



**DESCRIPTION**

XTR-8LR-REP is an half duplex repeater based on LoRa™ modulation providing an ultra long range communication, high interference immunity , very high sensitivity and low current consumption.

The repeater XTR-8LR-REP allows to enlarge the RF radio coverage between the Aurel XTR-8LR-4ZN or XTR-8LR-SOS keyfob (or XTR-8LR-ENC encoder) and the paired XTR-8LR-DEC decoder.

85 - 264VAC power supply, IP55 enclosure and integrated antenna.

The device embeds a supercapacitor for temporary power supply backup in case the primary power fails.

**OPERATION**

The XTR-8LR-REP repeats the packets received from Aurel XTR-8LR-4ZN and XTR-8LR-SOS keyfobs or Aurel XTR-8LR-ENC encoders.

In TRANSPARENT MODE (see "INSTALL THE XTR-8LR-REP" section below) it repeats packets received from all Aurel keyfobs (or encoders), in LEARN MODE it repeats only the packets received from learned keyfobs or encoders (see "LEARN PROCEDURE" section below).

XTR-8LR-REP repeats the received packets with the following timing:

1. XTR-8LR-4ZN keyfob or encoder in "Without retry mode": 500msec after the last received packet. This means that, if the user maintains the button pressed on the keyfob, the XTR-8LR-REP doesn't repeat any packet. When the user releases the button the keyfob stops transmitting and, after 500msec, the XTR-8LR-REP repeats the last received packet. For this reason it is suggested to have brief button pressures on the keyfob.
2. XTR-8LR-SOS keyfob or Encoder in "With retry mode" : immediately after a received packet. Note: the system works properly only with XTR-8LR-ENC firmware version 1.9 or later.

To reach the decoder a keyfob can use more than one XTR-8LR-REP as relay (see Figure 1) obtaining a multi-hop communication.

Figure 1 shows a schematic flow of packets in an example of installation with two hops (XTR-8LR-REP) between the keyfob and the decoder:

- the keyfob transmits a stream of packets during the button pressure. When the user releases the button the keyfob transmits the last packet (Packet#1) and it stops transmitting;
- the XTR-8LR-REP #1 repeats Packet #1 : it transmits the Packet #2 identical to the Packet #1. This packet is received by the keyfob and by the XTR-8LR-REP #2;
- the XTR-8LR-REP #2 receives the Packet #2 and repeats it : it transmits the Packet #3 identical to the Packet #1. This packet is received by the XTR-8LR-DEC and by the XTR-8LR-REP #1;
- the keyfob uses the Packet #2 as acknowledge packet;
- the XTR-8LR-DEC receives the Packet #3, activates the output and transmits the acknowledge packet (Packet #4) that is received by the XTR-8LR-REP #2;
- XTR-8LR-REP #1 doesn't repeat the Packet #3 (and in a similar way the XTR-8LR-REP #2 doesn't repeat the Packet #4) because that packets are identical to an already received packet by the repeater (respectively Packet #1 and Packet #2).

As you can see from the Figure 1 and related description, the keyfob only knows that the Packet#1 is received by the closer XTR-8LR-REP and it doesn't know if the command is really received (after one or more hop) by the XTR-8LR-DEC.

For this reason the keyfob never knows the status of the output on the decoder therefore it always shows the reception of the ack packet with the GREEN LED ON for 600msec even if the decoder output is set in bistable mode.

In a similar way the encoder always shows the reception of the ack packet with the ACK RECEIVED pin ON for 100msec (even if the decoder output is set in bistable mode and the output has been deactivated).

During the installation it is possible verify the RF link between the XTR-8LR-REP and another XTR-8LR-REP o the XTR-8LR-DEC (see "RADIO LINK TEST" section).

Note: the RF link test works properly only with XTR-8LR-DEC firmware version 1.9 or later.

**INSTALL THE XTR-8LR-REP**

**⚠ This symbol indicates a possibly dangerous situation**

**⚠ CAUTION: risk of injury by electric shock. A licensed electrician with knowledge and understanding electrician systems and electrical safety should complete the electrical installation.**

1. Turn the screws on the housing into position 0 (see Figure 2.1) and remove the cover.
2. Secure the housing on the wall using four screws (Ø4 mm max.), see figure 2.2. Make sure the screws are suitable for use with the given type of wall.
3. Shut off the main circuit breaker of the building for safety during the installation and ensure the wires are not short circuited during the installation.
4. Use a multicore cable with 2 cores of section from 1.5mmq to 2.5mmq. The maximum external dimension of the cable must be in the range 6 - 12mm.
5. Insert the multicore cable in the gland (see figure 2.2).
6. Insert each core of the cable on the 230VAC connector and tighten the screw (see figure 2.2). **⚠ ATTENTION: when carrying out installation work, always ensure that the connecting cable is not damaged or crushed.**
7. Select the mode of operation through the dip switch : if the dip switch is in ON position (see figure 2.3) the XTR-8LR-REP works in LEARN MODE, if the dip switch is in OFF position the device works in TRANSPARENT MODE.
8. Restore power at the main circuit breaker. **⚠ DANGER : touching live parts can result in an electrical shock.**
9. If the device works in LEARN MODE, save the keyfobs on the XTR-8LR-REP through the LEARN PROCEDURE (see section below).
10. Perform the Radio Link Test (see section below) to verify the RF link between the XTR-8LR-REP and another XTR-8LR-REP or XTR-8LR-DEC.
11. Replace the cover and turn the screws into position 1 (see Figure 2.1).

**LEARN PROCEDURE**

1. Press and release the LEARN BUTTON (see figure 2.3).
  2. The LEARN LED (see figure 2.3) blinks quickly for 10 seconds.
  3. Within this time press a push button on the keyfob : the LEARN LED stays on for 1 second to confirm the learning of the keyfob.
  4. Repeat the procedure from point 1 to 3 for all keyfobs you need to learn.
- Note: on the XTR-8LR-REP it is necessary to learn all the keyfobs learned on the decoder.  
Note : the learn procedure works only if the LEARN MODE is set.

**MEMORY ERASE PROCEDURE**

1. Press and release the LEARN BUTTON.
  2. The LEARN LED blinks quickly for 10 seconds.
  3. Within this time press the LEARN BUTTON again and maintain it pressed. The LEARN LED turns ON and, after 5 seconds, it turns OFF. At this time release the LEARN BUTTON.
  4. The LEARN LED blinks 5 times to confirm the memory erase.
- Note : the memory erase procedure works only if the LEARN MODE is set.

**RADIO LINK TEST**

Before performing the radio link test it is necessary to register on the XTR-8LR-REP a keyfob already learned on the decoder XTR-8LR-DEC:

1. Press and maintain pressed the TEST BUTTON (see figure 2.3).
2. After 5 seconds the TEST LED (see figure 2.3) starts blinking then release the TEST BUTTON.
3. During the TEST LED blinking (10 seconds) press a push button on a keyfob already learned on the decoder: the TEST LED stays on for 1 second to confirm the registration of the keyfob.

At this point it is possible to perform the link test between the XTR-8LR-REP and another XTR-8LR-REP or the decoder:

1. Press quickly the TEST BUTTON.
2. When the TEST BUTTON is released the TEST LED starts blinking.
3. If the RF link is OK the TEST LED stops blinking and stays ON for about 2 seconds. If the RF link is NOT OK the TEST LED continues to blink for about 3 seconds.

The technical features can change without forecasting. AUR°EL S.p.A doesn't assume any responsibility of damage due to the improper use of the device.

If in the installation there are more than one hop (XTR-8LR-REP) between the keyfob and the decoder it is suggested to start the installation from the XTR-8LR-REP closer to the decoder and proceed with the other XTR-8LR-REP.

With reference to Figure 1 proceed as follows:

1. Install the XTR-8LR-REP #2 closer to the decoder.
2. Perform the RF link test between the XTR-8LR-REP #2 and the decoder.
3. Install the XTR-8LR-REP #1 and perform the RF link test between the XTR-8LR-REP # 1 and the XTR-8LR-REP #2.
4. Test the link between the XTR-8LR-REP #1 and the keyfob pressing the button on the keyfob and verifying the reception of the ACK packet (green led ON for 600 msec).

**Technical characteristic**

| Characteristics                     | Min. | Typ.        | Max. | Unit |
|-------------------------------------|------|-------------|------|------|
| Power supply                        | 85   |             | 264  | VAC  |
| Average power consumption           |      | < 1         |      | W    |
| RF carrier frequency                |      | 868.3       |      | MHz  |
| European ISM Band                   |      | 868 - 868.6 |      | MHz  |
| Modulation                          |      | LoRa™       |      |      |
| ERP RF Power                        |      | 13          |      | dBm  |
| Sensitivity                         |      | -126        |      | dBm  |
| Operating time without power supply | 24   |             |      | h    |
| Box IP rating                       |      | IP 55       |      |      |

**Manufacturer's Declaration of Conformity EU**

Hereby, Aurel S.p.A. declares that the radio equipment type XTR-8LR-REP is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www.aurelwireless.com/declaration-of-conformity/>

The device operates at 868.3MHz (ISM frequency band 868.00 - 868.60 MHz) with maximum radiated power of 13dBm.

The device is a "Class 1" radio equipment as defined in article 1(1) of European Commission Decision No. 2000/299/EC of 06/04/2000. Class 1 radio equipments can be placed on the market and be put into service without restrictions on all EU member states.

**Recommendation CEPT 70-03**

The device operates in a harmonized frequency band and therefore, in order to comply with current regulations, the device must be used on the time scale with a maximum duty-cycle time of 1% (equivalent to 36 seconds usage on 60).

**WEEE Marking**

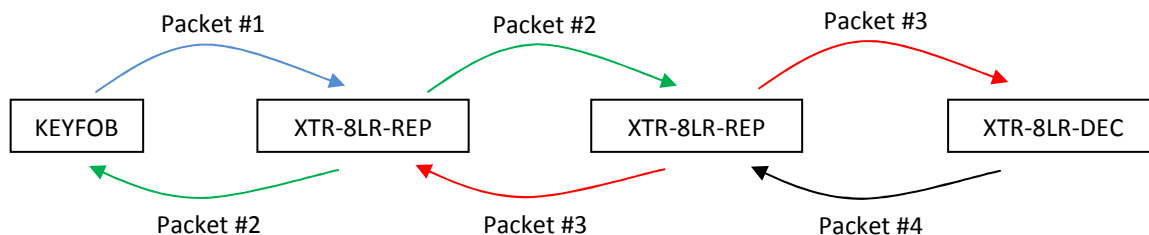
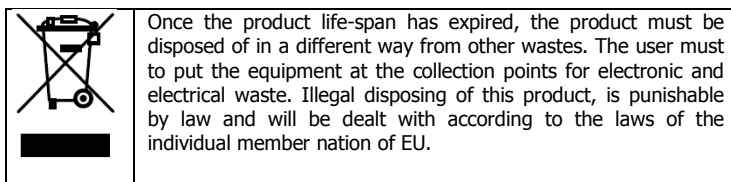


Figure 1

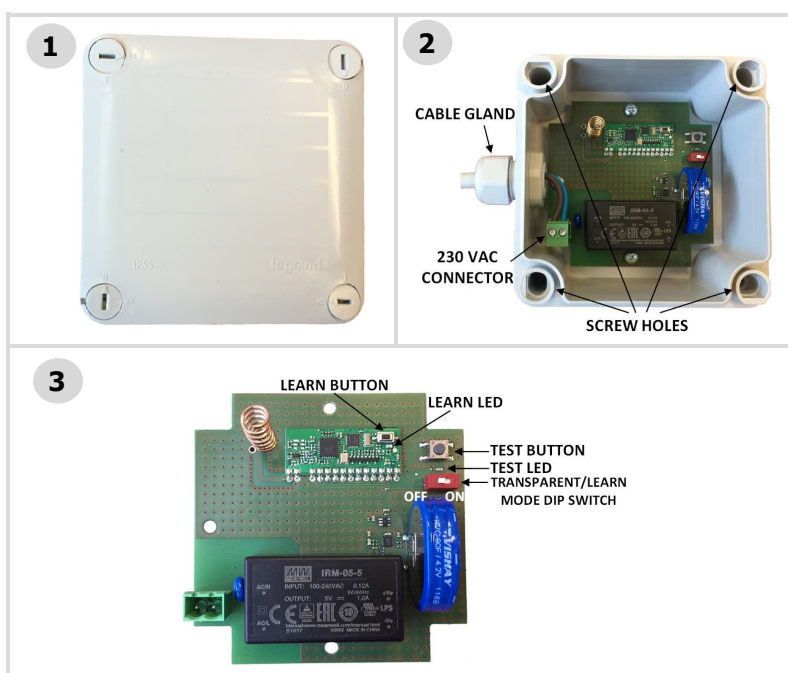


Figure 2

The technical features can change without forecasting. AUR°EL S.p.A doesn't assume any responsibility of damage due to the improper use of the device.