

# Biometric switch

Harmony<sup>®</sup> XB5S

Catalog

January 2013



# Harmony XB5S

Biometric switch



# Improve security of your daily operations

Harmony XB5S is an innovative biometric switch that uses fingerprint authentication to control access to your machines, vehicles, and rooms. The database of authorized users can be managed directly on the device or externally via a PC or HMI interface. The Harmony XB5S switch enables you to determine the level of access to different process areas and individual HMI menu tabs.

## Quick and reliable access verification

Using fingerprint recognition, the [Harmony XB5S biometric switch](#) is a competitive alternative to other access control systems that do not provide sufficient levels of protection for your process functions and personnel.

### **Simple, reliable and efficient**

Harmony XB5S enables you to restrict access to sensitive zones and machine functions (starting, adjustment, maintenance, etc.) to authorized personnel only.

## Mitigate risk of unauthorized use and associated downtime

The Harmony XB5S biometric switch is an automated solution that ensures that only the entitled persons attend to your key process areas.

**This allows you to prevent unwarranted machine use, helping you to protect your staff, equipment, and the continuity of your production process.**



### **Your finger is a unique access controller !**

Fingerprint recognition is one of the fastest and most accurate ways of verifying access rights.

# Control access to your critical assets and areas



Can you modify this specific process?

Yes, if you're authorized.

With Harmony XB5S, you can **identify**, **authorize** and **track** user operations on HMIs.



Can you operate this automated line?

Yes, if you're authorized.

With Harmony XB5S, you can **improve security** of your automated lines and tool machines.



Can you access this robot area?

Yes, if you're authorized.

With Harmony XB5S, you can **control** access to **restricted areas**.



Can you drive this forklift?

Yes, if you're authorized.

With Harmony XB5S, you can prevent unwarranted access to the **start function** of special **vehicles**.

# Flexible and secure management of user permissions

## Simple to manage:

### Harmony XB5S1/2

- Parameterizing and recording directly on front face of device using LED signalling

### Harmony XB5S3/4/5

- Visualization, saving and duplication of the authorized user database is now possible via HMI or PC and dedicated software
- Easy addition and deletion of user permissions
- Data transfer secured by administrator approval
- Database encrypted to prevent unwarranted use of personal data



With Vijeo Designer  
and Harmony  
XB5S Soft

## Harmony XB5S range

### Stand-alone product Harmony XB5S1/2



Improve control of access to equipment and restricted areas.

Manage embedded database of authorized users directly on the product.

### Configuration by PC Harmony XB5S3/4



Restrict use of special machines and vehicles.

Manage user database via a PC interface.

### Configuration by HMI Harmony XB5S5



Define different profiles of authorized users on HMIs to enhance security control.















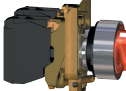

Manage user database easily via HMI; track and store access data of recorded users.

**< 1 second**  
to authenticate an  
operator and  
authorize or refuse  
their access



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Type of products		Pilot lights	Pushbuttons, selector switches and pilot lights			Biometric switches
						
						
						
						
Description of range		<ul style="list-style-type: none"><li>■ LED pilot lights</li></ul>	<ul style="list-style-type: none"><li>■ Pushbuttons<ul style="list-style-type: none"><li>■ Multiple-headed pushbuttons</li><li>■ Emergency Stop pushbuttons</li><li>■ Emergency switching off pushbuttons</li></ul></li><li>■ Selector switches and key switches</li><li>■ Illuminated pushbuttons</li><li>■ Pilot lights</li></ul>			<ul style="list-style-type: none"><li>Fingerprint readers 24V <math>\overline{\text{---}}</math><ul style="list-style-type: none"><li>■ Stand-alone biometric switches</li><li>■ Stand-alone USB biometric switches</li><li>■ USB biometric switches dedicated to Schneider HMI (1)</li></ul></li></ul>
Features	Products	Monolithic, compact, low consumption	Complete units or sub-assemblies (body + head)			Monolithic
	Bezel	Double insulated		Metal, chromium plated or black	Double insulated	Double insulated, dark grey
	Shape of head	Circular	Circular, square or rectangular	Circular	Circular or square	–
Drilling or cut-out for fixing		Ø 8 mm and Ø 12 mm/0.315 in. and 0.472 in.	Ø 16 mm/0.630 in.	Ø 22 mm/0.866 in.		
Degree of protection	Conforming to IEC 60529	IP 40 IP 65 with seal	IP 65	IP 66 IP 69K (Selector switches and key switches, multiple-headed pushbuttons and Emergency Stop pushbuttons with bellows)		IP 65 (control button)
	Conforming to UL 508 and CSA C22-2 N° 14	–	Enclosure type 4, 4X and 13			Enclosure type 12
Cabling		Tags for 2.8 x 0.5 mm/ 0.110 x 0.020 in. connectors or threaded connector	Faston connectors Solder pins for printed circuit boards	Spring clamp terminal connections Screw clamp terminal connections Faston connectors Connector With adaptor for printed circuit board		Cable or connectors
Mounting	Panel thickness	1...8 mm/ 0.039...0.315 in.	1...6 mm/0.039...0.236 in.			
Type references		XVLA	XB6	XB4	XB5	XB5S

(1) Compatible with Magelis iPC, STU, OT, GXO, GT (except GT1000 series), GK, GH, and GTO models.

(2) Wireless and batteryless pushbutton and receiver ready-paired at the factory.


More technical information on [www.schneider-electric.com](http://www.schneider-electric.com)

Wireless and batteryless pushbuttons	Pushbuttons, selector switches and pilot lights	Joystick controllers			Pushbuttons, selector switches and pilot lights	Cam switches
  	   	  			   	  
<ul style="list-style-type: none"><li>■ Wireless and batteryless pushbuttons and rope pull switch</li><li>■ Configurable receivers</li><li>■ Access point</li><li>■ Relay-antenna</li><li>■ Mobile handy box or plastic boxes for wall mounting</li></ul>	<ul style="list-style-type: none"><li>■ Pushbuttons</li><li>■ Emergency Stop and Emergency switching off pushbuttons</li><li>■ Selector switches and key switches</li><li>■ Illuminated pushbuttons</li><li>■ Pilot lights</li></ul>	<ul style="list-style-type: none"><li>■ 2 or 4 direction</li><li>■ Stay put or spring return</li></ul>			<ul style="list-style-type: none"><li>■ Pushbuttons</li><li>■ Emergency Stop buttons</li><li>■ Selector switches and key switches</li><li>■ Illuminated pushbuttons</li><li>■ Pilot lights</li></ul>	<ul style="list-style-type: none"><li>■ Switches</li><li>■ Stepping switches</li><li>■ Reversing and changeover switches</li><li>■ Ammeter switches</li><li>■ Voltmeter switches</li><li>■ Reversing switches</li><li>■ Star-delta and reversing star-delta switches</li><li>■ Pole change switches</li></ul>
Ready-to-use packs (2) and «components» range	Monolithic	Complete units or sub-assemblies (body + head with lever)			Complete units or sub-assemblies (body + head)	Complete units or sub-assemblies (body + front panel + head)
Metal, chromium plated or double insulated, black	Double insulated, dark grey (or white for pilot lights)	Metal, chromium plated	Double insulated, black		Metal, chromium plated or double insulated, black	
Transmitter with circular head	Circular	Circular			Hexagonal	Square
Ø 22 mm/0.866 in.					Ø 30 mm/1.181 in.	Ø 16 or Ø 22 mm/0.630 or 0.866 in.: series K10 Ø 22 mm/0.866 in. and multifixing: series K1/K2 4 holes, 48 or 68 centres: series K30...K150
IP 65	IP 65 (control buttons and pilot lights) IP 54 (Emergency switching off pushbuttons)	IP 65	IP 66	IP 65	IP 66	IP 65: series K10 IP 40, IP 65 with seal: series K1/K2 IP 40: series K30...K150
Enclosure type 12	Enclosure type 3 (pushbuttons and Emergency stop) and 4 (pilot lights)	Enclosure type 4, 4X and 13			Enclosure type 4 and 13 (9001K) Enclosure type 4, 4X, 13 (9001SK)	–
Wireless (transmitter) Through cable (receiver)	Screw and captive clamp terminal connections Faston clip connections (pilot lights)	Screw and captive clamp terminal connections				
1...6 mm/0.039...0.236 in.						0.5...6 mm/0.020...0.236 in. (depending on model)
XB5R, XB4R	XB7	XD4PA	XD2GA	XD5PA	9001K, 9001SK	K10, K1, K2, K30, K50, K63, K115, K150



More technical information on [www.schneider-electric.com](http://www.schneider-electric.com)

Applications	Simple access control for indoor industrial restricted areas
Type of products	Stand-alone biometric switch



Functions	<ul style="list-style-type: none"> <li>■ 1 level of authorization</li> <li>■ Authorizes user through fingerprint recognition</li> </ul>
Static Output	<ul style="list-style-type: none"> <li>■ Bistable output, machine operation at 2 fixed states</li> <li>■ Monostable output, machine operation at pulse control</li> </ul>
Power	24 V DC
Connection	<ul style="list-style-type: none"> <li>■ Pre-wired 3 wire cable (2 m/6.56 ft long) or</li> <li>■ M12 connector</li> </ul>
Memory capacity	<ul style="list-style-type: none"> <li>■ 200 records of fingerprints</li> <li>■ 100 authorized users with each registering 2 fingerprints or 200 authorized users with each registering 1 fingerprint</li> </ul>
Communication	No communication
Database management software tools	None
User database update	Stand-alone as updates are done directly on the biometric switch
Associated accessories	<ul style="list-style-type: none"> <li>■ Translucent protective cover</li> <li>■ Fixing nut</li> <li>■ Legend plate</li> </ul>
Type references	<b>XB5S1, XB5S2</b>

(1) Compatible with Magelis IPC, STU, OT, GXO, GT (except GT1000 series), GK, GH and GTO models .

(2) Compatible with all versions of Harmony XB5SSoft application. The XB5SSoft is a freeware application and can be downloaded from our website [www.schneider-electric.com](http://www.schneider-electric.com).



<ul style="list-style-type: none"> <li>■ Secure the control of automated lines and tool machines</li> <li>■ Protect the start function of special vehicles</li> </ul>	<ul style="list-style-type: none"> <li>■ Identify and authorize the user for HMI operations</li> <li>■ Trace the HMI operations of each user</li> </ul>
Stand-alone USB biometric switch	USB biometric switch dedicated to Schneider HMI (1)



<ul style="list-style-type: none"> <li>■ 1 level of authorization</li> <li>■ Authorizes user through fingerprint recognition</li> </ul>	<ul style="list-style-type: none"> <li>■ Provides access to HMI pages based on the user profile</li> <li>■ Several levels of authorization associated with HMI</li> <li>■ Traceability of users and operations by HMI</li> </ul>
<ul style="list-style-type: none"> <li>■ Bistable output, machine operation at 2 fixed states</li> <li>■ Monostable output, machine operation at pulse control</li> </ul>	None
24 V DC	24 V DC
<ul style="list-style-type: none"> <li>■ Pre-wired 3 wire cable (2 m/6.56 ft long) or</li> <li>■ M12 connector</li> </ul>	Pre-wired 2 wire cable (2 m/6.56 ft long)
<ul style="list-style-type: none"> <li>■ 400 records of fingerprints</li> <li>■ 200 authorized users with each registering 1 or 2 fingerprints</li> </ul>	<ul style="list-style-type: none"> <li>■ 400 records of fingerprints</li> <li>■ 200 authorized users with each registering 2 fingerprints</li> </ul>
Connects with a PC via the USB port for database management when required	Connects with a HMI via the USB port permanently
With Harmony XB5SSoft (2) on a PC	With Vijeo Designer (3) and Harmony XB5SSoft (2)
<ul style="list-style-type: none"> <li>■ Should be connected to a PC</li> <li>■ Download the new user database to the biometric switch from Harmony XB5SSoft application (4)</li> </ul>	<ul style="list-style-type: none"> <li>■ With VijeoDesigner in Run time on HMI (4)</li> <li>■ With VijeoDesigner in Build time on PC (4)</li> </ul>
<ul style="list-style-type: none"> <li>■ Translucent protective cover</li> <li>■ Fixing nut</li> <li>■ Legend plate</li> <li>■ Female/Female USB extension cable with a female USB port of Ø 22 mm/0.866 in. on one end for panel mount</li> </ul>	<ul style="list-style-type: none"> <li>■ Translucent protective cover</li> <li>■ Fixing nut</li> <li>■ Legend plate</li> </ul>
<b>XB5S3, XB5S4</b>	<b>XB5S5</b>

(3) Compatible with VijeoDesigner HMI editor software V6.1, Service pack 2.

(4) The user database cannot be uploaded from biometric switch to the PC.



More technical information on [www.schneider-electric.com](http://www.schneider-electric.com)



Stand-alone biometric switch (XB5S1/XB5S2)



Stand-alone USB biometric switch (XB5S3/XB5S4)



USB biometric switch dedicated to Schneider HMI (XB5S5)

## Presentation

The biometric switches of the Harmony® XB5S range are designed to control and secure access to systems and machines by checking users' authorization through fingerprint recognition.

The following types of biometric switches are available:

- Stand-alone biometric switches
  - type XB5S1, with 2 fixed states (bistable)
  - type XB5S2, with pulse control (monostable)
- Stand-alone USB biometric switches
  - type XB5S3, with 2 fixed states (bistable)
  - type XB5S4, with pulse control (monostable)
- USB biometric switches dedicated to Schneider HMI
  - type XB5S5, connected permanently with HMI

The biometric switches are aimed at 2 categories:

- Administrators, who decide and manage the list of users
  - the only people who can record the fingerprints in the device memory
- Users, who are authorized to use the biometric switch as a control unit
  - at least 1 of their fingerprints should be recorded in the device memory
  - access is granted when the finger is placed on the sensing screen

The USB switches communicate with the PC/HMI via the USB port to manage the user database. This database can be visualized, saved, and duplicated by PC/HMI with XB5SSoft application (1) (2). The fingerprint records can also be erased in the absence of users.

The Schneider HMI (3) with VijeoDesigner software (4) enables the switches to authorize different access levels and trace HMI operations of each user.

The switch operates on 24 V DC and provides protection against:

- Reverse polarity
- Overload and short-circuit (switching capacity ≤ 200 mA)

## Mounting

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 22.5 mm/0.886 in. diameter hole. 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 using a self-adhesive hinge.

A Female/Female USB extension cable makes it possible for the USB biometric switch to have the female USB port within a 22 mm/0.866 in. diameter hole on the control panel front.

## Environment

- Conformity to standards: UL, CSA, GOST, and CE.

- Product certifications:

- CSA C22-2 n° 14
- UL 508
- IEC 61000-6-2 and IEC 61000-6-4

- Degree of protection conforming to standard IEC 60529:

- IP 65
- NEMA 12

- Ambient air temperature:

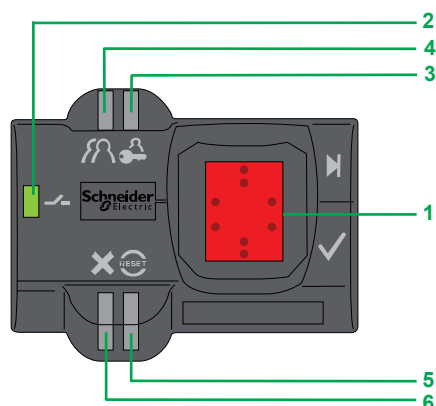
- For storage: - 25 to + 70 °C
- For operation: - 5 to + 50 °C

(1) Compatible with all versions of Harmony XB5SSoft application. The XB5SSoft is a freeware application and can be downloaded from our website [www.schneider-electric.com](http://www.schneider-electric.com).

(2) The user database cannot be uploaded from USB biometric switch to the PC.

(3) Compatible with Magelis iPC, STU, OT, GXO, GT (except GT1000 series), GK, GH, and GTO models.

(4) Compatible with VijeoDesigner HMI editor software V6.1, Service pack 2.



XB5S1B●●●●



XB5S3B●●●●



XB5SFFUSBEXT



ZB5SZ70

### Description

- The stand-alone biometric switch (XB5S1/XB5S2) consists of a dark gray housing, with the following on its front face:
  - A sensing screen **1** that allows the registration and subsequent recognition of the registered fingerprints,
  - A green LED output state indicator **2** that illuminates when the output is activated (solid-state NO 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 when the reader is presented with an "unrecognized" fingerprint or in the event of incorrect operation.
- The stand-alone USB biometric switch (XB5S3/XB5S4) consists of a dark gray housing with a sensing screen **1** for fingerprints, a green LED **2** for indicating the output state, and a red LED **6** for the unrecognized fingerprint on its front face.
- The USB biometric switch dedicated to Schneider HMI (XB5S5) consists of a dark gray housing with a sensing screen **1** for fingerprints on its front face.

### References

#### Complete units

Description	Connection	Reference	Weight kg/lb
Bistable biometric switch 24 V DC PNP output	By 2 m/6.56 ft cable	<b>XB5S1B2L2</b>	0.170/0.375
	By M12 connector	<b>XB5S1B2M12</b>	0.183/0.403
Monostable biometric switch 24 V DC PNP output	By 2 m/6.56 ft cable	<b>XB5S2B2L2</b>	0.170/0.375
	By M12 connector	<b>XB5S2B2M12</b>	0.183/0.403
Bistable USB biometric switch 24 V DC PNP output	By 2 m/6.56 ft cable	<b>XB5S3B2L2</b>	0.202/0.445
	By M12 connector	<b>XB5S3B2M12</b>	0.215/0.474
Monostable USB biometric switch 24 V DC PNP output	By 2 m/6.56 ft cable	<b>XB5S4B2L2</b>	0.202/0.445
	By M12 connector	<b>XB5S4B2M12</b>	0.215/0.474
USB biometric switch dedicated to Schneider HMI 24 V DC	By 2 m/6.56 ft cable	<b>XB5S5B2L2</b>	0.202/0.445

#### Accessories

Description	Function	Reference	Weight kg/lb
Female/Female USB extension cable with Ø 22 mm/0.866 in. female USB port on one end	For connecting biometric switch to the PC via the Ø 22 mm/0.866 in. hole on the control panel front	<b>XB5SFFUSBEXT</b>	0.108/0.238
Protective cover, translucent and self-adhesive	Protection of sensing screen	<b>ZB5SZ70</b>	0.020/0.044
Fixing nut Ø 22 mm/0.866 in.	Spare part	<b>ZB5SZ71</b>	0.030/0.066
Legend plate, 27 x 8 mm/ 1.06 x 0.32 in., self-adhesive, blank, black background, for engraving	—	<b>ZBY0101T</b>	0.005/0.011



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