High-Frequency RFID Reader with IO-Link Product Manual

Original Instructions
p/n: 252315 Rev. A
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Contents

Chapter Contents

Chapter 1 Overview

The RFID Read/Write head works with high-frequency tags designed to be installed on industrial equipment to report equipment or process information back to a central control system. Tool and process information, such as tool IDs, parameters, purchase date, maintenance status, and service life, can be stored in the tag. Read/write heads collect and report this information to manage manufacturing processes and maintenance cycles.

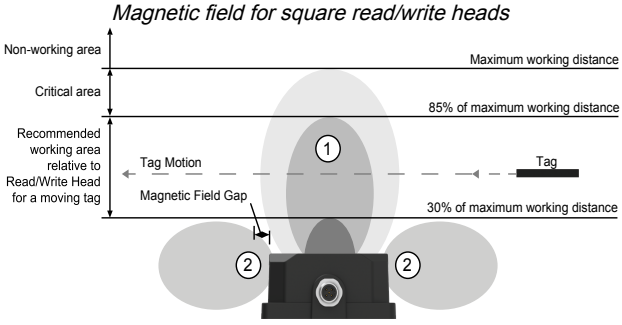
Typical applications include:

- Managing tool and/or fixture locations
- Locating parts within a manufacturing process
- Tracking service life

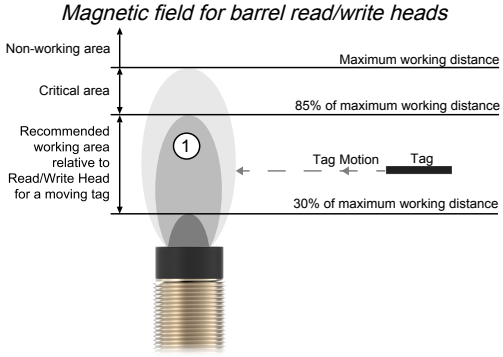
Read/write heads generate an induced magnetic field. This magnetic field is divided into minimum, maximum, and recommended working distances.

- Maximum distance: Outside the maximum distance (see "Maximum Distance Between the Read/Write Head and Tag" on page 6), data may not transfer correctly from the tag, resulting in a data error
- Recommended maximum working distance: The recommended maximum working distance is about 85% of the maximum range. Within this recommended working distance, the tag activates and communicates reliably with the read/write head.
- Minimum distance (30% of the maximum distance): For applications involving moving tags, Banner Engineering Corp recommends positioning the read/write head and tag separation distance to be greater than 30% of the maximum distance.

Magnetic field for square read/write heads



Magnetic field for barrel read/write heads

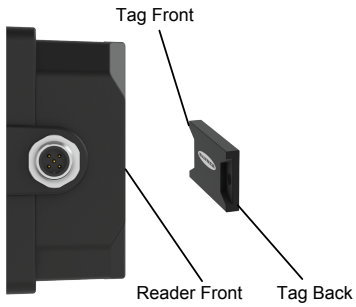


1. Main magnetic field
2. Secondary magnetic field (applies to square read/write heads only)

The tag should approach the read/write head within the maximum distance as listed in "Maximum Distance Between the Read/Write Head and Tag" on page 6, but can approach from any direction. The best performance is when the read/write head and tag are when the tag's front face is parallel to the reader.

When operating in a metallic working environment, thoroughly test your application to ensure the read/write head and tag are operating as expected.

Install the read/write head and tag faces to be parallel



RFID Read/Write Head Models

RFID Read/Write Head with IO-Link Models

Models	Read/Write Distance Range (depends on the tag model used)	Size	Connector	
BID-HS18-KQ	0-30 mm	18 Dia x 92 mm Barrel	A-Code M12	
BID-HS30-KQ	0-60 mm	30 Dia x 92 mm Barrel	A-Code M12	
BID-HQ50-KQ	0-80 mm	50 x 50 x 30 mm Square	A-Code M12	
BID-HQ90-KQ	0-110 mm	90 x 90 x 40 mm Square	A-Code M12	

The maximum distance between the read/write head and the tag varies depending on the tag model used. Always test your installation before mounting your components.

RFID Tag Models

RFID Tag Models

Tag Models	Can be Mounted on Metal	Size	Memory	
THS30C	No	30 mm dia	112 bytes	
THS30C-2K	No	30 mm dia	2000 bytes	
THB14M5C	Can be installed on or embedded in metal	14 x 18.6 mm	112 bytes	
THQ40C	No	40 x 22 mm	112 bytes	
THQ40C-2K	No	40 x 22 mm	2000 bytes	
THQ40CM	Can be installed on or embedded in metal	40 x 22 mm	112 bytes	
THQ66C	No	66 x 34 mm	112 bytes	
THQ66C-2K	No	66 x 34 mm	2000 bytes	
THQ66CM	Can be installed on or embedded in metal	66 x 34 mm	112 bytes	

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Chapter 2 Installation Instructions

Maximum Distance Between the Read/Write Head and Tag

Maximum distance (mm) between the read/write head and tag for non-metal installations

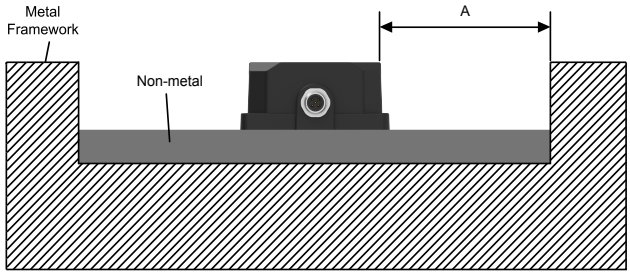
	Tags								
Readers	**THB14M5C**	**THS30C**	**THS30C-2K**	**THQ40C**	**THQ40C-2K**	**THQ40CM**	**THQ66C**	**THQ66C-2K**	**THQ66CM**
BID-HS18-KQ	15	45	45	40	40	25	60	55	30
BID-HS30-KQ	20	60	60	50	50	30	75	65	35
BID-HQ50-KQ	25	95	90	80	75	45	120	90	55
BID-HQ90-KQ	15	80	80	65	65	45	110	100	55

Maximum distance (mm) between the read/write head and tag when installed on or embedded within metal

	THQ40CM			THQ66CM		
Readers	**Non-Metal Installation**	**Installed on Metal**	**Embedded within Metal**	**Non-Metal Installation**	**Installed on Metal**	**Embedded within Metal**
BID-HS18-KQ	25	30	25	30	35	35
BID-HS30-KQ	30	40	30	35	40	45
BID-HQ50-KQ	45	50	60	55	55	65
BID-HQ90-KQ	45	45	60	55	55	70

Installing the Read/Write Heads on Metal

Embedding the read/write head into metal



If the read/write head is to be installed on metal, note that the read/write head performance is affected.

- Increase the distance between the read/write head and the metal surface by adding a non-metallic medium at least 20 mm thick
- When the distance between the metal surface and the read/write head is greater than 20 mm, the read/write head's performance is the same as that of a read/write head installed on a non-metallic surface
- In a metallic application, reduce the distance between the read/write head and the tag

If the read/write head is to be embedded within metal, allow for at least 10 cm (A) of distance between the read/write head and the metal that the read/write head is embedded into to preserve performance. We recommend that the value A is not less than half of the read/write head's length and/or width.

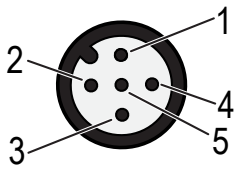
When installing multiple read/write heads in an enclosed metal framework, install the read/write heads at least 2.5 m apart.

Installing the RFID Tags

- In an application with multiple tags, ensure the tags are mounted outside the minimum tag distance
- In an application with multiple read/write heads, verify that the read/write heads are separated by at least the minimum distance
- Any metal near the read/write head can affect the read/write head's performance.
    - When the tag is embedded into metal, place the tag parallel to the metal plane's surface or allow the tag to be higher than the surface of the metal
    - Tag models designated as being able to be installed in metal can be installed directly on a metallic surface; tags that cannot be installed within metal should be installed at least 20 mm away from metal.

Wiring

Wiring for the read/write head with IO-Link

5-pin A-Code Male Pinout	Pin	Wire Color	Description
	1	Brown (bn)	24 V DC
	2	White (wh)	—
	3	Blue (bu)	0 V/Ground
	4	Black (bk)	IO-Link
	5	Shielding layer	Polyethylene shielding layer

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Chapter 3 Configuration Instructions

IO-Link Registers

RFID Read/Write Head IODD files

Models	IODD File	
BID-HS18-KQ	b_51953371	
BID-HS30-KQ	b_51953369	
BID-HQ50-KQ	b_51953372	
BID-HQ90-KQ	b_51953370	

Process Data In

Process Data In

Word	Byte	Bit	Description for Manual Mode	Description for Auto Read UID Mode	Description for Auto Read Data Mode
0	0	0	Ready	Ready	Ready
		1	Done	Done	Done
		2	Error	Error	Error
		3	Tag Present	Tag Present	Tag Present
		4	Busy	Busy	Busy
		5	Toggle	Toggle	Toggle
		6	N/A	N/A	N/A
		7	N/A	N/A	N/A
	1	8-15	RSSI	RSSI	RSSI
1	2	0-7	Error Code	Tag UID Information	Error Code

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Continued from page 8

Word	Byte	Bit	Description for Manual Mode	Description for Auto Read UID Mode	Description for Auto Read Data Mode
1	3	8-15	Data	Tag UID Information	Data
2	4	0-7	Data	Tag UID Information	Data
2	5	8-15	Data	Tag UID Information	Data
3	6	0-7	Data	Tag UID Information	Data
3	7	8-15	Data	Tag UID Information	Data
4	8	0-7	Data	Tag UID Information	Data
4	9	8-15	Data	Tag UID Information	Data
5	10	0-7	Data	N/A	Data
5	11	8-15	Data	N/A	Data
6	12	0-7	Data	N/A	Data
6	13	8-15	Data	N/A	Data
7	14	0-7	Data	N/A	Data
7	15	8-15	Data	N/A	Data
8	16	0-7	Data	N/A	Data
8	17	8-15	Data	N/A	Data
9	18	0-7	Data	N/A	Data
9	19	8-15	Data	N/A	Data
10	20	0-7	Data	N/A	Data
10	21	8-15	Data	N/A	Data
11	22	0-7	Data	N/A	Data
11	23	8-15	Data	N/A	Data
12	24	0-7	Data	N/A	Data
12	25	8-15	Data	N/A	Data
13	26	0-7	Data	N/A	Data
13	27	8-15	Data	N/A	Data
14	28	0-7	Data	N/A	Data
14	29	8-15	Data	N/A	Data
15	30	0-7	Data	N/A	Data
	31	8	Ready	Ready	Ready
		9	Done	Done	Done
		10	Error	Error	Error
		11	Tag Present	Tag Present	Tag Present
		12	Busy	Busy	Busy
		13	Toggle	Toggle	Toggle
		14	N/A	N/A	N/A
		15	N/A	N/A	N/A

Process Data Out

Process Data Out

Word	Byte	Bit	Description for Manual Mode	Description For Auto Read UID Mode	Description for Auto Read Data Mode
0	0	0	Enable (1 = Device On)	Enable (1 = Device On) (stays 1 after on)	Enable (1 = Device On) (stays 1 after on)
		1	Toggle (1 = Trigger On)	Toggle (1 = Trigger On) (always 0)	Toggle (1 = Trigger On) (always 0)
		2	New Job (1 = Start New Operation On)	New Job (1 = Start New Operation On) (always 0)	New Job (1 = Start New Operation On) (1 unless changing what register is being read)
		3	N/A	N/A	N/A
		4	N/A	N/A	N/A
		5	Protocol	Protocol	Protocol
		6	Protocol	Protocol	Protocol
		7	Protocol	Protocol	Protocol
	1	8-15	RFU	N/A	RFU
1	2	0-7	Command (17 = read, 18 = write)	N/A	Command (17 = read)
1	3	8-15	Starting Register High Byte	N/A	Starting Register High Byte
2	4	0-7	Starting Register Low Byte	N/A	Starting Register Low Byte
2	5	8-15	Number of Bytes to Read High Byte	N/A	Number of Bytes to Read High Byte
3	6	0-7	Number of Bytes to Read Low Byte	N/A	Number of Bytes to Read Low Byte
3	7	8-15	Data	N/A	N/A
4	8	0-7	Data	N/A	N/A
4	9	8-15	Data	N/A	N/A
5	10	0-7	Data	N/A	N/A
5	11	8-15	Data	N/A	N/A
6	12	0-7	Data	N/A	N/A
6	13	8-15	Data	N/A	N/A
7	14	0-7	Data	N/A	N/A
7	15	8-15	Data	N/A	N/A
8	16	0-7	Data	N/A	N/A
8	17	8-15	Data	N/A	N/A
9	18	0-7	Data	N/A	N/A
9	19	8-15	Data	N/A	N/A
10	20	0-7	Data	N/A	N/A
10	21	8-15	Data	N/A	N/A
11	22	0-7	Data	N/A	N/A
11	23	8-15	Data	N/A	N/A
12	24	0-7	Data	N/A	N/A
12	25	8-15	Data	N/A	N/A
13	26	0-7	Data	N/A	N/A
13	27	8-15	Data	N/A	N/A

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Word	Byte	Bit	Description for Manual Mode	Description For Auto Read UID Mode	Description for Auto Read Data Mode
14	28	0-7	Data	N/A	N/A
14	29	8-15	Data	N/A	N/A
15	30	0-7	Data	N/A	N/A
	31	8	Enable (1 = Device On)	Enable (1 = Device On) (stays 1 after on)	Enable (1 = Device On) (stays 1 after on)
		9	Toggle (1 = Trigger On)	Toggle (1 = Trigger On) (always 0)	Toggle (1 = Trigger On) (always 0)
		10	New Job (1 = Start New Operation On)	New Job (1 = Start New Operation On) (always 0)	New Job (1 = Start New Operation On) (1 unless changing what register is being read)
		11	N/A	N/A	N/A
		12	N/A	N/A	N/A
		13	Protocol	Protocol	Protocol
		14	Protocol	Protocol	Protocol
		15	Protocol	Protocol	Protocol

Parameters Set Using IO-Link

Information Parameters

Index	Subindex	Name	Number of Bits	Default Value
0	8	vendor id	16 bits	451
	9			
	10	device id	24 bits	
	11			
	12			
16	0	vendor name	78 bits	Banner
17	0	vendor text	20 bits	www.bannerengineering.com
18	0	product name	18 bits	
19	0	product id		
20	0	product text	161 bits	IO-Link RFID Reader
22	0	hardware version	8 bits	
23	0	firmware version	72 bits	

Configuration Parameters

Index	Subindex	Description	Number of Bits	Value Range	Default Value
112	0	mode	8 bits	0: interactive mode	1
				1: auto read uid mode	
				2: auto memory data read mode	
113	0	auto read starting address	8 bits		0
114	0	auto read number of bytes	8 bits	1-29	29

Interactive Mode

Specifies that the RFID read/write head does not actively send any content when a new tag is detected on site

Automatic UID Reading Mode

Specifies that the RFID read/write head actively sends the UID when a tag is presented

Automatic Reading Memory Data Mode

Specifies that when a new tag is detected on site, the RFID read/write head actively reads preset data based on established parameters

Chapter Contents

Chapter 4 Operating Instructions

Write Data to an RFID Tag

Follow these instructions to write to an RFID tag.

Hardware used:

- BID RFID Read/Write Head with IO-Link
- BID RFID tag

This example uses a starting address of 0x0020 (decimal 32) to write 8 bytes of data.

1. Control the output frame by populating the command structure as follows:

Byte Position	Decimal Value	Hexadecimal Value	Description
Byte 0	37	0x25	
Byte 1	0	0x00	Reserved (RFU)
Byte 2	18	0x12	Command: Write Memory
Byte 3	0	0x00	Start Address (High Byte)
Byte 4	32	0x20	Start Address (Low Byte)
Byte 5	0	0x00	Number of Bytes (High Byte)
Byte 6	8	0x08	Number of Bytes (Low Byte)
Byte 7	17	0x11	Data byte 1
Byte 8	34	0x22	Data byte 2
Byte 9	51	0x33	Data byte 3
Byte 10	68	0x44	Data byte 4
Byte 11	85	0x55	Data byte 5
Byte 12	102	0x66	Data byte 6
Byte 13	119	0x77	Data byte 7
Byte 14	136	0x88	Data byte 8
Byte 15–30	0	0x00	Unused (set to 0)
Byte 31	37	0x25	Protocol, Enable, Toggle, Newjob

2. Flip the Enable bit on if it is not already on.

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	256	1062	0
1053	0	1063	0
1054	0	1064	0
1055	0	1065	0

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Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1056	0	1066	0
1057	0	1067	1
1058	0		
1059	0		
1060	0		

3. Flip the Newjob bit on and enter the data/command information.

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	1280	1062	0
1053	4608	1063	0
1054	8192	1064	0
1055	2065	1065	0
1056	8755	1066	0
1057	17493	1067	5
1058	26231		
1059	34816		
1060	0		

4. Flip the Toggle bit on, then look at the Process Data In to verify the job has finished.

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	1792	1062	0
1053	4608	1063	0
1054	8192	1064	0
1055	2065	1065	0
1056	8755	1066	0
1057	17493	1067	7
1058	26231		
1059	34816		
1060	0		

5. Flip the Toggle bit off.

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	1280	1062	0
1053	4608	1063	0
1054	8192	1064	0
1055	2065	1065	0
1056	8755	1066	0
1057	17493	1067	5

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Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1058	26231		
1059	34816		
1060	0		

6. To reset the read/write head, flip the Newjob off and change the command to read.

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	256	1062	0
1053	4352	1063	0
1054	8192	1064	0
1055	2065	1065	0
1056	8755	1066	0
1057	17493	1067	1
1058	26231		
1059	34816		
1060	0		

Read Data from an RFID Tag

Follow these instructions to read from an RFID tag.

Hardware used:

- BID RFID Read/Write Head with IO-Link
- BID RFID tag

This example uses a starting address of 0x0020 (decimal 32) to write 8 bytes of data.

1. Control the output frame by populating the command structure as follows:

Byte Position	Decimal Value	Hexadecimal Value	Description
Byte 0	37	0x25	Protocol, Enable, Toggle, Newjob
Byte 1	0	0x00	Reserved (RFU)
Byte 2	17	0x11	Command: Read Memory
Byte 3	0	0x00	Start Address (High Byte)
Byte 4	32	0x20	Start Address (Low Byte)
Byte 5	0	0x00	Number of Bytes (High Byte)
Byte 6	8	0x08	Number of Bytes (Low Byte)
Byte 7–30	0	0x00	Unused (set to 0)
Byte 31	37	0x25	Protocol, Enable, Toggle, Newjob

2. Flip the Enable bit to on if it is not already on.

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	256	1062	0

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Continued from page 15

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1053	0	1063	0
1054	0	1064	0
1055	0	1065	0
1056	0	1066	0
1057	0	1067	5
1058	0		
1059	0		
1060	0		

3. Flip the Newjob bit off and change the command to read (note that the data section does not need to be removed from previous write commands).

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	1280	1062	0
1053	4352	1063	0
1054	8192	1064	0
1055	2048	1065	0
1056	0	1066	0
1057	0	1067	5
1058	0		
1059	0		
1060	0		

4. Flip the Newjob bit off.

Register (4xxxxx)	Value (Decimal)	Register (4xxxxx)	Value (Decimal)
1051	1	1061	0
1052	256	1062	0
1053	4352	1063	0
1054	8192	1064	0
1055	2048	1065	0
1056	0	1066	0
1057	0	1067	1
1058	0		
1059	0		
1060	0		

Byte Position	Description
Byte 0	Protocol, Ready, Done, TagPresent, Busy, Toggle
Byte 1	RSSI (optional, signal strength)
Bytes 2-9	Data from the requested memory range
Bytes 10-30	Unused
Byte 31	Protocol, Ready, Done, TagPresent, Busy, Toggle

5. Verify the data to ensure it matches the expected values in the process data input.

Read a Tag UID

Follow these instructions to read a tag's UID.

1. On the IO-Link master device, verify the IO-Link LED has changed from blinking green to solid green. (This LED behavior is specific to the Banner Engineering IO-Link master device. Other IO-Link master LED behavior will vary.)
2. Write a 1 to both Process Data Out Enable bits (see "Process Data Out" on page 10; word 0, byte 0, bit 0 and word 15, bit 31, bit 8).
3. Present the tag to the read/write head.
4. Verify the results in the Process Data In registers (see "Process Data In" on page 8).
    - Tag present register value: 1
    - Unique Tag ID: 8 bytes of content displays

Read Tag Information

Follow these instructions to read the information from a tag.

1. On the IO-Link master device, verify the IO-Link LED has changed from blinking green to solid green. (This LED behavior is specific to the Banner Engineering IO-Link master device. Other IO-Link master LED behavior will vary.)
2. Write a 1 to both Process Data Out Enable bits (See "Process Data Out" on page 10; word 0, byte 0, bit 0 and word 15, byte 31, bit 8).
3. Preset the tag to the read/write head.
4. Verify the results in the Process Data In registers (see "Process Data In" on page 8).
    - Tag present register value: 1
    - Unique Tag ID: 8 bytes of content displays
5. Configure the read registers in the Process Data Out (see "Process Data Out" on page 10). The length and starting registers are required.
6. Verify the results in the Process Data In registers.
    - Tag present register value: 1
    - Unique Tag ID: 8 bytes of content displays
7. Write a 0 to both Process Data Out NewJob bits (word 0, byte 0, bit 2 and word 15, byte 31, bit 10)
8. Verify the results in the Process Data In registers.
    - Process Data In Bytes 2-30
    - Number of registers you are reading
    - Read command
9. Write a 1 to both Process Data Out NewJob bits.

Chapter Contents

Chapter 5 Specifications

RFID Read/Write Head Specifications

Supply Power

Model	Supply Voltage	Current
BID-HS18	24 V DC ±10%	< 0.05 A at 24 V DC
BID-HS30	24 V DC ±10%	< 0.05 A at 24 V DC
BID-HQ50	18-30 V DC	< 0.07 A at 24 V DC
BID-HQ90	18-30 V DC	< 0.07 A at 24 V DC

Construction

BID-HS18 and BID-HS30 models: Nickel-plated brass

BID-HQ50 and BID-HQ90 models: Polycarbonate-ABS thermoplastic

Weight

BID-HS18: 0.05 kg

BID-HS30: 0.11 kg

BID-HQ50: 0.12 kg

BID-HQ90: 0.33 kg

Communication

IO-Link®

Operating Conditions

BID-HS18, -HS30, and -HQ50 models: –25 °C to +70 °C (–13 °F to +158 °F)

BID-HQ90 model: –40 °C to +70 °C (–40 °F to +158 °F)

95% maximum relative humidity (non-condensing)

Storage Conditions

BID-HS18, -HS30, and -HQ50 models: –25 °C to +85 °C (–13 °F to +185 °F)

BID-HQ90 model: –40 °C to +85 °C (–40 °F to +185 °F)

Environmental Rating

IP67

Certifications

CE

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Model	FCC ID	IC ID
BID-HS18-KQ	2BP53-SGHRI1IOL	34211-HRM18IOL0
BID-HS30-KQ	2BP53-SGHRI2IOL	34211-HRM30IOL0
BID-HQ50-KQ	2BP53-SGHRI4IOL	34211-HRS50IOL0
BID-HQ90-KQ	2BP53-SGHRI5IOL	34211-HRS90IOL0

RFID Tag Specifications

See "RFID Tag Models" on page 5 and "RFID Tag Dimensions" on page 20.

Rewrite Times

100,000

Material

PBT polyester

Installation and Environmental Conditions

Models	Installation	Temperature	IP Rating
THS30C	M5 screw (1)	–40 °C to +70 °C (–40 °F to +158 °F)	IP68
THS30C-2K	M5 screw (1)	–40 °C to +70 °C (–40 °F to +158 °F)	IP68
THB14M5C	Threaded stud (1)	–25 °C to +75 °C (–13 °F to +167 °F)	IP68
THQ40C	M3 screws (2)	–25 °C to +75 °C (–13 °F to +167 °F)	IP67
THQ40C-2K	M3 screws (2)	–25 °C to +75 °C (–13 °F to +167 °F)	IP67
THQ40CM	M3 screws (2)	–25 °C to +75 °C (–13 °F to +167 °F)	IP67
THQ66C	M3 screws (4)	–25 °C to +75 °C (–13 °F to +167 °F)	IP67
THQ66C-2K	M3 screws (4)	–25 °C to +75 °C (–13 °F to +167 °F)	IP67

Continued on page 19

Continued from page 18

Models	Installation	Temperature	IP Rating
THQ66CM	M3 screws (4)	–25 °C to +75 °C (–13 °F to +167 °F)	IP67

FCC Part 15 Class A for Intentional Radiators

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.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada Statement for Intentional Radiators

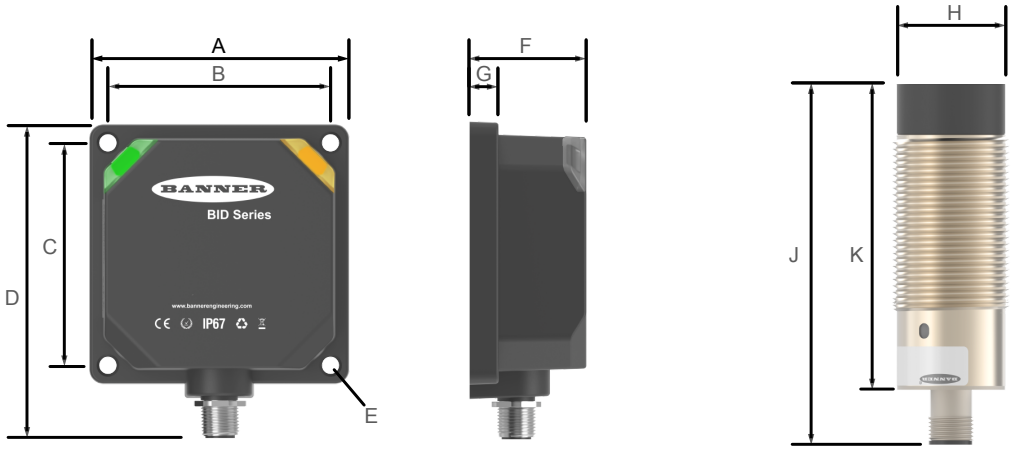
This device contains licence-exempt transmitters(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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 à la norme Innovation, Sciences, et Développement économique Canada. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage.
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

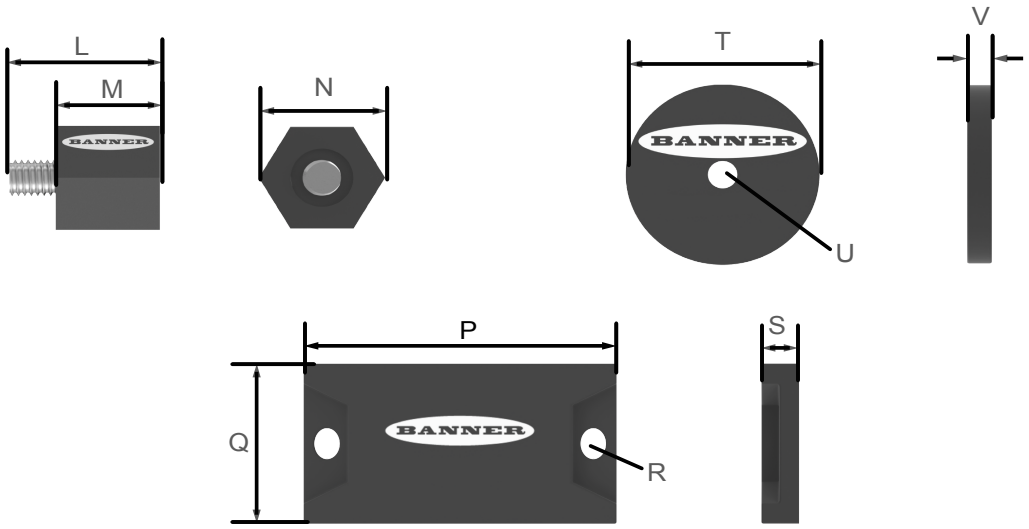
RFID Read/Write Head Dimensions



RFID Read/Write Head with IO-Link Dimensions (mm)

Models	A	B	C	D	E	F	G	H	J	K
BID-HS18-KQ	—	—	—	—	—	—	—	18	92	80
BID-HS30-KQ	—	—	—	—	—	—	—	30	92	78
BID-HQ50-KQ	50	41.77	41.95	67	M4	30	6	—	—	—
BID-HQ90-KQ	90	77	77	108.6	M5	40	10	—	—	—

RFID Tag Dimensions



RFID Tag Dimensions (mm)

	L	M	N	P	Q	R	S	V	W	X
THS30C	—	—	—	—	—	—	—	30	5	2.6
THS30C-2K	—	—	—	—	—	—	—	30	5	2.6
THB14M5C	18.8	13	16	—	—	—	—	—	—	—
THQ40C	—	—	—	40	22	3.2 × 4.2	4.8	—	—	—
THQ40C-2K	—	—	—	40	22	3.2 × 4.2	4.8	—	—	—
THQ40CM	—	—	—	40	22	3.2 × 4.2	4.8	—	—	—
THQ66C	—	—	—	66	34	3.3	4.8	—	—	—
THQ66C-2K	—	—	—	66	34	3.3	4.8	—	—	—
THQ66CM	—	—	—	66	34	3.3	4.8	—	—	—

Chapter Contents

Chapter 6 Accessories

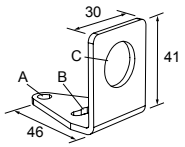
Brackets for the 18mm Barrel Readers

The following brackets work with the 18 mm barrel read/write heads.

SMB18A

- Right-angle mounting bracket with a curved slot for versatile orientation
- 12-ga. stainless steel
- 18 mm sensor mounting hole
- Clearance for M4 (#8) hardware

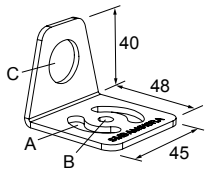
Hole center spacing: A to B = 24.2
Hole size: A = ø 4.6, B = 17.0 × 4.6, C = ø 18.5



SMBAMS18RA

- Right-angle SMBAMS series bracket with 18 mm hole
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

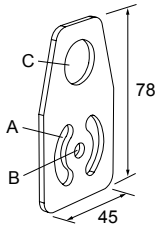
Hole center spacing: A = 26.0, A to B = 13.0
Hole size: A = 26.8 × 7.0, B = ø 6.5, C = ø 19.0



SMBAMS18P

- Flat SMBAMS series bracket with 18 mm hole
- Articulation slots for 90+° rotation
- 12-ga. (2.6 mm) cold-rolled steel

Hole center spacing: A = 26.0, A to B = 13.0
Hole size: A = 26.8 × 7.0, B = ø 6.5, C = ø 19.0



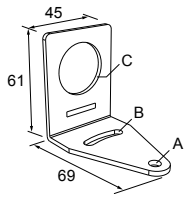
Brackets for the 30mm Barrel Readers

The following brackets work with the 30 mm barrel read/write heads.

SMB30A

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-gauge stainless steel

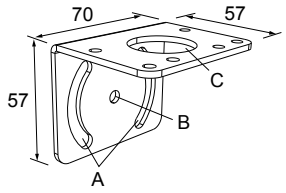
Hole center spacing: A to B=40
Hole size: A=ø 6.3, B= 27.1 × 6.3, C=ø 30.5



SMB30MM

- 12-gauge stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor

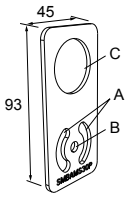
Hole center spacing: A = 51, A to B = 25.4
Hole size: A = 42.6 × 7, B = ø 6.4, C = ø 30.1



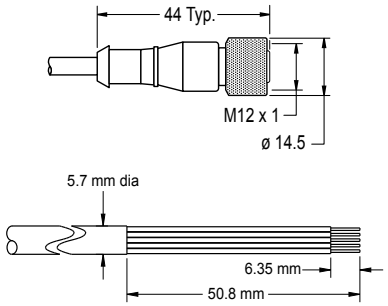
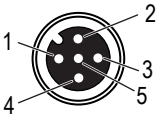
SMBAMS30P

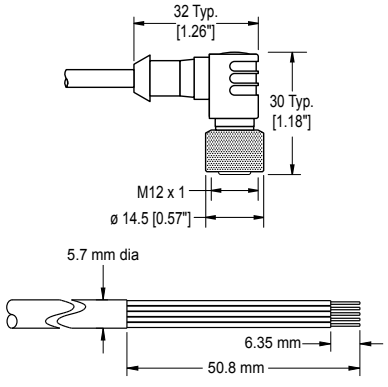
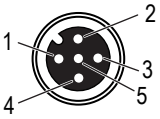
- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-gauge 300 series stainless steel

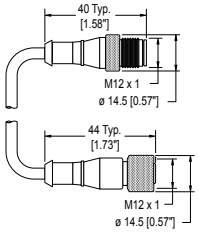
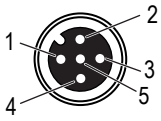
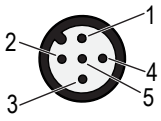
Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 × 7.0, B=ø 6.5, C=ø 31.0

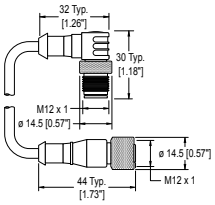
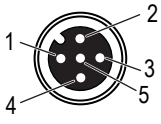
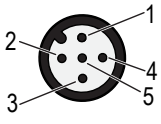


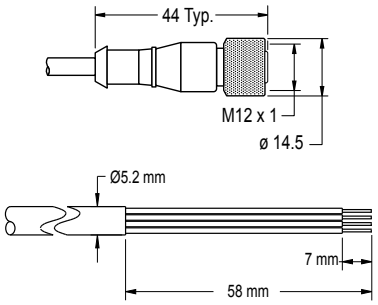
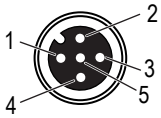
Cordsets

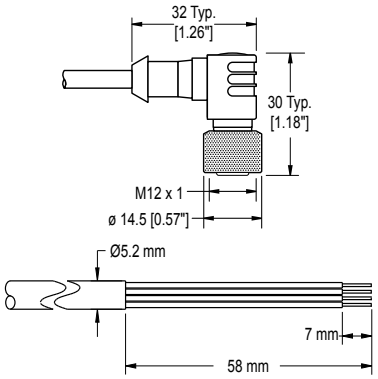
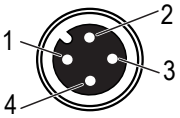
5-pin A-Code Single-Ended M12 Female Cordsets (datasheet p/n 235936)				
Model	**Length**	**Dimensions (mm)**	**Pinout (Female)**	
BC-M12F5-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
BC-M12F5-22-2	2 m (6.56 ft)			
BC-M12F5-22-5	5 m (16.4 ft)			
BC-M12F5-22-8	8 m (26.25 ft)			
BC-M12F5-22-10	10 m (30.81 ft)			
BC-M12F5-22-15	15 m (49.2 ft)			

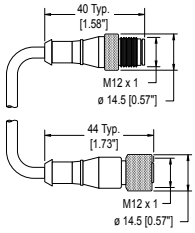
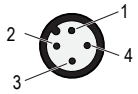
5-pin A-Code Single-Ended M12 Female Right-Angle Cordsets (datasheet p/n 235936)				
Model	**Length**	**Dimensions (mm)**	**Pinout (Female)**	
BC-M12F5A-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
BC-M12F5A-22-2	2 m (6.56 ft)			
BC-M12F5A-22-5	5 m (16.4 ft)			
BC-M12F5A-22-8	8 m (26.25 ft)			
BC-M12F5A-22-10	10 m (30.81 ft)			
BC-M12F5A-22-15	15 m (49.2 ft)			

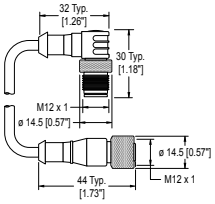
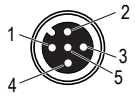
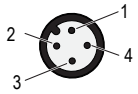
5-pin A-Code Double-Ended M12 Female to M12 Male Cordsets (datasheet p/n 236183)				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F5-M12M5-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
BC-M12F5-M12M5-22-2	2 m (6.56 ft)			
BC-M12F5-M12M5-22-5	5 m (16.4 ft)			
BC-M12F5-M12M5-22-8	8 m (26.25 ft)			
BC-M12F5-M12M5-22-10	10 m (30.81 ft)			
BC-M12F5-M12M5-22-15	15 m (49.2 ft)			

5-pin A-Code Double-Ended M12 Female Straight to M12 Male Right-Angle Cordsets (datasheet p/n 236183)				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F5-M12M5A-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
BC-M12F5-M12M5A-22-2	2 m (6.56 ft)			
BC-M12F5-M12M5A-22-5	5 m (16.4 ft)			
BC-M12F5-M12M5A-22-10	10 m (30.81 ft)			

4-pin Single-Ended M12 Female Cordsets (datasheet p/n 235937)				
Model	**Length**	**Dimensions (mm)**	**Pinout (Female)**	
BC-M12F4-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused c UL us LISTED
BC-M12F4-22-2	2 m (6.56 ft)			
BC-M12F4-22-5	5 m (16.4 ft)			
BC-M12F4-22-8	8 m (26.25 ft)			
BC-M12F4-22-10	10 m (30.81 ft)			
BC-M12F4-22-15	15 m (49.2 ft)			
BC-M12F4-22-20	20 m (65.61 ft)			
BC-M12F4-22-25	25 m (82.02 ft)			
BC-M12F4-22-30	30 m (98.42 ft)			

4-pin Single-Ended M12 Female Right-Angle Cordsets (datasheet p/n 235937)				
Model	**Length**	**Dimensions (mm)**	**Pinout (Female)**	
BC-M12F4A-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused c UL us LISTED
BC-M12F4A-22-2	2 m (6.56 ft)			
BC-M12F4A-22-5	5 m (16.4 ft)			
BC-M12F4A-22-8	8 m (26.25 ft)			
BC-M12F4A-22-10	10 m (30.81 ft)			
BC-M12F4A-22-15	15 m (49.2 ft)			

4-pin A-Code Double-Ended M12 Female to M12 Male Cordsets (datasheet p/n 236186)				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused c UL us LISTED
BC-M12F4-M12M4-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4-22-3	3 m (9.84 ft)			
BC-M12F4-M12M4-22-4	4 m (13.12 ft)			
BC-M12F4-M12M4-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4-22-15	15 m (49.2 ft)			

4-pin A-Code Double-Ended M12 Female to M12 Male Right-Angle Cordsets (datasheet p/n 236186)				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F4-M12M4A-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused c UL us LISTED
BC-M12F4-M12M4A-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4A-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4A-22-8	8 m (26.25 ft)			
BC-M12F4-M12M4A-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4A-22-15	15 m (49.2 ft)			

Chapter Contents

Chapter 7 Product Support and Maintenance

Repairs

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.

> **IMPORTANT:** If instructed to return the device, pack it with care. Damage that occurs in return shipping is not covered by warranty.

Banner Engineering Corp Limited Warranty

Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

THIS LIMITED WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE), AND WHETHER ARISING UNDER COURSE OF PERFORMANCE, COURSE OF DEALING OR TRADE USAGE.

This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

Banner Engineering Corp. reserves the right to change, modify or improve the design of the product without assuming any obligations or liabilities relating to any product previously manufactured by Banner Engineering Corp. Any misuse, abuse, or improper application or installation of this product or use of the product for personal protection applications when the product is identified as not intended for such purposes will void the product warranty. Any modifications to this product without prior express approval by Banner Engineering Corp will void the product warranties. All specifications published in this document are subject to change; Banner reserves the right to modify product specifications or update documentation at any time. Specifications and product information in English supersede that which is provided in any other language. For the most recent version of any documentation, refer to: www.bannerengineering.com.

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