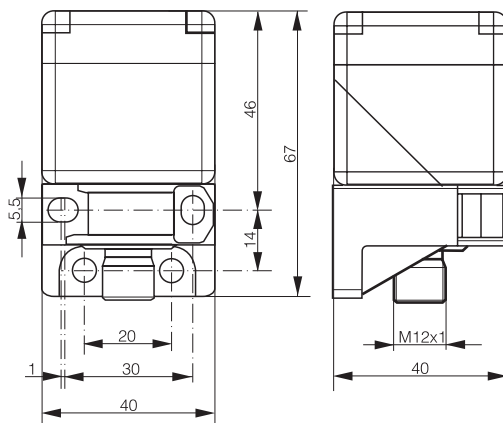


HOUSING	READ/WRITE DISTANCE	<ul style="list-style-type: none"> ✓ 40x40 mm plastic housing ✓ Sensing face of PBTP ✓ Insensitive to dirt ✓ IO-Link V1.1 	<ul style="list-style-type: none"> ✓ 2 x PNP output in SIO mode configurable
C44	~80 mm*		



* Please refer to table page 8

GENERAL DATA		INTERFACE	IO-Link	SIO
Carrier frequency	13.56 MHz	Data transfer rate	230 400 baud	✗
Compatible standard	ISO 15693**	LED green on	RWM power ON	RWM power ON
Maximum transmission speed	26.5 kbit/s	LED green blinking	IOL comm. on going	✗
Read-write distance max.	~80 mm with RTP-0502-082	LED yellow on	Transponder detected	See (Q1 / Q2) settings
		LED yellow blinking	RSSI level ≤ RSSI threshold	RSSI level ≤ RSSI threshold
		LED red	Error was triggered	Error was triggered
		IO-Link	✓	✗

ELECTRICAL DATA		MECHANICAL DATA	
Supply voltage range (U _b)	11...32 VDC	Protection degree	IP68 & IP69K
No-load supply current (field off)	x mA	Ambient temperature range TA***	-25...+80 °C
Max. current consumption (no load)	x mA	Storage temperature range TS****	-25...+80 °C
Short-circuit protection	✓	Sensing face material	PBTP
Voltage reversal protection	✓	Housing material	PBTP
Max. output current	≤ 200 mA	Connector type	M12 4-pin
		Weight (incl. nuts)	x g

** Protocol anti-collision excluded. A maximum of one transponder can be detected at a time by the RWM, otherwise "CollisionError" is reported

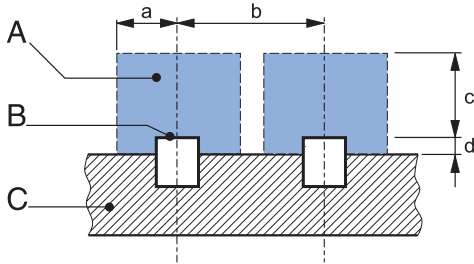
*** Read/write operations possible

**** Data retention and mechanical stability limit

MOUNTING RECOMMENDATIONS

CLEARANCE

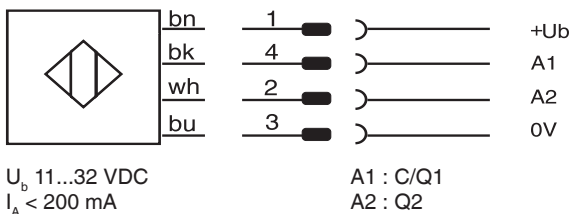
Read/write modules must not mutually influence each other. For this reason, a minimum distance of b between the devices must be observed.



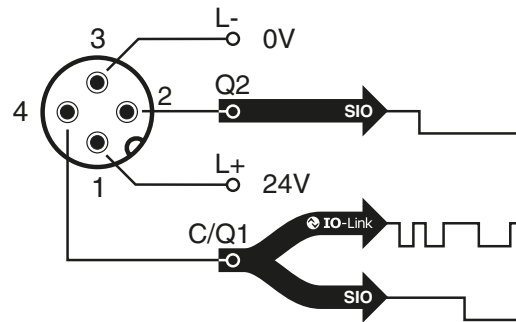
A : metal free zone
 B : sensing face
 C : support

a : 80 mm
 b : x mm
 c : 90 mm
 d : 40 mm

WIRING DIAGRAM



PIN ASSIGNMENT



IO-LINK CHARACTERISTICS	VALUE FOR RLH-C44PA-NIS
Vendor ID	0x0156
Device ID	0xAB0202
IO-Link Protocol	1.1
SIO-Mode	Supported
Process data	32 bytes input / 32 bytes output
Baudrate	COM3 (230.4 kBaud)
Minimum cycle time	10 ms
M-Sequence Capability	PREOPERATE=TYPE_1_2 with 2 bytes on-request data OPERATE = TYPE_2_V with 1 byte on-request data ISDU supported
Block Parameter	No
Supported Access Locks	Parameter: no, Data Storage: yes, Local Parameterization: no, Local User Interface: no

IODD files may be downloaded from
www.contrinex.com/product-range/RFID/.
 Select the product name to display the product page with corresponding downloads.
 Alternatively, just click/scan the QR code on the left.

CONFIGURATION PARAMETER (IO-LINK / SIO MODE)						
Index	Sub Hex	Name	Access	Data Type	Value	Default
SYSTEM						
02 _h	-	Standard Command	W	uint8	5 = ParamDownloadStore, 128 = Device Reset, 130 = Restore Factory Settings, 160 = Locate device (force all leds to blink during 30 seconds)	N/A
0C _h	-	Device Access Lock	R/W	uint16	Parameter Access, Data Storage, Local Parametrization and Local User Interface Locks	0000 _h
0D _h	-	Profile Characteristic	R	uint16	No profile for identification devices - 0000 _h	-
0E _h	-	PD Input Descriptor	R	array	<DataType><TypeLength><BitOffset> - [1] _h [2] _h [0] _h	-
0F _h	-	PD Output Descriptor	R	array	<DataType><TypeLength><BitOffset> - [1] _h [2] _h [0] _h	-
IDENTIFICATION						
10 _h	-	Vendor Name	R	char []	"Contrinex"	-
11 _h	-	Vendor Text	R	char []	"www.contrinex.com"	-
12 _h	-	Product Name	R	char []	"RLH-C44PA-NIS"	-
13 _h	-	Product ID	R	char []	"00000000"	-
14 _h	-	Product Text	R	char []	"IO-Link RFID reader"	-
15 _h	-	Serial Number	R	char []	"00000000"	-
17 _h	-	Firmware Revision	R	char []	"2.0.0"	-
18 _h	-	Application Specific Tag	R/W	char []	<user string, 32 byte (variable length)>	<vendor specific>
READER PARAMETER PROCESS DATA						
40 _h	01 _h	Operating Mode	R/W	uint8	00 _h : Scan UID 01 _h : Read / Write Command	00 _h
READER PARAMETER SIO						
41 _h	01 _h	C/Q1 PIN SIO Operating Mode	R/W	uint8	00 _h : Transponder Presence 01 _h : Compare Data 02 _h : Alarm 1 03 _h : Alarm 2 04 _h : No SIO	00 _h
	02 _h	SIO Start Address C/Q1	R/W	uint8	Transponder memory block address where to make the "Compare Data" operation	00 _h
	03 _h	C/Q1 SIO Data to compare	R/W	uint32	Reference data value stored in RWM memory to be compared to transponder data	00 _h , 00 _h , 00 _h , 00 _h
	04 _h	C/Q1 PIN SIO Polarity	R/W	uint8	00 _h : Output "close" if condition = true 01 _h : Output "open" if condition = true	00 _h
	05 _h	Data Hold Time Output (C/Q1 & Q2)	R/W	uint8	00 _h : No Hold Time 01 _h : Hold Time 100 ms 02 _h : Hold Time 200 ms 03 _h : Hold Time 500 ms 04 _h : Hold Time 1000 ms 05 _h : Hold Time 2000 ms	00 _h
	06 _h	Q2 PIN SIO Operating Mode	R/W	uint8	00 _h : Transponder Presence 01 _h : Compare Data 02 _h : Alarm 1 03 _h : Alarm 2 04 _h : No SIO	00 _h
	07 _h	SIO Start Address Q2	R/W	uint8	Transponder memory block address where to make the "Compare Data" operation	00 _h
	08 _h	Q2 SIO Data to compare	R/W	uint32	Reference data value stored in RWM memory to be compared to transponder data	00 _h , 00 _h , 00 _h , 00 _h
	09 _h	Q2 PIN SIO Polarity	R/W	uint8	00 _h : Output "close" if condition = true 01 _h : Output "open" if condition = true	00 _h
RF CONFIGURATION						
42 _h	03 _h	RSSI Threshold	R/W	uint8	0 = 0 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7	01 _h

TAG INFO						
43 _h	01 _h	UID	R	uint64	Data available only if transponder is in the RWM detection range when TAG INFO fields are read	-
	02 _h	Transponder DSFID	R	uint8	Data available only if transponder is in the RWM detection range when TAG INFO fields are read	-
	03 _h	Transponder AFI	R	uint8	Data available only if transponder is in the RWM detection range when TAG INFO fields are read	-
	04 _h	Number of Memory Blocks	R	uint8	Data available only if transponder is in the RWM detection range when TAG INFO fields are read	-
	05 _h	Memory Block Size	R	uint8	Data available only if transponder is in the RWM detection range when TAG INFO fields are read	-
	06 _h	IC Reference	R	uint8	Data available only if transponder is in the RWM detection range when TAG INFO fields are read	-
	07 _h	RSSI	R	uint8	Data available only if transponder is in the RWM detection range when TAG INFO fields are read	-
UID LIST						
44 _h	01 _h	Tag history 1	R	uint64	Last transponder UID seen by RWM	-
	02 _h	Time stamp Tag history 1	R	uint64	System time record when tag 1 entered in the RWM range	-
	03 _h	Tag history 2	R	uint64	-	-
	04 _h	Time stamp Tag history 2	R	uint64	System time record when tag 2 entered in the RWM range	-
	05 _h	Tag history 3	R	uint64	-	-
	06 _h	Time stamp Tag history 3	R	uint64	System time record when tag 3 entered in the RWM range	-
	07 _h	Tag history 4	R	uint64	-	-
	08 _h	Time stamp Tag history 4	R	uint64	System time record when tag 4 entered in the RWM range	-
	09 _h	Tag history 5	R	uint64	First transponder UID seen by RWM (on a shift register of 5 UIDs)	-
	0A _h	Time stamp Tag history 5	R	uint64	System time record when tag 5 enters in the RWM range	-
SIO COUNTER						
45 _h	01 _h	SIO Counter C/Q1	R/W	uint32	Counter value which reacts on switching events of C/Q1	00 _h , 00 _h , 00 _h , 00 _h
46 _h	01 _h	SIO Counter Q2	R/W	uint32	Counter value which reacts on switching events of Q2	00 _h , 00 _h , 00 _h , 00 _h
ALARM						
47 _h	01 _h	Measurement Alarm 1 Configuration	R/W	uint8	0 = Always OFF 1 = Active	00 _h
	02 _h	Measurement Alarm 1 Threshold	R/W	uint32	ALR1 goes TRUE if : SIO Counter Q1 ≥ Alarm 1 Threshold SIO Counter Q2 ≥ Alarm 1 Threshold RSSI ≤ Alarm 1 Threshold Tag IN RANGE Time ≤ Alarm 1 Threshold	00 _h , 00 _h , 00 _h , 00 _h
	03 _h	Measurement Alarm 1 Source	R/W	uint8	0 = SIO counter Q1 1 = SIO counter Q2 2 = RSSI 3 = Tag IN RANGE Time [ms]	00 _h
	04 _h	Measurement Alarm 2 Configuration	R/W	uint8	0 = Always OFF 1 = Active	00 _h
	05 _h	Measurement Alarm 2 Threshold	R/W	uint32	ALR2 goes TRUE if : SIO Counter Q1 ≥ Alarm 2 Threshold SIO Counter Q2 ≥ Alarm 2 Threshold RSSI ≤ Alarm 2 Threshold Tag IN RANGE Time ≤ Alarm 2 Threshold	00 _h , 00 _h , 00 _h , 00 _h
	06 _h	Measurement Alarm 2 Source	R/W	uint8	0 = SIO counter Q1 1 = SIO counter Q2 2 = RSSI 3 = Tag IN RANGE Time [ms]	00 _h

DEVICE DESCRIPTION						
48 _h	01 _h	Function Tag	R/W	char []	<user string, 32 byte (variable length)>	<vendor specific>
	02 _h	Location Tag	R/W	char []	<user string, 32 byte (variable length)>	<vendor specific>
DEVICE CHARACTERISTIC						
49 _h	01 _h	RFID Compatibility	R	char []	"13.56 MHz, ISO15693"	-
	02 _h	Read-write distance max	R	char []	"60 mm with diam 50mm SLIX tag"	-
	03 _h	Supply voltage range (Ub)	R	char []	"11...32 VDC"	-
	04 _h	Max. output current	R	char []	"≤ 200 mA"	-
	05 _h	Ambient temperature range TA	R	char []	"-25...+80°C"	-
	06 _h	Storage temperature range TS	R	char []	"-25...+80°C "	-
	07 _h	Enclosure rating	R	char []	"IP68 & IP69K"	-
TAG TIMING						
4A _h	01 _h	System Time - Transponder IN	R	uint64	Record system time when transponder enters the RWM detection range [ms]	-
	02 _h	System Time - Transponder OUT	R	uint64	Record system time when transponder leaves the RWM detection range [ms]	-
	03 _h	Transponder IN RANGE Time	R	uint64	IN RANGE = Transponder OUT - Transponder IN	-
SECURITY						
58 _h	01 _h	Security Mode	R/W	unit8	0 = Security mode inactive 1 = SLI-S or SLIX-2 Security mode active (perform a login with the specified password before each read or write operation) 12 = EM4233SLIC Security mode active (perform a login with the specified password before each read or write operation)	00 _h
	02 _h	Password	W	uint32	Password is never readable to avoid end-user application counterfeiting	8 x 00 _h
DIAGNOSTIC						
59 _h	01 _h	System Time	R	uint64	The system time is reset at each RWM power down or in case the standard command 128 = Device Reset is sent to the RWM. System Time is given in [ms]	-
	02 _h	Successful Login counter	R	uint32	Counter which counts the number of successful transponder Login since last RWM startup / reset	-
	03 _h	Error Login counter	R	uint32	Counter which counts the number of unsuccessful transponder Login since last RWM startup / reset	-
	04 _h	Error counter	R	uint32	Counter which counts the number of RMW error since last RWM startup / reset	-
	05 _h	Power-on cycles	R	uint32	Counter which counts the number of RMW Power on. This counter cannot be reset	-

PROCESS DATA REPRESENTATION

PROCESS DATA STRUCTURE - SCAN UID MODE

PROCESS DATA INPUT

Bitoffset

Byte	7	6	5	4	3	2	1	0
0	RFU	ERR	TAG	ANT	RFU			
1	ERROR CODE						ALR1	ALR2
2	RSSI							
3-10	UID 0 - UID 7							
11-18	STTI 0 - STTI 7							
19-26	TIRT 0 - TIRT 7							
27-31	RFU							

Name	Value	Description
ERR	0	Command executed and no error
	1	Command executed but error
TAG	0	No tag present in front of the RWM
	1	Tag present in front of the RWM
ANT	0	RF field OFF
	1	RF field ON
ERROR CODE	See ERROR CODE list below	
ALR1	0	Alarm 1 OFF
	1	Alarm 1 ON
ALR2	0	Alarm 2 OFF
	1	Alarm 2 ON
RSSI	RSSI signal level coming from the transponder	
UID 0	Transponder UID LSB	
UID 7	Transponder UID MSB	
STTI 0	System time - Transponder IN LSB	
STTI 7	System time - Transponder IN MSB	
TIRT 0	Transponder IN RANGE time LSB	
TIRT 7	Transponder IN RANGE time MSB	

ERROR CODE	Description
1	CommandNotSupported
2	FormatError
3	OptionNotSupported
5	CommandProblem
6	CommTagError
15	TagError
16	NoMemoryBlock
18	BlockProtected
21	CRCErrror
22	CollisionError
23	TimeOutError
24	AppMemError
25	AppQueError
26	AppLOGRnError
27	AppLOGPSWError
255	AppGeneralError

PROCESS DATA OUTPUT

Bitoffset

Byte	7	6	5	4	3	2	1	0
0	RFU		N_ANT	RFU				
1-31	RFU							

Name	Value	Description
N_ANT	0	Switch ON RF field
	1	Switch OFF RF field

PROCESS DATA STRUCTURE - SCAN READ/WRITE MODE

PROCESS DATA INPUT

Bitoffset

Byte	7	6	5	4	3	2	1	0
0	RDY	ERR	TAG	ANT	RFU	RSSI		
1	ERROR CODE						ALR1	ALR2
2	ADDRESS							
3-30	DATA 0- DATA 27							
31	RFU							

Name	Value	Description
RDY	0 → 1	Command executed and new data available
	1 → 0	
ERR	0	Command executed and no error
	1	Command executed but error
TAG	0	No tag present in front of the RWM
	1	Tag present in front of the RWM
ANT	0	RF field OFF
	1	RF field ON
RSSI		RSSI signal level coming from the transponder
ERROR CODE		See ERROR CODE list below
ALR1	0	Alarm 1 OFF
	1	Alarm 1 ON
ALR2	0	Alarm 2 OFF
	1	Alarm 2 ON
ADDRESS		First transponder memory block address where the R/W command was executed
DATA 0		Read data LSB
DATA 27		Read data MSB

ERROR CODE	Description
1	CommandNotSupported
2	FormatError
3	OptionNotSupported
5	CommandProblem
6	CommTagError
15	TagError
16	NoMemoryBlock
18	BlockProtected
21	CRCErrror
22	CollisionError
23	TimeOutError
24	AppMemError
25	AppQueError
26	AppLOGRnError
27	AppLOGPSWError
255	AppGeneralError

PROCESS DATA OUTPUT

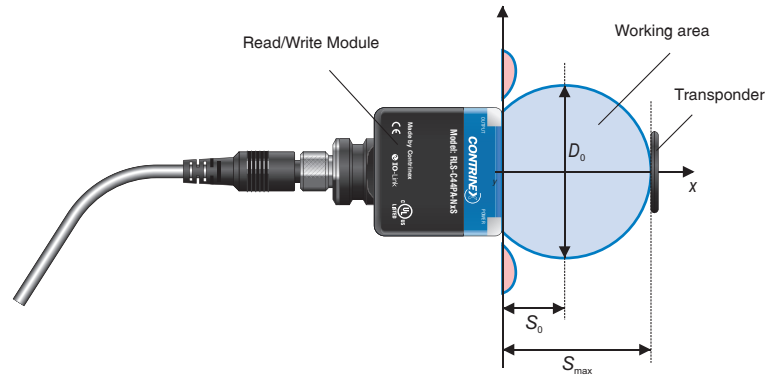
Bitoffset

Byte	7	6	5	4	3	2	1	0
0	START	RFU	N_ANT	CMD				
1	RFU					NB BLOCK		
2	ADDRESS							
3-30	DATA 0- DATA 27							
31	RFU							

Name	Value	Description
START	0 → 1	Start the selected RFID operation when bit toggles. If Auto-Read or Auto-Write is selected, bit toggling runs automatically as long as a transponder is inside the RWM range
	1 → 0	
N_ANT	0	Switch ON RF Field
	1	Switch OFF RF Field
CMD	0	No command
	1	Auto-Read
	2	Auto-Write
	3	Read
	4	Write
NB BLOCK		Number of transponder memory block to R/W
ADDRESS		First transponder memory block address where the R/W command will be executed
Data 0		Data to be written LSB
Data 27		Data to be written MSB

POSSIBLE COMBINATION AND TYPICAL DISTANCE - RLH-C44PA-NIS

Transponder type	S_{max} [mm]	S_0 [mm]	D_0 [mm]
Ø 9 RTP-0090-020			
Ø 16 RTP-0160-020			
Ø 20 RTH-D20QA-NC0			
Ø 20 RTH-D20QA-ND0			
Ø 26 RTP-0263-020			
Ø 30 RTH-D30QA-NC0			
Ø 30 RTH-D30QA-ND0			
Ø 50 RTH-D50QA-NC0			
Ø 50 RTH-D50QA-ND0			
Ø 50 RTP-0502-022			
Ø 50 RTP-0502-062			
Ø 50 RTP-0502-082	~80	~40	~80



AVAILABLE TYPES

Part number	Part reference	Sensing Face	Mounting	Connection
720 100 210	RLH-C44PA-NIS	40 x 40 mm	Non-embeddable	M12 4-pin

DISCLAIMERS

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 interference
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Caution: 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.

IC information

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference
- (2) this device must accept any interference, including interference that may cause undesired operation of the device

Cet appareil contient des émetteurs / récepteurs exemptés de licence conformes aux RSS (RSS) d'Innovation, Sciences et Développement économique Canada. Le fonctionnement est soumis aux deux conditions suivantes:

- (1) Cet appareil ne doit pas causer d'interférences
- (2) Cet appareil doit accepter toutes les interférences, y compris celles susceptibles de provoquer un fonctionnement indésirable de l'appareil.

Contrinex information

Operators of the products we supply are responsible for compliance with measures for the protection of persons. The use of our equipment in applications where the safety of persons might be at risk is only authorized if the operator observes and implements separate, appropriate and necessary measures for the protection of persons and machines. Terms of delivery and rights to change design reserved.