



# 150 Watt, 12:1 Wide Input DC/DC Converters Series DV150H12-72



## Features

- 150 Watt Isolated Output
- 12:1 Wide Input Range
- Fixed Switching Frequency
- Regulated Outputs
- Fully Isolated 3000VAC
- Approved UL62368-1 2<sup>nd</sup> (Reinforced Insulation)
- Meet Shock & Vibration EN50155 (EN61373)
- 5000m Operating Altitude
- Efficiency to 91%
- Over Current-, Temperature-, Voltage Protection
- Under Voltage Lockout
- Remote ON/OFF
- Industry Standard Half-Brick Package
- EN50155 with External Circuit
- Meet Fire & Smoke EN45545-2

MODEL NUMBER	INPUT VOLTAGE [ VDC ]	OUTPUT VOLTAGE [ VDC ]	OUTPUT CURRENT [ A ] MAX.	INPUT CURRENT NO LOAD [ mA ]	INPUT CURRENT LOAD [ A ] MAX.	EFF. [ % ] (Note 1)	EFF. [ % ] (Note 2)	CAP. LOAD [ µF ] MAX.	CASE
DV150H12-72S05	14 – 160	5	25	50	1,93	90	90	25000	H
DV150H12-72S12		12	12,5	50	2,29	91	90	16700	
DV150H12-72S15		15	10	50	2,32	90	90	10000	
DV150H12-72S24		24	6,25	50	2,34	89	89	6250	
DV150H12-72S48		48	3,2	50	2,37	90	89	1500	

NOTE:

1. Nominal Input Voltage 72 VDC.
2. Measured at Input Voltage 110 VDC.
3. An External Input Capacitor 100µF for All Models are Recommended to Reduce Input Ripple Voltage.
4. An External Electrolytic Capacitor at least 240µF connected between BUS and -Vin is necessary.
5. For Clear Mount insert, please add -C, for example DV150H12-72S12-C.
6. For Negative Logic, please add "N", for example DV150H12-72S12N.

## INPUT SPECIFICATIONS:

Input Voltage Range.....See Table  
 Input Surge Voltage (100ms max.)..... 180Vdc max.  
 Under Voltage Lockout:  
 Turn-On Voltage Threshold .. 12,5Vdc min./13Vdc typ./13,5Vdc max.  
 Turn-Off Voltage Threshold .. 10,5Vdc min./11Vdc typ./11,5Vdc max.  
 Lockout Hysteresis Voltage ..... 2Vdc typ.  
 Max. Input Current.... Vin=16,5V, Full Load..... 12A typ.  
 No Load Input Current.....see table  
 Input Filter ..... Pi Filter  
 Inrush Current (I<sup>2</sup>t) (ETS300 132-2)..... 0,1A<sup>2</sup>s max.  
 Input Reflected Ripple Current:  
 P-P thru 12µH inductor, 5Hz to 20MHz..... 50mA typ.

## OUTPUT SPECIFICATION:

Voltage Accuracy (Vin=72V, Full Load, 25°C) ..... ±1,0% max.  
 Voltage Current Transient:  
 (75% to 100% of I<sub>max</sub> step load change di/dt=0.1A/µs within 1% V<sub>out</sub> nom.)  
 Error Band ..... ±5 % max.  
 Recovery Time: 25% Step Load Change..... 250µ sec. max.  
 External Trim Adj. Range:  
 Po ≤ max rated power, I<sub>o</sub> ≤ I<sub>o</sub> max ..... -20 to +15%  
 Output Voltage Remote Sense Range:  
 Po ≤ max rated power, I<sub>o</sub> ≤ I<sub>o</sub> max % of nominal Vo ..... +15% max  
 Ripple and Noise, 20 MHz BW ( Note 3 )  
 5V ..... 60mV RMS / 150mV pk-pk max.  
 12V ..... 80mV RMS / 200mV pk-pk max.  
 15V ..... 60mV RMS / 200mV pk-pk max.  
 24V/48V ..... 100mV RMS / 240mV pk-pk max.  
 Temperature Coefficient..... ±0,02%/°C max.  
 Short Circuit Protection (Hiccup Mode) ..... Continuous, Auto-Recovery  
 Line Regulation ( Note 1 ) ..... ±0,2% max.  
 Load Regulation ( Note 2 ) ..... ±0,2% max.  
 Over Voltage Protection:  
 Limited Voltage, % of Vo nom ..... 117-140%

## GENERAL SPECIFICATIONS:

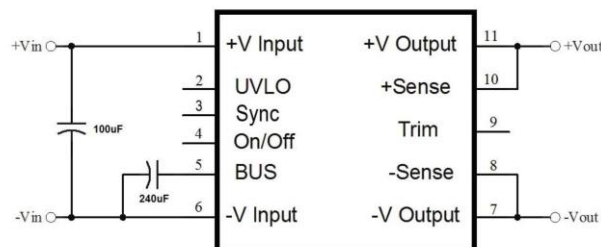
Efficiency ..... See Table  
 Isolation Voltage (1 minute):  
 Input/Output..... 3kVAC/4,2kVDC max.  
 Input/Case (Base Plate)..... 3kVAC/4,2kVDC max.  
 Output/Case (Base Plate)..... 500VAC/700VDC max.  
 Isolation Resistance ..... 100 MΩ min.  
 Isolation Capacitance:  
 Input/Output..... 500pF typ.  
 Input/Case (Base Plate)..... none  
 Output/Case (Base Plate)..... 2000pF typ.  
 Switching Frequency ..... 480KHz typ.  
 Operating Case Temperature ..... -40°C... +100°C  
 Storage Temperature Range ..... -55°C to +125°C  
 Over Temperature Shutdown ..... 105°C typ.  
 Over Temperature Recovery ..... 95°C typ.  
 On/Off Current (for both remote on/off logic):  
 Ion/off at Von/off=0V ..... 0,3mA typ./1mA max.  
 Leakage Current (for both remote on/off logic):  
 Logic High, Von/off=15V ..... 30µA max.  
 Off Converter Input Current:  
 Shutdown input idle current ..... 15mA typ./20mA max.  
 Humidity ..... 95% RH max. Non condensing  
 MTBF ( MIL-STD-217F,GB,25°C,Full Load ):  
 5V<sub>out</sub> ..... 455k hours typ.  
 12V<sub>out</sub> ..... 495k hours typ.  
 15V<sub>out</sub> ..... 545k hours typ.  
 24V<sub>out</sub> ..... 655k hours typ.  
 48V<sub>out</sub> ..... 565k hours typ.  
 Safety Approval ..... UL62368-1 2<sup>nd</sup> (Reinforced Insulation)  
 EMI:  
 Meets EN55032 & EN50155 Compliant (with external filter) Class A  
 Fire & Smoke.....meets EN45545-2  
 Dimensions ..... 57,9 x 61,0 x 12,7 mm  
 (2,28 x 2,40 x 0,5 inches)  
 Weight..... 105g typ.

## NOTE:

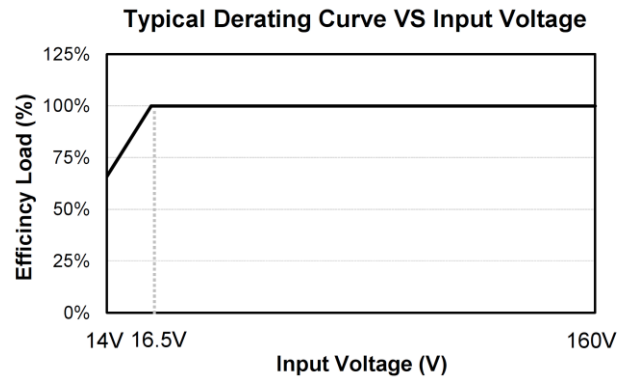
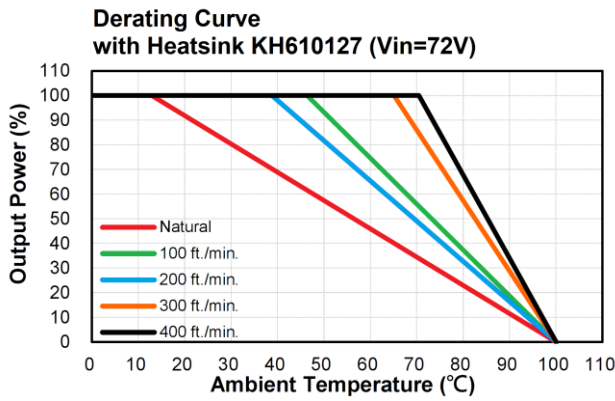
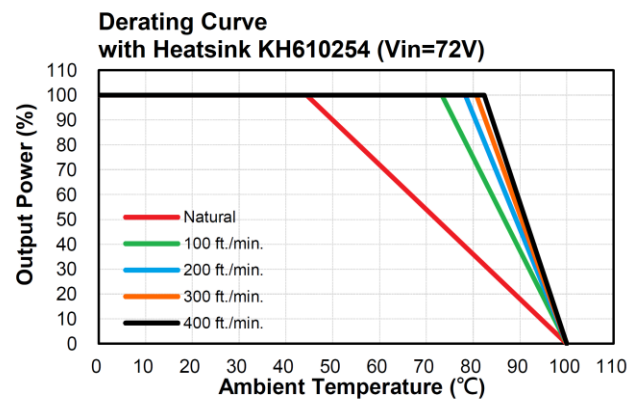
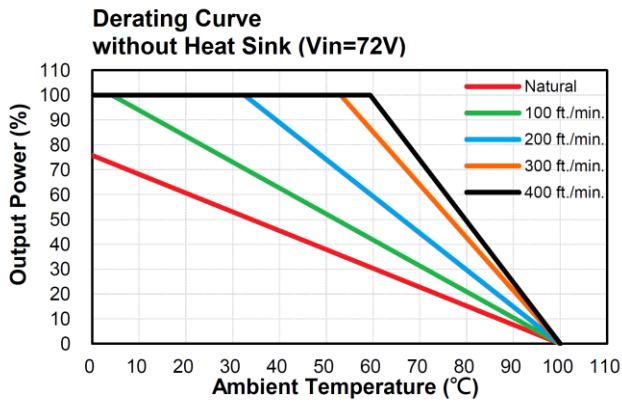
1. Measured from High Line to Low Line at Full Load.
2. Measured from Full Load to No Load.
3. Output Ripple and Noise measured with 10µF tantalum (for 48V<sub>out</sub> with 10µF aluminium), 1µF ceramic capacitor across output.
4. Positive Remote On/Off logic, Refer to -Vin pin.  
 Logic Low Module OFF (Von/off at Ion/off=1.0mA) ..... 0 to < 1.2Vdc  
 Logic High Module ON (Von/off at Ion/off=0.0µA, Pin open=off) ..... 3.5 to 160Vdc
5. Negative Remote (SUFFIX "N") On/Off logic, Refer to -Vin pin  
 Logic Low Module On (Von/off at Ion/off=1.0mA) ..... 0 to < 1.2Vdc  
 Logic High Module OFF (Von/off at Ion/off=0.0µA, Pin open=Off) ..... > 3.5Vdc to 160Vdc
6. The input external capacitor recommend to parallel with 330µF  
 ESR<0.7 Ω to reduce the input ripple voltage.
7. All Specifications Typical at Nominal Line, Full Load and 25°C.
8. For information about EN55032 & EN50155, refer to application note.

## MATERIAL:

Case Material ..... Aluminum Baseplate with Plastic Case

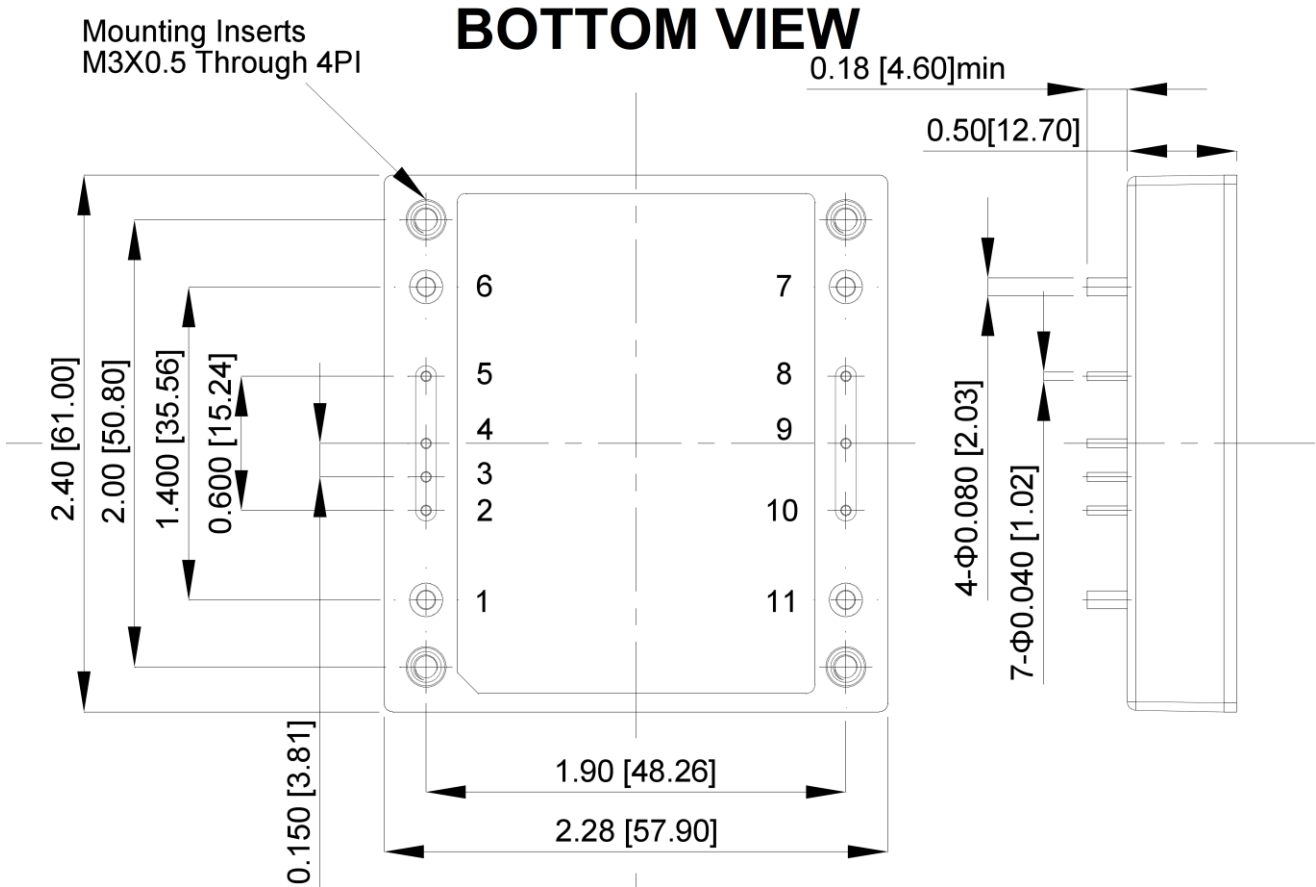


Simplified Application Circuit



All Dimensions in Inches (mm)

Tolerance    Inches        x.xx = ±0.02    x.xxx = ±0.010  
                   Millimeters    x.x = ±0.5        x.xx = ±0.25



PIN CONNECTION	
Pin	Function
1	+V Input
2	UVLO
3	Sync
4	On/Off
5	BUS
6	-V Input
7	-V Output
8	-Sense
9	Trim
10	+Sense
11	+V Output

## CASE H: HEAT SINK

Vertical Fins  
Model No. KH580210

Vertical Fins  
Model No. KH610127

Vertical Fins  
Model No. KH610254

## HEAT SINK SET (NOT MOUNTED incl. Heat Sink, Thermal Pad, Screw)

Order No. 17.079.811  
Model No. Heatsink-SET/KH580210

Order No. 17.079.812  
Model No. Heatsink-SET/KH610127

Order No. 17.079.813  
Model No. Heatsink-ET/KH610254

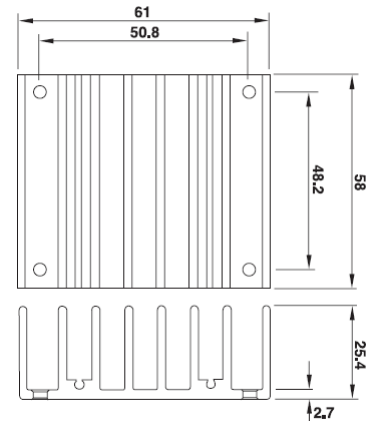
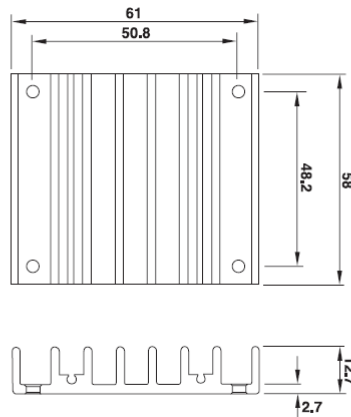
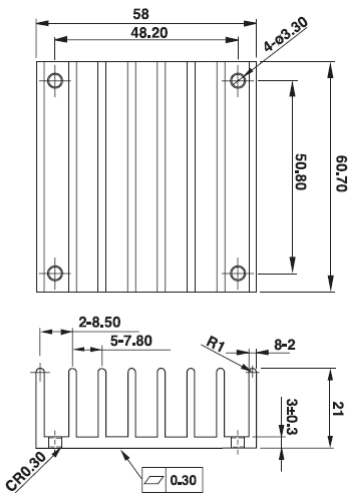
## HEAT SINK SET (MOUNTED incl. Heat Sink, Thermal Pad, Screw)

Order No. 17.079.201  
Model No. Heatsink-SET/KH580210

Order No. 17.079.202  
Model No. Heatsink-SET/KH610127

Order No. 17.079.203  
Model No. Heatsink-ET/KH610254

all dimensions in mm

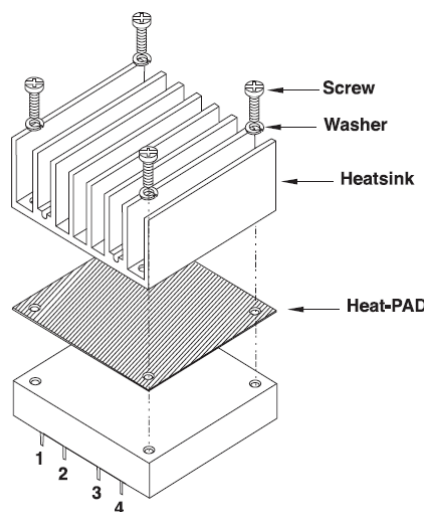


Rca: 3,9°C/W (typ.), At natural convection  
1,74°C/W (typ.), At 100LFM  
1,33°C/W (typ.), At 200LFM  
1,12°C/W (typ.), At 300LFM  
0,97°C/W (typ.), At 400LFM

Rca: 4,7°C/W (typ.), At natural convection  
2,89°C/W (typ.), At 100LFM  
2,30°C/W (typ.), At 200LFM  
1,88°C/W (typ.), At 300LFM  
1,59°C/W (typ.), At 400LFM

Rca: 3°C/W (typ.), At natural convection  
1,44°C/W (typ.), At 100LFM  
1,17°C/W (typ.), At 200LFM  
1,04°C/W (typ.), At 300LFM  
0,95°C/W (typ.), At 400LFM

Heat Sink Assembly  
example



Screw M3x8

Heatsink

Thermal Pad 56.9x60x0.25mm