



F&F Filipowski sp.k., ul. Konstytucyjna 79/81, 95-200 Pabianice, tel.: +48 (42) 214 90 37, e-mail: [biuro@fif.com.pl](mailto:biuro@fif.com.pl), [www.fif.com.pl](http://www.fif.com.pl)



## PCZ-524.4

1-channel astronomical time switch

Index: PCZ-524.4

Single-channel

Configuration for iOS and Android phone.

PCZ-524 astronomical clock is used to control lighting or other electrical consumers according to the hours of sunset and sunrise.

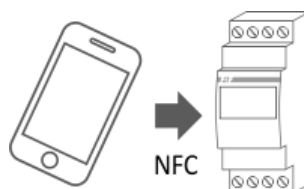


## FUNCTIONING

### DESCRIPTION

#### NEW FUNCTION IN 4-Series CLOCK.

In the Series 4 device, the clock **configuration** can be **read and saved wirelessly** via an **Android or iOS** phone equipped with an **NFC communication module**.



<https://www.youtube.com/embed/pqBjrlAqW6A?enablejsapi=1&origin=https%3A%2F%2Fwww.fif.com.pl>


### Operation


The **astronomical timer**, based on information about the current date and the geographical coordinates of the location of its installation, automatically determines daily programmed points of switching on and off the lighting. The exact **time of switching on and off** is determined by calculating the position of the sun in relation to the

horizon, and allows you to select one of three control options (the moment of light switching on and off is set independently):


1. astronomical sunset and sunrise
2. dusk / civil dawn
3. correction - individual correction of the software switch-on and switch-off points by the user: angular or temporal....

### Clock functions

**AUTOMATIC OPERATION** - automatic operation according to programmed switch-on and switch-off points of the contact [switched-on symbol  on the display on the left].

**semi-automatic** operation - possibility of manual switch on/off of the contact during automatic operation. The change will be in force until the next switch on/off resulting from the automatic operation cycle [flashing symbol  on the display on the left].

**NOTE!** In semi-automatic mode the contact position is opposite to that resulting from the program cycle (i.e. at night the contact is off, and during the day it is on). Semi-automatic operation works only until the end of the current cycle of automatic operation, e.g. entering semi-automatic mode during the day will switch on the light until the program switching time resulting from the astronomical cycle. Then the timer returns to automatic operation (and the light continues to stay on until dawn).

**MANUAL OPERATION** - [ON] permanent contact activation (items 1-5) or [OFF] permanent contact disconnection (items 1-6) with **AUTOMATIC OPERATION** mode off. [no symbol  on the display on the left].

**ASTRONOMIC SUNRISE AND SUNSET** - moments when the center of the solar disk touches the horizon (parameter  $h = -0.583^\circ$ ). For the sake of simplification of calculations, a deviation of a few minutes from the data determined by the "HM Nautical Almanac Office" is allowed.

**NOTE!** The advantage of setting the on/off moment as a function of the position of the solar disk is that it is insensitive to changes in the duration of dusk/dawn for different seasons, so that the on/off moment always occurs for the same level of brightness.

**DAWN AND CIVIC DAWN** - also calendar - phase of sunset,

in which the center of the solar disk will be no more than 6 angular degrees below the horizon (the solar disk viewed from Earth has a diameter of about half a degree). At this time, the brightest stars and planets appear in the sky (if the air is clear) (the "Evening Star," the "first star" on Christmas Eve). Due to the scattering of light in the atmosphere, there is still generally enough sunlight that it is still sufficient for normal outdoor activities without artificial light sources. Civil dawn (also calendar dawn) - the time before sunrise when the center of the sun's disc is already more than  $6^\circ$  below the horizon line.

**PROGRAMMABLE ON and OFF POINT** - the times of contact on (items 1-5) and contact off (items 1-6) determined based on the selected control option: astronomical sunrise/sunset or civil dawn/dusk and location.

**CONFIGURATION** - providing LOCALIZATION and designating the PROGRAMMABLE ON and OFF POINTS.

**LOCATION** - geographic coordinates and time zone of a locality relatively close to the place of installation of the clock. The memory defines locations and time zones of about 1500 localities from 51 countries of the world. It is possible to enter your own settings in the form of geographic location and time zone (UTC).

**CODE OF COORDINATES** - assigned geographic coordinates for the listed cities to make it easier to specify the location (cities and their assigned codes are given in the table at the back of the manual). The full list of countries and their corresponding codes can be found (at the bottom of the page) in the downloads under the name: *Coordinate Code Table*.

**CORRECTION** - acceleration or delay of on/off times in relation to the astronomical time points of sunrise and sunset:

$\pm 15^\circ$  - angular correction for the time of switch-on relative to the position of the center of the sun's disk relative to the horizon

$\pm 180$  min. - time correction for the moment of switching on as a time offset relative to sunrise/sunset.

**DST** - Daylight Saving Time - the global name for daylight saving time (free translation: sunlight-saving time). A function to disable automatic time change.

**AUTOMATIC TIME CHANGE** - Change of time from winter to summer time. Option to work with or without automatic change. The controller is equipped with a time zone selection function so that the switching time is in accordance with the local time.

**DATE LIVEPAGE** - preview of the set date (OK).

**PROGRAMMABLE ON/OFF POINTS AND LOCATION LIGHTING** - possibility to preview the current time of contact switching on and off, as well as the set location (geographic coordinates are displayed) and UTC time zone (in date preview mode successive presses of +/- buttons).

**NFC FREE COMMUNICATION** - Possibility to read and save the timer configuration wirelessly via an Android phone equipped with an NFC communication module.

**PCZ CONFIGURATOR APPLICATION** - Free application for Android phones and tablets running on Android and equipped with NFC wireless communication module.

Functions:

- \* preparation of clock configuration in offline mode (without the need to connect to the clock).
- \* setting coordinates by selecting a predefined location (coordinate code), directly pointing to the location on the map on the phone, or rewriting the current position registered by GPS on the phone.
- \* reading and writing configurations to the controller.
- \* quick programming of multiple controllers with a single configuration.
- \* reading and writing configurations to a file
- \* sharing of configurations via e-mail, network drives, ....
- \* unambiguous identification of the connected clock and the ability to give devices their own names.
- \* automatic configuration backup. In conjunction with the unique ID of each clock, you can easily restore the previous configuration
- \* setting the time and date based on your phone's watch.

The app is available on Google Play!

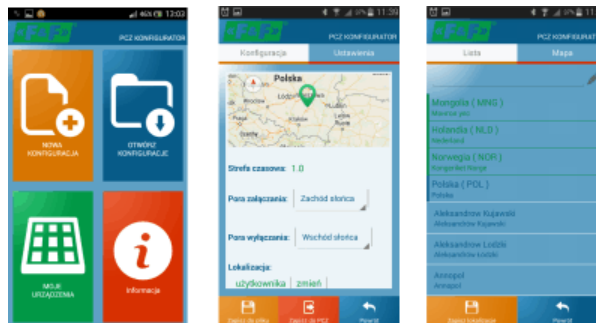
**CLOCK TIME CORRECTION** - Set monthly correction of system clock seconds.

**BATTERY CHARGING INDICATOR** - The controller is equipped with a battery status check to keep the clock running in case of main power supply failure. If the battery is low, the user will be notified to replace it.

**LCD BRIGHTNESS CORRECTION** - Changing the contrast of the display allows the LCD to be read clearly for different viewing angles.

**RELAY STATE MEMORY** - The set relay state in manual mode is also remembered after power failure.

### PCZ Configurator



- NFC wireless communication - possibility to read and save the timer configuration wirelessly via an Android phone equipped with an NFC communication module.
- preparation of the timer configuration in offline mode (without the need to connect to the timer)
- reading and writing the configuration to the controller
- quick programming of multiple controllers with a single configuration
- reading and writing the configuration to a file
- sharing the configuration via e-mail, network drives ...
- unambiguous identification of the connected clock and the ability to give devices their own names
- automatic configuration backup. In conjunction with the unique identifier of each clock, you can easily restore the previous configuration
- setting the time and date based on the phone's clock



The app is available on Google Play!

### What is NFC wireless communication?

**NFC (Near Field Communication) technology** is a form of very short-range wireless communication, usually no more than a few centimeters. It has found application in proximity payment solutions, whether using contactless payment cards or through smartphones with NFC functionality and a dedicated banking application. In several devices manufactured by **F&F**, we were the first to use NFC communication to configure time controllers. This is a very simple and convenient solution. With the help of a free Android phone application, the controller's work program is set. Then, in order to rewrite the program to the controller, it is enough to bring the phone close to it - in exactly the same way as we pay for our purchases at the checkout.

Programming using NFC has many additional advantages. One can:

- program multiple controllers quickly,
- store a copy of programs in the phone's memory,
- share programs via e.g. email to other users.

To program the controller, you don't need to connect it to the power supply, you don't even need to take it out of the box for this purpose.

<https://www.youtube.com/embed/m9Pp0zMZV-8?enablejsapi=1&origin=https%3A%2F%2Fwww.fif.com.pl>

[https://www.youtube.com/embed/7r\\_cCi2A-X8?enablejsapi=1&origin=https%3A%2F%2Fwww.fif.com.pl](https://www.youtube.com/embed/7r_cCi2A-X8?enablejsapi=1&origin=https%3A%2F%2Fwww.fif.com.pl)

## TECHNICAL DATA

---

Depth	65 mm
Height	90 mm
Width	35 mm
Width in number of modular spacings	2
Max. switching power LED	250 W
Nominal switching current at 250 V AC	16 A
Number of memory locations	1

Shortest switching time channel 1	1.00000002 min
Number of contacts	1
Accuracy per day	1 s
Autonomy in years	6
Number of channels	1
Supply voltage	24-265 V
Text guidance in display	No
External programming	Yes
With memory card	No
60 min program	No
24 h program	No
Weekly program	No
Annual program	No
Holiday program	No
Impulse program	No
Cycle program	Yes
Astro program	Yes
Random program	No
Hour meter	No
Mains synchronous	No
Quartz controlled	Yes
Radio-controlled	No
Radio-controlled (DCF77)	No
GPS (global positioning system)	No
Automatic switching summer/winter time	Yes
Suitable for manual operation	Yes
External push button input	No
Switching preselection	No
Potential free switch contact	Yes
Mounting method	DIN rail
Voltage type (supply voltage)	AC/DC