

AC-DC POWER SUPPLIES

UNIVERSAL INPUT, UP TO 15 WATT

1.0X 1.50 X 0.80 INCHES

ENCAPSULATED PACKAGE

DIN RAIL OR PC MOUNT

KUIE15 SERIES



FEATURES

- 3000 Vac Reinforced Insulation
- Adjustable Output Voltage
- Internal EN55022 Class B Filter
- Low Leakage Current
- Low Standby Power
- Operating Altitude 5000 meter
- Protection Class II
- Over Current Protection
- Over Voltage Protection
- Short Circuit Protection
- IEC/ EN/ UL62368-1
- RoHS and REACH Compliant

SELECTION GUIDE

All specifications are typical at 230VAC input, full load and 25°C unless otherwise noted.

Input Voltage Range Vdc	Output Voltage Vdc	Output Current Natural Convection A	Input Power @ No Load mW	Maximum Output Power W	Efficiency %	Model Number*
85 - 264	3.3	4000	75	13.2	84.0	KUIE15-33SB-D
85 - 264	5	3000	75	15	86.0	KUIE15-5SB
85 - 264	7.5	2000	75	15	86.0	KUIE15-7.5SB
85 - 264	9	1670	75	15	86.0	KUIE15-9SB
85 - 264	12	1250	75	15	87.0	KUIE15-12SB
85 - 264	15	1000	75	15	87.0	KUIE15-15SB
85 - 264	18	834	75	15	87.0	KUIE15-18SB
85 - 264	24	625	75	15	88.0	KUIE15-24SB
85 - 264	28	536	75	15	88.0	KUIE15-28SB
85 - 264	36	417	75	15	88.0	KUIE15-36SB
85 - 264	48	313	75	15	88.5	KUIE15-48SB
85 - 264	53	284	75	15	89.0	KUIE1553SB

NOTE:

- For Terminal Block: Use Suffix "T"
- For Molex: Use Suffix "M"
- For Pin Type: Use Suffix "P"
- For JST: No Suffix Needed
- For DIN Rail: Use Suffix: "D"

KUIE15 SERIES

Input Specifications

Operating input voltage range	85 Min., 264 Max., Vac	AC Input
	120 Min., 370 Max., Vdc	DC Input
Input frequency, Hz	47 Min., 63 Max.	AC Input
Input current, A	0.45 Max.	100 Vac and full load
	0.30 Max.	240 Vac and full load
No load input power, mW	75 Typ.	230 Vac
Leakage current, μ A	75 Max.	264 Vac
Start up time, ms	1500 Typ.	115 Vac and full load
Rise time, ms	20 Typ.	
Hold up time, ms	8 Typ.	115 Vac and full load
Input inrush current, A	40 Max.	230 Vac
Input protection	T1.6 A / 250 Vac	Internal fuse

Output Specifications

Output power, w	15 Max.	
Initial set voltage accuracy, %	-1.0 Min., 1.0 Max.	230 Vac and full load
Line regulation, %	-0.2 Min., 0.2 Max.	Low line to high line at full load
	-0.7 Min., 0.7 Max.	No load to full load, 3.3 Vout, 5 Vout
Load regulation, %	-0.5 Min., 0.5 Max.	Others
	-0.6 Min., 0.6 Max.	10% load to 90% load, 3.3 Vout, 5 Vout
	-0.4 Min., 0.4 Max.	Others
Voltage adjustability, %	-10 Min., 10 Max.	
Minimum load, %	0 Typ.	
Ripple and noise, mVp-p		Measured by 20MHz bandwidth
	40 Typ.	With a 10 μ F/50V 1206 X5R MLCC, 3.3 Vout, 5 Vout
	70 Typ.	7.5Vout, 9Vout, 12Vout, 15Vout
	100 Typ.	18Vout, 24Vout, 28Vout, 36Vout
	140 Typ.	With a 1 μ F/100V 1206 X7R MLCC, 48Vout, 53Vout
Temperature coefficient, %/°C	-0.02 Min., 0.02 Max	
Transient response	5% Vout Typ.	Load step from 75-100% change at 2.5A/ μ s, peak deviation
	500 μ s Typ.	Recovery time
Over voltage protection, %	115 Min., 140 Max.	% of Vout(nom); Latch mode
Over load protection, %	145 Typ.	% of Iout rated; Hiccup mode
Short circuit protection	Continuous, automatic recovery	

General Specifications

Isolation voltage, Vdc	1 minute, reinforced insulation	Input to output	3000 Min.
Isolation resistance, G Ω	500 Vdc		0.1 Min.
Switching frequency, kHz	KUIE15-xxSB-D	230 Vac	100 Typ.
	KUIE15-xxSB KUIE15-xxSB-B		85 Typ.

Environmental Specifications

Operating ambient temperature, °C	Natural convection	With derating	-40 Min.	+85 Max.
Storage temperature range, °C			-40 Min.	+85 Max.
Operating altitude, M				5000 Max.
Shock			IEC60068-2-27	
Vibration			IEC60068-2-6	
Relative humidity	Non-condensing		5% to 95% RH	

KUIE15 SERIES

Physical Specifications

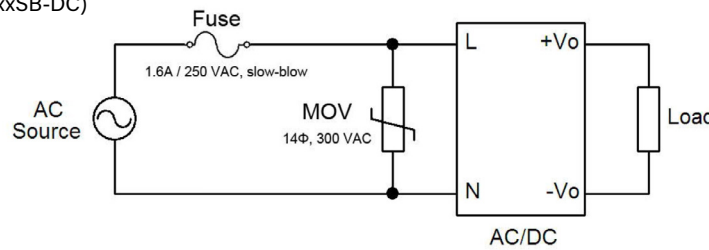
Design meet safety standard	IEC/ EN/ UL62368-1 UL:E193009 CB:UL(Demko)
Weight	Connector type 48.0g (1.69oz)
	Pin type 43.0g (1.52oz)
MTBF	3.063 × 10 ⁶ hrs, MIL-HDBK-217F, Full load

EMC Specifications

Specifications	Conditions	Level
EMI	EN55032 and FCC Part 15	Conducted Class B
		Radiated Class B
Harmonic currents	EN61000-3-2	Full Load Class A
Voltage flicker	EN61000-3-3	
EMS	EN55025	
ESD	EN61000-4-2	Perf. Criteria A
Radiated immunity	EN61000-4-3	20 V/m Perf. Criteria A
Fast transient	EN61000-4-4	± 2kV Perf. Criteria A
Surge	EN61000-4-5	DM ± 1kV Perf. Criteria A
Conducted immunity	EN61000-4-6	20 Vr.m.s Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	30 A/m Perf. Criteria A
Dip and interruptions	EN61000-4-11	Perf. Criteria A

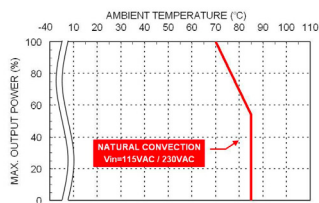
Typical Application

OVCIII Typical Circuit (Only for KUIE15-xxSB-DC)

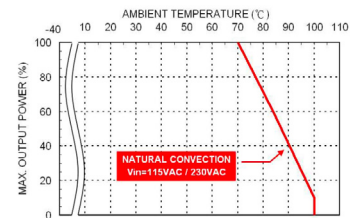


Typical Connection

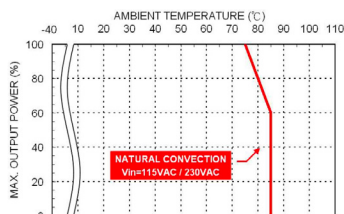
Characteristic Curve



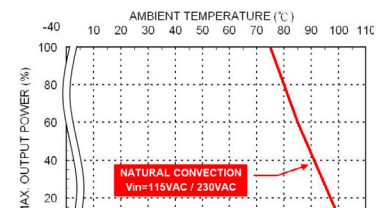
Derating Curve vs. Ambient Temperature
KUIE15-xxSB-D xx=3P3/05/7P5/09/12/15/18
Connector Option: (□): JST



Derating Curve vs. Ambient Temperature
KUIE15-xxSB-D xx=3P3/05/7P5/09/12/15/18
Connector Option: (-M / -T / -D)



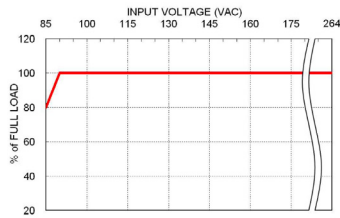
Derating Curve vs. Ambient Temperature
KUIE15-xxSB-D xx=24/28/36/48/53
Connector Option: (□): JST



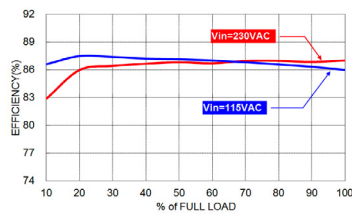
Derating Curve vs. Ambient Temperature
KUIE15-xxSB-D xx=24/28/36/48/53
Connector Option: (-M / -T / -D)

KUIE15 SERIES

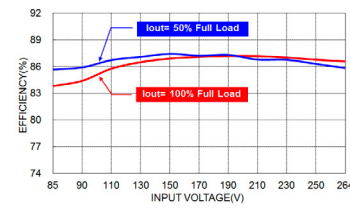
Characteristic Curve (continued)



Derating Curve vs. Input Voltage



KUIE15-12SB-D Efficiency vs. Output Load



KUIE15-12SB-D Efficiency vs. Input Voltage

Connector Options

JST Type

Molex Type, Suffix M

Terminal Block, Suffix T

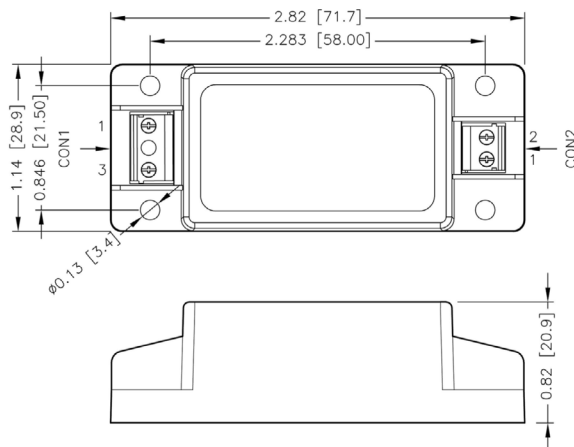
Terminal Block



Mates with:	Crimp Terminals:	Mates with:	Crimp Terminals:	Mates with:	Wire dimension range	Mates with:	Wire dimension range
CON1: VHR-3N	CON1: SVH-21T-P1.1	CON1: 09-50-8031	CON1: SD-2478	Screw locked torque	26 ~ 18AWG	Screw locked torque	26 ~ 16AWG
CON2: VHR-4N	CON2: SVH-21T-P1.1	CON2: 09-50-8021	CON2: SD-2478	MAX 2Kgf.cm / 0.2N.m		MAX 2Kgf.cm / 0.2N.m	

Mechanical Drawing

KUIE15- T Connector type



CONNECTORS

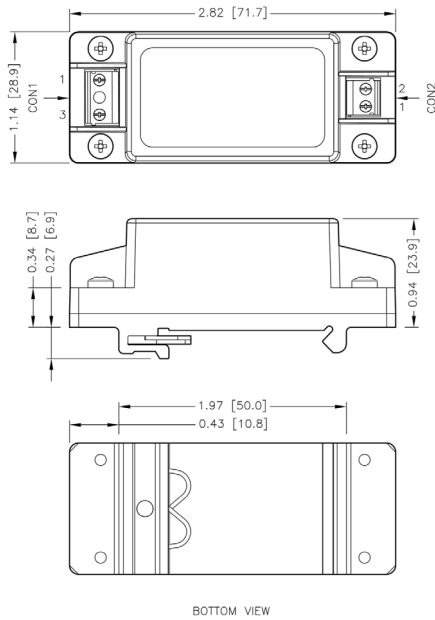
PIN	Input
1	Line
3	Neutral
Output	
1	-Vout
2	+Vout

- All dimensions in inch (mm)
- Tolerance :x.xx±0.02 (x.x±0.5)
x.xxx±0.01 (x.xx±0.25)
- The screw locked torque
MAX 3.4kgf-cm/0.33N-m

KUIE15 SERIES

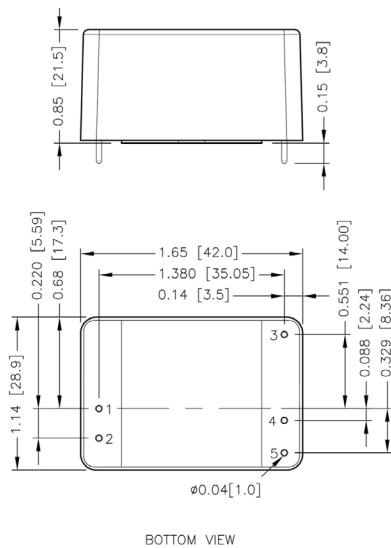
Mechanical Drawing

KUIE15 -D Pin type



1. All dimensions in inch (mm)
2. Pad size(lead free recommended)
3. Through hole 1.2.3.4.5: $\Phi 0.051$ [1.30]
4. Top view pad 1.2.3.4.5: $\Phi 0.064$ [1.63]
5. Bottom view pad 1.2.3.4.5: $\Phi 0.102$ [2.60]

KUIE15 - T Din rail type



1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
x.xxx±0.01 (x.xx±0.25)
3. Pin dimension tolerance ±0.004[0.10]

PIN CONNECTION (for KUIE15-xxSB -D)

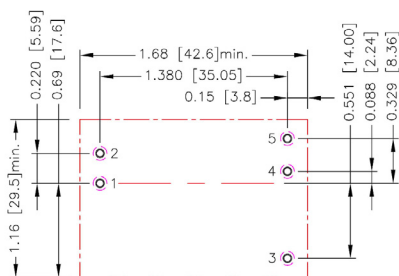
PIN	Input
1	Line
2	Neutral
3	Trim
4	-Vout
5	+Vout

PIN CONNECTION (for KUIE15-xxSB -D)

	Output
1	Neutral
2	Line
3	Trim
4	-Vout
5	+Vout

Recommended Pad Layout

KUIE15 -D Pin type



1. All dimensions in inch (mm)
2. Pad size(lead free recommended)
3. Through hole 1.2.3.4.5: $\Phi 0.051$ [1.30]
4. Top view pad 1.2.3.4.5: $\Phi 0.064$ [1.63]
5. Bottom view pad 1.2.3.4.5: $\Phi 0.102$ [2.60]

Output Voltage Adjustment

It allows the user to increase or decrease the output voltage of the module.

This is accomplished by connecting an external resistor between the Trim pin and either the +Vout or -Vout pins.

With an external resistor between the Trim and -Output pin, the output voltage increases.

With an external resistor between the Trim and +Output pin, the output voltage decreases.

The external Trim resistor needs to be at least 1/16W of rated power.

TRIM UP EQUATION

$$R_U = \left[\frac{G \times L}{(V_{o,up} - L - K)} - H \right] \Omega$$

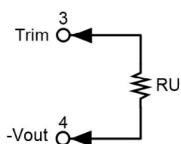
TRIM DOWN EQUATION

$$R_D = \left[\frac{(V_{o,down} - L) \times G}{(V_o - V_{o,down})} - H \right] \Omega$$

TRIM CONSTANTS

Module	G	H	K	L
KUIE15-33SB-D	2000	2000	2.06	1.24
KUIE15-5SB-D	7500	2000	2.5	2.5
KUIE15-7.5SB-D	22000	2000	5	2.5
KUIE15-9SB-D	30000	2000	6.5	2.5
KUIE15-12SB-D	51000	2000	9.5	2.5
KUIE15-15SB-D	68000	2000	12.5	2.5
KUIE15-18SB-D	91000	2000	15.5	2.5
KUIE15-24SB-D	130000	2000	21.5	2.5
KUIE15-28SB-D	150000	2000	25.5	2.5
KUIE15-36SB-D	200000	2000	33.5	2.5
KUIE15-48SB-D	270000	2000	45.5	2.5
KUIE1553SB-D	270000	2000	50.5	2.5

Trim Up



33SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	3.333	3.366	3.399	3.432	3.465	3.498	3.531	3.564	3.597	3.630
RU (k Ω)	73.152	35.576	23.051	16.788	13.030	10.525	8.736	7.394	6.350	5.515

5SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	5.050	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500
RU (k Ω)	373.000	185.500	123.000	91.750	73.000	60.500	51.571	44.875	39.667	35.500

7.5SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	7.575	7.650	7.725	7.800	7.875	7.950	8.025	8.100	8.175	8.250
RU (k Ω)	731.333	364.667	242.444	181.333	144.667	120.222	102.762	89.667	79.481	71.333

9SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	9.090	9.180	9.270	9.360	9.450	9.540	9.630	9.720	9.810	9.900
RU (k Ω)	831.333	414.667	275.778	206.333	164.667	136.889	117.048	102.167	90.593	81.333

12SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	12.120	12.240	12.360	12.480	12.600	12.720	12.840	12.960	13.080	13.200
RU (k Ω)	1060.500	529.250	352.167	263.625	210.500	175.083	149.786	130.813	116.056	104.250

15SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	15.150	15.300	15.450	15.600	15.750	15.900	16.050	16.200	16.350	16.500
RU (k Ω)	1131.333	564.667	375.778	281.333	224.667	186.889	159.905	139.667	123.926	111.333

Output Voltage Adjustment (continued)

Trim Up

18SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	18.180	18.360	18.540	18.720	18.900	19.080	19.260	19.440	19.620	19.800
RU (k Ω)	1261.889	629.944	419.296	313.972	250.778	208.648	178.556	155.986	138.432	124.389

24SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	24.240	24.480	24.720	24.960	25.200	25.440	25.680	25.920	26.160	26.400
RU (k Ω)	1352.167	675.083	449.389	336.542	268.833	223.694	191.452	167.271	148.463	133.417

28SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	28.280	28.560	28.840	29.120	29.400	29.680	29.960	30.240	30.520	30.800
RU (k Ω)	1337.286	667.643	444.429	332.821	265.857	221.214	189.327	165.411	146.810	131.929

36SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	36.360	36.720	37.080	37.440	37.800	38.160	38.520	38.880	39.240	39.600
RU (k Ω)	1386.889	692.444	460.963	345.222	275.778	229.481	196.413	171.611	152.321	136.889

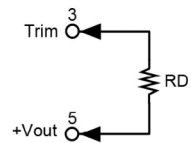
48SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	48.480	48.960	49.440	49.920	50.400	50.880	51.360	51.840	52.320	52.800
RU (k Ω)	1404.250	701.125	466.750	349.563	279.250	232.375	198.893	173.781	154.250	138.625

53SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	53.530	54.060	54.590	55.120	55.650	56.180	56.710	57.240	57.770	58.300
RU (k Ω)	1271.585	634.792	422.528	316.396	252.717	210.264	179.941	157.198	139.509	125.358

Trim Down



33SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	3.267	3.234	3.201	3.168	3.135	3.102	3.069	3.036	3.003	2.970
RD (k Ω)	120.848	58.424	37.616	27.212	20.970	16.808	13.835	11.606	9.872	8.485

5SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	4.950	4.900	4.850	4.800	4.750	4.700	4.650	4.600	4.550	4.500
RD (k Ω)	365.500	178.000	115.500	84.250	65.500	53.000	44.071	37.375	32.167	28.000

7.5SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	7.425	7.350	7.275	7.200	7.125	7.050	6.975	6.900	6.825	6.750
RD (k Ω)	1442.667	709.333	464.889	342.667	269.333	220.444	185.524	159.333	138.963	122.667

9SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	8.910	8.820	8.730	8.640	8.550	8.460	8.370	8.280	8.190	8.100
RD (k Ω)	2134.667	1051.333	690.222	509.667	401.333	329.111	277.524	238.833	208.741	184.667

12SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	11.880	11.760	11.640	11.520	11.400	11.280	11.160	11.040	10.920	10.800
RD (k Ω)	3984.500	1965.750	1292.833	956.375	754.500	619.917	523.786	451.688	395.611	350.750

15SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	14.850	14.700	14.550	14.400	14.250	14.100	13.950	13.800	13.650	13.500
RD (k Ω)	5596.667	2763.333	1818.889	1346.667	1063.333	874.444	739.524	638.333	559.630	496.667

Output Voltage Adjustment (continued)

Trim Down

18SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	17.820	17.640	17.460	17.280	17.100	16.920	16.740	16.560	16.380	16.200
RD (k Ω)	7743.111	3825.056	2519.037	1866.028	1474.222	1213.019	1026.444	886.514	777.679	690.611

24SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	23.760	23.520	23.280	23.040	22.800	22.560	22.320	22.080	21.840	21.600
RD (k Ω)	11513.833	5690.917	3749.944	2779.458	2197.167	1808.972	1531.690	1323.729	1161.981	1032.583

28SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	27.720	27.440	27.160	26.880	26.600	26.320	26.040	25.760	25.480	25.200
RD (k Ω)	13508.714	6678.357	4401.571	3263.179	2580.143	2124.786	1799.531	1555.589	1365.857	1214.071

36SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	35.640	35.280	34.920	34.560	34.200	33.840	33.480	33.120	32.760	32.400
RD (k Ω)	18409.111	9103.556	6001.704	4450.778	3520.222	2899.852	2456.730	2124.389	1865.901	1659.111

48SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	47.520	47.040	46.560	46.080	45.600	45.120	44.640	44.160	43.680	43.200
RD (k Ω)	25321.750	12524.875	8259.250	6126.437	4846.750	3993.625	3384.250	2927.219	2571.750	2287.375

53SB-D

ΔV (%)	1	2	3	4	5	6	7	8	9	10
Vout (V)	52.470	51.940	51.410	50.880	50.350	49.820	49.290	48.760	48.230	47.700
RD (k Ω)	25454.415	12591.208	8303.472	6159.604	4873.283	4015.736	3403.202	2943.802	2586.491	2300.642