TDK·Lambda

Industrial   **Test**

200W, 400W, 600W and 800W Programmable DC Power Supplies

Features	Benefits
• 2U high	Minimises system rack height
• Built-in USB, RS232 & RS485	Highly flexible system integration
• Optional LAN, GPIB & isolated analogue programming interfaces	Choice of additional communications
• Outputs up to 650Vdc	Wide application coverage
• Arbitrary function generation	Convenient for repeated test processes
• 5 year warranty	High reliability

Model Selector

Model	Voltage Adjust Range	Current Adjust Range	Max Power (W)	Ripple 5Hz-1MHz (mV)	Noise 20MHz BW (mV)	Ripple 5Hz-1MHz (mA)	Efficiency % (100-200VAC)	Front Panel Output Jacks (Option)
Z10-20	0 - 10	0 - 20	200	5	50	25	80 / 82	L/L2
Z10-40	0 - 10	0 - 40	400	5	50	70	80 / 82	L/L2*
Z10-60	0 - 10	0 - 60	600	5	50	150	80 / 82	L/L2*
Z10-72	0 - 10	0 - 72	720	5	50	180	80 / 82	L/L2*
Z20-10	0 - 20	0 - 10	200	6	50	15	82 / 84	L/L2
Z20-20	0 - 20	0 - 20	400	6	50	40	81 / 83	L/L2
Z20-30	0 - 20	0 - 30	600	5	50	75	82 / 84	L/L2*
Z20-40	0 - 20	0 - 40	800	5	50	100	82 / 84	L/L2*
Z36-6	0 - 36	0 - 6	216	6	50	8	83 / 85	L/L2
Z36-12	0 - 36	0 - 12	432	6	50	15	83 / 85	L/L2
Z36-18	0 - 36	0 - 18	648	5	50	25	84 / 85	L/L2
Z36-24	0 - 36	0 - 24	864	5	50	31	84 / 85	L/L2
Z60-3.5	0 - 60	0 - 3.5	210	7	50	4	83 / 85	L/L2
Z60-7	0 - 60	0 - 7	420	7	50	8	83 / 85	L/L2
Z60-10	0 - 60	0 - 10	600	12	50	8	83 / 85	L/L2
Z60-14	0 - 60	0 - 14	840	12	60	28	83 / 85	L/L2
Z100-2	0 - 100	0 - 2	200	8	80	3	83 / 85	L2
Z100-4	0 - 100	0 - 4	400	8	80	3	84 / 86	L2
Z100-6	0 - 100	0 - 6	600	15	80	5	84 / 86	L2
Z100-8	0 - 100	0 - 8	800	15	80	12	84 / 86	L2
Z160-1.3	0 - 160	0 - 1.3	208	10	100	1.2	79 / 81	L2
Z160-2.6	0 - 160	0 - 2.6	416	10	100	1.5	84 / 86	L2
Z160-4	0 - 160	0 - 4	640	10	100	2	86.5 / 88.5	L2
Z160-5	0 - 160	0 - 5	800	10	100	2	86.5 / 88.5	L2
Z320-0.65	0 - 320	0 - 0.65	208	25	150	0.8	79 / 81	L2
Z320-1.3	0 - 320	0 - 1.3	416	25	150	1	84 / 86	L2
Z320-2	0 - 320	0 - 2	640	30	150	1.5	87 / 88.5	L2
Z320-2.5	0 - 320	0 - 2.5	800	30	150	1.5	86.5 / 89	L2
Z375-2.2	0 - 375	0 - 2.2	825	30	150	1.5	87.5 / 89.5	L2
Z650-0.32	0 - 650	0 - 0.32	208	60	150	0.5	79 / 81	L2
Z650-0.64	0 - 650	0 - 0.64	416	60	150	0.6	84 / 86	L2
Z650-1	0 - 650	0 - 1	650	60	250	1	86.5 / 88.5	L2
Z650-1.25	0 - 650	0 - 1.25	812	60	250	1	87 / 89	L2

* Note: Front panel output jacks fuse limited to 24A

Specification

Model		Z10	Z20	Z36	Z60	Z100
Load Regulation	CV	2mV + 0.01% of rated voltage over 0 - 100% load change				
Line Regulation	CV	2mV + 0.01% of rated voltage over a 85 - 132 or 170 - 265VAC line change				
Recovery Time (1)	CV	1ms				
Temperature Coefficient	CV	30ppm/C following 30 minute warm up				
Temperature Stability	CV	0.02% of rated voltage over 8 hours following 30 minute warm up time				
Warm up Drift (2)	CV	<0.05% of rated voltage + 2mV of rated output voltage				
Load Regulation	CC	5mA + 0.01% of rated current over 0 - 100% Vout change				
Load Regulation thermal drift	CC	< 0.05% of rated current over 30 minutes after load change				
Line Regulation	CC	2mA + 0.01% of rated current over a 85 - 132 or 170 - 265VAC line change				
Temperature Coefficient	CC	100ppm/C of rated current after 30 minute warm up time				
Temperature Stability	CC	0.05% of rated current over 8 hours following 30 minute warm up time				
Warm up Drift (2)	CC	<+/-0.1% of rated current				
Vout & Iout programming & readback resolution	Digitally	< 0.012% of rated voltage/current				
Vout & Iout programming & readback accuracy	Digitally	< 0.05% of rated voltage, < 0.1% of rated current				
Voltage & Current Programming	Analog	By either Voltage (0-5V or 0-10V) or Resistance (0-5k or 0-10k)				
Voltage & Current Monitoring	Analog	0-5V or 0-10V Voltage (user selectable), +/-1% accuracy				
Overvoltage Shutdown (user programmable)	V	0.5 - 12	1 - 24	2 - 40	5 - 66	5 - 110
Overtemperature Protection	-	User selectable - latched or non-latching				
Display - Voltage	-	4 digits. Accuracy 0.5% of rated voltage or current +/- 1 count				
Remote On/Off	-	By applied voltage or dry contact relay (user selectable logic)				
Output Good	-	Low on fail				
Remote Sense Compensation (per wire)	V	1	1	2	3	5
Communication Interface	-	RS232, RS485 & USB standard, IEEE488 (GPIB) & LAN optional				
Series Operation	-	Up to two identical units (with external diodes)				
Parallel Operation	-	Up to six units in master-slave configuration				
Input Voltage / Frequency (3)	VAC	85-265VAC, 47-63Hz				
Inrush Current	A	< 30A				
Hold Up Time (Typical)	ms	16ms				
Power Factor Correction	-	Complies with EN61000-3-2 Class A (0.99 typ)				
Operating Temperature	°C	0 - 50°C				
Storage Temperature	°C	-20 to +85°C				
Humidity (non condensing)	%RH	Operating: 10 - 90%RH, Storage 10 - 95%RH				
Cooling	-	Variable speed fan				
Withstand Voltage	VAC	I/P to GND 2kVAC, I/P to O/P 3kVAC, O/P to GND 1380VDC 1 min				
Insulation Resistance	Ω	>100MΩ at 25°C & 70%RH				
Vibration (non operating)	-	IEC60068-2-64				
Shock	G	<20G, half sine, 11ms. IEC60068-2-27				
Safety Agency Certifications	-	UL61010-1, EN61010-1, IEC61010 (Designed to meet UL/EN60950-1)				
Immunity	-	IEC61326 (Designed to meet EN55022 / EN55024)				
Conducted & Radiated EMI	-	EN55022-B, FCC part 15-B, VCCI-B				
Size (H x W x D) (Excluding handles and busbars)	mm	Standard body 83 x 70 x 350mm; Wide Body 83 x 105 x 350mm				
Weight	kg	200W & 400W: Standard body 1.9kg, Wide body 2.4kg 600W & 800W: Standard body 2.1kg, Wide body 2.6kg				
Warranty	yrs	5				

Notes:

(1)   Recovery to within 0.5% of rated voltage after a load change of 10-90% (Output current 10-100% of Imax)

(2)   During 30 minute warm up time after power on

See www.emea.tdk-lambda.com/zplus for further information

Z+ Series

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Specification

Model		Z160	Z320	Z650
Load Regulation	CV	0.01% of rated voltage over 0 - 100% load change		
Line Regulation	CV	0.01% of rated voltage over 0 - 100% input change		
Recovery Time (1)	CV	2ms		
Temperature Coefficient	CV	30ppm/°C following 30 minute warm up		
Temperature Stability	CV	0.02% of rated voltage over 8 hours following 30 minute warm up time		
Warm up Drift (2)	CV	<0.05% of rated voltage of rated output voltage		
Load Regulation	CC	0.09% of rated current over 0 - 100% Vout change		
Load Regulation thermal drift	CC	< 0.05% of rated current over 30 minutes after load change		
Line Regulation	CC	<0.02% of rated current over a 85 - 132 or 170 - 265VAC line change		
Temperature Coefficient	CC	100ppm/°C of rated current after 30 minute warm up time		
Temperature Stability	CC	0.05% of rated current over 8 hours following 30 minute warm up time		
Warm up Drift(2)	CC	<±0.1% of rated current		
Vout & Iout programming & readback resolution	Digitally	< 0.012% of rated voltage/current		
Vout & Iout programming & readback accuracy	Digitally	0.05% of rated voltage + 0.05% of actual, 0.2% of rated current		
Voltage & Current Programming	Analog	By either Voltage (0-5V or 0-10V) or Resistance (0-5k or 0-10k)		
Voltage & Current Monitoring	Analog	0-5V or 0-10V Voltage (user selectable), ±1% accuracy		
Overvoltage Shutdown (user programmable)	V	5 - 176	5 - 353	5 - 717
Overtemperature Protection	-	User selectable - latched or non-latching		
Display - Voltage	-	4 digits. Accuracy 0.5% of rated voltage or current ± 1 count		
Remote On/Off	-	By applied voltage or dry contact relay (user selectable logic)		
Output Good	-	Low on fail		
Remote Sense Compensation (per wire)	V	5	5	5
Communication Interface	-	RS232, RS485 & USB standard, IEEE488 (GPIB) & LAN optional		
Series Operation	-	Up to two identical units (with external diodes)		
Parallel Operation	-	Up to six units in master-slave configuration		
Input Voltage / Frequency	-	85-265VAC, 47-63Hz		
Inrush Current	-	< 30A		
Hold Up Time (Typical)	ms	16ms		
Power Factor Correction	-	Complies with EN61000-3-2 Class A (0.99 typ)		
Operating Temperature	°C	0 - 50°C		
Storage Temperature	°C	-20 to +85°C		
Humidity (non condensing)	%RH	Operating: 20 - 90%RH, Storage 10 - 95%RH		
Cooling	-	Variable speed fan		
Withstand Voltage	-	I/P to GND 2kVAC, I/P to O/P 3kVAC, O/P to GND 1380VDC 1 min		
Insulation Resistance	-	>100M at 25°C & 70%RH		
Vibration (non operating)	-	IEC60068-2-64		
Shock	-	<20G, half sine, 11ms. IEC60068-2-27		
Safety Agency Certifications	-	UL61010-1, EN61010-1, IEC61010 (Designed to meet UL/EN60950-1)		
Immunity	-	IEC61326 (Designed to meet EN55022 / EN55024)		
Conducted EMI	-	IEC/EN61326-1 Industrial location B, FCC part 15-B, VCCI-B		
Radiated EMI	-	IEC/EN61326-1 Industrial location A, FCC part 15-A, VCCI-A		
Size (H x W x D) (Excluding handles and busbars)	mm	Standard body 83 x 70 x 350mm; Wide Body 83 x 105 x 350mm		
Weight	kg	200W & 400W Standard body 1.9kg; Wide Body 2.4kg		
Warranty	yrs	5		

Notes:

(1) Recovery to within 0.5% of rated voltage after a load change of 10-90% (Output current 10-100% of Imax)

(2) Over 30 minute warm up time after power on

See www.emea.tdk-lambda.com/zplus for further information

Factory Installed Options

	Option Code
For models up to 60V only:	
Front panel output jacks (binding post style ø 4mm)[1]	-L
For all models: [2]	
Front panel insulated output sockets (ø 4mm)[1]	-L2
Only one of the options below can be included:	
GPIB Interface[1]	-IEEE
Voltage Programming Isolated Analog Interface[1]	-IS510
Current Programming Isolated Analog Interface[1]	-IS420
LAN Interface (Complies with "LXI" Class C)	-LAN

**1:** Requires wide body (105mm) case style **2:** Front panel output jacks fuse limited to 24A

## Part Number Examples

Z10-20-LAN-L Z650-0.64

Accessories

|	Part Number
19" Rack Housing	
(Accepts four 105mm width units or six 70mm width units)	Z-NL100
70mm Blanking Panel For 19" Rack	Z-BP
105mm Blanking Panel For 19" Rack	Z-WBP
Dual/Triple Housing	
(Accepts two 105mm case units or three 70mm case units)	Z-NL200
Serial Link Cable (One is included with each power supply)	Z-RJ45
Communication Cable RS485	Z-485-9
Communication Cable RS232	Z-232-9
British AC Cord	Z-GB
European AC Cord	Z-E

Z+ Outline Drawing
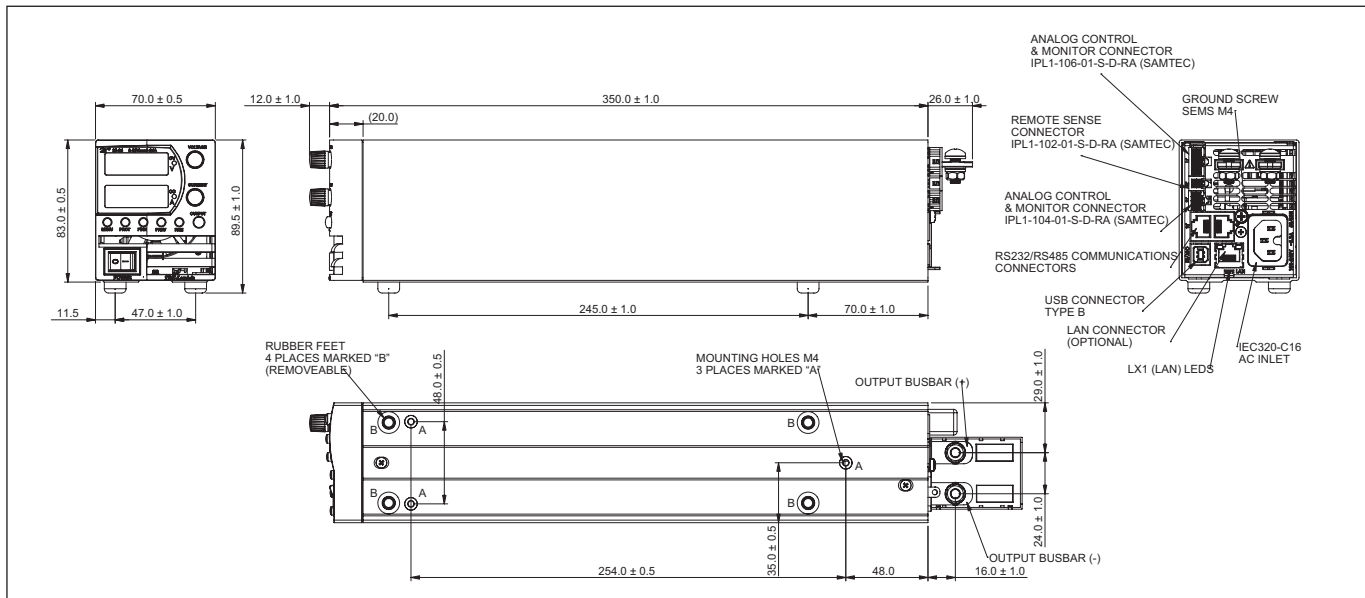
Z+ with L or L2 Option Outline Drawing

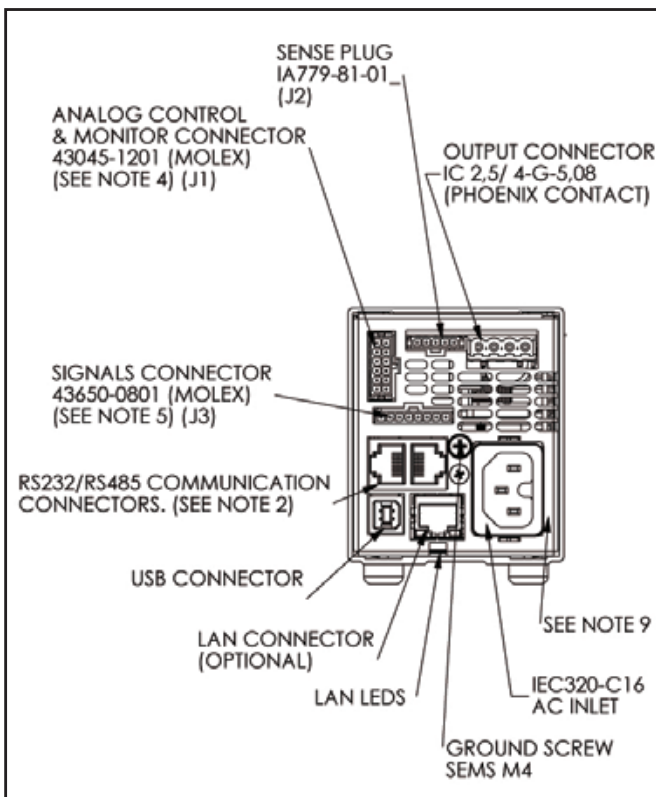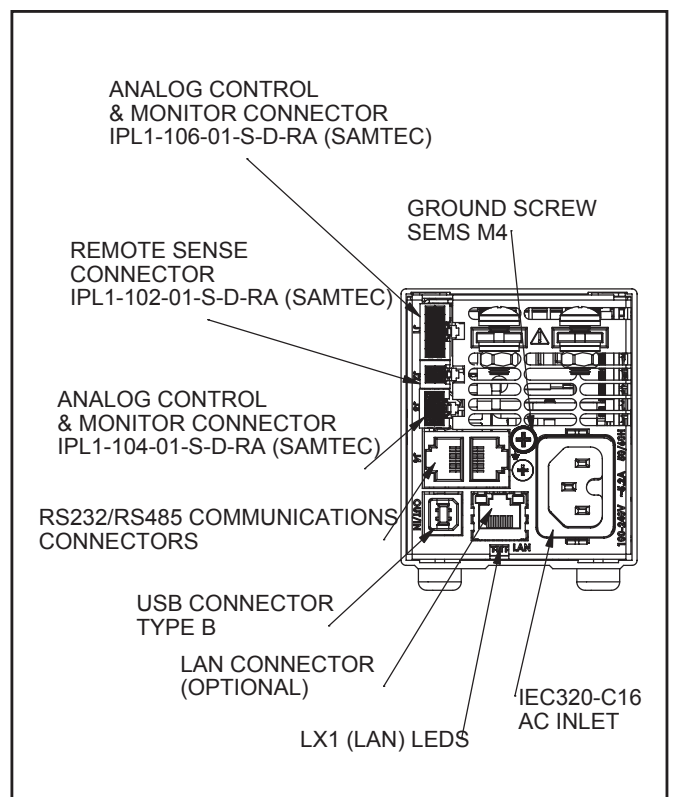Z+ Series
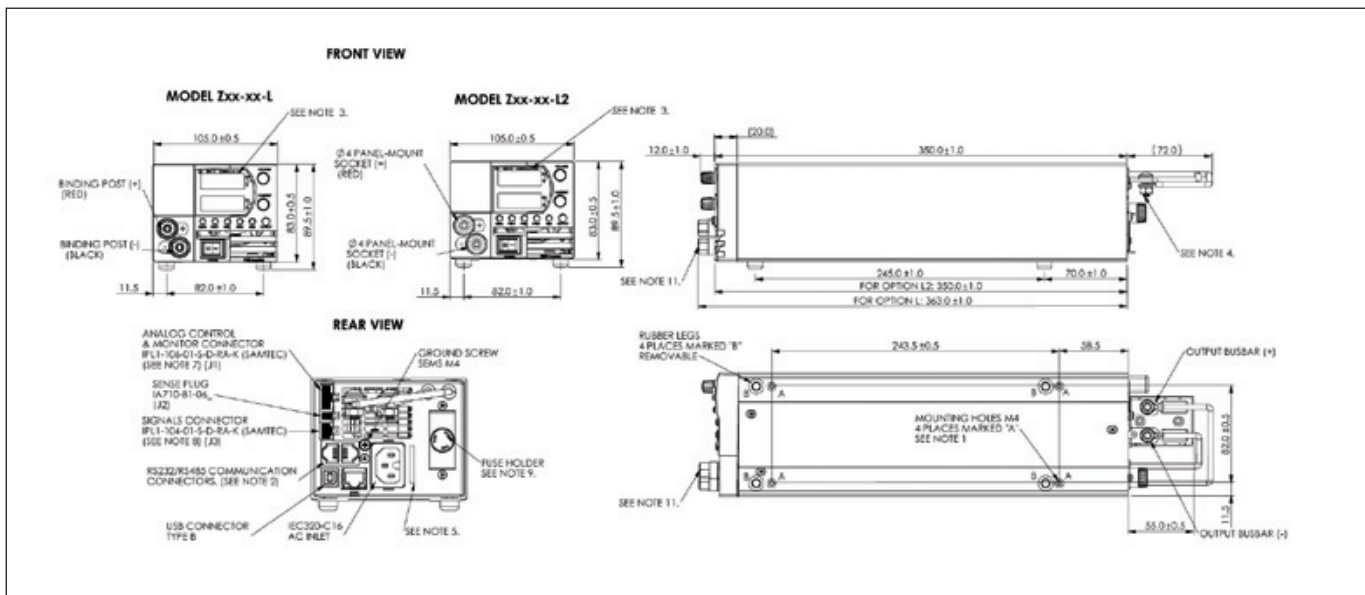
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Z+ HV Outline Drawing
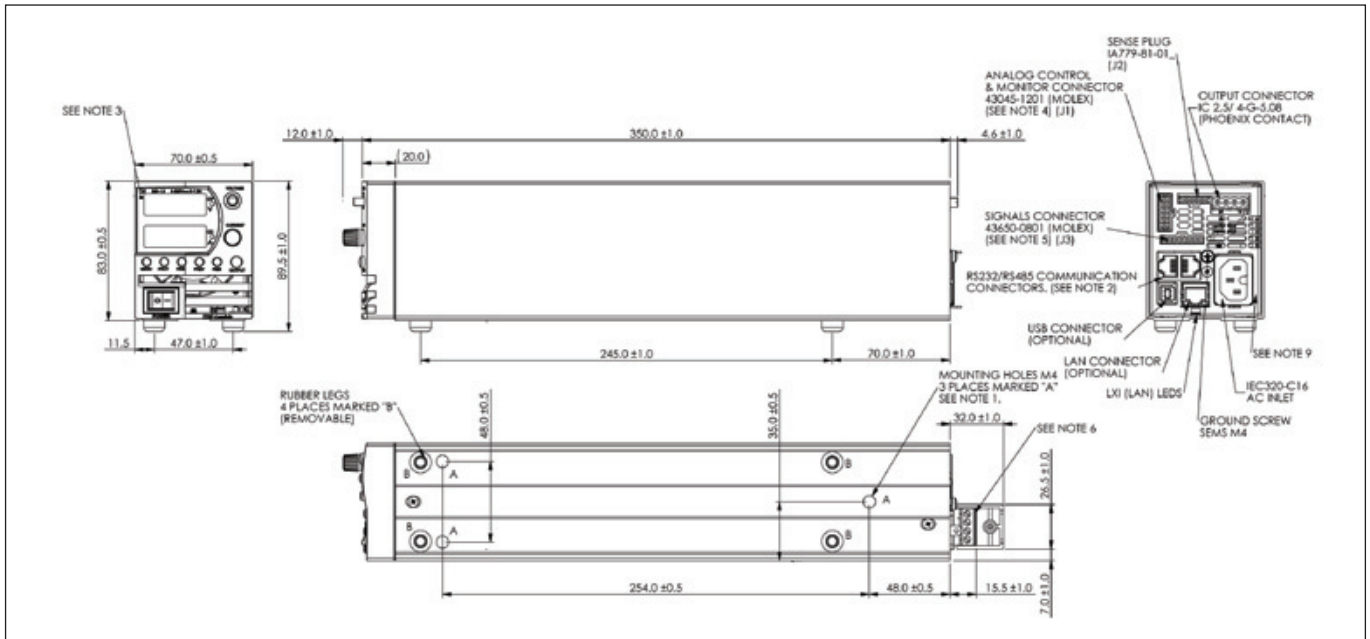
See Longform Datasheet for rack & wide body dimensions **www.emea.tdk-lambda.com/zplus**

Z+ Connections high voltage models 160V and above

- ANALOG CONTROL & MONITOR CONNECTOR 43045-1201 (MOLEX) (SEE NOTE 4) (J1)
- SENSE PLUG IA779-81-01_ (J2)
- OUTPUT CONNECTOR IC 2,5/ 4-G-5,08 (PHOENIX CONTACT)
- SIGNALS CONNECTOR 43650-0801 (MOLEX) (SEE NOTE 5) (J3)
- RS232/RS485 COMMUNICATION CONNECTORS. (SEE NOTE 2)
- USB CONNECTOR
- LAN CONNECTOR (OPTIONAL)
- LAN LEDS
- SEE NOTE 9
- IEC320-C16 AC INLET
- GROUND SCREW SEMS M4

Z+ Connections low voltage models up to 100V

- ANALOG CONTROL & MONITOR CONNECTOR IPL1-106-01-S-D-RA (SAMTEC)
- GROUND SCREW SEMS M4
- REMOTE SENSE CONNECTOR IPL1-102-01-S-D-RA (SAMTEC)
- ANALOG CONTROL & MONITOR CONNECTOR IPL1-104-01-S-D-RA (SAMTEC)
- RS232/RS485 COMMUNICATIONS CONNECTORS
- USB CONNECTOR TYPE B
- LAN CONNECTOR (OPTIONAL)
- LX1 (LAN) LEDS
- IEC320-C16 AC INLET

TDK·Lambda

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