

USK 223

Universal Driver Device working with Dallas iButton keys.

USK 223 device is mainly dedicated to access control systems where load current does not exceed 10 Ampere. State of device (ON/OFF) is changed by touching the device with a previously programmed DS1990 Dallas iButton key. By eliminating keyboards and RF transmission a high degree of confidentiality was obtained.

The device can work with maximum 223 keys. The key is a metal tablet with diameter of 17 mm and 3 or 5 mm high (depending on the key type: F-3 or F-5). The tablet contains a specialised Integrated Circuit. Each key has it's own unique code assigned. The number of possible combinations is 10 to the power 14.

The device is enclosed in a plastic case and could be placed dozens of meters from the key reader. Its reader is equipped with a LED indicator, which shows the state of the device.

The programmed data of keys and the configuration mode of the device are stored in the EEPROM, so no changes, or even a complete lack of power supply affect the stored data.

Working principle

The USK 223 has two basic working states: ON and OFF. The main device output is via a relay: pins NO, NC and COM. In the 'ON' state, the relay connects COM and NO pins. In the 'OFF' state, pins COM and NC are connected. The state 'ON' is indicated with the green LED in the reader, 'OFF' - with the red one.

There also exists an additional 'AUX' (Auxiliary) output. This output is driven by NPN transistor with an open collector. Emitter of the transistor is connected to the ground of the power supply. Depending on the configuration of the device, states ON/OFF can be obtained on the 'AUX' output, which could also co-operate with pre-alarm.

The 'ARM' pin is an input to the device. It could be used to connect USK223 to other devices. In addition, when the 'ARM' pin is connected with the ground of power supply, the LED indicator pulsates (instead of normal lighting) during state indication.

Configuration of the Device

Configuration of the device is performed in two phases, using five switches: SW1, SW2, SW3, SW4 and SET.

In the first phase of configuration, one can set three working parameters (table 1).

PARAMETERS:

SW1: (ON - MASTER mode; OFF - NORMAL mode)

Description:

MASTER mode - in this mode, the first two programmed keys are privileged. Only with these two keys one can add or delete other keys.

NORMAL mode - in normal mode, each programmed key enables adding and deleting other keys.

SW2: (RELAY → ON - ACTIVE; OFF - PASSIVE)

With an inactive relay, the 'AUX' pin becomes the output of the device.

SW3: AUX

OFF (driving mode) - 'AUX' is *low* when device is ON (transistor conduct) and 'AUX' is *high* when device is OFF.

ON (pre-alarm mode) - 'AUX' is normally in *high* state. It becomes *low* for 30 seconds when not a programmed key is touched to the reader.

Configuration chosen by setting SW1- SW3 switches must be confirmed. To do this, first turn off the power supply. Then turn on the power supply with the 'SET' button pressed. The LED indicator should be blind for 10 seconds and then comes yellow (green and red simultaneously). Now release the 'SET' switch.

THE OPERATION DELETES ALL PROGRAMMED KEYS!!!

In second phase, the 'time' parameter can be chosen. 'Time' parameter means how long the device remains active (ON state) after touching a programmed iButton key- Table 2. According to the table, one can set switches SW1-4 (power supply is ON all the time) and then just press 'SET' to confirm 'time' parameter configuration.

The first state (all switches OFF) means that the device turns from ON to OFF state only when the second key touch occurs.

The 'time' parameter can be changed every time during work of the device without any limitations.

Programming Keys

The device has no programmed keys as default. When turned on for the first time(after configuration procedures), it is ready for key programming (yellow LED indication). To program a key, please perform the below three steps:

- 1) Touch the reader with a key for approximately one second,
- 2) The LED indicator starts to pulsate yellow/red for 4 seconds, (Yellow/Red)
- 3) Then it starts to pulsate yellow/green for 15 seconds. It means the device is ready to program next keys, (Yellow/Green)

After 15 seconds the device switches to normal (OFF) state- red LED indication. (Red)

Pulsating yellow LED indication means that the maximum numbers of keys was programmed. (Yellow)

One key can be programmed in an infinite number of devices.

Adding and deleting keys

When the device is configured in 'MASTER' mode, the first or second programmed key is needed to perform this operation.

In 'NORMAL' mode, the operation is possible with any previously programmed key.

A key can be added to the device at any time. To do that, first activate the device (turn to ON state)- green LED. Then touch the reader with a previously programmed key (the first or second key in MASTER mode, any former key in NORMAL mode) and hold for a minimum of 5 seconds, but **NO LONGER THAN 30 SECONDS** (Exceeding 30 second will erase all programmed keys from the memory!!!).

The device switches to the PROGRAMMING mode (Yellow/Green pulsation). Then touch the reader with a new key to be programmed.

Working

Touching the reader with a programmed key switches the device from OFF to ON state (activates) for a certain time (Table 2). After this time the device returns to OFF state. The second key touch causes immediate switch OFF state (regardless of time). With SW1-4 OFF time set, the device remains ON until the second key touch. Using a not programmed key causes blocking the device for 30 seconds. Also, with the pre-alarm mode, the 'AUX' output becomes low for 30 seconds.

Technical data:

- Power Supply: 11-15V DC
- Power consumption: 17mA with relay and AUX outputs off.
- Relay output: maximum 10 A
- AUX output: maximum 50 mA
- Anti- sabotage switch
- Working temperature 0-55 °C
- Maximum 223 keys

LED indicator states:

- a)Green: ON state
- b)Green pulsating: ON state + low ARM input
- c)Red: OFF state
- d)Red pulsating: OFF state + low ARM input
- e)Red/Green pulsating: not programmed key in use
- f)Yellow: programming mode (no key programmed)
- g)Yellow/Green pulsation: programming mode - wait for the next (new) key
- h)Yellow/Red pulsation: a key was programmed
- i)Yellow pulsation: maximum number of keys programmed

Table 1

ON

OFF

sw1	MODE	MASTER*	NORMAL
sw2	RELAY	ACTIVE	INACTIVE
sw3	AUX	PRE-ALARM*	DRIVING
sw4	Not used		

Table 2

sw4	sw3	sw2	sw1	Time (seconds)
off	off	off	off	To next touch
off	off	off	on	2
off	off	on	off	4
off	off	on	on	6
off	on	off	off	8(default)
off	on	off	on	10
off	on	on	off	12
off	on	on	on	14
on	off	off	off	16
on	off	off	on	18
on	off	on	off	20
on	off	on	on	22
on	on	off	off	24
on	on	off	on	26
on	on	on	off	28
on	on	on	on	30

Picture