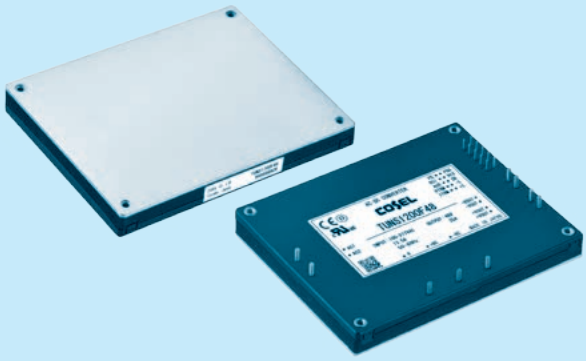
COSEL AC-DC Power Supplies Bus Converter·Power Module Type

TUNS1200F

Ordering information

TUN	S	1200	F	48	-□
①	②	③	④	⑤	⑥



①Series name
②Single output
③Output wattage
④Universal Input
⑤Output voltage
⑥Optional
T : with Mounting hole (φ3.4 thru)
Y1: Outputvoltage adjustment range ±20% (Only 48V)

*Avoid short circuit between +BC/R and -BC. It may cause the failure of inside components.
*Keep VTRM open, if output voltage adjustment is not necessary.
*Keep ITRM open, if output current adjustment is not necessary.
*If remote sensing is not necessary, connect between +Vout & +S and between -Vout & -S.

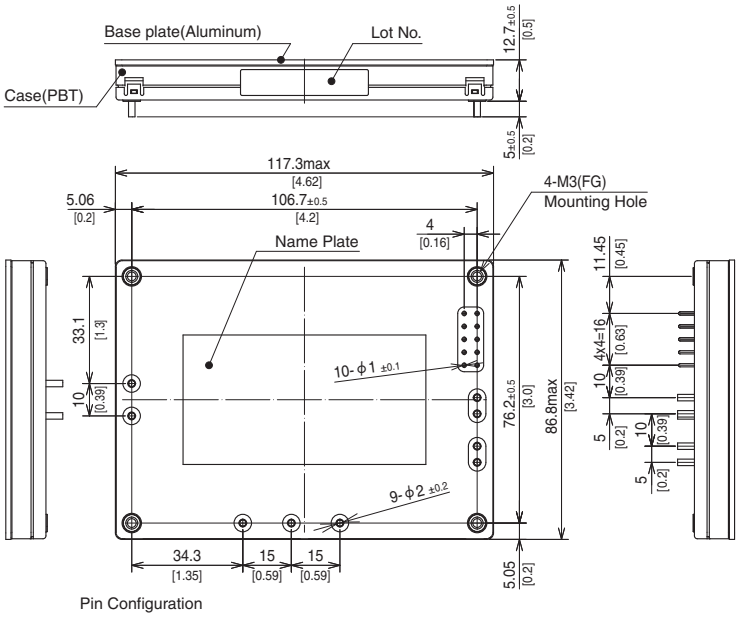
MODEL	TUNS1200F12	TUNS1200F28	TUNS1200F48
MAX OUTPUT WATTAGE[W]	1008	1204	1200
DC OUTPUT	12V 84A	28V 43A	48V 25A

SPECIFICATIONS

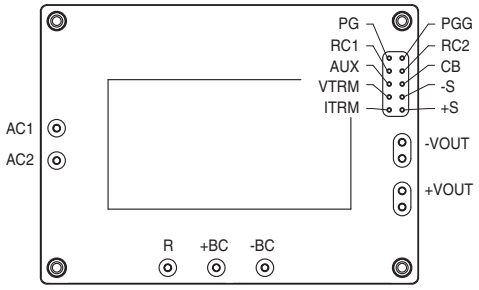
	MODEL		TUNS1200F12	TUNS1200F28	TUNS1200F48
INPUT	VOLTAGE[V]		AC85 - 305V 1φ		
	CURRENT[A]	ACIN 100V	12typ	14typ	14typ
		ACIN 200V	5.9typ	6.7typ	6.6typ
	FREQUENCY[Hz]		50/60 (47 - 63)		
	EFFICIENCY[%]	ACIN 100V	85typ	89typ	90typ
		ACIN 200V	87typ	91typ	92typ
	POWER FACTOR (Io=100%)	ACIN 100V	0.98typ		
		ACIN 200V	0.95typ		
	INRUSH CURRENT		Limited by external resistance		
	LEAKAGE CURRENT[mA]		0.5max (ACIN 240V 60Hz, Io=100%, According to IEC60601-1)		
OUTPUT	VOLTAGE[V]		12	28	48
	CURRENT[A]		84	43	25
	LINE REGULATION[mV]		24max	56max	96max
	LOAD REGULATION[mV]		24max	56max	96max
	RIPPLE[mVp-p]	0 to +100℃ *1	150max	180max	250max
		-40 to 0℃ *1	180max	200max	300max
	RIPPLE NOISE[mVp-p]	0 to +100℃ *1	180max	200max	300max
		-40 to 0℃ *1	200max	300max	450max
	TEMPERATURE REGULATION[mV]	0 to +80℃ *1	120max	280max	480max
		-40 to +100℃ *1	240max	560max	960max
	DRIFT[mV]	*2	40max	90max	180max
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		Fixed (TRM pin open), adjustable by external resistor or external signal		
			9.60 - 14.40	22.40 - 33.60	38.40 - 52.80 (-Y1 Option : 38.4 - 57.6)
	OUTPUT VOLTAGE SETTING[V]		11.91 - 12.29	27.56 - 28.44	47.24 - 48.76
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 101% of peak current and recovers automatically		
	OVERVOLTAGE PROTECTION[V]		15.00 - 16.80	35.00 - 39.20	55.20 - 60.00 (-Y1 Option : 60.0 - 67.2)
	REMOTE SENSING		Provided		
	REMOTE ON/OFF		Provided		
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃) 2MOOP		
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (20±15℃) 1MOOP		
	OUTPUT-FG		AC500V 1minute, Cutoff current = 100mA, DC500V 50MΩ min (20±15℃)		
	OUTPUT-RC, PG		AC100V 1minute, Cutoff current = 100mA, DC100V 10MΩ min (20±15℃)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-40 to +100℃ (On aluminum base plate), 20 - 95%RH (Non condensing) (Refer to DERATING CURVE)		
	STORAGE TEMP.,HUMID.AND ALTITUDE		-40 to +100℃, 20 - 95%RH (Non condensing), 9,000m (30,000 feet) max		
	VIBRATION		10 - 55Hz, 49.0m/s² (5G), 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT		196.1m/s² (20G), 11ms, once each along X, Y and Z axis		
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS		UL62368-1, EN62368-1, C-UL (equivalent to CAN/CSA-C22.2 No.62368-1), ANSI/AAMI ES60601-1, EN60601-1 3rd, C-UL (equivalent to CAN/CSA-C22.2 No.60601-1), Complies with IEC60601-1-2 4th		
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 (Class A) *3		
OTHERS	CASE SIZE/WEIGHT		117.3×12.7×86.8mm [4.62×0.5×3.42 inches] (W×H×D) / 280g max		
	COOLING METHOD		Conduction cooling (e.g. heat radiation from the aluminum base plate to the attached heat sink)		

*1 Refer to instruction manual for measuring method of electric characteristics.
*2 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.
*3 Please contact us about another class.

External view

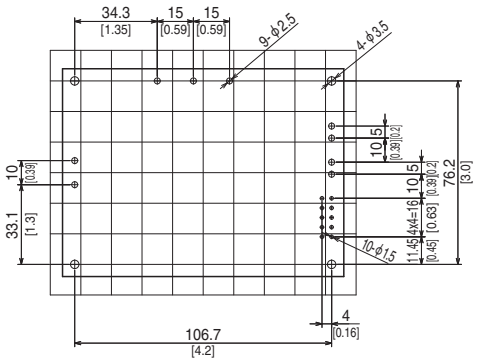


Pin Configuration



Bottom View

※Recommending size for processing PCB
(TOP VIEW)

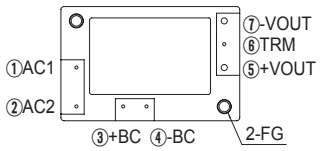


※ Dimensions in : mm / [inch]
※ Div. : 0.5inch

※ Tolerance : ±0.3 [±0.012]
※ Weight : 280g max
※ Dimensions in mm, [ ]=inches
※ Mounting hole screwing torque : 0.49N・m (5.0kgf・cm) max

Pin Configuration

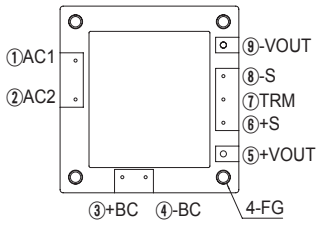
● TUNS50F



∗bottom view

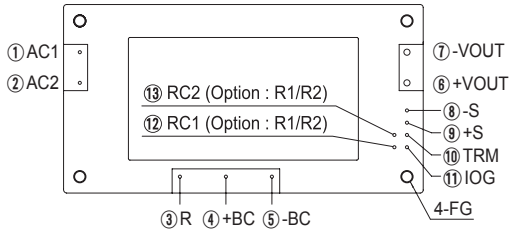
No.		Pin Connection	Function
TUNS50F	TUNS100F		
①	①	AC1	AC input
②	②	AC2	
③	③	+BC	+BC output
④	④	-BC	-BC output
⑤	⑤	+VOUT	+DC output
⑦	⑨	-VOUT	-DC output
–	⑧	-S	Remote sensing (-)
–	⑥	+S	Remote sensing (+)
⑥	⑦	TRM	Adjustment of output voltage
–	–	FG	Mounting hole (FG)

● TUNS100F



∗bottom view

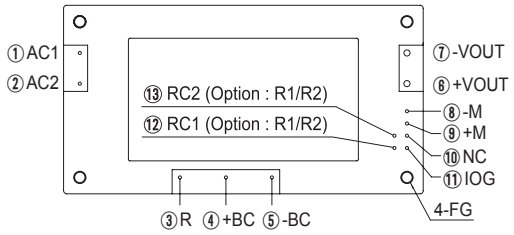
● TUNS300F/TUNS500F/TUNS700F



∗bottom view

No.	Pin Connection	Function
①	AC1	AC input
②	AC2	
③	R	External resistor for inrush current protection
④	+BC	+BC output
⑤	–BC	–BC output
⑥	+VOUT	+DC output
⑦	–VOUT	–DC output
⑧	–S	Remote sensing (–)
⑨	+S	Remote sensing (+)
⑩	TRM	Adjustment of output voltage
⑪	IOG	Inverter operation monitor
⑫	RC1	Remote ON/OFF (Option)
⑬	RC2	
—	FG	Mounting hole (FG)

● TUNS700F□□-P (OPTION)

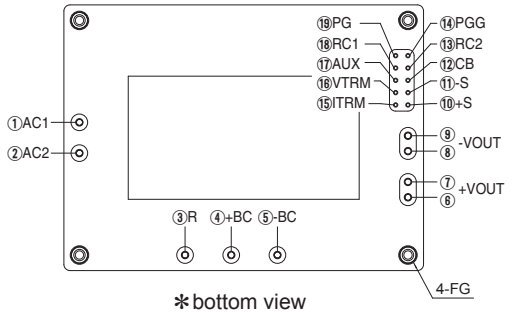


∗bottom view

No.	Pin Connection	Function
⑧	–M	Output voltage monitor terminal
⑨	+M	
⑩	NC	No connection

Other than the above are the same as standard products.

● TUNS1200F



∗bottom view

No.	Pin Connection	Function
①	AC1	AC input
②	AC2	
③	R	External resistor for inrush current protection
④	+BC	+BC output
⑤	-BC	-BC output
⑥⑦	+VOUT	+DC output
⑧⑨	-VOUT	-DC output
⑩	+S	Remote sensing (+)
⑪	-S	Remote sensing (-)
⑫	CB	Current balance
⑬	RC2	Remote ON/OFF ground
⑭	PGG	Power good output ground
⑮	ITRM	Adjustment of output current
⑯	VTRM	Adjustment of output voltage
⑰	AUX	Auxiliary output
⑱	RC1	Remote ON/OFF
⑲	PG	Power good output
—	FG	Mounting hole (FG)

Implementation • Mounting Method

Mounting method

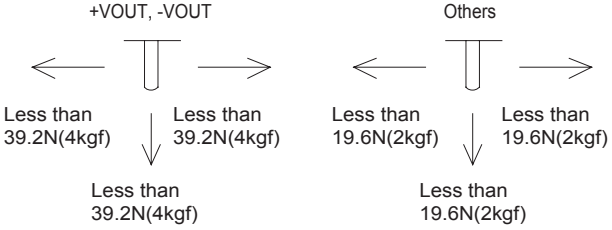
■Use with the conduction cooling (e.g. heat dissipation from the aluminum base plate to the attached heat sink).
■Use a heat sink that larger than the power supply and has a large thickness so that the alminum base plate can be cooled uniformly.
■The unit can be mounted in any direction. When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. Aluminum base plate temperature of each power supply should not exceed the temperature range shown in "derating".
■Avoid placing the AC input line pattern layout underneath the unit. It will increase the line conducted noise. Make sure to leave an ample distance between the line pattern layout and the unit. Also avoid placing the DC output line pattern underneath the unit because it may increase the output noise. Lay out the pattern away from the unit.
■Avoid placing the signal line pattern layout underneath the unit because the power supply might become unstable. Lay out the pattern away from the unit.
■High-frequency noise radiates directly from the unit to the atmosphere. Therefore, design the shield pattern on the printed circuit board and connect it to FG or -BC.The shield pattern prevents noise radiation.
■When a heat sink cannot be fixed on the base plate side, order the power module with "-T"option. A heat sink can be mounted by affixing a M3 tap on the heat sink. Please make sure a mounting hole will be connected to a grounding capacitor CY.

	Mounting hole
Standard	M3 tapped
Optional : -T	φ3.4 thru

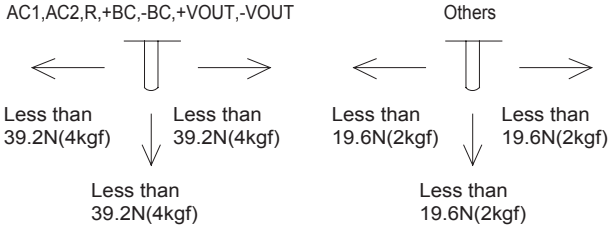
Stress onto the pins

■When too much stress is applied to the pins may damage internal connections. Avoid applying stress in excess of that shown in right figure.
■The pins are soldered onto the internal PCB.
Therefore, Do not bend or pull the leads with excessive force.
■Mounting hole diameter of PCB should be 3.5mm to reduce the stress to the pins.
■Fix the unit on PCB (fixing fittings) by screws to reduce the stress to the pins. Be sure to mount the unit first, then solder the unit.

● TUNS50F/100F/300F/500F/700F



● TUNS1200F



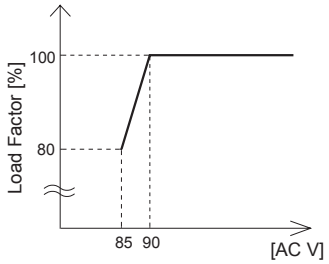
Soldering temperature

■Flow soldering : 260℃ for up to 15 seconds.
■Soldering iron (26W) : 450℃for up to 5 seconds.

Derating

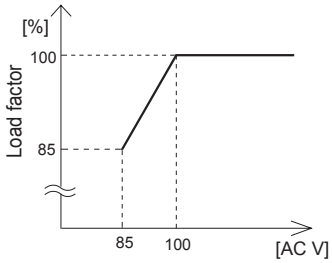
Input voltage derating curve

● TUNS50F/100F



● TUNS700F/1200F

✻TUNS1200F12 has no input voltage derating.



● TUNS300F/500F

✻TUNS300F/500F has no input voltage derating.

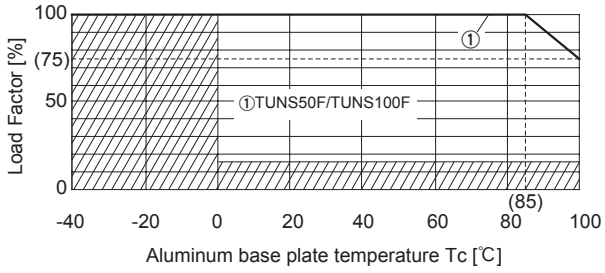
Derating

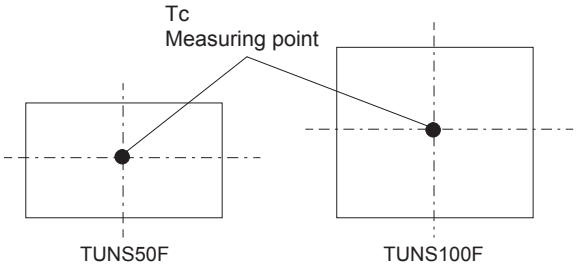
Output voltage derating curve

■Use the power modules with conduction cooling (e.g. heat dissipation from the aluminum base plate to the attached heat sink). Below shows the derating curves with respect to the aluminum base plate temperature. Note that operation within the hatched areas will cause a significant level of ripple and ripple noise.

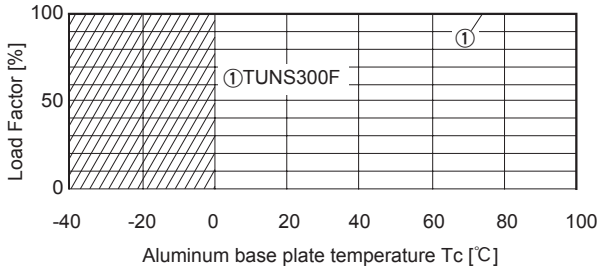
■Please measure the temperature on the aluminum base plate edge side when you cannot measure the temperature of the center part of the aluminum base plate.In this case, please take 5deg temperature margin from the derating characteristics shown in below. Please reduce the temperature fluctuation range as much as possible when the up and down of the temperature are frequently generated. Contact us for more information on cooling methods.

● TUNS50F/100F

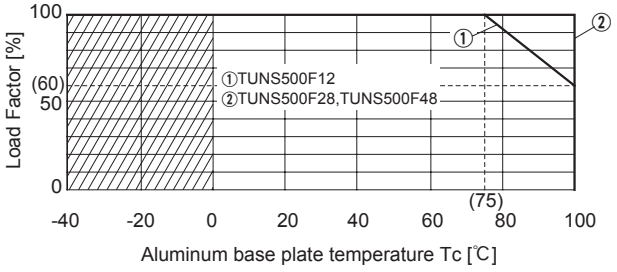




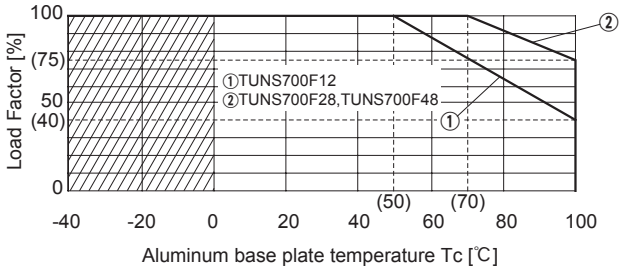
● TUNS300F

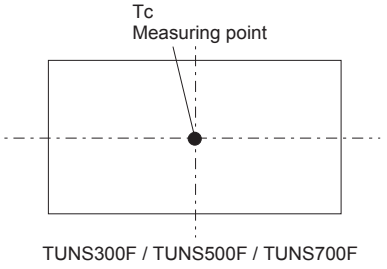


● TUNS500F



● TUNS700F





● TUNS1200F