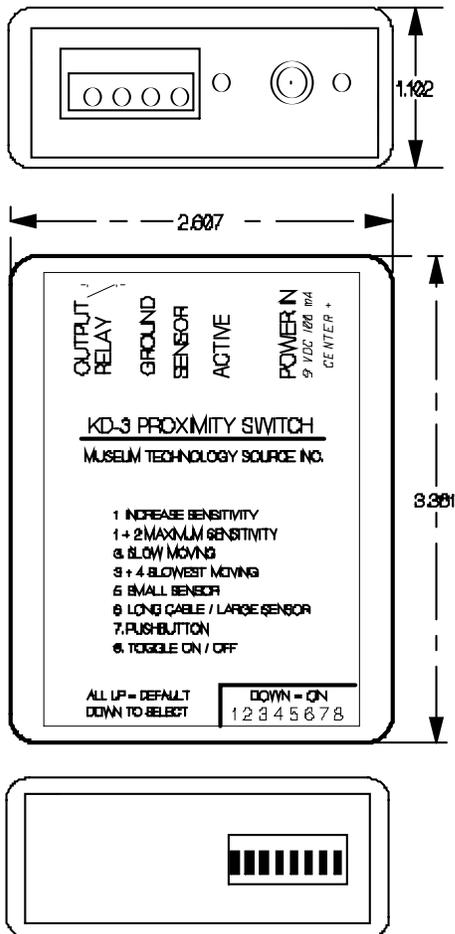


PRELIMINARY INFORMATION

June 2012



****Turns objects into touch activated switches***

****Activates from inches away***

****Works through wood, plastic***

****Easy setup...self calibrating***

****Normally open relay output***

****Operates on 9 to 24 Volts DC***

****Wide range of sensor sizes***

****Output mode: pushbutton, toggle or timed***

The KD-3 is a capacitive proximity switch that uses a combination of analog and digital techniques to detect a change of capacitance on a remote sensing plate. The capacitance change is brought about when the sensing plate is approached or touched. Upon activation, a normally open relay closes, indicated by a red LED lighting. Three modes are available: Pushbutton, in which the relay stays closed for as long as presence is sensed; Pulse, in which the relay closes for one second and then opens, or Toggle, where the relay closes on the first touch, remaining closed until a second touch occurs.

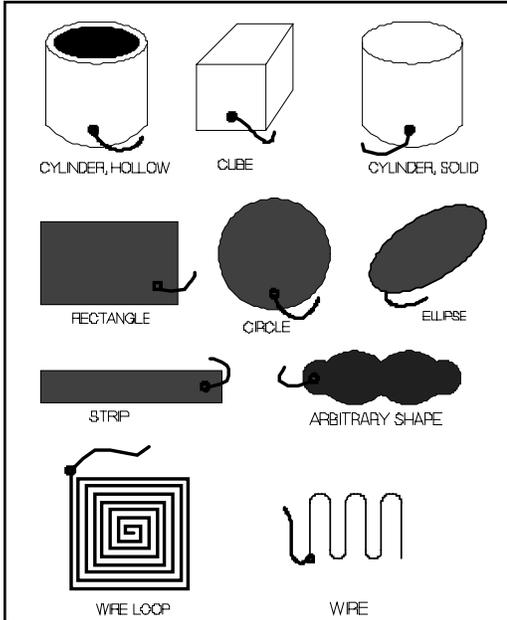
The KD-3 can work with sensing plates of various sizes and shapes. The sensing plate needs to be of metal, such as copper or aluminum, although others will also work. In certain cases the artifact itself may be used as the sensor, as in the case of a metal teapot or bowl. In other cases, the sensor may be embedded in the object, provided that the object is non-metallic. The KD-3 is normally mounted close to the sensor, with a single wire connecting the two. By use of coaxial cable, this distance may be extended to several feet.

The sensor size and shape will, to some extent, determine the distance over which the KD-3 will activate. Although not always required, internal adjustments are available to optimize the sensitivity and hence operating range. The KD-3 has been tested with sensor plates as small as one-half inch square, and as large as 12 by 16 inches.

The Auto-Calibration feature adjusts the KD-3 continuously to the environment. Such things as dirt, humidity, ice or damage to the sensor plate are automatically accounted for.

Museum Technology Source Inc.

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Possible Sensor Shapes

Preliminary Specifications

- Principle of Operation: Change in electrical capacitance
- Sensing range: Depending upon sensor size and shape up to 10 inches (250 mm)
- Response time: Typically 0.1 second or less
- Calibration: Automatically calibrates to installed environment
- Input-Output: 4 position 5.08 mm pluggable terminal
- Output: Normal open relay, 24 Volt, 1 Amp rating
- Power: 9 to 24 Volts DC, 10 mA standby, 70 mA active
2.1 mm jack
Power Input reverse polarity protected
- Protection: Passes JESD22-A114 Electrostatic Discharge Sensitivity Testing, Human Body Model (HMB) + / - 2000 Volts
Passes JESD22-A115 Electrostatic Discharge Sensitivity Testing, Machine Model (MM)

Principle of Operation

The KD-3 operates on the basis of detecting a change in the electrical capacitance between the sensor plate and the triggering object, which is usually the human hand. The capacitance of the sensor plate is constantly being compared to an internal reference. When the capacitance increases as a hand approaches, a threshold, set by the internal reference, is exceeded and the output switches on.

The internal reference automatically adjusts to take into account changes in humidity, or dirt on the sensor. This helps ensure long-term reliability.

The sensor plate may take almost any shape or form, and may be placed behind plastic, glass or other material that does not conduct electricity. The sensor may be molded into an object, thus when the object is touched the output activates.

The sensor plate should connect to the KD-3 with as short a wire as possible. In general, a lead wire of twelve inches or less works fine. For greater distances, coaxial cable should be used for distances up to several feet.

The KD-3 is to some degree sensitive to the speed of the hand as it approaches the sensor. Extremely slow movement may result in the hand not being detected. However, experience shows that the user intuitively and quickly adapts to the behavior of the KD-3

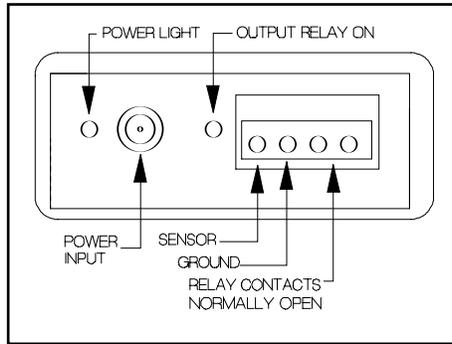
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PRELIMINARY INFORMATION--SUBJECT TO CHANGE

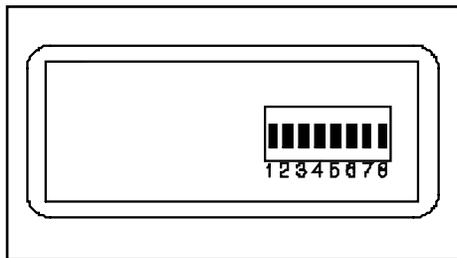
June 2012

INSTALLATION



Connect the SENSOR screw terminal to the sensing plate or wire to be used. The wire connecting the two should be kept as short as possible to maintain sensitivity. The maximum length of the connecting wire is largely determined by the size of the sensor. A large sensing plate will allow for a longer connecting wire. If a small sensing plate is to be used with the KD-3 mounted at a distance, coaxial cable should be used, with the shield connected to the GROUND terminal

Connect the supplied 9 Volt DC power supply to the POWER IN jack. Allow ten seconds or so for the KD-3 to complete its calibration cycle and then move a hand towards the sensor. When the hand is detected, the normally open relays contacts will close, and the red ACTIVE light will illuminate.



SETTING OPTIONS

It is well to bear in mind that each installation is to some degree different. Hence it is recommended that various settings be tried until optimal operation is achieved. Please consider these instructions to be a general outline of the KD-3's operation, and not a set of absolute requirements.

As supplied, all switches are in the up position. This sets the KD-3 to the default settings, which are appropriate for most applications. The optional settings configure the KD-3 to deal with the installation at hand. *After making a new setting, briefly power off the KD-3.*

Switches 1 and 2 serve to increase the sensitivity. With both in the down position, maximum sensitivity is provided. Do not use more sensitivity than actually required to avoid false triggering.

In situations where the hand approaches the sensor at a slow rate, placing switch 3 in the down position will make the KD-3 more responsive. Switch 4 provides for even slower movement, and 3 and 4 both down is for very slow motion. Be aware that using these settings will make the KD-3 less sensitive to a fast moving hand.

If a small sensing area is used, in the order of a few square inches, switch 5 should be placed in the down position.

If a long wire is used to connect the sensing plate to the KD-3, or if a large sensing plate is used, switch 6 may be helpful in maintaining sensitivity.

With both switches 7 and 8 in the up (off) position, the relay will close for approximately 1 second and then open when a hand is detected. Placing switch 7 down activates the pushbutton mode, in which the relay remains on as long as the hand is within the detection range. With switch 8 down, the KD-3 is in toggle mode. The first detection will turn the output on, and it will remain on until a second detection occurs.

DIP SWITCH FUNCTIONS

Default is all UP

1. Increase sensitivity
2. Additional sensitivity
- 1 + 2. Maximum sensitivity
3. Slow moving
4. Slower moving
- 3+4. Slowest moving
5. Small sensor area
6. Long cable and or large sensor
7. Pushbutton mode
8. Toggle mode