

G1SLE Mk2 Repeater control connections

Interconnection with the repeater is provided via a 25 way D Socket connections to this socket are as follows.

1. Remote control audio input. This input should be connected to the muted audio output of the remote control receiver. Level should be 50 to 800mV RMS.
2. Discriminator audio. This input should be connected to the repeater receiver un-muted unprocessed discriminator audio output. Input is buffered and appears as approximately 220k impedance. A level of 100 to 500mV p-p at 300hz deviation is desirable, should it be necessary the buffer amplifier feedback resistor may be changed to achieve best performance.
3. Remote Busy Input. When this pin is pulled low any DTMF decoded will be assumed to be remote control commands, when this pin is allowed high decoded DTMF will be passed to the serial port.
4. Mute in. This input should be connected to the repeater receiver mute output. An option is provided in hardware to cater for either mute polarity. If your radio provides a signal which is taken low, below 0.3 volt when the mute is open you should have fitted a diode on the mute input. The 89s5252 is protected from this input by the diode. The input should never be taken below 0 volt. If your radio provides a signal which is high when the mute is open you should have fitted the NPN transistor and associated base resistor, allowing a signal which is >2v when the mute is open to be used.
5. Net key in. Where a direct connection to a network terminal such as IRLP or Echolink is used this input should be connected to the network terminal TX key output. DC characteristics are as pin 4.
6. Net Busy output. Configured as a digital output which will go low when the repeater input is busy with a valid signal. This pin is intended to provide a busy signal to the network device.
7. CTCSS decode output. This open collector output goes low when any of the repeaters CTCSS decode tones are detected. This output is intended to be connected to interact with the receiver mute to reduce the mute threshold when CTCSS is detected. Output will typically sink up to 200mA and will hold off up to 25v. These figures assume output transistors are BC183.
8. Hi/Lo Power output. This open collector output goes low when the 'low power' CTCSS tone is detected. This output is intended to switch the repeater transmitter into low power. DC characteristics are as pin 7.
9. TX Key output. This open collector output goes low to switch on the repeater transmitter. DC characteristics are as pin 7.
10. Pips to TX. This output carries buffered pip tones to the repeater transmitter. A level of 0 to 3v p-p is available into a 600 ohm load. Tones will be inserted into the transmitter after any limiting, typically at the same point as '5 tone' signalling would be inserted. Output is low impedance and AC coupled. A series resistor may be desirable to prevent loading of transmitter audio, dependant on design of the transmitter.
11. AF to TX. This output carries buffered, muted, filtered audio to the repeater transmitter. A level of up to 3v p-p is available into a 600 ohm load. Output is AC coupled. This output will typically be connected to the transmitters 'line in'

12. AF from RX. This input should be connected to the repeaters receiver audio output, supplying muted audio to be filtered (to remove CTCSS) and muted before passing back out to pin 11. Input is buffered and presents an impedance of approx 47k ohm, level should be up to 3v p-p. If required the buffer feedback or input resistor values may be changed to suit.
13. Aux AF in. This input is to the same buffer amplifier as 12. This input will typically be used for connection to a network terminal such as IRLP or Echolink. AC characteristics as pin 12. Again input resistor may be changed if desirable.
14. RSSI in. This input should be connected to the repeater receiver signal meter. Level should ideally increase from 0 to 5v with increasing signal. Input is high impedance and (obviously!) DC coupled.
15. +ve Supply. This pin should be connected to a suitable ripple free DC supply. The acceptable supply range is 8 to 25 volts. Typically 12v will be used. Where supply voltage is above 10v it is recommended to fit the 7805 regulator with a small heatsink. Current drain will typically be 50 to 100ma.
16. Internally connected to 15.
17. Spare LM324 output. The output of a spare LM324 section is connected to this pin. The user may make use of this spare op-amp if required.
18. Spare LM324 input. The inverting input of the spare LM324 section is connected to this pin. The PCB makes provision for feedback and input resistors. None-inverting input biased at ½ rail. The user may make use of this spare op-amp if required.
19. +5v output from 7805 regulator
20. Gnd Internally connected to 20,21,22 and 23
21. Gnd Internally connected to 20,21,22 and 23
22. Gnd Internally connected to 20,21,22 and 23
23. Gnd Internally connected to 20,21,22 and 23
24. RS232 level network busy output.
25. CTCSS to TX. This output provides gated CTCSS tone to the repeaters transmitter. CTCSS will typically be connected to the transmitter audio stages after all audio processing. Up to 3v p-p is available. The output is low impedance and AC coupled, it may be desirable to provide an external series resistor to prevent loading of the transmitter audio, dependant on transmitter design.

The 9 way D connector is configured as a standard 9 way serial port DCE device for connection to a standard terminal using straight DTE – DCE lead.