

ClearTek Controllers

FOR CAPACITIVE TOUCHSCREENS

MicroTouch Systems offers a wide variety of controllers designed for standard communications to support its analog capacitive touchscreen line. Controllers for **ClearTek® 3000** and **ToughTouch™** are available in serial, USB, PC Bus, MousePort, ADB/Macintosh, chipset, and daughterboard interfaces. The **TouchPen™** controller is available in a serial interface and the **ThruGlass™** controller is available in serial or OEM.

To reduce OEM product design and time-to-market schedules, the chipset for ClearTek 3000 and ToughTouch can also be used with MicroTouch's **TouchTek®5** (5-wire) resistive touchscreen — one chipset, three choices for integration. This enables OEMs to maximize their engineering resources by providing touch technology flexibility, without requiring hardware design changes.

Technical Specifications for ClearTek 3000 and ToughTouch Controllers

All controllers for ClearTek 3000 and ToughTouch meet or exceed the following specifications:

Operating Temperature	0° to 55°C
Storage Temperature	-40° to 85°C
MTBF	715,000 hours for SMT3E; 572,600 hours for PC Bus, MousePort, and ADB (per MIL-HANDBOOK-217-F1).
Relative Humidity	0-95% , non-condensing.
EMI	Unaffected by EMI from other nearby CRTs and displays. Also unaffected by environmental EMI.
Electrostatic Protection	±20KV air and ±8KV contact discharge to screen (per IEC 801-2).
Regulatory Approvals	FCC-A, UL, and CE compliant. SMT3E is also FCC-B compliant. USB Implementors Forum recognized.

Controllers for ClearTek 3000 and ToughTouch

SERIAL CONTROLLER (SMT3E)

Controller	Cased programmable CMOS surface mount controller.
Circuit Board Dimensions	3.50" x 2.25" x 0.30" / 88.83 x 57.11 x 7.61mm
Plastic Enclosure Dimensions	3.75" x 2.50" x 0.84" / 95.18 x 63.45 x 21.32mm molded plastic enclosure. Diagnostic LED.
Attached Cable	8' (2.44 meters) shielded cable with 9-pin D connector for serial port (9-pin to 25-pin adapter available).
Power Requirements	+5VDC (70mA typical), 100mV peak-to-peak maximum ripple and noise if power supplied by optional MicroTouch keyboard power tap cable or wall-mount power supply. +8-15VDC (80mA typical), 400mV peak-to-peak maximum ripple and noise if power supplied from monitor.
Output Port	Bi-directional asynchronous RS-232C serial communication.
Port Parameters	Odd, even, or no parity; 7 or 8 data bits; 1 or 2 stop bits.
Data Rate	1200-19.2K baud.

UNIVERSAL SERIAL BUS (USB) CONTROLLER

Controller	Cased programmable CMOS surface mount controller.
Circuit Board Dimensions	3.50" x 2.25" x 0.30" / 88.83 x 57.11 x 7.61mm
Plastic Enclosure Dimensions	3.75" x 2.50" x 0.84" / 95.18 x 63.45 x 21.32mm molded plastic enclosure. Diagnostic LED.
Attached Cable	8' (2.44 meters) shielded cable with standard Series A USB connector.
Power Requirements	Power supplied through USB port in compliance with USB standards.
Data Rate	High speed (12M bits/second), low power device.

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PC BUS CONTROLLER

Controller	ISA bus.
Circuit Board Dimensions	4.875" x 3.813" / 123.73 x 96.78mm. Uses a half slot.
Touchscreen Extension Cable	6' or 10' (1.83 or 3.05 meters) shielded cable with grommet available. Do not substitute other cables.
Output Port	Bi-directional asynchronous RS-232C serial communication over bus.
Port Parameters	Odd, even, or no parity; 7 or 8 data bits; 1 or 2 stop bits.
Compatibility	Completely software-compatible with MicroTouch serial controller. Communicates with host via on-board asynchronous serial port. May be configured for COM port (1-8) and IRQ (2-5, 10-12, 15) using jumpers.
Power Requirements	+5 VDC (100 mA typical, 200 mA maximum), $\pm 5\%$ regulation. +12 VDC (50 mA typical, 100 mA maximum), $\pm 10\%$ regulation. 100 mV maximum ripple and noise.
Data Rate	1200 – 19.2K baud.

MOUSEPORT CONTROLLER

Controller	Cased programmable CMOS surface mount controller.
Circuit Board Dimensions	3.50" x 2.25" x 0.30" / 88.83 x 57.11 x 7.61mm
Plastic Enclosure Dimensions	3.75" x 2.50" x 0.84" / 95.18 x 63.45 x 21.32mm molded plastic enclosure. Diagnostic LED.
Attached Cable	8' (2.44 meters) shielded cable with 6-pin mini-din (PS/2) for mouseport.
Power Requirements	Derived from mouseport or if obtained from monitor +8-15VDC (80mA typical), 400mV peak-to-peak maximum ripple and noise.
Output Port	Bi-directional asynchronous serial communication.
Port Parameters	PS/2 mouseport.
Data Rate	1200-19.2K baud.

ADB (MACINTOSH) CONTROLLER

Controller	Cased programmable CMOS surface mount controller.
Circuit Board Dimensions	3.50" x 2.25" x 0.30" / 88.83 x 57.11 x 7.61mm
Plastic Enclosure Dimensions	3.75" x 2.50" x 0.84" / 95.18 x 63.45 x 21.32mm molded plastic enclosure. Diagnostic LED.
Attached Cable	8' (2.44 meters) shielded cable with ADB connector for ADB port.
Power Requirements	Derived from ADB or if obtained from monitor +8-15VDC (80mA typical), 400mV peak-to-peak maximum ripple and noise.
Output Port	Bi-directional asynchronous serial communication.
Port Parameters	ADB format.
Data Rate	1200-19.2K baud.

CHIPSET (for volume OEM customers only)

Chipset Components	MicroTouch Excalibur ASIC (80-pin Plastic Quad Flat Pack) plus supporting circuits.
Power Requirements	5V @ 35 mA typical.
Output Port	Serial UART or PS/2 interface.
Port Parameters	For serial: odd, even, or no parity; 7 or 8 data bits; 1 or 2 stop bits. For PS/2: mouseport.
Data Rate	For serial and PS/2: 1200-19.2K baud.
Compatibility	Supports both MicroTouch ClearTek 3000 capacitive and TouchTek5 resistive touchscreens. Pre-programmed microprocessor is functionally compatible with SMT3E controller.
Design Information	Interface specifications, schematics, and software provided.

DAUGHTERBOARD CONTROLLER (for volume OEM customers only)

Controller	Uncased serial (SMT3/SMT3E) controller.
Circuit Board Dimensions	3.50" x 2.25" x 0.30" / 88.83 x 57.11 x 7.61mm
Compatibility	Compatible with serial (SMT3E) controller. Serial lines are broken out to pin header for ease of installation.

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TouchPen Controller

TP4+ CONTROLLER

Controller	Uncased programmable CMOS surface mount controller.
Controller Dimensions	1.35" x 4.8" x .275" / 34.26 x 121.83 x 6.98mm
Power Requirements	+12-15 VDC (100mA typical).
Output	Communicates via RS232C level asynchronous serial communication.
Data Rate	200 points per second at 19.2K baud.
I/O Connections	RS 232C 9-pin sub-mini D female jack. Stylus: 8 Pin RJ 45 phone jack.
Operating Temperature	0° to 55°C
Storage Temperature	-50° to 85°C
MTBF	442,000 hours (per MIL-HANDBOOK-217-F1).
Relative Humidity	0-95% , non-condensing.
EMI	Unaffected by EMI from other nearby CRTs and displays. Also unaffected by environmental EMI.
Electrostatic Protection	±20KV air and ±8KV contact discharge to screen (per IEC 801-2).
Regulatory Approvals	FCC-A, UL, and CE compliant.

ThruGlass Touchscreen Controllers

SERIAL CONTROLLER

Controller	Cased RS232 programmable controller.
Circuit Board Dimensions	3.50" x 2.25" x .7" / 88.83 x 57.11 x 17.77mm
Plastic Enclosure Dimensions	3.75" x 2.50" x .9" / 95.18 x 63.45 x 22.84mm
Cable	8' (2.44 meters) with 9-pin D-type connector.
Power Requirements	5 VDC ±10% at 300mA.
Communications	Bi-directional RS232 at 9600 baud; N, 8, 1.
I/O Connection	16 channel; 18 way 0.1" pitch in-line connector.
Output Format	X-Y coordinate 5-byte packet compatible with TouchWare.
Operating Conditions	0°C to 70°C, 0-95% RH non condensing.
Storage Conditions	-40°C to 85°C, 0-95% RH non condensing.
Regulatory Approval	FCC-B, CE, UL.
MTBF	265,328 hours (per MIL-HANDBOOK-217-F1).

OEM CONTROLLER (for volume OEM customers only)

Controller	Uncased RS232 programmable controller.
Circuit Board Dimensions	3.50" x 2.25" x 0.6" / 88.83 x 57.11 x 15.23mm
Connection	6 pin 0.1 pitch header.
Power Requirements	12 VDC ±5% at 100mA.
Communications	Bi-directional RS232 at 9600 baud; N, 8, 1.
I/O Connection	16 channel; 18 way 0.1" pitch in-line connector.
Output Format	Single programmable ASCII codes for press & release for pads and X-Y coordinate 5-byte packet compatible with TouchWare for screen.
Operating Conditions	-40°C to 85°C, 0-95% RH non condensing.
Storage Conditions	-40°C to 85°C, 0-95% RH non condensing.
Regulatory Approvals	FCC-B, CE, UL.
MTBF	Better than 270,000 hours (per MIL-HANDBOOK-217-F1).

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ThruGlass Pads Controller

PADS CONTROLLER

Controller	Cased RS232 programmable controller.
Circuit Board Dimensions	3.50" x 2.25" x .7" / 88.83 x 57.11 x 17.77mm
Plastic Enclosure Dimensions	3.75" x 2.50" x 1" / 95.18 x 63.45 x 25.38mm With breakout board 4.6" x 4.35" x 1" / 116.75 x 110.41 x 25.38mm
Cable	8' (2.44 meters) with 9-pin D-type connector.
KeyPad Connection	Direct connection using 30-way 2mm DIL header.
PicturePads Connection	RCA jacks on breakout board.
Max KeyPads/PicturePads	16
Power Requirements	5 VDC \pm 10% at 300mA.
Output Format	Single programmable ASCII codes for press & release.
Port Parameters	RS 232 serial
Communications	Bi-directional RS232 at 9600 baud; N, 8, 1.
Sensing Frequency	65kHz - 2.0MHz.
Operating Conditions	0°C to 70°C, 0-95% RH non condensing.
Storage Conditions	-40°C to 85°C, 0-95% RH non condensing.
Regulatory Approvals	FCC-B, CE, UL.
MTBF	265,328 hours (per MIL-HANDBOOK-217-F1).

Supplemental Documentation

Touch Controllers Reference Guide
Excalibur Chip Set Controller Developer's Guide
ClearTek 3000 Specifications Sheet
ToughTouch Specifications Sheet
TouchPen Specifications Sheet
ThruGlass Specifications Sheet
ThruGlass Picture Pads and KeyPads
TouchTek5 Specifications Sheet

Supplemental documentation can be viewed at www.microtouch.com or are available by calling 800-642-7686.

www.microtouch.com

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