NOTA: Acest desen nu constituie o obligatie de aplicare de către
contractor.
El reprezintă doar un exemplu de circuit de cale utilizat la
CFR si nu trebuie aplicat ca atare.

NOTE: It is not compulsory for the contractor to apply this drawing.
It is only an example of track circuit in use at CFR and
shall not be applied as such.

D					
C					
B					
A					
Indice Index	Data Date	Modificare Modification/Revision	Proiectant Designer	Aprobat Consultant Approved Consultant	Aprobat CFR Approved CFR

GUVERNUL ROMANIEI
ROMANIAN GOVERNMENT

PROIECT FINANȚAT DE UNIUNEA EUROPEANĂ
EUROPEAN UNION FINANCED PROJECT

CLIENT / CLIENT

C.N.C.F. "C.F.R." - S.A.

ITALFERR
GRUPPO FERROVIE DELLO STATO
Joint Venture leader

Scott Wilson

OBERMEYER
PLANEN + BERATEN GmbH

TECNIC
Consulting Engineers

CONSULTANT / CONSULTANT

			Data Date	Semnătură Signature
Aprobat Approved	Şef proiect Project manager	R. Liuzza	12.12.2011	
Aprobat Approved	Coordonator Secțiune 1 Section 1 Coordinator	C. Gambelli	12.12.2011	
Verificat Checked	Expert Cheie Key Expert	P. Amodio	12.12.2011	

SUBCONTRACTANT / SUBCONTRACTOR

AREX COMPANY

Aprobat Approved	Responsabil Subconsultant Subconsultant Responsible	A. Stanciu - Dinulescu	12.12.2011	
Întocmit Elaborated	Proiectant Designer	Ing. Topala Madalin	12.12.2011	

Reabilitarea liniei de cale ferata Braşov - Simeria, parte componentă a coridorului IV Pan European, pentru circulaţia trenurilor cu viteza maximă de 160 km/h,
Tronsonul : Braşov - Sighişoara
Rehabilitation of the railway line Braşov - Simeria, component Part of the IV Pan-European Corridor, for the trains circulation with maximum speed of 160 km/h,
Section : Braşov - Sighişoara

Proiect/Project
2004/RO/16/P/PA/003

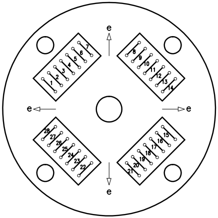
Faza / Phase:
D.E. / D.D.

Denumire desen / Drawing Title :

Statia / Station STUPINI
Fise picheti tip pentru circuite de cale
Model boxes for track circuit equipment

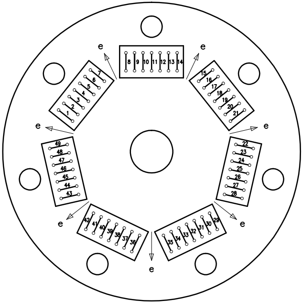
Codificare / Codification System	Scara / Scale Fără / No scale	LOT / LOT	Nr. / No 01 / 31

E A 5 1 | 0 1 | E | 0 3 | B X | S E | 0 0 | 3 | 2 | 0 2 0 | 0


e
e
e
e
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

C4–28

DM1,DM3,DM5,DM2,DM4,DM6,DR2,DA1,DA2


e
e
e
e
e
e
e
1
2
3
4
5
6
7
8
9
10
11
12
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14
15
16
17
18
19
20
21
22
23
24
25
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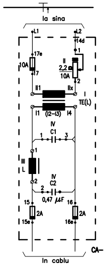
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49

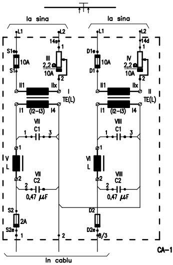
C7–49

DR1,DR3,DR4,DS1,DS3,DS5,DS7,DS9,DS2,DS4,DS6,DS8

CUTII DE DISTRIBUTIE

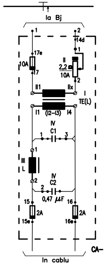

la sina
L1
L2
14d
17e
10A
17
II
2,2 Ω
10A
1
2
II1
IIx
I
TE(L)
I1
(I2–I3)
I4
IV
C1
1
3
III
L
IV
C2
0,47 μF
15
16
2A
15e
16e
In cablu

CA–1FM(2)

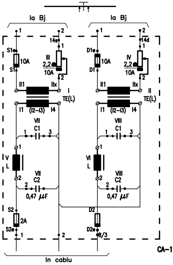

la sina
la sina
L1
L2
14s
14d
S1e
S1
D1e
D1
10A
III
IV
2,2 Ω
10A
II1
IIx
I
II
TE(L)
I1
(I2–I3)
I4
VII
VIII
C1
1
3
V
VI
L
C2
0,47 μF
S2
S2e
2A
D2
D2e
1
2
6/3
In cablu

CA–1P(2)

NOTA: Valoarea condensatorului C1 se coreleaza cu lungimea circuitului de cale si cu tipul de circuit (monofilar sau bifilar).


la Bj
1
2
14d
17e
10A
17
II
2,2 Ω
10A
II1
IIx
I
TE(L)
I1
(I2–I3)
I4
IV
C1
1
3
III
L
IV
C2
0,47 μF
15
16
2A
15e
16e
In cablu

CA–1FM(2)


la Bj
la Bj
1
2
14s
14d
S1e
S1
D1e
D1
10A
III
IV
2,2 Ω
10A
II1
IIx
I
II
TE(L)
I1
(I2–I3)
I4
VII
VIII
C1
1
3
V
VI
L
C2
0,47 μF
S2
S2e
2A
D2
D2e
1
2
6/3
In cablu

CA–1P(2)

Scheme de conectare a aparatajului in cutii de aparataj pentru circuitul de cale

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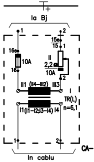
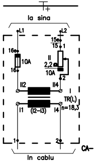
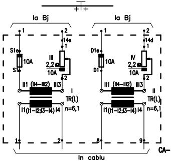

la Bj
1
2
15e
15
16e
16
10A
II
2,2 Ω
10A
II1
(II4–III2)
III3
TR(L)
n=6,1
I1(I1–I2;I3–I4)
I4
In cablu

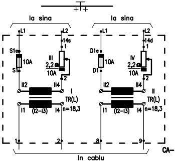
CA–1F(2)


la sina
L1
L2
15e
15
16e
16
10A
II
2,2 Ω
10A
II2
II4
TR(L)
n=18,3
I1
(I2–I3)
I4
1
2
In cablu

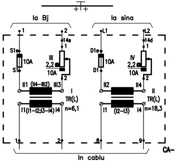
CA–1F(2)


la Bj
la Bj
1
2
14s
14d
S1e
S1
D1e
D1
10A
III
IV
2,2 Ω
10A
II1
(II4–III2)
III3
I
II
TR(L)
n=6,1
I1(I1–I2;I3–I4)
I4
8
9
In cablu

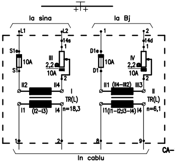
CA–1K(2)


la sina
la sina
L1
L2
14s
14d
S1e
S1
D1e
D1
10A
III
IV
2,2 Ω
10A
II2
II4
I
II
TR(L)
n=18,3
I1
(I2–I3)
I4
1
2
8
9
In cablu

CA–1K(2)


la Bj
la sina
1
2
L1
L2
14s
14d
S1e
S1
D1e
D1
10A
III
IV
2,2 Ω
10A
II1
(II4–III2)
III3
II2
II4
I
II
TR(L)
n=6,1
n=18,3
I1(I1–I2;I3–I4)
I1
(I2–I3)
I4
8
9
In cablu

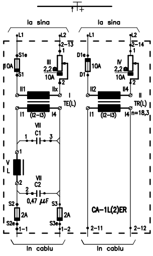
CA–1K(2)

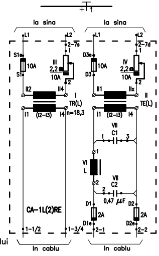

la sina
la Bj
L1
L2
1
2
14s
14d
S1e
S1
D1e
D1
10A
III
IV
2,2 Ω
10A
II2
II4
II1
(II4–III2)
III3
I
II
TR(L)
n=18,3
n=6,1
I1
(I2–I3)
I1(I1–I2;I3–I4)
I4
8
9
In cablu

CA–1K(2)

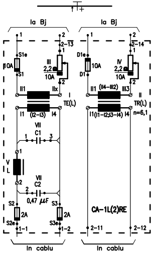
NOTA: La circuitele la care se controleaza ramificatiile, valoarea rezistentei din aparatajul de receptie este de 6 ohmi.

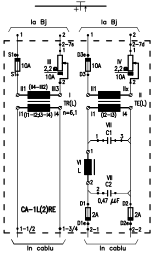
Scheme de conectare a aparatajului in cutii de aparataj pentru circuitul de cale


la sina
la sina
L1
L2
2-13
2-14
S1e
S1
10A
III
IV
2,2
D1e
D1
II1
IIx
II2
II4
I
II
TE(L)
TR(L)
I1
(I2-I3)
I4
n=18,3
VII
C1
V
L
C2
0,47 μF
S2
S3
2A
S2e
S3e
1-1
1-2
2-11
2-12
CA-1L(2)ER
In cablu
In cablu


la sina
la sina
L1
L2
2-7s
2-7d
S1e
S1
10A
III
IV
2,2
D3e
D3
II2
II4
II1
IIx
I
II
TR(L)
TE(L)
I1
(I2-I3)
I4
n=18,3
VII
C1
VI
L
C2
0,47 μF
D1
D2
2A
D1e
D2e
1-1/2
1-3/4
2-1
2-2
CA-1L(2)RE
In cablu
In cablu

Valoarea condensatorului C1 se coreleaza cu lungimea circuitului de cale si cu tipul de circuit (monofilar sau bifilar).


la Bj
la Bj
2-13
2-14
S1e
S1
10A
III
IV
2,2
D1e
D1
II1
IIx
(II4-III2)
III3
I
II
TE(L)
TR(L)
I1
(I2-I3)
I1(I1-I2;I3-I4)
I4
n=6,1
VII
C1
V
L
C2
0,47 μF
S2
S3
2A
S2e
S3e
1-1
1-2
2-11
2-12
CA-1L(2)RE
In cablu
In cablu


la Bj
la Bj
2-7s
2-7d
S1e
S1
10A
III
IV
2,2
D3e
D3
II1
(II4-III2)
III3
IIx
I
II
TR(L)
TE(L)
I1(I1-I2;I3-I4)
I4
n=6,1
(I2-I3)
VII
C1
VI
L
C2
0,47 μF
D1
D2
2A
D1e
D2e
1-1/2
1-3/4
2-1
2-2
CA-1L(2)RE
In cablu
In cablu

NOTA: La circuitele la care se controleaza ramificatiile, valoarea rezistentei din aparatajul de receptie este de 6 ohmi.

Scheme de conectare a aparatajului in cutii de aparataj pentru circuitul de cale

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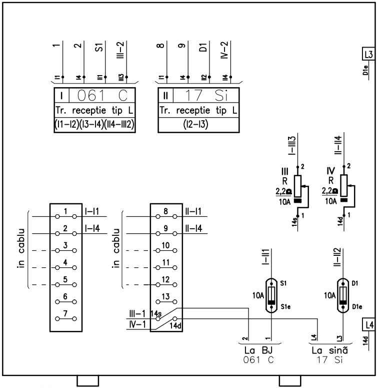
Tabel cu valorile condensatoarelor C1, C2 la capetele de emisie

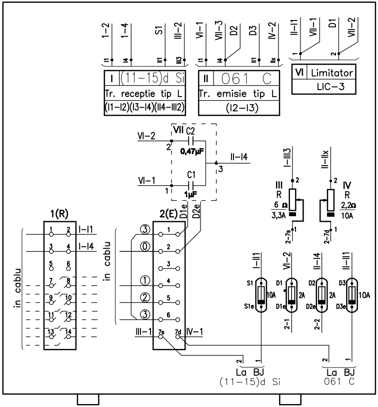
Circuitul de cale	Secventa	Tip Circuit	Lungimea circuitului de cale (m)	Valoarea capacitatii (μF)	
				C1	C2
031a C	1	bifilar	1491	**3 μF**	**0,47 μF**
021a C	3	bifilar	1491	**3 μF**	**0,47 μF**
031b C	3	bifilar	151	**0,47 μF**	**0,47 μF**
021b C	1	bifilar	151	**0,47 μF**	**0,47 μF**
033 C	1	bifilar	345	**1 μF**	**0,47 μF**
023 C	3	bifilar	289	**1 μF**	**0,47 μF**
3–5 Si	3	bifilar	350	**1 μF**	**0,47 μF**
1–7 Si	2	bifilar	417	**1 μF**	**0,47 μF**
11–15 Si	2	bifilar	928	**2 μF**	**0,47 μF**
9 Si	1	bifilar	380	**1 μF**	**0,47 μF**
061 C	3	bifilar	238	**1 μF**	**0,47 μF**
17 Si	1	monofilar	113	**1 μF**	**0,47 μF**
5 C	1	bifilar	753	**2 μF**	**0,47 μF**
4 C	4	bifilar	773	**2 μF**	**0,47 μF**
III C	3	bifilar	940	**2 μF**	**0,47 μF**
II C	4	bifilar	922	**2 μF**	**0,47 μF**
I C	2	bifilar	923	**2 μF**	**0,47 μF**
14–16 Si	4	monofilar	524	**2 μF**	**0,47 μF**
18 Si	2	bifilar	173	**0,47 μF**	**0,47 μF**
052 C	2	monofilar	50	**1 μF**	**0,47 μF**
12 Si	4	bifilar	370	**1 μF**	**0,47 μF**
10 Si	3	bifilar	370	**1 μF**	**0,47 μF**
2–8 Si	3	bifilar	466	**1 μF**	**0,47 μF**
4–6 Si	2	bifilar	398	**1 μF**	**0,47 μF**
034 C	2	bifilar	289	**1 μF**	**0,47 μF**
024 C	4	bifilar	345	**1 μF**	**0,47 μF**
Y 1AD	4	bifilar	1340	**3 μF**	**0,47 μF**
YF 1AD	2	bifilar	1340	**3 μF**	**0,47 μF**
Y 2AD	2	bifilar	1755	**3 μF**	**0,47 μF**
YF 2AD	4	bifilar	1755	**3 μF**	**0,47 μF**


1
2
S1
III-2
8
9
D1
IV-2
I 061 C
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
II 17 Si
Tr. receptie tip L
(I2-I3)
L3
D1e
I-III3
III
R
2,2Ω
10A
14s
II-II4
IV
R
2,2Ω
10A
14d
in cablu
I-I1
I-I4
II-I1
II-I4
III-1
IV-1
14s
14d
I-II1
S1
10A
S1e
II-II2
D1
10A
D1e
L4
14d
La BJ
061 C
La sină
17 Si

CA-1K(2)
BIF-MONO

061 C; 17 Si

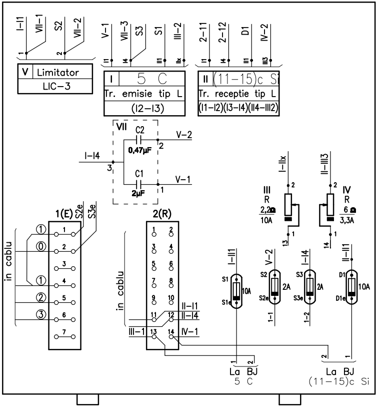
CUTIE APARATAJ PENTRU DOUA RECEPTII


1-2
1-4
S1
III-2
VI-1
VII-3
D2
D3
IV-2
II-I1
VII-1
D1
VII-2
I (11-15)d Si
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
II 061 C
Tr. emisie tip L
(I2-I3)
VI Limitator
LIC-3
VII C2
0,47µF
VI-2
VI-1
C1
1µF
II-I4
D1e
D2e
I-III3
III
R
6 Ω
3,3A
2-7s
II-IIx
IV
R
2,2Ω
10A
2-7d
1(R)
2(E)
in cablu
I-I1
I-I4
③
⓪
①
②
③
III-1
IV-1
7s
7d
I-II1
S1
10A
S1e
VI-2
D1
2A
D1e
2-1
II-I4
D2
2A
D2e
2-2
II-II1
D3
10A
D3e
La BJ
(11-15)d Si
La BJ
061 C

CA-1L(2)RE
BIF

(11-15)d Si;061 C

CUTIE APARATAJ PENTRU RECEPTIE-EMISIE

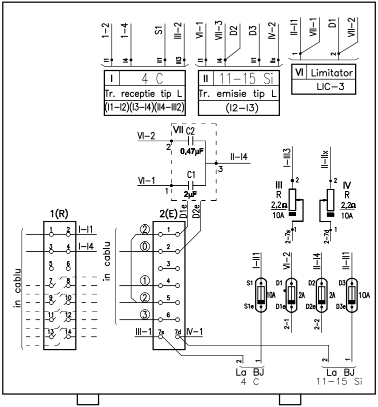

I-I1
VII-1
S2
VII-2
1
2
V Limitator
LIC-3
V-1
VII-3
S3
S1
III-2
I1
I4
III1
IIx
I 5 C
Tr. emisie tip L
(I2-I3)
2-11
2-12
D1
IV-2
II (11-15)c Si
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
VII
C2
0,47µF
V-2
I-I4
3
2
C1
2µF
V-1
1
I-IIx
II-III3
III
R
2,2Ω
10A
IV
R
6Ω
3,3A
13
14
1(E)
S2e
S3e
in cablu
①
⓪
①
②
③
2(R)
in cablu
II-I1
II-I4
III-1
IV-1
I-II1
V-2
I-I4
II-II1
S1
10A
S1e
S2
2A
S2e
S3
2A
S3e
D1
10A
D1e
1-1
1-2
La BJ
5 C
La BJ
(11-15)c Si

CA-1L(2)ER

BIF

5 C;(11-15)c Si

CUTIE APARATAJ PENTRU EMISIE-RECEPTIE

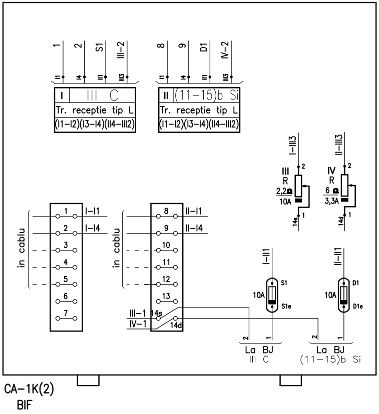

1-2
1-4
S1
III-2
VI-1
VII-3
D2
D3
IV-2
II-I1
VII-1
D1
VII-2
I1
I4
III1
III3
IIx
1
2
I 4 C
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
II 11-15 Si
Tr. emisie tip L
(I2-I3)
VI Limitator
LIC-3
VII
C2
0,47µF
VI-2
2
II-I4
3
C1
2µF
VI-1
1
I-III3
II-IIx
III
R
2,2Ω
10A
IV
R
2,2Ω
10A
2-7s
2-7d
1(R)
I-I1
I-I4
in cablu
2(E)
D1e
D2e
②
⓪
①
②
③
in cablu
III-1
7s
7d
IV-1
I-II1
VI-2
II-I4
II-II1
S1
10A
S1e
D1
2A
D1e
D2
2A
D2e
D3
10A
D3e
2-1
2-2
La BJ
4 C
La BJ
11-15 Si

CA-1L(2)RE

BIF

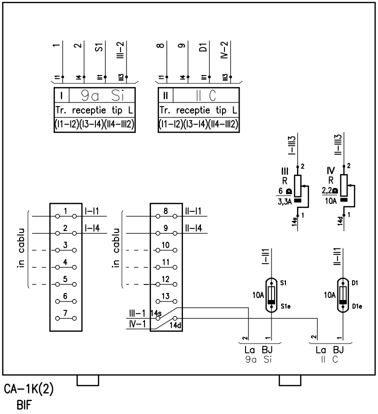
4 C;11-15 Si

CUTIE APARATAJ PENTRU RECEPTIE-EMISIE


1
2
S1
III-2
8
9
D1
IV-2
I1
I4
II1
III3
I
III C
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
II
(11-15)b Si
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
I-III3
II-III3
III
R
2,2Ω
10A
14s
IV
R
6 Ω
3,3A
14d
in cablu
1 2 3 4 5 6 7
I-I1
I-I4
8 9 10 11 12 13
II-I1
II-I4
III-1
IV-1
14s
14d
I-II1
S1
10A
S1e
II-II1
D1
10A
D1e
La BJ
III C
La BJ
(11-15)b Si
CA-1K(2)
BIF

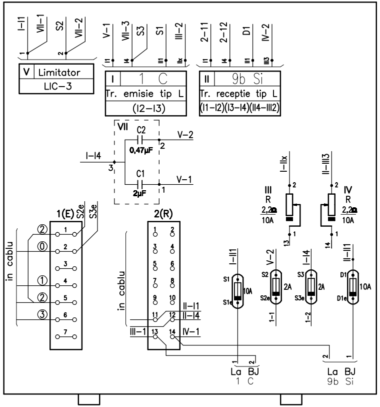
III C;(11-15)b Si

CUTIE APARATAJ PENTRU DOUA RECEPTII


1
2
S1
III-2
8
9
D1
IV-2
I1
I4
II1
III3
I
9a Si
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
II
II C
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
I-III3
II-III3
III
R
6 Ω
3,3A
14s
IV
R
2,2Ω
10A
14d
in cablu
1 2 3 4 5 6 7
I-I1
I-I4
8 9 10 11 12 13
II-I1
II-I4
III-1
IV-1
14s
14d
I-II1
S1
10A
S1e
II-II1
D1
10A
D1e
La BJ
9a Si
La BJ
II C
CA-1K(2)
BIF

9a Si;II C

CUTIE APARATAJ PENTRU DOUA RECEPTII

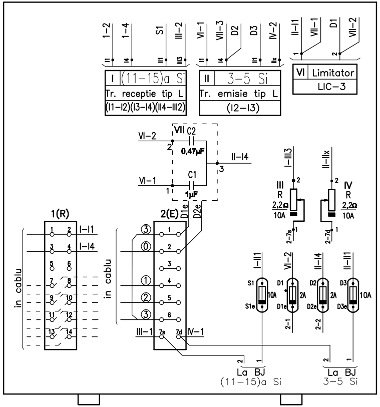

I–I1
VII–1
S2
VII–2
V–1
VII–3
S3
S1
III–2
2–11
2–12
D1
IV–2
V Limitator
LIC–3
I 1 C
Tr. emisie tip L
(I2–I3)
II 9b Si
Tr. receptie tip L
(I1–I2)(I3–I4)(II4–III2)
VII
C2
0,47µF
V–2
I–I4
C1
2µF
V–1
III
R
2,2Ω
10A
IV
I–IIx
II–III3
1(E)
S2e
S3e
2(R)
in cablu
II–I1
II–I4
III–1
IV–1
S1
S1e
S2
S2e
S3
S3e
D1
D1e
2A
La BJ
1 C
La BJ
9b Si

CA–1L(2)ER
BIF

1 C;9b Si

CUTIE APARATAJ PENTRU EMISIE–RECEPTIE

Statia: Stupini **EA51 01 E 03 BX SE 003 2 020 0 13/31**

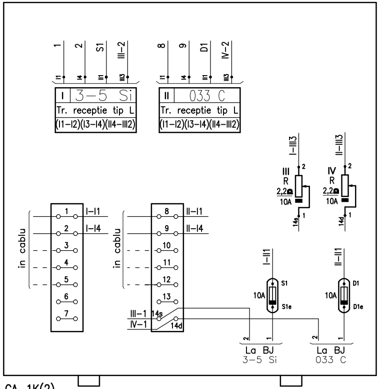

1–2
1–4
S1
III–2
VI–1
VII–3
D2
D3
IV–2
II–I1
VII–1
D1
VII–2
I (11–15)a Si
Tr. receptie tip L
(I1–I2)(I3–I4)(II4–III2)
II 3–5 Si
Tr. emisie tip L
(I2–I3)
VI Limitator
LIC–3
VII
C2
0,47µF
VI–2
VI–1
C1
1µF
II–I4
III
R
2,2Ω
10A
IV
I–III3
II–IIx
1(R)
2(E)
D1e
D2e
in cablu
I–I1
I–I4
III–1
IV–1
I–II1
VI–2
II–I4
II–II1
S1
S1e
D1
D1e
D2
D2e
D3
D3e
2A
La BJ
(11–15)a Si
La BJ
3–5 Si

CA–1L(2)RE
BIF

(11–15)a Si;3–5 Si

CUTIE APARATAJ PENTRU RECEPTIE–EMISIE

Statia: Stupini **EA51 01 E 03 BX SE 003 2 020 0 14/31**


1
2
S1
III–2
8
9
D1
IV–2
I 3–5 Si
Tr. receptie tip L
(I1–I2)(I3–I4)(II4–III2)
II 033 C
Tr. receptie tip L
(I1–I2)(I3–I4)(II4–III2)
I–III3
II–III3
III
R
2,2Ω
10A
IV
in cablu
I–I1
I–I4
II–I1
II–I4
III–1
IV–1
14s
14d
I–II1
II–II1
S1
S1e
D1
D1e
10A
La BJ
3–5 Si
La BJ
033 C

CA–1K(2)
BIF

3–5 Si;033 C

CUTIE APARATAJ PENTRU DOUA RECEPTII

Statia: Stupini **EA51 01 E 03 BX SE 003 2 020 0 15/31**