



# SM3300-series

- **SM 18-220**
- **SM 66-AR-110**
- **SM 100-AR-75**
- **SM 330-AR-22**
- **SM 660-AR-11**

## Firmware Update

It is strongly recommended, first to perform a firmware update before further operation.

See chapter Quick Start, paragraph 2.

## QUICK START GUIDE

Contents:

- 1 - Safety Instructions
- 2 - Quick Start
- 3 - EC Declaration of Conformity

# 1 SAFETY INSTRUCTIONS SM3300

## 1 Caution

The following safety precautions must be observed during all phases of operation, service and repair of this equipment. Failure to comply with the safety precautions or warnings in this document violates safety standards of design, manufacture and intended use of this equipment and may impair the built-in protections within. Delta Elektronika shall not be liable for user's failure to comply with these requirements.

## 2 Installation Category

The Delta Elektronika power supplies have been evaluated to installation category II (Over voltage category II).

## 3 Grounding of Mains Input

This product is a safety Class 1 unit. To minimize shock hazard, the unit chassis must be connected to the AC Power Supply mains through a three or four conductor power cable for respectively a single or three phase unit, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet.

For units designed to be hard-wired to supply mains, the protective earth terminal must be connected to the safety electrical ground before another connection is made. Any interruption of the protective ground conductor, or disconnection of the protective earth terminal will cause a potential shock hazard that might cause personal injury.

## 4 Grounding of Power Output

If the output of a unit is specified to deliver maximum 60VDC, and either the negative or positive power output is grounded, the voltage on the power outputs and sense connections can be considered safe.

### Warning:

When the positive power output can exceed 60VDC in respect to the negative output, additional external measures must be taken to ensure safety isolation of the power outputs and sense connections.

### Warning:

When the negative power output of the unit can exceed 60VDC / 42.4Vpk in respect to ground, additional external measures must be taken to ensure safety isolation of the power outputs and sense connections.

The standard LAN and Interlock connectors and optional interfaces are at ground level and can be considered safe if the negative power output of the unit does not exceed 1000VDC / 707Vpk in respect to ground.

**Caution 1:** If a low voltage unit has both power outputs floating, or if the output is in series with an external high AC or DC voltage, the negative power output can exceed the safe value in respect to ground as specified in the above warning!

**Caution 2:** Although a high voltage unit is set to a safe voltage below 60VDC, for safety it must always be considered as high voltage unit! Wrong operation, a programming error or an external defect can result in an unsafe high output voltage.

For more information and schematics regards Grounding and Safety, see the special application note "*Safe operation of a power supply*" on the Delta Elektronika website.

## 5 Danger of electrical shock

Touching the contacts of the mains plug or wires directly after disconnecting from the mains can cause an electrical shock. See next paragraph "Connection to the mains supply".

## 6 Connection to mains supply

Either connect to the mains supply permanently or via an industrial type plug, complying with IEC 60309. "Permanently connected equipment" or "Pluggable equipment type B".

## 7 Fuses

Fuses must be changed by authorized Delta Elektronika service personnel only, for continued protection against risk of fire.

## 8 Input Ratings

Do not use an AC Supply which exceeds the input voltage and frequency rating of this unit. The input voltage and frequency rating of the Delta Elektronika power supply series are stated in the accompanying datasheet.

## 9 Live Circuits

Operating personnel must not remove the unit cover. No internal adjustment or component replacement is allowed by non Delta Elektronika qualified personnel. Never replace components with the power cable connected. To avoid injuries, always disconnect power, discharge circuits and remove external voltage sources before touching components.

## 10 Parts Substitutions & Modifications

Parts substitutions and modifications are allowed by authorized Delta Elektronika service personnel only. For repairs or modifications the unit must be returned to a Delta Elektronika service facility.

## 11 Removal of (safety) covers

Safety cover(s) are used to cover potentially hazardous voltages. Observe the following when removing safety cover(s):

- Switch off the unit.
- Disconnect the unit from the mains supply.
- Wait for 3 minutes to allow internal capacitors to discharge.
- Unscrew the screws and remove the cover(s).
- Always place the cover(s) back before connecting the unit to the mains supply again.

## 12 Environmental Conditions

The Delta Elektronika power supplies safety approval applies to the following operating conditions:

- Indoor use
- Ambient temperature : -20 to 50 °C
- Maximum relative humidity : 95%, non condensing, up to 40 °C  
: 75%, non condensing, up to 50 °C
- Altitude : up to 2000 m
- Pollution degree : 2



*Caution risk of electrical Shock*



*Instruction manual symbol. The instrument will be marked with this symbol when it is necessary for the user to refer to the instruction manual*



*Protective ground conductor terminal*



*Off (supply)*



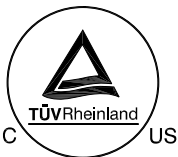
*On (supply)*

## 13 Canada



This product has been tested to the requirements of CAN/CSA-C22.2 No. 61010-1, second edition, including Amendment 1, or a later version of the same standard incorporating the same level of testing requirements

## 14 cTUVus



## WEEE (Waste Electrical & Electronic Equipment)

### 1 Correct Disposal of this Product

Applicable in the European Union.



This marking shown on the product, its packing or its literature indicates that it should not be disposed with other wastes at the end of its working life, but should be collected separately to recycle it responsibly to promote the sustainable reuse of material resources.

## 2 QUICK START GUIDE - SM3300

### 1 Connecting the unit

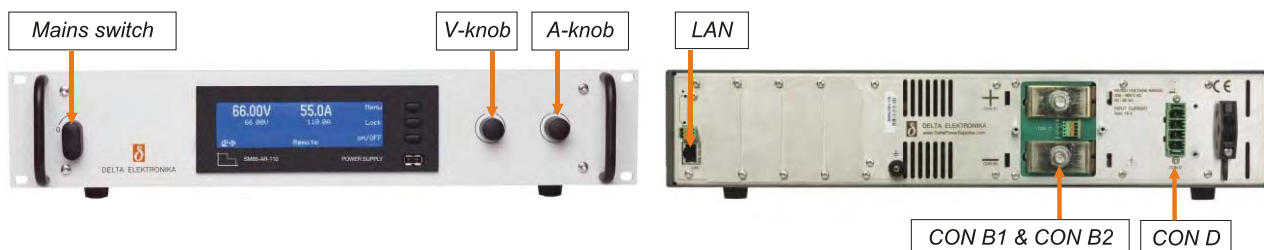


fig. 2 - 1

**Warning!** Never make connections to the Power Inputs and Outputs or the Sense Connector when the unit is connected to the mains supply or power outlet! Safety covers are used to cover these in- and outputs.

Carefully read the chapter "Safety Instructions" in this manual before connecting or operating the unit!

**Warning!** Some components inside the power supply are at AC voltage even when the On/Off switch is in the off position. Therefore a readily accessible, appropriately rated, disconnect device shall be incorporated external to the equipment. The power supply shall be connected to the mains supply via a protection device with a rating of maximum 16A. For example a circuit breaker or fuses etc.

#### AC POWER TERMINALS (AC-MAINS)

- This connector is located at the rear side, marked as CON D.
- Use a cable with a diameter of 2.5 mm<sup>2</sup> for each wire and a sufficient voltage rating for the AC input voltage of the unit.
- Use the included 4-pole header with the markings L1, L2, L3, PE for connecting the wire to the unit (see fig. 2 - 1). The mounting torque for the header terminals is 0.6 Nm.
- Always connect the PE terminal to the Protective Earth, no neutral connection is required.
- The unit can operate both on a single phase and a 3 phase grid, with a rated voltage of 200...480VAC.
- After installation, connect the pull relief and add the safety cover over the AC terminals.

#### DC POWER TERMINALS

- These terminals are located at the rear side, marked as CON B1 (PLUS) and B2 (MINUS).
- Use cables with a sufficient voltage rating for the maximum output voltage of the unit. The cable diameter depends on the type of unit, see table 2.1. For all units the terminals are bolts size M8 and require a mounting torque of 20Nm.
- Use low resistive connections between the power supply and the load:
  - Mount the cable lugs directly on the DC terminals followed by a washer, a split washer and a nut. Always in this order!
  - Never place washers between the lugs and the strips - this can result in excessive heat!
  - Only use nuts and washers supplied with the unit.
- The DC power terminals are floating in relation to Protective Earth.
- After installation mount the safety cover over the DC power terminals.

Unit	DC-cables [mm <sup>2</sup> ]
SM18-220	70
SM66-AR-110	35
SM100-AR-75	25
SM330-AR-22	4
SM660-AR-11	2,5

table 2 - 1  
Recommended  
cable diameters

#### LAN-CONNECTOR

- Insert a standard RJ45 network cable to the LAN-connector at the rear side, see fig. 2 - 1 and make connection to a Local Area Network (LAN) to perform a firmware update and use the units' web browser, see chapter 2.
- The LAN-connector is at Protective Earth level.

#### LOAD SENSING, INTERLOCK, USB, INTERFACES, SERIES-PARALLEL, MASTER/SLAVE

- Refer to user manual for connecting and using these features and options.

## 2 Operating the unit

#### FIRMWARE UPDATE

- Switch the unit on by rotating the mains switch on the front panel clockwise.
- In the unit menu, check the firmware revision via Menu > System > info > Unit > Version.
- On a computer, check at [www.DeltaPowerSupplies.com](http://www.DeltaPowerSupplies.com) if there is new firmware available via: Products > SM3300 > Downloads.
- If newer, download the firmware package to the computer and connected this to the same LAN as the unit.
- In the unit menu, check the IP-address via Menu > Interfaces > LAN > Address\*.
- On the computer, open the SM3300 web interface using an internet browser by entering the IP-address of the unit in the address bar of the browser.
- In the web interface, go to Administration > Firmware.
- Select "Choose File" and browse to the downloaded package, enter password and "Start Update".

**\*Note:** when DHCP is enabled, the IP-address can change, for example after a power cycle.

**FIRST OPERATION**

- The first line in the front display indicates the **actual output voltage and current**. The second line shows the settings of the controls.
- Check the text 'front' is indicated - this means the unit is in **local-operation** and can be controlled by the V-knob and A-knob at the front panel.
- **Switch the output on** by pressing the on/OFF button.
- **Turn the V- and A-knob** a half turn clockwise. Depending on the load, a voltage should now be present on the output and a current will run through the load.
- Depending on the load and settings, the unit will be either in **constant voltage or constant current mode**, respectively CV- or CC-mode.
- Respectively the indication 'CV' will appear on the first line, next to the actual voltage value. The indication 'CC' will appear next to the actual current value.

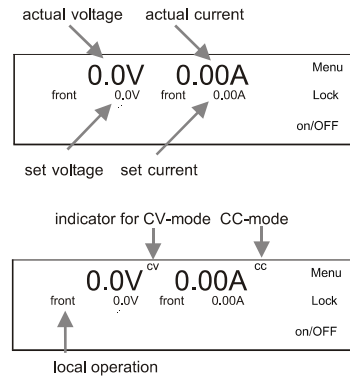


fig. 2 - 2, Start-up settings.

**LIMITATION OF SETTINGS**

- By default, the settings for CV and CC Limit are set to the maximum.
- **Change the limit settings** via Menu > Protection > Limits.

**REMOTE PROGRAMMING**

- By default a unit is in **local operation**, see fig. 2 - 3.
- In **remote operation** different programming options are available such as 'eth', 'web', 'seq', 'slot1' etc.
- Via the front menu the source can be set to the **required programming input** via: Menu > Configuration > Source.
- When connected to LAN, enter the unit's IP-address in a web browser to open the **web interface**.

With this interface all above described parameters plus additional parameters can be set and read.

- For more information, see the chapter Remote Programming of the user manual.

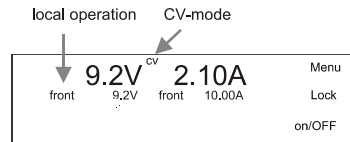


fig. 2 - 3, 19W output power.

**3 Download User Manual**

**FULL VERSION**

- Check at [www.DeltaPowerSupplies.com](http://www.DeltaPowerSupplies.com) for the full version of the user manual via: *Products > SM15K > Downloads*.
- It is strongly recommended to regularly check for new versions of the user manual and firmware for additional functionality and improvements.



fig. 2 - 4, The front console of the web interface for setting of the input and monitoring various parameters.

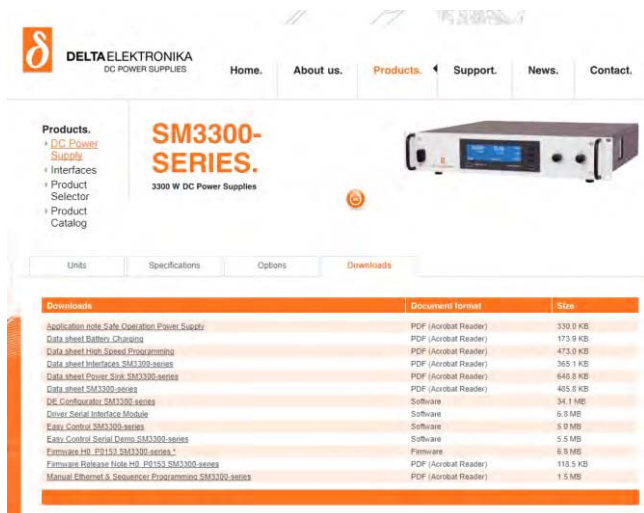


fig. 2 - 5, Regularly check for new versions of user manual and firmware.





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## EC Declaration of Conformity - SM3300-series

We

Delta Elektronika  
Vissersdijk 4  
4301 ND ZIERIKZEE  
The Netherlands

Declare under sole responsibility that the following Power Supplies:

**SM 18-220**  
**SM 66-AR-110**  
**SM 100-AR-75**  
**SM 330-AR-22**  
**SM 660-AR-11**

Meet the intent of Directives

2014/30/EC for Electromagnetic Compatibility  
2014/35/EC regarding Electrical Safety. (Low Voltage Directive)  
2011/65/EC Reduction of Hazardous Substances (RoHS2)

Compliance was demonstrated to the following specification as listed in the official Journal of the European Communities:

**EN 61000-6-3 Generic Emissions:** (residential, light industrial)

EN 55022 Radiated and conducted, Class **B**  
EN 61000-3-2 Power Harmonics  
EN 61000-3-3 Voltage fluctuation and flicker

**EN 61000-6-1 Generic Immunity:** (residential, light industrial)

**EN 61000-6-2 Generic Immunity:** (industrial environment)

EN 61000-4-2 Electrostatic Discharge  
EN 61000-4-3 Radiated electromagnetic fields  
EN 61000-4-4 Electrical Fast Transients / Bursts  
EN 61000-4-5 Surge on DC output  
EN 61000-4-5 Surge on line input  
EN 61000-4-5 Surge on Signal  
EN 61000-4-6 RF common mode, conducted  
EN 61000-4-11 Voltage variations and dips  
EN 61000-4-8 Power-frequency magnetic field

**EN 60950 Safety of IT equipment**

**EN 61010 Safety of electrical equipment for measurement, control and laboratory use**

J. Koopman,  
Managing director  
Zierikzee, February 2018