G1SLE Mk2 Repeater Controller Programming.

The 89C55WD or equivalend microprocessor is supplied with G1SLE repeater controller software pre-loaded in flash memory. The various parameters such as callsign and timers etc. are programmed by the keeper using a standard RS232 terminal, these parameters are then saved by the controller in none-volatile EEPROM

Connection to the programming terminal is via a standard 9 way serial lead, the controller is configured as DCE so a 'straight' male-female lead is required.
Only the RX and TX data and Ground connections are required by the controller, but many terminals require that CTS is connected to RTS and that DTR, DSR and DCD are connected together. These connections are made on the controller PCB so if a straight fully connected 9 way lead is used there should be no problem.

The controller serial port is configured for 9600 baud, 8 data bits, 2 stop bits, no parity and no flow control. The user should configure the terminal to match.

To place the controller in program mode a jumper is provided to short the 89s5252 pin 21 to ground, make this jumper, connect the terminal and switch on the controller.

Repeater callsign of up to 15 characters

Should be displayed, enter your repeaters callsign in full, including the CTCSS identifier letter if used, then tap enter, for example:-

Repeater callsign of up to 15 characters **gb3rb b**

The controller will now respond with

Dot length in 10s of mS
10 = 100mSec dot = 5 dots/sec = 12wpm
Dot length 4 to 12 (30 to 10wpm)

I typically use a morse speed of about 15 wpm. You should note that licensing restrictions may place an upper and lower limit on the morse speed.
Enter the desired dot length, for example :-

Dot length in 10s of mS
10 = 100mSec dot = 5 dots/sec = 12wpm
Dot length 4 to 12 (30 to 10wpm) **8**

The controller will now respond with

Morse pitch 1 to 8
1 = 450Hz 8 = 1450Hz
Pitch 1 to 8

I prefer a morse pitch of 700-800Hz which corresponds to a value of 5.
Enter the desired morse pitch, for example :-

Morse pitch 1 to 8
1 = 450Hz 8 = 1450Hz
Pitch 1 to 8 **5**

The controller will now respond with

Beacon time in seconds 180-1800

Enter the desired interval between ident beacons in seconds, 15 minutes corresponds to 900 seconds. Note that licensing conditions may place demands and limits on the beacon interval.

Beacon time in seconds 180-1800 **900**

The controller will now respond with

Normal CTCSS encode tone 1-39

Enter the desired CTCSS encode number taken from the list CTCSSTones.pdf.
This is the tone which the repeater will send when it detects a signal on the input.
GB3RB uses 71.9Hz, corresponding to tone #2

Normal CTCSS encode tone 1-39 **2**

The controller will now respond with

Normal CTCSS access tone 1-39

Enter the desired CTCSS decode number taken from the list.
This is the CTCSS tone that will normally be used to gain access to the repeater, usually this will be the same as the normal CTCSS encode tone.

Normal CTCSS access tone 1-39 **2**

The controller will now respond with

Networking CTCSS access tone 1-39

Enter the desired remote network node CTCSS tone.
This is the CTCSS tone that the network node will used to gain access to the repeater, if used this tone will identify network access by replacing the signal report with a morse N. Note that licensing conditions may prevent use of any tone other than the one suggested on the license to gain access.

Networking CTCSS access tone 1-39 **3**

The controller will now respond with

Low power CTCSS access tone 1-39

Enter the desired low power CTCSS tone.
This is the tone which when decoded will switch the transmitter power to the low level, reducing co-channel interference to other band users as required by the current amateur license. Note that licensing conditions may prevent use of any tone other than the one suggested on the license to gain access.

Low power CTCSS access tone 1-39 **4**

The controller will now respond with

Active mute CTCSS tone 1-39

Enter the desired active mute CTCSS tone.
This is the tone which when decoded will maintain access but will also mute the through audio path. This feature may be required to prevent network node ident beacons being re-broadcast by the repeater as sometimes required by license conditions. Note that licensing conditions may prevent use of any tone other than the one suggested on the license to gain access.

Active mute CTCSS tone 1-39 **5**

The controller will now respond with

Number of pips 3-30

Enter the desired number of TX tail pips.
Pips are sent at one second intervals as soon as the controller detects that signal has been removed from the receiver when the repeater is accessed, the first pip is always replaced with a signal report or morse N if the last over was from the network node.

Number of pips 3-30 **6**

The controller will now respond with

Access feature byte 0 to 255

This parameter allows various repeater features to be switched on or off as desired.
8 parameters are controlled by the access feature byte as follows.

Bit 0 = TX enable, setting this bit to zero will disable the transmitter.
Bit 1 = Mute, setting this bit to zero will disable the mute input, the repeater will only be accessible with CTCSS.
Bit 2 = Toneburst, setting this bit to zero will disable the toneburst input, the repeater will then only be accessible with CTCSS or by the network key input though once accessed can be held open by carrier.
Bit 3 = Network CTCSS, setting this bit to zero will disable the network node tone decoder.
Bit 4 = Low Power CTCSS, setting this bit to zero will disable the low power tone decoder.
Bit 5 = Normal CTCSS, setting this bit to zero will disable the normal CTCSS tone decoder.
Bit 6 = Network input, setting this bit to zero will disable the network TX key input.
Bit 7 = Active Mute CTCSS, setting this bit to zero will disable the active mute CTCSS tone decoder.

Access feature byte 0 to 255 **255**

The controller will now respond with

Time-out in seconds 60-1800

Enter the desired timeout period in seconds, 300 corresponds to a period of 5 minutes.

Time-out in seconds 60-1800 **300**

The controller will now respond with

DTMF PIN 4 digits 0000-9999

Enter the desired 4 digit security code for accessing the controllers remote control features. Don't use something obvious like this dummy!

DTMF PIN 4 digits 0000-9999 **1234**

The controller will now respond with

Cold Kerchunk timer 1 to 10 seconds

Enter the desired value for the cold kerchunker filter timer.
This is the time that a valid access method must be detected at initial access before the repeater will respond with a signal report, tail pips and an ID beacon.

Cold Kerchunker timer 1 to 10 seconds **5**

The controller will now respond with

Hot Kerchunk timer 1 to 10 seconds

Enter the desired value for the hot kerchunker filter timer.
This is the time that a valid access method must be detected once the repeater is accessed before the repeater will respond with a signal report, overs of less than the hot kerchunk time will not be followed by a signal report and repeated overs of less than the hot kerchunk time will not maintain access to the repeater. Note that the hot kerrchunk time must be less than the cold kerchunk time.

Hot Kerchunker timer 1 to 10 seconds **2**

The controller will now respond with

Mute option 1/0

Enter the desired mute configuration. Entering a 1 will cause the through audio path to be left open between overs when no valid busy is detected, a 0 will mute the through audio between overs. The 0 option will normally only be used where carrier is not a valid busy – ie CTCSS only operation.

Mute option 1/0 **1**

Details of the next 7 configuration parameters will only be released to repeater keepers buying at least one programmed 89C55WD.

The controller will now respond with

Network key input timeout 2 to 255 minutes

The network key timeout is intended to prevent problems caused by the network PC locking into a TX keyed state. After the network key has been low for the network key timeout period the network key input will be disabled, returning the repeater to normal operation without networking. When the network key input is disabled the repeater pips are replace with dashes to warn users that the network node is unavailable. The network key input is re-enabled as soon as the input goes high again.

Network key input timeout 2 to 255 minutes **5**

The controller will now respond with

Decode DTMF to com port immediate (1) or only if cold kerchunk expired (0)

In order to discourage users from dialling network connections without first announcing their intentions the controller can delay passing decoded DTMF to the com port until the repeater is fully accessed.

Decode DTMF to com port immediate (1) or only if cold kerchunk expired (0) **0**

The controller will now respond with

Prompt encode off (0) after sigrep (1) after pips (2)

The keeper may choose to switch off CTCSS encode immediately a user unkeys (0), just after the signal report is sent (1) or after the last tail pip (2). Note that use of any option other than (0) will prevent network connections by RFW radios.

Prompt encode off (0) after sigrep (1) after pips (2) **0**

The controller will now respond with

Decode # immediate (1) or decode # only when cold kerchunk expired (0)

In order to allow echolink users to disconnect a network connection quickly without meeting the cold kerchunk requirement decoding of DTMF # can be made immediate overriding the requirement to exceed cold kerchunk if selected.

Decode # immediate (1) or decode # only when cold kerchunk expired (0) **1**

The controller will now respond with

Cycle power please

Disconnect the power and open the jumper, re-apply power and all that remains is to set the various levels.