
Wireless and batteryless limit switches XCKW and XCMW ranges

Catalogue



Simply easy!™

 **Telemecanique**
Sensors

Wireless and batteryless limit switches

XCKW and XCMW ranges

■ Selection guide	pages 2 to 7
■ XCKW range: EN 50041 format	
□ General presentation	pages 8 and 9
□ Description	page 10
□ References of limit switches	page 10
□ References of ready-to-use packs	page 11
□ References of receivers	page 11
□ References of network access points	page 14
□ References of accessories	page 15
■ XCMW range: miniature format	
□ General presentation	pages 8 and 9
□ Description	page 12
□ References of limit switches	page 12
□ References of ready-to-use packs	page 13
□ References of receivers	page 13
□ References of network access points	page 14
□ References of accessories	page 15
■ Product reference index	page 16

Limit switches
XCKW range
Wireless and batteryless limit switches
Industrial format EN 50041

Product type		Transmitters: plunger head and rotary head limit switches			
					
Actuator type		Metal end plunger	Steel roller plunger	Thermoplastic roller lever	Steel roller lever
Radio transmission	Transmission protocol	ZigBee® Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)			
	Maximum range	100 m in free field 300 m with a relay antenna in free field			
	Transmission power	3 mW			
	Activation time	2 ms			
	Transmission time	< 2 ms			
Certifications and directives	Product certifications	EN/IEC 60947-5, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, EAC, Cc			
	Radio approvals	FCC (USA), IC (Canada), RCM (Australia)			
Mechanical characteristics	Mechanical life	400,000 operating cycles			
	Maximum operating rate	3,600 operating cycles per hour			
	Maximum tripping force	50 N	0.5 N.m		
	Materials	Plastic bodies and heads			
Environment	Ambient air temperature	Operation: -25...+55 °C Storage: -40...+70 °C			
	Degree of protection	IP66 and IP67 conforming to EN/IEC 60529			
	Degree of protection	IK05 conforming to EN/IEC 50102			
Electromagnetic compatibility (EMC)	Electrostatic discharge	8 kV (air) and 6 kV (contact) conforming to IEC 61000-4-2			
	Electromagnetic fields	10 V/m from 80 to 2,000 MHz, conforming to EN/IEC 61947-5-1 and IEC 61000-4-3 3 V/m from 80 to 2,700 MHz and a distance of 20 m, conforming to IEC 61000-4-3, EN 301-489-1, and EN 301-489-3			
	Radiated emissions	Conforming to standards EN 300-440-1 and EN 300-440-2			
References		XCKW101	XCKW102	XCKW131	XCKW133
Page		10			

(1) Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.
(2) Adjustable throughout 360° in 5° steps, or in 45° steps by reversing the lever mounting.

				
Variable length thermoplastic roller lever (1)	Variable length steel roller lever (1)	Elastomer roller lever, Ø 50 mm	Variable length elastomer roller lever Ø 50 mm (1)	Round thermoplastic rod lever, Ø 6 mm (2)
ZigBee® Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)				
100 m in free field 300 m with a relay antenna in free field				
3 mW				
2 ms				
< 2 ms				
EN/IEC 60947-5, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, EAC, Cc				
FCC (USA), IC (Canada), RCM (Australia)				
400,000 operating cycles				
3,600 operating cycles per hour				
0.5 N.m				
Plastic bodies and heads				
Operation: -25...+55 °C Storage: -40...+70 °C				
IP66 and IP67 conforming to EN/IEC 60529				
IK05 conforming to EN/IEC 50102				
8 kV (air) and 6 kV (contact) conforming to IEC 61000-4-2				
10 V/m from 80 to 2,000 MHz, conforming to EN/IEC 61947-5-1 and IEC 61000-4-3 3 V/m from 80 to 2,700 MHz and a distance of 20 m, conforming to IEC 61000-4-3, EN 301-489-1, and EN 301-489-3				
Conforming to standards EN 300-440-1 and EN 300-440-2				
XCKW141	XCKW143	XCKW139	XCKW149	XCKW159
10				



Additional technical information available on www.tesensors.com

Limit switches
XCMW range
Wireless and batteryless limit switches
Miniature format

Product type		Transmitters: plunger head and rotary head limit switches	
			
Actuator type		Metal end plunger	Steel roller plunger
Radio transmission	Transmission protocol	ZigBee® Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)	
	Maximum range	100 m in free field 300 m with a relay antenna in free field	
	Transmission power	3 mW	
	Activation time	30 ms	
	Transmission time	< 7 ms	
Certifications and directives	Product certifications	EN/IEC 60947-5, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, EAC, CE	
	Radio approvals	FCC (USA), IC (Canada), RCM (Australia)	
Mechanical characteristics	Mechanical life	400,000 operating cycles	
	Maximum operating rate	3,600 operating cycles per hour	
	Maximum tripping force	13 N	
	Materials	Plastic bodies, metal heads	
Environment	Ambient air temperature	Operation: -25...+55 °C Storage: -40...+70 °C	
	Degree of protection	IP65 conforming to EN/IEC 60529	
	Degree of protection	IK04 conforming to EN/IEC 50102	
Electromagnetic compatibility (EMC)	Electrostatic discharge	8 kV (air) and 6 kV (contact) conforming to IEC 61000-4-2	
	Electromagnetic fields	Test condition: from 2,000 to 2,700 MHz, conforming to EN/IEC 61947-5-1 and IEC 61000-4-3	
		Test condition: from 1,400 to 2,000 MHz, conforming to IEC 61000-4-3, EN 301-489-1, and EN 301-489-3	
		Test condition: from 80 to 1,000 MHz, conforming to IEC 61000-4-3, EN 301-489-1, and EN 301-489-3	
	Radiated emissions	Conforming to standards EN 300-440-1 and EN 300-440-2	
References		XCMW110	XCMW102
Page		12	

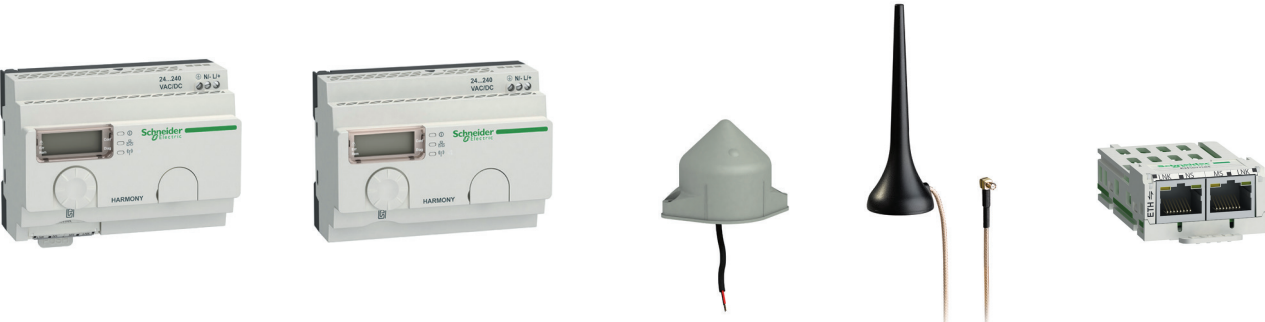
(1) Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.

		
Thermoplastic roller lever	Steel roller lever	Variable length thermoplastic roller lever (1)
ZigBee® Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)		
100 m in free field 300 m with a relay antenna in free field		
3 mW		
30 ms		
< 7 ms		
EN/IEC 60947-5, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, EAC, CE		
FCC (USA), IC (Canada), RCM (Australia)		
400,000 operating cycles		
3,600 operating cycles per hour		
0.5 N.m		
Plastic bodies, metal heads		
Operation: -25...+55 °C Storage: -40...+70 °C		
IP65 conforming to EN/IEC 60529		
IK04 conforming to EN/IEC 50102		
8 kV (air) and 6 kV (contact) conforming to IEC 61000-4-2		
Test condition: from 2,000 to 2,700 MHz, conforming to EN/IEC 61947-5-1 and IEC 61000-4-3		
Test condition: from 1,400 to 2,000 MHz, conforming to IEC 61000-4-3, EN 301-489-1, and EN 301-489-3		
Test condition: from 80 to 1,000 MHz, conforming to IEC 61000-4-3, EN 301-489-1, and EN 301-489-3		
Conforming to standards EN 300-440-1 and EN 300-440-2		
XCMW115	XCMW116	XCMW145
12		

Limit switches
XCKW and XCMW ranges
Accessories for wireless and batteryless limit switches

Product type		Receivers for wireless radio communication		
				
Maximum number of transmitters		2	32	32
Number and type of outputs		2 PNP outputs	4 PNP outputs	2 time delay relay outputs
Radio transmission	Transmission protocol	ZigBee® Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)		
	Maximum range	100 m in free field 300 m with a relay antenna in free field		
	Response time	< 30 ms		
Certifications and directives	Product certifications and radio approvals	EN/IEC 60947-5-1 CE		
		EN/IEC 60947-5, UL 508, CSA C22.2 n°14, CCC, GOST, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, FCC, RSS, C-Tick, ANATEL, SRRC, CE		
Power supply	Nominal supply voltage	24 V $\overline{\text{---}}$ (-15...+15%)		
		24...240 V $\sim$ / $\overline{\text{---}}$ (-10...+10%)		
Output characteristics	Nominal current and voltage	0.2 A/24 V $\overline{\text{---}}$		
		0.3 A/48 V $\overline{\text{---}}$ 3 A/120 V $\sim$ conforming to IEC 60947-5-1 3 A/250 V $\sim$ conforming to UL 508 and CSA C22.14		
Environment	Ambient air temperature	Operation: -25...+55 °C Storage: -40...+70 °C		
	Degree of protection	IP20 conforming to EN/IEC 60529	IP20 conforming to EN/IEC 60529	
References		XZBWR2STT24	ZBRR1 (1)	ZBRR2 (1)
Page		11 and 13		

(1) Schneider Electric products

Access points for wireless and batteryless limit switches		Accessories		
		Relay antenna	External antenna for ZBRN1 and ZBRN2	Communication module for ZBRN1
				
60	60	—	—	—
Communication protocol Ethernet Modbus/TCP		—	—	—
ZigBee® Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)		ZigBee® Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)		—
100 m in free field 300 m with a relay antenna in free field		300 m maximum depending on environment	100 m in free field	—
< 30 ms		—	—	—
EN/IEC 60947-5, UL 508, CSA C22.2 n°14, CCC, GOST, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, FCC, RSS, C-Tick, ANATEL, SRRC, CE		CCC, CSA, C-Tick, GOST, UL 508, BT 2006/95/EC, CE	—	CSA, UL 508, UL 873, UL 60730-1, BTL, CE
24...240 V $\sim$ / $\overline{\text{---}}$ (-10...+10%)		24...240 V $\sim$ / $\overline{\text{---}}$	—	—
—	—	—	—	—
Operation: -25...+55 °C Storage: -40...+70 °C		Operation: -25...+55 °C Storage: -40...+70 °C	—	Operation: -20...+65 °C Storage: -25...+70 °C
IP20 conforming to EN/IEC 60529		IP65 conforming to EN/IEC 60529 IK05 conforming to EN/IEC 50102	—	IP20 conforming to EN/IEC 60529
ZBRN1 (1)	ZBRN2 (1)	ZBRA1 (1)	ZBRA2 (1)	ZBRCETH (1)
14	15			



Limit switches

XCKW and XCMW ranges

Wireless and batteryless limit switches

XCKW and XCMW ranges



Wireless offer:
one-way **pulsed** transmission

Telemecanique Sensors has expanded its offer of wireless products with the launch of two ranges of limit switches based on an automatic radio wave generator system.

These ranges include transmitters and receivers that communicate via 2.4 GHz radio transmission.

There is no need to use batteries, as the radio pulse is emitted while the actuator moves.

Operation is therefore one-way towards the receiver.

The XCKW and XCMW offers can be used to determine the position of an item or part of a machine remotely, without a wired connection. The transmitter is equipped with a "dynamo" generator that converts the mechanical energy produced by the actuator movement to electrical energy. A radio-encoded message (2.4 GHz ZigBee protocol) is then sent, by a single pulse, to one or more receivers located several dozen meters away.

The system is self-powered, which means no batteries are needed.

Each transmitter has a unique identification code, which enables optimum management of each one. To incorporate this code, a simple teach sequence should be performed on the receiver using 2 buttons on the front face.

Thanks to this technology, the industrial applications field has diversified and now meets the requirements of machine manufacturers in terms of flexibility and modularity. It is the ideal product for confirming the position of a part remotely after a manual operation by an operator (1).

XCKW and XCMW wireless limit switches are therefore particularly suitable (2) for:

- automatic doors
- expandable conveyors
- wheel chocks for trucks
- rotary machines
- turntables

Note: Receivers can be actuated by Schneider Electric's **XCKW/XCMW** limit switches or **ZB•RTA** pushbuttons.

Simplified installation

- > Faster installation: no wiring between the limit switch and the receiver
- > No configuration necessary, thanks to the Plug and Play ready-to-use solution
- > Freedom of movement around the machine or process in order to detect parts that are moving or difficult to access

Reduced maintenance

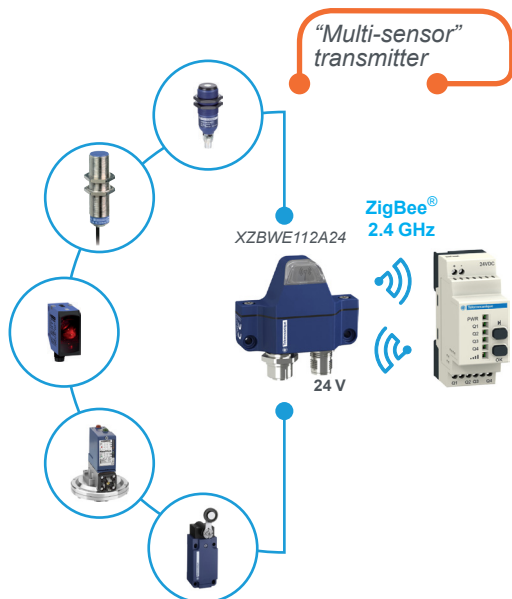
- > No battery maintenance required
- > Optimum availability of control functions
- > Minimal post-installation maintenance (no need for periodic retightening of contact terminal connections, no cables to be replaced or repaired)



(1) An operating speed above 10 mm/s is recommended.

(2) XCKW and XCMW wireless and batteryless limit switches are not suitable for hoisting applications or hazardous machinery.

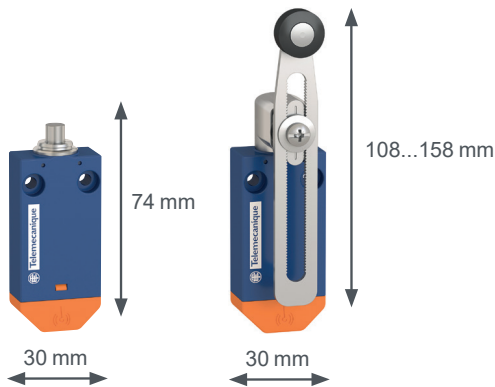
For these applications and machines, the XC Standard range of cabled switches is ideal. Please contact our Customer Care Center.



Wireless offer:
two-way **continuous** transmission.
With the XZBWE112A24 multi-sensor transmitter, our wireless offer allows continuous communication between the transmitter and the receiver.

+ Wireless and batteryless switches for simplified installation

Miniature format of the XCMW limit switch allows easy integration in machines



Miniature format

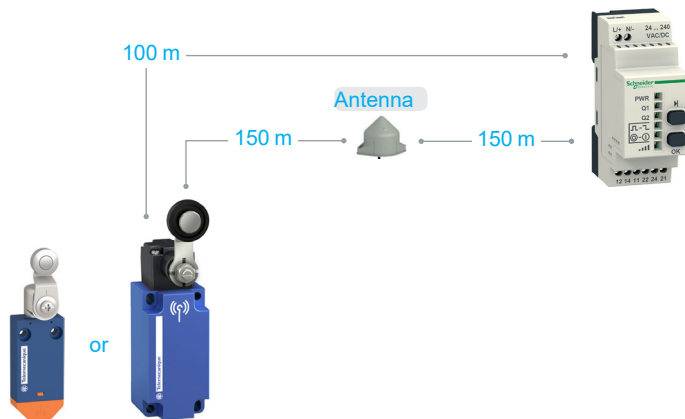
One of the smallest formats on the market

> Ideal for automatic doors, the limit switch can be easily installed in aluminum profiles.

Improved performance

A relay antenna increases the signal range

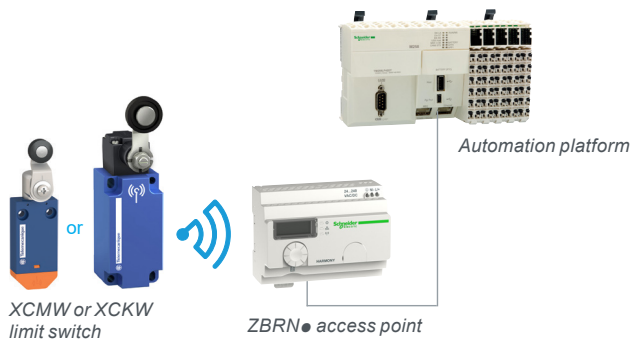
> Range of 300 meters, in free field, using an external relay antenna
> Range of 100 meters in free field



Open protocols for easy integration

Large I/O capacity

> The offer includes a receiver that can manage up to 60 transmitters. The signals received are converted to communication protocols.
> The proposed access points can be connected to an automation platform by either Modbus RS485 serial link or Modbus/TCP protocol.



Limit switches

XCKW range

Wireless and batteryless limit switches

EN 50041 format



Description

"Components" offer

The XCKW offer is available as separate parts and comprises:

■ **9 wireless and batteryless limit switches**, consisting of a plastic body and an actuator head taken from existing ranges (XCKS and XCKM)

■ **3 receivers**, which can be programmed using buttons on the front face

□ with 2 contact relay outputs, 24...240 V ~/-

□ with 2 or 4 PNP transistor outputs, 24 V -

■ **2 access points**, which provide open network connectivity by operating as an intermediate device between the transmitter and the PLC. The access point receives radio signals from the XCKW limit switches and converts them to communication protocols.

The access point is connected to the PLC using:

□ an Ethernet Modbus/TCP communication protocol for **ZBRN1**

□ a Modbus RS485 serial link communication for **ZBRN2**

■ Accessories:

□ 1 active relay antenna to boost the signal when the receiver is in a metal enclosure or to get round obstacles in the case of a complex installation

□ 1 external antenna for **ZBRN1** or **ZBRN2** access points to increase the range

□ 1 communication module for Ethernet Modbus/TCP network

"Ready-to-use pack" offer

To make it easier to install XCKW limit switches, ready-to-use packs are also available. The transmitter (limit switch) and receiver are factory-paired.

Each pack contains:

■ a limit switch

□ one version with steel roller plunger

□ one version with plastic roller lever

■ a receiver with 2 time delay relay outputs

References

Limit switches

Actuator type	Reference	Weight kg
Metal plunger	XCKW101	0.210
Steel roller plunger	XCKW102	0.220
Thermoplastic roller lever	XCKW131	0.240
Steel roller lever	XCKW133	0.245
Variable length thermoplastic roller lever	XCKW141	0.260
Variable length steel roller lever	XCKW143	0.265
Elastomer roller lever, Ø 50 mm	XCKW139	0.220
Variable length elastomer roller lever Ø 50 mm	XCKW149	0.270
Round thermoplastic rod lever, Ø 6 mm	XCKW159	0.230



Limit switches

XCKW range

Wireless and batteryless limit switches

EN 50041 format



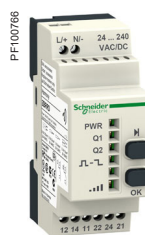
XCKWD02



XCKWD31



ZBRRC



ZBRRD



XZBWR2STT24

References (continued)

Ready-to-use packs

Composition	Reference	Weight kg
■ 1 limit switch with steel roller plunger XCKW102	XCKWD02 (1)	0.410
■ 1 receiver with 2 relay outputs ZBRRD		
■ 1 limit switch with thermoplastic roller lever XCKW131	XCKWD31 (1)	0.410
■ 1 receiver with 2 relay outputs ZBRRD		

Note: The transmitter (limit switch) and receiver are factory-paired.

Receivers

Configurable receivers are equipped with:

- 2 buttons (teach and parameter setting)
- 6 LED indicators (power ON, function modes, output status, and signal strength)

Number and type of outputs	Power supply	Number of transmitters	Reference	Weight kg
4 PNP outputs 200 mA/24 V	24 V $\overline{\text{---}}$	32	ZBRRC (1)	0.130
2 time delay relay outputs, 3A	24...240 V $\sim/\overline{\text{---}}$	32	ZBRRD (1)	0.130
2 PNP outputs 200 mA/24 V	24 V $\overline{\text{---}}$	2	XZBWR2STT24 (2)	0.130

(1) Schneider Electric product, also compatible with **ZB•RTA•** wireless pushbuttons (with a software version above or equal to V2.0).

(2) Also compatible with **ZB•RTA•** wireless pushbuttons and the **XZBWE112A24** wireless "multi-sensor" transmitter (with a software version above or equal to V1.0).

Limit switches

XCMW range

Wireless and batteryless limit switches

Miniature format



ZigBee®
2.4 GHz



Description

"Components" offer

The XCMW range is available as separate parts and comprises:

■ **5 wireless and batteryless limit switches**, consisting of a plastic body and an actuator head taken from existing ranges (XCKS and XCKM)

■ **3 receivers**, which can be programmed using buttons on the front face

□ with 2 contact relay outputs, 24...240 V ~/-

□ with 2 or 4 PNP transistor outputs, 24 V -

■ **2 access points**, which provide open network connectivity by operating as an intermediate device between the transmitter and the PLC. The access point receives radio signals from the XCMW limit switches and converts them to communication protocols.

The access point is connected to the PLC using:

□ an Ethernet Modbus/TCP communication protocol for **ZBRN1**

□ a Modbus RS485 serial link communication for **ZBRN2**

Accessories:

□ 1 active relay antenna to boost the signal when the receiver is in a metal enclosure or to get round obstacles in the case of a complex installation

□ 1 external antenna for **ZBRN1** or **ZBRN2** access points to increase the range

□ 1 communication module for Ethernet Modbus/TCP network

"Ready-to-use pack" offer

To make it easier to install XCMW limit switches, ready-to-use packs are also available. The transmitter (limit switch) and receiver are factory-paired.

Each pack contains:

■ a limit switch

□ one version with metal end plunger

□ one version with plastic roller lever

■ a receiver with 2 time delay relay outputs

References

Limit switches

Actuator type	Reference	Weight kg
Metal plunger	XCMW110	0.039
Steel roller plunger	XCMW102	0.046
Thermoplastic roller lever	XCMW115	0.082
Steel roller lever	XCMW116	0.088
Variable length thermoplastic roller lever	XCMW145	0.090

XC-SD_520_CPMFS18017



XCMW110

XC-SD_520_CPMFS18016



XCMW102

XC-SD_520_CPMFS18019



XCMW115

XC-SD_520_CPMFS18024



XCMW116

XC-SD_520_CPMFS18021



XCMW145

Limit switches

XCMW range

Wireless and batteryless limit switches

Miniature format



XCMWD02



XCMWD15



ZBRRC



ZBRRD



XZBWR2STT24

References (continued)

Ready-to-use packs

Composition	Reference	Weight kg
■ 1 limit switch with steel roller plunger XCMW102 ■ 1 receiver with 2 relay outputs ZBRRD	XCMWD02 (1)	0.176
■ 1 limit switch with thermoplastic roller lever XCMW115 ■ 1 receiver with 2 relay outputs ZBRRD	XCMWD15 (1)	0.212

Note: The transmitter (limit switch) and receiver are factory-paired.

Receivers

Configurable receivers are equipped with:

- 2 buttons (teach and parameter setting)
- 6 LED indicators (power ON, function modes, output status, and signal strength)

Number and type of outputs	Power supply	Number of transmitters	Reference	Weight kg
4 PNP outputs 200 mA/24 V	24 V $\overline{\text{---}}$	32	ZBRRC (1)	0.130
2 time delay relay outputs, 3A	24...240 V $\sim/\overline{\text{---}}$	32	ZBRRD (1)	0.130
2 PNP outputs 200 mA/24 V	24 V $\overline{\text{---}}$	2	XZBWR2STT24 (2)	0.130

(1) Schneider Electric product, also compatible with **ZB•RTA•** wireless pushbuttons (with a software version above or equal to V2.0).

(2) Also compatible with **ZB•RTA•** wireless pushbuttons and the **XZBWE112A24** wireless "multi-sensor" transmitter (with a software version above or equal to V1.0).

Limit switches
XCKW and XCMW ranges
Accessories for wireless and batteryless
limit switches
Network access points

Description

Standard access point with communication module

The **ZBRN1** access point has an empty slot for the **ZBRCETH** communication module to support the Modbus/TCP protocol.

This communication module has 2 standard Ethernet RJ45 connectors that provide connectivity for daisy chain operation and daisy chain loop operation (when used with Schneider Electric ConneXium Ethernet switches) and thus avoids the use of an external hub or switch.

Access point for Modbus serial link protocol

The **ZBRN2** access point has 2 embedded RS485 connectors that avoid the use of an external hub for an RS485 serial link connection. The supported data rates are 1,200, 2,400, 4,800, 9,200, 9,600, 38,400, and 115,200 bps.

References

Access points

Description	Data function	Output type	Receiver voltage	Reference	Weight
			V		kg
Configurable access points equipped with: - 7-segment display - jog dial - 8 LED indicators (power ON, function modes, communication status, signal strength) - external antenna connector and protective cap - for 60 transmitters max.	Set/Reset	2 RS485 connectors that provide Modbus RS485 serial link connectivity	24...240 ~/-	ZBRN2 (1)	0.270
	Set/Reset	1 slot for ZBRCETH communication module (to be ordered separately)	24...240 ~/-	ZBRN1 (1)	0.270

(1) Schneider Electric product, also compatible with **ZB•RTA•** wireless pushbuttons (with a software version above or equal to V1.5).



ZBRN2



ZBRN1

Limit switches

XCKW and XCMW ranges

Accessories for wireless and batteryless limit switches



ZBRCETH



ZBRA2



ZBRA1

References

Modbus/TCP network communication module

Description	Communication port	Reference	Weight kg
Communication module for ZBRN1 access point Modbus/TCP protocol with embedded web pages, available in 5 languages, for configuration, monitoring, and diagnostics	2 RJ45 connectors for daisy chain or daisy chain loop operation	ZBRCETH (1)	0.044

Relay antenna

Use	Description	Reference	Weight kg
Increases the distance between the limit switches and the receivers	24...240 V ~/--- 5 m cable 1 power ON LED 2 reception/transmission LEDs	ZBRA1 (2)	0.200

External antenna

Use	Description	Reference	Weight kg
Connected to ZBRN1 or ZBRN2 access point to increase the transmission distance	2 m cable 1 RF connector	ZBRA2 (1)	0.040

(1) Schneider Electric product.

(2) Schneider Electric products, also compatible with **ZB•RTA•** wireless pushbuttons.

X	
XCKW101	10
XCKW102	10
XCKW131	10
XCKW133	10
XCKW139	10
XCKW141	10
XCKW143	10
XCKW149	10
XCKW159	10
XCKWD02	11
XCKWD31	11
XCMW102	12
XCMW110	12
XCMW115	12
XCMW116	12
XCMW145	12
XCMWD02	13
XCMWD15	13
XZBWR2STT24	11 13
Z	
ZBRA1	15
ZBRA2	15
ZBRCETH	15
ZBRN1	14
ZBRN2	14
ZBRRC	11 13
ZBRRD	11 13