

Multi level DLM execution

Original text as published before the redesign of this article. Wording unchanged.

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Reduxi strategies enable DLM execution at every level of installation, ensuring protection and flexibility while contributing to significant cost reduction.

1. Introduction

With the increasing need for multi-level DLM (dynamic load management), the Reduxi system allows as part of strategies to ensure limitation on every level of installation, i.e. to protect electrical elements of each feed from damage.

2. Multi-level DLM protection

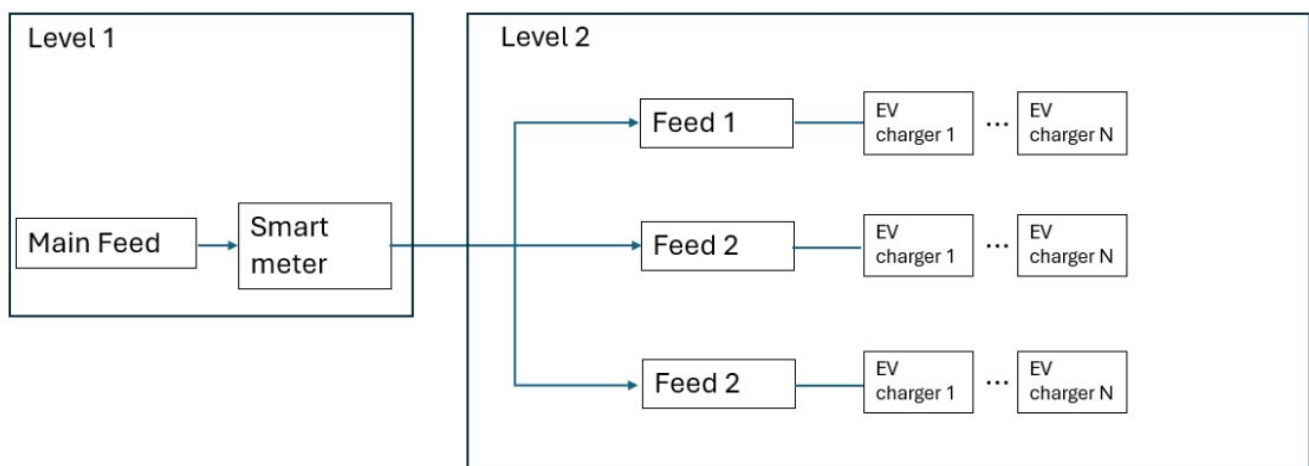
Achieving multi-level protection depends entirely on the specific installation at the location. For each new level of feed/feeds, a tailored strategy must be defined to ensure all safety conditions for proper control are met.

2.1 Example for multi-level DLM in Reduxi system

Two examples will be presented and are most commonly used in practice.

2.1.1 Main grid Smart meter case

An example is given where schematics of two-level installation are given under:



In this example, measurements from the Smart meter are taken at the main feed, with a single smart meter detecting and measuring the entire building's consumption. For secondary feeds at level two, measurements are obtained (calculated) directly from individual EV chargers, with the sum of power on each EV charger acting as a "virtual" Smart meter for that feed. **Please note (Important!)**, that this approach is only valid when the feed is exclusively connected to EV chargers. Otherwise, the measurements will be inaccurate.

How to set strategies for this example:

- Firstly general strategy needs to be set, including the Smart meter and all the chargers:

In [Reduxi Configurator](#) as part of [Strategies for Reduxi controller](#) define controlled devices (EV chargers) and measurement device (smart meter):

Controlled device (all EV chargers):

Choose which devices you want to regulate

Devices

- Feed 1 - EV chargers
- Feed 2 - EV chargers
- Feed 3 - EV chargers
- Landis+Gyr E650
- Reduxi Meter
- Schneider Electric PMS1xx / PMS3xx
- flexoTHERM - heat pump

Regulated devices

- Feed 1 - EV chargers
- Feed 2 - EV chargers
- Feed 3 - EV chargers

Back Next

Measurement device (smart meter):

1 Basic settings 2 Regulate 3 Measure

Where can we get measurement data for regulation?

Devices

- Feed 1 - EV chargers
- Feed 2 - EV chargers
- Feed 3 - EV chargers
- Landis+Gyr E650
- Reduxi Meter
- Schneider Electric PMS1xx / PMS3xx
- flexoTHERM - heat pump

Measurement devices

- Landis+Gyr E650

Back Done

Set an export/import limit for the general strategy:

Settings / Strategy

General settings		Regulated devices		Optimization modes	
Name	Event description	Export limit	Goal	Import limit	Advanced
Default mode	/	<input type="text" value="100"/> kW	Self-consumption	<input type="text" value="50"/> kW	

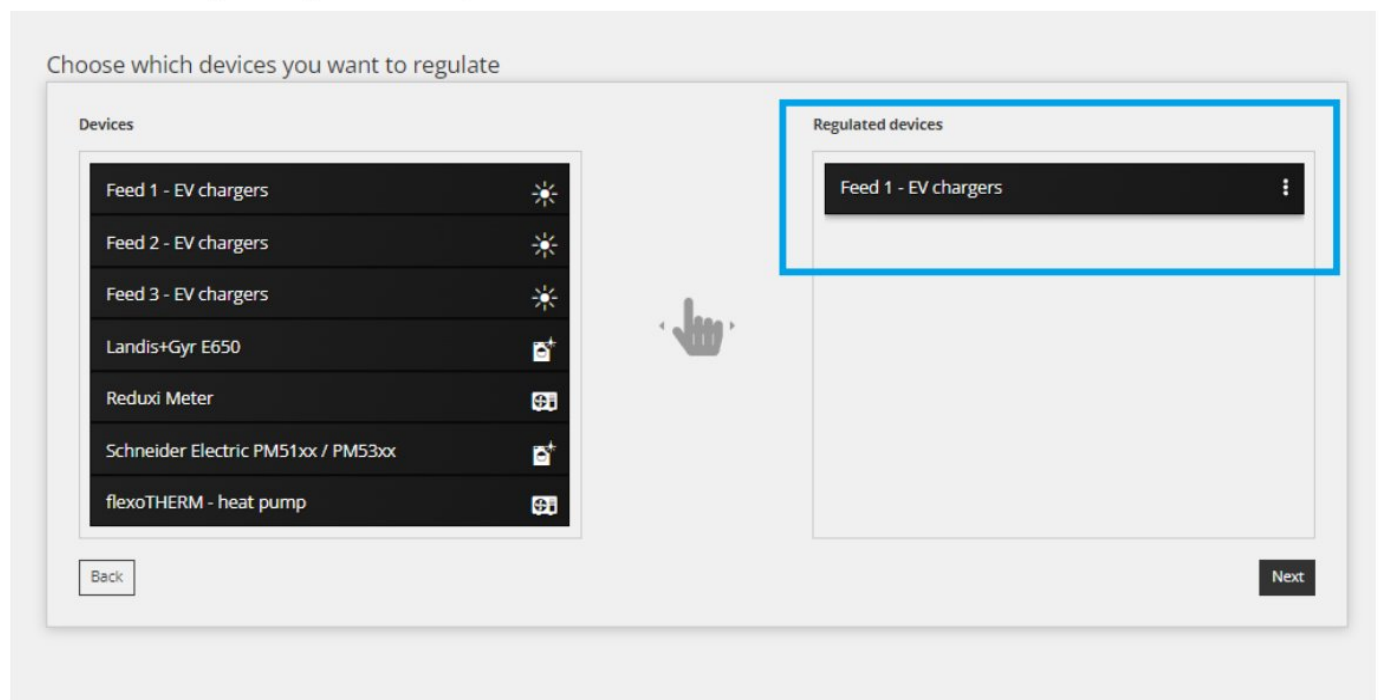
Back Save

With the definition of strategy, the general case is covered and the Reduxi controller will calculate the setpoint for individual EVs respecting the main grid limitations.

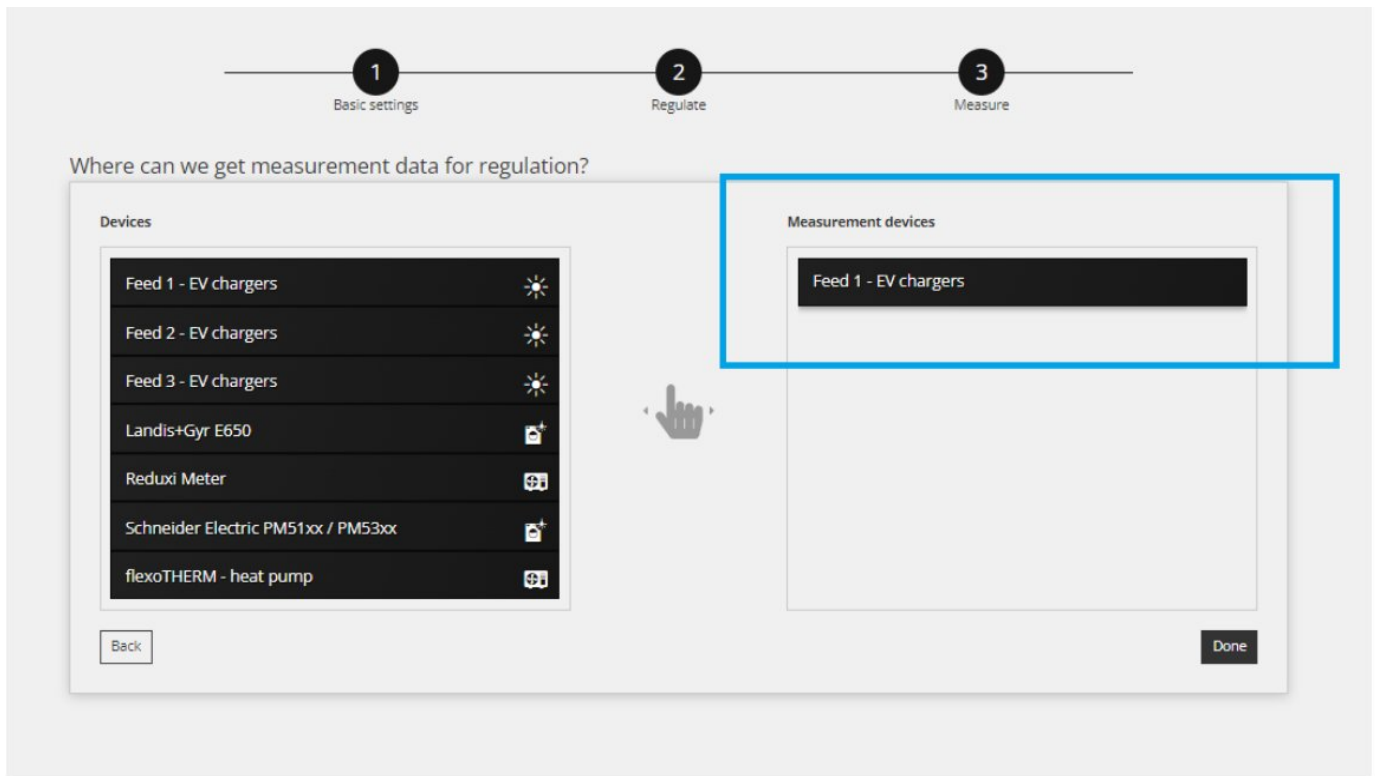
- Secondly specific strategy for individual feed needs to be set:

In [Reduxi Configurator](#) as part of [Strategies for Reduxi controller](#) define controlled device (EV chargers of feed one) and measurement device (EV chargers on feed one):

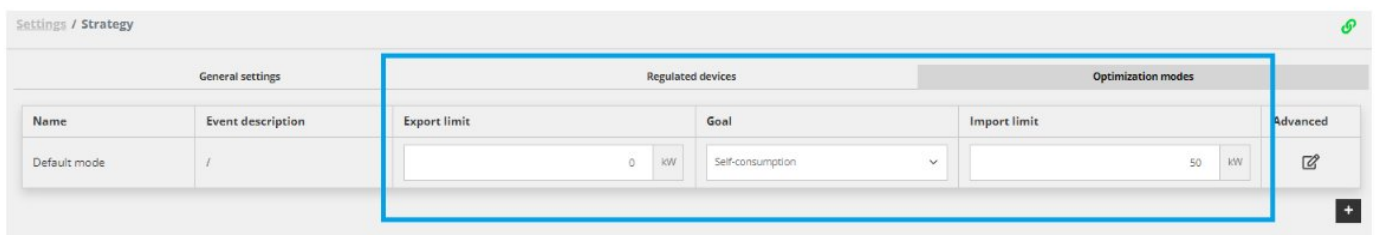
Controlled device (EV chargers for feed 1):



Measurement device (EV chargers for feed 1):



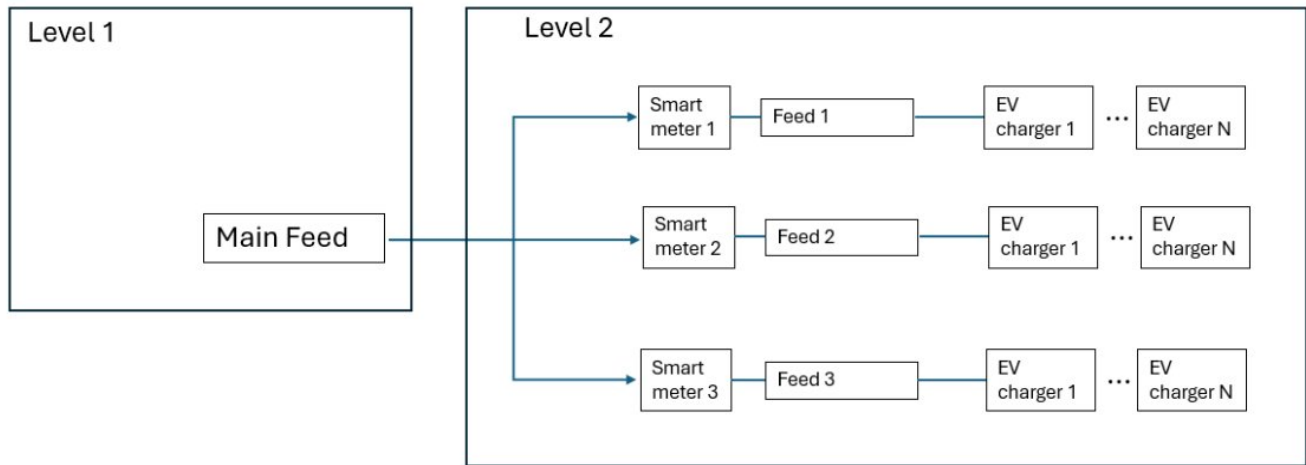
Set an export/import limit for the specific feed strategy, if needed:



The same procedure must be applied to feeds 2 and 3, resulting in a total of four defined strategies. With this, the Reduxi system will have all the necessary information to execute DLM safely. Please note that for each EV charger Reduxi controller will in real-time calculate two setpoints, derived from the individual strategy that includes the respective EV charger. Reduxi controller will always take the **lower setpoint**, ensuring maximal protection.

2.1.2 Lower-level Smart meters case

An example is given where schematics of two-level installation are given under:



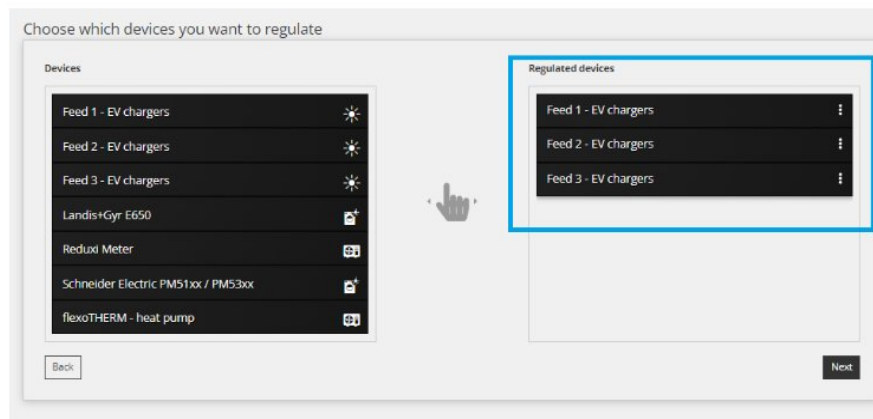
In this example, measurements from the Smart meters are taken at lower-level feeds, with three smart meters detecting and measuring the individual feed consumption. To obtain (calculate) main feed measurements lower feeds consumptions are summed together acting as a "virtual" grid Smart meter.

How to set strategies for this example:

- Firstly general strategy needs to be set, including a "virtual" Smart meter as sum as three low-level Smart meters and all EV chargers.

In [Reduxi Configurator](#) as part of [Strategies for Reduxi controller](#) define controlled device (all EV chargers) and measurement device ("virtual" Smart meter):

Controlled device (all EV chargers):



Measurement device (virtual Smart meter):

Where can we get measurement data for regulation?

Devices

- Feed 1 - EV chargers
- Feed 2 - EV chargers
- Feed 3 - EV chargers
- Landis+Gyr E650
- Reduxi Meter
- Schneider Electric PM51xx / PM53xx
- Smart meter (Feed 1)
- Smart meter (Feed 2)
- Smart meter (Feed 3)
- flexoTHERM - heat pump

Measurement devices

- Smart meter (Feed 1)
- Smart meter (Feed 2)
- Smart meter (Feed 3)

Back Done

Set an export/import limit for the general strategy:

Settings / Strategy

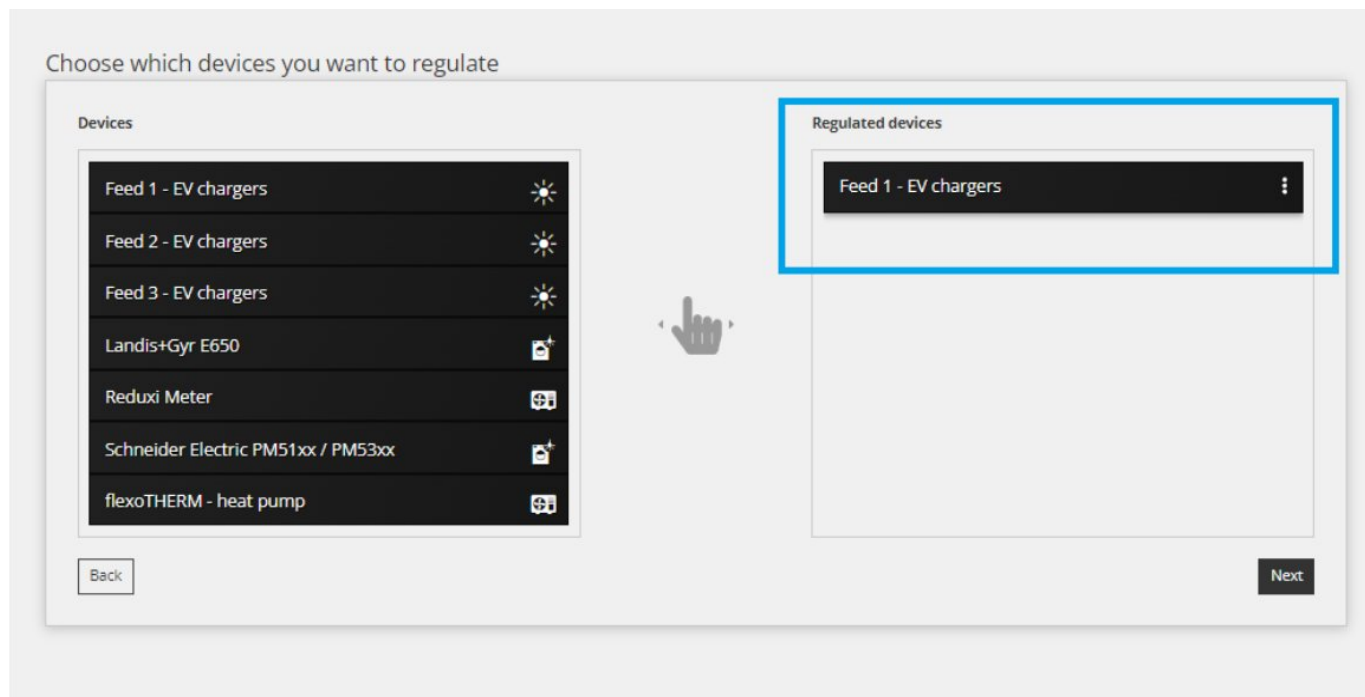
Name	Event description	Export limit	Goal	Import limit	Advanced
Default mode	/	100 kW	Self-consumption	50 kW	

Back Save

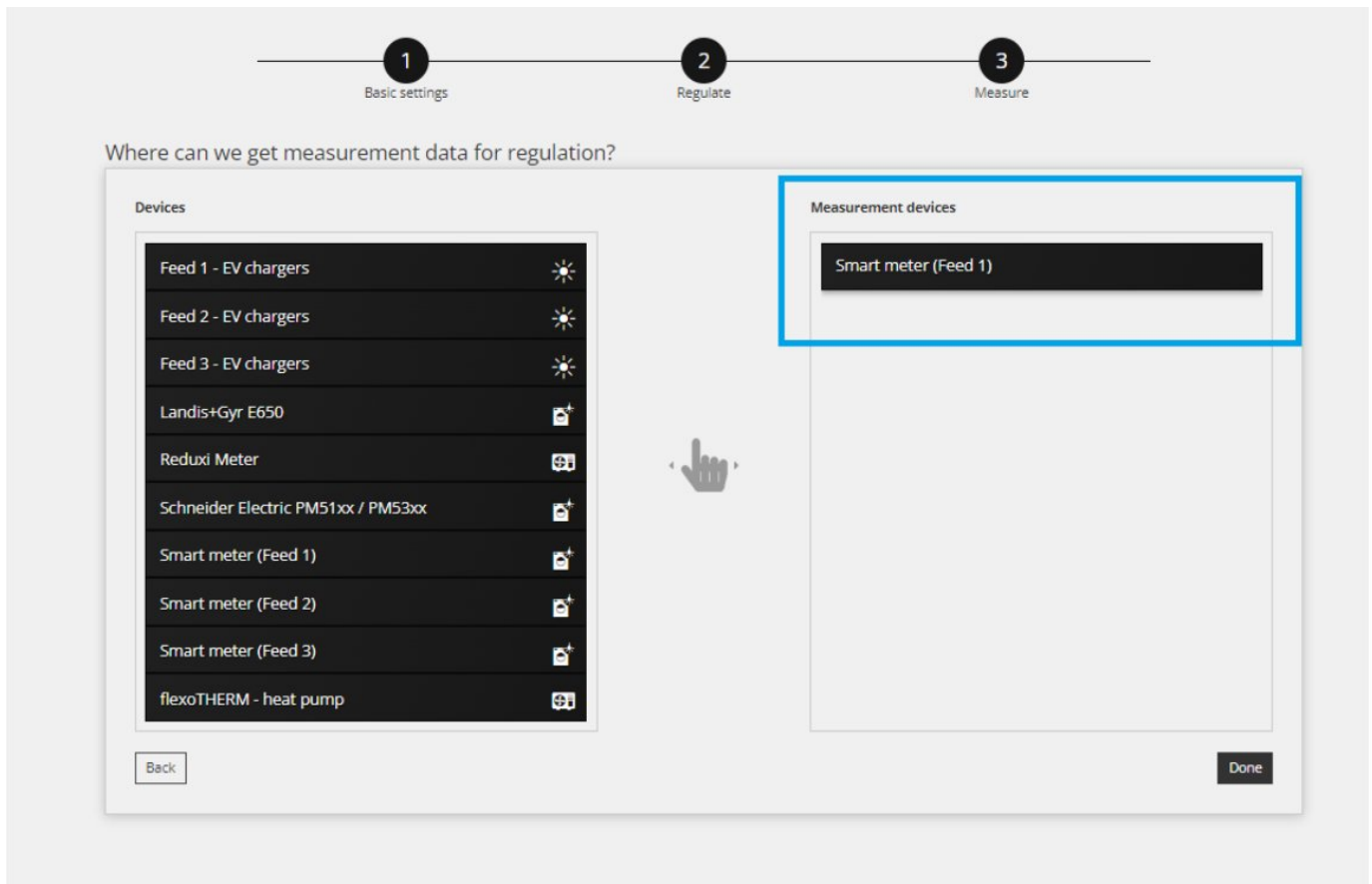
- Secondly, a specific strategy for individual feed needs to be set:

In [Reduxi Configurator](#) as part of [Strategies for Reduxi controller](#) define controlled devices (EV chargers of feed one) and measurement devices (EV chargers on feed one):

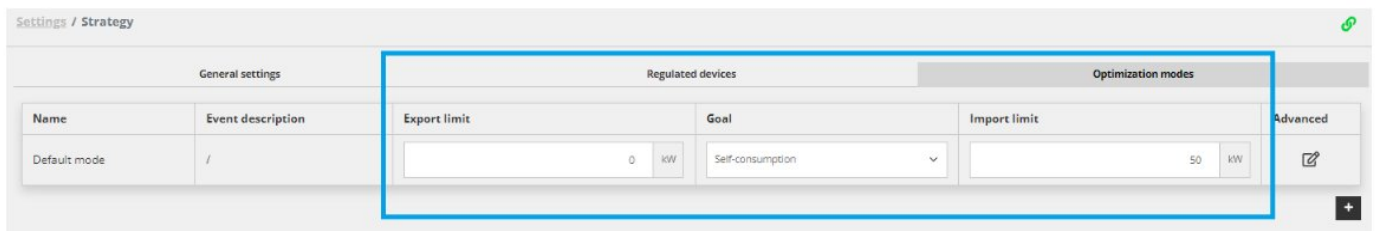
Controlled device (feed 1 Smart meter):



Measurement device (EV chargers for feed 1):



Set an export/import limit for the specific feed strategy, if needed:



The same procedure must be applied to feeds 2 and 3, resulting in a total of four defined strategies. With this, the Reduxi system will have all the necessary information to safely execute DLM. Please note that for each EV charger Reduxi controller will in real-time calculate two setpoints, derived from the individual strategy that includes the respective EV charger. Reduxi controller will always take the **lower setpoint**, ensuring maximal protection.

For further information, please follow the link to [Reduxi Configurator](#).

For visualization of data obtained from the device cloud application is used: [Reduxi Cloud](#).