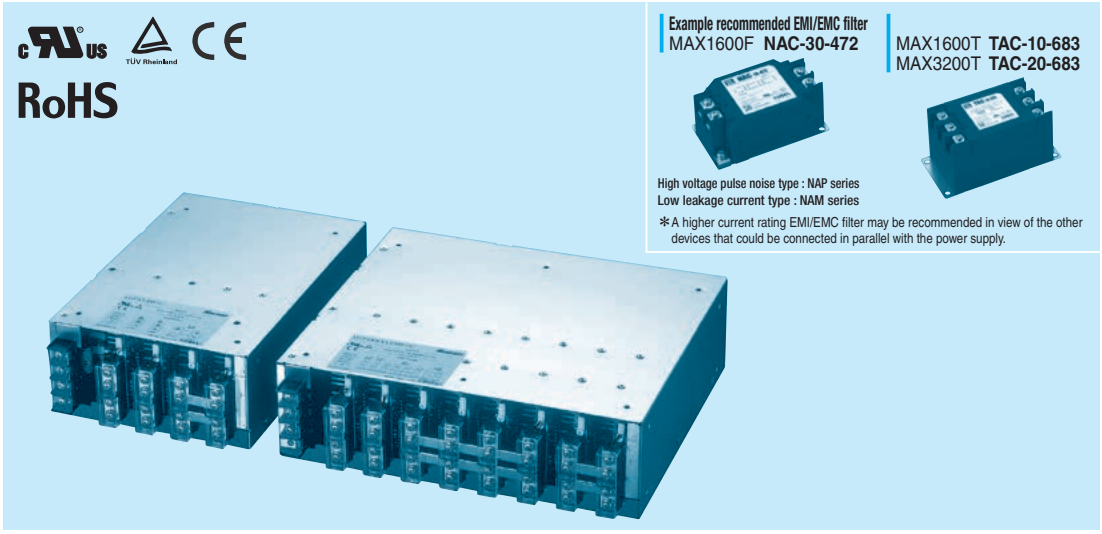
COSEL AC-DC Power Supplies Configurable Type

MAX series

Ordering information

M1□ - □□□□-□□-□□
① ⑧ ⑦ ⑧ ⑨ ⑩ ⑪

M3T - □□□□□□□□-□□-□□
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪



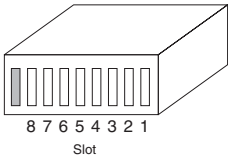
Example recommended EMI/EMC filter
MAX1600F **NAC-30-472**

MAX1600T **TAC-10-683**
MAX3200T **TAC-20-683**

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

＊A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

① Abbreviation type name of MAX series
M1F : MAX1600F
M1T : MAX1600T
M3T : MAX3200T
② Slot 8 Output module
③ Slot 7 Output module
④ Slot 6 Output module
⑤ Slot 5 Output module
⑥ Slot 4 Output module
⑦ Slot 3 Output module
⑧ Slot 2 Output module
⑨ Slot 1 Output module
⑩ Parallel code
⑪ Series and option code ＊7
Refer to instruction manual



＊The number of slot is different depending on the model.

＊Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

SPECIFICATIONS

	MODEL		MAX1600F (M1F)	MAX1600T (M1T)	MAX3200T (M3T)
INPUT	VOLTAGE[V]		AC85 - 264 1φ / DC120 - 350	AC170 - 264 3φ	AC170 - 264 3φ
	FREQUENCY[Hz]		47 - 63	47 - 63	47 - 63
	CURRENT[A]	AC100V ＊1	19typ	-	-
		AC200V ＊2	10typ	6.5typ	13typ
	POWER FACTOR	AC100V ＊1	0.99typ	-	-
		AC200V ＊2	0.95typ	0.95typ	0.95typ
	INRUSH CURRENT [A]	AC100V	20/40typ (Primary inrush current/Secondary inrush current)	-	-
		AC200V	40/40typ (Primary inrush current/Secondary inrush current)	40typ	40typ
	EFFICIENCY[%]	AC100V ＊1	78typ	-	-
		AC200V ＊2	82typ	85typ	85typ
	LEAKAGE CURRENT [mA] ＊3		1.5max	2max	2max
OUTPUT	NUMBER OF SLOT ＊4		4	4	8
	TOTAL MAXIMUM POWER[W]	AC90 - 150V ＊5	1500	-	-
		AC170 - 264V ＊5	1600	1600	3200
	START-UP TIME [ms]	AC100V ＊1	700typ	-	-
		AC200V ＊2	500typ	500typ	500typ
	HOLD-UP TIME[ms] ＊1		20typ	20typ	20typ
FUNCTION	ALARM		FAN ALARM	FAN AND OPEN PHASE ALARM	FAN AND OPEN PHASE ALARM
ISOLATION	INPUT-OUTPUT, RC		AC3,000V 1minute, Cutoff current=25mA, DC500V 50MΩ min (At Room Temperature) (Cutoff current = 100mA : MAX3200T)		
	INPUT-FG		AC2,000V 1minute, Cutoff current=25mA, DC500V 50MΩ min (At Room Temperature)		
	OUTPUT, RC-FG		AC500V 1minute, Cutoff current=100mA, DC500V 50MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP.,HUMID. AND ALTITUDE ＊5		-20 to +65℃, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max		
	STORAGE TEMP.,HUMID. AND ALTITUDE		-20 to +75℃, 20 - 90%RH (Non condensing) 9,000m (30,000feet) max		
	VIBRATION		19.6m/s², 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT		196.1m/s², 11ms, once each X, Y and Z axis		
SAFTY AND NOISE REGULATIONS	AGENCY APPROVALS		UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178, Complies with DEN-AN (At only AC input)		
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR22-B and EN55022-B	Complies with FCC-A, VCCI-A, CISPR22-A and EN55011-A	
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 ＊8	-	-
OTHERS	CASE SIZE ＊6		200×97×300mm (W×H×D) [7.87×3.82×11.81 inches]	200×97×300mm (W×H×D) [7.87×3.82×11.81 inches]	340×97×300mm (W×H×D) [13.39×3.82×11.81 inches]
	WEIGHT		7kg max	7kg max	14kg max
	COOLING METHOD		Forced cooling (built-in)		

＊1 It is a value when M1F-HFEC-00 (MAX1600F : 5V80A, 12V34A, 15V27A, 24V17A) outputs 1500W. The value changes by composing the output modules.
＊2 It is a value when M1F-HFEC-00 (MAX1600F : 5V80A, 12V34A, 15V27A, 24V17A) outputs 1600W or M1T-HFEC-00 (MAX1600T : 5V80A, 12V34A, 15V27A, 24V17A) outputs 1600W or M3T-HHFFEECC-00 (MAX3200T : 5V80A×2, 12V34A×2, 15V27A×2, 24V17A×2) outputs 3200W. The value changes by composing the output modules.
＊3 Complies with IEC60950 at AC240V 60Hz.
＊4 Each output module is insulated.
＊5 Refer to derating.
＊6 Case size contains neither the terminal blocks (cover) nor the screw.
＊7 Please contact us about safety approvals for the model with option.
＊8 Please contact us about class C.

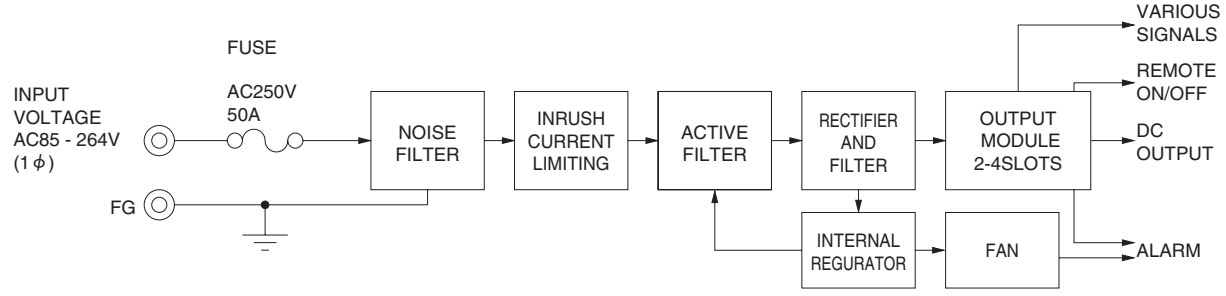
Output module specifications

ITEM \ CODE		A	B	C	D	E	F	G	H	I	O
Number of slots used		1	1	1	1	1	1	1	1	1	1
VOLTAGE[V]		2	3.3	5	7.5	12	15	18	24	28	BLANK PANEL
CURRENT[A]		80	80	80	54	34	27	22	17	14.5	
LINE REGURATION[mV]max		20	20	20	30	48	60	72	96	112	
LOAD REGURATION[mV]max		40	40	40	60	100	120	150	150	180	
RIPPLE [mV]max	0 to +50℃ *1	80	80	80	120	120	120	120	120	120	
	-20 to 0℃ *1	140	140	140	160	160	160	160	160	160	
RIPPLE NOISE [mV]max	0 to +50℃ *1	120	120	120	150	150	150	150	150	150	
	-20 to 0℃ *1	160	160	160	180	180	180	180	180	180	
TEMPRATURE COEFFICIENT[mV]max	0 to +50℃	40	40	50	75	120	150	180	240	280	
	-10 to +50℃	60	60	75	120	180	225	270	360	420	
DRIFT[mV]max *2		12	12	20	30	48	60	72	96	112	
OUTPUT VOLTAGE SETTING[V]		2.00 - 2.06	3.30 - 3.40	5.00 - 5.15	7.50 - 7.80	12.00 - 12.48	15.00 - 15.60	18.00 - 18.72	24.00 - 24.96	28.00 - 29.12	
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		1.98 - 2.20	2.64 - 3.63	4.00 - 5.50	6.00 - 8.25	9.60 - 13.20	12.00 - 16.50	14.40 - 19.80	19.20 - 26.40	22.40 - 30.80	
OVERCURRENT PROTECTION		Works over 105% of rated current automatic recovery									
OVERVOLTAGE PROTECTION[V]		4.00 - 5.50	4.00 - 5.50	5.75 - 7.00	8.63 - 10.50	13.80 - 16.80	17.25 - 21.00	20.70 - 25.20	27.60 - 33.60	32.20 - 39.20	
OUTPUT CURRENT IN PARALLEL[A] *3	TWO MODULES IN PARALLEL	144	144	144	97	61	49	40	31	26	-
	THREE MODULES IN PARALLEL	216	216	216	146	92	73	60	46	40	-
	FOUR MODULES IN PARALLEL	300	300	300	195	125	100	80	63	54	-
	FIVE MODULES IN PARALLEL	360	360	360	243	153	122	100	77	66	-
	SIX MODULES IN PARALLEL	444	444	444	292	196	149	120	92	80	-
	SEVEN MODULES IN PARALLEL	516	516	516	341	217	173	140	107	94	-
	EIGHT MODULES IN PARALLEL	600	600	600	390	250	200	160	127	108	-

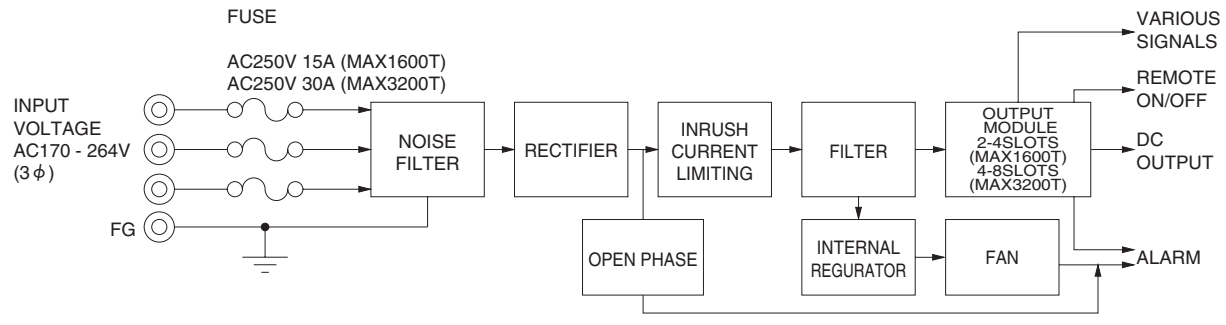
*1 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN : RM101).
Ripple and Ripple Noise is measured by using measuring board with capacitor of 470 μF between 20mm to 100mm from the output terminal.
*2 Drift is change in DC output for an eight hour period after a half-hour warm-up at 25℃, with the input voltage held constant at the rated input/output.
*3 Modulars in parallel are built to order and are not possible for the user to assemble them.

Block diagram

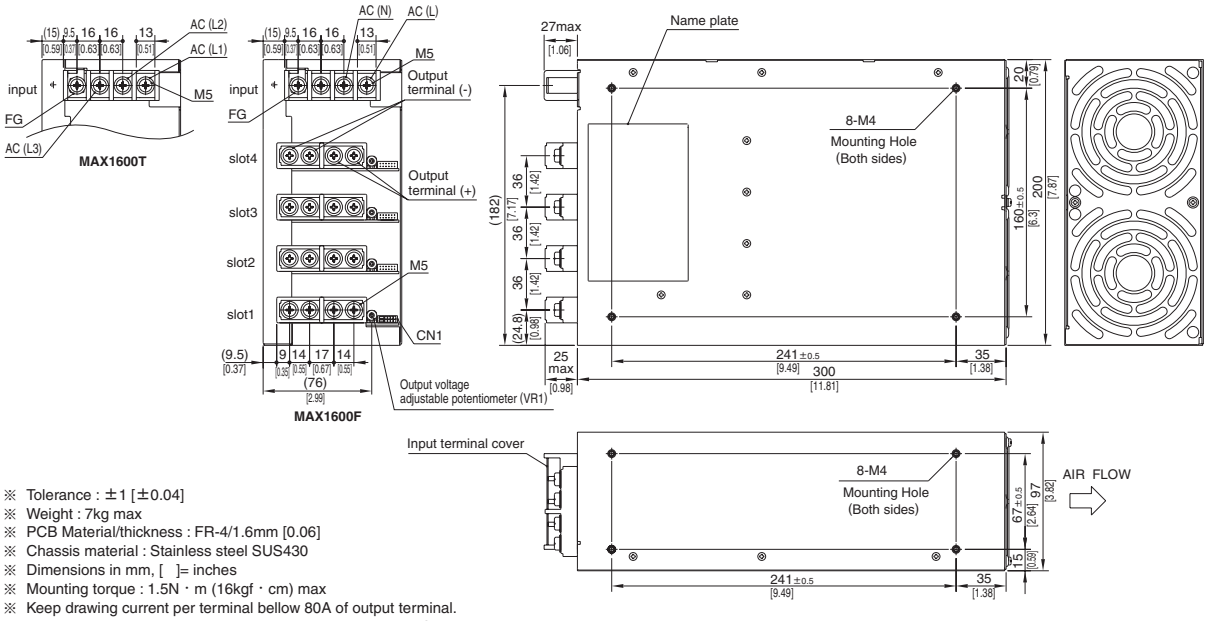
●MAX1600F



●MAX1600T / MAX3200T

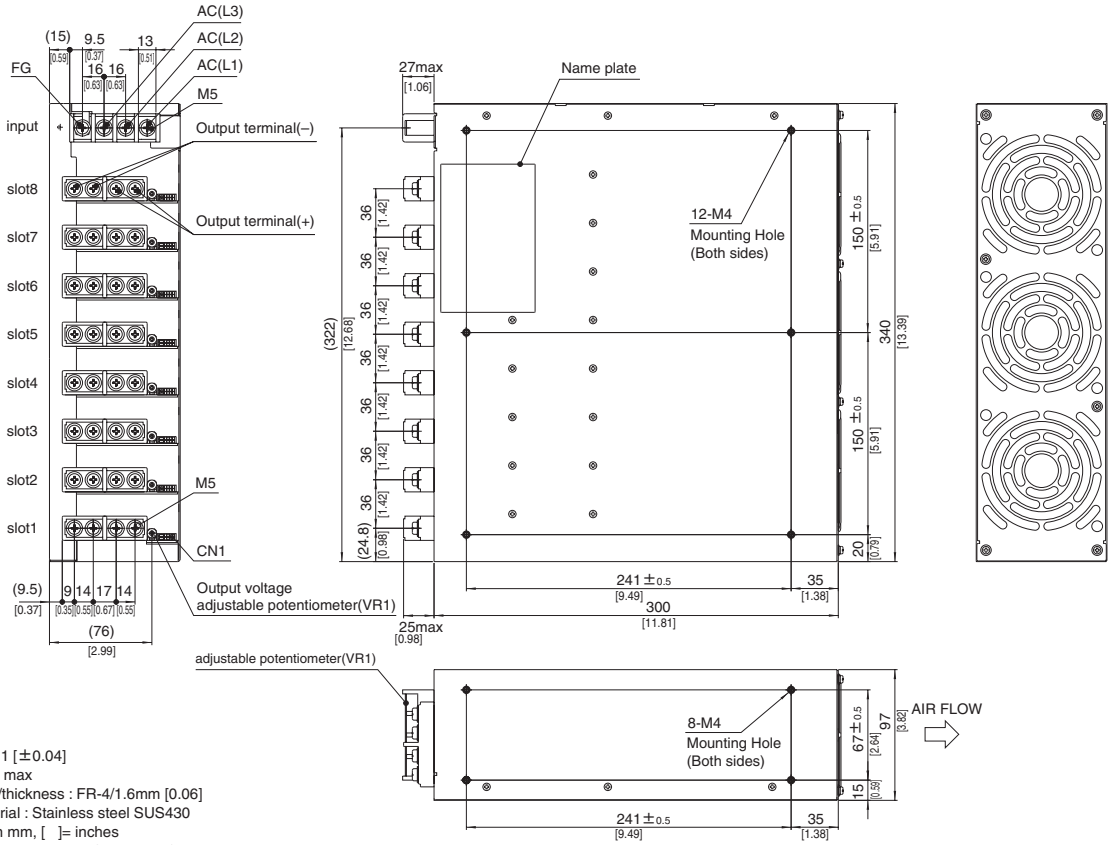


MAX1600F / MAX1600T external view



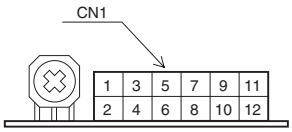
※ Tolerance : ±1 [±0.04]
※ Weight : 7kg max
※ PCB Material/thickness : FR-4/1.6mm [0.06]
※ Chassis material : Stainless steel SUS430
※ Dimensions in mm, [ ]= inches
※ Mounting torque : 1.5N・m (16kgf・cm) max
※ Keep drawing current per terminal bellow 80A of output terminal.
※ The housing for the remote sensing unused is mounted on CN1 of each output module.
However, when the output module is connected in parallel, the housing is mounted on only master output module.
※ Output terminal covers are appended.

MAX3200T external view



※ Tolerance : ±1 [±0.04]
※ Weight : 14kg max
※ PCB Material/thickness : FR-4/1.6mm [0.06]
※ Chassis material : Stainless steel SUS430
※ Dimensions in mm, [ ]= inches
※ Mounting torque : 1.5N・m (16kgf・cm) max
※ Keep drawing current per terminal bellow 80A of output terminal.
※ The housing for the remote sensing unused is mounted on CN1 of each output module.
However, when the output module is connected in parallel, the housing is mounted on only master output module.
※ Output terminal covers are appended.

Function connector (CN1) pinassign



Maiting connector and terminal of output module CN1

	Connector	Mating connector	Terminal	Mfr.
CN1	S12B-PHDSS	PHDR-12VS	Chain : SPHD-002T-P0.5	J.S.T
			Loose : BPHD-001T-P0.5	
			: BPHD-002T-P0.5＊1	

＊1 Ratchet Hand is nothing

Pin connection and function of output module CN1

Pin No.	Function
1	+M : +Output voltage monitoring
2	-M : -Output voltage monitoring
3	+S : +Remote sensing
4	-S : -Remote sensing, Signal ground
5	TRM : Adjustment of output Voltage
6	-S : -Remote sensing, Signal ground
7	RC2 : Remote ON/OFF
8	-S : -Remote sensing, Signal ground
9	RC3 : Remote ON/OFF
10	ALM : Fan alarm (and open phase alarm)＊
11	IOG : Inverter operation monitor
12	TMP : Thermal detection signal

＊MAX1600T / MAX3200T