ABITRON
Safety Radio Remote Controls

User Guide

Coder CMB-1

KH667111xx *Coder CMB-1*

Version

2021-02-09

Wiesnerstraße 20
A-4950 Altheim

1 Module Description

The coder board CMB-1 is used as a central logic board for ABITRON radio remote control transmitters, which evaluates digital and proportional controls and transmits them as a digital data telegram via the integrated RF-part or cable control to a suitable MBT-1 receiving module as well receiving and evaluating feedback data telegrams from the MBT-1.

The integrated RF-part of the CMB-1 is designed as a multiband transceiver, which allows, depending on the hardware version, different SubGHz frequencies and additionally 2.4GHz. Simultaneous use of SubGHz and 2.4GHz is not possible.

The frequency can be set with reference to the applicable country regulations, legal provisions and approvals, using a configuration tool.

The coder board CMB-1 contains all necessary function blocks, interfaces and signaling devices that are required for the operation of the transmitter. Additional external modules can be optionally connected and controlled via the integrated interfaces.

Following function blocks are integrated on the coder board CMB-1:

- Buzzer as an acoustical signal generator
- Bidirectional RF-part with adjustable GHz and Sub-GHz frequency ranges
- 24 configurable inputs or outputs for digital commands
- 8 configurable analogue or digital inputs
- Plug in location for operating LEDs
- Plug in location for optional external buzzer
- Plug in location for TTL in
- Plug in location for TTL out
- SPI interface for optional MEMO or optionally usable for 4 additional digital inputs or outputs
- I²C interface for optional extension boards
- B2B interface for optional extension boards (only for CEB extension boards)
- micro USB interface used as e.g. configuration interface (conducted parallel to the B2B interface)
- Cable control interface
- Interface for stop switch

4.1 Jumper-Setting

offen / 1-2

geschlossen / 2-3

J1	TTLout/NTC (B2B connector pin 6)	UART-1_TX (B2B connector pin 6)
J2	TTLoutTX X5 (UART-0_TX → Coderdata)	Digital Input/Output 31 (max. 8mA)
J4	I-SDA-A (X5 pin 4)	Digital Input/Output 30 (max. 8mA)
J5	I-SCL-A (X5 pin 3)	Digital Input/Output 29 (max. 8mA)
J10	Boot from internal flash	Boot from UART_0

grey indicates the default setting

5 Integration Instructions

for host product manufacturers according to KDB 996369 D03 OEM Manual v01

5.1 List of applicable FCC & RSS rules

Part 15.247
RSS-247

5.2 Specific operational use conditions

This module is approved for use in portable and mobile applications. Integrators must supply operating instructions for end users and installers to satisfy RF exposure compliance requirements are met. Integrators and installers must also make sure that compliance with Part 15B are ensured.

5.3 Limited module procedures

N/A, a full modular approval is targeted.
This module is compliant with Chapter (b) from §15.212.

5.4 Trace antenna designs

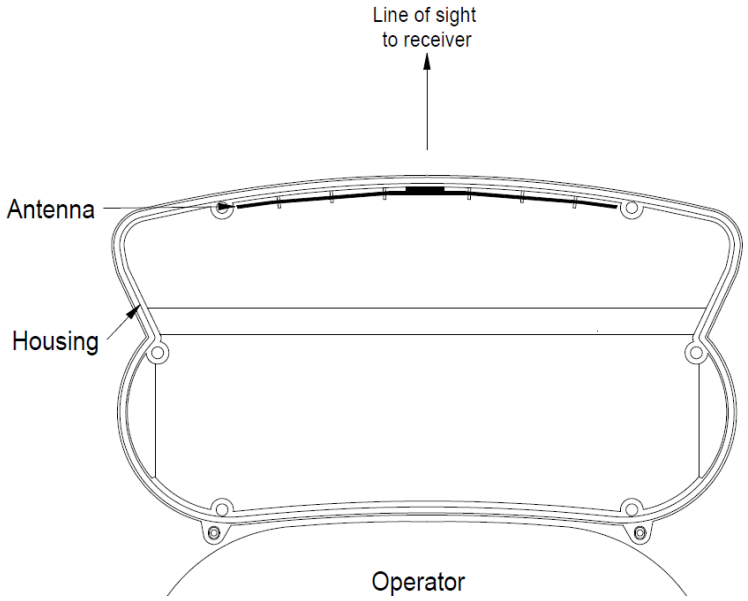
N/A, the module does not use a trace antenna, it uses an external dipole antenna

5.5 Antenna assembly

One of the under point 5.8 mentioned antennas has to be used. These antennas are intend for usage in housings and has to be protected against environmental influences.
Take care that there enough distance from the antenna to metal parts, which are not used as part of the antenna (e.g. ground plane).
As a guidance λ/10 can be used:

- ~3,3cm @915MHz
- ~1,2cm @2,4GHz

The used antenna should be mounted on the side of the housing, which is oriented to the receiver antenna.
e.g.:



5.6 Integration Tests

For integration tests in your device, please use following setting files:

902-928MHz:	rfEasyLinkTx_14dbm_902200_modulated.out
2.4GHz:	rfEasyLinkTx_6dbm_2480000_modulated

Please ask your contact partner for these setting files.

5.7 RF exposure considerations

WARNING:
In order to comply with the FCC RF Exposure limits, the end customer has to assure that the antenna of the device has a distance of more than 8mm from the human body for bodyworn devices.
For handheld devices, no distance is needed.

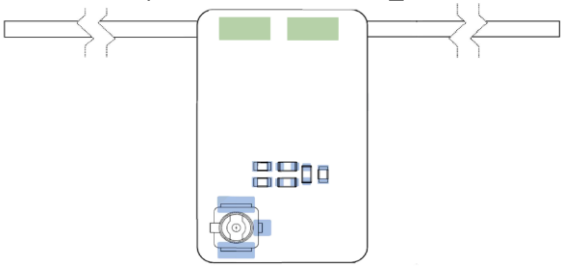
In order to comply with the ISED RF Exposure limits, the end customer has to assure that the antenna of the device has a distance of more than 15mm from the human body for bodyworn devices.
For handheld devices, no distance is needed.

Nevertheless, this device should be used in such a manner that the potential for human contact during normal operation is minimized. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

5.8 Antennas

5.8.1 902-928MHz

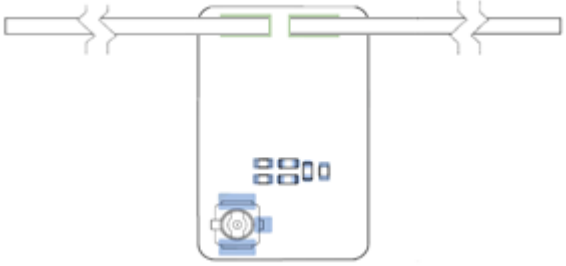
A ABITRON Dipole-Antenna “DiPol_STP-868” is intended for 902-928MHz



Frequency range:	863-928MHz
Impendance:	50Ω
VSWR:	<2:1
Peak Gain:	2.9 dBi

5.8.2 2.4GHz

A ABITRON Dipole-Antenna “DiPol_STP-2G4” is intended for 2.4GHz



Frequency range:	2 400 MHz
Impendance:	50Ω
VSWR:	<2:1
Peak Gain:	4.3 dBi

5.9 Label and compliance information

The CMB-1 module is labelled with its own FCC/IC ID. If the FCC/IC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a physical label or eLabel referring to the enclosed module. In that case the end product must be labelled in a visible area with the following:
contains
FCC ID: 2AC8P-CMB1
IC ID: 12310A-CMB1

6 Certification Informations

6.1 FCC/IC

This device complies with part 15 of the FCC Rules and RSS-247 of the Canadian RSS 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.
(2) NOTE: 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 and correct the interference by one or more of the following measures:
-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and the receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.