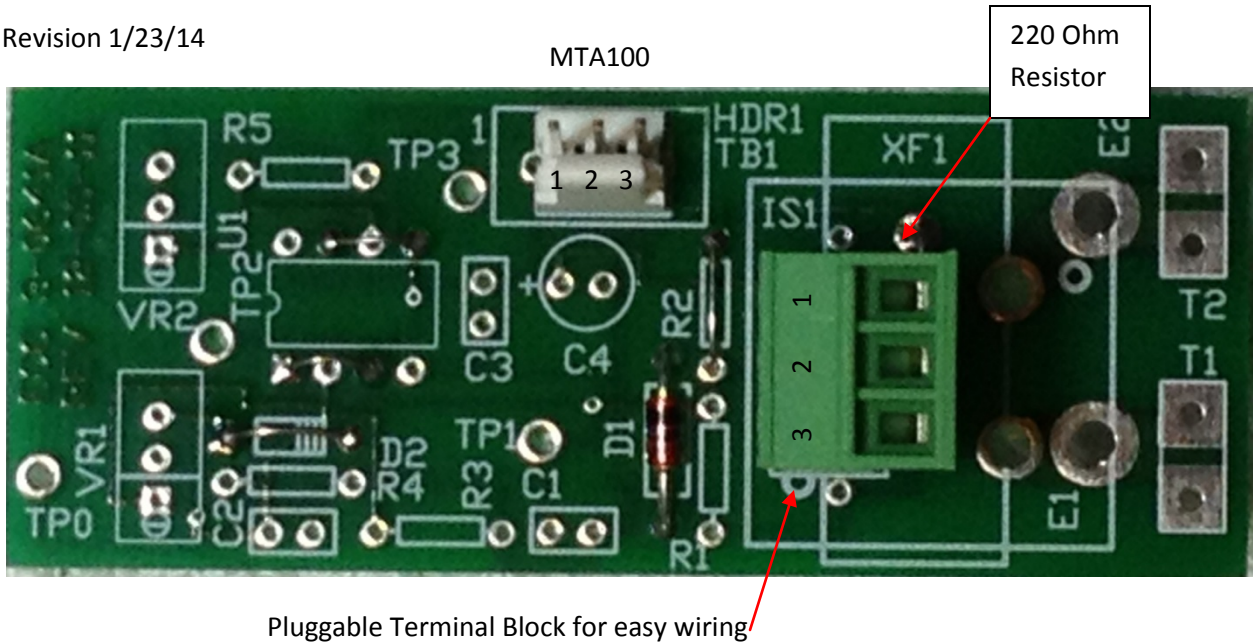


## Signal Conditioner for 4 to 20 MA to ADC Input

Revision 1/23/14



Circuit converts 4 to 20 MA to ADC voltage levels.

Model # SC4-20MTA-0641 depicted. MTA100 connector for easy connection to DCB2620/DCB1320.  
Model # SC4-20PTB-0641 replaces MTA100 connector with a pluggable terminal block.

Operating temperature -40 to +85°C.

See [connection diagram](#) below.

The ADC voltage is developed across a 220 ohm resistor.

4 MA is zero; the voltage is  $220 \times .004 = 0.88$  volts.

20 MA is full scale; the voltage is  $220 \times .020 = 4.4$  volts.

The full scale voltage was limited to 4.4 volts because some devices such as an ultrasonic level sensor produce 25 MA to indicate an out of control situation.

The voltage for 25 MA is  $220 \times .025 = 5.5$  which is limited to 5 to protect the ADC.

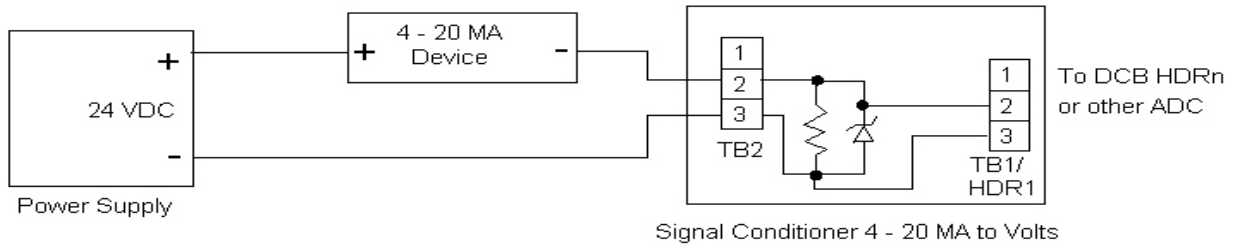
### Ten Bit ADC Counts:

At 0.88 volts, ADC Count =  $(1024/5) \times .88 = 180$

At 4.4 volts, ADC Count =  $(1024/5) \times 4.4 = 901$

Volts per MA = 0.22

At 1.0 MA, volts =  $0.88 + 0.22 = 1.1$ ; ADC Count =  $(1024/5) \times 1.1 = 225$



Typical Connection of a 4 to 20 MA Device to a 4 to 20 MA signal conditioner.

**Mounting:** The 2.95 x 1.15 circuit board mounts in a 3.0 inch Snap Track. The Snap Track can optionally be fitted with adapter for DIN Rail mounting.