SIGNALLING BOARD

LDK 4810/00

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A. TECHNICAL DATA

Input voltages

| | |
|---|---|
| Signalling | : 0 V = off; +24 V = on |
| Power supply | : approx. 25 Va.c. |

Ouput voltages and currents:

| | |
|---|---|
| Power supply | : approx. +23 V, not smoothed. |
| | : approx. +12.5 V stabilised. |
| Signalling | : 4 outputs are provided which can supply max. 1600 mA at 23 V. |

B. CIRCUIT DESCRIPTION

This unit comprises a switching circuit and a matrix with the aid of which the individual pilot lamps can be connected to the "call" or to the "on air" system or both. The unit furthermore comprises a switching circuit by means of which the hour counter can be switched on, and a +12.9 V power supply.

1. Signalling

"On air" lamps are connected to TS8 (lamp on top of camera head) and TS10 (lamps behind red ring on the lens).
The "call" lamps are connected to TS11 (viewfinder) and TS12 (rear of camera). The lamps are switched on by bottoming the transistors. The drive voltages are supplied via a matrix circuit. As TS8 and TS10 must deliver a relatively high power, TS7 and TS9 have been included between these transistors and the matrix.
With the aid of the matrix both the "call" and the "actual" control voltages can be applied to one of the four outputs, or a combination of these. The matrix has four junctions, marked in the diagram with $A\overline{C}$, $\overline{A}C$, AC and $\overline{AC}$. If a positive control voltage is applied to one of these junctions, this voltage will reach the output transistors via the diodes connected to that junction. The lamps then light up.
The letter A is for actual (on air) the letter C for call.
A line over the relevant letter means that the relevant circuit receives no signalling voltages. When it is not overlined this means that a signalling voltage is present.
For example, $A\overline{C}$ means that there is a voltage on point 14 and no voltage on point 8.
The letter combination near a junction indicates that on the relevant junction a voltage of approx. +12 V is present if the requirement given by the letter combination is met.
Consequently, there are four different cases:

a. No signalling voltages on inputs 8 and 14. Junction $\overline{AC}$ then receives a voltage of approx. +12 V, TS12 is conductive; the lamp in the call switch then lights up to indicate that the camera is switched on.
b. Signalling voltage on 8, not on 14 (call only). Junction $\overline{A}C$ now receives approx. +12 V. The lamp underneath the viewfinder is lit, the lamp in the call switch is extinguished. When the voltage on 8 disappears (by repeated depression of the call switch e.g. on the control rack) the situation described under a is restored.
c. Signalling voltage on 14, not on 8 ("actual" only). Junction $A\overline{C}$ now receives the voltage. The red lamps on the top of the camera and near the viewfinder and the lamp in the call switch light up.
d. Signalling voltage on 8 and 14 ("actual" and "call"). Junction AC now receives a voltage. The lamps on top of the camera and near the viewfinder light up. The lamp in the call switch is extinguished.
That junction $\overline{AC}$ receives a voltage in case a can be explained as follows.

When points 14 and 8 are voltageless, TS3 and TS5 are cut off and TS4 and TS6 are turned on. The cathodes of GR6 and 7 are connected to +12.5 V so that GR6 and 7 are turned off. The 12.9 V is then applied to junction $\overline{AC}$ via R9. The cathodes of GR8-9 are connected to earth via TS4 and 6; point AC receives no voltage.
The cathode of GR11 is connected to earth via TS4.
Junction GR10-11 will carry no voltage and neither will $A\overline{C}$.
Cathode GR12 is connected to 12.5 V, GR12 is cut off.
GR21 is connected to earth via TS6 so that $\overline{A}C$ is voltageless.
The situations b, c and d are obtained in a similar way.
By means of a different diode matrix, it is possible to determine which lamps should light up in a certain situation.

then also light up.
The signalling voltage for "Call" is approx. 24 V and is available on connector 270 of the power supply unit. Via the "CALL" switch the 24 V is applied to the camera via the signalling line. This is also possible via the remote switches.
The signalling voltage is furthermore applied to TS2 via emitter-follower TS1 so that TS2 becomes fully conductive and lamp "call" on the L.C.P. lights up.
In the case of remote control the lamp on the remote control panel also lights up.

2. Power supply

Rectifier GR1-4 supplies a direct voltage of approx. 23 V.
This voltage is used as supply voltage for the pilot lamps.
The voltage is smoothed with R3-C1-R4-C2.
With SP1-2 and TS2 the voltage is stabilised. The stabilised voltage is used for the signalling circuit.
Bridge rectifier GR5 is connected in series with the hour counter. When TS1 is conductive, the bridge rectifier is conductive and the hour counter is switched on.
TS1 is controlled by the stand-by circuit in the C.C.U.

3. Signalling C.C.U.

The signalling voltage for "Actual" is applied via relay RE1.
This relay can be energised in various ways:

a. By means of a voltage between points 4 and 6. This can be effected via the intercom plug (F and G) or via the signalling plug (A and B). The value of R7 (which is connected in series with rectifier bridge GR1) depends on the voltage applied, e.g. for 12 V the value of R7 is 330 Ω, for 20 V this value is 1500 Ω and for 48 V the value is 3900 Ω.
b. By interconnection of points 4 and 6. For this R7 should be removed and point d interconnected to c and e to f, so that rectifier bridge GR1 is connected to the internal +12 V.

When R1 is energised, +12 V is applied to the camera via the signalling line, so that the relevant lamps light up (see point 1). The +12 V is also applied to the base of TS3 so that TS3 becomes fully conductive and the "actual" lamps on the L.C.P. light up.
The lamp at the front of the module and, in the case of remote control, the lamp on the remote control panel

C SERVICE PARTS

A. Printed circuit board in the Camera Head

1. Mechanical

| | | |
|---|---|---|
| | Spacer for transistor | 4822 255 40006 |

2. Electrical

| Item Pos. | Description | Code number |
|---|---|---|
| C1 | Electrolytic capacitor 100 µF 40 V | 4822 124 20384 |
| C2 | Electrolytic capacitor 40 µF 16 V | 4822 124 20371 |
| C3-C4 | Electrolytic capacitor 1 µF 35 V | 4822 124 10047 |
| GR1-2-3-4 | Diode BY 126 | 4822 130 30192 |
| GR5 | Rectifier BYX 24 | 4822 130 30349 |
| GR6 - GR21 | Diode BAX 16 | 4822 130 30273 |
| Ts1-3-4-5-6-7-9-11-12 | Transistor BCY 56 | 4822 130 40235 |
| Ts2-8-10 | Transistor BFY 50 | 4822 130 40294 |
| SP1 | Diode BZY 88 C6 V2 | 4822 130 30286 |
| SP2 | Diode BZY 88 C6 V8 | 4822 130 30079 |

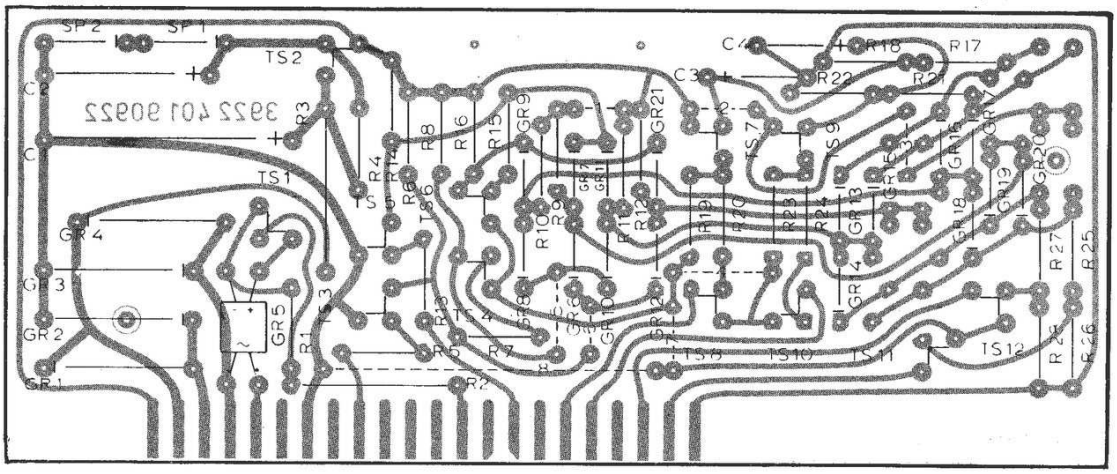
B. Printed circuit board in the C. C. U.

1. Mechanical

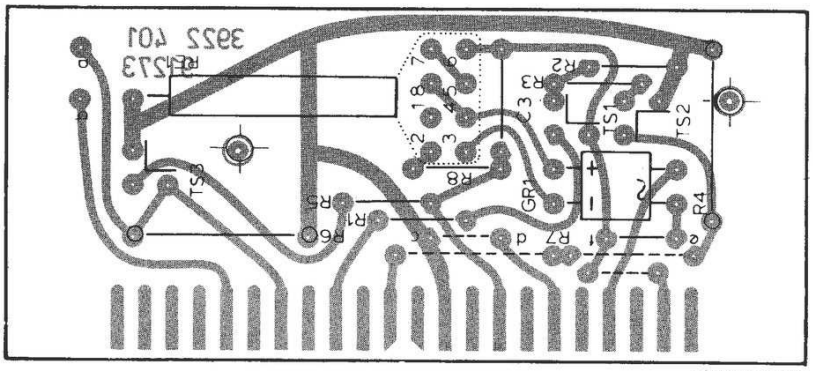
| | | |
|---|---|---|
| | Spacer for transistor. | 4822 255 40006 |

2. Electrical

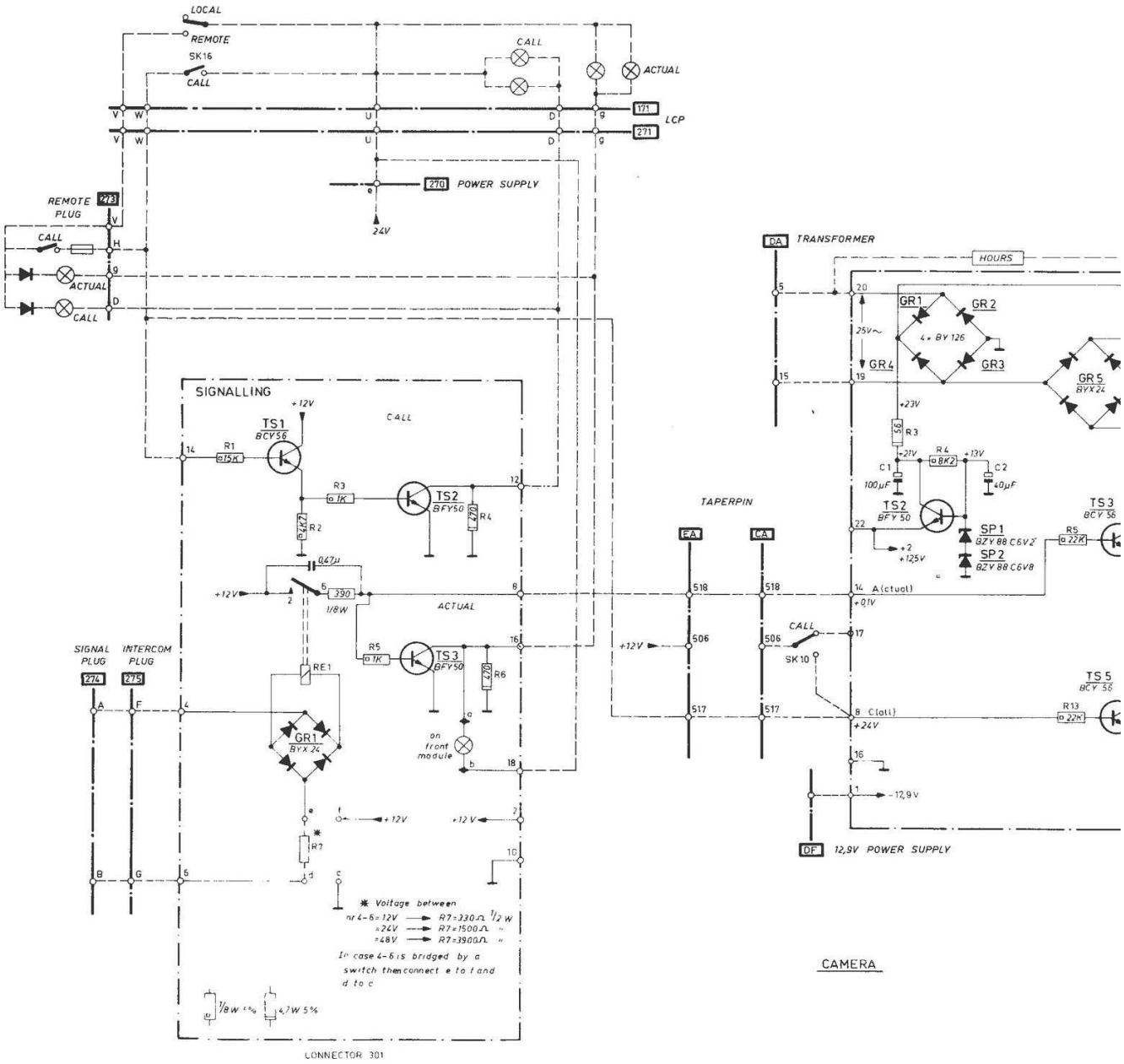
| Item Pos | Description | | Code number |
|---|---|---|---|
| R4 - 6 | Wire wound resistor 470 Ω -4.7 W | | 4822 112 20098 |
| GR1 | Bridge rectifier | BYZ 24 | 4822 130 30349 |
| Ts1 | Transistor | BCY 56 | 4822 130 40325 |
| Ts2-3 | Transistor | BFY 50 | 4822 130 40294 |
| Re1 | Relay | SZS 7123 | 4822 280 20028 |

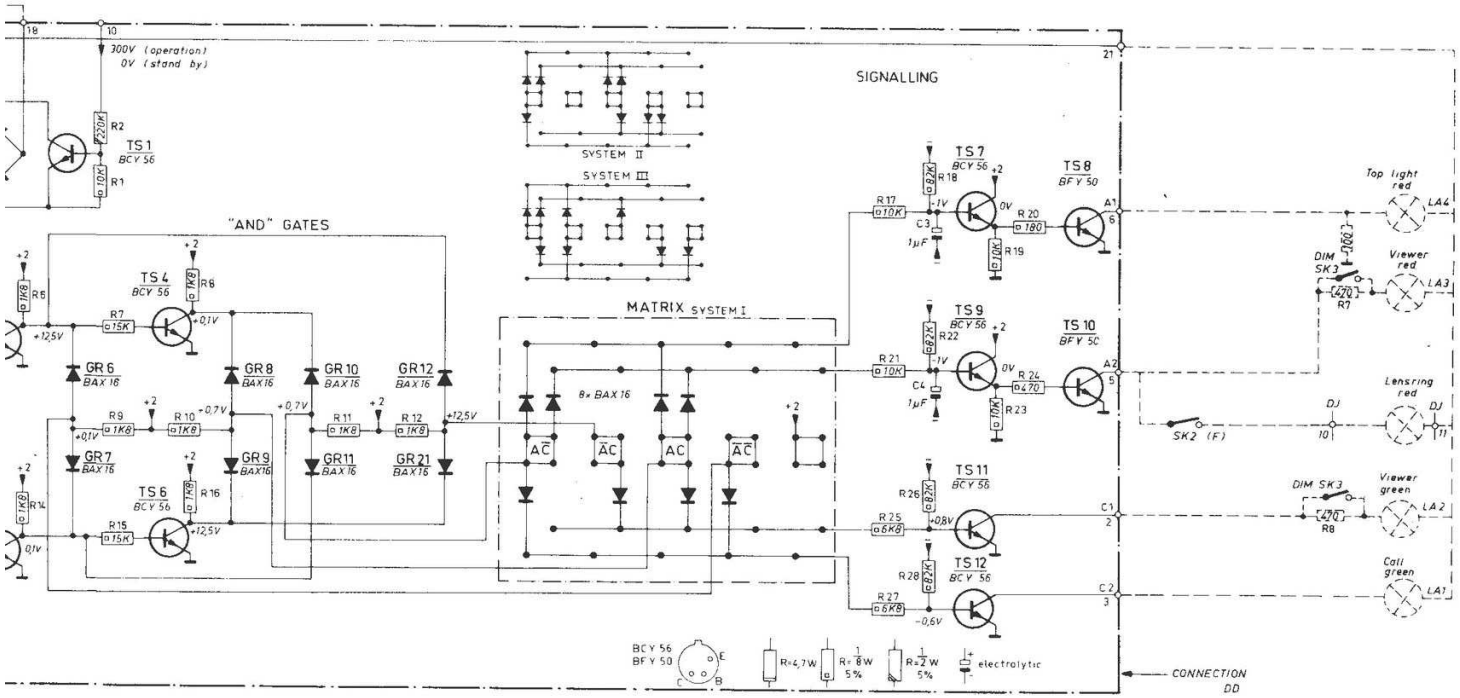



ETV 2554



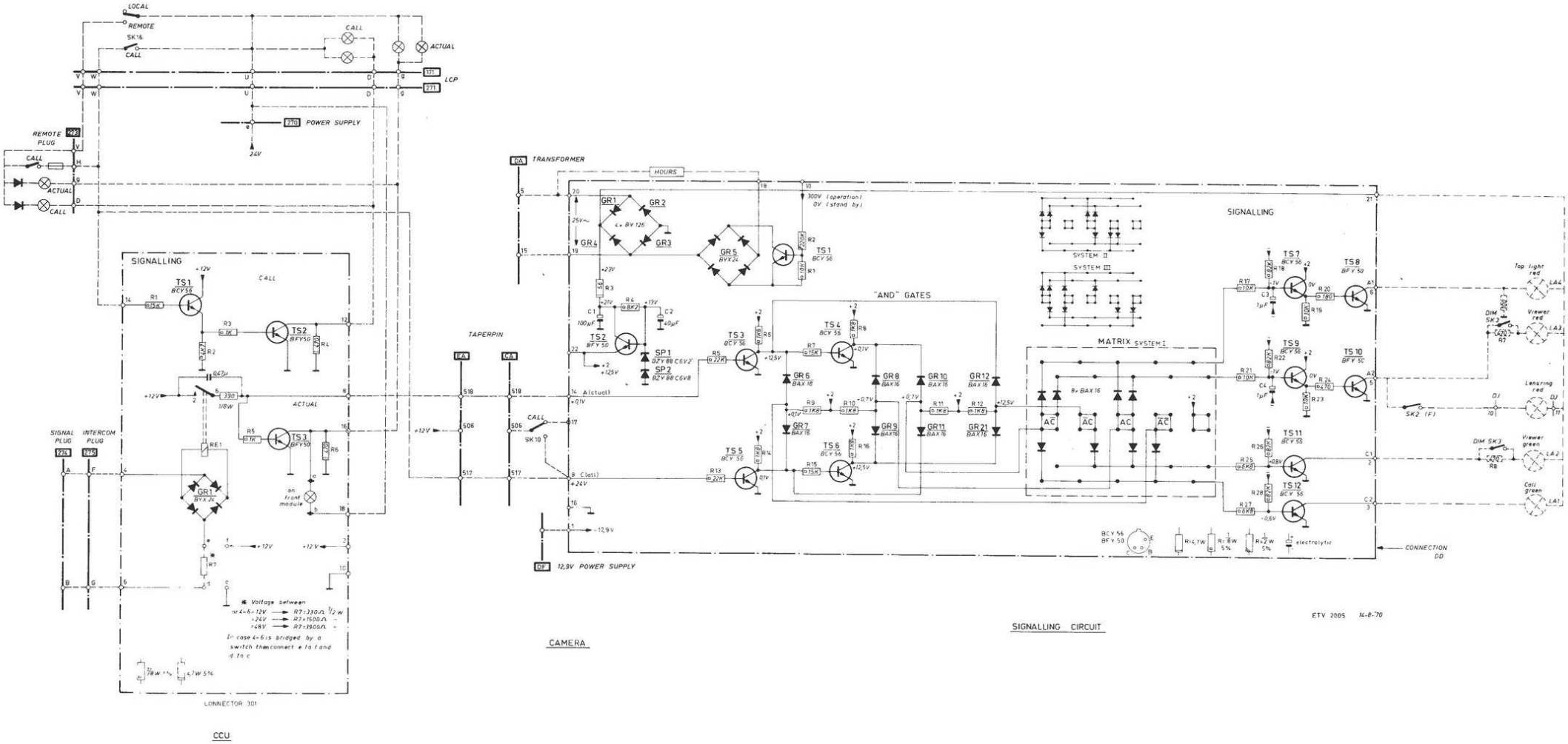

ETV 2609

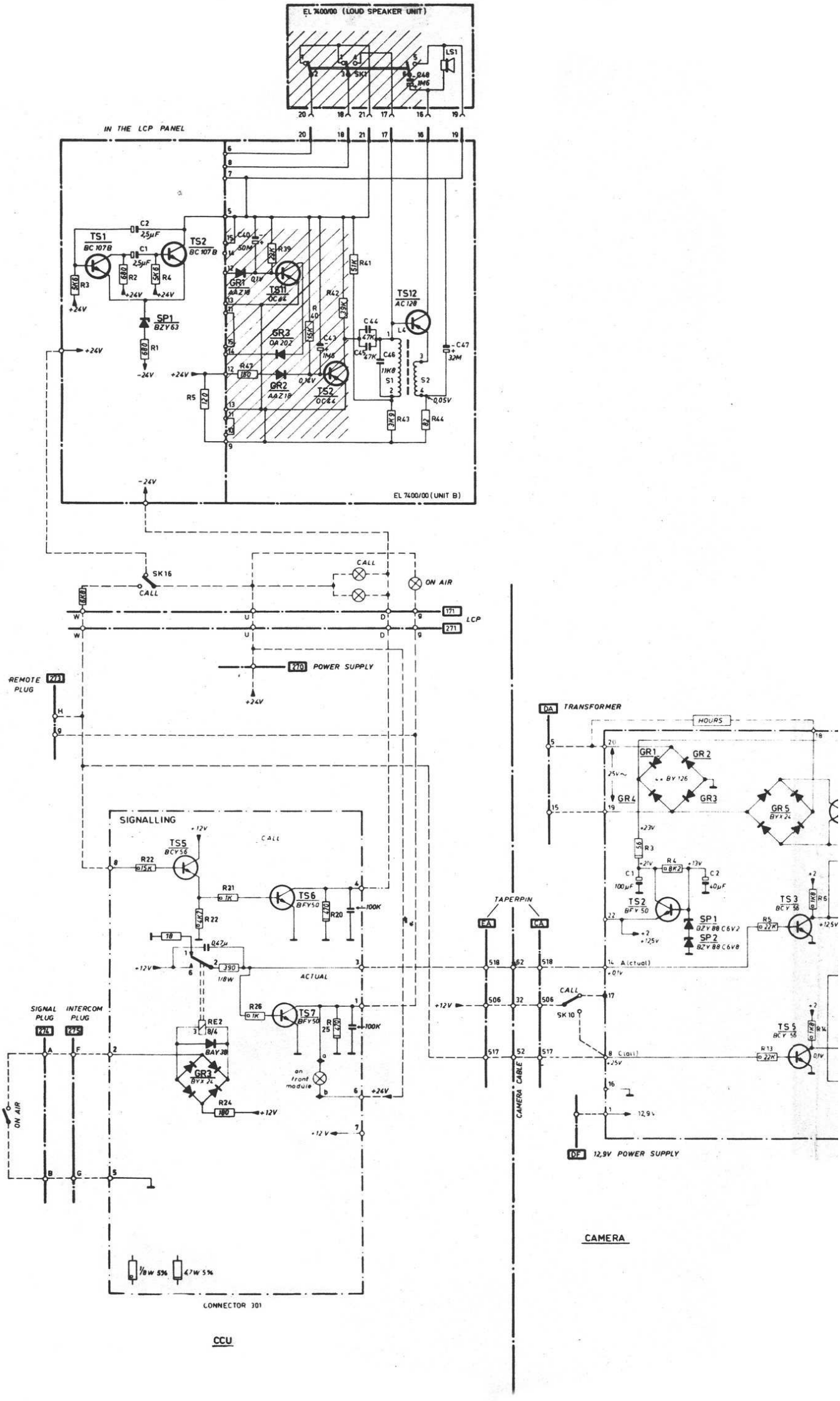

LOCAL
REMOTE
SK16
CALL
CALL
ACTUAL
V W U D g
171
LCP
271
270 POWER SUPPLY
24V
REMOTE PLUG 273
CALL
ACTUAL
CALL
SIGNALLING
TS1 BCY56
+12V
CALL
R1 15K
R3 1K
TS2 BFY50
R2 6K2
R4 470
0,47µ
390 1/8W
ACTUAL
TS3 BFY50
R5 1K
R6 470
RE1
GR1 BYX 24
on front module
SIGNAL PLUG 274
INTERCOM PLUG 275
R7*
CONNECTOR 301
* Voltage between
nr 4-6 = 12V → R7 = 330Ω 1/2 W
= 24V → R7 = 1500Ω "
= 48V → R7 = 3900Ω "
In case 4-6 is bridged by a switch then connect e to f and d to c
1/8W 1% 4,7W 5%
CCU
DA TRANSFORMER
HOURS
GR1 GR2 GR3 GR4 GR5
4 × BY 126
BYX 24
25V~
+23V
R3 56
C1 100µF
R4 8K2
C2 40µF
TS2 BFY 50
SP1 BZY 88 C6V2
SP2 BZV 88 C6V8
TS3 BCY 56
R5 22K
+2
+12,5V
TAPERPIN
EA
CA
518
506
517
+12V
CALL
SK 10
14 A (ctual)
+0,1V
17 C (all)
+24V
TS 5 BCY 56
R13 22K
16
1
-12,9V
DF 12,9V POWER SUPPLY
CAMERA

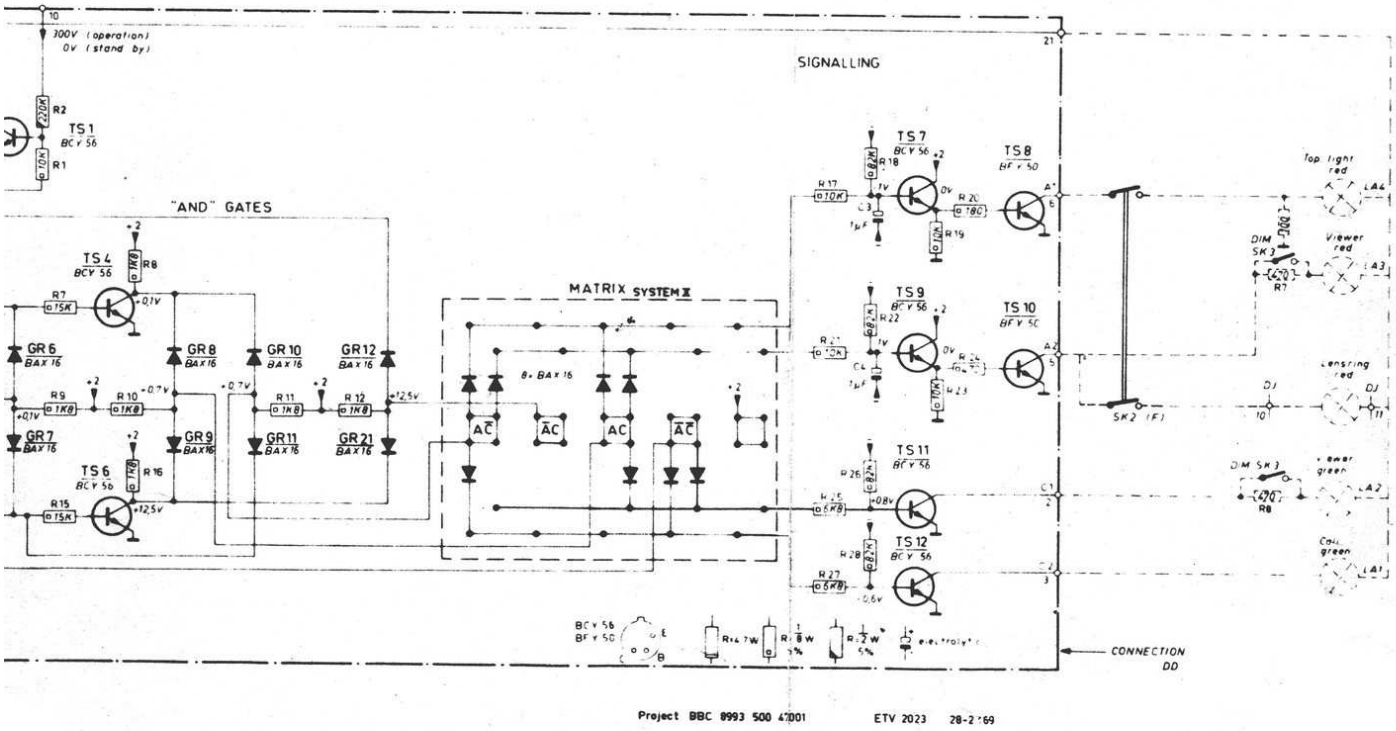



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SIGNALLING CIRCUIT

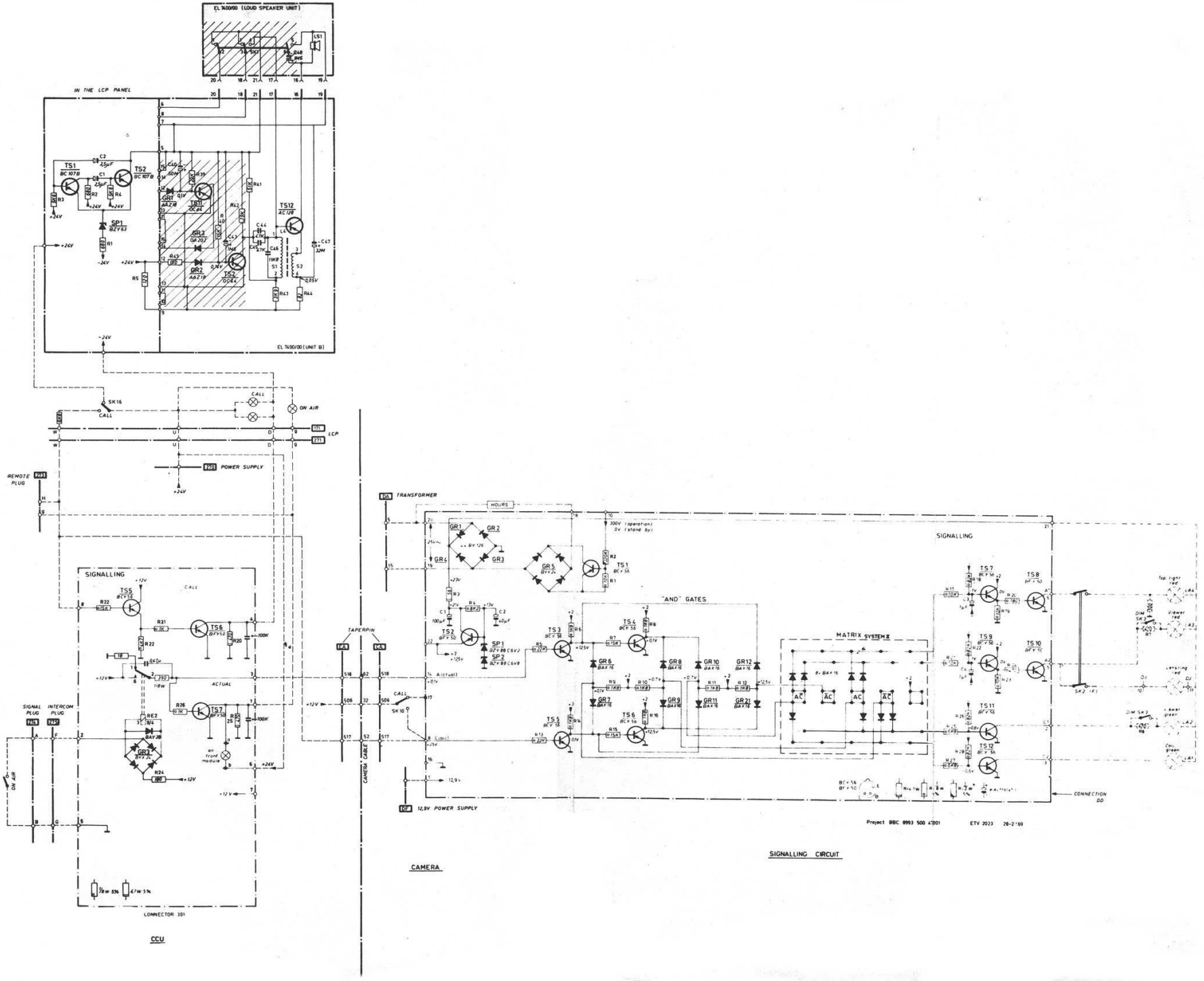

LOCAL
REMOTE
SK16
CALL
ACTUAL
LCP
POWER SUPPLY
24V
REMOTE PLUG
SIGNALLING
TS1 BCY56
TS2 BFY50
TS3 BFY50
GR1 BYX 24
RE1
SIGNAL PLUG
INTERCOM PLUG
on front module
* Voltage between
or 4-6 = 12V → R7 = 330Ω, 1/2 W
+24V → R7 = 1500Ω, -
+48V → R7 = 3900Ω, -
In case 4-6 is bridged by a switch then connect e to f and d to c
1/8W ±1%
4,7W 5%
CONNECTOR 301
CCU
TAPERPIN
TRANSFORMER
HOURS
300V (operation) 0V (stand by)
GR1 GR2 GR3 GR4 GR5
4 x BY 126
BYX 24
TS1 BCY 56
TS2 BFY 50
SP1 BZY 88 C6V2
SP2 BZY 88 C6V8
TS3 BCY 56
TS4 BCY 56
TS5 BCY 56
TS6 BCY 56
"AND" GATES
GR6 BAX 16
GR7 BAX 16
GR8 BAX16
GR9 BAX16
GR10 BAX16
GR11 BAX 16
GR12 BAX16
GR21 BAX16
8x BAX 16
MATRIX SYSTEM I
SYSTEM II
SYSTEM III
SIGNALLING
TS7 BCY 56
TS8 BFY 50
TS9 BCY 56
TS10 BFY 50
TS11 BCY 56
TS12 BCY 56
Top light red
Viewer red
Lensring red
Viewer green
Call green
DIM SK3
SK2 (F)
DJ
CALL
SK10
A (Actual)
B (Call)
+12,9V
12,9V POWER SUPPLY
CONNECTION DD
BCY 56 BFY 50
R=4,7W
R=1/8W 5%
R=1/2W 5%
electrolytic
CAMERA
SIGNALLING CIRCUIT
ETV 2005 14-8-70


EL 7400/00 (LOUD SPEAKER UNIT)
LS1
IN THE LCP PANEL
TS1 BC 107 B
TS2 BC 107 B
TS11 OC 44
TS12 AC 128
TS2 OC 44
GR1 AAZ 18
GR2 AAZ 18
GR3 OA 202
SP1 BZY 63
EL 7400/00 (UNIT B)
SK 16
CALL
ON AIR
LCP
POWER SUPPLY
REMOTE PLUG
SIGNALLING
TS5 BCY 56
TS6 BFY 50
TS7 BFY 50
ACTUAL
SIGNAL PLUG
INTERCOM PLUG
ON AIR
CONNECTOR 301
CCU
TAPERPIN
CAMERA CABLE
TRANSFORMER
HOURS
GR1 GR2 GR3 GR4 GR5
BY 126
BYX 24
TS2 BFY 50
TS3 BCY 56
TS5 BCY 56
SP1 BZY 88 C6V2
SP2 BZY 88 C6V8
SK 10
12,9V POWER SUPPLY
CAMERA




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SIGNALLING CIRCUIT


EL 7400/00 (LOUD SPEAKER UNIT)
IN THE LCP PANEL
EL 7400/00 (UNIT B)
SIGNALLING
CALL
ON AIR
SK16
LCP
POWER SUPPLY
REMOTE PLUG
SIGNAL PLUG
INTERCOM PLUG
ACTUAL
CONNECTOR 301
CCU
TRANSFORMER
HOURS
"AND" GATES
MATRIX SYSTEM X
TAPERPIN
CAMERA CABLE
SK10
12,9V POWER SUPPLY
CONNECTION DD
CAMERA
Project BBC 8993 500 43001
ETV 2023 28-2-69
SIGNALLING CIRCUIT