Downloader II Design

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Contents

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[1] `$Header: d:/Downloader2/Design/RCS/Dnldr.tex,v 1.4 2010-08-16 08:02:15-07 Hamilton Exp Hamilton $`
[4] `tocdepth = 4`

List of Tables

1 External Design of the Visual Basic Downloader II Front End

The new Downloader II front end is intended to make downloading of the SPECTRA IV as easy as possible and to allow access to a wide range of advanced serial communications options. It also has a limited range of PTZ type commands. The PTZ commands are intended only to help setting up a PTZ unit its built in menu system.

Note

During testing of the Downloader II it was observed that some Windows based computers do not operate correctly at higher baud rates. Since the Spectra IV and Spectra III only operate at a baud rate of 115200 over their RJ-45 ports, Windows computers that do not do well at high speed should not be use to attempt to download through the RJ-45 ports.

The following general types of Windows based computers should not be used due to this problem:

1. Windows based computers that are part of the Endura line of systems. Two different CPU units were tested. One was running Windows Vista and the other was running Windows 7. Both had identical problems. The both would work correctly when using the RS-422 port (maximum speed here is 9600 baud) but not when using the RJ-45 port. Using Windows 7 on a Dell desktop worked correctly.

1.1 Short form User's Guide

The Downloader II is designed to download new program files into a Spectra IV system using the RJ-45 port. To do this it has been optimized for this task. It is also possiable to download other units in differing ways. However each different unit will require some additonal steps to the basic downloading sequece listed here.

1.1.1 Downloading a Spectra IV via its RJ-45 port

The RJ-45 port uses RS-232 voltage levels and may thus be driven directly from the PC's serial port.

1. Obtain the download file(s) that will be sent to the Spectra IV.
2. Put them somewhere on the host PC.
3. Start the Downloader II.
4. The Downlader II will automatically identify, and list, all active `COM` ports. It will then automatically select the lowest numbered one for use.
5. If a different `COM` port than that automatically selected is planned for use, select it.
6. "Click on" the FAST button. (The AUTO BAUD + ID button may be used, but it might take longer than using the FAST button.)
7. When the Spectra IV has been recognized, the DOWNLOAD button will become active. It might take more than one clicking of the FAST button to get the Spectra IV recognized.

[5] `$Header: d:/Downloader2/Design/RCS/Dnldr.inc,v 1.6 2010-08-27 07:37:36-07 Hamilton Exp Hamilton $`

8. A Microsoft generated "file picker" screen will come up. Select the name of the file what you plan to download. The file picker will remember the location of the file that you just selected for the next file, if any, that will be downloaded.

9. Wait for the download process to finush. This should take a little longer than 2 minutes for a full applications file. Less for other file types.

10. The Spectra IV will reboot following the download sequence. When this happens, if needed, the PTZ button may be clicked to allow access to the Spectra IV's built in menu system for any required special setups.

11. And the full process is complete.

1.1.2 Downloading a Spectra IV via its RS-422/RS-485 port

Communicating with the RS-422/RS-485 ports requires that a level converter such as a PV-130/PV-140, or similar, be used between the PC's RS-232 port and the Spectra. The Downloader II asserts RTS and DTR lines to provide power for most simple level converters.

There are two different methods here that have to be considered:

1. A single Spectra IV at a time.

   1.1 This is very similar to the process outlined in Section 1.1.1, page 3. The only difference being that the Spectra IV's serial port (RS-422/RS-485) is used. And the download speed may take longer depending on the quality of the serial connection.

2. A multiple Spectra IVs one at a time.

   2.1 When several Spectra IVs are daisy-chained together, the FAST/AUTO BAUD + ID buttons may not be used. This is because the automatic identify feature uses the Query (`0x45`) command and that is the only D Protocol command that ignores the address field. Thus all devices in to the daisy-chain will respond at the same time. The result will be a "garbage" reply.

   To get around this problem the following will be needed:

   2.1.1. On the START screen manually select the baud rate that the Spectra will be operating at.

   2.1.2. On the START screen manually select the address that the Spectra will be responding to.

   2.1.3. Click on the DOWNLOAD button and proceed as outlined in Section 1.1.1, page 3.

1.1.3 Downloading a Spectra III via its RJ-45 port

The Spectra III's RJ-45 port does not support D Protocol which the Spectra IV's RJ-45 port does. Thus the initial logic of being able to automatically find something about the download unit will not work. However the Spectra III ignores the address field during a download sequence, thus only one item has to be manually selected.

1. On the START screen, select the Spectra III type of unit.

2. Proceed as outlined in Section 1.1.1, page 3.

1.1.4 Downloading a Spectra III via its RJ-422 port

1. Select the Spectra III device type on the SELECT screen.
2. Follow the instructions in Section 1.1.2, page 4.

1.1.5 Downloading a Spectra Mini via its RJ-422 port

<To be defined>

1.1.6 Downloading an ExSite via its RJ-422 port

<To be defined>

2 The Initial, or Start, Screen

Most of these fields have two uses. They may display information or may serve as input fields.

The initial screen, Figure 1, page 10, consists of several important areas, these are:

1. Stuff above a horizontal line. These values may be set automatically by using the AUTO BAUD + ID function.
2. Stuff below the horizontal line. These values may be set as a result of the AUTO BAUD + ID function. Usually the defalult values will be correct and all of these values may be overridden with valid user selected choices.
3. A list of COMs detected on initial load is displayed on the right hand the side. If more than one COM port is detected, the lowest numbered port is automatically selected. If another port is desired, then it must be selected manually.

All items on the screen, except for the data in the SYSTEM TYPE field which is a read only field, may be changed, but logic internal to the program will only permit logical combinations. E.g. see Figure 2, page 11 where the AUTO BAUD + ID button has been elimiated. This is because the opcode to automatically determine this information is not available in P Protocol.

In Figure 3, page 11 shows the results of using the AUTO BAUD + ID button and identifying a Spectra IV, while Figure 4, page 12 shows the same for detecting an Esprit.

All of the "sliders" are active and the adjacient fields change appropriatly. The slider fields follow what is found with the AUTO BAUD + ID function.

If it is desirable to **not** use the AUTO BAUD + ID function, then any of the sliders may be used to "force" choices of communications values for use. If a user gets confused as the the correct set of choices, either the DEFAULTS or RELOAD buttons may be used. The RELOAD button does a full reload of the program, while the DEFSULTS button selects a logical set of options based on the system type in the SYSTEM field. (Note that this is not the SYSTEM TYPE display on the top of the screen.)

Note that on initial load the DOWNLOAD button is "grayed out". This is because the download process requires that valid two-way communications be established with a unit that will accept a download. However PTZ operations work normally as they can be one-way or two-way.

2.1 Field/Button Descriptions on the Start screen

1. Upper portion of the screen

   1.1 SYSTEM TYPE line:

   1.1.1. The Display is the result of sending a Query command to the PTZ unit. This field does not exist in P Protocol as P Protocol does not have the Query command. This is marketing's part number for the PTZ. Possiable values are:

   1.1.1.1. `Unknown PTZ`: This indicates that a Query request has not been sent to the PTZ.

   1.1.1.2. `Searching.....`: This indicates that the Downloader II is sending Query requests one at a time with all baud rates to the PTZ.

   1.1.1.3. `Failed, re-try?`: This indicates that an attempt to identify the PTZ was unsuccesful. Sometimes this is normal due to the timing in the attached PTZ. If this happens and the AUTO BAUD + ID button is depressed again, the Downloader II will recycle through

[6] `$Header: d:/Downloader2/Design/RCS/Start.inc,v 1.10 2010-08-26 14:53:57-07 Hamilton Exp Hamilton $`

the different baud rates, but with a longer time gap between each Query command. The time gap between Queries the first time through is 400 ms (100 ms for FAST mode). Each additional time that the AUTO BAND + ID button is depressed again the timeouts are increased by 50 ms.

1.1.1.4. The marketing part number. Some older units may display the old engineering part number which started with `PG`. With the older engineering part number most details about the PTZ are not available.

1.1.2. FAST: This runs a portion of the full AUTO BAUD + ID sequence. It only check baud rates 2400, 4800, 9600 and 115200. Between each check the delay is shorter. Sometimes it will fail, in the same that a full AUTO BAUD + ID might do. If it fails, retry or use the full AUTO BAUD + ID procedure.
In this document the phrase FAST may be used interchangably with AUTO BAUD + ID. The only difference is the time that it takes to identify the attached PTZ unit.

1.1.3. AUTO BAUD + ID: This will initate an attempt to identify the PTZ unit connected to the Downloader II. If any type of unit other than a Spectra IV or Spectra III is selected, then the range of speeds used will be reduced to make the search faster.
Note: If this button, or the FAST button is used when the downloaded unit is "recovering" from a download (the Spectra IV will take slightly over 1 minute), then a `Failed, re-try?` message will be generated since the unit will not be able to respond correctly during the "recovery" period.

1.2 BAUD line:

1.2.1. Baud rates supported are as listed below. Note that the order is reversed from what might be suspected. This is because this is the order in which testing is performed. I.e. testing at 115200 is always first, unless a specific speed is selected first. When a specific speed is selected, it is used first and then, in full AUTO BAUD + ID mode the rest are used. The entries in **bold** are the only ones used in FAST AUTO BAUD + ID mode.

1.2.1.1. **115200** baud, used by: the RJ-45 port on Spectras only.

1.2.1.2. 57600 baud, used by some TXBs.

1.2.1.3. 38400 baud, used by some TXBs.

1.2.1.4. 28800 baud, used by some TXBs.

1.2.1.5. 19200 baud, used by some TXBs.

1.2.1.6. 14400 baud, used by some TXBs.

1.2.1.7. **9600** baud, used by all products.

1.2.1.8. **4800** baud, used by all products.

1.2.1.9. **2400** baud, used by all products.

1.2.1.10. 1200 baud, used by some TXBs.

1.2.2. The display is the current baud rate to be used. It may be changed three ways:

1.2.2.1. Automatically using the AUTO BAUD + ID button.

1.2.2.2. By typing in the first two digits of the desired baud rate at the left side of the display field and using the return key.

1.2.2.3. By moving the slider control located on the right of the window.
The slider control on the BAUD line: This follows the current baud rate as the baud rate is being automaticlly selected. It is also "active" in that a baud rate may be selected by clicking on the slider control and moving it horizontally to a desired baud rate.

1.3 Address set of fields:

The P Protocol address field is always one more than the D Protocol address field.

Only one of the address fields needs to be changed, the other will always be one larger or one smaller than a selected, or changed, value.

It is not possiable to have the address fields be more than one address apart.

1.3.1. D is the current D Protocol address.

1.3.2. P is the current P Protocol address.

1.3.3. There are three ways of changing the D Protocol and P Protocol address fields.

1.3.3.1. Automatically by using the Auto Baud + Id button.

1.3.3.2. By typing in the new address desired, followed by the return key.

1.3.3.3. By using the slider to the right of these fields.

1.4 System line:

This is the type of PTZ that the commands being used will be generated for.

The default is for the Spectra IV

The types of systems that have direct support are:

1.4.1. Spectra II

1.4.2. Spectra III

1.4.3. Spectra IV

1.4.4. Esprit

1.4.5. Esprit II (Future use)

1.4.6. ExSite

1.4.7. Mini Spectra

1.4.8. Other

This value may be changed three ways:

1.4.1. By using the Query command.

1.4.2. By moving the slider control horizontally.

1.4.3. By typing in the two letters/numbers in parenthessis after the name at the left of the field and using the carriage return key.

1.5 COMx line:

This value is automaticlly detected when the Downloader II is initialized. If more than one COM port is detected it will always be the lowest detected COM port. The COM port number must be in the range of $1 \rightarrow 16$[7].

The COM value may be changed two ways:

1.5.1. By moving the slider next to it horizontally.

1.5.2. Clicking on the COM number desired in the vertical list on the right hand side of the display. It is possiable to select a non-existant COM port this way and care should be used.

2. Lower portion of the screen

[7]This is a restriction on the number of COM ports that the driver supports. There are instructions on the web on how to increase this value, however I decided to not use modified MicorSoft software on this project.

2.1 Comm Type line:

The type of Comm Type is selected based on the System type choisen, or by using the slider bar.

The display field is used to display the type of communications that will be used by the Downloader II. There are three types:

2.1.1. RJ-45: The RJ-45 is only on the Spectra IV and Spectra III types of PTZ units. Except for some SMRs it always runs at 115,200 baud and uses RS-232 voltage levels. On the Spectra IV there is a design error on the UART and it will not operate correctly if two stop bits are selected. The Spectra III does not have this error.

2.1.2. RS-422: To use the RS-422 port an interface unit such as a PV-140 must be used to convert the PC's RS-232 voltage levels to the RS-422 levels. The Downloader II always has the PC's RTS and DTR lines active to power interface converters that are port powered.

2.1.3. RS-485: To use the RS-485 port an interface unit such as a PV-140 must be used to convert the PC's RS-232 voltage levels to the RS-485 levels. The Downloader II always has the PC's RTS and DTR lines active to power interface converters that are port powered.

2.2 Parity: This value is defaulted to `None` as no Pelco unit, except for SMRs and TXBs, uses parity. It may be changed using the slider bar. Parity types supported are:

2.2.1. None

2.2.2. Even

2.2.3. Odd

2.2.4. Space

2.2.5. Mark

The sixth parity type of Ignore is not supported.

2.3 Stop Bits: This value is defaulted to `One` when a Spectra IV and RJ-45 Comm Type is selected, otherwise it is set to `Two`. It may be changed using the near by slider bar. Stop bit counts supported are:

2.3.1. One Required with the Spectra IV and its RJ-45 port only. May be used elsewhare.

2.3.2. Two

2.4 Protocol: This is the communications protocol to be used. It is defaulted to D Protocol as of the two common types of PTZ protocols used at Pelco, it is the most capabile. It may be changed with the slider bar to P Protocol. If this is done then the Auto Baud + Id button, etc is eliminated and the Download button is grayed out since these features are not available in P Protocol.

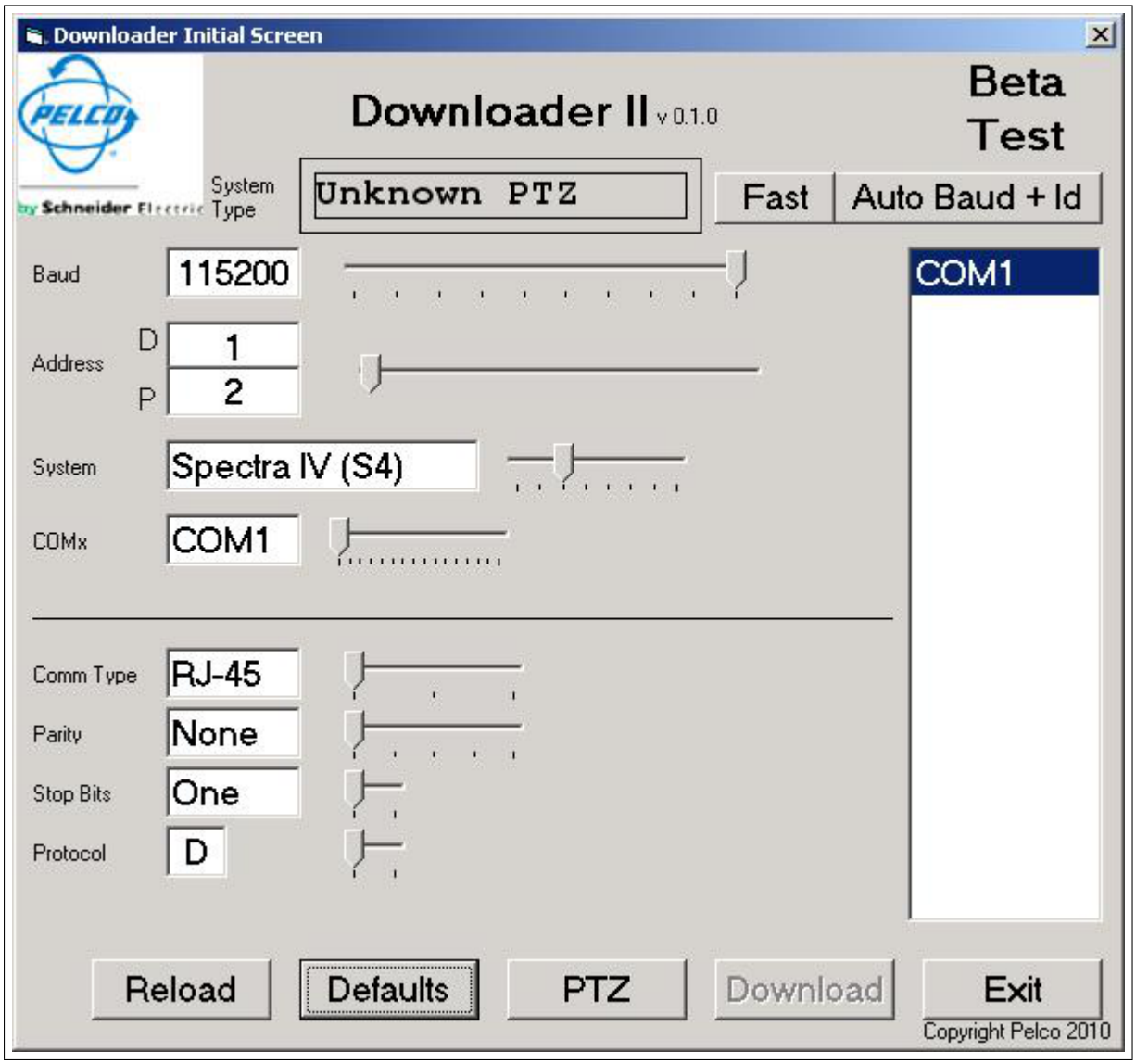
3. Buttons at the lower part of the screen:

3.1 Reload: Will reload the full Downloader II. This is sometimes useful if an operator gets the values in the rest of the screen totally messed up.

3.2 Defaults: Will help an operator select values on the screen when only part of the "answers" are known.

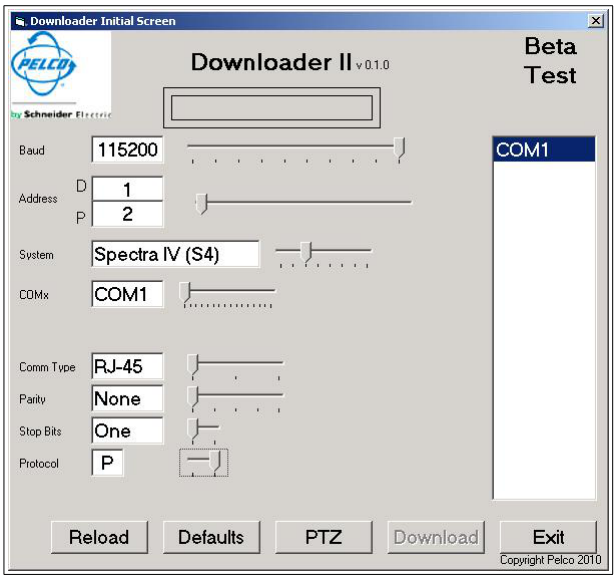
3.3 Download: The Download button is grayed out on initial load and will stay that way until the PTZ unit is identified as being capable of being downoaded. The only way to do this is by using the Auto Baud + Id button. The Download button is always grayed out in P Protocol mode.

3.4 Exit: Returns to the operating system.



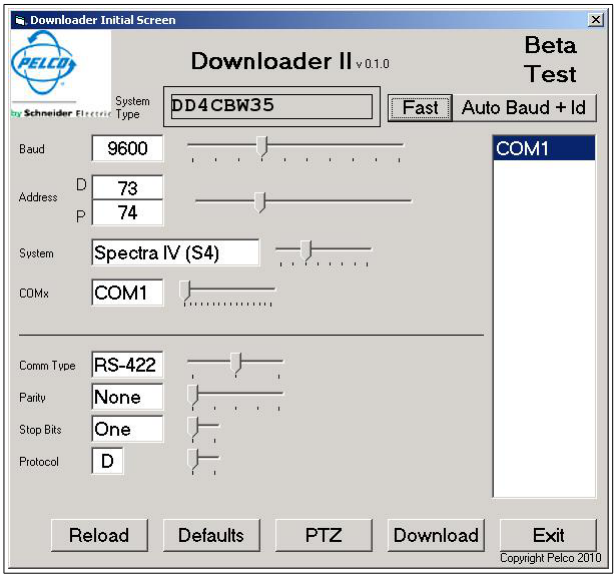
Start.ps —

Figure 1: Default Start Screen



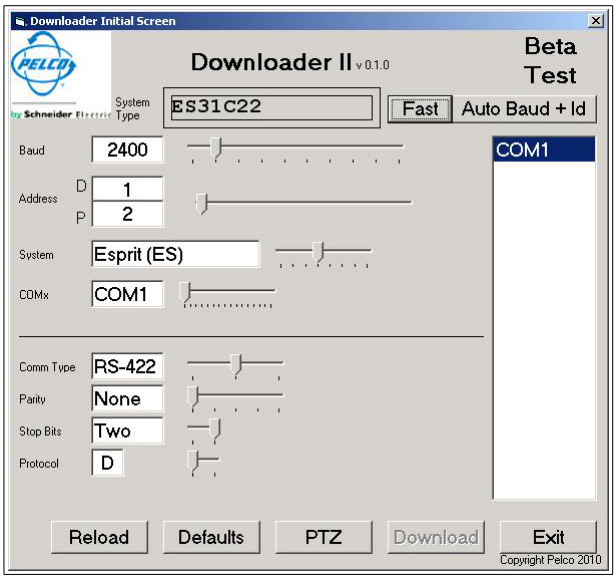
StartP.ps —

Figure 2: Start Screen with P Protocol selected



StartS.ps —

Figure 3: Start Screen for a “found” Spectra IV



StartES.ps —

Figure 4: Start Screen for a “found” Esprit

3 The Download Screen

Note

On this screen, buttons do their button thing and slider bars to their thing, all other fields are **display only** fields.

3.1 Field/Button Descriptions on the Download screen

The download screen is used to monitor the progress of a download action. It has several useful fields:

1. Upper area:

   1.1 SYSTEM TYPE: This is the system type read-only data from the START screen.

   1.2 An unlabled field just under the SYSTEM TYPE field: This is a general use download progress status message.

   Typical messages include, in alphabetical order. Some of these are unlikely to be seen as they are displayed for a very short duration. This list is likely to change without warning.

   1.2.1. `Downloading:` Followed by the filename from the `S0` record.
   1.2.2. `Download Complete`
   1.2.3. `Error # nn`
   1.2.4. `Excessive Errors`
   1.2.5. `File Error # nn`
   1.2.6. `File Opened`
   1.2.7. `Get a file name`
   1.2.8. `Lost Communications`
   1.2.9. `No file name selected`
   1.2.10. `Open Filename`
   1.2.11. `Reselect a file name`
   1.2.12. `Restarting`
   1.2.13. `Restart ..2 ⟵ Restart.............15`
   1.2.14. `Retry Downloading`
   1.2.15. `Start Downloading`

2. Left hand side area:

   2.1 TIMEOUTS: This is a count of the number of timeouts that has occurred in this download. Messages that are timed out will be resent a total of ten times, on a message by message basis. If the resend counter counts out, then the download sequence will be terminated. Each retransmission has a 25 ms delay before retransmission occurs.

   2.2 COMM EVENTS: This is a count of the number of communications events that have occurred in this download. Most of these will be a `LNACK` type which requires a resending of the message. Each message will be resent a maximum of 10 times. If the resend counter is exceeded, on a message by message basis, then the download sequence will be terminated.

[8] `$Header: d:/Downloader2/Design/RCS/DownLoad.inc,v 1.15 2010-08-26 14:53:56-07 Hamilton Exp Hamilton $`

2.3 Unlabeled field near COMM EVENTS: These are the most recent errors that have been detected or sent by the downloaded device. The following codes are used:

T	—	Timeout
1	LACK	Acknowledgment
2	LNACK	Negative acknowledgement. May indicate a bad received checksum or an invalid or out of sequence message. This is the most common error and, when detected, results in the message being resent.
3	LCCHAN	Clear Channel
4	LCONT	Continue download, ExSite only
5	LDONE	All done, ExSite only

Error codes

129_{10}	LERASE	Erase failure (0x81)
130_{10}	LWRITE	Write failure (0x82)
131_{10}	LALLOC	Memory allocation failure (0x83)
132_{10}	LCOMM	Communications failure (0x84)
133_{10}	LTERM	Termination request (0x85)
134_{10}	LCHIP	Invalid chip ID (0x86)
153_{10}	—	Internal program error(0x99)

2.4 MESSAGES SENT: This is a count of the "good" messages sent. When retransmission of messages is done, the retransmitted messages are not counted.

2.5 ERROR RATE %: This the result of adding the COMM EVENTS and TIMEOUTS together and dividing the sum by the MESSAGE COUNT field. Then multiplying the result by 100.

2.6 MSGLEN MSG/SEC: This is a dual use/display field. The first number is the length of the current download record in bytes. The second is the number of messages that are currently being sent.

When started the MSG/SEC field will "hunt" for a few seconds, then as the download process progresses, it will stabilize at some value determined by the message size, the current baud rate and the current error rate. (Shorter messages get sent more rapidly and sending messages at higher baud rate also increases the MSG/SEC number.)

Most download records, other than header and footer records, are the same size, so the length of each download record does not affect this field as much as might be expected.

2.7 ADDRESS: This is a read only field that is established on the START screen before entry here.

2.8 BAUD: This is a read only field that is established on the START screen before entry here.

3. Central area:

3.1 MAX RETRYS: This is maximum number of resendings that have occurred on the **same** message in the current SPEED MODE.

3.2 RETRY LIMIT: This the point where a failure is declared from resending the **same** message. It is a changeable field and may be set to 3, 7, 17 or 37 retires. The default, and recommended value to use, is 7 retires before exiting the program.

3.3 DOWNLOAD START TIME: Self explanatory

3.4 DOWNLOAD END TIME: This field is updated each second the download process runs. It will thus be the ending time of the download process.

3.5 Total Download Time: This is an incrementing counter that displays the duration of the current download in `HH:MM:SS` format.

3.6 Download file size, bytes: This is the raw length of the down load file on the disk. When messages are sent to the download target, one extra byte is added to each message as a terminator byte.

3.7 Total Bytes Sent: How many bytes were in the messages sent to the Spectra. This may end up being longer than the file size because it includes the end of line character, etc.

3.8 Bytes/Sec: This is an average of the total number many bytes are being sent per second.

3.9 Speed Mode: There are three speed modes supported by the Downloader II. It is anticipated that in some "noisy" environments that by sending messages at a slower rate, a more error free data transmission may occur.

Changing any of the buttons, including changing a button to itself will result in the Max Retires button being reset to 0.

When any of these buttons are selected, the currently active button's color will be changed to a "dim" version of the original color and the new button will have a "bright" version of its color. The choices are:

3.9.1. Fast (Green in color): This is the default rate and will insert no additional delays between each message. The computer's IO system and, if used, the USB⟶RS-232 adapter may introduce delays of up to about 10 ms. The Downloader II has no control over these delays. This is the recommended rate to use.

3.9.2. Med (Yellow in color): In this mode an additional delay of about 10 ms is added after each message is sent.

3.9.3. Slow (Red in color): In this mode an additional delay of about 50 ms is added after the sending of each message.

3.9.4. During a test of these buttons reveled the following relative times for different mode selections. These were for a 1,306,792 byte download file:

Mode	Msg/Sec	Kbyte/Sec	Gap	Total Time
Fast	146	10.2	640 μs	2:07
Med	63	4.4	10 ms	4:55
Slow	16	1.1	50 ms	19:29

4. Lower area:

4.1 Upper screen width display box: This is the name of the file being downloaded. It is also used as an error/status display. When the download is complete, it will display "`Download done`". When an abnormal exit is made, the reason will be displayed here.

4.2 Between the two screen width displays there is a progress bar that indicates the approximate percentage of the file that has been successfully downloaded. (Difficult to see on a B+W printout of the screen.)

4.3 Lower screen width display box: In this location as ASCII display of the message being sent to the PTZ is displayed. Note that the "S records" that are transferred to the downloaded unit are all in printable ASCII.

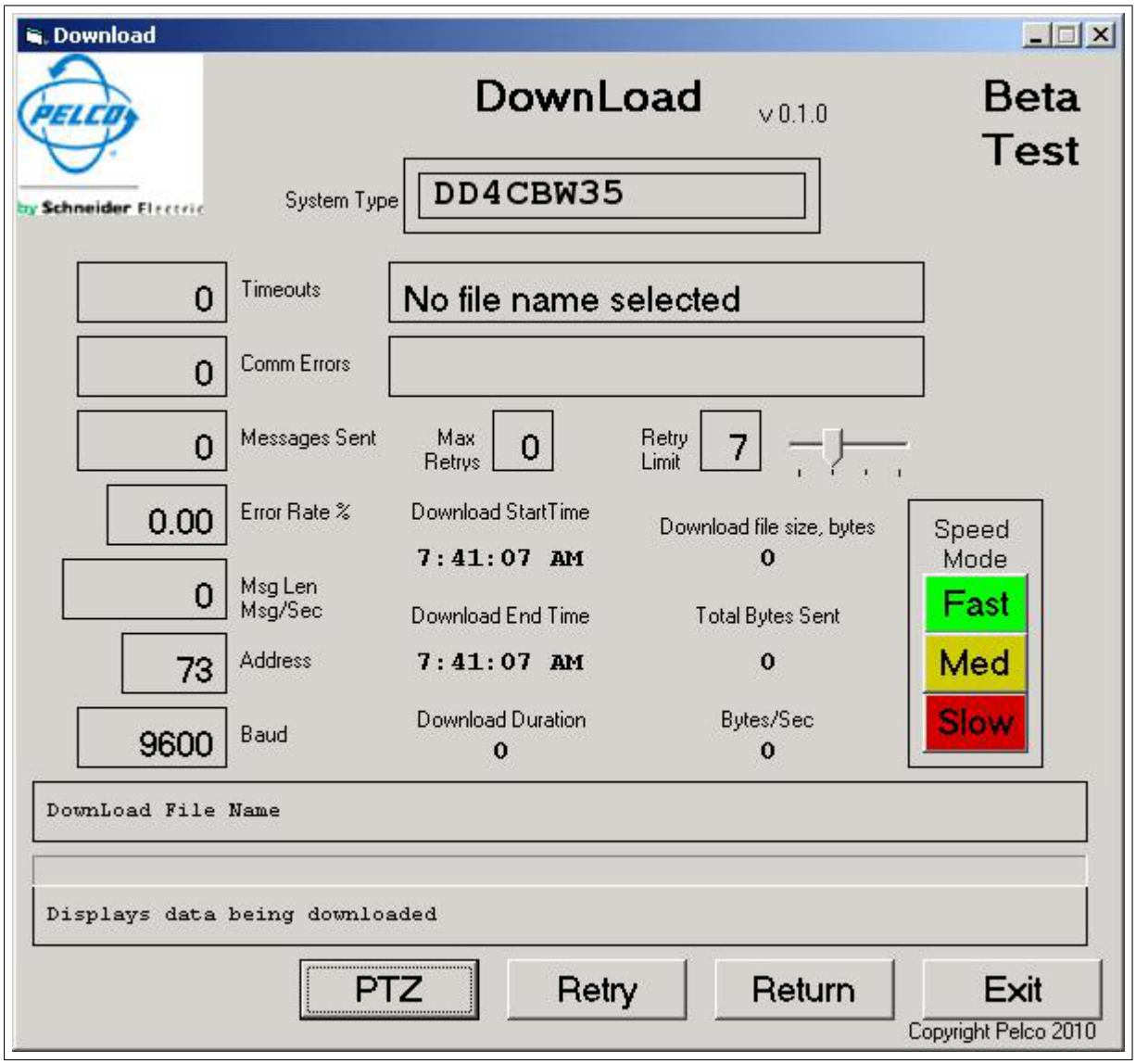
4.4 PTZ button: Calls the PTZ screen for configuration of the PTZ unit.

4.5 RETRY button: Allows additional downloads to be attempted. Note that most of Pelco's downloadable PTZ units will attempt to continue a download sequence when data is not given to them quickly enough. Using this button will force the time between data deliveries to be so long (15 seconds) as to cause the downloaded unit to exit Download mode. When using this button a 15 second delay is intentionally inserted in to the start of the delay process so that the downloaded unit may recover and get to "initial state".

4.6 RETURN button: Returns the uses to the screen that called the download screen.

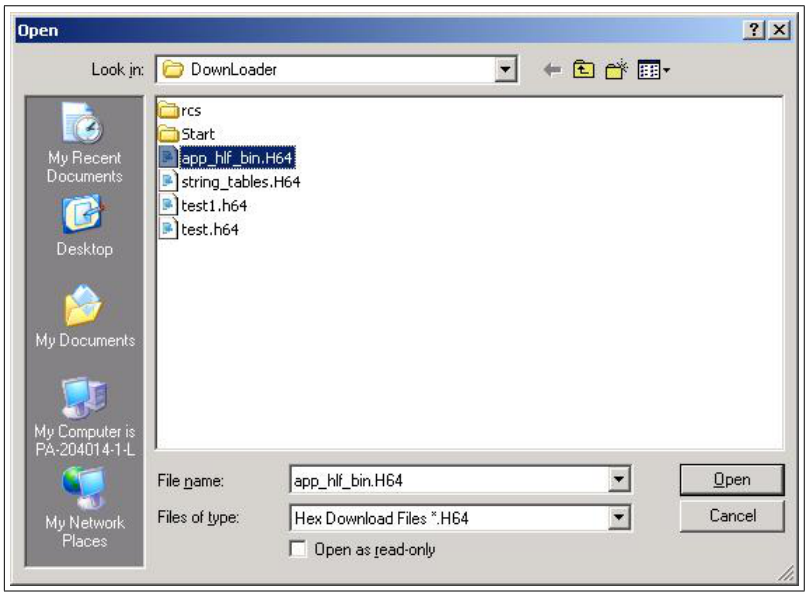
4.7 EXIT button: Self explanatory, returns to Windows.

When called, the downloader screen will automatically bring up the Figure 6, page 18 dialog as provided by MicroSoft for selecting a file to download with.



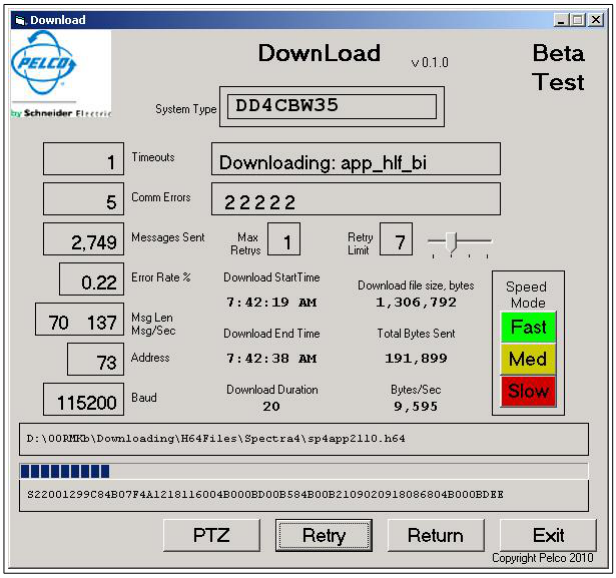
Download.ps —

Figure 5: Download Screen



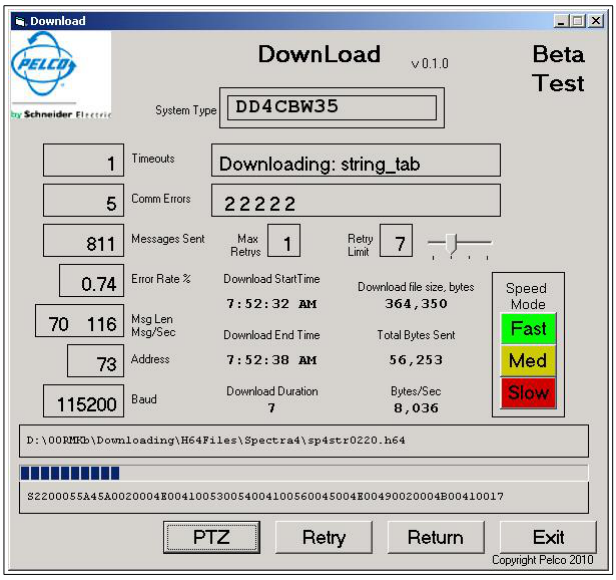
FileSelect.ps —

Figure 6: File Select



DownloadR.ps —

Figure 7: Download Screen while Downloading



Downloading.ps —

Figure 8: Download Screen #2

DownloadErrors.ps —

Figure 9: Download Error #1

DownloadinErrors1.ps —

Figure 10: Download Error #2

4 The PTZ Screen

Note

Buttons do their button thing, scroll bars to their scroll thing, all other fields are **display only** fields.

4.1 Field/Button Descriptions on the PTZ Control screen

1. Upper area:
   1.1 An unlabeled field at the top: This is the device type being worked with if it has been identified by using the Auto Baud + Id button on the start screen. Otherwise it displays `Unknown PTZ`. The contents of this field are for information only and do affect any of the operations on this screen.
2. Left hand area:
   2.1 Timeouts: Number of time outs while using this screen. May be cleared by using the Clear Errors button.
   2.2 Checksum Errors: Number of checksum errors detected on the replies from the PTZ. May be cleared using the Clear Errors button.
   2.3 Commands Sent: This is the total of all commands sent with this screen. May be cleared by using the Clear Errors button.
   2.4 Error Rate %: This is the percentage of errors detected during while using this screen. May be cleared by using the Clear Errors button
   2.5 Clear Errors: This button is used to clear the current error counters, commands sent counter and start the error rate at 0.
   2.6 Address: This is the address of the PTZ being used.
   2.7 Baud: This is the baud rate being currently used.
   2.8 Protocol: This is the current protocol being used. It will be either `D` or `P`.
3. Centeral area:
   3.1 Open: There are three buttons that send an Iris Open and a stop command when released command to the PTZ. The two upper locations are there to make navigating in the PTZ's menu system easier. All send the same commands.
   3.2 Left: This button sends a Pan Left command to the PTZ when pushed and a stop command when released.
   3.3 Open: The second Iris Open command button.
   3.4 Up: This button sends a Tilt Up command to the PTZ when pushed and a stop command when released.
   3.5 Stop: This button send a Stop command to the PTZ when pushed and a second stop command when released.
   3.6 Right: This button sends a Pan Right command to the PTZ when pushed and a stop command when released.

[9] `$Header: d:/Downloader2/Design/RCS/PTZ.inc,v 1.7 2010-08-26 14:53:56-07 Hamilton Exp Hamilton $`

3.7 Down: This button sends a Tilt Down command to the PTZ when pushed and a stop command when released.

3.8 Pan Slider: The pan slider is used to send variable speed Pan commands to the PTZ unit. It will send a Stop command when released. It is possible to send too many commands at a time to the PTZ unit with this slider. (This is a known problem with no known fix.)

When released the slider will **automatically move to the center** of its travel. See the Tilt Slider description for more. This is intentionally done to get user feed back to determine which behavior is preferred.

3.9 Tilt Slider: The pan slider is used to send variable speed Tilt commands to the PTZ unit. It will send a Stop command when released. It is possible to send too many commands at a time to the PTZ unit with this slider. (This is a known problem with no known fix.)

When released the slider will **stay in its current position** on the slider bar. See the Pan Slider description for more. This is intentionally done to get user feed back to determine which behavior is preferred.

4. Lower area:

4.1 The upper of the wide empty field is marked Command and is used to display the command that was being sent out.

4.2 The lower of the wide empty field is marked Reply and is used to display the reply received.

5. Lower set of Buttons:

5.1 Open: This is the third of the three Open buttons. This time it is in a more conventional location. When released a Stop command will be sent.

5.2 Close: This button sends an Iris Close command to the PTZ. When released a Stop command will be sent.

5.3 Near: This button sends a Focus Near command to the PTZ. When released a Stop command will be sent.

5.4 Far: This button sends a Focus Far command to the PTZ. When released a Stop command will be sent.

5.5 Tele: This button sends a Telephoto In, i.e. narrow angle of view, command to the PTZ. When released a Stop command will be sent.

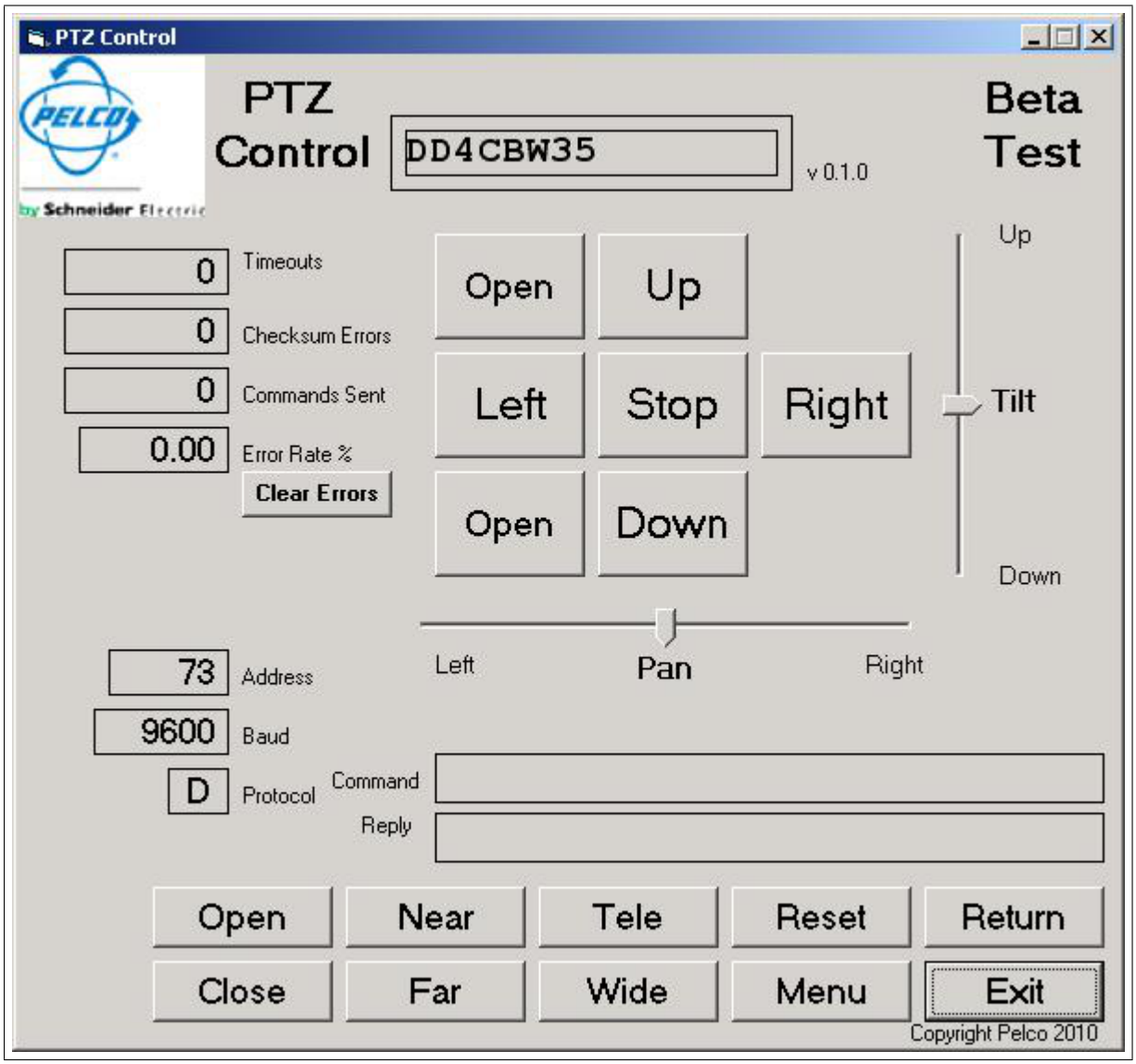
5.6 Wide: This button sends a Telephoto Out, i.e. wide angle of view, command to the PTZ. When released a Stop command will be sent.

5.7 Reset: This button sends a Reset command to the PTZ. The command will be fully reset and go through its reboot procedure.

5.8 Menu: This button sends a Preset Set 95 command to the PTZ when pushed and a Preset Set 28 command when released. This is done so that if the PTZ is in "32 preset mode", it will always be possible to access the menu system.

5.9 Return: This button will take the user to the screen that called this one. It will be either the Start or Download screen.

5.10 Exit: This button will return to the operating system.



PTZ.ps —

Figure 11: PTZ Screen

5 Defaults

	Default	S2	S3	S4	ES	E2	EX	MS	OT
Address	1	←	←	←	←	←	←	←	←
Max Address	255	64	255	←	←	←	←	←	←
Stop Bits	Two	←	←	One	Two	←	←	←	←
Parity Type	N	←	←	←	2400	←	←	←	←
Baud Rate	2400	2400	115200	←	←	←	←	←	←
Low baud Rate	2400	←	←	←	←	←	←	←	←
High baud Rate	9600	←	←	←	←	←	←	←	←
Connection Type	RS-422	RS-422	RJ-45	←	RS-485	RS-422	RS-422	←	←
Download Button	Yes	No	Yes	←	No	Yes	Yes	←	←
Has Query	Yes	←	←	←	←	←	←	←	←
Protocol	D	←	←	←	←	←	←	←	←

Table 1: Default values by System Type

S2	Spectra II
S3	Spectra III
S4	Spectra IV
ES	Esprit
E2	Esprit II
EX	ExSite
MS	Mini Spectra
OT	Other

Table 2: 2 character abbreviations for system types

12	1200
24	2400
48	4800
96	9600
14	14400
19	19200
28	28800
38	38400
57	57600
11	115200

Table 3: 2 character abbreviations for baud rates

[10] `$Header: d:/Downloader2/Design/RCS/Def.inc,v 1.2 2010-08-09 07:36:54-07 Hamilton Exp Hamilton $`

A E-mails about this project

A.1 First Alpha Test cover E-mail

```
From: Hamilton, Eric
Sent: Wednesday, August 04, 2010 8:36 AM
To: Amerson, Ed
Cc: Castro, Daniel; Harris, Steve; Wright, David
Subject: Alpha version of the new downloader

Attachments: DownLoader.exe

Hi

Here is copy of an ALPHA TEST version of the new downloader that I have
been working on. There are the following known problems in this version:

1. May not install.

2. "Tab Order" is incorrect.

3. Selecting "Cancel" in the "Open" dialog results in bad data being
sent, sometimes.

4. Program exits when the com line is disconnected. It should try to
recover for a bit. It actually makes seven tries and then quits. Seven
tries at 115200 baud is a short time.

5. The RJ-45 port is the only way to currently make a download. The RS-
422/RS-485 works normally in all known other cases.

6. Others? Yep, I just don't currently know what they are.

Have fun! And give me some non-physical feedback. (Please do not come in
my cube with a baseball bat, etc.)

bye.................eric
559-292-1981 x3375

```

A.2 Request for test PCs

```
From: Wright, David
Sent: Tuesday, July 20, 2010 1:55 PM
To: Manjal, Miki; Fairchild, Troy; Lucero, Mario
Subject: RE: Request for a temporary set of loaner computers

All,

Ed Amerson did some preliminary testing on a C++ version of the RMK for
PC.  I am sure he had some type of test plan, formal or informal.

The version that Eric needs to have tested is a Visual Basic version, and
should follow the same operational type testing at a high level.  The
user screens have changed dramatically.

David


-------------------------------------------------------------------------------

From: Manjal, Miki
Sent: Tuesday, July 20, 2010 1:46 PM
To: Fairchild, Troy; Lucero, Mario
Cc: Wright, David
Subject: Re: Request for a temporary set of loaner computers

Troy,

We'll talk when I get back to B7 at about 2-2:15.

Miki


On 7/20/10 1:31 PM, "Troy Fairchild" <tfairchild@pelco.com> wrote:

We should probably have your team do the initial testing first on the PCs
we have available here.  Once the we are comfortable with the test plan,
then we can send it to nResult.


-------------------------------------------------------------------------------

From: Lucero, Mario
Sent: Tuesday, July 20, 2010 1:32 PM
To: Fairchild, Troy
Subject: RE: Request for a temporary set of loaner computers

```

```
How soon do you need it?  Since we haven't gotten any code for the RMK PC
yet we haven't built one for it.  It'll take a few hours to set up, but I
could have it as soon as tomorrow morning.

Mario Lucero
SQE - Engineering and Product Development
Team Lead 3 - OEM & Atlas products
(559) 292-1981 x 4353


--------------------------------------------------------------------------------

From: Fairchild, Troy
Sent: Tuesday, July 20, 2010 1:21 PM
To: Lucero, Mario; Manjal, Miki
Subject: RE: Request for a temporary set of loaner computers

I will need a copy of your test plans for the PC version of the RMK.


--------------------------------------------------------------------------------

From: Lucero, Mario
Sent: Tuesday, July 20, 2010 1:19 PM
To: Fairchild, Troy; Manjal, Miki
Subject: RE: Request for a temporary set of loaner computers

I don't have a need for it right now, but it's good to keep in the hip
pocket.

Miki?

Mario Lucero
SQE - Engineering and Product Development
Team Lead 3 - OEM & Atlas products
(559) 292-1981 x 4353


--------------------------------------------------------------------------------

From: Fairchild, Troy
Sent: Tuesday, July 20, 2010 12:45 PM
To: Manjal, Miki; Lucero, Mario
Subject: FW: Request for a temporary set of loaner computers

Do you want to be involved in this?


```

```
95  ---------------------------------------------------------------------------
96
97  From: Fairchild, Troy
98  Sent: Tuesday, July 20, 2010 12:42 PM
99  To: Hamilton, Eric; Wright, David
100 Cc: Compton, Shane
101 Subject: RE: Request for a temporary set of loaner computers
102
103 DS4U is a software only version of Digital Sentry.  nResult tested it for
104 us on various types of computers.
105
106 I will contact Keith Meyers at nResult and have him give us a quote for
107 testing the PC downloader software on various machines.  I will only have
108 them test it with the Spectra.
109
110 Eric, put in an e-req for Mini-Spectra and ExSite cameras that you need.
111
112
113 ---------------------------------------------------------------------------
114
115 From: Hamilton, Eric
116 Sent: Tuesday, July 20, 2010 9:31 AM
117 To: Wright, David; Compton, Shane
118 Cc: Fairchild, Troy
119 Subject: RE: Request for a temporary set of loaner computers
120
121 Hi
122
123 They are in Washington state. What is a DS4U?
124
125 bye.................eric
126 559-292-1981 x3375
127
128
129 ---------------------------------------------------------------------------
130
131 From: Wright, David
132 Sent: Tuesday, July 20, 2010 9:29 AM
133 To: Hamilton, Eric; Compton, Shane
134 Cc: Fairchild, Troy
135 Subject: RE: Request for a temporary set of loaner computers
136
137 It looks like nresult also provides lab space.  As an option, we could
138 take PTZ devices there, and test them in their lab.
139
140 When you did the DS4U, did you send any cameras there for testing of
141 video reception?
142
```

```
143
144 ---------------------------------------------------------------------------
145
146 From: Hamilton, Eric
147 Sent: Tuesday, July 20, 2010 9:17 AM
148 To: Compton, Shane; Wright, David
149 Cc: Fairchild, Troy
150 Subject: RE: Request for a temporary set of loaner computers
151
152 Hi
153
154 I just called nresult and verified that that they have no PTZ devices.
155 They only have "normal" peripherals.
156
157 As an additional issue, I will be needing a working Mini Spectra (my
158 current one is questionable) and an ExSite. It would be good if I had a
159 fixed and non-fixed versions of the ExSites. (And it would be best if
160 they had different camera models in them.)
161
162 bye.................eric
163 559-292-1981 x3375
164
165
166 ---------------------------------------------------------------------------
167
168 From: Compton, Shane
169 Sent: Tuesday, July 20, 2010 8:28 AM
170 To: Hamilton, Eric; Wright, David
171 Cc: Fairchild, Troy
172 Subject: RE: Request for a temporary set of loaner computers
173
174 Eric, David and Troy,
175
176 This sounds like the perfect test case for nresult.  We used them in the
177 past to test BOSS and most recently DS4U.  They can test hundreds of
178 hardware and software configurations in a very short period of time.
179
180 Check it out their website.  http://nresult.com <http://nresult.com/>
181
182 If we can define the test plan then we should consider using them.
183
184 Shane
185
186
187 ---------------------------------------------------------------------------
188
189 From: Hamilton, Eric
190 Sent: Tuesday, July 20, 2010 8:08 AM
```

```
To: Wright, David
Cc: Fairchild, Troy; Compton, Shane
Subject: Request for a temporary set of loaner computers

Hi

I am just about to get to the point where I will need some "different"
computers to test the PC version of the the RMK on. What I need is
computers that are similar to those that a customer might have. Because
some of the testing will involve verifying that the install process is
correct I believe that I will need the following:

1. A "Plain Jane" type of XT computer. This must be easily reloaded as a
"clean" system so that I can verify that my install process works
correctly and that I am not using, by accident, some "left over" DLLs
from a previous install.

2. As above but this should be a computer running Vista.

3. Any other PC computer type that customers might be using in the field.
Right now I believe that XT and Vista should cover all of them, but who
knows?

None of these computers will be installed on Pelco's network and should
not have any of the "spy ware" and heavy level of virus protection that
is normally installed on our "normal" computers.

Because of the possibly frequent rebuilding of the these computers I must
have full admin rights on them.

I have several USB --> RS-232 adapters to use with these computers so I
don't think that I'll need any more of them.

My current schedule will have to slip starting about the 22nd (Thursday)
of this month if I don't have at least one of them to test with.

I have been using a pair of "contaminated" computers here and need a
"clean" one for testing. (I have Dan Perrin's and my old computers, but
they are not clean and both have a bunch of stuff that might be needed on
them.)

I estimate that I will need the test computers for several days and, if I
am unlucky, for maybe a week or more.


bye.................eric
559-292-1981 x3375

```

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