DVC 350

Digital Voltage Controller

Data sheet

4921240615-F

Improve Tomorrow



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1. Product description

1.1 Application

The DVC 350 is a digital voltage regulator used to control the alternator from the field current or the output voltage regulation loops. It is designed for alternators with SHUNT, AREP (auxiliary winding) or PMG (permanent magnet) excitation types. The DVC 350 adjusts the excitation current in the exciter field according to the desired alternator output.

The DVC 350 includes several protections and functions to keep the alternator running in full safe operation.

There are two configurable regulation modes:

1. Voltage: Adjust the voltage set point (the default setting).
2. Field current (manual mode): Allows direct control of the field current value.

Regulation features:

- Reactive droop compensation
- Line droop compensation
- Soft start function
- Load acceptance module (LAM)
- Soft voltage recovery
- Start on threshold

The utility software, DEIF EasyReg Advanced, provides a visual interface to configure values and parameters through the USB port.

Integration with DEIF controllers

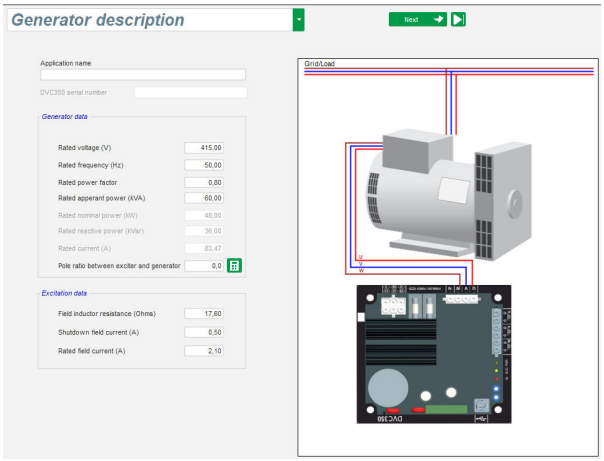
You can use the DVC 350 with an AGC 150 controller or an iE 250 controller to do digital voltage regulation. These controllers can control digital voltage regulation and receive fault information directly with the CAN bus communication in a similar way to an Engine Control Unit (ECU).

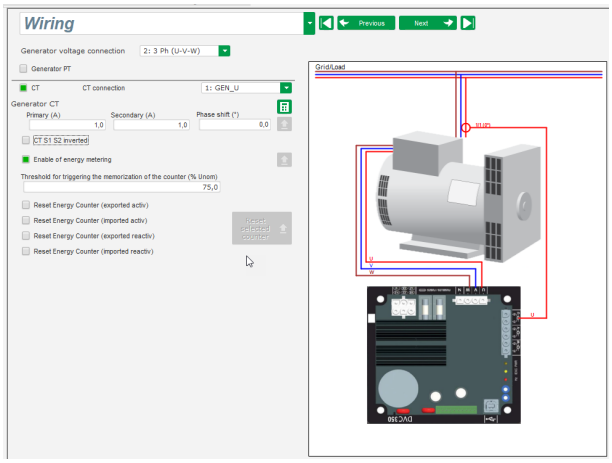
1.2 Operation range

The DVC 350 can operate on a wide range of existing alternators from the market. The excitation current can be 5 A, and the maximum power supply 300 V AC from the auxiliary winding, from PMG or from shunt.

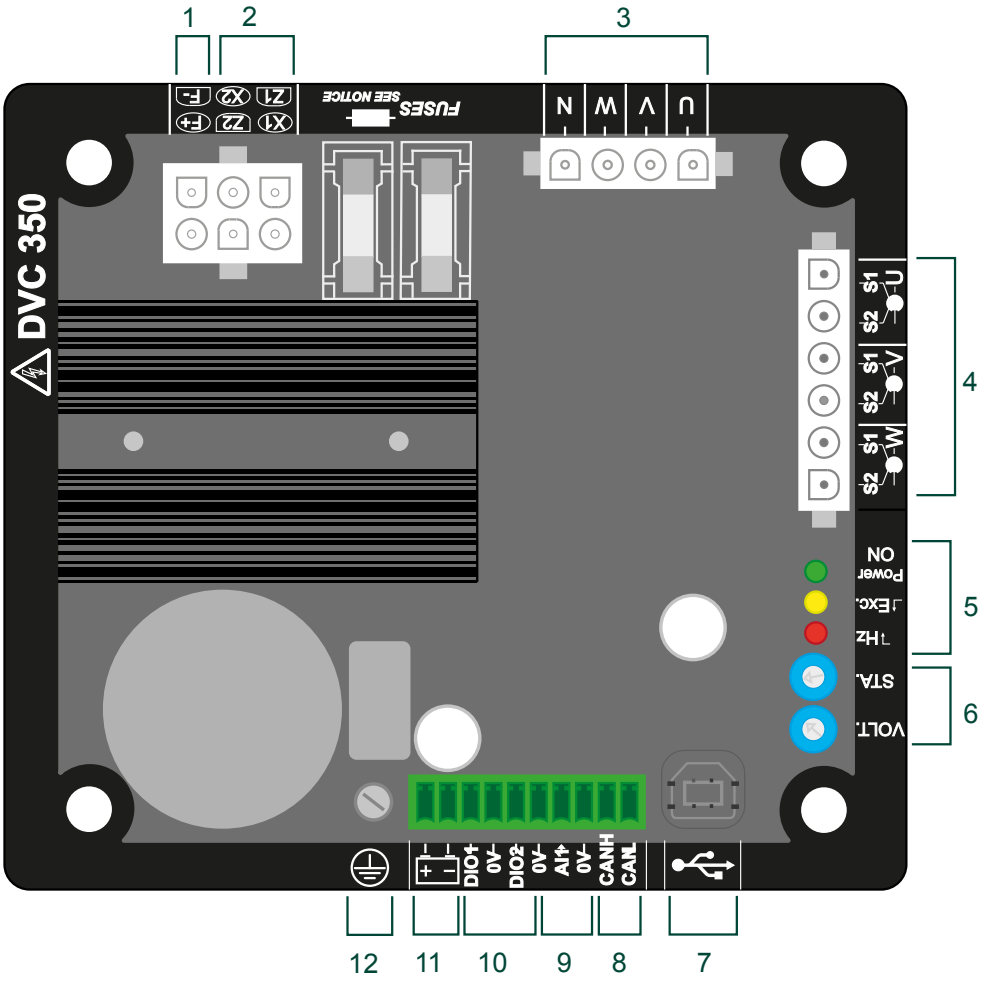
1.3 Setup and configuration

Setup is easily done via the PC utility software, DEIF EasyReg Advanced. The utility software offers additional features such as monitoring during commissioning, and saving and downloading of settings.





1.4 Terminal description



1. Excitation:
   - **F-**
   - **F+**
2. Power supply:
   - **AREP:**X1, X2, Z1, Z2
   - **PMG:**X1, X2, Z2
   - **SHUNT:**X1, X2
3. Alternator voltage sensing
4. Alternator current measurements (parallel operation CT)
5. LED indication
6. Potentiometers:
   - **STA.:**PID global gain or reactive droop compensation
   - **VOLT.:**Voltage
7. USB port
8. CAN port
9. Analogue input
10. 2 digital inputs or outputs
11. DC auxiliary supply
12. Ground

The DVC 350 does not have black start functionality, therefore DC auxiliary power supply is mandatory.

1.5 Software and hardware versions

The information in this document corresponds to the following software and hardware versions.

Item	Notes	Version
DVC 350		Hardware: 1 Firmware: 1.00
DEIF EasyReg Advanced	Utility software	1.2.5.0
AGC 150	Supported product	1.17
iE 150	Supported product	1.30.x or later

1.6 Hardware variants

Type	Variant	Description	Item no.
DVC 350	01	Digital Voltage Controller, DVC 350 5 A, 277 V	2913940140-01

2. Technical specifications

2.1 Electrical specifications

Electrical specifications	Notes
AC power supply	4 terminals for PMG, AREP, SHUNT Range: 50 to 277 V AC Consumption: < 3000 VA
Excitation	Rated field current: 0 to 5 A Field forcing current (10 s max): 10 A Recommended field resistance: > 4 Ω
Auxiliary DC power supply	Nominal voltage: 12 V DC or 24 V DC Operating range: 8 - 35 V DC Consumption: < 500 mA
Frequency range	10 to 100 Hz
Alternator voltage sensing	3 phases with neutral or 2 phases Three-phase range: 0 to 530 V AC Consumption: < 2 VA
AC voltage regulation accuracy	±0.25 %, average of three phases, harmonic distortion <5 %
AC voltage adjustment range	0 to 150 % of the rated voltage
Quadrature droop adjustment range	-20 to 20 %
Stator current measurement with CT	3 phase Range: 0 to 5 A Consumption: < 2 VA
Generator current measurement	1 or 3 phase Secondary range: 1 or 5 A Consumption: < 2 VA
Protection functions	Over-voltage (ANSI 59) Under-voltage (ANSI 27) Over-frequency (ANSI 81H) Under-frequency (ANSI 81L) Over-excitation (ANSI 32FV) Under-excitation (ANSI 32RV) Voltage unbalance (ANSI 47) Open diode and diode short-circuited failures

2.2 Inputs and outputs

Specification	Notes
2 digital inputs or outputs	Max. 30 V DC Max. 60 mA
1 analogue input	4 to 20 mA 0 to 10 V ±10 V ±5 V

2.3 Communication

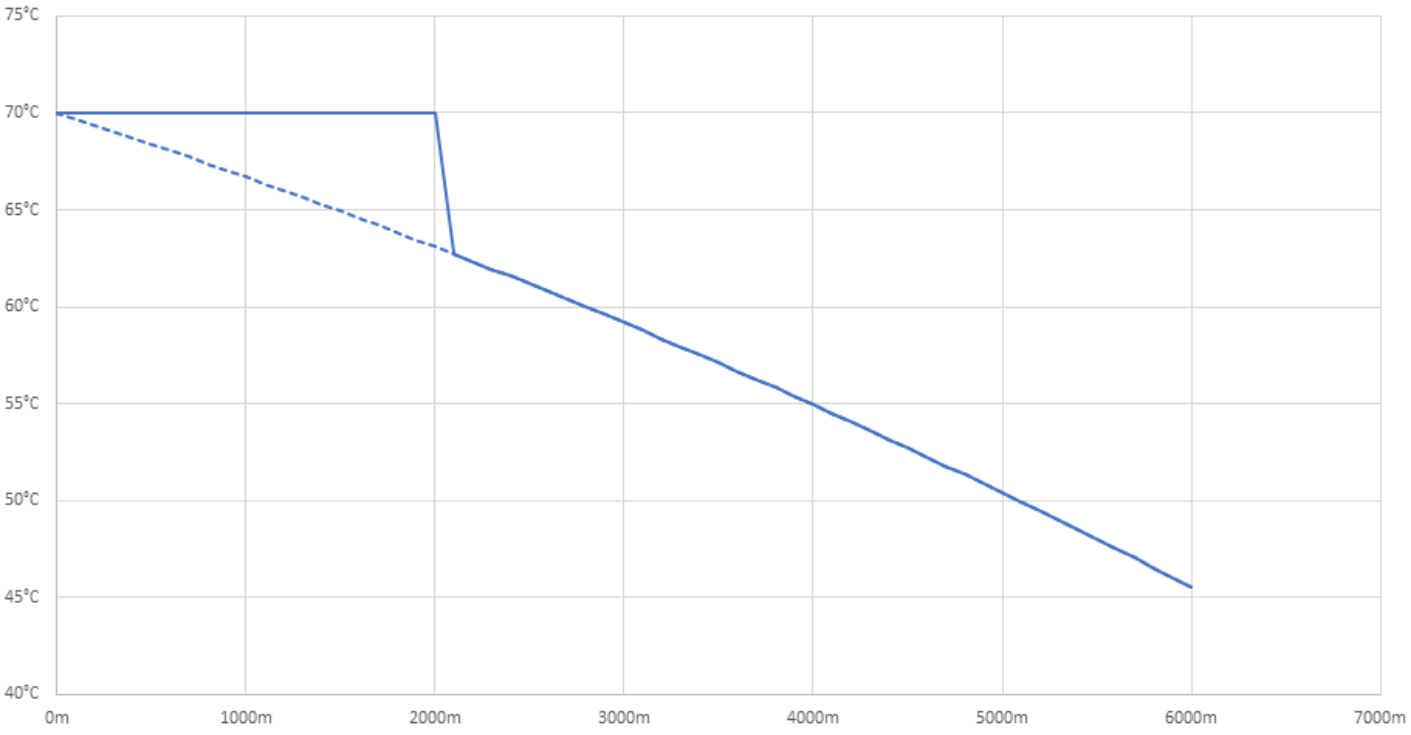
Communication	Notes
Software configuration	*DEIF EasyReg Advanced* utility software
USB port	Communication
CAN J1939	Monitoring and communication

2.4 Environmental conditions

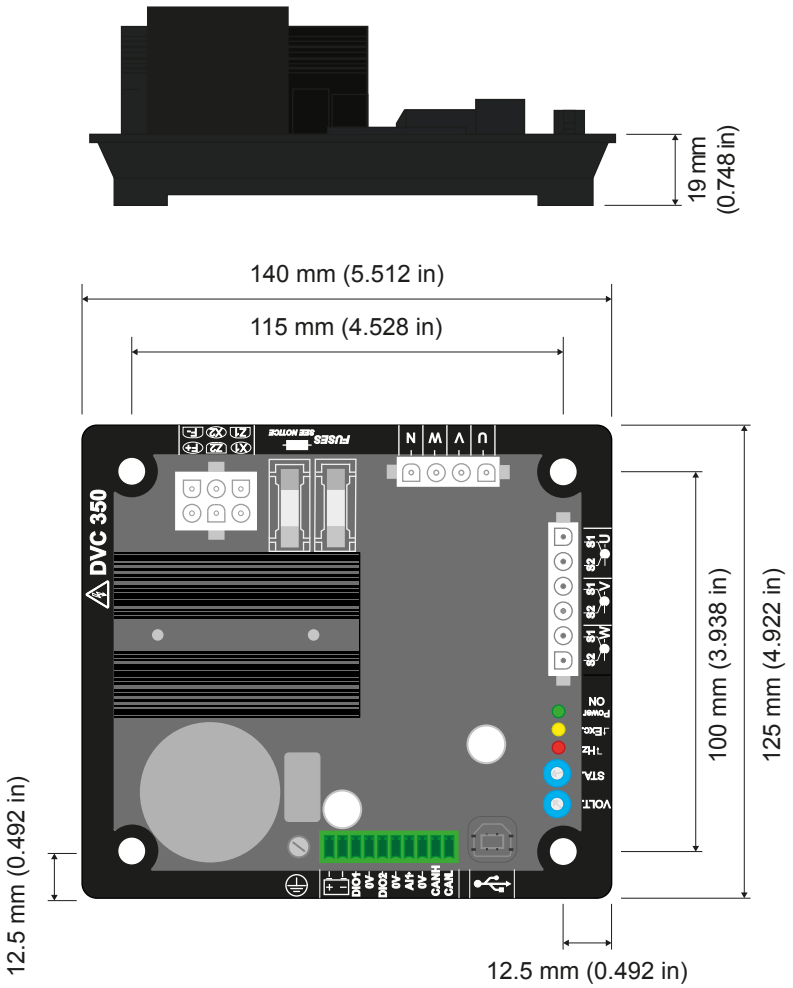
Specification	Notes
Ambient temperature	-40 °C to +70 °C
Operating and storage humidity	95 % RH, IEC 60068-2-30, test Db
Protective level	Terminals: IP 20 To IEC / EN 60529
Flammability	All plastic materials are self-extinguishing, according to UL94 (V1)
Mounting	Mounted in a cabinet or in a terminal box without excessive vibration.
Vibration	3 to 25 Hz 3.5 mm 25 to 100 Hz 4.4 g
Shock	50 g, 11 ms, half sine - I60068-2-27, test Ea Tested with three impacts in each direction in all three axes, in total 18 impacts per test.
Altitude	0 - 2000 m

Altitude and maximum operating temperature

The following graph shows the limits of the maximum operating temperature at different altitudes for the DVC.



2.5 Dimensions and weight



Dimensions and weight	Notes
Dimensions	Length: 140 mm (5.51 in) Width: 125 mm (4.92 in) Height: 52.9 mm (2.08 in)
Weight	0.45 kg (0.99 lbs)

2.6 Approvals and standards

Approvals
CE, UL

Standards	Notes
EMC	IEC 61000-6-2 IEC 61000-6-4
Humidity	IEC 60068-1 and test in accordance with IEC 60068-2-14
Dry heat	IEC 60068-2-2
Damp heat	IEC 60028-2-30
Cold	IEC 60068-2-1

3. Legal information

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