

## IO-Link System

**BIC 110-I2A50-M30MI3-SM4A4A,**

**BIC 210-I2A50-M30MI3-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.

The 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.

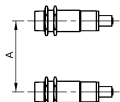
#### Fault conditions

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

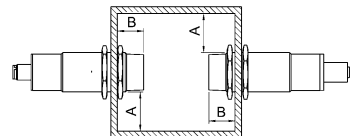
To prevent mutual interference from other Base or Remote units, maintain the following separation distances.

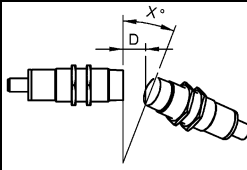
	Type	A (mm)
	BIC 110-I2A50...SM4A4A	100
	BIC 210-I2A50...SM4A5A	100

#### 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



	Distance D in mm	Angle X in °
	1	18°
	2	12°
	3	10°
	4	5°
	5	0°

### 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

**IO-Link System**  
**BIC 110-I2A50-M30MI3-SM4A4A,**  
**BIC 210-I2A50-M30MI3-SM4A5A**

**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



**Note, tip**

Process data update time is max. 50ms

**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			Device ID	3 Byte		0 x 050601		
	0 x 09							BALLUFF	
	0 x 0A			0 x 10	0		Vendor name	8 Byte	www.balluff.com
	0 x 0B			0 x 11	0		Vendor text	16 Byte	BIC 110-I2A50-M30MI3-SM4A4A
		0 x 12	0	Product name	34 Byte		BIC000C		
		0 x 13	0	Product ID	21 Byte		BIC IOL Base		
		0 x 14	0	Product text	34 Byte				
		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**

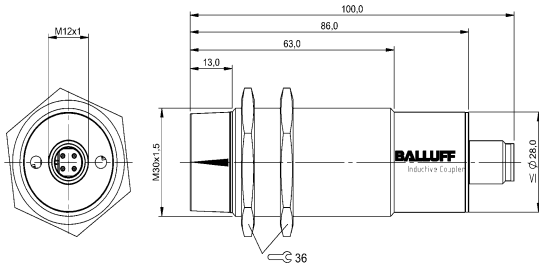
Class / Qualifier			Code (high + low)			
Mode	Type	Instance				
appears	Error	AL	Device Hardware	supply	Supply low voltage	U2 = supply + 24 V
0 x C0	0 x 30	0 x 03	0 x 5000	0 x 0100	0 x 0010	0 x 0002
	0 x F3				0 x 5112	
disappears	Error	AL	Device Hardware	supply	Supply low voltage	U2 = supply + 24 V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

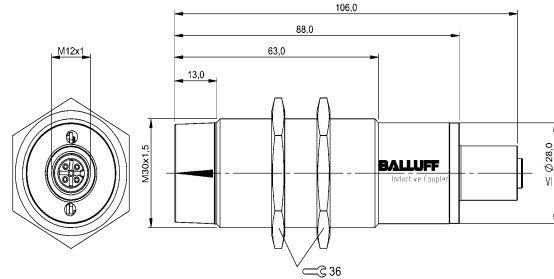
## BIC 110-I2A50-M30MI3-SM4A4A, BIC 210-I2A50-M30MI3-SM4A5A

### 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. Peak current	max. 800 mA
Data set ready	< 100 ms

### 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

 **www.balluff.com**

Balluff GmbH  
Schurwaldstrasse 9  
73765 Neuhausen a.d.F.  
Deutschland  
Tel. +49 7158 173-0  
Fax +49 7158 5010  
balluff@balluff.de  
 [www.balluff.com](http://www.balluff.com)