

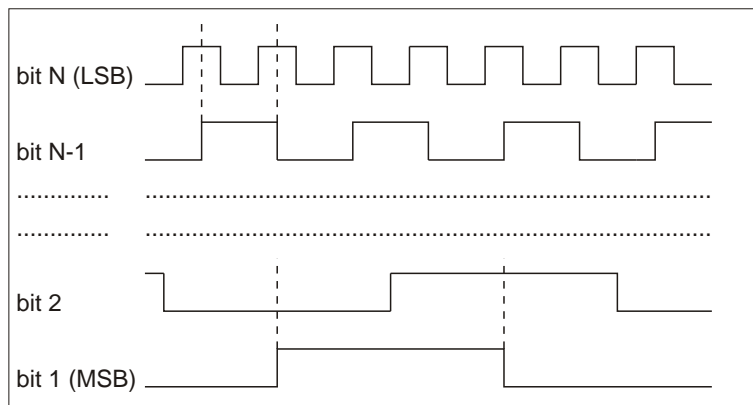


# PARALLEL INTERFACE GENERAL DESCRIPTION

## Parallel Interface

Singleturn and multiturn absolute encoders with a parallel output are the tradition form of encoders. These in fact supply the entire position data at the output, bit by bit, relative to the resolution adopted by the device. Whilst this form of transmission is the standard for singleturn encoders, it is more burdensome for multiturn encoders where the number of bits per turn, and on the turns, becomes high; singleturn encoders can arrive at 13 data bits, whilst multiturn ones reach 25 bits and beyond. This is without counting the normal command signals that go from count inversion to data blocking the data on the outputs (LATCH), etc. This is why data transmission methods, serially (SSI) or through field buses (PROFIBUS, CANBUS, etc.) have been introduced.

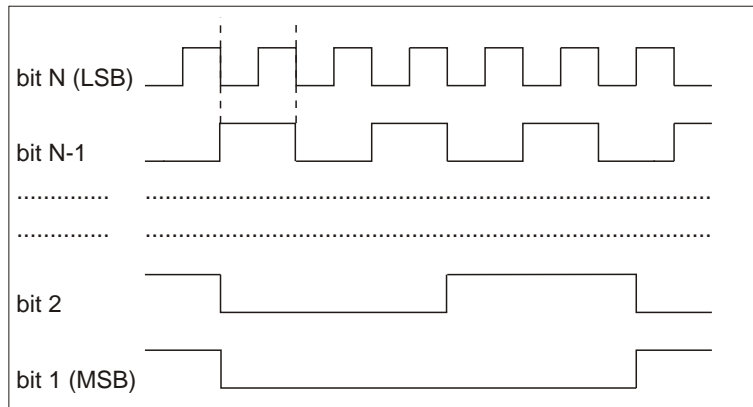
Output data in grey format:



Apart from the grey format output, the data is also available in binary form. In the latest generation of encoders, the binary code is obtained by ASIC devices processing the signals in grey code supplied by the photo-receiver circuit. The problem of discriminating the status of the binary code remains however, given that unlike the grey code, binary has multiple bit switching between the various phases.

In the past, to avoid this problem and therefore to supply an output code free from errors, we used an output synchronism signal (STROBE), whilst with the adoption of programmable logics this limitation has been overcome.

Output data in binary format:



There are various output stages and these cover all the electrical-electronic requirements demanded by the most widely ranging controllers. Usually, the conformations made available are: NPN, NPN OPEN-COLLECTOR, PNP OPEN COLLECTOR, PUSH-PULL.

## Command inputs and optional outputs

As mentioned earlier, external commands exist for processing and handling encoder data, even before it leaves the same; among these we shall look at a few really indispensable ones.

### STANDARD SIGNALS PRESENT ON ALL THE ENCODERS:

**-U/D:** this permits inversion of the absolute code; it is equivalent to making the encoder shaft rotate in the opposite direction.

### OPTIONAL SIGNALS (contact ELTRA for availability):

**-LATCH:** this command permits the data to be frozen. In this way, whilst the encoder shaft continues to turn, the output data of the same remains the same.

**-TRISTATE:** this permits the outputs to be placed in an isolation condition, or better, it puts them in a high impedance status, similar to an open circuit and this for example permits several encoders to be placed in parallel and the activation of just one at a time (only with electronic Push-Pull).

**-G/B:** this permits the automatic passage of the code from the gray format to the binary one and vice versa.

**-STROBE:** this is an output present only with the binary code and permits the acquisition of the binary code in a stable condition.

INPUT	STATE HIGH	STATE LOW
U/D	Inverts the code	Does not invert the code
LATCH	Blocks the code	Does not block the code
TRISTATE	Isolates the outputs	Does not isolate the output
G/B	Gray code	Binary code

