

# ALP TEX

*Your Complete Memory Emulation Source*

## **Guide for unpacking, setting up and using the ALPTEX "ie" ROM Emulator Demo Kit**



*Your biggest challenge should be your project...  
not your tools.*

# **Guide for unpacking, setting up and using the ALPTEX “ie” ROM Emulator Demo Kit**

This guide is intended to help the new user of ALPTEX’s “ie” ROM Emulator get started. It is, in a sense, a “quick start” guide to introduce you to ie. It will typically take the novice less than 30 minutes to complete this guide...for the experienced user, perhaps 5 minutes. Please note that when you are asked to enter data, do not type the quotes seen in the text.

Full, printable, instructions are contained on each page of the host application, “iemulate”...just click on the “?” at the bottom right corner of each page. We urge the user to read through the built-in instructions carefully, ie and the iemulate software are very powerful tools which can drastically shorten the time it takes to get your product to market.

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*All Statements, Specifications And Technical Information Are Subject To Change At Any Time*

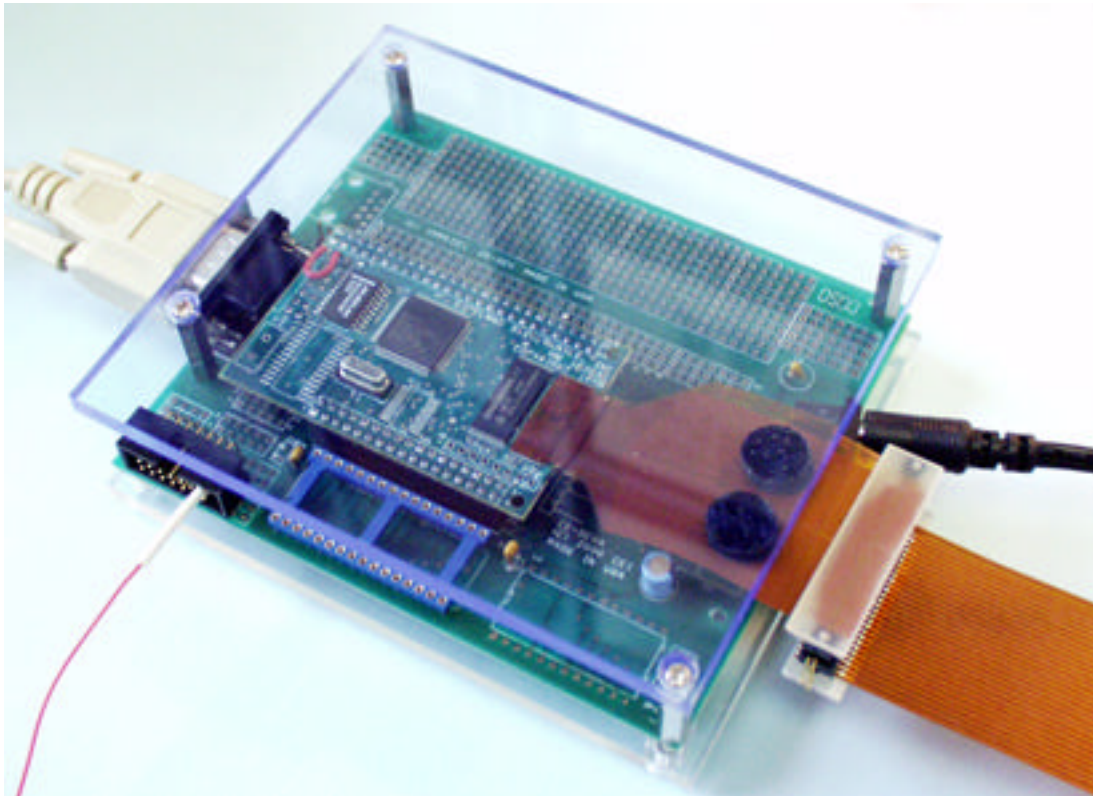
□ Unpacking:

- ALPTEX “ie” ROM Emulator...PN 923825
  - External Power Supply...110VAC@.4A Input, 5VDC@3A Output. This is identical to the power supply listed with the development board below.
  - Standard Ethernet Cable...Blue, 7Ft.
  - Null Ethernet Cable...Yellow, 7 Ft.
  - Serial Cable...Gray, 8 Pin MiniDin to 9 Pin FM D, 5 Ft.
  - Target Reset Wire...Red, 1 Pin Socket to 1 Pin Socket, 16 In.
  - Target Interrupt Wire...Yellow, 1 Pin Socket to 1 Pin Socket, 16 In.
  - ALPTEX “iemulate” CD
- ALPTEX PGM II Remap Adaptor...PN 923810-SSPR-0001
- ALPTEX Extender...PN 923728-56 or PN 923752-60
- ALPTEX FlexProbe...PN 923712-32 (Preassembled to the target)
- Copeland Electronics Demonstration Target
  - CE188 Single Board Computer (Preassembled to the Mounting Kit)
  - CEDEV Development Board (Preassembled to the Mounting Kit)
  - Mounting Kit
  - External Power Supply...110VAC@.4A Input, 5VDC@3A Output This is identical to the power supply listed with the ROM Emulator above.

□ Setting Up (Photo follows on the next page):

- Unzip and install the contents of the ALPTEX “iemulate” CD onto your computer’s hard drive.
- Plug the PGM II Remap Adaptor into the ROM Emulator.
- Plug the FlexProbe into the Extender.
- Plug the Extender into the PGM II Remap Adaptor. Position components to minimize the strain on the FlexProbe.
- Plug one end of the Target Reset Wire (Red) into pin #1 (upper right corner) of the 14 pin header on the CEDEV Development Board. Plug the opposite end into pin #1 of the IO Header on the ROM Emulator (upper right corner).
- Plug one end of the Target Interrupt Wire (Yellow) into pin #2 (lower right corner) of the 14 pin header on the CEDEV Development Board. Plug the opposite end into pin #2 of the IO Header on the ROM Emulator (lower right corner).
- Plug the D connector of the Serial Cable into the D connector on the CEDEV Development Board. Tighten the screws.
- Plug the MiniDin connector of the Serial Cable into the serial port on the ROM Emulator.
- If you’re connecting the ROM Emulator to a LAN, connect the Standard Ethernet Cable (Blue) between the ROM Emulator and your LAN jack.
- If you’re connecting the ROM Emulator directly to your computer, connect the Null Ethernet Cable (Yellow) between the ROM Emulator and your computer.
- Connect the External Power Supply between the wall outlet and the power input jack of the ROM Emulator.
- Wait until the status light on the ROM Emulator glows Orange (about 6 seconds).
- Connect the External Power Supply between the wall outlet and the power input jack of the CEDEV Development Board.
- Recheck all connections. In particular, make sure that the PGM II, Extender and FlexProbe are fully plugged in.

**Note: The emulator must always be powered up BEFORE the target and powered down AFTER the target! When working on your project ALWAYS use this sequence! Failure to follow this sequence will cause damage to your target and/or your emulator and will void your warranty!!!**



***CE188 SBC, CEDEV and Mounting Kit***

- Using “ie” with the CE188 Demonstration Target:
  - Startup the ALPTEX “iemulate” software
    - First time users are required to read, understand and agree to the terms of the EULA (End User License Agreement).
  - Choose the IP address of the “ie” you want to use from the drop down menu near the center of the top of the screen.
    - The factory default is 192.168.0.210, but you can change this to conform with the settings of your LAN...just use the “Change IP Config” button on the “Options” page.
  - Click the “Connect” button
    - iemulate will negotiate and complete an ethernet connection to the chosen unit within a few seconds.
    - The screen, at this point, will show the minimum of features and options. This is done to keep the working environment “clutter” free.
  - If Emulation is indicated as being ON, click that button to turn it OFF.
  - Click the small, blue, downward pointing triangle to the left of the “More Functions...” button.
    - The File List fields will expand downward, in preparation for adding files to the list.
  - Click the “Add File” button
    - You’ll be asked to navigate to and choose a file to be added to the file list.
  - Choose the file called “CEfreeloader.hex”
    - You’ll be prompted to enter a few bits of information regarding how and where you want this file to be loaded into “ie”.
  - At the “Base Address” prompt, replace the “F0000” in the entry field with “80000”, and click “OK”.
    - You’ve just indicated that you want this file to be loaded with a base address of 80000 Hex in “ie’s” memory.
  - At the “Offset Address” prompt, leave the entry as “00000” and click “OK”.
    - You’ve just indicated that you want this file to be loaded with no “offset” from the base address.
  - The next prompt will ask you how you want this file loaded. For this exercise, choose the “Odd” bank of memory.
    - More discussion of this and many other features can be found in the Help screens of each page by clicking the “?” button in the lower right corner.
  - Repeat the last 5 steps, this time choosing the file “CE-188A.hex”. Use a Base Address of “80000”, an Offset of “00000” and choose the “Odd” bank.
    - Your files are now ready for loading into “ie”.
  - Click the “Load File” button.
    - Notice how, as each file is loaded, it appears highlighted and a progress bar appears above the fields. More detailed information is shown in the “Info Field” above that.
  - A dialog box may appear after file loading reminding you to set the mask. If this appears, click “OK”.
  - Set the mask by choosing one from the drop down menu to the right of the “Load File” button. For this exercise, choose “512KB Mask”.
  - Turn Emulation on by clicking the “Emulation” button.
    - Notice that the Status Light on top of the ie case is now green, indicating that it is emulating.
    - That’s it! You’re emulating the Flash memory for the CE188 target!

- Using ie's Virtual UART feature to READ the CE188 Demonstration Target's memory:
  - Click the "More Functions..." button
    - Many more buttons representing various features and options will appear.
  - Click the "I/O Header" button in the "Navigate" group in the lower right corner.
    - You're now on the page that controls the functions of the pins on the I/O Header.
  - Choose "Reset Lo" from the drop down menu for Pin #1 of the header. Do this by clicking on the field under "Pin#1"...this probably says "I/O In" right now...and making your choice from the menu.
    - Pin # 1 of the I/O Header is now ready to reset the target whenever that action is taken by you or by the iemulate software.
  - Choose "Wr0 Even" from the drop down menu of Pin #8 in a manner similar to the previous step.
    - You've just set how you want the CE188 target to write data into ie's memory.
  - Click "Apply Settings"
  - Now go to the "Options" page by clicking "Options".
  - Set the "Virtual UART" settings to 19200-8-N-1 by using the appropriate drop down menus.
  - Click "Main" to return to the Main page.
  - Click "Turn UART On" to enable the Virtual UART.
  - Emulation may be OFF at this point, depending on what settings you changed on the "Options" or "I/O Header" pages. If so, click "Emulation" to turn it back ON.
  - Click the "ieTerm" button
    - A new window appears. This is a TelNet session window...one that you'll use to communicate with the CE188 target through ie.
    - If you prefer, you can use the TelNet application of your choice for this portion of this demonstration. ieTerm is included with the iemulate application for your convenience.
  - Click the "Connect" button in the "ieTerm" window.
    - You'll see a "Connection Opened..." message, a Copeland Electronics copyright message and a "CE>" prompt appear. You'll also see a small green plug appear next to the "Connect" button and the word "Connect" will change to "Disconnect".
  - If you don't see a flashing insertion point after the "CE>" prompt, click to the right of the prompt.
  - Type "dump 817D6 33" and hit Return (or Enter).
    - What you've just done is to instruct the CE188 target to dump 34 bytes of data starting at memory address 817D6 (Hex). This is a portion of the files that you previously loaded into ie. The characters following the "CMD Dump" are (translated into ascii characters) "(C)2003 Copeland Electronics, Inc.". If you see a response of "Bad Command", you probably made an entry error. Just repeat the step.
    - Done! You're using ie's Virtual UART feature! Remember, at this point, the CE188's "memory" resides in ie. You're just looking at it from the target's perspective now.
  - Click "Disconnect" to end this TelNet session.
    - You'll see a "Connection Closed..." message.

- Using ie's Virtual UART feature to WRITE to the CE188 Demonstration Target's memory:
  - Click the "Connect" button in the "ieTerm" window.
    - You'll see a "Connection Opened..." message, a Copeland Electronics copyright message and a "CE>" prompt appear.
  - If you don't see a flashing insertion point after the "CE>" prompt, click to the right of the prompt.
  - Type "write 817E7 47" and hit Return (or Enter).
    - You've just written a single byte of data ("47" is the Hex representation of the letter "G") to a location in the CE188 Target's memory.
    - If you see a response of "Bad Command", you probably made an entry error. Just repeat the step.
  - Repeat the last step 3 more times as follows: "write 817E8 65", then "write 817E9 65" and finally "write 817EA 6B".
    - Now you've written 3 more bytes of data to the target's memory.
  - Click "Disconnect" to end this TelNet session. To see what you've accomplished, you'll now read ie's memory from the emulator's perspective.
    - You'll see a "Connection Closed..." message
  - Click on the Main page to bring that window to the front.
  - Turn emulation OFF by clicking the "Emulation" button.
    - Emulation must be off in order to "read" ie's memory.
  - Click the "Show Editor" button at the lower left of the page.
    - A set of fields with tabs at the top appear. This is where you can view files or the contents of ie's memory.
  - Click the third tab from the left (labeled "8b Memory").
    - This is where you can read the "Odd" bank of ie's memory.
  - Click the "Read Odd" button.
    - You'll be prompted to enter a memory address to start reading from.
  - Enter "17D0" and click "OK".
    - If you see the address prompt return, you probably made an entry error...perhaps entering the letter "O" instead of zero? No problem...simply repeat the step.
    - Previously, you used the Virtual UART to write data starting at "817E7"...so why start reading at "17D0"? Remember...you loaded these files with a base address of "80000"...so, we subtract that from the address you wrote to and get "17E7"...then we backed up a few more bytes just to view the results better.
    - The field on the left is the memory address field...the field in the center is the data contained at those addresses, represented in Hex values...and the field on the right is the ascii equivalent of those Hex values.
    - Looking at the field on the right, you can see that what you've accomplished is to change "Electronics" to "Geektronics"! ;=)
  - Click "Turn UART OFF"
  - Click "Disconnect"

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## ASCII Table

Dec	Hex	Oct	Char	Dec	Hex	Oct	Char	Dec	Hex	Oct	Char	Dec	Hex	Oct	Char
0	00	000	NUL (Null)	32	20	040	Space	64	40	100	@	96	60	140	`
1	01	001	SOH (Start Heading)	33	21	041	!	65	41	101	A	97	61	141	a
2	02	002	STX (Start of Text)	34	22	042	"	66	42	102	B	98	62	142	b
3	03	003	ETX (End of Text)	35	23	043	#	67	43	103	C	99	63	143	c
4	04	004	EOT (End of Trans.)	36	24	044	\$	68	44	104	D	100	64	144	d
5	05	005	ENQ (Enquiry)	37	25	045	%	69	45	105	E	101	65	145	e
6	06	006	ACK (Acknowledge)	38	26	046	&	70	46	106	F	102	66	146	f
7	07	007	BEL (Bell)	39	27	047	'	71	47	107	G	103	67	147	g
8	08	010	BS (Backspace)	40	28	050	(	72	48	110	H	104	68	150	h
9	09	011	TAB (Horizontal Tab)	41	29	051	)	73	49	111	I	105	69	151	i
10	0A	012	LF (Line Feed)	42	2A	052	*	74	4A	112	J	106	6A	152	j
11	0B	013	VT (Vertical Tab)	43	2B	053	+	75	4B	113	K	107	6B	153	k
12	0C	014	FF (Form Feed)	44	2C	054	,	76	4C	114	L	108	6C	154	l
13	0D	015	CR (Carriage Return)	45	2D	055	-	77	4D	115	M	109	6D	155	m
14	0E	016	SO (Shift Out)	46	2E	056	.	78	4E	116	N	110	6E	156	n
15	0F	017	SI (Shift In)	47	2F	057	/	79	4F	117	O	111	6F	157	o
16	10	020	DLE (Data Link Esc.)	48	30	060	0	80	50	120	P	112	70	160	p
17	11	021	DC1 (Dev. Control 1)	49	31	061	1	81	51	121	Q	113	71	161	q
18	12	022	DC2 (Dev. Control 2)	50	32	062	2	82	52	122	R	114	72	162	r
19	13	023	DC3 (Dev. Control 3)	51	33	063	3	83	53	123	S	115	73	163	s
20	14	024	DC4 (Dev. Control 4)	52	34	064	4	84	54	124	T	116	74	164	t
21	15	025	NAK (Neg. Ack.)	53	35	065	5	85	55	125	U	117	75	165	u
22	16	026	SYN (Synch. Idle)	54	36	066	6	86	56	126	V	118	76	166	v
23	17	027	ETB (End Trans. Blk)	55	37	067	7	87	57	127	W	119	77	167	w
24	18	030	CAN (Cancel)	56	38	070	8	88	58	130	X	120	78	170	x
25	19	031	EM (End of Medium)	57	39	071	9	89	59	131	Y	121	79	171	y
26	1A	032	SUB (Substitute)	58	3A	072	:	90	5A	132	Z	122	7A	172	z
27	1B	033	ESC (Escape)	59	3B	073	;	91	5B	133	[	123	7B	173	{
28	1C	034	FS (File Separator)	60	3C	074	<	92	5C	134	\	124	7C	174	
29	1D	035	GS (Grp Separator)	61	3D	075	=	93	5D	135	]	125	7D	175	}
30	1E	036	RS (Rec Separator)	62	3E	076	>	94	5E	136	^	126	7E	176	~
31	1F	037	US (Unit Separator)	63	3F	077	?	95	5F	137	_	127	7F	177	DEL