

	MODEL		KHEA/KHNA30F-5	KHEA/KHNA30F-12	KHEA/KHNA30F-24			
	VOLTAGE[V]		AC85 - 264 1 ¢ (Output derating is required) or DC120 - 370					
INPUT		ACIN 115V	0.45typ	0.50typ	0.55typ			
	CORRENT[A]	ACIN 230V	0.30typ	0.30typ	0.35typ			
	FREQUENCY[Hz]		50 / 60 (47 - 440) or DC					
		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=25°C)					
	*1 ACIN 230V		35typ (lo=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[n	nV] *2	20max	48max	96max			
	LOAD REGULATION[	mV] *2	80max	100max	150max			
		0 to +70°C	150max	150max	150max			
	RIPPLE[mVp-p] *3	<b>-20 - 0</b> °C	300max	300max	300max			
		lo=0 - 30%	300max *4	300max *4	300max *4			
		0 to +70°C	180max	180max	180max			
OUIFUI	RIPPLE NOISE[mVp-p] *3	<b>-20 - 0</b> ℃	360max	360max	360max			
		lo=0 - 30%	360max *4	360max *4	360max *4			
	TEMPERATURE RECITLATION(m)/I	0 to +70℃	50max	120max	240max			
		-20 to +70℃	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 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			
PROTECTION	OVERCURRENT PROTE	ECTION	Works over 105% of rating and reco	overs automatically *10				
CIRCUIT AND	OVERVOLTAGE PROTE	CTION[V]	6.30 to 7.60	13.80 to 16.80	30.00 to 36.00			
OTHERS	DC_OK LAMP		LED (Green)					
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)					
ISOLATION	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)					
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M $\Omega$ min (At Room Temperature)					
	OPERATING TEMP., HUMID.AND ALTITUDE		-20 to +/0 C (Required to Derating), 20 - 90%RH (Non condensing)					
ENVIRONMENT	STORAGE TEMP., HUMID.AND	ALTITUDE	-30 to +85 C, 20 - 90% KH (Non condensing)					
	VIBRATION *8		10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60 minutes along $\angle$ axis (Non operating, mounted on DIN Rail)					
	IMPACT		196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis (Packing state)					
SAFETY 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					
REGULATIONS	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B					
	HARMONIC ATTENUATOR		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) [0.89×2.95×3.54 inches]					
OTHERS	WEIGHT		165g max					
	COOLING METHOD		Convection / Forced air					
<ul> <li>*1 The value is excluded.</li> <li>*2 Please con</li> </ul>	s primary surge. The current of ntact us about dynamic load an	input surge t	o a built-in EMI/EMC Filter(0.2ms or less)is onse.	<ul> <li>*6 Please contact us about another class.</li> <li>*7 Case size contains neither the umbo.</li> <li>*8 Only as standard mounting orientation (A). Ref.</li> </ul>	er to the instruction manual 5.1.			

 \*3 This is the value that measured on measuring board with capacitor of 22 µ F and 0.1 µ F at 150mm from \*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 10–0 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.

If install other than standard mounting orientation (A), please fix the power supply for withstand the

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

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**External view** 

<KHEA30F(Euro Style I/O Terminals)>

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



- % Tolerance : ±1 [±0.04]
  % Weight : 165g max
  % PCB Material/thickness : FR-4 / 1.6mm [0.06]
  % Chassis · Case material : PBT
- Crissis Case Internal FD1
   Din rail attachment material : PC/ABS
   Dimensions in mm, [ ] = inches
   Screw tightening torque : 1N · m max





% Tolerance : ±1 [±0.04]
% Weight : 165g max
% PCB Material/thickness : FR-4 / 1.6mm [0.06]
% Chassis · Case material : PBT

Chassis Case material : PB1
 Din rail attachment material : PC/ABS
 Dimensions in mm, [] = inches
 Screw tightening torque : 1N · m max

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MAX OUTPUT WATTAGE[W]			54	60		
DC OUTPUT			12V 4.5A 24V 2.5A			
SPECIF	ICATIONS		Please contact us about ★ marked model.			
	MODEL		KHEA/KHNA60F-12	KHEA/KHNA60F-24		
	VOLTAGE[V]		AC85 - 264 1 $\phi$ (Output derating is required) or DC120	) - 370		
		ACIN 115V	1.00typ 1.10typ			
	CONNENT[A]	ACIN 230V	0.60typ	0.70typ		
	FREQUENCY[Hz]		50 / 60 (47 - 440) or DC			
INPUT		ACIN 115V	86.0typ	89.0typ		
	EFFICIENCY[%]	ACIN 230V	88.0typ	91.0typ		
	INRUSH CURRENT[A]	ACIN 115V	18typ (Io=100%) (at cold start Ta=25℃)			
	*1	ACIN 230V	35typ (Io=100%) (at cold start Ta=25℃)			
	LEAKAGE CURRENT[mA]		0.45 / 0.75max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)			
	VOLTAGE[V]		12	24		
	CURRENT[A]		4.5	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	<b>-20 - 0</b> ℃	300max	300max		
		lo=0 - 30%	300max *4	300max *4		
OUTPUT		0 to +70℃	260max	260max		
001901	RIPPLE NOISE[mVp-p] *3	<b>-20 - 0</b> ℃	360max	360max		
		lo=0 - 30%	360max *4	360max *4		
		0 to +70℃	120max	240max		
	TEMPERATURE REGULATION[MV]	-20 to +70°C	150max	290max		
	DRIFT[mV] *5		48max	96max		
	START-UP TIME[ms]		200typ (ACIN 115V, Io=100%)			
	HOLD-UP TIME[ms]		20typ (ACIN 115V, Io=100%)			
	OUTPUT VOLTAGE ADJUSTMENT	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 automatically	*10		
CIRCUIT AND	OVERVOLTAGE PROTE	CTION[V]	13.80 to 16.80	30.00 to 36.00		
OTHERS	DC_OK LAMP		LED (Green)	<u>.</u>		
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)			
ISOLATION	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)			
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)			
	OPERATING TEMP., HUMID.AND	ALTITUDE	-20 to +70°C (Required to Derating), 20 - 90%RH (Non condensing)			
	STORAGE TEMP., HUMID. AND A	ALTITUDE	-30 to +85°C, 20 - 90%RH (Non condensing)			
ENVIRONMENT	VIBRATION	*8	10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60 minutes along Z axis (Non operating, mounted on DIN Rail)			
	IMPACT		196.1m/s <sup>2</sup> (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, EN55011-B, EN55022-B			
REGULATIONS	HARMONIC ATTENU	ATOR	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 inches]			
OTHERS	WEIGHT		270g max			
- THENO	COOLING METHOD		Convection / Forced air			

\*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.

848 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.
89 When two or more units are operating it may not comply with the IEC61000-3-2.
840 If the overcurrent protection circuit operates continuously, the output voltage shut down. Refer to the instruction manual 2.3.
8 To meet the specifications. Do not operate over-loaded condition.
8 A sound may occur from power supply at light or peak loading.



**External view** 

<KHEA60F(Euro Style I/O Terminals)>

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



※ Screw tightening torque : 1N ⋅ m max

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COLEI	AC-DC PC	wer S	upplies DIN Bail type Ordering in	Ordering information				
	КНКА	/KI		A 90 F -				
				3         4         5         6				
c SN° us RoHS	LUV Resoluted			Recommended EMVEMC Filter NAC-04-472-D() Series name KHE : Euro style I/O terminals KHN : Barrier blocks style 				
MODEL			★KHEA/KHNA90F-12	KHEA/KHNA90F-24				
	JI WAITAGE[W]		81.6 12V 6 8A	91.2				
			Please contact us about ★ marked model.	247 3.04				
SPECIF	ICATIONS							
	MODEL		KHEA/KHNA90F-12 KHEA/KHNA90F-24					
	VOLIAGE[V]	ACIN 115V	0.85tvp	0.95tvp				
	CURRENT[A] ACIN 230V		0.45typ	0.55typ				
	FREQUENCY[Hz]		50 / 60 (47 - 63)					
	EFFICIENCY[%]	ACIN 115V	87.0typ 89.0typ					
INPUT		ACIN 230V	88.0typ 91.0typ					
	(lo=100%)	ACIN 115V ACIN 230V	0.98typ					
	INRUSH CURRENT[A]	ACIN 115V	15V 18typ (Io=100%) (at cold start Ta=25°C)					
	*1 ACIN 230V		35typ (lo=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]		12 24					
			6.8	-				
			48max	- 96max				
	LOAD REGULATION	mV1 *2	100max	150max				
	RIPPLE[mVp-p] *3	0 to +70℃	200max 200max					
		<b>-20 - 0</b> ℃	300max	300max				
		lo=0 - 30%	300max *4	300max *4				
OUTPUT		0 to +70℃	260max	260max				
		-20-00	3DUIIIAX	30UIIIax				
		0 to +70°C	120max	240max				
	TEMPERATURE REGULATION[mV]	-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 RANGE[V]		10.80 to 13.20	22.50 to 28.50				
	OUTPUT VOLTAGE SETTING[V]		12.00 to 12.48	24.00 to 24.96				
PROTECTION	OVERCURRENT PROTE	CTION	WORKS OVER 105% OF rating and recovers automatically	y *9				
OTHERS			IS.0010 10.00	30.00 to 30.00				
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA. DC500V 50	M $\Omega$ min (At Room Temperature)				
ISOLATION	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50N	M $\Omega$ min (At Room Temperature)				
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M	$I\Omega$ min (At Room Temperature)				
	OPERATING TEMP., HUMID.AND	ALTITUDE	-20 to +70°C (Required to Derating), 20 - 90%RH (Non condensing)					
ENVIRONMENT	STORAGE TEMP., HUMID.AND A	LTITUDE	-30 to +85°C, 20 - 90%RH (Non condensing)					
	VIBRATION	*8	10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60 minutes along Z axis (Non operating, mounted on DIN Rail)					
	IMPACT		196.1m/s <sup>2</sup> (20G), 11ms, X, Y and Z axis (Packing state)					
SAFETY AND	AGENCY APPROVALS (At only	AC input)	UL00950-1, U-UL(USA60950-1), EN60950-1, EN50178, UL508, ANSI/ISA12.12.01 Complies with DEN-AN					
NUIJE			Complies with IEC61000-3-2 (Class A) *6					

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COOLING METHOD

OTHERS

CASE SIZE

WEIGHT

\*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 µ F and 0.1 µ F 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 Io=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.

\*7 50×90×90mm (W×H×D) [1.97×3.54×3.54 inches]

405g max

Convection / Forced air

\*6 Please contact us about another class.
\*7 Case size contains neither the umbo.
\*8 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.
\*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 peak loading.

KH-6





**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

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% 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

COSEL	AC-DC Power Supplies DIN Rail type			Ordering information					
	KHE	As	eries	KHE A	F -24 -				
				1 2 3	(4) (5) (6)				
c <b>SL</b> us RoHS	Liv Reserved			Recommended EM KHEA120F NAC KHEA240F NAC KHEA480F NAC High voltage pulse noise ty Low leakage current type * The EMI/EMC Filter is to connect with several	NEMC Filter -04-472-D -06-472-D -10-472-D -10-472-D -10-472-D -10-472-D -10-472-D -10-472-D -10-472-D -10-472-D -10-10-10-10-10-10-10-10-10-10-10-10-10-				
MODEL			KHEA120F-24	KHEA240F-24	KHEA480F-24				
	JT WATTAGE[W]		120 24V 54 (Peak 7 54)	240 24V 10A (Beak 15A)	480 241/ 204 (Pook 204)				
SDECIE			24V 5A (Feak 7.5A)	24V TOA (Peak TSA)	24V 20A (Feak 30A)				
					KHEA190E-24				
	VOLTAGE[V]		AC85 - 264 1 \$\phi\$ or DC120 - 370	NIEAZ4UF-Z4	AC85 - 264 1 ¢ *11 *12				
		ACIN 115V	1.2typ	2.3typ	4.6typ				
		ACIN 230V	0.6typ	1.2typ	2.3typ				
		ACIN 115V	90typ	92typ	92typ				
INPUT	EFFICIENCY[%]	ACIN 230V	92typ	94typ	94typ				
	POWER FACTOR	ACIN 115V	0.98typ	0.98typ	0.98typ				
	INRUSH CURRENT[A]	ACIN 115V	15typ (at cold start Ta=25℃)	20typ (more than 3 sec. to re-start)	0.50(3)				
	*1 ACIN 230V		30typ (at cold start Ta=25°C)     40typ (more than 3 sec. to re-start)						
	LEAKAGE CURRENT	[mA]	0.45 / 0.75max (ACIN 100V / 240V 60Hz. lo=100%.	According to IEC60950-1 and DEN-A					
	VOLTAGE[V]		24 24		24				
	CURRENT[A]	+0	5	10	20				
	LINE REGULATIONIN	*2 nV1 *3	96max	15	96max (Io=30-100%) *10				
	LOAD REGULATION	mV] *3	150max *4		150max (lo=30-100%) *10				
		0 to +70℃	120max	120max 240max					
	NIFFEE[IIIVP-b] **	lo=0 - 30%	240max *4		500max				
OUTPUT	RIPPLE NOISE[mVp-p] *5	0 to +70°C	150max	150max					
		-25 - 0°C	300max 300max *4	600max					
	10=0 - 30%		240max *4	240max					
	-25 to +70°C		360max *4	360max					
	DRIFT[mV] *6 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 24 0+1 0%				
	OVERCURRENT PROTECTION		Works over 101% of peak current and recovers automatically						
PROTECTION	OVERVOLTAGE PROTECTION[V]		30.0 to 36.0						
OTHERS	DC_OK LAMP		LED (Green)						
	DC_OK CONTACT		Relay contact 30VDC 1A max, 30VAC 0.5A max (resistive load)						
			AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)						
ISOLATION	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M $\Omega$ min (At Room Temperature) AC500V 1minute, Cutoff current = 100mA, DC500V 50M $\Omega$ min (At Room Temperature)						
	OUTPUT-RC, DC_OK		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)						
	OPERATING TEMP., HUMID.AND		-25 to +70°C (Required to Derating), 20 - 90%RH (Non condensing) -40 to +85°C, 20 - 90%RH (Non condensing)						
ENVIRONMENT	VIBRATION *9		10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60 minutes along Z axis (Non operating, mounted on DIN Rail)						
			196.1m/s <sup>2</sup> (20G), 11ms, once each X, Y and Z axis (Packing state)						
SAFETY AND	CONDUCTED NOISE	y ac input)	Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B						
REGULATIONS	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 (Class A) *7						
	CASE SIZE	*8	37 X 124 X 117mm (W X H X D) 50 X 124 X 117mm (W X H X D) [1 46 X 4 88 X 4 61 inches] [1 97 X 4 88 X 4 61 inches]		70×124×117mm (W×H×D)				
OTHERS	WEIGHT		[1.40^4.80^4.01 inches]         [1.97/X4.88X4.61 inches]           580g max         900g max		1,200g max				
	COOLING METHOD		Convection / Forced air						
<ul> <li>*1 The value is Filter(0.2ms</li> <li>*2 Refer to 3, ir</li> <li>*3 Please conta</li> <li>*4 The output v specification</li> <li>*5 This is the vi and 0.1 µ F a</li> </ul>	primary surge. The current of input or less) is excluded. Instruction manual. Lot us about dynamic load and input orldage is below 23.5V, the value is e Alue that measured on measuring bi t 150mm from output terminal.	surge to a bui response. equal to three t pard with capa	It-in EMI/EMC Measured by 20MHz oscilloscope or KEISOKU-GIKEN: RM103), Please refer to the instruction manual *6 Drift is the change in DC output for an warm-up at 25C, with the input voltag output. citor of 22 µF \$7 Please contact us about another class *8 Case size contains neither the umbo.	Hipple-Noise meter (Equivalent to I 2.7.       \$       Only as stanc I instal othe supply for with ge held constant at the rated input/         i.       \$       10 Burst toperative supply for with supply	fard mounting orientation (A). Refer to the instruction manual 5. re than standard mounting orientation (A), please fix the powe ithstand the vibration and impact. Ion at 30% load or less. Ing is required. Please refer to the instruction manual 5.2. act us about DC input voltage. specifications. Do not operate over-loaded condition. or occur from power supply at light or peak loading.				
KH-8									

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## KHEA series | CO\$EL



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COŚEL	AC-DC Po	ower S	upplies DIN Rail type	Ordering information				
	KHN	As	eries	KHN A		F	-24	-
c <b>AL</b> us RoHS				1 2 Riki Ki Ki Ki High Low * Tr to	acommended EMI     HA120F NAC- HA240F NAC- HA240F NAC- HA480F	(*)         /EMC Filter       (1)         (04-472-D       (2)         (06-472-D       (3)         (1)-472-D       (3)         (1)-472-D       (5)         (5)       (5)         (6)       (6)         (7)       (6)         (8)       (7)         (9)       (9)         (9) <th>Series name Single output Output wattage Universal input Output voltage Option C : with Coating 12: Screw mount</th> <th>9 t g nting</th>	Series name Single output Output wattage Universal input Output voltage Option C : with Coating 12: Screw mount	9 t g nting
MODEL			KHNA120F-24	KHNA240F-24		KHNA480F-2	24	
DC OUTPUT			120 24V 5A (Peak 7.5A)	240 24V 10A (Peak 15A)		480 24V 20A (Pe	ak 30A)	
SPECIF	ICATIONS						,	
	MODEL		KHNA120F-24	KHNA240F-24		KHNA480F-2	24	
	VOLTAGE[V]		AC85 - 264 1 \$\phi\$ or DC120 - 370			AC85 - 264	<b>1 \$ \$ \$ \$ 1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1 \$1\$1 \$</b>	
	CURRENT[A]	ACIN 115V	1.2typ	2.3typ		4.6typ		
		ACIN 230V	0.6typ	1.2typ		2.3typ	63)	
		ACIN 115V	90typ	92typ		92typ	507	
	EFFICIENCY[%]	ACIN 230V	92typ	94typ		94typ		
	POWER FACTOR	ACIN 115V	0.98typ	0.98typ		0.98typ		
		ACIN 230V	0.93Typ 15typ (at cold start Ta-25 $^{\circ}$ )	0.93typ 20typ (more than 3 sec	to re-start)	0.93typ		
	*1	ACIN 113V ACIN 230V	30typ (at cold start Ta=25°C)	40typ (more than 3 sec	. to re-start)			
	LEAKAGE CUBBENT	[mΔ]	0.45 / 0.75max			0.75 / 1.5ma	ax	
			(ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)					
			24 24 10		24			
	PEAK CURRENT[A]	*2	7.5 15			30		
	LINE REGULATION[n	nV] *3	96max		96max (lo=30-100%) *10			
	LOAD REGULATION	mV] *3	150max *4			150max (lo=	=30-100%) *10	
	RIPPLE[mVp-p] *5	-25 - 0℃	240max			240max		
		lo=0 - 30%	240max *4			500max		
OUTPUT		0 to +70℃	150max 300max 300max *4 240max *4			150max		
	RIPPLE NOISE[mvp-p] *5	-25 - 0 C				600max		
		0 to +70°C				240max		
	TEMPERATURE REGULATION[mV]	-25 to +70℃	360max *4			360max		
	DRIFT[mV] *6		96max 750max (ACIN 115)/ Io=100%)			96max 750max (ACIN 115V, Io-100%)		
	START-UP TIME[ms]		20typ (ACIN 115V, IO=100%)			20typ (ACIN	$\frac{110 115V}{115V}$ lo=100	<u>J0%)</u> %)
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		22.5 to 28.5			22.5 to 26.4		
	OUTPUT VOLTAGE SETTING[V]		24.0±1.0% 24			24.0±1.0%		
PROTECTION	OVERCURRENT PROTECTION		Works over 101% of peak current and recovers automatically					
CIRCUIT AND	DC_OK LAMP		LED (Green)					
OTHERS	ALARM LAMP		LED (Red)					
	DC_OK CONTACT		-					
			AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) AC2 000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)					
ISOLATION	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50M $\Omega$ min (At Room Temperature)					
	OUTPUT-RC		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)					
	OPERATING TEMP., HUMID.AND ALTITUDE		-25 to +70°C (Required to Derating), 20 - 90% RH (Non condensing)					
ENVIRONMENT	VIBRATION	*9	10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3minutes period, 60 minutes along Z axis (Non operating, mounted on DIN Rail)					
	IMPACT		196.1m/s <sup>2</sup> (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), EN	160950-1, EN50178, UL5	08, ANSI / IS/	A12.12.01 Coi	mplies with DE	N-AN
NOISE	CONDUCTED NOISE	ATOR	Complies with FCC-B, VCCI-B, CISP	YK22-B, EN55011-B, EN55	oU22-B			
			37×124×117mm (W×H×D)	50×124×117mm (W×	(H×D)	70×124×1	17mm (W×H>	×D)
OTHERS	CASE SIZE	*8	[1.46×4.88×4.61 inches]	[1.97×4.88×4.61 inch	es]	[2.76×4.88	×4.61 inches]	
			580g max Convection / Forced air	900g max		1,200g max		
*1 The value is	primary surge. The current of input	surge to a bui	UIII-in EMI/EMC Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to *9 Only as standard mounting orientation (A). Refer to the instruction manual				uction manual 5	
Filter(0.2ms *2 Refer to 3, in	or less)is excluded. hstruction manual.		KEISOKU-GIKEN: RM103). Please refer to the instruction manua	l 2.7.	If install other supply for with	than standard mountinstand the vibration and	ng orientation (A), plea nd impact.	se fix the powe
*3 Please conta *4 The output v	not us about dynamic load and input roltage is below 23.5V, the value is e	response. equal to three t	imes of the *6 Dritt is the change in DC output for an warm-up at 25°C, with the input voltage output to the input voltage.	n eight nour period after a half-hour ge held constant at the rated input/	*10 Burst operatio *11 Output deratin	n at 30% load or less. g is required. Please i	efer to the instruction r	manual 5.2.
*5 This is the vi and 0.1 UE a	n. alue that measured on measuring by t 150mm from output terminal	oard with capa	citor of 22 µ F *7 Please contact us about another class *8 Case size contains neither the umbo	S.	<ul> <li>To meet the sp</li> <li>A sound may</li> </ul>	ecifications. Do not o	perate over-loaded con ply at light or peak load	dition.
KH-10						nom power sup	, at agin or poar iddu	

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