



Radio to radio repeater

airREPEATER





INSTRUCTIONS MANUAL

M98250601-03-16A



Safety Warnings & Symbols

<p>DANGER</p> 	<p>Death, serious injury, or fire hazard could result from improper connection of this equipment. Read and understand this manual before connecting the equipment. Follow all installation and operating instructions while using the instrument.</p> <p>Installation, operation, and maintenance of this instrument must be performed by qualified personnel only. The National Electrical Code defines a qualified person as “one who has the skills and knowledge related to the construction and operation of the electrical equipment and installations, and who has received safety training on the hazards involved.”</p> <p>Use always the required personal protective equipment</p>
--	---

<p>WARNING</p> 	<p>Read the instructions manual before using the equipment.</p> <p>If the instructions preceded by this symbol are not met or applied correctly, this can cause personal injury or equipment and / or facilities damage.</p>
---	--


Liability limitations

CIRCUTOR, SA reserves the right to make changes, without previous notice, to devices or specifications of equipment shown in this manual.

The term of the CIRCUTOR guarantee is two years from the date of purchase and is limited to refund of the purchase price, repair free of charge, or replacement of defective equipment that is returned to CIRCUTOR post-sales service within the term of the guarantee.

The latest versions of specifications and the most up to date manuals of this equipment are available to CIRCUTOR, SA customers on its web site: www.circutor.com.

Recommendations prior to use

	<p>In order to use the equipment safely, it is critical that individuals who handle it, follow the safety measures set out in the standards of the country where it is being used, use the necessary personal protection equipment, and pay attention to the various warnings set forth in this instruction manual.</p>
---	---

Before handling, modifying the connection or replacing the equipment, the power supply must be switched off, and the equipment disconnected.

It is important to use only the connection cables and accessories that are delivered along with the equipment. These products are specially designed for use with this apparatus and comply with current safety standards. Also, it is critical to keep the cables in perfect condition in order to avoid accidents, personal injury and damage to installations.

The manufacturer of the equipment is not responsible for any damages resulting from failure by the user or installer to heed the warnings and/or recommendations set out in this manual, nor for damages resulting from the use of non-original products or accessories or those made by other manufactures.

We recommend using only the original material delivered with the equipment in order to ensure the safety of individuals who handle it and the integrity of the equipment itself.

Inspect the work area before install. Do not use the device in dangerous areas or where there is a risk of explosion. Avoid using the device in wet areas.

TABLE OF CONTENTS

<i>Safety Warnings & Symbols</i>	3
<i>Liability limitations</i>	3
<i>Recommendations prior to use</i>	3
1 GENERAL OVERVIEW	5
1.1 INITIAL CHECK OVER	5
2 STANDARD COMPONENTS AAND ACCESORIES	5
3 GENERAL DEVICE CHARACTERISTICS	5
4 TECHNICAL FEATURES	5
5 DIMENSIONS	6
6 CARD LAYOUT AND CONNECTION DIAGRAM	7
7 ASSOCIATING THE DEVICE TO A COMPATIBLE NETWORK	7
8 DISASSOCIATING THE DEVICE FROM THE NETWORK	7
9 LED/PUSH-BUTTON INTERFACE	8
10 IN CASE OF MALFUNCTION	9

1 GENERAL OVERVIEW

1.1 INITIAL CHECK OVER

Upon receiving the equipment, check the following points:

- The equipment meets the specifications of your order
- It has not been damaged during shipping.
- The shipment includes the accessories requested from the manufacturer.

2 STANDARD COMPONENTS AAND ACCESORIES

With the device you should receive a compatible antenna.

3 GENERAL DEVICE CHARACTERISTICS

The **airREPEATER** is a radio to radio repeater which belongs to ZB-Connection devices family. It has the active function of maintaining radio traffic from and to other similar devices and it can also act as a parent device for battery-powered nodes of the same family. The device requires an AC power supply of 230Vac. See also the manual on ZigBee network Configuration (M98253901-40-13A)

4 TECHNICAL FEATURES

SUPPLY	
Rated voltage	110... 230 VCA, ($\pm 10\%$)
Frequency	50 /60 Hz ($\pm 5\%$)
Maximum current	20 mA
Consumption	4,6 VA
Installation Category	300V CATIII

COMMUNICATIONS	
Interface between	Radio to radio ; IEEE 802.15.4 compliant Stack EmberZnet 3.5.x (ZigBee PRO) Modbus/RTU
RF range	2405 MHz ÷ 2480 MHz
Modulation	DSSS
RF transmission power	10 dBm (10mW)
Receiver sensitivity	-97dBm
External antenna gain	5,5dB
Outdoor/indoor range	200m/50m

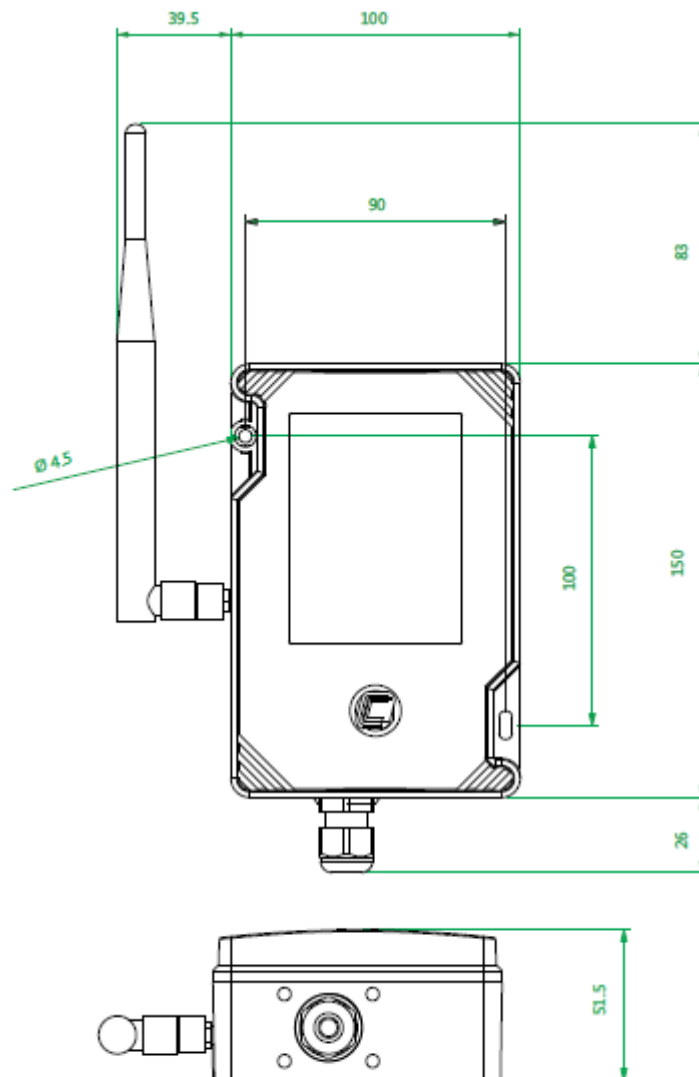
USER INTERFACE	
LED indicators	See paragraph 7

ENVIRONMENTFEATURES	
Working temperature (< 80% RH)	-10 ... 60 °C
Storage temperature (< 80% RH)	-20 ... 70 °C
Relative humidity (without condensation)	95 %
Maximum altitude (m)	2.000
Pollution resistance	Cat. II
Degree of protection	IP44


MECHANICAL FEATURES	
Weight	246 g
Materials	Polycarbonate
Dimensions (mm)	259 x 139,5 x 51,5
Wire (2m)	2 x 0,75 mm bipolar. CEI EN50075

STANDARDS	
General Legislation	2006/95 EEC (LV Directive) 99/5 EEC (R&TTE Directive) 2004/108 EEC (EMC Directive)
Electrical and radiation safety	EN 60950-1 (2006) +A11 (2009) EN 62479 – (2010)
Electromagnetic Compatibility	EN 61000-6-2 (2005) EN 61000-6-3 (2007)
Radio spectrum Matters (ERM)	ETSI EN 301 489-1 v1.8.1 ETSI EN 300 328 v1.7.1 ETSI EN 301 489-17 v1.2.1
Communications	IEEE 802.15.4 ZigBee , MiWi compatible

5 DIMENSIONS



6 CARD LAYOUT AND CONNECTION DIAGRAM

	<p>Equipment must be connected to external supply through a suitable overcurrent protective device</p>
---	--

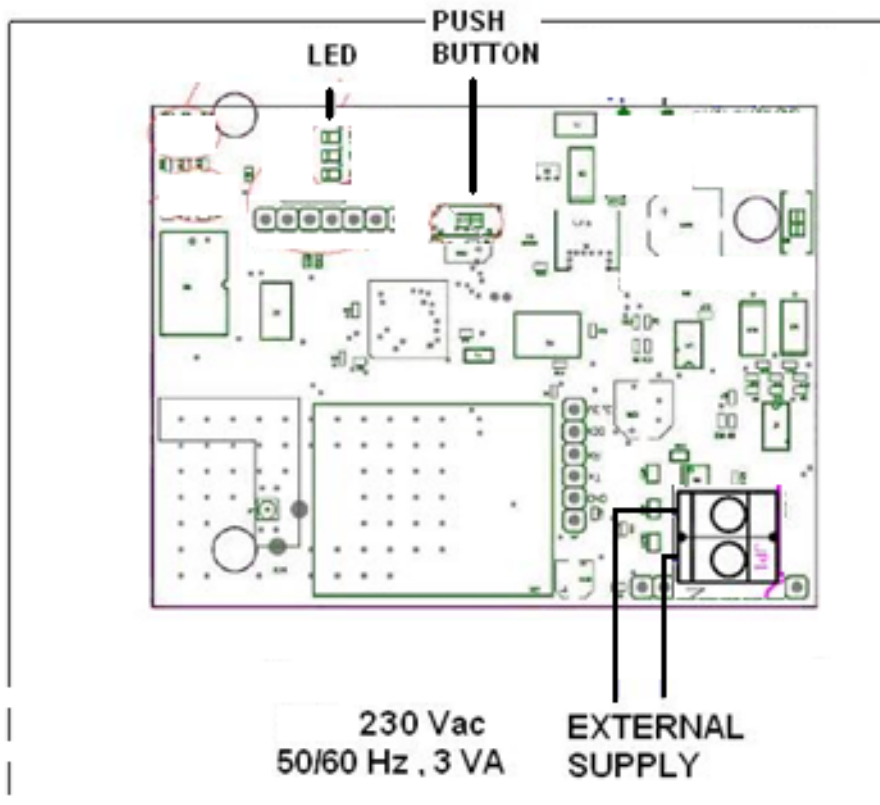


Fig. 6-1.- Card layout and supply diagram

7 ASSOCIATING THE DEVICE TO A COMPATIBLE NETWORK

The process to associate airREPEATER to a RF network is the usual in all ZB-bridge routers.

The association process is activated automatically by the device in case that the node does not have any network parameters assigned. This happens if the device is new in the network or if it has been voluntarily disassociated.

The association process consists of an automatic scanning of all the 16 radio channels, in search of an "open" and compatible network (ZB-Connection network). Scanning continues about 20 seconds. At the end of the scanning process if the association process finishes unsuccessfully the device resets and re-starts a new association process.

Network opening is performed by stimulating the Gateway (for further information, refer to the document relating to the Gateway).

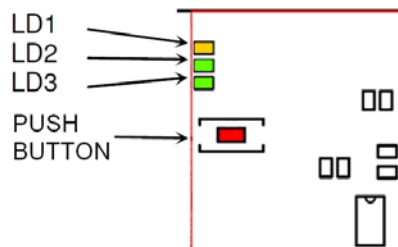
8 DISASSOCIATING THE DEVICE FROM THE NETWORK

Device disassociation causes the loss of network parameters, with the consequent exiting of the device from the network it belongs to. Disassociation can be done in two ways:

- Receipt of the appropriate command password.
- Holding the push button on the PCB for at least 6 seconds. Disassociation using the push-button is only possible 20 seconds after the device has been switched on.

9 LED/PUSH-BUTTON INTERFACE

The Repeater has three LED through which it is possible to obtain information on the device's operating state. Furthermore, the Repeater has a push-button which makes it possible to send commands to the device.



Behaviour of LED indicators at the start-up:

At the reset of the Repeater all LED indicators light for 2 seconds, then all flash fast for another 2 seconds and after the flashing the device starts the normal operation.

How do the LED indicators work when the Repeater is NOT ASSOCIATED to a network:

If the Repeater is not associated to a network, all LED light steady with a short flash every 20 seconds.

How do the LED indicators work when the Repeater is ASSOCIATED TO A NETWORK:

LD1 (yellow) : Working Status

Slow flashing (1Hz) -> Router LINKED (Closed)

Fast flashing (4Hz) -> Router NOT LINKED (Open)

LD2 (middle led, green): Radio Link

Turned off -> No Router with good link in the proximity

1 flash + pause -> One Router with good link in the proximity

2 flashes + pause -> Two Routers with good link in the proximity

3 flashes + pause -> Four or more Routers with good link in the proximity

LD3 (bottom LED, green): Radio Activity

Usually turned off

Short Flash on transmitting or receiving a radio message

10 IN CASE OF MALFUNCTION

In the event of questions or concerns regarding operation or malfunction of the device, notify **Technical Assistance Service (S.A.T.)** of **CIRCUTOR, SA**.

SPAIN	902 449 459
INTERNATIONAL	(+34) 93 745 29 00

Technical assistance Post-sales Department

Vial Sant Jordi, s/n –
08232 – Viladecavalls
Barcelona – Spain
e-mail: sat@circutor.es
Web: www.circutor.es