



DC/DC converter for railway applications

JL & JLH open frame version



Description

Originally designed for on-board passenger information systems, the JL series is now available in a wide variety of input and output configurations. Capable of providing 35W, 50W or 60W* of continuous power at ambient temperatures of up to 75°C, the low component count makes the JL series a highly reliable yet cost-effective solution. For applications where the converter will be housed within an enclosure, the open frame version offers a further cost saving. The JL and JLH series also include alternative size footprints, connectors and functional features.

Special features include:

- Wide operating temperature range
- Low component count, high reliability
- Simple construction - open frame or enclosed versions available
- Low cost

JL series family-overview

35 Watts	JL versions rectangular PCB with enclosure option JLR versions include RIA 12 and other functional options JLM versions mini PCB footprint with enclosure option JLM M1 versions mini PCB footprint with conduction cooled package
50 Watts	All versions as above; JLH, JLHR & JLHM

60 Watts* JLHM option '/2'

Options for JLR and JLHR versions

Code	Detail
L	Output OK Relay (NO and NC)
R	RIA 12 filtering
V	Enable. Connect to + input to enable

Input specifications

The following input voltage versions are available as standard:

110V	(66.0 - 137.5V) dc (Suffix A)
72V	(50.0 - 90.0V) dc (Suffix D)
52V	(36.0 - 65.0V) dc (Suffix C)
36V	(25.0 - 50.4V) dc (Suffix F)
24V	(16.8 - 33.6V) dc (Suffix B)

Parameter	Detail
Input Ripple	EN 50155
Input Protection	Reverse polarity protection. Surges and transients to EN 50155 (Direct and Indirect)
Inrush Current	Limited to typically 5 x nominal current (after 0.1ms)
Efficiency	85% typical
Hold-up time	10ms to EN 50155 S2 (including input short)
Supply change over (dips)	0 - 6Un 100mS to EN 50155 Class C1

Output specifications

Parameter	Detail
Maximum Output Power	35W JL, JLR & JLM versions 50W JLH, JLHR & JLHM versions 60W* JLHM option '1/2'
Output Versions	Single
Output Voltage	Fixed output can be specified from 5V to 110V dc (5V dc output versions limited to 35 Watts)
Setting Tolerance	±2%
Line / Load Regulation	±2%
Temperature Coefficient	<0.02% / °C
Output Ripple	<1% Pk-Pk of Output Voltage
Output Noise	<75mV Pk-Pk superimposed (up to 20MHz)
Response Time	1.0ms to within 2% (for a 20% - 90% load change)
Current Limit	Operates at approximately 115% of rated current
Isolation (tested at DC equivalent voltage)	Input to Output 2.0kV ac Output/Input to Case 1.0kV ac (enclosed version)

* -Limited availability -consult factory for further details

Environmental details

Parameter	Detail
Operating Temperature	-25°C to +75°C (no derating) -25°C to +55°C for '1/2' models @ 60W output
Storage Temperature	-40°C to +80°C
Cooling	By convection (M1 versions have conduction cooled package)
Relative Humidity	95% max
Shock & Vibration	EN 50155 (EN 61373)

Applicable norms

Parameter	Detail
EMC	EN 50155 (2017), EN 50121-3-2 (2016)
Other	EN 50155 (2017) RIA 12 (version specific)

Mechanical characteristics

Parameter	Detail		
Construction	Openframe PCB with Enclosure options		
Dimensions (Length x Width x Height)	Version	PCB Footprint	Enclosed version
	JL & JLH	220x73x30mm	250x78x35mm
	JLR & JLHR	220x73x30mm	250x78x35mm
	JLM & JLHM	115x85x23mm	145x91x35mm
Finish	JLM M1 Conduction cooled	135x85x30mm with base plate	
	PCB, Conformal coating. Enclosure, plated mild steel.		
Weight	<0.5kg (enclosed); <0.25kg (open frame)		
Connections	Version	Input Connector	Output Connector
	JL & JLH	Wago 236-501	Wago 236-501
	JLR & JLHR	Wago 236-501 or Wago 721-434	Wago 236-501 or Wago 721-435
	JLM & JLHM	(standard) Wago 236-501	Wago 721-434/001-000
		(Q4 option) Wago 721-433/001-000	Wago 721-433/001-000
	(Q6 option) Wago 236-501	Wago 236-501	
	(Q1 option) 3W3 male power D-type	3W3C coded female power D-type	

Options for all series

Code	Detail
T	Extended temperature range; -40°C operating
S	Enclosure with DIN Rail mounting clips
S2	Enclosure no clips

Options for JLM & JLHM series only

Code	Detail
M1	Conduction cooled package
Q1	Power D-type connectors
Q4	Alternative Wago input connector (input & output both cage clamp)
Q6	Alternative Wago output connector (input & output both pluggable)

JL & JLH enclosed version



JLM & JLHM open frame version



JLM & JLHM enclosed version



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