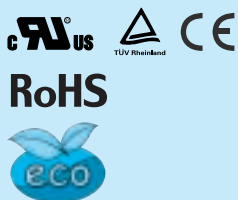


# KHEA series PRELIMINARY

**KHE A 240 F -24**

① ② ③ ④ ⑤



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage

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 1 φ or DC120 - 370			
	FREQUENCY[Hz]	50 / 60 (47 - 63) or DC			
	CURRENT[A]	ACIN 115V	1.2typ	2.3typ	4.6typ
		ACIN 230V	0.6typ	1.2typ	2.3typ
	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]	ACIN 115V	15typ (at cold start)	20typ (more than 3 sec. to re-start)	
		ACIN 230V	30typ (at cold start)	40typ (more than 3 sec. to re-start)	
LEAKAGE CURRENT[mA]	0.45/0.75max (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]	*3 7.5	15	30	
	LINE REGULATION[mV]	96max			
	LOAD REGULATION[mV]	150max			
	RIPPLE[mVp-p]	0 to +70°C *1	120max		
		-25 - 0°C *1	240max		
	RIPPLE NOISE[mVp-p]	0 to +70°C *1	150max		
		-25 - 0°C *1	300max		
	TEMPERATURE REGULATION[mV]	0 to +70°C	240max		
		-25 to +70°C	360max		
	DRIFT[mV]	*2 96max			
	START-UP TIME[ms]	750max (ACIN 115V, Io=100%)			
	HOLD-UP TIME[ms]	20typ (ACIN 115V, Io=100%)			
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	22.5 to 28.5				
OUTPUT VOLTAGE SETTING[V]	24.00 to 24.96				
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)			
	OVERLOAD 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 (20±15°C)			
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)			
	OUTPUT-FG	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)			
	OUTPUT-RC, DC_OK	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)			
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE	-25 to +70°C (Required to Derating), 20 - 95%RH (Non condensing), 3,000m (10,000 feet) max			
	STORAGE TEMP., HUMID. AND ALTITUDE	-40 to +85°C, 20 - 95%RH (Non condensing)			
	VIBRATION	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 NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178			
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B			
	CE MARKING	Low Voltage Directive			
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2			
OTHERS	CASE SIZE *4	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]	75×124×117mm (W×H×D) [2.95×4.88×4.61 inches]	
	WEIGHT	700g max	900g max	1,100g max	
	COOLING METHOD	Convection			

\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM101).

Ripple and ripple noise is measured on measuring board with capacitor of 22μF within 150mm from the output terminal.

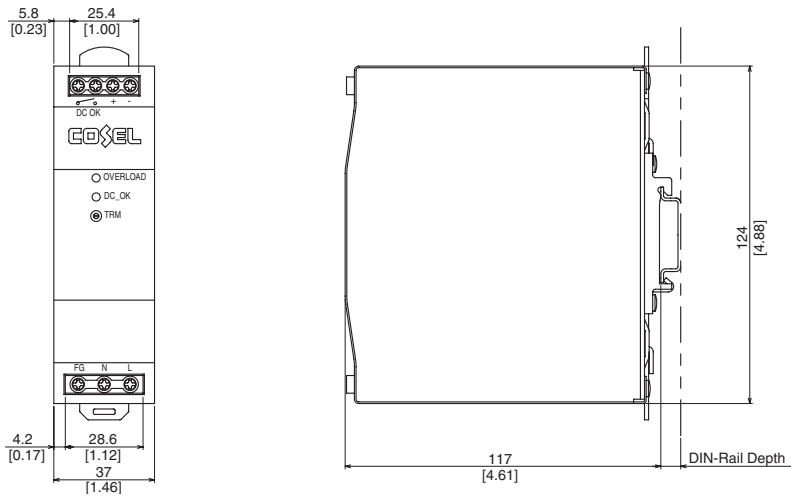
\*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.

\*3 Peak current for 5sec. And Duty 35% max. Refer to the manual.

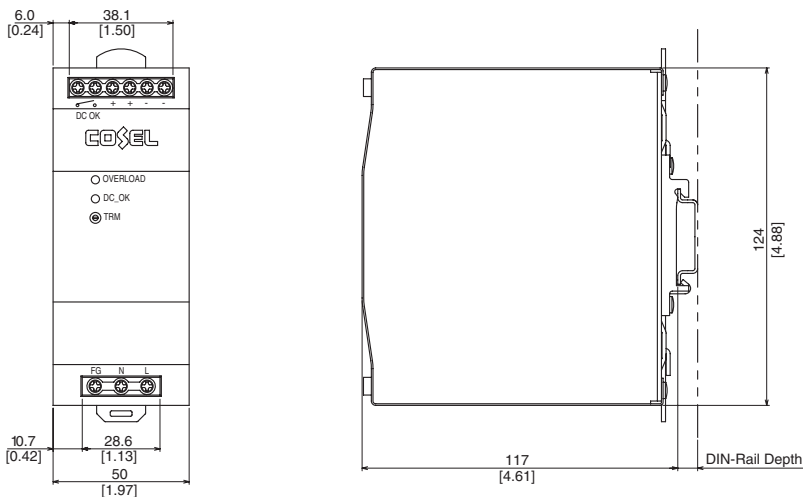
\*4 Case size contains neither the umbro.

## External view

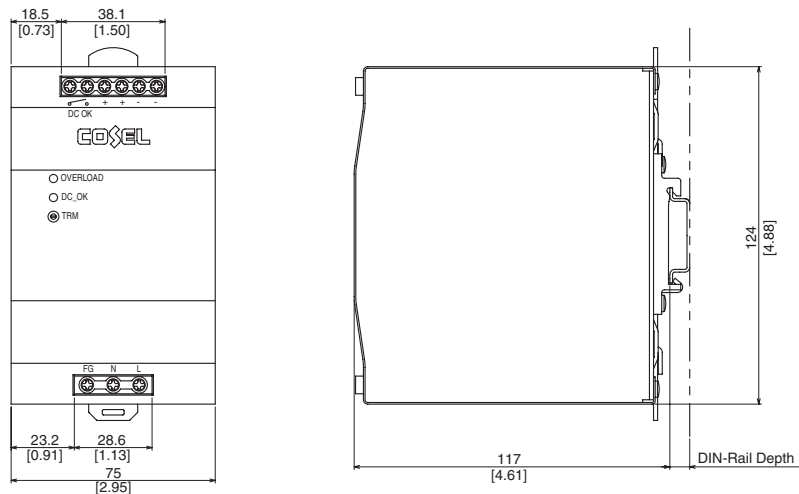
### ■KHEA120



### ■KHEA240



### ■KHEA480

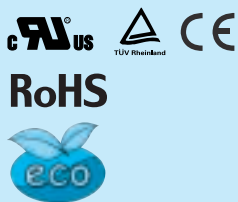


※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]  
 ※ Dimensions in mm, [ ]=inches

# KHNA series PRELIMINARY

**KHN A 240 F -24**

① ② ③ ④ ⑤



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage

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 1 φ or DC120 - 370			
	FREQUENCY[Hz]	50 / 60 (47 - 63) or DC			
	CURRENT[A]	ACIN 115V	1.2typ	2.3typ	4.6typ
		ACIN 230V	0.6typ	1.2typ	2.3typ
	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]	ACIN 115V	15typ (at cold start)	20typ (more than 3 sec. to re-start)		
	ACIN 230V	30typ (at cold start)	40typ (more than 3 sec. to re-start)		
LEAKAGE CURRENT[ma]	0.45/0.75max (ACIN 100V / 240V 60Hz, I <sub>o</sub> =100%, According to IEC60950-1 and DEN-AN)				
OUTPUT	VOLTAGE[V]	24	24	24	
	CURRENT[A]	5	10	20	
	PEAK CURRENT[A]	*3 7.5	15	30	
	LINE REGULATION[mV]	96max			
	LOAD REGULATION[mV]	150max			
	RIPPLE[mVp-p]	0 to +70°C *1	120max		
		-25 - 0°C *1	240max		
	RIPPLE NOISE[mVp-p]	0 to +70°C *1	150max		
		-25 - 0°C *1	300max		
	TEMPERATURE REGULATION[mV]	0 to +70°C	240max		
		-25 to +70°C	360max		
	DRIFT[mV]	*2	96max		
	START-UP TIME[ms]	750max (ACIN 115V, I <sub>o</sub> =100%)			
HOLD-UP TIME[ms]	20typ (ACIN 115V, I <sub>o</sub> =100%)				
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	22.5 to 28.5				
OUTPUT VOLTAGE SETTING[V]	24.00 to 24.96				
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)			
	OVERLOAD LAMP	LED (Red)			
DC_OK CONTACT	-				
ISOLATION	INPUT-OUTPUT	AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)			
	INPUT-FG	AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15°C)			
	OUTPUT-FG	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)			
	OUTPUT-RC	AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15°C)			
ENVIRONMENT	OPERATING TEMP., HUMID. AND ALTITUDE	-25 to +70°C (Required to Derating), 20 - 95%RH (Non condensing), 3,000m (10,000 feet) max			
	STORAGE TEMP., HUMID. AND ALTITUDE	-40 to +85°C, 20 - 95%RH (Non condensing)			
	VIBRATION	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 NOISE REGULATIONS	AGENCY APPROVALS (At only AC input)	UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178			
	CONDUCTED NOISE	Complies with FCC Part15 classB, VCCI-B, CISPR22-B, EN55011-B, EN55022-B			
	CE MARKING	Low Voltage Directive			
	HARMONIC ATTENUATOR	Complies with IEC61000-3-2			
OTHERS	CASE SIZE *4	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]	75×124×117mm (W×H×D) [2.95×4.88×4.61 inches]	
	WEIGHT	700g max	900g max	1,100g max	
	COOLING METHOD	Convection			

\*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM101).

Ripple and ripple noise is measured on measuring board with capacitor of 22μF within 150mm from the output terminal.

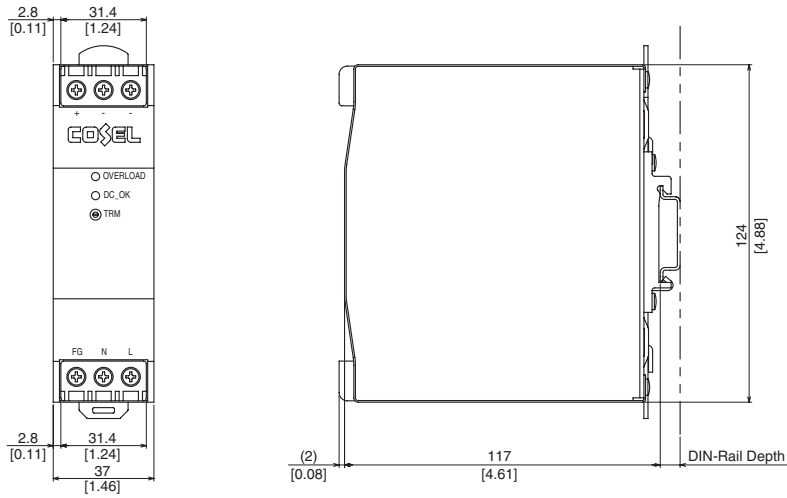
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\*3 Peak current for 5sec. And Duty 35% max. Refer to the manual.

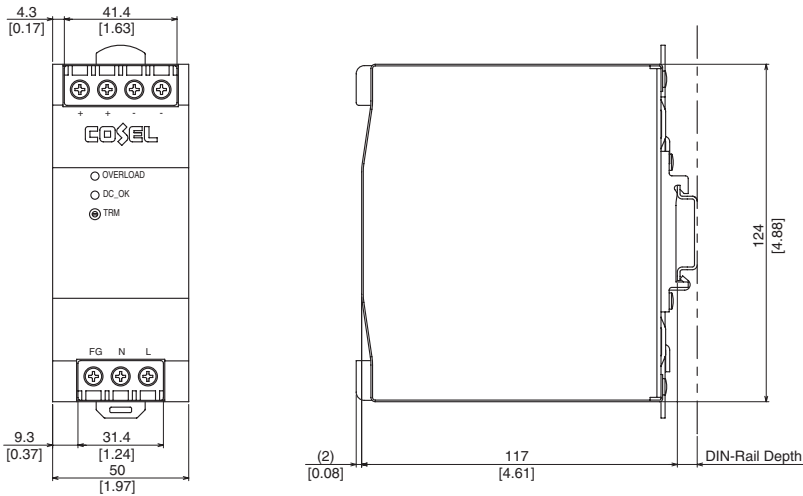
\*4 Case size contains neither the umbo.

## External view

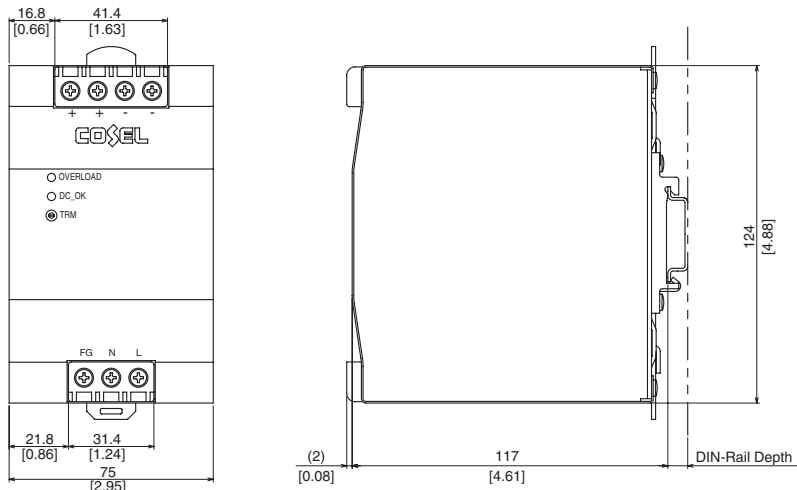
### ■ KHNA120



### ■ KHNA240



### ■ KHNA480



※ Tolerance :  $\pm 1$  [ $\pm 0.04$ ]  
 ※ Dimensions in mm, [ ]=inches