

Engineering Base

The Terminal Block Connection Diagram EVU

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1 The Terminal Block Connection Diagram EVU

As every terminal diagram, the terminal block connection diagram EVU is created dynamically when it is opened. Thus the terminal diagram represents the current project status.

The Terminal Block Connection Diagram 15er Matrix EVU DIN has two main areas:

- 1. Information about the connections to and from the terminal, wiring material and terminal types.
- 2. Information about the terminal, with terminal number (as used in the Explorer), a terminal matrix with 15 connections, internal and external slots of the terminal and the internal and external destination designations.



Terminal Block Connection Diagram EVU

Area of cable information

	7	1			2			7	₇ 3					
Í			No.	Cable	$\overline{\ }$	Cores occ.	: Sheet/	Tota	Cable-	Type Cross	-section Core	Cab	le Tracking	
			1	-W101T1	L1		2	2	NYCY	3X2,5/2,5	3			
			2				0	6						
			3	-W101T1	L2		2	2	NYCY	3X2,5/2,5	3			
	,		4	-W101T1	L3		2	2	NYCY	3X2,5/2,5	3			

Area of cable information

Example: Cable number 1 has 3 cores, two cores are occupied, both in this sheet.

Column	Meaning/Content			
No.	Refers to the cable number in the terminal matrix, number of $1 - 15$ for each cable used.			
Cable	Name of the cable, results from the equipment information from the catalog.			
Occupied cores per sheet	Number of occupied cores on this terminal block diagram.			
Occupied cores total	Number of occupied cores of this cable on all terminal block diagrams.			
Cable type	Type of the cable, results from the equipment information from the catalog.			
Cross-section	Cross-section of the cable, results from the equipment in- formation from the catalog.			
Core	Maximum number of cores in the cable, results from the equipment information from the catalog.			
Cable tracking	Shows on which terminal diagram this cable is represented next (ascending order).			

Area of wiring material and terminal types

6		7		8	
Wiring Material	Diam.:	colour	Termi	inals-Type]
Standard:	1,5mm²	SW	Stanc a-g h-i	lard: STME 6 STMED 6-PE	

Wiring material and terminal types in the Terminal Block Connection Diagram EVU

Column	Meaning/Content			
Wiring Material	 Standard: Standard material (wiring material) used for the internal wiring of the terminal block. If a standard wiring material is predefined with the three attributes Type, Color and Diameter at the terminal strip, this will be shown in the wiring material table. This also applies to new wires created in the diagram. Pos: Wiring material used for the internal or external wiring of the terminal block. The position number of the used wiring material is shown in the Terminal Block Diagram EVU in the column core/wire (internal or external). The entries in the wiring material table are sorted by wire type, diameter and color. 			
	not shown in the terminal matrix.			
Diameter	Diameter of the wiring material			
Color	Color of the wiring material			
Terminal-Type	 Standard: Standard terminal type. If the attribute Standard Terminal Type is predefined at the terminal strip and Terminal Summary Options=1 is set in the terminal diagram template, the predefined standard terminal is displayed. If either the attribute Standard Terminal Type is empty or the switch Terminal Summary Options <1> is set the terminal diagram template, the terminal most often entered is entered as the standard terminal type. 1 - xx: Terminal type on position 1 -xx The terminal types of the terminal block are displayed with their position. 			

4	√ 5	
Circuit Diagram		
Cables		
Installation	= 101 +S -X1	
Inst 1	-001 0 -71	
Inst 2		
Inst 3	Current Transformer	
Inst 4	Gurent Hanstofffer	

General Information on the terminal block

General information on the terminal block in the Terminal block Diagram EVU

Column	Meaning/Content		
Circuit Diagram	Reference to the corresponding circuit diagram		
Cables	Reference to the corresponding cable list		
Installation	Mounting hints are taken from the attributes Installation In- struction 1 – Installation Instruction 4 of the terminal block.		
=J01 +S -X1	Terminal block for which the terminal block diagram was created. The representation is controlled in the terminal diagram template by the attribute Hide Terminal Block Location .		

Information about the terminal structure

Back- reference	No. Core/	External destination designation	Pot No. Internal destination designation	Core/ Wire Remarks
\$01.2C	<. 2	=J01+J -T1L1 1S1	a a	
S01.2C	<> 1	=J01+J -T1L1 1S2	b =J01+S -A10 Q1	
S01.3C	<- 2	=J01+J -T1L2 1S1		
S01.3C	> c 1	=J01+J -T1L2 1S2	d ==_001 +S -A10 Q3	
S01.4C	<	=J01 +J -T1L3 1S1		
S01.4C	-> e 1	=J01+J -T1L3 1S2	f ==_001+S -A10 Q5	
\$01.5C	*		g = #J01+S -X1 h	
S01.5C	*	=J01+S -A10 PE	h =J01+S -X1 g	
			00000	

Terminal structure in the Terminal Block Connection Diagram EVU

Column	Meaning/Content
Back-reference	Drawing on which the terminal is represented.
No.	Cable number; under this number further information about the cables can be found in the cable information area
	In the previous example, each of the terminals 1, 3 and 4 is connected with 2 cores to the external side of the terminal.
Core/Wire	 Core number (wire) for internal and external destinations. Position number of the used wiring material, taken from the wiring material table at the top of the Terminal Block Diagram EVU (for internal or external destinations).
External/Internal desti- nation designation	External or internal destination of the terminal.
Remarks	Remarks about the terminal are entered here; for instance, the levels of a multi-level terminal blocks.
Pot	Associated potential
in between	Slots of accessory
No.	Terminal Number

If the attribute **Pin Ordering** is marked at the terminal, all pins of the terminal are displayed irrespective of whether an entry is made under the Pin Designation of the pin or whether the pin has an allocation. The pins are displayed next to the assigned potential (for external pins) and next to the terminal number (for internal pins).

Pins with the pin position = 0 are excluded from this rule.

For terminals with more than two pins, graphical wire bridges and insertion bridges are displayed on the associated pins.

destination identifier extern	Pot	No.	destination identifier intern			
=J01 +J -T1L1	151		a 4			
		2				
= 101 + 1 - T11 1	152	3		= 101 +5 -410	01	

The terminal structure with the set pin ordering at terminal a

2 Creating the Terminal Block Connection Diagram EVU

A terminal block diagram may either be created using the **New Report** or the **Multi Terminal Block Diagram** wizard. Using the **Multi Terminal Block Diagram** wizard, you can create terminal block diagrams for several terminal blocks.

2.1 Creating via "New Report"

If a terminal diagram already exists for the terminal block, it has to be deleted before it is created anew using another terminal diagram template.

- 1. In the Explorer, select the terminal block for which you want to create a terminal block connection diagram.
- 2. On the shortcut menu, click **New Report** and then click **Terminal Block Connec**tion Diagram 15er Matrix EVU DIN.

The sheet is created and the dialog **NEW [Sheet]** is opened.

3. Complete the information, and then click **OK**.

The terminal diagram is created and stored in the folder **Documents**.



If at a terminal block the attribute **First Sheet** is defined, then it is used as sheet designation of the terminal block diagram, even if you enter a different sheet designation into the dialog **New[Sheet]**.



If a terminal block is associated with a function, then the related terminal block diagram can only be associated with this function or with one of its sub-functions.

If you created a substructure (e.g. = E01/EMA) in the folder **Documents** in the Database Explorer, it is possible to store the Terminal Block Connection Diagram EVU in this substructure via the selection **Part of**.

🖃 🛍 Terminal Block Connection Diagram Example



Example: substructure in Documents EVU

2.2 Creating using the Multi Terminal Block Diagram Wizard

Using the Multi Terminal Block Diagram Assistant, it is possible to create terminal block diagrams for several terminal blocks.

The Multi Terminal Block Diagrams Assistant comprises two different dialogs. Which of the dialogs is displayed depends on whether at least one of the subsequently listed at-tributes is filled at one of the selected terminal blocks:

- First Sheet: corresponds to the sheet designation
- TBDiagram Template Sheet: Template to be used to create the terminal block diagram
- **TBDiagram Target Drawing**: Storage location in the Documents folder

The terminal block attributes **Title Line 1** - **4** are taken into account when creating the terminal block diagrams.

If the attribute **Pagination** is checked at a terminal of the terminal block, then ahead of this terminal a page break will be inserted into the terminal block diagram.



To mark or select several terminals in the Explorer, select a terminal with left click, press the CTRL key and select additional terminals. If you want to select an entire terminal group, mark the first terminal with a left click, hold down the Shift key and select the last terminal of the group with a left click.



If a terminal block is associated with a function, then the newly created terminal block diagram will be automatically associated with this function as well.

2.2.1 Creation with consecutive numbering of the terminal block diagrams

The attributes **First Sheet**, **TBDiagram Template Sheet** and **TBDiagram Target Drawing** of the selected terminal block diagrams must not be filled.

- 1. In the Explorer, select the terminal blocks for which you want to create a terminal block diagram.
- 2. Select **Multi Terminal Block Diagram** on the shortcut menu or click **Select Assistant** on the shortcut menu and select the **Multi Terminal Block Diagram** assistant, then click **Run**.

The dialog Multi Terminal Block Diagrams Assistant opens.

Create Diagrams for selected Terminal Blocks Select the terminal blocks and the sheet template. Then click 'Start' to create the terminal block iagrams. Selection Part Of Terminal Block Status All Start Start	Multi Terminal Block Diagrams Assistant 2.0.0 – 🗆 🗙							\times
Select the terminal blocks and the sheet template. Then click 'Start' to create the terminal block diagrams. Selection Part Of Terminal Block Status All All All All All 24kV-Switchgear = J01 + J -X0 Exist - 24kV-Switchgear = J01 + J -X1/5 Exist - Select all Terminal Blocks - - - Part Of Documents Start Sheet 1 Create gaps - Progress - - - - -	Create	Diad	rams for sele	cted Termina	Blocks			
Select the terminal blocks and the sheet template. Their click Start to create the terminal block diagrams. Selection Part Of Terminal Block Status All All All All All 24kV-Switchgear =J01 + J -X0 Exist 24kV-Switchgear =J01 + J -X1/5 Exist 24kV-Switchgear =J01 + J -X2 - Select all Terminal Blocks	Coloct the te	urmial bl	ake and the sheet term	plate. Then aliak 'Start'	to proof the term	inal bla	ak	
Selection Part Of Terminal Block Status All All All All 24kV-Switchgear = J01 + J -X0 Exist 24kV-Switchgear = J01 + J -X1 - 24kV-Switchgear = J01 + J -X1/5 Exist 24kV-Switchgear = J01 + J -X1/5 Exist 24kV-Switchgear = J01 + J -X2 Select all Terminal Blocks	diagrams.	ermiai bio	ocks and the sheet temp	plate. Then click Start	to create the term	inal dio	CK	
Selection Part Of Terminal Block Status All All All All 24kV-Switchgear =J01 +J -X0 Exist 24kV-Switchgear =J01 +J -X1 - 24kV-Switchgear =J01 +J -X1/5 Exist 24kV-Switchgear =J01 +J -X2 - Select all Terminal Blocks	5							
All All All All 24kV-Switchgear =J01 +J -X0 Exist 24kV-Switchgear =J01 +J -X1 24kV-Switchgear =J01 +J -X1/5 24kV-Switchgear =J01 +J -X2 Select all Terminal Blocks Part Of Documents Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN	Selection		Part Of	Terminal Block	Status			
□ 24kV-Switchgear =J01 +J -X0 Exist □ 24kV-Switchgear =J01 +J -X1 □ 24kV-Switchgear =J01 +J -X1/5 Exist ☑ 24kV-Switchgear =J01 +J -X1/5 Exist ☑ 24kV-Switchgear =J01 +J -X2 - □ 24kV-Switchgear =J01 +J -X2 - □ Select all Terminal Blocks	All		All	All	All			
☑ 24kV-Switchgear =J01 +J -X1 □ 24kV-Switchgear =J01 +J -X1/5 ☑ 24kV-Switchgear =J01 +J -X2 Select all Terminal Blocks Part Of Documents Start Sheet 1 □ Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN		24kV-	Switchgear =J01 +J	-X0	Exist			
□ 24kV-Switchgear =J01 +J -X1/5 Exist ☑ 24kV-Switchgear =J01 +J -X2 □ Select all Terminal Blocks Part Of Documents Start Sheet 1 □ □ Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN		24kV-	Switchgear =J01 +J	-X1				
✓ 24kV-Switchgear = J01 + J -X2 Select all Terminal Blocks ✓ Part Of Documents … Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN ✓ Progress ✓ ✓		24kV-	Switchgear =J01 +J	-X1/5	Exist			
Select all Terminal Blocks Part Of Documents Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN Progress	\checkmark	24kV-	Switchgear =J01 +J	-X2				
Select all Terminal Blocks Part Of Documents Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN								
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Part Of Documents Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN Progress	Select a	ll Termin	al Blocks					
Part Of Documents Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN	j Ocicet u	in remin						
Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN Progress	Part Of		Documente				1	
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Start Sheet 1 Create gaps Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN Progress								
Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN Progress	Start Sheet 1 Create gaps							
Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN Progress	,							
Progress	Sheet Template Terminal Block Connection Diagram 15er Matrix EVU DIN							
Progress								
	Progress						_	
			1					
Start Close	2				Start		Clos	e

In the dialog **Multi Terminal Block Diagrams Assistant**, the selected terminal blocks are displayed.

In all columns, the data can be filtered and sorted. The terminal block diagrams are output according to the specified sorting.

Selection	If this column is checked, then Start creates a terminal block diagram. Already existing terminal block diagrams will be deleted and created anew.			
Terminal Block	Name of the terminal block			
Status	 Empty: There is no terminal block diagram yet. Exists: There already is a terminal block diagram. Created: After executing the assistant, this status will be displayed if the creation of the terminal block diagram was successful. Replace: This status will be set for an existing terminal block diagram if the related checkbox in column Selection is checked. 			
Select all Terminal Blocks	If this option is checked, then all terminal blocks without terminal block diagram will be marked in column Selec-tion .			
Part Of	Click and select the required storage location for the terminal block diagrams in the displayed Select Drawing or Folder selection dialog.			
Start Sheet	Provide the sheet designation for First Sheet. First Sheet may be alphanumeric, but has to end with a numeric part. The special characters ".", "_", and "-" are permit- ted. The terminal block diagrams created will be numbered sequentially (e.g. A1, A2, A3,).			
Create gaps	The terminal block diagrams will not be numbered se- quentially. In each case, there will be a gap left corre- sponding to the number of sheets of the previous termi- nal block diagram. Example: If the terminal block diagram A1 has two sheets, then the numbering continues with A3.			
	If the terminal block diagram A2 has five sheets, then the numbering continues with A7.			
Sheet Template	Select a sheet template using the selection dialog.			

Meaning of columns and input fields

3. Complete the information as needed, then click **Start**.

The terminal block diagrams are created and stored in the **Documents** folder. The dialog remains opened.



If a terminal block is associated with a function, then the newly created terminal block diagram will be automatically associated with this function as well.

4. Click **Close** to end the dialog.

2.2.2 Creation with predefined values (list representation)

At least one of the attributes **First Sheet**, **TBDiagram Template Sheet** or **TBDiagram Target Drawing** of one of the selected terminal blocks must be filled.

- 1. In the Explorer, select the terminal blocks for which you want to create a terminal diagram.
- 2. Select **Multi Terminal Block Diagram** on the shortcut menu, or click **Select Assistant** on the shortcut menu and select the **Multi Terminal Block Diagram** assistant, then click **Run**.

The dialog Multi Terminal Block Diagrams Assistant opens.

election	Part Of	Terminal Block	Status	Start She	Target Drawing		Sheet Template
All	All	All	All	All	All	A	All
\checkmark	24kV-Switchgear =J02 +S	-X0	Exist	A 1	24kV-Switchgear\=J02+S		Terminal Block Connection Diagram 15er Matrix EVU DIN
	24kV-Switchgear =J02 +S	-X1	Exist	A 2	24kV-Switchgear\=J02+S		Terminal Block Connection Diagram without Q Cable Matrix EV
	24kV-Switchgear =J02 +S	-X1/5	Exist	A 3	24kV-Switchgear\=J02+S		Terminal Block Connection Diagram 15er Matrix EVU DIN
	24kV-Switchgear =J02 +S	-X2	Exist	A 4	24kV-Switchgear\=J02+S		Terminal Block Connection Diagram 15er Matrix EVU DIN
	24kV-Switchgear =J02 +S	-X3	Exist				
	24kV-Switchgear =J02 +S	-X5	Exist				
	24kV-Switchgear =J02 +S	-X6	Exist				

In the dialog **Multi Terminal Block Diagrams Assistant**, the selected terminal blocks are displayed.

In all columns, the data can be filtered and sorted. The terminal block diagrams are output according to the specified sorting.

Selection	If this column is checked, then Start creates a termi- nal block diagram. Already existing terminal block dia- grams will be deleted and created anew.
Part Of	Shows the superordinate structure of the terminal block. Only those objects are shown where the attributes Designation or Name are filled.
Terminal Block	Name of the terminal block
Status	 Empty: There is no terminal block diagram yet. Exists: There already is a terminal block diagram. Created: After executing the assistant, this status will be displayed if the creation of the terminal block diagram was successful. Replace: This status will be set for an existing terminal block diagram if the related checkbox in column Selection is checked.
Start Sheet	Provide the sheet designation for First Sheet. First Sheet may be alphanumeric, but has to end with a nu- meric part. The special characters ".", "_", and "-" are permitted. The terminal block diagrams created will be numbered sequentially (e.g. A1, A2, A3,).
Target Drawing	Click and select the required storage location for the terminal block diagrams in the displayed Select Drawing or Folder dialog.
	By pulling it down, the content may be copied into the subsequent rows.
	The value defined will be written into the attribute TBDiagram Target Drawing of the terminal block.
Sheet Template	Select a sheet template using the selection dialog. By pulling it down, the content may be copied into the subsequent rows. If there is only one terminal block diagram template in the project, then it will be inserted as sheet template. The value defined will be written into the attribute TBDiagram Template Drawing of the terminal block.
Select all Terminal Blocks	If you check this option, then all terminal blocks with- out existing terminal block diagram will be marked in the column Selection .

Meaning of columns and input fields

3. Complete the information, and then click **Start**.

The terminal block diagrams are created and stored in the **Documents** folder. The dialog remains opened.



If a terminal block is associated with a function, then the newly created terminal block diagram will be automatically associated with this function as well.

4. Click **Close** to end the dialog.

2.2.3 Defining filters or determining the sorting

By default, there is no filter defined; the cells in the second row therefore contain the value "All".

Click the second row of the column for which you want to define a filter or that is to be sorted. A selection list of all potential filters and of the sorting is displayed via the arrow key.

The following sorting and filter options are available:

- **All**: This is the default. No filters and no sorting have been selected.
- **Sort Ascending** or **Descending**: Select the required sorting for the data in this column.
- **Custom**: In the displayed **Custom autofilter** dialog, you can define two filters connected by **And** or.
- **Filtering by a comprised column value**: Via the selection list, you can filter by a column value.

2.3 Predefinition of sheet designations and title lines via terminal block attributes

Using terminal block attributes, you can predefine attributes for the terminal diagram that are inserted into it during the start or the creation of the terminal diagram.

Terminal block attribute	Corresponding attribute of the terminal diagram
Start Sheet	Sheet Designation
Title Line 1	Title Line 1
Title Line 2	Title Line 2
Title Line 3	Title Line 3
Title Line 4	Title Line 4

You can predefine the following attributes:

How to predefine terminal diagram attributes at the terminal block

- 1. In the Explorer, select the terminal block
- 2. In the context menu, click **Open**.

The dialog **Modify** is displayed.

- 3. Enter the desired pre-definitions in the attributes **First Sheet** and/or **Title Line 1-4**.
- 4. Close the dialog with **OK**.
- 5. Open the terminal diagram of the terminal block or create a new terminal diagram if there is as yet no terminal diagram for this terminal block.

The preset attributes are shown in the terminal diagram.

For already created terminal diagrams, the terminal diagram attributes are adopted with the first opening of the terminal diagram.

3 Terminal Block Connection Diagram EVU and Terminal Block Designer

The following three examples explain how settings in the Terminal Block Designer are shown in the Terminal Block Diagram EVU.

Example 1:



The relationship between Terminal Block Designer and Terminal Block Diagram EVU

Case A: A wire jumper: this is the connection between two terminals of a terminal block. In the Terminal Block Diagram EVU, it is shown as a destination designation (internal or external) and not graphically.

Example: In the Terminal Block Designer there is a wire jumper left built between the terminals 3 and 6 of the terminal block. In the Terminal Block Diagram EVU, this wire jumper is represented as "External destination designation," where terminal 3 is referred to terminal 6 and vice versa.

Case B: A mixed wire jumper right/left: this is the connection between two terminals of a terminal block. In the Terminal Block Diagram EVU, it is shown as a destination designation (internal or external) and not graphically.

In the example in the Terminal Block Designer a wire jumper is displayed, connected to terminal 5 on the left side and to terminal 9 on the right side. In the Terminal Block Diagram EVU, this wire jumper may be found at terminal 5 at "target designation extern" as reference to terminal 9. At terminal 9 at "target designation intern," a reference to terminal 5 may be found.

Case C: If a jumper is defined in an accessory slot, it is shown in the terminal block connection diagram as a jumper in one of the accessory columns.

Example: In the Terminal Block Designer, a jumper is defined in the accessory slot B3 right. In the Terminal Block Diagram EVU, it is shown as a jumper.

Example 2:

State Cable Wire Ld Durin Wire Amper L Interfice Bidge BF 12 D R 1	/ +/	-X1	1 1	erm	ninal	Bloc	k D	esigr	ier																										
1 1			Stat	us		able	Wire	e Lef	Destin	n Wii	re Jumpe	r L	Insertion Bridge	B3 Le	B2	Le B1 L	Pin Left	Terminal Segmen	Terminal	Number	Connectio	n	Switch	Pin Rig	ht B	31 Rig	B2 Rig	B3 Ri	i B8 Rig	ght	nserti	on Bridg	e R V	/ire Jum	pe
2 0	1					_							-			_	c		1					b											-
3	2	1															d						I E												
4 5 7	3	1																						elektrisch	(0)										
0 0	4				-	_									-				2									•	N I						
6 0 3 3 0	5	1																																	
7 8 9	6	1			-							r		1	-			1	3				11												
1 1	7	1													U								r -												
9 0	8	1													-	11																			
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11 1	10	٦															d							b					н						
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The relationship between Terminal Block Designer and Terminal Block Diagram EVU with accessories

Case D: A fixed bridge is defined as material bridge in a slot of accessory. This bridge is represented in the Terminal Block Diagram EVU as a fixed bridge with the respective shape.

In this example, there is in the Terminal Block Designer a fixed bridge (material bridge) in the slot of accessory B3 left. In the Terminal Block Diagram EVU, it will be represented as fixed bridge with the shape EXBDGO_LI of the material bridge.

Case E: The unspecified connection in the Terminal Block Designer is shown in the Terminal Block Diagram EVU as jumper, if the terminals are located sequentially on the terminal block and if they have the same type and potential.

In the example, there is an unspecified connection between the terminals 1 and 2. In the Terminal Block Diagram these are shown as jumpers.

Case F: If an insertion bridge (left or right) is defined in the Terminal Block Designer, it is shown as a jumper (external or internal) in the Terminal Block Diagram EVU.

In the example, there is an insertion bridge right between the terminals 3 and 15. In the Terminal Block Diagram EVU it is shown as an internal jumper.

Case G: In the Terminal Block Designer 2 terminals are defined as switches. They are represented in the terminal diagram with the respective symbols.

In the example, terminal 12 is a closed terminal switch (attribute **switch normally closed** is marked). Terminal 13 is a terminal switch.

Case H: Unspecified connections for which the option **Not shown in diagram** was specified in the context menu, are automatically moved to this column. These connections are not shown in the terminal diagram. The connection is stored as bridge in the project. At the bridge, the Boolean attribute **Suppress Bridge in Terminal Block diagram** is marked and the attribute **Jumper Specification** is set to **Bridge not Represented**.

In the example, the corresponding connections are located between the terminals 5 and 17 and the terminals 6 and 16.

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Example 3:

The relationship between Terminal Block Designer and Terminal Block Diagram EVU with accessories

The shapes shown in the Terminal Block Designer and Terminal Block Diagram EVU are defined in the **Engineering Base Explorer** in **Terminal accessories** (Button **Stencils** / folder **Graphics Toolbox**.



If there is no material (with Master-Shape definition in Specifications) assigned to the accessory or if there is no Master-Shape defined in Specifications, the end clamps or end covers are not shown in the T**erminal Block Diagram EVU**.

Case I: Material is defined in an accessory slot. If there are multiple materials assigned to the accessory slots of one terminal, the shapes are displayed overlapping in the Terminal Block Diagram EVU.

In the example, there are multiple materials defined in the accessory slots B2 left and B1 right in the Terminal Block Designer. In the Terminal Block Diagram EVU, they are also displayed overlapping.

Case J: An end cover is defined in the Terminal Block Designer. It is also shown in the Terminal Block Diagram EVU.

In the above example, there are end covers after terminals h and i. In the Terminal Block Diagram EVU they are displayed with the defined Master-Shapes.

Case K: An end clamp is defined in the Terminal Block Designer. The end clamp is also displayed in the Terminal Block Diagram EVU, if there is a Master-Shape predefined.

In the above example an end clamp is defined before the terminal a and after the terminal i. In the Terminal Block Diagram EVU they are displayed with the defined Master-Shapes.



Example 4:

The relationship between Terminal Block Designer and Terminal Block Diagram EVU

Case A: A wire jumper; this is the connection between two terminals of a terminal block. In the Terminal Block Diagram EVU, it is displayed as a destination designation (internal or external) and not graphically. This case has already been described in Example 1.

Case L: A graphical wire jumper is displayed in the column wire jumper (left or right) in the Terminal Block Designer. In the Terminal Block Diagram EVU, it is shown as a jumper (external or internal).

In the example, there is a graphical wire jumper left between the terminals 4 and 11. In the Terminal Block Diagram EVU, it is shown as an external jumper.

4 About the Terminal Block Diagram Template

Changes to the terminal block diagram template can be affected by editing the XML description of the template using the assistant **Terminal Block Diagram Config**. Alternatively, to facilitate graphical changes of the terminal block diagram, there is an additional module, the **Terminal Block Diagram Open Template**.

4.1 Terminal Block Diagram Config

All intended changes to the terminal block diagram template or to the terminal block diagram could be affected by editing the XML description of the diagram using the assistant **Terminal Block Diagram Config**.

How to run the assistant:

- 1. In the **Engineering Base Explorer**, select the terminal block diagram template or terminal block diagram.
- 2. On the shortcut menu, click Select Assistant.

The dialog **Assistant selection** is opened.

3. Select the assistant module Terminal Block Diagram Config, then click Run.

The assistant is started and the dialog **Terminal Block Diagram configuration editor** is opened.



To change the terminal block diagram template, edit the XML content of the editor.

Load	Import an alternative description of the terminal block diagram tem- plate. The desired XML file can be selected.
Save	Saves the terminal block diagram template as a XML file, with the chosen name and directory.
Ok	All changes are stored and the configuration editor is closed.
Cancel	Closes the configuration editor with a confirmation prompt asking whether the changes made are to be adopted or not.

Buttons:

4.2 Terminal Block Diagram Open Template

To facilitate graphical changes in the terminal block diagram template or terminal block diagram, an additional module, the **Terminal Block Diagram Open Template**, enhanced the assistant **Terminal Block Diagram**. Changes made through this assistant are applied to the XML configuration file describing the terminal block diagram template or terminal block diagram.

Using this module, you cannot create a new terminal block diagram template, but change the following features of an existing one:

- General changes to graphics aspects such as lines and texts may be applied by editing the template. For this, you have to first unlock the layers and afterwards to lock them again.
- Frames marked in red can be changed in size and position (first line, last line, line width, editable cable width).
- Fields marked in black allow you to change the current values.
- On the left margin of the screen, attributes are listed as examples: You can use these attributes by entering the attribute ID for the information you want to be displayed. This way, you can use attributes of your choice for the terminal block diagram.
- All texts can be formatted according to your choice (font, color, alignment).

How to run the assistant:

- 1. In the **Engineering Base Explorer**, select the terminal block diagram template or terminal block diagram.
- 2. On the shortcut menu, click **Select Assistant**.

The dialog **Assistant selection** is opened.

3. Select the assistant module **Terminal Block Diagram Open Template**, then click **Run.**



The assistant is started and the Terminal Block Diagram template is opened in Visio.

To apply general changes to graphics aspects of the terminal block diagram template like lines and texts.	Unlock the layers, edit the diagram, and lock them again afterwards.
To add an additional attribute to the template, e.g. for the description of an exter- nal device.	Pull the attribute, in this case ExDevAttr1 , from the left margin to the place where the de- sired information is to be displayed in the tem- plate (e.g. set the value of the attribute ExDevAttr1 to 77, if you want to display the ad- ditional comment of the external device).
To change the displayed information at an external cable.	Edit the value of the attribute CableAttr in the template, e.g. from 10437 for material to 25 for commentary.
To change the line width of a termi- nal.	Manipulate the width of the corresponding red frame in the template.
To change the maximum number of strap connections that can be dis- played in the terminal block dia- gram.	Edit the value of the attribute MaxBridges (e.g. set it equal to zero, if you want no strap connections to be displayed) in the template.
To change the maximum number of links that can be displayed in the terminal block diagram.	Edit the value of the attribute Max- WireBridges in the template.
To control the display of the stand-	Terminal Summary Options
ard terminal type.	• = 0: The terminal most used is entered as standard terminal type.
	• = 1: The predefined standard terminal (at- tribute standard terminal type at the termi- nal block) is used as the standard terminal type. If this attribute is not set, the termi- nal most used is displayed as the standard terminal type.
To control the display if terminals	ExtDestInfo
have a cross connection to other	IntDestInfo
tion of a terminal refers to other	Destination Pin Info=Q
destinations.	Drag the two attributes ExtDestInfo and IntDestInfo from the left margin to the corre- sponding position of the template. In the termi- nal diagram, the value specified in the attribute Destination Pin Info is displayed.
	E.g. Destination Pin Info=Q indicates that the other destinations are represented in the cross connection diagram.

5 Changing the Representation

5.1 Inserting a pagination in the Terminal Diagram

To insert a pagination in the terminal diagram

- 1. In the **Engineering Base Explorer**, select the terminal before which you want to insert a pagination.
- 2. Open the **Modify** dialog of the terminal.
- 3. Tick the attribute **Pagination** under **Specifications**.

When the terminal diagram is created, a pagination is inserted before the terminal which has the configured attribute **Pagination**.

5.2 Display of All Terminal Pins

To display all pins of a terminal in the terminal block diagram.

- 1. In the **Engineering Base Explorer**, select the terminal for which you wish to display all pins.
- 2. Open the **Modify** dialog of the terminal.
- 3. Tick the check box of the **Pin Ordering** attribute under **Operating Data**.

On creating the terminal block diagram, all pins of the terminal are displayed irrespective of whether an entry is made under the pin designation of the pin or whether the pin has an allocation. Pins with the pin position = 0 are excluded from this rule.

For terminals with more than two pins, graphical wire bridges and insertion bridges are displayed on the associated pins.

5.3 Changing the sorting of the terminals in the terminal diagram

- 1. In the **Engineering Base Explorer**, select the terminal block diagram template or terminal block diagram.
- 2. On the shortcut menu, click **Select Assistant,** select the assistant module **Terminal Block Diagram Config** and click **Run**.

The assistant is started and the dialog **Terminal Block Diagram configuration** editor is opened.

- 3. Change the value of the switch **<SortTerminalOptions>** according to the desired sorting method.
 - **<SortTerminalOptions>0</SortTerminalOptions>**: Sorting is executed by the position of the terminal segments and then by the terminal number (default value).
 - **<SortTerminalOptions>1</SortTerminalOptions>** Sorting is executed only by the terminal number.
- 4. Click **OK** to store your changes and to close the configuration editor.

5.4 Target Designation with Separator

The target designation can be represented with a separator, e.g. ":" in front of the pin and between the cable and the core in the terminal diagram, which enables the representation device:pin and cable:core.

If the target is a terminal, terminal block:terminal is displayed in the terminal diagram.

The target designator is shortened according to the sheet assignment.

To insert the separator ":" into the target designation

- 1. In the **Engineering Base Explorer**, select the terminal block diagram template.
- 2. Click **Select Assistant** in the context menu, select the assistant **Terminal Block Diagram/Configuration** and click **Run.**

The assistant is started and the dialog **Terminal Block Diagram configuration** editor is opened.

- 3. Add one of the following switches to the configuration file.
 - **<PinSeparator>:</PinSeparator>** for the separator ":" between device and pin.
 - <CableCoreSeparator>:</CableCoreSeparator> for the separator ":" between cable and core.
- 4. Close the terminal block configuration editor with **OK**.
- 5. Mark the terminal block diagram template again.
- 6. Click **Select Assistant** in the context menu, select the assistant **Terminal Block Diagram/Open Template** and click **Run**.
- 7. Drag the attributes listed below to the desired position in the terminal diagram and close the opened terminal diagram template.
 - ExtCableCoreDestination device and pin of external target
 - ExtCableCore cable and core of external target
 - IntCableCoreDestination device and pin of internal target
 - **IntCableCore** cable and core of internal target.

5.5 Suppression of Blanks for the Display of external and internal Destinations

In the terminal diagram, the levels of the associated functions (FunctionE, FunctionI) and units (LocationE, LocationI) of the internal and external destinations are separated by blanks. The output of the blanks as separators may be suppressed.

The blanks can be suppressed in two different ways:

Change in the graphical editor of the terminal diagram template

- 1. Open the terminal diagram template via the assistant **Terminal Diagram/Open Template**.
- 2. In the terminal diagram template, remove the blanks after the "=" at the attributes **Location separator** and **Function separator**.



Change in the configuration editor of the terminal diagram template

In the standard configuration, the attributes **FunctionSeparator** and **LocationSeparator** are not listed in the terminal diagram template.

- 1. Open the terminal diagram template via the assistant **Terminal Diagram/Configu**ration.
- 2. Add the two commands
 - <FunctionSeparator></FunctionSeparator>
 - <LocationSeparator></LocationSeparator>

to the XML configuration of the terminal diagram template.

If blanks are to be used again as separators, this may be enabled either with the two commands listed below or the blanks have to be added again after the "=" in the graph-ical editor.

- <FunctionSeparator><![CDATA[]]></FunctionSeparator>
- <LocationSeparator><![CDATA[]]></LocationSeparator>

5.6 Graphical Representation of Switches

In the Terminal Block Designer, you can define and graphically display disconnect switches. For this purpose, the attribute **Is Disconnect Switch** must be marked at the switch. It depends on the attribute **Switch Default Closed** whether the disconnect switch is shown open or closed.



In the terminal diagram templates for EB EVU, this attribute is already set.

There are 2 ways to activate the graphic display of disconnect switches:

Change in the graphical editor of the terminal diagram template

- 1. Open the terminal diagram template via the assistant **Terminal Diagram/Open Template**.
- 2. Drag the attribute **Switch** from the left margin to the respective place in the template where the information is to be displayed.
- 3. Close the terminal diagram template.

Change in the configuration editor of the terminal diagram template

- 1. Open the terminal diagram template via the assistant **Terminal Diagram/Configuration**.
- 2. Insert the following command into the terminal diagram template.
 - <Switch>xxx</Switch> ; xxx stands for the Y coordinate in the terminal diagram template
- 3. Finish the terminal configuration editor with **OK**.



In the terminal diagram templates for EB EVU, this attribute is already positioned.

5.7 Jumper Representation without Endpoints

Fixed bridges not represented by a shape in the terminal diagram are by default shown with end points.

How to change the display of fixed bridges in the graphical editor

- 1. Open the terminal diagram template via the assistant **Terminal Diagram/Open Template**.
- In the terminal block diagram template, change the attribute to Bridge Options =
 2.

How to change the display of fixed bridges in the configuration editor of the terminal block diagram template

- 1. In the **Engineering Base Explorer**, select the terminal diagram template.
- 2. In the context menu, select **Assistant**, select the assistant **Terminal Dia**gram/Configuration and click on **Start**.

The assistant is started and the dialog **Terminal Block Diagram configuration** editor is opened.

- 3. Change the value of the switch **<BridgeOptions>** depending on the desired representation.
 - **<BridgeOptions>0</BridgeOptions>** for a representation with end points (default).
 - <BridgeOptions>2</BridgeOptions> for a representation without end points.
- 4. Finish the Terminal Block Diagram configuration editor with **OK**.

5.8 Representation of Terminal Material in several Columns

The **Terminal Diagram without cable matrix EVU** offers in its header only space for three rows for the representation of the terminal material used. With the following changes you may define up to four columns with a maximum of 40 characters.

<TerminalSummary1 DeltaY="285" LastRow="277" LineSpace="4" LineFrom="244" LineTo="244" Size="3" NumberOfColumns="4" ColumnWidth="40">

<Index Size="2.625" Align="8">276</Index>

<AttrID1>10347</AttrID1>

<AttrPosition1 Size="2.625">280</AttrPosition1>

</TerminalSummary1>

NumberOfColumns indicates the number of columns in the area of the terminal material (Default ="1").

ColumnsWidth specifies the width of the columns (Default = "50").

5.9 Representation of Master-Shapes for Terminal Accessory in the Foreground

In the Terminal Block Connection Diagram, the attribute values are usually displayed in the foreground (**Shape Options = 0**). It is possible to display the master-shapes for terminal accessory (attribute **Master-Shape for Terminal Block Diagram**) in the foreground and to thereby superimpose the display of the attribute values.

How to display a master-shape for terminal accessory in the foreground

- 1. Open the terminal diagram template via the assistant **Terminal Diagram/Open Template**.
- 2. Assign the value 1 to the attribute **Shape Options**.

To change settings in the terminal block diagram template

- 1. In the **Engineering Base Explorer**, select the terminal diagram template.
- 2. In the context menu, click **Select Assistant**, select the assistant **Terminal Dia**gram/Configuration and click **Start**

The assistant is started and the dialog **Terminal Block Diagram configuration** editor is opened.

- 3. Change the value of the switch **<ShapeOptions>** depending on the desired representation.
 - <**ShapeOptions**>**0**</**ShapeOptions**> The attribute values are displayed in the foreground of the terminal row (default).
 - **<ShapeOptions>1</ShapeOptions>** The master-shapes are displayed in the foreground of the terminal row.

5.10 Scaling of Attribute Texts

In the terminal block diagram template the display of attribute texts may be scaled. The texts are displayed with the defined font, the height of the defined font remains unchanged, the width of the displayed texts may be individually adapted.

To change the scale of attribute texts - definition in the terminal block diagram template

- 1. Open the terminal block diagram template via the assistant **Terminal Block Dia**gram/Open Template.
- 2. Click the favored attribute in the terminal block diagram template.
- 3. Click 💷 on the tab **Home** below **Paragraph**.

The dialog **Text** opens.

- 4. Change below **Character** the value in the field **Scale**. You may select a value from the selection list or enter a value in the range 1 % 600 %.
 - Scale < 100 %: The text will be displayed narrower.
 - Scale < 100 %: The text will be displayed wider.
- 5. Click **OK** to confirm the dialog.
- 6. Close the terminal block diagram template and confirm the confirmation prompt with **Save**.

To change the scale of attribute texts - definition in the configuration editor

- 1. Open the terminal block diagram template via the assistant **Terminal Dia**gram/Configuration.
- 2. Insert the subsequently listed command into the command line of the favored attribute of the terminal block diagram template.
 - Scale="m.nn" Degree of scaling of the text in the terminal block diagram template entered as decimal number in the format m.nn. Valid are decimal values in the range 0.01 – 600.00.

m.nn = 1.00	The width of the text corresponds to the font defined.
m.nn < 1.00	The text will be displayed narrower. E.g. the value 0.90 corresponds to a scaling of 90 %.
m.nn > 1.00	The text will be displayed wider. E.g. the value 1.20 corresponds to a scaling of 120 %.

3. Quit the terminal configuration editor with **OK**.

Examples:

<ExtLocation Scale="0.50" Align="8">155</ExtLocation> : The attribute values of the attribute LocationE will be displayed narrower in the terminal block diagram. The scale is 50 %.

<ExtItem Scale="1.20" Align="2">162</ExtItem> : The attribute values of the attribute ItemE will be displayed wider in the terminal block diagram. The scale is 120 %.

5.11 Display of the Cross-Reference of an Unconnected Terminal

The cross-reference of a terminal that is placed, but not connected, on a circuit diagram can be displayed on terminal block diagram.

There are two ways to activate the graphic display of cross-references:

Change in the graphic editor of the terminal block diagram template

- 1. Open the terminal block diagram template using the **Terminal Block Dia**gram/Open Template assistant.
- 2. At the attribute **Terminal Representation Options**, enter the value **2**.
- 3. Close the terminal block diagram template.

Change in the configuration editor of the terminal block diagram template

- 4. Open the terminal block diagram template via the **Terminal Diagram/Configura-tion** assistant.
- 5. Insert the following command into the configuration of the terminal block diagram template.

<TerminalRepresentationOptions>2</TerminalRepresentationOptions>

6. Close the terminal configuration editor by clicking **OK**.



In the terminal block diagram template, this attribute already exists.

5.12 Suppressing the potential name at a terminal number

In the terminal block diagram, potential names are displayed at terminal numbers. You can suppress the display of the potential name.

You can make this setting at the potential by using the Boolean attribute **Suppress Po-tential**.

- **Suppress Potential** not checked (Default): The potential name is displayed at a terminal number in the terminal block diagram.
- **Suppress Potential** checked: The potential name is not displayed in the terminal block diagram.



If the attribute does not exist at the potential, you can add it via **Define Dialog**.