Digital Voltage Controller DVC 550

DEIF Improve Tomorrow

General description

The DVC 550 is a digital automatic voltage regulator, which monitors and regulates the alternator output with rated field current up to 7 A and voltage supply up to 277 V AC.

It is designed for alternators with SHUNT, AREP (auxiliary winding) or PMG (permanent magnet) excitation types.

The DVC adjusts the excitation current in the exciter field according to the desired alternator output.

The DVC 550 includes several protections and functions to keep the alternator running in full safe operation.

The utility software, *DEIF EasyReg Advanced*, provides a visual interface to configure values and parameters. The intuitive interface makes it fast and easy to monitor and troubleshoot.

EasyReg can also be configured directly with the USB port without external power supply.

Main features

- Unique CANbus integration between DVC 550 and AGC-4/AGC 150 genset controllers
- Start management capability with start on threshold, soft start and close before excitation (run up sync)
- Intelligent drying and ventilation mode for generators
- Short circuit limitation
- Loss of voltage sensing detection
- Over/ under excitation limitation
- Optimize genset performance and size using engine help functions
  - load acceptance module (LAM) assists generator during heavy loads
  - negative forcing to avoid voltage peak during load sheeding
  - U/f ramp
  - Soft voltage recovery
  - stator current limitation
- Settings from an AGC genset controller shared with the DVC 550 via CANbus
- Grid code compliant VDE410 and VDE4105

Benefits with AGC-4/AGC 150

Easy installation with CAN bus

A dedicated J1939 CAN bus connection provides efficient and exclusive communication between the DVC and the controller. This makes it possible to, for example, quickly and easily swap between nominal voltage or frequency settings for a generator.

Avoid genset over-sizing

Use magnetisation boosting or inductive motor starting to limit the stator current during start-up. This reduces the need to start multiple gensets when connecting a heavy load, and reduces genset over-sizing requirements to a minimum.

Protect the genset from humidity

Drying: Condensation on the windings can be removed using the genset drying mode. During drying mode heat generated from a controlled short circuit is used to evaporate condensation on the windings. The genset cannot be connected to the busbar until it is safe to do so.

Ventilation: Use the genset ventilation mode to prevent condensation forming on the windings by removing built-up humid air using the alternator fan. Power generation is postponed until the humidity levels are safe.
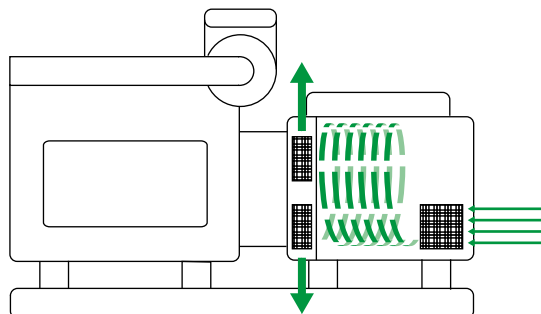
Fast backup for critical power applications

Use run-up synchronisation to start multiple gensets at the same time while the gensets are connected to the busbar.

Gridcode compliance

The DVC 550 fast reaction speed complies with European gridcodes. By combining the fast reaction speed with the AGC controller, it is easy to comply with advanced gridcodes, such as VDE 4105 and VDE 4110.

DEIF EasyReg Advanced

EasyReg utility software

*DEIF EasyReg Advanced* is the utility software for the DVC 550.

With Easyreg you can configure parameter settings, access log information, trending data, monitor inputs and outputs and measurements, work offline with your data, and much more.

Easy step-by-step configuration

When creating a new configuration, you start by typing in your generator data.

Then you select the next pages in the drop-down menu and type in the relevant data.

Fill in your data page by page, step-by-step.
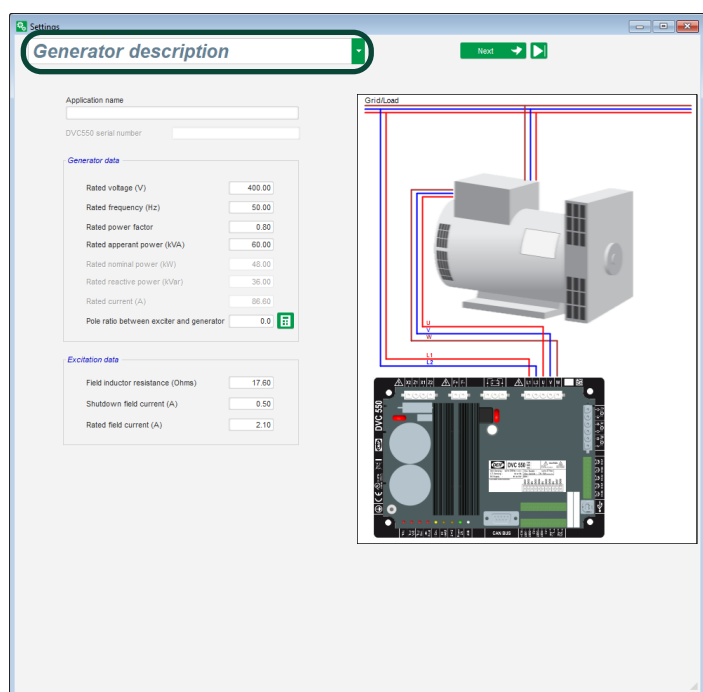
Dynamic wiring diagram

Wiring for the measurement inputs (alternator voltage and current) is easy to configure.

The dynamic diagram is automatically updated when the settings are changed, which gives a great overview of the wiring configuration.

DEIF EasyReg Advanced
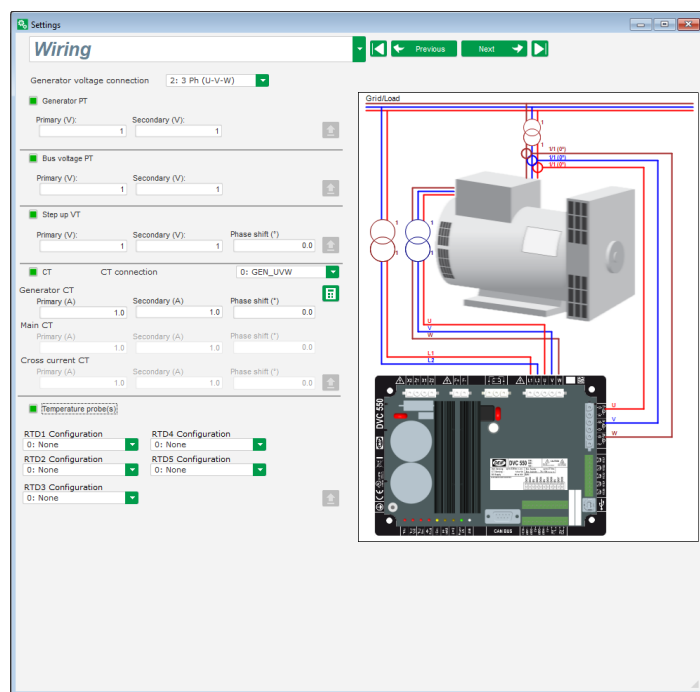
Monitoring

The monitoring window is used to configure the parameter display.

The window is fully configurable and the various objects can be added, moved, scaled, modified and/or deleted.

Example:

1. Select the monitor window
2. Fresnel diagram
3. Capability curve
4. Temperatures
5. Monitor panel
6. Gauge (analogue or digital)
7. Curve
8. AVR status
9. Synchronizer
10. Inputs and outputs
11. Display (analogue or digital)
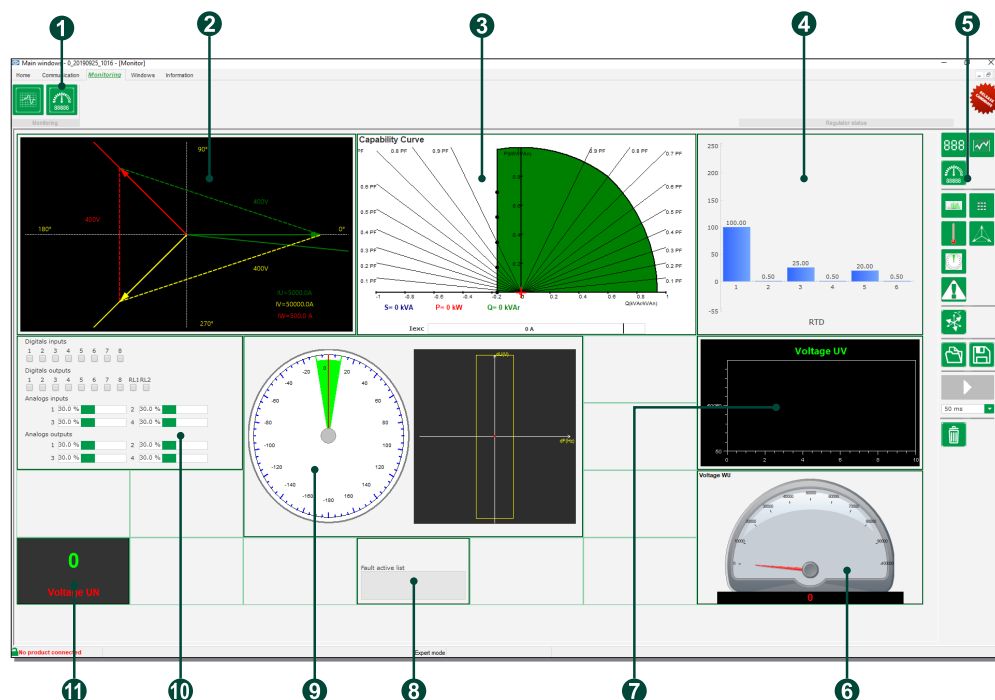
Trending

The oscilloscope window is used for trending data for up to 8 parameters at a time.

Data trending is very fast (less than 100 ms).

Use the oscilloscope panel (5) to customise the window with parameters, scaling, line colour and thickness, and more.

Record data to a file for later offline study.

Example:

1. Select the oscilloscope window
2. Frequency voltage curve
3. Voltage setpoint curve
4. Voltage curve
5. Oscilloscope panel
6. Apparent power KVA curve
7. Field current curve
8. Signatures

DVC 550
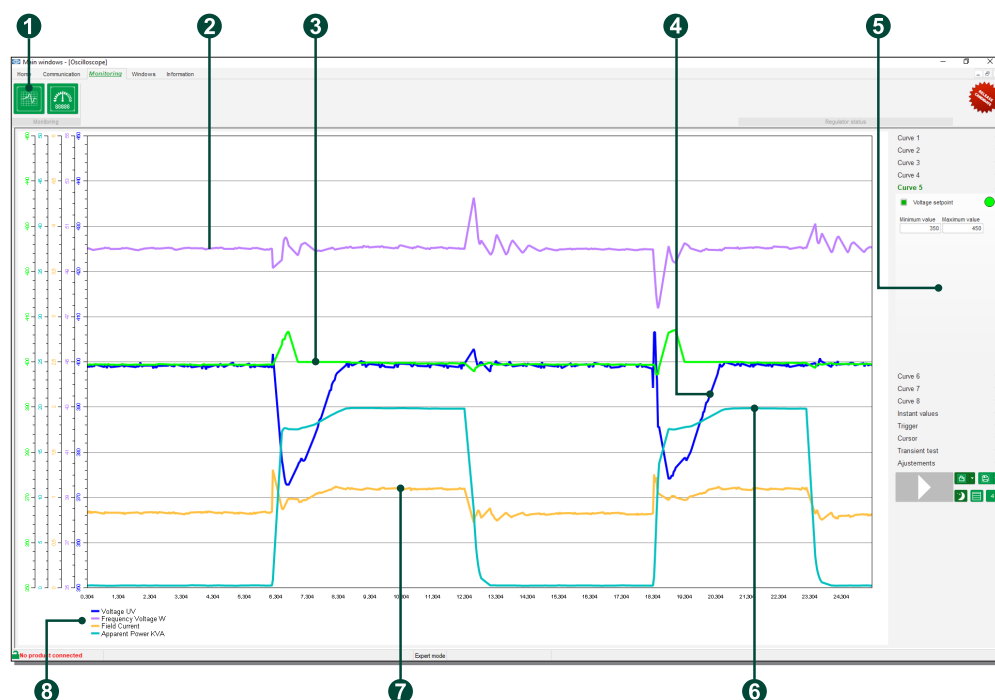
Technical specifications

Electrical specifications

- AC supply input: PMG, AREP, SHUNT (50 - 277 V AC)
- Excitation:
  - Rated field current (cont.): 7 A at 70 °C / 8 A at 55 °C
  - Field forcing current (10 s max): 15 A at 70 °C
- Voltage input impedance
  - Alternator: Phase/ground: 1.885 MΩ
    Phase/phase: 682.8 kΩ
  - Mains: Phase/ground: 3.96 MΩ
    Phase/phase: 2.64 MΩ

Protections

- Under-voltage.. ANSI 27
- Open diode and short-circuit failures
- Over-voltage... ANSI 59
- Under- frequency.. ANSI 81L
- Over-frequency... ANSI 81H
- Active reverse power.. ANSI 32P
- Reactive reverse power... ANSI 32Q
- Synchro check... ANSI 25
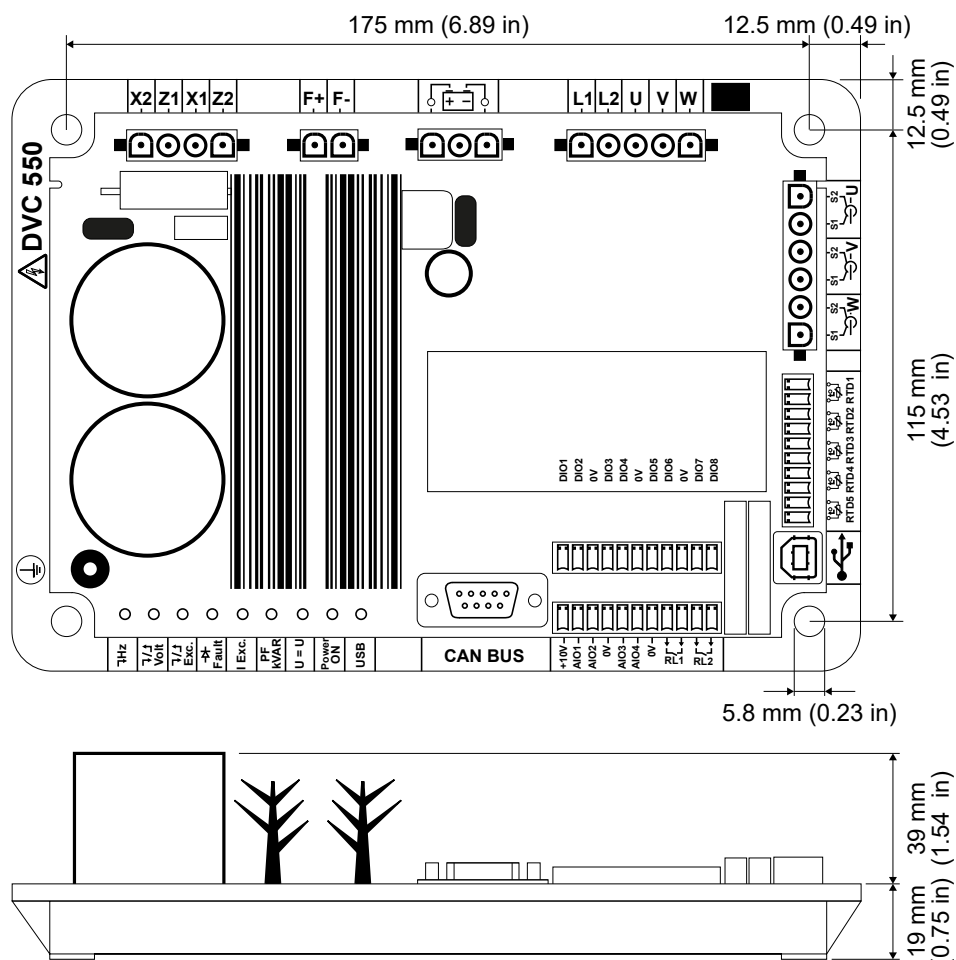
Inputs/Outputs

- Digital inputs and outputs: 8
- Analogue inputs and outputs: 4
- Relay outputs: 2
- Temperature sensors: 5

Measuring

- Generator voltage range: 0 to 530 V AC
- Grid voltage measurement: 0 to 530 V AC
- Generator current measurement: 1 or 5 A

Dimensions

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