



THE DRIVING FORCE BEHIND POWERFUL IDEAS

## 2.5kVA - 50kVA, NATURALLY COOLED, UNDERSLUNG INVERTERS



**MEDHA<sup>TM</sup> Servo Drives Pvt. Ltd.**, established in 1984 is an R&D focussed company dedicated to railway products. Over last 25 years, MEDHA's inhouse design teams have developed various world class hi-tech products and systems for application in Locomotives, Coaches and Stations/ Yards. MEDHA's state of art Design Centre and Manufacturing facilities employs over 900 people who are constantly striving to apply latest technologies to create innovative products in wide range of fields like Control Electronics, Power Electronics, Electro-mechanical systems and Signaling Systems. All new developments and modifications go through stringent testing, validation and verification of both hardware and software, many times going beyond customer specification requirements.

MEDHA has well equipped manufacturing facilities that are **ISO 9001:2000** certified by American Quality Assessors (accredited by **ANAB**). Facilities include automated assembly of Surface Mounted Devices on PCBs, CNC machines, various test equipment and custom test jigs for in process and final inspection of all manufactured goods. MEDHA supplies products for Locomotives including IGBT based AC Traction Control Systems for Diesel Locomotives, various models of microprocessor based Locomotive Control Systems including control panel and electricals for Diesel and Electric locomotives, microprocessor based Governors, 180 kVA 3 phase Static Converters for Electric Locomotives, Speed and Event recorders, TFT LCD Driver Display screens, End of Train Telemetry, etc. For signaling applications, MEDHA has developed Electronic Interlocking system and Integrated Signaling Power Supplies. For coaches, MEDHA supplies various models of underslung naturally cooled inverters ranging from 2.5 kVA to 50 kVA.

## FEATURES

- High efficiency and reliability.
- 100% water and dust proof.
- IGBT & Microcontroller based technology.
- Rugged design to suit Railway environment.
- Better heat dissipation.

## UNDER SLUNG INVERTER



## 2.5kVA – 50kVA, NATURALLY COOLED, UNDERSLUNG INVERTERS

### Application

It converts the available DC voltage from coach battery into 1 phase (2.5 kVA & 5 kVA) / 3 phase (25 kVA & 30 kVA) AC voltage to operate coach electrical equipment such as air-conditioner, fans, lights, electrical outlets etc.

The capacity and number of phases of the output of the inverter will depend on application of the equipment.

For example 25 kVA / 30 kVA, 3 phase, 415V, 50 Hz AC inverter is used to operate Air Conditioning Compressor & Fan motors, while 5 kVA / 2.5 kVA, 1 phase, 110V, 50 Hz AC inverters are used for coach fans, lighting and electrical charging outlets respectively.

The inverters are designed for underslung (underframe) mounting and are naturally cooled. They are designed for continuous full load operation even when the coach is stationary.

### Salient Features

- Designed to supply high starting currents of compressor motors of air conditioner and fans.
- Input voltage, input current, 3 phase output voltage and output currents, alongwith system's status are displayed on the LCD mounted on the coach control unit.
- Protections against over voltage, under voltage, over current, short circuit, earth fault, over temperature, input reverse polarity and phase imbalance provided
- Latest sixty faults can be logged in system memory. These faults can be downloaded to a PC alongwith date and time stamps for further analysis and corrective action.
- Designed specially for Railway application taking care of vibration, shocks, mud splashing, water immersion, and other harsh environmental conditions.
- Designed to meet IEC 411 and IEC 571 standards.

### Technical Specifications

Parameters	2.5 kVA	5 kVA	25 kVA	30 kVA
Operating Principle	IGBT based, DSP (digital signal processing) controlled, high frequency double conversion technology	IGBT based, 1Phase Pure Sine wave Inverter	Microcontroller and IGBT based, 3 Phase PWM Sine-wave inverter with built-in DC boost chopper	Microcontroller and IGBT based, 3 Phase PWM Sine-wave inverter with built-in DC boost chopper
Input Voltage	90 – 140 VDC	90 – 140 VDC	90 – 140 VDC	90 – 140 VDC
Operating Temp.	-5 to 55 ° C	-5 to 55 ° C	-5 to 55 ° C	-5 to 55 ° C
Output Voltage	110 V ± 5%, 50 Hz, 1 Ph, pure sinewave	110 V ± 5%, 50 Hz, 1 Ph, pure sinewave	415 V ± 5%, 50 Hz, 3 Ph, pure sinewave	415 V ± 5%, 50 Hz, 3 Ph, PWM sinewave
Power Rating Continuous	2.5 kVA at 0.8 PF	5 kVA at 0.8 PF	25 kVA at 0.8 PF	30 kVA at 0.8 PF
Peak Power Rating	2.75 kVA for 1 Hr	10 kVA for 10 sec	40 kVA for 10 sec	48 kVA for 10 sec
Efficiency at Full Load	> 90%	> 90%	> 93%	> 93%
Audible Noise	< 75 dB	< 75 dB	< 75 dB	< 75 dB
Current Harmonics at Full Load	< 3% THD	< 5% THD	< 5% upto 20 <sup>th</sup> Harmonic	< 5% upto 20 <sup>th</sup> Harmonic
Protection class	IP-68	IP-65	IP-65	IP-65
Dimensions (cu mm)	650x600x375	350x600x375	1710x849x580	1710 x 849 x 580
Weight (Kgs.)	50	70	430	430



2.5 & 5 kVA INVERTER



DISPLAY UNIT



25 & 30 kVA INVERTER