# TYPE 577: RANDOM NUMBER GENERATOR DRAWN FROM UNIFORM DISTRIBUTION

## General Description

This model generates a random number drawn from a uniform distribution based on user-supplied values of an initial seed, minimum and maximum function values.

## Detailed Description

At the heart of the Type577 random number generation routine is the Fortran intrinsic function called RAN. RAN returns the next number from a sequence of pseudorandom numbers of uniform distribution over the range 0 to 1. As an argument, it takes an integer seed that should ideally be a large, odd number. As a result, it returns a double precision representation of a real floating point number that is uniformly distributed between 0.0 (inclusive) and 1.0 (exclusive). For more information on the RAN function, refer to the Digital (Compaq, or Intel) Fortran documentation.

Type577 modifies the Fortran generated uniformly distributed number as shown in equation 577.1.

$$Z_{rand} = Z_{\min imum} + \left(Z_{\max imum} - Z_{\min imum}\right) * RAN(SEED) \qquad \text{(Eq. 577.1)}$$

## Example

Type577 is used in the following Simulation Studio example:
\trnsys16\TESS Models\Studio Projects\Utility Library\RandomNumbers.tpf

## References

Digital Fortran Language Reference Manual, Digital Equipment Corporation, Maynard, MA 1997