

BALLUFF

Power Only System
500 mA, IP67
User's Guide



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1 Notes

1.1. Scope of this manual This manual describes the construction, function and installation of the Balluff Power Only inductive coupler. It applies to the following models:

Base BIC 1P0-P2A50-M30MI3-SM4A4A and
Remote BIC 2P0-P2A50-M30MI3-SM4A5A (see type designation code)

The manual is intended for qualified technicians. Read this manual before installing or operating the devices.

1.2. Typographical Conventions The following typographical conventions are used in this guide

Enumerations Enumerations are shown as a list with preceding dash.

- Entry 1,
- Entry 2.

Actions Action instructions are indicated by a preceding triangle. The result of an action is indicated by an arrow.

- ▶ Action instruction 1
⇒ Action result
- ▶ Action instruction 2

Syntax Numbers
Decimal numbers are shown without additional indicators (e.g. 123),
Hexadecimal numbers are shown with the additional indicator hex (e.g. 00hex).

Cross references Cross-references indicate where further information on the topic can be found

1.3. Symbols



Attention!

This symbol indicates a security notice which must be observed.



Note

This symbol indicates general notes.

1.4. Abbreviations

BIC	Balluff Inductive Coupler
EMC	Electromagnetic Compatibility
FE	Function Ground

1.5. Differing views

Product views and images in this manual may differ from the product described. They are intended to serve only as illustrations.

Important!

Before commissioning, carefully read the operating manual.

2.1. Proper Use

The device is designed to replace a plug connection in order to ensure contact-free energy transmission. The system must not be used in applications in which the safety of persons is dependent on the function of the device.

Warranty and liability claims against the manufacturer are rendered void by:

- Unauthorized tampering
- Improper use
- Use, installation or handling contrary to the instructions provided in this operating manual

2.2. Authorized Personnel

Installation and commissioning may only be performed by trained specialist personnel.

2.3. Obligations of the Operating Company

The operating company must ensure that the locally applicable safety regulations are observed. The device corresponds to EMC Class A and can cause radio interference. The operating company must take appropriate precautions to prevent radio interference. The device may only be used with an approved power supply. (see "Technical Data"). Only approved cables may be used.

2.4. Malfunctions

In the event of defects and device malfunctions that cannot be rectified, the device must be taken out of operation and protected against unauthorized use.

2.5. Meaning of the Warning Notices

The warning notices in this guide and the measures described for avoiding dangers must be observed. The warning notices contain the following signal words that indicate the severity of the danger:

- **Danger:**
Indicates an immediate danger that will result in a severe injury or death of persons if not observed.
- **Warning:**
Indicates a potential danger that may result in a severe injury or death of persons if not observed.
- **Caution:**
Indicates a potential danger that may result in light injury to persons or damage to property if not avoided.
- **Attention:**
Indicates a situation that may result in property damage if not avoided.

When working with this product, the following warning notices apply:



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

2.6. Certification



With the CE marking, we confirm that our products meet the requirements of EC directives 2004/108/EC (EMC) and the EMC law.

In our EMC laboratory, which is accredited by DATech for testing electromagnetic compatibility, evidence has been provided that the Balluff products satisfy the EMC requirements of the generic standards:

EN 61000-6-4 (Interference emission) and

EN 61000-6-2 (Immunity to interference)

3 Construction and Function

- 3.1. Construction** The system is designed for applications with energy transmitting. It consists of the following two components:
- Base (transmitter)
 - Remote (receiver)
- The components are enclosed in a brass housing protected acc. to IP 67
- 3.2. Function** This set transfers power from the base to the remote via an air bridge. The base and remote must match one another with respect to size.
- The consumer load is wired to the remote. The remote is only inductively coupled to the base, however. The base transmits the energy for the consumer load to the remote. The energy available for the sensors is dependent on the distance and on the offset between base and remote and is, therefore, limited. For this reason, the total current consumption of the connected load must not exceed the maximum power output of the remote.
- 3.3. Features, Advantages**
- The cable length between the remote and consumers is limited depending on the cable resistance.
 - LED indicator on the remote and base for operating voltage
 - Angle offset is possible between base and remote
 - Simple wiring of e.g. rotary tables, replaceable punch heads etc.
 - M12 plug connection on the systems
 - Control of capacitive loads
 - More power in the same structural shape
 - Large operating voltage range
- 3.4. Display** If the supply voltage is applied correctly, the green LEDs on the base and remote illuminate. If the green LEDs on the base only flash, the supply voltage is too low. As soon as the remote moves out of the secured working range, its green LEDs begin to flash.

4 Indication

4.1. Base indicators



Status indicator "Power on"

Indicators	Function
Green – static	Supply voltage OK
Green – flashing	Supply voltage too low

4.2. Remote indicators



Status indicator "Power on"

Indicators	Function
Green – static	Supply voltage OK
Green – flashing	No connection between base and remote,

5 Installation and Connection

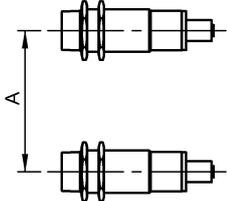
5.1. Mutual Interference

Note!

Improper mounting may affect the function of the system and lead to damage.

- The spacings specified for installation must be adhered to.

To prevent mutual interference with adjacent bases or remotes, the specified minimum distances must be adhered to:



Type	A (mm)
BIC 1P0-P2A50-M30MI3-SM4A4A	100
BIC 2P0-P2A50-M30MI3-SM4A5A	100

5.2. Installation in Metal

Note!

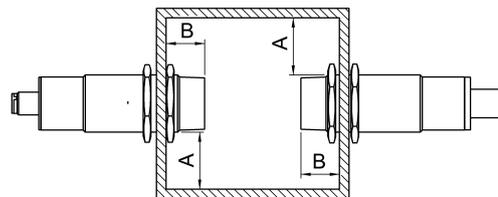
Device damage due to induction effects!

Metallic objects on the coil cap cause the objects to be heated.

- Install the components so that no metallic objects can collect on the coil cap.

When installing in metal, the specified minimum distances to the surrounding sides of the metallic object must be maintained. Otherwise, the transmission distance between transmitter and receiver changes.

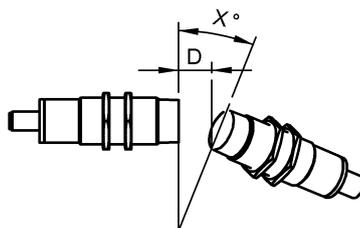
The transmission distance can also be influenced by the type of metal.



Type	A (mm)	B (mm)
BIC 1P0-P2A50-M30MI3-SM4A4A	30	20
BIC 2P0-P2A50-M30MI3-SM4A5A	30	20

5.3. Angle Offset

The permissible angle offset ensures proper function, even in difficult installation conditions:



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

5 Installation and Connection

5.4. Connection



Note!

Device damage due to incorrect voltage supply!
Malfunctions may occur if the ripple is too high or if the output voltage is not regulated.
Use only approved, regulated voltage supplies.



Note!

The remote (receiver) may be damaged by voltage spikes if cables that are too long are used!
To satisfy the EMC requirements, the receiver cable must not be longer than 10 m.
If a longer cable is used nevertheless, take all necessary measures to protect the receiver from voltage spikes.

Electrical connections – base

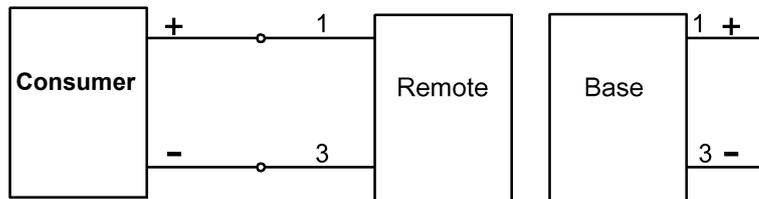
The base is wired via a "type 2" characteristic acc. to IEC 61131-2.

Power (M12, 4 pin-male plug)			
	PIN	Signal	Meaning
	1	+24 V	Input voltage
	2	NC	Not used
	3	GND	Ground
	4	NC	Not used

Electrical connections - remote

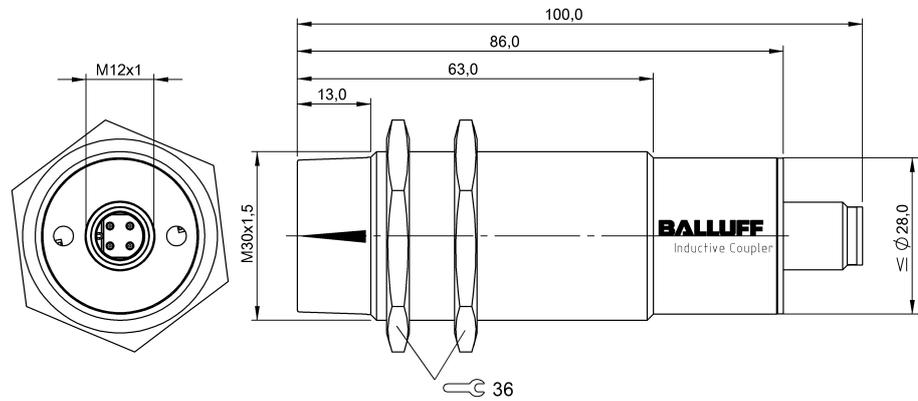
Power (M12, 5 pin-female plug)			
	PIN	Signal	Meaning
	1	+24 V	Output voltage
	2	NC	Not used
	3	GND	Ground
	4	NC	Not used
	5	NC	Not used

Connection diagram



6 Technical Data Base

6.1. Dimensions – Base



6.2. Mechanical Data – Base

Housing material	Brass
Degree of protection per IEC 60529	IP 67 (only in plugged-in and screwed-down state)
Connection type	M12, A-coded
Dimensions (D x L in mm)	M30 X 100
Weight	Approx. 160 g
Tightening torque	70 Nm

6.3. Operating Conditions – Base

Transmission distance	1...5 mm
Operating temperature T_a	-5 °C...55 °C
Storage temperature	-25 °C...75 °C

6.4. Electrical Data – Base

Operating voltage	24 V DC $\pm 10\%$, acc. to EN 61131-2
Operating current at 24 V	Max. 1 A
Standby current	Max. 100 mA
Overload protected	Yes

8 Accessories

8.1. Connectors

	BCC-M415-0000-1A-064-PX0234-XXX For Base	XXX -> cable length
	BCC-M425-0000-1A-064-PX0234-XXX For Base	XXX -> cable length
	BCC-M413-0000-2A-064-PX0234-XXX For Remote	XXX -> cable length
	BCC-M423-0000-2A-064-PX0234-XXX For Remote	XXX -> cable length

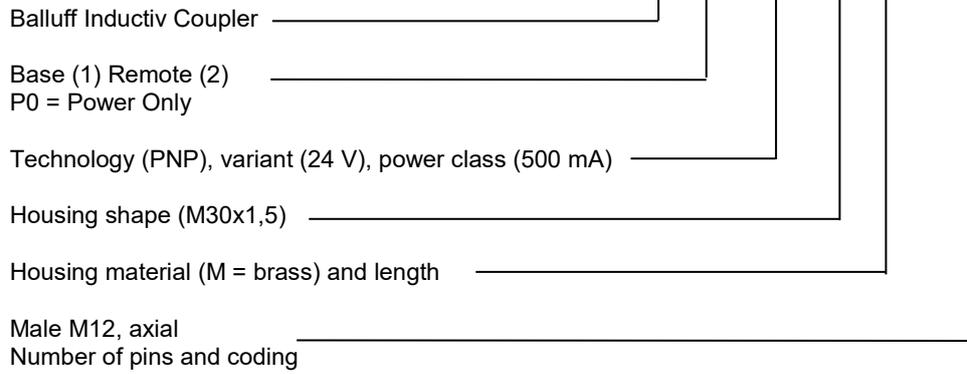
8.2. Mounting Accessories

BES 30,0-BS-1 	BES 30-HW-1 
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9 Type Designation Code

9.1. Type Designation Code

BIC 1P0-P2A50-M30MI3-SM4A4A



9.2. Order Code

Description	Order code
BIC 1P0-P2A50-M30MI3-SM4A4A	BIC0007
BIC 2P0-P2A50-M30MI3-SM4A5A	BIC0008

Notes

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