CONTROL SOLUTIONS CS1532 Bruno RF Remote Instructions

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RF Remote Instructions

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Bruno RF Remote

Control Solutions, Inc.

Contents

Introduction

The Wireless Control System allows a user to control and receive status indications from a Bruno CRE-3100 stair lift. The system consists of a ‘chassis’ module, which is installed in the main drive chassis of the lift, one or more ‘fobs’ which are two-button battery-powered remote controls, and one or more optional repeater units (which are AC powered stations which extend the range of the control network).
This specification describes the operation of the system as well as key specifications for each of the system elements.

Revision History

The revision history and release status of this document is stored electronically in Agile. To locate this history in Agile, search and open this document and click on the **Changes** tab.

References, Attachments, Definitions, Acronyms and Abbreviations

This section provides a complete list of all documents referenced elsewhere in the document.

3.1 References

[1] Bruno LED Operation for CRE-3100 Project January 28, 2015
[2] DOC0003735A CRE-3100 System Requirements Specification

3.2 Standards

[3] EN 81-40: 2008 Sections 5.5.4.1, 5.5.4.2, 5.5.13.3, and 5.5.14.1
[4] CSA B613-00 Sections 8.1 and 8.2.3
[5] CSA B44.1-14/ASME A17.5-2014 Sections 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.4.1, 6.5, 19.5.1 and 19.5.2
[6] ASME A18.1-2014 Section 4.10.1

3.3 Attachments

None.

3.4 Acronyms and Abbreviations

For system terminology and associate acronyms, refer to the CRE-3100 System Requirements Specification [2].

EEPROM – Electrically Erasable/Programmable Read Only Memory
GPIO – General Purpose Input/Output
I/O – Input/Output
LED – Light Emitting Diode

PCB – Printed Circuit Board
RAM – Random Access Memory

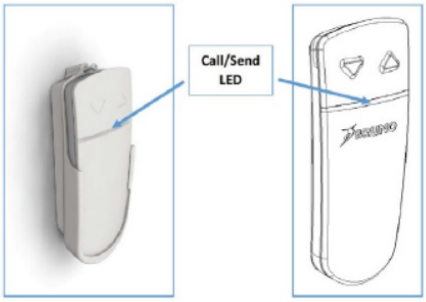
System Specifications

ID	Requirement	Value	Validation Method
R-1	Operating Frequency	2.4 GHz ISM band	Inspection
R-2	Number of channels	Operates on one of 16 available channels	Inspection
R-3	RF Compliance	FCC, IC, ETSI, C-TICK	Inspection
R-4	Max Chassis (master) stations	1	Inspection
R-5	Max Repeater (coordinator) Units	8	Inspection
R-6	Max Fob (end device) Units	>200	Inspection
R-7	Channel Selection	Based on quietest available channel at time of pairing	Demonstration

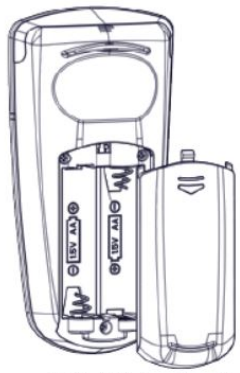
The Fob is based on the industrial design CAD package supplied by Bruno. Each fob may be paired with one and only one stairlift network (pairing again removes any old association). Pairing is initiated by pressing a hidden button (e.g. beneath the battery cover). When initiated, the remote will search the available channels for a network that is also in ‘pairing mode’ and associate itself with that network. During this process it will also discover available Repeater Units that will extend the range of the network.

The unit contains two colored LED indicators that illuminate according to the Bruno LED Operation for CRE-3100 Project document [1] when the unit is active. During periods of non-use, the unit shuts off to conserve power until the user presses one of the control buttons.

ID	Requirement	Value	Validation Method
R-17	Power Input	AA Batteries (2)	Inspection
R-18	Battery life	30 hours operation (with 2 min typical transmission length)	Test Data
R-19	Antenna Gain	2 dBi	Inspection
R-20	RF Power Output	0 dBm	Inspection
R-21	Indicators (LEDs)	2 (1 green, 1 amber)	Inspection
R-22	Enclosure material	ABS or polystyrene. Shall comply with the impact and flammability requirements as listed in the Standards section above.	Inspection
R-23	Button inputs	3 (up/down on front face, pairing button under battery door)	Inspection
R-24	Temperature Range	0 to +50 degrees C	Inspection
R-25	PCB Assembly	Shall comply with the appropriate sections as listed in the Standards section above.	Inspection



LED Operation	LED	Notes
LED OFF Off when not in use		• LED off when not in use to preserve battery life. • Press a button to wake transmitter up; displays current state for a short period of time. • If no buttons are pressed for 5 seconds, LED goes off.
SOLID GREEN "Ready to ride" (Charged or charging)		•Come on after pressing transmitter button. • Carriage is starting from charging/charged position. • Indicates carriage has reached charging station.
SOLID YELLOW "Not ready to ride" (Charging/Low voltage)		• Charging (battery voltage increasing), but below minimum voltage. • Only shows solid yellow at the charging positions (end of rail or mid park)
SLOW FLASHING YELLOW Battery or charging issue		• Indicates not charging, battery voltage low, battery voltage critical, or bad battery.
SLOW FLASHING GREEN Operated by call/send		• Indicates seat is moving. Helpful when seat is out of sight
FAST FLASHING YELLOW Indicates an error during operation		• Only stays flashing while pressing button. • Errors that give fast flashing yellow include: - Seat swivel switch open (not in safe-to-ride position) - Safety switch open - System fault


two (2) AA batteries

For best service life:
• Keep the rail channel clean and free of debris.
• Always park the carriage at one end of the rail so that the batteries charge when the stairlift is not in use.
• Keep the battery charger plugged into a live outlet at all times.
• At least once a year, have the stairlift examined, cleaned and lubricated by a qualified, examined, cleaned and lubricated by a qualified, authorized Bruno service technician.

TRANSMITTER BATTERY REPLACEMENT
• Detach the transmitter from the wall, if applicable.
• From the back of the transmitter, remove the battery access cover.
• Remove the old battery and replace with two (2) AA alkaline batteries. Change batteries annually.
• Put the access cover back on the transmitter.
• Reposition the transmitter on the wall, if applicable.

FCC Compliance 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.

FCC Interference Statement

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 correct the interference by one 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 which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC ID : 2AUD9-CS1532

Industry Canada Statement

This device complies with RSS-247 of the Industry Canada 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.

IC : 26638-CS1532

Antennas Statement

This radio transmitter (identify the device by certification number or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain 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.

Antenna List

No.	Model	Type	Gain[dBi]	Impedance
1	MRF24J40MA	PCB pattern Antenna	2.09	50

The modular transmitter must comply with the antenna and transmission system requirements of §§15.203,

15.204(b) and 15.204(c). The antenna must either be employ a “unique” antenna coupler (at all connections between the module and the antenna, including the cable).

Documents / Resources

	CONTROL SOLUTIONS CS1532 Bruno RF Remote [pdf] Instructions CS1532, 2AUD9-CS1532, 2AUD9CS1532, CS1532 Bruno RF Remote, CS1532, Bruno RF Remote