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*Part of the M9 Family of  
Data Entry Products*

## Specifications Control Drawing (SCD)

# M901

## PC-COMPATIBLE KEYBOARD

**86-Key with Enclosure  
Full-Travel Keystroke  
USB Interface  
Built-in TouchPad Control  
EL Backlighting  
Splash Proof Design**

M901 SCD

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**M901 SCD**

1.0

SHEET 1 OF 6

Revision Log					
Rev.	E. R. No.	Revised By	Checked By	Approved By	Rel. Date
1.0	41999	Dora Wang			

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## 1. PRODUCT FEATURES

- PC compatible, rugged and durable, 86-key QWERTY keyboard with ABS plastic enclosure
- Full-travel keystroke with optimal key operation and tactile response;
- USB 2.0 Compatible (Hot Swappable);
- Integrated TouchPad cursor control with two mouse buttons;
- Electro Luminescent (EL) backlighting with 4 levels of brightness adjustment;
- Splash-proof Water Sealing;
- Coil cable with detachable DB9 connector on the keyboard;
- Special ‘Emergency’ key.



Fig. 1: M901 Keyboard

## 2. ELECTRICAL SPECIFICATIONS

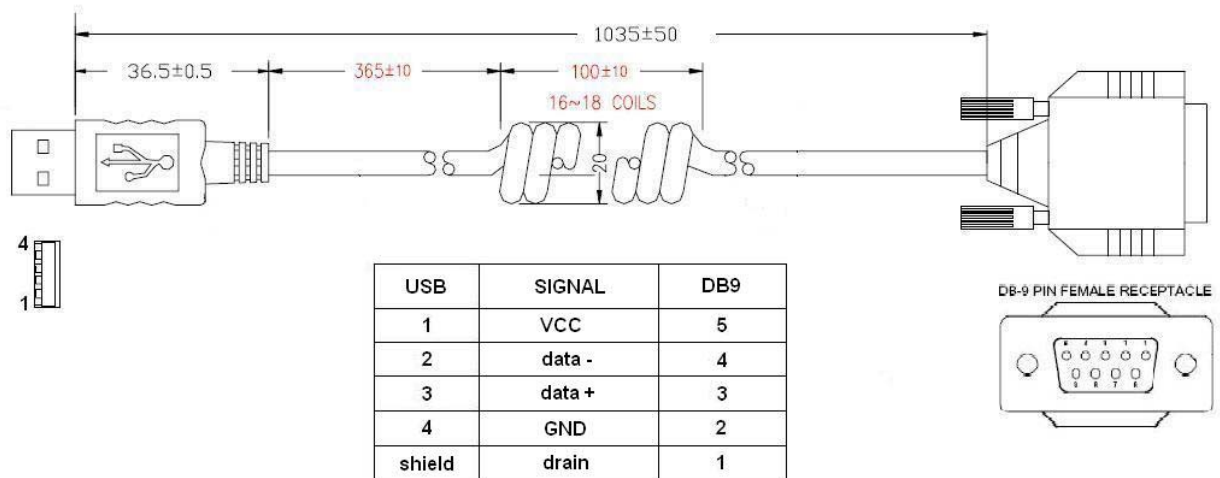
### 2.1 General Characteristics

- Total power consumption:  
Typically 1.25W, or 5V @ 250 mA (Max. 5V @ 500 mA).  
Keyboard’s power is supplied through its USB cable (bus power).
- DC operating voltage range: 4.75V ~ 5.5V (Typical 5V)
- USB 2 speed compliance:           480 Mbps (high speed)  
  12 Mbps (full speed)  
  1.5 Mbps (low speed)
- Contact resistance:.....2K ohm or less.
- Insulation Resistance:.....more than 100M ohm @ 250VDC

### 2.2 Connecting Cables

The keyboard is available with a coil USB interface cable, Figure 2. It has a length of 1035mm (3.4 ft) approximately in the relax state, a USB connector (type A) on one end, and DB9 connector type on the other. Note the DB9 connector is used primarily for keyboard connection. It does not imply the keyboard uses “serial” port to communicate with a computer, but instead, it uses the USB.

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**Fig. 2:** USB cable and connectors

### **2.3 Keyboard Backlight**

When turned ON, all of the 86 keys are illuminated. Its brightness can be adjusted by a "starburst" key located near the upper right corner of the keypad (Fig. 1). There are 4 levels of dimming adjustment, plus the "off" position. The EL backlight is operated with the power source supplied through the external USB cable.

### **2.4 Special Function Key "EMERGENCY"**

The keyboard has a special function key labeled as "EMERGENCY" at the upper left corner (Fig. 1). Each time it is pressed, internal keyboard encoder will send out a "Shift+F1" scan code to a computer or a device where the keyboard is connected to. At the same time, it turn OFF keyboard backlight.

## **3. MECHANICAL SPECIFICATIONS**

- Quite tactile feeling, full travel keystroke
- Life: Greater than 5 million cycles
- Nominal Key Travel =  $3.5 \pm 0.5$ mm (or  $0.14 \pm 0.02$  in)
- Nominal Actuation Force =  $55 \pm 25$  grams (or  $1.9 \pm 0.9$  ounces)
- Keytop pull force:  $> 0.5$  kg
- Keyboard weight: 2.25lb (1.13KG)

### **3.1 Keyboard Dimension**

The keyboard outline dimension is shown in Fig. 3

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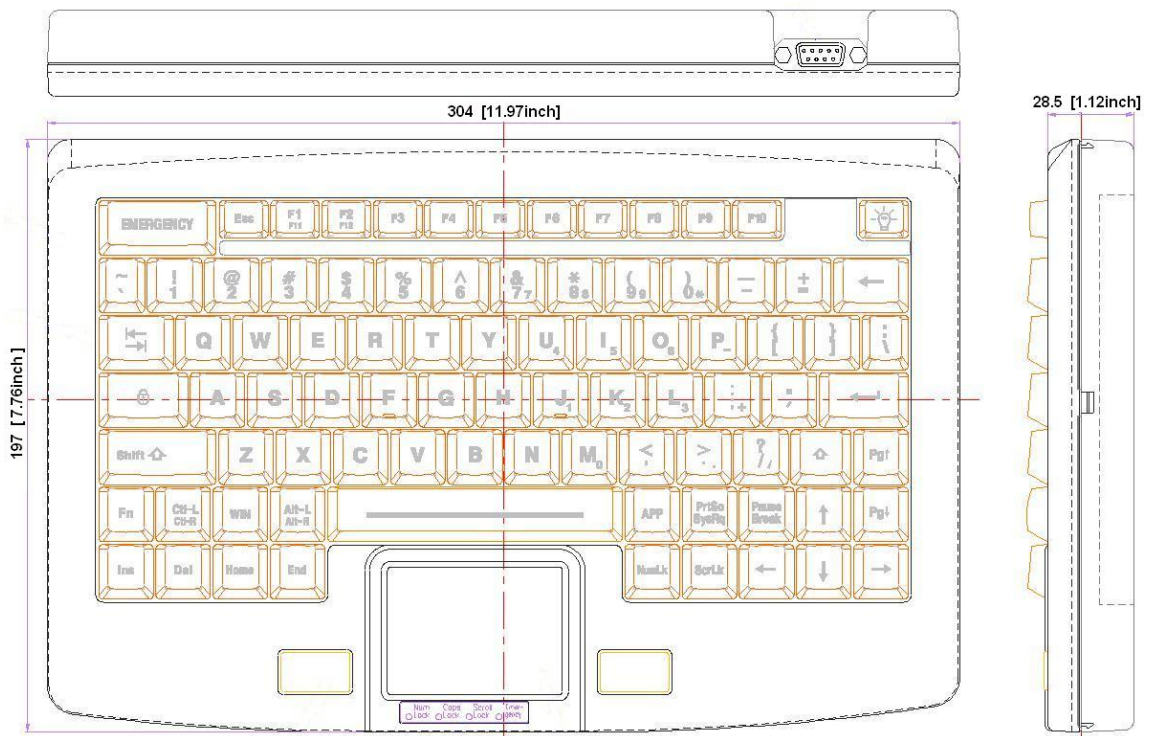


Fig. 3: Keyboard Outline Dimension

#### 4. ENVIRONMENTAL SPECIFICATIONS

##### 4.1 Operating Temperature and Humidity

Condition	Temperature	Relative Humidity (R.H.)
Operating	-25 to 55 °C (Keyboard) 0 to 55 °C (Touchpad)	85%
Storage	-40 to 60 °C	95%

##### 4.2 Flammability

Printed Circuit Board... = 94 VO  
Interface Cable..... = 94 VO

Silicone Overlay..... = 94 HB  
Enclosure..... = 94 VO

##### 4.3 Shock

There shall be no abnormality in operation and appearance of the keyboard when an impact of 10G has been applied to the package keyboard. The testing method shall be in accordance with 213B of MIL-STD-202E.

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#### **4.4 Vibration**

The packaged keyboard is designed to be operational in the following testing condition. The testing method shall be in accordance with 201A of MIL-STD-202E.

- Vibrating Frequency Range = 10~55Hz
- Vibrating Amplitude = 0.5 mm
- Vibrating Direction = X, Y, and Z individually
- Vibrating Time = 2 hours

#### **4.5 Key Life Test**

Standard: a. key-switch life: 5,000,000 cycles  
b. Keyboard is qualified using Hasco pneumatic life tester using soft cushion actuator with a 4cycles / second actuation speed 120 ~ 150gf air pressure.

#### **4.6 High Temperature Test**

Check Method: Leave for 96hours under +70 °C.

Standard: The keyboard operates normally after the test.

#### **4.7 Low Temperature Test**

Check Method: Leave for 96 hours under -25°C.

Standard: The keyboard operates normally after the test.

#### **4.8 Heat Cycle Test**

Check Method: By the condition shown in the Fig. 4, repeat heat cycle test for 2 times.

Standard: When the test is finished, followings must be satisfied.

- All functions operate normally.
- There are no defects which harm commercial value, e.g., change of color, rust or change of form.

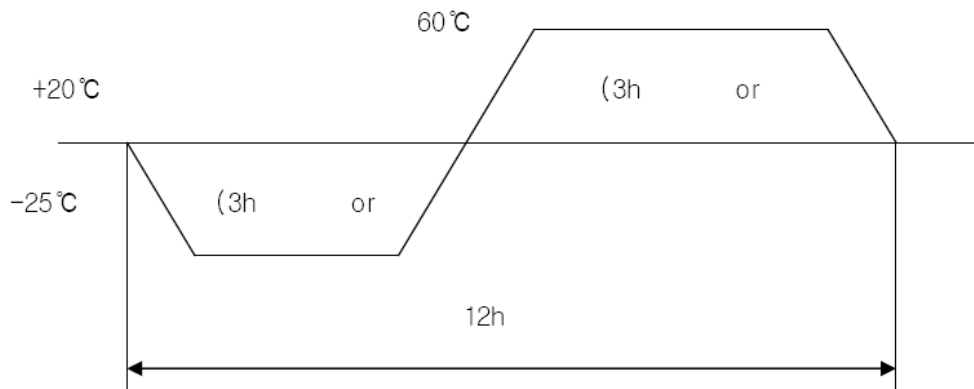


Fig. 4: Heat Cycle Test

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