

# Biometric switch Harmony

Catalogue  
February 2009





# Mastering your access control

Increase access protection to equipment and for operators whilst, at the same time, rationalising costs. With the Harmony biometric switch, Schneider Electric now offers an innovative solution to meet this indispensable security need for controlling access to machines and systems.

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Make the most of your energy



# Provide your operators and equipment with the protection they deserve

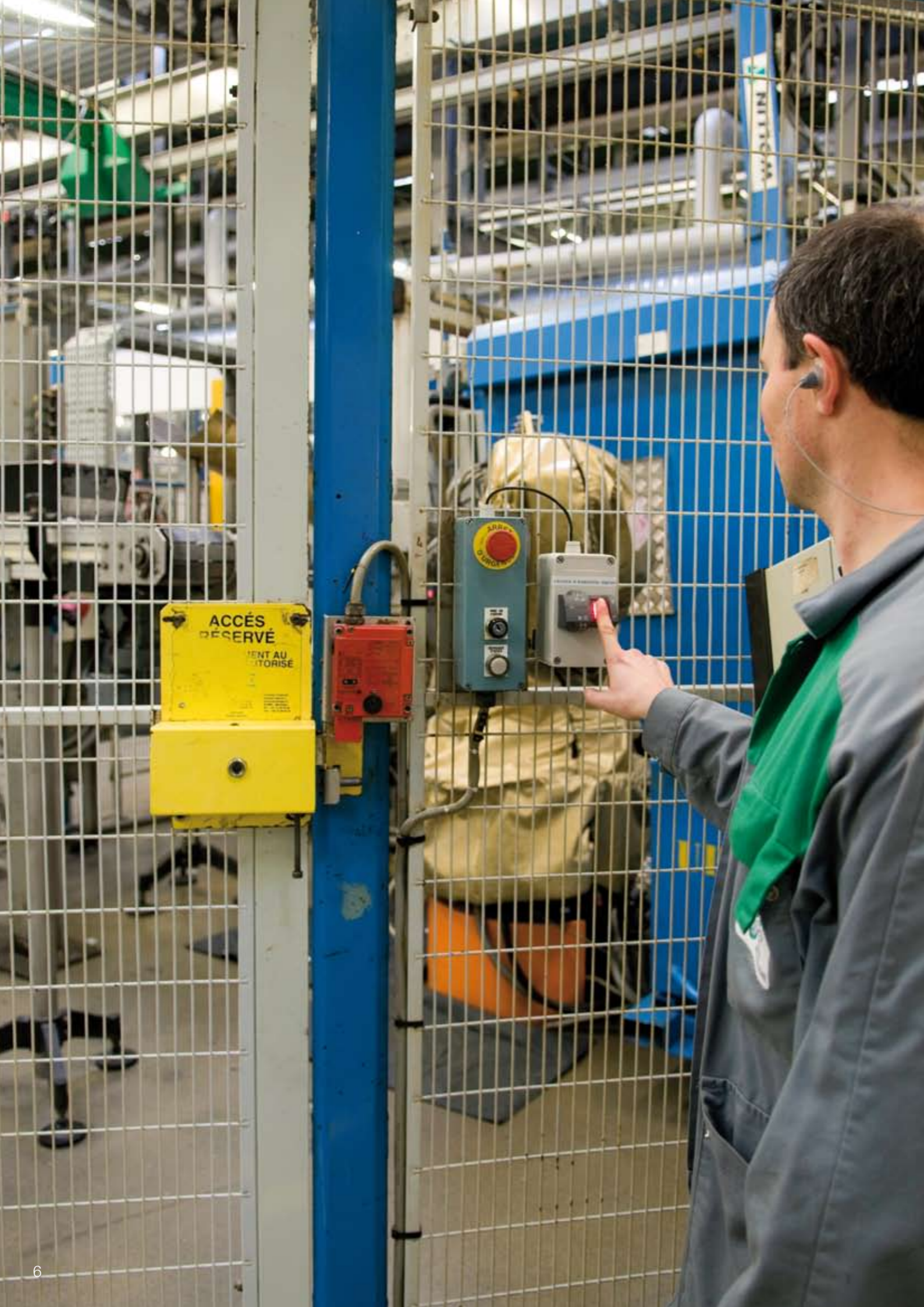


- Based on fingerprint recognition, the **Harmony biometric switch** is a competitive alternative to the weakness of the other access control systems.

**Simple, reliable and efficient**  
it enables restricting access to sensitive zones and machine functions (starting, adjustment, maintenance...) to only authorised personnel.

- The advances and level of performance achieved in biometric technology has now enabled us to offer a solution featuring excellent robustness, which is essential in an industrial environment.

- As a worldwide leader in operator dialogue components, our role is to offer you the most reliable and most affordable access control solution, without forgetting the importance of user-friendliness and simplicity of installation.

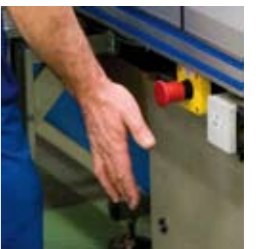


# Opt for maximum infallibility...

Use the most trustworthy technology to overcome the weakness of existing systems, which do not guarantee 100% reliable access control. This is the aim of the Harmony biometric switch.

## Specialised and reliable technology

- Efficient protection against theft, copying, loss, lending and forgetfulness (as opposed to keys, badges, codes and passwords...).
- Possibility of cheating greatly reduced due to uniqueness of fingerprint.
- Very low error and rejection rate for a high level of reliability.
- Authentication perfected: registration managed by the administrator and usage by the operator.



Example of applications: Resetting following activation of an emergency stop.

## Robustness suited to industry

- Excellent resistance to mechanical shock and vibration.
- EMC protection.
- IP65 degree of protection.
- Protective cover (option).

## Performance

- Memory capacity: 200 fingerprints.
- The fingerprints of several fingers of the operator can be recorded for more flexibility and precision.
- High intensity LEDs.



**-1 second**

to authenticate an operator and authorise or refuse their access

**<0.1%**

False Acceptance Rate (FAR)



## ... whilst gaining in simplicity

**+** Harmony innovation: an extremely compact and stand-alone product, as simple to use as any other Harmony control component, not requiring the use of an interface.

### User-friendly

- No password to be remembered, no losing or forgetting of key or badge - your finger becomes your key.
- Acceptance rate higher than 98% on first reading of fingerprint.
- The fingerprint processing assures anonymity of persons since the purpose of the product is authorisation and not identification.
- Fully stand-alone: programming and operational status achieved without use of supplementary interface.

### Simplicity of use

- Simple and intuitive user interface: parametering and registration/recording directly on front face of the product using LED dialogue.
- Ease of registration: teaching in the blink of an eye.

### Compactness and simplicity of installation

- Minimum size, enabling mounting in a standard Ø22 mm cut-out.
- Quick connection using bared wires or M12 connector.
- Integration as quick as any other Harmony control component, either on new or existing equipment.

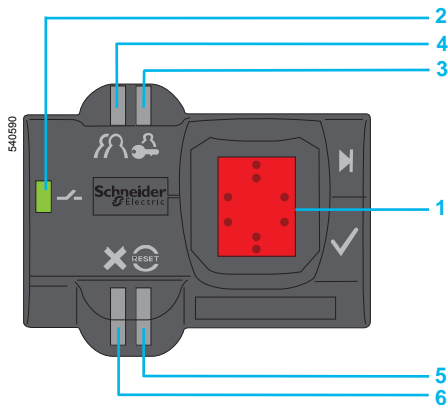
### Rationalise your costs

- Reduce maintenance and machine downtime resulting from unauthorised operation (inappropriate adjustment of machine settings, vandalism...)
- Eliminate costs associated with the administration or loss of keys, cards, badges...

Intuitive coloured LED dialogue system (patent applied for)



Fixing by single nut, no tool required



### Presentation

The fingerprint reader biometric switch is designed for use in industry to protect access to systems or machines. No type of interface is required for programming and operating the switch: it is an independent unit.

2 types of product are available:

- bistable biometric switches type XB5 S1B, with 2 fixed states,
- monostable biometric switches type XB5 S2B, with pulse control.

The biometric switch is aimed at 2 types of user:

- the administrator, who manages the registration and deletion of fingerprints,
- the operator who, once registered, uses the product as a control unit.

The product is of monolithic design (a single plastic housing) and is fixed by means of a nut (hand-tightened without need for tools) in a standard, 22 mm diameter hole. It operates on a 24 V d.c. supply.

Connection to the power supply and to the control output (relay or plc) is by means of a 2 metre cable or by M12 connector.

It can be installed on a flat, horizontal or vertical surface.

A protective cover is available as an accessory to protect the active face of the sensing screen. This cover is fixed by means of a self-adhesive hinge.

### Description

The product consists of a dark grey housing, with the following on its front face:

- a sensing screen **1** that allows the registration of fingerprints and subsequent recognition of fingerprints registered,
- a green LED output state indicator **2**, that illuminates when the output is activated (N/O solid state contact),
- an orange LED **3**, indicating an administrator's "Registration" mode,
- an orange LED **4**, indicating an operator's "Registration" mode,
- a red «RESET» LED **5**, which indicates, in "Delete" mode, that the administrator is deleting all or part of the memory,
- a red LED **6** which flashes in the presence of an "unrecognised" fingerprint or in the case of incorrect operation.

### References

#### Complete units

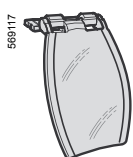
Description	Output	Connection	Reference	Weight kg
<b>Bistable biometric switch, 24 V d.c.</b>	PNP	By 2 m cable	<b>XB5 S1B2L2</b>	0.170
		By M12 connector	<b>XB5 S1B2M12</b>	0.183
	NPN	By 2 m cable	<b>XB5 S1B3L2 ▲</b>	0.170
		By M12 connector	<b>XB5 S1B3M12 ▲</b>	0.183
<b>Monostable biometric switch, 24 V d.c.</b>	PNP	By 2 m cable	<b>XB5 S2B2L2</b>	0.170
		By M12 connector	<b>XB5 S2B2M12</b>	0.183
	NPN	By 2 m cable	<b>XB5 S2B3L2 ▲</b>	0.170
		By M12 connector	<b>XB5 S2B3M12 ▲</b>	0.183

#### Accessories

Description	Function	Sold in lots of	Reference	Weight kg
<b>Protective cover, translucent and self-adhesive</b>	Protection of the sensing screen	<b>5</b>	<b>ZB5 SZ70</b>	0.020
<b>Fixing nut Ø 22 mm</b>	Replacement part	<b>5</b>	<b>ZB5 SZ71</b>	0.030
<b>Legend plate, 28 x 7 mm, self-adhesive, blank, with black background, for engraving</b>		<b>10</b>	<b>ZBY 0101T</b>	0.005



XB5 S1B2L2



ZB5 SZ70

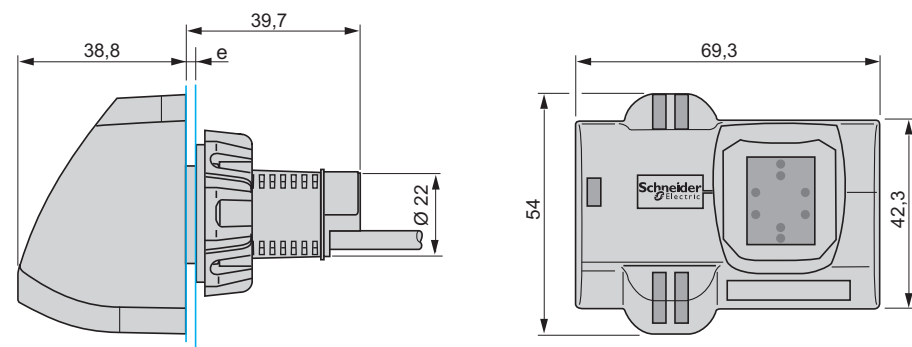
▲ Available: 3rd quarter 2009.

Characteristics			
Biometric switch type		XB5 S1B●●●● and XB5 S2B●●●●	
Product certifications		UL, CSA, CE IEC 61000-6-2 / IEC 61000-6-4	
Degree of protection	Conforming to EN/IEC 60529	IP 65 NEMA 12	
Ambient air temperature around the device	Storage	°C	- 25...+ 70
	Operation	°C	- 5...+ 50
Vibration resistance	Conforming to IEC 60068-2-6	1 gn - 9 to 500 Hz Amplitude 3 mm - 5 to 9 Hz	
Electric shock resistance	Conforming to IEC60068-2-27	50 gn, duration 11 ms	
Connection method	Cable	Length: 2 m, 3-wire, pre-wired	
	Connector	M12	
Materials	Housing	Polyamide PA66	
	Cable	PvR 3 x 0.34 mm <sup>2</sup>	
Memory capacity	200 records (100 users, operators or administrators, each registering 2 ngerprints)		
Output state indicator	Green LED		
Short-circuit protection	By gG fuse - 250 mA		
Rated supply voltage	V	--- 24 with protection against reverse polarity	
Voltage limits (including ripple)	V	--- 20...30	
Switching capacity	mA	≤ 200 with protection against overloads and short-circuits	
Residual voltage, closed state	V	≤ 1	
No-load current consumption	mA	≤ 50	
Delays	First-up	s	< 2
	Response time	s	< 1
	Recovery time	s	< 1

### Connections

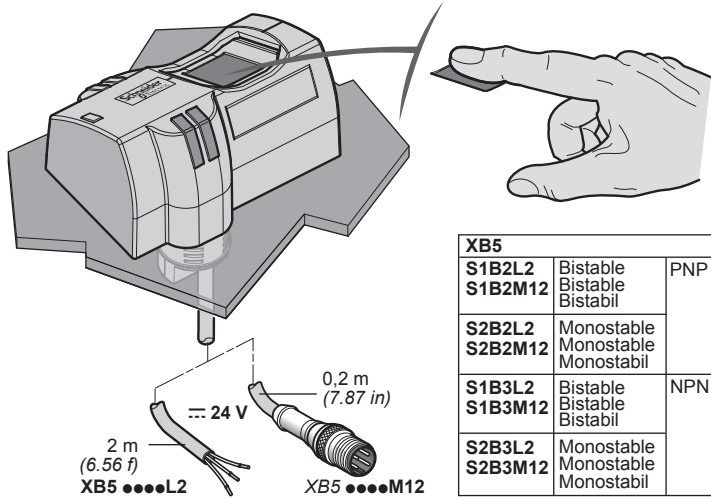
Connector	Cable	PNP	NPN
M12 4 3 1 2	BU: Blue BN: Brown BK: Black		
1 (+) 3 (-) 4 Output			

### Dimensions



e = 1 to 6 mm

- en** Harmony biometric key switch
- fr** Bouton biométrique Harmony
- de** Biometrischer Schalter Harmony



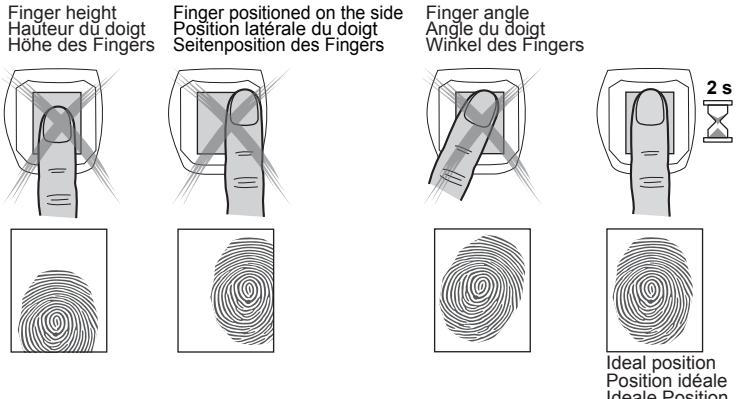
**HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH**

**RISQUE D'ELECTROCUTION, D'EXPLOSION OU D'ARC ELECTRIQUE**  
 - Disconnect all power before servicing equipment.  
 - Coupez l'alimentation avant de travailler sur cet appareil.  
**Le non-respect de ces instructions provoquera la mort ou des blessures graves.**

**STROMSCHLAG-, EXPLOSIONS- ODER LICHTBOGENGEFAHR**  
 - Vor dem Arbeiten an dem Gerät dessen Stromversorgung abschalten.  
**Die Nichtbeachtung dieser Anweisungen führt zu Tod oder schwerer Körperverletzung.**

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

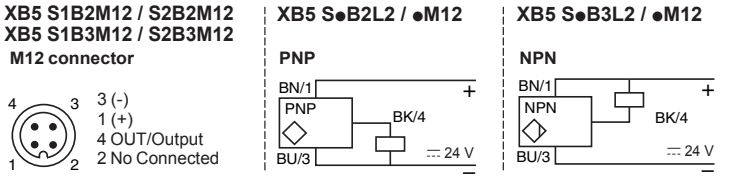
**How to position your finger correctly on the sensor for the capture**



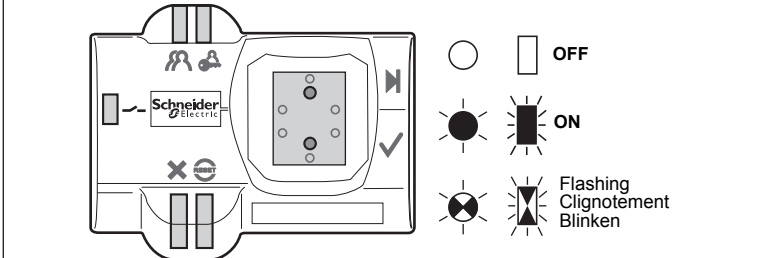
**en** Storage capacity: 200 fingerprints  
 Recommendations to ensure optimum fingerprint recognition:  
 - Save in this priority order: index finger, thumb and then middle finger  
 - Record one finger of each hand.

**fr** Capacité de la mémoire : 200 empreintes  
 Conseils pour optimiser la reconnaissance des empreintes :  
 - Enregistrer en priorité l'index, le pouce puis le majeur  
 - Enregistrer un doigt de chaque main.

**de** Speicherkapazität: 200 Abdrücke  
 Ratschläge für eine optimierte Erkennung der Fingerabdrücke:  
 - Zunächst den Zeigefinger, dann den Daumen und anschließend den Mittelfinger speichern  
 - Jeweils einen Finger einer Hand speichern.



**Key / Légende / Legende**



**Administrator** (orange LED): the individual (finger) responsible for managing the content of the memory (saving, deletion). There may be several administrators. The administrator finger is inoperative on the output status.

**Administrateur** (LED orange) : personne (doigt) responsable de la gestion du contenu de la mémoire (enregistrement, effacement). Il peut y avoir plusieurs administrateurs, le doigt administrateur n'a pas d'action sur l'état de la sortie.

**Administrator** (orange LED): Person (Finger), die für das Management des Speicherinhalts verantwortlich ist (Speichern, Löschen). Es kann mehrere Administratoren geben. Der Finger des Administrators hat keine Wirkung auf den Zustand am Ausgang.

**Operator** (orange LED): the individual (finger) recorded by an administrator, and who can act on the output status.

**Opérateur** (LED orange) : personne (doigt) enregistrée par un administrateur qui a une action sur l'état de la sortie.

**Bediener** (orange LED): Person (Finger), die von einem Administrator gespeichert wurde und eine Wirkung auf den Zustand am Ausgang hat.

**Error Detected** (red LED): flashes if the finger is not recognized, or an unsuccessful memory save or if the memory is full.

**Erreur** (LED rouge) : Clignote si doigt non reconnu, défaut d'enregistrement ou mémoire pleine.

**Fehler** (rote LED): Blinkt, wenn der Finger nicht erkannt wurde, Speicherfehler oder Speicher voll.

**Reset** (red LED): this function can be accessed by the administrator to delete the whole or part of the records.

**Reset** (LED rouge) : Fonction accessible par l'administrateur pour effacer partiellement ou totalement les enregistrements.

**Reset** (rote LED): Funktion, auf die der Administrator Zugang hat, um den Speicher teilweise oder vollständig zu löschen.

**Upper touchpad** (upper blue led) to browse the drop-down menu - Only available in administrator session.

**Zone tactile haute** (led bleue haute) permettant la navigation dans le menu déroulant - Uniquement accessible en session administrateur.

**Berührungsempfindliche Zone oben** (Obere blaue LED), um im Dropdown-Menü zu navigieren - Nur in Administrator-Sitzung zugänglich.

**Lower touchpad** (lower blue led) to confirm the selection or exit the drop-down menu - Only available in administrator session.

**Zone tactile basse** (led bleue basse) permettant la validation de la sélection ou la sortie du menu déroulant - Uniquement accessible en session administrateur.

**Berührungsempfindliche Zone unten** (Untere blaue LED), um die Auswahl zu bestätigen oder das Dropdown-Menü zu verlassen - Nur in Administrator-Sitzung zugänglich.

**Output status** (green): (lit = On, out = Off).

**Etat de sortie** (verte) : (allumée = On, éteinte = Off).

**Ausgangszustand** (grün): (leuchtet = On, erloschen = Off).

**en** **Precautions**  
**Cleaning:** the viewing port must be wiped regularly, using a dry cloth (tissue provided with the product). Do not use any liquids containing acids, alcohol, or abrasive materials.  
**Use:** protect the product from direct sunlight, to avoid glare and sensor saturation.  
 If the system is locked because the Administrator is absent, contact the Schneider Technical Support team.

**This product is an apparatus of class B, group 1, for EMC, as per standard CISPR 11.**

**fr** **Précautions d'emploi**  
**Nettoyage :** la fenêtre doit être régulièrement essuyée avec un chiffon sec (lingette fournie avec le produit). Ne pas utiliser des liquides à base d'acides, d'alcool ou des matériaux abrasifs.  
**Utilisation :** Protéger le produit du plein soleil pour éviter l'éblouissement et la saturation du capteur.  
 En cas de blocage par absence d'Administrateur, contacter le support technique de Schneider.

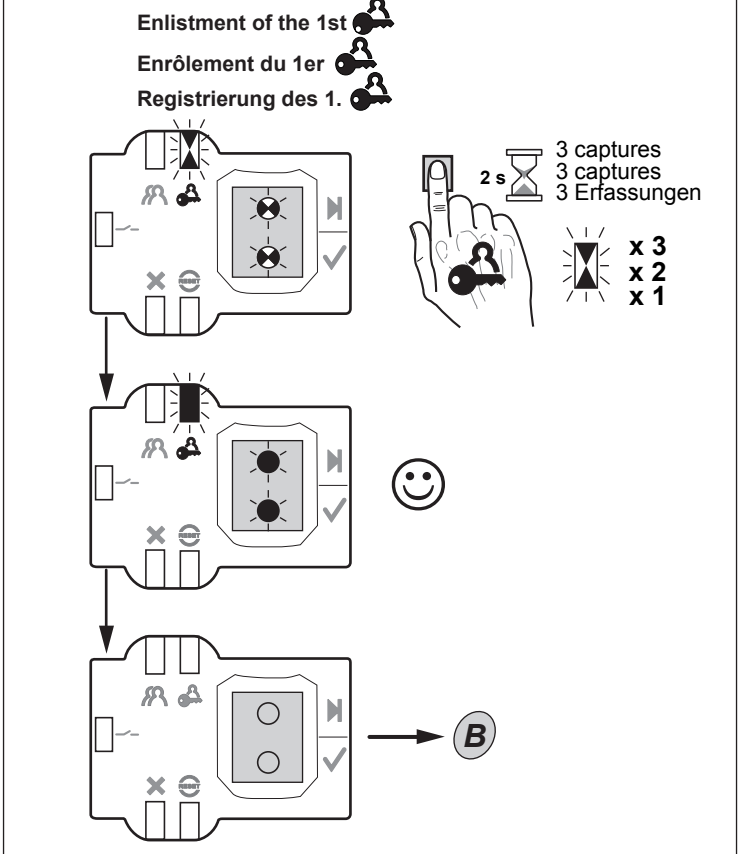
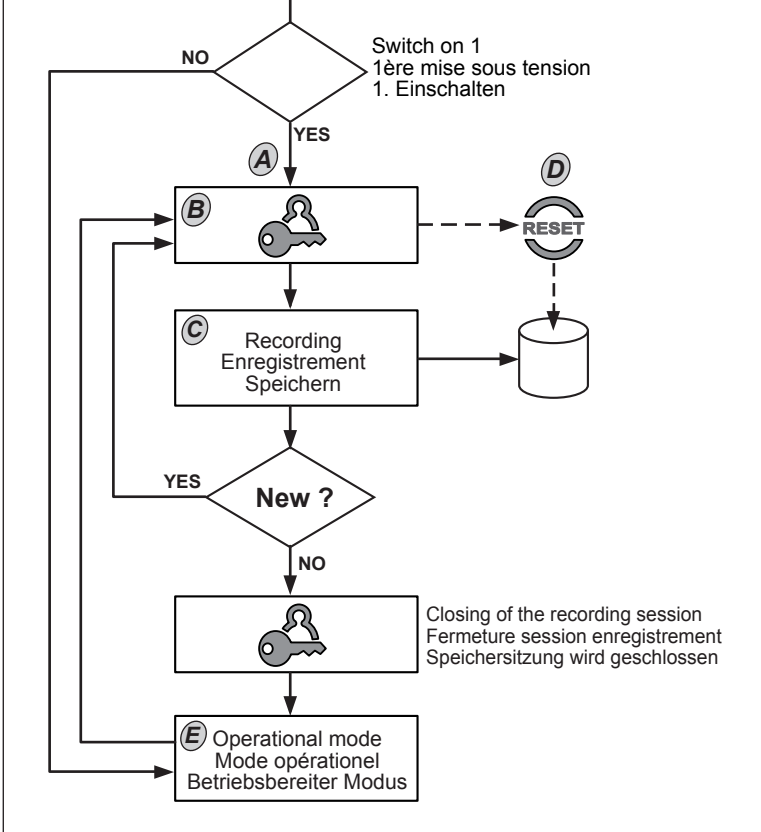
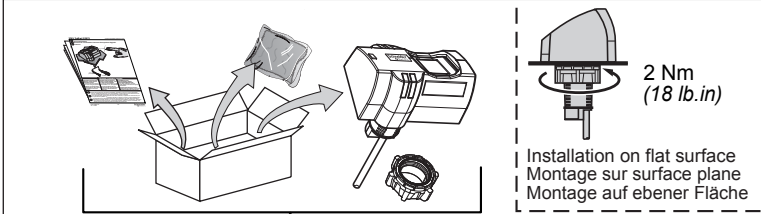
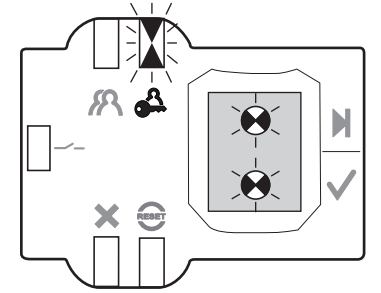
**Ce produit est un appareil de classe B groupe 1 pour la CEM selon la norme CISPR 11**

**de** **Vorsichtsmaßnahmen**  
**Reinigung:** Das Fenster muss regelmäßig mit einem trockenen Tuch gereinigt werden (Tuch wird mit dem Produkt geliefert). Keine säure- oder alkoholhaltigen Flüssigkeiten oder Scheuermittel verwenden.  
**Verwendung:** Das Produkt vor Sonnenstrahlen schützen, um der Sensor nicht geblendet oder überlastet wird.  
 Wenn das System bei Anwesenheit des Administrators blockiert ist, wenden Sie sich bitte an die Technische Unterstützung von Schneider.

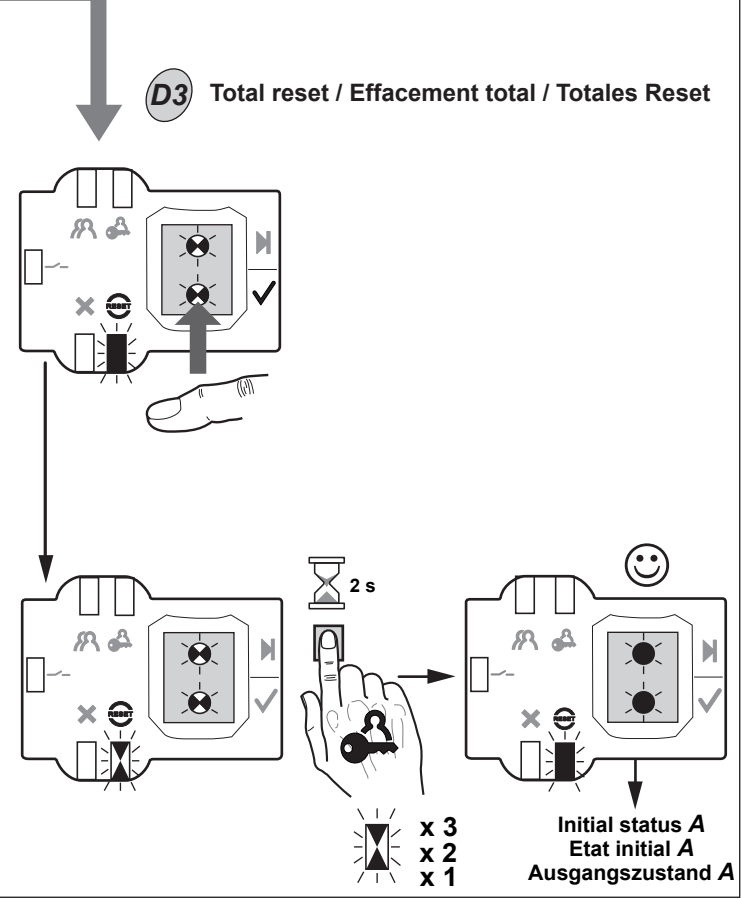
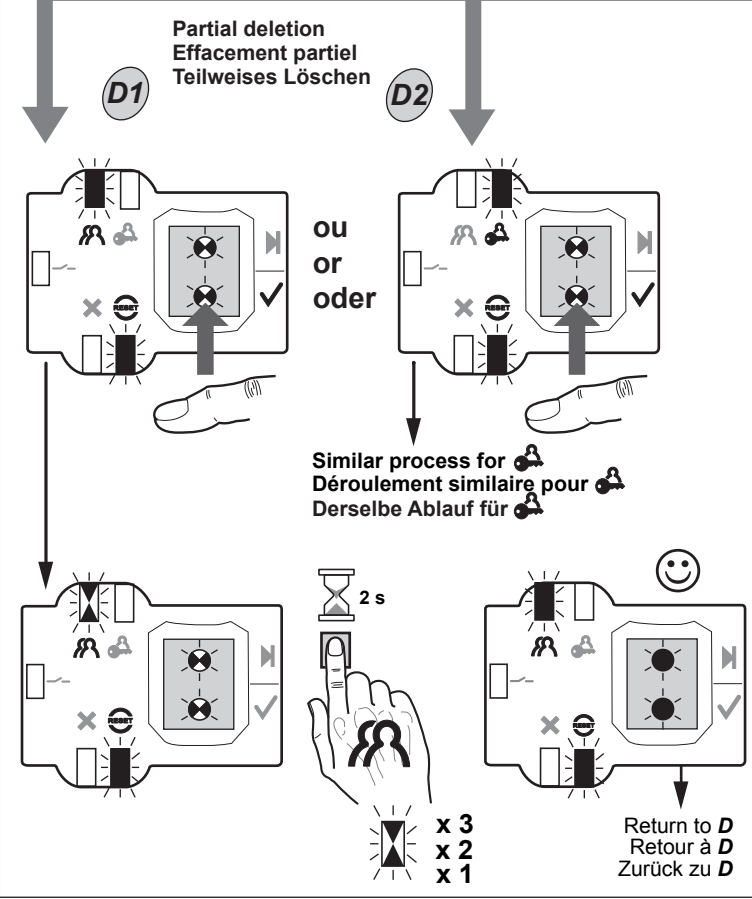
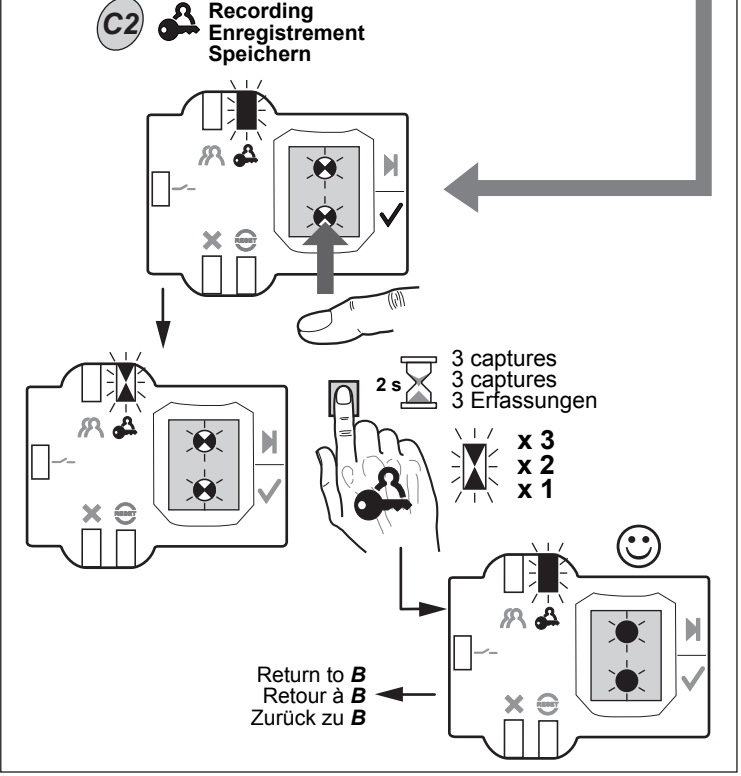
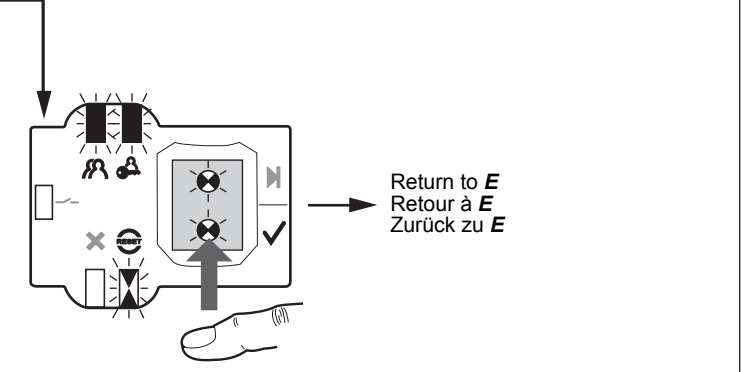
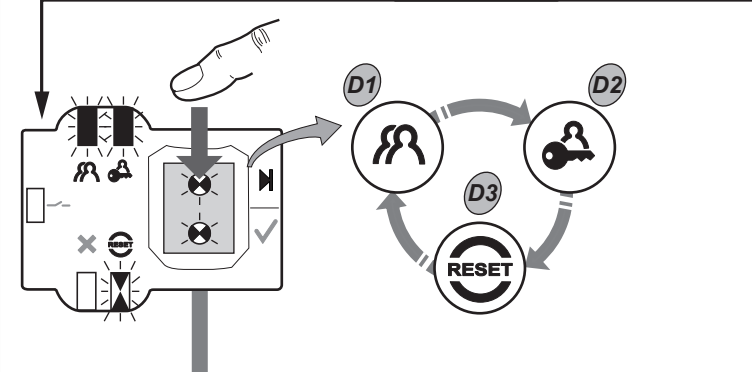
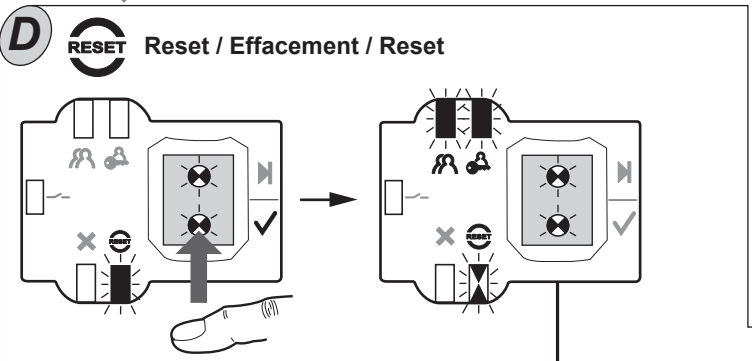
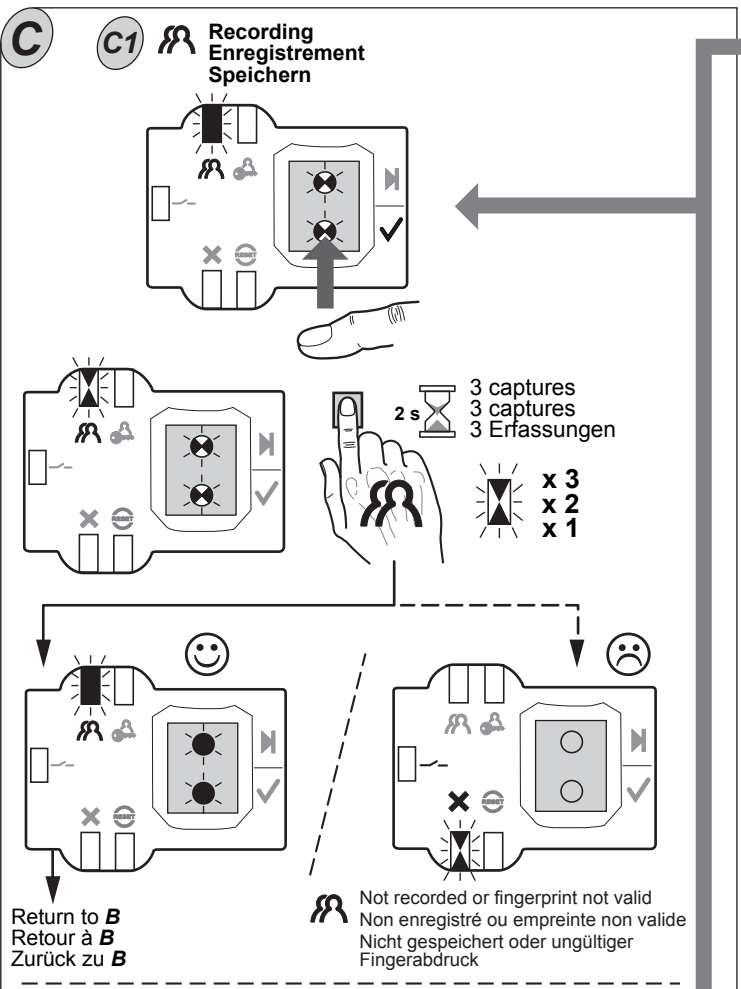
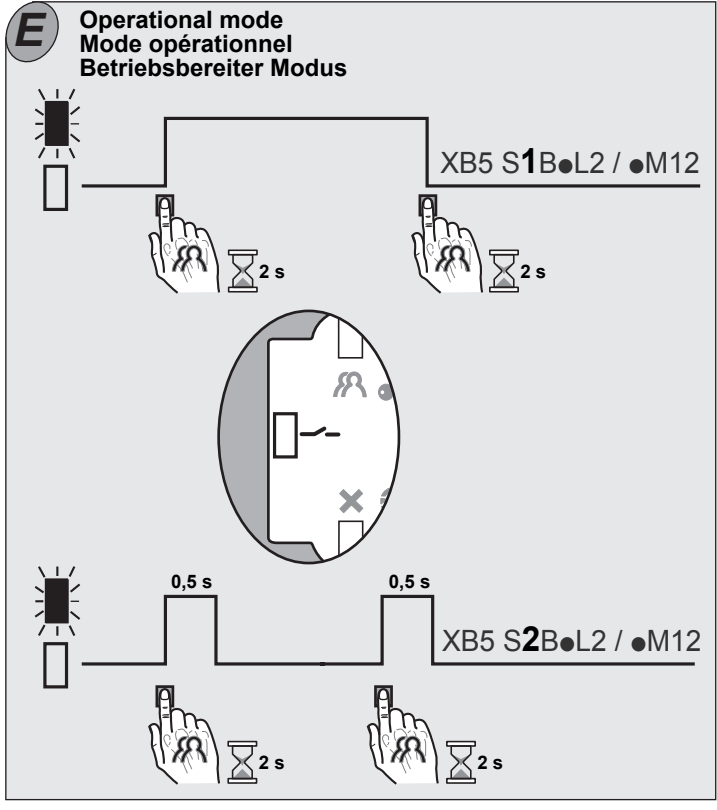
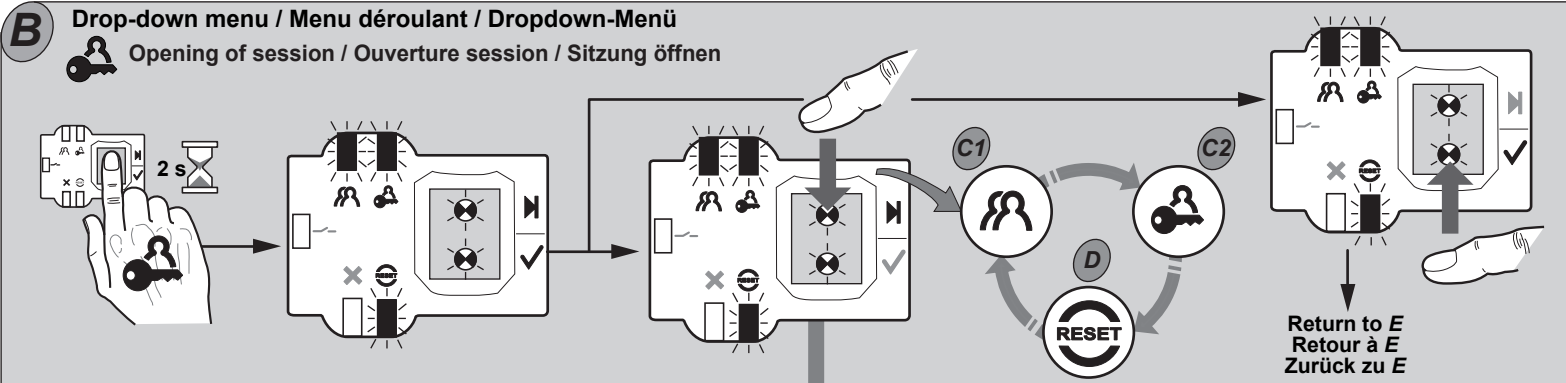
**Dieses Produkt ist ein Gerät mit einer EMV der Klasse B Gruppe 1 gemäß der Norm CISPR 11.**

**No action for 30 seconds returns the product to operational mode E.**  
**Sans action pendant 30 secondes le produit revient à son mode opérationnel E.**  
**Wenn innerhalb von 30 Sekunden keine Aktion erfolgt, kehrt das Produkt wieder zu seinem Betriebsmodus E zurück.**

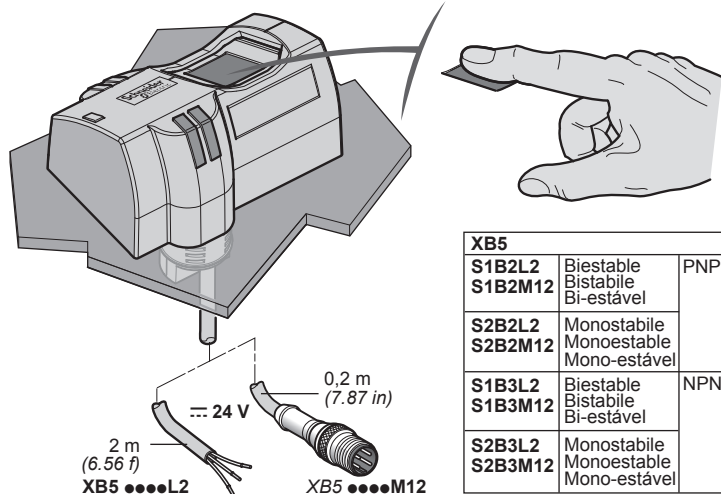
**First startup; initial status (memory is empty)**  
**Première mise en service; état initial (mémoire vide)**  
**Erste Inbetriebnahme; Ausgangszustand (leerer Speicher)**







- es** Botón biométrico Harmony
- it** Pulsante biometrico Harmony
- pt** Botão biométrico Harmony



XB5		
S1B2L2 S1B2M12	Biestable Bistabile Bi-estável	PNP
S2B2L2 S2B2M12	Monostabile Monoestabile Mono-estável	
S1B3L2 S1B3M12	Biestable Bistabile Bi-estável	NPN
S2B3L2 S2B3M12	Monostabile Monoestabile Mono-estável	

**⚠ PELIGRO / PERICOLO / PERIGO**

**RIESGO DE ELECTRO-CUCIÓN, EXPLOSIÓN O ARCO ELÉCTRICO**  
- Desconecte toda alimentación antes de realizar el servicio.  
**Si no se respetan estas instrucciones, se producirán graves daños corporales o la muerte.**

**RISCHIO DI SCOSSA ELETTRICA, DI ESPLOSIONE O DI OFTALMIA DA FLASH**  
- Scollegare l'apparecchio dalla presa di corrente prima di qualsiasi intervento.  
**La mancata osservanza di questa istruzione comporta gravi rischi per la vita e l'incolumità personale.**

**RISCO DE CHOQUE ELÉCTRICO, EXPLOÇÃO OU FAISCA**  
- Desligue a alimentação antes de trabalhar neste aparelho.  
**O não respeito destas instruções causará a morte ou lesões graves.**

**es** Sólo el personal de servicio cualificado podrá instalar, utilizar, reparar y mantener el equipo eléctrico. Schneider Electric no asume las responsabilidades que pudieran surgir como consecuencia de la utilización de este material.

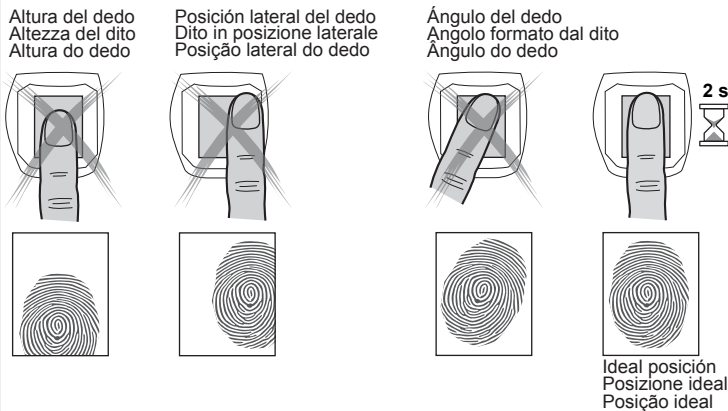
**it** Le apparecchiature elettriche devono essere installate, usate e riparate solo da personale qualificato. Schneider Electric non assume nessuna responsabilità per qualunque conseguenza derivante dall'uso di questo materiale.

**pt** O equipamento eléctrico só deve ser instalado, utilizado e reparado por técnicos especializados. A Schneider Electric não assume qualquer responsabilidade por quaisquer consequências decorrentes da utilização deste material.

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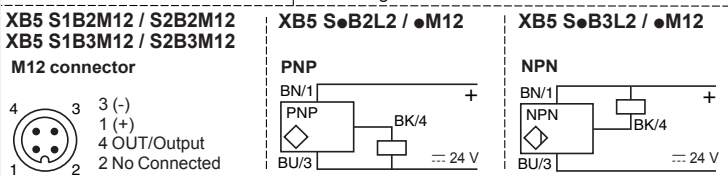
**Cómo posicionar el dedo correctamente en el lector para la captura**  
**Posizione corretta del dito sul sensore per la cattura**  
**Como posicionar correctamente o seu dedo no sensor para a captura**



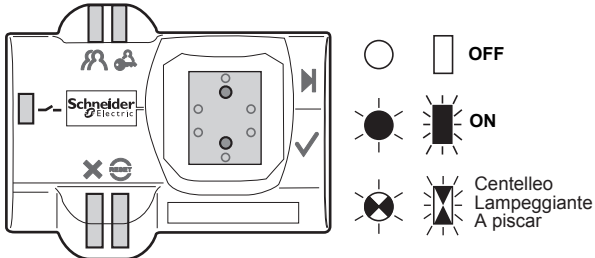
**es** Capacidad de la memoria: 200 huellas  
Recomendaciones para optimizar el reconocimiento de huellas:  
- Guardar preferiblemente el índice, el pulgar y el mayor,  
- Guardar un dedo de cada mano.

**it** Capacità della memoria: 200 impronte  
Consigli per ottimizzare il riconoscimento delle impronte:  
- Registrare in priorità l'indice, poi il pollice e il medio,  
- Registrare un dito di ogni mano.

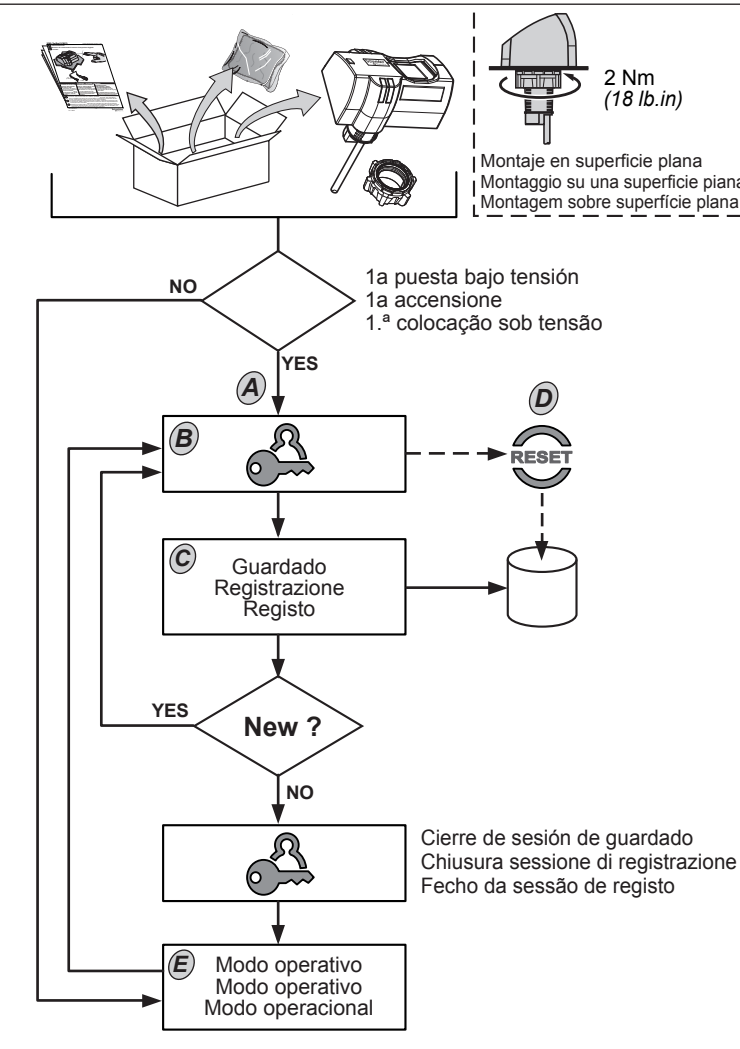
**pt** Capacidade da memória: 200 impressões digitais  
Conselhos para otimizar o reconhecimento das impressões digitais:  
- Registrar, em prioridade, o indicador, o polegar e maior,  
- Registrar um dedo de cada mão.



**Leyendas / Legenda / Legenda**



- Administrador** (LED naranja): persona (dedo) responsable de la gestión del contenido de la memoria (guardado, borrado). Puede haber varios administradores, el dedo administrador no tiene acción sobre el estado de la salida.
- Amministratore** (LED arancia): la persona (dito) responsabile della gestione del contenuto della memoria (registrazione, cancellazione). Ci può essere più di un amministratore, il dito dell'amministratore non ha alcun effetto sullo stato dell'uscita.
- Administrador** (LED laranja): pessoa (dedo) responsável pela gestão do conteúdo da memória (registro, eliminação). Podem existir vários administradores, o dedo administrador não tem qualquer ação no estado da saída.
- Operador** (LED naranja): persona (dedo) guardado par un administrador que tiene una acción sobre el estado de la salida.
- Operatore** (LED naranja): la persona (dito) registrata da un amministratore che ha un effetto sullo stato dell'uscita.
- Operador** (LED laranja): pessoa (dedo) registada por um administrador que tem uma ação sobre o estado da saída.
- Error** (LED roja): Parpadea si no se reconoce el dedo, fracasa el guardado o la memoria está llena.
- Errore** (LED rosso): Lampeggia se il dito non viene riconosciuto, difetto di registrazione o memoria saturo.
- Erro** (LED vermelho): pisca se o dedo não é reconhecido, defeito de registro ou memória cheia.
- Reset** (LED roja): Función accesible por el administrador para borrar parcial o totalmente las huellas guardadas.
- Reset** (LED rosso): Funzione accessibile da parte dell'amministratore per cancellare parzialmente o completamente le registrazioni.
- Reset** (LED vermelho): função acessível pelo administrador para eliminar, parcial ou totalmente, os registros.
- Zona táctil alta** (led azul alta) que permite navegar en el menú emergente. - Únicamente accesible en sesión administrador.
- Zona tattile alta** (led blu alto) che permette la navigazione nel menu scorrevole - Únicamente accessibile in sessione amministratore.
- Zona táctil alta** (led azul alta) que permite navegar no menu pendente. - Únicamente acessível em sessão administrador.
- Zona táctil baja** (led azul baja) que permite validar la selección o salir del menú emergente. - Únicamente accesible en sesión administrador.
- Zona tattile bassa** (led blu basso) che permette la convalida della selezione o l'uscita dal menu scorrevole - Únicamente accessibile in sessione amministratore.
- Zona táctil baixa** (led azul baixa) que permite validar a seleção ou sair do menu pendente - Únicamente acessível em sessão administrador.
- Estado de salida (verde): (encendida = On, apagada = Off).
- Stato uscita (verde): (accesa = On, spenta = Off).
- Estado de saída (verde): (ligada = On, desligada = Off).



**es** **Precauciones de utilización**  
**Limpieza:** la ventana debe limpiarse regularmente con un paño seco (suministrado con el producto).  
No utilizar líquidos a base de ácidos, de alcohol o materiales abrasivos.  
**Utilización:** proteger el producto del pleno sol para evitar el encandilamiento y la saturación del lector.  
En caso de bloqueo por ausencia de Administrador, contactar el soporte técnico de Schneider.

**Este producto es un aparato de clase B grupo 1 para la CEM según la norma CISPR 11**

**it** **Precauzioni d'uso**  
**Pulizia:** la finestra deve essere regolarmente pulita con uno straccio asciutto (salvietta fornita con il prodotto).  
Non utilizzare liquidi a base di acidi, di alcol o prodotti abrasivi.  
**Utilizzo:** Proteggere il prodotto dalla luce diretta del sole per evitare l'abbagliamento e la saturazione del sensore.  
In caso di blocco per assenza dell'amministratore, contattare il supporto tecnico di Schneider.

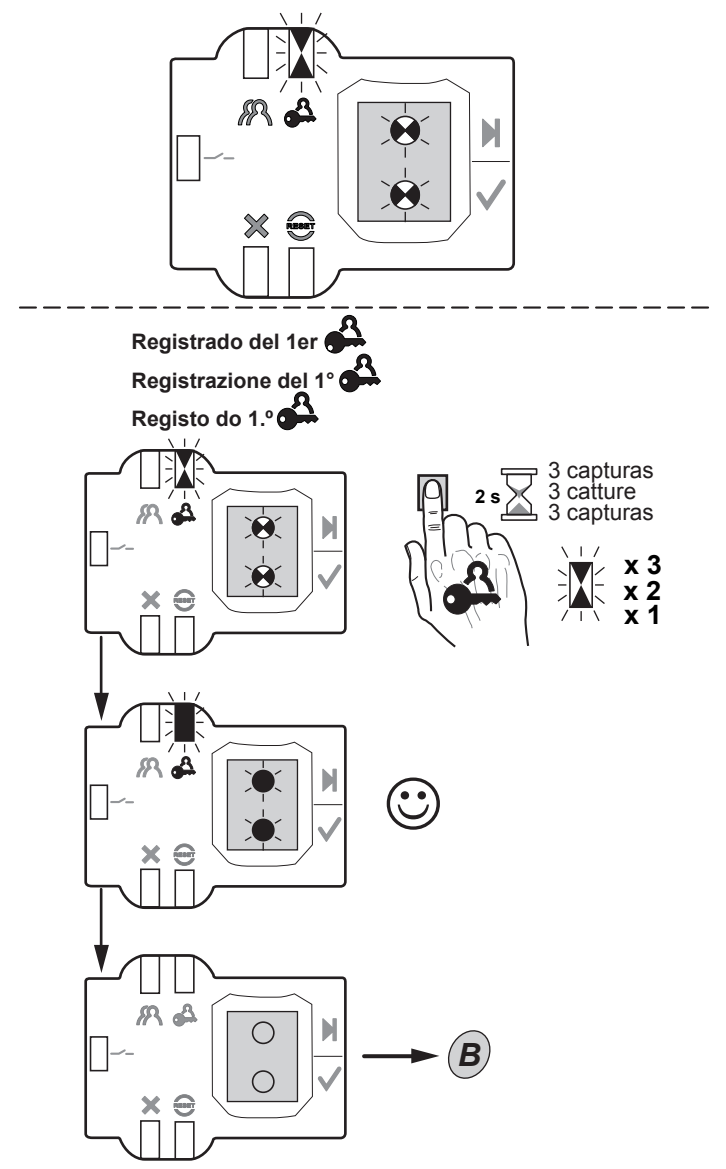
**Questo prodotto è un apparecchio di classe B gruppo 1 per la CEM secondo la norma CISPR 11.**

**pt** **Precações de utilização**  
**Limpeza:** a janela deve ser regularmente limpa com um pano seco (toallete fornecido com o produto).  
Não utilizar líquidos à base de ácido, de álcool ou de materiais abrasivos.  
**Utilização:** proteger o produto da luz solar directa para evitar encandear e saturar o sensor.  
No caso de bloqueio por ausência de Administrador, contactar o suporte técnico de Schneider.

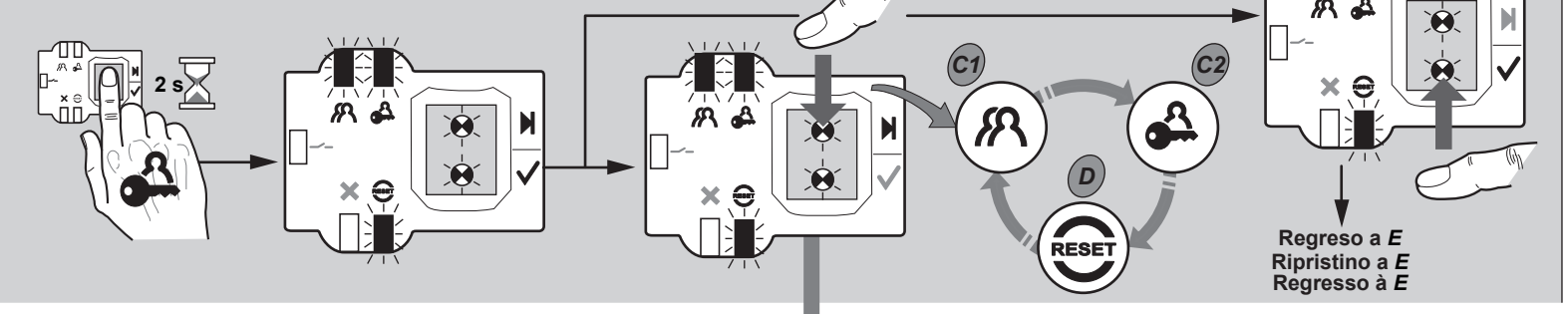
**Este produto é um aparelho de classe B, grupo 1, para a CEM, segundo a norma CISPR 11.**

**!** **Sin acción durante 30 segundos el producto regresa al modo operativo E.**  
**Senza alcuna azione per 30 secondi, il prodotto ritorna al modo operativo E.**  
**Sem acção durante 30 segundos o produto regressa ao modo operacional E.**

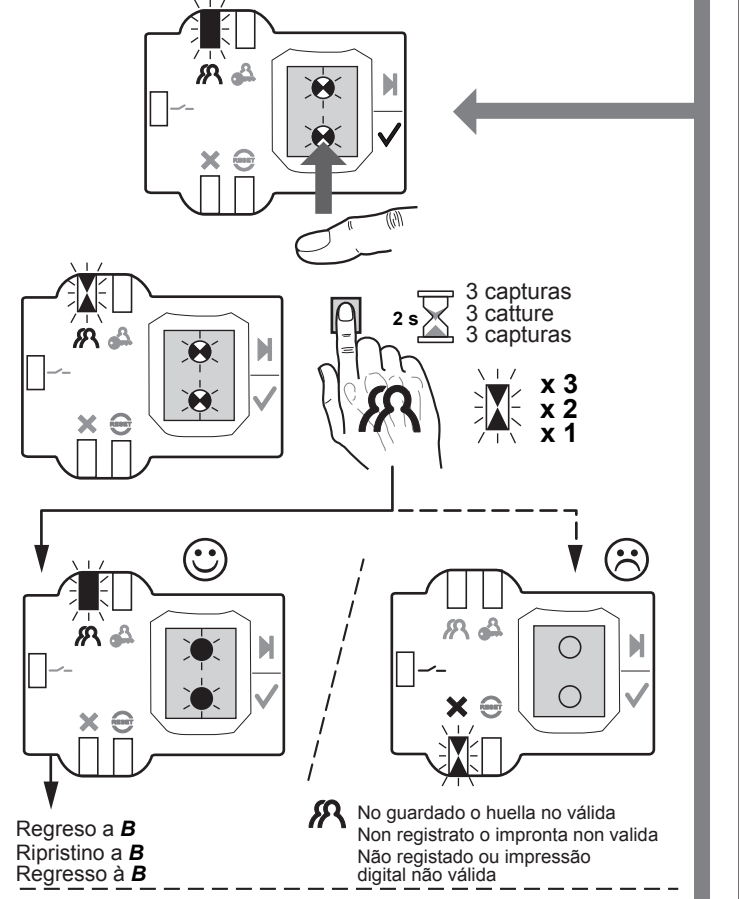
**A** **Primera puesta en marcha; estado inicial (memoria vacía)**  
**Prima accensione; stato iniziale (memoria vuota)**  
**Primeira entrada em serviço; estado inicial (memória vazia)**



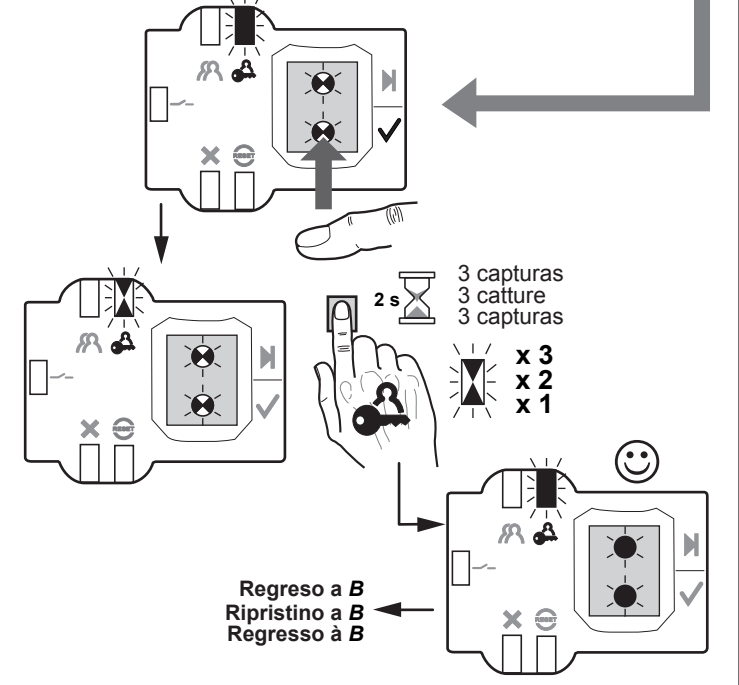
**B** Menú emergente / Menu scorrevole / Menu pendente  
 Apertura de sesión / Apri sessione / Abertura de sessão



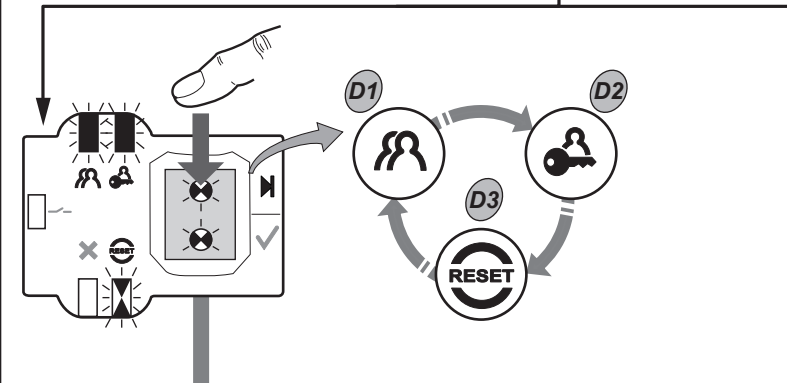
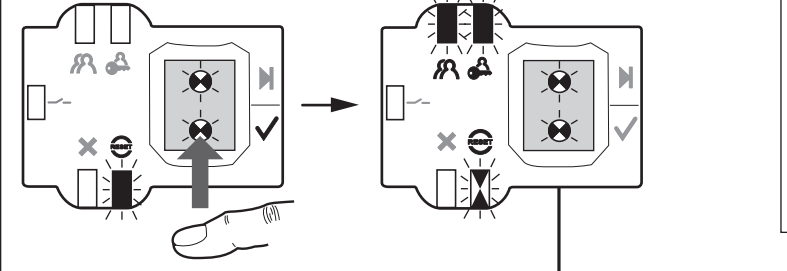
**C1** Guardado  
Registrazione  
Registo



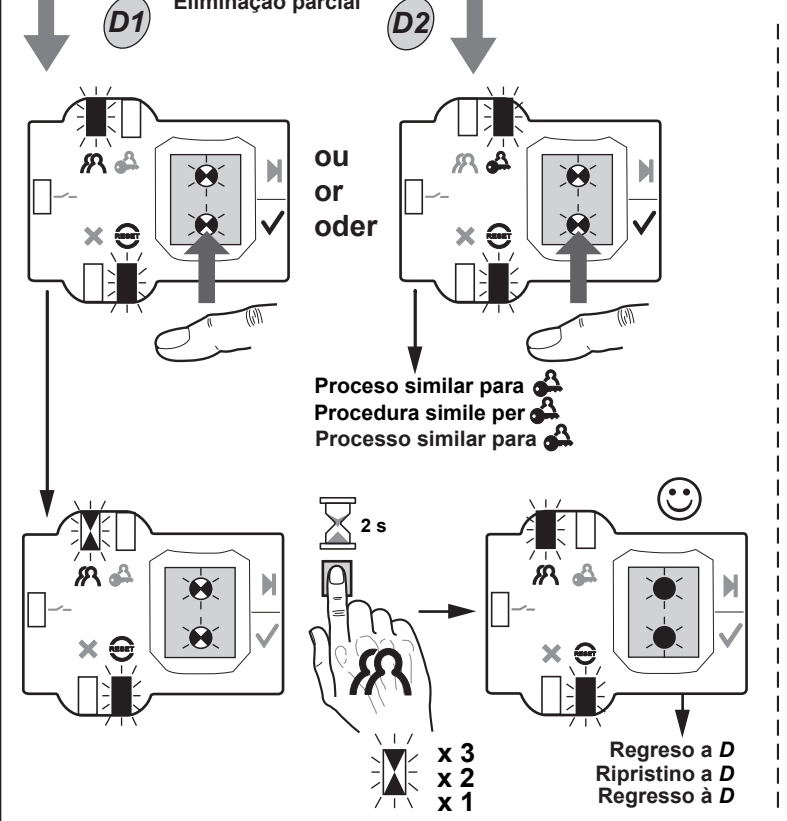
**C2** Guardado  
Registrazione  
Registo



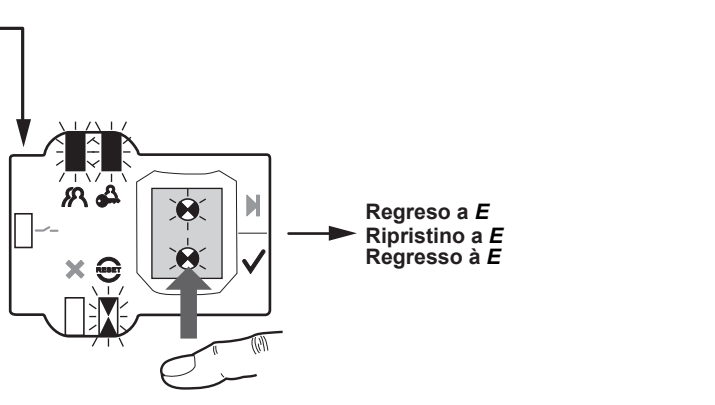
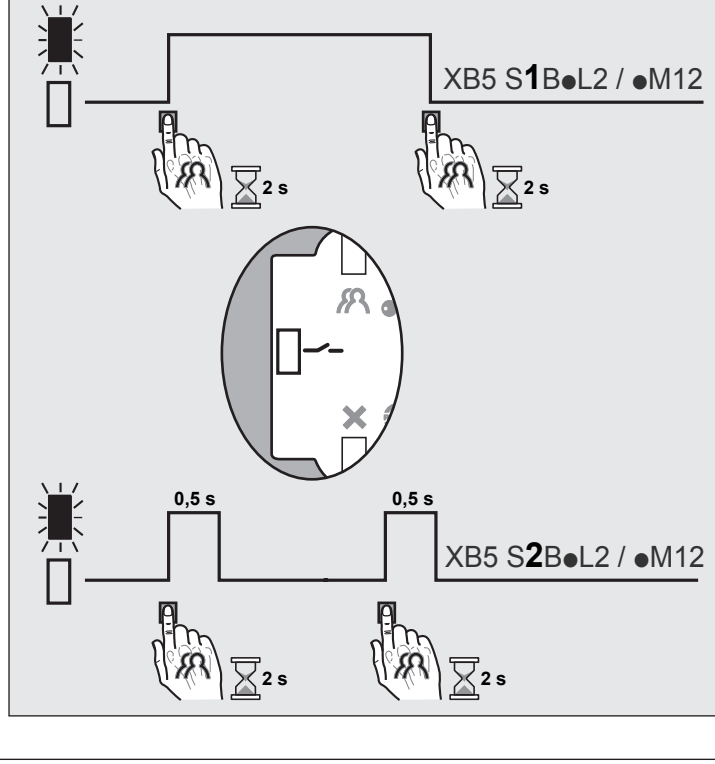
**D** Reset / Reset / Reset



**D1** Borrado parcial  
Cancellazione parziale  
Eliminação parcial



**E** Modo operativo  
Modo operativo  
Modo operacional



**D3** Reset total / Reset totale / Reset total

