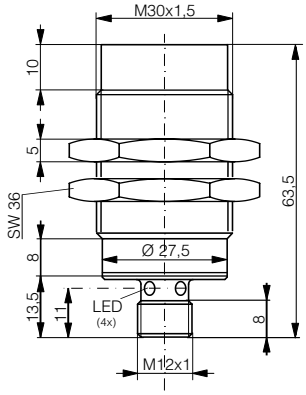
CONTRINEX

HF RFID SYSTEM
READ/WRITE MODULES (RWM)
RLS-1301-320

HOUSING	READ/WRITE DISTANCE
M30	60 mm*

- ✓ M30 Metal threaded housing
- ✓ Sensing face of PBTP
- ✓ Insensible to dirt
- ✓ IO-Link V1.1
- ✓ 2 x PNP output in SIO mode configurable
- ✓ RWM reconfigurable via a Master Tag



* Please refer to table page 8

DETECTION DATA	
Max. R/W distance with RTP-0502-022	60 mm
Carrier frequency	13.56 MHz
Compatible IC type	ISO 15693

INTERFACE	
Data transfer rate	38 400 baud
LED green on	RWM live
LED green blinking	IO-Link communication
LED yellow on	Transponder detected
LED yellow blinking	Transponder + IO-Link
	communication
IO-Link	✓

ELECTRICAL DATA	
Supply voltage range (Ub)	11...32 VDC
No-load supply current (field off)	20 mA
Max. current consumption (no load)	50 mA
Polling current	30 mA
Short-circuit protection	✓
Voltage reversal protection	✓
Max. output current	≤ 200 mA

MECHANICAL DATA	
Protection degree	IP67
Ambient temperature range TA	-25...+80°C
Storage temperature range TA	-25...+80°C
Sensing face material	PBTP
Housing material	Chrome-plated brass
Connector type	M12 4-pin
Weight (incl. nuts)	87 g

CONTRINEX AG Industrial Electronics

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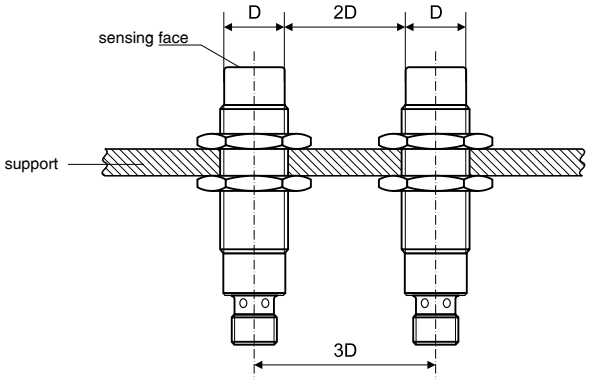
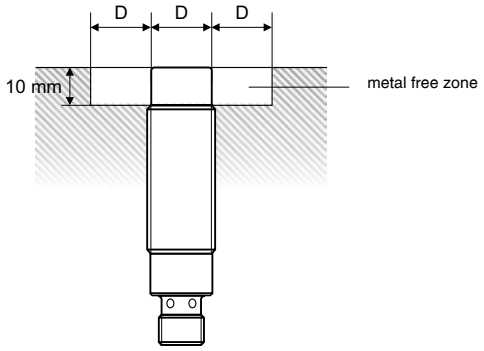
MOUNTING RECOMMENDATIONS

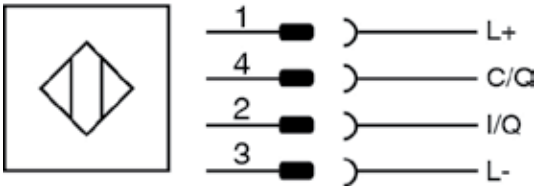
CLEARANCE

Read/write modules must not mutually influence each other. For this reason, a minimum distance of 2 x D between the devices must be observed.



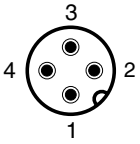


WIRING DIAGRAM



PIN ASSIGNMENT

PIN	SIGNAL	FUNCTION
1	L+	+24 V
2	I/Q	DO (tag presence or data comparison)
3	L-	OV
4	C/Q	SDCI/SIO (tag presence or data comparison)



M12

IO-LINK CHARACTERISTICS	VALUE FOR RLS-1181-320
IO-Link Protocol	1.1
COM-Mode	COM2 (38.4 kBaud)
Min. cycle time	14.4 ms
Process data width in	8 bytes
Process data width out	9 bytes
Profile	Smart Sensor Profile
SIO-Mode support	Yes
Port type	A
Memory request for data management	41 bytes
Device ID	0xAB0200
Vendor ID	0x0156

CONFIGURATION PARAMETER (IO-LINK / SIO MODE)

INDEX HE+A1: G25X	SUB HEX	NAME	ACCESS	DATA TYPE	VALUE	DEFAULT
IDENTIFICATION						
0x10		Vendor Name	R	char[]	"Contrinex"	
0x11		Vendor Text	R	char[]	"www.contrinex.com"	
0x12		Product Name	R	char[]	"RLS-1301-320"	
0x13		Product ID	R	char[]	"00000000"	
0x14		Product Text	R	char[]	"IO-Link RFID reader"	
0x15		Serial Number	R	char[]	"00000001"	
0x17		Firmware Revision	R	char[]	"01.09.01"	
0x18		Application Specific Tag	R/W	char[]	<user string, 16 byte (variable length)>	<vendor specific>
READER PARAMETER PROCESS DATA						
0x40	0x01	Operating Mode	R/W	uint8	0xFF: Scan UID 0x00: Scan User Data 0x01: Read/Write Command	0xFF
	0x02	Data Hold Time	R/W	uint8	0xFF: No Hold Time 0x00: Hold Time 100ms 0x01: Hold Time 200ms 0x02: Hold Time 500ms 0x03: Hold Time 1000ms 0x04: Hold Time 2000ms	0xFF
	0x03	Scan Address	R/W	uint8	Address to scan	0xFF
READER PARAMETER SIO						
0x41	0x01	C/Q1 PIN SIO Operating Mode	R/W	uint8	0xFF: Presence Transponder 0x00: Compare data 0x01: No SIO	0xFF
	0x02	C/Q1 SIO Data to compare H	R/W	uint32	Comparison N value bloc 7 to 4	0xFF, 0xFF, 0xFF, 0xFF,
	0x03	C/Q1 SIO Data to compare L	R/W	uint32	Comparison value bloc 3 to 0	0xFF, 0xFF, 0xFF, 0xFF,
	0x04	SIO Compare Data Address (C/Q1 & Q2)	R/W	uint8	Comparison address for Q1 and Q2 (A valid address must be chosen)	0xFF
	0x05	Data Hold Time Output (C/Q1 & Q2)	R/W	uint8	0xFF: No Hold Time 0x00: Hold Time 100ms 0x01: Hold Time 200ms 0x02: Hold Time 500ms 0x03: Hold Time 1000ms 0x04: Hold Time 2000ms	0xFF
	0x06	C/Q1 PIN SIO Polarity	R/W	uint8	0xFF : Output "close" if condition = true 0x00 : Output "open" if condition = true	0xFF
	0x07	Q2 PIN SIO Operating Mode	R/W	uint8	0xFF: Presence Transponder 0x00: Compare data (C/Q1 must be also in compare data) 0x01: No SIO	0xFF
	0x02	Q2 SIO Data to compare H	R/W	uint32	Comparison value bloc 7 to 4	0xFF, 0xFF, 0xFF, 0xFF,
	0x03	Q2 SIO Data to compare L	R/W	uint32	Comparison value bloc 3 to 0	0xFF, 0xFF, 0xFF, 0xFF,
	0x08	Q2 PIN SIO Polarity	R/W	uint8	0xFF : Output "close" if condition = true 0x00 : Output "open" if condition = true	0xFF

PROCESS DATA REPRESENTATION

PROCESS DATA MODE SCAN UID MODE

PROCESS DATA INPUT

Bitoffset

	7	6	5	4	3	2	1	0
0			**TAG**	**ANT**	**NB TAG**			
1	**UID 0**							
2	**UID 1**							
3	**UID 2**							
4	**UID 3**							
5	**UID 4**							
6	**UID 5**							
7	**UID 6**							
8	**UID 7**							

UID 0 = LSB
UID 7 = MSB
NB TAG = Number of TAG in front of the RWM
TAG = 1 if 1 TAG or more present in front of the RWM

PROCESS DATA OUTPUT

Bitoffset

	7	6	5	4	3	2	1	0
0				**N_ANT**	**TAG NB**			
1								
2								
3								
4								
5								
6								
7								
8								

N_ANT : 0 = Switch on antenna; 1 = Switch off antenna
TAG NB = Index of TAG to be printed in UID area (index from 0)

PROCESS DATA MODE SCAN USER DATA

PROCESS DATA INPUT

Bitoffset

	7	6	5	4	3	2	1	0
0	**RDY**	**ERR**	**TAG**	**ANT**				**EXT**
1	**Error Code / Data 0**							
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**							

RDY : 1 = Memory scaned and data ready for user
ERR : 1 = Memory scaned but error;
TAG : 1 = Tag present in front of the RWM
ANT : = State of antenna 1 active / 0 inactive
EXT : 1 if 8 octets data
Data 0 : LSB
Data 3 / 8 : MSB

PROCESS DATA OUTPUT

Bitoffset

	7	6	5	4	3	2	1	0
0				**N_ANT**				
1								
2								
3								
4								
5								
6								
7								
8								

N_ANT : 0 = Switch on antenna; 1 = Switch off antenna

PROCESS DATA MODE READ/WRITE

PROCESS DATA INPUT

Bitoffset

	7	6	5	4	3	2	1	0
0	**RDY**	**ERR**	**TAG**	**ANT**				**EXT**
1	**Error Code / Data 0**							
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**							

RDY : 1 = Command executed and data ready for user; 0 = no data
ERR : 1 = Memory scaned but error; 0 = No error
TAG : 1 = Tag present in front of the RWM; 0 = No tag
ANT : 1 = RF field active; 0 = RF inactive
EXT : 1 if 8 octets data
Data 0 : LSB
Data 3 / 8 : MSB

PROCESS DATA OUTPUT

Bitoffset

	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**							

CMD : 0 = no commande; 1 = ready; 2 = write;
N_ANT : 0 = Switch on antenna; 1 = Switch off antenna
START : 1 = Execute the command
ADD : Block address
Data : Data for write operation
EXT : 1 if 8 octets data
Data 0 : LSB
Data 3 / 8 : MSB

CommandNotSupported = 1,
FormatError = 2,
OptionNotSupported = 3,
CommandProblem = 5,
CommTagError = 6,
TagError = 15,
NoMomoryBloc = 16,
BlocProtected = 18,

SYSTEM COMMAND (idx 0 x 02)

VALUE HEX	VALUE DEC	FUNCTION
0 x 05	5	ParamDownloadStore
0 x 80	64	Device Reset
0 x 82	65	Restore factory settings*

*always do a reset after the restore of factory settings

MASTER TAG CONFIGURATION

For the RLS-1301-320, the IO-Link mode or the SIO (standard I/O mode) can be configured via IO-Link or via a Master Tag.

For the configuration via a Master Tag, a transponder (called Master Tag) will contain all the data used for the configuration. The structure of the data are explained in the table on page 7.

There is a simple procedure to configure the RWM. Once all the data are written in the Master Tag, you need to put it in front of the RWM sensing face, to switch off the RWM power supply and to switch on again. The RWM will detect that it's a Master Tag and read all the data and configure the outputs accordingly.

On the Contrinex webpage (www.contrinex.com) it is possible to download a software to setup the Master Tag via a Contrinex USB RWM. This program is called "IO-Link Master Tag programmer".

SIO MODE POSSIBILITIES

If you use the RLS-1301-320 in a SIO mode, you will have two main possibilities:

1. Presence Transponder:
   In this mode, the output will switch if a transponder is in the field of the RWM.

2. Compare Data:
   In this mode, the output will switch if the data red in the defined block memory of the transponder matches with the data stocked in the RWM.

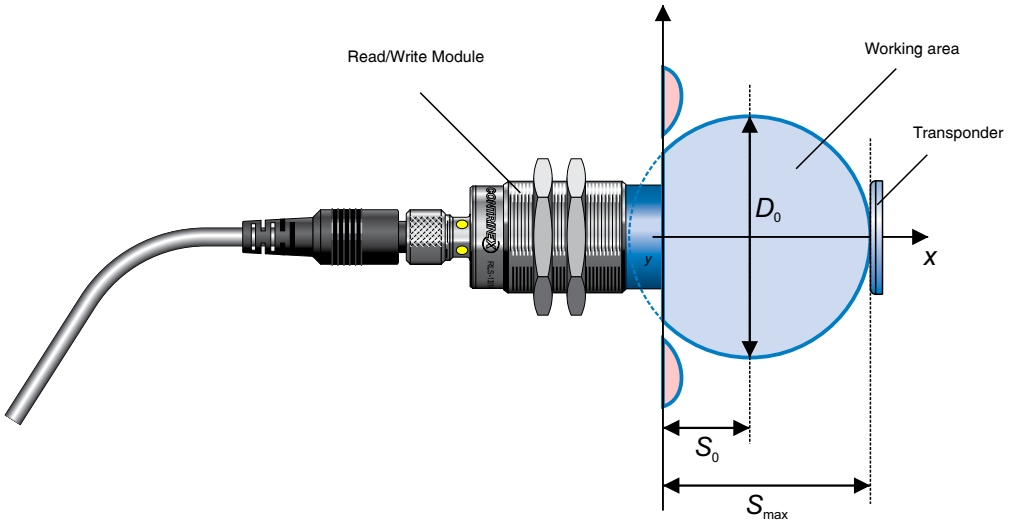
MASTER TAG

To build a Master Tag it's possible to use any ISO15693 chip with at least eight memory blocks with 32 bits each.

BLOC	OCTET	OFFSET	NAME	DATA TYPE	VALUE	DEFAULT	COMMENT
READER PARAMETER PROCESS DATA (IO-LINK MODE)							
0	0	0	Operating Mode	uint8	0xFF: Scan UID 0x00: Scan User Data 0x01: Read/Write Command	0xFF	See process data organisation
0	1	1	Data Hold Time	uint8	0xFF: No Hold Time 0x00: Hold Time 100ms 0x01: Hold Time 200ms 0x02: Hold Time 500ms 0x03: Hold Time 1000ms 0x04: Hold Time 2000ms	0xFF	
0	2	2	Scan Address	uint8	Address to scan	0xFF	Addresse to scan in Scan User DATA
READER PARAMETER SIO (SIO MODE)							
0	3	3	C/Q1 PIN SIO Operating Mode	uint8	0xFF: Presence Transponder 0x00: Compare Data 0x01: No SIO	0xFF	
1	3…0	4	C/Q1 SIO Data to compare H	uint32	Comparison value bloc 7 to 4	0xFF, 0xFF, 0xFF, 0xFF	Ext Data 7, Ext Data 6, Ext Data 5, Ext Data 4
2	3…0	8	C/Q1 SIO Data to compare L	uint32	Comparison value bloc 3 to 0	0xFF, 0xFF, 0xFF, 0xFF	Data 3, Data 2, Data 1, Data 0
3	0	12	SIO Compare Data Address (C/Q1 & Q2)	uint8	Comparison Address for Q1 and Q2 (A valid address must be chosen)	0xFF	
3	1	13	Data Hold Time Output (C/Q1 & Q2)	uint8	0xFF: No Hold Time 0x00: Hold Time 100ms 0x01: Hold Time 200ms 0x02: Hold Time 500ms 0x03: Hold Time 1000ms 0x04: Hold Time 2000ms	0xFF	
3	2	14	C/Q1 PIN SIO Polarity	uint8	0xFF : Output "close" if condition = true 0x00 : Output "open" if condition = true	0xFF	
3	3	15	Q2 PIN SIO Operating Mode	uint8	0xFF: Presence Transponder 0x00: Compare data (C/Q1 must be also in compare data) 0x01: No SIO	0xFF	
4	3…0	16	Q2 SIO Data to compare H	uint32	Comparison value bloc 7 to 4	0xFF, 0xFF, 0xFF, 0xFF	Ext Data 7, Ext Data 6, Ext Data 5, Ext Data 47
5	3…0	20	Q2 SIO Data to compare L	uint32	Comparison value bloc 3 to 0	0xFF, 0xFF, 0xFF, 0xFF	Data 3, Data 2, Data 1, Data 0
6	0	24	Q2 PIN SIO Polarity	uint8	0xFF : Output "close" if condition = true 0x00 : Output "open" if condition = true	0xFF	
CRC							
7	3…0	28	CRC CHECK	uint32	CRC 32 on all config field with polynom : X^32+X^26+X^23+X^22+X^16+X^12+X^11+X^10+X^8+X^7+X^5+X^4+X^2+X^1+X^0	--	--

POSSIBLE COMBINATION AND DISTANCE - RLS-1301-320

TRANSPONDER TYPE	S_{max}	D_o
Ø 20 RTP-0201-020	26	31
Ø 30 RTP-0301-020	36	41
Ø 50 RTP-0501-020	47	54
Ø 9 RTP-0090-020	16	22
Ø 26 RTP-0263-020	34	37
Ø 50 RTP-0502-022	60	65



AVAILABLE TYPES

Part number	Part reference	Ø	Mounting	Connection
720 100 207	RLS-1301-320	M30	Non-embeddable	M12 4-pin

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