Product sheet

AGC 150 Hybrid

About AGC 150 Hybrid

AGC 150 Hybrid 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).

Free utility software
Simple configuration with free utility software.

Solar features

Full inverter compliance
AGC 150 Hybrid 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.

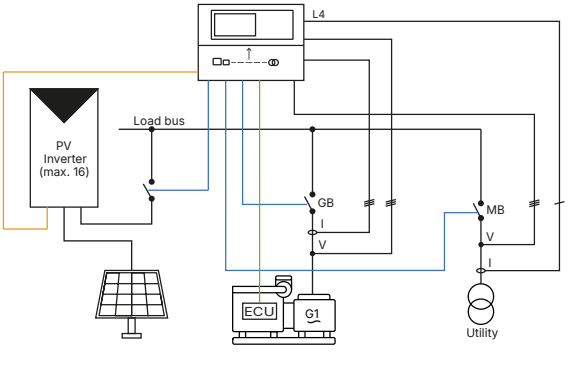
Automatic asset start/stop
Set threshold set points for PV production and mains import/export.

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. AGC 150 supports a large and growing number of specific engine protocols. For full details see iE 150 AGC 150 Engine communication.

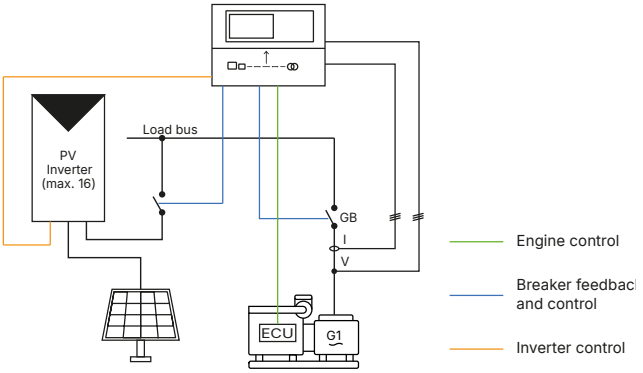
Greenfield applications



Hybrid application with a genset, PV and mains

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

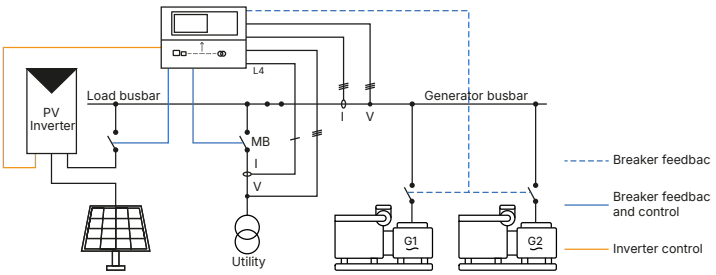
For the genset regulation, you can use the controller analogue outputs. Alternatively, regulate the governor and AVR using the ECU.



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.

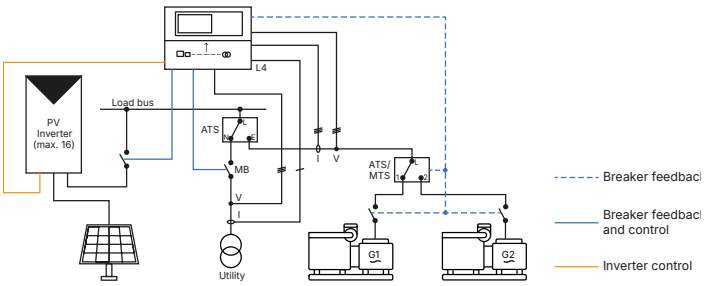
Brownfield applications



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.

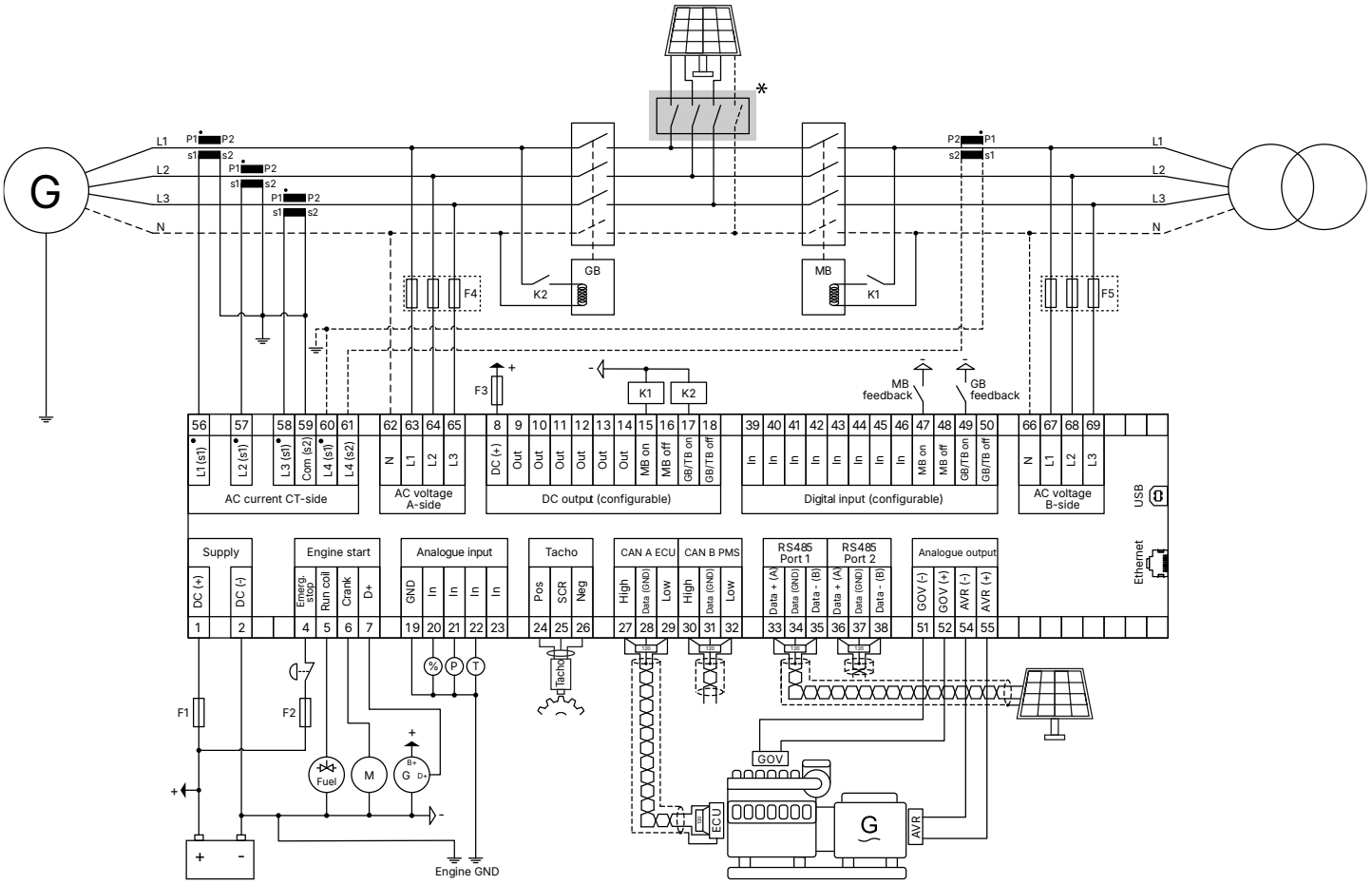


Adding PV to an application with a non-synchronising gensets

You can have up to four non-sync generators.

By switching between four sets of nominal settings in the AGC 150s, the controller can adapt the minimum genset load to match the connected generator.

Typical wiring for Hybrid controller



*Optional PV breaker

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 (Insight)
- 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
- 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)

Approvals

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

See www.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 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)

Protections

2 x Reverse power ..... ANSI 32R
2 x Fast over-current..... ANSI 50/50TD
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 27
3 x Over-frequency..... ANSI 81O
3 x Under-frequency..... ANSI 81U
1 x Unbalanced voltage..... ANSI 47
1 x Unbalanced current..... ANSI 46
1 x Reactive power import..... ANSI 40U
1 x Reactive power export..... ANSI 40O
5 x Overload..... ANSI 32
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 59
4 x Busbar/mains under-voltage..... ANSI 27
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 27D
2 x Directional over-current..... ANSI 67
1 x Negative sequence voltage high..... ANSI 47
1 x Negative sequence current high..... ANSI $46I_2$
1 x Zero sequence voltage high..... ANSI $59U_0$
1 x Zero sequence current high..... ANSI 51_0
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 failure
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

For more information:
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