

INTRODUCTION.

The Stereo Video Peak Programme Meter, type 377-700, is designed for use in TV control/continuity rooms, dubbing studios and other places, where it is convenient to monitor picture and sound level simultaneously. The instrument superimposes the scales in the original video signal. The scale pointer, the scale lines and the overload area are half white half black giving maximum contrast on black and white as well as on coloured backgrounds.

The two scales are placed vertically on the screen, and their horizontal position can be chosen with the two controls on the rear of the instrument.

CONSTRUCTION & FEATURES.

The instrument is housed in a 19 inch cabinet, 1 unit high.

The cabinet contains a motherboard with several plug-in modules and a self-contained power supply unit.

The instrument must be connected to mains, 220V AC.
(110V version available on request).

The audio inputs which are balanced, floating, are 3 pole XLR connectors.

The video input are switchable between 75 ohm and a high impedance. The instrument has a loop through facility for the video signal and a remote control for blanking of one or both channels, selection of an additional scale and selection of an optional input.

DESCRIPTION OF THE BLOCK DIAGRAM.

The block diagram 377-7019 is divided into 11 small block diagrams, one for each of the modules comprising the instrument. The number within these blocks refers to the detailed diagram.

The audio input signals are led to the input stages consisting of a current transformer followed by an amplifier. From here the signals are led to the input modules. The type of these modules depends on the required scale type. Two types are available: A log. module valid when DIN, Nordic or BBC scales are used, and A VU-amplifier module valid for the VU and % scale.

From the input modules, the signals are led via an input switch, which is remote controlled (9 pole D-connector on the rear), to the Scale Line Generator. Here the signals are compared with a ramp voltage which time unit is the frame frequency. These comparators give the starting time for the arrows in vertical direction. The signals are led to the Arrow Generator. The Scale Line Generator also generates the horizontal starting times for the arrows. This is done by means of two comparators which compare a ramp voltage, which time unit is the line frequency, with two adjustable DC levels. Also these signals are led to the Arrow Generator.

The Scale Line Generator also contains the vertical sync. separator. This resets the frame ramp and the counter generating the scale lines and the overload area. The counter is controlled by a PROM defining the distance between the scale lines in the following way: The PROM presets the down counters (part II). The counter then counts down to 0 with the line frequency. When it "reaches" 0, it gives a clock pulse to the counter on part I. At the same time the new address for the PROM is loaded into the latch. The PROM presets the down counters again starting a new cycle. This is repeated for all the scale lines. The master preset is executed by the frame sync. The outputs from the counters are led to the Arrow Generator.

The Arrow Generator is controlled by the H and V timing pulses coming from the Scale Line Generator and by the signals for scale lines and overload area. The horizontal timing is generated by a counter, a decoder and a gate circuit. These run through a sequence each time the horizontal timing pulses are present. They can be suppressed externally (remote control connector on the rear), i.e. blanking of the scales.

The vertical timings of the arrows are generated by two counters with associated gate circuits (part II). These run through a sequence started by the vertical timing from the Scale generator. The counter advances one step for each line. The outputs from the gate

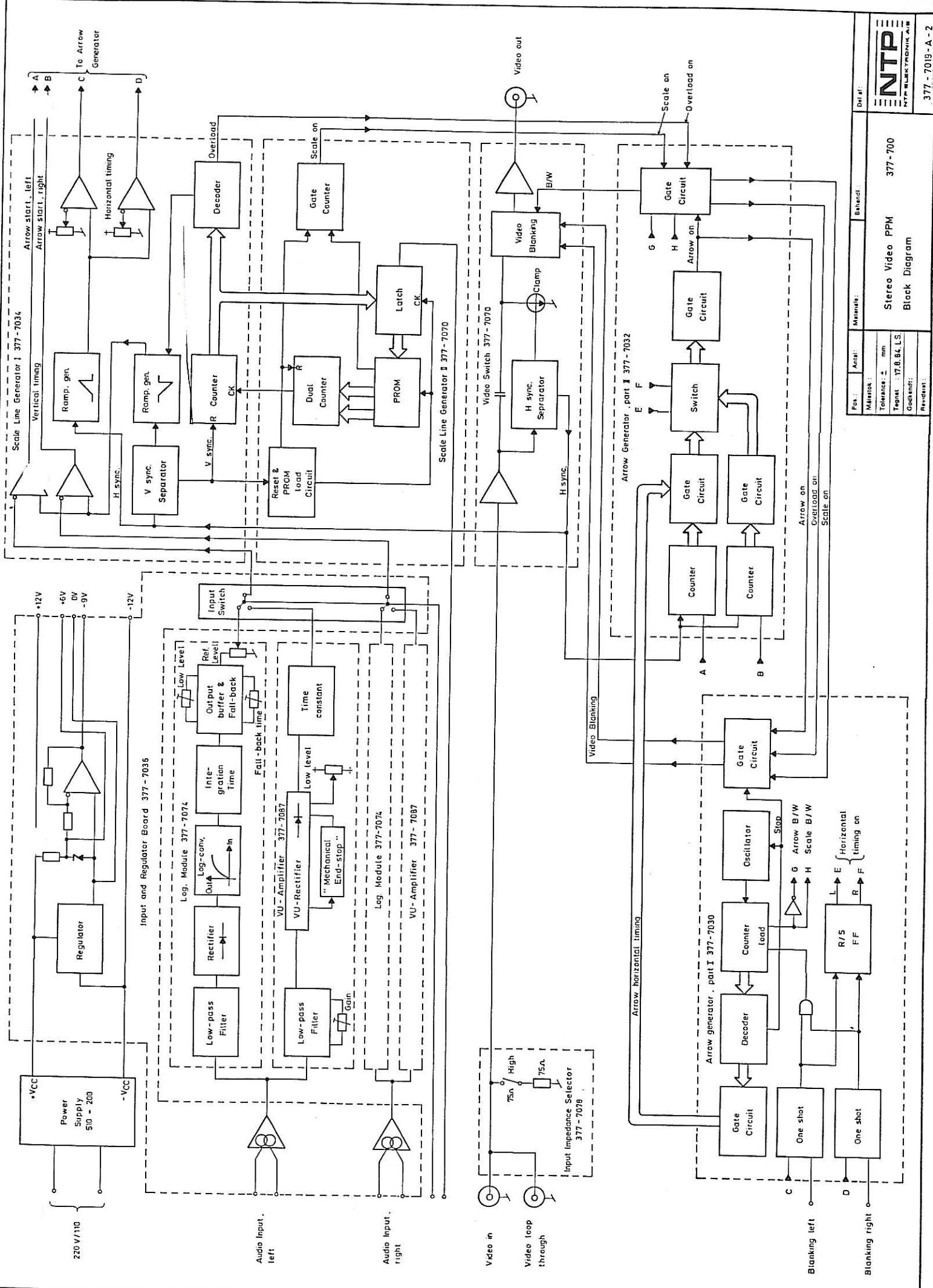


VIDEO PEAK PROGRAMME METER 377-700
DESCRIPTION

377-7012-A-3
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circuits are led to a switch gating left and right through in the right moments. From the switch the signals are led to another gate circuit deciding which outputs must be used, depending on the horizontal timing. Hereafter the signal (arrow on) is gated together with overload on, scale on and led to the Video Switch. The composite video signal is also led to the Video Switch. Here the horizontal sync. is separated, and the signal is led through a DC clamp circuit stating the sync.level. Then the signal is led to a circuit deciding, if the scale is black or white. This circuit also generates the blanking of the scales. Finally the composite video signal with the superimposed scales is led through a buffer with an output impedance of 75 ohm.

Note: In order to facilitate trouble-shooting the diagrams are furnished with side texts stating all the signals and their directions.



General Specifications

Supply voltage	220V AC (187-264V) 110V AC (94-132V) available on request. approx. 12VA (220V or 110V)
Power consumption	
Temperature range	0 to +50°C ambient temperature

Audio Input

Input impedance within frequency range	20kΩ ± 10%, balanced, floating
Input CMRR	>60dB at 15kHz
Input overload level	15.4V rms sine (+26dBu)
Frequency range, 0.5dB point	30 Hz to 16kHz

Rectifier Characteristics, DIN and Nordic

Dynamic measuring range	55dB for DIN scale 45dB for Nordic scale
Input voltage for 0dB reading (Nordic: +6dB),	Note 1 1.55V rms sine (+6dBu)

Measuring errors	<u>at +5 to -10dB</u>	<u>below -10dB</u>
1kHz, steady signal, 25°C	±0.5dB	±1dB
Within full frequency range, 25°C	+0.5/-1dB	+0.5/-2dB
Within full temperature range	±1dB	±2dB
Polarity shift of unsymmetrical wave	±0.5dB	±1dB

Integration time	10msec. for -1dB ±0.5dB
Conforming to DIN 45406 and IEC 268-10	5msec. for -2dB ±1dB
Integration time is measured with 5kHz tonebursts	3msec. for -4dB ±1dB
Fall-back time	0.4msec. for -15dB ±2dB
	1.5 sec. for 0 to -20dB

Rectifier Characteristics, BBC

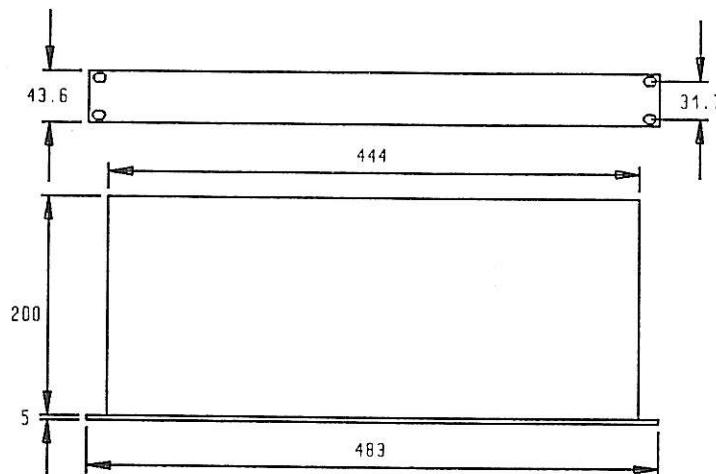
Dynamic measuring range	24dB
Input voltage for "4" reading,	Note 1 0.775V rms sine (0dBu)

Measuring errors	<u>+12dB to -12dB</u>
1kHz, steady signal, 25°C	±0.3dB
Within full frequency range, 25°C	+0.5/-1dB
Within full temperature range	±1dB
Polarity shift of unsymmetrical wave	±0.5dB

Integration time	<u>dB relative to mark "6"</u>
Conforming to BS 4297	100msec. for 0dB ±0.5dB
	10msec. for -2.5dB ±0.5dB
	5msec. for -4dB ±0.75dB
	1.5msec. for -9dB ±1dB
Fall-back time	2.5 to 3.2 sec. for "7" to "1"

Rectifier Characteristics, VU	
Dynamic measuring range	+3 VU to -20 VU
Input voltage for 0 VU reading,	1.228V rms sine (+4dBu)
Adjustable gain in preamplifier	±14dB
Rectifier characteristics	CU-oxide mean, corresponding to Weston type 30
Measuring errors	<u>between +3 VU and -10 VU</u>
1kHz, steady signal, 25°C	<0.2dB
Within frequency range 35 Hz to 10kHz, 25°C	max. 0.2dB
Within full temperature range	max. 0.2dB
Polarity shift of unsymmetrical wave	max. 0.2dB
Ballistics conforming to	ASA - C16.5 of 1961
Rise time to 99% of ref. deflection	300msec. ±10%
Overshoot	1.25% ±0.25%
Fall-back time to 0%	300msec. ±10%
"Mechanical" end stop	+3.3 VU
Video	
Input level,	Note 2 1Vpp composite (max. 1.4Vpp)
Input impedance (high/low switchable)	Low: $75\Omega \pm 3\%$
Gain	0dB ±0.2dB
Frequency response	50 Hz to 7 MHz ±0.5dB
Differential gain	<2%
Differential phase	<1°
Sync.	Internally separated from composite video input
Output level,	Note 2 1Vpp composite
Output impedance	$75\Omega \pm 3\%$
Return loss	>30dB
Superimposed video level	Black level: +0.3V ref. to sync bottom White level: +1V ref. to sync. bottom
Mechanical Data	
Connectors	
Remote Control,	Note 3 9-pole D-connector, female
Audio Input	XLR connector, female
Video Input/Output	BNC connectors
Mains	3-pole "EUROPE" type (with protective ground)
 	19" cabinet, 1E height
Mechanical outline, without connectors	approx. 3kg
Weight	

Mechanical Outline



Note 1: Special scale or special reference level may be specified by the customer.

Note 2: In order to obtain correct balance between the original video signal and the superimposed video signal, the video input level must be 1Vpp.

Note 3: The following functions can be remote controlled:

- a) Blanking of left channel.
- b) Blanking of right channel.
- c) Selection of an additional scale.
- d) Selection of an optional input.

GENERAL SPECIFICATION

Supply voltage	:	220V ac (187-264V) 110V ac (94-132V) available on request.
Power consumption	:	approx. 12VA (220V or 110V)
Temperature range	:	0 to +50°C ambient temperature

AUDIO INPUT

Input impedance within frequency range	:	20kOhm ±10%, balanced floating
Input CMRR	:	>60dB at 15kHz
Input overload level	:	15.45V rms sine (+26dBu)
Frequency range, 0.5dB point	:	20Hz to 16kHz

RECTIFIER CHARACTERISTICS, DIN and NORDIC

Dynamic measuring range	:	55dB for DIN scale 45dB for Nordic scale
Input voltage for 0dB reading (Nordic: +6dB), note 1	:	1.55V rms sine (+6dBu)
Measuring errors	:	<u>at +5 to -10dB</u> <u>below -10dB</u>
1 kHz, steady signal, 25°C	:	±0.5dB <u>±1dB</u>
Within full frequency range, 25°C	:	+0.5/-1dB <u>+0.5/-2dB</u>
Within full temperature range	:	±1dB <u>±2dB</u>
Polarity shift of unsymmetrical wave	:	±0.5dB <u>±1dB</u>
Integration time	:	10msec for - 1dB ±0.5dB
Conforming to DIN 45406 and IEC 268-10		5msec for ~ 2dB ± 1dB
Integration time is measured		3msec for - 4dB ± 1dB
with 5kHz tonebursts		0.4msec for -15dB ± 2dB
Fall-back time		1.5 sec for 0 to -20dB

RECTIFIER CHARACTERISTICS, BBC

Dynamic measuring range	:	24dB
Input voltage for "4" reading, note 1	:	0.775V rms sine (0dBu)
Measuring errors	:	<u>+12dB to -12dB</u>
1kHz, steady signal, 25°C	:	±0.3dB
Within full frequency range, 25°C	:	+0.5/-1dB
Within full temperature range	:	±1dB
Polarity shift of unsymmetrical wave	:	±0.5dB
Integration time	:	<u>dB relative to mark "6"</u>
Conforming to BS 4297		100msec for 0dB ±0.5dB
		10msec for -2.5dB ±0.5dB
		5msec for -4dB ±0.75dB
		1.5msec for -9dB ±1dB
Fall-back time	:	2.5 to 3.2 sec for "7" to "1"

RECTIFIER CHARACTERISTICS, VU

Dynamic measuring range	:	+3VU to -20VU
Input voltage for 0 VU reading, note 1	:	1.228V rms sine (+4dBu)
Adjustable gain in preamplifier	:	±14dB
Rectifier characteristics	:	CU-oxide mean, corresponding to Weston type 30
Measuring errors	:	<u>between +3VU and -10VU</u>
1kHz, steady signal, 25°C	:	<0.2dB
Within frequency range 35Hz to 10kHz, 25°C	:	max. 0.2dB
Within full temperature range	:	max. 0.2dB
Polarity shift of unsymmetrical wave	:	max. 0.2dB

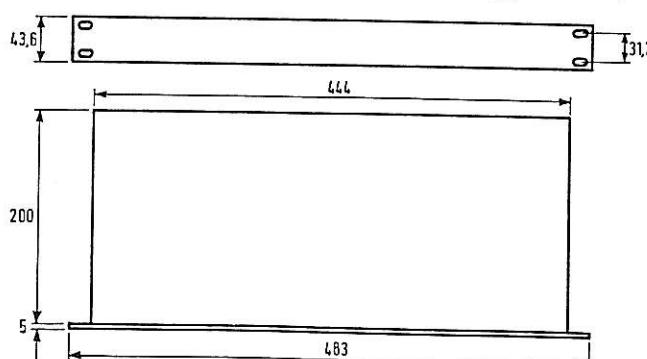
Ballistics conforming to	:	ASA - C16.5 of 1961
Rise time to 99% of ref.deflection	:	300m sec $\pm 10\%$
Overshoot	:	1.25% $\pm 0.25\%$
Fall-back time to 0%	:	300msec $\pm 10\%$
"Mechanical" end stop	:	+3.3 VU
 <u>VIDEO</u>		
Input level, note 2	:	1Vpp composite (max. 1.4Vpp)
Input impedance (high/low switchable)	:	Low : 75 Ohm $\pm 3\%$
Gain	:	0dB ± 0.2 dB
Frequency response	:	50Hz to 7MHz ± 0.5 dB
Differential gain	:	< 2%
Differential phase	:	< 1°
Sync.	:	Internally separated from composite video input
Output level, note 2	:	1Vpp composite
Output impedance	:	75Ohm $\pm 3\%$
Return loss	:	> 30dB
Superimposed video level	:	Black level: +0.3V ref. to sync. bottom White level: +1V ref. to sync. bottom

MECHANICAL DATA

Connectors

Remote Control, note 3	:	9 pole D-connector, female
Audio Input	:	XLR connector, female
Video Input/Output	:	BNC connectors
Mains	:	3 pole "EUROPE" type (with protective ground)
Mechanical outline, without connectors	:	19" cabinet, 1E height
Weight	:	approx. 3kg

Mechanical outline:



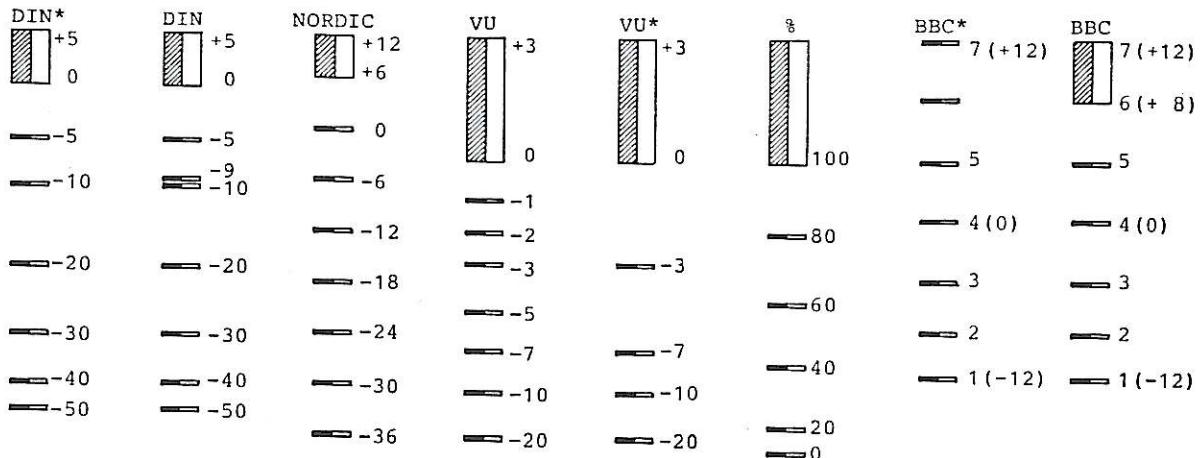
Note 1: Special scale or special reference level may be specified by the customer.

Note 2: In order to obtain correct balance between the original video signal and the superimposed video signal, the video input level must be 1Vpp.

Note 3: The following functions can be remote controlled:

- a) Blanking of left channel
- b) Blanking of right channel
- c) Selection of an additional scale
- c) Selection of an optional input

Scale name:



* These scales are used in instruments with two different types of scale.
 In instruments using only one type of scale, there will be an alternative by DIN, VU and BBC e.g. DIN* and DIN.

Instrument designation

Scale	DIN	Nordic	VU	%	BBC
Typenumber (625 lines)	377-700A	377-700B	377-700C	377-700J	377-700D
Associated PROM no.	IMP-18030A AA	IMP-18030A AC	IMP-18030A AE	IMP-18030A AG	IMP-18030A AI
Typenumber (525 lines)	377-700E	377-700F	377-700G	377-700K	377-700H
Associated PROM no.	IMP-18030A AB	IMP-18030A AD	IMP-18030A AF	IMP-18030A AH	IMP-18030A AJ

In instruments with two different types of scale, the typenumbers are decided as shown in the following examples:

1. Scales: DIN and VU (625 lines)

DIN is designated A. VU is designated C.

Typenumber: 377-700AC

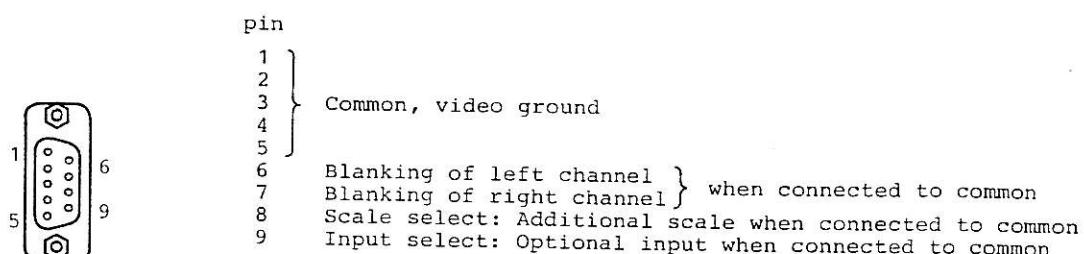
2. Scales: BBC and VU (625 lines)

BBC is designated D. VU is designated C.

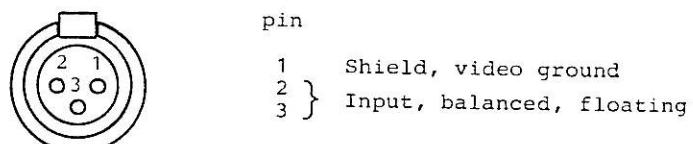
Typenumber: 377-700DC

Note: Other scales (divisions, combinations) may be specified by the customer.

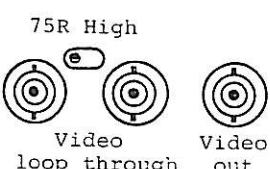
Remote Control 9 pole D-connector, female.



Audio Input XLR connector, female

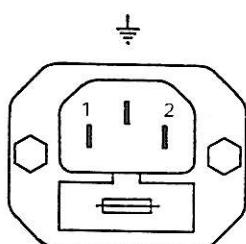


Video input/output BNC connectors



Mains

3 pole EURO mains chassis plug with fuse



- | | |
|---|-------------------------------------|
| 1 | Phase (Line via fuse to power unit) |
| 2 | Neutral |
| | Screen, chassis |

Since the instrument is adjusted correctly on delivery, adjustment only has to be carried out in case of faulty mode of operation, i.e. when a component has failed and has been replaced.

A: ADJUSTMENT OF INSTRUMENT WITH DIN SCALE.

Ref. Level

1. Apply the input connector 1.51V rms (5.8 dBu), 1kHz sine.
2. Adjust P3 on the Log. Module to obtain correct reading (pointer by 0 mark on the screen).

Low Level

1. Apply the input connector 15mV rms (-34.2 dBu), 1kHz sine.
2. Adjust P1 on the Log. Module to obtain correct reading (pointer by -40 mark on the screen).

Common Mode Rejection Ratio.

1. Apply 7.75v rms (+20dBu), 15kHz sine to both pins in the input connection (pin 2 & 3) with respect to ground.
2. Adjust C1 for left channel and C3 for right channel (Input and Regulator Board) to obtain minimum reading (pointer to the bottom of the scale).

Final Check of Levels.

Repeat the Ref.level and Low level adjustment.

Fall-back Time

1. Connect a burst generator, e.g. NTP type 507-100, with a setting:
300m sec burst (5kHz, +6dBu) and 1.5 sec pause to the input connector.
2. Adjust P2 on the Log.Module, so the pointer just exactly reaches down to -20dB in the pause.

B. ADJUSTMENT OF INSTRUMENT WITH NORDIC SCALE.

Ref.Level.

1. Apply the input connecgor 1,51V rms (5.8dBu), 1kHz sine.
2. Adjust P3 on the Log. Module to obtain correct reading (pointer by +6 mark on the screen).

Low Level

1. Apply the input connector 23.9mV rms (-30.2dBu), 1kHz sine.
2. Adjust P1 on the Log.Module to obtain correct reading (pointer by -30 mark on the screen).

Common Mode Rejection Ratio

1. Apply 7.75V rms (+20dBu), 15kHz sine to both pins in the input connectors (pin 2 & 3) with respect to ground.
2. Adjust C1 for left channel and C3 for right channel (Input and Regulator Board) to obtain minimum reading (pointer to the bottom of scale).

Final Check of Levels

Repeat the Ref.level and Low level adjustment.

Fall-Back Time

1. Connect a burst generator, e.g. NTP type 507-100, with a setting:
300m sec burst (5kHz, +6dBu) and 1.5 sec. pause to the input connector.
2. Adjust P2 on the Log.Module, so the pointer just exactly reaches down to -14dB in the pause.

C. ADJUSTMENT OF INSTRUMENT WITH VU SCALE.

Ref.Level

1. Apply the input connector 1.228V rms (4dBu), 1kHz sine.
2. Adjust P1 on the VU-amplifier Module to obtain correct reading (pointer by 0 mark on the screen).

Low Level

1. Apply the input connector 120mV rms (-16dBu), 1kHz sine.
2. Adjust P2 on the VU-amplifier moduel to obtain correct reading (pointer by -20 mark on the screen).

Common Mode Rejection Ratio

1. Apply both pins in the input connectors (pin 2 & 3) 7.73V rms (+20dBu) 15kHz sine, with respect to ground.
2. Adjust C1 for left channel and C3 for right channel (Input and Regulator Board) to obtain minimum reading (pointer to the bottom of scale).

Final Check of Levels

Repeat the Ref.level and Low level adjustment.

D. ADJUSTMENT OF INSTRUMENT WITH BBC SCALE.

Ref.Level

1. Apply the input connector 3.1V rms (+12dBu), 1kHz sine.
2. Adjust P3 on the Log.Module to obtain correct reading (pointer by "7" (+12) mark on the screen).

Low Level

1. Apply the input connector 195mV rms (-12dBu), 1kHz sine.
2. Adjust P1 on the Log.Module to obtain correct reading (pointer by "1" (-12) mark on the screen).

Common Mode Rejection Ratio

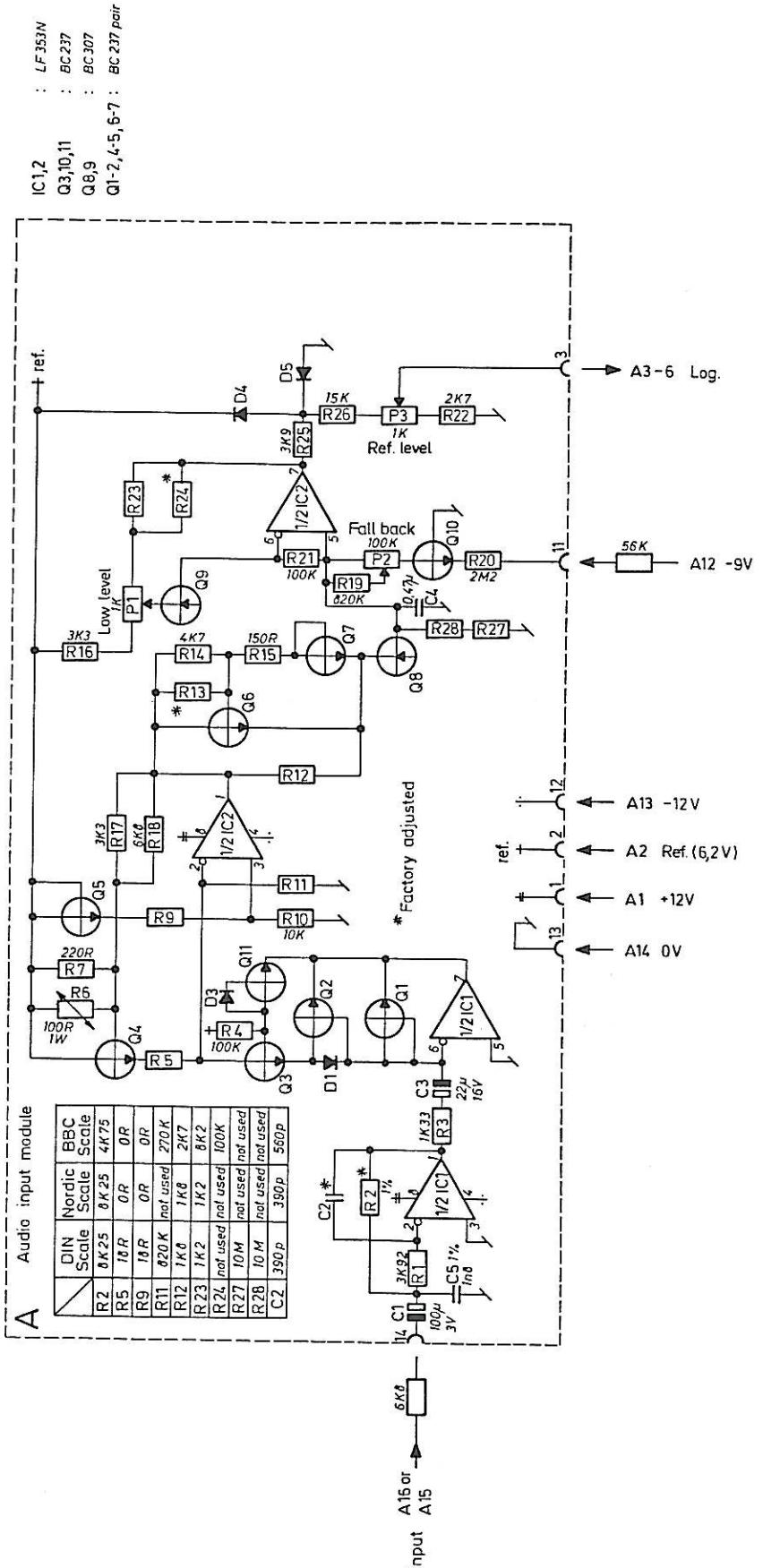
1. Apply 7.75V rms (+20dBu), 15kHz sine to both pint in the input connectors (pin 2 & 3) with respect to ground.
2. Adjust C1 for left channel and C3 for right channel (Input and Regulator Board) to obtain minimum reading (pointer to the bottom of scale).

Final Check of Levels

Repeat the Ref.level and Low level adjustment.

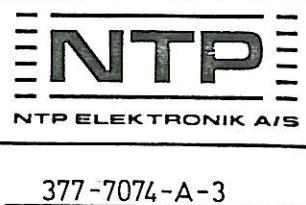
Fall-back time

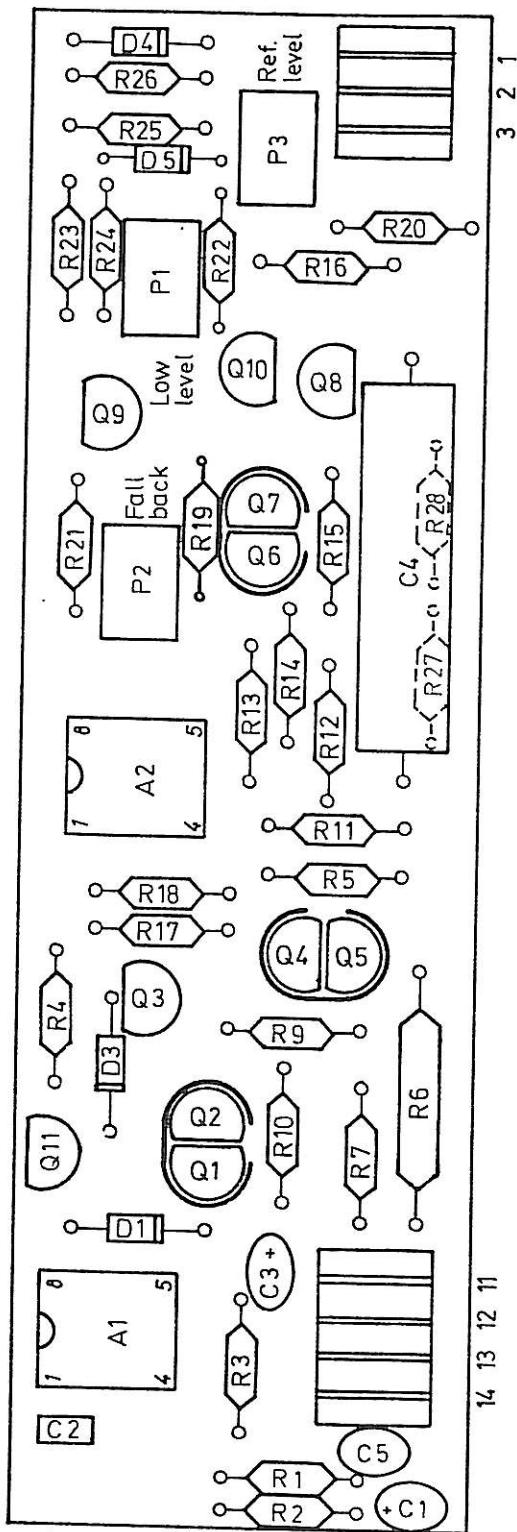
1. Connect a burst generator, e.g. NTP type 507-100, with a setting:
300m sec. burst (5kHz, +12dBu) and 2.8 sec. pause to the input connector.
2. Adjust P2 on the Log.Module, so the pointer just exactly reaches down to "1" (-12) in the pause.



Målestok :	
Konstruktør :	
Tegnet : 3.4.84. T.L.	
Godkendt :	
Revideret :	

Video PPM 377-700
 Audio Input Module
 Log. Module
 Schematic Diagram





Version dependent components:

R12, 23, 24, 11, 2, 5, 9, 19, 27, 28

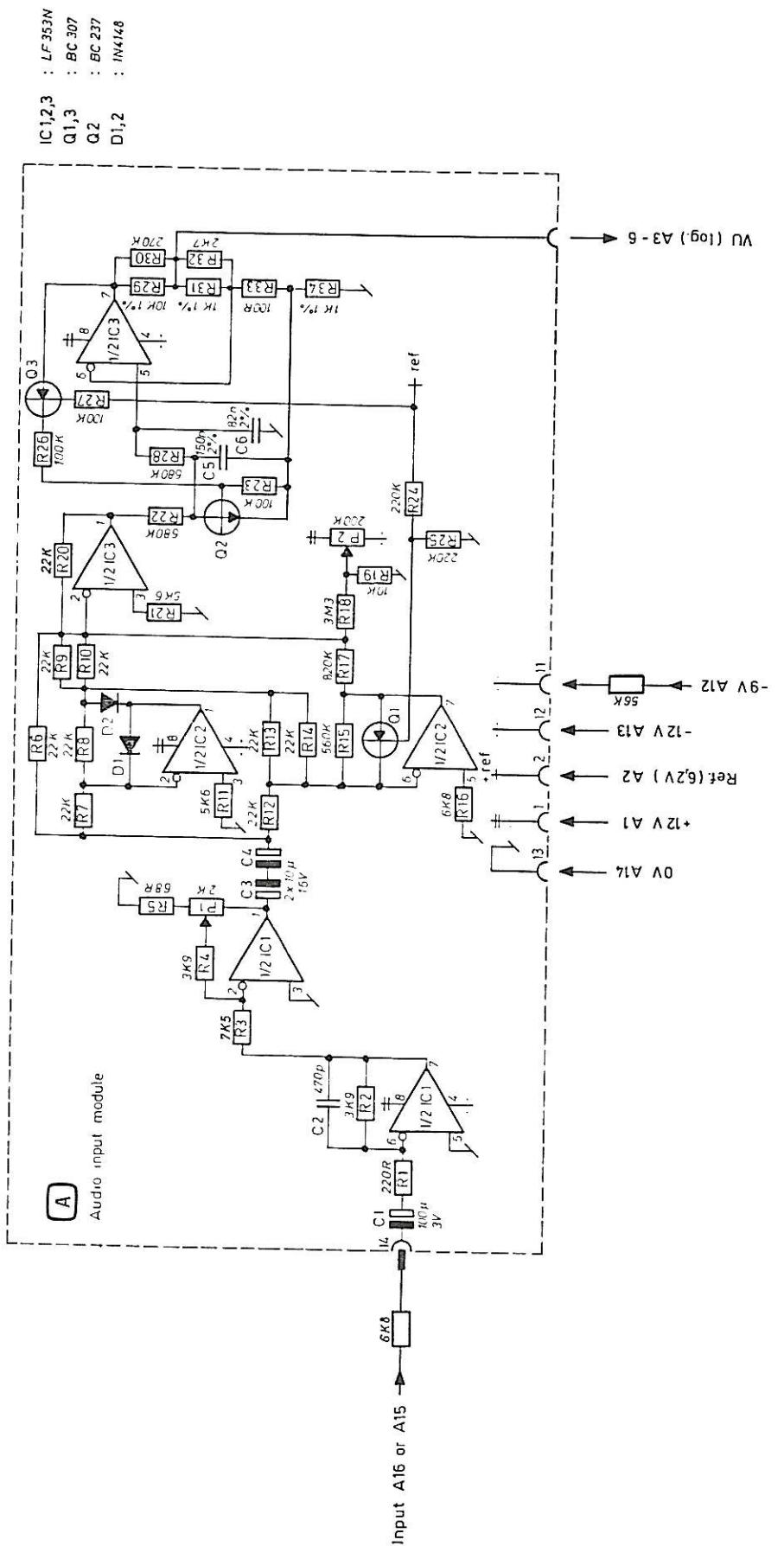
C2

Pos	Antal	Materiale	Behandl	Del af
Målestok	2;1			
Tolerance	mm			
Tegnet	30.3.84.T.L.			
Godkendt				
Revideret	3/900720 bb			

Video - PPM 377-700
Audio input module
Components lay-out

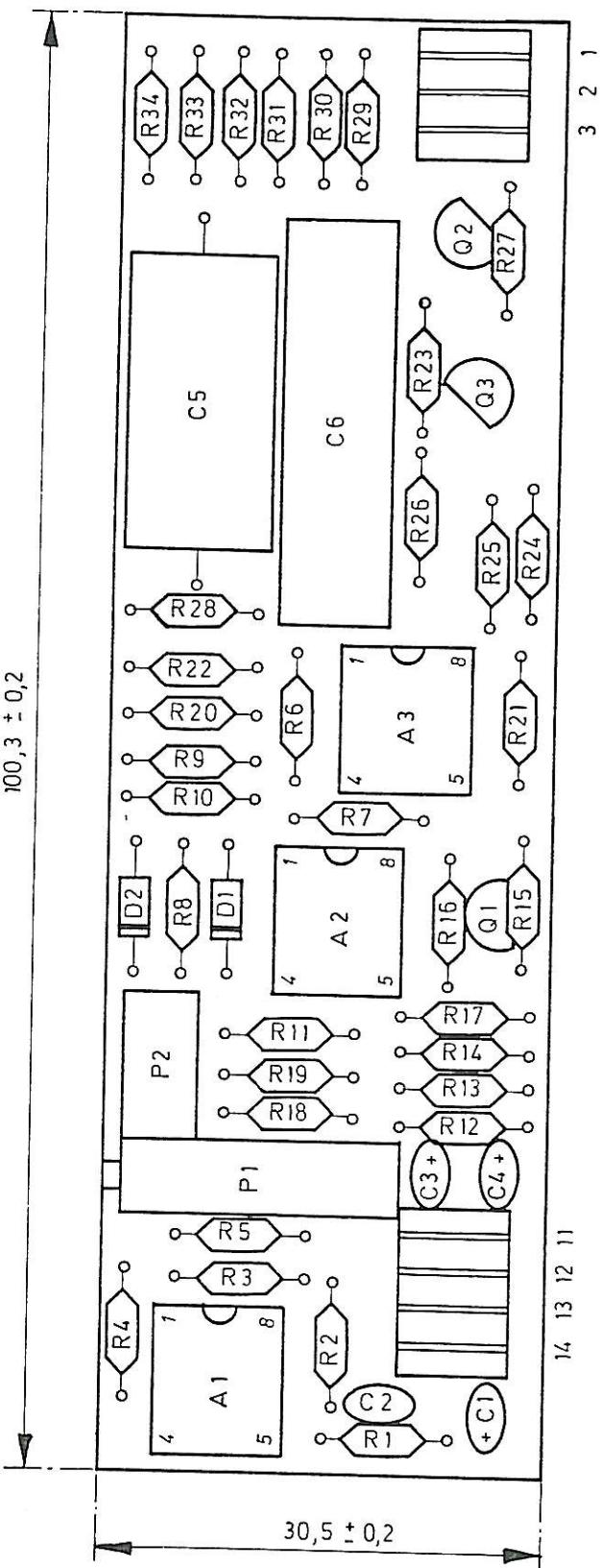
NTP
NTP ELEKTRONIK A/S

377-7085-A-4



Rev.	377-7076-A3	377-700	377-700
Ver.	Ver. 1.1	Ver. 1.1	Ver. 1.1
Maßstab	1:1	1:1	1:1
Zeichner	mm	mm	mm
Revisor	Regist.	Regist.	Regist.
Godsend	30.3.84. TL.	30.3.84. TL.	30.3.84. TL.
Revidiert			

Audio input module
VU-ampifier
Schematic diagram

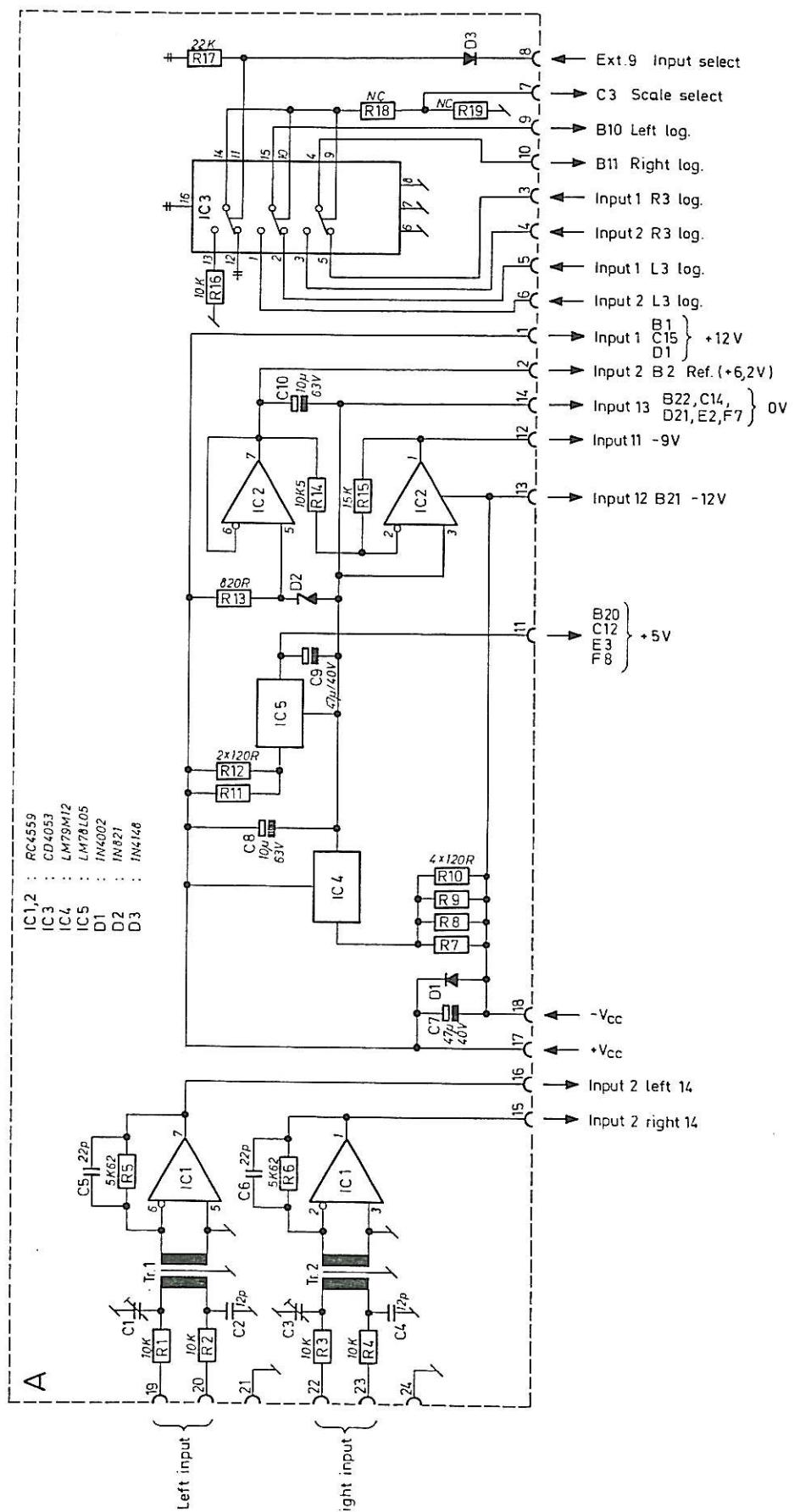


Pos	Antal	Materiale	Behandl.	Del nr
Målestok				
Tolerance	mm			
Tegnet	30.3.84. T.L.			
Godkendt				
Revideret				

Video - PPM 377-700
 Audio input module
 VU - amplifier
 Components Lay-out.

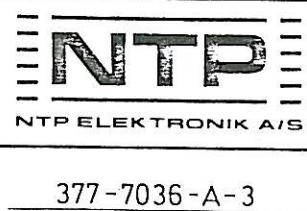


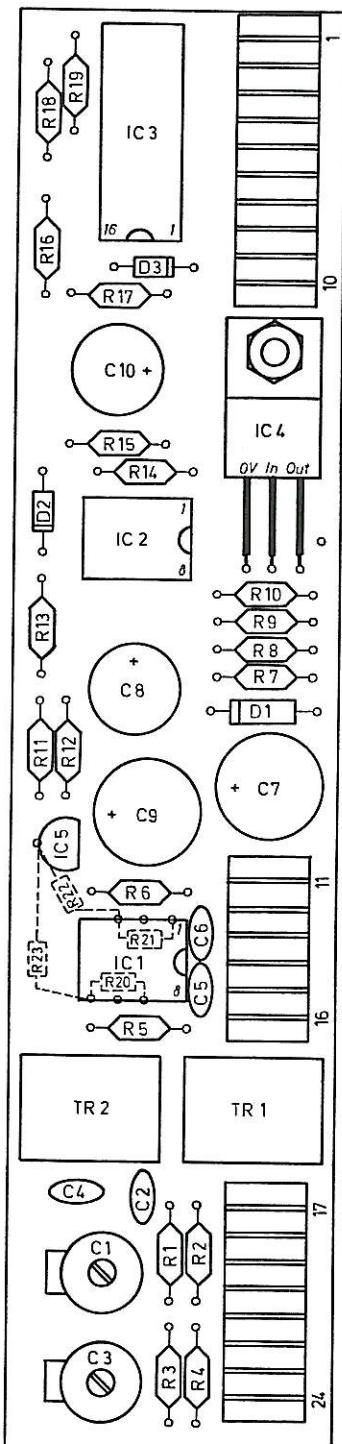
377-7087-A-4



Målestok :	
Konstruktør :	P. J.
Tegnet :	4.4.84. T.L.
Godkendt :	
Revideret :	

Video PPM 377-700
 Input and Regulator board
 Diagram



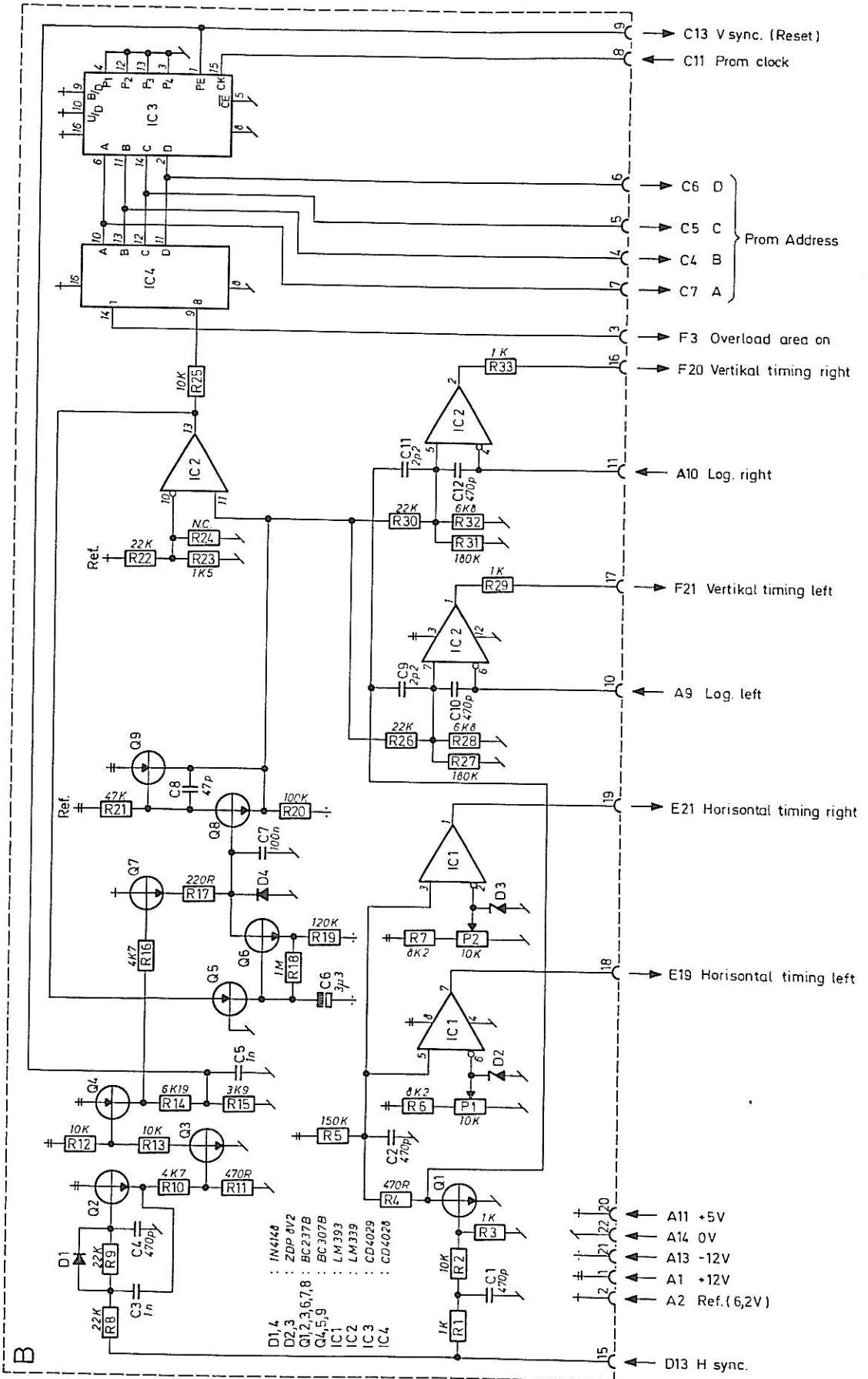


Mål	: 134,6 x 30,5mm
Konstruktør:	P. J.
Tegnet	: 4.4.84. T.L.
Godkendt	:
Revideret	: 1/921201

Video PPM 377-700
 Input and Regulator board
 Component Lay - out



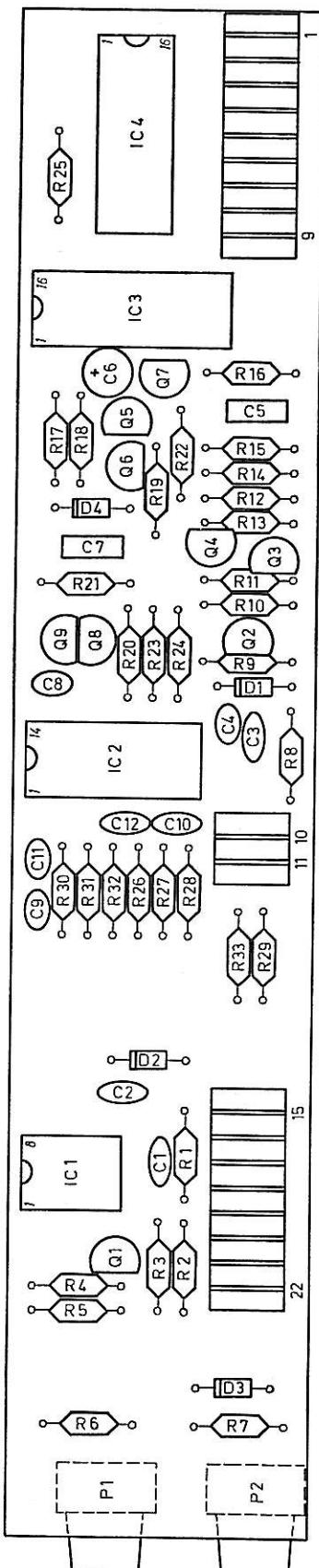
377-7047-A-3



Mødestok :	
Konstruktør :	P. J.
Tegnet :	11.4.84. T.L.
Godkendt :	
Revideret :	

Video PPM 377-700
Scale line generator part I
Diagram

NTP
NTP ELEKTRONIK A/S
377-7034-A-3



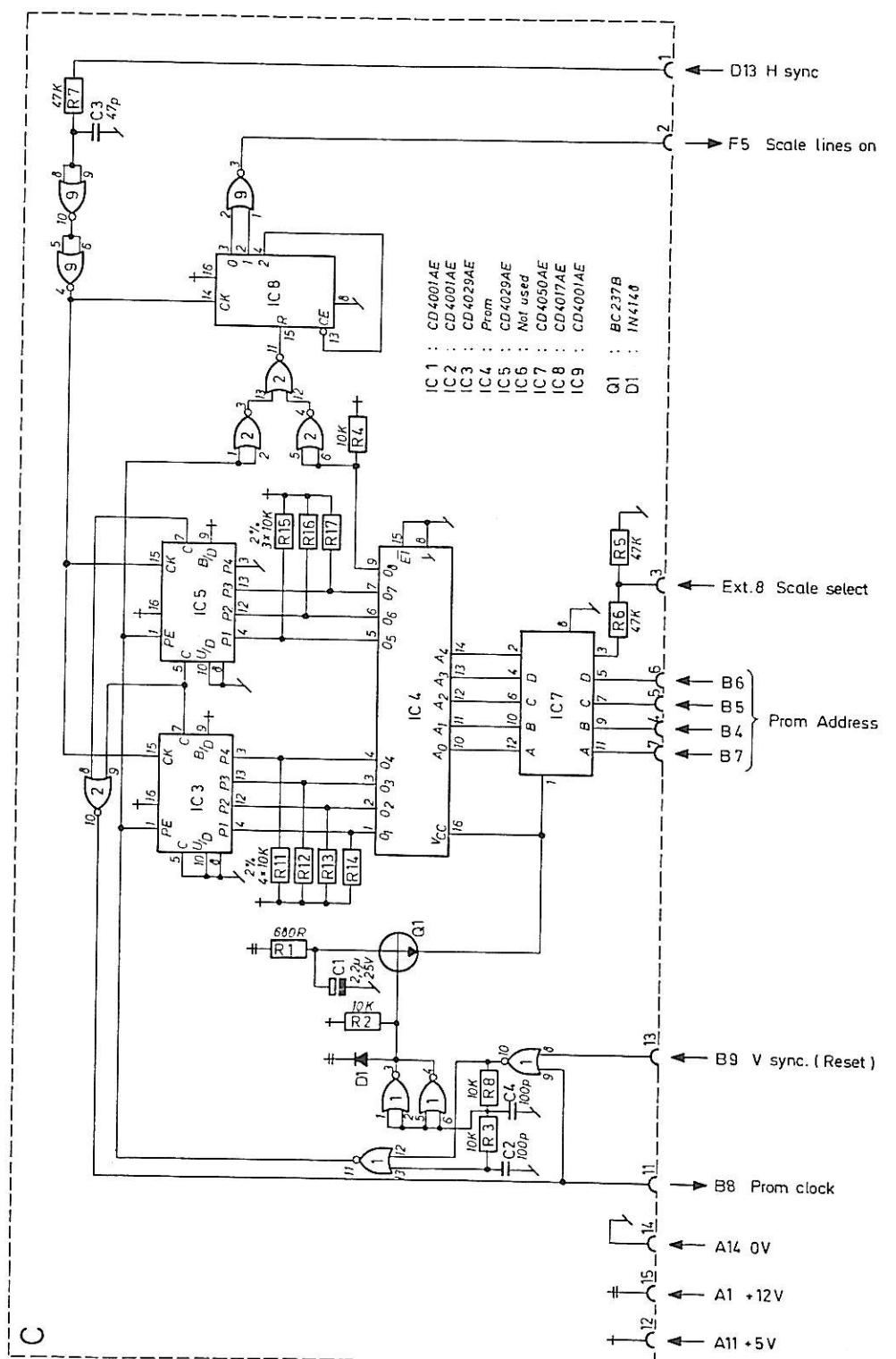
P1 og P2 monteres på bagsiden.

Mål	: 155 x 30,5mm
Konstruktør:	P.J.
Tegnet	: 10.4.84. T.L.
Godkendt	:
Revideret	: 1 / 920226

Video PPM 377-700
 Scale line generator part I
 Component Lay - out

NTP
 NTP ELEKTRONIK A/S

377-7045-A-3



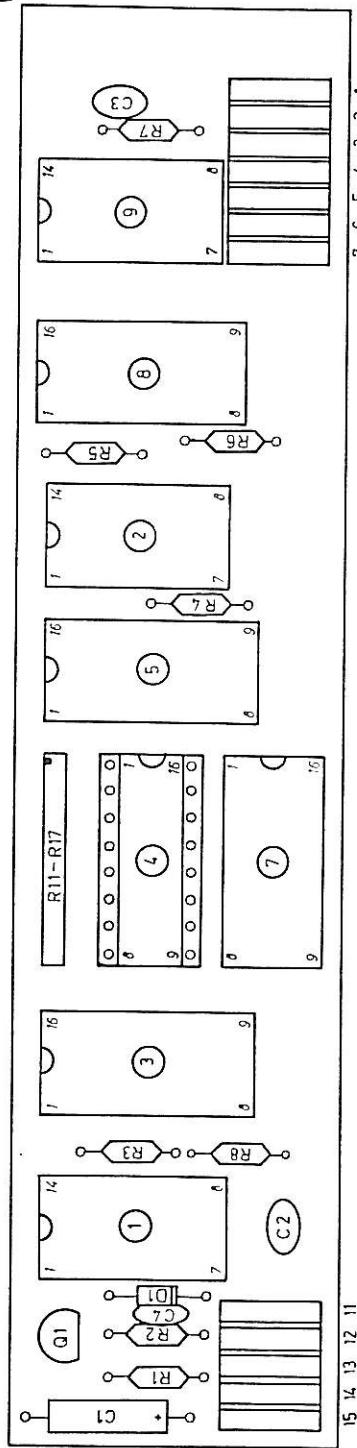
Målestok :	
Konstruktør:	
Tegnet :	2.4.84. T.L.
Godkendt :	
Revideret :	

Video PPM 377-700
 Scale Line Generator , Part 2
 Schematic Diagram

NTP
 NTP ELEKTRONIK A/S

377-7072-A-3

C

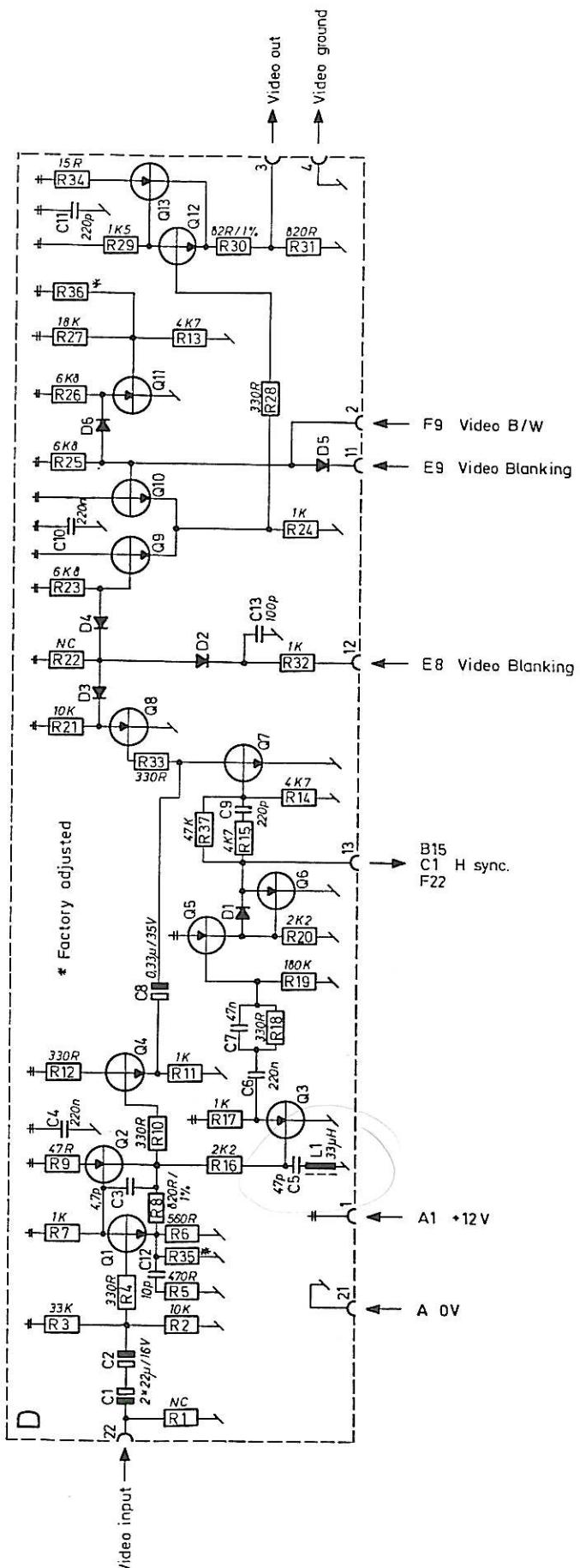


7 6 5 4 3 2 1

Basis		Actual	Material	Bertrand	γ ₀ , γ'
Valistor	2:1				
Tolerance	num				
Request	30.3.84, T.L.				
Goukendt					
Relevant					

NTP
N. TONES PREFERENCE
Components lay-out

377-7083-A-3



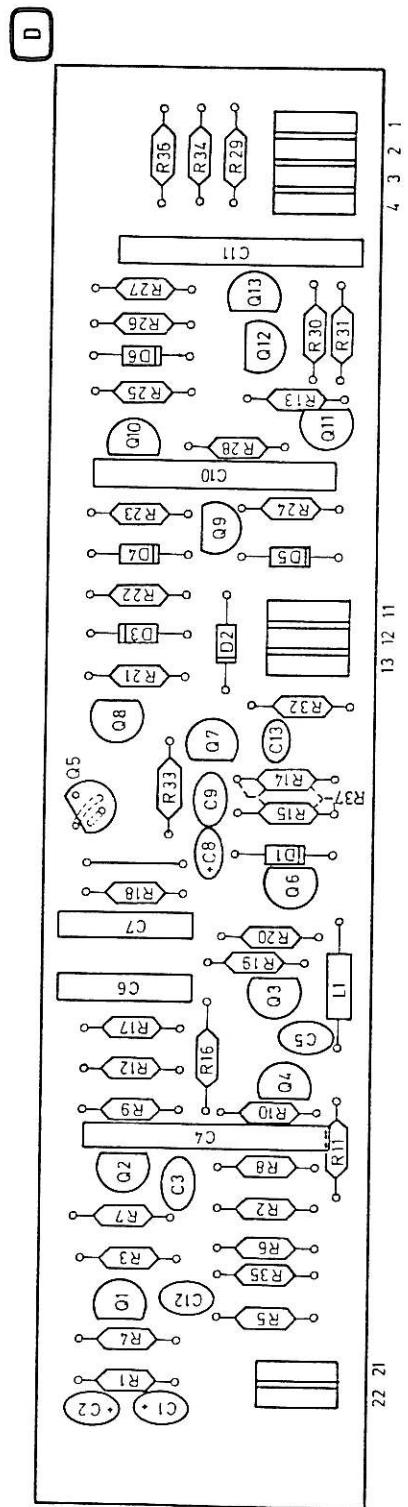
Q1,4,7,9,10,12 : BF241
 Q2,3,6,8,11,13 : BF 451
 Q5 : BC 307
 D1-6 : 1N4148

Mødestok :	
Konstruktør :	
Tegnet :	2.4.84. T.L.
Godkendt :	
Revideret :	1/ 19.9.88.

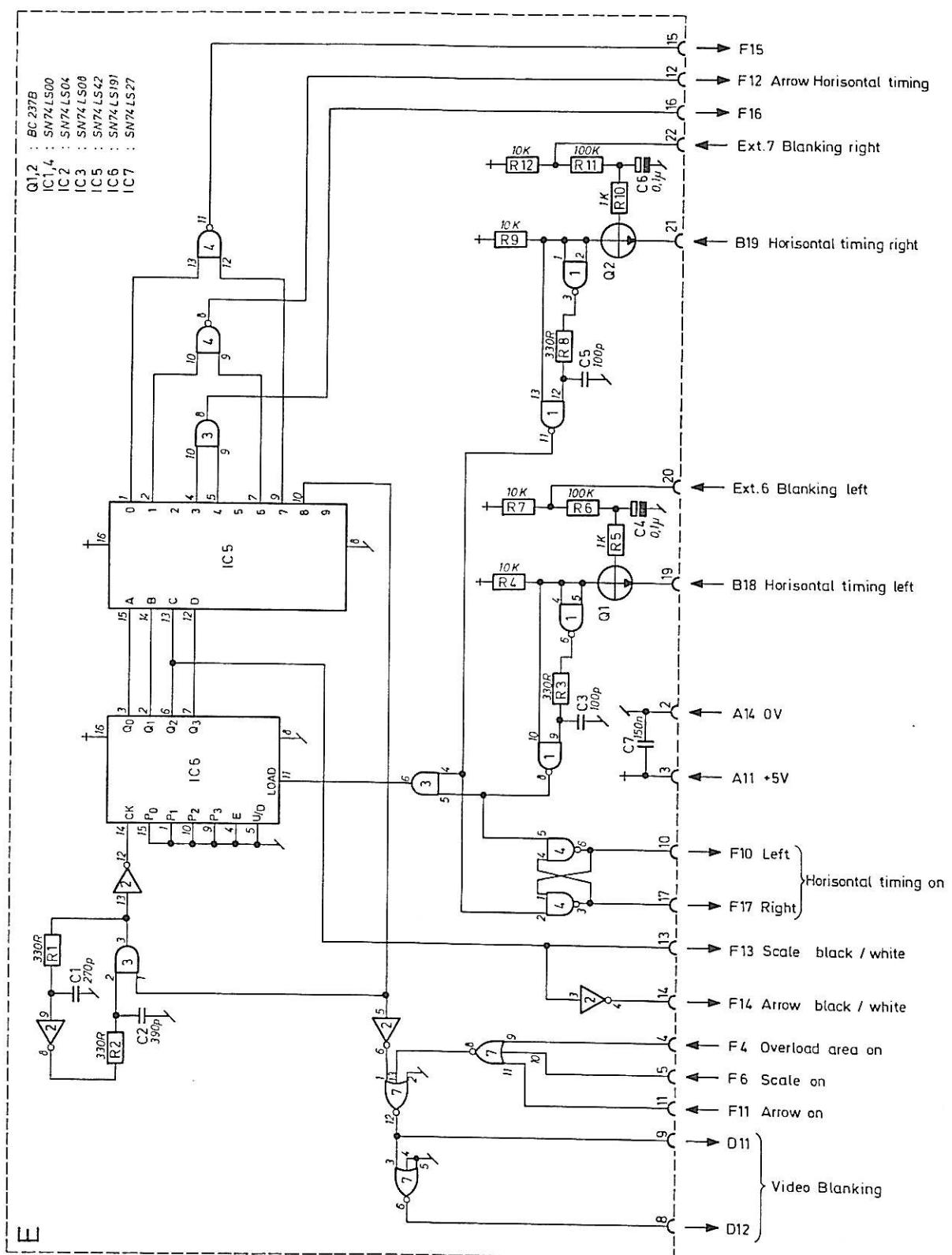
Video PPM 377-700
 Video Switch and Impedance Select
 Schematic Diagram



377-7070-A-3



Pos	Antal	Material	Bemärkning	Dev. av
Materstok	2.1			
Tolerance	mm	Video - PPM	377 - 700	
Tegeint	30.3.84. TL	Video switch		
Godkändt			Components	Lay-out
Reviserat				

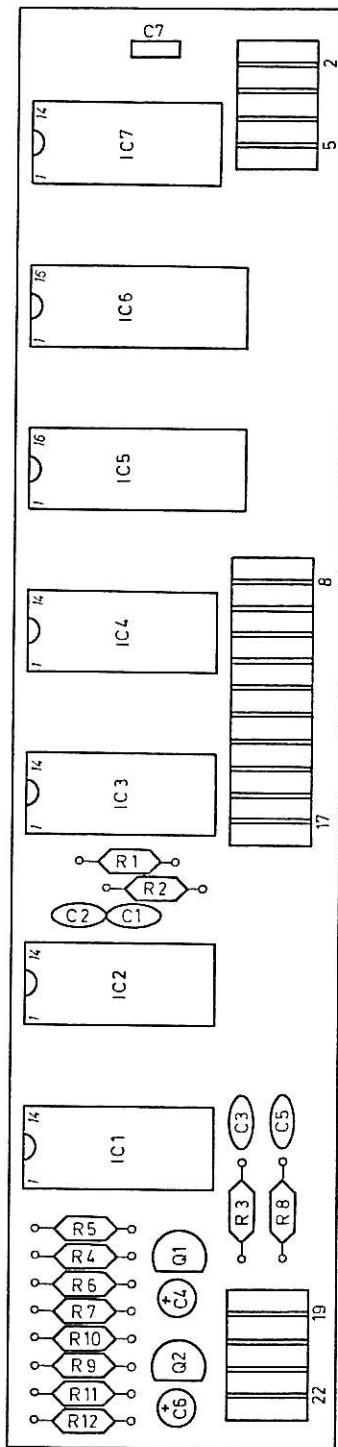


Målestok	:
Konstruktør	: P. J.
Tegnet	: 5.4.84. T.L.
Godkendt	:
Revideret	:

Video PPM
 Arrow Generator part 1
 Diagram

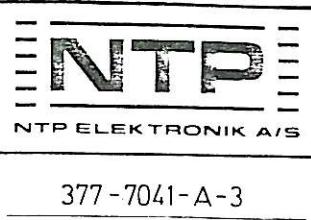
377-700

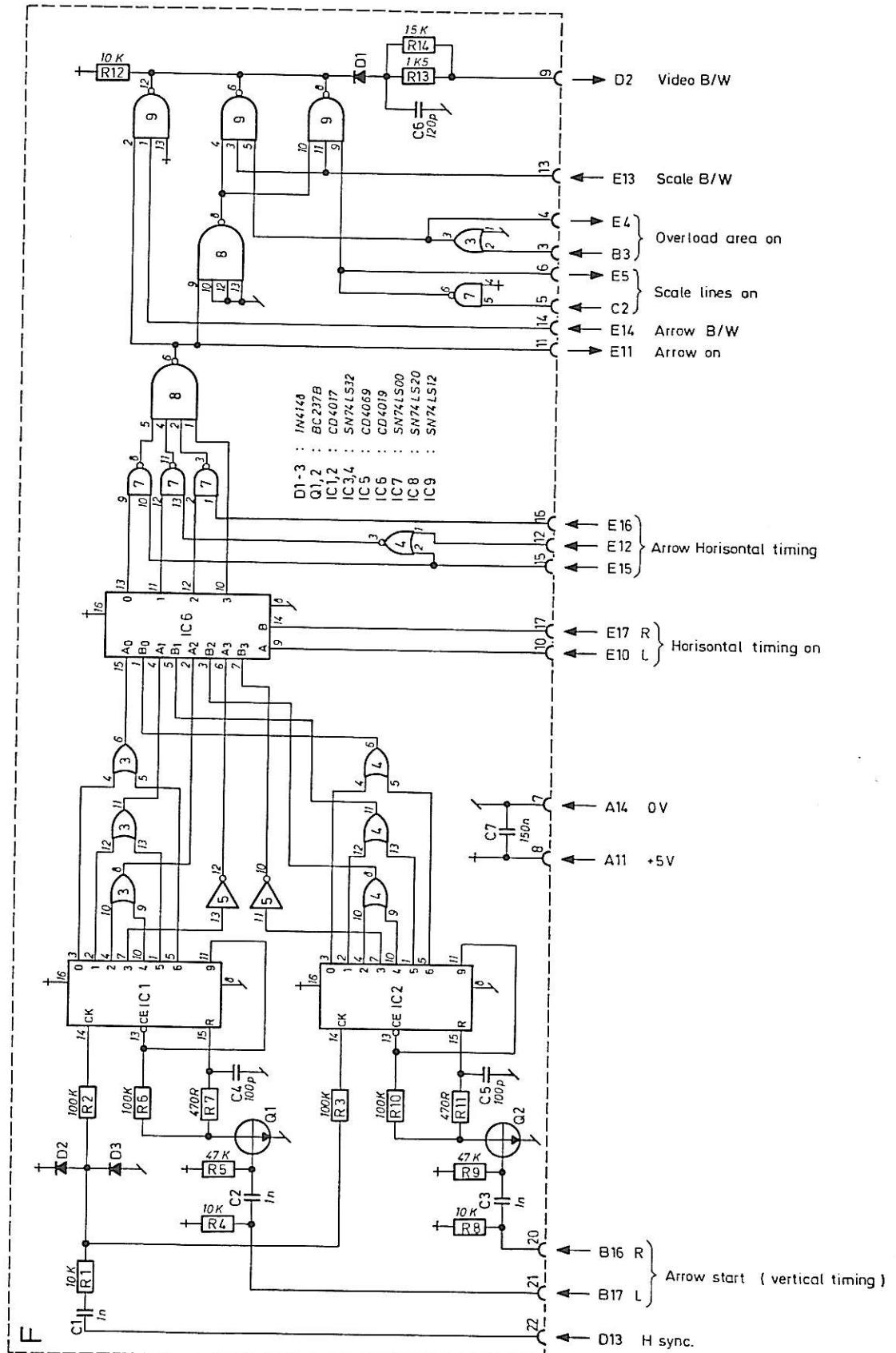
NTP
 NTP ELEKTRONIK A/S
 377-7030-A-3



Mål	: 134,6 x 30,5mm
Konstruktør:	P. J.
Tegnet	: 5.4.84. T.L.
Godkendt	:
Revideret	:

Video PPM 377-700
 Arrow Generator part 1
 Component Lay-out



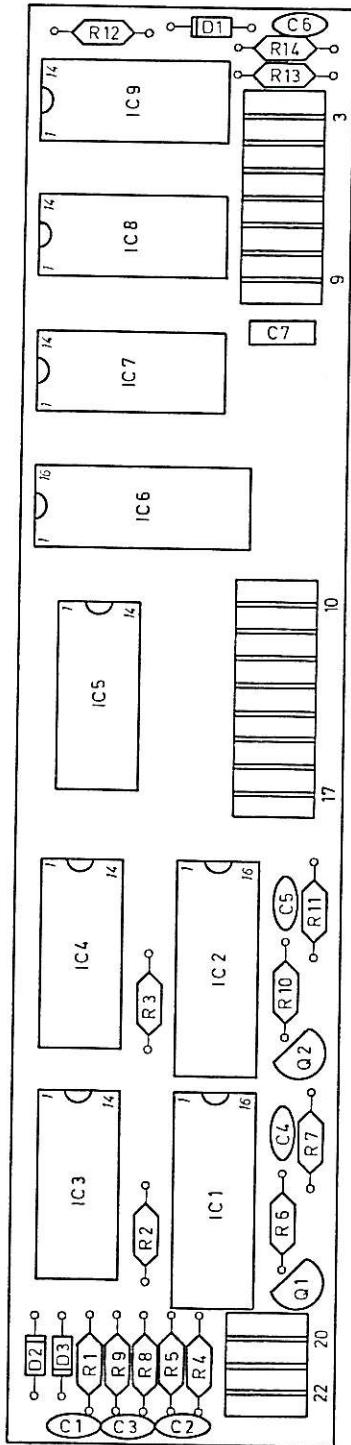


Målestok :	
Konstruktor: P.J.	
Tegnet : 10.4.84. T.L.	
Godkendt :	
Revideret :	

Video PPM 377-700
Arrow generator part II
Diagram

NTP
NTP ELEKTRONIK A/S

377-7032-A-3

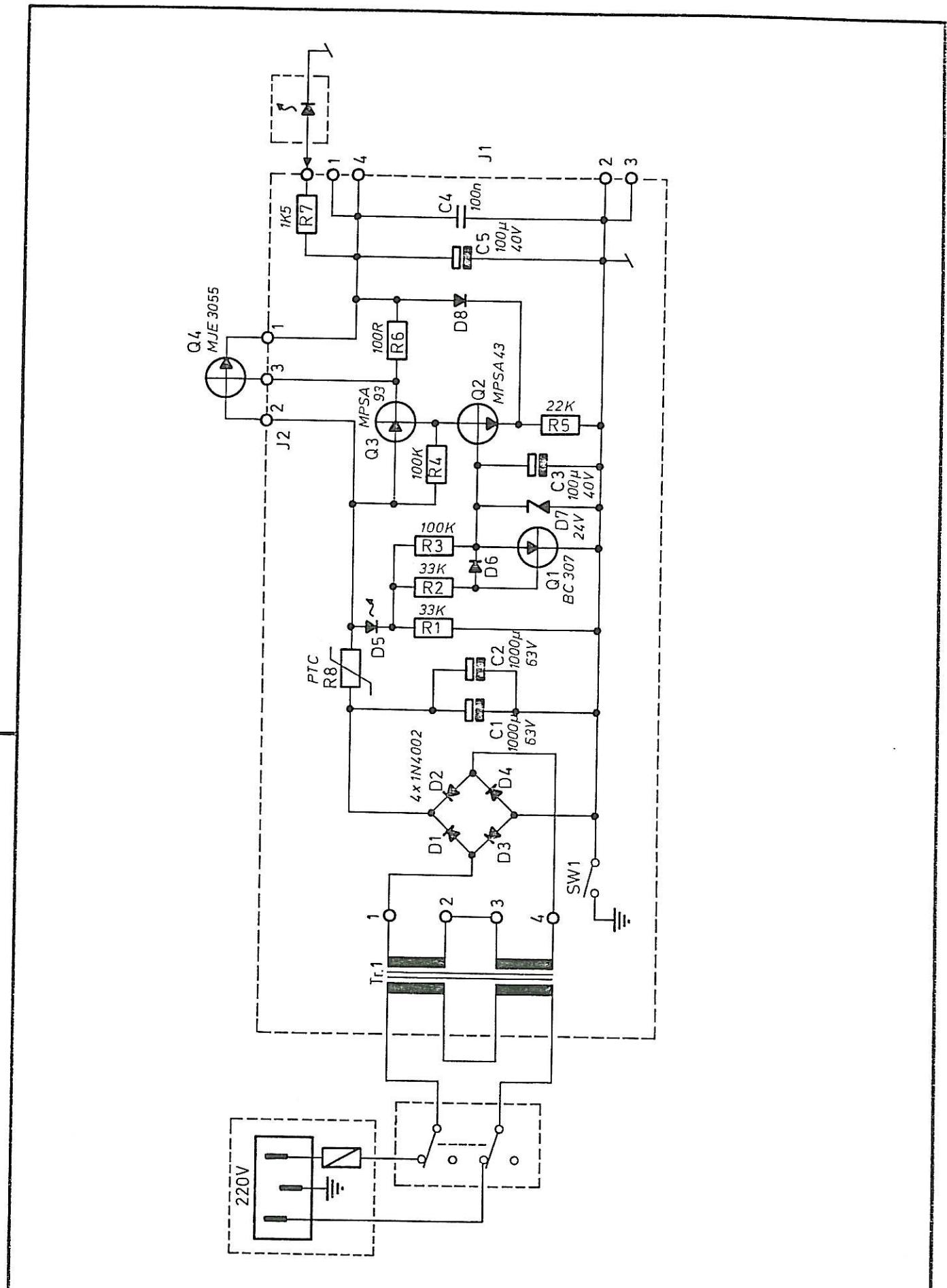


Målestok	: 134,6 x 30,5mm
Konstruktør	: P.J.
Tegnet	: 6.4.84. T.L.
Godkendt	:
Revideret	:

Video PPM 377-700
 Arrow Generator part II
 Component Lay - out

NTP
 NTP ELEKTRONIK A/S

377-7043-A-3

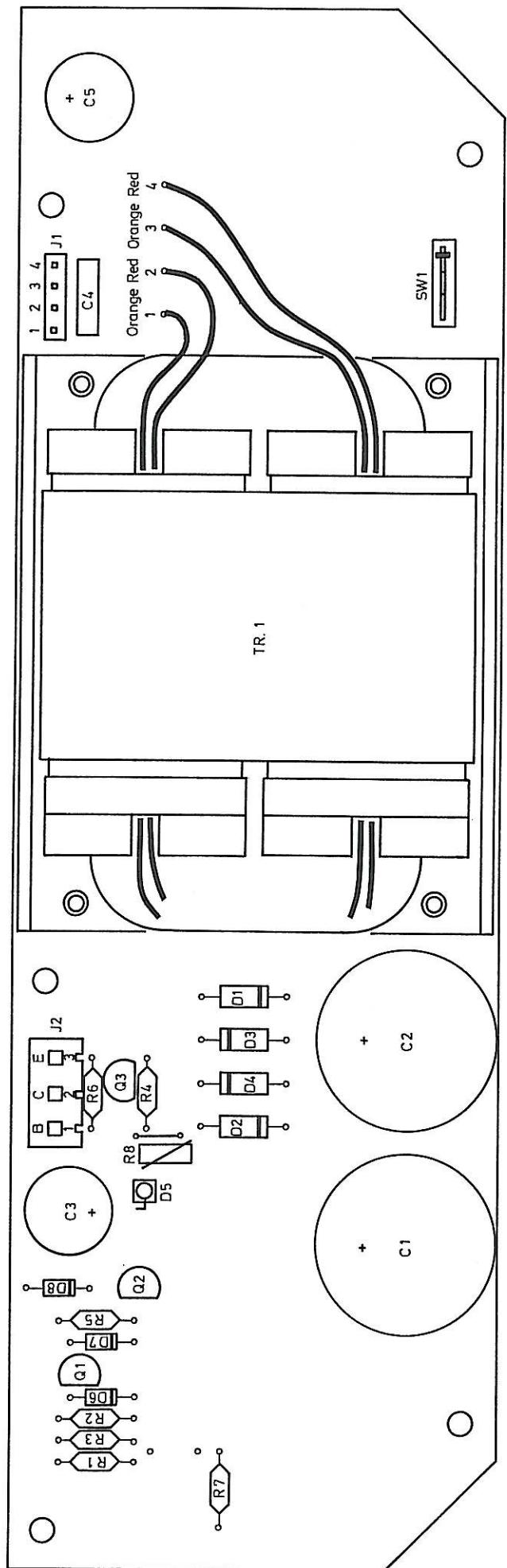


Målestok :	
Konstruktør:	
Tegnet : 1.5.84. JS.	
Godkendt :	
Revideret :	

Power Supply 510-200
Diagram

NTP
NTP ELEKTRONIK A/B

510-2030-A-4



Pos.:	Aantal:	Materiale:	Behandl.:	Del. al:
Målestok:				
Toleranse:	± mm			
Tegnet:	1.5.84. JS			
Godkendt:				
Reviderat:	21/931214			