

IO-Link System

BIC 110-I2A50-Q40KFU-SM4A4A, BIC 210-I2A50-Q40KFU-SM4A5A

Safety Informations

Intended use

This guide describes the Balluff Inductive Coupling System **BIC** ... for the use in industrial environment consisting of **Base** unit and **Remote** unit. Die electrical power is provided to the Remote unit via air gap. Simultaneously data are transmitted in IO-Link format. The Base unit communicates via IO-Link protocol with the host IO-Link master unit. The Remote unit is working as a virtual IO-Link master unit to the connected IO-Link device.



Read this operating guide thoroughly before startup!

These sensors may not be used in applications where the safety of persons depends on device function (not a safety component per the EU Machine Directive).



Caution!

Risk of burning on hot surfaces!
The active surface heats up even under normal operating conditions. Keep away hands and objects from the active surface. Avoid contact of metal objects on the active surface. Fire hazard!

Approved personnel

Installation and startup are permitted only by trained specialists.

Improper Use

Damage resulting from unauthorized actions or improper use is not covered under the warranty and liability provisions.

Obligations of the operator!

The equipment is an EMC Class A product. Such devices may cause RF noise radiation. The operator must take appropriate measures to account for this. The operator is responsible for observing the locally prevailing safety regulations.

Fault conditions

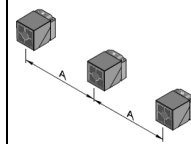
When defects and non-clearable faults occur in the device, it must be taken out of service and secured against unauthorized use.

Installation

Mutual interference

To prevent mutual interference from other Base or Remote units, maintain the following separation distances.

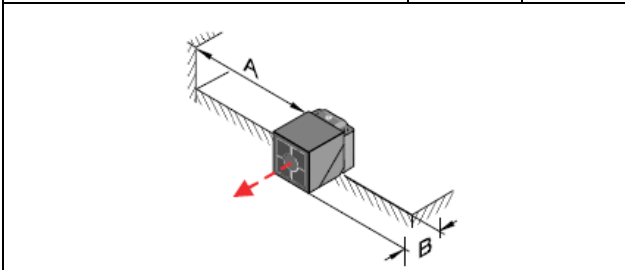
Type	A (mm)
BIC 110-I2A50...SM4A4A	70
BIC 210-I2A50...SM4A5A	70



Installation in metal

When installing in metal the specified minimum distances from the surrounding sides of the metallic object must be maintained, since otherwise the transmission distance between Base and Remote will change. The transmission distance can also be affected by the type of metal.

Type	A (mm)	B (mm)
BIC 110-I2A50...SM4A4A	30	20
BIC 210-I2A50...SM4A5A	30	20



IO-Link Communication

Transmission rate	COM2 (38,4 kBaud)
Frame type	1
Min cycle time	3 ms
Process data cycle	< 50 ms
SIO Mode	no
IO-Link Revision	1.0
Masterporttyp	A
Processdata in	4
Processdata out	0

Errors

Error Code	Additional Code
device application error 0x80	Index not available 0x11
device application error 0x80	SubIndex not available 0x12

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IO-Link-Communication

Process data image

Byte 0								Byte 1							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
PD Byte 0 Bit 7	PD Byte 0 Bit 6	PD Byte 0 Bit 5	PD Byte 0 Bit 4	PD Byte 0 Bit 3	PD Byte 0 Bit 2	PD Byte 0 Bit 1	PD Byte 0 Bit 0	PD Byte 1 Bit 7	PD Byte 1 Bit 6	PD Byte 1 Bit 5	PD Byte 1 Bit 4	PD Byte 1 Bit 3	PD Byte 1 Bit 2	PD Byte 1 Bit 1	PD Byte 1 Bit 0

Byte 2								Byte 3							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
PD Byte 2 Bit 7	PD Byte 2 Bit 6	PD Byte 2 Bit 5	PD Byte 2 Bit 4	PD Byte 2 Bit 3	PD Byte 2 Bit 2	PD Byte 2 Bit 1	PD Byte 2 Bit 0	0	0	0	0	Error „Supply Remote“	Error „Short Remote“	Error Inzone	Error Com

*unused data is cleared by 0.

- Error „Supply Remote“ Supply voltage at Remote is lower than 18V
- Error „Short Remote“ Short circuit detected on Remote Com-interface
- Error „Inzone“ No Remote detected
- Error „Com“ No IO Link device detected

Parameter data

	DPP	SPDU		Object name	Length	Range	Default value
	Index	Index	Sub Index				
Identification Data	0 x 07			Vendor ID	2 Byte	read only	0 x 0378
	0 x 08						
	0 x 09			Device ID	3 Byte		0 x 050603
	0 x 0A						
	0 x 0B						
		0 x 10	0	Vendor name	8 Byte		BALLUFF
		0 x 11	0	Vendor text	16 Byte		www.balluff.com
		0 x 12	0	Product name	34 Byte		BIC 110-I2A50-Q40KFU-SM4A4A
		0 x 13	0	Product ID	21 Byte		BIC005A
		0 x 14	0	Product text	34 Byte		BIC IOL Base
	0 x 16	0	Hardware Revision	3 Byte			
	0 x 17	0	Firmware Revision	3 Byte			
Parameter Data		0 x 40 64	0 1 - 16	Direct Parameter Page Remote Device	16 Byte		

Events

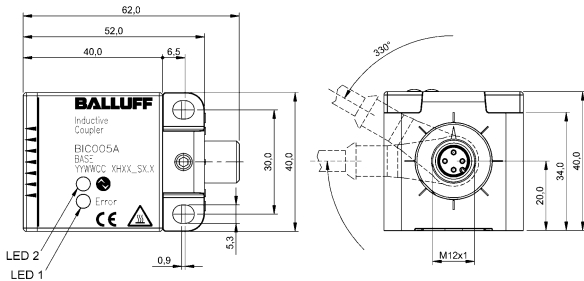
Class / Qualifier			Code (high + low)			
Mode	Type	Instance				
appears	Error	AL	Device Hardware	supply	Supply low voltage	U2 = supply + 24 V
0 x C0	0 x 30	0 x 03	0 x 5000	0 x 0100	0 x 0010	0 x 0002
0 x F3			0 x 5112			
disappears	Error	AL	Device Hardware	supply	Supply low voltage	U2 = supply + 24 V
0 x 80	0 x 30	0 x 03	0 x 5000	0 x 0100	0 x 0010	0 x 0002
0 x B3			0 x 5112			

IO-Link System

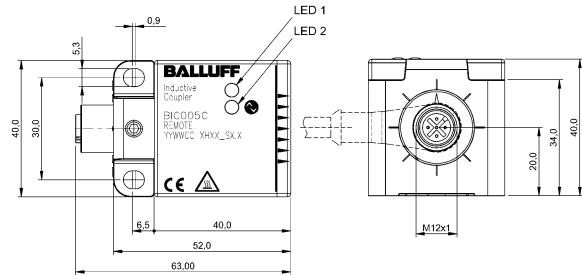
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Technical Data, Connection

Base



Remote



Base

Power (M12, 4 pin-male plug)		
	PIN	Signal
	1	+24 V
	2	NC
	3	GND, 0V
4	C/Q, IO Link	

Remote

Power (M12, 5 pin-female plug)		
	PIN	Signal
	1	+24 V
	2	NC
	3	GND, 0V
	4	C/Q, IO Link
5	NC	

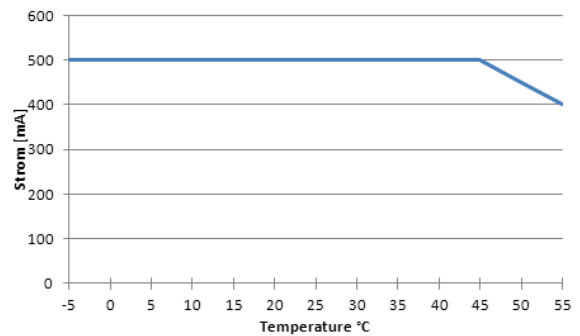
Electrical data Base

Operating voltage range	24 V DC $\pm 10\%$, by EN 61131-2
Current consumption	max 1 A
Leerlaufstrom	max. 100 mA
Overload protection	Yes

Electrical data Remote

Output Voltage	24 V DC $\pm 5\%$
Output current	500 mA
Short circuit proof	yes
Max. Output current	max. 800 mA
Data set ready	< 100 ms

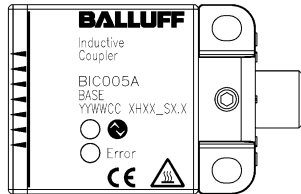
Output current in dependence on the ambient temperature of the Remote



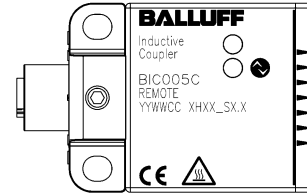
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Indication

Base



Remote



Base

Indicator	Function
Green static	Module supply OK No IO-Link communication
Green inverse blinking	IO-Link communication between Master and Base OK
Red blinking	Remote not detected
Red off	Remote present IO-Link Communication OK
Red static	Connection Base and Remote OK No IO-Link communication to connected Device

Remote

Indicator	Function
Green static	Inside working range, Communication between Remote and IO-Link device OK
Green blinking	No IO-Link device present

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Notizen

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