

MAX series

Ordering information

M1 -

①

⑥ ⑦ ⑧ ⑨ ⑩ ⑪

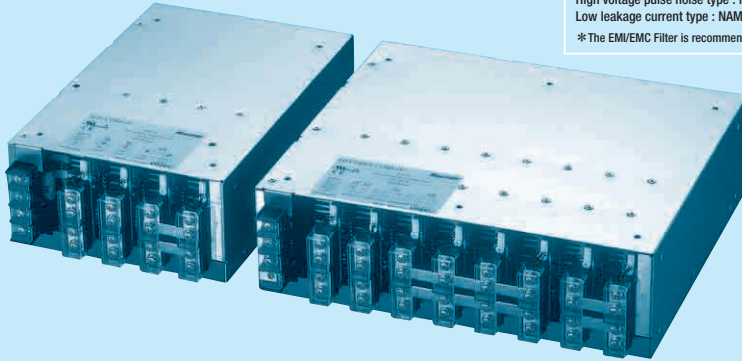
M3T -

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② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

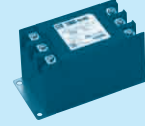


RoHS

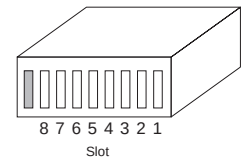

Recommended EMI/EMC Filter
MAX1600F NAC-30-472

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

* The EMI/EMC Filter is recommended to connect with several devices.

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


- 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.

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°C, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max		
	STORAGE TEMP., HUMID. AND ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing) 9,000m (30,000feet) max		
	VIBRATION	19.6m/s ² , 10 - 55Hz, 3minutes period, 60minutes each along X, Y and Z axis		
	IMPACT	196.1m/s ² , 11ms, once each X, Y and Z axis		
SAFETY 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		
	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 X2, 12V34A X2, 15V27A X2, 24V17A X2) 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]	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).

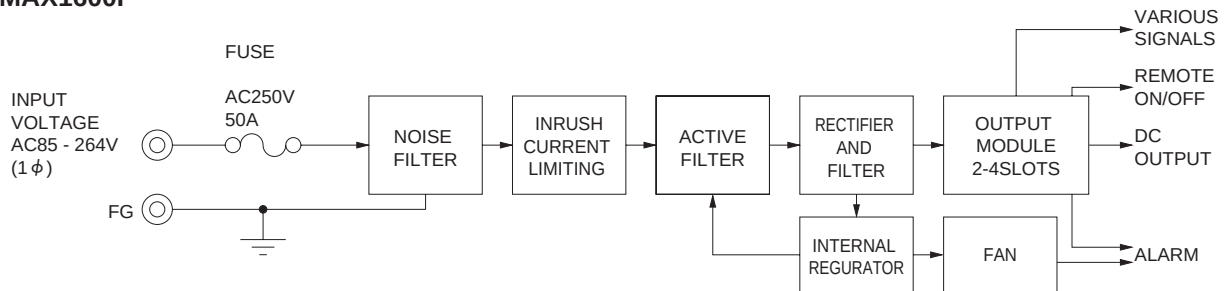
Ripple and Ripple Noise is measured by using measuring board with capacitor of 470 μ F between 20mm to 100mm from the output terminal.

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

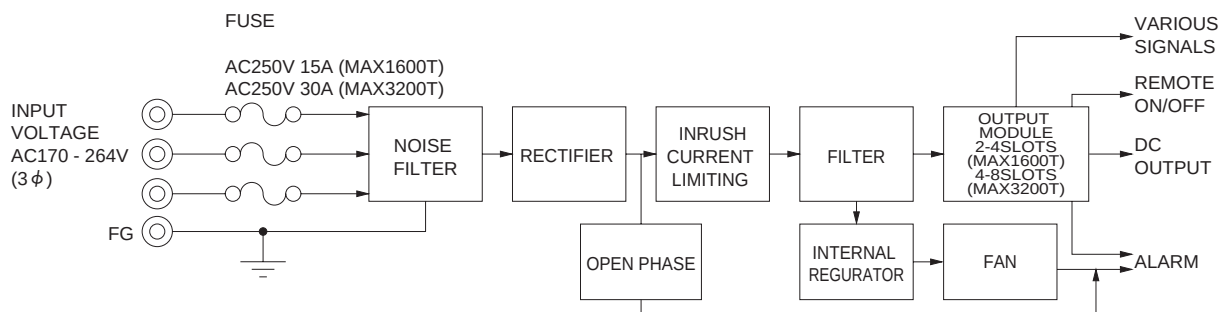
*3 Modularity in parallel are built to order and are not possible for the user to assemble them.

Block diagram

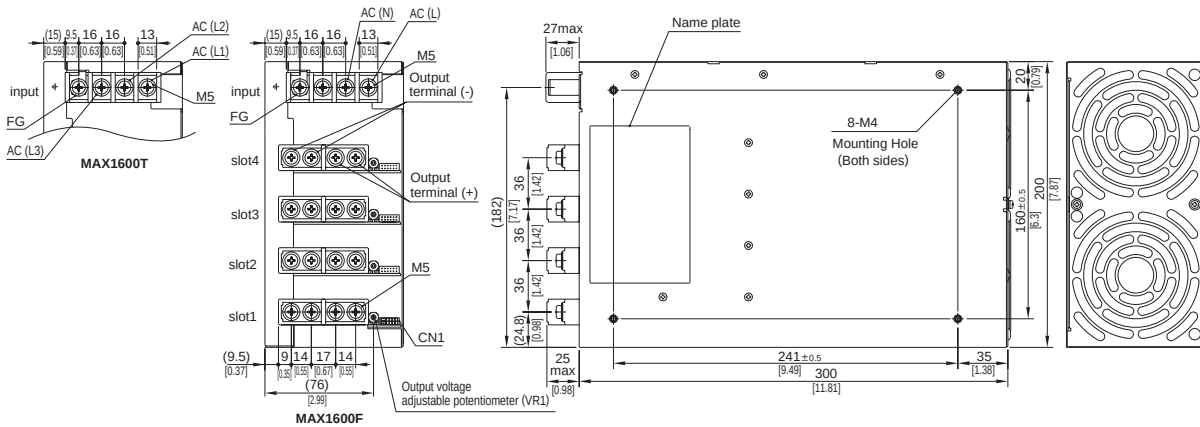
● MAX1600F



● MAX1600T / MAX3200T

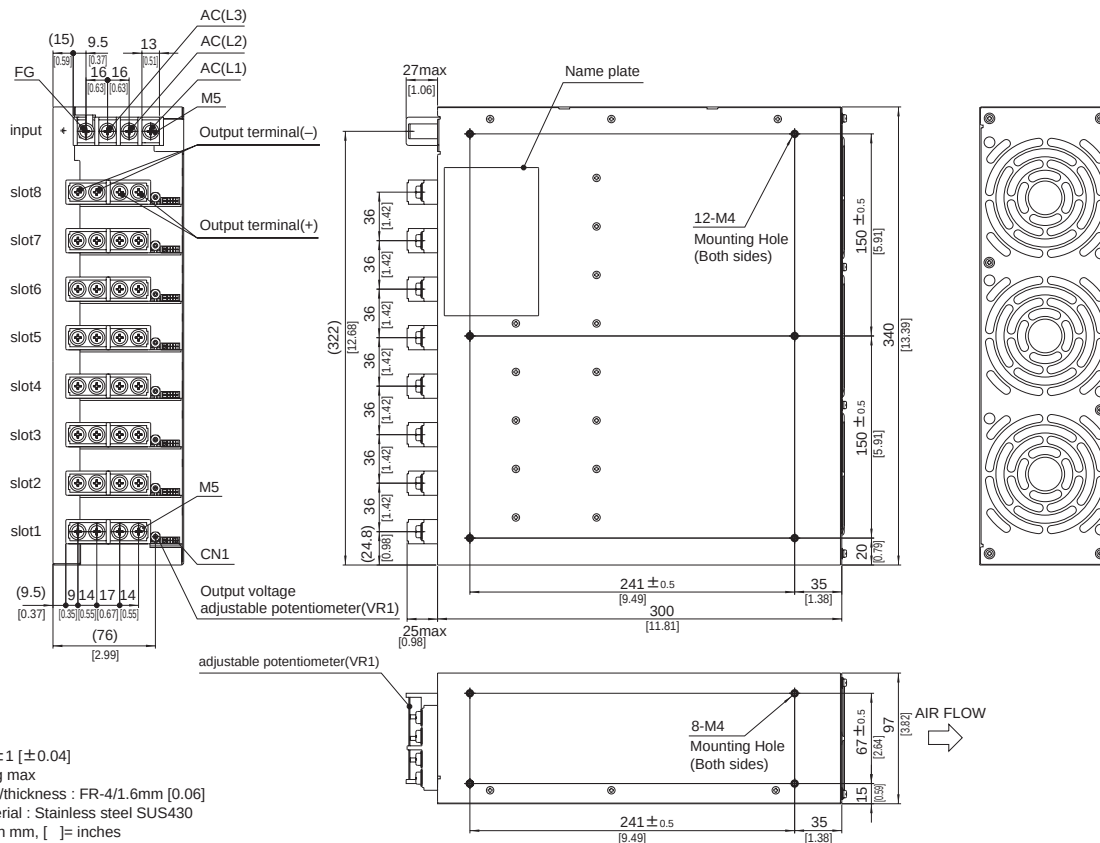


MAX1600F / MAX1600T external view



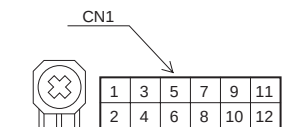
- ※ Tolerance : ± 1 [± 0.04]
- ※ Weight : 7kg max
- ※ PCB Material/thickness : FR-4/1.6mm [0.06]
- ※ Chassis material : Stainless steel SUS430
- ※ Dimensions in mm, [] = inches
- ※ Mounting torque : $1.5\text{N} \cdot \text{m}$ (16kgf · cm) max
- ※ Keep drawing current per terminal below 80A of output 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 : $1.5\text{N} \cdot \text{m}$ (16kgf · cm) max
- ※ Keep drawing current per terminal below 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



Mating 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

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OFFFFCBB-39](#) [M3T-OOCCCCC-1F](#) [M3T-OOEEEEEE-1F](#) [M3T-OOCCCCC-0F](#)