TDS

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Overview

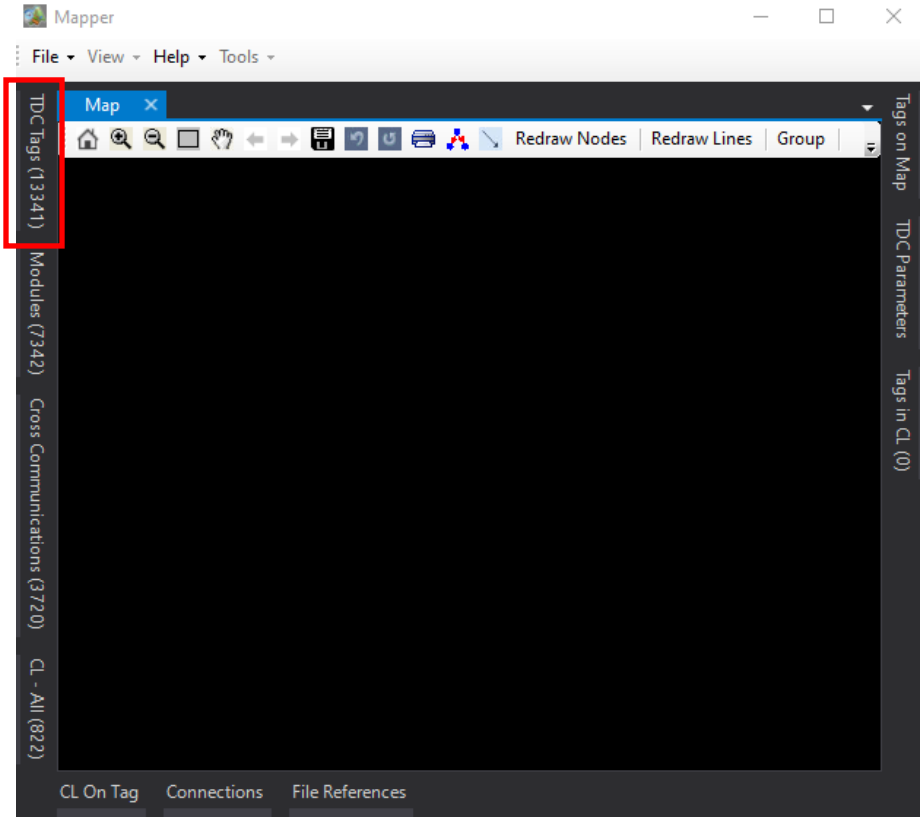
Mapper is a program that is similar to D3K. Where D3K's intended purpose is to maintain TDC systems, Mapper's intended purpose is to migrate TDC systems. Mapper shows point to point connections, maps logic blocks, maps JS files (TDC 2000), displays CL in an IDE format, formats TDC2000/3000 CL to show points that are not immediately obvious (e.g. add tagnames to $REGCTL CDS, packages, indirect hardware addresses), and much more.

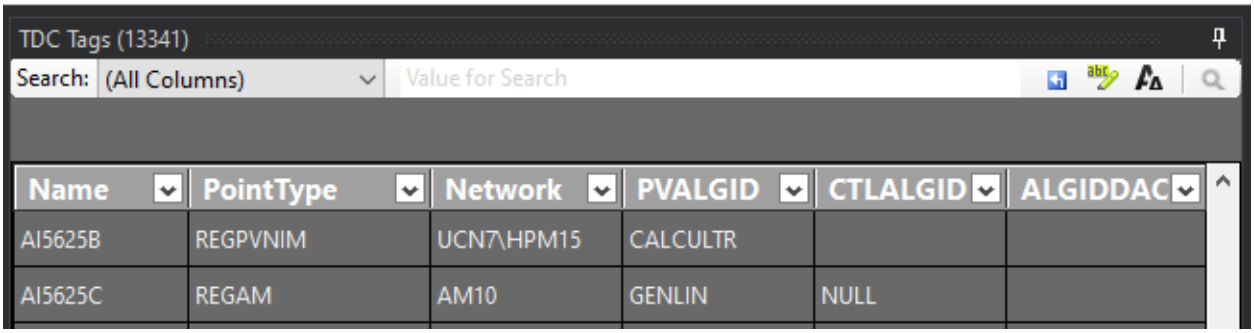
The TDC Parser (located at 10.213.10.134) is used to generate the database for mapper. Copy all the xxx.DB files into the same folder of Mapper.exe.

Mapper Windows

The mapper program is segregated into many smaller windows. These windows are hidden, unless pinned, on the edges of the app (top, bottom, left, right) and appear as tabs.

TDC Tags





The “TDC Tags” window is where you can search for tags that were parsed from the EB files. When you click on a row in the table, it will pull up a diagram under the “Map” tab which displays all the interconnected nodes attached to this point.

There are several columns that you can filter on in this table which can be seen in the above screenshot.

- **Name**: this is the tag name typically defined in the EB files. There are several exceptions listed below about “BOX (Internal)” and “LOGICHG”.
- **PointType**: this is the type of tag defined in the EB files
- **Network**: this is the physical location the tag resides
- **PVALGID**: this is the parameter that defines the PV algorithm for TDC3000 points (REGPVNIM and REGAM)

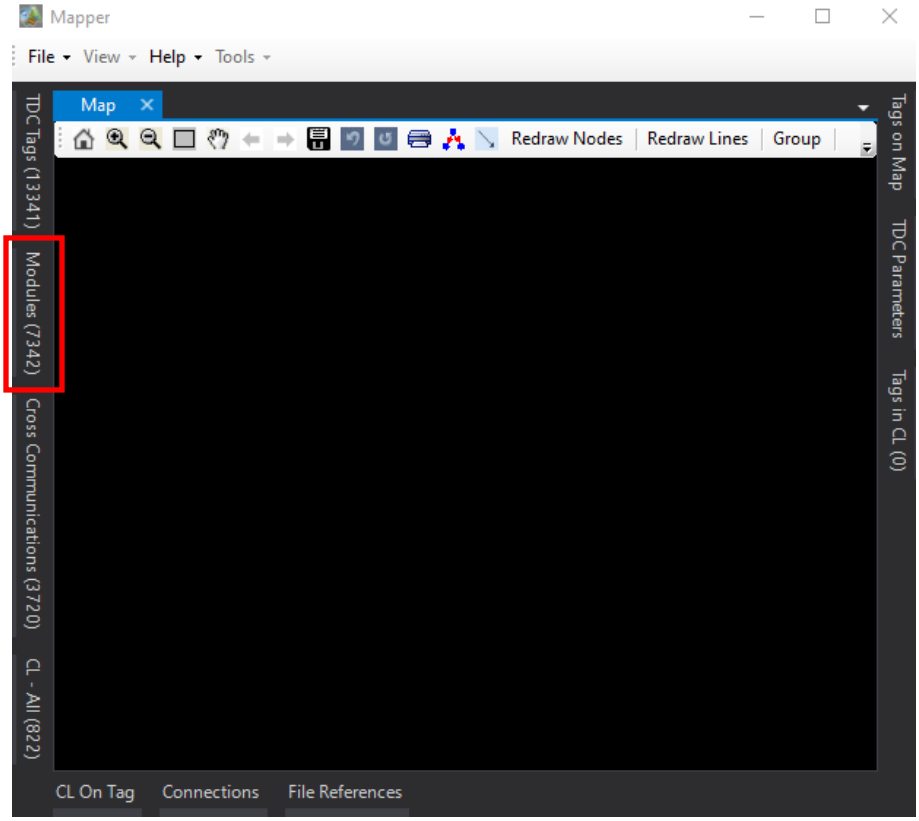
- **CTLALGID**: this is the parameter that defines the PV algorithm for TDC3000 points (REGCLNIM and REGAM)
- **ALGIDDAC**: this is the parameter that defines the PV/OP algorithm for TDC2000 points (REGHG)

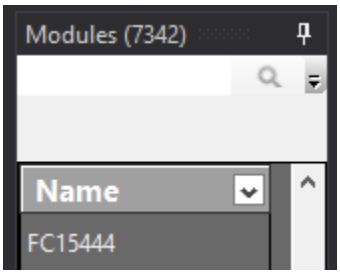
There are 2 “PointType” that can be added to this table that aren’t real TDC point types defined in EB files. Those are “BOX (Internal)” and “LOGICHG”.

A BOX point can be thought of as a container that holds potentially hundreds of tags (e.g. FLAGS, NUMERICS, TIMERS, etc). Tags in mapper that are listed as “BOX (Internal)” are references that are used in CL or logic connections. A “BOX (Internal)” tag is only created if the parser finds that box reference being used in logic or CL.s

In TDC2000, you could not define logic blocks in EB files but could create logic blocks in JS files. A “LOGICHG” tag is created when there are JS files that have been parsed. These are similar to LOGICNIM blocks but are the HG equivalent.

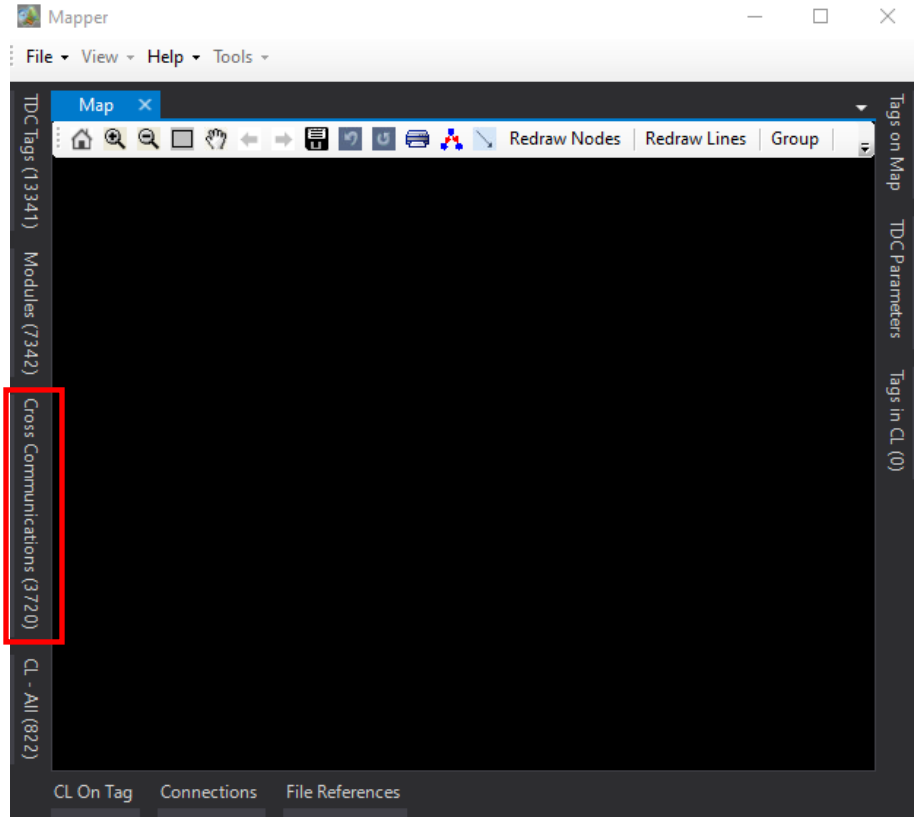
Modules

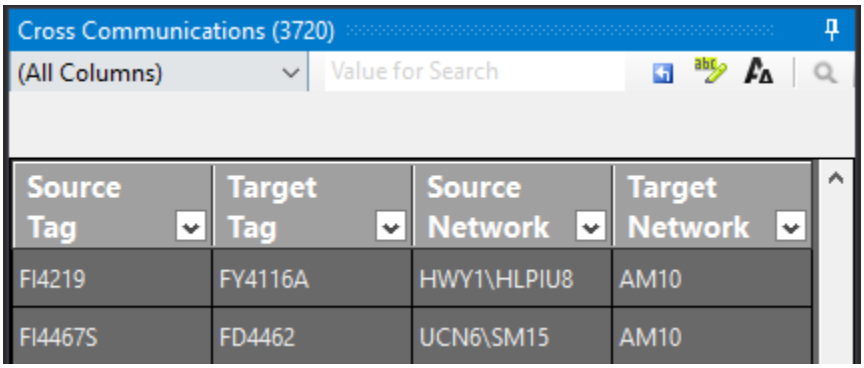




This a list of all the TDC Tag containers. See ***Modules*** for more information on how to create/delete/modify. The TDC parser automatically creates many modules for you, but they are not perfect and will need to be looked at.

Cross Communications





This is a useful table if the entire LCN is not being migrated, in particular, it's good for quickly identifying AM tags that should and shouldn't be migrated. The table lists all the parameter connections (i.e. not CL connections) between 2 tags that occur on different networks. Clicking on a row will pull up a map of the tags.

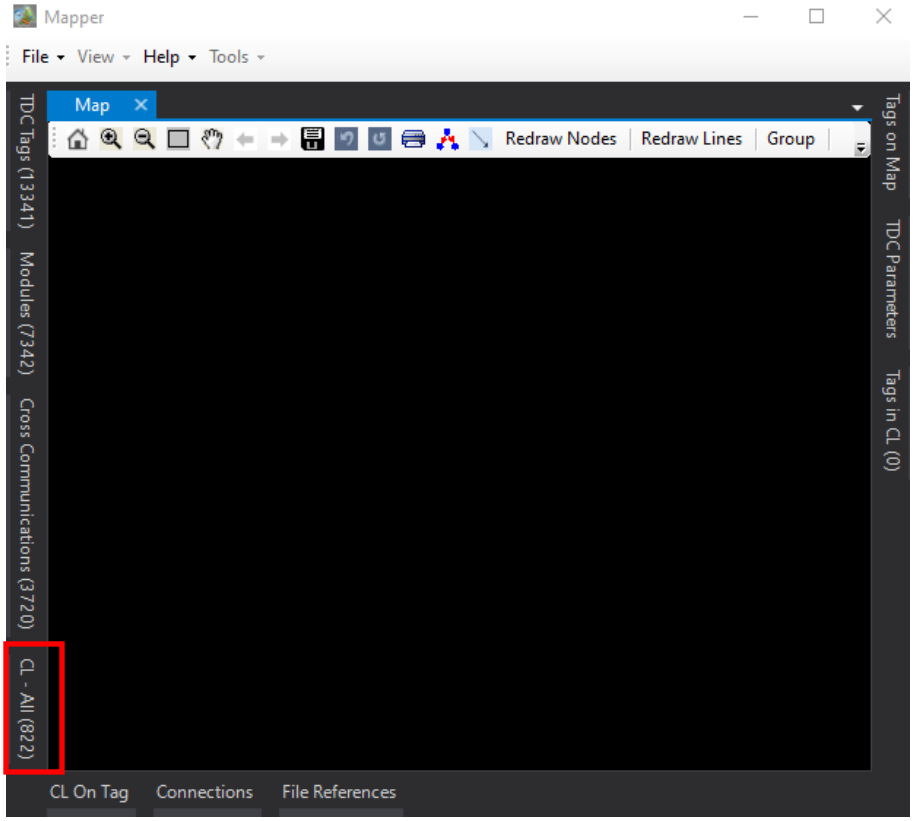
Consider the following scenario based on the screenshot above.

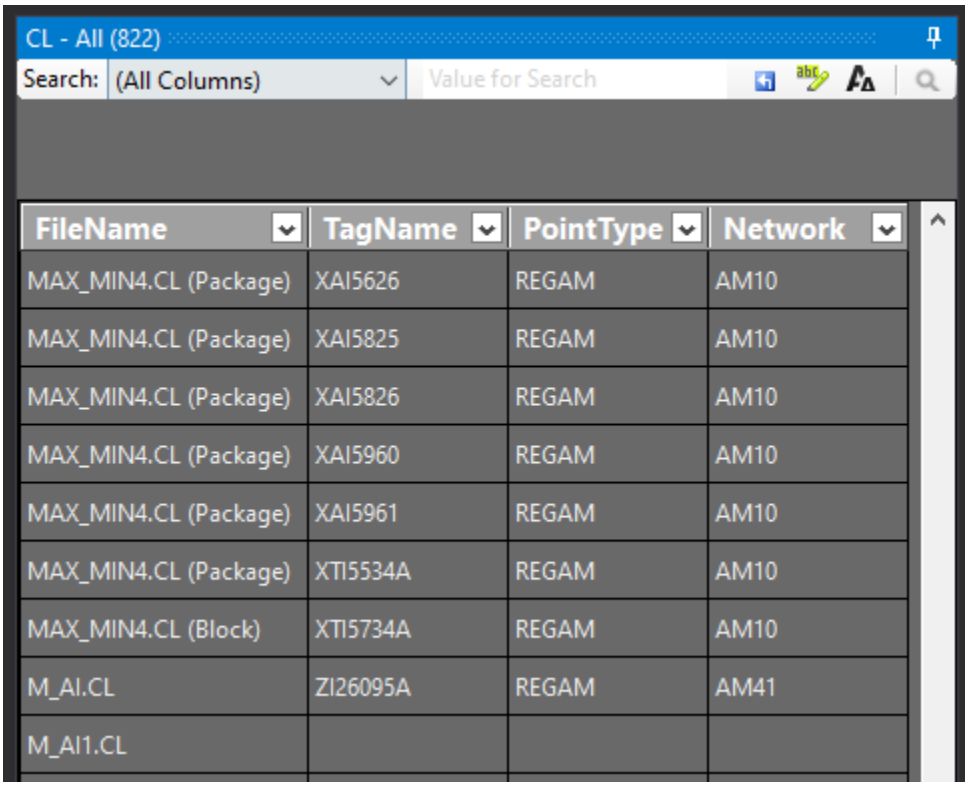
- All of UCN6 is being migrated,
- AM points are being migrated on a case-by-case basis.

- HWY1 is not being migrated

You can quickly filter “in scope” tags based off of “Source Network”. From that list, you could further filter “Target Network” to see all AM tags. Assuming there are no other connections to these tags or CL involved, you can quickly see that “Target Tag” FD4462 should probably be “in scope” and FY4116A should probably not be in scope

CL - All





FileName	TagName	PointType	Network
MAX_MIN4.CL (Package)	XAI5626	REGAM	AM10
MAX_MIN4.CL (Package)	XAI5825	REGAM	AM10
MAX_MIN4.CL (Package)	XAI5826	REGAM	AM10
MAX_MIN4.CL (Package)	XAI5960	REGAM	AM10
MAX_MIN4.CL (Package)	XAI5961	REGAM	AM10
MAX_MIN4.CL (Package)	XTI5534A	REGAM	AM10
MAX_MIN4.CL (Block)	XTI5734A	REGAM	AM10
M_AI.CL	ZI26095A	REGAM	AM41
M_AI1.CL			

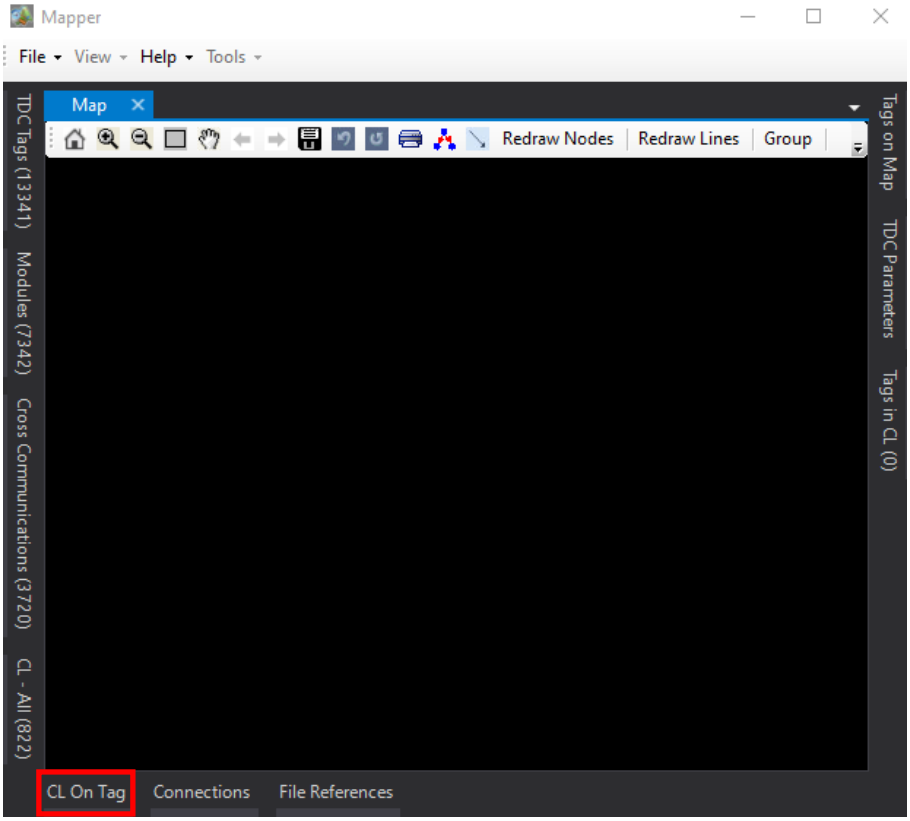
This window displays all the parsed CL files. Clicking on a cell will pull up a new tab or jump to an existing tab that displays the CL in a formatted manner. This table allows you to quickly find “in scope” and “out of scope” CL by filtering on “Network”. The columns are defined as follows:

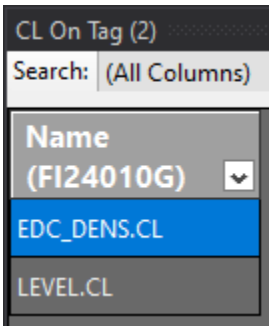
- **FileName**: this is the name of the CL file
- **TagName**: the CL is linked to this tag i.e. the CL program runs inside of this tag
- **PointType**: the type of tag that the CL is linked to
- **Network**: the physical location of the tag that the CL is linked to

There is a row in this table for every CL file. In addition to this, if a CL program is a PACKAGE, each tag the CL file links to is also listed in this table. The parser searches for parameters in the EB file named PKGNAME(i). The value of the PKGNAME parameter is a CL file. This allows the parser to figure out how CL is linked to TDC tags when they are not explicitly defined. You will see “(Package”) appended to the end of “FileName” if the PKGNAME parameter is found on a tag. Sometimes the PKGNAME parameter is not defined in the EB exports for some reason (perhaps a bad export, but I’m not sure). In this situation, if the CLSLOTS.ZB file was defined during parsing, the parser will check this file to see how tags are linked to CL. If the parser discovers a link in this file and not on the PKGNAME parameter, then you will see “(Block”) appended to the end of “FileName”.

CL files that have no tag defined likely do not need to be explicitly migrated. These are often parameter lists or unlinked (broken) CL.

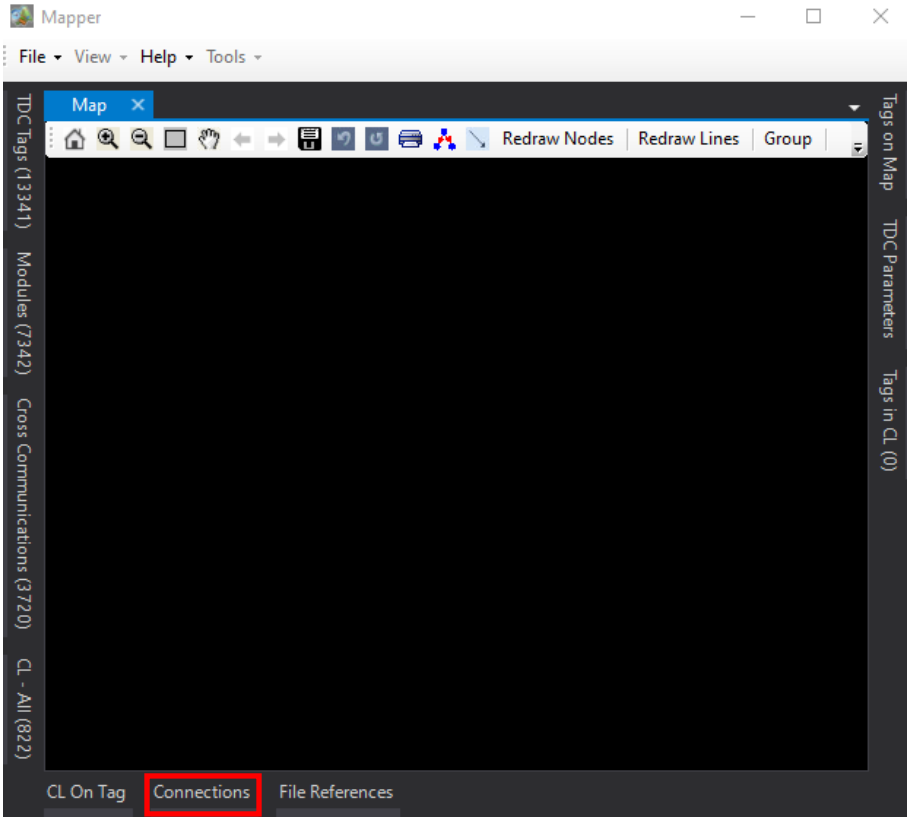
CL On Tag

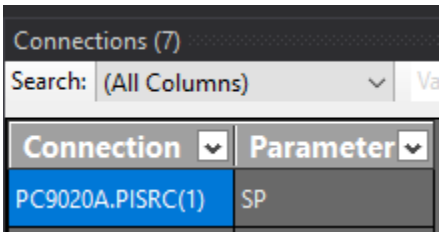




This table displays the CL that references the selected tag. The selected tag is shown in parenthesis and appended to the end of “Name” column e.g. (FI24010G) is selected tag in screenshot above. Whenever your selected tag changes (click a tag on the “Map”, click a tagname in a CL file, etc) then this table will update. Clicking on a cell in will pull up the CL file.

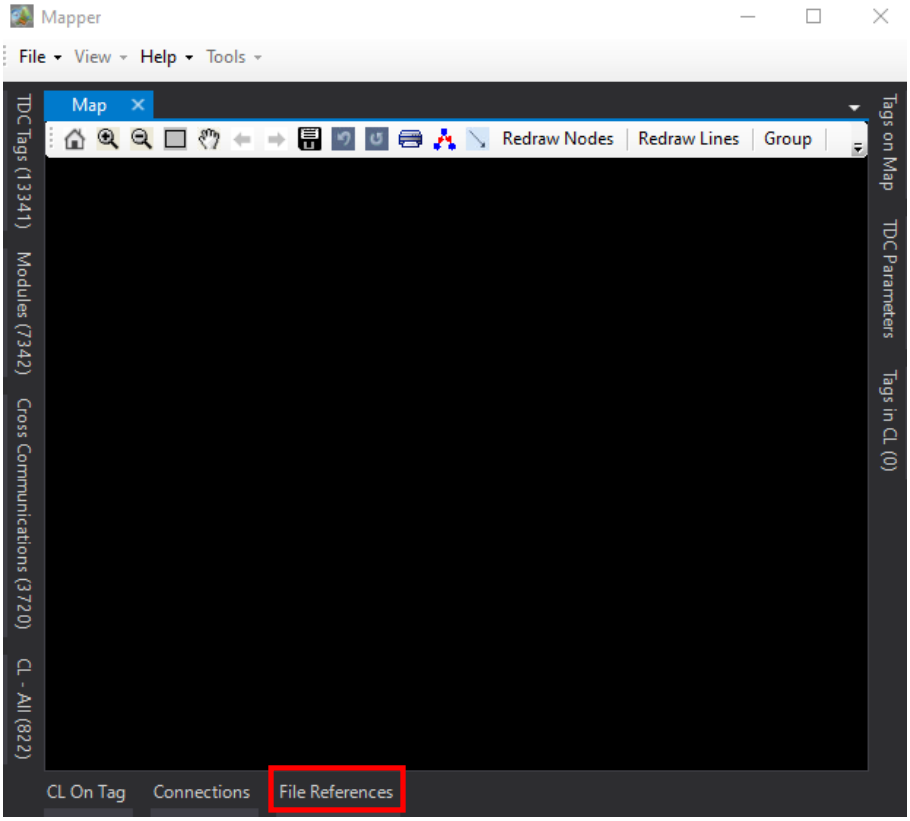
Connections

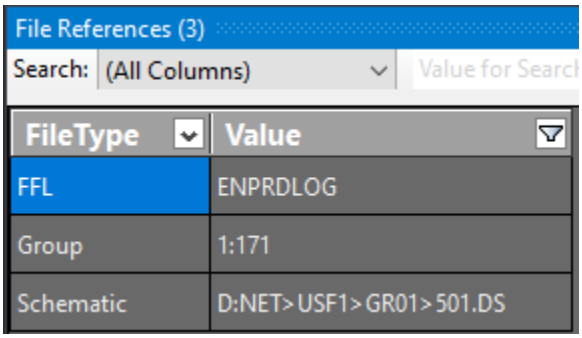




This table displays the parameter connections that references the selected tag. Whenever your selected tag changes (click a tag on the “Map”, click a tagname in a CL file, etc) then this table will update. The “Connection” column is connected to the “Parameter” column which can be visually seen via the “Map”.

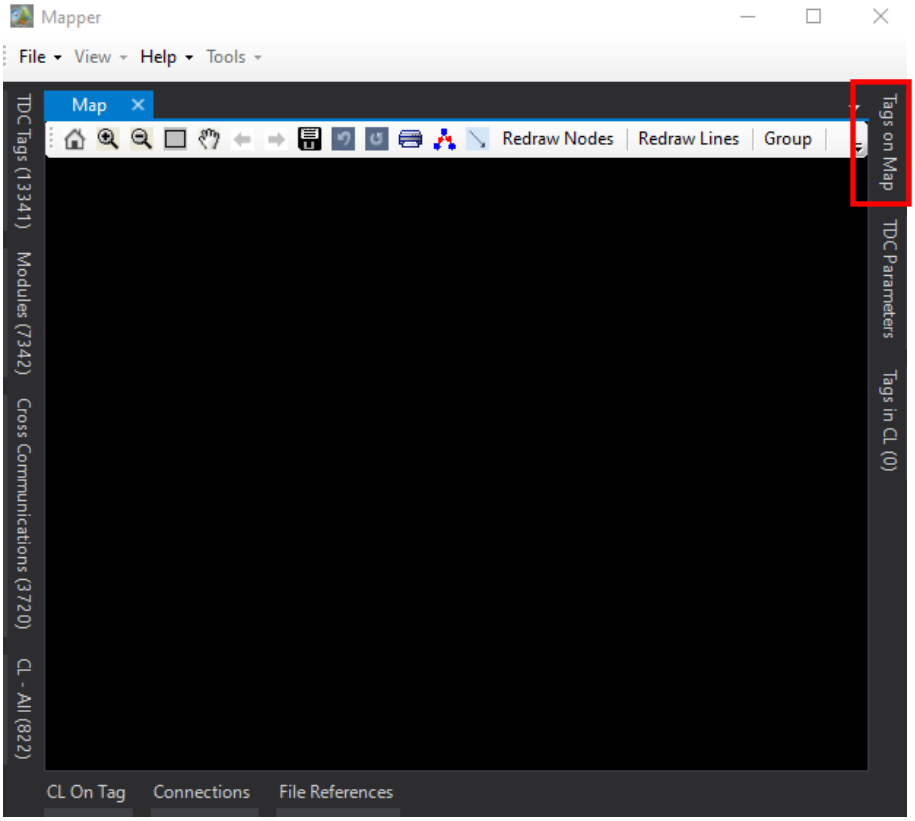
File References

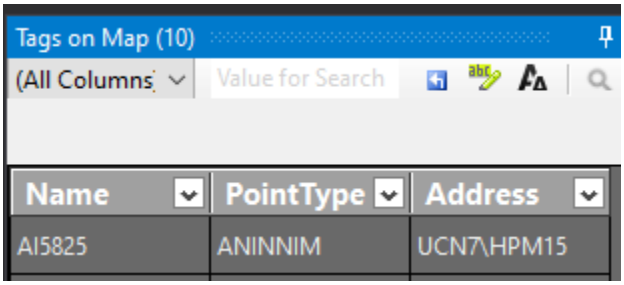




This table displays miscellaneous files that reference the selected tag. Whenever your selected tag changes (click a tag on the “Map”, click a tagname in a CL file, etc) then this table will update. This data is only available if a D3K.mdb file was included during parsing. The table displays all the Free format log (FFL), Group, and Schematic (graphic) references.

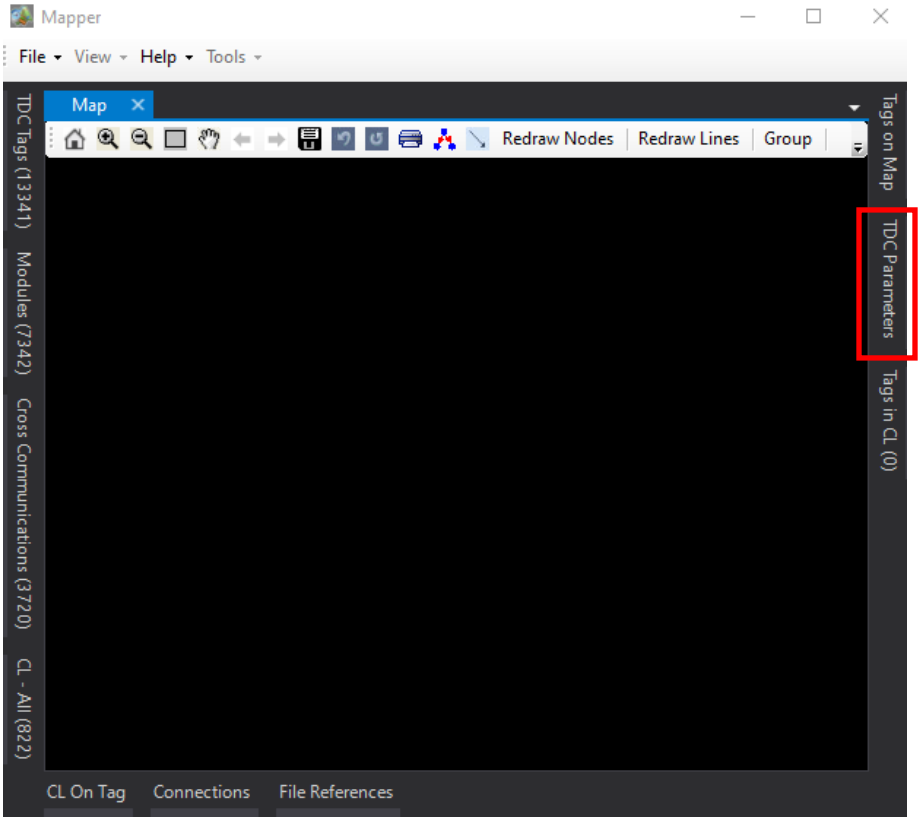
Tags On Map

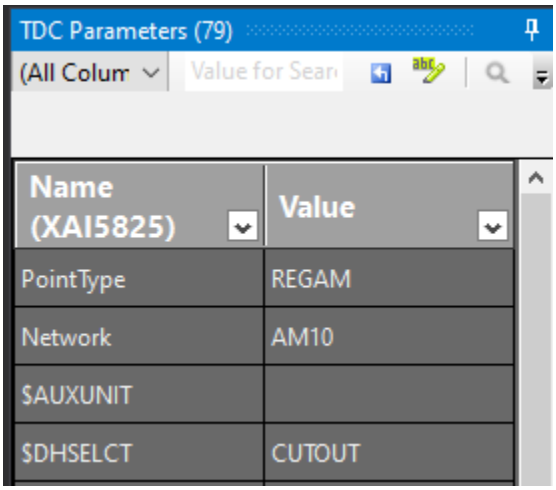




This table shows all the tags that are in the current “Map”. Clicking on a cell zooms into the node of the “Map”. Use the scroll wheel to zoom back out to a reasonable view from there.

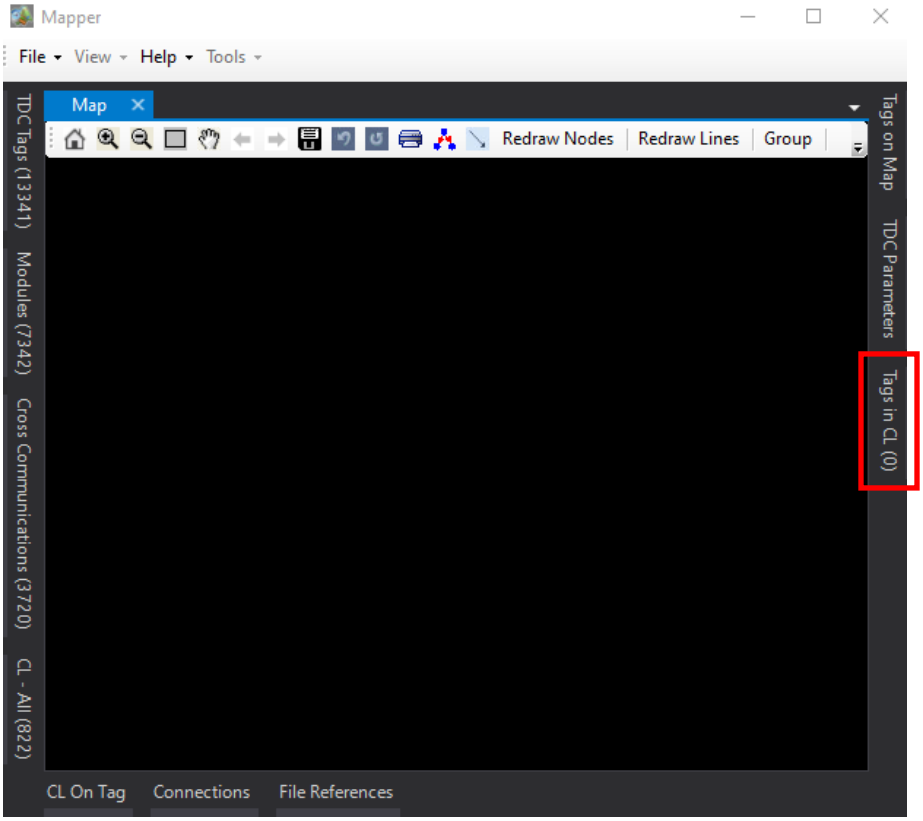
TDC Parameters

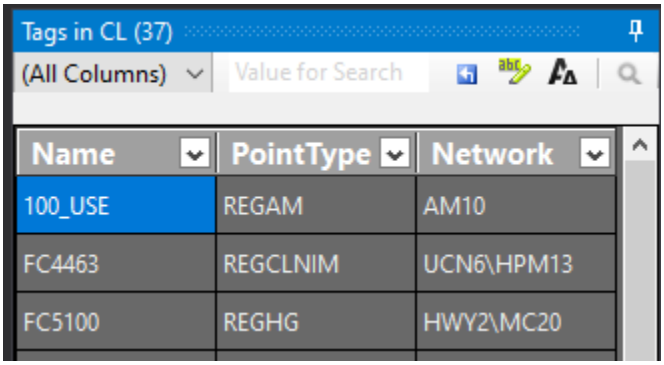




This table displays all the parameters defined in the EB files of the selected tag. Whenever your selected tag changes (click a tag on the “Map”, click a tagname in a CL file, etc) then this table will update.

Tags In CL



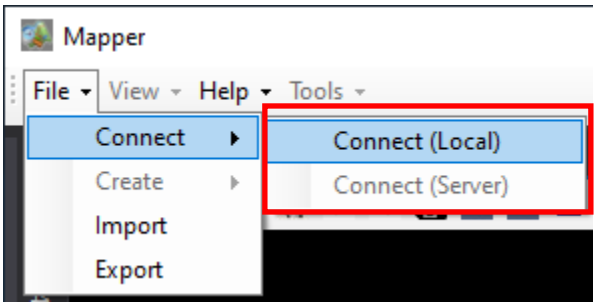


This table shows all the tags that are defined in the open CL file.

File

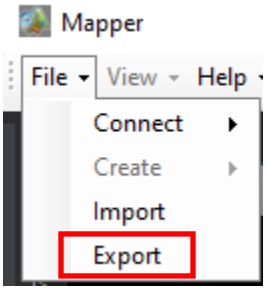
There are several options under “File” in the toolbar such as “Connect”, “Import”, “Export”

Connect

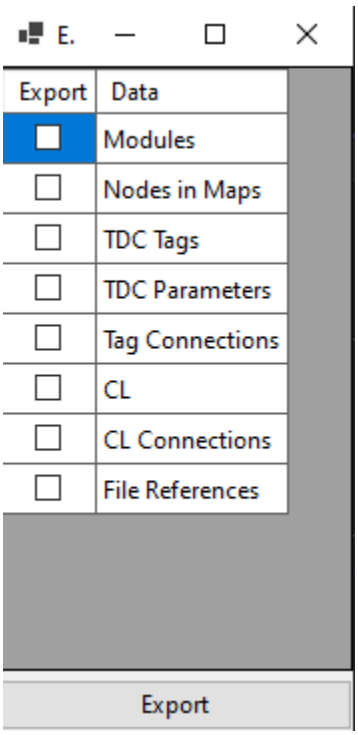


You can have several DB files stored in different locations that Mapper can open.

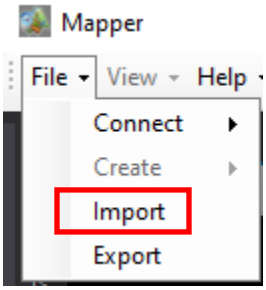
Export



You can connect any application that is capable of opening a SQLITE DB file to the ".DB" file of mapper. However, you can also use the "Export" button to easily export the data to excel. Checking multiple boxes will add sheets to the spreadsheet.

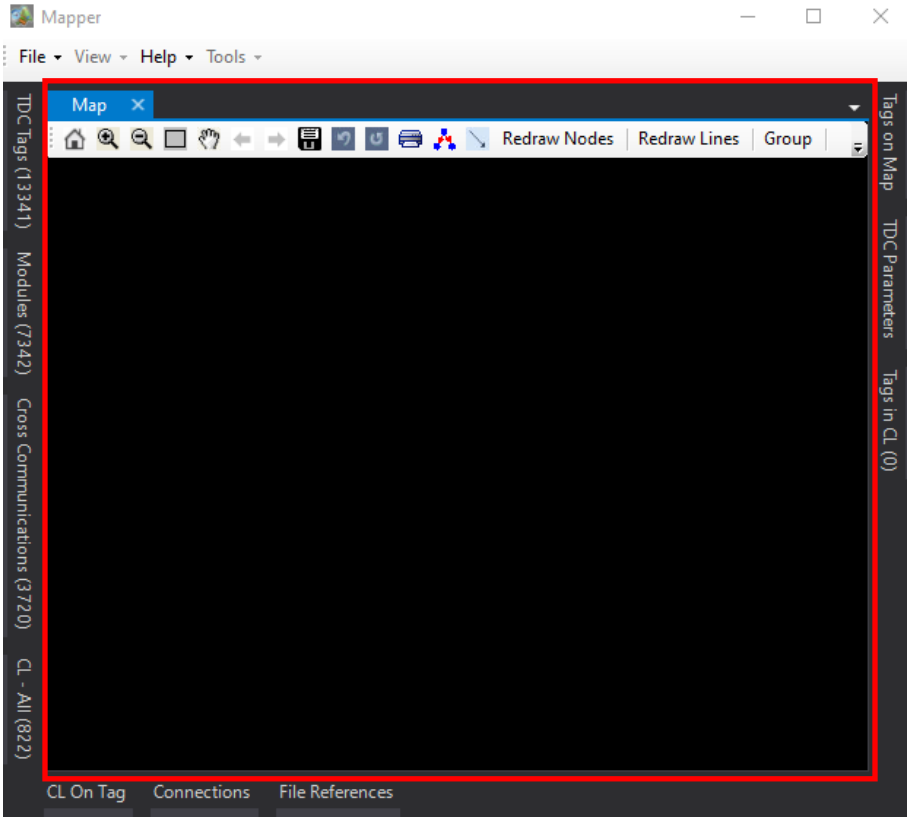


Import

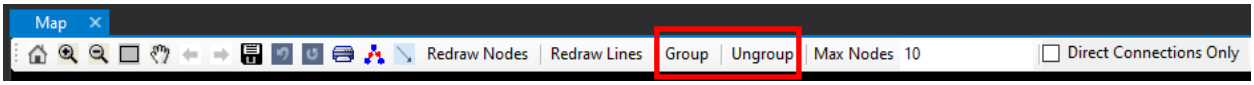


You can bulk edit changes from an exported file and then re-import the spreadsheet. There is a column called “Delete” that you can set to true/false if you want to remove something. If you want to add a row, just fill in all the necessary columns. This is useful to bulk edit tags in modules.

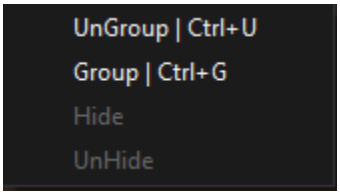
TDC Map


Mapper
File
View
Help
Tools
Map
Redraw Nodes
Redraw Lines
Group
TDC Tags (13341)
Modules (7342)
Cross Communications (3720)
CL - All (822)
Tags on Map
TDC Parameters
Tags in CL (0)
CL On Tag
Connections
File References

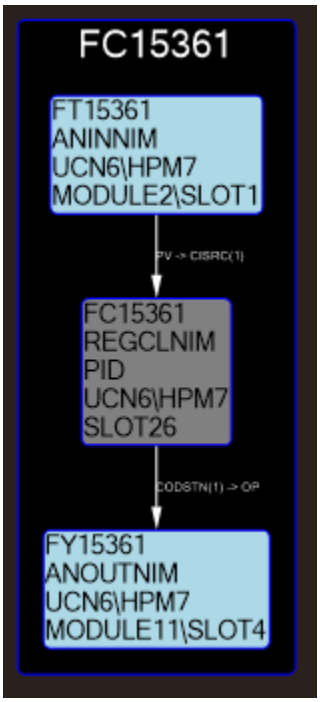
Modules



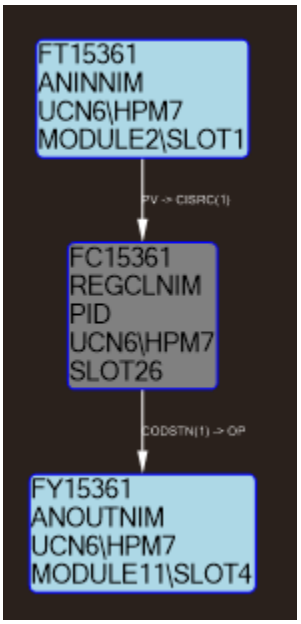
The TDC parser automatically creates modules and assigns tags to these modules. However, you may need to tweak these modules. You use the “Group” and “Ungroup” button to do this. You can also use the context menu by right clicking anywhere on the map or the shortcuts listed on the context menu.



Select the tags that you want to ungroup (blue outline indicates tag is selected) then press “Ungroup”



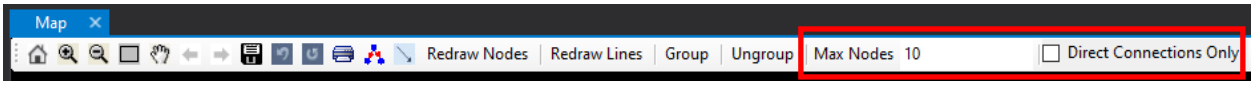
The result looks like this



You can then select tags however you want and click “Group”, fill in the name you’d like for the module then click “Ok”. You could for instance, change the module to this

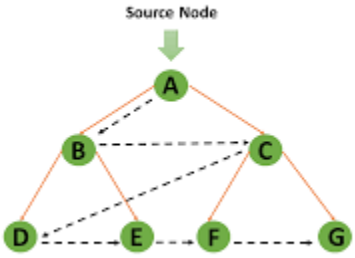
Out of all the selected tags, if 1 of them has a defined module, all the tags will be merged into that same module. If none of the tags have a module or if there are tags in multiple modules, then you will be prompted for a new module name.

Reducing Clutter



The “Max Nodes” textbox and “Direct Connections Only” checkbox control how many nodes are displayed on the map. Often times you don’t need to see the entire map because it just makes it more difficult to digest the information you can see.

Changing the value in “Max Nodes” will start from the selected tag and then do a breadth width first (BFW) search to find the closest nodes. See below screenshot for example.

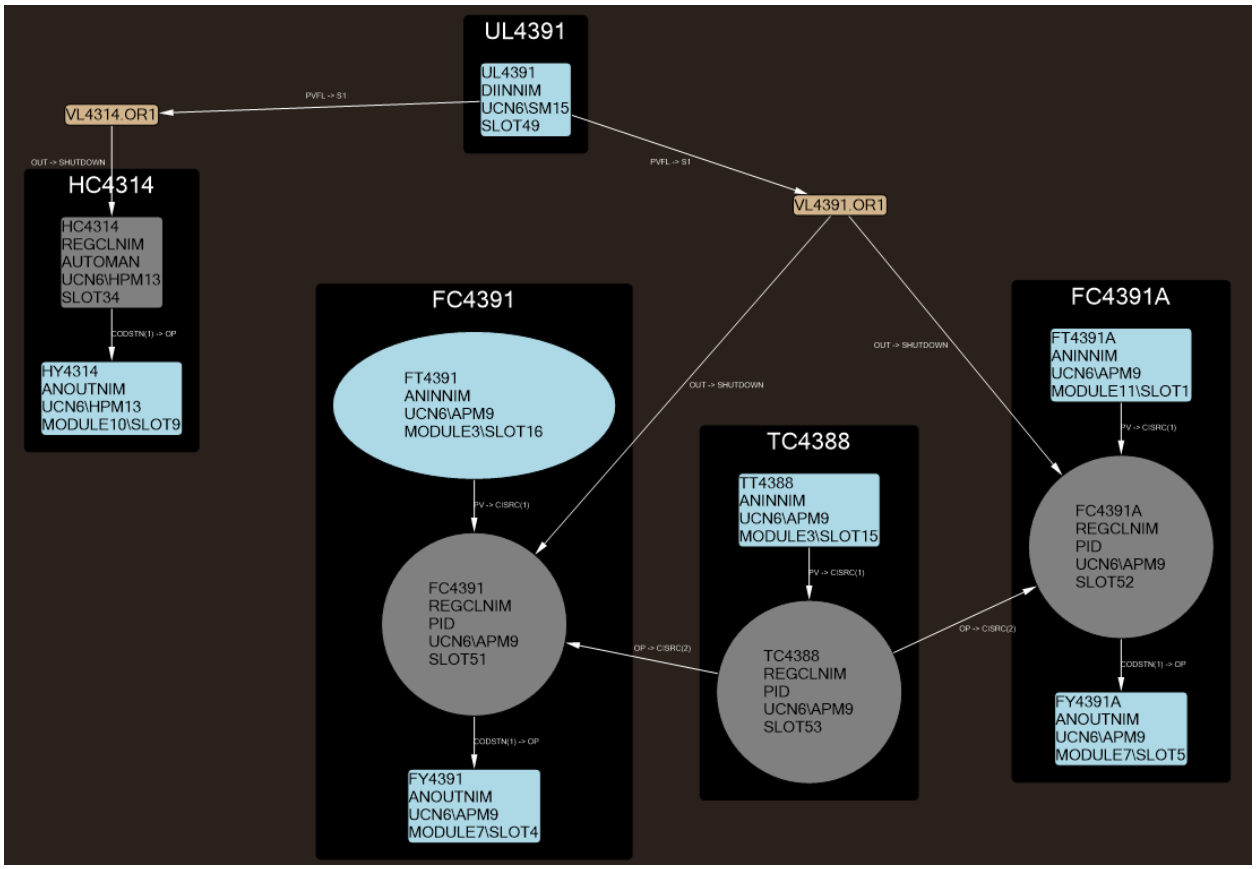


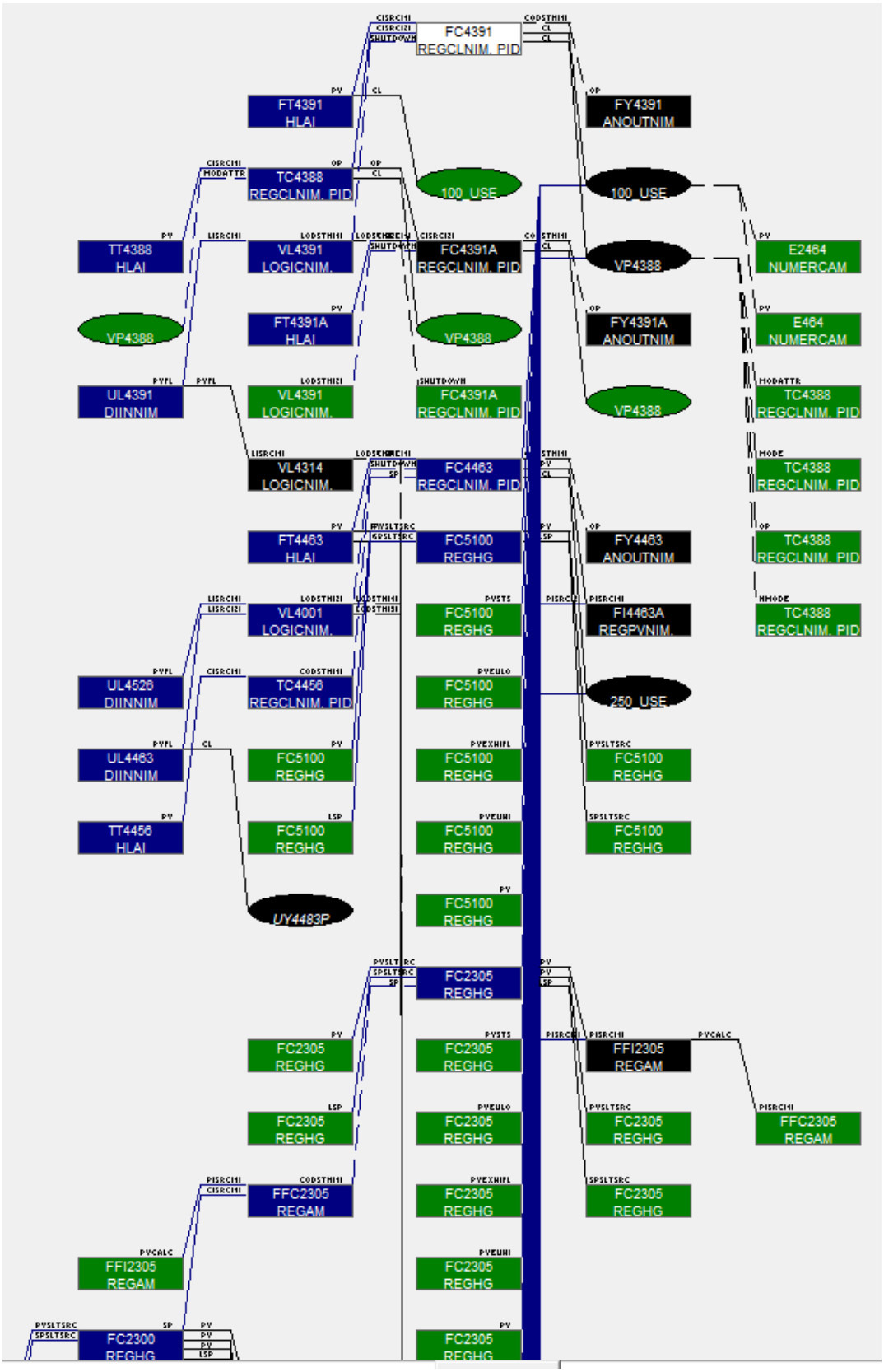
“Direct Connections Only” will only show tags that are directly connected to the selected tag via parameter connections.

Tags that are hiding connections have a red outline.

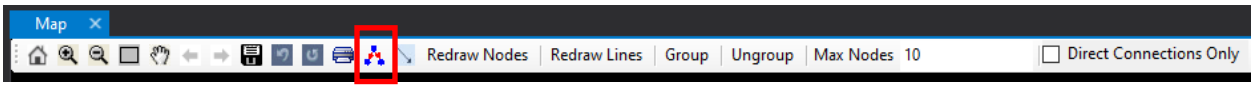
There are several key differences in how “Mapper” creates a diagram of interconnected nodes compared to DOC3000. The main reason for the discrepancies is a “Map” can become saturated with tags that often don’t affect one another. Below the discrepancies you will find 2 screenshots that are mapping the same tag.

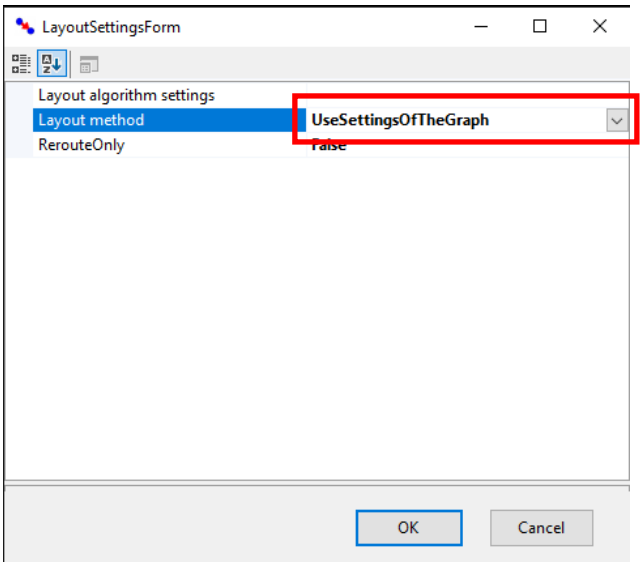
- Mapper only displays a tag once whereas D3K could display the same tag numerous times. See D3K screenshot below, all green tags are duplicates.
- The “LOGICNIM” can be thought of as a container for many more tags. Mapper automatically breaks apart “LOGICNIM” tags (“Map Logic Block” in D3K) into separate logic gates i.e. you will never see a “LOGICNIM” tag on a map, however, you will see the logic gate on the map (see tan tags on Mapper screenshot.
- CL isn’t displayed as nodes on a map in Mapper but is displayed in D3K. D3K displays CL files with oval nodes in a map. Mapper indicates a tag has CL on it by using an oval shape. It’s a small difference but the outcome is a much less cluttered map


UL4391
UL4391
DIINNIM
UCN6\SM15
SLOT49
PVFL -> S1
VL4314.OR1
PVFL -> S1
VL4391.OR1
OUT -> SHUTDOWN
HC4314
HC4314
REGCLNIM
AUTOMAN
UCN6\HPM13
SLOT34
CODSTN(1) -> OP
HY4314
ANOUTNIM
UCN6\HPM13
MODULE10\SLOT9
FC4391
FT4391
ANINNIM
UCN6\APM9
MODULE3\SLOT16
OUT -> SHUTDOWN
PV -> CISRC(1)
FC4391
REGCLNIM
PID
UCN6\APM9
SLOT51
OP -> CISRC(2)
CODSTN(1) -> OP
FY4391
ANOUTNIM
UCN6\APM9
MODULE7\SLOT4
TC4388
TT4388
ANINNIM
UCN6\APM9
MODULE3\SLOT15
PV -> CISRC(1)
TC4388
REGCLNIM
PID
UCN6\APM9
SLOT53
OP -> CISRC(2)
FC4391A
FT4391A
ANINNIM
UCN6\APM9
MODULE11\SLOT1
OUT -> SHUTDOWN
PV -> CISRC(1)
FC4391A
REGCLNIM
PID
UCN6\APM9
SLOT52
CODSTN(1) -> OP
FY4391A
ANOUTNIM
UCN6\APM9
MODULE7\SLOT5


FC4391
REGCLNIM. PID
FT4391
HLAI
FY4391
ANOUTNIM
TC4388
REGCLNIM. PID
100_USE
100_USE
TT4388
HLAI
VL4391
LOGICNIM.
FC4391A
REGCLNIM. PID
VP4388
E2464
NUMERCAM
VP4388
FT4391A
HLAI
VP4388
FY4391A
ANOUTNIM
E464
NUMERCAM
UL4391
DIINNIM
VL4391
LOGICNIM.
FC4391A
REGCLNIM. PID
VP4388
TC4388
REGCLNIM. PID
VL4314
LOGICNIM.
FC4463
REGCLNIM. PID
TC4388
REGCLNIM. PID
FT4463
HLAI
FC5100
REGHG
FY4463
ANOUTNIM
TC4388
REGCLNIM. PID
VL4001
LOGICNIM.
FC5100
REGHG
FI4463A
REGPVNIM.
TC4388
REGCLNIM. PID
UL4526
DIINNIM
TC4456
REGCLNIM. PID
FC5100
REGHG
250_USE
UL4463
DIINNIM
FC5100
REGHG
FC5100
REGHG
FC5100
REGHG
TT4456
HLAI
FC5100
REGHG
FC5100
REGHG
FC5100
REGHG
UY4483P
FC5100
REGHG
FC2305
REGHG
FC2305
REGHG
FFI2305
REGAM
FFC2305
REGAM
FC2305
REGHG
FC2305
REGHG
FC2305
REGHG
FFC2305
REGAM
FC2305
REGHG
FC2305
REGHG
FFI2305
REGAM
FC2305
REGHG
FC2300
REGHG
FC2305
REGHG

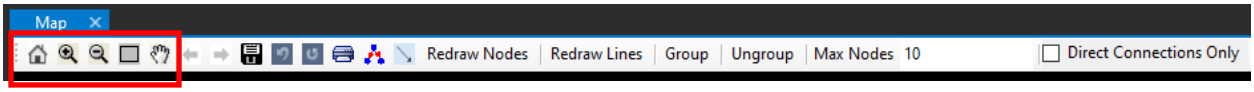
Drawing settings





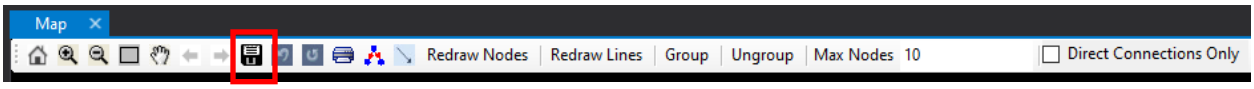
You can change the algorithm for how a map is displayed on a map. You would likely only need to do this for very large maps and you are probably better off simply reducing the “Max Nodes”

Pan & Zoom



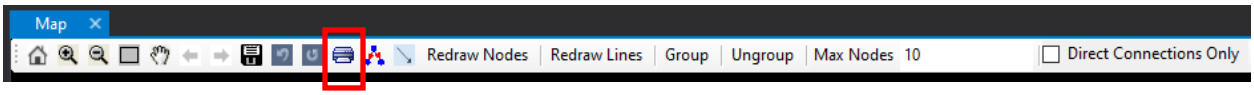
You can use the selected buttons to reset zoom, zoom in, zoom out, zoom to selection, and pan. Alternatively, you can scroll up to zoom in, scroll down to zoom out, and click and hold scroll wheel to pan.

Save Map



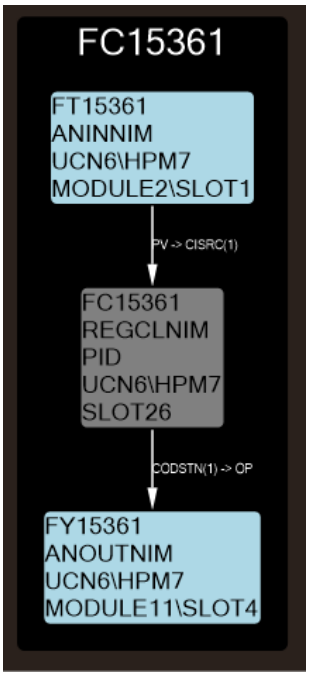
This feature does not work at this time. Plans to save node location if user wants to manually manipulate map.

Print Map



Prints the map to PDF or printer.

Function Block Colors



- Black container is module
- Blue is IO
- Gray is point type that isn't IO

- Red outline is missing connections

- Tan is not real TDC tag as defined by EB files. It is auxiliary logic.

- Green is SM address

- Red is missing tag

Function Block Shapes

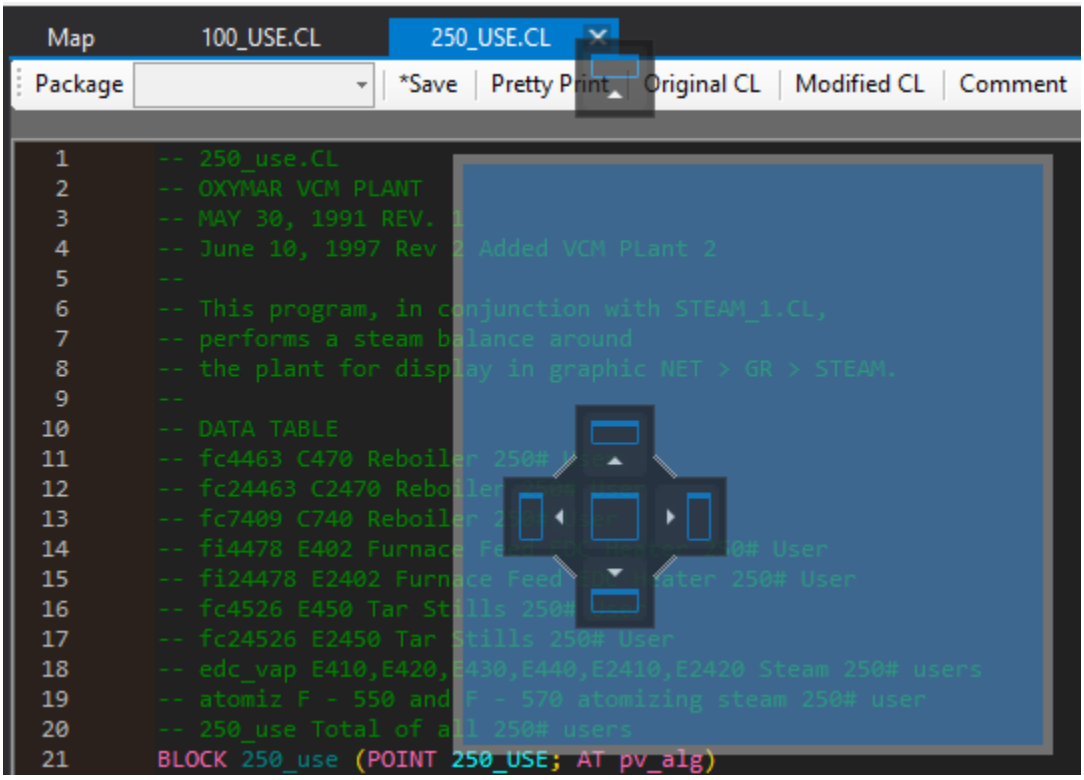
- Oval indicates tag appers in CL
- Rectangle is no CL on tag

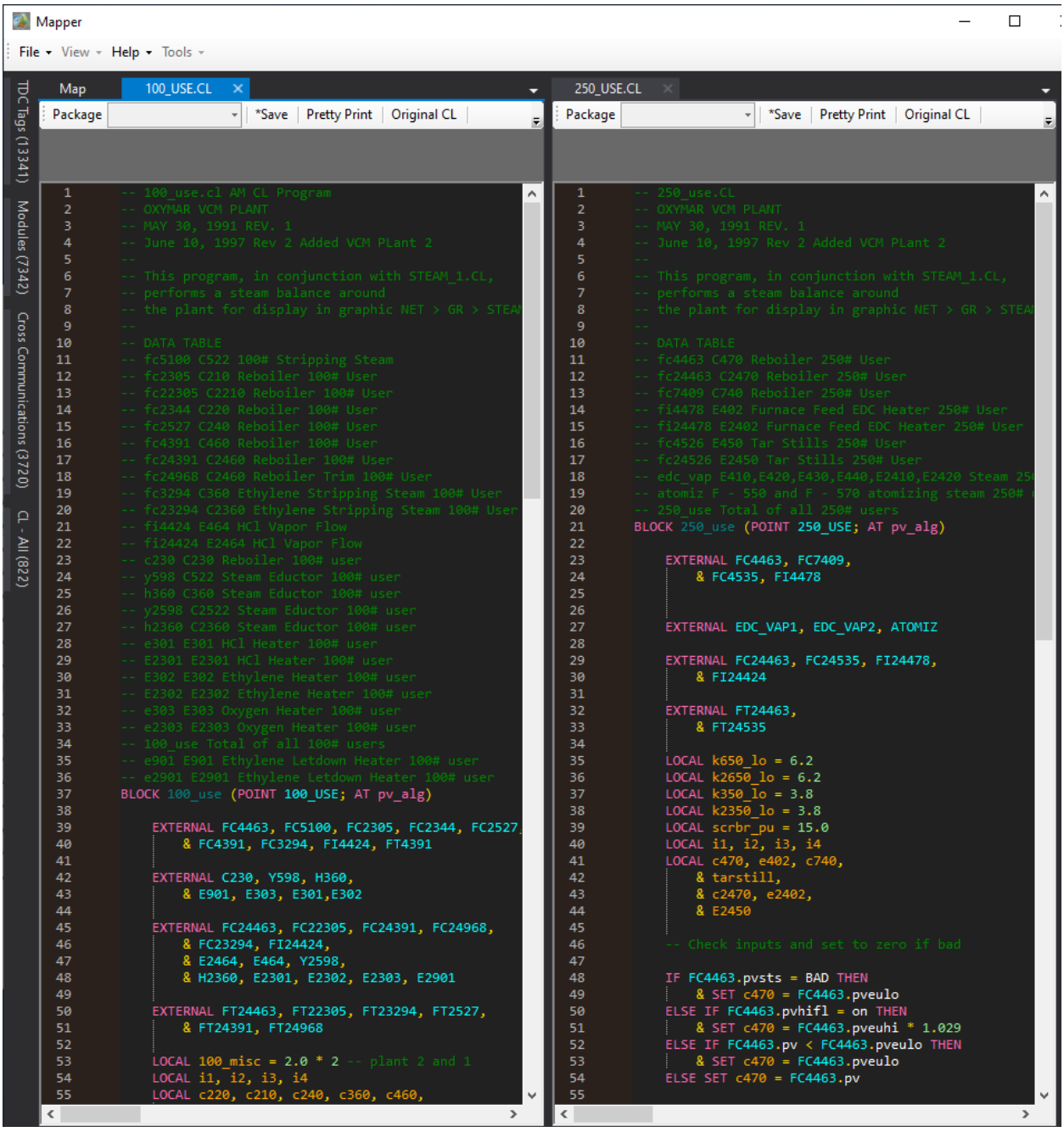
CL

See “Help” toolbar in Mapper, then click CL for an interactive guide of the most important elements of the program.

Multiple CL

You can open as many CL as you want and they will be added to the top tab. You can also drag tabs so that you have 2 CL files side by side.




Mapper
File
View
Help
Tools
TDC Tags (13341)
Modules (7342)
Cross Communications (3720)
CL - All (822)
Map
100_USE.CL
Package
*Save
Pretty Print
Original CL
-- 100_use.cl AM CL Program
-- OXYMAR VCM PLANT
-- MAY 30, 1991 REV. 1
-- June 10, 1997 Rev 2 Added VCM PLant 2
--
-- This program, in conjunction with STEAM_1.CL,
-- performs a steam balance around
-- the plant for display in graphic NET > GR > STEA
--
-- DATA TABLE
-- fc5100 C522 100# Stripping Steam
-- fc2305 C210 Reboiler 100# User
-- fc22305 C2210 Reboiler 100# User
-- fc2344 C220 Reboiler 100# User
-- fc2527 C240 Reboiler 100# User
-- fc4391 C460 Reboiler 100# User
-- fc24391 C2460 Reboiler 100# User
-- fc24968 C2460 Reboiler Trim 100# User
-- fc3294 C360 Ethylene Stripping Steam 100# User
-- fc23294 C2360 Ethylene Stripping Steam 100# User
-- fi4424 E464 HCl Vapor Flow
-- fi24424 E2464 HCl Vapor Flow
-- c230 C230 Reboiler 100# user
-- y598 C522 Steam Eductor 100# user
-- h360 C360 Steam Eductor 100# user
-- y2598 C2522 Steam Eductor 100# user
-- h2360 C2360 Steam Eductor 100# user
-- e301 E301 HCl Heater 100# user
-- E2301 E2301 HCl Heater 100# user
-- E302 E302 Ethylene Heater 100# user
-- E2302 E2302 Ethylene Heater 100# user
-- e303 E303 Oxygen Heater 100# user
-- e2303 E2303 Oxygen Heater 100# user
-- 100_use Total of all 100# users
-- e901 E901 Ethylene Letdown Heater 100# user
-- e2901 E2901 Ethylene Letdown Heater 100# user
BLOCK 100_use (POINT 100_USE; AT pv_alg)
EXTERNAL FC4463, FC5100, FC2305, FC2344, FC2527,
& FC4391, FC3294, FI4424, FT4391
EXTERNAL C230, Y598, H360,
& E901, E303, E301,E302
EXTERNAL FC24463, FC22305, FC24391, FC24968,
& FC23294, FI24424,
& E2464, E464, Y2598,
& H2360, E2301, E2302, E2303, E2901
EXTERNAL FT24463, FT22305, FT23294, FT2527,
& FT24391, FT24968
LOCAL 100_misc = 2.0 * 2 -- plant 2 and 1
LOCAL i1, i2, i3, i4
LOCAL c220, c210, c240, c360, c460,
250_USE.CL
Package
*Save
Pretty Print
Original CL
-- 250_use.CL
-- OXYMAR VCM PLANT
-- MAY 30, 1991 REV. 1
-- June 10, 1997 Rev 2 Added VCM PLant 2
--
-- This program, in conjunction with STEAM_1.CL,
-- performs a steam balance around
-- the plant for display in graphic NET > GR > STEA
--
-- DATA TABLE
-- fc4463 C470 Reboiler 250# User
-- fc24463 C2470 Reboiler 250# User
-- fc7409 C740 Reboiler 250# User
-- fi4478 E402 Furnace Feed EDC Heater 250# User
-- fi24478 E2402 Furnace Feed EDC Heater 250# User
-- fc4526 E450 Tar Stills 250# User
-- fc24526 E2450 Tar Stills 250# User
-- edc_vap E410,E420,E430,E440,E2410,E2420 Steam 25
-- atomiz F - 550 and F - 570 atomizing steam 250#
-- 250_use Total of all 250# users
BLOCK 250_use (POINT 250_USE; AT pv_alg)
EXTERNAL FC4463, FC7409,
& FC4535, FI4478
EXTERNAL EDC_VAP1, EDC_VAP2, ATOMIZ
EXTERNAL FC24463, FC24535, FI24478,
& FI24424
EXTERNAL FT24463,
& FT24535
LOCAL k650_lo = 6.2
LOCAL k2650_lo = 6.2
LOCAL k350_lo = 3.8
LOCAL k2350_lo = 3.8
LOCAL scrbr_pu = 15.0
LOCAL i1, i2, i3, i4
LOCAL c470, e402, c740,
& tarstill,
& c2470, e2402,
& E2450
-- Check inputs and set to zero if bad
IF FC4463.pvsts = BAD THEN
& SET c470 = FC4463.pveulo
ELSE IF FC4463.pvhifl = on THEN
& SET c470 = FC4463.pveuhi * 1.029
ELSE IF FC4463.pv < FC4463.pveulo THEN
& SET c470 = FC4463.pveulo
ELSE SET c470 = FC4463.pv