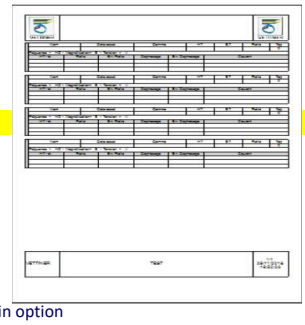
# VETTINER TECHNICAL OFFER
## TRANSFORMERS TESTING
## RATIO ERROR, PHASE ERROR, VECTOR GROUP, ...

**TECHNICAL OFFER N° xxxxxxxxx** — **DATE 26/01/2023**

| DESIGNATION | TRI-PHASE ACCURATE RATIOMETER (Portable unit) | |
|---|---|---|
| **Références Vettiner** | **MRT 3** | **MRT 3 G** |
| | **4 Test Voltages, option for 5 tests voltages** | **5 Test Voltages, option for 6 tests voltages** |
| | **➔ Mono Phase injection (Automatic phase after phase)** | **➔ Mono Phase injection (Automatic phase after phase)** |
| **Configuration**<br>**- Touch Screen 7"**<br>**- or KeyBoard/Mouse**<br>**- or PC control**<br> | | |
| Rack presentation<br>or rack case<br>on simple request | | |
| **Dimensions & Weight**<br>• Length x Width (mm)<br>• Height / Depth (mm)<br>• Weight (Kg) | 465 x 380 mm<br>175 mm<br>10 kg<br>**Proof Case IP 67** | 465 x 380 mm<br>175 mm<br>13 kg<br>**Proof Case IP 67** |
| **Main applications** | | |
| • Power Transmission & Distribution Transformers | ✓ | |
| • Auto Transformers | ✓ | |
| • Instrument Transformers (CT, VT & CVT's) | ✓ | |
| **Main functions** | | |
| • Direct measurement of turns ratio | ✓ | |
| • Ratio error detection | ✓ | |
| • Phase angle error detection | ✓ | |
| • Polarity test | ✓ | |
| • Interturn short circuit detection | ✓ | |
| • Cut spire / circuit detection | ✓ | |
| • Coupling connection & /Tap changer error | ✓ | |
| • Inversion of sub-coils detection | ✓ | |
| • **Abnormality in magnetic circuit detection** | ✓ | |
| **Main characteristics** | | |
| • Power supply<br>• Test Frequency (of Main power supply) | 85 V - 264 V / 45 Hz - 65 Hz (+ Autonomous power supply on rechargeable battery in option)<br>Industrial frequency of the mains power supply | |
| • Test Voltages<br>• Clock Index / Vector group | 3 V - 10 V - 40 V - 120 V (Mono) (+ 220 V mono in option)<br>00 - 11 | 3V-10V-40V-120V + Option 220V (Mono) + **40V (Tri-phase)**<br>00 - 11 **& 0°00 - ± 180,00 °** |
| **Measuring specification** | **Measuring Range** / **Display** | **Resolution** / **Accuracy** |
| • Simultaneous display of results on 3 phases | ✓ / ✓ | ✓ / ✓ |
| • Turns ratio range | 0.1 / 1 --> 20 000 / 1 / 5 1/2 digits | $1.10^{-4}$ / ≤ 0.05 % Rdg. ± 1 digit |
| • Phase angle | 0° - ± 180 ° / 5 1/2 digits | 0.01° / ≤ 0.5 ° Rdg. ± 1 digit |
| • Excitation current | 0 - 1 A / 6 or more digits | 1 µA / ≤ 1.0 % Rdg. ± 1 digit |
| **Vettiner - Customer benefit** | |  |
| • **Over 86 years experience / Ratio test (since 1933)** | ✓ | |
| • All transformers types mono & three-phase | ✓ | |
| • Easy use (Built-in soft assistance in addition) | ✓ | |
| • fast measurements (Few secondes only) | ✓ | |
| • **Automatic Vector Group detection** | ✓ | |
| • **Up to 1 spire more or less detection** | ✓ | |
| • **Ready/Edition of a test report on Excel or pdf...** | ✓ | |
| • **Built-in internal memory of test results/PC Transfer** | ✓ | |
| • **2 USB plugs (Storage, printing, ...)** | ✓ | |
| • Sturdiness & reliabilty over time | ✓ | |
| • Total safety of operator | ✓ | |
| • Built-in auto test & auto protection | ✓ | |
| • **2 years warranty** | **2 years included**, 3 or 5 years in option | |
| • After sales service | **10 years service guaranteed**, up to 50 years service recorded | |
| **Environment** | | |
| • Operating temperature<br>• Storage temperature | 0 °C up to + 40 °C<br>- 10 °C up to + 50 °C | |
| **Eventual options or accessories** / **References** | **Description of part of cables** | **Cables Extension "HV" side & "LV" side** / **Octopus Cables + small Clamps "HV" side & "LV" side** / **Octopus Cables + large Clamps "HV" side & "LV" side** |
| Available sets of measuring cables : Different length & clamps | **New High Quality of re-enforced elastomere cables** | |
| • All possible combinations are available including possibility of addition of different length of extension cables<br>1. Select your required length of cables "extension" (" XX ")<br>2. Select your expected size of clamps with octopus cables | | |
| Ex. 5 m Extension cable + octopus with small crocodile clamps<br>➔ = 5 m cables test set (Note: already included) TCA-MRT 5 | TCA MRT 5 | 5 m / 1,25 m * / 1,25 m * |
| • Octopus cables with large clamps TCAG-MRT XX | TCA MRT 10 | 10 m / 1,25 m * / 1,25 m * |
| • Cables extension (without octopus cables) : TCAR-MRT XX<br>5 m, 10 m, 15 m or XX m & cumul of extension like 5 m + 10 m extensions or other combination | TCA MRT 15 | 15 m / 1,25 m * / 1,25 m * |
| | TCA MRT XX | XX m under request / 1,25 m * / 1,25 m * |
| | Extensions are "inter-connectable" together | * Octopus cables length can be increased under request |
| • Remote control / tap changer test TCA-RCU-MRT | Remote control is only compatible with full cable set mounted with small crocodile cables only | |
| • True Three 40 V generator (= " G " option) GTR | GTR ( ✓ already included inside MRT 3 G ) | |
| • Autonomous supply /12V rechargeable battery ASS 12-230 | ASS 12-230 | |
| • Artificial neutral (When neutral not accessible) Nart | Nart | |
| • Multi-ratio standard for calibration C-PRT-MRT | C-PRT-MRT | |
| **Calibration** | | |
| • Vettiner calibration certificate included | ✓ | |
| • External laboratory calibration certificate | ISO 17 025 on request, in option | |

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