

## $\label{eq:constraint} VETTINER \ - TECHNICAL OFFER \\ TAN \,\delta \,\& \, CAPA \, TEST \ - \, EXTREME \, ACCURATE \, MEASURING \, DEVICES \\ \hbox{BASED ON MOST ACCURATE AUTOMATIC SCHERING BRIDGES } \\ \end{array}$



TECHNICAL OFFER N°	xxxxxx-xxxxx		DATE	17/02/2023	
DESIGNATION	EXTREME ACCURATE	AUTOMATIC SCHERING	BRIDGES (Same meas	suring Performances)	
Vettiner References		SPC 5			
<u>vettiler nererences</u>	Portab		Rack	<u>case</u>	
Illustration Software Under Windows					
Ref. Tan δ Soft 5 for SPC 5000		Image: Margin 12.026 KV         Jx           Γx         524.8192 pF           Tamβ         0.004979           Γx         0           Γx         0			
Dimensions & Weight	Portable case unit	<u>t</u>	Rack case Unit		
• Width (mm)	590 mm		520 mm (Rack case 1		
• Depth (mm)			400 mm (Rack case 460		
Height (mm)     Weight (Kg)			290 mm (Rack case 6	0)	
Weight (Kg)	25 kg		# 29 kg		
General Application Dielectric insulation gualification / status		1			
Power / Instrument Transformers insulation		×			
Generators insulation	✓				
Bars / Coils insulation	✓				
Cables insulation	✓				
Power Capacitors insulation					
Liquid / solid dielectric samples	<b>√</b>				
All HV equipments insulation		× .			
Laboratories, Production & Maintenance		*			
Main Characteristics		Coboring Bride	a Structure		
Technology     Measuring Modes	Schering Bridge Structure UST, GST & GSTg				
<ul> <li>Balancing Modes (Manual or/&amp; Automatic, Both built-in)</li> </ul>	Automatic / Manual (selection inside menu)				
Main Measured Values (All displayed)	Test ranges	LCD Display	Resolution	Accuracy	
Voltage	0999kV	5 dgts.	0,1 V	0,5 % ± 5 dgts	
Current	0 - 6 A (& +)	4 dgts.	0,1 µA	0,5 % ± 5 dgts	
Frequency	45 - 65 Hz & +	4 dgts.	0,01 Hz	0,01 % ± 1 dgts	
Capacitance	0-80000 µF & +	7 dgts.	0,01 pF	0,025 % ± 5 dgts	
• Tan Delta - Tan $\delta$	0 - 100 % & +	9 dgts.	1.10 <sup>-6</sup> (1ppm)	$0,5\% \pm 1.10^{-5}$	
<ul> <li>P. factor - cos φ</li> </ul>	0-1	4 dgts.	0.001	1,0 % ± 1 dgt	
Watt Loss	0 - 100 kW 0 - 30	5 dgts. 5 dgts.	1 μW 0.001	1,0 % ± 1 dgt 1,0 % ± 1 dgt	
• Permittivity - εr Other Tests or interfaces	0-30	5 úgis.	0.001	1,0 % 1 1 Ugt	
Ambient Temperature T °C & Hydro %		1			
<ul> <li>Option : Local Temp T°C / PT100, Resistivity ρ</li> </ul>	$\checkmark$				
<ul> <li>Software to drive tests &amp; manage test results</li> </ul>	1				
<ul> <li>Interface : RS 232, USB for Tests storage,</li> </ul>	4				
Vettiner - Benefits <ul> <li>Vettiner : Schering Bridge manufacturer since over 88 years (1933)</li> <li>Vettiner - Inventor of Null Oscilloscopic indicator</li> </ul>	✓ Vettiner patent				
Vettiner - Inventor of Automatic Schering Bridge		4			
<ul> <li>HMI 10" Touch screen PC Control &amp; sturdy µcontroller base</li> <li>PC Benefits &amp; Built-in Excel &amp; PDF conversion</li> </ul>					
Built-in interactive manual     Sequere ware intuitive		✓ ✓			
<ul> <li>Easy use, very intuitive</li> <li>Calibration : Easy check &amp; easy calibration</li> </ul>	✓ Calibration of only resistances & capacitances				
No or reduced maintenance over time	Constation of only resistances & capacitalities				
<ul> <li>Sturdiness &amp; reliability over time</li> </ul>	4				
Total operator safety & ease of use					
Warranty     After Sales Service	1 year included, 2 or 3 or 5 years in option 10 years service guaranteed, over 50 years recorded				
		TO Acars service Branduteet	i, over bo years recorded		
Eventual Options or Accessories     Connection Terminals     SCT		UHF without any request, Le	mo under simple request		
Measuring cables - XX m under request     TCA SPC XX	Length (XX m) can be adapted to your application, under simple request				
Automatic Guard Potential regulator     SRA 3	Already built-in parametric compensation for parasite capacitances & resistances of cables but SRA 3 option compulsory for test cel				
Measure & display of local Temp.     PT/SPC	Usually not necessary for most production routine tests - Nethertheless, necessary for tests with test cells & some specific application				
• Measure & display of permittivity $\varepsilon_r$ $\varepsilon_r/SPC$	Usually not necessary for most production routine tests - Can be required for tests with test cells & some specific application Can be required with few application. In main cases, a separate special test cell with a specific Mega/Tera-Ohmmeter i required				
<ul> <li>Measure &amp; display of resistivity ρ in DC ρ/SPC</li> <li>Additional shunt or CT / high current tests SS XX</li> </ul>	Can be required wih few application. In main cases, a separate special test cell with a specific Mega/Tera-Ohmmeter i required Usually not necessary for tests in power plants - Nevertheless, available on request				
Special protection / proof container     SPCPPACK	Supplied container are already proof when closed - Under request				
Null Oscilloscopic indicator 3 Fixed frequencies     GOSCB	Usually not required for routine tests and required only for very specific application, under request only				
Null Oscilloscopic indicator variable frequency     GOSCFV	Usually not required for routine tests and required only for very specific application, under request only				
Std Capacitor, Cn included or separated     CA/CS/CG	Typically, it can be built in factor	Std Capacitor XXXX kV - YYYY pF under request Typically, it can be built in for application on Test cells, 2 kV up to 5 kV when in rack case. For higher voltage, it is necessary separated			
<ul> <li>HV Generator, included or separated</li> <li>Variable resonating inductance</li> <li>ALRI XX-YY</li> </ul>	I ypically, it can be built in for application on Test cells, 2 kV up to 5 kV when in rack case. For higher voltage, it is necessary separate Usually required for tests in power plants (MV/HV Generators, Motors) - Available on request				
Sample test cell, liquids or solids     SCL/SCS	Most test cells available inside Vettiner ranges, for liquid or solid dielectric samples - Under request				
Heating Control for self heating test cells     SC/SH	A common heating system has been developped by Vettiner to be used with most Vettiner - Under request				
• Eventual training TRAIN	Depends on need & application, under request				
Eventual on site setting up INSTAL.	Depends on need, under request				
Eventuel other requests EOR		Depends on need	under request		
Environment • Operating Temperature • Storage Temperature	- 10 °C up to + 50 °C - 20 °C up to + 60 °C				
Calibration     Vettiner calibration certificate included (BNM Traceable)		- 20 C up (			
<ul> <li>External laboratory calibration (ISO 17025,)</li> </ul>		Under re	quest		
ote : Some of the above technical data are valid at the above mentic	aned date but could change without	t any notice at any time (Ex. dimen	ions or weight or else		

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