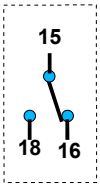
ke-DP02

Digital Protector
One phase
Voltage – Current
and
Frequency control

Voltage (V)
Current (A)
Frequency (Hz)

- Over Voltage Protection
- Under Voltage Protection
- Over Current Protection
- Under Current Protection
- Over Frequency Protection
- Under Frequency Protection
- Latch Function
- **TRUE RMS**



General:
In one phase systems, it measures RMS values of AC voltage, current and system frequency sensitively.
ke-DP02 has many features.
Those are;

- Over Voltage Protection	**(o - U)**
- Under Voltage Protection	**(u - U)**
- Over Current Protection	**(o - C)**
- Under Current Protection	**(u - C)**
- Over Frequency Protection	**(o - F)**
- Under Frequency Protection	**(u - F)**

When device is turn on if its adjusted voltage and frequency in its interval relay switch on.
If any of error occurred at the end of adjusted time relay switch off its contact. When system return normal values, at the end of time out relay switch on.

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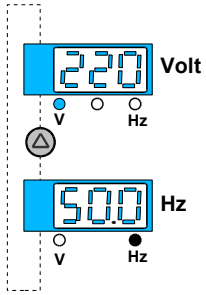
IMPORTANT: L - N is device supply inputs. Thus,the applied L – N voltage must be rated voltage of system . Otherwise normal led makes flash and the device switched off its output contact.
The measured frequency also must the frequency of the system.

Special Buttons:

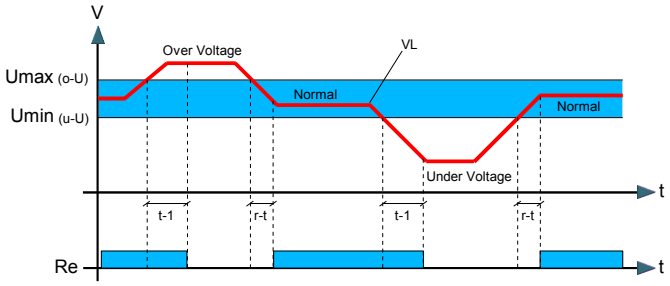
Select: (Up direction) when pressing continuously, screen displays frequency of system. When button release device continue to show voltage.

Reset:
If error case although disappeared then device is not return to normal, latch-function occurred and it makes locked device.
Or Lock-function (only for currents) may be occured.
After checking error in system then restart device with pushing reset button.

Display Functions

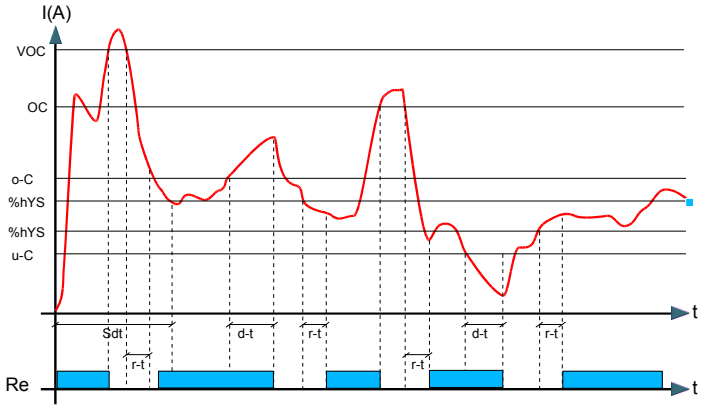


Over and Under Voltage : (o-U),(u-U)
Under voltage (u-U) it can adjusted between Umin= (180 – 225 V).
Over voltage (o-U) it can adjusted between Umax=(235 –275 V).
If the voltage drops below the adjusted under voltage limit, when **u-U** shows on the screen and device switch off its output contact end of the t-1 time Normal LED turned on .In this case **u-U** warn appears on the screen.
If the voltage exceed the adjusted over voltage limit, Normal LED turned off and output relay switch off. In this case **o-U** warn appers on its screen.
Hysteresis is 6 V.



Over and Under Current : (o-C),(u-C)
Under Current (u-C)
Over Current (o-C)
When the current of the protected system goes below the adjusted value it switches off its output contact after **d-t** delay.
Normal LED turn off and relay switch off its contact .In this case **u-C** warn appears on display.
When current passing through phase of the protected system exceeds the adjusted value the device switches off its output contacts after a proper time (**d-t**).Normal LED turn off and relay switch off its contact .In this case **o-C** warn appears on display.

NOTE: *Under current protection set value with its hysteresis must not overlap with over current protection set value with its hysteresis or, the under current protection set value must not be higher than the over current protection set value.*



Start delay time: Sd-t
It can be set between 1 and 60 seconds.It is used to prevent the switch off from occurance because of the motor's inrush current.
This function can be disable if Sd-t value = 000 (oFF)

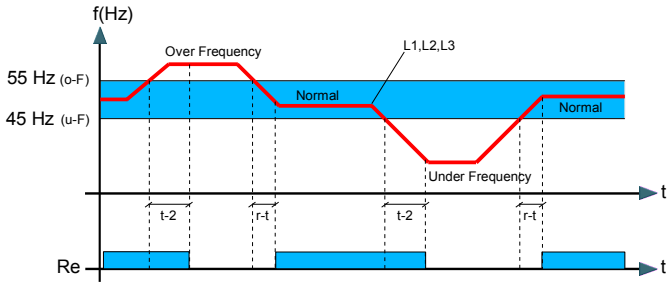
Return Time : r-t
it shows the delay time that device will wait to switch on its output relay when failure ends after a switch off. It can be set between 0,5 and 99,9 seconds.

Very Over Current Coefficient : VOC (Current Very Sudden Switch Off Protection)
It can be set by the user between 2,1 and 6.
When the current value exceeds the adjusted value within the start delay time, the device switches off, its output contact immediately.
Very Over Current value = (o – C) x (VOC)
This function can be disable if VOC = 000 (oFF)

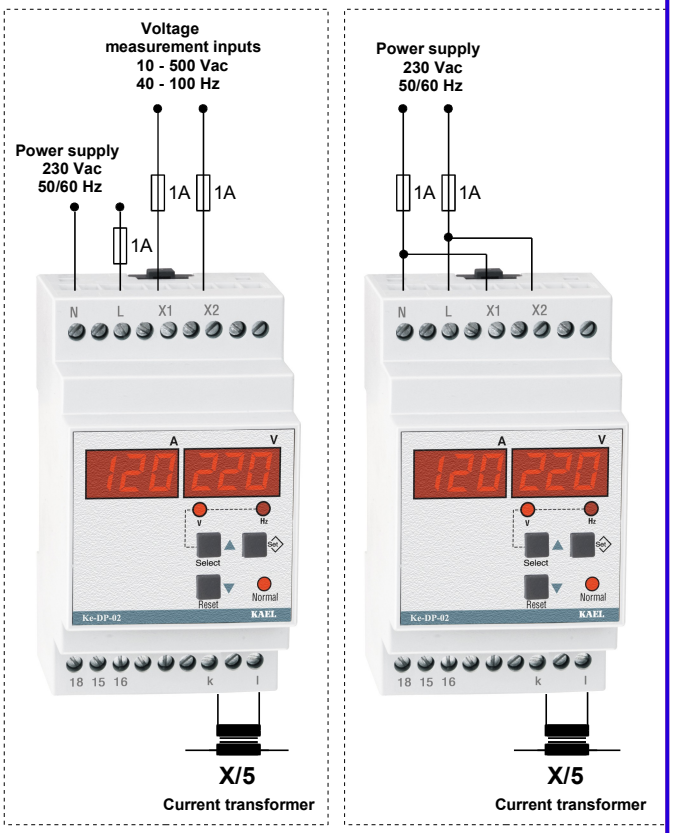
Over Current Coefficient : OC (Current Sudden Switch Off Protection)
It can be set by the user between 1,1 and 2.
When the current value exceeds the adjusted value without the start delay time, the device switches off, its output contact immediately.
Over Current value = (o – C) x (OC)
This function can be disable if OC = 000 (oFF)

Over and/or Under Frequency Protection : (40 – 70 Hz)
Under Frequency be able to set between**(u-F)** = 40 Hz ...[(o-F) -0,4]
Over Frequency be able to set between **(o-F)** =[(u-F) + 0,4]...70 Hz
If required , it can be set only under frequency or only over frequency protection as well as both of protection can be disabled.

- If o-F = 55 Hz and u-F = oFF set, device works as over frequency protector only. (if system frequency above 55 Hz, under screen displays **o-F** warning and end of time t-2 relay switch off its output contact)
- if o-F = oFF and u-F = 45 Hz set , device works as under frequency protector only . (if system frequency below 45 Hz, under screen displays **u-F** warning and end of time **t-2** relay switch off its out contact.)
- if o-F = oFF and u-F = oFF set, frequency protection is disabled.



Connection :



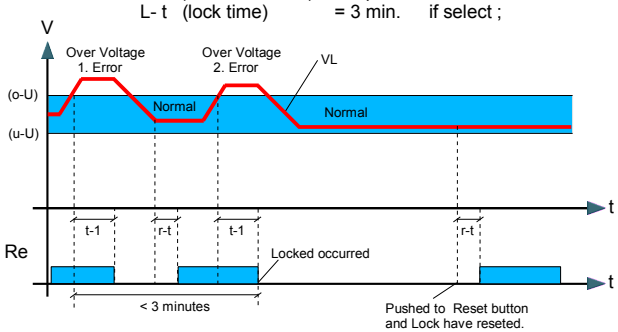
LOCKING FUNCTION :

It can be controlled by two parameters. Locking time and Locking counter. If the number of opening reaches the adjusted locking counter withing the adjusted locking time then device switch off its contact and locks its functions until the user pressed **Reset** button.
If the locking counter is adjusted to **oto** then this function is disable and device never locks itself.

L-t : Locking Time (001 – 060 min.)
It is well know the frequently occurring faults may damage system. For that the device when number of faults reaches the adjusted locking number within this locking time. This way the system is protected and user has chance to investigate the problem.

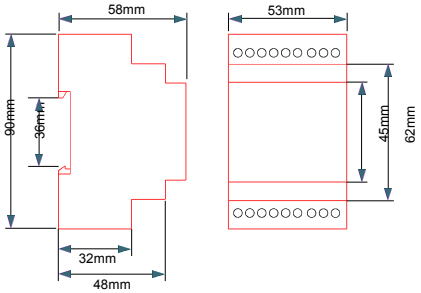
L-C : Locking Counter (oto , 001 – 010 piece)
The number of faults allowed within the period L-t. If number of faults exceeds this adjusted counter value device locks itself. In this case (**- - -**) warn appears on its screen. User must press Reset button then the fault passes in order to unlock the device. If **L- C** is set to **oto** then this property is disabled.

L- C (number of lock) = 2 piece
L- t (lock time) = 3 min. if select ;



TECHNICAL INFORMATION:

Rated Voltage (Un)	: 230Vac (L-N)
Operating Range	: (0,8-1,1) x Un
Frequency	: 50 / 60 Hz
Supply Power Consumption	: < 4VA
Current Transformer Ratio	: X / 5A
Current Measurement Range	: (for seconder current) 0,05 - 6 Amp AC
Voltage Measurement Range (X1, X2)	: 10 - 500 Vac, 40 - 100Hz
Voltage Measurement Power Consumption	: <1VA (for one phase)
Measurement Sensitivity	: %1±1 digit
Contact Current	: Max. 3A / 240Vac
Device Protection Class	: IP 20
Connector Protection Class	: IP 00
Temperature	: - 5 °C .... + 50 °C
Connection Type	: To connection rail in electrical panel
Dimension	:



ATTENTION !!!

- Clean the device using dry dust cloth after turned off device.
- Read and follow the instruction on this manual and attached label.

ACCESSING PARAMETER MENU: