



# CERTIFICATE OF ACCREDITATION

**The ANSI National Accreditation Board**

Hereby attests that

**HV Test S.A. de C.V. dba HV TEST**  
**Eléctricos No. 103 y 105 Parque Industrial Chichimeco**  
**Aguascalientes, México CP 20916**

Fulfills the requirements of

**ISO/IEC 17025:2017**

In the fields of

**CALIBRATION and TESTING**

This certificate is valid only when accompanied by a current scope of accreditation document.  
The current scope of accreditation can be verified at [www.anab.org](http://www.anab.org).

A handwritten signature in black ink, appearing to be 'J. Stine', is positioned above a horizontal line.

Jason Stine, Vice President

Expiry Date: 19 May 2025

Certificate Number: ACT-2982



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory  
quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

## SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

**HV Test S.A. de C.V. dba HV TEST**  
 Eléctricos No. 103 y 105 Parque Industrial Chichimeco  
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### CALIBRATION AND TESTING

Valid to: **May 19, 2025**

Certificate Number: **ACT-2982**

#### CALIBRATION

##### Electrical - DC Low Frequency

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
HVDC / Measuring Systems, Converting Devices, Test Sets <sup>1</sup>	(2 to 20) kV (>20 to 400) kV	0.75 % of reading 0.50 % of reading	PT-23 (IEC 60060-2. Sec. 5 & 6)
HVAC Measuring Systems, Converting Devices, Test Sets <sup>1</sup>	10 V to 100 kV at 60 Hz  (100 to 400) kV at (16 to 850) Hz	0.25% of reading  0.75% of reading	PT-24 (IEC 60060-2 Sec. 5&7)
Linearity	(>400 to 2000) kV At (16 to 850) Hz	2.8% of reading	

**Electrical - DC Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
HV Impulse / Measuring Systems, Converting Devices, Test Sets <sup>1</sup>  (Full Lightning Impulse)  Front Time Time to half value  (Switching Impulse) Front Time Time to half value	(100 to 800) kV (100 to 1200) kV (0.84 to 1.56) $\mu$ s (40 to 60) $\mu$ s  (100 to 700) kV (200 to 300) $\mu$ s (2000 to 3000) $\mu$ s	1.0 % of reading 1.4% of reading 3.1% of reading 2.8% of reading  1.0 % of reading 2.4% of reading 2.8% of reading	PT-25 (IEC 60060-2. Sec. 5 & 8)
Instruments and Software used in High-Voltage Impulse Tests <sup>1</sup>  (Full Lightning Impulse) Front Time Time to half value  (Chopped Impulse) Time to Chopped  (Switching Impulse) Time to peak Time to half value	(100 to 1600) V (0.84) $\mu$ s (60) $\mu$ s  (400 to 1250) V 0.5 $\mu$ s  (100 to 1600) V 20 $\mu$ s 4000 $\mu$ s	1.0 % of reading 3.0 % of reading 3.0 % of reading  1.5 % of reading 3.5 % of reading  1.0 % of reading 3.0 % of reading 3.0 % of reading	PT-33 (IEC 61083-1:2.0)



**Electrical - DC Low Frequency**

<b>Parameter/Equipment</b>	<b>Range</b>	<b>Expanded Uncertainty of Measurement (+/-)</b>	<b>Reference Standard, Method, and/or Equipment</b>
<p>Current Instrument Transformers<sup>1,2</sup></p> <p>Ratio Error</p> <p>Displacement</p>	<p><math>I_p</math></p> <p>(0.05 to 0.5) A (&gt;0.5 to 1000) A (&gt;1000 – 5000) A @ <math>I_s</math> 1A &amp; 5A</p> <p><math>0^\circ - 360^\circ</math> @ <math>I_p</math> (<math>\geq 0.05</math> to 1000) A @ <math>I_p</math> (&gt;1000 – 5000) A</p>	<p>0.0080 % 0.0050 % 0.011 %</p> <p>0.30 min 0.80 min</p>	<p>PT-38 (IEC 61869-2; IEEE C57.13)</p>
<p>Voltage Instrument Transformers<sup>1,2</sup></p> <p>Ratio Error:</p> <p>Displacement:</p>	<p><math>V_p</math></p> <p>100 V to 2kV (5 to 100) kV @ <math>V_s</math> 100 V</p> <p><math>0^\circ - 360^\circ</math> @ <math>V_p</math> 100 V to 2kV @ <math>V_p</math> (5 to 100) kV</p>	<p>0.025 % 0.020 %</p> <p>0.75 min 0.60 min</p>	<p>PT-39 (IEC 61869-3; IEEE C57.13)</p>

**Electrical - DC Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Active Power Meters (Wattmeters) <sup>1</sup> (40 to 110) V (rms) (0.4 to 1.1) A (rms) 60 Hz PF 0.01 PF 0.02 PF 0.05 PF 0.1 PF 0.5 PF 1.0	(0.16 to 1.21) W (0.32 to 2.42) W (0.8 to 6.05) W (1.6 to 12.1) W (8.0 to 60.5) W (16 to 121) W	3.4 % of reading 0.60 % of reading 0.45 % of reading 0.25 % of reading 0.040 % of reading 0.035 % of reading	PT-40 (Direct Comparison)  Power Standard
Active Power (Transformer Loss) Measuring Systems <sup>1</sup> (0.01 to 100) kV (rms) (0.25 to 80) A (rms) 60 Hz PF 0.01 PF 0.02 PF 0.05 PF 0.1 PF 0.5 PF 1.0	5W to 80 kW 10 W to 160 kW 25 W to 400 kW 50 W to 800 kW (0.25 to 4000) kW (0.5 to 8000) kW	4.1 % of reading 2.2 % of reading 1.1 % of reading 0.71 % of reading 0.41 % of reading 0.35 % of reading	PT-41 (Direct Comparison)  Power Meter Current Channel Voltage Channel

**Electrical - DC Low Frequency**

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
AC Voltage Ratio Meters and Test Sets (TTR meters) <sup>1</sup>  (60 Hz) (10 to 100) V	(1 to 150) (>150 to 320) (>320 to 400) (>400 to 1500)  Ratio Units	0.033 % of reading 0.030 % of reading 0.045 % of reading 0.15 % of reading	PT-42 (Direct Measurement)  Precision AC Ratio Transformer Standard
Resistance Meters <sup>1</sup>	0.1mΩ @ (30 A) 1mΩ @ (25A) 10mΩ @ (10A) 100mΩ @ (2.5A) 1Ω @ (750 mA) 10Ω @ (500 mA) 100Ω @ (50 mA) 1kΩ @ (5 mA)  1kΩ @ (<20 V) 10kΩ @ (<20 V) 100kΩ @ (<20 V)  1MΩ @ <20 V 10MΩ @ 100 V 100MΩ @ 1kV 1GΩ @ 1kV 10GΩ @ 1kV 100GΩ @ 1kV 1TΩ @ 1kV	0.14% of reading 0.065% of reading 0.040% of reading 0.030% of reading 0.025 % of reading 0.025% of reading 0.025% of reading 0.025% of reading  0.0060% of reading 0.0080% of reading 0.0080 % of reading  0.0055 % of reading 0.015 % of reading 0.025 % of reading 0.60 % of reading 0.60 % of reading 1.2 % of reading 2.5 % of reading	PT-43 (Direct Measurement)  Standard Resistor
Partial Discharge Measuring Systems <sup>1</sup>	(1 to 20) pC (20to 10 000) pC	6.2% of reading 2.7% of reading	PT-44 (IEC 60270)  Reference PD Calibrator

**Electrical - DC Low Frequency**

<b>Parameter/Equipment</b>	<b>Range</b>	<b>Expanded Uncertainty of Measurement (+/-)</b>	<b>Reference Standard, Method, and/or Equipment</b>
Partial Discharge Calibrators <sup>1</sup>	(1 to 10 000) pC	2.5% of reading	PT-45 (IEC 60270. Annex A. Alternative Method)

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.





## TESTING

### Electrical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
DC voltage test of the over sheath <sup>1</sup>	IEC 60229 & CFE E0000-28 Sec. 9.1.4.2	Medium Voltage, High Voltage & Extra High Voltage Cables	DC Voltage Cable Test System
Assessment of Electrical Insulation Condition <sup>1</sup> : Withstand Voltage Test (WT) Tangent Delta (TD)	IEEE 400.2 Sec. c..5.1, 5.3, 5.4 & 5.5 CIGRE Tech. Brochure 502	Shielded Power Cable Systems	Universal VLF & DC HV Test System Damped Alternating Current (DAC) Test Sets
Withstand Voltage Test (WT) <sup>1</sup>	IEC 60840 Sec. 16.3 & IEC 62067 Sec. 16.3	High Voltage Cable System Extra High Voltage Cable Systems	Resonant Test System
Measurement of Partial Discharges <sup>1</sup>	IEC 60270 & IEC TS 62478 IEC TS 62478 IEEE 400.3 IEEE 400.4	Medium Voltage, High Voltage, Extra High Voltage Cable Systems & Gas-Insulated Substations	Partial Discharge Monitoring System
Withstand Voltage Test (WT) <sup>1</sup>	IEC 62271-203 Sec. 10.2.101	Gas-Insulated Substations	Resonant Test System

Notes:

1. On-site calibration & Testing service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope
2. The Ratio range and uncertainty values are expressed in % absolute units, and not as % of reading.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. ACT-2982.



Jason Stine, Vice President