



DVLC-1

Lightning Strike Counter

Installation and Setup Guide

Version 1.0

November 2017

MAN1028

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1. Davicom DVLC-1 Lightning Strike Counter Setup & Connection instructions

1.1 What's included in the kit:

- DVLC-1 Lightning Strike Counter
- DVOR-1 Optical Receiver
- Fiber-optic cable (100-Foot / 30-Meter)
- DV-Micro Remote Control & Monitoring unit
- DV-Micro I/O Interconnect board
- CR123A battery
- USB Drive loaded with Davicom software package (DavLink, USB driver, workspace, configuration file)
- 12 VDC Power Supply
- USB cable
- Hook-up wires



Figure 1. Overview of the main components of the Davicom Lightning Strike Counter kit.

1.2 Components of the Davicom Lighting Strike Counter kit



Figure 2. Davicom DV-Micro Remote Control and Monitoring System (DV-Micro)



Figure 3. Davicom in-line 12 VDC power supply (ILPS)

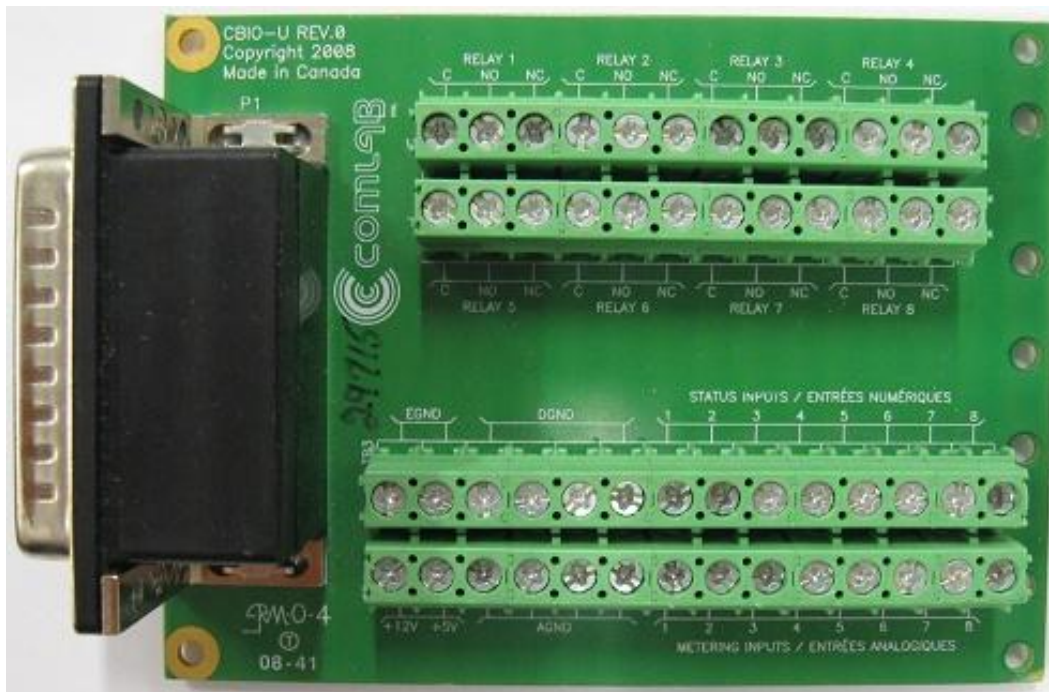


Figure 4. Davicom I/O interconnect board (MIOBU)



Figure 5. Davicom Optical receiver (DVOR)



Figure 6. Davicom Lightning Strike Counter (and optical transmitter) (DVLC)



Figure 7. 100 feet of optical fiber (with removable fisher attachment) (FOC)

1.3 Installation of the DV-Micro internal RAM Battery

- 1) Before using the DV-Micro remote control and monitoring unit, a RAM battery discharge protection tab must be removed from inside the unit. In order to do so, the unit's top half cover needs to be removed. Unscrew the top half side screws (3 on each side) and pull off the cover.



Figure 8. Removing the top-half cover screws from the DV-Micro (one side shown here).

- 2) Remove the protective plastic tab from the battery socket. Make sure the battery remains properly seated.

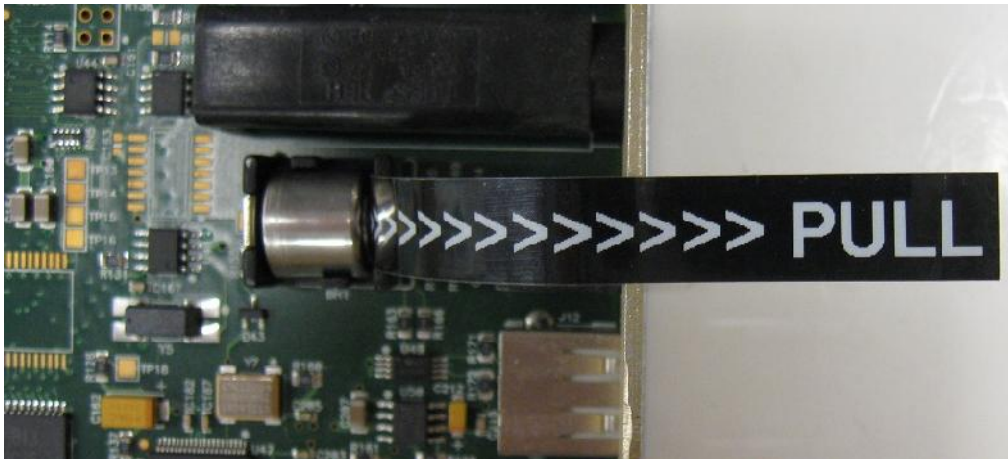


Figure 9. Removing the discharge protection tab of the DV-Micro internal RAM battery.

- 3) Reinstall the cover and the screws. **Apply only a light torque as the screws might strip.**

1.4 Optical fiber conduit fishing

VERY IMPORTANT: When manipulating the optical fiber, be very careful not to bend it too much as permanent damage could occur.

- 1) One end of the FOC has a removable metal wire to be used as a fisher attachment for fishing the FOC through plastic conduit. Once the fiber is in place, this attachment can be removed, along with the zip ties.

Also, depending from which end of the conduit the FOC is started, you may also have to remove the strain relief. It is NOT needed at the DVLC end, but IS needed at the DVOR end.



Figure 10. Removable fisher wire attachment.

1.5 I/O Board and Optical receiver wiring

- 1) Remove the cover from the DVOR.

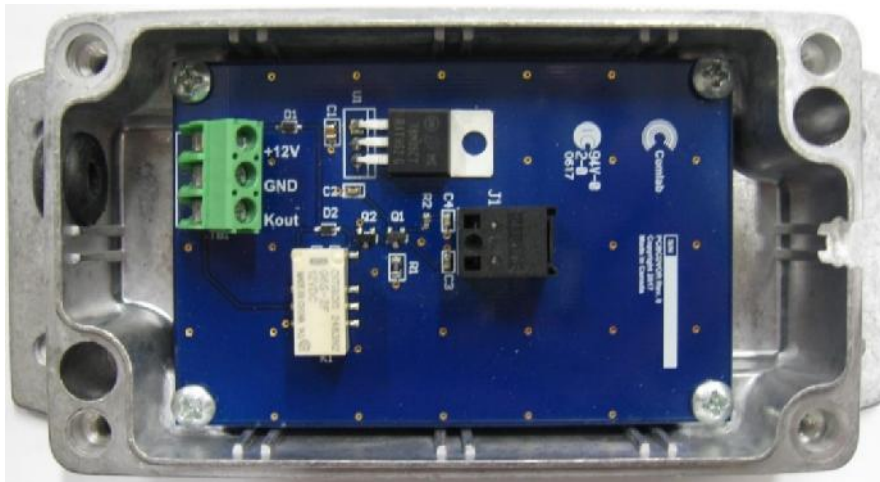


Figure 11. DVOR module with cover removed.

- 2) Using the 3 hookup wires provided in the kit, connect the Optical Receiver (DVOR) to the I/O Interconnect board (MIOBU) such that:

One wire goes from the MIOBU **+12V** terminal to the DVOR **+12V** terminal (use the red wire)

One wire goes from the MIOBU **AGND** terminal to the DVOR **GND** terminal (use the black wire)

One wire goes from the MIOBU **Status Input #8** terminal to the DVOR **K_{out}** terminal (use the white wire)

At this time, do not yet reinstall the cover on the Optical receiver.

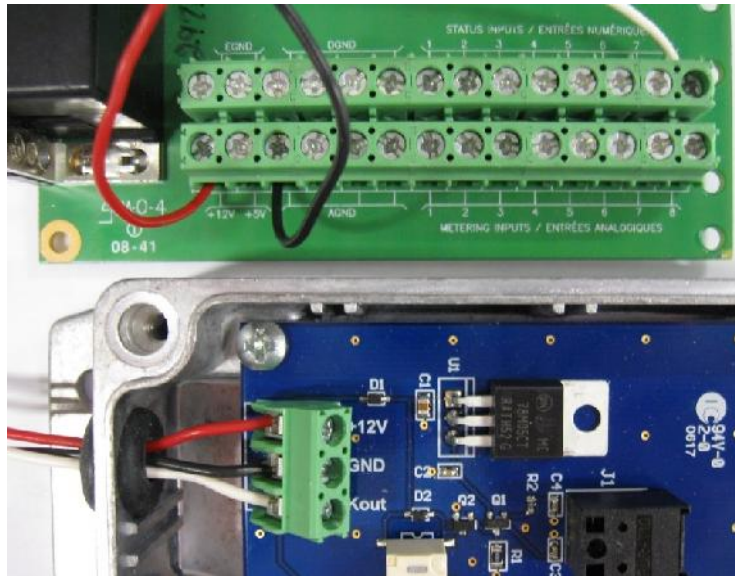


Figure 12. Wire connections between the MIOBU and the DVOR.

- 3) Plug the I/O Interconnect board into the rear of the DV-Micro unit.



Figure 13. The I/O Interconnect board connected to the back of the DV-Micro.

1.6 Lightning Strike Counter internal battery installation

- 1) Remove the cover from the Lightning Strike Counter module.



Figure 14. Inside view of Lightning Strike Counter.

- 2) Remove the side screw of the internal shielding cover and remove the cover.



Figure 15. Location of DVLC-1 internal screw.

- 3) Insert the CR123A battery into the socket as shown in the figure below.



Figure 16. Installation of the CR123A battery in the DVLC-1 module.

- 4) Gently reinstall the internal metal cover of the DVLC-1 module and its retaining screw. Do not overtighten the screw. **At this time, do not yet reinstall the main cover on the DVLC-1.**



Figure 17. Reinstalling the metal cover and the screw in the DVLC-1 module.

Apply only a very light torque as stripping might occur (screw inserts into plastic part).

- 5) You can verify that the battery is good and properly installed by pressing on the **Test** button. If the green LED lights-up, everything is ok.

1.7 Optical fiber connection

VERY IMPORTANT

- *When manipulating the optical fiber, be very careful not to bend it too much as permanent damage could occur.*
- *When inserting the fiber ends into optical receptacles, some pushing force may be required, but if you find that it does want to fit, verify polarisation and try again. DO NOT OVERPUSH. Also, some pull strength may be required for removal.*

- 1) Before connecting the optical fiber to any of the two modules, you will need to remove the protective rubber boots. Also, take note of the polarisation found on each of the optical fiber connectors.

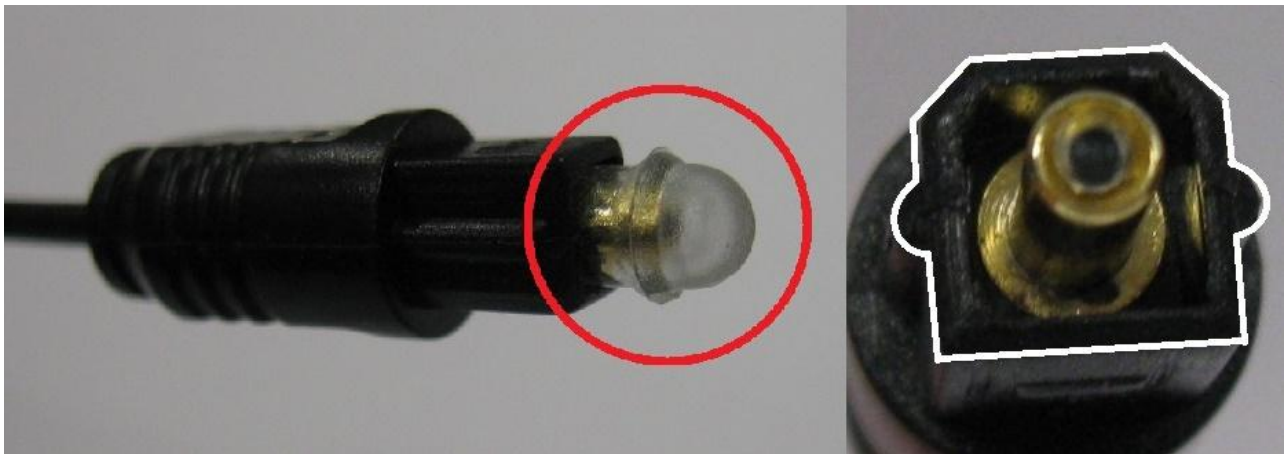


Figure 18. Close-up views of the removable protective boots found on both of the optical fiber tips, plus polarization of the tips.

1.7.1 DVLC Optical Fiber connection

- 1) As seen in the image below (left side), on the DVLC-1, insert one end of the optical fiber through the entry hole, then form a gentle “strain relief” loop, and delicately insert the optical fiber tip into the optical receptacle (right image), making sure to match the polarization of the FOC tip with the polarization of the optical receptacle.



Figure 19. Recommended optical fiber placement, and polarization of optical receptacle in the DVLC-1.

Do not yet install the cover on the DVLC-1 as we will later need to access its Test button.

1.7.2 DVOR Optical Fiber connection

- 1) Before connecting the optical fibre to the DVOR, take note that here too the optical receptacle is polarized.

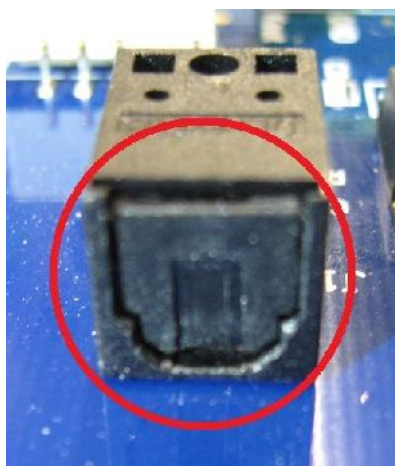


Figure 20. Optical fiber receptacle polarization on the DVOR. Note that the receptacle is protected with a small trap-door mechanism.

- 2) On the DVOR, while still taking care of the optical fiber receptacle polarization, insert the other end of the optical fiber into the optical receptacle.

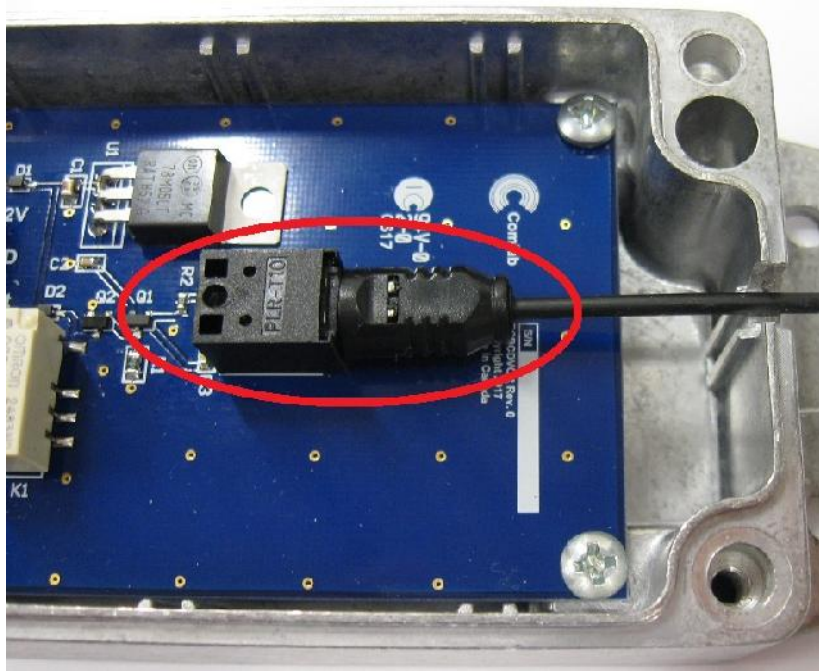


Figure 21. Insertion of an optical fiber end into the optical receptacle of the DVOR module.

- 3) Carefully slide the long strain relief of the FOC over to the DVOR.

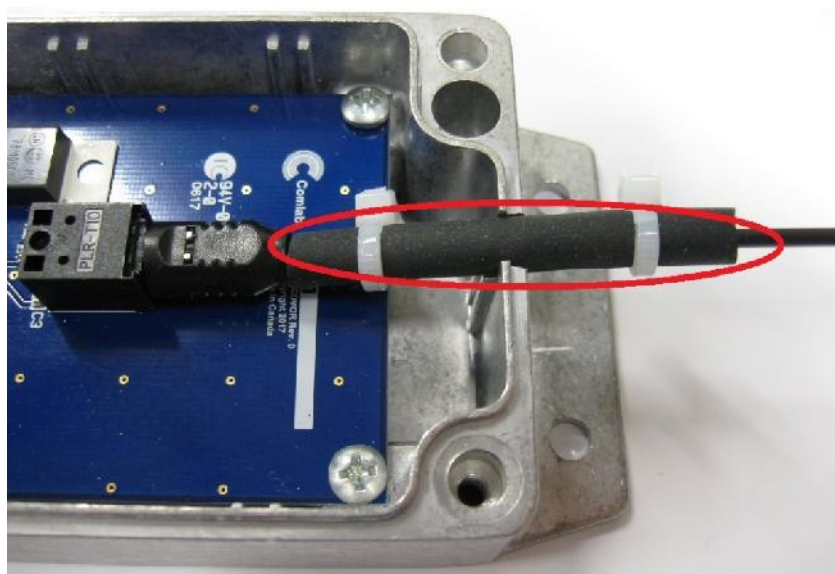


Figure 22. Strain relief placed over the FOC in the DVOR.

- 4) Reinstall the cover on the DVOR. Make sure to tighten the screws enough because a good electrical contact is required between the cover and the case – however, be careful to not overtighten and strip the threads.



Figure 23. Cover back on top of the DVOR module.

1.8 Powering-up the DV-Mini and connecting to it

- 1) Using the provided 12 VDC power supply, apply power to the DV-Micro.



Figure 24. Applying power to the DV-Micro.

- 2) Once the DV-Micro is connected to power, give it 2 minutes to boot up. The unit will be ready once the **DC POWER** LED is ON solid, and the **ACTIVITY** LED is blinking at a rate of about 1 pulse per second.



Figure 25. The DV-Micro under power.

- 3) Lastly, connect a USB cable between the DV-Micro's front panel USB port and a USB port on your PC.
- 4) This completes the hook-up steps. We will now move on to software installation and use.

1.9 Davicom software installation and setup

For the next steps, you will need the following (from CD, DVD, USB Flash drive, or download):

- DavLink software
- DavLink install key
- Davicom USB Driver
- The DavLink Lightning Striker Counter workspace
- The DV-Micro Lightning Strike Counter configuration file

The DV-Micro configuration file and the DavLink workspace file are located on the provided Flash drive. If you don't have this Flash drive, you can also get both files from the Davicom web site on the following page: <http://www.davicom.com/support/resources/tech-tips--notes--apps-and-more>, and look under "Workspaces & Associated Configuration files".

The DavLink software and the USB driver can also be obtained from our website, but membership registration is required. Visit our website or contact us for more info.

- 1) To install DavLink, insert the Davicom CD, DVD, or USB Flash drive into the PC. The install program should start automatically. If it does not, navigate to **Drive:\Davicom Firmware and utilities\English** and run the **DavFWandUtil556_20849.exe** file.

- 2) When requested, enter the install key. You will find the DavLink install key on the disc case or Flash drive label, or use the key that might have been provided to you. If you don't have any, contact us so we can provide you with one. Email dvsupport@davicom.com or call 1-877-282-3380.
- 3) To install the Davicom USB driver, based on your computer's operating system (32-bit or 64-bit), select the proper driver (**CP210xVCPInstaller_xxx**) version by following one of these two paths, and run it:

32-bit: Drive:\Davicom USB Driver\CP210x_VCP_Windows\CP210xVCPInstaller_x86

64-bit: Drive:\Davicom USB Driver\CP210x_VCP_Windows\CP210xVCPInstaller_x64
- 4) Connect a USB cable from the DV-Micro's front panel port to a USB port on the PC.
- 5) Launch DavLink.
- 6) In the DavLink top menu, click on **Setup**, then click on **Communications**. The following screen will appear:

The screenshot shows the 'DavLink Communication Parameters' window. It is divided into several sections for configuring different types of communications. The 'Modem Communications' section includes a dropdown for the communication port, a port speed of 57600, and three initialization strings. The 'Local Communications' section shows COM1 as the port, 115200 as the port speed, and 9600 as the alternate port speed. The 'Reach-Through Communications' section has a dropdown for the port, a port speed of 19200, and checkboxes for 'Application Bypasses DavLink' (unchecked) and 'Hardware Flow Control' (checked). The 'Serial Communications' section shows COM1 as the port and 1200 as the port speed. The window has standard 'OK' and 'Cancel' buttons at the bottom right.

Figure 26. Setting up the **Local Communication** parameters in DavLink.

- 7) Now, as seen in the screenshot below, under **Local Communications**, click on the **Communication Port** drop-down arrow, and select the port ID that shows up as **USB/COMx** (the actual port number might be different than the one seen here). Click on **OK**.

NOTE: If you don't see a **USB/COMx** listed, it means the USB driver is not installed. If you experience problems with the driver installation, contact us.

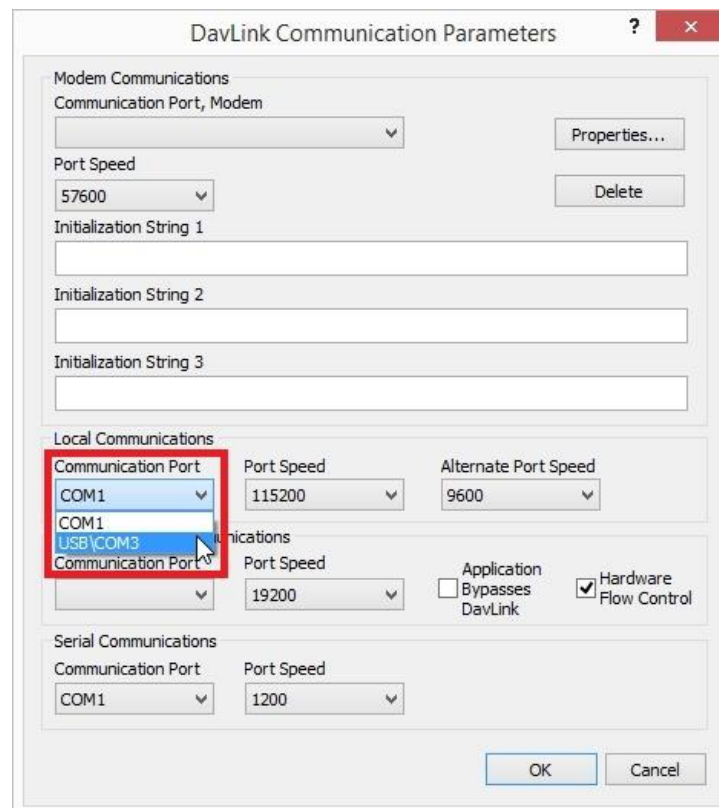


Figure 27. Selecting the local USB communication port in DavLink.

1.10 Connecting to the DV-Micro

- 1) In DavLink top menu, click on the computer-like **Connect** icon in order to establish a connection with the DV-Micro.

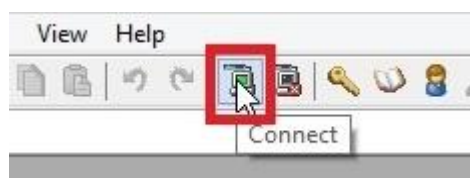


Figure 28. Establishing a connection with a DV-Micro.

2) The following connect pop-up will appear:

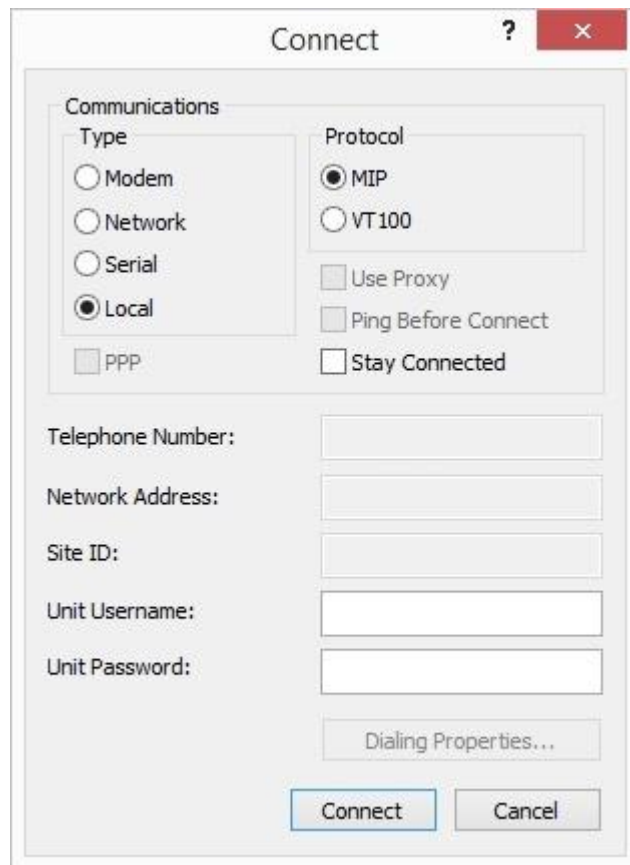
The image shows a 'Connect' dialog box with a title bar containing a question mark and a close button. The dialog is divided into two main sections. The top section, titled 'Communications', contains two groups of radio buttons. The first group, labeled 'Type', has four options: 'Modem', 'Network', 'Serial', and 'Local', with 'Local' selected. The second group, labeled 'Protocol', has two options: 'MIP' and 'VT100', with 'MIP' selected. Below these are three checkboxes: 'Use Proxy', 'Ping Before Connect', and 'Stay Connected', all of which are currently unchecked. The bottom section of the dialog contains five text input fields labeled 'Telephone Number:', 'Network Address:', 'Site ID:', 'Unit Username:', and 'Unit Password:'. Below these fields is a button labeled 'Dialing Properties...'. At the bottom of the dialog are two buttons: 'Connect' and 'Cancel'.

Figure 29. DavLink **Connect** window.

3) In the *Username* box, enter **SUPER01** (not case sensitive), and in the *Unit Password* box, enter **SSSSSSSS** (not case sensitive), then hit **Connect**.

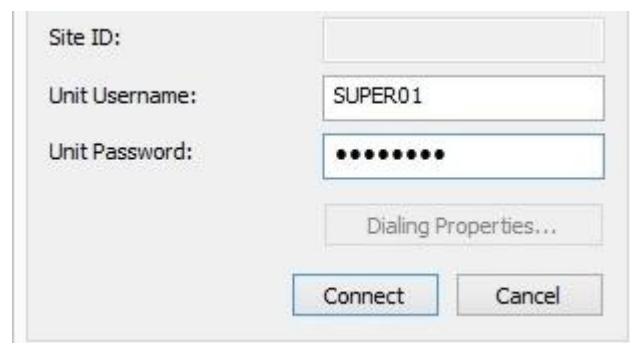
This image shows a close-up of the 'Connect' dialog box with the 'Unit Username' and 'Unit Password' fields filled in. The 'Unit Username' field contains the text 'SUPER01'. The 'Unit Password' field contains eight dots, representing the password 'SSSSSSSS'. The 'Site ID' field is empty. The 'Dialing Properties...' button and the 'Connect' and 'Cancel' buttons are also visible at the bottom.

Figure 30. Connecting to the DV-Micro.

- 4) You should now be connected to the DV-Micro, and a red visual confirmation will be available at the lower right side of the DavLink screen, such as this:



Figure 31. Visual confirmation of a connection between DavLink (PC) and a Davicom unit.

1.11 Setting up DavLink Workspace

- 1) First, we need to close any open workspace. Go in DavLink's top menu and click on **File**, then **Close Workspace**. If a Workspace is still present, close it also.

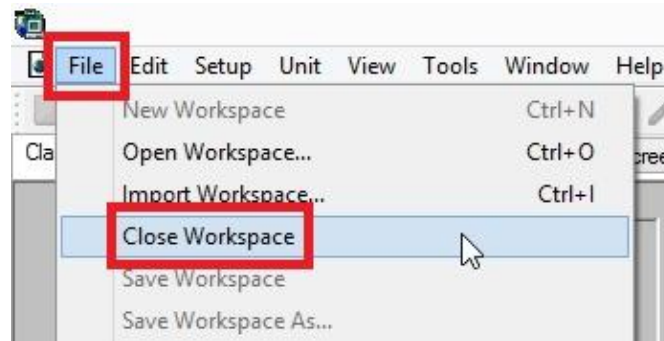


Figure 32. Closing a DavLink workspace.

- 2) Insert the provided Flash drive into a USB port of the PC.
- 3) Still in DavLink's top menu, click on **File**, then click on **Open Workspace**, browse to the Flash drive location and follow this path: **Drive:\DVLC-1 Lightning Strike Counter Files\Workspace file for DavLink** and select the **Workspace for DVLC** file.

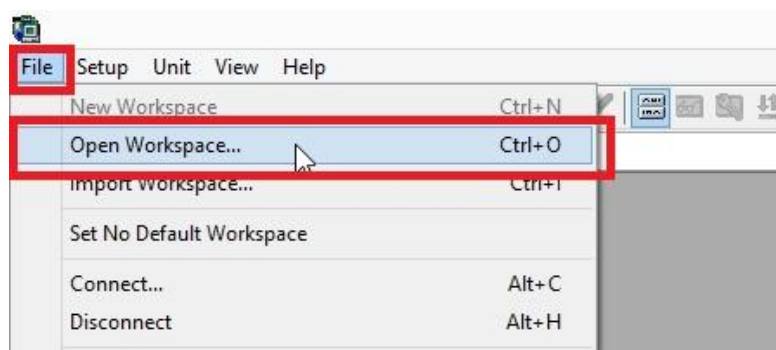


Figure 33. Opening the DVLC workspace in DavLink.

4) The following workspace will load:

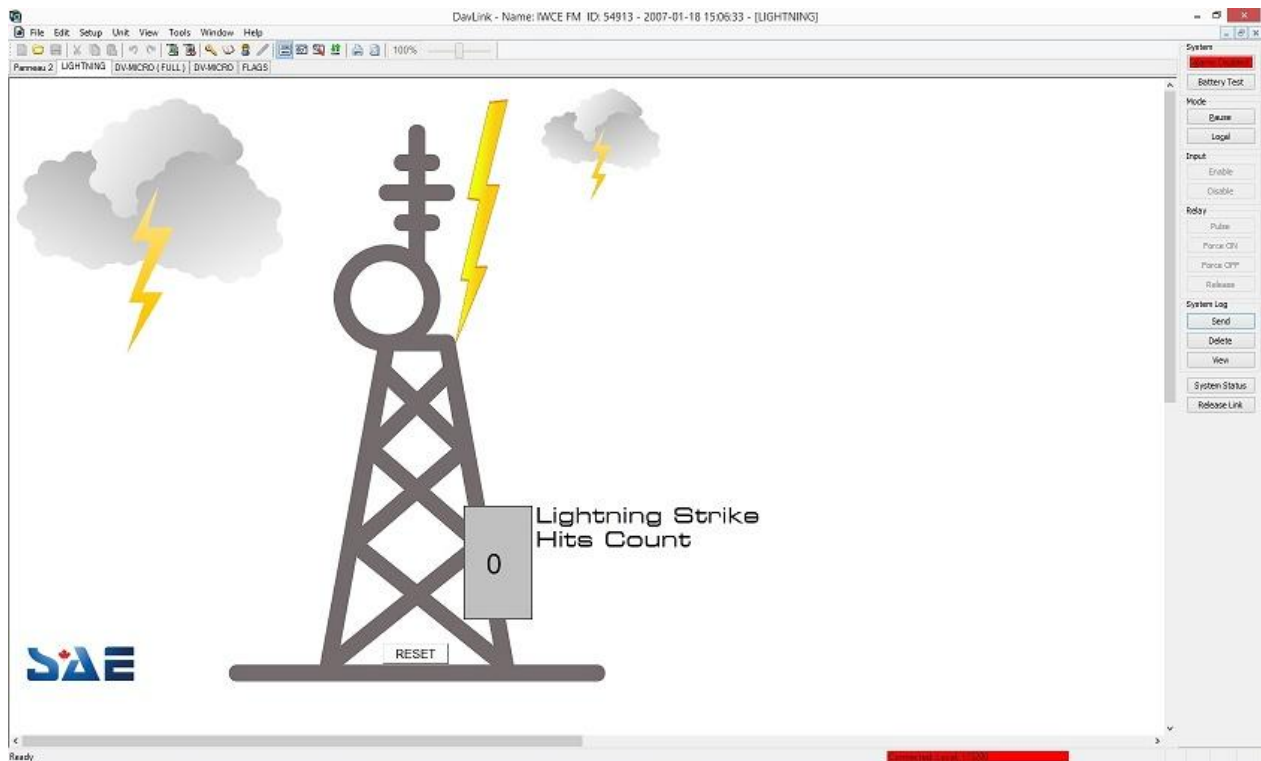


Figure 34. View of the Lightning Strike Counter workspace in DavLink.

5) If you wish, you can set this workspace to be the default one so it that it opens automatically every time you connect to the Davicom unit. To do so, in DavLink's menu, click on **File**, then select "**Set Current Workspace As Default**".

6) Now go in DavLink's top menu and click on **Setup**, then click on **Options**.

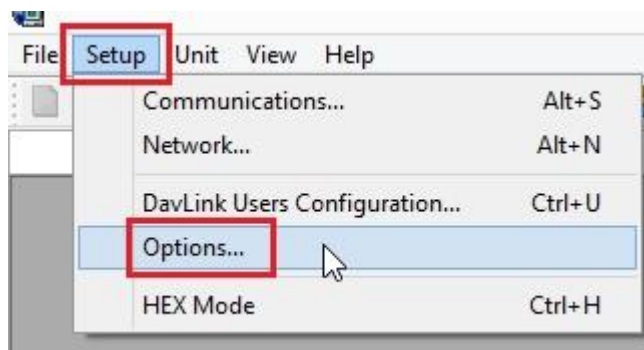


Figure 35. Accessing the **Options** properties in DavLink.

- 7) In the Logon window, enter **SUPER** in the *Username* box, and enter **SSSSSSSS** in the *Password* box.

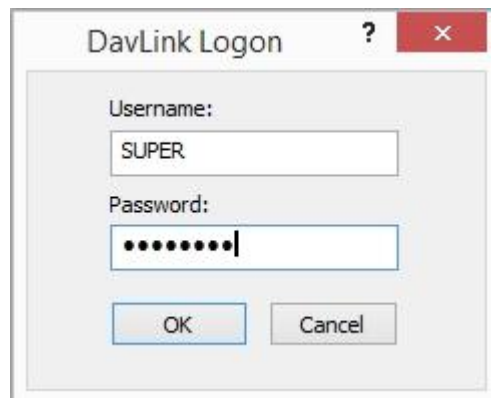


Figure 36. Logging on to DavLink.

- 8) An **Options - Properties** box will appear, double click on the **Quick Commands** line and select **2 - Double Click**. Click on **OK** to exit. This setting will allow to manually reset the counter using the double-click action from a mouse.

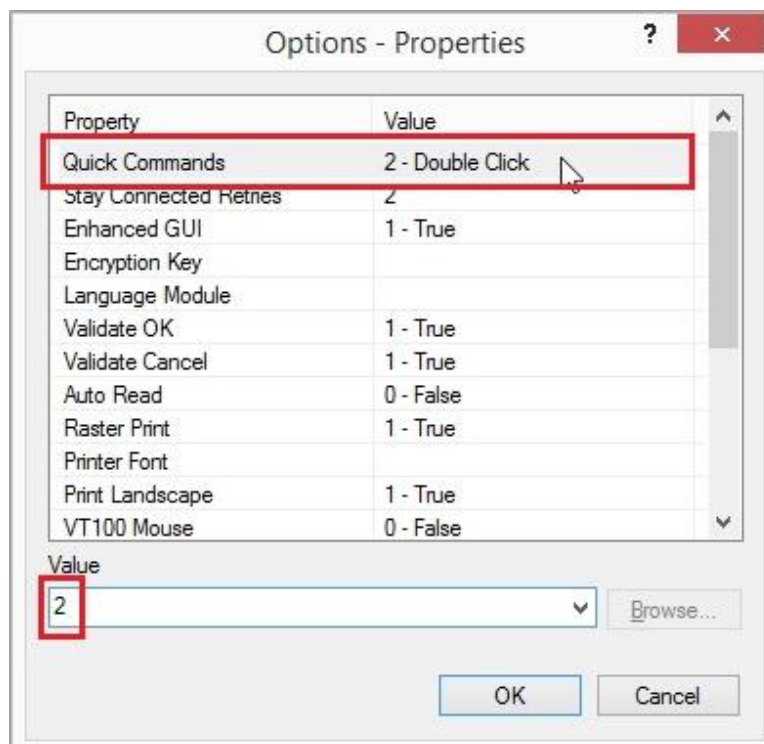


Figure 37. DavLink **Options – Properties** window.

1.12 Loading the configuration file into the DV-Micro

NOTES:

If you just went through all the previous steps, you are already connected to the DV-Micro. Otherwise, go to step 1.10 in order to get connected, then come back here.

At this step, a configuration file is required. You should already have it, either on the Flash drive that came with this kit, or from a download. If you don't have this configuration, please contact us.

- 1) In DavLink's top menu, click on **Unit**, then **Unit Utility**, then **Configuration Transfer**.



Figure 38. Accessing the **Configuration Transfer** menu in DavLink.

- 2) The window shown below will open. Click on **Browse**, and navigate to the Flash drive location and follow this path: **Drive:\DVLC-1 Lightning Strike Counter Files\Configuration file for Davicom unit** and select the **DVLC-1 configuration file for Davicom DV-Micro** file.

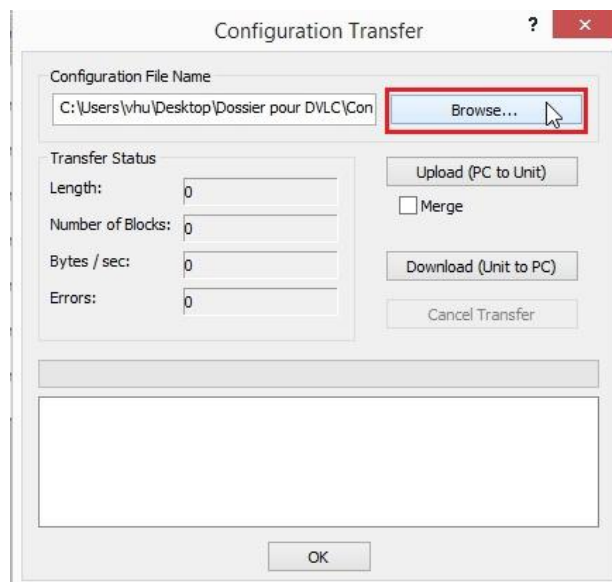


Figure 39. Browsing to the DV-Micro config file location.

- 3) Next click on **Upload (PC to Unit)**.

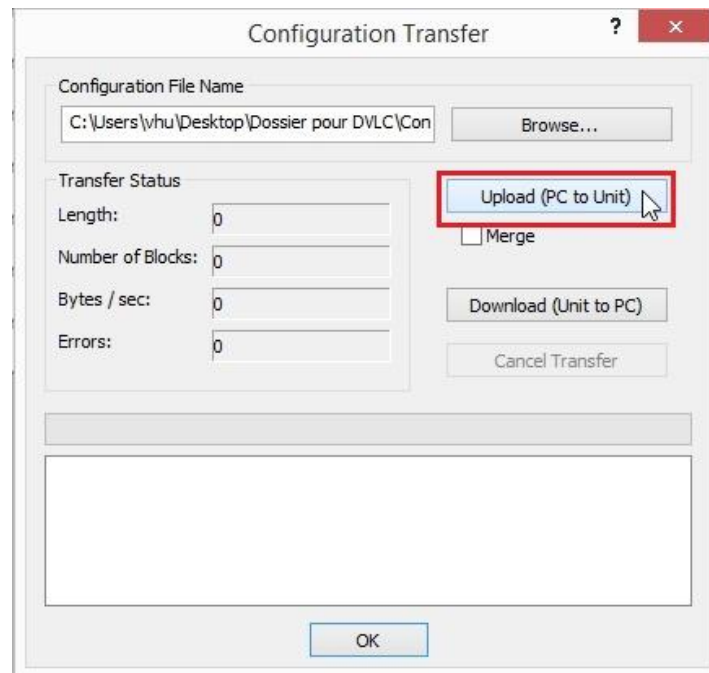


Figure 40. Uploading a configuration file into the DV-Micro.

- 4) The configuration file will be loaded into the unit. Progress messages will be shown during and after the data transfer. Wait to see **Success** before moving on to next step. Click **OK** when completed.

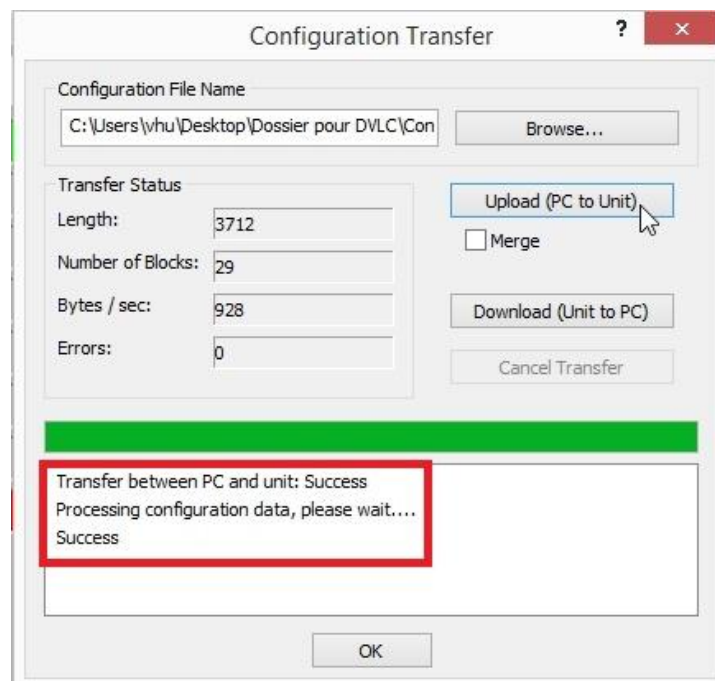


Figure 41. Configuration file upload messages during and after transfer into DV-Micro.

- 5) Now back in the DavLink workspace, after the Config file upload, if the value displayed in the **Lightning Strike Hits Count** box is not 0, double-click on the **RESET** button in order to reset it to 0.

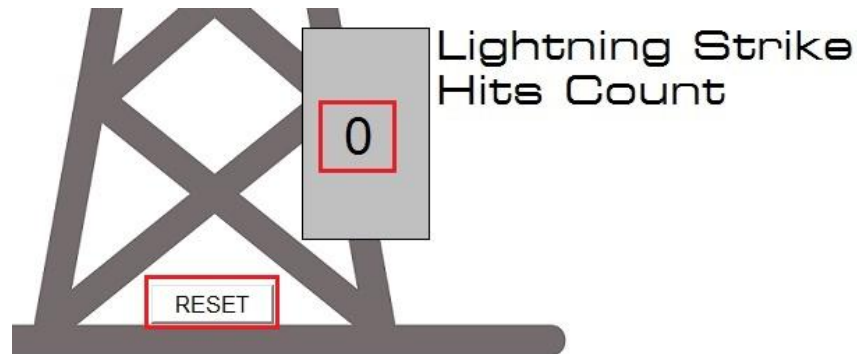


Figure 42. Resetting the DVLC hit counts.

1.13 Lightning Strike Counter setup test

- 1) On the Lightning Strike Counter module, a test button is provided (see Figure 34) in order to verify if everything is working properly. Pushing the test button generates an electric impulse which is picked-up by the detector coil, exactly as if a real lightning strike had occurred.
- 2) When pushing the test button, a battery voltage test is also performed to verify the state of the internal battery. If the battery is ok, the green LED will come on; if the battery is too low, the LED will not light, meaning that the battery (CR123A) will need to be replaced.



Figure 43. Lightning Strike Counter test button and battery voltage test indicator.

- 3) You are now ready to test the setup. If you push the test button, you should see incrementing values in the Lightning Strike Hits Count box in the DavLink workspace.

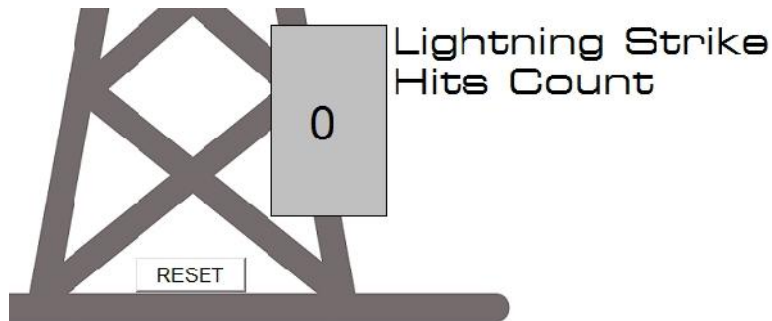


Figure 44. Number of lightning strikes displayed in DavLink.

- 4) To reset the hits count, double-click on the RESET button in the screen.



Figure 45. Resetting the lightning strike counter hit count.

- 5) Once testing is completed, you can put the cover back on the DVLC-1. The Lightning Strike Counter kit is now ready for use.
- 6) You can now disconnect from the DV-Micro unit by clicking on the File-Disconnect drop down menu.

Note that you do NOT need to be continuously connected to the DV-Micro for the lightning counts to be recorded and maintained in the unit. If you wish, the DV-Micro can be connected to a phone line or Network and it can be accessed remotely to check on the lightning strike counts.

1.14 Additional notes

Your Lightning Strike Counter kit provides you with much more capability than simply counting lightning strikes at your remote site. It can send you alerts automatically by telephone, email or text message whenever something happens at your site. It can start up backup equipment, monitor doors, temperature, humidity, line voltage, power outage, tower lights and much more.

Please consult the Davicom Manual provided on your CD, DVD or USB Flash drive for more details or see www.davicom.com for applications information.

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