TECHASA DAVR550

Digital Automatic Voltage Regulator for Synchronous Generators

Digital Automatic Voltage Regulator
User Manual

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1. Introduction

The TECHASA DAVR550 is a high-performance digital automatic voltage regulator (DAVR) designed for synchronous generators. It provides precise voltage control, real-time monitoring, and flexible configuration suitable for various industrial and power generation applications. With modern design and a robust feature set, the DAVR550 ensures stable generator operation under diverse load and environmental conditions.

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2. Key Features

- Digital display for real-time voltage, frequency, and current monitoring
- Manual and automatic voltage regulation modes
- Precision adjustment via AUTO SHIFT and SHIFT+Reverse keys
- LED indicators for generator status (Volts, Amps, Hz, etc.)
- Alarm indicators for Oil, Temp, Speed, and general Faults
- Remote control and monitoring capability
- TCP/IP and CAN Bus communication support
- START, STOP/RESET control buttons on the front panel

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3. Front Panel Overview

Display & Indicators:

- Digital 7-segment display for parameter monitoring
- Status LEDs:
    - VOLTS, AMPS, Hz, KW, KVAR
    - Vf (field voltage), If (field current)
    - NET, REMOTE, ALARM, SPEED, OIL, TEMP, PROGRAM

Control Buttons:

- **AUTO SHIFT**: Increase precision or cycle through control options
- **SHIFT + Reverse**: Decrease precision or reverse values
- **PROGRAM**: Enter configuration mode
- **ESC / JOG**: Exit menu or jog through values
- **ENTER**: Confirm selection
- **START / STOP RESET**: Generator operation control

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4. Electrical Specifications (Typical Values)

- Input Sensing Voltage: 170 – 520 VAC
- Output Voltage Range: 0 – 100 VDC
- Frequency Range: 45 – 70 Hz
- Power Supply: 220V AC ±10%
- Operating Temperature: -20°C to +70°C
- Voltage Regulation Accuracy: ±0.5%
- Communication: TCP/IP and CAN Bus

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5. Installation & Wiring

Mounting:

- Panel-mount type
- Use 4 screws at corner holes for secure installation

Wiring (Basic Guidelines):

- Connect generator voltage sensing lines to voltage input terminals
- Output terminals to excitation system
- Alarm and remote signals to corresponding input terminals
- Communication lines to TCP/IP or CAN Bus ports (if used)

Note: Refer to official wiring diagram (page 8) once available.

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6. Operation Modes

- **AUTO**: Regulator automatically adjusts output voltage to maintain generator voltage
- **MANUAL**: Operator can manually increase or decrease output voltage

- **Precision Adjustment**: Use AUTO SHIFT and SHIFT+Reverse to select fine control levels (e.g., 0.001, 0.01, 0.1)

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7. LED Status Indicators

- **NET**: Grid voltage present
- **REMOTE**: Remote command active
- **ALARM**: System fault or warning condition
- **OIL / TEMP / SPEED**: External input fault conditions

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8. Programming Parameters

To enter programming mode:

1. Press **PROGRAM**
2. Navigate using **AUTO SHIFT** and **ESC/JOG**
3. Modify values using **SHIFT+Reverse**
4. Confirm with **ENTER**

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9. Troubleshooting

Indicator	Condition	Possible Cause	Action
ALARM	Blinking	Overvoltage / Undervoltage	Check load, wiring, or AVR
OIL	On	Oil pressure low	Inspect generator sensors
TEMP	On	High temperature	Verify cooling system

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10. Maintenance

- Inspect connections every 3 months
- Keep unit free from dust and moisture
- Ensure ventilation openings are not blocked

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11. Contact Information

1.1 Application The TECHASA DAVR 550 is a digital automatic voltage regulator, which monitors and regulates the alternator output with rated field current up to 7 A. 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 TECHASA DAVR 550 includes several protections and functions to keep the alternator running in full safe operation. There are five configurable regulation modes: 1. Voltage 2. Field current (manual mode) 3. Generator power factor 4. Generator kVAr 5. Grid power factor Regulation features: • Voltage equalisation • Droop management • Soft start • Load Acceptance Module (Ęuuǵuʟu function to assist during heavy load application events • Negative field forcing The utility software, DEIF EasyReg Advanced, provides a visual interface to configure values and parameters through the USB port. Power is supplied to the TECHASA DAVR 550 from the USB connection. The TECHASA DAVR 550 also features an event log and data logger option.

2

2. Technical specifications

2.1 Electrical specifications

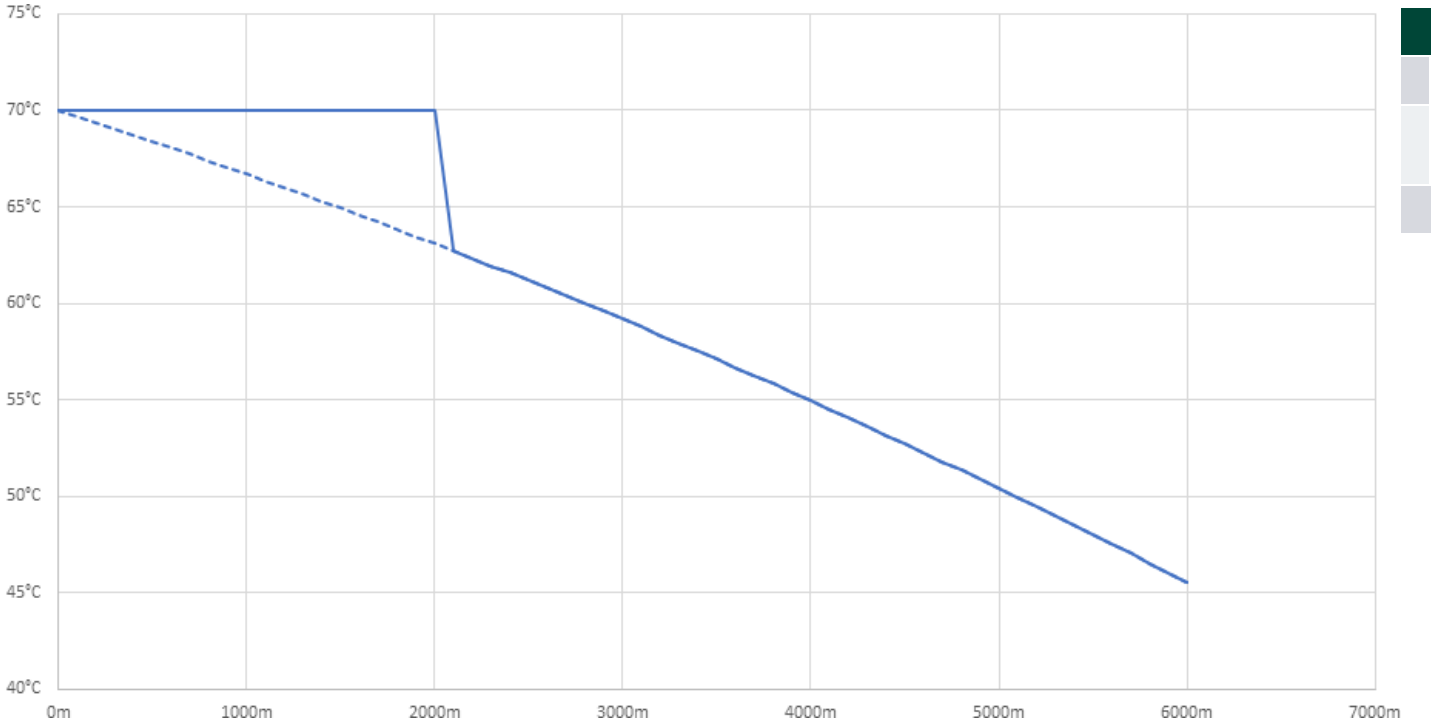
Electrical specifications	Notes
AC supply input	PMG, AREP, SHUNT Range: 50 to 277 V AC
Excitation	Rated field current (continuous): 7 A at 70 °C / 8 A at 55 °C Field forcing current (10s max): 15 A at 70 °C Recommended field resistance: > 4 Ω
Voltage input impedance	**Alternator - U V W:** • 1.885 MΩ phase/ground • 682.8 kΩ phase/phase **Mains - L1 L2:** • 3.96 MΩ phase/ground • 2.64 MΩ phase/phase
Auxiliary DC power supply	Nominal voltage: 12 V DC or 24 V DC (operating range: 8 to 35 V DC) Consumption: < 1 A
Frequency range	30 to 400 Hz
Generator voltage measurement	3-phase, 2-phase Range: 0 to 530 V AC Consumption: < 2 VA
Grid voltage measurement	2-phase Range: 0 to 530 V AC Consumption: < 2 VA

Generator current measurement	1 or 3-phase Secondary range: 1 or 5 A Consumption: < 2 VA

Specification	Notes
8 programmable digital inputs and outputs	Output specification: 150 mA - 30 VDC
4 programmable analogue inputs and outputs	4-20 mA / +10 V / 0-10V / potentiometer (1 kΩ)
2 relay outputs	125 V AC, 1 A 30 V DC, 3 A
5 temperature sensors	Type Pt100/PTC Programmable threshold Pt100 inputs: Class 2 Analogue inputs: Class 1
Protection functions	Open diode and diode short-circuited 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)
AC voltage regulation accuracy	• ±0.25 %, average of three phases, harmonic distortion <20 % • ±0.5 %, average of three phases, harmonic distortion 20 to 40 %

Altitude and maximum operating temperature

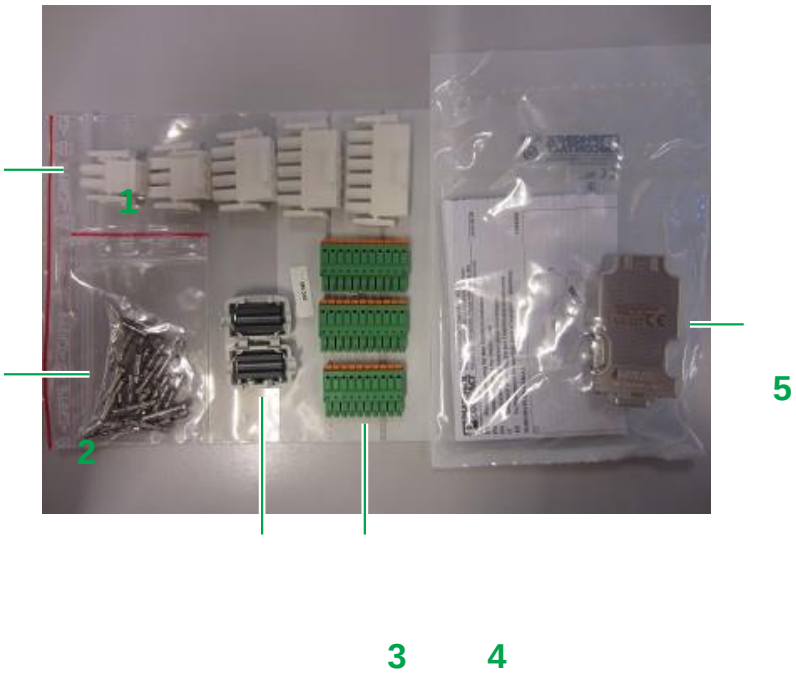
The following graph shows the limits of the maximum operating temperature at different altitudes for the DVC 550.



3. Accessories

3.1 Connector kit

Description	Order number
The kit includes: • 5 x MATE-N-LOK connectors (2-way, 3-way, 4-way, 5-way, and 6-way) • 2 x FMC mini combi connectors (11 position) • 1 x FMC mini combi connectors (10 position) • 1 x snap-on ferrite core for EMC interference • 1 x D-SUB (9-pin) connector • 25 x AWG connector pins	2913940150.05



1. MATE-N-LOK connectors
2. AWG connector pins
3. Snap-on ferrite core
4. FMC mini combi connectors
5. D-SUB (9 pin) connector

NOTE A connector kit is included when you buy the DVC 550.

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This manual is subject to updates. Visit our website for the latest documentation.