OPERATIONAL DESCRIPTION

The VXS-5 circuit board contains three main sub-sections:

1. Power supply and power transistor output
2. CPU + memory
3. RFID front end

The VXS-5 works off 12Vdc ±2V. it has an internal 5V voltage regulator for powering the logic section of the circuitry (CPU, memory).
A power transistor is used to direct up to 500mA of current at close to input voltage to the electromechanical lock, which is connected to the unit. An automatic fuse in series with the transistor protects the unit from over-current due to a possible short on the output or a power hungry locking device.

The CPU is a Microchip PIC micro-controller which supervises two inputs:

- RFID signal – comes from the RFID section
- Programming input – comes from the power- wire going to the locking device.

A valid key tag code will be compared to 11 non-volatile memory locations in the EEPROM. If key tag code is equal to master key, the VXS-5 will wait to see if key is held in place for 10 seconds. If it is, it enters the programming mode.
If the key tag is not the master key, the VXS-5 scans the next 10 locations. If the key is found in memory, the green light is turned on, and the power transistor is operated to open the lock. If the key is not found, the red light will be turned on.

The RFID front end section is a standard VisAccess design based on the Temic 2270 device. The 2270 is used for generating a 125 kHz carrier on the antenna and filtering the key tag code. The carrier frequency is maintained across the temperature range by using a few accurate capacitors (200V NPO 2% or 5%).
The antenna is a rectangular 54mm x 75mm air coil with a rating of approx. 1.2 mH @ 1000 Hz. The field generated by the front end using the antenna provides the CPU with key tag code to a maximum distance of 10 cm.