Abstract: This document provides step by step instructions on how to configure the DEWESoft vehicle CAN software program in order to specifically run tests for Blind Spot Monitoring (BSM) on automobiles. BSM is a newly emerging technology for increased safety in vehicle travel and further implementation in the future is highly likely.
1. Open the DEWESoft 7.0 program. This can be done by double clicking on the shortcut from your desktop computer.

2. Allow the program to load. When fully loaded, you should then see a screen like this.

3. From here, click on the button located on the tab ribbon on near the top named “New Setup”.
4. This screen will appear after clicking "New Setup".

5. From here, select the “Settings” option in the top right hand corner.
6. A drop-down menu will appear, in this menu, select “Hardware setup”.

7. This screen will pop up. From here, select the “Video” tab.
8. Before moving on, make sure you have all your cameras connected. This manual is being written assuming you will be using the Microsoft© LifeCam Cinema cameras. When you are sure everything is connected properly, check the box next to “DirectX”. After checking this, the cameras that are connected should appear.
9. On this same window, you also want to double check some things in the “Video options” (Red). The first thing to check would be the “AVI file type for compression” (Green). Also, you should look at the “File types for storing” (Purple). Start first with the “File types for storing” (Purple).

After checking the “DirectX” box, these 2 cameras I had connected appeared.

Be sure to check the “Enabled” status of the cameras. You want to make sure “Yes” is displayed. If this says “No”, click on the camera once to change the setting. Make sure this step is done with all cameras you may be using.

1. Under this title, the bubble for “AVI <2GB” should be selected. If that is not the case, click the bubble to select it.

2. If button shows “Uncompressed”, you will want to change that. To change it, click the button once. The menu below will appear.

If button shows “Uncompressed”, you will want to change that. To change it, click the button once. The menu below will appear.
After changing both compressions, the screen below should look like this. If you look below the “AVI file type compression” (Green) label and under the “AVI <2GB” (Purple) they should now read “XVID”. Your “Video -> Hardware setup” is complete. Just press the “OK” button now (Red).

1. From here, click the down arrow tab under “Compressor” and select the option “Xvid MPEG-4 Codec”. Now click “OK”.

You may also have noticed a compress option has also popped under “AVI <2GB”. This button should also be the “Xvid MPEG-4 Codec”. If it is not, click it and the same menu box above will appear and you will be able to choose the correct compressor.
10. A new “Video” tab will pop up at on the top ribbon bar. You will want to click on it.

11. Now at this point you should see the cameras that you have attached. Depending on if you are using 2 or 4 cameras, this next part will be slightly different. First under “Store options”, change the drop-down bar to the option of “fast on trigger, but slow otherwise” (Red).
12. Here is what the “Setup” for each camera will look like.

13. Now that the cameras are all setup, the next thing to do is set up the CAN hardware. At this point click the “Settings” (Red) button again and click on “Hardware setup” (Green).
14. From this window, click on the “CAN” (Red) tab. Now depending on which Dewetron you are using, this next part is slightly different. The (Green) box below will explain the differences.

First of all there are 3 different options that can be used. Depending on the setup, a certain check box will be selected.

1. DEWESoft w/CAN Case Using a Laptop: With this setup, the “Vector” check box should be selected.
2. Surehand Dewetron: With this, the “DEWESoft USB” option will be selected.
3. DEWE 43: On this setup, the “DEWESoft USB” will also be used.

Note: The example shown is for option 1 above.

15. That takes care of the CAN hardware. Now select the “Analog” (Red) tab to the left of the “CAN” tab.

This is the same situation as with the CAN above, but it is not difficult. I will list the 3 options and the select corrections again.

1. DEWESoft w/CAN Case Using a Laptop: With this setup, no change is needed. “No A/D hardware” option should stay selected.
2. Surehand Dewetron: With this, the “DEWESoft USB” option will be selected.
3. DEWE 43: On this setup, the “DEWESoft USB” will also be used.

Click the “OK” button when finished.
16. Now a new ribbon tab will appear on the top labeled “CAN”. Select this tab.

17. After loading the DBC file, many different messages will appear (As shown below). Message configuration is the next step. The example being used is for a Narrow Band (NB) setup configuration. This next step may be confusing, but I will explain very thoroughly the steps to go about. All of these message IDs should be specified by the engineer and then signals within those message IDs will be activated accordingly.

For NB setup the following messages should be enabled:

<table>
<thead>
<tr>
<th>Message ID</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>30h</td>
<td>R24_BSD_WARN_1_30h</td>
</tr>
<tr>
<td>31h</td>
<td>R24_BSD_WARN_1_31h</td>
</tr>
<tr>
<td>100h</td>
<td>VEH_SPEED_100h</td>
</tr>
<tr>
<td>102h</td>
<td>GEAR_POS_102h</td>
</tr>
<tr>
<td>110h</td>
<td>DI_DAT_COLL_110h</td>
</tr>
</tbody>
</table>
18. The next few pictures show the complete activation process of the messages and the signals.

Here message 30h is found and signal R24_BSD_WARN_1_30h is enabled.

The plus sign to the immediate left of the message will give the drop down menu of signals to select/enable. Just click once on “Unused” to enable the signals, just like with the cameras earlier.

Here message 31h is found and signal R24_BSD_WARN_1_31h is enabled.
Here message 100h is found and signals ST_WHEEL_ANG_100h & VEH_SPEED_100h are enabled.

Here message 102h is found and signal GEAR_POS_102h is enabled.
19. Now you will want to click the “Storing” tab located on the top ribbon.

Here the last message 110h is found and signal DI_DAT_COLL_110h is enabled.
20. Here is what the screen will look like.

Under the “Data file options”, where it is normally named “Test”, you can change the file name to whatever fits your liking (Recommended file name format: Vehicle_Test). Along the right side you will want to check the box that says “Create a multifile”. Under this will appear a new option titled “Make new file after”. Check this box as well. A drop-down menu should appear to the right. Use the drop-down menu to select one of 2 options.

1. Use the “min” option and set it to 20
2. Use the “triggers” option and set it to 1

The choice you use will most likely be based on the test you are doing.

21. The screen below should look like this after completing the above tasks. Next are the “Storing options” and “Trigger setup” which are underneath the “Data file options”.

In “Storing options” within the “Storing type” drop-down menu you will want to select “fast on trigger, slow otherwise”. In the “Trigger setup” you should check the boxes for both “Pre time” and “Post time”. Set both times to the specified “Pre time” and “Post time” given. If no time is given, use these recommended times:

“Pre time”: 3000ms (3 seconds)
“Post time”: 7000ms (7 seconds)
22. The next step is the “Start trigger setup”. Under that title you will need to configure the “Start storing conditions”. Use the plus button to the right to add a condition and then click the “Setup” button on the condition.

23. Now that DI_DAT_COLL_110h is selected, the “Trig level” (Red) needs to be set. A value of 0.5 is recommended unless otherwise specified by the engineer. This finishes the trigger conditions.
24. The last thing to do in the “Storing” tab is create folders to store your test data.

25. From here you will want to name the folder. The recommended naming for the folder is: VehicleName_Date_TestName. Within this folder you will want to make 2 more folders. These 2 folders should have the names: Data and Grid.
26. Next we will want to setup up the “Measure” tab on the top ribbon bar.

After clicking the “Measure” tab, this “Design” tab will pop up. Click on this next.

27. From here you see this screen. This is where you will design layout and messages you would like to see displayed as well as the picture for the cameras being used for the test. The next few screenshots will step you through the process of creating your layout.

Located here is a list of the messages we enabled, along with the cameras we configured as well.

Here are options to change based on what you have clicked on.

On this bar are items that can be added to the design screen. You only need a few of these, namely, “Digital meter” (Yellow), “Indicator lamp” (Light Blue), “Video” (Orange), “Note” and “Line” (Red). An object can simply be erased by selecting it with your mouse cursor and then pushing the delete key on your keyboard.

Say, first you want to configure the camera screens. First you will select the “Video” button above.
Next we will setup an indicator lamp. This process is essentially the same digital meters as well.

Steps to setup the video feed from the cameras being used.

1. Click the "Video" button.

2. To add new cameras, click on the "+" button to the left under "Control properties". You can also adjust the "Cols" option to change the view of how the cameras are placed.

3. Adjust to the size desire.

Setting up an "Indicator light" / "Digital meter".

1. Click on the correct icon button above.

2. For "Indicator light", be sure to check that the "Upper limit" check box is selected "Use" and the value in the box is the recommended 0.500 V.

   For "Digital meter", under "Control properties" must be changed.

3. Lastly, on the right hand side of the screen, you with the correct icon selected, you will want to click on the correct message that you want to have associated with that icon. For example, R24_BSD_WARN1_30h will be the indicator lamp icon to show if the light is triggered when traffic passes during testing.

After configuring all of the icons that you have created, your screen should look something like this. See below.
28. This next section has to do with the Grid folder we created. You will have to make a Grid setup and save it for reference and also to get accurate readings when analyzing data. The Grid will use the last 2 icons, “Note” and “Line”. The Grid is very important.

Note: If CAN is hooked up, the “Indicator lights” should be green, otherwise they will not display.

Usually the Grid will be setup right before testing. I will not be doing this for the manual, but instead will load a previous Grid file and show the steps to go about setting up the Grid. This is usually done outside in a parking lot. Lines are painted on the ground in a grid pattern and each line is 1 meter apart.

For the Grid you will need to setup one side at a time. In the example being used, we will start with the left side. To start, cones should be placed out on the Grid at 3 different distance marks. All cones are 3 meters out from the side of the vehicle and then 0, 3 and 7 meters from the rear of the vehicle.

To create the Grid, you will keep the “Design” tab on the ribbon selected.
After drawing out the lines you probably will have something like this.

We will start with creating the lines for the Grid using the “Line” icon. After clicking on the icon, click wherever you would like to place the base of the line. You will then be able to move your cursor and produce a line to your liking. The default settings for the line are on the left. You can change these options by selecting the drop-down arrows of the setting you wish to change.

It is recommended using Red for the “Color” option of the 3 meter line out from the vehicle and also for the 3 meter line from the back of the car.

Green should be used for the “Color” option of all other lines on the Grid.

“Width” should be the smallest line size possible and “End” should be changed from an arrow to the “Begin” option.

The other camera should then be setup the same way. The next thing to do after the lines is use the “Note” icon to label the lines.
After adding those, it should look something like this.

Complete this for the other side as well and you should now have a completed Grid.

29. This ends the normal creation of a DEWESoft 7.0 setup file. You may need to use different options or select different messages, but the overall process should be the same.