

OPEN FIELD NETWORK UNIT NU Series



CC-Link V2

NEW

CC-Link Compatible Network Unit
NU-CL1

DeviceNet

NEW

DeviceNet Compatible Network Unit
NU-DN1

EtherNet/IP

NEW

EtherNet/IP Compatible Network Unit
NU-EP1

EtherCAT

NEW

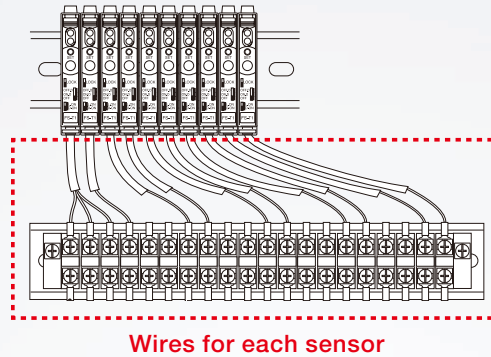
EtherCAT Compatible Network Unit
NU-EC1

Reduced Wiring

Dramatic reduction in wiring and installation time

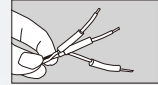
Conventional Method

Multiple preparation and wiring steps increased the installation time.

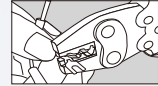


Conventional Wiring

Trim each cable for wiring to the terminal block. Identify and mark each cable.



Apply terminal connectors.



Tighten the screws on the terminal block to connect each sensor.



With the NU Series

Reduced Wiring

Only a single communication cable is required between the PC/PLC and the NU Series for wiring.

- ▶ No need to trim the cables
- ▶ No need for a terminal block
- ▶ No need for a complicated cable layout
- ▶ No additional wiring when replacing sensors

When using 10 amplifiers that are connected in series.

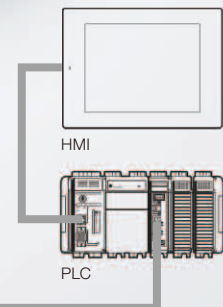
Conventional wiring (Series connection) 50 min.

NU Series

5 min. 90% less time than the conventional installation process



No wires



Lineup



CC-Link Compatible Network Unit
NU-CL1



DeviceNet Compatible Network Unit
NU-DN1



EtherNet/IP Compatible Network Unit
NU-EP1



EtherCAT Compatible Network Unit
NU-EC1



Digital Fiberoptic Sensor
FS-N10



e-CON Network Input Unit
NU-EN8N

Improved functionality through remote access

Status monitoring, settings changes, and setup backup/recovery can be done via HMI, PLC, or PC.

Conventional Method

With the NU Series

Monitoring

It is desired to prevent false detection by the sensor before it stops production. However, there is no way to monitor it without looking at each sensor.



The sensor status can be monitored on an HMI, PLC or PC, making it easier to detect problems before errors occur.

Tooling change (setting value change)

If multiple products are manufactured on the same line, settings need to be adjusted for each sensor during changeover.



The NU allows for settings to be changed externally from an HMI, PLC or PC. As a result, changeover time can be reduced, even where sensor settings must be changed frequently.

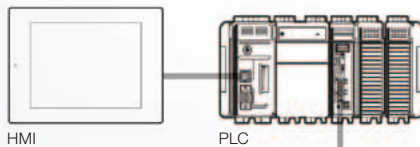
Settings backup/recovery

When shipping a machine, it is necessary to provide setting procedure details for the sensors. Assembling this information can be quite time consuming.



When shipping a machine, backup settings can be quickly saved on an HMI, PLC or PC. Recovering these settings is quick and easy.

System configuration image



* This connection requires an interface card or interface software that supports the respective networks.

Data reading ↑ ↓ Data writing

Data reading ↑ ↓ Data writing



Also available: Sensor input unit

NEW Network Sensor Input Unit **NU-EN8N**

Sensor and switch outputs can be connected with an e-CON (wirepress) connector (**OP-84338**^{*1} set of 2), making it possible to monitor their ON/ OFF status on an HMI, PLC, or PC.



Photoelectric sensor



Laser sensor



Pressure sensor



^{*1} Use shield outer diameter 1.15 to 1.35 mm 0.05" to 0.05", wire range 0.1 to 0.5 mm² cable. Prepare separate e-CON connectors capable of fitting the necessary cable diameter when the cable diameter is outside the OP-84338 specification listed above.

Specifications

EtherNet/IP Compatible Network Unit: NU-EP1

Model		NU-EP1
Ethernet specifications	Compliant standards	IEEE802.3 (10BASE-T)
		IEEE802.3u (100BASE-TX)
		IEEE802.3af (Power over Ethernet, Class 3)
	Transmission rate	10 Mbps (10BASE-T)
		100 Mbps (100BASE-TX)
	Transmission medium	STP cable or Category 3 or higher UTP cable (10BASE-T) ¹ STP cable or Category 5 or higher UTP cable (100BASE-TX)
Maximum cable length	100 m 328.1' (Distance between NU-EP1 and Ethernet switch)	
Maximum number of connectable hubs ²	4 (10BASE-T) 2 (100BASE-TX)	
EtherNet/IP	Compatible functions	Cyclic communication Compatible with UCMM and Class 3 messaging (Explicit messaging)
	Number of connections	64
	RPI (Transmission cycle)	0.5 to 10000 ms (in 0.5 ms)
	Tolerable communication bandwidth for cyclic communication	6000 pps
	Message communication	Compatible with UCMM and Class 3
	Conformance test	Compatible with Version A7
Sensor connection specifications	Connectable sensors	Sensor amplifiers with N-bus support ³ .
	Number of connectable sensor units	Up to 16 units ⁴ .
	Power supply	Power is supplied from the NU-EP1 via wire-saving connector.
	Allowable passing current ⁵	Overall 1200 mA or less
Power during PoE power receiving ⁶	Supply voltage: 24 V ± 10 %, supply current: 360 mA or less ⁷	
Indicator lamps	Link/activity indicator (LINK/ACT): Green LED	
	Module status indicator (MS): 2-color (green/red) LED	
	Network status indicator (NS): 2-color (green/red) LED	
	Sensor communication indicator (D-bus): 2-color (green/red) LED	
Power voltage	24 VDC ± 10%, ripple (p-p) 10% or less, (with power supply connector) 48 VDC (Max. 57 VDC) (During PoE power receiving)	
Power consumption	1500 mW or less (at 24 V 60 mA max) ⁸ .	
Environmental resistance	Operating ambient temperature	-20 to 55 °C -4 to 131 °F (no freezing)
	Operating ambient humidity	35 to 85% RH (no condensation)
	Vibration resistance	10 to 55 Hz compound amplitude 1.5 mm 0.06" , 2 hours each in X, Y, Z directions
	Pollution degree	2
Materials	Main unit case: Polycarbonate Power supply connector: Polyamide (plug), PBT (socket)	
Weight (including connectors)	Approx. 80 g	
Accessories	Instruction manual x 1, power connector x 1, end unit x 2	

1. When using the power PoE power receiving function, use the STP cable or Category 5 or higher UTP cable.

2. The number of connectable units is not limited when using a switch.

3. "N-bus" is the name of KEYENCE's wiring-saving system for sensor amplifiers.

4. Varies with the sensor amplifiers connected.

5. Current value which, when supplying power from the power supply connector, can be supplied to the NU-EP1 or to a sensor amplifier unit connected to the NU-EP1.

6. Power which can be supplied to the sensor amplifier when using the PoE power receiving function.

7. Varies according to the working ambient temperature. (-20 to 45 °C **-4 to 113 °F**: 360 mA or less, 45 to 50 °C **113 to 122 °F**: 260 mA or less, 50 to 55 °C **122 to 131 °F**: 140 mA or less)

8. Does not include power supplied to connected sensor amplifier.

EtherCAT Compatible Network Unit: NU-EC1

Model		NU-EC1
Ethernet specifications	Compliant standards	IEEE802.3u (100BASE-TX)
	Transmission speed	100 Mbps (100BASE-TX)
	Transmission interface	Category 5e STP
	Distance between nodes	100 m 328.1'
	Communication port	RJ-45 x2
EtherCAT communication specifications	Compatible functions	Process data object communication (cyclic communication) Mailbox communication (message communication) CoE compatible
	Connectable sensors	Sensor amplifiers with N-bus support ¹ .
Sensor connection specifications	Number of connectable sensor units	16 units max. ²
	Power supply	Power supplied from the NU-EC1 via wire-saving connector
	Tolerable current ³	Total 1200 mA or less
Indicator lamps	Power indicator (PWR): Green LED	
	RUN indicator (RUN): Green LED	
	ERR indicator (ERR): Red LED	
	Sensor communication indicator (N-bus): 2-color (green/red) LED	
Power voltage	Link/activity indicator: Green LED	
Power consumption	24 VDC ± 10 %; ripple (p-p) 10 % or less 1700 mW or less (at 24 V, 70 mA max.) ⁴ .	
Environmental resistance	Operating ambient temperature	-20 to +55 °C -4 to 131 °F (no freezing)
	Operating ambient humidity	35 to 85 % RH (no condensation)
	Vibration resistance	10 to 55 Hz, compound amplitude 1.5 mm 0.06" , 2 hours each in X, Y, Z directions
	Pollution degree	2
Materials	Main unit case and dust cover: Polycarbonate Power supply connector: Polyamide (plug), PBT (socket)	
Weight (including connectors)	Approx. 80g	

* EtherCAT is a registered trade name of BECKHOFF.

1. "N-bus" is the name of KEYENCE's wiring-saving system for sensor amplifiers.

2. Varies with the sensor amplifiers connected.

3. Value of current supplied to this product or sensor amplifier or module connected to this product.

4. Exclusive of the current supplied to the sensor amplifiers connected.

DeviceNet Compatible Communication Unit: NU-DN1

Model		NU-DN1		
Communication method		DeviceNet compliant		
		I/O Message (polling) Explicit Message		
DeviceNet specifications	Compliant functions	0 to 63 (PGM compatible)		
	Address setting			
	Baud rate (automatically switched)	500 kbps	250 kbps	125 kbps
	Maximum cable length	100 m 328.1' (thick cable)	250 m 820.2' (thick cable)	500 m 1640.4' (thick cable)
		100 m 328.1' (thin cable)	100 m 328.1' (thin cable)	100 m 328.1' (thin cable)
Sensor connection specifications	Connectable sensors	Sensor amplifiers with N-bus support ¹ .		
	Number of connectable sensor units	Up to 16 units max. ²		
	Power supply	Power is supplied via the DeviceNet communication power supply via NU-DN1.		
	Allowable passing current	Overall 1200 mA or less ³ .		
Indicator lamps		Network status indicator: 2-color (green/red) LED, Module status indicator: 2-color (green/red) LED, N-bus indicator: 2-color (green/red) LED		
Power voltage		11 to 25 VDC ⁴		
Power consumption		1480 mW or less (60 mA max. at 24 V, 106 mA max. at 12 V) ⁵ .		
Environmental resistance	Operating ambient temperature	-20 to +55°C -4 to 131 °F (no freezing)		
	Operating ambient humidity	35 to 85% RH (no condensation)		
	Vibration resistance	10 to 55 Hz, compound amplitude 1.5 mm 0.06" , 2 hours each in X, Y, Z directions		
	Pollution degree	2		
Materials		Main unit case and dust cover: Polycarbonate, DeviceNet connector: Polyamide (plug), PBT (socket)		
Weight (including connectors)		Approx. 65g		

1. "N-bus" is the name of KEYENCE's wiring-saving system for sensor amplifiers.

2. Depends on the sensor amplifiers connected.

3. Indicates the current that can be supplied to this product or to the sensor amplifier units linked to this product.

4. Power to the NU-DN1 is supplied from the DeviceNet communication power supply. The same power is also supplied to all sensor amplifiers connected, via the NU-DN1.

5. Exclusive of the current supplied to the sensor amplifiers connected.

CC-Link Compatible Network Unit: NU-CL1

Model		NU-CL1	
Communication method		CC-Link compliant	
CC-Link specifications	Compatible versions	Ver.2.00/Ver.1.10 (selectable)	
	Number of occupied stations	Ver.2.00: 3 stations; Ver.1.10: 1/2/3/4 stations (selectable)	
	Type of station	Remote device station	
	Transmission rate	156 kbps/625 kbps/2.5 Mbps/5 Mbps/10 Mbps	
	Setting of station numbers	1 to 64	
		Connectable sensors	Sensor amplifiers with N-bus support ¹ .
Sensor connection specifications	Number of connectable sensor units	16 units max. ²	
	Power supply	Power is supplied from the NU-CL1 via wire-saving connector.	
	Allowable passing current	Overall 1200 mA or less ³	
Indicator lamps		Power indicator: Green LED, Communication indicator (L_RUN): Green LED, Communication error indicator (L_ERR): Red LED, Sensor communication indicator: 2-color (green/red) LED	
Power voltage		24 VDC ± 10%; ripple (p-p) 10% or less	
Power consumption		1400 mW or less (55 mA max. at 24 V) ⁴	
Environmental resistance	Operating ambient temperature	0 to +55°C 32 to 131 °F (no freezing)	
	Operating ambient humidity	35 to 85% RH (no condensation)	
	Vibration resistance	10 to 55 Hz, compound amplitude 1.5 mm 0.06" , 2 hours each in X, Y, Z directions	
	Pollution degree	2	
Materials		Main unit case and dust cover: Polycarbonate CC-Link connector and power supply connector: Polyamide (plug), PBT (socket)	
Weight (including connectors)		Approx. 80g	

1. "N-bus" is the name of KEYENCE's wiring-saving system for sensor amplifiers.

2. Depends on the sensor amplifiers connected.

3. Indicates the current that can be supplied to this product or to the sensor amplifier units linked to this product.

4. Exclusive of the current supplied to the sensor amplifiers connected.

e-CON Network Input Unit: NU-EN8N

Model		NU-EN8N	
Connectable communication units		Compatible communication units, NU-DN1/NU-CL1/NU-EP1/NU-EC1	
Number of connectable units		2 units max. (occupied ID numbers: 8) ¹	
I/O	Connector	e-CON connector (4-pin)	
	Inputs	8	
	Supply voltage for equipment	Supplied via the NU-EN8N from the connected communication unit	
	Supply current	520 mA or less (total for eight ports)	
	Input signal	NPN open collector output, contact output	
	Input response time	20 μs or less	
	Internal input voltage	8 VDC (Reference value of input current: 3.1 mA)	
	Minimum ON voltage	6 V	
	Maximum OFF current	0.9 mA	
	Input resistance	2.4 kΩ	
Power voltage		12 to 24 VDC ±10%; ripple (p-p) 10% or less ²	
Weight (including tag)		Approx. 55g	
Accessories		Instruction manual, Tag, Index seal	

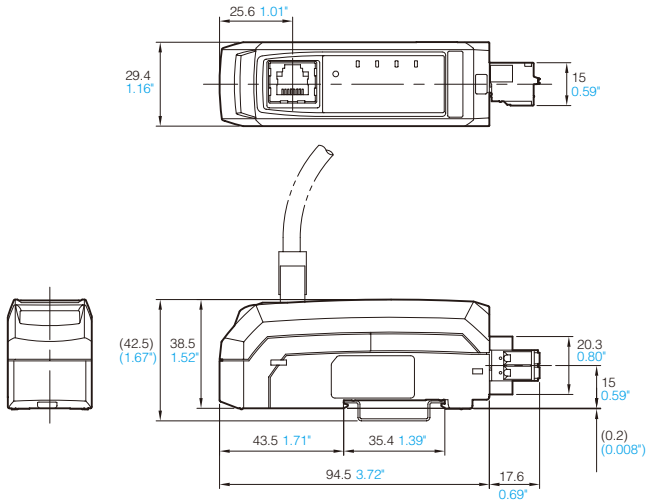
1. The NU-EN8N occupies eight ID numbers of the communication unit regardless of the number of input devices connected.

2. Power to the NU-EN8N is supplied from the connected communication unit.

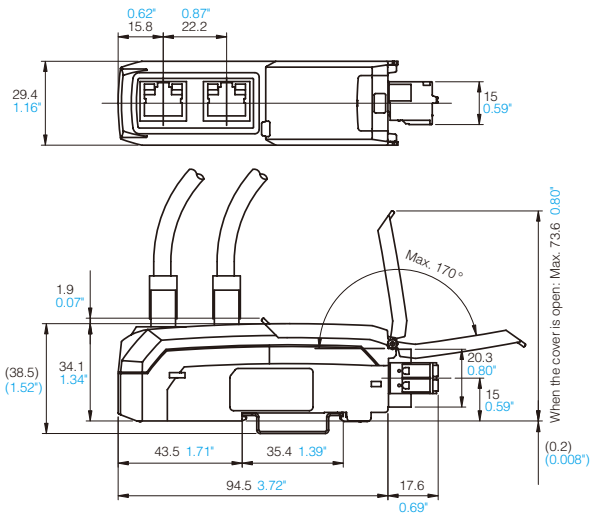
Dimensions

Unit: mm inch

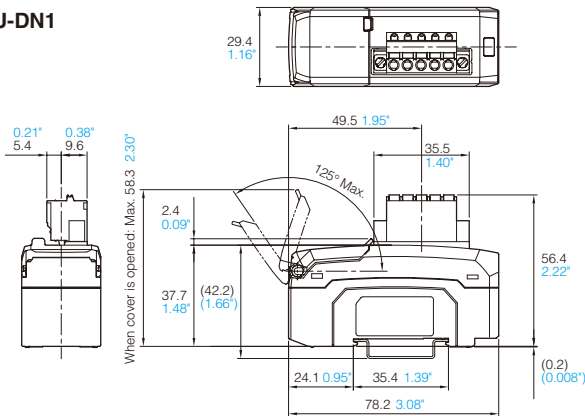
NU-EP1



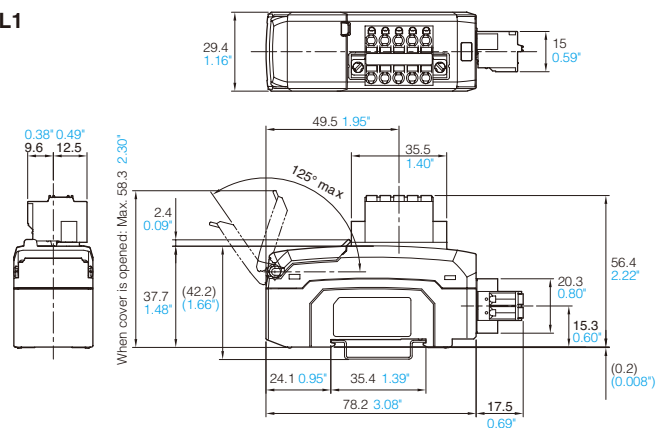
NU-EC1



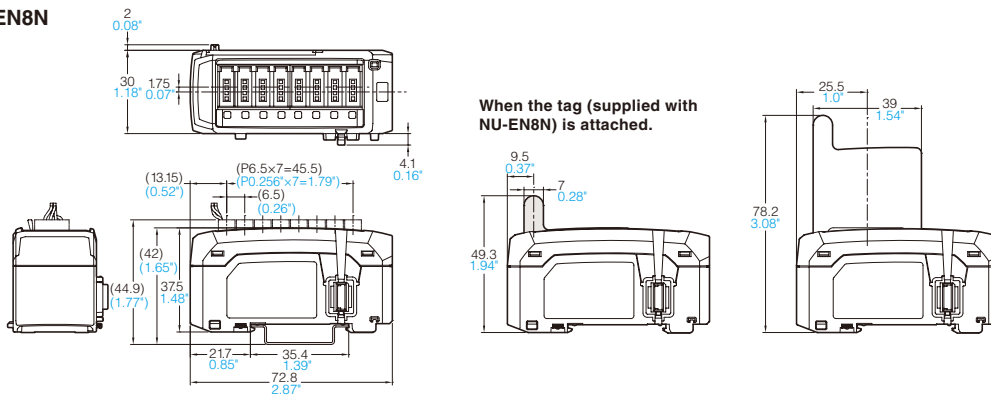
NU-DN1



NU-CL1



NU-EN8N



CALL TOLL FREE TO CONTACT YOUR LOCAL OFFICE
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 1-888-539-3623

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SAFETY INFORMATION

Please read the instruction manual carefully in order to safely operate any KEYENCE product.

CONTACT YOUR NEAREST OFFICE FOR RELEASE STATUS

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