



DOVE Telemetry Decoder HELP

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If you are not familiar with Windows Help, choose **Help|How To Use Help** from the Help menu now.

Help File Version

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All questions and comments are welcome.

Setup Packet

The screenshot shows a dialog box titled "SETUP PACKET (RS-232)". It contains the following elements:

- Baud Rate:** A list of options: 110, 300, 600, 1200, 2400, 4800, 9600, and 19200. The 19200 option is selected.
- COM Port:** A list of options: COM 1, COM 2, COM 3, and COM 4. The COM 1 option is selected.
- Parity:** A list of options: None, Odd, and Even. The None option is selected.
- Data Bits:** A list of options: 7 and 8. The 8 option is selected.
- Stop Bits:** A list of options: 1 and 2. The 1 option is selected.
- Buttons:** "Store", "Quit", and "Send".
- TNC Command:** A text input field with a "Send" button next to it.

This menu item will allow you to setup the RS-232 interface between your computer and your packet TNC. Check for the proper selections by reading the manual that came with your packet TNC. The Store button will store these selections for this and future executions. The quit button will not store any new selections that were made.

COM PORT - You will want to make sure that you select the correct RS-232 COM port. Check to see where on the back of the computer you have this selected. Then click on the corresponding radio button.

BAUD RATE - This allows you to select the baud rate from the computer to your packet TNC. More than likely this will 9600 Baud.

PARITY - This is the type of parity to use. Most likely "None", but check your TNC manual.

DATA BITS - This is the number of data bits. Most likely "8", but check your TNC manual.

STOP BITS - This is the number of stop bits. Most likely "1", but check your TNC manual.

TNC COMMAND - A text entry is provided if one needs to command their TNC. Just simply enter the desired text and click on SEND and the command will be sent. Note that a control-C will be sent first to put the TNC into the command mode if needed.

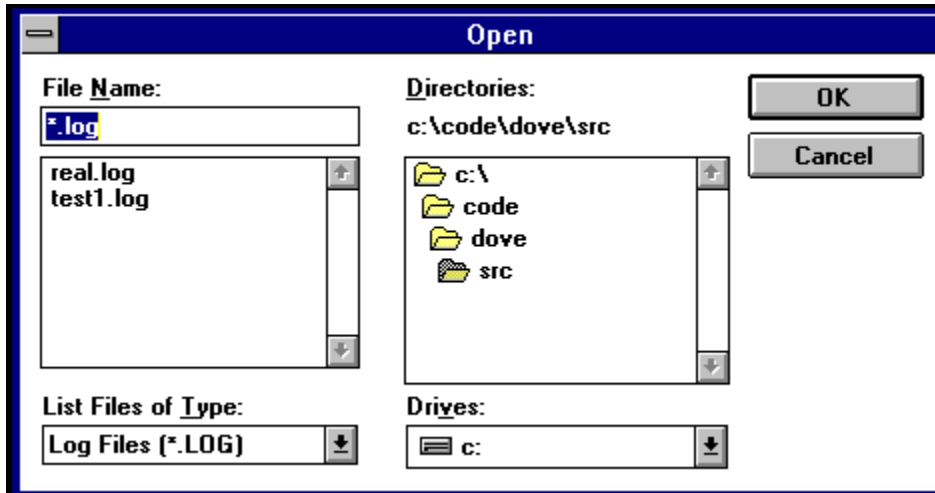
Start

The Start menu item can be used to start acquiring data via the RS-232 interface that is hooked up to a packet TNC. The program comes up in the start mode when the program is started. The data will be displayed as it is received. When a valid DOVE telemetry selection is received it will be saved into a temporary file and can be saved into the database at a later date via the Database Store dialog. Thus you can leave it running for weeks if you wish and it will have stored all valid data decodes into files that you can store into the database. This gives you the ability to preview all decodes before being put into the database. The main window gives a display buffer of approximately 20000 characters that you can scroll through. When the buffer fills up then old data will be discarded as new data is entered.

Stop

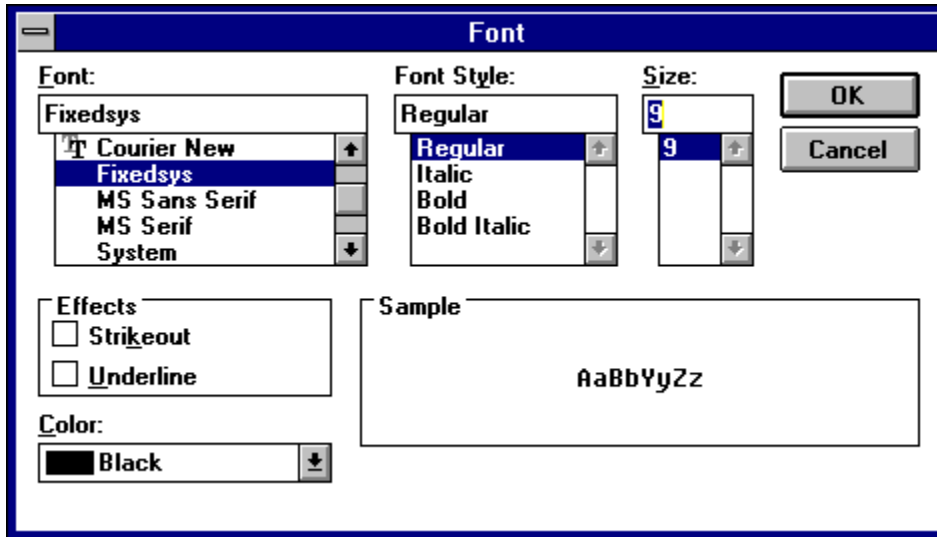
The Stop menu item can be used to stop the acquiring of packet data via the RS-232 interface. To start acquiring data again simply use the start menu item.

Log to File



Any text data that is displayed in the DOVE window can be output to to a file as well. This includes the View Processed and View Raw options that are available under the Database Store and Retrieve menu items. You can open a new file as a log file or an existing file. If you use an existing log file then the new data will be appended onto the end of the file.

Choose Font



You can choose the font and color of the text that is displayed in the DOVE window with this option. If the text in the DOVE window runs off the side then you will need to make the window larger or use a smaller font.

Print

Print

Printer: Default Printer (Star 9 pin on LPT1:)

Print Range

All
 Selection
 Pages

From: To:

Print Quality:

Copies: Collate Copies

With this function you can print the text that is in the DOVE window. It will also print the graph from the Graphic Mode in the Menu if your printer supports this.

Paste

The Paste menu item can be used to Paste ASCII text data from another source that supports cutting and pasting data to and from the clipboard. For instance you can use the windows notepad or write application to display the packet data. Then select the data you wish to input into this DOVE application and select Copy. Then go to the DOVE application and select Paste and then the ASCII text data will be copied into this application and processed.

If the Paste command is greyed out then this is because valid data is not in the clipboard.

In order for the decoder to decode and store the data pasted into this application the following lines need to appear in the pasted file.

1) First must be the time line:

```
DOVE-1>TIME-1:PHT: uptime is 212/05:48:35. Time is Sun Jan 08 19:52:16 1995
```

2) Second must be both data lines in order:

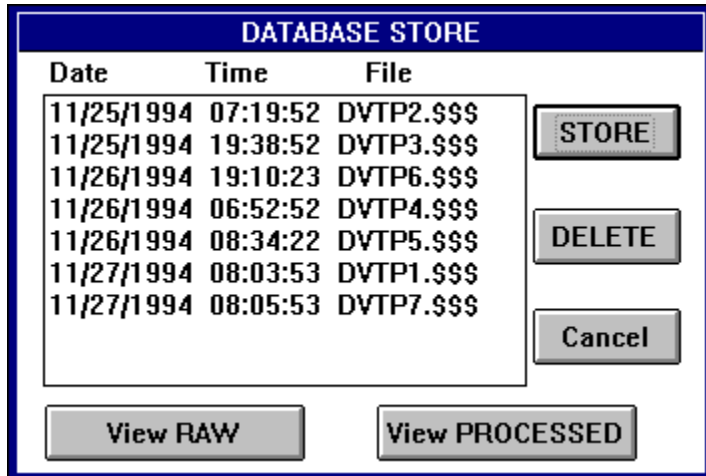
```
DOVE-1>TLM:00:58 01:58 02:87 03:35 04:56 05:57 06:6C 07:54 08:70 09:70 0A:A2  
0B:F6 0C:E8 0D:DA 0E:40 0F:26 10:DC 11:9D 12:00 13:D7 14:9D 15:AC  
16:74 17:75 18:77 19:77 1A:74 1B:46 1C:7C 1D:79 1E:D0 1F:63 20:D3
```

```
DOVE-1>TLM:21:C3 22:79 23:28 24:1C 25:33 26:30 27:01 28:00 29:01 2A:00 2B:6A  
2C:01 2D:6C 2E:59 2F:9F 30:CE 31:9E 32:00 33:00 34:A7 35:AA 36:AE  
37:B0 38:90
```

Clear

This menu item will clear the text display.

Store



Once data has been acquired and processed by this DOVE software it will store the results in a file. This file is available via the Store menu item. You can view both the raw and processed data by highlighting the file you wish to view and then selecting the appropriate button. This allows you to preview the data before it is stored into the database. Once you have verified that the data is good then select STORE and the data will be put into the database. The file will not be deleted though.

To delete a file just highlight the file and then press DELETE.

To exit this dialog press cancel.

Retrieve

| Date | Time |
|------------|----------|
| 11/25/1994 | 07:19:52 |
| 11/26/1994 | 06:52:52 |
| 11/26/1994 | 08:34:22 |
| 09/23/1994 | 06:25:18 |
| 12/13/1994 | 06:54:50 |
| 12/18/1994 | 18:27:51 |

Start Date: Stop Date:

Start Time: Stop Time:

Buttons: Retrieve, Delete, Cancel, Plot 1, Plot 2, Plot 3, Plot 4, View Raw, View Processed

The Retrieve menu item will allow you to retrieve selected data from the database. It will allow you to filter the data on both date and time. Once you have entered the date and time filter info just press Retrieve and the data from the database will be retrieved. To view a selected item, highlight the item desired and click on View RAW or View PROCESSED to view the raw or processed data respectively. When you are finished click on Cancel to quit. The retrieve list has a limit of 400 items. If this number is exceeded then only the first 400 will be displayed.

To filter data there are two filter criteria; date and time. To filter by date you can leave both the start and stop data blank in which case all dates will be retrieved. If only a start date is entered then all dates starting with this date will be retrieved. If only a stop date is entered then all dates up to this date will be retrieved. If both a start and stop date are entered then all dates between these dates will be retrieved. The time filter works the same as the date filter. With the time filter, time is in 24 hour format and you can wrap the time. For instance you can search between 21:00 and 01:00.

From this menu item you also have the capability to acquire up to 4 plots of the DOVE telemetry data for plotting when in the Graphic Mode. To acquire a plot you will need to perform a retrieve as outlined above of the data that you desire. Then click on one of the plot buttons. You will then be given an option to plot the x-axis by date or time.

What is DOVE

DOVE (Digital Orbiting Voice Encoder) is the name for a Satellite that was launched on January 22, 1990. Intended for the Amateur radio community. This satellite's main purpose is to provide a good readable signal usable for educational purposes. Its main output is in the middle of the Ham 2 meter band at 145.825 MHz. Its output consists of normal FM modulation that can be received on any 2 meter FM Ham rig or scanner that has a good antenna. In some cases when conditions are right a handheld can be used. The output consists of speech and digital data. It is the digital data that we will utilize in this program. The digital data is of the form AFSK AX.25. This is normal packet radio that you can receive with a normal TNC. To setup to receive this data see the Hardware Setup section.

The DOVE satellite is considered a LEO (Low Earth Orbit) satellite. This means it orbits around the earth at an altitude of about 800 Km. Its coverage of the earth at any one time is small but being low to the earth it does not require expensive antennas. At any point on the earth this satellite will make about 2 - 3 passes in a 24 hour period. You can expect each pass to last no more than about 10 - 15 minutes. To obtain more information on tracking the DOVE or other satellites I would recommend that you obtain a satellite tracking program. There are numerous programs available for both DOS and windows. My favorite is WinOrbit by K8CG.

Below is a sample of the telemetry received at my location in San Diego, CA. USA. during one pass.

```
DOVE-1>TIME-1:PHT: uptime is 212/05:48:35. Time is Sun Jan 08 19:52:16 1995
```

```
DOVE-1>TLM:21:C0 22:77 23:29 24:1D 25:30 26:00 27:02 28:00 29:26 2A:06 2B:74  
2C:00 2D:72 2E:5F 2F:9E 30:D0 31:9F 32:01 33:00 34:A4 35:AB 36:B0  
37:B0 38:97
```

```
DOVE-1>STATUS: 80 00 00 83 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52
```

```
DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0
```

```
DOVE-1>TIME-1:PHT: uptime is 212/05:49:05. Time is Sun Jan 08 19:52:46 1995
```

```
DOVE-1>BCRXMT:vmax=759160 battop=766771 temp=357713
```

```
DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0
```

```
DOVE-1>TIME-1:PHT: uptime is 212/05:49:35. Time is Sun Jan 08 19:53:16 1995
```

```
DOVE-1>TLM:00:5A 01:58 02:88 03:35 04:58 05:59 06:6B 07:52 08:70 09:70 0A:9F  
0B:FA 0C:E6 0D:DB 0E:40 0F:26 10:DB 11:9F 12:00 13:DA 14:A1 15:A6  
16:7D 17:74 18:79 19:77 1A:74 1B:49 1C:7D 1D:78 1E:CC 1F:64 20:D1
```

```
DOVE-1>TLM:21:C3 22:79 23:30 24:20 25:31 26:01 27:22 28:00 29:24 2A:04 2B:5F  
2C:00 2D:7A 2E:63 2F:A0 30:D0 31:9F 32:00 33:01 34:A6 35:A6 36:A737:AC 38:92
```

```
DOVE-1>STATUS: 80 00 00 85 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52
```

```
DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0
```

```
DOVE-1>TIME-1:PHT: uptime is 212/05:50:05. Time is Sun Jan 08 19:53:46 1995
```

DOVE-1>TLM:00:58 01:58 02:87 03:35 04:56 05:57 06:6C 07:54 08:70 09:70 0A:A2
0B:F6 0C:E8 0D:DA 0E:40 0F:26 10:DC 11:9D 12:00 13:D7 14:9D 15:AC
16:74 17:75 18:77 19:77 1A:74 1B:46 1C:7C 1D:79 1E:D0 1F:63 20:D3

DOVE-1>TLM:21:C3 22:79 23:28 24:1C 25:33 26:30 27:01 28:00 29:01 2A:00 2B:6A
2C:01 2D:6C 2E:59 2F:9F 30:CE 31:9E 32:00 33:00 34:A7 35:AA 36:AE
37:B0 38:90

DOVE-1>BCRXMT:vmax=760045 battop=766771 temp=318063

DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0

DOVE-1>TIME-1:PHT: uptime is 212/05:50:35. Time is Sun Jan 08 19:54:16 1995

DOVE-1>TLM:21:BE 22:7B 23:2A 24:1C 25:31 26:00 27:26 28:10 29:01 2A:01 2B:6C
2C:01 2D:70 2E:59 2F:9D 30:D0 31:9F 32:00 33:01 34:A8 35:A9 36:AA
37:AC 38:90

DOVE-1>STATUS: 80 00 00 87 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52

DOVE-1>LSTAT:I P:0x25B2 o:0 l:3837 f:6778, d:0 st:0

DOVE-1>TLM:00:70 01:57 02:87 03:34 04:58 05:58 06:6C 07:51 08:70 09:70 0A:A2
0B:FF 0C:E8 0D:DB 0E:FF 0F:26 10:DA 11:9E 12:00 13:D4 14:9D 15:AC
16:6E 17:78 18:7A 19:78 1A:76 1B:53 1C:7D 1D:7C 1E:C4 1F:65 20:D2

DOVE-1>TLM:21:BE 22:7A 23:28 24:1B 25:30 26:01 27:00 28:00 29:07 2A:00 2B:86
2C:01 2D:65 2E:59 2F:9F 30:CD 31:9F 32:01 33:00 34:A9 35:AA 36:AA
37:AC 38:8B

DOVE-1>STATUS: 80 00 00 87 07 18 AA 02 00 10 00 00 09 0B 3C 05 0F 31 01 0A 52

DOVE-1>BRAMST:27th December 1994 22:40 UTC

Voice experiment has been switched OFF.

S Band ON.

The Dove Command Team would like to wish
all listeners compliments of the season
and best wishes for 1995.

73 WD0E WJ9F VK7ZBX N5AHD PY2BJO

If you would like more information on the Amateur satellite program I would suggest you purchase the book "The Satellite Experimenter's Handbook" by Martin Davidoff and published by the American Radio Relay League, 225 Main Street, Newington, CT 06111. I would also suggest that you contact the Radio Amateur Satellite Corporation (AMSAT), 850 Sligo Ave., Silver Spring MD, 20910. AMSAT is the group that is responsible for launching most of the Ham satellites and has chapters in many countries.

Hardware Setup

The hardware setup is designed to be as simple as possible. If you are already on packet on 2 Meters then all you have to do is run this program and execute the Setup Packet menu item to configure the RS-232 port to match your TNC. If you are not sure of the settings then check what ever program you use to display packet and copy these settings.

If you have never used packet before then you will have to do a little experimenting. Your best bet is to read the setup portion of your manual that came with your TNC. In that book it should state what the various RS-232 parameters are. Use these to setup this program.

To test this program once you have run the Setup Packet dialog, tune to any common packet frequency. In the USA these will be from 144.91 to 145.09 in .02 increments. Then select the start menu item and you should start receiving packet data. Once you know it works then just tune your radio to 145.825 MHZ and click on start and let the program run. When the satellite passes overhead you should start receiving DOVE data if it is in the telemetry mode. This program was designed to run while iconified, so once you have started it, iconified it and go run something else on your PC. It will run by itself in the background.

This program has also been designed to be in the start mode when initially brought up. If this is your first time running this program then you might get an error message regarding a COM port setting. Ignore this error and goto the Setup Packet dialog and set the correct settings. Being started in the start mode is convient in that you can place this in the StartUp group of the Program Manager so that DOVE decoder will be automatically started every time you start windows. You can also set from Program Manager to have the program started in the iconified mode. This is the mode that I run so that my 2 meter is always tuned to the DOVE 2 meter frequency and when I bring up windows the dove program will be running.

Data/Graphic Mode

This menu item will toggle you between the Data Display and the Graphic Display. You can be plotting data while you are acquiring data. The data that you plot is the data that you saved with the Retrieve function. There are two buttons for each plot and they will cycle you up and down through the Dove data elements. To turn a plot on or off just press the corresponding plot button. You may need to resize the Dove window in order to see the entire graph. Either the data or graphic modes may be printed.

