FABRIMEX AG
CH-8608 Bubikon/Switzerland

FABRIMEX
POWER SUPPLIES

RoHS ✓ Compliant

Certified Management-System SQS ISO 9001
Reg. Nr. 12666

DC/DC Ultra Wide Input Converter
ECU 200 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 • External output voltage adjust • Inhibit on/off control • Half brick case

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 • Externer Ausgangsspannungsabgleich • Inhibit • Half brick Gehäuse

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 • Ajustement externe de la tension de sortie • Fonction inhibit • Boîtier au format "half brick"

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.
ECU24-3V3200	24 VDC	9...36 VDC	7900 mA	150 mA	3.3 VDC	50.00 A	For all models: -40...+100°C case temperature see derating specification on page 4	87%
ECU24-5V0200	24 VDC	9...36 VDC	9580 mA	150 mA	5.0 VDC	40.00 A		87%
ECU24-12200	24 VDC	9...36 VDC	9710 mA	100 mA	12.0 VDC	16.70 A		86%
ECU24-15200	24 VDC	9...36 VDC	9670 mA	100 mA	15.0 VDC	13.30 A		86%
ECU24-24200	24 VDC	9...36 VDC	9540 mA	100 mA	24.0 VDC	8.30 A		87%
ECU48-3V3200	48 VDC	18...72 VDC	3125 mA	80 mA	3.3 VDC	40.00 A	For all models: -40...+100°C case temperature see derating specification on page 4	88%
ECU48-5V0200	48 VDC	18...72 VDC	4682 mA	80 mA	5.0 VDC	40.00 A		89%
ECU48-12200	48 VDC	18...72 VDC	4744 mA	60 mA	12.0 VDC	16.70 A		88%
ECU48-15200	48 VDC	18...72 VDC	4723 mA	60 mA	15.0 VDC	13.30 A		88%
ECU48-24200	48 VDC	18...72 VDC	4716 mA	60 mA	24.0 VDC	8.30 A		88%

Rev.0 / 07.2009

Nomenclature | Nomenklatur | Nomenclature

ECU 48 - 12 200 x

Product Series

Nominal Input Voltage

Nominal Output Voltage
(3V3 = 3.3V)

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	±1.5% of Uout nom.
Ext. output voltage adjustment	Ext. Ausgangsspannungsabgleich	Ajustement ext. de la tension de sortie	±10%
Transient Response	Sprungcharakteristik	Rèsponse en 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]	3.3/5.0V 40mV RMS, max. 100mVpp, max. 12/15V 60mV RMS, max. 150mVpp, max. 24V 100mV RMS, max. 240mVpp, max.

Short circuit protection	Kurzschlussfestigkeit	Protection courts-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. 250 kHz
EMC Conducted and radiated	EMV Leitungsgebunden und abgestrahlt	EMC Emis et conduit	EN55022/11 Class A with external input capacitor
Temperature coefficient	Temperaturkoeffizient	Coefficient de température	typ. ±0.03%/°C
Storage temperature	Lagertemperatur	Température de stockage	-55...+105°C
Thermal shutdown range	Thermische Abschaltung	Coupure thérmic	Tcase 110°C
Current Limit	Strombegrenzung	Limitation du courant	110...140% Nominal output
Over voltage protection	Überspannungsschutz	Protection contre surtension	115...150% Vo nom.
Undervoltage lockout	Unterspannungsverhalten	Bloquage de soustension	power up @ 17V power down @ 16V
Case material	Gehäusematerial	Matériaux du boîtier	Aluminium baseplate with plastic case
Soldering information	Lötinformationen	Information de soudage	275°C for 10 sec.

EMC information EN55022/11 Class A

Graph coming soon

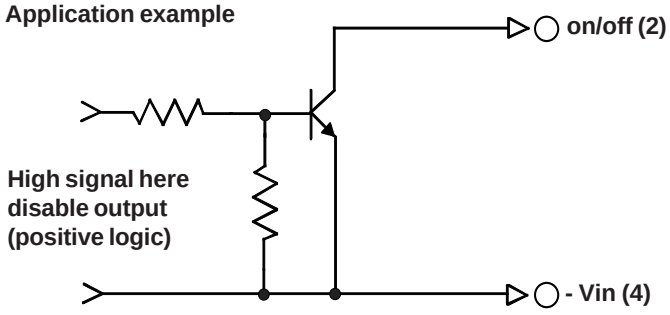
Inhibit on/off control

The ECU 200 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

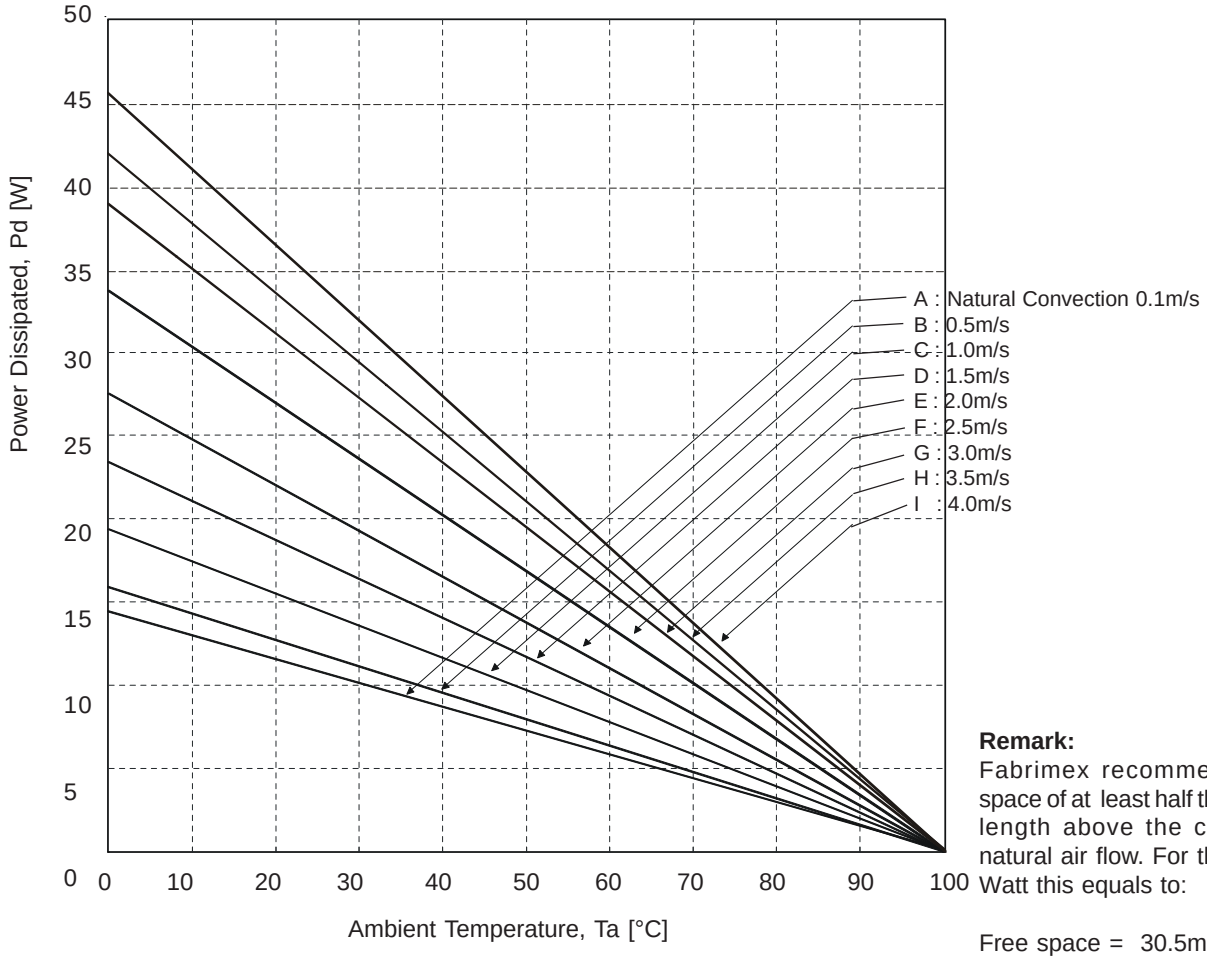


*** Suffix "N" to the model number with active low inhibit on /off**

Derating ECU 200 Watt Series

The operating case temperature range of ECU 200 series is -40°C to +100°C. When operating the ECU 200 series, proper derating or cooling is needed. The following curves are the derating curves of ECU 200 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 con verter length above the converter at natural air flow. For the ECU 200 Watt this equals to:

Free space = 30.5mm min.

Where:

The Power Dissipation (Pd):

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

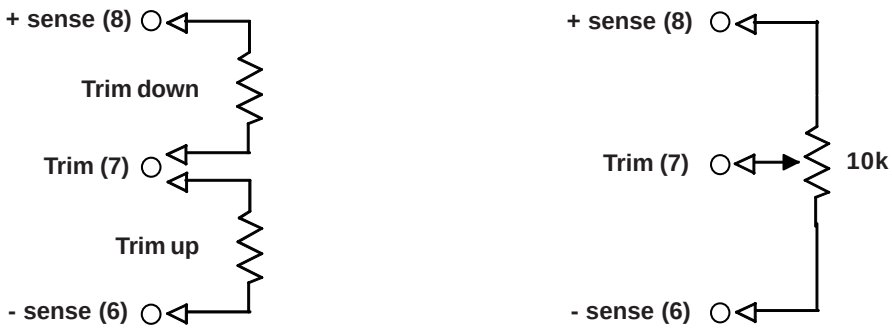
The temperature rise (delta T):

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

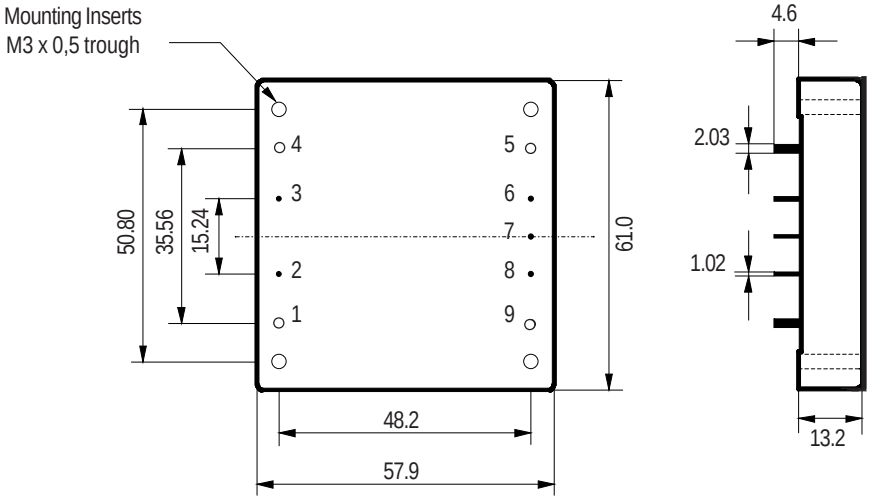
External output trim



Case Gehäuse Boîtier

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

HALF BRICK CASE



Bottom view

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

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.

Waschen

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.

Lavage

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.

FABRIMEX
POWER SUPPLIES

Switzerland:
FABRIMEX AG
Techcenterstrasse 2
CH-8608 Bubikon
Tel: +41-55-253 31 90 • Fax: +41-55-253 31 91
www.fabrimex.ch
Germany:
CAC FABRIMEX GmbH • D-89543 Gerstetten
Tel: 07323/ 950-0 • Fax: 07323/ 95050