

Technical Information  
Operating Instructions  
**NUC80E**

## **Impressum**

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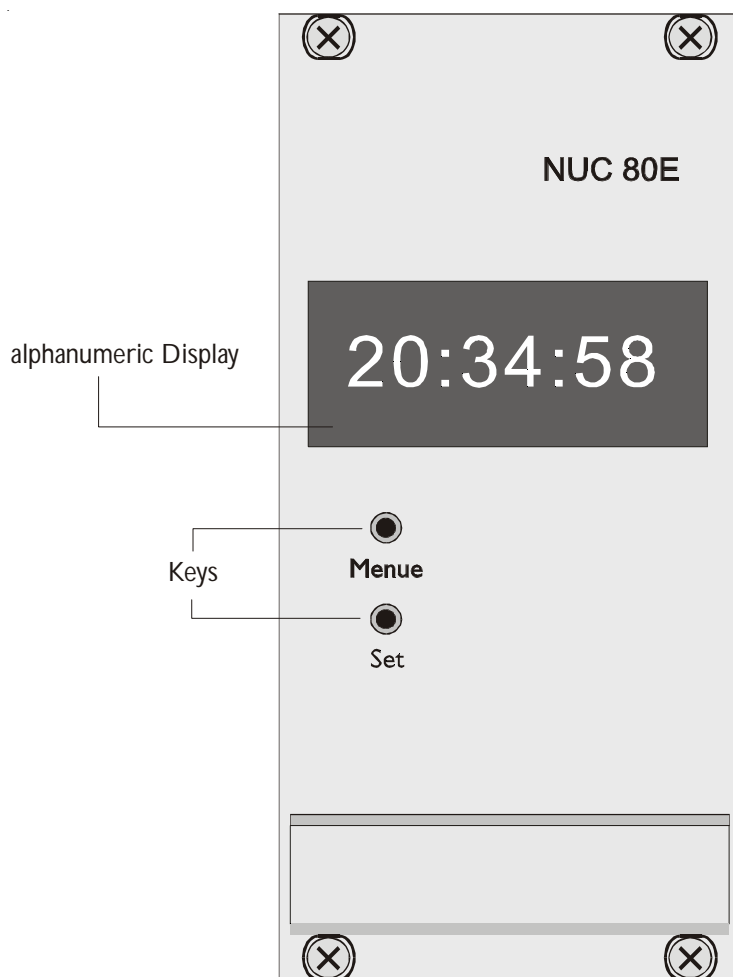
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## Slave Line Booster NUC80E

NUC80E is a module to control and drive slave clocks. It needs the serial timestring of a preconnected radio clock via the serial interface. The outputs are able to drive a line of up to 80 slave clocks with bipolar minute and second pulses. It is possible to cascade several NUC80E to get a number of slave lines.

An alphanumeric LED display is used to show the time and the state of operation. Two keys are used to control and configure the unit. The actual slave clock time is stored secondly in a buffered RAM so that the slave clocks are able to catch up the time after a power-fail.



Front Panel

## NUC80E Features

- \* microprocessor system for display, setting and output-check
- \* 8-digit alphanumeric display
- \* menu-driven configuration
- \* short circuit proofed line booster for minute and second lines
- \* integrated power supply, also for preconnected radio clock (+5V)
- \* buffered RAM
- \* optocoupler for line-control
- \* serial current loop interface

## Installation

The passive serial current loop input of the NUC80E has to be connected to an active serial output of a radio clock. This radio clock must send the "Meinberg Standard Time String" once per second. NUC80E compares the time string from the serial port with the time of the slave clocks and generates the necessary pulses on the slave clock lines. If the slave time is behind the master time it will be caught up by generating additional pulses on the minute line every two seconds. If the slave time is ahead the NUC80E stops generating pulses until the master time has reached the slave time. The fetched out pulses are checked on the board. If one of the lines is shorten, the lost pulses are generated later after the failure has been removed.

## Keys

Information on time and configuration can be retrieved by the two keys in the front panel. The **Menu** key lets the user choose between several menus. Pressing **Set** lets the user enter the corresponding menu.

## **The Menus in Detail**

### **"Uhr"**

This menu when selected displays the time of the slave line. After power on this menu is shown as default.

### **"Uhr SET"**

This menu lets the user set the internal slave clock time to the time shown on the connected slave clocks.

When pressing **SET** the first time the slave line time appears on the display with the first digit of the hours blinking. Pressing **SET** once more causes the slave line time to stop. Keeping the **SET** key pressed for a longer time the blinking digit is incremented. Pressing **SET** briefly causes the next digit to blink. Leaving this menu lets the NUC80E start the slave line.

### **"Minuten"**

This menu is given for testing the minute slave line. Minutes and hours are displayed. Pressing **SET** lets the user switch on or off the slave line. This state is indicated with a "H" (hold) or a "R" (run) shown in the display.

### **"Hauptuhr"**

This menu displays the time received from the preconnected radio clock.

## **Alarm Menus**

**"UHRALARM"** (blinking) indicates an invalid slave clock time. This alarm is possible only after power up (when the buffered RAM is cleared because of empty or defect buffer capacitor).

**"MIN-FEHL"** or **"SEK\_FEHL"** (blinking) indicates a short circuit at the corresponding slave line.

**"SER\_FEHL"** (blinking) indicates a missing or faulty serial string.

Each of this cases causes a relay to become active 90 seconds after the alarm has been established.

## Technical Specifications

Display:	8-digit dot matrix display (5mm)
Interface:	20mA current loop input (passive) Baudrate: 9600 baud Framing: 7E2
Pulse Outputs:	shorted slave line detection and autotracking of the slave clocks potential separation between power and control parts pulse voltage: 24V pulse current: 0.6A max. pulse width: 1s (minute slave line), 0.5s (second slave line) pulse outputs short circuit proof
Alarm Output:	Active when slave line is shortened or in case of driving failure
Connector:	Male connector, mixed F/H, DIN 41612 Type F: 24 poles, type H: 7 poles
Power Requirements:	Input: 230V/50Hz Output: +5V/350mA (power supply for the radio clock)
Physical Dimensions:	Eurocard, 100mm x 160mm, 1.5mm Epoxy
Front Panel:	Anodized aluminium, 60 mm wide
Ambient Temperature:	0 ... 50°C
Humidity:	max. 85 %

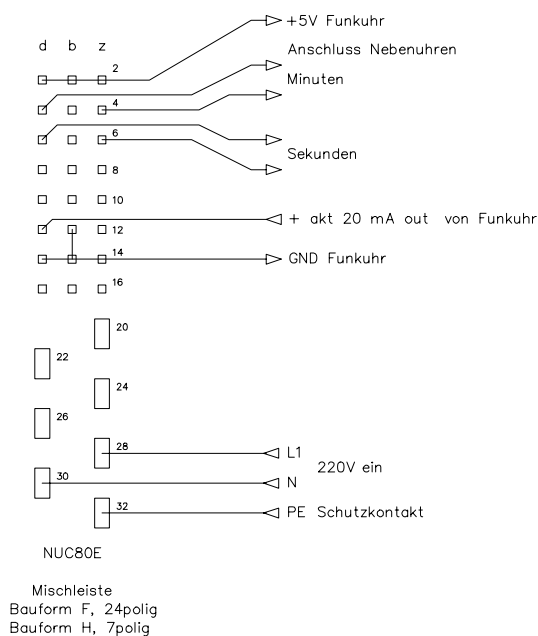
## CE Label



This device conforms to the directive 89/336/EEG on the approximation of the laws of the Member States of the European Community relating to electromagnetic compatibility.

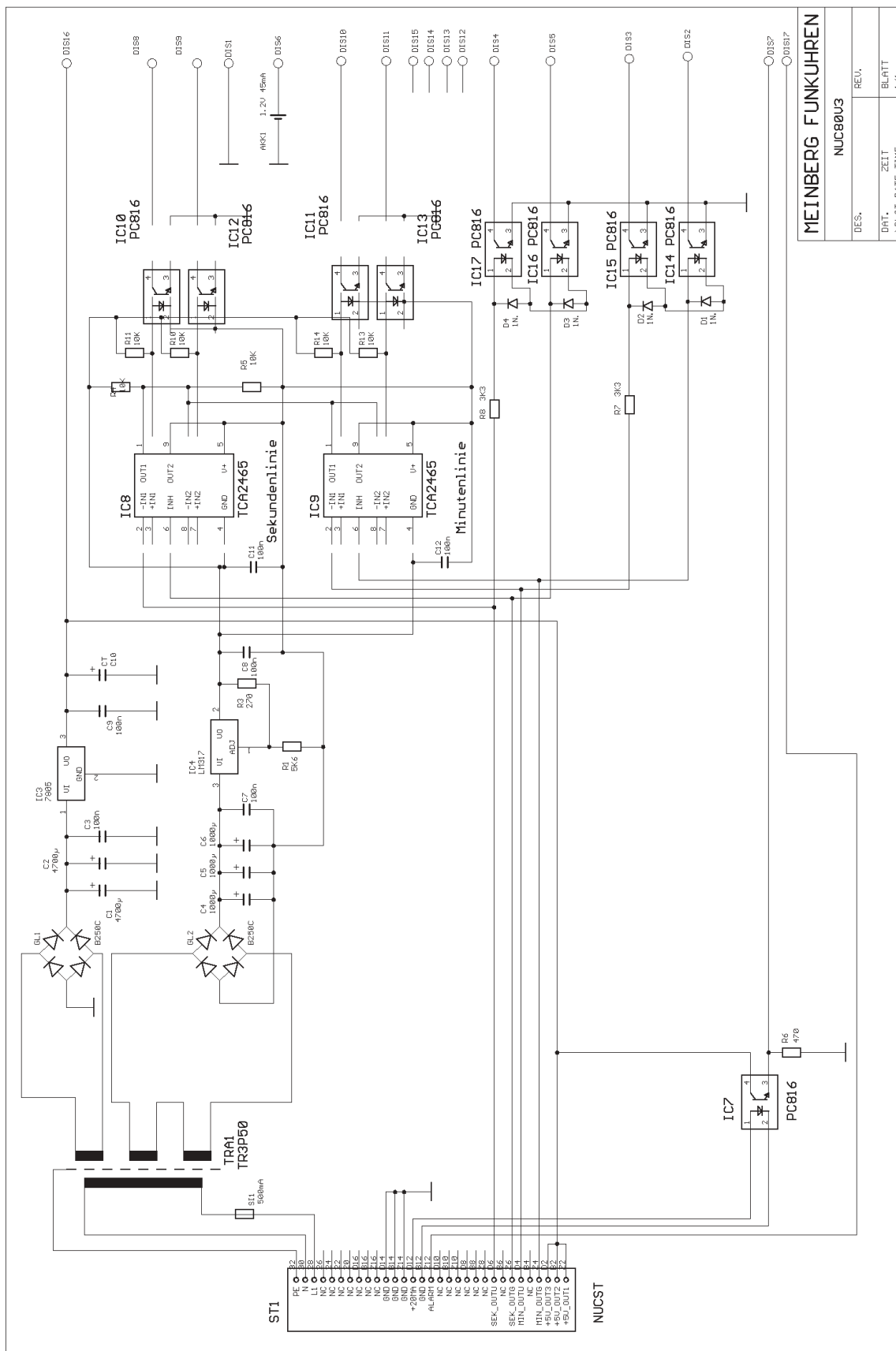
The wiring is explained in the following drawing. The connection of the slave clocks occurs via the rear VG connector. The correct polarity of the connected slave clocks can be checked by comparing the NUC80E slave line time with the time displayed on the slave clocks. If the slave clocks are one second/minute past or ahead the corresponding line must be connected to the NUC80E with reverse polarity.

## Anschluss NUC80E



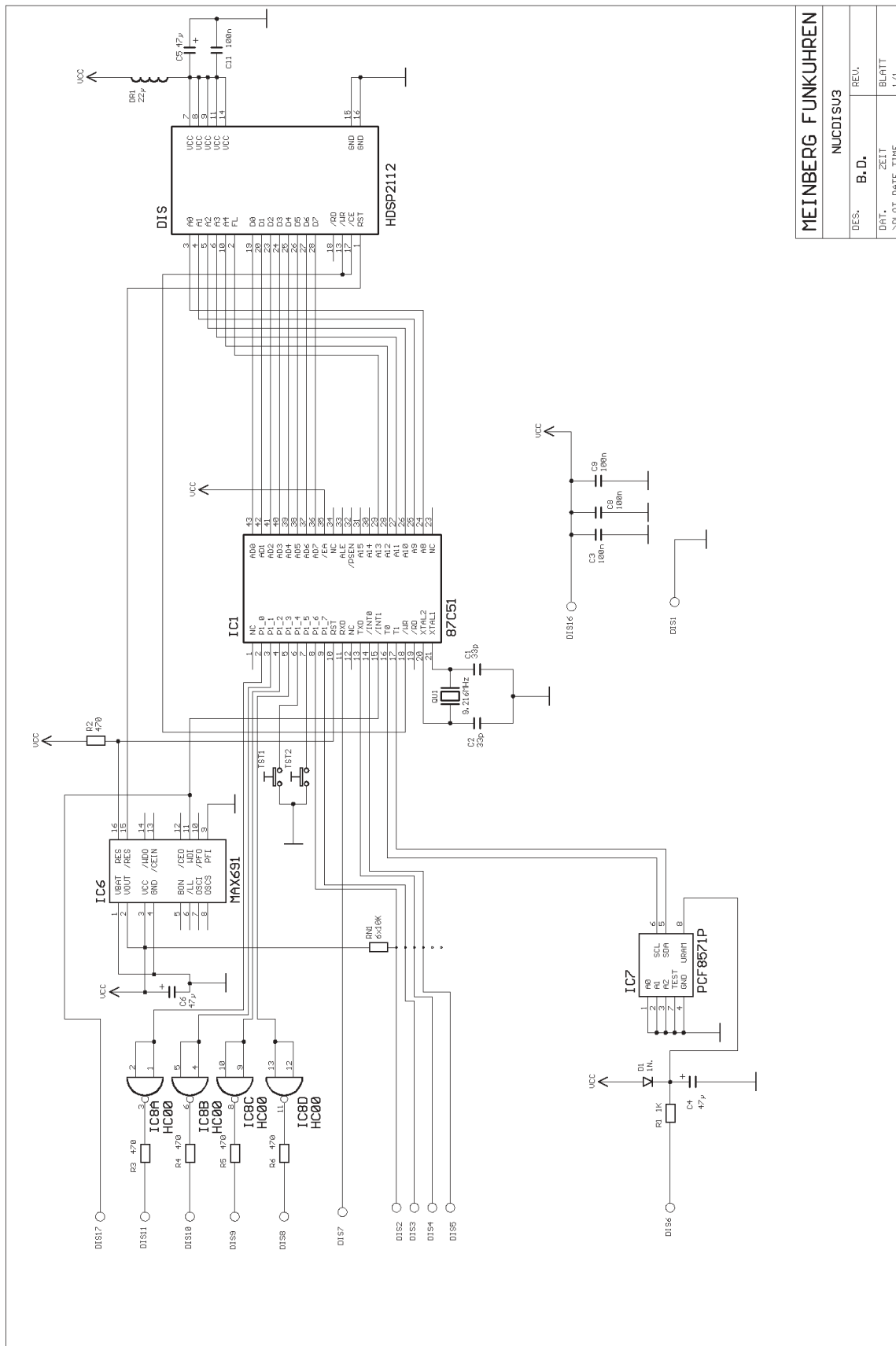


## Schematic Line Booster



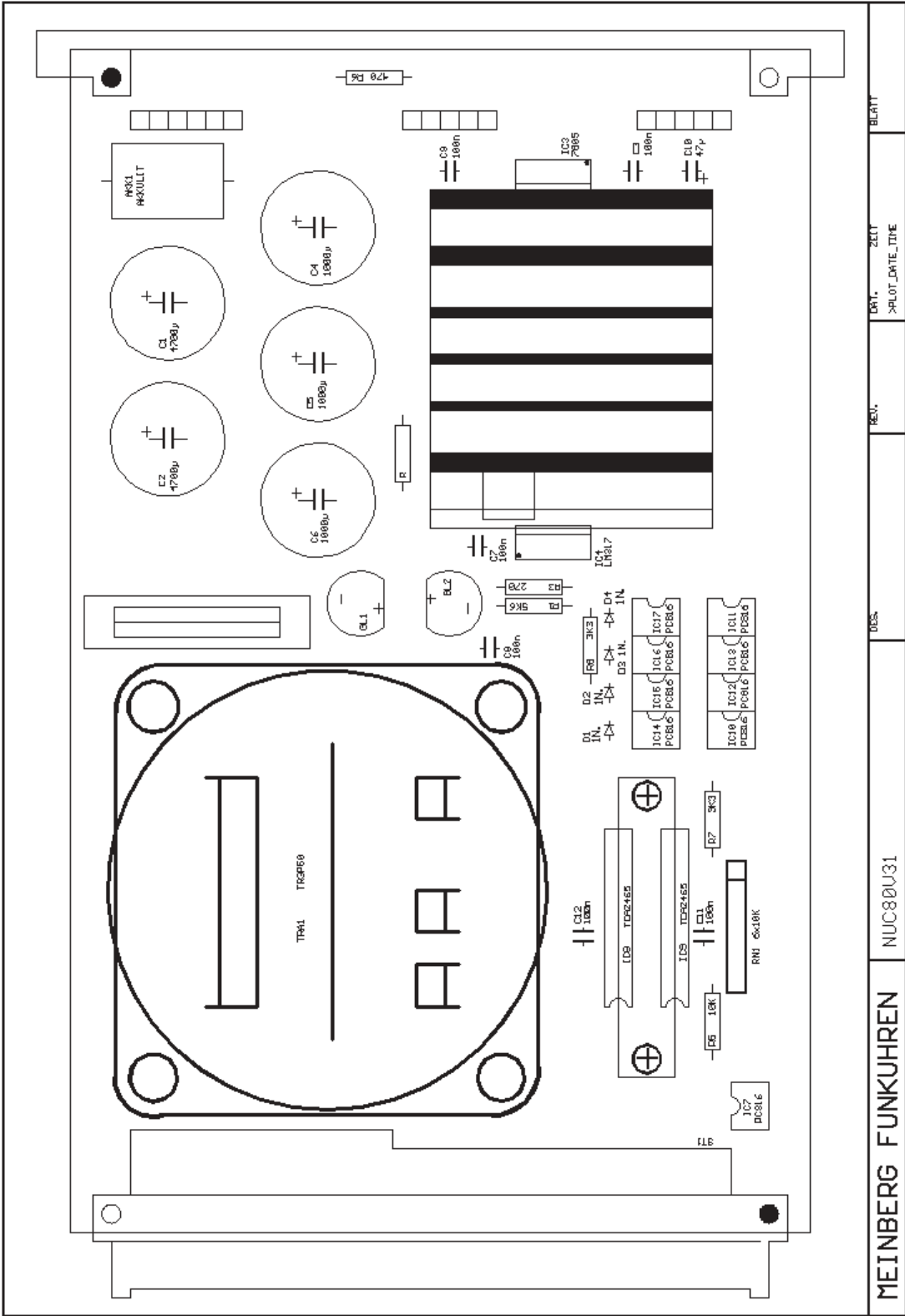


## Schematic Microprocessor and Display



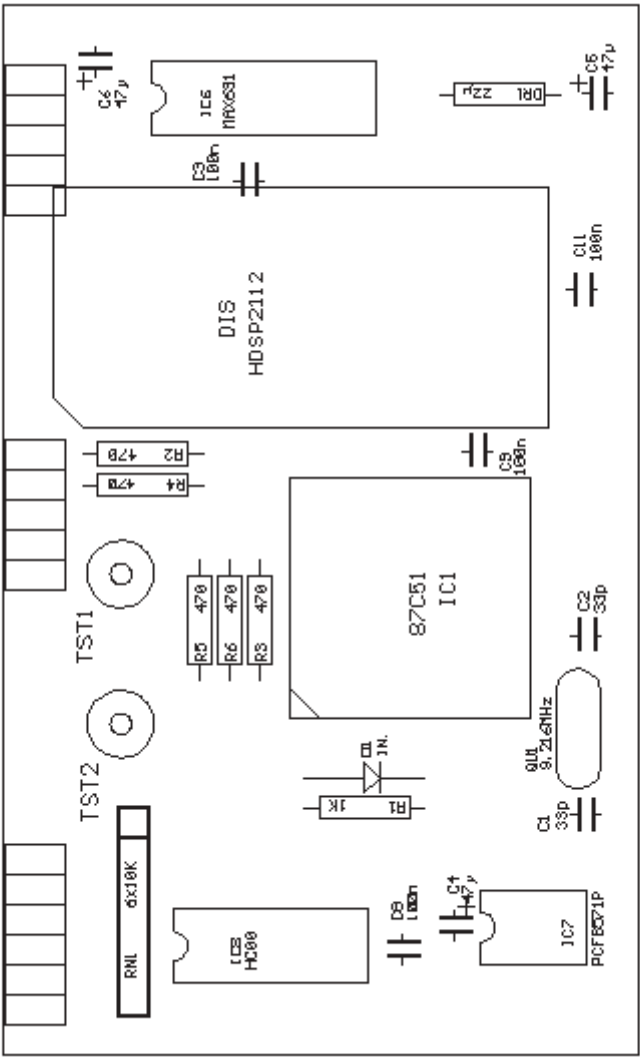


Component Layout





# Component Layout Display





## Rear Connector Pin Assignment

	z	b	d
2	VCC in (+5V)	VCC in (+5V)	VCC in (+5V)
4	Min. even out		Min. odd out
6	Sec. even out		Sec. odd out
8			
10			
12	Alarm	- 20mA in	+ 20mA in
14	GND	GND	GND
16			
20			
22			
24			
26			
28	230VAC(L1)		
30			230VAC(N)
32	PE		

Male connector, mixed F/H, DIN 41612  
 Type F: 24 poles, type H: 7 poles

