

# NE075DC05A 48 V<sub>DC</sub> to 5 V<sub>DC</sub> Converter

Ordering Code: 150041591



## Solar Applications

The NE075DC05 48 to 5V converter compliments our ECO Priority rectifiers for use in off grid solar applications where the served equipment may be a collection of equipment, some of which requires 48 Volts DC and some of which requires 5 Volts DC.

## Features and Advantages

- Compact - 1RU form factor provides high power density.
- Efficient - Peak efficiency of 94 % occurs at less than 50% load matching sweet spots with customer use patterns.
- Flexibly provides 75 Amps of 5 Volt power from any 48 Volt DC source.
- Starts and runs at any DC voltage from 40 to 60 V<sub>DC</sub>.
- Operates over a broad temperature range (-40°C through +75°C).
- Fail safe performance – hot insertion capabilities allow for converter replacement without system shutdown; inrush current protection prevents nuisance tripping of upstream breakers; coordinated start up assures that even large loads start.
- Extended service life – parallel operation with automatic load sharing ensures that units are not unduly stressed.

## A True System Solution

NE075DC05 converters and ECO Priority Rectifiers are part of the proven Infinity Power System specifically designed for wireless sites.

- Monitoring / control – the built in microprocessor controls and monitors all critical converter functions and communicates with the system controller using the built in Galaxy Protocol serial interface.
- Dual Voltage Compatible - unique connector pin designation allows the 48 to 5 Volt converter to be used in a “Universal” power shelf, alongside ECO Rectifiers supporting loads and batteries at 48 Volts DC.
- Plug and Play – installation of the converter in a shelf connected to a compatible system controller initializes all set up parameters automatically. No adjustments are needed.

ABB Energy’s NE075DC05 48 V<sub>DC</sub> to 5 V<sub>DC</sub> Converter is designed to efficiently transform energy from a 48 Volt DC source into the 5 Volt DC power needed for existing wireless base station equipment. This means that new 48 V DC power and batteries supporting modern 48V LTE deployments can also support legacy systems – without having to add an additional battery string.

Available in 1U shelves for mounting in 19 and 23 inch rack rails, the NE075DC05 can be used to make 5 Volts DC from any 48 Volt DC source.

Or if the existing battery system is supported by an Infinity M plant, 48 to 5 V converters can be added with no need for additional shelf hardware.

The NE075DC05 offers a powerful combination of efficiency, network simplicity and reliability for customers who have 48 Volts DC and need 5 Volts DC.

# Technical Specifications

## Electrical Specifications

### Input Voltage & Output Power

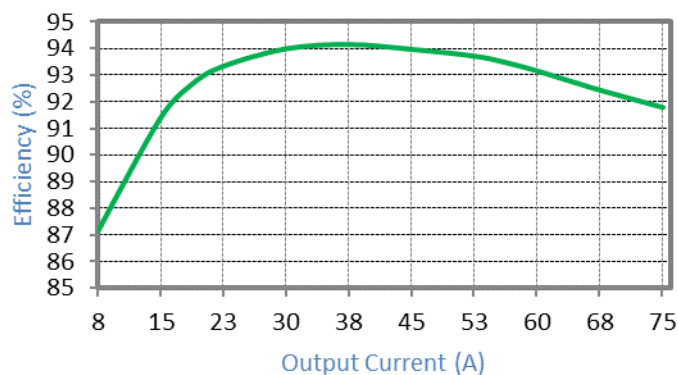
Parameter	Symbol	Min	Typ	Max	Unit
Operating Voltage	$V_{IN}$	40		60	$V_{DC}$
Absolute Limits (shut down < 18V, no damage over range)		0		60	$V_{DC}$
Minimum Turn on Voltage	$V_{IN}$	40			$V_{DC}$
Nominal DC input current @ 54.5V			42		A
Max DC input current @ 40V in and 75 amps output	$I_{IN}$		60		A
Inrush Current @ 60V input	$I_{IN}$		<65		A
Holdover,		>1 milliseconds, with Output droop from 27.25V to 23 V			

### OUTPUT

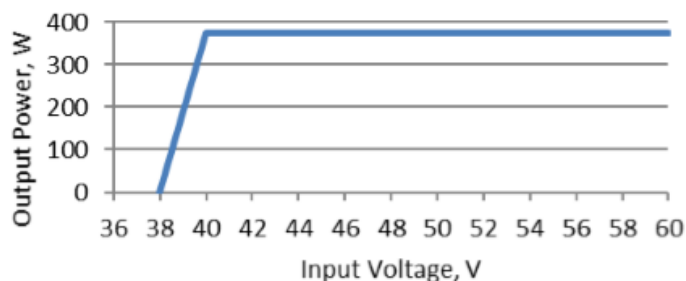
Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage Setpoint	$V_{OUT}$		5.25		$V_{DC}$
Output Voltage Range	$V_{OUT}$	4.5		5.25	$V_{DC}$
Output Current	$I_{OUT}$		75		A
Voltage Regulation	$V_{OUT}$		$\pm 0.5$		% w/ controller
Current Limit Setpoint (Full load)		30		100	%
Power Limit	W		395		Watts
Monotonic Start-up (Compare to overshoot)			<1.5		%
Ripple	$V_{OUT}$		100, 250		mV <sub>RMS</sub> , mV <sub>P-P</sub>
Capacitive Load Start		2			Farad
Capacitive Load Switched		Recovers from a 68,000 $\mu$ F switched load in less than 75 ms.			
Efficiency at 50% load	$\eta$		94		%

## Characteristic Curves

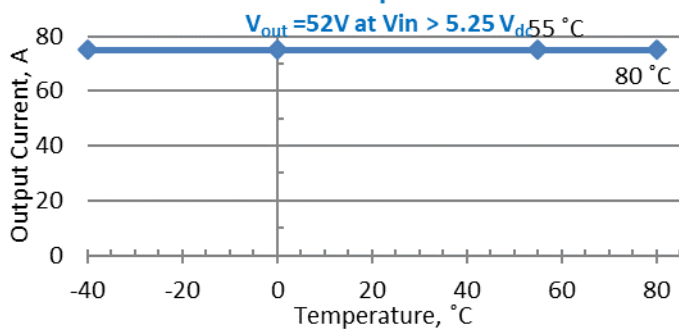
NE075DC24A Efficiency



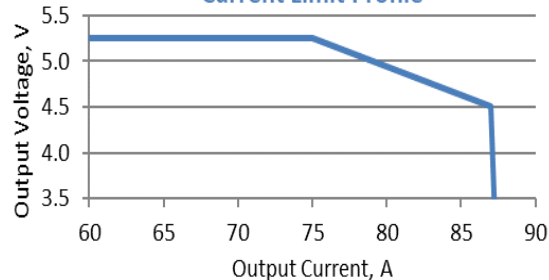
Power De-Rating Curve



Rated Output Current



Current Limit Profile



# Technical Specifications (Continued)

## Environmental, Compliance & Physical

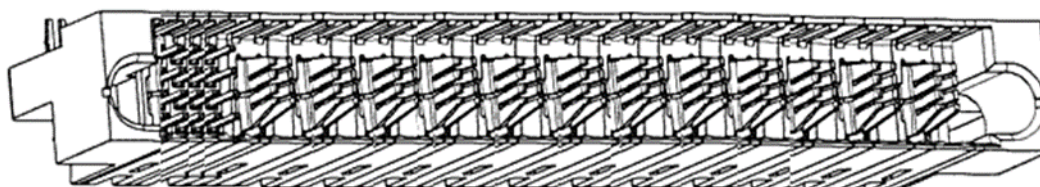
Operating Ambient Temperature Range	-40°C to +75°C (Output derates at 2%/°C beginning at 55°C)
Cooling Method	Front to back airflow with onboard temperature controlled fans
Operating Relative Humidity	0 - 95% (non-condensing) for use in a controlled environment
Electromagnetic Compatibility	FCC Part 15, EN 55032 (CISPR32), EN 55024, Level A, GR-1089
Agency Certifications* planned	UL1950, EN62368, CSA*234/950, NEBS GR-1089, GR-63-CORE
Heat Release	205 Watts, or 700 BTU/hr at full load of 2080 Watts
Mean Time Between Failure (MTBF)	900k Hours @ 25°C per Telcordia SR-332, Method 1, Case 3
Height x Width x Depth, Weight, Packaged weight	1.63x5.23x13.85in (42x133x352mm), 5.05 lbs (2.2 kg), 5.95 lbs (2.7 kg)

## Power Unit and Power Unit Shelf Connectors

Power Unit PWB this side

A4	A3	A2	A1	-48V	-48V	RTN <sup>1</sup>	RTN <sup>1</sup>	RTN <sup>1</sup>	RTN <sup>1</sup>	+5V	+5V	+5V	PE/GND (ACEG)	L2/N <sup>2</sup>	L1 <sup>2</sup>
B4	B3	B2	B1			(-48 / +5V)	(-48 / +5V)	(-48 / +5V)	(-48 / +5V)						
C4	C3	C2	C1												
D4	D3	D2	D1												
				P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1
4x Pins	4x Pins	4x Pins	4x Pins	Blade	Blade	Blade MFBL (long)	Blade MFBL (long)	Blade MFBL (long)	Blade MFBL (long)	Blade	Blade	Blade	Blade MFBL (long)	Blade	Blade

Shown looking into the rear of the power unit



Power Unit Connector - AMP Multi-Beam XL (FCI # 51939-234LF or Tyco # 1900948-1)

## Signals and Signal Pins

Pin	Length	Signal	Description
A1	Long	RS-485-	non-Inverting RS-485 signal line (RS-485 A)
B1	Long	RS-485+	Inverting RS-485 signal line (RS-485 B)
C1	Long	Factory Programming & Converter Shelf	Reserved for Factory Programming - Open Circuit in the system shelf
D1	Long	Return	<ul style="list-style-type: none"> <li>Signal Return for PSIDn, SIDn, &amp; Interlock</li> <li>Power Units Connect Return to NE Common Return internally.</li> <li>Power Units diode isolate the Return signals from each Power Slot.</li> </ul>
A2	Long	PSID0	Power Slot Address 0 <ul style="list-style-type: none"> <li>Logic 1 = Open Circuit (~3.3V).</li> <li>Logic 0 = Connection to the Return signal (~0.7V).</li> </ul>
B2	Long	PSID1	Power Slot Address 1 <ul style="list-style-type: none"> <li>Left slot (front view) is Power Slot 1 and has address 000B.</li> </ul>
C2	Long	PSID2	Power Slot Address 2 <ul style="list-style-type: none"> <li>Power Slot ID signals are connected directly to the Return signal at each Power Slot or left open.</li> </ul>

## Technical Specifications (Continued)

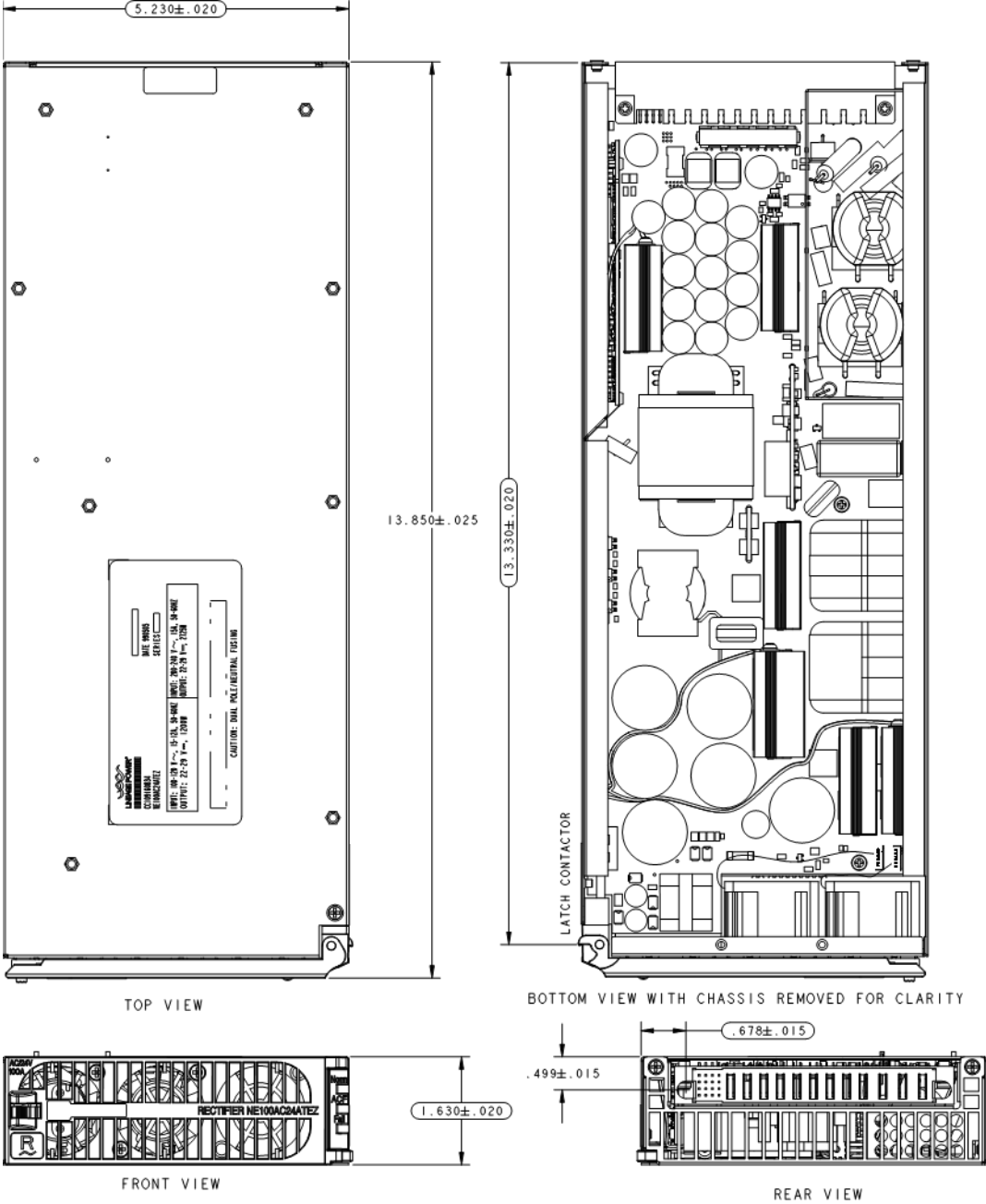
### Signals and Signal Pins

Pin	Length	Signal	Description	Description
D2	Long	SID3	Shelf Address 3	<ul style="list-style-type: none"> <li>Logic 1 = Connection to Return signal (~0.7V). Logic 0 = Open Circuit (~3.3V).</li> </ul>
A3	Long	SID4	Shelf Address 4	
B3	Long	SID5	Shelf Address 5	<ul style="list-style-type: none"> <li>Shelf addresses 1 (00001B) through 31 (11111B) are valid. Shelf address 0 (00000B) is invalid. Address 31 (11111B) disables comm. fail LED</li> </ul>
C3	Long	SID6	Shelf Address 6	
D3	Long	SID7	Shelf Address 7	<ul style="list-style-type: none"> <li>Power Unit Shelf ID signals connect to Shelf Return left open</li> </ul>
A4	Short	Interlock		<ul style="list-style-type: none"> <li>Disables power conversion within a Power Unit when not connected to the Return signal</li> <li>Power Unit Shelves connect Interlock directly to the Return signal at each Power Slot.</li> </ul>
B4	Long	Factory		
C4	Long	Programming		
D4	Long		Reserved for Factory Programming – Open Circuit in the system shelf.	

Note: The NE040DC48 behaves as an NE030DC48 when provided with slot addresses 1-4. Slot addresses 5-8 obtain the performance detailed in this data sheet.

# Technical Specifications (Continued)

## Physical Interface Dimensions



## Change History (excludes grammar & clarifications)

Version	Date	Description of the change
1.1	07/16/2021	Initial Release
1.2	08/22/2023	Added ordering code under title



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