Down Loader Design

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[1] `$Header: d:/00RMKb/Design/RCS/DnldLdr1.tex,v 1.3 2010-07-23 11:38:15-07 Hamilton Exp Hamilton $`
[4] `tocdepth = 4`

1 External Design of the Visual Basic Downloader Front End

The new Downloader 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.

1.1 The Initial, or Start, Screen

The initial screen, Figure 1, page 3, 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 `COM`s detected on initial load on 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 4 where the AUTO BAUD + ID button has been elimiated. This is because the opcode to sutomatically determine this information is not available in P Protocol.

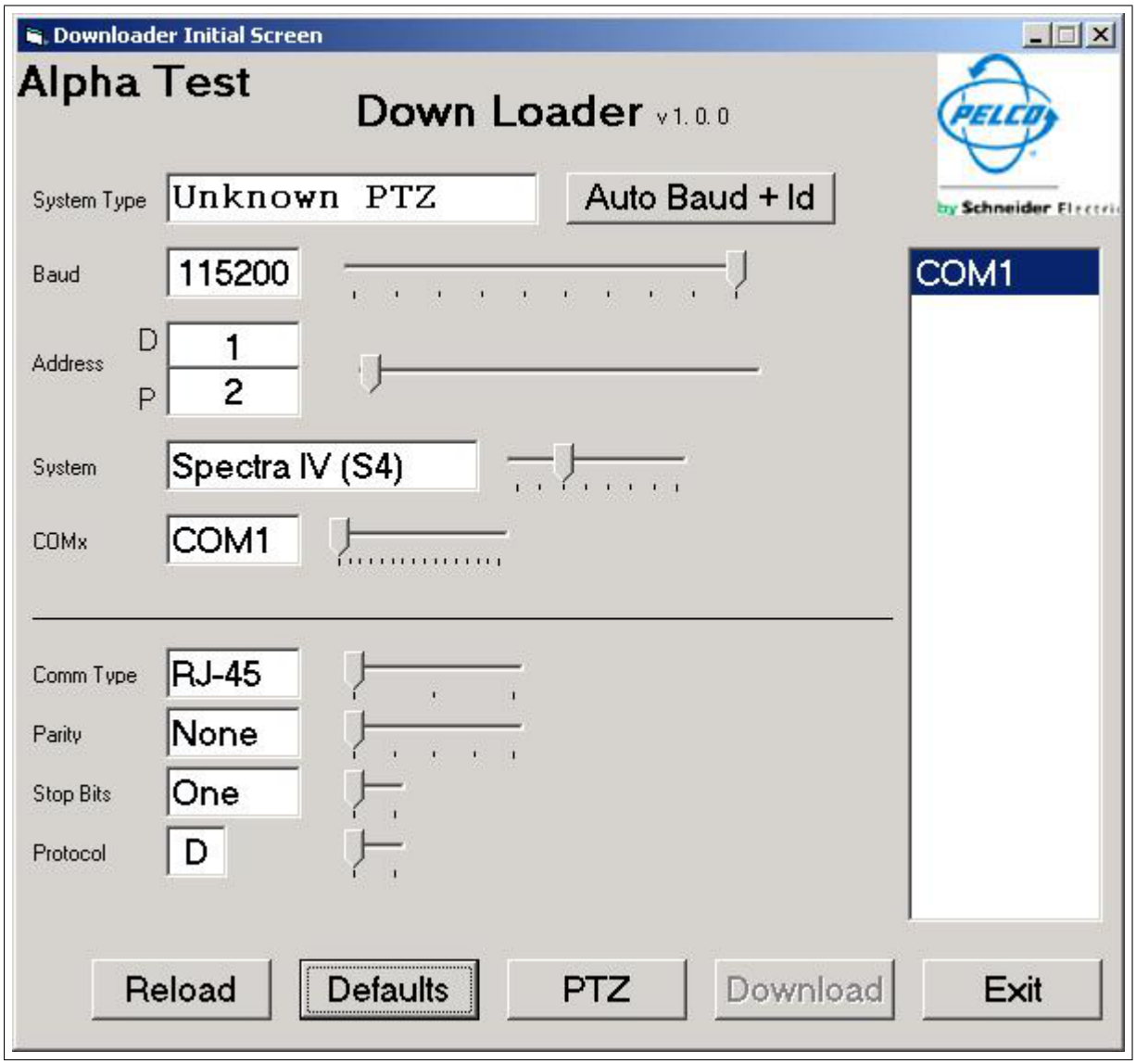
In Figure 3, page 4 shows the results of using the AUTO BAUD + ID button and identifying a Spectra IV, while Figure 4, page 5 shows the same for detecting an Esprit.

All of the "sliders" are active and the adjicent fields change appropriatly. The slider fields match 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 used 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.)

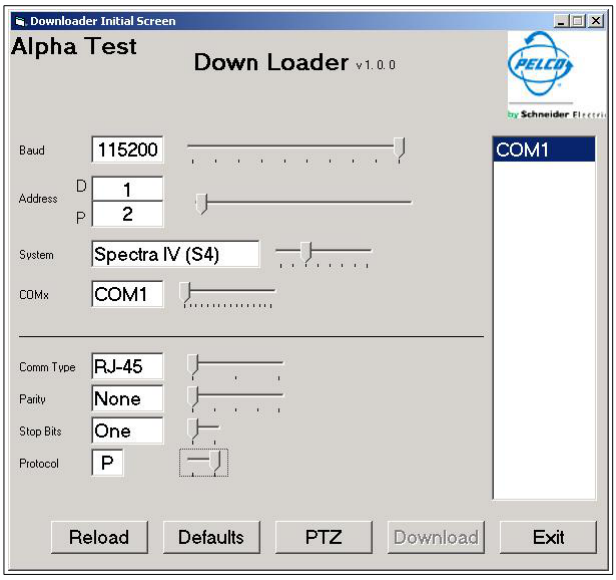
Note that the DOWNLOAD button is "grayed out". This is because the download process requires that valid two-way communications be established. However PTZ operations work normally as they can be one-way or two-way.

[5] `$Header: d:/00RMKb/Design/RCS/Design1.inc,v 1.2 2010-07-23 11:38:15-07 Hamilton Exp Hamilton $`
[6] `$Header: d:/00RMKb/Design/RCS/Start.inc,v 1.3 2010-07-23 11:38:16-07 Hamilton Exp Hamilton $`



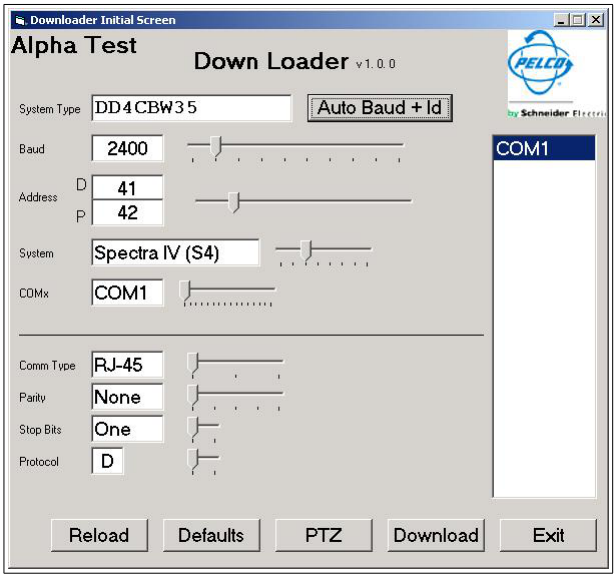
Start.ps 07/22/2010 02:23 PM

Figure 1: Initial Start Screen



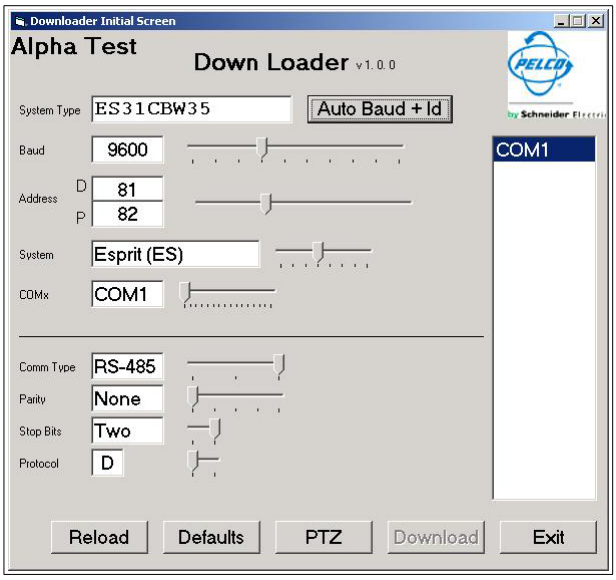
StartP.ps 07/23/2010 09:10 AM

Figure 2: Start Screen with P Protocol selected



StartS.ps 07/23/2010 09:22 AM

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



StartES.ps 07/23/2010 09:10 AM

Figure 4: Start Screen for a "found" Esprit

1.2 The Download Screen

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

1. System Type: This is the system type read-only data from the Start screen.
2. An unlabled field just under the System Type field: This is a general use download progress status message.
3. 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.
4. 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.
5. Unlabeled field hear Comm Events: This is the most recent error that has been detected or sent by the downloaded device. The following codes are used:

`T`	—	Timeout
`1`	LACK	Acknowledgment
`2`	LNACK	Negative acknowledgement
`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`)

6. Messages Sent: This is a count of the "good" messages sent. When retransmission of messages is done, the retransmitted messages are not counted.
7. 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.
8. Msg/Sec: When started this field will "hunt" for a few seconds, then as the download process progresses, it will stabilize at some value determined by the current baud rate and the current error rate. Most download records are the same size, so the length of each download record does not affect this field as much as might be expected.
9. Address: This is a read only field that is established on the Start screen before entry here.
10. Baud: This is a read only field that is established on the Start screen before entry here.

[7] `$Header: d:/00RMKb/Design/RCS/DownLoad.inc,v 1.6 2010-08-03 15:03:45-07 Hamilton Exp Hamilton $`

11. Download Start Time: Self explanatory

12. Download End Time: This field is updated each second the download process runs. It will thus be the ending time of the download process.

13. Download Seconds: This is an incrementing counter that displays the duration of the current download in seconds.

14. 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.

15. 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.

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

17. 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.

18. 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.)

19. Lower screen width display box: In this location as ASCII display of the message being sent to the PTZ is displayed.

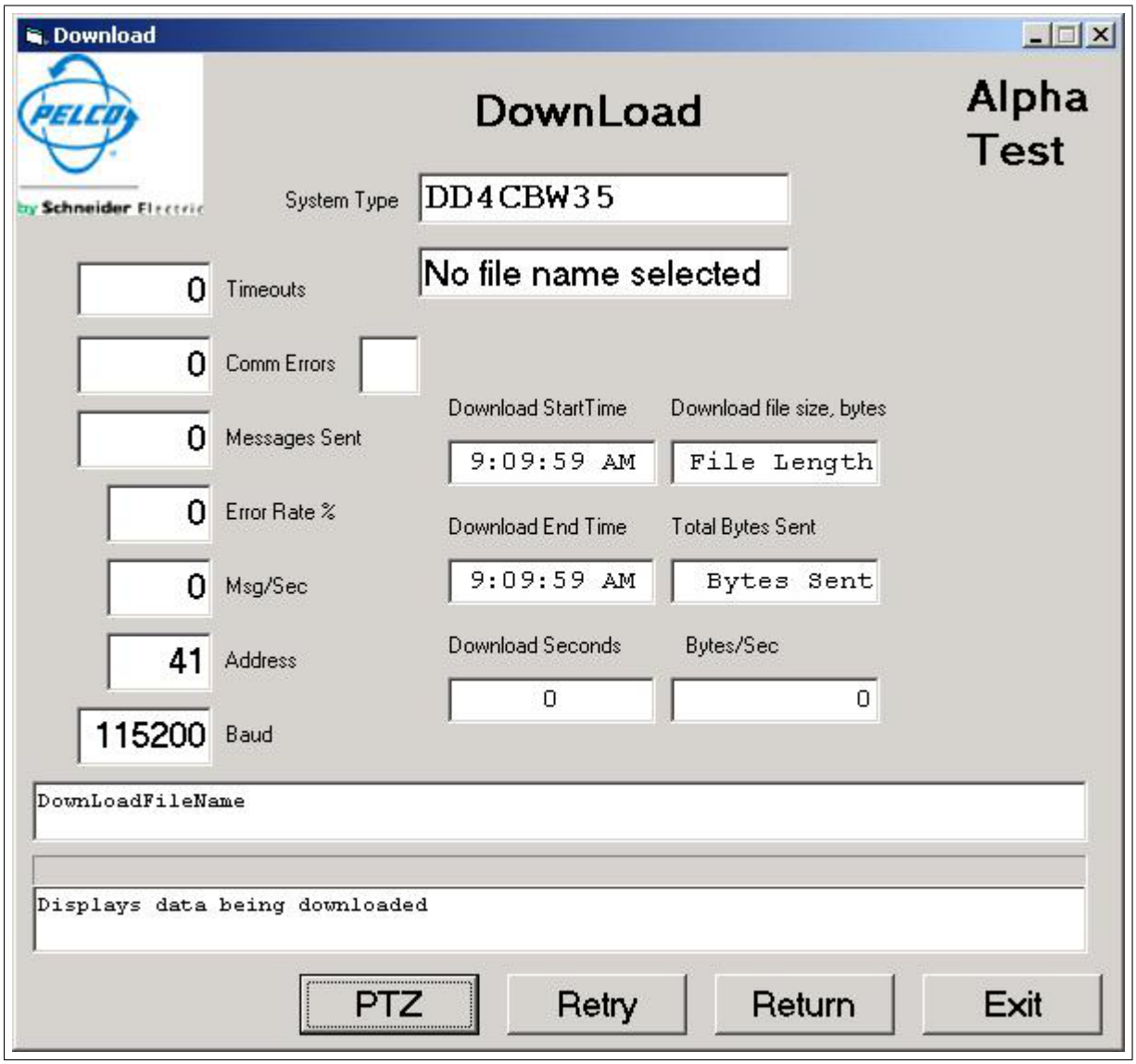
20. PTZ button: Calls the PTZ screen for configuration of the PTZ unit.

21. 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 as to cause the downloaded unit to get very confused. 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".

22. Return button: Returns the uses to the screen that called the download screen.

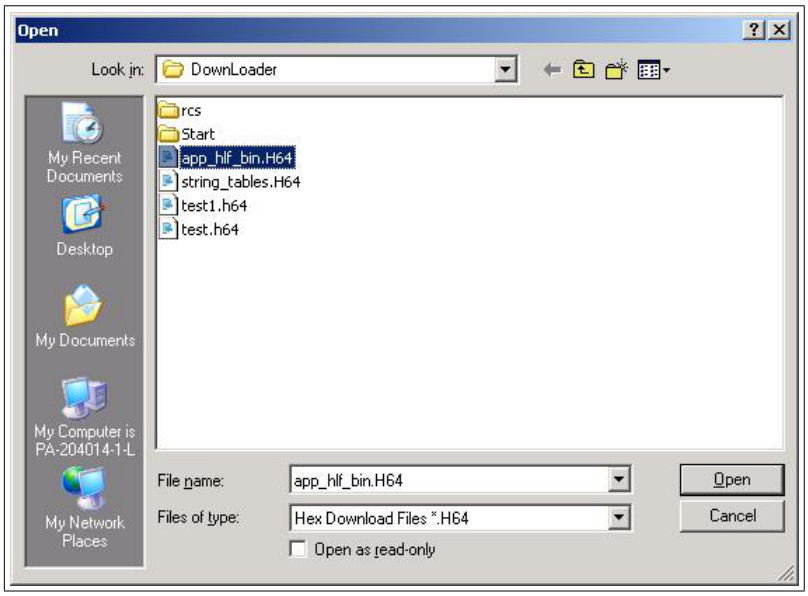
23. Exit button: Self explanatory, returns to Windows.

When called the downloader screen will automatically bring up the Figure 6, page 9 dialog as provided by MicroSoft for selecting a file to download.



Download.ps 07/23/2010 09:10 AM

Figure 5: Download Screen



FileSelect.ps 07/23/2010 11:40 AM

Figure 6: File Select

1.3 The PTZ Screen

The PTZ Control screen has the following fields:

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. Timeouts: Number of time outs while using this screen. May be cleared by using the Clear Errors button.

3. Checksum Errors: Number of checksum errors detected on the replies from the PTZ. May be cleared using the Clear Errors button.

4. Commands Sent: This is the total of all commands sent with this screen. May be cleared by using the Clear Errors button.

5. Error Rate %: This is the percentage of errors detected during while using this screen. May be cleared by using the Clear Errors button

6. Clear Errors: This button is used to clear the current error counters, commands sent counter and start the error rate at 0.

7. 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 command.

8. Left: This button sends a Pan Left command to the PTZ when pushed and a stop command when released.

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

10. Stop: This button send a Stop command to the PTZ when pushed and a second stop command when released.

11. Right: This button sends a Pan Right command to the PTZ when pushed and a stop command when released.

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

13. 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 know bug.)

    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.

[8] `$Header: d:/00RMKb/Design/RCS/PTZ.inc,v 1.3 2010-08-03 15:03:46-07 Hamilton Exp Hamilton $`

14. 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 know bug.)

    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.

15. The upper of the wide empty fields is used to display the command that was being sent out.

16. The lower of the wide empty fields is used to display the reply received.

17. 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.

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

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

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

21. 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.

22. 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.

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

24. 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.

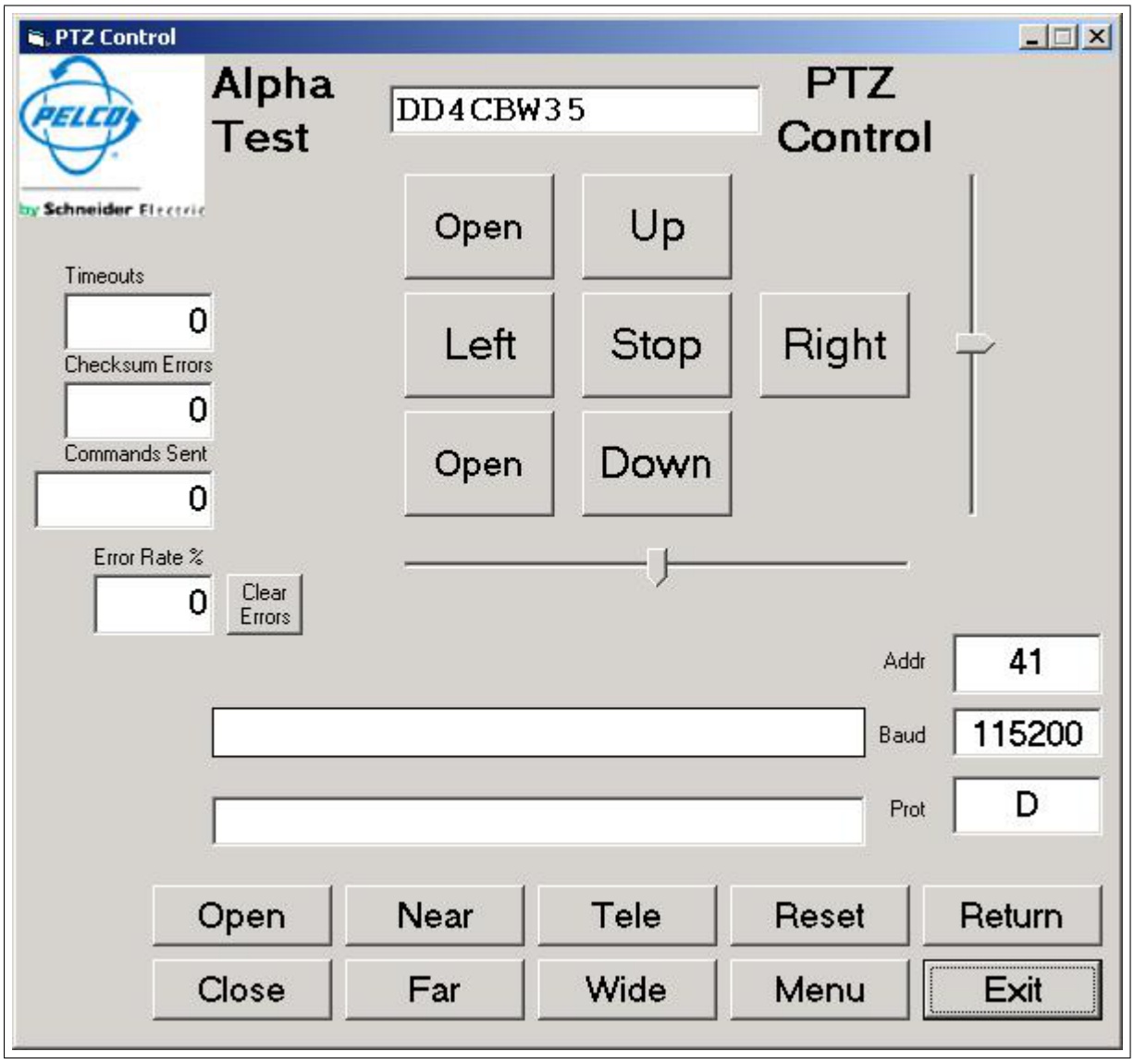
25. Return: This button will take the user to the screen that called this one. It will be either the Start or Download screen.

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

27. Addr: This is the address of the PTZ being used.

28. Baud: This is the baud rate being currently used.

29. Prot: This is the current protocol being used. It will be either `D` or `P`.



PTZ.ps 07/23/2010 09:22 AM

Figure 7: PTZ Screen

2 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

[9] `$Header: d:/00RMKb/Design/RCS/Def.inc,v 1.1 2010-07-23 10:13:59-07 Hamilton Exp Hamilton $`

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