

## FEATURES AND APPLICATIONS

- Ultra Wide 4:1 Input Range
- High Efficiency up to 91%
- 1500 Vdc Isolation
- Low Ripple and Noise
- Adjustable Output Voltage
- Remote On/Off Control
- Continuous Short Circuit Protection
- Over Current & Over Voltage Protection
- Over Temperature Protection
- Soft Start
- 2 x 1 x 0.4 inches
- RoHS ✓



## GENERAL DESCRIPTION

The VM30CW series is a family of 30 Watt single, dual and triple output DC-DC converters. These converters combine a nickel-coated copper package in a compatible case (50.8 x 25.4 x 10.2 mm) with high performance features such as 1500 VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line and load regulation.

Models operate from a 4:1 input bus voltage of 24 and 48 Vdc, and offering output voltage levels of 3.3, 5, 5.1, 12, 15, ±5, ±12, ±15, 3.3/±12, 3.3/±15, 5/±12 and 5/±15 Vdc. Cooling is by free-air convection.

### 4:1 Input single, dual and triple Output

Model Number	Input Voltage Range [VDC]	Output Voltage [VDC]	Input Current		Output Current		max. Capacitor Load [uF]	Efficiency [%] 24/48
			No-Load [mA] 24/48	Full Load [mA] 24/48	min. Load [mA]	Full Load [mA]		
VM30CW-xx3R3S	9-36 18-75	3.3	60/50	1185/593	0	7500	20000	89/89
VM30CW-xx05S		5	100/60	1420/702	0	6000	14000	91/91
VM30CW-xx5R1S		5	90/60	1448/724	0	6000	14000	91/91
VM30CW-xx12S		12	30/30	1436/718	0	2500	2000	90/90
VM30CW-xx15S		15	30/30	1420/710	0	2000	2000	91/90
VM30CW-xx05D	9-36 18-75	±5	120/70	1437/710	0	±3000	±3000	90/91
VM30CW-xx12D		±12	30/30	1453/718	0	±1250	±1300	89/90
VM30CW-xx15D		±15	40/40	1437/718	0	±1000	±1300	89/90
VM30CW-xx3R312T	9-36 18-75	3.3/±12	80/50	1287/636	500/±42	5000/±420	15000/±220	89/89
VM30CW-xx3R315T		3.3/±15	90/50	1279/640	500/±33	5000/±330	15000/±220	89/89
VM30CW-xx0512T		5.0/±12	100/60	1440/712	400/±42	4000/±420	8000/±220	89/91
VM30CW-xx0515T		5.0/±15	110/60	1431/707	400/±33	4000/±330	8000/±220	90/90

\* non standard output voltages on request

xx ... nominal Input voltage:

VM30CW-Series:     24 (18 – 36 Vdc)  
                          48 (36 – 75 Vdc)

Options:

Suffix –HS     Heat Sink

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### ELECTRICAL SPECIFICATIONS

Specifications typical at +25°C, nominal Input voltage, rated output current unless otherwise specified.

#### Input Specifications

Input Voltage Range	24V: 9 to 36 Vdc 48V: 18 to 75 Vdc
Input Filter	Pi type
Input Surge Voltage	24V: -0.7 to 50 Vdc, 100 mS, max. 48V: -0.7 to 100 Vdc, 100 mS, max.
Input Reflected Ripple Current	20 mA <small>Measured with a simulated source inductance of 12 µH.</small>
Start Up time	30 mS (nom. input, const. res. load)
Input Current (No-Load)	see table
Input Current (Full-Load)	see table

#### Remote ON/OFF Control

Control Voltage referenced to negative (-) input (Pin2)	
Positive Logic: ON-Control:	3.0 to 12 V or open
OFF-Control:	0 to 1.2 V or short Pin2 and Pin3
Remote off input current	5 mA, typ.

#### Environmental Specification

Operating Temperature	-40°C to +50°C without Derating +50°C to +75°C with Derating
Heat Sink Option	see Derating Curve on page 3
Storage Temperature	-40°C to +125°C
Max. Case Temperature	+105°C
Cooling	Free-air Convection
Over Temp. Protection	115°C, typ. (Case)
MTBF (MIL-HDBK-217F)	>435 khrs (Single & Dual) >320 khrs (Triple)
Relative Humidity	95% RH
Soldering Temperature	260°C max. (1.5mm from case 10 sec. max.)

#### EMC Characteristics

Rad. Emissions	EN55022	Class A
Cond. Emissions	EN55022	Class A*
* can meet EN55022 Class A with an external filter in parallel with the input pins.		
ESD	EN61000-4-2	Perf. Criteria A
RS	EN61000-4-3	Perf. Criteria A
EFT	EN61000-4-4	Perf. Criteria A
Surge	EN61000-4-5	Perf. Criteria A
An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5. Recommended: 220 µF/100 V		
CS	EN61000-4-6	Perf. Criteria A
PFMF	EN61000-4-6	Perf. Criteria A

#### Output Specifications

Output Power	30 Watts, max.
Output Voltage Accuracy	±1.0% Triple: ±1.0%/±5.0%
Output Voltage Trim	±10% (Single Output only) <small>The Output Voltage could be trimmed by using external Components (see Page 6)</small>
Min. Load for specified Regulation	see table
Ripple and Noise (20 MHz BW)	100 mVpp, max. Triple: 50 / 75 mVpp, max.
Line Voltage Regulation	±0.5%, max. (LL to HL at full load) Triple: ±1.0%/±5.0%, max.
Load Voltage Regulation	Single: ±0.5%, max. (No load to full load) Dual: ±1%, max. (No load to full load) Triple: ±1.0%/±5.0% (10% to 100%)
Cross Regulation	Dual: ±5% (Asym. load 25%/100% FL) Triple: ±5% (100%, 100%, 25%-100%)
Temperature Coefficient	±0.02%/°C, max.
Over Load Protection	150% (of FL at nominal input)
Short Circuit Protection	Continuous (Hiccup)
Capacitive Load	see table
Transient response recovery time	250 µsec (25% load step change)
Transient Response Deviation	±3%, max.
Over Voltage Protection	3.3 Vout: 3.9 Vdc 5.0, 5.1 & ±5 Vout: 6.2 Vdc 12 & ±12 Vout: 15 Vdc 15 & ±15 Vout: 18 Vdc

#### General Specifications

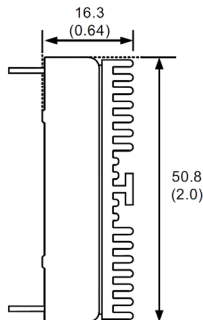
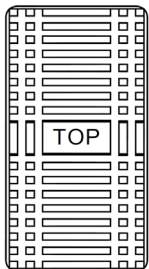
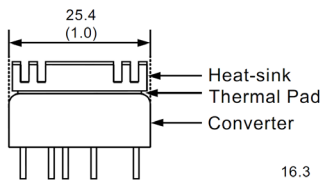
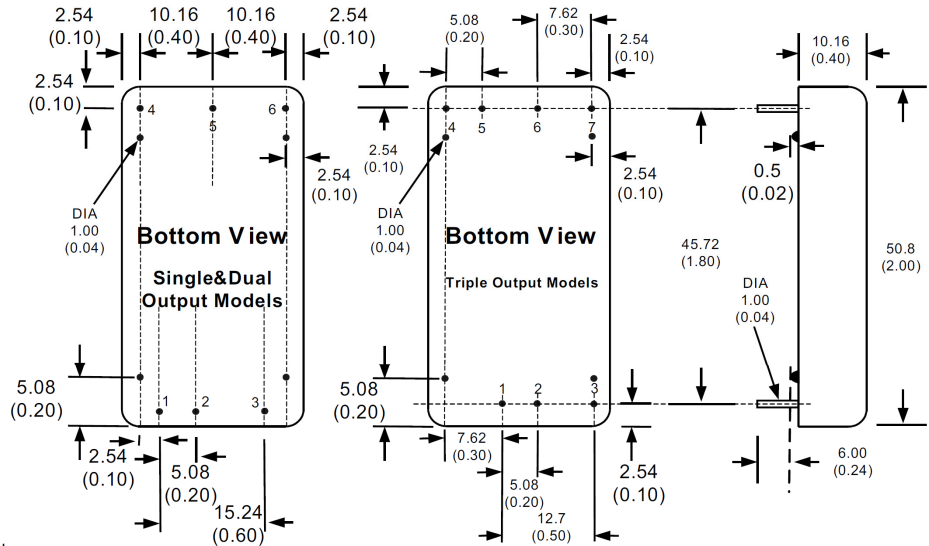
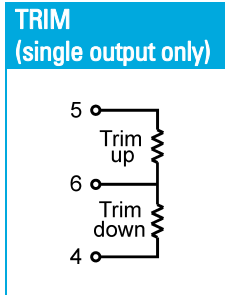
Efficiency	see table
Switching Frequency	330 kHz, typ.
Isolation Voltage	1500 Vdc, min. (1 minute)
Isolation Resistance	10 <sup>9</sup> Ohms, min.
Isolation Capacitance	1500 pF, max.
Approvals	IEC/EN60950-1 (designed to meet)

#### Physical Characteristics

Dimensions	50.8 x 25.4 x 10.2 mm 2.00 x 1.00 x 0.40 inches
Case Material	Nickel-coated copper
Base Material (UL94V-0 rated)	Non-conductive Black Plastic
Potting Material (UL94V-0 rated)	Epoxy
Weight	31 g

**CAUTION:** This power module is not internally fused. An input line fuse must always be used!

### PIN CONNECTIONS



#### Heat Sink

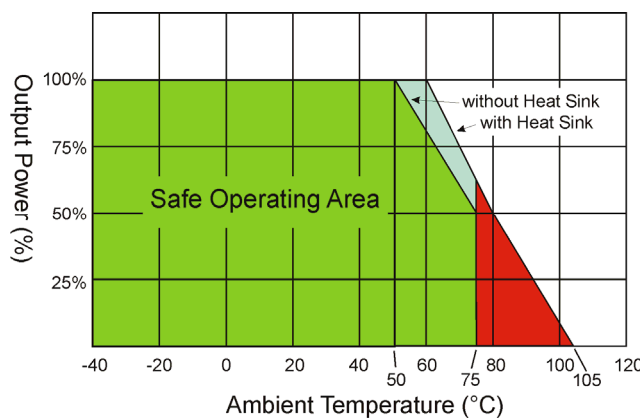
To order the VM30CW-Series assembled with heat sink, add following suffix to the part number:

-HS ... for Heat Sink  
(e.g. VM30CW-2405S-HS)

#### Standard PIN Connections

Pin	Single	Dual	Triple
1	+V Input	+V Input	+V Input
2	-V Input	-V Input	-V Input
3	Ctrl	Ctrl	Ctrl
4	+V Output	+V Output	+V AUX
5	-V Output	Common	-V AUX
6	TRIM	-V Output	Common
7	No Pin	No Pin	+V Output

### DERATING



Notes: All dimensions in millimeters (inches). Tolerance  $\pm 0.25\text{mm}$  (0.01).

Specifications can be changed without prior notice. Products are not intended for and must not be used in life support systems, human implantation, nuclear facilities or systems or any other application where product failure or malfunction

**V i t e c POWER GmbH**

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