

EM15

Excitation Module

Installation and maintenance

LEROY-SOMER™

Nidec
All for dreams

EM15

Excitation Module

This manual concerns the EM15 which you have just purchased.
We wish to draw your attention to the contents of this maintenance manual.

SAFETY MEASURES

Before using your EM15 for the first time, it is important to read the whole of this installation and maintenance manual.

All necessary operations and interventions on this machine must be performed by a qualified technician.

Our technical support service will be pleased to provide any additional information you may require.

The various operations described in this manual are accompanied by recommendations or symbols to alert the user to potential risks of accidents. It is vital that you understand and take notice of the following warning symbols.

The EM15 can be incorporated in a EC-marked machine.

WARNING

Warning symbol for an operation capable of damaging or destroying the machine or surrounding equipment.



Warning symbol for general danger to personnel.



Warning symbol for electrical danger to personnel.



All such operations performed on the EM15 should be undertaken by personnel trained in the commissioning, servicing and maintenance of electrical and mechanical components.

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338 567 258.

We reserve the right to modify the characteristics of this product at any time in order to incorporate the latest technological developments. The information contained in this document may therefore be changed without notice.

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All brands and models have been registered and patents applied for.

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1 - GENERAL DESCRIPTION

The EM15 Excitation Module is a power electronics component designed to provide excitation current to the generator that is controlled by an External Voltage Regulator (EVR).

Leroy-Somer is leading the power generation marketplace with power solutions engineered to deliver unmatched flexibility, expandability, reliability and cost-effectiveness.

1.1 - Features

- Over-excitation protection – limit can be adjusted via a potentiometer (IEXC)
- Green status LED indicating unit is powered on
- Red status LED indicating excitation current limiting (flashing) or shutdown (solid)

The External Voltage Regulator system offers:

- Automatic Voltage Regulation (AVR)
- Programmable stability settings
- Soft start control with an adjustable time setting in AVR control mode
- Dual Slope Under Frequency (Volts / Hz) regulation
- Three-phase or single-phase generator voltage (RMS) sensing/regulation in AVR mode

The EVR can also offer:

- Power Factor Regulation (PF)
- Generator paralleling with reactive droop compensation
- Line drop compensation

1.2 - Complete system integration

The EM15 is designed and factory tested to work seamlessly with Leroy-Somer alternators using Shunt Excitation (SE), AREP Excitation (AREP) or Permanent Magnet (PMG) excitation systems.

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2 - SPECIFICATIONS

2.1 - Electrical

Generator excitation types	Shunt excitation / AREP excitation / Permanent Magnet (PMG)
Max. continuous field current output	7 Amps
Max. forcing field current output	15 Vrms
Max. AC voltage input (X1:X2, Z1:Z2)	240 Vrms

2.2 - Environmental

Operating temperature range	-40 °C (-40 °F) to +70 °C (+158 °F)
Storage temperature range	-40 °C (-40 °F) to +85 °C (+185 °F)
Relative humidity tolerance	95% non-condensing humidity
Salt spray	5% salt (NaCl) solution for 120 hrs
Vibration	4.5 G-rms, 24-2000 Hz in 3 orthogonal planes
Electromagnetic compatibility	RF Immunity (radiated & conducted) RF Emissions (radiated & conducted) Electrical transients
Weight	800 g ± 30 g
Power consumption (at max.continuous rating)	<600 VA

2.3 - Conformity

UL	UL Recognized (U.S. and Canada) File No. E334232
CE integration certificate	In conformity with the applicable requirements of the following standards: EN 50178 EN 60204-1 EN 61000-6-2 EN 61000-6-4

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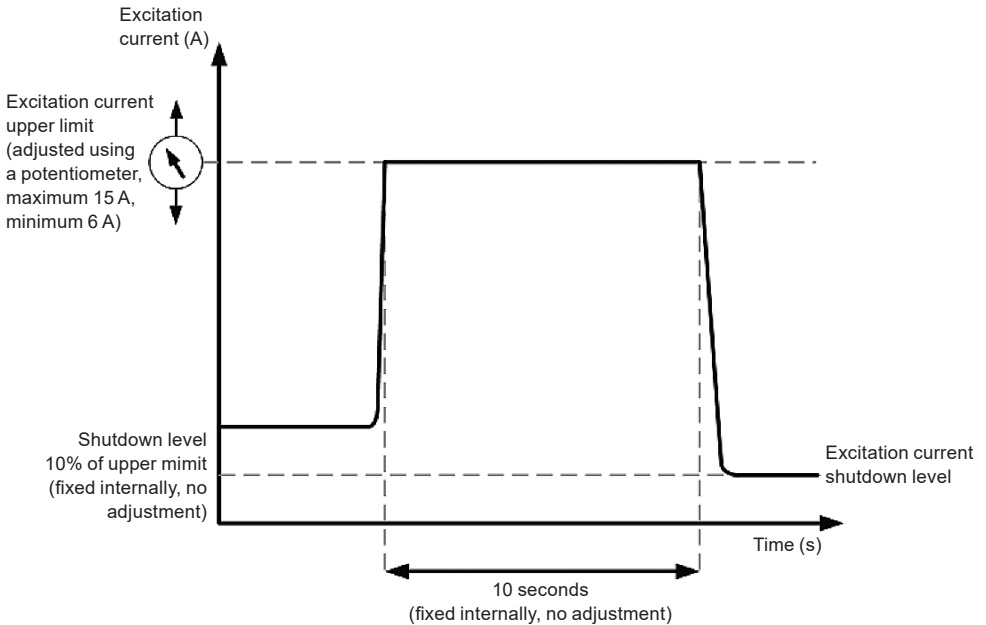
Excitation Module

3 - OVER-EXCITATION PROTECTION

If a short-circuit fault occurs at the generator terminals, the EM15 will allow the excitation current to rise to the upper limit value set by the adjustment potentiometer (max. 15 A).

The excitation current will be clamped at the upper limit value for 10 seconds (fixed internally).

After 10 seconds, the excitation current is reduced to a value of 10% of the potentiometer setting.

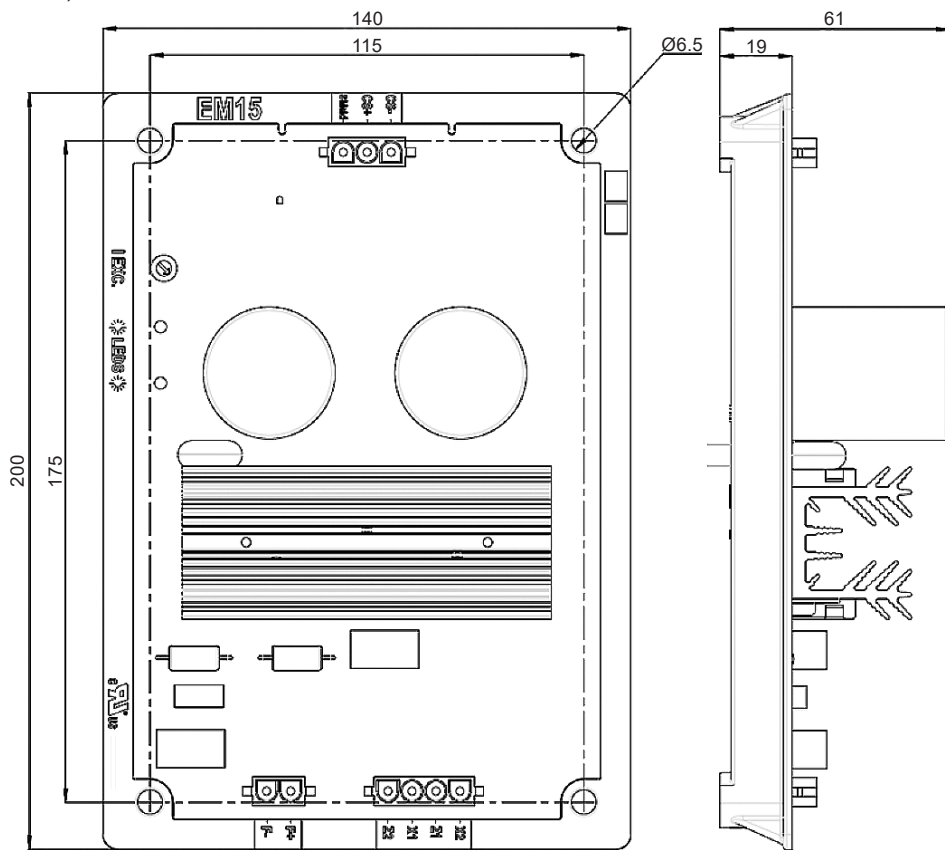


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4 - DIMENSIONS

(in mm)

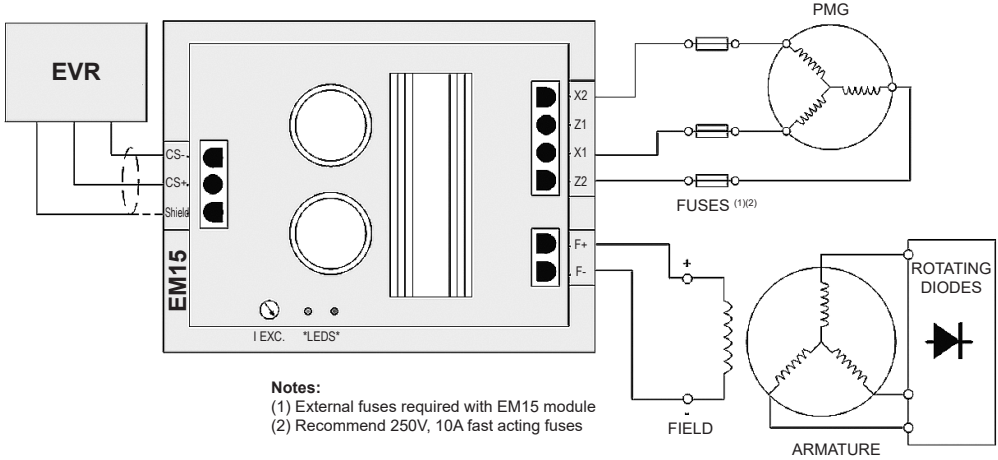


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5 - EXAMPLE CONNECTION DIAGRAM

(Permanent Magnet Excitation)



2-way Connector Functions:

Label	Function
F+	Exciter Field Positive Output
F-	Exciter Field Negative Output

3-way Connector Functions:

Label	Function
Shield	Excitation Command Shield
CS+	Excitation Command Positive Input
CS-	Excitation Command Negative Input

4-way Connector Functions (PMG Excitation):

Label	Function
X2	Excitation Power Supply Input (PMG Phase B)
Z1	Not Connected
X1	Excitation Power Supply Input (PMG Phase A)
Z2	Excitation Power Supply Input (PMG Phase C)

4-way Connector Functions (Shunt Excitation):

Label	Function
X2	Excitation Power Supply Input (Single-phase)
Z1	Not Connected
X1	Excitation Power Supply Input (Single-phase)
Z2	Not Connected

4-way Connector Functions (AREP Excitation):

Label	Function
X2	Excitation Power Supply Input (Aux Winding 1 - Positive)
Z1	Excitation Power Supply Input (Aux Winding 2 - Positive)
X1	Excitation Power Supply Input (Aux Winding 1 - Negative)
Z2	Excitation Power Supply Input (Aux Winding 2 - Negative)

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Service & Support

Our worldwide service network of over 80 facilities is at your service.

This local presence is our guarantee for fast and efficient repair, support and maintenance services.

Trust your alternator maintenance and support to electric power generation experts. Our field personnel are 100% qualified and fully trained to operate in all environments and on all machine types.

We have a deep understanding of alternator operation, providing the best value service to optimise your cost of ownership.

Where we can help:



Contact us:

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