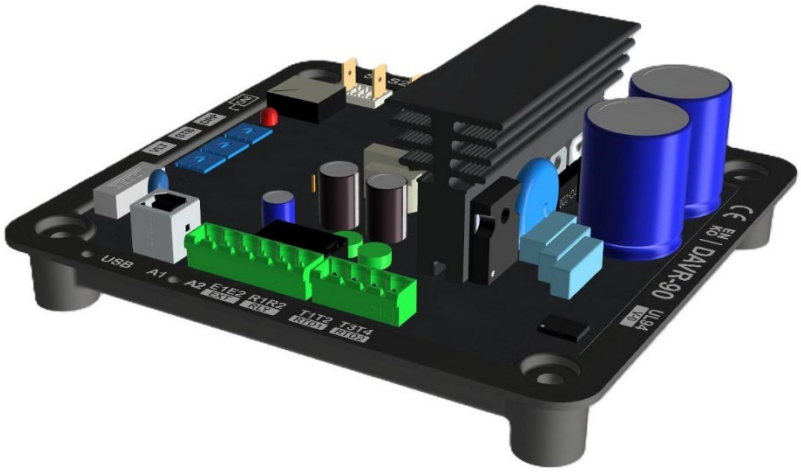
Digital Voltage Regulators



DAVR-90

Digital Voltage Regulators for Synchronous Alternators

Product Description:

DAVR-90 is a “microcontroller based, state-of-the-art design, specifically engineered for high-performance demanding applications for large capacity generator systems. This AVR is designed with complex applications in mind and gives extensive freedom to the OEM to fulfil customer requirements by configuring the AVR parameters, using PC Tools SW package.

The design is based on high-frequency PWM technique for driving the EXCITOR winding of the alternator and provides precise voltage regulation and dynamic performance, under all types of load conditions. All operation parameters are programmable, using PC Tools SW package.

DAVR-90 can deliver continuous 5.0Adc Excitation power into the FIELD winding of the alternator and for limited duration, it can handle up to 10.0Adc to help smooth operation during Block-Load conditions. The drive stage design is based on IGBT technology and Excitation power is precisely controlled during dynamic load changes. PID parameters can be set to get optimum performance with all types of alternator frames.

DAVR-90 has 3-phase voltage sense input and high-harmonic TRUE RMS measurement is standard in all versions. Also, power to AVR can be connected as SHUNT, AUXILIARY, or 3-phase PMG sources, depending on the type of application.

DAVR-90 is designed with integrated **“Block Load Module**” (BLM®) function, which monitors the behaviour of the generator by making fast FFT waveform analyses and relaxes the burden on the engine so that; engine capacity can be down-sized compared to competition on the market. This brings a big advantage when the generator is manufactured according to ISO8528 standard.

Alternator phase current is measured at high-resolution for “DROOP” compensation or LINE compensation with excellent performance. Generators running in parallel can be fine-tuned with on-board trimmer pot. Also, VOLTS and STAB values can be set with the on-board trimmers.

Alarm events can be linked to any limit of the AVR parameters, using PC Tools SW package. On-board integrated ALARM relay has SPST N/C contact, which can be controlled to trigger specific protection sequences directly from the AVR unit.

DAVR-90 has two built-in RTD temperature sensor inputs, which can be used to monitor critical temperatures on the generator during operation. This feature can also be linked directly to the ALARM relay so that, if there are any excess temperature conditions, automatic load shedding sequences can be initiated via this function. This is a very useful feature, if the generator is operating under very harsh conditions.

AUX inputs on the AVR unit can be used to control the AVR voltage via external intelligent control devices and set the voltage using EXT trimming potentiometers. Both inputs can be configured via PC Tools SW package. On-board USB port is galvanically isolated so that it can be used for parameter configuration as well as monitoring.

MAIN FEATURES:

- Microprocessor based design for high-performance,
- Continuous Excitation drive capability, in excess of 5Adc, 140% overload capacity for 120 sec., 200% for 10 seconds,
- Integrated BLM® function control to improve BLOCK-LOAD handling capability of the generator,
- 3-Phase TRUE RMS sense voltage measurement for precise voltage regulation in high-harmonic distorted load conditions,
- SHUNT and AUX and PMG connection modes for power input to AVR,
- AUXILIARY analogue inputs for external control of AVR functions,
- 2xPt100 temperature sensing input for alternator winding safety.
- Excellent stability control through digital signal processing,
- “LINE” compensation or “DROOP” compensation by parameter configuration setting,
- ALARM relay output for external safety sequence control of the generator,
- Galvanically isolated USB communication port for AVR parameter configuration and operation monitoring,
- Secure fast-on terminals for power connections,
- Encapsulated construction for extreme environmental operating conditions,
- Construction is resistant to high vibration mounting,
- CE compliant for EMC emissions,
- UL compliant safety standards,

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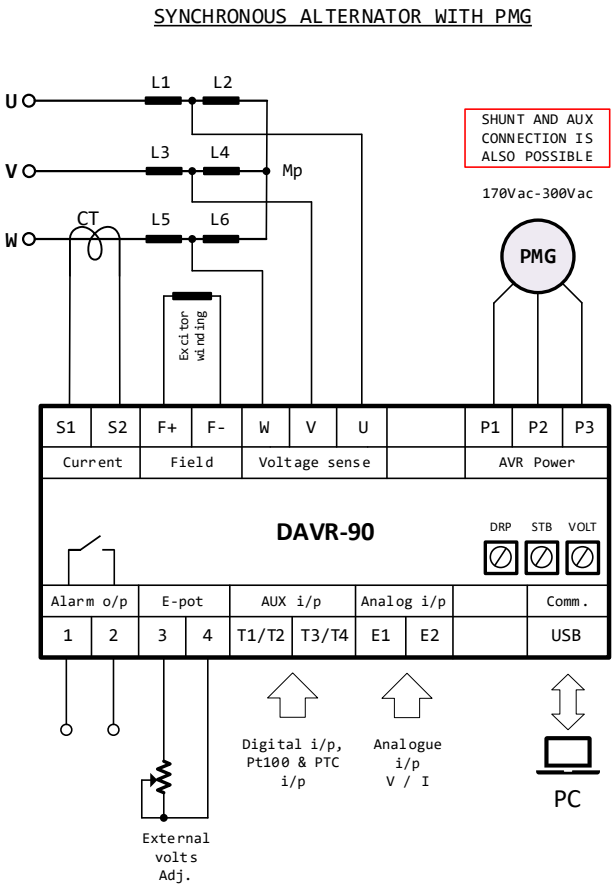
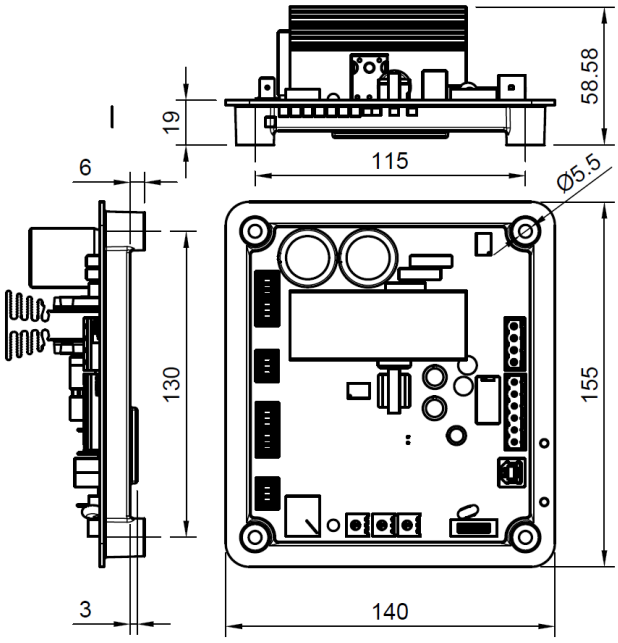
Technical Specifications:

Technical Specifications	Value	Description
Sensing voltage range:	100Vac to 480Vac	3-phase, 2-phase or single-phase sense input connection
Power connection to AVR:	Shunt / Auxiliary/3-phase PMG	300Vac maximum limit
Voltage regulation:	<0.25%	No-load to full load, PF>0.8 and ΔT<40°C
Voltage sensing type:	TRUE RMS calculation, capable of operation with high harmonic loads, 3-phase sensing	
Operating frequency:	45Hz to 70Hz	
Operating temperature range:	-35°C to +60°C	30%RH to 95%RH non-condensing
Voltage adjustment:	On-board trimmer	±20% of selected voltage range
	External pot trimming	±10% of set voltage value
	AUX input signal	±15% of set voltage value
Current sensing:	X/5 Class-1 CT (on-board)	Single-phase sensing, fitted on alternator phase-V
CT burden:	1VA (3VA maximum)	
Current sensing compensation:	DROOP compensation	Reactive load compensation
	LINE compensation	Load dependent line DROP compensation
	Motor Start Current	Monitoring and control of motor inrush current
Excitation current:	5.0Adc continuous	Rated for maximum operating temperature range
	7.0Adc 120 seconds	
	10.0Adc for 10 seconds	
FIELD impedance range:	5Ω to 50Ω	15Ω nominal winding impedance
AUX. signal input:	Analogue voltage input, External pot input	
	Temperature input for Pt100 type sensor (RTD)	
BLM® function:	BLOCK-LOAD acceptance limit setting with integrated comprehensive algorithm,	
Protection functions:	UFRO	Under Frequency Roll off protection
	LOS	Loss of sensing voltage protection
	OEX	Over Excitation protection
ALARM Output:	2.0Aac SPST N/C contact	Configurable via PC Tools SW package
Communication Port:	USB COMM port (isolated)	For AVR parameter configuration and continuous monitoring
EMC Compliance:	EN61000-6-2/4 EN6068-1-2-14-30 UL94 V2 flammability safety compliance	
Enclosure protection class:	Electronic components protected with PU encapsulation	
Overall dimensions:	140x155x59 mm	
Weight:	310gr	

Connection Diagram:



Mechanical Dimensions:



UL94 V-2

Compliance:

DAVR-90 is tested and compliant to CE regulations for emitted and conducted RFI interference, according to EN61000-6-4. Immunity is tested against EN61000-6-2. Vibration: EN60068-6-2 Dielectric strength: IEC255, Flammability: UL94, Safety: UL508