Weidmüller

UPAC Analog AC

UltraSlim Pak AC Converter

AC Voltage or Current Input
DC Voltage or Current Output

Read these instructions before using the product
and retain for future information.

R.T. Nr. 403723/10.97

1. General instructions

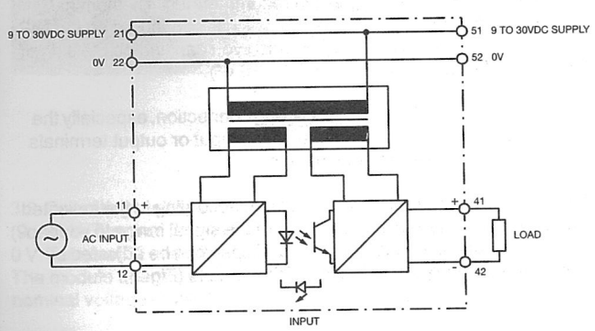
UPAC should only be installed by qualified personnel and should only be powered up when correcty installed.

2. Application

UPAC Analogue Converters may be used for sensing and converting signals from AC Voltage and current systems. The AC Voltage or current can be converted to an analogue DC standard voltage or current signal suitable for retransmission or interfacing to control and measuring systems.

3. Electrical connection

Figure 1:



3.1 Input (Terminal 11 and 12)

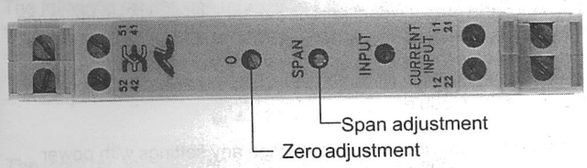
In order to avoid interference from electrical and magnetic fields the use of shielded and twisted pairs is recommended. The nominal value of the input signal will be either within the range configured by the DIP switches or indicated on a label which you can find on the side of the module ("In XXXX", e.g. "In 0....10 V").

3.2 Output (Terminal 41 and 42)
In order to avoid interference from electrical and magnetic fields the use of shielded and twisted pairs is recommended. The nominal value of the output signal will be that which is configured on the DIP switches or is indicated on a label which you can find on the side of the module ("Out XXXX", e.g. "Out 0....10 V").

Warning! Polarity reversal or wrong connection, especially the connection of power to the input or output terminals will damage the module.

The UPAC converter has been calibrated according to the indicated signal range. However, if an adaption of the signal range to your application should be necessary, zero and span can be adjusted by trimmers accessable from the top of the module (Fig. 2).

Fig. 2: Front view UPAC



Span adjustment
Zero adjustment

3.3 Operating voltage
(9...30 V: Terminal 21 and 51,
0 V: Terminal 22 and 52)
The module operates with a voltage of 9 Vdc to 30 Vdc. For the nominal voltage of 24 Vdc the current consumption is 65 mA.

Warning! When "Daisy chaining" the power supply of many modules the current through the internal connection of terminals 21 and 51, 22 and 52 must not be higher than 65 mA.

4. Adjustment instructions

The input and output signal ranges can be adjusted in a wide range for your application. The adjustment is done with DIP switches that are accessable through the side cover and the zero and span potentiometers which allow 50 % trim and are accessable through the top of the module.

Warning ! Do not attempt to change any settings with power applied.
Severe damage will result!

4.1 Equipment

- Power supply 24 V, 100 mA min.
- AC current/voltage source, allowing adjustments of UPAC with an accuracy better than 0,2 % of Full Scale.
- DC current/voltage meter, allowing adjustments of UPAC module with an accuracy better than 0,2 % of Full Scale.
- Cables for the connection of power supply, source and meter with UPAC.

4.2 Ranges

The following ranges can be selected according to the table on the side cover of UPAC:

- Input voltage: 100 mV to 200 V AC
- Input current: 10 mA to 100 mA AC
- Output ranges: 0...5 V, 0...10 V, 0...1 mA, 0...20 mA or 4...20 mA

The input ranges selected according to the table shown on the side plate of the module can be adjusted with potentiometers that are accessable from the front side (Fig. 2).

Potentiometer "0": Offset adjustment 0...50 % of Full Scale according to table with switch settings.

Potentiometer "Span": Full Scale adjustment 100...50 % of the value according to table.

4.3 Switch selection

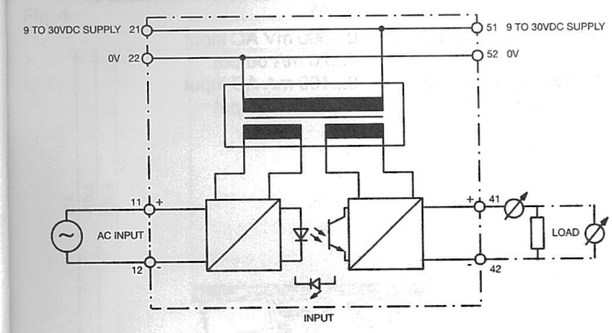
Warning ! Do not attempt to change any DIP switch settings with power applied.
Severe damage will result!

- With power disconnected.
- Set input range and function with DIP switch SW1.
- Set output range with DIP switch SW2.

5. Calibration

For greatest accuracy the calibration should be performed in the final installation.
After switch selection, connect UPAC module according to Fig. 3. In order to achieve maximum accuracy, wait 15 min. allowing the UPAC to warm up.

Fig. 3 Connection diagram for calibration



a) Apply the minimum input signal and adjust the "0" pot on the front panel for the minimum output signal.
b) Apply the maximum input signal and adjust the "Span" pot on the front panel for the maximum output signal.

Repeat steps a and b for maximum accuracy.

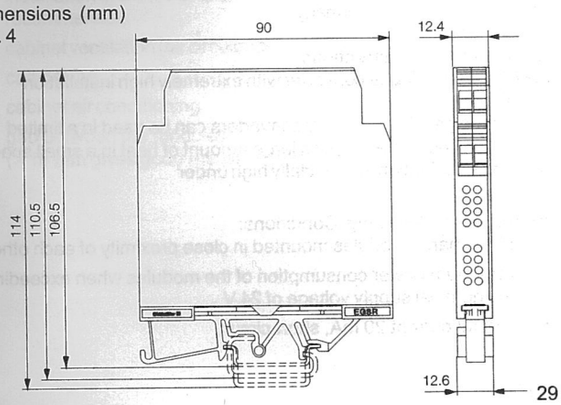
The factory setting and calibration unless otherwise stated is:

Voltage input module	0...500 mV AC input 4...20 mA output
Current input module	0...100 mA AC input 0...20 mA output

6. Installation

UPAC converters can be mounted on standard DIN rails TS 32 or TS 35 using the combination foot supplied. The modules must be installed, so that the ventilation holes on both sides of the module lie a vertical axis (standard cabinet installation). Furthermore, the ventilation holes must be not covered in order to enable a sufficient air flow through the module.

Dimensions (mm)
Fig. 4



7. CE mark

UPACs are marked CE in accordance with the EMC directive 89/336/EWG "Electromagnetic compatibility" detailling the harmonised EN norms.
The declaration of conformity for the authorising body is held by:

Weidmüller Interface GmbH & Co.
Postfach 3030
D-32720 Detmold
Germany

8. Installation instructions

UPAC is an analogue converter with extremely high installation density.
Due to the small width many converters can be used in a limited space and therefore supply a large amount of heat in a small space. The heat dissipation is especially high under

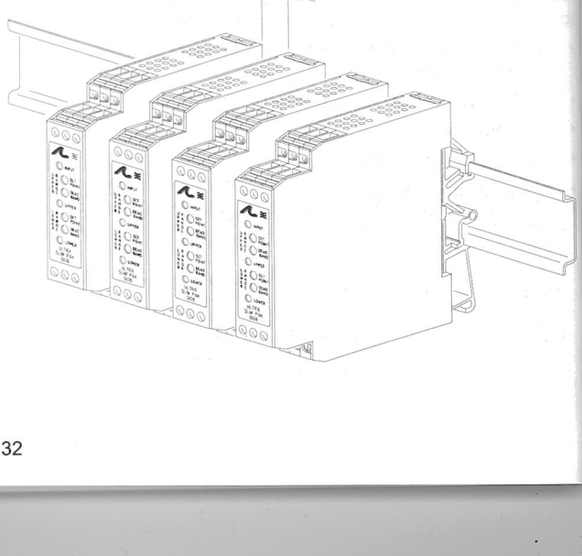
Worst Case Operating Conditions:

- More than 5 modules mounted in close proximity of each other
- Maximum power consumption of the modules when exceeding the nominal supply voltage of 24 V
- Output current 20 mA, short circuit

Regarding this fact the specified ambient temperature according to the operating instructions is the temperature in close proximity directly above the ventilation holes of the modules - and not at any other point of the closed installation room (e.g. cabinet installation). For permanent operation under worst case conditions (especially for short circuit current outputs) the specified ambient temperature has to be forced by adequate measures if necessary:

- installation in the lower area of the cabinet is generally recommended
- cabinet ventilation (air circulation)
- cabinet fan
- cabinet air conditioning
- gap between the modules
  (> 10 mm gives good results, see figure 5)

Fig. 5:
Gap between modules for dense applications with a high ambient



9. Technical Data

Input	
Voltage input	Config. from 0...100 mV to 0...200 Vac
Maximum overvoltage	300 Vac
Input impedance	> 100 kΩ
Current input	Configurable from 0...10 mA to 0...100 mAac
Overcurrent	200 mAac, 60 V
Maximum overcurrent	170 mA_{eff}
Input impedance	20 Ω
Common mode	Max. 1800 Vdc input to earth
Common mode rejection	DC to 60 Hz; 120 dB
Range of zero adjustment	0...50 % of input range using potentiometer on the front
Range of span adjustment	100...50 % of input range using potentiometer on the front
Output	
Current output	0...20 mA, 4...20 mA Max. load < 600 Ω 0...1 mA max. load < 7.5 kΩ
Voltage output	0...5 V, 0...10 V min. load > 1 kΩ
Input frequency signal	40...400 Hz (factory calibration at 50 Hz)

Accuracy (including linearity and hysteresis)	Typ. < ±0.1 % from end value, max. ±0.5 %
Stability	< ±0.025 %/°C of selected input range
Response time (10...90 %)	Typ. 250 ms
Isolation voltage	1800 Vdc, between input, output and voltage supply
Status indication	
LED INPUT	Green, power ON Input > 110 %, 8 Hz blinking
General	
Operating voltage	9...30 Vdc, 1.5 W typ., 2.5 W max.
Operating temperature	0...+50 °C
EMC norm	EN50081-1/EN50082-2
Mounting	12.6 mm width housing for DIN rails TS 35 or TS 32
Connection technology	Screw connection 0.5...2.5 mm^2

In the interest of saving the environment, return any spare operating instructions to your local stockist for re-use.
Printed on chlorine-free bleached paper.