

DataPro, SonicPro, EnerPro - heavy-duty surge diverters for efficient protection of measurement devices and sensors



- Rail mounting
- Leakage current of up to 20.000 A
- Fail-safe performance

DataPro, SonicPro, EnerPro

Surge diverters DataPro 2x1 and SonicPro 3x1

The DataPro 2x1 and Sonic Pro 3x2 surge diverters serve as protection units for the highly sensitive electronics at the end of data, measurement and control cables using 12 V DC / 2 to protect sensors and transmitters.

The devices are capable of protecting sensors and transmitters effectively from being damaged due to overvoltage effects.

Surge diverter EnerPro for power supply

EnerPro 2x1 is a surge diverter für 24 V DC supply voltages. The unit serves as protection for single-sided grounded devices with a voltage capacity of up to 6 A.

The identically constructed units can be easily snapped on standard mounting rails.

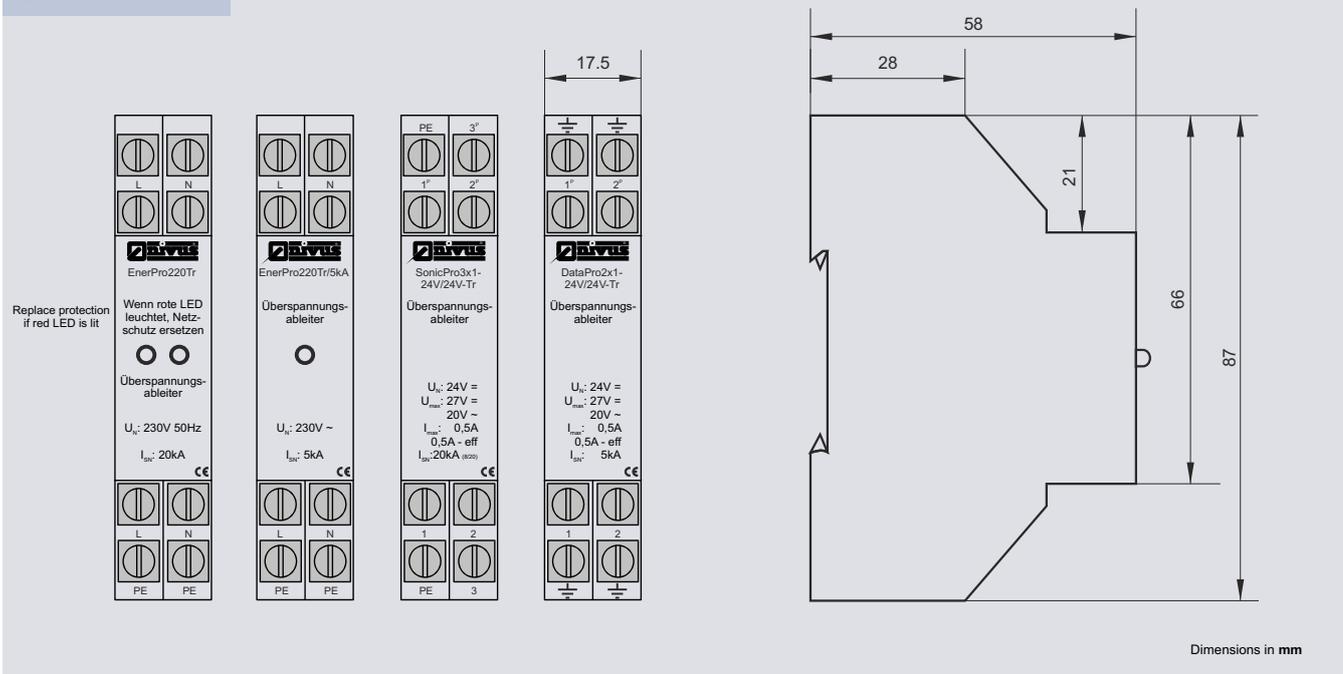
Containing a two-step protection circuit, the coarse protection is realised by using a gas-filled overvoltage diverter. The precision protection consists exclusively of filter and suppressor diodes. Leakage currents are negligible since no varistors are in use. This is why remote monitoring or routine checks are not required. The high 20 kA leakage current capacity ensures long lifetimes and high operational safety of the surge diverters. Regular inspection is not necessary due to the use of fail-safe diodes which, in case of error, produce a short-circuit.

Hint:

In order to connect the protection device to ground, the output side ground connection of the overvoltage limiter should be chosen in all cases as otherwise the limiter cannot fulfill its protective functions as desired.

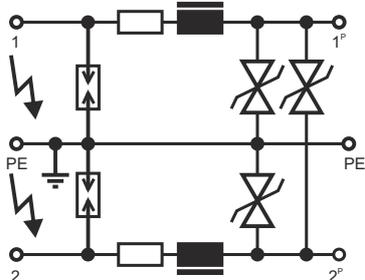
Specifications

Enclosure dimensions

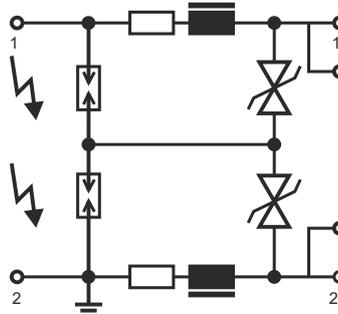


Wiring diagram

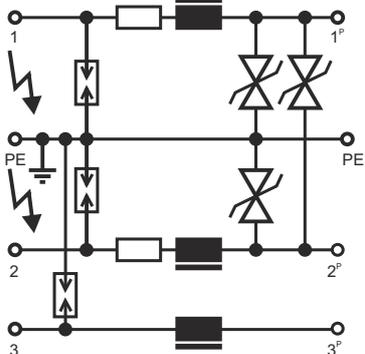
DataPro 2x1 24V/24V



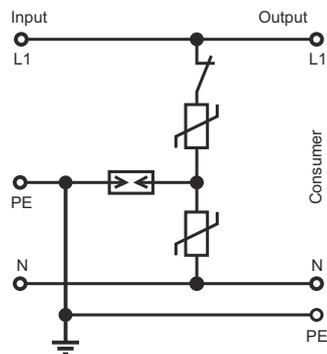
EnerPro 2x1-24V



SonicPro 3x1 24V/24V



EnerPro 220Tr



\downarrow = unprotected side e.g. transmission cable
 P = protected side e.g. to transmitter, PLC or similar

Lightning and overvoltage protection



EnerPro220Tr/5 and EnerPro220Tr/20 for 230 V supply voltage

The overvoltage limiters EnerPro220Tr/5 and EnerPro220Tr/20 serve as lightning and overvoltage protection for 230 V mains supply voltages.

The units are housed in snap-on enclosures for 35 mm DIN rails (according to EN 500229) which in addition have a green LED to indicate operating voltage as well as a red LED for the overload display (only EnerPro220Tr/20).

EnerPro220Tr/5 and EnerPro220Tr/20 are equipped with a high power, valve-type lightning arrester as well as with a cut-off circuit responding as soon as varistors show exceeding leakage currents due to ageing effects.

The cut-off point is situated in the cross-arm, which simply disconnects the overvoltage protection from mains. The power supply of protected units however will not be interrupted.

This condition is indicated with the red LED (EnerPro220Tr/20) lit or the green LED (EnerPro220Tr/5) off.

Installation hints for surge diverters

Effective operation of overvoltage diverters is possible only as long as all the leads connected to one piece of equipment are protected and the limiting device and the protected device have a common ground contact. Due to the resulting proximity between surge diverter and protected equipment several other points have to be considered additionally.

An important point for safe lightning protection is the circuit routing.

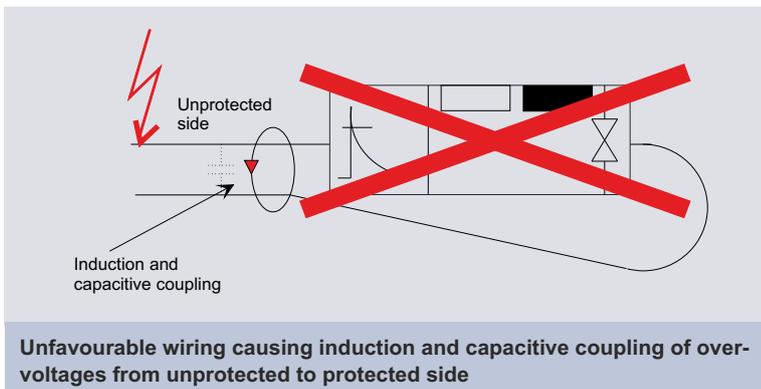
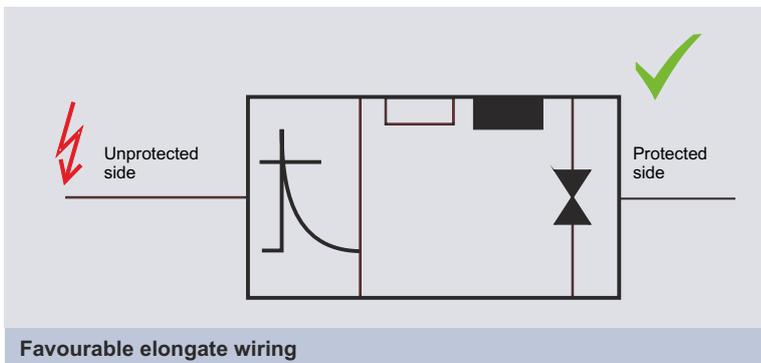
Always avoid inductive or capacitive coupling between unprotected and protected circuits.

Due to this reason please observe elongate wiring through the surge diverter.

See figures left.

If in one room several units are connected radially to one single protection device, the protected data and power circuits of each unit have to be routed closely parallel to each other with the data cables shielded.

By doing this, inductive coupling in the area between the data and power circuits will be minimised.





If the leakage current of the overvoltage limiting device is overwhelmed by a current surge, then the base elevates itself over the equipment's non-fused ground contact to $U = L \cdot di/dt$. It adds to the limited voltage of the overvoltage protector and gives the electronic input additional charge. However, the equipment's ground contact should be laid on the leakage potential of the overvoltage limiting device. One more source of errors is a wrongly placed ground connection. It is, therefore, never permissible to fit the ground connection to the overvoltage limiting device on the protected side.

Sequential currents / danger of fire

Sequential currents, with the subsequent danger of fire, represent another danger.

Gas-discharging diodes and air spark gaps with a sufficiently high current have a very small arc-drop voltage of approx. 10...30 V. If a circuit with a low-resistance supply of operational voltage

becomes close to sufficiently higher voltage after the sparking of a conductor due to overvoltage, the conductor may become very hot and in unfavourable cases may cause fire or an explosion. This is why NIVUS recommends to use a 6 A slow-blow pre-fuse when using the EnerPro 2x1-24V!

However it is always essential to check the danger of non-extinguishing conductors in particular cases when using an overvoltage limiter.

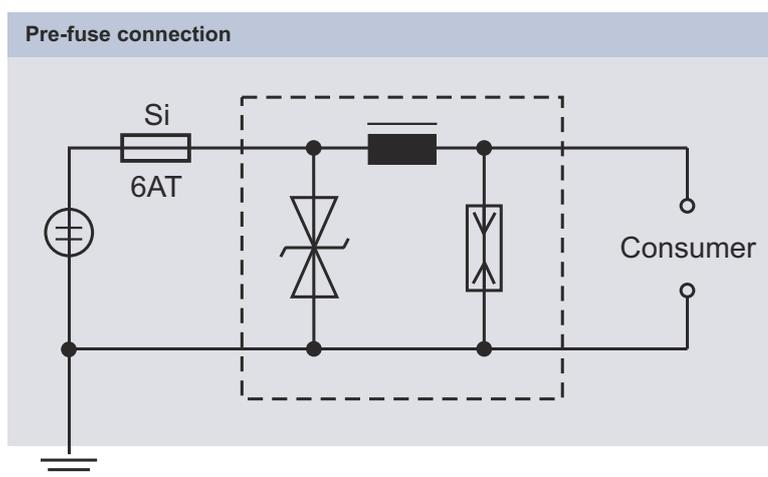
The DataPro overvoltage protection equipment does not have to be protected, as it allows a maximum operational current strength of 0.5 A through the resistance of its internal coupling. With this current, the extinguishing voltage of the gas conductor is more than 60 V. The type EnerPro220Tr is equipped with high resistance varistors instead of suppressor diodes.

Varistors are subject to ageing effects. Since these components show increased leakage current whilst ageing, they may become increasingly hot resulting in self-destruction.

Due to this constant risk of fire, NIVUS uses varistors with temperature-dependent cut-off devices.

The usual procedure in case of overheating is disconnecting the varistors from mains, indicating this condition with the red LED lit (EnerPro220Tr/20) or the green LED off (EnerPro220Tr/5).

Due to the use of the thermal cut-off device precautions are not necessarily required, however recommended regarding the safety of following equipment.



You can find more information in the instruction manual or on www.nivus.com