

Alert Prioritization Using the Impact Indicator - Application Note

Revision History

- Version 1.3, November 2023: Updated screenshots, alert impacts
- Version 1.2, January 2021: Updated the maximum impact value
- Version 1.1, November 2020: Updated examples

Contents

Overview 1

How is the impact indicator calculated 1

Possible energy loss 2

Risks that don't cause energy loss 2

Impact indicator ranges 2

Impact calculations 3

Frequently asked questions 4

Overview

SolarEdge’s alerts system provides real-time visibility into PV, and smart appliance account issues, which helps you quickly diagnose and troubleshoot faults.

For each alert, an impact indicator is automatically calculated to help you spot urgent issues and decide how to deal with each alert cost-effectively.

The impact indicator provides color-coded numeric values. It and is color-coded to ranks issues across your fleet, by estimating the cost of each issue for energy loss and/or other operational expenses. **Figure 1** displays an example of types of alerts and their corresponding impact values.

	IMPACT	ALERT TYPE
<input type="checkbox"/>	6	System overload
<input type="checkbox"/>	3	No string communication
<input type="checkbox"/>	3	No string communication
<input type="checkbox"/>	2	No communication with Power Optimizer
<input type="checkbox"/>	2	No communication with Power Optimizer
<input type="checkbox"/>	2	No communication with Power Optimizer
<input type="checkbox"/>	2	No communication with Power Optimizer
<input type="checkbox"/>	2	No communication with Power Optimizer
<input type="checkbox"/>	2	No communication with Power Optimizer

Figure 1: Alerts and Impact Values

How is the impact indicator calculated

To help you plan maintenance operations and solve issues, the impact calculation is based on the possible energy loss caused by an issue, or other risks.

**NOTE**

Alerts pinpoint faults in specific components, such as power optimizers, strings, and inverters. The impact displays the severity of the component's issue.

Possible energy loss

Higher energy loss results in higher impact values. Energy loss is calculated with the following:

- Number of affected modules
 - **For example:** a production issue in an inverter connected to 100 modules generates a higher energy loss and has a higher impact than the same production issue in an inverter connected to 30 modules
- Issue duration
 - **For example:** for a 10kW inverter, a production issue that lasts 10 hours causes a higher energy loss and has a higher impact than a production issue that lasted 2 hours on the same inverter

Risks that don't cause energy loss

- Issues that require attention, but do not result in direct energy loss, are given an impact value based on estimated risk:
 - **For example:** an inverter communication issue is not likely to affect its production and is at low risk of becoming a critical issue. In this case, the impact value is low, for example, 1.
 - **For example:** a battery communication issue does not affect PV production. However, when the inverter cannot communicate with the battery and manage its charge or discharge rate, the risk of battery discharge reaching low energy levels, which can harm it, is high. In this case, the impact value of the related alert is also high, for example, 9.

Impact indicator ranges

The maximum impact calculated for any PV system is 9. However, the highest impact calculated for a specific PV fleet may be lower than 9. This depends on the types of components you installed at your sites. **Figure 2** displays a sample of the possible impact indicator range in a PV fleet. The impact range varies based on the components and component size.

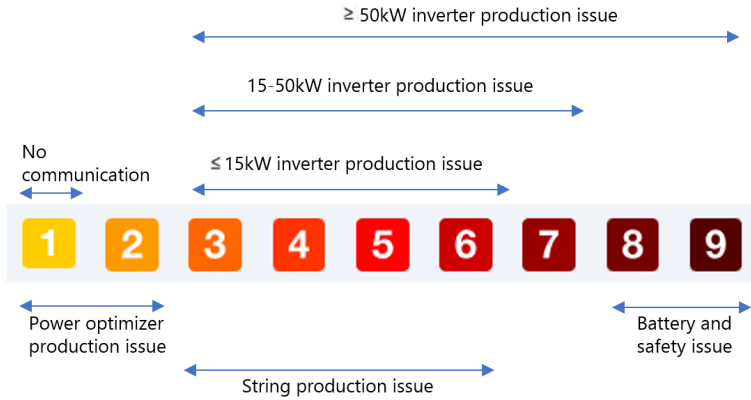


Figure 2: Sample Impact Indicator Range

The impact range varies for the following inverter sizes:

- An inverter that supports $\leq 15\text{kW}$ production has an impact range of between 3 – 6 inclusive
- An inverter that supports $\geq 50\text{kW}$ production has an impact range of between 3 – 9 inclusive
- A battery issue with an impact value of 8-9 is at risk of completely discharging. This may place it in a state where it can no longer be recharged.

Impact calculations

The tables below display how the source of an issue affects the impact value, to which it was assigned.

Table 1: Impact from the number of affected modules

	Site 1 1 x 100kW inverter with synergy technology	Site 2 3 x 100kW inverter with synergy technology	Site 3 3 x 100kW inverter with synergy technology
Alert	Production issue in an inverter 	Production issue in an inverter 	Production issue in all inverters on site
Impact	7	7	7 7 7
How to handle	All the alerts are raised for an issue in the same sized inverter, causing a similar energy loss regardless of site size. For site 3, an alert indicating the fault in each component is raised separately for each issue.		

Table 2: Impact affected by the duration of the issue

	Site 1 1 x 5kW inverter	Site 2 1 x 5kW inverter
Alert	Production issue in inverter (for 12 hours) 	Production issue in inverter (for 2 hours)
Impact	5	3

Explanation	Although these are the same sized inverters, the duration of the production issue in the inverter in site 1 is longer than that for site 2 and therefore it receives a higher impact value.
-------------	---

Table 3: Impact affected by possible energy loss


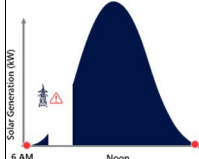
	Site 1 1 x 5kW inverter	Site 2 1 x 20kW inverter
Alert	Grid fault occurring at noon 	Grid fault occurring in the morning 
Impact	3	3
Explanation	A grid fault in a large inverter in the morning when PV production is relatively low can cause the same energy loss as a grid fault in a smaller inverter during peak sunshine hours.	

Table 4: Impact affected by non-energy related risks



	Site 1 1 x 7.6kW inverter with battery storage
Alert	Battery circuit breaker trip 
Impact	9
Explanation	A battery circuit breaker trip can cause the battery to discharge to an unrecoverable state, resulting in a high impact value to draw your attention to the issue.

Table 5: Impact affected by non-energy related risks

	Site 1 1 x 7.6kW inverter with battery storage
Alert	Inverter in OFF/Standby mode 
Impact	1
Explanation	If the inverter is turned off, it is probably intentional and does not require your immediate attention. However, this alert is displayed and is seen as a "warning".

Frequently asked questions

Q: What is the highest impact value my fleet can receive?

A: The maximum impact that can be calculated is 9. However, the highest impact in your PV fleet can be lower according to the largest inverter on site. For details, see [Impact Indicator Range](#).

Q: If I have a PV fleet of residential systems up to 15kW, what is the highest impact value I can see?

A: The impact calculation is based on the possible energy loss caused by an issue, such as the

number of affected modules and the issue duration, or other risks. In a fleet where the largest inverter is 15kW, the highest impact is 6. For comparison, in a fleet where the largest inverter is 100kW, the impact can reach 9, as a 100kW inverter issue can cause a higher energy loss than a 15kW inverter issue. For details, see the [Impact Indicator Range](#). If you have systems with battery storage, impact alerts for battery issues can reach 9, due to the high risk related to battery faults, such as a full discharge.

Q: Why are impact values for battery issues ranked as 9?

A: Although battery issues do not affect PV production, they may prevent your use of the battery and cause the battery to discharge to an unrecoverable state, ultimately harming it. To draw your attention to the issue and ensure no replacements are required, the impact value for battery-related alerts is high, e.g. 9.

Q: Why is the impact of an inverter communication issue ranked low?

A: When there's a communication issue in an inverter, network connectivity may be an issue, and the system production has not been affected.

Q: Can system owners see an alert's impact?

A: Not currently. This feature will be available in the future on the mySolarEdge App.

Q: Is it possible for the same issue to get different impacts? For example, can a 6kW inverter production issue get an impact of 3 on one occasion and an impact of 5 on another occasion?

A: Yes. Since the impact calculation takes into consideration the duration of the issue and the time of day the issue has occurred, the same alert can receive different impacts.

Q: Is an alert with impact 9 more critical than an alert with impact 8?

A: Most likely yes, but that's not always the case. Both issues with impacts of 8 and 9 are more critical than other alerts with, for example, an impact of 4 or lower. We recommend further investigation to determine which issue to handle first. This can be done by checking if there are more alerts on the site, and by using other monitoring tools, such as layout and charts.