Contrinex Read-Write Modules IO-Link Capable RFID (13.56 MHz)

RFID

RFID (Radio Frequency IDentification) technology is useful in a wide range of automation and logistics applications.

This technology allows objects to be identified by means of electronic labels (also known as tags or transponders). Compared to more traditional approaches such as bar codes or laser marking, RFID technology offers a number of significant advantages. For example:

- A direct line of sight between the tag and the read/write module is not needed to read or write data.
- Information stored in the tag can be added, modified or replaced.
- Human error is reduced while increasing reliability, flexibility and traceability.

There are three standard frequencies of RFID:

- Low-Frequency (30 to 300 KHz – most are 125 to 134.2 Khz). Various application-specific standards apply
- High-Frequency (13.56 MHz) (ISO/IEC 15693)
- Ultra High-Frequency (860 to 960 MHz) (ISO/IEC 18000-63)

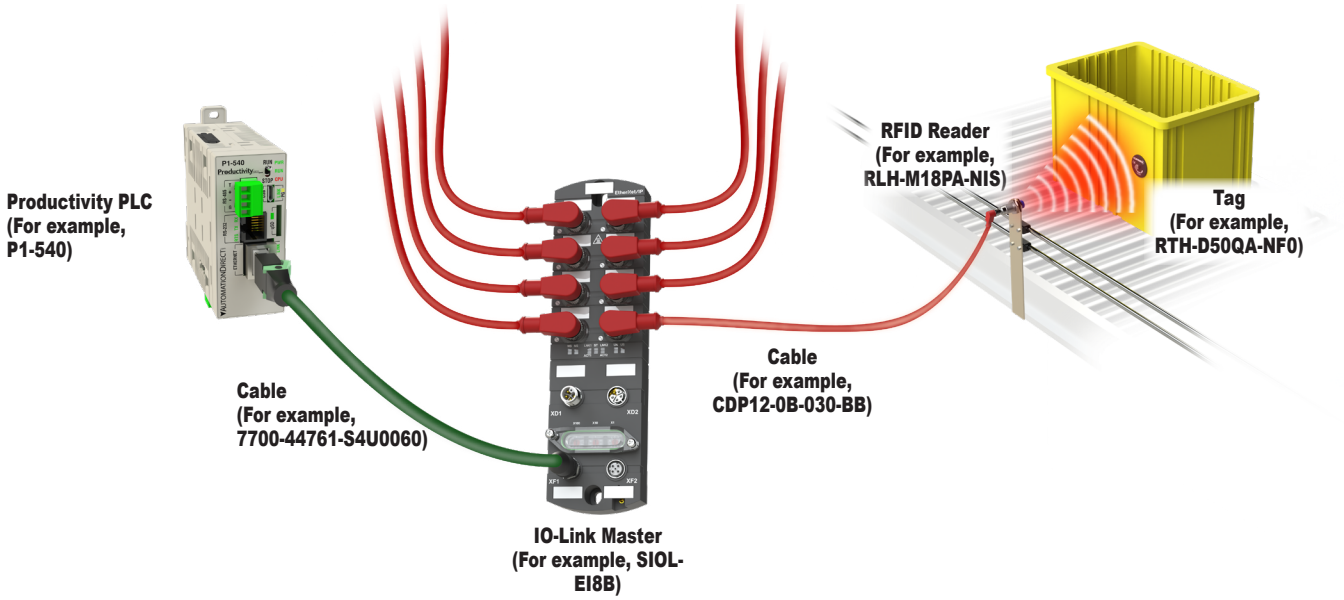
While there are pros and cons for each type of system, the High Frequency systems allow for fast communication between transponder and read/write modules. Contrinex IO-Link ready RFID technology operates on 13.56 MHz and complies with ISO/IEC 15693 and is therefore compatible with any components that meet this standard. The series has been designed for easy, cost-effective integration into existing control systems.

Simplicity of IO-Link

IO-Link is a standardized protocol (IEC 61131-9) that enables connection of intelligent devices, similar to the Contrinex RFID Read-Write Modules, to an automation system.

Communication takes place between an IO-Link master and one or more IO-Link devices. IO-Link is a point-to-point communication system and is not a fieldbus. A master module has one or more ports, and one device can be connected to each port.

The IO-Link master module serves as the interface between the IO-Link devices and the controller (PLC or Computer). The example below uses an IO-Link Master to communicate using EtherNet/IP.



Contrinex RHL Read/Write Units

Once the RLH unit is attached to the IO-Link master, the SIO functions of the device can be configured. Note that the SIO outputs will only be active if the IO-Link is not active. After the RLH unit is attached to the PLC using IO-Link, a lot more data will be available to the PLC.

- Read the identification of the Read-Write unit (for example: Manufacture, Firmware Version, Part Number, etc.)
- How long the RFID tag has been present
- Tag history
- Diagnostics
- Write to the tag
- Read the tag

And many more functions.

Contrinex 13.56 MHz HF RFID Tags

Standard HF RFID Tags

RTH-D20QA-ND0

RTH-D30QA-ND0

RTH-D50QA-NF0

RFID tags (also known as transponders) are electronic devices that store data. Each tag has fixed memory which stores a unique preset number (i.e., an identifier) as well as user memory which can be written to for storing data. Writeable data may include, for example, the object's history or the parameters of operations to which it will be subjected.

EEPROM Tag Features

- Unlimited read cycles
- 100,000 write cycles
- 4 bytes per block
- Fully complies with ISO/IEC 15693 (High Frequency) 13.56 MHz

FRAM Tag Features

- Unlimited read cycles
- 10^{12} write cycles
- Larger amount of memory
- 8 bytes per block

Applications

- Track and trace
- Production automation
- Process control
- Automatic sorting systems
- Logistics and distribution
- Access control

Agency Approvals

- CE

CE

Standard HF RFID Tag Selection Guide

Part Number	Price	Pack Size	Diameter (mm [in])	Memory Type	User Memory Size	IP Rating	Component Material	Operating Temperature	Storage Temperature	Tightening Torque	Weight (g [oz])	Drawing
RTH-D09RA-NF0-901	$50.00	10	9 [0.35]	EEPROM	316 bytes	IP67	Epoxy + PPS (Polyphenylene sulfide)	-20° to 85°C [-4° to 185°F]	-20° to 110°C [-4° to 230°F]	NA	0.25 g [0.01 oz]	PDF
RTH-D16RA-NF0-901	$45.00	10	16 [0.63]	EEPROM	316 bytes	IP67					0.75 g [0.03 oz]	PDF
RTH-D20QA-NF0-901	$80.00	10	20 [0.79]	EEPROM	316 bytes	IP68 IP69K	PPA (Polyphthalamide)	-25° to 80°C [-13° to 176°F]	-40° to 90°C [-40° to 194°F]	NA	1.3 g [0.05 oz]	PDF
RTH-D20QA-ND0	$11.00	1	20 [0.79]	FRAM	2000 bytes	IP68 IP69K					1.3 g [0.05 oz]	PDF
RTH-D30QA-NF0-901	$80.00	10	30 [1.18]	EEPROM	316 bytes	IP68 IP69K				1 N•m [0.74 lb•ft]	3g [0.11 oz]	PDF
RTH-D30QA-ND0	$17.50	1	30 [1.18]	FRAM	2000 bytes	IP68 IP69K					3g [0.11 oz]	PDF
RTH-D50QA-NF0	$9.50	1	50 [1.97]	EEPROM	316 bytes	IP68 IP69K					9.5 g [0.34 oz]	PDF
RTH-D50QA-ND0	$19.50	1	50 [1.97]	FRAM	2000 bytes	IP68 IP69K					9.5 g [0.34 oz]	PDF

High-Temperature HF RFID Tag

High-temperature RFID tags feature 100% silicone-free construction and thermal cycling reliability of 1000 hours (or 1000 cycles). Passive tags from the high-temperature family are ideal for use in paintshops and other high-temperature environments. Tags are insensitive to dirt, and their housings have an IP68 and IP69K enclosure rating. They are also fully ISO/IEC 15693-compliant. Tags are made from PPS (polyphenylene sulfide).

High-Temperature HF RFID Tag Selection Guide

Part Number	Price	Diameter (mm [in])	Memory Type	User Memory	IP Rating	Operating Temperature	Storage Temperature	Tightening Torque	Weight (g [oz])	Drawing
RTP-0263-020	$20.00	26 [1.97]	EEPROM	160 bytes	IP68 IP69K	-25 to 180°C [-13 to 356°F]	-40 to 180°C [-40 to 356°F]	1 N•m [0.74 lb•ft]	3.3 g [0.12 oz]	PDF

RTP-0263-020

Contrinex 13.56 MHz HF RFID Tags

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Working Distance Tables

Typical Working Distances When Using RLH-C44PA-NIS			
Tag (Transponder) Part Number	*S_{max} (mm [in])*	*S_0 (mm [in])*	*D_0 (mm [in])*
Ø 9 RTH-D09RA-NF0-901	24 [0.94]	9 [0.35]	32 [1.26]
Ø 16 RTH-D16RA-NF0-901	40 [1.57]	20 [0.79]	44 [1.73]
Ø 20 RTH-D20QA-NF0-901	40 [1.57]	18 [0.71]	44 [1.73]
Ø 20 RTH-D20QA-ND0	38 [1.50]	17 [0.67]	42 [1.65]
Ø 26 RTP-0263-020	38 [1.50]	17 [0.67]	44 [1.73]
Ø 30 RTH-D30QA-NF0-901	44 [1.73]	21 [0.83]	48 [1.89]
Ø 30 RTH-D30QA-ND0	46 [1.81]	23 [0.91]	52 [2.05]
Ø 50 RTH-D50QA-NF0	64 [2.52]	32 [1.26]	68 [2.68]
Ø 50 RTH-D50QA-ND0	58 [2.28]	26 [1.02]	66 [2.60]

Typical Working Distances When Using RLH-M30PA-NIS			
Tag (Transponder) Part Number	*S_{max} (mm [in])*	*S_0 (mm [in])*	*D_0 (mm [in])*
Ø 9 RTH-D09RA-NF0-901	17 [0.67]	5.5 [0.22]	24 [0.94]
Ø 16 RTH-D16RA-NF0-901	28 [1.10]	13 [0.51]	31 [1.22]
Ø 20 RTH-D20QA-NF0-901	26 [1.02]	12 [0.47]	30 [1.18]
Ø 20 RTH-D20QA-ND0	26 [1.02]	11.5 [0.45]	31 [1.22]
Ø 26 RTP-0263-020	33 [1.30]	15 [0.59]	36 [1.42]
Ø 30 RTH-D30QA-NF0-901	30 [1.18]	13 [0.51]	38 [1.50]
Ø 30 RTH-D30QA-ND0	34 [1.34]	15 [0.59]	38 [1.50]
Ø 50 RTH-D50QA-NF0	46 [1.81]	19 [0.75]	54 [2.13]
Ø 50 RTH-D50QA-ND0	44 [1.73]	18 [0.71]	54 [2.13]

Typical Working Distances When Using RLH-M18PA-NIS			
Tag (Transponder) Part Number	*S_{max} (mm [in])*	*S_0 (mm [in])*	*D_0 (mm [in])*
Ø 9 RTH-D09RA-NF0-901	11 [0.43]	3.5 [0.14]	15 [0.59]
Ø 16 RTH-D16RA-NF0-901	19 [0.75]	8.5 [0.33]	22 [0.87]
Ø 20 RTH-D20QA-NF0-901	18 [0.71]	8 [0.31]	21 [0.83]
Ø 20 RTH-D20QA-ND0	17 [0.67]	6 [0.24]	21 [0.83]
Ø 26 RTP-0263-020	15 [0.59]	4 [0.16]	21 [0.83]
Ø 30 RTH-D30QA-NF0-901	22 [0.87]	9 [0.35]	28 [1.10]
Ø 30 RTH-D30QA-ND0	19 [0.75]	5 [0.20]	28 [1.10]
Ø 50 RTH-D50QA-NF0	24 [0.94]	6 [0.24]	42 [1.65]
Ø 50 RTH-D50QA-ND0	20 [0.79]	0 [0]	44 [1.73]