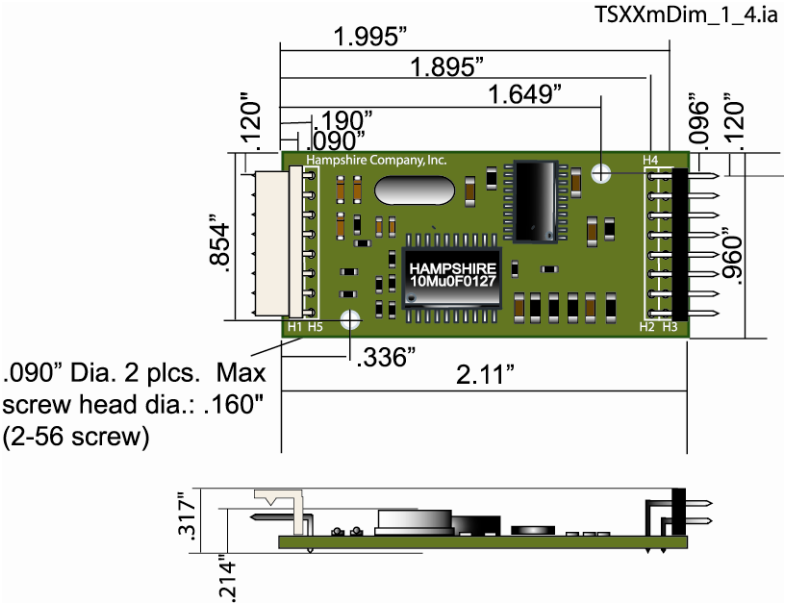
Setup and Users Manual

Hampshire TSHARC-12m RS-232 and PS/2 Touch Screen Controller Board

Version: 1.5



NOTE!! Rev. 1.1 through 1.4 are fit form and function identical. The 1.4 version of the TSHARC-12m controller has the following changes from previous versions: 1) mounting holes added. 2) Micro-controller change to allow room for mounting holes. All communication and touch screen connection settings are identical. Please contact Hampshire Company if you have any questions regarding your hardware version. The board version and firmware release can be found on your TSHARC touch screen controller board.

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**.**

General Information

Mailing address:
Hampshire Company, Inc.
9055 N. 51st Street Unit H
Brown Deer, WI 53223
Main Phone: 414-355-4675
Main Fax: 414-355-4775

World Wide Web Address:
www.hampshirecompany.com

User Information:
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.

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Hampshire TSHARC-12m Part Numbers and Identification information

Part_Numbers031215

Hampshire Part Number Identification Guide

All specified ("1") and "M" orders are non-cancelable / non-returnable

TSHARC Part Number

H S 12 - 0 0 0 0 0 S - XX

[1,3] [1,3] [2] [1,3] [1,3] [4]

ComType
Std, User Config
RS-232
USB
PS/2
t**E**n byte
Bus
TTL
SP**I**
Custom

Resolution
8-bit (256 x 256)
10-bit (1024 x 1024)
12-bit (4096 x 4096)

Specified
0- Standard
1- Specified

Power Settings
n**0**ne Specified
Power from port
Regulated 5v
Unregulated

Screen Type
0-4,5,8wire
1-4,7,8wire
4-wire
5-wire
7-wire
8-wire
9-Capacitive

Package
B**0**ard
Dip chip
Soic chip
sso**P** chip
Mini (touch screen type and com type must be specified)

Chip Options
n**0**ne
Industrial
3.3v
A - 3.3v + Industrial
B - EC (ext. clock)
C - EC + 3.3v

Other
- Blank
S-Chip w/ A-D
Octopus (chip or board)
V-Board

Custom Configuration Code

Chip Revision / Date code

12SSxxyyww

[1] [7]

Resolution
8-bit (256 x 256)
10-bit (1024 x 1024)
12-bit (4096 x 4096)

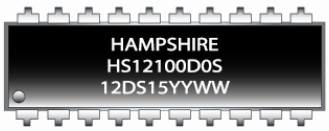
Package
Dip
Soic
sso**P**

ComType
S User Config
R-S232
Usb
Ps/2
t**E**n byte
Bus
TTL
A=TTL+EC
SP**I**
Custom

Firmware Revision
Where: *"XX"* = revision may be specified when ordering production chips.

[5] Chip Identification

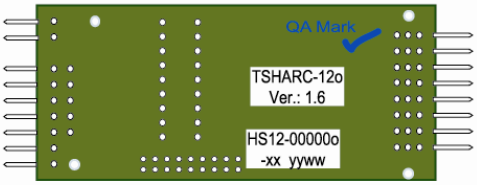
DIP



SOIC

SSOP

[6] Board Identification



Notes:

1 - Specify communication for TSHARC-12M. These options are user configurable for TSHARC "Octopus" boards, "V" boards and Chips. Specifying other than the standard field code indicates that you would like the board or chip pre-configured or customized and may increase the cost or limit its functionality.
Standard Octopus and "V" board configuration: RS-232, Un-Regulated power (7.5vDC - 24vDC), 4-wire (HSxx-00000x-xx)

2 - Place a "1" in this field if you are ordering TSHARC chips, "M" boards, a custom header configuration or firmware revision.
TSHARC controller boards ordered without a firmware specification are considered standard and will be shipped with the current standard firmware revision. If you require a specific firmware please signify this by placing the number "1" in the "Standard / Specific" field location of the TSHARC part number and include the firmware revision on your purchase order. All specified ("1") and "M" orders are non-cancelable / non-returnable.

3 - For all TSHARC-12M boards:
Specify RS-232 or PS/2 communication.
Specify touch screen type.
Enter "0" in the power specification field: 5vDC

4 - Custom headers may be specified. To order a controller with a specified .100 center connector configuration place the number "1" in the "Standard / Specific" field of the TSHARC part number and include the appropriate header configuration "dash number". The appropriate dash number may be obtained by contacting Hampshire Company.

5 - TSHARC chip identification is located on the top of the TSHARC micro-controller. This identification may be in the form of a laser mark or Kapton label. Due to space constraints, SSOP chips have an abbreviated identification which includes the chip revision and date code. Note: On some label options "HAMPSHIRE" may not appear on chip.

6 - TSHARC board Identification marks are located on the bottom of each controller board. This identification includes: model, version, part number (dash number ID only if assigned by Hampshire) and date code. Other identification may be present on the board, these marks are for internal uses only.

7 - The firmware revision must be included on all production orders for TSHARC touch screen controller "Chip" solutions. The latest firmware will be shipped with all prototype orders unless specified. Once you have evaluated and approved a specific chip revision Hampshire will register your approved revision for QA and revision control purposes.

Please contact Hampshire if you need further clarification: 414-873-4675 E-Mail: support@hampshirecompany.com

Introduction:

This manual has been written for users of the Hampshire Company Inc. TSHARC-12m (mini) touch screen controller board to be used in combination with the Hampshire TSHARC device drivers. The TSHARC-12m controller may be configured for RS-232, PS/2 or custom communication protocols. They are designed to be used with any manufacturers 4, 5, 7 or 8 wire analog resistive touch screen overlay products.

The Hampshire TSHARC-12m controller was developed for touch screen applications that require a high degree of performance, where real estate is limited and cost savings is a priority. This is a low cost solution designed to be integrated with flat panel display technology.

The TSHARC-12m touch screen controllers and software described within this document are assumed to be used with four, five, seven or eight wire analog resistive touch screen products manufactured by a variety of touch screen manufacturers. Touch screens between manufacturers vary slightly with regard to light transmission, sensitivity and electrical characteristics. If you have any questions regarding analog resistive touch screen technology or require special features for your application, please contact Hampshire Company.

The TSHARC-12m controller allows for 12- bit (4,096 x 4,096 = 16,777,216 points in the field) resolution of an analog resistive touch screen. Because touch screen resistance varies from manufacturer to manufacturer the resolution may vary (slightly) between touch screen overlay manufacturers' products. Higher resistance touch screens (>200 Ohms/Sq.) allow for slightly higher resolution. Lower resistance touch screens (<200 Ohms/Sq.) are capable of slightly lower resolution.

The TSHARCm board must be ordered for a specific communication and touch screen type. The desired configuration is set at Hampshire Company. Please contact Hampshire Company for information regarding our other touch screen controller options. Hampshire also manufactures 8 bit, 10 bit and 12 bit, ISA-Bus and USB touch screen controller products for 4, 5, 7 or 8 wire touch screen integration.

Drivers:

Hampshire Company provides a complete set of drivers with all TSHARC touch screen controller products at no charge. These drivers may only be used with an authentic Hampshire TSHARC touch screen controller. The drivers are written and supported in house by Hampshire engineers. Hampshire supports all Microsoft operating systems, Linux, Win CE, WindRiver, and various other real time operating systems. If you have a special driver requirement please contact Hampshire customer service.

Features of Hampshire TSHARC-12m RS-232 and PS/2 controller

Communication Options (Factory Set)

RS232 (2400, 4800, 9600 or 19.2k baud rate)
PS/2, Personal System / 2
Elo™ Compatible 10 Byte

Hampshire TSHARC Drivers:

DOS, Windows™ 3.1x, 95, 98, ME, XP, NT, 2000, CE, CE Net, WindRiver, Linux, QNX,

Supported Touch Screen types and manufacturers:

All manufacturers analog resistive: 4 wire, 5 wire , 7 wire, 8 wire

Resolution:

TSHARC-12m: 12 bit (4096 x 4096 = 16,777,216 points in the touch screen field)

Transmission Speed

> 75 - 175 points per second depending upon communication options chosen

Static:

24kv

Power Options:

Regulated Power: > 5 Vdc +/- 10%
(see TSHARC-12v or TSHARC-XX Octopus boards for on board regulated power options)

Calibration:

Internal, hard coded calibration available for custom configuration only.
Software (driver) calibration for all PC and Mac configurations

Note about software calibration:

When using an 8 wire or 4 wire touch screen, x and y axis may be switched. The software calibration routine will determine correct x and y position regardless of the touch screen connection. The controller will automatically determine the proper position and flip the x and y axis accordingly.

Communication Format

Stream:

Stream/touch down	Sync	1	1	X11	X10	X9	Y11	Y10	Y9
	Data 1	0	X8	X7	X6	X5	X4	X3	X2
	Data 2	0	Y8	Y7	Y6	Y5	Y4	Y3	Y2
	Data 3	0	0	0	0	X1	X0	Y1	Y0
Stream/Touch up	Sync	1	0	X11	X10	X9	Y11	Y10	Y9
	Data 1	0	X8	X7	X6	X5	X4	X3	X2
	Data 2	0	Y8	Y7	Y6	Y5	Y4	Y3	Y2
	Data 3	0	0	0	0	X1	X0	Y1	Y0

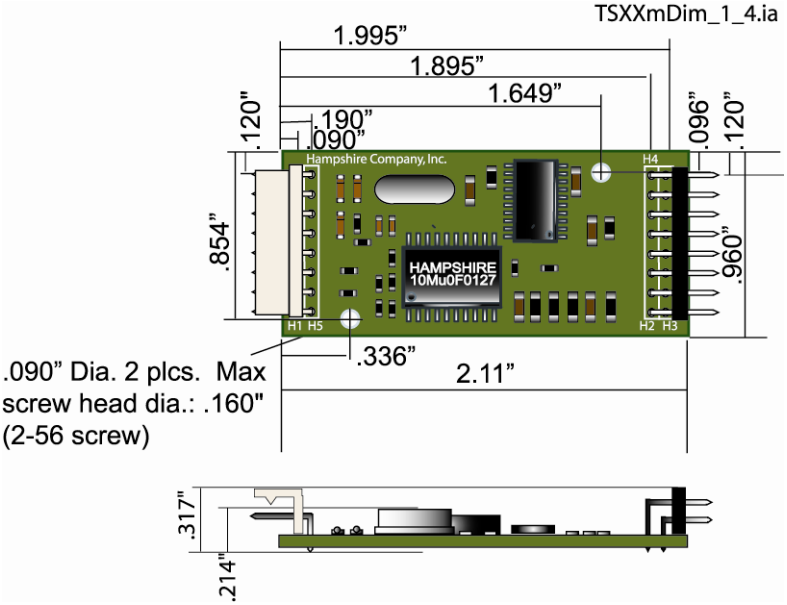
Where: X11-X0 - 12 bit X data
Y11-Y0 - 12 bit Y data

***Note: Hampshire TSHARC touch screen controllers are identified by model name, Board Version and firmware number. This information is located on the TSHARC controller board.

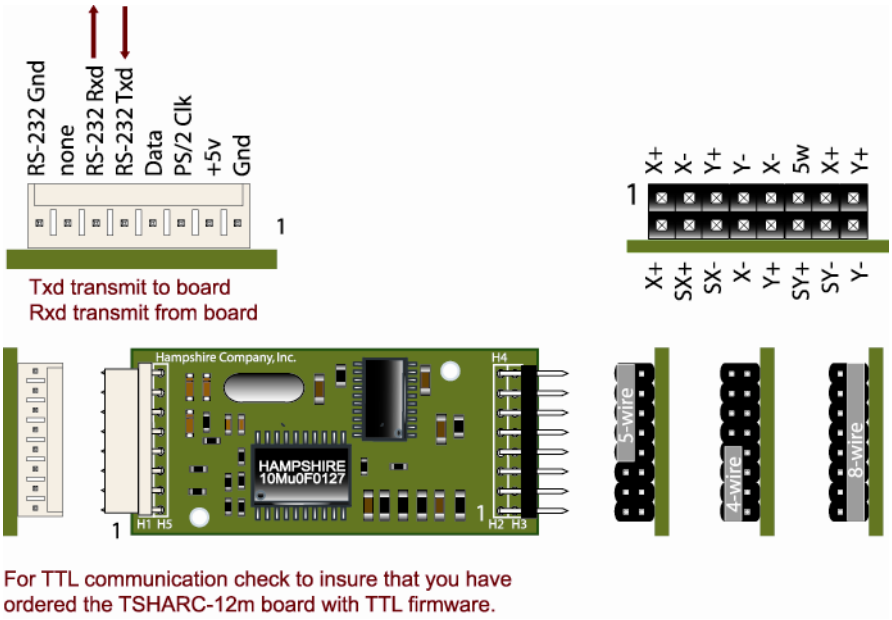
Mechanical Specifications

** Picture shows standard header configuration. Customers may specify other connectors if needed. If you would like to specify a different header configuration please contact Hampshire Company for details.

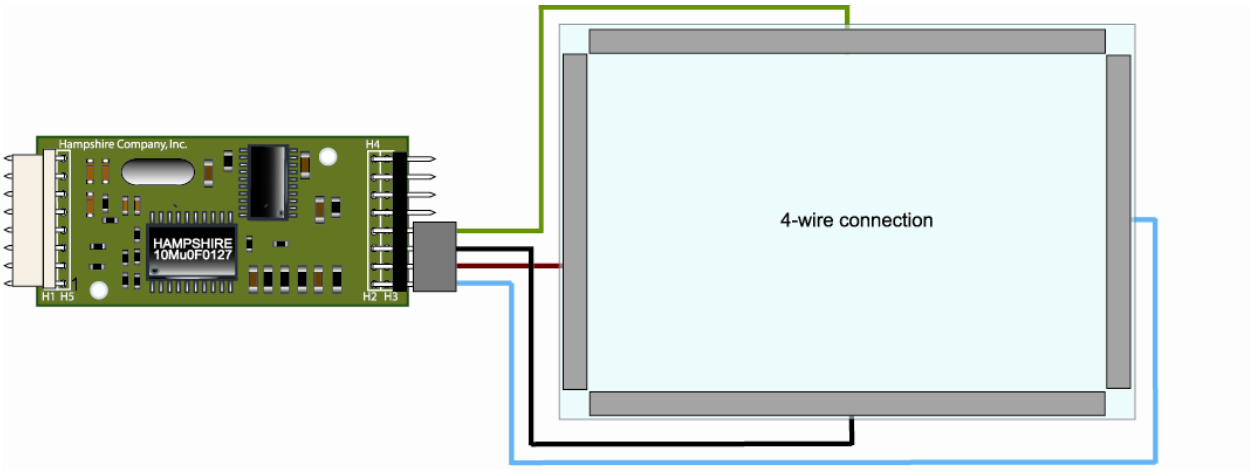
Consolation

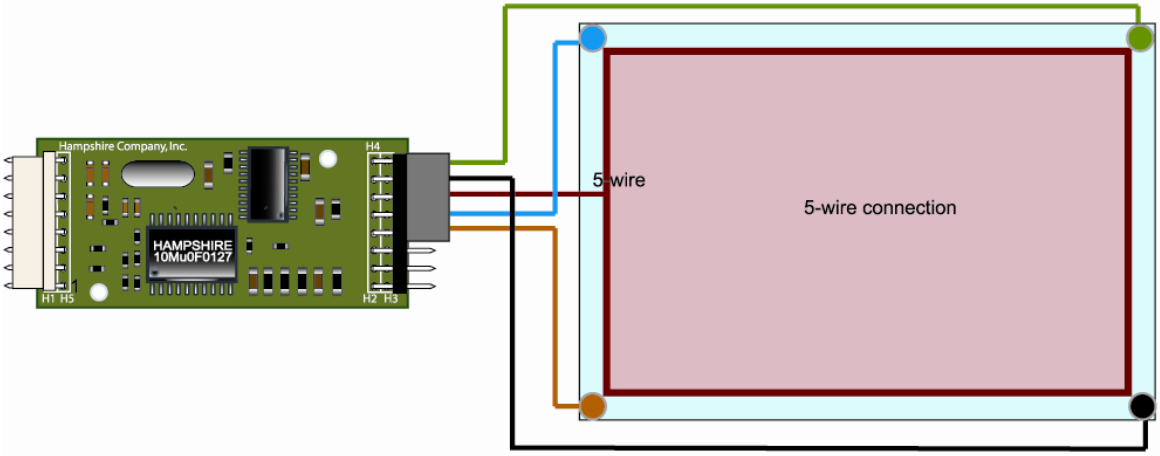


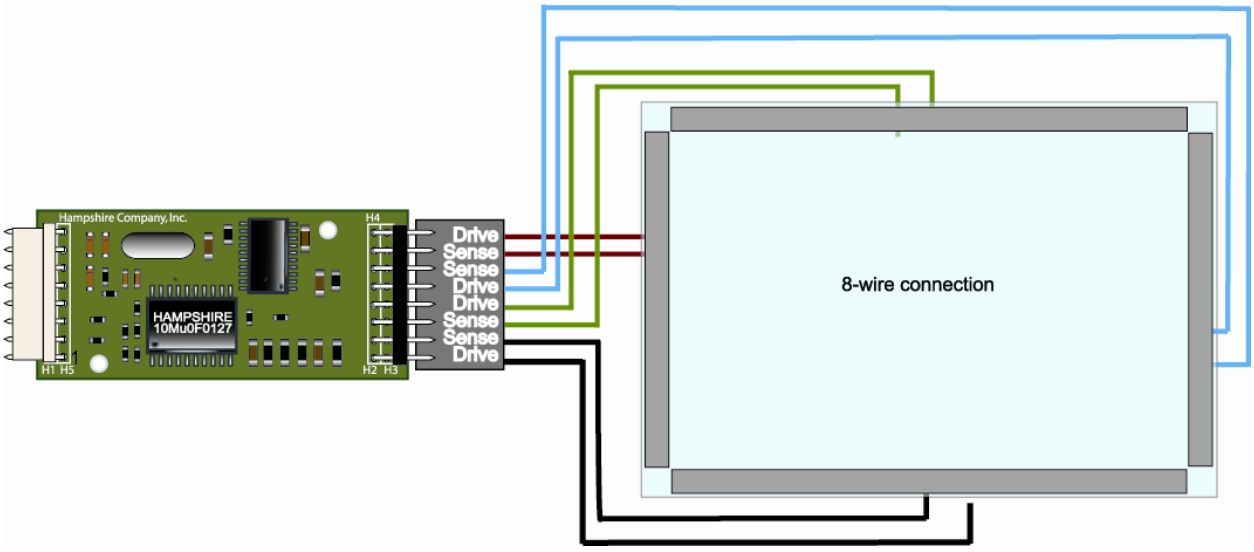
Touch Screen / Communication Connection Overview



4, 5, and 8 wire Touch Screen Connection Diagrams

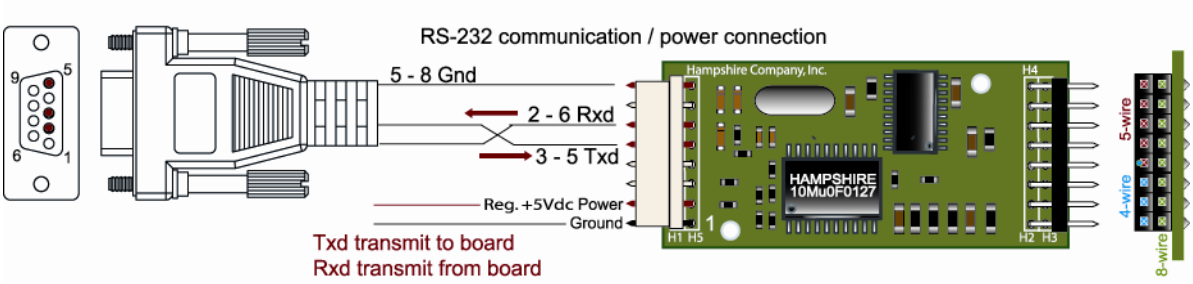




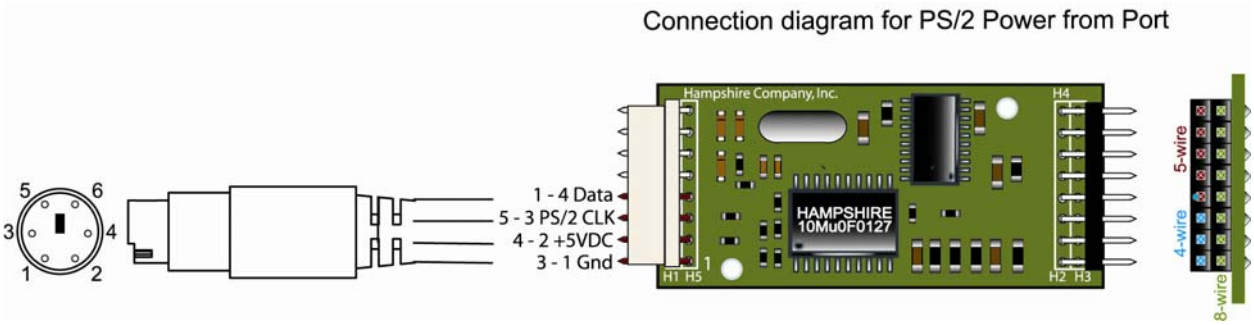


Communication Connection Diagrams

RS-232 Connection Diagram



PS/2 Connection Diagram



Mating connector for communication header

AMP header part number: 640457-8
Mating AMP socket connector: 640443-8 or any single row, 8 position .100” socket which mates to .024” square post header.