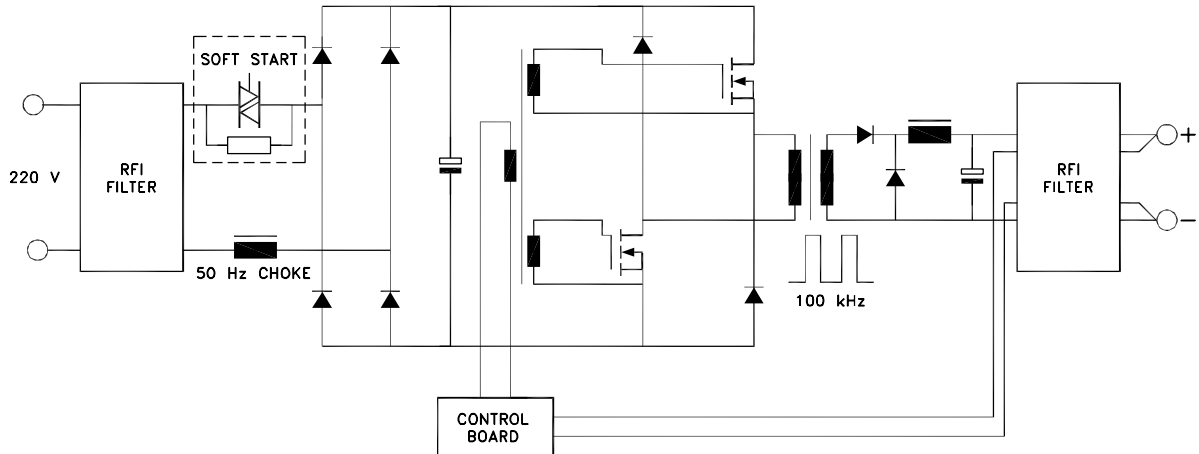


S 6 - 40
S 15 - 18
S 28 - 10

CIRCUIT DESCRIPTION



Simplified functional diagram of the S-series

The 220 VAC line voltage is rectified by a bridge rectifier and smoothed by an electrolytic capacitor. The 50 Hz choke in the input circuit improves the waveshape of the input current so that the low frequency distortion on the line voltage, produced by the rectifying into a large capacitor, is kept to a minimum.

The high frequency interference produced by the switching transistors is prevented from being fed back to the line and the load by carefully designed RFI filters.

When the unit is switched on the electrolytic capacitor is charged via the resistor of the SOFT START circuit, so that no high inrush current will flow. As soon as the voltage is sufficiently high the power supply starts working and the series resistor is bypassed by a triac.

Advantages of the 100 kHz switching frequency are: small size, light weight, low ripple and fast regulation. The rectified 220V (300V DC) is chopped and transformed to a lower voltage. The power converter is of the feed forward type which offers the best efficiency. The regulation is achieved by pulse width modulation.

Careful design, overdimensioning of vital components, several built-in protections and cool operation (possible because of the high efficiency) make the S-series very reliable. They can continuously be used at maximum rating, overloaded and short circuited.

LOAD RIPPLE AND PEAK CURRENTS

Ripple currents caused by the load at frequencies below 1 kHz are compensated by the voltage regulation. However high load ripple currents which exceed the current limit or which have strong components above 1 kHz can overheat the output electrolytic capacitors. Also repetitive high peak currents, as generated by the input current of some 50 Hz DC-AC inverters, can have this effect. In such cases an external electrolytic capacitor as buffer parallel to the load will solve the problem. Suggested values: 20.000uF S 6-40, 10.000uF S 15-18, 4.700 uF S28-10.

INSTALLATION

POWER REQUIREMENT

AC-input

The S-series operates on any input voltage between 195 and 265 VAC 48 and 62 Hz. Below maximum output voltage the minimum input voltage can even be lower than 195 V. For example at 24 V 10A the input of the S28-10 may go as low as 175VAC. The input fuse is 4 A slow blow.

For operation on line voltages between 100 and 132 VAC 48 and 62Hz an external link has to be made at the input connector and the input fuse has to be changed to 6.3A slow blow.

DC-input

The S-series can also be used as a DC-DC converter. However at lower output voltage the minimum DC input can be lower. Contact factory for details.

MECHANICAL

Rack mounting

The unit is designed as an Eurocassette according to DIN41494 to fit into a 19" Eurocard rack. The width of the unit is 38TE. A 40 TE front panel can be ordered separately.

Wall mounting

Although the unit is designed as a plug-in Eurocassette it can also be used for wall mounting. A special front panel for wall mounting FPW is available. The connectors can be fixed with a plate type DWG 888.

CONNECTORS

With each unit two H15 female connectors with faston tabs 6.3 x 0.8 mm are supplied.

Also available are H15 female connectors with screw connections and with solder pins. These can be ordered separately.

At the output connector 4 pins are available for + output and 4 for - output. It is important to **use all 4 pins** and put them in parallel to keep the voltage loss in the connector to a minimum, especially in the S 6-40.



H15 with faston tabs 6.3 x 0.8mm

with screw terminals

with solder pins

COOLING

The unit has natural convection cooling (no blower). This means that above and below enough space must be available to permit a vertical airflow through the unit. Although the efficiency is high, the dissipated heat at full load is still 38 W for S 28-10 to 60 W for S6-40 and this has to flow away.

OPERATION

Before operation the following connections have to be made: The four + connections (pins 4, 6, 8, 10) and the S+ (pin 12) have to be connected together. The same with the four - connections (pins 16, 18, 20, 22) and S- (pin 14). The 5 V reference voltage (pin 24) has to be connected with the voltage regulation (pin 26) and with the current regulation (pin 28).

Internal voltage and current adjustment

The voltage and current can be adjusted with the internal potentiometers which are accessible through the front panel.

External voltage and current adjustment

Connect 2.5 kOhm potentiometers as drawn. Turn internal potmeters to maximum. Because the 5kOhm of the internal potmeters remains parallel to the external ones the adjustment is not linear.

External voltage and current programming

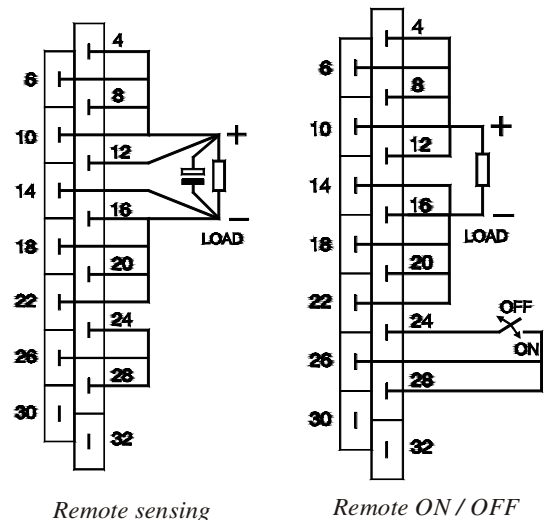
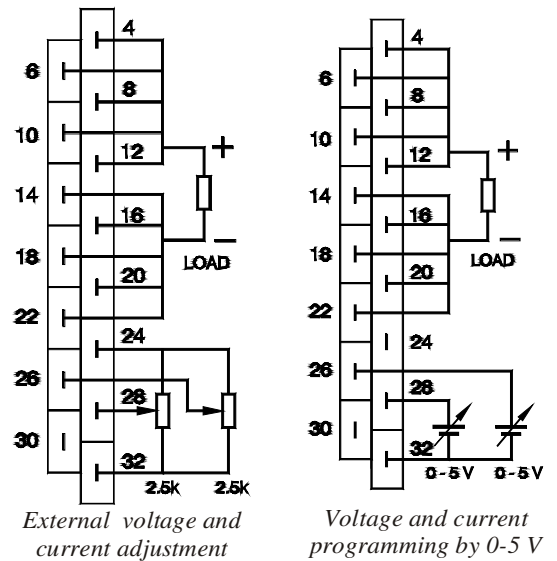
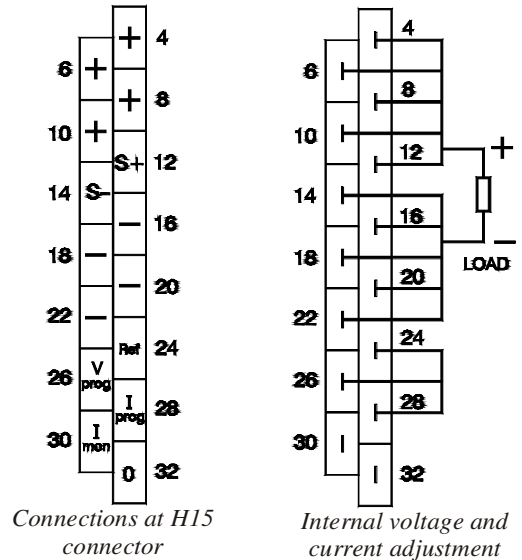
Turn internal potmeters to maximum. A programming voltage of 0-5V gives the full range of output voltage or current. The input impedance of the programming inputs is 5kOhm (the resistance of the internal potentiometers). The nonlinearity of the programming is max. 0.15% of full range. The offset error is max. +15 mV (0.3%) for voltage and +25mV (0.5%) for current programming.

The maximum programming speed is 600V per sec., however the product of dv/dt (in V/s) x amplitude (in V) x repetition frequency (in Hz) may not exceed $2 \cdot 10^4$.

Remote sensing

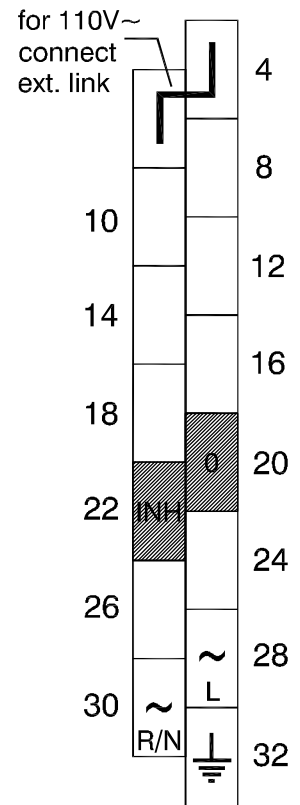
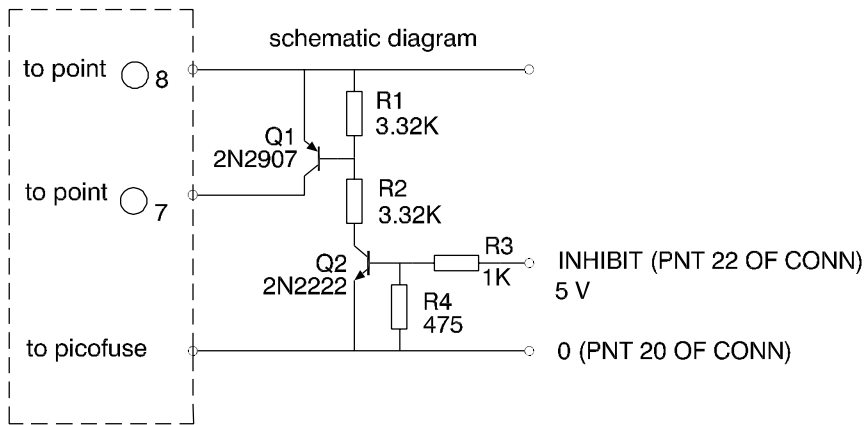
Normally the sense terminals S+ and S- will be connected directly to the + and - at the power supply output. This means that the output voltage is kept constant at the output terminals. However, if the voltage drop across the leads to the load is too high, it is possible to keep the voltage across the load constant by means of remote sensing. Max. 2V per lead (total 4 V) compensation is possible. The total voltage drop across the load leads has to be subtracted from the maximum voltage range. The OVP setting has to be increased accordingly.

In order to prevent undesired oscillations when using external sensing, an extra electrolytic capacitor at the load is recommended. 20.000 uF for S 6-40, 10.000 uF for S 15-18, 4.700 uF for S 28-10



OPTION P015

Inhibit function for S6 - 40, S15 - 18 and S28 - 10



LAY-OUT (TOPVIEW)

