

# Technical Note - Temperature Derating

## Version History

- Version 1.2 May 2023 - Editorial updates; formatting; update Power Optimizer table.
- Version 1.1 December 2022 - Added S500B Power Optimizer.
- Version 1.0, July 2022 – Editorial updates.

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## Overview

SolarEdge Inverters and Power Optimizers operate at full power and full current up to a specified maximum ambient temperature. When the ambient temperature exceeds the specified maximum, they continue to operate at reduced ratings to prevent damage to the devices. This technical note summarizes the derating properties of SolarEdge Inverters and Power Optimizers.

## Background

Inverters and Power Optimizers can reach high internal temperatures due to high ambient temperatures. This might happen because of prolonged exposure to direct sunlight or insufficient clearance between the device and other items, i.e. insufficient airflow around the device. When either of these units reaches high internal temperatures, it gradually reduces its power output by reducing its output current. This power reduction process is called "derating". Derating protects sensitive components within the unit and prolongs its lifetime. When the ambient temperature falls below the specified maximum, normal power output resumes.

## Power Optimizers

The following Power Optimizer models operate at full power and full current up to the ambient temperatures listed in the table:

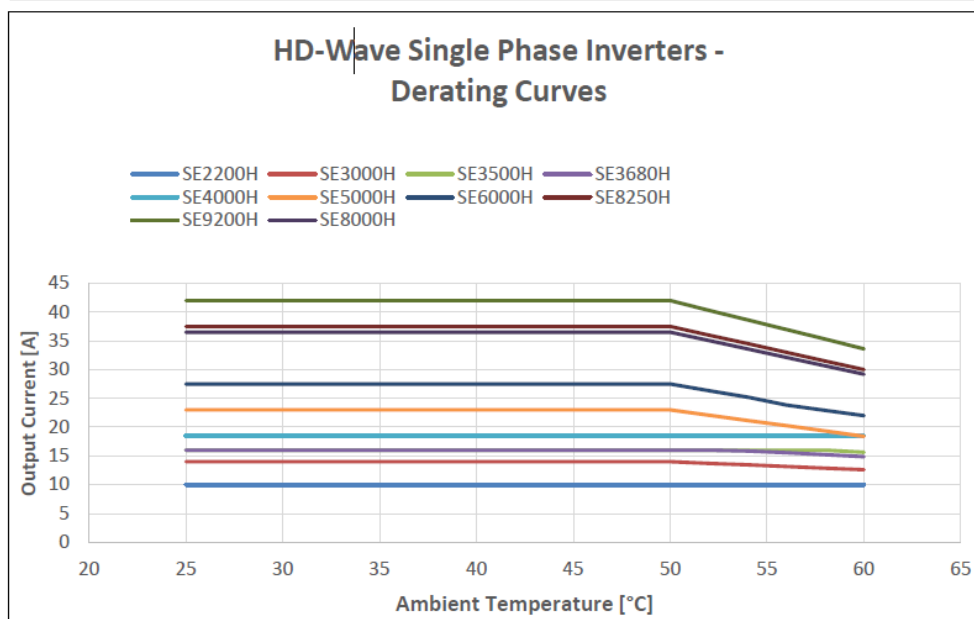
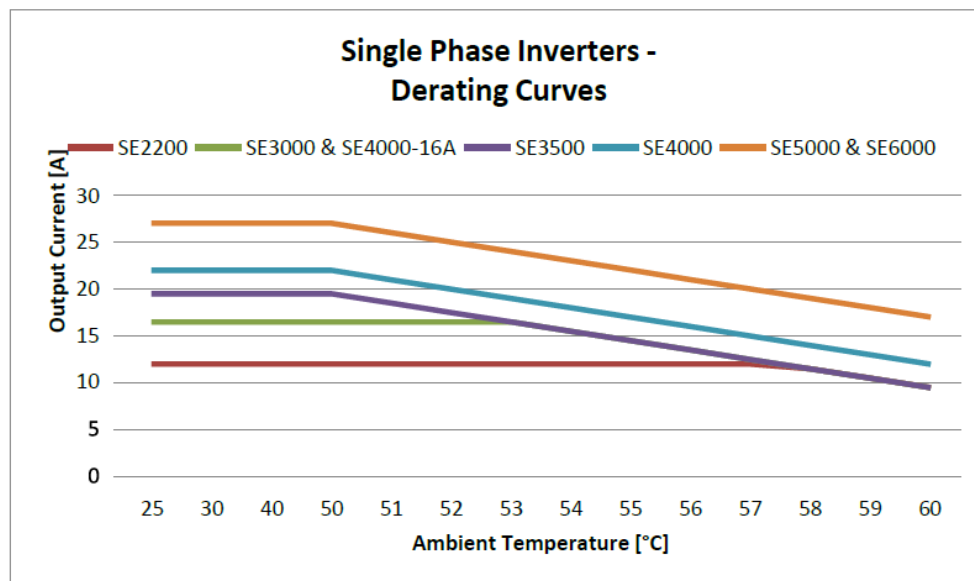
Power Optimizer Model	Ambient Temperature
OP250-LV, OP300-MV, OP400-MV, OP400-EV, OP600-96V, S1200, S1201	150°F (65°C)
P960	131°F (55°C)
H1300, S1200, S1201	149°F (65°C)
P404, P485, P505, P600, P601, P605, P650, P700, P701, P730, P800s, P800p, P801, P850, P950, P860, M1600	158°F (70°C)
P400, P500, P1100, S500B, S650B	167°F (75°C)
M2640, OP480	176°F (80°C)
S440, S500, P300, P350, P320, P340, P370, P375/P395/P401, P405	185°F (85°C)

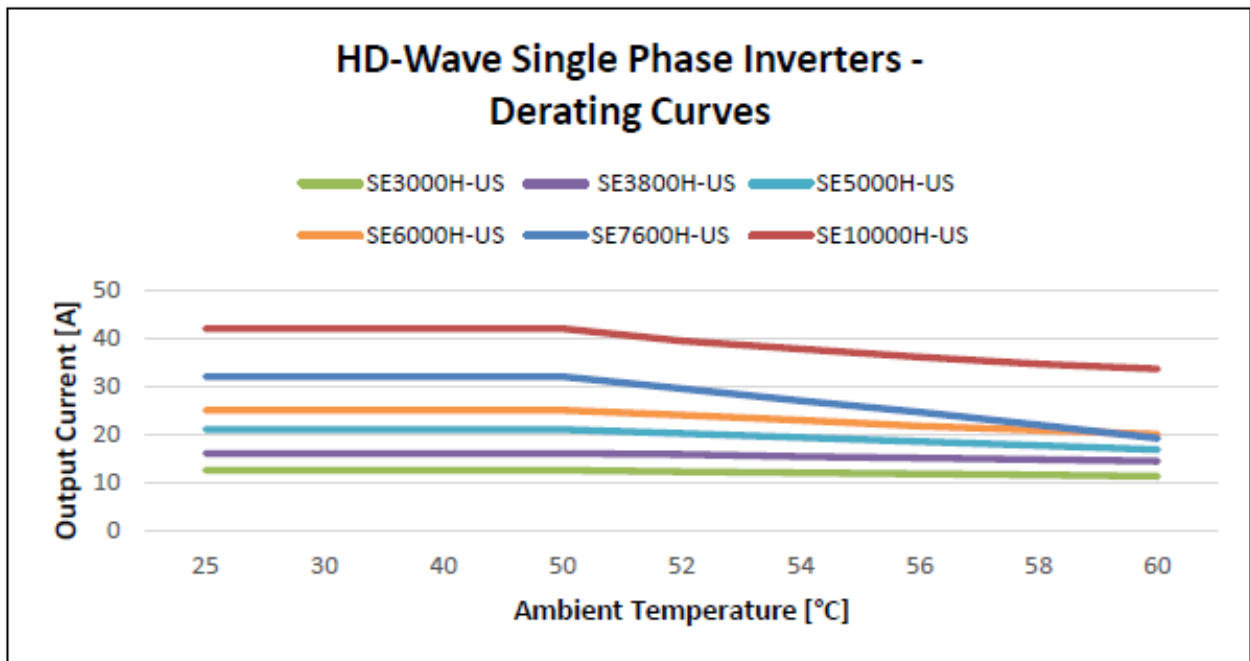
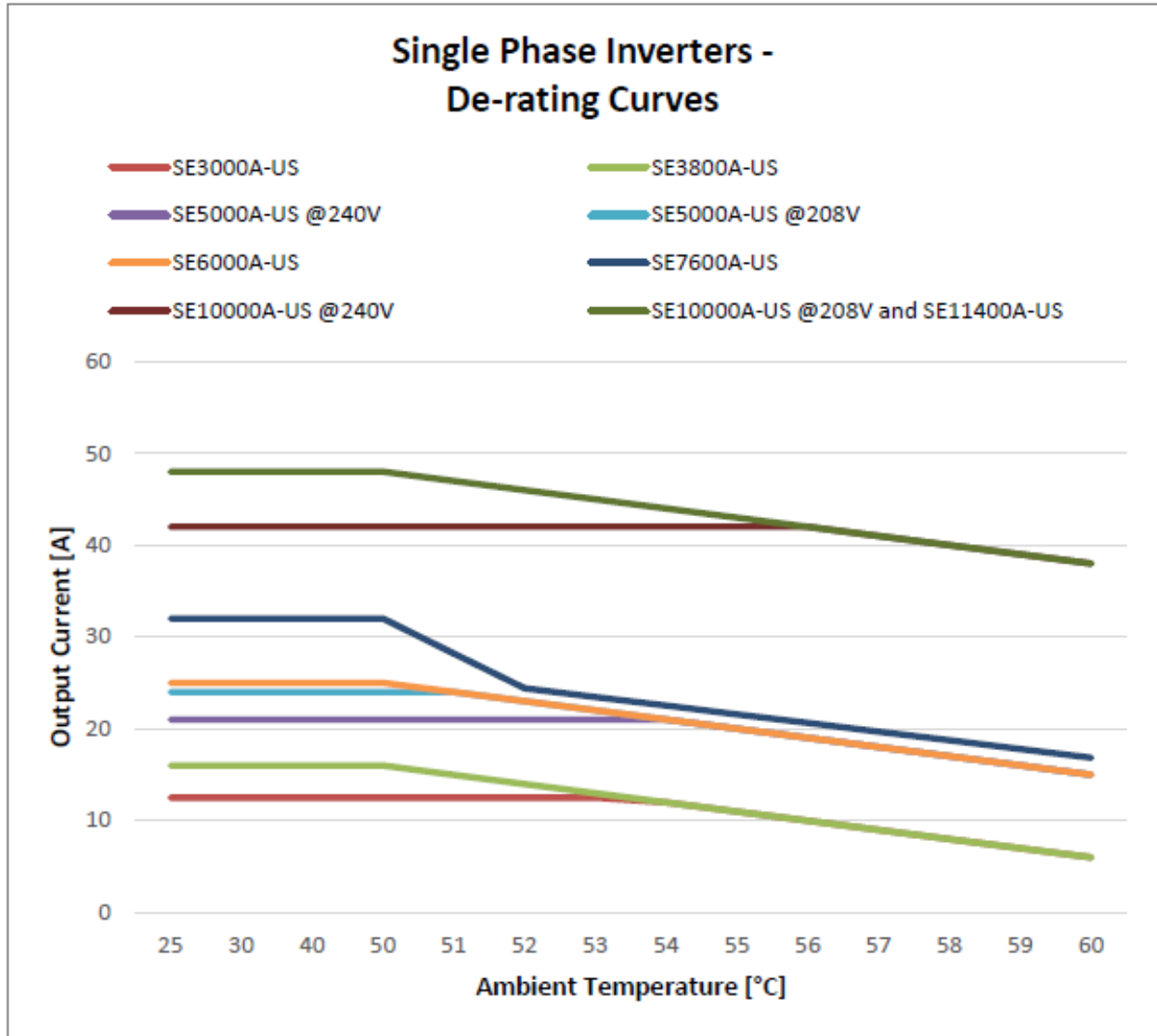
## Single Phase Inverters

The following inverter models operate at full power and full current up to the ambient temperatures listed in the table.

Inverter Model	Ambient Temperature
SE2200, SE3000, SE3500, SE4000, SE4000-16A, SE5000, SE6000,  SE3500H, SE3680H, SE4000H, SE5000H, SE6000H, SE8000H, SE8250H, SE9200H  SE3000-US, SE3800-US, SE5000-US, SE6000-US, SE7600-US, SE10000-US, SE11400-US, SE5000H-US, SE6000H-US, SE7600H-US, SE10000H-US	120°F (50°C)
SE2200H, SE3000H, SE3000H-US, SE3800H-US	140°F (60°C)

These inverters operate at reduced ratings up to 140°F (60°C) according to the graphs below. The graphs describe the reduction in current relative to ambient temperature. The actual output current is never higher than the maximum current specified in the inverter datasheets and might be lower than described in the graphs due to specific inverter model ratings per country and grid requirements.





## Three Phase Inverters

The following inverter models operate at full power and full current up to the ambient temperatures listed in the table:

Inverter Model	Ambient Temperature
SE3K, SE4K, SE5K, SE6K, SE7K, SE8K, SE9K, SE10K, SE12.5K	140°F (60°C)
SE8K, SE8.25K	135.5°F (57.5°C)
SE25K, SE50K	127°F (53°C)
SE9K, SE9KUS, SE10K, SE10KUS, SE15K, SE16K, SE17K	120°F (50°C)
SE14.4KUS, SE17.3KUS, SE20.1K, SE27.6K, SE30K, SE30KUS, SE33.3K, SE33.3KUS, SE40K, SE40KUS, SE43.2KUS, SE55K, SE66.6K, SE66.6KUS, SE75K, SE80K, SE80KUS, SE82.8K, SE90K, SE100K, SE100KUS, SE120K, SE120KUS	

These inverters operate at reduced ratings up to 140°F (60°C) according to the graphs below. The graphs describe the reduction in current relative to ambient temperature. The actual output current is never higher than the maximum current specified in the inverter datasheets and might be lower than described in the graphs due to specific inverter model ratings per country and grid requirements.

