

Datenblatt

Touch Controller

4/5 Draht Resistiv

TC-R4/5-232+USB



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1. APPLICATION

The series products are solution for touch panel application. The controller is designed for fully integrated touch application. The control board supports both USB and serial interface including PnP. It is for both 4 and 5 wire resistive touch panel. It also provides 12 bit ADC resolution. It is able to fit most of the popular touch panels in the industry.

2. FUNCTION

2.1. SUMMARY

This board supports USB or RS-232 function.

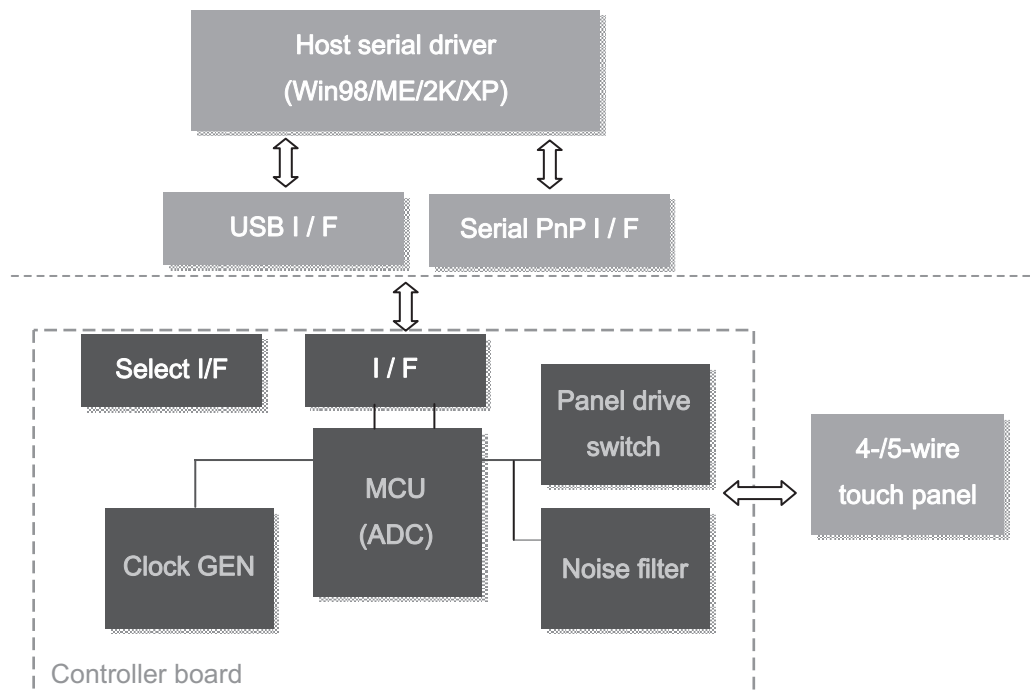
This board can be operated by the USB host controller as standard HID device.

This board supports 4、 5 wire Analog Resistive Film Touch-panel.

MCU mounted on this board does not have the calibration function. If a special device driver is installed, the application of the calibration and other function can be executed

This board meets the ROHS requirement.

2.2 BLOCK DIAGRAM



2.3 INTERFACE SPECIFICATIONS

2.3.1 Interface for HOST Side

USB fuction

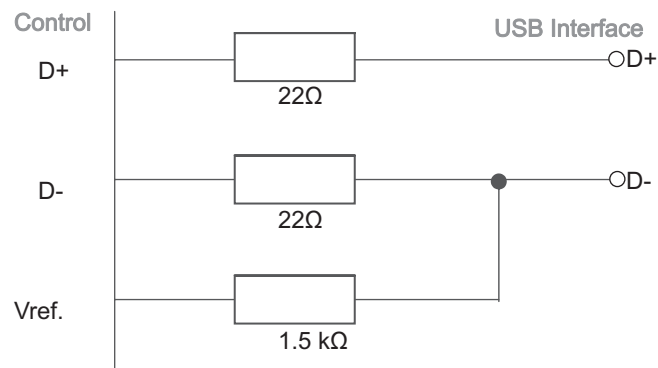
Signal	Pin No.	Specifications
+5V	1	Vcc
D-	2	D-
D+	3	D+
0V	4	GND
F.G.	5	FRAME GND

The details of Signal Conductor are as below:

(1)Data Signal

The signal compatible with USB spec. 1.1.

(2)Power :



Interface Circuit

RS232 function

Communication mode : Full duplex communication mode-serial interface.

Transmission speed : 9600 bps.

Data transmission mode : Asynchronous start-stop synchronization.

Signal level : Conforming to RS-232-C

Data format : Binary

Pin No.	Signal name	I/O	Specifications	Note
1	TXD	O	Data send signal	Approximately $\pm 12V$
2	RXD	I	Data receive signal	Approximately $\pm 12V$
3	VCC	I	Power	+5V
4	RTS	I	PnP request signal	Approximately $\pm 12V$
5	GND	-	Ground	0V

2.3.2 Interface for Touch Panel Side

Pin No.	Specifications / Standards
2	Left
4	Right
6	Lower
8	Upper

Pin No.	Specifications / Standards
1	Lower Left
3	Upper Left
5	Top Sheet
7	Lower Right
9	Upper Right

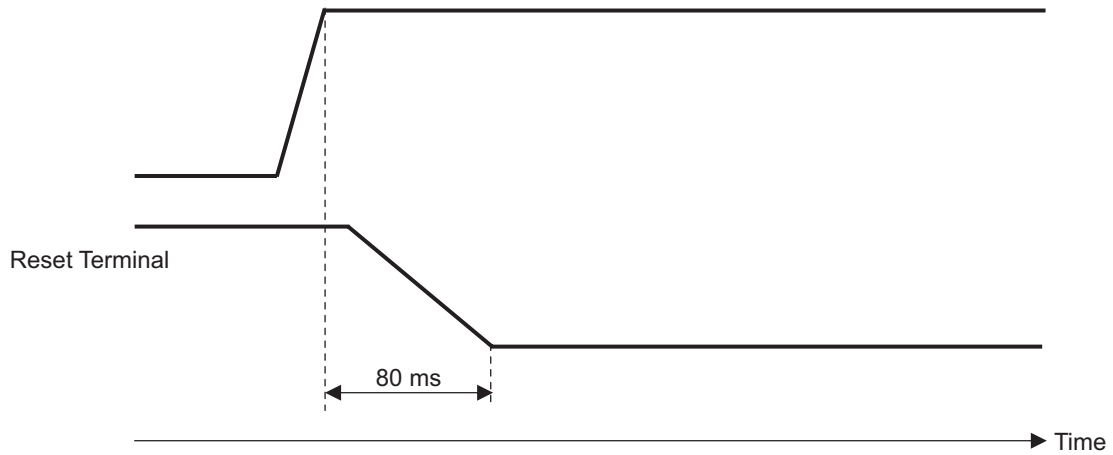
CONTENT

CONSENT

RESET LINE AND TIMING CHART

2.4.1 Power on Reset

MCU is low level reset for at least 80ms while the oscillator is running in order to reset the entire MCU .



2.5 TOUCH-PANEL FUNCTION

2.5.1 Coordinate Placement

The coordinate for the initial status display the external shape of the panel. The origin is at one corner of the panel and the diagonal corner is the maximum value(X=4096 Y=4096). Accordingly, the minimum value of the input area is larger than 0 and the maximum value is less than 4096.

2.5.2 Output Data

Byte	Definition	Explanation
Byte 0	Touch ON/OFF	Touch ON/OFF
Byte 2~ Byte 1	X Coordinates	The Data Numerical Value is 0~Max 4095
Byte 4 ~ Byte 3	Y Coordinates	The Data Numerical Value is 0~Max 4095

USB function

MCU on this board notifies the host side data by the HID report descriptor of the Mouse collection in accordance with HID spec 1.1.

MCU on this board generates 12bit coordinates by using built-in ADC.

The output data format is showed as above table. It mentioned each coordinate value has the range of theoretical value of 12bit. However, this board guarantees the range of about 10bit when the penpoint rests, and guarantees the range 12bit when the penpoint moves (When you consider the loss in the panel electrode part).

A numeric range of the guarantee is not provided for here because the A/D translation accuracy depends on the accuracy of the supplied power greatly.

RS232 function

The output data format is showed as above table and the Plug and Play (PnP) ID response:

Forwarding Method

Transfer rate: 1200bps

Data transmission mode: Asynchronous start-stop synchronization

Signal level: Conforming to RS-232-C

PnP ID Response Operation

The operation when PnP ID is transmitted to the host is described as follows:

RTS means host's RTS signal

H means +12V(space)

L means -12V(mark).

PnP ID description:

4-wire

Synchronizing with standing up of RTS=H(DTR signal is H) 100ms. The following 22 bytes respond. 28H ,01H , 24H , 54H , 54H , 54H , 30H , 30H , 30H , 32H,5CH,5CH,5CH,5CH,34H,57H,32H,33H,32H,46H , 34H , 29H.(hexadecimal mark)

5-wire

Synchronizing with standing up of RTS=H(DTR signal is H) 100ms. The following 22 bytes respond. 28H ,01H , 24H , 54H , 54H , 54H , 30H , 30H , 30H , 32H , 5CH , 5CH , 5CH , 5CH , 35H , 57H , 32H , 33H , 32H , 46H ,35H , 29H.(hexadecimal mark)

When Power on is reset(DTR signal is H),this MCU is executed PnP ID response. Connect DTR with RTS in the loop back on the PC side when you use the PnP function on windows PC.

3. ELECTRICAL CHARACTERISTICS

3.1 ABSOLUTE MAXIMUM RATING (VSS=0V)

Item	Description
DC Supply Voltage	-0.3 to 7.0
Input / Output Voltage	GND -0.3 to VCC +0.3
Operating Ambient Temperature (°C)	-20 to 80
Storage Temperature (°C)	-40 to 125
Operating Voltage (VCC)	+2.7 to 5.5

3.2 ELECTRICAL CHARACTERISTICS (VSS=0V,T(OPR)=0~70)

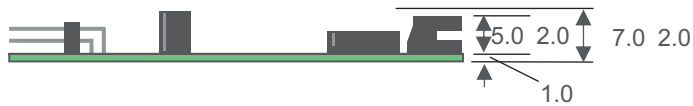
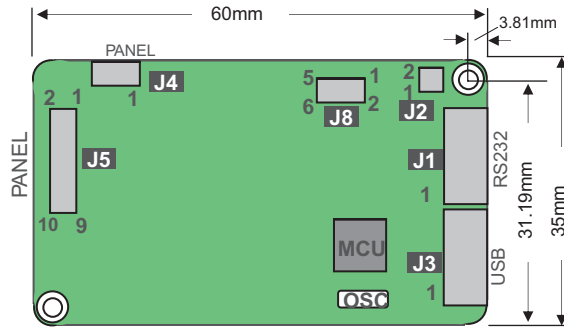
(VCC=5V±5%, GND=0V, TA=0~70°C ,Fosc=6MHz, Unless Otherwise Noted)

Symbol	Parameter	Condition	Min	Type	Max	Units
VDD	Supply Voltage		2.7	-	5.5	V
VIH	Input High Voltage		0.7VDD	-	VDD+0.3	V
VIL	Input Low Voltage		-0.3	-	0.3VDD	V
VOH	Output High Voltage (port 2)	Ioh=-25mA	VDD-2.0	-	VDD	V
VOH	Output High Voltage (port 0,1,3)	Ioh=-80µA	2.4	-	-	V
VOL	Output Low Voltage (port 2)	IoL=25mA	0	-	0.4	V
VOL	Output Low Voltage (port 0,1,3)	IoL=1.6mA	-	-	0.45	V
IiL	Input Leakage Current	0V<VIN<VDD	-1	-	1	V
RPH	Pull High Resistance		-	25	-	V
IDD,OPT	Operating Mode Current	Fosc=6MHz, No load	-	11	-	V
IDD,IDL	Idle Mode Current	Fosc=6MHz, No load V3.3 regulator and 1.5K register turn off	-	-	200	V
IDD,PD	Power Down Mode Current	Oscillator disabled, No load, V3.3 regulator and 1.5K register turn off	-	-	1	V
V33	3.3 Regulator Output		3.0	3.3	3.6	V
R_Bottun	Right button key	Open=5V	0	-	5	V
Vrest	Reset Voltage Note		3.5	3.6	3.7	V

Note: reset voltage only valid when USB function is used

4. MECHANICAL SPECIFICATION

4.1 EXTERNAL SHAPE OF CONTROL BOARD



Interface for Host side (J1 RS232)

Pin No.	Specification
1	TXD
2	RXD
3	DTR
4	RTS
5	GND

Interface for Host side (J3 USB)

Signal	Pin No.	Specification
+5V	1	Vcc
D-	2	D-
D+	3	D+
0V	4	GND
F.G.	5	FRAME GND

Interface for touch panel side (J5) 5W

Pin No.	Specifications / standards
1	Lower left
3	Upper left
5	Top sheet
7	Lower right
9	Upper right

Interface for touch panel side (J5 / J4) 4W

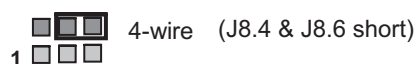
J5 Pin No.	J4 Pin No.	Specifications / standards
2	1	Left
4	2	Right
6	3	Lower
8	4	Upper

Extra power connector (J2)

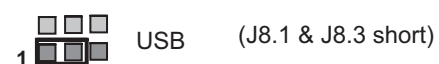
Pin No.	Specification
1	VCC (5V)
2	GND

Select jump for port and wire type(J8)

upper laye



lower layer



4.2 HEIGHT OF COMPONENT MOUNTING

7.0mm Maximum (Height of mounting from solder side)

4.3 WEIGHT

Around 8.6g

4.4 INTERFACE CONNECTOR

Serial Side : Wafer 2.00mm pitch connector

Touch Panel Side : 2.54mm Shrouded Header(4- /5-wire)

1.00mm FPC/FFC connector (4-wire) (option)

Extra Power: 2.54mm pin header (option)

5. PACKING METHOD

5.1 ELECTROSTATIC PREVENTION AIR BAG

Each control board will be arranged into electrostatic prevention air bag then several air bags will be arranged into partition of the inner box. (This is buffer material, so that is not shaking while transporting)

5.2 MASTER CARTON

Several partitions of the inner box will be arranged into a master carton. The descriptions showed as following will print in the front of master carton:

- shipping mark
- carton number
- quantity
- net and gross weight
- measurement
- country of manufacture

NOTE

Provider reserves the right to change product or specifications without notice. All trademark is belong to all origin company.