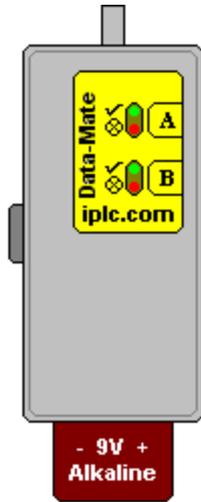


IPLC Data Mate Model:4

Version 3.00



OEE Award Winner 2000 - 2001
Energy Management Technology

Natural Resources CANADA



System Requirements

You will require a computer running Microsoft Windows® with:

RAM: 8MB, minimum.

HD Space: 4MB available.

2 - USB Ports

Input Devices: Keyboard and Mouse.

Video Card: minimum 640x480 VGA compatible.

Printer: Graphics capable printer with Windows driver.

NOTE: It is assumed the user is familiar with the Windows® operating system. For users running any of the Windows NT varieties you may require the assistance of your system administrator to install the software.

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FCC statement of compliance

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Installation

The IPLC Data Mate software is now located on a flash drive instead of a CD-ROM as in the past. You can now have access to all of your parking lot files on which ever computer the flash drive is attached to. If you attach the flash drive to a different computer all of the parking lots you have currently loaded in your software will show up. You can also interchange between 32 or 64 bit operating systems by simply selecting the correct driver after you insert the flash drive.

Insert the flash drive into a USB port on your computer.

Select the “removable disk” option; you will see a number of folders (ie. Drivers, IPLCFT, Manuals, and PDF’s).

Drivers

This new version gives you the capability to use this software with a 32 or 64 bit operating system.

Select “drivers” option and select the operating system of the computer you are currently using (32 or 64 bit).

In each category (32 or 64 bit) you will select the operating system you are running (example 32 bit you will select Vista/Windows 7 or XP). Double click the system you are using. Select the icon that appears to install the necessary drivers for the software and Belkin cable to operate. When complete you may be prompted to restart your computer. Once the computer has restarted open the flash drive again.

IMPORTANT: Attach the Data Mate to the Belkin Cable and insert into a USB port on your computer at this time.

Select the IPLCFT folder, and select DM400.exe, to open the software. When complete you will see the main tables of the IPLC Data Mate Software.

As a precaution we recommend you make a backup copy on your main computer and keep it up to date. If this flash drive happens to fail you will still have all of your information available. You may also want to make an original copy on an extra flash drive to keep as a spare.

Please review the next section Getting Started for a tutorial.

Getting Started

This section contains several tutorials to help you get started using your IPLC Data Mate. The **FIRST** thing that you need to do after installing the software is to register your IPLC units with the software. To do this please see the first tutorial Registering IPLCs. Please also note that you can use the “F1” key for online help with the IPLC software.

NOTE IPLC M200: (Applicable to Handheld programmers only, not the IPLC Data Mate) To perform any of these management functions the IPLC M200 units **do not** have to be connected to the AC supply. The IPLC Handheld will detect if the IPLC unit (via the hard connector) is powered or unpowered and supply power to the internal computer if necessary.

NOTE IPLC M210: To perform any of these management functions the IPLC M210 units **have to be** connected to the AC supply and powered. The IPLC Handheld or Data Mate can not supply power via the optical connection to the IPLC M210 and therefore requires the AC supply to be connected and active in order to perform any functions on the unit.

Registering IPLCs

1) Connect your IPLC Data Mate to an available serial port using the supplied serial cable ensure IPLC Data Mate has a good battery installed.

2) Run the IPLC software.

3) Within the program select menu: Commands, IPLC Registry, Add/Update. The software will now configure your Data Mate to Register IPLCs in the field.

4) After the main screen reappears, close the application (Alt+X). Disconnect your Data Mate from the serial cable.

5) Ensure that you have a fresh 9V Alkaline battery installed in the IPLC Data Mate. Now, connect to all of your IPLCs (one by one) in the field and push the “A” button on the Data Mate. To connect the Data Mate to an IPLC unit, insert firmly the “white” tip of the nib over the center clear LED on the front of the IPLC M210 and push “A” (ensure at NO time this interface is disconnected while the Data Mate is in progress..). After the Data Mate has completed remove it from the IPLC unit. This process takes about 5-10 seconds for each IPLC. Upon finishing the Data Mate will signal with a sound and light. If the Data Mate signals “OK”

move the next IPLC unit. If the handheld signals “Error” check your interface with the IPLC and try again. Please note power MUST BE applied to the subject IPLC M210 during this operation. The IPLC Data Mate can register up to 94 units without uploading information to the IPLC software (if this number is exceeded the Data Mate will signal an “Error”). If you have more than 94 units, register the first 94 units (point 6) then repeat this procedure from point 1).

6) Upon “touching off” your IPLC units reconnect the PC Serial cable to the Data Mate. Start the IPLC software. During the software initialization several messages will be displayed letting you know how many units are being registered etc. After the software main screen appears you will note that the “Unassigned” parking lot has your newly registered IPLC unit serial numbers and their configurations (Dual or Single circuit) shown. Create a Parking lot and Parking Groups to move the new units to. Please see the section “IPLC Assignment Editor” for more information on organizing your IPLC units.

7) You have now completed the first step in managing your parking lot. See the next section Creating Performance Reports on how to create performance reports.

Creating Performance Reports

To perform this tutorial you **MUST** have a graphics capable printer with a Windows driver installed. This application **ONLY** uses 8.5" x 11" paper.

1) Connect your IPLC Data Mate to an available serial port using the supplied serial cable.

2) Run the IPLC software.

3) Within the application select a parking lot and parking group within the left most panel (Parking Lot Group View). The IPLC units contained should appear in the center panel (Parking Stall View). Now to view a online report of these units select the "Report Viewer" tab (just above these views).

4) All of the information collected from the IPLC units within the selected Parking Group is displayed in spread sheet form. At the top left is a summary of all of the collected data showing Parking Duration, Vehicle Load, and Consumption Savings. Move your mouse over the various columns of the spread sheet form to display a pop-up message describing the item (ensure Verbose hints is enabled within the Options menu). If you view the last row within the spread sheet totals of several items is displayed.

5) To print out a copy of this report simply right click your mouse and left click "print.." A printer selection screen will appear, choose the destination printer and click ok. A message dialog will appear asking if you would like to print the definition of terms (an explanation of each of the columns). Answer yes for this tutorial. Then another will ask if you wish to print a report for this Parking Group, answer yes. The definition of terms and a spread sheet report should now be printed.

6) Experiment with the pop-up options within the Report Viewer. Two are available and are explained in the Section "Report Options".

7) To Print a report without first viewing within the Report Viewer select from the Main Menu, File | Create Reports.. a Create Reports dialog will appear. The Create Reports dialog enables the user to create and print reports for individual Parking Groups as well as for a whole Parking Lot. Simply select the desired Parking Lot or Group within the dialog's treeview control, Report Options to be applied, and click OK. After a printer is selected, a small dialog will query the user as to whether a report should be generated for the selected Parking Group or for each group within the selected Parking Lot.

Viewing and Changing IPLC Profiles

In this tutorial the IPLC Profile Editor is explained. The IPLC Profile Editor enables you to view or change the individual Parking Stall Profiles or program. Before you attempt this tutorial, FIRST read the section “IPLC Profiles Explained”.

- 1) Connect your IPLC Data Mate to an available serial port using the supplied serial cable.
- 2) Run the IPLC software.
- 3) Within the application select a parking lot and parking group within the left most panel (Parking Lot Group View). The IPLC units contained should appear in the center panel (Parking Stall View). Notice that each Parking Stall within the Parking Stall View has a small IPLC ICON and a Letter with a superscript diamond. The letter corresponds with an IPLC Profile within the “IPLC Profiles” control (the right most control within the IPLC Assignment Editor tab). To view a stalls profile simply double click the stall within the Parking Stall view.
- 4) A warning message will appear letting you know that this profile is “In Service”. An IPLC Profile is considered “In Service” if one or more IPLC Units registered are currently using this profile. Any Profile which is “In Service” can ONLY be viewed, the only thing you may edit is the Profile’s given name, although you may edit the contents of the profile they WILL NOT be written to the database. This keeps the databases within the individual IPLC units and your PC consistent.
- 5) Experiment with the displayed profile to get familiar with the functions and features of the “IPLC Profile Edit Dialog” (also review this section within the manual).
- 6) Close the “IPLC Profile Edit Dialog” by using the “ESC” key or left click the “X” or Cancel button.
- 7) Within the IPLC Profiles control (rightmost control on the IPLC Assignment Editor tab) select a profile using a single left click of the mouse. Then right click and several options will be displayed (see section “POPUP MENU IPLC Profile Editor”). Left click “COPY”, a copy of the selected profile will be created and added to the list of profiles. Double click this new profile, change it’s name schedules etc. and left click the OK or Check Mark button.

8) Now to change a Parking Stall to this newly created profile. Bring the desired stall to be changed in view within the “Parking Stall View”. With your mouse depress the left mouse button over the newly created profile within the IPLC Profiles control, and holding down the left mouse button move (drag) your mouse over the stall you wish to change, and release the left mouse button (drop). The Parking Stalls Letter ICON should now have a “pink” diamond superscript instead of a “green” one. This indicates that the Parking Stall is scheduled for a Change Order. In this way you may schedule change orders for individual stalls. To clear individual change orders select the stall with a left click and then right click over the stall and left click “Clear Change Order”.

9) To change a whole Parking Group, drag the desired IPLC Profile over a Parking Group (within the “Parking Lot Group View”) and drop it. A message dialog will appear asking if you wish to change all of the units within the Parking Group to the new Profile. If you answer yes the whole group will be scheduled for a Profile Change Order (ie. all will have a “pink” superscript). To clear change orders for a whole Parking Group select the parking group with a left click and then right click over the stall group and left click “Clear Change Orders..”. A message dialog will confirm you wish to clear all change orders within the parking group.

10) To clear change orders globally (for every registered IPLC unit) select from the main menu: Commands | Change Orders | Clear. A confirmation message dialog will appear.

11) To apply your change orders select from the main menu: Commands | Change Orders | Apply. The software will build and download a database into your IPLC Data Mate associating the Profile changes with each IPLC unit’s serial number. A message dialog will appear asking if you would like to print a unit check list. This is a list of all the IPLC units scheduled for a change order by serial number and stall name. Use this list to “touch off” the required units in the field. Please follow the procedure in Registering IPLCs point 5) above.

12) After touching off all of the IPLCs on the list reconnect your IPLC Data Mate and run the application software. Upon initializing the software your change order confirmations will be processed and update your IPLC database. Notice that the IPLCs scheduled for change orders (“pink” superscript diamonds) now reflect the new IPLC Profile letter and have a “green” superscript diamond. Please also note your new IPLC Profile is NOW “in service”.

IPLC Data Mate Tour

The IPLC Data Mate hardware and software enables the user to manage a large number of parking stalls in multiple parking lots, generate performance reports, modify parking stall operation characteristics, etc. The Data Mate hardware is the link between the IPLC units in the field and the hosting personal computer. To use this package you will require a personal computer with the requirements listed in System Requirements.

In the section What's In The Box, all of the supplied equipment is discussed with emphasis on it's care and maintenance. The IPLC Data Mate Control Pad section discusses the function and meaning of each hardware control features of the Data Mate.

In Application Software the personal computer software interface is discussed with topics on the IPLC Assignment Editor, Report Viewer, and System Menus.

What's In The Box

In this section, all the equipment supplied in this package is discussed with emphasis on care and maintenance. Below is a list of all the hardware that is included with this package please become familiar with each before continuing.

- One IPLC DataMate Unit

- One Personal Computer Serial Cable

- One Alkaline 9V Battery

- One Flash Drive, includes the actual software as well as several PDF technical documents, manuals and videos.

IPLC Data Mate Unit



The IPLC Data Mate unit is compact with multiple hardware features for extracting and updating data from/to IPLCs in the field. Several care and maintenance items you should be aware of are discussed here. After returning from the parking lot allow the unit to adjust to the ambient room temperature before connecting with your personal computer (approximately one hour). Condensation on the internal hardware components can cause undefined operation and may damage the unit. You will require the Data Mate to be connected with your computer in order to run the supplied software. **Never disconnect the Data Mate from the serial cable before exiting the software.**

Personal Computer Serial Cable

The supplied serial cable is a “Belkin” cable. To connect your computer with the Data Mate you will require one “free” serial port on your computer. Connect the cable to the Data Mate and insert the other end into a USB port on your computer. You do not have to concern yourself with the computer COM port settings. The software will automatically detect an IPLC Data Mate and configure the port appropriately. Please also note you must have the IPLC Data Mate connected to your computer in order to run the application software.

IPLC Data Mate Control Pad



In this section each of the interfaces and controls are discussed as to their function and normal use. The IPLC Data Mate has one serial port interface (located on the side of the unit), four LEDs and two buttons "A" and "B". The unit is battery operated for field operation and office use. For a complete discussion of hardware specifications, care, and maintenance please see What's in the Box. A general discussion of the Data Mate cable interfaces is found in IPLC Data Mate Interface Connectors. The lights, sounds, and buttons are discussed in Data Mate Controls.

IPLC Data Mate Interface Connectors

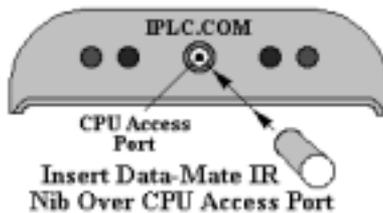
The IPLC Data Mate unit has two interfaces;



The PC serial interface connector is located on the side of the Unit and is to be used with the Personal Computer serial cable connector.



The IPLC is interfaced to by the White Infrared nib found at the front of the Data Mate. Simply insert the IPLC Data mate's IR port nib over the IPLC M210's CPU access port (Data Mate control pad facing away from the IPLC unit), depress a function button ("A" or "B") and wait for operation completion. NOTE: Please do not put undue pressure on the IPLC Data Mate while connected to an IPLC in the field. This may cause damage to both the IPLC and IPLC Data Mate.



IPLC Data Mate Controls

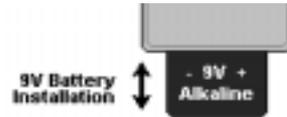


The four LEDs, three sounds, and two buttons ("A" and "B") form the field interface for the IPLC Data Mate. Each Button "A" or "B" have two associated LEDs, one green and one red. The green LED flashes showing that a operation in progress and which function "A" or "B" is running. The green LED will flash once upon completing a successful operation and an "OK" sound will play for auditory feedback. If unsuccessful, the red LED associated with the button "A" or "B" will flash once to signal an unsuccessful operation and play an "Error" sound. When the battery gets low an internal low battery detector will play a "Low Battery" sound. To hear these sounds see the help menu item "Sounds" within the application software.

The Data Mate has two buttons "A" and "B" this will allow more diverse operations to be done in the field without having to connect to your host PC.

Through the application software the user creates a field update plan which is assigned to button "A" and keyed to each IPLC's serial number and is then downloaded into the Data Mate. Then, in the field pushing button "A", the Data Mate indexes the update plan for the connected IPLC, performs the operation, signals the outcome, and quits. This avoids confusion and saves one from taking those gloves off in cold weather. NOTE: Button "B" in this version is ONLY used to convert an IPLC from Dual Stall to Single Stall operation OR from Single Stall to Dual Stall operation. If this button is pressed the light on the B side (right side of the unit) will be solid red indicating no power is available. Press the B button again to turn this side back on.

IPLC Data Mate Battery and Power



The IPLC Data Mate unit uses an ALKALINE 9V battery, the battery location is shown on left. It is important ONLY to use an Alkaline 9V battery, other battery types cannot supply enough power to operate the unit. Before you venture to the parking lot, ensure that you have a fresh 9V battery installed. The IPLC Data Mate has a new low battery low indicator feature. When the battery is getting low a "Low Battery" sound will alert you.

Application Software

The IPLC application software consists of three main components; the IPLC Assignment Editor, Report View, and System Menus. Of these three the assignment editor is the most important. It covers how to arrange the individual stalls into an hierarchy of parking lots, groups and stalls, create an update plan for field operations, view and change the operation configurations of stalls and groups of stalls, and design your own parking profile configurations. The report viewer covers how to generate reports and the associated options available. And finally, the system menus covers IPLC hardware commands as well as several other miscellaneous items.

IPLC Assignment Editor

Report Viewer

System Menus

IPLC Assignment Editor

The IPLC Assignment Editor tab is composed of three window views; the Parking Lot and Group view , Parking Stall view , and IPLC Profile Editor . These three controls enable the user to create heirarchical structures of parking lots, parking groups, and stalls. Further, IPLC operation profiles may be edited and then assigned to individual stalls or groups of stalls alike. Each control has a list of options which are displayed in the status bar as the mouse is moved from control to control. The Parking Lot and Group view is on the extreme left, Parking Stall view is in the center, and the IPLC Profile Editor is on the extreme right.

Parking Lot Group view

Parking Stall view

IPLC Profile Editor

Parking Lot Group view

The Parking Lot Group view enables the user to organize a large number of parking stalls into unique groups within a parking lot. As an example, a parking lot may have visitor, employee, and emergency vehicle stalls. With this control, a parking lot may be created along with parking groups for each catagory, then each individual stall is assigned to one of these groups. In this way a heirarchical structure of parking lots, parking groups, and parking stalls is created. If one had several of these parking lots this organization would allow quick access to any parking stall within any parking lot and group.

This control supports three different types of group objects, the Unassigned, Parking Lot, and Parking Group, where each have their own set of popup options. Please refer to each below.

 Unassigned Stalls

 Parking Lots (red cars)

 Parking Groups (blue cars)

Unassigned Stalls

 **Unassigned Stalls:** The IPLC software stores all stalls that it has registered internally. If a registered stall or unit is not assigned to any group within any parking lot it is displayed within the Unassigned group. All newly registered IPLC units or parking stalls appear **first** within the Unassigned Stalls group.

 - Indicates group is currently empty (greyed).

 - Indicates group is NOT empty and NOT in view.

 - Indicates group is NOT empty and is currently IN view.

To move stalls from Unassigned to any other defined parking group; **First**, ensure the destination parking group is in view within the Parking Lot Group View (left control). **Second**, select the Unassigned group with a  left click, such that the stalls are in view within the Parking Stall View (center control). **Third**, select which stalls you wish to move using standard multiple selection methods, **drag** the selected stalls over the destination group, and **drop**. The selected parking stalls are now assigned to the destination parking group.

Parking Lots

 **Parking Lots:** Parking lots allow a user to group a large number of stalls together to form a parking lot. Each parking lot is composed of one or more parking groups. Parking stalls **can not** be assigned to Parking Lots only to Parking Groups within a Parking Lot. Individual Parking Groups may be moved to other Parking Lots by **drag** and **drop**. Select the Parking Group to be move with the left mouse, **drag** it over the destination Parking Lot and **drop** it.

Parking Groups

 **Parking Groups:** Parking groups enable a user to bind parking stalls with common attributes or configurations together. Each Parking Group is a member of a Parking Lot, which can be dragged and dropped between Parking Lots.

 - Indicates group is currently empty (greyed).

 - Indicates group is NOT empty and NOT in view.



- Indicates group is NOT empty and is currently IN view.

To move stalls from a Parking Group to any other. **First**, ensure the destination parking group is in view within the Parking Lot Group View (left control).

Second, select the source Parking Group with a  left click, such that the stalls are in view within the Parking Stall View (center control). **Third**, select which stalls you wish to move using standard multiple selection methods, **drag** the selected stalls over the destination group, and **drop**. The selected parking stalls are now assigned to the destination parking group.

POPUP MENU Parking Lot Group View

Depending on the selected item and the current item status one or more of the following menu options will apply;

Edit Name: Edit the name of the selected item (you cannot edit the Unassigned group's name).

Edit Stall Names: Edit all of the stall names of a parking group.

Clear Change Orders: Clear the pending change orders for the selected parking group as a whole.

Add Parking Lot: Add a parking lot to the parking lot group view.

Add Parking Group: Add a parking group to the selected parking lot.

Delete: Delete an empty parking lot or group.

Parking Stall View

This control displays all of the parking stalls assigned to the currently selected parking group and is multiselection capable. In the title bar just above this view the name of the parking lot and group currently displayed is shown. To select a different parking group simply  left click the desired group within the Parking Lot and Group view . Please note, a group's contents will **only** be displayed if it is not empty.



 My Example Stall

Each stall displayed has three items visible (as shown above), two icons and the stall's given name. The **first** icon (reading left to right) identifies the IPLC port the parking stall is assigned to. The **second** icon identifies the Stall's current IPLC profile configuration. And the stall's **given name** is displayed last (editing given names).

Hint: Move the  over stalls to view popup status reports. These reports display the IPLC profile name in use, the unit's serial number, code version, change order details, etc.

POPUP MENU Parking Stall View

Clear Change Order: Clear any change order(s) for the selected stall(s) (multiple selection options apply).

IPLC Port Identification Icons

Three different **IPLC port types** are possible;



- This icon signifies that the IPLC unit is configured for **single AC** circuit operation. One IPLC, one Parking Stall.



- This icon signifies that the IPLC unit is configured for **dual AC** circuit operation. And the parking stall is assigned to the IPLC's **Port A**.



- This icon signifies that the IPLC unit is configured for **dual AC** circuit operation. And the parking stall is assigned to the IPLC's **Port B**.

IPLC Profile Icons

IPLC profile icons, identify a parking stall's current configuration profile and it's update status.

to - Identify **Standard configurations** which cannot be modified or deleted (red letters).

to - Identify **User configurations** (maximum number is 26), blue letters.

The small diamond super script shown on each of the above icons indicates the update status of the stall;

◆ A green diamond indicates **no** changes orders are pending.

◆ A pink diamond indicates that change orders **are pending**.

Editing Stall “Given Names”

To edit **given names** of stalls:

In the Parking Stall View, simply left click within the stall's name and use to end editing.

In the Parking Lot and Group View, right click on the selected group and choose “Edit Stall Names” to edit all of the group's stall name's.

Multiple Selection Methods

Multiple Selection only applies to parking stalls within the Parking Stall View and is used to define the source or destination of **drag** and **drop** operations. Two methods are commonly used to select multiple stalls;

1) To **select** or **deselect** an individual stall hold down the **Ctrl** key, and then left click over the desired stall.

2) To **select a range** of stalls  left click the first stall and while holding down the **Shift** key  left click the last stall. Now, all stalls in the range will be selected.

IPLC Profile Editor

The IPLC Profile Editor control lists all of the currently available IPLC profiles, where each have popup options (right mouse click). To assign a new IPLC profile to a stall or group of stalls simply **drag** and **drop** the desired profile onto the destination stall or parking group (multiple selection methods apply). If the newly assigned profile differs from the current profile each effected stall will display a change order pending identification within the Parking Stall View . Before these changes will become active you will need to apply the change orders. Please note, standard profiles or profiles which are currently **in use** by any parking stall **cannot be deleted**.

To edit / view an IPLC profile, double  left click on a stall within the Parking Stall View or  right click on a selected profile within the IPLC Profile Editor control and choose the **edit / view** option. For more information on editing and viewing IPLC profiles please see IPLC Profile Edit Dialog.

POPUP MENU IPLC Profile Editor

Several popup options are available for each IPLC profile listed, which options displayed depends on the selected profile and it's current status. All of the options are listed below;

Edit / View: Edit or View the selected IPLC profile. Standard profiles can only be viewed, user profiles in use or service, only the **given name** may be edited. User profiles not in service including ones assigned as a change order **can** be edited fully.

New: Create a new IPLC profile and ready to be edited from scratch.

Copy: Copy the selected IPLC profile to a new user profile. This option enables the user to copy an existing profile and edit the new profile to suit their needs.

Delete: Delete an unused user profile. Standard profiles cannot be edited or deleted.

Report Viewer

The Report Viewer tab displays the collected data for the selected parking group within the Parking Lot Group View . On the top left of the tab, a summary of the parking group's performance is shown. On the top right, the enabled report

options are displayed. Move the  from column to column to display information on each value of the report. To change the Report Options or to print a report  right click within the report grid and select the desired option from the popup menu. Please also see Create Reports.. within the File Menu section.

Please note, the destination print must be graphics capable and have a print driver installed. In addition, this application is design to use 8.5" by 11" paper only.

Report Options

Two report options are available **report type** and **sorted by**. **Report type** can be one of three possibilities; incremental, present, or past. A report may be **sorted by** either IPLC serial number or stall given names. And, a option of printing the definition of terms used in the report is presented.

To understand the **report type** option, two databases are kept for each stall of a parking lot the Present and Past. The Present database holds the most recent data collected from a stall. While the Past database is replaced with the Present database when new data is collected. This structure allows the user to view incremental reports, which are created from the difference between the Present and Past databases. Or reports based on either the Present or Past databases. With incremental reports a user can create monthly reports to show what has happened over the last month only. Present reports show collected data totals from the original installation date.

System Menus

Each of the System Menus is described here as to their function and normal use; File, Handheld Commands, Options, Help

File Menu

The File menu hosts four menu entries **Backup Database**, **Restore Database**, **Create Reports..** and **Exit**. There is no need for open or save options as the IPLC database is handled internally. Backup and Restore Database, menu items backup and restores the Internal IPLC Database to/from a safe medium respectively. Create Reports, enables the creation and printing of reports for a parking lot or parking group. **Exit**, exits the application software and updates the internal databases.

Important: DO NOT edit, add, or delete ANY files in the KEEPOUT! directory!

File Menu: Backup Database

This menu option enables the user to backup the internal IPLC database to another location for safe keeping. Choose a directory and drive within the Backup IPLC Database to Directory.. dialog and click OK. All of the required IPLC Database files will be copied to this destination directory.

It is recommended after registering new units or applying any change orders you create a backup of your database using this function. You can restore this database using the Restore Database menu option.

File Menu: Restore Database

This menu option enables the user to restore a previous backup of the IPLC Database to the internal IPLC database. Choose the directory and drive where the backup IPLC database resides within the Restore IPLC Database from Directory.. dialog and click OK. All of the required IPLC Database files will be copied to the KeepOut! directory. After executing this menu item the application will terminate and on the next session the restored database will be used.

Warning: The present Internal IPLC Database will be over written!

File Menu: Create Reports..

The Create Reports dialog enables the user to create and print reports for individual Parking Groups as well as for a whole Parking Lot. Simply select the desired Parking Lot or Group within the dialog's treeview control, Report Options to be applied, and  left click OK. After a printer is selected, a small dialog will query the user as to whether a report should be generated for the selected Parking Group or for each group within the selected Parking Lot.

Please note, the destination printer must be graphics capable and have a print driver installed. In addition, this application is design to use 8.5" by 11" paper only.

Commands Menu

The Commands menu hosts several menu items to initialize the attached IPLC Data Mate unit for field operations. Under, **IPLC Registry** IPLC units may be added or deleted, **Change Orders** may be applied or cleared globally, and **Collect Data**, initializes the Data Mate to collect performance data from already **registered** IPLC units.

The **IPLC Registry** menu enables units to be Added / Updated or Deleted to/ from the internal IPLC database respectively. You will **first** need to add / update IPLCs to the internal registry in order to build a database of parking stalls and data.

The **Change Orders** menu has two options **apply** change orders and **clear** all change orders globally.

The **Collect Data** menu item initializes the Data Mate to collect performance data from registered IPLCs in the field.

Please note: While running this software the IPLC Data Mate unit **must** be connected and powered! see IPLC Data Mate Tour .

Options Menu

This menu has two items **Verbose Popup Hints** and **Warning Messages**. Verbose popup hints is a check menu item which controls how much information is displayed in the popup hints for the Parking Stall View. The Warning Messages check menu item determines if a warning message is displayed when an attempt is made to edit a profile which is in service.

Help Menu

This menu gives serveral options to access various help for the application software and hardware. The Sounds menu item demonstrates the different sounds the user will hear from the Data Mate in the field. About, gives copyright and contact information for this application and the “about programmer” menu item will give information about the Connected IPLC programmer including it’s serial number..

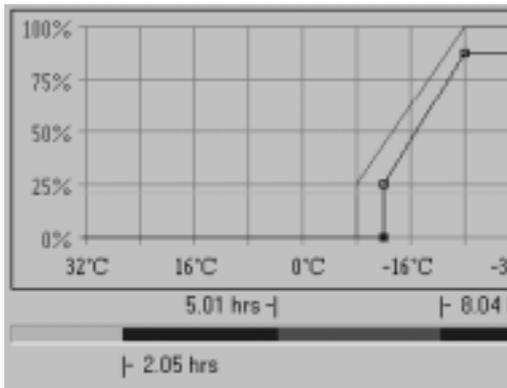
IPLC Profile Edit Dialog

The Profile Edit Dialog allows profiles to be edited or viewed depending on their type and in service status. A new or copied profile may be edited fully (OK button is not grey). A profile which is **in service** and is **not** a standard profile may edit it's **given name** only (OK button is grey but the Edit Profile Name button is not). And a standard profile can only be viewed (both the OK and Edit Profile Name buttons are grey). **Please note**, user profiles which are **not** in service **but are** scheduled for a change order **can be** edited fully!

Before, an attempt is made to create your own profiles please refer to IPLC Profiles Explained and Schedule Curve Editing .

Schedule Curve Editing

Below is a picture of the Schedule Edit Window (top) and Active Schedule Order Bar (bottom). The Schedule Edit Window is used to edit the profile curves for the Primary, Secondary, and Initial Power Delay Schedules. And the Active Schedule Order bar shows the order and duration of each schedule from “plug-in”.



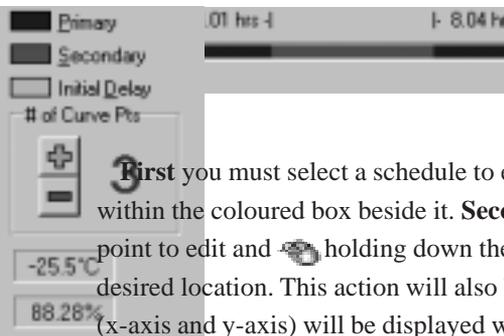
Each schedule has it's own colour; **Blue** is for the Primary, **Red** is for the Secondary, and **Aqua** is for the Initial Power Delay schedules. A **selected** schedule is shown with boxes around it's points, with the solid box identifying the point which currently has focus. Two methods are provided to edit points of a schedule using the mouse or keyboard. Schedules which are **not enabled** (see IPLC Profiles Explained) are not shown and their selection box is greyed. Depending on the selected schedule, a vertical axis is highlighted purple showing the appropriate units, either percentage for the Primary or Secondary

schedules (left axis) or hours for Initial Power Delay (right axis).

Active Schedule Order Bar

The Active Schedule Order Bar shows the order in which the various schedules become active and for how long, read from left (a car “plugs-in”) to right (a car leaves). Looking to the picture above, a car “plugs-in” (extreme left) and is subjected to an Initial Power Delay of ~2 hours, after the Primary Schedule is active for ~3 hours, then the Secondary Schedule for ~3 hours, and finally the Primary Schedule (extreme right) is active until the car leaves.

Schedule Mouse Editing



First you must select a schedule to edit,  left click the desired schedule within the coloured box beside it. **Second**, move the mouse over the desired point to edit and  holding down the left mouse button **drag** the point to the desired location. This action will also bring the point into focus and it's values (x-axis and y-axis) will be displayed within the controls on the right (shown here). To **add a point**  left click the “PLUS” button or to **delete a point** with focus  left click the “MINUS” button. To change the point with focus  right click within the schedule edit window (cross hair cursor).

Schedule Keyboard Editing

First you must select a schedule to edit:

 Primary Schedule.

 Secondary Schedule.

 Initial Power Delay Schedule.

Second, you must bring the desired point into focus and then move it into position, this is done with  Key commands (while holding down the  Key press another key). These commands are shown here:

 or  brings a point into focus (one by one).

, , , or  moves the point with focus.

Insert Key adds a point.

Delete Key deletes a point with focus.

IPLC Profiles Explained

Each IPLC port or Parking Stall is assigned an IPLC profile which defines it's operation characteristics. A profile consists of a maximum load size parameter and upto three curves a Primary, Secondary, and Initial Power Delay. The **maximum load size** parameter defines the maximum load that the IPLC port or parking stall will accept (such as block heaters only, etc.). The Primary Schedule curve is **always** present, while the Secondary and Initial Power Delay curves are **optional**. These parameters and any associated options are described here.

Primary Schedule Curve

The Primary Schedule Curve is **always** present and can be considered as the default delivery schedule. This curve determines the amount of power delivered to attached loads (as a percentage) for a given temperature. This delivery schedule can have upto eight temperature / power points where, each point is connected to their neighbours with a straight line. The power delivered is determined by the intersection of the ambient temperature with this curve.

As an example, if your curve has two points, point one; **0°C:0%** and point two; **-20°C:100%**. Then for an ambient temperature of **-10°C** the power delivered would be 50%.

Secondary Schedule Curve

The Secondary Schedule Curve operates just like the Primary Schedule Curve with a few minor differences. This curve adds two parameters, schedule **delay** and **duration** time. If this curve is **enabled** the schedule **duration** parameter **must** be defined. Schedule **delay** time determines the amount of time from

“plug-in” before the Secondary Schedule Curve becomes active. Upon becoming active, it replaces the Primary Schedule for the amount of time defined in the schedule **duration** time parameter. After this time the delivery schedule reverts back to the Primary Schedule until the load is removed or “unplugged”.

Initial Power Delay Curve

The Initial Power Delay Curve defines the amount of time that power is **not** delivered to a **newly asserted** load. This curve can be temperature dependent or fixed. If the Secondary Schedule curve is **enabled** this curve can **only have** a fixed value (a curve with one point). Otherwise, this curve may have upto eight temperature / delay time points where, each point is connected with their neighbour points by a straight line. Again like the Primary Schedule, the delay time is determined by the intersection of the ambient temperature with this curve. If the Initial Power Delay Curve is enabled it becomes the **first active** schedule before all others. After this time expires and the load is still present the Primary or Secondary Schedule becomes active. The Grace Period parameter **only** has meaning if the Initial Power Delay Curve is **enabled**.

Grace Period

The Grace Period parameter **only** has meaning **if** the Initial Power Delay Curve is **enabled**. The Grace Period becomes **valid** after a load has survived the Initial Power Delay time. If a vehicle leaves for a time shorter than a **validated** Grace Period, upon returning the vehicle **will not** be subjected to another initial power delay.

example: The Initial Power Delay curve is enabled and is fixed at two hours (ie. the curve has one point set at 2 hours). The Grace Period is set at one hour. A car arrives at 8 a.m. and “plugs-in”, no power is delivered to the car for a minimum of two hours. At 10 a.m. the Grace Period becomes **valid**, since the car survived the Initial Power Delay. At this time either the primary or secondary schedule curve becomes active (depending on setup parameters). At noon, the car leaves for lunch and the Grace Period starts **counting down** from one hour. If the car returns to the parking lot and “plugs-in” **before** 1 p.m. (ie. the count down is not zero) the initial power delay of two hours will be skipped. Otherwise, the car will have to endure another two hour power delay. Also note, if a car returns which satisfies the Grace Period, the Primary Schedule Curve will be used for the remaining parking duration **exclusively**. In other words, leaving for lunch nullifies the use of any preprogrammed schedule other than the Primary Schedule Curve.

Maximum Load Size

The Maximum Load Size parameter determines the maximum wattage that the stall will accept as a valid load. The IPLC measures current draw of a load and not wattage, to calculate watts the line voltage is assumed to be 120 VAC. When setting the Maximum Load Size, choose the maximum wattage you wish to accept and add 5% to this value to compensate for line voltage variations. Or as a rule of thumb, add 90 watts. The wattage range is from 240 to 2000 watts, which translates to 2 to 15 Amps approximately.

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Vantera Incorporated IPLC, VERSION 3.00, AND SOFTWARE / HARDWARE RELATED COMPONENTS.

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