







High voltage pulse noise type: NAP series Low leakage current type: NAM series

*The EMI/EMC Filter is recommended to connect with several devices

I/O terminals

②Single output 3 Output wattage

Universal input (5) Output voltage (6) Option

C : with Coating

MODEL	★KHEA/KHNA30F-5	★KHEA/KHNA30F-12	KHEA/KHNA30F-24
MAX OUTPUT WATTAGE[W]	25	27.6	31.2
DC OUTPUT	5V 5A	12V 2.3A	24V 1.3A

SPECIFICATIONS

Please contact us about ★ marked models.

	MODEL		KHEA/KHNA30F-5	KHEA/KHNA30F-12	KHEA/KHNA30F-24	
	VOLTAGE[V]		AC85 - 264 1 φ (Output derating is required) or DC120 - 370			
	OUDDENITE AT	ACIN 115V	0.45typ	0.50typ	0.55typ	
	CURRENT[A]	ACIN 230V	0.30typ	0.30typ	0.35typ	
	FREQUENCY[Hz]		50 / 60 (47 - 440) or DC			
INPUT	EEEIGIENGVI9/1	ACIN 115V	84.0typ	87.0typ	88.5typ	
	EFFICIENCY[%]	ACIN 230V	85.5typ	88.5typ	89.5typ	
	INRUSH CURRENT[A]	ACIN 115V	18typ (Io=100%) (at cold start Ta=2			
	*1	ACIN 230V	35typ (Io=100%) (at cold start Ta=25°C)			
	LEAKAGE CURRENT[mA]		0.45 / 0.75max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)			
	VOLTAGE[V]		5	12	24	
	CURRENT[A]		5.0	2.3	1.3	
	PEAK CURRENT[A]		-	-	-	
	LINE REGULATION[m	ıV] *2	20max	48max	96max	
	LOAD REGULATION[mV] *2	80max	100max	150max	
		0 to +70°C	150max	150max	150max	
	RIPPLE[mVp-p] *3	-20 - 0°C	300max	300max	300max	
		lo=0 - 30%	300max *4	300max *4	300max *4	
OUTPUT		0 to +70°C	180max	180max	180max	
UIPUI	RIPPLE NOISE[mVp-p] *3	-20 - 0°C	360max	360max	360max	
		lo=0 - 30%	360max *4	360max *4	360max *4	
	TEMPERATURE REGULATION[mV]	0 to +70°C	50max	120max	240max	
		-20 to +70°C	60max	150max	290max	
	DRIFT[mV] *5		20max	48max	96max	
	START-UP TIME[ms]		200typ (ACIN 115V, Io=100%)			
	HOLD-UP TIME[ms]		20typ (ACIN 115V, Io=100%)			
	OUTPUT VOLTAGE ADJUSTMENT F	RANGE[V]	4.50 to 5.50	10.80 to 13.20	22.50 to 28.50	
	OUTPUT VOLTAGE SETTING[V]		5.00 to 5.15	12.00 to 12.48	24.00 to 24.96	
ROTECTION	OVERCURRENT PROTE	CTION	Works over 105% of rating and reco	overs automatically *10		
IRCUIT AND	OVERVOLTAGE PROTE	CTION[V]	6.30 to 7.60	13.80 to 16.80	30.00 to 36.00	
THERS	DC_OK LAMP		LED (Green)			
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current =	10mA, DC500V 50MΩ min (At R	oom Temperature)	
SOLATION	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)			
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M Ω min (At Room Temperature)			
	OPERATING TEMP., HUMID. AND	ALTITUDE	-20 to +70°C (Required to Derating), 20 - 90%RH (Non condensing)			
NVIRONMENT	STORAGE TEMP., HUMID. AND A	LTITUDE	-30 to +85°C, 20 - 90%RH (Non condensing)			
NVIHUNWENT	VIBRATION	*8				
	IMPACT		196.1m/s² (20G), 11ms, once each X, Y and Z axis (Packing state)			
AFETY AND	AGENCY APPROVALS (At only	/ AC input)	UL60950-1, C-UL(CSA60950-1), UL508 (NEC Class2 per UL1310), ANSI/ISA12.12.01, EN60950-1, EN50178 Complies with DEN-AN			
OISE	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISE	PR22-B, EN55011-B, EN55022-B		
EGULATIONS	HARMONIC ATTENUA	ATOR	Complies with IEC61000-3-2 (Class	A) *6 (Not built-in to active filter)	*9	
	CASE SIZE	*7	22.5×75×90mm (W×H×D) [0.89			
OTHERS	WEIGHT		165g max	-		
	COOLING METHOD		165g max Convection / Forced air			

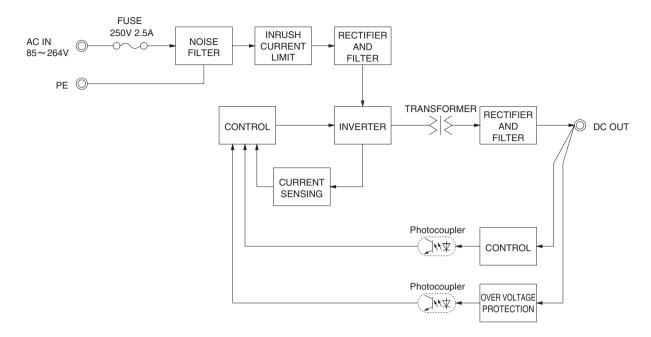
- *1 The value is primary surge. The current of input surge to a built-in EMI/EMC Filter(0.2ms or less)is

- *1 The value is primary surge. The current of input surge to a built-in EMI/EMC Filter(0.2ms or less) is excluded.
 *2 Please contact us about dynamic load and input response.
 *3 This is the value that measured on measuring board with capacitor of 22 μF and 0.1 μF at 150mm from output terminal.
 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103). Please refer to the instruction manual 2.7.
 *4 In case of operating under 0°C ambient temperature, the value is two times of specification at 0 to 30% load factor.
 *5 Petities the between in DC output for an elect hour provided of the a helf hour warm up at 45°C with the
- *5 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- *6 Please contact us about another class.
 *7 Case size contains pairber 45
- Case size contains neither the umbo.

 Only as standard mounting orientation (A). Refer to the instruction manual 5.1. Willy as standard mounting orientation (A). Refer to the instruction manual 5.1.
 If install other than standard mounting orientation (A), please fix the power supply for withstand the vibration and impact.
 When two or more units are operating it may not comply with the IEC61000-3-2.
 If the overcurrent protection circuit operates continuously, the output voltage shut down. Refer to the instruction manual 2.3.
 To meet the specifications. Do not operate over-loaded condition.
 A sound may occur from power supply at light or peak loading.



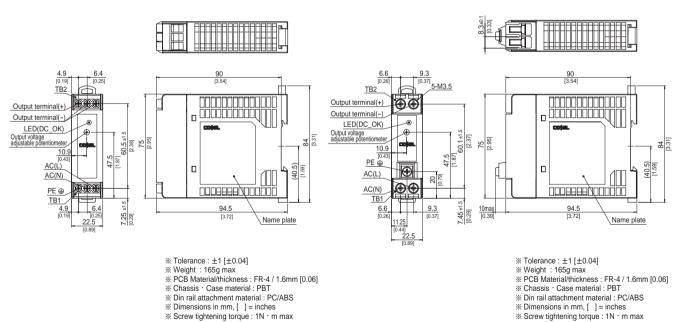
Block diagram



External view

<KHEA30F(Euro Style I/O Terminals)>

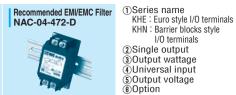
<KHNA30F(Barrier Blocks Style I/O Terminals)>











High voltage pulse noise type: NAP series Low leakage current type: NAM series

*The EMI/EMC Filter is recommended to connect with several devices

I/O terminals ②Single output

3 Output wattage 4 Universal input

(5) Output voltage (6) Option

C : with Coating

MAX OUTPUT WATTAGE[W] 54 60	DEL 7	★KHEA/KHNA60F-12	KHEA/KHNA60F-24
DC OUTPUT 12V 4.5A	X OUTPUT WATTAGE[W] 5	54	60
DC 001F01 12V 4.5A 24V 2.5A	OUTPUT 1	12V 4.5A	24V 2.5A

SPECIFICATIONS

Please contact us about ★ marked model.

	MODEL		KHEA/KHNA60F-12	KHEA/KHNA60F-24	
	VOLTAGE[V]		AC85 - 264 1 φ (Output derating is required) o	r DC120 - 370	
	CUDDENTIAL	ACIN 115V	1.00typ	1.10typ	
	CURRENT[A]	ACIN 230V	0.60typ	0.70typ	
	FREQUENCY[Hz]		50 / 60 (47 - 440) or DC		
INPUT	EFFICIENCY[%]	ACIN 115V	86.0typ	89.0typ	
		ACIN 230V	88.0typ	91.0typ	
	INRUSH CURRENT[A]	ACIN 115V	18typ (Io=100%) (at cold start Ta=25℃)	·	
	*1	ACIN 230V	31 ()		
	LEAKAGE CURRENT[mA]		0.45 / 0.75max (ACIN 100V / 240V 60Hz, Io=1	00%, According to IEC60950-1 and DEN-AN)	
	VOLTAGE[V]		12	24	
	CURRENT[A] 4.5 2.5			2.5	
	PEAK CURRENT[A]		-	-	
	LINE REGULATION[n	nV] *2	48max	96max	
	LOAD REGULATION[mV] *2	100max	150max	
		0 to +70°C	200max	200max	
	RIPPLE[mVp-p] *3	-20 - 0°C	300max	300max	
		lo=0 - 30%	300max *4	300max *4	
		0 to +70℃		260max	
DUTPUT	RIPPLE NOISE[mVp-p] *3		360max	360max	
			360max *4	360max *4	
	TEMPERATURE REGULATION[mV]	0 to +70℃	120max	240max	
		-20 to +70°C	150max	290max	
	DRIFT[mV]		48max	96max	
	START-UP TIME[ms]		200typ (ACIN 115V, Io=100%)		
	HOLD-UP TIME[ms]		20typ (ACIN 115V, Io=100%)		
	OUTPUT VOLTAGE ADJUSTMENT F	RANGE[V]	10.80 to 13.20	22.50 to 28.50	
	OUTPUT VOLTAGE SETT	ING[V]	12.00 to 12.48	24.00 to 24.96	
PROTECTION	OVERCURRENT PROTE	CTION	Works over 105% of rating and recovers autom	natically *10	
CIRCUIT AND	OVERVOLTAGE PROTE	CTION[V]	13.80 to 16.80	30.00 to 36.00	
OTHERS	DC_OK LAMP		LED (Green)	·	
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC	500V 50MΩ min (At Room Temperature)	
SOLATION	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC5	500V 50MΩ min (At Room Temperature)	
	OPERATING TEMP., HUMID. AND	ALTITUDE	-20 to +70°C (Required to Derating), 20 - 90%RH (Non condensing)		
- NUMBONIA ENT	STORAGE TEMP., HUMID. AND A	ALTITUDE	-30 to +85°C, 20 - 90%RH (Non condensing)		
NVIRONMENT	VIBRATION *8		10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60 minutes along Z axis (Non operating, mounted on DIN Rail)		
	IMPACT		196.1m/s² (20G), 11ms, once each X, Y and Z axis (Packing state)		
SAFETY AND	AGENCY APPROVALS (At only	y AC input)	UL60950-1, C-UL(CSA60950-1), UL508 (NEC Class2 per UL1310), ANSI/ISA12.12.01, EN60950-1, EN50178 Complies with DEN-AN		
NOISE	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B, EN	55011-B, EN55022-B	
REGULATIONS	HARMONIC ATTENUA		Complies with IEC61000-3-2 (Class A) *6 (Not built-in to active filter) *9		
	CASE SIZE	*7	32×90×90mm (W×H×D) [1.26×3.54×3.54		
OTHERS	WEIGHT		270g max	•	
	COOLING METHOD		Convection / Forced air		

- The value is primary surge. The current of input surge to a built-in EMI/EMC Filter(0.2ms or less)is
- excluded.
- excluded.

 2 Please contact us about dynamic load and input response.

 3 This is the value that measured on measuring board with capacitor of 22 µF and 0.1 µF at 150mm from output terminal.

 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103). Please refer to the instruction manual 2.7.

 Ripple and ripple noise spec is change at lo-0 to 30% by burst operation.

 4 In case of operating under 0°C ambient temperature, the value is two times of specification at 0 to 30% load factor.
- *5 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- *6 Please contact us about another class.
 *7 Case size contains patter the contains.
- Case size contains neither the umbo.

 Only as standard mounting orientation (A). Refer to the instruction manual 5.1.

 If install other than standard mounting orientation (A), please fix the power supply for withstand the
- If install other than standard mounting orientation (A), please fix the power supply for withstand the vibration and impact.

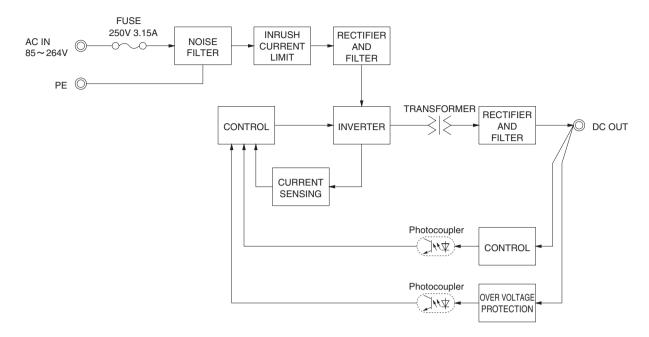
 *9 When two or more units are operating it may not comply with the IEC61000-3-2.

 *10 If the overcurrent protection circuit operates continuously, the output voltage shut down. Refer to the instruction manual 2.3.

 * To meet the specifications. Do not operate over-loaded condition.
- A sound may occur from power supply at light or peak loading.



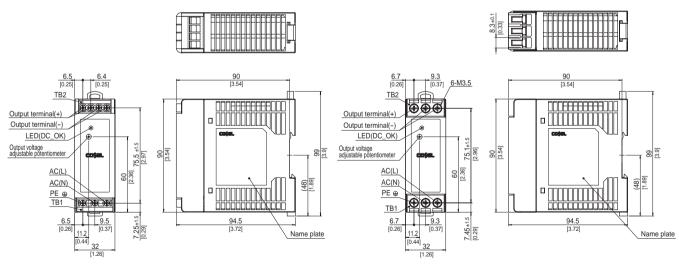
Block diagram



External view

<KHEA60F(Euro Style I/O Terminals)>

<KHNA60F(Barrier Blocks Style I/O Terminals)>



- % Tolerance : ±1 [±0.04]
- * Weight : 270g max
- % PCB Material/thickness: FR-4 / 1.6mm [0.06]
 % Chassis · Case material: PBT
- ※ Din rail attachment material : PC/ABS
- % Dimensions in mm, [] = inches % Screw tightening torque : 1N · m max

- % Tolerance : ± 1 [± 0.04] % Weight : 270g max
- PCB Material/thickness : FR-4 / 1.6mm [0.06]
 Chassis · Case material : PBT
 Win rail attachment material : PC/ABS

- Dimensions in mm, [] = inches
 Screw tightening torque: 1N · m max









High voltage pulse noise type: NAP series Low leakage current type: NAM series

*The EMI/EMC Filter is recommended to connect with several devices

I/O terminals ②Single output

3 Output wattage 4 Universal input

(5) Output voltage (6) Option

C : with Coating

MODEL	★KHEA/KHNA90F-12	KHEA/KHNA90F-24
MAX OUTPUT WATTAGE[W]	81.6	91.2
DC OUTPUT	12V 6.8A	24V 3.8A

SPECIFICATIONS

Please contact us about ★ marked model

	MODEL		KHEA/KHNA90F-12	KHEA/KHNA90F-24	
	VOLTAGE[V]		AC85 - 264 1 φ (Output derating is required) *10		
	OUDDENTIAL	ACIN 115V	0.85typ	0.95typ	
	CURRENT[A]	ACIN 230V	0.45typ	0.55typ	
	FREQUENCY[Hz]		50 / 60 (47 - 63)		
	EFFICIENCY[9/1	ACIN 115V	87.0typ	89.0typ	
INPUT	EFFICIENCY[%]	ACIN 230V	88.0typ	91.0typ	
	POWER FACTOR	ACIN 115V	0.98typ		
	(lo=100%)	ACIN 230V	0.86typ		
	INRUSH CURRENT[A]	ACIN 115V	18typ (Io=100%) (at cold start Ta=25℃)		
	*1	ACIN 230V	1 - 3 1 1		
	LEAKAGE CURRENT[mA]		0.45 / 0.75max (ACIN 100V / 240V 60Hz, Io=100%, Ac	cording to IEC60950-1 and DEN-AN)	
	VOLTAGE[V]		12	24	
	CURRENT[A]		6.8	3.8	
	PEAK CURRENT[A]		-	-	
	LINE REGULATION[n	ıV] *2	48max	96max	
	LOAD REGULATION[mV] *2	100max	150max	
		0 to +70°C	200max	200max	
	RIPPLE[mVp-p] *3	-20 - 0°C	300max	300max	
OUTPUT RIPE		lo=0 - 30%	300max *4	300max *4	
		0 to +70°C	260max	260max	
	RIPPLE NOISE[mVp-p] *3	-20 - 0°C	360max	360max	
		lo=0 - 30%	360max *4	360max *4	
	TEMPERATURE REGULATION[mV]	0 to +70°C	120max	240max	
		-20 to +70℃	150max	290max	
	DRIFT[mV]	*5	48max	96max	
	START-UP TIME[ms]		500typ (ACIN 115V, Io=100%)		
	HOLD-UP TIME[ms]		20typ (ACIN 115V, Io=100%)		
	OUTPUT VOLTAGE ADJUSTMENT F	RANGE[V]	10.80 to 13.20	22.50 to 28.50	
	OUTPUT VOLTAGE SETT		12.00 to 12.48	24.00 to 24.96	
PROTECTION	OVERCURRENT PROTE		Trome ever 100/0 or raining and received datematically	*9	
CIRCUIT AND	OVERVOLTAGE PROTE	CTION[V]		30.00 to 36.00	
OTHERS	DC_OK LAMP		LED (Green)		
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)		
SOLATION	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)		
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M Ω min (At Room Temperature)		
	OPERATING TEMP.,HUMID.AND		-20 to +70°C (Required to Derating), 20 - 90%RH (Non condensing)		
NVIRONMENT	STORAGE TEMP., HUMID. AND A	LTITUDE	-30 to +85°C, 20 - 90%RH (Non condensing)		
	VIBRATION	*8			
	IMPACT		196.1m/s ² (20G), 11ms, X, Y and Z axis (Packing state)		
SAFETY AND	AGENCY APPROVALS (At only	/ AC input)	UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178, UL508, ANSI/ISA12.12.01 Compliies with DEN-AN		
NOISE	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B	, EN55022-B	
REGULATIONS			Complies with IEC61000-3-2 (Class A) *6		
	CASE SIZE	*7	50×90×90mm (W×H×D) [1.97×3.54×3.54 inches]		
OTHERS	WEIGHT		405g max		
	COOLING METHOD		Convection / Forced air		

- The value is primary surge. The current of input surge to a built-in EMI/EMC Filter(0.2ms or less)is
- *1 The value is primary surge. The current or Input surge to a butter in the properties of the excluded.
 *2 Please contact us about dynamic load and input response.
 *3 This is the value that measured on measuring board with capacitor of 22 μF and 0.1 μF at 150mm from output terminal.
 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103). Please refer to the instruction manual 2.7.
 Ripple and ripple noise spec is change at 1o=0 to 30% by burst operation.
 *4 In case of operating under 0°C ambient temperature, the value is two times of specification at 0 to 30% load factor.
- *5 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- *6 Please contact us about another class. *7 Case size contains neither the umbo.
- Case size contains neither the umbo.

 Only as standard mounting orientation (A). Refer to the instruction manual 5.1.

 If install other than standard mounting orientation (A), please fix the power supply for withstand the
- It install other than standard mounting orientation (A), please fix the power supply for withstand the vibration and impact.

 *9 If the overcurrent protection circuit operates continuously, the output voltage shut down. Refer to the instruction manual 2.3.

 *10 Please contact us about DC input voltage.

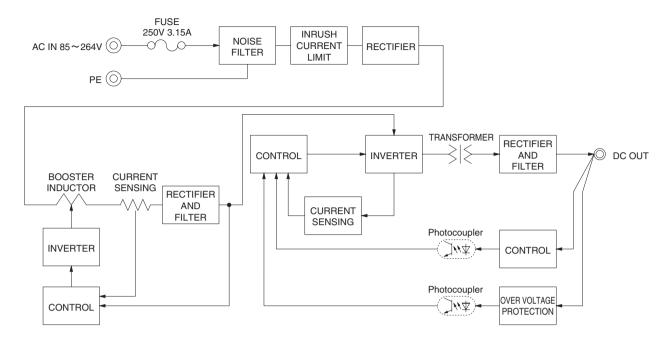
 * To meet the specifications. Do not operate over-loaded condition.

 * A sound may occur from power supply at light or neak loading.

KH-6



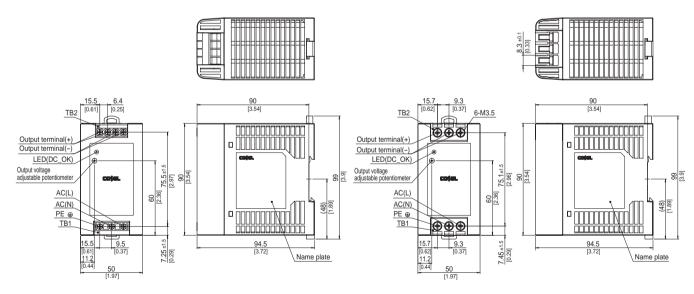
Block diagram



External view

<KHEA90F(Euro Style I/O Terminals)>

<KHNA90F(Barrier Blocks Style I/O Terminals)>



- % Tolerance : ±1 [±0.04]
- Weight: 405g max

 PCB Material/thickness: FR-4 / 1.6mm [0.06]
- ※ Chassis · Case material : PBT
- Din rail attachment material : PC/ABS
 Dimensions in mm, [] = inches
 Screw tightening torque : 1N · m max

- % Tolerance : ±1 [±0.04]
- Weight: 405g max

 PCB Material/thickness: FR-4 / 1.6mm [0.06]
- ** Cob Material Interiess : 1 10-47 (John W. Chassis · Case material : PBT
 ** Din rail attachment material : PC/ABS
 ** Dimensions in mm, [] = inches
- ※ Screw tightening torque: 1N ⋅ m max

Ordering information

KHEA series





Recommended EMI/EMC Filter KHEA120F NAC-04-472-D KHEA240F NAC-06-472-D KHEA480F NAC-10-472-D



High voltage pulse noise type: NAP series Low leakage current type: NAM series

*The EMI/EMC Filter is recommended to connect with several devices.

(1)Series name
②Single output
3 Output wattage

- 4)Universal input ⑤Output voltage ⑥Option
 - C: with Coating N2: Screw mounting

MODEL	KHEA120F-24	KHEA240F-24	KHEA480F-24
MAX OUTPUT WATTAGE[W]	120	240	480
DC OUTPUT	24V 5A (Peak 7.5A)	24V 10A (Peak 15A)	24V 20A (Peak 30A)

SPECIFICATIONS

	MODEL		KHEA120F-24	KHEA240F-24	KHEA480F-24
	VOLTAGE[V]		AC85 - 264 1 φ or DC120 - 370		AC85 - 264 1 φ *11 *12
		ACIN 115V	1.2typ	2.3typ	4.6typ
	CURRENT[A]	ACIN 230V	0.6typ	1.2typ	2.3typ
	FREQUENCY[Hz]		50 / 60 (47 - 63) or DC	, Jr	50 / 60 (47 - 63)
	ACIN 115V		90typ 92typ		92typ
	EFFICIENCY[%]	ACIN 230V	92typ	94typ	94typ
NPUT		ACIN 115V	0.98typ	0.98typ	0.98typ
	POWER FACTOR	ACIN 230V	0.93typ	0.93typ	0.93typ
	INRUSH CURRENT[A]	ACIN 115V	15typ (at cold start Ta=25°C)	20typ (more than 3 sec. to re-start)	Головир
		ACIN 230V	30typ (at cold start Ta=25°C)	40typ (more than 3 sec. to re-start)	
	ACIN 230V		0.45 / 0.75max	Totyp (more than 6 does to 16 data)	0.75 / 1.5max
	LEAKAGE CURRENT	[mA]	0.45 / 0.75 max 0.75 / 1.5 max U.75 / 1.5 max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)		
	VOLTAGE[V]		24	24	24
	CURRENT[A]		5	10	20
	PEAK CURRENT[A]	*2	7.5	15	30
				13	
	LINE REGULATION[n		96max		96max (lo=30-100%) *10
	LOAD REGULATION[150max *4		150max (Io=30-100%) *10
		0 to +70℃			120max
	RIPPLE[mVp-p] *5	-25 - 0°C	240max		240max
		lo=0 - 30%			500max
UTPUT		0 to +70°C			150max
001701			300max		300max
		lo=0 - 30%			600max
	TEMPERATURE REGULATION[mV]	0 to +70℃	240max *4		240max
	- 1 -25 to +70℃				360max
	DRIFT[mV] *6		96max		96max
	START-UP TIME[ms]		750max (ACIN 115V, Io=100%)		750max (ACIN 115V, Io=100%)
	HOLD-UP TIME[ms]		20typ (ACIN 115V, Io=100%)		20typ (ACIN 115V, Io=100%)
	OUTPUT VOLTAGE ADJUSTMENT F	RANGE[V]	22.5 to 28.5		22.5 to 26.4
	OUTPUT VOLTAGE SETT	ING[V]	24.0±1.0%		24.0±1.0%
	OVERCURRENT PROTE	ECTION	Works over 101% of peak current ar	d recovers automatically	
ROTECTION	OVERVOLTAGE PROTE	CTION[V]	30.0 to 36.0		
IRCUIT AND	DC_OK LAMP		LED (Green)		
THERS	ALARM LAMP		LED (Red)		
	DC_OK CONTACT		Relay contact 30VDC 1A max, 30VAC 0.5A max (resistive load)		
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)		
	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)		
SOLATION	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M Ω min (At Room Temperature)		
	OUTPUT-RC, DC OK		AC500V 1minute, Cutoff current = 100mA, DC500V 50M Ω min (At Room Temperature)		
	OPERATING TEMP., HUMID. AND	ALTITUDE	-25 to +70°C (Required to Derating), 20 - 90%RH (Non condensing)		
	STORAGE TEMP., HUMID.AND /		-40 to +85°C, 20 - 90%RH (Non condensing)		
NVIRONMENT	VIBRATION		10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60 minutes along Z axis (Non operating, mounted on DIN Rail)		
	IMPACT		196.1m/s² (20G), 11ms, once each X, Y and Z axis (Packing state)		
AFETY AND	AGENCY APPROVALS (At only	v AC input)		60950-1, EN50178, UL508, ANSI / IS	A12.12.01 Complies with DEN-AN
IOISE	CONDUCTED NOISE	<u> </u>	Complies with FCC-B, VCCI-B, CISP		
REGULATIONS	HARMONIC ATTENU		Complies with IEC61000-3-2 (Class	<u> </u>	
			37×124×117mm (W×H×D)	50×124×117mm (W×H×D)	70×124×117mm (W×H×D)
	CASE SIZE	*8	[1.46×4.88×4.61 inches]	[1.97×4.88×4.61 inches]	[2.76×4.88×4.61 inches]
OTHERS	WEIGHT		580g max	900g max	1,200g max
	COOLING METHOD		Convection / Forced air	ooog max	1,200g IIIux
	OCCLING METHOD		OUTIVECTION / TOTARU AN		

- The value is primary surge. The current of input surge to a built-in EMI/EMC Filter(0.2ms or less) is excluded.

- Refer to 3, instruction manual.
 Please contact us about dynamic load and input response.
 The output voltage is below 23.5V, the value is equal to three times of the specification.
 This is the value that measured on measuring board with capacitor of 22 µF and 0.1 µF at 150mm from output terminal.

- Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).
 Please refer to the instruction manual 2.7.
 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/
- output.

 *7 Please contact us about another class.

 *8 Case size contains neither the umbo.
- Only as standard mounting orientation (A). Refer to the instruction manual 5.1. If install other than standard mounting orientation (A), please fix the power supply for withstand the vibration and impact.

 Burst operation at 30% load or less.

 Output derating is required. Please refer to the instruction manual 5.2.

 Please contact us about DC imput voltage.

 To meet the specifications. Do not operate over-loaded condition.

 A sound may occur from power supply at light or peak loading.



External view

AC(N)

PE⊕

[2.72]

⊗ []

[4.61] 121.2

1000

-RC +RC ■KHEA120F 111.2 (M. M. M.) DC OK Output terminal(+) Output terminal(-) LED(ALARM) Name plate 124 LED(DC_OK) 109 Output voltage adjustable potentiometer % Tolerance : ±1 [±0.04] AC(L) (65.7) * Weight : 580g max AC(N) ※ PCB Material/thickness : FR-4 / 1.6mm [0.06] PE ⊕ ※ Chassis material : Aluminum 1000 % Case material : Stainless steel * DIN rail attachment material : Aluminum, Nylon ※ Dimensions in mm, [] = inches [4.61] 121.2 [4.77] Screw tightening torque: 1N • m max **■KHEA240F** +RC èle 111.2 DC_OK Output terminal(+) cote. Output terminal(-) LED(ALARM) 33.5 [5.26] Name plate 124 LED(DC_OK) 109 Output voltage adjustable potentiometer % Tolerance : ±1 [±0.04] AC(L) * Weight : 900g max AC(N) * PCB Material/thickness : FR-4 / 1.6mm [0.06] ※ Chassis material : Aluminum PE⊕ % Case material : Stainless steel **100 100 100** * DIN rail attachment material : Aluminum, Nylon 7.5 ※ Dimensions in mm, [] = inches 117 Screw tightening torque: 1N • m max 50 **■KHEA480F** DC_OK coţa Output terminal(+) Output terminal(-) LED(ALARM) LED(DC OK) Name plate 124 109 [4.29] % Tolerance : ±1 [±0.04] Output voltage adjustable potentiometer Weight : 1,200g max AC(L) ※ PCB Material/thickness : FR-4 / 1.6mm [0.06]

KH-9

※ Chassis material : Aluminum * Case material : Stainless steel

※ Dimensions in mm, [] = inches Screw tightening torque: 1N • m max

% DIN rail attachment material : Aluminum, Nylon

Ordering information

KHNA series

-24





Recommended EMI/EMC Filt KHNA120F NAC-04-472 KHNA240F NAC-06-472 KHNA480F NAC-10-472-D



High voltage pulse noise type: NAP series Low leakage current type: NAM series

*The EMI/EMC Filter is recommended to connect with several devices.

er	①Series name
-D	②Single output
-D	3 Output wattag
-D	4)Universal inp

- gle output tput wattage versal input ⑤Output voltage
- ® Option C: with Coating N2: Screw mounting

MODEL	KHNA120F-24	KHNA240F-24	KHNA480F-24
MAX OUTPUT WATTAGE[W]	120	240	480
DC OUTPUT	24V 5A (Peak 7.5A)	24V 10A (Peak 15A)	24V 20A (Peak 30A)

SPECIFICATIONS

	MODEL		KHNA120F-24	KHNA240F-24	KHNA480F-24
	VOLTAGE[V]		AC85 - 264 1 φ or DC120 - 370		AC85 - 264 1 φ *11 *12
	ACIN 115V		1.2typ 2.3typ		4.6typ
	CURRENT[A]	ACIN 230V	0.6typ	1.2typ	2.3typ
	FREQUENCY[Hz]		50 / 60 (47 - 63) or DC	71	50 / 60 (47 - 63)
	ACIN 1		90typ 92typ		92typ
	EFFICIENCY[%]	ACIN 230V	92typ	94typ	94typ
IPUT		ACIN 115V	0.98typ	0.98typ	0.98typ
	POWER FACTOR	ACIN 230V	0.93typ	0.93typ	0.93typ
	INRUSH CURRENT[A]	ACIN 115V	15typ (at cold start Ta=25℃)	20typ (more than 3 sec. to re-start)	О.ООТУР
	*1	ACIN 230V		30typ (at cold start Ta=25°C) 40typ (more than 3 sec. to re-start)	
	ACIIV 230V		0.45 / 0.75max	Totyp (more than 6 doc. to 10 dtart)	0.75 / 1.5max
	LEAKAGE CURRENT	[mA]	(ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)		
	VOLTAGE[V]		24	24	24
	CURRENT[A]		5	10	20
	PEAK CURRENT[A]	*2	7.5	15	30
	LINE REGULATION[n		96max	10	96max (Io=30-100%) *10
	LOAD REGULATION		150max *4		150max (I0=30-100%) *10
	LUAD REGULATION	0 to +70℃			120max (10=30-100 %) *10
	RIPPLE[mVp-p] *5	-25 - 0°C			240max
	HIPPLE[IIIVP-P] **		240max		500max
			240max *4		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
OUTPUT	DIDDLE HOISE, V. 1	0 to +70°C	150max 300max		150max
	RIPPLE NOISE[mVp-p] *5				300max
	TEMPERATURE REGULATION[mV]	lo=0 - 30%			600max
		0 to +70°C	240max *4		240max
	-25 to +70°C				360max
	DRIFT[mV] *6		96max		96max
	START-UP TIME[ms]		750max (ACIN 115V, Io=100%)		750max (ACIN 115V, Io=100%)
	HOLD-UP TIME[ms]		20typ (ACIN 115V, Io=100%)		20typ (ACIN 115V, Io=100%)
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		22.5 to 28.5		22.5 to 26.4
	OUTPUT VOLTAGE SETT		24.0±1.0% Works over 101% of peak current and recovers automatically		24.0±1.0%
	OVERCURRENT PROTE			d recovers automatically	
ROTECTION	OVERVOLTAGE PROTE	CTION[V]	30.0 to 36.0		
IRCUIT AND	DC_OK LAMP		LED (Green)		
THERS	ALARM LAMP		LED (Red)		
	DC_OK CONTACT		_		
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)		
OLATION	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)		
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M Ω min (At Room Temperature)		
	OUTPUT-RC		AC500V 1minute, Cutoff current = 100mA, DC500V 50M Ω min (At Room Temperature)		
	OPERATING TEMP., HUMID. AND		-25 to +70°C (Required to Derating), 20 - 90%RH (Non condensing)		
VIRONMENT	STORAGE TEMP.,HUMID.AND		-40 to +85°C, 20 - 90%RH (Non condensing)		
	VIBRATION	*9	10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60 minutes along Z axis (Non operating, mounted on DIN Rail)		
	IMPACT		196.1m/s ² (20G), 11ms, once each X	, ,	
AFETY AND	AGENCY APPROVALS (At only			60950-1, EN50178, UL508, ANSI / IS	A12.12.01 Complies with DEN-AN
DISE	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B		
EGULATIONS	HARMONIC ATTENU	ATOR	Complies with IEC61000-3-2 (Class		
	CASE SIZE	*8	37×124×117mm (W×H×D)	50×124×117mm (W×H×D)	70×124×117mm (W×H×D)
THERS			[1.46×4.88×4.61 inches]	[1.97×4.88×4.61 inches]	[2.76×4.88×4.61 inches]
	WEIGHT		580g max	900g max	1,200g max
	COOLING METHOD		Convection / Forced air		

- The value is primary surge. The current of input surge to a built-in EMI/EMC Filter(0.2ms or less)is excluded. Refer to 3, instruction manual. Please contact us about dynamic load and input response. The output voltage is below 23.5V, the value is equal to three times of the specification.
- rise output voltage is below 23.54, the value is equal to three times of the specification.

 This is the value that measured on measuring board with capacitor of 22 µF and 0.1 µF at 150mm from output terminal.
- Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).
 Please refer to the instruction manual 2.7.
 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/
- output.

 *7 Please contact us about another class.

 *8 Case size contains neither the umbo.
- Only as standard mounting orientation (A). Refer to the instruction manual 5.1. If install other than standard mounting orientation (A), please fix the power supply for withstand the vibration and impact.

 Burst operation at 30% load or less.

 Output derating is required. Please refer to the instruction manual 5.2.

 Please contact us about DC input voltage.

 To meet the specifications. Do not operate over-loaded condition.

 A sound may occur from power supply at light or peak loading.

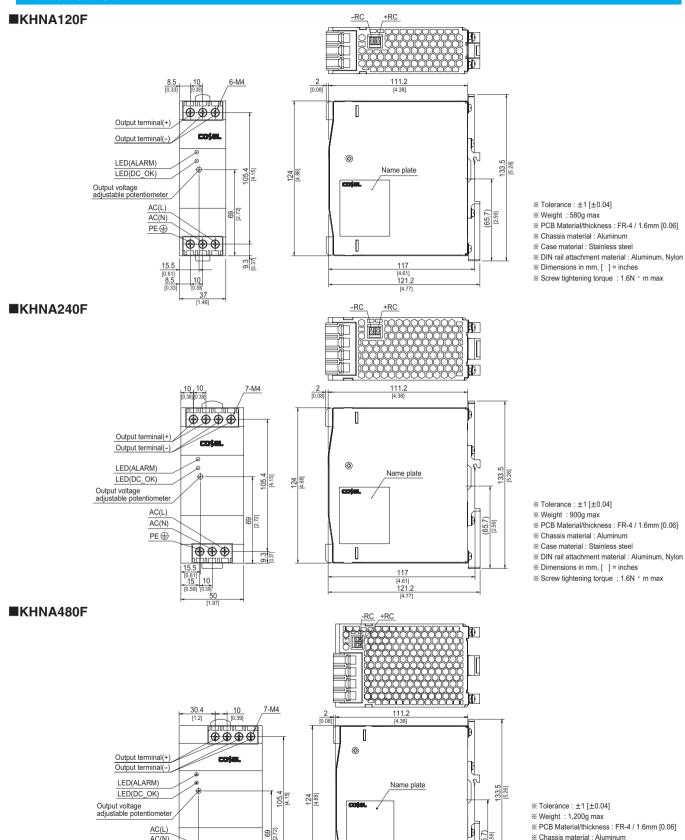




AC(N) PE ⊕

 $\oplus \oplus \oplus$

9.3



(9]

※ Chassis material : Aluminum

% Case material : Stainless steel

※ Dimensions in mm, [] = inches

Screw tightening torque: 1.6N • m max

* DIN rail attachment material : Aluminum, Nylon

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Cosel:

KHEA90F-24 KHEA30F-12 KHEA30F-5