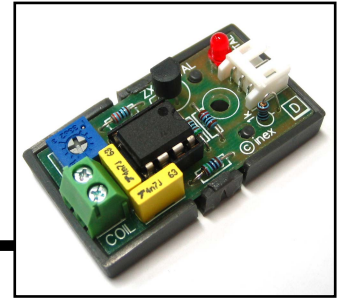


# ZX-METAL

## The metal detector module

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### Features

- Detect presence of any metallic object
- Detection Indicator
- Digital output. Active with logic "0"
- Operation range varies according to size of the metallic object
- Adjustable sensitivity
- An easy removable searching coil screw based terminal block
- JST connector for supporting all of INEX controller board
- Interface with any microcontroller
- The module has a plastic protection tray
- Supply voltage of +5V from the main controller board that interfaced via JST connector.
- Available with a small searching coil. Activated via a simple proximity switch.

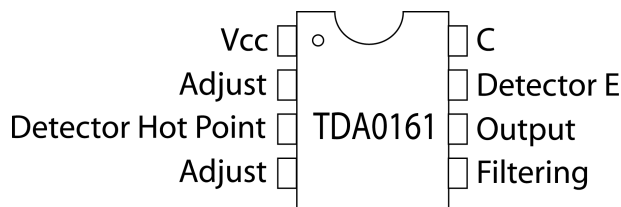
**Include** : ZX-METAL board, JST3-8AA cable (1), Small searching coil (1) and Documentation

## TDA0161 : Proximity detector

The heart of this sensor module is the TDA0161 chip from ST microelectronics. The monolithic integrated circuits are designed for any metallic body detection by detecting the variations in the high frequency Eddy current losses. With an external tuned circuit they act as oscillators. Output signal level is altered by an approaching metallic object.

Output signal is determined by supply current changes. Independent of supply voltage, this current is high or low according to the presence or the absence of a close metallic object.

### PIN CONNECTION (top view)



- Output current : 10mA.
- Oscillator frequency : 10 MHz.
- Supply voltage : + 4 to + 35 V
- Connect coil directly. No need external component.

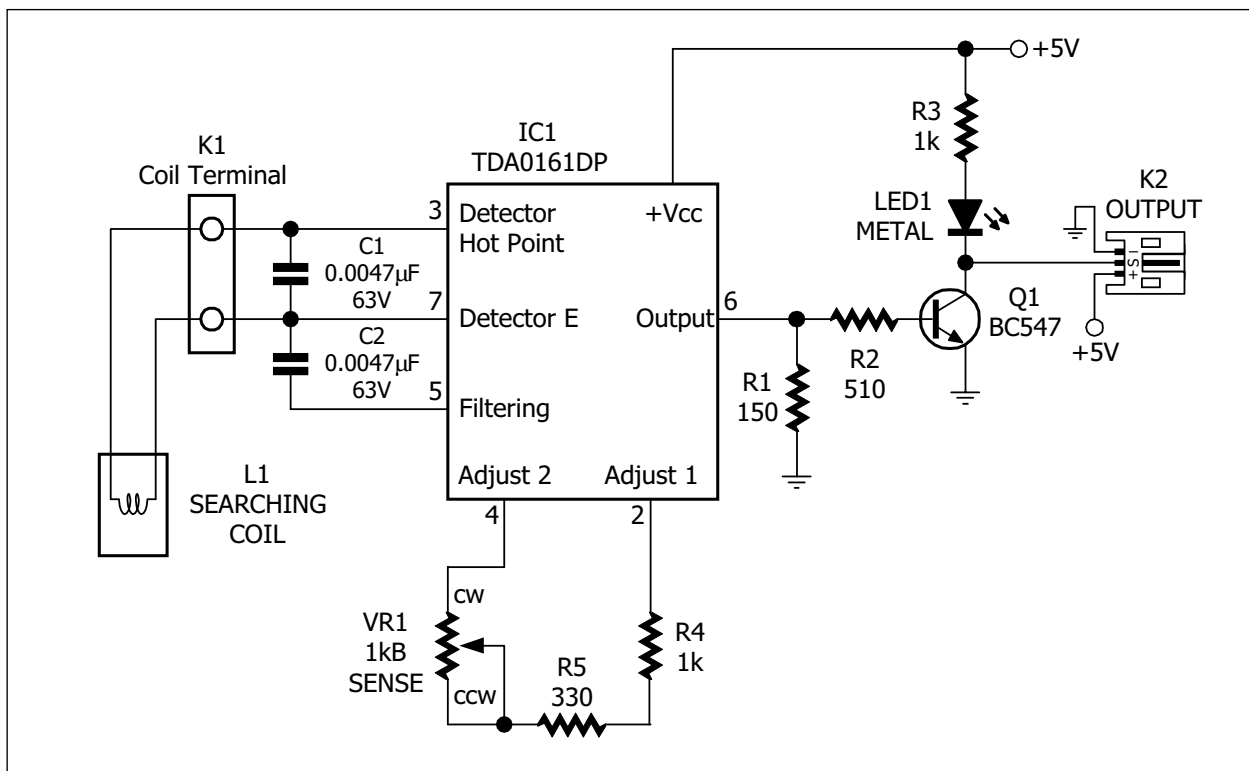


Figure 1 ZX-METAL schematic diagram

## Operation

Figure 1 shows the complete schematic diagram of ZX-METAL. L1 the searching coil connected with C1 to generate the signal. IC1 TDA0161 is proximity detector. It detects the Variation in high frequency Eddy current losses. If the metal object is near the searching coil, the output current will flow more. On the other hand, the current will be decrease when the object is far from the searching coil.

R1 is the current load. If there is more current flow, the voltage across will increase. Transistor Q1 will be conducted. LED1 will then turn on. The logic output at K2 connector is Low or 0V. If no metal is detected, Q1 will be turned off and LED1 turned off too. The logic output is High or +5V.

## Testing

Make sure the Searching coil must connect at terminal block of ZX-MTAL module. After that connect the ZX-METAL with the main microcontroller such as i-BOX3.0, Stamp-BOX, SCi-BOX, AX-11, MicroCamp, RBX-877 or RBX-51 with JST3AA-8 cable (bundled iwth module). The supply voltage +5V from thre main controller board will apply to ZX-METAL. Bring the sensor to find the mtal object. If it can detect, LED1 will on and logic output is LOW or "0".

You can adjust the sensitivity with potentiometer on the ZX-METAL module.

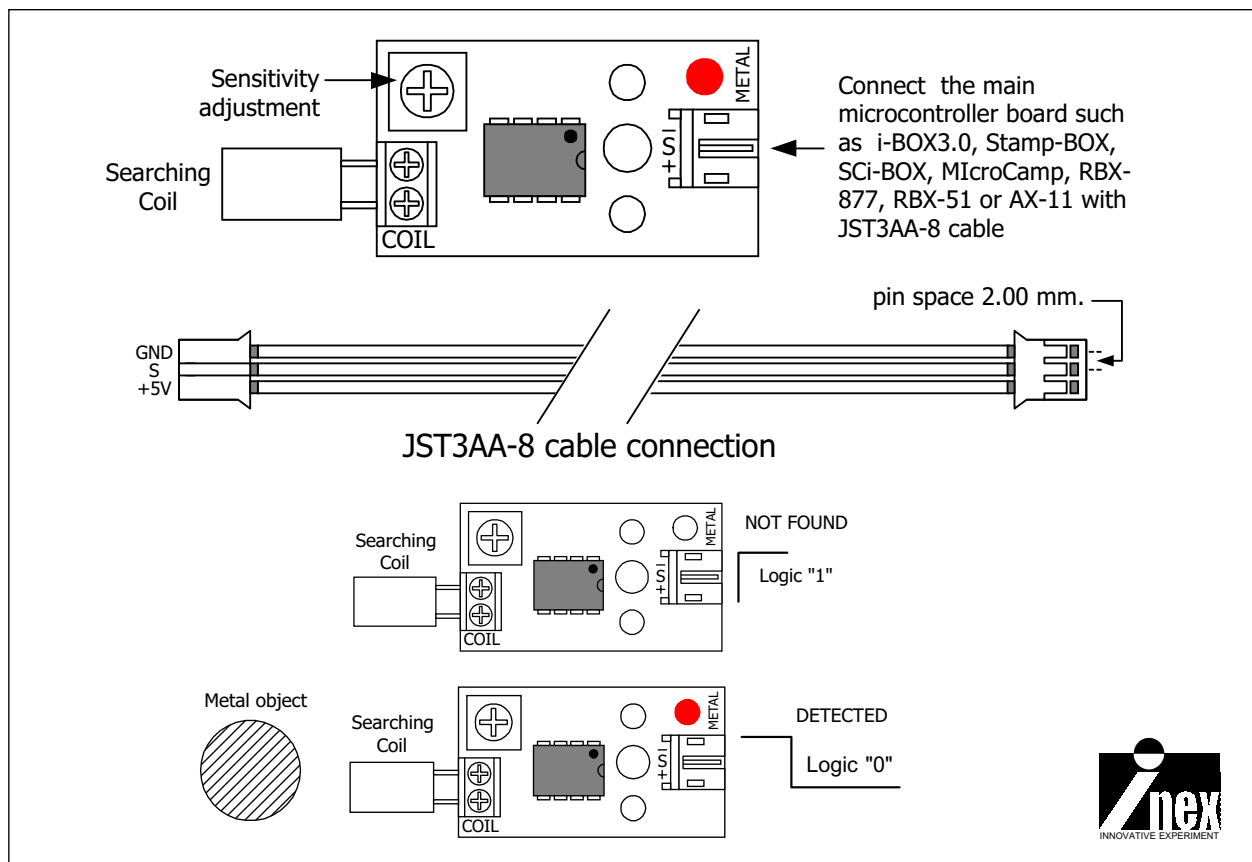


Figure 2 Interfacing and testing the ZX-METAL module

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