TYPE 515: HEATING AND COOLING SEASON SCHEDULER

General Description

The Heating and Cooling Season Scheduler utility programs (Type515.exe and SeasonsScheduler.exe) and their companion component Type515 are used in conjunction with one another to input a heating/cooling season schedule. A heating/cooling schedule denotes which portions of the year when heating or cooling (or both) equipment may be utilized.

Two applications are provided: Type515.exe is a plugin for use with the TRNSYS Simulation Studio while SeasonsScheduler.exe is designed for use in distributable TRNSED applications. The first section of the Detailed Description here below provides the user with information on manipulating Type515.exe and SeasonsScheduler.exe since operationally they are identical. Type515.exe and SeasonsScheduler.exe differ only in the format of data that they pass to the program that called them. A second section describes the use of Type515 and Type515.exe within the TRNSYS Simulation Studio environment. The third section of the Detailed Description describes the application of SeasonsScheduler.exe in TRNSED distributable applications.

Detailed Description

1. Use of the Scheduler Programs

At the top of the screen is the File menu, which controls the selection of the file that will store the values and be read in by TRNSYS as well as the control of the program. The user can select “Open” from the menu to open an existing file, “Save” to save the current values to a file, or “Exit” to leave the program.

The two horizontal bars on the screen are used to set the dates when the different seasons are active, with the heating season being set with the upper bar and the cooling season with the lower. The part of the year that has heating active is denoted by the red portion of the bar and that has cooling active by the blue portion. The sections of the bar are changed by grabbing the separation lines with the mouse and moving the lines to the desired date. When the mouse cursor is moved over a separation line so that it can be selected the cursor changes from the arrow ( ) to the pointing finger ( ). The line can then be moved by clicking and moving the mouse while holding the mouse button down. When selected the cursor will change to the closed hand ( ). While the separation lines are moving the dates below the bar will change to denote the date being set. Any day of the year (except leap days) can be selected. Figure 1 shows the data entry screen for the Heating and Cooling Season Scheduling utility program.

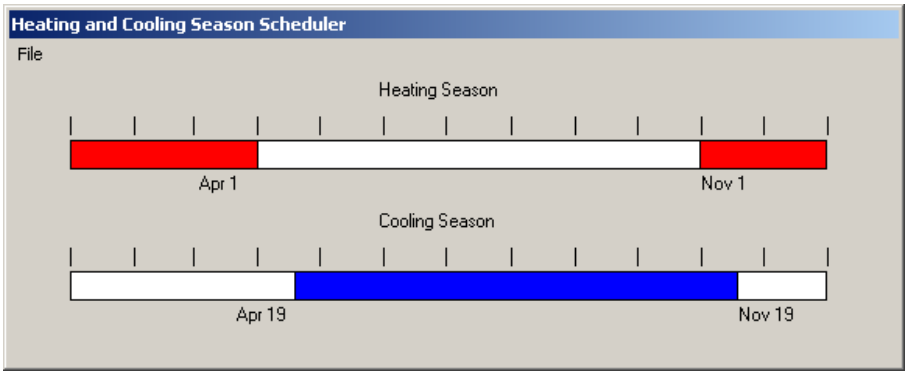


Figure 1: Heating and Cooling Season Data Entry

2. Implementation of Type515.exe and the Type515 Component in the Simulation Studio

Type515.exe is a Simulation Studio plugin. Plugins offer an alternative method for entering parameters and inputs. Once Type515 has been placed in a Studio project, double click the component as you normally would to enter its parameter and input initial values. The window that pops up should look like that shown in **Error! Reference source not found.**. Clicking the icon in the lower left hand corer of the window will launch Type515.exe, allowing you to set the appropriate schedule.

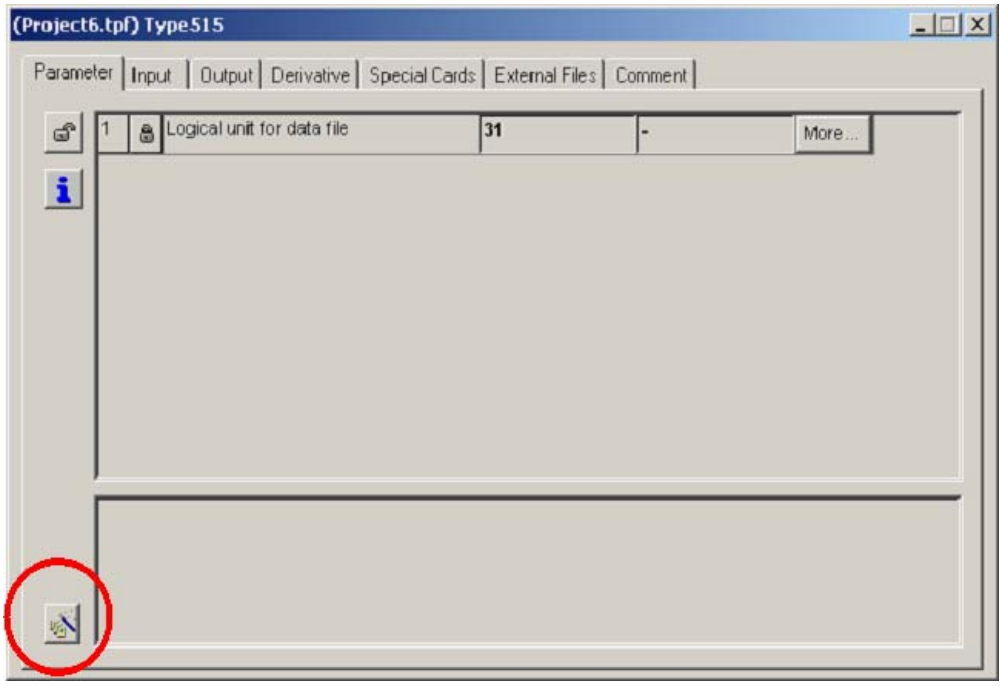


Figure 2: Data Entry when a Plugin is Available

3. Implementation of SeasonsScheduler and the Type515 Component in TRNSED

While TRNSED is a powerful tool for taking user supplied data and inserting it into the appropriate spot in a TRNSYS simulation input file, for some types of data, TRNSED's built in syntax can be cumbersome for the user. For example, if the TRNSED programmer wishes to allow the end user to enter the beginning and end of heating and cooling seasons in a building simulation, one traditional method has been to include a pull down menu for the month in which cooling is to start, then to include a numerical value field for the day of that month on which cooling is to start. Next, a pull down menu and a numerical value field for the end of the cooling season are included, followed by the same for the beginning and end of the heating season. Implementation of the heating and cooling season schedules can be simplified through the use of Type515 and its companion application, SeasonsScheduler.exe. The TRNSED programmer can provide the end user with a button in the TRNSED interface, which when clicked launches the SeasonsScheduler application allowing the end used to set up the heating and cooling season begin and end points graphically. The following example shows such a possible implementation in TRNSED. Please refer to the TRNSED/TRNEdit manual for more information regarding the syntax used.

Figure 3 shows what the TRNSED end user might see in this example's implementation of Type515. The text and button in the figure below are contained in a bitmap image called Seas.bmp

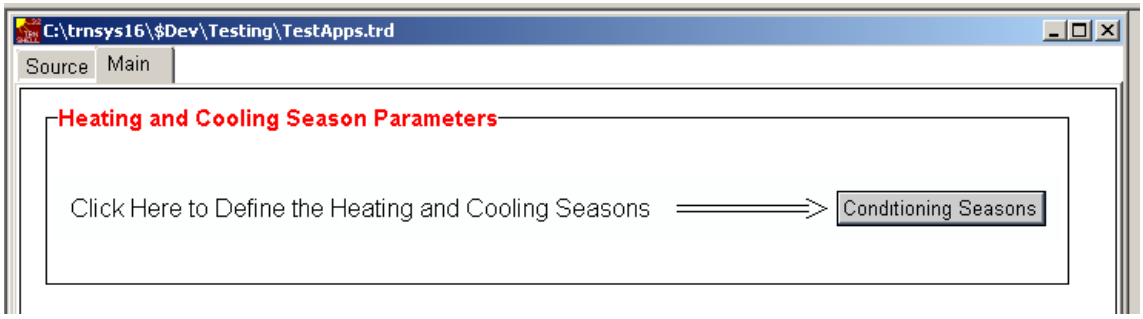


Figure 3: A Clickable Button in TRNSED. Clicking the button launches the SeasonsScheduler.exe Application

The TRNSED source required to create Figure 3 is as follows:

```
*|[SEAS|Heating and Cooling Season Parameters
*|<APPLINK1> \trnsys16\images\Seas.bmp  file=\trnsys16\AppsDat\seas.hcs   LEFT
ASSIGN \trnsys16\AppsDat\seas.hcs          21
*|]
...

UNIT 10 TYPE 515 - HEATING AND COOLING SEASON SCHEDULER (SEASONSSCHEDULER.EXE)
PARAMETERS 1
21         !logical unit of data file
```

In the above, the <APPLINK1> keyword takes three arguments. The first argument is the location of the clickable bitmap image that will be displayed in TRNSED view. When clicked, the executable program associated with APPLINK1 (in this case SeasonsScheduler.exe) will be launched with the second argument. The second argument is the file that should be loaded by the launched program. In this case, it is the *.dat file that contains the heating and cooling season schedule data. The third argument is a justification (LEFT, RIGHT, or CENTER) for the bitmap image.

The only other thing that the TRNSED programmer must do in order to implement the clickable button is to make sure that APPLINK1 in the TRNEdit File: Setup Menu is directed to SeasonsScheduler.exe. The Link Tab would be set as follows:

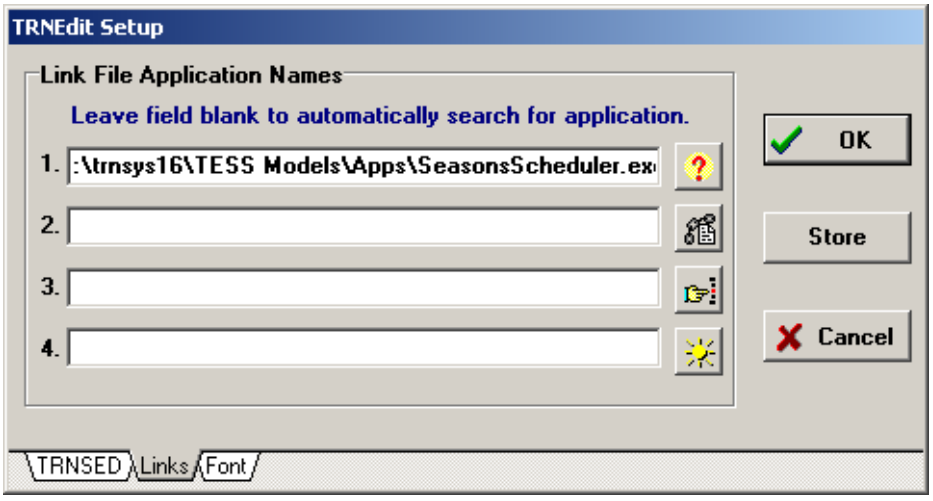


Figure 4: The TRNEdit Links Setup

When the end user clicks on the button labeled “Conditioning Seasons,” c:\trnsys16\Tess Models\Apps\SeasonsScheduler.exe is launched with the file c:\trnsys16\AppsDat\seas.dat.” Once the user has made and saved their changes to the slider values, SeasonsScheduler records those changes in the .dat file. Later in the TRNSED input file, the same file is ASSIGNed to a logical unit number. This data file is read by Type515 during the simulation and the Type outputs appropriate values of the beginning and end of the heating and cooling seasons for the simulation.