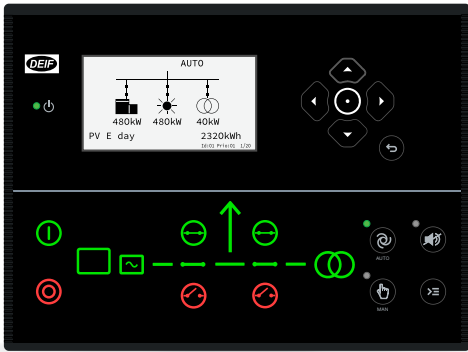


iE 150 Hybrid genset



About iE 150 Hybrid genset

iE 150 Hybrid genset controller protects and controls a hybrid installation with up to two gensets and 16 PV inverters, and a mains connection.

Benefits

- Power production with the highest PV penetration.
- Load supported with PV power in a safe and reliable way, to make sure there is minimum genset load.
- Ideal for small and medium PV plants, for example, rooftop PV plants.

A controller you can trust

- Easy to use and built to last.
- Three password-configurable user levels.
- Configurable shortcut menu.
- User-friendly programmable PLC functions (M-Logic).
- Alarm and event logging (up to 500 alarms and 500 events).
- Available with Sync or PM software packages.

Free utility software

- Simple configuration with free utility software.

Solar features

Full inverter compliance

The controller is compliant with a large and growing number of PV inverter protocols, including SunSpec. For full details see **DEIF hybrid controller compatibility**. Contact DEIF if your protocol is not listed.

Generate profit or regulate PV production

In grid parallel mode, feed surplus PV energy to the grid and generate profit, or regulate PV production to match self-consumption if grid feed-in is not permitted.

PV power emulation

Test and operate controller hybrid functions safely without a PV plant.

Energy counters (kWh/kvarh)

- PV energy
- Curtailment counter
- Genset energy

Genset features

Spinning reserve

Start and stop the genset to provide spinning reserve. Spinning reserve can be a percentage of PV power production or mains import.

AC measurement

- Genset: One CT for each, for balanced load
- Genset and mains voltage
- Mains power: One CT

Built-in analogue AVR and GOV control

Eliminates the need for external equipment.

Digital AVR support

Use with DVC 350 or DVC 550 digital voltage controllers to support features like engine aid, close before excitation (CBE), and critical power start-up.

CIO support

Support of CANbus-based I/Os, to increase the number of I/Os.

Hybrid features

PV included in mode of operation

Mains power export/import, automatic mains failure, load take-over, fixed power and peak shaving.

Minimum load

Eliminate the risk of reverse power caused by low load. Minimum load is controlled by the PV inverter set point.

Automatic asset start/stop

Set threshold set points for PV production and mains import/export.

Engine control

Stage V and Tier 4 Final compliance

Monitor and control your exhaust after-treatment systems in accordance with the standard.

Engine communication

Communicate with engines that use the J1939 protocol. The controller supports a large and growing number of specific engine protocols. For full details see **iE 150 AGC 150 Engine communication**.

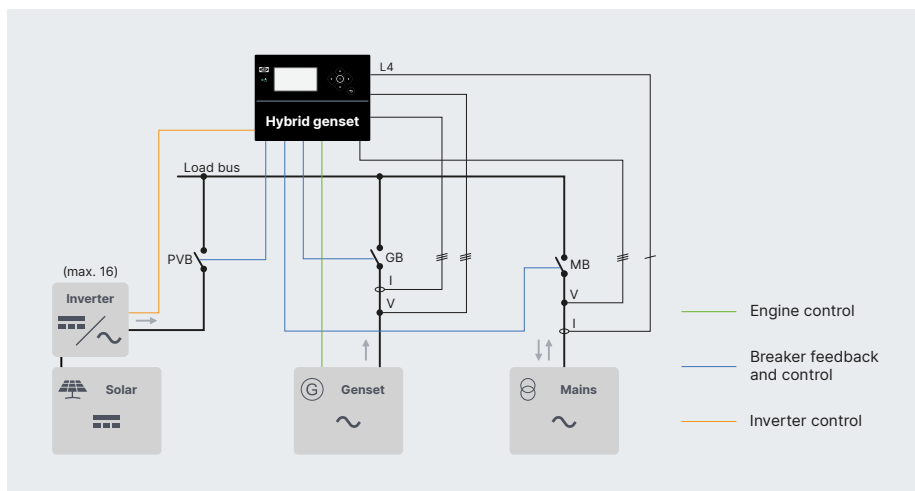
Application examples

Greenfield applications

Hybrid application with a genset, PV and mains

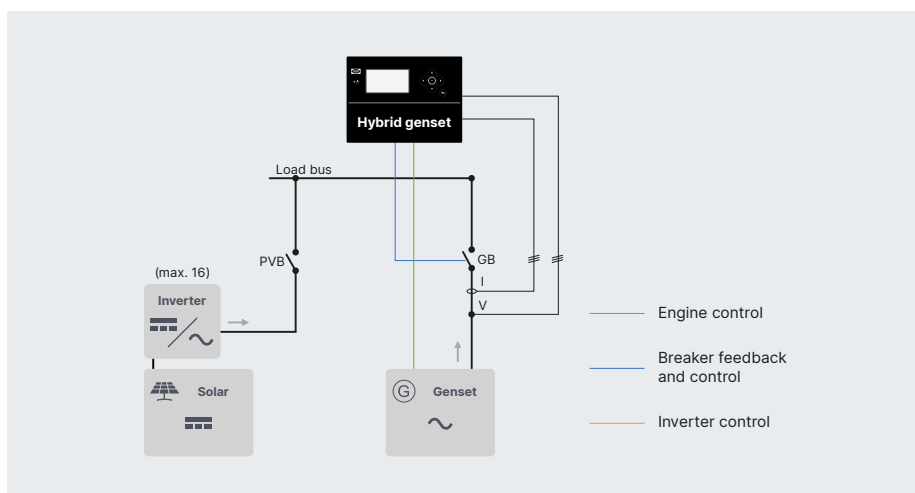
The controller regulates the genset governor and AVR, and controls the PV breaker and mains breaker.

For the genset regulation, you can use the controller analogue outputs. Alternatively, regulate the governor and AVR using the ECU.



Off-grid hybrid application

The controller calculates the set points for the PV power based on the genset power measurements. This makes sure that the minimum genset load requirement is met.

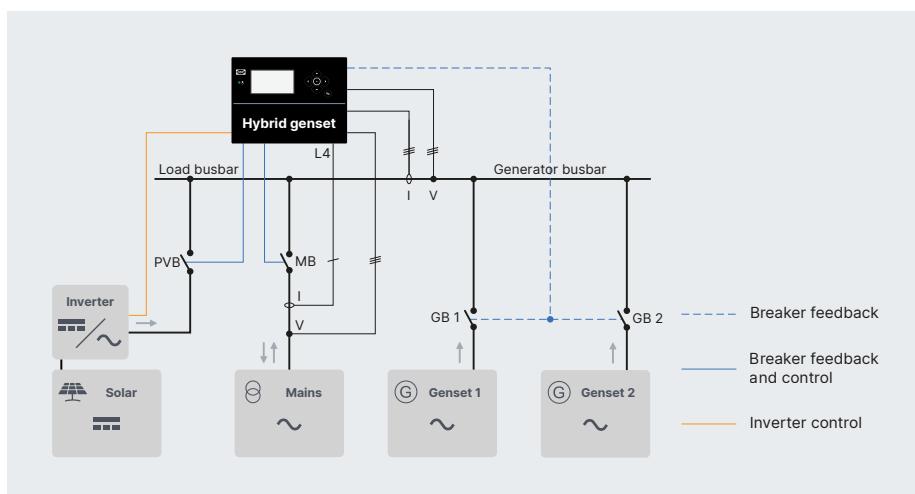


Brownfield applications

Adding PV to an application with synchronising gensets

To control the photovoltaic power, three sets of nominal settings are used in the controller.

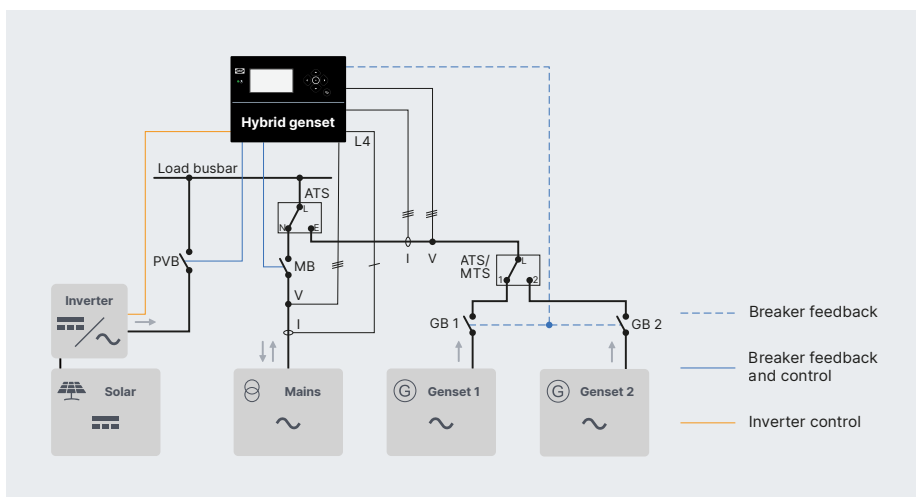
Different nominal settings are used in the controller when both Genset 1, Genset 2, or both Genset 1 and 2 are connected.



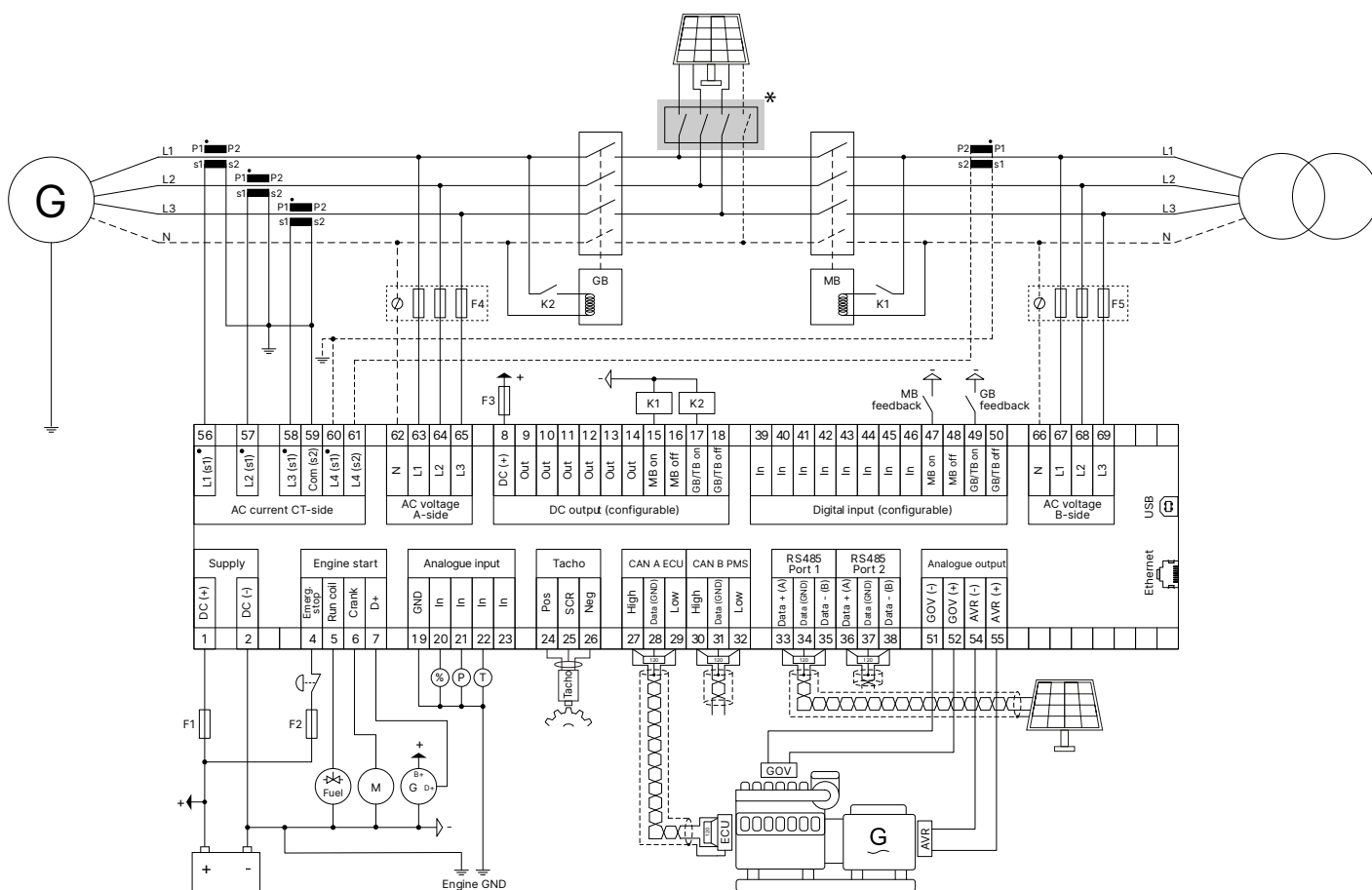
Adding PV to an application with non-synchronising gensets

You can have up to four non-synchronising generators.

By switching between four sets of nominal settings in the controllers, the controller adapts the minimum genset load to match the connected generator.



Typical wiring



NOTE * Optional PV breaker.

Technical specifications

Communication

- RS-485 Port 1 and RS-485 Port 2
 - Modbus master to PV
 - Modbus master to weather station
 - Modbus RTU, PLC, SCADA, Remote monitoring
- RJ45 Ethernet
 - Modbus master to PV
 - Modbus master to weather station
 - Modbus RTU, PLC, SCADA, and so on
 - NTP time synchronisation with NTP servers
- USB service port
- CAN bus
 - Connect to Engine CAN port (CAN A)
 - Connect to DVC 550, CIO 116, CIO 208 and CIO 308 (CAN A)
 - Connect to IOM 220 and IOM 230 (CAN A)
 - Connect to AOP-2 (CAN B)

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 supply

- Nominal voltage: 12/24 V DC
- Operating range: 6.5 to 36 V DC

Inputs and outputs

- Digital common: 12/24 V DC
- 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)
- 2 x analogue inputs

Environmental specifications

Operating temperature

- -40 to +70 °C (-40 to +158 °F)

Storage temperature

- -40 to +85 °C (-40 to +185 °F)

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.

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 59
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
1 x Inverse time earth over-current	ANSI 50G
1 x Inverse time neutral over-current.....	ANSI 50N
3 x Busbar/mains over-voltage	ANSI 59P
4 x Busbar/mains under-voltage.....	ANSI 27P
3 x Busbar/mains over-frequency.....	ANSI 81O
3 x Busbar/mains under-frequency	ANSI 81U
1 x Low auxiliary supply	ANSI 27DC
1 x High auxiliary supply	ANSI 59DC
1 x Breaker open failure.....	ANSI 52BF
1 x Breaker close failure	ANSI 52BF
1 x Breaker position failure.....	ANSI 52BF
1 x Phase sequence error	ANSI 47
1 x Vector shift	ANSI 78
1 x ROCOF	ANSI 81R
1 x Positive sequence (mains) voltage low	ANSI 27
2 x Directional over-current.....	ANSI 67
1 x Negative sequence voltage high.....	ANSI 47
1 x Negative sequence current high	ANSI 46I2
1 x Zero sequence voltage high	ANSI 59U0
1 x Zero sequence current high.....	ANSI 510
1 x Power-dependent reactive power.....	ANSI 40
1 x IEC/IEEE inverse time over-current	ANSI 51
1 x Emergency stop	
1 x Close before excitation failure	
1 x De-load error	
1 x Hz/V failure	
1 x Not in Auto	
1 x Generator external trip	
1 x Mains breaker external trip	
1 x Synchronisation failure alarms	
2 x Under-voltage and reactive power	

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

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