtain  
 218 the following quantities of the following materials:

Table 9: Packaging materials

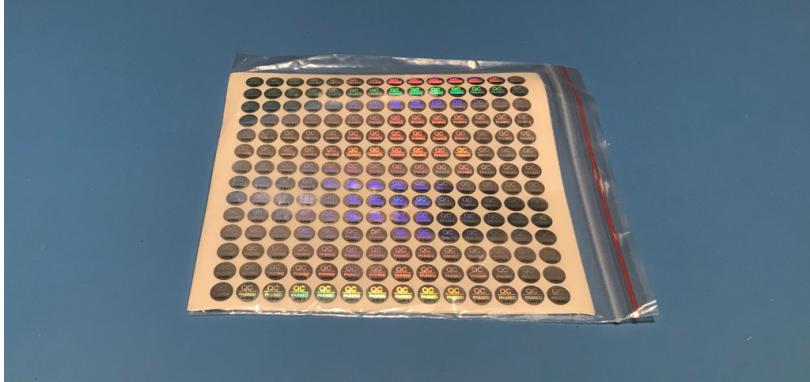
Item #	Description	Signature/Stamp
3.4.3.1	No marking required  	Stamp or sign here
3.4.3.2	No marking required  	Stamp or sign here
3.4.3.3	No marking required  	Stamp or sign here

Fig. 15: 1x QC Sticker

continues on next page

Table 9 – continued from previous page

Item #	Description	Signature/Stamp
3.4.3.4	<p>No marking required</p> 	<div style="text-align: center; margin-top: 100px;"> <span>Stamp or sign here</span> </div>
3.4.3.5	<p>No marking required</p> 	<div style="text-align: center; margin-top: 100px;"> <span>Stamp or sign here</span> </div>

## <sup>219</sup> Section 4

# <sup>220</sup> Assembly

### <sup>221</sup> 4.1 1510A assembly

<sup>222</sup> This assembly step takes 20 minutes.

Table 10: 1510A assembly steps

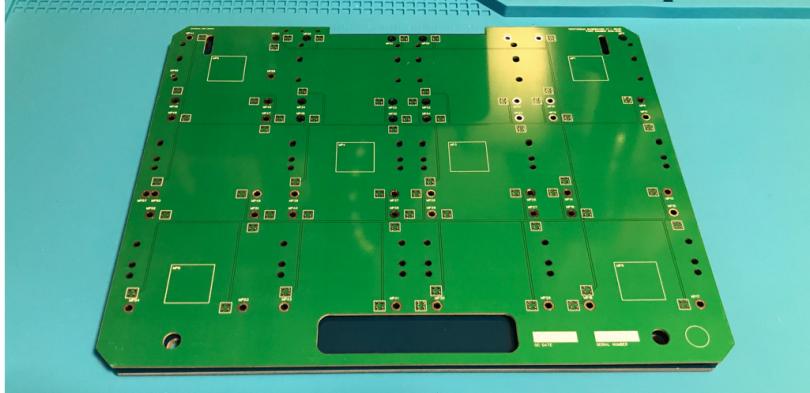
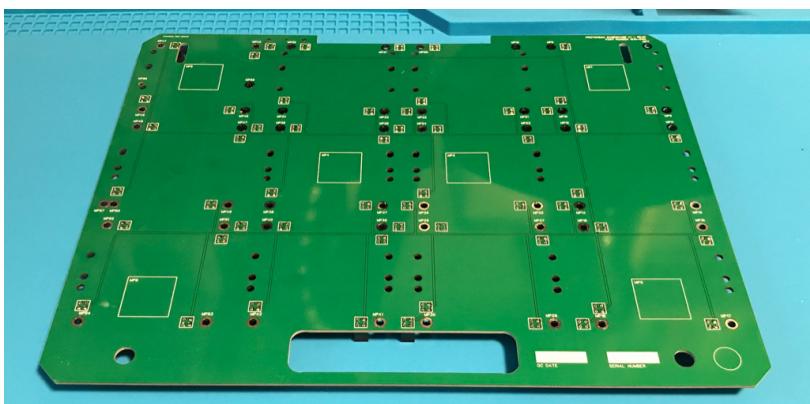
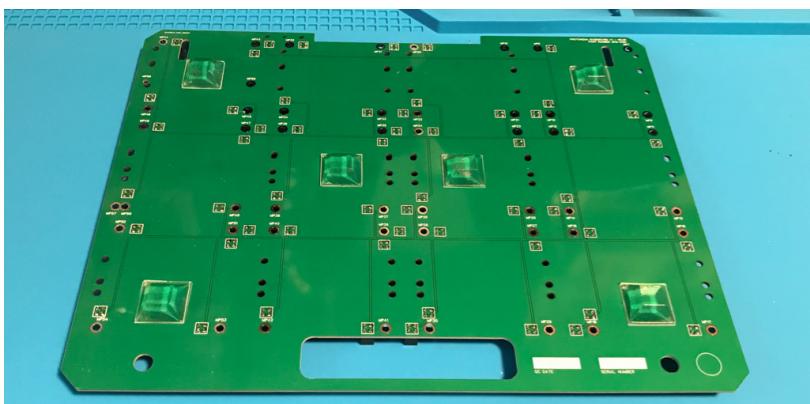
Step #	Description	Signature/Stamp
4.1.1	<p>Take the 1510-0111 v0.3 fixture and align it on the assembly mat</p> 	<input type="text"/> <span>Stamp or sign here</span>
4.1.2	<p>Place 2x2 female sockets pins-up in the slots in the fixture labelled J1 - J57. All rectangular holes should be filled.</p> 	<input type="text"/> <span>Stamp or sign here</span>

Fig. 20: Aligned 1510-0111 fixture

Fig. 21: Fixtures with placed 2x2 female sockets

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Table 10 – continued from previous page

Step #	Description	Signature/Stamp
4.1.3	<p>Take the 1510-0101 PCB and rotate it upside-down, with the handle facing you. Carefully align and lower the PCB onto the upwards-facing pins of the 2x2 female sockets.</p> 	<span>Stamp or sign here</span>
4.1.4	<p>Solder the 57 sockets to the 1510-0101 PCB.</p> <p>CAUTION: The 1510-0101 PCB will often have a slight warp. To ensure that the 2x2 female sockets are aligned flush with the PCB, it is necessary to push down on the PCB while soldering the sockets.</p> 	<span>Stamp or sign here</span>
4.1.5	<p>Remove the protective paper from the clear rubber feet, and attach them to positions MP1 - MP6</p> 	<span>Stamp or sign here</span>

continues on next page

Table 10 – continued from previous page

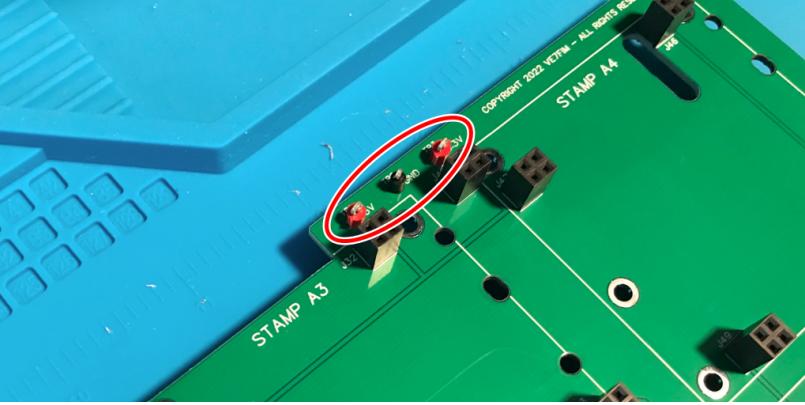
Step #	Description	Signature/Stamp
4.1.6	<p>Remove the 1510-0101 PCB from fixture, and move the fixture to the side.</p> <p>Flip the 1510-0101 PCB over to the front. Insert the three test points into TP1 - TP3 at the top-right, making sure that the black test point is used for GND.</p> 	Stamp or sign here
4.1.7	Solder the three test points to the 1510-0101 PCB.	Stamp or sign here

Fig. 25: Front of 1510-0101 PCB with test points inserted

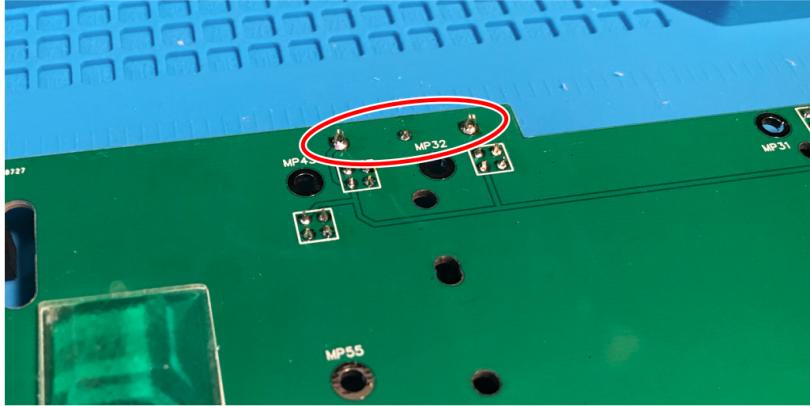


Fig. 26: 1510-0101 PCB with test points soldered down

## <sup>223</sup> Section 5

### <sup>224</sup> Test

#### <sup>225</sup> 5.1 Visual inspection

<sup>226</sup> This test process takes 2 minutes.

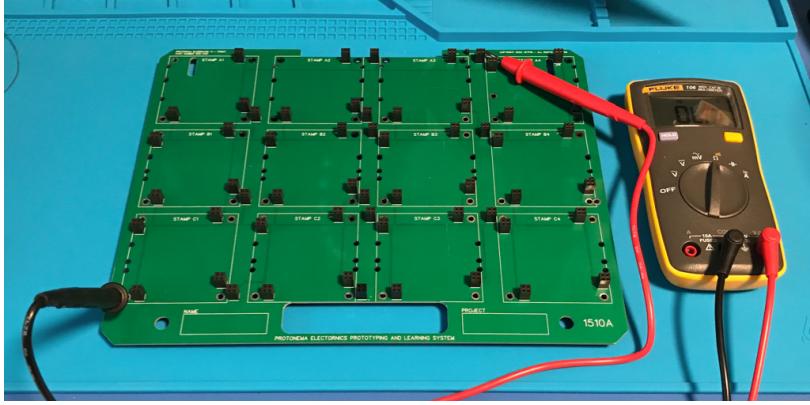
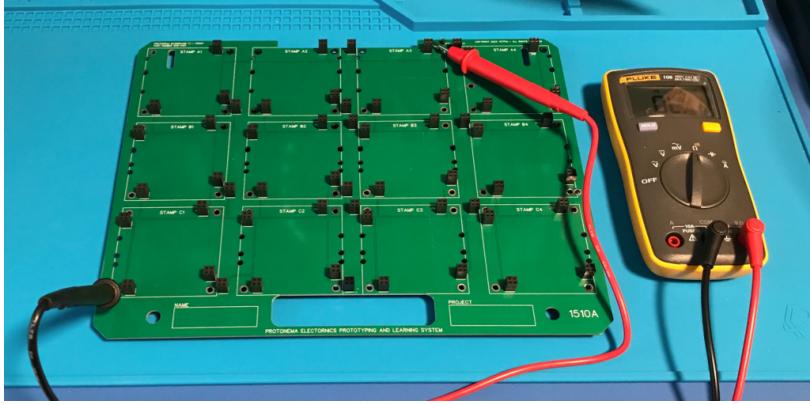
Table 11: 1510A visual inspection

Step #	Description	Signature/Stamp
5.1.1	Verify that there are no loose parts.	Stamp or sign here
5.1.2	Verify that there are no visible fingerprints.	Stamp or sign here

## 227 5.2 QC final check

228 This test process takes 2 minutes.

Table 12: 1510A QC final check

Step #	Description	Signature/Stamp
5.2.1	<p>Using the multimeter, verify that there are no shorts between ground and the 3.3 power rail.</p> <p>If test does not pass, write down the unexpected behaviour in the "Signature/Stamp" column on the right.</p> 	Stamp or sign here
5.2.2	<p>Using the multimeter, verify that there are no shorts between ground and the 5V power rail.</p> <p>If test does not pass, write down the unexpected behaviour in the "Signature/Stamp" column on the right.</p> 	Stamp or sign here

continues on next page

Table 12 – continued from previous page

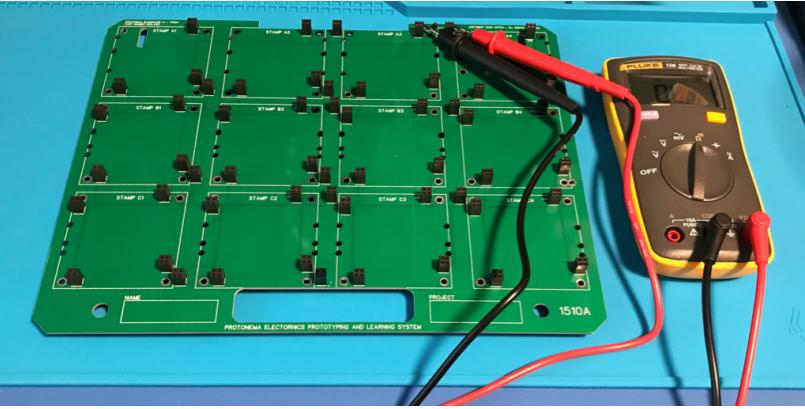
Step #	Description	Signature/Stamp
5.2.3	<p>Using the multimeter, verify that there are no shorts between the 3.3 and 5V power rails.</p> <p>If test does not pass, write down the unexpected behaviour in the "Signature/Stamp" column on the right.</p> 	<p>Stamp or sign here</p>

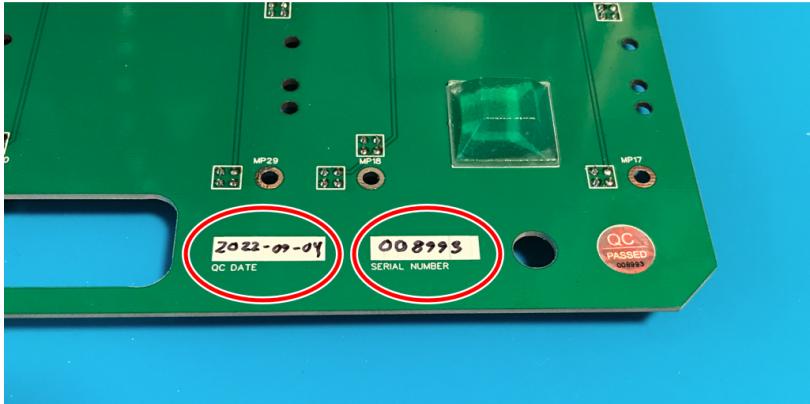
Fig. 29: Resistance measurement

## 229 5.3 QC PASS

230 Only perform these steps if all QC checks have passed.

231 This test process takes 1 minutes.

Table 13: 1510A QC approval

Step #	Description	Signature/Stamp
5.3.1	Affix QC Passed sticker in location shown below:  	Stamp or sign here
5.3.2	Using the sharpie pen, write down the serial number (from the QC sticker) and QC date on the rear of the PCB. Wait for five minutes for the ink to dry. Write down serial number in "Signature" column to the right.  	Stamp or sign here
5.3.3	Take two photographs, one of the front of the 1510A, and one of the back of the 1510A.	Stamp or sign here

## 232 5.4 QC FAIL

- 233 Only perform these steps if any QC check have failed.  
 234 This test process takes 2 minutes.

Table 14: 1510A QC fail

Step #	Description	Signature/Stamp
5.4.1	Place the 1510A module in the anti-static bag.  	Stamp or sign here
5.4.2	Take an A4 plastic bag, and place the 1510A, along with this document, in the "QC Fail" bin  	Stamp or sign here

## 235 Section 6

# 236 Packaging

### 237 6.1 1510A packing

238 This packaging process takes 3 minutes.

Table 15: 1510A packaging

Step #	Description	Signature/Stamp
6.1.1	<p>Place the 1510A module in the anti-static bag.</p> 	<div style="text-align: center; border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content;"> <span>Stamp or sign here</span> </div>
6.1.2	<p>Seal the anti-static bag with a 1510A sticker.</p> 	<div style="text-align: center; border: 1px solid black; border-radius: 50%; padding: 10px; width: fit-content;"> <span>Stamp or sign here</span> </div>

Fig. 34: 1510A in anti-static bag.

continues on next page

Table 15 – continued from previous page

Step #	Description	Signature/Stamp
6.1.3	Using the Sharpie pen, Write down the serial number of the 1510A on the sticker, at the end of the line listing the 1510A.	Stamp or sign here
	 A photograph of a black plastic bag containing a green printed circuit board (PCB) is shown inside a clear plastic bag. A yellow sticker on top of the bag reads "1510A" in large letters, followed by smaller text: "PACKAGE CONTENTS: 1x 1510 PROTONEEMA BASEBOARD" and a serial number "008913". A red circle highlights the serial number area.	
6.1.4	Place 1510A bag in the box on top of the bottom foam padding.	Stamp or sign here
	 A photograph of the same green PCB from Fig. 36, now placed inside a dark brown cardboard box. The box contains a layer of orange-red foam padding at the bottom, and the PCB is resting on top of it.	
6.1.5	Take a photograph of the 1510A in the box.	Stamp or sign here
6.1.6	Close the box and Affix a 1510A sticker to the lid of the box.	Stamp or sign here
	 A photograph of the closed dark brown cardboard box. A yellow sticker on the front lid reads "1510A" in large letters, followed by smaller text: "PACKAGE CONTENTS: 1x 1510 PROTONEEMA BASEBOARD".	

Fig. 36: Example photographs of the sealed box

continues on next page

Table 15 – continued from previous page

Step #	Description	Signature/Stamp
6.1.7	Using the Sharpie pen, Write down the serial number of the 1510A on the sticker, at the end of the line listing the 1510A.	Stamp or sign here
	 <p>Fig. 39: 1510A in box with sticker with serial number.</p>	
6.1.8	Using the ESD tape, secure the lid of the box.	Stamp or sign here
	 <p>Fig. 40: 1510A in box, taped.</p>	
6.1.9	Take a photograph of the sealed 1510A box.	Stamp or sign here

239

## Section 7

240

### Clean-up

241

#### 7.1 Consumables

242

This packaging process takes 5 minutes.

Table 16: Consumables cleanup

Step #	Description	Signature/Stamp
7.1.1	If the ESD gloves have contacted solder paste, or are soiled, they shall be disposed of in the standard waste bin.	Stamp or sign here
7.1.2	If there is unused solder wire on the spool, it shall be returned to stores.	Stamp or sign here
7.1.3	Loose component packaging shall be disposed of in the standard waste bin.	Stamp or sign here

243

#### 7.2 Tools

244

This cleanup process takes 5 minutes.

Table 17: Tools cleanup

Step #	Description	Signature/Stamp
7.2.1	All tools shall be returned to the "1XXX Assembly Tools" container, and returned to the stores supply shelf.  If any tools are damaged or worn, return the container to stores, and let the manager know which tool is damaged or worn.	Stamp or sign here

continues on next page

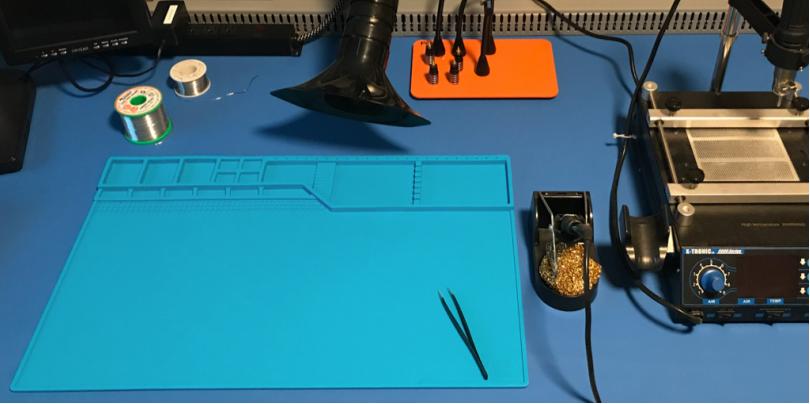
Table 17 – continued from previous page

Step #	Description	Signature/Stamp
7.2.2	Remove this document from the springback binder.	 Stamp or sign here
7.2.3	Print a new copy of this document, and insert it into the springback binder that this document was originally in.	 Stamp or sign here
7.2.4	Return the springback binder with the newly printed document to the 1XXX section of the store supply shelf.	 Stamp or sign here

## 245 7.3 Workspace

246 This packaging process takes 5 minutes.

Table 18: Workspace cleanup

Step #	Description	Signature/Stamp
7.3.1	Make sure that the workspace is clean and as it was when you started the assembly.  <p>Fig. 41: Clean assembly workstation</p>	Stamp or sign here

## 247 Section 8

# 248 Record keeping

### 249 8.1 1510A record keeping

250 This packaging process takes 1 minutes.

Table 19: 1510A record keeping

Step #	Description	Signature/Stamp
1	<p>Write the serial number, the date, and your first and last name in large print on the bottom of the front cover of this document.</p> <div style="text-align: center; border: 1px solid black; padding: 10px; margin-top: 10px;"> <b>FPO</b> </div>	 <p>Stamp or sign here</p>
2	Create a new folder under the 1510A folder, named with the serial number.	 <p>Stamp or sign here</p>
3	Copy all photos taken during the assembly process into the newly created folder in step #2.	 <p>Stamp or sign here</p>
4	Remove this document from the binding clamps, scan the document, and save the scanned PDF into the newly created folder in step #2, with the name "1510A-SNAAAAAA.pdf", where AAAAAA is replaced with the serial number.	 <p>Stamp or sign here</p>

continues on next page

Table 19 – continued from previous page

Step #	Description	Signature/Stamp
5	Three-hole punch the document, then file it at the end of the current month's assembly records binder.	 Stamp or sign here
6	Add an entry to the assembly records binder, "<Date> - 1510A - SN# AAAAAAA - <Your Name>", where <Date> is replaced with today's date in ISO-8601 YYYY-MM-DD, where AAAAAAA is replaced with the serial number of the 1510A, and where <Your Name> is replaced with your first and last name.	 Stamp or sign here

251 **Section 9**

252 **Process improvement**

253 **9.1 Feedback**

254 Please submit an issue to the [Protonema Issue Repository](http://www.github.com/dslik/protonema/issues) (<http://www.github.com/dslik/protonema/issues>) if you  
255 encounter any of the below situations:

- 256     • Error in this document  
257     • Unclear directions  
258     • Suggested process improvements  
259     • Results of QC failure investigations  
260     • Tool change suggestions

261 Qualtiy processes and documentation is a team effort. This document would not exist without the participation and  
262 contributions of the entire assebly team.

263 Thank you for reading this assembly instructions document.

264 End of document.

265

## **Part II**

266

## **Annexes**

267

## Section 10

268

# Printed Circuit Boards

269

## 10.1 1510-0101 PCB

Table 20: 1510-0101 PCB

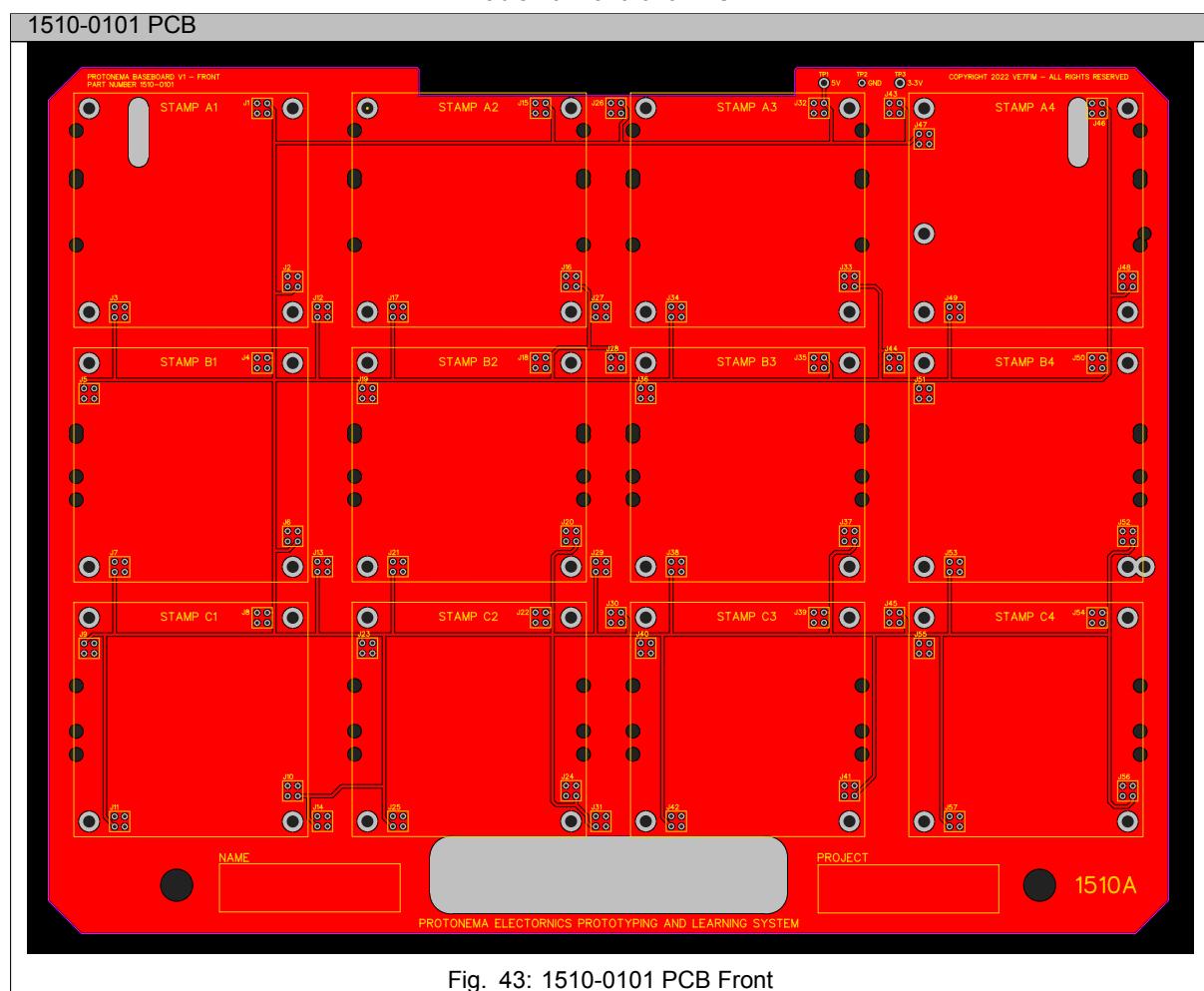


Fig. 43: 1510-0101 PCB Front

continues on next page

Table 20 – continued from previous page

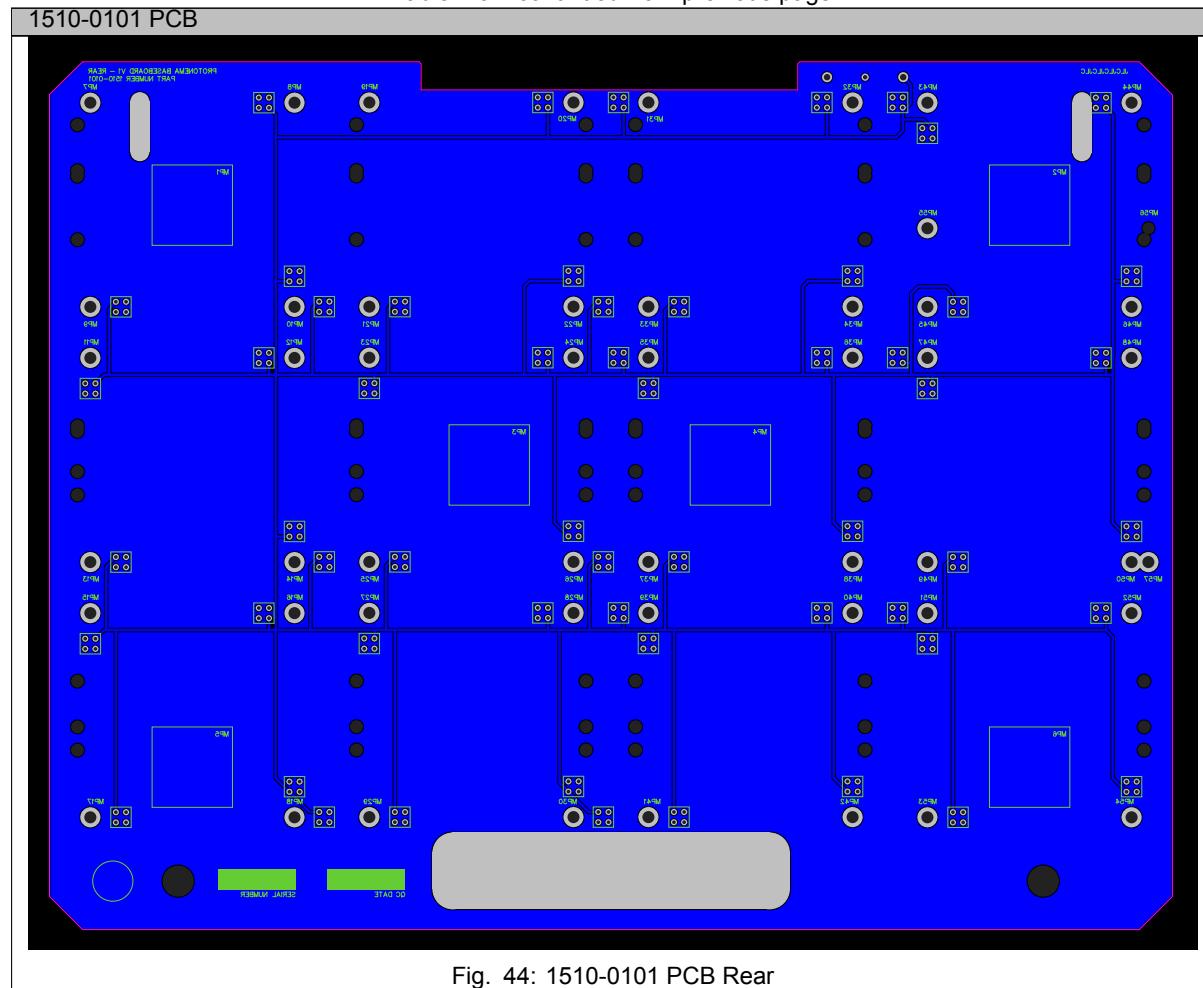


Fig. 44: 1510-0101 PCB Rear

## 270 Section 11

### 271 Bill of materials

#### 272 11.1 1510A baseboard

273 The parts required to assemble a 1510A are listed in Table 21.

Table 21: 1510A parts

Reference Designation	Qty	Description	Manufacturer	Manufacturer Part Number	Supplier	Cost
1510-0101	1	Baseboard PCB	JLCPCB	Y234-2154951A	JLCPCB	\$7.97 CAD
J1 - J57	57	2.54mm by 2.54mm Straight 2x2P Female Header	CONNFLY Elec	DS1023-2*2SF11	LCSC	\$6.65 CAD
TP1, TP3	2	Red Test Point	Bisco Industries	TP-104-13-02	Bisco	\$0.32 CAD
TP2	1	Black Test Point	Bisco Industries	TP-105-01-00	Bisco	\$0.21 CAD
MP1 - MP6	6	Clear Rubber Feet	Cloverdale Supply	VSQBC35	Amazon	\$2.41 CAD
SK1	1	QC Sticker	Order by Description			\$0.0094 CAD
Total						\$17.57 CAD

274 **Section 12**

275 **Reduction of Hazardous Materials**

276 Compliance declarations, in BOM order.

## 277 12.1 MG Chemicals 4900

Table 22: MG Chemicals 4900 RoHS Compliance

Declaration for MG Chemicals 4900 -  
<https://www.mgchemicals.com/downloads/msds/01%20English%20Can-USA%20SDS/sds-4900-4917.pdf>



**ISO 9001:2015 Quality Management System**  
 SAI Global File #004008  
 Burlington, Ontario, Canada

**SAC305 NO CLEAN SOLDER WIRE**

**4900-4917**

**California Proposition 65** (Chemicals known to cause cancer or reproductive toxicity, USA)

This product does not contain any of the listed substances.

### Europe

**RoHS** (Restriction of Hazardous Substances Directive)

This product does not contain any lead, cadmium, mercury, hexavalent chromium, PBB's, PBDE's, DEHP, BBP, DBP, or DIBP and complies with European RoHS regulations.

**WEEE** (Waste Electrical and Electronic Equipment Directive)

This product is not a piece of electrical or electronics equipment, and is therefore not governed by this regulation.

### Section 16: Other Information

**SDS Prepared by** MG Chemical's Regulatory Department

**Date of Review** 06 March 2020

**Supersedes** 09 July 2019

**Reason for Changes:** Update to the emergency phone number information.

### Reference

1) ACGIH 2017 TLVs and BEIs: Based on the documentation of the threshold limit values for chemical substances and physical agents & biological exposure indices, American Conference of Governmental of Industrial Hygienist Cincinnati, OH (2017).

2) All toxicological data were checked against the RTECS (Registry of Toxic Effects of Chemical Substances®)

*Section continued on the next page*

Page **12 of 13**

Date of Revision: 06 March 2020 / Ver. 3.01

## 278 12.2 JLC lead-free PCB

Table 23: JLC PCB RoHS Compliance

Declaration for JLCPBCB lead-free PCBs - <https://s3.amazonaws.com/helpscout.net/docs/assets/59f1de7804286313cffbb22c/images/5d4d09562c7d3a036965d6a3/ROHS-Certificate-of-Compliance.jpg>

ROHS-Certificate-of-Compliance.jpg 566x800 pixels

2022-08-16, 23:45



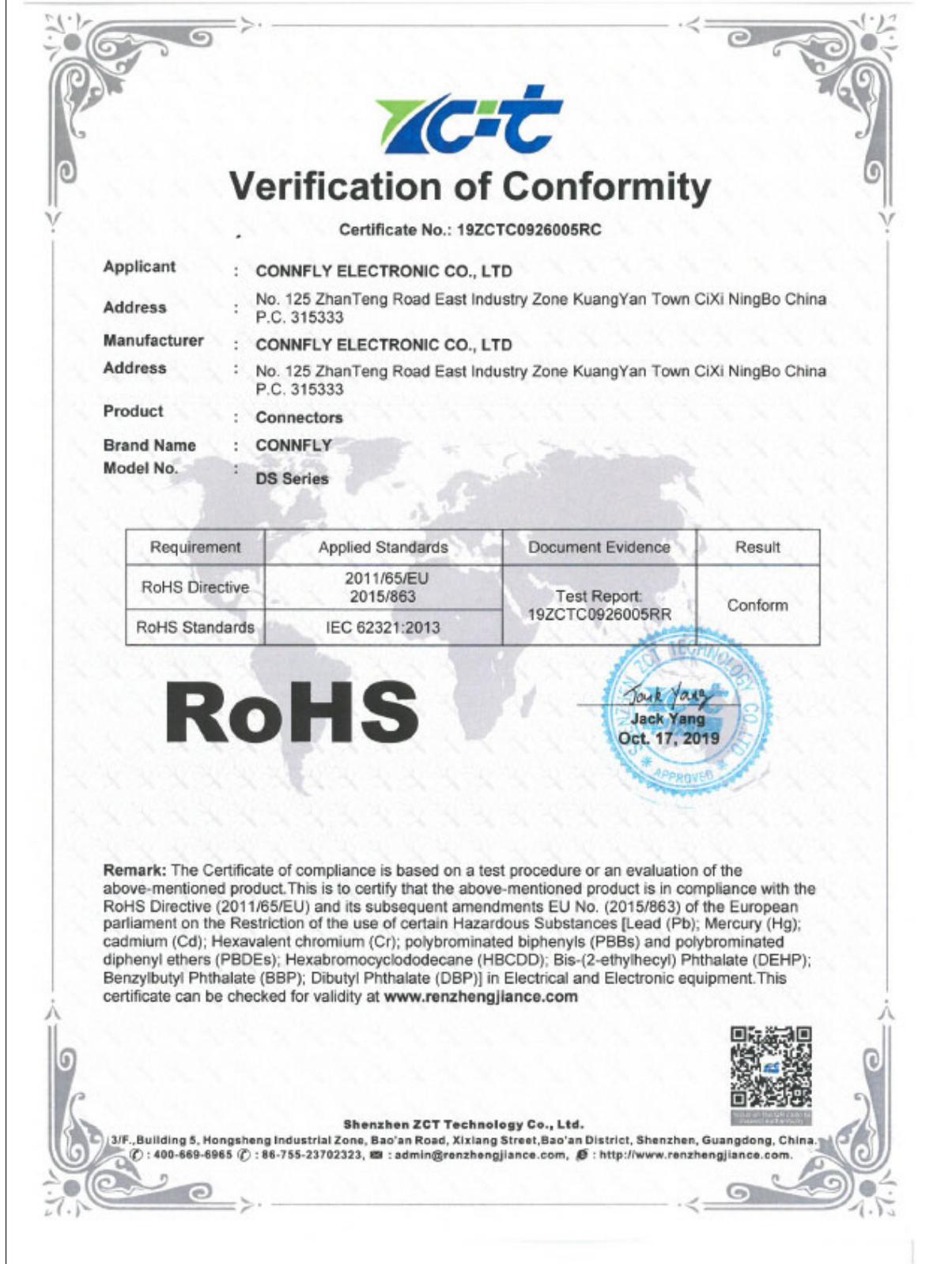
<https://s3.amazonaws.com/helpscout.net/docs/assets/59f1de7804286313cffbb22c/images/5d4d09562c7d3a036965d6a3/ROHS-Certificate-of-Compliance.jpg>

Page 1 of 1

279 **12.3 Connfly DS1023-2\*2SF11**

Table 24: Connfly DS1023-2\*2SF11 Compliance

Declaration for Connfly DS1023-2\*2SF11 -  
<http://en.connfly.group/static/upload/image/ico/RoHS□□□Connectors□.jpg>



## 280 12.4 Bisco TP-104-13-02

Table 25: Bisco TP-104-13-02 RoHS Compliance

Declaration for Bisco TP-104-13-02 - <https://www.toby.co.uk/uploads/publications/1500.pdf>

### Ordering Information

#### Example:

**TP-104 - 30 - 01**

<b>Series Designation:</b>	TP-104
<b>Number of Positions:</b>	1 through 30
<b>Color:</b>	00 = Black      05 = Green 01 = Brown     06 = Blue 02 = Red        07 = Purple 03 = Orange    08 = Gray 04 = Yellow    09 = White

### Product Description

The new TP-104 Series takes Components Corporations highly-efficient and economical loop configured test point design one step further, by adding a plastic standoff that boosts visibility and allows for easy polarization and identification. The TP-104 incorporates all of the design features of all Component's test points - solid non-slip grip of test clips and probes, low profile, single hole wave-solderable mounting, and the elimination of skin punctures suffered by users of wrap posts as substitute test points.

The TP-104 is furnished in 30-position breakaway strips with 0.125" centers that make storage, handling and even tandem installations a snap. Component's special hand tool #1040 further enhances board mounting with test point separating, gripping and positioning functions accomplished in one easy motion. Standard TP-104 colors are red and black, with special colors available on order.

The TP-104 can be ordered pre-cut to any number of positions up to 30. Individual and tandem units hold securely when inserted in .062" diameter holes for soldering operation. The rectangular passage in the TP-104's molded standoff maintains wire form alignment, important in tandem installations.

#### Certificate of Compliance with Directive 2011/65/EU RoHS and EU Regulation EC 1907/2006

This is to certify that Components Corporation designs, manufactures and supplies products to our customers that are in compliance with Directive 2011/65/EU RoHS and EU Regulation EC 1907/2006. This also pertains to procurement of raw material, component parts and processes.

the vital  
component

## 281 12.5 Bisco TP-105-01-00

Table 26: Bisco TP-105-01-00 RoHS Compliance

Declaration for Bisco TP-105-01-00 - <https://www.toby.co.uk/uploads/publications/1502.pdf>

### Ordering Information

#### Example:

TP-105 - 40 - 02

<input checked="" type="radio"/>	<b>Series Designation:</b>	TP-105
<input checked="" type="radio"/>	<b>Number of Positions:</b>	01 through 40
<input checked="" type="radio"/>	<b>Color:</b>	00 = Black      05 = Green 01 = Brown      06 = Blue 02 = Red      07 = Purple 03 = Orange      08 = Gray 04 = Yellow      09 = White

### Product Description

The TP-105 series test point offers a functionally superior alternative to other means of board level trouble shooting, particularly .025" square header posts. While featuring a loop profile for positive test probe retention, this product is available in any combination of positions, from one to forty, at .100" centers and fits in the popular .035" diameter hole size. The above board profile is substantially below that of headers and other devices used as test points. Thus, a re-fit can be accomplished without any printed circuit board layout re-design costs, while significantly reducing test point height and improving function.

Visibility and identification are significantly enhanced by the choice of ten standard colors for the TP-105 series, representing all of the variations of the industry color code. The TP-105 may be purchased pre-cut to any specified number of positions from one to forty. Mounting leg design insures positive retention in the circuit board during soldering operations.

### Certificate of Compliance with Directive 2011/65/EU RoHS and EU Regulation EC 1907/2006

This is to certify that Components Corporation designs, manufactures and supplies products to our customers that are in compliance with Directive 2011/65/EU RoHS and EU Regulation EC 1907/2006, 84 SVH. This also pertains to procurement of raw material, component parts and processes.

the **vital**  
component

282 **12.6 Cloverdale VSQBC35**

Table 27: Cloverdale VSQBC35 Compliance

Declaration for Cloverdale VSQBC35 - N/A



1607 Imperial Way, West Deptford, New Jersey 08066, USA  
 Phone: (856) 345-7650 • Fax: (856) 345-7690  
 Website: [www.bumperspecialties.com](http://www.bumperspecialties.com) • Email: [info@bumperspecialties.com](mailto:info@bumperspecialties.com)

March 10, 2022

**Compliance - EU Directive 2015/863 (RoHS 3), PAH, Phthalates and Nonylphenol**

**Please be advised that based on the information available to us from our raw material suppliers, the products manufactured by us do not contain, as intentional additives, any of the below referenced materials as referenced in the subject EU directive.**

Further note that none of these materials are generated during production. We have confirmed this through a Certified Independent Laboratory who tested a representative sample of our bumper products.

- Hexavalent chromium compounds
- Cadmium and its compounds
- Mercury and its compounds
- Lead and its compounds
- Polybrominated diphenyl ethers (PBDEs)
- Polybrominated biphenyls (PBBs)
- Polycyclic Aromatic Hydrocarbons (PAH)
- Phthalates (DEHP, DBP, DINP, DIDP, DIBP, DNOP, BBP)
- Nonylphenol

Best Regards,

**Joseph Ribinsky**

Joseph Ribinsky  
 Director of Manufacturing  
 Bumper Specialties, Inc.