

• Hardware Solutions for Doors

# Mechatronic applications for EDS locks



Applications and system solutions for locks with electronic latch control

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# To ensure it works right from the start – mechatronic applications the easy way.

To keep use of EDS locks simple, we at WSS have defined five modules to provide a simple solution to any problem. Clearly defined interfaces allow quick development of new and versatile solutions.

Your advantage: Perfect functionality and interaction of all components are guaranteed.

#### Only five modules:

- Lock
- Cable transition
- Power supply
- Control
- Sensors

The following pages contain a compilation of applications and clear descriptions of concrete solutions using these five modules.

Naturally, if your application is not shown, you can simply replace the products described in the modules.



#### Required components

1 Lock	Set 24, with panic function	Art. No. 14.234
2 Cable transition	Cable transition, concealed, with installation box	Art. No. 05.802.0000.026
3 Power supply	Top-hat rail mount type power supply 24V 125A	Art. No. 01 198 0500 000
4 Control	Limer, Finder 12.21	Art. No. 01.198.1200.000

Alternative components, which can be used easily in these modules, are listed beginning on Page 20.

### Power supply

Top-hat rail mount	Art. No.
Top-hat rail mount type power supply, 24 V, 1.25 A	01.198.0500.000
Top-hat rail mount type power supply, 24 V, 2 A	01.198.0600.000
Top-hat rail mount type UPS, 12 V, 5 A Rechargeable battery	<b>01.198.0700.000</b> 18.315.0002.599
Top-hat rail mount type UPS, 24 V, 3 A (incl. power supply)	01.198.0800.000
Rechargeable battery, 2 each required	18.315.0002.599

Frame mount	Art. No.
Frame mount power supply, 12 V, 1A	01.198.0100.000
Flush mount	Art. No.
Flush mount power supply, 12 V, 1 A	01.198.1100.000

### Situation 1 Server room: EDS lock + access control system

Simple control and opening of the access door using the access control system guarantees that only authorised personnel can enter the server room. In case of an emergency, the room can be exited at any time without a key using the lock's panic function. Self-locking after entry ensures maximum security and burglar protection.

#### Advantages

- Simple control via access control system
- Self-locking for maximum security
- Feedback contacts allow lock to be checked via building control technology or alarm system
- Can be incorporated into master access control systems
- Panic function ensures safe escape route

#### Alternative applications

Residential doors, entry doors to multiple-family residences, entry doors to office buildings, storage rooms





Control input	12	Access control		
+12V-24V DC	13		+	
GND	14		-	Power pack
			•	
Initial states		Exterior	r door	handle uncounled
Upon actuation/a	ccess co	ontrol closes circuit:Exterior	r door	handle coupled



1 Lock	Set 23, with panic function	Art. No. 14.230	
2 Cable transition	Cable transition, 12-pin, disconnectable, with installation box	Art. No. 14.600.0000.000	
3 Power supply	Frame mount power supply, 12 V, 1A	Art. No. 01.198.0100.000	
4 Control	Access control	(provided by customer)	

### Situation 2 **Physician's office: EDS lock + timer + button**

Use of a timer automatically limits use of access door to fixed times when office is open. In combination with a button, the lock can also be actuated outside office hours from inside to allow access from outdoors. The lock's mechanical override with a profile cylinder allows the staff to enter the office with a key in the morning, whereby the exterior door handle is again uncoupled, when the key is removed. Upon leaving the office in the evening, the self-locking mechanism locks the door automatically, making forgetting to lock the door a thing of the past.

#### Advantages

- Combination of various controls
- Internal override for inputs
- Mechanical opening from inside possible at any time
- Office hours: Door handle coupled - so that door is "open" for everyone without door opening button
- Closed times: Door can be opened with button or key as required

#### Alternative applications

Office buildings, retail shops, production halls





Function input	11	Timer	
Control input	12	Button	
+12V-24V DC	13	+	
GND	14	-	Power pack
Initial state: Upon pressing button: Upon actuation by time	er:	Exterior door Exterior door Exterior door Exterior door button has no	handle uncoupled handle coupled handle coupled, function



1 Lock	Set 24, with panic function	Art. No. 14.234	
2 Cable transition	Cable transition, concealed, with installation box	Art. No. 05.802.0000.026	
3 Power supply	Top-hat rail mount type power supply, 24V, 1.25A	Art. No. 01.198.0500.000	
4 Control	Timer, Finder 12.21	Art. No. 01.198.1200.000	

### Situation 3 Office building: EDS lock + timer + card reader + buzzer

The EDS lock provides dual security for access to office rooms. Authorised staff members can access the secure area during office hours using a card only. A buzzer provides a signal when the door handle is coupled, indicating to the user that the door is open.

Outside office hours, it is possible to exit the area at any time, e.g. after working overtime, by using the panic function. During this period the door can also be opened from the outside with a key. The forced locking function ensures that the door handle is uncoupled after use. In combination with the monitoring contacts and a lock monitoring feature, this self-locking function makes it superfluous for a security service to lock up every evening.

#### Advantages

- Sensitive areas remain securely locked
- Automatic access control
- Combination actuation for double security
- An integrated polling feature allows integration into the building control technology
- Staff access during office hours only
- Door is securely locked during the evening and at night
- Can also be opened from inside with button

#### Alternative applications

Museums, storage facilities, personnel rooms









1 Lock	Set 22, with panic function	Art. No. 14.226
2 Cable transition	Cable transition, 12-pin, disconnectable, with installation box	Art. No. 14.600.0000.000
3 Power supply	Frame mount power supply, 12 V, 1A	Art. No. 01.198.0100.000
4 Control	Timer, Finder 12.21	Art. No. 01.198.1200.000
5 Sensors	Magnetic contact VdS B, for monitoring open/locked state Mounting part, assembly for magnetic contact Mounting part, assembly for magnet	Art. No. 01.198.1300.000 Art. No. 01.198.1400.000 Art. No. 01.198.1500.000

### Situation 4 Delivery entrance: EDS lock + UPS

Having two control inputs makes it possible to secure highly sensitive areas with the EDS lock. This combination of lock and uninterruptible power supply guarantees operation of the lock in the secure mode. In the event of a power outage – resulting from manipulation or malfunction – the UPS ensures that the exterior door handle is uncoupled automatically, so the door cannot be opened from the outside. After the power is restored, the lock automatically returns to its normal operating mode. This effectively prevents intrusion by manipulating the control.

#### Advantages

Applications

- Maximum security for sensitive areas
- Automatic building security
- The door can be opened from the outside mechanically with a key at any time.
- Energy-saving electronic lock circuitry for building security of the future.
- Components mounted on top-hat rail for easy maintenance

#### Alternative applications

Entry door to multiple family residence, basement parking access





Function input	11				
Control input	12	Button			
+12V-24V DC	13			+	
GND	14		•	-	UPS
				l	
Initial state: Upon pressing button In event of UPS alarm	i: I (powe	er outage):	Exterio Exterio Exterio Exterio button	or door h or door h or door h has no	andle uncoupled andle coupled andle coupled, function



1 Lock	Set 22, with panic function	Art. No. 14.226
2 Cable transition	Cable transition, concealed, without installation box	Art. No. 05.802.1000.026
3 Power supply	UPS, 12 V, 5 A Rechargeable battery	Art. No. 01.198.0700.000 Art. No. 18.315.0002.599
4 Control	Button	(provided by customer)

### Situation 5 Basement parking/staircase: EDS lock + electric bell system + UPS

Simple actuation of the EDS lock ensures convenient and highly secure solution for basement parking facilities. Access to parking deck from staircase possible at any time without hindrance. However, user access to the staircase is possible only after clearance with the electric bell system or with a key. In the event of an alarm or a power outage, the exterior door handle is automatically coupled, allowing free access to the staircase.

#### Advantages

- Self-locking function for maximum security
- Simple actuation
- Stand-alone solution or incorporation into system
- Energy-efficient, trend-setting technology no continuous power consumption

#### Alternative applications

Lattice doors with EDS locks without panic function in weatherprotected areas, applications using closed-circuit principle.





		I			
Function input	11				
Control input	12	Electric bell system			
+12V-24V DC	13			+	
GND	14			_	USV
Initial state: Upon pressing buttor In event of UPS alarm	i: i (powe	er outage):	Exte Exte Exte bell s	rior door h rior door h rior door h system ha	handle uncoupled handle coupled handle coupled, s no function



1 Lock	Set 21, with panic function	Art. No. 14.222	
2 Cable transition	Cable transition, 12-pin, disconnectable, without installation box	Art. No. 14.600.1000.000	
3 Power supply	UPS, 24V, 3A	Art. No. 01.198.0900.000	
4 Control	Electric bell system	(provided by customer)	

### Situation 6 Gate/isolating system: Two EDS locks without panic function + button

In combination with the integrated polling feature, simple actuation of the EDS lock offers the possibility of configuring monitored sluice gates for security areas without further controls. These are used particularly in official buildings, where gatekeepers allow access for authorised individuals. Here the internal processes reliably ensure that only one door can be opened at a time - even when the two switches are operated incorrectly.

#### Advantages

- Simple control using integrated polling
- Control via two simple buttons or via an internal procedure
- Optional supplementary lock monitoring features
- Power supply via power pack possible

#### Alternative applications

If required, in combination with escape route control and EDS locks with panic function in area of rescue routes.





#### Circuit diagram



When S2 actuated and door 1 closed:......Exterior door handle for lock 2 coupled When S2 actuated and door 1 closed:.....



1 Lock	Set 21, without panic function	Art. No. 14.223
2 Cable transition	Cable transition, concealed, with installation box (2x)	Art. No. 05.802.0000.026
3 Power supply	Top-hat rail mount type power supply, 24 V, 2 A	Art. No. 01.198.0600.000
4 Control	Button	(provided by customer)
5 Sensors	Electronic latch switching contact, VDS C/adjustable switching point (2x)	Art. No. 01.885.2000.000

### Situation 7 Clean room doors / air sluices: Two EDS locks

Particularly clean room technology requires that individual rooms or entire areas be entered and exited only through air sluices. EDS locks provide for simple realisation of such sluices using reciprocal actuation of two locks in combination with the open monitoring feature. A discretionary feature, e.g. for moving furniture, etc., can be realized only with an additional switch.

#### Advantages

- Optional discretionary switch
- Independent operation without additional electronic sensor circuitry
- Ideal combination of lock and open monitoring
- Feedback to master systems possible

#### Alternative applications

If required, in combination with escape route control and EDS locks with panic function in area of rescue routes.









1 Lock	Set 22, without panic function	Art. No. 14.227	
2 Cable transition	Cable transition, concealed, without installation box (2x)	Art. No. 05.802.1000.026	
3 Power supply	Top-hat rail mount type power supply, 24 V, 2 A	Art. No. 01.198.0600.000	
5 Sensors	Magnetic contact VdS B, for monitoring open/locked state (2x) Mounting part, assembly for magnetic contact Mounting part, assembly for magnet	Art. No. 01.198.1300.000 Art. No. 01.198.1400.000 Art. No. 01.198.1500.000	

### Situation 8 Security area: EDS lock + UPS + Access control

In highly sensitive areas, which are to be separated from one another, it is desirable to allow access through a door only for authorized persons. The EDS lock, in combination with the uninterruptible power supply, makes it possible to secure these areas from one another and release them in the event of an alarm. After the alarm the areas are again separated from one another without having to reconfigure the lock. The integrated, manipulation-proof, status polling feature also allows the door to be monitored.

#### Advantages

- Lock without panic function
- Simple control and monitoring of lock state
- Self-locking function for maximum security
- Automatic separation of two sensitive areas
- Stand-alone solution or incorporation into system
- Energy-saving, trend-setting design

#### Alternative applications

Storage rooms, forensic clinics, prisons









1 Lock	Set 22, without panic function	Art. No. 14.227	
2 Cable transition	Cable transition, 12-pin, disconnectable, without installation box	Art. No. 14.600.1000.000	
3 Power supply	Flush mount power supply, 12 V, 1 A	Art. No. 01.198.1100.000	
4 Control	Access control	(provided by customer)	
5 Sensors	Magnetic contact VdS B, for monitoring open/locked state Mounting part, assembly for magnetic contact Mounting part, assembly for magnet	Art. No. 01.198.1300.000 Art. No. 01.198.1400.000 Art. No. 01.198.1500.000	

### **Alternative Components**

The modules used in the previous examples are listed on the following pages. If your specific application is not covered 100% or you have an entirely different type of application, please do not hesitate to substitute other modules or put them together to meet your specific requirements. Naturally you are

welcome to contact us if you require additional accessories or further consultation in selecting the components for your particular application.

### Series 200 self- locking EDS locks

Single leaf Art.	No. Double lea	af	Art. No.
Set 21, with panic function	Set 23, with panic (max. 1,60	function 0 x 2,500 mm)	Art. No. 14.230
Set 21, without panic function	Set 24, with panic (max. 1,60	function 0 x 3,500 mm, with add	Art. No. 14.234 ditional locking device at top)
Set 22, with panic functionArt. No. 14.226 (max. 1,600 x 3,500 mm, with additional locking device at	 op)		
Set 22, without panic function <b>14.227</b> (max. 1,600 x 3,500 mm, with additional locking device at	 op) Additional i	information on lock set:	s is given starting on Page 22.

### Power supply

Top-hat rail mount	Art. No.
Top-hat rail mount type power supply, 24 V, 1.25 A	01.198.0500.000
Top-hat rail mount type power supply, 24 V, 2 A	01.198.0600.000
Top-hat rail mount type UPS, 12 V, 5 A Rechargeable battery	<b>01.198.0700.000</b> 18.315.0002.599
Top-hat rail mount type UPS, 24 V, 3 A (incl. power supply) Rechargeable battery, 2 each required	<b>01.198.0800.000</b> 
Frame mount	Art. No.

Frame mount power supply, 12 V, 1A......01.198.0100.000

Flush mount	Art. No.
Flush mount power supply, 12 V, 1 A	01.198.1100.000
Wall installation	Art. No.
UPS for wall installation, 24 V, 3 A (incl. power supply / batteries)	01.198.0900.000
UPS for wall installation, 12 V, 5 A (incl. power supply / batteries)	01.198.1000.000

### Cable transitions

Fixed Art. I	No.	Detachable	Art. No.
Cable transition, concealed, with installation box05.802.0000.0	026	Cable transition, 12-pole, concealed, with installation box	14.600.0000.000
Cable transition, concealed, without installation box	026	Cable transition, 12-pole, concealed, without installation box	.14.600.1000.000

### Control

Fingerscan	Art. No.
Fingerscanner ekey home Decor. element ekey IN ED for FS-Integra ekey home SE 1 KUB 48 Cable A	<b>50021799</b> 50021798 50027235 50017498
Smoke sensor	Art. No.
Hekatron ORS 142 <b>05</b> (without base)	.700.0000

Timer	Art. No.
Timer,	
Finder 12.21	01.198.1200.000

#### Surface mount installation base ......05.701.0000.---

### Sensors

Bolt switching contacts	Art. No.	
Electronic bolt switching contact, with 6 m cable	50016381	
Electronic bolt switching contact, VDS C/adjustable switching point, with 6 m cable	01.885.2000.000	i

Lock monitor	Art. No.
Magnetic contact VdS B	
for monitoring open/locked state	01.198.1300.000
Mounting part,	
assembly for magnetic contact	01.198.1400.000
Mounting part, assembly for magnet	01.198.1500.000

### Self-locking lock sets

The features and components of the lock sets recommended here are listed below. Additional information on the sets, profile systems and accessories is given in the catalogue "Series 200 Emergency Exit Doors".



#### Set 21 Series 200



- for single leaf doors, max. 1,600 x 3,500 mm\*, max. 320 kg
- Available optionally with or without panic function
- Bolts and latches lock automatically when door is closed

#### Set consists of:

- Self-locking panic lock with 20 mm bolt projection, function EDS with stainless steel forend, for use on left or right, delivery version DIN right
- Strike plate closed
- Connecting cable

#### Set 22 Series 200

for single leaf doors,



- max. 1,600 x 3,500mm, max. 320kg
- Available optionally with or without panic function
- Bolts and latches lock automatically when door is closed
- with additional upper locking device

#### Set consists of:

- Self-locking panic lock with 20mm bolt projection, function EDS with stainless steel forend, for use on left or right, delivery version DIN right, with additional upper locking device
- Strike plate closed
- Connection rod for additional locking device, 1,550 mm long
- Latch for additional locking device
- Rod guide with cone
- Strike plate for additional locking device
- Connecting cable

\* At door heights greater than 2,500 mm we recommend use of locks with additional upper locking device.

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#### Set 23 Series 200

- for double leaf doors,
  - max. each 1,600 x 3,500 mm\*, max. 320 kg each leaf
- Bolts and latches lock automatically when door is closed

#### Set consists of:

- Active leaf:
- Self-locking panic lock with 20 mm bolt projection, function EDS with stainless steel forend, for use on left or right, delivery version DIN right
- Connecting cable
   Passive leaf:
- Panic strike box with stainless steel forend
- Latch
- Strike plate for latch
- Top connection rod, 1,550mm long
- Connection rod with locking piece, bottom
- Adjustable strike plate for bottom



#### Set 24 Series 200

for double-leaf doors,



- max. each 1,600 x 3,500mm, max. 320kg each leaf
- Bolts and latches lock automatically when door is closed
- with additional upper locking device

#### Set consists of:

- Active leaf:
- Self-locking panic lock with 20mm bolt projection, function EDS with stainless steel forend, for use on left or right, delivery version DIN right, with additional upper locking device
- Connecting cable
- Connection rod, latch and strike plate for additional locking device
- Rod guide with cone
- Passive leaf:
- Panic strike box with stainless steel forend
- Latch
- Top connection rod, 1,550 mm long
- Strike plate for latch
- Connection rod with locking piece, bottom
- Adjustable strike plate for bottom

\* At door heights greater than 2,500 mm we recommend use of locks with additional upper locking device.

### DIN Standards for Emergency Exit and Panic Doors

### **DIN EN 179**

#### Locks for emergency exit doors

Panic locks for emergency exit doors with fixed knob and lever handle or lever handle on both sides are used in buildings where a panic is not likely to occur. Those affected are familiar with the escape routes and functions of emergency exit doors.

Areas of application: Office rooms, workshops.



### Fire protection



The articles marked with this pictrograph are suitable for smoke and fire protection; system approval is required.

### Legal basis and duty of application

The extent to which new standards are mandatory, should already be examined during the planning phase. Since concrete definition of the standards is the prerogative the planner, the following should be observed:

### Decision of Federal High Court of Justice. Reference number VII ZR 184/97:

"...a structure must satisfy the state-of-the-art at the time it is completed."

#### In German penal law, § 319 StGB Para. 1 also applies:

1) Anyone violating the generally accepted rules of technology ... during the planning, supervision or execution of a construction project and thereby endangering the life and limb of other humans shall be subject to imprisonment up to 5 years or fine.

Lock systems tested in compliance with DIN EN 179 and DIN EN 1125 satisfy the requirement that doors in escape and rescue routes must be easy to open at any time from the inside over the full width with one hand movement.



### **DIN EN 1125**



### Locks with panic push bar or panic bar handle for panic doors

Panic locks with panic push bar or panic bar handle are used in buildings where panic is likely to break out in a hazardous situation. Those affected are not familiar with the functions of emergency exit doors. In case of an emergency, safe escape must be possible, even when an initial load (pressure) is present.

**Areas of application:** Schools, hospitals, public administrative buildings, shopping centres, airports, hotels, theatres, cinemas, stadiums, discotheques and concert halls.





#### Please note:

The fittings and locks must always be tested and certified together. Adaptation to individual profile systems may be accomplished only by the manufacturer of the fittings.

### Lock monitoring

EDS locks offer integrated, potential-free switches for checking various components and states:

- Actuation of follower from outside
- Actuation of follower from inside
- Lock locked
- Lock released
- Actuation of profile cylinder/locking lug motion

The lock monitor can be used for electronic control and monitoring technology provided by the customer - for example alarm systems, building control technology, door drives, etc.

#### Connection diagram:



#### The figure shows the contact states in the initial position position:

- Latch and bolt extended
- Door handle not actuated
- Profile cylinder not actuated

#### Technical data for floating contacts:

Max. power	1W
Max. switching	DC or AC peak 30V
voltage	
Max. switching	DC or AC peak 100 mA
current	
Max. surge current	DC or AC peak 300mA

#### Note:

- Additional relays are required for switching large loads.
- To ensure long service life, we recommend not exceeding a load current of 10mA or switching voltage of 24VDC.

### Forced locking function

The forced locking function makes it possible to couple the exterior door handle with the key for a short time. However, in contrast to function B, this coupling serves for single passage only, not for permanently opening the door. If the key is moved back to the initial position or removed, the exterior door handle is again uncoupled.

### Open and closed-circuit principle

The open and closed-circuit principle is familiar from applications with electric door openers. The background for this principle is, that, in the event of an alarm or, above all, a power outage, the lock assumes a previously defined state. The open-circuit principle, uncouples the door handle in the event of a power outage, thus securing the door; the closed-circuit principle provides free access using the door handle.

In combination with an uninterruptible power supply (UPS), the EDS lock can realise both functions, without having to use different lock versions. The design of the EDS lock allows it to operate with high energy efficiency.



Exterior door handle:

Coupled

### Uninterruptible power supply (UPS)

In the event of a power outage, the uninterruptible power supply ensures that sufficient power is present for the lock to assume a

defined state according to the open or closed-circuit principle. In addition to this function, the uninterruptible power supplies shown in this brochure also serve as a standard power supply, eliminating the necessity of a separate unit. Your advantage: One lock for both applications.

## Electronic latch control with lock monitoring

Door handles that can be uncoupled on one or both sides make the automatic locking EDS lock the basis for various solutions in the field of automated access control.

The exterior door handle – in the version with panic function – or both door handles – in the version without panic function – can be coupled or uncoupled in just 0.3 seconds. The self-locking function and door handle, which can be uncoupled completely from the remaining mechanism, ensure maximum security.

Expansion of the mechanical 200 series to include an integrated control and energy-saving motor, has made it possible to broaden the advantages of mechanical, self-locking panic locks with the familiar case dimensions to include electronic features.

### This proximity of the EDS lock to its mechanical siblings offers many advantages for you:

- Simple to change over door closing (DIN) direction
- ✓ Simple to change over panic side
- ✓ Optional additional locking device
- Self-locking without adaptation of control latch
- ✓ Conical bolt with 20 mm projection
- Can be replaced with series locks

The compatibility with the familiar 200 series mechanical lock accessories from the spring-supported rod guide to the strike box and push bar make use of the EDS locks child's play. Even the connecting cable for the integrated lock monitor is the same for all locks.

The electronic latch control not only operates at high speed, it also saves a great deal of energy, because power is only required for a short moment for coupling or decoupling and the lock then returns immediately to its energy-saving standby mode.

Coupling time approx. 0.3 seconds
✓ Tested for 1 million cycles
Suitable up to resistance class RC2
Long-term open function without door opening button
✓ Long-term open function conforms to fire protection requirements
Self-locking even in event of power outage
Single and double leaf versions available
Available with and without additional locking device



The version with integrated panic function reliably secures emergency exit doors and rescue routes in compliance with DIN EN 179 or DIN EN 1125. This reliability ensures passage or escape from the inside to the outside, while access remains electronically actuated for secure control.

Without the panic function and with continuous follower, the EDS lock can be used for a wide variety of applications for reliably separating security areas from one another. The uncoupled handle also prevents lattice doors in weather-protected areas from being opened by reaching through.

The open interface and logical actuation facilitate use of the feedback contacts without additional components. These contacts are a standard feature in the lock, to make mechatronic solutions as simple as possible without having to use additional components.

Proper function of the door is guaranteed even in the event of a power outage. The self-locking function completely secures the door mechanically, allowing passage during this time with a key only. The forced locking function also ensures that security areas can be entered only by authorised persons.





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