Binary Source

October 6, 2016

This block generates a sequence of binary values (1 or 0) and it can work in four different modes:

1. Random
2. PseudoRandom
3. DeterministicCyclic
4. DeterministicAppendZeros

Input Parameters

- mode
- probabilityOfZero
- patternLength
- bitStream
- numberOfBits
- bitPeriod

Functional description

The *mode* parameter can take integer values from 1 to 4 (that correspond, respectively, to Random, PseudoRandom, DeterministCyclic and DeterministAppendZeros modes) and allows the user to select between one of the four operation modes of the binary source.

Random Mode Generates a 0 with probability *probabilityOfZero* and a 1 with probability 1-*probabilityOfZero*.

Pseudorandom Mode Generates a pseudorandom sequence with period $2^{patternLength} - 1$.

DeterministicCyclic Mode Generates the sequence of 0's and 1's specified by *bitStream* and then repeats it.

DeterministicAppendZeros Mode Generates the sequence of 0's and 1's specified by *bitStream* and then it fills the rest of the buffer space with zeros.

Input Signals

(Currently working with no input signal.)

Number: 0 or 1 (which would work as a trigger)

Type: Binary (DiscreteTimeDiscreteAmplitude)

Output Signals

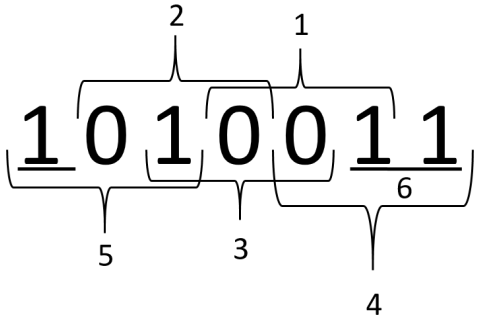
Number: 1 or more

Type: Binary (DiscreteTimeDiscreteAmplitude)

Examples

Random Mode

PseudoRandom Mode As an example consider a pseudorandom sequence with *patternLength*=3 which contains a total of 7 ($2^3 - 1$) bits. In this sequence it is possible to find every combination of 0's and 1's that compose a 3 bit long subsequence with the exception of 000. For this example the possible subsequences are 100, 010, 001, 110, 101, 011 and 111. Some of these require wrap.



DeterministicCyclic Mode

DeterministicAppendZeros Mode

Sugestions for future improvement

Implement an input signal that can work as trigger.