



## 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 $\mu$ W
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:


**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.

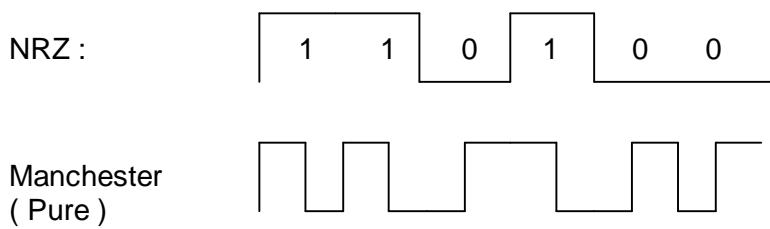
This type of code has the feature that for each bit there is a transition.

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 -> H

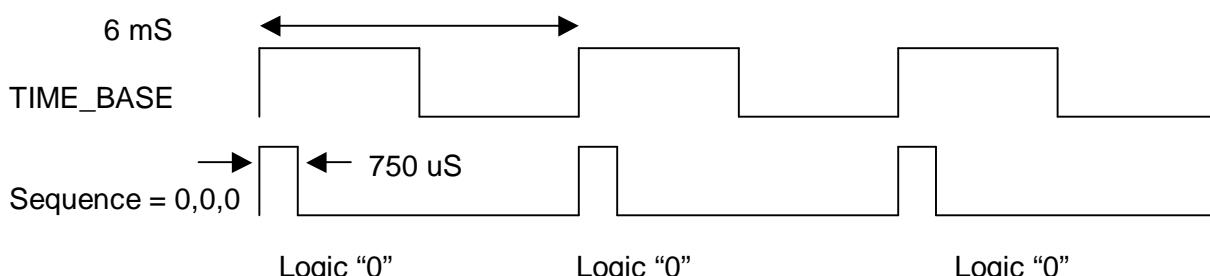
EXAMPLE:

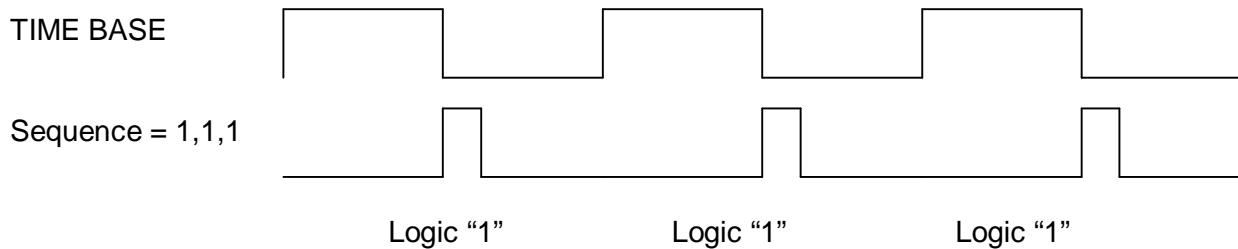


For the code generation the used rule is the following:

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  $\mu$ 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  $\mu$ S.

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

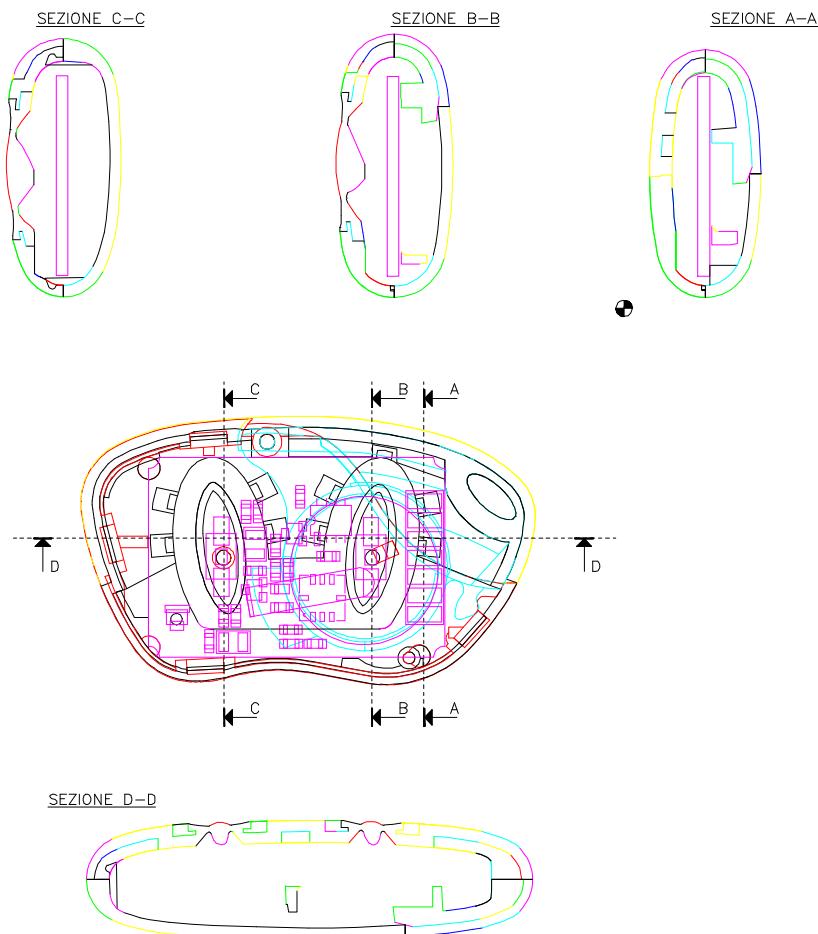




Each frame is paused by the next with a 22 – 25 mS pause delay

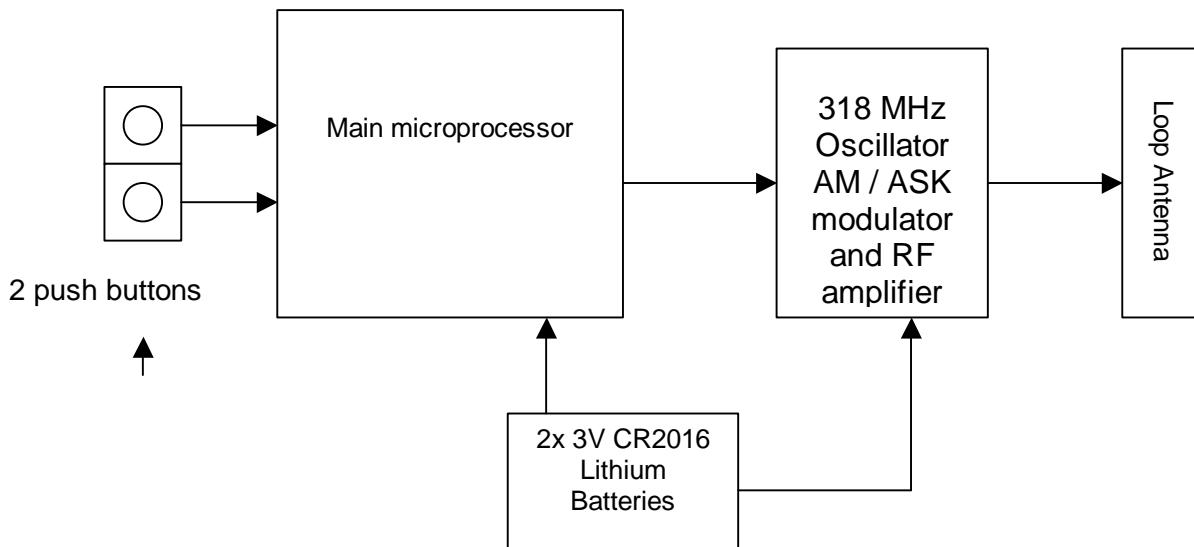
The RF signal is received by a Wiegand receiver which arranges the data demodulated and transmits them over the wiegand bus.

## 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