

DC/DC Wide Input Converter ECW 100 Watt Series



DC/DC converter module with input to output isolation of 1500 VDC • Pi-filter at input • Continuous short circuit proof • High efficiency • Low output ripple and noise • Low silhouette • 5-sided metal case • External output voltage adjust • Inhibit on/off control • Half brick case • UL, cUL certified (only 36-72Vdc input range)

DC/DC Konverter-Modul mit galvanischer Trennung Eingang / Ausgang von 1500 VDC • Pi-Filter am Eingang • Dauerkurzschlussfest • Hoher Wirkungsgrad • Gute Werte von Rippel und Noise • Geringe Bauhöhe • 5-seitiges Metallgehäuse • Externer Ausgangsspannungsabgleich • Inhibit • Half brick Gehäuse • UL, cUL zertifiziert (nur 36-72Vdc Eingangsspannungsbereich)

Module convertisseur DC/DC avec séparation galvanique entrée/sortie 1500 VDC • Filtre d'entrée • Protection contre courts-circuits permanents • Rendement élevé • Très faible ondulation résiduelle de sortie • Hauteur réduite • Boîtier métallique à 5 faces • Ajustement externe de la tension de sortie • Fonction inhibiter • Boîtier au format "half brick" • Approbation UL et cUL, seulement pour tensions d'entrée 36-72Vdc)

Product range

Typenübersicht

Sommaire des types

Model	Input nominal	Input range	Input current max. @ full load	Input current No Load	Output Uout	Output Iout max.	Operating temperature	Efficiency typ.
ECW24-2V5100	24 VDC	18...36 VDC	2705 mA	50 mA	2.5 VDC	20.00 A	For all models:	77%
ECW24-03100	24 VDC	18...36 VDC	3480 mA	50 mA	3.3 VDC	20.00 A	-40...+100°C case temperature	79%
ECW24-05100	24 VDC	18...36 VDC	5020 mA	50 mA	5.1 VDC	20.00 A		83%
ECW24-12100	24 VDC	18...36 VDC	4880 mA	50 mA	12.0 VDC	8.30 A	see derating	85%
ECW24-15100	24 VDC	18...36 VDC	4925 mA	50 mA	15.0 VDC	6.70 A	specification on page 4	85%
ECW24-24100	24 VDC	18...36 VDC	4905 mA	50 mA	24.0 VDC	4.17 A		85%
ECW48-2V5100	48 VDC	36...72 VDC	1335 mA	50 mA	2.5 VDC	20.00 A		78%
ECW48-03100	48 VDC	36...72 VDC	1720 mA	50 mA	3.3 VDC	20.00 A		80%
ECW48-05100	48 VDC	36...72 VDC	2480 mA	50 mA	5.1 VDC	20.00 A		84%
ECW48-12100	48 VDC	36...72 VDC	2442 mA	50 mA	12.0 VDC	8.30 A		85%
ECW48-15100	48 VDC	36...72 VDC	2463 mA	50 mA	15.0 VDC	6.70 A		85%
ECW48-24100	48 VDC	36...72 VDC	2463 mA	50 mA	24.0 VDC	4.17 A		85%

ECW 48 - 05 100 x

Product Series

Nominal Input Voltage

Nominal Output Voltage
(2V5 = 2.5V)

Output Power in Watts

blank = Positive logic inhibit on/off
N = Negative logic inhibit on/off

Specifications

Spezifikationen

Spécifications

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

Output voltage accuracy	Ausgangsspannungsgenauigkeit	Précision de la tension de sortie	±1% of Uout nom.
Ext. output voltage adjustment	Ext. Ausgangsspannungsabgleich	Ajustement ext. de la tension de sortie	±10%
Transient Response	Sprungcharakteristik	Réponse aux transitoires	25% step load change <500u sec.
Residual output ripple and noise [BW 20 MHz]	Ausgangsspannungsrippel und Noise [BW 20 MHz]	Ondulation résiduelle et bruit de sortie [BW 20 MHz]	2.5/3.3/5.1V 40mV RMS, max. 100mVpp, max. 12/15V 60mV RMS, max. 150mVpp, max. 24V 100mV RMS, max. 240mVpp, max.
Short circuit protection	Kurzschlussfestigkeit	Protection court-circuits	continuous
Line regulation (Umax...Umin)	Leitungsregulierung (Umax...Umin)	Régulation ligne (Umax...Umin)	±0.2% max. @ Iout nom.
Load regulation (100...0%)	Lastregulierung (100...0%)	Régulation charge (100...0%)	±0.2% max.
Isolation voltage	Isolationsspannung	Tension d'isolement	Input/Output 1500VDC Input/Case 1500VDC Output/Case 1500VDC
Isolation resistance	Isolationswiderstand	Résistance d'isolement	> 10 MOhm
Switching frequency	Schaltfrequenz	Fréquence de découpage	typ. 500 kHz
MTBF (MIL-HB 217E at 25°C)	MTBF (MIL-HB 217E bei 25°C)	MTBF (MIL-HB 217E à 25°C)	>1'000'000 hrs.
EMC Conducted and radiated	EMV Leitungsgebunden und abgestrahlt	EMC Emis et conduit	EN55022/11 Class A with external input capacitor
Safety approval	Sicherheitsprüfung	Sécurité	UL / cUL File No, E195564 (only 36-72Vdc input range)
Temperature coefficient	Temperaturkoeffizient	Coefficient de température	typ. ±0.03%/K
Storage temperature	Lagertemperatur	Température de stockage	-40...+105°C
Thermal shutdown range	Thermische Abschaltung	Coupeure thermique	Tcase 100°C
Current Limit	Strombegrenzung	Limitation du courant	110...140% Nominal output
Over voltage protection	Überspannungsschutz	Protection contre surtension	115...140% Vo nom.
Undervoltage lockout	Unterspannungsverhalten	Blocage de sous-tension	24Vin power up @ 17.0V power down @ 16.0V 48Vin power up @ 34.0V power down @ 32.5V
Case material	Gehäusematerial	Matériaux du boîtier	Aluminium
Soldering information	Lötinformationen	Prescriptions de soudage	275°C for 10 sec.
Weight	Gewicht	Poids	approx. 100 g

EMC information EN55022/11 Class A

Electro-Metrics

EMV Messung

Date : 09/08/99 Time : 15:04:19.74
 Technician : U. Luessi Test Equip. : EMC-30 MKIV
 Test Method : CONDUCTED EMISSION Test Number : 1
 Equipment : Sensor Loc. : NA
 Mode of Op. : Normal operation Sensor Pol. : positiv
 Serial No. : 9932 Ext. Atten. : 0 dB

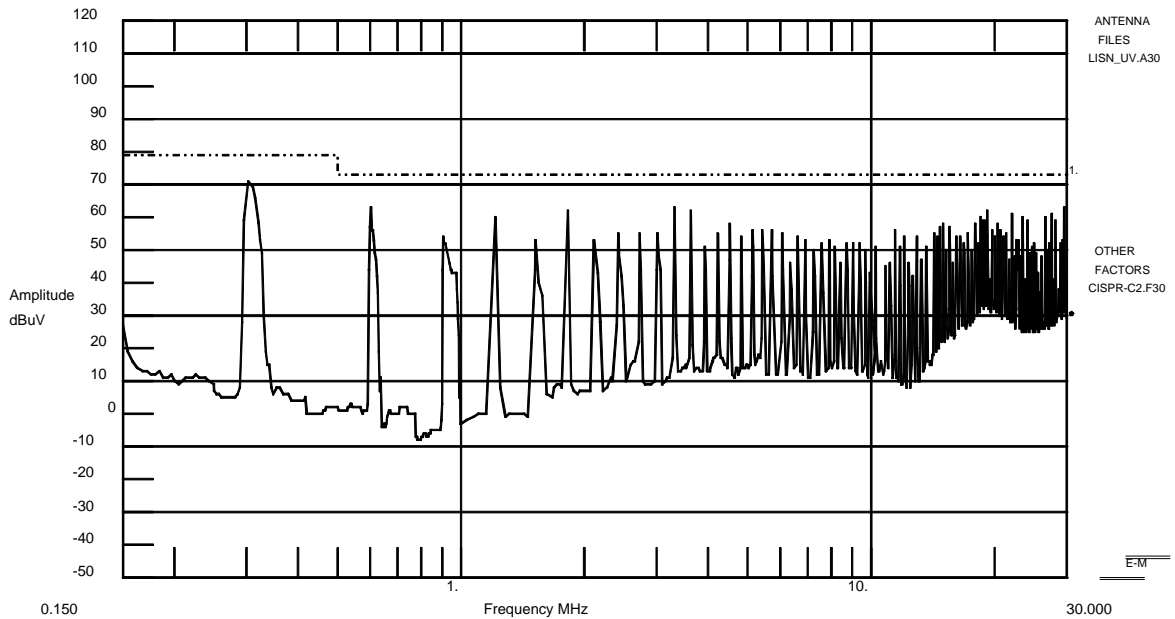
EMC-30 SETTINGS

Detector QuasiPeak
 Bandwidth CISPR
 Dwell N/A
 RF Atten. 0 dB
 IF Atten. 0 dB

SPECS

1) EN 55022 Class A QuasiPeak

Comment : 48VDC input voltage with 220uF capacitor near input



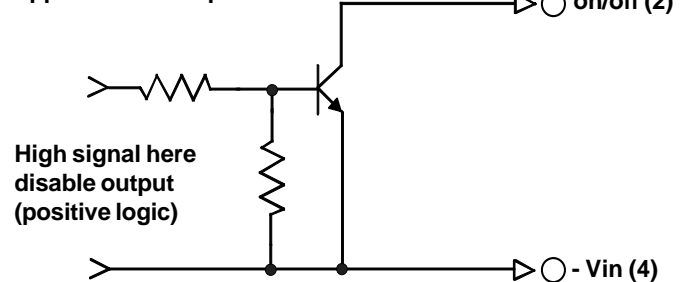
Inhibit on/off control

The ECW 100 Watt allows the user to switch the module on and off electronically by inhibit on/off feature. The converters are available in "positive logic" or "negative logic" (option) versions for inhibit on/off.

Logic table

Logic state (Pin 2)	Negative logic*	Positive logic
Logic low	Module on	Module off
Logic high	Module off	Module on

Application example

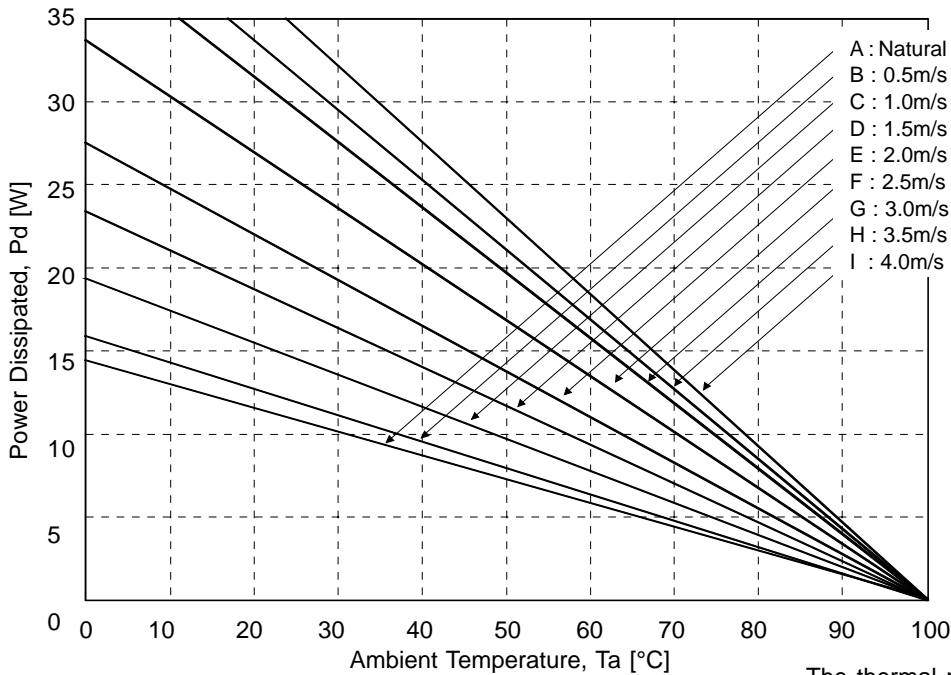


* Suffix "N" to the model number with active low inhibit on /off

Derating ECW 100 Watt Series

The operating case temperature range of ECW 100 series is -40°C to +100°C. When operating the ECW 100 series, proper derating or cooling is needed. The following curves are the derating curves of ECW 100 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 Dissipated vs Ambient Temperature and Air Flow



Remark:

Fabrimex recommends a free space of at least half the converter length above the converter at natural air flow. For the ECW 100 Watt this equals to:

Free space = 30.5mm min.

Where:

The Power Dissipation (Pd):

$$Pd = Pi - Po = Po * (1 - \eta) / \eta$$

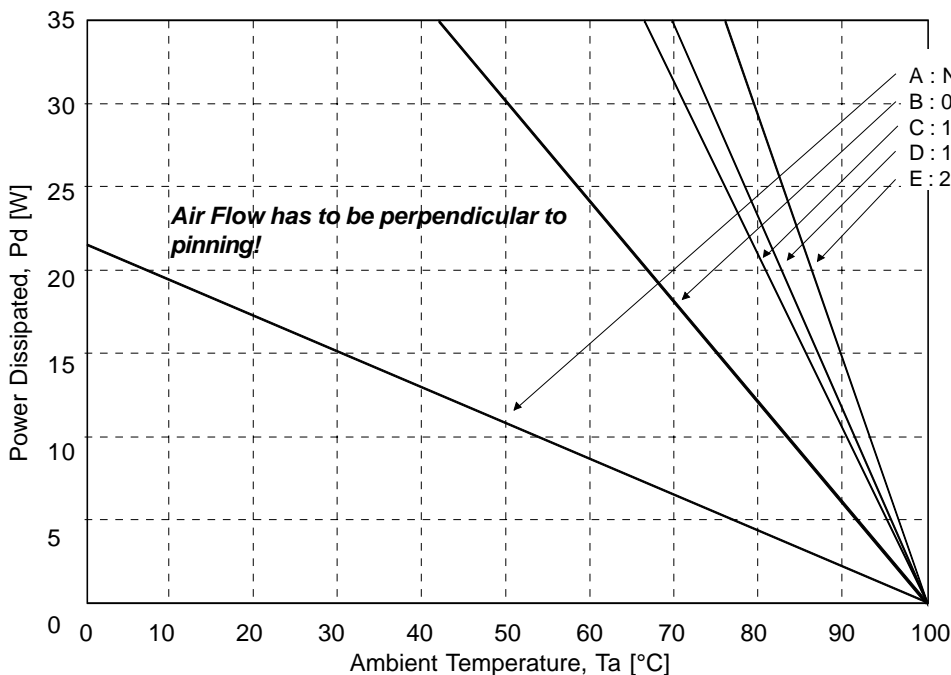
The temperature rise (delta T):

$$\Delta T = Pd * Rca$$

The thermal resistances with out heat sink are listed below:

air flow rate	typical Rca
natural convection 0.1m/s	7.12 K/W
0.5m/s	6.21 K/W
1.0m/s	5.17 K/W
1.5m/s	4.29 K/W
2.0m/s	3.64 K/W
2.5m/s	2.96 K/W
3.0m/s	2.53 K/W
3.5m/s	2.37 K/W
4.0m/s	2.19 K/W

With Heat Sink FH-6158-13: Power Dissipated vs Ambient Temperature; Height: 12.7mm

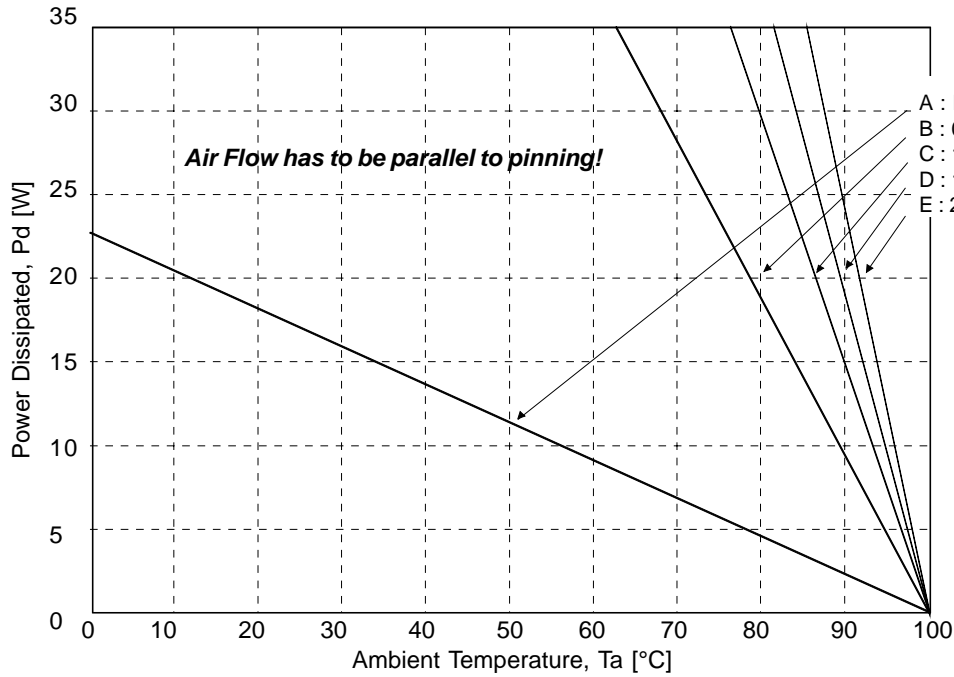


Remark:

Fabrimex recommends a free space of at least half the heat sink height above the heat sink at natural air flow. For the FH-6158-13 this equals to:

Free space = 6.5 mm min.

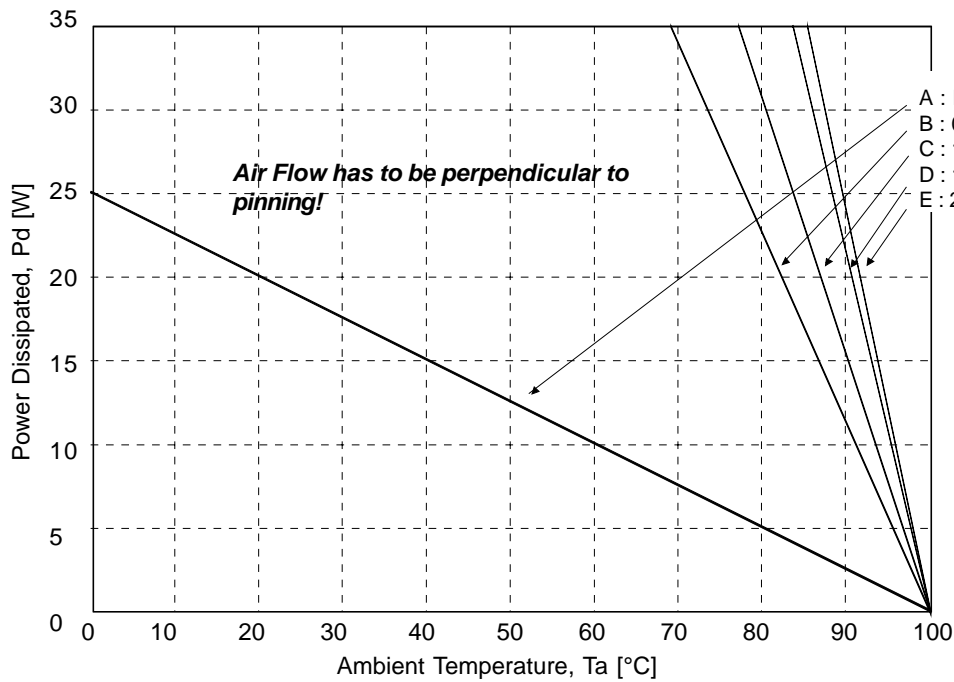
With Heat Sink FH-5861-21: Power Dissipated vs Ambient Temperature; Height: 21mm



Remark:
 Fabrimex recommends a free space of at least half the heat sink height above the heat sink at natural air flow. For the FH-5861-21 this equals to:

Free space = 10.5mm min.

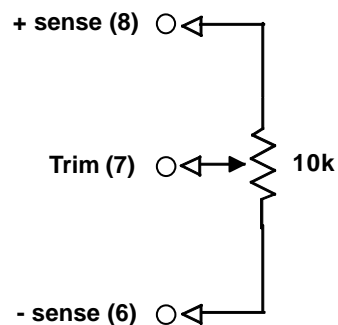
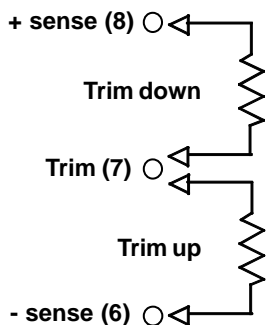
With Heat Sink FH-6158-25: Power Dissipated vs Ambient Temperature; Height: 25.4mm



Remark:
 Fabrimex recommends a free space of at least half the heat sink height above the heat sink at natural air flow. For the FH-6158-25 this equals to:

Free space = 12.5mm min.

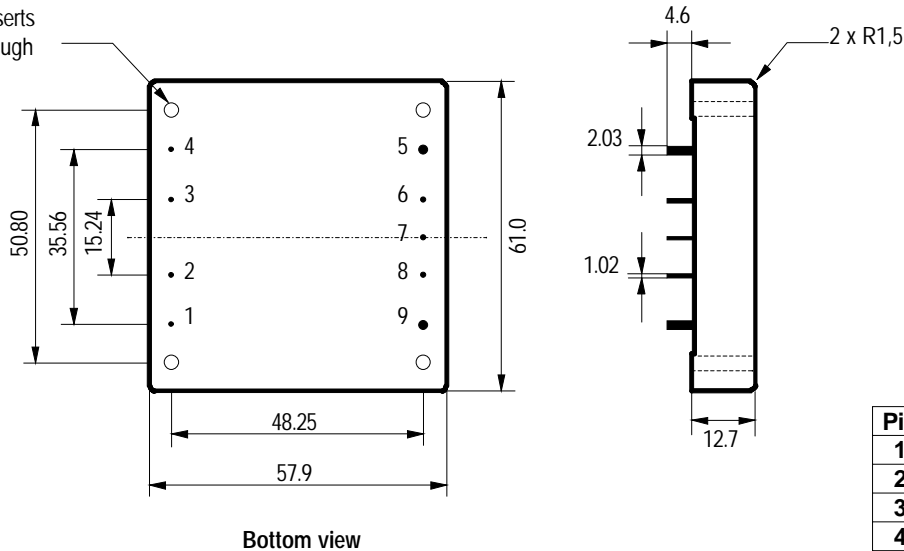
External output trim



View from bottom; Normal tolerance 1/10 ± 0.5 mm, 1/100 ± 0.25 mm; Pin tolerance ± 0.5 mm diameter

HALF BRICK CASE

Mounting Inserts
M3 x 0,5 trough



Pin	Function
1	+ Vin
2	on/off
3	case
4	- Vin
5	- Vout
6	- sense
7	trim
8	+ sense
9	+ Vout

Cleaning

Waschen

Lavage

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.

Die Module sind waschbar mit den heute bekannten und in der Elektronikindustrie üblichen Reinigungsmitteln. Bedingt durch die verschiedenen Reinigungsprozesse und neu auf den Markt kommende Mittel, raten wir dringend beim Ersteinsatz der Konverter eine Verträglichkeitsprüfung vorzunehmen.

Les modules sont généralement lavables avec les solvants couramment utilisés dans l'industrie électronique. En fonction de la diversité des processus de lavage disponibles sur le marché, il est recommandé de faire, avant la première utilisation, un test de compatibilité.

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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