

END USER INSTRUCTIONS

Receivers:

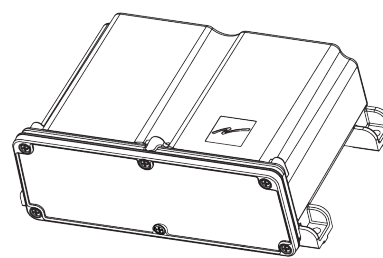
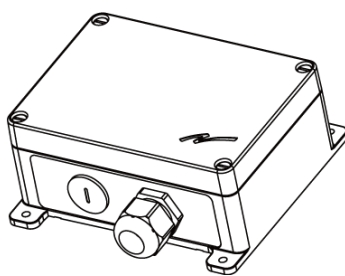
R23-01, R23-03

R23-02, R23-04

safe

smart

strong



IMPORTANT! This document is intended for R23 receivers with software version SW0028-09v09 or higher.

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CHAPTER 1: INTRODUCTION

Thank you for using a Tele Radio product



READ ALL INSTRUCTIONS AND WARNINGS CAREFULLY BEFORE OPERATING THE PRODUCTS.

These End user instructions have been published by Tele Radio and are not subject to any guarantees. The End user instructions may be withdrawn or revised by Tele Radio at any time and without further notice. Corrections and updates will be added to the latest version of the manual. Always download the End user instructions from our website, www.tele-radio.com, for the latest available version. Keep the safety instructions for future reference.

IMPORTANT! These instructions are intended for end users. The instructions can be printed and handed to end user.

Tele Radio remote controls are often built into wider applications. This documentation is not intended to replace the determination of suitability or reliability of the product for specific user applications and should not be used for this purpose. It is the responsibility of any such users or integrators to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use. Tele Radio shall not be responsible or liable for misuse of the information contained herein.

Always refer to the applicable local regulations for installation and safety requirements relating to cranes, hoists, material handling applications, lifting equipment, industrial machinery, and/or mobile hydraulic applications using Tele Radio products, e.g.:

- applicable local and industrial standards and requirements,
- applicable occupational health and safety regulations,
- applicable safety rules and procedures for the factory where the equipment is being used,
- user and safety manuals or instructions of the manufacturer of the equipment where Tele Radio remote control systems are installed.

Tele Radio End user instructions do not include or address the specific instructions and safety warnings of the end product manufacturer.

Tele Radio products are covered by a warranty against material, construction, or manufacturing faults. See "Chapter 7: Warranty, service, repairs, and maintenance".

1.1 About this document

Before installing or operating the product, read the corresponding documentation carefully.

Tele Radio's product range is composed of transmitters, receivers, and accessories intended for use together as a system.

These End user instructions cover general safety issues, main technical specifications, and standard operating instructions. Images shown in this document are for illustrative purposes only.

Please report any error or omission in this document, as well as any improvement or amendment suggestion to td@tele-radio.com.

1.1.1 COPYRIGHT

Information in this document is subject to change without notice. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, photographic, mechanical (including photocopying), recording or otherwise for any purpose other than the purchaser's personal use without the written permission of Tele Radio.

1.1.2 TERM AND SYMBOL DEFINITIONS

The capitalized terms and symbol used herein shall have the following meaning:

- **WARNING:** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION:** indicates a hazardous situation which, if not avoided, will result in minor or moderate injury.
- **IMPORTANT:** is used for information that requires special consideration.
- **NOTE:** is used to address practices not related to physical injury.



This symbol is used to call attention to safety messages that would be assigned the signal words "WARNING" or "CAUTION".

1.2 About R23 receivers

Tele Radio's remote control systems are suitable for a wide variety of applications for e.g. stationary or mobile equipments, hydraulic machines, construction, forestry or agriculture equipments and more. Tele Radio's transmitters and receivers are highly customizable and can be configured to suit the most wide-ranging application requirements & usage habits.

R23 receivers have simplex communication and can work in either discontinuous or continuous mode. There are eight models available:

	Casing type		Main board	Expansion boards			Bus system
	1 (yellow / black)	2 (black)	10 relays	5-relay	14- relays	DI	CAN/RS485
R23-01	●		●	○	○	○	○
R23-02		●	●	○	○	○	○
R23-03	●		●	●	○	○	○
R23-04		●	●	●	–	○	○

● Standard; ○ Optional¹; – Not possible

¹Must be purchased separately.

CHAPTER 2: SAFETY

2.1 Warnings & restrictions



Carefully read through the following safety instructions before proceeding with the installation, configuration, operation, or maintenance of the product. Failure to follow these warnings could result in death or serious injury.

This product must not be operated without having read and understood the End user instructions and having received the appropriate training. The purchaser of this product has been instructed how to handle the system safely. The following information is intended for use as a complement to applicable local regulations and standards.

IMPORTANT! Tele Radio remote controls are often built into wider applications.

These systems should be equipped with:

- a wired emergency stop where necessary
- a brake
- an audible or visual warning signal

2.1.1 OPERATION



This radio system must not be used in areas where there is a risk of explosion.



This equipment is not suitable for use in locations where children are likely to be present.



Only qualified personnel should be permitted to access the transmitter and operate the equipment.



- Always follow operating and maintenance instructions as well as all applicable safety procedures and requirements.
- Do not open the receiver encapsulation unless you are qualified.
- You must satisfy the age requirements in your country for operating the equipment.
- It is strictly prohibited to operate the equipment under the influence of drugs, alcohol and/or medications.
- Always test the transmitter stop button before operating it. Press the stop button then twist and pull it out. This test should be done on each shift, without a load.
- Never use a transmitter if the stop button is mechanically damaged. Contact your supervisor or representative for service immediately.
- Never leave the transmitter unattended.
- Always switch the transmitter off when not in use. Store in a safe place.
- Keep a clear view of the work area at all times.

2.1.2 MAINTENANCE



Before maintenance intervention on any remote controlled equipments:

- always remove all electrical power from the equipment.
 - always follow lockout procedures.
-
- Keep the safety information for future reference. Always download the End user instructions from our website, www.tele-radio.com, for the latest available version.
 - If error messages are shown, it is very important to find out what caused them. Contact your representative for help.
 - The functionality of the stop button should be tested at least after every 200 hours' use.
 - If the stop button is mechanically damaged, do not use the transmitter. Contact your supervisor or representative for service immediately.
 - Do not try to open the encapsulation.
 - Always contact your representative for service and maintenance work on the product.
 - Keep contacts and antennas clean.
 - Wipe off dust using a clean, slightly damp cloth.
 - Never use cleaning solutions.

- Check the encapsulation, foils and cable for damages every day. If you use the product although the encapsulation or foil is damaged, moisture can cause serious damage to the electronics.

CHAPTER 3: TECHNICAL DATA

3.1 Common specifications

Power supply	12–24 V AC/DC, 48–230 V AC, 50–60 Hz, max. 1 A
Number of stop relays	2 (potential free*, 10 A, 250 V AC)
Relay functionality	Momentary, latching, interlocking (programmable)
Radio type	Low IF topology
Radio frequency band	2405 – 2480 MHz
Frequency management	Direct Sequence Spread Spectrum (DSSS)
Number of Channels	16 (channel 11 – 26)
Radio communication	Simplex
Radio frequency output power	EIRP ¹ < 10 dBm (10 mW)
Max. number of registered transmitters	16
Antenna Standard Optional	Internal antenna External antenna
IP code	IP66
Operating temperature	-20...+55 °C / -4...+130 °F
Safety levels	EN ISO 13849-1 PLd CAT3 (stop function)

* Potential free means that a supply voltage is needed to get voltage out of a relay.

¹Equivalent isotropic radiated power

3.2 Other specifications

3.2.1 R23-01, R23-03 (HOUSING 1)

	R23-01	R23-03
Number of relays	10	15
	potential free ¹ , 10 A, 250 V AC	
Number of digital inputs	–	–
Number of digital outputs	2	5
Bus system	–	–
Connector	Cable gland M25 x 1.5 (PA66)	
Dimensions	176 x 160 x 75 mm / 6.9 x 6.3 x 3 in	
Weight (typical)	745 g / 1.64 lbs	832 g / 1.83 lbs

3.2.2 R23-02, R23-04 (HOUSING 2)

	R23-02	R23-04
Number of relays	10	15
	potential free, 10 A, 250 V AC	
Number of digital inputs	–	–
Number of digital outputs	2	5
Bus system	–	–
Connector	Customizable (e.g. Harting 10, 16 or 24 pin, or cable gland. Must be purchased separately).	
Dimensions	209 x 147 x 71 mm / 8.23 x 5.8 x 2.8 in	
Weight (typical)	919 g / 2.02 lbs	943 g / 2.08 lbs

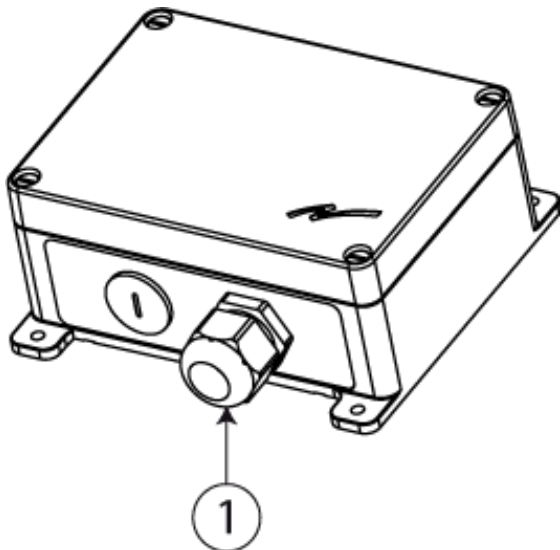
¹* Potential free means that a supply voltage is needed to get voltage out of a relay.

CHAPTER 4: PRODUCT GENERAL DESCRIPTION

The pictures shown in this chapter are for illustrative purposes only.

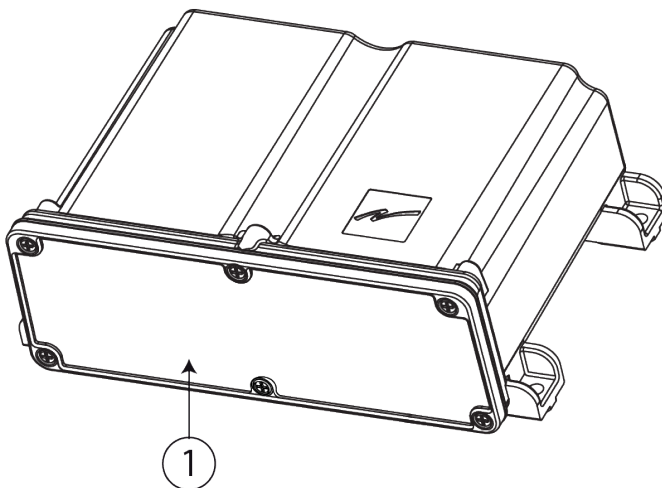
4.1 Receiver description

4.1.1 R23-01, R23-03 (HOUSING 1)



1. Power cable gland (M25x1.5)

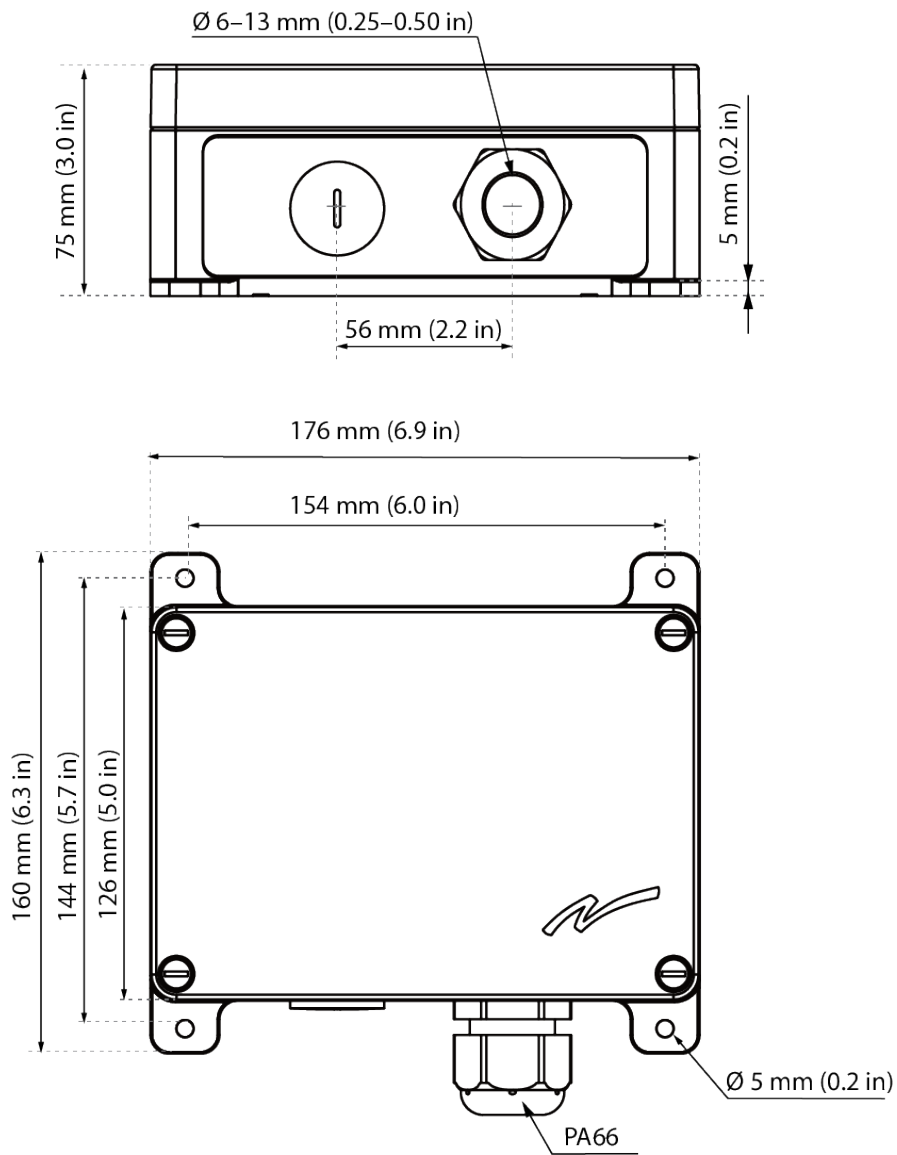
4.1.2 R23-02, R23-04 (HOUSING 2)



1. Customizable (e.g. Harting 10, 16 or 24 pin, or cable gland. Must be purchased separately).

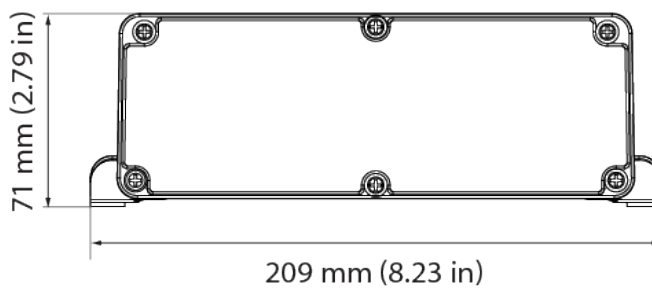
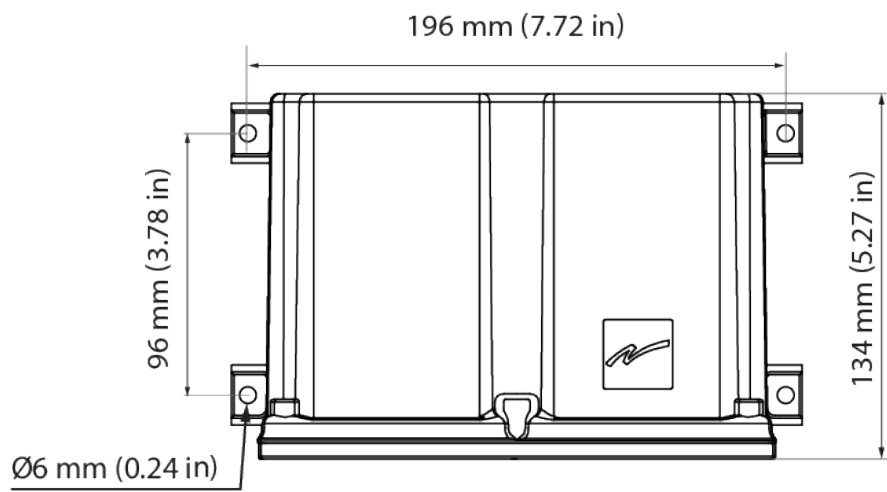
4.2 Mechanical installation

4.2.1 R23-01, R23-03 (HOUSING 1)



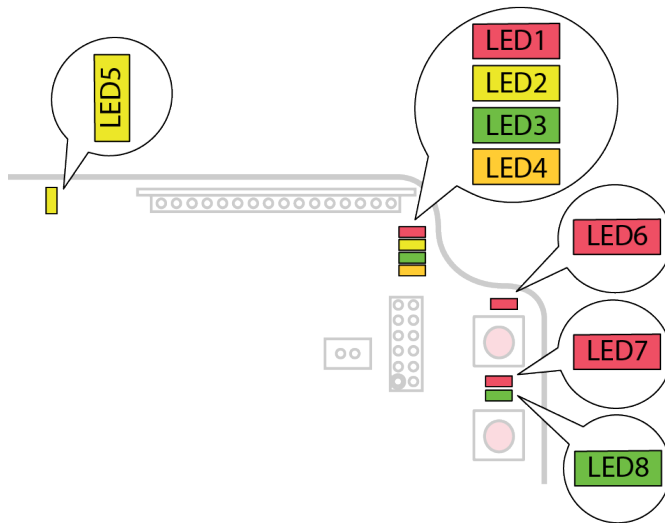
NOTE: For mounting on a wall or equipment, use 4 M5x30 mm screws or equivalent fastening method.

4.2.2 R23-02, R23-04 (HOUSING 2)



NOTE: For mounting on a wall or equipment, use 4 M5x30 mm screws or equivalent fastening method.

CHAPTER 5: STATUS AND ERROR INDICATIONS



5.1 Function LEDs indication in normal operation

LED	Color	Off	On	Flashing	Indicates
5	yellow	○			No power to the receiver
			●		Receiver is powered up
6	red		●		Not compliant with PLd
		○			Compliant with PLd
1	red	○			No transmitter is registered.
			●	Single flash	One or more transmitters are registered. No radio link.
			●	Double flash	One or more transmitters are registered and logged in. No radio link.
			●	Solid	Radio link established.
2	yellow		●		Receiving a radio packet from a transmitter other than a Panther.
2 3	yellow green		● ●		Receiving a radio packet from a transmitter set to a different radio mode (discontinuous or continuous) than the receiver.
2 4	yellow orange		● ●		Receiving a radio packet from a transmitter that is not registered.
3	green		●		Receiving a radio packet, low signal (RSSI).
4	orange		●		Receiving a radio packet, configuration ID not accepted.

LED	Color	Off	On	Flashing	Indicates
3 4	green orange		● ●		Receiving a radio packet, custom ID not accepted.
2 3 4	yellow green orange		● ● ●		1. Receiving a radio packet from a registered transmitter. The receiver is already controlled by another registered transmitter. 2. Load select mode is activated. Incorrect Load is selected on the transmitter.
1-4	red yellow green orange		● ● ● ●		TRABUS mode activated (PC communication).

CHAPTER 6: OPERATION

6.1 General information

6.1.1 RECEIVERS WITH LOGIN/LOGOUT¹ FUNCTION ACTIVATED

To control a receiver, the transmitter must be registered and logged in to the receiver. If another transmitter is already logged in to the receiver, it must be logged out before a different transmitter can be logged in.

If no transmitter is logged in to the receiver, the first registered transmitter to be started will automatically log in to the receiver. Once a transmitter has been logged in, it will remain logged in until it is manually logged out.

More than one transmitter can be registered in the receiver, but only one transmitter can be logged in at a time.

6.1.2 RECEIVERS WITHOUT LOGIN/LOGOUT FUNCTION OR WITH LOGIN/LOGOUT FUNCTION INACTIVATED

To control a receiver, the transmitter must be registered in the receiver.

If no transmitter is controlling the receiver, the first registered transmitter to be started will automatically take control of the receiver. Switching the transmitter off will free the receiver and allow any other registered transmitter that is started to control the receiver.

More than one transmitter can be registered in the receiver, but only one transmitter can control the receiver at a time.

NOTE: If the login/logout function is inactivated the receiver is not PLd compliant.

6.1.3 MULTIPLE TRANSMITTERS REGISTERED IN A SAME RECEIVER

If more than one transmitter is registered in the same receiver, it is recommended to select the same frequency channel on all transmitters.

¹For more information about login/logout, see "6.4 Login/logout function"

6.2 Radio mode

The radio mode is determined by the selected **Operating mode**.

To establish a radio link between the transmitter and the receiver, both units must be set to the same radio mode.

This receiver is set to **continuous** radio mode by default.

Some settings can only be selected when the products are transmitting continuously. These settings are indicated with the note "Only for continuous radio mode."

6.3 Relay functions

This receiver is set to momentary relay functionality by default. The relay remains active while a button is pressed on the transmitter. When the button is released the relay deactivates. Setting a relay to latching means that the relay becomes active when a button is pressed and remains active until the button is pressed again.

6.4 Login/logout function

NOTE: Only for **continuous** radio mode.

For this receiver, the login/logout function is activated by default.

Logging out means stopping the communication between the transmitter and the receiver, and freeing the receiver for another registered transmitter to log in.

CHAPTER 7: WARRANTY, SERVICE, REPAIRS, AND MAINTENANCE

Tele Radio products are covered by a warranty against material, construction and manufacturing faults. During the warranty period, Tele Radio may replace the product or faulty parts. Work under warranty must be performed by Tele Radio or by an authorized service center specified by Tele Radio.

The following are **not** covered by the warranty:

- Faults resulting from normal wear and tear
- Parts of a consumable nature
- Products that have been subject to unauthorized modifications
- Faults resulting from incorrect installation and use
- Damp and water damage

Maintenance

- Repairs and maintenance must be performed by qualified personnel
- Only use spare parts from Tele Radio
- Contact your representative for service or any other assistance
- Keep the product in a clean, dry place
- Keep contacts and antennas clean
- Wipe off dust using a slightly damp, clean cloth

NOTE: Never use cleaning solutions or high-pressure washer.

CHAPTER 8: REGULATORY INFORMATION

8.1 Europe

Applies to: **R23-01, R23-03; R23-02, R23-04**

8.1.1 CE MARKING



Hereby, Tele-Radio i Lysekil AB, declares that the product(s) listed above is/are in compliance with the Radio Equipment Directive 2014/53/EU. The latest version of the complete EU Declaration of Conformity is available at the following website: www.tele-radio.com.

8.1.2 WEEE DIRECTIVE



This symbol means that inoperative electrical and electronic products must not be mixed with household waste. The European Union has implemented a collection and recycling system for which producers are responsible. For proper treatment, recovery and recycling, please take this product to a designated collection point.

Tele Radio strives to minimize the use of hazardous materials, promotes reuse and recycling, and reduces emissions to air, soil and water. When a commercially viable alternative is available, Tele Radio strives to restrict or eliminate substances and materials that pose an environmental, health or safety risk.

8.2 United Kingdom

Applies to: **R23-01, R23-03; R23-02, R23-04**

8.2.1 UKCA MARKING



UK Importer: Tele Radio (UK) LTD
1 SEYMOUR COURT,
MANOR PARK, RUNCORN, WA7 1SY, UK
Email: sales@teleradiouk.com

The latest version of the complete UKCA Declaration of Conformity is available on request. Contact your representative for more information.

8.3 North America

Applies to: **R23-01, R23-03; R23-02, R23-04**

8.3.1 FCC STATEMENT

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.

8.3.2 IC STATEMENT

This product complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- 1) l'appareil ne doit pas produire de brouillage;
- 2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Gain of antenna: 3.0 dBi max.

Type of antenna: 50 ohm, Omni-directional

Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous ayant le gain admissible maximal et l'impédance requise pour chaque type d'antenne indiqué. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Gain d'antenne: 3.0 dBi maximum

Type d'antenne: 50 ohm, omnidirectionnel

To satisfy IC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operation at closer than this distance is not recommended.

Afin d'assurer la conformité aux exigences de la IC en matière d'exposition aux RF, une distance de séparation d'au moins 20 cm doit être maintenue entre l'antenne de cet appareil et toute personne à proximité pendant le fonctionnement de l'appareil. Pour assurer le respect de ces exigences, il n'est pas recommandé d'utiliser l'appareil à une distance inférieure à celle-ci.

8.3.3 FCC/IC LABELS

The radio module in this product is labeled with its own FCC ID and IC numbers. The FCC ID and IC numbers are not visible when the radio module is installed inside

another device. Therefore, the outside of the device into which the module is installed must also display a label referring to the enclosed radio module. The final end device must be labeled in a visible area with the following:

“Contains FCC ID: ONFC1902A

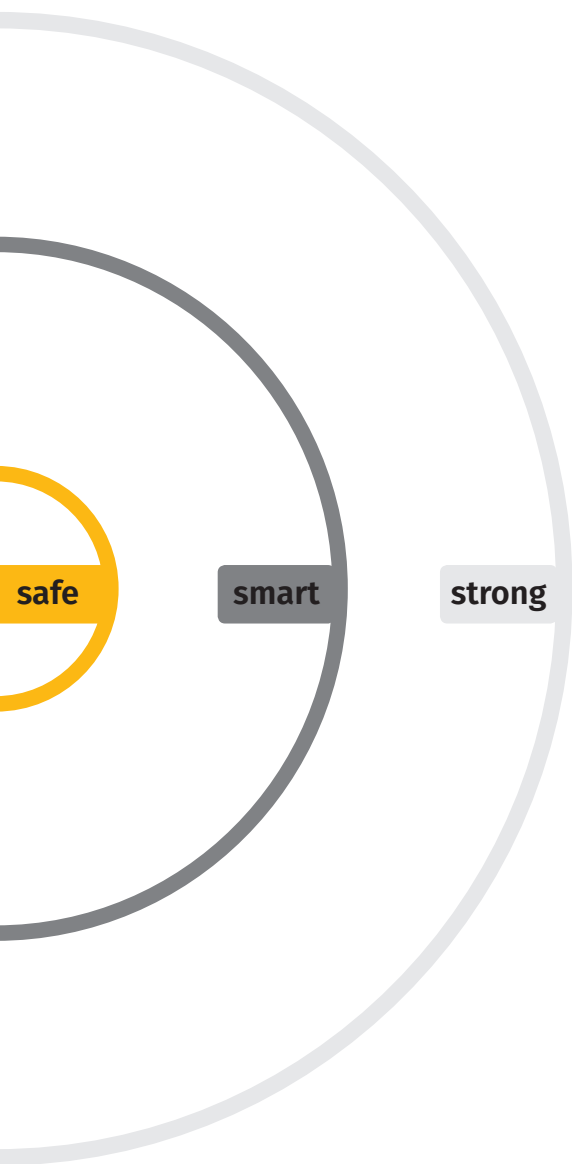
“Contains IC: 4807A-C1902A

The FCC and IC numbers are found on the product label.

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wireless solutions

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