FABRIMEX POWER SUPPLIES
CH-8608 Bubikon/Switzerland

FABRIMEX
POWER SUPPLIES

RoHS ✓ Compliant

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

DC/DC Wide Input Converter
ECW 75 Watt Series

cULus

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 • Remote on/off control • UL, cUL certified (only single output, 18-36 or 36-72Vdc input range) • Half brick case • Remote sense

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 Ausgangs-spannungsabgleich • Inhibit • UL, cUL zertifiziert (nur einfacher Ausgang, 18-36 oder 36-72Vdc Eingangsspannungs-bereich) • Half brick Gehäuse • Fühlerleitung

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 inhibit • Boîtier au format "half brick" • Approbation UL et cUL, seulement pour tensions d'entrée 18-36 et 36-72Vdc, sortie simple)

Product range | Typenübersicht | Sommaire des types

SINGLE OUTPUT

Model	Input range	Input nominal	Output Uout	Output Iout max.	No load input current	Operating temperature	Efficiency typ.
ECW12-2V575	9...18 VDC	12 VDC	2.5 VDC	15.00 A	typ. 50 mA	For all models:	76%
ECW12-0375	9...18 VDC	12 VDC	3.3 VDC	15.00 A	typ. 50 mA	-40...+100°C	78%
ECW12-0575	9...18 VDC	12 VDC	5.1 VDC	15.00 A	typ. 50 mA	case temperature	81%
ECW12-1275	9...18 VDC	12 VDC	12.0 VDC	6.25 A	typ. 50 mA	see derating	84%
ECW12-1575	9...18 VDC	12 VDC	15.0 VDC	5.00 A	typ. 50 mA	specification on page 5	84%
ECW12-2475	9...18 VDC	12 VDC	24.0 VDC	3.13 A	typ. 50 mA		84%
ECW24-2V575	18...36 VDC	24 VDC	2.5 VDC	15.00 A	typ. 50 mA		77%
ECW24-0375	18...36 VDC	24 VDC	3.3 VDC	15.00 A	typ. 50 mA		79%
ECW24-0575	18...36 VDC	24 VDC	5.1 VDC	15.00 A	typ. 50 mA		82%
ECW24-1275	18...36 VDC	24 VDC	12.0 VDC	6.25 A	typ. 50 mA		85%
ECW24-1575	18...36 VDC	24 VDC	15.0 VDC	5.00 A	typ. 50 mA		85%

Model	Input range	Input nominal	Output Uout	Output Iout max.	No load input current	Operating temperature	Efficiency typ.
ECW24-2475	18...36 VDC	24 VDC	24.0 VDC	3.13 A	typ. 50 mA	For all models: -40...+100°C case temperature see derating specification on page 4	86%
ECW48-2V575	36...72 VDC	48 VDC	2.5 VDC	15.00 A	typ. 50 mA		77%
ECW48-0375	36...72 VDC	48VDC	3.3 VDC	15.00 A	typ. 50 mA		79%
ECW48-0575	36...72 VDC	48 VDC	5.1 VDC	15.00 A	typ. 50 mA		83%
ECW48-1275	36...72 VDC	48 VDC	12.0 VDC	6.25 A	typ. 50 mA		85%
ECW48-1575	36...72 VDC	48 VDC	15.0 VDC	5.00 A	typ. 50 mA		85%
ECW48-2475	36...72 VDC	48 VDC	24.0 VDC	3.13 A	typ. 50 mA		86%

DUAL OUTPUT (meets UL, not certified)

Model	Input range	Input nominal	Output Uout	Output Iout min.	Output Iout max.	No load input current	Operating temperature	Efficiency typ.
ECW48-052V575	36...72 VDC	48 VDC	5.1 VDC	1.00 A	15.00 A	typ. 30 mA	For all models: -40...+100°C case temperature	84%
			2.5 VDC	0 A	15.00 A			
ECW48-053V375	36...72 VDC	48 VDC	5.1 VDC	1.00 A	15.00 A	typ. 30 mA		84%
			3.3 VDC	0 A	15.00 A			

Nomenclature Nomenklatur Nomenclature

ECW 48 - 03 (05) 75 x

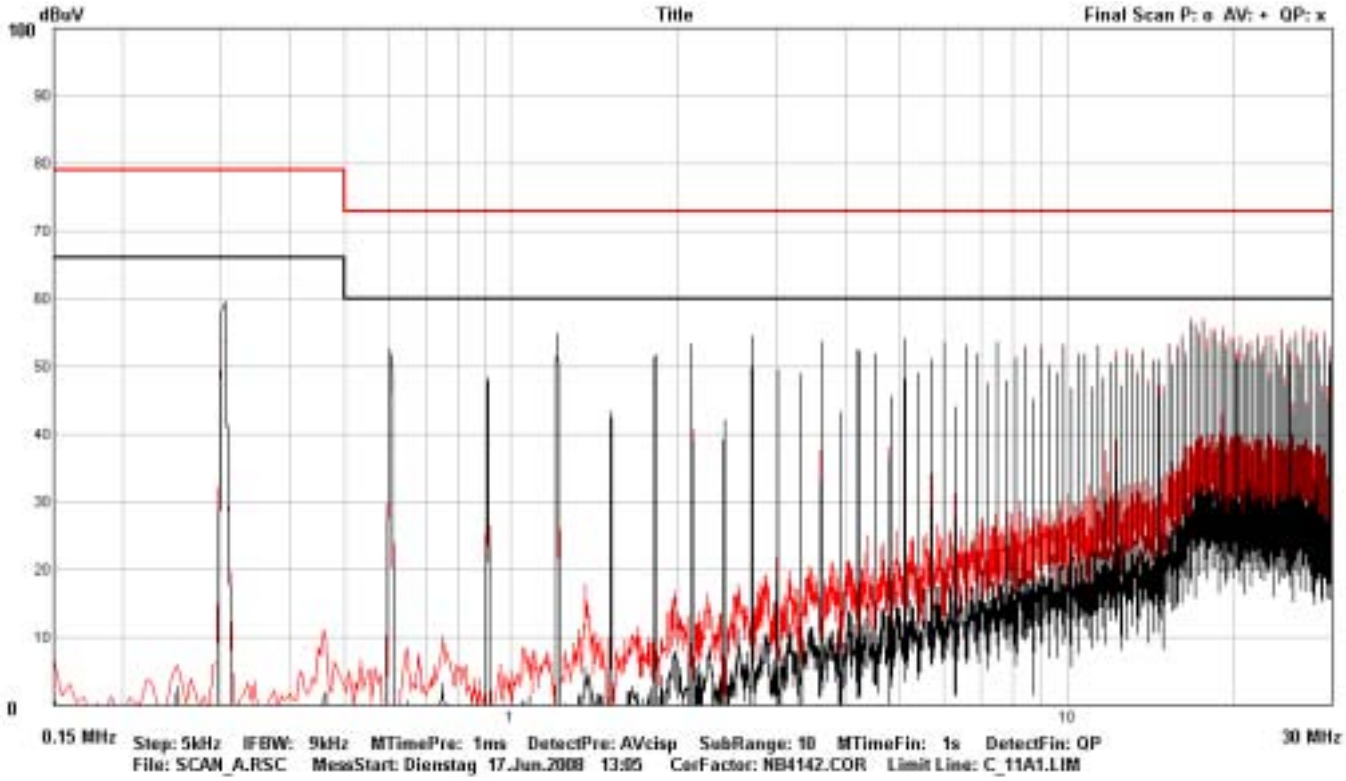
- **Product Series**
- **Nominal Input Voltage**
- **Nominal Output 1 Voltage**
- **Nominal Output 2 Voltage (2V5 = 2.5 V)**
- **Output Power in Watts**
- **blank** = Positive logic inhibit on/off
- **N** = Negative logic inhibit on/off

Specifications	Spezifikationen	Spécifications	

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

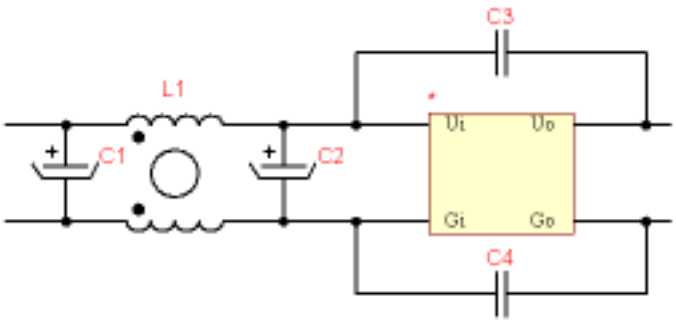
Output voltage accuracy	Ausgangsspannungsgenauigkeit	Précision de la tension de sortie	±1% of Uout nom. (single) ± 2% of Uout nom. (dual)
Ext. output voltage adjustment	Ext. Ausgangsspannungsabgleich	Ajustement ext. de la tension de sortie	±10% (single) ± 5% each output (dual)
Residual output ripple 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 20mV RMS, max. 75mVpp, max. 12/15V 30mV RMS, max. 100mVpp, max. 24V 100mV RMS, max. 240mVpp, max. Dual 2.5/3.3/5.1V 40mV RMS, max. 100mVpp, 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. (single) ±0.5% max. (dual)
Isolation voltage	Isolationsspannung	Tension d'isolement	Input/Output 1500VDC Input/Case 1500VDC Output/Case 1500VDC
Isolation resistance	Isolationswiderstand	Résistance d'isolement	> 1 GOhm
Switching frequency	Schaltfrequenz	Fréquence de découpage	48 Vin typ. 300 kHz 12/24 Vin typ. 400 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	Approbation de sécurité	UL / cUL 1950
UL file number	UL Nummer	Numéro d'UL	UL / cUL File No. E195564 only single, 18-36 and 36-72 Vdc input range)
Temperature coefficient	Temperaturkoeffizient	Coefficient de température	typ. ±0.03%/K
Storage temperature	Lagertemperatur	Température de stockage	-55...+105°C
Thermal shutdown range	Thermische Abschaltung	Coupure thérmique	Tcase 100°C
Current Limit	Strombegrenzung	Limitation du courant	110...140% Nominal output
Over voltage protection	Überspannungsschutz	Protection contre surtension	115...140%
Under- Overvoltage lockout	Unter- Oberspannungsverhalten	Blocage de sous-tension	12Vin power up @ 8.8V power down @ 8.0V 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 (single) Aluminum baseplate with plastic case (dual)
Soldering information	Lötinformationen	Prescriptions de soudage	275°C for 10 sec.
Weight	Gewicht	Poids	approx. 100 g
Transient response	Sprungcharakteristik	Résponse en transitoires	25% Step Load Change < 500u sec.

EMC information ECW48-0550 EN55022/11 Class A



Filter

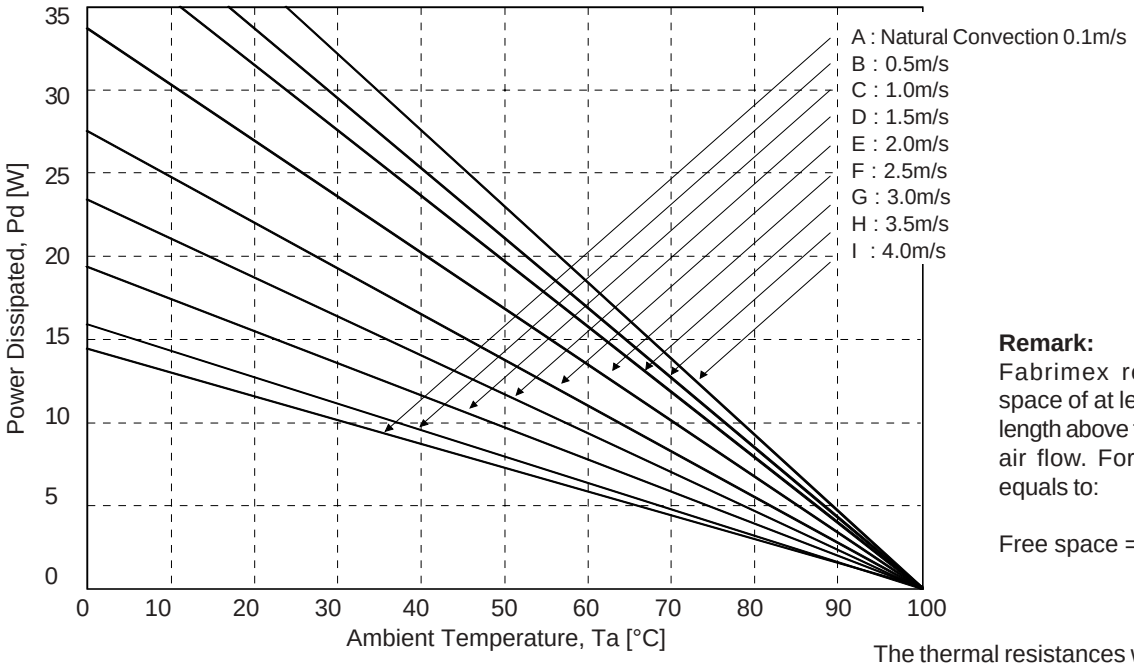
Used Parts:	
C1	220µF / 63V Nic Comp. NRWS221M63V10X16
C2	220µF / 63V Nic Comp. NRWS221M63V10X16
C3	4n7 / 100V Kemet CK05
C4	4n7 / 100V Kemet CK05
L1	2 x 6.8µH / 1.2A Schaffner RN112-1.2/02



Derating ECW 75Watt Series

The operating case temperature range of ECW 75 series is -40°C to +100°C. When operating the ECW 75 series, proper derating or cooling is needed. The following curves are the derating curves of ECW 75 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 ECW 75 Watt



Remark:
Fabrimex recommends a free space of at least half the converter length above the heat sink at natural air flow. For the ECW 75W this equals to:

Free space = 30 mm min.

Where:

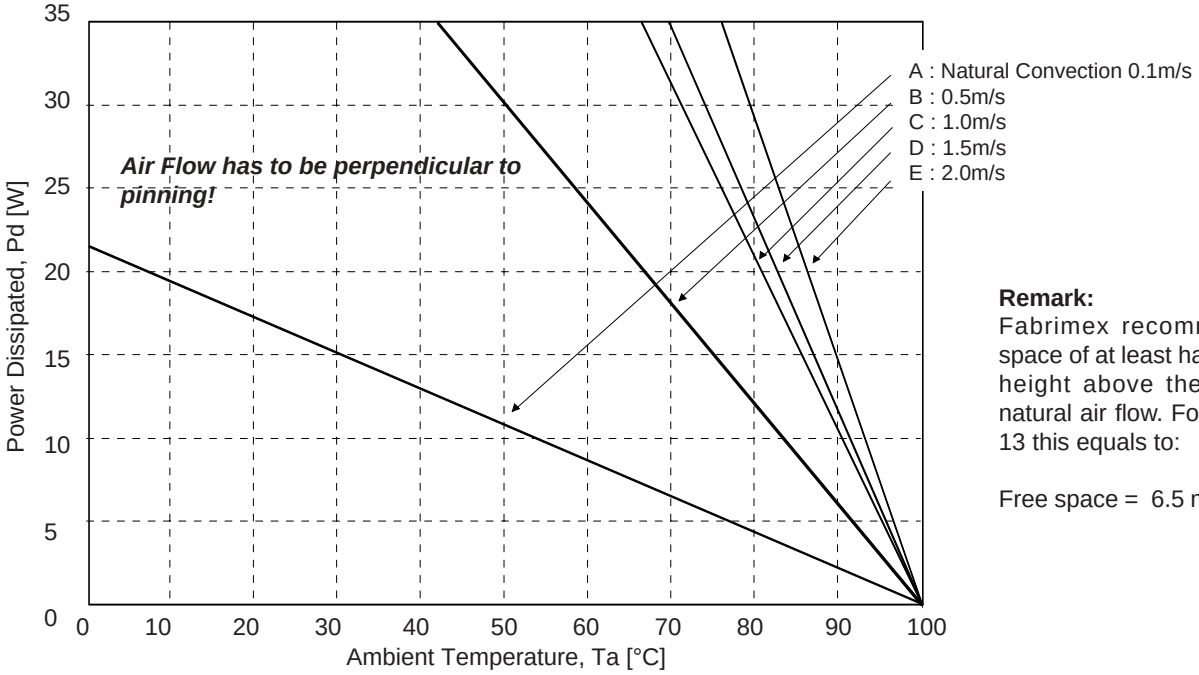
The Power Dissipation (Pd):
Pd = Pi - Po = Po * (1 - eta) / eta

The temperature rise (delta T):
delta T = Pd * Rca

The thermal resistances without 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

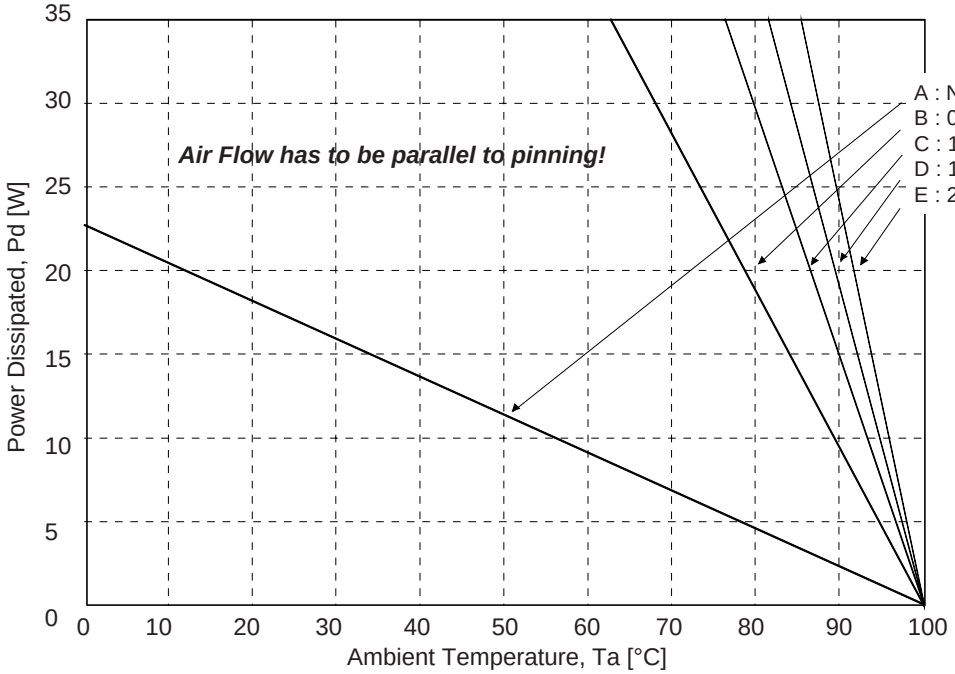
With Heat Sink FH-6158-13: Power Dissipated vs Ambient Temperature; Height: 12.7mm



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.

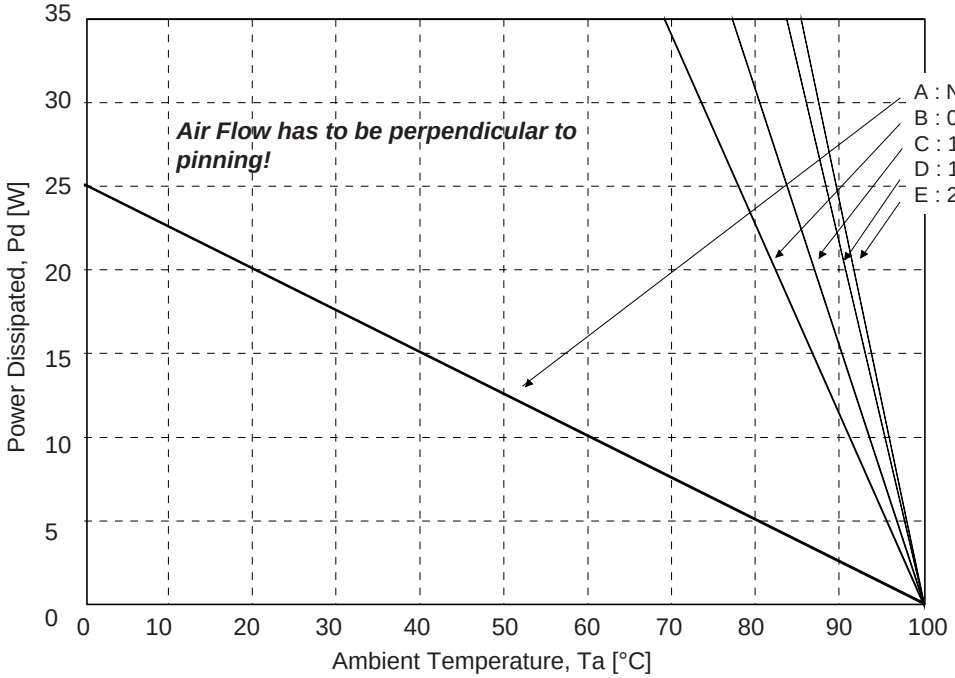
With Heat Sink FH-5861-21: Power Dissipated vs Ambient Temperature; Height: 21mm



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 = 12.7 mm min.

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.

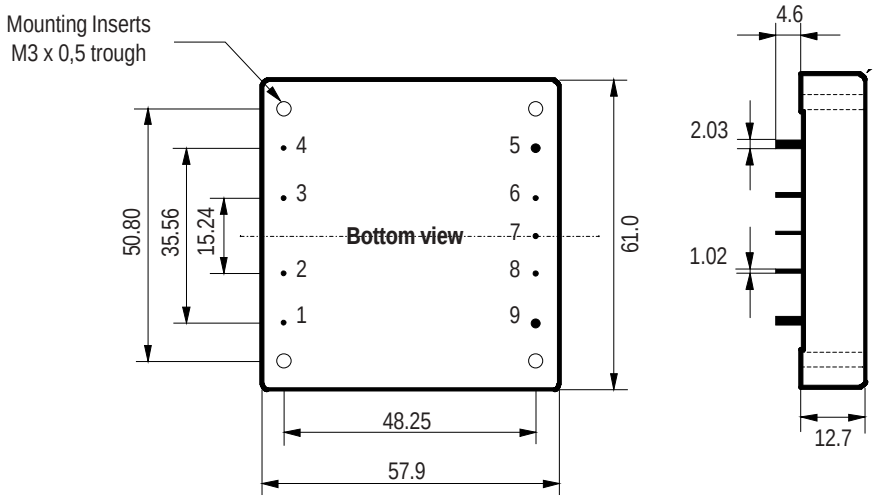
Die Module sind waschbar mit den heute bekannten und in der Elektronikindustrie üblichen Reinigungsmitteln. Bedingt durch die verschiedenen Reinigungsprozesse und neu auf den Markt kommenden Mittel, raten wir dringend, beim Ersteinsatz der Konverter eine Verträglichkeitsprüfung vorzunehmen.

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.

Case Gehäuse Boîtier

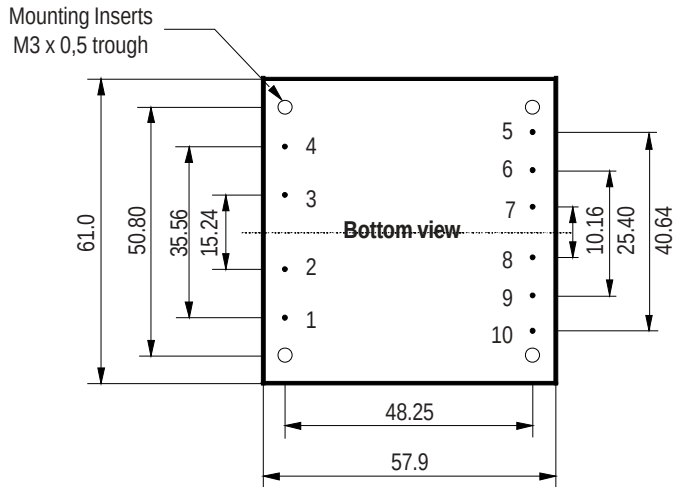
View from bottom; Normal tolerance 1/10 ±0.5 mm, 1/100 ±0.25 mm; Pin tolerance 0.5 mm diameter

SINGLE OUTPUT



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

DUAL OUTPUT



Pin	Function
1	+ Vin
2	on/off
3	case
4	- Vin
5	+ $V_{out}2$
6	- $V_{out}2$
7	$V_{out}2$ trim
8	+ $V_{out}1$
9	- $V_{out}1$
10	$V_{out}1$ trim

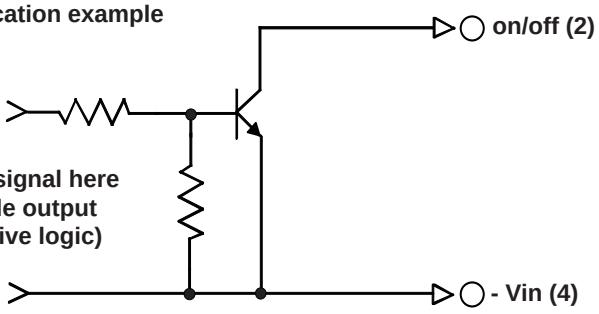
Inhibit on/off control

The ECW 33/50/75 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

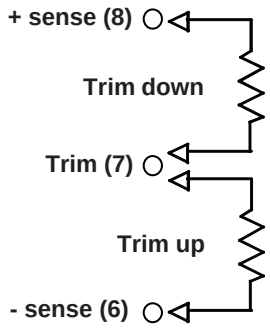
Logic state (Pin 2)	Negative logic*	Positive logic
Logic low	Module on	Module off
Logic high	Module off	Module on

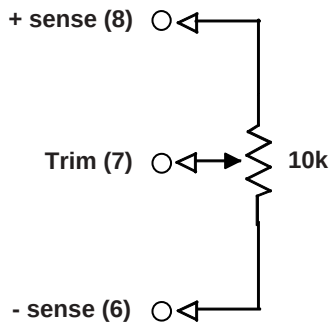
Application example



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

External output trim





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300'056 Rev. C / 08.2002