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

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

CLIENT / CLIENT

CONSULTANT / CONSULTANT

			Data Date	Semnatura Signature
Aprobat Approved	Sef proiect Project manager	R. Lucca	12.12.2011	
Aprobat Approved	Coordonator Sectiune 1 Section 1 Coordinator	C. Gambelli	12.12.2011	
Verificat Checked	Expert Cheie Key Expert	P. Amodio	12.12.2011	

SUBCONTRACTANT / SUBCONTRACTOR

Aprobat Approved	Responsabil Subcontractant Subcontractant Responsible	A. Stanciu - Dinulescu	12.12.2011	
Intocmit Elaborated	Proiectant Designer	Ing. Jugenaru Adriana	12.12.2011	

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

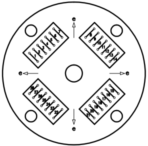
Proiect/Project
2004/RO/16/P/PA/003

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

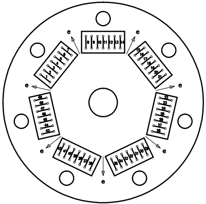
Denumire desen / Drawing Title :

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

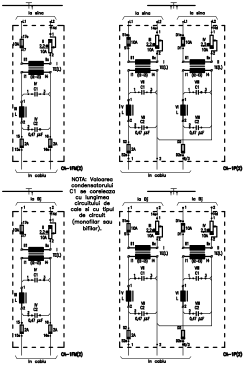
Codificare / Codification System	Scara / Scale FARA / No scale	LOT / LOT	Nr. / No 01 / 33
E A 5 1 0 1 E 0 9 B X S E 0 0 9 2 0 2 0 1			



C4–28
DM1,DM2,DM6,DR2,DS3,DS2,DS4,DS6



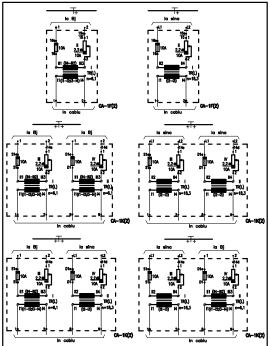
C7–49
DM3,DM4,DM8,DR1,DR4,DA2,DS1,DS5,DS7,DS8,DS10,DS12
CUTII DE DISTRIBUTIE



la sina
la sina
la sina
10A
2,2Ω
TE(L)
0,47 μF
2A
in cablu
in cablu
CA-1FM(2)
CA-1P(2)
la Bj
la Bj
la Bj
in cablu
in cablu
CA-1FM(2)
CA-1P(2)

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

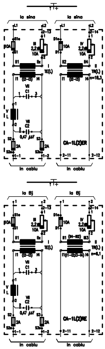
Scheme de conectare a aparatajului in cutii de aparataj pentru circuitul de cale


la Bj
la sina
10A
2,2Ω
10A
TR(L)
n=6,1
n=18,3
CA-1F(2)
CA-1K(2)
in cablu

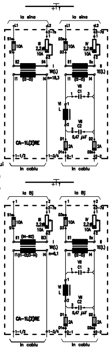
NOTA: La circuitele la care se controleaza ramificatiile, valoarea rezistentei din aparatajul de receptie este de 6 ohmi.

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

---


la sina
la Bj
10A
TE(L)
0,47 μF
2A
CA-1L(2)ER
CA-1L(2)RE
in cablu

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


la sina
la Bj
10A
TR(L)
n=18,3
n=6,1
0,47 μF
2A
CA-1L(2)RE
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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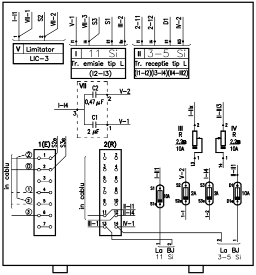
Tabel cu valorile condensatoarelor C1, C2 la capetele de emisie

Circuitul de cale	Secventa	Tip Circuit	Lungimea circuitului de cale (m)	Valoarea capacitatii (μF)	
				C1	C2
XF–1AD	3	bifilar	1400	**3 μF**	**0,47 μF**
X–1AD	1	bifilar	1400	**3 μF**	**0,47 μF**
023 C	1	bifilar	345	**1 μF**	**0,47 μF**
033 C	3	bifilar	289	**1 μF**	**0,47 μF**
1–7 Si	2	bifilar	436	**1 μF**	**0,47 μF**
3–5 Si	3	bifilar	382	**1 μF**	**0,47 μF**
11 Si	2	bifilar	605	**2 μF**	**0,47 μF**
9–13 Si	3	bifilar	1071	**2 μF**	**0,47 μF**
1 C	1	bifilar	873	**2 μF**	**0,47 μF**
II C	3	bifilar	897	**2 μF**	**0,47 μF**
III C	4	bifilar	941	**2 μF**	**0,47 μF**
4 C	1	bifilar	770	**2 μF**	**0,47 μF**
5 C	4	bifilar	735	**2 μF**	**0,47 μF**
30 Si	2	bifilar	96	**0.47 μF**	**0,47 μF**
24–28 Si	3	bifilar	220	**0.47 μF**	**0,47 μF**
26 Si	3	bifilar	111	**0.47 μF**	**0,47 μF**
22 Si	4	bifilar	133	**0.47 μF**	**0,47 μF**
20 Si	3	monofilar	133	**1 μF**	**0,47 μF**
18 Si	2	bifilar	155	**0.47 μF**	**0,47 μF**
8–16 Si	3	bifilar	452	**1 μF**	**0,47 μF**
10–14 Si	4	bifilar	428	**1 μF**	**0,47 μF**
4–6 Si	3	bifilar	198	**0.47 μF**	**0,47 μF**
2 Si	2	bifilar	96	**0.47 μF**	**0,47 μF**
046 C	2	bifilar	347	**1 μF**	**0,47 μF**
056 C	4	bifilar	533	**1 μF**	**0,47 μF**
024 C	2	bifilar	288	**1 μF**	**0,47 μF**
034 C	3	bifilar	282	**1 μF**	**0,47 μF**
044 C	4	bifilar	327	**1 μF**	**0,47 μF**
054 C	3	bifilar	293	**1 μF**	**0,47 μF**
YR–1AD	4	bifilar	1410	**3 μF**	**0,47 μF**
YRF–1AD	2	bifilar	1410	**3 μF**	**0,47 μF**
YA–1AD	D1	bifilar	1680	**3 μF**	**0,47 μF**
YAF–1AD	A1	bifilar	1680	**3 μF**	**0,47 μF**

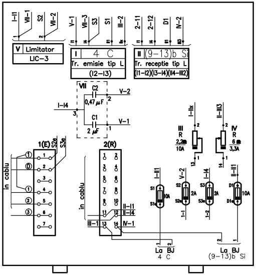

I–I1
VII–1
S2
VII–2
V–1
VII–3
S3
S1
III–2
2–11
2–12
D1
IV–2
V Limitator
LIC–3
I 11 Si
Tr. emisie tip L
(I2–I3)
II 3–5 Si
Tr. receptie tip L
(I1–I2)(I3–I4)(II4–III2)
VII
C2
0,47 μF
V–2
I–I4
C1
2 μF
V–1
I–IIx
II–III3
III
R
2,2Ω
10A
IV
R
2,2Ω
10A
1(E)
S2e
S3e
2(R)
in cablu
in cablu
II–I1
II–I4
III–1
IV–1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

CA–1L(2)ER
BIF

11 Si; 3–5 Si

CUTIE APARATAJ PENTRU EMISIE–RECEPTIE

Statia: Apata **EA51 01 C 09 BX SE 009 2 020 1 7/33**

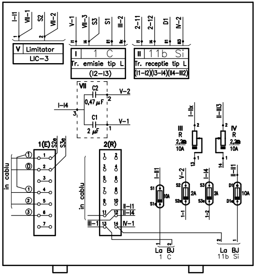

I–I1
VII–1
S2
VII–2
V–1
VII–3
S3
S1
III–2
2–11
2–12
D1
IV–2
V Limitator
LIC–3
I 4 C
Tr. emisie tip L
(I2–I3)
II (9–13)b Si
Tr. receptie tip L
(I1–I2)(I3–I4)(II4–III2)
VII
C2
0,47 μF
V–2
I–I4
C1
2 μF
V–1
I–IIx
II–III3
III
R
2,2Ω
10A
IV
R
6Ω
3,3A
1(E)
S2e
S3e
2(R)
in cablu
in cablu
II–I1
II–I4
III–1
IV–1
I–II1
V–2
I–I4
II–II1
S1
S1e
10A
S2
S2e
2A
S3
S3e
2A
D1
D1e
10A
I–1
I–2
La BJ
4 C
La BJ
(9–13)b Si

CA–1L(2)ER
BIF

4 C; (9–13)b Si

CUTIE APARATAJ PENTRU EMISIE–RECEPTIE

Statia: Apata **EA51 01 C 09 BX SE 009 2 020 1 8/33**

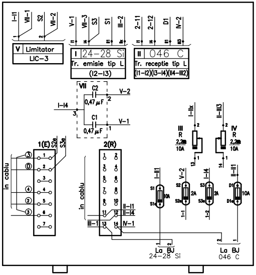

I–I1
VII–1
S2
VII–2
V–1
VII–3
S3
S1
III–2
2–11
2–12
D1
IV–2
V Limitator
LIC–3
I 1 C
Tr. emisie tip L
(I2–I3)
II 11b Si
Tr. receptie tip L
(I1–I2)(I3–I4)(II4–III2)
VII
C2
0,47 μF
V–2
I–I4
C1
2 μF
V–1
I–IIx
II–III3
III
R
2,2Ω
10A
IV
R
2,2Ω
10A
1(E)
S2e
S3e
2(R)
in cablu
in cablu
II–I1
II–I4
III–1
IV–1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

CA–1L(2)ER
BIF

1 C; 11b Si

CUTIE APARATAJ PENTRU EMISIE–RECEPTIE

Statia: Apata **EA51 01 C 09 BX SE 009 2 020 1 9/33**

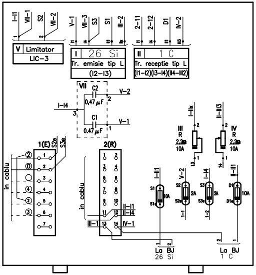

V Limitator
LIC-3
I 24-28 Si
Tr. emisie tip L
(I2-I3)
II 046 C
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
VII
C2 0,47 μF
C1 0,47 μF
V-2
V-1
I-I4
III R 2,2Ω 10A
IV R 2,2Ω 10A
1(E)
2(R)
in cablu
II-I1
II-I4
III-1
IV-1
La BJ 24-28 Si
La BJ 046 C

CA-1L(2)ER
BIF

24-28 Si; 046 C

CUTIE APARATAJ PENTRU EMISIE-RECEPTIE

Statia: Apata **EA51 01 E 19 BX SE 019 2 030 1 10/33**

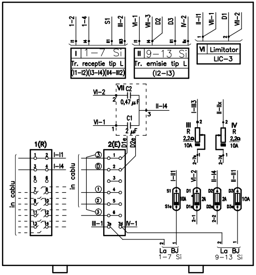

V Limitator
LIC-3
I 26 Si
Tr. emisie tip L
(I2-I3)
II 1 C
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
VII
C2 0,47 μF
C1 0,47 μF
V-2
V-1
I-I4
III R 2,2Ω 10A
IV R 2,2Ω 10A
1(E)
2(R)
in cablu
II-I1
II-I4
III-1
IV-1
La BJ 26 Si
La BJ 1 C

CA-1L(2)ER
BIF

26 Si; 1 C

CUTIE APARATAJ PENTRU EMISIE-RECEPTIE

Statia: Apata **EA51 01 C 09 BX SE 009 2 030 1 11/33**

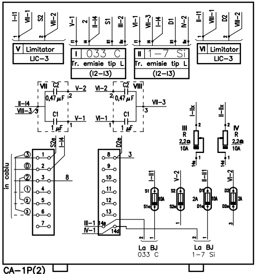

I 1-7 Si
Tr. receptie tip L
(I1-I2)(I3-I4)(II4-III2)
II 9-13 Si
Tr. emisie tip L
(I2-I3)
VI Limitator
LIC-3
VII
C2 0,47 μF
C1 2 μF
VI-2
VI-1
II-I4
III R 2,2Ω 10A
IV R 2,2Ω 10A
1(R)
2(E)
in cablu
I-I1
I-I4
III-1
IV-1
La BJ 1-7 Si
La BJ 9-13 Si

CA-1L(2)RE
BIF

1-7 Si; 9-13 Si

CUTIE APARATAJ PENTRU RECEPTIE-EMISIE

Statia: Apata **EA51 01 C 09 BX SE 009 2 030 1 12/33**

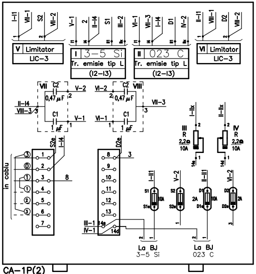

I–I1
VII–1
S2
VII–2
V Limitator
LIC–3
V–1
2
II–I4
S1
III–2
I 033 C
Tr. emisie tip L
(I2–I3)
VI–1
VII–3
I–I4
D1
IV–2
II 1–7 Si
Tr. emisie tip L
(I2–I3)
II–I1
VIII–1
D2
VIII–2
VI Limitator
LIC–3
VII
C2
0,47 μF
V–2
II–I4
VIII–3
C1
1 μF
V–1
VI–2
C2
VIII
0,47 μF
VII–3
VI–1
C1
1 μF
I–IIx
III
R
2,2Ω
10A
II–IIx
IV
R
2,2Ω
10A
14e
14d
S2e
I–I4
in cablu
③
⓪
②
①
②
③
1
2
3
4
5
6
7
8
D2e
8
9
10
11
12
13
3
III–1
IV–1
14e
14d
I–III1
S1
10A
S1e
V–2
S2
S2e
II–III1
D1
2A
10A
D1e
VI–2
D2
2A
D2e
La BJ
033 C
La BJ
1–7 Si
CA–1P(2)
BIF

033 C; 1–7 Si

CUTIE APARATAJ PENTU DOUA EMISII
CIRCUIT DE CALE

Statia: Apata

EA51 01 C 09 EX SE 009 2 030 1 13/33

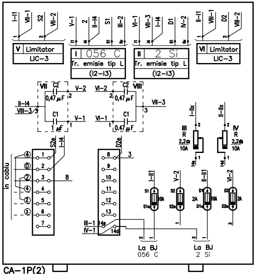

I–I1
VII–1
S2
VII–2
V Limitator
LIC–3
V–1
2
II–I4
S1
III–2
I 3–5 Si
Tr. emisie tip L
(I2–I3)
VI–1
VII–3
I–I4
D1
IV–2
II 023 C
Tr. emisie tip L
(I2–I3)
II–I1
VIII–1
D2
VIII–2
VI Limitator
LIC–3
VII
C2
0,47 μF
V–2
II–I4
VIII–3
C1
1 μF
V–1
VI–2
C2
VIII
0,47 μF
VII–3
VI–1
C1
1 μF
I–IIx
III
R
2,2Ω
10A
II–IIx
IV
R
2,2Ω
10A
14e
14d
S2e
I–I4
in cablu
③
⓪
①
①
②
③
1
2
3
4
5
6
7
8
D2e
8
9
10
11
12
13
3
III–1
IV–1
14e
14d
I–III1
S1
10A
S1e
V–2
S2
S2e
II–III1
D1
2A
10A
D1e
VI–2
D2
2A
D2e
La BJ
3–5 Si
La BJ
023 C
CA–1P(2)
BIF

3–5 Si; 023 C

CUTIE APARATAJ PENTU DOUA EMISII
CIRCUIT DE CALE

Statia: Apata

EA51 01 C 09 EX SE 009 2 030 1 14/33


I–I1
VII–1
S2
VII–2
V Limitator
LIC–3
V–1
2
II–I4
S1
III–2
I 056 C
Tr. emisie tip L
(I2–I3)
VI–1
VII–3
I–I4
D1
IV–2
II 2 Si
Tr. emisie tip L
(I2–I3)
II–I1
VIII–1
D2
VIII–2
VI Limitator
LIC–3
VII
C2
0,47 μF
V–2
II–I4
VIII–3
C1
1 μF
V–1
VI–2
C2
VIII
0,47 μF
VII–3
VI–1
C1
0,47 μF
I–IIx
III
R
2,2Ω
10A
II–IIx
IV
R
2,2Ω
10A
14e
14d
S2e
I–I4
in cablu
④
⓪
②
④
②
③
1
2
3
4
5
6
7
8
D2e
8
9
10
11
12
13
3
III–1
IV–1
14e
14d
I–III1
S1
10A
S1e
V–2
S2
S2e
II–III1
D1
2A
10A
D1e
VI–2
D2
2A
D2e
La BJ
056 C
La BJ
2 Si
CA–1P(2)
BIF

056 C; 2 Si

CUTIE APARATAJ PENTU DOUA EMISII
CIRCUIT DE CALE

Statia: Apata

EA51 01 C 09 EX SE 009 2 030 1 15/33