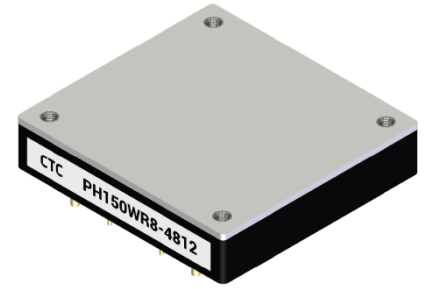


### Features

- Ultra wide input range voltage from 9-75Vdc
- 150W power in industrial standard half brick package
- Fixed switching frequency
- Continuous short circuit protection
- Over temperature protection, Over voltage/ current protection, input under voltage lockout, and remote ON/OFF control function
- 3kVDC isolation
- Design meet EN 62368 standard

### Application

- Industrial control
- Electric power
- Battery management system
- Automation power application
- Datacom application



### Selection Guide

Part Number	Input voltage	Output voltage	Output current @ full load	Ripple & Noise	Efficiency <sup>(1)</sup> (typ.)	Capacitive load <sup>(2)</sup> (max.)
PH150WR8-4812J	9-75 Vdc Nom. 48Vdc	12Vdc	12500mA	120mVp-p	89.5%	5000uF
PH150WR8-4824J		24Vdc	6250mA	240mVp-p	88.5%	2000uF
PH150WR8-4828J		28Vdc	5357mA	240mVp-p	89.0%	1500uF
PH150WR8-4848J		48Vdc	3125mA	240mVp-p	88.5%	1000uF
PH150WR8-4854J		54Vdc	2778mA	240mVp-p	89.0%	1000uF

1. The efficiency is test by 48V nominal input and max. full load @25°C.
2. The capacitive load is test by 9V input and constant resistive load.
3. Special input and output voltage combinations available by request, please check with our sales.

### Part Number

**P H 1 5 0 W R 8 - 4 8 1 2 J**  
 ↓                      ↓                      ↓                      ↓  
 Power                      Wide                      Input                      Output  
    input range                      voltage                      voltage

# Specifications

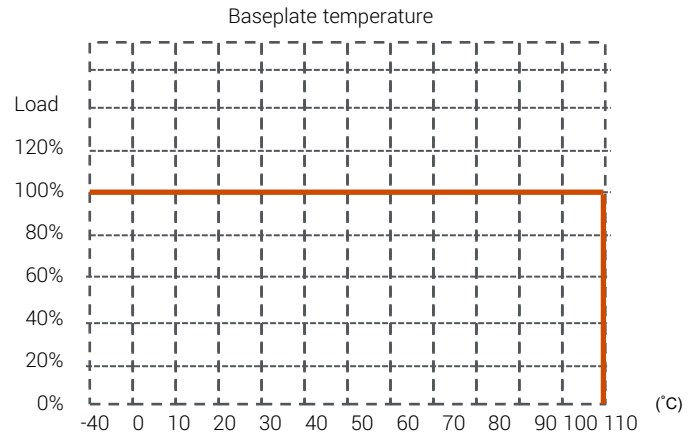
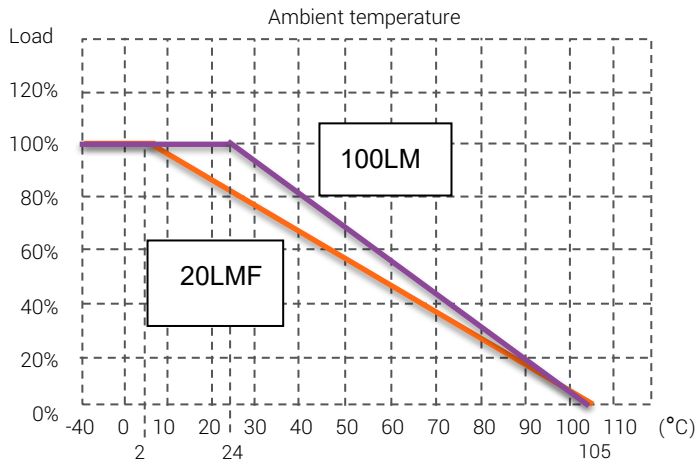
	Parameter	Conditions	Min.	Typ.	Max.	Unit	
Input	Input filter			Pi type			
	Input voltage range		9		75	VDC	
	No load input current	$V_{out} \leq 28V_{dc}$				35	mA
		$V_{out} = 48, 54V_{dc}$				75	mA
	Start-up time	100% load @48V in	200			400	ms
	Start-up voltage			9			VDC
	Under voltage lockout	0%~100% load		8			VDC
	Input surge voltage	0.1s. Max				100	VDC
	Remote ON/OFF	DC-DC ON DC-DC OFF			Open or $3V < V_r < 12V$ Short or $0V < V_r < 1.2V$		
Output	Voltage accuracy				±1	%	
	Voltage adjustability				±10	%	
	Line regulation	LL-HL at 100% load			±0.2	%	
	Load regulation	0%-100% load			±0.5	%	
	Minimum load	$V_{in}$ range	0				%
	Transient response recovery time	25% load step change (75%-100%)			500		µs
	Operating frequency	100% load nominal input			200		KHz
Environment	Operating temperature	at Nominal $V_{in}$	-40		105	°C	
	Storage temperature		-55		125	°C	
	Max case temperature				110	°C	
	Over temperature protection				115	°C	
	Temperature coefficient				0.05	%/°C	
	Relative Humidity		5		95	%RH	
	MTBF (MIL-HDBK-217F)	+25°C	TBD				KHrs
	Vibration				MIL-STD-202G		
Function	Isolation voltage	Input to output 60 sec.	3			KVDC	
	Isolation resistance	500VDC	1000			MΩ	
	Isolation capacitance				3500	pF	
	Over load protection			150		%	
	Over voltage protection	Shut down	110		150	%	
	Short Circuit Protection				Continuous, automatic recovery		
	Safety approvals				Meet EN62368		
Physical	Dimension			57.9 x 61.0 x 12.7 mm			
	Weight			109		g	
	Case material			Plastic			
	Potting material			Silicone			
	Cooling method			Nature Convection			
EMC	EMI	EN 55022		CLASS A/ B with external filter			
	ESD	EN61000-4-2, Air±8kV; Contact±6kV		Criteria A			
		EN61000-4-3, 10 V/m		Criteria A			
	Fast transient	EN61000-4-4, ±2kV		Criteria A			
	Surge	EN61000-4-5, ±2kV		Criteria A			
	Conducted immunity	EN61000-4-6, 10 V/rms		Criteria A			
	Magnetic field immunity	EN61000-4-8, 10 A/m		Criteria A			

1. All specifications valid at nominal input voltage, full load and 25°C after warm-up time unless otherwise stated.
2. The product information and specifications are subject to change without prior notice.

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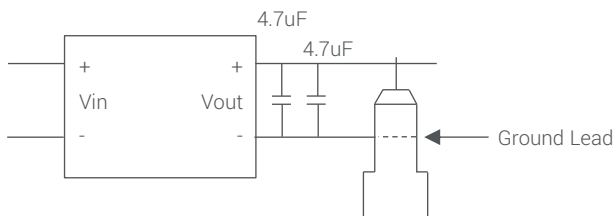
The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.

## Derating Curve



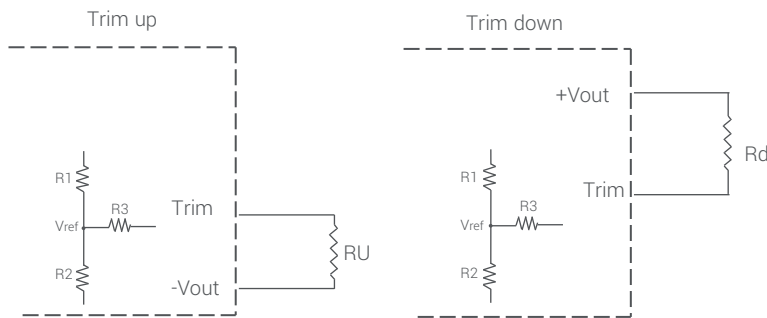
The derating curve was measured at 48V input in chamber.

## Ripple & Noise Measure Method



Measured with 20MHz bandwidth and 1.0uF ceramic capacitor

## External Output Trimming



Formula for trim resistor:

$$\text{UP: } R_u = \frac{aR_2}{R_2 - a} - R_3 \quad a = \frac{V_{ref}}{V'_0 - V_{ref}} \cdot R_1$$

$$\text{DOWN: } R_d = \frac{bR_1}{R_1 - b} - R_3 \quad b = \frac{V'_0 - V_{ref}}{V_{ref}} \cdot R_2$$

Note:

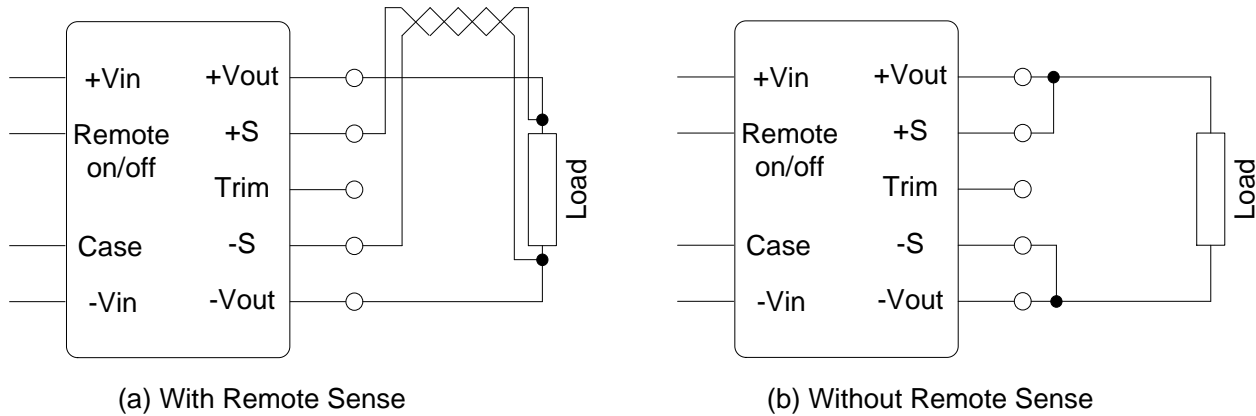
1.  $R_u, R_d$  is mean trim resistor, please check the formula.
2.  $a$  &  $b$ : user define parameter, no actual meanings.
3.  $V'_0$  is mean trim up/down voltage.

Vout	Vref	R1	R2	R3
12V	2.5V	38K	10K	68K
24V	2.5V	86K	10K	76.8K
28V	2.5V	102K	10K	76.8K
48V	2.5V	182K	10K	80.6K
54V	2.5V	206.1K	10K	82k

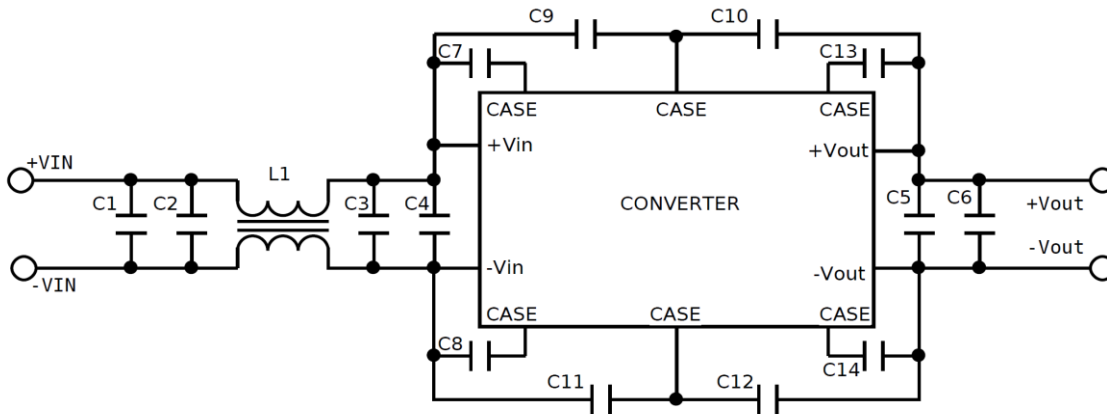
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## Remote Sense Application



## EMI Filtering-suggestion for EN55022 Class A

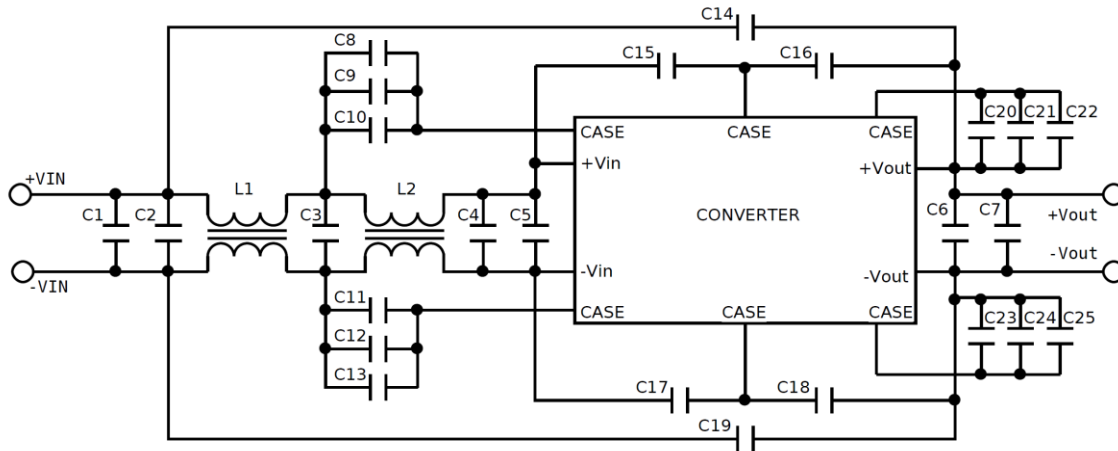


out	C1	C2	L1	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14
12V	220uF	2.2uF	2.2mH	220uF	2.2uF	4.7uF	4.7uF	1000pF	1000pF	2200pF	2200pF	2200pF	2200pF	1000pF	1000pF
24V	220uF	2.2uF	2.2mH	220uF	2.2uF	4.7uF	4.7uF	1000pF	1000pF	2200pF	2200pF	2200pF	2200pF	1000pF	1000pF
28V	220uF	2.2uF	2.2mH	220uF	2.2uF	4.7uF	4.7uF	1000pF	1000pF	2200pF	2200pF	2200pF	2200pF	1000pF	1000pF
48V	220uF	2.2uF	2.2mH	220uF	2.2uF	4.7uF	4.7uF	2200pF	2200pF	3300pF	3300pF	3300pF	3300pF	2200pF	2200pF
54V	220uF	2.2uF	2.2mH	220uF	2.2uF	4.7uF	4.7uF	2200pF	2200pF	3300pF	3300pF	3300pF	3300pF	2200pF	2200pF

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## EMI Filtering-suggestion for EN55022 Class B

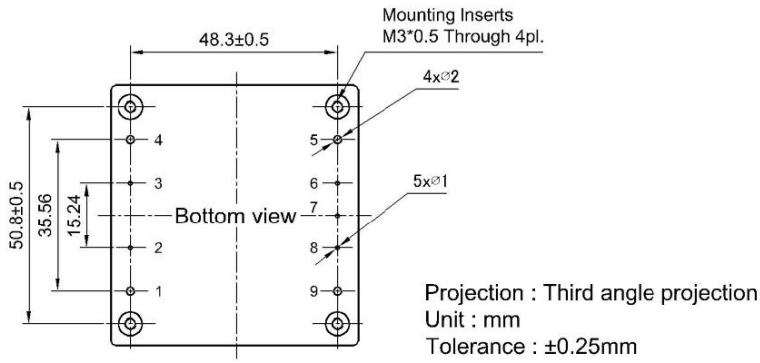
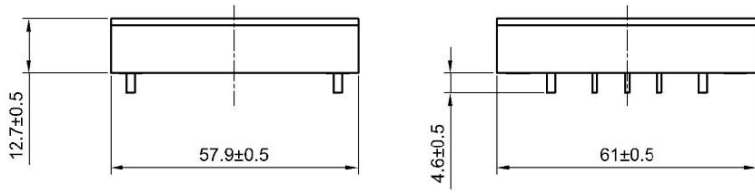


Vout	C1	C2	L1	L2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
12V	220uF	2.2uF	2.2mH	2.2mH	2.2uF	220uF	2.2uF	4.7uF	4.7uF	4700pF	NONE	NONE	4700pF	NONE
24V	220uF	2.2uF	2.2mH	2.2mH	2.2uF	220uF	2.2uF	4.7uF	4.7uF	4700pF	4700pF	NONE	4700pF	4700pF
28V	220uF	2.2uF	2.2mH	2.2mH	2.2uF	220uF	2.2uF	4.7uF	4.7uF	4700pF	4700pF	NONE	4700pF	4700pF
48V	220uF	2.2uF	2.2mH	2.2mH	2.2uF	220uF	2.2uF	4.7uF	4.7uF	4700pF	4700pF	4700pF	4700pF	4700pF
54V	220uF	2.2uF	2.2mH	2.2mH	2.2uF	220uF	2.2uF	4.7uF	4.7uF	4700pF	4700pF	4700pF	4700pF	4700pF
Vout	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	
12V	NONE	10pF	2200pF	2200pF	2200pF	2200pF	10pF	4700pF	NONE	NONE	4700pF	NONE	NONE	
24V	NONE	NONE	2200pF	2200pF	2200pF	2200pF	NONE	4700pF	4700pF	NONE	4700pF	4700pF	NONE	
28V	NONE	NONE	2200pF	2200pF	2200pF	2200pF	NONE	4700pF	4700pF	NONE	4700pF	4700pF	NONE	
48V	4700pF	10pF	4700pF	4700pF	4700pF	4700pF	10pF	4700pF	4700pF	4700pF	4700pF	4700pF	4700pF	
54V	4700pF	10pF	4700pF	4700pF	4700pF	4700pF	10pF	4700pF	4700pF	4700pF	4700pF	4700pF	4700pF	

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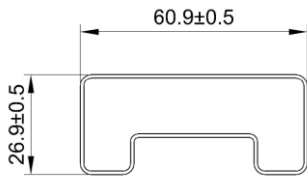
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## Mechanical Dimension & Pinning



Pin	Function
1	+Vin
2	Remote ON/OFF
3	Case
4	-Vin
5	-Vout
6	-Sense
7	Trim
8	+Sense
9	+Vout

## Package



UNIT:mm  
 1 Tube = 7 pcs  
 Length:520±2mm

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