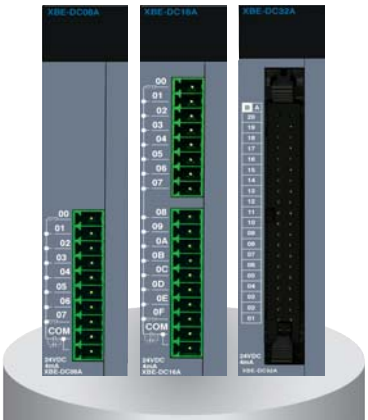
Specification

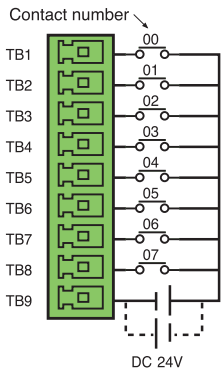


XBE-DC08A
XBE-DC16A
XBE-DC32A

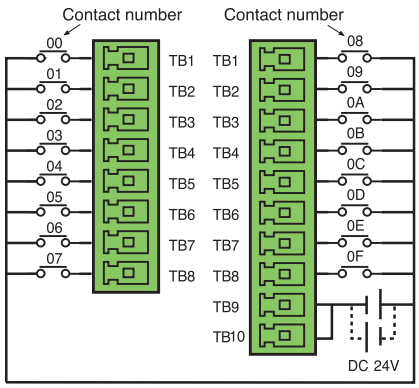
Specification \ Model		XBE-DC08A	XBE-DC16A	XBE-DC32A
Input point		8 points	16 points	32 points
Rated input voltage/current		DC 24V / 4mA		
Operation voltage range		DC 20.4 ~ 28.8V (Ripple rate < 5%)		
Input resistance		5.6kΩ		
Response time	Off → On	1 / 3 / 5 / 10 / 20 / 70 / 100ms (setting by CPU parameter) Initial value: 3ms		
	On → Off			
Insulation pressure		AC 560Vrms / 3 Cycle (altitude 2000m)		
Insulation resistance		10MΩ or more by megger		
COMMON method		8 points / COM	16 points / COM	32 points / COM
Internal current consumption		30mA	40mA	50mA

Wiring
(XBE-DC08A/DC16A)

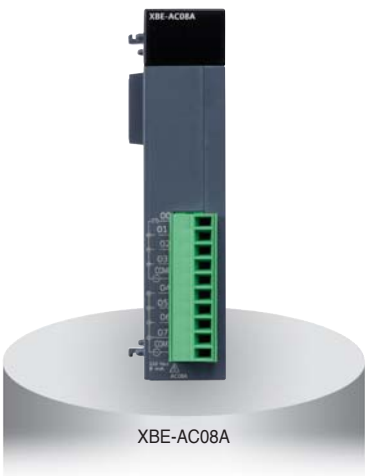
8-point DC Input — XBE-DC08A



16-point DC Input — XBE-DC16A



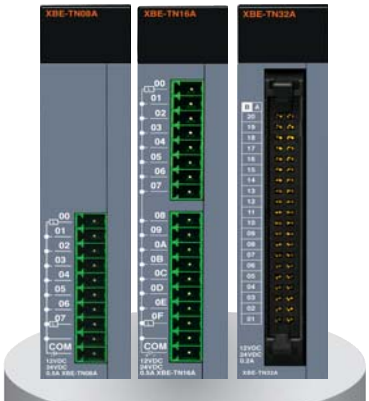
Specification



XBE-AC08A

Specification \ Model		XBE-AC08A
Input point		8 point
Insulation method		Photo coupler insulation
Rated input voltage		AC100-120V(+10/-15%) 50/60ß'(±3Hz) (distortion rate < 5%)
Rated input current		Max. 12mA / point
Inrush current		Max. 200mA 1ms (AC132V)
On Voltage/Current		AC80V or higher / 5 mA or higher (50Hz, 60Hz)
Off Voltage/Current		AC30V or lower / 1 mA or lower (50Hz, 60Hz)
Input resistance		About 12kΩ(60Hz), About 15kΩ(50Hz)
Response time	Off → On	20 ms or less (AC100V 50Hz, 60Hz)
	On → Off	25 ms or less (AC100V 50Hz, 60Hz)
Insulation pressure		AC3000Vrms / 3Cycle (altitude 2000m)
Insulation resistance		10MΩ or more by Megohmmeter
Common method		4 point / COM
Weight		70 g

Specification



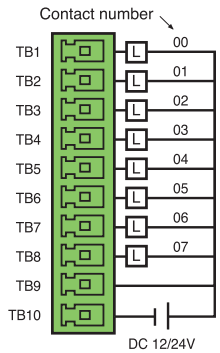
XBE-TN08A
XBE-TN16A
XBE-TN32A

Specification \ Model		XBE-TN08A	XBE-TP08A	XBE-TN16A	XBE-TP16A	XBE-TN32A	XBE-TP32A
Type		Sink	Source	Sink	Source	Sink	Source
Output point		8 point		16 point		32 point	
Rated load voltage		DC 12 / 24V					
Load voltage range		DC 10.2 ~ 26.4 V					
Max. load current		0.2A / 1point		0.2A / 1point, 2A / COM			
Off leakage current		0.1mA or less					
Max. voltage drop (On)		DC 0.4V					
Response time	Off → On	1mA or less					
	On → Off	1mA or less (Rated load, resistive load)					
Common method		8 points / COM		16 points / COM		32 points / COM	
Internal current consumption		40mA		60mA		120mA	
External power supply	Voltage	DC 12 / 24V ± 10% (Ripple voltage ≤ 4 Vp-p)					
	Current	10mA or less (DC 24V connection)				20mA or less (DC 24V connection)	

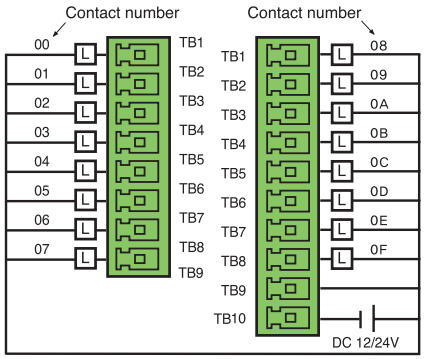
Item			XBF-AD04C	
Analog range		Item	Voltage	Current
		Range	DC 1 ~ 5V, DC 0 ~ 5V, DC 0 ~ 10V, DC -10 ~ 10V (Input resistance 1MΩ min)	DC 4 ~ 20mA DC 0 ~ 20mA (Input resistance 250MΩ)
Digital Output		Type	16bit binary data (Data : 14bit)	
	Range	Unsigned value	0 ~ 16000	
		Signed value	-8000 ~ 8000	
		Precise value	1000 ~ 5000 (1 ~ 5V), 0 ~ 5000 (0 ~ 5V), 0 ~ 10000 (0 ~ 10V)	4000 ~ 20000 (4 ~ 20mA), 0 ~ 20000 (0 ~ 20mA)
		Percentile value	0 ~ 10000	
Resolution			1/16000	
			0.250mV (1 ~ 5V) 0.3125mV(0 ~ 5V) 0.625mV (0 ~ 10V) 1.250mV(±10V)	1.0μA (4 ~ 20mA) 1.25μA (0 ~ 20mA)
Max. conversion speed			1ms/channel	
Max. absolute input			DC ±15V	DC ±3mA
Analog Input Channels			4 channel/module	
Insulation method			Photo-coupler insulation between input terminal and PLC power (no insulation between channels)	
Connection terminal			15-point terminal block	
Occupied I/O points			Fixed type : 64points	
Current consumption	DC 5V		110mA	
	DC 24V		100mA	

Wiring
(XBE-TN08A/TN16A)

8-point Sink Output — XBE-TN08A

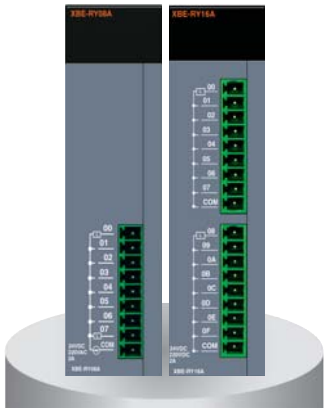


16-point Sink Output — XBE-TN16A



APPLICSTION

Specification

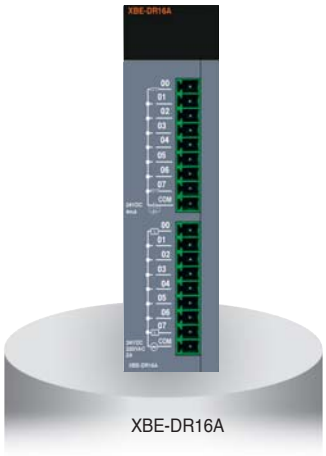


XBE-RY08A
XBE-RY16A

Specification \ Model		XBE-RY08A	XBE-RY16A
Output point		8 points	16 points
Insulation method		Relay insulation	
Rated input voltage/Current		DC 24V 2A (resisitive load)/AC 220V 2A (COSΨ = 1), 5A /COM	
Min. load voltage/Current		DC 5V 1mA	
Max. load voltage		AC 250V, DC 125V	
Off leakage current		0.1mA (AC 220V, 60Hz)	
Max. on/Off frequency		3,600 times / hr	
Surge absorber		None	
Service life	Mechanical	20million times or more	
	Electrical	Rated load voltage/Current 100,000 times or more	
		AC 200V/1.5A, AC 240V/1A (COSΨ = 0.7) 100,000 times or more	
		AC 200V/1A, AC 240V/0.5 (COSΨ = 0.35) 100,000 tiems or more	
		DC 24V/1A, DC 100V/0.1A (L / R = 7ms) 100,000 times or more	
Response time	Off → On	10ms or less	
	On → Off	12ms or less	
COMMON method		8 points / 1COM	
Internal current consumption		230mA	420mA
Operation indicator		Output On, LED On	
External connection method		9-pin terminal block connector	9-pin terminal block connector × 2

Item			XBF-DV04C	XBF-DC04C
Analog range		Item	Voltage	Current
		Range	DC 1 ~ 5V, DC 0 ~ 5V, DC 0 ~ 10V, DC -10 ~ 10V (Input resistance 1kΩ or more)	DC 4 ~ 20mA DC 0 ~ 20mA (Input resistance 600MΩ or less)
Digital Output		Type	16bit binary data (Data : 14bit)	
	Range	Unsigned value	0 ~ 16000	
		Signed value	-8000 ~ 8000	
		Precise value	1000 ~ 5000 (1 ~ 5V), 0 ~ 5000 (0 ~ 5V), 0 ~ 10000 (0 ~ 10V)	4000 ~ 20000 (4 ~ 20mA), 0 ~ 20000 (0 ~ 20mA)
		Percentile value	0 ~ 10000	
Resolution			1/16000	
			0.250mV (1 ~ 5V) 0.3125mV (0 ~ 5V) 0.625m V(0 ~ 10V) 1.250mV (±10V)	1.0μA (4 ~ 20mA) 1.25μA (0 ~ 20mA)
Max. conversion speed			1ms/channel	
Analog Input Channels			4 channel/module	
Insulation method			Photo-coupler insulation between output terminal and PLC power (no insulation between channels)	
Connection terminal			11-point terminal block	
Occupied I/O points			Fixed type : 64points	
Current consumption		DC 5V	75mA	
		DC 24V	170mA	

DC Input specification


XBE-DR16A

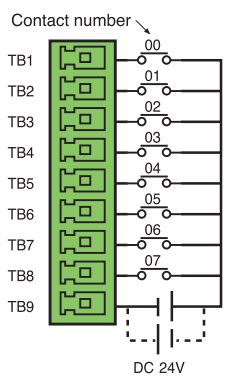
Specification \ Model		DC Input (XBE-DR16A)
Input point		8 points
Insulation method		Photocoupler
Rated input voltage		DC 24V
Rated input current		4mA
Operation voltage range		DC 20.4 ~ 28.8V (Ripple rate < 5%)
On voltage/On current		DC 19V or more/3mA or more
Off voltage/Off current		DC 6V or less/1mA or less
Input resistance		5.6kΩ
Response time	Off → On	1/3/5/10/20/70/100ms (setting by CPU parameter) init value: 3ms
	On → Off	
COMMON method		8 points/COM
Weight		81g

Relay output specification

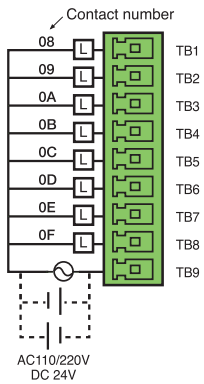
Specification \ Model		Relay Output (XBE-DR16A)
Output point		8 points
Insulation method		Relay insulation
Rated input voltage/Current		DC 24V 2A (resisitive load)/AC 220V 2A (COSΨ = 1), 5A /COM
Min. load voltage/Current		DC 5V 1mA
Max. load volfage		AC 250V, DC 125V
Off leakage current		0.1mA (AC 220V, 60Hz)
Max. on/Off frequency		3,600 times/hr
Surge absorber		None
Service life	Mechanlcal	20million times or more
	Electrical	Rated load voltage/Current 100,000 times or more
		AC 200V/1.5A, AC 240V/1A (COSΨ = 0.7) 100,000 times or more
		AC 200V/1A, AC 240V/0.5 (COSΨ = 0.35) 100,000 tiems or more
		DC 24V/1A, DC 100V/0.1A (L / R = 7ms) 100,000 times or more
Response time	Off → On	10ms or less
	On → Off	12ms or less
COMMON method		8 points/1COM
Internal current consumption		250mA
Operation indicator		Output On, LED On
External connection method		9-pin terminal block connector

Wiring
(XBE-DR16A)

8-point DC Input



8-point Relay Output



APPLICSTION

DC Input specification

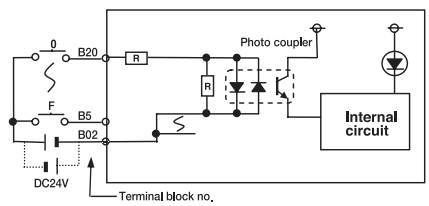
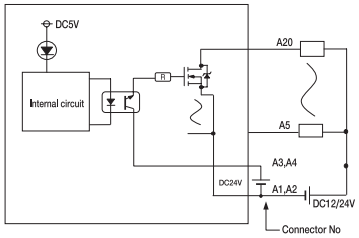
XBE-DN32A

Specification \ Model		DC input module XBE-DN32A
Input point		16 point
Insulation method		Photo coupler insulation
Rated input voltage		DC24V
Rated input current		About 4mA
Input Derating		DC20.4~28.8V (ripple rate < 5%)
Operation voltage range		Refer to Derating diagram
On voltage / On current		DC 19V or higher / 3 mA or higher
Off voltage / Off current		DC 6V or less / 1mA or less
Input resistance		About 5.6㏀
Response time	Off → On	1/3/5/10/20/70/100㎳ (set by CPU parameter) Default:3㎳
	On → Off	
Insulation pressure		AC 560Vrms / 3 Cycle (altitude 2000m)
Insulation resistance		10㏁ or more by Megohmmeter
Common method		16 point / COM
Proper cable size		0.3㎟
Current consumption		60㎃ (When all inputs and outputs are on)
Operation indicator		Input On, LED On
External connection method		40 pin connector
Weight		60g

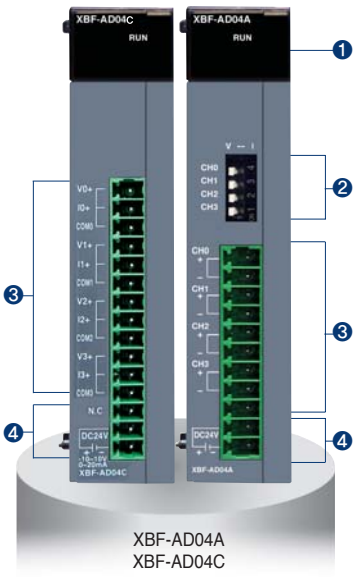
Transistor specification

Specification \ Model		Main unit XBE-DN32A
Output point		16 point
Insulation method		Photo coupler insulation
Rated voltage		DC12/24V
Rated current		About 4mA
Operation voltage range		DC10.2~26.4V
Max. load voltage		0.2A / 1 point, 2A / 1COM
Off leakage current		0.1mA or less
Max. load voltage		0.7A / 10ms or less
Max. voltage drop (On)		DC 0.4V or less
Surge absorber		TVS Diode
Response time	Off → On	1㎳ or less
	On → Off	1㎳ or less (Rated load, resistive load)
Common method		32 point / COM
Proper cable size		0.3㎟
Current consumption		60mA (when all point On)
External power	Voltage	DC12/24V 10% (ripple voltage 4 Vp-p or less)
	Current	20mA or less (connecting DC24V)
Operation indicator		LED On when output On
External connection method		40 pin terminal block connector
Weight		60g

Wiring
(XBE-DN32A)

16-points DC Input	16-points Transistor Output
	

Specification



XBF-AD04A
XBF-AD04C

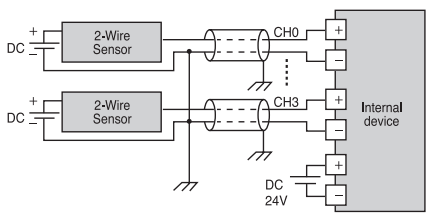
Item			XBF-AD04A		XBF-AD04C		XBF-AD08A	
Analog range	Item		Voltage	Current	Voltage	Current	Voltage	Current
	Range		DC 0~10V (input resistance : 1MΩ min.)	DC 4~20mA, DC 0~20mA (input resistance: 250Ω)	DC 1 ~ 5V DC 0 ~ 5V DC 0 ~ 10V DC -10 ~ 10V (Input resistance : 1MΩ min)	DC 4 ~ 20mA DC 0 ~ 20mA (Input resistance : 250MΩ)	DC 1~5V DC 0~5V DC 0~10V (Input resistance : 250MΩ)	DC 4~20mA, DC 0~20mA (input resistance: 250Ω)
Digital output	Type		12bit binary data		16bit binary data (Data : 14bit)		12bit binary data	
	Range	Unsigned value	0~4000		0 ~ 16000		0~4000	
		Signed value	-2000~2000		-8000~8000		-2000~2000	
		Precise value	0~1000	4000~2000 / 0~2000	100~5000 (1~5V) 0~5000 (0~5V) 0~10000 (0~5V) -10000~10000 (±10V)	4000~20000 (4~20mA) 0~20000 (0~20mA)	100~500 (DC 1~5V) 0~500 (DC 0~5V) 0~1000 (DC 0~10V)	4000~2000 (DC 4~20mA) 0~2000 (DC 0~20mA)
		Percentile value	0~1000		0~10000		0~1000	
Resolution			2.5mV (1/4000)	5μA (1/4000)	1/16000 0.250mV (1 ~ 5V) 0.3125mV (0 ~ 5V) 0.625mV (0 ~ 10V) 1.250mV (±10V)	1.0μA (4 ~ 20mA) 1.25μA (0 ~ 20mA)	1.25mV (DC 1~5V, 0~5v) 2.5mV (DC 0~10V)	5μA (DC 4~20mA, 0~20mA)
Max. conversion speed			1.5ms / channel		1ms / channel		1.5ms / channel	
Max. absolute input			±15V	± 25mA	DC±15V	DC±3mA	±15V	± 25mA
Analog Input channels			4 channel/module		4 channel/module		8 channel/module	
Insulation method			Photocoupler insulation between I/O terminal and power supply		Photo-coupler insulation between input terminal and PLC power (No insulation between channels)		Photocoupler insulation between I/O terminal and power supply	
Connection terminal			11-point terminal block		15-point terminal block		11-point terminal block	
Occupied I/O points			Fixed type : 64 points					
Current consumption		DC 5V	120mA		110mA		105mA	
		DC 24V	62mA		100mA		85mA	

Names and Functions

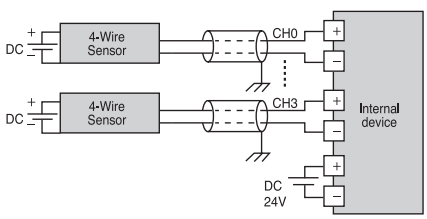
No.	Name	Descriptions
❶	RUN LED	▶ Indicates condition of module • LED On: Normal condition • LED On and Off: Flickering • LED Off: Power Off or module malfunction
❷	Input selection S/W	▶ Voltage/Current selection switch • V: Voltage input selection • I: Current input selection
❸	Terminal block	▶ External device connection
❹	External power supply terminal	▶ External DC 24V input

Wiring

Wiring with 2-wire sensor



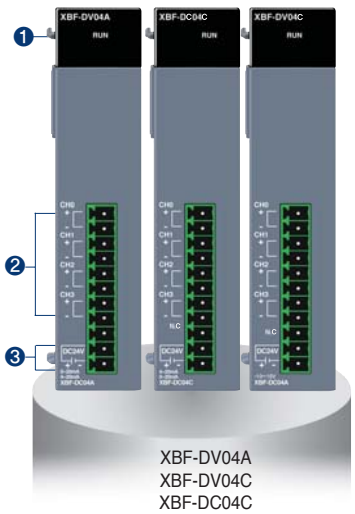
Wiring with 4-wire sensor



※Use 22AWG, 2 conductor, twist shielded cable when wiring between analog module and external device.

APPLICSTION

Specification



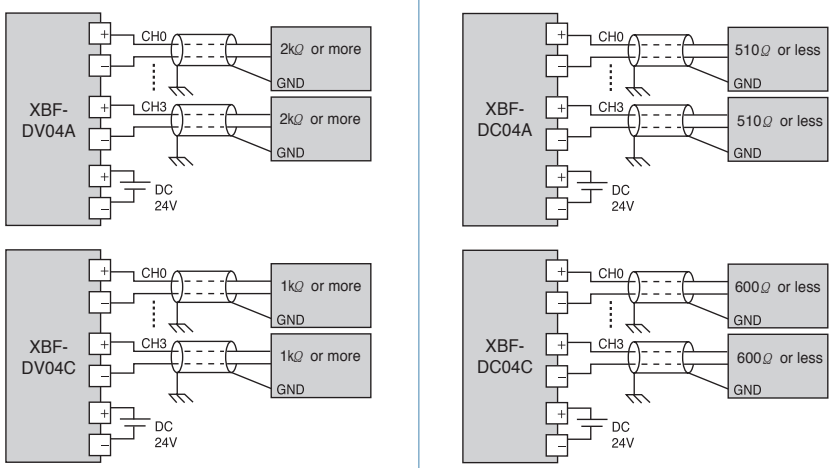
XBF-DV04A
XBF-DV04C
XBF-DC04C

Item		XBF-DV04A	XBF-DV04C	XBF-DC04C	XBF-DC04A
Analog range		DC 0 ~ 10 V (Load resistance ≥ 2kΩ)	DC 1 ~ 5V DC 0 ~ 5V DC 0 ~ 10V DC -10 ~ 10V (Input resistance : 1kΩ or more)	DC 4 ~ 20mA DC 0 ~ 20mA (Input resistance : 600MΩ or less)	4 ~ 20mA / 0 ~ 20mA (Load resistance ≤510Ω)
Analog range Selection		–	–		XG 5000 I/O parameter
Digital data	Output range	0 ~ 10 V	–		4 ~ 20mA/0 ~ 20mA
	Unsigned value	0 ~ 4000	0 ~16000		0 ~ 4000
	Signed value	– 2000 ~ 2000	– 8000 ~ 8000		– 2000 ~ 2000
	Precise value	0 ~ 1000	1000~5000 (1~5V) 0~5000 (0~5V) 0~10000 (0~10V) -1000~10000 (±10V)	4000~20000 (4~20mA) 0~20000 (0~20mA)	400 ~ 2000/0 ~ 2000
	Percentile value	0~1000	0~10000		0~1000
	Data format	Data format of digital input is set by user program or I/O parameter (Setting for each channel is available.)			
Resolution		Resolution (1/4000)	1/1600		Resolution (1/4000)
		2.5mV	0.250m (1~5V) 0.3125m (0~5V) 0.625m (0~10V) 1.250m (±10V)	1.0μA (4~20mA) 1.25μA (0~20mA)	5μA
Max. conversion speed		1ms/channel	1ms/channel		1ms/channel
Max. absolute output		±15V	–		±25mA
Accuracy		±0.5% or less	–		±0.5% or less
Analog output channels		4 channel/module	4 channel/module		4 channel/module
Insulation method		Photocoupler insulation between I/O terminal and power supply	Photo-coupler insulation between output terminal and PLC power (no insulation between channels)		Photocoupler insulation between I/O terminal and power supply
Connection terminal		11-point terminal block			
Occupied I/O points		Fixed type: 64 points			
Current consumption	DC 5V	110mA	75mA		110mA
	DC 24V	70mA	170mA		120mA

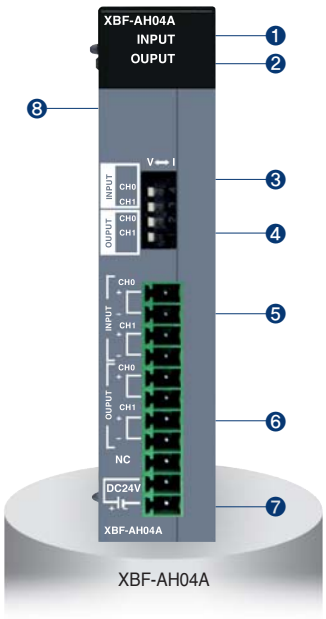
Names and Functions

No.	Name	Descriptions
1	RUN LED	▶ Indicates condition of module • LED On: Normal condition • LED On and Off: Flickering • LED Off: Power Off or module malfunction
2	Terminal block	▶ External device connection
3	External power supply terminal	▶ External DC 24V input

Wiring



Specification



XBF-AH04A

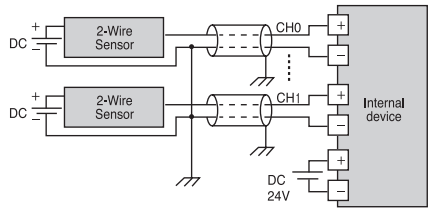
Item		XBF-AH04A	
		Input	Output
Analog channel		2 channels	2 channels
Analog range		DC 1 ~ 5V, DC 0 ~ 5V, DC 0 ~ 10V (Input resistance: 1 MΩ min.) DC 4 ~ 20mA, DC 0 ~ 20mA (Input resistance 250Ω)	DC 1 ~ 5V, DC 0 ~ 5V, DC 0 ~ 10V (Load resistance ≥ 2kΩ) DC 4 ~ 20mA, DC 0 ~ 20mA (Load resistance ≤510Ω)
Analog range selection		XG 5000 I/O parameter and External switch	
Digital data	Unsigned value	0 ~ 4000	
	Signed value	-2000 ~ 2000	
	Precise value	100 ~ 500 (DC 1 ~ 5V), 0 ~ 500 (DC 0 ~ 5V), 0 ~ 1000 (DC 0 ~ 10V) 400 ~ 2000 (DC 4 ~ 20mA), 0 ~ 2000 (DC 0 ~ 20mA)	
	Percentile value	0 ~ 1000	
Resolution (1/4000)		1.25mV (DC 1~5V, 0~5V), 2.5mV (DC 0~10V) 5㎂ (DC 4~20mA, 0~20mA)	
Max. conversion speed		±15V, 25mA	
Max. absolute output		1ms / Channel	
Accuracy		±0.5% or less	
Insulation method		Photocoupler insulation between I/O terminal and power supply	
Connection terminal		11-point terminal block	
Occupied I/O points		Fixed type: 64 points	
Current consumption	DC 5V	120mA	
	DC 24V	130mA	

Names and Functions

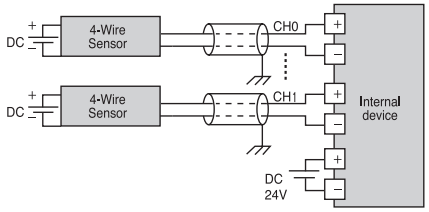
No.	Name	Descriptions
1	INPUT LED	▶ Indicates input condition of module • LED On: Normal condition • LED On and Off: Flickering • LED Off: Power Off or module malfunction
2	OUTPUT LED	▶ Indicates output condition of module • LED On: Normal condition • LED On and Off: Flickering • LED Off: Power Off or module malfunction
3	Input selection S/W	▶ Voltage / Current selection switch for input
4	Output selection S/W	▶ Voltage / Current selection switch for output
5	Terminal block	▶ Terminal for external input device
6		▶ Terminal for external output device
7	External power supply terminal	▶ Terminal for external DC 24V input
8	Expansion connector	▶ Terminal for expansion

Wiring

Wiring with 2-wire sensor (for analog input)



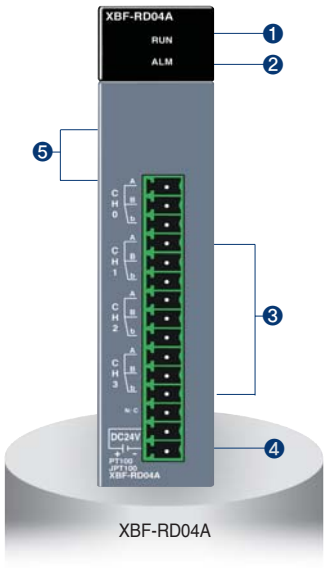
Wiring with 4-wire sensor (for analog input)



※Use 22AWG, 2 conductor, twist shielded cable when wiring between analog module and external device.

APPLICSTION

Specification

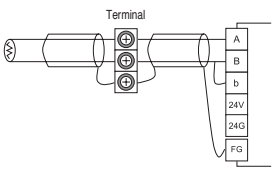
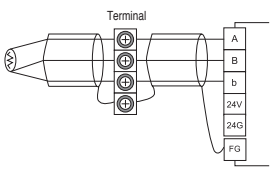
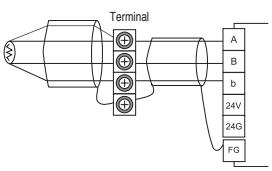


Item		XBF-RD04A
Number of channels		4
Sensor type	PT 100	JIS C1804-1997
	JPT 100	JIS C1604-1981, KS C1603-1991
Temperature range	PT 100	– 200 ~ 600℃
	JPT 100	– 200 ~ 600℃
Digital output	PT 100	– 2000 ~ 6000
	JPT 100	– 2000 ~ 6000
	Scaling	0 ~ 4000
Accuracy	25℃	±0.3% or less
	0 ~ 55℃	±0.5% or less
Conversion speed		40ms / Ch
Wiring method		3-wire
Current consumption	DC 5V	100mA
	DC 24V	100mA

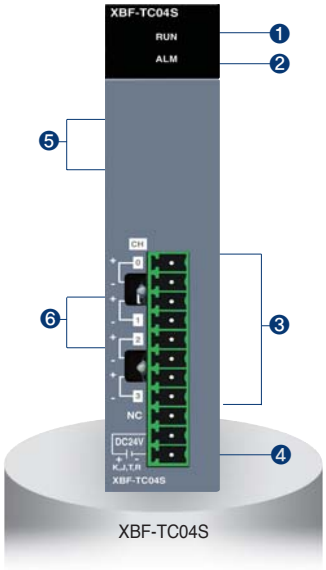
Names and Functions

No.	Name	Descriptions
1	RUN LED	▶ Displays the hardware operation status (Fatal fault) • On: Normal status • Flickering: Error (0.2s flickering) • Off: hardware error or power off
2	ALM LED	▶ Displays the status of the channels (Light fault) • Flickering: Line disconnection (1s flickering) • Off: Normal status
3	Terminal block	▶ 3-wire RTD sensors can be connected
4	External power terminal	▶ Supplies the external DC 24V
5	Expansion connector	▶ Connects the module with an expansion module

Wiring

2-wire	3-wire	4-wire
		

Specification



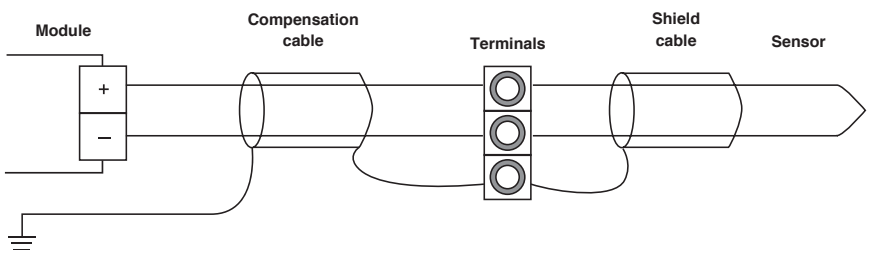
XBF-TC04S

Item		XBF-TC04S
Number of channels		4
Input sensor type		Thermocouple K/J/T/R JIS C1602–1995
Temperature input range	K	– 200.0℃ ~ 1300.0℃ (-328.0℉ ~ 2372.0℉)
	J	– 200.0℃ ~ 1200.0℃ (-328.0℉ ~ 2192.0℉)
	T	– 200.0℃ ~ 400.0℃ (-328.0℉ ~ 752.0℉)
	R	0.0℃ ~ 1700.0℃ (32.0℉ ~ 3092.0℉)
Digital output	Temperature display unit	Display down to one decimal place K, J, T: 0.1℃ R: 0.5℃
	Scaling display (Defined by user)	Unsigned scaling (0 ~ 65535)
		Signed scaling (-32768 ~ 32767)
Accuracy	Normal temperature (25℃)	±0.2%
	Temperature coneffcient (0 ~ 55℃)	±100 ppm / ℃
Max. conversion speed		50ms / Channel
Warming-up time		15 minutes or more
Terminal		11-point terminal
I/O points occupied		64 points
Current consumption	DC 5V	100mA
	DC 24V	100mA

Names and Functions

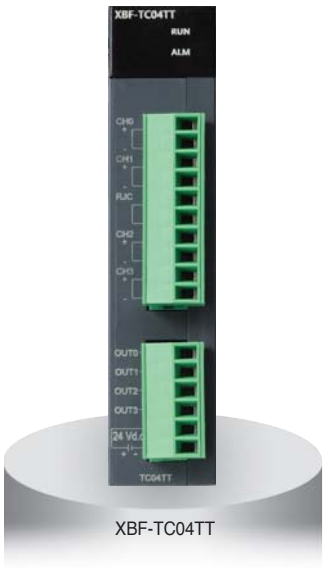
No.	Name	Descriptions
❶	RUN LED	▶ Displays the hardware operation status (Fatal fault) • On: Normal status • Flickering: Error (0.2s flickering) • Off: hardware error or power off
❷	ALM LED	▶ Displays the status of the channels (Light fault) • Flickering: Line disconnection (1s flickering) • Off: Normal status
❸	Terminal block	▶ Terminals to connect the thermo-couple sensor
❹	External power terminal	▶ Terminals to supply the external DC 24V
❻	RJC	▶ Device for Reference Junction Compensation

Wiring



APPLICSTION

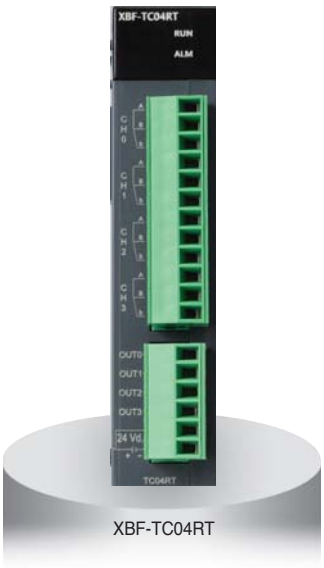
Specification



XBF-TC04TT

Item			XBF-TC04TT	
Control loop			4 loop	
Thermocouple type and input range	K		-200.0 ~ 1300.0 ℃	
			0.0 ~ 500.0 ℃	
	J		-200.0 ~ 1200.0 ℃	
			0.0 ~ 500.0 ℃	
	T		-200.0 ~ 800 ℃	
Precision	Standard precision		±0.2% or less (25 ℃, normal temperature, except -200~-100 ℃ for the T type)	
	Temperature coefficient		±100ppm/℃(0.01%/℃)	
Cold junction compensation	Compensation method		Automatic compensation by RJC sensing	
	Compensation degree		±2.0 ℃	
Sampling period			500ms/ 4 loop	
Control method			PID CONTROL, ON/OFF CONTROL	
Control parameter	Target value (SV)		Setting within range according to input type (temperature unit setting)	
	Proportional gain		0: ON/OFF CONTROL, REAL	
	Integral time		0: Except integral control, REAL	
	Derivative time		0: Except derivative control, REAL	
Transistor output	Output point		4	
	Rated load voltage		DC 24 V	
	Max. load current		0.1 A / Output point	
	Max. voltage drop when on		DC 1.2 V or less	
	Leakage current when off		0.1 mA or less	
	Response time	On => Off	1 ms or less	
		Off => On	1 ms or less	
	Control output cycle		0.5 ~ 120.0 sec (Setting unit: 0.5 sec.)	
	Time proportional resolution		Larger one of either 10 ms or 0.05% of the full-scale	
Insulation	Between input channels		Photo relay	Withstanding voltage: 400V AC, 50/60Hz 1min, leakage current 10mA or less
	Input terminal-PLC power		Photo relay	Insulation resistor: 500V DC, 10 MΩ or above
	Output terminal-PLC power		Non-insulation	
	Between output channels			
Averaging function	Weighted average		0 ~ 99% (setting range)	
	Moving average		0 ~ 99 times (setting range)	
Warm-up			20 minutes or above	
Maximum rate of ambient temperature changing			0.5 ℃/min (30 ℃/hour) or less	
Access terminal			16 point terminal (10 point terminal 1ea, 6 point terminal 1ea)	
IO occupation point			Fixed: 64 points	
Max. no. of installation			XBM-DxxxS type: 7ea, XB(E)C-DxxxH type: 10ea, XB(E)C-DxxxSU: 7ea, XB(E)C-DxxxU: 10ea	
Power supply			5 V, DC 24 V	
Current consumed			Internal DC 5 V : 120 mA, External DC 24 V : 100 mA	

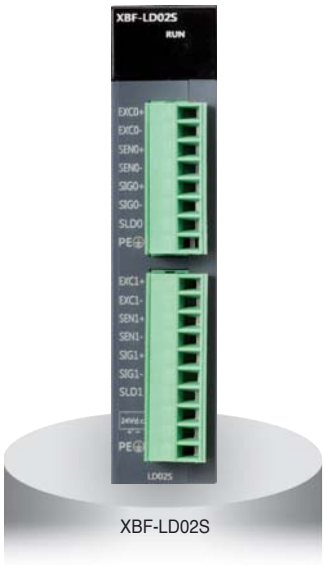
Specification



XBF-TC04RT

Item			XBF-TC04RT	
Control loop			4 loop	
RTD type and input range	Pt100		-200.0 ~ 850.0 ℃	
	JPt100		-200.0 ~ 600.0 ℃	
Precision	Standard precision		±0.2% or less (25 ℃, normal temperature)	
	Temperature coefficient		±100ppm/ ℃(0.01%/ ℃)	
Sampling period			500ms/ 4 loop	
Control method			PID CONTROL, ON/OFF CONTROL	
Control parameter	Target value (SV)		Setting within range according to input type (temperature unit setting)	
	Proportional gain		0: ON/OFF CONTROL, REAL	
	Integral time		0: Except integral control, REAL	
	Derivative time		0: Except derivative control, REAL	
Transistor output	Output point		4	
	Rated load voltage		DC 24 V	
	Max. load current		0.1 A/Output point	
	Max. voltage drop when on		DC 1.2 V or less	
	Leakage current when off		0.1 mA or less	
	Response time	On => Off	1 ms or less	
		Off => On	1 ms or less	
	Control output cycle		0.5 ~ 120.0 sec (Setting unit: 0.5 sec.)	
	Time proportional resolution		Larger one of either 10 ms or 0.05% of the full-scale	
Insulation	Between input channels		Photo relay	Withstanding voltage: 1500V AC, 50/60Hz 1min, leakage current 10mA or less
	Input terminal- PLC power		Photo relay	Insulation resistor: 500V DC, 10 MΩ or above
	Output terminal- PLC power Between output channels		Non-insulation	
Averaging function	Weighted average		0 ~ 99% (setting range)	
	Moving average		0 ~ 99 times (setting range)	
Access terminal			18 point terminal (12 point terminal 1ea, 6 point terminal 1ea)	
IO occupation point			Fixed: 64 points	
Max. no. of installation			XBM-DxxxS type: 7ea, XB(E)C-DxxxH type: 10ea, XB(E)C-DxxxSU: 7ea, XB(E)C-DxxxU: 10ea	
Power supply			5 V, DC 24 V	
Current consumed			Internal DC 5 V : 120 mA, External DC 24 V : 100 mA	

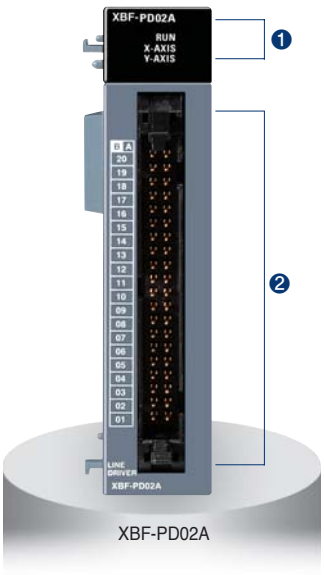
Specification



XBF-LD02S

Item	Specifications			
Input Channel	2 Channel (Insulation between Channels)			
Load Cell Input Voltage	5VDC ±5%, (8 per 350Ω load cell channel)			
Load Cell Type	Four-wire or Six-wire			
Resolution	1/40000			
Analog Input Range	0.0~6.0㎷			
Load Cell Output Sensitivity	0.125㎶(when the rated output of the load cell is 0.0 ~ 1.0㎷/ V)			
Input Accuracy	±0.01% or below (nonlinear accuracy, 25℃) Zero Drift: ±0.25℃), Gain Drift: ±15ppm//℃			
Sampling Cycle (per channel)	5㎳			
Insulation	Classification	Insulation Method	Insulation Voltage Resistance (Internal Test Specifications)	Insulation Resistance
	Input terminal-Internal circuits	Isolator	AC 550 V 50/60 Hz 1 minute, Leakage 10 mA or below	DC500 V, 10 MΩ or above
	Between input channels	Transformer		
	External power-Internal circuits	DC/DC Converter		
Warm-up time	30 minutes or above			
Input Connector	8 pins Connector(CH0)/10 pins Connector(CH1)			
IO Occupation Points:	Fixed type:64 points			
Max. no. of installation	XBM-DxxxS type: 7ea, XB(E)C-DxxxH type: 10ea, XB(E)C-DxxxSU: 7ea, XB(E)C-DxxxU: 10ea,			
Power Supply	5V, DC 24			
Consumption	Internal DC5V : 110㎃, External DC24V : 280㎃			

Specification

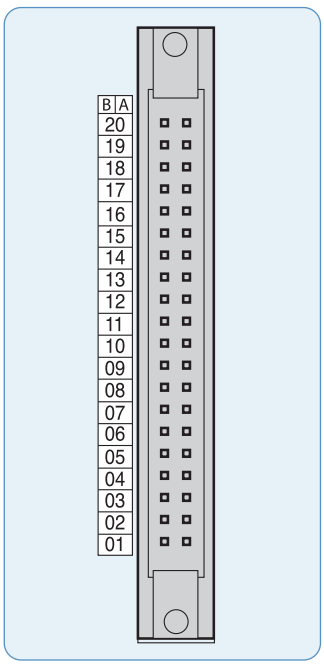


Item		XBF-PDO2A
N0. of control axis		2 axis
Pulse output type		Line drive
Max. pulse output		2Mpps
Max. connection length		10m
Control mode		Position control, Speed control, Speed /Position switching control, Position / Speed switching control
Interpolation		Linear interpolation, Circula interpolation
Positioning data		150 operation data for each axis
Configuration tool		Built-in function parameter of XG5000
Back-up		Flash memory
Positioning	Positioning method	Absolute/Incremental method
	Unit	pulse
	Positioning range	– 2,147,483,648 ~ 2,147,483,648
	Speed range	1~2,000,000 (pulse/sec)
	Acceleration/Deceleration type	Trapezoidal acceleration/deceleration
	Acceleration/Deceleration time	0~65,535ms, Asymmetric acceleration/deceleration
Max. encoder input		200kpps (Line drive)
Error/Operation		LED
I/O occupied points		Fixed type: 64 points
Connection terminal		40pin connector
Current consumption (mA)		500

Names and Functions

No.	Name	Descriptions
1	RUN LED	1. RUN ▶ Displays the hardware operation status • On: Normal status • Off: Abnormal status 2. X_AXIS, Y_AXIS • On: Operation • Flickering: Error
2	Terminal block	▶ Terminals to connect the MPG, external device and drive device.

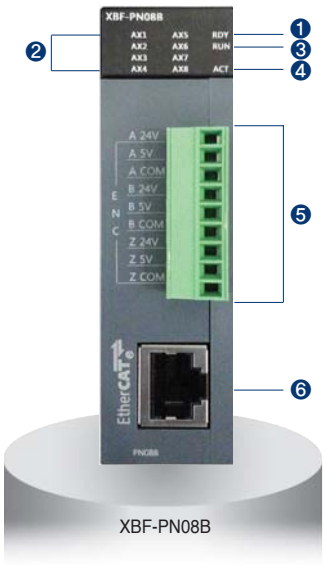
Terminal



Pin number		Signal name	
X axis	Y axis		
B20		MPG A+	Manual Pulse Generator/Encoder A+ input
A20		MPG A–	Manual Pulse Generator/Encoder A– input
B19		MPG B+	Manual Pulse Generator/Encoder B+ input
A19		MPG B–	Manual Pulse Generator/Encoder B– input
A18	B18	FP+	Forward pulse+
A17	B17	FP–	Forward pulse–
A16	B16	RP+	Reverse pulse+
A15	B15	RP–	Reverse pulse–
A14	B14	OV+	High limit
A13	B13	OV–	Low limit
A12	B12	DOG	Near point
A11	B11	NC	–
A10	B10		
A09	B09	COM	Common
A08	B08	NC	–
A07	B07	INP	Inposition signal
A06	B06	INP COM	Inposition signal common
A05	B05	CLR	Deviation counter clear signal
A04	B04	CLR COM	Deviation counter clear signal common
A03	B03	HOME +5V	Zero signal(DC 5V)
A02	B02	HOME COM	Zero signal Common
A01	B01	NC	–

APPLICSTION

Specification



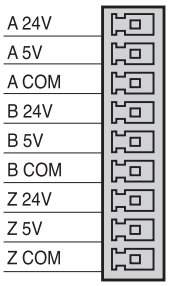
XBF-PN08B

Item			XBF-PN08B		
No. of control axis			8		
Interpolation function			2~8 axes linear interpolation, 2 axes circular interpolation, 3 axes helical interpolation		
Control method			Position control, Speed control, Speed/Position control, Position/Speed control, Position/Torque Control, Feed control		
Control unit			Pulse, mm, inch, degree		
Positioning data			Each axis can have up to 400 operation data .(Operation step number : 1~400) Available to set with XG-PM or program		
XG-PM	Connection		RS-232C port of CPU module or USB		
	Setting data		Common, Basic, Extended, Servo parameter, Operation data, Cam data, Command information		
	Monitor		Operation information, Trace, Input terminal information, Error information		
Back-up			Save the parameter, operation data in MRAM ROM (No need of Battery)		
Positioning	Positioning method		Absolute method/Incremental method		
	Position address range		Absolute	Incremental	Speed/Position, Position/Speed Switching control
		mm	-214748364.8~214748364.7(㎛)	-214748364.8~214748364.7(㎛)	-214748364.8~214748364.7(㎛)
		Inch	-21474.83648~21474.83647	-21474.83648~21474.83647	-21474.83648~21474.83647
		degree	-21474.83648~21474.83647	-21474.83648~21474.83647	-21474.83648~21474.83647
		pulse	-2147483648~2147483647	-2147483648~2147483647	-2147483648~2147483647
	Speed range	mm	0.01~20000000.00(ßÆ/min)		
		Inch	0.001~2000000.000(Inch/min)		
		degree	0.001~2000000.000(degree/min)		
		pulse	1~20,000,000(pulse/SEC)		
		rpm	0.1~100000.0(RPM)		
	Acc./Dec. process		Trapezoid type, S-type		
	Acc./Dec. time		1~2,147,483,647ms selection is available from 4 types of acceleration/deceleration pattern		
Manual Operation			Jog Operation, MPG Operation, Inching Operation		
Homing method			Refer to the method supported by the servo driver		
Speed change function			Speed change (Percent/Absolute value)		
Torque unit			Rated torque % designation		
Absolute position system			Available (when using absolute encoder type servo driver)		
External Encoder input	Channel		1 channel		
	Max. Input		200 kpps		
	Input form		Line drive input (RS-422A IEC specification), open collector output type encoder		
	Input type		CW/CCW, PULSE/DIR, Phase A/B		
	Connection connector		9-point connector		
Communication Period			1ms		
Max. transmission distance			100m		
Communication cable			Over CAT.5 STP (Shielded Twisted-pair) cable		
Error indication			Indicated by LED		
Communication status indication			Indicated by LED		
Consumable current			510mA		
Weight			115g		

Names and Functions

No.	Name	Descriptions
❶	Module ready signal	On: Positioning module normal status Off: Power OFF or CPU module reset status Flicker: Positioning module abnormal status
❷	Operation indicator LED (AX1 ~ AX8)	On: applicable axis is running Off: applicable axis is stop status Flicker: applicable axis is error status
❸	Communication status indicator LED	On: communication with servo driver is connected Off: communication with servo driver is disconnected Flicker: Error occurs during communicating with servo driver
❹	TRX status LED	On: Wiring with servo driver is done Off: Wiring with servo driver is not done Flicker: communicating with servo driver
❺	Connector for encoder wiring	Connector to connect with encoder
❻	RJ-45 connector	RJ-45 connector to connect with servo driver

Terminal

Pin arrangement	Pin No.	Signal name		Signal direction
	1	A 24V	Encoder A 24V input	Input
	2	A 5V	Encoder A 5V input	
	3	A COM	Encoder A input COM	
	4	B 24V	Encoder B 24V input	
	5	B 5V	Encoder B 5V input	
	6	B COM	Encoder B input COM	
	7	Z 24V	Encoder Z 24V input	
	8	Z 5V	Encoder Z 5V input	
	9	Z COM	Encoder Z input COM	

Specification

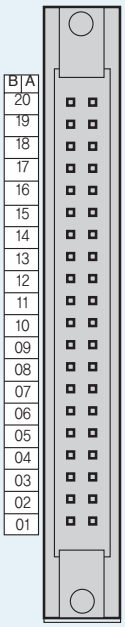
XBF-HO02A
XBF-HD02A

Item		Specification	
		XBF-HO02A	XGF-HD02A
Count input signal	Signal	A-phase, B-phase	
	Input type	Voltage input (Open Collector)	Differential input (Line Drive):
	Signal level	DC 5/12/24V	RS-422A Line Drive/HTL LEVEL Line Drive
Maximum coefficient speed		200kpps	500kpps (HTL input : 250kpps)
Number of channels		2 Channels	
Coefficient range		Signed 32-bit (-2,147,483,648 ~ 2,147,483,647)	
Count mode		Linear Count (When 32-bit range exceeded, Carry /Borrow occurs, The count value stopped)	
		Ring Count (Repeated count within setting range)	
Input pulse mode		1-phase input	
		2-phase input	
		CW/CCW input	
Up/down setting	1-phase input	Increasing/Decreasing operation setting by B-phase input	
		Increasing/Decreasing operation setting by program	
	2-phase input	Automatic setting by difference in phase	
	CW/CCW	A-phase input: Increasing operation	
		B-phase input: Decreasing operation	
Multiplication function	1-phase input	1/2 multiplication	
	2-phase input	1/2/4 multiplication	
	CW/CCW	1- multiplication	
Control input	Signal	Preset instruction input, Auxiliary mode instruction input	
	Signal level	DC 5V/12V/24V (by terminal selection) input type	
	Signal type	Voltage	
External output	Output points	2-point/channel (for each channel): Terminal output available	
	Type	Select single-compared (>, >=, =, =<, <) or section compared output (Included or excluded)	
	Output type	Open collector output (Sink)	
Operation status display	Input signal	A-phase input, B-phase input, Preset instruction input, Auxiliary mode instruction input	
	Output signal	External output 0, External output 1	
	Busy status	Module Ready	
Count enable		To be set through program (Count available only in enable status)	
Preset function		To be set through terminal or program	
Auxiliary mode function		Count clear, Count latch, Section count(time setting value: 0~60000㎳), Measurement of input frequency(for respective input phase), Measurement of counts per hour(time setting value: 0~60000㎳) Count prohibited function	
Terminal		40 pin connector	
I/O occupied points		Fixed point: 64	
Current consumption(mA)		200	260
Weight		90g	

Names and Functions

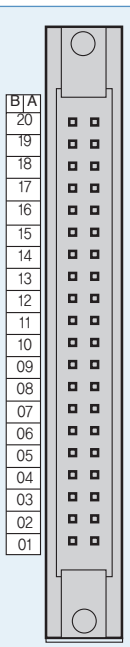
No.	Name	Descriptions
1	Run LED (ØA, ØB, P, G, 00, 01)	▶ On: Relevant channel pulse inputting, Preset/Auxiliary function signal inputting, Outputting ▶ Off: No input of relevant channel pulse, No input of preset/ Auxiliary function signal, No output of comparison
	Ready signal (RDY)	▶ On: HSC module normal ▶ Off: Power off or CPU module reset, HSC module error • Flicker: HSC module error
2	External wiring connector	Connector to conect with external I/O

Terminal (XBF-H002A)



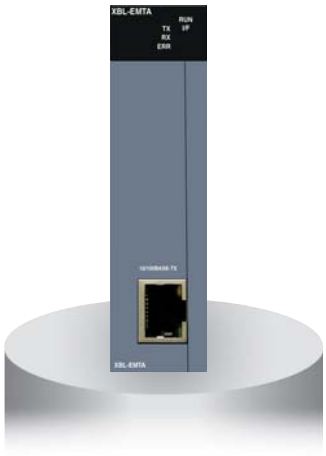
Pin arrangement		Signal name	
B ch1	A ch0		
20	20	A 24V	A phase pulse input 24V
19	19	A 12V	A phase pulse input 12V
18	18	A 5V	A phase pulse input 5V
17	17	A COM	A phase pulse input COM
16	16	B 24V	B phase pulse input 24V
15	15	B 12V	B phase pulse input 12V
14	14	B 5V	B phase pulse input 5V
13	13	B COM	B phase pulse input COM
12	12	P 24V	Preset input 24V
11	11	P 12V	Preset input 12V
10	10	P 5V	Preset input 5V
09	09	P COM	Preset input COM
08	08	G 24V	Auxiliary function input 24V
07	07	G 12V	Auxiliary function input 12V
06	06	G 5V	Auxiliary function input 5V
05	05	G COM	Auxiliary function input COM
04	04	OUT0	Comparison output 0
03	03	OUT1	Comparison output 1
02	02	24V	External power input 24V
01	01	24G	External power input GND

Terminal (XBF-HD02A)



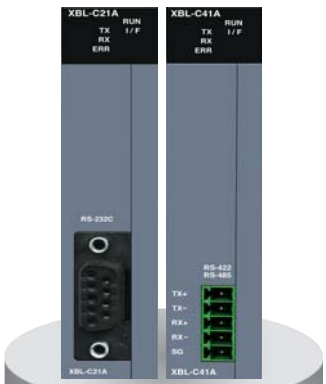
Pin arrangement		Signal name	
B ch1	A ch0		
20	20	A I +	A I phase differentiation input +
19	19	A I -	A I phase differentiation input -
18	18	A II +	A II phase differentiation input +
17	17	A II -	A II phase differentiation input -
16	16	B I +	B I phase differentiation input +
15	15	B I -	B I phase differentiation input -
14	14	B II +	B II phase differentiation input +
13	13	B II -	B II phase differentiation input -
12	12	P 24V	Preset input 24V
11	11	P 12V	Preset input 12V
10	10	P 5V	Preset input 5V
09	09	P COM	Preset input COM
08	08	G 24V	Auxiliary function input 24V
07	07	G 12V	Auxiliary function input 12V
06	06	G 5V	Auxiliary function input 5V
05	05	G COM	Auxiliary function input COM
04	04	OUT0	Comparison output 0
03	03	OUT1	Comparison output 1
02	02	24V	External power input 24V
01	01	24G	External power input GND

Ethernet (XBL-EMTA)



Item		XBL-EMTA
Communication spec.		10/100 Base-TX
Protocol		TCP/IP, UDP/IP
Service	With LS PLCs	High-speed link, P2P service
	With other devices	P2P service
	Application	XGT Dedicated protocol Server/Client, Modbus/TCP Server/Client
HS link sending/Receiving data		200words/block (Max. 64blocks)
No. of channel Connectable to upper stage		6 channels
Service		Communication with PC (HMI) and external devices, High-speed communication among LS ELECTRIC PLCs
Media		UTP/STP Category 5
Current consumption (mA)		300

RS-232C, RS-422 / 485



XBL-C21A
XBL-C41A

Item		Built-in RS-232C	XBL-C21A	Built-in RS-485	XBL-C41A
Interface		RS-232C 1ch	RS-232C 1ch	RS-485 1ch	RS-422 / 485 1ch
MODEM function		Remote communication via the external MODEM (XBL-C21A Only)			
Mode	Dedicated mode	1:1 or 1:N via the dedicated protocol			
	XG5000 mode	Program download, Upload and control via the remote control			
	P2P mode	Communication defined by the protocol using XG-PD XGT/Modbus master			
Operation mode	Server (slave)	XGT/Modbus server, User-defined communication			
	Client (master)	XGT/Modbus P2P Master, User-defined communication			
Data format	Start Bit	1			
	Data Bit	7 or 8			
	Stop Bit	1 or 2			
	Parity	Even / Odd / None			
	Setting	Setting by XG-PD parameter			
Synchronous		Asynchronous			
Speed (bps)		1,200/2,400/4,800/9,600/19,200/38,400/57,600/115,200 bps			
Station number		Setting by XG-PD, Max. 32 stations			
Distance		RS-232C: Max.15m (Expansion by MODEM), RS-422/485: Max 500m			
MODEM communication		–	Support	–	–
Network		1 : 1		1 : N	
Diagnostic		Via LED and XG-PD			
Max. expansion		Built-in	2 stages	Built-in	2 stages

RAPIEnet (XBL-EIMT)

Item		XBL- EIMT
Transmission standard	Transmission speed	100Mbps
	Transmission method	Base band
	Max. extension distance between nodes	100m
	Max. number of nodes	64
	Max. protocol size	1,516 bytes
	Access method to service zone	CSMA / CD
	Frame error check	CRC 32 = $X^{32}+X^{26}+X^{23}+\cdots\cdots+X^{2}+X+1$
	Normal communication guarantee	Max. 1,200 (packet/sec)
Basic standard	Dimension (mm)	90(H) x 27(W) x 60(D)
	Current consumption (mA)	290
	Weight (g)	102

Ethernet/IP (XBL-EIPT)

Item		XBL- EIPT
Transmission standard	Transmission speed	100Mbps
	Transmission method	Base band
	Max. extension distence between nodes	100m
	Access method to service zone	CSMA/CD
	Frame error check	CRC 32 = $X^{32}+X^{26}+X^{23}+\cdots\cdots+X^{2}+X+1$
Topology		Line, Star
The number of connections (Client/Server)	TCP	16 / 32
	CIP (IO communication)	32 / 64
Number of Max. services (P2P)		2
Number of Max. installations		2
Max. setting data size per block	Periodic client	500 bytes
	Aperiodic client	512 bytes
Basic standard	Dimension (mm)	90(H) x 27(W) x 60(D)
	Current consumption(mA)	290
	Weight (g)	102

Profibus-DP Module (XBL-PMEC, XBL-PSEA)

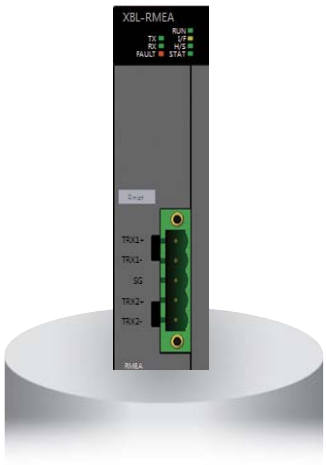
Item		XBL-PMEC	XBL-PSEA
Module Type		Slave	
Network Type		Profibus-DP	
Standard		EN501170/DIN19245	
Interface		RS-485 (Electric)	
Topology		Bus type	
Modulation Type		NRZ (Non Return to Zero)	
Protocol		Profibus DP-V0	
Max. Distance & Transmission Speed	Distance (m)	Send Speed (bps)	
	1,200	9.6k/19.2k/93.75k/187.5k	
	400	500k	
	200	1.5M	
	100	3M/6M/12M	
Max. number of stations per segment		32 (including master & repeater)	
Cable used		Electric-twist shielded pair cable	
Max. Communication size		Input : 122 Word Outpuut : 122 Word	
Max. Communication size per block		Input : 64 Word Outpuut : 64 Word	
Communication Transmission cycle		10/20/50/100/200/500ms, 1/5/10s	
Communication Receive cycle		Main unit scan × 2 + Data receive time + Communication module scan	
Max. number of units installed		2 units	
Communication Parameters to set		XG5000 (setting station and high-speed link parameter block)	
Internal-consumed current (mA)		300	250
Weight (g)		86 (including connector: 122)	

APPLICSTION

DeviceNet Module
(XBL-DSEA)

	Item		XBL-DSEA
Transmission Specification	Transmission Speed (kbps)		125/250/500
	Transmission Type		Poll, Bit strobe, COS, Cyclic
	Communication distance (m)	Thick Cable	500 (125kbps)/250 (250kbps)/100 (500kbps)
		Thin Cable	100 (125/250/500kbps)
	Terminal resistance (Ω)		121 (1%, 1/4W)
	Max.drop length (m)	125 kbps	6 (Max. extended length 156)
		250 kbps	6 (Max. extended length 78)
		500 kbps	6 (Max. extended length 39)
	Data Packet		0~8 Bytes
	Message Access Control		CSMA/NBA
	Network Structure		• Trunk/drop line • Power/Signal cable inside the identical network cable
	Bus Type		• Poll type
	Max. number of nods		Up to 64 (including master) MAC IDs (MAC Identifier)
	System Features		Insertion and removal of nod available in voltage On status
	Operation Voltage		DC 24V
	Diagnosis Function		Module: Checks duplicated station/ Checks CRC error SyCon: Detects defective station/Checks BusOff/Auto-scan function XG5000: Monitors High-speed link
	Master/Slave Operation		Available only in slave
Parameter setting			Setting to High-speed link of XG5000 (RS-232C of CPU module or USB port)
XG5000 (High-speed link)	Data process unit		Word
	Send/Receive period		Select among 10ms, 20ms, 50ms, 100ms, 200ms, 500ms, 1s, 5s and 10s - Default : 20ms
	Max. communication point		Send 2048points, Receive 2048 points, 256 bytes respectively
	Max. block number		64 (Setting range: 0~63)
	Max. point number per block		1024 points (64 Words)
Basic Specification	Max. modules installed		Up to 2
	Internal-consumed current (mA)		100mA
	Weight (g)		110

Rnet
(XBL-RMEA)



Item		XBL-RMEA
Transmission Speed		1Mbps(Rnet I/F modules common)
Max. Tx distance		Max. 750m
Connection Cable		Twisted pair shielded cable
Maximum stations connected	Network	Master station 1[station no:0(fixed)] + Slave stations up to 31[station no:1~63], Note 1) - Only 1 master is available in the network.
Diagnostic function		XG5000 : High Speed Link Monitoring
Terminal resistance (Ω)		110Ω (±5%), 1/2W
Master/Slave operation		Only available as Master
XG5000(HS Link)	Data Processing unit	Byte
	Tx/Rx cycle	Selection among 20ms, 50ms, 100ms, 200ms(default), 500ms, 1s, 5s, 10s
	Max. Communication points.	3,780 Bytes (slave 31stations * 120Bytes/station)
	Max. Block number	64 (setting range : 0~63)
	Max. points by Block	120 Byte (60words)
	Auto scanning	Supported
Specification	Max. module mounted	2 modules

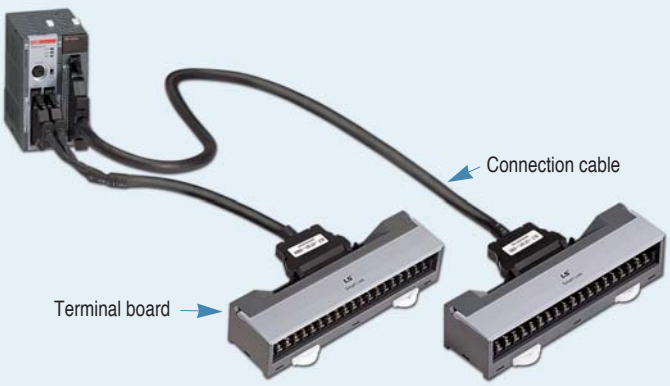
CANopen Module
(XBL-CMEA, XBL-CSEA)

Item		XBL-CMEA	XBL-CSEA
Transmission Speed		10, 20, 50, 100, 125, 250, 500, 800, 1000Kbps	
Num. of port		1	
Max. node		32	-
PDO	TPDO	Total 32	64
	RPDO		64
Max. size of data per PDO		8Byte	
PDO transfer type		Synchronous acyclic (0), synchronous cyclic (1~240), RTR (252~253), time-event trigger(254~255)	
Support SDO		Client 127/Server 1	Server 1
SDO transfer type		Expedited, Normal	-
Access method		CSMA/BA (Carrier Sense Multiple Access/Bitwise Arbitration)	
Topology		BUS	
SYNC Service		Producer Cycle : 20~5000ms	Consumer
NMT. eode control		NMT master	NMT slave
Emergency		Save the last five per slave	Save up to last 10
NMT. error control		Heartbeat, Life guarding	Heartbeat
Network scan		O	-
Size (mm)		90 (H)X27 (W)X60 (D)	
Current consumption (mA)		211	202
Weight (g)		78	

Option modules

Option modules	
XBO-AD02A	Voltage/Current, Input 2 chs
XBO-DA02A	Voltage/Current, Output 2 chs
XBO-AH02A	Voltage/Current, Input 1 ch
	Voltage/Current, Output 1 ch
XBO-TC02A	TC (Thermocouple), Input 2 chs
XBO-RTCA	RTC (Real Time Clock)
XBO-DC04A	DC 24V, Input 4 points
XBO-TN04A	Transistor (Sink), Output 4 point
XBO-RD01A	RTD (Resistance Temperature Detect, Input 1 ch)

Smart link



Connection cable	XBF-PD02A	XBF-HO02A	XBF-HD02A	XBE-DC32A	XBE-TN32A	XBE-TP32A	XBM-DN16S	XBM-DN32S	XBM-DN32H	XBM/XEM-DN32HP (H2)	XGB-UP
R40H/20HH-05S-XBM3	–	–	–	–	–	–	●	●	–	–	–
R40H/20HH-10S-XBM3	–	–	–	–	–	–	●	●	–	–	–
C40HH-05SB-XBI	●	●	●	●	●	●	–	–	●	●	●
C40HH-10SB-XBI	●	●	●	●	●	●	–	–	●	●	●
C40HH-15SB-XBI	●	●	●	●	●	●	–	–	●	●	●
C40HH-20SB-XBI	●	●	●	●	●	●	–	–	●	●	●
C40HH-30SB-XBI	●	●	●	●	●	●	–	–	●	●	●
C40HH-05SB-XBE	–	–	–	–	●	●	–	–	–	–	–
C40HH-10SB-XBE	–	–	–	–	●	●	–	–	–	–	–
C40HH-15SB-XBE	–	–	–	–	●	●	–	–	–	–	–
C40HH-20SB-XBE	–	–	–	–	●	●	–	–	–	–	–
C40HH-30SB-XBE	–	–	–	–	●	●	–	–	–	–	–
C40HH-05SB-XBE	–	–	–	–	●	–	–	–	–	–	–
C40HH-10SB-XBE	–	–	–	–	●	–	–	–	–	–	–
C40HH-15SB-XBE	–	–	–	–	●	–	–	–	–	–	–
C40HH-20SB-XBE	–	–	–	–	●	–	–	–	–	–	–
C40HH-30SB-XBE	–	–	–	–	●	–	–	–	–	–	–