X-Keys
Protel PCB Layout

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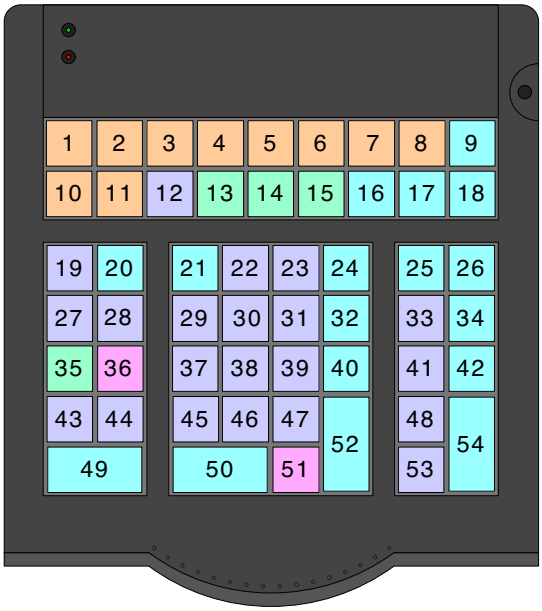
4/1/02

Protel PCB Shortcut Keys to X-Keys Map



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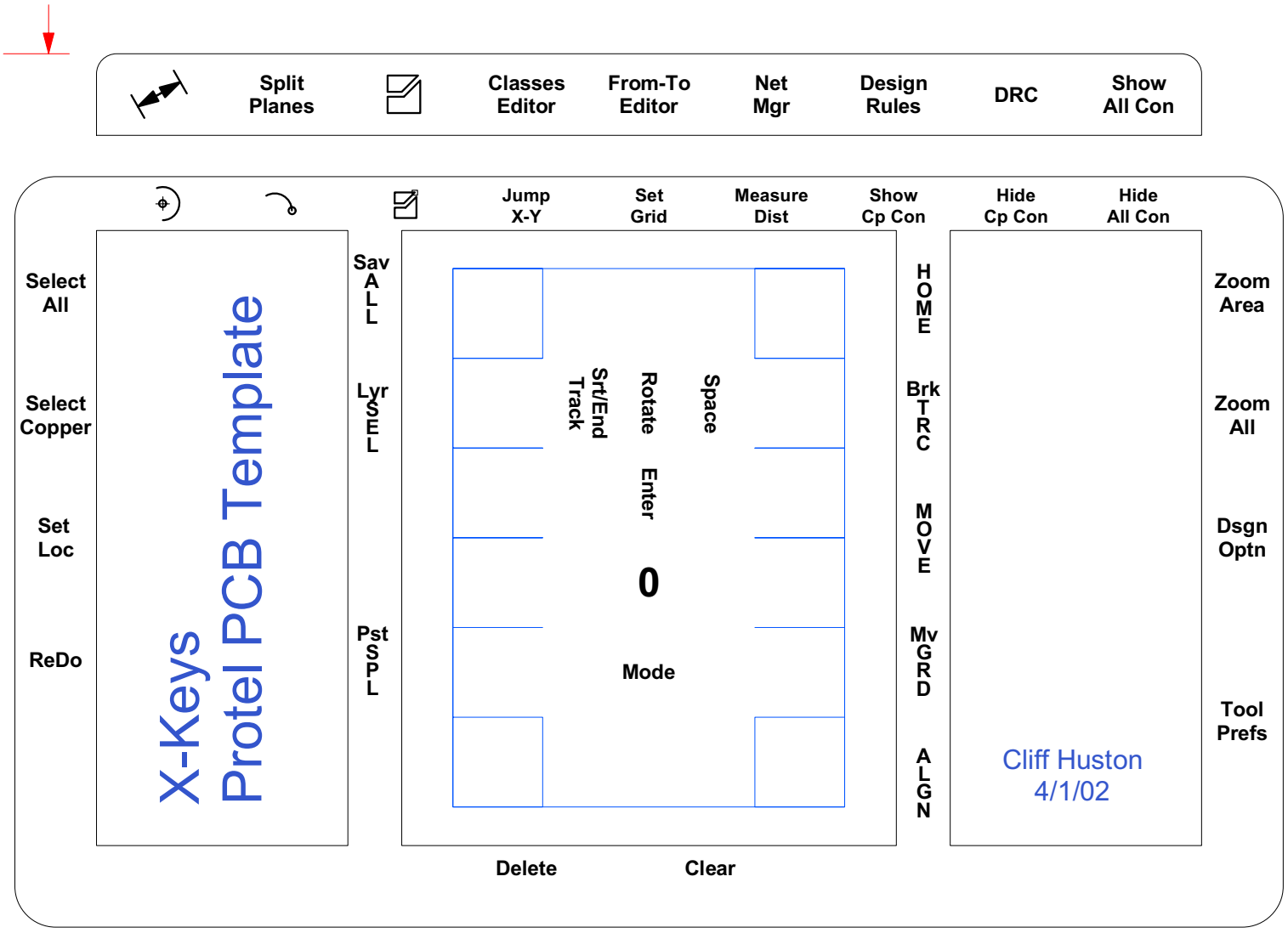
Key Loc.	1st Level (Green)	Comment	2nd Level (Red)	Comment
1	P, L	Place Track	P, D	Place Dimension
2	P, F	Place Fill Rectangle	D, I	Open Split Planes Editor
3	P, G	Place Polygon	P, I	Place Split Plane
4	P, P	Place Pad	D,C	Open Classes Editor
5	P, V	Place Via	D, F	Open From - To Editor
6	P, S	Place String	D, E	Open Net Manager
7	P, C	Place Component	D, R	Open Design Rules
8	P, K	Place Keepout	T, D	Open Design Rule Check
9	Up Arrow	Up Arrow	V, C, S	Show All Connections
10	P, U	Place Circle	P, A	Place Arc from Center
11	P, G	Place Arc from Edge	P, N	Place Arc any Angle
12	M, G	Edit Polygon Vertices	M, V	Edit Split Plane Vertices
13	J, C	Jump to Component	J, L	Jump to X,Y Location
14	E, O, S	Set Origin	Ctrl G	Set Grid
15	V, U	Toggle Units In/mm	R, M	Measure Distance
16	Left Arrow	Left Arrow	V, C, C	Show Component Connections
17	Right Arrow	Right Arrow	V, C	Hide Component Connections
18	Down Arrow	Down Arrow	V, C, H	Hide All Connections
19	X, A	De-Select All	S, A	Select All
20	F, S	Save Active Document	F, A	Save All Documents
21	L	Toggle Component Layer	L	Toggle Component Layer
22	=	Equal Sign (=)	X	Flip Horizonal
23	/	Divide (/)	Y	Flip Vertical
24	*	Multiply (Cycle Through Route Layers)	*	Multiply (Cycle Through Route Layers)
25	End	End (Refresh Screen)	Home	Home (Make Curser Center)
26	Page Up	Zoom In (Around Curser)	V, A	Zoom Area (selection box)
27	S, T	Toggle Selection	S, P	Select Connected Copper
28	Ctrl C	Copy to Clipboard	S, L	Select All on Current Layer
29	7	Number 7	7	Number 7
30	8	Number 8	8	Number 8
31	9	Number 9	9	Number 9
32	-	Minus (Previous Layer)	-	Minus (Previous Layer)
33	M, R	Re-Route	M, B	Break Trace
34	Page Down	Zoom Out (Around Curser)	V, F	Zoom to Fit Board
35	J, M	Jump to Mark	J	Set Location Mark
36	Ctrl X	Cut to Clipboard	Ctrl X	Cut to Clipboard
37	4	Number 4	4	Number 4
38	5	Number 5	5	Number 5
39	6	Number 6	6	Number 6
40	+	Plus (Next Layer)	+	Plus (Next Layer)
41	TAB	Edit Current Object	M, M	Move Object
42	Shift S	Toggle Single Layer Mode	D, O	Open Design Options
43	Alt Backspace	Undo	Ctrl Backspace	Re-Do
44	Ctrl V	Paste from Clipboard	E, A	Paste Special from Clipboard
45	1	Number 1	1	Number 1
46	2	Number 2	2	Number 2
47	3	Number 3	3	Number 3
48	Shift R	Cycle Through Route Modes	I, G	Move to Grid
49	Esc...2...Esc	X-Keys Mode Key (Toggle)	Esc...2...Esc	X-Keys Mode Key (Toggle)
50	0	Number 0	Delete	Delete
51	.	Decimal Point (.)	Ctrl Delete	Clear
52	Enter	Enter	Enter	Enter
53	Shift Space	Cycle Through Track Modes	I, A	Align Objects
54	Space	Space (Rotate, Start/End Track	T, P	Open Tool Preferences


Split Planes
Classes Editor
From-To Editor
Net Mgr
Design Rules
DRC
Show All Con
Jump X-Y
Set Grid
Measure Dist
Show Cp Con
Hide Cp Con
Hide All Con
Select All
Select Copper
Set Loc
ReDo
Sav ALL
Lyr SEL
Pst SPL
Srt/End Track
Rotate
Enter
Space
0
Mode
HOME
Brk TRC
MOVE
Mv GRD
ALGN
Zoom Area
Zoom All
Dsgn Optn
Tool Prefs
X-Keys
Protel PCB Template
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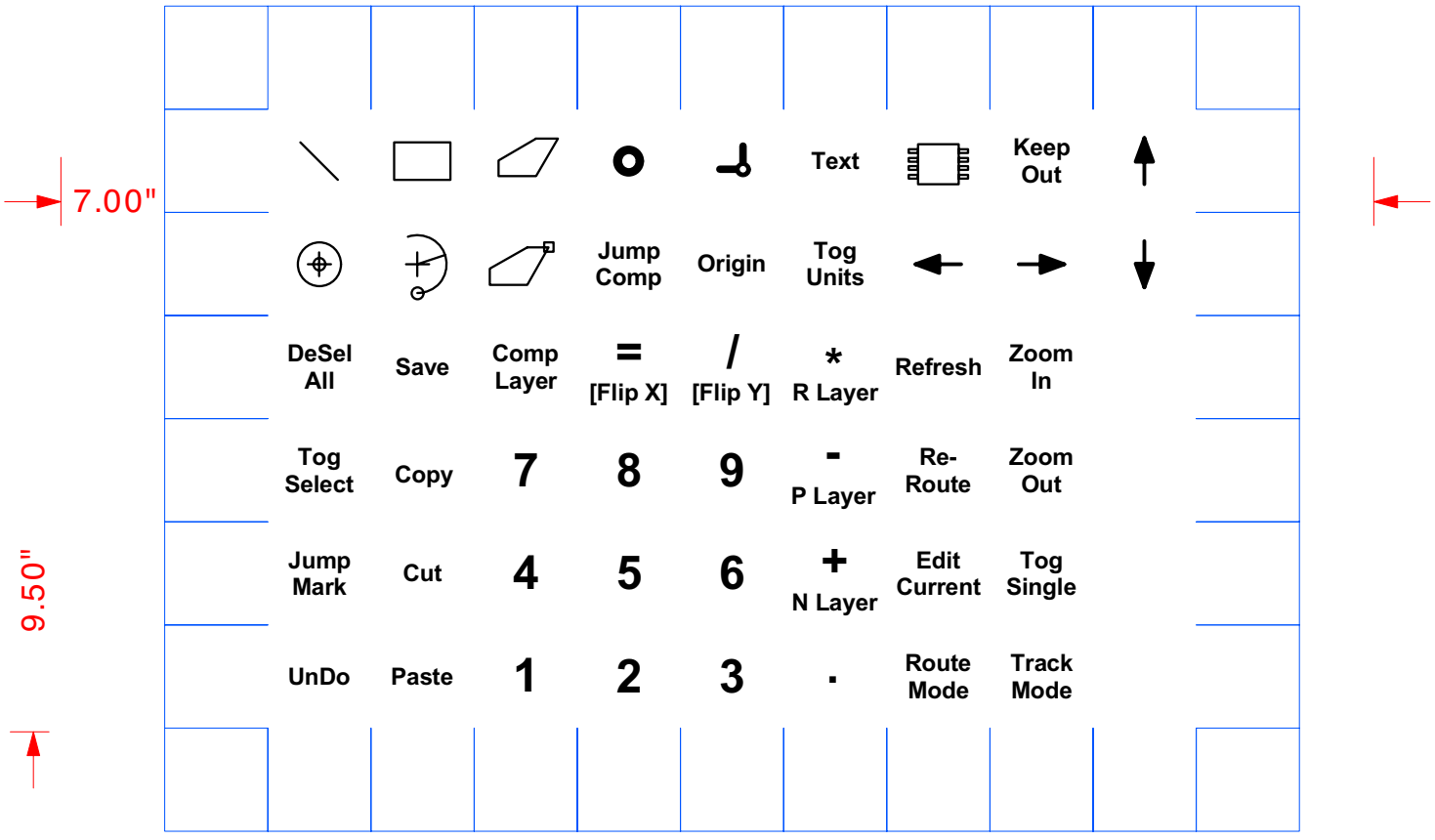
Delete
Clear


7.00"
9.50"
Text
Keep Out
Jump Comp
Origin
Tog Units
DeSel All
Save
Comp Layer
= [Flip X]
/ [Flip Y]
* R Layer
Refresh
Zoom In
Tog Select
Copy
7
8
9
- P Layer
Re-Route
Zoom Out
Jump Mark
Cut
4
5
6
+ N Layer
Edit Current
Tog Single
UnDo
Paste
1
2
3
.
Route Mode
Track Mode

X-Keys Protel Layout Notes

1) The layout uses Protel 99SE default keyboard shortcuts. I'm way too lazy to use all those <whatever> marks for the shortcut codes, instead I have just divided keystroke sets with a ',' ; so read 'Ctrl X' as <control + x> and 'M, G' as <m> <g>.
2) The X-Keys second level labels are on the overlay (I like to be able to read the labels) and belong to the outside keys, that is except for delete and clear, none of the center number pad keys are labeled on the overlay. The only other second level keys, in the number pad area, are the '[Flip X]' and '[Flip Y]' on the '=' and '/' keys. Several other keys have sub-labels (without the brackets), such as '*' and 'R Layer', but these sub-labels are merely reminders for Protel and don't indicate key levels.
3) The 'Mode' key toggles between X-Keys level (green/red) and after programming, can be changed to a X-Keys level shift by programming the 'Mode' key using the Esc…1…Esc sequence. I have tried using the key both ways and find that the toggle works best for me.
4) My mouse is set-up to provide a backspace on the third button (useful in backing down when doing manual routing, polygons, and split planes) and a control lock on the fourth button (useful for suspending the electrical snap to object). Likewise, I use the right mouse button pop-up menu to get into manual route mode. These could be added to the X-Key layout, but I found them more useful on the mouse.
5) You should be able to print the template from Acrobat to a letter size sheet (check the print setup in Acrobat to make sure that it is set for 'letter size', '100%'scale, and is not set for 'scale to paper'). Do a test print and check the printout dimensions marks with a ruler to make sure the print scale is right. If necessary, adjust the print scale.
6) I printed the template on 4mil, frosted on one sided, Mylar drafting film; printing the frosted side, on a HP 4050N LaserJet printer. Once printed, I used a X-Acto knife and a steel ruler to cutout the overlays and key labels. The frosted Mylar printed fine and on the colored keys, gives the keyboard a nice frosted jelly look. Also the Mylar makes the overlay washable. An alternative method would be to print the template on paper and make a cover sheet for the overlay using overhead projector film or some other plastic sheet.
7) Spray adhesive (use the removable kind) or double stick scotch tape can be used to mount the overlay on the X-Keys pad.
8) If you would like to roll your own version of this template, download the Protel database (X-KEYS TEMPLATE.EXE) and the associated notes (Protel X-keys ddb.pdf) for a version that can be modified in Protel PCB.
9) Also, if there is anyone else that uses both Protel and VectorWorks, contact me at the e-mail address below, with the VectorWorks version your running, and I will send you the VectorWorks file.

Cliff Huston – Propeller Head Design – email:Prop-Head@attbi.com
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