Wireless and batteryless pushbuttons

Harmony® XB5R plastic and XB4R metal

Catalog

November 2014
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Wireless and batteryless pushbuttons
Harmony XB5R and XB4R

General presentation and selection guide

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General Presentation

Control and signaling units Ø 22
Wireless and batteryless pushbuttons
Harmony XB5R plastic and XB4R metal

Installation made easy with Harmony® XB5R plastic and XB4R metal, wireless and batteryless pushbuttons

The Harmony XB5R plastic and XB4R metal range of wireless and batteryless pushbuttons are used for various building utilities (automatic doors, lightings, etc), industrial applications (conveying systems, automotive, MMM, logistics, food and beverage) including explosive atmospheres for mining, dust and gas environments. They are based on 2 types of devices, transmitter and receiver which communicates via 2.4 GHz radio transmission (free worldwide band).

Simplified installation

- Reduction in installation costs and time
- No set-up needed due to ready-to-use Plug-and-Play package
- Freedom of mobility around the machine or process
- Ideal solution when you need to add or move a control function

Enables the end users to considerably reduce installation and maintenance costs

Easy maintenance

- Requires no battery maintenance and assures permanent availability
- Maximum availability of control functions
- Eco-friendly Green technology
- Minimize post-installation maintenance

No battery to replace, recycle & recharge

Energy efficient due to non-current consuming transmitter

Designed for industrial environment with proven robustness

- High resistance to contamination from dust (no cable entry)
- No risk of cable damage or loosened screws on the transmitter
- Ø 22 mm/0.866 in. operating head available in plastic (ZB5) and metal (ZB4) and Ø 40 mm/1.575 in. impulsion mushroom black head allowing operation with gloves
- For automatic doors, the rope pull switch command can be set anywhere
- Suitable for the most demanding environments, depending on the model, up to IP 66, for external use from -25 to 70 °C/-13 to 158 °F

Robust performance

Easy integration in to automation products
Control and signaling units Ø 22
Wireless and batteryless pushbuttons
Harmony XB5R plastic and XB4R metal

Assured performance according to distance

- 25 m/82 ft with the receiver installed in a metal electrical cabinet
- Boosted to more than 300 m/984 ft with use of external relay antenna with the receiver installed in a metal electrical cabinet
- 100 m/328 ft in free space

Smooth integration through open protocols

- Integration into industrial automation via field bus link
  - Modbus serial link: as found on all Schneider Electric PLCs
  - Modbus/TCP: integrated into the Schneider Electric PLCs and HMIs

Simple to order with ready-to-use packs

(1) Reduction in distance when the receiver is placed in a metal cabinet
Control and signaling units Ø 22
Wireless and batteryless pushbuttons
Harmony XB5R plastic and XB4R metal

Architecture solutions and applications

> Designed to easily integrate into MachineStruxure™ architectures for OEM machine builders and PlantStruxure™ architectures for process environments.

Example of Machine architecture

Example of HVAC architecture

-20% installation costs compared to a hard-wired solution
General Presentation (continued)

Control and signaling units Ø 22
Wireless and batteryless pushbuttons
Harmony XB5R plastic and XB4R metal

A worldwide range

- From individual products to ready-to-use packs

Wide range of XB5R/XB4R individual products

- Designed to meet the requirements of the most common applications
- Simple to order with only one reference number
- Easy to install with factory pre-programmed transmitter and receiver

Plug and play package with minimal set up

(1) Only one transmitter per receiver
(2) Up to 32 transmitters per receiver

(1) Plastic head XB5RF01
Metal head XB4RF01
- Transmitter with plastic or metal pushbutton
- Non-configurable receiver, 1 CO relay output

(2) Plastic head XB5RFA02
Metal head XB4RFA02
- Transmitter with plastic or metal pushbutton
- Set of 10 pushbutton caps
- Configurable receiver, 2 CO relay outputs

(1) Plastic head XB5RMB03
- Transmitter with plastic pushbutton ZB5R in ergonomic enclosure
- Non-configurable receiver, 1 CO relay output

(2) Plastic head XB5RMA04
- Transmitter with plastic pushbutton ZB5R in ergonomic enclosure
- Set of 10 pushbutton caps
- Configurable receiver, 2 CO relay outputs
### Control and signaling units

#### Selection guide

**Type of products**
- Pilot lights
- Pushbuttons, selector switches and pilot lights
- Biometric switches

**Description of range**
- LED pilot lights
- Pushbuttons
- Multiple-headed pushbuttons
- Emergency Stop pushbuttons
- Selector switches and key switches
- Illuminated pushbuttons
- Pilot lights
- Fingerprint readers
- 24V
- Stand-alone biometric switches
- Stand-alone USB biometric switches
- Wireless and batteryless pushbuttons
- Configurable receivers
- Access point
- Relay antenna
- Mobile handy box or plastic box for wall mounting
- Mobile handy box or plastic box for ceiling mounting

**Features**
- Products: Monolithic, compact, low consumption
- Complete units or sub-assemblies (body + head)
- Monolithic

**Shape of head**
- Circular
- Circular, square or rectangular
- Rectangular

**Brazing or cut-out for fixing**
- Ø 9 mm and Ø 12 mm or 3/8 in. and 7/16 in.
- Ø 16 mm or 0.630 in.
- Ø 22 mm or 0.866 in.

**Degree of protection**
- Conforming to IEC 60529
  - IP 40
  - IP 65 (Selector switches and key switches, multiple-headed pushbuttons and Emergency Stop pushbuttons with switches)
- IP 65 (control button)

**Cabling**
- Faston connectors
- Solder pins for printed circuit boards (4)
- Fast connector
- Connector with adapter for printed circuit board

**Mounting**
- Panel thickness: 1...3 mm or 0.039...0.118 in.
- 1...5 mm or 0.039...0.236 in.

**Type references**
- XVLA
- XB6, XB6E
- XB4
- XB5
- XB5S

---

**Wireless and batteryless pushbuttons**
- Pushbuttons, selector switches and pilot lights
- Joystick controllers
- Pushbuttons, selector switches and pilot lights
- Cam switches

**Ready-to-use packs (2) and “components” range**
- Monolithic
- Complete units or sub-assemblies (body + head)
- Complete units or sub-assemblies (body + head with lever)
- Complete units or sub-assemblies (body + front panel + head)

**Transmitter with circular head**
- Circular
- Circular
- Hexagonal
- Square

**Enclosure type**
- 12
- 4, 4X and 13
- 65
- 66

**Wireless (transmitter)**
- Screw and captive clamp terminal connections
- Screw and captive clamp terminal connections
- Screw and captive clamp terminal connections
- Through cable (receiver)

**Type references**
- XB5R, XB4R
- XB7
- XD4PA
- XD2GA
- XD5PA
- 9001K, 9001SK
- K10, K1, K2, K30, K50, K63, K115, K150

(1) Compatible with Magelis iPC, STU, GT, SXO, GT (except GT1000 series), GP, GH, and GTO models.
(2) Wireless and batteryless pushbutton and receiver ready-paired at the factory.
(3) For Harmony XB6 only.
(4) For Harmony XB6E only.
Control and signaling units Ø 22
Wireless and batteryless pushbuttons
Harmony XB5R and XB4R

XB5R and XB4R wireless and batteryless pushbuttons

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  - “Components” range .................................................. page 2/4
- References
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  - Transmitter components for wireless and batteryless
    pushbuttons ............................................................... page 2/6
  - Transmitter components for wireless and batteryless
    rope pull switch ......................................................... page 2/6
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The Harmony wireless and batteryless pushbuttons range enables remote control of a relay (receiver) by means of a pushbutton (transmitter). The control is by radio transmission where the transmitter is fitted with an electric generator that converts mechanical energy, produced when the pushbutton is pressed, to electrical energy. A radio-encoded message with a unique ID code is sent as a single pulse to one or more receivers located several dozen metres away (see figure A). A single receiver can also be actuated by up to 32 different transmitters (see figure B).

In order to avoid any conflict of multiple transmission from different transmitters, a minimum time frame of 10ms is required between each radio transmission. Depending on the application, a relay-antenna can be used to get round an obstacle that impedes transmission or to increase the range (see figure A and figure B).

The possible distance between a transmitter and a receiver is approximately:
- 100 m/328 ft where there are no obstacles,
- 25 m/82 ft if the receiver is installed in a metal housing or in a closed metal enclosure,
- 300 m/984 ft if a relay-antenna is located between the transmitter and the receiver (receiver installed in a metal housing or in a closed metal enclosure).

In industrial environments the distance could be drastically reduced (radio perturbations, obstacles, EMC interferences, etc.). As a consequence, some radio frames may not be received by the receiver.

The wireless and batteryless pushbutton reduces installation time and cost by eliminating wiring and associated equipment between the transmitters and the control panel.

This technology also allows an operator to be mobile or have a control mounted on-board of a vehicle (trolley, truck, etc.). The pushbutton is always available and requires no maintenance (no battery needed).

The mobile box ZBRM21 or ZBRM22 associated with its support function is adapted for static and mobile applications which will be mounted on vehicles.

In association with the pushbuttons, a new wireless and batteryless rope pull switch is designed for easy operation of automatic doors. This switch can be either mounted directly on the panel or between two ropes close to the automatic door. This enables the forklift driver or pedestrian to open or close the door by pulling the rope, where the mechanical energy produced is transmitted as a radio message to the receiver placed in the control panel (see figure C).

This technology (radio-encoded message sent as a single pulse) cannot be used for hoisting applications ("up/down", "right-left" movements, etc) or safety applications (Emergency Stop pushbuttons, etc). For these applications, it is recommended that Harmony XB4 and XB5 wired pushbuttons or the XAC range of pendant control stations be used.

Environment
The performance features of the XB5R range conform to the following specifications:

- International standards and approvals:
  - Wireless and batteryless pushbuttons: EN/IEC 60947-1, EN/IEC 60947-5-1, UL 508, CSA C22.2 N° 14

- International certifications: UL, CSA, C-Tick, GOST, CCC

- Radio agreements: ANATEL (Brazil), SRRC (China), FCC (USA), RSS (Canada), ICASA (South Africa), ARIB T66 (Japan)

For more technical information, please refer to our website www.schneider-electric.com.

(1) Typical values which can be affected by the application environment.
**Description of the “Ready-to-use packs” ranges**

**Pack with Configurable receiver (see figure D)**

The pack comprises:

1. A transmitter with a fixing collar for assembly with a pushbutton head and mounting in a Ø 22 mm/0.866 in. hole.
2. A flush, spring return, plastic or metal pushbutton head.
3. A set of 10 different colored caps, which can be clipped onto the pushbutton head.
4. An 24...240 V Configurable receiver, 2 relay outputs, with 2 buttons (teach and parameter setting) and 6 indicating LEDs.

**Pack with Non-configurable receiver (see figure E)**

The pack comprises:

1. A transmitter with a fixing collar for assembly with a pushbutton head and mounting in a Ø 22 mm/0.866 in. hole.
2. A flush, spring return, plastic or metal pushbutton head.
3. A Black cap that can be clipped onto the pushbutton head.
4. An 24 V Non-configurable receiver, 1 relay output, without indicating LED or button.

**Pack with handy box and Configurable receiver (see figure F)**

The pack comprises:

1. A handy box containing a wireless and batteryless pushbutton with plastic head.
2. A set of 10 different colored caps, which can be clipped onto the pushbutton head.
3. A 24...240 V Configurable receiver, 2 relay outputs, with 2 buttons (teach and parameter setting) and 6 indicating LEDs.

---

(1) Wireless and batteryless pushbutton and the receiver are factory-paired.
Control and signaling units Ø 22
Harmony XB5R plastic and XB4R metal
Wireless and batteryless pushbuttons

Description of the “Ready-to-use packs” ranges (1) (continued)
Pack with handy box and Non-configurable receiver (see figure G)
The pack comprises:
1 A handy box containing a wireless and batteryless pushbutton with plastic head.
2 A Black cap that can be clipped onto the pushbutton head.
3 A 24 V Non-configurable receiver, 1 relay output, without indicating LED or button.

Description of the “Components” range
Components are sold separately to allow completion of existing applications or creation of specific applications:
1 transmitter for assembly with pushbutton head and mounting in a Ø 22 mm/0.866 in. hole,
2 flush, spring return, pushbutton head, metal or plastic version,
3 mushroom head, plastic version,
4 plastic or metal fixing collar,
5 empty handy box,
6 set of 10 different colored caps or set of 10 same color caps, that can be clipped onto the pushbutton head,
7 empty plastic boxes (1 or 2 cut-outs) for wall mounting or on-board applications,
8 24...240 V Configurable receiver, 2 relay outputs, with 2 buttons (teach and parameter setting) and 6 indicating LEDs,
9 24 V Configurable receiver, 4 PNP outputs, with 2 buttons (teach and parameter setting) and 6 indicating LEDs,
10 relay-antenna,
11 rope pull switch,
12 ZBRM21 mobile box for 1 pushbutton,
13 ZBRM22 mobile box for 2 pushbuttons,
14 ZBRACS support for mobile box.

(1) Wireless and batteryless pushbutton and the receiver are factory-paired.
## Control and signaling units Ø 22

Harmony XB5R plastic and XB4R metal Wireless and batteryless pushbuttons

### Ready-to-use packs (1)

<table>
<thead>
<tr>
<th>Description</th>
<th>Transmitter type</th>
<th>Voltage receiver V</th>
<th>Receiver type</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packs comprising:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 1 wireless and batteryless pushbutton assembled on fixing collar,</td>
<td>Wireless and batteryless pushbutton</td>
<td>≈ 24...240</td>
<td>Configurable receiver ZBRRA equipped with: - choice of 3 output functions (monostable, bistable, stop/start) - 2 relay outputs type RT 3A (2), - 2 buttons (teach, parameter setting) - 6 indicating LEDs (power ON, function modes, output status, signal strength)</td>
<td>XB5RFA02</td>
<td>0.230/0.507</td>
</tr>
<tr>
<td>- 1 receiver pushbutton and receiver are factory-paired.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton + Ø 22 mm/0.866 in. plastic head</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 1 set of 10 different colored caps (1 cap to be selected and fitted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton + Ø 22 mm/0.866 in. metallic head</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 1 set of 10 different colored caps (1 cap to be selected and fitted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton + Ø 22 mm/0.866 in. plastic head</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 1 Black cap not fitted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton + Ø 22 mm/0.866 in. metallic head</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 1 Black cap not fitted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton + Ø 22 mm/0.866 in. plastic head</td>
<td></td>
<td>≈ 24...240</td>
<td>Configurable receiver ZBRRA equipped with: - choice of 3 output functions (monostable, bistable, stop/start) - 2 relay outputs type RT 3A (2), - 2 buttons (teach, parameter setting) - 6 indicating LEDs (power ON, function modes, output status, signal strength)</td>
<td>XB5RMA04</td>
<td>0.250/0.551</td>
</tr>
<tr>
<td>mounted in a handy box</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 1 set of 10 different colored caps (1 cap to be selected and fitted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton + Ø 22 mm/0.866 in. plastic head</td>
<td></td>
<td>≈ 24...240</td>
<td>Non-configurable receiver equipped with monostable output function: - 1 relay output type RT 3A - without button - without indicating LED</td>
<td>XB5RFB01</td>
<td>0.230/0.507</td>
</tr>
<tr>
<td>mounted in a handy box</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 1 Black cap not fitted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton + Ø 22 mm/0.866 in. plastic head</td>
<td></td>
<td>≈ 24...240</td>
<td>Non-configurable receiver equipped with monostable output function: - 1 relay output type RT 3A - without button - without indicating LED</td>
<td>XB5RMB03</td>
<td>0.250/0.557</td>
</tr>
<tr>
<td>mounted in a handy box</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+ 1 Black cap not fitted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Wireless and batteryless pushbutton and the receiver are factory-paired.

(2) Receivers supplied are set to monostable output function. The user can configure it to bistable and stop/start functions.

(3) Supplied with a magnet to be stuck on by the customer.
## Transmitter components for wireless and batteryless pushbuttons

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of push</th>
<th>Color</th>
<th>Reference</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmitter for wireless and batteryless pushbutton</td>
<td>1 radio frame sent at the push of the button</td>
<td>ZBRT1</td>
<td>0.025/0.055</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 radio frame sent at the release of the button</td>
<td>ZBRT2 (5)</td>
<td>0.025/0.055</td>
<td></td>
</tr>
<tr>
<td>Spring return pushbutton heads for transmitter ZBRT1</td>
<td>Flush (plastic) Without cap (3)</td>
<td>ZB5RZA0</td>
<td>0.015/0.033</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flush (metal) Without cap (3)</td>
<td>ZB4RZA0</td>
<td>0.030/0.066</td>
<td></td>
</tr>
<tr>
<td>Spring return mushroom head for transmitter ZBRT1</td>
<td>Mushroom 40 mm/1.58 in. (plastic) Black</td>
<td>ZB5RZC2</td>
<td>0.025/0.055</td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbutton including:</td>
<td>Mushroom 40 mm/1.58 in. (plastic) Black</td>
<td>ZB5RTC2</td>
<td>0.055/0.121</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- a transmitter fitted with fixing collar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- a spring return mushroom head</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless and batteryless pushbuttons including:</td>
<td>Flush (plastic) White</td>
<td>ZB5RTA1</td>
<td>0.045/0.099</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black</td>
<td>ZB5RTA2</td>
<td>0.045/0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green</td>
<td>ZB5RTA3</td>
<td>0.045/0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White I on Green background</td>
<td>ZB5RTA331</td>
<td>0.045/0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red</td>
<td>ZB5RTA4</td>
<td>0.045/0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White O on Red background</td>
<td>ZB5RTA432</td>
<td>0.045/0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yellow</td>
<td>ZB5RTA5</td>
<td>0.045/0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blue</td>
<td>ZB5RTA6</td>
<td>0.045/0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flush (metal) White</td>
<td>ZB4RTA1</td>
<td>0.085/0.187</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black</td>
<td>ZB4RTA2</td>
<td>0.085/0.187</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Green</td>
<td>ZB4RTA3</td>
<td>0.085/0.187</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White I on Green background</td>
<td>ZB4RTA331</td>
<td>0.085/0.187</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Red</td>
<td>ZB4RTA4</td>
<td>0.085/0.187</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White O on Red background</td>
<td>ZB4RTA432</td>
<td>0.085/0.187</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yellow</td>
<td>ZB4RTA5</td>
<td>0.085/0.187</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blue</td>
<td>ZB4RTA6</td>
<td>0.085/0.187</td>
</tr>
</tbody>
</table>

## Transmitter components for wireless and batteryless rope pull switch

<table>
<thead>
<tr>
<th>Description</th>
<th>Application</th>
<th>Reference</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rope pull switch with wireless and batteryless transmitter</td>
<td>For automatic doors: The rope pull switch sends a radio message to the receiver placed in the control panel to open and close the door.</td>
<td>ZBRP1</td>
<td>0.150/0.331</td>
</tr>
</tbody>
</table>

---

(1) Fixing collar ZB5AZ009 (plastic) or ZB4BZ009 (metal) to be ordered separately.
(2) Only heads ZB4RZA0 and ZB5RZA0 are mechanically compatible.
(3) Cap to be ordered separately. Refer to the “Accessories” table on page 2/7.
(4) This cap is fitted by Schneider Electric and cannot be removed (risk of damage).
(5) This transmitter is only compatible with receiver ZBRP version ≥ 2.0, relay antenna ZBRA1 version ≥ 2.0 and access point ZBRN version > 1.2.
Control and signaling units Ø 22
Harmony XB5R plastic and XB4R metal
Wireless and batteryless pushbuttons

Configurable receivers

<table>
<thead>
<tr>
<th>Description</th>
<th>Output function</th>
<th>Output type</th>
<th>Receiver voltage V</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configurable receivers (1) equipped with:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 2 buttons (teach and parameter setting)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 6 indicating LEDs (power ON, function modes, output status, signal strength)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monostable</td>
<td>4 PNP outputs, 200 mA / 24 V</td>
<td>24</td>
<td>ZBRRC</td>
<td>0.130/0.287</td>
<td></td>
</tr>
<tr>
<td>Monostable, Bistable</td>
<td>2 relay outputs type RT 3A (2)</td>
<td>24...240</td>
<td>ZBRRD</td>
<td>0.130/0.287</td>
<td></td>
</tr>
<tr>
<td>Monostable, Bistable, Stop/Start</td>
<td>2 relay outputs type RT 3A (2)</td>
<td>24...240</td>
<td>ZBRA</td>
<td>0.130/0.287</td>
<td></td>
</tr>
</tbody>
</table>

Accessories

Caps for Harmony pushbutton heads ZB5RZA0 and ZB4RZA0

Sets of 10 different colored caps with identical marking (3)
- White
- "I" (Black)
- "+" (Black)
- "I" (White)
- "O" (White)
- "O" (White)
- "I" (White)
- "O" (White)
- "I" (White)
- "O" (White)

Sets of 6 different colored caps
- White, Black, Green, Red, Yellow, Blue
- "I" on Green background
- Black "I" on White background
- White "O" on Red background
- White "O" on Black background

Boxes for wireless and batteryless pushbuttons

<table>
<thead>
<tr>
<th>Product</th>
<th>Application</th>
<th>Description</th>
<th>Sold in lots of</th>
<th>Unit reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile box, plastic empty (4) (8)</td>
<td>For mobile and fix applications</td>
<td>1 cut-out</td>
<td>1</td>
<td>ZBRM21</td>
<td>0.109/0.240</td>
</tr>
<tr>
<td></td>
<td>with wireless and batteryless pushbuttons</td>
<td>2 cut-outs</td>
<td>1</td>
<td>ZBRM22</td>
<td>0.110/0.243</td>
</tr>
<tr>
<td></td>
<td>Support for tube or wall specific for</td>
<td>-</td>
<td>1</td>
<td>ZBRACS</td>
<td>0.064/0.141</td>
</tr>
<tr>
<td></td>
<td>ZBRM21 and ZBRM22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handy box, plastic empty (4) (5) (8)</td>
<td>For mobile wireless and</td>
<td>1 cut-out</td>
<td>1</td>
<td>ZBRM01</td>
<td>0.040/0.089</td>
</tr>
<tr>
<td></td>
<td>batteryless pushbuttons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empty plastic boxes for</td>
<td>For fixed or on-board wireless and</td>
<td>1 cut-out</td>
<td>1</td>
<td>XALD01</td>
<td>0.136/0.300</td>
</tr>
<tr>
<td>wireless and batteryless</td>
<td>batteryless pushbuttons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pushbuttons (6)</td>
<td></td>
<td></td>
<td>2</td>
<td>XALD02</td>
<td>0.193/0.426</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relay-antenna (7)</td>
<td>Between transmitter and receiver</td>
<td>1 cut-out</td>
<td>1</td>
<td>ZBRA1</td>
<td>0.200/0.441</td>
</tr>
<tr>
<td></td>
<td>Used to increase the range</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>and/or get round obstacles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixing collar (7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legend plate, 27 x 8 mm/1.06 x 0.32 in., for engraving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For sticking onto handy box</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZBRM01, ZBRM21 and ZBRM22</td>
<td></td>
<td>1</td>
<td>ZBY0101T</td>
<td>0.005/0.011</td>
</tr>
</tbody>
</table>

(1) Each receiver can be actuated by up to 32 transmitters.
(2) Receivers supplied are set to monostable output function. The user can configure it to bistable and stop/start functions.
(3) Cap can be clipped in at 90° steps, through 360°.
(4) Cannot be used for wired contacts (no cable gland outlet)
(5) Supplied with a magnet to be stuck on by the customer.
(6) Box equipped with cable gland outlets, compatible with Harmony ZBS pushbutton heads.
(7) Not wired to the receiver.
(8) Compatible with ZBRT1 and ZBRT2.
Contents

XB5R and XB4R wireless and batteryless pushbuttons for explosive atmospheres

- Presentation
  - Explosive atmosphere and ignition sources .................................................. page 3/2
  - ATEX categories and zones .............................................................................. page 3/2
  - ATEX certification ............................................................................................... page 3/3
  - Marking example on transmitters for GAS zone ............................................... page 3/3
  - Environment ........................................................................................................ page 3/3

- Description
  - ATEX transmitters and receivers in DUST zone ............................................. page 1/6
  - ATEX transmitters and receivers in GAS zone ................................................ page 3/4

- References
  - Transmitter components for wireless and batteryless pushbuttons ................ page 3/5
  - Transmitter components for wireless and batteryless rope pull switch ............... page 3/5
  - Handy boxes for wireless and batteryless pushbuttons ................................. page 3/5
  - Plastic boxes for wireless and batteryless pushbuttons .................................... page 3/5
  - Accessories ......................................................................................................... page 3/5
Control and signaling units Ø 22
Harmony XB5R plastic and XB4R metal for explosive atmospheres
Wireless and batteryless pushbuttons

Presentation
The Harmony ATEX range of wireless and batteryless pushbuttons are designed for industries where explosive atmospheres can be present. This range can be ideally used for environments where the generation of possible ignition sources can be prevented and controlled.

XB5R IECEx is certified for:
- Dust applications (Group III, D mode) for zone 21 and zone 22
- Gas applications (Group II, G mode) for zone 1 and zone 2
- Mining applications (Group I) for equipment category Mb

Explosive atmosphere and ignition sources
According to the ATEX directive, a potentially explosive atmosphere is the mixture of air with flammable substances in the form of gas, vapor, and/or dust, that when exposed to an ignition source under normal atmospheric conditions can completely or partially catch fire and explode.

The types of ignition sources that can create an explosive atmosphere are:
- Hot surfaces
- Flames and hot gases
- Mechanically produced sparks
- Electrical equipment
- Transient currents
- Static electricity
- Lightning strikes
- Electromagnetic waves
- Optical radiation
- Ultrasound
- Chemical reactions
- People (indirectly)

Explosive atmospheres are found in areas like:
- Metal surface grinding, especially aluminum dust and particles
- Oil refineries, rigs and processing plants
- Gas pipelines and distribution centers
- Printing industries, paper and textiles
- Aircraft refueling and hangars
- Chemical processing plants
- Grain handling and storage
- Sewage treatment plants
- Surface coating industries
- Underground coal mines
- Wood working areas
- Sugar refineries
- Vessels/ships
- Power plants

ATEX categories and zones
Depending on the presence of flammable materials, explosive atmospheres are classified into the following categories and zones:

<table>
<thead>
<tr>
<th>Category</th>
<th>Group</th>
<th>Level of protection</th>
<th>Zones</th>
<th>Hazardous quantities</th>
<th>Extent of protective measure (Risk)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>Ma</td>
<td>I</td>
<td>Very high</td>
<td>N/A</td>
<td>Without specific methane concentration</td>
</tr>
<tr>
<td></td>
<td>Mb</td>
<td>High</td>
<td>With specific methane concentration</td>
<td>Safe with 1 fault, foreseen</td>
<td></td>
</tr>
<tr>
<td>Gas</td>
<td>Ga</td>
<td>II</td>
<td>Very high</td>
<td>0</td>
<td>Occasionally</td>
</tr>
<tr>
<td></td>
<td>GB</td>
<td>High</td>
<td>1</td>
<td>Occasionally</td>
<td>Safe with 1 fault, foreseen</td>
</tr>
<tr>
<td></td>
<td>Gc</td>
<td>Enhanced</td>
<td>2</td>
<td>Rear/most likely never</td>
<td>Normal</td>
</tr>
<tr>
<td>Dust</td>
<td>Da</td>
<td>III</td>
<td>Very high</td>
<td>20</td>
<td>Occasionally</td>
</tr>
<tr>
<td></td>
<td>Db</td>
<td>High</td>
<td>21</td>
<td>Occasionally</td>
<td>Safe with 1 fault, foreseen</td>
</tr>
<tr>
<td></td>
<td>Dc</td>
<td>Enhanced</td>
<td>22</td>
<td>Rear/most likely never</td>
<td>Normal</td>
</tr>
</tbody>
</table>

Note: In the table, the highlighted rows in green are the targeted areas for the XB5R ATEX offer.
Control and signaling units Ø 22
Harmony XB5R plastic and XB4R metal for explosive atmospheres
Wireless and batteryless pushbuttons

**Presentation (continued)**

**ATEX certification**

ATEX IECEx certification has a detailed procedure for testing and inspecting the equipment made for use in potentially hazardous areas. The results obtained after this procedure enable an ATEX certificate to be issued, together with a report confirming and demonstrating that the product can be used safely in potentially explosive atmospheres (in line with the given parameters).

- Based on this certification procedure, the XB5R wireless and batteryless pushbuttons are ATEX certified with the following standards:
  - EN 60079-0: 2009
  - EN 60079-11: 2012

- Certificate numbers are:
  - IECEx INE 12.0041 for transmitters ZBMR01EX, ZBM01BEX, XAWGR100EX, XAWGR200EX, XAWGR300EX, ZB5RTA0EX, and ZBRP1EX
  - IECEx INE 12.0054 for relay antenna ZBRA10EX

**Marking example on transmitters for GAS zone**

<table>
<thead>
<tr>
<th>IECEx INE 12.0041</th>
<th>Ineris certified, following EN60079-0:2009, EN60079-11:2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ib</td>
<td>Protection method</td>
</tr>
<tr>
<td>IIC</td>
<td>Gas, C for acetylene, hydrogen</td>
</tr>
<tr>
<td>T6</td>
<td>Temperature class</td>
</tr>
<tr>
<td>Gb</td>
<td>EPL, Gas high</td>
</tr>
</tbody>
</table>

**Environment**

The performance features of the XB5R range also conforms to the following specifications:

- ATEX certified for IECEx
- International standards and approvals:
  - Wireless and batteryless pushbuttons: EN/IEC 60947-1, EN/IEC 60947-5-1, UL 508, CSA C22.2 N° 14
- International certifications: UL, CSA, C-Tick, GOST, CCC
- Radio agreements: ANATEL (Brazil), SRRC (China), FCC (USA), RSS (Canada), ICASA (South Africa), ARIB T66 (Japan)
Control and signaling units Ø 22
Harmony XB5R plastic and XB4R metal for explosive atmospheres
Wireless and batteryless pushbuttons

Description

ATEX transmitters and receivers in DUST zone (Group III, D mode)
In the dust zone (zone 21 and zone 22), the receiver can be placed inside or outside the zone as per the requirement. Any one of the two available antennas (ZBRA1EX and ZBRA1DEX) can be used to improve radio transmission to the receiver that is placed in a plastic or metal cabinet.

In Figure C, the transmitters, relay antennas, and receiver are all placed in the dust zone. The receiver must be placed in an ATEX certified plastic or metal cabinet which provides protection against explosion.

In Figure D, the transmitters and the relay antennas are placed in the dust zone. The receiver is placed outside the dust zone in a standard plastic or metal cabinet.

ATEX transmitters and receivers in GAS zone (Group II, G mode)
In the gas zone (zone 1 and zone 2), the receiver can be placed inside or outside the zone as per the requirement. Only ZBRA1EX relay antenna must be used to improve radio transmission to the receiver that is placed in a plastic or metal cabinet.

In Figure E, the transmitters, relay antenna and receiver are all placed in the gas zone. The receiver must be placed only in an ATEX certified metal cabinet which provides protection against explosion.

In Figure F, the transmitters and the relay antenna are placed in the gas zone. The receiver is placed outside the gas zone in a standard plastic or metal cabinet.
## Transmitter components for wireless and batteryless pushbuttons

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of category and group</th>
<th>Type of push</th>
<th>Cap</th>
<th>Reference (1)</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring return pushbutton equipped with transmitter and fixing collar for hazardous locations.</td>
<td>Mining Ex ib I Mb Gas Ex ib IIC T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>Flush (plastic)</td>
<td>Without cap</td>
<td>ZB5RTA0EX</td>
<td>0.043/0.095</td>
</tr>
<tr>
<td></td>
<td>Mining Ex ib I Mb Gas Ex ib IIC T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>Flush (metal)</td>
<td>Without cap</td>
<td>ZB4RTA0EX</td>
<td>0.083/0.183</td>
</tr>
</tbody>
</table>

## Transmitter components for wireless and batteryless rope pull switch

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of category and group</th>
<th>Type of push</th>
<th>Reference (1) (2)</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rope pull switch for hazardous locations.</td>
<td>Mining Ex ib I Mb Gas Ex ib IIC T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>Plastic</td>
<td>ZBRP1EX</td>
<td>0.140/0.309</td>
</tr>
</tbody>
</table>

## Handy boxes for wireless and batteryless pushbuttons

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of category and group</th>
<th>Type and number of pushbuttons</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Handy box equipped with wireless and batteryless pushbutton, fixing collar, and 1 set of six different colored caps.</td>
<td>Mining Ex ib I Mb Gas Ex ib IIC T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>1 spring return pushbutton with leather protection</td>
<td>ZBROM01EX</td>
<td>0.150/0.331</td>
</tr>
<tr>
<td></td>
<td>Mining Ex ib I Mb Gas Ex ib IIB T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>1 spring return pushbutton</td>
<td>ZBROM01BEX</td>
<td>0.100/0.220</td>
</tr>
</tbody>
</table>

## Plastic boxes for wireless and batteryless pushbuttons

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of category and group</th>
<th>Number of pushbuttons</th>
<th>Reference</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic box equipped with wireless and batteryless pushbutton and 1 set of six different colored caps. Used with fixed wireless and batteryless pushbutton.</td>
<td>Mining Ex ib I Mb Gas Ex ib IIC T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>1 plastic spring return pushbutton</td>
<td>XAWGR100EX</td>
<td>0.500/1.102</td>
</tr>
<tr>
<td></td>
<td>Mining Ex ib I Mb Gas Ex ib IIC T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>2 plastic spring return pushbuttons</td>
<td>XAWGR200EX</td>
<td>0.550/1.213</td>
</tr>
<tr>
<td></td>
<td>Mining Ex ib I Mb Gas Ex ib IIC T6 Gb Dust Ex ib IIIC T85°C Db IP65</td>
<td>3 plastic spring return pushbuttons</td>
<td>XAWGR300EX</td>
<td>0.700/1.543</td>
</tr>
</tbody>
</table>

## Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Type of category and group</th>
<th>Function</th>
<th>Reference (3)</th>
<th>Weight kg/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relay antenna equipped with 24...240V connector, 1 power-on LED, and 2 LEDs for reception/transmission in hazardous locations.</td>
<td>Gas Ex d IIC T6 Gb Dust Ex lb IIIC T85°C Db IP65</td>
<td>Placed between transmitter and receiver Used to increase the range and/ or get around an obstacle</td>
<td>ZBRA1EX</td>
<td>3.100/6.834</td>
</tr>
<tr>
<td></td>
<td>Dust Ex lb IIIC T85°C Db IP65</td>
<td>Placed between transmitter and receiver Used to increase the range and/ or get around an obstacle</td>
<td>ZBRA1DEX</td>
<td>1.000/2.205</td>
</tr>
</tbody>
</table>

(1) For the list of receivers that can be used with the transmitters, see “Configurable receivers” table on page 2/7.
(2) For the list of access points that can be used with the transmitters, see “Configurable access points” table on page 4/3.
(3) ZBRA1EX will be IECEx certified by 2nd quarter 2013.
Contents

Control and signaling units Ø 22
Wireless and batteryless pushbuttons
Harmony XB5R and XB4R

ZBRN1 and ZBRN2 access points
- Presentation ................................................................. page 4/2
- Description ................................................................. page 4/2
- References
  - Configurable access points........................................ page 4/3
  - Communication module........................................... page 4/3
  - Accessories ............................................................ page 4/3
Control and signaling units Ø 22
Harmony XB5R plastic and XB4R metal
ZBRN1 and ZBRN2 access points for wireless and batteryless pushbuttons

Presentation
The access point of Harmony wireless and batteryless range provides network connectivity openness by operating as an intermediate equipment between the transmitter and the PLC (Programmable Logic Controller). The access point receives radio signals from the transmitters and converts them to communication protocols. Based on the model, it is connected to the PLC using either RS485 Modbus Serial line or Modbus/TCP protocol.

The access point can be used with transmitters such as XB4R and XB5R wireless and batteryless pushbuttons, rope pull switch, mushroom head pushbutton (1), and all PLCs that support Modbus Serial line over RS485 or Modbus/TCP protocols.

Depending on the application, an external or a relay antenna can be used to improve signal reception. An access point can support up to 60 radio transmitters.

The Access point can be configured:
- through jog dial and 7-segment display (configuration and diagnostic modes),
- through web pages for ZBRN1 (Modbus/TCP communication module),
- through SoMachine, Unity Pro software, or third party FDT container using DTM (Device Type Manager) files (2) (3),
- through SD card and csv files for communication and radio configuration.

The possible distance (4) between a transmitter and an access point is approximately:
- 100 m/328 ft if there are no obstacles,
- 25 m/82 ft if the access point is installed in a metal housing or in a closed metal enclosure,
- 300 m/984 ft if a relay-antenna is located between the transmitter and the access point (installed in a metal housing or in a closed metal enclosure),
- 60 m/197 ft if an external antenna is connected to the access point.

Description
Standard access point with communication module (see figure B)
The 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 an external switch or hub.

1. ZBRN1 standard access point (5)
2. ZBRN1 instruction sheet
3. ZBRCETH Modbus/TCP network communication module
4. ZBRCETH instruction sheet

(1) Please refer to the References table on Page 2/6 for the compatible list of transmitters.
(2) For more information on SoMachine and Unity Pro software, please refer to our website www.schneider-electric.com.
(3) DTM is a software component file that enables the SoMachine or Unity Pro software to communicate with the connected system.
(4) Typical values which can be affected by the application environment.
(5) ZBRN1 must be plugged with a communication module, reference ZBRCETH for Modbus/TCP protocol.
Control and signaling units Ø 22
Harmony XB5R plastic and XB4R metal
ZBRN1 and ZBRN2 access points for wireless and batteryless pushbuttons

Description
Access point for Modbus serial line protocol (see figure C)
The access point ZBRN2 has 2 embedded RS485 connectors that avoid the use of an external hub for RS485 Serial line connection. The supported bps are 1200 bps, 2400 bps, 4800 bps, 9200 bps, 9600 bps, 38,400 bps, and 115,200 bps.

1 ZBRN2 access point
2 ZBRN2 instruction sheet

Configurable access points
<table>
<thead>
<tr>
<th>Description</th>
<th>Data function</th>
<th>Output type</th>
<th>Receiver (min...max) V</th>
<th>Reference</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configurable access points equipped with:</td>
<td></td>
<td></td>
<td></td>
<td>ZBRN2</td>
<td>0.270/0.595</td>
</tr>
<tr>
<td>- 7-segment display</td>
<td></td>
<td></td>
<td>2 RS485 (adjustable from 100 ms to 1 s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- jog dial</td>
<td></td>
<td></td>
<td>connectivity for</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 8 indicating LEDs (power ON, functions mode, communication status, signal strength)</td>
<td></td>
<td></td>
<td>Modbus RS485 Serial line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- external antenna connector and protective plug</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Communications module
<table>
<thead>
<tr>
<th>Description</th>
<th>Characteristics</th>
<th>Communication port</th>
<th>Reference</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modbus/TCP network communication module</td>
<td>Modbus/TCP protocol with embedded Web pages in 5 languages for configuration, monitoring and diagnostics</td>
<td>2 RJ45 connectors that provides connectivity for daisy chain and daisy chain loop operation</td>
<td>ZBRCETH</td>
<td>0.044/0.097</td>
</tr>
</tbody>
</table>

Accessories
<table>
<thead>
<tr>
<th>Product</th>
<th>Application</th>
<th>Description</th>
<th>Reference</th>
<th>Weight (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External antenna</td>
<td></td>
<td></td>
<td>ZBRA2</td>
<td>0.040/0.088</td>
</tr>
</tbody>
</table>

Note: The ZBRN2 has embedded communication port for Modbus Serial Line, where as ZBRN1 must be plugged with a communication module to support different protocols.
Control and signaling units Ø 22
Wireless and batteryless pushbuttons
Harmony XB5R and XB4R

Product reference index

Product reference index........................................................................................................ page 5/2
<table>
<thead>
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<th>Index</th>
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