DEIF

-power in control

CE

DATA SHEET

Digital Voltage Controller, DVC 310

- Four possible regulation modes: Voltage, PF, kVA, manual
- Grid Code function
- Programmable stability settings
- Licence-free PC software

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Document no.: 4921240467A
SW version:

1. Digital Voltage Controller, DVC 310

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1.1 Product information

1.1.1 Application

The DVC 310 is a digital voltage regulator, which monitors and regulates the alternator output voltage. It is designed for alternators with SHUNT, AREP or PMG excitation. The role of the DVC is to adjust the excitation current in the exciter field according to the desired alternator output.

Although the DVC 310 is an open loop circuit, the inductor exciter field must have a negative potential in relation to the earth if the neutral of the stator winding is connected to the earth.

- There are four possible regulation modes:

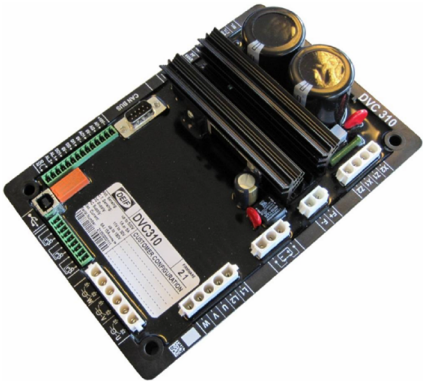
Voltage, PF, kVA, manual

- The I/Os can be configured:

2 analogue inputs
1 analogue output
2 digital inputs
3 digital outputs

- 1 dry contact

- 1 USB port



1.1.2 Operation range

Alternator types from Leroy Somer:

	➤ LSA 40	➤ 42.3	➤ 43.2	➤ 44.2	➤ 46.2	➤ 47.2	➤ 49.1	➤ 50.2	➤ 51.2	➤ 53.1	➤ 54
Shunt/AREP or PMG	√	√	√	√	√	√	√	√	√	√	√

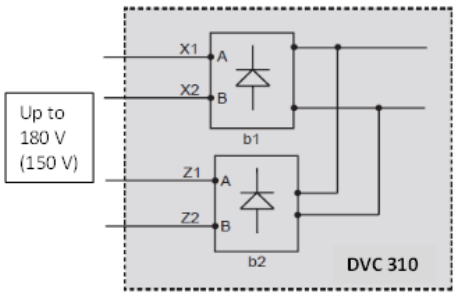
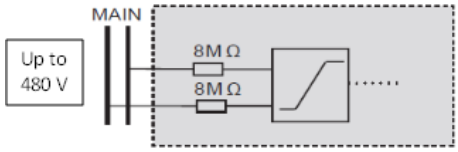
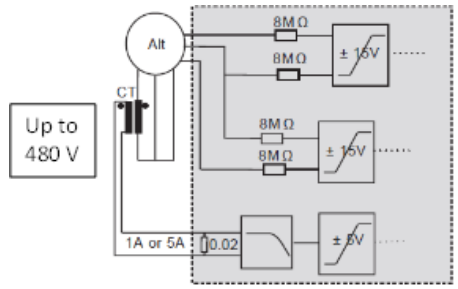
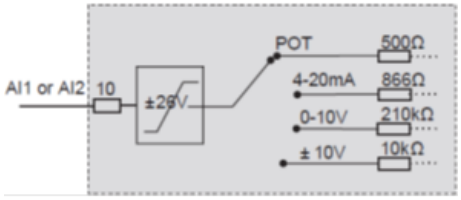
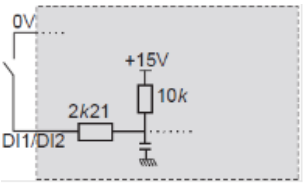
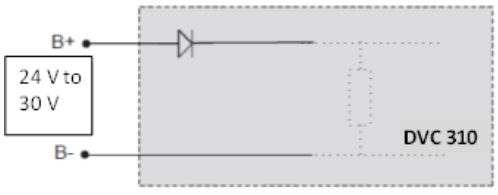
Besides this list, the DVC 310 can operate on a wide range of existing alternators from the market. The limitations are that the excitation current cannot be higher than 6 A, and the DVC 310 should be fed with an AC signal of maximum:

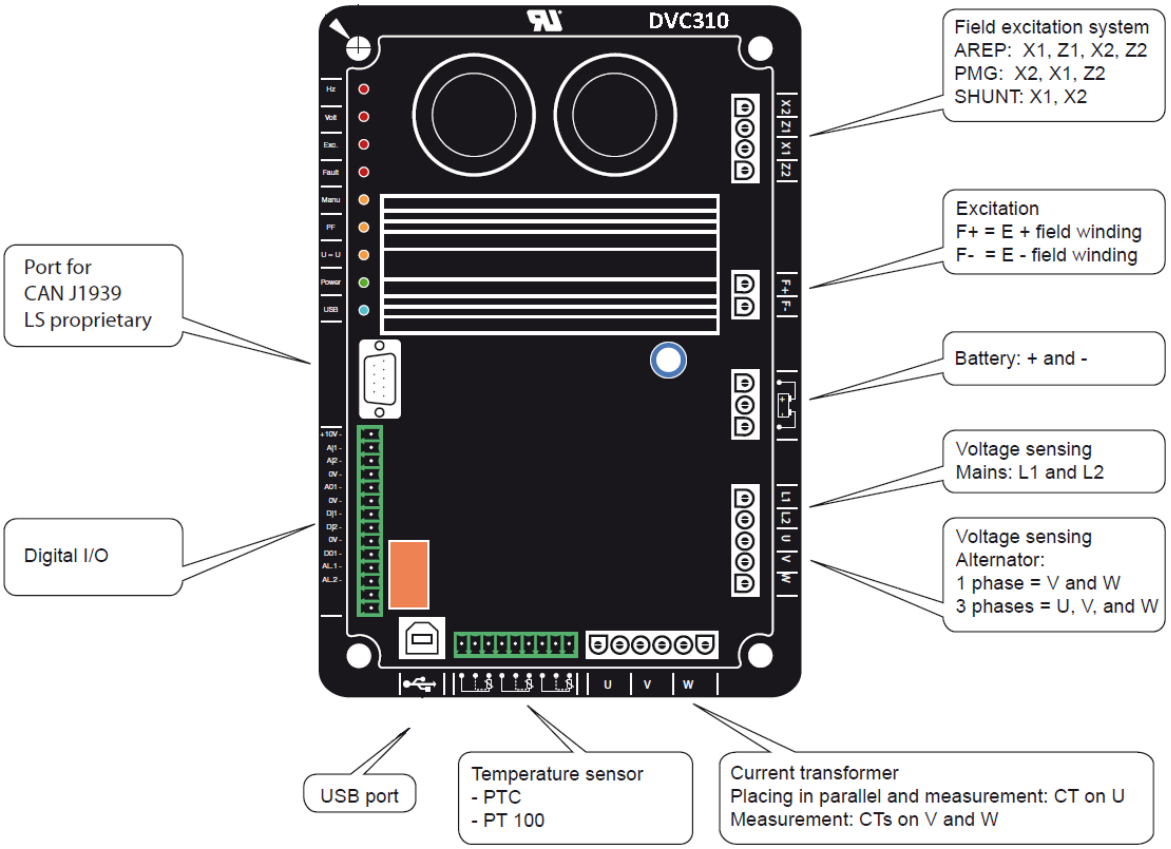
180 V_{ac} from the auxiliary winding or PMG
150 V_{ac} from shunt

1.1.3 Setup

Setup is easily done via a PC Windows®-based EasyReg software (password-protected). The PC EasyReg software offers additional features such as monitoring of all relevant information during commissioning, saving and downloading of settings.

1.1.4 Terminal description

Terminals	Signals	Scheme
X1 X2 Z1 Z2	Power supply - Auxiliary winding input - PMG input (up to 180 V_{ac} in these configurations) - Shunt input (up to 150 V_{ac})	
L1 L2	Mains voltage measurement	
U V W	Alternator voltage measurement For single-phase: Use V and W	
IU = (s1, s2) IV = (s1, s2) IW = (s1, s2)	Alternator current measurement	
AI1 AI2	Analogue inputs: External setting	
DI1 DI2	Digital inputs: U=U and PF/kvar regulation	
B+ B-	DC power supply	


DVC310
Field excitation system
AREP: X1, Z1, X2, Z2
PMG: X2, X1, Z2
SHUNT: X1, X2
Excitation
F+ = E + field winding
F- = E - field winding
Battery: + and -
Voltage sensing
Mains: L1 and L2
Voltage sensing
Alternator:
1 phase = V and W
3 phases = U, V, and W
Port for
CAN J1939
LS proprietary
Digital I/O
USB port
Temperature sensor
- PTC
- PT 100
Current transformer
Placing in parallel and measurement: CT on U
Measurement: CTs on V and W

1.2 Technical information and disclaimer

1.2.1 Technical specifications

Aux. supply	DC 24.0 to 30.0 V, continuous power supply
Power consumption	<3 W
Protection response time	(Delay set to min.): Short circuit <400 ms Loss of voltage reference <400 ms Over-voltage <400 ms Over-excitation <400 ms High temperature <400 ms Speed drop <400 ms Diode fault <400 ms Stator current unbalance <400 ms Stator current limitation <400 ms
Accuracy on AC voltage regulation	+/-0.25 %
Accuracy class	AC voltage inputs: Class 0.5 Frequency: Class 0.2 AC current: Class 2.5 Field excitation current: Class 5 Pt100 inputs: Class 2 Analogue inputs: Class 1
Voltage input impedance	8 MΩ - max. 480 V_{ac}
Analogue input	AL1 and AL2: Max. current 60 mA Voltage: 0 to 24 V_{dc}
Relay output (DO2)	6 A, 30 V_{dc}/250 V_{ac} (on resistive load)
Service port	Standard USB-B plug (standard USB A/B cable)
CT secondary	1 A to 5 A , adjustable Current overload: 5 × In, 10 s Max. consumption: 0.3 VA/phase
Working conditions	Temperature: (-40 to +55) °C
Storage conditions	Temperature: (-55 to +85) °C
Protective level	Terminals: IP 20 To IEC/EN 60529
Material	All plastic materials are self-extinguishing, according to UL94 (V1)
CE/EMC marking	EMC/CE: To EN 61000-6-2, EN 61000-6-4 IACS UR E10 power distr. zone
Climate	95 % RH, IEC 60068-2-30, test Db
Approval	CE, UL
Vibration	3 to 25 Hz 3.5 mm 25 to 100 Hz 4.4 g

Shock	50 g, 11 ms, half sine - IEC 60068-2-27, test Ea Tested with three impacts in each direction in all three axes, in total 18 impacts per test
Safety (insulation intensity)	To EN 61010-1 Installation category (over-voltage category) III, 300 V, pollution degree 2
Altitude	2000 m
Dimensions	Overall: 115 × 175 mm

1.2.2 Disclaimer

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