

Specification of CA Controller Board & User Manual

Customer :

Model : CAUSB / CA232

Date :

Version:

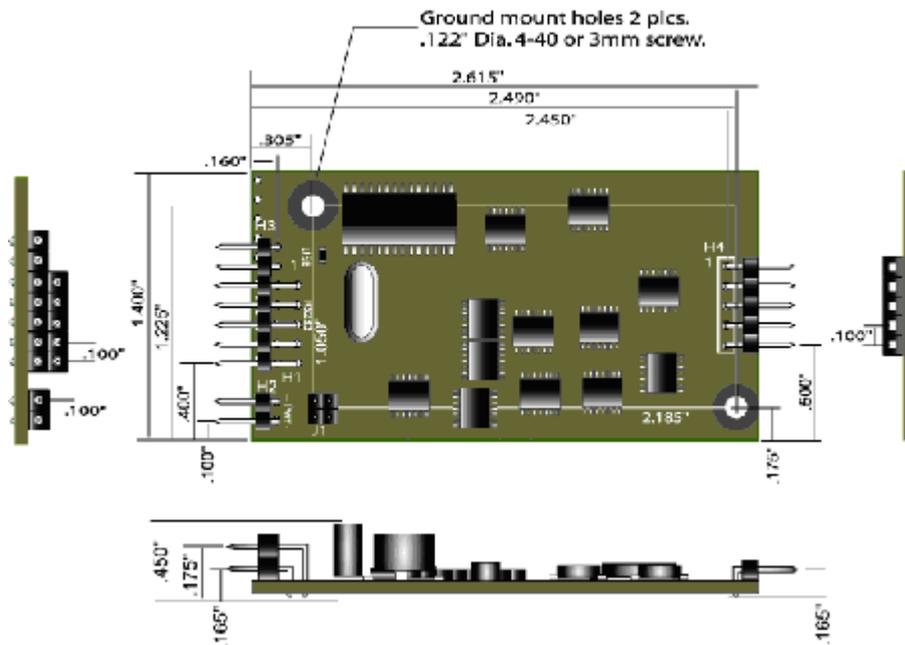
Acceptance Sheet			
Onetouch Technologies Co., Ltd.			
(Supplier)		(Purchaser)	
Date	Approval Signature	Date	Approval Signature

Onetouch CA Controller Board

Setup and Users Manual

Version 2.9

• Mechanical Diagram



NOTE!! The board revision can be found on a label on the back side of your controller board.

• Static Protection Warning:

The Onetouch CAUSB/232 controller has internal static protection to +/- 27kV for static discharge from the touch screen to the controller. This static protection is adequate for most applications but is only effective once the board is grounded properly. You must take adequate static precautions when connecting the Onetouch controller to your application.

In some applications it may be necessary to further protect your controller board from excess transient voltage. If you believe that your application will require additional static protection, it is up to you to determine the appropriate static protection needed to protect your electronics from transient voltage.

Failure to take the necessary precautions may result in damage to your controller.

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- **Part number information P/N: 32-CAUSB-HHO or 32-CA232-HHO or 32-CA232-HHM**
 Firmware revision may be specified. If firmware is not specified, the latest firmware revision will be supplied with all Onetouch CAUSB/232 (capacitive) boards ordered.

IMPORTANT DOCUMENT AND USER INFORMATION

This document is to be used as a guide only. The information contained in this document is subject to change without notice. This document and all of its contents are protected under Taiwan and international copyright law. Onetouch Technologies Co., Ltd., patents and copyrights are the exclusive property of Onetouch and may not be used without the express written consent of Onetouch.

Due to the vast range of application variables that fall outside of Onetouch's expertise and control Onetouch assumes no responsibility for the usability or the suitability of Onetouch products in your application(s). Onetouch assumes those responsible for the application and use of Onetouch products and documentation have taken all necessary steps to insure that the application of Onetouch products meet any and all safety and performance requirements including any laws, regulations, codes and standards associated with the application. In no case does Onetouch warrant the usability or suitability of its products in any, medical, aviation, military or other life critical applications. User should contact Onetouch before integrating any Onetouch hardware or software product into these types of applications.

All Onetouch standard software products, including, but not limited to device driver software, are provided "as is" and may be used exclusively with an authentic Onetouch touch screen controller. Onetouch does not warrantee or guarantee the usability of any of it's software products.

Onetouch warrants to you, the original purchaser, or a third party who is listed on Onetouch "Multi Party Authorization Agreement" that for the warranty period identified by Onetouch warranty for the specific product that you have purchased, that the goods will be in conformance with Onetouch specifications. Or, non Onetouch specifications agreed to in writing by Onetouch, in advance for this limited purpose between you and Onetouch and that the goods will be free from defects in design and material for the warrantee period. Onetouch, at its option will repair or replace the nonconforming or defective goods, or issue a credit memorandum, or refund the purchase price, as its sole obligation: provided that the nonconforming or defective goods are rejected in writing (including a reasonable failure analysis statement) to Onetouch and returned to Onetouch within the relevant warranty period, and provided that the nonconformance or defect was not caused by misuse, alteration, accident, or abnormal conditions of storage, operation or handling, as determined by Onetouch.

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• General Information

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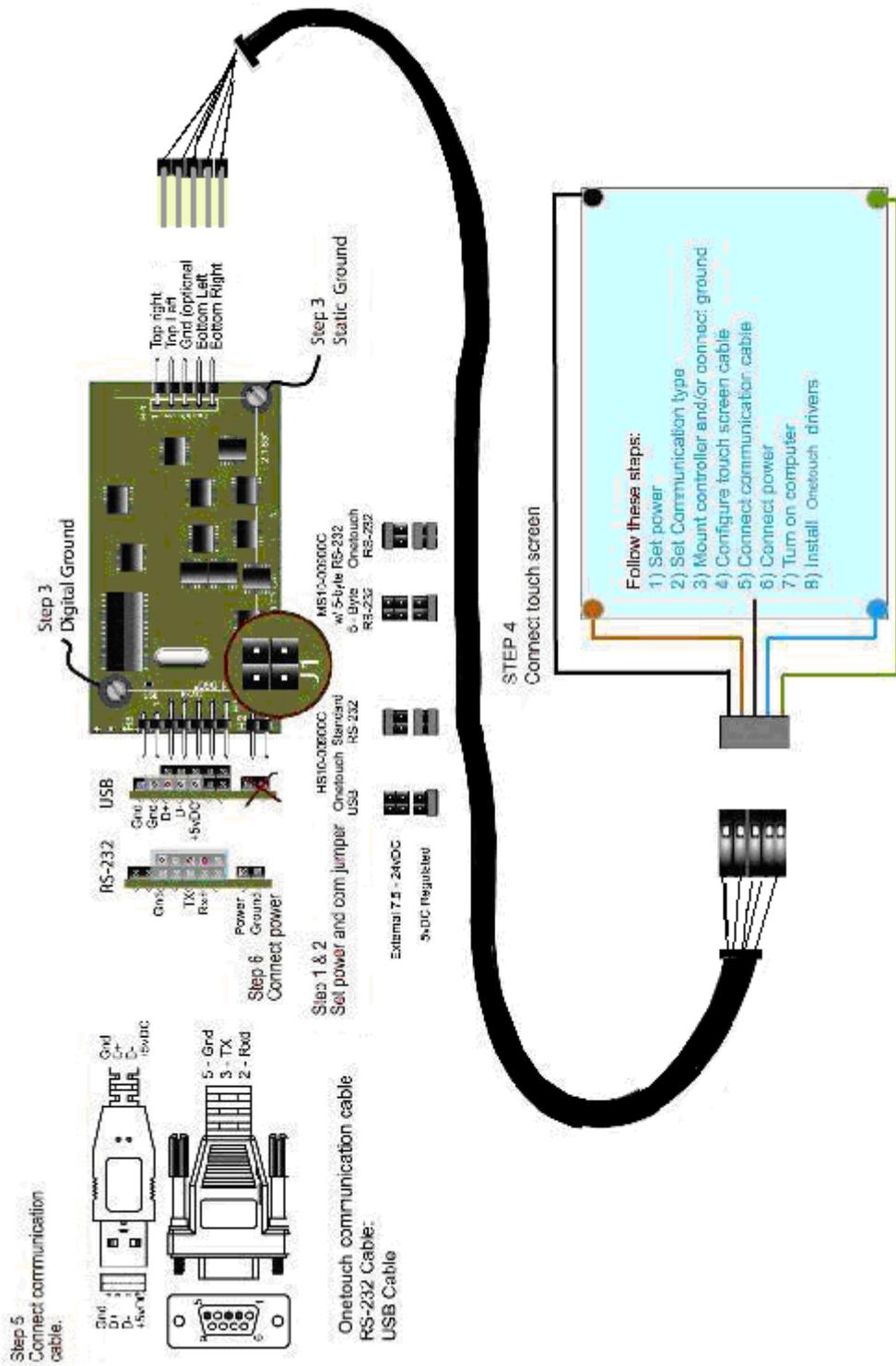
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Onetouch CA USB / CA 232 Capacitive Quick View Setup Diagram



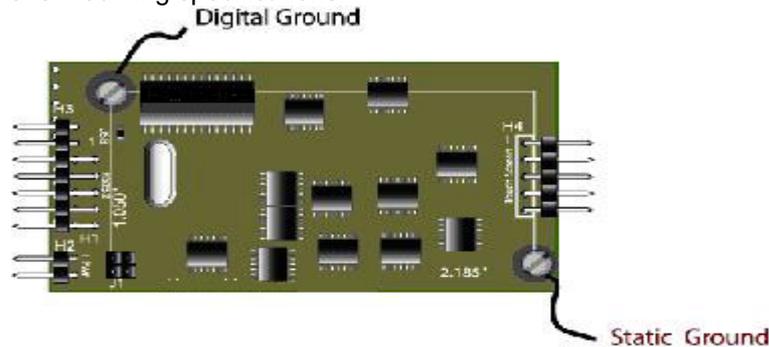
Integrating the Onetouch Capacitive controller

• Mounting the controller

The controller has two .122" (4-40 or 3mm screw) diameter plated grounding holes; one for digital ground termination (system ground) and one for static ground termination (earth ground). In many cases these grounds are the same. Failure to ground the controller will result in poor performance and may eliminate the effectiveness of the on board static protection.

For best performance mount the controller

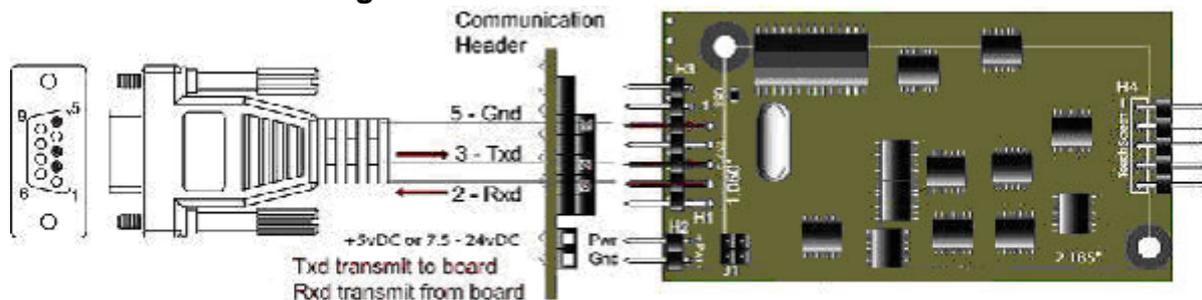
- 1) Away from high power, EMI and RFI components.
- 2) In such a way to keep the touch screen tail away from high EMI, RFI and power sources.
- 3) "In line" with the touch screen tail limiting the number and severity of any bends or folds in the touch screen tail. If not Onetouch touchscreen, contact your touch screen manufacturer to determine any touch screen manufacturer's mounting specifications.



• RS-232 and USB Communication:

The Onetouch Capacitive controller supports RS-232 (9600 baud) and USB (HID compliant, low speed) communication. While these are Onetouch's standard communication formats, higher or lower transmission speeds may be available. The standard controller will dynamically report 40 and 100 verified touch points per second. These are verified, tested points and are determined by the action of the activator. While typically not an important specification, the total number of points sampled is significantly higher.

• RS-232 Connection Diagram

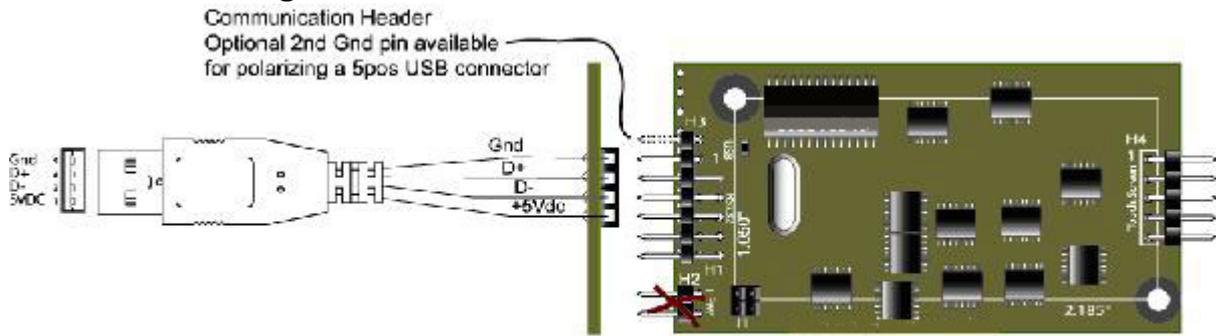


You may connect an RS-232 communication cable to the controller using a variety of cable types. Part number: 51-CA-RFAA-150 cable may be sourced directly from Onetouch. This is a standard 150cm long DB-9 female connector terminated to a (housing/contact) 10 position dual row socket via a round shielded cable. This cable has a ground termination wire running the length of the cable which may be utilized to ground the controller board through the DB-9 connector.

If you would make your own cable, you can only use contact/housing connector types for the 10 position dual row socket because IDC connectors will not fit properly. If you would like to use an IDC type connector for the communication connection, you may want to use a 14 position socket which extends on to the USB pins with only the RS-232 communication connections actually terminated.

Onetouch also provides an option to use a single row, 150mm 8 pin connection to the serial communication of the Onetouch controller board. This option may be used if you would like to continue to connect the Onetouch CA controller to your system which has already been configured for 3M™/Microtouch™ connections. Please contact Onetouch for ordering instructions for this option.

• **USB Connection Diagram**



Connect to the USB header contacts as pictured above for enabling USB communications with the controller board. The USB contacts are located on the lower side of the communication header. See diagram above. You may order a 150 long 4 position socket to a Type "A" USB plug, jacketed shielded USB cable part number: 51-CA-UF4A-150 from Onetouch. For information about ordering this cable please contact Onetouch.

There is an extra ground pin for USB which may be used to connect a five position USB connector. A five pin connection may be required if you would like to polarize the connector to insure it is terminated correctly.

• **Communication Protocol**

All Onetouch touch screen controllers' communication with the host computer in a 4-byte (RS-232) and 5_byte (USB) communication protocol. Onetouch's 4-byte communication protocol produces the industries most reliable, accurate data transfer information without compromising touch speed.

Note: Many Onetouch controllers may be configured to communicate with other industry protocols such as 3M's 5-Byte or Elotouch™ 10 byte communication protocol. However, the overall performance of the Onetouch controller will be reduced to that standard's level of performance. In no case does Onetouch authorize the use of any driver software to enable a Onetouch controller without proper authorization from the software developer or rightful owner of the software.

USB Protocol

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	0	0	0	0	0	0	0	P
2	X7	X6	X5	X4	X3	X2	X1	X0
3	0	0	0	0	X11	X10	X9	X8
4	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
5	0	0	0	0	Y11	Y10	Y9	Y8

RS232 Protocol

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
1	1	P	X11	X10	X9	Y11	Y10	Y9
2	0	X8	X7	X6	X5	X4	X3	X2
3	0	Y8	Y7	Y6	Y5	Y4	Y3	Y2
4	0	0	0	0	X1	X0	Y1	Y0

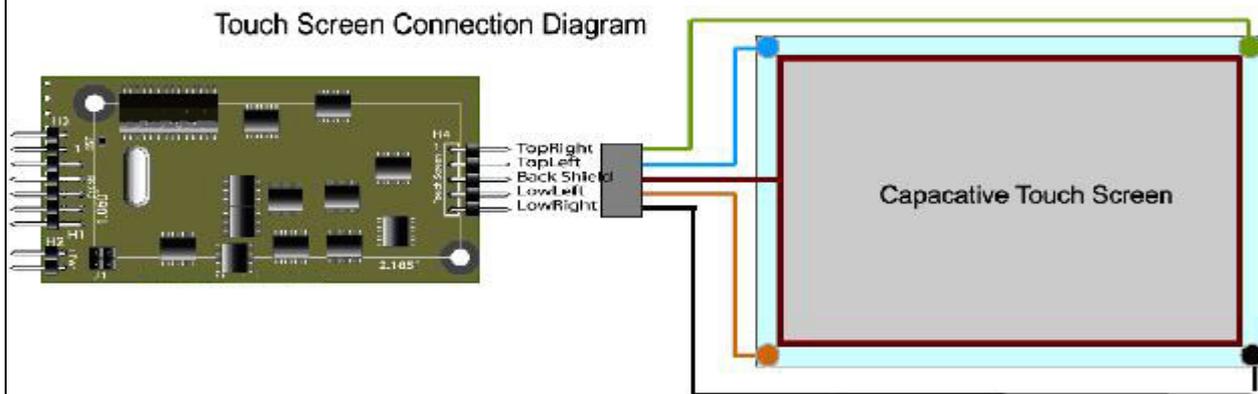
Where: P - 0 Pen-Up, 1 Pen-Down
 X11-X0 - 12 bit X position data
 Y11-Y0 - 12 bit Y position data
 PU - 0 no Pen-Up, 1 Pen-Up
 PD - 0 no Pen-Down, 1 Pen-Down
 CK7-CK0- AAH + 55H + Sum of Bytes 2 through 9

Connecting the Touch Screen:

This capacitive controller supports all back shielded and non back shielded capacitive touch screen overlays. Check the touch screen tail and verify the pin-out of the touch screen before you connect the touch screen to the controller. Connecting the touch screen incorrectly will cause the controller to malfunction. See the touch screen pin-out diagram below.

Note: Onetouch's touch screen mapping is consistent with Microsoft® display mapping specifications. However, if you are using the controller in a 3M® (Microtouch™ 5 – Byte emulation) mode, the touch screen connection is not consistent with Microsoft® display mapping protocol. For 5-byte Emulation mode the touch screen connection will be as follows: UL, UR, Shield, LR, LL. For best performance and to insure industry consistency we do not recommend that you use the controller in a Microtouch™ emulation mode.

!! Onetouch device driver software will correct for Microtouch touch screen connection configurations via the Onetouch calibration software. There is no need to change the Microtouch touch screen connections in order to use the Onetouch Native controller configuration..



Connector type:

100" spaced, .024" square post, 61cm mating length, pin strip header.

Berg Part Number: 52-CC-550D-061

• Power and Communication Jumper Settings

5vDC power is required to power the Onetouch Capacitive controller board. However, the on board voltage regulator may also be utilized. You may enable the voltage regulator by setting the power jumper accordingly. Before you power on your Onetouch controller please check your jumper settings and your power supply to insure the proper configuration. **Failure to have the power jumper set properly will damage your controller board.** See diagram below.

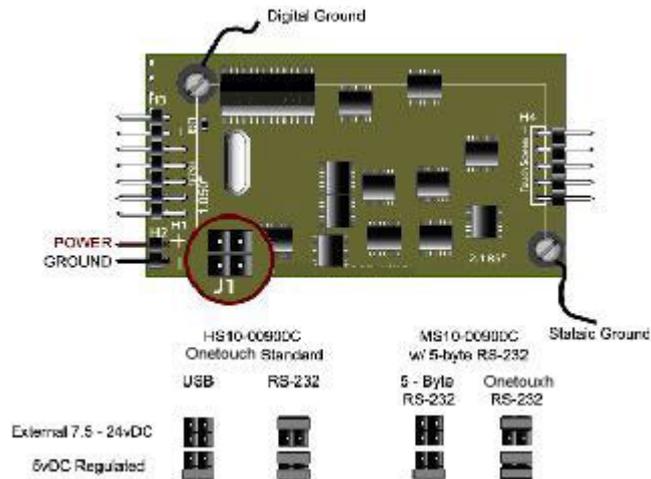
Warning: The static ground mount must be terminated to a common system ground before powering on your controller board. Failure to follow this will bypass the static protection that is on board and may damage your controller and the board will not function properly. Please see the mechanical / mounting diagram on the cover page of this document for the location of these ground mounts.

• Regulated power:

5 Vdc supply at: Typical: 50mA, Max: 90mA, with 50mV max ripple and noise, peak to peak.

• Unregulated power:

7.5 Vdc <24 Vdc Typical: 100mA.



• **Status LED Indicator:**

The Onetouch CAUSB / CA232 capacitive touch screen controller board is equipped with a status indicator LED. This LED will give you information regarding the functionality of the controller. The LED indication codes are as follows:

- **When powered on:** The LED will blink once (on then off), collect an environment baseline then turn on for 1 second and then off. **DO NOT TOUCH THE TOUCH SCREEN DURING THIS PROCESS.**
- **LED will turn on every time the touch screen is touched:** Once the controller has collected the base line LED will turn off. It will turn on every time the touch screen is touched thereafter. **DO NOT TOUCH THE TOUCH SCREEN WHEN THE CONTROLLER IS POWERED ON. THE CONTROLLER MUST COMPLETE THE BASELINE PROCESS IN ORDER TO POWER ON CORRECTLY.**

• **Mounting your capacitive touch screen:**

There are a number of methods that may be used to mount your touch screen depending upon your application and the recommendations from your touch screen supplier. In all cases it is important that you do not make an electrical connection between the touch screen surface and the display case or bezel.

• **Software and Device Drivers:**

Note: You must calibrate the touch screen via a calibration software utility before the touch screen will function properly. Onetouch provides device driver software which includes calibration utilities and a number of other touch screen enabling software programs.

All Onetouch touch screen controller products are designed to utilize Onetouch's device drivers. Onetouch internally develops, supports and maintains all device driver products supplied with a Onetouch® trademark touch screen controller product. Onetouch does not use third party technical resources to develop, support or maintain any of its software or hardware products.

The Onetouch CAPACITIVE touch screen controller is currently supported by the Onetouch, UniWinDriver (Win98se, WinME, WinXP, Win2k) version 6.19 and higher. Please review the driver user's manuals for instructions for installing the driver. Onetouch drivers may be found at the Onetouch Web site: www.onetouch.com.tw

Onetouch® device drivers are included at no additional charge with all standard Onetouch touch screen controllers. Drivers are available for DOS, Windows™ 3.11, NT, 9x, ME, 2000, XP, XPe, Windows CE™, Linux™ WindRiver™. Typically, all Onetouch drivers are compatible with all Onetouch controller solutions. Please contact Onetouch if you have need further clarification of the operating systems supported by Onetouch.

Custom or private labeled drivers may be licensed from Onetouch for a small annual fee. Each license comes complete with electronic copies of editable driver and controller board documentation to allow you to easily privatize your own user's documentation. Onetouch does not assume any responsibility for the accuracy of any changes that you make to original Onetouch documents.

Cables Available from Onetouch

• Communication Cables

Part Number:	Description
51-CA-RFAA-150	150cm RS-232 cable. Direct connect to H1 header to female DB-9
51-CA-UF4A-150	150cm USB cable. Direct connect to H3 header to male type A plug connector.

• Touch Screen Cables

52-CC-550D-061	61cm touch screen cable. Direct connect to H4. 5 position .100" socket to 5 position plug. "xx" identifies pin-out
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• Power Cables

53-RL-0204-050	50cm power cable. Direct connect to H2. 2 position, .100" socket to wire lead.
53-RL-2201-030	30cm power cable Direct connect to H2. 2 position, .100" socket to 2 position .100" socket.

Onetouch CA Connector Specifications.

• Communication Connector.

Onetouch uses standard .100" x .100" .024sq. post dual or single row, 94-V0 rated, pin strip header to connect the communication lines to the Onetouch controller.

• Onetouch Controller Chip Solutions

Large volume OEM's who have in-house electrical and software engineers on staff may purchase a Onetouch "Chip Only" touch screen controller solution which may be integrated on to their main board. A complete set of technical documentation is available from Onetouch to assist you in correctly integrating a chip solution into your product. Contact Onetouch Technologies Co., Ltd.

• Mounting Hardware

Do to the wide variety of mounting options available for the Onetouch capacitive board we do not stock mounting hardware. Please visit the RAF web site to review the available mounting hardware.
http://www.rafhdwe.com/RAF_site/OnlineCatalog/EHCoverFrame.html

• Onetouch Support Services:

All of Onetouch products are 100% developed and supported in house by Onetouch technical staff. As a result we have included a broad range of support documentation on the Onetouch web site www.onetouch.com.tw including users and setup manuals, device drivers, driver manuals and other software. In addition we have an e-mail based support. You may contact us via e-mail at: sales@onetouch.com.tw. In addition, Onetouch also understands that there is often a need for "real time" technical support. Please contact Onetouch via telephone at any point to discuss issues that you may have regarding our products. Onetouch's telephone number: +886-2-8647-1266.

In the event that you need to contact us via telephone or via our support e-mail, please take a moment to complete "On Line" support form which is available on our web site: <http://www.onetouch.com.tw>. Completing this form prior to contacting Onetouch will insure a prompt response from our technical staff. If you do not complete the on-line form our technical staff will ask you for the following details of your application. Please take a minute to identify these items prior to contacting Onetouch technical support staff.

- 1) Onetouch controller part number
- 2) Information about Onetouch reseller if not purchased directly from Onetouch
- 3) Onetouch chip revision (located on the top of each micro-controller chip)
- 4) Touch Screen type and Manufacturer
- 5) Communication type
- 6) Onetouch driver and revision
- 7) Operating system and service pack releases
- 8) A brief summary of the problem that you are having.