

**SX - series**

**• ST 150**

# Safety Instructions

## 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.

## Installation Category

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

## Grounding

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

For instruments 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.

## Fuses

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

## Input Ratings

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

## Live Circuits

Operating personnel must not remove the instrument 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.

## 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.

## 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)



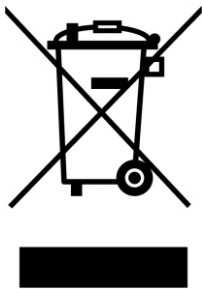
On (Supply)

## WEEE

### (Waste Electrical & Electronic Equipment)

### 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.

## DESCRIPTIONS

### 1) Mounting in a 19" Eurocard rack

A ST150, with a front panel F8-6 of 8TE width, fits into a 6 HE Eurocard rack.

Sufficient space above and below the unit has to be kept to allow the air to flow freely along the unit for optimal cooling. If the cooling is insufficient the output will be shutdown by the overtemperature protection. When cooling down the output automatically resets.

### 2) Wall and rail mounting

Wall mounting is possible with the help of the front panel W 8-6. For rail mounting, besides the W 8-6, a rail adapter AR 1 is required.

For wall and rail mounting also the clamp CL15 is needed to fix the H15 mating connector.

Units have to be mounted vertically with sufficient space above and below for optimal cooling (see fig. 3 - 1)

Horizontal mounting is not recommended but if necessary the output has to be derated to 80% at 50°C ambient temperature (see fig. 3 - 2). Good cooling is important for a long life.

### 3) Autoranging input

This power supply can be used at any AC input voltage within the ranges 98-132 V and 185-264 V.

At the lowest range the input rectifier circuit changes automatically from a bridge rectifier into a voltage doubler.

At DC the input circuit does not switch over, so only the upper range 230-350 V DC can be used.

This is because the voltage doubler can only work with AC.

### 4) Connections

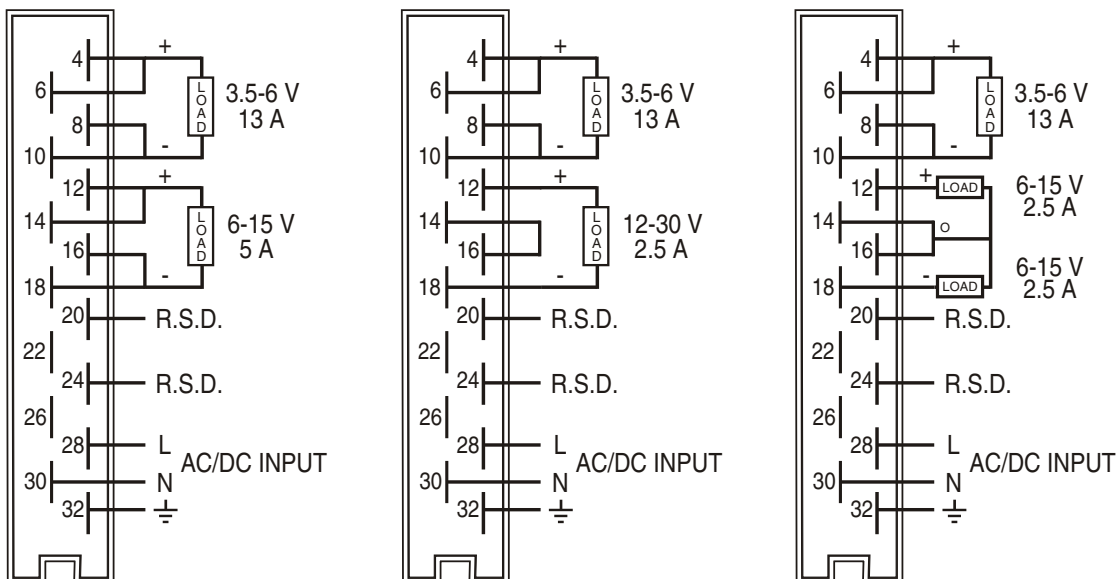


fig. 3 - 3

The two outputs of 6-15 V can be connected in series or parallel

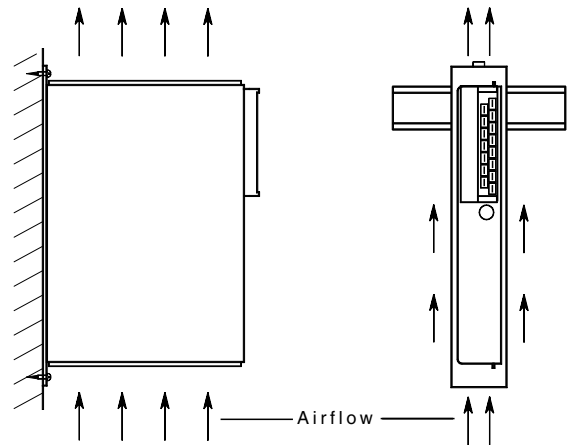


fig. 3 - 1

Vertical wall or rail mounting

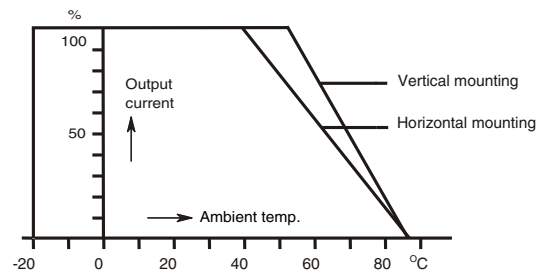


fig. 3 - 2

Temperature derating

## 5) Remote sensing

Remote sensing is not possible with the ST150.

## 6) Parallel operation

Parallel operation is allowed up to 40 °C, but usually there is a better solution by using a combination of single output units.

### Current limit

At overload and short circuit the current limits to a safe value. At the low end of the voltage range a slightly higher current can be taken.

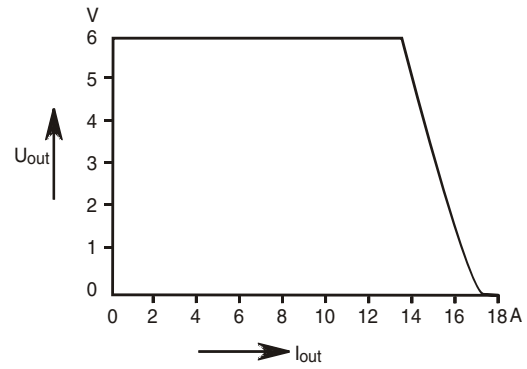


fig. 3 - 4  
Current limit 5 V output

## 8) Remote programming

Remote programming is not possible with the ST150.

## 9) Remote control

Remote control is not possible with the ST150.

## 10) Remote ShutDown

Both, the 5 V and the 2 x 15 V outputs have an independent Shut-Down input.

Remote ShutDown is possible by +5 V (3.5-12 V) between RSD and – (pin 20 and pin 10) for the 5 V and 24 and 18 for the 2 x 15 V. This means that the 2 ShutDown inputs have no common zero. The ShutDown inputs are low ohmic ( $R_i$  is about 300  $\Omega$ ).

## 11) Dual mode

The two 6-15 V outputs of the ST150 can be used as a dual power supply with equal positive and negative output voltage (see fig. 3 - 6).

It is not an ideal dual with two independently regulated outputs.

The total voltage is kept constant within millivolts. The shift of the zero point at unequal loading is so small that it is a practical, inexpensive dual which can be used for nearly all applications.

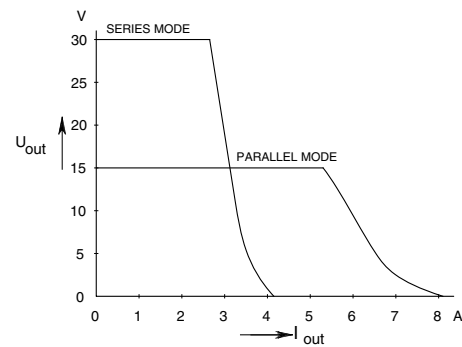


fig. 3 - 5  
Current limit 2 x 15 V output

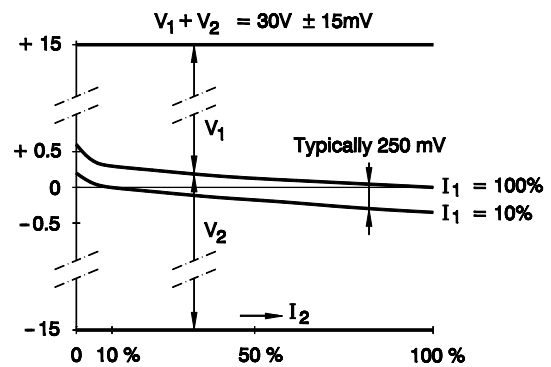


fig. 3 - 6  
6-15 V outputs  
Zero-shift caused by unequal loading of + and - 15 V



## **EC Declaration of Conformity**

We

Delta Elektronika  
P.O. BOX 27  
4300 AA ZIERIKZEE  
The Netherlands

declare under sole responsibility that the following Power Supply:

### **ST 150**

meet the intent of Directives 2004/108/EC; 92/31/EEC; 93/68/EEC for Electromagnetic Compatibility and Directives 73/23/EEC; 93/68/EEC regarding Electrical Safety. (Low Voltage Directive)  
Compliance was demonstrated to the following specification as listed in the official Journal of the European Communities:

#### **EN 61204-3 EMC, low voltage power supplies**

#### **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 61000-4-2 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 61000-4-6 RF common mode, conducted  
EN 61000-4-11 Voltage variations and dips

#### **EN 60950 Safety of IT equipment**

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

Managing director