

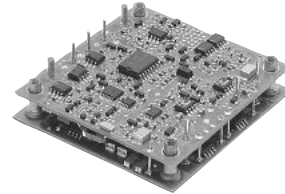
DC to DC Converters

Distributed Power Supplies for Systems, Insulation Type

Half Brick Type iHA/iHD Series

Power supply systems for infrastructure devices used in communication networks primarily use brick-type DC to DC converters. As the voltage used for LSIs continues to drop, power supplies are expected to provide lower output, higher efficiencies, and lower noise levels. Moreover, the high-power is needed in the mid output voltage such as RF lamps.

To meet these demands, we have developed half brick types with low output voltage.



FEATURES

- Wide input voltage range (DC.36 to 75V)
- There are 19 models in the lineup of products with low to medium output voltages.
- High efficiency: 92%(5V and 28V output)
- Heat sink is not required.
- Remote ON-OFF function
- Output voltage external variable function
- Remote sensing function
- Various protective functions
- Parallel operations are available only for iHD type

PRODUCT IDENTIFICATION

iHA	48	060A	012V	-○○○
(1)	(2)	(3)	(4)	(5)

(1) Type name

iHA/iHD: Half brick type

(2) Rated input voltage

(3) Output current

(4) Output voltage

(5) Option code

001: Standard(Negative on/off logic, Pin length: 3.68mm, Shutdown type OVP)

000: Positive on/off logic, Pin length: 3.68mm, Shutdown type OVP

002: Positive on/off logic, Pin length: 3.68mm, Automatic recovery type OVP

003: Negative on/off logic, Pin length: 3.68mm, Automatic recovery type OVP

004: Positive on/off logic, Pin length: 2.79mm, Shutdown type OVP

005: Negative on/off logic, Pin length: 2.79mm, Shutdown type OVP

006: Positive on/off logic, Pin length: 2.79mm, Automatic recovery type OVP

007: Negative on/off logic, Pin length: 2.79mm, Automatic recovery type OVP

PART NUMBERS AND RATINGS

Output voltage(V)	Current(A)	Part No.
Low output voltage type		
1.2	60	iHA48060A012V
1.5	60	iHA48060A015V
1.8	60	iHA48060A018V
2.5	60	iHA48060A025V
3.3	40	iHA48040A033V
3.3	60	iHA48060A033V
5	40	iHA48040A050V
Low output voltage type(supports parallel operations)		
1.2	60	iHD48060A012V
1.5	60	iHD48060A015V
1.8	60	iHD48060A018V
2.5	60	iHD48060A025V
3.3	60	iHD48060A033V
5	40	iHD48040A050V
Mid output voltage type		
12	25	iHA48025A120V
24	12.5	iHA48013A240V
28	11	iHA48011A280V
28	8	iHA24008A280V(24V input)
Mid output voltage type(supports parallel operations)		
12	25	iHD48025A120V
24	12.5	iHD48013A240V
28	11	iHD48011A280V
28	8	iHD24008A280V(24V input)

SPECIFICATIONS AND STANDARDS

Part No.	General use	iHA48060A012V	iHA48060A015V	iHA48060A018V	iHA48060A025V	iHA48040A033V	iHA48060A033V	iHA48040A050V
	Supports parallel operations	iHD48060A012V	iHD48060A015V	iHD48060A018V	iHD48060A025V		iHD48060A033V	iHD48040A050V
	Rated output voltage and current* ¹	1.2V • 60A	1.5V • 60A	1.8V • 60A	2.5V • 60A	3.3V • 40A	3.3V • 60A	5.0V • 40A
	Maximum output power	W	72	90	108	150	132	200
Input conditions								
	Input voltage E _{dc}	V	36 to 75[Continuation]/100[Transient 100ms]					
	Input current	A	2.6max.	3.2max.	3.7max.	5.2max.	4.5max.	6.2max.
	Inrush transient* ²	A ² S	0.02max.	0.02max.	0.02max.	0.02max.	0.02max.	0.02max.
	Efficiency	%	83typ.	86typ.	86.5typ.	89typ.	90typ.	92typ.
Output characteristics								
	Output voltage E _{dc}	V	1.2	1.5	1.8	2.5	3.3	5
	Voltage adjustment range	%	-46 to +10	-46 to +10	-46 to +10	-46 to +10	-46 to +10	-46 to +10
	Maximum output current	A	60	60	60	60	40	60
	Minimum output current	A	0	0	0	0	0	0
	Output voltage initial setting	%	±1.7max.	±1.7max.	±1.7max.	±1.6max.	±1.6max.	±1.6max.
	Overvoltage protection	V	1.65typ.	2.0typ.	2.2typ.	3.2typ.	4.4typ.	6.0typ.
	Overcurrent protection	A	76typ.	72typ.	71typ.	68typ.	46typ.	66typ.
Voltage stability	Line regulation	mV	2max.(1typ.)	4max.(2typ.)	4max.(2typ.)	5max.(2typ.)	6max.(2typ.)	8max.(2typ.)
	Load regulation	mV	6max.(4typ.)	6max.(4typ.)	6max.(4typ.)	8max.(4typ.)	10max.(6typ.)	10max.(4typ.)
	Temperature regulation	mV	15max. (10typ.)	30max. (10typ.)	30max. (10typ.)	30max. (10typ.)	30max. (10typ.)	40max. (15typ.)
	Dynamic response* ³	mV	±35typ.	±100typ.	±100typ.	±100typ.	±110typ.	±150typ.
	Ripple noise E _{p-p}	mV	40typ.	50typ.	50typ.	50typ.	60typ.	150typ.
	Start up time	ms	32typ.	70typ.	70typ.	70typ.	70typ.	70typ.
Auxiliary functions								
	Overvoltage protection	Yes(Shut-down type: Models capable of automatic output voltage recovery are available as an option.)						
	Overcurrent protection	Yes(Automatic recovery)						
	Alarm output	No						
	Over-temperature protection	Yes(Automatic recovery)						
	Remote ON-OFF	Yes						
	Remote sensing	Yes						
	Parallel operation	Impossible						
	Output voltage adjustment	Yes						
	Master slave operation	No						
Standards								
	Safety standards	UL60950 and VDE0805 approved. EN60950 approved.						
Constructions								
	External dimensions	mm	12.7×57.9×61.0[H×W×L]					
	Weight	g	25typ.					
	Mounting method	Mounted from the terminal side (soldered).						
	Oscillating method	Fixed frequency						
	Oscillating frequency	kHz	300typ.[1.2V and 1.5V output: 240kHz]					

*¹ Verify the rated current (maximum output current) because this involves derating.

*² Applies only to the primary surge. The power supply does not have an input fuse, so make sure to install an external fuse when using this product.

*³ Load step from 50 to 75% of I_o max.

SPECIFICATIONS AND STANDARDS

Part No.	General use	iHA48025A120V	iHA48013A240V	iHA48011A280V	iHA24008A280V
	Supports parallel operations	iHD48025A120V	iHD48013A240V	iHD48011A280V	iHD24008A280V
Rated output voltage and current*1		12V • 25A	24V • 12.5A	28V • 11A	28V • 8A
Maximum output power		W	300	300	308
Input conditions					
Input voltage E _{dc}		V	36 to 75[Continuation]/100[Transient 100ms]		
Input current		A	10.2max.	10.2max.	10.2max.
Inrush transient*2		A ² S	0.02max.	0.02max.	0.02max.
Efficiency		%	92typ.	91typ.	92typ.
Output characteristics					
Output voltage E _{dc}		V	12	24	28
Voltage adjustment range		%	-46 to +10	-46 to +10	-46 to +10
Maximum output current		A	25	12.5	11
Minimum output current		A	0	0	0
Output voltage initial setting		%	±1.7max.	±1.7max.	±1.8max.
Overvoltage protection		V	14typ.	29typ.	33.5typ.
Overcurrent protection		A	31typ.	15.2typ.	13.6typ.
Voltage stability	Line regulation	mV	15max.(5typ.)	25max.(10typ.)	30max.(10typ.)
	Load regulation	mV	25max.(10typ.)	50max.(10typ.)	50max.(10typ.)
	Temperature regulation	mV	100max.(40typ.)	200max.(75typ.)	200max.(85typ.)
	Dynamic response*3	mV	±250typ.	±500typ.	±500typ.
Ripple noise E _{p-p}		mV	150typ.	350typ.	350typ.
Start up time		ms	70typ.	40typ.	70typ.
Auxiliary functions					
Overvoltage protection		Yes(Shut-down type: Models capable of automatic output voltage recovery are available as an option.)			
Overcurrent protection		Yes(Automatic recovery)			
Alarm output		No			
Over-temperature protection		Yes(Automatic recovery)			
Remote ON-OFF		Yes			
Remote sensing		Yes			
Parallel operation		Impossible			
Output voltage adjustment		Yes			
Master slave operation		No			
Standards					
Safety standards		UL60950 and VDE0805 approved. EN60950 approved.			
Constructions					
External dimensions		mm	12.7×57.9×61.0[H×W×L]		
Weight		g	25typ.		
Mounting method		Mounted from the terminal side (soldered).			
Oscillating method		Fixed frequency			
Oscillating frequency		kHz	300typ.[1.2V and 1.5V output: 240kHz]		

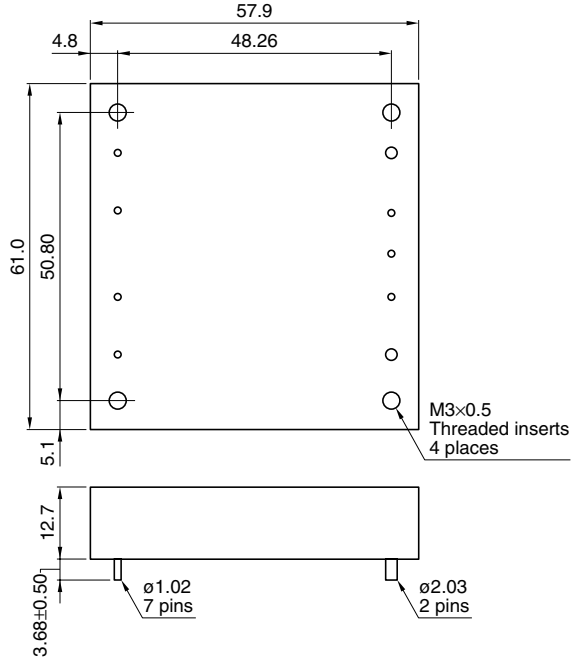
*1 Verify the rated current (maximum output current) because this involves derating.

*2 Applies only to the primary surge. The power supply does not have an input fuse, so make sure to install an external fuse when using this product.

*3 Load step from 50 to 75% of I_o max. with 200μF external capacitor.

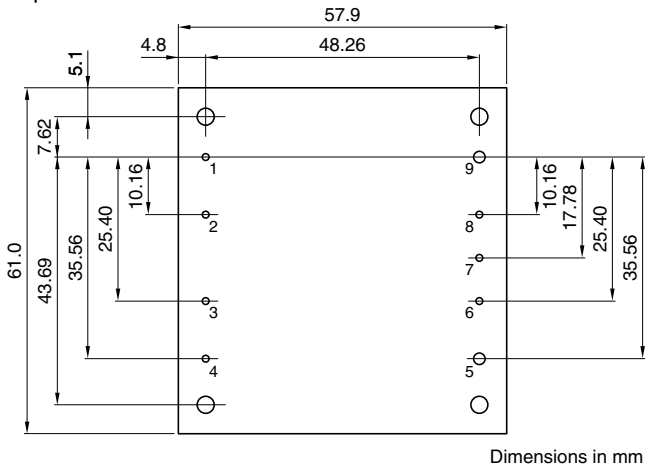
SHAPES AND DIMENSIONS

Bottom view



TERMINAL DESIGNATIONS AND FUNCTIONS

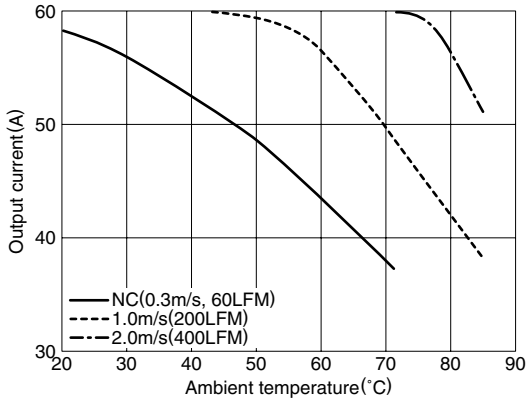
Top view



1	+Vin	DC input terminal (+)
2	On/Off	The output can be turned on/off externally.
3	Case	Do not connect anything.
4	-Vin	DC input terminal (-)
5	-Vout	DC output terminal (-)
6	-Sense	Remote sensing terminal (-)
7	Trim	The output voltage can be varied by an external resistor.
8	+Sense	Remote sensing terminal (+)
9	+Vout	DC output terminal (+)

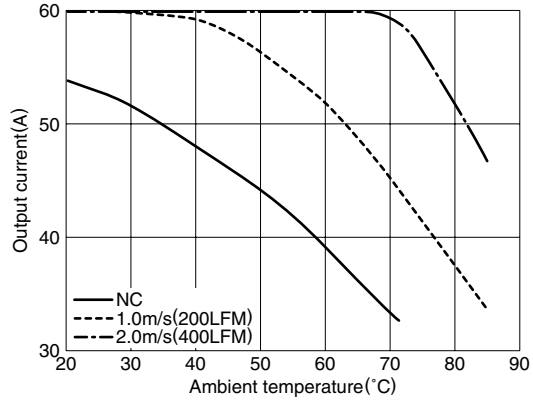
OUTPUT POWER-AMBIENT TEMPERATURE (DERATING)
MAXIMUM OUTPUT CURRENT vs. AMBIENT TEMPERATURE(Ta)
iHA48060A012V/iHD48060A012V

Wind direction: From output side to input side, Vin=48V



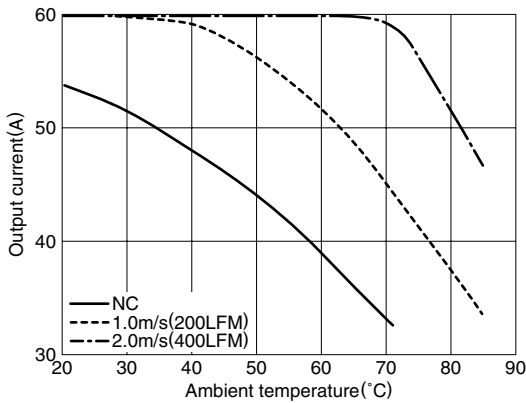
iHA48060A015V/iHD48060A015V

Wind direction: From output side to input side, Vin=48V



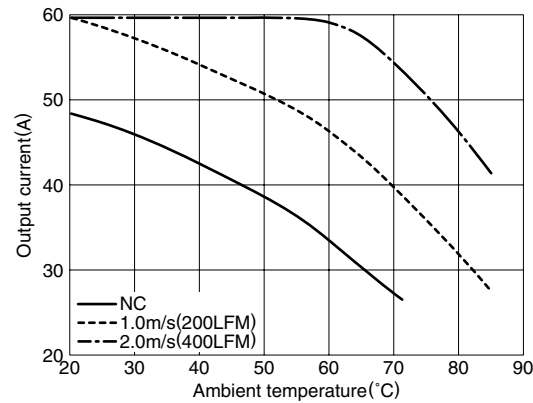
iHA48060A018V/iHD48060A018V

Wind direction: From output side to input side, Vin=48V



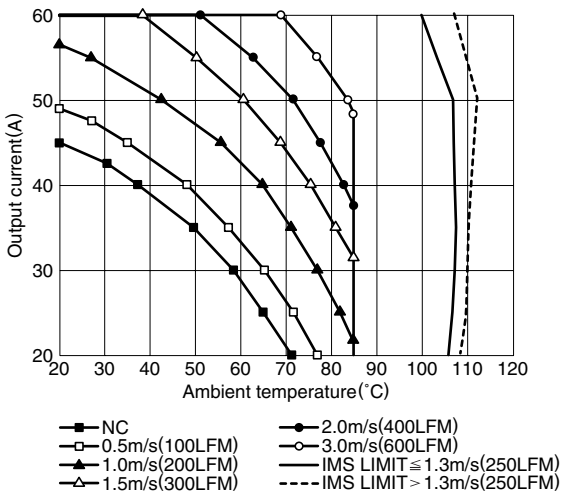
iHA48060A025V/iHD48060A025V

Wind direction: From output side to input side, Vin=48V



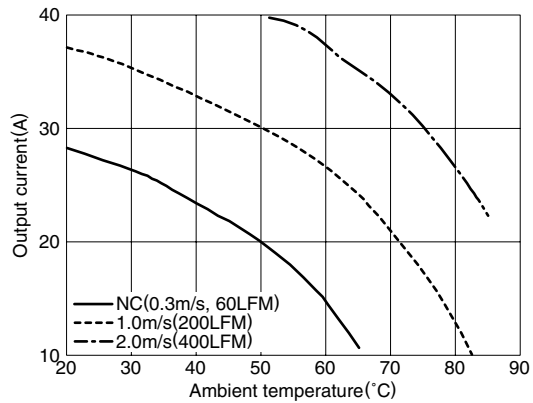
iHA48060A033V/iHD48060A033V

Wind direction: From output side to input side, Vin=48V



iHA48040A050V/iHD48040A050V

Wind direction: From output side to input side, Vin=48V

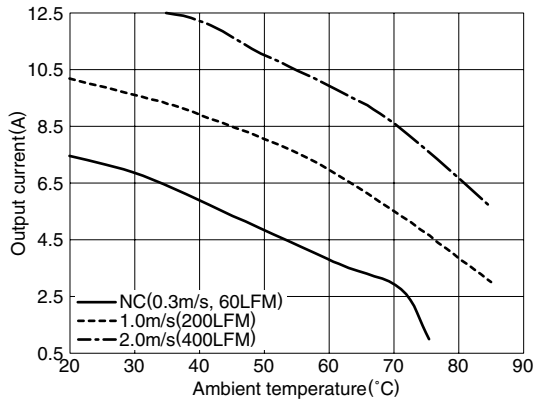


• All specifications are subject to change without notice.

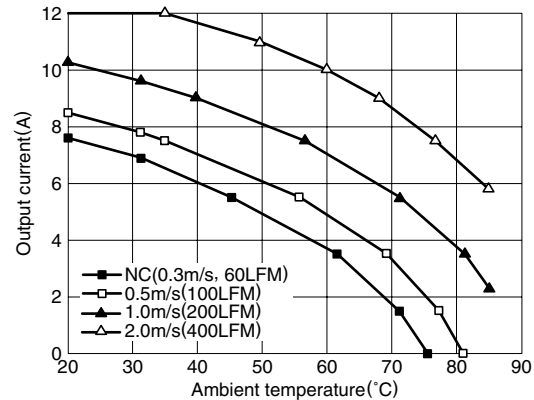
OUTPUT POWER-AMBIENT TEMPERATURE (DERATING)

MAXIMUM OUTPUT CURRENT vs. AMBIENT TEMPERATURE(Ta)

Wind direction: From output side to input side, Vin=48V

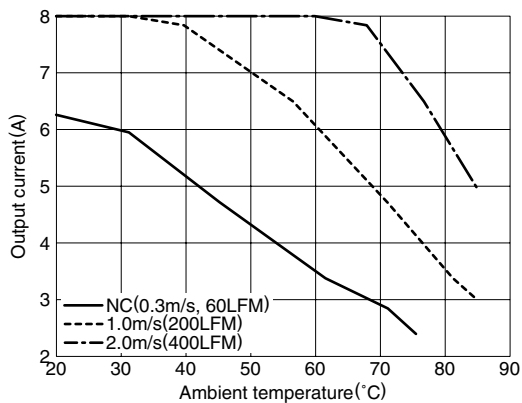


Wind direction: From output side to input side, Vin=48V



iHA24008A280V/iHD24008A280V

Wind direction: From output side to input side, Vin=24V



COMMON SPECIFICATIONS

Temperature and humidity

Temperature range	Operating(°C)	-40 to +115[12, 24 and 28V outputs: -40 to +110]
	Storage(°C)	-55 to +125[Ambient temperature of the power supply]
Humidity range	Operating(%)RH	10 to 85[Without dewing]
	Storage(%)RH	

Vibration and shock

Vibration	5 to 10Hz	Acceleration: 0.5G
	10 to 200Hz	Acceleration: 1.5G
Shock	Acceleration	50G[Half sine wave, 3 directions]
	Pulse duration	6ms

Withstand voltage

Withstand voltage	Input terminal to output terminal	DC.1.5kV[1min, Normal temperature, normal humidity, cutout current 10mA]
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