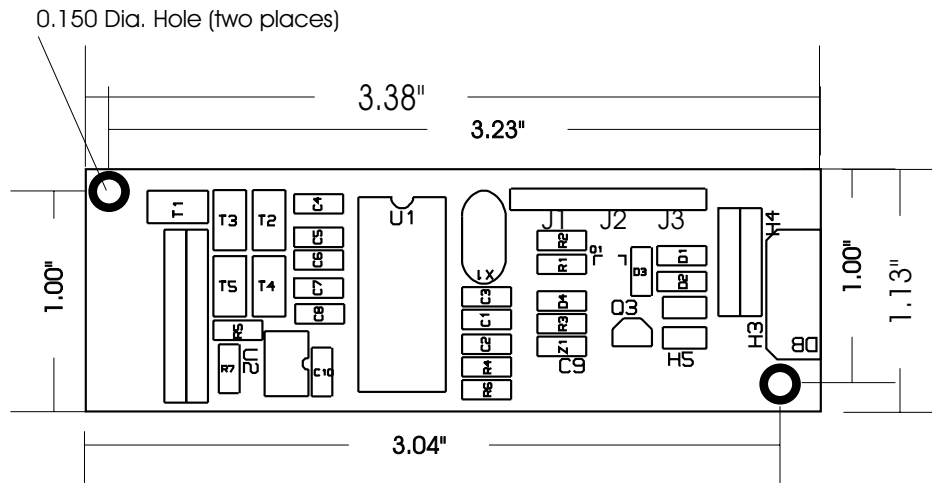


Setup and Users Manual



Hampshire TSHARC-8 Touch Screen Controller Board (Revision 1.6)

Hampshire TSHARC-8 Mechanical Specifications



Warning:

Although Hampshire Company has taken steps to protect your touch screen controller from transient voltage, it is important to make all grounding, communication and touch screen connections to the controller and touch screen before powering on your computer, video monitor or touch screen controller. **Failure to follow this procedure may result in damage to your controller and/or communication port.**

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Company and General Information

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Copyright Information:

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User Information:

Hampshire Company, Inc. holds no warranty nor assumes any responsibility for the application of the information contained herein. Those responsible for the application and use of Hampshire Company, Inc. products and documentation are assumed to have taken all necessary steps to insure that the application of Hampshire products meet safety and performance requirements including any laws, regulations, codes and standards associated with user application.

Edition Information:

This document has been revised: June 1, 2000
Documents part number: TSHARC8UsersManual051000.doc

Introduction:

This manual has been written for users of the Hampshire Company Inc. **TSHARC-8** controller board in combination with Hampshire touch screen controller device drivers.

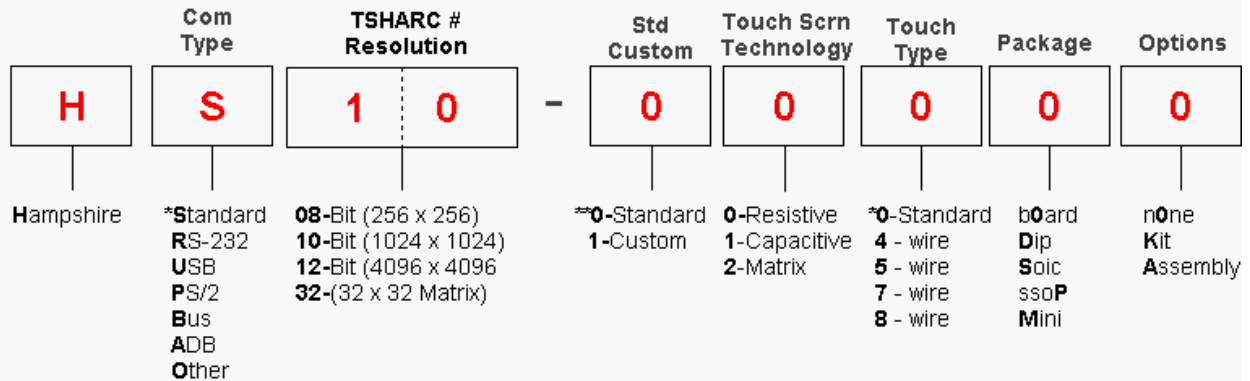
The Hampshire 8-bit controllers were developed for cost sensitive, touch applications that typically are "touch only" input. The TSHARC-8 controller is suitable for 15" diagonal displays and smaller. However, it may be used for larger display applications provided that the application does not incorporate drawing, dragging or writing. The **TSHARC-8** touch screen controllers and software described within this document are assumed to be used with four, five or 8 wire analog resistive touch screen products manufactured by a variety of touch screen manufacturers. Touch screens between manufacturers vary with regards to light transmission, sensitivity and electrical characteristics.

The Hampshire **TSHARC-8** series controller allows for 8-bit resolution (256 x 256 or 65,536 points of contact) of an analog resistive touch screen. The resolution of the **TSHARC-8** series controller is determined by the a-d converter on board. Approximately 256 points of resolution can be expected with the **TSHARC-8** series controller boards. Resolution may vary between touch screen manufacturers' products. The Hampshire device drivers are designed to integrate smoothly with PC and MAC operating systems. The 256 points of resolution easily resolve icons, pull down menus and touch areas found within PC based operating systems.

If your application requires higher resolution application, please contact Hampshire Company for information regarding our high resolution TSHARC-12 touch screen controller products. In most instances the Hampshire TSHARC-8 controller is appropriate and is roughly ½ the cost of 10 & 12 bit solutions.

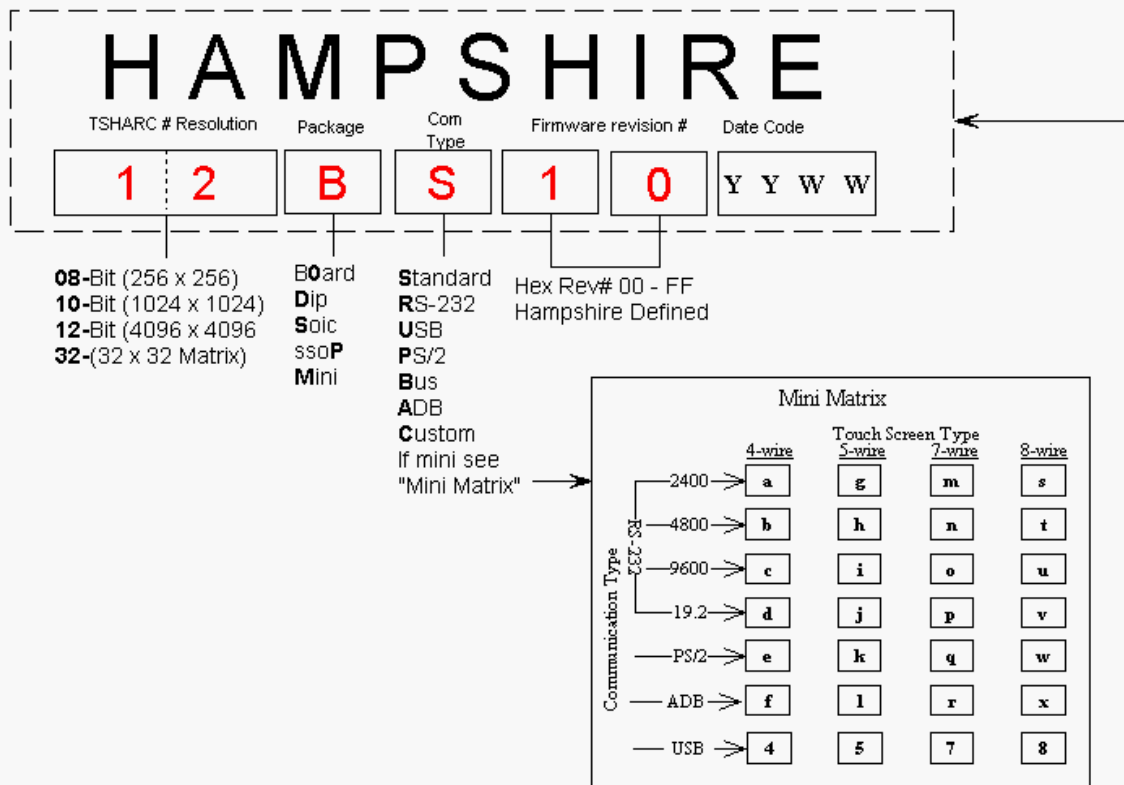
Ordering and part number identification

TSHARC controller part numbering guide



When ordering a TSHARC "Chip and Driver" or "Mini" controller solution you must specify the firmware. If you do not know the firmware to specify, please contact Hampshire Company for assistance.

TSHARC controller firmware guide/label



Note: Because Hampshire TSHARC controller firmware is never obsoleted, you may not want the latest firmware revision available. If you choose to continue to use "Older" firmware than the most current, you must specify the firmware you require and specify the controller as a "Custom" product. You may choose this option in the 5th column labeled "Std Custom" of the "TSHARC Controller" part numbering guide. If you choose this option, it is important to specify the firmware revision needed.

* Standard = Jumper configurable boards or chips

** Standard = Current standard firmware

10 Pin Square Post connector:

The 10 pin square post header connections are shown in the Hampshire 8-bit Serial Controller Diagram

Touch Screen Connections:

Note about calibration and touch screen orientation

A touch screen may be connected in any orientation you wish. Hampshire's calibration routine will supply the necessary parameters for the controller to identify the proper axis.

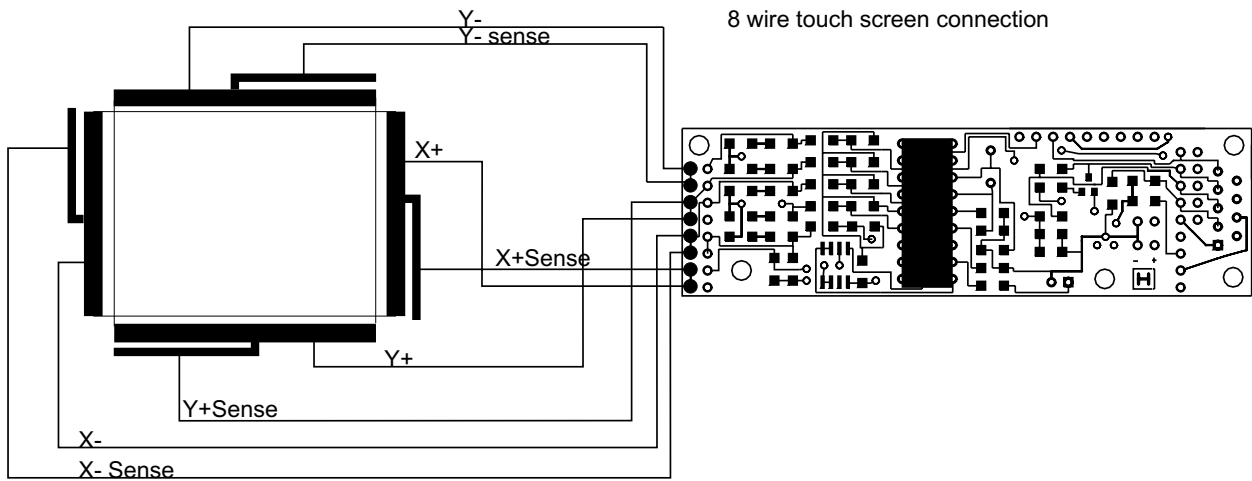
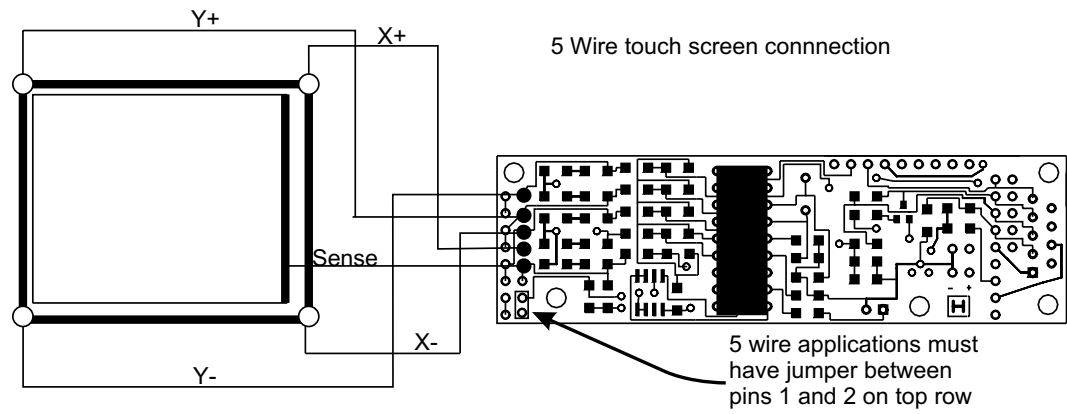
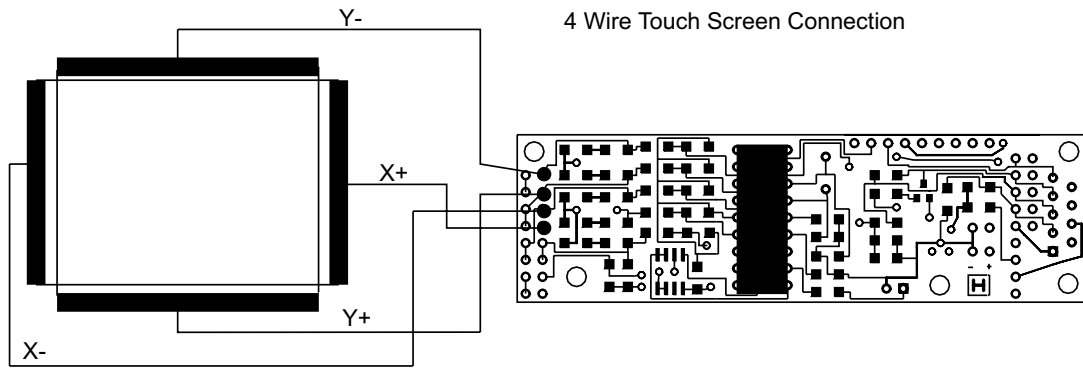
Touch Screen, Switch, and I/O Connections:

The serial controller board has two eight pin headers for touch screen connections and external I/O. Header H1 allows for direct connection to a 4-wire touch screen with no external connecting or interface cable. Header H2 allows for direct connection to an eight wire touch screen with no external connecting or interface cable. H1 also allows for five wire touch screen connection. **YOU MUST JUMPER PIN 1 & 2 TO INITIALIZE THE CONTROLLER TO WORK WITH A 5-WIRE TOUCH SCREEN.** Note the location of this header on your board for the option mounted. The normal option is at header H1.

Touch Screen Connection Table.

Description	Designator	Bottom 8-wire connection Header Header	Top 4 & 5 wire connection Header	Designator	Description
Right Touch Screen Bus Bar	X+	16	8	Y-	Right Touch Screen Bus Bar
Right Touch Screen Bus Bar	X+	15	7	Y+	Left Touch Screen Bus Bar
Left Touch Screen Bus Bar	X-	14	6	X-	Bottom Touch Screen Bus Bar
Left Touch Screen Bus Bar	X-	13	5	X+	Top Touch Screen Bus Bar
Bottom Touch Screen Bus Bar	Y+	12	4	5 W	5 Wire sense connection
Bottom Touch Screen Bus Bar	Y+	11	3	NC	Not Connected
Top Touch Screen Bus Bar	Y-	10	2	S1	Switch S1
Top Touch Screen Bus Bar	Y-	9	1	GND	Ground used for Switch S1

Connections to 4, 5 or 8 wire Touch Screen:



Communication Formats:

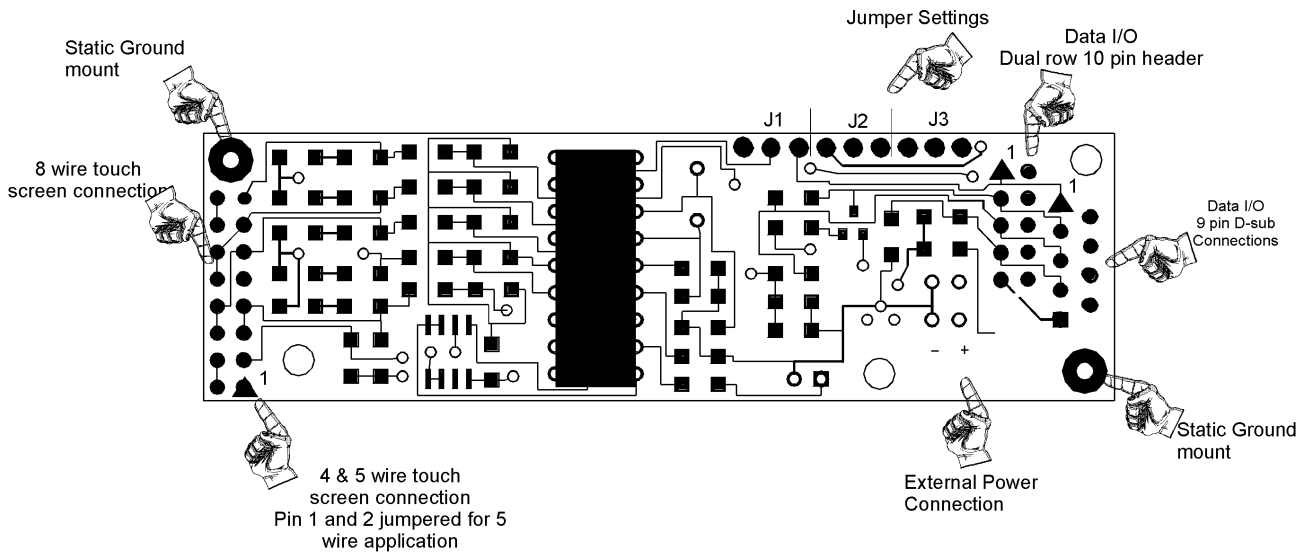
Stream	Sync	1	1	0	0	X7	0	0	Y7
	Data 1	0	X6	X5	X4	X3	X2	X1	X0
	Data 2	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0
					:				
Touch-Up	Sync	1	0	0	0	X7	0	0	Y7
	Data 1	0	X6	X5	X4	X3	X2	X1	X0
	Data 2	0	Y6	Y5	Y4	Y3	Y2	Y1	Y0

Where:

X7-X0 – 8 bit X data
Y7-Y0 – 8 bit Y data

TSHARC-8 Diagram

(Warning: You must ground board with the Static Ground mounts on the board for adequate static protection)



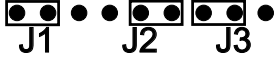


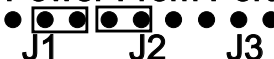





Hampshire 8-bit, TSHARC-8 Series Controller Diagram

Rev.: 1.6
8setup.cdr

TSHARC-8 Power & Communication Jumper Settings

Jumper settings must be set properly **BEFORE** powering up your controller and/or your communication port. Improper jumper settings may cause damage to the TSHARC™ controller. Make sure that your communication cable and power supply cable are been configured properly before connecting to your TSHARC™ controller.

*See the cable diagrams for cable assembly instructions.

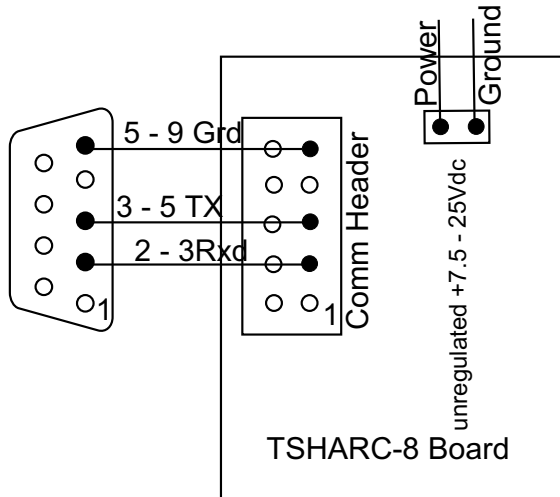
<p>RS-232 Jumper Settings</p> <p>External Un-Regulated +7.5 - 25Vdc recommended.</p> <p>Unregulated power should be supplied to two position power header on board.</p> <p>Power from port may be utilized ONLY if touch screen lead to lead resistance is > 200 Ohms.</p>	<p>RS-232 Jumper Settings External Un-Regulated Recommended!</p> <p>Power From Port </p> <p>External Regulated 5Vdc </p> <p>External Un-regulated 7.5 - 25Vdc </p>
<p>PS/2 Jumper Settings</p> <p>Power from port recommended.</p> <p>External regulated power must be supplied through the 10 pin communication header.</p> <p>Unregulated power should be supplied to two position power header on board.</p>	<p>PS/2 Jumper Settings Power from port recommended !</p> <p>Power From Port </p> <p>External Regulated 5Vdc </p> <p>External Un-regulated 7.5 - 25Vdc </p>
<p>ADB (Mac) Jumper Settings</p> <p>Power from port recommended.</p> <p>External regulated power must be supplied through the 10 pin communication header.</p> <p>Unregulated power should be supplied to two position power header on board.</p>	<p>ADB (Mac) Jumper Settings Power from port recommended !</p> <p>Power From Port </p> <p>External Regulated 5Vdc </p> <p>External Un-regulated 7.5 - 25Vdc </p>

TSHARC-8 Communication Connection Diagrams

Note: Power from port may be used in certain circumstances. Since the power found at an RS-232 port varies from computer to computer and the resistance of touch screens varies depending upon technology and manufacturer, we do not recommend this power configuration. If you have any questions regarding this configuration, please contact Hampshire Technical Support.

RS-232 Connection for External Un-Regulated

RS-232 External Unregulated power

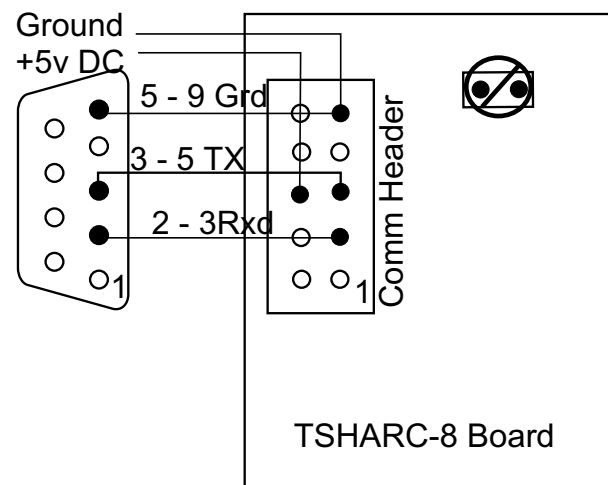


Important: Make sure power jumpers are set properly before connecting power. Jumpers must be Set for Regulated or Unregulated power.

Power

RS-232 Connection for External Regulated

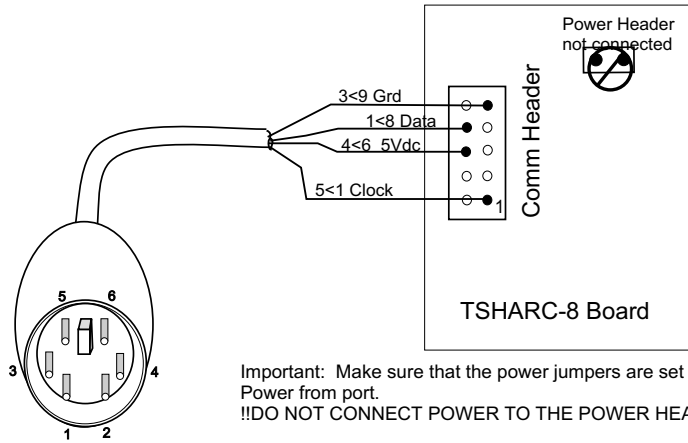
RS-232 External Regulated +5v DC power



Important: Make sure power jumpers are set properly before connecting.

PS/2 Connection for Power from Port

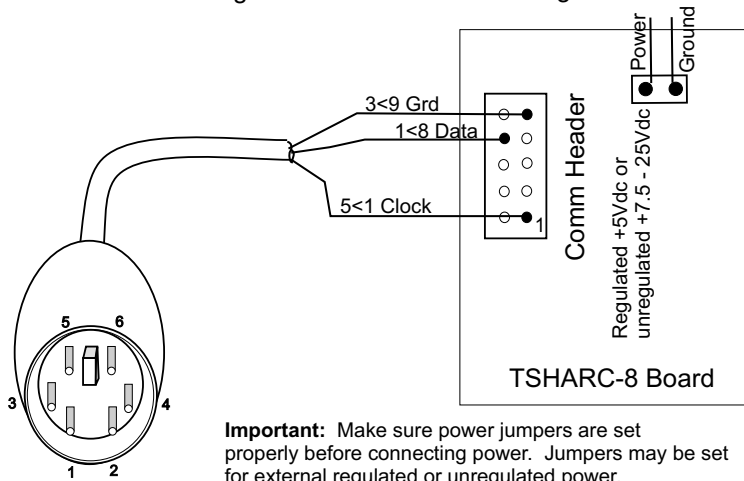
Connection diagram for PS/2 Power from Port



Important: Make sure that the power jumpers are set for Power from port.
!!DO NOT CONNECT POWER TO THE POWER HEADERS!!

PS/2 Connection for External Unregulated 7.5 – 24v DC Power

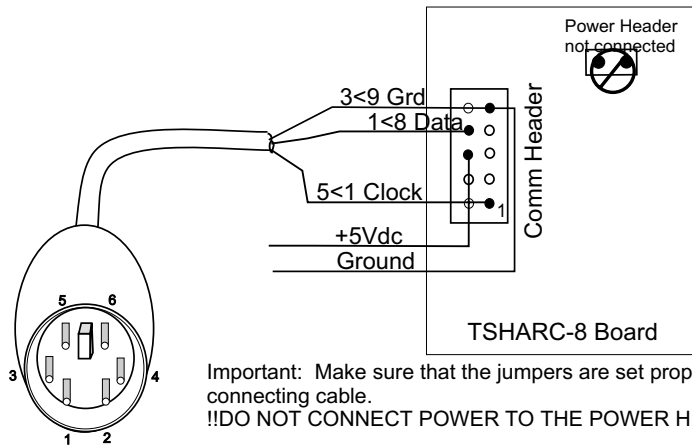
Connection diagram for PS/2 External Unregulated Power



Important: Make sure power jumpers are set properly before connecting power. Jumpers may be set for external regulated or unregulated power.

PS/2 Connection for External Regulated +5v DC Power

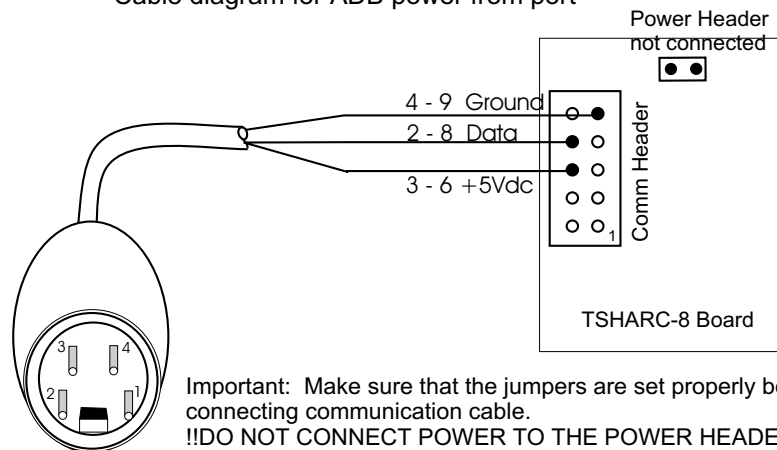
Connection diagram for PS/2 Power from Port



Important: Make sure that the jumpers are set properly before connecting cable.
!!DO NOT CONNECT POWER TO THE POWER HEADERS!!

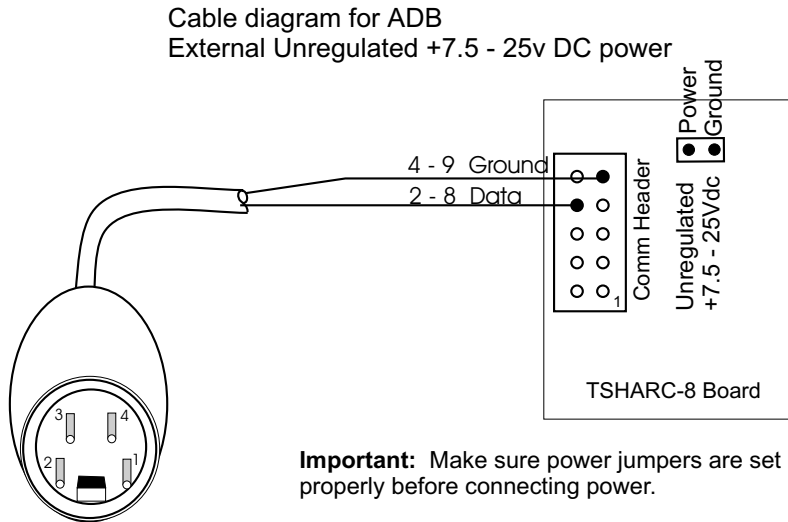
ADB Connection for Power from Port

Cable diagram for ADB power from port



Important: Make sure that the jumpers are set properly before connecting communication cable.
!!DO NOT CONNECT POWER TO THE POWER HEADERS!!

ADB Connection for External unregulated 7.5 – 24v DC Power



ADB Connection for External Regulated +5v DC Power

