# 5-Wire Resistive Touch Technology

## Product Overview

### The System Difference:

WEDC utilizes TouchKO's 5-Wire Resistive touch system is one of the most advanced, fastest touchscreen / controller combinations on the market. The overlay is constructed with a double-sided, pen-entry film which is adhered to glass.

### The Controller Advantages:

TouchKO's Cheetah™ controllers are built for speed and accuracy. The first touch response is acquired in less than one millisecond and has a 12-bit resolution. Utilizing the fastest TI DSP chip, it can be ordered with USB, USB / serial combo or multi-zone.

### Easy To Integrate:

WEDC designs and manufactures products to be easily integrated into a wide range of standard displays and enclosures.

### Quick Specs

- 5-Wire Resistive
- Double-Sided, Pen-Entry Overlay
- Up to 86% Light Transmission
- Anti-Newton, Anti-Glare (standard)
- Surface Hardness of 4H
- 5 year limited warranty on touchscreen
- 5 year limited warranty on controller
- Linearity greater than 99%
- Multi-Point calibration for optimum accuracy

### Applications

- POS
- Kiosk
- Hospitality
- Medical
- Military
- Industrial
- Public Use

## Touchscreen Specifications

### Touch System

**Overlay:** 5-Wire Resistive Technology

**Size:** 5.7 to 50 Diagonal inches

**Controller:** Resistive with USB, USB / Serial Combo or Multi-zone Capability Controller Optional

### Warranty

**Touchscreen:** 5 Year Touchscreen

**Controller:** 5 Year Controller

### Reliability

**Expected Life Performance:** 35 million touches for touchscreen and 1.1M hours MTBF for controller

**Position Accuracy:** Greater than 99% with less than 1.5% maximum deviation.

**Chemical:** Resistant to processing and common household chemicals

**Hardness:** 4H Hardness (ASTM 3363.)

**Durability:** Meets Taber abrasion test (ASTM D1044)

For more information, visit our website at **www.whiteedc.com** or call 602-437-1520 and ask for product sales.

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## Touchscreen Specifications *continued*

### Mechanical

**Standard Sizes:** 5.7 to 50 diagonal inches.
Custom sizes available, please see our website for complete listing.

**Glass Thickness:** 0.093 Standard
0.063 to .25 thickness available

### Environmental

**Vibration / Shock:** In accordance with UL291 when properly installed in a suitable bezel

**Humidity:** Up to 90% RH from 0 to +35°C, non-condensing

**Temperature:** -15°C to 70°C for the touchscreen

**Storage:** Always store in original container between -50°C and 85°C

**Sealability:** Can be sealed to meet NEMA 4 and 12

# Controller Specifications

**Operational voltage:**

- 3.3V (DSP, Touchscreen)

**Input voltage:**

- 3.8V to 16V on connector J2, USB bus 5V on connector J4

**Current Draw:**

- 15mA (+25mA USB) Average Current in standard operating mode (No touch)
- 60mA (+25mA USB) Typical Current in standard operating mode (Touch)
- 150mA (+25mA USB) Peak Current in standard operating mode (Touch)
- 8mA Current in sleep mode (Touch wakes controller, no serial communication)

**Power Consumption:**

- 55mW @ 3.6V (No touch)
- 75mW @ 5V (No touch)
- 300mW @ 5V (Touch) Typical
- 750mW @ 5V (Touch), 400mW dissipated across touch sensor during touch
- +125mW if USB circuit is used

*Touchscreen characteristics contribute to overall power consumption.*

**Operating Temperature:**

- 0°C to +70°C Commercial
- -20°C to +80°C Industrial (Available upon request)

**Storage Temperature:**

- -40 to +85 °C

**Touch Response speed:**

- Touch response time (PEN) 1 to 2mS typical
- Touch response time (FINGER) 1.5 to 3.5mS typical

*Touch response speed is measured from first touch contact to first serial bit toggle.*

*Touch activation force: less than 5 oz.*

**Touch Acquisition Speed:**

- 800uS minimum contact required

*Touch acquisition speed is measured from first touch contact to the end of the sampling period.*

*Pen taps have been measured to less than 1mS.*

**Analog conversions per touch coordinate:**

- AtoD = 312

**16 Bit Math/ Logic per touch coordinate:**

- ADDS, SHIFT, DIV = 388
- CONFIDENCE TESTS = 16

**DSP clock speed:**

- External = 8MHz
- Internal = 0 to 32Mhz

**MTBF:**

- Per MIL-HDBK-217, notice 2 > 1M hours

*Report available upon request*

**Static Discharge:**

- RS-232 Bus Pin ESD
- +/-15KV per the Human Body Model
- Touch Pin ESD
- ESD Rating of Class N (exceeding 16 kV) per the Human Body Model (24 Watts @ 1mS)
- Power Pin ESD
- 2kV per the Human Body Mode

**Touch Coordinate Resolution:**

- 13Bit internal scaled depending on output format and calibration

**Diagnostics:**

- Surface mount LED for Power and Touch

**Baud Rate (Serial RS232):**

- 38,400 (TouchKo mode default)
- 19200
- 9600 (MTS / Elo emulation)

**Touch Coordinates Per Second:**

- 146pps TouchKO mode (53mA)
- 140pps MTS emulation mode (75mA)
- 72pps Elo emulation mode (68mA)
- Over 400pps available (custom mode)

**Command Set emulation:**

- ELO 2210
- MTS Capacitive or Resistive
- Other emulations available

**Footprint Dimensions:**

- 2.1 Inch (Length) x 1.1 Inch (Width) x 0.37 (Height)
- 0.15 Inch Hole centers from edge of board

**TouchKO and MTS Emulation Packet Format**

| Byte | Description |
|---|---|
| 1 | Status Byte |
| 2 | XLOW |
| 3 | XHIGH |
| 4 | YLOW |
| 5 | YHIGH |

**Elo 2210 Emulation Packet Format**

| Byte | Description |
|---|---|
| 1 | ASCII 'U' (55h) |
| 2 | ASCII 'T' (54h) |
| 3 | Status Byte |
| 4 | XLOW |
| 5 | XHIGH |
| 6 | YLOW |
| 7 | YHIGH |
| 8 | ZLOW |
| 9 | ZHIGH |
| 10 | Chksum |

**For ordering or information on any of our products and services, call White Electronic Designs at:**

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