

Scopes of Calibration and Accreditation

Field of Calibration	Properties of Measured / Equipment Under Calibration	Capability Range	Calibration Methods	ISO/IEC 17025 Accredited by ONSC-TISI (Thailand)		ISO/IEC 17025 Accredited by ANAB (USA)			
				LAB	ON-SITE	LAB	ON-SITE		
Electrical DC/Low Frequency	Voltage / Current / Power Meters								
	DC Volt Meters / Panel Meters (Digital & Analog)	DCV: 0-1100V DCA: 0-100A ACV: Up-1100V (10Hz-1MHz) ACA: Up-50A (10Hz-30kHz) DCR: 0-100GΩ Frequency: 1Hz-10MHz	Direct measurement with Calibrator	Yes	Yes	Yes	Yes		
	AC Volt Meters / Panel Meters (Digital & Analog)			Yes	Yes	Yes	Yes		
	DC Current Meters / Panel Meters (Digital & Analog)			Yes	Yes	Yes	Yes		
	AC Current Meters / Panel Meters (Digital & Analog)			Yes	Yes	Yes	Yes		
	DC Volt / Current Meters (Digital & Analog)			Yes	Yes	Yes	Yes		
	AC Volt / Current Meters (Digital & Analog)			Yes	Yes	Yes	Yes		
	Analogue Circuit Testers / Analogue Multi Testers	Capacitance: Up-100mF Inductance: 100µH-10H	Direct measurement with Calibrator	Yes	Yes	Yes	Yes		
	Leakage Current Testers			Yes	Yes	Yes	Yes		
	AC/DC Current Cut-Off Meters			Yes	Yes	Yes	Yes		
	Multi-Function Meters			Yes	Yes	Yes	Yes		
	Electrometers / Pico Ammeters			Yes	Yes	Yes	Yes		
	Digital Multimeters (3.5 digits)			Yes	Yes	Yes	Yes		
	Digital Multimeters (4.5 digits)			Yes	Yes	Yes	Yes		
	Digital Multimeters (5.5 digits)			Yes	Yes	Yes	Yes		
	Digital Multimeters (6.5 digits)			Yes	Yes	Yes	Yes		
	Digital Multimeters (7.5 digits)			Yes	Yes	Yes	Yes		
	Digital Multimeters (8.5 digits)			Yes	-	Yes	Yes		
	Portable AC/DC Watt Meters (Analog Type)			DCW: 0-36kW (DCV: 0-1000V, DCA: 0-36A) ACW: Up-50kW (ACV: Up-1000V, ACA: Up-50A, 40Hz-1kHz, PF 0.3-1.0)	Direct measurement with Calibrator	Yes	Yes (V, A)	Yes	Yes
	Single-Phase Watt Meters (Analog / Digital)					Yes	Yes (V, A)	Yes	Yes
	Three-Phase Watt Meters (Analog / Digital)					Yes	Yes (V, A)	Yes	Yes
	Power Quality Analyzers	Yes	Yes (V, A)			Yes	Yes		
	Clamp-On Power Meters	Yes	Yes (V, A)			Yes	Yes		
	Power Quality Logger	Yes	Yes (V, A)			Yes	Yes		
	Power Monitor	Yes	Yes (V, A)			Yes	Yes		
	AC/DC Current Clamp Probe	DCA: 0-1000A ACA: Up-1000A (10Hz-1kHz)	Direct measurement with Calibrator	-	-	Yes	Yes		
	AC Clamp Meters			Yes	Yes (V, A)	Yes	Yes		
	DC Clamp Meters			Yes	Yes (V, A)	Yes	Yes		
	AC/DC Clamp Meters			Yes	Yes (V, A)	Yes	Yes		
	Digital High Volt Meters	DCV: 0-10kV ACV: Up-7.07kV (40Hz-60Hz) ACV: >7.07kV-10kV (50Hz)	Direct measurement and direct comparison	Yes*	-	Yes	Yes		
	Analogue High Volt Meters			Yes*	-	Yes	Yes		
	High Voltage Probe with Indicator			Yes*	-	Yes	Yes		
	High Voltage Dividers			*DCV: Up-10 kV	-	Yes	Yes		
	High Voltage Probe			*ACV: Up-6 kV	-	Yes	Yes		
	High Voltage Differential Probe			@50-60Hz	-	Yes	Yes		
	Voltage / Current / Power Meters (Cont.)								
	Electrostatic Field Meters	DCV: Up to ±10 kV	Direct measurement with High Voltage Calibrator and Electrostatic Plates	-	-	Yes	Yes		
	Electrostatic Volt Meters			-	-	Yes	Yes		
	Charged Plate Monitors			-	-	Yes	Yes		
	Charge Analyzer			-	-	Yes	Yes		
	Static Sensors			-	-	Yes	Yes		
	Electrostatic Locators			-	-	Yes	Yes		
	Electrostatic Discharge Simulators			-	-	Yes	Yes		
	Ion Monitors			-	-	Yes	Yes		
	Voltage / Current / Power Sources								
	Single Output DC Power Supply	DCV: 0-1,000V DCA: 0-100A ACV: Up-10kV (10Hz-100kHz) ACA: Up-50A (10Hz-1kHz)	Direct measurement and in-direct measurement	Yes	Yes	Yes	Yes		
	Multi Output DC Power Supply			Yes	Yes	Yes	Yes		
	Single Output AC Power Supply			Yes	Yes	Yes	Yes		
Multi Output AC Power Supply	Yes			Yes	Yes	Yes			
Electronic Load	Yes			Yes	Yes	Yes			
Electrical Safety Testers Instruments									
Withstanding Voltage Testers	DCV: 0-10 kV ACV: Up-10 kV (40Hz-60Hz) DCA: 0-100 A ACA: Up-50 A (10Hz-1kHz) DCR: 0-10 TΩ ACR: 0-10 GΩ	Direct measurement and in-direct measurement	Yes	Yes*	Yes	Yes			
Hi-Pot Testers			Yes	Yes*	Yes	Yes			
Flash Testers			Yes	Yes*	Yes	Yes			
Puncture Tester			Yes	Yes*	Yes	Yes			
Battery Testers			Yes	Yes*	Yes	Yes			
Battery Simulators			Yes	Yes*	Yes	Yes			
Capacity Battery Testers			Yes	Yes*	Yes	Yes			
Insulation Testers			Yes	Yes*	Yes	Yes			
Earth Testers			Yes	Yes*	Yes	Yes			
Insulation and Continuity Testers			Yes	Yes*	Yes	Yes			
Withstanding Voltage / Insulation Tester			Yes	Yes*	Yes	Yes			
High Voltage Insulation Testers			Yes	Yes*	Yes	Yes			
High Voltage Power Supply			Yes	Yes*	Yes	Yes			
Dielectric Analyzers			Yes	Yes*	Yes	Yes			
Electrical Safety Compliance Analyzers			Yes	Yes*	Yes	Yes			
Appliance Multitesters			Yes	Yes*	Yes	Yes			
Puncture / Insulation Testers			Yes	Yes*	Yes	Yes			
Ground Resistance Testers			Yes	Yes*	Yes	Yes			
Ground Bond Testers			Yes	Yes*	Yes	Yes			
Low Resistance Ohmmeters			Yes	Yes*	Yes	Yes			
AC Milliohm Meters			Yes	Yes*	Yes	Yes			
AC Low Ohm Testers			Yes	Yes*	Yes	Yes			
AC Grounding Testers			Yes	Yes*	Yes	Yes			
Electrical Safety Testers Instruments (Cont.)									
High Resistance Meters	DCV: 0-10 kV ACV: Up-10kV (40Hz-60Hz) DCA: 0-100A ACA: Up-50A (10Hz-1kHz) DCR: 0-100GΩ ACR: 0-10GΩ	Direct measurement and in-direct measurement	Yes	Yes	Yes	Yes			
Megohmmeters			Yes	Yes	Yes	Yes			
Super Megohmmeters			Yes	Yes	Yes	Yes			
Ultra High Resistance Meters			Yes	Yes	Yes	Yes			
Impulse Winding Testers			-	-	Yes	Yes			
Winding Testers			-	-	Yes	Yes			
Surge Testers			-	-	Yes	Yes			
Spark Testers			-	-	Yes	Yes			
Shoes and Flooring Testers			DCV: 0-10 kV	Direct measurement and in-direct measurement	Yes	-	Yes	Yes	
Wrist Strap and Footwear Testers			ACV: Up-10kV (40Hz-60Hz)		Yes	-	Yes	Yes	
Wrist Strap Testers			DCA: 0-100 A		Yes	-	Yes	Yes	
Wrist Strap & Dual Heel Testers			ACA: Up-50 A (10Hz-1kHz)		Yes	-	Yes	Yes	
System Testers			DCR: 0-10 TΩ		Yes	-	Yes	Yes	
ESD Shoe/ Wrist Strap Testers			ACR: 0-10 GΩ		Yes	-	Yes	Yes	
Flooring Testers					Yes	-	Yes	Yes	
Resistivity Meters					Yes	-	Yes	Yes	
Environment & Megohmmeters					Yes	-	Yes	Yes	
Surface Resistivity Checkers					Yes	-	Yes	Yes	
Worksurface Testers					Yes	-	Yes	Yes	
Megohmmeter Test Kit		Yes	-	Yes	Yes				
Electrical DC/Low Frequency	Resistance / Capacitance / Inductance Instruments								
	Decade Resistance Boxes	DCR: 0-100GΩ ACR: 1mΩ-1MΩ (DC-13MHz)	Direct measurement / Sub-stitution / Volt-Amp	Yes	Yes	Yes	Yes		
Resistance Boxes for Insulation Tester	Yes			-	Yes	Yes			



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				LAB	ON-SITE	LAB	ON-SITE			
	Low Accuracy Resistors	Cap.: 1pF-100mF (20Hz-13MHz) Ind.: 100µH-10H (100Hz-10kHz) DCR for Insulation Tester: 10 kΩ to 100 GΩ (10V to 1kV)		Yes	Yes	Yes	Yes			
	Low Accuracy Standard Resistors			Yes	Yes	Yes	Yes			
	High Accuracy Standard Resistors			-	-	Yes	Yes			
	DC Current Shunts			-	-	Yes	Yes			
	DC/AC Current Shunts			-	-	Yes	Yes			
	Decade Capacitance Boxes			Yes	-	Yes	Yes			
	Low Accuracy Capacitors			Yes	-	Yes	Yes			
	High Accuracy Capacitors			Yes	-	Yes	Yes			
	4-T Standard Air Capacitors Set			Yes	-	Yes	Yes			
	4-T Standard Air Capacitors Set			Yes	-	Yes	Yes			
	Calibration L-R Standard			Yes	-	Yes	Yes			
	4-T Pair Standard Resistors Set			Yes	-	Yes	Yes			
	Decade Inductance Boxes			Yes	-	Yes	Yes			
	Low Accuracy Inductors			Yes	-	Yes	Yes			
	High Accuracy Inductors			Yes	-	Yes	Yes			
	Resistance / Capacitance / Inductance Instruments (Cont.)									
	L Meters			DCR: 0-100GΩ ACR: 1mΩ-1MΩ (DC-13MHz) Cap.: 1pF-100mF (20Hz-13MHz) Ind.: 100µH-10H (100Hz-10kHz)	Direct measurement / Sub-stitution	Yes	-	Yes	Yes	
	Inductance Meters	Yes	-			Yes	Yes			
	C Meters	Yes	-			Yes	Yes			
	Capacitance Meters	Yes	-			Yes	Yes			
	Crystal Impedance Meters	Yes	-			Yes	Yes			
	LCR Meters	Yes	-			Yes	Yes			
	LCZ Meters	Yes	-			Yes	Yes			
	Transformer Impedance Analyzers	Yes	-			Yes	Yes			
	Impedance Analyzers	Yes	-			Yes	Yes			
	Impedance Gain / Phase Analyzers	Yes	-			Yes	Yes			
	Automatic Component Analyzers	Yes	-			Yes	Yes			
	Impedance Deviation Meters / Comparators	Yes	-			Yes	Yes			
	LCR Meter & Bias Current Sources	Yes	-			Yes	Yes			
	Semiconductor Parameter Analyzers	Yes	-			Yes	Yes			
	Transistor / Relay / Diode / Transformer / Ratio / Cable / Breaker / Semi-conductor Tester Instruments									
	Diode Curve Tracers	DCV: 0-10 kV DCA: 0-100 A DCR: 0-100GΩ	Direct measurement			Yes	Yes	Yes	Yes	
	Transistor Curve Tracers					Yes	Yes	Yes	Yes	
	High Power Curve Tracers			Yes	Yes	Yes	Yes			
	Transformer Testers			Yes	Yes	Yes	Yes			
	Current Transformers			Yes	Yes	Yes	Yes			
	Variable Autotransformers			Yes	Yes	Yes	Yes			
	Voltage Transformers			Yes	Yes	Yes	Yes			
	Transformer Ratiometers			Yes	Yes	Yes	Yes			
	Ratio Formers			Yes	Yes	Yes	Yes			
	Ratio Testers			Yes	Yes	Yes	Yes			
	Universal Cable / Harness Testers			Yes	Yes	Yes	Yes			
	Cable Multi Tester			Yes	Yes	Yes	Yes			
	Relay Checkers			Yes	Yes	Yes	Yes			
	Relay Test Sets			Yes	Yes	Yes	Yes			
	Automatic Three-Phase Relay Test Set			Yes	Yes	Yes	Yes			
	Advanced Protection Relay Test Set			Yes	Yes	Yes	Yes			
	Secondary Injection Relay Test Set			Yes	Yes	Yes	Yes			
	Substation Test Set			Yes	Yes	Yes	Yes			
	Breaker Analyzers			Yes	Yes	Yes	Yes			
	Semiconductor Testers			Yes	Yes	Yes	Yes			
	Fo & Ze Meters			Yes	Yes	Yes	Yes			
	Calibration Standard Instruments (Low Accuracy)									
	DC Voltage Current Source/Monitor	DCV: 0-1100V DCA: 0-100A ACV: Up-1100V (10Hz-1MHz) ACA: Up-50A (10Hz-30kHz) DCR: 0-100GΩ Frequency: 1Hz-10MHz Capacitance: Up-100mF	Direct measurement and in-direct measurement	Yes	Yes	Yes	Yes			
	Programmable DC Voltage/Current Generator			Yes	Yes	Yes	Yes			
	DC Voltage Current Source/Monitor			Yes	Yes	Yes	Yes			
	Bias Current Sorce			Yes	Yes	Yes	Yes			
	Portable Calibrator			Yes	Yes	Yes	Yes			
	Process Loop Calibrator / Multimeter			Yes	Yes	Yes	Yes			
	AC Current & Voltage Source			Yes	Yes	Yes	Yes			
	Current/Voltage Calibrator/Meter			Yes	Yes	Yes	Yes			
	Calibrator / Source			Yes	Yes	Yes	Yes			
	Picoammeter / Voltage Source			Yes	Yes	Yes	Yes			
	Source Meter			Yes	Yes	Yes	Yes			
	V-I Loop Calibrator			Yes	Yes	Yes	Yes			
	Programmable DC Source			Yes	Yes	Yes	Yes			
	Calibration Standard Instruments (Medium Accuracy)									
	Handy Calibrator			DCV: 0-1100V DCA: 0-100A ACV: Up-1100V (10Hz-1MHz) ACA: Up-50A (10Hz-30kHz) DCR: 0-100GΩ Frequency: 1Hz-10MHz Capacitance: Up-100mF	Direct measurement and in-direct measurement	Yes	Yes	Yes	Yes	
	AC Voltage / Current Standard	Yes	Yes			Yes	Yes			
	DC Voltage / Current Calibration Set	Yes	Yes			Yes	Yes			
	Process Calibrator	Yes	Yes			Yes	Yes			
	DC Calibration Set	Yes	Yes			Yes	Yes			
	Precision Multifunction Process Calibration	Yes	Yes			Yes	Yes			
	Programable DC Standard	Yes	Yes			Yes	Yes			
	Calibration Standard Instruments (High Accuracy)									
	Multi-Product Calibrators (Fluke 55XXA, Wavetek 9100)	DCV: 0-1100V DCA: 0-100A ACV: Up-3V (10Hz-30MHz) >3-220V (10Hz-1MHz) >220-1100V (10Hz-100kHz) ACA: Up-50A (10Hz-10kHz) DCR: 0-10GΩ Capacitance: 1pF-100mF (20Hz-13MHz) TC/RTD : All types Phase: 0-90 Deg. Freq: 1Hz-26.5GHz RF Power: +20dBm to -100dBm RF Impedance: 50Ω, 75Ω, 600Ω, 1MΩ	Direct measurement and in-direct measurement	Yes	Yes	Yes	Yes			
	Multi-Product Calibrators + Scope Option 300/600MH (Fluke 55XXA-SC300/600, Wavetek 9100)			Yes	Yes	Yes	Yes			
	Multi-Product Calibrators (Fluke 552XA)			Yes	Yes	Yes	Yes			
	Multi-Product Calibrators + Scope Option 300/600MH (Fluke 552XA-SC300/600)			Yes	Yes	Yes	Yes			
	Multi-Product Calibrators + Scope Option 1.1GHz (Fluke 552XA-SC1100)			Yes	Yes	Yes	Yes			
	Oscilloscope Calibrators (Fluke 58XXA, Wavetek 9500)			Yes	Yes	Yes	Yes			
	Oscilloscope Calibrators + 5CH Option (Fluke 5820A-5C-GHz)			Yes	Yes	Yes	Yes			
	Multi-Function Calibrators (Fluke 57XXA, 572XA, Wavetek 4800A)			Yes	Yes	Yes	Yes			
	Multi-Function Calibrators + Wideband Option (Fluke 57XXA-WB, 572XA-WB, Wavetek 4800A)			Yes	Yes	Yes	Yes			
	Amplifier (Fluke 5725A)			Yes	Yes	Yes	Yes			
	Calibration Standard Instruments (High Accuracy) Cont.									
	Electrical DC/Low Frequency			AC Measurement Standard (Fluke 5790A)	AC-DC Transfer ACV: Up-1100V (10Hz-30MHz)	Direct comparison and AC-DC Different Transfer	-	-	-	-
		AC Measurement Standard + Wideband (Fluke 5790A+WB Option)			-	-	-	-		
		DC Voltage Reference Standard Cell	DCV: 1V, 1.018V, 10V, 100V	Comparison or transfer	Yes	-	Yes	-		



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				LAB	ON-SITE	LAB	ON-SITE
Yes -	(Fluke 732A) DC Voltage Reference Standard Cell		standard	Yes	-	Yes	-
	(Fluke 732B)						

= Accredited ISO/IEC 17025

= Not accredited scopes of ISO/IEC 17025