



P3135-3A

Three-phase transformer 6/10V and 23/40V



Purpose and characteristic properties

The P3135-3A three-phase transformer 6/10 V and 23/40 V is used to carry out basic experiments on the properties and applications of three-phase current. Due to its unusual design, it is a valuable device for physics demonstration lessons.

Safety and electromagnetic compatibility

This device is designed for its intended use to be connected to a $3 \times 230/400$ V three-phase supply. On the output side, voltages of up to over 40 V RMS can be taken with a rated load capacity of 6 A. Therefore, the device is intended exclusively for demonstration lessons. If the subject teacher considers the students to be morally and professionally suitable and this is also covered by local regulations, she/he may also use it in student experiments under constant supervision.

For connecting the loads to the device outputs, only safety connecting leads with a rigid protective collar may be used.

Before commissioning the setup, it must be checked again. The device itself is protected against overload on all sides. However, due to the high rated power, the device can destroy consumers that are connected incorrectly or used incorrectly.

If the device housing or power cable shows any damage, take the device out of service immediately and either return it or have it repaired by a qualified electrician. There are no user-serviceable parts inside the device.

The device does not generate high-frequency radiation.

Special Features

Compared with earlier products of this type and comparable products from competing suppliers, this device has the following special features:

Inrush current limiting:

Due to its high rated power, the device is equipped with a ceramic inrush current limiter. This significantly reduces the inrush current surge and prevents nuisance tripping of circuit breakers when switching on. Conversely, after switching off, observe a cooling time of one minute so the ceramic elements can cool down.

Combination of a thermal-magnetic main fuse and an ON/OFF operating switch.

This industry-standard combination simplifies the setup, increases the safety level, and makes operation clearer. Unlike the popular single fuses, this device shuts off the entire supply if one phase is overloaded.

Combination of a thermal-magnetic primary fuse and an ON/OFF switch for each individual phase:

On the rear of the device, all phases can be activated or deactivated individually and independently. This eliminates the otherwise usual connecting and disconnecting of connection cables. In addition, both the primary current circuits and the secondary current circuits are now effectively protected by thermal-magnetic circuit breakers.

Operating indicator for all phases:

The presence of the respective voltage at the outputs is indicated by LEDs. This makes it easy to see whether the respective outputs are active or not.

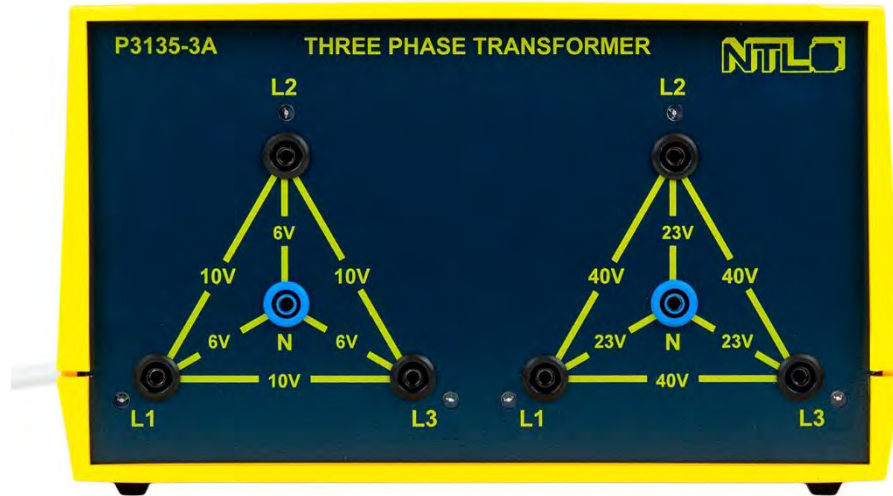
Individual transformers for all phases:

Such devices typically use three-phase transformers in which all three phases are transformed together in a single transformer. With symmetrical loads, there is no objection to this. For experimental setups—especially when the initially often not very intuitive effect of the rotating magnetic field is being demonstrated—or if something goes wrong, this symmetry is no longer present. As a result, the neutral point shifts massively, which can be fatal for operation and, in some cases, for electrical safety. This device, equipped with individual transformers, keeps the neutral point constant under all load conditions.

Connections and controls, technical specifications

The P3135-3A three-phase transformer 6/10 V and 23/40 V has the following connection and operating elements:

Front panel:



One block each with four safety sockets for tapping the three-phase voltages. Left 3 x 6/10 V and right 3 x 23/40 V. The maximum current rating is 6 A. The output voltages are galvanically isolated from the three-phase power supply, but not from each other. In other words: All outputs of both blocks are internally connected together inside the device!

Whether an output is live or not is indicated by an LED mounted in the immediate vicinity. The voltages in star and delta are printed on

Rear of unit:



- ① Permanently connected mains cable > 1.5 m with permanently connected CEE industrial plug 16A 5p 6h IP44 according to IEC 60309. For commissioning, this plug must be plugged into a suitable industrial power socket.
- ② 3-pole circuit breaker with integrated ON/OFF switch: Press the green button to switch the device on. Press the red button to switch it off. In the event of a fault in the primary circuit, the device trips here: the black button pops out.
- ③ 6 x 1-pole circuit breakers with integrated ON/OFF switch: By flipping up the respective switch, the corresponding output is energized. If a fault occurs on this output, this output switches off. Other outputs are not affected. This can make troubleshooting easier.

Technical specifications:

- Rotating-field voltage outputs: one block each with four safety sockets:
Left: 3 x 6/10 V, Right: 3 x 23/40 V
The voltages in star and delta configurations are printed on the unit
- Maximum current rating: 6 A
- Output voltages are galvanically isolated from the three-phase mains supply
- Permanently connected mains cable: CEE plug 16A 5p 6h IP44 in accordance with IEC 60309
- Power consumption: 3 x 140 VA
- Input voltage: 3 x 230/400 V AC, 50/60 Hz
- Dimensions: 260 x 150 x 218(240) mm
- Mass: approx. 8240 g



FRUHMANN GmbH
NTL Manufacturer & Wholesaler



Katharinenweg 3
7372 Karl, Austria

Tel.: +43-2617-20278-0
e-mail: office@ntl.at

Fax: ext. 4
www.ntl.at

