# NX-series Analog I/O Unit NX-AD/DA

CSM NX-AD DA DS F 3 3

## Analog inputs and outputs to meet all machine control needs, from general purpose to high-speed synchronous control

- Connect to other NX I/O Units and EtherCAT® Coupler Units using the high-speed NX-bus
- Separate modules for voltage and current



#### **Features**

- Up to eight analog inputs per unit (NX-AD)
- Up to four analog outputs per unit (NX-DA)
- Free-run refreshing or synchronous I/O refreshing with the NX1P2 CPU Unit or EtherCAT Coupler Unit
- Sampling times down to 10 s per channel and high resolution of 1/30,000
- Single-ended input type with built-in power supply terminals for low power equipments or noize-resistant differential input type (NX-AD)
- Selecting channel to use, moving average, input disconnection detection, over range/under range detection, and user calibration
- Detachable front connector with screwless Push-In Plus terminals for easy installation and maintenance
- Compact with a width of 12 mm per unit
- Connect to the CJ PLC using the EtherNet/IP<sup>™</sup> bus coupler

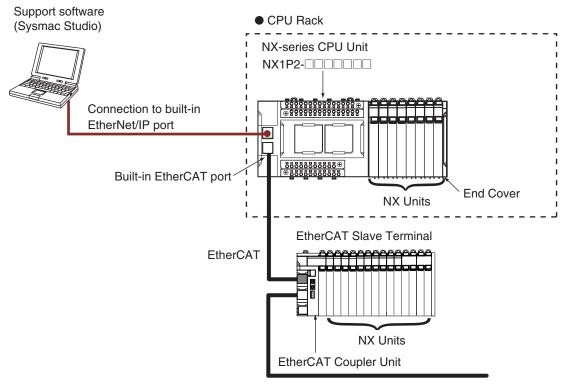
Sysmac is a trademark or registered trademark of OMRON Corporation in Japan and other countries for OMRON factory automation products. EtherCAT<sup>®</sup> is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany. EtherNet/IP<sup>™</sup> is a trademark of ODVA.

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#### **System Configurations**

#### **Connected to a CPU Unit or Communication Control Unit**

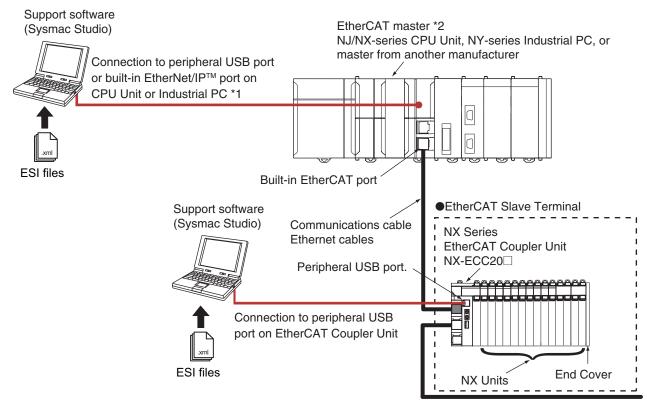
The following figure shows a system configuration when NX Units are connected to an NX-series CPU Unit.



Note: For whether an NX Unit can be connected to the CPU Unit, refer to the version information.

#### Connected to an EtherCAT Coupler Unit

The following figure shows an example of the system configuration when an EtherCAT Coupler Unit is used as a Communications Coupler Unit.

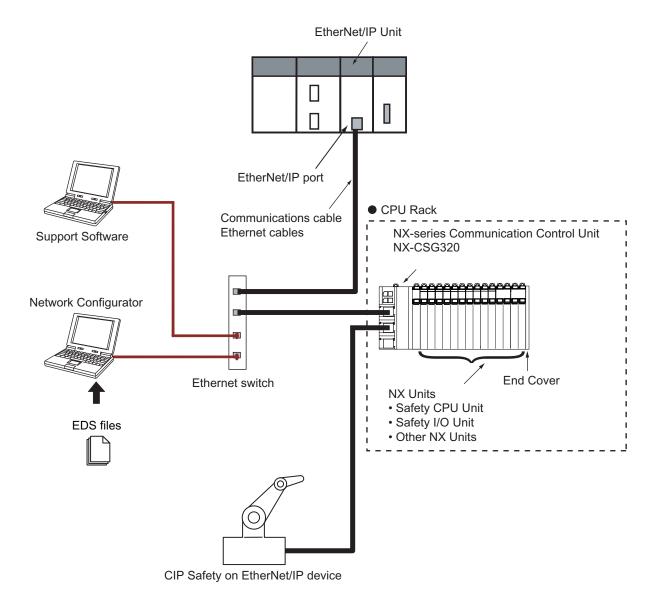


- \*1. The connection method for the Sysmac Studio depends on the model of the CPU Unit or Industrial PC.
- \*2. An EtherCAT Slave Terminal cannot be connected to any of the OMRON CJ1W-NC□81/□82 Position Control Units even though they can operate as EtherCAT masters.

Note: For whether an NX Unit can be connected to the Communications Coupler Unit, refer to the version information.

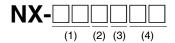
#### System Configuration in the Case of a Communication Control Unit

The following figure shows a system configuration when a group of NX Units is connected to an NX-series Communication Control Unit. To configure a Safety Network Controller, mount the Safety CPU Unit, which is one of the NX Units, to the CPU Rack of the Communication Control Unit.



Note: For whether an NX Unit can be connected to the Communication Control Unit, refer to the version information.

#### **Model Number Structure**



#### (1) Unit type

No.	Specification
AD	Analog input
DA	Analog output

#### (2) Number of points

No.	Specification
2	2 points
3	4 points
4	8 points

#### (3) I/O range

No.	Specification			
1				
2	4 to 20 mA			
6	-10 to +10 V			

#### (4) Other specifications **Analog Input Units**

				I/O refreshing method		
No.	Resolution	Conversion time	Input method Free-Run refreshing *1 only		Switching synchronous I/O refreshing *2 and Free-Run refreshing	
03	1/8000	250 μs/point	Single-ended	Yes		
04	1/8000	250 μs/point	Differential	Yes		
08	1/30000	10 μs/point	Differential		Yes	

#### **Analog Output Units**

			I/O refreshing method		
No.	Resolution	Conversion time	Free-Run refreshing *1 only	Switching synchronous I/O refreshing *2 and Free-Run refreshing	
03	1/8000	250 μs/point	Yes		
05	1/30000	10 μs/point		Yes	

<sup>\*1</sup> Free-Run refreshing
\*2 Synchronous I/O refreshing

<sup>\*1</sup> Free-Run refreshing
\*2 Synchronous I/O refreshing

## **Ordering Information**

#### **Applicable standards**

Refer to the OMRON website (www.ia.omron.com) or ask your OMRON representative for the most recent applicable standards for each model.

#### **Analog Input Units**

					Specificat	ion					
Product name	Number of points	Input range	Resolution	Conversion value, decimal number (0 to 100%)	Over all accuracy (25°C)	Input method	Conversion time	Input impedance	I/O refreshing method	Model	
					±0.2%	Single-ended input	250 μs/		Free-Run	NX-AD2603	
			1/8000	-4000 to 4000	(full scale)	Differential input	point		refreshing	NX-AD2604	
	2 points		1/30000	-15000 to 15000	±0.1% (full scale)	Differential input	10 μs/ point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD2608	
Voltage Input type			. /2222		±0.2%	Single-ended input	250 μs/		Free-Run	NX-AD3603	
		-10 to	1/8000	-4000 to 4000	(full scale)	Differential input	point		refreshing	NX-AD3604	
	4 points	+10 V	1/30000	-15000 to 15000	±0.1% (full scale)	Differential input	10 μs/ point	1 MΩ min.	1 MΩ min.  Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD3608	
				-4000 to 4000	±0.2% (full scale)	Single-ended input	250 μs/		Free-Run refreshing	NX-AD4603	
	8 points	nts	1/8000			Differential input	point			NX-AD4604	
			1/30000	-15000 to 15000	±0.1% (full scale)	Differential input	10 μs/ point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD4608	
	2 points	2 points		8000 0 to 8000	±0.2% (full scale)	Single-ended input	250 μs/	250 Ω	Free-Run refreshing	NX-AD2203	
			1/8000			Differential input	point			NX-AD2204	
			1/30000	0 to 30000	±0.1% (full scale)	Differential input	10 μs/ point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD2208	
Current Input type			4/0000	0.4- 0000	±0.2% (full scale)	Single-ended input	250 μs/	- 250 Ω	Free-Run	NX-AD3203	
		4 to	1/8000	0 to 8000		Differential input	point		refreshing	NX-AD3204	
	4 points	4 to 20 mA	1/30000	0 to 30000	±0.1% (full scale)	Differential input	10 μs/ point		Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD3208	
			1/0000	0.1.0000	±0.2%	Single-ended input	250 μs/		Free-Run	NX-AD4203	
			1/8000	0 to 8000	(full scale)	Differential input	point		refreshing	NX-AD4204	
	8 points	8 points		1/30000	0 to 30000	±0.1% (full scale)	Differential input	10 μs/ point	85 Ω	Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-AD4208

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#### **Analog Output Units**

	Specification							
Product name	Number of points	Output range	Resolution	Output setting value, decimal number (0 to 100%)	Over all accuracy (25°C)	Conversion time	I/O refreshing method	Model
Voltage Output type			1/8000	-4000 to 4000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA2603
	2 points	-10 to	1/30000	-15000 to 15000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free- Run refreshing	NX-DA2605
	4 points	+10 V	1/8000	-4000 to 4000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA3603
			1/30000	-15000 to 15000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free- Run refreshing	NX-DA3605
Current Output type	2 points		1/8000	0 to 8000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA2203
		oints 4 to	1/30000	0 to 30000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	NX-DA2205
	4 points	20 mA	1/8000	0 to 8000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	NX-DA3203
			1/30000	0 to 30000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free- Run refreshing	NX-DA3205

## **Optional Products**

Product name		Specification				
Unit/Terminal Block Coding Pins	For 10 Units (Terminal Block: 30 pins,	or 10 Units erminal Block: 30 pins, Unit: 30 pins)				
	Specification					
Product name	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	Model	
	8				NX-TBA082	
Terminal Block	12	A/B	None	10 A	NX-TBA122	
	16				NX-TBA162	

#### **Accessories**

Not included.

## **General Specifications**

	Item	Specification		
Enclosure		Mounted in a panel		
Grounding method Gr		Ground to 100 $\Omega$ or less		
	Ambient operating temperature	0 to 55°C		
	Ambient operating humidity	10% to 95% (with no condensation or icing)		
	Atmosphere	Must be free from corrosive gases.		
	Ambient storage temperature	−25 to 70°C (with no condensation or icing)		
	Altitude	2,000 m max.		
	Pollution degree	2 or less: Meets IEC 61010-2-201.		
Operating environment	Noise immunity	2 kV on power supply line (Conforms to IEC61000-4-4.)		
environment	Overvoltage category	Category II: Meets IEC 61010-2-201.		
	EMC immunity level	Zone B		
	Vibration resistance	Conforms to IEC 60068-2-6. 5 to 8.4 Hz with 3.5-mm amplitude, 8.4 to 150 Hz, acceleration of 9.8 m/s², 100 min each in X, Y, and Z directions (10 sweeps of 10 min each = 100 min total)		
	Shock resistance	IConforms to IEC 60068-2-27. 147 m/s², 3 times each in X, Y, and Z directions		
Applicable sta	andards *	cULus: Listed (UL508), ANSI/ISA 12.12.01, EU: EN 61131-2, C-Tick or RCM, KC Registration, NK, LR		

<sup>\*</sup> Refer to the OMRON website (www.ia.omron.com) or ask your OMRON representative for the most recent applicable standards for each model.

## **Analog Input Unit Specifications**

## Analog Input Unit (voltage input type) 2 points NX-AD2603

Unit name	Analog Input Unit (voltage input type)	Model		NX-AD2603			
		External co	Screwless clamping terminal block (8				
Number of points	2 points	terminals		terminals)			
I/O refreshing method	Free-Run refreshing						
	TS indicator	· ·		Single-ended input			
	AD2603	Input rang		-10 to +10 V			
		•	rersion range	-5 to 105% (full scale)			
Indicator		Absolute r		±15 V			
maioator		Input impe		1 MΩ min.			
		Resolution		1/8000 (full scale)			
		Overall accuracy	25°C	±0.2% (full scale)			
		Conversio	0 to 55°C	±0.4% (full scale)			
		Conversio	n ume	250 μs/point  Between the input and the NX bus: Power			
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation n	nethod	= Transformer, Signal = Digital isolator (no isolation between inputs)			
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric :	strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.			
I/O power supply method	Supply from the NX bus		pacity of I/O ply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.			
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.35 W max. Connected to a Communications Coupler Unit 1.05 W max.	onnected to a CPU Unit or ommunication Control Unit					
Weight	70 g max.						
Circuit layout	Terminal block Input1+ to 2+ AMP  IOG AG: Analog circuit internal GND  NX bus connector (left)  I/O power supply + NX bus connector (right)						
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions						
Terminal connection diagram	Additional I/O Power Supply Unit NX-AD2603  A1 Input + 24 V (Sensor power supply +) 0 V (Sensor power supply - / Input -) IOG IOG IOG IOG NC NC  A8 B8 B8 The NC terminal is not connected to the internal circuit.						
Input disconnection detection	Not supported.						

## Analog Input Unit (voltage input type) 2 points NX-AD2604

Unit name	Analog Input Unit (voltage input type)	Model	NX-AD2604		
		External connection	Screwless clamping terminal block (8		
Number of points	2 points	terminals	terminals)		
I/O refreshing method	Free-Run refreshing	1			
	TS indicator	Input method	Differential Input		
	AD2604 ■TS	Input range	-10 to +10 V		
		Input conversion range Absolute maximum	-5 to 105% (full scale)		
Indicator		rating	±15 V		
Indicator		Input impedance	1 MΩ min.		
		Resolution	1/8000 (full scale)		
		Overall 25°C	±0.2% (full scale)		
		accuracy 0 to 55°C	±0.4% (full scale)		
		Conversion time	250 µs/point		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)		
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.		
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.35 W max. Connected to a Communications Coupler Unit 1.05 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	Terminal block  Input1+ to 2+  AG  AG  AG: Analog circuit internal GND  NX bus connector (left)  I/O power supply + I/O power supply - I/O power				
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions				
Terminal connection diagram	Voltage Input Unit NX-AD2604  A1				
Input disconnection detection	Not supported.				

## Analog Input Unit (voltage input type) 2 points NX-AD2608

Unit name	Analog Input Unit (voltage input type)	Model	NX-AD2608				
Number of points		External connection	Screwless clamping terminal block (8				
	2 points	terminals	terminals)				
I/O refreshing method	Selectable Synchronous I/O refreshing or F		Differential lands				
	TS indicator AD2608	Input method Input range	Differential Input -10 to +10 V				
	DTS	Input conversion range	-5 to 105% (full scale)				
		Absolute maximum					
		rating	±15 V				
Indicator		Input impedance	1 MΩ min.				
		Resolution	1/30000 (full scale)				
		Overall 25°C	±0.1% (full scale)				
		accuracy 0 to 55°C	±0.2% (full scale)				
		Conversion time	10 μs/point				
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)				
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.				
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals				
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.35 W max. Connected to a Communications Coupler Unit 1.05 W max.	I/O current consumption	No consumption				
Weight	70 g max.						
Circuit layout	Terminal block Input1+ to 2+  Input1- to 2-  AG  NX bus connector (left)  I/O power supply +  I/O power supply -	Terminal block Input1– to 2–  AG  AG: Analog circuit internal GND  NX bus connector (a-b):  (AB)  NX bus connector (a-b):  (AB)  NX bus connector (a-b):  (AB)					
Installation orientation and restrictions		<ul> <li>Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.</li> <li>Connected to a Communications Coupler Unit: Possible in 6 orientations.</li> </ul>					
Terminal connection diagram	Voltage Input Unit NX-AD2608  A1						
Input disconnection detection	Not supported.						

## Analog Input Unit (voltage input type) 4 points NX-AD3603

Unit name	Analog Input Unit (voltage input type)	Model	NX-AD3603
	0 1 ( 0 1 ); /	External connection	Screwless clamping terminal block (12
Number of points	4 points	terminals	terminals)
I/O refreshing method	Free-Run refreshing	Innuit mathed	Single-ended input
	TS indicator AD3603	Input method Input range	-10 to +10 V
	DTS DTS	Input conversion range	-5 to 105% (full scale)
		Absolute maximum	, , ,
Indicator		rating	±15 V
indicator		Input impedance	1 MΩ min.
		Resolution	1/8000 (full scale)
		Overall 25°C	±0.2% (full scale)
		accuracy 0 to 55°C	±0.4% (full scale)
		Conversion time	250 μs/point  Between the input and the NX bus: Power
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	= Transformer, Signal = Digital isolator (no
	22.140		isolation between inputs)
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply	Supply from the NX bus	Current capacity of I/O	IOV: 0.1 A/terminal max.,
method		power supply terminal	IOG: 0.1 A/terminal max.
	Connected to a CPU Unit or Communication Control Unit		
NX Unit power	1.35 W max.	I/O current consumption	No consumption
consumption	Connected to a Communications     Coupler Unit	We durient consumption	The defination
	1.10 W max.		
Weight	70 g max.		
Circuit layout	Terminal block Input1+ to 4+ IOG AG: Analog circuit internal GND  NX bus connector (left)  I/O power supply - I/O power supply		
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communications Connected to a Communications Couple Restrictions: No restrictions		
Terminal connection diagram	Additional I/O Power Supply Unit  A1  B1  OOG IOG  IOV IOV  IOV IOV  IOG IOG  A8  B8	Voltage Input Unit NX-AD3603  A1	Input + 24 V (Sensor power supply +) 0 V (Sensor power supply – / Input –) re sensor
Input disconnection detection	Not supported.		

## Analog Input Unit (voltage input type) 4 points NX-AD3604

Unit name	Analog Input Linit (voltage input type)	Model	NX-AD3604		
Offic fiame	Analog Input Unit (voltage input type)	External connection	Screwless clamping terminal block (12		
Number of points	4 points	terminals	terminals)		
I/O refreshing method	Free-Run refreshing  TS indicator  Differential Input				
	TS indicator AD3604	Input method	Differential Input		
	AD3604	Input range	-10 to +10 V		
		Input conversion range Absolute maximum	-5 to 105% (full scale)		
Indicator		rating	±15 V		
		Input impedance	1 MΩ min.		
		Resolution	1/8000 (full scale)		
		Overall 25°C accuracy 0 to 55°C	±0.2% (full scale)		
		7   7 10 00 0	±0.4% (full scale)		
		Conversion time	250 μs/point		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)		
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.		
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.35 W max. Connected to a Communications Coupler Unit 1.10 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	Terminal block Input1+ to 4+  AG  AG  AG: Analog circuit internal GND  NX bus connector (left)  I/O power supply +  I/O power supply -				
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions				
Terminal connection diagram	Voltage Input Unit NX-AD3604  A1 Input1+ Input2+ Input2+ Input + Input3+ Input4+ Input3- Input4- AG AG AG AG AG AG B8  AG terminal is connected to 0 V of analog circuit inside the Unit. It is not necessary to wire AG terminal normally.				
Input disconnection detection	Not supported.				

## Analog Input Unit (voltage input type) 4 points NX-AD3608

Unit name	Analog Input Unit (voltage input type)	Model	NX-AD3608		
Number of points	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)		
I/O refreshing method	Selectable Synchronous I/O refreshing or Free-Run refreshing				
	TS indicator	Input method	Differential Input		
	AD3608 • TS	Input range	-10 to +10 V		
		Input conversion range	-5 to 105% (full scale)		
Indicator		Absolute maximum rating	±15 V		
		Input impedance	1 MΩ min.		
		Resolution	1/30000 (full scale)		
		Overall 25°C accuracy 0 to 55°C	±0.1% (full scale) ±0.2% (full scale)		
		Conversion time	10 μs/point		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)		
Insulation resistance	20 $\mbox{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.		
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.45 W max. Connected to a Communications Coupler Unit 1.10 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	Terminal block Input1+ to 4+  AG  AG  AG: Analog circuit internal GND  NX bus connector (left)  I/O power supply +  I/O power supply -				
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communications Connected to a Communications Couple Restrictions: No restrictions				
Terminal connection diagram	Voltage Input Unit NX-AD3608  A1 Input1+ Input2+ Input1- Input2- Input3- Input4- AG AG AG AG AG AG  AG terminal is connected to 0 V of analog circuit inside the Unit. It is not necessary to wire AG terminal normally.				
Input disconnection detection	Not supported.				

## Analog Input Unit (voltage input type) 8 points NX-AD4603

Unit name	Analog Input Unit (voltage input type)	Model	NX-AD4603		
Number of points			Screwless clamping terminal block (16 terminals)		
I/O refreshing method	Free-Run refreshing				
	TS indicator	Input method	Single-ended input		
	AD4603 ■TS	Input range	-10 to +10 V		
		Input conversion range	-5 to 105% (full scale)		
Indicator		Absolute maximum rating	±15 V		
mulcator		Input impedance	1 MΩ min.		
		Resolution	1/8000 (full scale)		
		Overall 25°C accuracy 0 to 55°C	±0.2% (full scale)		
			±0.4% (full scale)		
		Conversion time	250 μs/point  Between the input and the NX bus: Power		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	= Transformer, Signal = Digital isolator (no isolation between inputs)		
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.		
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOG: 0.1 A/terminal max.		
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.45 W max. Connected to a Communications Coupler Unit 1.15 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	Terminal block Input1+ to 8+ IOG  NX bus connector (left) I/O power supply + I/O power supply -	1 MΩ  AG  AG: Analog circuit in	ternal GND  I/O power supply +  NX bus connector (right)		
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions				
Terminal connection diagram	Additional I/O Power Supply Unit Power Supply Connection Unit NX-AD4603  A1 B1 OV IOV IOV IOV IOV IOV IOV IOV IOV IOV				
Input disconnection detection	Not supported.				

## Analog Input Unit (voltage input type) 8 points NX-AD4604

Unit name	Analog Input Unit (voltage input type)	Model	NX-AD4604	
Number of points	8 points	External connection	Screwless clamping terminal block (16	
I/O refreshing method	Free-Run refreshing	terminals	terminals)	
70 refreshing method	TS indicator	Input method	Differential Input	
	AD4604	Input range	-10 to +10 V	
	₽TS	Input conversion range	-5 to 105% (full scale)	
		Absolute maximum rating	±15 V	
Indicator		Input impedance	1 MΩ min.	
		Resolution	1/8000 (full scale)	
		Overall 25°C	±0.2% (full scale)	
		accuracy 0 to 55°C	±0.4% (full scale)	
		Conversion time	250 μs/point	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.45 W max. Connected to a Communications Coupler Unit 1.15 W max.	I/O current consumption	No consumption	
Weight	70 g max.			
Circuit layout	Terminal block Input1+ to 8+  Input1- to 8-    S 510 KΩ   S 510 KΩ    AG   AG   AG: Analog circuit internal GND    NX bus connector (left)   I/O power supply + I/O power supply - I/O			
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communical Connected to a Communications Couple Restrictions: No restrictions			
Terminal connection diagram	<del>                                 </del>	nput + nput –		
Input disconnection detection	Not supported.			

## Analog Input Unit (voltage input type) 8 points NX-AD4608

Unit name	Analog Input Unit (voltage input type)	Model	NX-AD4608		
Number of points	8 points	External connection	Screwless clamping terminal block (16		
	terminais		terminals)		
I/O refreshing method	Selectable Synchronous I/O refreshing or Free-Run refreshing  TS indicator				
	AD4608	Input method Input range	-10 to +10 V		
	<b>■</b> TS	Input conversion range	-5 to 105% (full scale)		
		Absolute maximum	, ,		
		rating	±15 V		
Indicator		Input impedance	1 MΩ min.		
		Resolution	1/30000 (full scale)		
		Overall 25°C	±0.1% (full scale)		
		accuracy 0 to 55°C	±0.2% (full scale)		
		Conversion time	10 μs/point		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)		
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.		
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.45 W max. Connected to a Communications Coupler Unit 1.15 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	Terminal block Input1+ to 8+ Input1- to 8- S 510 KΩ AG: Analog circuit internal GND  NX bus connector (left)  I/O power supply + I/O power supply - I/O power supply				
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions				
Terminal connection diagram		nput + nput –			
Input disconnection detection	Not supported.				

## Analog Input Unit (current input type) 2 points NX-AD2203

Unit name	Analog Input Unit (current input type)	Model	NX-AD2203	
		External connection	Screwless clamping terminal block (8	
Number of points	2 points	terminals	terminals)	
I/O refreshing method	Free-Run refreshing			
	TS indicator	Input method	Single-ended input	
	AD2203 •TS	Input range	4 to 20 mA	
		Input conversion range Absolute maximum	-5 to 105% (full scale)	
Indicator		rating	±30 mA	
maioator		Input impedance	250 Ω	
		Resolution	1/8000 (full scale)	
		Overall 25°C accuracy 0 to 55°C	±0.2% (full scale)	
		Conversion time	±0.4% (full scale) 250 μs/point	
		Conversion time	Between the input and the NX bus: Power	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	= Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.25 W max. Connected to a Communications Coupler Unit 0.90 W max.	I/O current consumption	No consumption	
Weight	70 g max.			
Circuit layout	Terminal block Input1+ to 2+ IOG  NX bus connector (left)  I/O power supply + I/O power supply -	250 Ω AMP AG AG: Analog circuit inte	I/O power supply + NX bus connector (right)	
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communica Connected to a Communications Couple Restrictions: No restrictions			
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1  IOV IOV  IOG IOG  IOG IOG  A8 B8	IOG IOG NC	Input +  24 V (Sensor power supply +)  0 V (Sensor power supply – / Input –)  wire sensor  minal is not connected to the internal circuit.	
Input disconnection detection	Supported.			

## Analog Input Unit (current input type) 2 points NX-AD2204

Unit name	Analog Input Unit (current input type)	Model	NX-AD2204		
	3 1 \ 1 71 7	External connection	Screwless clamping terminal block (8		
Number of points	2 points	terminals	terminals)		
I/O refreshing method	Free-Run refreshing				
	TS indicator	Input method	Differential Input		
	AD2204 ■TS	Input range	4 to 20 mA		
		Input conversion range	-5 to 105% (full scale)		
Indicator		Absolute maximum rating	±30 mA		
maioator		Input impedance	250 Ω		
		Resolution	1/8000 (full scale)		
		Overall 25°C accuracy 0 to 55°C	±0.2% (full scale)		
		Conversion time	±0.4% (full scale) 250 μs/point		
		Conversion time	Between the input and the NX bus: Power		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	= Transformer, Signal = Digital isolator (no isolation between inputs)		
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.		
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals		
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.25 W max. Connected to a Communications Coupler Unit 0.90 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	Terminal block Input1+ to 2+  AG  AG: Analog circuit internal GND  NX bus connector (left)  I/O power supply +  I/O power supply -				
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions				
Terminal connection diagram	Current Input Unit NX-AD2204  A1 Input1+ Input2+ Input1- Input2- AG AG  NC NC  AG terminal is connected to 0 V of analog circuit inside the Unit. It is not necessary to wire AG terminal normally.				
Input disconnection detection	Supported.				

## Analog Input Unit (current input type) 2 points NX-AD2208

Unit name	Analog Input Unit (current input type)	Model	NX-AD2208	
Number of points	2 points External connection terminals		Screwless clamping terminal block (8 terminals)	
I/O refreshing method	Selectable Synchronous I/O refreshing or F			
	TS indicator	Input method	Differential Input	
	AD2208 DTS	Input range	4 to 20 mA	
		Input conversion range	-5 to 105% (full scale)	
Indicator		Absolute maximum rating	±30 mA	
maioato.		Input impedance	250 Ω	
		Resolution	1/30000 (full scale)	
		Overall 25°C accuracy 0 to 55°C	±0.1% (full scale) ±0.2% (full scale)	
		Conversion time	10 μs/point	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.25 W max. Connected to a Communications Coupler Unit 0.90 W max.	I/O current consumption	No consumption	
Weight	70 g max.			
Circuit layout	Terminal block Input1+ to 2+		I/O power supply + NX bus connector (right)	
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communica Connected to a Communications Couple Restrictions: No restrictions			
Terminal connection diagram	Current Input Unit NX-AD2208  A1			
Input disconnection detection	Supported.			

## Analog Input Unit (current input type) 4 points NX-AD3203

Unit name	Analog Input Unit (current input type)	Model	NX-AD3203	
		External connection	Screwless clamping terminal block (12	
Number of points	4 points	terminals	terminals)	
I/O refreshing method	Free-Run refreshing			
	TS indicator	Input method	Single-ended input	
	AD3203 DTS	Input range	4 to 20 mA	
		Input conversion range	-5 to 105% (full scale)	
Indicator		Absolute maximum rating	±30 mA	
indicator		Input impedance	250 Ω	
		Resolution	1/8000 (full scale)	
		Overall 25°C	±0.2% (full scale)	
		accuracy 0 to 55°C	±0.4% (full scale)	
		Conversion time	250 μs/point  Between the input and the NX bus: Power	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	= Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.25 W max. Connected to a Communications Coupler Unit 0.90 W max.	I/O current consumption		
Weight	70 g max.			
Circuit layout	Terminal block Input1+ to 4+ IOG  NX bus connector (left)  I/O power supply + I/O power supply -	250 Ω AMP AG: Analog circuit inte	I/O power supply + NX bus connector (right)	
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions			
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1  Old IOV IOV  IOV IOV  IOG IOG  A8 B8	Current Input Unit NX-AD3203  A1 Input1+ Input2+ IOV IOV IOG IOG Input3+ Input4+ IOV IOV IOG IOG IOG IOG  A8 B8	Input +  24 V (Sensor power supply +)  0 V (Sensor power supply – / Input –)  vire sensor	
Input disconnection detection	Supported.			

## Analog Input Unit (current input type) 4 points NX-AD3204

Unit name	Analog Input Unit (current input type)	Model	NX-AD3204	
Number of points	4 points	External connection	Screwless clamping terminal block (12	
•	'	terminals	terminals)	
I/O refreshing method	Free-Run refreshing	In most weath and	Differential land	
	TS indicator AD3204	Input method Input range	Differential Input 4 to 20 mA	
	DTS	Input range Input conversion range	-5 to 105% (full scale)	
		Absolute maximum	· · · · ·	
		rating	±30 mA	
Indicator		Input impedance	250 Ω	
		Resolution	1/8000 (full scale)	
		Overall 25°C	±0.2% (full scale)	
		accuracy 0 to 55°C	±0.4% (full scale)	
		Conversion time	250 μs/point	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.25 W max.     Connected to a Communications Coupler Unit 0.90 W max.	I/O current consumption	No consumption	
Weight	70 g max.			
Circuit layout	Terminal block Input1+ to 4+  AG  NX bus connector (left)  I/O power supply +  I/O power supply -	AMP AG: Analointeri	og circuit nal GND  I/O power supply + NX bus connector (right)	
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions			
Terminal connection diagram	Current Input Unit NX-AD3204  A1 B1 Input1+ Input2+ Input1- Input2- Input3+ Input4+ Input3- Input4- AG			
Input disconnection detection	Supported.			

## Analog Input Unit (current input type) 4 points NX-AD3208

Unit name	Analog Input Unit (current input type)	Model		NX-AD3208	
	3 1 1 1 1 1 1	External c	onnection	Screwless clamping terminal block (12	
Number of points	4 points	terminals		terminals)	
I/O refreshing method	Selectable Synchronous I/O refreshing or Free-Run refreshing				
	TS indicator	Input meth		Differential Input	
	AD3208 DTS		je	4 to 20 mA	
			version range	-5 to 105% (full scale)	
In all a stan		Absolute rating	maximum	±30 mA	
Indicator		Input impe	edance	250 Ω	
		Resolution	1	1/30000 (full scale)	
		Overall	25°C	±0.1% (full scale)	
		accuracy	0 to 55°C	±0.2% (full scale)	
		Conversio	on time	10 µs/point	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation n	method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	20 M $\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric		510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	No supply		apacity of I/O oply terminal	Without I/O power supply terminals	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.30 W max. Connected to a Communications Coupler Unit 0.95 W max.	I/O current consumption		No consumption	
Weight	70 g max.				
Circuit layout	Terminal block Input1+ to 4+  AG  NX bus connector (left)  I/O power supply +  I/O power supply -	\$510 ΚΩ \$ 510	AO. Aliai	og circuit nal GND  I/O power supply + NX bus connector (right)	
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions				
Terminal connection diagram	Current Input Unit NX-AD3208  A1 Input1+ Input2+ Input1- Input2- Input3+ Input4+ Input3- Input4 AG				
Input disconnection detection	Supported.				

## Analog Input Unit (current input type) 8 points NX-AD4203

Unit name	Analog Input Unit (current input type)	Model	NX-AD4203	
Number of points	8 points	External connection terminals	Screwless clamping terminal block (16 terminals)	
I/O refreshing method	Free-Run refreshing			
	TS indicator	Input method	Single-ended input	
	AD4203 DTS	Input range	4 to 20 mA	
		Input conversion range	-5 to 105% (full scale)	
Indicator		Absolute maximum rating	±30 mA	
indicator		Input impedance	85 Ω	
		Resolution	1/8000 (full scale)	
		Overall 25°C	±0.2% (full scale)	
		accuracy 0 to 55°C	±0.4% (full scale)	
		Conversion time	250 µs/point	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max.	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.40 W max. Connected to a Communications Coupler Unit 1.05 W max.	I/O current consumption	No consumption	
Weight	70 g max.			
Circuit layout	Terminal block Input1+ to 8+  NX bus connector (left)  I/O power supply +	AG: Analog circuit inte	I/O power supply + NX bus connector (right)	
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communica Connected to a Communications Couple Restrictions: No restrictions			
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1	B1 A1 B1 Input1+ Input2+ Input3+ Input4+ Input4+	Input +  24 V (Sensor power supply +) 0 V (Sensor power supply – / Input –)  ree-wire Sensor	
Input disconnection detection	Supported.			

## Analog Input Unit (current input type) 8 points NX-AD4204

Unit name	Analog Input Unit (current input type)	Model	NX-AD4204			
	<b>.</b>	External connection	Screwless clamping terminal block (16			
Number of points	8 points	terminals	terminals)			
I/O refreshing method	Free-Run refreshing					
	TS indicator AD4204	Input method	Differential Input 4 to 20 mA			
	DTS	Input conversion range	-5 to 105% (full scale)			
		Input conversion range Absolute maximum	, ,			
		rating	±30 mA			
Indicator		Input impedance	85 Ω			
		Resolution	1/8000 (full scale)			
		Overall 25°C	±0.2% (full scale)			
		accuracy 0 to 55°C	±0.4% (full scale)			
		Conversion time	250 μs/point			
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)			
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.			
I/O power supply method	No supply	Current capacity of I/O power supply terminal	Without I/O power supply terminals			
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.40 W max. Connected to a Communications Coupler Unit 1.05 W max.	I/O current consumption	No consumption			
Weight	70 g max.					
Circuit layout			log circuit rnal GND  I/O power supply + NX bus connector (right)			
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communica Connected to a Communications Couple Restrictions: No restrictions					
Terminal connection diagram		nput + nput –				
Input disconnection detection	Supported.					

#### Analog Input Unit (current input type) 8 points NX-AD4208

Unit name	Analog Input Unit (current input type)	Model		NX-AD	04208
Number of points	8 points	External conterminals	onnection	Screw	less clamping terminal block (16 als)
I/O refreshing method	Selectable Synchronous I/O refreshing or F	ree-Run refi	reshing	_	
	TS indicator	Input meth	od	Differe	ential Input
	AD4208	Input rang	е	4 to 20	) mA
	₽TS	Input conv	ersion range	-5 to 1	05% (full scale)
ha dha a a a a		Absolute rating	maximum	±30 m.	A
Indicator		Input impe	dance	85 Ω	
		Resolution	1	1/3000	00 (full scale)
		Overall	25°C	±0.1%	(full scale)
		accuracy	0 to 55°C	±0.2%	(full scale)
		Conversio	n time	10 μs/j	point
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation n	nethod	= Tran	en the input and the NX bus: Power sformer, Signal = Digital isolator (no
Insulation resistance	20 MΩ min. between isolated circuits (at 100 VDC)	Dielectric :	strength	510 V	on between inputs)  AC between isolated circuits for 1  at a leakage current of 5 mA max.
I/O power supply method	No supply		pacity of I/O		ut I/O power supply terminals
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.45 W max. Connected to a Communications Coupler Unit 1.10 W max.		t consumption	No cor	nsumption
Weight	70 g max.				
Circuit layout	Terminal block Input1+ to 8+ Input1- to 8-  NX bus connector (left)  I/O power supply +  I/O power supply -	510 KΩ ₹ 510 l G AG	AG: Anal	og circuit nal GND (	I/O power supply + NX bus connector (right)
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communica Connected to a Communications Couple Restrictions: No restrictions				it installation.
Terminal connection diagram		nput + nput –			
Input disconnection	[AO DO]				

## **Analog Output Unit Specifications**

## Analog Output Unit (voltage output type) 2 points NX-DA2603

Unit name	Analog Output Unit (voltage output type)	Model	NX-DA2603	
Number of points	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)	
I/O refreshing method	Free-Run refreshing			
	TS indicator DA2603  TS	Output range Output conversion range	-10 to +10 V -5 to 105% (full scale)	
		Allowable load resistance	5 kΩ min.	
Indicator		Output impedance	0.5 Ω max.	
		Resolution	1/8000 (full scale)	
		Overall 25°C	±0.3% (full scale)	
		accuracy 0 to 55°C	±0.5% (full scale)	
		Conversion time	250 μs/point	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.	
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.40 W max. Connected to a Communications Coupler Unit 1.10 W max.	I/O current consumption	No consumption	
Weight	70 g max.			
Circuit layout	NX bus connector (left) I/O power supply -	AMP W	Output V1+ to V2+  IOG  I/O power supply +  I/O power supply -  I/O power supply -  I/O power supply -	
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions			
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1  IOO IOV  IOV IOV  IOG IOG  A8 B8 A8	Voltage Output Unit NX-DA2603  V1+ V2+  IOV IOV  IOG IOG  NC NC  B8	Voltage output +  Voltage output -	

#### Analog Output Unit (voltage output type) 2 points NX-DA2605

Unit name	Analog Output Unit (voltage output type)	Model	NX-DA2605
Number of points	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)
/O refreshing method	Selectable Synchronous I/O refreshing or F	ree-Run refreshing	
	TS indicator	Output range	-10 to +10 V
	DA2605	Output conversion range	-5 to 105% (full scale)
		Allowable load resistance	5 k $Ω$ min.
Indicator		Output impedance	0.5 Ω max.
		Resolution	1/30000 (full scale)
		Overall 25°C	±0.1% (full scale)
		accuracy 0 to 55°C	±0.3% (full scale)
		Conversion time	10 μs/point
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.40 W max. Connected to a Communications Coupler Unit 1.10 W max.	I/O current consumption	No consumption
Weight	70 g max.		
Circuit layout	NX bus connector (left)  NX bus connector I/O power supply + I/O power supply -	aMP W	Output V1+ to V2+  IOG  I/O power supply +  I/O power supply -  I/O power supply -  I/O power supply -
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communications Couple Restrictions: No restrictions		
Terminal connection diagram	●IOV IOV  ■IOG IOG  IOV IOV  IOG IOG	Voltage Output Unit NX-DA2605  A V1+ V2+  IOV IOV  IOG IOG  NC NC  A8 B8	Voltage output + Voltage output –

## Analog Output Unit (voltage output type) 4 points NX-DA3603

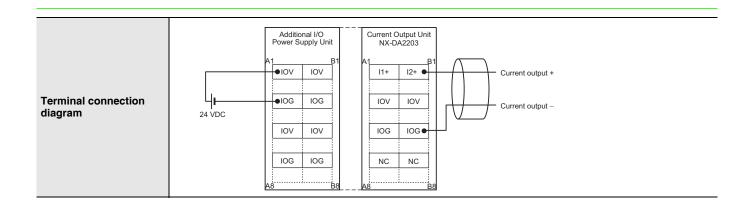
Unit name	Analog Output Unit (voltage output type)	Model		NX-DA3603	
Number of points	4 points	External conterminals	onnection	Screwless clamping terminal blo terminals)	ck (12
/O refreshing method	Free-Run refreshing				
	TS indicator	Output ran	nge	-10 to +10 V	
	DA3603	Output cor range	nversion	-5 to 105% (full scale)	
		Allowable resistance		5 kΩ min.	
Indicator		Output imp	pedance	$0.5~\Omega$ max.	
		Resolution	1	1/8000 (full scale)	
		Overall	25°C	±0.3% (full scale)	
		accuracy	0 to 55°C	±0.5% (full scale)	
		Conversio	n time	250 μs/point	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation n	nethod	Between the input and the NX bu = Transformer, Signal = Digital is isolation between inputs)	us: Power solator (no
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric	strength	510 VAC between isolated circui minute at a leakage current of 5	
I/O power supply method	Supply from the NX bus		pacity of I/O	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.	
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.35 W max. Connected to a Communications Coupler Unit 1.25 W max.	I/O current consumption		No consumption	
Weight	70 g max.				
Circuit layout	NX bus connector (left)  NX bus connector (left)  NX bus connector (left)		MP WP AG	Output V1+ to V4+  IOG  I/O power supply +  I/O power supply -  I/O power supply -	k
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions				
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1 OIOV IOV IOV IOV IOV IOV IOV IOV IOV IO	Voltage Output I NX-DA3603  A1	B1 (	─ Voltage output + ─ Voltage output –	

## Analog Output Unit (voltage output type) 4 points NX-DA3605

Unit name	Analog Output Unit (voltage output type)	Model		NX-DA3605
Number of points	4 points	External connection terminals		Screwless clamping terminal block (12 terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or F		reshina	terminals)
	TS indicator	Output rar		-10 to +10 V
	DA3605	Output corrange		-5 to 105% (full scale)
		Allowable resistance		5 k $Ω$ min.
Indicator		Output im	pedance	0.5 Ω max.
		Resolution	ו	1/30000 (full scale)
		Overall	25°C	±0.1% (full scale)
		accuracy	0 to 55°C	±0.3% (full scale)
		Conversio	n time	10 μs/point
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation n	nethod	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric	strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus		pacity of I/O	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 1.60 W max. Connected to a Communications Coupler Unit 1.25 W max.	I/O current consumption		No consumption
Weight	70 g max.			
Circuit layout	NX bus connector (left)  NX bus convector (left)  NX bus convector (left)		MP 00 AG	Output V1+ to V4+  IOG  I/O power supply +  I/O power supply -  I/O power supply -  I/O power supply -
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communication Control Unit: Possible in upright installation.  Connected to a Communications Coupler Unit: Possible in 6 orientations.  Restrictions: No restrictions			
Terminal connection diagram	Additional I/O Power Supply Unit  A1 B1 OIOV IOV IOV IOV IOV IOG IOG A8 B8	Voltage Output NX-DA3605  V1+ V2+ IOV IOV IOG IOG V3+ V4+ IOV IOV IOG IOG	B1 ()	Voltage output + Voltage output –

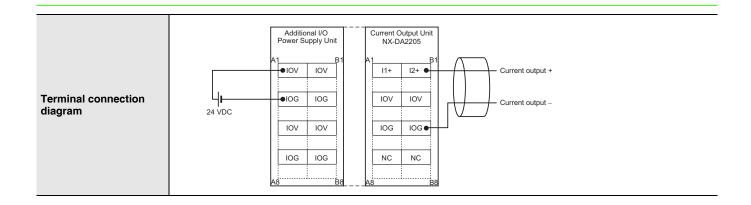
## Analog Output Unit (current output type) 2 points NX-DA2203

Unit name	Analog Output Unit (current output type)	Model	NX-DA2203
Number of points	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)
I/O refreshing method	Free-Run refreshing		
	TS indicator	Output range	4 to 20 mA
	DA2203	Output conversion range	-5 to 105% (full scale)
Indicator		Allowable load resistance	600 Ω max.
		Resolution	1/8000 (full scale)
		Overall 25°C	±0.3% (full scale)
		accuracy 0 to 55°C	±0.6% (full scale)
		Conversion time	250 μs/point
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.
NX Unit power consumption	<ul> <li>Connected to a CPU Unit or Communication Control Unit 2.10 W max.</li> <li>Connected to a Communications Coupler Unit 1.75 W max.</li> </ul>	I/O current consumption	No consumption
Weight	70 g max.		
Circuit layout	NX bus connector (left)  NX bus connector (left)  NX bus connector (left)	amp wit internal GND AG	Output I1+ to I2+  IOG  I/O power supply +  I/O power supply -  I/O power supply -
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communic Connected to a Communications Coupl Restrictions: For upright installation: No restrictions For any installation other than upright: Res	er Unit: Possible in 6 orienta	ations.



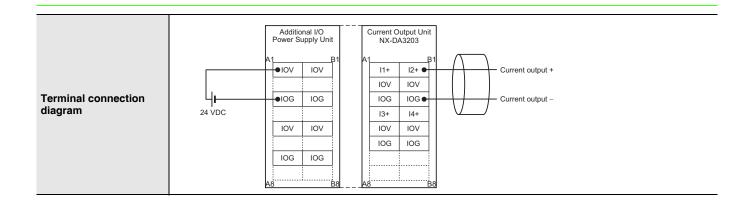
## Analog Output Unit (current output type) 2 points NX-DA2205

Unit name	Analog Output Unit (current output type)	Model	NX-DA2205
Number of points	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)
I/O refreshing method	Selectable Synchronous I/O refreshing or I	ree-Run refreshing	
	TS indicator	Output range	4 to 20 mA
	DA2205 ■TS	Output conversion range	-5 to 105% (full scale)
Indicator		Allowable load resistance	$600~\Omega$ max.
		Resolution	1/30000 (full scale)
		Overall 25°C	±0.1% (full scale)
		accuracy 0 to 55°C	±0.3% (full scale)
		Conversion time	10 μs/point
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.
NX Unit power consumption	<ul> <li>Connected to a CPU Unit or Communication Control Unit 2.10 W max.</li> <li>Connected to a Communications Coupler Unit 1.75 W max.</li> </ul>	I/O current consumption	No consumption
Weight	70 g max.		
Circuit layout	NX bus connector (left)  NX bus connector (left)  NX bus connector (left)	uit internal GND AG	Output I1+ to I2+  IOG  I/O power supply +  I/O power supply -  I/O power supply -
Installation orientation and restrictions	Installation orientation:  • Connected to a CPU Unit or Communic  • Connected to a Communications Couple Restrictions:  For upright installation: No restrictions  For any installation other than upright: Res	tricted as shown in the grap  Use  40 55 (°C)	tions.



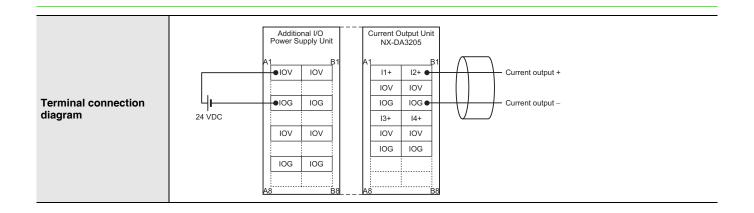
## Analog Output Unit (current output type) 4 points NX-DA3203

Unit name	Analog Output Unit (current output type)	Model	NX-DA3203
Number of points	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)
I/O refreshing method	Free-Run refreshing		
	TS indicator	Output range	4 to 20 mA
	DA3203	Output conversion range	-5 to 105% (full scale)
Indicator		Allowable load resistance	$350~\Omega$ max.
		Resolution	1/8000 (full scale)
		Overall 25°C	±0.3% (full scale)
		accuracy 0 to 55°C	±0.6% (full scale)
		Conversion time	250 μs/point
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.
NX Unit power consumption	<ul> <li>Connected to a CPU Unit or Communication Control Unit 2.10 W max.</li> <li>Connected to a Communications Coupler Unit 1.80 W max.</li> </ul>	I/O current consumption	No consumption
Weight	70 g max.		
Circuit layout	NX bus connector (left)  NX bus connector (left)  NX bus connector (left)	AMP W	Output I1+ to I4+  IOG  I/O power supply +  I/O power supply -  I/O power supply -  I/O power supply -
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communic Connected to a Communications Coupl Restrictions: For upright installation: No restrictions For any installation other than upright: Res	er Unit: Possible in 6 orienta	itions.



## Analog Output Unit (current output type) 4 points NX-DA3205

Unit name	Analog Output Unit (current output type)	Model	NX-DA3205		
Number of points	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)		
I/O refreshing method	Selectable Synchronous I/O refreshing or Free-Run refreshing				
	TS indicator	Output range	4 to 20 mA		
	DA3205	Output conversion range	-5 to 105% (full scale)		
Indicator		Allowable load resistance	$350~\Omega$ max.		
		Resolution	1/30000 (full scale)		
		Overall 25°C	±0.1% (full scale)		
		accuracy 0 to 55°C	±0.3% (full scale)		
		Conversion time	10 μs/point		
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation method	Between the input and the NX bus: Power = Transformer, Signal = Digital isolator (no isolation between inputs)		
Insulation resistance	$20~\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric strength	510 VAC between isolated circuits for 1 minute at a leakage current of 5 mA max.		
I/O power supply method	Supply from the NX bus	Current capacity of I/O power supply terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.		
NX Unit power consumption	Connected to a CPU Unit or Communication Control Unit 2.10 W max. Connected to a Communications Coupler Unit 1.80 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	NX bus connector (left)  NX bus connector (left)  NX bus connector (left)	aMP	Output I1+ to I4+  IOG  I/O power supply +  I/O power supply -  I/O power supply -		
Installation orientation and restrictions	Installation orientation:  Connected to a CPU Unit or Communic  Connected to a Communications Couple Restrictions:  For upright installation: No restrictions  For any installation other than upright: Res	tricted as shown in the grap  Use it within the state of	tions. The below.		



#### **Version Information**

#### Connected to a CPU Unit

Refer to the user's manual for the CPU Unit details on the CPU Units to which NX Units can be connected.

	NX Unit	Corresponding uni	t versions/versions
Model	Unit version	CPU Unit	Sysmac Studio
NX-AD	Ver.1.0	Ver.1.13	Ver.1.17

Note: Some Units do not have all of the versions given in the above table. If a Unit does not have the specified version, support is provided by the oldest available version after the specified version. Refer to the user's manuals for the specific Units for the relation between models and versions.

#### Connected to an EtherCAT Coupler Unit

N	NX Unit	Corre	responding unit versions/versions			
Model Unit version		EtherCAT Coupler Unit	CPU Unit or Industrial PC	Sysmac Studio		
NX-AD	Ver.1.0	Ver.1.0	Ver.1.05	Ver.1.06		

Note: Some Units do not have all of the versions given in the above table. If a Unit does not have the specified version, support is provided by the oldest available version after the specified version. Refer to the user's manuals for the specific Units for the relation between models and versions.

#### Connected to an EtherNet/IP Coupler Unit

NX Unit		Corresponding unit versions/versions					
Model Unit versio		Application with an NJ/NX/NY-series Controller *1			Application with a CS/CJ/CP-series PLC *2		
		EtherNet/IP Coupler Unit	CPU Unit or Industrial PC	Sysmac Studio	EtherNet/IP Coupler Unit	Sysmac Studio	NX-IO Configurator *3
NX-AD	Ver. 1.0	Ver. 1.2	Ver. 1.14	Ver. 1.19	Ver. 1.0	Ver. 1.10	Ver. 1.00

Note: Some Units do not have all of the versions given in the above table. If a Unit does not have the specified version, support is provided by the oldest available version after the specified version. Refer to the user's manuals for the specific Units for the relation between models and versions.

- \*1 Refer to the user's manual for the EtherNet/IP Coupler Units for information on the unit versions of EtherNet/IP Units that are compatible with EtherNet/IP Coupler Units.
- \*2 Refer to the user's manual for the EtherNet/IP Coupler Units for information on the unit versions of CPU Units and EtherNet/IP Units that are compatible with EtherNet/IP Coupler Units.
- \*3 For connection to an EtherNet/IP Coupler Unit with unit version 1.0, connection is supported only for a connection to the peripheral USB port on the EtherNet/IP Coupler Unit. You cannot connect by any other path. If you need to connect by another path, use an EtherNet/IP Coupler Unit with unit version 1.2 or later.

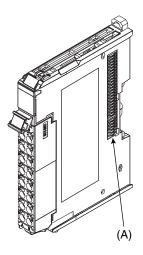
#### **Connected to Communication Control Units**

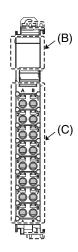
	NX Unit	Corresponding unit versions/versions		
Model	Unit version	Communication Control Unit	Sysmac Studio	
NX-AD	Ver.1.0	Ver.1.00	Ver.1.24	

Note: Some Units do not have all of the versions given in the above table. If a Unit does not have the specified version, support is provided by the oldest available version after the specified version. Refer to the user's manuals for the specific Units for the relation between models and versions.

## **External Interface**

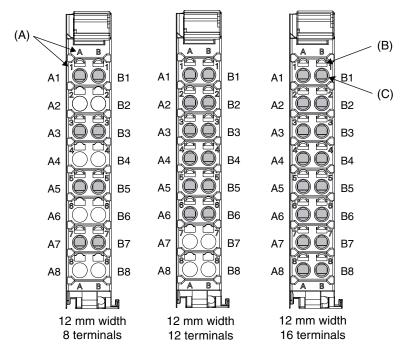
## Screwless Clamping Terminal Block Type 12 mm Width





Letter	Item	Specification	
(A)	NX bus connector	This connector is used to connect to another Unit.	
(B)	Indicators	The indicators show the current operating status of the Unit.	
(C)	Terminal block	The terminal block is used to connect to external devices. The number of terminals depends on the Unit.	

#### **Terminal Blocks**



Letter	Item	Specification
(A)	Terminal number indication	The terminal number is identified by a column (A through D) and a row (1 through 8).  Therefore, terminal numbers are written as a combination of columns and rows, A1 through A8 and B1 through B8.  The terminal number indication is the same regardless of the number of terminals on the terminal block.
(B)	Release hole	A flat-blade screwdriver is inserted here to attach and remove the wiring.
(C)	Terminal hole	The wires are inserted into these holes.

#### **Applicable Terminal Blocks for Each Unit Model**

	Terminal Blocks						
Unit model	Model	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity		
NX-AD2□□□	NX-TBA082	8	A/B	None	10 A		
NX-AD3□□□	NX-TBA122	12	A/B	None	10 A		
NX-AD4□□□	NX-TBA162	16	A/B	None	10 A		
NX-DA2□□□	NX-TBA082	8	A/B	None	10 A		
NX-DA3□□□	NX-TBA122	12	A/B	None	10 A		

#### **Applicable Wires**

#### **Using Ferrules**

If you use ferrules, attach the twisted wires to them.

Observe the application instructions for your ferrules for the wire stripping length when attaching ferrules.

Always use plated one-pin ferrules. Do not use unplated ferrules or two-pin ferrules.

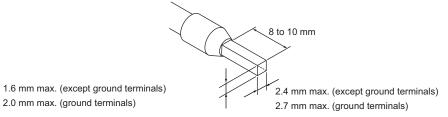
The applicable ferrules, wires, and crimping tool are given in the following table.

Terminal type	Manufacturer	Ferrule model	Applicable wire (mm² (AWG))	Crimping tool
Terminals other	Phoenix Contact	AI0,34-8	0.34 (#22)	Phoenix Contact (The figure in parentheses is the applicable wire size.)
than ground terminals		AI0,5-8	0.5 (#20)	CRIMPFOX 6 (0.25 to 6 mm <sup>2</sup> , AWG24 to 10)
terminais		AI0,5-10		
		AI0,75-8	0.75 (#18)	
		AI0,75-10		
		AI1,0-8	1.0 (#18)	
		AI1,0-10		
		AI1,5-8	1.5 (#16)	
		Al1,5-10		
Ground terminals		Al2,5-10	2.0 *	
Terminals other	Weidmuller	H0.14/12	0.14 (#26)	Weidmuller (The figure in parentheses is the applicable wire size.)
than ground terminals		H0.25/12	0.25 (#24)	PZ6 Roto (0.14 to 6 mm², AWG 26 to 10)
terminais		H0.34/12	0.34 (#22)	
		H0.5/14	0.5 (#20)	
		H0.5/16	1	
		H0.75/14	0.75 (#18)	
		H0.75/16	1	
		H1.0/14	1.0 (#18)	
		H1.0/16	1	
		H1.5/14	1.5 (#16)	
		H1.5/16		

<sup>\*</sup> Some AWG 14 wires exceed 2.0 mm² and cannot be used in the screwless clamping terminal block.

When you use any ferrules other than those in the above table, crimp them to the twisted wires so that the following processed dimensions are achieved.

Finished Dimensions of Ferrules



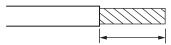
#### **Using Twisted Wires/Solid Wires**

If you use the twisted wires or the solid wires, use the following table to determine the correct wire specifications.

Terminals			Wire type			Wire size	Conductor length (stripping length)
		Twisted wires		Solid wire			
Classification	Current capacity	Plated Unplated		Plated	Unplated		(cuipping iongin)
All terminals except ground terminals	2 A or less	Possible	Possible	Possible	Possible	0.08 to 1.5 mm <sup>2</sup> AWG28 to 16	8 to 10 mm
	Greater than 2 A and 4 A or less		Not Possible	Possible *1	Not Possible		
	Greater than 4 A	Possible *1		Not Possible			
Ground terminals		Possible	Possible	Possible *2	Possible *2	2.0 mm <sup>2</sup>	9 to 10 mm

<sup>\*1.</sup> Secure wires to the screwless clamping terminal block. Refer to the Securing Wires in the USER'S MANUAL for how to secure wires.

<sup>\*2.</sup> With the NX-TB□□□1 Terminal Block, use twisted wires to connect the ground terminal. Do not use a solid wire.



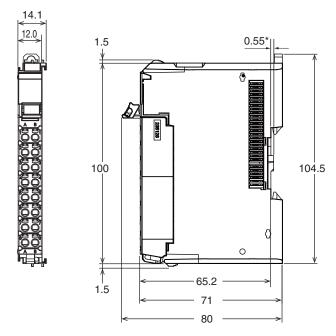
Conductor length (stripping length)

< Additional Information > If more than 2 A will flow on the wires, use plated wires or use ferrules.

**Dimensions** (Unit/mm)

## **Screwless Clamping Terminal Block Type**

12 mm Width



<sup>\*</sup> The dimension is 1.35 mm for Units with lot numbers through December 2014.

#### **Related Manual**

Cat. No.	Model number	Manual name	Application	Description
W522	NX-AD	NX-series Analog I/O Units User's Manual for Analog Input Units and Analog Output Units		The hardware, setup methods, and functions of the NX-series Analog Input Units and Analog Output Units are described.

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