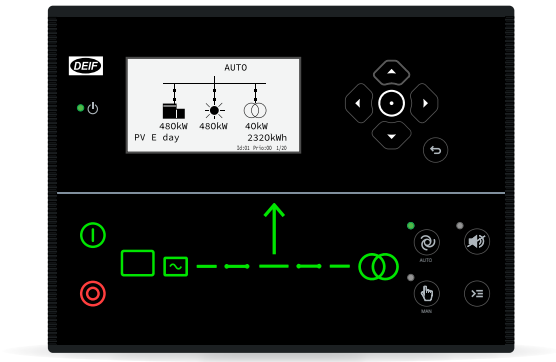
iE 150 Solar



About iE 150 Solar

Use the **iE 150 Solar** as a **single controller** to add PV power to an existing site, or with other DEIF controllers in a **power/energy management system** (PMS). The iE 150 Solar optimises the PV power to **save fuel** and maximise green penetration.

Each controller controls and protects a photovoltaic (PV) system with up to **32 inverters**. The controller is **plug-and-play** and **easy to customise** with the user-friendly M-Logic tool. You can **easily scale up** from a single controller to a PMS with a variety of controllers and up to 16 solar controllers.

Power management

- Automatically maximises PV power
- Automatically starts and stops generators
  - Load-dependent start and stop
- Automatically closes and opens breakers
- Optimises the fuel consumption
  - Asymmetric load sharing possible
- Balances the loads in the system
- Uses the plant logic
- Makes sure that the system is safe

Off-grid applications

- **With a genset**: The controller uses the genset power measurements to calculate the set points for the PV power
- **With storage**: The controller combines the available PV power with the charge/discharge scheme to determine the set point for the PV power

Grid-tied applications

- Feed surplus PV energy to the grid
- Charge the energy storage system (ESS)
- Regulate PV production to match the self-consumption

Solar features

Spinning reserve

- If there is a mains connection, the power management system can start and stop the genset(s).
- The spinning reserve can be a percentage of the PV power production or the mains import.

Ideal for self-consumption applications

- The iE 150 Solar can feed surplus PV energy to the grid and generate profit in accordance with grid operator feed-in tariffs.
- Alternatively, the controller can regulate the PV production to match the self-consumption, thereby preventing any feed-in of PV power to the grid.

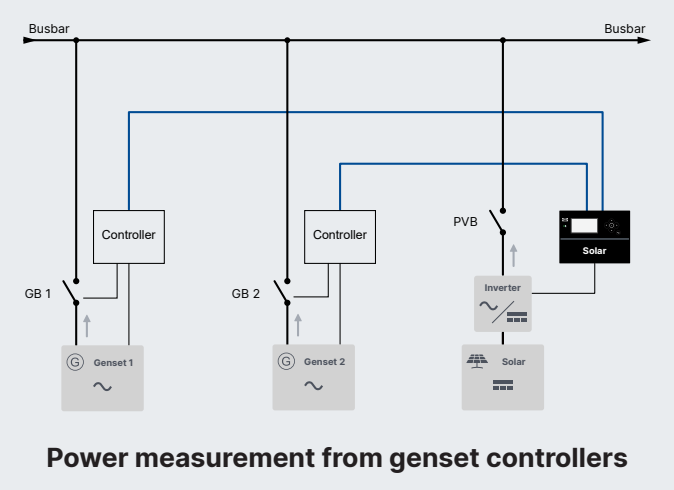
Features	Premium
→ Number of inverters	32
→ Photovoltaic breaker (PVB) control	●
→ Power management	●
→ Irradiance sensor	●
→ Weather station	●
→ Reactive power control	●
→ Inverter monitoring	●
→ Inverter start/stop logic	●
→ PV integration	●
→ Solar power load calculation	●
→ Ensure a minimum genset load	●
→ PV power counters (kWh)	●
→ Mains import/export power counters (kWh)	●

Single controller

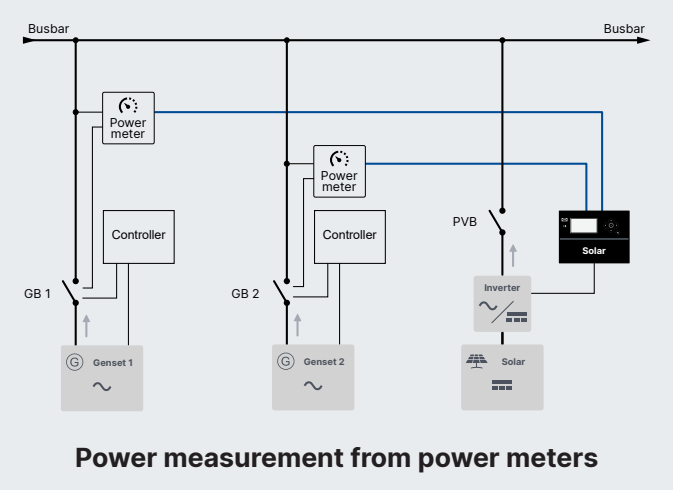
- Useful for **rental** and **brownfield** applications
- Makes sure that there is a **minimum genset load**
- Requires **power measurement** and breaker feedback for other power sources
  - **Only one source**: Can use the controller's 4th current measurement
  - **Multiple power sources**: Measurements from:
    - Genset controllers (DEIF or third parties)
    - Power meters
    - Transducers
- Power management communication is not required

Application examples

Single controller



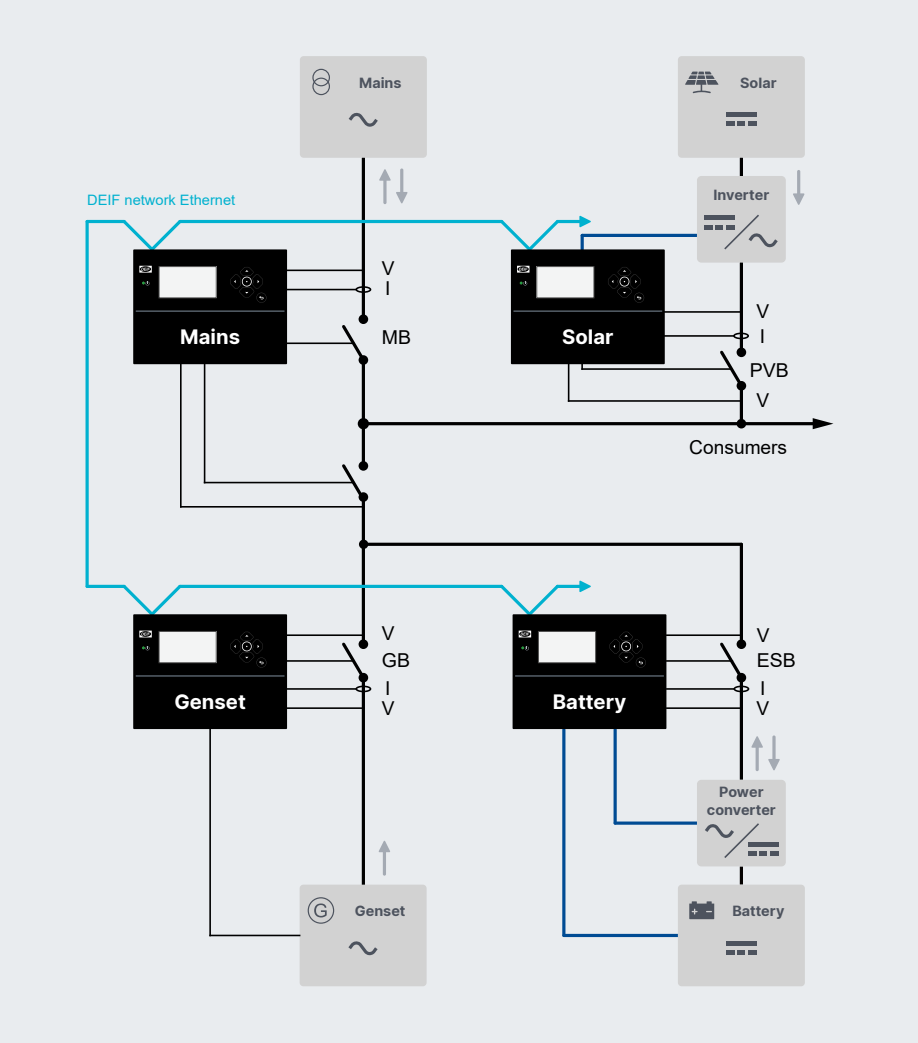
Power measurement from genset controllers



Power measurement from power meters

Maximum number of gensets for a single controller: 4 (Extended) or 16 (Premium)

Power management



Maximum number of compatible controllers*

Generator controllers	32
Mains controllers	32
BTB controllers	8
Solar controllers	16
Storage (BESS) controllers	16
Load controllers	8

NOTE * All controllers must use DEIF power management.

Technical specifications

Communication

PV inverters

- Modbus RTU (RS-485)
- Modbus TCP (Ethernet)

Power meters

- Modbus RTU (RS-485)

Other DEIF controllers

- CAN bus
- Ethernet

Weather stations

- Modbus RTU (RS-485)

PC

- Ethernet
- USB (service port)

Compatibility

PV inverters

- Supports hundreds of PV inverter types
- Supports a wide range of manufacturers

Power meters

- Genset controllers (DEIF or third parties)
- Power meters
- Transducers

Weather stations and sensors

NOTE Refer to **DEIF hybrid controller compatibility** for all the compatible PV inverters, power meters, and weather stations.

Approvals

- CE
- UL/cUL Listed to UL/ULC6200:2019, 1. ed. Controllers for Use in Power Production

NOTE Refer to deif.com for the most recent approvals.

AC measuring

- Voltage: 100 to 690 V phase-to-phase (10 to 135 %), ±1 %
- Current: -/1 A or -/5 A (2 to 300 %), ±1 %
- Frequency: 3.5 to 75 Hz
- Power: ±1 %

Power supply

- Nominal voltage: 12/24 V DC
- Operating range: 6.5 to 36 V DC
- Load dump protection: ISO16750-2
- Operating range: 0 to 36 V DC

Inputs and outputs

- Digital inputs: 12 x (max. +36 V, min. -24 V)
- Digital outputs:
  - 2 x (15 A inrush, 3 A continuously)
  - 10 x (2 A inrush, 0.5 A continuously)
  - Common: 12/24 V DC
- 4 x analogue inputs
- 2 analogue outputs
- CAN bus A and B
- RS-485 1 and 2
- RJ-45 Ethernet

Environmental specifications

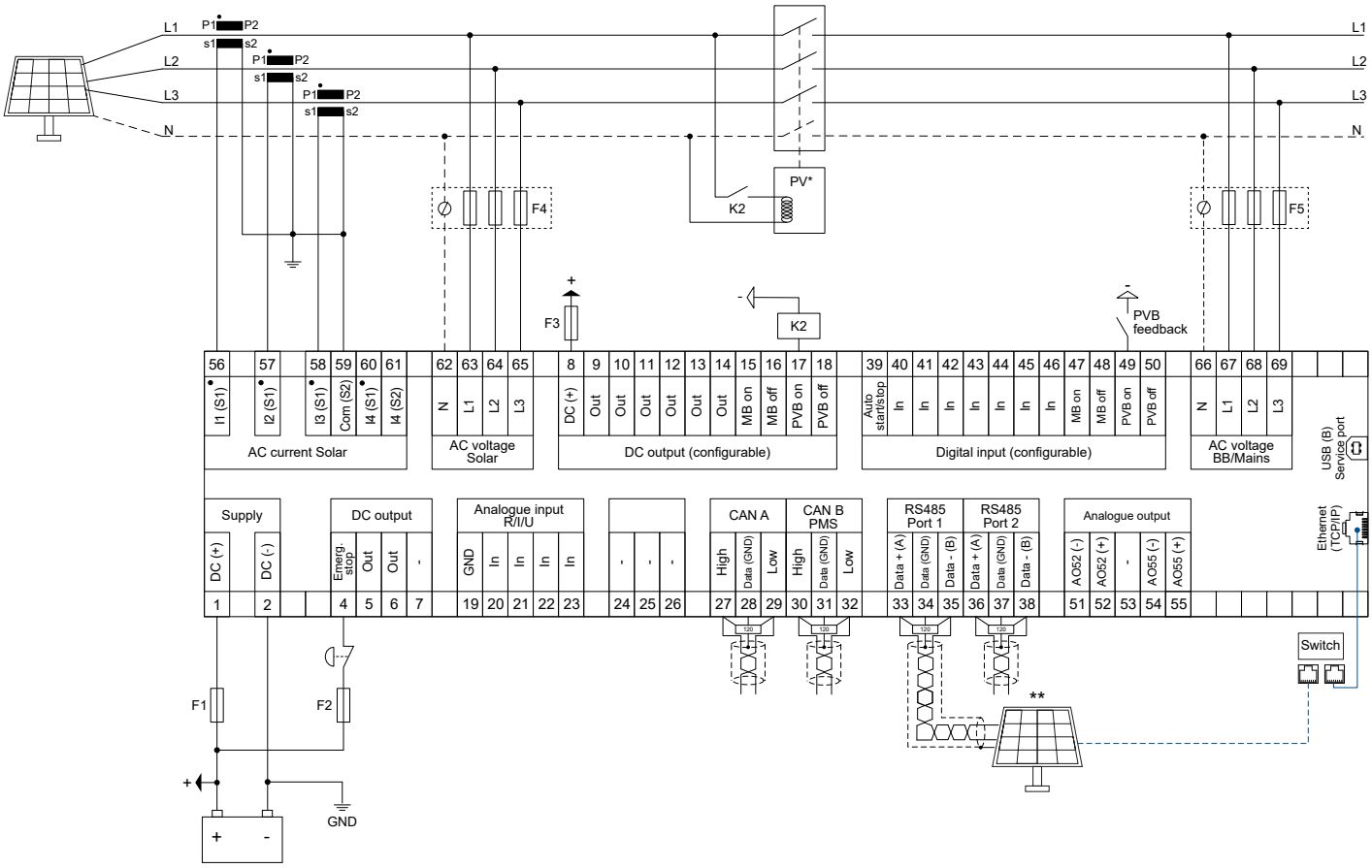
- Operating temperature: -40 to +70 °C (-40 to +158 °F)
- Storage temperature: -40 to +85 °C (-40 to +185 °F)
- Altitude: 0 to 4000 m
- Humidity: 20/55 °C at 97 % RH
- Protection degree: IP65 in panel, IP20 on terminals
- Pollution degree 2
- Self-extinguishing plastic

Protections

2 x Reverse power ..... ANSI 32R
2 x Fast over-current..... ANSI 50P
4 x Over-current .....ANSI 50TD
1 x Voltage-dependent over-current ..... ANSI 50V
2 x Over-voltage ..... ANSI 59P
3 x Under-voltage.....ANSI 27P
3 x Over-frequency .....ANSI 81O
3 x Under-frequency .....ANSI 81U
1 x Unbalance voltage .....ANSI 47
1 x Unbalance current .....ANSI 46
1 x Under-excitation or reactive power import ... ANSI 32RV
1 x Over-excitation or reactive power export ..... ANSI 32FV
5 x Overload* .....ANSI 32F
3 x Busbar over-voltage ..... ANSI 59P
4 x Busbar under-voltage .....ANSI 27P
3 x Busbar over-frequency .....ANSI 81O
3 x Busbar under-frequency .....ANSI 81U
1 x Low auxiliary supply .....ANSI 27DC
1 x High auxiliary supply .....ANSI 59DC
Breaker open failure ..... ANSI 52BF
Breaker close failure..... ANSI 52BF
Breaker position failure ..... ANSI 52BF
1 x Phase sequence error .....ANSI 47
1 x Neutral current
1 x Emergency stop
1 x De-load error
1 x Hz/V failure
1 x Not in Auto
1 x PV breaker external trip
Synchronisation failure alarms

NOTE * You can configure these protections for overload or reverse power.

Typical wiring



Scan to learn more about **DEIF**

DEIF A/S
Frisenborgvej 33
DK-7800 Skive

+45 9614 9614
info@deif.com
deif.com