ETHERNET/IP + RS LOGIX

How to add an Inline or Fieldline Modular bus coupler for Ethernet/IP to a CompactLogix control program

Application note
8468_en_00

1 Introduction

This document describes how to create an RSLogix 5000 Control program with one of the following bus couplers as part of the I/O configuration.

Products

Description	Type	Order No.	Pcs. / Pkt.
Ethernet/IP bus coupler, 8 inputs, 24 V DC, 4 outputs, 24 V DC, 500 mA, complete with I/O connectors	IL EIP BK DI8 DO4 2TX-PAC	2897758	1
Fieldline Modular M12 bus coupler, Ethernet/IP M12, inputs: 24 V DC	FLM BK EIP M12 DI 8 M12-2TX	2773322	1
Ethernet/IP bus coupler for Inline, 24 V DC, complete with accessories (connector and labeling field)	FL IL 24 BK ETH/IP-PAC	2863986	1

The following describes how an IL EIP BK DI8 DO4 2TX-PAC bus coupler is added. Installation of other bus couplers is very similar. Exceptions will be described in this document.

It is assumed that the user has the latest licensed versions of Rockwell RSLinx, RSNetworx for Ethernet/IP and RSLogix 5000.

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

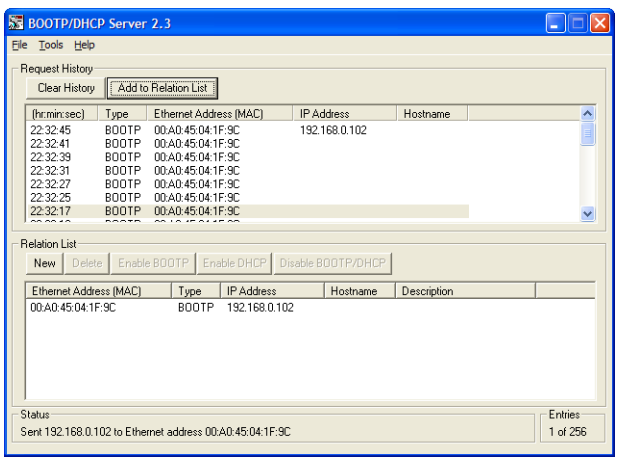
2 Adding an IL EIP BK DI8 DO4 2TX-PAC

2.1 Assigning IP addresses using a BootP server

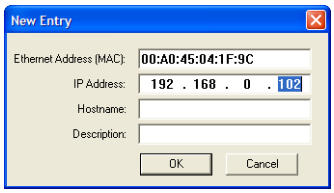
The IL EIP BK DI8 DO4 2TX-PAC (short: IL EIP BK) has been designed according to the latest EIP specifications. This specification defines when a device uses BootP to assign its IP address. Upon power up, the device will send BootP requests and continue to send the request until the request is acknowledged. If the BootP request is not acknowledged the device cannot revert to a stored or static IP address.

This application note will use the BootP DHCP server provided with the RSLogix 5000 Software suite.

1. Open the BootP/DHCP server from “Start... All Programs... Rockwell Software... BOOTP/ DHCP Server... BOOTP/DHCP Server”.



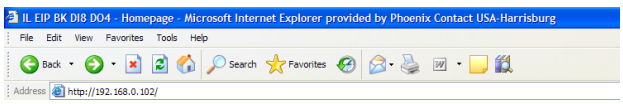
2. When power is applied to the IL EIP BK BootP requests from the module will start appearing in the “Request History” field.
3. Select one of the requests and then click the “**Add to Relation List**” button.



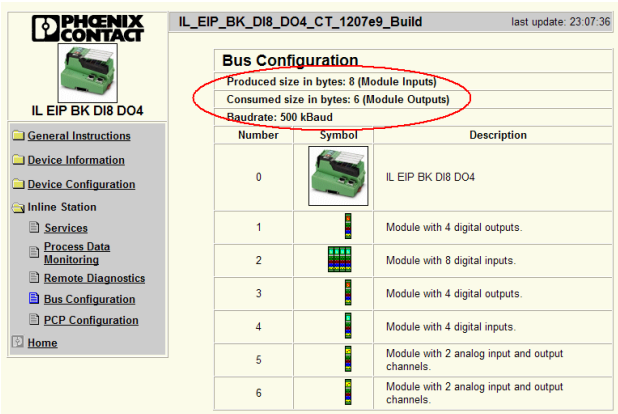
4. The “New Entry” window will open, enter the desired IP address for the IL EIP BK in this case **192.168.0.102**. Then click OK. The IL EIP BK is moved to the relation List and assigned the IP address. For the rest of this program session the BootP can be minimized.

2.2 IL EIP BK web page

The built-in web page of the IL EIP BK includes details on the module and the I/O modules connected to the IL EIP BK. The information required for this session is the produced and consumed data size.



1. Open the Internet Explorer and enter the IP address of the IL EIP BK in the URL address field.

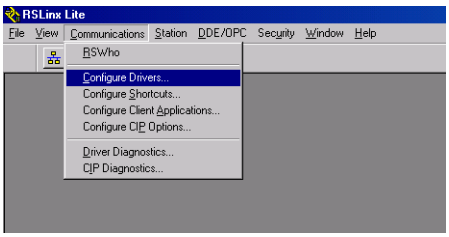


2. From the web page menu select “**Inline Station**” then “**Bus Configuration**”. This window displays the current bus configuration and the produced and consumed Sizes
3. Keep these values for later steps; **produced size in bytes: 8** and **consumed size in bytes: 6.**

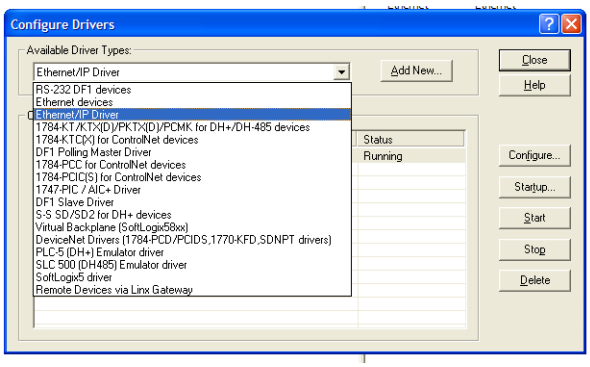
2.3 RSLinx configuration

RSLinx links Allen-Bradley networks and devices to Microsoft Windows applications such as RSLogix and RSNetWorx. Here we will use RSLinx to make the IL EIP BK available to the RSLogix 5000 software.

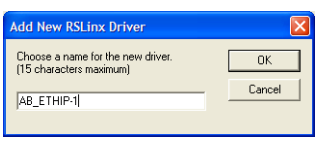
1. Open RSLinx by clicking on its icon on the toolbar. If RSLinx is not already running, go to " Start... Programs... Rockwell Software... RSLinx... RSLinx" to start it.



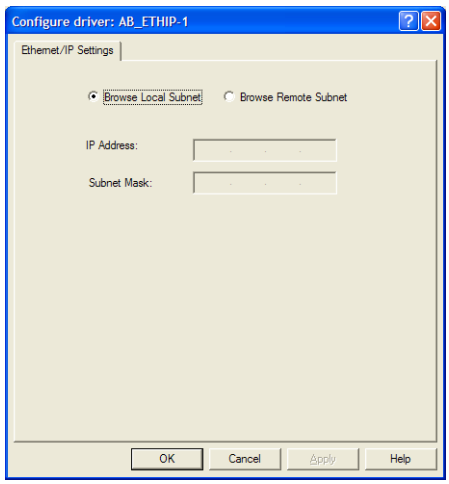
2. Under "Communications" select "Configure Drivers" as shown.



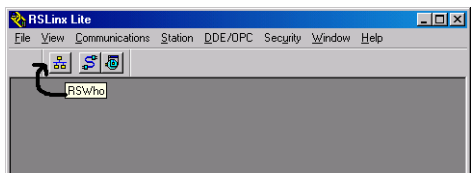
3. You should now be able to see the "Configure Drivers" window. Select "Ethernet /IP Driver" from the "Available Driver Types" pull-down menu and click on "Add New" as shown.



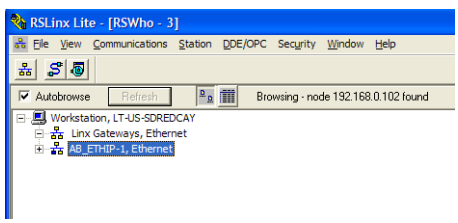
4. The "Add New RSLinx Driver" window should now be visible. Assign a name to the driver and click OK. In this example, the name of our driver is "AB_ETHIP-1."



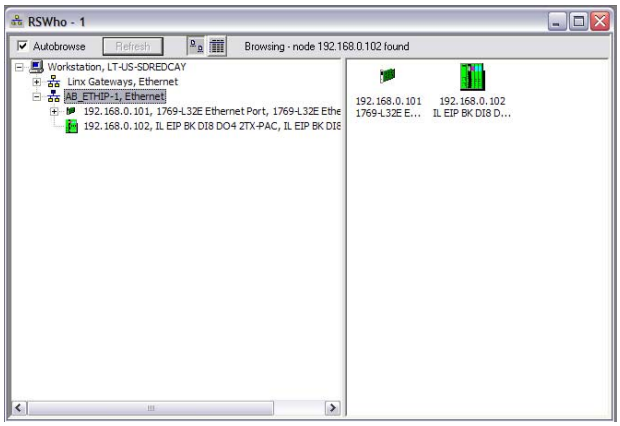
5. After you have clicked OK in step 4 the "Configure driver: AB_ETHIP-1" window will appear automatically. Click OK.



6. Click the RSWho icon in the main window of RSLinx.



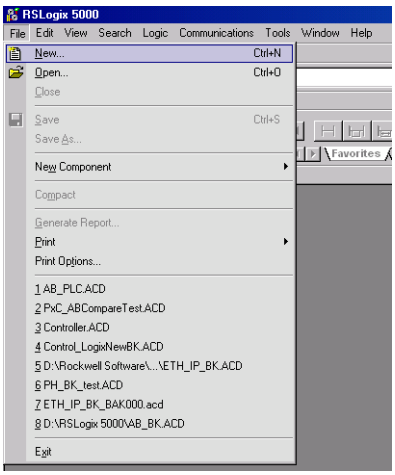
7. Make sure that the "Autobrowse" box is checked in the upper-left hand corner of the RSWho window. Click the "+" sign next to the name of the driver you have created in step 4. In this case "AB_ETHIP-1".



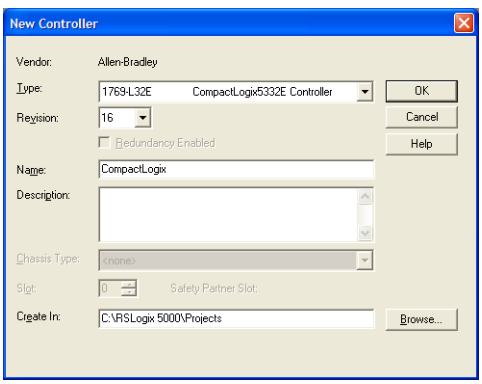
8. The PLC and the IL EIP BK can both be seen in the EtherNet/IP network. You can now close RSLinx and continue. Closing RSLinx will just minimize the program, it is still running and may be accessed at any time by clicking on its icon in desktop's system tray (lower right-hand corner on the desktop screen under Windows).

2.4 RSLogix 5000 program setup

1. Open RSLogix 5000 from "Start... All Programs... Rockwell Software... RSLogix Enterprise Series... RSLogix 5000".

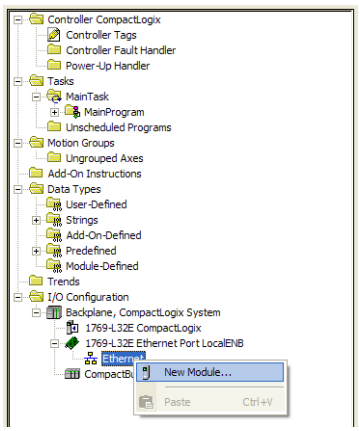


2. From the home screen, select "New" from the "File" pull-down menu.

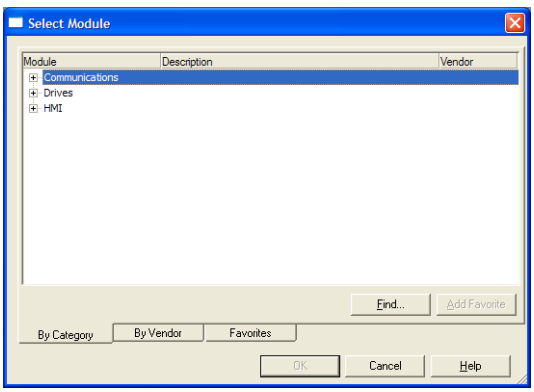


3. The "New Controller" window open. Under "Type", select your specific controller type; in this case the 1769-L32E CompactLogix5332E controller.
4. For this application the revision is 16.
5. Once all relevant controller information has been entered, assign a name to your controller under "Name", enter a description under "Description" (if necessary), select where you want to create your project (usually in "RSLogix... Projects"), and click OK.

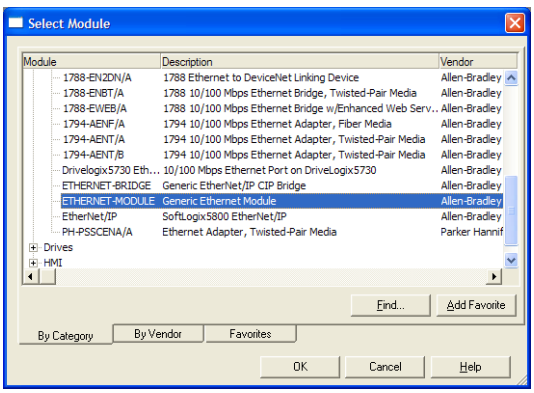
A new project is created.



6. Right click the “Ethernet” icon and select “New Module.”



7. Expand the Communications module category by clicking the + icon.



8. Scroll down the expanded menu and select “ETHERNET-MODULE Generic Ethernet Module” Then click OK.

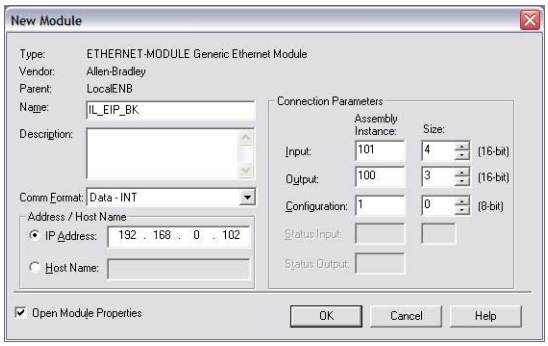
To activate the requested control byte, send an explicit message to the bus coupler.

Service:	10 (hex) Set Attribute Single
Class:	64 (hex)
Instance:	1
Attribute:	20 (hex)
Value:	01

After sending this message, you can set an output instance in the Logix control program.

Assembly instance 100, size 1 (16-bit)

The figure shows an Inline bus coupler with multiple digital as well as analog inputs and output.

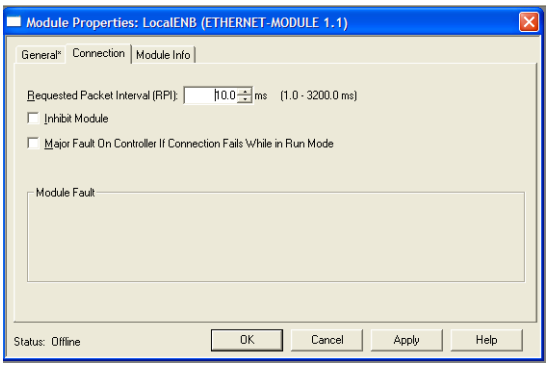


9. The “Module Properties” window will open. This is most critical part of the configuration. The connection parameters must match the IL EIP BK parameters for the PLC to connect to the IL EIP BK.
10. Enter a name for the module and the IP address, in this case 192.168.0.102.
11. Set "Comm Format" to "**Data–INT**".
12. Enter the size of the input and output connection parameters using the produced (input) and consumed (output) data sizes obtained from the IL EIP BK web page.

NOTE:

You will need to convert the size on the web page in bytes (8 bits) to INT (16 bits). In this application the produced size of 8 bytes equals 4 INT and consumed size of 6 bytes equals 3 INT.

13. For the “Assembly Instances” enter 101, 100, and 1 in the fields for “Input”, “Output” and “Configuration”.
14. Then click OK.

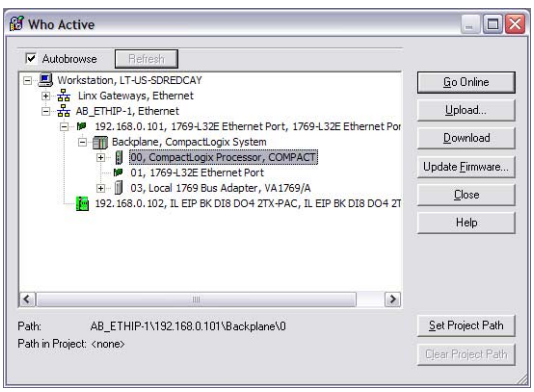


15. Specify the cycle time for your bus system. For example, accept the RPI of 10.0 ms and click OK.

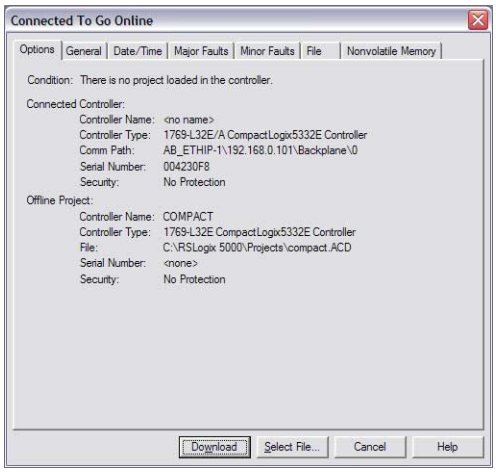
The Project can now be downloaded to the PLC.

16. Make sure the “PLC Program/ Run” switch is in the REM (Remote) position. The key switch in located just above the Ethernet port on the PLC

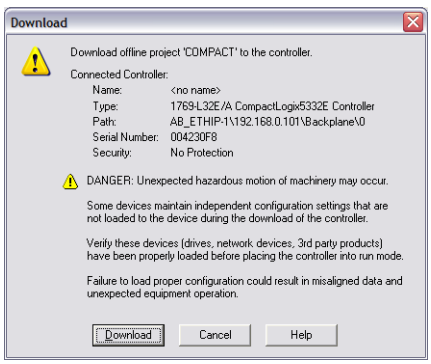
17. Left click the “Who Active” button to select the communication path to the PLC. The “Who Active” window will open.



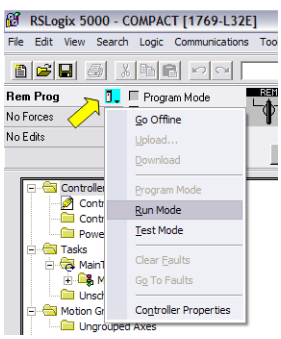
18. Select the processor.
Expand “AB_EIP-1, Ethernet network”, then select “00, CompactLogix Processor ...”.
19. Click the “Go Online” button. The “Connected To Go Online” window will open.



20. Click the “Download” button



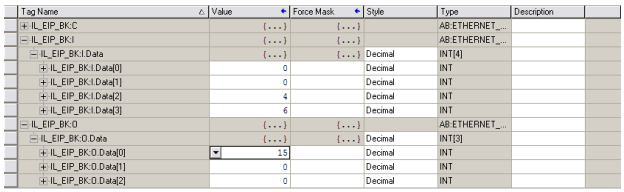
21. If the PLC is running a warning window will open. Click the “Download” button.



22. Click the button "PLC state" and select “Run Mode” from the drop down menu

The PLC is now running. The process data of the IL EIP BK can be access from the controller tags.

23. Double left click the controller tags icon in the project tree to open the controller tags window.



Tag Name	Value	Force Mask	Style	Type	Description
IL_EIP_BK:C	{...}	{...}		AB:ETHERNET_...	
IL_EIP_BK:I	{...}	{...}		AB:ETHERNET_...	
IL_EIP_BK:I.Data	{...}	{...}	Decimal	INT[4]	
IL_EIP_BK:I.Data[0]	0		Decimal	INT	
IL_EIP_BK:I.Data[1]	0		Decimal	INT	
IL_EIP_BK:I.Data[2]	4		Decimal	INT	
IL_EIP_BK:I.Data[3]	6		Decimal	INT	
IL_EIP_BK:O	{...}	{...}		AB:ETHERNET_...	
IL_EIP_BK:O.Data	{...}	{...}	Decimal	INT[3]	
IL_EIP_BK:O.Data[0]	15		Decimal	INT	
IL_EIP_BK:O.Data[1]	0		Decimal	INT	
IL_EIP_BK:O.Data[2]	0		Decimal	INT	

24. The IL_EIP_BK: I (input) and IL_EIP_BK: O (output) data fields can be expanded. With the “Monitor Tags” tab selected at the bottom of the screen, the values can now be edited.
25. Select the“ Value” cell for IL_EIP_BK: O: Data [0]. This is the first INT (16bit) output of the IL EIP BK. Type a value of 15 and press enter. The four onboard digital outputs of the IL EIP BK will turn on.
26. The eight onboard digital inputs will start at IL_EIP_BK: I: Data [1]. INT [0] contains the IL EIP BK status.

Default I/O mapping for this application:

Tag name	**IL process data input**
IL_EIP_BK:I.Data[0]	IL BK status
IL_EIP_BK:I.Data[1]	On board DI8, IL DI4 and paddding
IL_EIP_BK:I.Data[2]	IL AI2 channel 1
IL_EIP_BK:I.Data[3]	IL AI2 channel 2
Tag name	IL process data output
IL_EIP_BK:O.Data[0]	On board DO4, IL DO4 and padding
IL_EIP_BK:O.Data[1]	IL AO2 channel 1
IL_EIP_BK:O.Data[2]	IL AO2 channel 2

Please refer to the IL EIP BK DI8 DO4 2TX-PAC user manual for more details on the I/O mapping rules.

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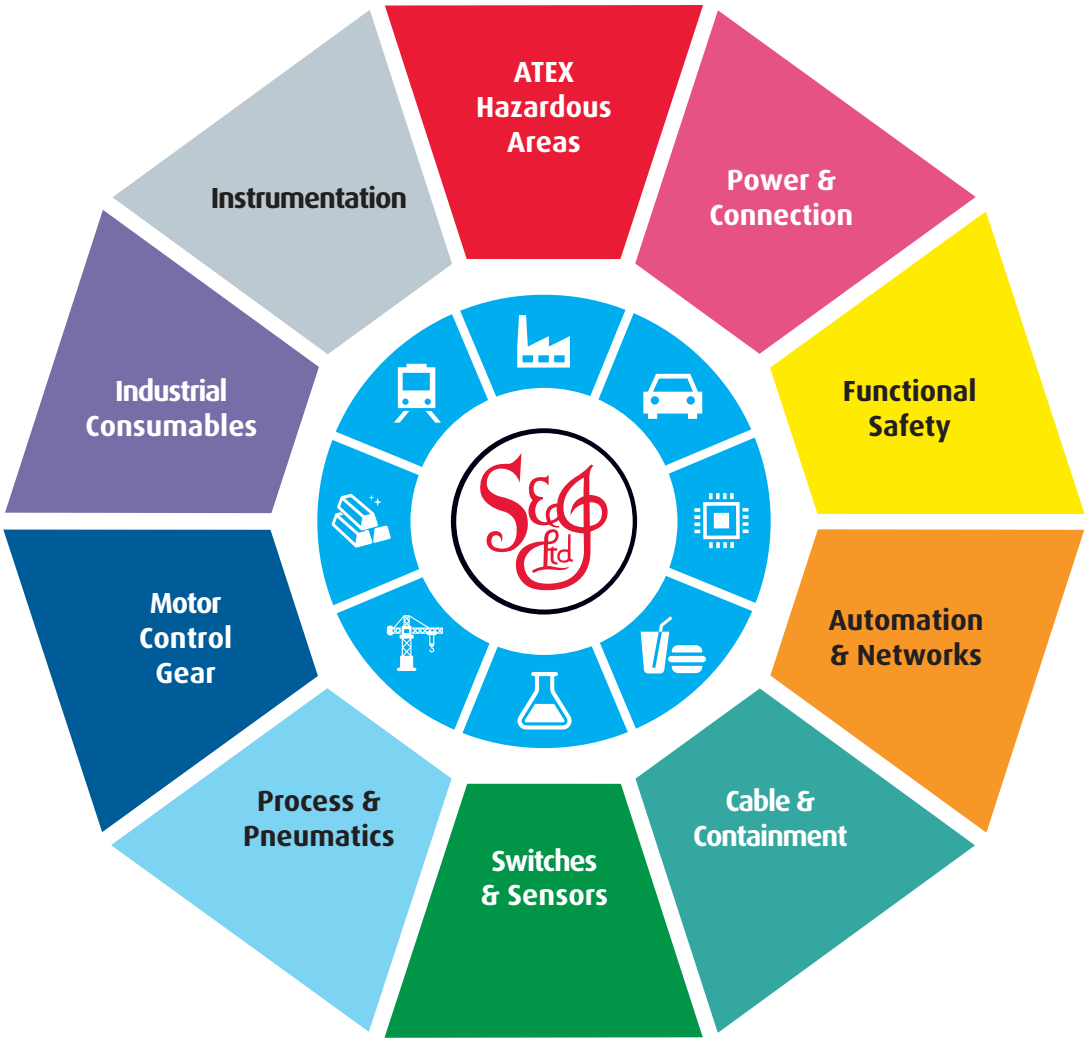

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