

TXB Testing

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¹\$Header: d:/TXBs/RCS/TestCabl.tex,v 1.4 2006-04-10 07:19:20-07 Hamilton Exp Hamilton \$

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1 Power up sequence

Power up sequences consist of sending query commands to the Pelco PTZ unit until an answer is received at different baud rates. When a valid 18 byte reply is used, the baud rate that the command was sent at is then used for further communications with Pelco PTZ units. The query command is unique in that it is the only command that Pelco PTZ units do not look at the address in. Thus this is a way to find the address of the Pelco PTZ unit with software.

Following the receipt of a query response, the TXB will send its type, software revision ID and the configuration of any DIP switches/jumpers to the Pelco PTZ for display. This is done so that an installer has some idea of what is plugged into the Pelco PTZ. It also tells the installer that almost all of the TXB is operating correctly. The only part of the TXB that is not tested by this “name display” is the input circuitry from the competitor’s head end.

The TXB will clear the screen when it gets a first command from the head end. This is the point where these recordings stop.

1.1 In a Spectra

This is a recording of the power up sequence between a TXB-Hernis and a Spectra III, software rev 1.27. Before the logic was added to the TXB to autobaud the baud rate.

```

1  $Header: d:/TXBs/RCS/S-TXB-H1.out,v 1.1 2006-01-19 06:37:57-08 Hamilton Exp Hamilton $
2  $ Header: d:/TXB-Hernis/txb-h/Captures/RCS/s-txb-h1.out,v 1.2 2006-01-12 10:57:49-08 Hamilton
Exp $
3  FTS capture file: E:\Capture\newtest2.cfa (1/12/2006 10:15:07 AM)
4  Event 1 (1/12/2006 10:13:35.754380 AM) through
5  Event 3,543 (1/12/2006 10:14:14.971394 AM)
6
7      1,      1: DCE      0.000000      0.000000 ff 01 00 45 00 00 46
8      1,      1: DTE      0.008191      0.001041 ff 01 44 44 35 33 43 42 57 00 00 00 00 00 00 00
13
9
10     2,      8: DCE      0.031323      0.005449 ff 01 00 45 00 00 46
11     2,     19: DTE      0.039076      0.001041 ff 01 44 44 35 33 43 42 57 00 00 00 00 00 00 00
13
12
13     3,     15: DCE      0.062665      0.005903 ff 01 00 15 14 54 7e
14     3,     37: DTE      0.070386      0.001042 ff 01 00 7e
15     4,     22: DCE      0.093615      0.020111 ff 01 00 15 15 58 83
16     4,     41: DTE      0.101169      0.001042 ff 01 00 83
17     5,     29: DCE      0.124807      0.020521 ff 01 00 15 16 42 6e
18     5,     45: DTE      0.132990      0.001042 ff 01 00 6e
19     6,     36: DCE      0.155964      0.019848 ff 01 00 15 17 2d 5a
20     6,     49: DTE      0.164201      0.001039 ff 01 00 5a
21     7,     43: DCE      0.187104      0.019867 ff 01 00 15 18 48 76
22     7,     53: DTE      0.194663      0.001004 ff 01 00 76
23     8,     50: DCE      0.218310      0.020527 ff 01 00 15 19 45 74
24     8,     57: DTE      0.226903      0.001041 ff 01 00 74
25     9,     57: DCE      0.249500      0.019478 ff 01 00 15 1a 52 82
26     9,     61: DTE      0.257275      0.001041 ff 01 00 82

```

27	10,	64: DCE	0.280907	0.020515 ff 01 00 15 1b 4e 7f
28	10,	65: DTE	0.288471	0.001042 ff 01 00 7f
29	11,	71: DCE	0.312111	0.020516 ff 01 00 15 1c 49 7b
30	11,	69: DTE	0.320502	0.001038 ff 01 00 7b
31	12,	78: DCE	0.343249	0.019628 ff 01 00 15 1d 53 86
32	12,	73: DTE	0.351313	0.001042 ff 01 00 86
33	13,	85: DCE	0.374392	0.019955 ff 01 00 15 1e 20 54
34	13,	77: DTE	0.382697	0.001043 ff 01 00 54
35	14,	92: DCE	0.405529	0.019714 ff 01 00 15 1f 41 76
36	14,	81: DTE	0.413686	0.001043 ff 01 00 76
37	15,	99: DCE	0.436695	0.019890 ff 01 00 15 20 4c 82
38	15,	85: DTE	0.445098	0.001041 ff 01 00 82
39	16,	106: DCE	0.467834	0.019617 ff 01 00 15 21 50 87
40	16,	89: DTE	0.476200	0.001041 ff 01 00 87
41	17,	113: DCE	0.498974	0.019739 ff 01 00 15 22 48 80
42	17,	93: DTE	0.506558	0.001046 ff 01 00 80
43	18,	120: DCE	0.530190	0.020514 ff 01 00 15 23 41 7a
44	18,	97: DTE	0.537658	0.001016 ff 01 00 7a
45	19,	127: DCE	0.561342	0.020566 ff 01 00 15 24 20 5a
46	19,	101: DTE	0.569168	0.001008 ff 01 00 5a
47	20,	134: DCE	0.592487	0.020201 ff 01 00 15 25 30 6b
48	20,	105: DTE	0.600157	0.001033 ff 01 00 6b
49	21,	141: DCE	0.623811	0.020536 ff 01 00 15 26 20 5c
50	21,	109: DTE	0.631251	0.001043 ff 01 00 5c
51	22,	148: DCE	0.654949	0.020573 ff 01 00 15 27 20 5d
52	22,	113: DTE	0.662775	0.001041 ff 01 00 5d
53				
54	23,	155: DCE	13.812216	13.146391 ff 01 00 17 00 00 18
55	23,	117: DTE	13.820289	0.001043 ff 01 00 18
56				
57	24,	162: DCE	13.843161	0.019754 ff 01 00 04 30 00 35
58	24,	169: DCE	13.859196	0.009787 ff 01 00 75 00 00 76
59				
60	24,	121: DTE	14.144459	0.001042 ff 01 00 35
61	24,	125: DTE	14.148617	0.001043 ff 01 01 75
62				

1.2 In an ExSite

This is a recording of the power up sequence between a TXB-Hernis an ExSite, with wiper running software rev 1.03.

```

1  $Header: d:/TXBs/RCS/ExSite4.out,v 1.1 2006-01-19 06:37:44-08 Hamilton Exp Hamilton $
2  $ Header: d:/TXB-Hernis/txb-h/Captures/RCS/exsite4.out,v 1.1 2006-01-12 09:52:28-08 Hamilton
Exp $
3  FTS capture file: E:\Capture\newtest2.cfa (1/12/2006 9:29:01 AM)
4  Event 1 (1/12/2006 9:12:57.500578 AM) through
5  Event 5,060 (1/12/2006 9:14:04.137341 AM)
6
7      1,      1: DCE      0.000000      0.000000 ff 01 00 45 00 00 46
8      1,      1:  DTE      0.007510      0.001042 ff 01 49 50 53 58 4d 33 31 43 42 57 32 33 20 20 20
dd
9
10     2,      8: DCE      0.031643      0.006457 ff 01 00 45 00 00 46
11     2,     19:  DTE      0.039332      0.001035 ff 01 49 50 53 58 4d 33 31 43 42 57 32 33 20 20 20
dd
12
13     3,     15: DCE      0.063661      0.006711 ff 01 00 15 14 54 7e
14     3,     37:  DTE      0.071677      0.001049 ff 01 00 7e
15     4,     22: DCE      0.094605      0.019810 ff 01 00 15 15 58 83
16     4,     41:  DTE      0.102874      0.001041 ff 01 00 83
17     5,     29: DCE      0.125751      0.019759 ff 01 00 15 16 42 6e
18     5,     45:  DTE      0.133558      0.001042 ff 01 00 6e
19     6,     36: DCE      0.156902      0.020225 ff 01 00 15 17 2d 5a
20     6,     49:  DTE      0.164859      0.001056 ff 01 00 5a
21     7,     43: DCE      0.188050      0.020072 ff 01 00 15 18 48 76
22     7,     53:  DTE      0.196059      0.001049 ff 01 00 76
23     8,     50: DCE      0.219182      0.020006 ff 01 00 15 19 45 74
24     8,     57:  DTE      0.227054      0.001034 ff 01 00 74
25     9,     57: DCE      0.250334      0.020162 ff 01 00 15 1a 52 82
26     9,     61:  DTE      0.258252      0.001038 ff 01 00 82
27    10,     64: DCE      0.281479      0.020110 ff 01 00 15 1b 4e 7f
28    10,     65:  DTE      0.289345      0.001004 ff 01 00 7f
29    11,     71: DCE      0.312632      0.020169 ff 01 00 15 1c 49 7b
30    11,     69:  DTE      0.320647      0.001098 ff 01 00 7b
31    12,     78: DCE      0.343778      0.019999 ff 01 00 15 1d 53 86
32    12,     73:  DTE      0.351858      0.001044 ff 01 00 86
33    13,     85: DCE      0.374918      0.020017 ff 01 00 15 1e 20 54
34    13,     77:  DTE      0.382952      0.001118 ff 01 00 54
35    14,     92: DCE      0.406063      0.020065 ff 01 00 15 1f 41 76
36    14,     81:  DTE      0.413934      0.001043 ff 01 00 76
37    15,     99: DCE      0.437165      0.020096 ff 01 00 15 20 4c 82
38    15,     85:  DTE      0.445148      0.001117 ff 01 00 82
39    16,    106: DCE      0.468355      0.020157 ff 01 00 15 21 50 87
40    16,     89:  DTE      0.476287      0.001042 ff 01 00 87
41    17,    113: DCE      0.499500      0.020044 ff 01 00 15 22 48 80
42    17,     93:  DTE      0.507386      0.001041 ff 01 00 80
43    18,    120: DCE      0.530644      0.020088 ff 01 00 15 23 41 7a
44    18,     97:  DTE      0.538844      0.001042 ff 01 00 7a

```

45	19,	127: DCE	0.561785	0.019822 ff 01 00 15 24 20 5a
46	19,	101: DTE	0.569585	0.001040 ff 01 00 5a
47	20,	134: DCE	0.592945	0.020201 ff 01 00 15 25 30 6b
48	20,	105: DTE	0.600927	0.001042 ff 01 00 6b
49	21,	141: DCE	0.624092	0.020038 ff 01 00 15 26 20 5c
50	21,	109: DTE	0.632028	0.001042 ff 01 00 5c
51	22,	148: DCE	0.655222	0.020077 ff 01 00 15 27 20 5d
52	22,	113: DTE	0.663329	0.001041 ff 01 00 5d
53				
54	23,	155: DCE	10.147763	9.481314 ff 01 00 17 00 00 18
55	23,	117: DTE	10.155591	0.001043 ff 01 00 18
56				
57	24,	162: DCE	10.179058	0.020349 ff 01 00 02 1c 00 1f
58	24,	169: DCE	10.194970	0.009709 ff 01 00 75 00 00 76
59				
60	24,	121: DTE	10.455006	0.001049 ff 01 00 1f
61	24,	125: DTE	10.459132	0.001004 ff 01 01 75
62				

APPENDIX A

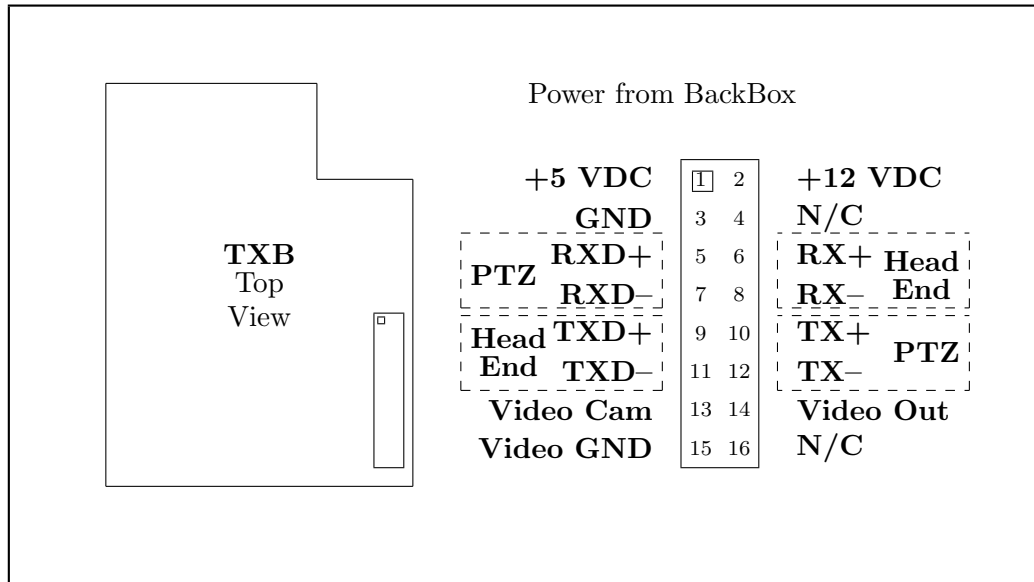
A Test Configurations

A.1 Cable Wiring

16-pin			Use
	1		+5 VDC, Esprit
	2		+12 VDC, Spectra
	3		Ground
	4		No Connection
A	5		RXD + to dome
	6	B	RX + to head end
A	7		RXD – to dome
	8	B	RX – to head end
A	9		TXD + to dome
	10	B	TX + to head end
A	11		TXD – to dome
	12	B	TX – to head end
	13		Video in, from dome
	14		Video out, to head end, Coaxitron in from head end
	15		Video ground
	16		No Connection

Table A-1. TXB socket wiring on the Spectra

²\$Header: d:/TXBs/RCS/16Pins.inc,v 1.2 2006-04-04 14:06:57-07 Hamilton Exp Hamilton \$



\$RCSfile: 16Pins.inc,v \$

Figure A-1. TXB pin outs

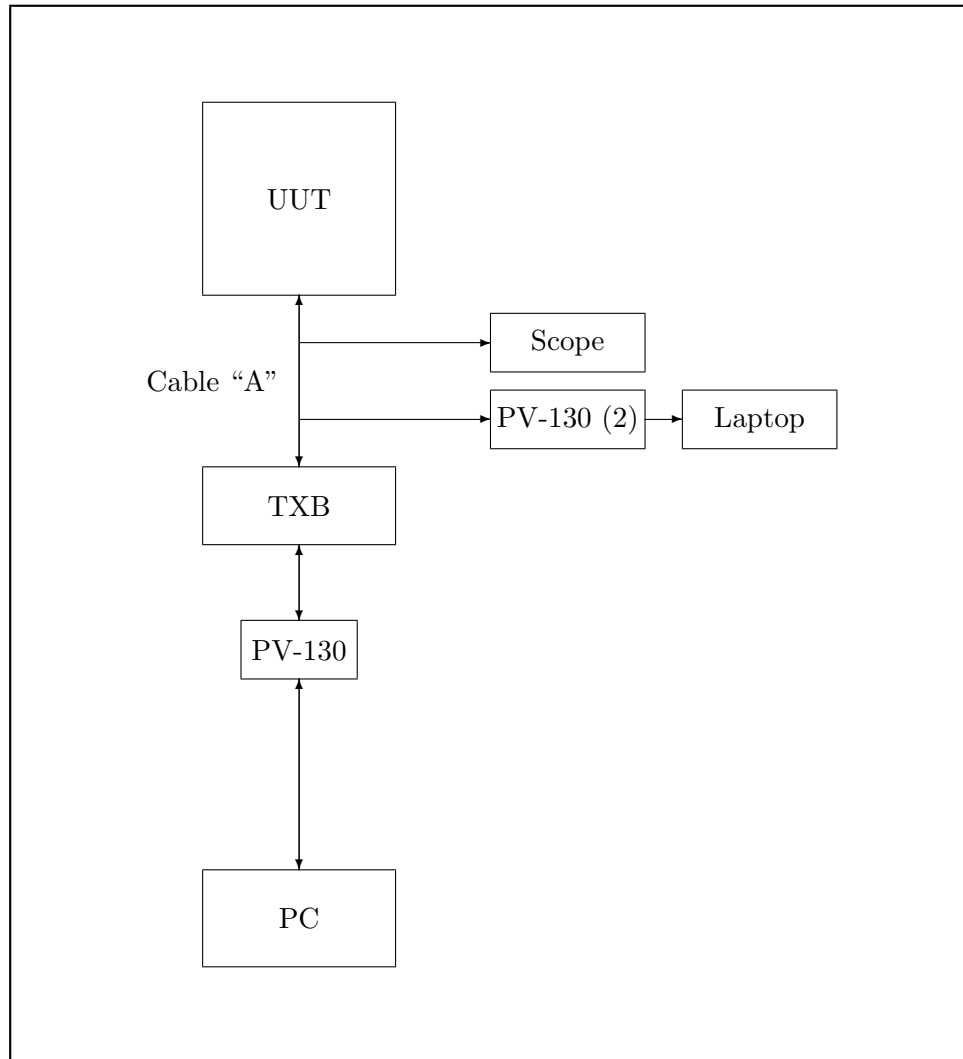
TXB-S422		Pin	Spectra II	
Direction	Name	#	Name	Connector
—	+5V	1	Open	—
—	+12V	2	+12V	—
—	Gnd	3	Gnd	—
—	Open	4	Open	—
To Camera	RXD+	5	RXD+	J6-6
From Control	RX+	6	RX+	P4-4
To Camera	RXD-	7	RXD-	J6-7
From Control	RX-	8	RX-	P4-3
From Control	TDX+	9	TXD+	J6-4
To Camera	TX+	10	TX+	P4-1
From Control	TXD-	11	TXD-	J6-5
To Camera	TX-	12	TX-	P4-2
—	Video	13	Video Cam	J7-10
—	Video	14	Video Out	J1
—	Gnd	15	Gnd	—
—	Open	16	Open	—

Table A-2: TXB RS-422 signal names *vs.* Spectra signal names, from SH11-0006-00B0 and SH05-0007-00F

Cable	Color	16-pin	Use	DB-9
A	Blue	12	TXB –	6
	Green	10	TXB +	1
	Black	8	RXD –	9
	Red	6	RXD +	5
B	Blue	11	TXB –	6
	Green	9	TXB +	1
	Black	7	RXD –	9
	Red	5	RXD +	5

Table A-3. Cable A & B wiring

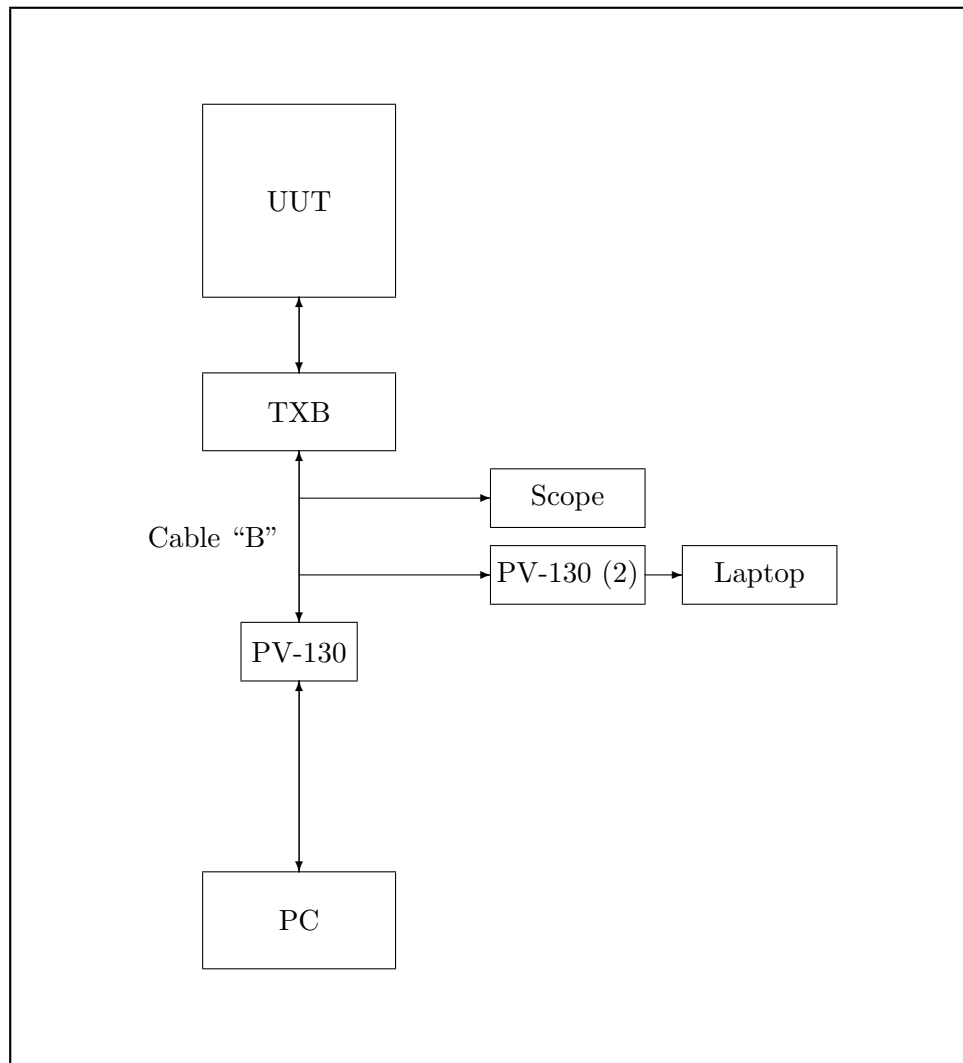
A.2 Configuration A



\$RCSfile: ConfigA.inc,v \$

Figure A-2. TXB test configuration "A", D Protocol between a TXB and a UUT

³\$Header: d:/TXBs/RCS/ConfigA.inc,v 1.3 2006-04-05 08:57:54-07 Hamilton Exp Hamilton \$

A.3 Configuration B

\$RCSfile: Configb.inc,v \$

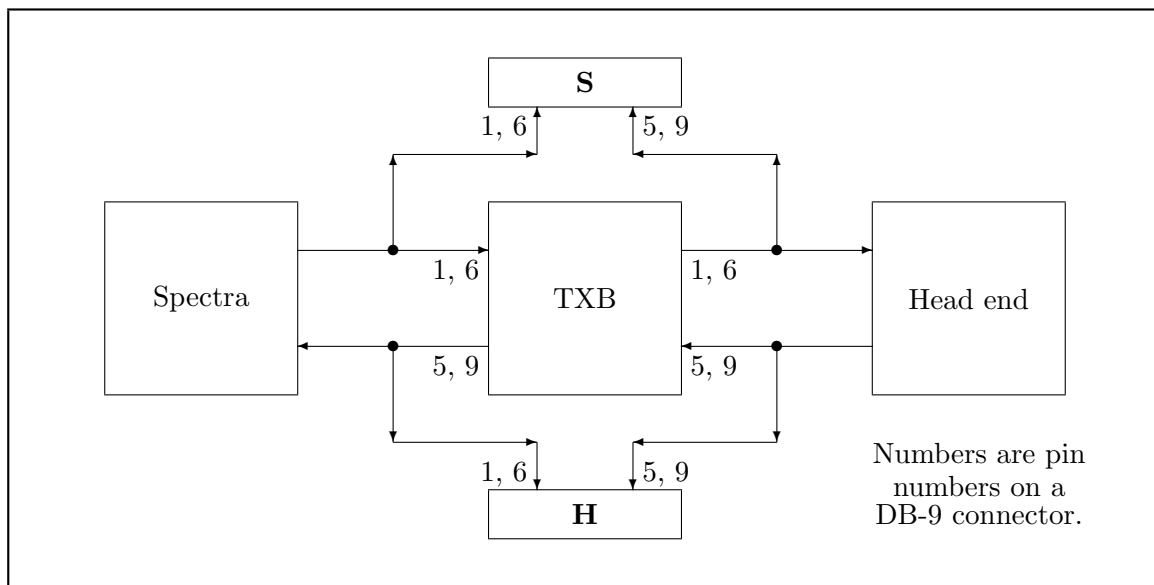
Figure A-3. TXB test configuration "B", Foreign Protocol between a head end and a TXB

⁴\$Header: d:/TXBs/RCS/Configb.inc,v 1.3 2006-04-05 08:57:54-07 Hamilton Exp Hamilton \$

A.4 Viewing Data Into and Out of a TXB

The data capture software may only view two directions of communications. The two cables described above, A and B, will either allow viewing of the data between the TXB and the Pelco PTZ (**B**) or between the TXB and the head end (**A**). There are times when it is important to know exactly how each input to the TXB is translated and sent out. There is also the reverse problem of knowing how Pelco PTZ replies are translated that come from the PTZ and return to the head end. There are two solutions to this problem:

1. Have two data capture computers with data capture software running on them.
2. Make a set of special cables:
 - 2.1. Make a special cable that will allow Head end transmit and TXB transmit data to be viewed simultaneously. This cable will be called the type “**H**” cable.
 - 2.2. Make a special cable that will allow Pelco PTX equipment transmit and TXB transmit data to be viewed simultaneously. This cable will be called the type “**S**”, for Spectra, cable.



\$RCSfile: shcables.inc,v \$

Figure A-4. Type S and H cables

⁵\$Header: d:/TXBs/RCS/shcables.inc,v 1.1 2007-04-26 12:37:24-07 Hamilton Exp Hamilton \$

APPENDIX B

B Running FTS Software

B.1 How to save data with FTS

Utilizing the new asynchronous data capture program from FrontLine Test Systems' named "Serialtest Async" requires that it be set up as follows to capture data from a Panasonic WV-CU161 keyboard in RS-485 four wire mode:

1. Configuration: Monitor Both 19200,N,8,1 19200,N,8,1 DTE=COM4, DCE=COM5.
Configuration parameters must match the equipment being tested/monitored.
2. Capture file:E:\Capture\test, or where ever you want to put it.
3. Bit Order: LSB first (normal)
4. Hardware Settings: Use FTS Cables
5. System Settings: Wrap Buffer is selected
6. System Settings: Capture Buffer Size (in K): 2052
7. System Settings: File Size (in K): 4102
8. Program Start Up Options: Prompt for a filename, then immediately start capturing.
9. Advanced System Options: <all at defaults>

After getting every thing turned on, click on the correct Icon, fool around a bit and then select "Live: Start Capture to Disk...".

To output the captured data:

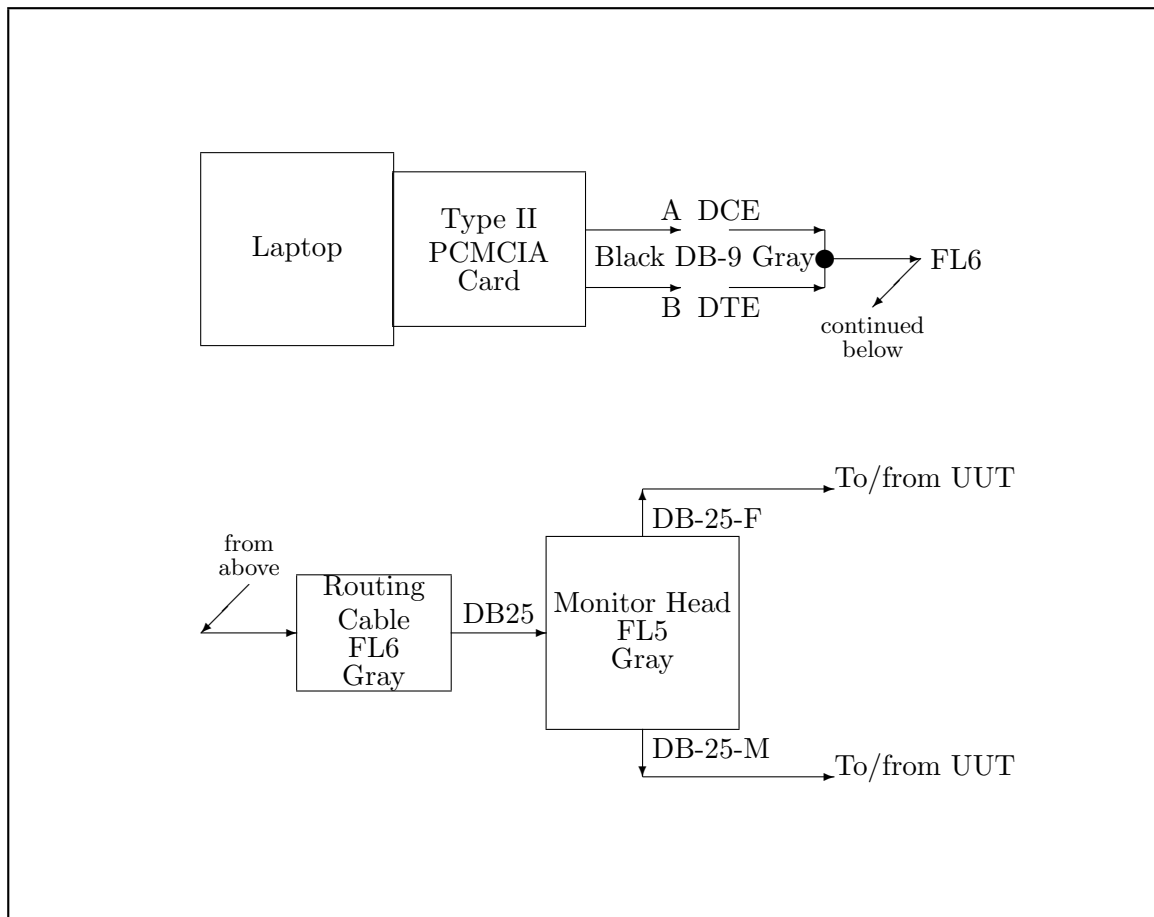
1. Export Events...
2. Apply Template: Sample Events
3. Displayed Fields: Side Timestamp Hexadecimal
4. Text Output
5. Separate Records With CR/LF
6. Output Header
7. Output Field Name Record

⁶\$Header: d:/TXBs/RCS/TestCab1.tex,v 1.4 2006-04-10 07:19:20-07 Hamilton Exp Hamilton \$

⁷\$Header: d:/TXBs/RCS/FtsSave.inc,v 1.2 2006-01-19 07:43:16-08 Hamilton Exp Hamilton \$

8. Align Field Names With Data
9. Timestamp Format: Native
10. Character Set: ASCII
11. Signals Characters: 1/0
12. Errors Characters: X/<sp>
13. Field Delimiter: Space
14. Filter Out: Neither Side
15. Export: Entire Buffer
16. As: Serialtest Async Events.txt or other name of your choice

⁸\$Header: d:/TXBs/RCS/InterCnt.inc,v 1.1 2006-01-19 07:05:39-08 Hamilton Exp Hamilton \$



\$RCSfile: InterCnt.inc,v \$

Figure B-1. Connections for use with FrontLine Systems' version of Breakout

B.1.1 Input Data Format

The capture data must be saved with the following fields in the following order:

1. Sample data line: "DCE_5_4/25/2007_10:58:07.148671_AM_31"

2. **Data Source:**

2.1. For cable **A**: "DCE_" (from TXB) or "DTE_" (from Pelco PTZ)

2.2. For cable **B**: "DCE_" (from PC) or "DTE_" (from TXB)

3. **Event #**: "5_"

4. **Date/Time**: "4/25/2007_10:58:07.148671_AM_"

Note that the day, month, and hour fields may be expressed as one or two digits. It is the responsibility of other analysis software to be able to work with variable sized fields.

5. **Data**: "31"

Typical first few lines of the capture file **must** be as follows:

```

1 FTS capture buffer (4/25/2007 10:58:49 AM)
2 Event 1 (4/25/2007 10:58:07.144509 AM) through
3 Event 317 (4/25/2007 10:58:25.618862 AM)
4
5 Sd  Event# Timestamp                Hx
6 DCE      1 4/25/2007 10:58:07.144509 AM 02
7 DCE      2 4/25/2007 10:58:07.145538 AM 41
8 DCE      3 4/25/2007 10:58:07.146586 AM 44
9 DCE      4 4/25/2007 10:58:07.147629 AM 30
10 DCE     5 4/25/2007 10:58:07.148671 AM 31
11 DCE     6 4/25/2007 10:58:07.149698 AM 3b
12 DCE     7 4/25/2007 10:58:07.150754 AM 51
13 DCE     8 4/25/2007 10:58:07.151796 AM 49
14 DCE     9 4/25/2007 10:58:07.152843 AM 44
15 DCE    10 4/25/2007 10:58:07.153891 AM 03
16 DTE    11 4/25/2007 10:58:07.179288 AM 06
17 DTE    12 4/25/2007 10:58:07.195838 AM 02
18 DTE    13 4/25/2007 10:58:07.196898 AM 41
19 DTE    14 4/25/2007 10:58:07.197960 AM 44
20 DTE    15 4/25/2007 10:58:07.199021 AM 30
21 DTE    16 4/25/2007 10:58:07.199914 AM 31
22 DTE    17 4/25/2007 10:58:07.201145 AM 3b
23 DTE    18 4/25/2007 10:58:07.202204 AM 57
24 DTE    19 4/25/2007 10:58:07.203264 AM 56
25 DTE    20 4/25/2007 10:58:07.204326 AM 2d
26 DTE    21 4/25/2007 10:58:07.205387 AM 43
27 DTE    22 4/25/2007 10:58:07.206449 AM 53
28 DTE    23 4/25/2007 10:58:07.207509 AM 38
29 DTE    24 4/25/2007 10:58:07.208570 AM 35
30 DTE    25 4/25/2007 10:58:07.209642 AM 30

```

31	DTE	26	4/25/2007	10:58:07.210530	AM	41
32	DTE	27	4/25/2007	10:58:07.211590	AM	03
33	DCE	28	4/25/2007	10:58:08.294527	AM	02
34	DCE	29	4/25/2007	10:58:08.295564	AM	52
35	DCE	30	4/25/2007	10:58:08.296607	AM	4f
36	DCE	31	4/25/2007	10:58:08.297653	AM	4e
37	DCE	32	4/25/2007	10:58:08.298690	AM	3a
38	DCE	33	4/25/2007	10:58:08.299738	AM	30
39	DCE	34	4/25/2007	10:58:08.300779	AM	03
40	DTE	35	4/25/2007	10:58:08.313702	AM	06
41	DTE	36	4/25/2007	10:58:08.329405	AM	02
42	DTE	37	4/25/2007	10:58:08.330464	AM	52
43	DTE	38	4/25/2007	10:58:08.331395	AM	4f
44	DTE	39	4/25/2007	10:58:08.332588	AM	4e
45	DTE	40	4/25/2007	10:58:08.333649	AM	03
46	DCE	41	4/25/2007	10:58:09.447848	AM	02
47	DCE	42	4/25/2007	10:58:09.448891	AM	41
48	DCE	43	4/25/2007	10:58:09.449933	AM	44
49	DCE	44	4/25/2007	10:58:09.450981	AM	30
50	DCE	45	4/25/2007	10:58:09.452022	AM	31

B.2 Saving Oscilloscope Pictures

With a Tektronix TDS220 (and other similar Tektronix Oscilloscopes) configure the printer port as follows:

1. Hard Copy Setup:
 - 1.1. LAYOUT Portrait
 - 1.2. FORMAT EPSIMAGE
 - 1.3. PORT RS232
2. RS-232 setup:
 - 2.1. BAUD 19,200
 - 2.2. FLOW CONTROL None
 - 2.3. EOL STRING CR/LF
 - 2.4. PARITY None
3. Computer setup.
 - 3.1. Boot the computer into “real DOS” not “DOS in a window” if using Kermit to collect data.
 - 3.2. On the computer set it up to receive serial data.
 - 3.3. Use a “null modem” or “Laplink” type cable to connect the two together.
 - 3.4. Using this configuration, it will take 1 to 2 minuets to transfer the data from the oscilloscope to the picture.

⁹\$Header: d:/TXBs/RCS/ScopeSav.inc,v 1.1 2006-01-19 07:05:49-08 Hamilton Exp Hamilton \$

APPENDIX C

C MAKESECS.L

Serial data captured with the SerialTest Async program has to be “processed” before it is in a format that allows easy understanding of what is there. The flex program MAKESECS is used to do the first step of getting rid of some unused data and converting the time into a total seconds field¹¹.

C.1 Raw Data Capture File

The SerialTest Async program converts its captured data into an ASCII file. The order and some of the format of the output file is selected via parameters in the “Export Events” menu choice. For normal collection of data the following fields were chosen as shown below:

DTE 9/27/2005 8:34:55.468656 AM 57

1. DTE_L: This is the source of the data. It is either DTE (Data Terminal Equipment) or DCE (Data Communication Equipment). Both of these are old terms and have little to do with collecting data when the data has to be converted from RS-422 levels to RS-232 as the two values may be easily interchanged. It is important to remember that once an assignment is made to not change it for the duration of testing.
2. 9/27/2005_L: This is the date that the capture was performed on. The date and time are selected as one item, thus it is necessary to get the date if the time field is wanted. This format is variable and has been observed to have the following formats with M = Month, D = Day and Y = Year:
 - 2.1. M/D/YYYY
 - 2.2. M/DD/YYYY
 - 2.3. MM/D/YYYY
 - 2.4. MM/DD/YYYY
3. 8:34:55.468656_L: This is the time of data capture. It has the following formats with H = Hours, M = Minutes, S = full Seconds and s = parts of a second:
 - 3.1. H:MM:SS.ssssss
 - 3.2. HH:MM:SS.ssssss
4. AM_L: This indicates which half of the day the data was captured during. It has the following formats:

¹⁰\$Header: d:/TXBs/RCS/MakeSecs.inc,v 1.3 2005-09-29 11:27:20-07 Hamilton Exp Hamilton \$

¹¹All the samples/examples used in this document came from testing the TXB-NTCIP when it was installed in a Spectra III SE running rev 1.27 of the software.

- 4.1. A
- 4.2. AM
- 4.3. P
- 4.4. PM

57: This is the hexadecimal value that was captured. Hex bytes are represented by lower case letters.

C.1.1 Sample Raw Data File

```
1 FTS capture file: E:\Capture\newtest2.cfa (9/27/2005 8:40:01 AM)
2 Event 1 (9/27/2005 8:33:26.076887 AM) through
3 Event 1,103 (9/27/2005 8:39:31.531404 AM)
4
5 Sd Timestamp Hx
6 DTE 9/27/2005 8:33:26.076887 AM
7 DTE 9/27/2005 8:33:26.076901 AM 00
8 DCE 9/27/2005 8:34:55.452286 AM ff
9 DCE 9/27/2005 8:34:55.453361 AM 01
10 DCE 9/27/2005 8:34:55.454402 AM 00
11 DCE 9/27/2005 8:34:55.455445 AM 45
12 DCE 9/27/2005 8:34:55.456458 AM 00
13 DCE 9/27/2005 8:34:55.457462 AM 00
14 DCE 9/27/2005 8:34:55.458562 AM 46
15 DTE 9/27/2005 8:34:55.460336 AM ff
16 DTE 9/27/2005 8:34:55.461383 AM 01
17 DTE 9/27/2005 8:34:55.462426 AM 44
18 DTE 9/27/2005 8:34:55.463466 AM 44
19 DTE 9/27/2005 8:34:55.464481 AM 35
20 DTE 9/27/2005 8:34:55.465484 AM 33
21 DTE 9/27/2005 8:34:55.466579 AM 43
22 DTE 9/27/2005 8:34:55.467620 AM 42
23 DTE 9/27/2005 8:34:55.468656 AM 57
24 DTE 9/27/2005 8:34:55.469698 AM 00
25 DTE 9/27/2005 8:34:55.470738 AM 00
26 DTE 9/27/2005 8:34:55.471781 AM 00
27 DTE 9/27/2005 8:34:55.472815 AM 00
28 DTE 9/27/2005 8:34:55.473856 AM 00
29 DTE 9/27/2005 8:34:55.474899 AM 00
30 DTE 9/27/2005 8:34:55.475940 AM 00
31 DTE 9/27/2005 8:34:55.476975 AM 00
32 DTE 9/27/2005 8:34:55.478018 AM 13
33 DCE 9/27/2005 8:34:55.545387 AM ff
34 DCE 9/27/2005 8:34:55.546455 AM 01
35 DCE 9/27/2005 8:34:55.547495 AM 00
36 DCE 9/27/2005 8:34:55.548537 AM 6b
37 DCE 9/27/2005 8:34:55.549579 AM 00
38 DCE 9/27/2005 8:34:55.550620 AM 00
39 DCE 9/27/2005 8:34:55.551669 AM 6c
40 DTE 9/27/2005 8:34:55.553205 AM ff
41 DTE 9/27/2005 8:34:55.554247 AM 01
42 DTE 9/27/2005 8:34:55.555290 AM 00
43 DTE 9/27/2005 8:34:55.556331 AM 6d
44 DTE 9/27/2005 8:34:55.557365 AM 01
45 DTE 9/27/2005 8:34:55.558407 AM 17
46 DTE 9/27/2005 8:34:55.559450 AM 86
47 DCE 9/27/2005 8:34:56.513995 AM ff
48 DCE 9/27/2005 8:34:56.515053 AM 01
49 DCE 9/27/2005 8:34:56.516113 AM 00
50 DCE 9/27/2005 8:34:56.517175 AM 00
51 DCE 9/27/2005 8:34:56.518236 AM 00
52 DCE 9/27/2005 8:34:56.519303 AM 00
53 DCE 9/27/2005 8:34:56.520345 AM 01
54 DTE 9/27/2005 8:34:56.522072 AM ff
55 DTE 9/27/2005 8:34:56.523107 AM 01
56 DTE 9/27/2005 8:34:56.524074 AM 00
57 DTE 9/27/2005 8:34:56.525190 AM 01
```

C.2 Output from MAKESECS

MAKESECS processes the raw capture file and does the following to it.

1. It inserts a control field for RCS/VisualSourceSafe to use. This is the first line of the output.
2. Then the next three lines are saved. This is the original header that SerialTest Async placed in the file as a very brief overview of what the file is about.
3. The SerialTest Async column header is deleted.
4. Then the captured data is reformatted as follows:

```
      2,11::DTE89.3917690.00103657
```

- 4.1. 2,: Indicates that this is the second message group from its source. Source will be either DTE or DCE.
- 4.2. 11:: Indicates that this is the 11th overall byte from its source. This field is copied directly from the capture file.
- 4.3. DTE: Indicates that this message/byte comes from the DTE data source. All DTE flags are offset by one byte to make them slightly different from the DCE flags
- 4.4. 89.391769: Total seconds of the day relative to the start of this data capture. This is converted from hours, minutes, seconds and AM/PM information. However end of day rollover, end of month rollover and end of year rollover are not properly processed. I.e. don't expect good results if the capture is through midnight local time.
- 4.5. 0.001036: Time from the preceding byte from this source. In this case 0.001036 is about the "right" time for bytes coming in at a 9,600 baud rate. There is a time quantization, or granularity, problem with the clock and getting the "exact" right time. Inter byte times for various baud rates (all of these end up with repeating 3's or 6's):
 - 4.5.1. 1200 = .0083333 sec
 - 4.5.2. 2400 = .0041666 sec
 - 4.5.3. 4800 = .0020833 sec
 - 4.5.4. 9600 = .0010416 sec
 - 4.5.5. 19200 = .00042083 sec
- 4.6. 57: The data byte in hexadecimal. This field is copied directly from the capture file.
5. After processing all of the input data some overall statistics are output. These self explanatory statistics message are:
 - 5.1. There were a total of 52 bytes transferred
 - 5.2. There were a total of 21 DCE bytes transferred

- 5.3. The first DCE byte came in at 89.375399 seconds from the start of data collection
 - 5.4. The last DCE byte was at 90.443458 seconds from the start of data collection
 - 5.5. There were a total of 31 DTE bytes transferred
 - 5.6. The first DTE byte came in at 0.000000 seconds from the start of data collection
 - 5.7. The last DTE byte was at 90.448303 seconds from the start of data collection
6. From time to time various changes in the exact format will be made at the whim of the person using the program.

C.2.1 Raw output of the MAKESECS program

```

1 $Header: d:/TXBs/RCS/Start1.dat,v 1.1 2006-01-11 09:28:42-08 Hamilton Exp Hamilton $
2 FTS capture file: E:\Capture\newtest2.cfa (9/27/2005 8:40:01 AM)
3 Event 1 (9/27/2005 8:33:26.076887 AM) through
4 Event 1,103 (9/27/2005 8:39:31.531404 AM)
5
6
7 1,      1: DTE      0.000000      0.000000
8 1,      2: DTE      0.000014      0.000014 00
9
10 2,      1: DCE      89.375399      89.375385 ff
11 2,      2: DCE      89.376474      0.001075 01
12 2,      3: DCE      89.377515      0.001041 00
13 2,      4: DCE      89.378558      0.001043 45
14 2,      5: DCE      89.379571      0.001013 00
15 2,      6: DCE      89.380575      0.001004 00
16 2,      7: DCE      89.381675      0.001100 46
17
18 2,      3: DTE      89.383449      0.001100 ff
19 2,      4: DTE      89.384496      0.001047 01
20 2,      5: DTE      89.385539      0.001043 44
21 2,      6: DTE      89.386579      0.001040 44
22 2,      7: DTE      89.387594      0.001015 35
23 2,      8: DTE      89.388597      0.001003 33
24 2,      9: DTE      89.389692      0.001095 43
25 2,     10: DTE      89.390733      0.001041 42
26 2,     11: DTE      89.391769      0.001036 57
27 2,     12: DTE      89.392811      0.001042 00
28 2,     13: DTE      89.393851      0.001040 00
29 2,     14: DTE      89.394894      0.001043 00
30 2,     15: DTE      89.395928      0.001034 00
31 2,     16: DTE      89.396969      0.001041 00
32 2,     17: DTE      89.398012      0.001043 00
33 2,     18: DTE      89.399053      0.001041 00
34 2,     19: DTE      89.400088      0.001035 00
35 2,     20: DTE      89.401131      0.001043 13
36
37 3,      8: DCE      89.468500      0.067369 ff
38 3,      9: DCE      89.469568      0.001068 01

```

```

39      3,      10: DCE      89.470608      0.001040 00
40      3,      11: DCE      89.471650      0.001042 6b
41      3,      12: DCE      89.472692      0.001042 00
42      3,      13: DCE      89.473733      0.001041 00
43      3,      14: DCE      89.474782      0.001049 6c
44
45      3,      21: DTE      89.476318      0.001049 ff
46      3,      22: DTE      89.477360      0.001042 01
47      3,      23: DTE      89.478403      0.001043 00
48      3,      24: DTE      89.479444      0.001041 6d
49      3,      25: DTE      89.480478      0.001034 01
50      3,      26: DTE      89.481520      0.001042 17
51      3,      27: DTE      89.482563      0.001043 86
52
53      4,      15: DCE      90.437108      0.954545 ff
54      4,      16: DCE      90.438166      0.001058 01
55      4,      17: DCE      90.439226      0.001060 00
56      4,      18: DCE      90.440288      0.001062 00
57      4,      19: DCE      90.441349      0.001061 00
58      4,      20: DCE      90.442416      0.001067 00
59      4,      21: DCE      90.443458      0.001042 01
60
61      4,      28: DTE      90.445185      0.001042 ff
62      4,      29: DTE      90.446220      0.001035 01
63      4,      30: DTE      90.447187      0.000967 00
64      4,      31: DTE      90.448303      0.001116 01
65
66 There were a total of          52 bytes transferred
67
68 There were a total of          21 DCE bytes transferred
69 The first DCE byte came in at 89.375399 seconds from the start of data collection
70 The last DCE byte was at 90.443458 seconds from the start of data collection
71
72 There were a total of          31 DTE bytes transferred
73 The first DTE byte came in at 0.000000 seconds from the start of data collection
74 The last DTE byte was at 90.448303 seconds from the start of data collection
75

```

C.3 Final Processing of the MAKESECS Processed Capture File

The output of MAKESECS is then taken, and using an editor, has each message formatted to fit on one line and then that line usually has a textual description of what it is appended.

```

1  $Header: d:/TXBs/RCS/Start2.dat,v 1.1 2006-01-11 09:28:44-08 Hamilton Exp Hamilton $
2  FTS capture file: E:\Capture\newtest2.cfa (9/27/2005 8:40:01 AM)
3  Event 1 (9/27/2005 8:33:26.076887 AM) through
4  Event 1,103 (9/27/2005 8:39:31.531404 AM)
5
6
7      1,      1: DTE      0.000000      0.000000                      Noise
8      1,      2: DTE      0.000014      0.000014 00                      Noise
9      2,      1: DCE      89.375399      89.375385 ff 01 00 45 00 00 46 Query
10     2,      3: DTE      89.383449      0.001100 ff 01 44 44 35 33 43 42 57 00 00 00 00 00 00 00 13 Query
Reply
11     3,      8: DCE      89.468500      0.067369 ff 01 00 6b 00 00 6c Query Device Type
12     3,     21: DTE      89.476318      0.001049 ff 01 00 6d 01 17 86 Device Type Response
13     4,     15: DCE      90.437108      0.954545 ff 01 00 00 00 00 01 Stop
14     4,     28: DTE      90.445185      0.001042 ff 01 00 01                      Response
15
16 There were a total of      52 bytes transferred
17
18 There were a total of      21 DCE bytes transferred
19 The first DCE byte came in at 89.375399 seconds from the start of data collection
20 The last DCE byte was at 90.443458 seconds from the start of data collection
21
22 There were a total of      31 DTE bytes transferred
23 The first DTE byte came in at 0.000000 seconds from the start of data collection
24 The last DTE byte was at 90.448303 seconds from the start of data collection
25

```


APPENDIX D

D D Protocol Commands

0x03 /3	Set Preset
0x05 /5	Clear Preset
0x07 /7	Go To Preset
0x09 /9	Set Auxiliary
0x0B /11	Clear Auxiliary
0x0D /13	Dummy
0x0F /15	Remote Reset
0x11 /17	Set Zone Start
0x13 /19	Set Zone End
0x15 /21	Write Character to Screen
0x17 /23	Clear Screen
0x19 /25	Alarm Acknowledge
0x1B /27	Zone Scan On
0x1D /29	Zone Scan Off
0x1F /31	Set Pattern Start
0x21 /33	Set Pattern Stop
0x23 /35	Run Pattern
0x25 /37	Set Zoom Speed
0x27 /39	Set Focus Speed
0x29 /41	Reset Camera defaults
0x2B /43	Auto-focus auto/on/off
0x2D /45	Auto Iris auto/on/off
0x2F /47	AGC auto/on/off
0x31 /49	Backlight compensation on/off
0x33 /51	Auto white balance on/off
0x35 /53	Enable device phase delay mode
0x37 /55	Set shutter speed
0x39 /57	Adjust line lock phase delay
0x3B /59	Adjust white balance (R-B)
0x3D /61	Adjust white balance (M-G)
0x3F /63	Adjust gain
0x41 /65	Adjust auto-iris level
0x43 /67	Adjust auto-iris peak value
<i>Continued on the next page.</i>	

¹²\$Header: d:/TXBs/RCS/DCmnds.inc,v 1.1 2006-04-10 07:20:05-07 Hamilton Exp Hamilton \$

<i>Continued from the previous page.</i>	
0x45 /69	Query
0x47 /71	Preset Scan
0x49 /73	Set Zero Position
0x4B /75	Set Pan Position
0x4D /77	Set Tilt Position
0x4F /79	Set Zoom Position
0x51 /81	Query Pan Position
0x53 /83	Query Tilt Position
0x55 /85	Query Zoom Position
0x57 /87	Download
0x5F /95	Set Magnification
0x61 /97	Query Magnification
0x65 /101	Activate Echo Mode
0x67 /103	Set Remote Baud Rate
0x69 /105	Start Download
0x6B /107	Query Device Type
0x6F /111	Query Diagnostic Info
0x73 /115	Version Information Macro Opcode
0x75 /117	Everest Macro Opcode
0xFD /253	Return Status
0xFF /255	Invalid op code
0x01 /1	Standard Extended Response
0x59 /89	Query Pan Response
0x5B /91	Query Tilt Response
0x5D /93	Query Zoom Response
0x63 /99	Query Magnification Response
0x6D /109	Query Device Type Response
0x71 /113	Query Diagnostic Info Response

APPENDIX E

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