

# ASK 868.35 MHz MINI RECEIVER MODULE

**PRELIMINARY**

## 2 Channel HCS Version - Cod. 3-2001035HCS

Compatible with HCS transmitters (HCS Keeloq protocol)

## 2 Channel Mipot Version - Cod. 3-2001035MIP

Compatible with transmitters 3-2000912 / 3-2000912A (Mipot protocol)

## 2 Channel HT12E Version - Cod. 3-2001035HT

Compatible with all transmitters equipped with HT12E coding algorithm



### DESCRIZIONE:

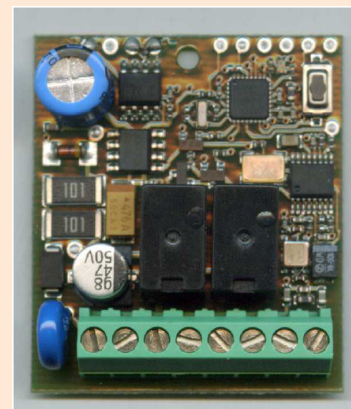
2 Channel Receiver Module working on the 868 MHz ISM Band, very Compact external dimensions. The receiver on board is a super heterodyne receiver with OOK/ASK modulation format. The microcontroller on board permits decoding, auto learning and memory function of the transmitter code. The firmware implements a digital filter to improve the RF performance in noisy environments.

### CHARACTERISTICS:

Conforms the European Standards I-ETS 300 220 and ETS 300 683.

### APPLICATIONS:

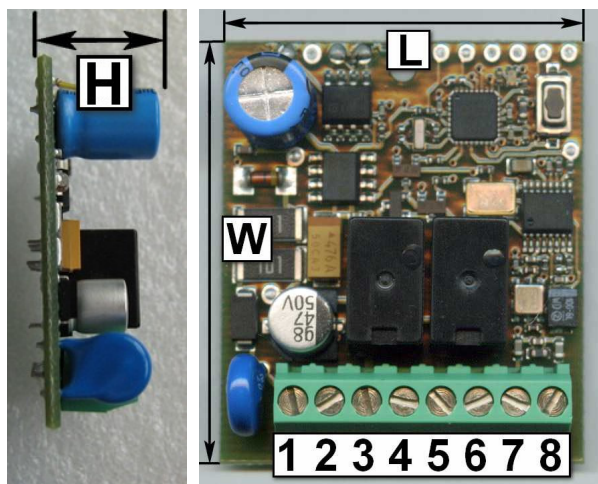
Remote control system, remote control for lighting, remote control for doors, garage doors



### MECHANICAL CHARACTERISTICS:

#### External dimensions:

H (height)	=	16 mm
W (wide)	=	40,5 mm
L (length)	=	36,5 mm



#### SIGNALS ON THE TERMINALS:

- 1 – Supply Input Voltage  
(positive supply)
- 2 – Ground  
(negative supply)
- 3 – Relays 1 common output
- 4 – Relays 1 normally open output  
(when active green led flashes)
- 5 – Relays 2 common output
- 6 – Relays 2 normally open output  
(when active red led flashes)
- 7 – Antenna Shield
- 8 – Antenna Input (50 Ohm)

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#### ABSOLUTE MAX. VALUE

Supply voltage	33VAC / 35VDC
RF Input Level	+ 20 dBm
Voltage on output pins respect to GND :	120V
Storage temperature:	- 40 ÷ + 100 °C
Operating temperature:	- 20 ÷ + 70 °C

ELECTRICAL CHARACTERISTICS AT THE TEMPERATURE OF + 25 °C					
Parameter	Min.	typ.	Max.	Unit	Note
Supply Voltage(VDC)	12	-	30	Volt	
Supply Voltage (VAC)	12	-	28	Volt	
Current consumption (during reception)	-	14	-	mA	
Current consumption (1 channel active)	-	28	-	mA	
Current consumption (2 channel active)	-	39	-	mA	
Centre Frequency	-	868.35	-	MHz	
Sensitivity	-	-105	-	dBm	Note 1
RF Bandwidth (-3dB)	-	±150	-	kHz	
Level of spurious emission	-	-	-60	dBm	
Start up time	-	-	2,8	s	Note 2
Activation time	-	-	0,5	s	Note 3
Max load for the outputs VDC	-	-	1A 24V	Amp Vdc	
Max load for the outputs VAC	-	-	1A 120V	Amp Vac	

**Note 1:** Measure made with an AM 100% signal, square wave, modulation frequency 1KHz.

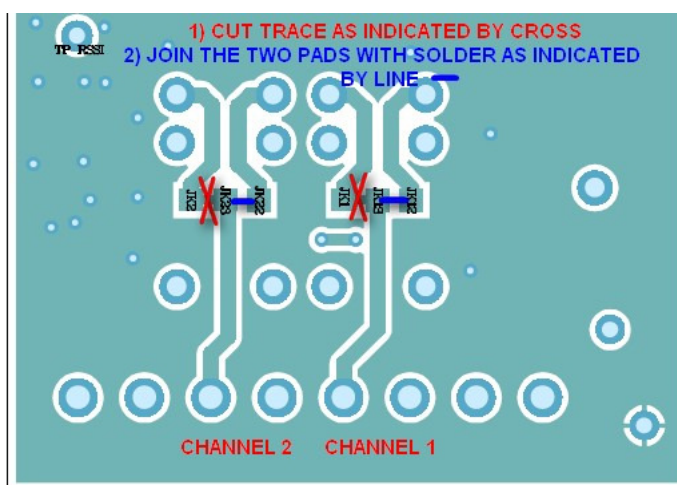
**Note 2:** necessary time from power up to valid data reception (receiver ready to work)

**Note 3:** necessary time from the transmission to the relay activation

**Note 4:** All the measurements of the RF parameters were done with a 50 Ohm load connection on pin8 (Antenna Input)

## APPLICATION NOTE – RELAYS: FROM N.O. TO N.C.

It is possible to change the relays outputs from Normally Open (N.O.) to Normally Closed (N.C.), just cut the micro strip line regarding the desired channel, for details see the picture below:



Rear PCB layer of the Receiver

After cutting remember to connect the two soldering pads!

## USER'S MANUAL



RF  
WIRELESS

### RECEIVER PROGRAMMING AND CHANNEL CONFIGURATION

All receiver programming and channel configuration operations are made through the only button.

The two-coloured LED (green and red, orange if both colours are on) gives information about programming and configuration phases: when the LED is green, all operations are referred to channel 1; when the LED is red, all operations are referred to channel 2.

#### 1 - LEARNING AND ERASING REMOTE CONTROLS

Remote controls that can activate the outputs of the receiver are memorized through the learning procedure.

Instead, with erasing procedure, a single remote control or all the remote controls stored in memory can be erased.

The default phase is the normal phase: the LED is off, output are activated if it's received a remote control that has been previously stored. The LED turns on in green colour if the output 1 is active, in red colour if the output 2 is active or in orange colour if both outputs are active.

#### 2 - ENTERING LEARNING AND ERASURE MODES

To pass from a mode to another one, just press and release the button:

- 1<sup>st</sup> pressure: LED is green. Learning of a remote control on channel 1;
- 2<sup>nd</sup> pressure: LED is green. Learning of a remote control on channel 2;
- 3<sup>rd</sup> pressure: LED flashes with the orange colour. Erasure of a remote control from memory.

When the button is released, the receiver remains in the selected phase for 5 seconds. Expired the 5 seconds time-out, the receiver exits from the selected phase; otherwise if the receiver receives a valid code, it informs the correct memorization or erasure turning off the LED for 0,5 seconds.

When a remote control is memorized or erased the user has again a 5 seconds time-out in order to carry another memorization or erasure.

**NOTE:** the erasure of a single remote control in the 3<sup>rd</sup> phase is carried out independently from the channel or the channels where the remote control has been previously memorized.

Example 1: memorization of a remote control on channel 1:

- press the button and release it: the LED is green;
- within 5 seconds perform a transmission with the remote control you want to memorize;
- LED is turned off for 0,5 seconds to confirm the memorization of the remote control;
- wait 5 seconds (or press the button again) to exit this memorization phase. When the LED is off the receiver is in normal mode.

Example 2: memorization of a remote control on channel 2:

- press the button 2 times: at the first pressure the LED is green while at the second pressure the LED is red;
- within 5 seconds performs a transmission with the remote control to memorize;
- wait 5 seconds (or press the button again) to exit the learning phase. When the LED is off the receiver is in normal mode.

Example 3: erasure of a remote control from memory:

- press the button 3 times: at the first pressure the LED is green, at the second pressure the LED is red and at the third pressure the LED is flashing in orange colour;
- within 5 seconds make a transmission with the remote control to erase;
- LED turns off for 0,5 seconds to confirm erasure (if the remote control wasn't previously memorized, there is no confirmation);
- wait 5 seconds (or press the button again) to exit the erasing phase. When the LED is off the receiver is in normal mode.

### 3 - CHANNEL CONFIGURATION

Both channels can be set up in the following configurations:

- MONOSTABLE configuration: at the reception of a correct frame, the output remains active until the frame is received;
- BISTABLE configuration: at the reception of a correct code, the output changes its state. If the output was inactive it becomes active and vice versa.
- TEMPORIZED configuration: at the reception of a correct code, the output remains active for the set up time.

### 4 - SELECTION OF A CHANNEL CONFIGURATION:

To enter the phase of the channels configuration, please keep pressed the button in the learning phase until the LED starts flashing.

#### EXAMPLES:

- channel1 configuration: press and keep pressed the button. LED turns on in green colour. After 3 seconds from the button pressure, the green LED starts flashing fast: the MONOSTABLE configuration is selected;
- channel2 configuration: press and release the button. LED turns on in green colour. Press the button a second time and keep it pressed. LED turns on in red colour. After 3 seconds from the button pressure, the red LED starts flashing fast: the MONOSTABLE configuration is selected.

If the button is not pressed again, after 5 seconds the LED makes a slow flash: it indicates that the selected channel has been configured as MONOSTABLE.

If the button is pressed again during the fast flashing, the BISTABLE configuration is selected. It's indicated by 2 fast flashes repeated continuously. If the button is not pressed in the next 5 seconds, the LED makes 2 slow flashes to indicated that the selected channel has been configured as BISTABLE.

Pressing the button again while the LED flashes fast, the TEMPORIZED configuration is selected: the LED makes 3 fast flashes continuously. If the button is not pressed in the next 5 seconds, the orange LED turns on (for both channels). If the button is not pressed within 3 seconds after the orange LED turns on, the TEMPORIZED configuration is confirmed and the activation time is set to the default value, that is 60 seconds.

If the button is pressed when the LED is orange, the button pressure is indicated by turning on the LED in the colour of the selected channel for 0,5 seconds. At every button pressure, the activation time is increased by 5 seconds. For example, if the button is pressed 4 times, the activation time will be 20 seconds. When there's a pause of 3 seconds from the last button pressure, the TEMPORIZED configuration is confirmed and the number of button pressures are indicated by an equally number of passages from orange colour to the colour of the selected channel.

The maximum time that's possible to set is 20 minutes that is 240 button pressures.

### 5 - EXIT FROM CHANNEL CONFIGURATION

If the button is pressed during the 3 fast flashes indicating the TEMPORIZED configuration, the receiver returns to the normal mode without making changes on channels configuration.

### 6 - ERASURE OF MEMORY

To cancel all remote controls from memory keep the button pressed during the third pressure (receiver is entered in the erasing phase) until the LED stops flashing and remains on with the orange colour. At this point, the user can release the button.

When the LED turns off, the memory has been cancelled and both channels are set to MONOSTABLE configuration.

## NOTES

### A1 - Memory error

When there's an error about the memory where all codes are stored, the orange LED flashed continuously. In this case it's necessary to call assistance.

### A2 - Maximum number of remote controls that's possible to store:

Version 3-2001035HCS	=	250 remote controls
Version 3-2001035HT	=	250 remote controls
Version 3-2001035MIP	=	250 remote controls

### A3 - Output activation

Output activation is signalled turning on the relative LED: when the output 1 is active, the green LED is on; while if the output 2 is active, the red LED is on.  
If the orange LED is on, both channels are active.

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