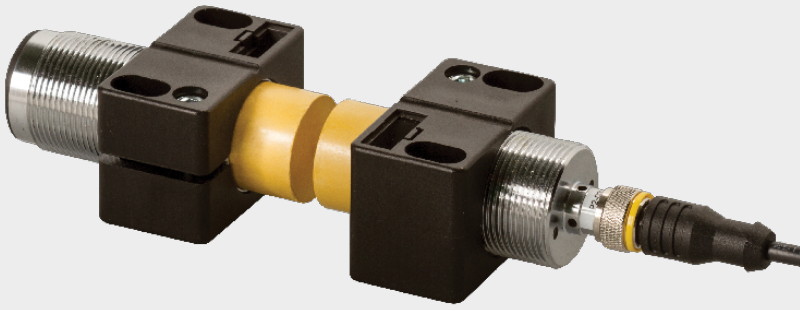
TURCK

Your Global Automation Partner

# Inductive Coupler
# NIC Series



# A Global Leader in Industrial Automation

Turck's sensors, connectivity, and fieldbus technology products are built to be the best. As one of the most **prominent** sensor manufacturers **in the world**, we even back our sensors with a **lifetime warranty**. Turck works by bringing **rugged engineering** solutions to your industrial automation applications.

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**2,000+** EXPERIENCED SALES REPRESENTATIVES

Pioneer in non-contact **sensing** technology

Developed innovative **connectivity** solutions in response to our customers' needs

Recognized the need for advanced **I/O solutions** in harsh duty environments

**SUPPORT & DEDICATED SERVICE**

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**4,000+** APPLICATION EXPERTS

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Strategically placed manufacturing facilities in the **USA** with **30** GLOBAL SUBSIDIARIES

**GLOBAL BUT LOCAL...**

**60** representations worldwide


# NIC - Contactless Transmission of Data and Power

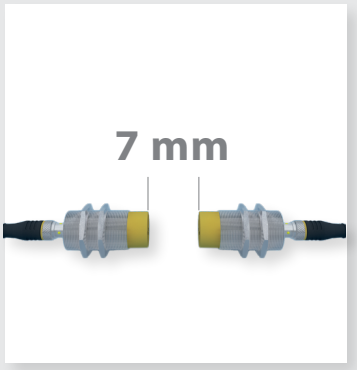
## Compact combination

Inductive couplers transmit data and power across an air gap without contact. They are a wear-free alternative to slip rings or connectors subject to high mechanical stress. This non-contact design reduces costs by enabling maintenance intervals to be extended, reduces unplanned downtime and improves cycle rates. The NIC coupler sets consist of a primary part on the control side and a secondary part on the sensor/actuator side of the connection. The NIC couplers transmit up to eight PNP switching signals and up to 750 milliamps of current with 18 watts output power. This enables sensors and actuators such as light curtains, piezo valves or smaller valve manifolds to be operated without an additional amplifier on the secondary side.

The primary parts are connected with a 4-pin M12 male connector. With a length of only 86 mm for each device and in an M30 housing, these sensors are ideal for applications with a small footprint. Since this system is non-contact, maintenance intervals can be extended, unplanned downtime reduced and higher clock speeds achieved. Inductive couplers are also impressive on account of the freedom of movement they offer their coupled components, such as robots with rotating tools or shafts from which sensor signals have to be taken. In this application, a contactless connection is a major benefit, since the system also tolerates a counter-rotation of the components. Although the slip ring is established in the industry as an alternative solution, it has significant limitations due to its wear. Another application area for inductive couplers are overhead conveyor systems as are frequently used in the automotive industry.

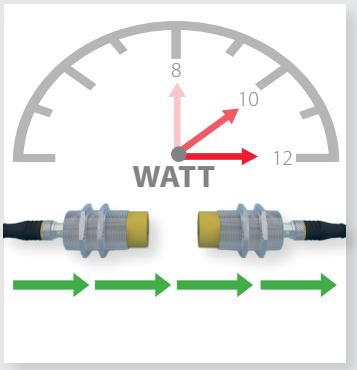
**Wide transmission range with offset tolerance**

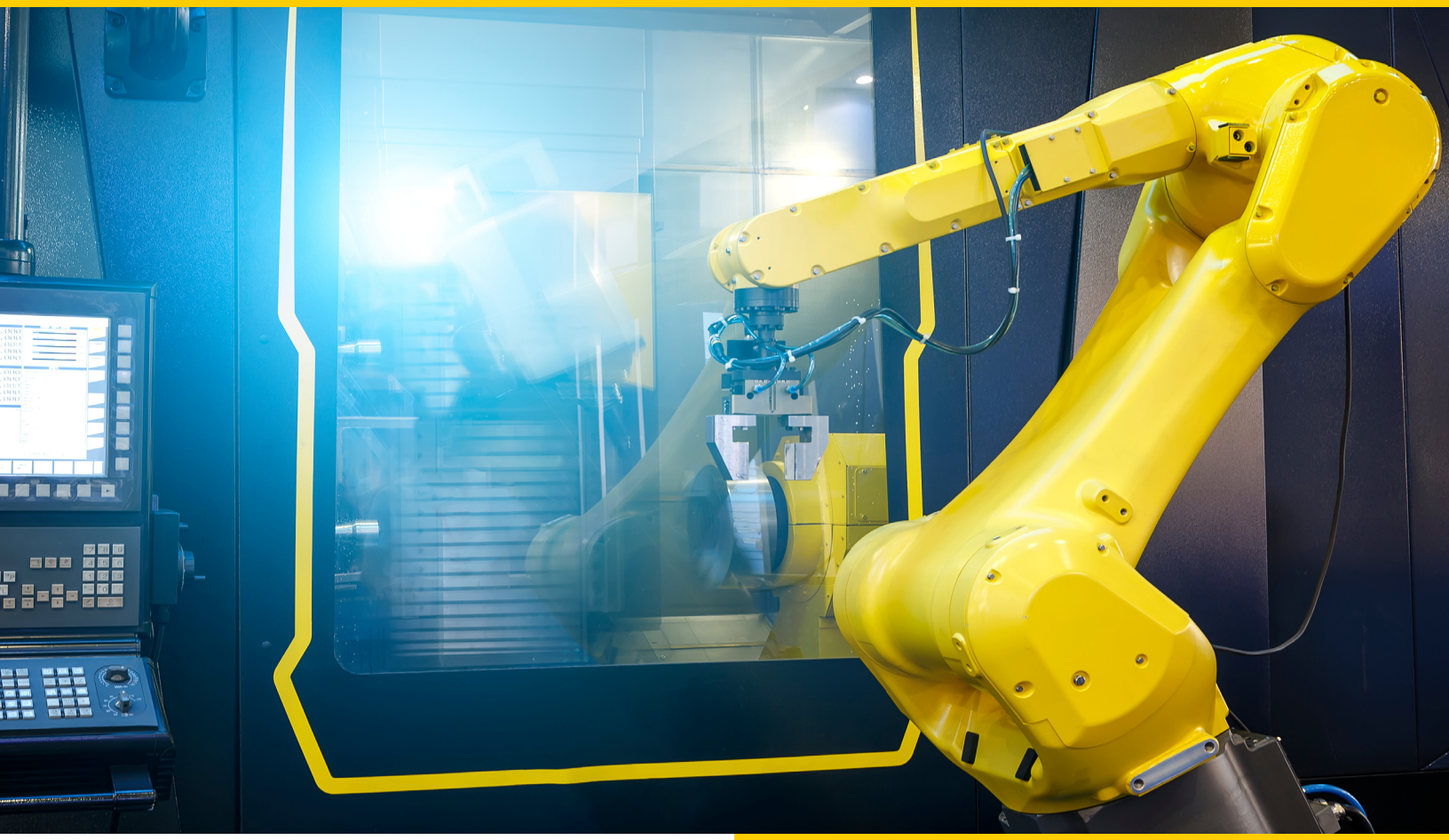
Turck's inductive couplers transmit the full power of 18 W at a distance of 7 mm. They also tolerate a lateral offset of 5 mm and an angular misalignment up to 15° degrees without any reduction of the transmitted power.




**High power transmission**

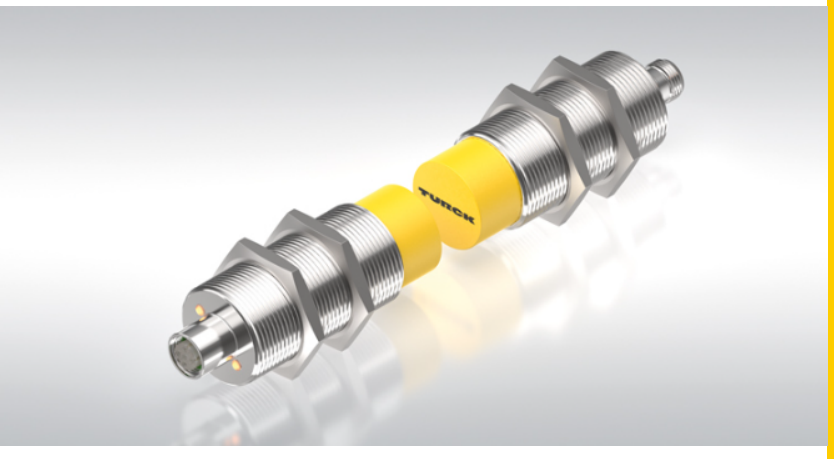
The NIC couplers transmit switching signals up to 750 mA of current with 18 W output power. This enables sensors and actuators such as light curtains, piezo valves or smaller valve manifolds to be operated without an additional amplifier on the secondary side.





## Connection technology and sensors

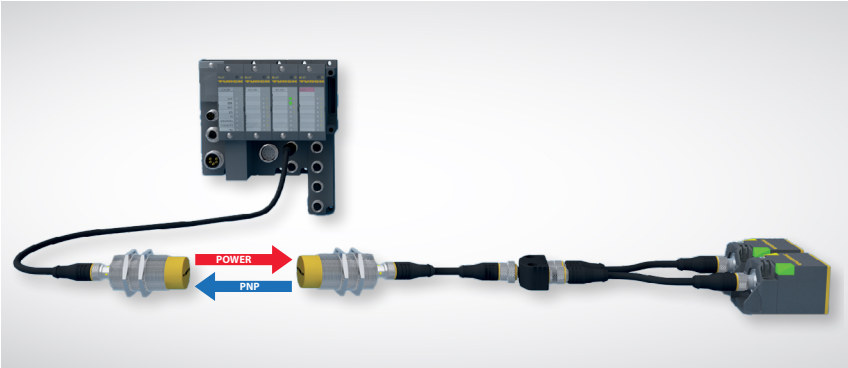
Customers can draw on the extensive range of Turck connectivity, fieldbus technology and sensor products to ensure the simple mounting and use of the new NIC couplers. Several options are available, from standard 4-pin M12 connectors and several different variants of Y-pieces, I/O hubs, right through to the appropriate adapter cable for the BL67 modular fieldbus system.



## Your advantages:

- Reduces needed stock and replacement via wear free operation
- Mounting flexibility through an optimum air interface and offset tolerances
- Tool identification using Turck's TBIL I/O Hub
- Less suppliers: Couplers, sensors and connection technology from a single source
- Reduces downtime via control system diagnostics and availability of IO-Link
- Worldwide support by global sales and support channels of the Turck Group

# Solutions for different applications




## Two PNP switching signals

**Solution 1:**
Up to two PNP switching signals can be transmitted via the secondary part NICS-EM30-IOL-HK1141 (right) – either from power clamp sets or from two different sensors that are connected via a VB2-splitter.

See page 8 for more information.

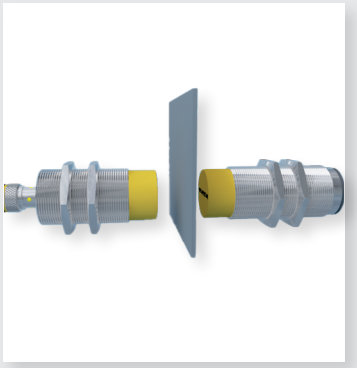

## One IO-Link device

**Solution 2:**
If the primary part NICP-EM30-IOL-H1141 (left) is connected to an IO-Link master, data from measuring IO-Link sensors can be transmitted bidirectionally. You can, of course, also connect IO-Link-capable actuators such as tower lights or the TBIL-M1-16DIP I/O hub with 16 digital PNP inputs.

See page 8 for more information.

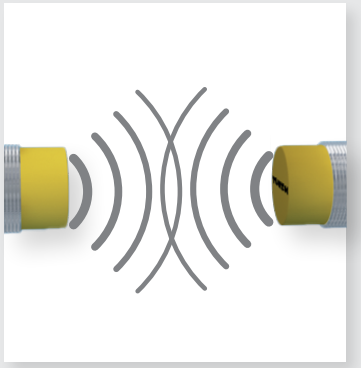
**Foreign Object Detection**

The NIC system provides two pins for diagnostic signals: One signal indicates the presence of the secondary part, the second is for "Foreign Object Detection," for example, to detect metallic foreign objects between the primary and secondary part.

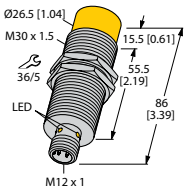
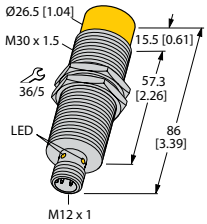


**Dynamic Pairing**

The primary parts can be combined with as many secondary parts as wanted - and vice versa. By means of "Dynamic Pairing" more complex applications can be solved satisfactorily with several primary and secondary parts.



# Variants and technical data

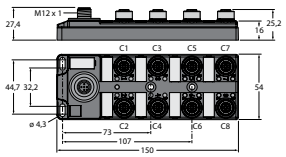
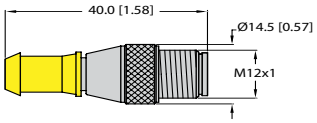
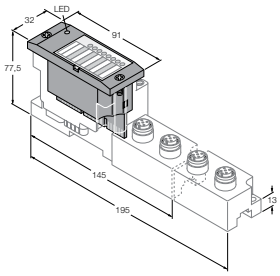
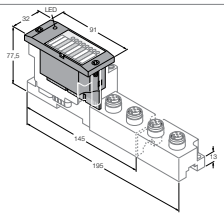
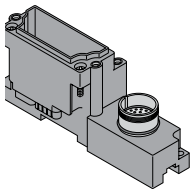
| Dimension drawing | Ident no. | Type | Description |
|---|---|---|---|
|  | 100018258 | NICP-EM30-IOL-H1141 | Inductive coupler, primary part, IO-Link and 2 x PNP<br>connection: Male M12, 4-pin |
|  | 100018259 | NICS-EM30-IOL-HK1141 | Inductive coupler, secondary part, IO-Link and 2 x PNP, connection: 0.3 m cable with female M12, 4-pin |

| General Technical Data | |
|---|---|
| Operating voltage | 24 VDC ± 10 % |
| Transmission distance | 0…7 mm |
| Lateral offset | 5 mm at 4 mm transmission distance |
| Angular misalignment | 15° mm at 4 mm transmission distance |
| Transmit power | up to 18 W |
| Ambient temperature | -20…+55 °C |
| Protection class | IP67, IP68 |
| Output current | 750 mA |
| Standby power coupled | 4 W |
| Standby power uncoupled | 1 W |
| Standby time | ≤ 160 ms |
| Readiness delay | 10 ms |
| IO-Link transmission | COM2, IO-Link V1.1.1 |

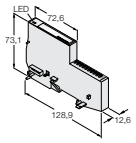
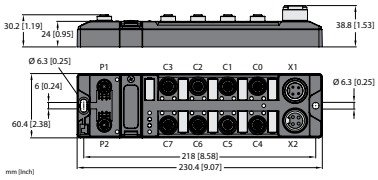
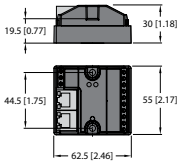
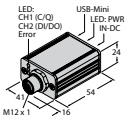
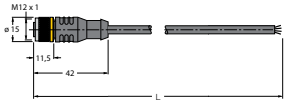
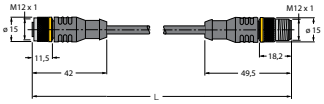
| NICP-EM30-IOL-H1141 | |
|---|---|
| ID | 100018258 |
| Operating voltage | 24 VDC ± 20 %/- 15 % |
| Operating current | max. 1700 mA |
| Nominal distance | 0…7 mm |
| Ambient temperature | -25…+55 °C |
| Storage temperature | -40…+70 °C |
| Output function | IO-Link/2 digital channels |
| Protection type | IP67, IP68 |
| Electrical connection | M12 connector, 4-pin |

| NICS-EM30-IOL-HK1141 | |
|---|---|
| ID | 100018259 |
| Output voltage | 24 VDC ± 10 % |
| Output current | max. 750 mA |
| Nominal distance | 0…7 mm |
| Ambient temperature | -25…+55 °C |
| Storage temperature | -40…+70 °C |
| Output peak current | 2.5 A for 0.1 ms, 10 A for 0.02 ms |
| Output function | IO-Link/2 digital channels |
| Protection type | IP67, IP68 |
| Electrical connection | M12 female connector, 4-pin |
| Min. input voltage<br>High Level<br>Low Level | <br>8 V<br>5 V |
| Input current | < 4.5 mA |

# Accessories

| Dimension drawing | Ident no. | Type | Description |
|---|---|---|---|
|  | 6814100 | TBIL-M1-16DIP | I/O hub for IO-link, 16 digital PNP inputs |
| | 6814101 | TBIL-M1-8DOP | I/O hub for IO-link, 8 digital outputs |
|  | U0956-72 | RS 4.4T-J14 | Jumper plug used with TBIL-M1-16DIP hub |
|  | 6827386 | BL67-4IOL | IO-Link-1.1 master for the modular fieldbus system BL67,<br>4 IO-Link ports and 4 programmable PNP ports |
|  | 6827383 | BL67-16DI-P | Digital input modular I/O card |
|  | 6827216 | BL67-B-1M23-19 | Base module for BL67-16DI-P |

# Accessories

| Dimension drawing | Ident no. | Type | Description |
|---|---|---|---|
|  | 6827385 | BL20-E-4IOL | IO-Link-1.1 master for the modular fieldbus system BL20,<br>4 IO-Link ports and 4 programmable PNP ports |
|  | 100028459 | TBEN-L4-8IOLA | Compact multiprotocol I/O module for Ethernet, 8 IO-Link master channels, 16 universal digital PNP channels, channel diagnostics |
|  | 6814140 | FEN20-4IOL | Compact IP20 multiprotocol I/O station, 4 IO-Link master channels |
|  | 6825482 | USB-2-IOL-0002 | IO-Link-1.1 master with USB port,<br>1-chanel operation in IOL or SIO mode.<br>Module to link PC to OI-Link devices via PACTware. |
|  | U5302 | RKC4.4T-2 | Connection cable, female M12, straight, 4-pin, cable length:<br>2 m,  PVC jacket |
|  | U5264 | RKC4.4T-2-RSC4.4T | Extension cable, female M12, straight 4-pin, cable length 2 m, male M12, straight 4-pin, PVC jacket |

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