TECHNICAL SPECIFICATIONS

Power supply: 12 - 24 V ac/dc
Power consumption: 50 mA
Range : 200 - 300 mt in open space
Outputs : TTL Open Collector "H" Level : Vcc = 5.5 V , Ioh = 200 µA max
"L" Level : Vol = 0.4 V , Iol = 16 mA max

RECEIVER:

- reception frequency .....27.195 MHz
- local oscillation frequency.....27.650 MHz
- local oscillation frequency tolerance.30 p.p.m. da -10° a +55°C
- intermediate frequency .....455 KHz
- input impedance .....50 Ohms
- sensitivity (for a fine signal).....0.5 µ V
- local oscillation emission .....≤70dBm (<100pW)

TRANSMITTER:

carrier frequency : 27.195 MHz
carrier frequency tolerance: 30 p.p.m. da -10° a +55°C
band width: 10 KHz/ ± 5KHz
apparent power irradiated : -10 " -7dBm (100-200µW)
power emitted to adjacent channel (± 10 KHz): < -37 dBm (< 0.2 µW)
modulation: AM / ASK
signal modulation : PCM, 1,3 ms/bit

CARDIN ELETTRONICA spa
31020 San Vendemiano (TV) - Italy
Via Raffaello, 36
Telefono 0438/401818
Telefax 0438/401831

CODE Nr.	SERIES	MODEL
L210.00	RX48	WG

This product has been tried and tested in the manufacturer's laboratory, during the installation of the product follow the supplied indications carefully.

RX48/WG RECEIVER

REMARKS

Before commencing with the installation of this appliance make sure that you have read the following instructions carefully.
In particular familiarise yourself with the safety devices required by the system, only then will you be able to use them to great effect.

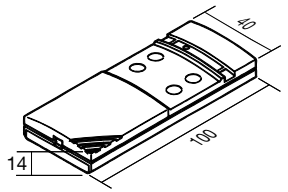
Not all of the safety devices required by Italian or local safety standards have been taken into consideration in this manual.
The installer must make sure that any eventual safety devices required by the local standards and regulations have been installed both ahead of and after the products described in this manual.

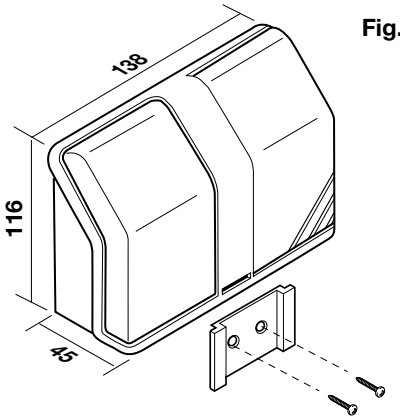
This appliance must be used exclusively for the purpose for which it has been made. Any non authorised modifications are to be considered improper and therefore dangerous. The manufacturer accepts no liability for damage caused by, or situations arising from, the improper use of these appliances and therefore all work carried out after the delivery of the appliance is to be considered the complete responsibility of the installer.

These instructions are aimed at professionally qualified "installers of electrical equipment" in conformity with the standard **"Nr. 46/5.3.1990"**.

The manufacturer accepts no liability for any possible printing or typing errors in this brochure. The manufacturer reserves the right to modify any product in this brochure without giving prior notice.

OVERALL DIMENSIONS **Fig.1**





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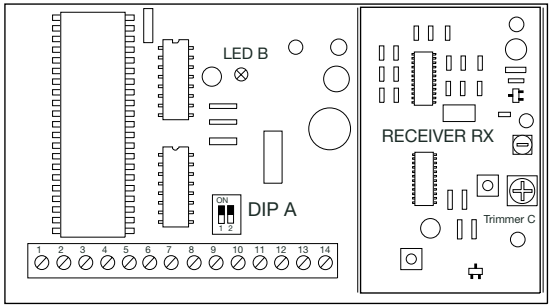
Description
The RX48/WG receiver is a quartz RF receiver that can detect and de-codify the signal from a pre-codified TX-S48 Transmitter and convert its code in 4 different formats.
The output signals can be either in compliance with the ISO-3554 Standards or in compliance with the WIEGAND standard for magnetic cards .
The RX48/WG is a product addressed to the "Acces Control System Manufacturers".
It can be used with pre-codified transmitters Cardin mod.S48 .
With this receiver it is possible to realize acces control systems where it is necessary to recognize the user's enabling at distance.

The receiver can have different outputs: WIEGAND output (signals DATA0 e DATA1) in 2 formats called Wiegand1 and Wiegand2, and an ISO2 output (signals CLS, RDP e RCP).
The choice between the modes can be done by mean of a 2 way dip switch placed on the receiver board.

Receiver board

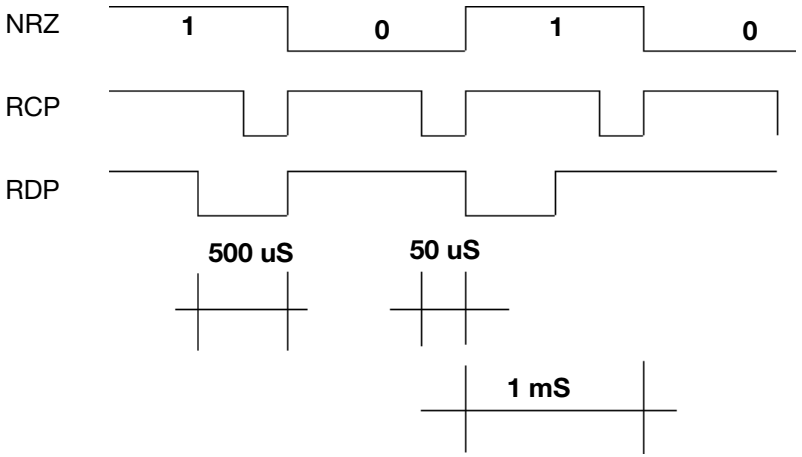
Fig.2



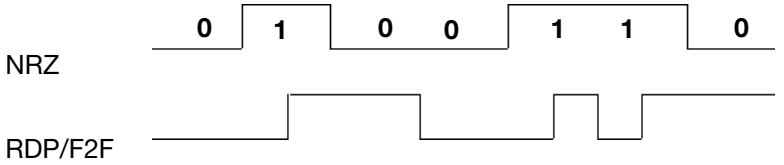
Output signals:

N	NAME	Description	Note
1	DATA0	Wiegand DATA0	TTL Open Collector
2	DATA1	Wiegand DATA1	TTL Open Collector
3	GND	Ground	
4	VCC5V	Output 5V @ 50 mA	
5	CLS	Card loading signal	TTL Open Collector
6	RCP	Read Clock Pulse	TTL Open Collector
7	RDP	Read Data Pulse	TTL Open Collector
8	GND	Ground	
9	NRZ	Not Return to Zero	CMOS
10	Vac24	24 V ac/dc	
11	Vac12	12 V ac/dc	
12	GND	Ground	
13	ANTENNA	Antenna GND	
14	ANTENNA	Antenna Signal	

The phase shift between these signals are as follows



The F2F OPTION
The receiver S48/WG is able to interconvert the frame signal in F2F o FM1 format (Two frequency coherent phase and bi-phase mark).
The ISO2 RDP Signal is obtained by inverting the successive zeros
The dip-switch A2 is used to select this option.
A2=ON NRZ with F2F ; A2=OFF NRZ with F2F



RECEPTION HYSTERESYS
The receiver has an internal system that doesn't allow the reception of multiple frames coming from the same transmitter and carrying the same code and/or channel information.
Once the receiver has sent the frame and it has been correctly received, it is internally disabled for a period of 7 sec. This system is disabled until either a different frame is received or the 7 second period has expired.
If the receiver detects 2 subsequent frames carrying different channel or code information it will work as usual.

RANGE ADJUSTMENT
On the RF card it is present a small trimmer indicated as A on the fig. 2, that can be used to adjust the range of the receiver.
Once the receiver has been installed and the antenna connection fixed on the terminal baord, it is possible to reduce the range of the receiver in order to fit sistem specifications, by moving the trimmer "C" by using an anti-inductive screw-driver even till the range is reduced to zero.

7.077.888. different codes are totally generated.
The frame contains even the channel information.
The channel character is codified following the rule:

CHANNEL	DECIMAL NUMBER
CHA	1
CHB	2
CHC	3
CHD	4

THE LRC CHARACTER

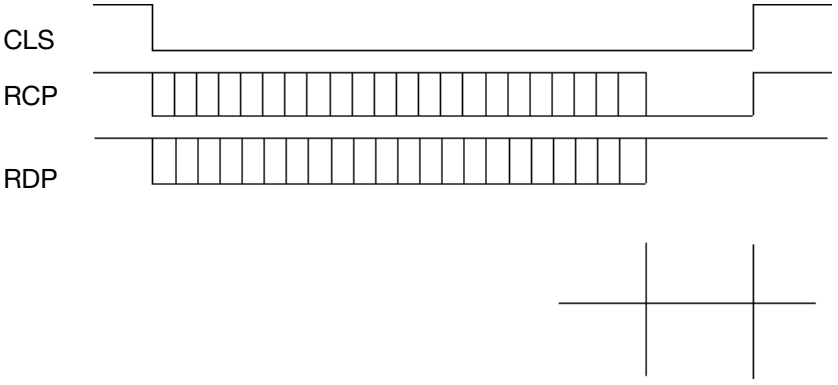
The LRC character is the longitudinal even parity of the bits in vertical sense, according to the following example:

MEANING	DATA BITS	PARITY
Start	1 0 1 1	0
"1"	0 0 0 1	0
"6"	0 1 1 1	1
"3"	0 0 1 1	1
Stop	1 1 1 1	1
LRC	0 0 0 0	1

The parity bit is the last to be sent
In the second half of the frame, after the separator character, there is the code in nine's complement format: that means that if the code decimal number is, for instance : 00001275, the nine's complement decimal number will be: 99998724.
The same rule is applied also for the channel character.

ISO2 FORMAT - ABA TRACK

The ISO2 interface signals are 3: CLS (Card Loading Signal) , RCP (Read Clock Pulse) and RDP (Read Data Pulse).
These signals are the same of the ones generated by a magnetic card reader. According to the ISO 3554 Specifications the frame is sent throught these 3 signals (active low)



dip-switch selection

A1	A2	FORMAT
ON	ON	WIEGAND OUTPUT FORMAT TYPE 1
ON	OFF	WIEGAND OUTPUT FORMAT TYPE 2
OFF	ON	ISO2 OUTPUT FORMAT;NORMAL FRAME
OFF	OFF	ISO2 OUTPUT FORMAT;F2F FRAME

If he LED B is ON the detection and the frame are OK
The output frames are different according to the standard used : WIEGAND1, WIEGAND2 or ISO2

Wiegand1: Frame composition

The frame is composed by 31 bit : B0,.., B30; B0 is the first to be send , B30 is the last

BIT DETAILS

B0,B1,B2,B3,B4,B5 : Give the binary expression of the cathegory; B0 msb and B5 lsb.

B6,B7,B8,...,B23 : TX binary code ; B6 msb and B17 lsb.

B24, B25 : Channel bit according to the following table:

Chanel	B24	B25
CHA	1	1
CHB	1	0
CHC	0	1
CHD	0	0

B26 : Even parity bit on the following bits: B0,B4,B8,B12,B16,B20,B24. It is "1" if the "ones" number is impair and "0" if the "ones" number is pair.

B27 : Even parity bit on the following bits : B1,B5,B9,B13,B17,B21,B25

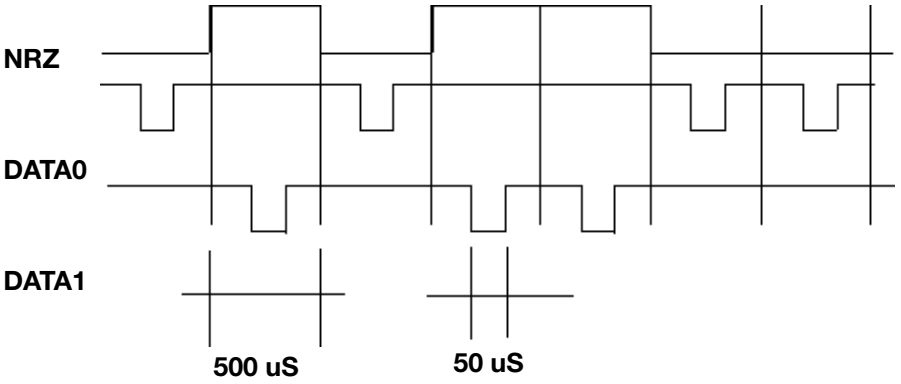
B28 : Even parity bit on the following bits : B2,B6,B10,B14,B18,B22

B29 : Even parity bit on the following bits : B3,B7,B11,B15,B19,B23

B30 : Even parity bit on the whole frame : it is 0 if the total number of "ones" is pair or it is "1" if the total number of "ones" is impair.

Wiegand1 : Electrical format

Wiegand1 frame is output on the signals DATA0 and DATA1. They are "open-collector". A NRZ frame is present always on the terminal board. The period of the single bit NRZ has the same lenght of the bit either in WIEGAND or in ISO format.The Wiegand1 format is based on DATA0 and DATA1 signals:



WIEGAND2 FRAME COMPOSITION

The frame is composed by **30 bit** : B1,.., B30; B1 is the first to be send , B30 is the last.

BIT DETAILS

B1: Even parity on bit : B2,B3,..,B15;

B2,B3,B4,B5,B6,B7 : Give the binary expression of the cathegory; B2 msb and B7 lsb;

B8,B9,B10,...,B25 : TX binary code ; B8 msb and B25 lsb;

B26, B27 : Channel bit according to the table:

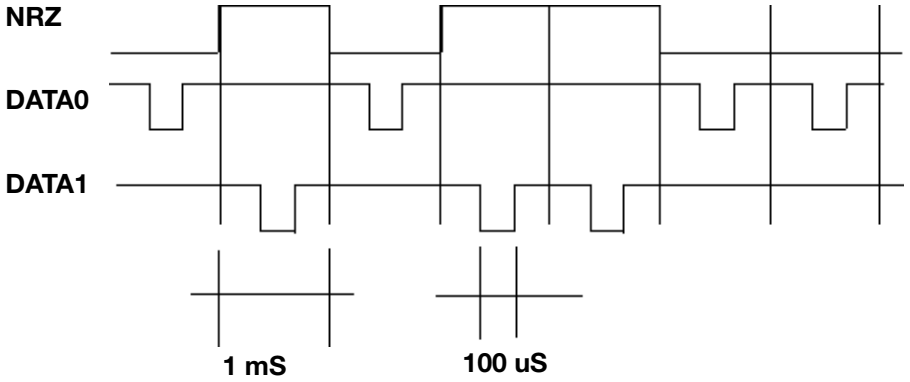
Chanel	B26	B27
A	1	1
B	1	0
C	0	1
D	0	0

B28,B29 : Fixed at "1";

B30 : Odd parity on bit : B16,B17,..,B29.

Wiegand2 : Electrical Format

Wiegand2 frame is output on the signals DATA0 and DATA1. They are "open-collector".
A NRZ frame is always present on the terminal board.
The period of the single bit NRZ has the same lenght of the bit either in WIEGAND or in ISO format.
The Wiegand2 format is based on DATA0 and DATA1 signals



ISO2 : Frame composition

The frame coming from the receiver is made up of 22 characters of 5 bit.

Inside the frame there are:

- 1 Start Sentinel character
- 8 TX code characters in BCD format
- 1 channel character
- 1 Separator
- 8 TX nine's complement code characters in BCD format
- 1 channel character in BCD format
- 1 End character
- 1 LRC (Longitudinal Redundancy Check).

Each character of the frame is obtained as follows:

ISO2: Characters corrispondence

Parità	B4	B3	B2	B1	Carattere
1	0	0	0	0	0
0	0	0	0	1	1
0	0	0	1	0	2
1	0	0	1	1	3
0	0	1	0	0	4
1	0	1	0	1	5
1	0	1	1	0	6
0	0	1	1	1	7
0	1	0	0	0	8
1	1	0	0	1	9
1	1	0	0	1	-
0	1	0	1	1	Start Sentinel
1	1	1	0	0	-
0	1	1	0	1	Separatore
1	1	1	1	0	-
0	1	1	1	1	End Sentinel

The parity bit is the odd parity of B4,B3,B2,B1.
The code of the S48 transmitter is inserted in the frame in BCD format (Binary Coded Decimal) .
In the frame there are 8 digit: the first 2 most significant digits are the category, the other 6 digits are the progressive number.