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Additional user operational notes for CEL Noise Products

The following set of notes outline the main points associated with operating the CEL-360 noise dosimeters and includes a set of simple walk-through instructions on using them for the first time. You should read these notes in conjunction with the “User’s Handbook” that was originally supplied with the meter you have.

The notes are not intended to teach the user all about the different aspects of noise measurement since these are too varied to be dealt with adequately in such a simple document. The purpose of these notes is to provide a simple guide to the correct usage of the particular instrument for the main types of noise measurements without needing to be an “expert”.

Refer also to the glossary of common acoustic terms or the “Help” pages on the Casella USA web site for an explanation of what the various technical words mean in layman’s language or to any good acoustics textbook for a more thorough description of the terms and noise measurement techniques.

For specific questions relating to these notes please send an email to-

help@casellausa.com

or call

Casella CEL Help line on (800) 366-2966 or (866) 577-0700

Or visit our website at

<http://www.casellausa.com/>

where we will endeavor to answer technical questions not covered by these notes within 2 business days.

Bob Selwyn

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Contents of this document

CEL-360 Noise Dosimeter.....	4
CEL-360 - Assembly of parts	5
CEL-360 - Installing batteries.....	5
CEL-360 - Switching on	5
CEL-360 - Setting the correct date and time	6
CEL-360 - Calibrating the instrument	7
CEL-360 - Positioning the instrument for good measurements.....	7
CEL-360 - Reading the results - overview	8
CEL-360 - Making measurements – simple sound level meter	8
CEL-360 - Making measurements – saving recordings into memory	10
CEL-360 - Loading a specific setup for a measurement.....	11
CEL-360 - Recording the results on paper/direct printing.....	13
CEL-360 - Downloading the results to a personal computer.....	14

CEL-360 Noise Dosimeter



CEL-360 in the “METER” measurement and display mode



CEL-360 in simple Sound level meter mode



CEL-360 in Data logging storage mode

CEL-360 - Assembly of parts

The CEL-360 is a small, lightweight, body worn instrument that can be used to make sound level measurements very discreetly for typical workplace noise problems according to recognized OSHA regulations. There are two parts associated with the instrument, namely; the microphone assembly and the body of the meter. The microphone assembly has a 5-pin locking plug on the end that locates in the socket on the top of the instrument body with the little red spot facing you. You cannot put the microphone into the body of the meter unless it is lined up correctly.

To assemble the meter, gently turn the plug to locate the microphone in the socket and then push it firmly all the way in. You will hear a faint click to indicate that it is correctly installed in the meter body. Do not force the microphone into the socket otherwise damage could result.

To disassemble the instrument, carefully hold the body in one hand and grip the knurled surround of the plug in the other hand. Pull them apart gently, do not try and unscrew the connector as serious damage will result and the unit will have to be returned to CEL for repair. Do not disconnect the microphone from the body of the meter when it is still switched on. Always switch it off before trying to take the microphone out.

CEL-360 - Installing batteries

The CEL-360 instrument uses a single 9V radio battery to power it for making measurements. A new battery will last for about 40 hours when used continuously but since most of the measurements are usually over shorter intervals than this then the actual time may be longer. This is because the battery will normally have chance to recover between usage. We recommend using Duracell type batteries (or similar makes of alkaline batteries) since this will give the longest operational running time. A 9V NiCad rechargeable battery can also be used but it will only give about 1/3 of the running time before it must be removed and recharged external to the dosimeter.

Hold the instrument body in one hand with the keypad facing into your palm and slide the battery compartment cover down about half an inch with your thumb then lift it away from the body. Clip the flying lead to the terminals of the battery making sure to get the stud and claw the right way round. Push the lead into the space provided at the top of the compartment and fit the battery in with the connectors at the left hand side. Refit the battery cover over the compartment and slide it up until it clicks into place.

The meter is protected against reverse polarity if the terminals are touched the wrong way round but it will not operate unless fitted correctly. You can leave the battery in the meter when the measurements are finished as long as it switched off since this will help to maintain any stored setups and data in the memory.

CEL-360 - Switching on

Do not switch on until the microphone is properly fitted and a good battery is present to power the meter. Turn the instrument round so that the display faces you and then press the On/Off button in the top left hand corner of the keypad. The meter will show all the segments of the liquid crystal display for a couple of seconds to check that they are all working correctly. Then it

will show the model number, in this case CEL 360 (this is the same functionally as a CEL-360S). Then it will show the internal firmware version number that we use to help us diagnose any problems if you need to call us. It may also indicate a 6-digit serial number that can be set from the associated computer software for users that have more than 1 instrument and want to be able to identify them at switch on time.

When the self-check is finished the meter will revert to the last used setting. If this is the first time that it has been used since a new battery was fitted then it will show the internal date and time (midnight, Jan 01 2000). If it was used in the simple sound level meter mode last time then it will be showing the current instantaneous sound level or LAS display. Note that the simple sound level meter mode of operation does not store any readings. They are only shown on the display and will be lost when the meter is switched off.

If readings need to be stored for later recall to the screen or to download to a computer then the DATA mode must be used as described later on. In this mode of operation up to 50 separate sets of readings can be stored so results could be taken at up to 50 different locations concerned with the same noise source or from 50 entirely different readings done on completely different days.

CEL-360 - Setting the correct date and time

The instrument has a real time clock that can be used to confirm the time when recordings were made. This must be checked periodically and set to the right time as follows. From the end of the startup routine press the MENU button in the center of the keypad until the icon in the bottom row of the display shows OPTION. Pressing the MENU button repeatedly just cycles round the different headings of the instruments menu structure (in the order; SLM - DATA – SETUP - OPTION) just like the top line of a Windows computer program screen. If you go past the OPTION display just keep pressing the MENU button until it comes round again.

The screen will show CAL and probably ---.- at first. Ignore that and press the RIGHT ARROW button on the keypad. The display will show the current time in the format hours:minutes:seconds (hh:mm:ss). Press the SET/ENTER button in the bottom right of the keypad to get into the change time mode. The “hours” digits will start to flash. When they are flashing use the UP or DOWN buttons to change the hours time to the correct setting. Press the RIGHT ARROW button to move to the “minutes” column and use the UP and DOWN buttons to alter that too. Repeat this to set the seconds and when the right time is shown simply press the SET/ENTER button again to fix the settings into the meter.

Press the RIGHT ARROW button to move to the date display and press the SET/ENTER button to change those values in the same way as for the time. An important thing to note is that the date format is day:month:year (dd:mm:yy) NOT month:date:year so be sure to set the date correctly to suit the date today. For example February 10th 2002 would be entered as 10:02:02 NOT 02:10:02. When the correct date has been entered press the SET/ENTER button again to fix it in the instruments memory.

Note that when you are in the edit mode and trying to change the date and time settings there will only be the UP/DOWN navigation arrow icons displayed at the top of the screen showing that they are currently active. As soon as you fix the values by pressing the SET/ENTER key then all

four navigation arrow icons will re-appear on the display to indicate that they cannot be used to make the changes to the displayed values currently being shown.

CEL-360 - Calibrating the instrument

Press the MENU button enough times to get the word CAL shown in the left of the display. Now the meter is ready to be checked against the fixed noise source or field calibrator, the CEL-282. This calibration device is a stable noise source that is used to readjust the small movements in microphone sensitivity that occurs from day to day with all noise measurement equipment. It is perfectly natural for the meter to change slightly as the weather changes. Usually these changes are small, in the order of a few tenths of a decibel, and the purpose of doing the field calibration is to bring the meter back into specification.

Prepare a CEL-282 calibrator for use as explained in its operating manual. Fit the small black reducing coupler (CEL-4725) into the half-inch cavity in the end of the calibrator and firmly push it over the quarter-inch microphone on the meter. Switch on the calibrator and allow about 5 seconds for the level to stabilize. The display on the noise meter should read 113.6 dB plus or minus 0.1dB. This means that a displayed level of between 113.5 and 113.7 dB will be OK for measurements to proceed.

If the level shown is outside these limits then press the SET/ENTER button and use the UP or DOWN buttons to make the display show the correct level. Note that each press of the UP or DOWN button will change the display by less than 0.1dB so more than 1 press may be necessary to get the displayed readings to change. If you keep your finger pressed on the button then it will change more quickly after about 4 or 5 seconds so be careful you do not keep it pressed for too long at a time.

It is normally only necessary to set the calibration once a day for normal measurements but should be done to check everything is working properly before actual measurements are taken on site. If the displayed value of the calibrator changes by more than about half a decibel (or 0.5dB) between times when it is used then this could be an advance warning of some problem with the meter and it may need to be returned to our Certified Service Department in NH for a recalibration and inspection.

The calibration may be done at the end of the measurements if required as an added verification of the instruments accuracy. Fit the microphone into the calibrator and select the calibration display as detailed above, press the SET/ENTER key on the keypad twice once the displayed level has stabilized. Do not change the displayed sound level at this time since the purpose of the final calibration is to see what drift may have occurred during the time that the measurements were being taken. The displayed final calibration level at the end of the measurements will be shown on the direct printout and on the run results downloaded to the CEL software on a personal computer.

CEL-360 - Positioning the instrument for good measurements

Like most noise dosimeters the CEL-360 should be clipped to the wearer's belt with the microphone attached via the dress clip to the collar. Usually the microphone is positioned to face forwards but if the main sources of noise are likely to come behind the wearer then it should

be clipped to face backwards at the top of the collar. The microphone is equally responsive to all noise arriving from all directions, just like your ears, so it will measure everything that you can hear. It is not a directional microphone and cannot filter out some noise sources to concentrate on just one type of source.

When the meter is first switched on make sure that the battery icon in the display shows at least 1 bar in it otherwise replace with a new battery as soon as possible. When the battery icon shows empty and is flashing there is insufficient power available to operate the meter accurately and reliably and you must put a fresh battery in the instrument.

CEL-360 - Reading the results - overview

There are two basic ways to use the CEL-360 to make noise measurements. These are the simple sound level meter mode (shows SLM on the bottom of the display) and the data-logging mode (shows DATA on the bottom of the display). The difference between them is that the simple mode does not store any results so readings must be read from the display before the meter is switched off and written down manually otherwise they will be lost. In the data-logging mode up to 50 sets of measurements can be stored for later recall or printing or download. The second mode may need to have the matching CEL computer software, either dB10 or dB12 (version 2.0 or above) to setup the instrument prior to measurements otherwise one of the pre-configured settings will have to be used to take the measurements. For workplace noise measurements the standard “OSHA” setup is used and this is the default setup loaded by the instrument.

The CEL-360 is a multi function instrument and it can store many different descriptors of the noise. Not all of these will be needed for every measurement you make so refer to any document or procedure you may have to check which noise values are needed for each particular job. For a complete description of these different terms please refer to the CEL guide on Noise Measurements produced elsewhere. You should refer to your local noise standard to see which one (or more than one) of these is needed to identify community noise problems in your workplace. The OSHA setup has all the necessary settings pre-configured automatically so these do not need to be selected by the user. Typically the LAeq and the LASMX can be used for many environmental noise measurements.

CEL-360 - Making measurements – simple sound level meter

In the simple sound level meter (SLM) mode any of the following readings of the noise levels can be made.

SPL the instantaneous value “now” of the current noise level in dB,
DUR the duration of the measurement since the start or last reset in hh:mm:ss,
MAX the highest value of the noise during the measurement with the chosen settings,
MIN the lowest value of the noise during the measurement with the chosen settings,
LEQ the average value of the noise during the measurement with the chosen settings,
SEL the one second equivalent noise level during the measurement with the chosen settings,
PEAK the absolute highest peak value during the measurement with the chosen settings,

To make simple noise measurements proceed as follows. Switch on the meter and wait for the startup screen to be displayed. If it was last used as a simple meter then the screen will show the

LAS in the left hand side and the actual noise value at the right hand side. If it does not show the LAS then it may be displaying the current date and time and show DATA in the bottom of the display. In this case, press the MENU button until SLM is shown at the bottom of the display.

The meter will go straight to the current SPL display and begin to operate as a simple sound level meter. The current noise level will be displayed if it is within the selected measurement range of the meter. The CEL-360 has three measurement ranges covering a high range from 70 to 140 dB, a medium range from 50 to 120 dB and a low range from 30 to 120 dB. The low range is normally used for community noise measurements unless there is a loud noise to be measured.

Press the RIGHT ARROW button on the keypad to show which range is currently selected, if it is the RANGE 70-140 or 50-120 then press the DOWN ARROW button to select the low measurement range 30-100.

Press the RIGHT ARROW button on the keypad to go to the next screen. Use the UP or DOWN buttons to show the response setting of the meter. Select the SLOW setting by using the UP or DOWN ARROW buttons.

Press the RIGHT ARROW button on the keypad to go to the next screen. Use the UP or DOWN buttons to show the averaging response setting of the meter. Select the Q-3 setting by using the UP or DOWN ARROW buttons.

Press the RIGHT ARROW button on the keypad to go to the next screen. Use the UP or DOWN buttons to show the frequency response setting of the meter. Select the A setting by using the UP or DOWN ARROW buttons.

Press the RIGHT ARROW button on the keypad to go to the next screen. Use the UP or DOWN buttons to show the frequency response setting of the Peak detector in the meter. Select the LPEAK setting by using the UP or DOWN ARROW buttons.

Press the RIGHT ARROW button on the keypad to go back to the SPL screen.

The readings on the display will now be on the low measurement range, “A” frequency weighted with the “Slow” response and the standard Q-3 time averaging for the noise energy level. This should satisfy all but the most detailed noise ordinances where other settings may be required for special measurement purposes. As an example, the “Fast” sound level meter response may be specified instead of the “Slow” setting. In this case the display of the meter should show LAF instead of LAS.

Use the DOWN ARROW button to cycle round the available noise parameters that are all calculated simultaneously by the CEL-360. When the DUR or LASMX, LASMN or LAEQ or LLPK are displayed press the STOP button to reset the measurement and begin again, for example, if changing to a new measurement position or if the sound of the noise appears to change. Read the values from the display and write them down onto the example result sheet.

The RUN/PAUSE key at the bottom left of the keypad may be used to temporarily halt the collection of noise data during a recording. When the key is first pressed the instrument shows the “||” mark in the top of the display and none of the noise is added to the data taken by the meter. When the unwanted noise has finished press the PAUSE key again to continue from where you left off and the instrument will carry on updating the recordings until you have

finished. You can also use the PAUSE key to “freeze” the readings on the display to give yourself enough time to read them and write them down before continuing.

CEL-360 - Making measurements – saving recordings into memory

To make measurements and store them in one of the 50 memories proceed as follows. This assumes that the meter has the one of the default setups such as OSHA pre-loaded or has been previously pre-programmed with a user-selected setup as described elsewhere and is in the (DATA) mode.

Switch on the meter and wait for the startup screen to be displayed. If it was last used as a simple sound level meter then the screen will show the LAS in the left hand side and the actual noise value at the right hand side. If it shows the current date and time and DATA at the bottom of the display then it is ready to start recording and save the results to memory. In this case press the MENU button until SETUP is shown at the bottom of the display. Check the name of the setup that is currently loaded. This should match the required setup name of OSHA (or for example, the customized setup might be called “NOISE”) that has been previously sent from the computer using a pre-programmed configuration file that has been uploaded from the control part of the CEL software package.

Press the UP or DOWN ARROW button until it shows OSHA at the left and press the SET/ENTER button to select this setting. The required setup is now loaded ready to start measurements so press the MENU button three times to get back to the date and time display. A new measurement can only be started when the current date and time are being displayed and the meter is in the DATA mode.

Fit the CEL dosimeter onto the subject as previously explained and press the RUN button in the bottom left hand corner of the keypad to begin recording the noise levels. The top line of the display will show REC to show that it is in the recording mode and is saving results to the memory of the meter. This procedure can be repeated up to 50 times before a new measurement will over-write the oldest run in the meter’s memory. You must recall the measurement results from the meter before beginning the 51st run otherwise you may lose the earlier recordings.

Once the measurement is started the readings can be displayed on screen by pressing the DATA key in the top right hand corner of the keypad. The information is displayed in the following order with each value found by pressing the DATA button repeatedly. The results can be read from the display in both ways (bi-directionally) but the DATA button only cycles around the memory in one direction.

Results measured during a run are displayed in the following order each time the DATA button is pressed.

RUN XX	the number of the memory that the run data is stored in,
DUR	the duration of the run from the time that the start button was pressed,
NOISE dAtA	the name of the setup in use (in our example this has been called “NOISE”),
DOSE1	this result is the actual measured noise dose above threshold 1,
PROJ1	this result is the 8-hour projected noise dose above threshold 1,

TWA1	this result is the decibel equivalent of the PROJ1 value,
DOSE2	this result is the actual measured noise dose above threshold 2,
PROJ2	this result is the 8-hour projected noise dose above threshold 2,
TWA2	this result is the decibel equivalent of the PROJ2 value,
PA2H	ignore this result,
LAEQ	this is the average level of the noise since the run began,
LAE	ignore this result,
LAV5	this result is the actual measured time average level with the 5 dB exchange rate,
LEPD	ignore this result,
LASMIX	this is the highest level with the rms settings chosen,
LASMIN	this is the lowest level with the rms settings chosen,
LLPK	this is the absolute highest (or peak) level of the noise,
LS10	this is the 10% noise exceedance level and may be ignored,
LS50	this is the 50% noise exceedance level and may be ignored,
LS90	this is the 90% noise exceedance level and may be ignored,
LS95	this is the 95% noise exceedance level and may be ignored,
LS99	this is the 99% noise exceedance level and may be ignored,
LAS	this is the current level of the noise to see what is happening now.

Not all of the results shown above may be displayed depending on the specific setup file in use in the instrument.

Of all these possible results the DOSE1, PROJ1, and TWA1, are the three most usual results to be required by most OSHA regulations. Some of these results are only used when making specific noise recordings, for example, in community noise assessments and may be ignored for most measurements in the workplace. Check with your own noise regulations or ordinance to see exactly what noise units are required to be measured. The required noise units can be pre-selected for storage and display and all the unwanted units can be suppressed from the display using the dB10 or dB12 CEL software package as outlined in the next section.

CEL-360 - Loading a specific setup for a measurement

The CEL-360 is usually used for noise at work measurements where the levels are quite high. For this reason all the preprogrammed setups are set to measure on the high range from 70 to 140 dB and this is not usually suitable for environmental measurements to check against many noise ordinances. It is necessary to configure the meter with a setup that will be more suitable for this type of work on a lower measurement range.

A personal computer with a copy of the CEL programs dB10 or dB12 (both version 2.0 or higher) will be required together with a C6671 cable to first program the meter with a new operating setup. The setup can be given a unique name to identify it from any other setups present in the meter. This name can be up to 5 characters such as "NOISE", for example, and only capital letters can be shown on the display of the CEL-360.

Connect the sound level meter to the correct Comm. port on the computer and start the CEL dB10 or dB12 software as is usual with a normal Windows program. Select FILE|OPEN A CEL-320/360 CONFIGURATION FILE from the main menu and go to the directory where the CEL

program was installed, e.g. C:\dB10. You may be asked to “Initialize a new configuration file for a CEL-360”. Click the radio button for the CEL-360 and click OK to continue. The Edit Configuration file window will be shown. Click in the drop down box to find an empty data setup location, e.g. DATA#8 and then click on the EDIT button below it. The software will advise you that the location is currently empty and will offer to load an existing setup for you to edit, click Ok to continue.

When the DATA Setup Editor window is displayed the cursor will be highlighting the default name USER for your setup. Change this to “NOISE” then click the METER button in the Load Standard Settings section. Click on the Range tab and select the 30 – 100 dB measurement range in the drop down box. Click on the Weightings tab and select None for the Number of thresholds, 3 for the Q factor, A for the RMS frequency weighting and Lin for the Peak frequency weighting, select Slow for the Time weighting. Click on the Cumulative tab and uncheck all of the noise parameters that will not be required for the measurements. This usually means just leaving the LAEQ and the LASMUX boxes checked but you may need to select other units if your noise ordinance requires other values to be measured. Finally, click on the OK button at the bottom to close the dialog box.

Select DATA#8 NOISE in the Default setup box, make sure that Data : store is shown in the Default mode box. Make sure that the check mark is in the box shown as “Let the instrument keypad select only the default mode” and click Close. You will be prompted to save the changes to this configuration file. Click on Yes and the screen will show the Save dialog box. Choose a location and name for the Configuration file, for example C:\db10\setup\noise.mts and click OK. The newly changed configuration file containing the setup called NOISE will be saved at the selected location on your hard drive. The changes to the settings needed in the CEL-360 have now been saved on the computer and can be used to reprogram the instrument again at any time in the future. Also, when the instrument is next switched on it will be already set to start measuring in this new NOISE configuration so it will not have to be chosen from the list in the meter.

It only remains to transfer this new configuration file to the instrument as follows. Switch on the meter and wait for the startup routine to finish. If all is correct the display should show COMMS IN to show that it recognizes the computer attached to it. Select INSTRUMENT|CONTROL (UPLOAD SETUPS TO) CEL-320/360 from the main menu and the Control dialog box will open. Click on the SEND button and the dialog box will open. Go to the SETUP directory in the dB10 (or dB12) directory where the configuration file has been saved and select the configuration file that has just been modified with the NOISE setup. Click on OK to send the configuration file to the meter and wait for a few seconds for the confirmation that this has been done.

Switch off the meter and disconnect the cable from the computer. Reconnect the microphone and switch the meter back on again. When the startup routine finishes the current date and time will be displayed. Press the MENU button to confirm that the new setup called NOISE has been loaded as the new default method of making the measurements and press the MENU button again sufficient times to get back to the date and time display. A new measurement can only be started when the date and time are being displayed.

Move to the position where the measurements are to be taken, hold the instrument comfortably at arms length and press the RUN button in the bottom left hand corner of the keypad to begin recording the noise levels. This procedure can be repeated up to 50 times before a new measurement will over-write the oldest run in the meter's memory. You must recall the measurement results from the meter before beginning the 51st run otherwise you may lose the earlier recordings.

CEL-360 - Recording the results on paper/direct printing

Only results that have been saved in the memory of the meter can be directly printed out. You will need the serial download cable, C6671, and the parallel printer adapter cable, C6672 to be able to print directly from the meter. The CEL-360 will print to any standard office style printer with a Centronic interface. These include Laserjet, Deskjet and Bubblejet printers by the major manufacturers such as Canon, HP, and Epson etc.

Disconnect the microphone and plug in the RS232 cable part number C6671 to the socket on the top of the meter. You cannot make new measurements and print at the same time since both activities require the same connector on the meter. This is not normally a problem for these types of workplace or community noise measurements. Connect the C6672 printer adapter into the 9-way connector of the C6671 cable and connect the other end into the 36-way parallel port on the printer. The printer must be switched on and be on line and have sufficient paper loaded before the meter is turned on otherwise it will not be recognized and direct printing will not be possible from the CEL-360.

Switch on the CEL instrument and wait for it to finish the startup routine. If it recognizes the attached printer correctly it will show the word PRINT in the display just before it finishes the startup routine by showing the date and time. Press the DATA button in the top right hand corner of the keypad to display the start date and time of the last completed measurement stored in memory. If this is not the one that you want to print then press the UP ARROW button to show the start date and time of the previous measurements until the right one that you want to print is shown in the display.

Press the DATA button when the required measurement start time is shown in the display. The display will now show the run number in the display. Press the DATA key once more to show the display "PRINT ready". Press the SET/ENTER key to start the printout on the attached printer. The data from the measurement is automatically formatted to fit onto a single sheet of paper and the printer will start to output the page. You will see the message on the display of the meter saying PRINT BUSYXX as the printout occurs. This is the meter showing how many lines it has output to the printer. It will count down to show PRINT BUSY00 when all data has been sent to the printer.

If printing does not happen check that the printer is switched on is on line and has paper loaded and that the cables are connected properly to the meter. Switch off the meter, switch it back on and try again. Sometimes certain printers require that they be put into a special mode to act as simple text printers so check the printer handbook to see if this needs to be done with the printer in use.

CEL-360 - Downloading the results to a personal computer

When a permanent record of the stored noise recordings is needed the instrument will need to be downloaded to a computer that has a copy of the CEL Windows program called dB10 or dB12 (both version 2.0 or higher) installed. See the User Manual for these software packages to find out how to install the software. Once the software has been loaded onto the computer perform the following steps to transfer measurements from the CEL-360 to the hard disk for archival purposes.

Connect the cable, C6671, to the socket on the top of the instrument and to the correct Comm. Port of the computer. Start the program in the normal way and switch on the meter. Wait for it to finish the startup routine and the display to show COMMS IN. Select the menu option INSTRUMENT|DOWNLOAD RESULTS FROM CEL-320/360 to open the download dialog box. You may need to change the comm. Port setting to match the physical RS232 socket that you have selected for the download.

The box at the left hand side of the window will show a list of up to 50 completed measurements stored in the meter's memory. Click on the TARGET NAME button and choose a name and location to save the measurements. The usual place to store the results is in the directory called DATA that will have been created at installation time. This should be found under the dB10 directory. In any case the results can be saved into any valid location that already exists on the computer. You may want to create further subdirectories under the DATA directory for different purposes to be able to separate readings from different areas or types of noise complaint.

Click on DOWNLOAD RUN(S) to copy the data stored in the meter. More than 1 single run can be transferred if required but in this case the software will use the characters of the chosen name and add the suffix 01 to 50 to the name root automatically. Use the usual Shift or Ctrl plus the mouse cursor to select single or multiple runs to download. Runs remain in the memory of the meter so they can be downloaded again to another computer if needed or brought to the display if required. Switch off the meter to save the battery as soon as the download has been successful.

When a run (or runs) has been transferred successfully you will be offered the choice of viewing the run summary for the last run in the download set. Click YES to view this information and then choose VIEW|GENERAL TEXT from the menu to see a screen with all of the relevant information in it. The dates and times of the run are shown on the first part of the page and the noise readings are about half way down the page just past the dotted line going across the page.

If the print button is selected in the CEL software you will get a 2-page report automatically sent to the default printer separated where the dotted line is indicated on screen. The pre-formatted report will contain all the relevant noise data collected during the measurement run. You can cut and paste selected portions of the run results into a standard Windows word processor such as MS Word if you only require parts of the run information to be saved to your own report.

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