

# Product Guide



**EUCHNER**  
More than safety.



## High spirits safeguard steady innovation

The EUCHNER success story starts in 1940 with the start-up of an engineering company by Emil Euchner. A milestone was set in 1952 with the development of the first “multiple limit switch” in the world. Highly sophisticated in technical terms, this position switch was developed in close co-operation with the machine tool industry. It is used for positioning and controlling machines and systems, and is still a symbol of the company’s innovative power today.

Safeguarding people, machines and processes is the main focus of EUCHNER's activities today. Wherever people and machine meet, our safety components help minimizing hazards and risks for workers.

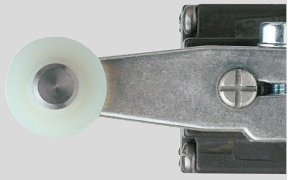
Our primary objective is 100% customer satisfaction without neglecting the well-being of our employees. The hallmarks of the EUCHNER philosophy are therefore quality, reliability and precision. Based on the long-standing experience of our staff, we always find the right solution for our customers' individual requirements.

The medium-sized family-operated company based in Leinfelden, Germany, employs around 750 people around the world. In addition to the production locations in Unterböhringen and Shanghai/China, 18 subsidiaries and other sales partners in Germany and abroad work for our international success on the market.



 **made  
in  
Germany**

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## ■ ManMachine

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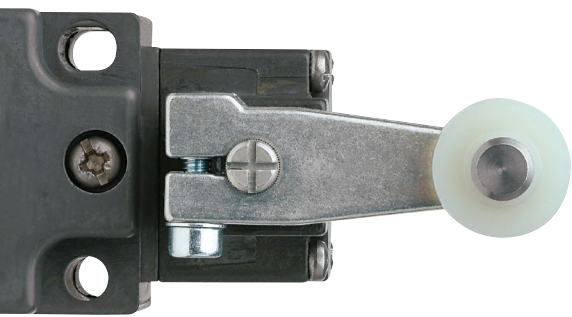
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## ■ Automation

EUCHNER developed the first multiple limit switch in 1952. This switch, which has been continuously further developed, still forms a key element of the product range today alongside numerous other command switches. Selected, high quality materials, the tough surfaces as well as the proven EUCHNER characteristics of quality, reliability and precision makes these switches ideal for use in mechanical and systems engineering. The Automation product line also includes round plug connectors, trip dogs, trip rails and inductive ident systems.

### Position switches

These mechanical command switches are designed according to the European standard EN 50041. The robust design, the utilization of corrosion-resistant materials, the precise production methods and the high degree of protection guarantee straightforward and reliable function in the toughest conditions.



■ Detailed information in catalog: Main Catalogue ManMachine, Automation



### Precision single limit switches

These limit switches were developed in close co-operation with machine tool manufacturers. The high quality materials, the combination of mature technology, high precision and practical design guarantee straightforward function in all industrial applications. Different designs cover a wide range of specific applications.

■ Detailed information in catalog: Main Catalogue ManMachine, Automation



### Precision multiple limit switches

Suitable for use in harsh production conditions, these high precision, reliable switches with their compact design are ideal for positioning and control applications in mechanical and systems engineering. A very wide range of applications is covered by the flexible configuration of these devices with non-contact and mechanical switches as well as other customer-specific features. Their high quality guarantees an exceptional mechanical life.

■ Detailed information in catalog: Main Catalogue ManMachine, Automation





### Inductive ident systems

Inductive ident systems are used for the non-contact identification of tools, workpiece carriers, pallets, containers and vehicles in the entire logistics sector. The read/write data carriers function completely wear-free and without batteries using inductive coupling.

**I Detailed information in catalog: Main Catalogue ManMachine, Automation**

### Trip rails/trip dogs

The combination of trip rails and trip dogs with all EUCHNER command switches safeguards the advantages of these highly precise positioning devices and ensures trouble-free operation.



**I Detailed information in catalog: Main Catalogue ManMachine, Automation**



### Single hole fixing limit switches

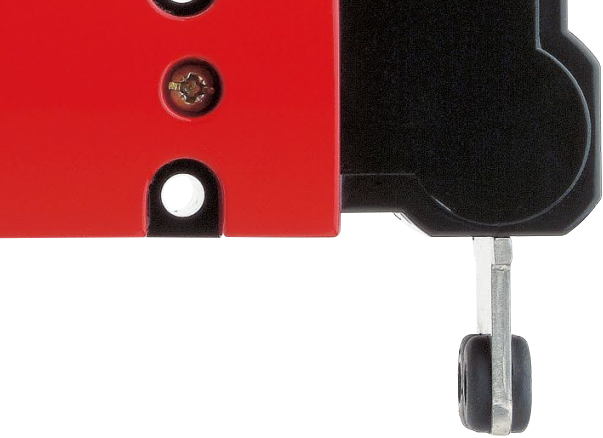
The alternative to inductive proximity switches are mechanically actuated limit switches. These switches are completely maintenance-free and are also used in the most extreme conditions. Their small size makes it possible to install them directly at the monitoring point.

**I Detailed information in catalog: Main Catalogue ManMachine, Automation**

### Round plug connectors

Round plug connectors have a very robust, matt chromium-plated brass housing. When assembled correctly in relation to EMC, they provide optimal protection against electromagnetic interference. The connector system can also be used for very low currents and voltages because of the integration of gold-plated contacts.





## ■ Safety

### Safety switches with metal housing

The function of safety switches is to monitor the position of a safety guard and, if the safety guard is opened, to trigger a signal that safely interrupts the supply of power to the hazardous parts of the system. Switches are available with a large number of options, for example with guard locking, emergency release and escape release as well as accessories.

### Safety switches without guard locking

Safety switches with a separate actuator permit operation of a system only if the safety guard is in the closed position and the actuator is inserted in the switch. A range of mounting fixtures makes these devices ideally suited to situations requiring high flexibility and robust design.



■ Detailed information in catalog:  
Safety Switches with Metal Housing



### Safety switches with guard locking

In addition to the same function as the safety switches with a separate actuator, these switches also have guard locking. Safety guards can then not be opened when locked.

■ Detailed information in catalog:  
Safety Switches with Metal Housing





### Safety switches with guard locking and guard lock monitoring

These safety switches have an interlocking solenoid with additional guard lock monitoring. As a result the position of the guard and the solenoid can be monitored safely. The guard locking prevents the unintentional opening of a safety guard. These switches are suitable for the protection of people as well as for the protection of the process.

**I Detailed information in catalog: Safety Switches with Metal Housing**



### Safety hinges

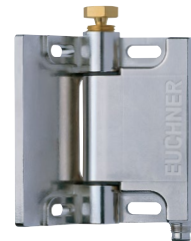
Because of its small design, the safety hinge is particularly suitable for applications in which robustness is required in conjunction with small dimensions. It combines the function of a door hinge with that of a safety switch. The safety hinge can be mounted on standard aluminum profiles or directly on doors. The operating point can be adjusted over a large angular range.

**I Detailed information in catalog: Safety Switches with Metal Housing**

### Position switches and limit switches with safety function

These position switches are used to limit the final position and to safely shut down drives in systems and machinery. The built-in safety switching elements ensure safe interruption of the circuit. Like all EUCHNER safety switches, contact elements are available in a large number of versions and provide the necessary flexibility for all applications.

**I Detailed information in catalog: Safety Switches with Metal Housing**



## ■ Safety

### Safety switches with plastic housing

The safety switches with plastic housing are also ideally suited to use in all applications. Both small and large guards can be protected depending on the version and requirement. Switches with and without guard locking are also available in plastic housing.



### Position switches with safety function

These switches are used for monitoring the position of safety guards and moving machine components. They are available with different actuating heads. Every user can thus employ the most suitable actuating element for his/her application. The versions with hinged actuator require little space for mounting and can be fitted such that they are secure against tampering.

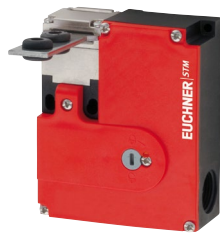
■ Detailed information in catalog: [Safety Switches with Plastic Housing](#)



### Safety switches without guard locking

These safety switches with a separate actuator are suitable for safety guards that must be closed to provide the necessary safety. The different versions of the switches provide solutions for all applications.

■ Detailed information in catalog: [Safety Switches with Plastic Housing](#)



### Safety switches with guard locking and guard lock monitoring

The plastic safety switches also ensure that safety guards remain in the closed position until a dangerous movement has come to a standstill. Opening of the safety guards during a process is also prevented. With a choice of actuating heads made of plastic or metal, you will find the right combination for every application. The advantages of metal and plastic switches can therefore be optimally combined.



**I Detailed information in catalog: Safety Switches with Plastic Housing**

### Rope pull switches

EUCHNER rope pull switches are used as EMERGENCY STOP devices with detent according to the related standard wherever machines and systems cannot be protected with safety covers (for example on particularly long and extensive systems). The EMERGENCY STOP function is triggered by pulling a pre-tensioned rope system or if the rope is severed.



**I Detailed information in catalog: Emergency Stop Device/Rope Pull Switches**





## Safety

### Non-contact safety switches

EUCHNER supplies non-contact safety switches with two different principles of operation. Systems with transponder technology and systems with magnetically coded reed switches. Especially the transponder-based safety systems feature a very large read distance and center offset, a uniform operating distance as well as protection against tampering. Furthermore, with their small design, no service requirements and their resistance to vibration, they offer advantages in many applications.



### Non-contact safety systems CES with transponder coding

The coded electronic safety systems CES are modern interlocking devices of type 4 for the protection of people, machines and processes. They are based on non-contact transponder technology and consist of a coded actuator, a read head and evaluation electronics. In some systems, the read head and evaluation electronics form a self-contained unit. A unit of this kind is referred to as a safety switch. All safety functions are combined in a single component here (internal evaluation). With external evaluation, the actuator is read via a separate read head connected to an evaluation unit in the control cabinet.



**Detailed information in catalog: Transponder-coded safety systems**



### Key adapter CKS

The CKS is used as an electronic lockout mechanism and for safely entering installations. It is based on transponder technology and prevents the installation starting if the key is removed. The CKS key adapter is used in combination with a CES evaluation unit.



**Detailed information in the catalog: Transponder-coded safety systems**



### Non-contact safety systems CMS – magnetic coding

These magnetic switches are characterized by their high degree of protection and compact design. A major advantage of safety switches CMS is that the actuator and read head can be fitted behind stainless steel.

**Detailed information in catalog: Magnetically coded safety switches CMS**

### Safety system ESL

Multifunctional door handle, consisting of a handle module and an interlocking module with integrated transponder technology. It is used for protecting and monitoring safety guards. The compact and symmetrical design permits simple mounting on profile and allows use on doors hinged on the left and right. The metal housing is ideal for use in harsh conditions.



**I Detailed information in catalog: Safety system ESL**



### Transponder-coded safety guard locking with guard lock monitoring

With the CET the advantages of non-contact transponder technology have been combined with mechanical guard locking. Features such as unique coding and a particularly large offset are integrated into a switch with extremely high locking forces. The highest safety category is achieved even with the use of a single switch.

**I Detailed information in the catalog: Transponder-coded safety systems**

### Safety switches CTP

This switch combines the proven principle of operation of electromechanical safety switches with guard locking and guard lock monitoring with modern transponder coded safety engineering. Thanks to this technology, even a single CTP achieves category 4 / PL e according to EN ISO 13849-1 without additional fault exclusion and complies with all the requirements of EN ISO 14119.



**I Detailed information in catalog: Transponder-coded safety switch CTP with guard locking**



EtherNet/IP **PROFINET**

### Safety System MGB – Multifunctional Gate Box

The safety system MGB (Multifunctional Gate Box) combines a safety switch, bolt and door locking mechanism in one system. The modular design is flexible for upgrades and can be individually adapted to suit the diverse safety requirements of every customer. It is ideal for protecting safety doors. In addition to the standard version the MGB is also available in the versions PROFINET and EtherNet/IP.

**I Detailed information in catalog: Multifunctional Gate Box MGB**

### Field evaluation unit CES-FD

The CES-FD evaluation unit is suitable for the connection of CES / CKS read heads. The transponder signals are evaluated directly in the field. The safe semiconductor outputs can be connected directly to the control system.

**I Detailed information in catalog: Transponder-coded safety systems**

### Transponder-coded safety switch CEM-C40

The safety switch CEM-C40 is the ideal solution for all customers who must achieve a high level of safety (category 4 / PL e) when securing a safety guard and also need guard locking to protect the process. It comprises a solenoid and integrated evaluation electronics. Opening is effectively prevented by the magnetic forces even in applications where significant forces are applied by the user.

**I Detailed information in catalog: Transponder-coded safety systems**





## Safety

### Enabling switches

The large range of enabling switches from EUCHNER provides the user with suitable solutions for every application. Along with standard devices, built-in versions and kits are available.

### Bolts for safety guards

Bolts are used in conjunction with safety switches. The safety switches are protected against damage and installation is simplified.

### Light grids and light curtains LCA

When combined with the proven guard locking devices and interlocking devices, non-contact safety guards such as light grids and light curtains form a complete solution to secure machines.




### Enabling switches

Enabling switches are manually operated control devices. These switches are used wherever personnel must work directly in the danger area on machines and systems. Because of their robust and ergonomic design, these switches are the right choice for numerous applications, for example during setup operation.



Authorized personnel can enter hazardous areas with the enabling switches. Enabling switches are available as built-in and hand-held versions, with two or three-stage switching elements and in various housings.

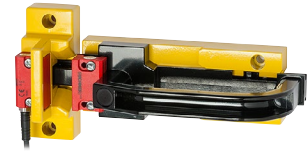


 Detailed information in catalog: Enabling Switches

### Bolts for safety guards

The use of bolts will ensure that the actuator is properly inserted in the safety switch when the safety guard is closed. Forces, as occur for instance on slamming a guard shut, are applied to the mechanically very robust bolt and not the safety switch. In accessible hazardous areas, bolts with escape release enable the safety guard to be opened from inside the danger area. By fitting padlocks to the bolt tongue, operators can effectively prevent locking inside.

An additional door handle is no longer required if an EUCHNER bolt is used.



The bolt is designed to provide mechanical protection of the switch when the safety guard is closed. The assembly holes provided permit easy and fast installation of the bolts to the safety guards. Mounting is particularly straightforward on standard aluminum profiles. Bolts can be combined with both electromechanical and non-contact safety switches

**I Detailed information in the accessory category of catalogs: Transponder-coded safety systems. Safety Switches with Metal Housing and Safety Switches with Plastic Housing.**

### Light grids and light curtains LCA

Light grids and light curtains are non-contact safety guards (electro-sensitive protective equipment) for securing danger areas on machines and installations. They use several light beams to form an invisible safety light curtain in front of the danger area. When a machine operator interrupts one of these light beams, it will cause the safety outputs to switch off.

**I Detailed information in catalog: Light grids and light curtains LCA**





## ■ Safety

### Safety Switches with AS-Interface

A connection to the AS-Interface Safety at Work is available for almost all EUCHNER safety switches. As a result the switches can be integrated into the bus very easily.

### Safety relays

EUCHNER supplies a wide range of evaluation units for monitoring safety components.

### Small safe control system

Freely programmable, modular safety system for the protection of machines and installations.

### Safety Switches with AS-Interface

These safety products are based on the proven standard AS-Interface bus technology. The wiring effort has been reduced to a minimum. Because of the simple structure it is not necessary to set parameters. The safety-related signals for AS-Interface Safety at Work are evaluated using a safety monitor. This monitor is a safety PLC that can be programmed, as required, very straightforwardly using clearly understandable software.



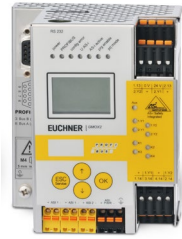
The wiring of the overall system always corresponds to the highest safety category. The status signals from all safety-related components connected can be evaluated directly in the control system. Additions can be realized as required with very little effort and very easily.



■ Detailed information in catalog: Safety Switches with AS-Interface







**Safety relays ESM**

All modules in this series are built into a housing that is only 22.5 mm wide. Various safety relays are available to which expansion modules can be added on the output side. The advantage of the ESM modular principle is that different safety evaluations can be realized with only a few module variants.

**| Detailed information in catalog: Safety Relays ESM**

**Small safe control system MSC**

The small safe control system MSC is a universal, freely programmable, modular safety system for the protection of machines and installations. Even with only the base unit it is possible to realize applications with up to 8 inputs and 2 outputs. Depending on requirements, the MSC can be expanded with input, output or fieldbus modules. Programming is undertaken easily and intuitively using the software EUCHNER Safety Designer. The MSC offers various options for diagnostics to obtain a quick overview of the status of the device.

**| Detailed information in catalog: Small safe control system MSC**





## ■ ManMachine

### Joysticks, electronic handwheels, hand-held pendant stations

Joysticks are integrated into control panels and portable control equipment. Electronic handwheels are particularly useful in any situation where manual axis positioning is required. The hand-held pendant stations facilitate work in danger areas on machinery and systems.

### Electronic-Key-System

The EKS provides electronic access management on PCs and control systems, and protects against unauthorized operation.



### Electronic handwheels

EUCHNER electronic handwheels are universal pulse generators for manual axis positioning. They are mainly used for positioning NC-controlled axes. Different pulse rates and output stages make the handwheels suitable for the most control systems. By using wear-free magnetic detent mechanisms, absolutely no servicing is required.

■ Detailed information in catalog: Hand-Held Pendant Stations/Handwheels



### Joysticks

These devices are always used if movements are to be controlled as a function of the manual actuation direction. Joysticks are used in areas of the steel and construction industry, in transport and conveyor systems, in systems engineering and mechanical engineering, as well as in warehousing, medicine and studios. The devices are also approved for maritime use because of their certification by Germanischer Lloyd.



■ Detailed information in catalog: Joystick Switches

### Hand-held pendant stations

Machine functions can be monitored and controlled decentrally using hand-held pendant stations. In addition to the control function, hand-held pendant stations can also have a safety function. For this purpose the hand-held pendant stations are equipped with EMERGENCY STOP buttons and enabling switches.

■ Detailed information in catalog: Hand-Held Pendant Stations/Handwheels



**Electronic-Key-System EKS**

The EKS comprises an Electronic-Key and an Electronic-Key adapter - a read/write device with integrated evaluation electronics and interface. Various versions with different interfaces are available. All devices feature an extremely compact design for installation in a standard cut-out. Because of the non-contact transfer of data, the Electronic-Key adapter is suitable for harsh industrial use.

**I Detailed information in catalog: Electronic-Key-System EKS**



**Electronic-Key-Manager EKM**

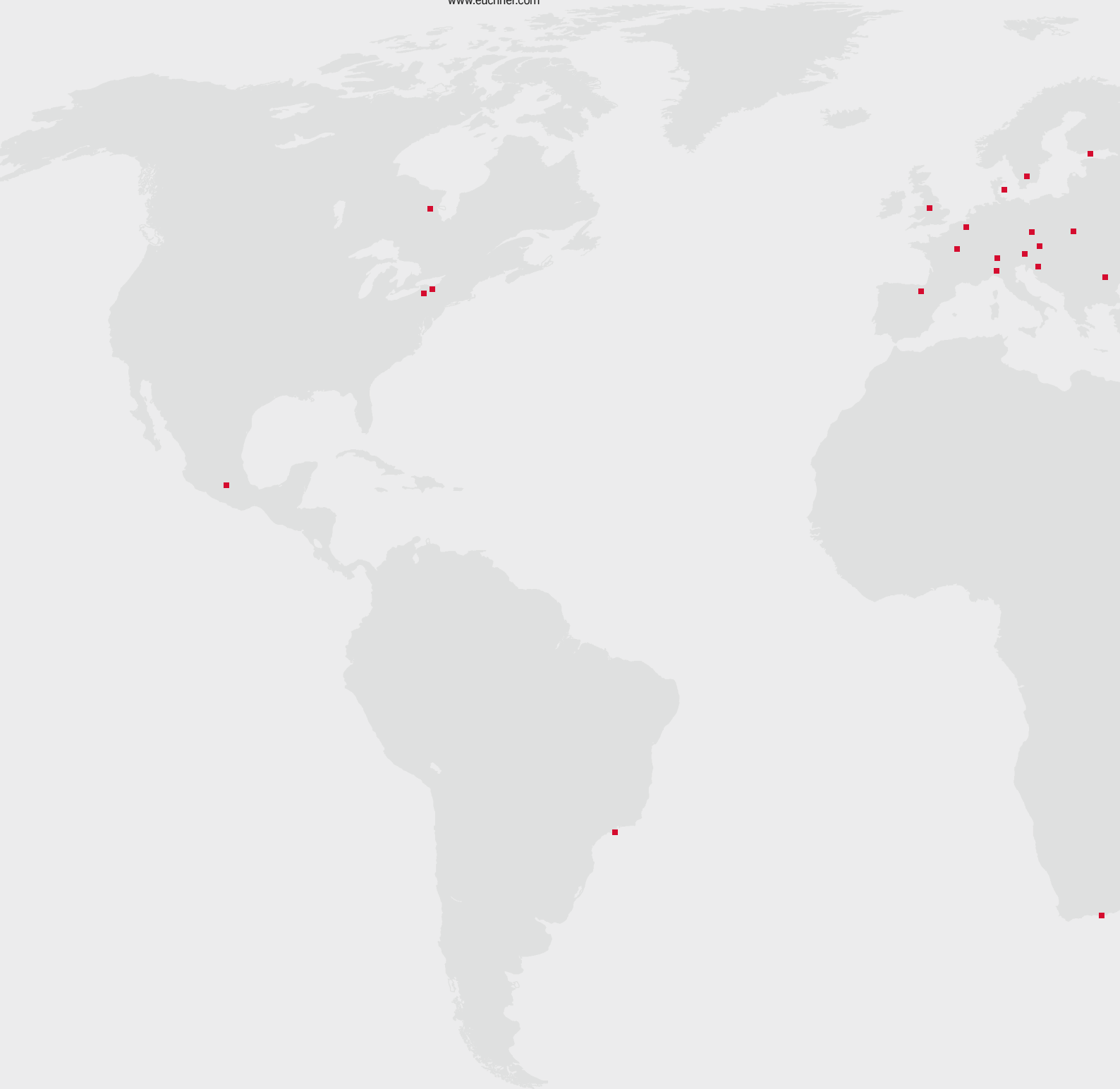
EKM is a software package for writing and managing the keys using a PC. All Electronic-Keys and their contents are saved in a central database. The freely programmable memory in the key can be allocated to database fields. The database fields and the user interfaces for entering the data can be configured as required. Read and write authorizations can be granted through user management. Product parameters and operator entries can be logged according to FDA-21 CFR part 11.



**I Detailed information in catalog: Electronic-Key-System EKS**

## Head office

EUCHNER GmbH + Co. KG  
Kohlhammerstraße 16  
70771 Leinfelden-Echterdingen  
Germany  
Tel. +49 711 7597-0  
Fax +49 711 753316  
info@euchner.de  
www.euchner.com



# International Representatives

## Austria

EUCHNER GmbH  
Aumühlweg 17-19/Halle 1C  
2544 Leobersdorf  
Tel. +43 720 010 200  
Fax +43 720 010 200-20  
info@euchner.at

## Benelux countries

EUCHNER (BENELUX) BV  
Visschersbuurt 23  
3356 AE Papendrecht  
Tel. +31 78 615-4766  
Fax +31 78 615-4311  
info@euchner.nl

## Brazil

EUCHNER Com. Comp. Eletronicos Ltda.  
Av. Prof. Luiz Ignácio Anhaia Mello,  
no. 4387  
Vila Graciosa  
São Paulo - SP  
CEP 03295-000  
Tel. +55 11 29182200  
Fax +55 11 23010613  
euchner@euchner.com.br

## Canada

EUCHNER Canada Inc.  
2105 Fasan Drive  
Oldcastle, ON NOR 1L0  
Tel. +1 519 800-8397  
Fax +1 519 737-0314  
sales@euchner.ca

## China

EUCHNER (Shanghai)  
Trading Co., Ltd.  
No. 15 building,  
No. 68 Zhongchuang Road,  
Songjiang  
Shanghai, 201613, P.R.C  
Tel. +86 21 5774-7090  
Fax +86 21 5774-7599  
info@euchner.com.cn

## Czech Republic

EUCHNER electric s.r.o.  
Trnkova 3069/117h  
62800 Brno  
Tel. +420 533 443-150  
Fax +420 533 443-153  
info@euchner.cz

## Denmark

Duelco A/S  
Systemvej 8-10  
9200 Aalborg SV  
Tel. +45 7010 1007  
Fax +45 7010 1008  
info@duelco.dk

## Estonia

Sähkölehto OÜ  
Hobujaama 4  
Tallinn 10151  
Tel. +372 56 645 400  
office@sahkolehto.fi

## Finland

Sähkölehto Oy  
Holkkitie 14  
00880 Helsinki  
Tel. +358 9 7746420  
Fax +358 9 7591071  
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

## Hungary

EUCHNER Magyarországi Kft.  
FSD Park 2.  
2045 Törökbálint  
Tel. +36 1919 0855  
Fax +36 1919 0857  
info@euchner.hu

## India

EUCHNER (India) Pvt. Ltd.  
401, Bremen Business Center,  
City Survey No. 2562, University Road,  
Aundh, Pune - 411007  
Tel. +91 20 64016384  
Fax +91 20 25885148  
Mobil +91 8600121112  
info@euchner.in

## Israel

Ilan & Gavish Automation Service Ltd.  
26 Shenkar St. Qiryat Arie 49513  
P.O. Box 10118  
Petach Tikva 49001  
Tel. +972 3 9221824  
Fax +972 3 9240761  
mail@ilan-gavish.com

## Italy

TRITECNICA SpA  
Viale Lazio 26  
20135 Milano  
Tel. +39 02 541941  
Fax +39 02 55010474  
info@tritecnica.it

## Japan

EUCHNER Co., Ltd.  
1662-3 Komakiharashinden,  
Komaki-shi, Aichi-ken  
485-0012, Japan  
Tel. +81 568 42 0157  
Fax +81 568 42 0159  
info@euchner.jp

## Korea

EUCHNER Korea Co., Ltd.  
115 Gasan Digital 2-Ro  
(Gasan-dong, Daeyung  
Technotown 3rd Rm 810)  
153- 803 Kumchon-Gu, Seoul  
Tel. +82 2 2107-3500  
Fax +82 2 2107-3999  
info@euchner.co.kr

## Mexico

EUCHNER México S de RL de CV  
Conjunto Industrial PK Co.  
Carretera Estatal 431 km. 1+300  
Ejido El Colorado, El Marqués  
76246 Querétaro, México  
Tel. +52 442 402 1485  
Fax +52 442 402 1486  
info@euchner.mx

## Poland

EUCHNER Sp. z o.o.  
Kraśnińskiego 29  
40-019 Katowice  
Tel. +48 32 252 20 15  
Fax +48 32 252 20 13  
info@euchner.pl

## Portugal

PAM Servicos Tecnicos  
Industriais Lda.  
Rua de Timor - Pavilhao 2A  
Zona Industrial da Abelheira  
4785-123 TROFA  
Tel. +351 252 418431  
Fax +351 252 494739  
pam@mail.telepac.pt

## 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  
Str. Ritmului Nr. 1 Bis  
Ap. 2, Sector 2  
021675 Bucuresti  
Tel. +40 21 2526218  
Fax +40 21 3113193  
office@firstelectric.ro

## Singapore

BM Safety Singapore Pte Ltd.  
3 Ang Mo Kio Industrial Park 2A  
#07-04 Ang Mo Kio Tech 1  
Singapore 568050  
Tel. +65 6483 9288  
Fax +65 6235 0506  
sales@bmsafety.com.sg

## Slovakia

EUCHNER electric s.r.o.  
Trnkova 3069/117h  
62800 Brno  
Tel. +420 533 443-150  
Fax +420 533 443-153  
info@euchner.cz

## Slovenia

SMM proizvodni sistemi, d.o.o.  
Jaskova 18  
2000 Maribor  
Tel. +386 2 4502326  
Fax +386 2 4625160  
franc.kit@smm.si

## Spain

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

## Sweden

Censit AB  
Box 331  
33123 Värnamo  
Tel. +46 370 691010  
Fax +46 370 18888  
info@censit.se

## Switzerland

EUCHNER AG  
Falknisstrasse 9a  
7320 Sargans  
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  
day11@ms23.hinet.net

## Turkey

EUCHNER Endüstriyel Emniyet  
Teknolojileri Ltd. Şti.  
Hattat Bahattin Sok.  
Ceylan Apt. No. 13/A  
Göztepe Mah.  
34730 Kadıköy /İstanbul  
Tel. +90 216 359-5656  
Fax +90 216 359-5660  
info@euchner.com.tr

## United Kingdom

EUCHNER (UK) Ltd.  
Unit 2 Petre Drive  
Sheffield  
South Yorkshire  
S4 7PZ  
Tel. +44 114 2560123  
Fax +44 114 2425333  
sales@euchner.co.uk

## USA

EUCHNER USA Inc.  
6723 Lyons Street  
East Syracuse, NY 13057  
Tel. +1 315 701-0315  
Fax +1 315 701-0319  
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. +49 711 7597-0  
Fax +49 711 753316  
info@euchner.de  
www.euchner.com

**EUCHNER**

More than safety.

# Product Overview







## Automation



**EUCHNER**

More than safety.

# Automation at a glance


















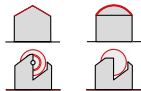


		Ident Systems						
		CIS3		CIS3A		CIS3A-Mini		
								
		Read system	Read/write system	Read system	Read/write system	Read system	Read/write system	
Approval		<b>ERC</b>		<b>ERC</b>		<b>ERC</b>		
General	Housing material	Head	CuZn, nickel-plated	plastic	CuZn, nickel-plated	plastic	CuZn, nickel-plated	
		Evaluation unit	–	–	–	–	plastic	
	Housing dimensions	Head	M30x80 mm	40x40x149 mm	M30x80 mm	40x40x149 mm	M12x39 mm	M12x39 mm
		Evaluation unit	–	–	–	–	114x99x22.5 mm	114x99x22.5 mm
	Ambient temperature		0 to +50 °C	0 to +55 °C	0 to +50 °C	0 to +55 °C	0 to +50 °C	0 to +55 °C
	Type of installation	Head	non-flush	non-flush	non-flush	non-flush	non-flush	non-flush
		Evaluation unit	–	–	–	–	DIN rail mounting	DIN rail mounting
Degree of protection, max. acc. to IEC 60529	Head	IP67	IP65	IP67	IP65	IP65	IP65	
	Evaluation unit	–	–	–	–	IP20	IP20	
Operating voltage $U_B$		24 V	24 V	24 V	24 V	24 V	24 V	
Current consumption (without load current) $I_B$		100 mA	120 mA	100 mA	120 mA	100 mA	100 mA	
Connection	Output voltage	A, B, C, D, strobe = 1 min.	$U_B - 3 V$	–	$U_B - 3 V$	–	$U_B - 3 V$	–
		A, B, C, D, strobe = 0 max.	2 V	–	2 V	–	2 V	–
Input voltage	Skip = 1 min.	15 V	–	15 V	–	15 V	–	
	Skip = 0 max.	2 V	–	2 V	–	2 V	–	
Interface		4-Bit parallel	seriell RS 232/V.24	4-Bit parallel	seriell RS 232/V.24	4-Bit parallel	seriell RS 232/V.24 RS 422	
Transfer protocol		–	3964R	–	3964R	–	3964R	
Data transfer rate		–	9.6 kBaud	–	9.6 kBaud	–	9.6 kBaud 28.8 kBaud	
Design								
Housing dimensions		$\varnothing 16 \times 8 \text{ mm}$		$35 \times 16 \times 8 \text{ mm}$		$\varnothing 10 \times 4 \text{ mm}$		
Approach		direction-dependent		direction-independent		direction-independent		
Type of installation		cube-shaped: screws, non-flush with metal Cylindrical: bonding, flush in metal		screws, non-flush with metal		bonding, flush in metal		
Read distance, max.		18 mm		28 mm		5 mm		
Relative speed		410 mm/s	static	230 mm/s	static	static		
Data carrier/read station								
Storage capacity		16 Bytes		16 Bytes		4 Bytes	116 Bytes	
Ambient temperature		-40 to +85 °C		-20 to +85 °C		-25 to +70 °C		
Degree of protection		IP67		IP67		IP67		
Number of write cycles, min.		100.000		100.000		100.000		
Number of read cycles		not limited		not limited		not limited		

Inductive ident systems are used for the non-contact identification of products such as workpiece carriers or tools. The robust data carriers without batteries are, for example, programmed with a sequential number. Data carriers can be purchased programmed or you can program them yourself using a head with serial interface, or a portable hand-held terminal. The information is transferred via read-only heads directly to the inputs/outputs on a control system using a parallel data interface. Integration is therefore straightforward and low-cost.

● available    ○ available on request    – not available

All given data refer to the respective minimum or maximum values for the entire series.

# Automation at a glance

	Position Switches	Precision Single Limit Switches				
						
	NG	N01	SN01	N1A	N11	
Approvals						
Special features/ specific advantages	<ul style="list-style-type: none"> <li>• Acc. to EN 50041</li> <li>• down to -40°C (on request)</li> </ul>	<ul style="list-style-type: none"> <li>• down to -40°C (on request)</li> </ul>		<ul style="list-style-type: none"> <li>• Acc. to DIN 43693</li> <li>• down to -40°C (on request)</li> </ul>		
Switching element	Contact elements, max.	4	1	2	2	2
	Switching current, max.	10A	4A	4A	6A	10A
	Switching current min. (at 24V)	1mA	10mA	10mA	5mA	20mA
	Switching voltage, max.	230V	230V	230V	230V	230V
	Mechanical life, max.	30x10 <sup>6</sup>	1x10 <sup>7</sup>	1x10 <sup>7</sup>	30x10 <sup>6</sup>	30x10 <sup>6</sup>
	Operating point accuracy max.	± 0.002	± 0.02	± 0.02	± 0.002	± 0.002
Environment	Housing material	die-cast aluminum, anodized	die-cast aluminum, anodized	die-cast aluminum, anodized	die-cast aluminum, anodized	die-cast aluminum, anodized
	Housing dimensions, min. (HxWxD)	100x40x42mm	40x40x20mm	45x50x22mm	60x76x28mm	62x65x30mm
	Plunger spacing	-	-	-	-	-
	Number of plungers	1	1	1	1	1
	Ambient temperature	-25 to +80°C	-5 to +125°C	-5 to +80°C	-25 to +80°C	-5 to +80°C
	Degree of protection, max., acc. to IEC 60529	IP67	IP67	IP67	IP67	IP67
	LED indicator	●	-	-	●	-
	Approach/actuating direction					
	Approach speed, max.	300m/min	50m/min	50m/min	80m/min	80m/min
	Connection	Cable entry	M20x1.5	M12x1.5	M16x1.5	2 x M16x1.5
Connection cable (pre-assembled)		-	2 or 5m	2 or 5m	-	-
Plug connector		M12, 4-pin + PE SR6 DIN 43651	M12, 4-pin + PE	M12, 4-pin + PE	M12, 4-pin + PE	-
Accessories	Plunger types with bearing, for high approach speed, on request					

● available    ○ available on request    - not available

All given data refer to the respective minimum or maximum values for the entire series.

Single Hole Fixing Limit Switches



EGM8



EGM12



EGT12  
EGT1/4



EGT1M12



EGT1



EGT2



EGT4



- high precision
- small design



- down to -30 °C (on request)



- up to +120 °C (on request)
- for underwater use





## Precision Multiple Limit Switches



RGBF



SN/SB



GSBF



RGBF...AM



SN...AM



• Acc. to DIN 43697

- upright housing
- small flange
- down to -40 °C (on request)
- down to +120 °C (on request)

• upright housing

• Acc. to DIN 43697 with exterior diaphragm

• with exterior diaphragm

2 per plunger unit

2 per plunger unit

2 per plunger unit

2 per plunger unit

2 per plunger unit

10A

10A

10A

10A

10A

10mA

10mA

10mA

10mA

10mA

230V

230V

230V

230V

230V

30x10<sup>6</sup>

30x10<sup>6</sup>

30x10<sup>6</sup>

30x10<sup>6</sup>

30x10<sup>6</sup>

± 0.002

± 0.002

± 0.002

± 0.002

± 0.002

die-cast aluminum,  
anodized

die-cast aluminum,  
anodized

die-cast aluminum,  
anodized

die-cast aluminum,  
anodized

die-cast aluminum,  
anodized

depending on the number  
of plungers

depending on the number  
of plungers

depending on the number  
of plungers

depending on the number  
of plungers

depending on the number  
of plungers

12/16

8/12/16

8/12/16

12

12

2 to 16

2 to 6

2 to 10

2 to 8

2 to 6

-5 to +80 °C

-5 to +80 °C

-5 to +80 °C

-5 to +80 °C

-5 to +80 °C

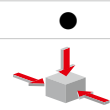
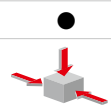
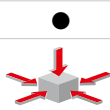
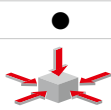
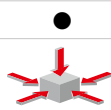
IP67

IP67

IP67

IP67

IP67



120 m/min

120 m/min

120 m/min

50 m/min

50 m/min

M25x1.5

M20x1.5

M25x1.5

M25x1.5

M25x1.5

-

-

-

-

-

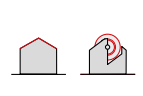
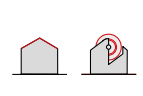
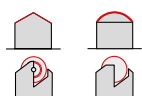
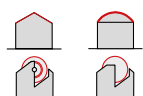
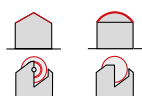
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# Automation at a glance

Inductive					
Precision Single Limit Switches		Precision Multiple Limit Switches			
					
ENA		ESN		SN	
Approvals					
Special features/ specific advantages	• Acc. to DIN 43693	• small design	• Acc. to DIN 43697	• upright housing • small flange	
Switching element	Assured operating distance	0 to 4 mm	0 to 4 mm	0 to 4 mm	0 to 4 mm
	Switching function	NO + NC	NO + NC	NO + NC	NO + NC
	Output	PNP	PNP	PNP	PNP
	Operating voltage DC/AC	10 to 55V	10 to 55V	10 to 55V	10 to 55V
	Rated operating current	250 mA	250 mA	250 mA	250mA
Environment	Housing material	die-cast aluminum, anodized	die-cast aluminum, anodized	die-cast aluminum, anodized	die-cast aluminum, anodized
	Housing dimensions, min. (HxWxD)	74x76x28 mm	50x45x22 mm	depending on the number of proximity switches	depending on the number of proximity switches
	Proximity switch spacing	–	–	12/16	12/16
	Number of proximity switches	1	1	2 to 16	2 to 6
	Ambient temperature	-25 to +70 °C	-25 to +70 °C	-25 to +70 °C	-25 to +70 °C
	Degree of protection, max. acc. to IEC 60529	IP67	IP67	IP67	IP67
	LED indicator	●	●	integrated as standard	integrated as standard
Approach/actuating direction					
Connection	Cable entry	M16x1.5	–	M25x1.5	M20x1.5
	Connection cable (pre-assembled)	–	5 m	–	–
	Plug connectors	–	M12, 4-pin	–	–

● available    ○ available on request    – not available

All given data refer to the respective minimum or maximum values for the entire series.

# Automation at a glance

## Plug Connectors



Round design, metal encapsulated



Design acc. to DIN43651, plastic encapsulated



Design acc. to DIN43651, with cable



Round design, metal encapsulated, with cable



M8/M12

Version	●	●	–	–	●
Male socket	●	●	–	–	●
Male plug	●	–	–	–	●
Female socket	●	●	●	●	●
Female plug	●	–	–	–	●
Coupling socket	●	–	–	–	●
Elbow connector (female)	–	●	●	●	●
Connection					
Number of pins	4 to 19	6 + PE/11 + PE	6 + PE/11 + PE	18 + PE	3 to 8
Thread	PG9 to PG21/ M16 to M25	PG11/PG13.5/ PG16/M20x1.5	PG11/PG13.5/ PG16/M20x1.5	M20x1.5	M8/M8
Earth conductor	●	●	●	●	●
Contact material	CuZn, nickel-plated, 1 µm hard gold-plated	CuZn, silver-plated	CuZn, silver-plated	CuZn, alloy	CuZn, nickel-plated, 0.8 µm hard gold-plated
Connection	Soldered connection	Crimp connection	Crimp connection	Crimp connection	overmolded
Conductor cross-section, max.	1 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1.5 mm <sup>2</sup>	1 mm <sup>2</sup>	0.34 mm <sup>2</sup> /0.5 mm <sup>2</sup>
General					
Housing material	CuZn, matt chromium-plated	PET (polyethylene terephthalate)	PET (polyethylene terephthalate)	CuZn, nickel-plated	CuZn, nickel-plated/ PUR, PVC
Degree of protection to IEC 529/EN60529	IP67	IP65	IP65	IP67	IP67
Ambient temperature	-20 to +80 °C	-40 to +90 °C	-40 to +90 °C	-40 to +125 °C	-40 to +90 °C
Contact resistance	≤ 5 mΩ	≤ 5 mΩ	≤ 5 mΩ	≤ 3 mΩ	≤ 5 mΩ
Rated impulse withstand voltage U <sub>imp</sub>	4 kV	4 kV	4 kV	1.5 kV	1.5 kV
Rated voltage with PE	250 V	250 V	250 V	150 V	10 – 230 V
Rated voltage without PE	50 V	50 V	50 V	–	10 – 30 V
Rated current	6 A	10 A	10 A	8 A	1 – 4 A

### EMC-compliant assembly

The more demanding and complex electronic devices become, the higher the requirements in relation to electromagnetic compatibility (EMC). Only devices that are free of electromagnetic interference will provide trouble-free operation. The connectors on the device input and output can be a key element for an optimal EMC solution. Screened connectors that reduce radiated effects and remove conducted interference are the ideal solution. Round connectors with symmetrical pin patterns and full metal housings are very suitable for this application. The screen function can be optimally realized with these connectors.

● available    ○ available on request    – not available

All given data refer to the respective minimum or maximum values for the entire series.

## Trip Rails



Series UFA



Series UF



Series ULA

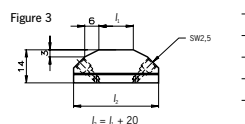
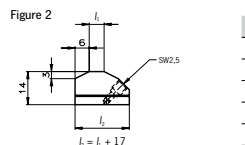
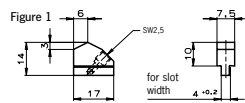


Series UL

Housing material	Aluminium	Cast iron	Aluminium		Aluminium
Slot spacing	8 mm	8 mm	12 mm	16 mm	12 mm
Dimension at number of slots (Width in mm)	2 slots: 44 mm 3 slots: 52 mm 4 slots: 60 mm 5 slots: 68 mm 6 slots: 76 mm	2 slots: 44 mm 3 slots: 52 mm 4 slots: 60 mm 5 slots: 68 mm 6 slots: 76 mm 8 slots: 92 mm	2 slots: 29 mm 3 slots: 41 mm 4 slots: 53 mm 5 slots: 65 mm 6 slots: 77 mm	2 slots: 33 mm 3 slots: 49 mm 4 slots: 65 mm 6 slots: 97 mm	2 slots: 24 mm 3 slots: 36 mm 4 slots: 48 mm
Number of slots max.	6	8	6		4
Length max.	2010 mm	1000 mm	2010 mm		4000 mm

## Trip Dogs

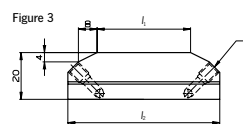
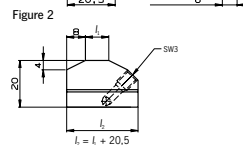
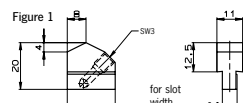
For slot spacing UF8/UFA8



$l_1$	Figure
0	1
4	2
6,3	2
10	3
16	3
20	3
25	3
40	3
63	3
100	3

Series U8

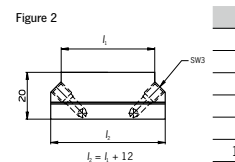
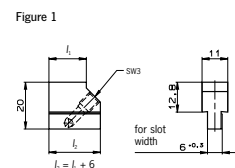
For slot spacing ULA/UL/UF



$l_1$	Figure	DIN/form
0	1	UA
4	2	UA
6,3	2	-
10	2	UA
16	3	UB
25	3	UB
40	3	UB
63	3	UB
100	3	UB
125	3	-

Series U1216

For slot spacing ULA/UL/UF



$l_1$	Figure
10	1
16	1
25	2
40	2
63	2
100	2
125	2

Series UX1216

Housing material	Hardened, ground steel	Hardened, ground steel		Black painted steel	
Slot spacing	8 mm	12 mm	16 mm	12 mm	16 mm

# Product Overview

## Safety Engineering electro-mechanical



# EUCHNER

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# Safety Engineering at a Glance

## Enabling Switches



Enabling switches  
ZSE/ZXE



Enabling switches  
ZSA/ZSB












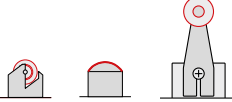


Enabling switches  
ZSM

	Enabling switches ZSE/ZXE	Enabling switches ZSA/ZSB	Enabling switches ZSM
Approvals			
Features/specific advantages	<ul style="list-style-type: none"> <li>• three-stage built-in version</li> <li>• single or dual-channel</li> </ul>	<ul style="list-style-type: none"> <li>• three-stage</li> <li>• single or dual-channel</li> <li>• kit available</li> </ul>	<ul style="list-style-type: none"> <li>• three-stage</li> <li>• dual or three-channel</li> <li>• modular design, vibration signal</li> <li>• kit available</li> </ul>
AS-Interface <i>Safety at Work</i>	–	●	–
<b>Switching elements</b>			
Total switching contacts	see product catalog	see product catalog	see product catalog
Conventional thermal current	4 A	4 A	–
Switching current, min. (at 24V)	1 mA (ZSE)/5 mA (ZXE)	1 mA	–
Mechanical life, max.	1 x 10 <sup>5</sup> (ZSE)/1 x 10 <sup>5</sup> (ZXE)	1 x 10 <sup>5</sup>	1 x 10 <sup>6</sup>
<b>Environment</b>			
Housing material	Plastic	Plastic	Plastic
Housing dimensions, min. (HxWxD)	see product catalog	see product catalog	see product catalog
Ambient temperature	-5 to +60 °C	-5 to +50 °C	-5 to +60 °C
Degree of protection, max. acc. to IEC 60529	IP65 (integrated)	IP65/IP67	IP54
LED display	–	●	●
Approach/actuating directions	–	–	–
Approach speed, max.	–	–	–
<b>Guard locking</b>			
Solenoid operating voltage	–	–	–
Power consumption	–	–	–
Locking force, max.	–	–	–
<b>Connection</b>			
Cable entry	–	∅ 4 – 8 mm	∅ 5 – 10 mm
Connection cable (pre-assembled)	–	●	●
Plug connector	–	●	●
<b>Accessories</b>			
Holder	–	●	●
Connection box/etc.	–	●	●
Kit	–	●	●

1) ZSE and ZXE

# Safety Engineering at a Glance

	Safety Switches with Safety Function		
	 <p>Single limit switches NB01</p>	 <p>Single limit switches N1A</p>	 <p>Safety hinges ESH-ARO/ESH-PRO</p>
	 <p>Position switches NZ</p>		 <p>Safety switches NZ.VZ</p>
Approvals			
Features/specific advantages	<ul style="list-style-type: none"> <li>• according to EN 50041</li> <li>• according to DIN 43693</li> </ul>	<ul style="list-style-type: none"> <li>• robust version</li> <li>• two positively driven contacts</li> </ul>	<ul style="list-style-type: none"> <li>• basic housing according to EN 50041</li> </ul>
ASInterface Safety at Work 	●	–	●
<b>Switching elements</b>			
Total switching contacts	1– 4	2	4
Conventional thermal current	4 A – 6 A	3 A	4 A
Switching current, min. (at 24V)	1 mA (NZ, NB01)/ 5 mA (N1A)	1 mA	1 mA
Mechanical life, max.	10x10 <sup>6</sup> (NB01)/ 30x10 <sup>6</sup> (NZ, N1A <sup>2)</sup> )	1 x 10 <sup>6</sup>	2 x 10 <sup>6</sup>
<b>Environment</b>			
Housing material	die-cast alloy, anodized	die-cast zinc	die-cast alloy, anodized
Housing dimensions, min. (HxWxD)		123 x 40 x 42 mm	115 x 40 x 42 mm
Ambient temperature	-25 to +80 °C*	-25 to +70 °C	-25 to +80 °C
Degree of protection, max. acc. to IEC 60529	IP67	IP67	IP67
LED display	●	Window	●
Approach/actuating directions	depending on actuator 	–	
Approach speed, max.	50 m/min. – 300 m/min.	–	20 m/min.
<b>Guard locking</b>			
Solenoid operating voltage	–	–	–
Power consumption	–	–	–
Locking force, max.	–	–	–
<b>Connection</b>			
Cable entry	M20 x 1.5 <sup>1)</sup>	–	M20 x 1.5 <sup>1)</sup>
Connection cable (pre-assembled)	○	–	○
Plug connector	●	M12	●
<b>Accessories</b>			
Actuator straight/straight rubber-cushioned		–	●/–
Hinged actuator	Roller lever arm, chisel, roller and dome plungers, long roller plunger	–	●
Min. door radius (hinged actuator)		–	165 mm
Min. door radius (standard actuator)		–	1000 mm
Bolts for safety guards		–	●

● available

● not available in all versions (see catalog)



















○ available on request

– not available



**Metal Housing**

**Safety Switches with Separate Actuator**

















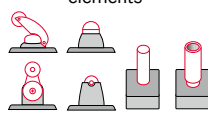
Without guard locking		With guard locking	With guard locking and guard lock monitoring		
					
Safety switches NX	Safety switches SGA	Safety switches NZ.VZ.VS	Safety switches TZ	Safety switches TX	Safety switches STA
					
• physically compatible with TX	• physically compatible with GP und SGP	• basic housing according to EN 50041	• two switching systems in one housing	• slim design • auxiliary key, emergency or escape release	• physically compatible with TP and STP • also as Twin and BiState version
○	–	–	○	○	○
4	4	4	8	4	4
4A	4A	4A	4A	4A	4A
1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
2 x 10 <sup>6</sup>	2 x 10 <sup>6</sup>	2 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>
die-cast alloy, anodized	die-cast alloy	die-cast alloy, anodized	die-cast alloy, anodized	die-cast alloy, cathodically dipped	die-cast alloy
115x40x42mm -25 to +80 °C	123x40x42 mm -20 to +80 °C	115x40x42mm -25 to +80 °C	110x110x40mm -25 to +80 °C	240x42x59mm -20 to +80 °C	190x40x46.5 mm -20 to +80 °C
IP67	IP67	IP67	IP67	IP67	IP67
○	–	○	●	●	○
					
20 m/min.	20 m/min.	20 m/min.	20 m/min.	20 m/min.	20 m/min.
–	–	24 / 115 / 230V	24 / 115 / 230V	24 / 115 / 230V	24 / 110 / 230V
–	–	10W	7W	8W	8W
–	–	2000N	2000N	1700N	3000N
M20x1.5 <sup>1)</sup>	3xM20x1.5	M20x1.5 <sup>1)</sup>	M20x1.5 <sup>1)</sup>	3xM20x1.5 <sup>1)</sup>	3xM20x1.5
○	–	○	○	○	○
○	○	○	○	○	○
●/-	●/●	●/-	●/-	-/●	●/●
●	●	●	●	●	●
165 mm	200 mm	165 mm	165 mm	100 mm	200 mm
1000 mm	300 mm	1000 mm	1000 mm	300 mm	300 mm
●	●	●	●	●	●

\* (Low and high temperature upon request)

1) further versions upon request

2) snap-action contact element 1 x 10<sup>6</sup>



















# Safety Engineering at a Glance

	Safety Switches with Safety Function					
	Without guard locking					
	 Safety switches NM	 Safety switches NM.VZ	 Safety switches NQ	 Safety switches NP	 Safety switches GP	
Approvals						
Features/specific advantages	<ul style="list-style-type: none"> <li>• small design</li> <li>• various lever/plunger forms and hinged actuators</li> </ul>	<ul style="list-style-type: none"> <li>• small design</li> <li>• small approach radii</li> </ul>	<ul style="list-style-type: none"> <li>• compact housing</li> </ul>	<ul style="list-style-type: none"> <li>• basic housing according to EN 50047</li> <li>• ideal for profile assembly</li> </ul>	<ul style="list-style-type: none"> <li>• identical fixing dimensions to safety switches TP</li> </ul>	
AS-Interface <i>Safety at Work</i> 	-	-	-	-	●	
Switching elements	Total switching contacts	3	3	3	3	4
	Conventional thermal current	4 A	4 A	2,5 A	4 A	4 A
	Switching current, min. (at 24V)	1 mA	1 mA	1 mA	30 mA	1 mA
	Mechanical life, max.	30x10 <sup>6</sup>	1x10 <sup>6</sup>	1x10 <sup>6</sup>	1x10 <sup>6</sup>	2x10 <sup>6</sup>
Environment	Housing material	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic
	Housing dimensions, min. (HxWxD)	77,5x25x32 mm	82x25x32 mm	78x30x15 mm	98x35x36 mm	125x40x42 mm
	Ambient temperature	-20 to +80 °C	-20 to +80 °C	-25 to +70 °C	-25 to +80 °C	-20 to +80 °C
	Degree of protection, max. acc. to IEC 60529	IP67	IP67	IP67	IP67	IP67
	LED display	-	-	-	-	-
	Approach/actuating directions					
Approach speed, max.	60 m/min.	20 m/min.	60 m/min.	20 m/min.	20 m/min.	
Zuhaltung	Solenoid operating voltage	-	-	-	-	-
	Power consumption	-	-	-	-	-
	Locking force, max.	-	-	-	-	-
Connection	Cable entry	3xM16x1.5	3xM16x1.5	-	M20x1.5	3xM20x1.5
	Connection cable (pre-assembled)	○	○	●	○	○
	Plug connector	●	●	-	●	●
Accessories	Actuator straight/straight rubber-cushioned		●/●	-/●	●/●	●/●
	Hinged actuator		-	●	●	●
	Min. door radius (hinged actuator)		-	50 mm	90 mm	90 mm
	Min. door radius (standard actuator)		150 mm	160 mm	1000 mm	1000 mm
Bolts for safety guards		●	-	●	●	

All data given refer to the respective minimal or maximal values for the entire series.

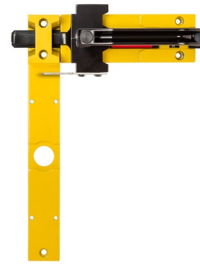
Plastic Housing

Safety Switches with Separate Actuator

	With guard locking	With guard locking and guard lock monitoring				
						
Safety switches SGP	Safety switches TQ	Safety switches STM	Safety switches TP / STP	Safety switches CTP	Safety switches TK	
						
<ul style="list-style-type: none"> <li>Actuating head made of metal, also as Twin version</li> </ul>	<ul style="list-style-type: none"> <li>compact housing</li> </ul>	<ul style="list-style-type: none"> <li>actuating head made of plastic or metal</li> </ul>	<ul style="list-style-type: none"> <li>TP: auxiliary, key auxiliary, emergency or escape release</li> <li>ideal for profile assembly</li> <li>also as Twin and BiState version</li> </ul>	<ul style="list-style-type: none"> <li>integrated transponder</li> <li>Cat. 4 / PL e</li> <li>compatible mounting</li> <li>also as Extended- and BiState version</li> </ul>	<ul style="list-style-type: none"> <li>very high locking force</li> <li>no protection against unintentional closing</li> </ul>	
●	–	–	●	●	–	
4	5	3	4	see product catalog	2	
4A	2,5A	4A	4A		4A	
1 mA	1 mA	1 mA	1 mA		1 mA	
2x10 <sup>6</sup>	1x10 <sup>6</sup>	2x10 <sup>6</sup>	1x10 <sup>6</sup>	1x10 <sup>6</sup>	1x10 <sup>6</sup>	
reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic	
123x40x42mm	75x75x15mm	96x79x38mm	192x40x42mm	204x40x42 mm	192x40x42mm	
-20 to +80 °C	-25 to +50 °C	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C	-20 to +55 °C	
IP67	IP65	IP67	IP67	IP67 / IP69 / IP69K	IP67	
–	–	●	●	●	●	
						
20 m/min.	60 m/min.	20 m/min.	20 m/min.	20 m/min.	20 m/min.	
–	24V	24V/230V	24/110/230V	24V	24/48/230 V	
–	2,7W	6 W	8W	6W	8W	
–	500N	plastic 1000N metal 2000N	TP 1300N STP 2500 N	3900N	5000N	
3xM20x1.5	–	M20x1.5	3xM20x1.5	–	3xM20x1.5	
○	●	○	○	–	○	
●	–	●	●	1x M12/2x M12/1x M23	●	
●/●	–/●	–/●	●/●	–/●	–	
●	●	●	●	●	–	
200mm	50mm	200mm	TP 90 mm STP 200 mm	200mm	–	
300mm	160mm	300mm	TP 1000 mm STP 300 mm	300mm	–	
●	–	–	●	●	–	














# Safety Engineering at a Glance

## Bolts



Can be combined with	NZ, TP, STP, GP, SGP, STA, SGA, CTP	NZ.VZ, TZ, GP, TP, SGP, STP, SGA, STA, CTP	NM...VZ, NP, NZ.VZ, TZ, TX, GP, SGP, SGA, TP, STP, STA, CTP
Material	Plastic	Aluminum	Metal
Door hinge position	left and right	left and right	left and right
Detent mechanism open/closed	●/-	●/●	●/●
Escape release	●	●	●

# Safety Engineering at a Glance

	Emergency Stop		Rope Pull Switches	
				
	Emergency stop	Emergency stop	Rope pull switches RPS-M	Rope pull switches RPS
Approvals				
Features/specific advantages	<ul style="list-style-type: none"> <li>Built-in devices</li> </ul>	<ul style="list-style-type: none"> <li>With housing</li> </ul>	<ul style="list-style-type: none"> <li>Fast-action clamping and tensioning device with visualization</li> <li>integrated emergency stop function</li> </ul>	<ul style="list-style-type: none"> <li>Fast-action clamping and tensioning device with visualization</li> <li>integrated emergency stop function</li> </ul>
AS-Interface <i>Safety at Work</i> 	-	●	-	-
<b>Switching elements</b>				
Total switching contacts	4	3	4	4
Conventional thermal current	1 A	1 A	10 A	10 A
Switching current, min. (at 24V)	10 mA	10 mA	10 mA	10 mA
Mechanical life, min.	250.000	250.000	100.000	100.000
<b>Environment</b>				
Housing material	reinforced thermoplastic/policarbonate	reinforced thermoplastic/policarbonate	die-cast alloy	reinforced thermoplastic/policarbonate
Housing dimensions, min. (HxWxD)	65.6x30x29 mm	91.5x76x76 mm	282x90x88 mm	256x42x88 mm
Ambient temperature	-25 to +60 °C	-25 to +55 °C	-30 to +80 °C	-25 to +70 °C
Degree of protection max. acc. to IEC 60529	IP20/IP65	IP65	IP67	IP67
LED display	●	●	-	-
Approach/actuating directions				
Approach speed, max.	-	-	-	-
<b>Connection</b>				
Cable entry	-	2 x Ø 21.3 mm	3xM20x1.5 <sup>1)</sup>	3xM20x1.5 <sup>1)</sup>
Connection cable (pre-assembled)	-	-	-	-
Plug connector	-	●	●	●
Screw terminal	●	●	-	-

1) further versions upon request

**EUCHNER GmbH + Co. KG**  
 Kohlhammerstraße 16  
 70771 Leinfelden-Echterdingen  
 Germany

Tel. +49 711 7597-0  
 Fax +49 711 753316  
 info@euchner.de  
 www.euchner.com

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 More than safety.

# Product Overview















## Safety Engineering electronic



# EUCHNER







More than safety.

# Safety Engineering at a Glance

Transponder-coded read heads with external evaluation									
Evaluation units		Read heads							
 Evaluation unit CES-AZ-01B/-02B/-04B		 Field evaluation unit CES-FD		 Read head CES-A-LNN/ CES-A-LNA/CES-A-LMN		 Read head CET-AX		 Read head CKS	
Approvals									
Features/specific advantages	<ul style="list-style-type: none"> <li>connection of read heads</li> </ul>	<ul style="list-style-type: none"> <li>AP interface</li> <li>connection of read heads CKS and CES-A-LMN</li> </ul>	<ul style="list-style-type: none"> <li>small designs (rectangular or cylindrical)</li> <li>with LED indicators (CES-A-LNN)</li> </ul>	<ul style="list-style-type: none"> <li>CEM-A: guard locking on solenoid (without guard lock monitoring)</li> <li>CET-AX: guard locking and guard lock monitoring</li> </ul>	<ul style="list-style-type: none"> <li>safe entry into installations</li> <li>function as electronic lockout mechanism</li> </ul>				
Safety category/PL acc. to EN ISO 13849-1	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e				
AS-Interface Safety at Work 	–	–							
Variants	Unicode: detects only actuator taught-in	●	●						
	Multicode: detects all actuators	●	●						
	Fixcode: actuator allocation fixed	–	–						
Inputs/outputs	Read heads	4	1						
	Relay safety outputs	2	–						
	Semiconductor safety outputs	–	2						
	Monitoring outputs (semiconductor)	5	–						
	Series connection (Quantity)	any	–						
	Direct connection to ET200pro	–	●						
	Monitoring/connection feedback loop	●	–						
	Monitoring/connection start button	●	–						
	Switching current per safety output	6 A	150 mA						
	Mechanical life min.	10 x 10 <sup>6</sup>	∞	∞	1 x 10 <sup>6</sup>	∞			
Integrated short circuit monitoring of the safety outputs	–	●							
Term of pulsed signals at the safety outputs	any	0.3 ms							
Environment	Dimensions min. (W x H x D)	CES-AZ-01B: 114x99 x 22.5 mm CES-AZ-02B/-04B: 114 x 99x 45 mm	95 x 30x 12 mm	CES-A-LNN: 42x25x 12 mm CES-A-LMN: M12 x 1 mm x 38 mm	CEM-A: 80x50x 28 mm CET-AX: 166x42x 41 mm	83x40x 50 mm			
	Ambient temperature	-20 to +55 °C	-20 to +55 °C	-25 to +70 °C	CEM-A: -25 to +55 °C CET-AX: -20 to +55 °C	-20 to +70 °C			
	Degree of protection max.	IP20	IP67	IP67/IP69/IP69K	IP67	IP67			
	Typ. switch-on distance	depending on the used read head	depending on the used read head	CES-A-LNN: 19 mm CES-A-LMN: 5 mm	CEM-A: 2 mm CET-AX: –	–			
	Locking/adhesive force max.	–	–	–	CEM-A: 650 N/1000 N CET-AX: 6500 N	–			
	Connection	plug-in connection terminals	plug connector M8/M12	cable/plug connector M8	plug connector M8/M12	plug connector M8			
	Bolts for safety guards	–	–			–			



# Safety Engineering at a Glance

	Without / with guard locking	Without / with guard locking	Control module
			
	Safety system MGB-L0/L1/L2	Safety system MGB Profinet or EtherNet/IP/L0/L1/L2	Control module MGB-C Profinet
Approvals			
Features/specific advantages	<ul style="list-style-type: none"> <li>• system consisting of a handle, guard locking and integrated control module</li> </ul>	<ul style="list-style-type: none"> <li>• system consisting of a handle, guard locking and integrated control module</li> </ul>	<ul style="list-style-type: none"> <li>• maximum design flexibility when equipping</li> </ul>
Safety category/PL acc. to EN ISO 13849-1	Cat. 4 / PL e	Cat. 4 / PL e	–
Guard locking	without / mechanical / electrical	without / mechanical / electrical	–
Switches (optional)	up to 4 (buttons, indicators, emergency stop, ...)	up to 14 buttons, indicators, key-operated switches, emergency stop, ...)	up to 6 buttons, indicators, key-operated switches, emergency stop, ...)
Inputs/outputs	Semiconductor safety outputs	2 (semiconductor)	10
	Monitoring outputs	4 (semiconductor)	up to 72
	Series connection (Quantity)	10	–
	Monitoring/connection feedback loop	–	–
	Monitoring/connection start button	–	–
	Switching current per safety output	200 mA	–
	Mechanical life min.	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>
Environment	Dimensions min. (W x H x D)	114 x 289 x 109 mm	345 x 289 x 115 mm
	Ambient temperature	-20 to +55 °C	-20 to +55 °C
	Degree of protection max. acc. to EN 60529	IP65	IP54
	LED displays	●	●
	Solenoid operating voltage	– / 24 V	– / 24 V
	Locking force max.	– / 2000 N	– / 2000 N
Connection	Cable entry	4 x M20 x 1.5	–
	Plug connector	●	RJ45 / M12
	Connection cable (pre-assembled)	○	–












● available

◐ not available in all versions (see catalog)

○ available on request

– not available

## Safety System Multifunctional Gate Box MGB

Without / with guard locking	Bus module	Control module	Without / with guard locking	Submodule	Without / with guard locking
					
Safety system MGB2 I/L1/L2 <i>Modular</i>	Bus module MBM	Extension module MCM <i>Modular</i>	Safety system MGB2 I/L1/L2 <i>Classic</i>	Submodule MSM	MGBS-P-I/L1/L2
					
<ul style="list-style-type: none"> <li>system consisting of handle module and locking module</li> <li>modular design</li> </ul>	<ul style="list-style-type: none"> <li>with integrated PROFINET/PROFISAFE</li> <li>several MGB2 <i>Modular</i> or MCM devices can be connected</li> </ul>	<ul style="list-style-type: none"> <li>function expansion for bus module and locking module</li> <li>compatible with all <i>Modular</i> devices</li> </ul>	<ul style="list-style-type: none"> <li>system consisting of handle module and locking module</li> <li>modular design</li> <li>direct connection to control system</li> </ul>	<ul style="list-style-type: none"> <li>function expansion for modules MGB2 and MCM</li> </ul>	<ul style="list-style-type: none"> <li>MGBS-P-I: system consisting of handle module, interlocking module and integrated control module</li> <li>MGBS-P-L1/L2: system consisting of handle module, locking module and integrated control module</li> </ul>
Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	–	Cat. 4 / PL e
without/mechanical/ electrical	–	–	without/mechanical/ electrical	–	MGBS-P-I: without MGBS-P-L1/L2: mechanical/electrical
2 x MSM	–	4 x MSM	1 x MSM	up to 3	up to 3 (buttons, indicators, emergency stop, ...)
2	–	–	2 (semiconductor) + 2 external + MSM outputs	up to 6	2 (semiconductor)
10	–	–	4 (semiconductor) + MSM outputs	up to 3	to 3 (semiconductor)
–	–	–	10	–	to 20
–	–	–	–	–	–
–	–	–	1...150 mA	–	150 mA
1 x 10 <sup>6</sup>	–	–	1 x 10 <sup>6</sup>	–	1 x 10 <sup>6</sup>
114x314 x 116 mm	94x155x52.5 mm	148x155x52.5 mm	114x314x 116 mm	114x38x75 mm	286x183x116 mm
-25 to +55 °C	-25 to +55 °C	-25 to +55 °C	-15 to +55 °C	-25 to +55 °C	-20 to +55 °C
IP65	IP65	IP65	IP65	IP65 (on front)	IP65
●	●	●	●	–	●
– / 24 V	–	–	– / 24 V	–	– / 24 V
– / 2000 N	–	–	– / 2000 N	–	– / 3900 N
–	–	–	M20	–	–
M12	RJ45 / M12	M12	●	–	M12 / M23
–	–	–	○	–	–

# Safety Engineering at a Glance

## Transponder-coded safety switches without guard locking



Safety switch CES-C01/CES-C02/CES-C04



Safety switch CES-C07



Safety switch CES-C014



Safety switch CES-A-C5/CES-A-W5

			UQS	
Approvals			UQS	
Features/specific advantages	<ul style="list-style-type: none"> <li>safety switch with integrated evaluation electronics</li> <li>small design</li> <li>diagnostic function by means of LED</li> </ul>	<ul style="list-style-type: none"> <li>safety switch with integrated evaluation electronics</li> <li>for diagnostic information readout, connection to the IO-Link evaluation unit ESM-CB</li> </ul>	<ul style="list-style-type: none"> <li>safety switch CES-C04 encapsulated in epoxy resin</li> <li>suitable for aggressive ambient media</li> </ul>	<ul style="list-style-type: none"> <li>no internal pulsed signals at the safety outputs</li> <li>external pulsed signals possible (e.g. by a Safety PLC)</li> <li>ATEX version available for zone 2/22</li> </ul>
Safety category/PL acc. to EN ISO 13849-1	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e	Cat. 4 / PL e
AS-Interface <i>Safety at Work</i>		-	-	-
<b>Variants</b>				
Unicode: detects only actuator taught-in	●	●	●	●
Multicode: detects all actuators	●	●	●	●
Fixcode: actuator allocation fixed	⦿	⦿	⦿	-
<b>Inputs/outputs</b>				
Read heads	integrated	integrated	integrated	integrated
Relay safety outputs	-	-	-	-
Semiconductor safety outputs	2	2	2	2
Monitoring outputs (semiconductor)	1	1	1	1
Series connection (Quantity)	AP: 1 / AR: 20	BP: 1 / BR: 20	AP: 1 / AR: 20	3
Direct connection to ET200pro	C01-AP; C02-AP; C04-AP	C07-BP	⦿	-
Monitoring/connection start button	-	-	-	-
Monitoring/connection feedback loop	-	-	-	-
Switching current per safety output	C01: 400 mA C02: 150 mA C04: 150 mA	150 mA	150 mA	400 mA
Mechanical life min.	∞	∞	∞	∞
Integrated short circuit monitoring of the safety outputs	●	●	●	-
Term of pulsed signals at the safety outputs	C01-AP: 0.40 ms C02-AP: 0.35 ms C04-AP: 0.30 ms C01/C02/C04-AR: 0.80 ms	0.30 ms	AP: 0.30 ms AR: 0.80 ms	external pulsed signals, any
<b>Environment</b>				
Dimensions min. (W x H x D)	C01: 70x40x40 mm C02: 95x30x12 mm C04: 42x25x18 mm	40x26.5x18 mm	116 x 30 x 23 mm	119x40x40 mm
Ambient temperature	C01: -20 to +55 °C C02: -40 to +65 °C C04: -20 to +65 °C	-25 to +55 °C	0 to +55 °C	-20 to +55 °C
Degree of protection max. EN IEC 60529	C01: IP67 C02-C04: IP67 / IP69 / IP69K	IP65 / IP67 / IP69 / IP69K	IP65 / IP67 / IP69 / IP69K	IP67
Typ. switch-on distance	C01: 18 mm C02: 15 mm C04: 15 mm	13 mm	22 mm	20 mm
Locking/adhesive force max.	-	-	-	-
Connection	cable/plug connector M8/M12	plug connector M12	cable	plug connector M12
Bolts for safety guards	⦿	-	-	●

AP: Version for use as single device

AR: Version for series connection

Transponder-coded safety switches with detent mechanism/guard locking for process protection



Safety system  
ESL



Modular magnetic guard locking  
CEM-C60



Safety switch  
CEM-C40



Safety switch  
CTP-I/11/12



- handle module with integrated safety switch
- suitable for mounting on profile

- function expansion for safety switches of series CES-C04/CES-C07

- integrated solenoid (without guard lock monitoring)
- adjustable adhesive force

- with adhesive force
- with integrated control elements (optional)
- CTP-I: without guard locking
- CTP-11/12: mechanical/electrical guard locking (without guard lock monitoring)

Cat. 4 / PL e

Cat. 4 / PL e

Cat. 4 / PL e

Cat. 4 / PL e

-

●

-

-

●

●

●

●

●

●

●

●

-

●

-

-

integrated

integrated

integrated

integrated

-

-

-

-

2

2

2

2

1

1

3

to 3

ESL-AR: 20

AR: 20/ BR: 20

CEM-AY: 1/ CEM-AR: 20

AP: 1/ AR: 20

-

C04-AP/ C07-BR

-

AP

-

-

-

-

-

-

-

-

200 mA

C04: 150 mA  
C07: 150 mA

150 mA

150 mA

1 x 10<sup>6</sup>

∞

1 x 10<sup>6</sup>

1 x 10<sup>6</sup>

●

●

●

●

0,8 ms

C04-AP: 0.3 ms  
C04-AR: 0.8 ms  
C07-BP/BR: 0.3 ms

CEM-AY: 0.8 ms  
CEM-AR: 0.8 ms

CTP-AP: 0.3 ms  
CTP-AR: 0.8 ms

107x100x46 mm

90x50 x39 mm

140x40x40 mm

190x42x40 mm  
190x56x40 mm  
(CTP with controls)

-20 to +55 °C

-20 to +55 °C

-20 to +55 °C

-20 to +55 °C

IP67

IP65/ IP67

IP65/ IP67

IP67 / IP69 / IP69K / IP65  
(CTP with controls)

-

10 mm

-

-

detent mechanism

650 N

600 N

- / 3900 N

plug connector M12

plug connector M12

plug connector M12/M23

plug connector M12/M23








-

-

-

●

# Safety Engineering at a Glance

		Transponder-coded read heads with external evaluation		Magnetically coded safety switches
				
		Safety switch CET	Safety switch CTP-L1/L2	Safety system CMS (Reed/Hall)
Approvals				
Features/specific advantages		<ul style="list-style-type: none"> <li>• high locking force</li> <li>• very robust design</li> <li>• actuator with large freedom of movement</li> </ul>	<ul style="list-style-type: none"> <li>• small and narrow design</li> <li>• compatible mounting with existing safety switches TP/STP</li> <li>• with integrated controls (optional)</li> <li>• with bistable locking function (optional)</li> <li>• ATEX version available for zone 2/22</li> </ul>	<ul style="list-style-type: none"> <li>• read heads/actuators available in different designs</li> </ul>
Safety category/PL acc. to EN ISO 13849-1		Cat. 4 / PL e	Cat. 4 / PL e	Cat. 3 / Cat. 4
AS-Interface Safety at Work 		●	●	●
Variants	Unicode: detects only actuator taught-in	●	●	-
	Multicode: detects all actuators	●	●	●
	Fixcode: actuator allocation fixed	-	-	-
Inputs/outputs	Read heads	integrated	integrated	1 to 30
	Relay safety outputs	-	-	2
	Semiconductor safety outputs	2	2	-
	Monitoring outputs (semiconductor)	2	up zu 3	1 (relay)
	Series connection (Quantity)	CET-AP: 1 / CET-AR: 20	CTP-AP: 1 / CTP-AR: 20	any
	Direct connection to ET200pro	CET-AP	CTP-AP	-
	Monitoring/connection start button	●	-	●
	Monitoring/connection feedback loop	●	-	●
	Switching current per safety output	200 mA	150 mA	4 A
	Mechanical life min.	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	10 x 10 <sup>6</sup>
Integrated short circuit monitoring of the safety outputs	●	●	-	
Term of pulsed signals at the safety outputs	CET-AP: 0.3 ms CET-AR: 0.8 ms	CTP-AP: 0.3 ms CTP-AR: 0.8 ms	-	
Environment	Dimensions min. (W x H x D)	166 x 42 x 41 mm	190 x 42 x 40 mm 190 x 56 x 40 mm (CTP with controls)	114 x 99 x 22.5 mm 114 x 99 x 45 mm
	Ambient temperature	-20 to +55 °C	-20 to +55 °C	0 to +50 °C
	Degree of protection max. EN IEC 60529	IP65 / IP67	IP67 / IP69 / IP69K / IP65 (CTP with controls)	IP20
	Typ. switch-on distance	-	-	depending on the used read head
	Locking/adhesive force max.	6500 N	3900 N	-
Connection	plug connector M12/M23	plug connector M12/M23	screw terminals	
Bolts for safety guards	●	●	-	

# Safety Engineering at a Glance

	Safety control systems and safety relays			
	Small safe control system MSC (Basic modul)	Safety relays ESM	Evaluation unit ESM-CB	Safety monitors GMOx
Approvals				
Applications	<ul style="list-style-type: none"> <li>Cat. 4 / PL e</li> <li>stop category 0 and 1</li> </ul>	<ul style="list-style-type: none"> <li>Cat. 4 / PL e</li> <li>stop category 0 and 1</li> <li>requirement level III C according to EN 574 for two-hand device</li> </ul>	<ul style="list-style-type: none"> <li>Cat. 4 / PL e</li> <li>Stop-Kategorie 0</li> </ul>	<ul style="list-style-type: none"> <li>Cat. 4 / PL e</li> <li>stop category 0 and 1</li> <li>requirement level III C according to EN 574 for two-hand device</li> </ul>
Base module	<ul style="list-style-type: none"> <li>8 inputs</li> <li>1 or 2-channel control</li> <li>feedback loop</li> <li>start button</li> <li>2 OSSD outputs</li> <li>2 monitoring outputs</li> <li>programmable</li> <li>up to 14 expansion modules</li> </ul>	<ul style="list-style-type: none"> <li>1 or 2-channel control</li> <li>up to 7 outputs (time-delay or non-time-delay)</li> <li>version for two-hand circuits</li> <li>LED status indicators</li> <li>feedback loop</li> <li>start button (monitoring possible)</li> <li>short circuit monitoring</li> <li>earth fault and ground fault monitoring</li> </ul>	<ul style="list-style-type: none"> <li>1- or 2-channel monitoring of the sensor circuit</li> <li>connection of BP/BR devices</li> <li>2 relay outputs</li> <li>start button (monitored) and feedback loop can be connected</li> </ul>	<ul style="list-style-type: none"> <li>programmable</li> <li>up to 62 subscribers</li> <li>4 outputs, expandable up to 16</li> <li>comprehensive LED status indications and diagnostic functions</li> <li>feedback loop</li> <li>start button (monitoring possible)</li> <li>short circuit monitoring</li> <li>earth fault and ground fault monitoring</li> <li>formation of safety groups</li> </ul>
Contact expansions/ output modules	<ul style="list-style-type: none"> <li>up to 16 safe outputs (time-delay or non-time-delay)</li> <li>LED status indicators</li> <li>up to 28 monitoring outputs</li> <li>OSSD or Relays outputs</li> </ul>	<ul style="list-style-type: none"> <li>up to 4 outputs (time-delay or non-time-delay)</li> <li>LED status indicators</li> </ul>	<ul style="list-style-type: none"> <li>from the ESM product range</li> </ul>	<ul style="list-style-type: none"> <li>via AS-Interface</li> </ul>
Input modules	<ul style="list-style-type: none"> <li>up to 128 inputs (time-delay or non-time-delay)</li> <li>LED status indicators</li> </ul>	-	-	<ul style="list-style-type: none"> <li>via AS-Interface</li> </ul>
Switching current AC, max.	400 mA DC / 6 A	6 A / 8 A	6 A	3 A
Switching voltage AC, max.	250 V AC	250 V	250 V	30 V
Operating voltage	24 V DC	24 V AC/DC, 114/230 V AC	24 V DC	AS-Interface (30 V DC) or 24 V DC
Mechanical life, max.	2 x 10 <sup>7</sup> operating cycles	1 x 10 <sup>7</sup> operating cycles	1 x 10 <sup>7</sup> operating cycles	1 x 10 <sup>7</sup> operating cycles
Connection type	plug-in screw terminals	plug-in screw terminals	plug-in screw terminals	plug-in screw terminals
Housing material	plastic	plastic	plastic	stainless steel
Installation	DIN rail	DIN rail	DIN rail	DIN rail
Dimensions (HxWxD)	108x22.5x114.5 mm	114x99x22.5 mm	116.6 x 17.5 x 114.5 mm	120x96x100 mm
Ambient temperature (at U <sub>B</sub> = 24 V)	-10 to +55 °C	-15 to +60 °C	-25 to +60 °C	0 to +55 °C
Degree of protection (acc. to IEC/EN 60529)	IP20	IP20	IP20	IP20
LED indicators	●	●	●	●

**EUCHNER GmbH + Co. KG**  
 Kohlhammerstraße 16  
 70771 Leinfelden-Echterdingen  
 Germany

Tel. +49 711 7597-0  
 Fax +49 711 753316  
 info@euchner.de  
 www.euchner.com

**EUCHNER**  
 More than safety.

# Product Overview

## ManMachine



# **EUCHNER**

More than safety.



# ManMachine at a glance



Approval				
Features/specific advantages		FSA	FSA	FSA
Version	compact	compact	compact	compact
Housing material	plastic (PA 6 GF30 gray)	plastic (PA 6 GF30 gray)	plastic (PA 6 GF30 gray)	plastic (PA 6 GF30 gray)
Ambient temperature at U <sub>b</sub> =DC24V	0 to +55 °C	0 to +55 °C	0 to +55 °C	0 to +55 °C
Mounting cut-out acc. to DIN43700	33x68 mm	33x68 mm	33x68 mm	33x68 mm
Operating voltage U <sub>b</sub> (regulated, residual ripple < 5%)	20 to 28 V DC	–	20 to 28 V DC	20 to 28 V DC
Current consumption, max.	100 mA	100 mA	150 mA	150 mA
Degree of protection acc. to IEC 60529	IP65, IP67 installed	IP65, IP67 installed	IP65, IP67 installed	IP65, IP67 installed
Interface to the PC or to the control system	serial, RS232/RS422	USB Full Speed	Ethernet IEEE802.3	RS485
Transfer protocol	3964R ActiveX®-Modul as protocol driver	3964R ActiveX®-Modul as protocol driver	TCP/IP ActiveX®-Modul as protocol driver	PROFIBUS DP acc. to IEC 61158 IEC 61784-1
Data transfer rate	9.6 kBaud	9.6 kBaud	10/100 MBit/s	9.6 to 500 kBit/s 1.5 to 12 MBit/s
Connection type for power supply	miniature plug connector, 3-pole	Via USB	miniature plug connector, 3-pole	miniature plug connector, 3-pole
Interface connection type	Sub-D 9-pole	USB type B	RJ45	Sub-D 9-pole
Cable length, max.	RS232 5 m/RS422 1000 m	3 m	100 m	100 to 1200 m
LED indicator	green: »ready« yellow: »Electronic-Key active«	green: »ready« yellow: »Electronic-Key active«	green: »ready« yellow: »Electronic-Key active« red: »error«	green: »ready« yellow: »Electronic-Key active« red: »error«

## System overview

The Electronic-Key-System EKS is used for electronic access management. It makes it possible to also log product parameters and operator entries (e. g. in accordance with FDA standard 21 CFR part 11). The Electronic-Key, in the form of a robust tag, contains a data carrier and an antenna (transponder). The data carrier has a combined read/write and fixed-code memory (see table Electronic-Key memory structure). In operation the Electronic-Key placed inserted into the Electronic-Key adapter. The data are transferred between the Electronic-Key adapter and the Electronic-Key without using any contacts. The Electronic-Keys are available in different colors. The colors can be used, for example, to indicate the different levels of access rights.

Electronic-Key memory structure								
	E <sup>2</sup> PROM (programmable)					ROM (serial number)		
Byte no. [dec]	0	1	...	114	115	116	...	123
Byte no. [hex]	00	01	...	72	73	74	...	7B
	Quantity: 116 bytes					Quantity: 8 bytes		

## Version FSA

As an alternative the Electronic-Key adapters with USB, Ethernet TCP/IP, PROFIBUS, PROFINET interface and EKS *Light* are available in the FSA (For Safety Applications) version. These devices have a second channel, which is available as an additional semiconductor switching contact. This switching contact is used in connection with functionally safe applications. The evaluable function in terms of safety engineering involves reliable recognition that no Electronic-Key has been placed.

## Key management using the Electronic-Key-Manager EKM

With the Electronic-Key-Manager EKM EUCHNER also provides a flexible PC software package for programming and managing Electronic-Keys. The freely programmable memory on the Electronic-Key can be structured exactly as required using EKM. The full version of EKM is based on a client/server architecture with central database.

# ManMachine at a glance



**PROFINET**

**Light**

PROFINET		Light	
compact	modular	compact	modular
plastic (PA 6 GF30 gray)	plastic (PVDF GF30 grey)/(PA6.6)	plastic (PA 6 GF30 gray)	plastic (PVDF GF30 gray)/(PA6.6)
0 to +55 °C	-20 to +100 °C/ 0 to +55 °C	-20 to +70 °C	-20 to +100 °C/ -20 to +70 °C
33x68 mm	Hole Ø 22.5/ DIN rail 35 mm	33x68 mm	Hole Ø 22,5/ DIN rail 35 mm
20 to 28 V DC	20 to 28 V DC	9 to 28 V DC	9 to 28 V DC
150 mA	150 mA	70 mA (without load)	70 mA (without load)
IP65, IP67 installed	IP65, IP67, IP69K installed	IP65, IP67 installed	IP65, IP67, IP69K installed
IEEE802.3	Ethernet IEEE802.3	4-bit parallel/plus Strobe	4-bit parallel/plus Strobe
PROFINET IO acc. to IEC 61158 IEC 61784-1 and -2	PROFINET IO acc. to IEC 61158 IEC 61784-1 and -2	binary coded via high/low level	binary coded via high/low level
10/100 MBit/s	10/100 MBits/s	-	-
miniature plug connector, 3-pole	miniature plug connector, 4-pole	miniature plug connector, 2-/4-pole	miniature plug connector, 4-pole
RJ45	RJ45	miniature plug connector, 5-pole	miniature plug connector, 4-pole
100 m	15 m / 100 m	50 m	15 m / 50 m
green: »ready« yellow: »Electronic-Key active« red: »error«	green: »ready« yellow: »Electronic-Key active« red: »error«	green: »ready« yellow: »Electronic-Key active« red: »error«	green: »ready« yellow: »Electronic-Key active« red: »error«

### Series EKS Light – Access the easy way...

EKS Light is characterized by simple integration into the control system environment. After the Electronic-Key is placed, the Electronic-Key's data are evaluated within the device as the first step, which permits automatic Electronic-Key recognition without the aid of the control system. Once the internal check of the data integrity is complete, an access level is issued at the data outputs.

The EKS Light is a read-only system with integrated evaluation electronics and interface. The access level is output via a 4-bit parallel interface. The parallel interface offers the advantage of transparent depiction of the data and therefore simple connection directly to the inputs of a control system or a switching device.

### Compact and modular design

The EKS with PROFINET interface and the EKS Light are available in compact and modular design. In the compact version, the Electronic-Key adapter and the electronics form a unit. The Electronic-Key latches into the Electronic-Key adapter and is retained there. In the modular version, by contrast, the Electronic-Key adapter is mounted spatially separate from the electronics. The modular Electronic-Key adapter allows the Electronic-Key to be placed by hooking on the front side. Thanks to the shallow installation depth, installation is possible even in tight spaces. The design was realized with a view to applications in hygienically sensitive areas.

Approval

Housing material

Switching lever material

Weight

Mechanical life, min.

Ambient temperature with spring return switch

Ambient temperature with stayput switch

Mounting

Degree of protection to IEC 529 on actuating side with/without bellows

Switching elements, max.

Connection

Contact elements

Switching principle

Rated insulation voltage  $U_i$

Rated impulse withstand voltage  $U_{imp}$

Utilization category AC 15

Utilization category DC 13

Switching current, min. at 24V

Switching voltage, min.

Contact material

Short circuit protection (control circuit fuse)

Number of actuating directions, max.

All-round actuation R (spring return switch only)

Switching positions per direction

Pushbutton D

● available ○ available on request

All given data refer to the respective minimum

Environment

Connection

## Joysticks



Joystick  
WK



Joystick  
WE



Joystick  
KB



Joystick  
KF



Joystick  
KE



Joystick  
KC



reinforced thermoplastic/ aluminium	reinforced thermoplastic/ aluminium	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic	reinforced thermoplastic/ aluminium
stainless steel	galvanized steel	stainless steel	stainless steel	stainless steel	galvanized steel
approx. 0.17 kg	approx. 0.65 kg	approx. 0.2 kg	approx. 0.2 kg	approx. 0.1 kg	approx. 0.75 kg
1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>	1 x 10 <sup>6</sup>
-5 to +65 °C	-5 to +65 °C	-5 to +65 °C	-5 to +65 °C	-25 to +65 °C	-5 to +65 °C
-25 to +65 °C	-25 to +65 °C	-25 to +65 °C	-25 to +65 °C	-25 to +65 °C	-25 to +65 °C
IEC 947-5-1 D30	Front panel installation	IEC 947-5-1 D30	IEC 947-5-1 D22	IEC 947-5-1 D22	front panel installation
IP 65/IP 54	IP65/IP54	IP65	IP65	IP65	IP65/IP50
8	8	4	4	4	3 per direction
tab connector	screw terminal	tab connector/ screw terminal	screw terminal	tab connector/ screw terminal	tab connector/ screw terminal
changeover contact C IEC 947-5-1	changeover contact C IEC 947-5-1	changeover contact C IEC 947-5-1	changeover contact C IEC 947-5-1	changeover contact C IEC 947-5-1	changeover contact C IEC 947-5-1
snap-action contact element	snap-action contact element	snap-action contact element	snap-action contact element	snap-action contact element	snap-action contact element
250V	250V	250V	250V	250V	250V
2.5 kV	2.5 kV	2.5 kV	2.5 kV	2.5 kV	2.5 kV
230V/4A	230V/10A	230V/5A	230V/5A	230V/4A	230V/4A
24V/2A	24V/4A	24V/3A	24V/3A	24V/2A	24V/2A
12 mA	50 mA	10 mA	10 mA	12 mA	12 mA
10V	24V	12V	12V	10V	10V
silver alloy	silver alloy	silver alloy	silver alloy	silver alloy	silver alloy
T6/F10	T16/F25	T10/F20	T10/F20	T10/F20	T6/F10
8	8	8	8	8	8
○	○	○	–	○	○
1	1	1	1	1	1
○	○	–	–	–	○

– not available

Further information is available at [www.euchner.com](http://www.euchner.com)

or maximum values for the entire series.

# ManMachine at a glance

## Hand-Held Pendant Stations



Hand-held pendant station  
HBA



Hand-held pendant station  
HBL



Hand-held pendant station  
HBLS



Hand-held pendant station  
HBM

Kit available



Approvals



Housing material

plastic

plastic

plastic

plastic

Color

gray RAL 7040

gray RAL 7031

gray RAL 7031

anthracite

Weight

approx. 0.8 kg

approx. 2.1 kg

approx. 2.2 kg

approx. 1.1 kg

Operating temperature

0 to +50 °C

0 to +50 °C

0 to +50 °C

0 to +50 °C

Storage temperature

-20 to +50 °C

-20 to +55 °C

-20 to +55 °C

-20 to +55 °C

Degree of protection  
acc. to EN 60529/NEMA

IP65/250-12

IP65/250-12

IP65/250-12

IP65/250-12

Connection

spiral cable 3.5 m,  
plug connector

cable 3.5 m straight,  
plug connector

cable 3.5 m straight,  
plug connector

cable 3.5 m straight,  
plug connector

Selector switches

2 x 6  
positions

3 x 12  
positions

2 x 12  
positions

2 x 6  
positions

Membrane keypad

3

–

12

–

Enabling switches

2/3-stage

2/3-stage

2-stage

2-/3-stage

EMERGENCY STOP device  
acc. to EN 13820



Handwheel 100 pulses



Buttons



3



6

Key-operated switch



Interface

RS422A  
(handwheel)

RS422A  
(handwheel)

serial, RS422A  
3964R protocol

RS422A  
(handwheel)

Housing

Features

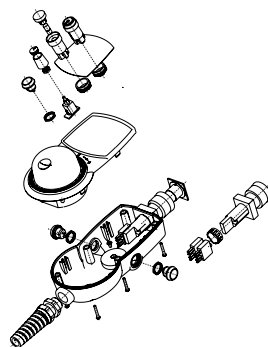
### Kits for hand-held pendant stations

To enable you to use ergonomically designed housings even for small quantities, e. g. prototypes or special versions, EUCHNER provides kits for hand-held pendant stations. As a result you can assemble a hand-held pendant station in a user-friendly housing to suit your requirements.

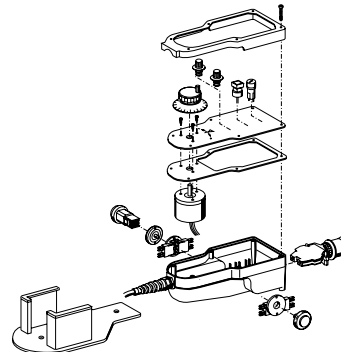
### Custom hand-held pendant stations

Customized hand-held pendant stations based on the standard devices can also be produced in small quantities. EUCHNER offers the option of customized solutions so these ergonomically designed housings can be used for various requirements.

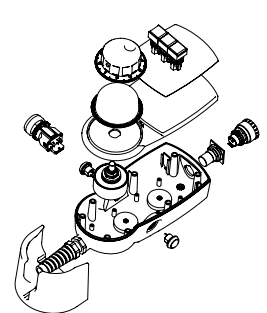
Kit HBA



Kit HBL



Kit HBM



● available   ○ available on request   – not available

All given data refer to the respective minimum or maximum values for the entire series.

# ManMachine at a glance

## Electronic Handwheels



Handwheel  
HKB



Handwheel  
HKC



Handwheel  
HKD



Handwheel  
HWA



Handwheel  
HWB

Approval



Housing material

aluminium

aluminium

aluminium

plastic/metal

plastic/metal

Weight

0.095 kg

0.25 kg

0.5 kg

0.1 kg

0.125 kg

Mechanical life, min.

5 x 10<sup>6</sup>

5 x 10<sup>6</sup>

20 x 10<sup>6</sup>

1 x 10<sup>6</sup>

1 x 10<sup>6</sup>

Operating temperature

0 to +50 °C

0 to +50 °C

0 to +70 °C

0 to +50 °C

0 to +50 °C

Storage temperature

-20 to +50 °C

-20 to +50 °C

-25 to +85 °C

-20 to +50 °C

-20 to +50 °C

Atmospheric humidity, max.

80 %

80 %

80 %

80 %

80 %

Front degree of protection,  
EN 60529/IEC 529

IP65

IP65

IP65

IP65

IP65

Front degree of protection, NEMA

250-12

250-12

250-12

250-12

250-12

Pulses per revolution

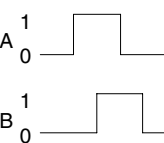
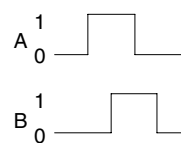
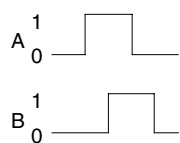
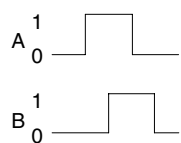
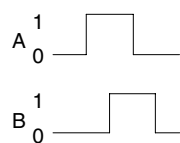
25 or 100, 2 signals  
each (A/B), 90° offset

25 or 100, 2 signals  
each (A/B), 90° offset

25 or 100, 2 signals  
each (A/B), 90° offset

25 or 100, 2 signals  
each (A/B), 90° offset

25 or 100, 2 signals  
each (A/B), 90° offset



Detent mechanism

magnetic

magnetic

magnetic

mechanical

mechanical

Detent positions

100

100

100

100

100

Shaft loading, axial, max.

25 N

25 N

25 N

25 N

25 N

Shaft loading, radial, max.

40 N

40 N

40 N

40 N

40 N

Resistance to vibration

Vibration (3 axes)  
Shock (3 axes)

DIN/IEC 68-2-6  
DIN/IEC 68-2-27

DIN/IEC 68-2-6  
DIN/IEC 68-2-27

DIN/IEC 68-2-6  
DIN/IEC 68-2-27

-

-

EMC protection requirement acc. to CE

EN 61000-6-2  
EN 61000-6-4

EN 61000-6-2  
EN 61000-6-4

EN 61000-6-2  
EN 61000-6-4

-

-

Output circuit

RS422  
or push-pull

RS422  
or push-pull

RS422  
or push-pull

RS422  
or push-pull

RS422  
or push-pull

Connection

screw terminal S

screw terminal S

ribbon cable V,  
screw terminal S

screw terminal T

screw terminal T

Environment

Connection

**EUCHNER GmbH + Co. KG**  
Kohlhammerstraße 16  
70771 Leinfelden-Echterdingen  
Germany

Tel. +49 711 7597-0  
Fax +49 711 753316  
info@euchner.de  
www.euchner.com

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