NX-series Analog Output Unit

NX-DA

CSM_NX-DA_DS_E_2_1

Analog Outputs to meet all machine control needs; from general-purpose outputs to high-speed synchronous, high-resolution control outputs

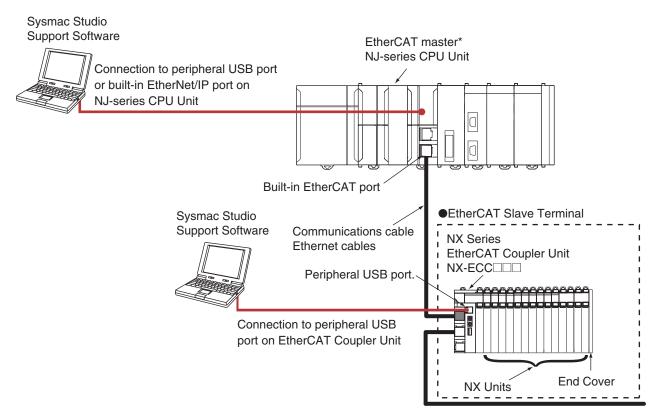
- Analog Output Units for the NX-series modular I/O system.
- Connect to other NX-series I/O Units and EtherCAT Coupler units using the high-speed NX-bus.
- Separate modules for voltage- and current outputs.



Features

- Up to four analog outputs per unit.
- Free-run refreshing or synchronous I/O refreshing can be selected using the NX-series EtherCAT Coupler.
- Output update cycles of 10 µs per channel, and resolution of 1/30000, ideal for high-speed, high-precision control.
- The screwless terminal block is detachable for easy commissioning and maintenance.
- Screwless push-in terminal block significantly reduces wiring work.
- · All models are just 12 mm wide, saving space in your cabinet.

System Configuration



^{*} OMRON CJ1W-NC 81/ 82 Position Control Units cannot be connected to the EtherCAT Slave Terminal even though they support EtherCAT.

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Ordering Information

International Standards

- The standards are abbreviated as follows: U: UL, U1: UL (Class I Division 2 Products for Hazardous Locations), C: CSA, UC: cULus, UC1: cULus (Class I Division 2 Products for Hazardous Locations), CU: cUL, N: NK, L: Lloyd, CE: EC Directives, and KC: KC Registration.
- Contact your OMRON representative for further details and applicable conditions for these standards.

Analog Output Unit

					Specification	on					
Unit type	Product Name	Capacity	Input range	Resolution	Output setting value, decimal number (0 to 100%)	Over all accuracy (25°C)	Conversion time	I/O refreshing method	NX Unit power consumption	Model	Standards
				1/8000	-4000 to 4000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	1.10W max.	NX-DA2603	
	Voltage Output Unit	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	1.10W max.	NX-DA2605	_
	31		+10V	1/8000	-4000 to 4000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	1.25W max.	NX-DA2603 NX-DA2605 NX-DA3603 NX-DA3605	
NX Series Analog	ries	4 points		1/30000	-15000 to 15000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	1.25W max.	NX-DA3605	UC1,N, L,
Output				1/8000	0 to 8000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	1.75W max.	NX-DA2203	UC1,N, L,
	Current Output Unit	2 points	4 to	1/30000	0 to 30000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	1.75W max.	NX-DA2205	
			20mA	1/8000	0 to 8000	±0.3% (full scale)	250 μs/point	Free-Run refreshing	1.80W max.	NX-DA2603 NX-DA2605 NX-DA3603 NX-DA2203 NX-DA2203	
	22	4 points		1/30000	0 to 30000	±0.1% (full scale)	10 μs/point	Selectable Synchronous I/O refreshing or Free-Run refreshing	1.80W max.	NX-DA3205	-

Option

Product Name	Specification				Model	Standards
Unit/Terminal Block Coding Pins	For 10 Units (Terminal Block: 30 pins, Unit: 30 pins)				NX-AUX02	
		Specif	ication			
Product Name	No. of terminals	Terminal number indications	Ground terminal mark	Terminal current capacity	Model	Standards
Terminal Block	8	A/B	None	10 A	NX-TBA082	
Terminal Block	12	A/D	None	IUA	NX-TBA122	

Accessories

Not included.

General Specification

	Item	Specification			
Enclosure Grounding method		Mounted in a panel			
		Ground to 100 Ω 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: Conforms to JIS B3502 and IEC 61131-2.			
Operating environment	Noise immunity	2 kV on power supply line (Conforms to IEC61000-4-4.)			
environment	Overvoltage category	Category II: Conforms to JIS B3502 and IEC 61131-2.			
	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 and ANSI/ISA 12.12.01 EC: EN 61131-2 and C-Tick, KC Registration, NK, LR			

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Analog Output Unit Specifications

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

Unit name	Analog Output Unit (voltage output type)	Model	NX-DA2603	
Capacity	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)	
I/O refreshing method	Free-Run refreshing			
	TS indicator	Output range	-10 to +10 V	
	AD2603 ■™	Output conversion range	-5 to 105% (full scale)	
		Allowable load resistance	5 k $Ω$ min.	
Indicator		Output impedance	$0.5~\Omega$ 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 M Ω 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	1.10 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) NX bus connector (left)	uit internal GND AG	Output V1+ to V2+ IOG I/O power supply + I/O power supply - I/O power supply -	
Installation orientation and restrictions	Installation orientation: Possible in 6 orient Restrictions: No restrictions	ations.		
Terminal connection diagram	Additional I/O Power Supply Unit NX-DA2603 A1 FIGURE 100 FIGURE			

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

Unit name	Analog Output Unit (voltage output type)	Model	NX-DA2605		
Capacity	2 points	External connection terminals	Screwless clamping terminal block (8 terminals)		
I/O refreshing method	Selectable Synchronous I/O refreshing or F				
	TS indicator	Output range	-10 to +10 V		
	DA2605 ■TS	Output conversion range	-5 to 105% (full scale)		
		Allowable load resistance	5 kΩ 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 M Ω 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	y from the NX bus Current capacity of I/O power supply terminal			
NX Unit power consumption	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 + O	AMP W	Output V1+ to V2+ IOG I/O power supply + I/O power supply - I/O power supply -		
Installation orientation and restrictions	Installation orientation: Possible in 6 oriental Restrictions: No restrictions	ations.			
Terminal connection diagram	Additional I/O Power Supply Unit A1 B1 OIOY IOV IOV IOV IOV IOG IOG IOG A8 B8	Voltage Output Unit NX-DA2605 A1 V1+ V2+ Voltage output + Voltage output - Voltage output - NC NC NC NC NC NC NC			

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

Unit name	Analog Output Unit (voltage output type)	Model	NX-DA3603		
Capacity	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)		
I/O refreshing method	Free-Run refreshing				
	TS indicator AD3603 TS	Output range Output conversion range	-10 to +10 V -5 to 105% (full scale)		
		Allowable load resistance	5 kΩ min.		
Indicator		Output impedance	$0.5~\Omega$ max.		
		Resolution	1/8000 (full scale)		
		Overall 25°C	±0.3% (full scale)		
		accuracy 0 to 55°C	±0.5% (full scale)		
Dimensions	12 (W) x 100 (H) x 71 (D)	Conversion time Isolation method	250 μs/point 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	1.25 W max.	I/O current consumption	No consumption		
Weight	70 g max.				
Circuit layout	NX bus connector (left) NX bus connector (left) N/O power supply -	uit internal GND 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: Possible in 6 orient Restrictions: No restrictions	ations.			
Terminal connection diagram	Additional I/O Power Supply Unit A1 IOV IOV IOV IOV IOG IOG IOG IOG A8 B8	dditional I/O ver Supply Unit NX-DA3603 A1 V1+ V2+ IOV IOV IOG IOG V3+ V4+ IOV IOV IOG IOG IOG IOG IOG IOG			

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

Unit name	Analog Output Unit (voltage output type)	Model	NX-DA3605	
		External connection	Screwless clamping terminal block (12	
Capacity	4 points	terminals	terminals)	
I/O refreshing method	Selectable Synchronous I/O refreshing or Free-Run refreshing			
	TS indicator	Output range	-10 to +10 V	
	DA3605 ■TS	Output conversion range	-5 to 105% (full scale)	
		Allowable load resistance	5 kΩ 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 M Ω 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	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) NX bus connector (left)	AMP (W)	Output V1+ to V4+ IOG I/O power supply + I/O power supply - I/O power supply -	
Installation orientation and restrictions	Installation orientation: Possible in 6 oriental Restrictions: No restrictions	ations.		
Terminal connection diagram	A1 B1 OIOV IOV IOV IOV IOG IOG	Voltage Output Unit NX-DA3605 1	Voltage output + Voltage output –	

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

Unit name	Analog Output Unit (current output type)	Model	NX-DA2203			
Capacity	2 points	External connection	Screwless clamping terminal block (8			
I/O refreshing method	Free-Run refreshing	terminals	terminals)			
To roncoming memora	TS indicator	Output range	4 to 20 mA			
	DA2203	Output conversion range	-5 to 105% (full scale)			
Indicator		Allowable load resistance	600 Ω min.			
		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 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	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.			
NX Unit power consumption	1.75 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) NX bus connector (left) NX bus connector (right)					
Installation orientation and restrictions	Installation orientation: Possible in 6 orientations. Restrictions: For upright installation: No restrictions For any installation other than upright: Restricted as shown in the graph below.					
Terminal connection diagram	Additional I/O Power Supply Unit A1 B1 A1 OIOV IOV IOV IOV IOG IOG A8 B8 A8	IOV IOV	urrent output + urrent output –			

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

Unit name	Analog Output Unit (current output type)	Model		NX-DA2205	
Capacity	2 points	External connection S		Screwless clamping terminal block (8	
I/O refreshing method	Selectable Synchronous I/O refreshing or F	terminals	1.2		
70 Terresting metriou	TS indicator	Output range		4 to 20 mA	
	DA2205 ■TS	Output conversion range		-5 to 105% (full scale)	
Indicator		Allowable load	d	600 Ω min.	
		Resolution		1/30000 (full scale)	
		Overall 25°		±0.1% (full scale)	
		-	o 55°C	±0.3% (full scale)	
		Conversion til	me	10 μs/point Between the input and the NX bus: Power	
Dimensions	12 (W) x 100 (H) x 71 (D)	Isolation meth	nod	= Transformer, Signal = Digital isolator (no isolation between inputs)	
Insulation resistance	20 $\text{M}\Omega$ min. between isolated circuits (at 100 VDC)	Dielectric stre	ngth	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 capac power supply	ity of I/O terminal	IOV: 0.1 A/terminal max., IOG: 0.1 A/terminal max.	
NX Unit power consumption	1.75 W max.	I/O current co	nsumption	No consumption	
Weight	70 g max.				
Circuit layout	NX bus connector (left) NX bus connector (left) NX bus connector (left)	uit internal GND A		Output I1+ to I2+ IOG I/O power supply + I/O power supply - I/O power supply - I/O power supply -	
Installation orientation and restrictions	Installation orientation: Possible in 6 orientations. Restrictions: For upright installation: No restrictions For any installation other than upright: Restricted as shown in the graph below.				
Terminal connection diagram	Additional I/O Power Supply Unit A1 B1 A1 B1 A1 B1 A1 IOO IOV IOV IOV IOO A8 B8 A8	NC NC B8		urrent output + urrent output –	

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

Unit name	Analog Output Unit (current output type)	Model	NX-DA3203		
Capacity	4 points	External connection	Screwless clamping terminal block (12		
	·	terminals terminals)			
I/O refreshing method	Free-Run refreshing TS indicator	Output range	4 to 20 mA		
	DA3203	Output range Output conversion range	-5 to 105% (full scale)		
Indicator		Allowable load resistance	350 Ω min.		
indicator		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	1.80 W max.	I/O current consumption			
Weight	70 g max.	1			
Circuit layout	NX bus connector (left) NX bus connector (left) NX bus connector (left)	internal GND AG	Output I1+ to I4+ IOG I/O power supply + I/O power supply - I/O power supply -		
Installation orientation and restrictions	Installation orientation: Possible in 6 orientations. Restrictions: For upright installation: No restrictions For any installation other than upright: Restricted as shown in the graph below.				
Terminal connection diagram	Additional I/O Power Supply Unit A1 B1 A1 OOV IOV IOG IOG A8 B8 A8	IOV IOV	urrent output + urrent output –		

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

Unit name	Analog Output Unit (current output type)	Model	NX-DA3205		
Capacity	4 points	External connection terminals	Screwless clamping terminal block (12 terminals)		
I/O refreshing method	Selectable Synchronous I/O refreshing or F		T		
	TS indicator DA3205	Output range Output conversion range	4 to 20 mA -5 to 105% (full scale)		
Indicator		Allowable load resistance	350 $Ω$ min.		
indicator		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 $\mbox{M}\Omega$ 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	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	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) NX bus connector (left)	uit internal GND AG	Output I1+ to I4+ Terminal block IOG I/O power supply + NX bus connector (right)		
Installation orientation and restrictions	Installation orientation: Possible in 6 orientations. Restrictions: For upright installation: No restrictions For any installation other than upright: Restricted as shown in the graph below.				
Terminal connection diagram	Additional I/O Power Supply Unit A1 B1 A1	IOV IOV	Current output + Current output –		

Version Information

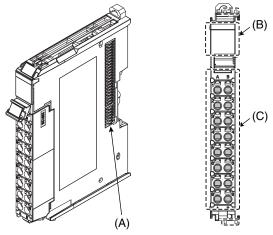
NX	Unit	Corresponding unit versions/versions			
Model Unit Version		EtherCAT Coupler Units NX-ECC201/ECC202 *	NJ-series CPU Units NJ501-□□□□/NJ301-□□□□	Sysmac Studio	
NX-DA	Ver.1.0	Version 1.0 or later	Version 1.05 or later	Version 1.06 or higher	

^{*} For the NX-ECC202, there is no unit version of 1.1 or earlier.

External Interface

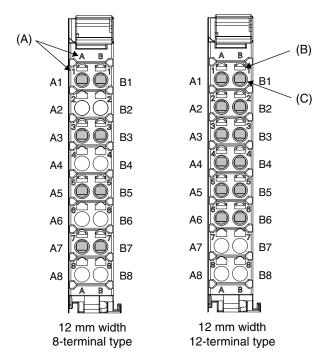
Analog Output Unit

NX-DA□□□□ 12mm Width



Symbol	Name	Function			
(A)	NX bus connector	This connector is used to connect each Unit.			
(B)	Indicators	The indicators show the current operating status of the Unit.			
(C)	Terminal block	The terminal block is used to connect external devices. The number of terminals depends on the type of Unit.			

Terminal Blocks



Symbol	Name	Function			
(A)	Terminal number indications	Terminal numbers for which A to D indicate the column, and 1 to 8 indicate the line are displayed. The terminal number is a combination of column and line, so A1 to A8 and B1 to B8 are displayed. The terminal number indications are the same regardless of the number of terminals on the terminal block.			
(B)	Release holes	Insert a flat-blade screwdriver into these holes to connect and remove the wires.			
(C)	Terminal holes	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-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 one-pin ferrules. Do not use two-pin ferrules.

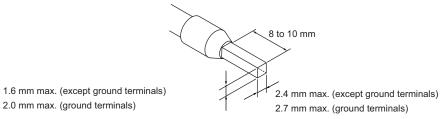
The applicable ferrules, wires, and crimping tool are given in the following table.

Terminal types	Manufacturer	Ferrule model number	Applicable wire (mm² (AWG))	Crimping tool
Terminals other than ground terminals	Phoenix Contact	AI0,34-8	0.34 (#22)	Phoenix Contact (The figure in parentheses is the applicable wire size.)
		AI0,5-8	0.5 (#20)	CRIMPFOX 6 (0.25 to 6 mm ² , AWG24 to 10)
		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	1	
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)
terriiriais		H0.34/12	0.34 (#22)	
		H0.5/14	0.5 (#20)	
		H0.5/16		
		H0.75/14	0.75 (#18)	
		H0.75/16		
		H1.0/14	1.0 (#18)	
		H1.0/16		
		H1.5/14	1.5 (#16)	
		H1.5/16	1	

^{*} 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.

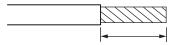
Finished Dimensions of Ferrules



Using Twisted Wires/Solid Wires

If you use the twisted wires or the solid wires, the applicable wire range and conductor length (stripping length) are as follows.

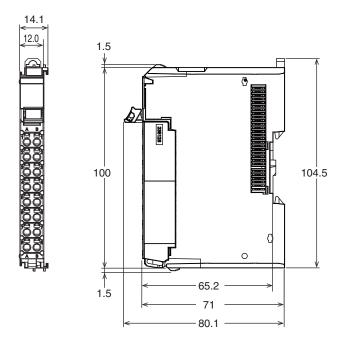
Terminal types	Applicable wires	Conductor length (stripping length)	
Ground terminals	2.0 mm ²	9 to 10 mm	
Terminals other than ground terminals	0.08 to 1.5 mm ² AWG28 to 16	8 to 10 mm	



Conductor length (stripping length)

Dimensions (Unit/mm)

Analog Output Unit NX-DA□□□□ 12 mm Width



Related Manuals

Cat. No.	Model number	Manual name	Application	Description	
W522	NX-AD NX-DA NX-DA NX-TS	NX-series Analog I/O Units User's Manual	Learning how to use NX-series Analog I/O Units and Temperature Input Units	The hardware, setup methods, and functions of the NX- series Analog I/O Units and Temperature Input Units are described.	

Terms and Conditions Agreement

Read and understand this catalog.

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranties.

- (a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied.
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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: http://oceanchips.ru/

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А