



UP

position memory

DOWN

# DWM-210

Smart digital window regulator control  
module with position memory

USER INSTALLATION MANUAL

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## INTRODUCTION

Pandora would like to thank you for choosing our window regulator control module **Pandora DWM-210**.

The Module DWM-210 is designed for sequential control 2 car window regulators in two directions (to open and close), provided that the vehicle electric drives are installed. The module can be controlled by the "Up" (close) and "Down" (Open) buttons located in car interior, by a signal of car security system or another device when arming or closing door locks. A universal (+/-) and digital trigger inputs are provided for this. It is possible to control the window regulator module via an encoded signal when it connects with Pandora alarm systems.

The window regulator module combines high reliability, maximum simplicity and ease of use. The module doesn't affect the operation of the standard window control system. If the module power is disconnected, the original circuits operation remains active. The module is installed permanently on the vehicle and connected to the standard wiring with a voltage of +12V and the common negative terminal of the battery that is connected to the car body in a grounding spot.

It is essential for module functioning that you read and understand instructions in this manual.

Note that all radio devices are subject to interference, which could affect proper performance.

This device has limited external factors resistance. It should not be subjected to water beyond occasional splatter, or operated in temperatures outside  $-40$  to  $+80^{\circ}\text{C}$  range.

It is strongly advised to have professional car mechanic installing the module. Most features are highly dependent on competent installation. Our electronics is thoroughly tested for quality, so if a feature fails to produce expected results, most likely the problem is in improper installation.

The manufacturer reserves the right to change set and construction of the product to improve its technological and operational parameters without notification.

**[www.pandorainfo.com](http://www.pandorainfo.com)**

Technical support: [support@pandorainfo.com](mailto:support@pandorainfo.com)



Product is in conformity with Electromagnetic Compatibility Directive EMC 2004/108/EC and R&TTE Directive 1999/5/EC



v 2.0

The quality management system of the manufacturer is certified in accordance with IATF 16949: 2016, ISO 9001:2015

## SPECIFICATION

PARAMETER	VALUE
Supply voltage, V	9...15
Current consumption, mA	3
Maximum output current, A	20
Type of trigger impulse	Positive or negative no less than 500ms, digital code
Pulse type on 'Expansion' output	digital code
Operation control	Electromagnetic noise of the motors
Operation time limit (for each window),sec	8±1
Number of switching outputs	2
Dimensions, mm	
- Base unit	71x69x25
- Pacakging	165x140x45
Protection of electrical circuits:	
- Power supply circuits	Car fuses, the circuit protection against reverse polarity and overvoltage
- Low-voltage output circuits	Circuit protection against short-circuit to the grounding spot
- Input circuits	Circuit protection against overvoltage
Precious metals, g	No
Gross mass, kg	0,270

## MODULE SET

1.	Base unit DWM-210	1
2.	Wires with a connector	1
3.	Screw $\varnothing$ 4,2x1	2
4.	User installation manual	1
5.	Packaging	1

## FEATURES

- Automatic windows closing when a car is armed;
- The module memorize the position of the windows when a car is armed and automatically lets the windows down to the previous state if the parking lasted no more than 20 minutes.
  - The module doesn't have any influence on the original circuits of window regulators in the deactivate state;
  - Control the windows from car interior by short presses of the buttons («one touch» system);
  - Quick stop of the moving window by pressing any button of the window regulator;
  - Automatic stopping of moving glass if an obstacle is appeared;
  - Automatic switching off of the motors on overcurrent;
  - Automatic switching-off of the electric motor of the window regulator at breakage of its cable;
  - Automatic detection of the type of alarm system control signals;

- The option to disable the alarm system sensors for the time of windows movement to exclude false alarm;

The maximum efficiency of the module is achieved when it is used with Pandora car alarm systems.

## MODULE OPERATION

The module can be controlled by a signal of 'positive' or 'negative' polarity. The duration of trigger pulse must be at least 500 ms (0,5 sec.). The module can also be controlled by a digital code signal. The module detects the polarity 1 second after power is connected to the module.

To do this, connect the control pin of the security system to 'White/Red' (close windows) or 'White' (open windows) module pin respectively. The duration of trigger pulse must be at least 500 ms (0,5 sec.).

The module activates window regulators in series, after a trigger pulse was sent in the following order: the driver's door is the first then the passenger's door is activated; herewith the following output will be activated after the previous one completed its work. If a window has been already closed, the module will immediately switch to the next output. Closing control is performed by the electromagnetic noise of the motor. If the motor was not stopped (window regulator cable broken), switch to the following output will be performed forcibly in 8 seconds. To prevent damage of the module components and to protect electric motors of window regulators, microcontroller module program will not start the cycle again if the duration of the trigger pulse exceeds the duration of the first cycle.

The module will be calibrated for the current protection after the power is connected and it is activated by the window regulator buttons (short press) or by control pulses.



WARNING! WHEN CONNECTING THIS MODULE, MAKE SURE THAT ELECTRIC MOTOR OF WINDOW REGULATOR ARE CONNECTED TO 'GROUND' (WHEN CONTROL BUTTONS ARE RELEASED). THIS IS HOW WINDERS ARE CONTROLLED IN THE MOST OF MODERN CARS.

Digital output ('Gray') is intended to control additional modules of window regulators if it is required to close more windows or to connect other devices. A negative impulse of 500 ms is formed on the wire after the second output completes its work.

The module has 'Status' output ('Pink') with negative potential while this module is active. It can be used, for example, to temporary deactivate the shock (volume) sensor until all windows, doors and hatches are closed.

Digital input (AUX) («Gray/Red») is intended to control the module by a code digital signal from the other devices: Pandora car alarm system, another DWM-210 module.

## MODULE INSTALLATION

It should be installed in the car interior in place that is protected from moisture and dust. When connecting, pay attention to the quality of

connections. All wiring must be insulated on the outside when installation is finished.

Throughout the metal bulkhead, wiring should pass only through special rubber bushings. The circuit diagram shows one possible module connection.

## WARRANTY OBLIGATIONS

The manufacturer guarantees correct operation of the winder module if exploitation, installation, storage and transportation conditions described in this manual were met.

The module should only be used according to installation scheme and user manuals.

The module is meant to be installed by the professional car electronics installers.

Parts malfunctioning during warranty period on the fault of the manufacturer should be repaired or replaced by the installation center of the manufacturer or by certified service center.

The user loses the right for warranty services in the following cases:

- when warranty period expires;
- if exploitation, installation, storage or transportation conditions were not met;
- if there is mechanical damage of the external parts of the module after it is sold. This includes: fire damage, consequential damage in case of car accident, aggressive liquids and water seeping damage, damage caused by improper use;



- if the damage was caused with incorrect settings and parameter adjustment;
- if module devices are replaced with any devices that are not recommended by the manufacturer;
- if manufacturer sealing is broken;
- if there is no properly filled warranty card and installation certificate.

Warranty period is 3 years since the moment of purchase, but no more than 3,5 (three and a half ) years since the moment of production

## WIRING ASSIGNMENT

SOCKET CONTACT	WIRE COLOR	CIRCUIT
1	Red	Module power supply +12V, 1A
11, 12	Red	Window regulator power supply +12 V, 20A
7, 17	Black	Ground
2	White	"Open windows" trigger input
9	White/Red	"Close windows" trigger input
3	Gray	Digital output
4	Pink	Status output
5	Gray/Red	Digital input (AUX)
16	Yellow/Red	"Up" button (passenger's window)
20	Yellow	"Down" button (passenger's window)
13	Blue/Red	Window regulator motor output (+) (driver's window)
18	Blue	Window regulator motor output (-) (driver's window)
14	Orange/Red	"Up" button (driver's window)
19	Orange	"Down" button (driver's window)
15	Green/Red	Window regulator motor output (+) (passenger's window)
10	Green	Window regulator motor output (-) (passenger's window)

## ACCEPTANCE CERTIFICATE

**Pandora DWM-210** is in conformity with Electromagnetic Compatibility Directive EMC 2004/108/EC and R&TTE Directive 1999/5/EC.

Serial number \_\_\_\_\_

Date of production \_\_\_\_\_  
Responsible person's signature

(stamp)  
Packager \_\_\_\_\_  
Signature

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## WARRANTY CARD

Model **Pandora DWM-210**

Serial number \_\_\_\_\_

Data « \_\_\_\_ » \_\_\_\_\_ 200\_\_ г.

\_\_\_\_\_  
Seller's (installer's) stamp

Seller's signature \_\_\_\_\_

