

## 3 x 5" 600W AC-DC Power Supplies



Medical



Industrial



Test



LED



COMM



Broadcast



The compact CUS600M is packaged in the industry standard 3x5" footprint and can deliver 600W with forced air or 400W with a 600W peak power with convection cooling. With Medical & ITE certifications, the unit can be used in both Class I & Class II (no ground wire) applications, and meets Class B Conducted and Radiated EMI. A 5V 2A standby voltage, remote on/off, remote sense and a Power Good signal is standard on the CUS600M. Other options include an internal fan, single input fuse and output adjustment. The CUS600M1 models offer a reduced feature set for cost optimization.

Features	Benefits
• 400W (600W Peak) Convection Cooled	• Quiet Operation
• 600W with Forced Air	• Can Utilize System Airflow or Integrated Fan
• Medical Certifications (2 x MOPP)	• Suitable for B and BF Type Medical Equipment
• Class B Conducted and Radiated EMI	• Easier System EMC Compliance
• Suitable for Class I and Class II installations	• Flexible Utilisation
• Compact 3 x 5 x 1.46" Size	• Space Saving in End Equipment
• Enclosure & Other Options	• Versatile Application

Model Selector							
Model	Nominal Output Voltage (V)	Output Adjustment (V) (Specify /ADJ option suffix*) (1)	Maximum Current Convection (A)	Maximum Current Forced Air (A)	Peak Current (A)	Maximum Power Convection (W)	Maximum Power Forced Air (W)
CUS600M-12	12	11.7 - 12.9	33.4	50.0	50.0	400.8	600.0
CUS600M-19	19	18.5 - 20.5	21.1	31.6	31.6	400.9	600.4
CUS600M-24	24	23.4 - 25.9	16.7	25.0	25.0	400.8	600.0
CUS600M-28	28	27.3 - 30.2	14.3	21.5	21.5	400.4	602.0
CUS600M-32	32	31.2 - 34.5	12.5	18.8	18.8	400.0	601.6
CUS600M-36	36	35.1 - 38.8	11.1	16.7	16.7	399.6	601.2
CUS600M-48	48	46.8 - 51.8	8.4	12.6	12.6	403.2	604.8

CUS600M-	12	/	EF
Features	CUS600M-	CUS600M1-	
Standby Voltage			
Remote On/Off	Yes	Not Available	
Remote Sense			
Power Good Signal			
	Output voltage 12, 19, 24, 28, 32, 36, 48		blank Open frame construction /EF Enclosed with end fan (exhaust air)* /ADJ Output adjustment potentiometer** /SF Single input fuse (Line)

\* /EF model has /ADJ included (CUS600M only)

\*\* Not available for CUS600M1 models

Other options are available, please contact sales

Specifications		
Model		CUS600M
<b>Input</b>		
Input Voltage range	V	85 - 265Vac (See derating curves)
Input Frequency	Hz	47 - 63Hz
Input Current (115/230Vac)	A	< 6.0 / 3.0 (600W)
Inrush Current at 230Vac (typ) (Cold Start)	A	<50A
Leakage Current	uA	<200uA at 265Vac 60Hz
Touch Current (Enclosure Leakage)	uA	<100uA
Power Factor (115/230Vac)	-	0.99 / 0.95
Harmonic Compliance	-	Meets IEC61000-3-2 Class A
No Load Power Consumption	W	<0.5W at 230Vac (Remote off and no load on 5Vsb)
Hold Up Time (typ) at 115Vac Input	ms	>22ms 400W load, >14ms 600W load
Efficiency	-	Up to 96%
Conducted & Radiated EMI	-	EN55032/EN55011-B (See installation / instruction manual for conditions)
Immunity	-	Compliant with EN60601-1-2:2015 (Ed4), see immunity table
Insulation Class	-	Construction suitable for Class I or Class II installation
Safety Agency Certifications	-	IEC/EN/UL62368-1, 60950-1 and 60601-1. ES60601-1. CE Mark (LVD, EMC and RoHS)

Immunity				
Test	Standard	Test Level	Criteria	Notes (the power stated below is total power (main power + fan output))
ESD	EN61000-4-2	4	A	-
Radiated Susceptibility	EN61000-4-3	3	A	Includes proximity field requirements of EN60601-1-2:2015
Electrical Fast Transient Burst	EN61000-4-4	4	A	(AC Port, 5kHz and 100kHz)
Surge	EN61000-4-5	3	A	-
Conducted Susceptibility	EN61000-4-6	3	A	-
Magnetic fields	EN61000-4-8	4	A	-
Voltage Dips and Input Interruptions	EN61000-4-11 Class 3 Industrial, incl EN55024 (100Vac)	0% for 1/2 cycle	A	-
		0% for 1 cycle	A/B	A up to 330W, B above 330W
		40% for 10/12 cycles	A/B	A up to 210W, B above 210W
		70% for 25/30 cycles	A/B	A up to 500W, B above 500W
		80% for 250/300 cycles	A/B	A up to 570W, B above 570W
		0% for 250/300 cycles	B	-
	EN61000-4-11 Class 3 Industrial, incl EN55024 (240Vac)	0% for 1/2 cycle	A	-
		0% for 1 cycle	A/B	A up to 330W, B above 330W
		40% for 10/12 cycles	A/B	A up to 570W, B above 570W
		70% for 25/30 cycles	A	-
		80% for 250/300 cycles	A	-
		0% for 250/300 cycles	B	-
EN60601-1-2:2015 (100Vac)	0% for 1/2 cycle	A	Customer to consider essential performance of end equipment	
	0% for 1 cycle	A/B	A up to 330W, B above 330W	
	70% for 25/30 cycles	A/B	A up to 500W, B above 500W	
	0% for 250/300 cycles	B	-	
EN60601-1-2:2015 (240Vac)	0% for 1/2 cycle	A	Customer to consider essential performance of end equipment	
	0% for 1 cycle	A/B	A up to 330W, B above 330W	
	70% for 25/30 cycles	A	-	
	0% for 250/300 cycles	B	-	
SEMI F47 Line Dip	SEMI F47	-	-	At input voltages > 200Vac

Specifications		
Model		CUS600M
<b>Output</b>		
Line Regulation	%	0.5% (85 - 265Vac)
Load Regulation	%	1% (0 - 100% load)
Ripple & Noise	mV	12V: 240mV, 19V - 28V: 360mV, 32V - 48V: 480mV
Temperature Coefficient	%/°C	±0.02%/°C
Minimum Load	-	No minimum load required
Overcurrent Protection	%	>105%. Hiccup mode, automatic recovery
Overvoltage Protection	-	Latching (unit shutdown), cycle AC input to reset
Overtemperature Protection	-	Latching (unit shutdown), cycle AC input to reset
Remote Sense	-	0.5V total compensation (1)
Remote On/Off	-	Opto-isolated. Inhibit: Low = ON, High = OFF (1)
Power Good	-	Combined AC Fail and DC OK opto isolated signal (1)
Standby Voltage	-	Open frame version: 5V 2A, /EF version 5V 1.5A (1)
Parallel Operation	-	Not possible
Series Operation	-	Possible, see installation manual
<b>Environmental</b>		
Operating Temperature	°C	-20°C to +70°C, see derating curves below
Storage Temperature	°C	-40°C to +85°C
Operating Humidity (non condensing)	%RH	10 - 95%RH
Cooling	-	Convection cooling or forced air (2.7m/s)
Altitude	m	5,000m. Operating, transportation and storage
Withstand Voltage (For 1 minute)	Vac	Input to Ground 2kVAC (1xMOPP), Input to Output 4kVAC (2xMOPP), Output to Ground 1.5kVAC (1xMOPP)
Isolation Resistance	MΩ	>100MΩ at 25°C, 70%RH Output - FG 500VDC
Vibration (Non Operating)	-	10-55Hz (1 min sweep). Maximum 19.6m/s <sup>2</sup> ; x, y, z for 1 hour each
Shock	-	<196m/s <sup>2</sup>
<b>Other</b>		
Weight (Typ)	g	Open frame: 470, /EF: 790
Size (LxWxH)	mm	Open frame: 127 x 76.2 x 37, /EF: 157 x 85 x 42.5
Size (LxWxH)	Inches	Open frame: 5 x 3 x 1.46, /EF: 6.18 x 3.35 x 1.67
Connectors	-	Input: JST VHR-5N, Output: M4 screws, Standby: JST XHP-2, Signals: JST PHDR-08VS
Warranty	yrs	5

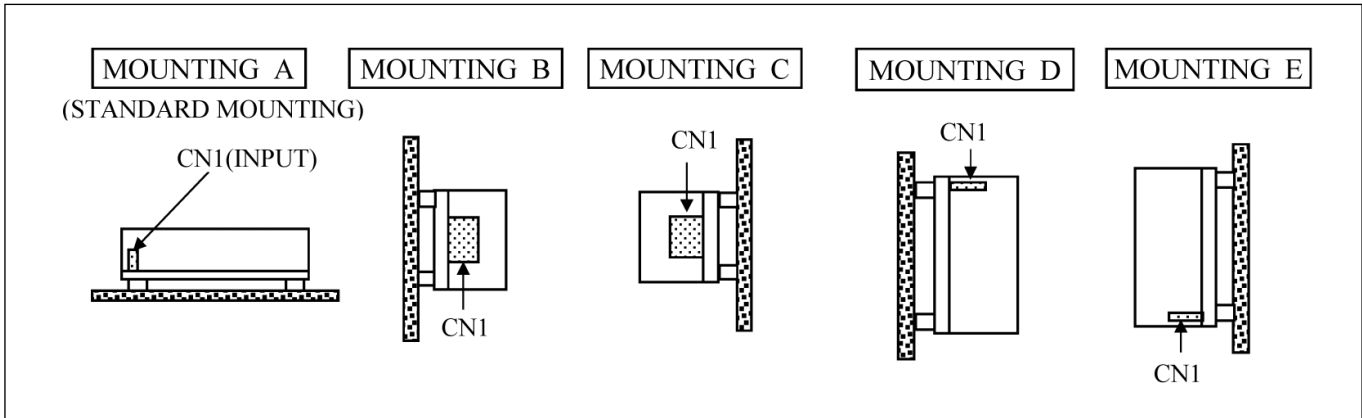
**Notes:**

See website for detailed specifications, test methods and installation manual

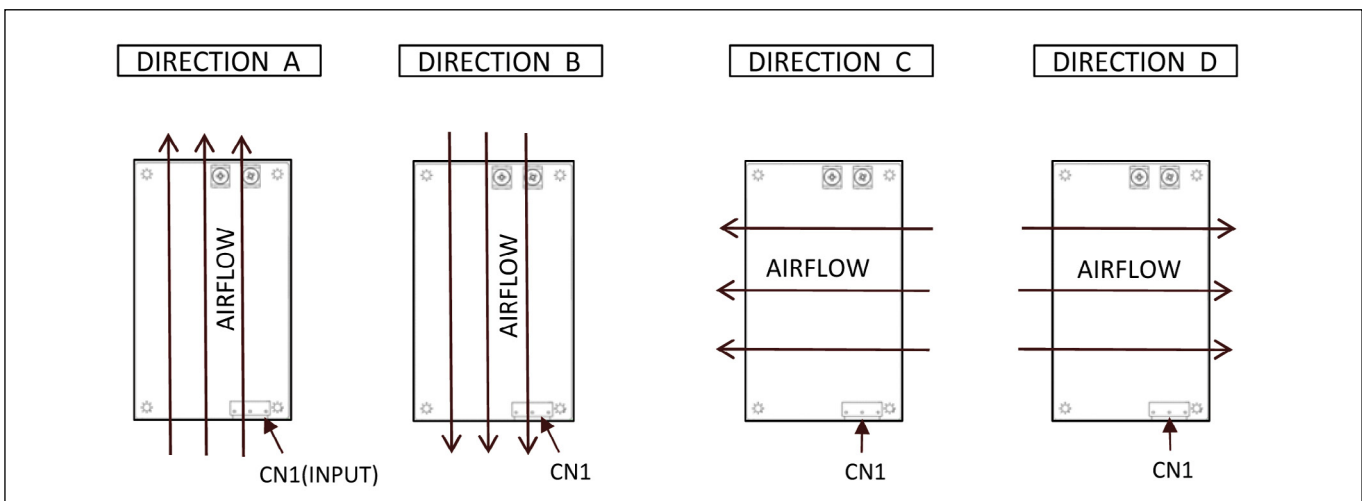
Specification parameters apply at 25°C ambient temperature unless otherwise stated.

(1) Not available on the CUS600M1 models, see model selector

## Mounting Orientation



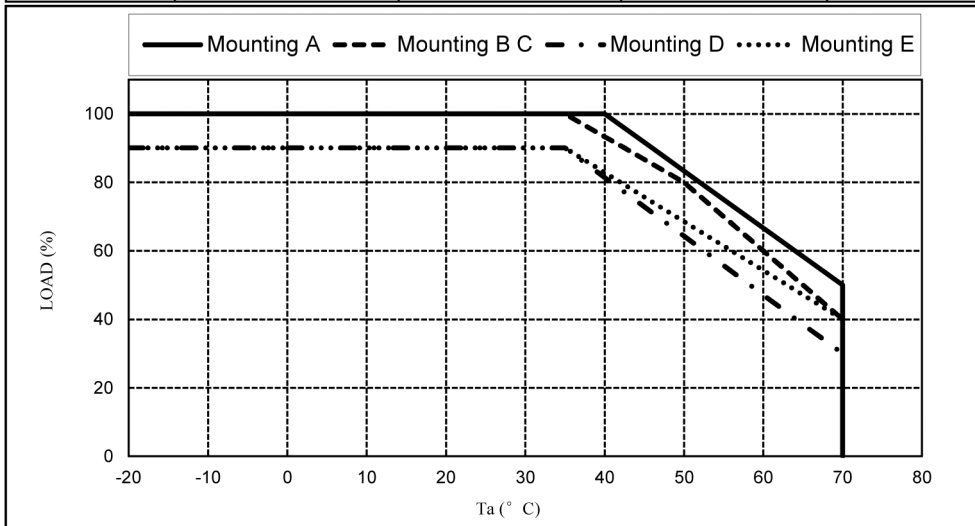
## Airflow Direction



## Convection Cooling CUS600M-12

(Zero load on Standby Voltage. Wide range input. Additional derating applies below 115Vac input)

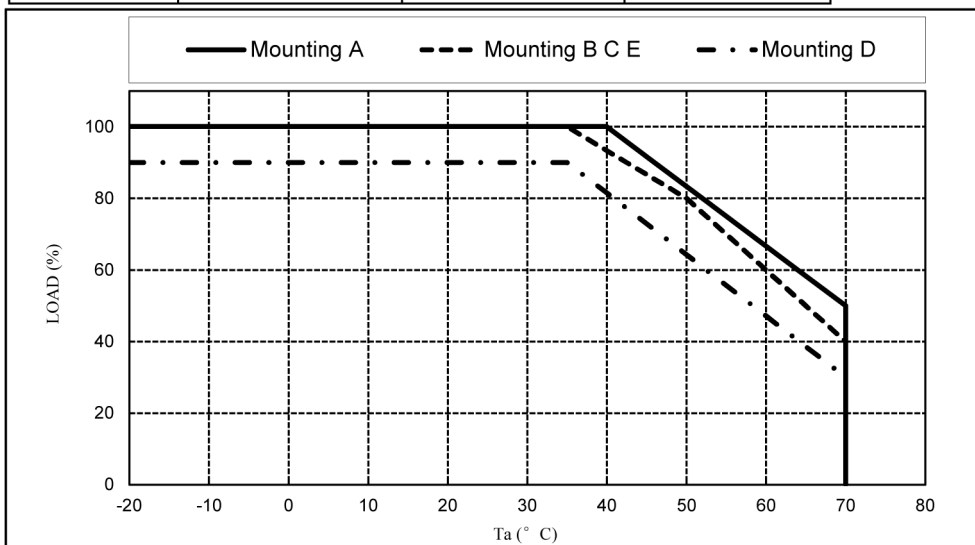
Ta (°C)	Mounting A	Mounting B C	Mounting D	Mounting E
	LOAD (%)	LOAD (%)	LOAD (%)	LOAD (%)
-20 - +35	100	100	90	90
40	100	93.3	81.4	82.9
50	83.3	80	64.3	68.6
60	66.7	60	47.1	54.3
70	50	40	30	40



## Convection Cooling CUS600M-19 to -48

(Zero load on the Standby Voltage output. Wide range input. Additional derating applies below 115Vac input)

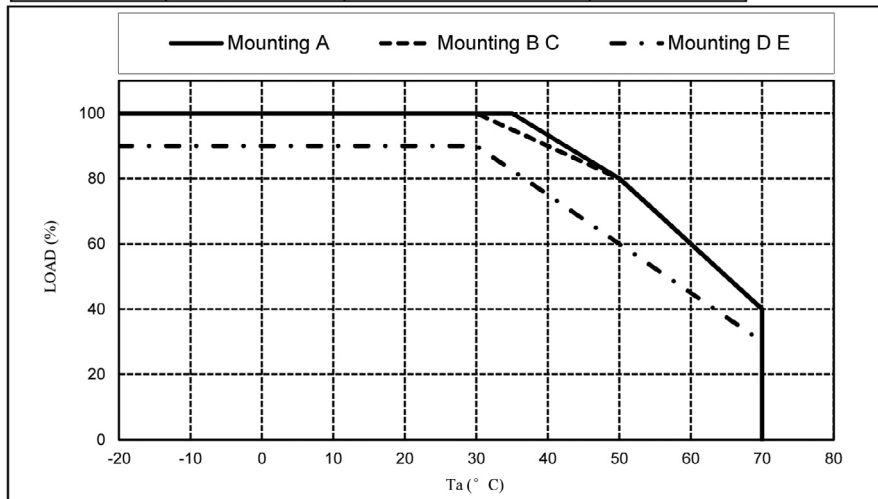
Ta (°C)	Mounting A	Mounting B C E	Mounting D
	LOAD (%)	LOAD (%)	LOAD (%)
-20 - +35	100	100	90
40	100	93.3	81.4
50	83.3	80	64.3
60	66.7	60	47.1
70	50	40	30



## Convection Cooling (All models)

(Loading applied on the Standby Voltage output. Wide range input. Additional derating applies below 115Vac input)

Ta (°C)	Mounting A	Mounting B C	Mounting D E
	LOAD (%)	LOAD (%)	LOAD (%)
-20 - +30	100	100	90
35	100	95	82.5
40	93.3	90	75
50	80	80	60
60	60	60	45
70	40	40	30

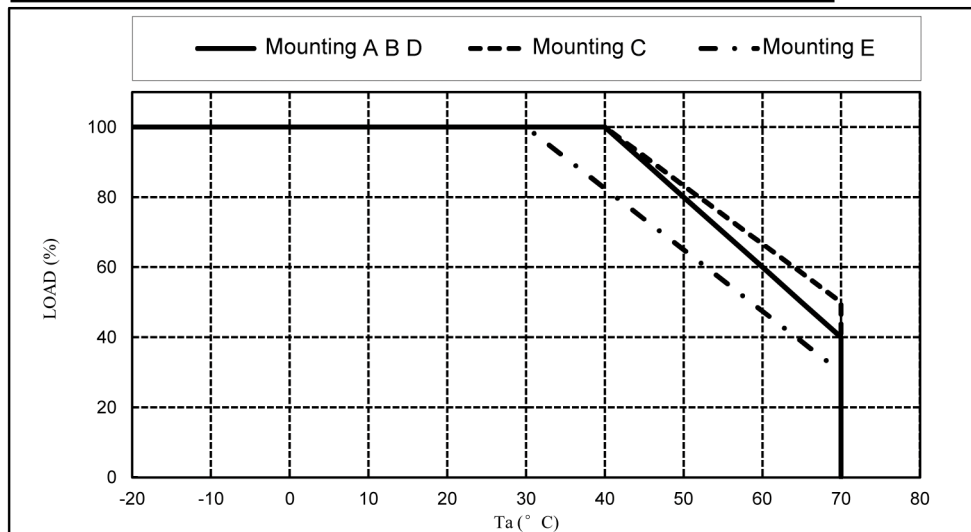


## Convection Cooling CUS600M-12

(Loading applied on the Standby Voltage output. 176 - 265Vac input. Additional derating applies below 115Vac input)

MODEL: CUS600M-12

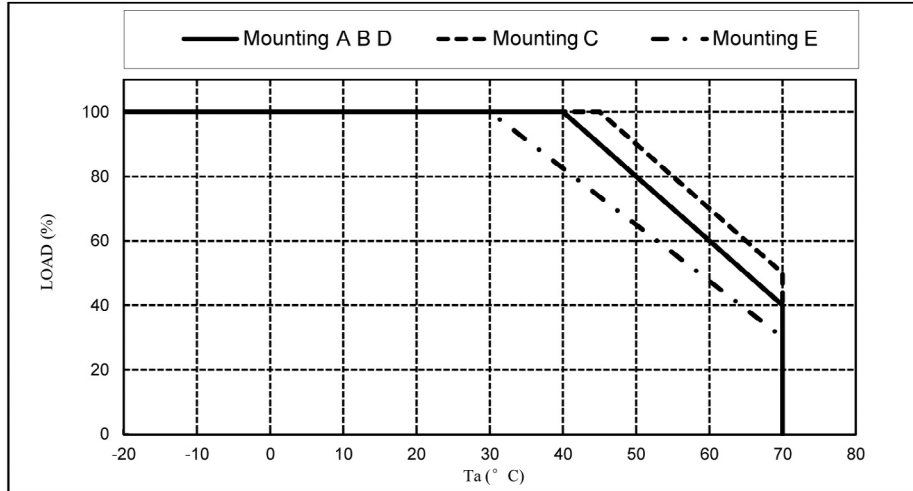
Ta (°C)	Mounting A B D	Mounting C	Mounting E
	LOAD (%)	LOAD (%)	LOAD (%)
-20 - +30	100	100	100
40	100	100	82.5
50	80	83.3	65
60	60	66.7	47.5
70	40	50	30



## Convection Cooling CUS600M-19 to -48V

(Loading applied on the Standby Voltage output. 176 - 265Vac input. Additional derating applies below 115Vac input)

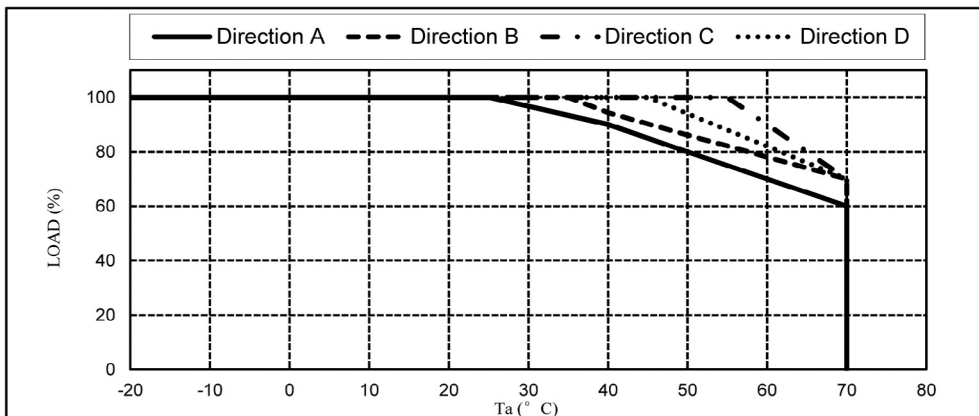
Ta (°C)	Mounting A B D	Mounting C	Mounting E
	LOAD (%)	LOAD (%)	LOAD (%)
-20 - +30	100	100	100
40	100	100	82.5
45	90	100	73.8
50	80	90	65
60	60	70	47.5
70	40	50	30



## Forced Air Cooling CUS600M-12 (2.7m/s)

(Loading applied on the Standby Voltage output. Wide range input. Additional derating applies below 115Vac input)

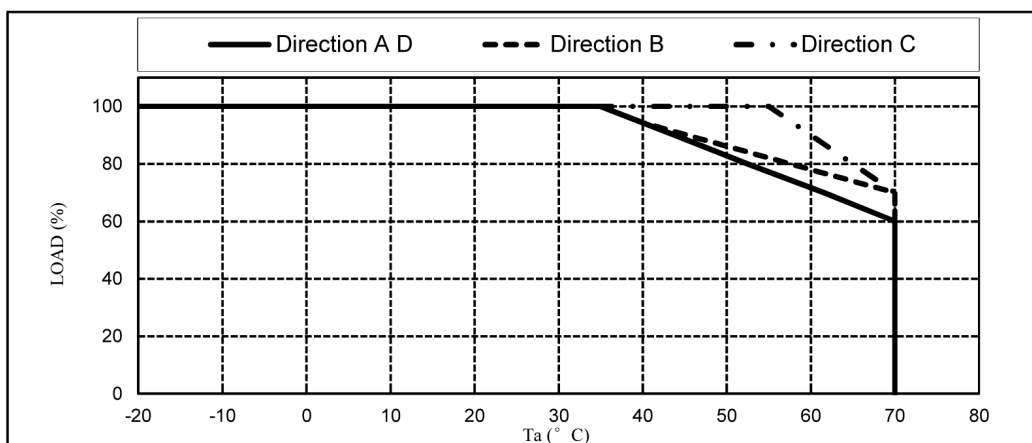
Ta (°C)	Direction A	Direction B	Direction C	Direction D
	LOAD (%)	LOAD (%)	LOAD (%)	LOAD (%)
-20 - +25	100	100	100	100
35	93.3	100	100	100
40	90	94.3	100	100
45	85	90.2	100	100
50	80	86.2	100	94
55	75	82.1	100	88
60	70	78	90	82
70	60	70	70	70



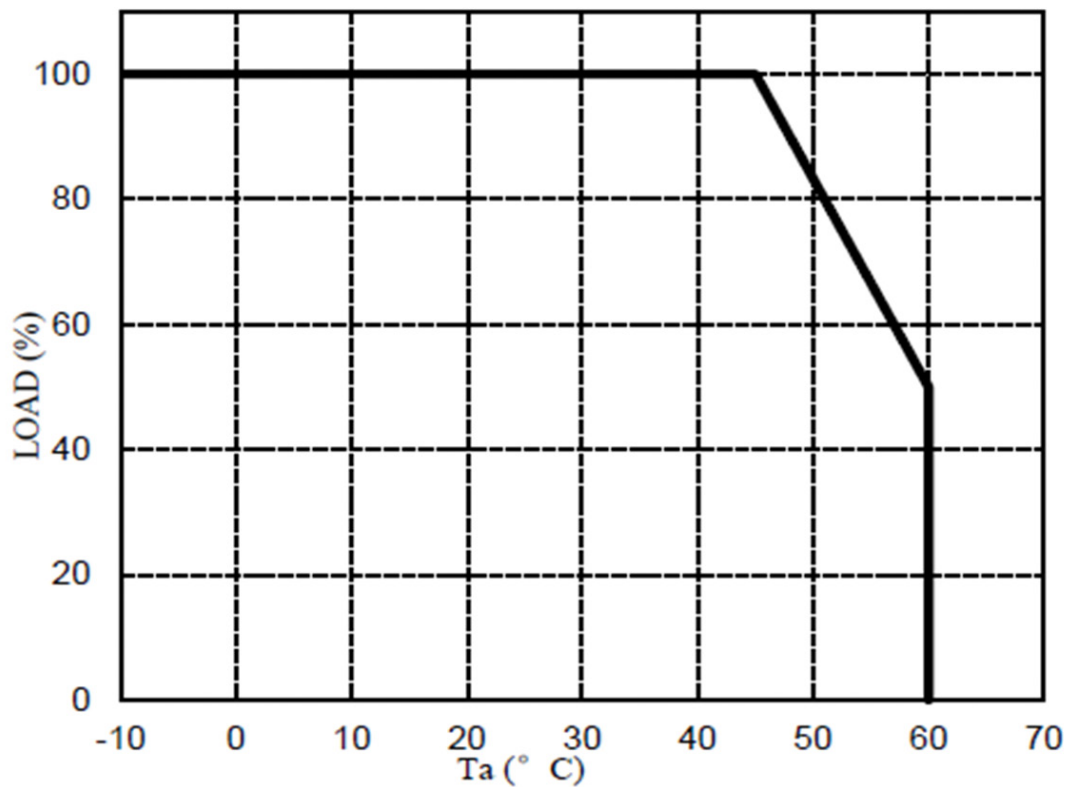
## Forced Air Cooling CUS600M-19 to -48 (2.7m/s)

(Loading applied on the Standby Voltage output. Wide range input. Additional derating applies below 115Vac input)

Ta (°C)	Direction A D	Direction B	Direction C
	LOAD (%)	LOAD (%)	LOAD (%)
-20 - +35	100	100	100
40	94.3	94.3	100
50	82.8	86.2	100
55	77.1	82.1	100
60	71.4	78	90
70	60	70	70



## CUS600M-xx/EF (End Fan)

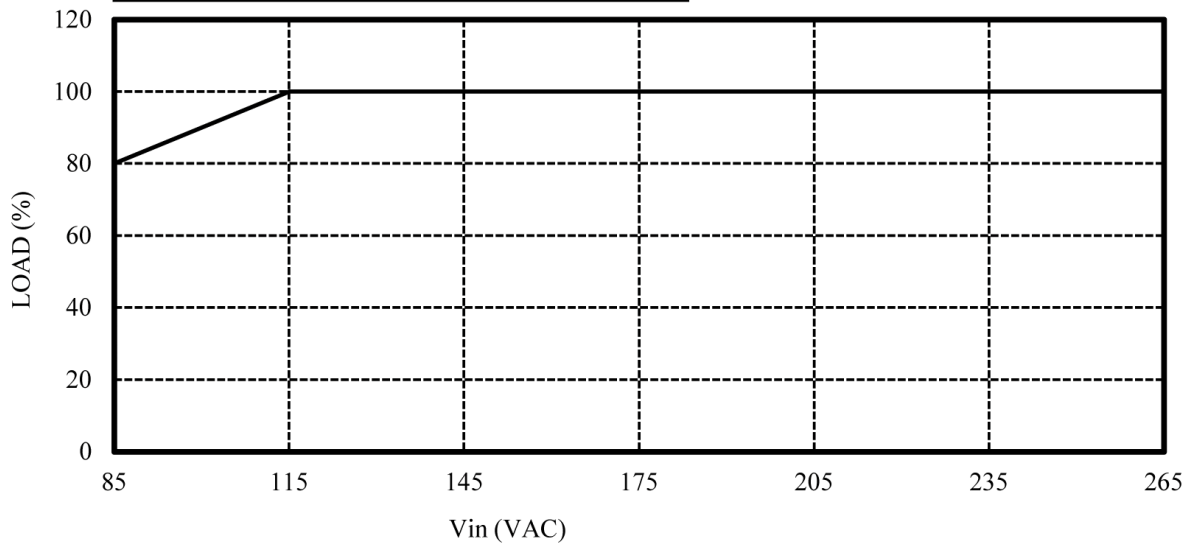




## Derating versus Input Voltage

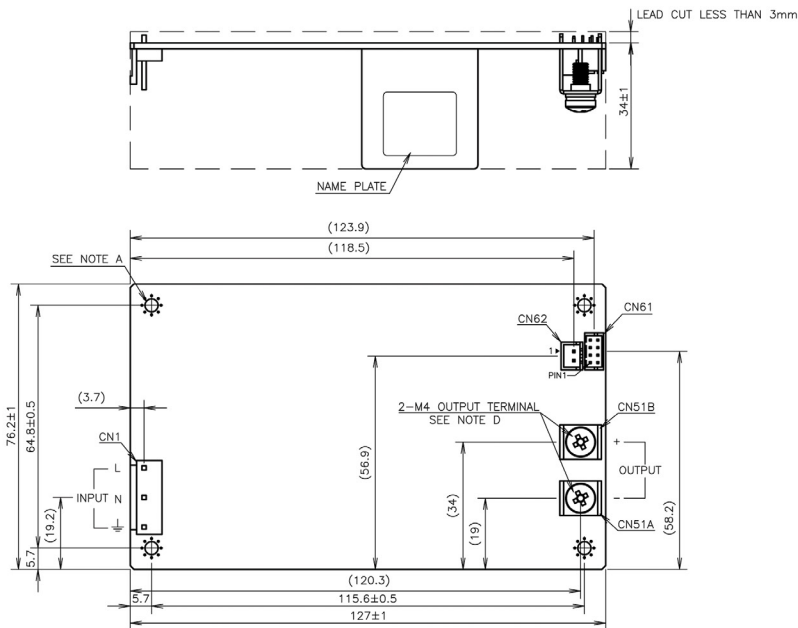
(All models, all conditions)

INPUT VOLTAGE (VAC)	LOAD (%)
85	80
115~265	100



## Mechanical Specification

### Outline Drawing CUS600M Open Frame Unit



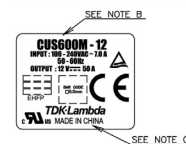
PIN CONFIGURATION AND FUNCTIONS OF CN61

PIN No.	FUNCTION
1	STBY+: STANDBY SUPPLY + (5V+)
2	STBY-: STANDBY SUPPLY - (5V-)
3	S+: REMOTE SENSE+
4	S-: REMOTE SENSE-
5	NO CONNECTION
6	PG: POWER GOOD SIGNAL
7	R+: REMOTE ON/OFF TERMINAL +
8	R-: REMOTE ON/OFF TERMINAL -

PIN CONFIGURATION AND FUNCTION OF CN62

PIN No.	FUNCTION
1	STBY+: STANDBY SUPPLY + (5V+)
2	STBY-: STANDBY SUPPLY - (5V-)

NAME PLATE (SCALE:3/2)



**NOTE:**

- A: 4- $\phi$ 3.5 HOLES ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION AND EMI SPEC.
- B: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, AND MAXIMUM OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- C: COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
- D: M4 SCREWS FOR OUTPUT TERMINAL(2), RECOMMENDED TORQUE: 1.18N·m(12kgf·cm) MAX

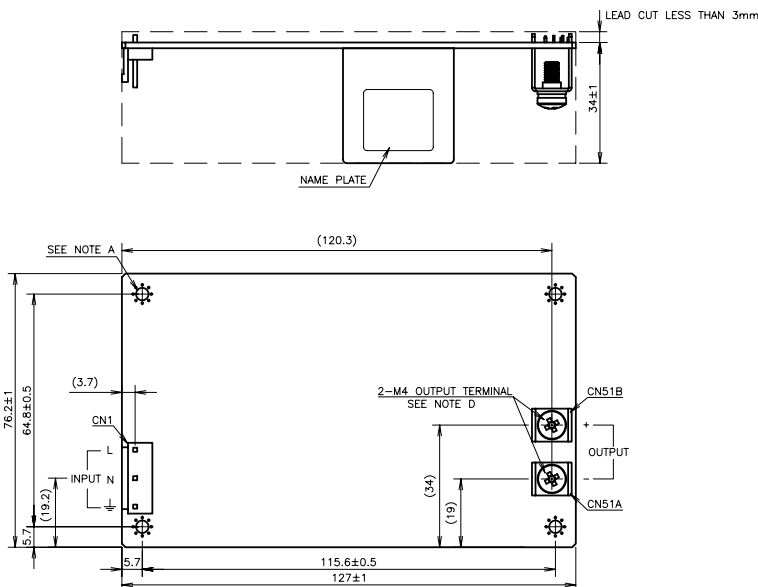
**CONNECTORS USED:**

PART DESCRIPTION	PART NAME	HOUSING	QTY	CONTACT	QTY	CRIMPING TOOL	MANUFACT.
CN1	B3P5-VH(LF)(SN)	VHR-5N	1	SVH-41T-P1.1	3	YC-930R, YC931R	J.S.T
CN51A/CN51B	M4 OUTPUT TERMINAL		2				
CN61	B8B-PHDS(LF)(SN)	PHDR-08VS	1	SPHD-001T-P0.5	8	YC-610R, YC611R	J.S.T
CN62	B2B-XH-A(LF)(SN)	XHP-2	1	SXH-001T-P0.6	2	YC-110R, YC111R	J.S.T

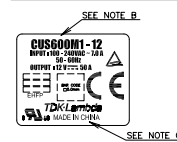
(HOUSINGS, PINS & TOOL ARE NOT INCLUDED WITH THE PRODUCT.)

## Mechanical Specification

### Outline Drawing CUS600M1 Open Frame Unit



NAME PLATE (SCALE:3/2)



**NOTE:**

- A: 4- $\phi$ 3.5 HOLES ARE FOR CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION AND EMI SPEC.
- B: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, AND MAXIMUM OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
- C: COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
- D: M4 SCREWS FOR OUTPUT TERMINAL(2), RECOMMENDED TORQUE: 1.18N·m(12kgf·cm) MAX

**CONNECTORS USED:**

PART DESCRIPTION	PART NAME	HOUSING	QTY	CONTACT	QTY	CRIMPING TOOL	MANUFACT.
CN1	B3P5-VH(LF)(SN)	VHR-5N	1	SVH-41T-P1.1	3	YC-930R, YC931R	J.S.T
CN51A/CN51B	M4 OUTPUT TERMINAL		2				

(HOUSINGS, PINS & TOOL ARE NOT INCLUDED WITH THE PRODUCT.)

## Outline Drawing CUS600M End Fan

**OUTPUT VOLTAGE ADJUSTMENT**  
VR51 (62.6)

**CN61** (8.5±0.5) (18±0.5) (130±0.5) (151.7) (148.1)

**CNS1B** (23.4) (38.4)

**CNS1A**

**OUTPUT**

**NAME PLATE**  
SEE NOTE B

**2-M4**  
SEE NOTE D

**8-M3 SCREW PENETRATION DEPTH 4.5mm MAX**

**SEE NOTE A**

**4-M3 SCREW PENETRATION DEPTH 4.5mm MAX**

**AIR FLOW**

**42.5±1** (18±0.5) (5.2±0.5) (85±1) (74.6±0.5)

**130±0.5** (165.1) (130±0.5) (130±0.5) (151.7)

**2.5±0.5**

**SEE NOTE A**

**NAME PLATE (SCALE:3/2)**

**CUS600M - 12/EF**  
TDK-Lambda  
MADE IN CHINA  
INPUT: 100-240VAC - 2.0 A  
50-60Hz  
OUTPUT: 12V --- 50 A  
EHP CODE: CUS600M  
EHPFP  
CE  
UL  
SEE NOTE C

**CONNECTORS USED:**

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
CN1 HOUSING	350767-1	TYCO	1
TERMINAL PINS	350219-1	TYCO	3
CNS1A/CNS1B	M4 TERMINAL		2
CN61	BBB-PHDSS(LF)(SN)	J.S.T	1

**RECOMMENDED MATCHING HOUSINGS, PINS & TOOL**  
(NOT INCLUDED WITH THE PRODUCT):

PART DESCRIPTION	PART NAME	MANUFACT.	QTY
SOCKET HOUSING	350766-1		1
CN1 TERMINAL PINS	350536-1	TYCO	3
HAND CRIMPING TOOL	91500-1		-
SOCKET HOUSING	PH88-86VS		1
CN61 TERMINAL PINS	SPHD-001T-P0.5	J.S.T	8
HAND CRIMPING TOOL	YC-610R, YC-611R		-

**PIN CONFIGURATION AND FUNCTIONS OF CN61**

PIN No.	FUNCTION
1	STBY+: STANDBY SUPPLY + (SV+)
2	STBY-: STANDBY SUPPLY - (SV-)
3	S+: REMOTE SENSE +
4	S-: REMOTE SENSE -
5	NO CONNECTION
6	PS: POWER GOOD SIGNAL
7	R+: REMOTE ON/OFF TERMINAL +
8	R-: REMOTE ON/OFF TERMINAL -

**NOTE:**  
A: 12-M3 TAPPED & STANDOFF HOLES FOR CUSTOMER'S CHASSIS MOUNTING HOLES. ALL MUST BE SCREWED IN ORDER TO CONFORM THE VIBRATION AND EMI SPEC. RECOMMENDED TORQUE: 0.49N·m(9kf·cm).  
B: MODEL NAME, INPUT VOLTAGE RANGE, NOMINAL OUTPUT VOLTAGE, AND MAXIMUM OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.  
C: COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.  
D: M4 SCREWS(2) FOR O/P TB, RECOMMENDED TORQUE: 1.18N·m(12kf·cm) MAX



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