TESTRANO 600

Three-phase test system for comprehensive power and distribution transformer testing
One system for multiple tests on power transformers: TESTRANO 600

Touch-and-Test with TESTRANO 600

TESTRANO 600 is the world’s first portable, three-phase test system which supports all common electrical tests on single- and three-phase power and distribution transformers. Compared to conventional single-phase test sets the three-phase capabilities of TESTRANO 600 offer several advantages:

> One setup can be used to perform various tests
> The rewiring effort is significantly reduced
> Testing time can be cut down to a third of the time
> Increased safety as less trips up and down are needed

TESTRANO 600 provides you with a convenient way of testing to gain a comprehensive insight into the condition of every part of your power transformer. It can be operated using TESTRANO TouchControl on the integrated display, or by using our Primary Testing Manager™ software on your laptop. This makes it ideal for routine and diagnostic testing onsite or during factory acceptance tests (FAT).

Your benefits

> True three-phase power transformer test set
> Powerful device with 3 x 33 A DC or 400 V AC
> Reduced wiring effort as same wiring can be used for different tests
> Three times faster testing
> Automatic tap changer control and measurement, no accessory required
> Fast and reliable demagnetization of transformer’s core

www.omicronenergy.com/TESTRANO-600
TRANSFORMER TURNS RATIO
Transformer turns ratio (TTR) measurements verify the operating principle of a power transformer to detect shorted turns and open-circuited conditions. In order to perform this test with up to 12 kV, the CP TD12 and MCA1 are required.

EXCITING CURRENT
Exciting current measurements are performed to assess the turn-to-turn insulation of the windings, the magnetic circuit of a transformer as well as the tap changer. In order to perform this test with 10 kV, the CP TD12 is required.

DC WINDING RESISTANCE
DC winding resistance measurements are used to assess contact problems of the windings and tap changers.

DYNAMIC RESISTANCE
Dynamic resistance measurements (DRM) are used to check the on-load tap changer (OLTC) for poorly maintained and damaged OLTC contacts.

VECTOR GROUP CHECK
The vector group check can be used to determine the vector group of the power transformer.

COOLDOWN TEST
The cooldown test is performed to determine the winding temperature at the end of the heat run procedure by means of a winding resistance measurement.

SHORT-CIRCUIT IMPEDANCE / LEAKAGE REACTANCE
Leakage reactance / short-circuit impedance measurements are sensitive methods to assess possible deformation or displacements of windings.

FREQUENCY RESPONSE OF STRAY LOSSES
The frequency response of stray losses (FRSL) test identifies short-circuits between parallel strands and local overheating due to excessive eddy current losses.

DEMAGNETIZATION
Demagnetization of the core is recommended after DC has been applied, e.g. during winding resistance tests. The risk of high inrush currents during energization, and influences on other tests are reduced.

POWER / DISSIPATION FACTOR (with CP TD12)
Power/dissipation factor and capacitance measurements are performed to investigate the insulation of power transformers and bushings.

QUICK TEST
The Quick Test is TESTRANO 600’s swiss army knife. You can define your own test procedures and perform special measurements like magnetic balance or zero-sequence impedance.
Three-phase solution to speed up and simplify power transformer testing

Three wires are all you need
TESTRANO 600 is connected to the high-voltage and low-voltage side of the transformer by using specially designed multi-purpose cables.

The cables, which support a 4-wire (Kelvin) connection, only have to be connected once at the transformer’s terminals. Then all test outputs and measurement inputs are automatically controlled by TESTRANO 600 without the need to change the connection again.

To automatically switch between different tap positions of an on-load tap changer (OLTC), a multiplug cable can be connected. This cable can also be used to record motor current and voltage of the OLTC.

Your advantages of true three-phase testing:
> Rewiring effort is significantly reduced
> Speeds up testing because all three phases are energized at once
> Fully automated control of tap changer during the test
> Verify the phase shift of any winding configuration
Three powerful sources
The compact and powerful design with three integrated sources enables you to perform high accuracy measurements in a fraction of the time required by other solutions:
> 3-phase transformer turns ratio with 400 V L-L
> 3-phase winding resistance with 33 A
> 3-phase short-circuit impedance / leakage reactance
> Fast demagnetization with 16 A

A wider frequency range
Standard power / dissipation factor measurements at line frequency can only detect the effects of moisture and aging at an advanced stage.
By combining TESTRANO 600 with CP TD12*, you can perform measurements across a frequency range from 15 Hz to 400 Hz. This increases the sensitivity of the test and enables you to detect problems much earlier than with the standard measurement.

Active discharge and fast demagnetization
The active discharge function (patent pending) of TESTRANO 600 automatically discharges the winding within a matter of seconds, e.g. after resistance measurements have been performed. This speeds up testing time and increases the safety for the tester.
With TESTRANO 600, you can quickly demagnetize the transformer's core before and after testing. This reduces the risk of high inrush currents during energization and of influences of a magnetized core on other tests.

Safety first
TESTRANO 600 follows the “safety first” principles and fulfills the highest safety standards by providing an emergency stop button as well as safety and warning lights.
Another example are the custom-designed connector plugs which prevent you from connecting the wrong outputs. In addition, the simple wiring concept with labeled connection leads, leaves almost no room for errors.

Rugged and compact design
With TESTRANO 600 you get all the required components in just one box. This makes testing quite comfortable and the system, weighing only 20 kg / 44 lbs, easy to transport. The rugged design makes it ideal for on-site testing as well as in rough environments.

* CP TD12 is an optional accessory to the TESTRANO 600. See more details on page 11.
TESTRANO TouchControl – Easy test preparation and fast test execution

TESTRANO 600 can be operated in multiple ways:

> Primary Test Manager™ Standard is the default software and offers basic functionality on your laptop.
> Primary Test Manager™ Advanced offers a guided test workflow, easy data management and automatic result assessment on your laptop.
> TESTRANO TouchControl, using the integrated touch display for fast and easy test workflow on the device.

All three options support all diagnostic tests on power and distribution transformers.

**TESTRANO TouchControl**

TESTRANO TouchControl is an optional control option and features an integrated, high-resolution, multi-touch display. The high contrast of the 10.6” display ensures good visibility even in bright sunlight. This allows fast, flexible and easy testing without bringing a laptop PC onsite.

The USB interface can be used to import and export test files to and from TESTRANO 600. This can be used to prepare complex tests in advance and just import them onsite.
Easy handling during test preparation

During operation with TESTRANO TouchControl, you can choose between creating a new, manual test or loading an already prepared test.

In order to identify your asset and keep your testing results organized, you can enter basic transformer nameplate information before starting your test.

Best possible support during test preparation and execution

Each test follows an intuitive two-step workflow. You can set the measurement parameters on the “Settings” screen and press “Start”. You can then review the results on the “Measurement” screen.

Pre-configured wiring diagrams, that depend on the selected vector group of your power transformer, assist you with setting up the test equipment in the correct manner. This minimizes the likelihood of measurement errors and speeds up your testing process.

Handy features for comparison and detailed analysis

Test results are available as a table and in graphical form to provide you with the best possible overview on your test results.

You can easily re-order the lines of the table when making phase-to-phase or tap-to-tap comparisons. You can also switch between different result plots, e.g. one showing the absolute values and another showing the deviation to nameplate values.

In order to create customized reports, you can export tests to our Primary Test Manager™.
The Primary Test Manager™ (PTM) is the ideal software tool for the diagnostic testing and condition assessment of your power transformers, providing different PTM licenses depending on your needs:

> Primary Test Manager™ Standard is the default software and offers basic functionality on your laptop.
> Primary Test Manager™ Advanced offers a guided test workflow, easy data management and automatic result assessment on your laptop.

Primary Test Manager™ — Guided testing with easy data management

Management of location, asset and test data

PTM provides a well-structured database for managing all related transformer data to get a comprehensive overview of your asset’s condition. You can define and manage locations, assets, jobs and reports in an easy and fast way.

PTMate app — your mobile companion

PTMate is our mobile companion for PTM. The app supports you on site and extends the PTM feature set to your smartphone, such as sending images directly, fast and safe wiring for tests as well as a stop button for ongoing measurements.

Data synchronization and back-up

During on-site testing, data is often generated by multiple testing teams. With the ‘PTM DataSync’ module, you can synchronize all data to a central database hosted on premises or in the cloud. In doing so, data synchronization and storage becomes safer and more convenient. You can select the relevant locations in order to keep the local database small.

Get the PTMate app free of charge in the App Store and Google Play Store!
Execution of diagnostic tests
PTM enables you to control and operate the connected test set directly from a computer. In order to assist you during testing, PTM helps you in defining your transformer with type-specific nameplate views.

Customized test plans
Based on the nameplate values, PTM generates a customized test plan according to current standards and guidelines for each asset. Thereby, PTM provides you with a comprehensive test plan to thoroughly assess the condition of your asset.

Automatic test execution
PTM allows to define a group of tests, which do not require any changes in connection. By the click of a button, all tests within the group are executed automatically in the defined sequence. This reduces testing time and increases convenience.

Result analysis and reporting
Results are automatically stored and organized in the database on your PC and are available for analysis and reporting. Each test can be automatically assessed according to international standards and guidelines or based on your individual limit values.

Comparison tools for detailed analysis
The measurement result can be visualized in tables and plots for easy review and assessment. Additionally, they can be compared with previous results and historical trends, allowing further in-depth analysis.

Customized, individual reports
PTM automatically generates reports including all asset-related information and performed tests. This gives you a comprehensive overview of the test object, test results and assessment.

You can easily adapt test reports, for example, by choosing from different types of result tables and diagrams and by providing comments on every test. Furthermore, you can incorporate your company logo, photos and other test results.

PTM supports you in the best possible way during execution of diagnostic tests via wiring diagrams and asset-specific test plans according to international standards.

For a comprehensive analysis, PTM offers automatic result assessment and comparison as well as customized reporting.
**Technical data and possible accessories**

### TESTRANO 600

#### Outputs

**HV & LV outputs – power**

<table>
<thead>
<tr>
<th>Source</th>
<th>Range</th>
<th>$V_{\text{rms}}$</th>
<th>$P_{\text{cont}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-phase AC (RMS)</td>
<td>0 ... 230 V (LN)</td>
<td>0.16 A</td>
<td>1500 W</td>
</tr>
<tr>
<td>0 ... 80 V (LN)</td>
<td>0.16 A</td>
<td>0 ... 40 V (LN)</td>
<td>0.16 A</td>
</tr>
<tr>
<td>1-phase AC (RMS)</td>
<td>0 ... 240 V</td>
<td>0.16 A</td>
<td>4000 W</td>
</tr>
<tr>
<td>0 ... 120 V</td>
<td>0.16 A</td>
<td>0 ... ±113 V</td>
<td>0.16 A</td>
</tr>
<tr>
<td>3-phase DC</td>
<td>0 ... ±340 V</td>
<td>0.16 A</td>
<td>33 A</td>
</tr>
<tr>
<td>0 ... ±170 V</td>
<td>0.16 A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Inputs

**HV & LV inputs – voltage**

<table>
<thead>
<tr>
<th>Source</th>
<th>Range</th>
<th>$I_{\text{rms}}$</th>
<th>$P_{\text{cont}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-phase AC (RMS)</td>
<td>0 ... 300 mV</td>
<td>100 mA</td>
<td>0.01 % rd + 0.003 % range</td>
</tr>
<tr>
<td>0 ... 3 V</td>
<td>10 mA</td>
<td>0.01 % rd + 0.003 % range</td>
<td></td>
</tr>
<tr>
<td>0 ... 30 V</td>
<td>1 mA</td>
<td>0.01 % rd + 0.003 % range</td>
<td></td>
</tr>
<tr>
<td>0 ... 300 V</td>
<td>0.1 mA</td>
<td>0.012 % rd + 0.003 % range</td>
<td></td>
</tr>
<tr>
<td>DC</td>
<td>0 ... 42.4 mV</td>
<td>16 A</td>
<td>0.022 % rd + 0.032 % range</td>
</tr>
<tr>
<td>0 ... 424 mV</td>
<td>0.1 A</td>
<td>0.01 % rd + 0.017 % range</td>
<td></td>
</tr>
<tr>
<td>0 ... 42.4 V</td>
<td>16 A</td>
<td>0.007 % rd + 0.012 % range</td>
<td></td>
</tr>
<tr>
<td>0 ... 424 V</td>
<td>0.1 A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Combined values

**DC resistance measurement**

<table>
<thead>
<tr>
<th>Source</th>
<th>Range</th>
<th>$R_{\text{cont}}$</th>
<th>$R_{\text{cont}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 A$_{\text{dc}}$</td>
<td>10 ... 100 Ω</td>
<td>0.1 % rd + 0.18 % range</td>
<td></td>
</tr>
<tr>
<td>1 ... 10 Ω</td>
<td>0.1 % rd + 0.267 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.1 ... 1 Ω</td>
<td>0.1 % rd + 0.18 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 A$_{\text{dc}}$</td>
<td>1 ... 10 Ω</td>
<td>0.037 % rd + 0.017 % range</td>
<td></td>
</tr>
<tr>
<td>0.1 ... 1 Ω</td>
<td>0.04 % rd + 0.027 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.01 ... 0.1 Ω</td>
<td>0.033 % rd + 0.017 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.001 ... 0.01 Ω</td>
<td>0.037 % rd + 0.027 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0001 ... 0.001 Ω</td>
<td>0.05 % rd + 0.043 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 A$_{\text{dc}}$</td>
<td>3 ... 30 mΩ</td>
<td>0.033 % rd + 0.017 % range</td>
<td></td>
</tr>
<tr>
<td>300 ... 3000 μΩ</td>
<td>0.037 % rd + 0.027 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 ... 300 μΩ</td>
<td>0.05 % rd + 0.043 % range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 ... 30 μΩ</td>
<td>0.07 % rd + 0.044 % range</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Ratio measurement

<table>
<thead>
<tr>
<th>Range</th>
<th>$R_{\text{cont}}$</th>
<th>$R_{\text{cont}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1 ... 10</td>
<td>0.03 % rd + 0.043 % range</td>
<td></td>
</tr>
<tr>
<td>1:10 ... 100</td>
<td>0.027 % rd + 0.043 % range</td>
<td></td>
</tr>
<tr>
<td>1:100 ... 1000</td>
<td>0.027 % rd + 0.043 % range</td>
<td></td>
</tr>
<tr>
<td>1:1000 ... 10 000</td>
<td>0.027 % rd + 0.043 % range</td>
<td></td>
</tr>
</tbody>
</table>
**Technical data and possible accessories**

**CP TD12**

### System requirements
- **Operating system**
  - Windows 10™, 64-bit
  - Windows 8™ and 8.1™, 64-bit
  - Windows 7™ SP1, 32-bit and 64-bit
- **CPU**
  - Multicore system with 2 GHz or faster
- **RAM**
  - Single core system with 2GHz or faster
- **Hard disk**
  - Minimum 4 GB (8 GB)
- **Storage device**
  - Minimum 5 GB of available space
- **Graphics adapter**
  - Super VGA (1280x768) or higher-resolution video adapter and monitor
- **Interface**
  - Ethernet NIC
- **Installed software**
  - Microsoft Office® 2016, Office® 2013, Office® 2010 or Office® 2007

### Power specifications
- **Nominal Voltage**
  - 100 V ... 240 V AC
- **Permitted Voltage**
  - 85 V ... 264 V AC
- **Frequency**
  - Nominal: 50 Hz / 60 Hz
  - Permitted: 45 Hz ... 65 Hz
- **Power fuse**
  - Automatic circuit breaker with magnetic overcurrent tripping at I > 16 A
- **Power consumption**
  - Continuous: < 3.5 kW
  - Peak: < 5.0 kW

### Environmental conditions
- **Temperature**
  - Operating: -10 °C ... +55 °C / +14 °F ... +131 °F
  - Storage: -30 °C ... +70 °C / -22 °F ... +158 °F
- **Relative humidity**
  - 5 % ... 95 %, non-condensing
- **Maximum altitude**
  - Operating: 2000 m / 6550 ft
    - up to 5000 m / 16400 ft
    - (with limited specifications)
  - Storage: 12000 m / 40000 ft

### Mechanical data
- **Dimensions**
  - 580 x 386 x 229 mm / 22.9 x 15.2 x 9.0 inch
  - (W = 464 mm / 18.3 inch without handles)
- **Weight**
  - Device with display: 20.6 kg / 45.5 lbs
  - Device without display: 19.5 kg / 43 lbs

### Equipment reliability
- **Shock**
  - IEC / EN 60068-2-27, 15 g / 11 ms,
  - half-sinusoid, each axis
- **Vibration**
  - IEC / EN 60068-2-6, frequency range from 10 Hz to 150 Hz,
  - continuous acceleration 2 g (20 m/s² / 65 ft/s²),
  - 10 cycles per axis

1. Only AC permitted
2. Typical phase accuracy at 50 / 60 Hz, V > 30 % of range: 0.017°
3. Means “typical accuracy”
4. Typical phase accuracy at 50 / 60 Hz, I > 30 % of used range: 0.025°
5. From 2000 m to 5000 m altitude CAT III compliance only with half voltage
6. From 2000 m to 5000 m altitude only CAT II compliance or CAT III compliance with half voltage
7. Signals below 45 Hz with reduced values possible.
8. Reduced accuracy at mains frequency or its harmonics.
9. Recommended system requirements marked in bold
10. Graphics adapter supporting Microsoft® DirectX 9.0 or later is recommended.
11. Installed software required for the optional Microsoft Office® interface functions.

### High-voltage output

<table>
<thead>
<tr>
<th>U</th>
<th>THD</th>
<th>I_max</th>
<th>S_max</th>
<th>t_max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 12 kV AC</td>
<td>&lt; 2%</td>
<td>300 mA</td>
<td>3600 VA</td>
<td>&gt; 2 min</td>
</tr>
<tr>
<td>0 ... 12 kV AC</td>
<td>&gt; 2%</td>
<td>100 mA</td>
<td>1200 VA</td>
<td>&gt; 60 min</td>
</tr>
</tbody>
</table>

### Capacitance Cp (equivalent parallel circuit)

<table>
<thead>
<tr>
<th>Range</th>
<th>Typical accuracy</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pF ... 3 μF</td>
<td>Error &lt; 0.05 % of reading + 0.1 pF</td>
<td>I &lt; 8 mA, U_{test} = 2 kV ... 10 kV</td>
</tr>
<tr>
<td>1 pF ... 3 μF</td>
<td>Error &lt; 0.2 % of reading</td>
<td>I &gt; 8 mA, U_{test} = 2 kV ... 10 kV</td>
</tr>
</tbody>
</table>

### Dissipation factor DF (tan δ)

<table>
<thead>
<tr>
<th>Range</th>
<th>Typical accuracy</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 10 % (capacitive)</td>
<td>Error &lt; 0.1 % of reading + 0.005 %</td>
<td>f = 45 ... 70 Hz, I &lt; 8 mA, U_{test} = 2 kV ... 10 kV</td>
</tr>
<tr>
<td>0 ... 100 % (0 ... 10000%)</td>
<td>Error &lt; 0.5 % of reading + 0.02 %</td>
<td>U_{test} = 2 kV ... 10 kV</td>
</tr>
</tbody>
</table>

### Power factor PF (cos φ)

<table>
<thead>
<tr>
<th>Range</th>
<th>Typical accuracy</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 10 % (capacitive)</td>
<td>Error &lt; 0.1 % of reading + 0.005 %</td>
<td>f = 45 ... 70 Hz, I &lt; 8 mA, U_{test} = 2 kV ... 10 kV</td>
</tr>
<tr>
<td>0 ... 100 %</td>
<td>Error &lt; 0.5 % of reading + 0.02 %</td>
<td>U_{test} = 2 kV ... 10 kV</td>
</tr>
</tbody>
</table>

### Primary Test Manager™

- **Operating system**
  - Windows 10™, 64-bit
  - Windows 8™ and 8.1™, 64-bit
  - Windows 7™ SP1, 32-bit and 64-bit
- **CPU**
  - Multicore system with 2 GHz or faster
- **RAM**
  - Single core system with 2GHz or faster
- **Hard disk**
  - Minimum 4 GB (8 GB)
- **Storage device**
  - Minimum 5 GB of available space
- **Graphics adapter**
  - Super VGA (1280x768) or higher-resolution video adapter and monitor
- **Interface**
  - Ethernet NIC
- **Installed software**
  - Microsoft Office® 2016, Office® 2013, Office® 2010 or Office® 2007
## Ordering information

### TESTRANO 600 packages

All packages are delivered by default with the Primary Test Manager™ Standard software. Find advanced control options in the corresponding section.

<table>
<thead>
<tr>
<th></th>
<th>TESTRANO 600 Basic Package</th>
<th>TESTRANO 600 Standard Package</th>
<th>TESTRANO 600 Advanced package</th>
<th>TESTRANO 600 Universal Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTM Standard software license, including manual control mode and report generator</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Quick test</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Transformer turns ratio (TTR) / exciting current</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>DC winding resistance</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Demagnetization</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Short-circuit impedance / leakage reactance</td>
<td>–</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Frequency response of stray losses (FRSL)</td>
<td>–</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Power / dissipation factor and capacitance (incl. CP TD12 and its accessories)</td>
<td>–</td>
<td>–</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>OLTC scan / dynamic resistance measurement (DRM)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>■</td>
</tr>
<tr>
<td>Vector group check</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>■</td>
</tr>
<tr>
<td>Cooldown test</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Power losses at low voltage</td>
<td>■</td>
<td>■</td>
<td>■</td>
<td>■</td>
</tr>
</tbody>
</table>

**Ordering numbers**

- VE000701
- VE000702
- VE000707
- VE000708

■ included  – not included

### Advanced control options

<table>
<thead>
<tr>
<th>Description</th>
<th>Ordering No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TESTRANO 600 TouchControl (for new device)</td>
<td>VEHO0700</td>
</tr>
<tr>
<td>TESTRANO 600 TouchControl (retrofit option)</td>
<td>VEHO0701</td>
</tr>
<tr>
<td>PTM Advanced software license</td>
<td>VESM0703</td>
</tr>
</tbody>
</table>

License for PC software upgrade adding guided workflow, customized test plans, automatic assessment, graphical comparison and trending
### Upgrade options

<table>
<thead>
<tr>
<th>Description</th>
<th>Ordering No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Short-circuit impedance / leakage reactance&quot; module</td>
<td>VESM0701</td>
</tr>
<tr>
<td>&quot;OLTC scan and transient recording&quot; module</td>
<td>VESM0702</td>
</tr>
<tr>
<td>&quot;Power losses at low voltage&quot; module</td>
<td>VESM0704</td>
</tr>
<tr>
<td>&quot;Vector group check&quot; module</td>
<td>VESM0705</td>
</tr>
<tr>
<td>„Cooldown test“ module</td>
<td>VESM0706</td>
</tr>
<tr>
<td>CP TD12 Upgrade Option</td>
<td>VE000638</td>
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### Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Ordering No.</th>
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<tbody>
<tr>
<td>TESTRANO 600 HV cable extension package</td>
<td>VEHK0704</td>
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<tr>
<td>TESTRANO 600 LV cable extension package</td>
<td>VEHK0705</td>
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<tr>
<td>SAA2</td>
<td>–*</td>
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<tr>
<td>SAA3</td>
<td>VEHZ0688</td>
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<tr>
<td>C-Probe 1</td>
<td>VEHZ4000</td>
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<td>MCA1</td>
<td>VEHZ0792</td>
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<tr>
<td>TESTRANO 600 transport case for accessories</td>
<td>VEHP0076</td>
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</table>

* Find detailed ordering information and package descriptions on [www.omicronenergy.com/testrano-600](http://www.omicronenergy.com/testrano-600).
Welcome to the team

At OMICRON you can always depend on an experienced team that actively supports you and an infrastructure that you can rely on. We always listen attentively in order to understand your needs so that we can offer you the best possible solutions. We strive for lasting partnerships and ensure that you can continue to rely on your product long after you’ve purchased it. In order to do this, we focus on quality, the transfer of knowledge and unique customer support.

Charles, Wenyu and René are able to tell you about the services we have available for you and why it pays to be part of the team.

Solutions you can rely on...

... developed with experience, passion and an innovative approach that we use to continually set groundbreaking standards in our industry sector.

We invest more than 15 % of the total turnover in research and development so that we can even guarantee the reliable use of the latest technology and methods in the future.

Our comprehensive product care concept also guarantees that your investment in our solutions – like free software updates – pays off in the long term.
We share our knowledge...

… by maintaining a constant dialogue with users and experts. Some examples of this are our customer events and conferences that take place all over the world and our collaboration with numerous standardization committees. We also make our knowledge available to you in the customer section of our website in the form of application reports, specialized articles and articles in the discussion forum. With the OMICRON Academy, we also provide a wide spectrum of training possibilities and assist you with Start-up training and free webinars.

When rapid assistance is required...

… our excellent level of support is always appreciated. You can reach the highly-qualified and committed technicians in our customer support department 24 hours a day, seven days a week – and it’s completely free. We deal with repair services and service features in a fair and non-bureaucratic manner. We can help minimize your downtime by lending you equipment from a readily available plant at one of our service centers in your area. A comprehensive offer of services for consulting, testing and diagnostics completes our range of services.
OMICRON is an international company serving the electrical power industry with innovative testing and diagnostic solutions. The application of OMICRON products allows users to assess the condition of the primary and secondary equipment on their systems with complete confidence. Services offered in the area of consulting, commissioning, testing, diagnosis and training make the product range complete.

Customers in more than 160 countries rely on the company’s ability to supply leading-edge technology of excellent quality. Service centers on all continents provide a broad base of knowledge and extraordinary customer support. All of this together with our strong network of sales partners is what has made our company a market leader in the electrical power industry.