

# VNW Series

## 15W 4:1 Regulated Single & Dual output



### Features

- Ultra Wide 4:1 Input Range
- Soft Start
- 1600 VDC Isolation
- Efficiency up to 89%
- Extended Operating Temperature Range -40 ~ 85°C max.
- Adjustable Output Voltage
- Remote On/Off Control (CTRL)
- Over Current Protection
- Over Voltage Protection
- No Minimum Load Required
- 50% Volume than traditional products



The VNW series is a family of high performance 15W single & dual output DC-DC converters. These converters are built in nickel-coated copper package in a 1"x1" case with non conductive base - precise controlling and protection provide : tightline / load regulation , soft start , over current and over voltage protection . Input voltages of 24 and 48 with output voltage of 3.3 , 5, 12, 15, ±5, ±12, ±15Vdc. maximum. Positive and negative logic ON/OFF control optional . Products are built in a case which is only half size of conventional 2"X1" package .

ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED.

OUTPUT SPECIFICATIONS		
Output Voltage Accuracy	±1%	
Output Voltage Adjustability(Trim)	Single output: ±10%, max	
Maximum Output Current	See table	
Line Regulation	±0.2%, max	
Load Regulation( I <sub>o</sub> =0% to 100%)	Single: ±0.5%, max Dual:±1%, max(balanced load)	
Cross Regulation (Dual Output) (1)	±5%	
Ripple&Noise(20MHz bandwidth) (2)	100mVp-p, max	
Over Voltage Protection ( Zener diode clamp)	3.3V output	3.9V
	5V output	6.2V
	12V output	15V
	15V output	18V
	±5V output	±6.2V
	±12V output	±15V
	±15V output	±18V
Over Current Protection	170% of FL, typ	
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)	
Temperature Coefficient	±0.02%/°C	
Capacitive Load (3)	See table	
Transient Recovery Time (4)	250us, typ	
Transient Response Deviation(4)	±3%, max	

INPUT SPECIFICATIONS	
Input Voltage Range	See table
Under Voltage Lockout	
24V Modes	Module ON / OFF
48V Modes	Module ON / OFF
Start up Time (Nominal Vin and constant resistive load)	20mS, typ
Input Filter	Pi Type
Input Current(No-Load)	See table, typ
Input Current(Full-Load)	See table, max
Input Reflected Ripple Current(5)	20mAp-p, typ
Remote On/Off (Positive logic)(6)	
ON:	3.0 ... 12Vdc or open circuit
OFF:	0 ... 1.2Vdc or Short circuit pin2 and pin 3
OFF idle current:	5 mA, typ

ENVIRONMENTAL SPECIFICATIONS	
Operating Ambient Temperature	-40°C ~ +85°C(See Derating Curve) -40°C ~ +66°C(For 100% load)
Maximum Case Temperature	105°C
Storage Temperature	-40°C ~ +125°C
Cooling	Nature Convection

GENERAL SPECIFICATIONS	
Efficiency	See table, typ
I/O Isolation Voltage(3 sec)	
Input/Output	1600Vdc
Case/Input & Output	1600Vdc
Isolation Resistance	1000 MΩ, min
Isolation Capacitance	1200 pF, max
Switching frequency	375kHz, typ
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>560 khrs
Safety Standard (designed to meet)	IEC/EN 60950-1

EMC CHARACTERISTICS		
Radiated Emissions	EN55022	CLASS A
Conducted Emissions(7)	EN55022	CLASS A
ESD	EN61000-4-2	Perf. Criteria A
RS	EN61000-4-3	Perf. Criteria A
EFT(8)	EN61000-4-4	Perf. Criteria A
Surge (8)	EN61000-4-5	Perf. Criteria A
CS	EN61000-4-6	Perf. Criteria A
PFMF	EN61000-4-8	Perf. Criteria A

PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Copper
Base Material	Non-conductive Black Plastic(UL94V-0 rated)
Pin Material	Ø1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	18.0g
Dimensions	1.00"x1.00"x0.40"

ABSOLUTE SPECIFICATIONS (9)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Voltage(100mS)	
24 Modes	-0.7~50 Vdc
48 Modes	-0.7~100 Vdc
Soldering Temperature (1.5mm from case 10 sec. Max.)	260°C max.

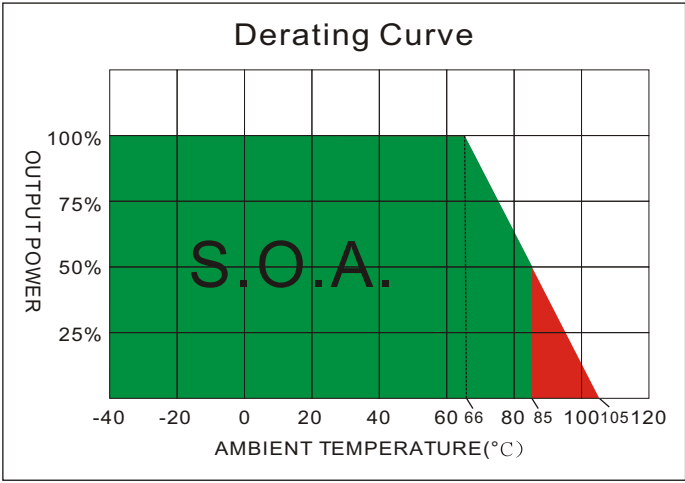
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# VNW - 15W 4:1 Regulated Single & Dual output

### PART NUMBER STRUCTURE

**VNW - 24 12 S 15**

- VNW**: Series Name
- 24**: Input Voltage Range (24 - 9 ~ 36V, 48 - 18 ~ 75V)
- 12**: Nominal Output Voltage (3R3 - 3.3V, 5 - 5V, 12 - 12V, 15 - 15V)
- S**: Output Type (S - Single output, D - Dual Output)
- 15**: Watt

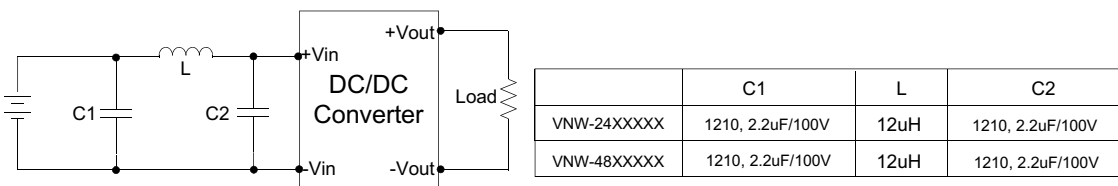


## MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL(%)	Capacitor Load(uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
VNW-243R3S15	9-36	15	647	3.3	0	4000	86	1000
VNW-2405S15	9-36	15	727	5	0	3000	87	1000
VNW-2412S15	9-36	15	747	12	0	1300	88	330
VNW-2415S15	9-36	15	710	15	0	1000	89	220
VNW-483R3S15	18-75	10	331	3.3	0	4000	84	1000
VNW-4805S15	18-75	10	368	5	0	3000	86	1000
VNW-4812S15	18-75	10	378	12	0	1300	87	330
VNW-4815S15	18-75	10	360	15	0	1000	88	220
VNW-2405D15	9-36	15	744	±5	0	±1500	85	±470
VNW-2412D15	9-36	15	718	±12	0	±625	88	±220
VNW-2415D15	9-36	15	710	±15	0	±500	89	±100
VNW-4805D15	18-75	10	376	±5	0	±1500	84	±470
VNW-4812D15	18-75	10	363	±12	0	±625	87	±220
VNW-4815D15	18-75	10	359	±15	0	±500	88	±100

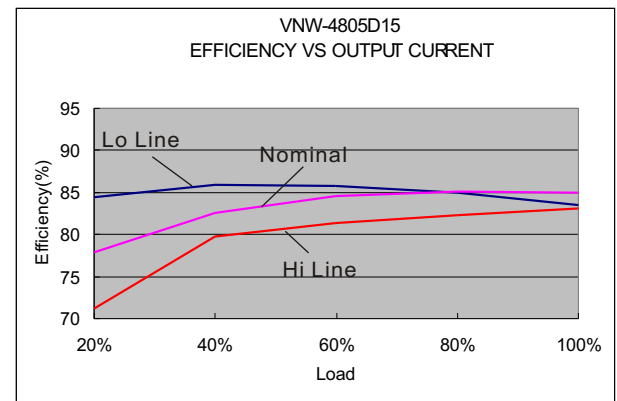
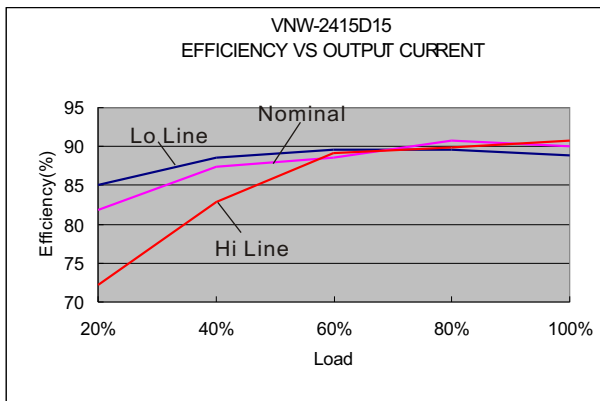
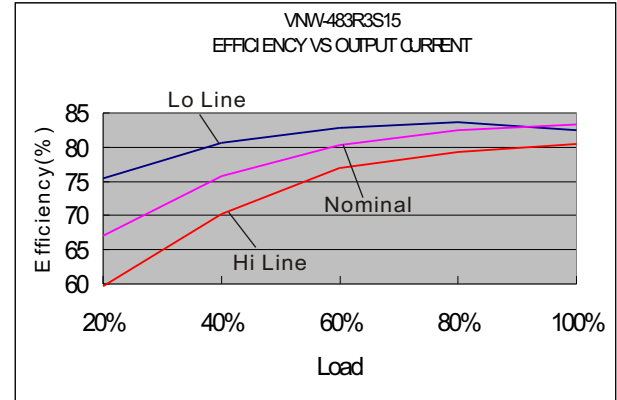
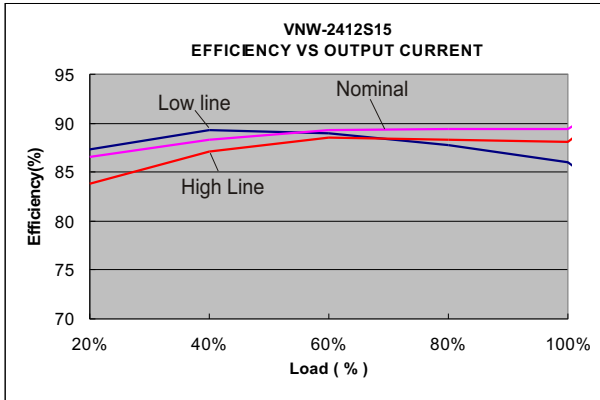
### NOTE

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
- Measured with a 1.0uF ceramic capacitor and 10uF tantalum capacitor.
- Tested by minimal Vin and constant resistive load.
- Tested by normal Vin and 25% load step change ( 75%-50%-25% of Io ).
- Measured Input reflected ripple current with a simulated source inductance of 12uHand a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz).
- The remote on/off control pin is referenced to -Vin(pin2).
- Input filter components (C1, C2, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.
- An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5. The filter capacitor Motien suggest: Nippon chemi-con KY series, 220uF/100V.
- Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

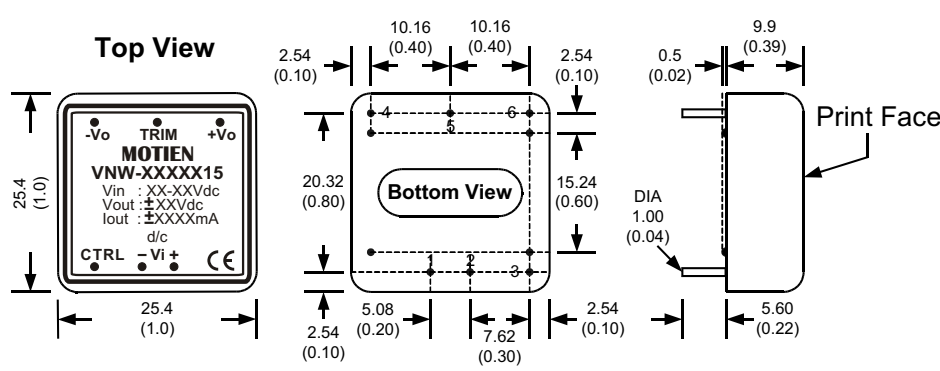


The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

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## MECHANICAL SPECIFICATIONS



PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	+Vout	+Vout
5	Trim	Com
6	-Vout	-Vout

All dimensions are typical in millimeters ( inches ).

1. Pin diameter:  $1.0 \pm 0.05$  (  $0.04 \pm 0.002$  )
2. Pin pitch tolerance:  $\pm 0.35$  (  $\pm 0.014$  )
3. Case Tolerance:  $\pm 0.5$  (  $\pm 0.02$  )
4. Stand-off tolerance:  $\pm 0.1$  (  $\pm 0.004$  )

**EXTERNAL OUTPUT TRIMMING**

Output can be externally trimmed by using the method as below. (single output models only )