

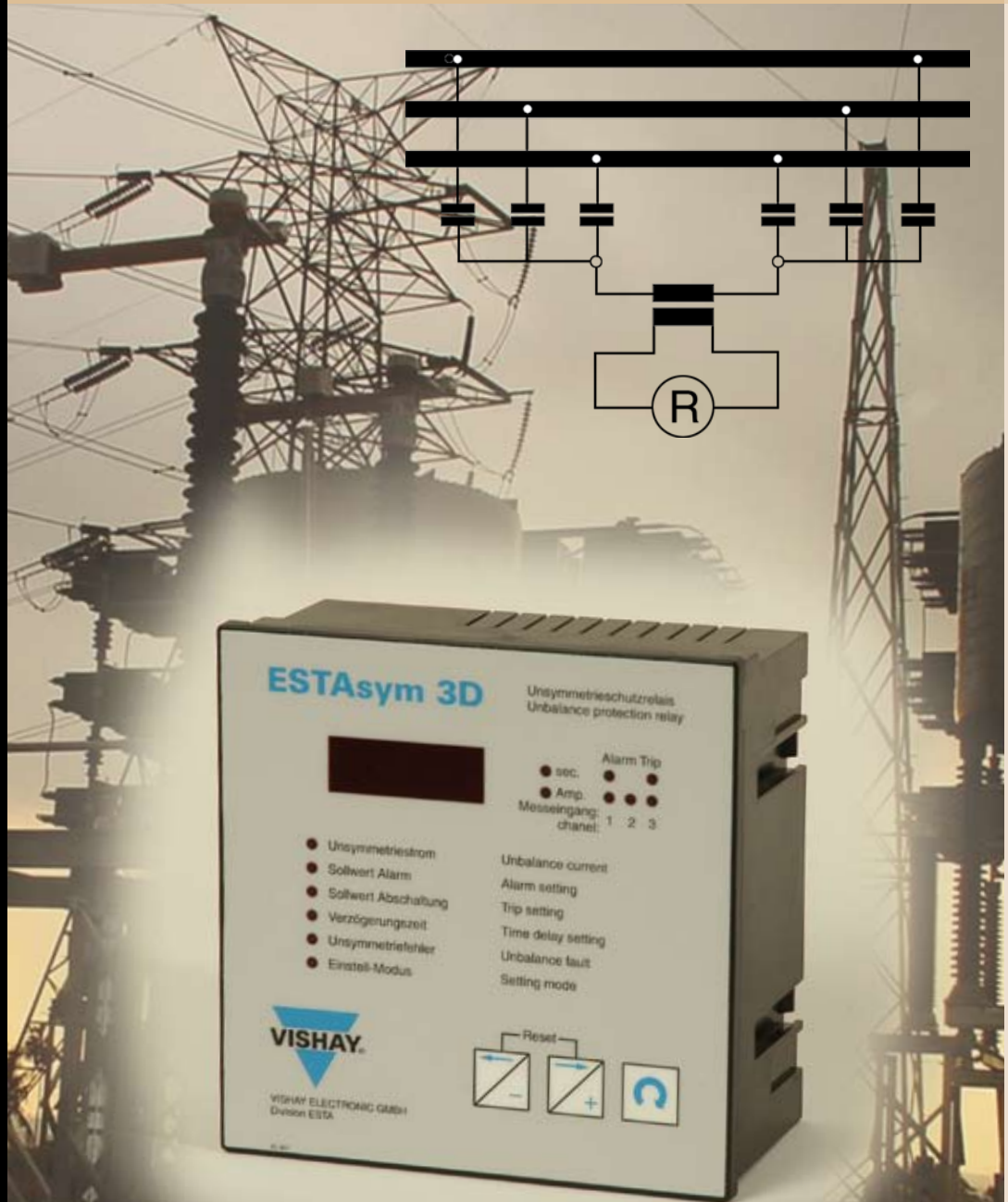


VISHAY INTERTECHNOLOGY, INC.

CAPACITORS

ESTAsym® 3D

Unbalance Protection Relay



PRODUCT OVERVIEW

ESTAsym 3D

Unsymmetrieschutzrelais
Unbalance protection relay

- Unsymmetriestrom
- Sollwert Alarm
- Sollwert Abschaltung
- Verzögerungszeit
- Unsymmetriefehler
- Einstell-Modus

Alarm Trip

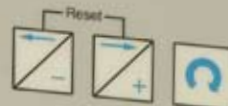
- sec.
- Amp.

Messeingang:
channel: 1 2 3

Unbalance current
Alarm setting
Trip setting
Time delay setting
Unbalance fault
Setting mode



VISHAY ELECTRONIC GMBH
Division ESTA



Application

The ESTAsym[®] 3D is designed to monitor large-capacitor equipment in a one or three double-star circuit (Fig.1) or bridge circuit (Fig. 2 and Fig. 3).

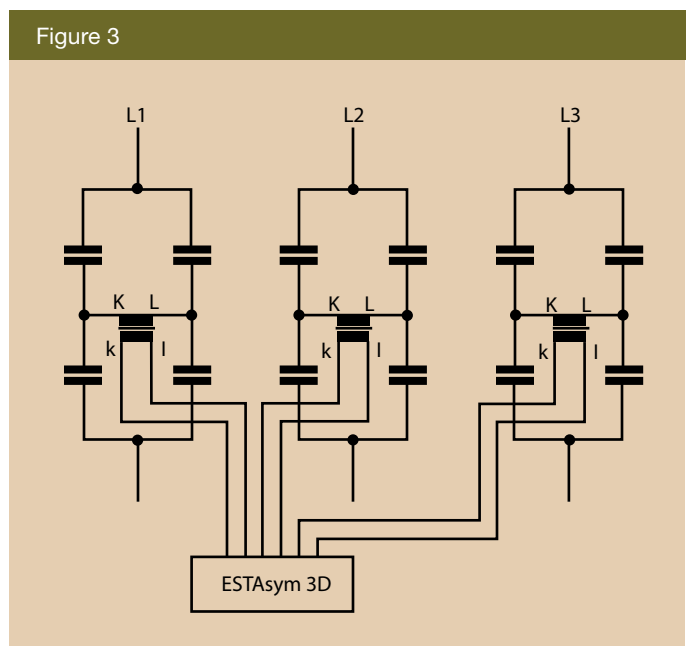
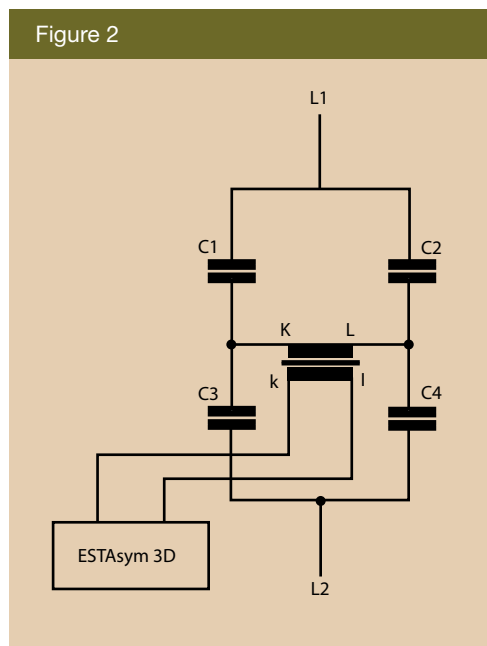
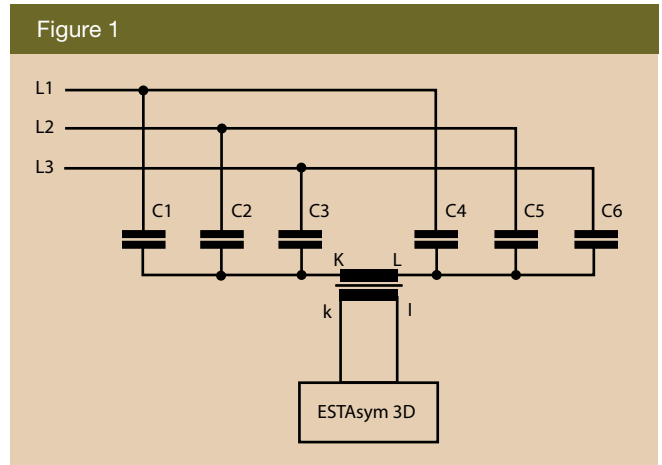
Double Star

The star connection is divided into two star points. The star points are connected via a current transformer. Normally this current features has very small values. In the event of a failure, i.e., element breakdown or group short-circuit, the star point of the respective branch is shifted and causes a current flow between the star points. The intensity of the current is determined by the capacitor construction and the number of capacitors.

ESTAsym 3D has three measurement inputs, where pick-up values can be set separately from each other. Thus, there is the possibility of controlling up to three filter circuits with one ESTAsym 3D with a double star structure. The filter circuits can feature different tuning frequencies and outputs.

The capacitor bank forms four bridge branches, with two branches each constituting a series connection. The medium potentials of the branches are connected by a current transformer. The division of the bridge branches preferably should be symmetrical. An unsymmetrical structure would also be possible. However, with an unsymmetrical structure, the pick-up values must be set to the more sensitive branch.

Here too, it is possible to control up to three filter circuits with one ESTAsym 3D with a bridge connection structure. The filter circuits can have different tuning frequencies and outputs.



Features

Hardware

- Three galvanic measurement channels that are independent of each other.
- Current measuring range up to 5A --> transformers X/1A and X/5A can be connected directly without requiring any conversion.
- Via the measurement signal, only the fundamental wave is evaluated --> no influence of harmonic waves.
- Potential-free signal contacts; change-over contacts without any protective circuits.
- Fitted with interfaces RS232 and RS485 as a standard.
- Real-time function for storing the alarm messages.
- Compact structure in a plastic casing.
- Voltage supply via a wide-range supply unit, all common supply voltages are available.

Software

- For each measurement channel, separate alarm and switch-off values can be set.
- Time delays for alarm and switch-off can be set separately.
- The basic setting of the signal relay (picked up or released) can be configured.
- The following two ways of cancelling the alarm are possible:
 - Manual RESET : The alarm continues to be active even after the measurement signal has fallen below the set trip value (e.g., upon switching off the capacitor equipment). The alarm can be cancelled by pressing the two keys simultaneously.
 - Automatic RESET : The alarm will be cancelled when the measurement signal falls below the set trip value. No manual reset is necessary.
- Storing the unbalance current when tripping the switch-off. The value can be read off at the unit (only activated if resetting is carried out manually).
- Storing the unbalance current with date and time when tripping the switch-off. Up to 20 messages can be stored; query via PC software.
- All parameters: setting values can be configured via the interface.

Ordering information: Please indicate in your order the required supply voltage and frequency.



Technical Data

Measuring Circuits	
Possible Current Transformer Types	X/1 or X/5; without any conversions on the unit
Measuring Range	0 A to 5.0 A
Galvanic Separation	via current voltage transformer, dielectric strength of 2kV
Power Consumption per Measuring Circuit	1 VA
Measurement Input Filter	The measurement signal is passed via a 50-Hz or 60-Hz band pass filter.
Measuring Accuracy	Class 1
Overload Capacity	2500 A at $t = 0.1$ ms

Setting Ranges	
Setting Range Alarm	0 A to 5.0 A; separately for each measurement channel
Setting Range Switch-off	0 A to 5.0 A; separately for each measurement channel
Setting Range Time Delay Alarm	0.1 seconds to 5.0 seconds
Setting Range Time Delay Switch-off	0.1 seconds to 5.0 seconds

Output Circuit	
Signal Outputs	Potential-free change-over switch contacts for alarm and switch-off
	The normal position of the relay can be selected, picked up or released
	Contact rating 8 A/265 VAC or 0.3 A/300 VDC or 8 A/30 VDC
	The contacts do not have any protective circuits
Resetting of the Tripping	Automatic, when decreasing below the pick-up value or manual via key operation



Display	
Measurement and Rated Value Display	LED seven-segment display, four-digit, red, font size = 10 mm
Unit	The allocation of the unit [sec] or [A] is effected via two LEDs
Menu Display	The display of the selected menu is effected via six LEDs
Fault Display	An active alarm or switch-off is indicated by blinking LEDs
Measurement Channel	The measurement channel selected for the display is indicated by LEDs.

Interface	
RS232 and RS485	
PC software and interface record at request	

Supply	
Operating Voltage, Two Models	110 VAC to 230 VAC, 50/60 Hz and 110 VDC to 350 VDC or 18 VDC to 72 VDC
Power Consumption	Ca. 10 VA

Mechanical Structure	
Front Plate	144 mm x 144 mm
Switchboard Cutout	138 mm x 138 mm
Installation Depth	Ca. 70 mm
Weight	Max. 0.65 kg
Model	Pursuant to EN 50178, Class II protection and EN 61010-1, EN50081-1, EN50082-2
International Protection	IP 40 with mounted plug connector (If requested, IP 55 from the front in the assembled state via lockable full-view window)
Operating and Environment Temperatures	-25 °C to +60 °C
Installation Position	Optional

SEMICONDUCTORS:

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