




sincro

soga  energyteam

Installation and User Guide



Dear customer

Thank you for purchasing the avrterm, the PC management software specifically designed for the new digital automatic voltage regulator (AVR) dbL with microprocessor that SINCRO S.r.l. has developed for its brushless alternators range. Thanks to this software it is possible to view both graphically and numerically the status, the alarms and the fundamental measurements of the alternator. Furthermore, the software allows the modifications of the configurations, the threshold and the settings of the characteristic parameters of the machine. Data are also memorized and can be downloaded in excel format.

Contact Information

If you need help in installing your digital AVR management software (avrterm), you can contact our After Sales Service: SINCRO S.r.l.

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Important Rules for Safe Operation

Please read and follow the instructions in this manual. Use only the components that are provided with this kit.

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>> 1 Introduction

The objective of these instructions is to indicate correct installing and use operations for the digital automatic voltage regulator (AVR) **dbL** and its management software **avrterm**. For the correct installation and use of this product, please read and follow carefully the instructions contained within. Keep this manual in your hand for rapid and easy consultation.

>> 2 Safety regulation

These notice have been produced for your and other people's safety. We would therefore ask you to read them carefully before proceeding with installation or connecting the items of equipment to be powered.



Important All the operations of installation of the various components of the kit and their connection must be performed with the rotor of alternator in stationary position. In case the alternator is already coupled to the engine all the measures and necessary precautions must be taken because there is not a sudden start of the engine (ex.: automatic start for a mains failure, etc..)



Important Before accessing to the electric connection terminal and/or access to the other internal electric parts of alternator it is necessary to verify that there is not presence of any voltage.

>> 3 System description

>> 3.1 Digital AVR

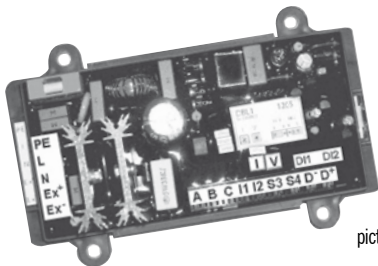
Sincro Digital Voltage Regulator **dbL** is designed to be used on 50/60Hz brushless alternators. It regulates the output voltage of a generator by controlling the current into the generator exciter field. Modular architecture enables optimisation for different applications.

Strong points:

- **Simple.** Voltage reference is adjustable via Personal Computer, using the internal potentiometer or at distance using external potentiometer.

For communication is available RS485 port and GUI (Graphic User Interface) **avrterm**.

- **Advanced control algorithm** is designed to be very stable and precise in steady state with fast response to disturbances and change of the load.
- **Precise and stable voltage** in all-working conditions with different generators and for all types of load.



picture.1

>> **3.2 Management software** Avrterm is a PC software for communication using Windows Operating System.

Strong points:

- **User Friendly** with interactive help, multi Language and fault tolerant.
- **Complete monitoring:** it's monitoring 3 phase voltage, frequency and alarm-status. In trace mode, every sampling time, it is saving voltages, alarm-status and time of record.
- **Records of trace file** have graphical representation. Trace file can be saved as another file name. All files, with the trace file format, have a graphical representation.
- **Configuration and settings** are possible to be read from file. When a communication is established, the AVRterm receives and displays configuration and settings.

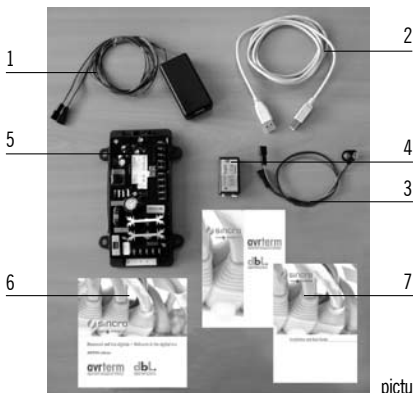
- **Command** is available to save actual configuration and settings in file. Settings are: Set point, Excitation limit, Under frequency and Control gains. It is also possible to save changed settings in AVR flash memory.
- **Sensing is versatile**, 3 or single phase, from 115 to 480V. Software drivers for reference input calculate true RMS value, using advantages of 3 phases sensing when it is implemented.



picture.2 >Management software

>> 4 Package Contents

Check the contents of the package. It should contain the items shown in Picture 3.



picture.3

- 1> USB/RS485 converter (1mt)
- 2> USB cable (2mt)
- 3> Battery cable
- 4> Battery 9V
- 5> Digital AVR (DBL1)
- 6> CD containing the file of
 - a. Supervision software avrterm
 - b. Drivers for USB/RS485 converter/port
 - c. Documentation
- 7> Installation and user guide

Please contact Sincro's After Sales Service if any of the above listed items are missing or damaged
 •info.sincro@sogagroup.com•

>> 5 Before You Start

Before you install your digital AVR management software (avrterm), you need the following items. These items are not supplied with the kit.

- 1> Computer: minimum requirements are IBM compatible PC, Pentium or higher microprocessor, CD-ROM Drive and USB port.

Requested operating system:

XP	XP X 64	WIN98	MACb OS X Intel	MAC OC X	Linux
Windows	Windows	Windows			
VISTA	VISTA x 64	98			
Windows	Windows	Windows			
XP	XP x 64	ME			
Windows					
2000					

>> 6 Modes of operation

>> 6.1 RUN on board operation

This mode of operation corresponds to that case where the alternator (equipped with the digital AVR) is already coupled to an engine and to which you want to connect a local PC for the supervision through the software avrterm.

WARNING!

This mode of operation can be performed only on alternators that are already equipped with digital AVR **model DBL1 release r07 or higher**.

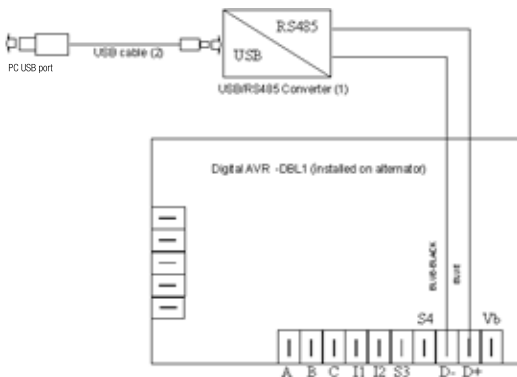
If the alternator is equipped with an analogic AVR or a digital AVR model DBL1 with a release less than r07, please contact our after sales service

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For this mode of operation the following components are necessary:

- 1> USB/RS485 converter (1mt)
- 2> USB cable (2mt)
- 3> CD containing the file of the supervision
- 4> Installation and user guide

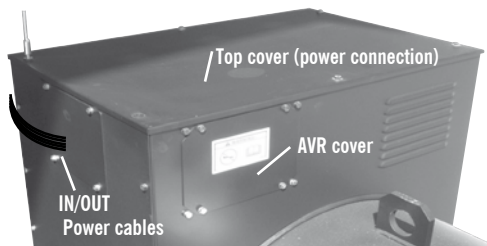
>> 6.1.1 Description of the operations for the installation and the connection of the components.



WARNING! DANGER

All the operations of installation of the various components of the kit and their connection must be performed with the rotor of the alternator in stationary position. In case the alternator is already coupled to the engine, all the measures and necessary precautions must be taken because there is not a sudden start of the engine (ex: automatic start for a mains failure, etc.).

- 1> Place the PC at a distance from the alternator not superior than 2 mt.
- 2> Remove the top cover of the power connection box of alternator actioning on the fixing screws with a screwdriver (see picture 4).
- 3> Remove the lateral cover of the power connection box of the alternator (AVR cover) actioning on the fixing screws with a screwdriver (see picture 4).



picture 4

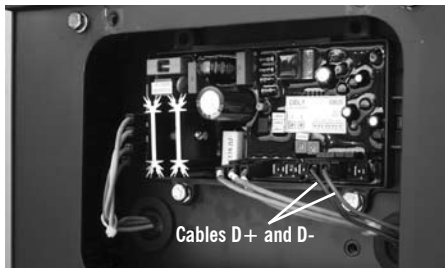
WARNING! DANGER

Before accessing to the electric connection terminal and/or access to the other internal electric parts of alternator, it is necessary to verify that there is not presence of any voltage.

- 4> Insert from the lateral part the two cables D+ and D- of the converter USB/RS485 in the same holes of the power cables to the terminal block and then from this sideways up to reach the AVR board. Note: The cables D+ (blue) and D- (blue-dark) of the converter USB/RS485s are only 2mt long. That means that the converter must be positioned at a distance of max 2mt from the alternator. If this

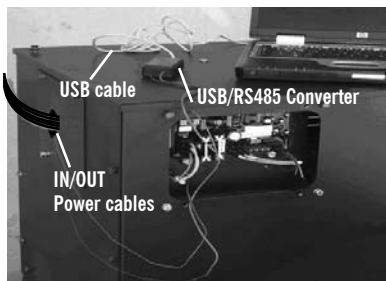
is not possible, the cables D+ and D- can be lengthened up to total max 15mt.

- 5> Connect the cables D+ e D- to the correspondent fastons of the connector placed at the bottom of the AVR . These fastons are marked with the letters “D+” and “D-” (see picture 5).



picture 5

- 6> Close the lateral cover (AVR cover) and the top cover of the power terminal box which was previously removed (see points 2 and 3).
- 7> Install on the PC the driver for the converter USB/RS485 and the SW avrterm as described on the next chapter 6.1.2
- 8> Connect the cable USB to the converter USB/RS485 and to the USB port of PC (see picture 6).



picture 6

- 9> Switch-on the gen-set (the alternator starts).
- 10> Start the program avrterm (see CD/DOC/UMen01WIN_SW.pdf) and check that there is a communication with the alternator.
- 11> If necessary, proceed with the settings and configurations described on the user manual of the avrterm software (see CD/DOC/UMen01WIN_SW.pdf) for a final alternator set-up.

>> 6.1.2

Description of the installation operations of the driver for the USB/RS485 converter and for the avrterm software

After having performed the installations of all the components and completed the relative wirings, you can proceed with the installation of the driver for the converter USB/RS485 and of the avrterm software.

- 1> Insert the CD on the CD reader of the PC and open the contains folder.
- 2> Install the driver of the USB/RS485 converter selecting the file "Install_driver_VCP.htm" contained in the folder DOC/Install_driver_VCP. Follow the installation procedure.
- 3> Configure the USB Serial Port parameters selecting the file "Configure_VCP.htm" contained in the folder DOC/Configure_VCP. Follow the installation procedure.
- 4> Install the avrterm software selecting the file "setup" which is contained in the folder AVR.
- 5> Proceed with the settings of the program avrterm as described in the user manual contained in the folder DOC/UMen01WIN_SW.pdf.

For the characteristics and the user's procedures of the avrterm program please refer to the user manual contained in the CD (ref. File DOC/UMen01WIN_SW.pdf.)

>> 6.2. TEST on board operation

This mode of operation allows to install and check all the components, the drivers and the software avrterm on an **alternator already equipped with a digital AVR but not yet in service**. It is a provisional operation condition in order to perform some tests. The operation of the alternator is simulated supplying the digital AVR with an external battery.

WARNING!

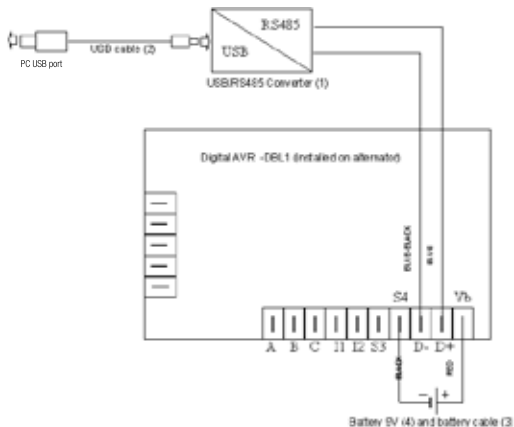
This mode of operation can be performed only on alternators that are already equipped with digital AVR **model DBL1 release r07 or higher**.

If the alternator is equipped with an analogic AVR or a digital AVR model DBL1 with a release less than r07 please contact our after sales service

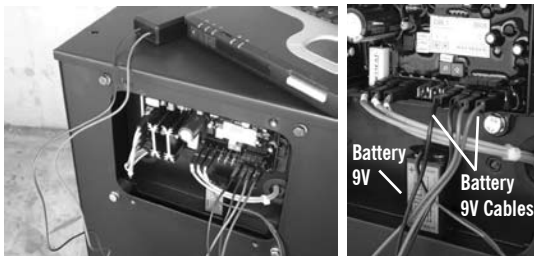
In this mode of operation the alternator must never be put in normal operation condition (started the rotation of the rotor).

For this mode of operation the following components are necessary:

- 1> USB/RS485 converter (1mt)
- 2> USB cable (2mt)
- 3> Battery cable
- 4> Battery 9V
- 5> CD containing the file of the supervision sw avrterm and of the drivers
- 6> Installation and user guide

>> 6.2.1
Description of the operations for the installation and the connection of the components


- 1> Place the PC at a distance from the alternator not superior than 2 mt.
- 2> Remove the lateral cover of the power connection box of alternator (AVR cover) actioning on the fixing screws with a screwdriver (see picture 4).
- 3> Connect the cables D+ (blue) e D- (blue-dark) of the USB/RS485 converter on the correspondent fastons of the connector place on bottom of AVR . These fastons are marked with the letters “D+” and “D-” (see picture 7).
- 4> Connect the battery cables on the 9V battery which is included in the kit (see the connection diagram).
- 5> Connect the positive (red) and the negative (black) battery cables on the correspondent fastons of the connector placed at the bottom of the AVR. These fastons are marked with the letters S4 (for black cable) and +Vbat (for red cable) (see picture 7)



picture 7

- 6> Install on the PC the driver of the USB/RS485 converter and the SW avrterm as described on chapter 6.1.2.
- 7> Connect the cable USB to the converter USB/RS485 and to the USB port of the PC.
- 8> Start the program avrterm (see CD/DOC/UMen01WIN_SW.pdf) and check that there is a communication with the alternator.

For the characteristics and the user's procedures of the avrterm program please refer to the user manual contained in the CD (ref. File DOC/UMen01WIN_SW.pdf.)

>> 6.3

TEST on desk operation

This mode of operation allows to install and check all the components, the drivers and the software avrterm without the availability of any alternator.

It is a “test” operation condition for a demonstration/showing purpose.

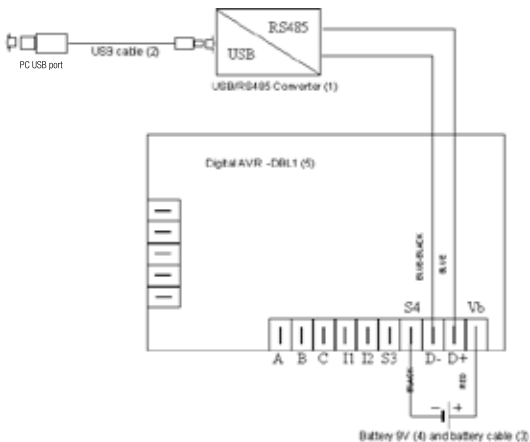
The operation of the alternator is simulated supplying the digital AVR with an external battery.

For this mode of operation the following components are necessary:

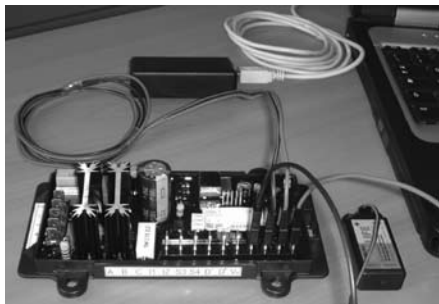
- 1> USB/RS485 converter (1mt)
- 2> USB cable (2mt)
- 3> Battery cable
- 4> Battery 9V
- 5> Digital AVR (DBL1)
- 6> CD containing the file of the supervision sw avrterm and of the drivers
- 7> Installation and user guide

>> 6.3.1

Description of the operations for the installation and the connection of the components.



- 1> Place the PC and all the components of the kit on a table or desk.
- 2> Connect the cables D+ (blue) e D- (blue-dark) of the USB/RS485 converter to the correspondent fastons of the connector placed at the bottom of the AVR. These fastons are marked with the letters "D+" and "D-" (see picture 8).
- 3> Connect the battery cables on the 9V battery which is included in the kit (see the connection diagram).
- 4> Connect the positive (red) and the negative (black) battery cables on the correspondent fastons of the connector placed at the bottom of the AVR. These fastons are marked with the letters S4 (for black cable) and +Vbat (for red cable) (see picture 8).



picture 8

- 5> Install on the PC the driver of the USB/RS485 converter and the SW avrterm as described on chapter 5.1.2.
- 6> Connect the cable USB to the converter USB/RS485 and to the USB port of the PC.
- 7> Start the program avrterm (see CD/DOC/UMen01WIN_SW.pdf) and check that there is a communication with the alternator.

For the characteristics and the user's procedures of the avrterm program please refer to the user manual contained in the CD (ref. File DOC/UMen01WIN_SW.pdf.)



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