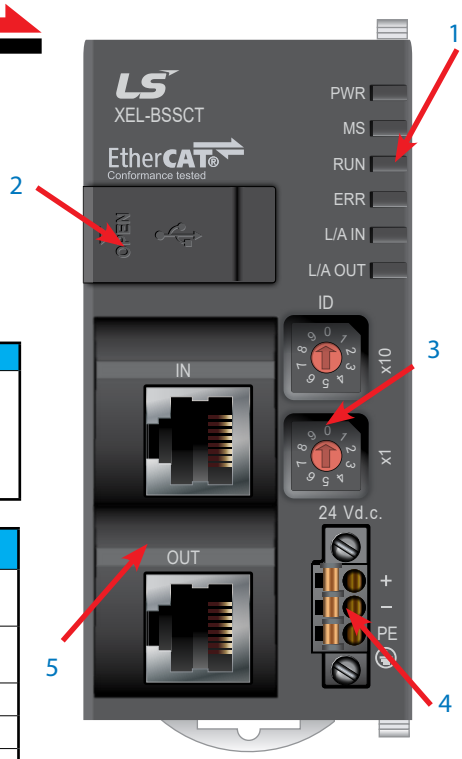
XEL-BSSCT Bus Coupler

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.

EtherCAT®

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
XEL-BSSCT	$219.00	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.	PDF

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
		Extension Module Mapping Area	I Area	2kB
			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
	Phsyical 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 Ouput: 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.**

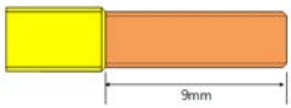
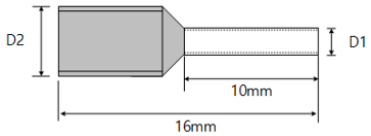
Location	Function
1	LED Display
2	Mini-B USB Connector
3	Slave address switch
4	24VDC input power
5	Ethernet connectors

XEL-BSSCT Bus Coupler, *continued*

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

XEL-BSSCT Bus Coupler, *continued*

DC Power Wiring

Wiring Specifications	*XEL-BSSCT*
Using Solid Wire	Wire specification: 24–16 AWG (0.2–1.5 mm^2) Strip: 9mm 
Using Stranded Wire	Sleeve type crimp terminal  D1 and D2 according to the wire standard are as follows. • 20 AWG: D1 (1mm), D2 (2.6 mm) • 18 AWG: D1 (1.2 mm), D2 (2.8 mm)

RJ45 Cable Wiring

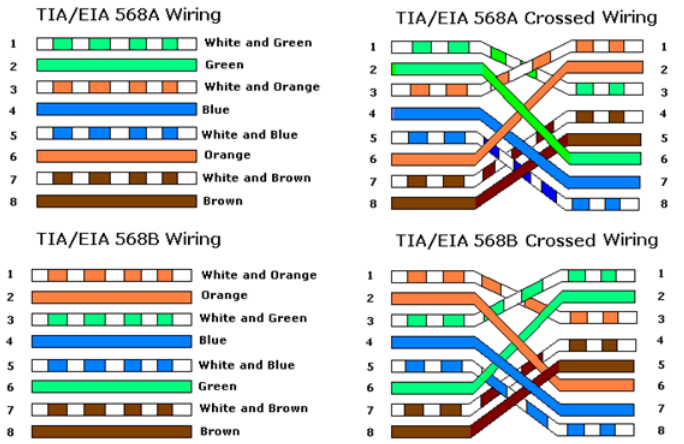


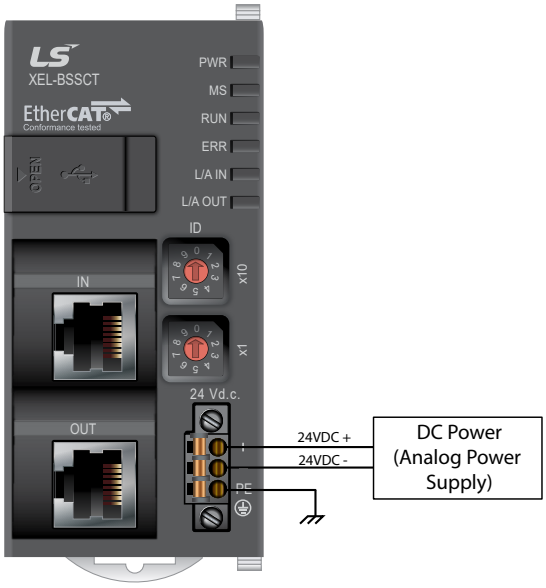
Figure A

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
	PWR	Red OFF	Power Off
		Red ON	Power On
	MS	Green ON	RUN mode
		Green OFF	STOP mode or operation unavailable error
		Red ON	Unrecoverable error has occured
		Red 1s flicker	Recoverable or insignificant error has occured
		Red 500ms flicker	Minor error has occured
		Red 100ms flicker	Critical error has occured
	RUN	Green ON	OP status
		Green blinking	PRE-OP status
		Green single flash	SAFE-OP status
		Green flicker	Initialization or BOOTSTRAP status
		Green OFF	INIT status
	ERR	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
		Red ON	ESC failure / hardware failure
	L/A IN	Green OFF	No connection, no communication
		Green ON	Connected to master, no communication
		Green flicker	Connected to master, communicating
	L/A OUT	Green OFF	No connection, no communication
		Green ON	Connected to master, no communication
		Green flicker	Connected to master, communicating

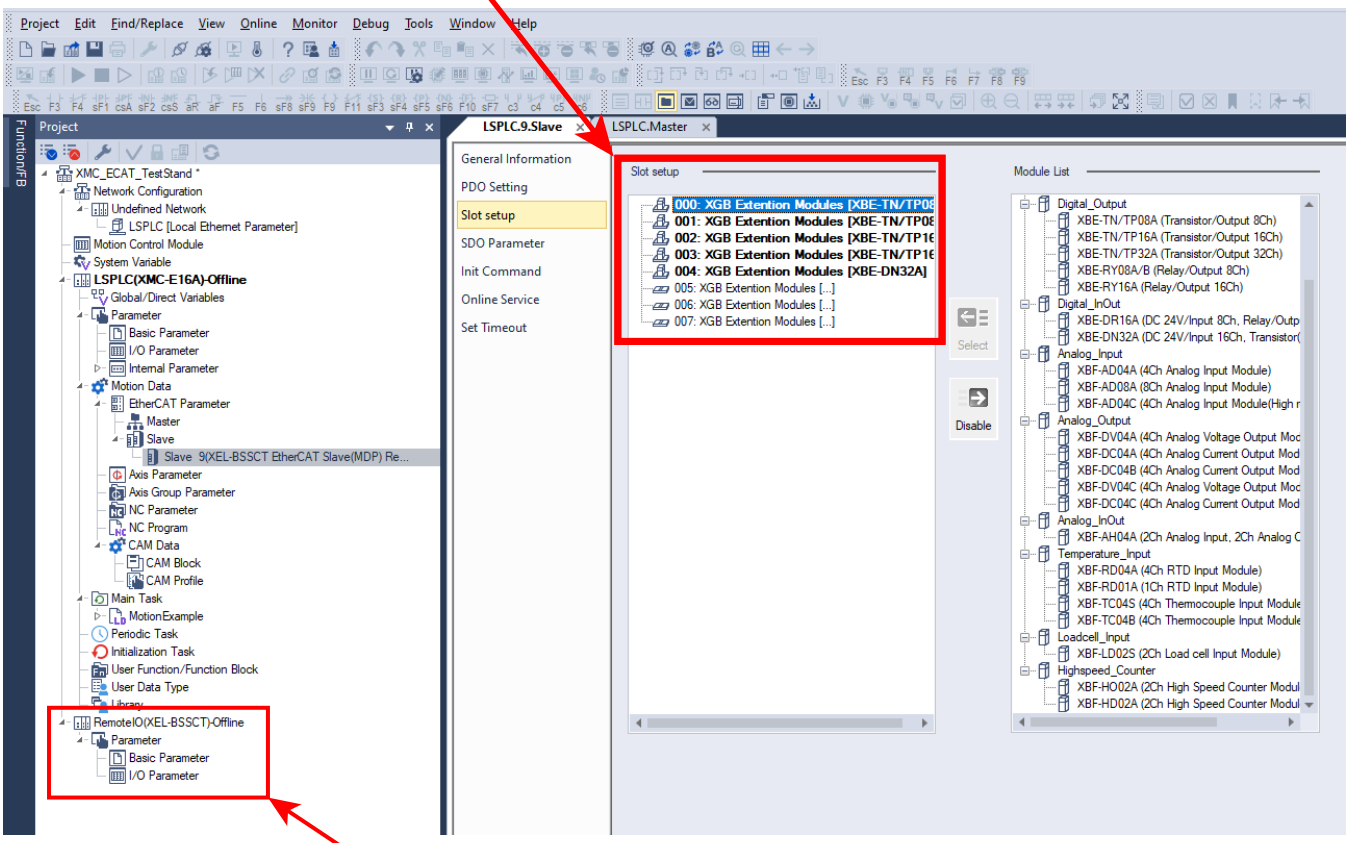
Device Switch Functionality

Faceplate View	Name	Setting	Function
	ID	01–99	Sets the EtherCAT slave address.
		00	EtherCAT master assigns the slave address.

XEL-BSSCT Bus Coupler, *continued*

Example XEL-BSSCT XG5000 Project

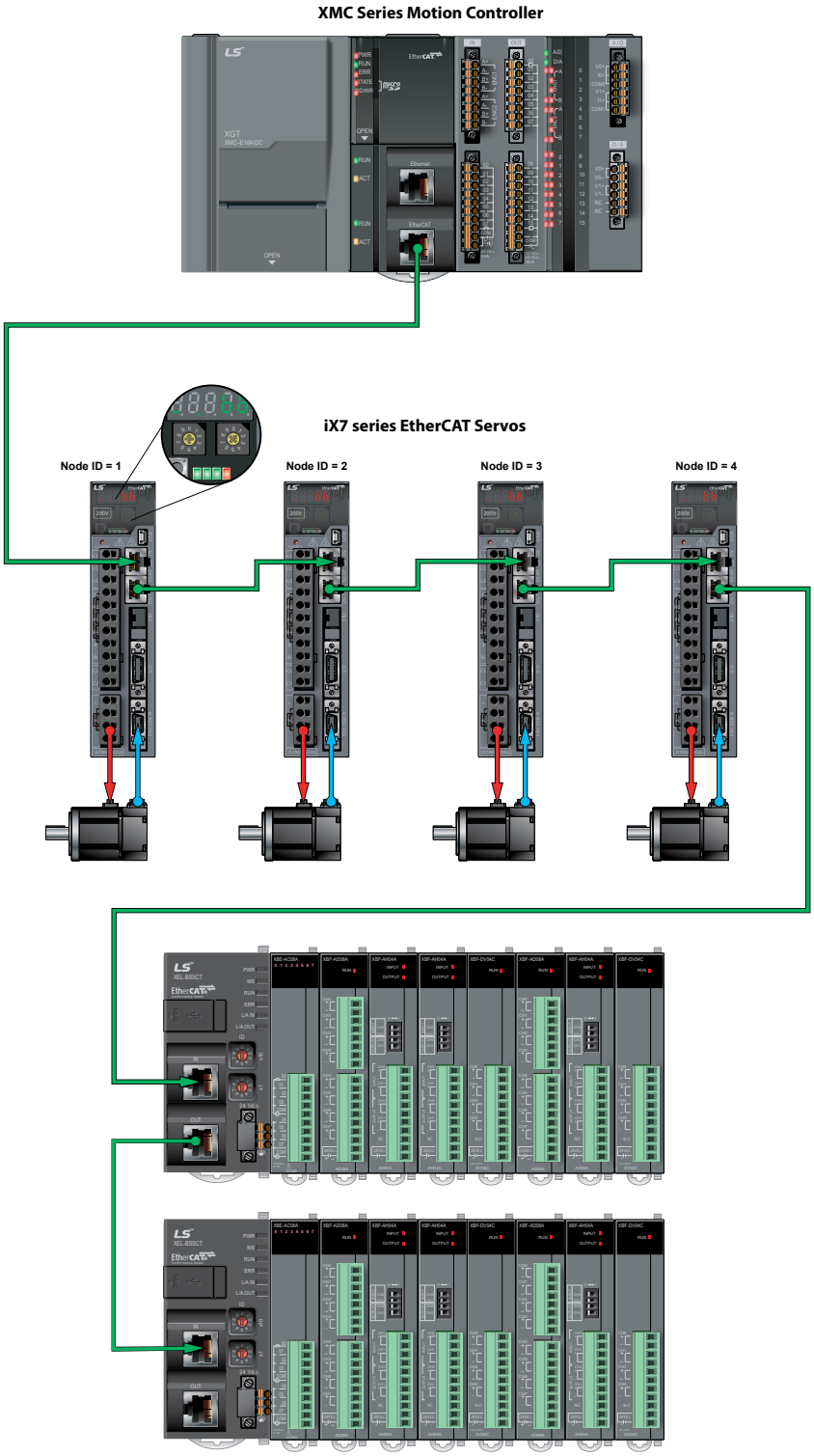
XEL-BSSCT I/O configuration configured for XMC to access module data



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

XEL-BSSCT Bus Coupler, *continued*

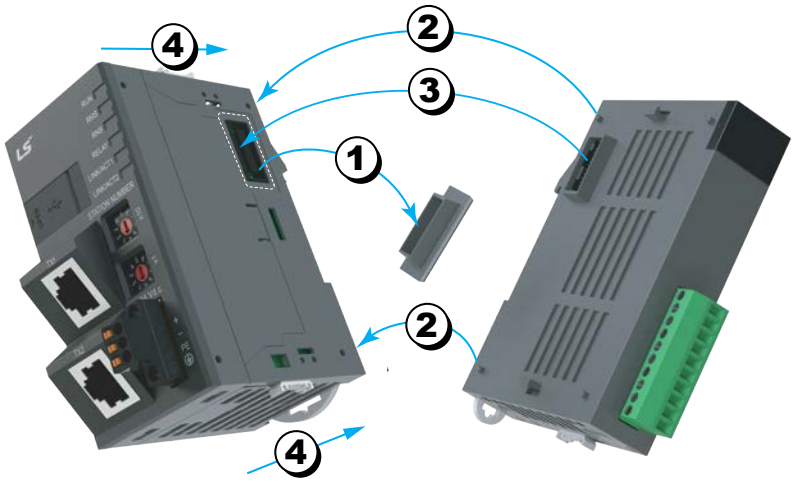
Example Network Diagram for an LS Electric EtherCAT Motion System



Bus Coupler Installation

Module Installation

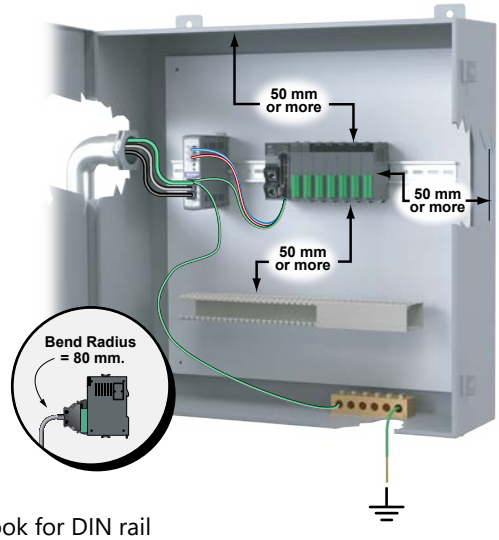
Attach each I/O module to the XEL-BSSCT or XEL-BSSRT bus coupler per the diagram to the right. Up to eight modules can be attached by hooking in to each expansion module in the same manner. Any 32-point I/O and counter input module will require a Smart Link cable and terminal block. Use the online Product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



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

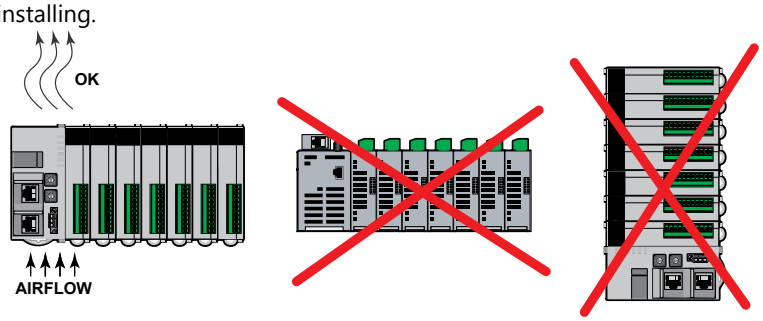
When mounting the completed XEL-BSSCT or XEL-BSSRT module to your structure, keep the distances shown in the diagram below to maintain proper ventilation and allow easy detachment and attachment.



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.