

# 2 Channel Radio Interface

## RE005

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ISSUE: 100



## ***Introduction***

The BOSCH 2 channel radio interface has been designed to allow wireless control of Solution control panels as well as wireless control of the two on-board relays for controlling external devices. It may also be used as a stand alone receiver, independent of a Solution control panel, and used solely for remote control of external devices connected to the two on-board relays.

The BOSCH 2 channel radio interface is a 304 MHz receiver, with the ability to store up to 120 radio remote control codes. The receiver “learns” the transmitters code during the teaching procedure as outlined below and stores the code in its internal memory. Each code can be taught to operate one of the two on-board relays with either a latching or momentary action, or the code can be taught to operate the Solution control panel that the receiver is connected to via the Solution interface built into the receiver.

## ***Operation***

The BOSCH 2 channel radio interface has two modes of operation, these being:

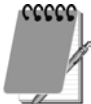
1. Operation of the Solution control panel that the receiver is connected to.
2. Operation of the two on-board relays to control external devices.

## ***Teaching***

There are four push buttons located on the receiver board which are used when teaching the transmitters code to the receiver. These four push buttons are marked SW1, SW2, SW3 and SW4.

To teach the transmitters code to the receiver, one or more of these push buttons must be held down whilst at the same time, pressing the transmit button on the transmitter. The push button(s) that is held down while teaching the transmitters code will dictate the operation of the transmitters code. More than one push button may be held down while teaching the code, depending on the desired operation of the transmitter.

For example, if you wanted to have Relay 2 toggle on/off each time button 2 on the hand held transmitter is pressed, you would need to teach button 2 on the transmitter as a Relay 2-Toggle. To do this, hold down the SW2 and SW3 buttons on the receiver at the same time, and then press button two on the hand held transmitter. The relay will operate when the code has been successfully learnt. When you press button 2 on the hand held transmitter, Relay 2 will turn on. Pressing button 2 a second time will turn Relay 2 off.



**When teaching a code to operate a relay, if SW3 is not held down as well as SW1 or SW2, a momentary operation will be assumed.**

Each button on a hand held transmitter, when pressed, transmits a different code. Pressing a combination of buttons on a hand held transmitter will also transmit another different code. It would then be possible to have a two channel hand held transmitter controlling three different functions.

Transmitter Button(s) Pressed	Code Transmitted
Button 1	Code 1
Button 2	Code 2
Buttons 1 and 2 Together	Code 3















For example, you could have button 1 (Code 1) for arming and disarming the system in AWAY mode. Button 2 (Code 2) could be used to operate Relay 1 (to control the garage door). Both buttons held down together (Code 3) could be used to generate a PANIC alarm.



**The above example uses three remote radio user codes. There are 120 remote radio user codes available in the receivers memory.**

The following table outlines the switch combinations that need to be held down whilst teaching transmitter codes to the receiver to operate the different functions of the receiver.

An  denotes the switch/s to be held down for each operation required.

Operation Required	Switch 1	Switch 2	Switch 3	Switch 4
AWAY Mode Arm Only				
AWAY Mode Disarm Only				
Arm/Disarm In AWAY Mode				
Arm/Disarm In STAY Mode				
Panic Alarm Via Transmitter				
Operate Relay 1 With Momentary Operation				
Operate Relay 2 With Momentary Operation				
Operate Relay 1 With Toggle Operation				
Operate Relay 2 With Toggle Operation				

You may also teach a transmitter to operate both relays at once using just one button on the transmitter. This however, is a two step operation. Firstly you must teach the transmitter code to Relay 1 by holding down SW1 and then pressing the transmitters button. Then you would teach the transmitter to Relay 2 by holding down SW2 and then pressing the **same** button on the transmitter that you used to teach Relay 1.

Now, when you push the button on the transmitter, both relays will operate. You could even teach the transmitter to operate both relays, but to have Relay 1 as momentary operation and to have Relay 2 as a toggle operation. Simply hold down both SW2 and SW3 when teaching the transmitters code to Relay 2.



**When a relay that has a toggle attribute is in the latched state (on), if a transmitter assigned to that same relay with a momentary attribute is activated, the relay will toggle off when the button on the transmitter is released.**

## Defaulting

There are several different ways of defaulting the receiver board, depending on what codes you need to remove. The table below lists the various options.

Default Required	Procedure
Full Default (All Codes)	Remove power, hold down SW3 and power up
Relay 1 Default (Relay 1 Codes Only)	Remove power, hold down SW1 and power up
Relay 2 Default (Relay 2 Codes Only)	Remove power, hold down SW2 and power up
Panel Codes Default (Panel Codes Only)	Remove power, hold down SW4 and power up

Table 1: Defaulting Procedures

## Wiring

To connect the 2 channel receiver to an BOSCH Solution control panel, wire the receiver in parallel with the system codepad(s).

2 Channel Receiver	Solution Panel
+12V	+12V
GND	GND
CLOCK	CLK

Table 2: Wiring Connections

## Relay Indicators

There are two red LED's located beside the terminal block on the receiver PCB (LD1 and LD2). These are marked RL1 and RL2 on the PCB. When either Relay 1 or Relay 2 are operating, the corresponding red LED will illuminate.



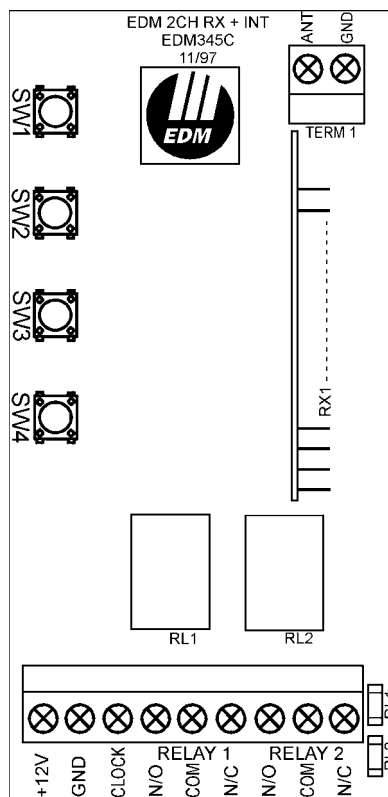
For the 2 channel radio interface to work correctly with the Solution range of control panels, the feature of "Enable Radio Key/Keyswitch Interface" must be enabled in the control panel that the 2 channel radio interface is connected to. Refer to the control panels Installation manual for more information on enabling this feature.

**Antenna**

The antenna should consist of approx. 25cm of No.24 gauge solid insulated wire. Remove approx. 1 cm of the insulation and locate in the ANT terminal on the receiver PCB. If a remote antenna is required, the wire antenna can be replaced with a 50 ohm coax cable connected to a remote antenna. Connect the centre conductor to the ANT terminal and the shield to the GND terminal located beside the ANT terminal.

Ensure the receiver or aerial is not near (>5m) any high speed logic cables. Eg, computers, data cables, electronic telephones. Fast logic edges have harmonics up to >1GHz. Ensure the receiver is not near a parked car/ garage. Many cars have alarms that use super-regenerative receivers that radiate continuously and pollute a broad band of UHF frequencies.

Ensure the antenna has plenty of free space around it. Close proximity to any metal will reduce their effectiveness and thus range.



Picture 1: 2 Channel Radio Receiver And Interface Board

**Specifications**

Power Input:	12 Volts DC
Current Stand-By:	7.5 mA
Current Active (One/Both Channels):	40/73 mA
Channel Outputs:	Dry Contact Relay (1 Amp @ 12V)
Transmitter Code Memory Capacity:	120 Codes
Size:	71mm x 75mm x 22mm
Data/Power Connection:	3 Wire Connection To Solution Panel
Output Connection:	6 Terminal Connection
Frequency Of Operation:	304 MHz

