

CABLEMANAGER

NEWS DOCUMENT VERSION 6



Overview of cables and cable ways – from design phase to maintenance

This document is a quick walk through the major new functions in Cablemanager version 6 (and some version 5 news).

Version 6

Developed by PCSHEMATIC A/S

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NEW MANUAL

The manuals for the program have been updated, so deeper info about the new functions can be read in the manuals.

The Cablemanager manual now consists of the following parts:

- Part 1: Cablemanager Service – User Manual
 - This manual describes the functions in Cablemanager Service
 - The manual covers what a Read-only user can do in the main program

- Part 2: Cablemanager – User Manual
 - How to create cables, cableways and other objects
 - How to perform batch actions
 - Report functions
 - Settings
 - User management and user rights

- Part 3: Data structure and Import functions
 - Understand the data structure
 - Code tables and Main tables
 - How to use the Import Wizard

- Part 4: Installation manual
 - How to install the program
 - How to install the database

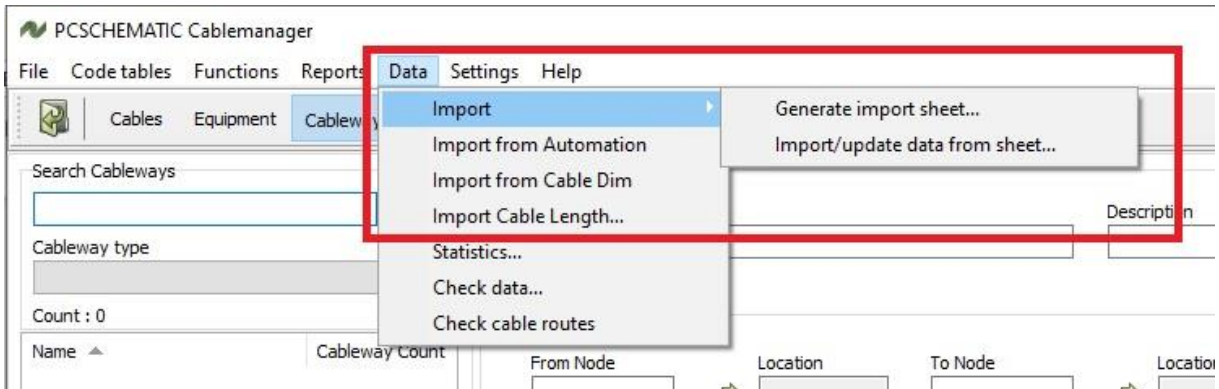
You find the manuals in the Help menu. ⁱ

IMPORT WIZARD

It was possible to import data into the old versions of the program, but you didn't get much help from the program, instead you needed to figure out a lot on your own.

From ver. 6, it is possible to import data in an easy way.

In the Data menu you find the import functions. This first section describes the import functions in the Import Wizard. ⁱⁱ



You start your imports by generating Import sheets. Import sheets are Excel sheets, that have the necessary – and the selected optional – data fields as headers.



What can be imported

When you open the 'Generate import sheet' you meet this dialog.

You can generate sheets for importing data of the listed kinds. see the picture – or update sheets for the same types.

You can also import data from other systems.

Select which data fields to import to

Here I have selected to import Cable specifications.

In the section Cable spec code table (see the manual) you can see a description of, what the various data fields contain.

Some data fields are mandatory, others are optional when you import – as well as if you create the spec's manually.

Make your selections, and generate the sheet.

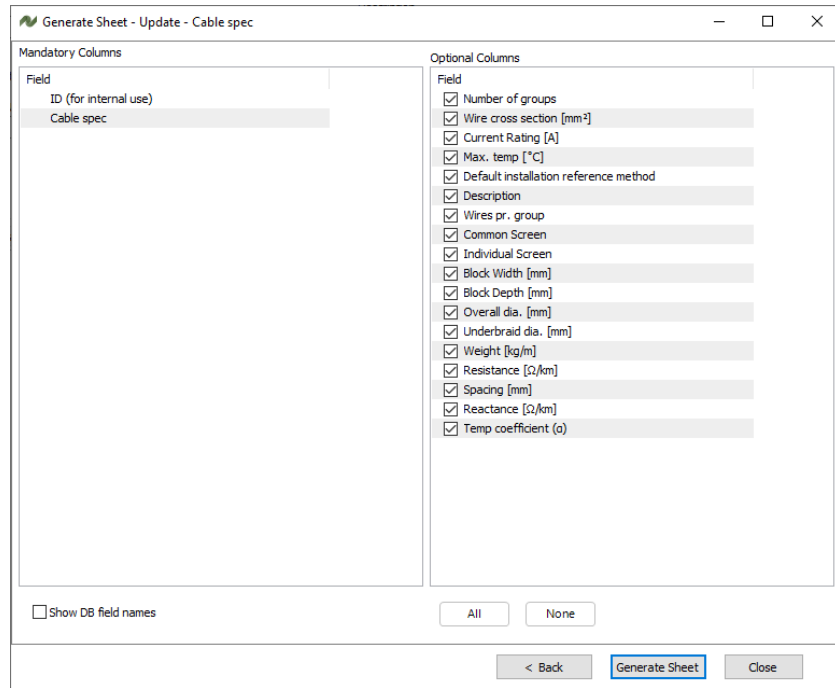
The import sheet

Below, you can see (part of) the import sheet. Next step is to write/paste data into it, so that it can be imported into the program.

	A	B	C	D	E	F	G	H
1	Cable spec	Number of groups	Wire cross section [mm²]	Current Rating [A]	Max. temp [°C]	Default installation reference method	Overall dia. [mm]	Description
2								
3								
4								

Update functions

When you need to update existing data, you make Update sheets.



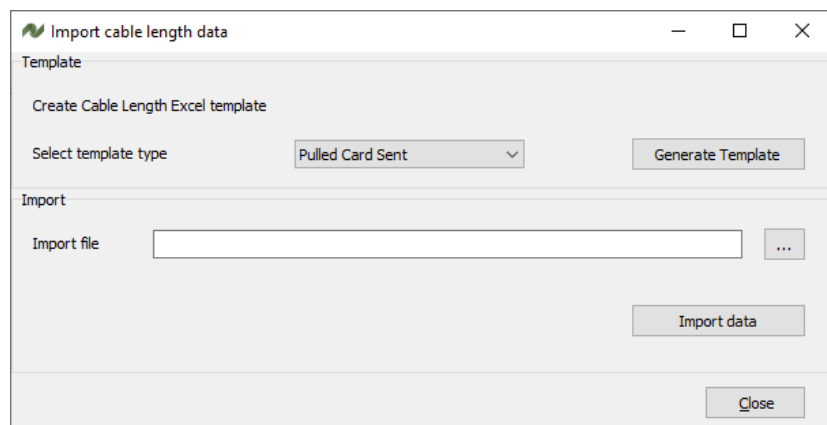
The generated sheet contains the existing parts and the selected data.

	A	B	C	D	E	F	G	H
1	ID (for internal use)	Cable spec	Number of groups	Wire cross section [mm ²]	Current Rating [A]	Max. temp [°C]	Default installation reference method	Description
2		1 3G4	1	4	42	90	All	JMV HF Flex
3		2 5G4	1	4	42	90	All	NOIKLX
4		3 S1	1	1,5	18,5	70	All	YSLY-JZ 3x1,5 m
5		4 4X6	1	6	54	90	All	JMV HF Flex
6		5 5G1,5	1	1,5	17,5	70	All	JMV HF Let
7		6 5G10	1	10	57	70	All	JMV HF Let
8		7 5G16	1	16	76	70	All	JMV HF Let
9		8 5G2,5	1	2,5	24	70	All	JMV HF Let
10		9 5G6	1	6	54	70	All	ScanKab POWE
11		10 3G1,5	1	1,5	18,5	70	All	ScanKab SCANL

Import cable length data

This import function allows you to update

- Cable status – according to Pulled Card Sent
- Pulled lengths – according to filled out pulling cards
- Installed lengths – according to filled out installation card.

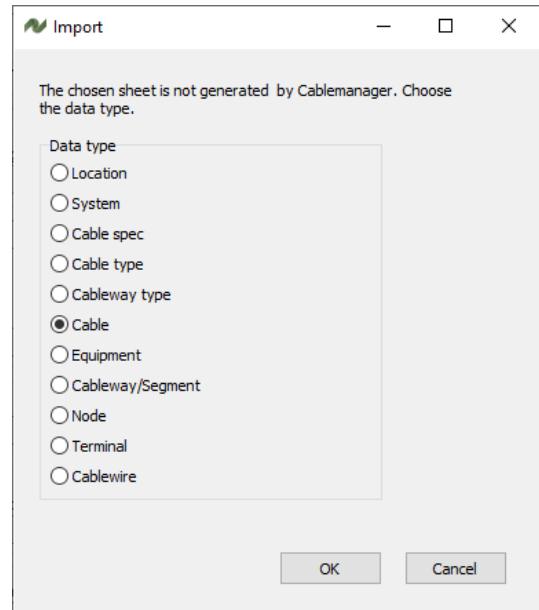


Import lists in other formats

A lot of times, you might have data in other systems, and the data doesn't fit exactly into the templates above.

In that case, you go through the following functions.

Start by selecting Data|Import. If the file format is not recognized, you get this window. Select the data type, and click ok.

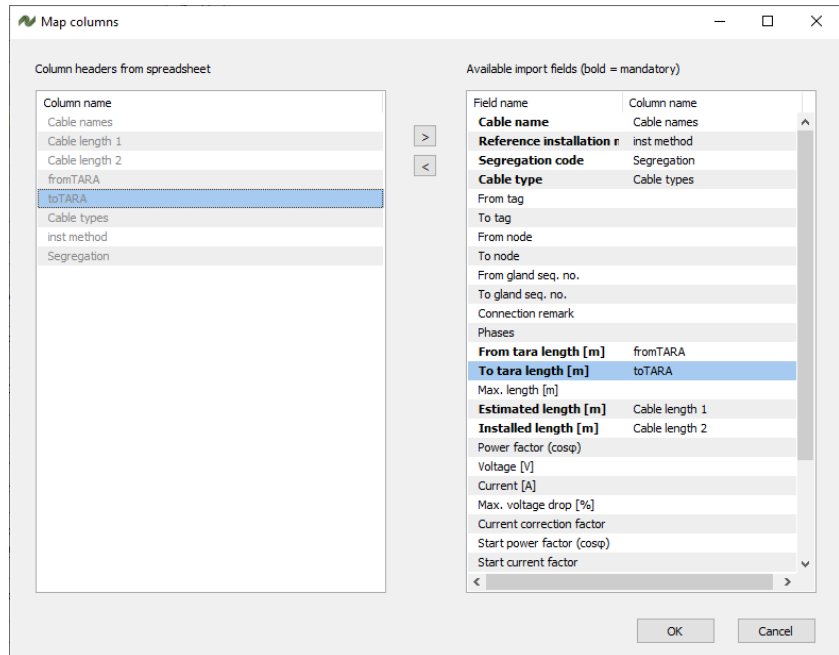


In the next window, you map the data fields:

Select a header in the left column, select the header in the right column, and press the > to map the two headers together.

When mapped, you can see 'your' header beside the import field.

All **bold** fields are mandatory for the selected import!



Was the import ok

After import, the list is opened, and you can see in the list, whether the import went well or not. Here, the cable, the equipment, their term.rows and connections must be created, AND the wire color in the import sheet MUST comply with the cable's specification.

	A	B	C	D	E	F	G	H	I	J	K
1	Cable name	Cable wire color	From equip	From termrow	From termi	From connection	To equip	To termrow	To termi	To connection	
2	test-cable1	BK	Panel1	x1	1	1	Panel2	x1	1	1	Imported
3	test-cable1	BU	Panel1	x1	2	1	Panel2	x1	2	1	Imported
4	test-cable1	OG	Panel1	x1	3	1	Panel2	x1	3	1	Error: Wire with color OG not found.
5	test-cable1	PK	Panel1	x1	4	1	Panel2	x1	4	1	Error: Wire with color PK not found.
6											

NODE CONNECTION, CABLEWAYS, SEGMENTS

What was formerly called Segments has been completely restructured.

The segments still exist, so that you can update your existing database, but further functionality has been added.

Nodes

There must be a node at all positions, where a cable/cableway changes direction. However, if you have parallel cableways, you only need one node at the X,Y coordinate. See more below.

Nodes are now without segregation codes. Earlier, you would have a lot of nodes at almost the same position, only with different segregation codes. Nodes are now only coordinates.

Node connection

When you start defining a route, you start by making a Node connection, which is a simple and logical connection between two nodes.

The node connection can be automatically named after the nodes (if selected in the settings).

The length and direction of the node connection is calculated in the program.

Cableway

The next level is the actual cableway. It may be a tray, a ladder, a transit or another cableway type.

The cableway type contains the physical sizes and load factors.

The Cableway runs on the node connection, but with an optional offset from the nodes.

That means, that if you have more parallel cableways, you have one node connection, but two or more cableways.

When you add a new cableway on a node connection, there is a default offset value.

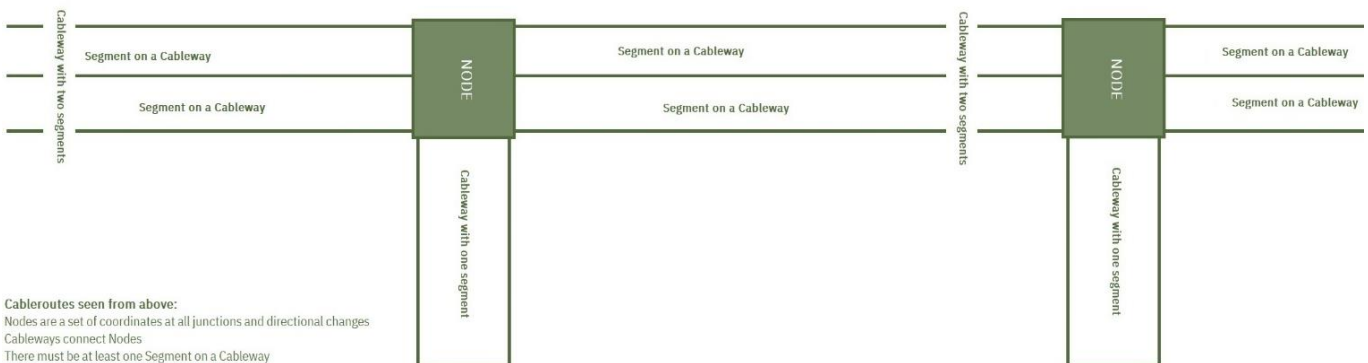
Segment

The last level is the (old) segment.

The segment has segregation codes, that define the installation type in the segment.

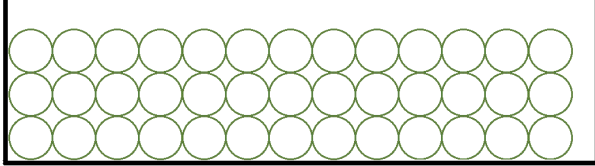

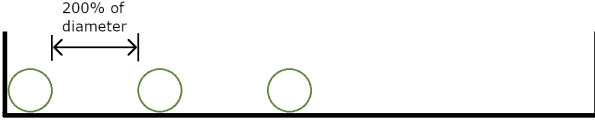
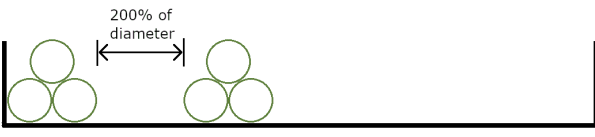
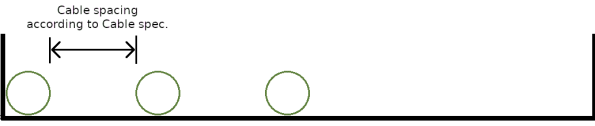
The segment has a width – default 100% of the Cableway, but it can be changed.

The reference installation methods are defined on the segment.



Reference Installation Methods

Each segment has an Installation reference method, which controls how the cables are allowed to route on the segments, and it also controls how the fill % is calculated.

Reference installation method	How to calculate fill %
	<p>If 'Area' is chosen, the fill % is calculated as follows:</p> <p>The cross section area of each cable = diameter².</p> <p>Fill = (Sum of cable cross section areas) / (Segment cross section area * fill factor) * 100%</p>
	<p>If 'One layer' is chosen, the fill % is calculated as follows:</p> <p>Fill = (Sum of cable diameters) / (Segment width * fill factor)</p>
	<p>If 'One layer with spacing' is chosen, the fill % is calculated as follows:</p> <p>The space between each two cables is assumed to be 200% of the cable diameter.</p> <p>Fill = (3 * Sum of cable diameters - 2 * Last cables diameter) / (Segment width * fill factor) * 100%</p>
	<p>If 'One layer triplex' is chosen, the fill % is calculated as follows:</p> <p>The cables are divided into groups of 3.</p> <p>Group width = 2 * cable diameter</p> <p>Space between groups = 2 * cable diameter.</p> <p>If the number of cables is not divisible by 3, the number of groups is rounded up.</p> <p>Fill = (No of groups * Group width + (No of groups - 1) * Space) / (Segment width * fill factor) * 100%</p>
 <p data-bbox="245 1731 619 1753">NEW INSTALLATION METHOD in ver. 6.</p>	<p>If 'One Layer incl. Cable spacing' is chosen, the fill % is calculated as follows:</p> <p>The space between each two cables is assumed to be 200% of the cable diameter.</p> <p>Fill = (Sum of cable diameters + Sum of cable spacings (except the last)) / (Segment width * fill factor) * 100%</p>
<p>Weight fill</p>	<p>Regardless of Installation reference method, the Used weight is calculated as follows:</p> <p>Used weight = (Sum of cables weight pr length) / (Normal load * weight factor) * 100%</p>

Cableway shapes and possible Reference installation methods

The shape of the Cableway/Segment defines in which way it is possible to fill a Segment.

The following list shows what is possible:

Shape	Possible Reference installation method for different shapes
Diameter	Area
Height and Width	Area (Default)
	One Layer
	One Layer with spacing
	One Layer Triplex
	One Layer incl. Cable spacing
Frame	Area (Integer)
Width	One Layer (Default)
	One Layer with spacing
	One Layer Triplex
	One Layer incl. cable spacing
Unlimited	(Area)

You can read much more about Cableway types and reference installation methods in the Manual - Data structure and Import functions, and how to use the functions in the User manual.

Split node connection

If you need to make a new change of direction, you can split the node connection.

It takes all data from cableways, segments, routed cables and cable lengths to the two new node connections.ⁱⁱⁱ



CABLE ROUTES

You can force a cable on to a specific route, by selecting nodes in the Via nodes part.

When you batch route cables, it will by default find the shortest route. This is not necessarily optimal, because you want to pull a lot of cables simultaneously, also if it means that some cables become longer than necessary. To do so, you need to select the 'via nodes' that the cables must pass through when they are routed.

Cable data		Description		Cable status	Segregation
Cable name	-W1	From MDP to SDP 1		PSS	M 440V OR BELOW
Remark	[ælkæælk]ælsdf læsd ælæskfdi mange fiere lagog endnu fiere lagr Zkælkæælk]ælsdf læsd ælæskfdi mange fiere lagog endnu fiere lagr ...			Project	Contractor
Cable type	5G4	Description	NOBKX	Discipline	System
Installation reference method	All	Route fill load ok	Route weight load ok	Cable size / Area 1x5x4,00 mm ² / 12x12 = 144 mm ²	
Main Status Route load Wiring Calculations					
From		To		Via nodes	
Node	M1	Node	M8	M18	
Tara length [m]	11,00	Tara length [m]	8,00		
Tag	-MDP	Tag	-SDP 1		
Location	A1	Location	A3		
Description	Main distribution panel	Description	Sub-distribution panel 1		
Cable Gland		Cable Gland			
Type		Type			
Size		Size			
Cable lengths [m]					
Maximum	0,00	Estimated	0,00	Routed	40,02
		Routed + Tara	59,02	Pulled	0,00
		Installed	0,00		
Correction factor					
Current correction	1,00	Current [A]			
		Current rating	42,00	Current	5,00
		Max. current	42,00		
Operational status					
Date		User		Message	
					Clr. Add History...
Created date	09/07/2015 09.30.51	Created by	ADMIN	Updated date	14/07/2020 15.47.09
				Updated by	ADMIN

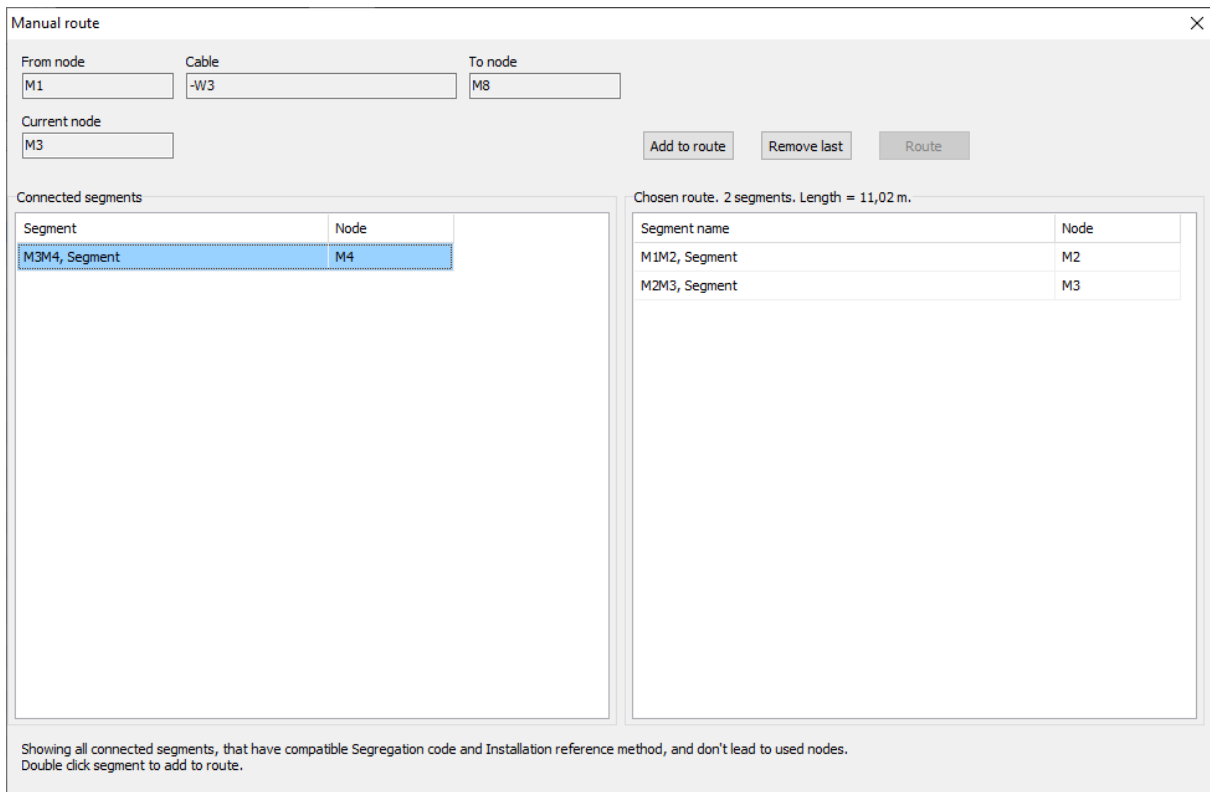
Manual route

You can also route a cable manually.

That means that you have to select each segment that the cable goes through manually.

In the (new) dialog, you see all compatible connected segments on the route – if there are more ways to to, you can select between them and add them to the route.

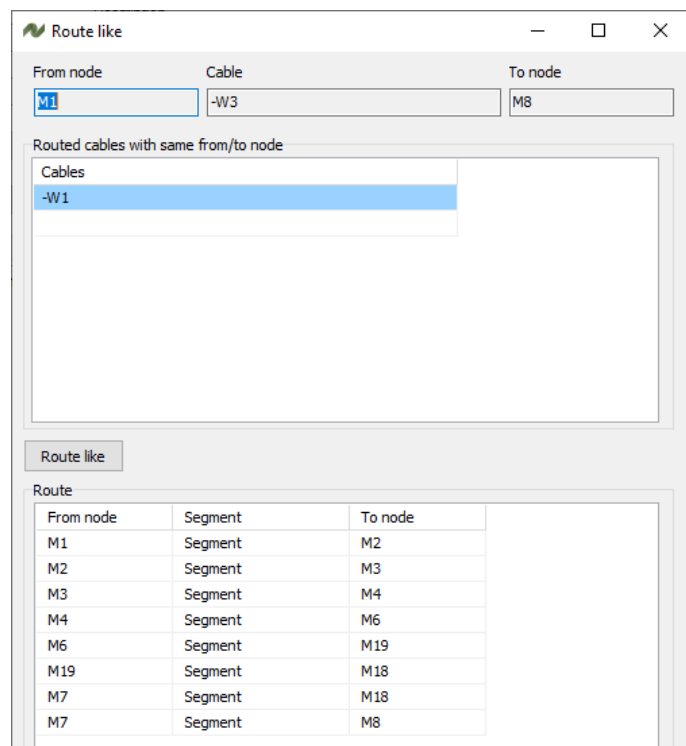
You might consider to use the Via nodes function instead of the manual route function.



You can also Route like ... another cable.

In this way you can also optimize for the pulling of cables.

And let new cables follow other cables, that have a Via nodes ... or that you have routed manually.



Optimize route

When you have parallel cableways, you might end up with having too much space.

For that, you can optimize the cable routes, which means that you can force the routed cables on to the highest cableway with sufficient space

Cableway data

Node connection name: KJNY-M10 Description: Test cableway

Connection

From Node: KJNY Location: A3 To Node: M10 Location: A3 Calc. distance [m]: 22,09

Position: X: 5,00 Y: 5,00 Z: 5,00 Position: X: 27,00 Y: 7,00 Z: 5,00 Dif: X: 22,00 Y: 2,00 Z: 0,00 Direction: Horizontal

Load | Cables

	Type	Segregation	Cable Count	Used Area/Width	Installation Method	Fill Factor	Available Area/Width	Allowed Area/Width	Length [m]	Offset from [m]	Offset to [m]
Cableway 1	CT1						150x400 mm²		22,09	Z:1	Z:1
Segment CW1 - 1		T	1	0,3 % Area		1,00	200 mm (50%)	30.000 mm ²			
Segment CW1 - 2		M	0	0 % Area		1,00	100 mm (25%)	15.000 mm ²			
Segment CW1 - 3		S	0	0 % Area		1,00	100 mm (25%)	15.000 mm ²			
Cableway 2	CT1						150x400 mm²		22,09	Z:0,5	Z:0,5
Segment - new...		T	1	0,1 % Area		1,00	400 mm (100%)	60.000 mm ²			
Cableway 3	CT1						150x400 mm²		22,09	-	-
Segment		T	1	4,3 % One Layer		1,00	200 mm (50%)	200 mm			

The function is found on the Cable | Route load tab:

Cable data

Cable name: -W1 Description: From MDP to SDP 1 Cable status: PSS Segregation: M 440V OR BELOW

Remark: [ælkæækjæjsdf læsd ælæskfll mange flere lagog endnu flere lagr 2ælkæækjæjsdf læsd ælæskfll mange flere lagog endnu flere lagr ...] Project: Contractor: Discipline: System:

Cable type: SG4 Description: NOIKLX Cable size / Area: 1x5x4,00 mm² / 12x12 = 144 mm²

Installation reference method: All Route fill load ok Route weight load ok

Main | Status | **Route load** | Wiring | Calculations

From Node	To Node	Segment	Cable Count	Type	Length [m]	Width [mm]	Used Width...	Area [mm ²]	Used Area ...	Weight [kg/m]	Used Weig..
M1	M2	Segment	7	CT1	6,02	-	-	42.000	2,0%	180,000	1,0%
M2	M3	Segment	6	CT1	5,00	-	-	42.000	1,8%	180,000	1,0%
M3	M4	Segment	6	TRANSIT1	1,00	-	-	175.000	1,4%	1.000,000	0,2%
M4	M6	Segment	5	CT1	10,00	-	-	42.000	1,5%	180,000	0,8%
M6	M19	Segment	4	TRANSIT1	1,00	-	-	175.000	0,9%	1.000,000	0,1%
M19	M18	Segment	3	CT1	13,00	-	-	42.000	1,0%	180,000	0,6%
M7	M18	Segment	2	TRANSIT1	1,00	-	-	175.000	0,5%	1.000,000	0,1%
M7	M8	Segment	1	CT1	3,00	-	-	42.000	0,3%	180,000	0,2%

Confirm ✕

Optimize cable route? For every route segment, the cable will be moved to the highest cableway with the correct segregation, reference installation method and sufficient space.

Cable batch function, change nodes on cables

A new batch function allows you to change to and/or from nodes on a collection of not-routed cables in one batch operation.

The screenshot displays the PCSHEMATIC Cablemanager interface. The main window shows a list of cables on the left and a 'Cable data' dialog box in the center. The 'Cable batch action' dialog is open, showing a table of selected cables and a 'Change nodes' sub-dialog box.

Cable batch action dialog - Cable data table:

Cable Name	Description	Cable Type	Cable Type Description	Cable Status	Segregation
<input checked="" type="checkbox"/> -W3	From MDP to LP1	SG4	NODIX	CR	M
<input checked="" type="checkbox"/> -W4	From MDP to LP2	SG4	NODIX	CR	M
<input checked="" type="checkbox"/> -W14	From LP2 to E8 (n A2)	3G1,5	PVIK1 3G1,5	CR	M
<input checked="" type="checkbox"/> -W19					M

Change nodes dialog:

From node: No change, Remove node, Set node [text field]

To node: No change, Remove node, Set node [text field]

Buttons: OK, Cancel

Database: kh demo (original) User id: ADMIN



