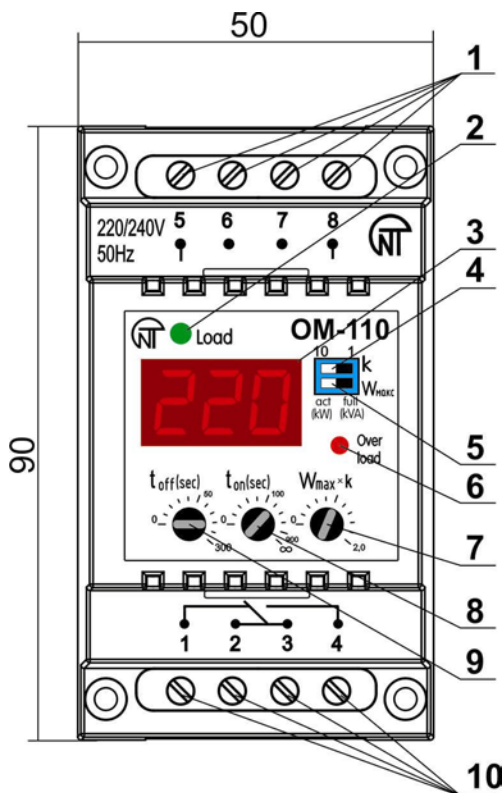


# SINGLE PHASE POWER LIMITER

## OM-110



1. Input terminals (voltage measurement circuit and power supply)
2. POWE LOAD LED indicator
3. Digital LED indicator for measured and controlled parameters
4. Multiply factor switch k (1 or 10 ) which sets the range for the knob “maximal power capacity” 0-2 kW or 0-20kW (kVA).
5. Mode selection switch – active power limiting// total power limiting
6. Overload LED indicator
7. Adjustment knob – Maximal power threshold –  $W_{max}$
8. Autoreclosing time delay ( $t_{on}$ ) – adjustment knob
9. Tripping time delay ( $t_{off}$ ) – adjustment knob
10. Output terminals ~250V AC, 8A

Figure 1 – Front panel and main knobs and controls.

## 1. GENERAL DESCRIPTION AND OPERATION

### 1.1. Application

Single phase power limiter OM-110 (hereinafter **OM-110**) is designed for the continuous control over active or total power capacity for the single phase loads. Measured range is from 0 to 20 kW or from 0 to 20 kVA. The function of **OM-110** is to cut off the power load in case of exceeding the preset threshold for maximal level of permitted power load consumed by the user (with user defined time delay) and automatic autoreclosing with adjusted time delay or prohibited restart. User sets the threshold values for power, tripping time delay and autoreclosing time delay using the knobs and DIP switches on the front panel of the **OM-110**.

All the measurements are done with a help of built-in current sensor in the case of the device without any interference to the controlled circuits.

Device can be applied as:

- digital wattmeter (to measure active or total power capacity);
- Relay which limits the consumed power as per the user defined settings;

OM-110 allows to control the level of power consumption and the state of the load with help of LED indicators located on the front panel. OM-110 doesn't require any additional power supply sources and is powered by the controlled circuit from the input terminals.

### 1.2. Basic technical parameters and characteristics

|   |                                  |
|---|----------------------------------|
| Rated power supply voltage, V   | 220                              |
| Operational voltage range, V*   | from 130 to 300                  |
| Rated voltage frequency, Hz   | 47– 53                           |
| Measurement range , – for active power P, kW<br>– for total power S, kVA  | 0– 20<br>0– 20                   |
| Power measurement accuracy is not less than   | 2.5%                             |
| Adjustable range for setting maximal power<br>a) k=1; Wmax, kW( kVA)<br>Absolute deviation for power measurement not more than, kW (kVA)<br>b) k=10; Wmax, kW(kVA)<br>Absolute deviation for current measurement not more than, kW, kVA | 0– 2.0<br>±0,05<br>0– 20<br>±0,5 |
| Adjustable time range for autoreclosing time delay - t <sub>on</sub> , sec  | 0– 900, ∞                        |
| Adjustable time range for tripping time delay – t <sub>off</sub> , sec  | 0– 300                           |
| Readiness time after turn ON, not more than, sec**  | 0,8                              |
| Power consumption (under the load), not more than, VA   | 3,0                              |
| Maximal commutation current on the output terminals at cosφ=1, A  | 8                                |
| Commutation lifetime for the output contacts:<br>- under the load of 5A, not less than<br>- under the load of 1A, not less than   | 100 000<br>1 000 000             |
| Protection class:<br>- device plastic enclosure<br>- connection terminals   | IP40<br>IP20                     |
| Climatic performance  | YXJ4                             |
| Operational temperature range, °C   | From - 25 to +55                 |
| Storage temperature range, °C   | From - 45 to +70                 |
| Weight, kg, not more than   | 0,200                            |
| Dimensions<br>(3 way standard DIN module thickness for DIN rail mounting), mm   | 50 x 90 x 58                     |

**\* To increase operational range to low voltage OM-110 has function to disable LED digital indicator if voltage level gets lower than 130V. If voltage level is less than 110V then OM-110 automatically opens its output terminals to initial cold state position and thus turns OFF.**

**\*\* Reaction time on turn ON is not more than 2 seconds. This time includes device selftesting, turning ON the power load, measuring power consumption and tripping the power load OFF in case fault situation is detected.**

### 1.3. Application and Operation

On giving the power supply to the input terminals 220V 50Hz ( item 1; Figure 1) within the readiness time of

0,8 sec the power load must be turned ON: output contacts 1-2 open, and contacts 3-4 close. Simultaneously turns on LED indicator “LOAD” ( item 2; Figure 1) and digital LED indicator (item 3; Figure 1) starts displaying power load being consumed by the load.

As soon as the power load reaches user adjusted threshold value for maximal power (this setting is set up in 2 ranges: **Range 1** - from 0 to 2 kW (kVA) and **Range 2** from 0 to 20 kW (kVA) using the knob on the front panel **Wmax** and the range selector switch (item 4; Figure 1) then the red color LED “Overload” (item 6; Figure 1) and the tripping time delay -  $t_{off}$  (item 9; Figure 1) countdown (adjustable from 0 to 300 seconds) starts, and the indicator in turns displaying the value of consumed power and the remaining time to cut off the load (in seconds). On the expiration of the tripping time delay contacts 3-4 open and contacts 1-2 close (item 10; Figure 1) and green “Load” LED turns off.

If the consumed power decreases lower than the preset threshold value  $W_{max}$  “Overload” LED turns off and the countdown of the autoreclosing time delay begins (adjustable in the range from 0 to 900 seconds, being set up using the knob (item 8; Figure 1). When counting the autoreclosing time delay – digital LED indicator (item 3; Figure 1) shows the remaining time (in seconds) to turn ON the power load automatically. If after turning the power load off the power consumption doesn't decrease lower than the value of  $W_{max}$  then the countdown of the autoreclosing time delay doesn't start and the digital LED indicator (item 3; Figure 1) will display “Err” and the current value of the power being consumed.

After the expiration of the autoreclosing time delay the power load turns ON automatically: contacts 1-2 open and contacts 3-4 close and the LED indicator “Load” turns ON and the digital LED indicator will display current value of the power load.

When spinning any of the adjustment knobs (items 7,8,9; Figure 1) on the digital LED indicator is being displayed the adjusted value of the parameter and in the lower order of the digit is shown decimal dot.

If the autoreclosing time delay knob is set up to position inF (mark «∞» on the knob scale, item 8; Figure 1) then there will be no automatic restart of the power load and the digital LED display will show in turns inF (autoreclosing prohibited) and current value of power. To turn ON the power load it's necessary to take OFF the power supply for the input terminals of **OM-110** or to change the position of the autoreclosing time delay (adjustment knob (item 8; Figure 1) to another value different from inF. When moving the autoreclosing time delay knob to the position of prohibited autoreclosing (inF) then on the digital LED indicator is being displayed “inF” within 4 seconds.

There is a possibility to select one of two modes of operation of **OM-110**:

- Measurement and control over the active power
- Measurement and control over total power

To select the required mode it's necessary to set the DIP-switch (item 5; Figure 1) to the corresponding position. Position “Act.kW” – measurement and control over active power; position “Total kVA” – measurement and control over total power.

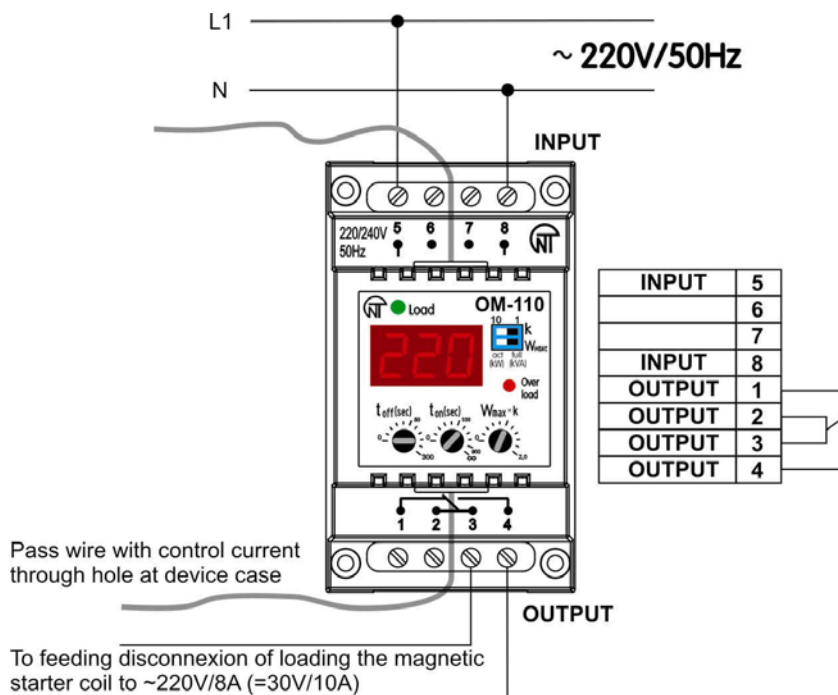


Figure 2. Wiring diagram for OM-110

#### 1.4. Startup preparations

In accordance to all safety regulations connect OM-110 as shown on the scheme above (Figure 2). The wire of the circuit which should be under the device control must be inserted through the hole in the case of OM-110. Next step is to set up the type of measured power using DIP-switch (item 5; Figure 1) and adjust the range for maximal power threshold values using the knob (item 4; Figure 1). Then set up the tripping time delay and autoreclosing time delay (items 7, 8, 9; Figure 1).

**ATTENTION!!! According safety regulations all the connections must be performed only on fully deenergized device!**

After all the connections are done it's necessary to turn ON the power supply and make precise adjustment of all the knobs according to the values shown on the digital LED display. OM-110 is ready for operation.

For the convenience the scales for time delays are split for some ranges:

Autoreclosing time delay scale is divided to the ranges 0-100 and 100-900 seconds

Tripping time delay scale is divided to the ranges 0-50 and 50-300 seconds.

## **2. STORAGE AND SHIPPING CONDITIONS**

The OM-110 product in original manufacturer packing should be stored in enclosed rooms at the temperature in the range from  $-45^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  and exposed to no more than 80% of relative humidity when there are no fumes in the air that exert a deleterious effect on package and the switch material. The Buyer must provide the protection of the switch against mechanical damages in transit.

## **3. WARRANTY**

Novatek-Electro LTD. Company assures and guarantee trouble-free operation of OM-110 phase switch manufactured by it within 36 months from the date of sale, provided:

- the proper connection;
- the safety of the inspection quality control department seal;
- the integrity of the case, no traces of an opening, cracks, spalls etc.