*Plasma Display Panel Division
*TV System Products Division
*Overseas Solution Business Dept.

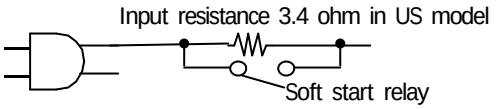
POWER CONSUMPTION

OVERVIEW

Power Consumption-related items are described for installation of a plasma display.

RUSH CURRENT

TH-42PWD5 for example:



TH-42PWD5 US model I=120Vx1.41/3.4 ohm= 49.8 [A]
If power is ON where a sine wave voltage is 0V, a rush current is 0 to maximum 49.8[A].
* TH-42PWD5 except US I=240Vx1.41/6.8 ohm= 49.8 [A]
* TH-50PHD5 US model I=120Vx1.41/6.8 ohm= 24.9 [A]

- A rush current is an instantaneous large current flowing at a time of Power ON and depends on an input resistance of power supply circuit (in parallel with a soft start relay).

MAXIMUM POWER CONSUMPTION & CURRENT

* Maximum Power Consumption

The power Consumption values described on the catalog resulted from the measurement of power Consumption for a certain sound and image for European models. The PDP must make every pixel discharge light repetitively on a not-constant base, thus resulting in a huge value of power Consumption.(US models)

* Maximum Current

Current can be normally found by the formula: Current A = Power P ÷ Voltage V, but it depends heavily on the power factor of a power circuit.

*Values of the existing models

	Power Consumption	Max. Power Consumption	Power Factor	Max. Current (Approx.)	
				AC100v	AC200v
TH-50PHD5	495W	Approx. 550W	100%	5.5A	2.8A
TH-42PHD5	375W	Approx. 450W	100%	5.0A	2.5A
TH-42PWD5	295W	Approx. 395W	75%	5.3A	2.7A
TH-37PWD5	225W	Approx. 325W	70%	4.4A	2.2A

CALORIFIC VALUE

Calorific Value[J]=Power Consumption[W]xTime[S] 1 J=0.24cal

Calorific value per hour[Kcal/H] = 0.24xPowerConsumptionx3600
=Power Consumptionx0.864

* TH-42PWD5UY = 295Wx0.864 = 255[Kcal/H]

British Thermal Units VALUE

British Thermal Units = Power Consumption [W] × 3.41 = [BTU/h]

* TH-42PWD5UY = 295 W × 3.41 = 1,006 BTU/h

HEAT COOLING

* PDP operation conditions

Temperature: 0 deg – 40 deg Humidity : 20% - 80%(not dewing)

NOTICE: When it exceeds the above range, you have to consider cooling.

* Method of choosing a cooling fan

● Operating airflow rate needed for cooling (Q')

$$Q' \ [m^3/min] = \frac{\text{PDP Power Consumption}}{20\text{x [Temp inside the housing case - Housing case ambient Temp)}}$$

NOTICE: ※ The formula is based on the assumption that heat eradication is done by a cooling airflow of a fan.

● Choice of a fan

Since the operating airflow is generally 1/2 to 2/3 the maximum airflow, it is recommended that you choose the fan 1.5 to 2.0 times the calculated airflow Q'.

Assuming that an operating airflow is 2/3 the maximum airflow, the maximum airflow Q[m3/min]=Q' x 3/2.

: Calculation example for placing TH-42PWD4 inside the housing:

- * Power Consumption : 295W
- *Temp inside Housing : Need to be below 40 deg
- *Ambient Temp : 35 deg (example)
- *Operating airflow : 2/3 the maximum airflow

Q' = 295 / [20x(40-35)) = 2.95 [m^3/min]

Q = 2.95 x 3/2 = 4.425 [m^3/min]

Heat tends to focus on the upper part. A fan had better be placed to ventilate this area.

Example) Two fans whose maximum airflow is 2.3[m^3/min]

or 3 fans whose maximum airflow is 1.5[m^3/min.]

(Example) Ambient temp. =25 deg: Q' = 0.98m^3/min.
Ambient temp. =30 deg: Q' = 1.48m^3/min.

* Other cautions

* Never fail to attach the fan the PDP inside.
* The values mentioned above are the theoretical ones. You are required to make enough tolerance in actual design and to perform a mounting experiment at the time of studying.
* When you study the outdoor use, you have to take into account the heat inflow from outside such as solar heat.