Wireless and batteryless limit switches OsiSense XCKW

Catalogue

Simply easy!™

Telemecanique Sensors

Contents

Wireless and batteryless limit switches OsiSense XCKW

Limit switches
OsiSense XCKW
Wireless and batteryless limit switches

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 2.4 GHz (IEEE 802.15.4)		
	Maximum range	100 m in free field. 300 m with a relay antenna in free field. 25 m when the receiver is placed in a metal enclosure.		
	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, e		
	Radio approvals	FCC (USA), IC (Canada), RCM (Australia)		
Mechanical characteristics	Mechanical life	400,000 operating cycles		
	Maximum operating rate	3600 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	IP 66 and IP 67 conforming to EN/IEC 60529		
	Degree of protection	IK 05 conforming to EN/IEC 50102		
Electromagnetic compatibility (EMC)	Electrostatic discharges	8 kV (air) and 6 kV (contact) conforming to IEC 61000-4-2		
	Electromagnetic fields	10 V/m from 80 to 2000 MHz, conforming to EN/IEC 61947-5-1 and IEC 61000-4-3 3 V/m from 80 to 2700 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**
Pages		8		

(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 2.4 GHz (IEEE 802.15.4)				
100 m in free field. 300 m with a relay antenna in free field. 25 m when the receiver is placed in a metal enclosure.				
3 mW				
2 ms				
< 2 ms				
EN/IEC 60947-5, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, EAC, e				
FCC (USA), IC (Canada), RCM (Australia)				
400,000 operating cycles				
3600 operating cycles per hour				
0.5 N.m				
Plastic bodies and heads				
Operation: - 25…+ 55°C Storage: - 40…+ 70°C				
IP 66 and IP 67 conforming to EN/IEC 60529				
IK 05 conforming to EN/IEC 50102				
8 kV (air) and 6 kV (contact) conforming to IEC 61000-4-2				
10 V/m from 80 to 2000 MHz, conforming to EN/IEC 61947-5-1 and IEC 61000-4-3 3 V/m from 80 to 2700 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**
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Limit switches
OsiSense XCKW
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 relays C/O type outputs
Radio transmission	Transmission protocol	ZigBee® Green Power at 2.4 GHz (IEEE 802.15.4)		
	Maximum range	100 m in free field. 300 m with a relay antenna in free field. 25 m when the receiver is placed in a metal enclosure.		
	Response time	< 30 ms		
Certifications and directives	Product certifications and radio approvals	EN/IEC 60947-5-1 e		EN/IEC 60947-5, UL 508, CSA C22.2 no. 14, CCC, GOST, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, FCC, RSS, C-Tick, ANATEL, SRRC, e
Power supply	Nominal supply voltage	24 V c (-15…+ 15%)		24…240 V a / c (-10…+ 10%)
Output characteristics	Nominal current and voltage	0.2 A/24 V c		0.3 A/48 V c 3 A/120 V a conforming to IEC 60947-5-1 3 A/250 V a conforming to UL 508 and CSA C22.14
Environment	Ambient air temperature	Operation: - 25…+ 55°C Storage: - 40…+ 70°C		
	Degree of protection	IP 20 conforming to EN/IEC 60529	IP 20 conforming to EN/IEC 60529	
References		**XZBWR2STT24**	**ZBRRC** *(1)*	**ZBRRD** *(1)*
Pages		9		

(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	–	–	–
Ethernet Modbus/TCP communication protocol	Communication via Modbus serial link 2 RS485 ports	–	–	–
ZigBee® Green Power at 2.4 GHz (IEEE 802.15.4)		ZigBee® Green Power at 2.4 GHz (IEEE 802.15.4)		–
100 m in free field 300 m with a relay antenna in free field 25 m when the receiver is placed in a metal enclosure		300 m maximum depending on environment	100 m in free field	–
< 30 ms		–	–	–
EN/IEC 60947-5, UL 508, CSA C22.2 no. 14, CCC, GOST, EMC 2004/108/EC directive, R&TTE 1999/5/EC directive, FCC, RSS, C-Tick, ANATEL, SRRC, e		CCC, CSA, C-Tick, GOST, UL 508, BT 2006/95/EC, e	–	CSA, UL 508, UL 873, UL 60730-1, BTL, e
24…240 V a / c (-10…+ 10%)		24…240 V a / c	–	–
–	–	–	–	–
Operation: - 25…+ 55°C Storage: - 40…+ 70°C		Operation: - 25…+ 55°C Storage: - 40…+ 70°C	–	Operation: - 20…+ 65°C Storage: - 25…+ 70°C
IP 20 conforming to EN/IEC 60529		IP 65 conforming to EN/IEC 60529 IK 05 conforming to EN/IEC 50102	–	IP 20 conforming to EN/IEC 60529
ZBRN1 *(1)*	**ZBRN2** *(1)*	**ZBRA1** *(1)*	**ZBRA2** *(1)*	**ZBRCETH** *(1)*
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Limit switches
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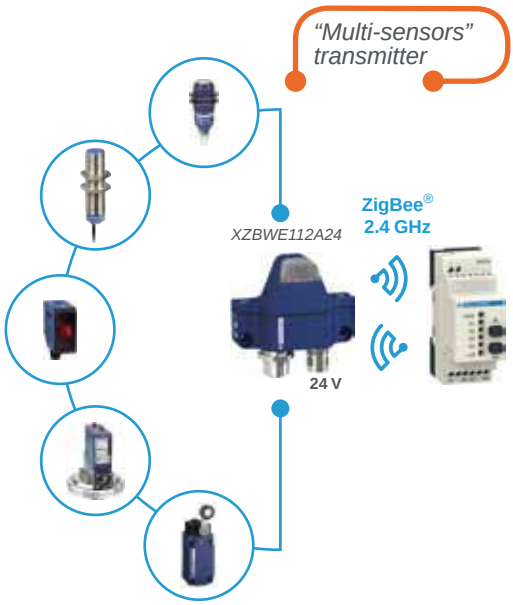
Wireless and batteryless limit switches

OsiSense XCKW

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



"Less-wire" offer:
*two-way **continuous** transmission*

No battery to replace, recycle or recharge

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

This range includes transmitters and receivers which 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 OsiSense XCKW offer can be used to find the position of an item or part of a machine remotely, without a wired connection. The transmitter is equipped with a "dynamo" generator which 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 metres away.
There are therefore no batteries, as the system is self-powered.

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)*.
OsiSense XCKW wireless limit switches are therefore particularly suitable *(2)* for:
- automatic doors
- expandable conveyors
- wheel chocks for lorries
- rotary machines
- turntables

Reminder: With the XZBWE112A24 multi-sensors transmitter, our "less-wire" offer allows continuous communication between the transmitter and the receiver.

***NB**: Receivers can be actuated by Schneider Electric's **OsiSense XCKW** limit switches or **ZBpRTAp** 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) The operating speed must be faster than 10 mm/s.
(2) OsiSense XCKW wireless and batteryless limit switches are not suitable for hoisting applications or dangerous machines.
For these applications and machines, OsiSense XC Standard cabled switches are ideal.
Please contact our Customer Care Centre.

Limit switches
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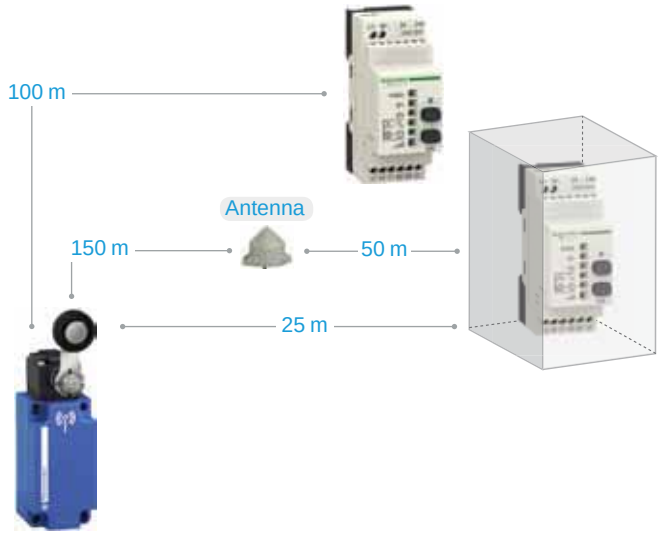
Improved performance

A relay antenna to increase the signal range
> Range of 300 metres, in free field, using an external relay antenna.
> Range of 200 metres when the receiver is installed in a metal enclosure, using an external relay antenna.
> Range of 100 metres in free field.
> Range of 25 metres when the receiver is installed in a metal enclosure *(1)*.



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.

(1) The distances stated may vary depending on the environment.

Limit switches
OsiSense XCKW
Wireless and batteryless limit switches

ZigBee®
2.4 GHz

Description

"Components" offer

The OsiSense XCKW offer is available as separate parts and consists of:

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

b **3 receivers**, which can be programmed using buttons on the front face.
v with 2 contact relay outputs, 24…240 V a / c .
v with 2 or 4 PNP transistor outputs, 24 V c .

b **2 access points** which provide network connectivity openness by operating as an intermediate device between the transmitter and the PLC. The access point receives radio signals from the OsiSense XCKW limit switches and converts them to communication protocols.
The access point is connected to the PLC using:
v an Ethernet Modbus/TCP communication protocol, for **ZBRN1**.
v a Modbus RS485 serial link communication, for **ZBRN2**.

b **accessories:**
v 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.
v 1 external antenna for entry points **ZBRN1** or **ZBRN2** to increase the range.
v 1 communication module for Ethernet Modbus/TCP network.

Ready-to-use pack offer

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

Each pack contains:
b a limit switch
v a version with steel roller plunger
v a version with plastic roller lever

b a receiver with 2 relay outputs

XCKW101

XCKW102

XCKW159

XCKW131

XCKW133

XCKW139

XCKW141

XCKW143

XCKW149

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
OsiSense XCKW
Wireless and batteryless limit switches

PF150521 - PF100766

XCKWD02

PF150522 - PF100766

XCKWD31

PF100706

ZBRRC

PF100766

ZBRRD

PF150002

XZBWR2STT24

References *(continued)*

Ready-to-use packs

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

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

Receivers

Configurable receivers are equipped with:
b 2 buttons (teach and parameter setting).
b 6 LED indicators (power ON, output status, signal strength).

Number and type of outputs	Power supply	Number of transmitters	Reference	Weight kg
4 PNP outputs 200 mA/24 V	24 V c	32	**ZBRRC** *(1)*	0.130
2 relay outputs type C/O 3A	24…240 V a / c	32	**ZBRRD** *(1)*	0.130
2 PNP outputs 200 mA/24 V	24 V c	2	**XZBWR2STT24** *(2)*	0.130

*(1) Schneider Electric product, also compatible with **ZBpRTAp** wireless pushbuttons (with a software version above or equal to V2.0).*
*(2) Also compatible with **ZBpRTAp** wireless pushbuttons and the **XZBWE112A24** wireless "multi-sensors" transmitter (with a software version above or equal to V1.0).*

PF121503E

ZBRN2

PF121500E

ZBRN1

Description

Standard access point with communication module

Access point **ZBRN1** has an empty slot for the **ZBRCETH** communication module to support 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 a hub or an external switch.

Access point for Modbus serial link protocol

Access point **ZBRN2** has 2 embedded RS485 connectors that avoid the use of an external hub for an RS485 serial link connection. The supported bps are 2400 bps, 4800 bps, 9200 bps, 9600 bps, 38,400 bps, 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 a / c	**ZBRN2** *(1)*	0.270
	Set/Reset	1 slot for communication module **ZBRCETH** (to be ordered separately)	24...240 a / c	**ZBRN1** *(1)*	0.270

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

Limit switches
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Wireless and batteryless limit switches
Accessories

PF121506B

ZBRCETH

PF121508A

ZBRA2

PF1100707

ZBRA1

References

Modbus/TCP network communication module

Description	Communication port	Reference	Weight kg
Communication module for access point **ZBRN1** 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 a / c 5 m cable 1 power ON LED 2 reception/ transmission LEDs	**ZBRA1** *(2)*	0.200

External antenna

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

(1) Schneider Electric product.
*(2) Schneider Electric product, also compatible with **ZBpRTAp** wireless pushbuttons.*

Product reference index

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