Your Global Automation Partner

TURCK

TN-M...-IOL-H1141
HF Read/Write Head

Instructions for Use

Contents

1 About These Instructions

These operating instructions describe the structure, functions and the use of the product and will help you to operate the product as intended. Read these instructions carefully before using the product. This is to avoid possible damage to persons, property or the device. Retain the instructions for future use during the service life of the product. If the product is passed on, pass on these instructions as well.

1.1 Target groups

These instructions are aimed a qualified personal and must be carefully read by anyone mounting, commissioning, operating, maintaining, dismantling or disposing of the device.

1.2 Explanation of symbols used

The following symbols are used in these instructions:

	**DANGER** DANGER indicates a dangerous situation with high risk of death or severe injury if not avoided.
	**WARNING** WARNING indicates a dangerous situation with medium risk of death or severe injury if not avoided.
	**CAUTION** CAUTION indicates a dangerous situation of medium risk which may result in minor or moderate injury if not avoided.
	**NOTICE** NOTICE indicates a situation which may lead to property damage if not avoided.
	**NOTE** NOTE indicates tips, recommendations and useful information on specific actions and facts. The notes simplify your work and help you to avoid additional work.
▶	**CALL TO ACTION** This symbol denotes actions that the user must carry out.
⇨	**RESULTS OF ACTION** This symbol denotes relevant results of actions.

1.3 Other documents

Besides this document the following material can be found on the Internet at **www.turck.com**:

- Data sheet
- IO-Link parameters manual
- Commissioning manual IO-Link devices
- Configuration manual
- EC Declaration of Conformity

1.4 Feedback about these instructions

We make every effort to ensure that these instructions are as informative and as clear as possible. If you have any suggestions for improving the design or if some information is missing in the document, please send your suggestions to **techdoc@turck.com**.

2 Notes on the Product

2.1 Product identification

These instructions apply to the following HF read/write heads:

- TN-M18-IOL-H1141
- TN-M30-IOL-H1141

2.2 Scope of delivery

- Two housing nuts
- Quick start guide

2.3 Legal requirements

The devices are subject to the following EU directives:

- 2014/30/EU (electromagnetic compatibility)
- 2011/65/EU (RoHS Directive)
- 2014/53/EU (RED Directive)

2.4 Manufacturer and service

Hans Turck GmbH & Co. KG
Witzlebenstraße 7
45472 Muelheim an der Ruhr
Germany

Turck supports you with your projects, from initial analysis to the commissioning of your application. The Turck product database contains software tools for programming, configuration or commissioning, data sheets and CAD files in numerous export formats. You can access the product database at the following address: **www.turck.de/products**
For further inquiries in Germany contact the Sales and Service Team on:

- Sales: +49 208 4952-380
- Technology: +49 208 4952-390

Outside Germany, please contact your local Turck representative.

3 For Your Safety

The product is designed according to state-of-the-art technology. However, residual risks still exist. Observe the following warnings and safety notices to prevent damage to persons and property. Turck accepts no liability for damage caused by failure to observe these warning and safety notices.

3.1 Intended use

These devices are designed solely for use in industrial areas.
Read/write heads work on a frequency of 13.56 MHz and are used as a means of contactless data exchange with tags within the HF RFID system. It is only possible to connect to and operate the devices via IO-Link masters corresponding to specification V1.1.
The devices may only be used as described in these instructions. Any other use is not in accordance with the intended use. Turck accepts no liability for any resulting damage.

3.2 General safety notes

- The device may only be assembled, installed, operated, parameterized and maintained by professionally-trained personnel.
- The device may only be used in accordance with applicable national and international regulations, standards and laws.
- The device only meets the EMC requirements for industrial areas and is not suitable for use in residential areas.

4 Product Description

The cylindrical read/write heads TN-M…-IOL-H1141 are provided in a metal housing with M18 or M30 male threads.

The devices can be configured and operated via an IO-Link interface. All devices feature an M12 male connector in metal for connecting the cable.

4.1 Device overview

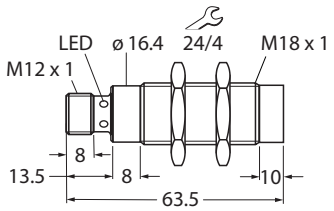


Fig. 1: TN-M18-IOL-H1141

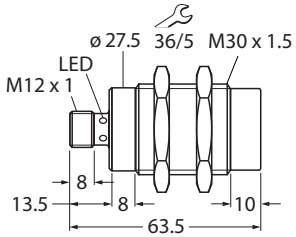


Fig. 2: TN-M30-IOL-H1141

4.2 Properties and characteristics

- M18 × 1 or M30 × 1.5 threaded tube
- Chrome-plated brass
- IO-Link interface

4.3 Functional principle

The read/write heads are used as a means of contactless data exchange with tags. During this process, the control unit sends commands and data to the read/write head via the interface and receives the appropriate response data back from the read/write head. Examples of such commands include reading the UIDs of all RFID tags within the reading area or writing a specific production date to an RFID tag. Communication with the tag is achieved by data from the read/write head being encoded and transmitted via an electromagnetic field that simultaneously supplies the tag with energy.

A read/write head contains a transmitter and a receiver, a port to the interface and a coupling element (coil antennas) for communicating with the tag. Inductive coupling is used for the transmission process between the read/write head and the tag in devices designed for the HF range.

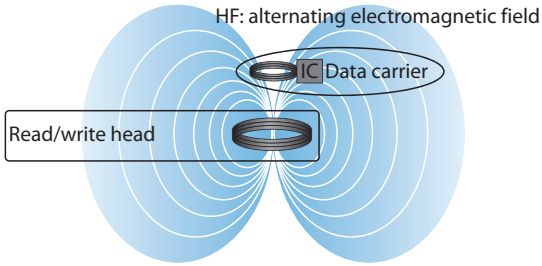


Fig. 3: Functional Principle of HF RFID

The coupling element in the read/write head generates an electromagnetic AC field. This field creates a transmission window known as an air interface, in which the data exchange with the tag takes place. The size of the transmission window depends on the combination of read/write heads and tags.

Every Turck read/write head can communicate with a number of different Turck tags. To do this, the read/write head and tags must each work within the same frequency range. Depending on their power and the frequency in use, the devices have a range of a few millimeters up to several meters. The specified maximum distance between the read/write heads represents values measured under laboratory conditions, free from any influences caused by surrounding materials. Attainable distances may vary due to component tolerances, mounting conditions, ambient conditions and influences caused by surrounding materials (especially metal and liquids).

4.4 Functions and operating modes

The devices can be used to read and write passive HF tags in single or multi-tag operation. To do this, the devices form a transmission zone. The size and expansion of this zone may vary on account of several conditions, for example the tags used and the application conditions. The maximum distance permitted between the read/write heads is outlined in the data sheets.

NOTE
During multi-tag operation, only the **Inventory** command is possible.

The devices can be operated in IO-Link mode or in standard I/O mode (SIO mode). In IO-Link mode, bidirectional IO-Link communication takes place between an IO-Link master and the read/write heads. To make this possible, the devices are integrated via an IO-Link master at the control level. The read data or the data to be written is transferred via the IO-Link interface along with the process data. In addition to the read data, diagnostic and identification messages can also be requested via IO-Link.

Various device functions can be configured via the IO-Link interface.

In SIO mode, the presence of tags can be polled or the data from two tags can be compared.

The devices can also be programmed using a parameterization tag. In this case, the settings are transferred from a tag to the read/write head via a read process. Application-specific parameterization tags are available from Turck on request.

4.5 Technical accessories

Accessories for mounting, connecting and parameterizing can be found in product database or the Accessories List for TBEN (D301367) under www.turck.com. The accessories are not part of the scope of delivery.

5 Mounting

The maximum tightening torque for the housing nuts is 25 Nm (M18 model) or 70 Nm (M30 model).

- ▶ Install the device using the corresponding mounting accessories such that the front cap of the device protrudes fully from the mounting surface.
- ▶ Maintain the minimum distances between the read/write heads.

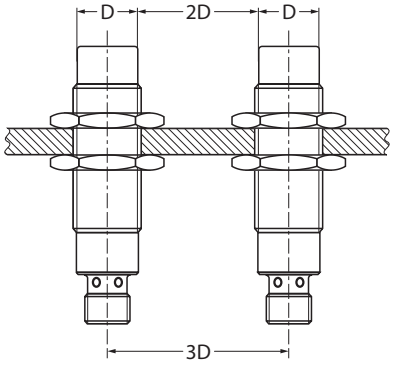


Fig. 4: Minimum distance between Two Read/Write Heads

- ▶ Avoid placing the read/write head in close proximity to metal. Metal rails or similar objects must not interrupt the transmission zone.

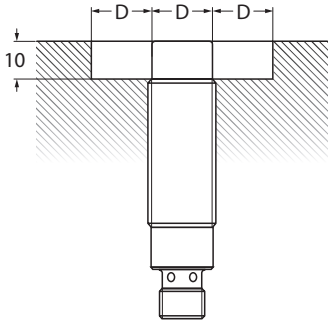


Fig. 5: Minimum distance between the Read/Write Heads and Metal

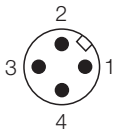
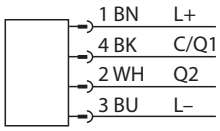
- ▶ Protect the device against thermal radiation, sudden temperature fluctuations, high levels of dirt, electrostatic charging and mechanical damage.

For further information about using the read/write heads refer to the RFID configuration manual.

6 Connection

- Connect the open end of the connecting cable (e.g. RKC4.4T-2/TXL, Ident-No. 6625503) to an IO-Link master.
- Connect the connecting cable coupling to the connector at the rear of the device.

6.1 Wiring diagram

Pin assignment	Wiring diagram
	

7 Commissioning

After connecting and switching on the power supply, the device is automatically ready for operation.
When the device is connected to an IO-Link master, IO-Link communication will start automatically. To do this, the IO-Link master sends a wake-up request to the device.

7.1 Initiating IO-Link mode

- ▶ Set the cycle time on the IO-Link master.
- ⇨ The device is ready for operation.

7.2 Initiating SIO mode

- ▶ Connect the device to a standard I/O port.
- ⇨ The device is ready for operation.

In SIO mode, the functions relating to **data synchronization** and **tag presence** are available. For more information on setting up the functions, refer to the IO-Link parameters manual.

8 Setting and Parameterization

The devices can be parameterized via IO-Link or via a master tag. Further information can be found in the IO-Link commissioning manual and in the IO-Link parameters manual.

8.1 Setting via a parameterization tag

Application-specific parameterization tags are available from Turck on request.

- ▶ Connect the read/write head to the voltage supply.
- ▶ Move the parameterization tag into the sensing range of the read/write head.
- ▶ The settings saved to the master tag are applied automatically to the read/write head.

8.2 Setting via the control program with IO-Link function block

The read/write heads can be set up and configured via Siemens control units from the S7-1200, S7-1500 and TIA V14 product series. A function block is required for this purpose. The library file contains various application-specific function blocks. The library is available at www.turck.com as a free download.

Function blocks are available for the following functions:

Function block	Function	Storage requirement (bytes)	Execution time (ms)	Duration of data transfer	
				Data length (bytes)	Transfer time (ms)
IOL_Inventory	Reads the UID of the tag in the sensing range	94	2	8/8	50
IOL_Continuous_read	Reads either 32 bytes or 64 bytes of user data from the address specified in the **ScanAddress** parameter	116	2	4/8	80
IOL_READ	Reads variable user data from a variable address	2112	2	4/8	100
				12/24	300
				96/192	2350
				N/A / 1000	12,500
IOL_WRITE	Writes variable user data from a variable address	2096	2	4/8	110
				12/24	320
				96/192	3100
				N/A / 1000	14,000
IOL_read-write-head_switch_off	Switches the read/write head antenna on or off	50	2	–	–

8.2.1 Reading the UID

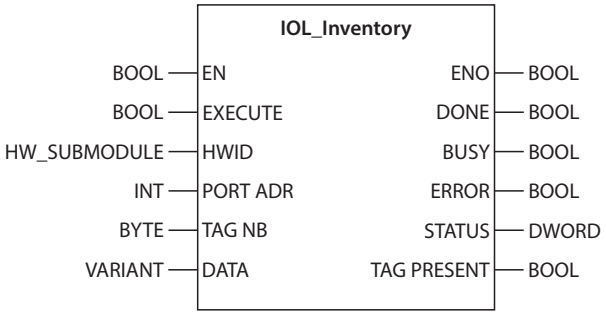


Fig. 6: Function block: IOL_Inventory

With the function block called **IOL_Inventory** the UIDs of the tag can be read within the sensing range of the read/write head. 64-bit data is transmitted to the control unit.

Function block: IOL_Inventory — Input Variables

Name	Data type	Meaning
EN	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation
Execute	BOOL	0 →1: Sending command
HwId	HW_SUBMODULE	Hardware identifier for the IO-Link master
portAdr	Int	Start address for the read/write head
TagNB	Byte	Index of the tag to be written in Data
Data	Variant	Area of the control unit in which the data is stored

Function block: IOL_Inventory — Output Variables

Name	Data type	Meaning
Done	BOOL	0: Last command execution has not been completed 1: Last command execution has been completed Only for SCL, FBD and KOP representation
Busy	BOOL	0: Function block is not active 1: Function block is active
Error	BOOL	0: No error 1: Error
Status	DWORD	Error code 0x00: No error Error codes can be found in the "Reading Error Codes" section.
Tag Present	BOOL	0: No tags in the sensing range 1: Tags in the sensing range
ENO	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation

8.2.2 Reading the fixed memory area of a tag

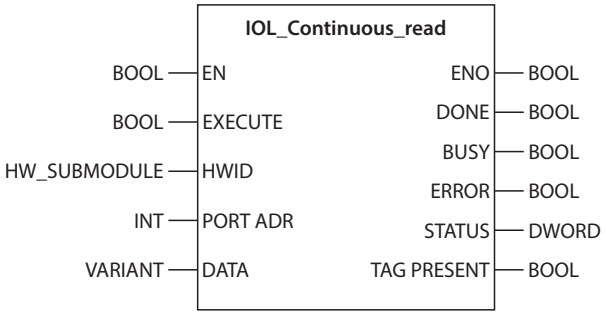


Fig. 7: Function block: IOL_Continuous_read

With the function block called **IOL_Continuous_read** a fixed memory area of the tag can be read. The memory area must be specified in the **ScanAdress** parameter. 32-bit or 64-bit data can be transmitted to the control unit.

Function block: IOL_Continuous_read — Input variables

Name	Data type	Meaning
EN	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation
Execute	BOOL	0 → 1: Sending command
HwId	HW_SUBMODULE	Hardware identifier for the IO-Link master
portAdr	Int	Start address for the read/write head
Data	Variant	Area of the control unit in which the data is stored

Function block: IOL_Continuous_read — Output variables

Name	Data type	Meaning
Done	BOOL	0: Last command execution has not been completed 1: Last command execution has been completed Only for SCL, FBD and KOP representation
Busy	BOOL	0: Function block is not active 1: Function block is active
Error	BOOL	0: No error 1: Error
Status	DWORD	Error code 0x00: No error Error codes can be found in the "Reading Error Codes" section.
Tag Present	BOOL	0: No tags in the sensing range 1: Tags in the sensing range
ENO	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation

8.2.3 Reading user data

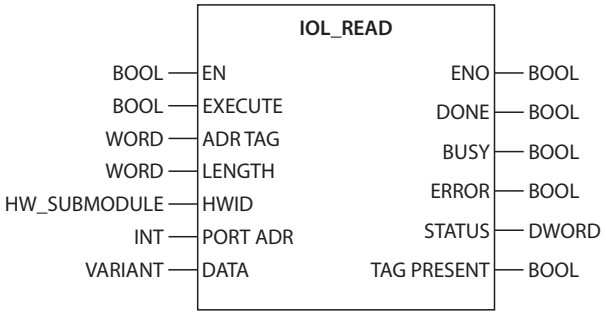


Fig. 8: Function block: IOL_Read

With the function block called **IOL_READ** user data from the tag can be read. The length of the data that is transmitted to the control unit is variable.

Function block: IOL_READ — Input Variables

Name	Data type	Meaning
EN	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation
Execute	BOOL	0 →1: Sending command
HwId	HW_SUBMODULE	Hardware identifier for the IO-Link master
portAdr	Int	Start address for the read/write head
AdrTag	WORD	The block address of the memory area to be read
Length	WORD	The length of the data to be read (bytes)
Data	Variant	Area of the control unit in which the data is stored

Function block IOL_READ — Output Variables

Name	Data type	Meaning
Done	BOOL	0: Previous command execution has not been completed 1: Previous command execution has been completed Only for SCL, FBD and KOP representation
Busy	BOOL	0: Function block is not active 1: Function block is active
Error	BOOL	0: No error 1: Error
Status	DWORD	Error code 0x00: No error Error codes can be found in the "Reading Error Codes" section.
Tag Present	BOOL	0: No tags in the sensing range 1: Tags in the sensing range
ENO	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation

8.2.4 Writing user data

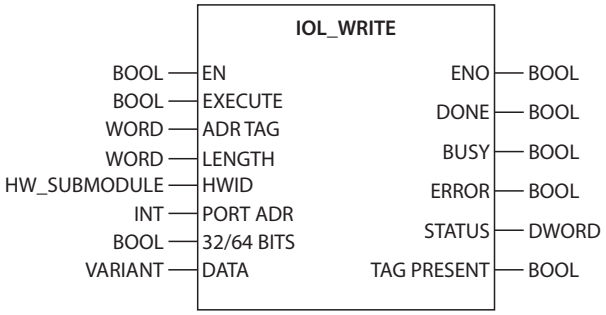


Fig. 9: Function block: IOL_WRITE

With the function block called **IOL_WRITE** user data can be written to the tag. The length of the data that is transmitted to the controller is variable.

Function block: IOL_WRITE — Input Variables

Name	Data type	Meaning
EN	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation
Execute	BOOL	0 →1: Sending command
HwId	HW_SUBMODULE	Hardware identifier for the IO-Link master
portAdr	Int	Start address for the read/write head
AdrTag	WORD	The block address of the memory area to be written
Length	WORD	The length of the data to be written (in bytes)
32/64 bits	BOOL	0: Write 32 bits 1: Write 64 bits
Data	Variant	Area of the control unit in which the data is stored

Function block: IOL_WRITE — Output Variables

Name	Data type	Meaning
Done	BOOL	0: Last command execution has not been completed 1: Last command execution has been completed Only for SCL, FBD and KOP representation
Busy	BOOL	0: Function block is not active 1: Function block is active
Error	BOOL	0: No error 1: Error
Status	DWORD	Error code 0x00: No error Error codes can be found in the "Reading Error Codes" section.
Tag Present	BOOL	0: No tags in the sensing range 1: Tags in the sensing range
ENO	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation

8.2.5 Switching the read/write head antennas on/off

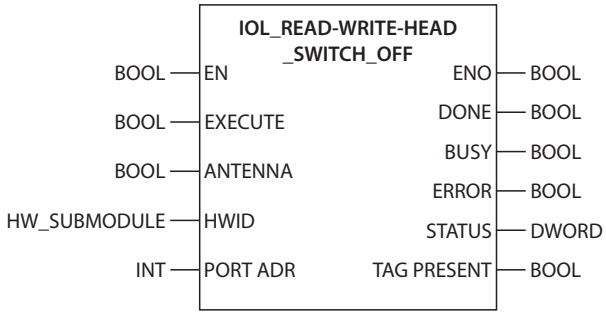


Fig. 10: Function block: IOL_read-write-head_switch_off

With the function block called **IOL_read-write-head_switch_off** the read/write head antenna can be switched on and off.

Function block: IOL_read-write_head_switch_off — Input Variables

Name	Data type	Meaning
EN	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation
Execute	BOOL	0 →1: Sending command
HwId	HW_SUBMODULE	Hardware identifier for the IO-Link master
portAdr	Int	Start address for the read/write head
antenna	BOOL	1: Switch on the antenna 0: Switch off the antenna

Function block: IOL_read-write_head_switch_off — Output Variables

Name	Data type	Meaning
Done	BOOL	0: Last command execution has not been completed 1: Last command execution has been completed Only for SCL, FBD and KOP representation
Busy	BOOL	0: Function block is not active 1: Function block is active
Error	BOOL	0: No error 1: Error
Status	DWORD	Error code 0x00: No error Error codes can be found in the "Reading Error Codes" section.
ENO	BOOL	0: Disable input 1: Enable input Only for FBD and LAD representation

8.2.6 Function blocks — reading error codes

Error code	Description	Solution
0x00018101	Tag before the end of the command execution outside the sensing range	Restart the process
0x00018102	Previous command has not been completed	Restart the process
0x00018104	Length < 4	Specify a length greater than 4
0x000180… 0x000187… 0x000185…	Error messages from STEP7	Use online help from STEP7
0x00110001	Command not supported	Check parameters
0x00110002	Format error	
0x00110003	Option not supported	
0x00110005	Problem with command execution	
0x00110006	Tag error during command execution	
0x0011000F	Tag error	
0x00110010	No memory block	
0x00110012	Block protected	

8.3 IO-Link mode — process data

8.3.1 Process data — reading the UID

Process input data

Byte no.	Bit							
	7	6	5	4	3	2	1	0
0			TAG	ANT	NB TAG			
1	UID0							
2	UID1							
3	UID2							
4	UID3							
5	UID4							
6	UID5							
7	UID6							
8	UID7							

Meaning of the status bits

Designation	Meaning
TAG	0: No tags in the sensing range 1: Tags in the sensing range
ANT	0: RF field is switched off 1: RF field is switched on
NB TAG	Number of tags in the sensing range
UID0…UID7	UID (LSB…MSB)

Process output data

Byte no.	Bit							
	7	6	5	4	3	2	1	0
0				N_ANT	NB TAG			
1								
2								
3								
4								
5								
6								
7								
8								

Meaning of the command bits

Designation	Meaning
N_ANT	0: Switch off the RF field 1: Switch on the RF field
NB TAG	Index of the tag to be described

8.3.2 Process data — reading the fixed memory area of a tag

Process input data

Byte no.	Bit							
	7	6	5	4	3	2	1	0
0	RDY	ERR	TAG	ANT				EXT
1	Data 0/Error Code							
2	Data 1							
3	Data 2							
4	Data 3							
5	Extended Data 4							
6	Extended Data 5							
7	Extended Data 6							
8	Extended Data 7							

Meaning of the status bits

Designation	Meaning
RDY	0: No data available 1: Data available
ERR	0: No error 1: Error
TAG	0: No tags in the sensing range 1: Tags in the sensing range
ANT	0: RF field is switched off 1: RF field is switched on
EXT	0: 4 data bytes 1: 8 data bytes
Data 0/Error Code	Data (LSB) or error code
…	
Data 7	Data (MSB)

Process output data

Byte no.	Bit							
	7	6	5	4	3	2	1	0
0	START			N_ANT	CMD			EXT
1	ADD							
2	Data 0							
3	Data 1							
4	Data 2							
5	Data 3							
6	Extended Data 4							
7	Extended Data 5							
8	Extended Data 6							
9	Extended Data 7							

Meaning of the command bits

Designation	Meaning
N_ANT	0: Switch off the RF field 1: Switch on the RF field

8.3.3 Process data — reading and writing

Process input data

Byte no.	Bit							
	7	6	5	4	3	2	1	0
0	RDY	ERR	TAG	ANT				EXT
1	Data 0/Error Code							
2	Data 1							
3	Data 2							
4	Data 3							
5	Extended Data 4							
6	Extended Data 5							
7	Extended Data 6							
8	Extended Data 7							

Meaning of the status bits

Designation	Meaning
RDY	0: No data available 1: Data available
ERR	0: No error 1: Error
TAG	0: No tags in the sensing range 1: Tags in the sensing range
ANT	0: RF field is switched off 1: RF field is switched on
EXT	0: 4 data bytes 1: 8 data bytes
Data 0/Error Code	Read data (LSB) or error code
…	
Data 7	Read data (MSB)

Process output data

Byte no.	Bit							
	7	6	5	4	3	2	1	0
0	START			N_ANT	CMD			EXT
1	ADD							
2	Data 0							
3	Data 1							
4	Data 2							
5	Data 3							
6	Extended Data 4							
7	Extended Data 5							
8	Extended Data 6							
9	Extended Data 7							

Meaning of the command bits

Designation	Meaning
START	0: Do not run command 1: Run command
N_ANT	0: Switch off the RF field 1: Switch on the RF field
CMD	0: No command 1: Read 2: Write
EXT	0: 4 data bytes 1: 8 data bytes
ADD	Block address
Data 0	Data (LSB) or error code
…	
Extended Data 7	Data (MSB)

8.3.4 Process data – error codes

Error code (dec.)	Error code (hex.)	Description
1	0x01	Command not supported
2	0x02	Format error
3	0x03	Option not supported
5	0x05	Problem with command execution
6	0x06	Tag error during command execution
15	0x0F	Tag error
16	0x10	No memory block selected
18	0x12	Memory block protected

9 Operation

9.1 LEDs

Display	Meaning
Green	Device is operational
Flashing green	IO-Link communication
Yellow	Tag detected
Flashing yellow	IO-Link communication, tag detected

10 Troubleshooting

If the device does not function as expected, first check whether ambient interference is present.
If there is no ambient interference present, check the connections of the device for faults.
If there are no faults, there is a device malfunction. In this case, decommission the device and replace it with a new device of the same type.

11 Maintenance

Ensure that the plug connections and cables are always in good condition.
The devices are maintenance-free, clean dry if required.

12 Repair

The device must not be repaired by the user. The device must be decommissioned if it is faulty.
Observe our return acceptance conditions when returning the device to Turck.

12.1 Returning devices

Returns to Turck can only be accepted if the device has been equipped with a Decontamination declaration enclosed. The decontamination declaration can be downloaded from
https://www.turck.de/en/retoure-service-6079.php
and must be completely filled in, and affixed securely and weather-proof to the outside of the packaging.

13 Disposal

The devices must be disposed of correctly and must not be included in normal household garbage.

14 Technical Data

Technical data	TN-M18-IOL-H1141	TN-M30-IOL-H1141
Mounting condition	Non-flush	Non-flush
Ambient temperature	-25…+70 °C	-25…+70 °C
Operating voltage	11…32 VDC	11…32 VDC
DC rated operational current	≤ 50 mA	≤ 50 mA
Inrush current	700 mA for 1 ms	700 mA for 1 ms
Data transfer	Inductive coupling	Inductive coupling
Operating frequency	13.56 MHz	13.56 MHz
Radio communication and protocol standards	ISO 15693	ISO 15693
Wire breakage/reverse polarity protection	Yes	Yes
Output function	4-wire, read/write, IO-Link	4-wire, read/write, IO-Link
Design	M18 × 1 threaded tube	M30 × 1.5 threaded tube
Dimensions	63.5 mm	63.5 mm
Housing diameter	18 mm	30 mm
Housing material	Metal, CuZn, chrome-plated brass	Metal, CuZn, chrome-plated brass
Material, active face	Plastic, PBT	Plastic, PBT
Electrical connection	Connector, M12 × 1	Connector, M12 × 1
Vibration resistance	55 Hz (1 mm)	55 Hz (1 mm)
Shock resistance	30 g (11 ms)	30 g (11 ms)
Protection class	IP67	IP67
MTTF	391 years according to SN 29500 (Ed. 99) 20 °C	391 years according to SN 29500 (Ed. 99) 20 °C
IO-Link specification	Specified acc. to version 1.1	Specified acc. to version 1.1
Parameterization	Parameterization tag FDT/IODD Control and IO-Link master	Parameterization tag FDT/IODD Control and IO-Link master
Communication mode	COM 2 (38.4 kBaud)	COM 2 (38.4 kBaud)
Process data width	32 bit	32 bit
Minimum cycle time	3 ms	3 ms
Function of pin 4	IO-Link	IO-Link

15 Appendix: Conformity and Approvals

15.1 EC Declaration of Conformity

Hereby, Hans Turck GmbH & Co.KG declares that the radio equipment types TN-M…-IOL-H1141 are in compliance with Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available on the Internet at the following address: **www.turck.com**

15.2 FCC Information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation. Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Note:This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

15.3 IC Information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:
(1) This device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d`Industrie Canada applicables aux appareils radio exempts de licence. L`exploitation est autorisée aux deux conditions suivantes :
(1) L`appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l`appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d`en compromettre le fonctionnement.

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