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FIRMWARE UPDATE AXL E EC

Updating the firmware of Axioline E-EtherCAT®devices with TwinCAT®

Application note
106166_en_00

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This document describes how to use the TwinCAT® software to carry out a firmware update on Axioline E devices for EtherCAT®.

The document is valid for the following Axioline E EtherCAT® devices:

Order designation	Order No.
AXL E EC DI16 M12 6P	2701521
AXL E EC DI16 M12 6M	2701526
AXL E EC DIO16 M12 6P	2701522
AXL E EC DIO16 M12 6M	2701528
AXL E EC DI8 DO8 M12 6P	2701520
AXL E EC DI8 DO8 M12 6M	2701525
AXL E EC DI8 DO4 2A M12 6P	2701523
AXL E EC DI8 DO4 2A M12 6M	2701529
AXL E EC IOL8 M12 6P	2701524
AXL E EC IOL8 M12 6M	2701531

Make sure you always use the latest documentation.
It can be downloaded at phoenixcontact.net/products.

INSPIRING INNOVATIONS

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2 Preparation

2.1 Setup the network

- Connect the AXL E EtherCAT®device with an Ethernet cable to your network adapter, which is used by TwinCAT®.

2.2 Create a project

- If this is the first time that you open TwinCAT® please copy the device description file "ECAT_AXL_E.xml" into the folder: <YourTwinCAT InstallationFolder\IO\EtherCAT>.

The device description file for EtherCAT® is called **ESI** (**E**therCAT **S**lave **I**nformation File).

Please make sure that you use the correct device description file that corresponds to your firmware version of the AXL E EtherCAT® device. After firmware update of AXL E EtherCAT® device, you also have to update the ESI file "**ECAT_AXL_E.xml**". Please download a new ESI file from the Phoenix Contact webpage and overwrite your old file.

- Start the TwinCAT® System Manager and create a new project by simply choosing the menu item "File, New".

2.3 Scan the network for devices

- Open the context menu by a right click on "I/O-Configuration, I/O Devices".
- Click on the menu item "Scan Devices …".

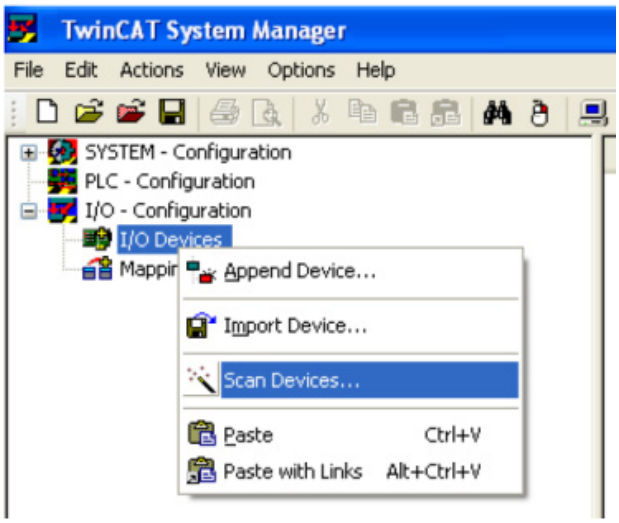

Figure 1 Scan devices (network cards)

This way I/O devices are added automatically to your configuration.

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- Choose network card, which is connected to the AXL E EtherCAT® device.
- Then click the "OK" button.

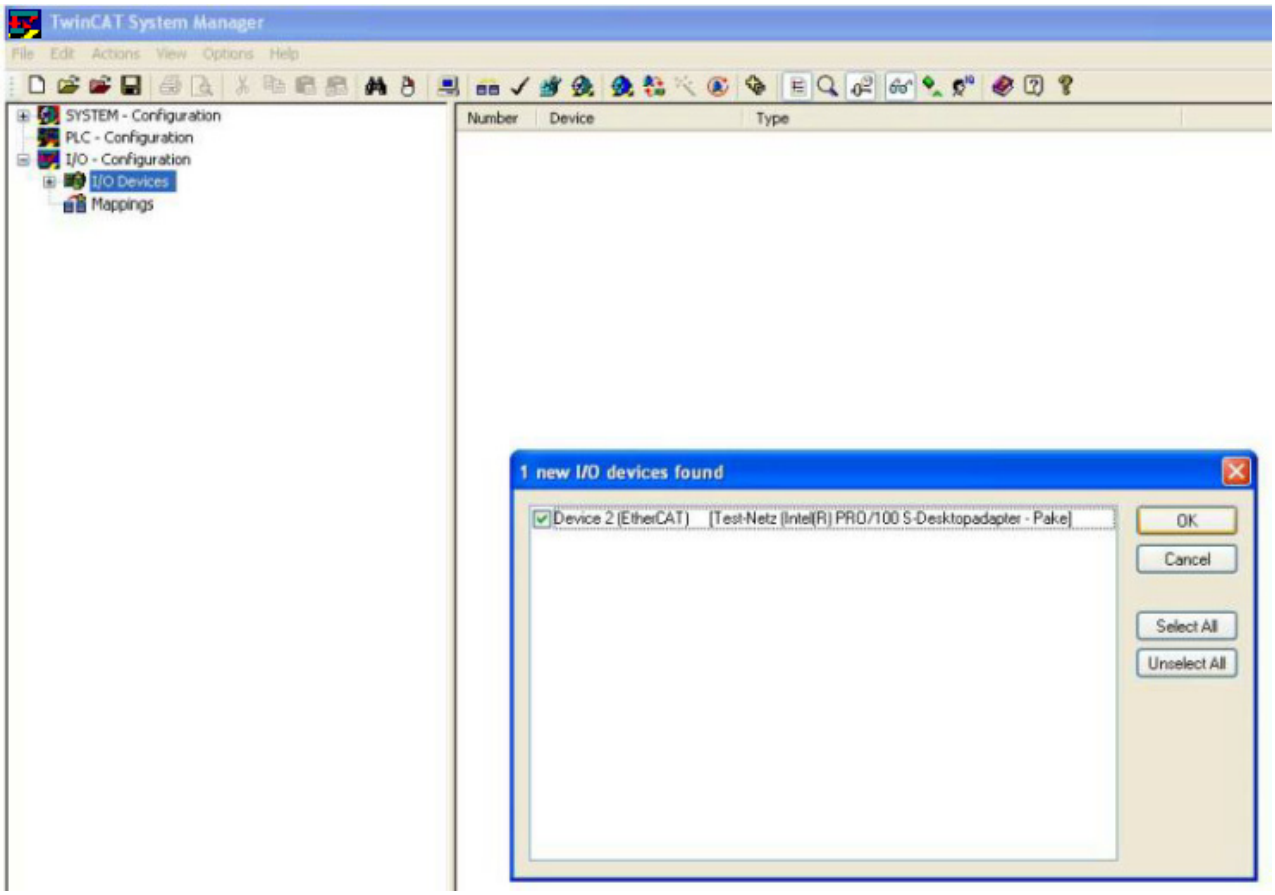

Figure 2 Select the network card

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- Please answer the question "Scan for boxes" with "Yes".

If TwinCAT® finds a device, it will automatically add it to your project.

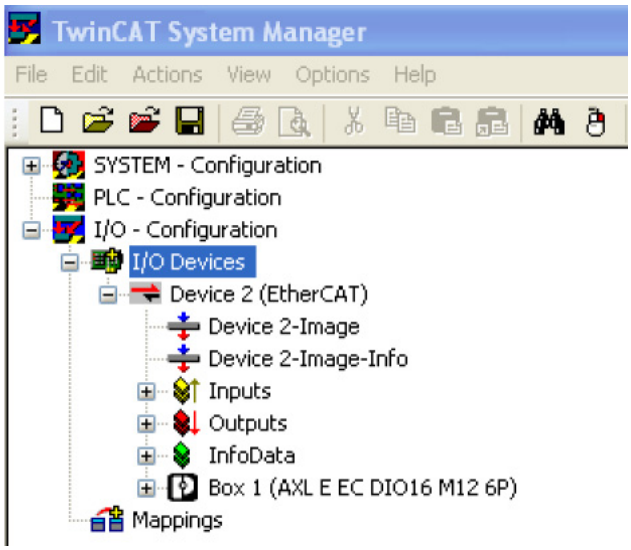

Figure 3 Project with detected devices

- Answer the question "Activate Free Run" with "Yes".

Figure 4 Activate "Free Run"

During this process TwinCAT® will try to put the AXL E EtherCAT®device into the state "Operational", by default.

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2.4 Scan the Network for Devices (ESI is not present in TwinCAT®)

If no matching ESI file is saved in TwinCAT®, you will receive an error message, similar to this one, when scanning for devices:

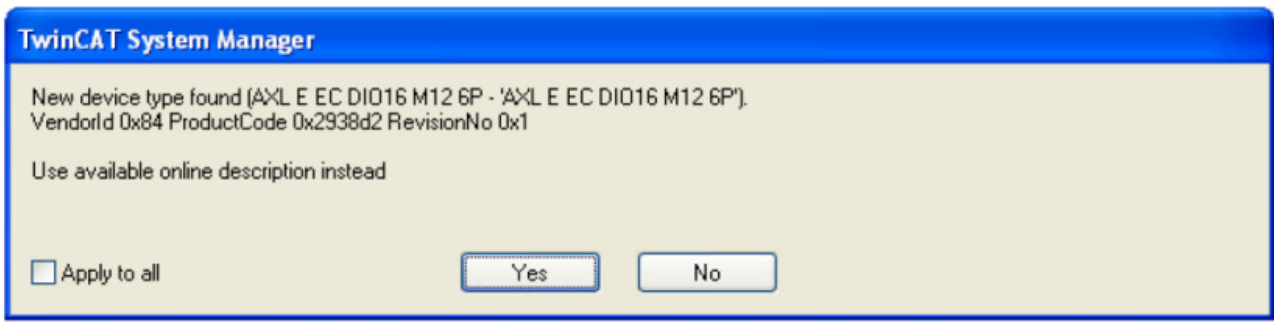

Figure 5 Warning message when no ESI is present

This means that the Slave Information Interface (SII) of the device is read out, to get the device description throughout of it.

3 Firmware update process (step by step)

The protocol "File Access Over EtherCAT (FoE)" is generally used for firmware updates.
The following steps will guide you through the firmware update process of your AXL E EtherCAT® device.

- Put your device into the EtherCAT® state "Bootstrap".

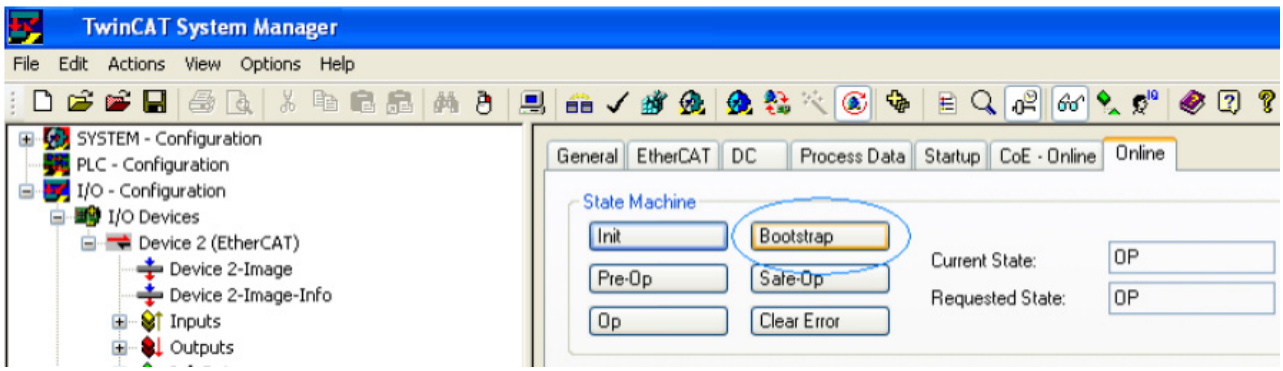

Figure 6 Activating state "Bootstrap"

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To verify that the device is in state "Bootstrap", please check the text box "Current State"

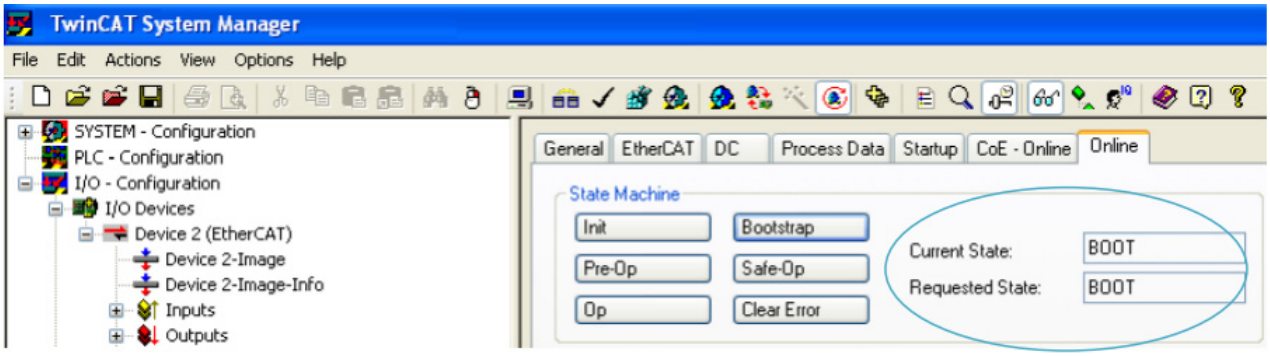

Figure 7 Verifying transition into state "Bootstrap"

- Click on the button "Download" in the field "File Access over EtherCAT" within the Online window.

A dialog will appear, in which the firmware file for the update can be selected.

Firmware files for AXL E EtherCAT® devices have the file extension ".nxf".

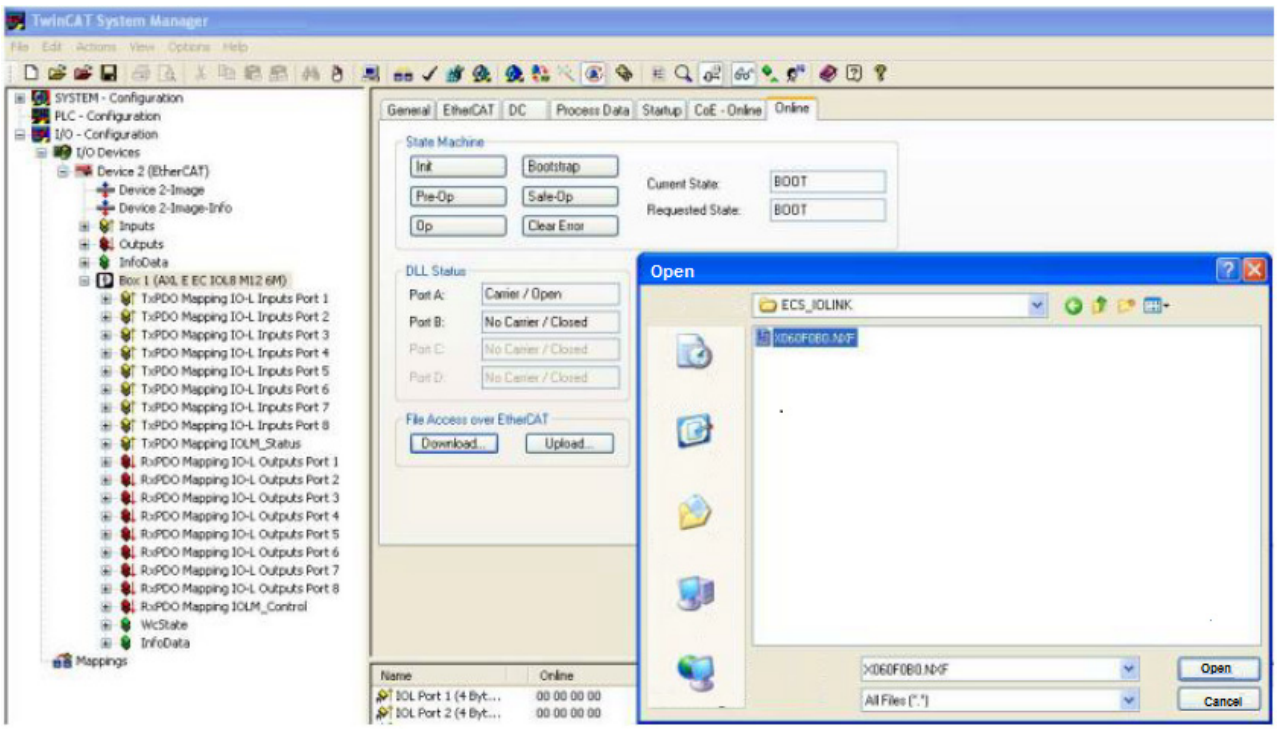

Figure 8 Selecting the firmware file

- Select the firmware file and click "Open".

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The following dialog will appear:

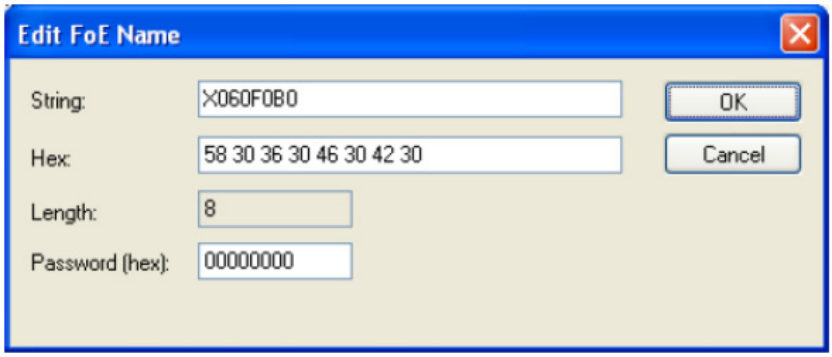

Figure 9 Selected firmware file

Extend the parameter "String" with the file extension ".nxf", like shown as below:

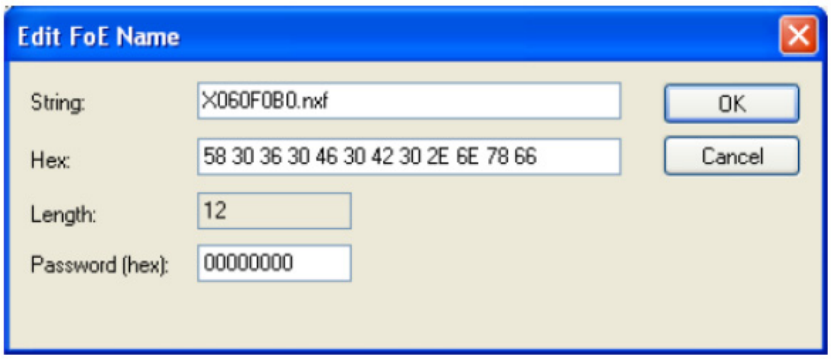

Figure 10 Extending parameter "String" with .nxf

- To start the firmare download, please click "OK".

The progress of firmware download ("Downloading …") is shown in the bottom of the screen of TwinCAT®.

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After a successful firmware download, you might get the following message. Please ignore this message.

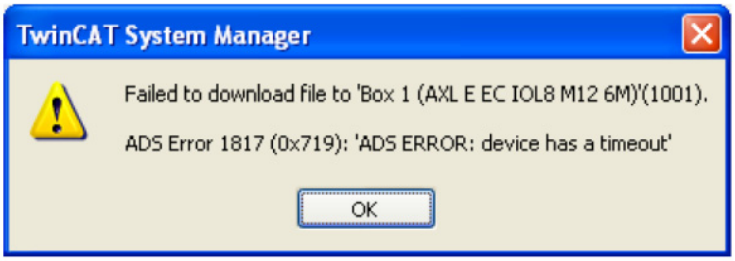

Figure 11 Timeout warning message

This message does not limit the function of the device. The background for this message are executed mechanisms in TwinCAT® and in the device itself, like stored timeout values that do not fit properly together. Although TwinCAT® reports a timeout, the firmware is still loaded completely into the device.

- Restart the device, e.g. power reset, to start the device with the new firmware.

The firmware version can be checked via the "COE object 0x100A (Manufacturer Software Version)".

Index	Name	Flags	Value
1000	Device Type	RO	0x00001389 (5001)
1008	Manufacturer Device Name	RO	AXL E EC IOL8 DI4 M12 6M
1009	Manufacturer Hardware Version	RO	V.1.0.0
100A	Manufacturer Software Version	RO	V.1.1.0.0
1018:0	Identity	RO	> 4 <

Figure 12 Checking the firmware version

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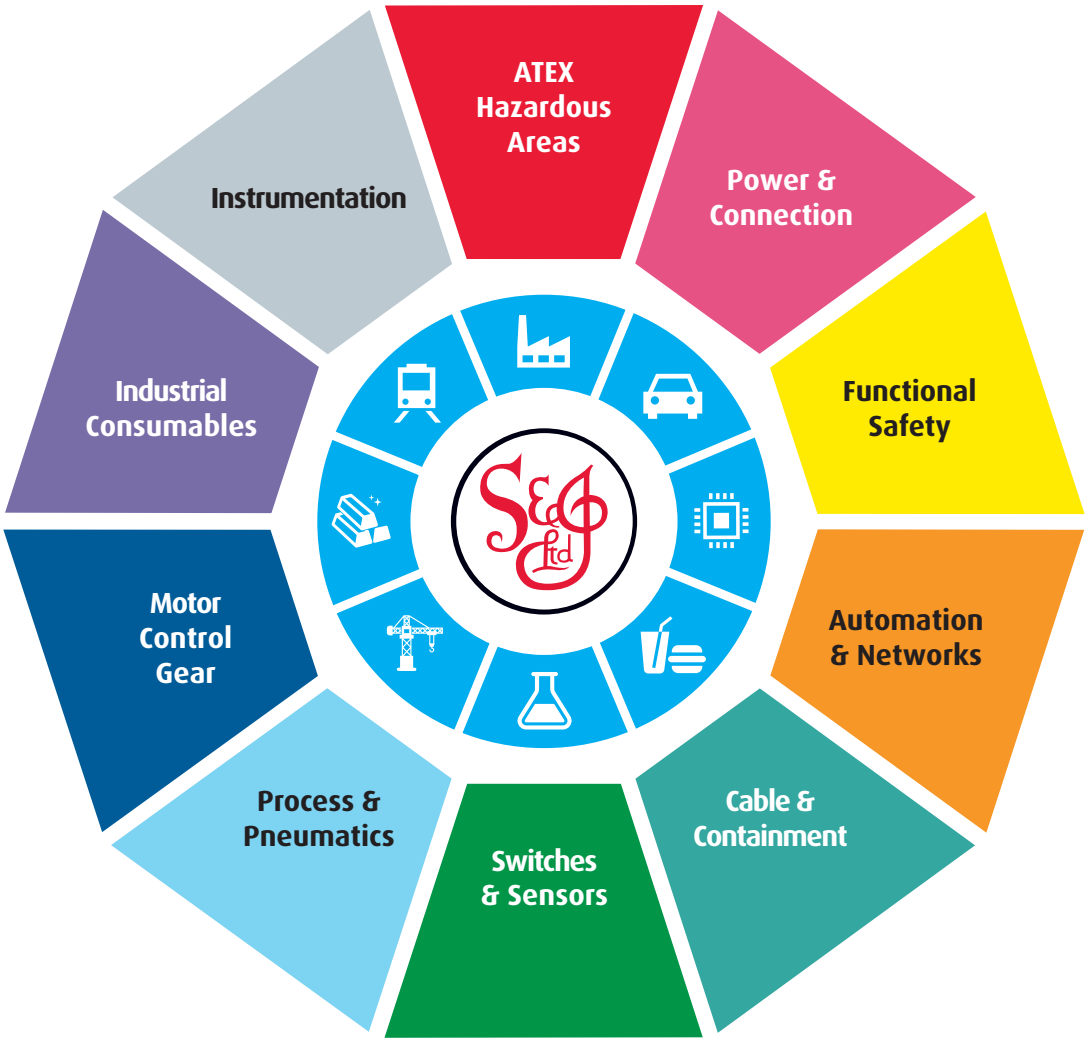

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