How do I drive the inputs?

With the obvious exceptions of the RSSI and AF inputs all inputs are active low, it is simply necessary to pull them to supply ground, no external pull-ups are required.
The CTCSS decoder inputs should be taken low when valid CTCSS is decoded.
The carrier detect input should be taken low when carrier is detected.
The power fail input should be taken low when mains fails.
The T/T off input should be taken low when talkthrough is barred.
The low power input should be taken low when low TX power is desired.
The reset input should be taken low to reset the CPU
The RSSI input should be connected to a point on the receiver which shows a gradual change with signal strength across the range 0 to +5v with high signal giving high voltage. The actual voltage swing may be anywhere in the range 0 to 5v, (1 to 2v for example) however the bigger the swing the better. If RSSI is not available or signal reporting is not desired then don't fit the LM324 opamp, all signal reports will then be 'intermediate'.
The AF input is purely to drive the 1750Hz-burst decoder and should be driven with detector audio at 50 to 500mV.

What are the characteristics of the various outputs?

With the obvious exception of the AF output all outputs are active low open collectors. Depending on the type of switching transistors you choose to use they will be capable of sinking a few 100 mA. No snubber diodes are provided so if you are driving inductive loads (such as relay coils) ensure that a reverse snubber diode is fitted to the load.
The hi/lo power output should be connected to a point which when grounded causes the TX to switch to low power.
The TX key output should be connected to a point which when grounded cause the TX to operate.
The 'heart' output toggles at a few Hz whilst the CPU is running through its 'house keeping' loop, connect via a LED and suitable series resistor to a positive supply for an indication that the CPU is 'running'.
The kill CTCSS output should be connected to a point which will, when grounded stop the CTCSS encoder from generating tone.
The mute T/T AF output should be connected to a point which will when grounded prevent any received audio from being passed to the transmitter.
The AF output should be connected to a point in the transmitter which will allow the level available to modulate the transmitter by the desired amount (typically no more than 40% of full deviation). Take care that the piptones are still present when both T/T mute and kill CTCSS are active.

What are the HI and LO connections?

These outputs pull to ground when the RSSI exceeds the HI level or falls below the LO level. The outputs can optionally be connected via an LED and suitable series resistor to +5v to give an indication of the signal level.

To enter 'engineering mode' the HI and LO outputs can be strapped together and grounded prior to power up. In this mode a continuos tone is generated for level setting, with the carrier detect input high the tone will be at the high level, pulling the carrier input low will set the tone to the low (background) level.

What about the FSK output?

This was originally intended to provide an FSK beacon key output for 23cms groups. However lack of demand has lead to this being modified to act as a 'network key' input for operation with IRLP or for other 'on air' networking projects.

To use this input it will be necessary to replace the output transistor with a 1n4148 diode pointing out from pin 8 of the 87c51 to the FSK terminal. If the network key input is not used then it's still important that the output transistor is not fitted as if fitted its base-emitter junction will effectively hold the network key input low.

What is the power supply requirement?

The whole board runs from +5v, if a non-CMOS CPU CPU is fitted (8751H or other HMOS device) up to 250mA will be required. If a CMOS part (87C51 etc) is used this will fall to as little as 50mA or less.

If +5v is available at sufficient current the onboard regulator may be dispensed with.

If +7 to 24v is available then the 7805 should be used.

It is worth noting that particularly with non CMOS CPUs and high supply voltages substantial heatsinking of the 7805 will be required, in the extreme the regulator may need to be relocated off board on a suitable bit of chassis.