AGC 150

Basic knowledge

Synchronizing Controllers

GPC-3
Base mounted
Non-Power Management

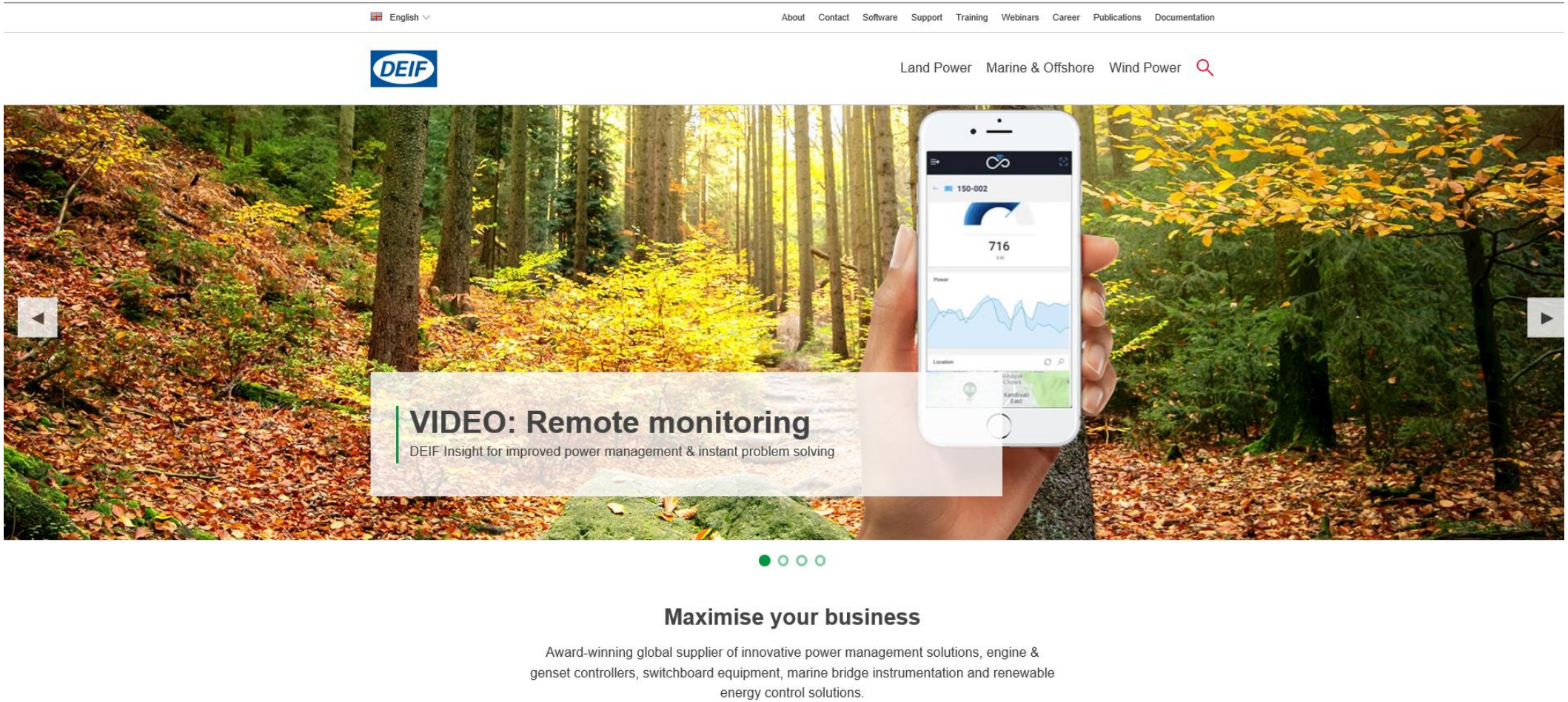
AGC 200
Front mounted
Standard Power Management

AGC-4
Base mounted
Custom Power Management

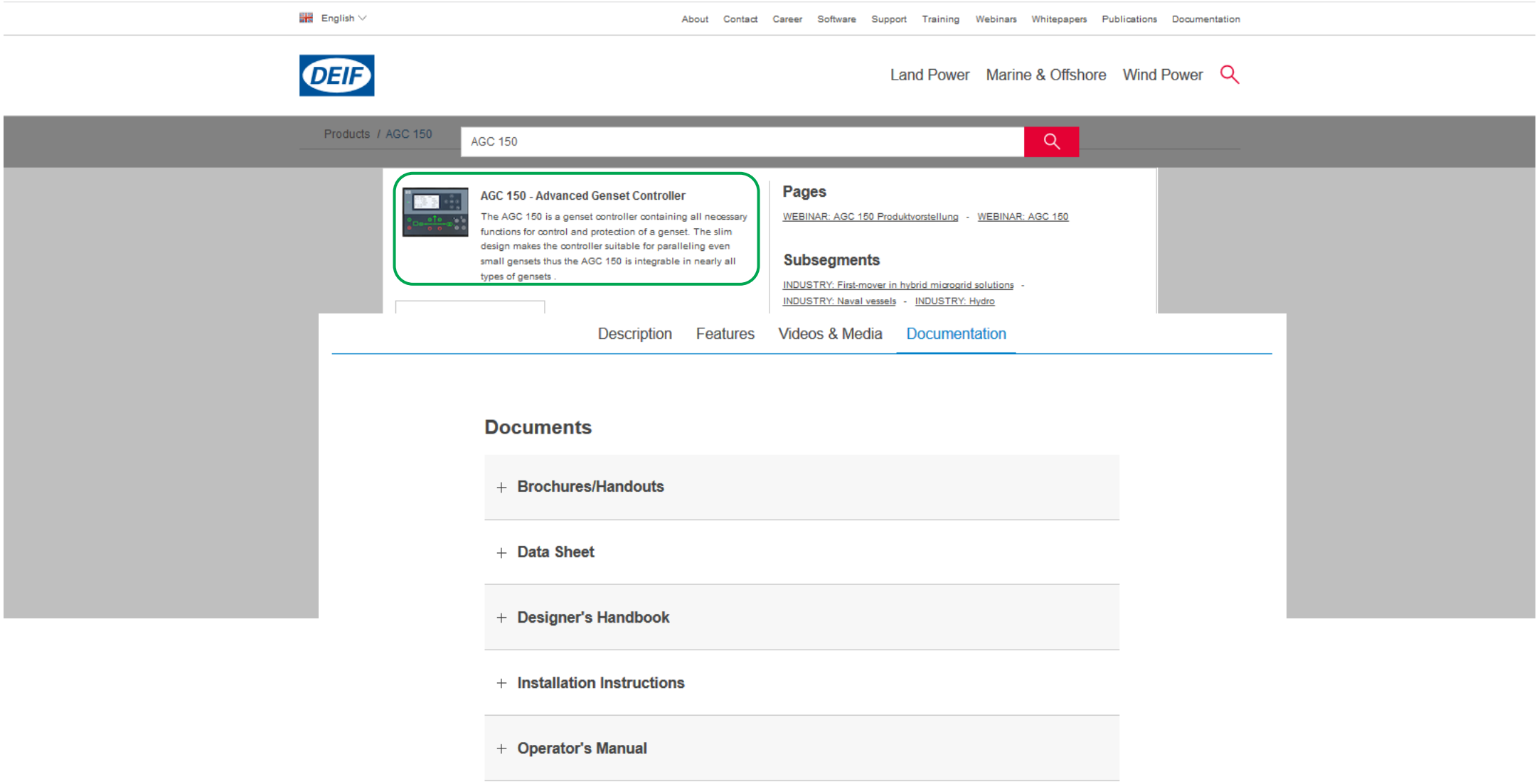
AGC 150
Front mounted
Simple Power Management

Documentation

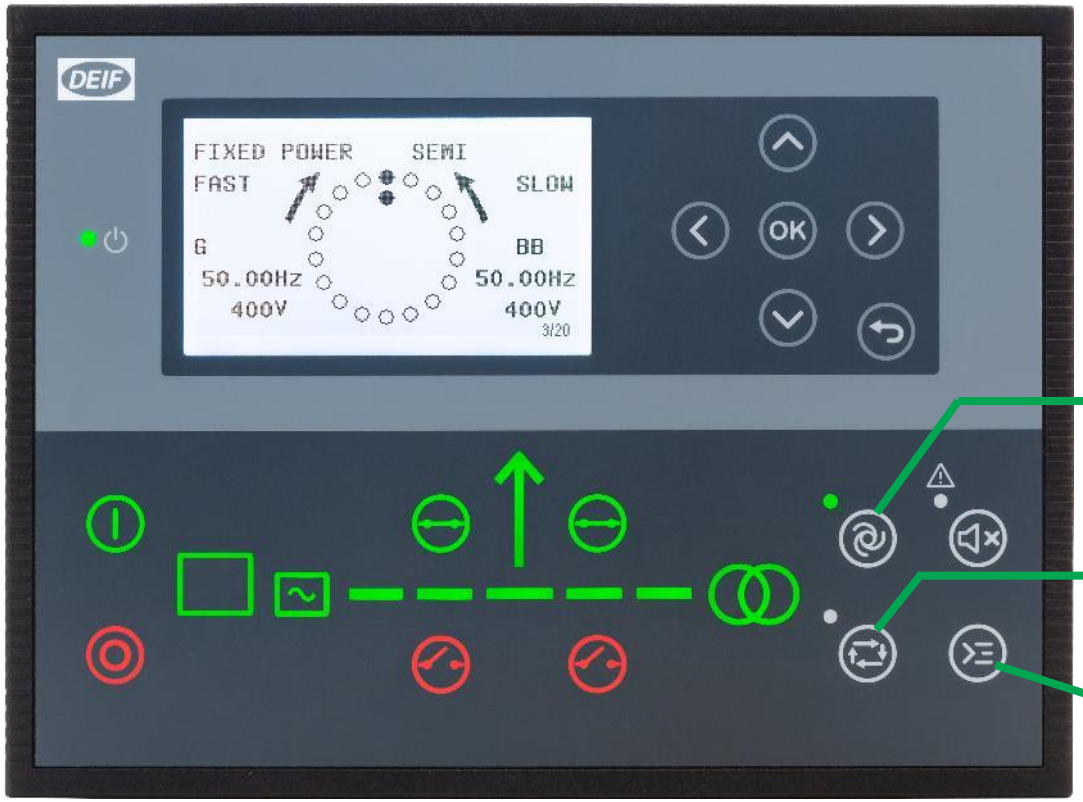
www.deif.com contains all manuals for the controllers



Documentation



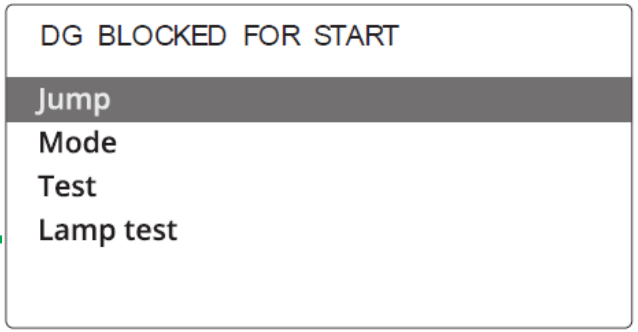
AGC 150



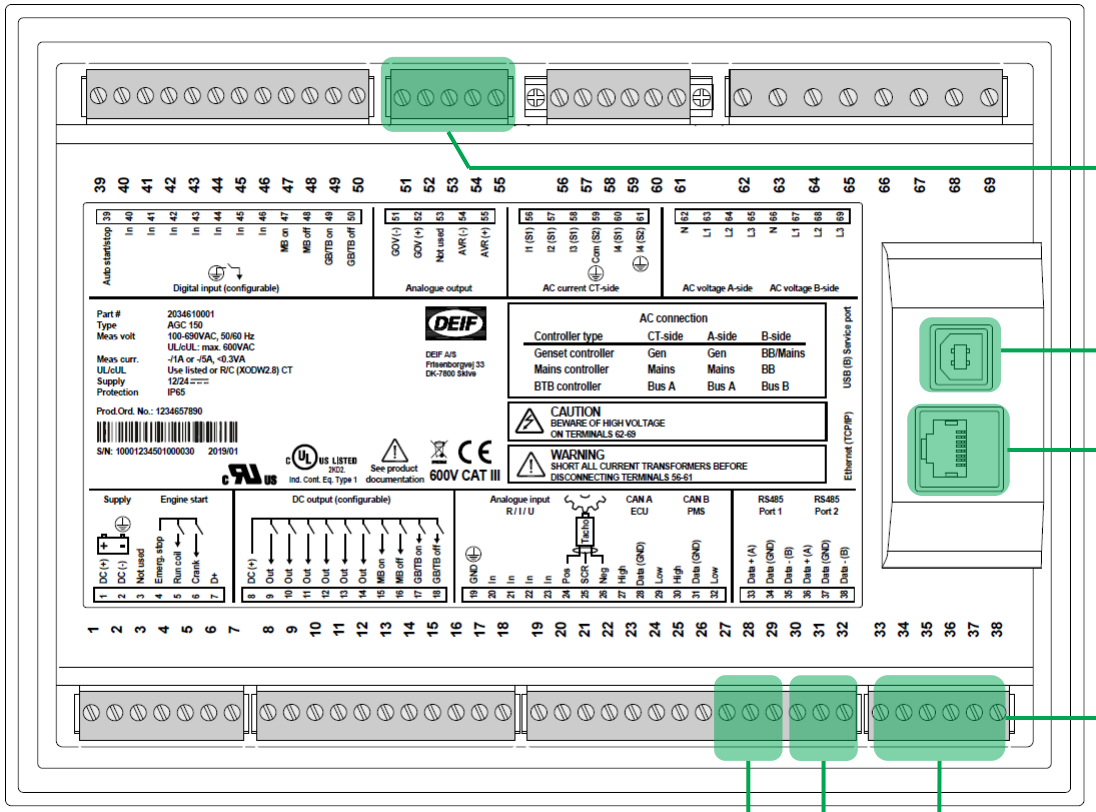
AUTO

SEMI AUTO

Shortcut Menu



AGC 150



GOV / AVR
- -10... 10VDC
- PWM

USB

Ethernet TCP/IP

RS485 (2)

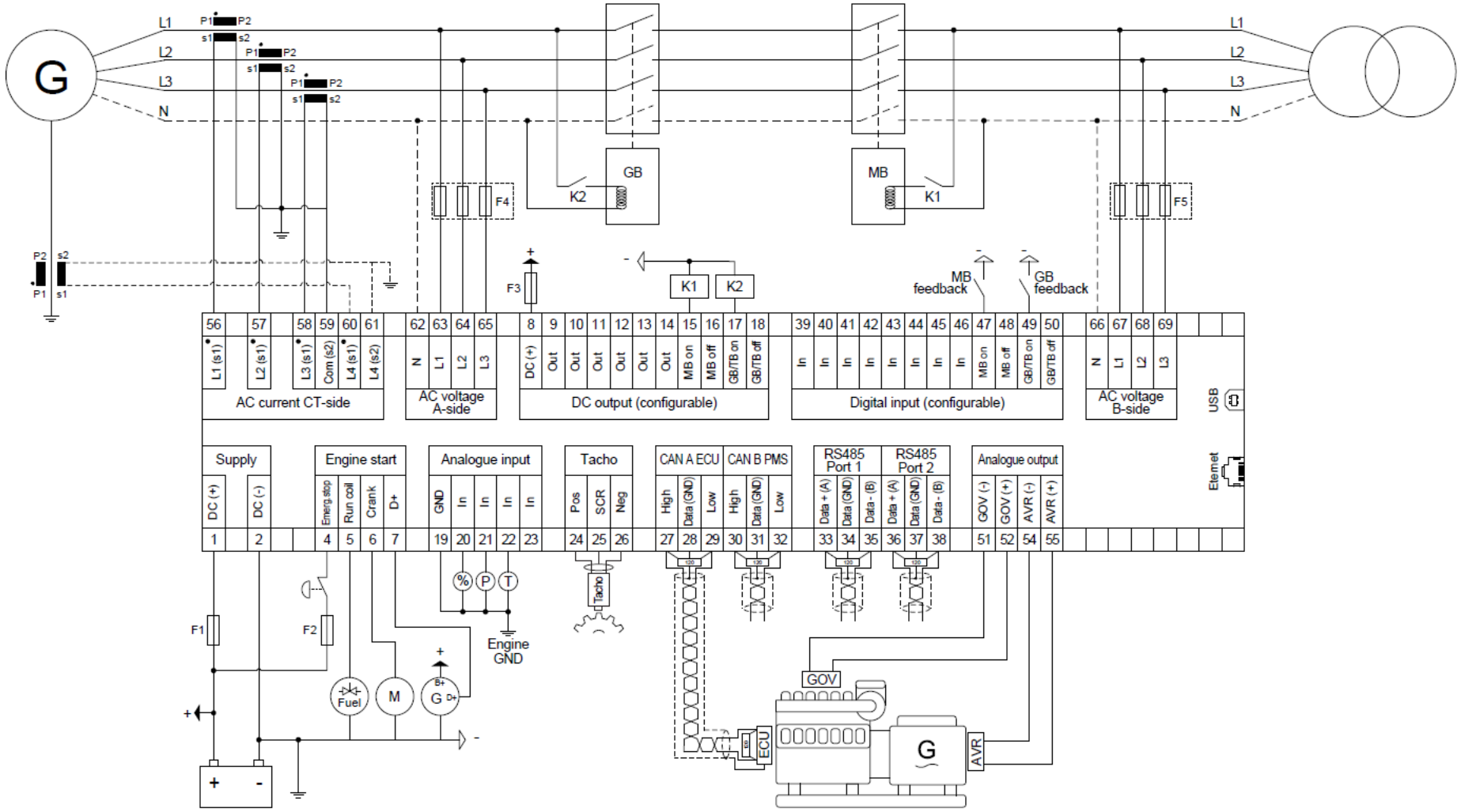
RS485 (1)

Additional I/O

ECU

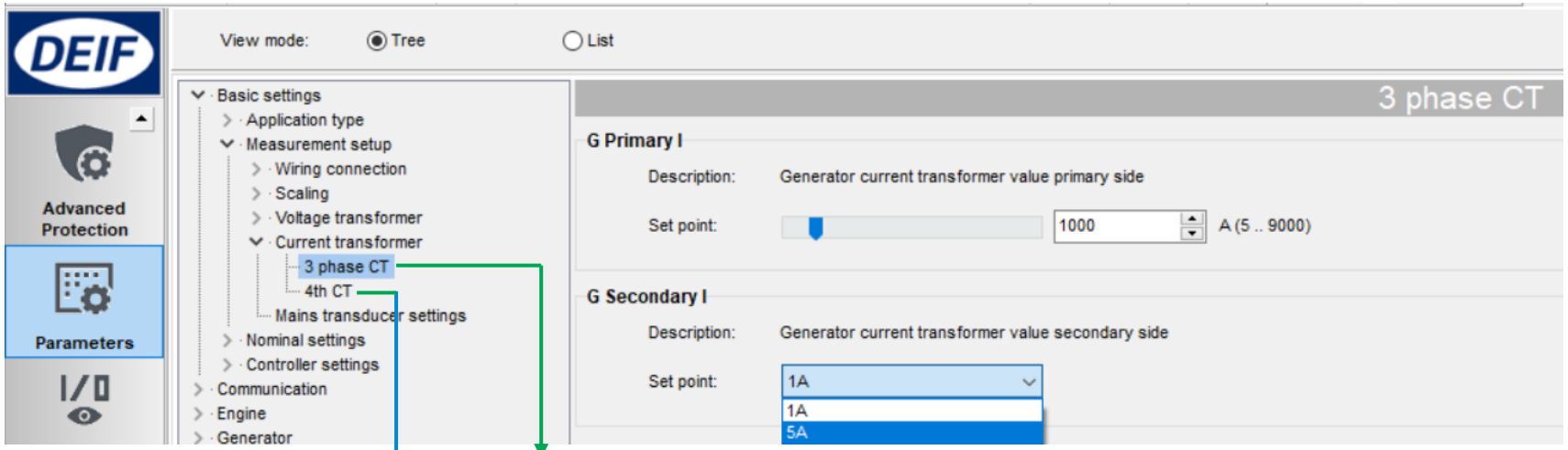
DEIF PMS

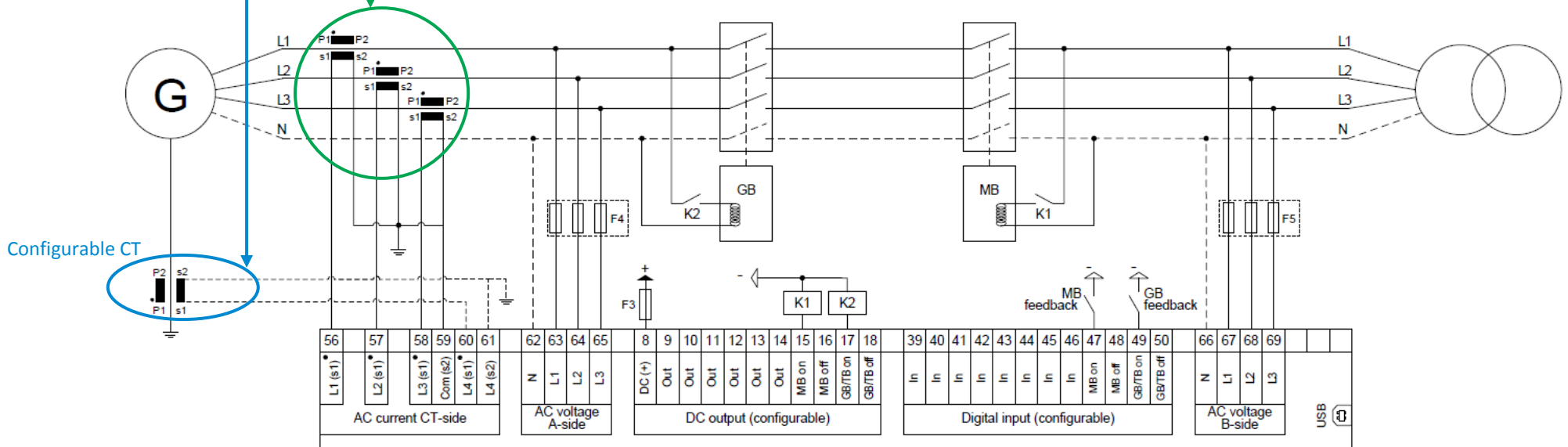
Typical wiring



Basic Settings

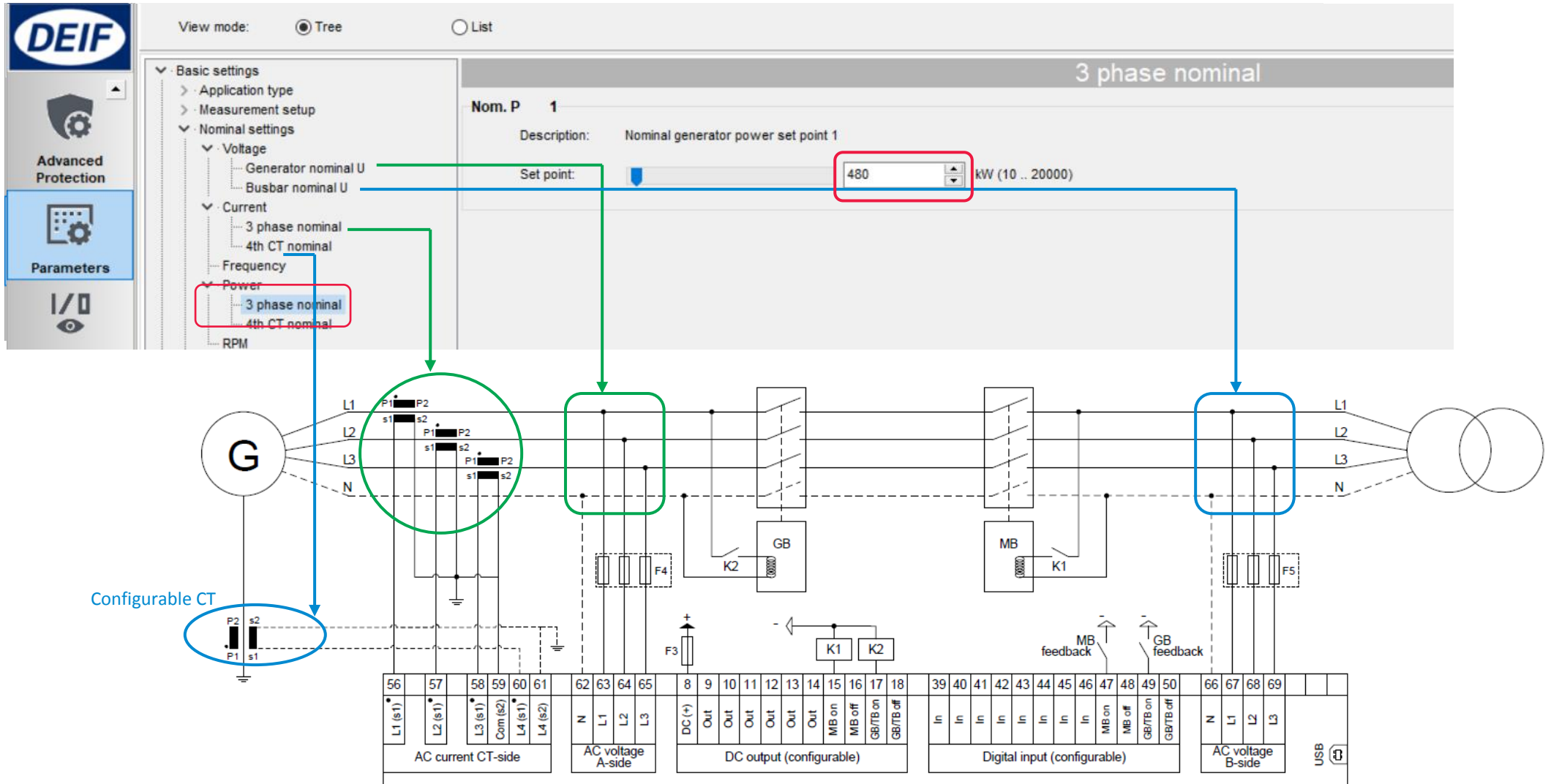
Setup Current Transformer





Basic Settings

Nominal settings



Start Sequence

1. Before starting, start prepare ON (Relay 9). Can be used to activate pre-heating element.

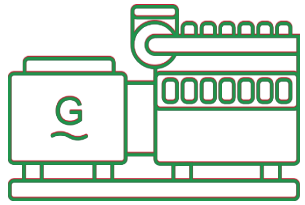
If not required, timer can be changed to 0s to reduce starting time.

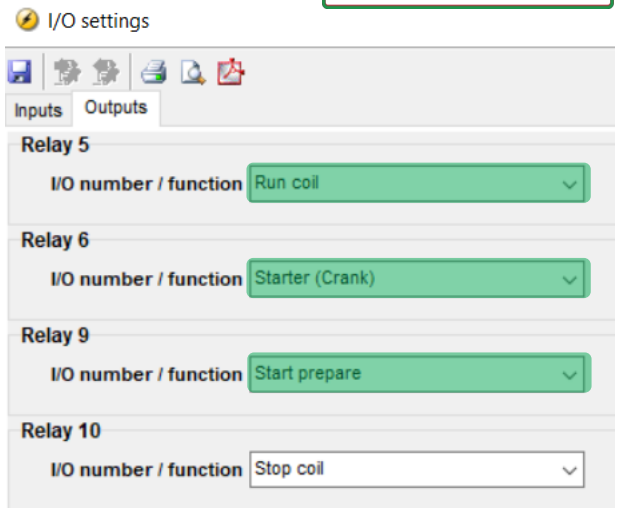
2. Shortly after, Starter/crank (relay 6) and Run coil (relay 5), both ON.

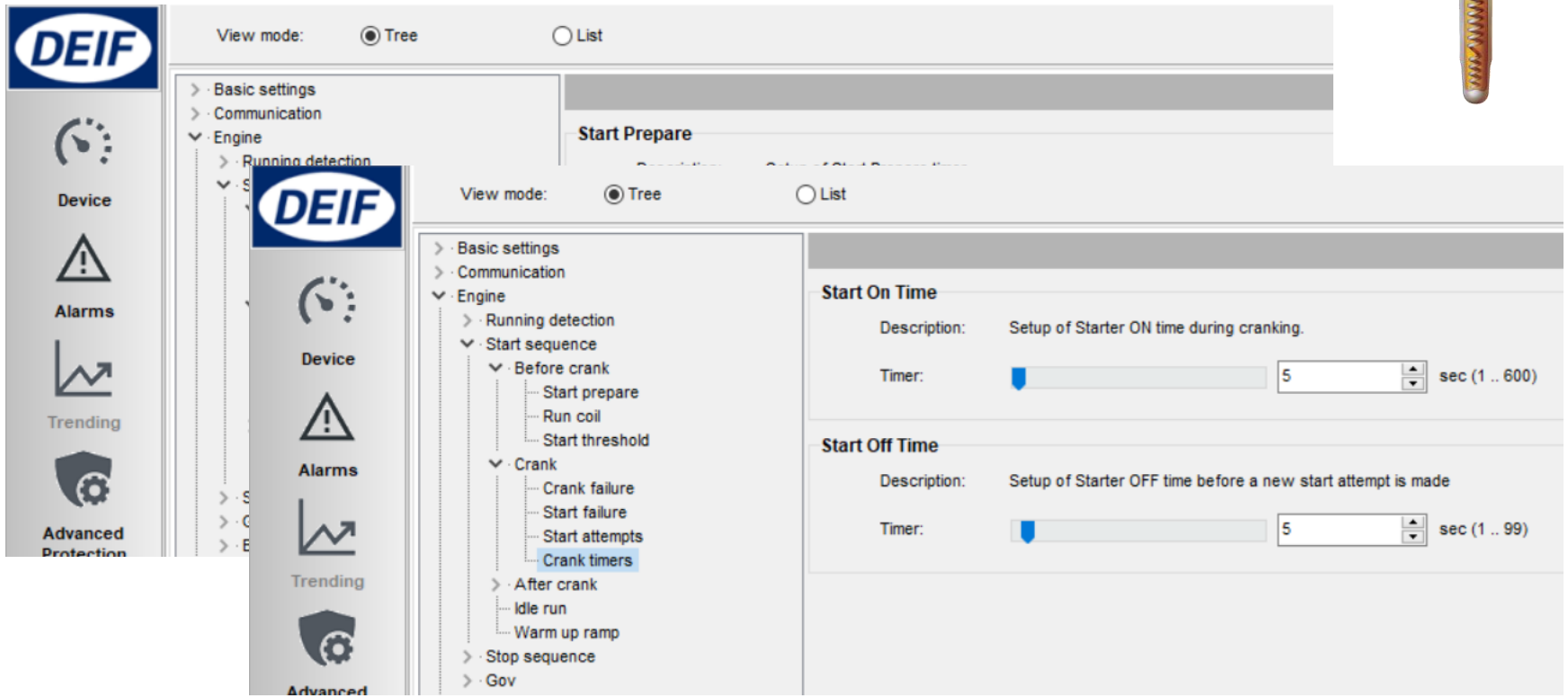
Once running feedback detected, Starter/crank is deactivated.

3. Run coil activates continuously all the time, for the duration of engine running.

Glow plug

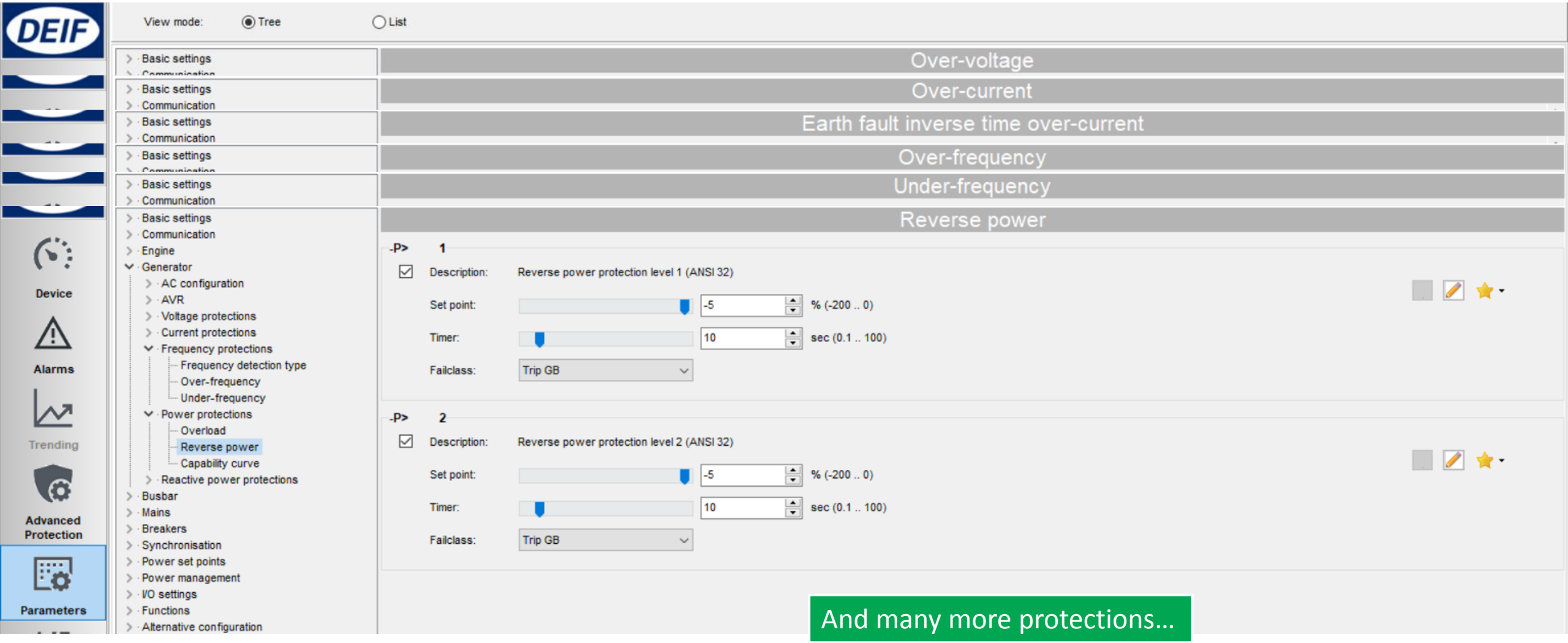






Generator Protection

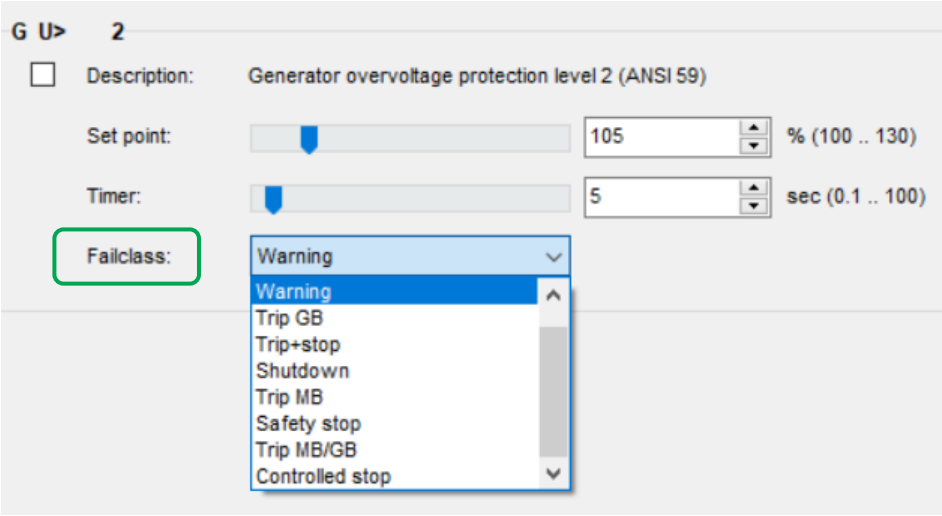
Checkmark [√] = enable



And many more protections…

Generator Protection

Fail class:



Trip + stop = GB trip, engine stop after cooling down

Safety stop = Extra genset start up & replace faulty genset

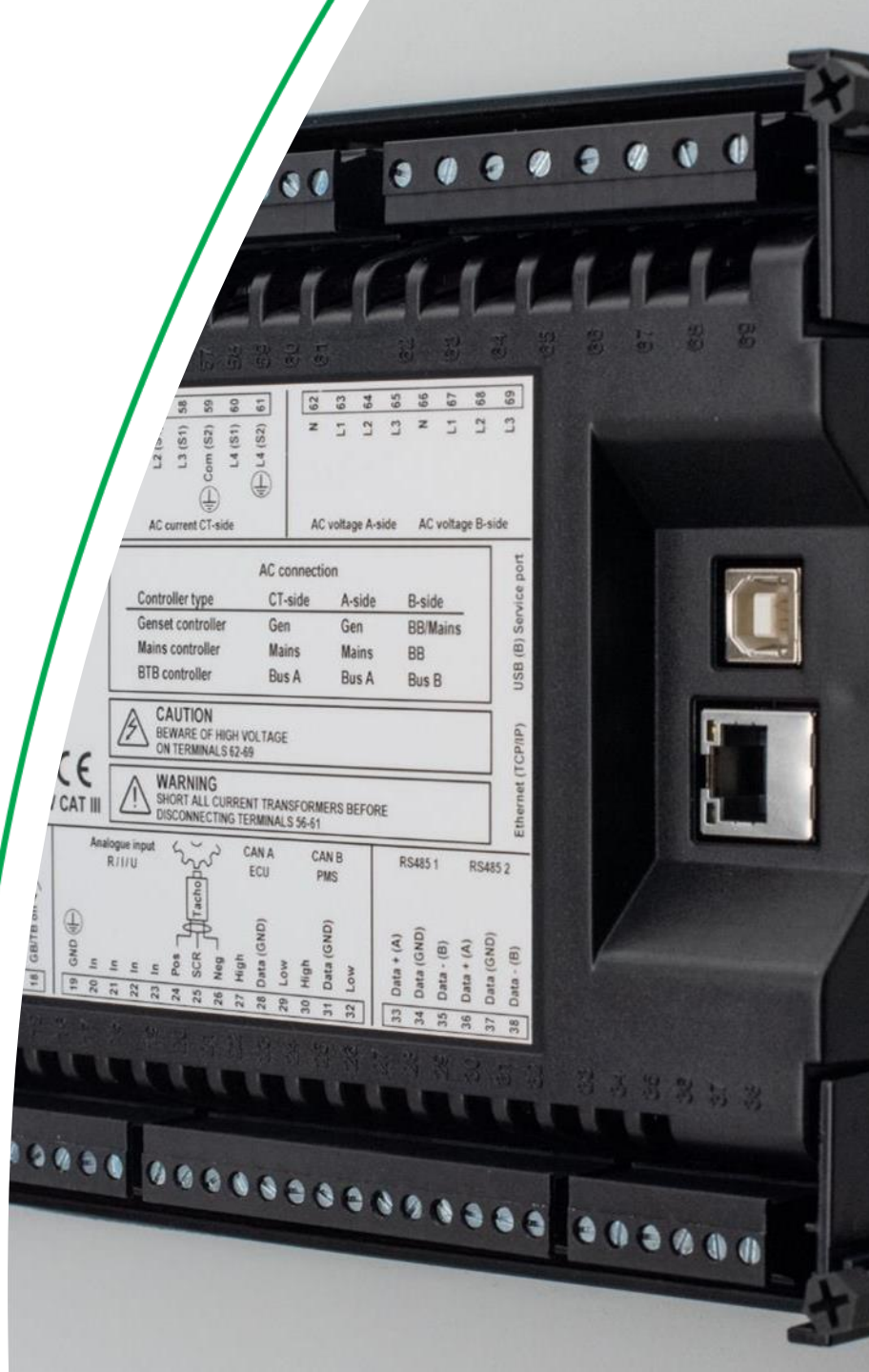
Trip MB/GB = In application “Single DG with mains”, will trip MB instead

I/O

DIGITAL INPUT

DIGITAL OUTPUT

ANALOG INPUT

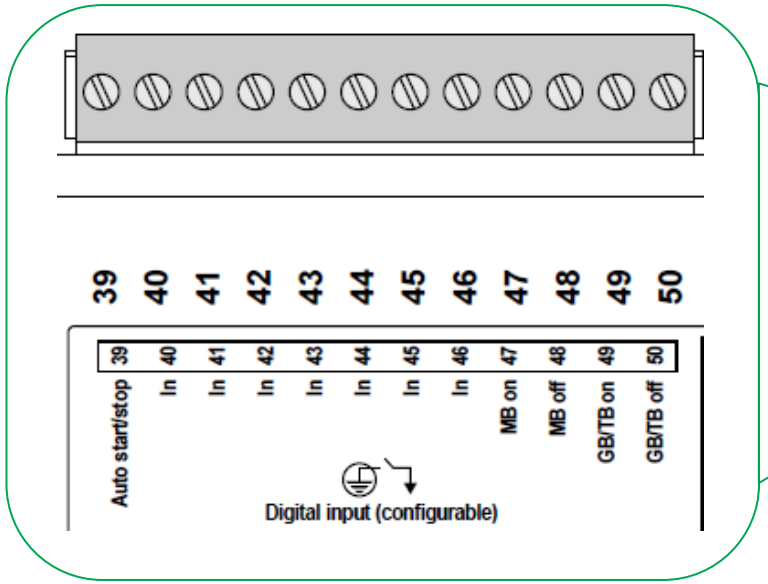


Digital Input

12 digital inputs, activated by negative (-) VDC signal

Each can be configured as:

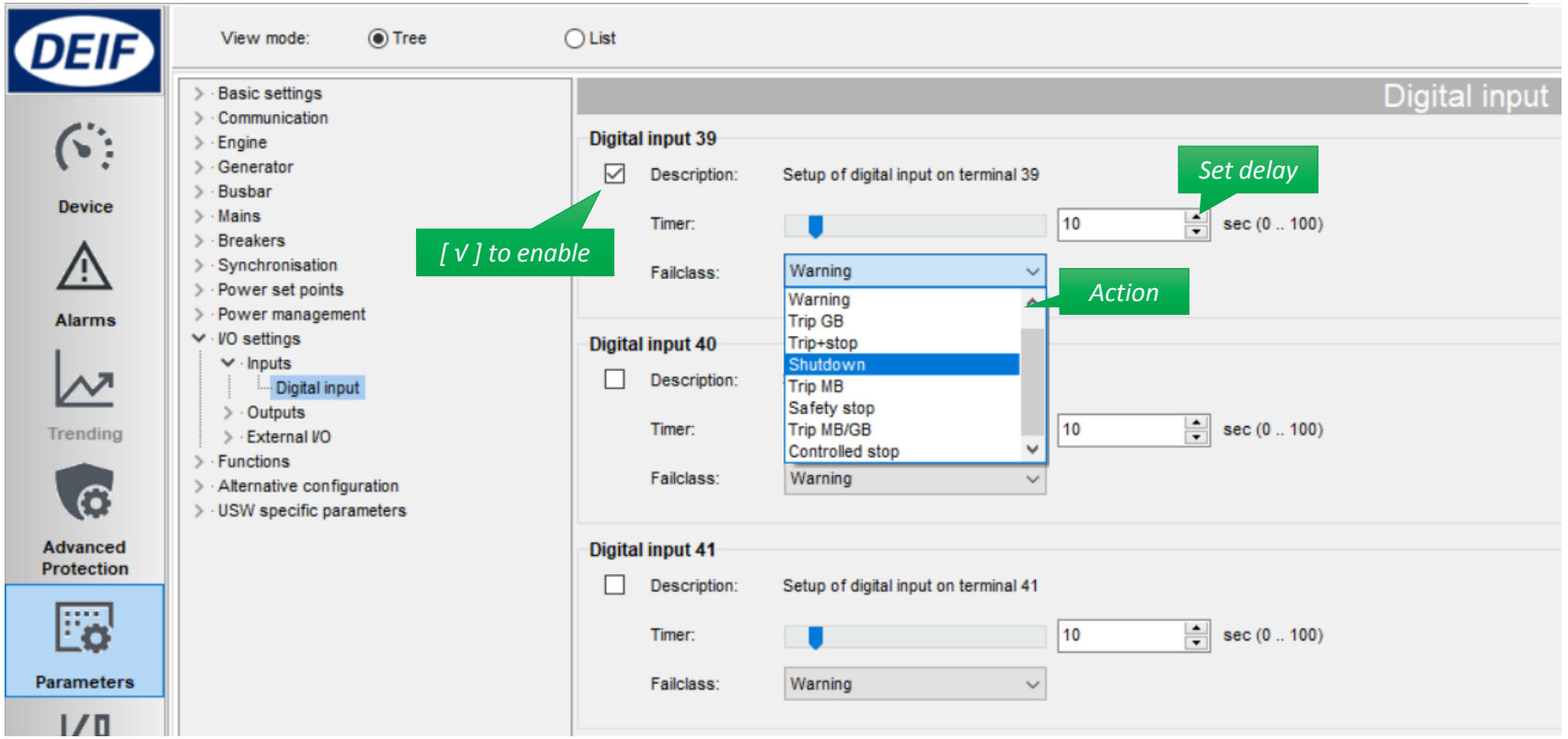
1. Alarms → setup by Display or USW
2. Function → setup by USW only



Digital Input

1. Digital input as **alarm**

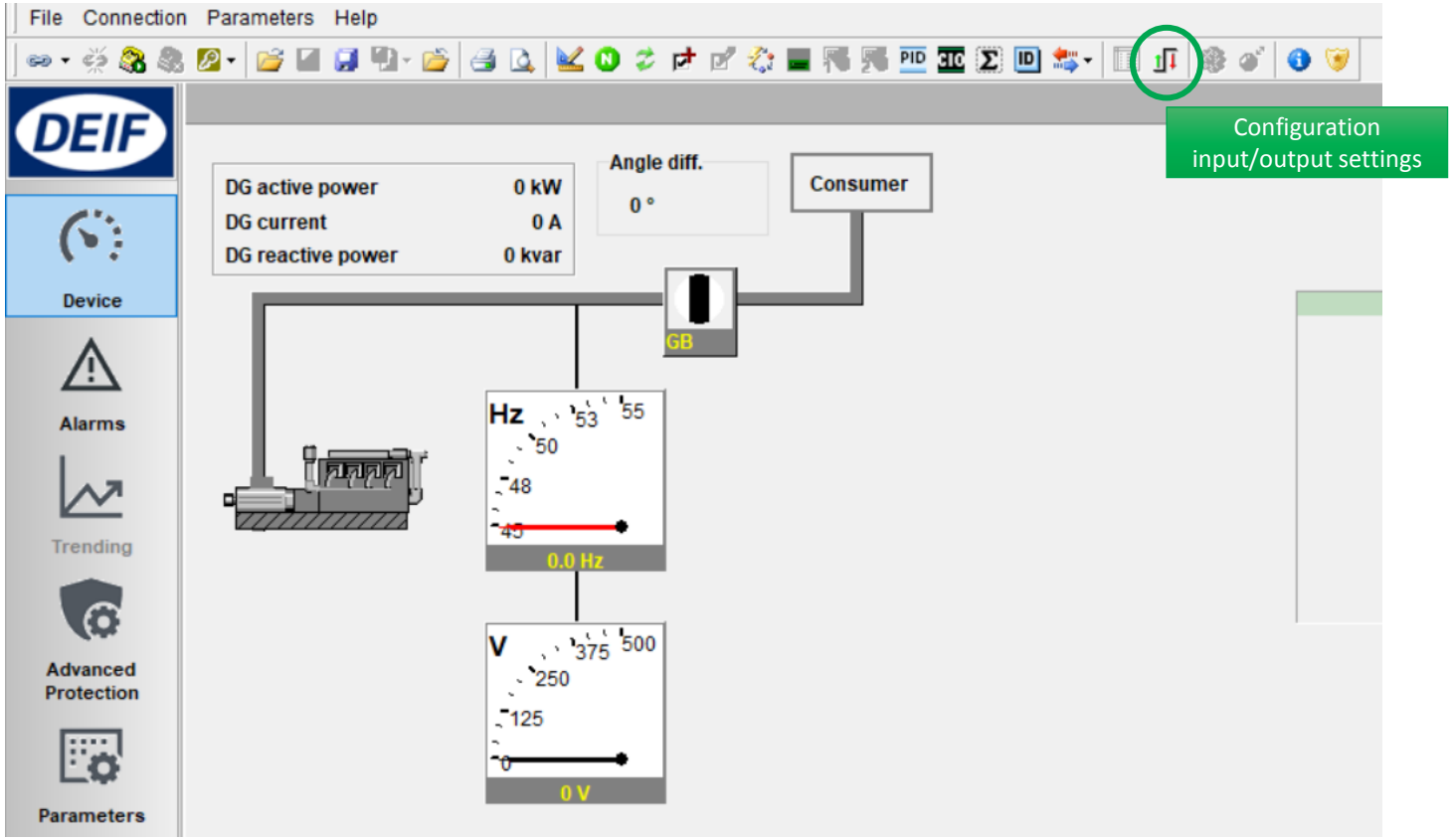
Parameter > I/O settings > Inputs > Digital inputs

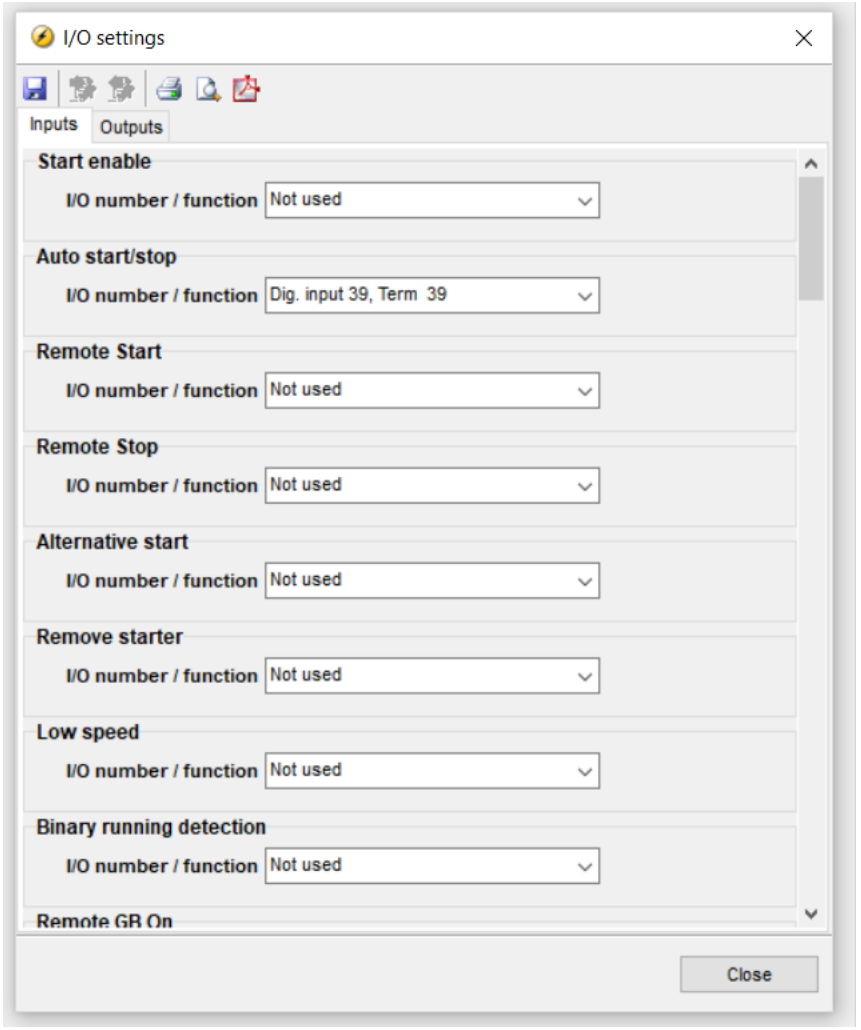


Digital Input

2. Digital input as **Function**

Click icon I/O settings





Digital Input

Default assignment

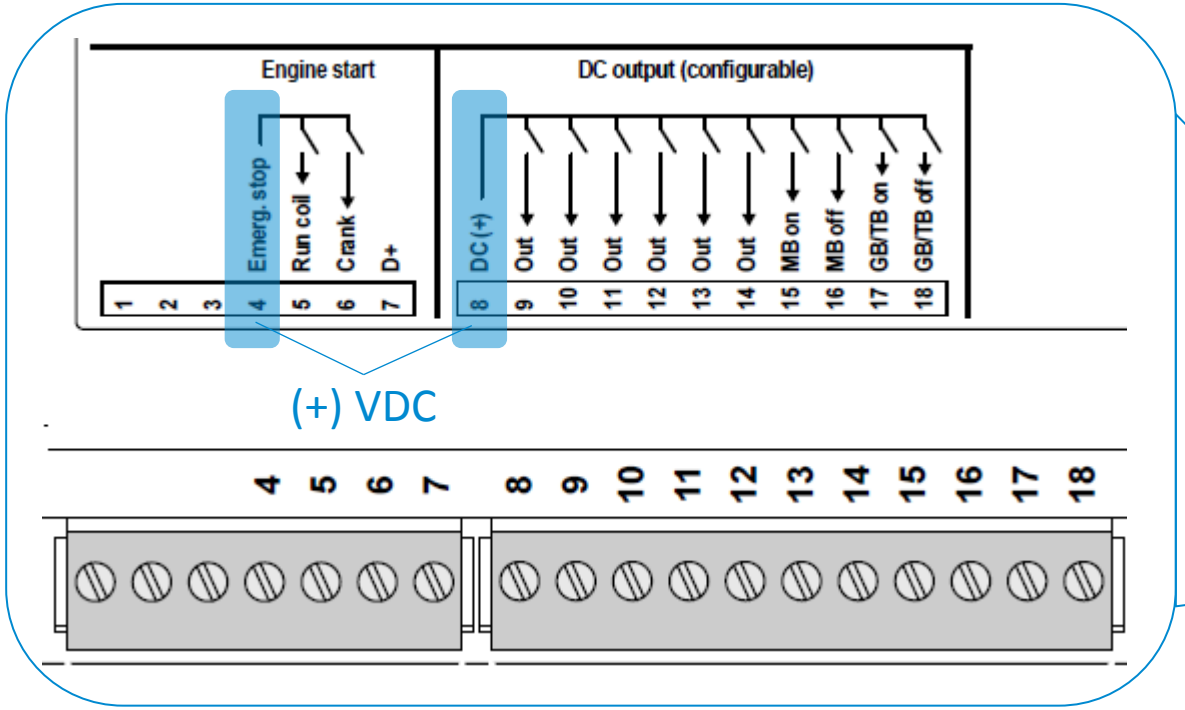
Terminal no.	Function	Remarks
39	Auto start/stop	For remote start signal
40	Not used	
41	Not used	
42	Not used	
43	Not used	
44	Not used	
45	Not used	
46	Not used	
47	Status MB ON	For application with Mains
48	Status MB OFF	For application with Mains
49	Status GB ON	
50	Status GB OFF	

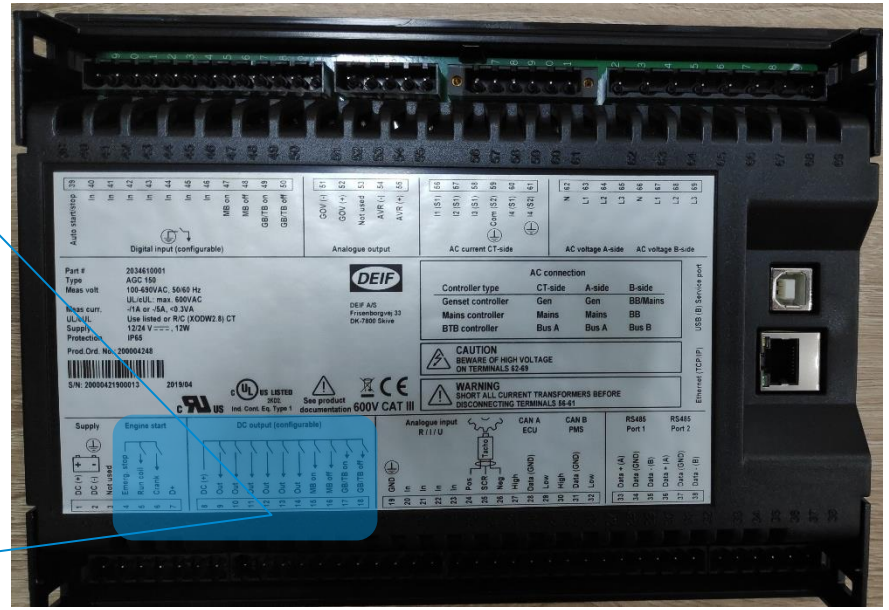
Digital Output

12 digital outputs (DC outputs)

Require common positive (+) VDC

Configuration by USW

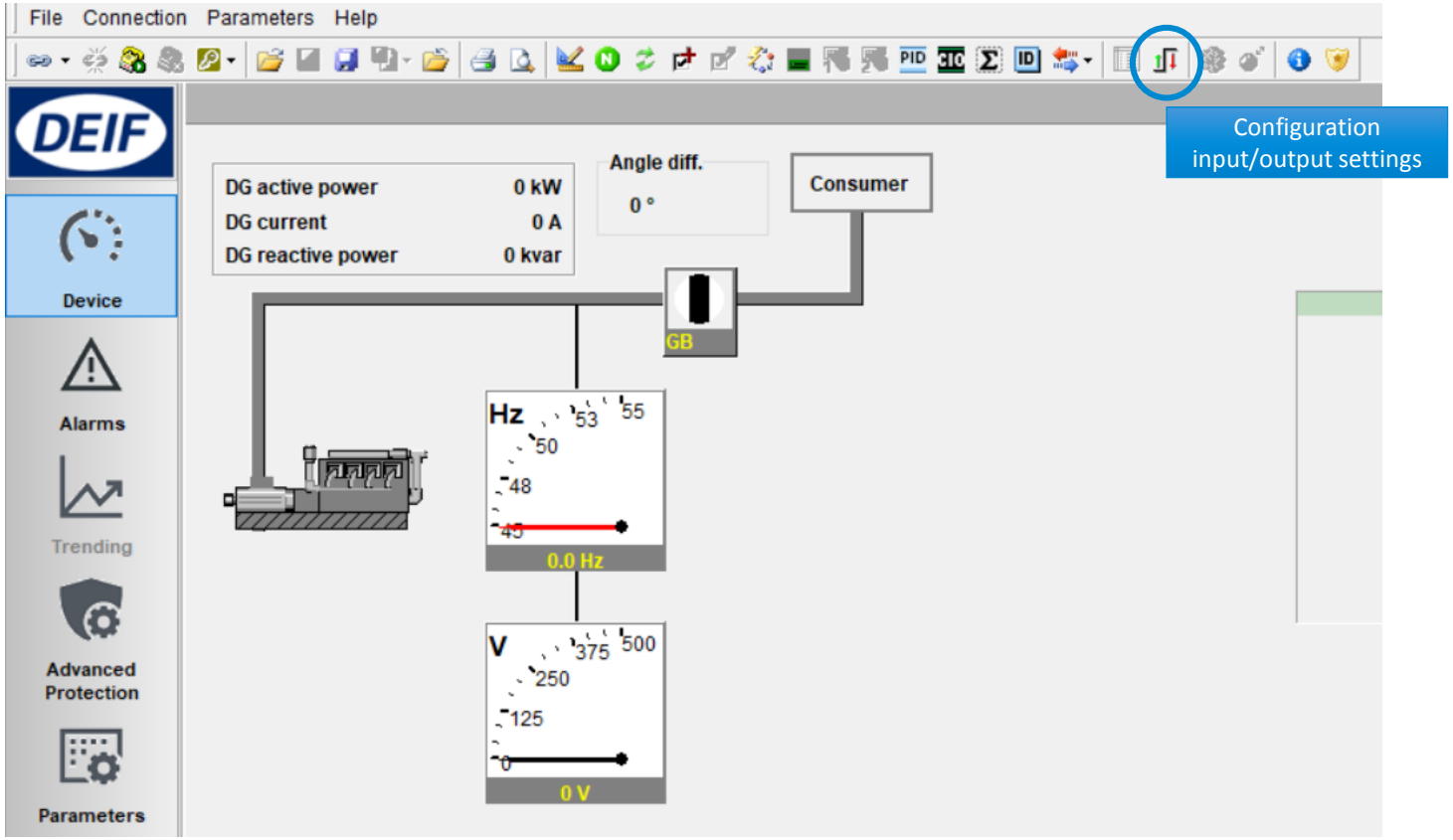


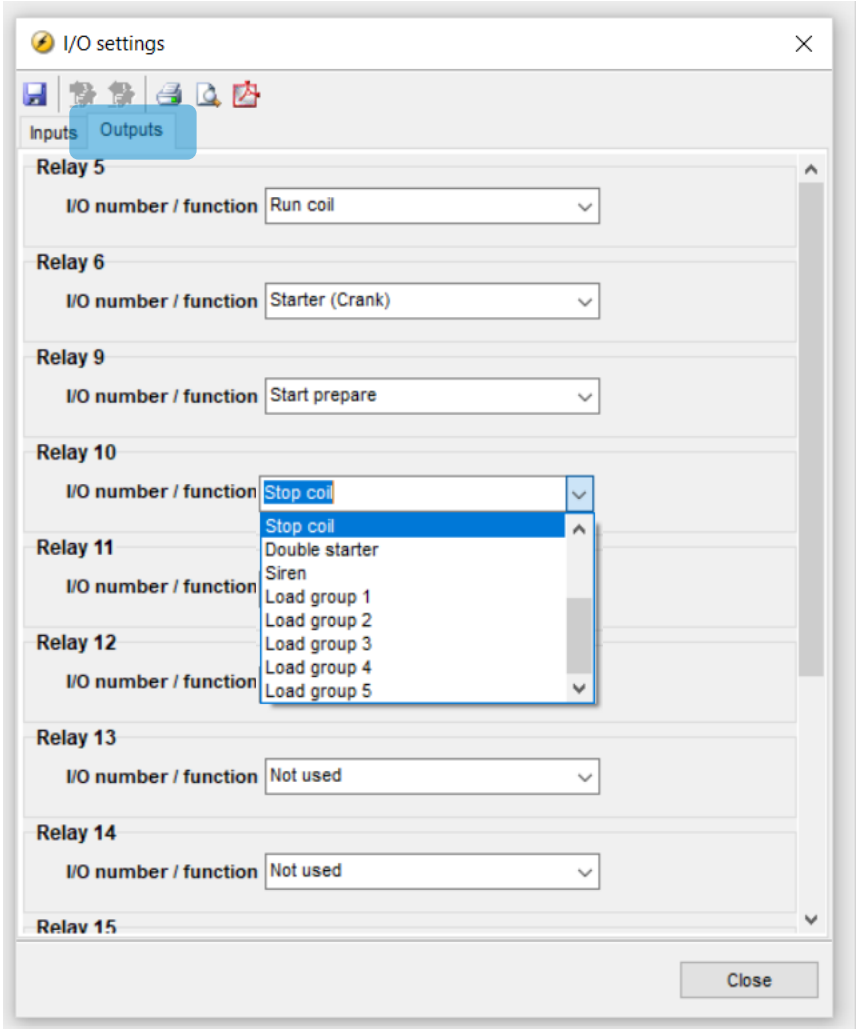


Digital Output

Setup digital output

Click icon I/O settings





Digital output

Default assignment:

Terminal no.	Function	Remarks
4	Common (+) for DO 5-6	Also serves as Emergency stop
5	Run coil	
6	Starter (crank)	
---	---	---
8	Common (+) for DO 9-18	
9	Start prepare	
10	Stop coil	
11	Status OK	
12	Horn	
13	Not used	
14	Not used	
15	MB ON	For application with Mains
16	MB OFF	For application with Mains
17	GB ON	
18	GB OFF	

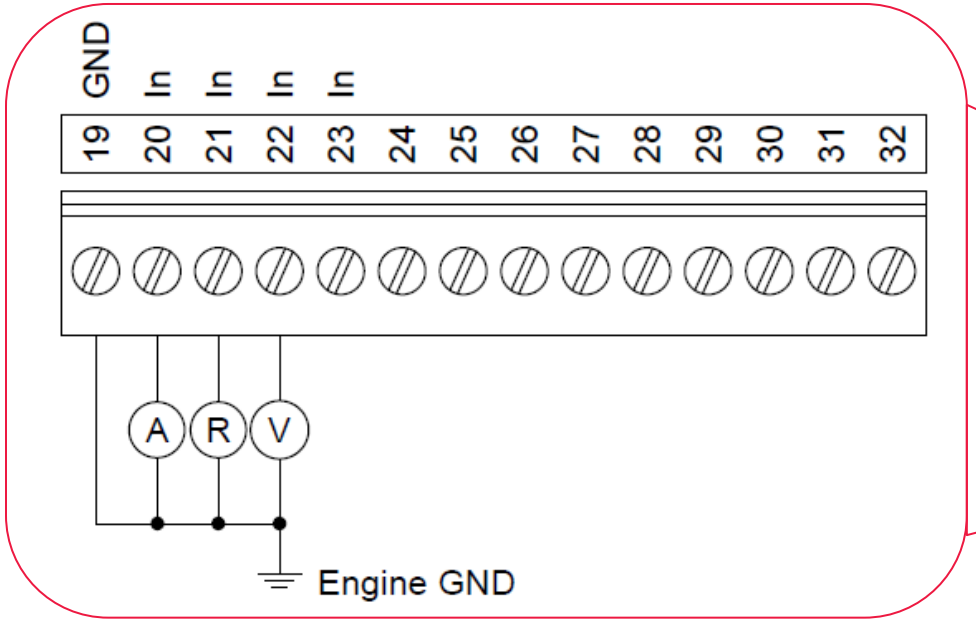
Analog Input

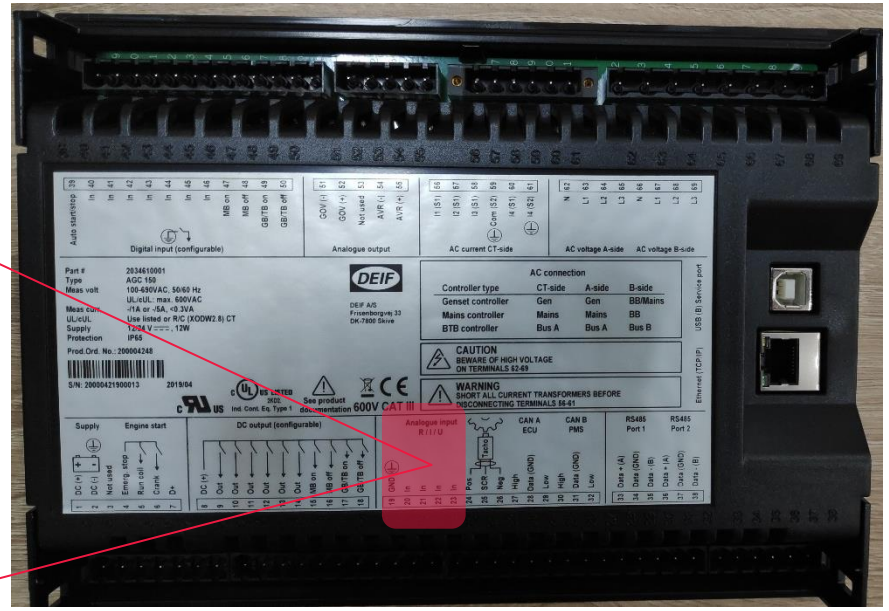
4 multi inputs

Selectable for:

- *4-20 mA*
- *0-10 VDC*
- *PT100*
- *Binary input*
- *RMI Oil Pressure*
- *RMI Water Temperature*
- *RMI Fuel Level*

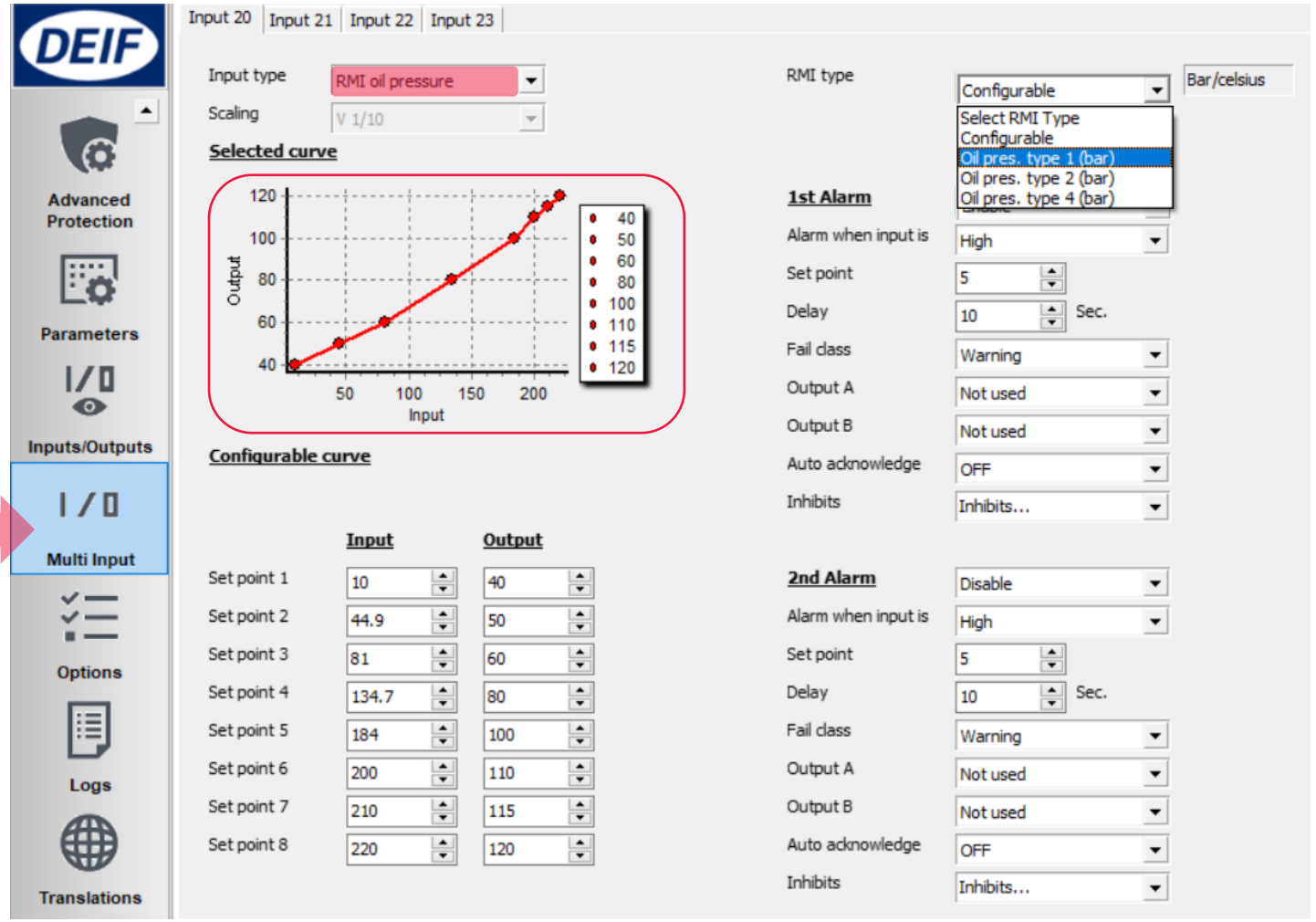
Setup by USW





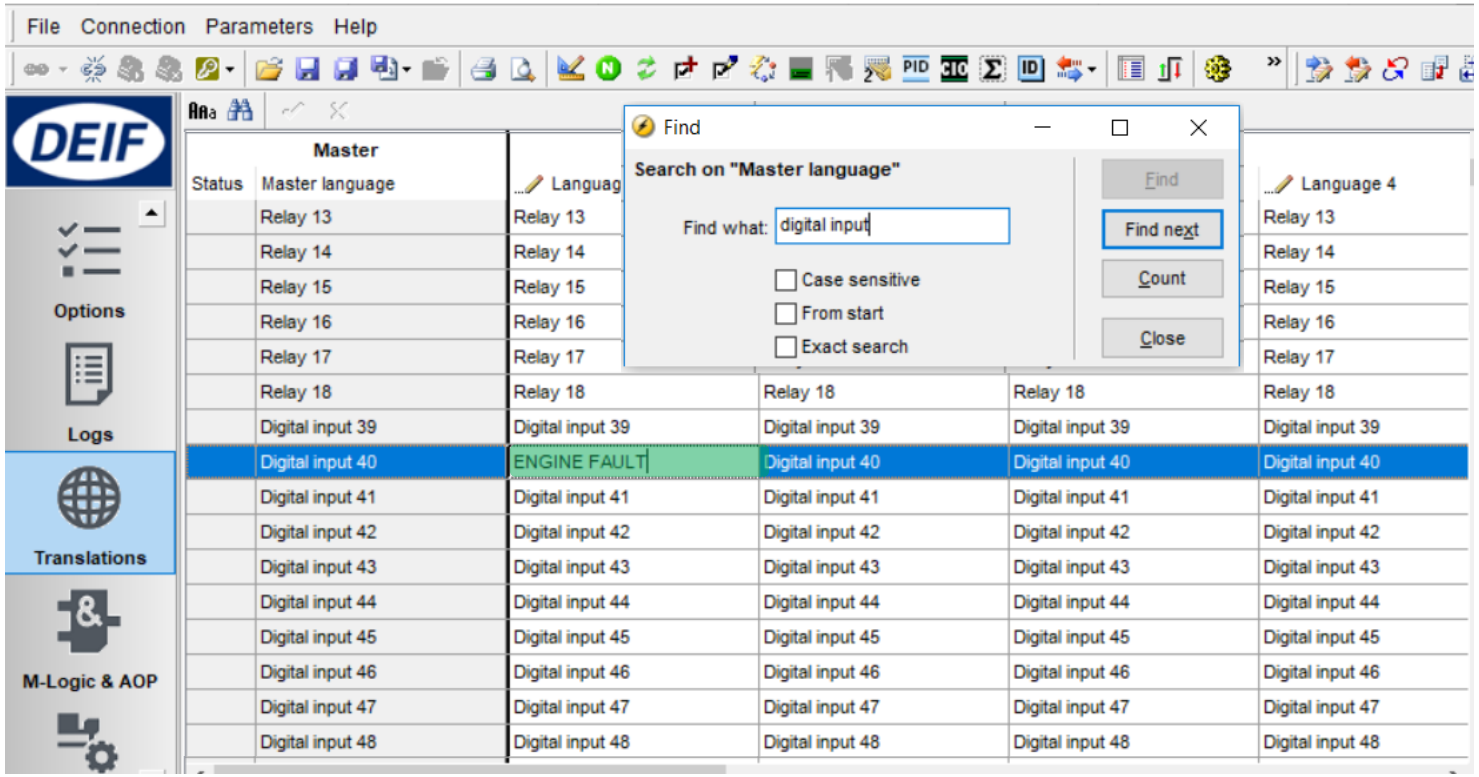
Analog Input

Configuring multi inputs



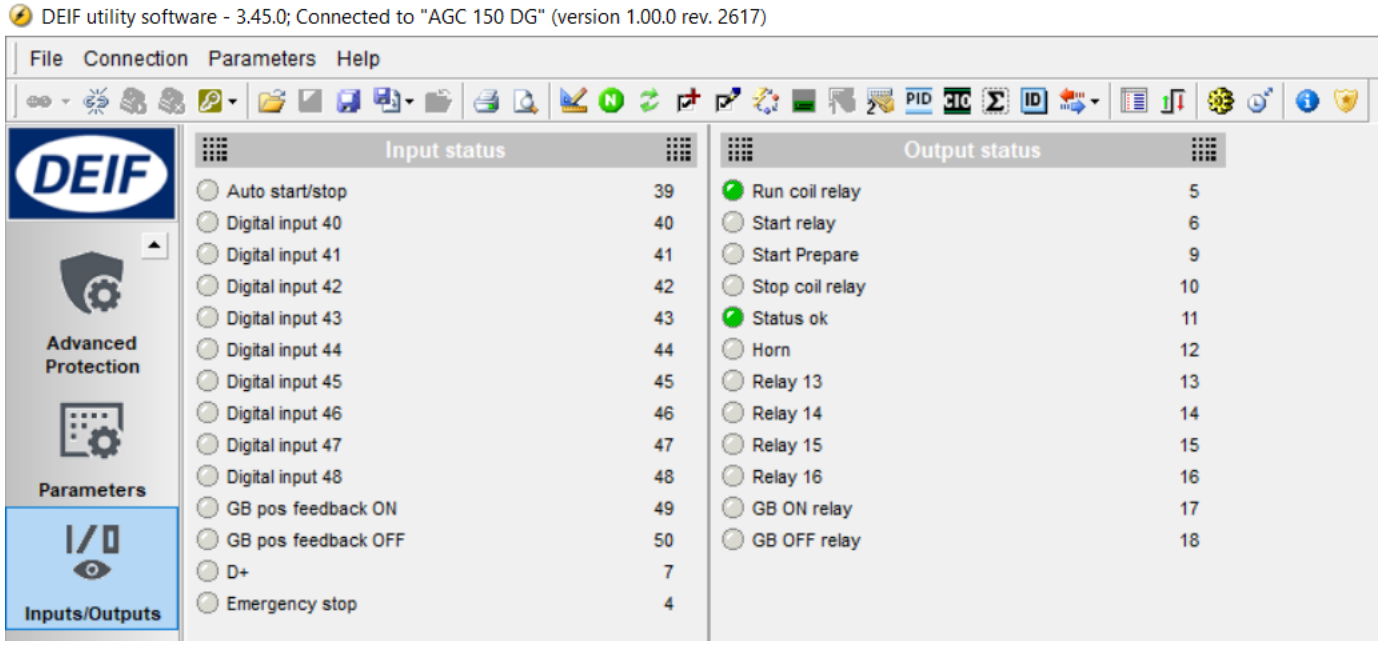
Input & Output Text

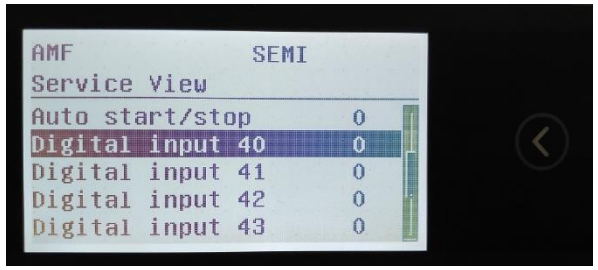
To change text, use Translations

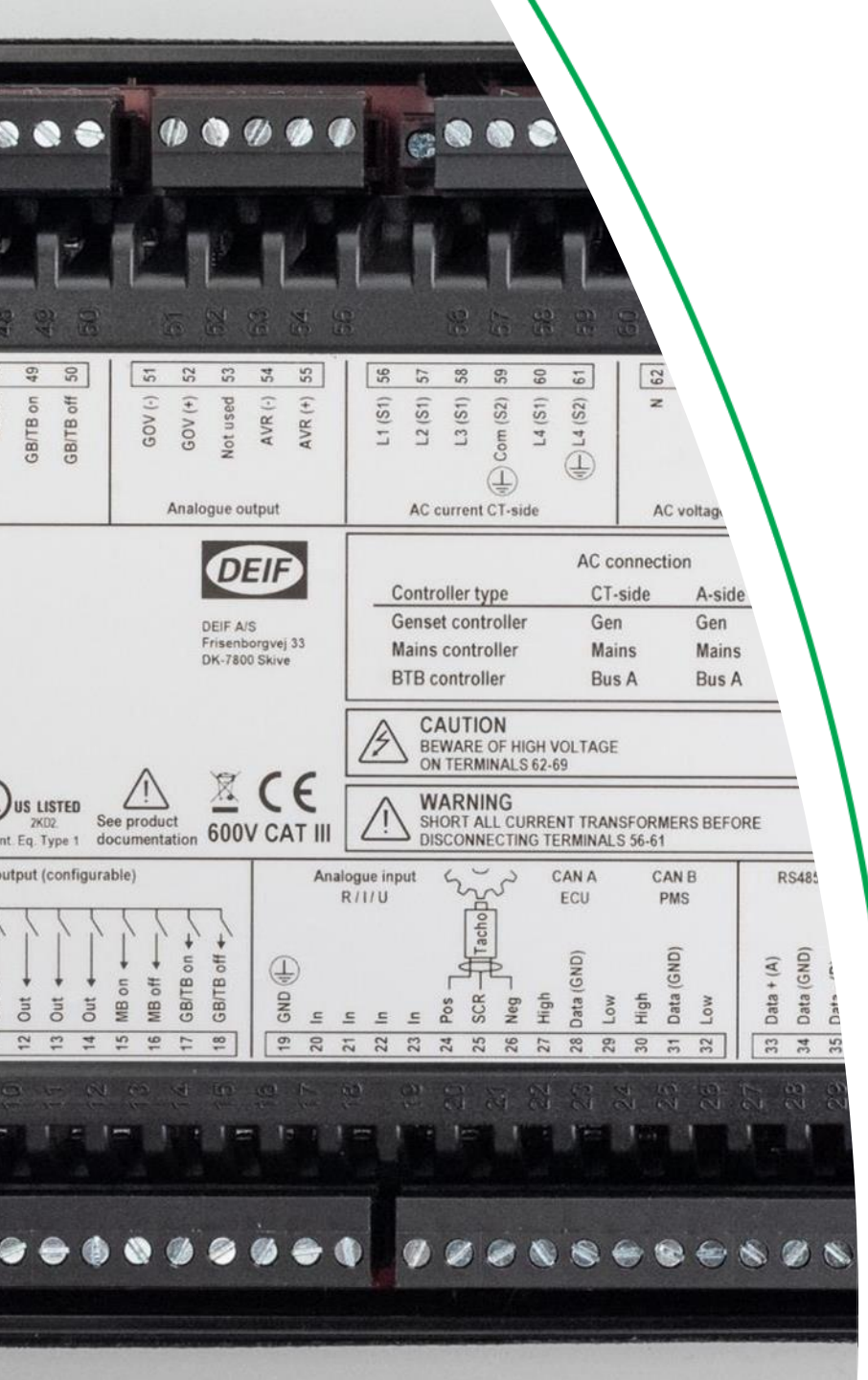


Input & Output Status

Any digital input/output can be monitored trough USW and display



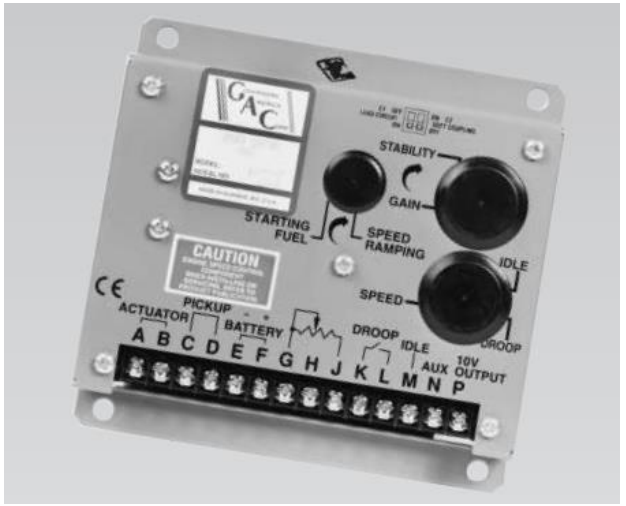




Analog Regulation

SPEED REGULATION - ANALOG

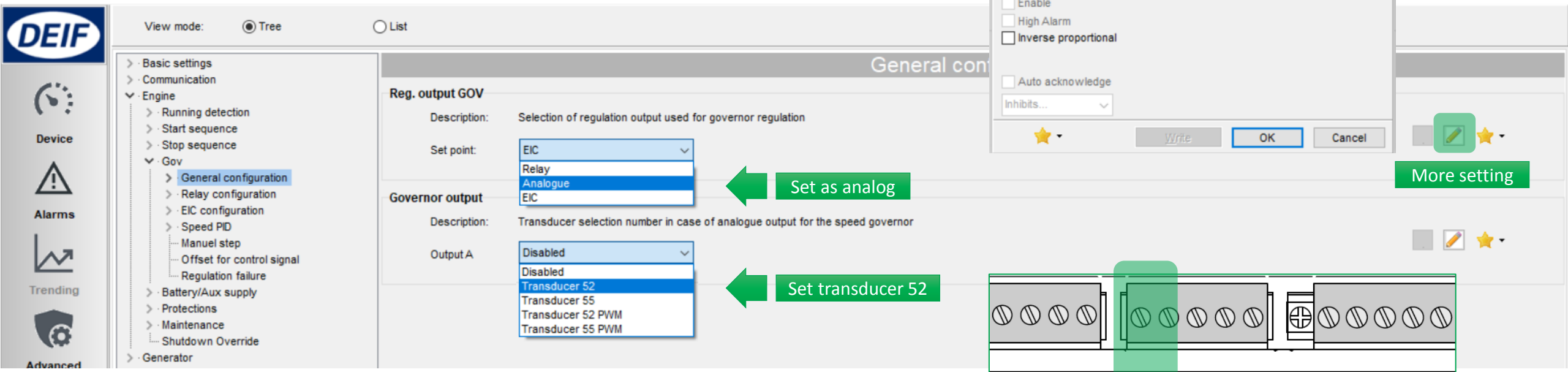
VOLTAGE REGULATION - ANALOG



Speed Regulation - Analog

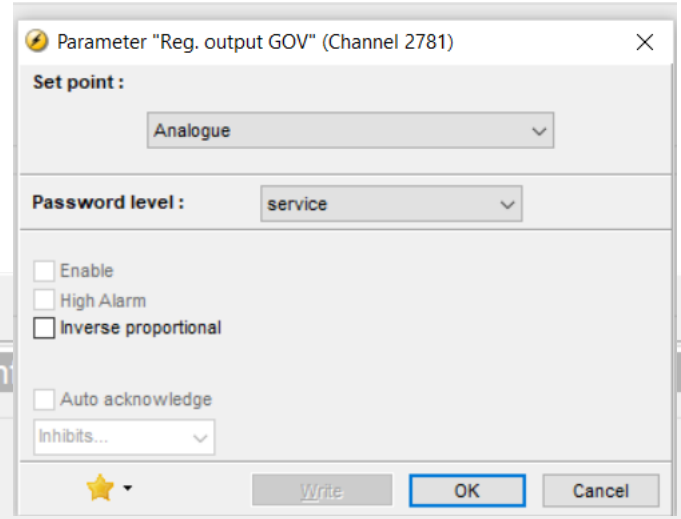
1. Setup terminal analog output

Parameter > Engine > Gov > General configuration

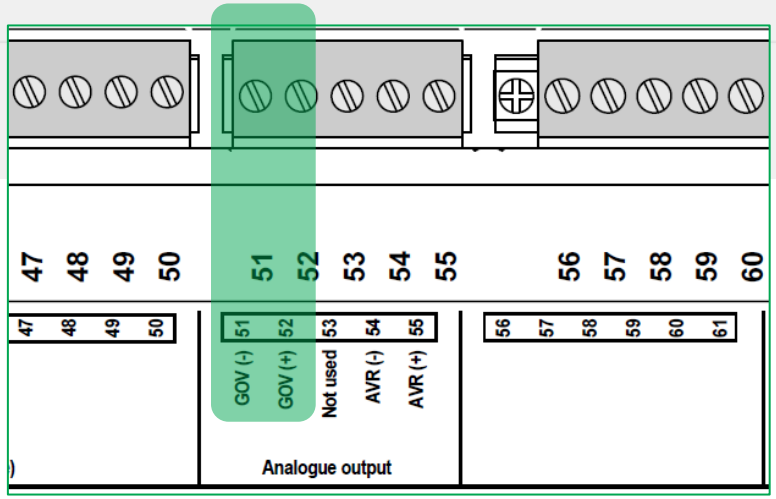


Set as analog

Set transducer 52



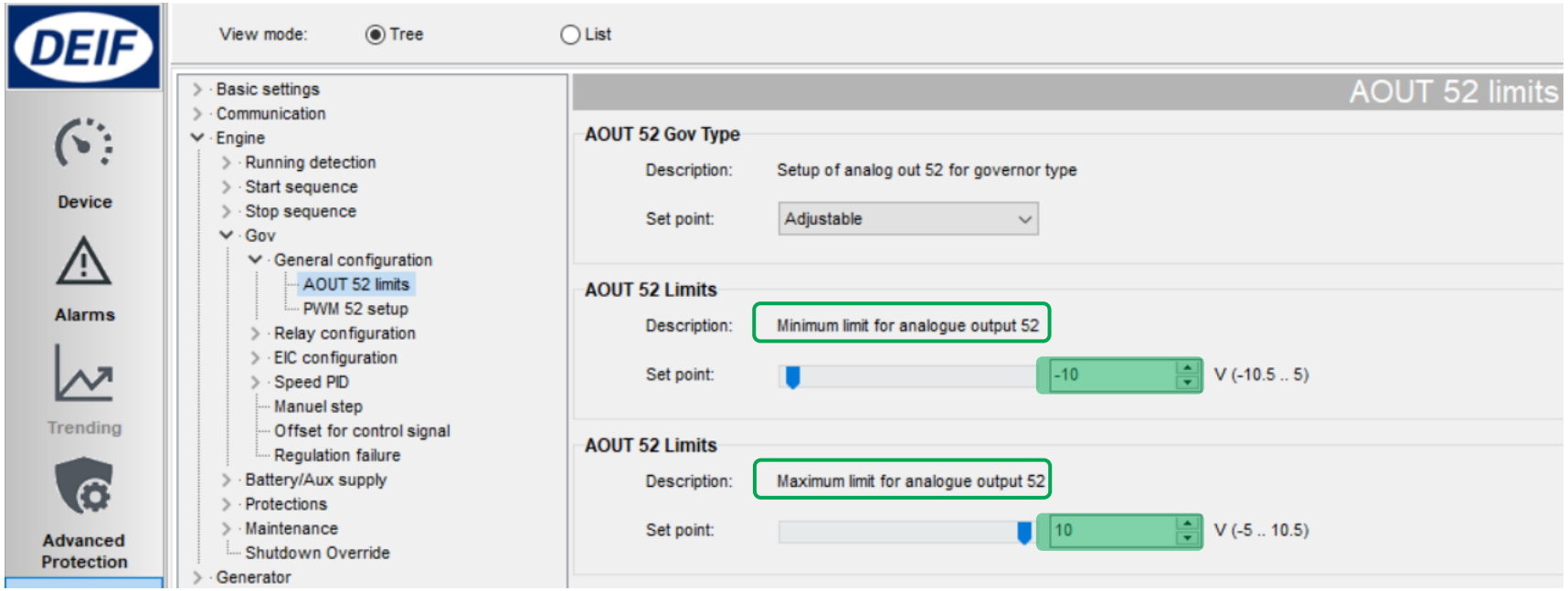
More setting

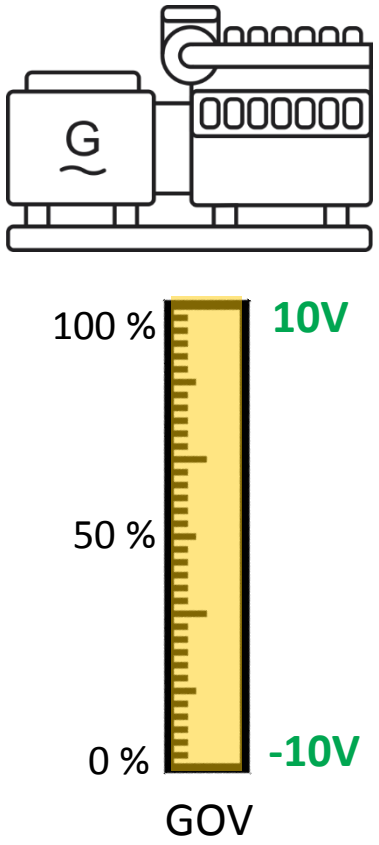


Speed Regulation - Analog

2. Setting analog output range (VDC)

Parameter > Engine > Gov > General configuration > AOUT 52 limits

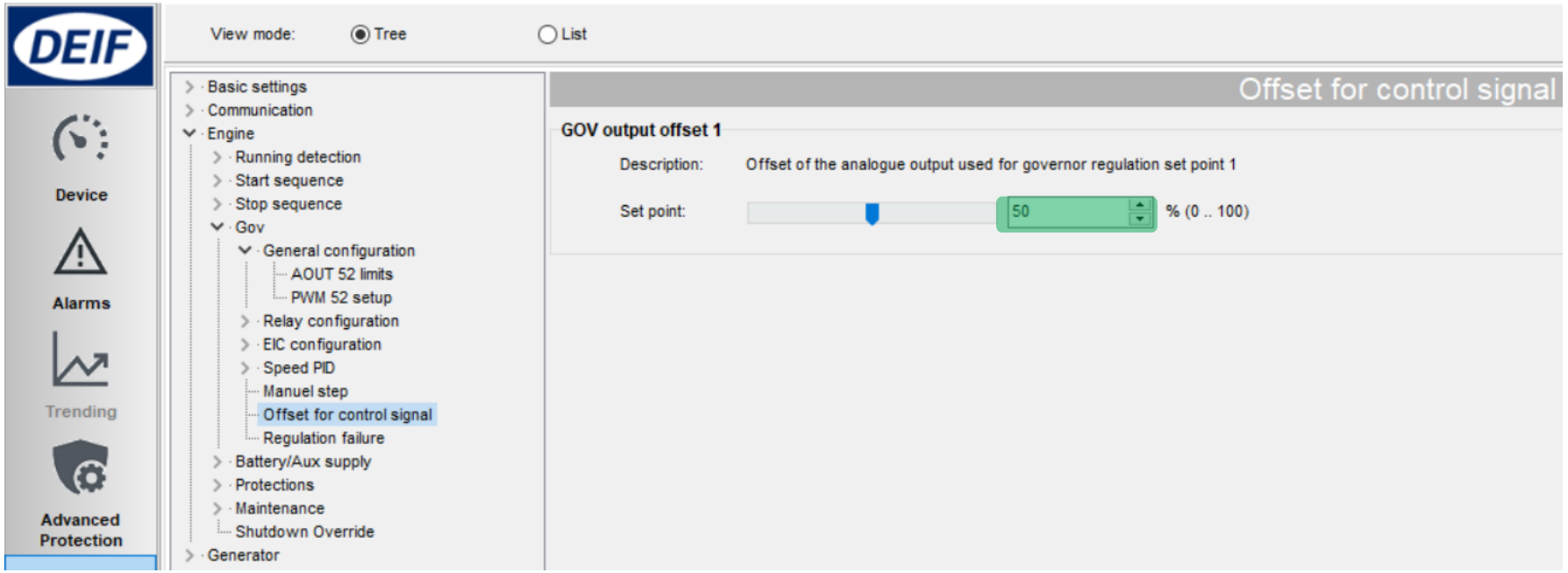


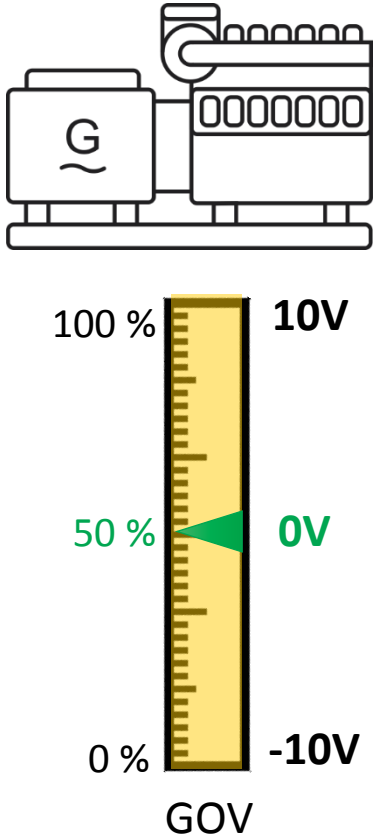


Speed Regulation - Analog

3. Setting offset / center

Parameter > Engine > Gov > Offset for control signal



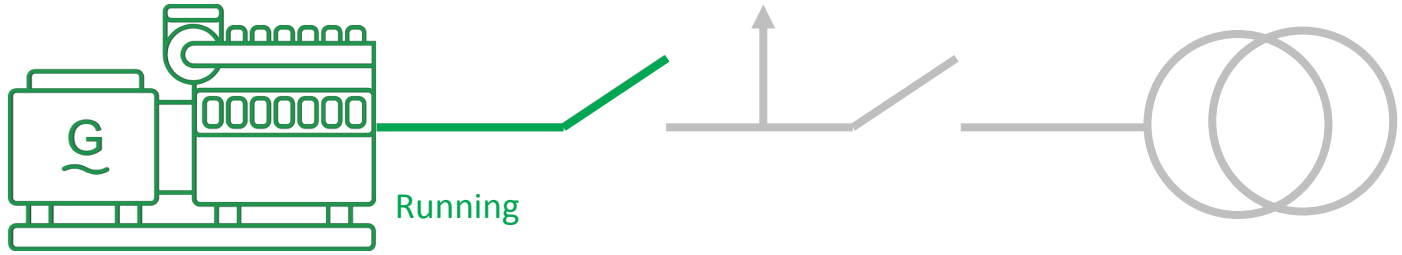


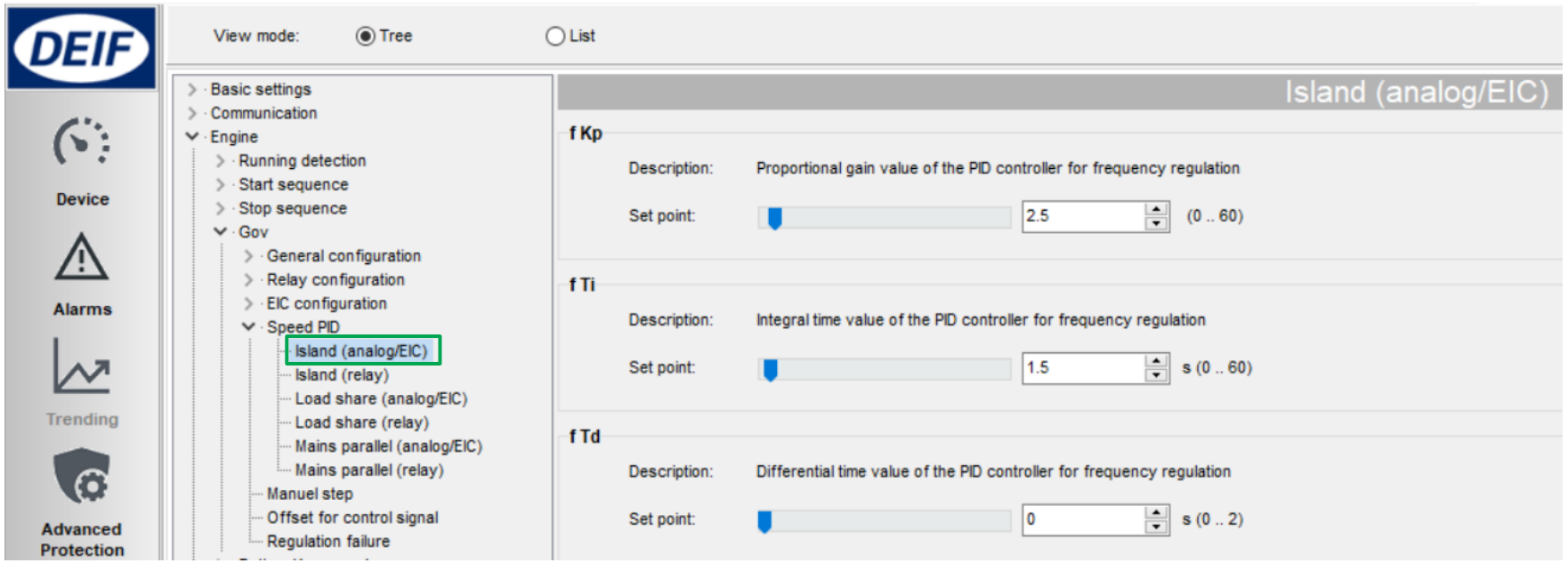
Speed Regulation – Analog Gain

1. PID Island

Parameter > Engine > Gov > Speed PID

> Island (analog/EIC)



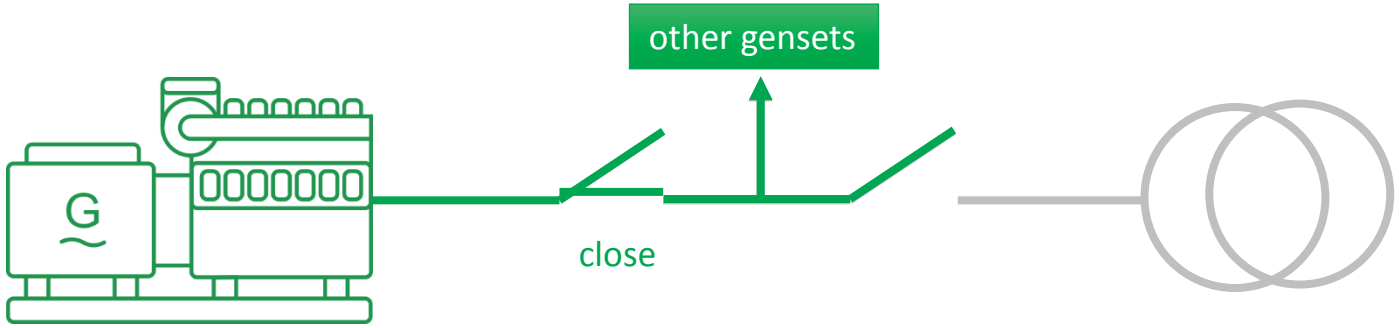


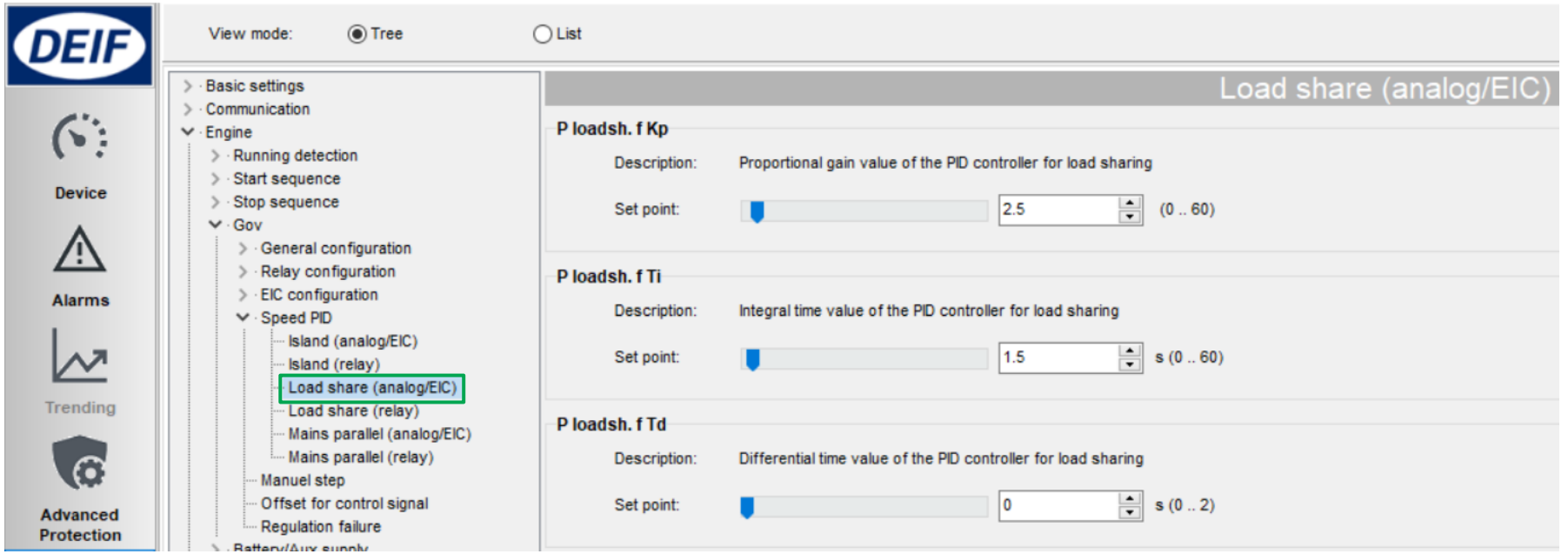
Speed Regulation – Analog Gain

2. PID Load sharing

Parameter > Engine > Gov > Speed PID

> Load share (analog/EIC)



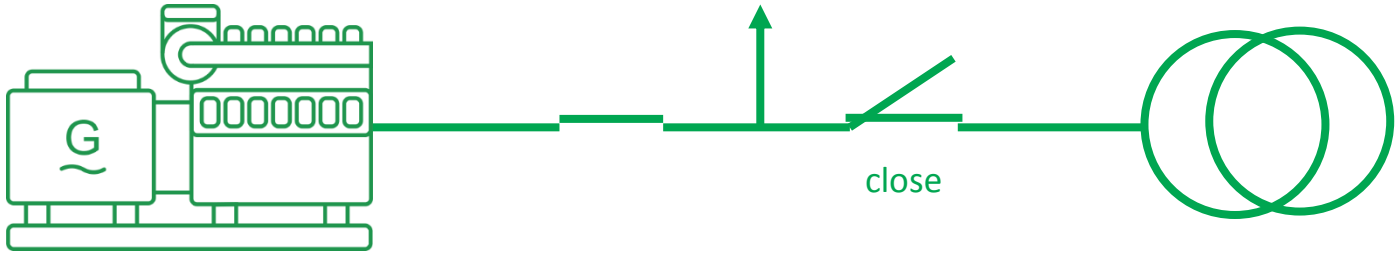


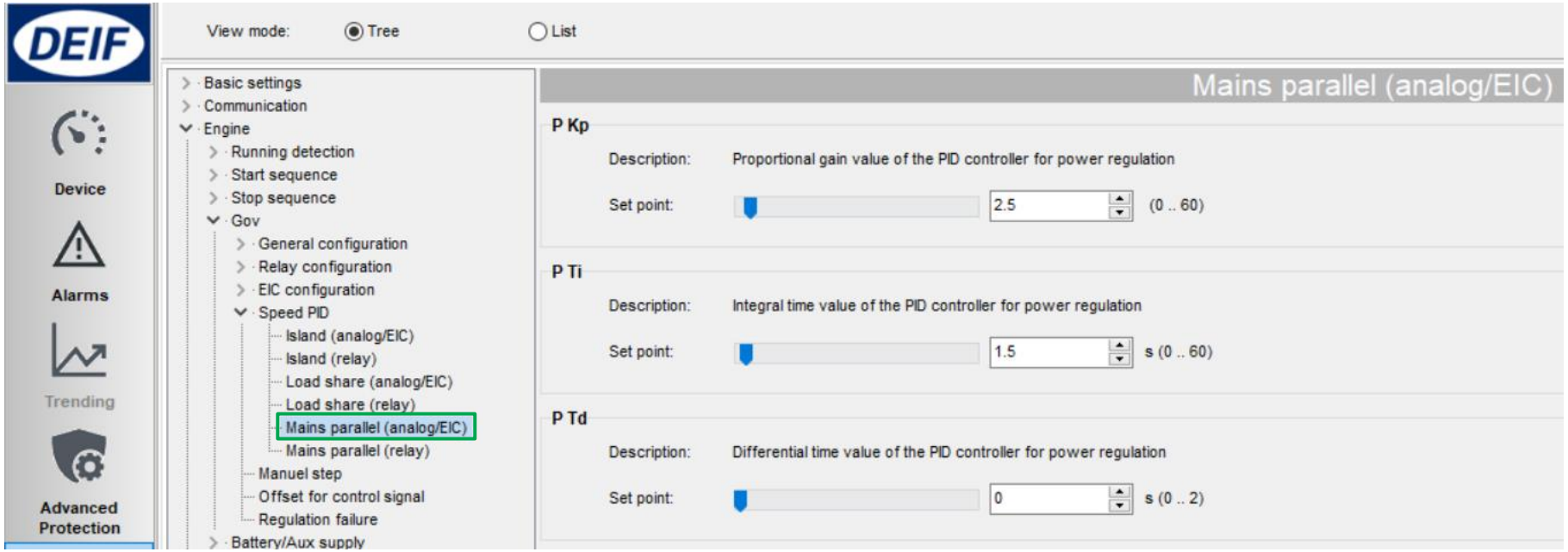
Speed Regulation – Analog Gain

3. PID Mains parallel

Parameter > Engine > Gov > Speed PID

> Mains parallel (analog/EIC)

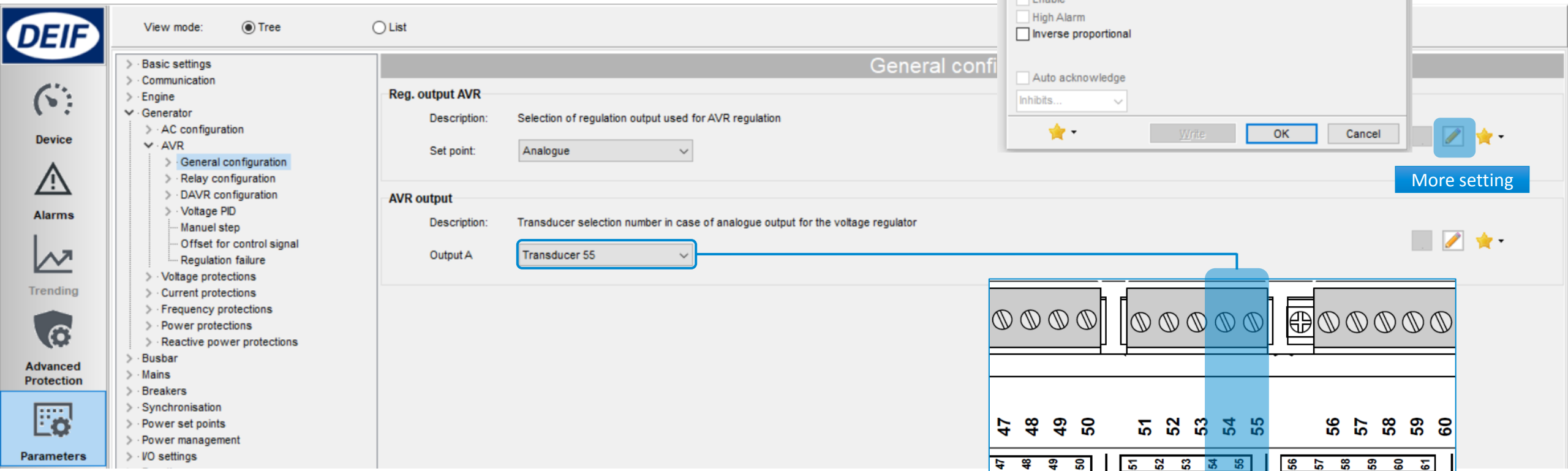




Voltage Regulation - Analog

1. Setup terminal analog output

Parameter > Generator > AVR > General configuration

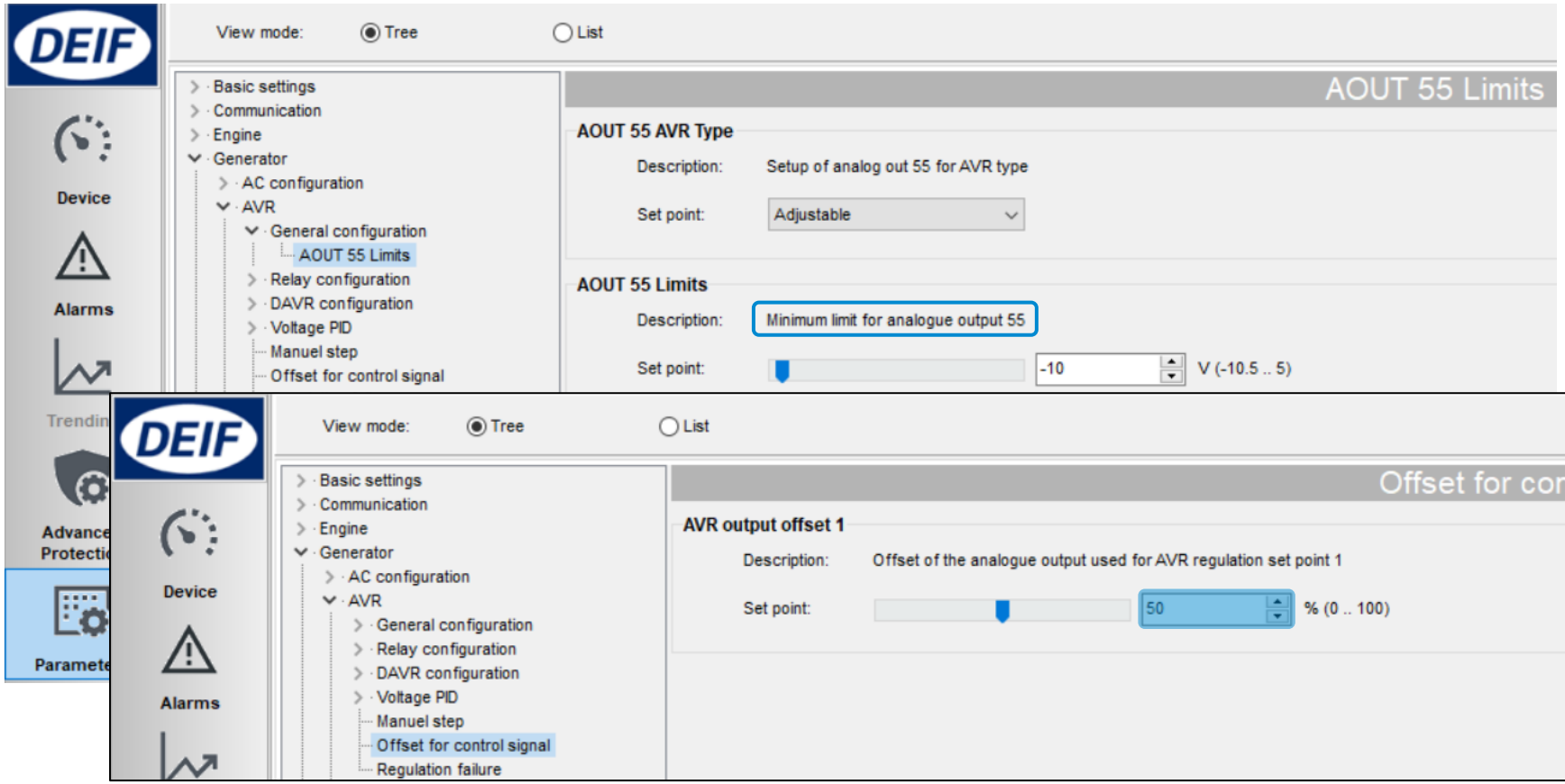


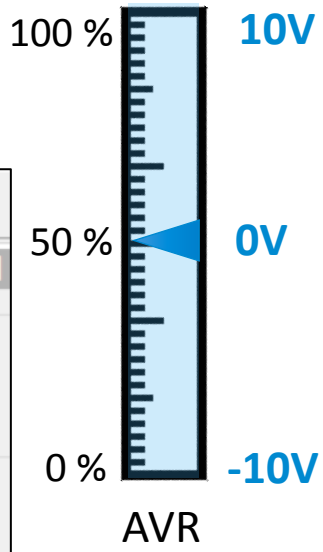
Voltage Regulation - Analog

2. Setting analog output range & center

Parameter > Generator > AVR > General configuration > AOUT 55 limits

Parameter > Generator > AVR > Offset for control signal



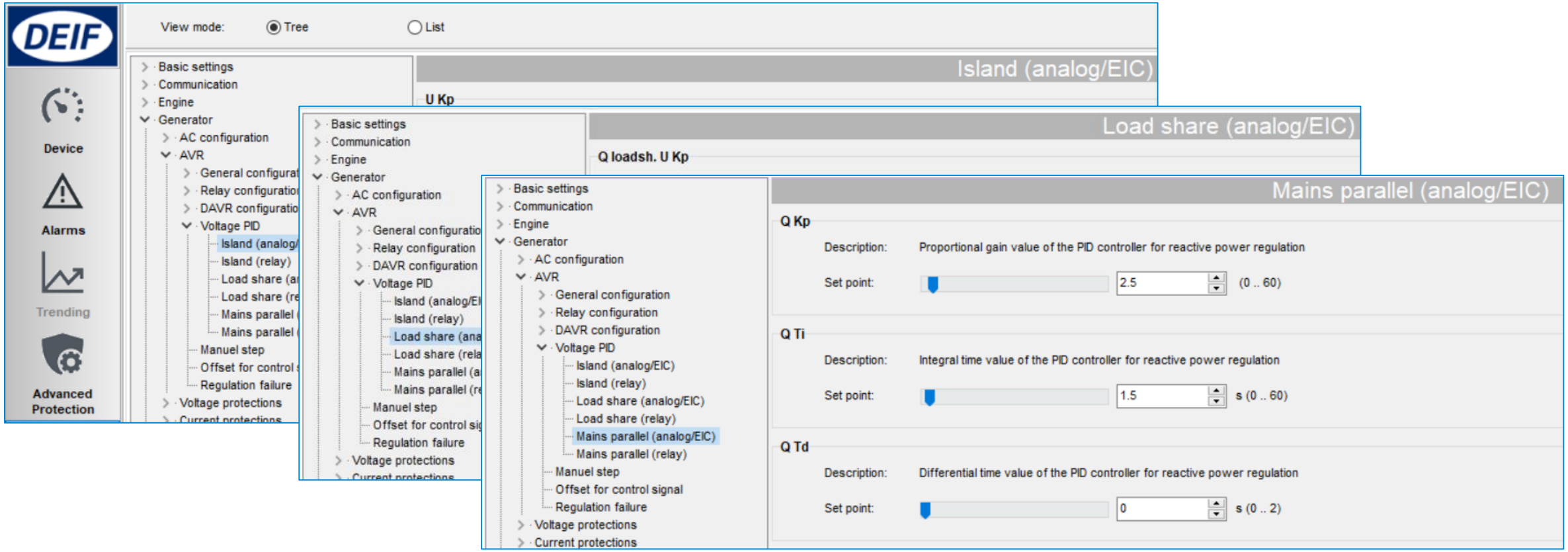


Voltage Regulation – Analog Gain

Same principle with speed PID

Parameter > Generator > AVR > Voltage PID >

- *Island (analog/EIC)*
- *Load share (analog/EIC)*
- *Mains parallel (analog/EIC)*

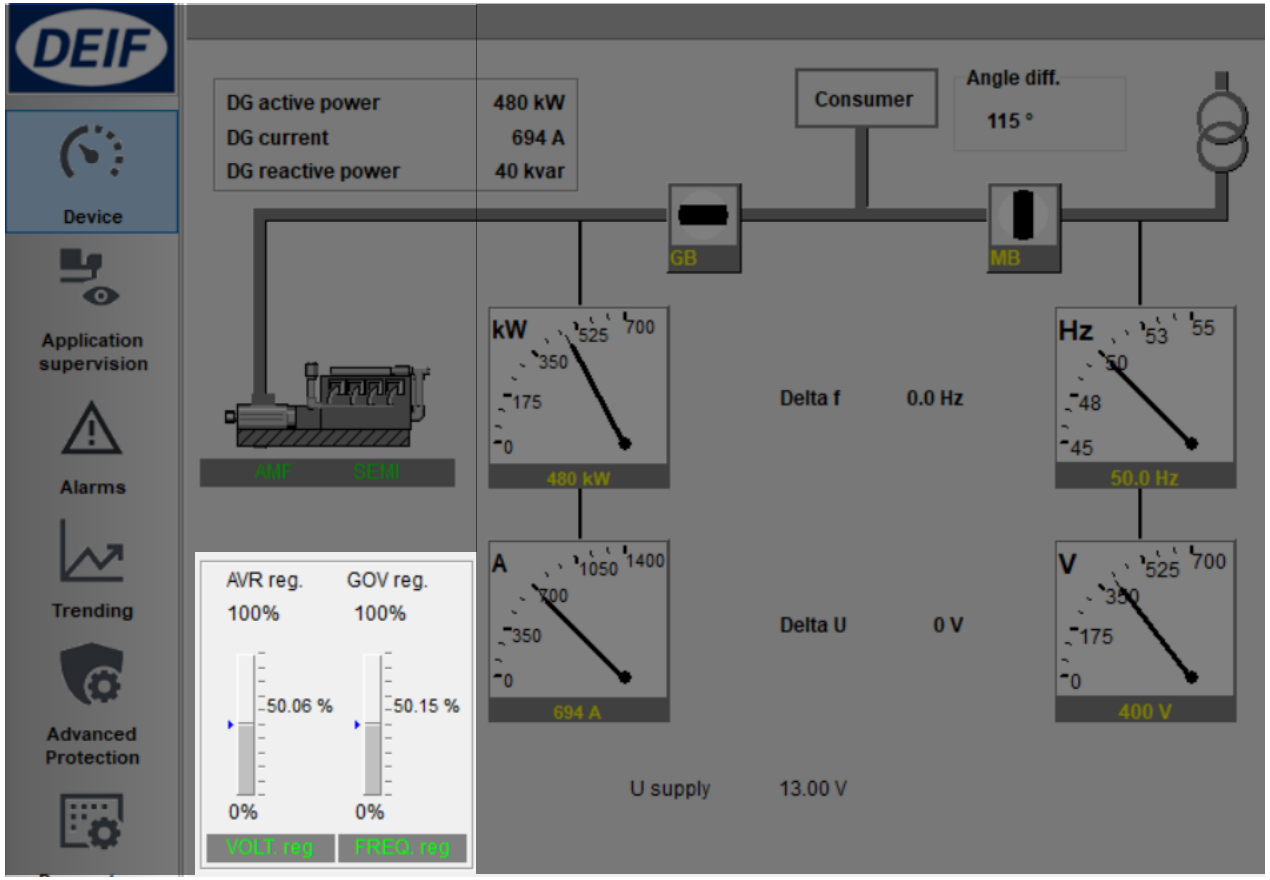


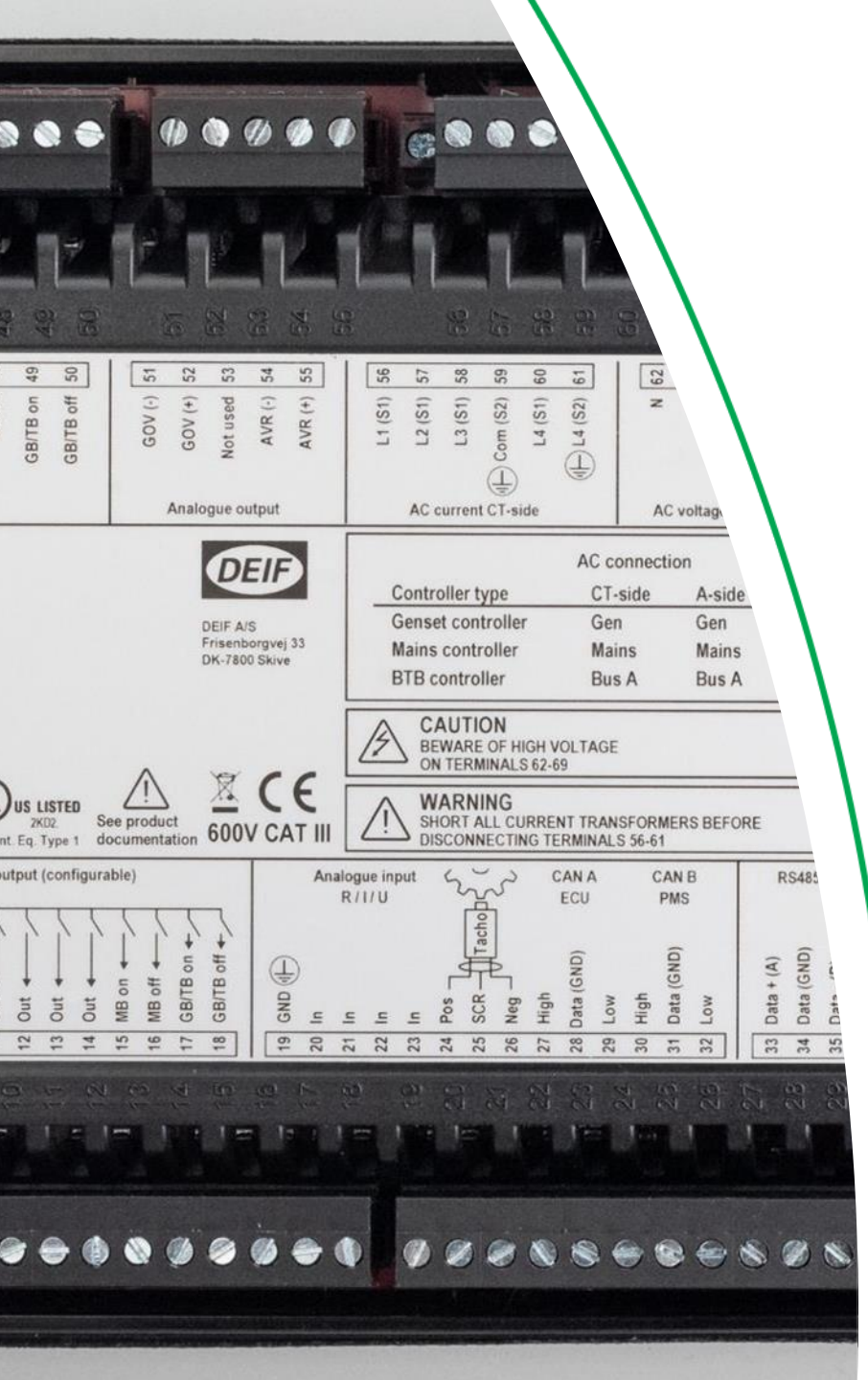
Analog Regulation Status

Check Device

> *Governor reg.*

> *AVR reg.*





Relay regulation

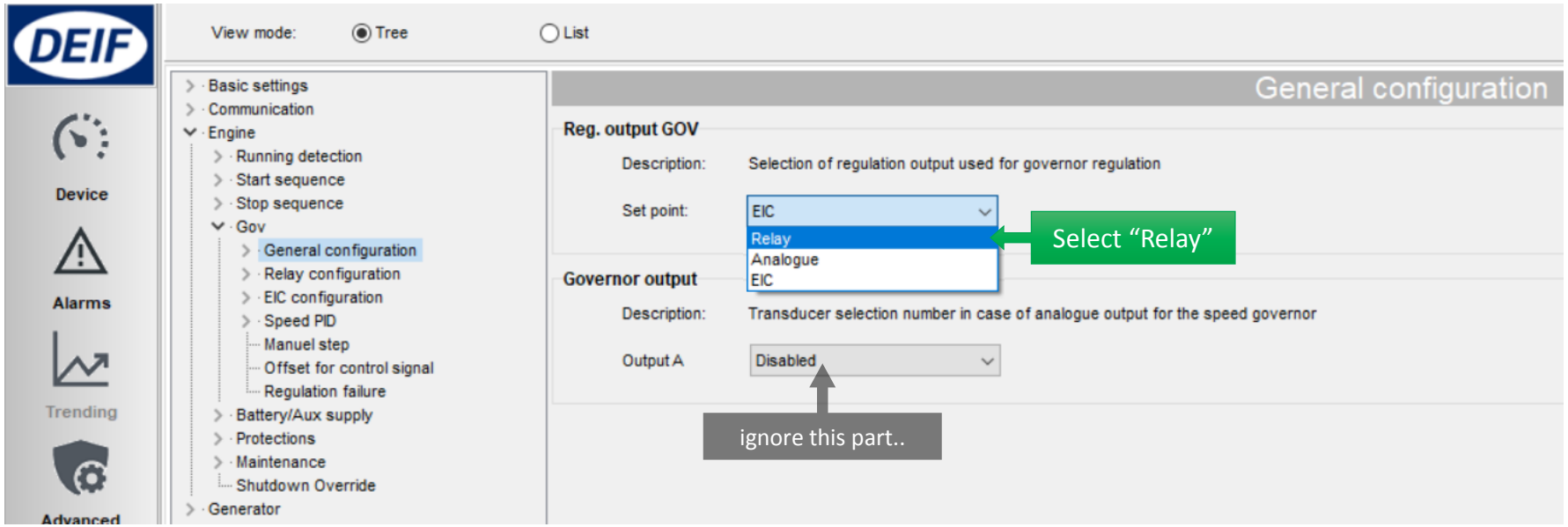
SPEED REGULATION - RELAY

VOLTAGE REGULATION - RELAY

Speed Regulation - Relay

1. Change Gov setting to relay

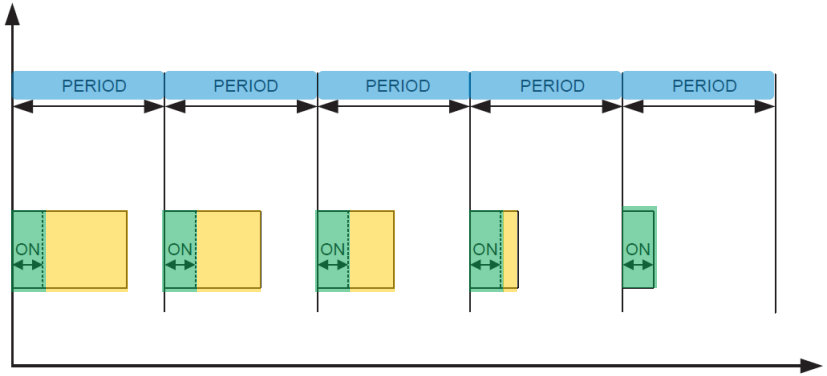
Parameter > Engine > Gov > General configuration

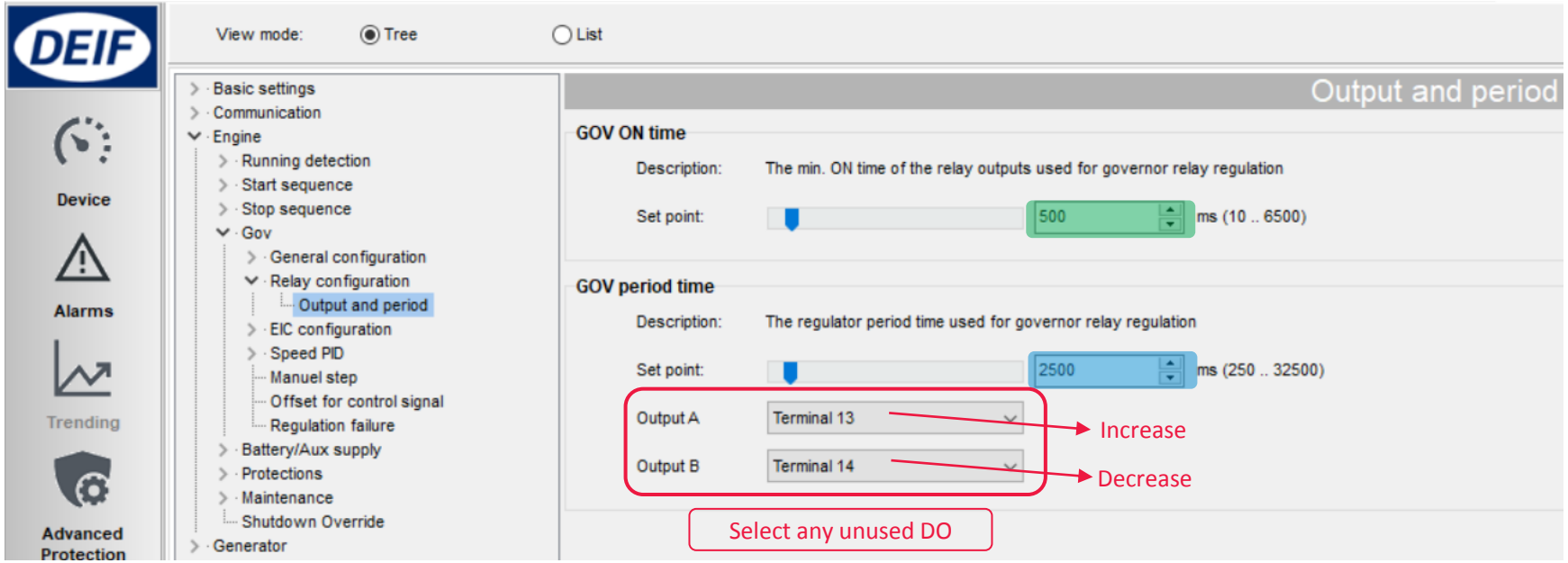


Speed Regulation - Relay

2. Setup pulse signal and choosing relay terminals

Parameter > Engine > Gov > Relay configuration > Output and period



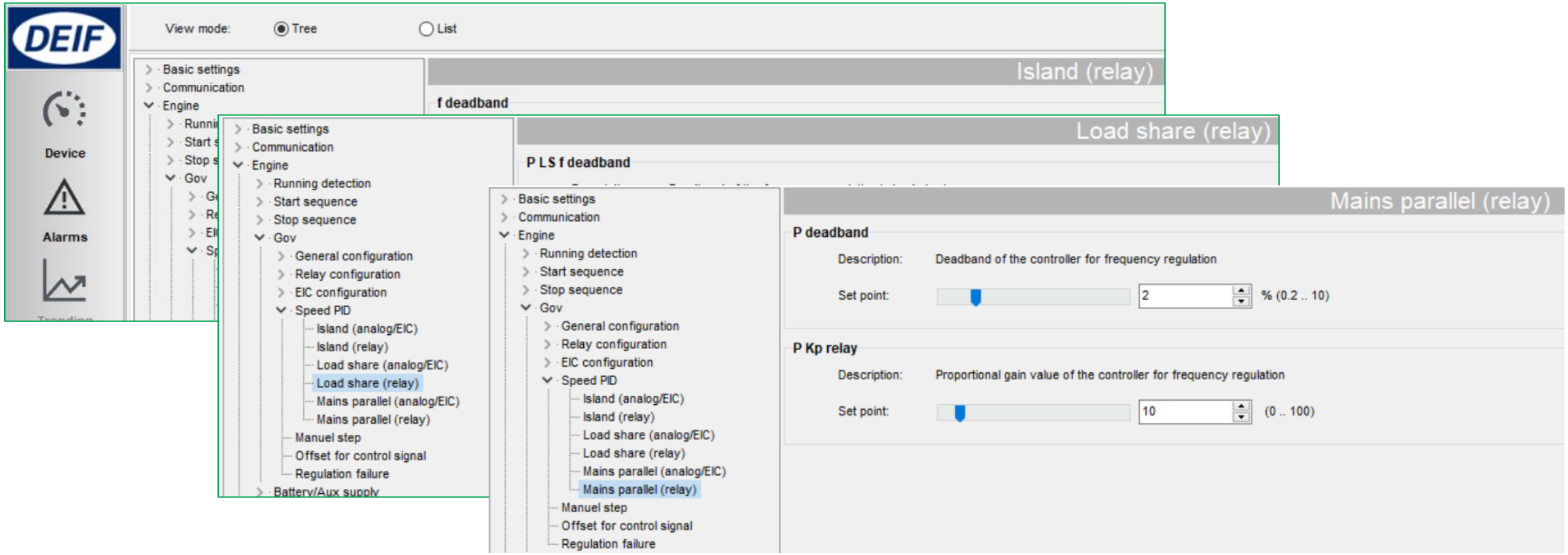


Speed Regulation - Relay

3. Setup speed Gain

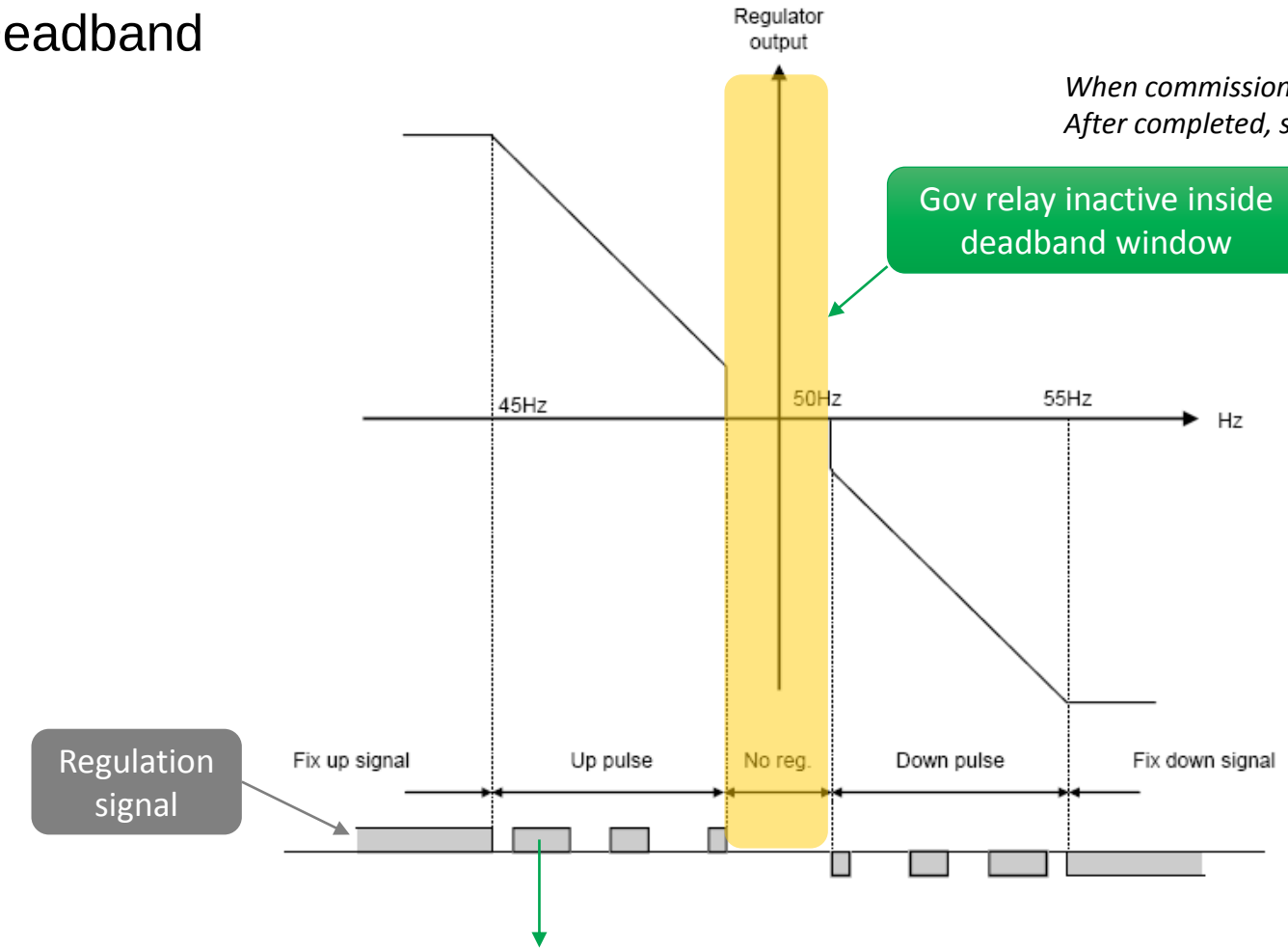
Parameter > Engine > Gov > Speed PID >

- *Island (relay)*
- *Load share (relay)*
- *Mains Parallel (relay)*



Speed Regulation - Relay

Regulation Deadband

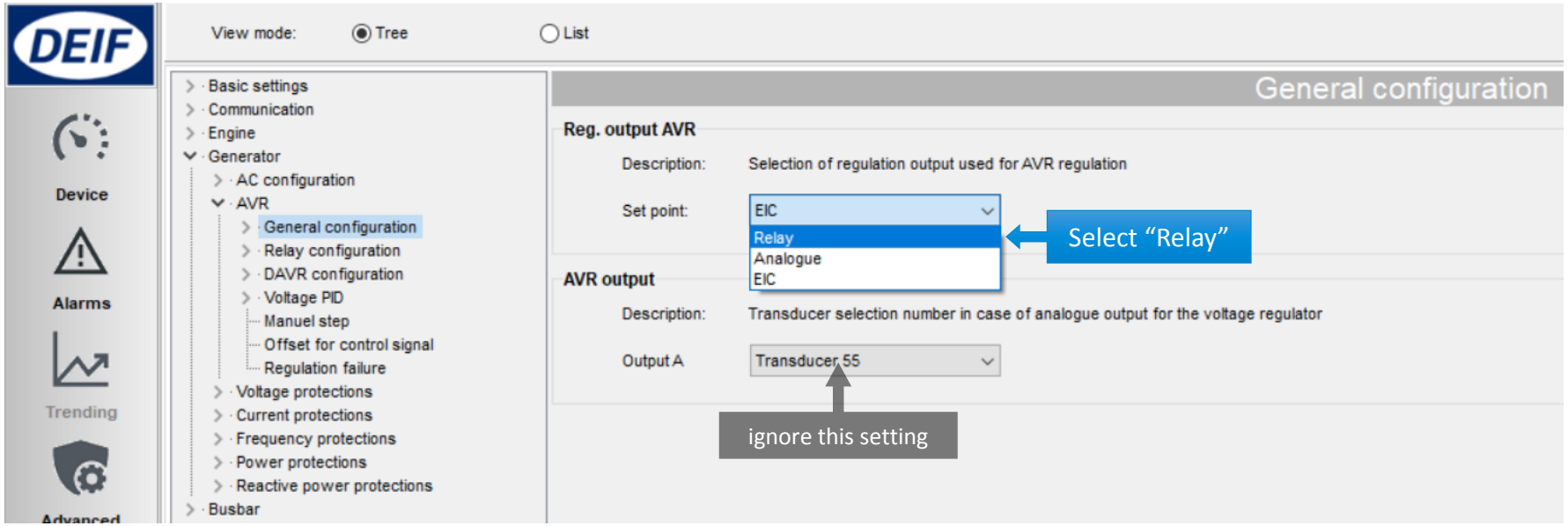


When commissioning, set deadband to minimum to check genset response
After completed, set deadband back to prolong relay lifetime

Voltage Regulation - Relay

1. Change AVR setting to relay

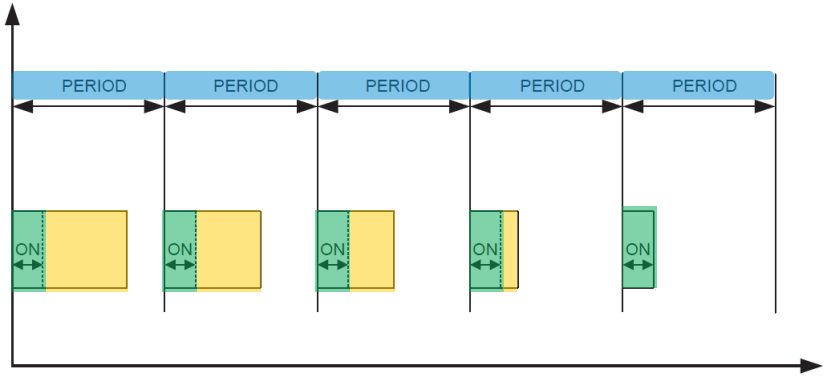
Parameter > Generator > AVR > General configuration

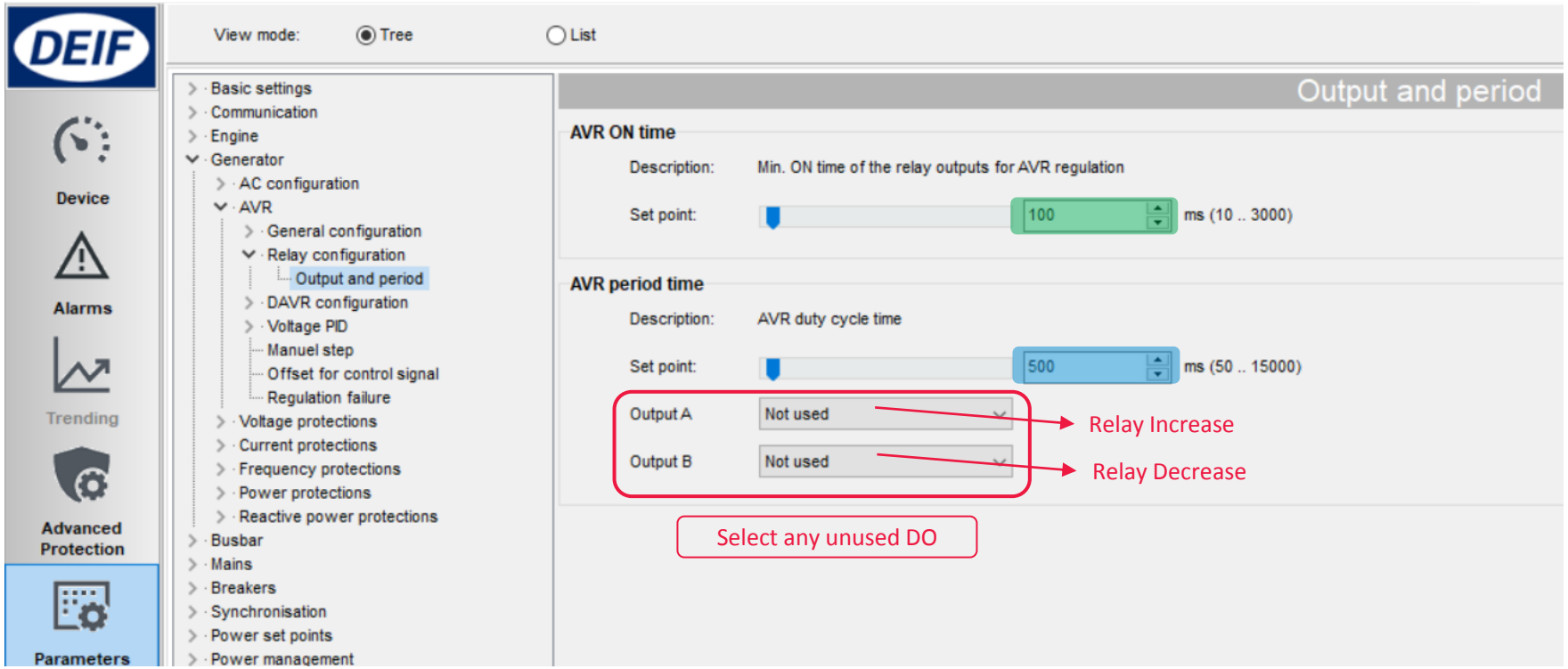


Voltage Regulation - Relay

2. Setup pulse signal and choosing relay terminals

Parameter > Generator > AVR > Relay configuration > Output and period





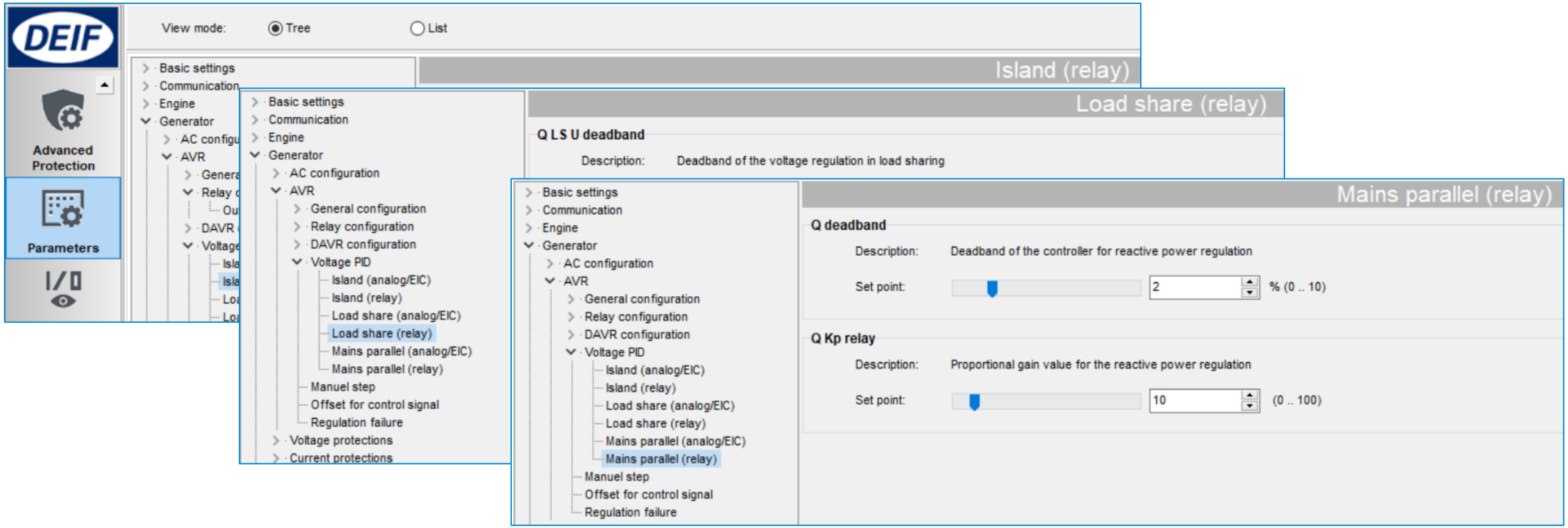
Voltage Regulation - Relay

3. Setup voltage Gain

Parameter > Generator > AVR > Voltage PID >

- *Island (relay)*
- *Load share (relay)*
- *Mains Parallel (relay)*

When commissioning, set deadband to minimum to check genset response
After completed, set deadband back to prolong relay lifetime

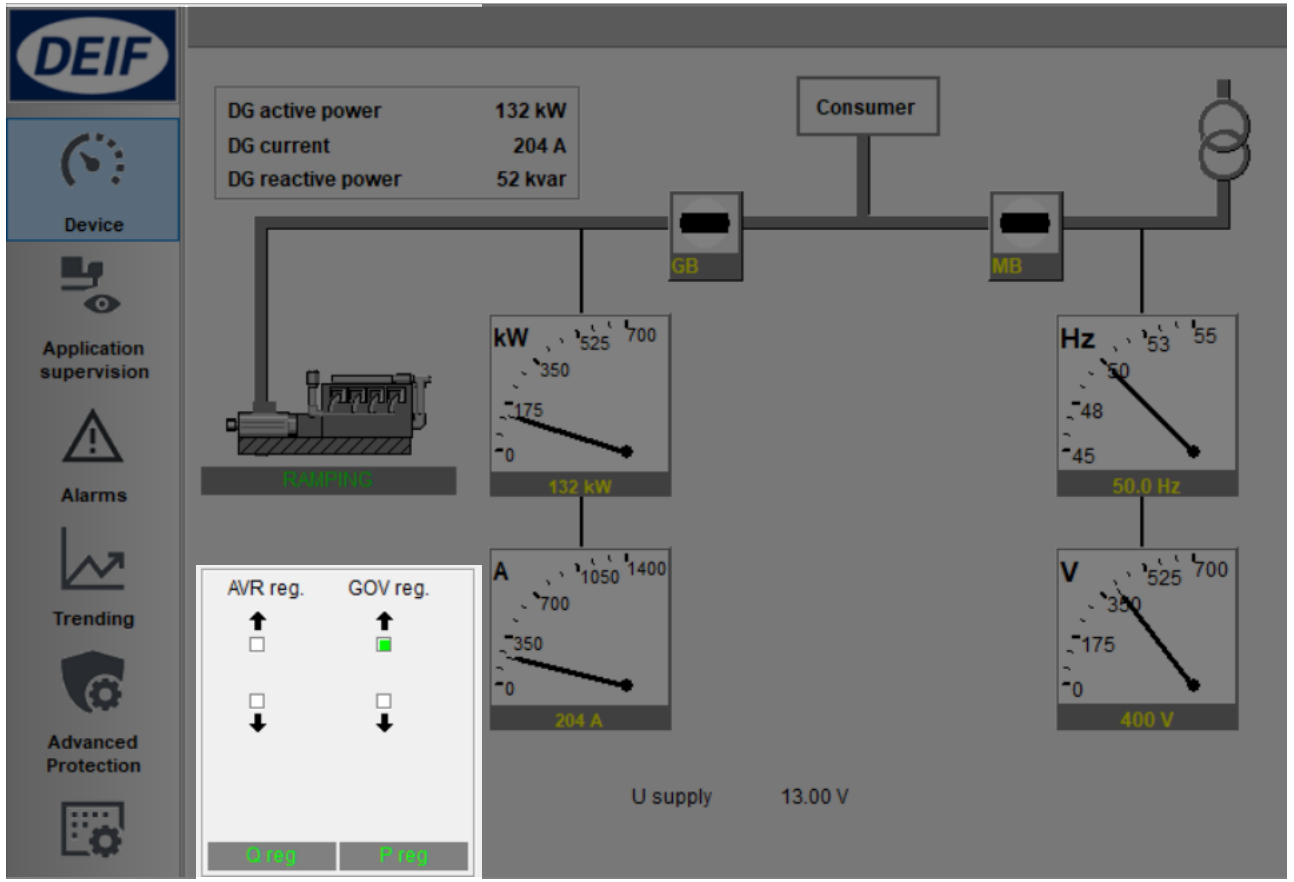


Relay Regulation Status

Check Device

> Governor reg.

> AVR reg.

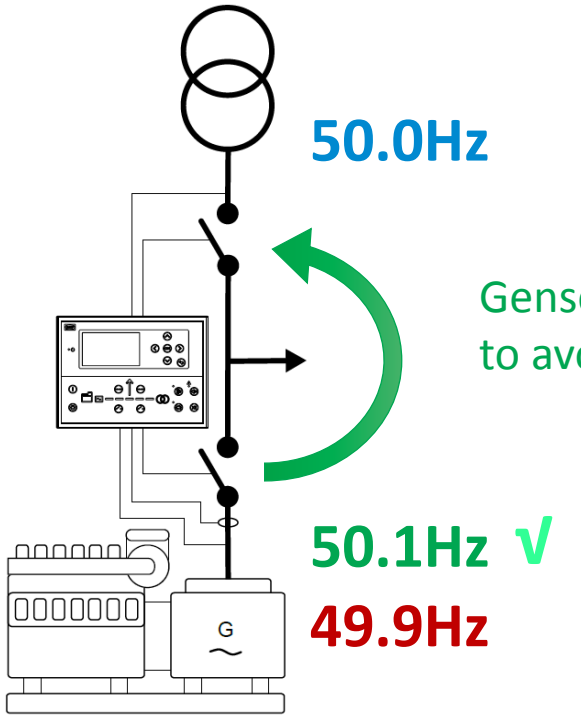


Synchronisation

Synchronisation

AGC always perform synchronism check before closing breakers

All modes: Auto, Semi Auto, and Manual

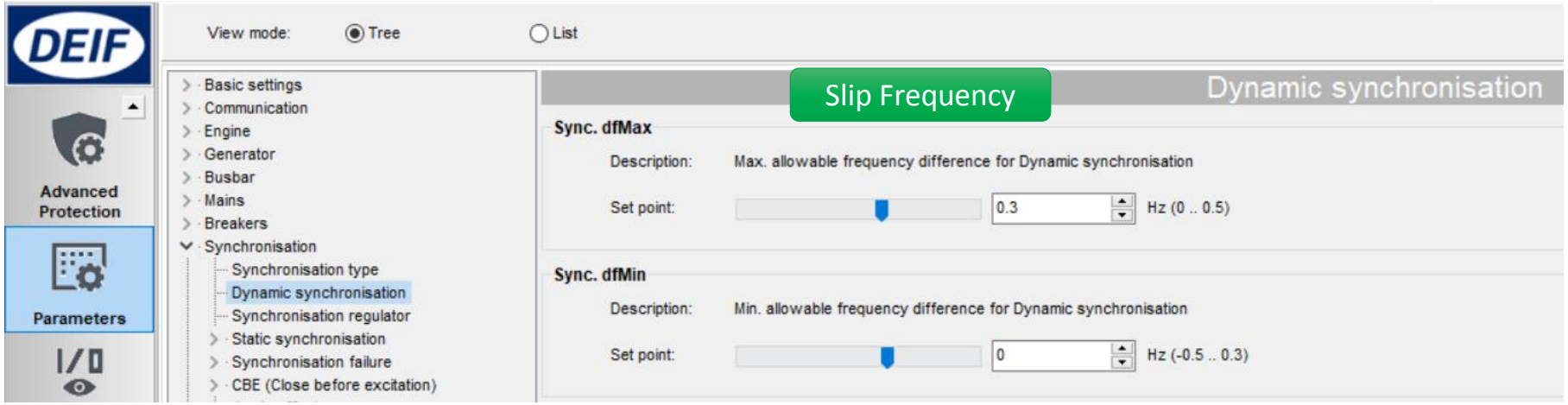


Allowed maximum slip frequency: **0.3Hz**

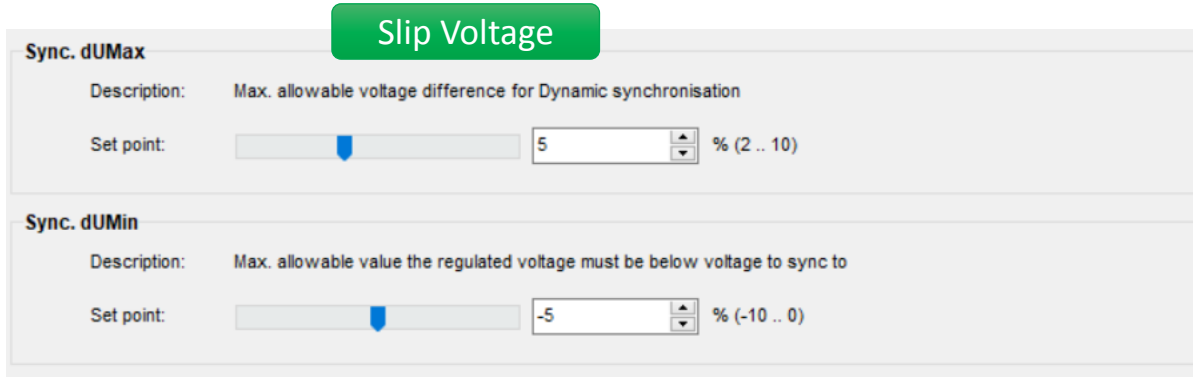
Synchronisation

Change slip frequency & voltage

Synchronisation > Dynamic synchronisation



Here, to sync with 50.0Hz 400V busbar, genset need to run:
- Freq between 50.0 – 50.3Hz
- Voltage between 380 – 420V



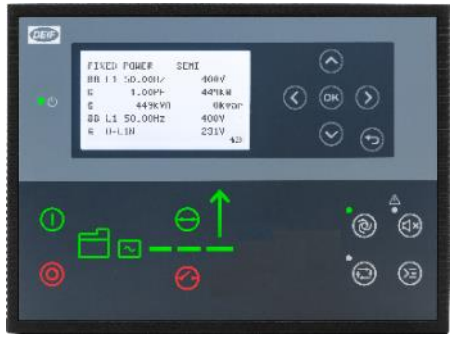
Normally no need changing these settings

Application

SINGLE GENSET

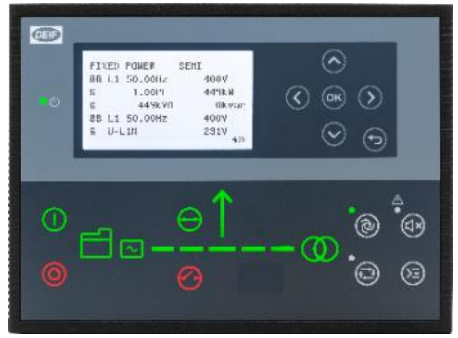
MULTIPLE GENSETS

Adapting Mimic



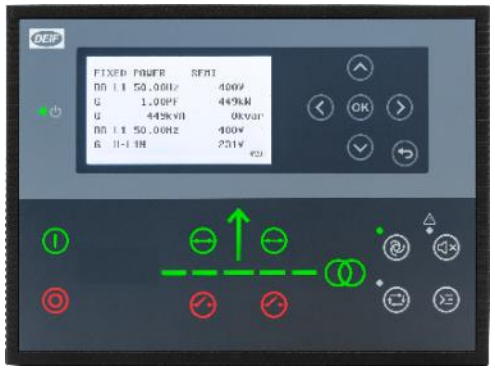
Standalone Island

Standalone AMF



Standalone Parallel without MB

Genset



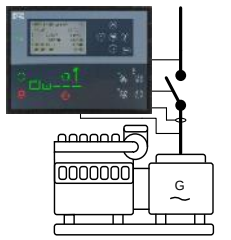
MAINS+TB

MAINS

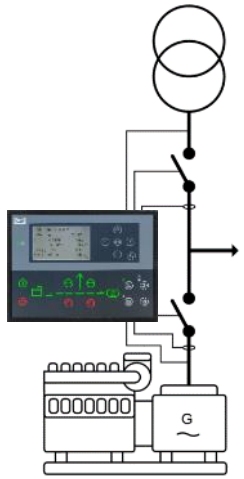
BTB

Typical Applications for AGC 150

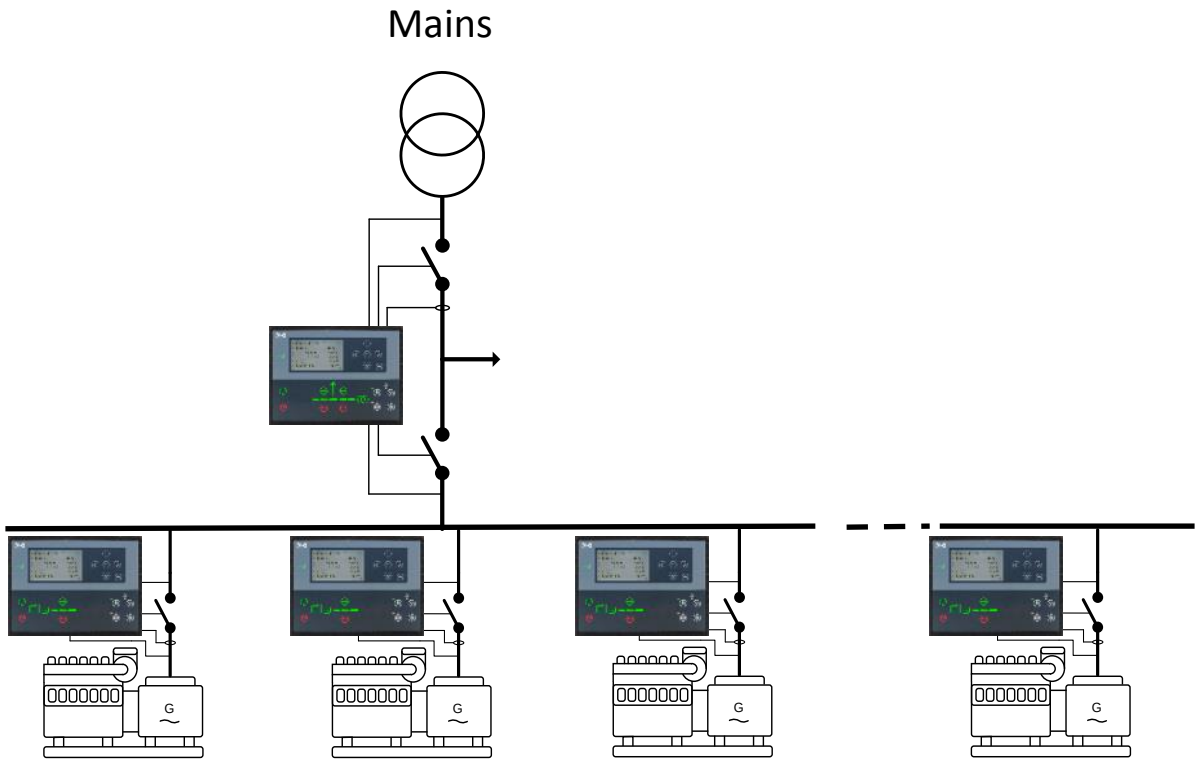
- Single Genset
- Single Genset with Mains
- Multiple Genset’s with Mains



Single Genset



Single Genset w. Mains



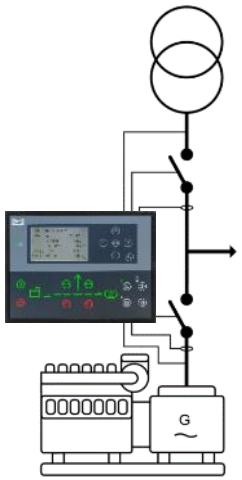
Application

SINGLE GENSET

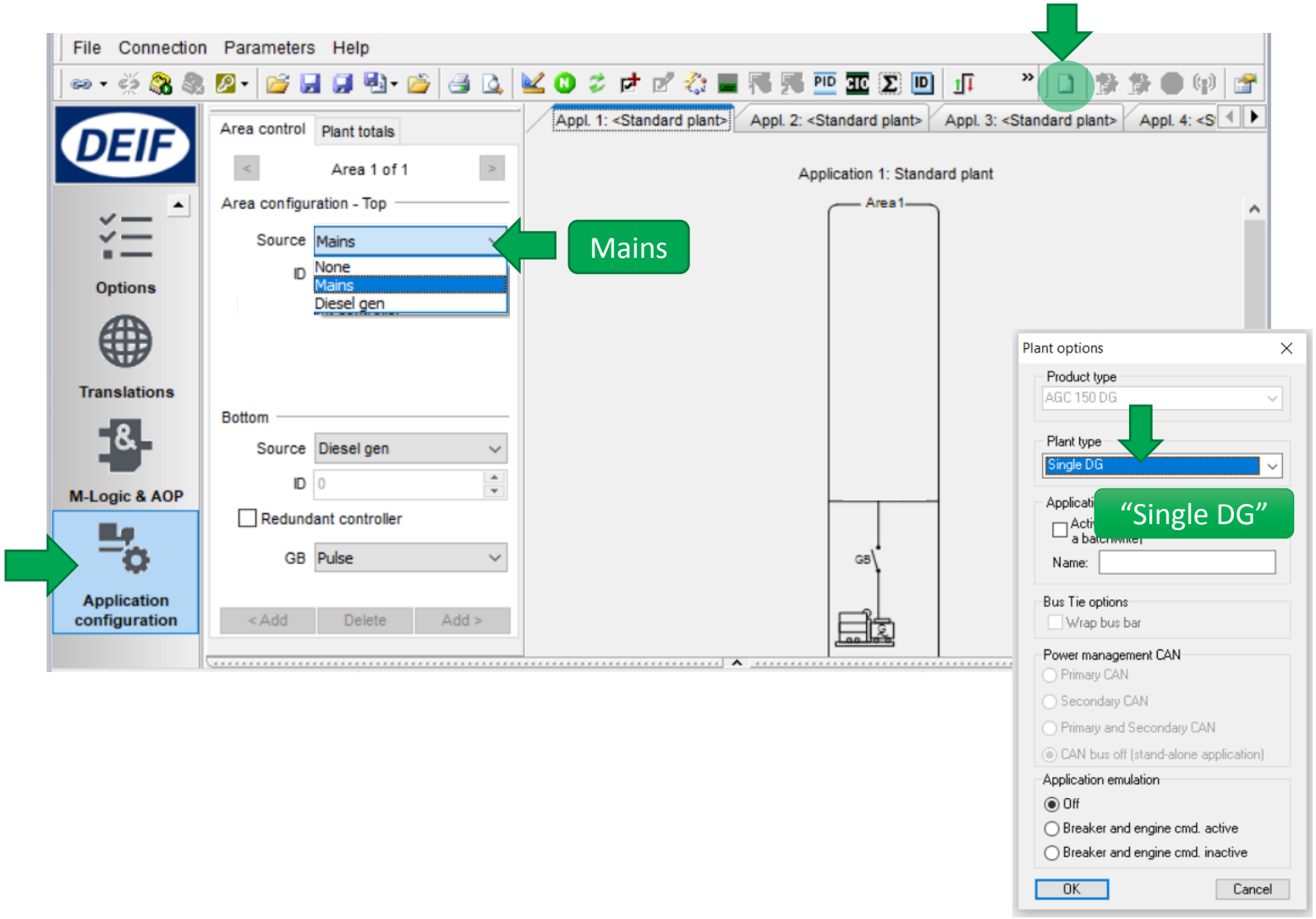
Single Genset

→ *Application configuration*

→ *New plant configuration*



Single Genset with Mains



Single Genset

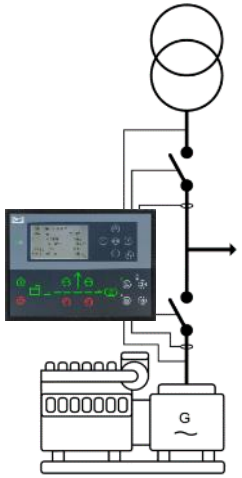
Alternative setup:*

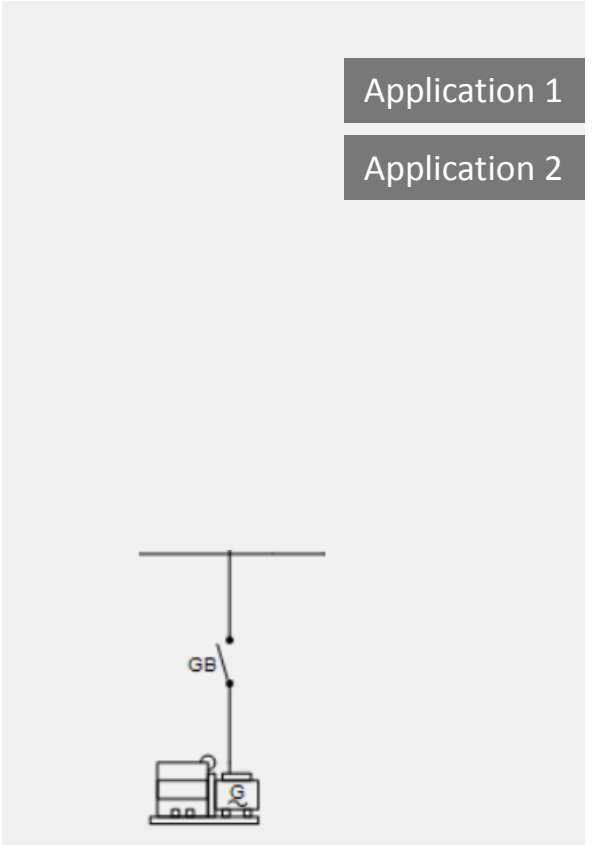
Access from AGC 150 display:

Settings > Basic settings > Application type > Standalone or PM >

> Application select > *Active Application*

change active application from **[1]** to **[2]**



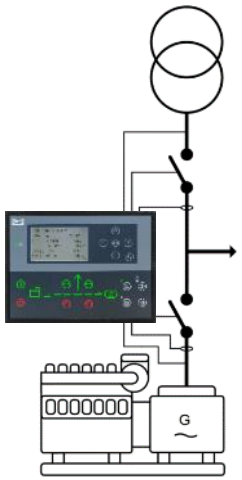


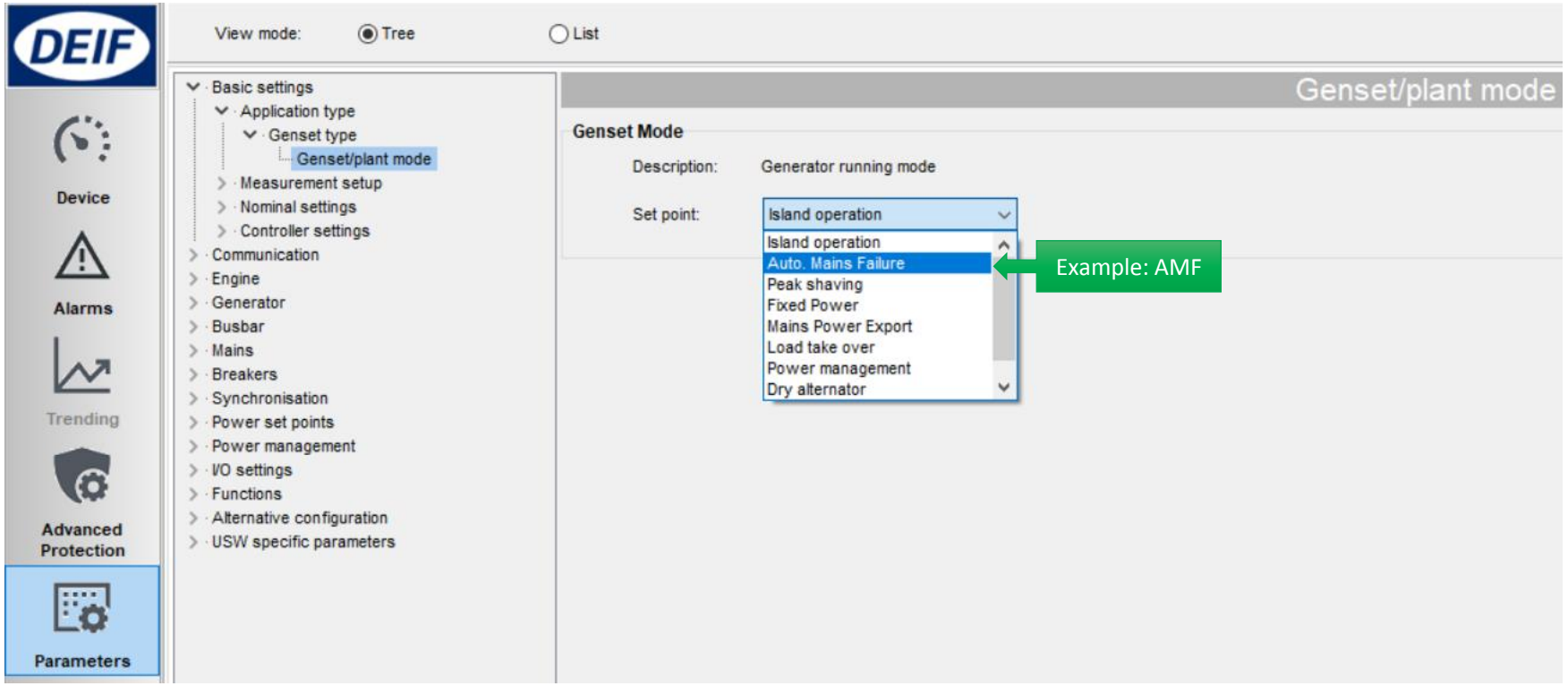
*Only works if application 2 in default factory setting

Single Genset

Select Genset Mode

Parameter > Basic settings > Application type > Genset type > Genset/plant mode

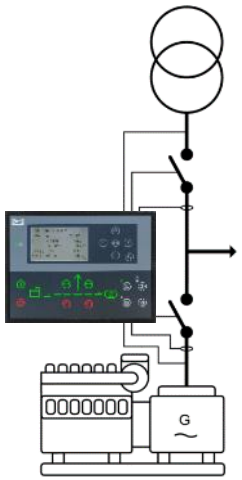


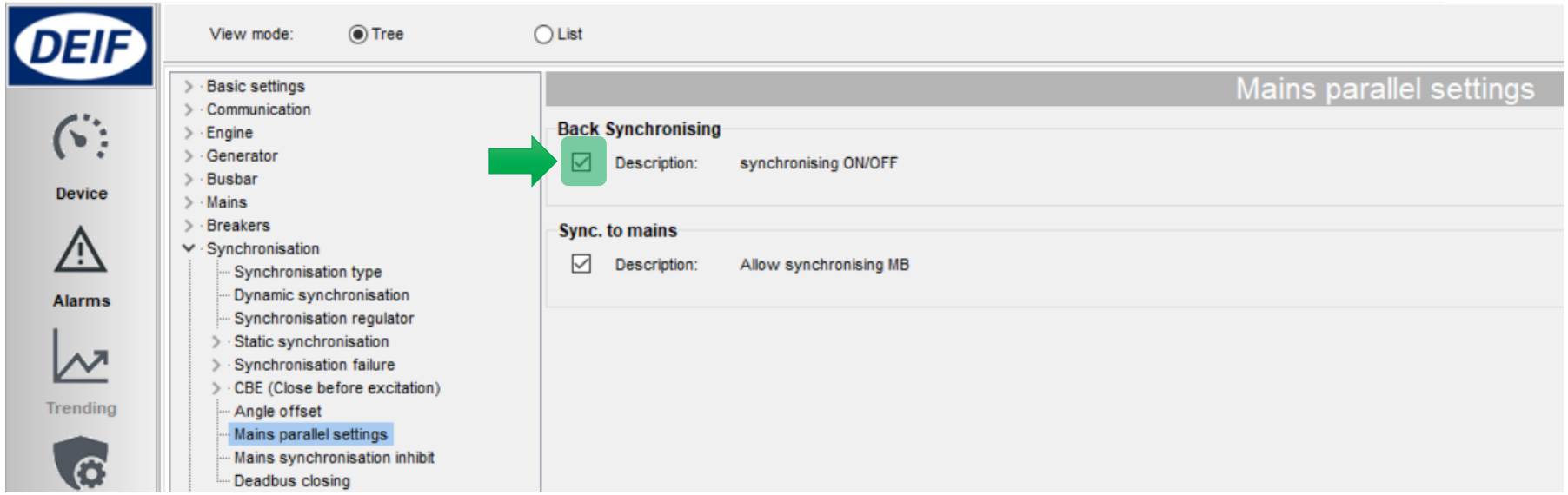


Single Genset

Enable Back Synchronising

Parameter > Synchronisation > Mains parallel settings

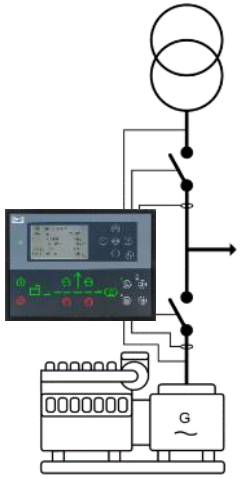




Single Genset

AMF delay settings

Parameter > Mains > AMF function > AMF timer



Mains failure delay

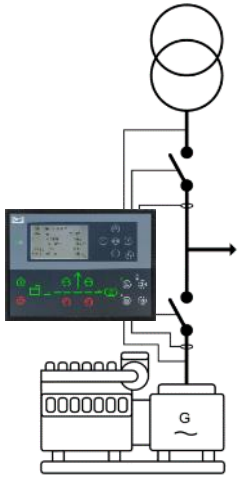
Mains Ok delay

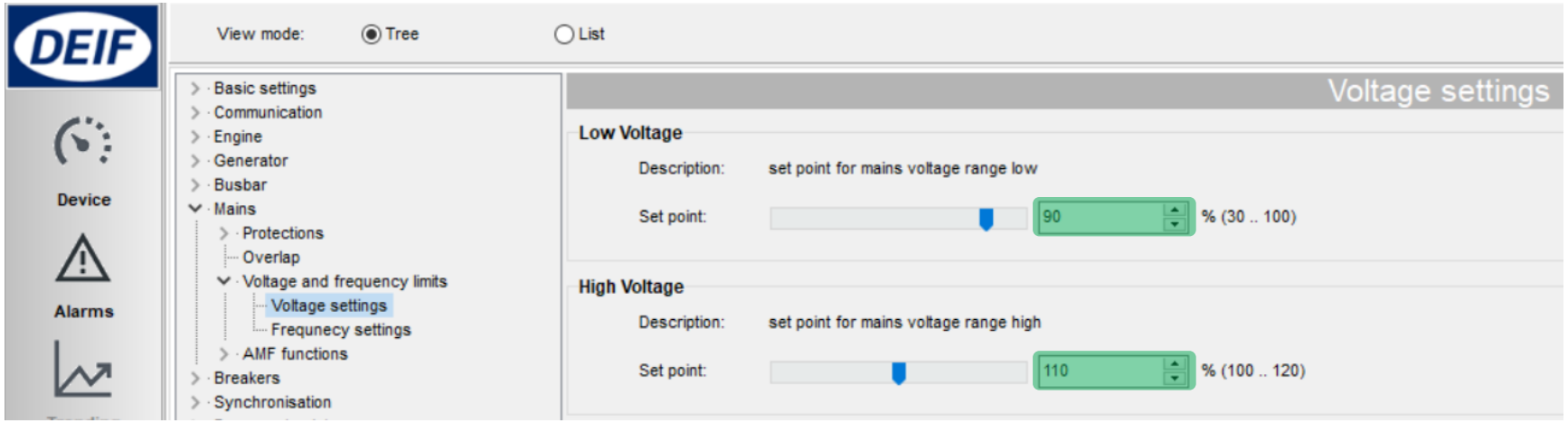
Modeshift ON: Other modes retain AMF function when Mains fail

Single Genset

Mains failure voltage setpoint

Parameter > Mains > Voltage and frequency limits > Voltage limits

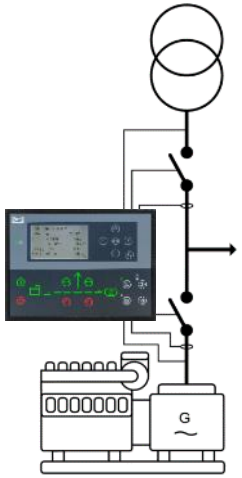


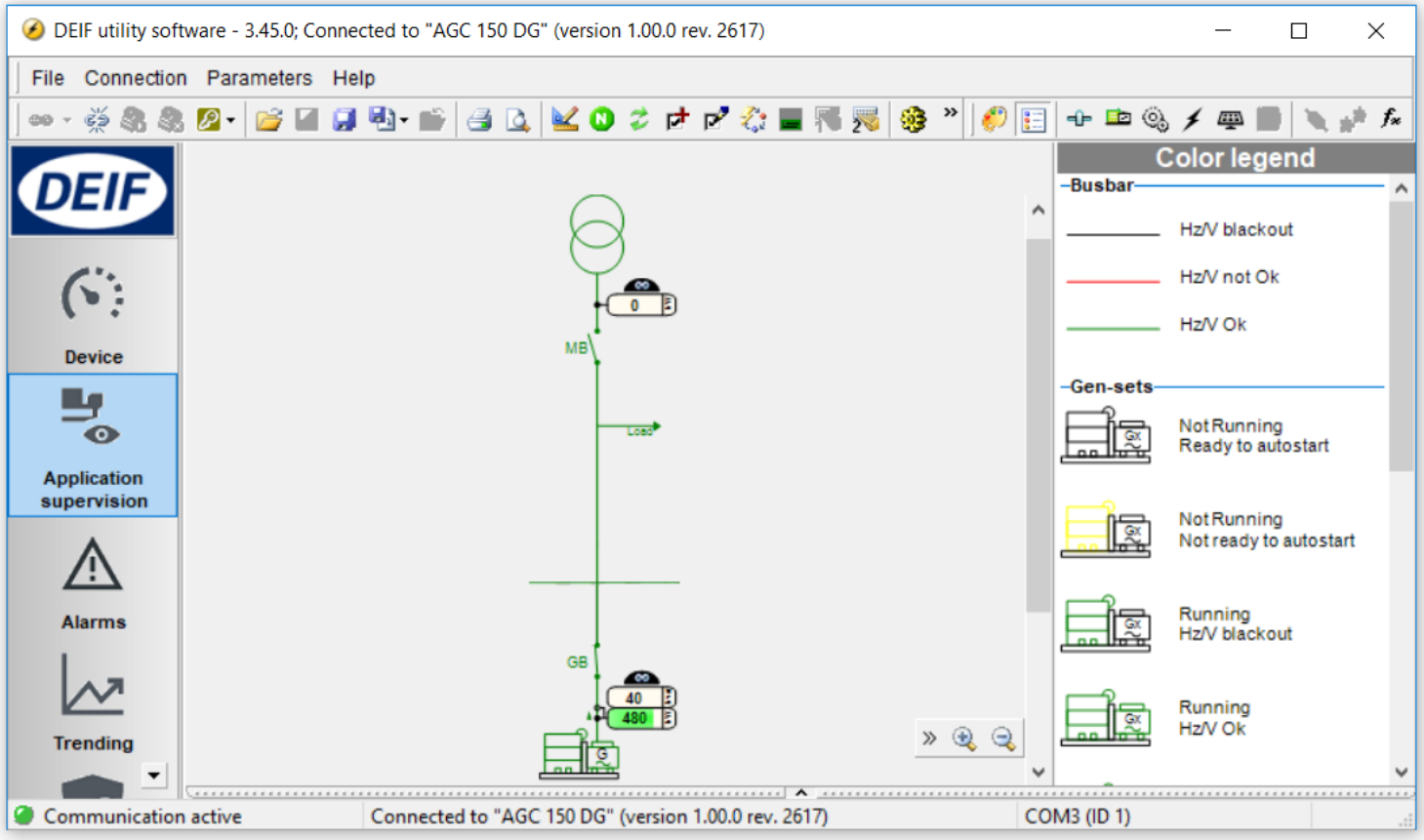


Single Genset

Done setup single genset?

Check Application Supervision

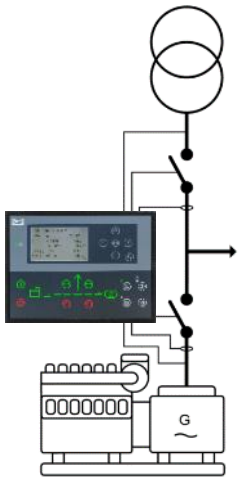


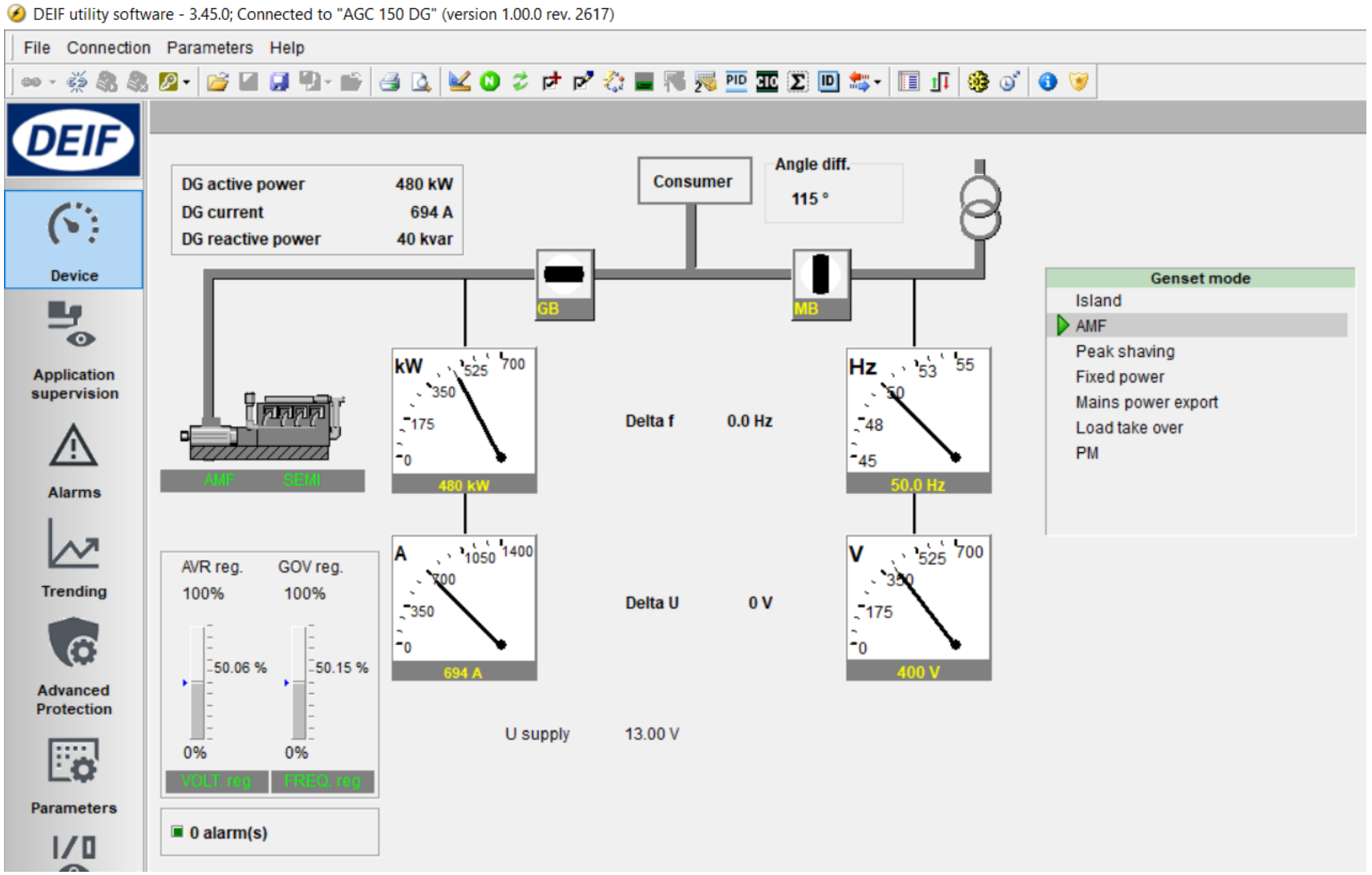


Single Genset

Or Device

For detailed monitoring





Application

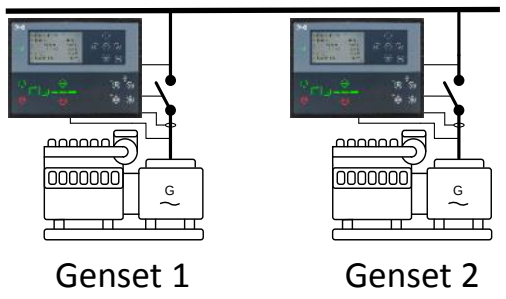
MULTIPLE GENSETS

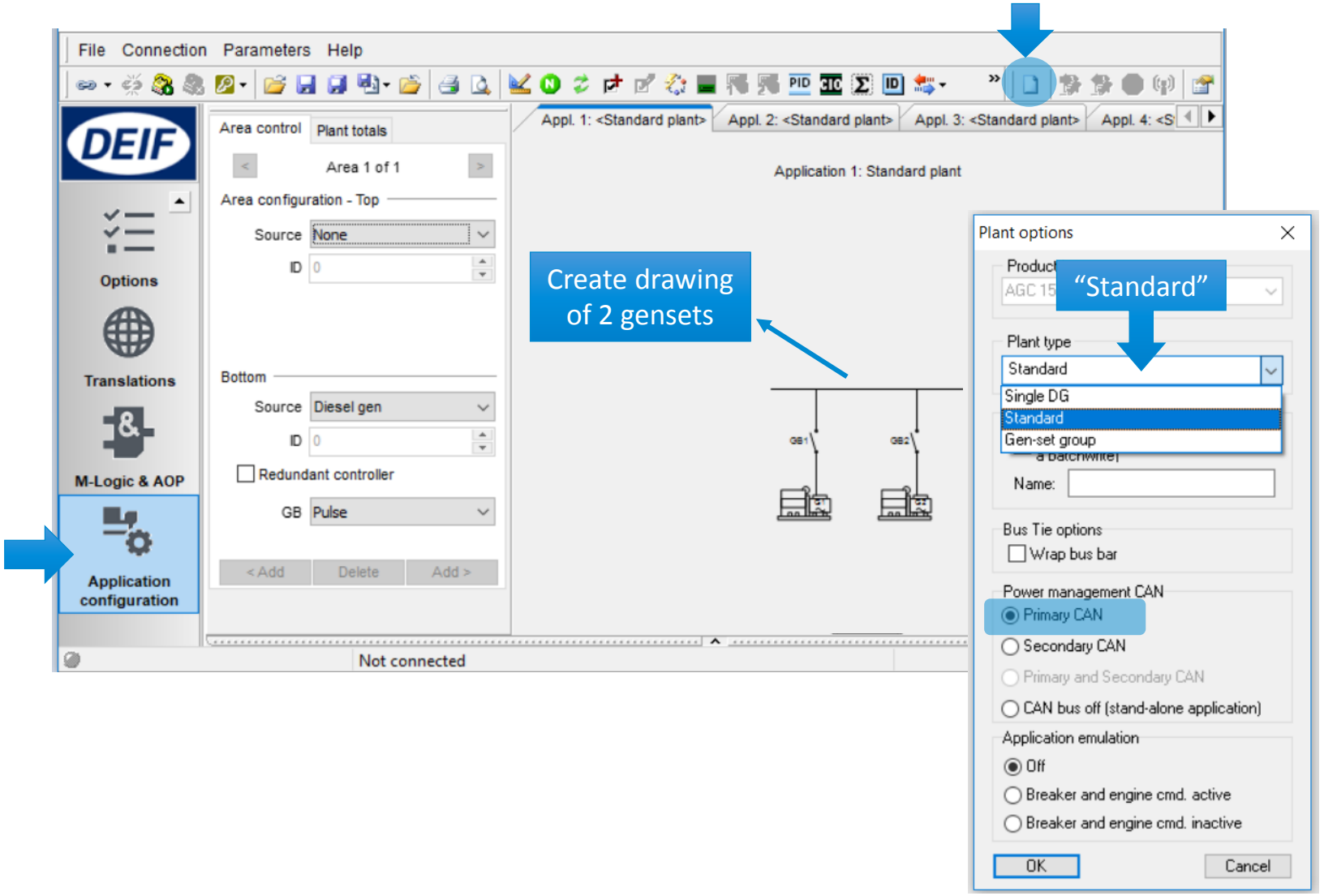
Multiple Gensets

→ *Application configuration*

→ *New plant configuration*

2 Gensets

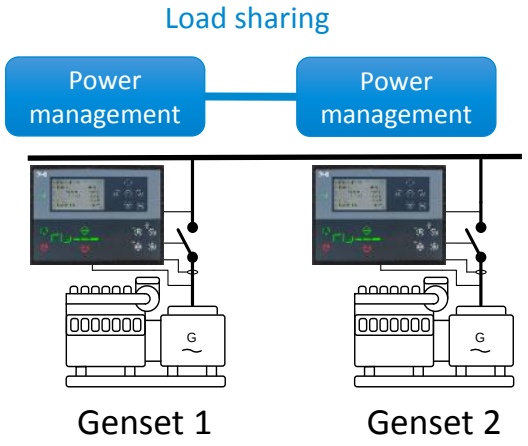


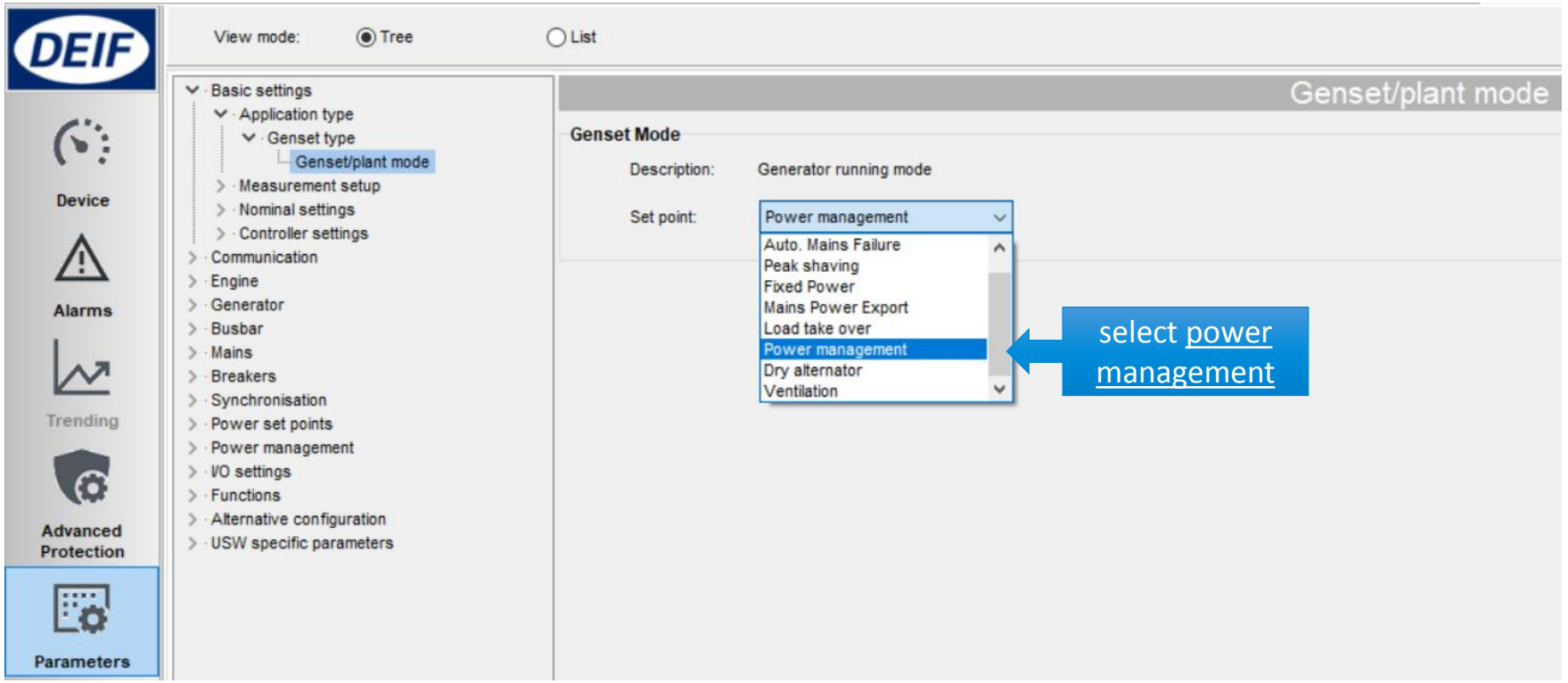


Multiple Gensets

Select Genset Mode

Parameter > Basic settings > Application type > Genset type > Genset/plant mode

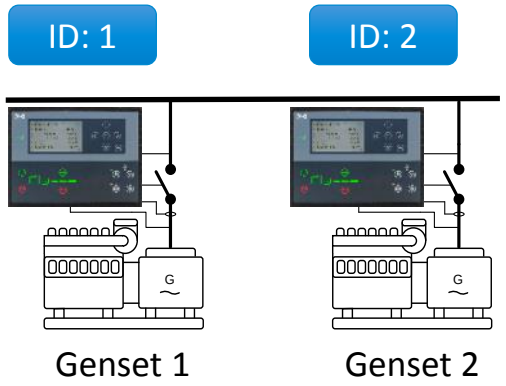


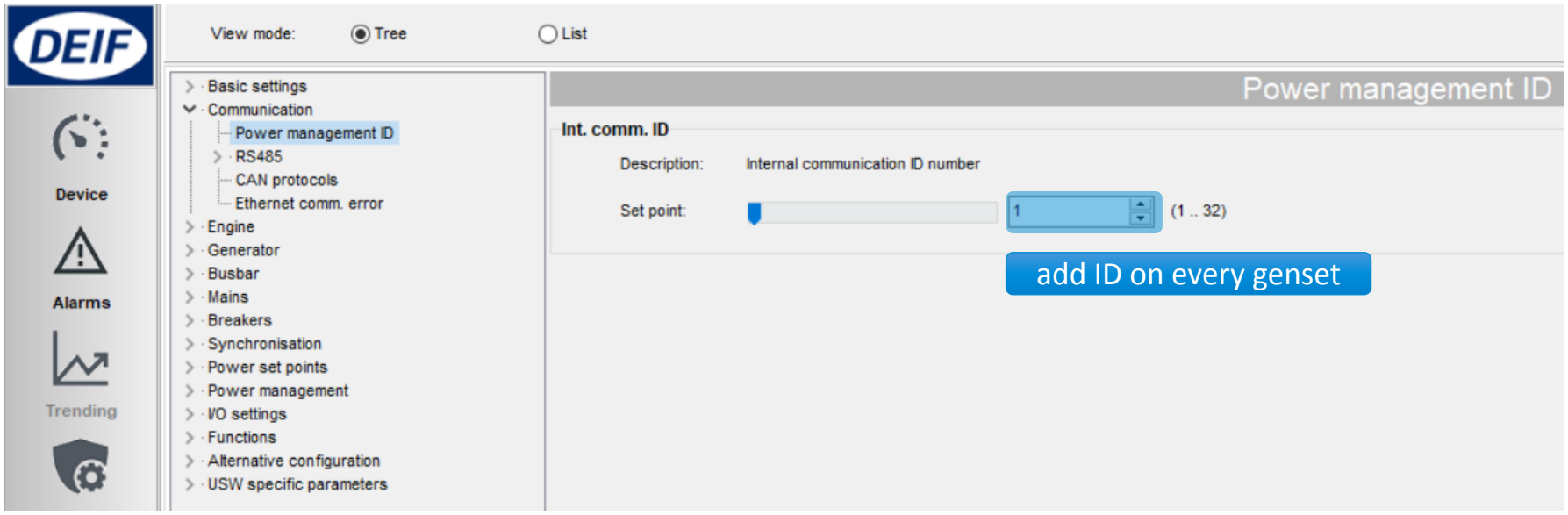


Multiple Gensets

Setup ID Number

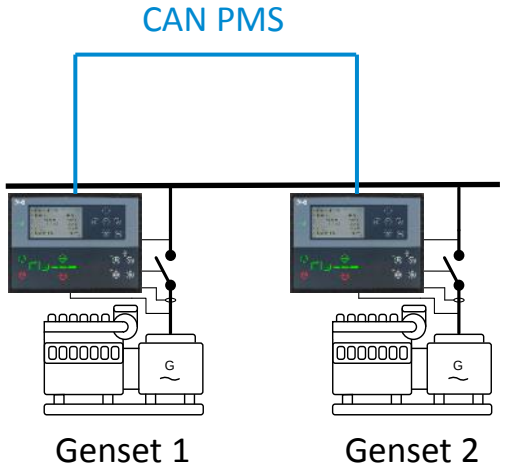
Parameter > Communication > Power management ID

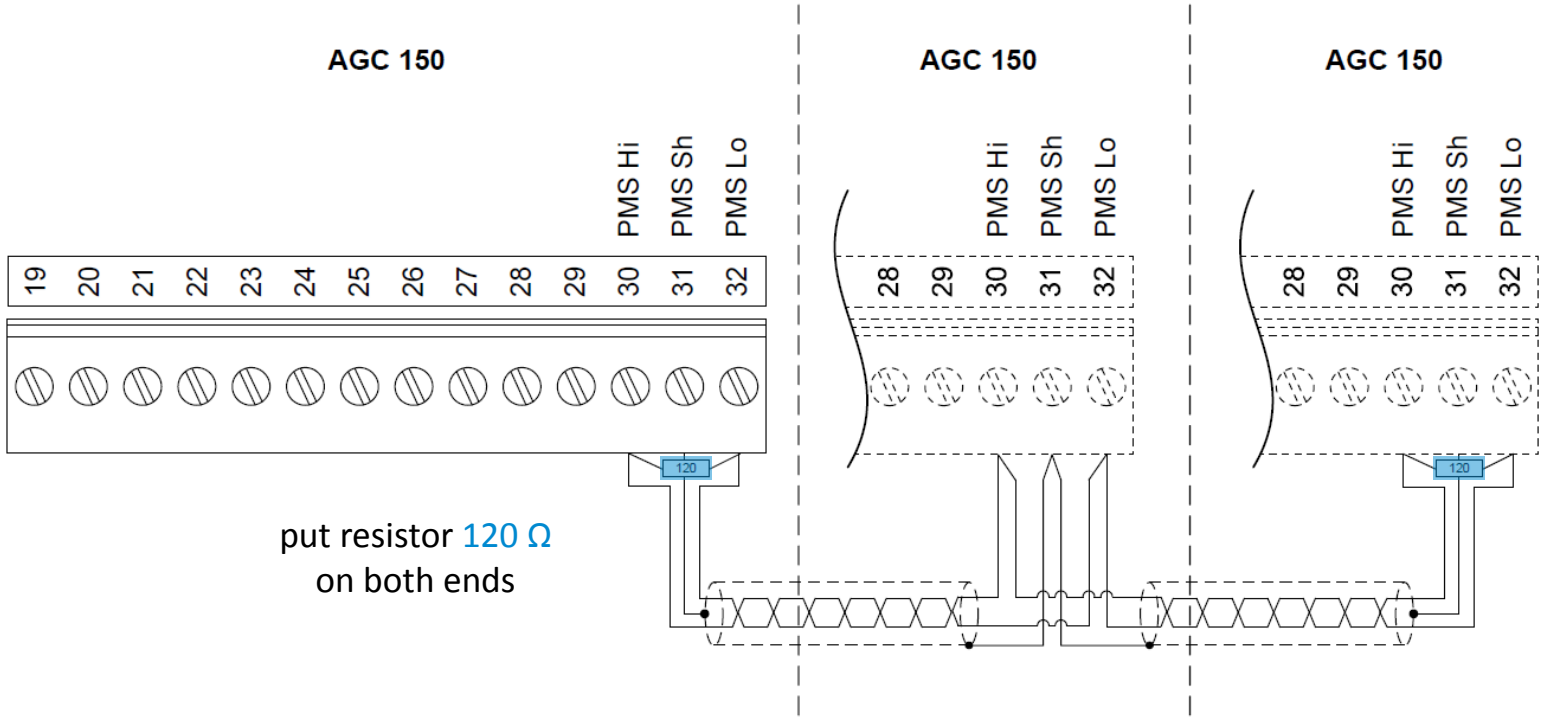




Multiple Gensets

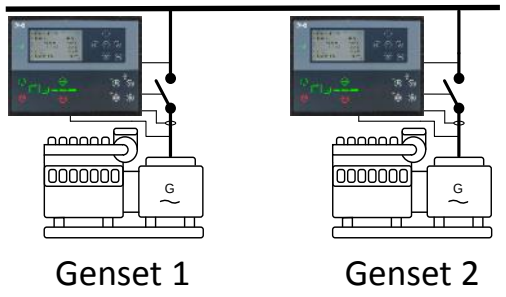
CANbus wiring

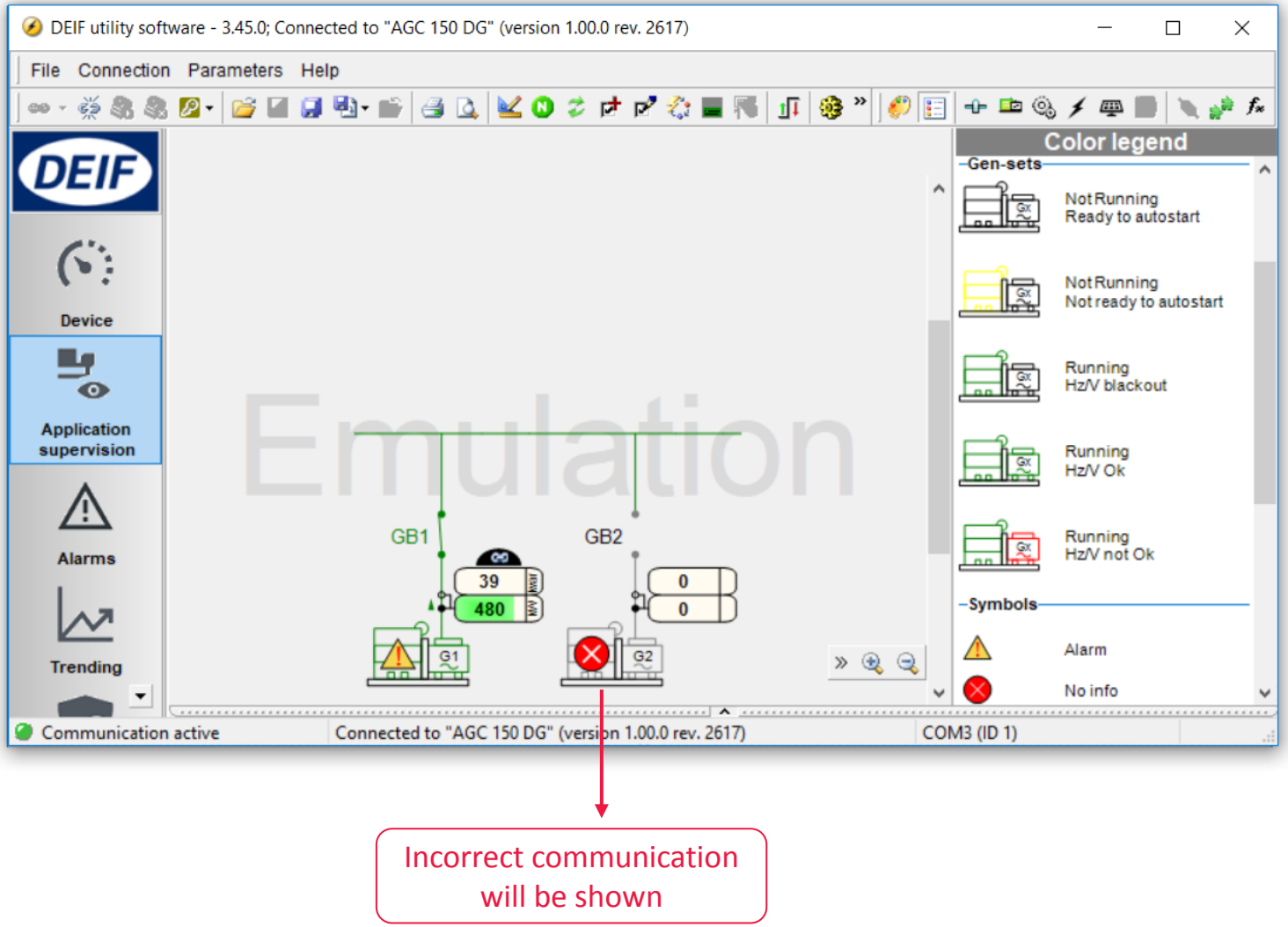




Multiple Gensets

Check Application Supervision



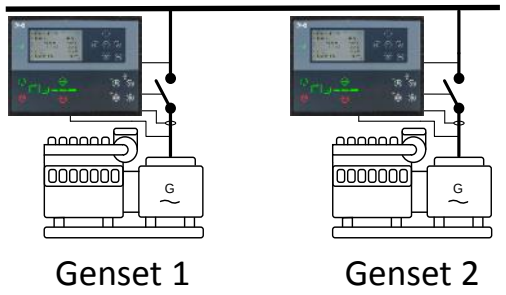


Incorrect communication will be shown

Power Management

LOAD DEPENDENT START/STOP

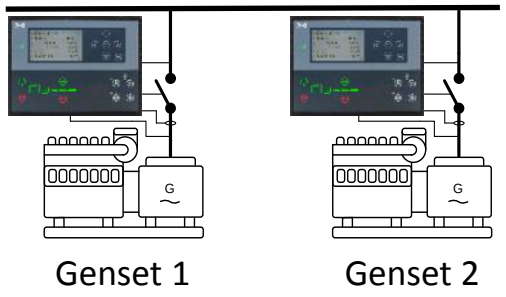
MULTI START

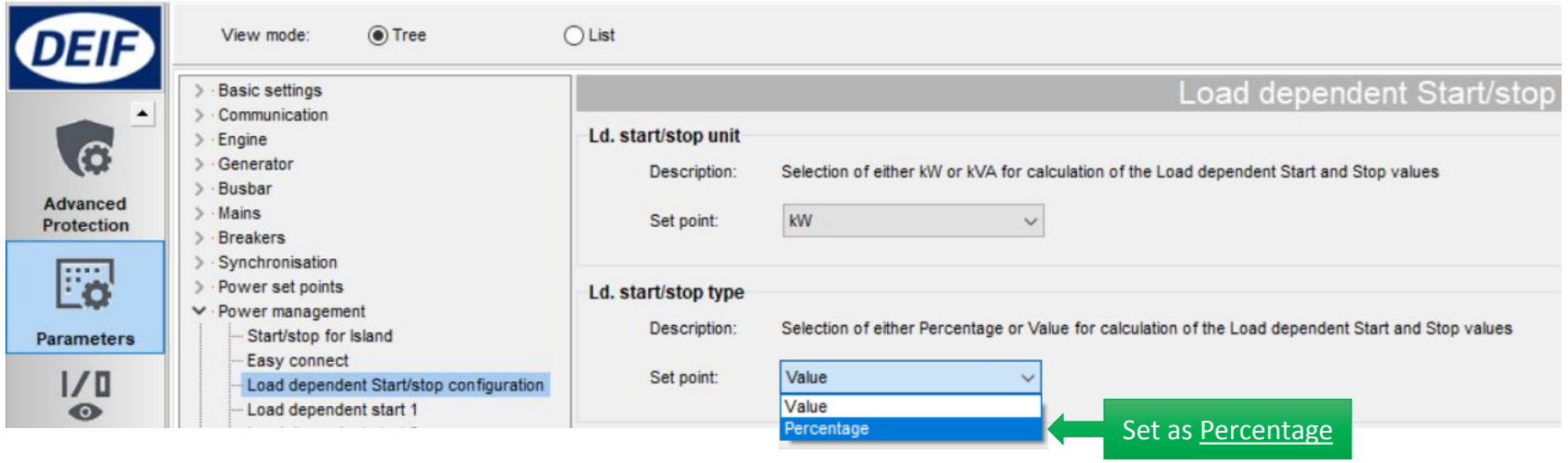


Load dependent start/stop

Configure Start/stop based on load Percentage

Parameter > Power management > Load dependent start/stop configuration

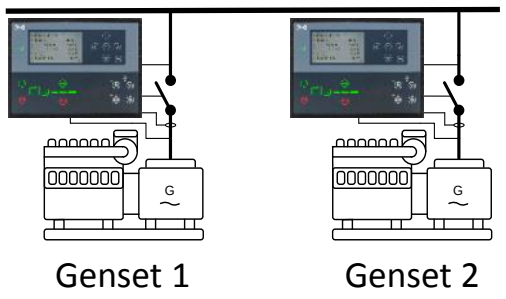


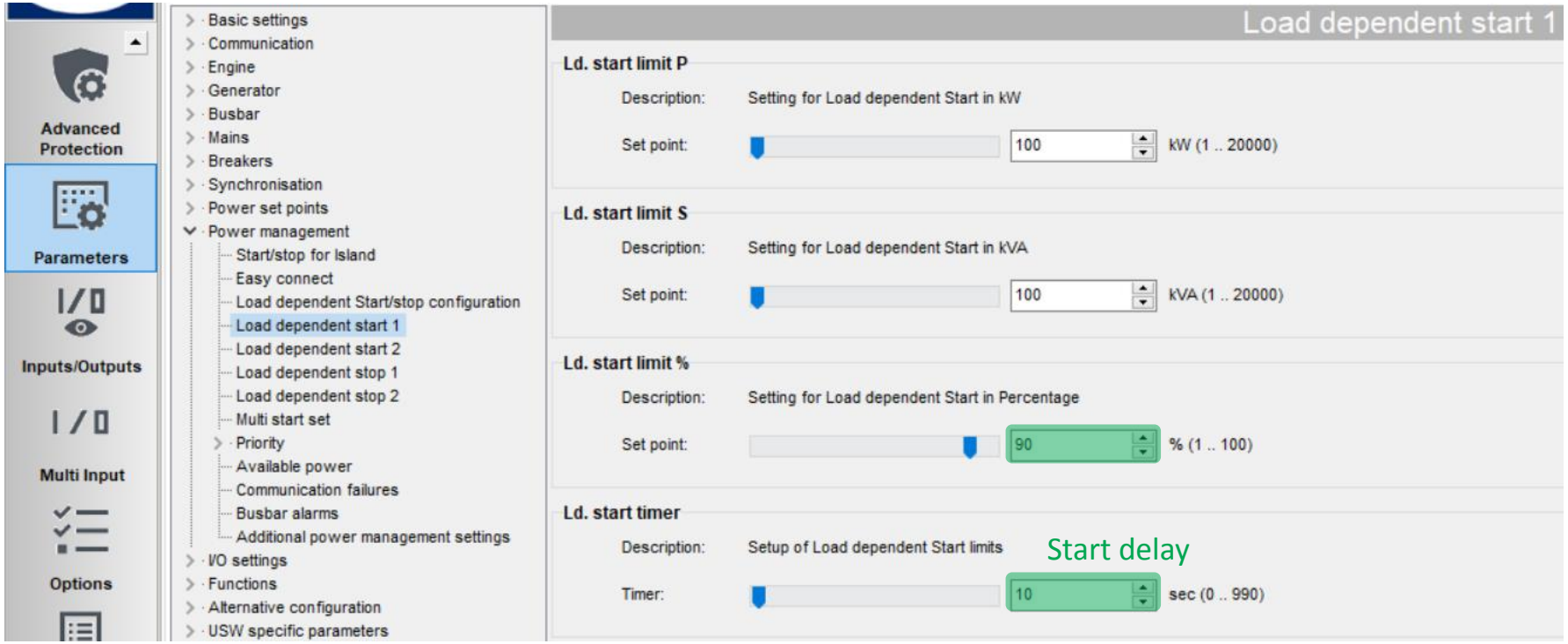


Load dependent start/stop

Start percentage setpoint

Parameter > Power management > Load dependent start 1

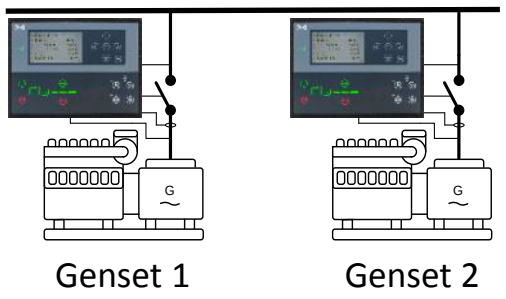


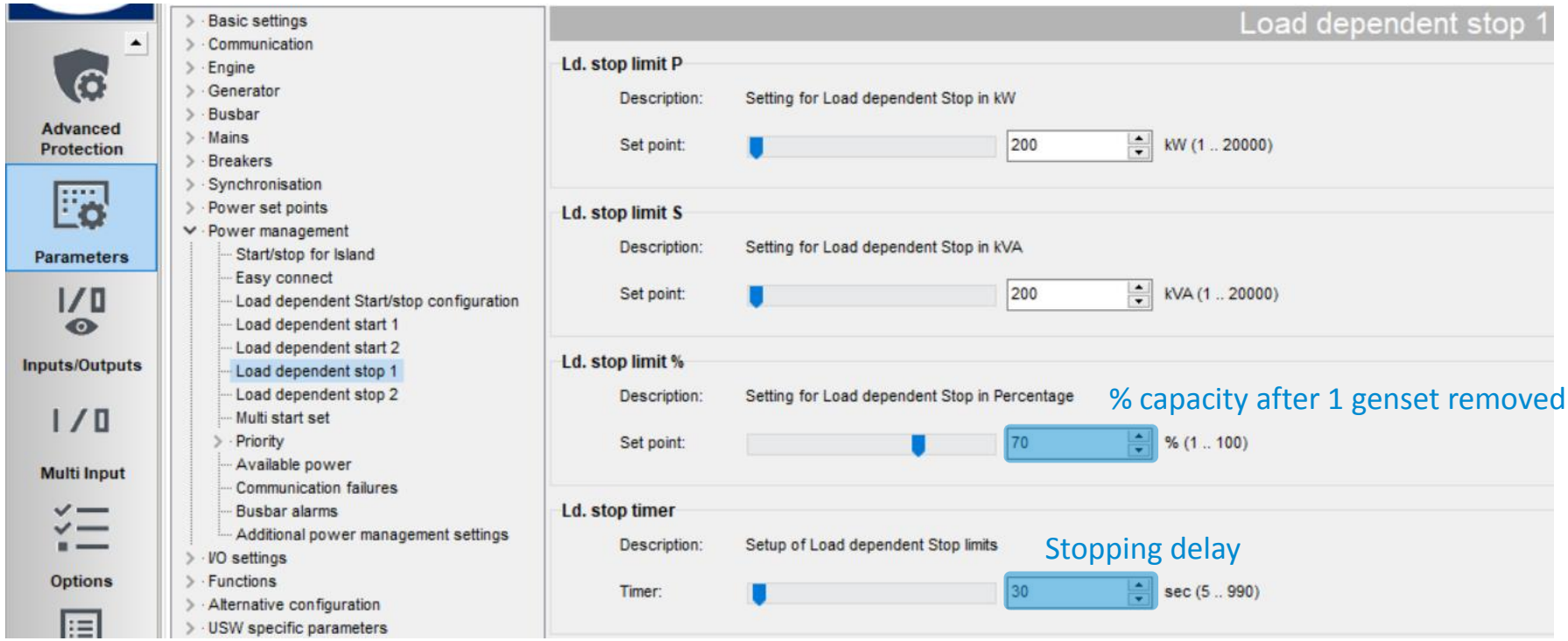


Load dependent start/stop

Stop percentage setpoint

Parameter > Power management > Load dependent stop 1

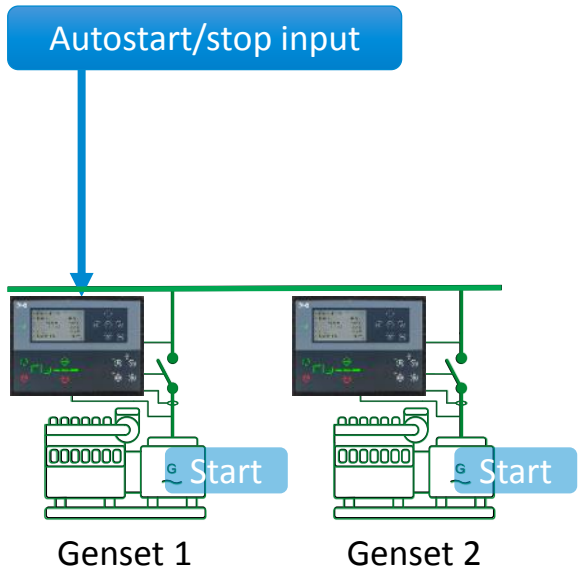


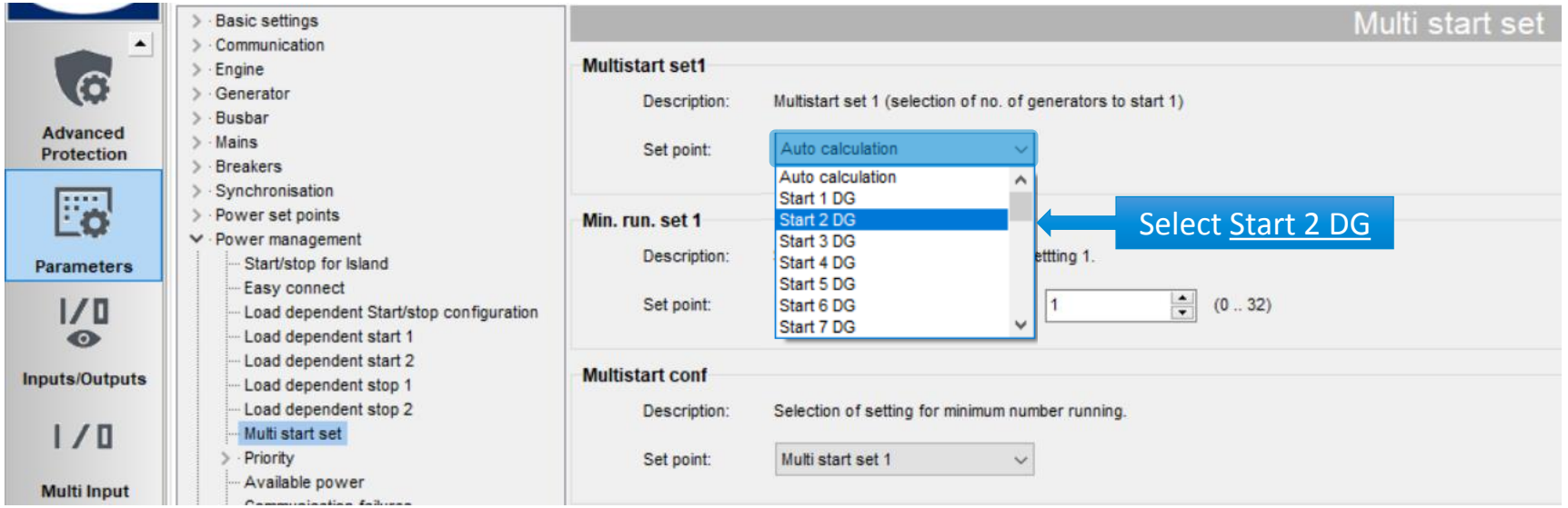


Multi start

Setup of how many gensets start together

Parameter > Power management > Multi start set





Questions?

/DEIFgroup

/company/DEIFgroup

/DEIF_group

/DEIFgroup

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Thank you

/DEIFgroup

/company/DEIFgroup

/DEIF_group

/DEIFgroup

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