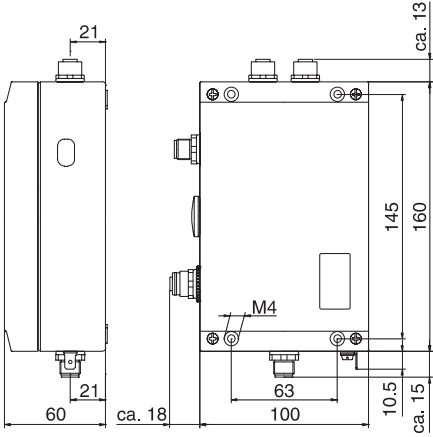


## BIS L-6027 Ethernet with TCP/IP-Protocol

Quick Guide



**[www.balluff.com](http://www.balluff.com)**

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## 1 User Notes

### 1.1 About this Manual

This manual describes the processor for the BIS L-6027 identification system and guides you through startup for immediate operation.



#### Note

A detailed user's guide for the processor can be found on the accompanying BIS-CD or in the Internet under [www.balluff.com](http://www.balluff.com).

### 1.2 Manual layout

The manual is designed so that each section builds on the previous sections.

Section 2: Basic information regarding safety.

Section 3: The main steps in installing the identification system.

Section 4: Basic informations for using the product.

Section 5: Technical data for the processor.

### 1.3 Conventions

The following conventions are used in this manual.

#### Enumerations

Enumerations are represented as a list with bullet points.

- 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.  
⇒ Result of action.
- ▶ Action instruction 2.

#### Notation

##### Numbers:

- Decimal numbers are represented without additional description (e.g. 123),
- hexadecimal numbers are represented by appending the abbreviation `hex` (e.g. `00hex`).

##### Directory paths:

Paths in which data are or will be saved/stored are represented in small caps (e.g. `PROJECT:\DATA TYPES\USERDEFINED`).

#### Cross-references

Cross-references indicate where additional information on the topic can be found (see "[Technical Data](#)" on page 11).

### 1.4 Symbols



#### Attention!

This symbol indicates a safety advisory which must be observed.



#### Note, tip

This symbol indicates general notes.

### 1.5 Abbreviations

BIS	Balluff Identification System
CRC	Cyclic Redundancy Code
EEPROM	Electrical Erasable and Programmable ROM
EMC	Electromagnetic Compatibility
IP	Internet Protocol
MAC-ID	Media Access Control Identifier
PC	Personal Computer
PLC	Programmable Logic Controller
TCP	Transmission Control Protocol

## 2 Safety

### 2.1 Intended use

The BIS L-6027 processor is a component of the BIS L identification system. Within the identification system it is used for linking to a host computer (PLC, PC). It is intended only for use only in this way and in an industrial environment complying with Class A of the EMC Law.  
This description applies to processors in series BIS L-6027-039-....

### 2.2 General notes on device safety

#### Installation and startup

Installation and startup are to be carried out only by trained specialists. The manufacturer revokes the right to any warranty or liability claims resulting from unauthorized modifications or improper use. When connecting the processor to an external controller, be sure to observe proper polarity for all connections including the power supply (see section "Getting Started" on page 7).

The processor must be operated only using approved power supplies (see section "Technical Data" on page 11).

#### Operation and testing

It is the responsibility of the operator to ensure that the locally applicable safety regulations are maintained.

In case of defects and faults in the identification system which cannot be remedied, take it out of operation and protect against unauthorized use.

### 2.3 Meaning of safety instructions



#### Attention!

The pictogram used with the word "Attention" warns of a possibly hazardous situation for the health of persons or equipment damage.

Disregarding these warnings may result in personal injury or equipment damage.

- ▶ Always observe the instructions given for avoiding this hazard.

**3 Getting Started**

**3.1 Mechanical connection**

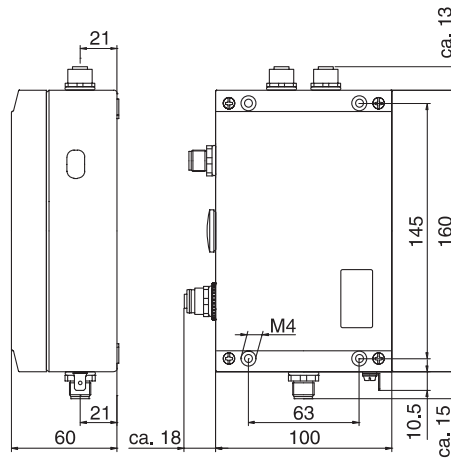


Fig. 1: Mechanical connection

- ▶ Attach processor using (4) M4 screws.

**3.2 Electrical connection**



**Note**

Route the ground wire to ground either directly or through an RC combination, depending on the system.  
When connecting to the Ethernet, be sure that the connector shield is perfectly connected to the connector body.

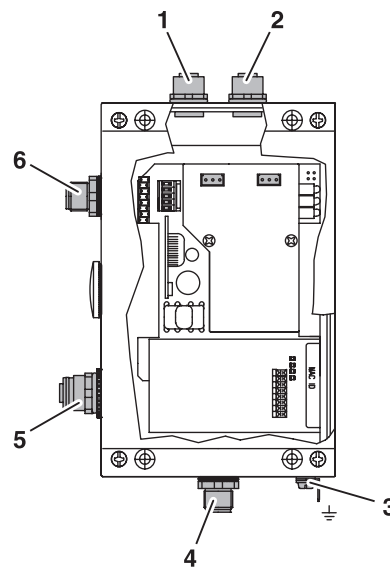
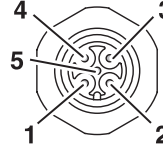


Fig. 2: Electrical connection

- |                                     |                            |
|-------------------------------------|----------------------------|
| <b>1</b> Head 2 - Read/write head 2 | <b>4</b> X4 - Service port |
| <b>2</b> Head 1 - Read/write head 1 | <b>5</b> X3 - Ethernet     |
| <b>3</b> Function ground FE         | <b>6</b> X1 - Power supply |

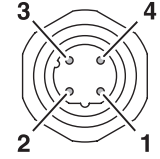
## Getting Started

X1 - Power supply



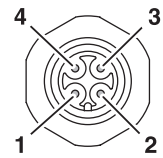
PIN	Function
1	+Vs
2	
3	-Vs
4	
5	

X3 - Ethernet



PIN	Function
1	TD+
2	RD+
3	TD-
4	RD-

X4 - Service port

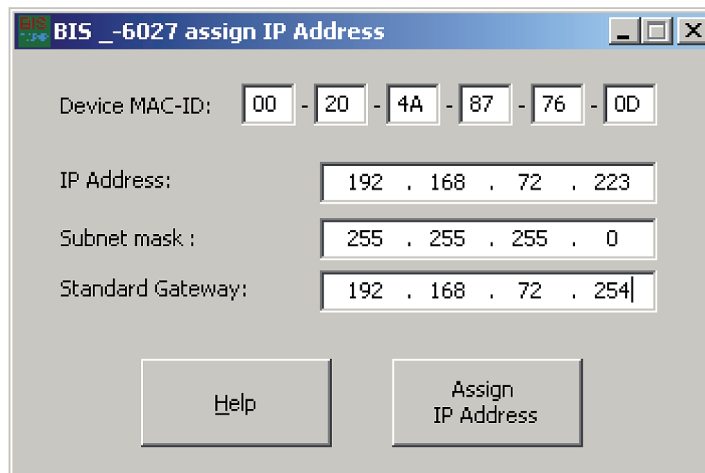


PIN	Function
1	
2	TxD
3	GND
4	RxD

### 3.3 Bus connection

The bus connection is established using the "BIS SetIP" program running on a Windows PC having an Ethernet connection. The "BIS SetIP" application is included on the BIS-CD supplied.

- ▶ Start "BIS SetIP".  
⇒ The "BIS\_-6027 assign IP Address" window is opened.



- ▶ Enter the MAC-ID for the device.



#### Note

The MAC-ID for the device can be found on the sticker on the housing cover.

- ▶ Assign IP address, subnet mask and gateway address.
- ▶ Confirm your setting by clicking on "Assign IP Address".

## 4 Basic Knowledge

### 4.1 Identification system principles of operation

The BIS L identification system belongs to the category of non-contact systems having a read and write function. This enables you to not only read data contained in the data carriers, but also to write new data to them at any point in the process.

The main components of the BIS L identification system are:

- Processor,
- Read/write heads,
- Data carriers.

The main areas of application are:

- In production for controlling material flow (e.g. for variant-specific processes, workpiece transport using conveying systems, for collecting safety-related data),
- In inventory systems for monitoring inventory movements,
- In transport and conveying technology.

### 4.2 Product description

BIS L-6027 processor:

- Metal enclosure,
- Round connectors for making plug connections,
- Capacity for two read/write heads,
- Read/write heads are suitable for both dynamic and static operation,
- Processor provides power for system components,
- Carrier signal from the read/write heads provides power for the data carrier.

### 4.3 Communication module

The communication module is used for implementing data exchange between the processor and the host system.

#### LED indicator

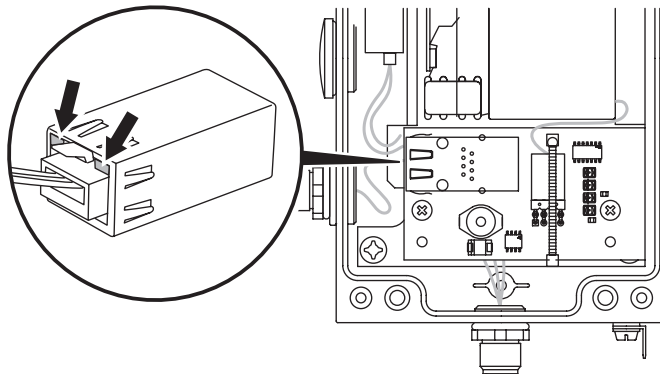


Fig 3: LED indicator on communication module



**4 Basic Knowledge**

The LED on the communication module indicates the status of the Ethernet connection.

LED 1 (10 BASE-T connection)	LED 2 (100 BASE-T connection)	Connection type
Off	Off	No connection
Off	Yellow	100 BASE-T half-duplex
Off	Flashing yellow	100 BASE-T half-duplex; activity
Off	Green	100 BASE-T full-duplex
Off	Flashing green	100 BASE-T full-duplex; activity
Yellow	Off	10 BASE-T half-duplex
Flashing yellow	Off	10 BASE-T half-duplex; activity
Green	Off	10 BASE-T full-duplex
Flashing green	Off	10 BASE-T full-duplex; activity

**Resetting the communication module**

The communication module settings can be reset to their factory default condition.

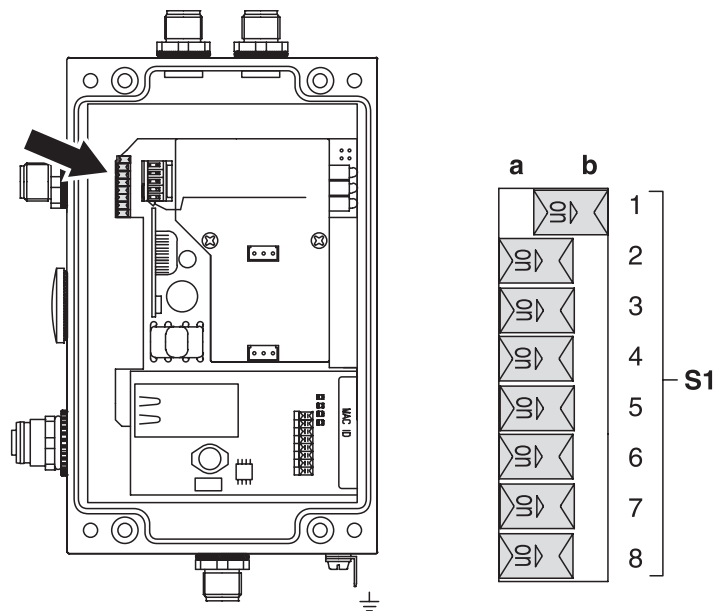


Fig. 4: Switch S1

- a S1.1 OFF: Device functions in normal operating state
- b S1.1 ON: Reset communication settings to factory default

## **4** Basic Knowledge

### **Procedure:**



#### **Attention!**

The Switches S1.2 ... S1.8 have to be set to OFF.

---

- ▶ Turn off power supply
- ▶ Set S1.1 to **ON**.
  - ⇒ Communication module settings are reset.
  - ⇒ After a successful reset, the "Ready", "CT1 Present/Operating" and "CT2 Present/Operating" LEDs flash cyclically.
- ▶ Turn off device.
- ▶ Set S1.1 to **OFF**.
- ▶ Turn on power supply.
  - ⇒ Settings are reset to factory default values.

### **4.4 Bus connection**

The processor and host system communicate using the physical Ethernet network. The device uses Internet Protocol (IP) for network communication. Transmission Control Protocol (TCP) is used to ensure complete, errorless and properly sequenced data transmission.

**5 Technical Data**

**5.1 Dimensions**

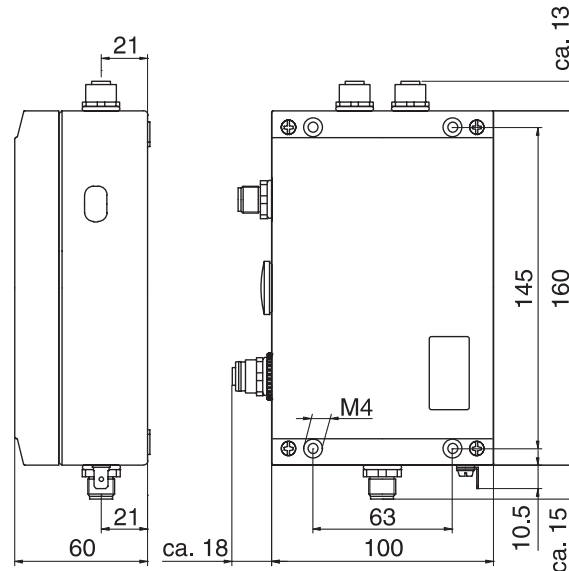


Fig 5: Dimensions in mm

**5.2 Mechanical Data**

Housing material	EN AC-AISi12 (a), DIN EN 1706
X1 – Input	V <sub>s</sub> 24 V DC - 5-pin terminal
X3 – Ethernet	M12 - 4-pin socket, D-coded
X4 – Service port	RS 232 - 4-pin terminal
Head 1, 2 ( Read/Write head connections)	8-pin socket
Enclosure rating	IP65 (with plugs connected)
Weight	950 g

**5.3 Electrical Data**

Operating voltage V <sub>s</sub>	24 V DC ±10%
Ripple	≤ 10 %
Current consumption	≤ 400 mA
Device interface	Ethernet
Service port	RS 232

## 5 Technical Data

### 5.4 Operating conditions

Ambient temperature	0 °C ... 60 °C
EMV	<ul style="list-style-type: none"> <li>- EN 61000-4-2/3/4/5/6</li> <li>- EN 55011</li> </ul>
Shock/Vibration	EN 60068 Part 2-6/27/29/64/32

### 5.5 Function indicators

The operating states of the identification system, the Ethernet connection and the TCP/IP connection are indicated by means of LED's.

#### Overview of indicators

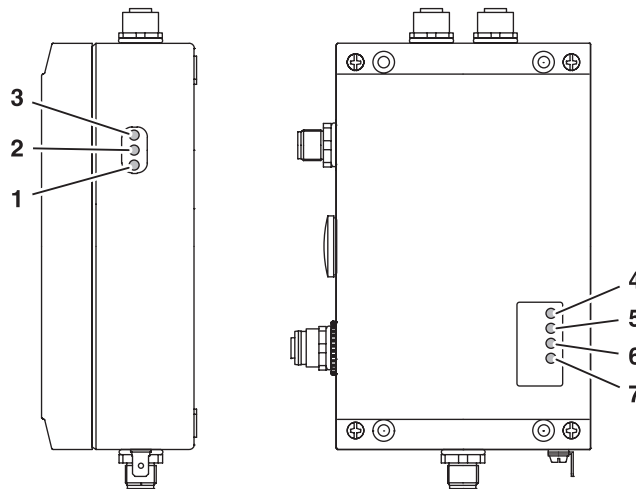


Fig. 6: Function indicators

#### Identification system

- 1 CT2 Present/Operating
- 2 CT1 Present/Operating
- 3 Ready

#### Ethernet

- 4 Receive Data (RxD)
- 5 Transwith Data (TxD)
- 6 Network Status (NS)
- 7 Ready (BB)

#### Power up

During power-up all LED's for the Ethernet connection are tested as described in the following table.

LED name	LED sequence							
Receive Data (RxD)	off							
Transwith Data (TxD)	off							
Network Status (NS)	on	off	1 x flash	off				
Ready (BB)	on	off	4 x flash	off	1 x flash	off	on	

**5 Technical Data**

**Diagnostics**

**Identification system**

Status LED	Meaning
Ready	
green	Operating voltage present; no hardware error

CT1 Present/Operating	
green	Data carrier ready to read/write at Read/Write Head 1
yellow	Read/Write job beeing processed at Read/Write Head 1
yellow flashing	Cable break on Read/Write Head 1 or Read/Write Head 1 not connected
yellow flashing fast	Communication error with Read/Write Head 1
off	No data carrier in the active zone of the Read/Write Head 1

CT2 Present/Operating	
green	Data carrier ready to read/write at Read/Write Head 2
yellow	Read/Write job beeing processed at Read/Write Head 2
yellow flashing	Cable break on Read/Write Head 2 or Read/Write Head 1 not connected
yellow flashing fast	Communication error with Read/Write Head 2
off	No data carrier in the active zone of the Read/Write Head 2

**Ethernet and TCP/IP connection**

Status LED	Meaning
Receive Data	
off	No data transmission
yellow	Device receiving data

Transmit Data	
off	No data transmission
yellow	Device sending data

Network Status	
off	Device has no TCP/IP connection
green flashing	Device has a TCP/IP connection

Ready	
off	Network module defective. Inform service department
green	Network module is ready.

# BIS L-6027 Ethernet with standard TCP/IP-Protocol Processor

## Appendix

### Ordering code

**BIS L - 6027 - 039 - 050 - 06 - ST19**

Balluff Identification system \_\_\_\_\_  
 Series L Read/Write System \_\_\_\_\_  
 Hardware Type \_\_\_\_\_  
 6027 = Metal enclosure, Ethernet  
 Software Type \_\_\_\_\_  
 039 = Ethernet with TCP/IP protocol  
 Version \_\_\_\_\_  
 050 = with two ports for external read/write heads BIS L-3\_ \_  
 Interface \_\_\_\_\_  
 06 = Ethernet  
 Customer connection \_\_\_\_\_  
 ST19= Plug variant  
 X1 = Round connector for supply voltage (5-pin male)  
 X3 = Round connector for Ethernet (4-pole female)  
 X4 = Round connector for RS 232 interface (4-pin male)

### Accessories (optional, not included in scope of delivery)

#### Type

#### Ordering code

Connector no cable:	for Head 1, Head 2	BKS-S117-00
Connection cable	for Head 1, Head 2; 5 m for Head 1, Head 2; 10 m	BIS L-500-PU-05 BIS L-500-PU-10
Connection cable: one end with a straight, molded-in connector (female), one end for user-assembled connector, length as desired.	for Head 1, Head 2; 25 m	BIS L-501-PU1-25
Connection cable: one end with a right-angle format, molded-in connector (female), one end for user-assembled connector, length as desired.	for Head 1, Head 2; 25 m	BIS L-502-PU1-25
Connector	for X1 for X3	BKS-S 79-00 BKS-S 182-00
Cover cap	for X4 for Head 1, Head 2	BES 12-SM-2 Cover cap M12 female (121 671)
Adapter cable M12 D coded to RJ45		BIS C-526-PVC-00,5



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