# EX121 & EX141 Series Controller Specification

## 3M Touch Systems

3M Touch Systems Standard Product

Production Status

Approved By:

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# EX121 & EX141 SERIES CONTROLLER SPECIFICATIONS

The controller specifications listed below were validated in test systems containing 3M Touch Systems components. These specifications may not be valid if configured with components from suppliers other than 3M Touch Systems. All components in the manufacture of electronic controllers are RoHS Directive compliant (2002/95/EC).

| DESCRIPTION | | SPECIFICATION | |
|---|---|---|---|
| **PHYSICAL DIMENSIONS** | Uncased | 3.50 in. x 2.30 in. x 0.45 in. | (88.9 mm x 58.4 mm x 11.4 mm) |
| | Cased | 3.75 in. x 2.50 in. x 0.90 in. | (95.3 mm x 63.54 mm x 22.9 mm) |
| **BOARD LEVEL FUNCTIONS** | | | |
| Power | | 5 VDC (87 mA typical, 100 mA maximum); ± 5% regulation<br>50 $mV_{pp}$ maximum ripple and noise | |

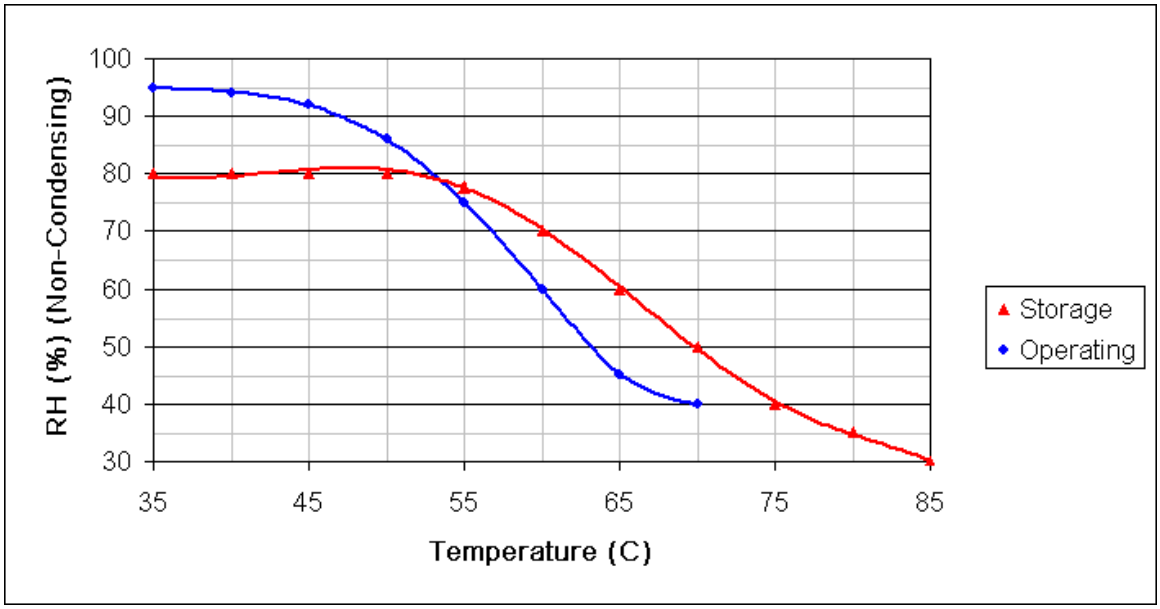
| **REGULATORY REQUIREMENTS** | **Performance** | | |
|---|---|---|---|
| CE | | | Compliant |
| • Radiated Emissions – EN 55022:1998 | Class B | | Compliant |
| • AC Mains Conducted Emissions – EN 55022:1998 | Class B | | Compliant |
| • Telco Lines Conducted Emissions | N/A | | N/A |
| • RFI – EN 61000-4-3 / ENV 50140 | Class A | | Compliant |
| • CRFI – EN 61000-4-6 | N/A | Cable < 3 meters long | N/A |
| | Class A | < 80% Screen Area | |
| | Class B | ≥ 80% Screen Area | |
| • EFT (Burst Immunity) – EN 61000-4-4 | Class B | | Compliant |
| • ESD Susceptibility – IEC 61000-4-2 | Class 1 | | Compliant |
| • Surge – EN 61000-4-5 | Class B | | Compliant |
| • Harmonics – EN 61000-3-2 | Class A | | Compliant |
| • Flicker – EN 61000-3-3 | | | Compliant |
| • Power Frequency Magnetic Field – EN 61000-4-8 | Class A | | Compliant |
| • Voltage Dips – EN 61000-4-11 | Class B | < 5% V | Compliant |
| | Class C | < 70% V | |
| • Voltage Interruptions – EN 61000-4-11 | Class C | | Compliant |
| FCC Class B / CISPR22 Class B | Class B | | Compliant |
| VCCI Class B ITE Emissions (Japan) | Class B | | Compliant |
| AS/NZS 3548:1995/CISPR 22 Class B ITE Emissions (Aus.) | Class B | | Compliant |
| UL 60950 / EN 60950 / IEC 60950-1:2001 | | | Compliant |

| **AMBIENT OPERATING AND STORAGE ENVIRONMENTAL CONDITIONS** | **(All Humidity is Non-Condensing)** |
|---|---|
| Operating Temperature Range | - 40 °C to +70 °C |
| Operating Humidity Range | < 36° C 0-95% RH |
| | ≥ 36 °C see Figure 1 below |
| Storage Temperature Range | - 50 °C to +85 °C |
| Storage Humidity Range | < 36°C 0-80% RH |
| | ≥ 36 °C see Figure 1 below |

| | |
|---|---|
| **PERFORMANCE & RELIABILITY** | |
| Minimum Touch Duration | 5.4 msec. |
| Touch Resolution – (Maximum number of addressable coordinates generated by the controller) | 16K x 16K |
| ESD Susceptibility - | |
| ±8 kV Contact Discharge* – Class 2 per section 9 of IEC 61000-4-2<br>1 false touch allowed | Compliant |
| ±27 kV Air Discharge* – Class 1 per section 9 of IEC 61000-4-2<br>Normal Operation – No false touches | Compliant |
| * ESD discharges to a 3M Touch Systems touch screen connected to the controller | |
| MTBF (by MIL Std. 217F Calculation) | > 500,000 Hours |
| **TOUCH SYSTEM PARAMETERS** | |
| Accuracy vs. Dynamic Temperature Change (tested at 0 deg. C to 60 deg. C with a 0.5 deg. C/minute temperature ramp) | Maintains 99.0% Accuracy |
| Touch Screen Compatibility | 3M Touch Systems Capacitive Touch Screens |
| Communications Protocol | USB Rev. 1.1 |
| **WARRANTY PERIOD** | See Contract Terms and Conditions |

Figure 1

Storage and Operating Temperature with Humidity Conditions



# IMPORTANT NOTICE TO PURCHASER

**NOTICE:** Given the variety of factors that can affect the use and performance of a 3M Touch Systems, Inc. Product (the "Product"), including that solid state equipment has operation characteristics different from electromechanical equipment, some of which factors are uniquely within User's knowledge and control, it is essential that User evaluate the 3M Touch Systems, Inc. Product and software to determine whether it is suitable for User's particular purpose and suitable for User's method of application. 3M Touch Systems, Inc. statements, engineering/technical information, and recommendations are provided for User's convenience, but their accuracy or completeness is not warranted. 3M Touch Systems, Inc. products and software are not specifically designed for use in medical devices as defined by United States federal law. 3M Touch Systems, Inc. products and software should not be used in such applications without 3M Touch Systems, Inc. express written consent. User should contact its sales representative if User's opportunity involves a medical device application.

"RoHS Directive compliant" means that the product or part does not contain any of the following substances in excess of the following maximum concentration values in any homogeneous material, unless the substance is in an application that is exempt under RoHS: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's knowledge and belief based on information provided by third party suppliers to 3M."

**IMPORTANT NOTICE TO PURCHASER:** Specifications are subject to change without notice. These 3M Touch Systems, Inc.' Products and software are warranted to meet their published specifications from the date of shipment and for the period stated in the specification**. 3M Touch Systems, Inc. makes no additional warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose.** User is responsible for determining whether the 3M Touch Systems, Inc. Products and software are fit for User's particular purpose and suitable for its method of production, including intellectual property liability for User's application. If the Product, software or software media is proven not to have met 3M Touch Systems, Inc. warranty, then 3M Touch Systems, Inc.' sole obligation and User's and Purchaser's **exclusive remedy**, will be, at 3M Touch Systems, Inc.' option, to repair or replace that Product quantity or software media or to refund its purchase price. 3M Touch Systems, Inc. has no obligation under 3M Touch Systems, Inc. warranty for any Product, software or software media that has been modified or damaged through misuse, accident, neglect, or subsequent manufacturing operations or assemblies by anyone other than 3M Touch Systems, Inc. **3M Touch Systems, Inc. shall not be liable in any action against it in any way related to the Products or software for any loss or damages, whether non-specified direct, indirect, special, incidental or consequential (including downtime, loss of profits or goodwill) regardless of the legal theory asserted.**



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