TYPE 647: FLOW DIVERTER WITH UP TO 100 PORTS

General Description

Type647 models a diverting valve that splits a liquid inlet mass flow into fractional outlet mass flows. One inlet flow may be split into as many as 100 individual streams. The limit of 100 inlet flows can be modified in the Fortran source code.

Nomenclature

$\dot{m}_{in}$	[kg/hr]	Mass flow rate of liquid entering the diverting valve.
$\dot{m}_i$	[kg/hr]	Mass flow rate of liquid exiting a given port of the diverting valve.
f_i	[-]	Fraction of inlet mass flow rate that exits through a given port of the diverting valve.

Detailed Description

Type647 takes, as inputs, liquid temperature and mass flow rate. The component also takes a single value of pressure drop across the diverting.

The user is asked to provide (as parameters) the fractions of total inlet mass flow rate that exit the diverting valve through each given port. The number of ports is also supplied as a parameter and the model checks to make sure that the user specified fractions add up to 1. If they do not, then the last user specified fraction is calculated by the model and the user is warned that the value was reset. If the calculated value of the last fraction turns out to be less than zero, the model generates an error and stops the simulation. The outlet flow rate of liquid exiting a given port of the diverting valve is determined as the fraction for that port multiplied by the inlet mass flow as shown in equation 647.1.

$$\dot{m}_i = \dot{m}_{in} f_i \qquad \text{(Eq. 647.1)}$$

The temperature of the supply flows at each port are set equal to the temperature of the liquid inlet stream. Type647 does not perform any pressure drop calculations.