KEYENCE

Network Communication Module

NEW NQ Series



The Next Evolution in Communication

IO-Link

One simple connection unlocks vast amounts of device data and control

IO-Link

ON/OFF Status
Various Settings



Network Communication Module

NEW NQ Series





Simplified Integration

- Any System
- Any Device
- Any Location



Intuitive Software

- Direct or Remote Connection
- Automatic Device Recognition
- Easy Real-Time Configuration



Unmatched Monitoring

- Fully Customizable Displays
- Reduced Downtime
- Improved Preventive Maintenance

Compatible with various network protocols

EtherNet/IP

PROFINET

EtherCAT®

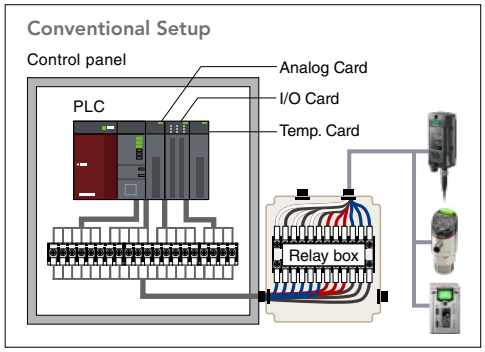
Modbus/TCP

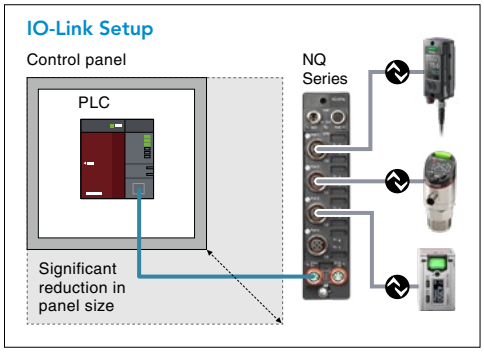
EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Drastically reduce installation and wiring time with IO-Link!

What is IO-Link?

IO-Link communication allows sensors to share large amounts of information with an IO-Link Master Unit via a single connection point. The master unit then converts this information to a common network protocol to communicate with a PLC, greatly reducing wiring.





Any System

Regardless of the number of sensors on the machine or the network protocol being used, the NQ Series can adapt to any setup. These units are compatible with all major network protocols and can be cascaded in series to handle countless devices.

Various Networking Options

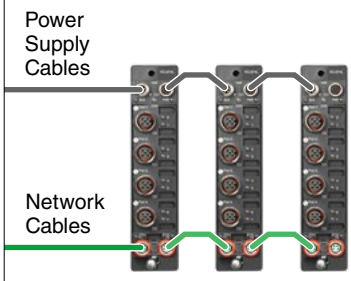
EtherNet/IP

PROFINET

EtherCAT

Modbus/TCP

Cascade Connection



*The number of units that can be added varies depending on the connected devices.

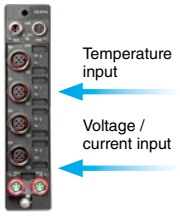
Any Device

The NQ Series can be the hub for all devices, not just IO-Link devices. This series features units designed specifically to incorporate Temperature, Analog, and Digital I/O devices into one complete system.

Analog and Temperature Devices

Temperature/Analog Input Module NQ-EP4A

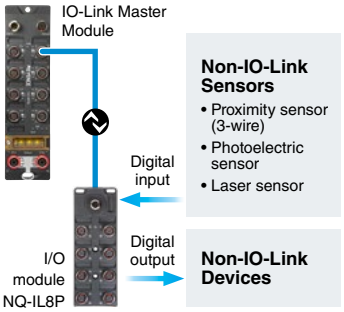
A single unit can accommodate a variety of inputs.



Non-IO-Link Equipment
- Thermocouples
- RTD
- Voltage analog device
- Current analog device

*Input mode can be set for each port.

Basic Digital I/O Devices



Non-IO-Link Sensors
- Proximity sensor (3-wire)
- Photoelectric sensor
- Laser sensor

Non-IO-Link Devices

*Only for PNP input/output devices

Any Location

Featuring impressive IP65/67/69K enclosure ratings, for complete dust and liquid resistance, these blocks can be mounted in any environment / location. Slim body models are also offered to help in situations where space is limited.

Waterproof/Oil-proof Structure



Slim Body

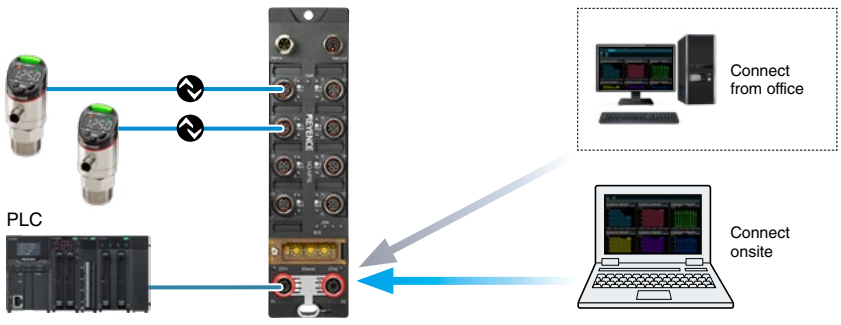


Intuitive software ensures setup in mere minutes, not hours!



Dedicated Software with Direct Connection Capabilities

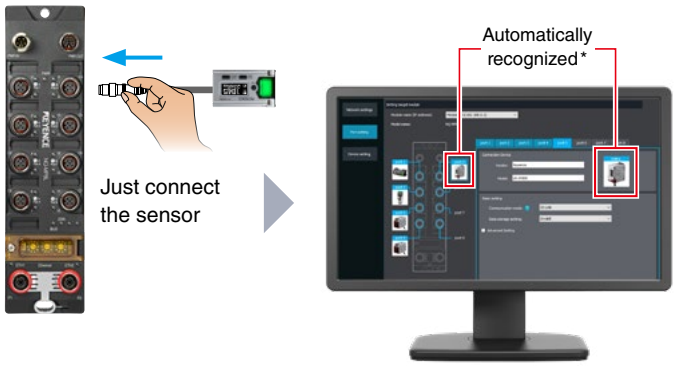
The NQ Monitor software allows users to configure ports, check/change sensor settings, monitor devices in real-time, and much more. All of this can be done remotely or directly without needing to go through the PLC.



Directly monitor connected devices without going through the PLC

Automatic Recognition of KEYENCE Devices

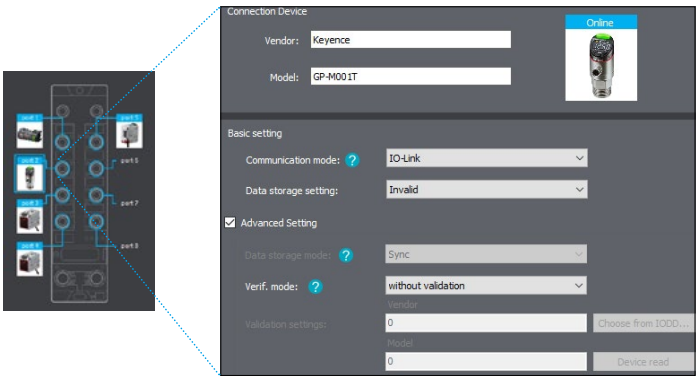
When connected to KEYENCE IO-Link devices, the NQ Series will automatically recognize the connected sensor and import all of the pertinent information. This helps drastically reduce set up time.



* Only for KEYENCE IO-Link compatible devices.

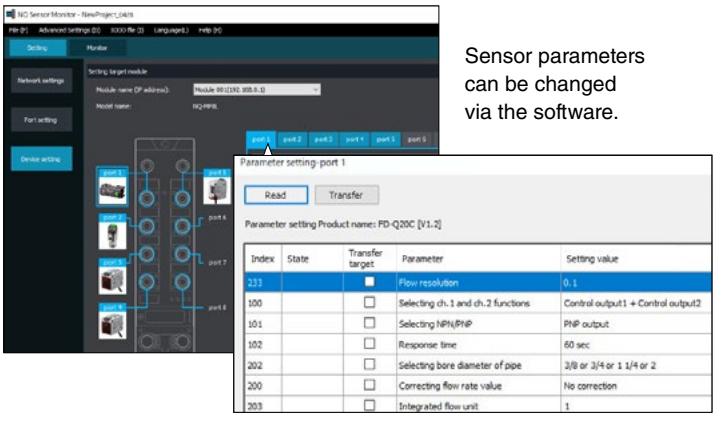
Easy Configuration of Port Settings

Configure each port with ease using simple drop down menus and check boxes. When connecting similar devices, port settings can be duplicated across multiple ports to speed up configuration.



See and Change Device Settings in Real-Time

Device parameters can be shown and changed in real-time using the software, including performing calibrations and changing menu settings. It is no longer necessary to access the physical unit to set up or make changes to the device.



* NQ-EC8L is not compatible with NQ Sensor Monitor.

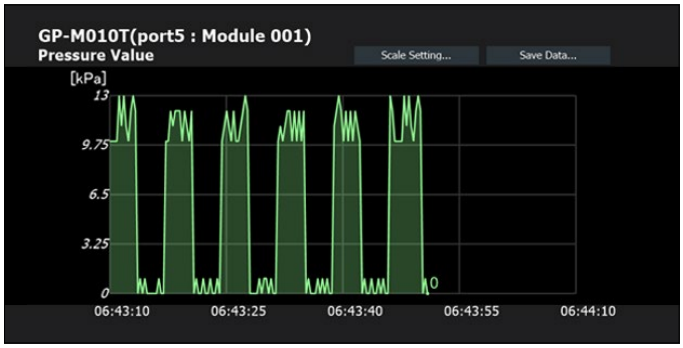
Customizable displays make monitoring easier than ever!



Monitor Readings Over Time

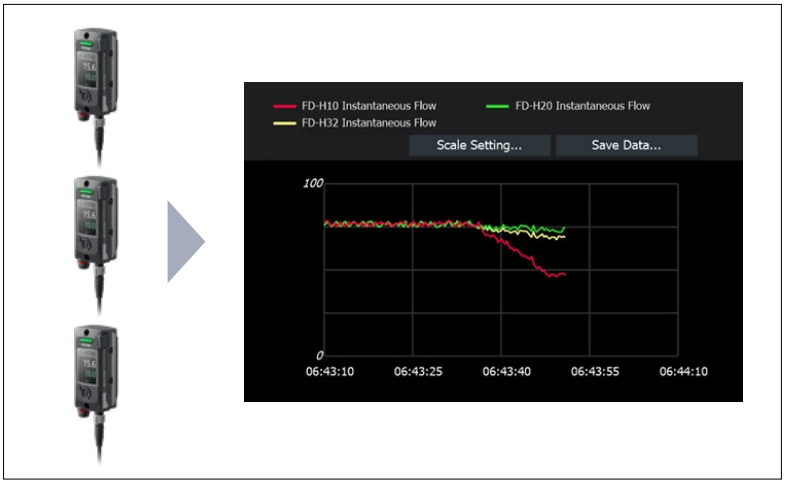
Track data, including temperature, pressure, distance, level, and more, to help better understand your process. With customizable scales and settings, clear process information has never been easier to obtain.





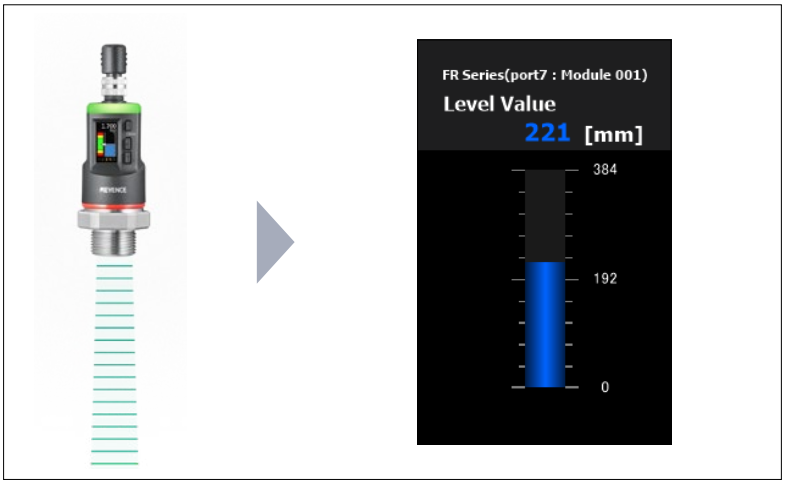
Compare Multiple Sensors at Once

Data from multiple units can be charted on a single graph. This allows for an easy comparison of different machines or processes and can help to identify potential issues before they become a problem.



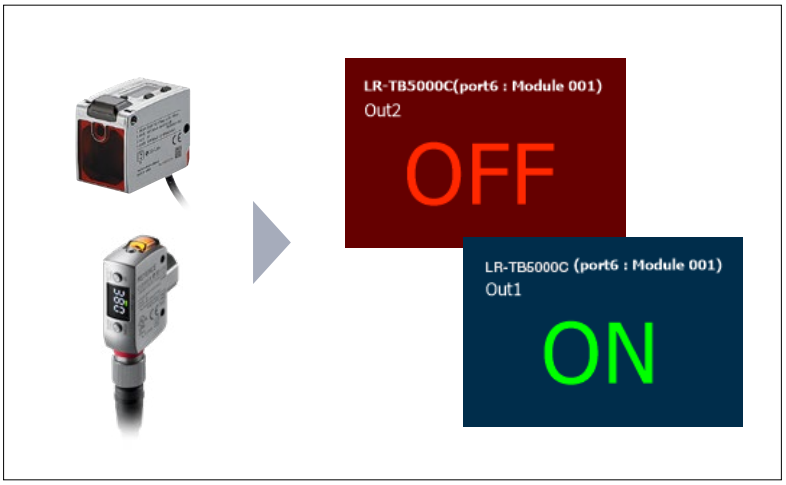
Bar Graphs Show Current Status

Bar graphs provide a great visual representation of the current situation when it comes to things like fill level, pressure, positioning, and more. Both horizontal and vertical bar graph options are available.



See Output Statuses at a Glance

Large indicators can be integrated into your display to show the status of connected sensors with a quick glance. These can be used for the output status of a sensor, as well as error or alert information.



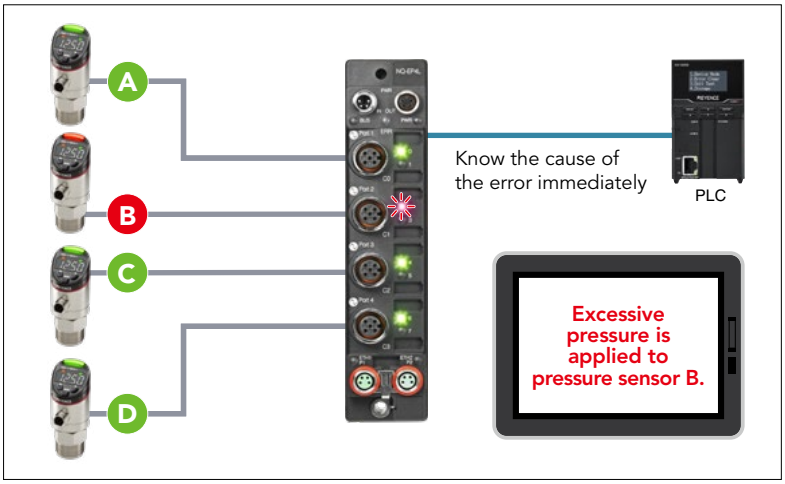
* NQ-EC8L is not compatible with NQ Sensor Monitor.

Downtime is a Thing of the Past!



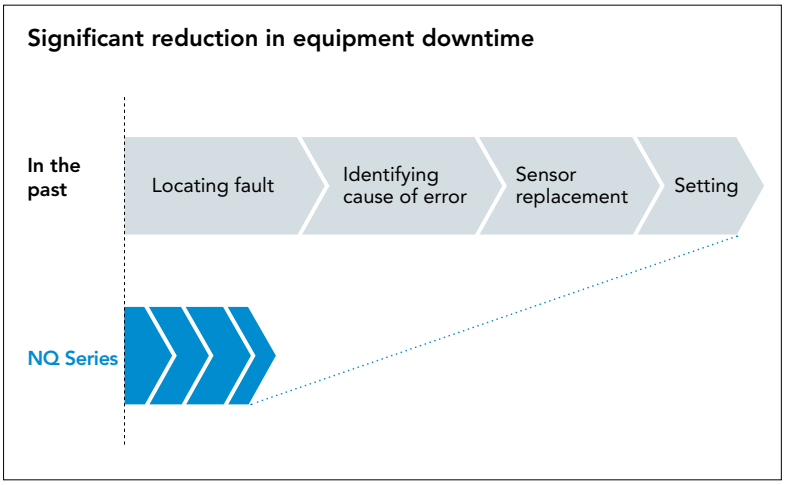
Identify Damaged Units Immediately

When a machine stops working properly, it is not typically easy to identify which device is damaged or not working correctly. When using IO-Link this device can be identified immediately.



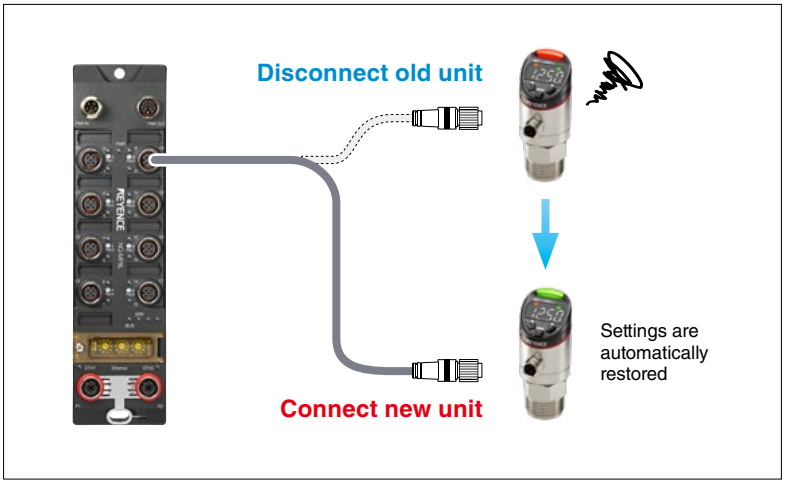
Significantly Reduce Downtime

By recognizing the damaged unit so quickly, the time associated with locating the fault, determining the reason for the fault, and replacing the unit are drastically reduced, minimizing costly downtime.



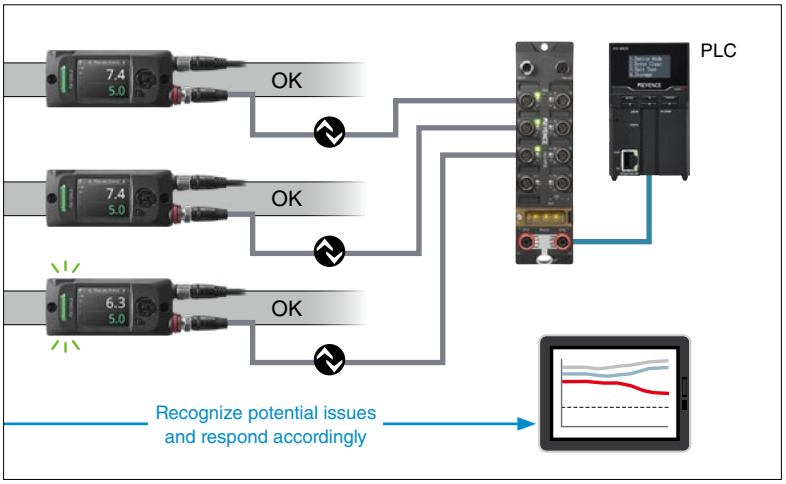
Replace Units Without Needing to Reprogram

By using the data storage function, reprogramming sensor replacements is a thing of the past. Simply connect the new unit and all of the old settings will be automatically restored on the new device.



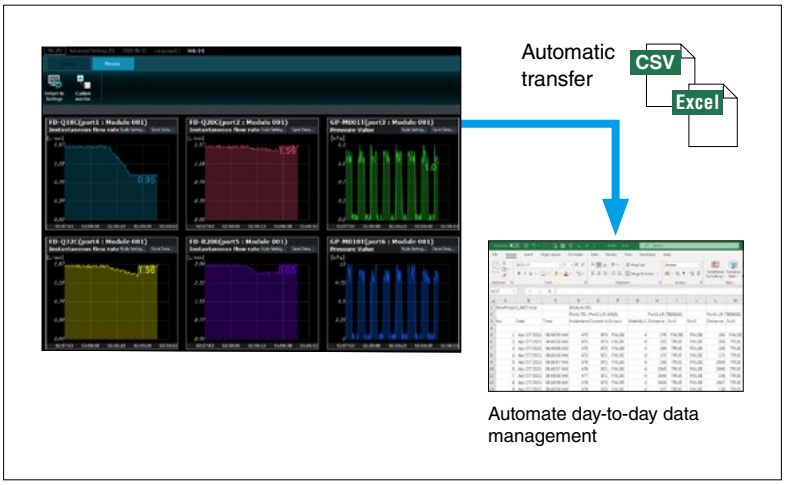
Predictive Maintenance At Your Fingertips

By comparing multiple processes at one time, it is possible to recognize potential issues before they become a problem. This allows preventive maintenance to be performed more efficiently and in a timely manner.



Export Reports/Data to Analyze Later

The data on the monitor screen is not just for visual use. This data can be exported automatically to create extensive reports that can be analyzed to help better understand and optimize machinery in the future.



Selecting an NQ Series Model

STEP 1 Select an IO-Link Master Module, Temperature/Analog Input Module, and/or I/O Module

▶ P14

IO-Link Master Modules



Multi-protocol compatible
8 ports
NQ-MP8L



EtherCAT® compatible
8 ports
NQ-EC8L



EtherNet/IP™ compatible
4 ports
NQ-EP4L

Temperature/ Analog Input Module



EtherNet/IP™ compatible
4 ports
NQ-EP4A

I/O Module

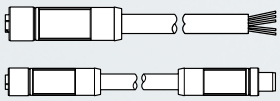


IO-Link compatible
8 ports
NQ-IL8P

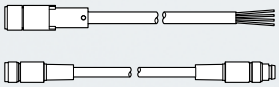
STEP 2 Select Power Supply Cables

▶ P14

M12 Power Supply Cables for NQ-MP8L/EC8L



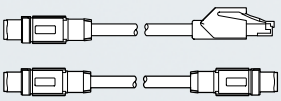
M8 Power Supply Cables for NQ-EP4L/EP4A



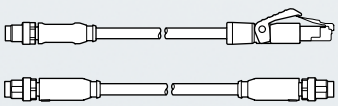
STEP 3 Select Ethernet Cables

▶ P15

M12 Ethernet Cables for NQ-MP8L/EC8L



M8 Ethernet Cables for NQ-EP4L/EP4A



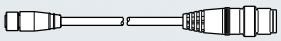
STEP 4 Select IO-Link Master ↔ Sensor Connection Cables

▶ P16

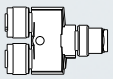
M12 Female ↔ M12 Male Cable



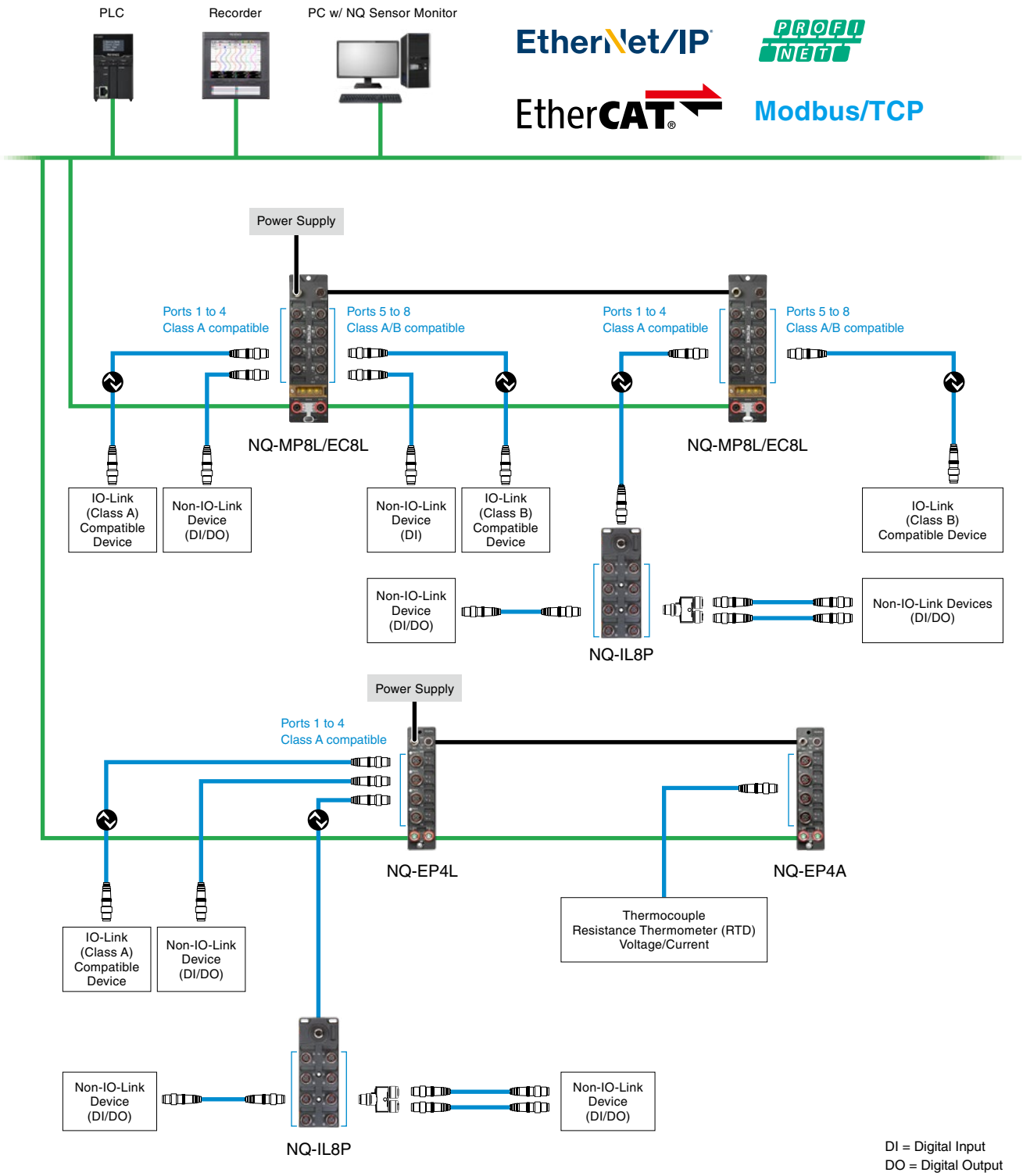
M8 Female ↔ M12 Male Cable



M12 Y-Shaped Branching Connector



System Configuration



*PROFINET compatible only with NQ-MP8L
*EtherCAT® compatible only with NQ-EC8L

STEP 1 Select an IO-Link Master Module, Temperature/Analog Input Module, and/or I/O Module

IO-Link Master Modules





Model			NQ-MP8L	NQ-EP4L	NQ-EC8L
Compatible Protocols	EtherNet/IP™		✓	✓	–
	PROFINET		✓	–	–
	Modbus/TCP		✓	✓	–
	EtherCAT®		–	–	✓
Power Supply Port/Communication Port			M12	M8	M12
IO-Link	Number of Connectable Devices		8	4	8
	Port Type	Ports 1 to 4	Class A	Class A	Class A
		Ports 5 to 8	Class B	-	Class B
Digital Input	Maximum Number of Inputs		12	8	12
Digital Output	Maximum Number of Outputs		4	4	4

Temperature/Analog Input Module



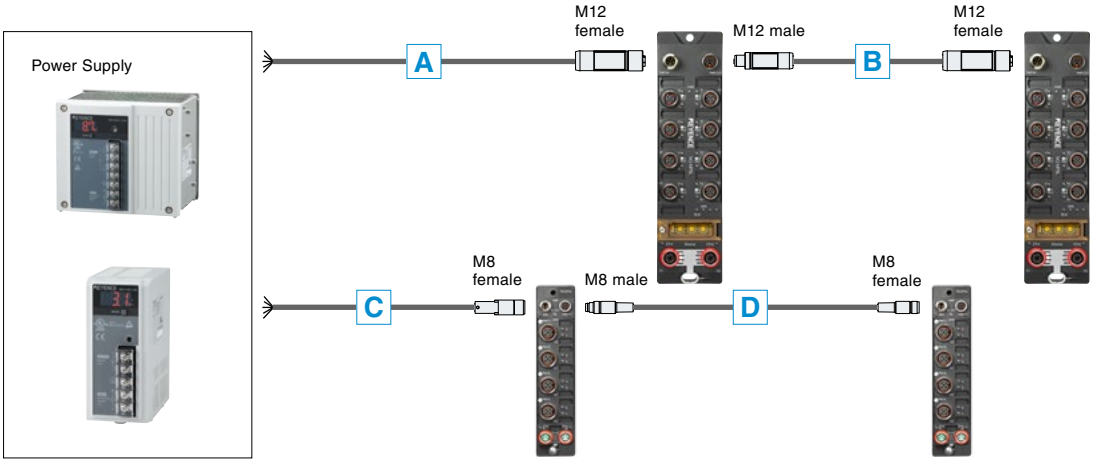
Model		NQ-EP4A
Compatible Protocols	EtherNet/IP™	✓
	PROFINET	–
	Modbus/TCP	✓
Power Supply Port/Communication Port		M8
Number of Inputs		4
Input Modes		Voltage Current Resistance Thermometer (RTD) Thermocouple

I/O Module

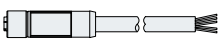
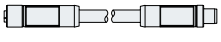
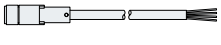
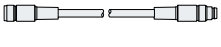


Model		NQ-IL8P
Compatible Network		IO-Link
Digital Input	Maximum Number of Inputs	16
Digital Output	Maximum Number of Outputs	16

STEP 2 Select Power Supply Cables



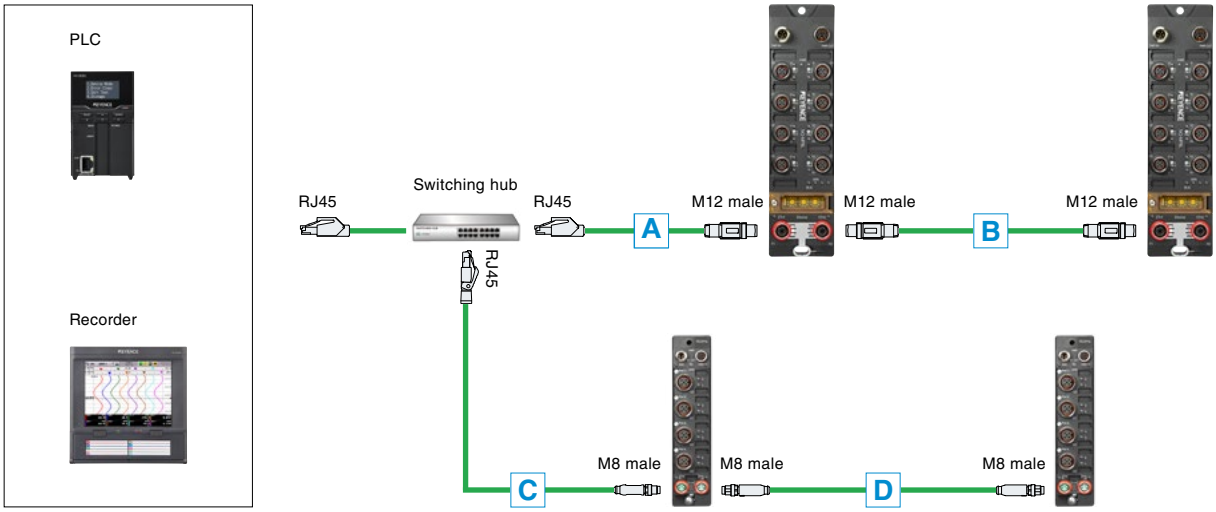
*M12 and M8 power supply ports cannot be used together for cascade connections.

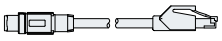
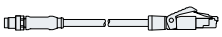
Symbol	Appearance	Description	Model	Material	Length	Weight
A		M12 female ↔ loose wire power supply cable	**NQ-P8B2**	PVC	2 m 6.6'	Approx. 350 g
			NQ-P8B5		5 m 16.4'	Approx. 750 g
			NQ-P8B10		10 m 32.8'	Approx. 1500 g
B*		M12 female ↔ M12 male power supply cable	**NQ-P8C03**		0.3 m 1.0'	Approx. 100 g
			NQ-P8C2		2 m 6.6'	Approx. 300 g
			NQ-P8C10		10 m 32.8'	Approx. 1500 g
C		M8 female ↔ loose wire power supply cable	**NQ-P4B2**		2 m 6.6'	Approx. 80 g
			NQ-P4B5		5 m 16.4'	Approx. 170 g
			NQ-P4B10		10 m 32.8'	Approx. 350 g
D*		M8 female ↔ M8 male power supply cable	**NQ-P4C03**		0.3 m 1.0'	Approx. 30 g
			NQ-P4C2		2 m 6.6'	Approx. 80 g
			NQ-P4C10		10 m 32.8'	Approx. 350 g

*Can be used as an extension cable.

STEP 3 Select Ethernet Cables

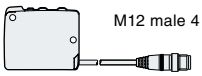
▮ Ethernet Cable



Symbol	Appearance	Description	Model	Material	Length	Weight
A		M12 male ↔ RJ45 Ethernet cable	**OP-88086**	PUR	2 m 6.6'	Approx. 160 g
			OP-88087		5 m 16.4'	Approx. 340 g
			OP-88088		10 m 32.8'	Approx. 660 g
B		M12 male ↔ M12 male Ethernet cable	**OP-88451**		0.3 m 1.0'	Approx. 50 g
			OP-88089		2 m 6.6'	Approx. 160 g
			OP-88091		10 m 32.8'	Approx. 660 g
C		M8 male ↔ RJ45 Ethernet cable	**OP-88448**		2 m 6.6'	Approx. 120 g
			OP-88449		5 m 16.4'	Approx. 200 g
			OP-88450		10 m 32.8'	Approx. 320 g
D		M8 male ↔ M8 male Ethernet cable	**OP-88452**		0.3 m 1.0'	Approx. 30 g
			OP-88453		2 m 6.6'	Approx. 90 g
			OP-88454		10 m 32.8'	Approx. 300 g

STEP 4 Select IO-Link Master ↔ Sensor Connection Cables

▮ M12 (4-pin) Connector Sensor



M12 male 4 pin

A M12 female to M12 male



Cable extension

A M12 female to M12 male

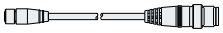


▮ M8 (4-pin) Connector Sensor



M8 male 4 pin

B M8 female to M12 male

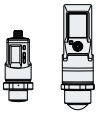


Cable extension

A M12 female to M12 male



▮ M12 (8-pin) Connector Sensor



M12 male 8 pin

C M12 female to M12 male



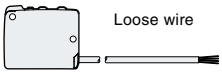
Cable extension

A * M12 female to M12 male



* When extending the MP-F Series cable, use OP-94740 (5 m 16.4').

▮ Loose Wire ↔ M12 Adapter Connector



Loose wire

D OP-88296



NQ-MP8L NQ-EC8L NQ-EP4L NQ-EP4A



NQ-IL8P



▮ NQ-IL8P



A M12 female to M12 male



Cable extension

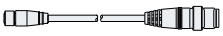
A M12 female to M12 male



NQ-MP8L NQ-EC8L NQ-EP4L



Connection Cables

Type	Appearance	Description	Model	Material	Length	Weight
A		M12 female 4 pin ↔ M12 male 4 pin Straight cable	**OP-85503***1	PVC	2 m 6.6'	Approx. 70 g
			OP-85504*1		5 m 16.4'	Approx. 130 g
			OP-88075	PUR	2 m 6.6'	Approx. 80 g
			OP-88076		5 m 16.4'	Approx. 180 g
		M12 female 4 pin ↔ M12 male 4 pin L-shaped cable	**OP-88455**		2 m 6.6'	Approx. 120 g
B		M8 female 4 pin ↔ M12 male 4 pin Straight cable	**OP-88456**	PVC	2 m 6.6'	Approx. 60 g
			OP-88457		5 m 16.4'	Approx. 120 g
			OP-88071	PUR	2 m 6.6'	Approx. 70 g
			OP-88072		5 m 16.4'	Approx. 140 g
		M8 female 4 pin ↔ M12 male 4 pin L-shaped cable	**OP-88073**		2 m 6.6'	Approx. 70 g
			OP-88074		5 m 16.4'	Approx. 140 g
C		For FR/FL/FD-EC/FD-EP Series M12 female 8 pin ↔ M12 male 4 pin	**OP-88444**	PVC	2 m 6.6'	Approx. 80 g
			OP-88445		5 m 16.4'	Approx. 150 g
			OP-88446		10 m 32.8'	Approx. 270 g
		For FD-H/FI-1000 Series M12 female 8 pin ↔ M12 male 4 pin	**FD-HCC0**	-	Adapter	Approx. 20 g
			FD-HCC2	PVC	2 m 6.6'	Approx. 120 g
			FD-HCC10		10 m 32.8'	Approx. 480 g
		For MP-F Series M12 female 8 pin ↔ M12 male 4 pin	**OP-88761**		5 m 16.4'	Approx. 220 g
D		Loose wire ↔ M12 adapter connector	**OP-88296**	-	-	Approx. 12 g

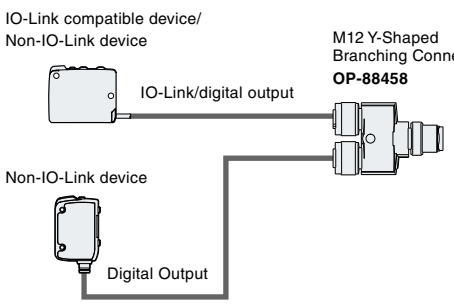
*1 Cannot be used for connection between NQ-IL8P and IO-Link Masters.

Additional Accessories

Appearance	Description	Model	Material	Length	Weight
	M12 Y-Shaped Branching Connector	**OP-88458**	-	-	Approx. 28 g
	M12 adapter connector for thermocouples	**OP-88459**	-	-	Approx. 25 g

Tip Two sensors can be connected to a single port using a Y-shaped branching connector.

Connecting to IO-Link master



IO-Link compatible devices and Non-IO-Link devices can be connected together.

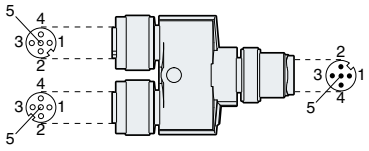


*Only ports 1 to 4 can be used.

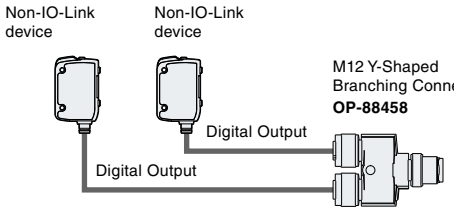
▮ Combinations that can be used with a Y-shaped branching connector:

	1	2
1	IO-Link communication	Digital input
2	IO-Link communication	Digital output
3	Digital input	Digital input
4	Digital input	Digital output

M12 Y-Shaped Branching Connector
OP-88458



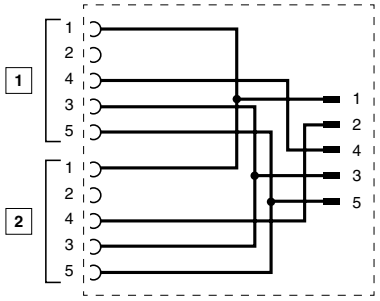
Connecting to I/O module



Two Non-IO-Link devices can be connected, with a maximum of 16 points possible across 8 ports.



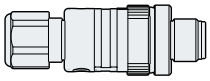
Internal circuit diagram



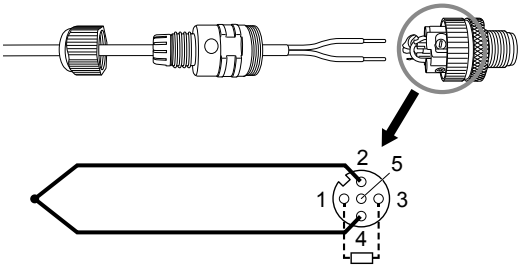
Tip The M12 adapter connector for thermocouples makes it easy to monitor thermocouples with high accuracy.

For NQ-EP4A

M12 adapter connector for thermocouples
OP-88459



The solderless screw mounting style offers easy connection for thermocouples. In addition, a resistance thermometer / RTD (Pt1000) for cold junction temperature compensation is built into the connector, and the measured value is continuously adjusted if the ambient temperature changes. This enables highly accurate measurement.

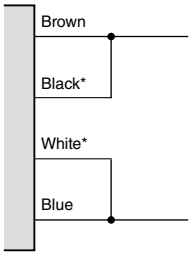


No.	Signal
1	CJC+
2	TC+
3	CJC-
4	TC-
5	FE

Wiring to the Power Supply

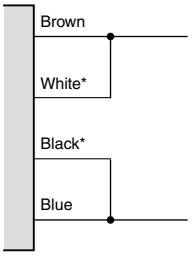
KEYENCE power supply cable: Wiring diagrams show wire colors when used with NQ-P8Bx/NQ-P4Bx.

▮ NQ-MP8L/EC8L



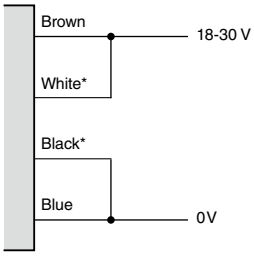
*Required when connecting Class B devices to ports 5 to 8.

▮ NQ-EP4L



*Required to supply power to the sensors.

▮ NQ-EP4A



*Required when performing cascade connections.

Specifications

IO-Link Master Module

Product Name		8-Port multi-protocol compatible IO-Link Master Module	4-Port EtherNet/IP™ compatible IO-Link Master Module	8-Port EtherCAT® compatible IO-Link Master Module
Model		**NQ-MP8L**	**NQ-EP4L**	**NQ-EC8L**
Network Specifications	Compatible Networks	EtherNet/IP™, PROFINET, Modbus/TCP	EtherNet/IP™, Modbus/TCP	EtherCAT®
	Transmission Speed	10 Mbps/100 Mbps		100 Mbps
	Connector	M12 4-pin female D-code	M8 4-pin female A-code	M12 4-pin female D-code
Power Supply Specifications	Connector Type	Power supply port IN: M12 5-pin male L-code Power supply port OUT: M12 5-pin female L-code	Power supply port IN: M8 4-pin male A-code Power supply port OUT: M8 4-pin female A-code	Power supply port IN: M12 5-pin male L-code Power supply port OUT: M12 5-pin female L-code
	Power Voltage	18 to 30 VDC (During IO-Link communication: 20.4 V to 28.8 V)		
	Allowable Current	V1 and V2: max. 9 A each V1 and V2: 11 A in total	V1 and V2: max. 4 A each	V1 and V2: max. 9 A each V1 and V2: 11 A in total
	Current Consumption	V1: max. 180 mA V2: max. 90 mA	V1: max. 110 mA V2: max. 115 mA	V1: max. 180 mA V2: max. 90 mA
Sensor Connection Specifications	Connector Type	M12 5-pin female A-code		
	V1 Power Supply Capacity	Ports 1 and 5: Each port max. 4 A, with short-circuit protection Ports 2 to 4, 6 to 8: Each port max. 2 A, with short-circuit protection	-	Ports 1 and 5: Each port max. 4 A, with short-circuit protection Ports 2 to 4, 6 to 8: Each port max. 2 A, with short-circuit protection
	V2 Power Supply Capacity	Ports 5 and 6: Each port max. 4 A, with short-circuit protection Ports 7 and 8: Each port max. 2 A, with short-circuit protection	Ports 1 to 4: 4 A in total	Ports 5 and 6: Each port max. 4 A, with short-circuit protection Ports 7 and 8: Each port max. 2 A, with short-circuit protection
IO-Link Specifications	Number of Connectable Devices	8	4	8
	Compliant Standards	Ver1.1		
	Transmission Speed	COM1: 4.8 kbps COM2: 38.4 kbps COM3: 230.4 kbps		
	Port type*1	Ports 1 to 4: Class A Ports 5 to 8: Class B	Ports 1 to 4: Class A	Ports 1 to 4: Class A Ports 5 to 8: Class B
	Process Data Size	Input: Max. 32 bytes/Output: Max. 32 bytes		
Digital Input (DI) Specifications	Number of Inputs	Max. 12 (when using DI mode)	Max. 8 (when using DI mode)	Max. 12 (when using DI mode)
	Input Type	PNP		
	ON Voltage/ON Current	11 V or higher/2 mA or higher		
	OFF Voltage/OFF Current	Less than 5 V/less than 1.5 mA		
	Input Current	Pin 2: approx. 7 mA, Pin 4: approx. 12 mA		
Digital Output (DO) Specifications	Number of Outputs	Max. 4		
	Output Type	PNP		
	Maximum Load Current	Each port max. 2 A	Each port max. 0.5 A	Each port max. 2 A
	Short-Circuit Protection Circuit	Yes		
	Leakage Current	0.1 mA or lower		
	Residual Voltage	1 V or lower		
Environmental Resistance	Operating Ambient Temperature	-40°C to +70°C -40°F to +158°F (no freezing)		
	Enclosure Rating	IP65/IP67/IP69K		
	Vibration Resistance	5 to 150 Hz/20 G/10 sweeps each in X, Y, and Z axes		
	Shock Resistance	15 G/11 ms/3 times each in X, Y, and Z axes		
Case Material		Housing: PA6-GF30 IP address settings switch cover: PEI Connector: SUS303	Housing: PA6-GF30 Connector: SUS303	Housing: PA6-GF30 Device ID settings switch cover: PEI Connector: SUS303
Weight		Approx. 530 g	Approx. 190 g	Approx. 530 g

*1 When using Class B, V1 and V2 each require a power supply.

Specifications

Temperature/Analog Input Module

Product Name			EtherNet/IP™ compatible Temperature/Analog Input Module
Model			**NQ-EP4A**
Network Specifications	Compatible Networks		EtherNet/IP™, Modbus/TCP
	Communication Speed		10 Mbps/100 Mbps
	Connector Type		M8 4-pin female A-code
Power Supply Specifications	Connector Type		Power supply port IN: M8 4-pin male A-code Power supply port OUT: M8 4-pin female A-code
	Power Voltage		18 to 30 VDC
	Allowable Current		V1 and V2: max. 4 A each V1 and V2: 5.5 A in total
	Current Consumption		Max. 240 mA
Input Specifications	Connector Type		M12 5-pin female A-code
	Number of Inputs		4
	Input Types		Voltage/current/resistance thermometer (RTD)/thermocouple
	Resolution		16 bit
	V1 Power Supply Capacity		Ports 1 to 4: 1 A in total, with short-circuit protection
Voltage Input Specifications	Input Range		Differential/single end 0 to 10 V/±10 V/2 to 10 V/0 to 5 V/1 to 5 V/±1 V/±500 mV/±100 mV/±50 mV
	Input Filters		4 stages
	Absolute Maximum Input		11.85 V
	Input Resistance		100 kΩ or above
	Conversion Speed		4 ms or less
	Conversion Precision	(at 25°C 77°F)	0.1% of F.S. or lower
		(at -40 to +70°C -40°F to +158°F)	0.75% of F.S. or lower
Current Input Specifications	Input Range		Differential/single end 0 to 20 mA/4 to 20 mA/±20 mA
	Input Filters		4 stages
	Absolute Maximum Input		23 mA
	Input Resistance		50 Ω or lower
	Conversion Speed		4 ms or less
	Conversion Precision	(at 25°C 77°F)	0.1% of F.S. or lower
		(at -40 to +70°C -40°F to +158°F)	0.75% of F.S. or lower
Resistance Thermometer (RTD) Input Specifications	Input Range		Pt100/Pt200/Pt500/Pt1000/Ni100/Ni200
	Connection Type		2 wires/3 wires/4 wires
	Input Filters		4 stages
	Conversion Speed		400 ms or lower
	Conversion Precision (Typical Example)	(at 25°C 77°F)	Pt100: 0.2% of F.S. or lower (2 wires, -200°C to 850°C -328°F to 1562°F), Pt1000: 0.2% of F.S. or lower (2 wires, -200°C to 850°C -328°F to 1562°F)
		(at -40 to +70°C -40°F to +158°F)	Pt100: 0.85% of F.S. or lower (2 wires, -200°C to 850°C -328°F to 1562°F), Pt1000: 0.85% of F.S. or lower (2 wires, -200°C to 850°C -328°F to 1562°F)
Thermocouple Input Specifications	Input Range		K: -270 to 1370°C -454 to 2498°F E: -270 to 1000°C -454 to 1832°F N: -270 to 1300°C -454 to 2372°F S: -50 to 1768°C -58 to 3214.4°F C: 0 to 2315°C 32 to 4199°F B: 100 to 1820°C 212 to 3308°F J: -210 to 1200°C -346 to 2192°F R: -50 to 1768°C -58 to 3214.4°F T: -270 to 400°C -454 to 752°F G: 0 to 2315°C 32 to 4199°F
	Input Filters		4 stages
	Conversion Speed		400 ms or lower
	Conversion Precision (Typical Example)	(at 25°C 77°F)	K thermocouple: 0.7% of F.S. or lower (-200°C to 1370°C -328°F to 2498°F)
		(at -40 to +70°C -40°F to +158°F)	K thermocouple: 1.35% of F.S. or lower (-200°C to 1370°C -328°F to 2498°F)
Environmental Resistance	Operating Ambient Temperature		-40°C to +70°C -40°F to +158°F (no freezing)
	Enclosure Rating		IP65/IP67/IP69K
	Vibration Resistance		5 to 150 Hz/20 G/10 sweeps each in X, Y, and Z axes
	Shock Resistance		15 G/11 ms/3 times each in X, Y, and Z axes
Case Material			Housing: PA6-GF30 Connector: SUS303
Weight			Approx. 190 g

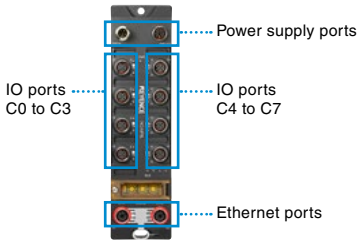
Specifications

I/O Module

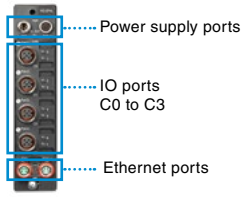
Product Name		IO-Link Compatible I/O Module
Model		**NQ-IL8P**
Network Specifications	Compatible Network	IO-Link
	Connector Type	M12 5-pin male A-code
	Compatible Standards	Ver1.1
	Communication Speed	COM2: 38.4 kbps
	Minimum Cycle Time	3.2 ms
Power Supply Specifications	Power Voltage	20.4 to 28.8 VDC
	Allowable Current	4 A in total
	Power Consumption	3.5 W or lower (145 mA or lower at 24 V)
Sensor Connection Specifications	Connector Type	M12 5-pin female A-code
	Power Supply Capacity	Ports 1 to 8:Each port max. 120 mA, with short-circuit protection
Digital Input (DI) Specifications	Number of Inputs	Max. 16
	Input Type	PNP
	ON Voltage/ON Current	11 V or higher/2 mA or higher
	OFF Voltage/OFF Current	Less than 5 V/less than 1.5 mA
	Input Current	Approx. 7 mA
Digital Output (DO) Specifications	Number of Outputs	Max. 16
	Output Type	PNP
	Maximum Load Current	Each port max. 0.5 A
	Short-Circuit Protection Circuit	Yes
	Leakage Current	0.1 mA or lower
	Residual Voltage	1 V or lower
Environmental Resistance	Operating Ambient Temperature	−40°C to +70°C -40°F to +158°F
	Enclosure Rating	IP65/IP67/IP69K
	Vibration Resistance	5 to 150 Hz/20 G/10 sweeps each in X, Y, and Z axes
	Shock Resistance	15 G/11 ms/3 times each in X, Y, and Z axes
Case Material		Housing: PA6-GF30 Connector: SUS303
Weight		Approx. 210 g

Pin Layout

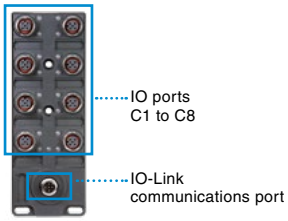
NQ-MP8L/NQ-EC8L



NQ-EP4L/EP4A



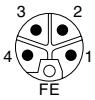
NQ-IL8P



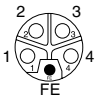
Power Supply Ports

NQ-MP8L/NQ-EC8L

PWR IN
(M12 male, L-code)



PWR OUT
(M12 female, L-code)



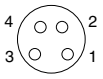
Pin Number	Details
1	24 VDC (V1)
2	GND (V2)
3	GND (V1)
4	24 VDC (V2)

NQ-EP4L/EP4A

PWR IN
(M8 male, A-code)



PWR OUT
(M8 female, A-code)

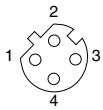


Pin Number	Details
1	24 VDC (V1)
2	24 VDC (V2)
3	GND (V1)
4	GND (V2)

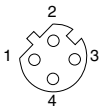
Ethernet Ports

NQ-MP8L

ETH1
(M12 female, D-code)



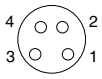
ETH2
(M12 female, D-code)



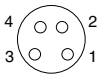
Pin Number	Details	
	ETH1	ETH2
1	TX +	RX +
2	RX +	TX +
3	TX -	RX -
4	RX -	TX -

NQ-EP4L/EP4A

ETH1
(M8 female, A-code)



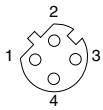
ETH2
(M8 female, A-code)



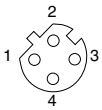
Pin Number	Details	
	ETH1	ETH2
1	TX +	RX +
2	RX +	TX +
3	RX -	TX -
4	TX -	RX -

NQ-EC8L

XF1
(M12 female, D-code)



XF2
(M12 female, D-code)

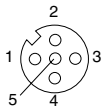


Pin Number	Details	
	XF1	XF2
1	TX +	RX +
2	RX +	TX +
3	TX -	RX -
4	RX -	TX -

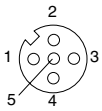
IO Ports

NQ-MP8L/NQ-EC8L

C0 to C3
(M12 female, A-code)



C4 to C7
(M12 female, A-code)



C0 to C3 (Class A)

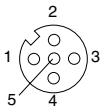
Pin Number	Details
1	24 VDC (V1)
2	Digital input/digital output
3	GND (V1)
4	IO-Link/digital input (C/Q)
5	(No connection)

C4 to C7 (Class B)

Pin Number	Details
1	24 VDC (V1)
2	24 VDC (V2)
3	GND (V1)
4	IO-Link/digital input (C/Q)
5	GND (V2)

NQ-EP4L

C0 to C3
(M12 female, A-code)

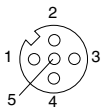


C0 to C3 (Class A)

Pin Number	Details
1	24 VDC (V2)
2	Digital input/digital output (V2)
3	GND (V2)
4	IO-Link/digital input (C/Q)
5	(No connection)

NQ-EP4A

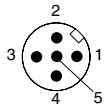
C0 to C3
(M12 female, A-code)



Pin Number	Current/Voltage		Resistance Thermometer (RTD)	Thermocouple
	Differential Input	Single-Ended Input		
1	24 VDC (V1)	24 VDC (V1)	B (RL +)	CJC +
2	AI +	AI +	B (R +)	TC +
3	GND (V1)	AI -/GND (V1)	A (RL -)	CJC -
4	AI -	(No connection)	A (R -)	TC -
5	FE	FE	FE	FE

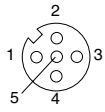
NQ-IL8P

IO-Link communication port
(M12 male, A-code)



Pin Number	Details
1	24 VDC
2	(No connection)
3	GND
4	IO-Link
5	FE

C1 to C8
(M12 female, A-code)

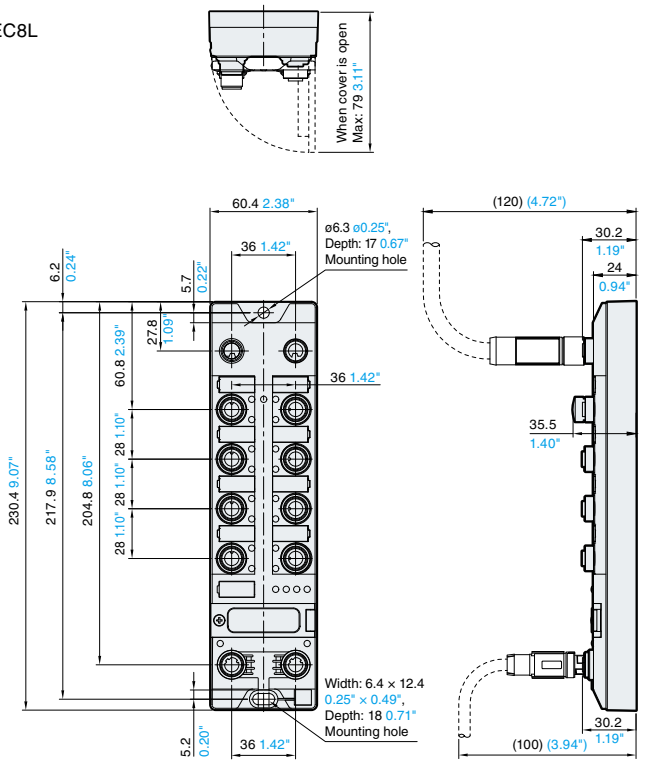


Pin Number	Details
1	24 VDC
2	Digital I/O B
3	GND
4	Digital I/O A
5	FE

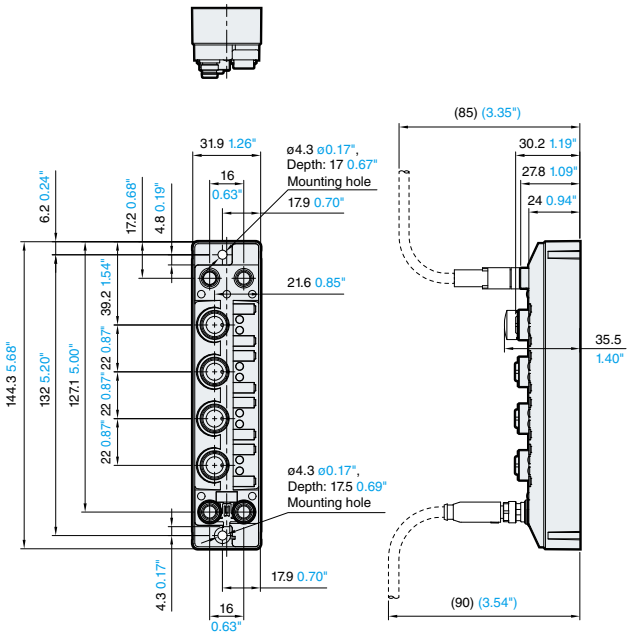
Dimensions

Unit: mm inch

NQ-MP8L/NQ-EC8L



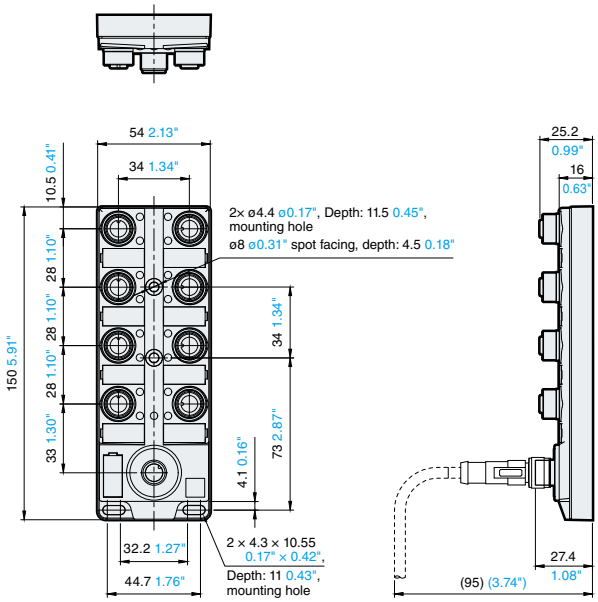
NQ-EP4L/EP4A



Dimensions

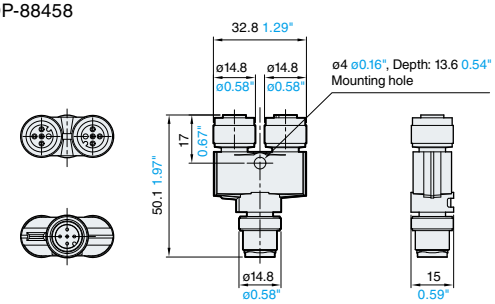
Unit: mm inch

▮ NQ-IL8P



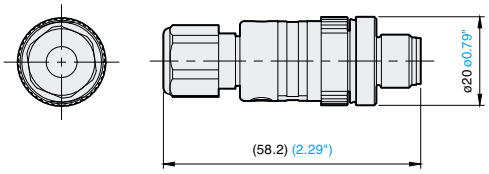
M12 Y-Shaped Branching Connector

▮ OP-88458



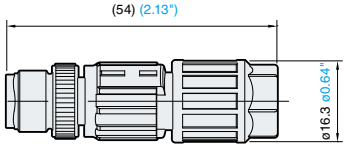
M12 Adapter Connector for Thermocouples

▮ OP-88459



Loose Wire-M12 Adapter Connector

▮ OP-88296



KEYENCE IO-Link Compatible Devices*



Clamp-On
Flow Sensor

FD-H/FD-Q Series



Clamp-On
Flow Meter

FD-R Series



Clamp-On
Micro Flow Sensor

FD-X Series



Clamp-On
Gas Flow Meter

FD-G Series



Air Quality Multi Sensor/
Air Flow Sensor

MP-F/FD-E Series



Heavy Duty Digital
Pressure Sensor

GP-M Series



Radar
Level Sensor

FR Series



Sensing Guide Pulse
Level Sensor

FL Series



Digital Fiber
Optic Sensor

FS-N40 Series



Ultra-Compact
Laser Sensor

LR-X Series



Do-It-All
Laser Sensor

LR-Z Series



Long Range
TOF Laser Sensor

LR-T Series



All-Purpose
Appearance Sensor

LR-W Series



Pattern Matching
Sensor

AI Series

*Varies depending on model

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