

DAVR-40

Digital Voltage Regulators for Synchronous Alternators

Product Description:

DAVR-40 is a “microcontroller integrated voltage regulator unit”, designed for high performance, with generators operating into dynamically complex loads. This AVR model offers high-performance operation with relatively low cost, by utilising an SCR controlled power stage for excitation of the alternator. It can deliver continuous 5.0A_{dc} excitation power into the FIELD winding and can handle 130% overload for a minimum duration of 120 seconds.

DAVR-40 is digitally synthesised so that; sense voltage is measured with high sampling rates, which enables stable voltage regulation even with very high harmonic distorted loads. This is particularly critical with inverter type switching loads.

Power input to AVR can be connected in SHUNT mode or with AUXILIARY winding of the alternator with over 1.5KVA input power rating.

DAVR-40 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 designed according to ISO8528 standard.

“Reactive Load Sharing” is also an integrated feature and has 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. All other functions can be trimmed according to customer’s specific requirements by using the on-board USB port with free supplied PC Tools SW package.

Alarm conditions 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-40 has also a built-in RTD temperature sensor input, which can be used to monitor critical temperatures on the alternator unit 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.

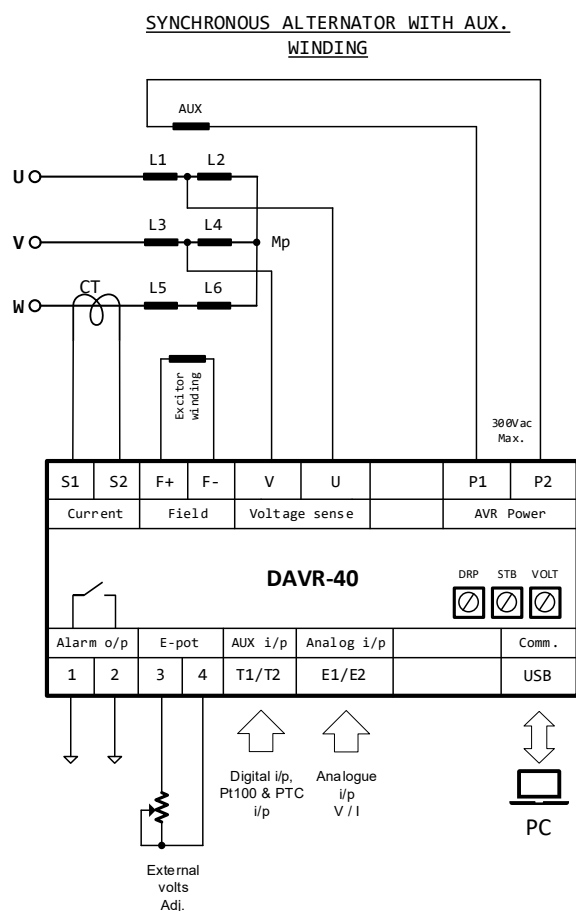
AUX inputs on the AVR unit can be used to control the AVR voltage via external intelligent control devices and set the voltage using EXT trimming potentiometers. Both inputs can be configured via PC Tools SW package.

MAIN FEATURES:

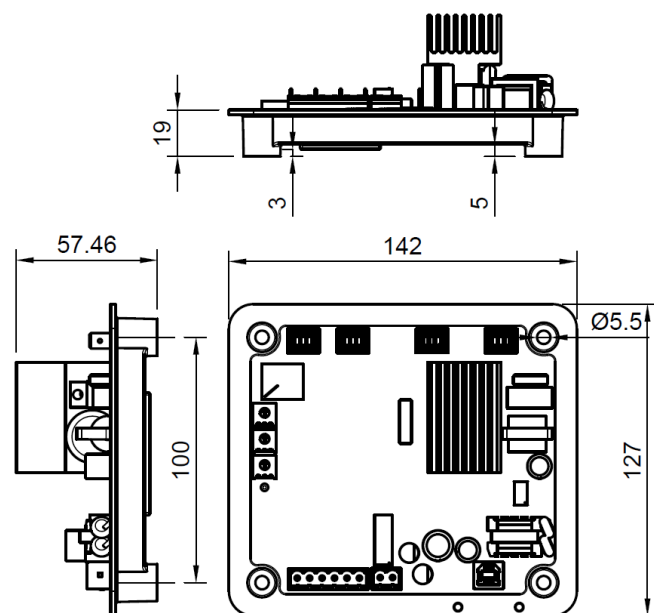
- Microprocessor based design for high-performance,
- Continuous Excitation drive capability, in excess of 5A_{dc}, 130% overload capacity for 120 sec.,
- Integrated BLM® function control to improve BLOCK-LOAD handling capability of the generator,
- TRUE RMS sense voltage measurement for precise voltage regulation in high-harmonic distorted load conditions,
- SHUNT and AUX connection modes for power input to AVR,,
- AUXILIARY analogue inputs for external control of AVR functions,
- EXT 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,
- USB communication port for AVR parameter configuration,
- 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,

Technical Specifications	Value	Description
Sensing voltage range:	120Vac to 576Vac	2-phase or single-phase sense input connection
Power connection to AVR:	Shunt / Auxiliary	300Vac maximum limit
Voltage regulation:	<0.5%	No-load to full load, PF>0.8 and $\Delta T < 40^{\circ}\text{C}$
Voltage sensing type:	TRUE RMS calculation, capable of operation with high harmonic loads	
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	$\pm 20\%$ of selected voltage range
	External pot trimming	$\pm 10\%$ of set voltage value
	AUX input signal	$\pm 15\%$ 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
Excitation current:	5.0Adc continuous	Rated at maximum operating temperature conditions.
	6.25Adc 120 seconds	
	7.0Adc for 10 seconds	
FIELD impedance range:	5 Ω to 50 Ω	15 Ω nominal winding impedance
AUX. signal input:	Analogue voltage input, External pot input Temperature input for RTD type sensor	
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:	2Aac SPST N/C contact	Configurable via PC Tools SW package
Communication Port:	USB COMM port	For AVR parameter configuration
EMC Compliance:	EN61000-6-2, EN61000-6-4	
	EN6068-1-2-14-30	
	UL94 V2 flammability safety compliance	
Enclosure protection class:	Electronic components protected with PU encapsulation	
Overall dimensions:	142x127x58 mm	
Weight:	220gr	

Connection Diagram:



Mechanical Dimensions:



Compliance:

DAVR-40 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



UL94
V-2