Down Loader Design

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[1] `$Header: d:/00RMKb/Design/RCS/DwnLdr.tex,v 1.2 2010-06-14 14:42:27-07 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.

1.1 Initial Defaults

Since the primary purpose of the Downloader is to download the Spectra IV the initial options that are displayed for the user are defaulted to downloading the Spectra IV as quickly as possible. The Spectra IV defaults are:

1. 115200 baud
2. System Type of `Spectra IV`
3. Connect with its RJ-45 port.
4. Using `COM1`. (But see Section 6, page 3 below.)

A full list of the defaults is shown in Table 1, page 7.

When a successful connection has been made to the PTZ unit, the initial screen will change to the one shown in Figure 2, page 6. It should be noted that there are fewer choices on this screen. This is because after a successful connection, there is nothing to change. If the user wishes to make a change, then hit the "Default" command button or change the PTZ type by typing in anything to its text field. (Using the short form of names in Table 2, page 7 will make this a one step operation.)

1.1.1 Initial Screen, System Types

A typical screen shot of the initial screen is shown in Figure 1, page 5.

A large set of options are available with specific sets of options that are customized on a Pelco product by product basis. The following Pelco products have specific sets of default configurations built in. All of these may be selected by typing in a two letter code as listed in Table 2, page 7:

1. Spectra III using either its RJ-45 or RS-422 ports.
2. Spectra IV using either its RS-422 port or its RJ-45 port.
3. Esprit using its RS-485 port.
4. Esprit II using its RS-422 port.
5. ExSite using its RS-422 port.
6. Mini Spectra using its RS-422 port.
7. Any of the above with a TXB-NTCIP installed.
8. LRD41C with its RS-422 port.
9. ERD97P21 with its RS-422 port.

[5] `$Header: d:/00RMKb/Design/RCS/Design.inc,v 1.4 2010-06-15 08:27:10-07 Hamilton Exp Hamilton $`
[6] `$Header: d:/00RMKb/Design/RCS/Initial.inc,v 1.2 2010-06-15 08:27:11-07 Hamilton Exp Hamilton $`

10. "Other" unit types which assume a RS-422 port being in use.
11. And any additional types that it might be useful to add. (An effort has been made to make adding additional default types as easy as possible.)

1.1.2 Initial Screen, Slider Controls

Using "slider" type controls on the initial screen the following may be selected (all items are defaulted to the System type selected, and may be changed as desired):

1. Baud Rate: 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600 and 115200. The default baud rate is System Type specific. All of these may be selected by typing in the first two characters of their value. See Table 3, page 7.
2. Address for D and P Protocol usage. For D Protocol, address `1` and for P Protocol address `2` are the defaults with the range from $0 \rightarrow 255$ being available for D Protocol and $1 \rightarrow 256$ being available for P Protocol.
3. Parity Type will be defaulted to `None` with choices for `Even`, `Odd`, `Space` and `Mark` being available. (There is a chance that a sixth type of `Ignore` will be added. With this choice a parity type of `None` will be used for transmitting data and on replies the status of the parity will be ignored.)
4. Stop Bits will be usually be defaulted to `TWO`, except for the Spectra IV using its RJ-45 port. Options for `ONE` and `TWO` are available.
5. Comm Type. This is the type of communications that will be used. For both Spectras it will default to `RJ-45`, for the `Esprit` and `TXB-NTCIP` it will be `RS-485` and all others it will default to `RS-422`.
6. `COM` port number is selectable. During the power up sequence for the Downloader an enumeration of the available `COM` ports will be made and the lowest numbered port will be selected. Any of the `COM` ports discovered duration the enumeration process may be selected.
7. System Type may be selected with the default being Spectra IV. The full list of options are: `Spectra III`, `Spectra IV`, `Esprit`, `Esprit II`, `Mini Spectra`, `TXB-NTCIP`, `LRD41C`, `ERD97P21`, and `Other` in that order.
8. Either `D` or `P` Protocol may be selected with `D Protocol` being the default for all System types except for the `ERD97P21` which will have a default of `P Protocol`

1.1.3 Initial Screen, Check Box Controls

In addition to the "Slider" controls there are several "check box" options:

1. Auto Baud Short Sequence. The default is not selected. The short auto baud sequence consists of attempting to connect as 2400, 4800 and 9600 baud.
2. Auto Baud Long Sequence. The default is not selected. The long auto baud sequence is to try every baud rate the the Downloader supports.
3. Auto Address. The default is to not select it and use the address displayed in the address field.
4. Auto Parity. The default is to not select and use use the parity type displayed in the parity field.
5. Enable Converter Power. The default to have it selected. This will "turn on" the RTS line which some RS-232 to RS-422 converters use for power.

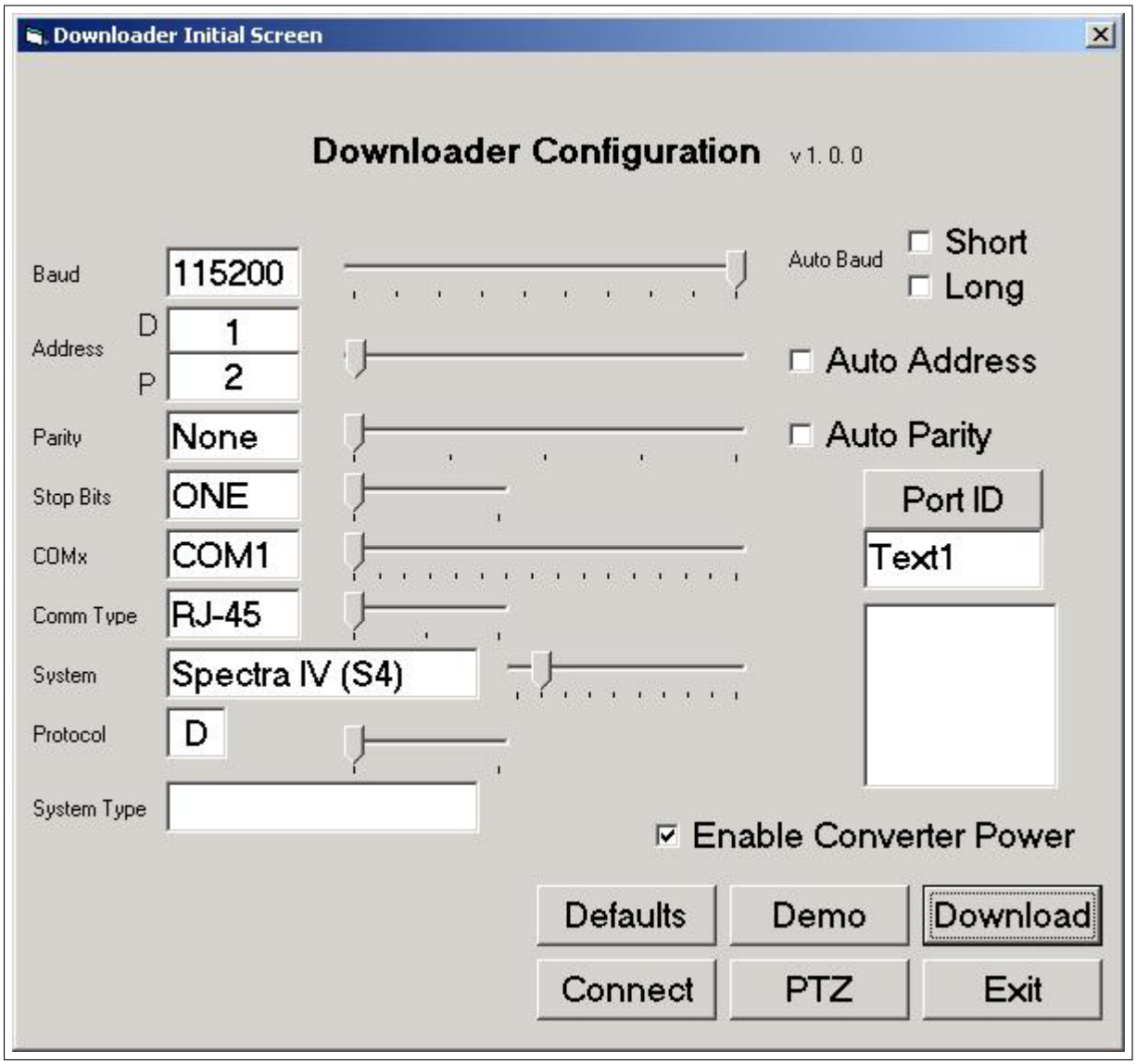
1.1.4 Initial Screen, Read Only field

The System Type displays the results of the reply string returned by a Query command. When a Query command was used to determine the PTZ's address/baud rate/parity. For units that do not support the Query command this field will remain blank.

1.1.5 Initial Screen, Command Buttons

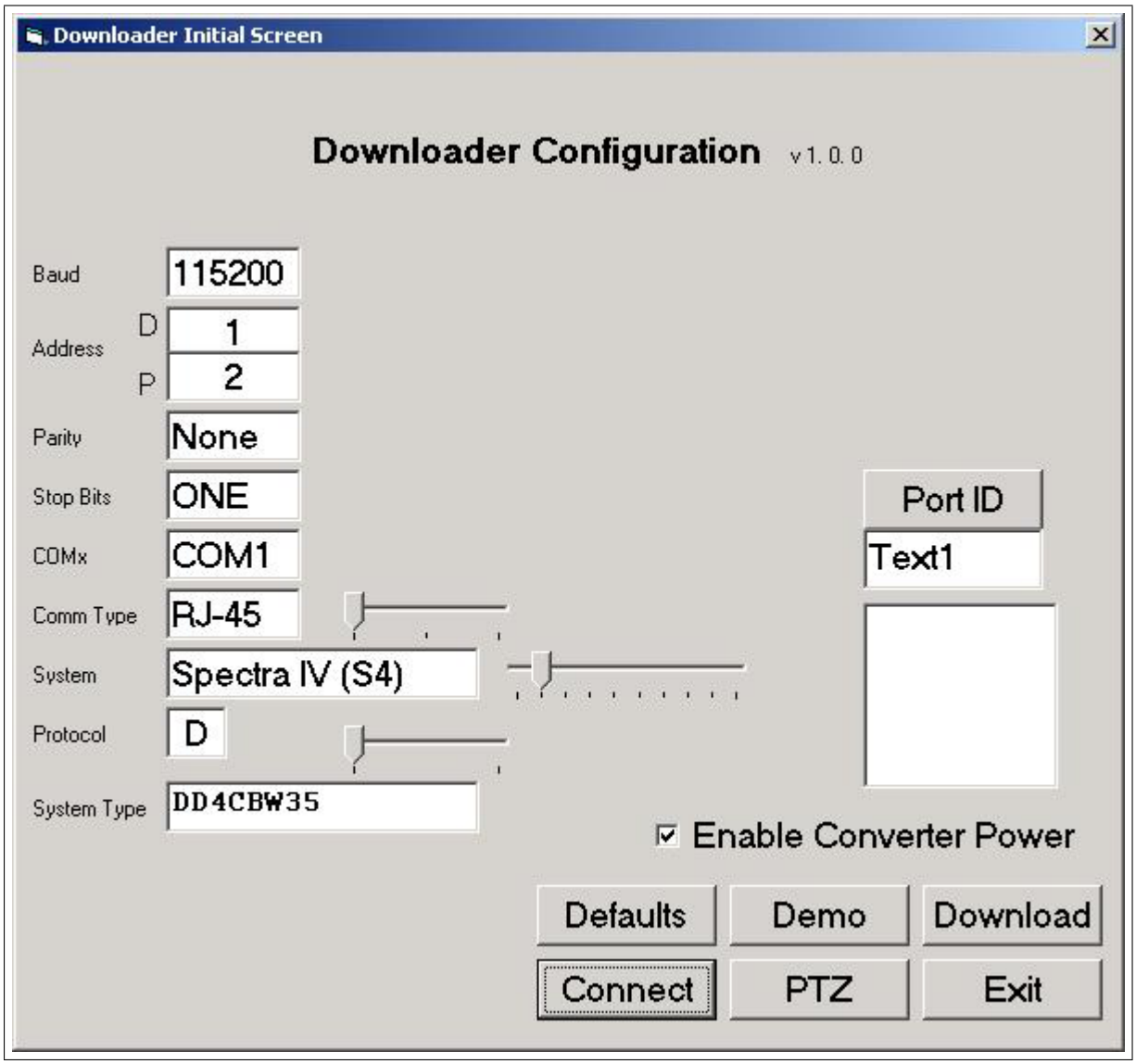
There are several command "buttons". These are for:

1. `Download`. This is the default button with the focus on load.
2. `PTZ`. The is the second tab index position and is designed to allow users to gain easy access to the PTZs menu system for configuration and to perform a limited amount of movement.
3. `Defaults`. This will force a reload of whatever the defaults are for the current System type. When selected it does not change the user selected options for `COM`, Comm Type, or System type.
4. `Connect`. This will allow a "trial" connection to the PTZ unit and will honor the chosen values on the screen. This includes the various types of automatic connection options.
5. `Demo` (name may change). This will allow continuing on with out getting any replies from the PTZ unit. However the user will be blocked from trying to Download the PTZ as the Download logic requires replies to work correctly. Thus only the `PTZ` button choice will be available.
6. `Exit` returns to the system. All display screens, except for the initial one, have an `Exit` button for direct exit at any time. The rest of the screens also have a `Return` button to allow returning to the initial screen.



InitialScreen.ps 06/14/2010 11:14 AM

Figure 1: Initial Downloader Screen



InitialOKConnect.ps 06/15/2010 07:19 AM

Figure 2: Initial Downloader Screen after a successful PTZ connection

	Default	S3	S4	ES	E2	MS	TX	LR	ER	OT
Address	1	←	←	←	←	←	←	←	←	←
Max Address	255	←	←	←	←	←	←	←	←	←
Stop Bits	Two	←	One	Two	←	←	←	←	←	←
Parity Type	N	←	←	2400	←	←	E	←	←	←
Baud Rate	2400	115200	←	←	←	←	9600	2400	←	←
		2400	2400	—	—	—	—	—	—	—
Low baud Rate	2400	←	←	←	←	←	9600	1200	2400	←
High baud Rate	9600	←	←	←	←	←	9600	9600	←	←
Connection Type	RS-422	RJ-45	←	RS-485	RS-422	←	RS-485	RS-422	←	←
	—	RS-422	RS-422	—	—	—	—	—	—	—
Download Button	Yes	←	←	No	Yes	←	←	No	←	←
RTS	On	←	←	←	←	←	←	←	←	←
Connected	No	←	←	←	←	←	←	←	←	←
Has Query	Yes	←	←	←	←	←	No	No	←	←
Protocol	D	←	←	←	←	←	←	←	P	D
← means that this value is the same as the one to the left.										

Table 1: Default values by System Type

E2	Esprit II	MS	Mini Spectra
ER	ERD97	OT	Other
ES	Esprit	S3	Spectra III
EX	ExSite	S4	Spectra IV
LR	LRD41	TX	TXB-NTCIP

Table 2: 2 character abbreviations for system types

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

Table 3: 2 character abbreviations for baud rates

[7] `$Header: d:/00RMKb/Design/RCS/Notes.inc,v 1.2 2010-06-15 08:27:11-07 Hamilton Exp Hamilton $`

1.2 Connect Screen

A typical screen shot of the connect screen is shown in Figure 3, page 10

This screen has two modes of operation:

1. In the first mode it will not be visible but its functions will be automatically called before entering the down load logic or the PTZ control logic. If the "Demo" button has been selected, this screen and all of the functions that it performs, will not be performed.

2. In the second mode, the screen will be visible and display the results of whatever it is being asked to perform. If any of the automatic options have been selected, then the appropriate "progress bars" will be visible and active.

On exit return from this screen, its status will be conveyed back to the initial screen where its results will be displayed in both modes.

The only user options on this screen are the Command buttons:

1. `Retest` will rerun the connect sequence.

2. `Return` will return to the initial screen.

3. `Exit` will exit the system.

1.2.1 Connect Screen, Display Fields

1. Address will contain address data from the initial screen on entry, on exit it will contain the first address that gave a valid response from the PTZ unit. During auto address mode, it will display the current address being used.

2. Auto Address will display `No` or `Yes` depending on whether on not this is an Auto Address call.

3. Address progress bars. This pair of bars are only visible when the Auto address option has been selected. There are two of these, the upper one cycles through its range every 32 addresses and the lower one cycles through its range in steps of 32 to cover the range of $0 \rightarrow 255$, for D Protocol mode and $1 \rightarrow 256$ for P Protocol mode. They will progress while auto addressing is done.

4. Baud will contain the current baud rate being used which comes from the initial screen on entry. If an autobaud rate option is selected it will change as different baud rates are selected and the final baud rate will be displayed on exit.

5. Auto Baud will have one three different displays: `No`, `Short` or `Long`. The field is not selectable from this screen, the data comes from the initial screen.

6. Auto Baud progress bar. This will be visible when auto bauding is being done and will progress as the testing continues.

7. Parity will have the type of parity being used displayed. It is not a selectable field and comes from the initial screen.

8. Auto Parity will have one two different displays: `No`, or `Yes`. The field is not selectable from this screen, the data comes from the initial screen.

[8] `$Header: d:/00RMKb/Design/RCS/Connect.inc,v 1.2 2010-06-15 08:27:10-07 Hamilton Exp Hamilton $`

9. Auto Parity progress bar. This will be visible when auto parity detection is being done and will progress as the testing continues.

10. `COM#` will contain the current `COM` port ID in it. It is not a changeable field and is provided for information only.

11. PROTOCOL will contain the current protocol type being used. It is not a changeable field and is provided for information only.

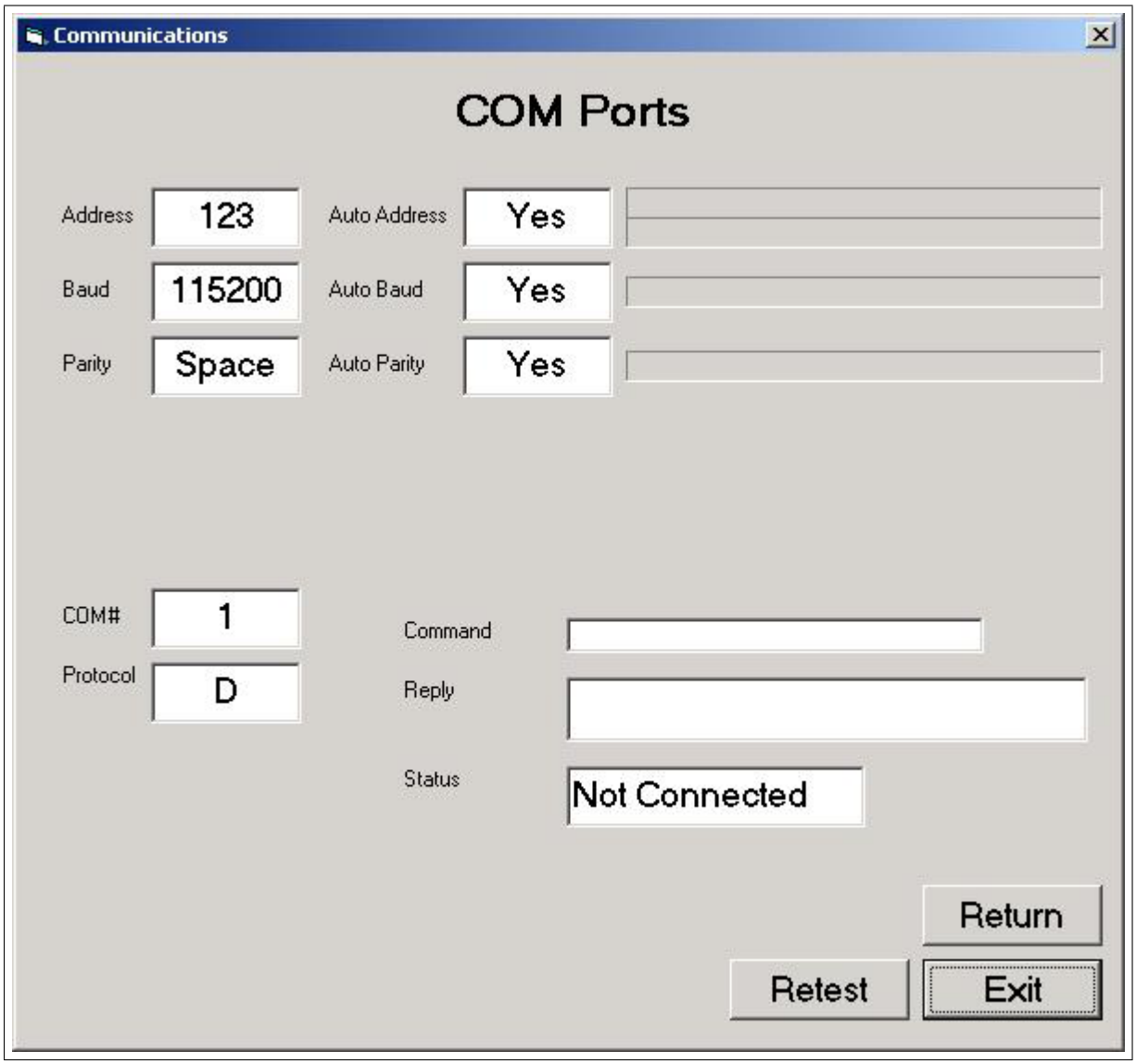
12. COMMAND this is the exact command, in hexadecimal, that was sent.

    In D Protocol for units that support the Query command a Query command will be sent. For those units that do not support a Query command a "stop" command will be sent. For the `TXB-NTCIP` no command will be sent. The `TXB-NTCIP` has a special way of starting a download sequence and all steps of working with it will be in the download section.

    In P Protocol a "stop" command will be used.

13. REPLY this is the PTZ units exact reply, in hexadecimal that was received.

14. STATUS this will indicate if the attempt to connect was successful or not.



ComPorts.ps 06/14/2010 11:10 AM

Figure 3: Connect Screen

1.3 PTZ Control

A typical screen shot of the PTZ screen is shown in Figure 4, page 13

The primary use of this screen is to enable customers to easily access the menu system of an attached PTZ unit. In addition to menu access the most common PTZ functions are also supported. If the user needs to access the full power of D Protocol/P Protocol a link to the Glass Keyboard is also provided.

1.3.1 PTZ Control Screen, Command Buttons

1. Up sends a fixed speed tilt command in the currently selected protocol to the PTZ unit.
2. Down sends a fixed speed tilt command in the currently selected protocol to the PTZ unit.
3. Left sends a fixed speed pan command in the currently selected protocol to the PTZ unit.
4. Right sends a fixed speed pan command in the currently selected protocol to the PTZ unit.
5. Stop sends a Stop command in the currently selected protocol to the PTZ unit.
6. Open sends an Iris Open command in the currently selected protocol to the PTZ unit.
7. Close sends an Iris Close command in the currently selected protocol to the PTZ unit.
8. Near sends a manual Focus Near command in the currently selected protocol to the PTZ unit.
9. Far sends a manual Focus Far command in the currently selected protocol to the PTZ unit.
10. Tele sends a Telephoto focal length Tele (makes the target to appear smaller)command in the currently selected protocol to the PTZ unit.
11. Wide sends a Telephoto focal length Wide (makes the target to appear larger) command in the currently selected protocol to the PTZ unit.
12. Expert calls the Glass Keyboard
13. Menu sends a Set Preset 95 command when it is depressed and then a Set Preset 28 command when it is released. Sending both of these Set Preset commands is done so that if the PTZ unit is working in 32 preset mode, the menu may be accessed.
14. Return goes back to the initial screen.
15. Exit exits the full system.

1.3.2 PTZ Control Screen, Slider Bars

1. The pan slider (this is the horizontal one) sends variable speed pan commands to the connected PTZ unit.
2. The tilt slider (this is the vertical one) sends variable speed pan commands to the connected PTZ unit.

[9] `$Header: d:/00RMKb/Design/RCS/PtzCon.inc,v 1.2 2010-06-15 08:27:11-07 Hamilton Exp Hamilton $`

1.3.3 PTZ Control Screen, HScroll/VScroll Bars

1. The Horizontal scroll bar send variable speed pan commands to the connected PTZ unit.
2. The Vertical scroll bar send variable speed tilt commands to the connected PTZ unit.

1.3.4 PTZ Control Screen, Read Only fields

1. The System Type field has the results of sending a Query command to the PTZ unit. It is blank if there was no reply.
2. The Command out field has the exact command sent out displayed in hexadecimal.
3. On the right of the Command out field is the current baud rate.
4. The Reply field has the exact command received displayed in hexadecimal.
5. On the right of the Reply is the current protocol type.

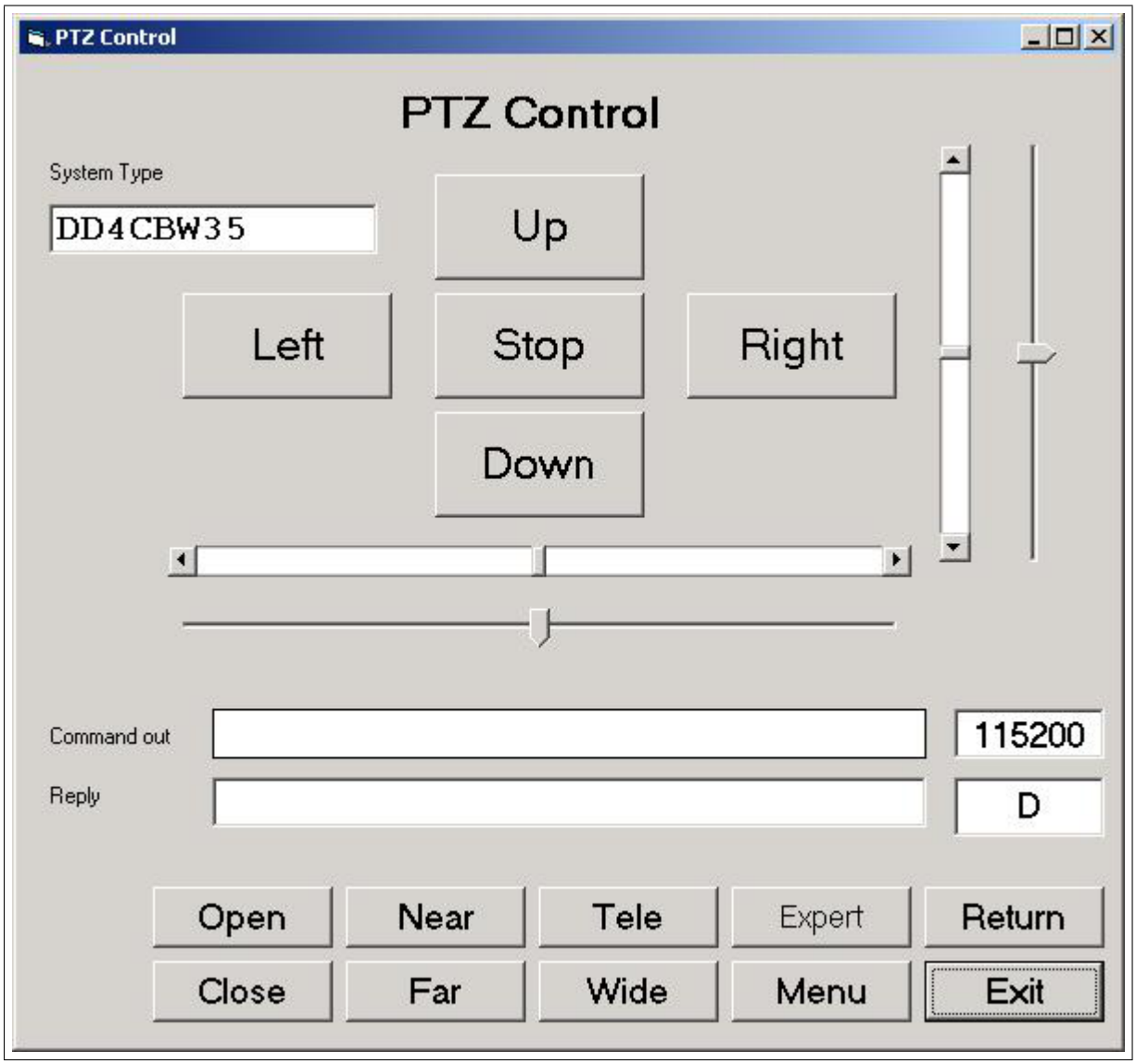


Figure 4: PTZ Screen

1.4 Glass Keyboard

A typical screen shot of the Glass Keyboard screen is shown in Figure 5, page 15

The Glass Keyboard is designed for advanced users and offers many features which are not listed in this docment.

When called it will take it initial parameters from those set up by the Down Loader. Once in the Glass Keyboard almost anything may be changed. Care must be used when in the Glass Keyboard as unexpected results may happen.

[10] `$Header: d:/00RMKb/Design/RCS/GlasKey.inc,v 1.1 2010-06-15 07:39:44-07 Hamilton Exp Hamilton $`

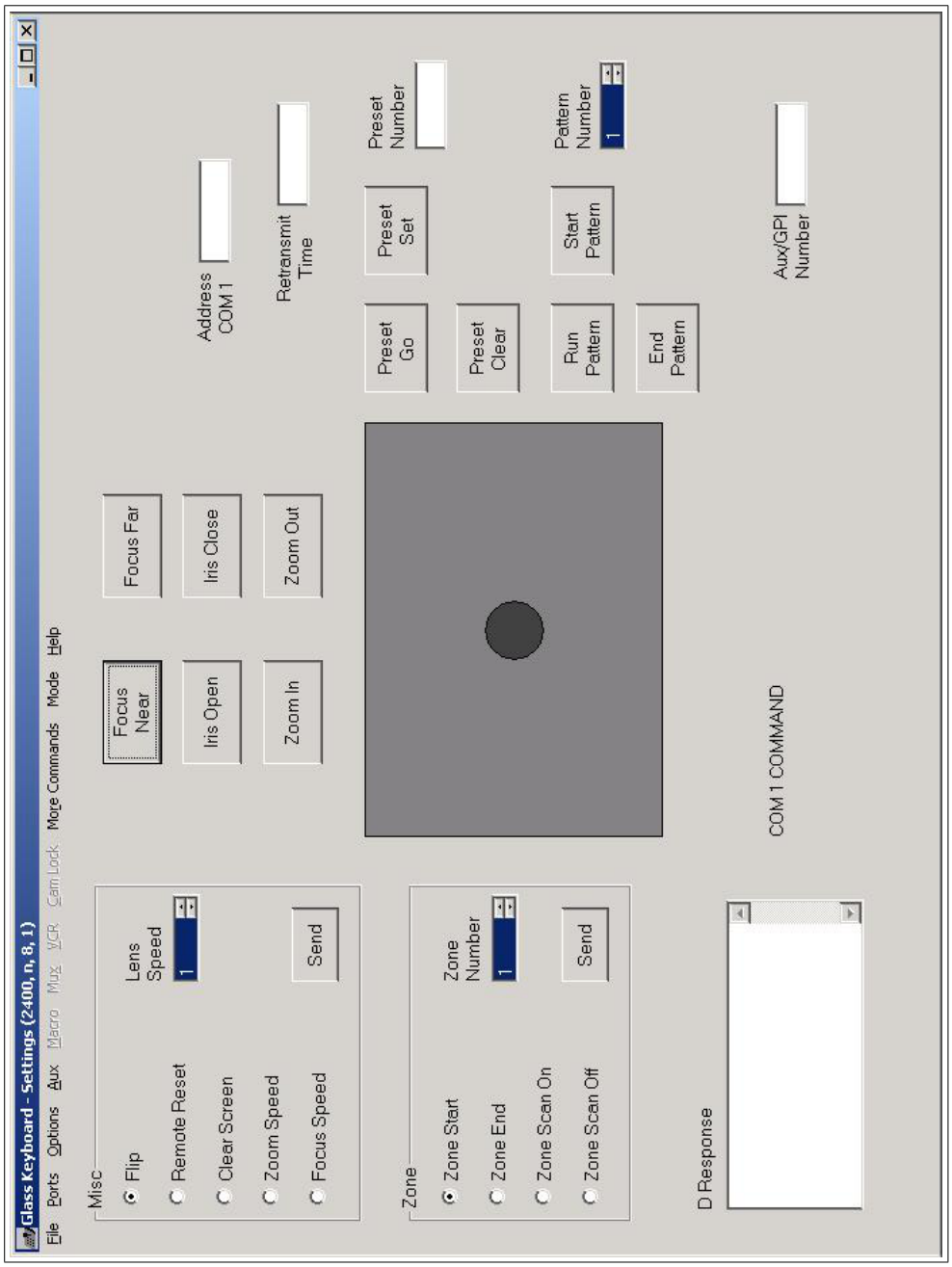


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Figure 5: Glass Keyboard Main Screen

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