Wireless and batteryless limit switches XCMW range

Catalogue



Simply easy!™



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Selection guide

Limit switches XCMW range Wireless and batteryless limit switches Miniature format

			(B) Tokonecanique		
Actuator type		Metal end plunger	Steel roller plunger	Thermoplastic roller lever	Steel roller leve
Radio transmission	Transmission protocol	ZigBee [®] Green Powe	r at 2.405 GHz (Channel	11, IEEE 802.15.4)	
	Maximum range	100 m in free field 300 m with a relay an	tenna in free field		
	Transmission power	3 mW			
	Activation time	30 ms			
	Transmission time	< 7 ms			
Certifications and directives	Product certifications	EN/IEC 60947-5, EI UKCA, C€	MC directive 2004/108/	EC, R&TTE directive	1999/5/EC,
	Radio approvals	FCC (USA), IC (Cana ANATEL (Brazil: pend	da), ACMA and RSM (Au ling)	istralia and New Zeala	and), MIC (Japan),
Mechanical	Mechanical life	400,000 operating cy	cles		
characteristics	Maximum operating rate	3,600 operating cycle	s per hour		
	Maximum tripping force	13 N			
	Materials	Plastic bodies, metal	heads		
Environment	Ambient air temperature	Operation: -25+55 Storage: -40+70 °C			
	Degree of protection	IP65 conforming to E	N/IEC 60529		
	Degree of protection	IK04 conforming to E	N/IEC 50102		
Electromagnetic compatibility	Electrostatic discharge	8 kV (air) and 6 kV (c	ontact) conforming to IEC	C 61000-4-2	
(EMC)	Electromagnetic fields				
	Test level: 1 V/m	Test condition: from 2	,000 to 2,700 MHz, conf	orming to EN/IEC 6194	47-5-1 and IEC 6100
	Test level: 3 V/m	Test condition: from 1 and EN 301-489-3	,400 to 2,000 MHz, confe	orming to IEC 61000-4	I-3, EN 301-489-1,
	Test level: 10 V/m	Test condition: from 8 and EN 301-489-3	0 to 1,000 MHz, conform		EN 301-489-1,
	Radiated emissions	Conforming to standa	ards EN 300-440-1 and E	N 300-440-2	
References		XCMW110	XCMW102	XCMW115	XCMW116

Telemecanique

Sensors



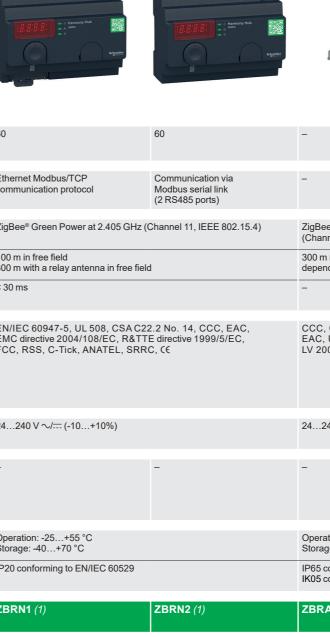
XCMW145 XCMW146 XCMW139
Conforming to standards EN 300-440-1 and EN 300-440-2
Test condition: from 80 to 1,000 MHz, conforming to IEC 61000-4-3, EN 301-489-1
Test condition: from 1,400 to 2,000 MHz, conforming to IEC 61000-4-3, EN 301-48
Test condition: from 2,000 to 2,700 MHz, conforming to EN/IEC 61947-5-1 and IEC
8 kV (air) and 6 kV (contact) conforming to IEC 61000-4-2
IK04 conforming to EN/IEC 50102
IP65 conforming to EN/IEC 60529
Operation: -25+55 °C Storage: -40+70 °C
Plastic bodies, metal heads
0.5 N.m
3,600 operating cycles per hour
400,000 operating cycles
FCC (USA), IC (Canada), ACMA and RSM (Australia and New Zealand), MIC (Jap
EN/IEC 60947-5, EMC directive 2004/108/EC, R&TTE directive 1999/5/EC, U
< 7 ms
30 ms
3 mW
100 m in free field 300 m with a relay antenna in free field
ZigBee [®] Green Power at 2.405 GHz (Channel 11, IEEE 802.15.4)

(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.
(3) Value taken with actuation by moving part at 100 mm from the fixing.

Selection guide (continued)

Limit switches XCMW range Accessories for wireless and batteryless limit switches

Product type		Receivers for wireless rad	io communication		Access points for wireless and	batteryless
		24/DC 24/DC PRR 22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			21.30 PRUT VACOC PULL B.B.B.B.C - Among Hub - Among Hu	
Maximum number of t	ransmitters	2	32	32	60	60
Number and type of or	utputs	2 PNP outputs	4 PNP outputs	2 time delay relay outputs	Ethernet Modbus/TCP communication protocol	Comm Modbu (2 RS4
Radio transmission	Transmission protocol	ZigBee [®] Green Power at 2.4	05 GHz (Channel 11, IEE	E 802.15.4)	ZigBee® Green Power at 2.405 GH	Hz (Channel
	Maximum range	100 m in free field 300 m with a relay antenna i	n free field		100 m in free field 300 m with a relay antenna in free	field
	Response time	< 30 ms			< 30 ms	
ertifications nd directives	Product certifications and radio approvals		EMC directive 2004/10	508, CSA C22.2 No. 14, CCC, EAC, 18/EC, R&TTE directive 1999/5/EC, NATEL, SRRC, C€, UKCA	EN/IEC 60947-5, UL 508, CSA EMC directive 2004/108/EC, R8 FCC, RSS, C-Tick, ANATEL, S	TTE directi
ower supply	Nominal supply voltage	24 V (-15+15%)		24240 V ∼/ (-10+10%)	24240 V ∿/ (-10+10%)	
Dutput haracteristics	Nominal current and voltage	0.2 A/24 V		0.3 A/48 V $=$ 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			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	ZBRRC (1)	ZBRRD (1)	ZBRN1 (1)	ZBRN
Page		11			12	



s limit switches

Accessories		
Relay antenna	External antenna for ZBRN1 and ZBRN2	Communication module for ZBRN1
-	-	-
-	-	-
ZigBee® Green Power at 2.405 GH (Channel 11, IEEE 802.15.4)	z	-
300 m maximum depending on environment	100 m in free field	-
-	-	-
CCC, CSA, C-Tick, EAC, UL 508, LV 2006/95/EC, C€	-	CSA, UL 508, UL 873, UL 60730-1, BTL, C€
24240 V ~/	-	-
-	-	-
Operation: -25+55 °C Storage: -40+70 °C	-	Operation: -20+65 °C Storage: -25+70 °C
IP65 conforming to EN/IEC 60529 IK05 conforming to EN/IEC 50102	-	IP20 conforming to EN/IEC 60529
ZBRA1 (1)	ZBRA2 (1)	ZBRCETH (1)
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General presentation

Limit switches XCMW range Wireless and batteryless limit switches Miniature format

XCMW range



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



"Less-wire" offer:

Two-way **continuous** transmission With the XZBWE112A24 multi-sensor transmitter, our "less-wire" offer allows continuous communication between the transmitter and the receiver (see page 13). Telemecanique Sensors has expanded its offer of wireless products with the XCMW range of limit switches based on an automatic radio wave generator system.

This range includes 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 XCMW offer 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 optimal management of each one. To incorporate this code, a simple teach sequence must be performed on the receiver using the two 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).

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 **XCMW** limit switches or **ZB•RTA•** Schneider Electric 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) 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.





General presentation (continued)

Limit switches

XCMW range Wireless and batteryless limit switches Miniature format



Miniature format

One of the smallest formats on the market

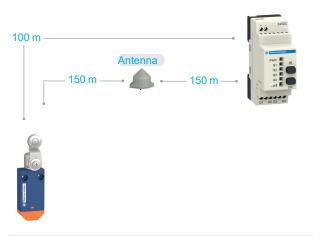
Ideal for automatic doors, the limit switch can be easily installed in aluminum profiles.

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
- Modbus RS485 serial link or Modbus/TCP protocol.



Simple to order, with ready-to-use packs



Description

Limit switches

XCMW range Wireless and batteryless limit switches Miniature format



Description

"Components" offer

The XCMW range comprises:

- 9 wireless and batteryless limit switches consisting of a plastic body and an actuator head taken from the existing XCMN and XCMD ranges.
- 3 receivers that can be programmed using buttons on the front face:
- \Box with 2 contact relay outputs, 24...240 V $\sim/$
- □ with 2 or 4 PNP transistor outputs, 24 V ----
- 2 access points that 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
- □ 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
- □ one version with round plastic rod lever, Ø 6 mm

a receiver with 2 time delay relay outputs

Characteristics

Limit switches

XCMW range Wireless and batteryless limit switches Miniature format Transmission system for sensors

Characteristics of	XCMW1 •• limit switches	3
Environmental charact	teristics	
Conformity to standards	Products	CE, EN/IEC 60947-5-1, UL 508, CSA C22-2 No. 14, CCC
	Machine assemblies	EN/IEC 60204-1
Product certifications		UL, CSA, CCC, UKCA
Protective treatment	Version	Standard: "TC"; Special: "TH"
Ambient air temperature	For operation	-25+70 °C
	For storage	-40+70 °C
Vibration resistance	Conforming to EN/IEC 60068-2-6	25 gn (10500 Hz)
Shock resistance	Conforming to EN/IEC 60068-2-27	40 gn (11 ms)
Protection against electric shock	Conforming to EN/IEC 61140	Class II
Degree of protection	Conforming to EN/IEC 60529	IP65
	Conforming to EN 62262	IK04
Materials		Plastic body, metal head
Characteristics of	XZBWR2STT24 receiver	
Ambient air temperature	For operation	-20+55 °C
	For storage	-40+70 °C
Power supply		24 V 100 mA max.
Outputs		2 + 2 PNP (200 mA each output)
Degree of protection	Conforming to EN/IEC 60529	IP20
Display		1 LED for each output, 1 LED for the power supply,1 LED for the signal current
Characteristics of	XZBWE112A24 radio trai	nsmitter
Radio range in free field		100 m
Typical radio range in indus	strial environment	25 m
Ambient air temperature	For operation	-25+55 °C
	For storage	-40+70 °C
Power supply (transmitter of	nly)	24 V - 15%
Output power supply for se	ensor or limit switch	24 V - 15%/+20% - 100 mA max. (no overload protection)
Start-up time		< 0.4 s
Response time		30 ms
Input frequency		< 0.5 Hz
Degree of protection	Conforming to EN/IEC 60529	IP67
Display		1 green or orange LED depending on the mode

References, characteristics

Limit switches

XCMW range Wireless and batteryless limit switches Miniature format

Type of head	Plunger (fixing	g by the body)	Rotary (fixing	by the body)			
Type of operator	Metal end plunger	Steel roller plunger	Steel or thermoplastic roller lever (1) (2)	Variable length steel or thermoplastic roller lever (1) (2)	Thermoplastic roller lever, Ø 50 mm <i>(1) (2)</i>	Variable length thermoplastic roller lever, Ø 50 mm (1) (2)	Round thermoplastic rod lever, Ø 6 mm (2) (3) (4)
References							
	XCMW110	XCMW102	XCMW115 (thermoplastic) XCMW116	XCMW145 (thermoplastic) XCMW146	XCMW139	XCMW149	XCMW159
			(steel)	(steel)			
	0 0.9	4.3 (A) 5.4	(steel)	(steel) 67° (A) 87°			
Weight (kg)	0.040		0.085 0.090	67° (A) 87°	0.100	0.110	0.080
Weight (kg) Receiver output statu	0.040	5.4	0.085	67° (A) 87°	0.100	0.110	0.080
	0.040 s Closed	5.4	0.085 0.090	67° (A) 87°	0.100	0.110	0.080
Receiver output statu	0.040 s Closed	5.4	0.085 0.090	67° (A) 87°	0.100		0.080 By any moving part
Receiver output statu	0.040 s Closed Open	0.045	0.085 0.090	67° (A) 87°	0.100		
Receiver output statu Characteristics Switch actuation	0.040 S On end On end	0.045	0.085 0.090	67° (A) 87°	0.100		By any moving part
Receiver output statu Characteristics Switch actuation Type of actuation	0.040 s Closed Open S On end ↓ ↓ C On end 0.5 m/s	0.045	(A) = Cam displace	67° (A) 87°	0.100		By any moving part
Receiver output statu Characteristics Switch actuation Type of actuation Maximum actuation sp Mechanical durability (in millions of	0.040 s Closed Open S On end ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	5.4 0.045 By 30° cam	0 12° 0.085 0.090 (<i>A</i>) = Cam displace	67° (A) 87°	0.100		By any moving part

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

(2) A limit switch without a lever can be ordered: reference **XCMW101**.

(3) Adjustable throughout 360° in 5° steps, or in 45° steps by reversing the lever mounting.

(4) Value taken with actuation by moving part 100 mm from the fixing.

References

Limit switches

XCMW range Wireless and batteryless limit switches Miniature format

~	VI-NI- VACIOC	References (c Ready-to-use page				
	r Schneider	Composition			Reference	Weight
			teel roller plunger XCM lay outputs ZBRRD (1)		XCMWD02	kg 0.176
KCMWD02			nermoplastic roller lever lay outputs ZBRRD <i>(1)</i>		XCMWD15	0.212
* *	School Sc	Ø 6 mm XCMW159	ound thermoplastic rod) lay outputs ZBRRD <i>(1)</i>		XCMWD59	0.170
(1)	12 14 11 22 24 21	Note: The transmitter	(limit switch) and receiv	ver are factory-pair	red.	
CMWD15		Receivers				
		2 buttons (teach	vers are equipped wi and parameter settir (power ON, function	ng)	status, and signal stre	ength)
	Unite 34, 340 We for	2 buttons (teach	and parameter settir	ng)	status, and signal stre Reference	Weight
	La No. 24. 26 Sepander Martin Call Cal	 2 buttons (teach 6 LED indicators Number and 	and parameter settir (power ON, function	ng) modes, output s Number of		Weight kg
×CMWD59	A CONTRACT OF CONTRACT	 2 buttons (teach 6 LED indicators Number and type of outputs 4 PNP outputs 	and parameter settir (power ON, function Power supply	ng) modes, output : Number of transmitters	Reference	weight) Weight kg 0.130
CCMWD59		 2 buttons (teach 6 LED indicators Number and type of outputs 4 PNP outputs 200 mA/24 V 2 time delay 	and parameter settir (power ON, function Power supply 24 V 	ng) modes, output s Number of transmitters 32	Reference ZBRRC (1)	Weight kg 0.130

Telemecanique Sensors

Description, references (continued)

Limit switches XCMW range 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 two 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 two embedded RS485 connectors that avoid the use of an external hub for an RS485 serial link connection. The supported data rates are 1200, 2400, 4800, 9200, 9600, 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	Set/Reset	2 RS485 connectors that provide Modbus RS485 serial link connectivity	24240 ~/	ZBRN2 (1)	0.270
- external antenna connector and protective cap - for 60 transmitters max.	Set/Reset	1 slot for ZBRCETH communication module (to be ordered separately)	24240 ~/	ZBRN1 (1)	0.270

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



ZBRN1



ZBRN2

References (continued)

Limit switches XCMW range Accessories







XZBWE112A24

References

Modbus/TCP network communication module	
---	--

 Description
 Communication

 Communication module for ZBRN1
 2 RJ44

 access point
 daisy of

 Modbus/TCP protocol with embedded
 chain I

 web pages, available in 5 languages, for
 configuration, monitoring, and diagnostics

Communication port	Reference	Weight kg
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	24240 V ~/ 5 m cable 1 power ON LED 2 recention/	ZBRA1 (2)	0.200		

transmission LEDs

External antenna		
Use	Description	Reference
Connected to ZBRN1 or ZBRN2 access point to increase	2 m cable 1 RF connector	ZBRA2 (1)

Multi-sensor radio transmitter for "less-wire" solution

This remote connection system, compatible with any sensor or limit switch, is used to reduce costs by using less wiring for all kinds of application.

- For radio transmission to a 24 V sensor or limit switch
- Compatible with a PNP or NPN sensor or limit switch
- ZigBee Green Power 2.405 GHz communication protocol

Description	Reference	Weight kg
1x 5-pin M12 female connector (sensor) 1x 4-pin M12 male connector (power supply) 2 LED indicators (sensor output and data exchange)	XZBWE112A24	0.051

(1) Schneider Electric product.

transmission distance

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

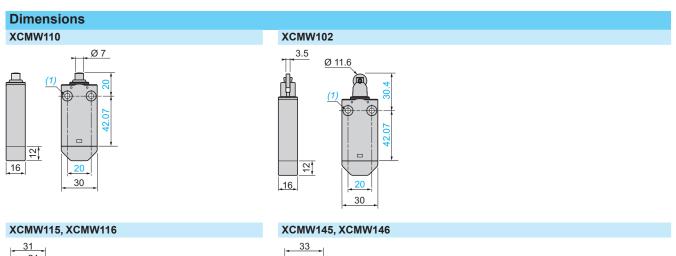


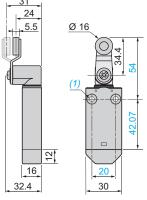
Weight kg 0.040

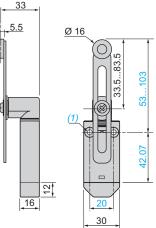
Dimensions

Limit switches

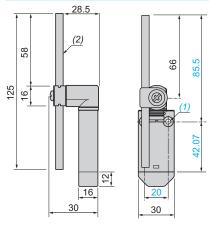
XCMW range Wireless and batteryless limit switches Miniature format







XCMW159

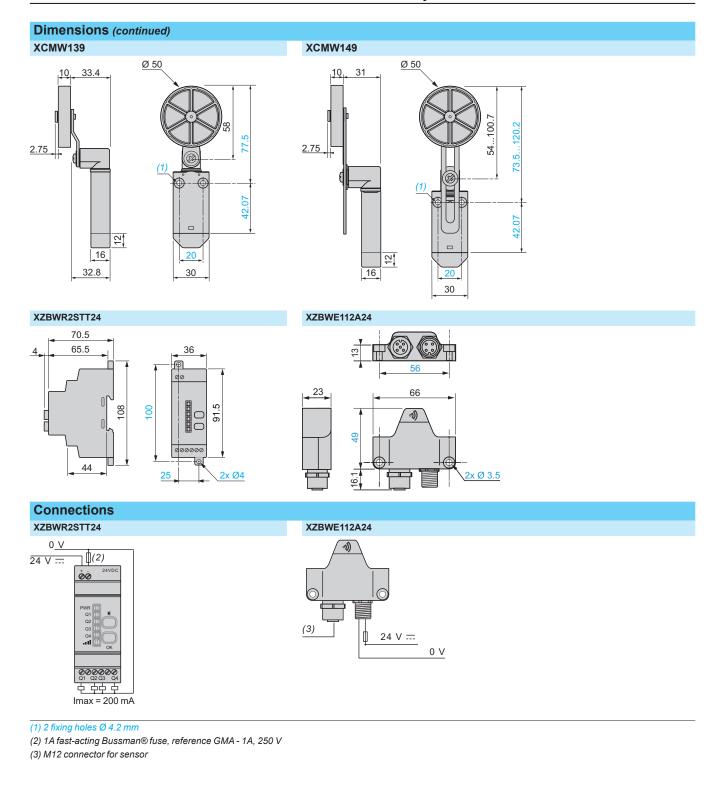


(1) 2 fixing holes Ø 4.2 mm (2) Rod Ø 6 mm

Dimensions (continued), schemes

Limit switches

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