MorseGen User Guide
Dec 2011
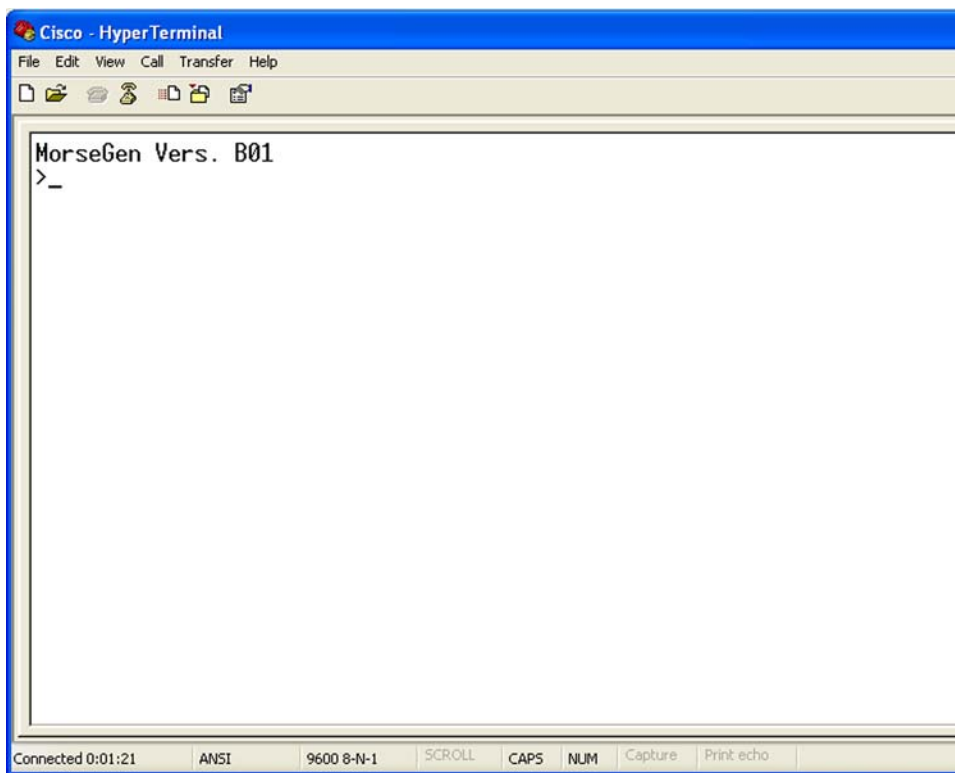
Serial Port
The circuit connects to a standard serial port DE9 pin connector. Set the serial port parameters to 9600 8-N-1 (9600 Baud, 8 Bit, No Parity, One Stop Bit).
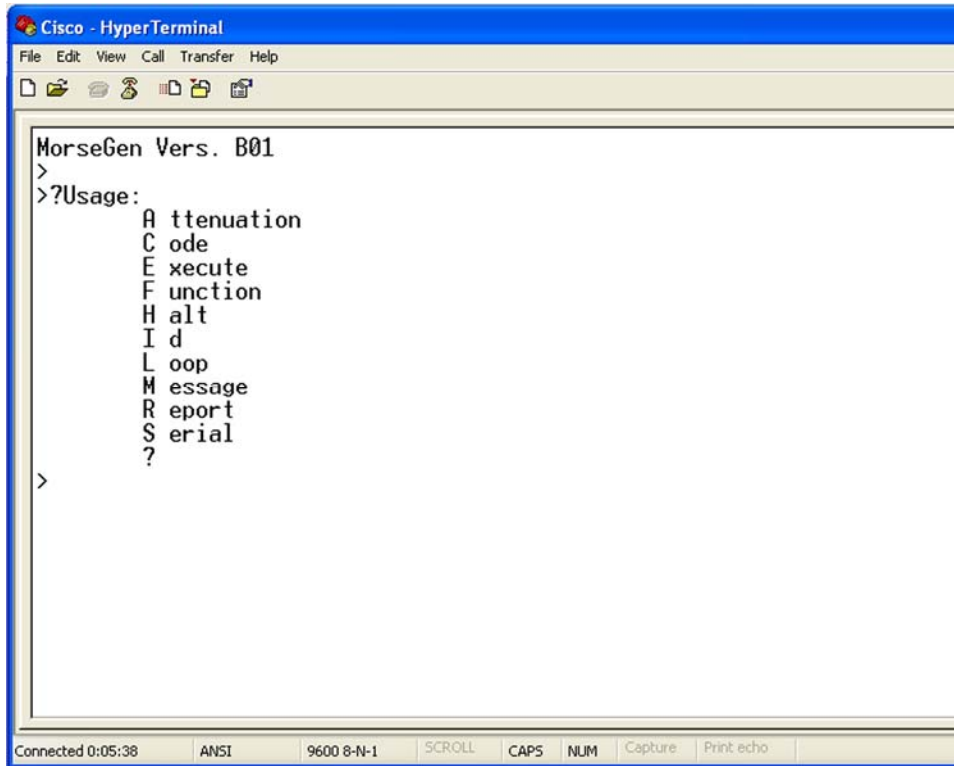
Terminal Emulator
Any popular terminal emulator should work. This example uses HyperTerminal in Windows XP, using ANSI mode.

On power up the screen should display the MorseGen name and a revision code.

Type **?** to get a help screen.


```
Cisco - HyperTerminal
File  Edit  View  Call  Transfer  Help

MorseGen Vers. B01
>
>?Usage:
        A ttenuation
        C ode
        E xecute
        F unction
        H alt
        I d
        L oop
        M essage
        R eport
        S erial
        ?

>

Connected 0:05:38     ANSI     9600 8-N-1   SCROLL   CAPS   NUM   Capture   Print echo
```

Attenuation (Version B code only) sets the output drive level attenuation.

Code sets the Morse code rate in WPM.

Execute restarts the MorseGen OS. The OS is normally running.

Function sets the ID, message and tone output.

Halt stops the MorseGen OS.

Id sets the call sign and optional location.

Loop sets the period between identifications.
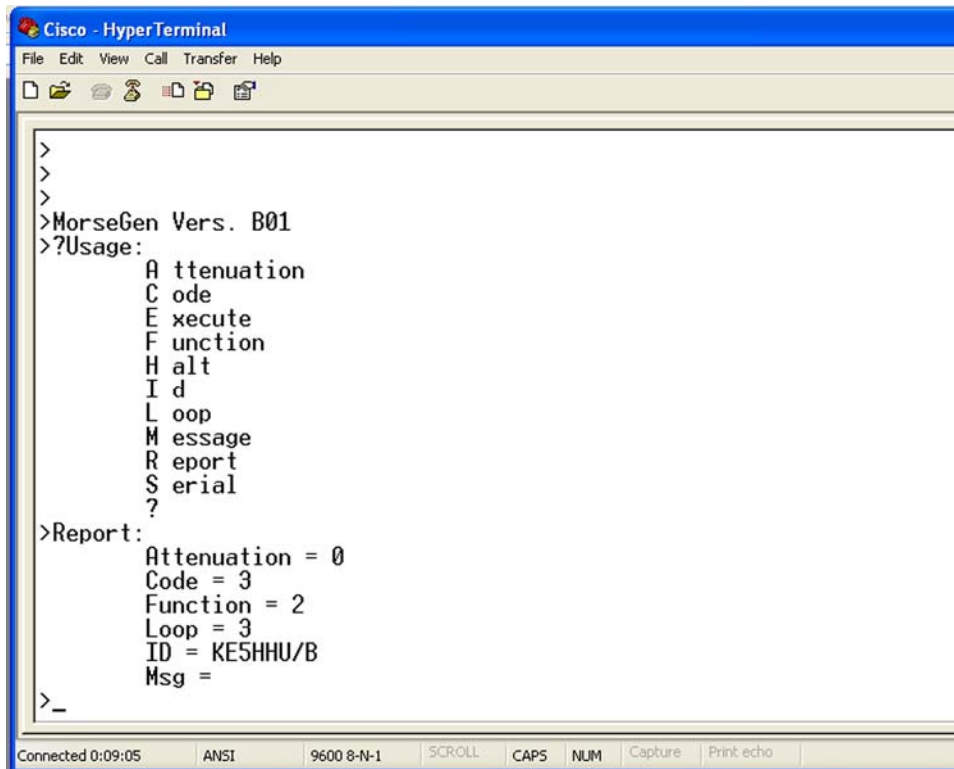
Message sets the optional message.

Report displays the current settings.

Serial was intended to change serial port parameters. Not Used!

? displays the help screen.

Report Screen

Type **R** to get the report screen.

```
Cisco - HyperTerminal
File  Edit  View  Call  Transfer  Help

>
>
>
>MorseGen Vers. B01
>?Usage:
         A ttenuation
         C ode
         E xecute
         F unction
         H alt
         I d
         L oop
         M essage
         R eport
         S erial
         ?
>Report:
         Attenuation = 0
         Code = 3
         Function = 2
         Loop = 3
         ID = KE5HHU/B
         Msg =
>_

Connected 0:09:05    ANSI    9600 8-N-1    SCROLL   CAPS   NUM   Capture   Print echo
```
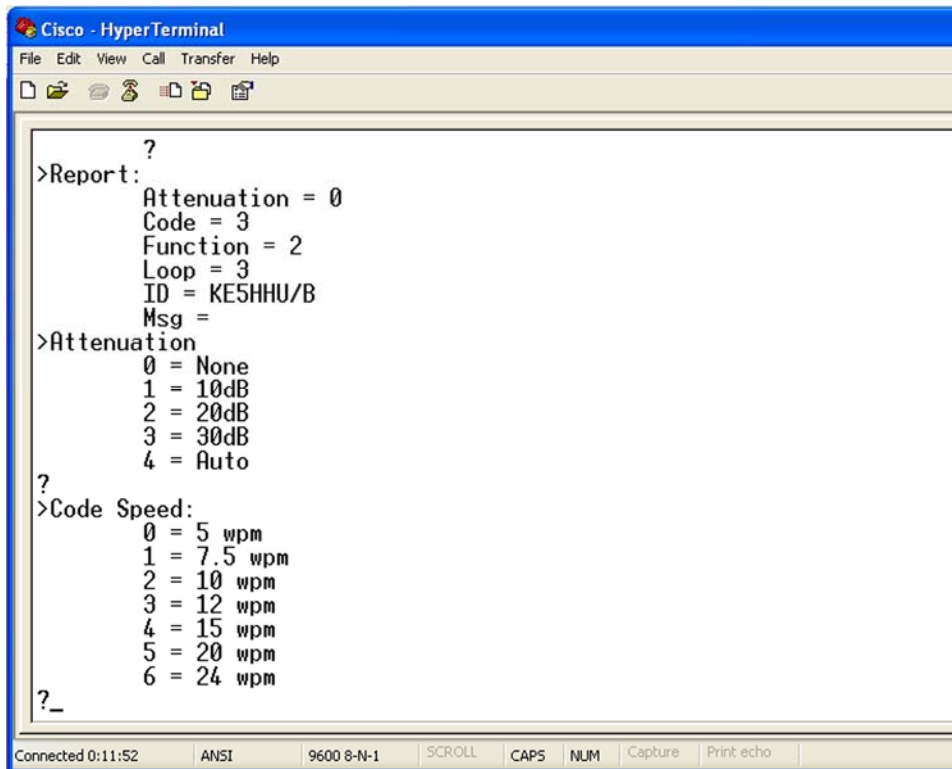
The report shows Attenuation at none, code speed is 12wpm, the function is ID + Tone, and the loop time is 30 seconds. The ID is my call sign and the mandatory /B beacon designation. The message is currently empty.

The report is actually showing the stored code values for each of the categories. Type the appropriate letter to view or change each category.

Attenuation and Code Speed Screens

Type **A** for the attenuation screen. Type **C** for the Code Speed screen.

```
   Cisco - HyperTerminal
 File  Edit  View  Call  Transfer  Help

           ?
 >Report:
           Attenuation = 0
           Code = 3
           Function = 2
           Loop = 3
           ID = KE5HHU/B
           Msg =
 >Attenuation
           0 = None
           1 = 10dB
           2 = 20dB
           3 = 30dB
           4 = Auto
 ?
 >Code Speed:
           0 = 5 wpm
           1 = 7.5 wpm
           2 = 10 wpm
           3 = 12 wpm
           4 = 15 wpm
           5 = 20 wpm
           6 = 24 wpm
 ?_

 Connected 0:11:52    ANSI    9600 8-N-1    SCROLL   CAPS   NUM   Capture   Print echo
```
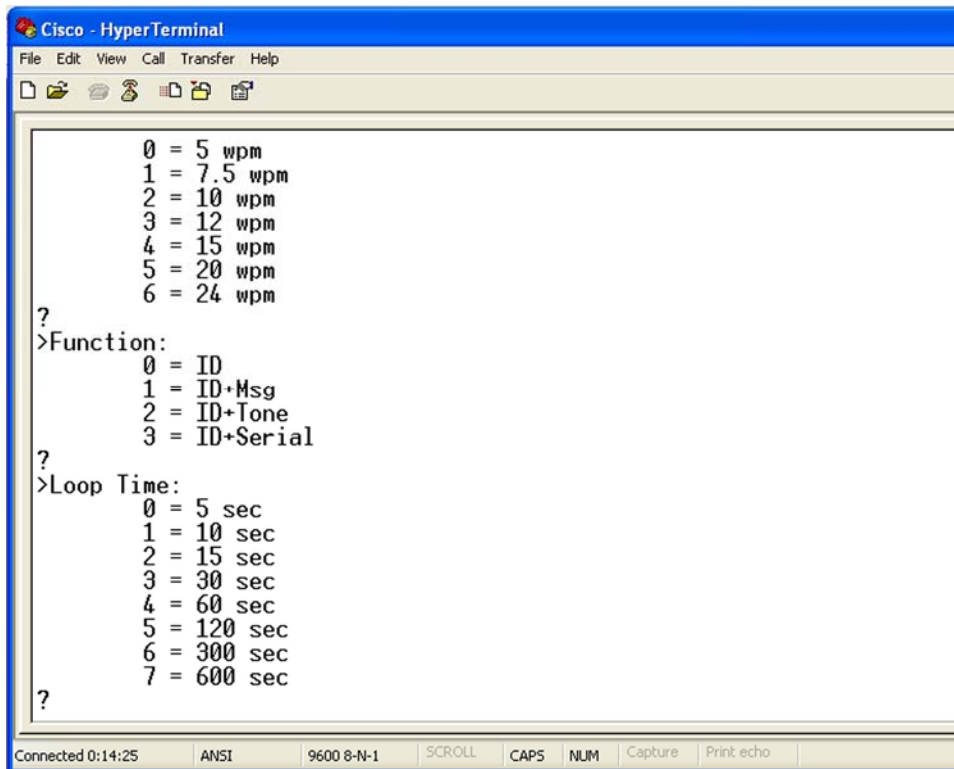
The attenuation function is used for propagation testing. The drive circuit for the PIN Absorptive Modulators is set to pre-determined thresholds to provide the attenuation of the output in 10dB increments from 0dB to -30dB.

The code speed function sets the speed of the ID Morse code. Selections from 5wpm to 24wpm are available. The spacing for 5 and 7.5 wpm is altered to match 12 wpm speeds to sound more natural.

<u>Function Screen</u>

Type **F** to select the function screen. Type **L** to select the loop screen.

```
             0 = 5 wpm
             1 = 7.5 wpm
             2 = 10 wpm
             3 = 12 wpm
             4 = 15 wpm
             5 = 20 wpm
             6 = 24 wpm
?
>Function:
             0 = ID
             1 = ID+Msg
             2 = ID+Tone
             3 = ID+Serial
?
>Loop Time:
             0 = 5 sec
             1 = 10 sec
             2 = 15 sec
             3 = 30 sec
             4 = 60 sec
             5 = 120 sec
             6 = 300 sec
             7 = 600 sec
?
```

Function 0 transmits the ID on a cycle time determined by the loop setting.

Function 1 transmits the ID plus the message at the loop interval. Messages that exceed the loop interval period will cause unexpected results.
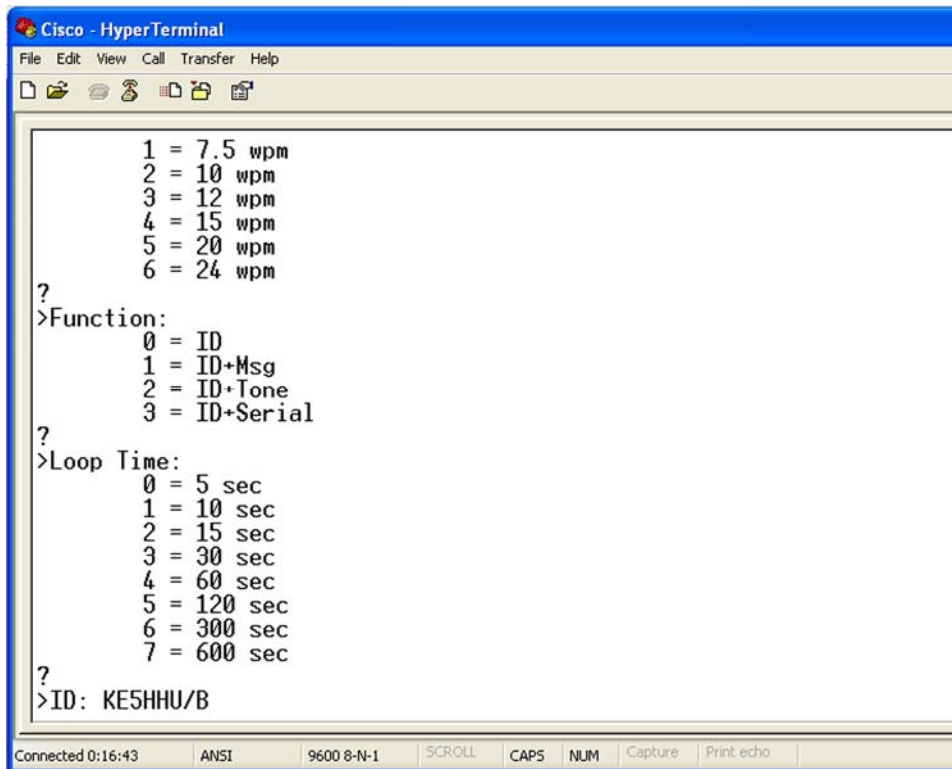
Function 2 transmits the ID with a tone present between ID periods.

Function 3 is not implemented.

The loop time is the period between IDs. Setting from 5 seconds to 10 minutes can be selected. Short loop times will require fast code speeds to allow IDs to complete between loop cycles.

ID Screen

Type **I** to change the ID string. Use **R**eport to view the ID string.

The ID string can be 15 characters. Your call sign and the /B are mandatory. There is also space to put the 6 digit maiden head designation for the beacon location.

Once the ID change has begun it must be completed. The existing contents are displayed but must be re- entered to keep from altering. When erasing unused character locations use the spacebar and backspace.

Press Enter twice to complete the ID entry.

If the command prompt > does not appear then the ID editor got confused. Use the reset character Ctrl-Z to stop the entry. Press Enter to get a command prompt. Start the edit process again.

Please note that the Ctrl-Z function was meant to reset the message function and will also erase the message buffer and set the ID function back to 0.

The following show a successful ID change as verified with the **R**eport function.

```
Cisco - HyperTerminal
File  Edit  View  Call  Transfer  Help

         H  alt
         I  d
         L  oop
         M  essage
         R  eport
         S  erial
         ?
>Report:
         Attenuation = 0
         Code = 3
         Function = 0
         Loop = 3
         ID = KE5HHU/B
         Msg =
>ID: KE5HHU/B DM59RC
>
>Report:
         Attenuation = 0
         Code = 3
         Function = 0
         Loop = 3
         ID = KE5HHU/B DM59RC
         Msg =
>_

Connected 0:22:38    ANSI    9600 8-N-1    SCROLL  CAPS  NUM  Capture  Print echo
```

Add a message the same way using **M**. The max message is 95 characters.

```
Cisco - HyperTerminal
File  Edit  View  Call  Transfer  Help

>
>
>
>
>
>
>
>
>
>
>
>
>
>
>MorseGen Vers. B01
>Report:
         Attenuation = 0
         Code = 3
         Function = 1
         Loop = 3
         ID = KE5HHU/B DM59RC
         Msg = DM59 WX 1340 MST PRTLY CLDY 43F WIND NW 13 MPH GUST 25 VIS 25MI
>
>

Connected 0:37:05    ANSI    9600 8-N-1    SCROLL  CAPS  NUM  Capture  Print echo
```

MorseGen Test Circuit

Parts List:

Qty	Part	Ref	DigiKey	Cost
1	PIC16F88	Microchip CPU	PIC16F88-I/P-ND	4.00
1	MAX232	RS232 to TTL converter	MAX232CPE+-ND	3.47
1	LM78L05	+5 volt regulator	LM78L05ACZFS-ND	.48
1	DE9 Pin	Female connector	1003-1875-ND	6.63
1	1000 uF 16V		399-6082-ND	.47
6	10 uF 16V		P14482-ND	1.32
2	.01 uF		490-5396-ND	.60
2	10K Resistor .25W		10.0KXBK-ND	.26
1	1K Resistor .25W		1.0KXBK-ND	.13
1	2N3904		2N3904TFCT-ND	.43
2	L1, L2	Optional isolation inductor		
1	18 Pin Socket		A100207-ND	.22
1	Proto Circuit Board			5.67

				23.68

The circuit board prices come from ExpressPCB mini-board service 3 panels with 3 circuits on each panel (9 circuits total) for a cost of $51.

The circuit board requires +12VDC and has an output active high (Code) or active low (Key). The serial port is set to 9600 8-N-1.

It is recommended that the PIC chip be placed in a socket for ease in updating the code with future releases.

The Attenuation function in the B01 revision code is not implemented on the A01 version circuit board. All other functions are backward compatible.