



# XGB Bus Modules

## XEL-BSSCT Bus Coupler

XEL-BSSCT is a cost-effective EtherCAT bus coupler that brings XGB Remote I/O expansion to the XMC motion controllers and other EtherCAT masters.



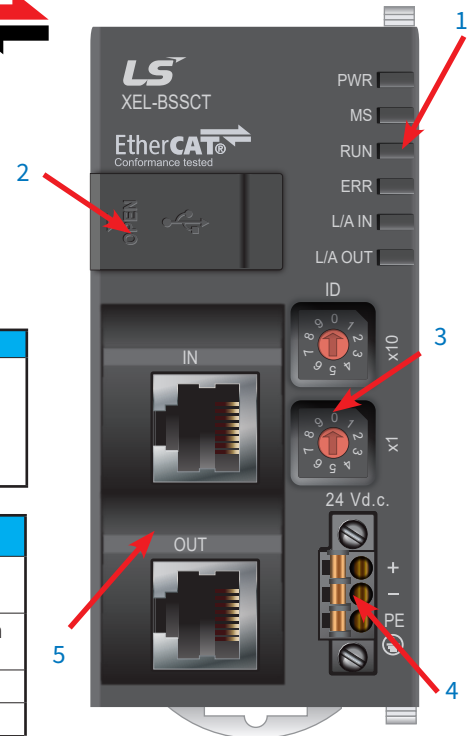
### Features

- Provides EtherCAT protocol communication
- Easy setup and configuration using XG5000 software
- Supports the network topology that the EtherCAT master is compliant with
- Automatic identification of cable type and communication speed

Part Number	Price	Classification	Description	Drawing
<a href="#">XEL-BSSCT</a>	\$199.00	Bus Coupler	LS Electric XGB bus coupler, 24 VDC, (2) Ethernet (RJ45) and (1) USB B port(s), EtherCAT Slave, 100 Mbps. For use with LS Electric XGB series I/O modules.	<a href="#">PDF</a>

General Specifications		XEL-BSSCT		
Adapter Specifications	Max Number of Modules to be Installed	8*		
	Operation Mode	RUN, STOP (manual testing through XG5000 is only available in STOP mode)		
	Refresh Time	DC Sync0 time x refresh time (0-100)		
	Standard Input Filter	1, 3, 5, 10, 20, 70, 100 ms		
	Self-diagnosis Function	Indication of a current error and warning		
	EEPROM	Self-recovery Function	Enable/disable automatic recovery	
		EEPROM Size	4kB	
	Memory	System Flag Area	F Area	2kB
			I Area	2kB
		Extension Module Mapping Area	Q Area	2kB
U Area			1kB	
External Connection Terminal	Programming Port	USB 1 channel		
	Communication Port	RJ45 2 ports (response to shield)		
	Power Port	3-pin push-in/screw fixing type connector		
EtherCAT Communication Specifications	Communication Protocol	EtherCAT		
	Data Transfer Speed	100Mbps		
	Physical Layer	100BASE-TX (IEEE 802.3)		
	Topology	Conforms to the EtherCAT master		
	Transmission Media	STP (Shielded Twisted-pair) cable with Category 5 or higher		
	Transmission Distance	100m or less between slaves		
	Size of PDO Data Transmission and Reception	Input:	up to 1,024 byte	
		Output:	up to 1,024 byte	
	Mailbox Data Size	Input:	up to 256 byte	
		Output:	up to 256 byte	
	Mailbox Support Command	SDO requests, SDO information		
	Refresh Method	Free-run, Refresh Sync mode (for LS devices only)		
Slave Address Setting Method	Rotary switch, master, PADT			
Slave Address Setting Range	Explicit ID (1-99)			
	Alias Address (1-65535)			
	Applies the EEPROM value set by the master when setting PADT 0			

\* Supports a maximum output current of 3A.



Location	Function
1	LED Display
2	Mini-B USB Connector
3	Slave address switch
4	24VDC input power
5	Ethernet connectors



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## XEL-BSSCT Bus Coupler, *continued*

<b>Power Specifications</b>		<b>XEL-BSSCT</b>
<b>Input</b>	<b>Rated input voltage</b>	24VDC
	<b>Input voltage range</b>	20.4–28.8 VDC (-15%, + 20%)
	<b>Input current</b>	1.3 A or less (typically 1A)
	<b>Inrush current</b>	50A peak or less
	<b>Efficiency</b>	80% or more
	<b>Permitted momentary power failure</b>	Less than 10ms
<b>Output</b>	<b>Rated output voltage</b>	5VDC ( $\pm 2\%$ )
	<b>Output point</b>	3.0 A
<b>Power Supply Status Indication</b>		When output voltage is normal, LED On
<b>Cable specification</b>		22–20 AWG (0.3–0.5mm <sup>2</sup> )

## XEL-BSSCT Bus Coupler, *continued*

### DC Power Wiring

Wiring Specifications	XEL-BSSCT
<b>Using Solid Wire</b>	Wire specification: 24–16 AWG (0.2–1.5 mm <sup>2</sup> ) Strip: 9mm 
<b>Using Stranded Wire</b>	Sleeve type crimp terminal  D1 and D2 according to the wire standard are as follows. <ul style="list-style-type: none"> <li>• 20 AWG: D1 (1mm), D2 (2.6 mm)</li> <li>• 18 AWG: D1 (1.2 mm), D2 (2.8 mm)</li> </ul>

### RJ45 Cable Wiring

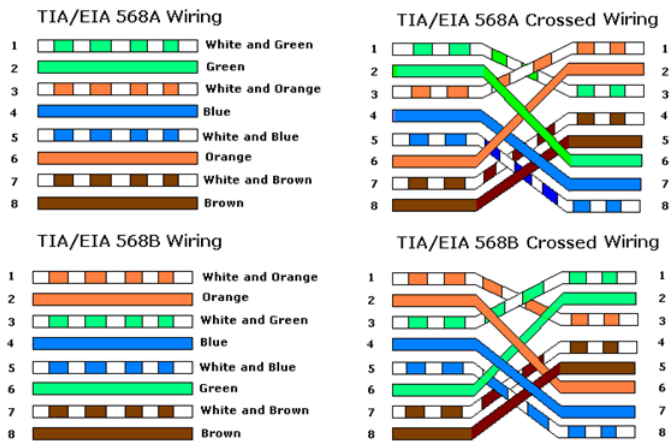


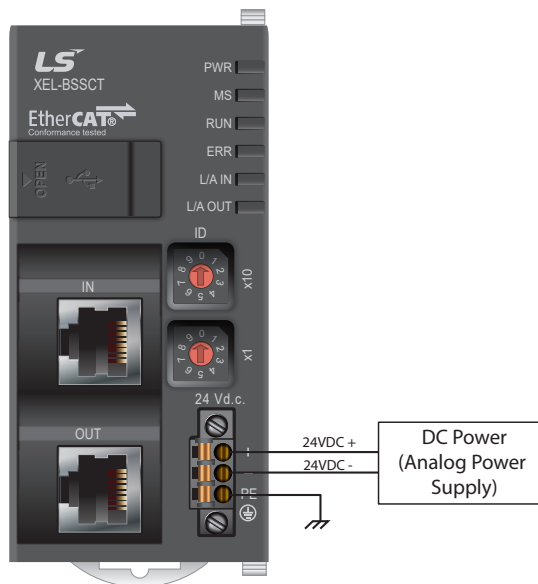
Figure A

Shows the Pin Out of Straight through Cables

Figure B

Shows the Pin Out of Crossover Cables

### Power Wiring



## XEL-BSSCT Bus Coupler, *continued*

### LED Functionality

Faceplate View	LED	Status	Meaning
	<b>PWR</b>	Red OFF	Power Off
		Red ON	Power On
	<b>MS</b>	Green ON	RUN mode
		Green OFF	STOP mode or operation unavailable error
		Red ON	Unrecoverable error has occurred
		Red 1s flicker	Recoverable or insignificant error has occurred
		Red 500ms flicker	Minor error has occurred
		Red 100ms flicker	Critical error has occurred
		<b>RUN</b>	Green ON
	Green blinking		PRE-OP status
	Green single flash		SAFE-OP status
	Green flicker		Initialization or BOOTSTRAP status
	Green OFF		INIT status
	<b>ERR</b>	Red OFF	No error
		Red blinking	General setting error or invalid H/W setting
		Red single flash	EtherCAT state cannot be changed to OP due to error
		Red double flash	Sync manager watchdog timeout
		Red flicker	Booting error
	<b>L/A IN</b>	Red ON	ESC failure / hardware failure
		Green OFF	No connection, no communication
		Green ON	Connected to master, no communication
		Green flicker	Connected to master, communicating
	<b>L/A OUT</b>	Green OFF	No connection, no communication
		Green ON	Connected to master, no communication
		Green flicker	Connected to master, communicating

### Device Switch Functionality

Faceplate View	Name	Setting	Function
	<b>ID</b>	01-99	Sets the EtherCAT slave address.
		00	EtherCAT master assigns the slave address.

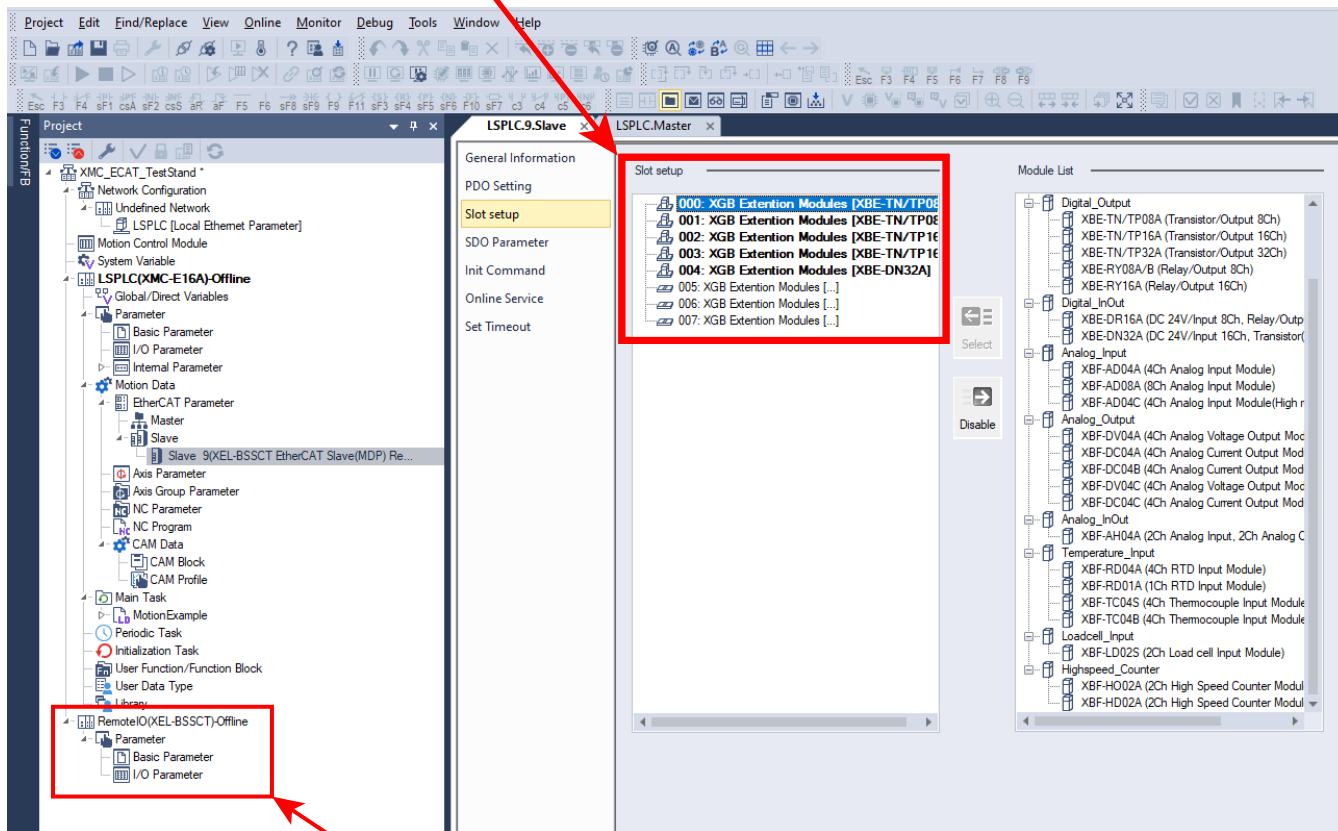


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## XEL-BSSCT Bus Coupler, *continued*

### Example XEL-BSSCT XG5000 Project

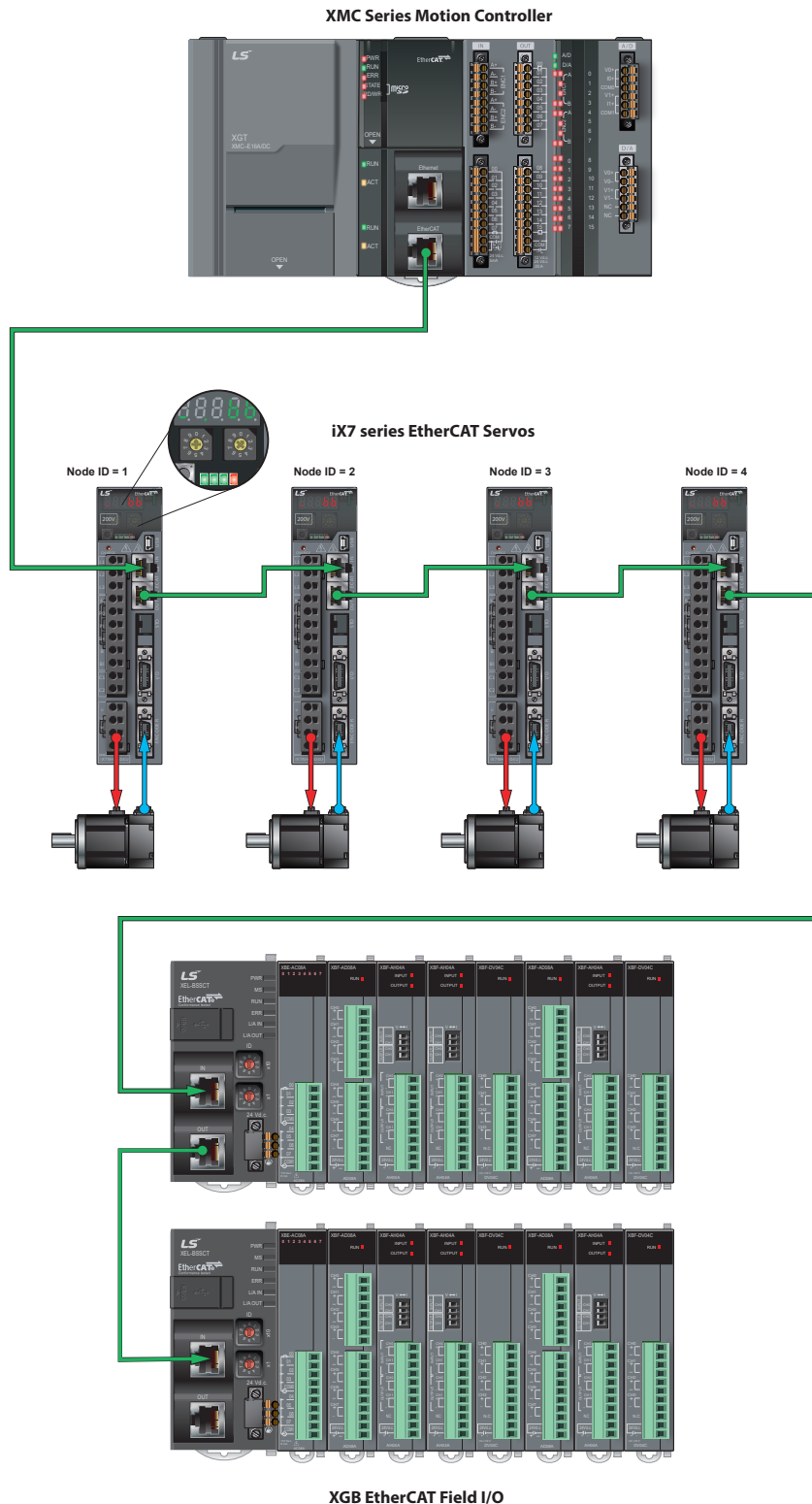
XEL-BSSCT I/O configuration configured for XMC to access module data



XEL-BSSCT setup can be stored in the same XG5000 project as XMC

## XEL-BSSCT Bus Coupler, *continued*

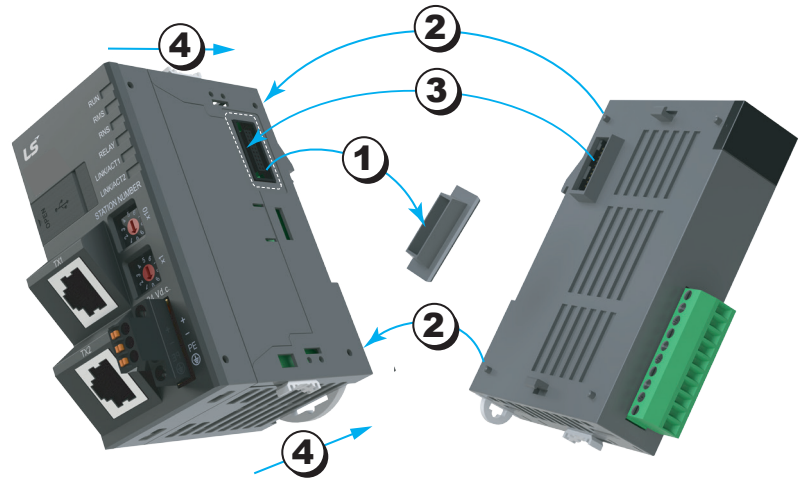
### Example Network Diagram for an LS Electric EtherCAT Motion System



## Bus Coupler Installation

### Module Installation

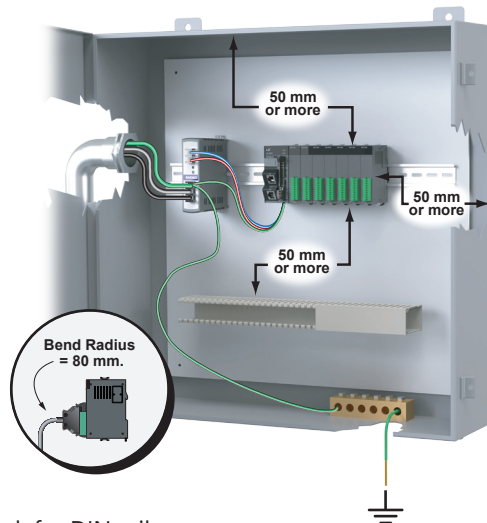
Attach each I/O module to the XEL-BSSCT or XEL-BSSRT bus coupler per the diagram to the right. Up to eight modules can be attached by hooking in to each expansion module in the same manner. Any 32-point I/O and counter input module will require a Smart Link cable and terminal block. Use the online Product Selector to help configure the PLC at [automationdirect.com/ls/config](http://automationdirect.com/ls/config).



1. Remove expansion port cover.
2. Align tabs with corresponding holes.
3. Seat the expansion port connector.
4. Secure modules with top and bottom sliding lock.

### Mounting the Bus Coupler

When mounting the completed XEL-BSSCT or XEL-BSSRT module to your structure, keep the distances shown in the diagram below to maintain proper ventilation and allow easy detachment and attachment.



#### Additional Clearance Distances:

- Wire duct on the side requires 5mm or more
- Panel wall on the side requires 20mm or more
- Another device on the side requires 50mm or more

#### DIN Rail Mounting

The XEL-BSSCT and XEL-BSSRT have a hook for DIN rail mounting (35mm). To mount to DIN rail:

- Pull the hook as shown below at the bottom of module and install it at the DIN rail.
- Push the hook to fix the module to the rail after installing.

