

1.0 Introduction

The system Radiocontrol Erone 318W is composed by one transmitter and by one receiver operating at 318 MHz.

The modulation is AM/ASK.

The main characteristic is the wiegand protocol used by the transmitter, which can be used into access control systems.

Each transmitter is identified by a single code, different for each transmitter, inserted during the in-circuit programming.

The rated range of the transmitters is about 150 mt in free-space.

The transmitters have 2 push-buttons.

The channel information is provided inside the transmitted frame.

Main characteristics of the system

BRAND : **ERONE**

SERIES : **ERONE 318W**

TYPES: **TX : SETW318AM2**

MANUFACTURER : **ELPRO INNOTEK S.r.l.**

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2.0 Technical characteristics

2.1 Transmitters

Operating frequency	MHz
Carrier frequency:.....	318 MHz
Rated frequency tolerance:.....	± 75 KHz
Rated E.R.P.	100 -150 µW
Modulation :	AM / ASK
Modulating signal frequency:	167 bit/sec
Channel width:.....	> 25 KHz
Power supply:	6 Vdc
Battery.....	2 x 3 Vdc CR 2016 lithium batteries
Security code system	Fixed code
Code combinations	2 ¹⁴
Different Facilities available	2 ⁶
Channel pushbuttons :	2
Range.....	150 m
Dimensions.....	61 x 36 x 16 mm
Weight	20 g
Antenna.....	Integral
Automatic deactivation of the transmission after	2 sec.

3.0 System components

The system to which this transmitter belongs is composed by many transmitters and a receiver with converts the data into a wiegand format.

Transmitter : Series **ERONE 318W**
Type : **SETW318AM2**

Receiver : Series **ERONE 318W**
Type : **SELWR318**

4.0 Description

4.1 Transmitter

This transmitter is a very innovative transmitter which combine a very efficient electronic circuit with the technology of printing of the plastic in double injection.

The power supply is provided by a couple of CR 2016 3 Vdc lithium batteries

Summarising the main features of this mini transmitter are the following :

- ◆ High efficient RF antenna;
- ◆ Fixed security code (2^{14} code combinations);
- ◆ Saw resonator controlled oscillator;
- ◆ Long lasting lithium batteries;
- ◆ Battery support rotating door;
- ◆ Original double material plastic box ;
- ◆ Several colour combination;
- ◆ Key-holder ring.

The frame sent to the AM modulator is composed as explained in the next paragraph.

4.2 Frame composition

The frame architecture is described on the following table:

[illegible]

Bit 1 = Start bit (Logic value "1");

Bit 2,3,4,5,6,7 = Facility code (up to 2^6 possible facilities different codes);

Bit 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 = Serial number (up to 2^{16} possible different transmitters) – The serial number is different for each transmitter and it is written into the micro during the in-factory programming;

Bit 22, 23, 24 = Channel code bit:

4.3 Timings

The system used is based on the Manchester code but with always a RZ.

This type of code has the feature that for each bit there is a transition.

This avoid long sequences of data always at “0” or always at “1”, and hence give more data to the clock extractor circuit systems.

Logic value "1" = transition H -> L

Logic value "0" = transition L $\rightarrow$ H

EXAMPLE:

NRZ:

1	1
---	---

 0

1

 0 0

Manchester
(Pure)

For the code generation the used rule is the following:

Starting from a time-base with period of 6 mS and duty cycle of 50% the generation of the "1" occurs at the rising edge of the clock with a duration of the high level of 750 μ S, while for the generation of the "0" the signal is carried up at the falling edge of the clock with always the duration of 750 μ S.

In this way the interval between 2 bits can change depending upon the edge type 1->0 or 0->1.

6 mS

TIME_BASE

Sequence = 0,0,0

750 uS

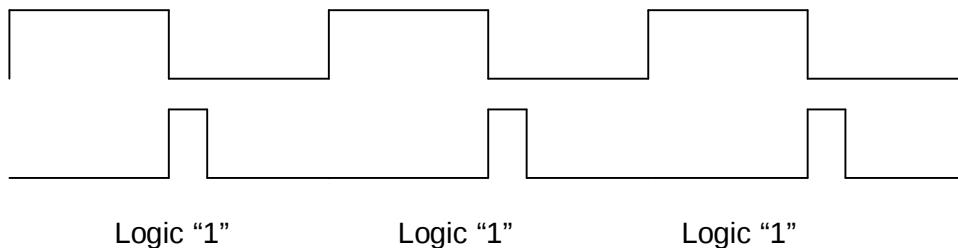
Logic "0"

Logic "0"

Logic "0"

TIME BASE

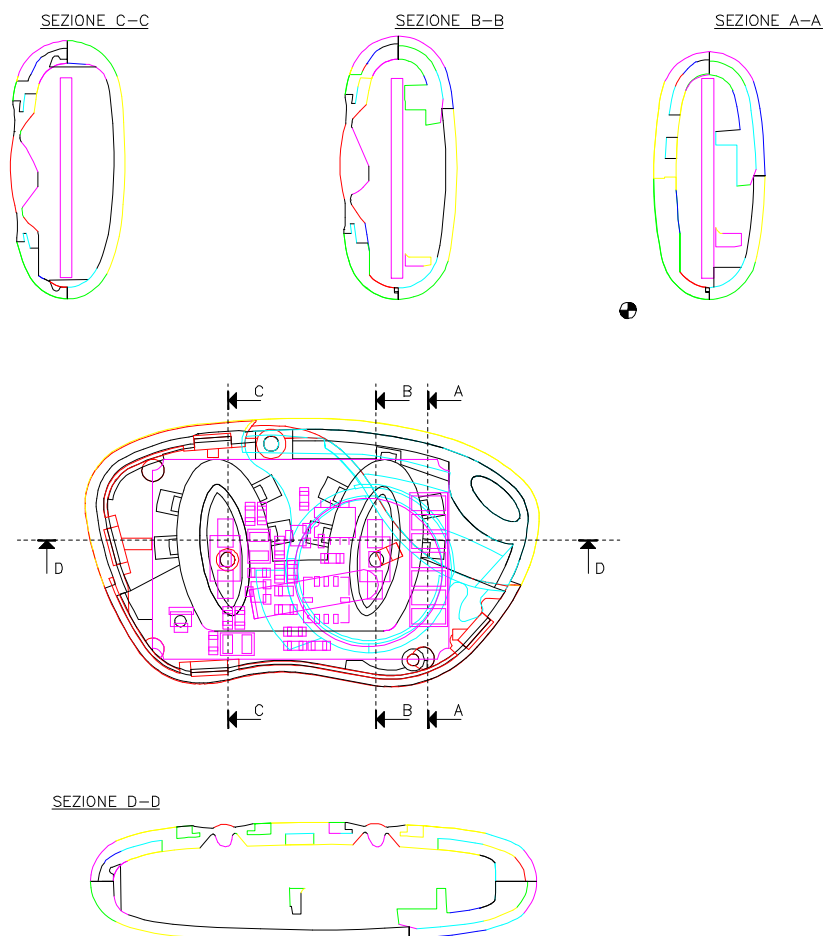
Sequence = 1,1,1



Each frame is paused by the next with a 22 – 25 mS pause delay

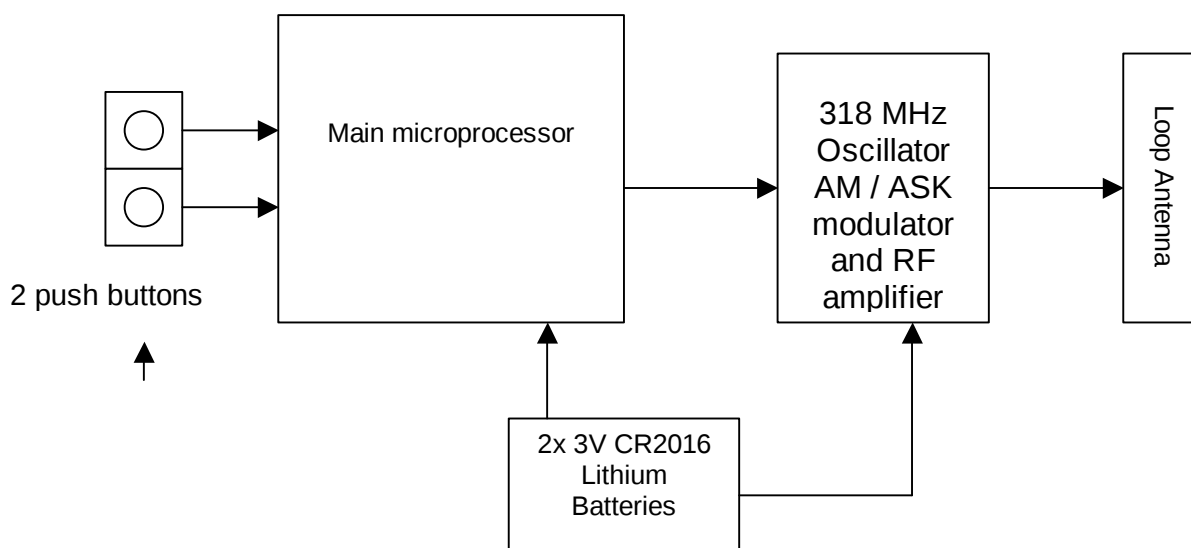
The RF signal is received by a Wiegand receiver which arranges the data demodulated and transmits them over the wiegand bus.

4.3 Mechanical drawings



5.0 Schematic block diagrams

5.2 2 keys transmitter



6.0 Reference Regulations

System Erone 318W has been designed in compliance with the following Regulations:

- Part 15 of FCC Rules