COSEL AC-DC Power Supplies DIN Rail type

KHEA/KHNA30F

Ordering information

KH□ A 30 F -□□ -□

① ② ③ ④ ⑤ ⑧

Recommended EMI/EMC Filter
NAC-04-472-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.

①Series name
KHE : Euro style I/O terminals
KHN : Barrier blocks style I/O terminals
②Single output
③Output wattage
④Universal input
⑤Output voltage
⑥Option
C : with Coating

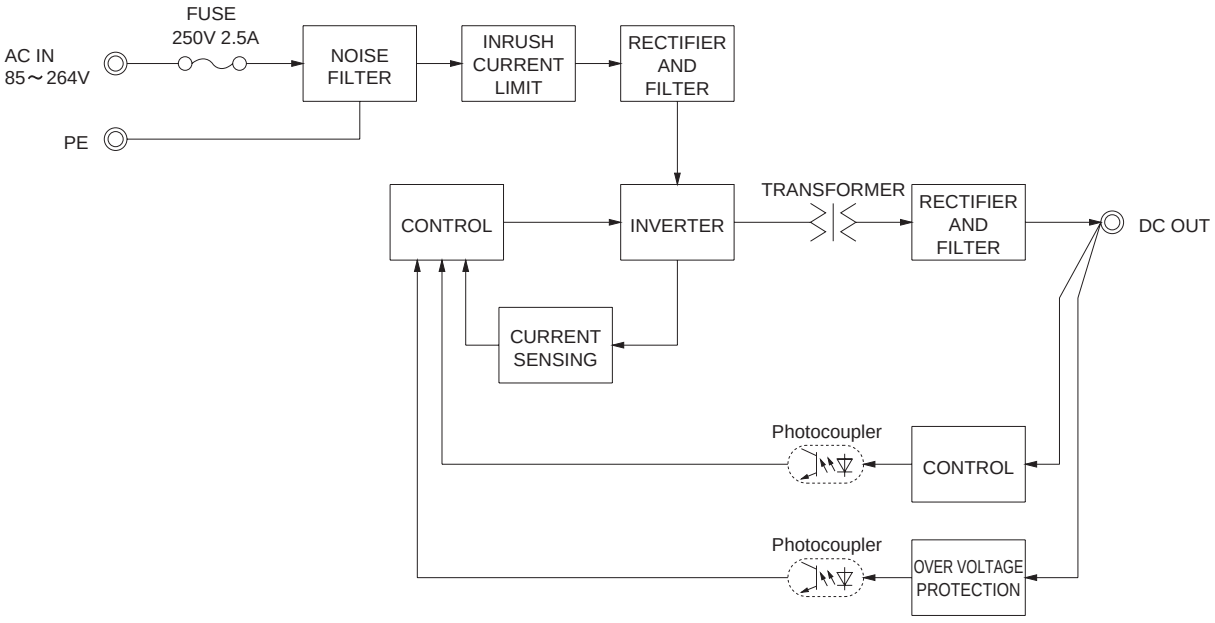
MODEL	KHEA/KHNA30F-5	KHEA/KHNA30F-12	KHEA/KHNA30F-24
MAX OUTPUT WATTAGE[W]	25	27.6	31.2
DC OUTPUT	5V 5A	12V 2.3A	24V 1.3A

SPECIFICATIONS

	MODEL		KHEA/KHNA30F-5	KHEA/KHNA30F-12	KHEA/KHNA30F-24
INPUT	VOLTAGE[V]		AC85 - 264 1φ (Output derating is required) or DC120 - 370		
	CURRENT[A]	ACIN 115V	0.45typ	0.50typ	0.55typ
		ACIN 230V	0.30typ	0.30typ	0.35typ
	FREQUENCY[Hz]		50 / 60 (47 - 440) or DC		
	EFFICIENCY[%]	ACIN 115V	84.0typ	87.0typ	88.5typ
		ACIN 230V	85.5typ	88.5typ	89.5typ
	INRUSH CURRENT[A] ✻1	ACIN 115V	18typ (Io=100%) (at cold start Ta=25℃)		
		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)		
OUTPUT	VOLTAGE[V]		5	12	24
	CURRENT[A]		5.0	2.3	1.3
	PEAK CURRENT[A]		-	-	-
	LINE REGULATION[mV] ✻2		20max	48max	96max
	LOAD REGULATION[mV] ✻2		80max	100max	150max
	RIPPLE[mVp-p] ✻3	0 to +70℃	150max	150max	150max
		-20 - 0℃	300max	300max	300max
		Io=0 - 30%	300max ✻4	300max ✻4	300max ✻4
	RIPPLE NOISE[mVp-p] ✻3	0 to +70℃	180max	180max	180max
		-20 - 0℃	360max	360max	360max
		Io=0 - 30%	360max ✻4	360max ✻4	360max ✻4
	TEMPERATURE REGULATION[mV]	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 CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically ✻10		
	OVERVOLTAGE PROTECTION[V]		6.30 to 7.60	13.80 to 16.80	30.00 to 36.00
	DC_OK LAMP		LED (Green)		
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-20 to +70℃ (Required to Derating), 20 - 90%RH (Non condensing)		
	STORAGE TEMP.,HUMID.AND ALTITUDE		-30 to +85℃, 20 - 90%RH (Non condensing)		
	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 NOISE REGULATIONS	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		
	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		
OTHERS	CASE SIZE ✻7		22.5×75×90mm (W×H×D) [0.89×2.95×3.54 inches]		
	WEIGHT		165g max		
	COOLING METHOD		Convection / Forced air		

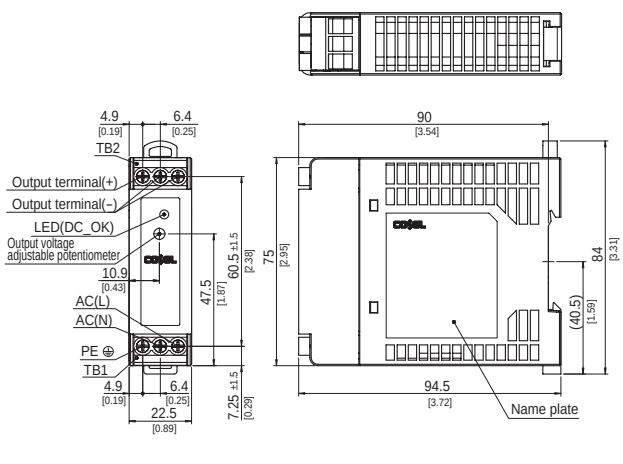
✻1 The value is primary surge. The current of input surge to a built-in EMI/EMC Filter(0.2ms or less)is excluded.
✻2 Please contact us about dynamic load and input response.
✻3 This is the value that measured on measuring board with capacitor of 22μF and 0.1μF at 150mm from output terminal.
Measured 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℃ 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℃, 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.
✻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 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



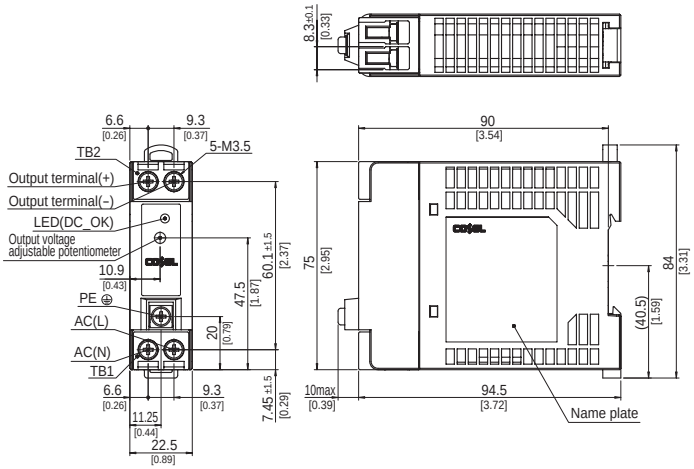
External view

<KHEA30F(Euro Style I/O Terminals)>



※ Tolerance : ±1 [±0.04]
※ Weight : 165g 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

<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
※ Din rail attachment material : PC/ABS
※ Dimensions in mm, [ ] = inches
※ Screw tightening torque : 1N・m max

KH

COSEL AC-DC Power Supplies DIN Rail type

KHEA/KHNA60F

Ordering information

KH□ A 60 F -□□ -□

① ② ③ ④ ⑤ ⑧

Recommended EMI/EMC Filter
NAC-04-472-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.

①Series name
KHE : Euro style I/O terminals
KHN : Barrier blocks style I/O terminals
②Single output
③Output wattage
④Universal input
⑤Output voltage
⑥Option
C : with Coating

MODEL	KHEA/KHNA60F-12	KHEA/KHNA60F-24
MAX OUTPUT WATTAGE[W]	54	60
DC OUTPUT	12V 4.5A	24V 2.5A

SPECIFICATIONS

	MODEL		KHEA/KHNA60F-12	KHEA/KHNA60F-24
INPUT	VOLTAGE[V]		AC85 - 264 1φ (Output derating is required) or DC120 - 370	
	CURRENT[A]	ACIN 115V	1.00typ	1.10typ
		ACIN 230V	0.60typ	0.70typ
	FREQUENCY[Hz]		50 / 60 (47 - 440) or DC	
	EFFICIENCY[%]	ACIN 115V	87.0typ	89.0typ
		ACIN 230V	88.0typ	91.0typ
	INRUSH CURRENT[A] ＊1	ACIN 115V	18typ (Io=100%) (at cold start Ta=25℃)	
		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)	
OUTPUT	VOLTAGE[V]		12	24
	CURRENT[A]		4.5	2.5
	PEAK CURRENT[A]		-	-
	LINE REGULATION[mV] ＊2		48max	96max
	LOAD REGULATION[mV] ＊2		100max	150max
	RIPPLE[mVp-p] ＊3	0 to +70℃	200max	200max
		-20 - 0℃	300max	300max
		Io=0 - 30%	300max ＊4	300max ＊4
	RIPPLE NOISE[mVp-p] ＊3	0 to +70℃	260max	260max
		-20 - 0℃	360max	360max
		Io=0 - 30%	360max ＊4	360max ＊4
	TEMPERATURE REGULATION[mV]	0 to +70℃	120max	240max
		-20 to +70℃	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 SETTING[V]		12.00 to 12.48	24.00 to 24.96
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically ＊10	
	OVERVOLTAGE PROTECTION[V]		13.80 to 16.80	30.00 to 36.00
	DC_OK LAMP		LED (Green)	
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)	
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-20 to +70℃ (Required to Derating), 20 - 90%RH (Non condensing)	
	STORAGE TEMP.,HUMID.AND ALTITUDE		-30 to +85℃, 20 - 90%RH (Non condensing)	
	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 NOISE REGULATIONS	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	
	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	
OTHERS	CASE SIZE ＊7		32×90×90mm (W×H×D) [1.26×3.54×3.54 inches]	
	WEIGHT		270g max	
	COOLING METHOD		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 excluded.
＊2 Please contact us about dynamic load and input response.
＊3 This is the value that measured on measuring board with capacitor of 22μF and 0.1μF 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℃ 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℃, with the input voltage held constant at the rated input/output.
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＊7 Case size contains neither the umbo.
＊8 Only as standard mounting orientation (A). Refer to the instruction manual 5.1.
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＊9 When two or more units are operating it may not comply with the IEC61000-3-2.
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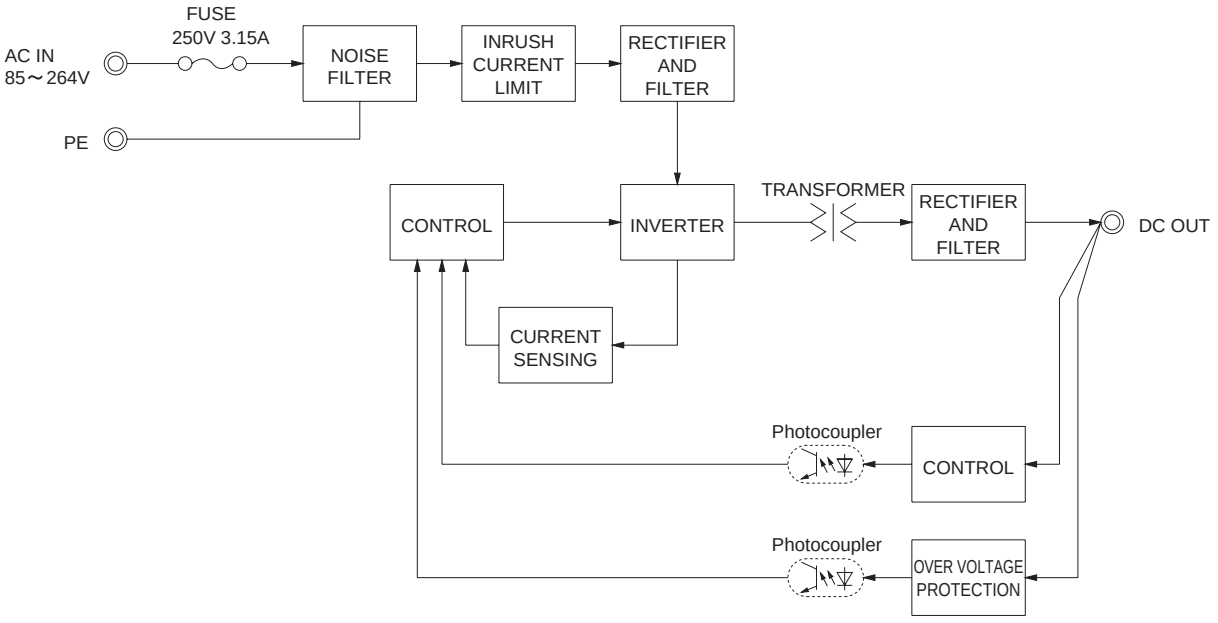
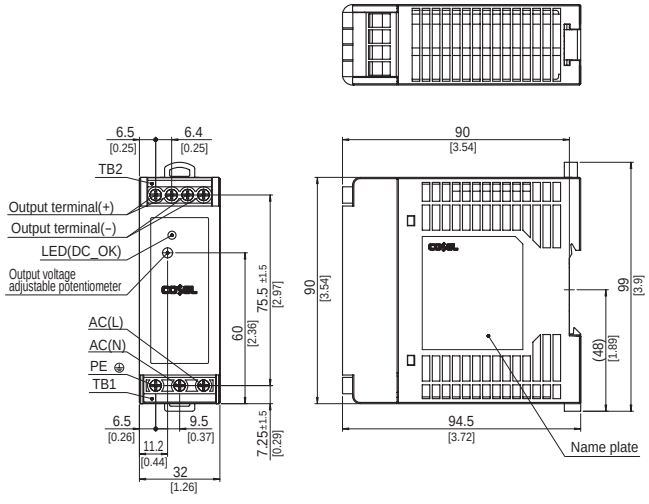
Block diagram



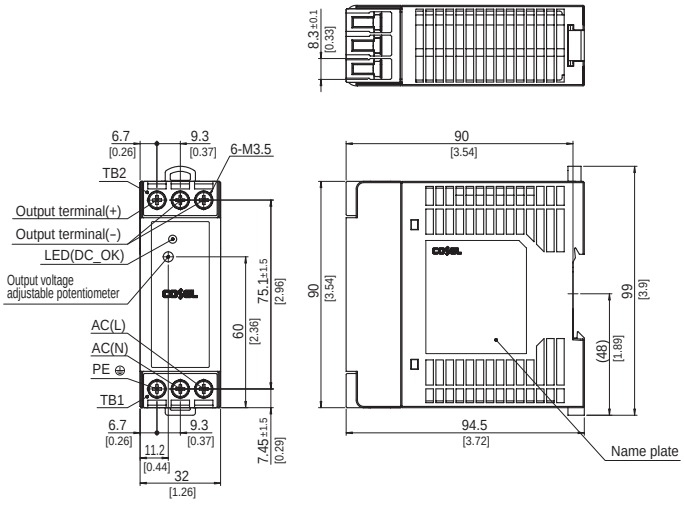
External view

<KHEA60F(Euro 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

<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

KH

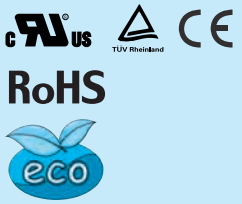
COSEL AC-DC Power Supplies DIN Rail type

KHEA/KHNA90F

Ordering information

KH□ A 90 F -□□ -□

① ② ③ ④ ⑤ ⑧



Recommended EMI/EMC Filter
NAC-04-472-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.

①Series name
KHE : Euro style I/O terminals
KHN : Barrier blocks style I/O terminals
②Single output
③Output wattage
④Universal input
⑤Output voltage
⑥Option
C : with Coating
E : NEC Class2 (24V)

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

SPECIFICATIONS

	MODEL		KHEA/KHNA90F-12	KHEA/KHNA90F-24
INPUT	VOLTAGE[V]		AC85 - 264 1φ (Output derating is required) ✻10	
	CURRENT[A]	ACIN 115V	0.85typ	0.95typ
		ACIN 230V	0.45typ	0.55typ
	FREQUENCY[Hz]		50 / 60 (47 - 63)	
	EFFICIENCY[%]	ACIN 115V	87.0typ	89.0typ (88.0typ for option -E)
		ACIN 230V	88.0typ	91.0typ (89.5typ for option -E)
	POWER FACTOR (Io=100%)	ACIN 115V	0.98typ	
		ACIN 230V	0.86typ	
	INRUSH CURRENT[A] ✻1	ACIN 115V	18typ (Io=100%) (at cold start Ta=25℃)	
		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)	
OUTPUT	VOLTAGE[V]		12	24
	CURRENT[A]		6.8	3.8
	PEAK CURRENT[A]		-	-
	LINE REGULATION[mV] ✻2		48max	96max
	LOAD REGULATION[mV] ✻2		100max	150max
	RIPPLE[mVp-p] ✻3	0 to +70℃	200max	200max
		-20 - 0℃	300max	300max
		Io=0 - 30%	300max ✻4	300max ✻4
	RIPPLE NOISE[mVp-p] ✻3	0 to +70℃	260max	260max
		-20 - 0℃	360max	360max
		Io=0 - 30%	360max ✻4	360max ✻4
	TEMPERATURE REGULATION[mV]	0 to +70℃	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 RANGE[V]		10.80 to 13.20	22.50 to 28.50 (Fixed for option -E)
	OUTPUT VOLTAGE SETTING[V]		12.00 to 12.48	24.00 to 24.96 (24.00 to 24.50 for option -E)
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating (101% for option -E), recovers automatically ✻9	
	OVERVOLTAGE PROTECTION[V]		13.80 to 16.80	30.00 to 36.00 (26.40 to 33.60 for option -E)
	DC_OK LAMP		LED (Green)	
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)	
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)	
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-20 to +70℃ (Required to Derating), 20 - 90%RH (Non condensing)	
	STORAGE TEMP.,HUMID.AND ALTITUDE		-30 to +85℃, 20 - 90%RH (Non condensing)	
	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, X, Y and Z axis (Packing state)	
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)		UL60950-1, C-UL(CSA60950-1), EN60950-1, EN50178, UL508, NEC Class2 (24V output only option -E), ANSI/ISA12.12.01 Compliies with DEN-AN	
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B	
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 (Class A) ✻6	
OTHERS	CASE SIZE ✻7		50×90×90mm (W×H×D) [1.97×3.54×3.54 inches]	
	WEIGHT		405g max	
	COOLING METHOD		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 excluded.
✻2 Please contact us about dynamic load and input response.
✻3 This is the value that measured on measuring board with capacitor of 22μF and 0.1μF 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℃ 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℃, 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.
✻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.
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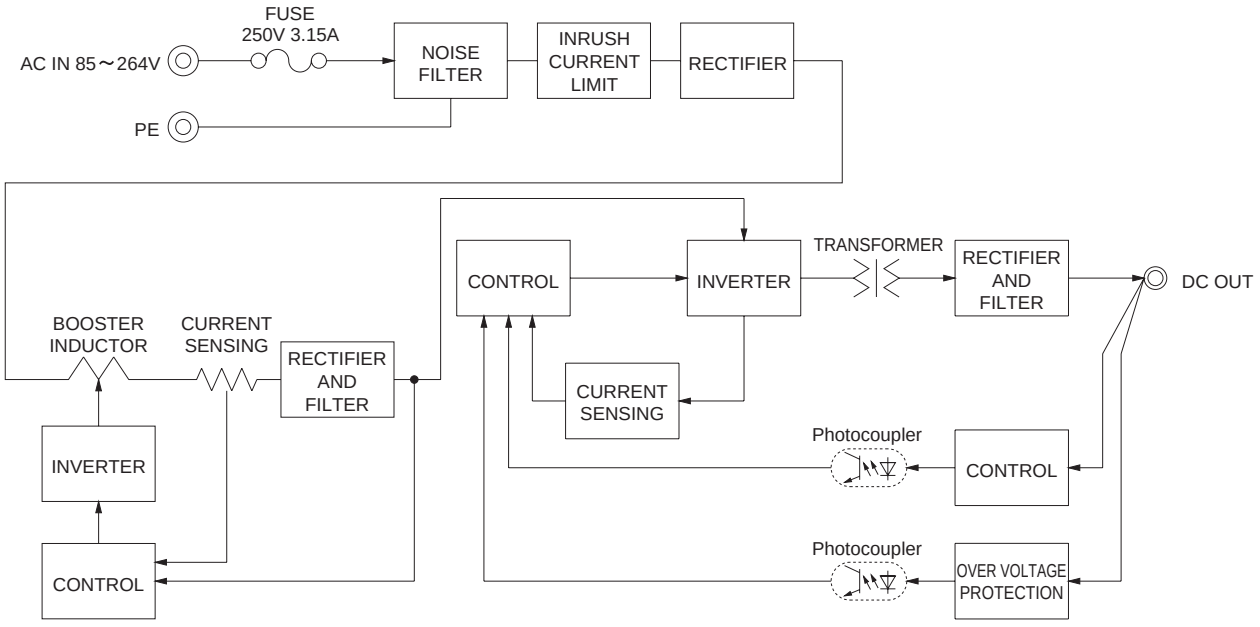
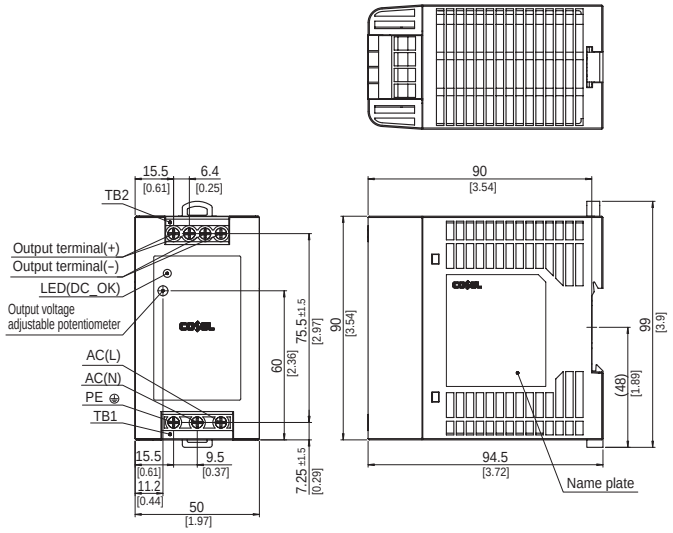
Block diagram



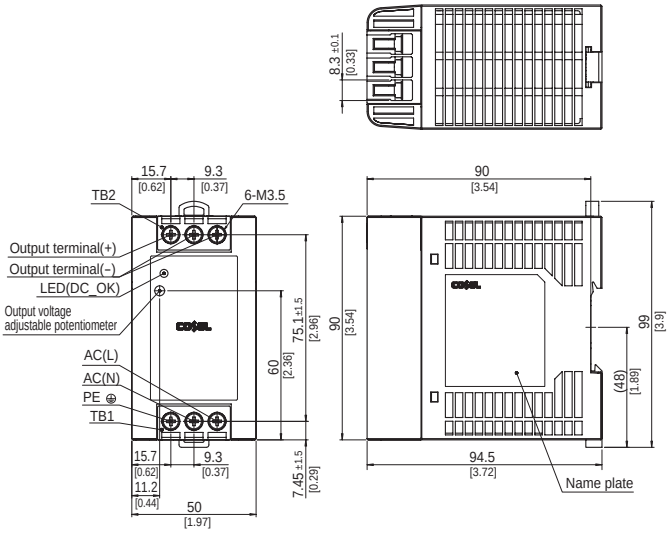
External view

<KHEA90F(Euro 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

<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

KH

COSEL AC-DC Power Supplies DIN Rail type

KHEA series

Ordering information

KHE ① A ② □□□ ③ F ④ -24 ⑤ -□ ⑥

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.

①Series name
②Single output
③Output wattage
④Universal 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)

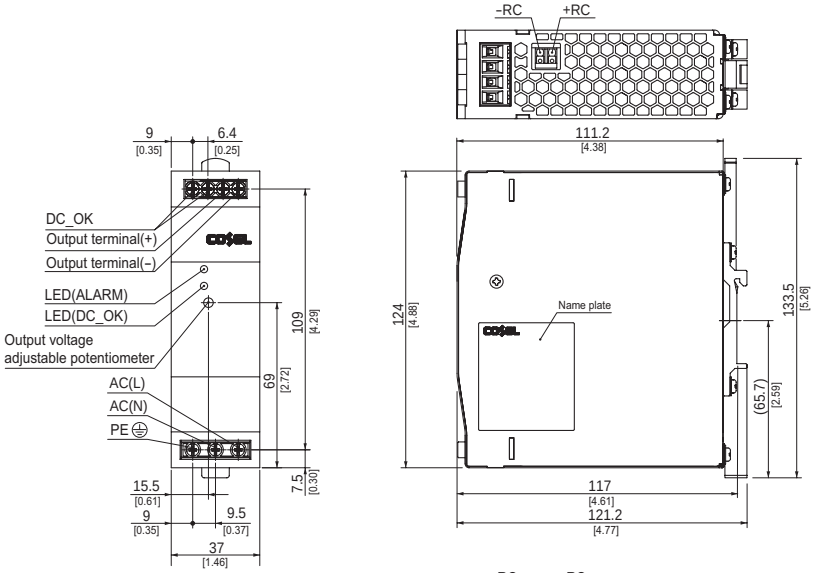
SPECIFICATIONS

	MODEL		KHEA120F-24	KHEA240F-24	KHEA480F-24
INPUT	VOLTAGE[V]		AC85 - 264 1φ or DC120 - 370		AC85 - 264 1φ ✻11 ✻12
	CURRENT[A]	ACIN 115V	1.2typ	2.3typ	4.6typ
		ACIN 230V	0.6typ	1.2typ	2.3typ
	FREQUENCY[Hz]		50 / 60 (47 - 63) or DC		50 / 60 (47 - 63)
	EFFICIENCY[%]	ACIN 115V	90typ	92typ	92typ
		ACIN 230V	92typ	94typ	94typ
	POWER FACTOR	ACIN 115V	0.98typ	0.98typ	0.98typ
		ACIN 230V	0.93typ	0.93typ	0.93typ
	INRUSH CURRENT[A] ✻1	ACIN 115V	15typ (at cold start Ta=25℃)	20typ (more than 3 sec. to re-start)	
		ACIN 230V	30typ (at cold start Ta=25℃)	40typ (more than 3 sec. to re-start)	
	LEAKAGE CURRENT[mA]		0.45 / 0.75max		0.75 / 1.5max
			(ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)		
OUTPUT	VOLTAGE[V]		24	24	24
	CURRENT[A]		5	10	20
	PEAK CURRENT[A] ✻2		7.5	15	30
	LINE REGULATION[mV] ✻3		96max		96max (Io=30-100%) ✻10
	LOAD REGULATION[mV] ✻3		150max ✻4		150max (Io=30-100%) ✻10
	RIPPLE[mVp-p] ✻5	0 to +70℃	120max		120max
		-25 - 0℃	240max		240max
		Io=0 - 30%	240max ✻4		500max
	RIPPLE NOISE[mVp-p] ✻5	0 to +70℃	150max		150max
		-25 - 0℃	300max		300max
		Io=0 - 30%	300max ✻4		600max
	TEMPERATURE REGULATION[mV]	0 to +70℃	240max ✻4		240max
		-25 to +70℃	360max ✻4		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 SETTING[V]		24.0±1.0%		24.0±1.0%
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 101% of peak current and recovers automatically		
	OVERVOLTAGE PROTECTION[V]		30.0 to 36.0		
	DC_OK LAMP		LED (Green)		
	ALARM LAMP		LED (Red)		
	DC_OK CONTACT		Relay contact 30VDC 1A max, 30VAC 0.5A max (resistive load)		
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-RC, DC_OK		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-25 to +70℃ (Required to Derating), 20 - 90%RH (Non condensing)		
	STORAGE TEMP.,HUMID.AND ALTITUDE		-40 to +85℃, 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/s² (20G), 11ms, once each X, Y and Z axis (Packing state)		
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)		UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178, UL508, ANSI / ISA12.12.01 Complies with DEN-AN		
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B		
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 (Class A) ✻7		
OTHERS	CASE SIZE ✻8		37×124×117mm (W×H×D) [1.46×4.88×4.61 inches]	50×124×117mm (W×H×D) [1.97×4.88×4.61 inches]	70×124×117mm (W×H×D) [2.76×4.88×4.61 inches]
	WEIGHT		580g max	900g max	1,200g max
	COOLING METHOD		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 excluded.
✻2 Refer to 3, instruction manual.
✻3 Please contact us about dynamic load and input response.
✻4 The output voltage is below 23.5V, the value is equal to three times of the specification.
✻5 This is the value that measured on measuring board with capacitor of 22μF and 0.1μF 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.
✻6 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃, 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.
✻9 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.
✻10 Burst operation at 30% load or less.
✻11 Output derating is required. Please refer to the instruction manual 5.2.
✻12 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.

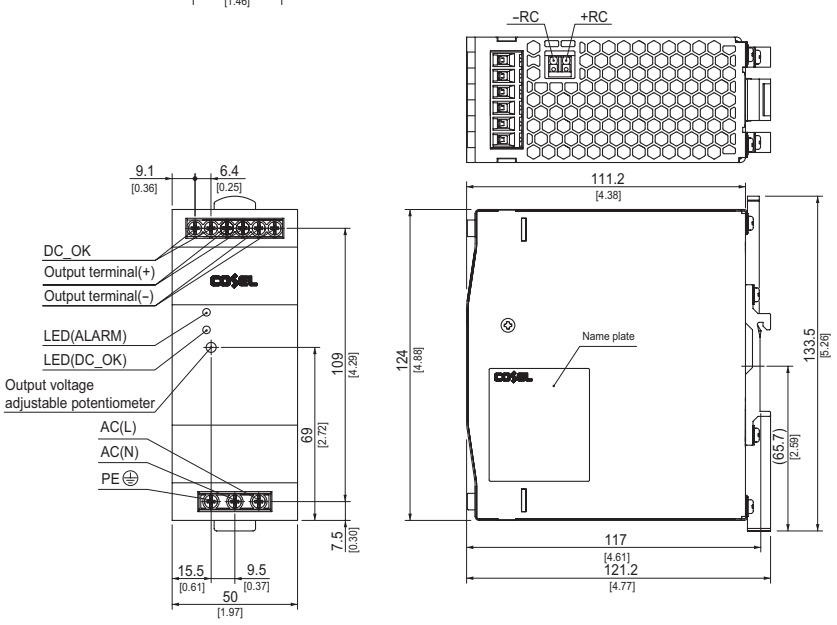
External view

■KHEA120F



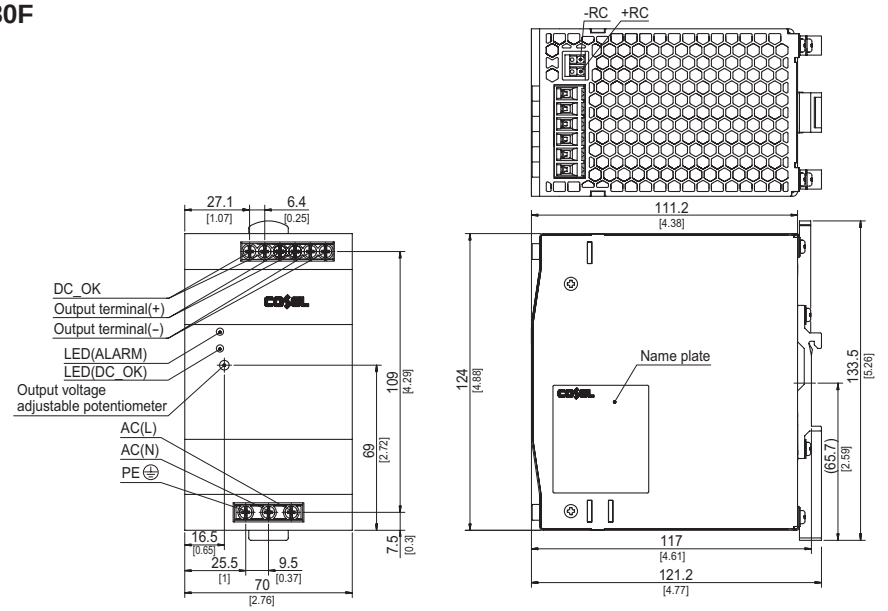
※ Tolerance : ±1 [±0.04]
※ Weight : 580g max
※ PCB Material/thickness : FR-4 / 1.6mm [0.06]
※ Chassis material : Aluminum
※ Case material : Stainless steel
※ DIN rail attachment material : Aluminum, Nylon
※ Dimensions in mm, [ ] = inches
※ Screw tightening torque : 1N・m max

■KHEA240F



※ Tolerance : ±1 [±0.04]
※ Weight : 900g max
※ PCB Material/thickness : FR-4 / 1.6mm [0.06]
※ Chassis material : Aluminum
※ Case material : Stainless steel
※ DIN rail attachment material : Aluminum, Nylon
※ Dimensions in mm, [ ] = inches
※ Screw tightening torque : 1N・m max

■KHEA480F



※ Tolerance : ±1 [±0.04]
※ Weight : 1,200g max
※ PCB Material/thickness : FR-4 / 1.6mm [0.06]
※ Chassis material : Aluminum
※ Case material : Stainless steel
※ DIN rail attachment material : Aluminum, Nylon
※ Dimensions in mm, [ ] = inches
※ Screw tightening torque : 1N・m max

COSEL AC-DC Power Supplies DIN Rail type

KHNA series

Ordering information

KHN ① A ② □□□ ③ F ④ -24 ⑤ -□ ⑥

Recommended EMI/EMC Filter
KHNA120F **NAC-04-472-D**
KHNA240F **NAC-06-472-D**
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.

①Series name
②Single output
③Output wattage
④Universal input
⑤Output voltage
⑥Option
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
INPUT	VOLTAGE[V]		AC85 - 264 1φ or DC120 - 370		AC85 - 264 1φ ✻11 ✻12
	CURRENT[A]	ACIN 115V	1.2typ	2.3typ	4.6typ
		ACIN 230V	0.6typ	1.2typ	2.3typ
	FREQUENCY[Hz]		50 / 60 (47 - 63) or DC		50 / 60 (47 - 63)
	EFFICIENCY[%]	ACIN 115V	90typ	92typ	92typ
		ACIN 230V	92typ	94typ	94typ
	POWER FACTOR	ACIN 115V	0.98typ	0.98typ	0.98typ
		ACIN 230V	0.93typ	0.93typ	0.93typ
	INRUSH CURRENT[A] ✻1	ACIN 115V	15typ (at cold start Ta=25℃)	20typ (more than 3 sec. to re-start)	
		ACIN 230V	30typ (at cold start Ta=25℃)	40typ (more than 3 sec. to re-start)	
	LEAKAGE CURRENT[mA]		0.45 / 0.75max		0.75 / 1.5max
			(ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)		
OUTPUT	VOLTAGE[V]		24	24	24
	CURRENT[A]		5	10	20
	PEAK CURRENT[A] ✻2		7.5	15	30
	LINE REGULATION[mV] ✻3		96max		96max (Io=30-100%) ✻10
	LOAD REGULATION[mV] ✻3		150max ✻4		150max (Io=30-100%) ✻10
	RIPPLE[mVp-p] ✻5	0 to +70℃	120max		120max
		-25 - 0℃	240max		240max
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	RIPPLE NOISE[mVp-p] ✻5	0 to +70℃	150max		150max
		-25 - 0℃	300max		300max
		Io=0 - 30%	300max ✻4		600max
	TEMPERATURE REGULATION[mV]	0 to +70℃	240max ✻4		240max
		-25 to +70℃	360max ✻4		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 SETTING[V]		24.0±1.0%		24.0±1.0%
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 101% of peak current and recovers automatically		
	OVERVOLTAGE PROTECTION[V]		30.0 to 36.0		
	DC_OK LAMP		LED (Green)		
	ALARM LAMP		LED (Red)		
	DC_OK CONTACT		–		
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	INPUT-PE		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-PE		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT-RC		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-25 to +70℃ (Required to Derating), 20 - 90%RH (Non condensing)		
	STORAGE TEMP.,HUMID.AND ALTITUDE		-40 to +85℃, 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/s² (20G), 11ms, once each X, Y and Z axis (Packing state)		
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)		UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178, UL508, ANSI / ISA12.12.01 Complies with DEN-AN		
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B, EN55011-B, EN55022-B		
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 (Class A) ✻7		
OTHERS	CASE SIZE ✻8		37×124×117mm (W×H×D) [1.46×4.88×4.61 inches]	50×124×117mm (W×H×D) [1.97×4.88×4.61 inches]	70×124×117mm (W×H×D) [2.76×4.88×4.61 inches]
	WEIGHT		580g max	900g max	1,200g max
	COOLING METHOD		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 excluded.
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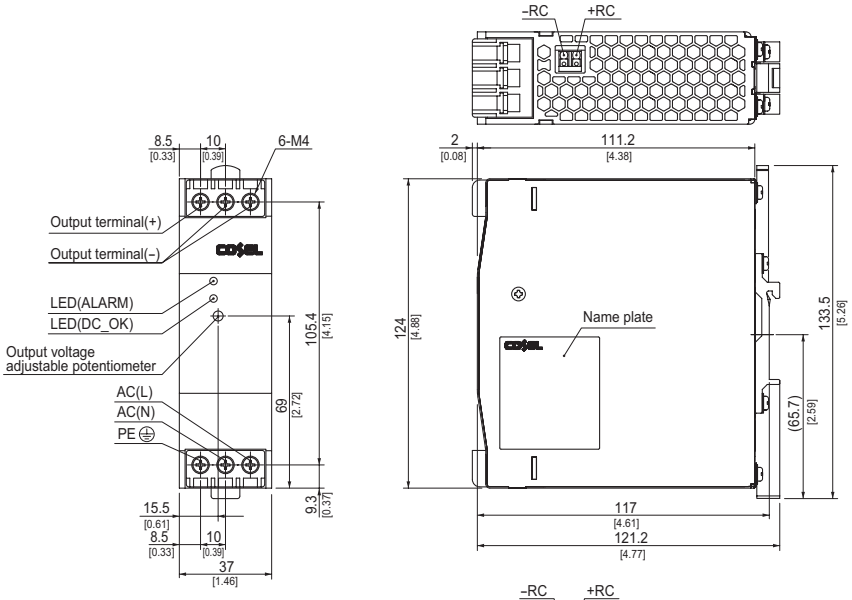
✻10 Burst operation at 30% load or less.
✻11 Output derating is required. Please refer to the instruction manual 5.2.
✻12 Please contact us about DC input voltage.
✻ To meet the specifications. Do not operate over-loaded condition.
✻ A sound may occur from power supply at light or peak loading.

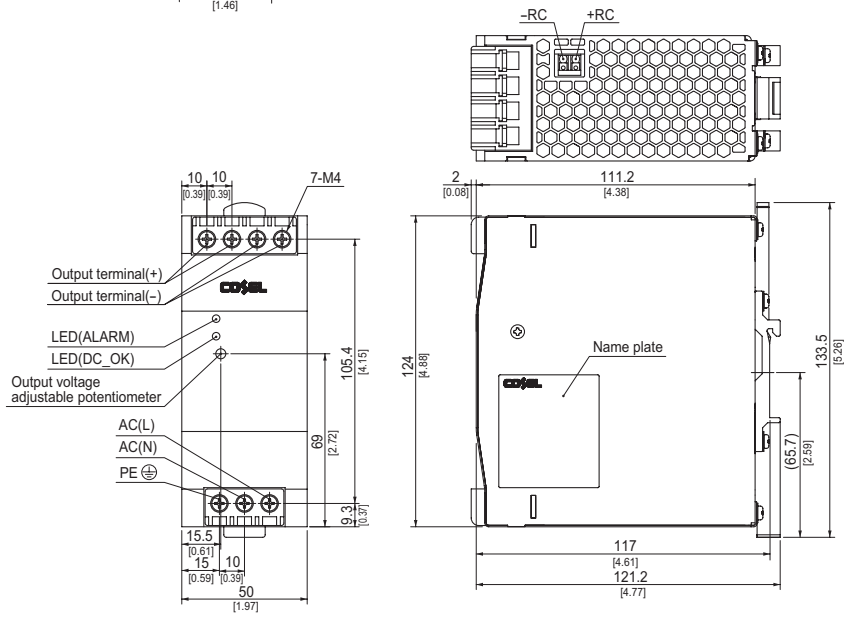
External view

■KHNA120F



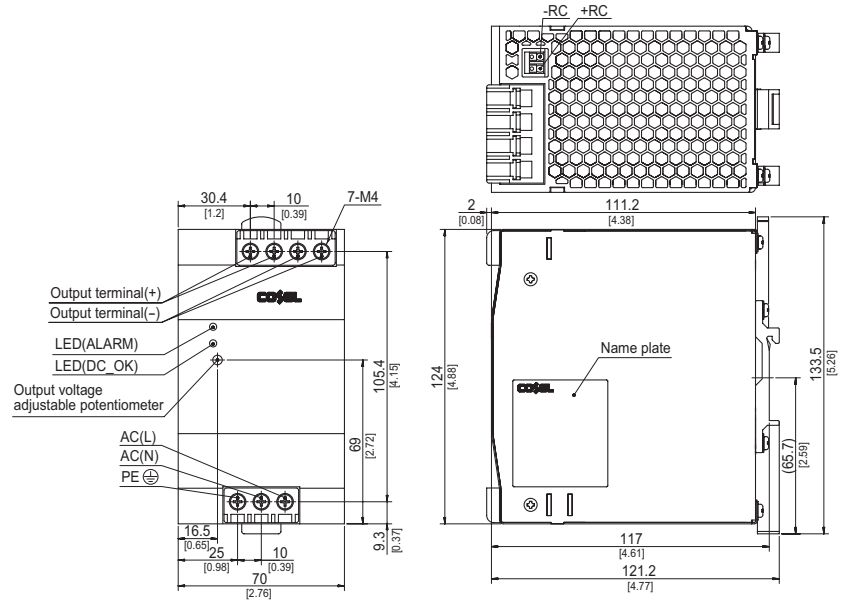
※ Tolerance : ±1 [±0.04]
※ Weight : 580g max
※ PCB Material/thickness : FR-4 / 1.6mm [0.06]
※ Chassis material : Aluminum
※ Case material : Stainless steel
※ DIN rail attachment material : Aluminum, Nylon
※ Dimensions in mm, [ ] = inches
※ Screw tightening torque : 1.6N・m max

■KHNA240F



※ Tolerance : ±1 [±0.04]
※ Weight : 900g max
※ PCB Material/thickness : FR-4 / 1.6mm [0.06]
※ Chassis material : Aluminum
※ Case material : Stainless steel
※ DIN rail attachment material : Aluminum, Nylon
※ Dimensions in mm, [ ] = inches
※ Screw tightening torque : 1.6N・m max

■KHNA480F



※ Tolerance : ±1 [±0.04]
※ Weight : 1,200g max
※ PCB Material/thickness : FR-4 / 1.6mm [0.06]
※ Chassis material : Aluminum
※ Case material : Stainless steel
※ DIN rail attachment material : Aluminum, Nylon
※ Dimensions in mm, [ ] = inches
※ Screw tightening torque : 1.6N・m max

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Cosel:

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