Noise Filter
MK 5130N, LG 5130

0272373



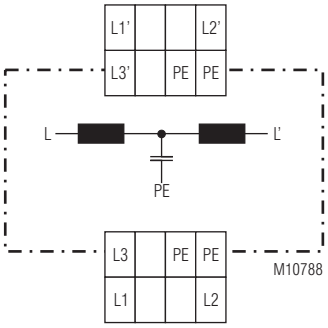
Your Advantages

- Reliable operation of measuring relays and other low consumption loads in systems with high frequency noise
- Protection of measuring inputs / measuring relays by reduction of noise
- More precise and constant measuring results
- Increasing the availability of plants

Features

- 3-phsase noise filter for measuring relays
- Noise suppression of wire bound interference
- Broadband suppression of high frequencies
- For nominal voltages up to 3 AC 1000 V
- PE connection for increased suppression level
- 2 models available:
  MK 5130N: depth 97 mm
  LG 5130: depth 121 mm
- Width: 22.5 mm

Circuit Diagram



Approvals and Markings

CE

Applications

- Operation of measuring relays on inverters and equipment with high frequency noise voltage
- Noise suppression for circuits and loads up to 50 mA per phase
- Reduction of noise created by electric tools, contactors and luminescent lamps

Connection Terminals

Terminal designation	Signal designation
L1, L2, L3	Input phase voltages
L1', L2', L3'	Output phase voltages
PE	Connection for protective conductor

Notes

The noise filter is connected with its input terminals L1/L2/L3 to the inverter output and the measuring relay or device to be protected to the filter outputs L1'/L2'/L3'.
It is not mandatory to connect the PE to the corresponding device terminals but it increases the filter effect.
The maximum current in each filter path is 50 mA. So this filter can also be used in the auxiliary supply of low consumption equipment.
If only one line should be filtered, the 3 paths could be connected in series increasing the filter effect, or in parallel increasing the current capacity to 150 mA.

Function

Increased numbers of inverters create on their outputs steep commutation edges that create noise and high frequency leaking currents on direct connected equipment. Devices that are connected to inverters can be disturbed or damaged. The HF components can be conducted to other parts of the system e.g. via the DC 24 V supply.
This could happen on measuring relays that are connected to the inverter output. The auxiliary supply of the measuring relay has a galvanic separation from the measuring input, but coupling capacitances in the power supply can create a high frequency connection to the measuring input. Certain frequencies will then create leakage currents from inverter to auxiliary supply.
In principle all monitoring devices connected to inverter outputs may be subject to interference. It is also possible that these devices conduct the interference to other parts of the system.
The noise filter MK 5130N / LG 5130 have in each path for the 3 phases (input L1/L2/L3 - output L1'/L2'/L3') 4 inductances connected in series to provide broad band filtering up to very high frequencies. If also PE is connected, a Y-capacitor connected to PE gets active and provides increased filtering. (T-filter).
By connecting the MK 5130N / LG 5130 between inverter and measuring relay / device to be protected, the current flowing via coupling capacitances is extremely reduced, as the filter elements create a rising impedance with rising frequency. This avoids disturbance or damage on connected devices.

All technical data in this list relate to the state at the moment of edition. We reserve the right for technical improvements and changes at any time.

Technical Data

Nominal voltage U_N
without PE connection: max. 3 AC 1000 V
with PE connection: max. 3/N AC 860 / 500 V
Current carrying capacity per path: max. 50 mA
Ohmic resistance per path: approx. 140 Ω

Impedance per path (approximate values):

f / Hz	10 k	20 k	50 k	100 k	200 k	300 k	500 k	1 M	2 M	3 M	5 M ... 30 M
without PE:	2.5 kΩ	4.5 kΩ	10 kΩ	16 kΩ	20 kΩ	23 kΩ	30 kΩ	30 kΩ	30 kΩ	25 kΩ	22 kΩ
with PE:	2.5 kΩ	4.5 kΩ	10 kΩ	10 kΩ	18 kΩ	55 kΩ	160 kΩ	300 kΩ	770 kΩ	1 MΩ	1 MΩ

General Data

Nominal operating mode: Continuous operation
Temperature range
Operation and storage: - 40 ... + 70°C
Relative air humidity: 93% at 40°C
Altitude: < 2,000 m
EMC
Electrostatic discharge: 8kV (air) IEC/EN 61 000-4-2
Fast transients: 4 kV IEC/EN 61 000-4-4
Surge voltages between
power supply L/N: 2 kV IEC/EN 61 000-4-5
between wire and ground: 4 kV IEC/EN 61 000-4-5
HF wire guided: 20 V IEC/EN 61 000-4-6
Degree of protection
Housing: IP 40 IEC/EN 60 529
Terminals: IP 20 IEC/EN 60 529
Housing: Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance: Amplitude 0.35 mm frequency 10 ... 55 Hz IEC/EN 60 068-2-6
Climate resistance: 40 / 070 / 04 IEC/EN 60 068-1
Wire connection: 1 x 4 mm² solid or
2 x 2.5 mm² solid or
1 x 2.5 mm² stranded wire with sleeve or
2 x 1.5 mm² stranded wire with sleeve DIN 46 228-1/-2/-3/-4 or
2 x 2.5 mm² stranded wire with sleeve DIN 46 228-1/-2/-3/
Wire fixing: Plus-minus terminal screws M 3.5 box terminals with wire protection
Fixing torque: 0.4 Nm
Mounting: DIN rail IEC/EN 60 715
Weight:
MK 5130N: approx. 130 g
LG 5130: approx. 140 g

Dimensions

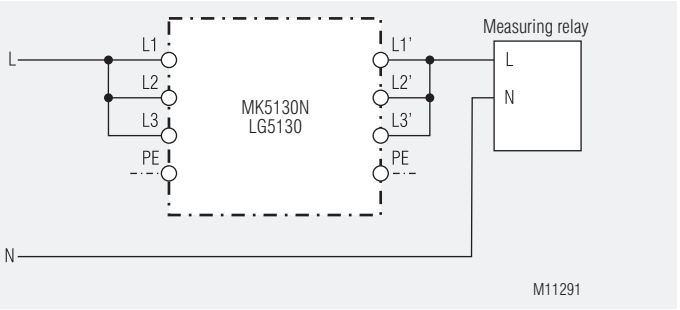
Width x heigth x depth:
MK 5130N: 22.5 x 90 x 97 mm
LG 5130: 22.5 x 90 x 121 mm

Standard Types

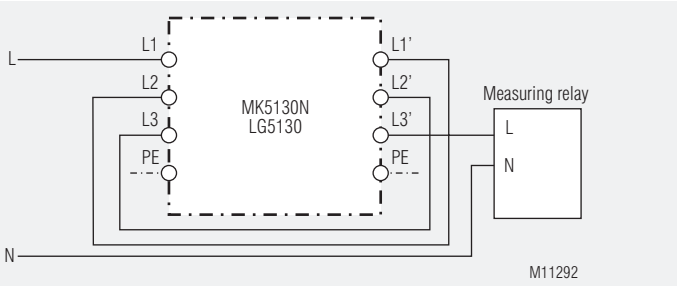
MK 5130N
Article number: 0065014
- Width: 22.5 mm
- Depth: 97 mm

LG 5130
Article number: 0065015
- Width: 22,5 mm
- Depth: 121 mm

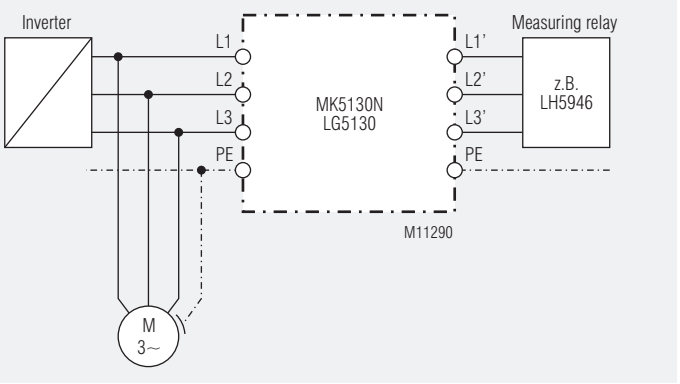
Connection Examples



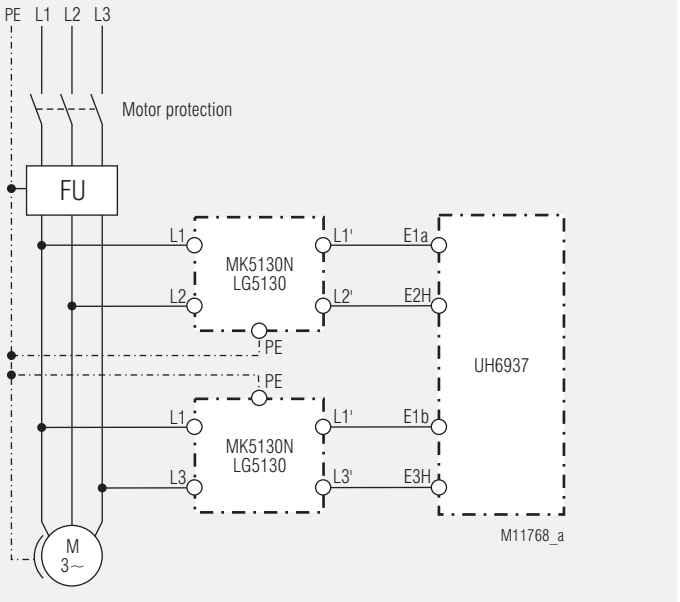
Noise filtering in a single wire with max. current capacity 150 mA



Noise filtering in a single wire with max. current capacity 50 mA



Noise filtering between the 3 phases of an inverter and a measuring relay



Inverter monitoring function, 3-phase with frequency monitor UH 6937