

REFLECTION ALARM UNIT 21TE, RS963

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BLOCK DESCRIPTION

Refer to block diagram RS000 130 and RS963001.

The reflection alarm unit receives a DC input representing the total output power to the antenna, and the amount of reflected power, from a measuring coupler. These values are presented on the upper line of a display on the front panel of the unit.

A microprocessor calculates the reflection factor (R) and from this the standing wave ratio (SWR). Both values are presented on the lower line of the display.

The standing wave ratio is also compared with two locally set voltages to obtain alarms at two levels. The alarm signals are forwarded to all connected channel units via the alarm unit.

The samples from the measuring coupler and potentiometer settings are converted to digital form for the processing in an A/D converter (not shown in the diagram).

The circuits are distributed on two cards, one reflection measurement card and one reflection display card.

CIRCUIT DESCRIPTION

Refer to circuit diagrams RS963 102 and RS963 202.

The microprocessor

The microprocessor consists of CPU Q1, which is controlled by the program in EPROM Q2. Clock generator and working memory are contained in the CPU. Space is provided on the card for an external RAM if a future change in the program would require an extended working memory.

An 8 bit data bus is provided for communication with EPROM, A/D converter and display.

There are three sets of ports on the CPU. Set P is used for alarm outputs, switch inputs and watchdog triggering, set A for most significant address bits and set AD for data and least significant address bits.

Data and least significant address bits are separated by buffer Q4, which provides address bits to the EPROM, the A/D converter and the display. The address bits are latched into the buffer on signal ALE (Address latch enable).

The EPROM requires 6 additional address bits which are provided by ports A. It is mounted in a socket to facilitate program modifications. Two address inputs can be restrapped to adapt to different program areas if necessary.

The A/D converter

Three inputs to the A/D converter, IN5 through IN7, arrive from potentiometers on the display card: two alarm levels LV1 and LV2 and one alarm threshold LOW LIM. The alarm threshold is used to inhibit alarms when there is no transmitter output but "reflected" power is detected by the measuring coupler in the antenna line due to power induced into the antenna from a second base station on the same site.

From the remaining inputs IN1 and IN2 are used for the PO and PR signals, respectively, from the measuring coupler. The signals are buffered on the card.

At the end of the conversion an output from the A/D converter sets flip-flop Q5 to obtain an interrupt request IRQ- to the CPU.

Control signals

The circuitry Q6 through Q8 provides control signals for EPROM, A/D converter and display from the R/W (read/write) and E (Enable) outputs from the CPU together with two address bits A14 and A15.

The E output has also two other uses: it is used as a clock signal for the A/D converter and watchdog Q9 and it is rectified by D1,D2 to provide an input voltage to the contrast setting potentiometer on the display card. The watchdog is triggered by an output from port P24 on the CPU and will try to restart the CPU with a Reset-signal in the event of a CPU failure.

Alarm output

The two alarms, REFL1 and REFL2, are issued by the CPU at ports P11 and P12. They illuminate LEDs on the display card and are passed via the open collector buffer Q12 to connector P1. The alarms are then brought to all channel units via the alarm unit.

Control switches

One of the two switches on the display card is used to switch the microprocessor between alarm mode and setting mode (alarm levels set by the potentiometers). When both switches are depressed simultaneously an alarm test is initiated. After 5 seconds REFL1 is activated and after 10 seconds REFL2.

The display

The display is a two line display similar to the display on the channel unit. The contrast is set by a potentiometer on the display card. Background illumination is provided by an AC from oscillator Q1.

Normally the display shows power output, reflected power, standing wave ratio and reflection factor. In the setting mode the display shows alarm levels and threshold level.

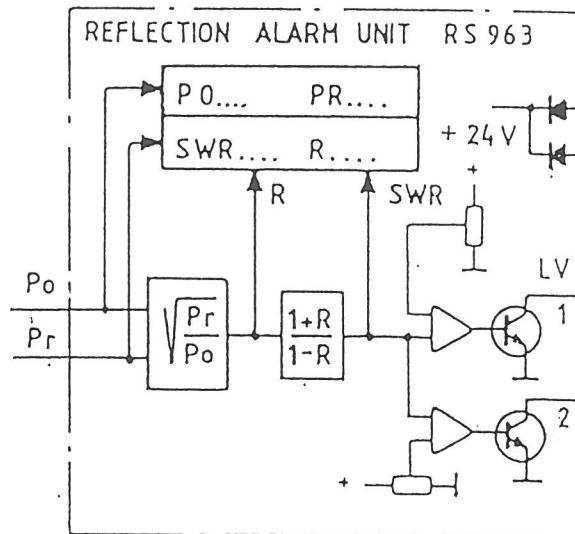
Power supply

The +24 V input is stabilized to +5 V by stabilizer Q13 and to +7.5 V by stabilizer Q10. A reference voltage REF+ for the conversion levels in the A/D converter is obtained from a voltage divider at the +7.5 V output.

Power on is indicated by a LED on the display card.

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No.	Qty	Revision and/or message no.	Date	Not.	Appr.
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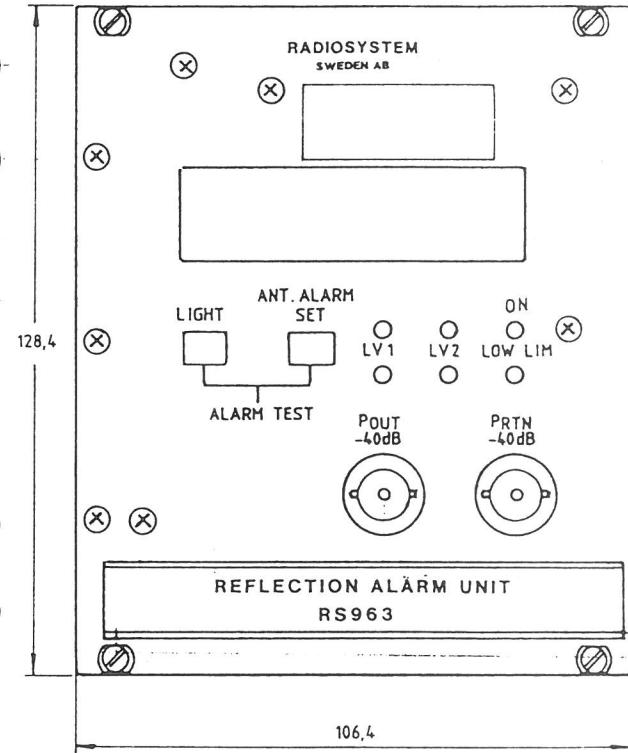
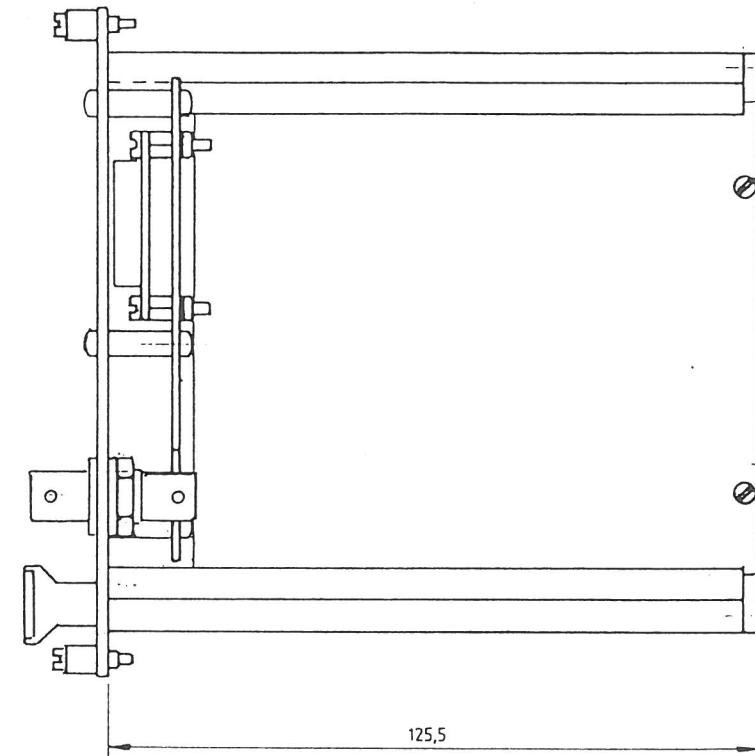
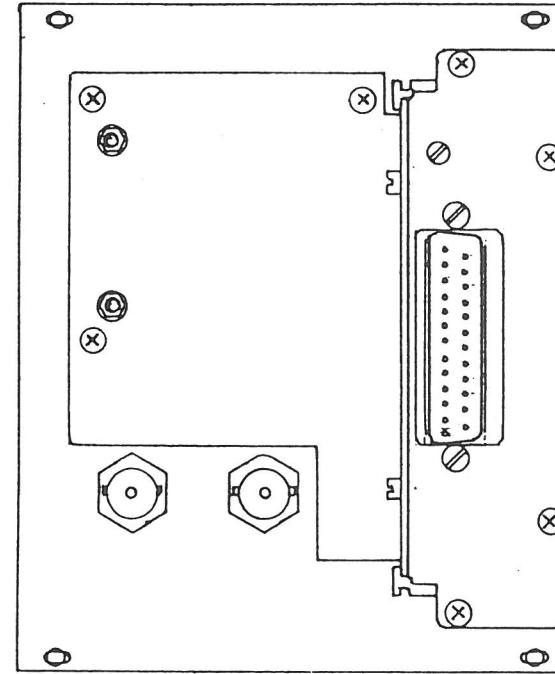
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RADIOSYSTEM SWEDEN AB			BLOCK DIAGRAM ; ;		
REFLECTION ALARM UNIT RS963			Date 860115 Dwg. No.		
			RS963001		

No.	Qty
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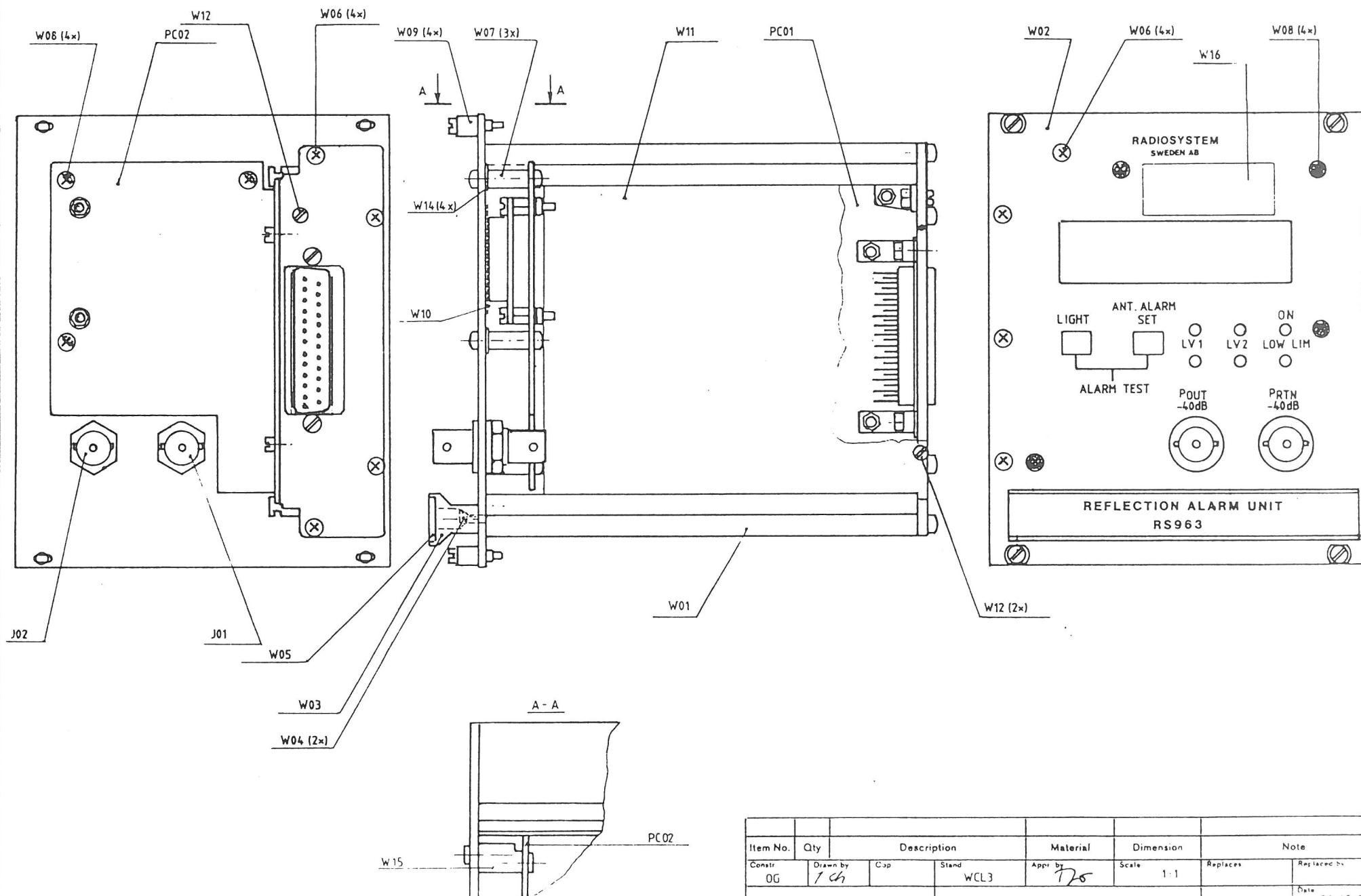
on and/or message no.

Date

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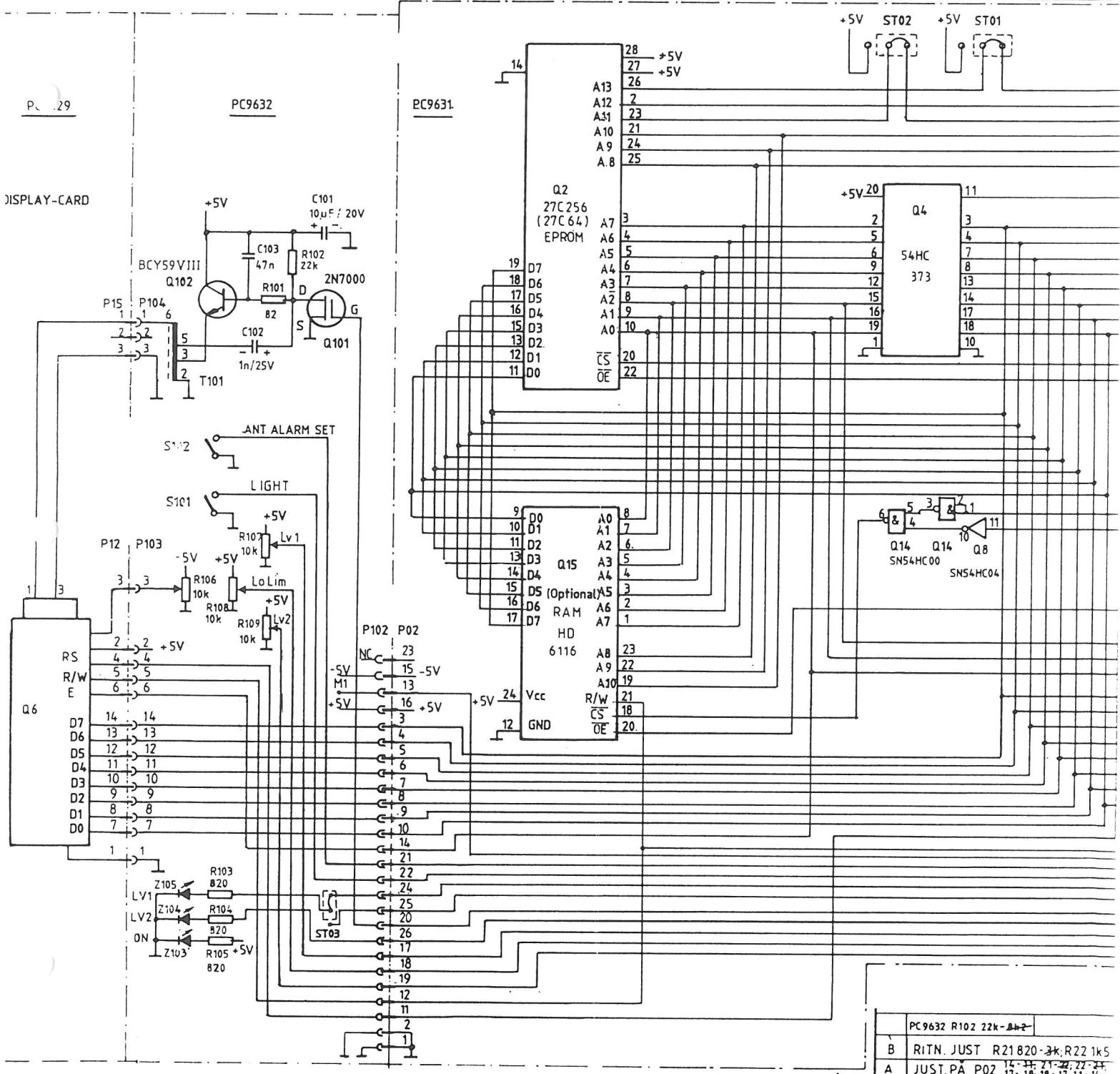
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0G	7CH		A003	70	1:1			86 05 07
RADIOSYSTEM		OUTLINE DRAWING						Dwg. No.
SWEDEN AB		REFLECTION ALARM UNIT RS963						RS963004



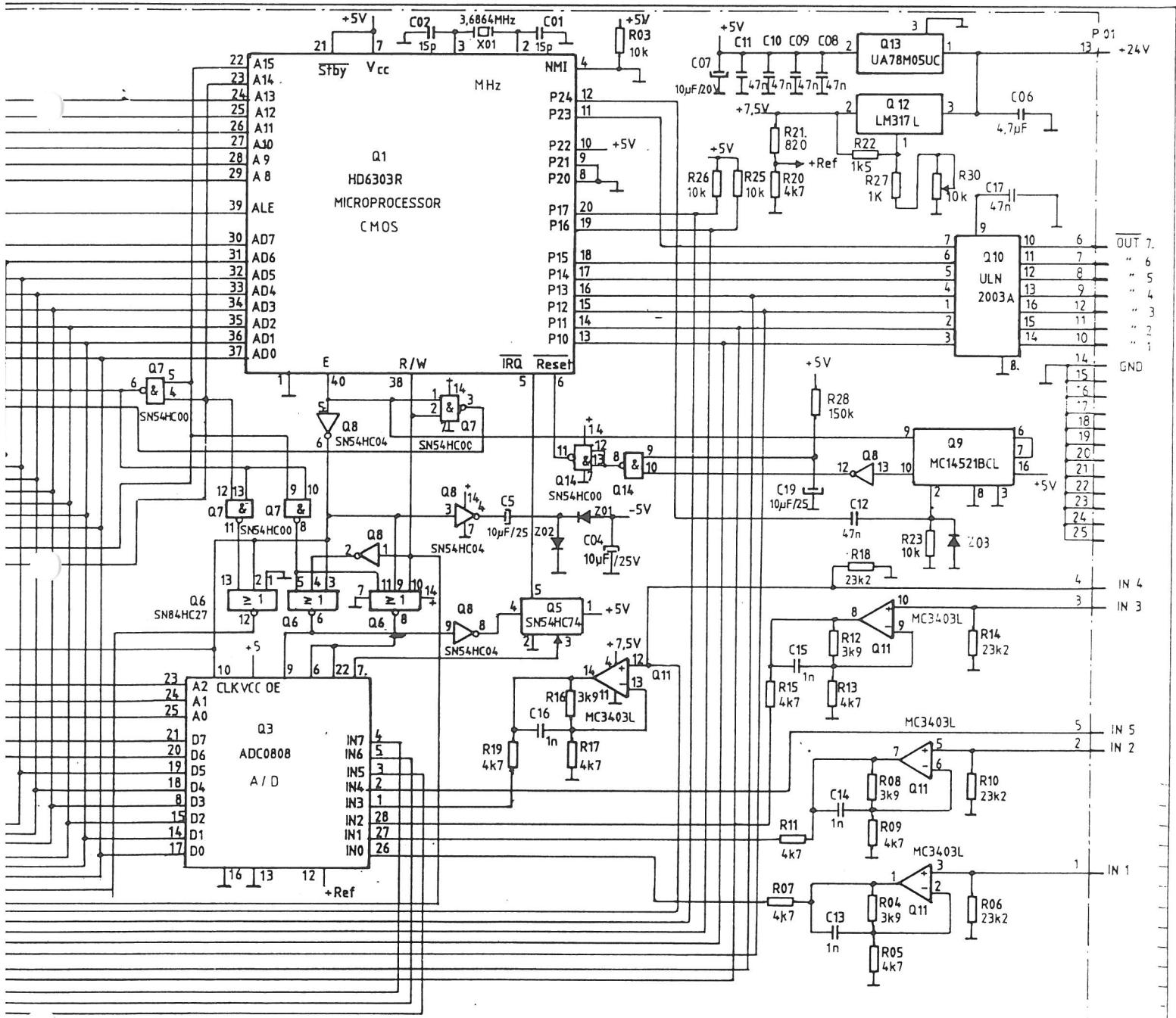
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0G	1 ch		WCL3	725	1:1		Date 86-05-07
RADIOSYSTEM		COMPONENT LOCATION				Drawing No.	
SWEDEN AB		REFLECTION ALARM UNIT		RS963		RS963003	

PC 29

DISPLAY-CARD



	PC 9632 R102 22k - 14-2
B	RITN. JUST R21820-3k; R221k5
A	JUST.PA P02 14-34, 21-22, 22-23 17-30, 18-17, 11-14
No	Message

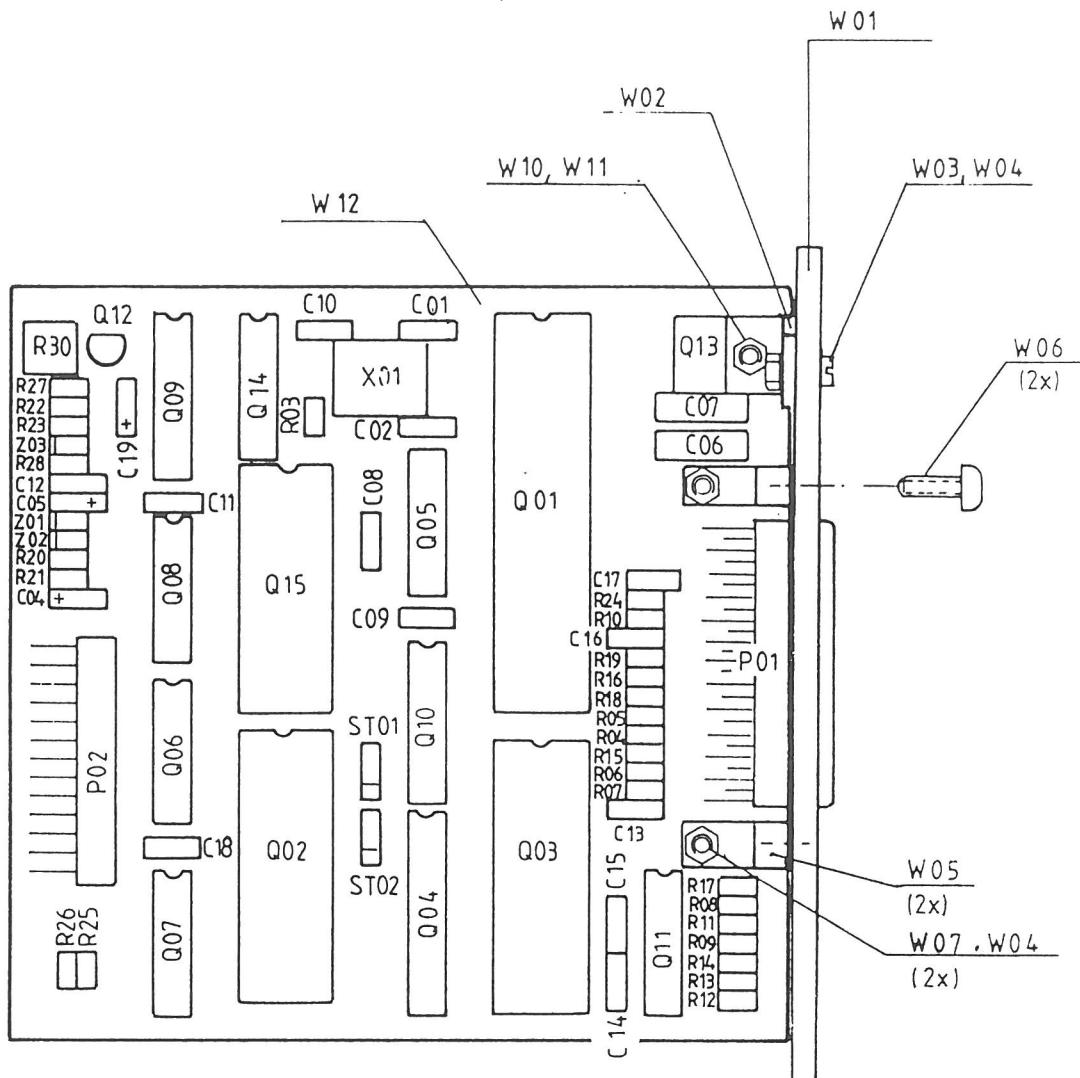


Kontr. OG	Ritad JC	Kop.	Kontr. ACD2	Stand. Godk <i>DJ</i>	Stake	Ersöder 861205	Ersatt av
820-3k; R22 1k5 -320							
+5; 21-22; 22-23; 18-19; 11-14	670816 Ca						Dat. 870112
date	Appr	No.	Message	date	Appr	Aren-av	RS963002

RADIOSYSTEM SWEDEN AB
CIRCUIT DIAGRAM
ALARM UNIT RS963

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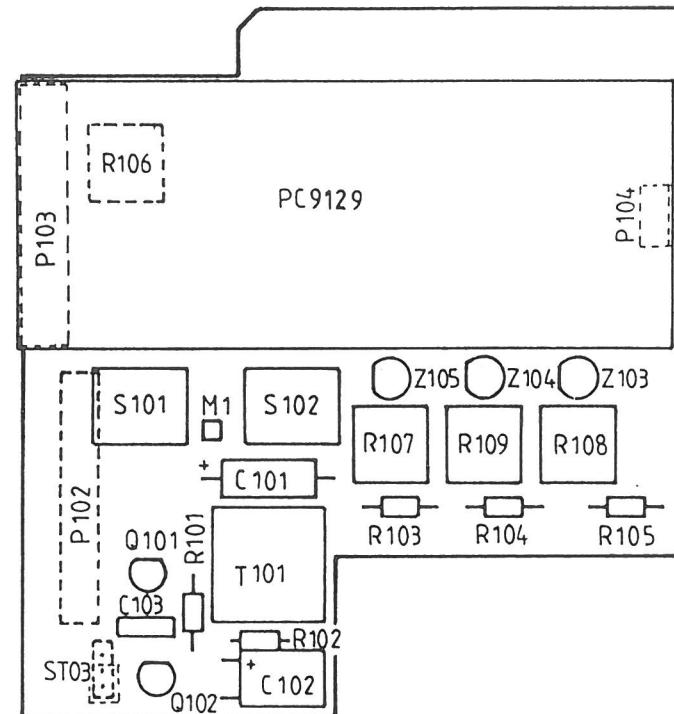
No.	Qty	Revision and/or message no.	Date	Not.	Appr.
A		RITN JUST Z01-03, L04 05, 19	8704 06	Cg	



Item No.	Qty	Description	Material	Dimension	Note
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					Replaces _____
					Replaced by _____
RADIOSYSTEM SWEDEN AB			COMP. LOCATION		Date 860916
			PC9631		Dwg. No. RS963103

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Item No.	Qty	Description		Material	Dimension	Note	
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OG	Cg		ACL	670	1:1		
RADIOSYSTEM SWEDEN AB		COMPONENT LOCATION				Date	
		PC9632				Dwg. No. RS 963203	