

KSH Controller Series – L5N

The KSH-L5N series motor controller for brushless DC motor (BLDC) or permanent-magnet synchronous motors (PMSM) offers best in class energy efficient design in compact form-factor. To achieve high reliability and efficiency in demanding load cycling requirements encountered in eV traction applications, these controllers utilize MOSFETs with the latest generation packaging technology. This efficiently removes heat from MOSFETs and keeps them cool in harsh ambient temperature thus significantly increasing efficiency and lifetime of the controller.

Key Features

- Max Torque Per Amp Vector Control & efficient Flux Weakening Algorithm
- Advance Space Vector modulation PWM scheme with Synchronous rectification
- Built-in vehicle electronic control unit (VCU) for on-road eV 3w Passenger(L5M), 3 & 4-Wheeler Cargo (L5N & N1), Off-road golf-carts and e-tractors etc.
- Regeneration on Brake and at Zero Throttle
- Hill-Hold for 10 seconds, thereafter controlled roll-off hill assist - ease of drivability in gradients



Controller P/N	KSH-012-048-VC	KSH-012-072-VC	KSH-012-096-VC
Control Mechanism	Vector control with advance space vector modulation		
Rotor Position Sensing	Sine/Cosine analog encoder		
Input Voltage Range	36V ~ 60V	60V ~ 84V	84V ~ 110V
Continuous Line Current (S2-60 Minute)	200A rms	140A rms	110A rms
Peak Line Current (S2 – 2 Minute)	450A rms	310A rms	240A rms
PWM Frequency	10KHz Nominal (Configurable)		
Fundamental Frequency Range	0 ~ 600Hz		
Peak Efficiency	> 97%		
Storage Temp	-30°C to +75°C		
Operating ambient Temp	-20°C to +60°C		
Thermal Cutback	Controller linearly derates the current when baseplate temperature rises from 80 to 90°C. Thermal cutback occurs above 90°C & below -30°C		
Ingress Protection	IP65		
Withstand Voltage between Heatsink & DC/AC Power Terminals	500V DC/Resistance >=7 MΩ as per IS 18590:2024		
Isolation Resistance between Heatsink & DC/AC Power Terminals	500Ω/Volt of the working voltage, as per AIS-038/IS 18590:2024		
EMC	ECE R10/AIS-004 Part-2 Immunity & Part-3 Emission (designed to meet)		
Functional safety	As per AIS-038/IS 18590:2024 (designed to meet)		
Vibration	IEC 60068-2-6, 5G 10-500Hz, 3 Axes (designed to meet)		
Weight	4 Kg		
Dimension (W x L x H)	155 mm x 212 mm x 86 mm		
Power Connector	5 x M8		
Signal Interface	35 POS Ampseal connector		
Communication	Standard CAN 2.0 & CANFD		

Related Motors

Key Features

- Compact size with industry-leading power density
- Delivers full rated power in extreme ambient conditions using high-grade materials
- IP67 environmental protection compliant with IEC 60529
- High efficiency across the operating range

Models

- KSH-012-048
- KSH-012-072
- KSH-012-096



Note: The technical data present in this document is for information purpose only and is subject to change without prior notice. Should you require more information, please reach us at info@zepcotek.com