

Control Electronics

ControlReg 200/200P

Integrated genset controller and Automatic Voltage Regulator

Advantages

- Cost effective solution
- Standard controller features and display
- Easy Genset configuration
- AVR information displayed
- Data logging
- Predictive maintenance
- Quick setup

Engine control

- Start preparation (preheating or prelubrication)
- Start/stop sequences with selectable no. of start attempts
- Local or remote start/stop
- Stop sequence with cooling down
- Selectable running feedback

Generator protection (ANSI)

- Over-/undervoltage (27/59)
- Over-/underfrequency (81)
- Overcurrent (51)

Setup

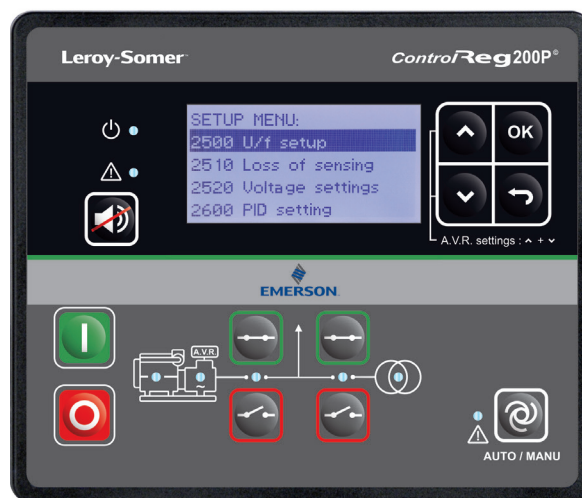
Setup is easily done via a PC Windows® through the Leroy-Somer Utility Software (password-protected). The Leroy-Somer PC Utility Software offers additional features such as monitoring of all relevant information during commissioning, saving and downloading of settings and downloading of software updates. Furthermore, the settings can be accessed via the display push-buttons (password protected).

Language

Master language is English and furthermore, there are three additional languages that can be selected by the user.

Translation

This function makes it possible to change all texts used in the unit.



For a detailed description of buttons and LEDs, please read the Operator's Manual.

Voltage regulation

- AC voltage measurement using Ph-N or Ph-Ph connection
- Maximum excitation current 4A (7A forcing, 10s)
- U/F Function
- Voltage setpoint is adjustable between 90 up to 480 VAC
- Voltage stability setpoint
- Soft Start function

Application

The ControlReg 200 is a microprocessor-based control unit containing all necessary functions for protection and control of a generator set.

More than a simple genset controller, it includes all the functions needed to control the alternator as well.

It's a brand new concept with genset controller and AVR function in one single product.

The unit is equipped with an LCD screen displaying all values and alarms. The controller is a compact flexible unit designed for the following applications:

- Built-in digital Automatic Voltage Regulator
- Automatic Mains Failure
- Generator protection
- Breaker control

The voltage regulator is compatible with shunt excited LSA40/42/43/44 alternators with the following characteristics: 50 and 60 Hz frequencies, re-connectable and multi-voltage (operation on thermal engines having at least 2-3-4 cylinders). The supply voltage maximum is 227V single phase or three phase.

The role of the AVR is to adjust the excitation current in the exciter field according to the desired alternator output.

When the neutral of the main stator winding is connected to earth, the negative terminal of the stator exciter must be earthed as well.

Variants

- ControlReg 200, Auto Start module, item number: **AEM277RE001**
- ControlReg 200P, AMF module, item number: **AEM277RE002**

Accessories list

- USB cable, 3 m
(for Leroy-Somer PC Utility Software)

Terminal description

Term	Technical data	Description
CANbus port: Engine interface		
1	CAN-L	CanBus J1939 protocol, for engine communication interface
2	CAN-GND	
3	CAN-H	
DC power supply		
4	BATT -	
5	BATT +	
Inputs		
6	Emergency stop	
Outputs		
7		MOSFET Output
8		
9	Digital Output	
10		
11		
Bi-directional		
12	D+	Bi-directional input
Multi-inputs		
13	Common	Configurable multi-input
14		
15		
16	Resistive input, 0(4)...20mA or binary	
17		
18		
19		Common for term. 14...19
20	Common	
Generator current measurement		
21	Gen. current L3, s1	GENERATOR CURRENT
22	Gen. current L3, s2	
23	Gen. current L2, s1	
24	Gen. current L2, s2	
25	Gen. current L1, s1	
26	Gen. current L1, s2	
Mains voltage measurement		
27	Mains voltage neutral	MAINS VOLTAGE
29	Mains voltage L1	
31	Mains voltage L2	
33	Mains voltage L3	
Generator voltage measurement		
34	Gen. neutral	GENERATOR VOLTAGE
36	Gen. voltage L1	
38	Gen. voltage L2	
40	Gen. voltage L3	
AVR Supply		
X2	Power Supply -	SHUNT
X1	Power Supply +	
Excitation output		
E-	Alternator Excitation -	Field Excitation Output
E+	Alternator Excitation +	

Technical specification

Electrical data	
Auxiliary Supply	DC 8.0V to 35.0V, Continuous Power Supply Reverse protection -35 VDC continuously Power consumption < 3W
Dropout cranking	Able to survive 0 V for 10 ms
Load Dump	ISO 7637-2 (24VDC system - Test pulse 5) Power supply ports: 123V/1Ω/100ms 174V/8Ω/350ms
Measuring input voltage	3-Phase 4 wires 15VAC-277VAC (Ph-N)
	3-Phase 3 wires 30VAC-480VAC (Ph-Ph)
	Single phase 2 wires 15VAC-277VAC (Ph-N)
Voltage Input frequency	50/60 Hz selectable Range 45Hz to 70Hz In the range, guaranteed response time for alarm handling. During cranking, lower frequencies will be detected.
Measuring input current	5A / 1A (rated) Class II Current overload: 2 x In, 60 seconds 4 x In, 10 seconds
Voltage Input Impedance	1.2-1.5 M Ohms
Protection Response time	(Delay set to min.) Generator: Reverse power < 400ms Power/overload < 400ms Overcurrent < 400ms Over-/undervoltage < 400ms Over-/underfrequency < 400ms Fast overcurrent < 300ms
Accuracy on AC voltage measurement	Class 2.0 to IEC/EN 60688
Analogue input	RMI inputs: Resistance measurement input, range from 0-7500ohms with wire fail detection
	Range: 0-2500 Ohm Class 2 Range: 2500-7500 Ohm Class 4
	Analogue input: From active transducer Current: (0)4...20mA Impedance: 100 ohms with wire fail detection Class 2
	Binary input: dry contact inputs, with cable supervision Digital inputs trigger levels: active from 0 to 1.6 Vdc Inactive from 1.7 to power supply voltage
MPU input	Voltage range: 1.5 to 25 VAC RMS Frequency range: 10 to 10KHz Accuracy 1/10 [Hz] @ 10 to 99.9 [Hz], 1 [Hz] @ 100 to 10000 [Hz]
Digital outputs	Current: 6A current rating on 2xDO Current: 0.5A current rating on 3xDO

Electrical data	
Service Port	Standard USB-B plug (Standard USB A/B cable)
Voltage range	115 VAC to 415 VAC @ 50 Hz 120 VAC to 480 VAC @ 60 Hz
AC supply voltage (X1 and X2 terminals)	90 VAC to 277 VAC @ 50 Hz or 60 Hz
Voltage regulation accuracy	+/- 0.5 % for a total harmonics content below 3 %
Excitation characteristics (the temperature rise of the exciter field does not exceed 60°K)	
Without load	$I_o = 0.6$ to 1A
With load	Maximum continuous $I_{exc} = 4A$
Forcing (10s)	Maximum $I_{exc} = 7A$
Exciter field resistance	10 to 30 ohms
Environment	
Working conditions	Temperature: (-30 to +70)°C
Storage Condition	Temperature: (-40 to +85)°C
Protective Level	IP65 from front Terminals: IP20 To IEC/EN 60529
Material	All plastic materials are self-extinguishing
Climate	95%RH, IEC 60068-2-30, test Db IEC 60255-1
Vibration	3...13.2 Hz: 2 mmpp. 13.2...100 Hz: 0.7g (peak) To IEC 60068-2-6 and IACS UR E10 3...25 Hz: 3.2 mmpp. 25...100 Hz: 4.0g (peak) To IEC 60068-2-6 and IACS UR E10 10...60 Hz: 0.15mmpp. 60...150 Hz: 1g (peak) To IEC 60255-21-1 Response (class 2) 10...150 Hz: 2 g. To IEC 60255-21-1 Endurance (class 2)
Shock	50g, 11msec, half sine – IEC 60068-2-27, test Ea Tested with 3 impacts in each direction in all 3 axes. Total 18 per test. IEC 60255-21-2 10g EUT ON, 30g EUT OFF
Bump	20 g, 16msec, half sine – IEC 60255-21-2 (Class 2)
Safety (insulation Intensity)	Installation category (overvoltage category) III, 300V, pollution degree 2. IEC 60255-27
Altitude	2.000m
Sizes	
Dimensions	Length 131mm - Height 111mm - Depth 67mm
Weight	410 grams without connectors
Mounting	Panel mounted - Cut out: 92 x 112 mm
Standards	
Approval	CE
EMC marking	To IEC/EN 60255-26