



# Instruments & Equipment Co

Dated: 03-02-2025

Dear Sir,

We are pleased to offer you our best Specifications against your requirement of **AUTOMATIC SERVO VOLTAGE STABILIZER, 100KVA, 3 PHASE** for your kind consideration as per following parameters and Terms & Conditions. Please feel free to ask for any clarification.

<b>MAKE</b>	-	<b>'IECO'</b>
<b>TYPE</b>	-	Three Phase, Unbalanced Mains – Unbalanced Load
<b>INPUT VOLTAGE RANGE</b>	-	320 – 480 Volts, AC (Phase – Phase)
	-	185 – 277 Volts, AC (Phase – Neutral)
<b>OUTPUT VOLTS</b>	-	415 $\pm$ 1 % Volts, AC (Phase - Phase)
	-	240 $\pm$ 1 % Volts, AC (Phase - Neutral)
<b>FREQUENCY</b>	-	50 Hz $\pm$ 5 %
<b>WAVEFORM DISTORTION</b>	-	Nil
<b>MAXIMUM TEMP RISE</b>	-	45 deg C above ref ambient of 45deg C
<b>CLASS of INSULATION</b>	-	'A'
<b>COOLING</b>	-	Oil Cooled (with first filling of Oil)
<b>NO. OF SERVO MOTOR</b>	-	03 Nos. (01 for each phase)
<b>DIGITAL CONTROL CARDS</b>	-	03 Nos. (01 for each phase)
<b>AUTO-VARIABLE TRANSFORMER</b>	-	03 Nos. (As per IS-5142)
<b>BUCK-BOOST TRANSFORMER</b>	-	03 Nos. (As per IS-2026)
<b>DUTY CYCLE</b>	-	Continuous
<b>MODE OF OPERATION</b>	-	AUTO MODE
		MANUAL MODE WITH PRESS SWITCHES
<b>DEGREE of PROTECTION</b>	-	Indoor-Type IP-30 and Outdoor-Type IP55 as per site
<b>RESPONSE TIME</b>	-	Less than 10 milliseconds
<b>CORRECTION METHOD</b>	-	Step-less Correction

<b>SPEED OF CORRECTION</b>	-	15 - 20 Volts per Sec
<b>TESTING STANDARDS</b>	-	<b>IS:9815 &amp; IS:2026</b>
<b>BREAKDOWN STRENGTH</b>	-	1.5 kV for 1 minute on Power Components
<b>INSULATION RESISTANCE</b>	-	More than 5 Meg-Ohms after Pre-Heat (as per IS-9815)
<b>NO LOAD LOSS</b>	-	Less than 0.5%
<b>FULL LOAD LOSSES</b>	-	Less than 1%
<b>TERMINATIONS</b>	-	On suitable sized Aluminum Alloy High Strength Bus Bars
<b>TRANSFORMER OIL</b>	-	'A' GRADE LOW VISCOSITY, HIGH FLASHPOINT,VIRGIN TRANSFORMER OIL, ISI MARKED (IS:335)
<b>OIL BREAKDOWN STRENGTH</b>	-	Not less than 40 kV
<b>CONTROLLING ELEMENT</b>	-	Toroidal Auto-Variable Transformer with Flat Carbons
<b>ACCOUSTIC LEVEL</b>	-	Less than 50 dB
<b>DISPLAY</b>	-	True RMS Large sized Bright Red LED (Visibility 5 meters)
<b>CONTROL CARD</b>	-	Micro-controller based Software driven Fully Solid State Digital Control Card with STATIC SWITCHING - avoiding Electro-magnetic Relays.
<b>MAINS INDICATORS</b>	-	Large 19 mm Red, Yellow, Blue for Each Phase
<b>OUTPUT INDICATION</b>	-	Individually on each Phase (Both Input and Output)
<b>MAGNETIC CORE</b>	-	Low Loss, Cold Rolled Grain Oriented, soft annealed Lamination of Electrical Steel Grade 41 with thickness 0.24 to 0.27 mm
<b>HOUSING</b>	-	The acoustically stable and critically damped MS Steel tanks are manufactured from Plates of min 2 mm thickness with suitable Stiffeners and Braces all around. Control Panel is housed in an angle iron frame for full strength and covered with 18 SWG MS CRCA covers. All steel structure is fully passivated and then covered with 2 chrome coats of Epoxy Primer and finally painted with Hard-Kote Electrical grade Siemens Grey Paint having high Emissivity properties and corrosion resistance. Whole Assembly is suitable for indoor commissioning in a well-ventilated room having minimum moving space of at least 2-3 feet around the Stabilizer.

<b>AVR</b>	-	Toroidal type wound with round Copper flattened surface With winding configuration to minimize Losses at Minimum or Maximum Input conditions. Track surface is MIRROR POLISHED with special surface grinding and lapping process to make the surface super smooth, thus achieving very low coefficient of friction resulting in reduced Track and Carbon Brush wear and tear. It also results in next to nil Carbon deposition on commutating surface thus enhancing the life of AVR.
<b>CARBON BRUSHES</b>	-	Flat Type self-lubricating Carbon brushes mounted on self-adjusting pinion assembly with Pressure adjusting tensioning springs. Flat Carbons have long operating life of more than 1 lakh track meters. Full Contact ensures better current transfer as Carbons run on FLAT surface of the Copper track. All the heat generated at Contact points is immediately dissipated through specially designed Heat sinks to the Cooling Oil which keeps on circulating within the tank by strong convection currents. Turbulence controlled heat dissipation mechanism ensures low hot-spots and thus prolonging the life of the AVR.
<b>MOTORS</b>	-	Three Servo Motors, one on each Phase driving AVR on individual phase so that correction on every phase is independent of other two phases.  Motors are Permanent Magnet Low RPM Burn-proof, AC Synchronous type with INSTANT Start, Stop, Forward and Reverse mechanism having clockwise, anticlockwise and stalling currents within $\pm 5\%$ .
<b>DRIVE</b>	-	Drive is directly coupled to Motors through Gears. Direct coupling ensures more robust mechanism with positive transmission of power ensuring noise free operation and long life.
<b>EARTHING</b>	-	Two number Earthing Terminals provided on the tank

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| <b>LIFTING HOOKS</b>     | - | Suitable Lifting Hooks are provided to lift the Equipment as well as assembly out of the tank   |
| <b>MOUNTING</b>          | - | on unidirectional Castor Wheels   |
| <b>CABLE TERMINATION</b> | - | Suitable Gland Plates provided  |
| <b>CAPACITY</b>          | - | <b>100KVA, Three Phase, Type Unbalanced</b><br><b><u>Stabilizer size: 4ft(W) x 2ft(D) x 4.5ft(H)</u></b><br><b>We need 2ft more all around the stabilizer for maintenance and heat dissipation purpose.</b> |
| <b>PROTECTIONS</b>       | - | <b>Low &amp; High Voltage Cutoff, Overload and Short-Circuit Protection, Single Phase Prevention (Optional)</b>   |
| <b>PROTECTIONS</b>       | - | <b>On-load Bypass system to isolate the Stabilizer in case of Fault (Optional)</b>  |
| <b>PROTECTIONS</b>       | - | <b>Surge Protection Device (Optional)</b>   |

**TERMS & CONDITIONS:**

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| <b>DELIVERY</b> | - | 04 weeks from Receipt of Advance Payment. |
| <b>WARRANTY</b> | - | 1 Year against any manufacturing defects. |

Thanking you and assuring you of our best services.

**Yours very truly**  
**Instruments & Equipment Co**