



## ELECTRA v4.50 - Guided Autorouting

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ELECTRA supports batch routing flow and active control of the autorouter. During batch routing, the order of the connections is determined by the autorouter and it is typically based on a sorting by length algorithm, while guided autorouting is about assisting the router to create routed structures in sequence.

As a preliminary step to batch autorouting, guided routing can be useful when a number of connections have to be routed as a topological group on specific layers or as a group of connections of predefined length range. For example, the user assists the router by defining bus structures to be routed, or short fromto's interconnecting close-by components on top/bottom layers to be routed first, then long tracks on inner layers.

Different ways to pre-select before routing:

1. Select a terminal to **route the connected net**
2. Select a Component to **route the attached nets**
3. Select a **Class** to route the net members
4. Select **fromto's by length** to route them
5. Select **fromto's by window** to route them

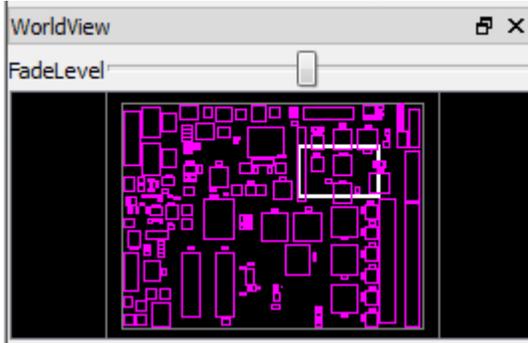
The last two methods are not net based but connection based. The selection of the pin to pin connections (fromto's) can be performed in two ways:

- a. By defining a rectangular area intersecting the ratline of the connections.
- b. By invoking a command to select the fromto based on minimum and maximum length criteria.  
*select fromto (length <min\_val> <max\_val>)*

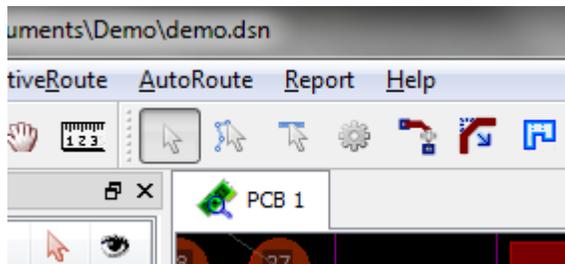
## Tutorial on Guided Autorouting

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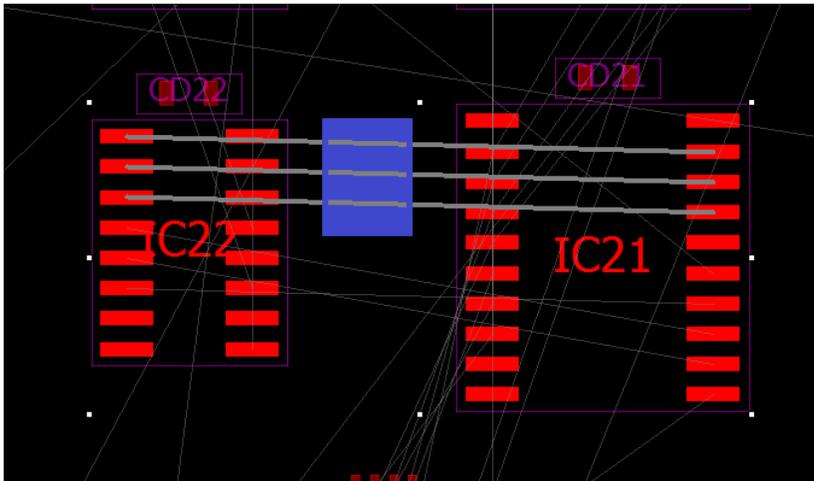
1. Load demo.dsn
2. Zoom to area including IC22 and IC



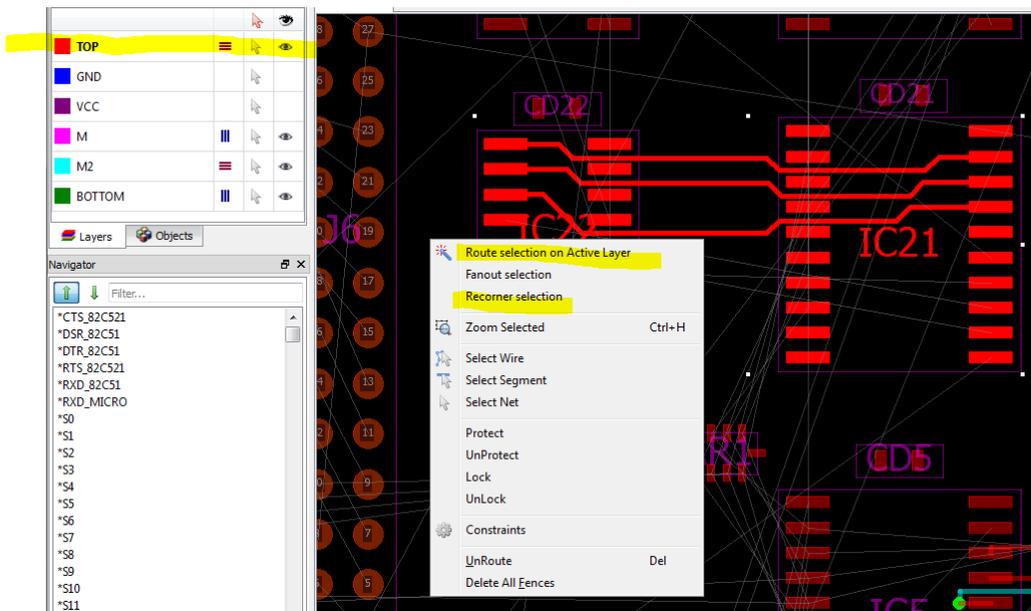
3. Toolbar default is the "select mode" cursor:



4. Select the ratlines by defining the rectangular area by dragging from one corner to the other corner of the rectangle, shown below in blue.  
Make sure that the active layer shown on the layer Panel as the layer name in bold is the one desired to be active on.

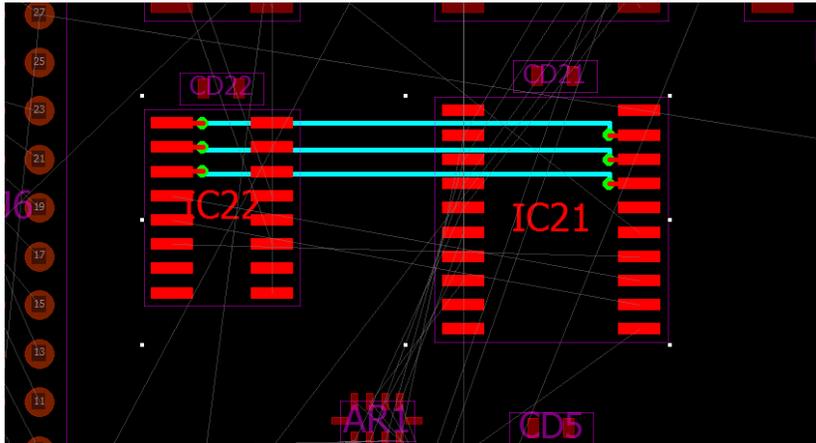


5. The 3 connections are highlighted, press RMB to bring up the context popup menu and select **Route selection on Active Layer** to single layer route the selected connections. Finish with RMB **Recorner selection**

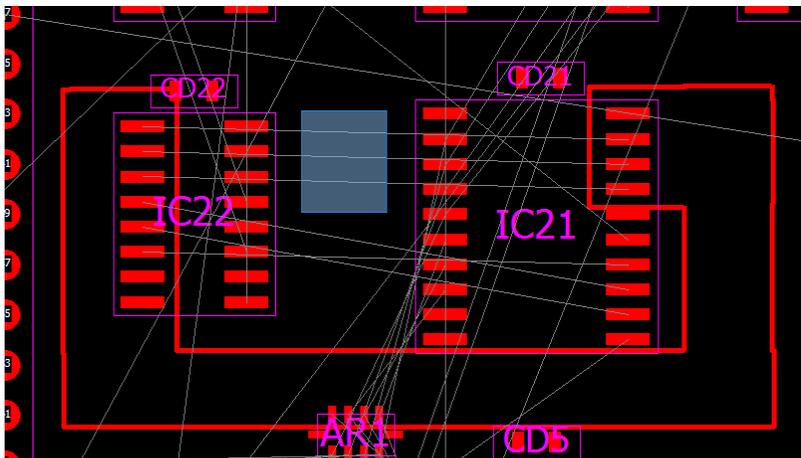


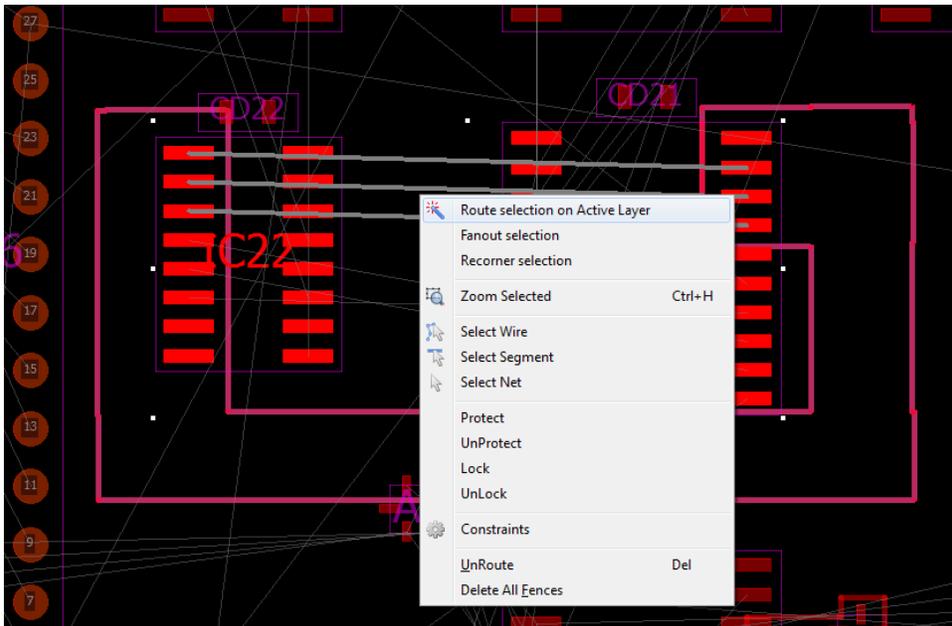
6. Try routing on bottom layer. RMB Unroute. From the layer panel, change active layer to **BOTTOM**. RMB Fanout selection. RMB Route selection.

7. Compare with multilayer routing: Select the routed nets by window by defining a rectangle surrounding any group of 3 pins, RMB **Unroute**. Type in the command: **route**. The solution is multilayered and follows the predominant layer directions:

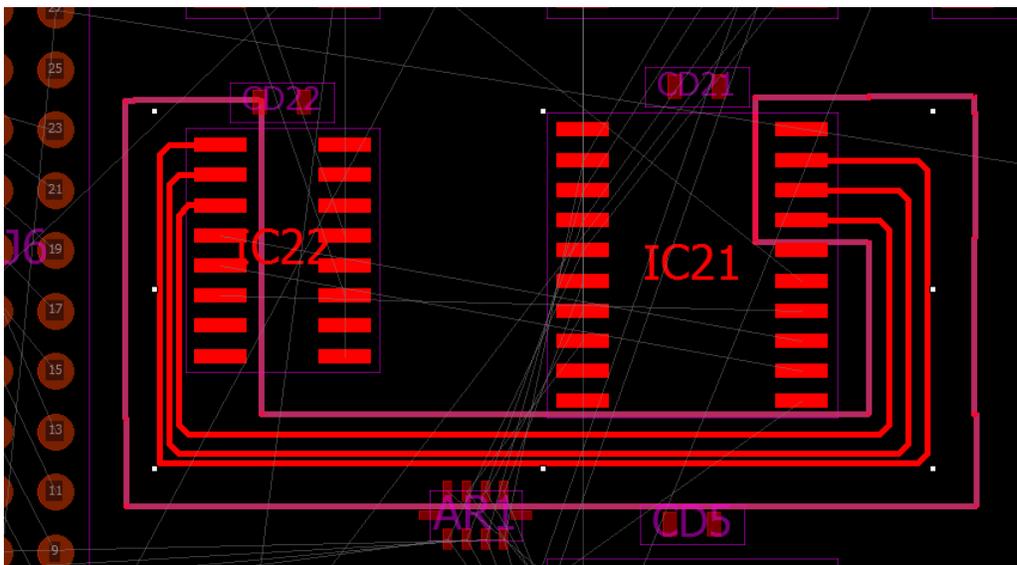


8. Right mouse button to bring up the context popup menu and select **Unroute** to remove the selected routes.
9. Let's define a keep-in zone. Select again the 3 connections and Use the menu Active Route/ Draw Fence as shown below and RMB to invoke **Route** selection on Active Layer





Final results showing the group of fromto auto-steered within the fence zone:



Selected routes can easily be protected or locked. When fences are not needed anymore, they can be removed with the menu (Edit / Delete All Fences).