

**MTBF**

The following table shows calculated MTBF (Mean Time Between Failure) values in failures per million hours (fpmh) in accordance with MIL-HDBK-217F Notice 1 for Alpha converters, modules, and options at 25°C and 50°C ambient temperatures.

Module	Failure Rate/ fpmh	Failure Rate/ fpmh
	Ambient = 25C	Ambient = 50C
Alpha 400 Converter, filter (all types), fan (x1)	6.83	11.4
Alpha 600 Converter, filter (all types), fan (x1)	9.83	13.85
Alpha 1000 Converter, filter (all types), fans (x2)	14.0	23.15
Alpha 1500 Converter, filter (all types), fans (x2)	14.27	23.66
A Module	0.80	1.17
AA Module	1.12	1.91
B Module	0.90	1.31
BB Module	0.97	1.51
C Module	0.84	1.20
D Module	0.82	1.17
E Module	1.25	1.75
EB Module	1.34	2.10
EQ Module	1.51	2.23
F Module, FF Module	0.96	1.35
G Module	0.83	1.12
H Module	1.62	2.30
J Module	1.07	1.62
K Module	0.84	1.22
L Module	1.12	1.63
M Module	0.84	1.18
N Module	0.78	1.10
P Module	1.64	2.33
Q Module	0.55	0.78
R Module	0.82	1.27
S Module	1.42	2.32
T Module	1.36	1.85
U Module	1.06	1.61
W Module	1.09	1.52
Z Module	0.90	1.31

INH Option	0.80	1.10
PA Option	1.12	1.60
PP Option	0.29	0.55
RP Option	0.05	0.06
CD Option	0.45	0.58
MF Option	0.51	0.74
MFL Option	0.66	0.86
MFE Option	0.62	0.80
MFU Option	0.60	0.78

#### MTBF Calculation

To calculate MTBF for a particular product configuration, sum the failure rates (fpmh) for the individual parts to produce a total failure rate.

MTBF is then simply given by  $1,000,000 / \text{fpmh}$ .

#### Example

Product configuration : CA400 24G, 5B, 12C\_INH, 24D

Total failure rate is given by summing the individual part failure rates:

CA400 converter	6.83 fpmh
G Module	0.83 fpmh
Module	0.84 fpmh
Option	0.80 fpmh
D Module	<u>0.82 fpmh</u>

C  
INH

Total failure rate 10.12fpmh

MTBF =  $1,000,000 / 10.12 = 98,814$  Hours

#### **NB**

To exclude MTBF of cooling fan(s), subtract 4.09 fpmh (at 25DegC) or 7.51 fpmh (at 50DegC) for each fan from the total failure rate before calculating the MTBF.

E.g. above configuration excluding fan, Failure rate =  $10.12 - 4.09 = 6.03$  fpmh.