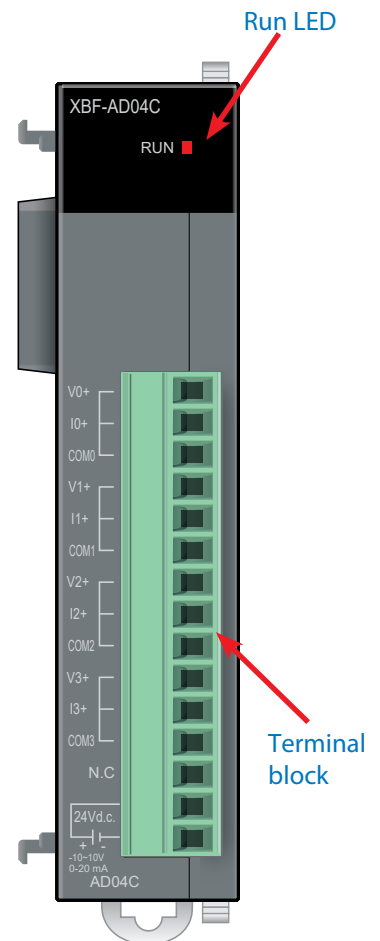


XBF-AD04C Analog Input Module

AD04C is an enhanced analog input module which provides higher resolution and upper/lower alarm tag for each channel.

Part Number	Price	Classification	Description	# of Channels	Drawing
XBF-AD04C	\$;05]5a:	Voltage/current Input	LS Electric XGB analog input module, 4-channel, current/voltage, 14-bit, input current signal range(s) of 0-20 mA, 4-20 mA, input voltage signal range(s) of 0-5 VDC, 1-5 VDC, 0-10 VDC, +/- 10 VDC, external 24 VDC required.	4	PDF

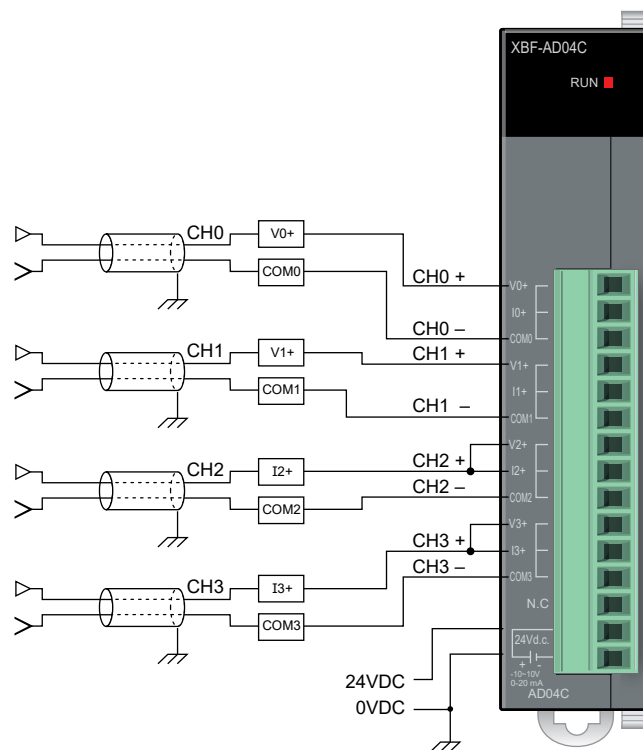
General Specifications		XBF-AD04C	
		Voltage	Current
Analog Input Range		1-5 VDC 0-5 VDC 0-10 VDC ±10 VDC (Input resistance: 1MΩ min.)	4-20 mA DC 0-20 mA DC (Input resistance: 250Ω)
Digital Output	Type	16 bit binary data (Data: 14Bit)	
	Unsigned Value	0-16,000	
	Signed Value	±8,000	
	Precise Value	1,000-5,000 (1-5 V) 0-5,000 (0-5 V) 0-10,000 (0-10 V) ±10,000 (±10V)	4,000-20,000 (4-20 mA) 0-20,000 (0-20 mA)
	Percentile Value	0-10,000	
Maximum Resolution		1/16,000	
		0.250 mV (1-5 V) 0.3125 mV (0-5 V) 0.625 mV (0-10 V) 1.250 mV (±10V)	1.0 μA (4-20 mA) 1.25 μA (0-20 mA)
Accuracy		±0.2% (when ambient temperature 25°C ± 5°C) ±0.3% (when ambient temperature outside range above)	
Maximum Conversion Speed		1ms/channel	
Absolute Maximum Input		±15VDC	±30mA DC
Additional Function	Filter	Digital filter (4-64,000 ms)	
	Average	Time average (4-16,000 ms)	
	Detection Alarm	Disconnection (1-5VDC, 4-20 mA DC)	
	Hold Last Value	When input signal exceeds the effective range, holds the last effective value	
	Alarm Function	When input signal exceeds the effective range, relevant flag turns on.	
Insulation Method		Photocoupler insulation between input terminal and PLC power (no insulation between channels)	
Connection Terminal		15 point terminal block	
I/O Points Occupied		Fixed type assignment: 512	
Current Consumption	Internal (5VDC)	105mA	
	External (24VDC)	100mA	
Weight		72g	
Power Supply		20.4-28.8 VDC	



XBF-AD04C Analog Input Module Wiring

When connecting cable to your XBF-AD04C:

- Keep the AC power line away from the analog input module's external input signal line to prevent surge or inductive noise.
- Use cable rated to meet your application's ambient temperature and current needs. AWG22 (0.3mm²) or greater recommended.
- Keep cable clear of high heat and oil.
- Check polarity when wiring the terminal.
- Using high-voltage line or power line may cause abnormal operations or defects due to inductive hindrance.
- Make sure the desired channel is enabled.



Notes:

- Use 2-core twisted shield cable
- Use AWG22 (0.3mm²) or greater cable
- Current input resistance is 250Ω
- Voltage input resistance is 1MΩ
- Terminal screwdriver: slotted 2.5 mm

XBF-AD04C Analog Input Module Configuration

Follow the Quick start video to learn how to Register and Configure any Analog Module:

Analog Module Setup

Direct Variables

All XGB series analog modules are assigned 32 words in the “U” memory area based on the slot number assignment. (%UW0.z.0 - %UW0.z.31, z = slot number). The actual memory address used within the 32 word block are specific to each module. See the table below for Direct Variable assignments.

For Direct Variable nomenclature explanation, see [Direct Variable User Programming Memory](#).

Symbolic Variables

Symbolic variables for the analog module can be automatically created in XG5000 software by using the top MENU bar: Edit > Register Module Variable Comments.

Symbolic variables and direct variables for XBF-AD04C are as follows (z refers to module slot number (2 to 8)).

Type	Scope	Variable (Symbolic)	Address (Direct Variable Alias)	Data Type	Comment
Tag	GlobalVariable	_0z_CH0_ACT	%UX0.z.16	BOOL	Analog Input Module: CH0 Activation Status
Tag	GlobalVariable	_0z_CH0_DATA	%UW0.z.2	WORD	Analog Input Module: CH0 Output
Tag	GlobalVariable	_0z_CH0_ERR	%UX0.z.24	BOOL	Analog Input Module: CH0 Error
Tag	GlobalVariable	_0z_CH0_HOOR	%UX0.z.176	BOOL	Analog Input Module: CH0 Upper Alarm
Tag	GlobalVariable	_0z_CH0_IDD	%UX0.z.160	BOOL	Analog Input Module: CH0 Disconnection Flag
Tag	GlobalVariable	_0z_CH0_LOOR	%UX0.z.192	BOOL	Analog Input Module: CH0 Lower Alarm
Tag	GlobalVariable	_0z_CH1_ACT	%UX0.z.17	BOOL	Analog Input Module: CH1 Activation Status
Tag	GlobalVariable	_0z_CH1_DATA	%UW0.z.3	WORD	Analog Input Module: CH1 Output
Tag	GlobalVariable	_0z_CH1_ERR	%UX0.z.25	BOOL	Analog Input Module: CH1 Error
Tag	GlobalVariable	_0z_CH1_HOOR	%UX0.z.177	BOOL	Analog Input Module: CH1 Upper Alarm
Tag	GlobalVariable	_0z_CH1_IDD	%UX0.z.161	BOOL	Analog Input Module: CH1 Disconnection Flag
Tag	GlobalVariable	_0z_CH1_LOOR	%UX0.z.193	BOOL	Analog Input Module: CH1 Lower Alarm
Tag	GlobalVariable	_0z_CH2_ACT	%UX0.z.18	BOOL	Analog Input Module: CH2 Activation Status
Tag	GlobalVariable	_0z_CH2_DATA	%UW0.z.4	WORD	Analog Input Module: CH2 Output
Tag	GlobalVariable	_0z_CH2_ERR	%UX0.z.26	BOOL	Analog Input Module: CH2 Error
Tag	GlobalVariable	_0z_CH2_HOOR	%UX0.z.178	BOOL	Analog Input Module: CH2 Upper Alarm
Tag	GlobalVariable	_0z_CH2_IDD	%UX0.z.162	BOOL	Analog Input Module: CH2 Disconnection Flag
Tag	GlobalVariable	_0z_CH2_LOOR	%UX0.z.194	BOOL	Analog Input Module: CH2 Lower Alarm
Tag	GlobalVariable	_0z_CH3_ACT	%UX0.z.19	BOOL	Analog Input Module: CH3 Activation Status
Tag	GlobalVariable	_0z_CH3_DATA	%UW0.z.5	WORD	Analog Input Module: CH3 Output
Tag	GlobalVariable	_0z_CH3_ERR	%UX0.z.27	BOOL	Analog Input Module: CH3 Error
Tag	GlobalVariable	_0z_CH3_HOOR	%UX0.z.179	BOOL	Analog Input Module: CH3 Upper Alarm
Tag	GlobalVariable	_0z_CH3_IDD	%UX0.z.163	BOOL	Analog Input Module: CH3 Disconnection Flag
Tag	GlobalVariable	_0z_CH3_LOOR	%UX0.z.195	BOOL	Analog Input Module: CH3 Lower Alarm
Tag	GlobalVariable	_0z_CH_ACT_ARY	%UX0.z.16	ARRAY[0..3] OF BOOL	Analog Input Module: Each CH Active
Tag	GlobalVariable	_0z_CH_DATA_ARY	%UW0.z.2	ARRAY[0..3] OF WORD	Analog Input Module: Each CH Output
Tag	GlobalVariable	_0z_CH_ERR_ARY	%UX0.z.24	ARRAY[0..3] OF BOOL	Analog Input Module: Each CH Error
Tag	GlobalVariable	_0z_CH_HOOR_ARY	%UX0.z.176	ARRAY[0..3] OF BOOL	Analog Input Module: Each CH Upper Alarm
Tag	GlobalVariable	_0z_CH_IDD_ARY	%UX0.z.160	ARRAY[0..3] OF BOOL	Analog Input Module: Each CH Disconnection Flag
Tag	GlobalVariable	_0z_CH_LOOR_ARY	%UX0.z.192	ARRAY[0..3] OF BOOL	Analog Input Module: Each CH Lower Alarm
Tag	GlobalVariable	_0z_ERR	%UX0.z.0	BOOL	Analog Input Module: Error Flag
Tag	GlobalVariable	_0z_ERR_CLR	%UX0.z.208	BOOL	Analog Input Module: Error Clear Request
Tag	GlobalVariable	_0z_RDY	%UX0.z.15	BOOL	Analog Input Module: Ready Flag

Environmental Specifications, all XGB Series Modules

Item				Specification	Reference
Ambient Operating Temperature				0–55°C (32–131°F)	–
Storage Temperature				-25–70°C (-13–158°F)	
Ambient Operating Humidity				5–95% relative humidity (non-condensing)	
Storage Humidity				5–95% relative humidity (non-condensing)	
Vibration ¹	Occasional Vibration	Frequency	5 ≤ f < 8.4 Hz	3.5 mm pulse width	IEC61131-3-2
			8.4 ≤ f < 150Hz	9.8 m/s ² (1G)	
	Continuous Vibration		5 ≤ f < 8.4 Hz	1.75 mm pulse width	
			8.4 ≤ f < 150Hz	4.9 m/s ² (0.5G)	
Shocks		Peak Acceleration	147 m/s ² (15G)		
		Duration	11ms		
		Pulse Wave Type	Half-sine (3 times each direction per each axis)		
Noise Resistance	Square Wave Impulse Noise		1,500VAC 900VDC	LS Electric standard	
	Electrostatic Discharge		Voltage: 4kV (contact discharge)	IEC61131-3-2 IEC61000-4-2	
	Radiated Electromagnetic Field Noise		80–1,000 MHz, 10 V/m	IEC61131-3-2 IEC61000-4-3	
	Fast Transient / Burst Noise	Classification	Voltage	IEC61131-3-2 IEC61000-4-4	
		Power Supply	2kV		
		Digital/Analog Input/Output Communication Interface	1kV		
Environment				Free from corrosive gases and excessive dust	–
Attitude				Less than 2,000m	
Pollution Degree				Less than 2 (see note 2)	
Cooling Method				Air-cooling	

1 - Vibration of 10 times each direction (X, Y, and Z)

2 - Normally only nonconductive pollution occurs. Temporary conductivity caused by condensation is to be expected.



XGB Series PLC Family

Available I/O Modules

XGB Series I/O Modules									
Part Number	Price	Description	Digital Input	Digital Output	Analog Input	Analog Output	Motion	Bus Coupler Compatible	Smart Link Required
Digital									
<u>XBE-DC08A</u>	\$61ey:	LS Electric XGB discrete input module, 8-point, 24 VDC, sinking/sourcing, 1 common(s), 8 point(s) per common. Removable terminal block included.	✓					✓	
<u>XBE-DC16A</u>	\$:;5]4]:	LS Electric XGB discrete input module, 16-point, 24 VDC, sinking/sourcing, 1 common(s), 16 point(s) per common. Removable terminal blocks included.	✓					✓	
<u>XBE-DC16B</u>	\$:5]4?:	LS Electric XGB discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 common(s), 16 point(s) per common. Removable terminal blocks included.	✓					✓	
<u>XBE-DC32A</u>	\$:;05]4.:	LS Electric XGB discrete input module, 32-point, 24 VDC, sinking/sourcing, 1 common(s), 32 point(s) per common. Requires XTB-40H terminal block and C40HH-xxSB-XBI cable.	✓					✓	✓
<u>XBE-AC08A</u>	\$:5]50:	LS Electric XGB discrete input module, 8-point, 120 VAC, 2 common(s), 4 point(s) per common. Removable terminal blocks included.	✓					✓	
<u>XBE-RY08A</u>	\$61eu:	LS Electric XGB relay output module, 8-point, 125 VDC/250 VAC, (8) Form A, 1 common(s), 8 point(s) per common, 2A/point, 5A/common. Removable terminal block included.		✓				✓	
<u>XBE-RY08B</u>	\$:05]51:	LS Electric XGB relay output module, 8-point, 125 VDC/250 VAC, (8) Form A, 8 isolated common(s), 1 point(s) per common, 2A/point. Removable terminal blocks included.		✓				✓	
<u>XBE-RY16A</u>	\$:05]52:	LS Electric XGB relay output module, 16-point, 125 VDC/250 VAC, (16) Form A, 2 isolated common(s), 8 point(s) per common, 2A/point, 5A/common. Removable terminal blocks included.		✓				✓	
<u>XBE-TN08A</u>	\$61ev:	LS Electric XGB discrete output module, 8-point, 12-24 VDC, sinking, 1 common(s), 8 point(s) per common, 0.5A/point, 2A/common. Removable terminal blocks included.		✓				✓	
<u>XBE-TN16A</u>	\$:5]54:	LS Electric XGB discrete output module, 16-point, 12-24 VDC, sinking, 1 common(s), 16 point(s) per common, 0.5A/point, 2A/common. Removable terminal blocks included.		✓				✓	
<u>XBE-TN32A</u>	\$:05]55:	LS Electric XGB discrete output module, 32-point, 12-24 VDC, sinking, 1 common(s), 32 point(s) per common, 0.2A/point, 2A/common. Requires XTB-40H terminal block and C40HH-xxSB-XBI cable.		✓				✓	✓
<u>XBE-TP08A</u>	\$61ex:	LS Electric XGB discrete output module, 8-point, 12-24 VDC, sourcing, 1 common(s), 8 point(s) per common, 0.5A/point, 2A/common. Removable terminal blocks included.		✓				✓	
<u>XBE-TP16A</u>	\$:5]56:	LS Electric XGB discrete output module, 16-point, 12-24 VDC, sourcing, 1 common(s), 16 point(s) per common, 0.5A/point, 2A/common. Removable terminal blocks included.		✓				✓	
<u>XBE-TP32A</u>	\$:05]57:	LS Electric XGB discrete output module, 32-point, 12-24 VDC, sourcing, 1 common(s), 32 point(s) per common, 0.2A/point, 2A/common. Requires XTB-40H terminal block and C40HH-xxSB-XBI cable.		✓				✓	✓
<u>XBE-DN32A</u>	\$:05]53:	LS Electric XGB discrete combo module, Input: 16-point, 24 VDC, sinking/sourcing, Output: 16-point, 12-24 VDC, sinking, 0.2A/point, 2A/common. Requires XTB-40H terminal block and C40HH-xxSB-XBI cable.	✓	✓				✓	✓
<u>XBE-DR16A</u>	\$061e#:	LS Electric XGB discrete combo module, Input: 8-point, 24 VDC, sinking/sourcing, Output: 8-point, 125 VDC/250 VAC, relay, (8) Form A (SPST) relays, 2A/point, 5A/common. Removable terminal blocks included.	✓	✓				✓	
Motion									
<u>XBF-PN04B</u>	\$:;05]5:	LS Electric XGB 4-axis positioning module, EtherCAT Master, 1 high-speed input point(s), sinking/line driver (differential), 1-channel, differential and single-ended encoder input(s), (1) Ethernet 100Base-TX (RJ45) port(s). For use with LS Electric XEM-DxxxHx PLCs.					✓		
<u>XBF-PN08B</u>	\$:;05]6:	LS Electric XGB 8-axis positioning module, EtherCAT Master, 1 high-speed input point(s), sinking/line driver (differential), 1-channel, differential and single-ended encoder input(s), (1) Ethernet 100Base-TX (RJ45) port(s). For use with LS Electric XEM-DxxxHx PLCs.					✓		
<u>XBF-HO02A</u>	\$:05]5e:	LS Electric XGB counter input module, 200 kHz maximum switching frequency, 2 high-speed input point(s), 5-24 VDC, sinking, 2-channel, single-ended encoder input(s), 2 high-speed output point(s), 5-24 VDC, sinking, external 24 VDC required.					✓	✓	✓
<u>XBF-HD02A</u>	\$:;05]5f:	LS Electric XGB counter input module, 500 kHz maximum switching frequency, 2 high-speed input point(s), 5-24 VDC, sinking, 2-channel, differential encoder input(s), 2 high-speed output point(s), 5-24 VDC, sinking, external 24 VDC required.					✓	✓	✓

Note: See "Smart Link I/O System" on page tLSE-131 for the XTB-40H terminal block and cables. See "XGB PLC Replacement Terminals" on page tLSE-149 for replacement removable terminal blocks.

Continued on next page