

Ident System



CIS



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Emil Euchner, the company's founder and inventor of the multiple limit switch, circa 1928.



Around the world – the Swabian specialists in motion sequence control for mechanical and systems engineering.

EUCHNER's history began in 1940 with the establishment of an engineering office by Emil Euchner. Since that time, EUCHNER has been involved in the design and development of switchgear for controlling a wide variety of motion sequences in mechanical and systems engineering. In 1953, Emil Euchner founded EUCHNER + Co., a milestone in the company's history. In 1952, he developed the first multiple limit switch – to this day a symbol of the enterprising spirit of this family-owned company.

Automation – Safety – ManMachine

Today, our products range from electromechanical and electronic components to complex system solutions. With this wide range of products we can provide the necessary technologies to offer the right solution for special requirements – regardless of whether these relate to reliable and precise positioning or to components and systems for safety engineering in the automation sector.

EUCHNER products are sold through a world-wide sales network of competent partners. With our closeness to the customer and the guarantee of reliable solutions throughout the globe, we enjoy the confidence of customers all over the world.

Quality, reliability, precision

Quality, reliability and precision are the hallmarks of our corporate philosophy. They represent concepts and values to which we feel totally committed.

At EUCHNER, quality means that all our employees take personal responsibility for the company as a whole and, in particular, for their own field of work. This individual commitment to perfection results in products which are ideally tailored to the customers' needs and the requirements of the market. After all: our customers and their needs are the focus of all our efforts. Through efficient and effective use of resources, the promotion of personal initiative and courage in finding unusual solutions to the benefit of our customers, we ensure a high level of customer satisfaction. We familiarize ourselves with their needs, requirements and products and we learn from the experiences of our customers' own customers.

EUCHNER – More than safety.



Quality – made by EUCHNER

Ident Systems CIS



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Inductive Ident Systems CIS

Applications

Inductive ident systems are used for the non-contact identification of products such as tools, product carriers or containers in the entire manufacturing and logistics sector. The data carriers for the ident systems CIS are mostly programmed with a unique sequential number. The product is identified at a read station using this number and the related production data are then assigned to the product.

The data carriers are read using a completely wear-free inductive coupling. The read heads and data carriers are of robust design, have a high degree of protection and are designed for harsh industrial usage. The ident system will also work without problems when subject to dirt and moisture.

System overview and function

The ident system CIS essentially comprises the following components:

- ▶ Data carrier
- ▶ Read-only station or read/write station with data interface

The ident systems CIS3, CIS3A and CIS3A-Mini are very similar with regard to the interfaces to the higher level control system. As a result the integration into the control system is similar. There are differences, on the one hand, in the design of the antenna and, on the other hand, in the design of the components. The special features and advantages of the individual systems as well as the related system components are divided into separate sections for the systems CIS3, CIS3A and CIS3A-Mini. The components for the different ident systems CIS3, CIS3A and CIS3A-Mini must not be mixed between the systems, i. e. a CIS3 read head is not suitable for reading a CIS3A data carrier.

The read stations and read/write stations for the CIS3 and CIS3A are fitted compactly in one housing. In the case of the CIS3A-Mini the stations are split in two for space reasons, that is interface adapter and antenna are connected via an antenna cable.

Power is supplied to the transponder and the data are transferred between the read/write station and the data carrier without using any contacts.

The CIS ident system operates on the principle of inductive coupling in the near field, based on a carrier frequency of 125 kHz. This standard frequency at the low end of the frequency band used for RFID applications makes it possible, if necessary, to even install the data carrier flush in metal. However, it will certainly be of advantage if a non-metallic material is used in the immediate area around the data carrier.

A memory chip and an antenna are fitted in the data carrier, in various shapes (transponder). The E²PROM to which data can be written (programmable) retains the data in non-volatile form. For all standard data carriers used for CIS the following applies:

- ▶ Transponder without battery
- ▶ Robust encapsulated data carrier housing with degree of protection IP67

The read-only stations communicate with the higher level control system via a 4-bit parallel interface and the read/write stations via a serial interface.

Integration for read-only operation

The ident system CIS is mostly used in installation as a read-only system with the 4-bit parallel interface. The advantage of the parallel interface is simple integration into the control system and the transparent representation of the data. Quick and therefore low-cost integration into any type of PLC is possible.

The 4 data wires, which are connected directly to the PLC via inputs and outputs (I/O), represent at a point in time a related hex digit using high/low levels (24 V/0 V). After the read station is switched on, the level on all 4 wires is initially high. If a data carrier now enters the operating distance of the read station, first the data are automatically transferred from the data carrier to the memory in the read station and stored there temporarily. In the second step, the data are actively retrieved from the memory in the read station by the control system. For the second step it is no longer necessary for the data carrier to be in the read head's operating distance.

The read station saves the data from a data carrier read until the next data carrier is fed to the read station or the read station is switched off and on again. In the case of the CIS3A-Mini it is also possible to delete the temporary memory in the read station via a reset pulse. If there is a data carrier in front of the read head, the data are transferred again automatically.

In the first step, it is signaled to the control system via the high level on the STROBE output on the read station that there is a data carrier in the operating distance and new data are available in the memory on the read station. The STROBE output is set to the high level when the first 4 hex digits on the CIS3/CIS3A and the first 8 hex digits on the CIS3A Mini are available in the memory on the read station. If in the case of the CIS3/CIS3A more than 4 hex digits are required in the application, it is necessary to wait long enough until all the digits have been transferred to the memory in the read station (see pulse diagram in the manual for the read station). If, for some reason (e. g. excessively high relative speed), it was not possible to read all the digits, on the output of the data F_{hex} is output as an error message from the point at which the data were no longer read from the data carrier.

In the second step, the data can be retrieved from the temporary memory in the read station by the control system. A value between 0 and 15 is represented at a point in time via a combination of high/low levels on the data outputs on the read station using binary coding (high level on A=1, B=2, C=4, D=8). The first digit from the data carrier is indicated immediately on the 4-bit data wire. Using pulses from the control system on the SKIP input on the read station, a maximum of 32 hex digits (16 bytes) can be read with the CIS3/CIS3A and 8 hex digits (4 bytes) with the CIS3A Mini. Reference is to be made to the pulse diagram in the manual for the read station for information on the timing of the pulses.

If the SKIP input on the read station is maintained static at a high level, no data are transferred from the data carrier into the memory in the read station. By maintaining the SKIP signal at the high level prior to the entry of the data carrier in the operating distance, on the change in the SKIP signal to the low level the data can be read statically at this defined point in time. As long as the SKIP input is maintained at the high level, the STROBE output remains at the low level, even if there is a data carrier in the operating distance of the read head. The signaling that there is a read head in front of the read head must therefore be provided separately if you want to use this reading method. On the application of this method of control, a CIS3 data carrier can, for instance, approach the read head in the opposite direction to the arrow.

In typical applications 2, 3 or 4 digits of these 8 (CIS3AMini) or 32 (CIS3/CIS3A) possible digits are combined to form a number and used in the application. Hereby, e. g. 150 product carriers (3 digits) with 001, 002, 003 to 150 are sequentially numbered in decimal notation. The definition of the sequence of numbers with leading zeros produces a logical series. The data carrier then has a data record address that is used to store the actual production information in the control system. In this example with 3 available digits, 999 different product carriers could be addressed in decimal notation. In the case of a 3-digit number, the data are provided on the 4-bit data wire in the following sequence: the first digit is displayed automatically, the second digit is displayed after the first SKIP pulse from the control system and the third digit is displayed after the second SKIP pulse.

There exist the following possible ways of programming the data carriers with digits:

- ▶ Order programmed data carriers
- ▶ Program in-house using read/write station with serial interface
- ▶ Program in-house using mobile hand-held terminal

The data carrier can be written (programmed) for read-only operation on customer request and also visibly labelled using a laser. In this case a data carrier programming and labelling information form is to be completed with the order. This form is available for download from www.euchner.de.

You will have significantly more flexibility if you have your own facility for data carrier programming. The read/write station for the related ident system with a serial interface can be used on a PC for easy writing to

the data carriers (programming). For this purpose the programming software Transponder Coding (TC) is installed on the PC. TC is an ASCII/hex editor with which it is easy to write to and read from the data carrier on the PC.

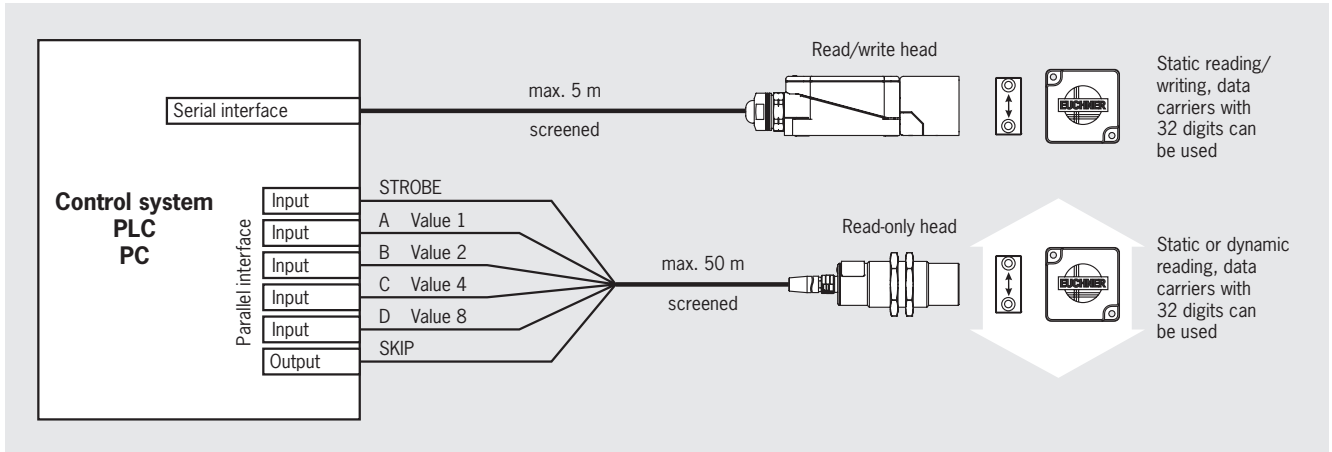
It is also possible to write to and read from data carriers with the aid of the portable mobile hand-held terminal MHT-G2. For this purpose a read/write head to suit the related ident system is fitted. The data carriers can be read and written (programmed) using the software Transponder Coding CE (TCCE). TCCE is an ASCII/hex editor with which it is easy to write to and read from the data carrier on the MHT.

Integration for read/write operation

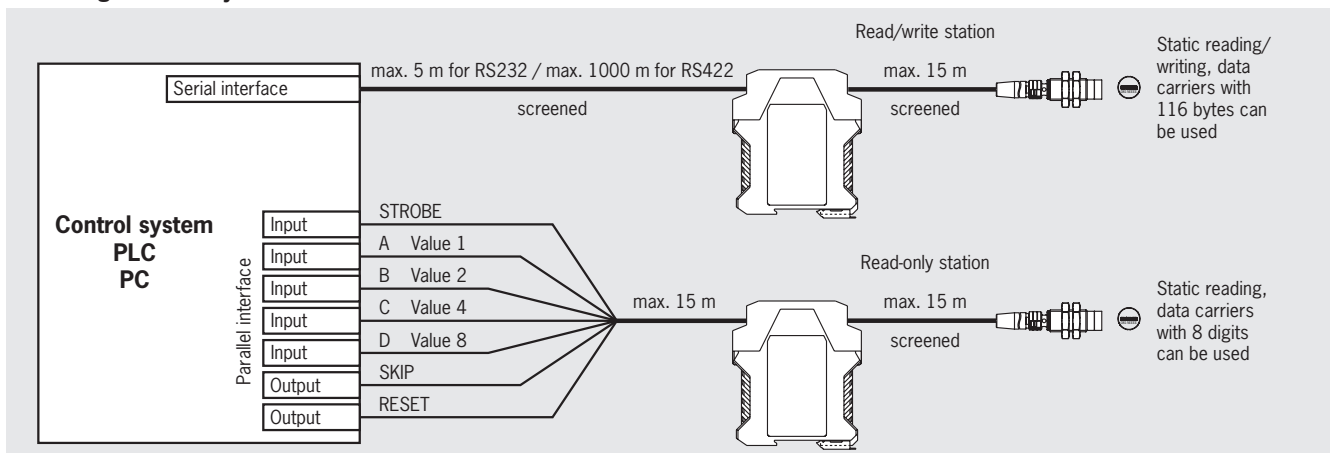
In the case of read/write stations with serial interface, the data communication is according to the 3964R transfer protocol. The individual commands, e. g. for reading the data or writing the data, are described in the device-specific manuals. For unusual CIS applications in which data carriers must also be re-programmed during production, the application is programmed in the control system with the aid of these commands based on the 3964R transfer protocol.

Interfacing of a read/write station with serial interface to the user's PC-based application is supported by the optionally available ActiveX® modules (can be used if Microsoft Windows®-based user programs support ActiveX®). CIS can thus be used in conjunction with PC-based control software or visualization software. The ActiveX® module is used here as a protocol driver for the 3964R transfer protocol. You can obtain further information on the usage of an ActiveX® module on request.

Block diagram ident system CIS3/CIS3A



Block diagram ident system CIS3A-Mini



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Subject to technical modifications; no responsibility is accepted for the accuracy of this information.





Features and possible combinations for CIS components





| | | |
|----------------|---|-----------------------------|
| Key to symbols | ● | Combination possible |
| | | Combination not permissible |





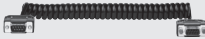

| Ident system | Features | Applications | Interface adapter, read/write head | Data carriers | | | |
|--------------|--|---|--|--|---|--|---|
| | | | | CIS3P35X16SH16Y... <small>All items</small> | CIS3P16D08KH16YSNO... <small>All items</small> | CIS3AP50X50SH16YSNO... <small>All items</small> | CIS3AP10D05KH01K... <small>All items</small> |
| CIS3 | Read distance max. 18 mm Dynamic reading up to 410 mm/s | Coding of recirculating product carriers or larger tools with standard read distances | Read-only head CIT3PL1N30-STA 071 552 | ● | ● | | |
| | | | Read-only head CIT3PL1N30-STR 071 950 | ● | ● | | |
| | | | Read/write head CIT3SX1R1G05KX 096 560 | ● | ● | | |
| CIS3A | Read distance max. 28 mm Dynamic reading up to 230 mm/s | Coding of slowly recirculating product carriers or very large tools at increased read distances | Read-only head CIT3APL1N30-STA 071 900 | | | ● | |
| | | | Read-only head CIT3APL1G05ST 077 805 | | | ● | |
| | | | Read/write head CIT3ASX1R1G05KX 077 890 | | | ● | ● ¹⁾ |
| CIS3A-Mini | Miniature dimensions Read distance max. 6.5 mm | Coding of tools or small product carriers | Interface adapter CIA3... All items with read/write head CIT3ASX1N12ST 077 940 | | | | ● |

1) To set up a programming station for CIS3A-Mini data carriers, a CIS3A read/write head can be used.

| Ident system CIS3 | | | |
|-------------------|---|---|--|
| | Interface adapters | Read/write heads | Data carriers |
| Read only | Parallel interface integrated in the read head |  <p>CIT3PL1N30-ST...</p> <ul style="list-style-type: none"> ▶ Read-only head ▶ Cylindrical design M30 ▶ M12 plug connector ▶ Axial or radial connection (see page 12) |  <p>CIS3P35X16SH16YHNO...</p> <ul style="list-style-type: none"> ▶ Cube-shaped ▶ Approach direction horizontal (see page 16) |
| | | |  <p>CIS3P35X16SH16YVNO...</p> <ul style="list-style-type: none"> ▶ Cube-shaped ▶ Approach direction vertical (see page 16) |
| Read / write | Serial interface integrated in the read/write head |  <p>CIT3SX1R1G05KX</p> <ul style="list-style-type: none"> ▶ Read/write head ▶ Housing according to EN 50041 ▶ Connection terminals (see page 14) |  <p>CIS3P16D08KH16YSNO...</p> <ul style="list-style-type: none"> ▶ Cylindrical Ø 16 mm (see page 17) |

| Ident system CIS3A | | | |
|--------------------|---|---|---|
| | Interface adapters | Read/write heads | Data carriers |
| Read only | Parallel interface integrated in the read head |  <p>CIT3APL1N30-STA</p> <ul style="list-style-type: none"> ▶ Read-only head ▶ Cylindrical design M30 ▶ M12 plug connector ▶ Axial connection (see page 22) |  <p>CIS3AP50X50SH16YSNO...</p> <ul style="list-style-type: none"> ▶ Square (see page 28) |
| | |  <p>CIT3APL1G05ST</p> <ul style="list-style-type: none"> ▶ Read-only head ▶ Housing according to EN 50041 ▶ M12 plug connector ▶ Axial connection (see page 24) | |
| Read / write | Serial interface integrated in the read/write head |  <p>CIT3ASX1R1G05KX</p> <ul style="list-style-type: none"> ▶ Read/write head ▶ Housing according to EN 50041 ▶ Connection terminals (see page 26) | |

| Ident system CIS3A-Mini | | | |
|-------------------------|--|--|---|
| | Interface adapters | Read/write heads | Data carriers |
| Read only |  <p>CIA3PL1G08</p> <ul style="list-style-type: none"> ▶ Plug-in screw terminals (see page 34) |  <p>CIT3ASX1N12ST</p> <ul style="list-style-type: none"> ▶ Read/write head ▶ Cylindrical design M12 ▶ M8 plug connector ▶ Axial connection (see page 38) |  <p>CIS3AP10D05KH01K...</p> <ul style="list-style-type: none"> ▶ Cylindrical Ø 10 mm (see page 39) |
| Read / write |  <p>CIA3SX1R1G08</p> <ul style="list-style-type: none"> ▶ Plug-in screw terminals (see page 36) | | |

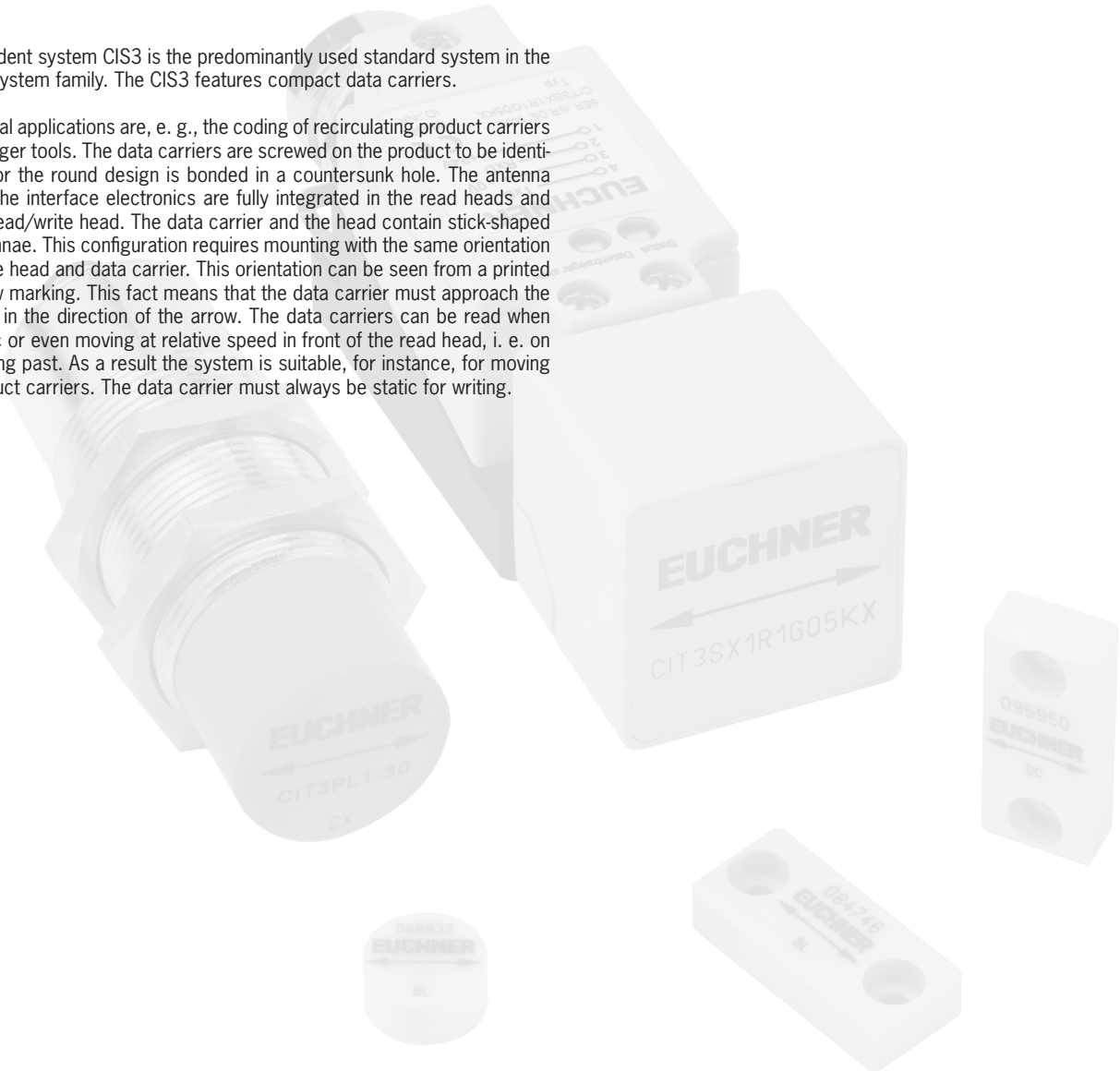
| Mobile hand-held terminal MHT-G2 | |
|---|---|
| Basic unit | Accessories |
|  <p>MHT-G2-BU</p> <ul style="list-style-type: none"> ▶ For reading and programming the data carriers ▶ With touch-pen and cover for rechargeable battery compartment (see page 44) |  <p>Rechargeable battery MHT-G2-BA (see page 45)</p> |
| |  <p>SD memory card MHT-G2-SD-TCCE</p> <ul style="list-style-type: none"> ▶ With software <i>Transponder Coding CE (TCCE)</i> (see page 45) |
| |  <p>Docking station MHT-G2-DS</p> <ul style="list-style-type: none"> ▶ With power supply unit and USB connecting cable (see page 45) |
| |  <p>Extension cable</p> <ul style="list-style-type: none"> ▶ For read/write head (see page 45) |
| | <p>Read/write head CIT3-H2</p> <ul style="list-style-type: none"> ▶ For ident system CIS3 (see page 45) |
| |  <p>Read/write head CIT3A-H2</p> <ul style="list-style-type: none"> ▶ For ident system CIS3A (see page 45) |
| | <p>Read/write head CIT3A-MINI-H2</p> <ul style="list-style-type: none"> ▶ For ident system CIS3A-Mini (see page 45) |

Ident System CIS3

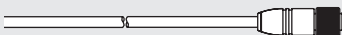
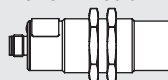

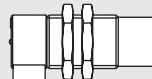



- ▶ Low-cost read/write system with predominantly used, separate read-only heads
- ▶ Extremely compact head design, no separate interface adapter required
- ▶ Read distance maximum 18 mm
- ▶ Dynamic reading with a relative speed up to 410 mm/s
- ▶ Data carrier memory capacity 16 bytes E²PROM read/write
- ▶ Easy connection of the read-only heads to I/O on any control system via 4-bit parallel interface (24 V)
- ▶ Read/write heads with serial interface RS232

The ident system CIS3 is the predominantly used standard system in the CIS system family. The CIS3 features compact data carriers.

Typical applications are, e. g., the coding of recirculating product carriers or larger tools. The data carriers are screwed on the product to be identified or the round design is bonded in a countersunk hole. The antenna and the interface electronics are fully integrated in the read heads and the read/write head. The data carrier and the head contain stick-shaped antennae. This configuration requires mounting with the same orientation of the head and data carrier. This orientation can be seen from a printed arrow marking. This fact means that the data carrier must approach the head in the direction of the arrow. The data carriers can be read when static or even moving at relative speed in front of the read head, i. e. on moving past. As a result the system is suitable, for instance, for moving product carriers. The data carrier must always be static for writing.



Selection table for ident system CIS3

| | Connection cable | Read/write heads | Data carriers |
|--------------|--|--|--|
| Read only |  <p>Page 18</p> | <p>Read-only head CIT3PL1N30-STA</p>  <p>Page 12</p> | <p>Horizontal CIS3P35X16SH16YHNO...</p>  <p>Page 16</p> |
| | | <p>Read-only head CIT3PL1N30-STR</p>  <p>Page 12</p> | <p>Vertical CIS3P35X16SH16YVNO...</p>  <p>Page 16</p> |
| Read / write | | <p>Read/write head CIT3SX1R1G05KX</p>  <p>Page 14</p> | <p>CIS3P16D08KH16YSNO...</p>  <p>Page 17</p> |

Possible combinations for CIS3 components

To give you a quick overview of which CIS3 components can be combined with each other, there is a combinations table for each read head. The table will answer the following questions:

- ▶ Which data carrier can be read by the selected read head?
- ▶ What is the operating distance of this combination?

| | | |
|----------------|------|--|
| Key to symbols | L 18 | Combination possible, max. read distance 18 mm |
| | S 9 | Combination possible, max. write distance 9 mm |
| | | Combination not permissible |

Ident system CIS3

| Read/write heads | Data carriers | |
|---|---------------------------------|------------------------------------|
| | CIS3P35X16SH16Y... All items | CIS3P16D08KH16YSNO... All items |
| Read-only head CIT3PL1N30-STA 071 552 | L 18 | L 14 |
| Read-only head CIT3PL1N30-STR 071 950 | L 18 | L 14 |
| Read/write head CIT3SX1R1G05KX 096 560 | L 18 S 10 | L 14 S 9 |

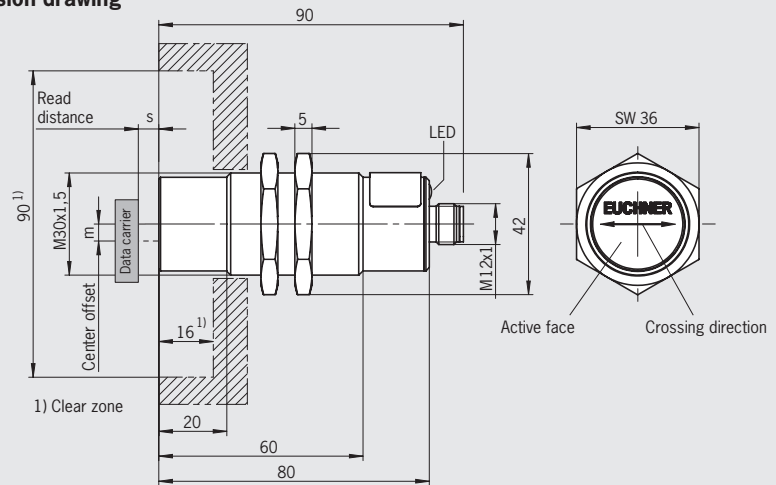
Read-only heads CIT3PL1N30-ST...

- ▶ Parallel interface
- ▶ Cylindrical design M30
- ▶ M12 plug connector
- ▶ Axial or radial connection



Read-only head CIT3PL1N30-STA
M12 plug, 8-pin, axial connection

Dimension drawing



For connection cable see page 18

For possible combinations see page 11

Mounting instructions

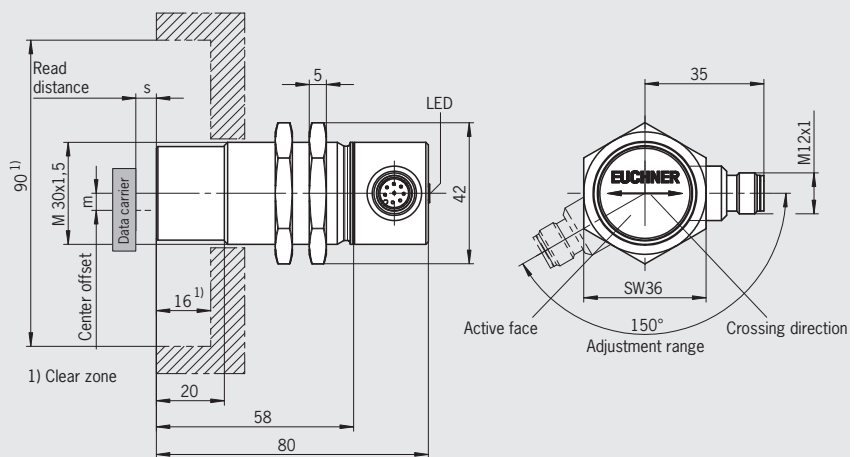
On mounting the read head and data carrier, it is to be ensured the crossing direction as per the direction of the arrow on the active face of the read head is observed.

Attention:

On the usage of a screened cable the connection cable is allowed to be max. 50 m long.

Read-only head CIT3PL1N30-STR
M12 plug, 8-pin, radial connection

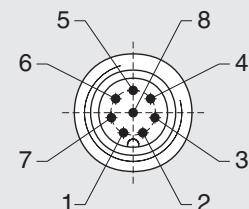
Dimension drawing



For connection cable see page 18

Pin assignment

| Pin | Designation | Description | Wire color |
|-----|---------------------|----------------------------|------------|
| 1 | 0V/GND | Ground, DC 0 V | WH |
| 2 | 24 V/U _B | Power supply, DC 24 V | BN |
| 3 | A | Output data wire A | GN |
| 4 | B | Output data wire B | YE |
| 5 | C | Output data wire C | GY |
| 6 | D | Output data wire D | PK |
| 7 | SKIP | Input data clock | BU |
| 8 | STROBE | Output data carrier active | RD |
| - | | Screen | Open |



View on the connection side of the read head

The screen on the connection cable is connected to the read head's housing via the knurled nut on the M12 plug connector.

Ordering table

| Series | Interface | Connection | Order no. / item |
|-------------------------|-----------|---|----------------------------------|
| Read-only head for CIS3 | Parallel | M12 plug connector axial connection | 071 552 CIT3PL1N30-STA |
| | | M12 plug connector radial connection | 071 950 CIT3PL1N30-STR |

Technical data read-only heads CIT3PL1N30-ST...

| Parameter | Value | | | Unit |
|--|---|------|-------------------|------|
| | min. | typ. | max. | |
| Housing material | Brass (CuZn) nickel-plated | | | |
| Weight | 0.2 | | | kg |
| Ambient temperature at $U_B = DC 24 V$ | -25 | - | +50 | °C |
| Degree of protection according to EN 60529 | IP67 | | | |
| Type of installation | Non-flush | | | |
| Connection type | M12 plug connector, 8-pin, axial or radial connection, screw terminal | | | |
| Cable length | - | - | 50 | m |
| Operating voltage U_B (regulated, residual ripple < 5 %) | 20 | 24 | 28 | V DC |
| Current consumption I_B (without load current) | - | 65 | 100 ¹⁾ | mA |
| Interface/data transfer | | | | |
| Interface to I/O on a control system | 4-bit parallel, binary coded via HIGH/LOW level | | | |
| Load current per output I_A (push-pull) | - | - | 30 | mA |
| Output voltage U_A | | | | |
| A, B, C, D, STROBE = 1 (HIGH level) | $U_B - 3$ | - | U_B | V DC |
| A, B, C, D, STROBE = 0 (LOW level) | 0 | - | 2 | |
| Input voltage U_E | | | | |
| SKIP = 1 (HIGH level) | 15 | - | U_B | V DC |
| SKIP = 0 (LOW level) | 0 | - | 2 | |
| Input resistance R_i (SKIP input) | - | 4.5 | - | kOhm |
| LED indication | Yellow: Data carrier active ²⁾ | | | |

1) Continuous current in operation.

2) The LED illuminates yellow if there is a functional data carrier in the operating distance in front of the read head.

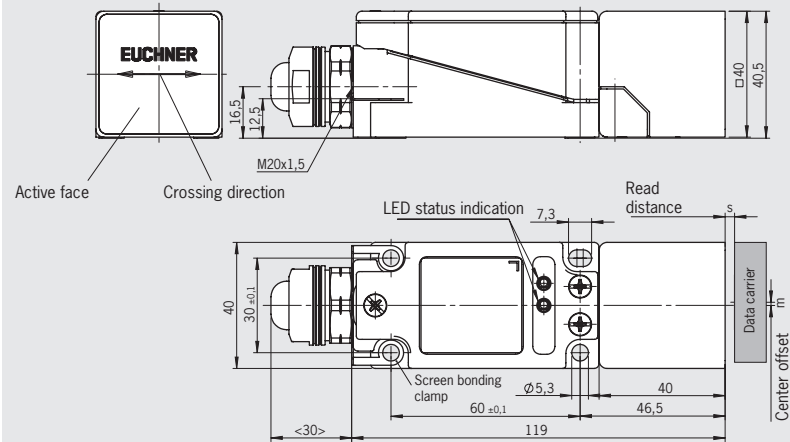
Read/write head CIT3SX1R1G05KX

- ▶ Serial interface RS232
- ▶ Active face can be adjusted to 5 different positions
- ▶ Standard housing according to EN 50041
- ▶ Connection terminals



Read/write head CIT3SX1R1G05KX

Dimension drawing



For possible combinations see page 11

Serial interface

The individual commands for reading and writing the data carrier are in accordance with the common 3964R protocol and are described in the EUCHNER CIS3 system manual (order no. 071 652). For data carrier programming away from the system, a convenient WINDOWS®-compatible PC software application is available (Software Transponder Coding, see page 41).

Standard housing

The size of the robust housing in degree of protection IP65 is compliant with the standard EN 50041. The division into 3 assemblies permits easy mounting and straightforward replacement.

Mounting instructions

On mounting the read/write head and data carrier, it is to be ensured the crossing direction as per the direction of the arrow on the active face of the read/write head is observed.

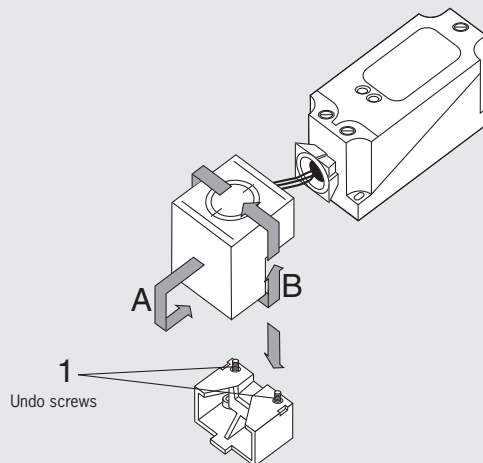
Attention:

On the usage of a screened cable the connection cable for the serial interface is allowed to be max. 5 m long.

Pin assignment

| Terminal | Designation | Description |
|----------|---------------------|---------------------------|
| 1 | 24 V/U _B | Power supply, DC 24 V |
| 2 | RxD | Serial interface receive |
| 3 | 0V/GND | Ground, DC 0 V |
| 4 | TxD | Serial interface transmit |

Changing the active face



Ordering table

| Series | Interface | Connection | Order no. / item |
|--------------------------|--------------|----------------------|---------------------------|
| Read/write head for CIS3 | Serial RS232 | Connection terminals | 096 560 CIT3SX1R1G05KX |

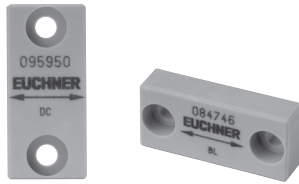
Technical data read/write head CIT3SX1R1G05KX

| Parameter | Value | | | Unit |
|--|--|------|------|-------|
| | min. | typ. | max. | |
| Housing material | Plastic | | | |
| Weight | 0.29 | | | kg |
| Ambient temperature at $U_g = DC 24 V$ | 0 | - | +55 | °C |
| Degree of protection according to EN 60529 | IP65 | | | |
| Type of installation | Non-flush | | | |
| Connection type | Screw terminals | | | |
| Operating voltage U_g (regulated, residual ripple < 5 %) | 20 | 24 | 28 | V DC |
| Current consumption I_g (without load current) | - | 80 | 120 | mA |
| Interface/data transfer | | | | |
| Interface to the PC or to the control system | Serial RS232 | | | |
| Transfer protocol | 3964R | | | |
| Data transfer rate | - | 9.6 | - | kbaud |
| Data format | 1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit | | | |
| Cable length RS232 interface | - | - | 5 | m |
| LED indication | Green: Ready (in operation) Yellow: Data carrier active ¹⁾ | | | |

1) The LED illuminates yellow if there is a functional data carrier in the operating distance in front of the read/write head.

Data carrier CIS3P35X16SH16Y...

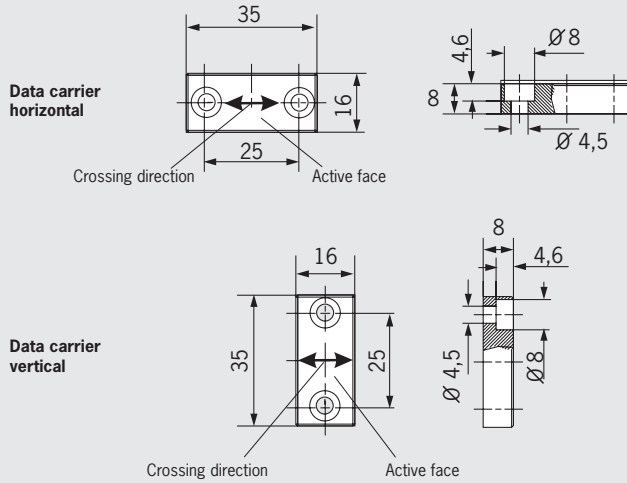
- ▶ Cube-shaped design 35 x 16 mm
- ▶ Data carrier horizontal or vertical
- ▶ Unprogrammed or programmed



For possible combinations see page 11

Data carrier CIS3P35X16SH16Y...

Dimension drawing



Mounting instructions

On mounting the read head and data carrier, it is to be ensured the crossing direction as per the direction of the arrow on the active face of the read head or read/write head is observed.

Programming

The data carrier can be written (programmed) for read-only operation with a maximum of 32 hexadecimal digits (value from 0_{hex} to F_{hex}) on customer request. Standard filler digit after the customer-specific defined digits is E_{hex} .

The housing is permanently laser marked with the digits programmed (not including filler digits) in hexadecimal notation.

Technical data

| Parameter | min. | Value typ. | max. | Unit |
|---|---|------------|------|--------|
| Memory capacity (read/write) | - | 16 | - | bytes |
| Housing material | Plastic PPS | | | |
| Weight | 0.005 | | | |
| Degree of protection according to EN 60529 | IP67 | | | |
| Ambient temperature | -40 | - | +85 | °C |
| Type of installation | Screw fixing, not flush (also on metal) | | | |
| Memory organization | Only possible in 2-byte blocks | | | |
| Write | Possible byte by byte | | | |
| Read | | | | |
| Operating parameters on reading using read-only head CIT3PL1N30-STA or CIT3PL1N30-STR | | | | |
| Read distance s_L | 0 | 7 | 18 | mm |
| Center offset m_L in x direction (for $s_L = 7$ mm) | - | - | ± 23 | |
| Center offset m_L in y direction (for $s_L = 7$ mm) | - | - | ± 8 | |
| Relative speed for reading 4 hexadecimal digits | - | - | 410 | mm/s |
| Reduction for each additional hexadecimal digit (at $s_L = 7$ mm and $m_L = 0$ mm in y direction) | - | - | 25 | |
| Number of read cycles | Not limited | | | |
| Operating parameters on reading and writing using read/write head CIT3SX1R1G05KX | | | | |
| Read distance s_L | 0 | 7 | 18 | mm |
| Write distance s_S | 0 | 5 | 10 | |
| Center offset m_L/m_S in x direction (at $s_L/s_S = 5$ mm) | - | - | ± 10 | |
| Center offset m_L/m_S in y direction (at $s_L/s_S = 5$ mm) | - | - | ± 8 | |
| Number of write cycles | 100,000 | - | - | cycles |

Ordering table

| Series | Design | Version | Order no. / item |
|------------------------------|------------------------|--------------------------|---------------------------------------|
| Data carrier for CIS3 | Cube-shaped 35 x 16 mm | Horizontal, unprogrammed | 084 746 CIS3P35X16SH16YHN0U |
| | | Horizontal, programmed | 084 747 CIS3P35X16SH16YHN0P |
| | | Vertical, unprogrammed | 095 950 CIS3P35X16SH16YVN0U |
| | | Vertical, programmed | 095 951 CIS3P35X16SH16YVN0P |

Data carrier CIS3P16D08KH16YSNO...

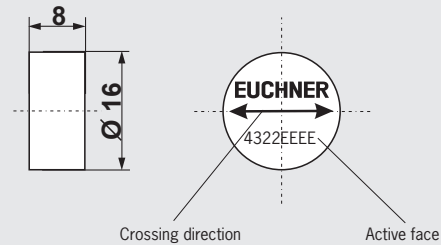
- ▶ Cylindrical design \varnothing 16 mm
- ▶ Unprogrammed or programmed



For possible combinations see page 11

Data carrier CIS3P16D08KH16YSNO...

Dimension drawing



Notes on installation

- ▶ On mounting the read head and data carrier, it is to be ensured the crossing direction as per the direction of the arrow on the active face of the read head or read/write head is observed.
- ▶ For fastening use e.g. two-component epoxy resin adhesive.

Programming

The data carrier can be written (programmed) for read-only operation with a maximum of 32 hexadecimal digits (value from 0_{hex} to F_{hex}) on customer request. Standard filler digit after the customer-specific defined digits is E_{hex} .

The housing is permanently laser marked with the digits programmed (not including filler digits) in hexadecimal notation.

Technical data

| Parameter | min. | Value typ. | max. | Unit |
|---|---|------------|----------|--------|
| Memory capacity (read/write) | - | 16 | - | bytes |
| Housing material | Plastic PPS | | | |
| Weight | 0.003 | | | kg |
| Degree of protection according to EN 60529 | IP67 | | | |
| Ambient temperature | -40 | - | +85 | °C |
| Type of installation | Bonded, flush (also in metal) ¹⁾ | | | |
| Memory organization | Only possible in 2-byte blocks | | | |
| Write | Possible byte by byte | | | |
| Read | | | | |
| Operating parameters on reading using read-only head CIT3PL1N30-STA or CIT3PL1N30-STR¹⁾ | | | | |
| Read distance s_L | 0 | 5 | 14 | mm |
| Center offset m_L in x direction (for $s_L = 5$ mm) | - | - | ± 18 | |
| Center offset m_L in y direction (for $s_L = 5$ mm) | - | - | ± 6 | |
| Relative speed for reading 4 hexadecimal digits | - | - | 320 | mm/s |
| Reduction for each additional hexadecimal digit (at $s_L = 5$ mm and $m_L = 0$ mm in y direction) | - | - | 25 | |
| Number of read cycles | Not limited | | | |
| Operating parameters on reading and writing using read/write head CIT3SX1R1G05KX¹⁾ | | | | |
| Read distance s_L | 0 | 5 | 14 | mm |
| Write distance s_S | 0 | 5 | 9 | |
| Center offset m_L / m_S in x direction (at $s_L / s_S = 5$ mm) | - | - | ± 10 | |
| Center offset m_L / m_S in y direction (at $s_L / s_S = 5$ mm) | - | - | ± 6 | |
| Number of write cycles | 100,000 | - | - | cycles |

1) On flush installation in a non-metallic material, better operating parameters as for the data carriers CIS3P35X16SH16Y... are obtained

Ordering table

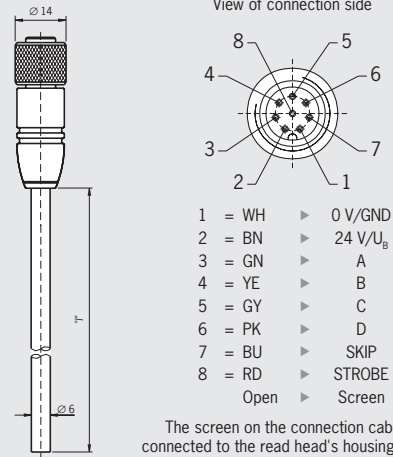
| Series | Design | Version | Order no. / item |
|-----------------------|---------------------------------|--------------|---------------------------------------|
| Data carrier for CIS3 | Cylindrical \varnothing 16 mm | Unprogrammed | 088 832 CIS3P16D08KH16YSNOU |
| | | Programmed | 088 833 CIS3P16D08KH16YSNOP |

Connection cables and documentation

- ▶ Screened connection cable for read-only heads CIT3PL.../CIT3APL...

For read-only heads CIT3
M12 socket, 8-pin, silicone-free

Dimension drawing



Technical data

| Parameter | Value | | | Unit |
|-------------------------|--|------|------|-----------------|
| | min. | typ. | max. | |
| Plug connector | 8-pin M12 female connector, straight | | | |
| Connection type | Screw terminal, knurled nut electrically connected to cable screen | | | |
| Conductor cross-section | 8 x 0.25 screened | | | mm ² |
| Material, outer sheath | PVC | | | |

Ordering table

| Plug connectors | Cable type | Cable length l [m] | Order no / item |
|-----------------|----------------|--------------------|---|
| Straight | V Cable PVC | 5 | 077 751 C-M12F08-08X025PV05,0-ZN-077751 |
| | | 10 | 077 752 C-M12F08-08X025PV10,0-ZN-077752 |
| | | 15 | 077 753 C-M12F08-08X025PV15,0-ZN-077753 |
| | | 20 | 077 871 C-M12F08-08X025PV20,0-ZN-077871 |
| | | 25 | 077 872 C-M12F08-08X025PV25,0-ZN-077872 |
| | | 50 | 077 873 C-M12F08-08X025PV50,0-ZN-077873 |

- ▶ User manual CIS3/CIS3A

Ordering table

| Series | Comment | Order no. |
|---|------------------------------------|----------------|
| Manual Inductive Ident System CIS3/CIS3A | PDF file as download ¹⁾ | 071 652 |

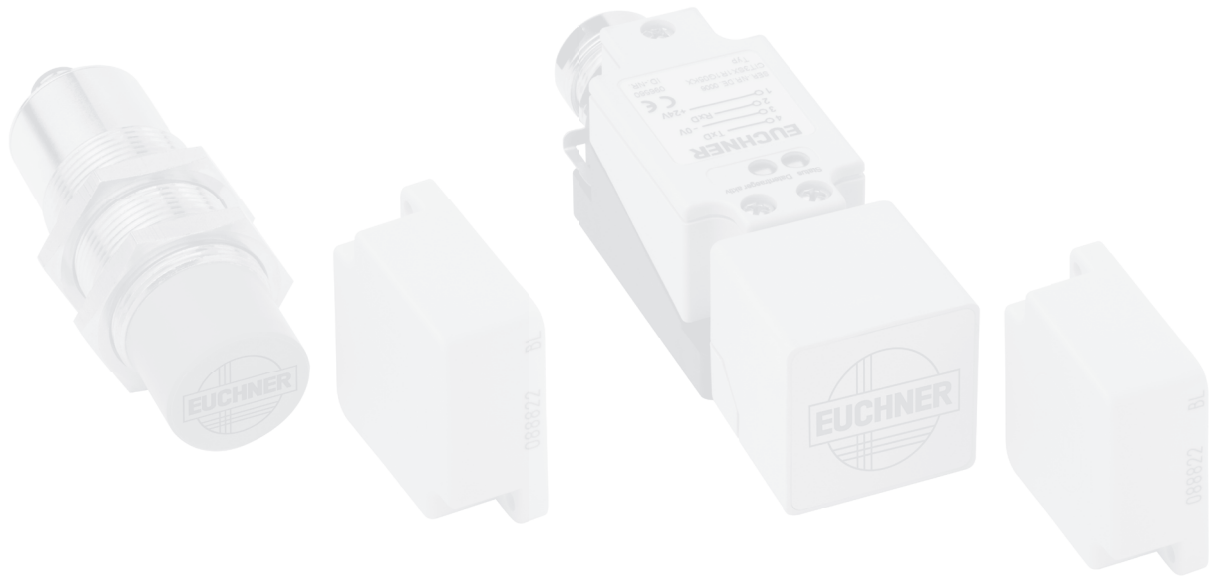
1) Downloads available at www.euchner.de in Download/Manuals/Automation/Ident systems.

Inductive Ident System CIS3A

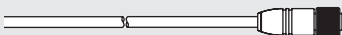
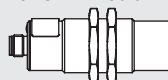


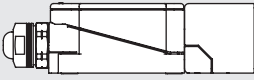
- ▶ Low-cost read/write system with predominantly used, separate read-only heads
- ▶ Extremely compact head design, no separate interface adapter required
- ▶ Read distance maximum 28 mm
- ▶ Dynamic reading with a relative speed up to 230 mm/s
- ▶ Data carrier memory capacity 16 bytes E²PROM read/write
- ▶ Easy connection of the read-only heads to I/O on any control system via 4-bit parallel interface (24 V)
- ▶ Read/write heads with serial interface RS232

The ident system CIS3A is used if somewhat larger read distances are required. As a result a larger data carrier is necessary.

The data carrier is screwed on the product to be identified. The antenna and the interface electronics are fully integrated in the read heads and the read/write head. The data carrier and the head contain round-shaped antennae. The orientation of the data carrier in relation to the head is unimportant. This fact means that the data carrier can approach the head from any direction. The data carriers can be read when static or moving at low relative speed in front of the read head, i. e. on moving past. The data carrier must always be static for writing.



Selection table for ident system CIS3A

| | Connection cable | Read/write heads | Data carriers |
|--------------|--|--|--|
| Read only |  <p>Page 29</p> | Read-only head CIT3APL1N30-STA  <p>Page 22</p> | CIS3AP50X50SH16YSNO...  <p>Page 28</p> |
| | | Read-only head CIT3APL1G05ST  <p>Page 24</p> | |
| Read / write | | Read/write head CIT3ASX1R1G05KX  <p>Page 26</p> | |

Possible combinations for CIS3A components

To give you a quick overview of which CIS3A components can be combined with each other, there is a combinations table for each read head. The table will answer the following questions:

- ▶ Which data carrier can be read by the selected read head?
- ▶ What is the operating distance of this combination?

| | | |
|-----------------------|------|---|
| Key to symbols | L 20 | Combination possible, max. read distance 20 mm |
| | S 28 | Combination possible, max. write distance 28 mm |
| | | Combination not permissible |

Ident system CIS3A

| Read/write heads | Data carriers |
|--|---------------|
| | |
| Read-only head CIT3APL1N30-STA 071 900 | L 20 |
| Read-only head CIT3APL1G05ST 077 805 | L 28 |
| Read/write head CIT3ASX1R1G05KX 077 890 | L 28 S 28 |

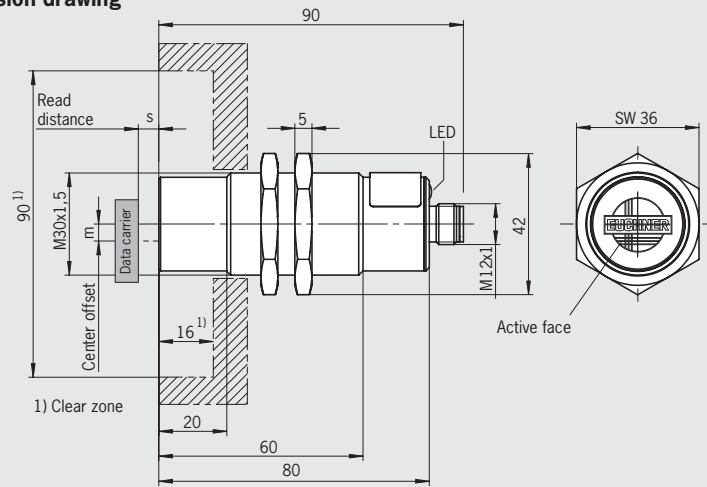
Read-only head CIT3APL1N30-STA

- ▶ Parallel interface
- ▶ Cylindrical design M30
- ▶ M12 plug connector
- ▶ Axial connection



Read-only head CIT3APL1N30-STA
M12 plug, 8-pin, axial connection

Dimension drawing



For connection cable see page 29

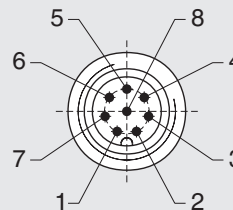
For possible combinations see page 21

Attention:

On the usage of a screened cable the connection cable is allowed to be max. 50 m long.

Pin assignment

| Pin | Designation | Description | Wire color |
|-----|---------------------|----------------------------|------------|
| 1 | 0V/GND | Ground, DC 0 V | WH |
| 2 | 24 V/U _B | Power supply, DC 24 V | BN |
| 3 | A | Output data wire A | GN |
| 4 | B | Output data wire B | YE |
| 5 | C | Output data wire C | GY |
| 6 | D | Output data wire D | PK |
| 7 | SKIP | Input data clock | BU |
| 8 | STROBE | Output data carrier active | RD |
| - | | Screen | Open |



View on the connection side of the read head

The screen on the connection cable is connected to the read head's housing via the knurled nut on the M12 plug connector.

Ordering table

| Series | Interface | Connection | Order no. / item |
|--------------------------|-----------|--|-----------------------------------|
| Read-only head for CIS3A | Parallel | M12 plug connector axial connection | 071 900 CIT3APL1N30-STA |

Technical data read-only head CIT3APL1N30-STA

| Parameter | Value | | | Unit |
|--|---|------|-------------------|------|
| | min. | typ. | max. | |
| Housing material | Brass (CuZn) nickel-plated | | | |
| Weight | 0.2 | | | kg |
| Ambient temperature at $U_B = DC 24 V$ | -25 | - | +50 | °C |
| Degree of protection according to EN 60529 | IP67 | | | |
| Type of installation | Non-flush | | | |
| Connection type | M12 plug connector, 8-pin, axial connection, screw terminal | | | |
| Cable length | - | - | 50 | m |
| Operating voltage U_B (regulated, residual ripple < 5 %) | 20 | 24 | 28 | V DC |
| Current consumption I_B (without load current) | - | 65 | 100 ¹⁾ | mA |
| Interface/data transfer | | | | |
| Interface to I/O on a control system | 4-bit parallel, binary coded via HIGH/LOW level | | | |
| Load current per output I_A (push-pull) | - | - | 30 | mA |
| Output voltage U_A | | | | |
| A, B, C, D, STROBE = 1 (HIGH level) | $U_B - 3$ | - | U_B | V DC |
| A, B, C, D, STROBE = 0 (LOW level) | 0 | - | 2 | |
| Input voltage U_E | | | | |
| SKIP = 1 (HIGH level) | 15 | - | U_B | V DC |
| SKIP = 0 (LOW level) | 0 | - | 2 | |
| Input resistance R_i (SKIP input) | - | 4.5 | - | kOhm |
| LED indication | Yellow: Data carrier active ²⁾ | | | |

1) Continuous current in operation.

2) The LED illuminates yellow if there is a functional data carrier in the operating distance in front of the read head.

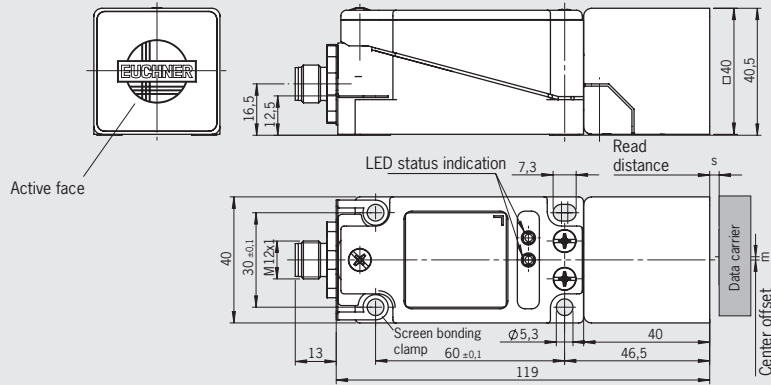
Read-only head CIT3APL1G05ST

- ▶ Parallel interface
- ▶ Active face can be adjusted to 5 different positions
- ▶ Standard housing according to EN 50041
- ▶ M12 plug connector
- ▶ Axial connection



Read-only head CIT3APL1G05ST
M12 plug, 8-pin, axial connection

Dimension drawing



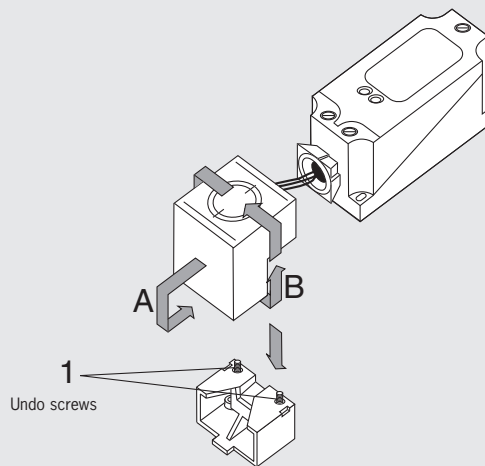
For connection cable see page 29

For possible combinations see page 21

Attention:

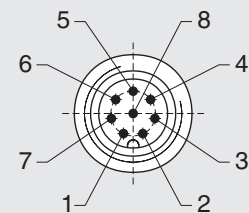
On the usage of a screened cable the connection cable is allowed to be max. 50 m long.

Changing the active face



Pin assignment

| Pin | Designation | Description | Wire color |
|-----|---------------------|----------------------------|------------|
| 1 | OV/GND | Ground, DC 0 V | WH |
| 2 | 24 V/U _B | Power supply, DC 24 V | BN |
| 3 | A | Output data wire A | GN |
| 4 | B | Output data wire B | YE |
| 5 | C | Output data wire C | GY |
| 6 | D | Output data wire D | PK |
| 7 | SKIP | Input data clock | BU |
| 8 | STROBE | Output data carrier active | RD |
| - | | Screen | Open |



View on the connection side of the read head

The screen on the connection cable is connected to the read head's screen bonding clamp via the knurled nut on the M12 plug connector.

Ordering table

| Series | Interface | Connection | Order no. / item |
|--------------------------|-----------|--|---------------------------------|
| Read-only head for CIS3A | Parallel | M12 plug connector axial connection | 077 805 CIT3APL1G05ST |

Technical data read-only head CIT3APL1G05ST

| Parameter | Value | | | Unit |
|--|--|------|-------------------|------|
| | min. | typ. | max. | |
| Housing material | Plastic | | | |
| Weight | 0.3 | | | kg |
| Ambient temperature at $U_B = DC 24 V$ | 0 | - | +50 | °C |
| Degree of protection according to EN 60529 | IP65 | | | |
| Type of installation | Non-flush | | | |
| Connection type | M12 plug connector, 8-pin, axial connection, screw terminal | | | |
| Cable length | - | - | 50 | m |
| Operating voltage U_B (regulated, residual ripple < 5 %) | 20 | 24 | 28 | V DC |
| Current consumption I_B (without load current) | - | 90 | 120 ¹⁾ | mA |
| Interface/data transfer | | | | |
| Interface to I/O on a control system | 4-bit parallel, binary coded via HIGH/LOW level | | | |
| Load current per output I_A (push-pull) | - | - | 30 | mA |
| Output voltage U_A | | | | |
| A, B, C, D, STROBE = 1 (HIGH level) | $U_B - 3$ | - | U_B | V DC |
| A, B, C, D, STROBE = 0 (LOW level) | 0 | - | 2 | |
| Input voltage U_E | | | | |
| SKIP = 1 (HIGH level) | 15 | - | U_B | V DC |
| SKIP = 0 (LOW level) | 0 | - | 2 | |
| Input resistance R_i (SKIP input) | - | 4.5 | - | kOhm |
| LED indication | Green: Ready (in operation) Yellow: Data carrier active ²⁾ | | | |

1) Continuous current in operation.

2) The LED illuminates yellow if there is a functional data carrier in the operating distance in front of the read head.

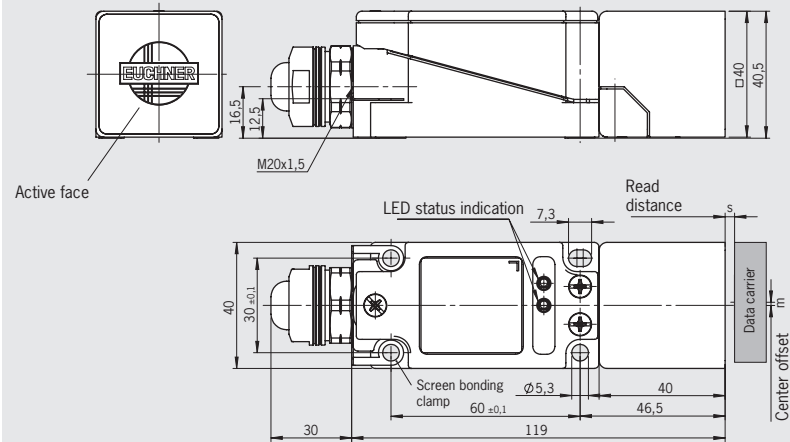
Read/write head CIT3ASX1R1G05KX

- ▶ Serial interface RS232
- ▶ Active face can be adjusted to 5 different positions
- ▶ Standard housing according to EN 50041
- ▶ Connection terminals



Read/write head CIT3ASX1R1G05KX

Dimension drawing



For possible combinations see page 21

Serial interface

The individual commands for reading and writing the data carrier are in accordance with the common 3964R protocol and are described in the EUCHNER CIS3 system manual (order no. 071 652). For data carrier programming away from the system, a convenient WINDOWS®-compatible PC software application is available (Software Transponder Coding, see page 41).

Standard housing

The size of the robust housing in degree of protection IP65 is compliant with the standard EN 50041. The division into 3 assemblies permits easy mounting and straightforward replacement.

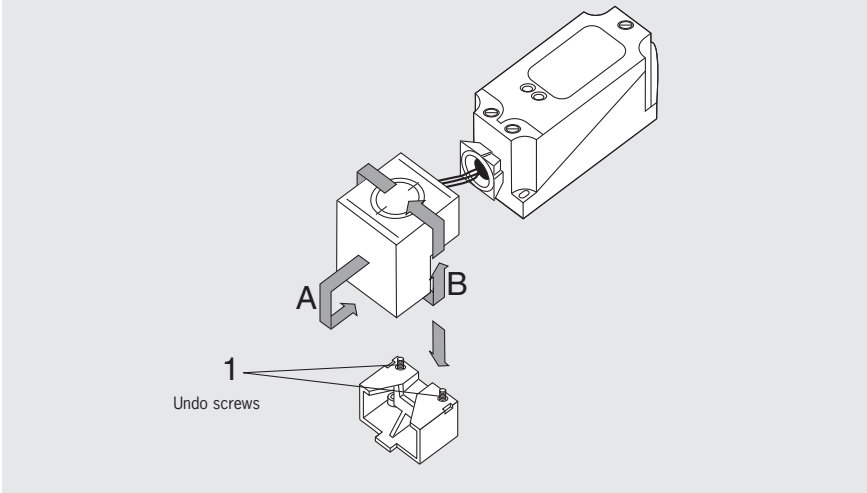
Attention:

On the usage of a screened cable the connection cable for the serial interface is allowed to be max. 5 m long.

Pin assignment

| Terminal | Designation | Description |
|----------|---------------------|---------------------------|
| 1 | 24 V/U _B | Power supply, DC 24 V |
| 2 | RxD | Serial interface receive |
| 3 | 0V/GND | Ground, DC 0 V |
| 4 | TxD | Serial interface transmit |

Changing the active face



Ordering table

| Series | Interface | Connection | Order no. / item |
|---------------------------|--------------|----------------------|----------------------------|
| Read/write head for CIS3A | Serial RS232 | Connection terminals | 077 890 CIT3ASX1R1G05KX |

Technical data read/write head CIT3ASX1R1G05KX

| Parameter | Value | | | Unit |
|--|--|------|------|-------|
| | min. | typ. | max. | |
| Housing material | Plastic | | | |
| Weight | 0.29 | | | kg |
| Ambient temperature at $U_g = DC 24 V$ | 0 | - | +55 | °C |
| Degree of protection according to EN 60529 | IP65 | | | |
| Type of installation | Non-flush | | | |
| Connection type | Screw terminals | | | |
| Operating voltage U_g (regulated, residual ripple < 5 %) | 20 | 24 | 28 | V DC |
| Current consumption I_g (without load current) | - | 80 | 120 | mA |
| Interface/data transfer | | | | |
| Interface to the PC or to the control system | Serial RS232 | | | |
| Transfer protocol | 3964R | | | |
| Data transfer rate | - | 9.6 | - | kbaud |
| Data format | 1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit | | | |
| Cable length RS232 interface | - | - | 5 | m |
| LED indication | Green: Ready (in operation) Yellow: Data carrier active ¹⁾ | | | |

1) The LED illuminates yellow if there is a functional data carrier in the operating distance in front of the read/write head.

Data carrier CIS3AP50X50SH16YSNO...

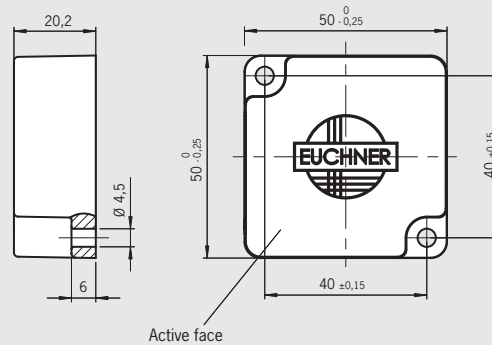
- ▶ Square design 50 x 50 mm
- ▶ Unprogrammed or programmed



For possible combinations see page 21

Data carrier CIS3AP50X50SH...

Dimension drawing



Programming

The data carrier can be written (programmed) for read-only operation with a maximum of 32 hexadecimal digits (value from O_{hex} to F_{hex}) on customer request. Standard filler digit after the customer-specific defined digits is E_{hex} .

The housing is permanently laser marked with the digits programmed (not including filler digits) in hexadecimal notation.

Technical data

| Parameter | min. | Value typ. | max. | Unit |
|--|---|------------|------|--------|
| Memory capacity (read/write) | - | 16 | - | bytes |
| Housing material | Plastic PPS | | | |
| Weight | 0.07 | | | kg |
| Degree of protection according to EN 60529 | IP67 | | | |
| Ambient temperature | -20 | - | +85 | °C |
| Type of installation | Screw fixing, not flush (also on metal) | | | |
| Memory organization | Only possible in 2-byte blocks | | | |
| Write | Possible byte by byte | | | |
| Read | | | | |
| Operating parameters on reading using read-only head CIT3APL1N30-STA | | | | |
| Read distance s_L | 7 ¹⁾ | 12 | 20 | mm |
| Center offset m_L (for $s_L = 12$ mm) | - | - | ± 11 | |
| Relative speed for reading 4 hexadecimal digits | - | - | 200 | mm/s |
| Reduction for each additional hexadecimal digit (at $s_L = 12$ mm and $m_L = 0$ mm) | - | - | 25 | |
| Number of read cycles | Not limited | | | |
| Operating parameters on reading using read-only head CIT3APL1G05-STA | | | | |
| Read distance s_L | 14 ¹⁾ | 20 | 28 | mm |
| Center offset m_L (for $s_L = 20$ mm) | - | - | ± 13 | |
| Relative speed for reading 4 hexadecimal digits | - | - | 230 | mm/s |
| Reduction for each additional hexadecimal digit (at $s_L = 20$ mm and $m_L = 0$ mm) | - | - | 25 | |
| Number of read cycles | Not limited | | | |
| Operating parameters on reading and writing using read/write head CIT3ASX1R1G05KX | | | | |
| Read distance s_L and write distance s_S | 0 | 20 | 28 | mm |
| Center offset m_L/m_S (at $s_L/s_S = 20$ mm) | - | - | ± 13 | |
| Number of write cycles | 100,000 | - | - | cycles |

1) It is necessary to maintain the minimum distance on the approach of the data carrier from the side if the data must be transferred correctly to the read head in one transmission.

Ordering table

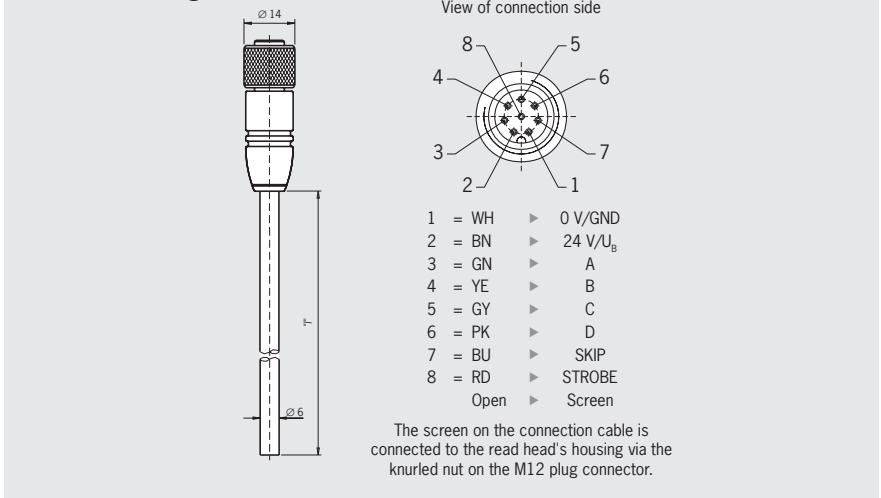
| Series | Design | Version | Order no. / item |
|------------------------|-------------------|--------------|--|
| Data carrier for CIS3A | Square 50 x 50 mm | Unprogrammed | 088 822 CIS3AP50X50SH16YSNOU |
| | | Programmed | 088 823 CIS3AP50X50SH16YSNOP |

Connection cables and documentation

- ▶ Screened connection cable for read-only heads CIT3PL.../CIT3APL...

For read-only heads CIT3
M12 socket, 8-pin, silicone-free

Dimension drawing



Technical data

| Parameter | Value | | | Unit |
|-------------------------|--|------|------|-----------------|
| | min. | typ. | max. | |
| Plug connector | 8-pin M12 female connector, straight | | | |
| Connection type | Screw terminal, knurled nut electrically connected to cable screen | | | |
| Conductor cross-section | 8 x 0.25 screened | | | mm ² |
| Material, outer sheath | PVC | | | |

Ordering table

| Plug connectors | Cable type | Cable length l [m] | Order no / item |
|-----------------|----------------|--------------------|---|
| Straight | V Cable PVC | 5 | 077 751 C-M12F08-08X025PV05,0-ZN-077751 |
| | | 10 | 077 752 C-M12F08-08X025PV10,0-ZN-077752 |
| | | 15 | 077 753 C-M12F08-08X025PV15,0-ZN-077753 |
| | | 20 | 077 871 C-M12F08-08X025PV20,0-ZN-077871 |
| | | 25 | 077 872 C-M12F08-08X025PV25,0-ZN-077872 |
| | | 50 | 077 873 C-M12F08-08X025PV50,0-ZN-077873 |

- ▶ User manual CIS3/CIS3A

Ordering table

| Series | Comment | Order no. |
|---|------------------------------------|----------------|
| Manual Inductive Ident System CIS3/CIS3A | PDF file as download ¹⁾ | 071 652 |

1) Downloads available at www.euchner.de in Download/Manuals/Automation/Ident systems.

Inductive Ident System CIS3A-Mini

- ▶ One of the smallest plug-in read heads
- ▶ Interface adapter for fitting on the DIN rail in the control cabinet
- ▶ Miniature data carrier, diameter 10 x 4 mm
- ▶ Read distance maximum 6.5 mm (static, on installation in non-metallic material)
- ▶ Data carrier memory capacity 116 bytes E²PROM read/write
- ▶ Easy connection of the read-only adapter to I/O on any control system via 4-bit parallel interface (24 V), max. 4 bytes of the data carrier usable via parallel interface
- ▶ Read/write interface adapter with serial interface RS232 or RS422, complete memory of 116 bytes usable via serial interface

The innovative ident system CIS3A-Mini is used if there is very little space to fit a data carrier to the product to be identified, or if there is very little space available for the read head.

Incredibly small dimensions characterize the CIS3A-Mini where the read/write head and data carrier are concerned. Typical applications are for example tool identification or modern, very complex compact assembly installations with small product carriers. The round data carriers are bonded in a countersunk hole. Due to the high quality design of the data carrier with ferrite core, a relatively large read distance is even achieved on installation in metal, despite the small antenna. The antenna and the interface electronics are located in separate housings and are connected via a special connection cable. The data carrier and the head contain round-shaped antennae. The orientation of the data carrier in relation to the head is unimportant. This fact means that the data carrier can approach the head from any direction. The data carrier can only be read or written if it is static in front of the read head.

The following components are necessary for the operation of a read station:

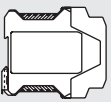
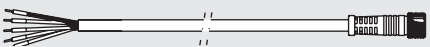


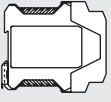
- ▶ Read head
- ▶ Read-only interface adapter
- ▶ Connection cable for connection of read head to interface adapter

The following components are necessary for the operation of a read/write station:

- ▶ Read head (here with read/write functionality)
- ▶ Read/write interface adapter
- ▶ Connection cable for connection of read head to interface adapter



Selection table for ident system CIS3A-Mini

| | Interface adapter | Connection cable | Read/write head | Data carrier |
|--------------|--|--|--|---|
| Read only | Parallel interface CIA3PLG08  Page 34 |  Page 40 | Read/write head CIT3ASX1N12ST  Page 38 | CIS3AP10D05KH01K...  Page 39 |
| Read / write | Serial interface CIA3SX1R1G08  Page 36 | | | |

Possible combinations for CIS3A-Mini components

To give you a quick overview of which CIS3A-Mini components can be combined with each other, there is a combinations table for each read head. The table will answer the following questions:

- ▶ Which data carrier can be read by the selected read head?
- ▶ What is the operating distance of this combination?

| | | |
|-----------------------|-------|---|
| Key to symbols | L 6.5 | Combination possible, max. read distance 6.5 mm |
| | S 6 | Combination possible, max. write distance 6 mm |
| | | Combination not permissible |

Ident system CIS3A-Mini

| Read/write station | Data carriers |
|---|----------------------------------|
| | CIS3AP10D05KH01K... All items |
| Interface adapter CIA3... All items with read/write head CIT3ASX1N12ST 077 940 | L 6.5 S 6 |

Read-only interface adapter CIA3PL1G08

- ▶ Parallel interface
- ▶ In combination with read head CIT3ASX1N12ST
- ▶ DIN rail mounting



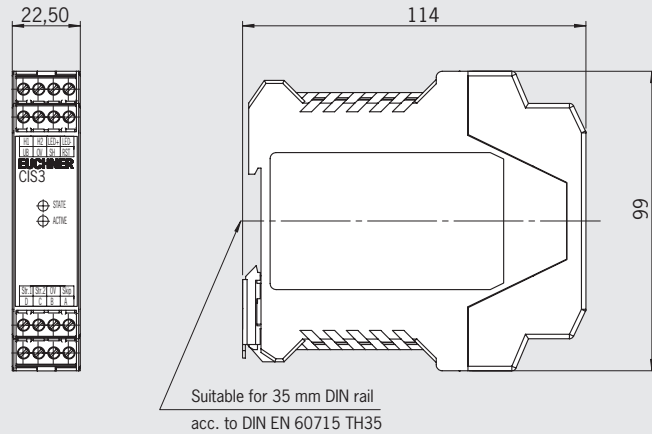
For possible combinations see page 33

Attention:

- ▶ The connection cable to the control system is allowed to be max. 15 m long.
- ▶ On the usage of a screened cable the connection cable to the read head is allowed to be max. 15 m long.
- ▶ It is only ever possible to connect 1 read head per interface adapter.

Interface adapter CIA3PL1G08

Dimension drawing



Pin assignment power supply and interface

| Designation | Description |
|---------------------|----------------------------|
| 0V/GND | Ground, DC 0 V |
| 24 V/U _B | Power supply, DC 24 V |
| A | Output data wire A |
| B | Output data wire B |
| C | Output data wire C |
| D | Output data wire D |
| SKIP | Input data clock |
| STROBE 1 | Output data carrier active |
| RST | Input RESET |

Pin assignment read head

| Designation | Description | Wire color |
|-------------|-------------------|------------|
| H1 | Read head antenna | BN |
| H2 | Read head antenna | WH |
| LED + | Read head LED | YE |
| LED - | Read head LED | GN |
| SH | Read head screen | BK |

Ordering table

| Series | Interface | Order no. / item |
|----------------------------------|-----------|------------------------------|
| Read-only adapter for CIS3A-Mini | Parallel | 091 875 CIA3PL1G08 |

Technical data read-only interface adapter CIA3PL1G08

| Parameter | Value | | | Unit |
|--|--|------|-------------------|------|
| | min. | typ. | max. | |
| Housing material | Plastic | | | |
| Weight | 0.12 | | | kg |
| Ambient temperature at $U_B = DC 24 V$ | 0 | - | +55 | °C |
| Degree of protection according to EN 60529 | IP20 | | | |
| Mounting | 35 mm DIN rail acc. to DIN EN 60715 TH35 | | | |
| Connection type | Plug-in screw terminals | | | |
| Cable length to control system | - | - | 15 | m |
| Cable length to read head | - | - | 15 | |
| Operating voltage U_B (regulated, residual ripple < 5 %) | 20 | 24 | 28 | V DC |
| Current consumption I_B (without load current) | - | 65 | 100 ¹⁾ | mA |
| Interface/data transfer | | | | |
| Interface to I/O on a control system | 4-bit parallel, binary coded via HIGH/LOW level | | | |
| Load current per output I_A (push-pull) | - | - | 30 | mA |
| Output voltage U_A | | | | V DC |
| A, B, C, D, STROBE = 1 (HIGH level) | $U_B - 3$ | - | U_B | |
| A, B, C, D, STROBE = 0 (LOW level) | 0 | - | 2 | |
| Input voltage U_E | | | | V DC |
| SKIP = 1 (HIGH level) | 15 | - | U_B | |
| SKIP = 0 (LOW level) | 0 | - | 2 | |
| Input resistance R_i (RESET input and SKIP input) | - | 4.5 | - | kOhm |
| LED indication | Green: Ready (in operation) Yellow: Data carrier active ²⁾ | | | |

1) Continuous current in operation.

2) The LED illuminates yellow if there is a functional data carrier in the operating distance in front of the read head.

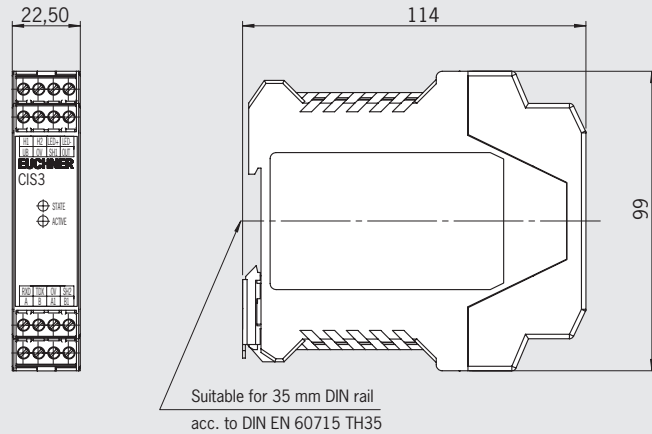
Read/write interface adapter CIA3SX1R1G08

- ▶ Serial interface RS232/RS422
- ▶ In combination with read head CIT3ASX1N12ST
- ▶ DIN rail mounting



Interface adapter CIA3SX1R1G08

Dimension drawing



For possible combinations see page 33

Serial interface

The individual commands for reading and writing the data carrier are in accordance with the common 3964R protocol and are described in the EUCHNER CIS3 system manual (order no. 084 727). For data carrier programming away from the system, a convenient WINDOWS®-compatible PC software application is available (Software Transponder Coding, see page 41).

Attention:

- ▶ On the usage of a screened cable the connection cable for the serial interface is allowed to be max. 5 m long for RS232 and max. 1000 m long for RS422.
- ▶ On the usage of a screened cable the connection cable to the read/write head is allowed to be max. 15 m long.
- ▶ It is only ever possible to connect 1 read head per interface adapter.

Pin assignment

| Designation | Description |
|---------------------|----------------------------------|
| 0V/GND | Ground, DC 0 V |
| 24 V/U _B | Power supply, DC 24 V |
| TxD | Serial interface transmit |
| RxD | Serial interface receive |
| A/TxD+ | Serial interface transmit + |
| B/TxD- | Serial interface transmit - |
| A1/RxD+ | Serial interface receive + |
| B1/RxD- | Serial interface receive - |
| OUT | Output data carrier active, 24 V |
| SH2 | Screen data wire |

Pin assignment read head

| Designation | Description | Wire color |
|-------------|-------------------|------------|
| H1 | Read head antenna | BN |
| H2 | Read head antenna | WH |
| LED + | Read head LED | YE |
| LED - | Read head LED | GN |
| SH1 | Read head screen | BK |

Ordering table

| Series | Interface | Order no. / item |
|---|----------------------|--------------------------------|
| Read/write interface adapter for CIS3A-Mini | Serial RS232 / RS422 | 077 910 CIA3SX1R1G08 |

Technical data read/write interface adapter CIA3SX1R1G08

| Parameter | Value | | | Unit |
|--|--|------|------|-------|
| | min. | typ. | max. | |
| Housing material | Plastic | | | |
| Weight | 0.12 | | | kg |
| Ambient temperature at $U_g = DC 24 V$ | 0 | - | +55 | °C |
| Degree of protection according to EN 60529 | IP20 | | | |
| Mounting | 35 mm DIN rail acc. to DIN EN 60715 TH35 | | | |
| Connection type | Plug-in screw terminals | | | |
| Operating voltage U_g (regulated, residual ripple < 5 %) | 20 | 24 | 28 | V DC |
| Current consumption I_g (without load current) | - | 65 | 100 | mA |
| Interface/data transfer | | | | |
| Interface to the PC or to the control system | Serial RS232 / RS422 (can be changed using rotary switch) | | | |
| Transfer protocol | 3964R | | | |
| Data transfer rate (selectable with DIP switch) | 9.6 | - | 28.8 | kbaud |
| Data format | 1 start bit, 8 data bits, 1 parity bit (even parity), 1 stop bit | | | |
| Cable length RS232 interface | - | - | 5 | m |
| Cable length RS422 interface | - | - | 1000 | |
| LED indication | Green: Ready (in operation) Yellow: Data carrier active ¹⁾ | | | |

1) The LED illuminates yellow if there is a functional data carrier in the operating distance in front of the read/write head.

Read/write head CIT3ASX1N12ST

- ▶ Use with interface adapter CIA3...
- ▶ Cylindrical design M12
- ▶ M8 plug connector
- ▶ Axial connection



For possible combinations see page 33

Note

The read head CIT3ASX1N12ST has

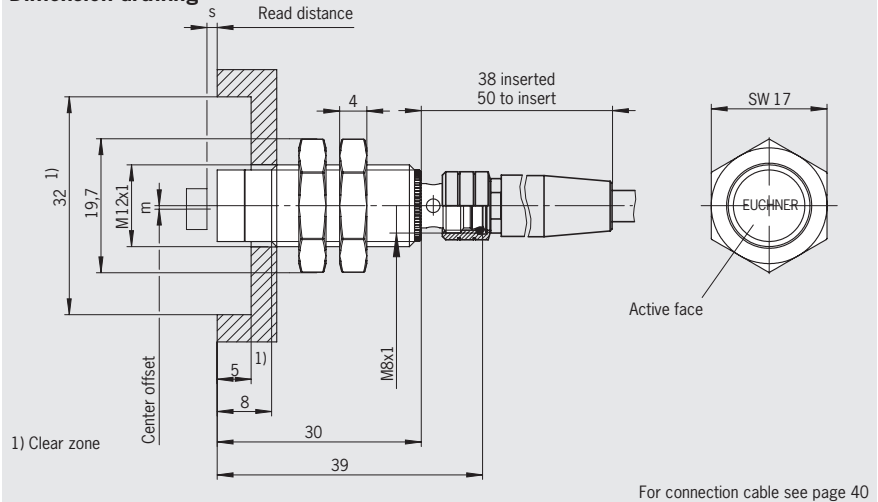
- ▶ Read-only functionality in combination with the read-only interface adapter with parallel interface
- ▶ Read/write functionality in combination with the read/write interface adapter with serial interface

Attention:

On the usage of a screened cable the connection cable to the interface adapter is allowed to be max. 15 m long.

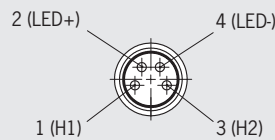
Read/write head CIT3ASX1N12ST
M8 plug, 4-pin, axial connection

Dimension drawing



For connection cable see page 40

Pin assignment



The screen on the connection cable is connected to the read/write head's housing via the knurled nut on the M8 plug connector.

View on the connection side of the read head

| Pin | Designation | Description | Wire color |
|-----|-------------|------------------|------------|
| 1 | H1 | Antenna H1 | BN |
| 2 | LED + | LED connection + | YE |
| 3 | H2 | Antenna H2 | WH |
| 4 | LED - | LED connection - | GN |
| - | | Screen | BK |

Technical data

| Parameter | Value | | | Unit |
|--|----------------------------|------|------|------|
| | min. | typ. | max. | |
| Housing material | Brass (CuZn) nickel-plated | | | |
| Weight | 0.02 | | | kg |
| Degree of protection according to EN 60529 | IP65 | | | |
| Ambient temperature | -25 | - | +50 | °C |
| Type of installation | Non-flush | | | |

Ordering table

| Series | Use | Connection | Order no. / item |
|---------------------------------------|-----------------------------|--|---------------------------------|
| Read/write head for CIS3A-Mini | With interface adapter CIA3 | M8 plug connector axial connection | 077 940 CIT3ASX1N12ST |

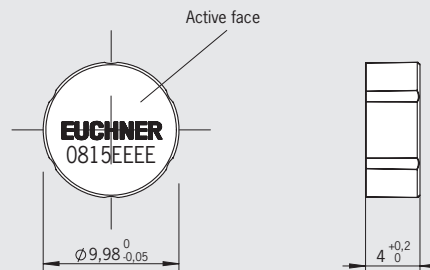
Data carrier CIS3AP10D05KH01K...

- ▶ Cylindrical design \varnothing 10 mm
- ▶ Unprogrammed or programmed



Data carrier CIS3AP10D05KH01K...

Dimension drawing



For possible combinations see page 33

Mounting instructions

For fastening use e.g. two-component epoxy resin adhesive.

Programming

The data carrier can be written (programmed) for read-only operation with a maximum of 8 hexadecimal digits (value from 0_{hex} to F_{hex}) on customer request. Standard filler digit after the customer-specific defined digits is E_{hex} .

The housing is permanently laser marked with the digits programmed (not including filler digits) in hexadecimal notation.

Technical data

| Parameter | min. | Value typ. | max. | Unit |
|---|---|---------------|-----------|--------|
| Memory capacity (read/write) | - | 116 | - | bytes |
| Housing material | Plastic PPS | | | |
| Weight | 0.001 | | | kg |
| Degree of protection according to EN 60529 | IP67 | | | |
| Ambient temperature | -25 | - | +70 | °C |
| Type of installation | Bonded, flush (also in metal) | | | |
| Memory organization | Only possible in 4-byte blocks Possible byte by byte | | | |
| Write | | | | |
| Read | | | | |
| Operating parameters on reading using read/write head CIT3ASX1N12ST and interface adapter CIA3PL1G08 or CIA3SX1R1G08 | | | | |
| Read distance s_r for non-metallic environment | 0 | 3 | 6.5 | mm |
| Read distance s_r on flush installation in iron | 0 | 3 | 6 | |
| Read distance s_r on flush installation in aluminum | 0 | 3 | 5 | |
| Center offset m_r (for $s_r = 3$ mm) | - | - | ± 2.5 | |
| Number of read cycles | Not limited | | | |
| Operating parameters on writing using read/write head CIT3ASX1N12ST and interface adapter CIA3SX1R1G08 | | | | |
| Write distance s_w for non-metallic environment | 0 | 3 | 6 | mm |
| Write distance s_w on flush installation in iron | 0 | 3 | 5.5 | |
| Write distance s_w on flush installation in aluminum | 0 | 3 | 4.5 | |
| Center offset m_w (for $s_w = 3$ mm) | - | - | ± 2 | |
| Number of write cycles | 100,000 | - | - | cycles |

Ordering table

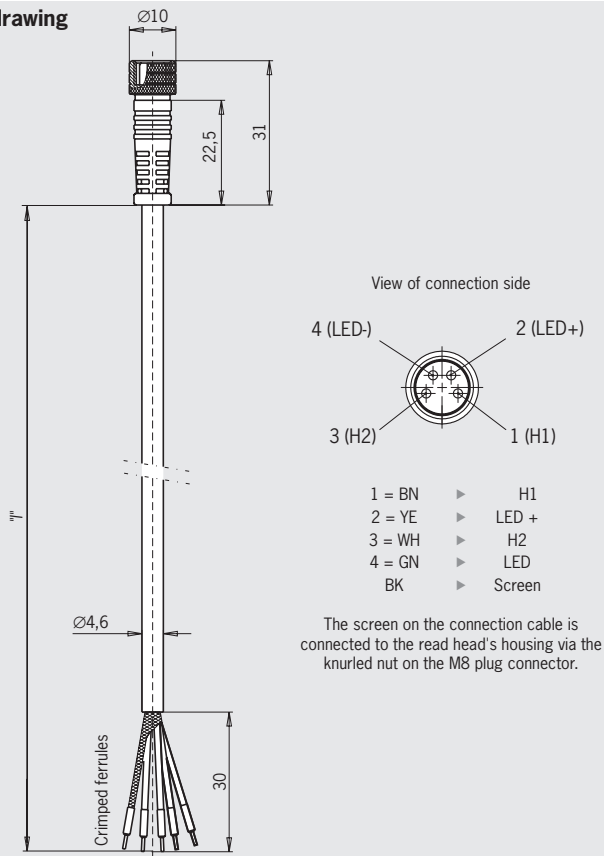
| Series | Design | Version | Order no. / item |
|-----------------------------|---------------------------------|--------------|--------------------------------------|
| Data carrier for CIS3A-Mini | Cylindrical \varnothing 10 mm | Unprogrammed | 077 785 CIS3AP10D05KH01K |
| | | Programmed | 092 320 CIS3AP10D05KH01K-P |

Connection cables and documentation

- ▶ Screened connection cable for read/write head CIT3ASX1N12ST

For read/write head CIT3ASX1N12ST
M8 socket, 4-pin

Dimension drawing



Technical data

| Parameter | Value | | | Unit |
|-------------------------|--|------|------|-----------------|
| | min. | typ. | max. | |
| Plug connectors | 4-pin M8 female plug, straight | | | |
| Connection type | Screw terminal, knurled nut electrically connected to cable screen | | | |
| Conductor cross-section | 4 x 0.25 screened | | | mm ² |
| Material, outer sheath | PVC | | | |

Ordering table

| Plug connectors | Cable type | Cable length l [m] | Order no / item |
|-----------------|----------------|--------------------|---|
| Straight | V Cable PVC | 2 | 084 641 C-M08F04-04X025PV02,0-ES-084641 |
| | | 5 | 084 642 C-M08F04-04X025PV05,0-ES-084642 |
| | | 10 | 084 643 C-M08F04-04X025PV10,0-ES-084643 |
| | | 15 | 084 644 C-M08F04-04X025PV15,0-ES-084644 |

- ▶ User manual CIS3A-Mini

Ordering table

| Series | Comment | Order no. |
|---|------------------------------------|----------------|
| Manual Inductive Ident System CIS3A-Mini | PDF file as download ¹⁾ | 084 727 |

1) Downloads available at www.euchner.de in Download/Manuals/Automation/Ident systems.

Transponder Coding (TC)

- ▶ Software for writing the data carriers
- ▶ In conjunction with read/write stations with serial RS232 interface

Description

The Transponder Coding (TC) software is an ASCII/hex editor that can be used to read and write the data carrier on the PC. The software is used in conjunction with a read/write station with serial interface.

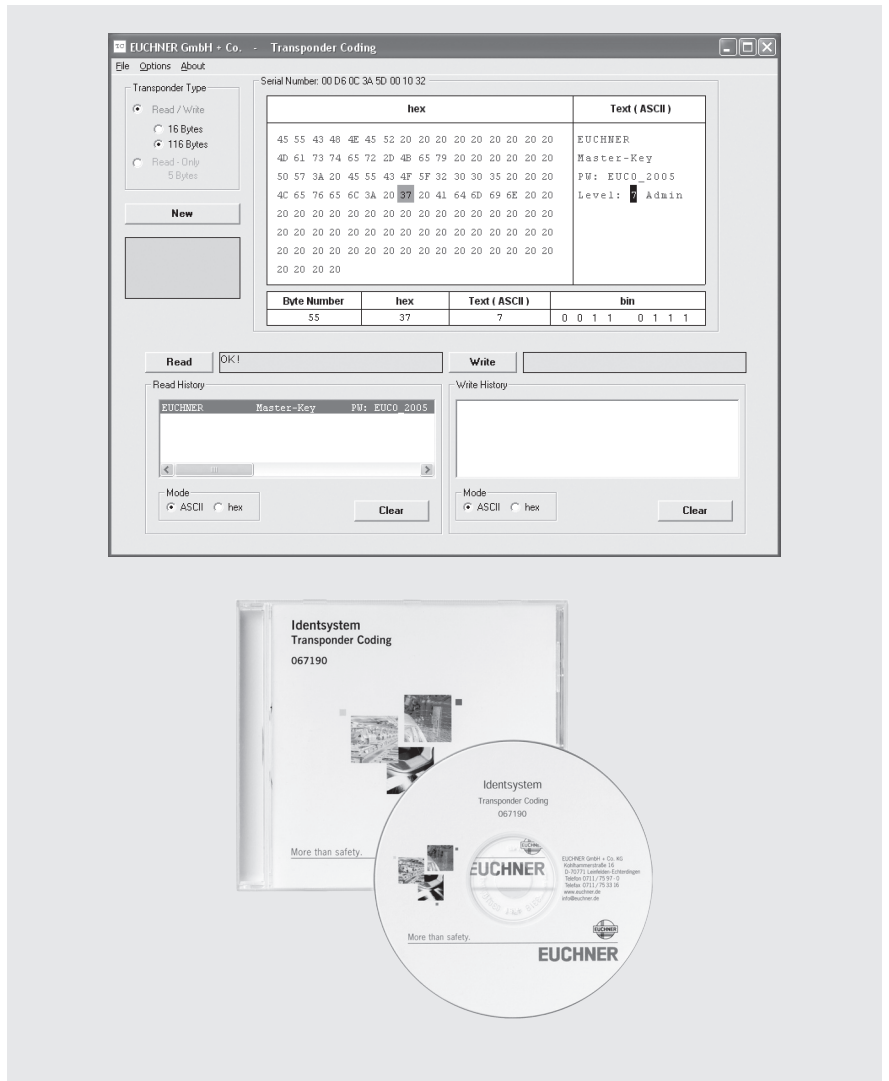
Overview

- ▶ Display of the data in ASCII and in hex notation
- ▶ Byte-wise editing of the data
- ▶ Storage of the data as ASCII or hex file on PC

System requirements

- ▶ Operating system: Microsoft Windows® 98/ME/NT/2000/XP/Vista/7
- ▶ Processor: from Pentium 2
- ▶ Available memory: min. 64 MB
- ▶ Hard disk space for the installation: approx. 20 MB
- ▶ Interface: serial

Transponder Coding (TC)



Ordering table

| Designation | Comment | Order no. / item |
|--------------------------------|---------|------------------|
| Software Transponder Coding | On CD | 067 190 |

Mobile Hand-Held Terminal MHT-G2

The mobile hand-held terminal MHT-G2 supplements the ident systems CIS. It makes it possible to read from and write to data carriers independent of location. The basic unit is based on the hand-held computer PSION WORKABOUT PRO with the operating system Windows® Embedded CE. The device is powered using a rechargeable lithium-ion battery. The battery in the Basic unit is charged using a docking station. The docking station can also be used for data transfer between the basic unit and a PC via a USB port. An SD memory card is inserted in the basic unit, which contains the software Transponder Coding CE (TCCE) for writing (programming) and reading the data carriers. A read/write head to suit the data carrier is fitted to the basic unit. To achieve even more flexibility in use, the read/write head can be connected to the hand-held terminal via an optionally available coiled cable. The robust, splash-proof design (IP54) guarantees correct function even in difficult conditions in a harsh, industrial environment.

The following components are necessary for the operation of a mobile hand-held terminal:

- ▶ Basic unit
- ▶ Rechargeable battery
- ▶ Docking station
- ▶ SD memory card with Transponder Coding CE (TCCE)
- ▶ CIS3, CIS3A or CIS3A-Mini read/write head
- ▶ Coiled extension cable (optional)



Mobile hand-held terminal basic unit MHT-G2-BU

- ▶ Reading, writing and editing EUCHNER CIS3, CIS3A and CIS3A-Mini data carriers
- ▶ With operating system Microsoft Windows® Embedded CE

Mobile hand-held terminal MHT-G2-BU




Technical data

| Parameter | Value | | | Unit |
|---|-------------------------------|------|------|------|
| | min. | typ. | max. | |
| Basic unit MHT-G2-BU for the connection of 1 read/write head (via TTL port) | | | | |
| Read/write head used | To suit the data carrier used | | | |
| Screen | Color, touch-sensitive | | | |
| Housing material | Plastic | | | |
| Degree of protection according to EN 60529 | IP54 | | | |
| Dimensions | Approx. 222 x 76 x 31 | | | mm |
| Weight (incl. rechargeable battery and read/write head) | Approx. 0.68 | | | kg |
| Ambient temperature | -20 | - | 50 | |
| Operating voltage U_B (via lithium-ion rechargeable battery) | - | 3.7 | - | V DC |
| Docking station MHT-G2-DS for a basic unit MHT-G2-BU | | | | |
| Housing material | Plastic | | | |
| Power supply unit for docking station with plug adapter for the countries EU, GB, USA, AUS | | | | |
| Operating voltage (primary, 50 ... 60 Hz) | 100 | - | 240 | V AC |

Windows® is a registered trademark of Microsoft Corporation

Ordering guide mobile hand-held terminal MHT-G2

| Overview | Item | Designation | Order no. / item |
|--|------|---|--|
|  | 1a | Mobile hand-held terminal basic unit | |
| | 1b | Touch-pen | 099 975 MHT-G2-BU |
| | 1c | Cover for rechargeable battery compartment | |
| | 2 | Rechargeable battery | 099 981 MHT-G2-BA |
| | 3 | SD memory card with software Transponder Coding CE (TCCE) | 099 982 MHT-G2-SD-TCCE |
| | 4a | Docking station for recharge and for PC communication via USB | |
| | 4b | Power supply unit for docking station | 099 976 MHT-G2-DS |
| | 4c | USB cable for the connection of the docking station to a PC | |
| | 5 | Extension cable for read/write head | 071 759 |
| | 6 | Read/write head depending on configuration: For ident system CIS3 For ident system CIS3A For ident system CIS3A-Mini | 071 755 CIT3-H2 071 778 CIT3A-H2 077 970 CIT3A-MINH2 |
| <p align="center">Manual Mobile hand-held terminal MHT</p> | - | PDF file as download ¹⁾ | 103 702 |

1) Downloads available at www.euchner.de in Download/Manuals/Automation/Ident systems.

Index by item designation

| Item | Order no. | Page |
|--|-----------|-------|
| CIA3PL1G08 | 091 875 | 34 |
| CIA3SX1R1G08 | 077 910 | 36 |
| CIS3AP10D05KH01K | 077 785 | 39 |
| CIS3AP10D05KH01K-P | 092 320 | 39 |
| CIS3AP50X50SH16YSNOP | 088 823 | 28 |
| CIS3AP50X50SH16YSNOU | 088 822 | 28 |
| CIS3P16D08KH16YSNOP | 088 833 | 17 |
| CIS3P16D08KH16YSNOU | 088 832 | 17 |
| CIS3P35X16SH16YHNOP | 084 747 | 16 |
| CIS3P35X16SH16YHNOU | 084 746 | 16 |
| CIS3P35X16SH16YVNOP | 095 951 | 16 |
| CIS3P35X16SH16YVNOU | 095 950 | 16 |
| CIT3A-H2 | 071 778 | 45 |
| CIT3A-MINI-H2 | 077 970 | 45 |
| CIT3APL1G05ST | 077 805 | 24 |
| CIT3APL1N30-STA | 071 900 | 22 |
| CIT3ASX1N12ST | 077 940 | 38 |
| CIT3ASX1R1G05KX | 077 890 | 26 |
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| CIT3PL1N30-STR | 071 950 | 12 |
| CIT3SX1R1G05KX | 096 560 | 14 |
| C-M08F04-04X025PV02,0-ES-084641 | 084 641 | 40 |
| C-M08F04-04X025PV05,0-ES-084642 | 084 642 | 40 |
| C-M08F04-04X025PV10,0-ES-084643 | 084 643 | 40 |
| C-M08F04-04X025PV15,0-ES-084644 | 084 644 | 40 |
| C-M12F08-08X025PV05,0-ZN-077751 | 077 751 | 18/29 |
| C-M12F08-08X025PV10,0-ZN-077752 | 077 752 | 18/29 |
| C-M12F08-08X025PV15,0-ZN-077753 | 077 753 | 18/29 |
| C-M12F08-08X025PV20,0-ZN-077871 | 077 871 | 18/29 |
| C-M12F08-08X025PV25,0-ZN-077872 | 077 872 | 18/29 |
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| 077 872 | C-M12F08-08X025PV25,0-ZN-077872 | 18/29 |
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| 077 910 | CIA3SX1R1G08 | 36 |
| 077 940 | CIT3ASX1N12ST | 38 |
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A series of horizontal lines for taking notes, consisting of 40 parallel grey bars.

A series of 34 horizontal grey bars intended for taking notes.

Product Guide

Automation



Position Switches

- ▶ Position Switches
- ▶ Position Switches according to EN 50 041

Precision Multiple Limit Switches

Inductive Limit Switches

Plug Connectors

Trip Rails/Trip Dogs

Inductive Ident Systems

Safety



Safety Switches, Metal Housing

- ▶ Safety Switches NZ/TZ
- ▶ Safety Switches NX/TX

Safety Switches, Plastic Housing

- ▶ Safety Switches NM
- ▶ Safety Switches NP/GP/TP
- ▶ Safety Switches STM
- ▶ Safety Switches STP

Non-Contact Safety Switches

- ▶ Non-Contact Safety Switches CES/CEM,
Transponder Coding
- ▶ Non-Contact Safety Switches CMS,
Magnetic Coding

Safety Products with integrated Bus Interface

Bolts for Safety Guards

Enabling Switches

Safety Relays

- ▶ Safety Relays ESM
- ▶ Modular Safety System ESM-F

Rope Pull Switches

ManMachine



Joystick Switches

Electronic Handwheels

Pendant Stations

- ▶ Pendant Stations HBA
- ▶ Pendant Stations HBE/HBL

Electronic-Key-System

International representation

Australia

Micromax Sensors & Automation
112 Beaconsfield St
Auburn NSW 2144
Tel. +61-2-4271-1300
Fax +61-2-4271-8091
micromax@micromax.com.au

Austria

EUCHNER G.m.b.H.
Süddruckgasse 4
2512 Tribuswinkel
Tel. +43-2252-421-91
Fax +43-2252-452-25
info@euchner.at

Benelux

EUCHNER (BENELUX) BV
Visschersbuurt 23
3350 AC Papendrecht
Tel. +31-78-6154-766
Fax +31-78-6154-311
info@euchner.nl

Brazil

EUCHNER Ltda
Av. Prof. Luiz Ignácio Anhaia Mello,
no. 4387
S. Lucas
São Paulo - SP - Brasil
CEP 03295-000
Tel. +55-11-2918-2200
Fax +55-11-2301-0613
euchner@euchner.com.br

Canada

IAC & Associates Inc.
2180 Fasan Drive
Unit A
Oldcastle, Ontario
NOR 1L0
Tel. +1-519-737-0311
Fax +1-519-737-0314
sales@iacnassociates.com

China

EUCHNER (Shanghai) Trading Co., Ltd.
Unit C, Floor 20
Cross Region Plaza
No. 899 Lingling Road
Xuhui District
Shanghai, 200030
Tel. +86-21-5774-7090
Fax +86-21-5774-7599
info@euchner.com.cn

Czech Republic

EUCHNER electric s.r.o.
Spielberk Office Center
Holandská 8
639 00 Brno
Tel. +420-533-443-150
Fax +420-533-443-153
info@euchner.cz

Denmark

Duelco A/S
Mommarmvej 5
6400 Sønderborg
Tel. +45-7010-1007
Fax +45-7010-1008
info@duelco.dk

Finland

Sähkölehto Oy
Holkkitie 14
00880 Helsinki
Tel. +358-9-774-6420
Fax +358-9-759-1071
office@sahkolehto.fi

France

EUCHNER France S.A.R.L.
Parc d'Affaires des Bellevues
Allée Rosa Luxembourg
Bâtiment le Colorado
95610 ERAGNY sur OISE
Tel. +33-1-3909-9090
Fax +33-1-3909-9099
info@euchner.fr

Hong Kong

Imperial Engineers & Equipment Co. Ltd.
Unit B 12/F Cheung Lee Industrial Building
9 Cheung Lee Street Chai Wan
Hong Kong
Tel. +852-2889-0292
Fax +852-2889-1814
info@imperial-elec.com

Hungary

EUCHNER Ges.m.bH
Magyarországi Fióktelep
2045 Törökbálint
FSD Park 2.
Tel. +36-2342-8374
Fax +36-2342-8375
info@euchner.hu

India

EUCHNER Electric (India) Pvt. Ltd.
West End River View
40, First Floor
Survey No. 169/1, Aundh
Pune 411007
Tel. +91-20-6401 6384
Fax +91-20-2588 5148
info@euchner.in

Teknic Euchner Pvt. Ltd.

64, Electronics City
Hosur Road
Bangalore 560100
Tel. +91-80-28520711
Fax +91-80-28520900
marketing@teknic-euchner.co.in

Israel

Ilan At Gavish Automation Service Ltd.
26 Shenkar St. Qiryat Arie 49513
P.O. Box 10118
Petach Tikva 49001
Tel. +972-3-922-1824
Fax +972-3-924-0761
mail@ilan-gavish.com

Italy

TRITECNICA S.r.l.
Viale Lazio 26
20135 Milano
Tel. +39-02-5419-41
Fax +39-02-5501-0474
info@tritecnica.it

Japan

Solton Co. Ltd.
2-13-7, Shin-Yokohama
Kohoku-ku, Yokohama
Japan 222-0033
Tel. +81-45-471-7711
Fax +81-45-471-7717
sales@solton.co.jp

Korea

EUCHNER Korea Co., Ltd.
RM 810 Daerung Technotown 3rd
#448 Gasang-Dong
Kumchon-Gu, Seoul
Tel. +82-2-2107-3500
Fax +82-2-2107-3999
info@euchner.co.kr

Mexico

SEPIA S.A. de C.V.
Maricopa # 10
302, Col. Napoles.
Del. Benito Juarez
03810 Mexico D.F.
Tel. +52-55-5536-7787
Fax +52-55-5682-2347
alazcano@sepia.mx

Poland

ELTRON
Pl. Wolności 7B
50-071 Wrocław
Tel. +48-71-3439-755
Fax +48-71-3460-225
eltron@eltron.pl

Republic of South Africa

RUBICON ELECTRICAL DISTRIBUTORS
4 Reith Street, Sidwell
6061 Port Elizabeth
Tel. +27-41-451-4359
Fax +27-41-451-1296
sales@rubiconelectrical.com

Romania

First Electric SRL
5, Luterana Street
App. 27, Sector 1
010161 Bucharest
Tel. +40-21-31231-39
Fax +40-21-31131-93
office@firstelectric.ro

Singapore

Sentronics Automation & Marketing Pte Ltd.
Blk 3, Ang Mo Kio Industrial Park 2A
#05-06
Singapore 568050
Tel. +65-6744-8018
Fax +65-6744-1929
sentronics@pacific.net.sg

Slovakia

EUCHNER electric s.r.o.
Spielberk Office Center
Holandská 8
639 00 Brno
Tel. +420-533-443-150
Fax +420-533-443-153
info@euchner.cz

Slovenia

SMM d.o.o.
Jaskova 18
2000 Maribor
Tel. +386-2450-2326
Fax +386-2462-5160
franc.kit@smm.si

Spain

EUCHNER, S.L.
Gurutzegi 12 - Local 1
Polígono Belartza
20018 San Sebastian
Tel. +34-943-316-760
Fax +34-943-316-405
comercial@euchner.es

Sweden

Censit AB
Box 331
33123 Värnamo
Tel. +46-370-6910-10
Fax +46-370-1888-8
info@censit.se

Switzerland

EUCHNER AG
Grofstrasse 17
8887 Mels
Tel. +41-81-720-4590
Fax +41-81-720-4599
info@euchner.ch

Taiwan

Daybreak Int'l (Taiwan) Corp.
3F, No. 124, Chung-Cheng Road
Shihlin 11145, Taipei
Tel. +886-2-8866-1234
Fax +886-2-8866-1239
day111@ms23.hinet.net

Thailand

Aero Automation Co., Ltd.
600/441 Moo 14 Phaholyothin Rd.
Kukot, Lam Lukka
Patumthanee 12130
Tel. +66-2-536-7660-1
Fax +66-2-536-7877
aeroautomation@yahoo.co.th

Turkey

Entek Otomasyon Urunleri San.ve Tic.Ltd.Sti.
Perpa Tic.Mer. B Blok
Kat: 11 No:1622 - 1623
34384 Okmeydani / Istanbul
Tel. +90-212-320-2000 / 01
Fax +90-212-320-1188
entekotomasyon@entek.com.tr

United Kingdom

EUCHNER (UK) Ltd.
Unit 2 Petre Drive,
Sheffield
South Yorkshire
S4 7PZ
Tel. +44-114-256-0123
Fax +44-114-242-5333
info@euchner.co.uk

USA

EUCHNER USA Inc.
6723 Lyons Street
East Syracuse, NY 13057
Tel. +1-315-7010-315
Fax +1-315-7010-319
info@euchner-usa.com

EUCHNER USA Inc.

Detroit Office
130 Hampton Circle
Rochester Hills, MI 48307
Tel. +1-248-537-1092
Fax +1-248-537-1095
info@euchner-usa.com

EUCHNER GmbH + Co. KG

Kohlhammerstraße 16

70771 Leinfelden-Echterdingen

Germany

Tel. +49-(0)711-7597-0

Fax +49-(0)711-753316

info@euchner.de

www.euchner.com

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EUCHNER