TYPE 576: TWO DIMENSIONAL BIN SORTER

General Description

This component calculates the number of hours during the simulation in which the two inputs fall within user-specified bins. The user must provide the number of bins for each of the inputs and the minimum and maximum values for the bins. The model will then sort the inputs into these bins; producing a 2-D grid upon completion. The outputs from this model are written to a user-specified file.

Detailed Description

Type576 is useful in summarizing simulation results automatically. For example, the model could ideally be used to answer the question: how many hours during a year does the ambient temperature fall between 10 and 12 C with a relative humidity between 40 and 50%?

During the course of the simulation, Type576 accumulates the amount of time that each of the two inputs spends in the ranges defined by parameters to the Type. It also keeps track of the time spent either below or above the specified maximum bin value. Type576 writes its output file at the very end of a simulation (when INFO(8) is set to –1). Consequently an output file will not be created for simulations that are aborted or that terminate in error. For more information on the INFO array, refer to Chapter 3 of the main TRNSYS manual.

The use of Type576 is perhaps best illustrated using an example. A user wishes to sort ambient temperature and wind speed using Type576 component. The user wishes to have 5 ambient temperature bins and 5 wind speed bins. The ambient temperature should be binned from 0 to 50 C and the wind speed binned from 1 to 5 m/s. The output from this component may look like:

		Temperature						
		< Minimum	5	15	25	35	45	> Maximum
Wind Speed	< Minimum	10	20	30	20	15	10	5
	0.5	20	18	16	14	12	10	8
	1.5	25	23	21	19	17	15	13
	2.5	33	31	29	27	25	23	21
	3.5	28	26	24	22	20	18	16
	4.5	12	10	8	6	4	2	0
	> Maximum	16	14	12	10	8	6	4

The bin of 15 C (which represents temperatures greater than 10 C and less than or equal to 20 C) and 1.5 m/s (which represents wind speeds greater than 1 m/s and less than or equal to 2 m/s) contains a value of 21. This indicates that there were 21 hours of the year in which the ambient temperature was between 10 and 20 C with a corresponding wind speed between 1 and 2 m/s. The grid also shows that for 4 hours of the year, the ambient temperature was greater than 50 C with a wind speed greater than 5 m/s. While not shown in the sample output, Type576 writes the decimal number of hours that each input spends in each bin; it does not round to the nearest integer.

Example

Type576 is used in the following Simulation Studio example:
\trnsys16\TESS Models\Studio Projects\Utility Library\Utility_Misc.tpf