DFCKII: clock module

DFCKII clock module allows to control some outputs in a **Domino** system according to configurable schedules, both daily and weekly, .
The CLOCK function (see programming manual) allows to manage a virtually unlimited amount of outputs, each one with its proper switching ON and OFF time, fixed by program. In addition, DFCKII module allows to manage up to 20 different outputs, with up to 21 distinct switching ON and 21 switching OFF times each one; thanks to this feature, it is possible to change each scheduled time directly by the pushbuttons on the panel of DFCKII module itself.

The main characteristics are of DFCKII module are:

- LCD display with timed back-light
- internal clock with back-up battery and automatic change of daylight-saving /standard time
- control of up to 20 distinct outputs
- Up to 21 On/Off programmable points for each output
- daily and weekly programming
- 3 buttons keyboard (▲ ▼ and **SET**)
- possibility to install up to 8 DFCKII modules in the same bus system, allowing to control up to 160 distinct outputs

DFCKII housing is a standard DIN 3M module and it provides a 2-pole terminal block for the connection to the bus (+ and -); as all modules of **Domino** family, the power supply for the module operation is carried by the bus itself.

The back-light of the display is automatically activated when pushing down any button on the front panel; the switch off occurs after 30 seconds about of inactivity on the buttons.

General settings

The display normally shows 6 fields in the following order:

- the day of the week, hours and minutes and on the first line
- day, month and year on the second line

To allow proper operation of DFCKII module, the current date and time of the clock must be set by the buttons on the front panel according to the following procedure:

- each pressing on SET button selects one of the 6 fields in the sequence as they appear on the display: the selected field flashes
- the button ▲ increases the flashing value, the button ▼ decreases it, the SET button confirms the setting of current field and select the next one
- when the flashing field is the last one, another pressing of SET button exits the setting procedure

The module will automatically exit the setting mode after 30 seconds of inactivity on the buttons.

To change the language for displaying the days of the week, press and hold down the SET button and then press the button ▲. For each pressing of this last button (holding SET button down) the display will shows the labels IT (Italian), EN (English), FR (French) or DE (German) in place of the day of the week; once chosen the preferred language, release all buttons.

Since up to 8 DFCKII modules can be installed in the same **Domino** system, an identification number (or address) must be assigned to the module; to do this, press and hold down the SET button and then press the button ▼; at each pressing of this last button (holding SET button down) the number at the center of the second line on the display will be increased (allowed values are 1 to 8). Once chosen the wanted identification number, release all buttons.

Warning: if more DFCKII modules are installed in the same **Domino** system, it is mandatory to assign to one and only one of them the address 1.

Clock

DFCKII module contains a timekeeper chip and a back-up battery in order to allow the clock operation even if the module is not connected to the bus.
DFCKII module automatically handles the change between the daylight-saving and standard time.

If more DFCKII modules are connected on the same **Domino** bus, then they will be always synchronized to date and time of the module having address is 1; in addition, a change of date and time on a DFCKII module will be automatically reported on the other ones.

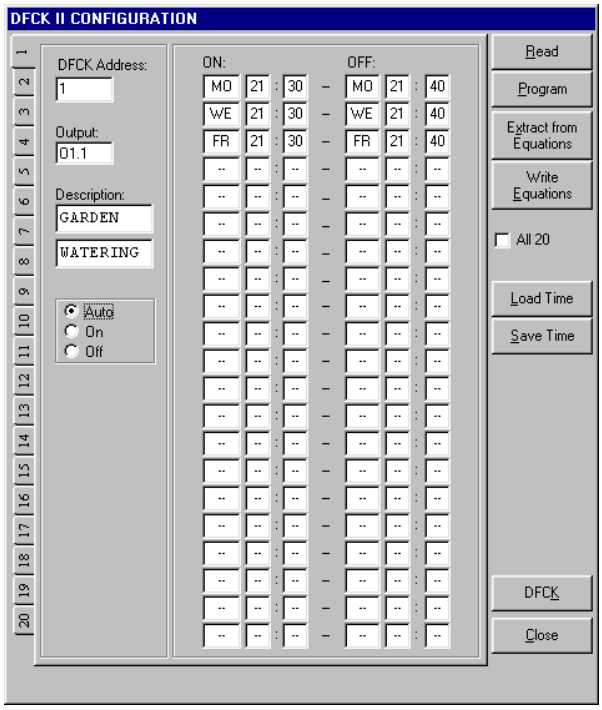
Setting up

To allow proper operation of DFCKII module, some parameters must be set. This can be done by the support program BDTools *release 3.1.1 or higher*.
From the main menu of BDTools, select “Programming” and then “DFCK Configuration”; the window shown in the following page will appear (the shown window was filled out as example).

The window is arranged in 20 TABs, one for each output; each TAB must filled out entering the following information:

- DFCK Address: to exactly identify the DFCKII module to be set
- Output: the address/point of the output to be controlled
- Description: the name to be assigned to the output (on two lines) as it will appear on the display of DFCKII

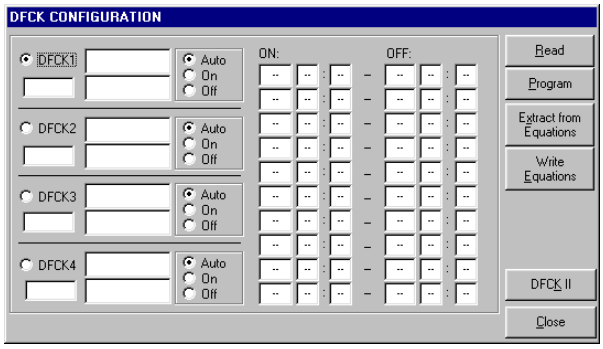
- ON: the day of the week, hour and minutes when the output will be switched on. Entering the symbol * (asterisk) as day of the week, then the specified timing will be daily; entering the symbol – (dash), then all the scheduled times following that position will be cleared
- OFF: the day of the week, hour and minutes when the output will be switched off. Entering the symbol * (asterisk) as day of the week, then the specified timing will be daily; entering the symbol – (dash), then all the scheduled times following that position will be cleared



If one or more outputs are not used, leave blank the Output entry box; in this case that output will not be shown on the display of DFCKII.

On the right side of the configuration window of DFCKII some buttons allow to perform the following functions:

- Read: reading of the configuration currently loaded in DFCKII module
- Program: send to DFCKII module the configuration currently shown in the window
- Extract from Equations: filling of the window using the equations loaded in the editor window of BDTools (if any)
- Write Equations: conversion of the configuration currently shown in the "DFCKII Configuration" window into equations that will be shown in the editor windows of BDTools; this feature is useful to save the DFCKII configuration in the program file of the system (.equ)
- Load Time: to load from file the scheduled times for switching on and off
- Save Time: to save to file the scheduled times for switching on and off as shown in the window
- DFCK: to change from the configuration window of DFCKII to the configuration window of DFCK, as shown in the following figure



The button DFCKII in the DFCK window allows to come back to DFCKII window.

The check box named "All 20", *if unselected*, will enable the buttons Read, Program, and Write Equations to transfer the settings related to the output currently shown in the window. On the contrary, *if this check box is selected*, the buttons listed before will transfer the settings of all outputs (writing and reading operations takes 1 minute about).

All parameters shown in the DFCKII configuration window can be set and modified by the buttons on the front panel of the module; the exceptions are the address of the outputs to be controlled and the related descriptions.

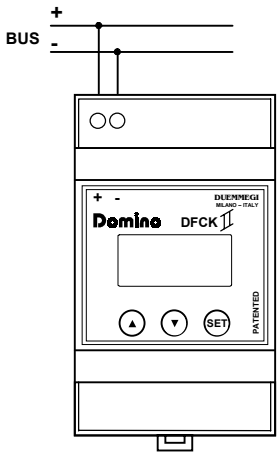
The following procedure allows to enter or to modify the settings Auto, On and Off by the buttons on the front panel of the module:

- hold SET button down for more than 2 seconds: the display will show the description (2 lines) related to the first output to be controlled (if at least one was defined); press ▲ or ▼ button to search the required output.
- press SET button to enter the menu allowing the selection of the controlling mode for the output chosen at the previous point; pressing ▲ or ▼ button, 3 sequential options will be displayed: On (to keep the output always on), Off (to keep the output always off) and Auto (to leave the control of the output to the scheduled times). The Auto option on the display is followed by the current status of the selected output (On or Off).
- press SET button while the display is showing the On or Off option to return to the output selection menu.
- press SET button while the display is showing the Auto option to enter the edit mode of scheduled times related to selected output; switching on time is displayed on the first line (day of week, hours and minutes) and the switching off time is displayed on the second line

- press ▲ or ▼ button to scroll between the programmed times (max 21); a sequence of character – (dash) means that no more times were defined beyond that position. A sequence of character << (less symbol) means that no more times are allowable beyond that position.
- press SET button again to enter the edit mode of displayed times, which execution is similar to the procedure already described for the clock setting; characters ** (asterisks) at day of week position mean a daily scheduling (the output will be switched on and off everyday at the shown times). To quit the edit mode of displayed times, press SET button until no more flashing fields are displayed.
- press ▲ button to select the next scheduling times and repeat the previous point, or press and hold SET and then press ▼ button to fill the displayed times with the character – (dash); these characters means that no more times were defined beyond that position for the selected output.
- press ▲ and ▼ buttons at the same time to quit the edit mode and return to the output selection menu. Press again ▲ and ▼ buttons at the same time to return to the clock displaying (after 30 seconds of inactivity on the buttons the module automatically quits the edit mode).

Module connection

DFCKII module requires only the connection to the bus as shown in the following schematic diagram.



Technical characteristics

Power supply (bus side)	By specific centralized power supply Mod. DFPW
Display	LCD 2 lines / 8 characters with automatic back lighting
Amount of controlled outputs	20
Scheduled points	21 for each output
Internal battery	NiMH 3.6V 11mAh
Housing	Standard DIN 3M for DIN rail
Operating temperature	-5 ÷ +50 °C
Storage temperature	-20 ÷ +70 °C
Protection degree	IP20

Warning: DFCKII module contains a NiMH rechargeable battery: remove this battery before to throw the device. The battery must be eliminated in a safe way according to current laws.

Outline dimensions