

Reg. Nr. 12666

DC/DC Wide Input Converter EQW 75 (300V) Series



Picture similar

- * Baseplate Cooled
- * I/O isolation of 3000 Vac
- * Continuous short circuit proof
- * Efficiency up to 90%
- * Low no load input current
- * Fully protected (OTP/OCP/OVP/UVLO)
- * Operating case temperature -40 to +105°
- * UL62368-1 (Reinforced Insulation)
- * Shock & Vibration MIL-STD-810F Compliant
- * Fire & Smoke meets EN45545-2
- * Lower temperature range -55°C, optional suffix I2



Product Range

Model	Input nominal	Input range	lin @ Uin nom. full load	no load	Uout	Output Iout max.	power	Efficiency typ.	Max. capacity
Single									
EQW300-3V375	300Vdc	180...450Vdc	0.205A	10mA	3.3Vdc	15A	50W	81.5	15'000uF
EQW300-0575	300Vdc	180...450Vdc	0.30A	10mA	5.0Vdc	15A	75W	82%	15'000uF
EQW300-1275	300Vdc	180...450Vdc	0.285A	10mA	12Vdc	6.25A	75W	88%	6'250uF
EQW300-1575	300Vdc	180...450Vdc	0.28A	10mA	15Vdc	5A	75W	90%	5'000uF
EQW300-2475	300Vdc	180...450Vdc	0.28A	10mA	24Vdc	3.12A	75W	90%	3'300uF
EQW300-4875	300Vdc	180...450Vdc	0.28A	10mA	48Vdc	1.56A	75W	89%	1'000uF

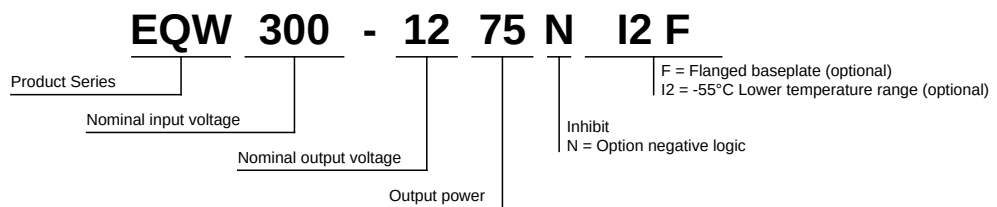
Notes:

Nominal input voltage 300 Vdc

Measured at 300Vin

An external input capacitor 33uF for all models is recommended to reduce Input Ripple Voltage.

Nomenclature



Specifications

All values refer to an ambient temperature of 25°C and nominal rated values where nothing else is specified.

Input Specifications

Characteristic		Conditions	min	typ	max	unit
U_{IN}	Input voltage		180	300	450	Vdc
U_{UVLO}	Under voltage lockout			170 / 160		Vdc
	Max. input current at full load		See	product	range	A
	No load input current			10		mA
	Inrush current	ETS300 132-2			0.1	A ² s
	Input surge voltage					Vdc

Output Specifications

Characteristic		Conditions	min	typ	max	unit
U_{ACC}	Output voltage accuracy			±1.0		%
	Output voltage adjust		+20 (5V: +10) / -20			%
	Line regulation	Measured from high to low			±0.2	%
	Load regulation	Measured from full to no load			±0.2	%
	Cross regulation					%
	Load transient recovery time	75% / 100% step load change		< 250		µs
	Load transient error band			±5.0		%
	Temperature coefficient				±0.02	%/K
	Ramp up time			30		ms
	Start up time			30		ms
	Ripple and noise	BW = 20MHz	5V:100, 12/15V:150, 24V:240, 48V:480			mVpp
	Current limit		110	135	160	% Inom
	Over voltage protection		112		130	% Unom
	Short circuit protection			continuous		% Inom
	Short circuit characteristic		Hiccup Mode, auto recovery			

General Specifications

Characteristic		Conditions	min	typ	max	unit
U _{ISO}	Isolation voltage		3000			Vac
R _{ISO}	Isolation resistance		> 100M			Ohm
C _{ISO}	Isolation capacity		typ. 333			pF
F _{SW}	Switching frequency		typ. 300			kHz
	Approvals					
	Safety Approvals		UL62368-1			
	MTBF	MIL-STD-217-F, GB, 25°C	850k			h
	Case material		Alu base plate, plastik DAP 94V-0			
	Compound material		UL 94V-0			
	PCB material		UL 94V-0			
	Weight		61			gr
	Dimensions		57.9 x 36.8 x 12.7mm			mm
	Soldering infos		275°C for 10			s

EMC Specifications

Characteristic		Conditions	
	EMC conducted	With external filter	EN55032/EN55022 Curve A

Environmental Specifications

Characteristic		Conditions	min	typ	max	unit
T _{CASE}	Operation temperature	Case temperature	-55/-40...+105			°C
T _{AMB}	Storage temperature		-40...+105			°C
T _{SD}	Thermal shutdown range	Case temperature	110 (converter)			°C

Own notes

EMC information

No EMC graph available yet, please contact factory

No EMC filter available yet, please contact factory

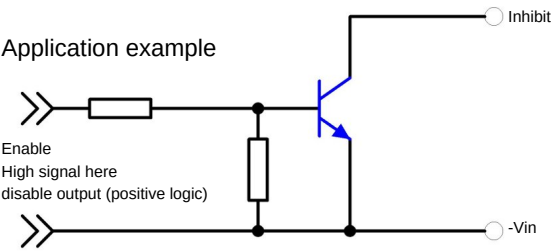
Inhibit

The EQW 75 (300V) Series allows the user to switch the module on and off electronically by inhibit on/off feature. The converters are available in "positive logic" (standard) or "negative logic" (option) versions for inhibit on/off.

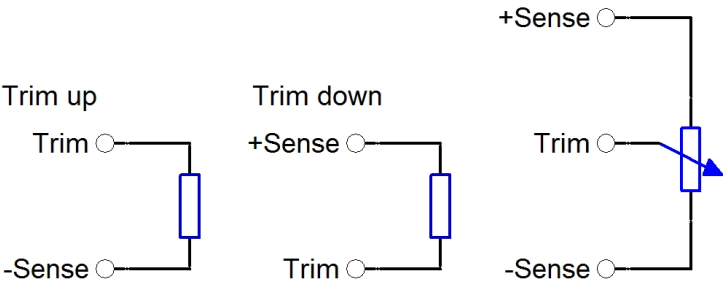
Logic table (inhibit pin)

Logic state	Negative logic*	Positive logic
Logic low	Module on	Module off
Logic high	Module off	Module on

* Suffix "N" to the model number with active low inhibit on/off



Trimming

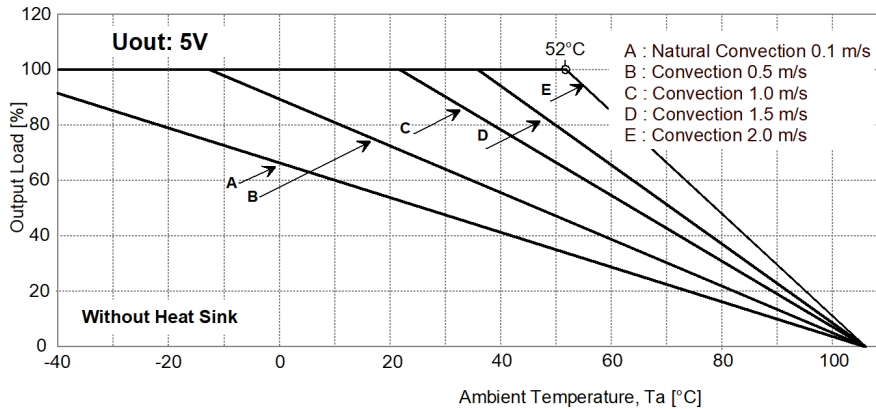


Own notes

Derating

The operating case temperature range of EQW 75 (300V) series is -55/-40...+105°C. When operating the EQW 75 (300V) series, proper derating or cooling is needed. The following curves are the derating curves of EQW 75 (300V) without and with heat sink. Please note that these are relative values in a test environment. Ambient temperature can not be exactly defined in an application, only the case temperature.

Without Heat Sink: Power Dissipation vs Ambient Temperature and Air Flow



A : Natural Convection 0.1m/s
B : 0.5 m/s
C : 1.0 m/s
D : 1.5 m/s
E : 2.0 m/s

Remarks:

Fabrimex recommends a chassis mount or a heatsink. If neither is used a reasonable free space is recommended. Without heatsink, this leads to:

Free space = 30 mm min.

Where:

The power dissipation Pd:

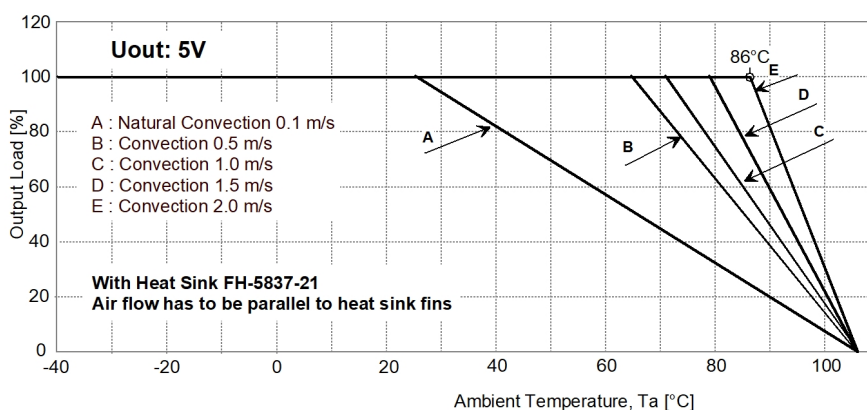
$$P_d = P_i - P_o = \frac{P_o \cdot (1 - \eta)}{\eta}$$

The thermal resistances without heat sink are listed below:

Air flow rate	Typical Rthca
natural convection 0.1m/s	10.1 K/W
0.5 m/s	8.0 K/W
1.0 m/s	5.4 K/W
1.5 m/s	4.4 K/W
2.0 m/s	3.4 K/W

The temperature rise Delta T: $\Delta T = P_d \cdot R_{thca}$

With Heat Sink FH-5837-21: Power Dissipation vs Ambient Temperature and Air Flow; Height: 21mm



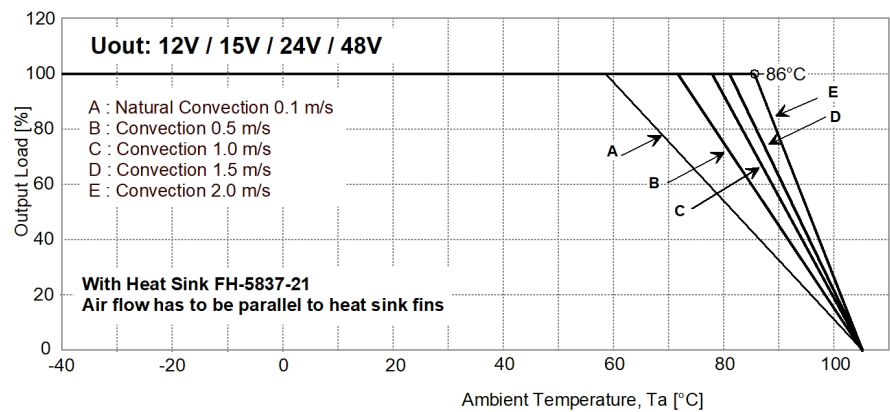
A : Natural Convection 0.1m/s
B : 0.5 m/s
C : 1.0 m/s
D : 1.5 m/s
E : 2.0 m/s

Remarks:

Fabrimex recommends a free space of at least half heat sink height above the heat sink at natural air flow. For the FH-5837-21 this equals to:

Free space = 10.5 mm min.

With Heat Sink FH-5837-21: Power Dissipation vs Ambient Temperature and Air Flow; Height: 21mm



- A: Natural Convection 0.1m/s
- B: 0.5 m/s
- C: 1.0 m/s
- D: 1.5 m/s
- E: 2.0 m/s

Remarks:

Fabrimex recommends a chassis space of at least half the heat sink height as a reasonable free space at rear of the unit. Without this the FH-5837-21: Non equal plastic QB

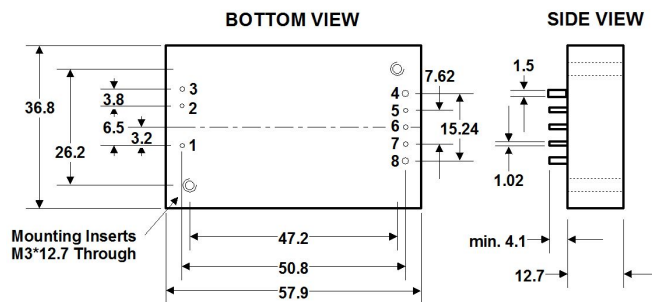
Free space = 30.5mmmin.

Case

Normal tolerance 1/10 ± 0.5 mm, 1/100 ± 0.25 mm; Pin tolerance ± 0.05 mm diameter

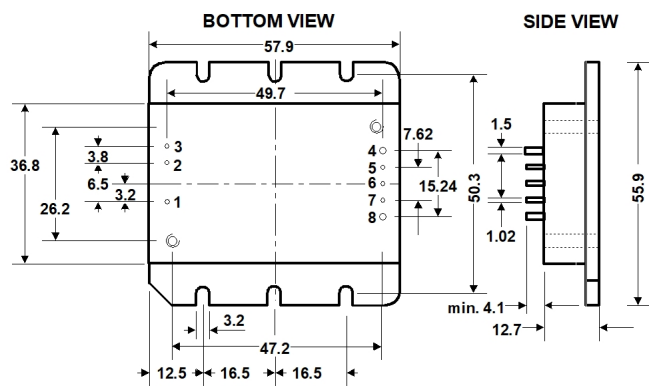
NP = No pin, NC = Not connected, NA = Not available for electrical contact, do not connect, (opt) = optional

Quarter Brick



Pin	Single
1	+Vi
2	on/off
3	-Vi
4	-Vo
5	-Sense
6	Trim
7	+Sense
8	+Vo

Quarter Brick with Flange



Cleaning

The modules are cleanable with the today's known and in the electronics industry usually used products. Due to the different cleaning processes and new available products, we highly recommend to do a compatibility test when using the converters the first time.

Notice: All statements, technical information, and recommendations related to FABRIMEX's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user should determine the suitability of the product for its intended use.

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