



# Identsystem CIS3-IBS for Automatic Assembly Lines



**More than safety.**

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## System Overview

### Identsystem CIS3-IBS for connection to the InterBus

The EUCHNER inductive Identsystem permits contactless identification of pallets, workpieces, production transport systems and any parts which flow in a dynamic manufacturing environment.

The **programmable data carriers which need no battery** have a memory capacity of up to 32 kBytes. The main components within the data carrier are the non volatile ferro-electrical memories (**FRAM**).

In comparison to a battery powered data carrier the FRAM data carrier could be programmed every second of its life and still have a higher life time than the battery powered version.

The maximum number of programming write cycles of FRAM cells is **10 thousand million**. This is 100,000 times higher than the limit for EEPROM memories. The inductive transmission of energy and data to and from the read/write head is comparable with the Identsystem CIT3-PL from EUCHNER and also compatible with the automotive standard of the transponder coded anti-theft engine immobiliser.

- **Data carriers with >10 billion programming cycles**
- **Up to 20mm read/write distance**
- **Read/write head - adjustable position of sensing face direction**
- **Long established proven immobiliser technology of the automotive industry**

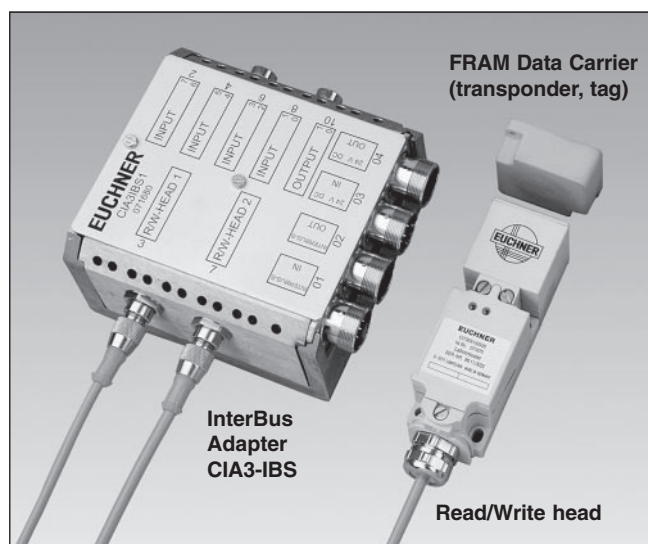
**Connection** of the identsystem to the **InterBus** is carried out via the serial interface adapter CIA3-IBS. Besides the **2 read/write heads** it is also possible to connect up to **8 sensors** or switches as well as **2 actuators** with a maximum load of **2 amps**.

The InterBus adapter is sealed within a robust aluminium housing (environmental protection according to IP67).

The connected sensors, together with the bus logic, are powered by the voltage incorporated in the InterBus cable. The output actuators are supplied with a separate cable and voltage supply.

Because the actuator outputs are supplied via a second cable the outputs can be disabled for **safety reasons** in an **E-stop circuit**. The sensor inputs and bus transmission can continue to be read.

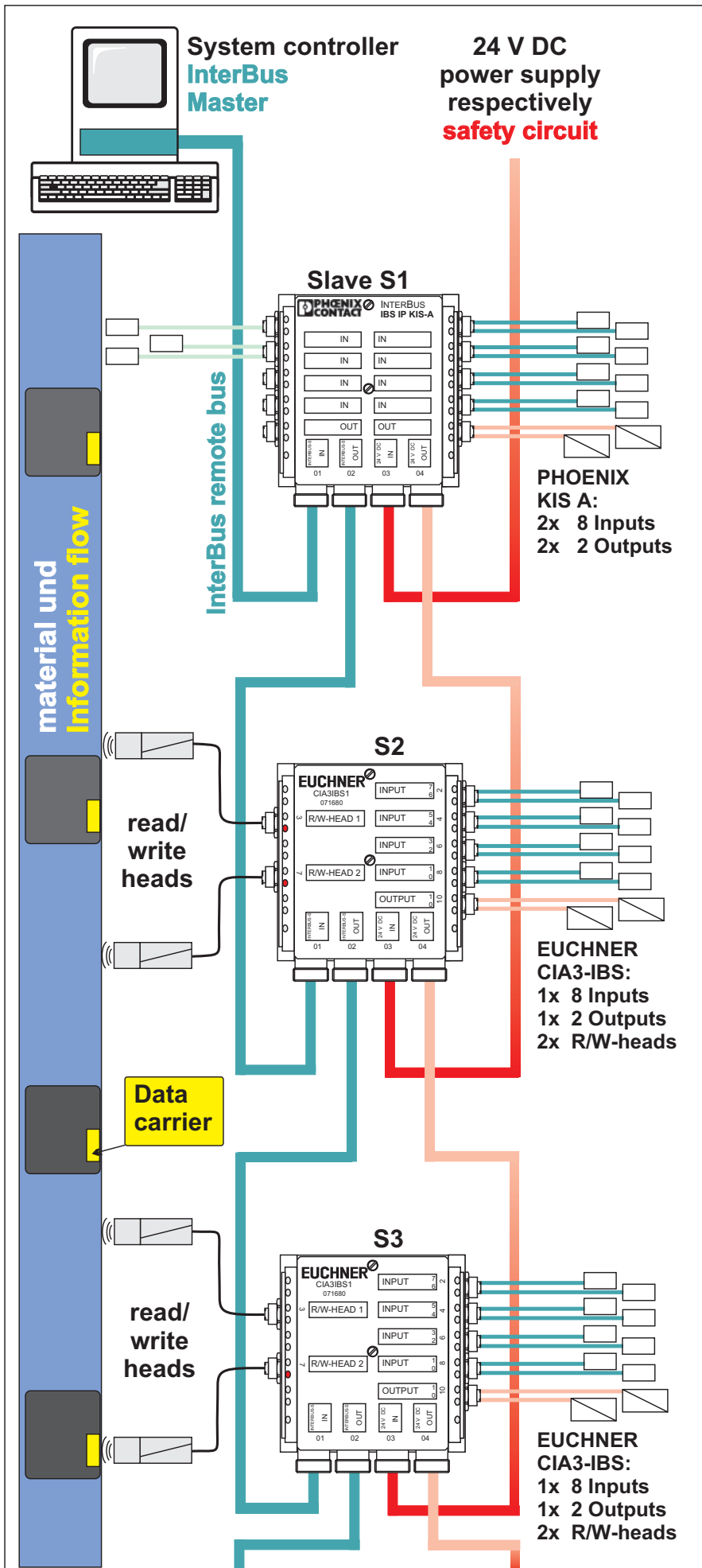
- **InterBus interface adapter for connection to:**
  - ➔ **2 read/write heads**
  - ➔ **8 binary sensors**
  - ➔ **2 binary actors (2 amps)**
- **Environmental protection of the InterBus interface adapter is according to IP67 with separate looped through safety chain**



### Components of the Identsystem CIS3-IBS

The technology for the inductive transmission of energy and data between the FRAM data carriers and the read/write head is based on long established experiences of EUCHNER with identification systems over the last 10 years. Since 1994 virtually all European transponder car keys for the coded anti-theft immobiliser are produced and programmed with systems developed by EUCHNER.

The InterBus adapter CIA3-IBS has been developed in close co-operation with KRAUSE/Bremen, PHOENIX-CONTACT together with a large automotive industry customer. The housing of the InterBus adapter module CIA3-IBS is based on the machine mounted distribution box KIS-A from PHOENIX.



### System overview of the InterBus, machine mounted distribution boxes:

The CIA3-IBS InterBus adapter is used to connect the Identsystem to the InterBus remote bus. This adapter is based on the InterBus machine mounted distribution box KIS-A from PHOENIX-CONTACT. The adapter module CIA3-IBS is 100% compatible with the InterBus protocol.

The CIA3-IBS is, as well as the distribution boxes KIS and KES are especially designed to be conveniently fitted directly on to the machine frame.

The concept of these machine mounted distribution boxes is to provide the supply voltage of the distribution box, the connected sensors and the read/write heads via the bus cable. The operating current within the InterBus cable makes it possible to supply up to 20 machine mounted distribution boxes and all connected sensors and read/write heads.

There is a separate cable which is used to supply the actuators. This cable has three extra lines which can be used for safety E-stop chain.

### Saves space in factories and control cabinets:

The InterBus I/O distribution box will make it possible to reduce space requirements in control cabinets by up to 80%, because they move all the I/O device components out of the control cabinet and into the machine or system.

### Reduce startup costs by up to 90%:

If the individual function units have already been pretested by the manufacturer, all that is necessary during installation of the system is to connect the devices.

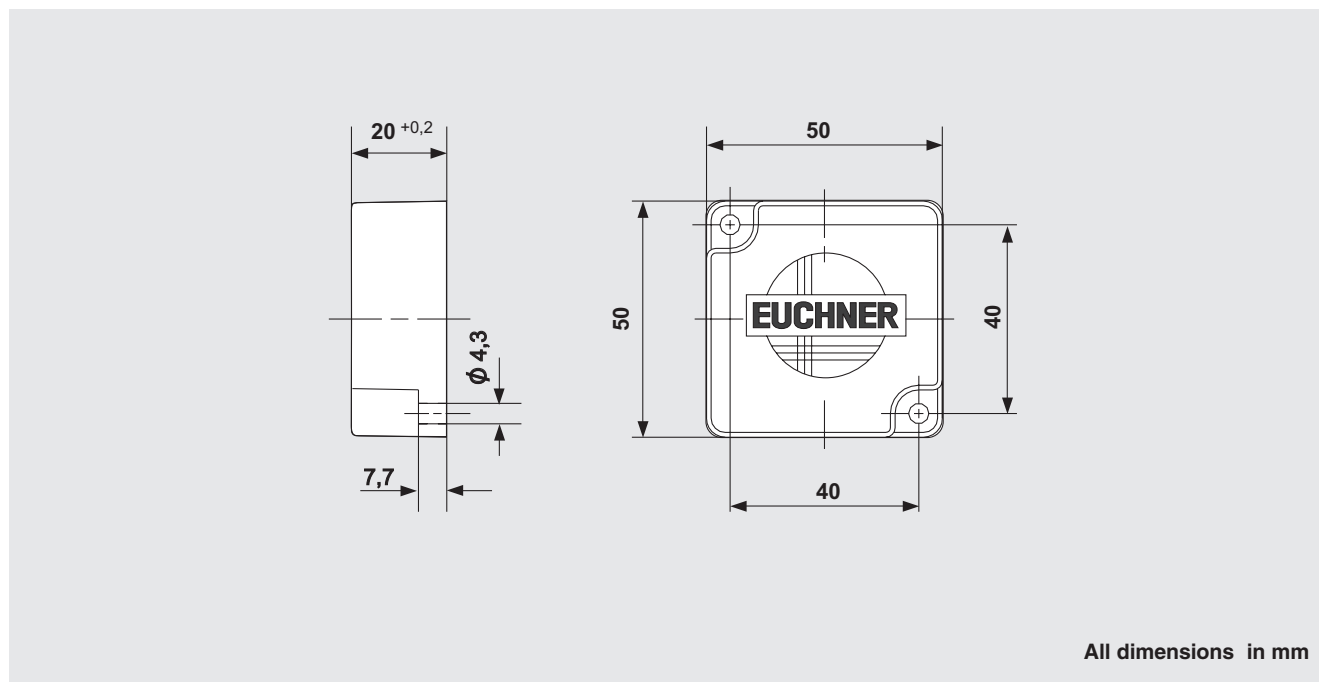
Wiring errors, which are frequently detected only when the system is being erected at the site of the final installation, are a thing of the past.

Startup times can be reduced by 70% to 90% compared to systems with conventional wiring.

## CIS3P50X50SHxxB Data Carrier with FRAM technology

xx = memory capacity in kByte, 16 kByte standard (02, 04, 08, 32 kByte on request)

	<b>Cat. No.</b>
<b>16 kByte</b>	<b>071 980</b>



Instead of the common sealing procedure the data carriers are now produced in the latest transmolding technique. The advantage is the very high resistance against any environmental influences.

The housing material, epoxy resin (filled with quartz powder), is very suitable for applications with aggressive solvents.

The robust circuit design, as well as the high noise immunity of inductive data transmission from and to the read/write heads are features which have proven themselves in many extreme applications over the years.

Due to the use of memory components with ferro electrical memory cells (FRAM) the number of read/write cycles is higher than 10 thousand millions (10<sup>10</sup>).

### Technical Data

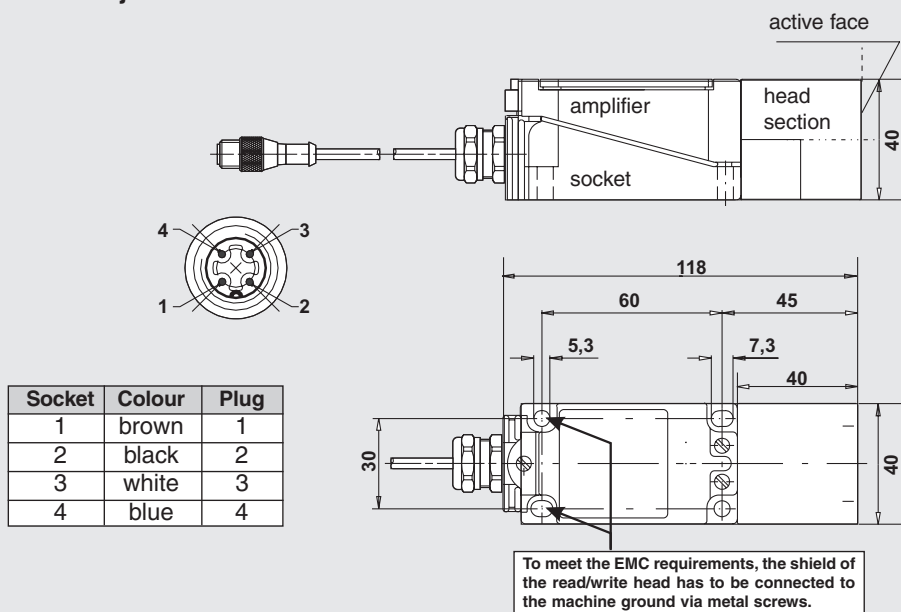
General parameter	Value			Unit
	min.	nom.	max.	
Housing	epoxy, filled with quartz powder			
Environmental protection	IP 68			
EMC requirements according to C€	met			
Storage temperature	-25		85	°C
Operating temperature	0		55	°C
<b>Operating parameter for writing and reading data carrier CIS3P50X50</b>				
Read/write distance s: (see diagram in appendix B)	2	18	20	mm
Center offset m at s (nom)		±4		mm
Carrier frequency		125		kHz
Installation method	screw fixing / non-flush on metal or flush in metal with 10 mm edge spacing			
Installation direction	any			
Data retention at 25 °C <sup>1)</sup>	10			years
Data retention at 40 °C <sup>1)</sup>	2			years
Data retention at 75 °C <sup>1)</sup>	30			days
Data retention at 85 °C <sup>1)</sup>	15			days
Number of read/write cycles	10 <sup>10</sup>			
Error recognition with status information from the CIA-IBS	- Error of data carrier electronics - Parity error			

1) Data retention relates on the latest read or write cycle. I.e. every read or write cycle releases a refresh of the data.

## CIT3SX1I0G05 Read/Write head for connection to the InterBus Adapter CIA3-IBS

<b>Cat. No.</b>
<b>071 670</b>

Type G05 with adjustable active face



Socket	Colour	Plug
1	brown	1
2	black	2
3	white	3
4	blue	4

All dimensions in mm

The robust housing with the environmental protection IP65 agrees to the standard EN 50 041 with regard to its size.

The 3 units

- separately mountable base
- amplifier component with plug-in feature
- sensing element which can be easily rotate and positioned in up to 5 different positions

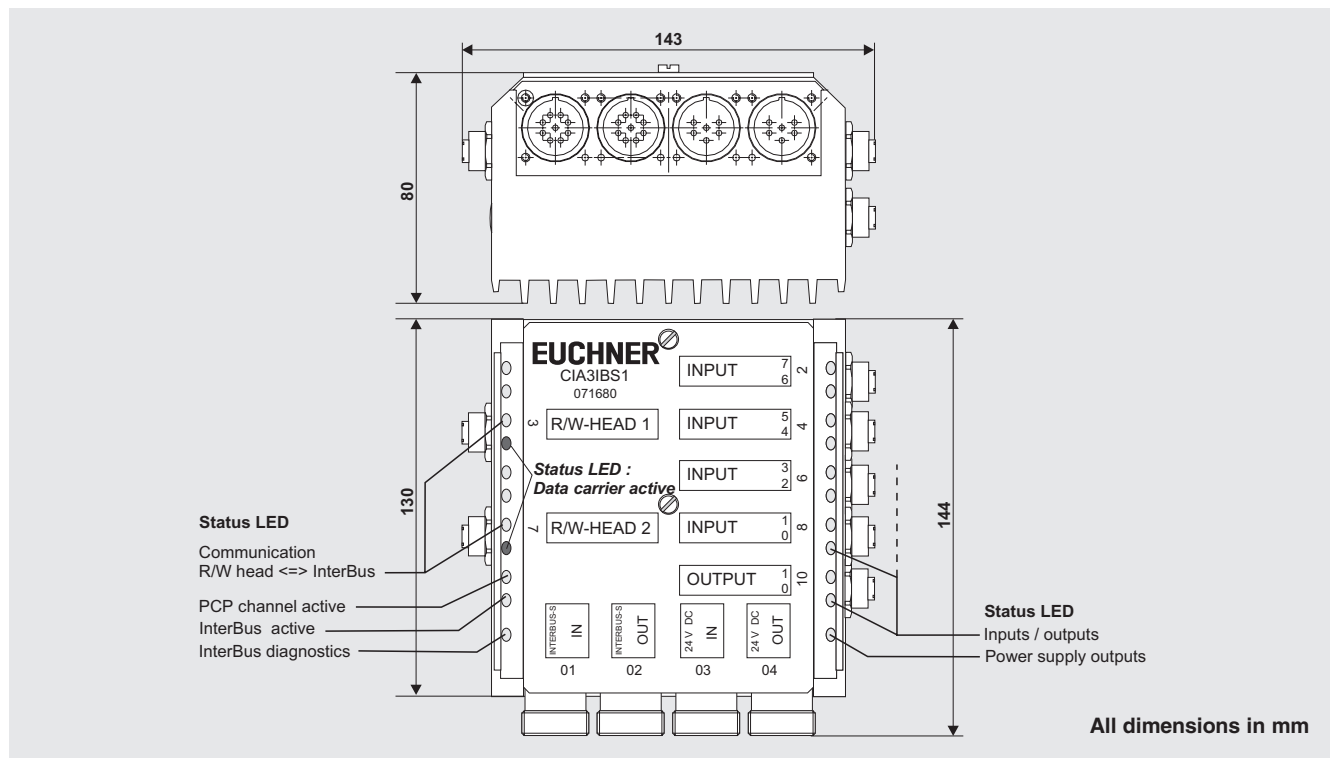
permit a simple assembly and an easy exchangeability.

### Technical Data

General parameter	Value			Unit
	min.	nom.	max.	
Housing	plastic			
Environmental protection	IP 67			
EMC requirements according to C€	met			
Storage temperature	-25		80	°C
Operating temperature	0		55	°C
Operating voltage from the InterBus Adapter CIA3-IBS		15		V
Operating current		110	120	mA
Connection type	2 m PUR cable with connector for CIA3-IBS			
Installation direction	any			
<b>Operating parameter for writing and reading data carrier CIS3P50X50</b>				
Read/write distance s: (see diagram in appendix B)	2	18	20	mm
Center offset m at s (nom)		±4		mm
Carrier frequency		125		kHz
Read time for 1024 byte (see diagram in appendix A)		2.5		s
Write time for 1024 byte		3		s
Read time for 16 kByte		32		s
Write time for 16 kByte		40		s

## InterBus Adapter CIA3-IBS

<b>Cat. No.</b>
<b>071 680</b>



Connection of the identification system to the InterBus is carried out via the InterBus adapter CIA3-IBS. This adapter is sealed within a water resistant, robust aluminium die cast housing and is therefore particularly suitable for fixing directly to the machine frame outside the electrical cabinet.

The InterBus Adapter CIA3-IBS can be mounted in any position. There are 9 mm holes for surface wall mounting or fixing to aluminium profiles commonly used for building mechanical equipment. Convenient slots enables substructural assemble possible.

In addition to the 2 read/write heads it is possible to connect up to 8 binary sensors or switches and 2 binary 24V-actuators with a maximum of 2 amps load to each.

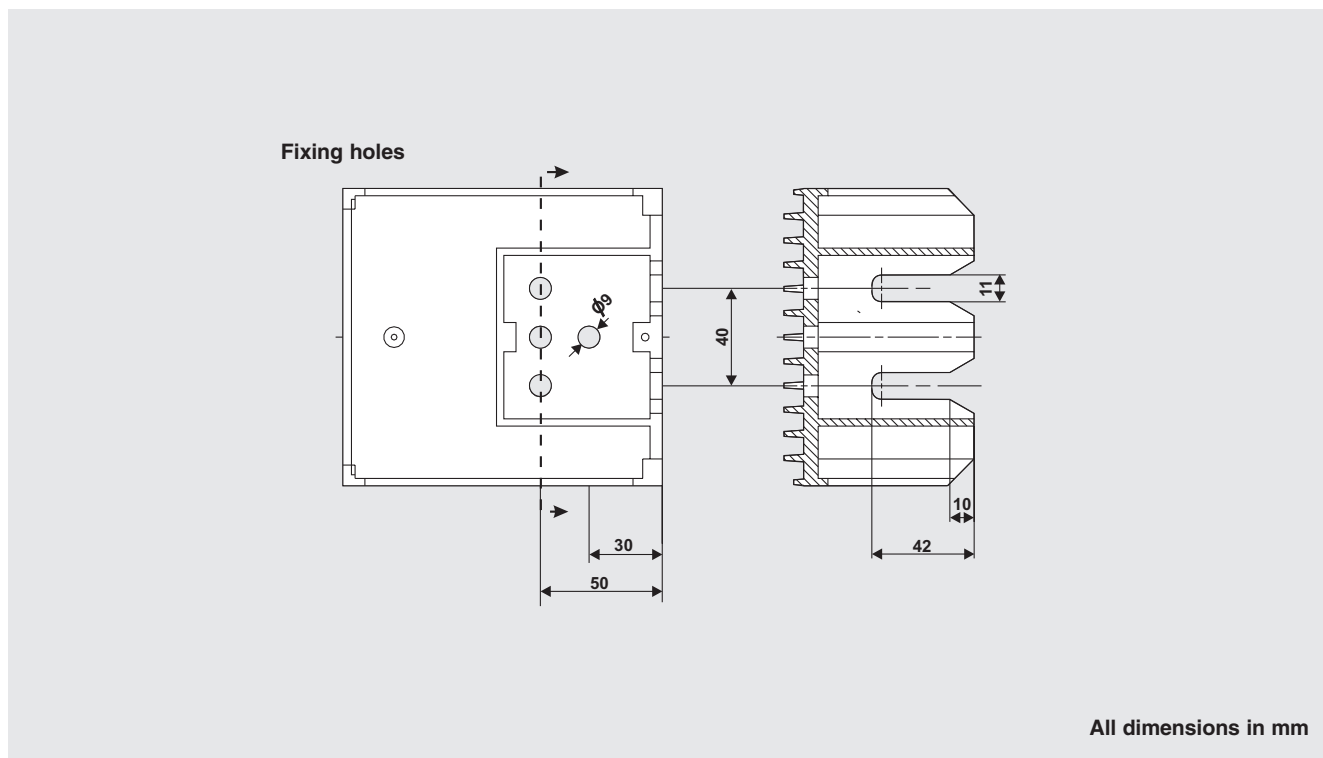
The sensors together with the bus signals, are powered by the voltage incorporated in the InterBus cable. Because the outputs are supplied by a second cable the outputs can be disabled for safety in a way that the sensor inputs and bus transmission can continue unaffected.

### Technical Data

Parameter	Value			Unit
	min.	nom.	max.	
Environmental protection	IP 67			
EMC requirements according to C E	met			
Storage temperature	-25		70	°C
Operating temperature	0		55	°C
Operating voltage via InterBus installation remote bus	18	24	30	V
Residual ripple (50 ... 60 Hz)			3.6	V <sub>PP</sub>
Current consumption without load current (R/W head, I/O) at 24 V		130	140	mA
<b>Communication</b>	InterBus Master, Generation G4			
Sensor/Actor signals, R/W head „data carrier active“ etc.	Processdata-channel (2 byte)			
Read, write, delete and copy data carrier	PCP-channel (8 byte)			
InterBus ID-Code	F1 <sub>HEX</sub>			
Read time for 1024 byte (see diagram in appendix A)		2.5		s
Write time for 1024 byte (see diagram in appendix A)		3		s
PCP telegram length		246		byte
Error recognition with status information	- data carrier error - Read/write error - connection error			

## InterBus Adapter CIA3-IBS

<b>Cat. No.</b>
<b>071 680</b>



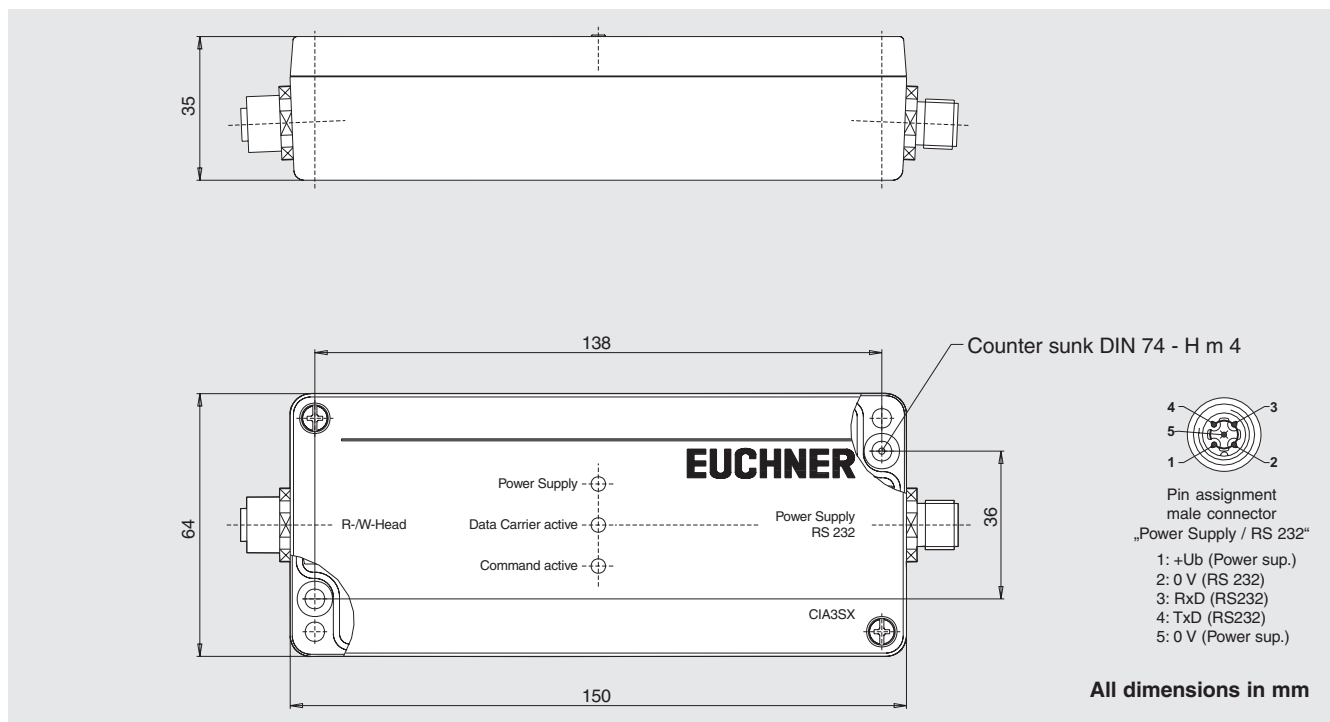
The InterBus Adapter CIA3-IBS can be mounted in any position. There are 9 mm holes for surface wall mounting or fixing to aluminium profiles commonly used for building mechanical equipment. Convenient slots enables substructural assemble possible.

### Technische Daten (continuation)

Parameter	Value			Unit
	min.	nom.	max.	
<b>Inputs</b>				
Number of inputs	8 (on 4 connectors)			
Current consumption of the sensors per input			50	mA
Input connection type	4-wire (proximity switch connector)			
Input current per channel (typ.)		7		mA
Allowable input voltage for LOW (0)	-30	0	5	V
Allowable input voltage for HIGH (1)	12	24	30	V
Signal change delay time		3		ms
<b>Outputs</b>				
Number of outputs	2 (on 1 connector)			
Output connection type	4-wire (proximity switch connector)			
Reverse voltage protection	only by fuse protection up to 6 A			
Permissible output current per output			2	A
Permissible load per output (resistive or inductive load)			60	W
Permissible load per output (lamp load)			10	W
max. sampling frequency (resistive load)			5	kHz
max. sampling frequency (inductive load)			5	Hz
max. sampling frequency (lamp load)			10	Hz
<b>Programmable diagnostics functions</b>	- remote bus disable - remote bus reset			
<b>Local diagnostics functions</b>				
Status indicator output / input	LED yellow			
Power supply of outputs	LED green			

## Serial Interface Adapter CIA3SX

<b>Cat. No.</b>
<b>071 901</b>



This adapter module enables connection of a read/write head of the type CIT3SX1IOG05 (Cat. No. 071 670) to a host control with serial interface (RS232 / V.24). The individual commands for reading and writing the data carrier are in accordance to the conventional 3964R protocol.

The device has a robust aluminum die cast housing with the environmental protection IP65. The device was developed particularly for application outside of control cabinets or distribution enclosures, directly on the machine.

### Technical Data

Parameter	Value			Unit
	min.	nom.	max.	
Housing	Aluminium			
Environmental protection	IP65			
Storage temperature	0		+80	°C
Operating temperature	0		+50	°C
Operating voltage $U_b$ (regulated, residual ripple < 2 %)	20	24	25	V=
Current consumption		160		mA
Connection type	2 x connector M12 (5-pin)			
<b>Operating parameter for writing and reading with</b>				
- Read/write head CIT3SX1IOG05 (Cat. No.: 071670)				
- Data carrier CIS3P50X50SHxxB (i.e. Cat. No.: 071980)				
Read/write distance s (see diagram in appendix B)	2	18	20	mm
Center offset m at s (nom)		± 4		mm
Read time (for 128 byte at 9600 baud)		450		ms
Write time (for 128 byte at 9600 baud)		500		ms
<b>Interface / Data communication</b>				
Interface	RS232 / V.24			
Protocol	3964R Protocol frame with max. 135 byte telegram data per protocol			
Data rate	selectable: 9.6 or 28.8			kBaud
Parity	even			
Cable length (RS232 interface)			5	m

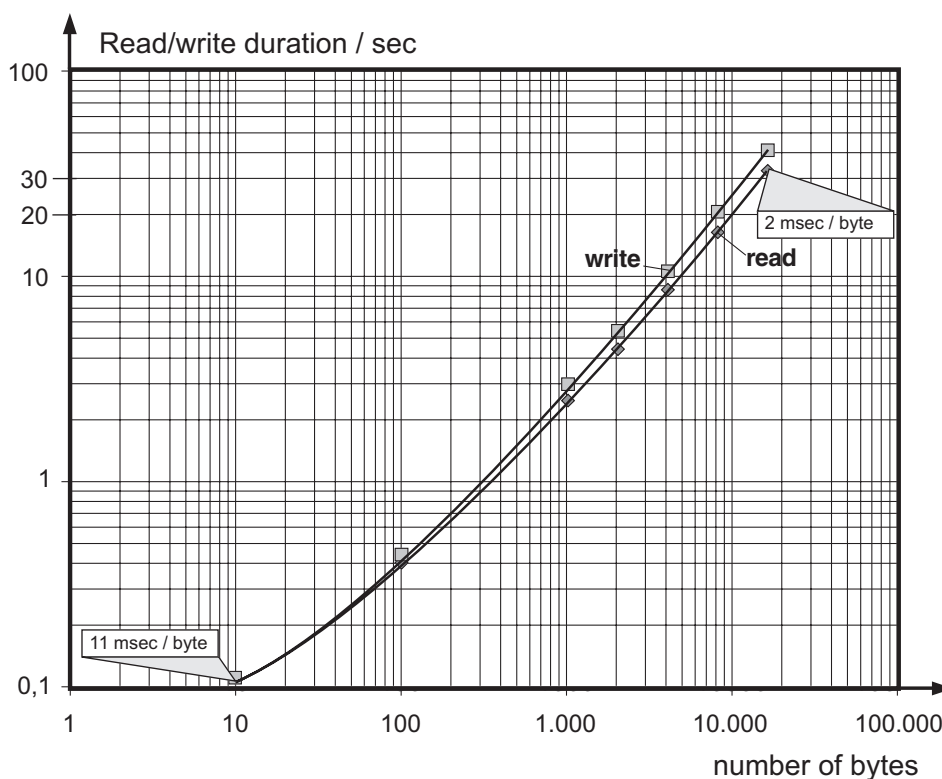
## Appendix A

### Duration of transmission whilst writing and reading of the data carriers

The diagram shows duration of data transmission on the InterBus, including the inductive data transmission between read/write head and data carrier as a function of the amount of data that has to be transmitted.

In case of smaller quantities of data the additional time, needed for the frame of the transmission protocol, can be seen more clearly than in case of large data blocks:

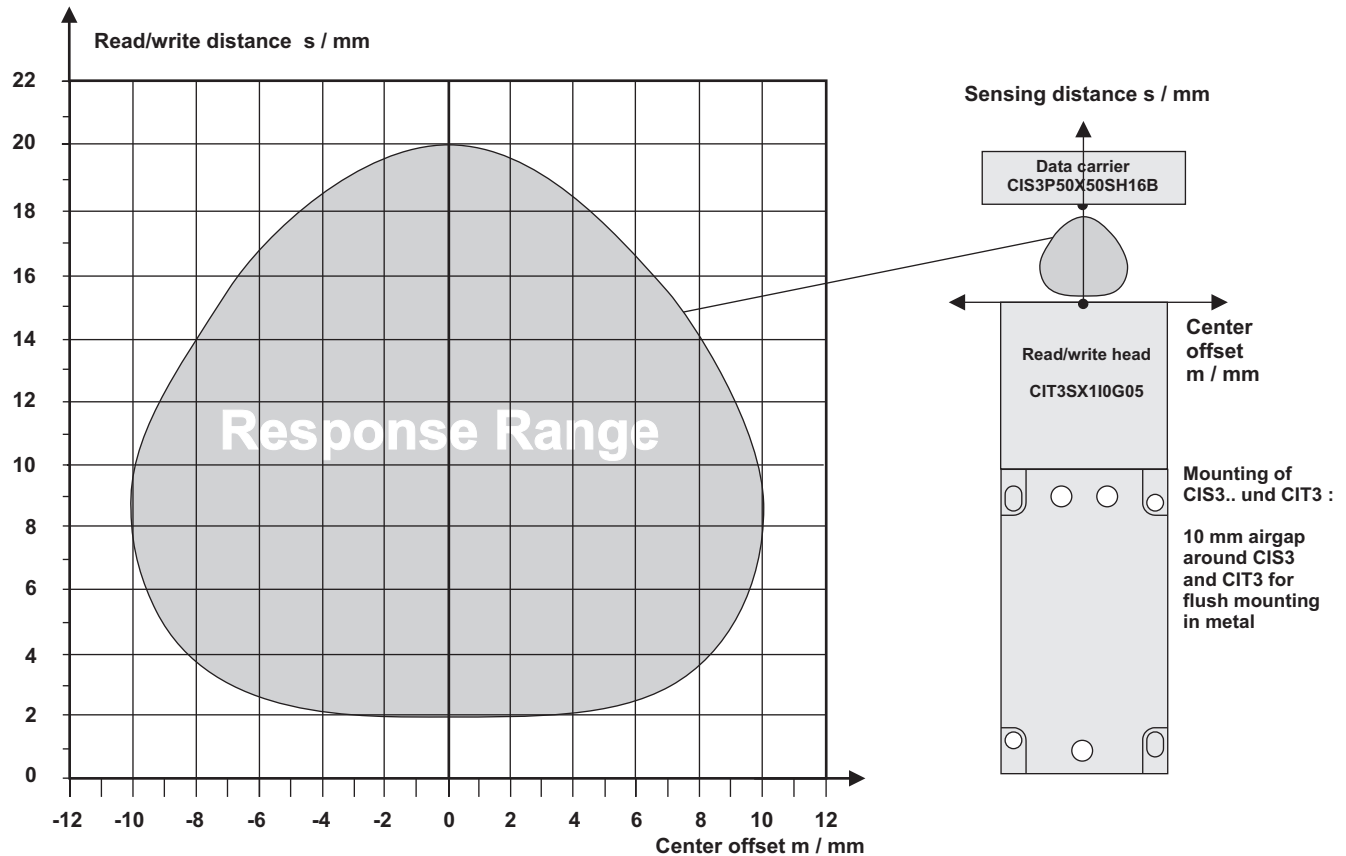
At 10 Byte the average duration of transmission for reading the data carrier is 10 msec per Byte. At data blocks with 8 and more kByte the average duration of transmission practically stays constant with 2 msec per Byte.



## Appendix B

### Response range for reading and writing between data carrier and read/write head

The diagram shows the response range i.e. the allowed sensing distance as well as the allowed center offset between data carrier and read/write head for reading and writing.



# Mobile Hand-Held Terminal CIP3-IBS



## Mobile Hand-Held Terminal CIP3-IBS

The mobile hand-held terminal CIP3-IBS with plug-on read/write head is a convenient complement to the EUCHNER Identsystem CIS3-IBS.

The unit is equipped with a compact, removable read/write head.

In order to improve the ease of use even further, it is possible to connect the read/write head to the hand-held terminal via an optional spiral cable (Cat. No. 071 759).

The solid, splash-proof design (IP 54) ensures perfect operation even under difficult operating conditions in a tough industrial environment.

Customer-specific masks can be created for clear and individual representation of the information stored in a data carrier.

It is also possible to create the complete processing program to suit the customer's requirements (e.g.: file management, creation of a data base, graphical user interface, display of information, etc.).



- Reading, writing and editing of all EUCHNER CIS3-IBS data carriers
- Read/write distance 0 to max. 12 mm (depending on the used data carrier)
- Customer-specific masks
- Operation either with batteries (2 AA cells) or with a rechargeable battery pack
- Operating time with batteries up to 40 hours
- Simple data exchange with a PC via optional docking station

### Technical Data

General parameter	Value			Unit
	min.	nom.	max.	
Housing	Plastic			
Environmental protection	IP 54			
Dimensions approx..	250 x 90 x 35			mm
Weight approx. (including battery pack and read/write head)	400			g
Storage temperature	-25		70	°C
Operating temperature	0		55	°C
Operating voltage (battery pack or 2 AA batteries)	3			V
Operating time with batteries approx.	40			h
Memory capacity (RAM)	Standard: 2 MByte expandable up to 16 MByte			
Processor	16 Bit NEC V30MX / 27.684 MHz (80C86 compatible)			
LCD display	DOT-Matrix display with graphics capability 240 x 100 pixels (up to 12 lines with 39 char.) backlit display			
Interface to a host PC	via integrated RS232 interface or via optional docking station			

## Mobile Hand-Held Terminal CIP3-IBS



The hand-held terminal can also be equipped with a docking station (Cat. No. 071 761), which permits a comfortable data transfer between a PC and the hand-held terminal.

For the hand-held terminal a large selection of accessories are available. The required hand-held terminal can be assembled according to the kit principle.

With the basic complement, a hand-held terminal CIP3-IBS consist of the basic unit (Psion-Workabout), a CIT3-IBS-H2 read/write head and a CIS3-IBS standard software module. This software module can be used to read and write CIS3-IBS data carriers and to edit data on the display.

A customer-specific software adaption is available within a short time at a low extra charge. This is possible, even if only one unit is purchased.

### Parts list and accessories

Part designation	Cat. No.
Basic unit (Psion-Workabout) (Basic unit , batteries included, without read/write head and without software)	071 760
Read/write head CIT3-IBS-H2	071 775
CIS3-IBS standard software	071 776
Manual for CIS3-IBS standard software	071 777
Rechargeable battery pack (can be charged only in the optional docking station)	071762
Spiral connection cable Read/write head ↔ Hand-held terminal	071759
Docking station including connecting cable and PC software (For simple data transfer between the hand-held terminal and a PC and simultaneous charging of the optional rechargeable battery pack)	071761