

# DesignMATE

A segment design tool for FOUNDATION™ fieldbus H1



**Fieldbus Foundation™**

Freedom to Choose. Power to Integrate.

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### 1 Used Symbols

#### Safety-relevant Symbols



#### ***Danger!***

This symbol indicates a warning about a possible danger.

In the event the warning is ignored, the consequences may range from personal injury to death.



#### ***Warning!***

This symbol indicates a warning about a possible fault or danger.

In the event the warning is ignored, the consequences may cause personal injury or heaviest property damage.



#### ***Caution!***

This symbol warns of a possible fault.

Failure to observe the instructions given in this warning may result in the devices and any connected facilities or systems develop a fault or fail completely.

#### Informative Symbols



#### ***Note!***

This symbol brings important information to your attention.



#### ***Action***

This symbol marks an acting paragraph.

## 2 Introduction to DesignMATE

### Purpose

DesignMATE is the complete tool for planning, validation and documentation of your fieldbus infrastructure for FOUNDATION fieldbus H1. DesignMATE assists in planning and validation of fieldbus segments. It automatically audits the chosen layout for conformity with the fieldbus standard IEC 61158-2. The user rests assured that the fieldbus infrastructure will work with the desired parameters such as cable length, installed devices and selected power supplies.

### Limitations

DesignMATE only audits the selected fieldbus infrastructure for conformity with the fieldbus standard IEC 61158-2.

DesignMATE does not validate explosion protection. Even when a power supply with reduced voltage and current levels is applied, the auditing is limited to conformity with the fieldbus standard.

DesignMATE does not audit for any regional or local regulations.

DesignMATE does not calculate bus cycle time.

### Features of DesignMATE

DesignMATE is a software with complete graphical user interface and mouse support. Segment design on the fly is supported with drag & drop. The DesignMATE software shows your Fieldbus installation in form of stylized topologies.

At every moment and on the fly DesignMATE analyses and checks all parameters of the physical layer: supply voltage, load conditions at all terminals of power supply, fieldbus couplers and field instruments. An error log indicates deviations from the standard in clear text – visual for immediate remedy by the user.

DesignMATE considers ambient temperature and cable parameters, which can be set easily in respective dialog windows. DesignMATE is equipped with libraries for all components for the fieldbus infrastructure: power supplies, fieldbus couplers for the safe and any hazardous area, field instruments. Default values for spur length or device load current can be set once.

Instruments from many manufacturers are available in the DesignMATE. Additionally an easy to use device editor is included for creation of custom libraries for instruments.

DesignMATE documents the fieldbus segment in multiple ways:

- Exportable image of the stylized topology
- A printable report with all details and results – rich text format (rtf)



***Caution!***

The operator of the system is responsible in terms of planning, mounting, commissioning, operating and maintenance.



***Danger!***

The DesignMATE must not be used for checking of safety data or explosion protection parameters, the DesignMATE does not replace any stipulated calculations.

### 3 Installation



**Note!**

***The Microsoft .NET Framework version 2.0 is needed***

The internet version needs the Microsoft .NET Framework. It is available as a download from the internet.



#### Installing the Internet Version of the Software



**Caution!**

Close all running programs before you run the setup tool!

The setup tool cannot replace any files that are used by other programs. In the worst case the system may become unstable or even crash.

To install the software, proceed as follows:

1. Download the DesignMATE Software to your PC.
2. Extract the .ZIP-Archive to a temporary folder.
3. Launch the setup program (filename SETUP.EXE).  
The Setup Wizard appears.
4. Follow the instructions of the wizard.

### 4 Operation

#### 4.1 Basic Operations

This section describes basic operations of the **DesignMATE** Software

##### 4.1.1 Working with Projects

###### Working with the Devices

In this section, you learn about adding, editing and removing devices from a project.



###### Adding a New Device

To add a device, proceed as follows:

1. Choose the desired device in the Device Tree window.
2. Put the device via drag & drop into the Segment Editor window. Move it close-by to other device to connect it with them
3. Choose the Property Editor.
4. If desired: Enter a Device Tag and a Device Instance Description.
5. Depending on the device: Enter other parameters, e. g. voltage and current.  
The new device is added to the Segment Editor window.



###### Editing the Parameters of a Device

To edit parameters of a device, proceed as follows:

1. Choose the desired device in the Segment Editor window.  
The parameters of the device are displayed in the Property Editor window.
2. Edit the parameters, e. g. voltage and current.



###### Deleting a Device

To delete a device, proceed as follows:

1. Right-Click the device.  
A context menu appears.
2. Click Delete Element.  
The device will be deleted.



### Working with Notes

Notes offer you a possibility to add additional information into your projects. The note objects may contain free texts and can be formatted in different fonts and styles.



#### Adding a New Note Object

To add a new note object, proceed as follows:

1. Choose the Add a new note object button.  
A new note object is generated.
2. Add your desired text in the Property Editor.
3. Choose the Font Selection Button.  
The Font dialog appears.
4. Choose your desired font type, -size and -style.
5. Choose the OK button.  
The note object will be formatted according to your settings.
6. Move the note object to the desired position by drag & drop.



#### Deleting a Note Object

To delete a note object, proceed as follows:

1. Right-Click the note object  
A context menu appears.
2. Choose Delete Element  
The note object will be deleted.

### 4.1.2 Opening a Project



#### Opening a DesignMATE Project

To open a DesignMATE project, proceed as follows:

1. Choose File > Open ...

The **Open** dialog appears.

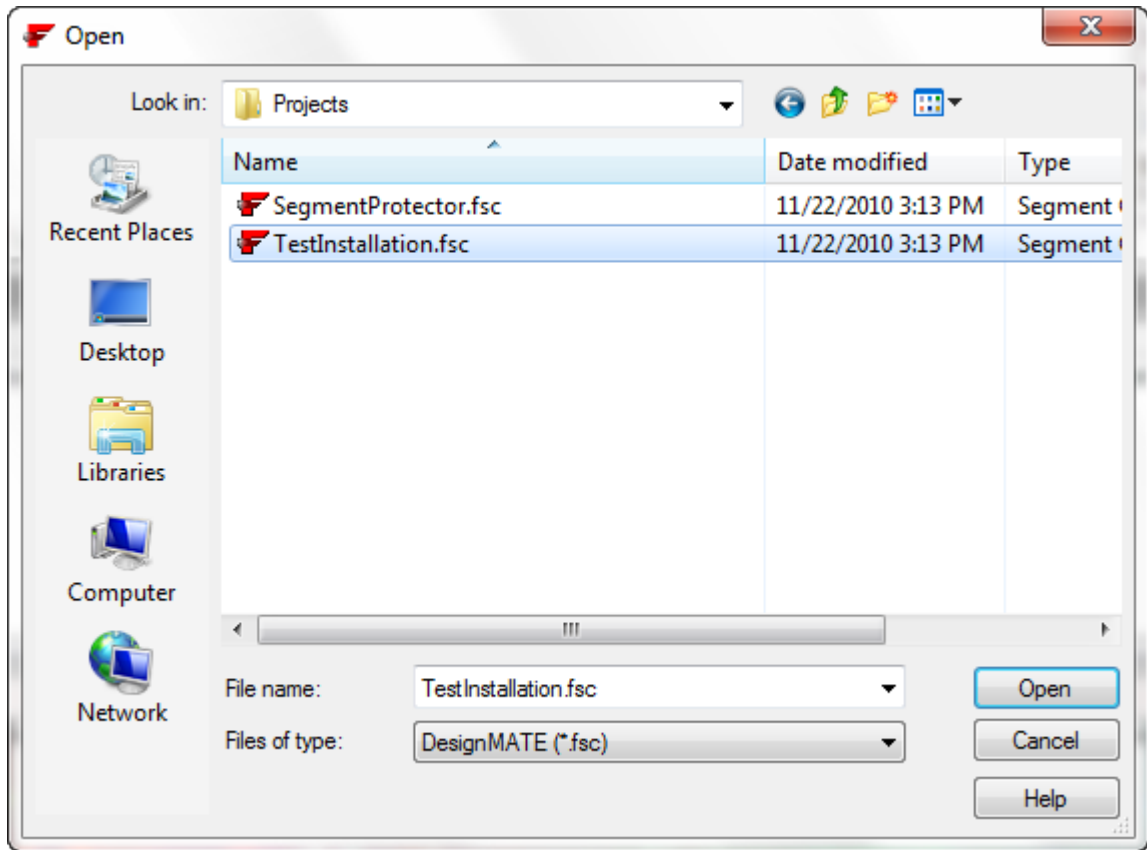


Figure 4.1: Open dialog

2. Select the desired DesignMATE file

3. Proceed with **OK**

The DesignMATE Project file is opened.

### 4.1.3 Saving a Project



#### Saving a New DesignMATE Project

To save a new DesignMATE project for the first time, proceed as follows:

1. Choose File > Save As ...

The **Save As** dialog appears.

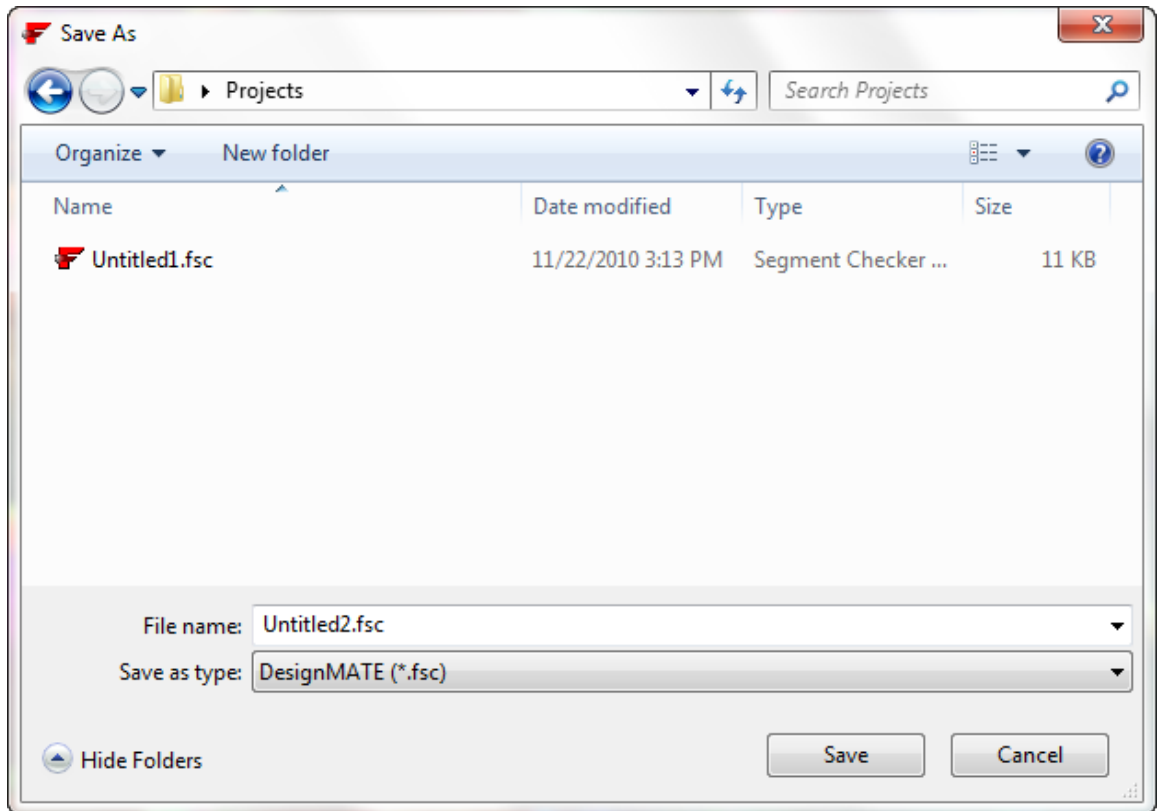


Figure 4.2: Save As dialog

2. Choose the desired folder
3. Enter a file name
4. Choose Save.

The DesignMATE project is saved.

### 4.1.4 Save all projects



#### Saving All Opened Projects

To save all opened DesignMATE projects at once, proceed as follows:

Choose File > Save All

All opened DesignMATE projects are saved.



#### **Note!**

If one new project is not saved ever, the **Save as** dialog appears.

### 4.1.5 Display a Print Preview



#### Displaying a Print Preview

To display a print preview of a DesignMATE project, proceed follows:

Choose **File > Print preview**

The window **Print preview** will be displayed.

**DesignMATE for FOUNDATION Fieldbus**

Segment Type	Resolution Rule
Cable Type	A 0.8mm <sup>2</sup> (AWG 18)
Env. Temp.	21°C
Default Field Device current	10mA
Default Spur length	0.5m
Handled current	10mA
Short Circuit check	On
Handled Spur check	On
Handled Trunk check	On
Handled Host check	On

**Project Parameters**

Segment Type = Foundation Fieldbus  
 Cable Type = A 0.8mm<sup>2</sup> (AWG 18)  
 Env. Temp. = 21°C  
 Default Field Device current = 10mA  
 Default Spur length = 0.5m  
 Handled current = 10mA  
 Short Circuit check = On  
 Handled Spur check = On  
 Handled Trunk check = On  
 Handled Host check = On

**Checker Results**

Checker Summary	Result
Topology Check	SUCCESS
Power Distribution Check	SUCCESS
Short Circuit Check	skipped
Handled Communication Check	SUCCESS
Handled Host Check	SUCCESS
Handled Spur Check	SUCCESS
Handled Trunk Check	SUCCESS

**Device Summary**

Devices	Count
1 spur FWE	1
Gen. Field Device	1
Host	1
Power Supply	1
Terminator	2

**Cables**

Untitled1.fsc < 1 / 4 > 3/14/2012 12:06:00 PM

Figure 4.3: Print preview window

### 4.2 Window Overview

This section gives an overview of the main windows of the DesignMATE Software.

### 4.2.1 The Device Tree Window

The Device Tree contains all the devices to be used in the Segment Editor window.

The devices are classified and can be found under their group name, e. g. **Hosts**, **Power Supplies** etc.

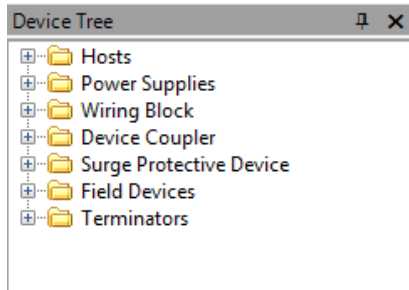


Figure 4.4: Device Tree Window



#### **Note!**

If the window is hidden, you can make it visible using the View menu.

### 4.2.2 Property Editor Window

The Property Editor window enables you to see and change several properties of the project as a whole and of each device or cable.

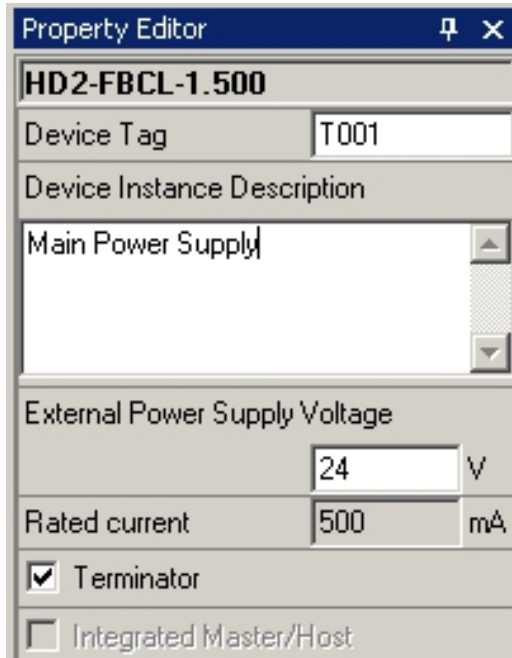


Figure 4.5: Property Editor



#### **Note!**

If the window is hidden, you can make it visible using the View menu.

### 4.2.3 The Error Log Window

The Error log window shows all errors in the designed fieldbus network. The displayed errors depend also on the network type which was selected when the project was created.

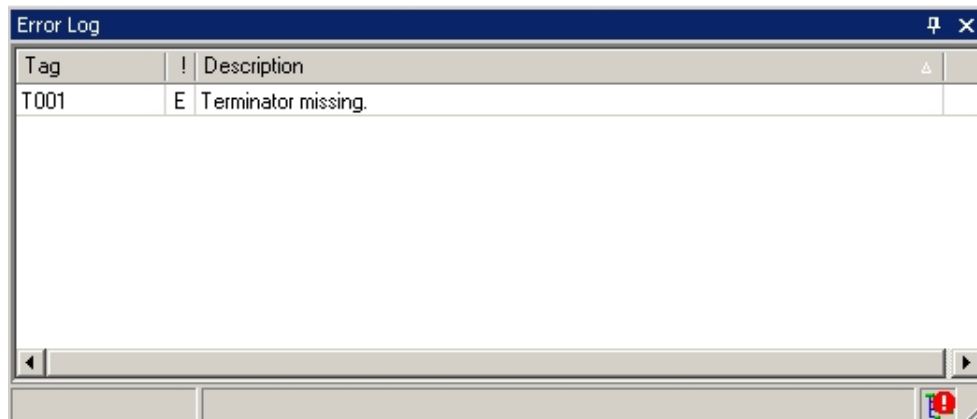


Figure 4.6: Error Log Window





### Note!

If the window is hidden, you can make it visible using the View menu.

## 4.2.4 The Segment Editor Window

The Segment Editor window is the working space of the DesignMATE software. In this window you can build up a project using the Drag & Drop technique.

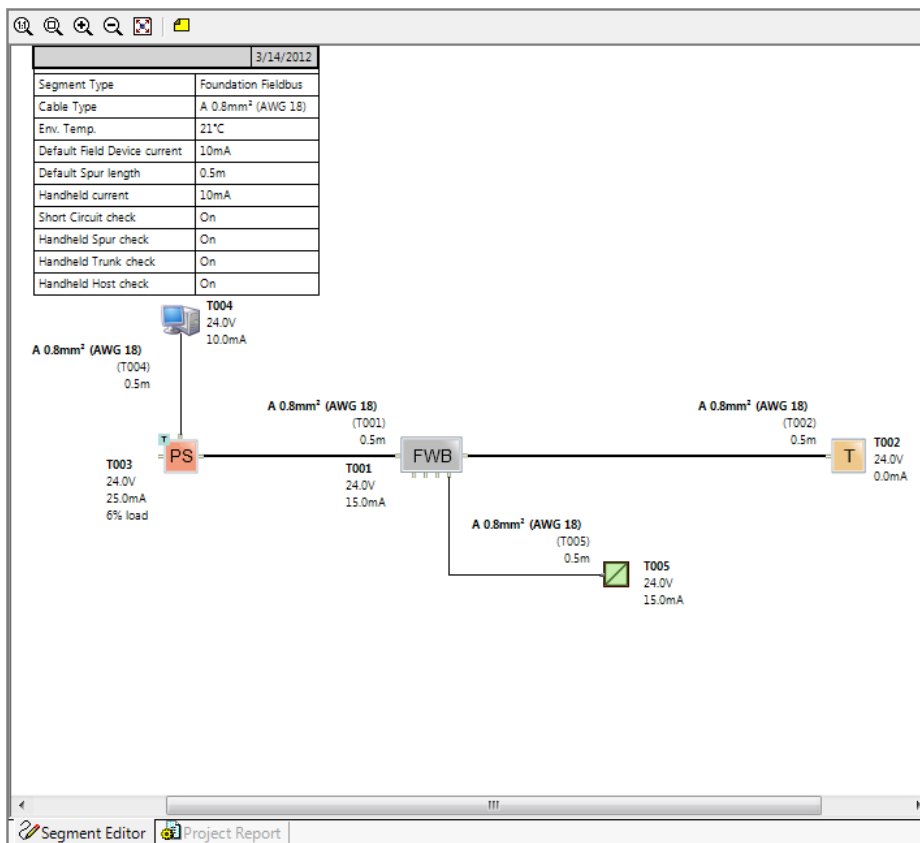


Figure 4.7: Segment Editor Window

### 4.2.5 The Project Report Window

The Project Report window gives a summary of the project and all integrated devices.

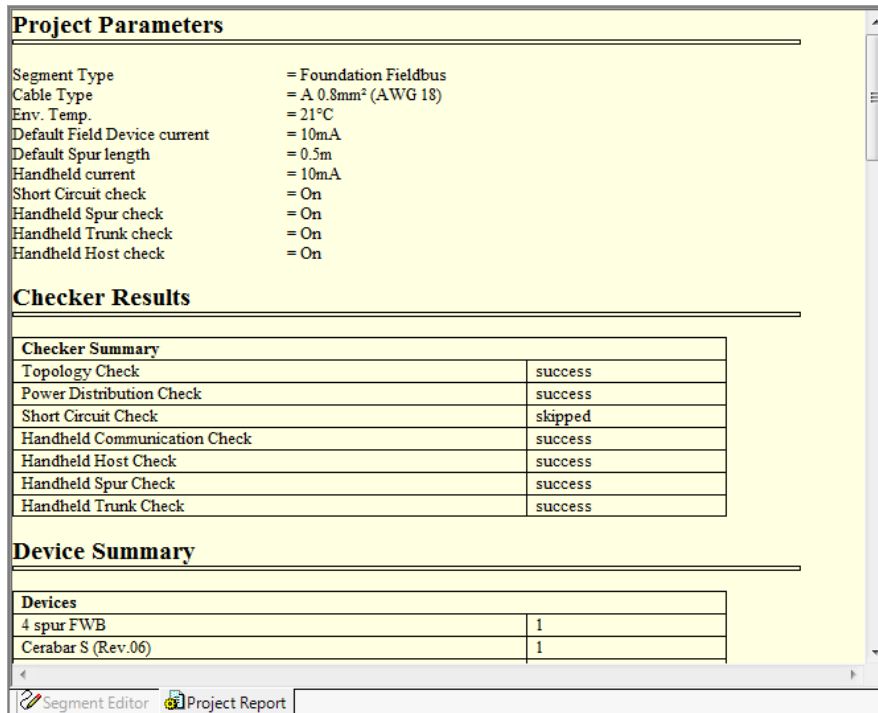


Figure 4.8: Project Report Window

### 4.3 Toolbar Overview

This section gives an overview over the toolbars of the DesignMATE Software.

	Creates a new project file
	Opens a previously saved project file
	Closes the active project file
	Saves the active project file
	Saves the active project file under a different name
	Saves all open project files
	Opens a print preview window for the active object
	Prints the active document
	Closes all files and exits the application

Table 4.1: File Toolbar





	Displays and activates the Device Tree panel
	Displays and activates the Property Editor panel
	Displays and activates the Error Log panel
	Displays the Device Catalog Editor. This function is active only if all projects are closed.

Table 4.2: View Toolbar




	Cascades all windows
	Tiles all windows horizontally
	Tiles all windows vertically

Table 4.3: Window Toolbar

## 4.4 Device Catalog Editor

The Device Catalog Editor is a tool which is delivered together with the DesignMATE Software. It enables you to:

- create your own device types with specific parameters
- create your own cable types with specific parameters
- import **User Catalog Files** (your own or files delivered by other companies)
- export **User Catalog Files** (your own or files delivered by other companies)

### 4.4.1 Starting the Device Catalog Editor



#### **Note!**

Before you can run the **Device Catalog Editor** all projects must be closed.



#### Running the Device Catalog Editor

To run the Device Catalog Editor, proceed as follows:

Choose View > Device Catalog Editor

The **Device Catalog Editor** appears.

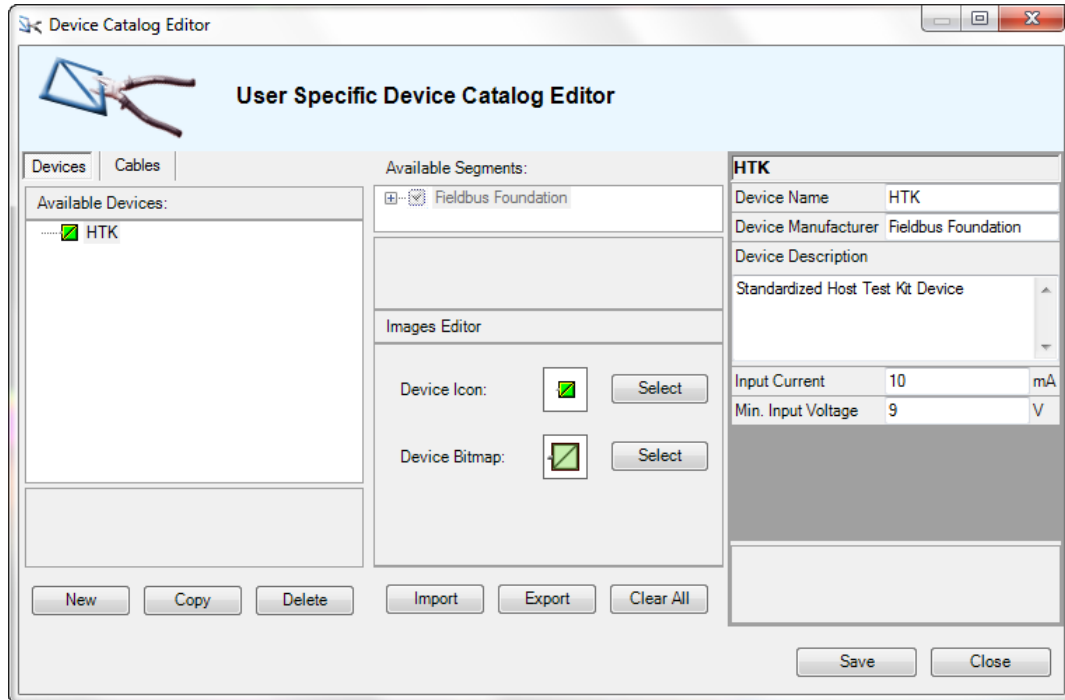


Figure 4.9: Device Catalog Editor Window

### 4.4.2 Managing Cables



#### Adding a New Cable Type

To add a new cable type, proceed as follows:

1. Mark the Cables tab in the Device Catalog Editor window.
2. Click the New button.  
A new cable named **New Cable** appears.
3. Enter all properties of the cable into the right area of the window.
4. Close the Device Catalog Editor window with the Save button.

The changes are saved.



#### **Note!**

If your new cable type is similar to a cable type which is already existing, copying the existing cable type and changing the necessary properties may be easier. Therefore, select the cable type and press the Copy button.



#### Changing the Properties of a Cable Type

To change properties of a cable type, proceed as follows:

1. Mark the Cables tab in the Device Catalog Editor window.
2. Mark the cable which you want to change.

The properties of the cable type appear in the right area of the window.

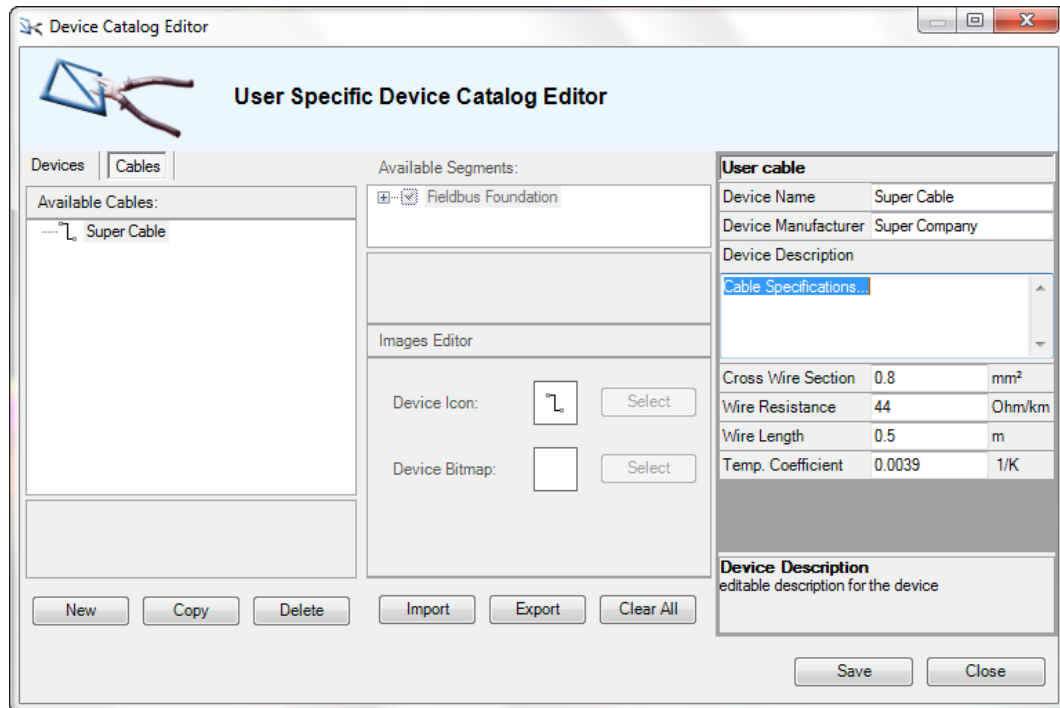


Figure 4.10: Changing the Properties of a Cable

3. Change the properties of the cable in the right section of the window.
4. Close the Device Catalog Editor window with the Save button.

The changes are saved.



### Deleting a Cable Type

To delete a cable type, proceed as follows:

1. Mark the Cables tab in the Device Catalog Editor window.
2. Mark the cable which you want to delete.
3. Press the Delete button.

The cable is removed from the list.

4. Close the Device Catalog Editor window with the Save button.

The changes are saved.

#### 4.4.3

### Managing Devices



#### Adding a Device Type

To add a device type, proceed as follows:

1. Mark the Devices tab in the Device Catalog Editor window.
2. Click the New button.

A new device named **New Device** appears.

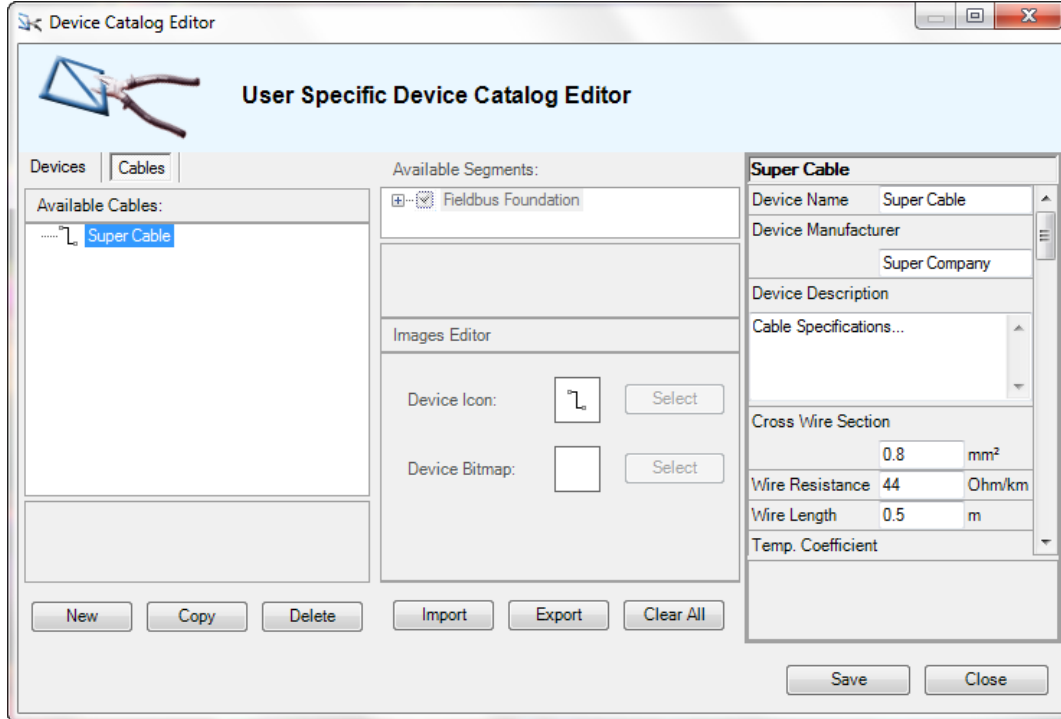


Figure 4.11: Create a New Cable

3. Define the availability of the device in the Available Segments part.  
The device will only be available in projects where the specifications are met.
4. If you want to customize the device icon: Upload a device icon via the Select button. Bitmap files only supported.
5. If you want to customize the device bitmap: Upload a device bitmap via the Select button. Bitmap files only supported.
6. Enter all properties of the cable in the right section of the window.
7. Close the **Device Catalog Editor** window with the Save button.  
The changes are saved.



### **Note!**

If your new device is similar to a device type which is already existing, copying the existing device type and changing the necessary properties may be easier. Therefore, select the device type and press the Copy button.



### Changing the Properties of a Device Type

To change properties of a device type, proceed as follows:

1. Mark the Devices tab in the Device Catalog Editor window.
2. Mark the device which you want to change.
3. Change the properties of the device.
4. Close the **Device Catalog Editor** window with the Save button.

The changes are saved.



### Deleting a Device Type

To delete a device type, proceed as follows:

1. Mark the Devices tab in the Device Catalog Editor window.
2. Mark the device which you want to delete.
3. Press the Delete button.  
The device is removed from the list.
4. Close the **Device Catalog Editor** window with the Save button.  
The changes are saved.

## 4.4.4 Importing and Exporting Devices

### General Information

The DesignMATE software offers the possibility to import or export user-defined devices. This functionality can be used for exchanging self-prepared devices with other computers.

Files containing such device information have the filename extension .PFD



### Importing Devices



#### **Note!**

A PFD-file may contain many devices. You are able to choose only the devices you actually want to import. Above all it is possible to update the data of devices which are already in your **Device Tree**.

To import devices of a .PFD file, proceed as follows:

1. Be sure that the **Device Catalog Editor** is active. see chapter 4.4.1
2. Choose the Import button.  
The **Import User Defined Device Catalog** dialog appears.

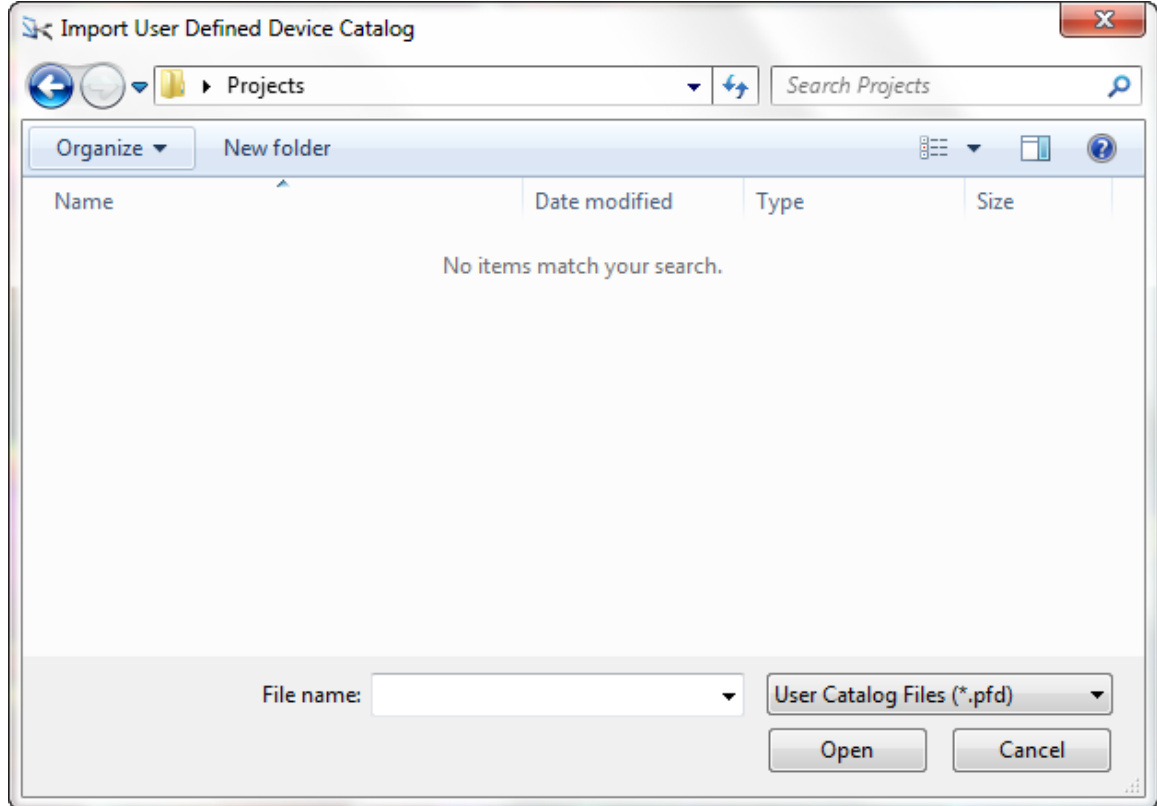


Figure 4.12: Import Dialog Window

3. Choose the desired PFD-file.
4. Proceed with the OK button.  
The **Import** dialog appears.
5. Choose the check marks of all devices , which you want to import, in the **New devices** area.
6. Choose the check marks of all devices , which you want to update, in the **Changed devices** area.
7. Proceed with the Import button.  
The marked devices are added to your list of **Available Devices**.
8. Leave the **Device Catalog Editor window** with the Save button.



### Exporting Devices

To export your self-prepared devices into a .PFD file, proceed as follows:

1. Be sure that the **Device Catalog Editor** is active. see chapter 4.4.1
2. Choose the Export button.

The **Export User Defined Device Catalog** dialog appears.



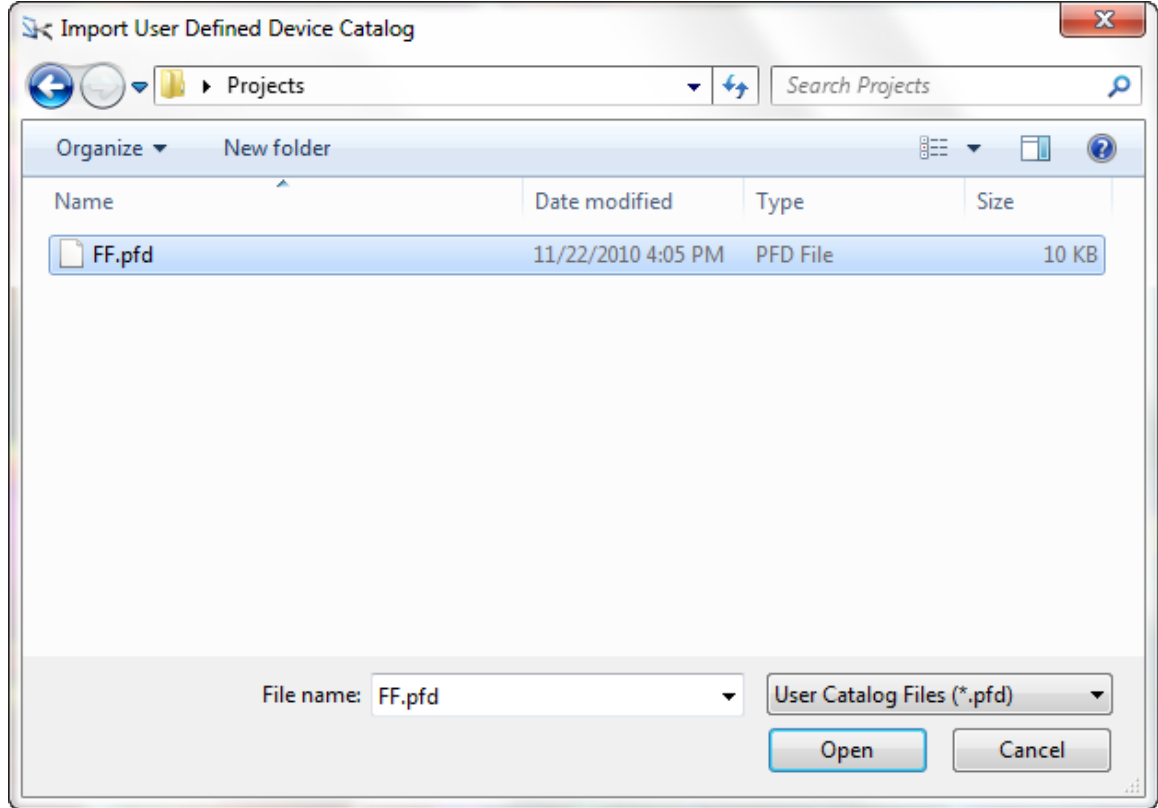


Figure 4.13: Export Dialog Window

3. Choose your desired folder and enter a file name
4. Proceed with the Save button.  
The self-prepared devices are exported into the PFD-file.

## 4.5 General Settings

The DesignMATE software offers the possibility to set default unit settings for all your projects. Values in existing projects will be automatically converted.



### Changing the Unit Settings



#### **Note!**

Before you can run the **Device Catalog Editor** all projects must be closed.

To change the unit setting, proceed as follows:

1. Choose View > Settings.  
The Settings window appears.

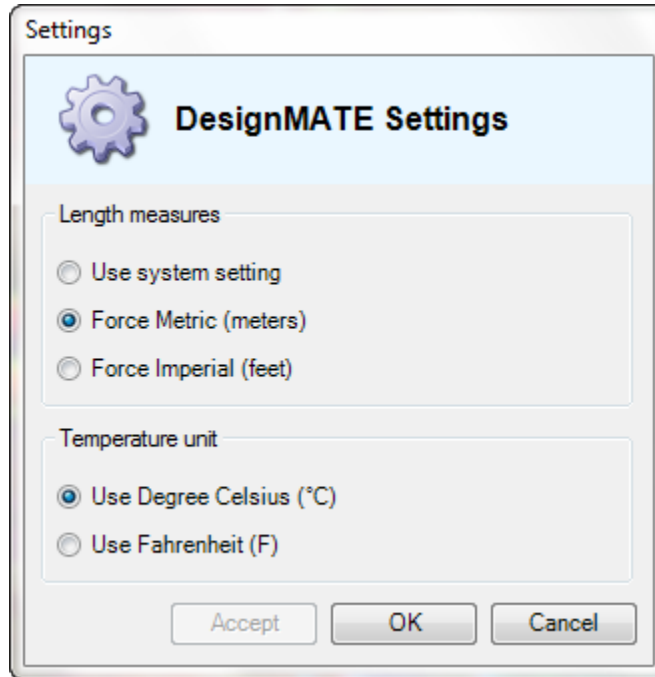


Figure 4.14: Settings Window

2. Choose your desired units.
3. Proceed with the OK button.  
The desired units are stored.

## 4.6 Example: Building a Simple Project

### Intention

This section is intended as a beginners' course. You will learn step-by-step to build a simply fieldbus network. The focus of this section is mainly the usage of the DesignMATE software. For more information on fieldbus technology, please refer to further reading.

### Creating a New Project

The first step is creating a new project. A project in the DesignMATE software is an independent composition of a field bus network. At the beginning of the project, you set up the segment type. The reason for this is that DesignMATE will only offer you those devices that are valid in your segment type.

In this example, let us build a basic FOUNDATION Fieldbus network.



### Creating the New Project

To create the new project, choose File > New.

### General Settings for the Project

The next step is setting up general parameters for the project. For example, you can enter a project name, the environment temperature or the default cable type.

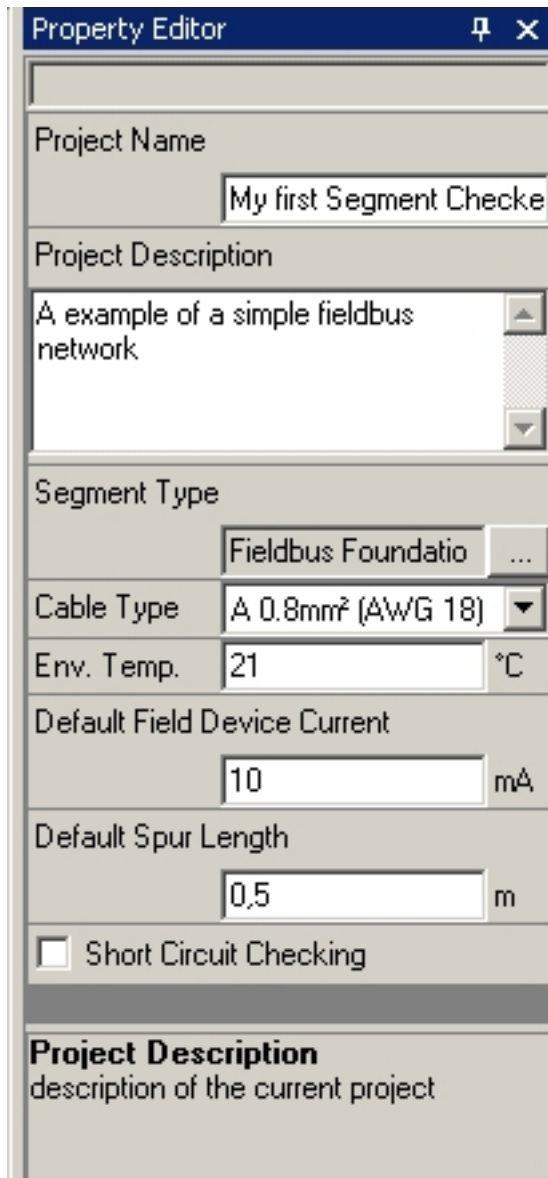
In this example we are going to leave the most settings on defaults.



### General Settings for the Project

To enter the general settings, proceed as follows:

1. Choose the **Property Editor** window.
2. Enter a **Project Name**, e. g. “My first DesignMATE project”
3. Enter a **Project Description**, e. g. “A example of a simple fieldbus network”



The screenshot shows a 'Property Editor' dialog box with the following fields and values:

- Project Name:** My first Segment Checke
- Project Description:** A example of a simple fieldbus network
- Segment Type:** Fieldbus Foundatio
- Cable Type:** A 0.8mm<sup>2</sup> (AWG 18)
- Env. Temp.:** 21 °C
- Default Field Device Current:** 10 mA
- Default Spur Length:** 0,5 m
- Short Circuit Checking:**

At the bottom, there is a section titled 'Project Description' with the text 'description of the current project'.

Figure 4.15: Project Properties

### Adding the Devices

Now you can add the devices to your fieldbus network.

Each device has several properties, which can be shown and changed in the **Property Editor** window when the device is marked in the **Segment Editor** window.

A fieldbus network consists a least of the following devices:

- One host
- One power supply
- Two terminators, one at each end of the trunk

- One distribution device, such as a wiring block, device coupler or field barrier
- One or more field devices



### Note!

The **Error Log** window displays not only error messages. It also displays some hints to build the basic structure of the network.

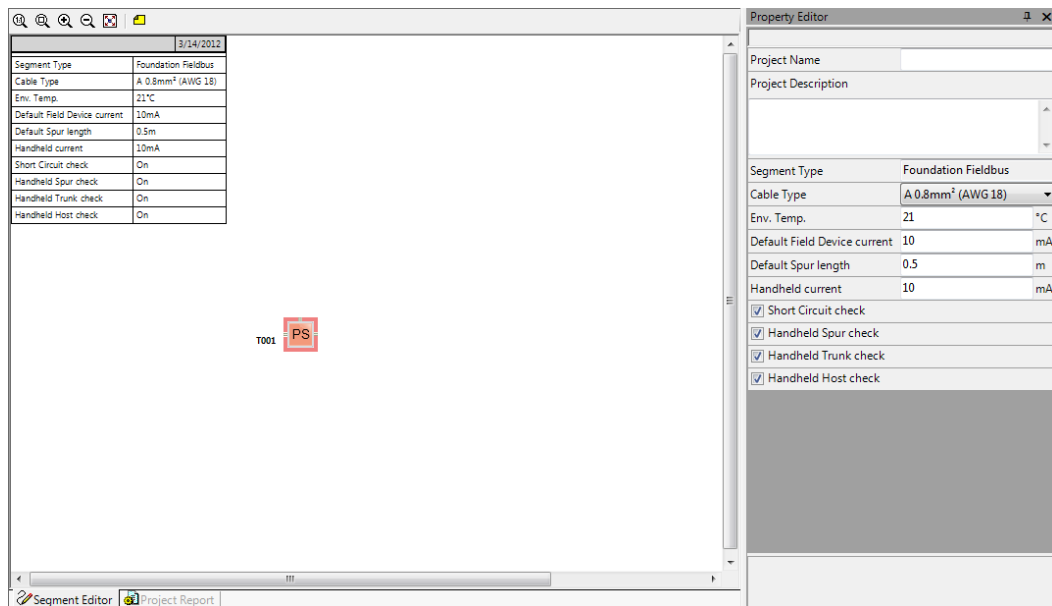


## Adding Devices

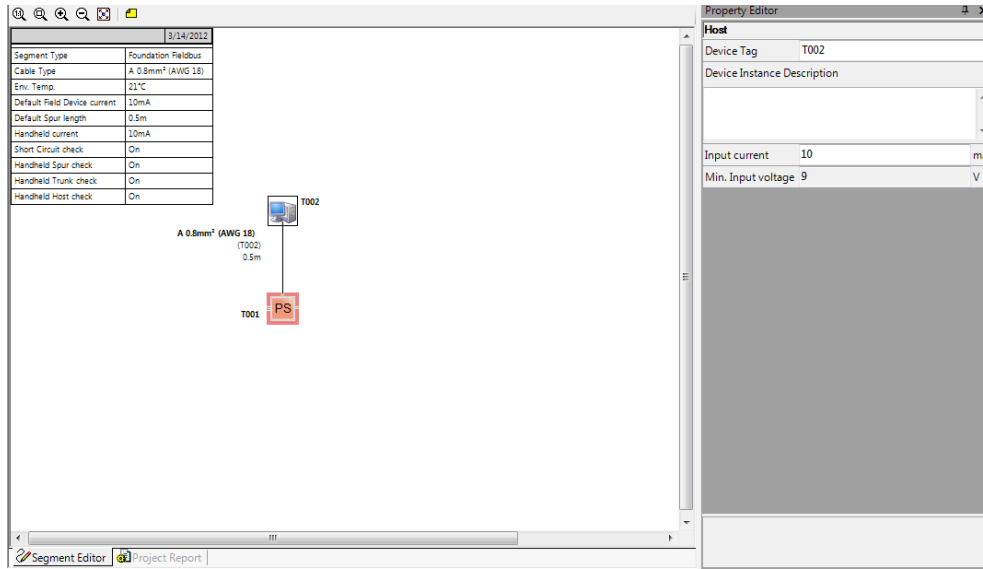
To add the devices, proceed as follows:

1. Add a power supply device: Expand the folder **Power Supplies** in the **Device Tree** window. Move a power supply, e. g. the HD2-FBCL-1.500, via Drag & Drop into the **Segment Editor** window.

The power supply is added to the project and the properties of the devices are shown in the **Property Editor** window.

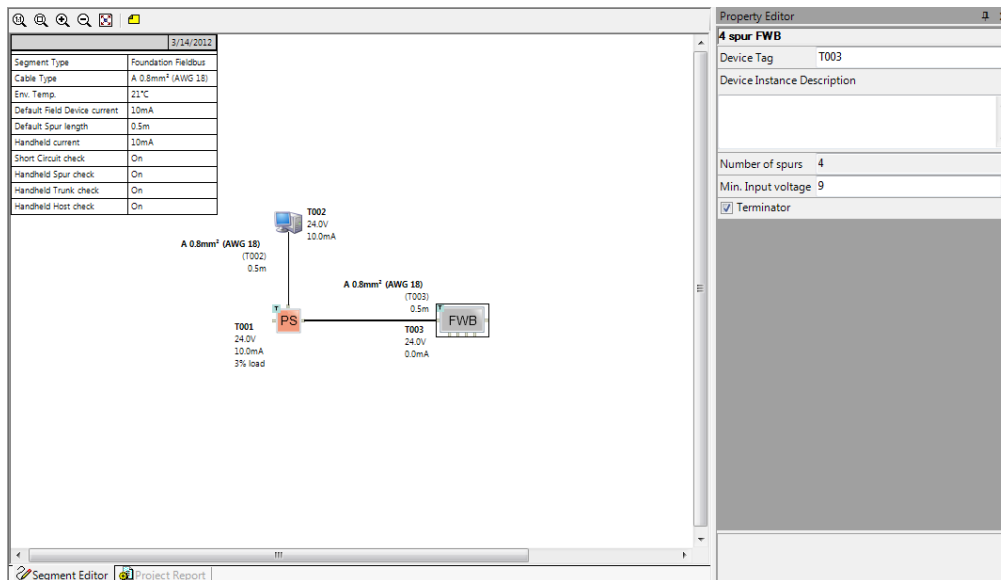


2. Enter a device name and a description for the power supply in the **Property Editor** window. The HD2-FBCL-1.500 power supply contains a detachable terminator. For our purpose, ensure that the check box **Terminator** is activated.
3. Add a host device: Expand the folder **Hosts** in the **Device Tree** window. Move a host, e. g. the Gen. Host, via Drag & Drop into the **Segment Editor** window nearby the power supply. The host is added to the project and connected to the power supply.



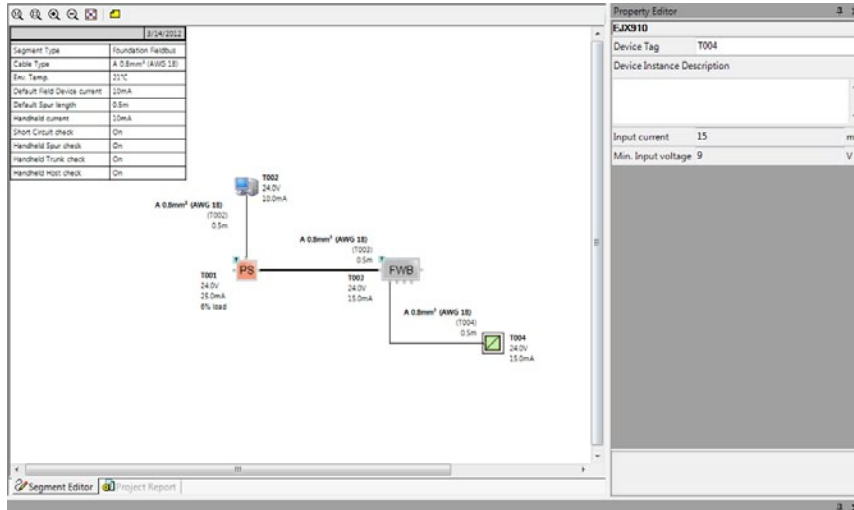
4. Enter a device name and a description for the host in the **Property Editor** window.
5. Add a distribution device, e. g. a device coupler: Expand the folder **Device Couplers** in the **Device Tree** window. Move a device coupler, e. g. the F2-JB-4.xx, via Drag & Drop into the **Segment Editor** window nearby the power supply.

The device coupler is added to the project and connected to the other devices.



6. Enter a device name and a description for the device coupler in the **Property Editor** window. The F2-JB-4.xx power device coupler contains a detachable terminator. For our purpose, ensure that the check box **Terminator** is activated.
7. Add a field device: Expand the folder **Field Devices** in the **Device Tree** window. Move a field device, e. g. the LTC series, via Drag & Drop into the **Segment Editor** window nearby the device coupler.

The field device is added to the project and connected to the device coupler.



8. Enter a device name and a description for the field device in the **Property Editor** window.



### Note!

If the **Error Log** window displays no messages, the fieldbus network is valid.

## Changing Properties of Cables

While you are building a project via Drag & Drop, the devices are connected with cables of the default cross-sectional area and length. DesignMATE is able to assign the length and the cross-sectional area individually for each cable connection.

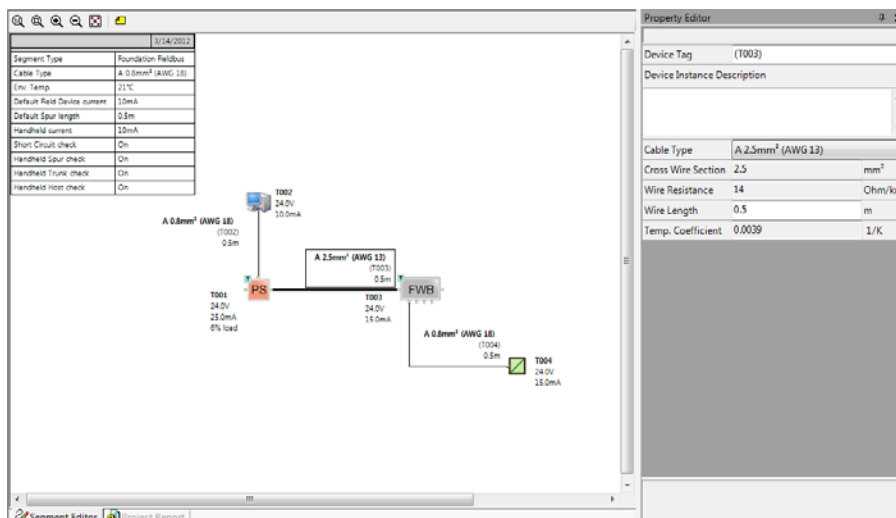


## Changing the Properties of a Cable

To change the property of a cable, proceed as follows:

1. Select the desired cable. For example, select the cable between the power supply and the device coupler.

The properties of the cable appear in the **Property Editor** window.



2. Change the desired cross-sectional area and cable length. For example, choose a cross-sectional area of AWG 16 and a cable length of 10 meters.

The cross-sectional area and the cable length are stored. The values depending on the cables are updated.



### 5 Troubleshooting

This chapter describes errors that may be displayed in the Error Log.

Error Messages	Possible Causes	Corrective measures
Calculated current is too high	<ul style="list-style-type: none"> <li>The power consumption of all devices exceeds the power of the power supply.</li> </ul>	<ul style="list-style-type: none"> <li>Add a power supply which is more powerful.</li> <li>If possible: Remove devices.</li> <li>Split networks.</li> </ul>
Device type not available	<ul style="list-style-type: none"> <li>A device type is not available within the selected segment type.</li> </ul>	<ul style="list-style-type: none"> <li>Remove the invalid devices.</li> <li>Replace the invalid devices with devices that are valid within the selected segment type.</li> </ul>
Over all cable length exceeds maximum.	<ul style="list-style-type: none"> <li>The cable length within the fieldbus network exceeds the maximum allowed cable length.</li> </ul>	<ul style="list-style-type: none"> <li>Be sure that the cable length is conform with the specification.</li> </ul>
Nested trunk branch	<ul style="list-style-type: none"> <li>The network structure is to nested.</li> </ul>	<ul style="list-style-type: none"> <li>Be sure that distributor devices, such as device couplers or wiring blocks, are not used below the level which is allowed by the segment type.</li> </ul>
No master/host present	<ul style="list-style-type: none"> <li>There is no host present.</li> <li>The host is not connected to the network.</li> </ul>	<ul style="list-style-type: none"> <li>Add a host.</li> <li>Connect the host to the network.</li> </ul>
Short Circuit Check: Calculated current is too high	<ul style="list-style-type: none"> <li>The power of the power supply is to low if a short circuit appears in a segment.</li> </ul>	<ul style="list-style-type: none"> <li>Add a power supply which is more powerful.</li> </ul>
Terminator missing	<ul style="list-style-type: none"> <li>One terminator is missing.</li> <li>Both terminators are missing.</li> </ul>	<ul style="list-style-type: none"> <li>Add a terminator at the end of the trunk.</li> <li>Add both terminators - each at one end of the trunk.</li> </ul>
The device is not an element of the segment	<ul style="list-style-type: none"> <li>The device has no connection to the network.</li> </ul>	<ul style="list-style-type: none"> <li>Put the device via Drag &amp; Drop into the network.</li> </ul>
Too many terminators	<ul style="list-style-type: none"> <li>Three or more terminators are present.</li> </ul>	<ul style="list-style-type: none"> <li>Remove the needless terminators. There must be exactly two terminators present.</li> </ul>
Wrong terminator position	<ul style="list-style-type: none"> <li>The terminator is placed at a position within the network which is not conform with the specification.</li> </ul>	<ul style="list-style-type: none"> <li>Place the two terminators at the end of the trunk.</li> </ul>

### 6 Glossary

#### 6.1 DesignMATE Terms

##### Device Tree

The Device Tree contains all the available fieldbus devices classified in a folder structure.

##### Error Log

The Error Log displays all errors occurred in the current DesignMATE project.

##### Property Editor

In the Property Editor all the properties of devices and cables can be displayed and changed.

#### 6.2 Fieldbus Entries

##### Field Barrier

A field barrier provides intrinsically safe connection of the field devices.

##### Fieldbus

A fieldbus is an industrial network system for real-time distributed control, more precisely a digital, two-way, multi-drop communication link among intelligent measurement and control devices. It serves as a Local Area Network (LAN) for advanced process control, remote input/output and high speed factory automation applications.

##### Field Device

A field device is a component interacting directly with the process, usually remote I/O, sensors, actuators, transducers. A field device is located in the field, whereas an instrument need not be.

##### FOUNDATION fieldbus™

FOUNDATION fieldbus™ is the Fieldbus Foundation's official product/service trade name.

##### Host

A host is generally a computer connected to a network.

##### Wiring Block

A wiring block connects the field devices to the trunk by individual spurs, thus allowing easy disconnection and maintenance.

### Power Supply Module

A power supply module combines the digital communication signal with the power to feed the field devices on the two-wire fieldbus trunk cable connected to the fieldbus host.

### Segment

A segment or bus segment is a closed part of a serial bus system. The bus line between two termination resistors forms a segment. A segment contains 0 to 32 bus participants.

### Device Coupler

A device coupler distributes and prevents from communication break-downs caused by short-circuits at any connected field device.

### Spur

A spur is a branch line connecting a sub segment to the main segment of a fieldbus network. Only one field device shall be connected to the end of the spur.

### Surge Protective Device

A surge protective device allows to incorporate protection concepts against power surges and lightning strikes.

### Terminator

A terminator is a resistor connecting conductor pairs at both ends of a wire medium segment to prevent reflections from occurring at the ends of cables. Ideally it should be the wave impedance of the wire medium.

### Trunk

The trunk is the main communication line of a fieldbus network. From the trunk, the spurs go off which connect the field devices to the fieldbus.

I downloaded the DesignMATE software. How do I install it on my computer?

Please read our installation instructions see Chapter 3.

How do I load more instruments in the Device Tree?

Other devices can be added quite easily. You can even input your own devices with the included Device Editor. See also Import and Export functions.

How can I put my own instruments into the Device Tree?

Your own instruments can quickly be created and added to the Device Tree with the Device Catalog Editor. This editor feature is included with DesignMATE see chapter 4.4.

What is short-circuit checking?

During normal operation one short circuit at a spur should be permissible and included in the planning. The short circuit test is only possible with short-circuit limited “wiring interfaces” e.g. Device Coupler or Barrier. This means it tests voltage levels and load current with one short circuit on an output to determine where the segment gets the worst effect from a short circuit.

Where can I get a detailed report on my project?

You will find an analysis of your project by clicking on the Project Report window located at the bottom of the drawing see chapter 4.2.6.

How do I get an instrument from the Device Tree into my project layout?

In order to build a network, simple drag and drop or double-click methods can be used to build the structure. Simply drag the icon to the Segment Editor window and drop it. To add the next element, just drag it close to the intended interconnecting element. The software will then make the connection automatically with the same type of trunk cable that was defined earlier in the basic parameter setup. Please be aware that you will need to connect elements when using the double-click method see chapter 4.6.

### How do I specify the part to be considered the trunk?

It is important to identify the trunk through placement of the terminators. The trunk is specified as the electric connection between the two terminators. Terminators are typically located on the power supply and the last wiring interface. Some wiring interfaces and power supplies have an optional terminator that can be turned on in the detail view of the device. External terminators can also be used.

### What is the difference in the Icon and Bitmap within the Device Editor?

The Icon is the image associated with the created instrument that will appear under your Device Tree. The Bitmap is the image displayed in a project once it is connected to an interface product.

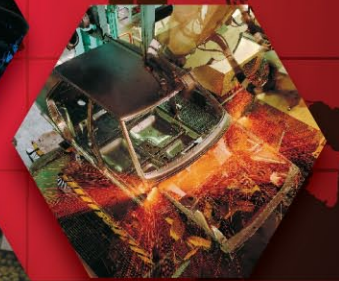
### What are the import and export functions within the Device Editor?

The import function allows you to incorporate instrument libraries of various field device instruments. The export function allows you to save created field devices and share them with other people, or transfer to another computer.

### What is Microsoft .NET Frameworks?

Microsoft .NET is a technology to create and distribute software. The base of .NET is the .NET-Framework, which is a complex but easy to handle infrastructure that realizes communication from Windows- and internet applications over networks and the internet. The Microsoft .NET technology creates the runtime environment for Windows based applications.

# Automation Infrastructure For Operational Excellence.



## Fieldbus Foundation

9005 Mountain Ridge Drive  
Bowie Bldg - Suite 200  
Austin, TX 78759-5316

Phone: 512.794.8890  
Fax: 512.794.8893  
E-mail: [info@fieldbus.org](mailto:info@fieldbus.org)

[www.fieldbus.org](http://www.fieldbus.org)

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