Technical Publication
SC-1005R0

Schematics

HF Series Generators

REVISION HISTORY

REVISION	DATE	REASON FOR CHANGE
Refer to each schematic		

This Document is the english original version, edited and supplied by the manufacturer.

The Revision state of this Document is indicated in the code number shown at the bottom of this page.

ADVISORY SYMBOLS

The following advisory symbols will be used throughout this manual. Their application and meaning are described below.

DANGERS ADVISE OF CONDITIONS OR SITUATIONS THAT IF NOT HEEDED OR AVOIDED WILL CAUSE SERIOUS PERSONAL INJURY OR DEATH.

ADVISE OF CONDITIONS OR SITUATIONS THAT IF NOT HEEDED OR AVOIDED COULD CAUSE SERIOUS PERSONAL INJURY, OR CATASTROPHIC DAMAGE OF EQUIPMENT OR DATA.

Advise of conditions or situations that if not heeded or avoided could cause personal injury or damage to equipment or data.

Note ☞

Alert readers to pertinent facts and conditions. Notes represent information that is important to know but which do not necessarily relate to possible injury or damage to equipment.

TABLE OF CONTENTS

POWER INPUT TRANSFORMER
6T2

530V 480V 440V 415V 400V 230V 110V 60V 0V
240V 115V 0V 21V 0V 11V 0V 28V 26V 24V 22V 20V 16V 14V 12V 0V
Shield Stud

connect according with the input line

POWER LAMP 6NL1

3F2 T 1.5A
3F8 T 3A
3F6 T 3A
3F7 T 3A
6F13 T 10A
6F12 T 10A
6F3 T 50A
6F4 T 50A
6F5 T 50A

115 VAC (sheets 3 & 4)
0 VAC
24 VAC TR
20 VAC TR
0 VAC TR
(sheets 5)
0 VAC RTR
60 VAC RTR
230 VAC RTR
(sheets 8)

240 VAC SW
115 VAC SW
3K3
3LF3

LVDC POWER SUPPLY
3PS1
jumper
jumper
+5V +12V -12V GND
3F9 T 0.4A

+24V-PSU
3BR4
3BR2
3BR1
3C7 2400 MF
3C6 2400 MF
3K3
1 ohm 4 w
+24V
+SUPPLY
-SUPPLY
(sheets 3 & 4)

6J2
(sheets 3 & 4)
-PWR OFF
-PWR ON
+12V
-12V
+12V UNR
+12V UNR
GND
GND
GND

3TS1
240 VAC SPLY
+24V
-12V
+12V
240 VAC SW
115 VAC SW

THIS SHEET ONLY APPLIES TO THREE PHASE GENERATORS MANUFACTURED FOR INPUT LINES FROM 400 VAC

Note.- In Three Phase Generators manufactured for Input Lines up to 240 VAC, Input Transformer 6T2 is as shown on sheet 2.

L1 L2 L3 GND NEUTRAL

6R1
20 ohm
100 w

6LF1
MAINS
LOAD

AC1 AC2 AC3
C1 470 nF
C2 1 nF
C3 470 nF
C4 1 nF
C5 470 nF
C6 1 nF

INPUT RECTIFIER BOARD
(A3255-03)
5A5

CR1 CR2 CR3
BUS + (sheet 5)
BUS - (sheet 5)

12TS4
N U V W GND
12F14 T 15A
12F15 T 15A
12F16 T 15A

Note.- 12TS4, 12F14, 12F15, and 12F16 are optional

+24V-PSU
+24V-DELAYED
A1 A2 6K5
A1 A2 6K6

6J3
10
-LINE CONT
-LINE CONT (sheets 3 & 4)
-CHRG DR (sheets 3 & 4)

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I	NC 13/015	R. Asenjo	21/01/13

	NAME	DATE
DRAWING	F.GARCIA	30/09/02
REVISED	A.DIAZ	11/11/02

SHEET / OF 1/8

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H G F E D C I REV

COMPACT-LV DRAC/LF RAC GENERATOR

POWER INPUT TRANSFORMER 6T2

connect according with the input line

POWER LAMP 6NL1

7 240V — 6 — 5 230V — 4 — 21 208V — 23 120V — 3 110V — 8 — 22 100V — 9 60V — 2 — 1 0V

240V 20 — 115V 18 — 0V 17 — 21V 15 — 0V 14 — 11V 12 — 0V 11 — 28V 35 — 26V 34 — 24V 16 — 22V 33 — 20V 32 — 16V 31 — 14V 30 — 12V 19 — 0V 13

Shield Stud

3F2 T 1.5A — 9 — 5 — 240 VAC SW

3F8 T 3A — 115 VAC (sheets 3 & 4)

3K3 14 — 13 — 115 VAC SW — 0 VAC

3LF3 1 3 2 4

3F6 T 3A

3F7 T 3A — 11 — 7

3BR4 — 3C7 2400 MF

3BR2 — 3C6 2400 MF — +24V-PSU

3K3 10 — 6 — 1 ohm 4 w — +24V

3BR1

24 VAC TR
20 VAC TR
0 VAC TR — 12 — 8 — (sheets 5)

L1 — T1 — 0 VAC RTR
60 VAC RTR
230 VAC RTR — (sheets 8)

LOW POWER SUPPLY 3PS1

3F9 T 0.4A

1 2 3 4 — jumper — jumper — 7 10 8 9 6

+5V +12V -12V GND

+SUPPLY
-SUPPLY — (sheets 3 & 4)

(sheets 3 & 4) — -PWR OFF — -PWR ON

6J2

4 -PWR OFF
5 -PWR ON
3 +12V
9 -12V
2 +12V UNR
8 +12V UNR
6 GND
7 GND
1 GND

3TS1

54 240 VAC SPLY
17 +24V
16 -12V
15 +12V
26 240 VAC SW — 240 VAC SW
27 115 VAC SW — 115 VAC SW

THIS SHEET ONLY APPLIES TO SINGLE PHASE GENERATORS MANUFACTURED FOR INPUT LINES UP TO 240 VAC

6F13 T 10A
6F12 T 10A
6F3 T 50A — L1

Note.- For Two Phases, replace Neutral Cartridge (L2/N) by Fuse 6F4

Neutral Cartridge or 6F4

6F4 T 50A — N/L2

GND

L1 — T1 — L2 — T2 — 6R1 20 ohm 100 w — L2 — T2

6LF1 MAINS LOAD

AC2 — C4 1 nF — C5 470 nF — AC3 — C6 1 nF

INPUT RECTIFIER BOARD (A3255-03)
5A5

CR2 — CR3

\+ — BUS + (sheet 5)

\- — BUS - (sheet 5)

12TS4

N V U W GND

12F15 T 15A — 12F14 T 15A

Note.- 12TS4, 12F14, and 12F15, are optional

+24V-PSU — A1 — A2 — 6K5 — -LINE CONT (sheets 3 & 4)

+24V-DELAYED — A1 — A2 — 6K6 — -CHRG DR (sheets 3 & 4)

6J3

-LINE CONT — 10

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H G F E D C I REV

COMPACT-LV DRAC/LF RAC GENERATOR

THIS SHEET ONLY APPLIES TO GENERATORS WITH HT TRANSFORMERS FOR TWO X-RAY TUBES

HT CONTROL BOARD 3A1

P2: 1 -12V; 2 +12V; 3 +5V; 4 GND; 5 GND

P1: 1 -KV UP; 2 -KV DWN; 6 -EXP; 4 C-HT DAT; 5 C-HT CLK; 3 -PREP; 9 GND; 7 -CHRG; 8 -FIL 1 ACK

P4: 3 RTR I; 8 FIL I; 4; 1 -KV; 2 +KV; 6 -MA; 7 +MA; 5 GND

P1: 10 HT-C CLK; 11 HT-C DAT; 12 -TUBE 2 SCL; 13 -FIL 1 SCL; 14 -START; 15 -PRE CHRG; 16 -CHRG DR; 17 -TUBE 3

P3: 6 ERROR DRAC; 1 -KV DR1; 2 -KV DR2; 4 -FIL DR1; 5 -FIL DR2; 3 GND

P5: 5 -RTR RUN; 7 -ACC; 6 -BRAKE; 9 -HS SCL; 4 -RTR RDY; 3 -IGBT FAULT; 1 -AUTO OFF INH; 10 HI MA

See NOTE 2

-T2 SCL (sheet 8) — -TUBE 2 SCL (sheet 8)

-START (sheet 8)

-CHRG DR (sheets 1 & 2)

ERROR DRAC (sheet 3)

-KV DR1, -KV DR2 (sheet 5)

-IGBT FAULT (sheet 5)

6J3: PT CRL 7; -KV UP 15; -KV DWN 8; HT-C DAT 3; HT-C CLK 6; -EXP 1; C-HT DAT 2; C-HT CLK 5; -PREP 4

-PREP (sheet 3)

-CHRG (sheet 5)

RTR I (sheet 8)

3TS1: BUCKY SPLY 2; BUCKY SPLY 9; AUX BUCKY SPLY 46; -BUCKY 1 MOTION 5; -BUCKY 2 MOTION 12; BUCKY 1 DR 4; BUCKY 2 DR 11; 0 VAC 3; 0 VAC 10 — 0 VAC; BUCKY 1 MOT RTN 6; GND 7; BUCKY 2 MOT RTN 13; GND 14; SUPPLY (BUCKY 1) 1; SUPPLY (BUCKY 2) 8

FILAMENT DRIVER BOARD 3A3

P1: 5 -FIL DR1; 6 -FIL DR2; 3 +5V; 8 DELAYED +24V; 7 FIL I; 1 GND

P3: 2 FIL PREHEAT; 1 FIL RTN; 4 FIL SUP

P2: 4 +SUPPLY; 1 -SUPPLY

DELAYED +24V; +5V

(sheets 1 & 2) +SUPPLY, -SUPPLY

HT SW CONTROL 10A2

J2: 4; 3; 2; 1

J1: 1; 2; 3; 4; 5

+24V

240 VAC SW

-TUBE 2 SCL (sheet 8)

INTERFACE CONTROL BOARD 3A2

P1: 7 -PWR ON; 8 -PWR OFF; 4 PT CRL; 3 ON; 2 GND; 6 +12V; 1 GND

(sheets 1 & 2) -PWR ON, -PWR OFF

+12V

P3: 4 +24V; 2 GND; 1 GND

+24V

P4: 12 -BUCKY 1 DR CMD; 13 -BUCKY 2 DR CMD; 9 BUCKY SPLY; 5 AUX BUCKY SPLY; 11 -BUCKY 1 MOTION; 10 -BUCKY 2 MOTION; 8 BUCKY 1 DR; 7 BUCKY 2 DR; 18 -TUBE 2 SCL; 19 -FIL 1 SCL; 17 FIL PREHEAT; 14 FIL RTN; 22 -FIL 1 ACK

-BUCKY 1 DR CMD; -BUCKY 2 DR CMD

See NOTE 1: FIL 1 RTN, FIL 2 RTN

P5: 6 +5V; 8 +24V; 5 +24V; 16 +24V; 2 DELAYED +24V; 1 -LINE CONT; 4 +5V OUT; 12 DISCHARGE 1; 14 DISCHARGE 1 RTN; 13 DISCHARGE 2; 10 DISCHARGE 2 RTN; 9 GND

+5V; +24V; +24V-PSU; DELAYED +24V

-LINE CONT (sheets 1 & 2)

+5V OUT (sheet 5)

DISCHARGE 1, DISCHARGE 1 RTN, DISCHARGE 2, DISCHARGE 2 RTN (sheet 5)

P3: 3 LINE SYNC

P2: 2 -ROOM LIGHT; 3 IC SPLY 1; 5 IC SPLY 2; 1 PT SPLY; 7 IC GND; 4 ROOM LIGHT SW; 6 ROOM LIGHT SUP

-ROOM LIGHT (sheet 5)

P4: 6 -BUCK EXP; 2 115 VAC; 1 0 VAC; 3 115 VAC SW; 15 FIL 1 RTN; 16 FIL 2 RTN; 20 SOL DR

115 VAC (sheets 1 & 2)

0 VAC

115 VAC SW

NOTE 1:
Wires FIL 1 RTN (P4-15) and FIL 2 RTN (P4-16), are factory inverted on the INTERFACE CONTROL Board

6J3: -BUCKY 1 DR CMD 14; -BUCKY 2 DR CMD 11; LINE SYNC 9; -BUCKY EXP 12; GND 16

3TS1: PT SPLY 39; IC GND 42; ROOM LIGHT SW 48; ROOM LIGHT SUP 47; GND 18

HT TRANSFORMER 9HT1

J1: K HI MA; A GND; B +KV; C -KV; D +MA; E -MA; F FIL 1 RTN; H FIL 2 RTN; G FIL SUP; N SW COM; U SW1; V SW2; J -HT INTLK

0 VAC

GND

mA test posts: Red, Black

P1 — HT DR1 (sheet 5)

P3 — HT DR2 (sheet 5)

SHLD — COM (sheet 5)

-BRAKE (sheet 8)

-ACC (sheet 8)

6J1 — See NOTE 2: +24V 10; ERROR DRAC 8; 9; -RTR RUN 1; -TUBE 1 RTR 2; -TUBE 2 RTR 3; -HS SCL 4; -RTR RDY 5; -SF PREP 6; -FL EXP 7; -PREP 12; GND 11

+24V; ERROR DRAC (sheet 3)

(sheet 5): -SF PREP, -FL EXP, -PREP

6J3: -HT INTLK 13

NOTE 2.- For High Speed Version:

-T2 SCL signal is shortcircuited with -TUBE 2 SCL signal.

-ACC and -BRAKE signals for Low Speed Version becomes -TUBE 1 RTR and -TUBE 2 RTR respectively.

6J1 connector used only for High Speed version (see LV-DRAC documentation).

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	NAME	DATE
DRAWING	F.GARCIA	30/09/02
REVISED	A.DIAZ	11/11/02

SHEET / OF: 3/8

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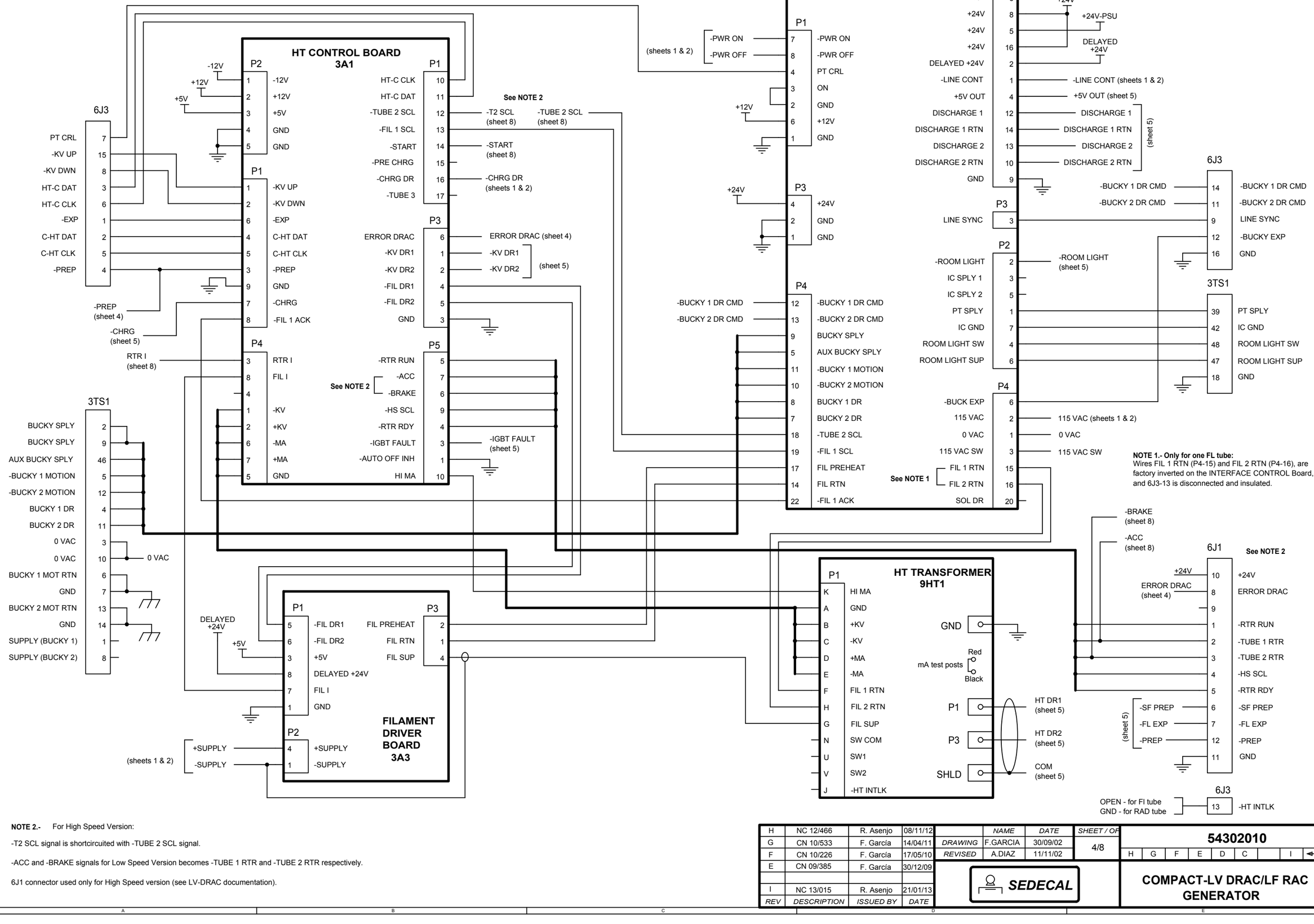
H G F E D C I ← REV

COMPACT-LV DRAC/LF RAC GENERATOR

THIS SHEET ONLY APPLIES TO GENERATORS WITH HT TRANSFORMER FOR ONLY ONE X-RAY TUBE



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REVISED	A.DIAZ	11/11/02

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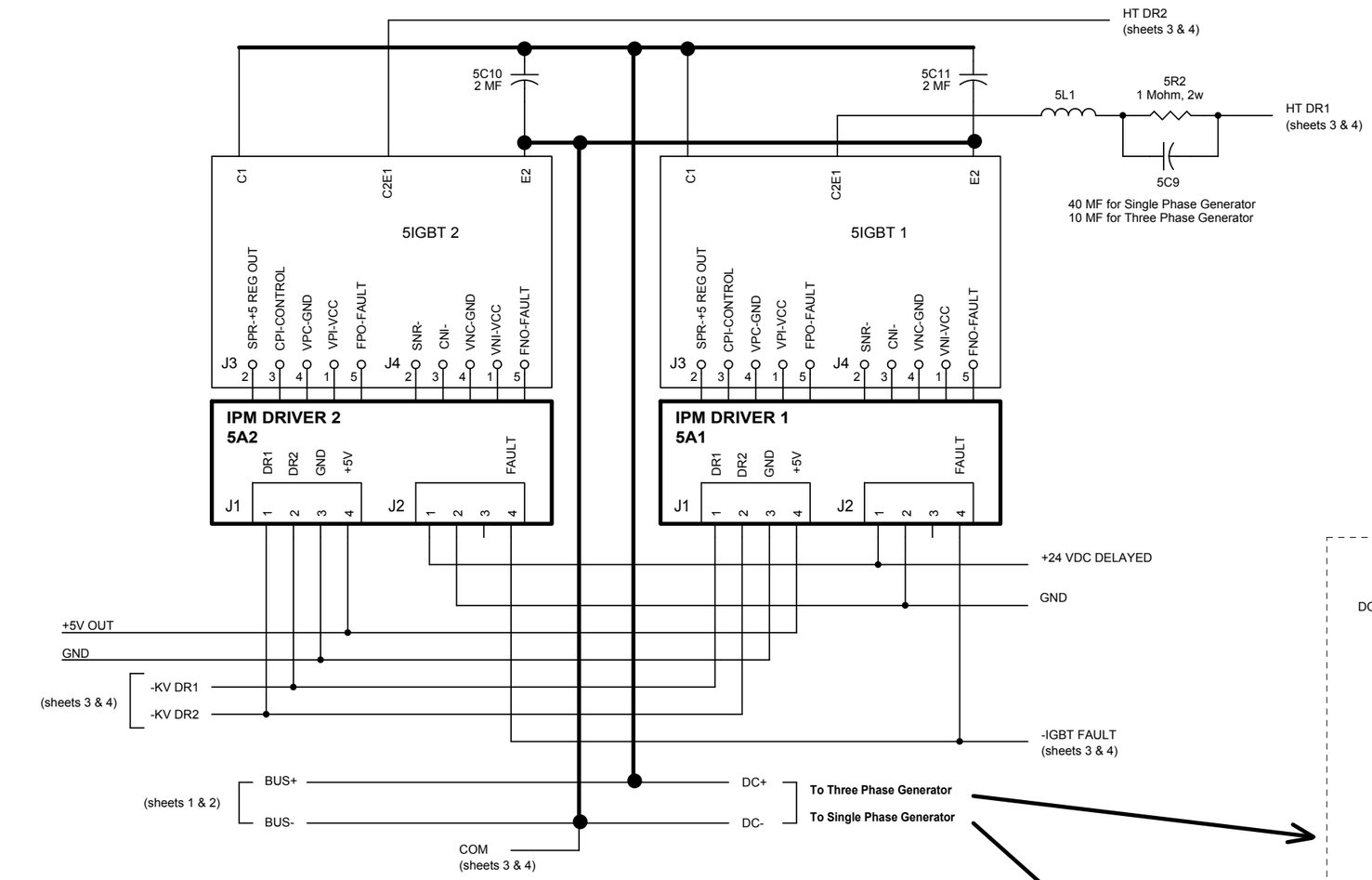
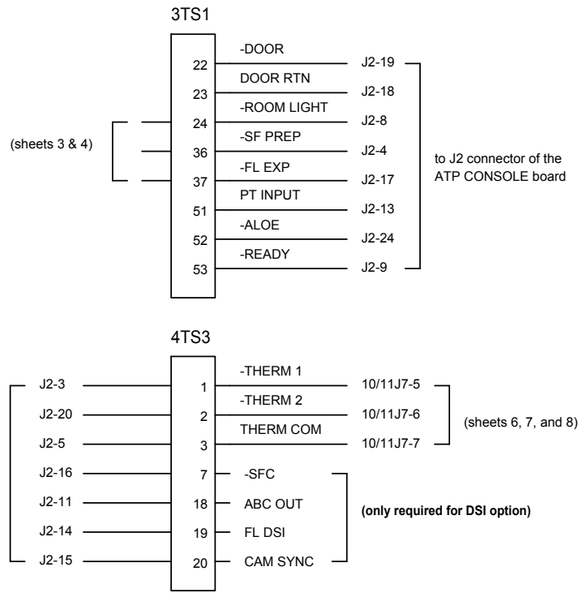
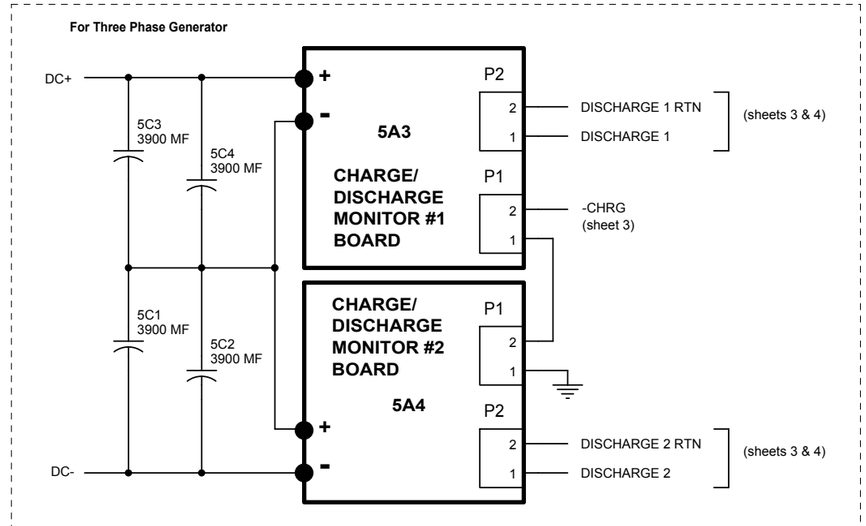
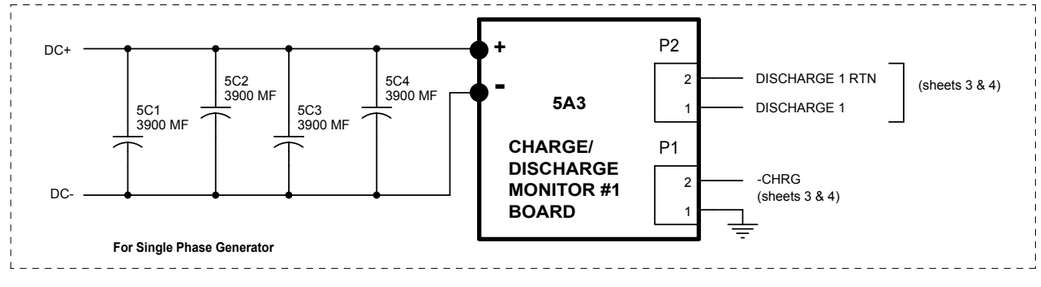
H G F E D C I ◄REV

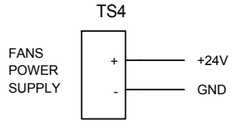
COMPACT-LV DRAC/LF RAC GENERATOR

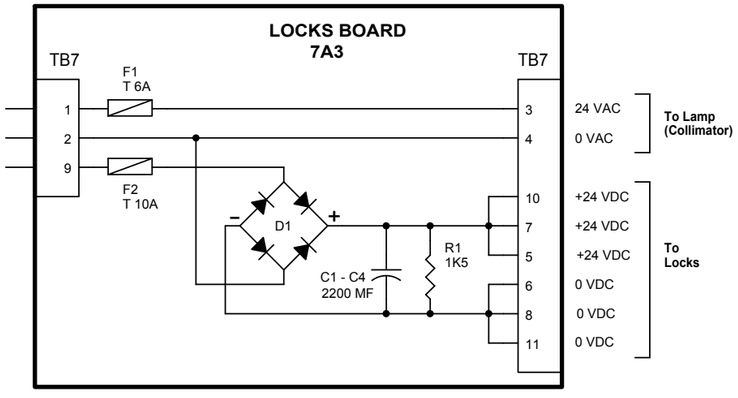












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G	CN 10/533	F. García	14/04/11	DRAWING	F.GARCIA	30/09/02	5/8
F	CN 10/226	F. García	17/05/10	REVISED	A.DIAZ	11/11/02	
E	CN 09/385	F. García	30/12/09				
I	NC 13/015	R. Asenjo	21/01/13				
REV	DESCRIPTION	ISSUED BY	DATE				

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H	G	F	E	D	C		I	← REV

COMPACT-LV DRAC/LF RAC GENERATOR

CONTROL DRAC PCB (A3243-03)

11A1

J4

	1	GND	
6J1-8	2	-ERROR CODE	ERROR DRAC
	3	NC	
6J1-5	4	RDY 1	-RTR RDY
	5	RDY 1 OUT	
	6	+15 VDC	
6J1-11	7	RDY 1 RTN	GND
	8	NC	
	9	SPARE 2	
	10	SPARE 2 RTN	
	11	SPARE 1	
	12	SPARE 1 RTN	
6J1-10	13	SF	+24 VDC
6J1-6	14	SF RTN	-SF PREP
	15	FL	
6J1-7	16	FL RTN	-FL EXP
	17	HS	
6J1-4	18	HS RTN	-HS SCL
	19	ST	
6J1-1	20	ST RTN	-RTR RUN
	21	T3	
	22	T3 RTN	
	23	T2	
6J1-3	24	T2 RTN	-TUBE 2 RTR

Cable to High Speed Starter connection 6J1 (sheets 3 & 4)

J3

1	+5 VDC	
2	+5 VDC	
3	+5 VDC	
4	+5 VDC	
5	GND	
6	GND	
7	GND	
8	GND	
9	+15 VDC	
10	+15 VDC	
11	+15 VDC	
12	+15 VDC	
13	-15 VDC	
14	-15 VDC	
15	V UNR	
16	V UNR	
17	PRECH IF	
18	PRECH IF	
19	+5 VDC	
20	+5 VDC	
21	T3 IF	
22	T3 IF	
23	T2 IF	
24	T2 IF	
25	T1 IF	
26	T1 IF	

Ferrite Core

Ribbon Cable

Ferrite Core

J1

1	+5 VDC	
2	+5 VDC	
3	+5 VDC	
4	+5 VDC	
5	GND	
6	GND	
7	GND	
8	GND	
9	+15 VDC	
10	+15 VDC	
11	+15 VDC	
12	+15 VDC	
13	-15 VDC	
14	-15 VDC	
15	V UNR	
16	V UNR	
17	PRECH IF	
18	PRECH IF	
19	+5 VDC	
20	+5 VDC	
21	T3 IF	
22	T3 IF	
23	T2 IF	
24	T2 IF	
25	T1 IF	
26	T1 IF	

INTERFASE DRAC-HF PCB (A3240-05)

11A2

Connections ( ) for only one FL tube

11TS2

MAIN T1	1 (9)	
AUX T1	2 (10)	
COM T1	3 (11)	
-THERM 1	4 (12)	
THERM COM	5 (13)	
See Note FAN 1	6 (14)	
0 VAC	7 (15)	
GND	8 (16)	
115 VAC SW	17	
240 VAC SW	18	

Note:
Connect FAN to 11TS2-17
or 11TS2-18 as required.

J1

AUX	4
COM	3
SHL	2
PRIN	1

AUXILIARY TRANSFORMER

MAIN TRANSFORMER

CLAMPING

11K2 R1 R2 — 11K3 R1 R2

VR1 V480LA20A

F1 T 6.25A

COM T1
AUX T1
MAIN T1
Note

11K2 R3 R4 — 11K3 R3 R4

Note:
Connections to 11TS2 of the Generator Cabinet

J2

V-	1
V+	2

Ferrite Core

Ferrite Core

J2

5	-DC OUT
4	+DC OUT
3	GND
2	+DC IN
1	-DC IN

from DC voltage Bus (sheet 5)

J5

1	
2	
4	
3	

+24 VDC

11K2 A1 A2 — 11K3 A1 A2

J4

K1	1
	2
K3	3

J3

240 VAC SW	1	to 11TS2
0 VAC	2	

Note.- 11J7 is an aerial connector

11J7

+24V DELAYED	1	+24 VDC
GND	3	
240 VAC SW	4	
115 VAC SW	2	
(sheet 5) 4TS3-1 -THERM 1	5	to 11TS2
4TS3-3 THERM COM	7	
0 VAC	8	

THIS SHEET ONLY APPLIES TO HIGH SPEED STARTER FOR ONLY ONE X-RAY TUBE (OPTIONAL)

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SHEET / OF 6/8

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H G F E D C I REV

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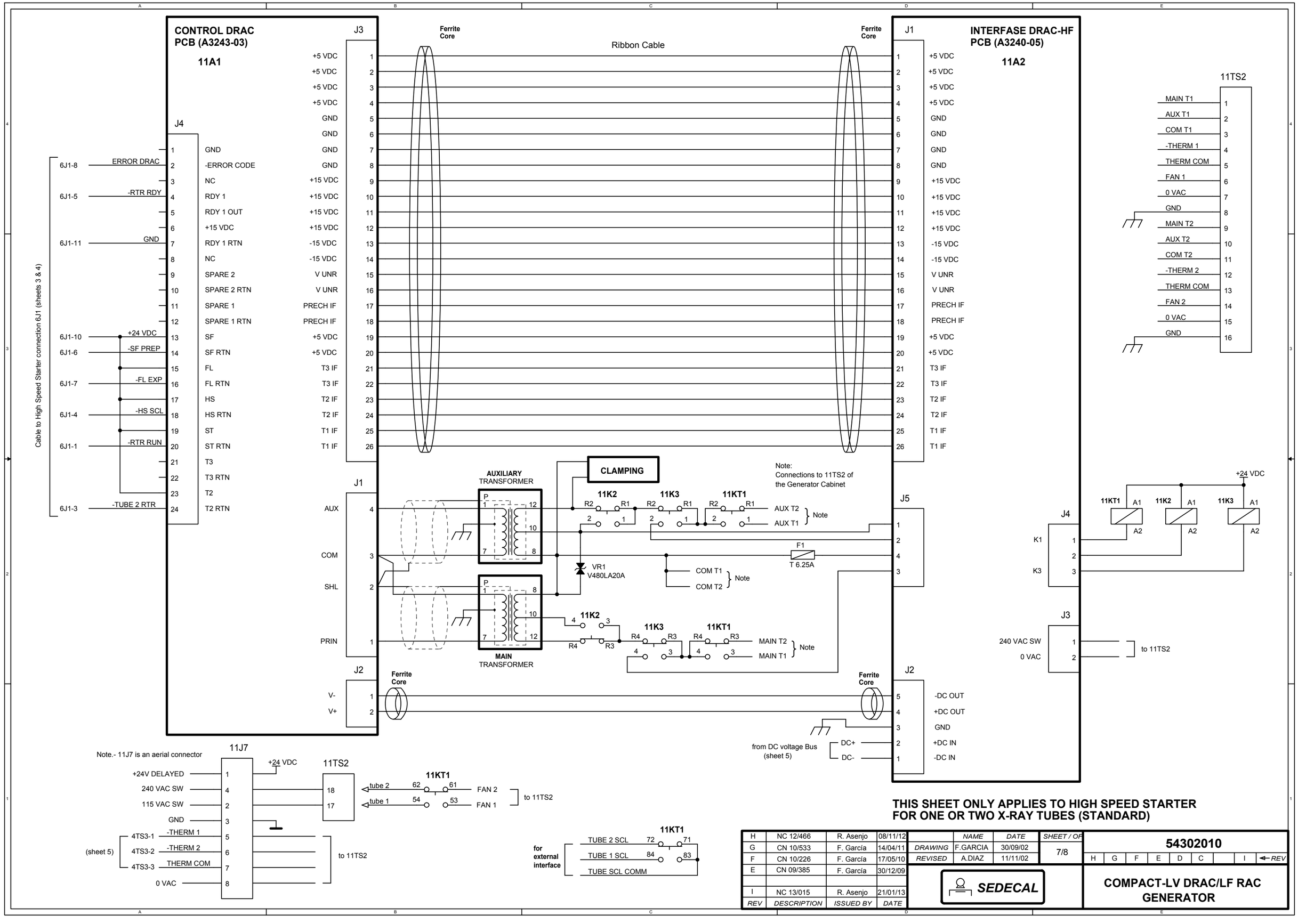
COMPACT-LV DRAC/LF RAC GENERATOR



THIS SHEET ONLY APPLIES TO HIGH SPEED STARTER FOR ONE OR TWO X-RAY TUBES (STANDARD)

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DRAWING	F.GARCIA	30/09/02
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SHEET / OF 7/8

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H G F E D C I ← REV

COMPACT-LV DRAC/LF RAC GENERATOR

THIS SHEET ONLY APPLIES TO LOW SPEED STARTER

NOTE.- 10T3, 10C5-1, and 10R4-1 for 330 VAC Stator

Note.- Capacitor 10C5 could be 40 uF depending on tube used

10C5-1 15 uF

10C5-2 30 uF

10R4-1 1 Mohm, 2w

10R4-2 1 Mohm, 2w

30 uF

15 uF

115 VAC SW

240 VAC SW

for external interface

TUBE 1 SCL

TUBE 2 SCL

TUBE SCL COM

NOTE.- Use Tube 2 connections for FL tube

Note.- 10J7 and 10J8 are aerial connectors

10J8

(sheets 1 & 2)

230 VAC RTR

60 VAC RTR

0 VAC RTR

TB1

KACC K1-1

F1 T 6A

47 2w

10RC1 100 nF 1 KV

10T3

330V

220V

0V

10LF2

10K1

T1/T2 COMM (to 10TS2)

TB2

T1 Tube 1

T2 Tube 2

KCT K2-1

T2

laux

T1

Imain

TB1

10 11 12 13 14 15 16 21 22 23 24 25 26 27 28

TB3 T2 Tube 2 / T1 Tube 1

KCT K2-3

TB4 T2 Tube 2 / T1 Tube 1

KCTRR K5-1

KCTRR K5-3

J1 9 10 11 12

KCTR K4-2

KBR K3-2

CR6 KBU4J

KCTR K4-1

KCTR K4-4

KBR K3-1

TB1

17 18 19 20

10TS2

6	FAN 1
14	FAN 2
3	COM T1
11	COM T2
7	0 VAC
15	0 VAC
5	THERM COMM
13	THERM COMM
4	-THERM 1
12	-THERM 2
2	AUX T1
10	AUX T2
1	MAIN T1
9	MAIN T2
8	GND
16	GND

T1/T2 COMM

0 VAC

THERM COM

+24V DELAYED

10K1 3 4

10R5 475 2w

+24V

KCTR K4

CR4 1N4007

KCT K2-2

+24V

KCTRR K5

CR5 1N4007

KCTR K4-3

LF-RAC BOARD 10A1

CR10 VM48 AC + / AC -

CR11 1N4007

CR12 1N4007

C3 100nF

R8 1K5

Q2 2N4401

CR8 1N4007

CR9 VM48 AC + / AC -

CR7 1N4007

C2 100nF

R7 1K5

Q1 2N4401

DS4 HLMP1700

KACC K1-2

R4 4K99

R5 4K99

R6 475

TP3 RTRI

C1 22 uF

TP2 +24V

C4 100 uF 35V

TP1 GND

KCTRR K5-2

J1

1 +24V DELAYED

2 GND

3

4

5

R1 4K75 CR1 1N4007 KACC K1 DS1 HLMP1700

R2 4K75 CR2 1N4007 KCT K2 DS2 HLMP1700

R3 4K75 CR3 1N4007 KBR K3 DS3 HLMP1700

+24V

J1 6 7 8

10J7

240 VAC SW	4	240 VAC SW
115 VAC SW	2	115 VAC SW
+24V DELAYED	1	+24V DELAYED
GND	3	GND
from HT CONTROL board -START	9	
-ACC	10	
-T2 SCL	11	
-BRAKE	12	
RTRI	13	
-TUBE 2 SCL	14	
0 VAC	8	0 VAC
(sheet 5) 4TS3-1 -THERM 1	5	-THERM 1
4TS3-2 -THERM 2	6	-THERM 2
4TS3-3 THERM COM	7	THERM COM

to 10TS2

REV	DESCRIPTION	ISSUED BY	DATE
H	NC 12/466	R. Asenjo	08/11/12
G	CN 10/533	F. García	14/04/11
F	CN 10/226	F. García	17/05/10
E	CN 09/385	F. García	30/12/09
I	NC 13/015	R. Asenjo	21/01/13

	NAME	DATE
DRAWING	F.GARCIA	30/09/02
REVISED	A.DIAZ	11/11/02

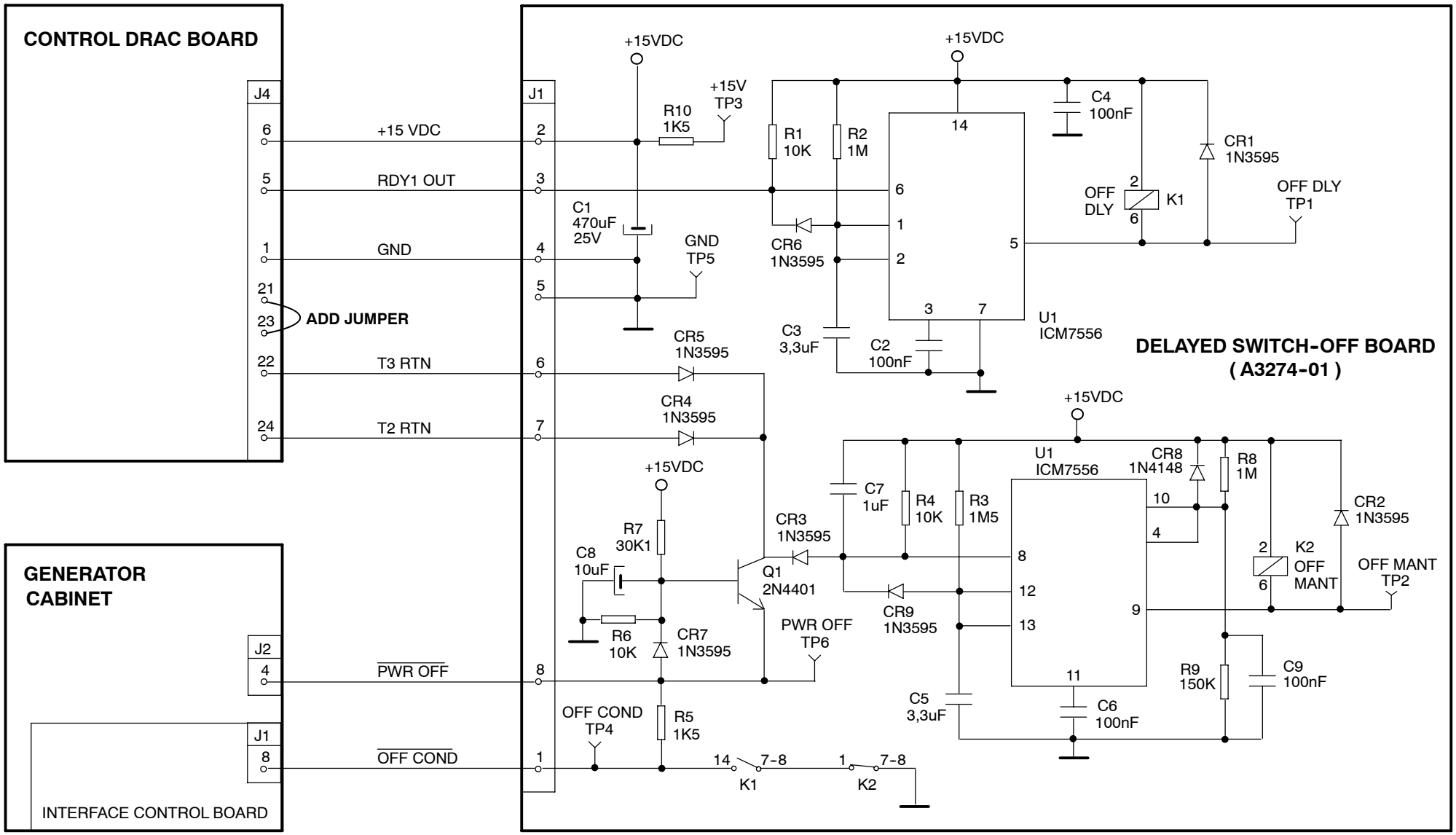
SHEET / OF 8/8

SEDECAL

54302010

H G F E D C I REV

COMPACT-LV DRAC/LF RAC GENERATOR



061109

C	CN 00/183	F. GARCIA	06/09/00
B	CN 99/003	F. GARCIA	13/01/99
REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	05/05/98	1 / 1
REVISED	A. DIAZ	05/05/98	

SEDECAL

DWG: A3274-01

C B REV

DELAYED SWITCH-OFF

(*) Use jumpers only for A3000-34 and 35

L	NC 09/266	F. Díaz	13/10/09
K	NC 05/061	F. Díaz	01/04/05
O	NC 12/242	F. Díaz	04/06/12
N	NC 10/090	F. Díaz	24/02/10
M	NC 09/300	F. Díaz	04/11/09
REV	*DESCRIPTION*	*ISSUED BY*	*DATE*

	NAME	*DATE*
DRAWING	F. Díaz	04/11/09
REVISED	A. Díaz	04/11/09

SHEET / OF 1/3

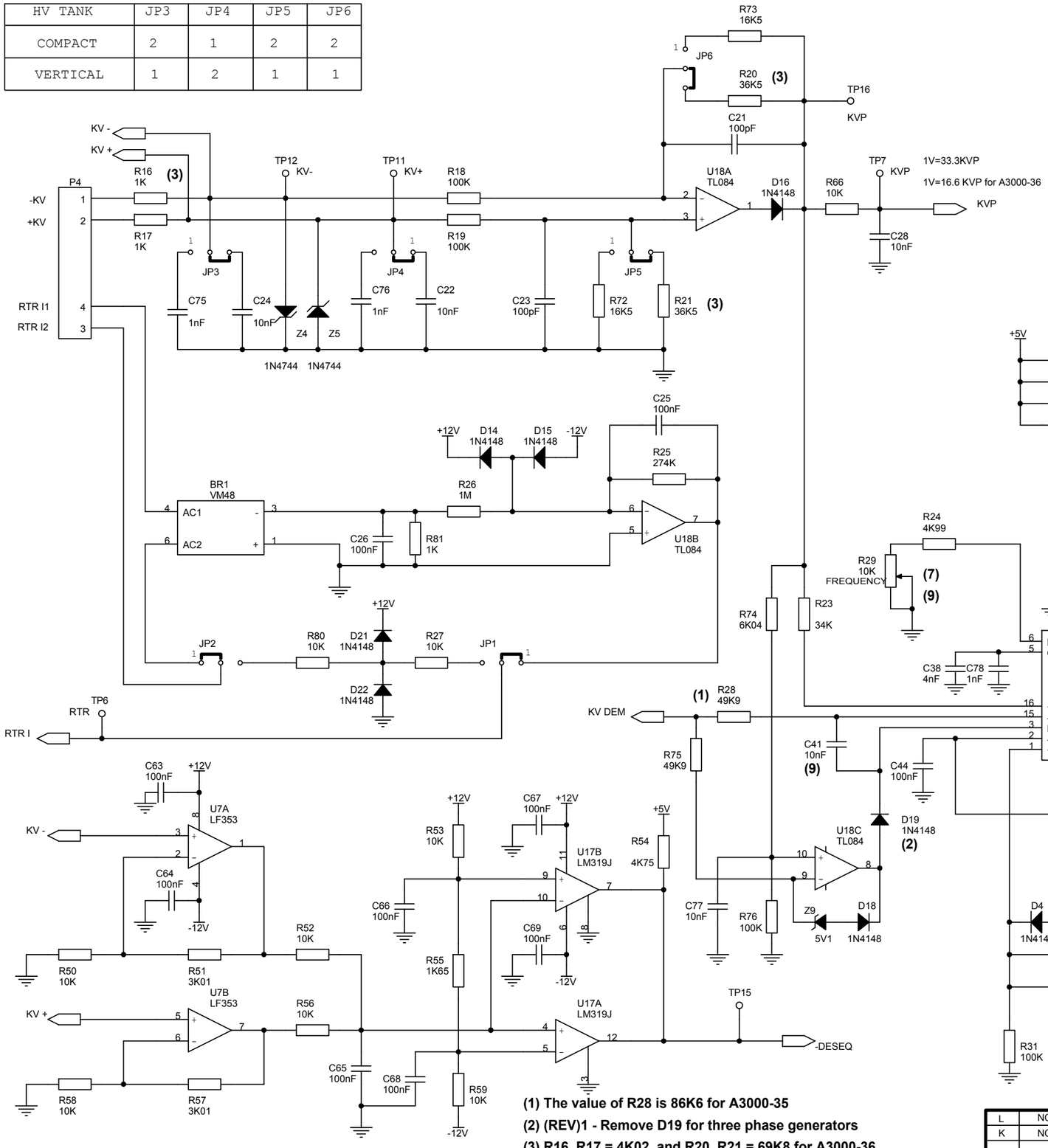
SEDECAL

A3000-33/34/35/36/43/44/51

N M L K J I O ← *REV*

HT CONTROLLER

HV TANK	JP3	JP4	JP5	JP6
COMPACT	2	1	2	2
VERTICAL	1	2	1	1



(1) The value of R28 is 86K6 for A3000-35

(2) (REV)1 - Remove D19 for three phase generators

(3) R16, R17 = 4K02, and R20, R21 = 69K8 for A3000-36

(7) Adjust R29 to have a period of 48 us at U19-5 for A3000-43

(9) C41 = 100nF. Adjust R29 to have a period of 48 us at U19-5 for A3000-51

REV	DESCRIPTION	ISSUED BY	DATE
L	NC 09/266	F. Díaz	13/10/09
K	NC 05/061	F. Díaz	01/04/05
O	NC 12/242	F. Díaz	04/06/12
N	NC 10/090	F. Díaz	24/02/10
M	NC 09/300	F. Díaz	04/11/09

	NAME	DATE
DRAWING	F. Díaz	04/11/09
REVISED	A. Díaz	04/11/09

SHEET / OF: 2/3

SEDECAL

A3000-33/34/35/36/43/44/51

N M L K J I O ← REV

HT CONTROLLER

(4) R38, R39 = 226K, and R60, R62 = 25K5 for A3000-36

(5) R36, R37 = 200K, and R40 = 2K21 for A3000-44

(8) Remove Z6 and Z7 for A3000-44

1V = 10mA (FROM 10mA UP TO 80 mA)
1V = 100mA (FROM 100mA UP TO maximum mA)
1V = 20mA (FROM 10mA UP TO 80 mA)
1V = 200mA (FROM 100mA UP TO maximum mA)
A3000-44

P4
-mA
+mA
FIL I
GND
TP14 mA +
TP13 mA -
TP5 mA
TP8 FIL
R34 1K
R35 1K
(5) R36 100K
(5) R37 100K
R38 113K
R39 113K
R40 10K
R41 8K87
R42 1K
R43 1K54
R44 10K
R46 4K99
R48 10K
R47 49K9
R49 20K
FREQUENCY
R60 12K7
R61 10K
R62 12K7
R67 10K
R68 10K
R69 205
RP4 1K
RP14-B 22
C42 100nF 250V
C43 100nF 250V
C45 100nF
C46 100nF
C47 10nF
C48 10nF
C49 10nF
C50 1uF
C51 100nF
C52 10nF
C53 100nF
C54 100nF
C55 100nF
C56 100nF
C59 10nF
C60 100nF
C61 100nF
C62 100nF
C70 100nF
C71 100nF
C73 100nF
C74 100nF
D8 1N4148
D9 1N4148
D17 1N4148
Z6 1N4757A
Z7 1N4757A
(8)
U18D TL084
U21 AD536
U23 TL594
U24A DG300
U24B DG300
U24 DG300
U20-C ULN2803A
U20-D ULN2803A
K1
1-14
7-8
P3
-FIL DR 1
-FIL DR 2
V22 LM336AZ
U6 AD7837
DATA BUS
-L DAC
-WR DAC
-CS DAC
-mA SAFETY
KV DEM
mA
+5V
+12V
-12V
A15

REV	DESCRIPTION	ISSUED BY	DATE
L	NC 09/266	F. Díaz	13/10/09
K	NC 05/061	F. Díaz	01/04/05
O	NC 12/242	F. Díaz	04/06/12
N	NC 10/090	F. Díaz	24/02/10
M	NC 09/300	F. Díaz	04/11/09

	NAME	DATE
DRAWING	F. Díaz	04/11/09
REVISED	A. Díaz	04/11/09

SHEET / OF: 3/3

SEDECAL

A3000-33/34/35/36/43/44/51

N M L K J I O ← REV

HT CONTROLLER

NOTE 1: W1-A for version A3004-10/11/12, W1-B for version A3004-09

NOTE 1: W1-A para versión A3004-10/11/12, W1-B para versión A3004-09

NOTE 2: R7= 2K67 ohms for A3004-09/10
R7= 1K4 ohms for A3004-11
R7= 1K ohms for A3004-12

NOTE 2: R7= 2K67 ohms para A3004-09/10
R7= 1K4 ohms para A3004-11
R7= 1K ohms para A3004-12

GND
GND
+5V
+5V
-FIL DR1
-FIL DR2
FIL I
DELAY
+24V

P1

NTC T° R18

NTC T° R19

R20 100K 3W

DS1 Green

D2 1N4148

R2 100

Q2 SGP23N60UFD

C10 330uF/450V

C11 330uF/450V

+15V

R5 33

D4 UF4006

C6 100nF

+5V

+24V R17 3K74

TP9

C12 100nF

+5V

R16 2K

D7 UF4006

+24V R14 3K74

R13 2K

D6 UF4006

TP8

TP7

TP6

R15 10K

R12 10K

R9 10K

U5 HCPL2232

U3

HIN
LIN
SD
HO
VB
VS
VCC
LO
COM
VDD
VSS

IR2113

C8 1uF

C7 1uF

D1 1N4148

R1 100

Q1 SGP23N60UFD

C1 470nF/630Vdc

P3

FIL SUP
FIL PREHEAT
FIL RTN

T1

Pulse. PE-67300. 1 : 300

D5 BZX55C15V

R11 1K

R10 10K

U4 H11AA1

R6 2K43

W1 NOTE 1

1V=0.31 Arms

TP4

R7 NOTE 2

R8 10

+24V

C9 10uF/50V

U2

+IN +OUT
-IN -OUT

EC4BE13

TP3

+15V

R4 10K

C4 10uF/50V

C5 100nF

D3 1N4007

U1 LM7805

IN OUT GND

C3 10uF/50V

+5V

TP1

R3 10K

C2 100nF

TP2 TP5

P2

+SUPPLY
-SUPPLY

C13 1.5uF/250V-X2

L1

C15 10nF/250V-Y2

C14 10nF/250V-Y2

Ground stud

PCB 90068-04

REV	DESCRIPTION	ISSUED BY	DATE
F	NC 09/347	F. Díaz	26/11/09
E	NC 09/162	R. Asenjo	05/06/09
Db1	NC 06/251	F. Díaz	01/12/06
Cb1	NC 05/112		

	NAME	DATE
DRAWING	F. Díaz	26/10/04
REVISED	A. Díaz	26/10/04

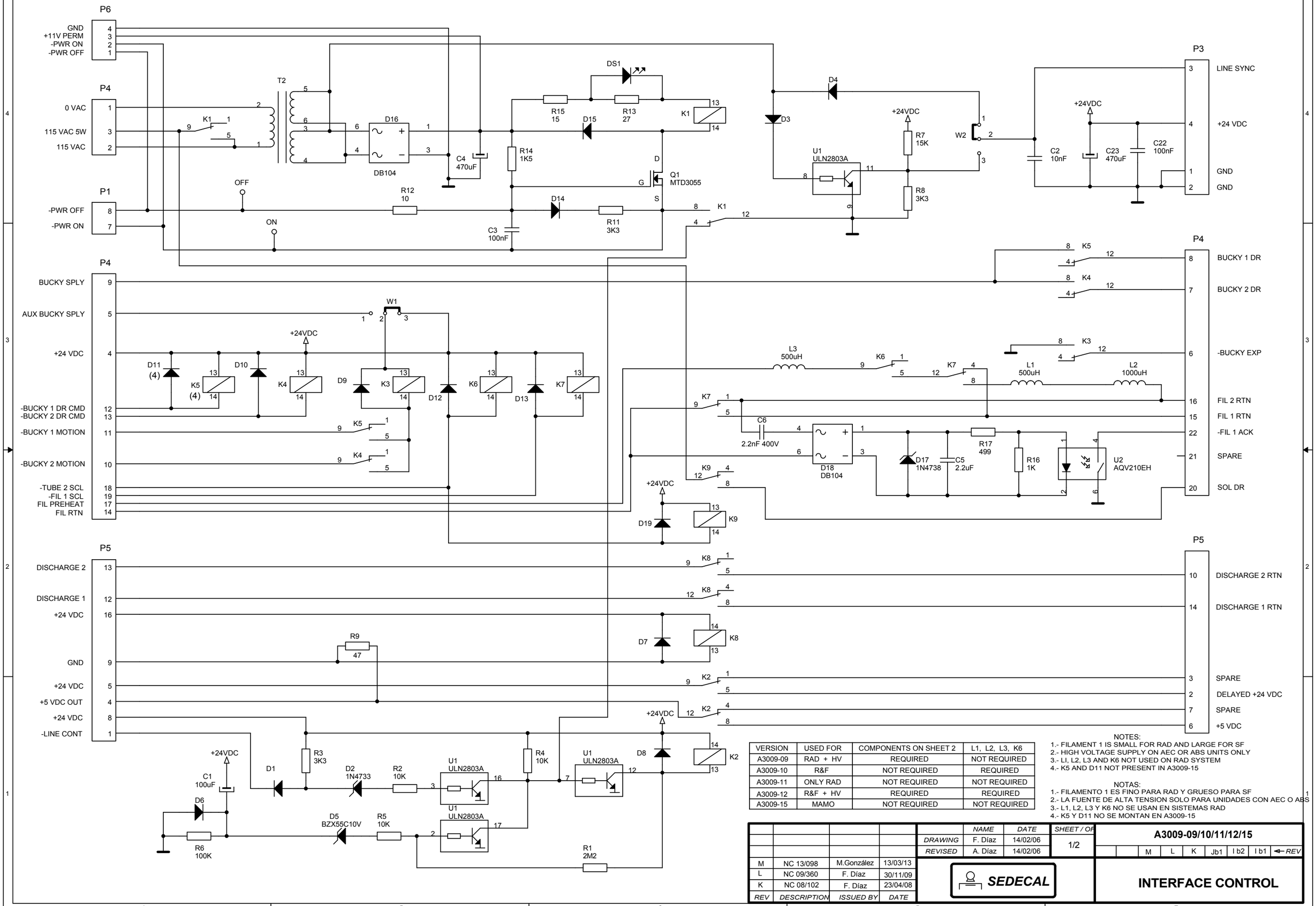
SHEET / OF: 1/1

SEDECAL

A3004-09/10/11/12

F | E | Db1 | Cb1 | Bb1 | Ab1 | b2 | b1 | REV

Filament Driver HC



VERSION	USED FOR	COMPONENTS ON SHEET 2	L1, L2, L3, K6
A3009-09	RAD + HV	REQUIRED	NOT REQUIRED
A3009-10	R&F	NOT REQUIRED	REQUIRED
A3009-11	ONLY RAD	NOT REQUIRED	NOT REQUIRED
A3009-12	R&F + HV	REQUIRED	REQUIRED
A3009-15	MAMO	NOT REQUIRED	NOT REQUIRED

NOTES:
1.- FILAMENT 1 IS SMALL FOR RAD AND LARGE FOR SF
2.- HIGH VOLTAGE SUPPLY ON AEC OR ABS UNITS ONLY
3.- LI, L2, L3 AND K6 NOT USED ON RAD SYSTEM
4.- K5 AND D11 NOT PRESENT IN A3009-15

NOTAS:
1.- FILAMENTO 1 ES FINO PARA RAD Y GRUESO PARA SF
2.- LA FUENTE DE ALTA TENSION SOLO PARA UNIDADES CON AEC O ABS
3.- L1, L2, L3 Y K6 NO SE USAN EN SISTEMAS RAD
4.- K5 Y D11 NO SE MONTAN EN A3009-15

REV	DESCRIPTION	ISSUED BY	DATE
M	NC 13/098	M.González	13/03/13
L	NC 09/360	F. Díaz	30/11/09
K	NC 08/102	F. Díaz	23/04/08

	NAME	DATE
DRAWING	F. Díaz	14/02/06
REVISED	A. Díaz	14/02/06

SHEET / OF: 1/2

A3009-09/10/11/12/15

M | L | K | Jb1 | I b2 | I b1 | REV

SEDECAL

INTERFACE CONTROL

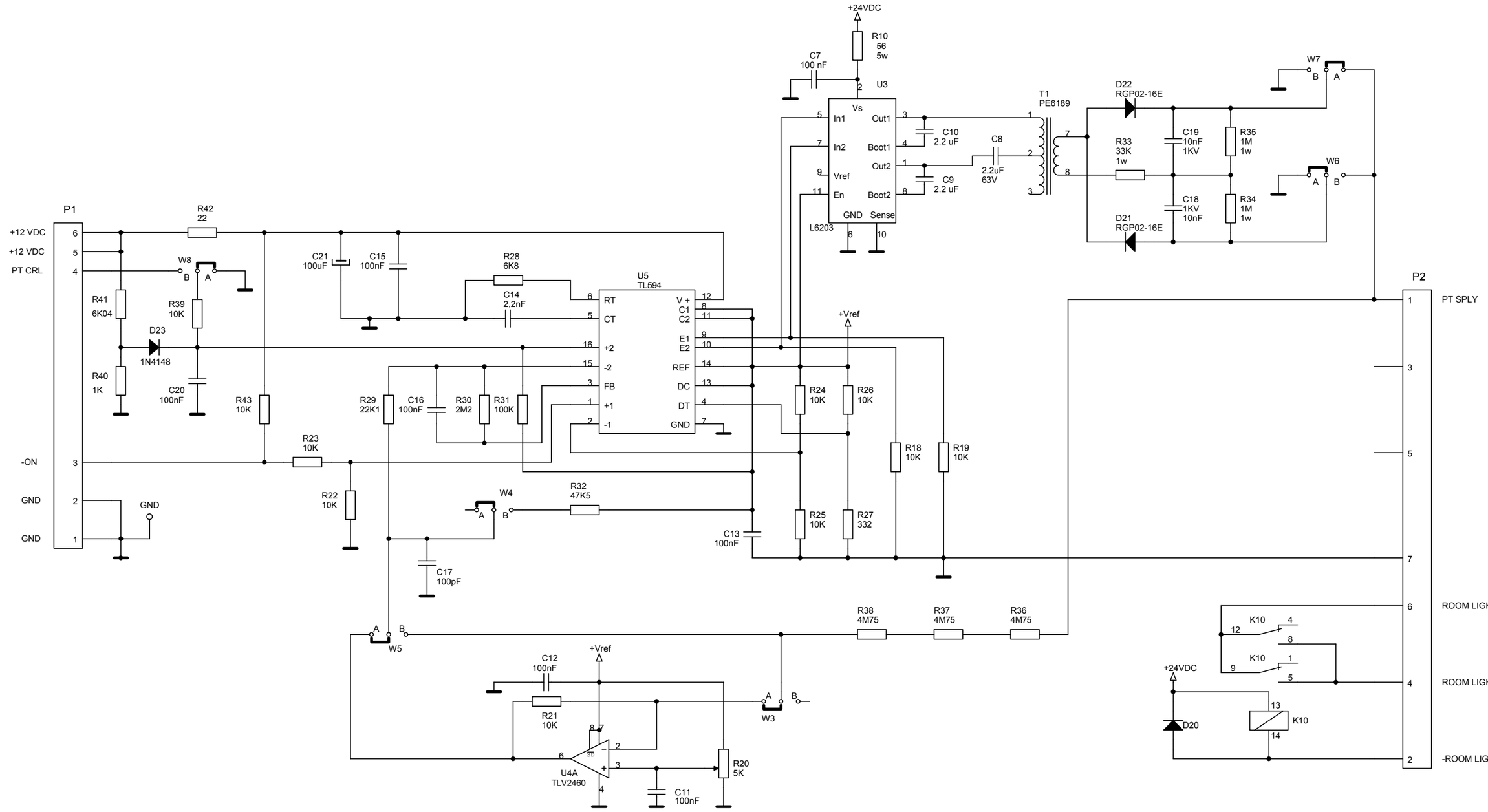


PHOTO TUBE SPLY OUTPUT (P2-1)

+500 VDC OR +300 VDC : JUMPERS W3 TO W8 IN POS "A", AND ADJUSTING WITH R20
VARIABLE NEGATIVE OUTPUT : JUMPERS W3 TO W10 IN POS "B"

SALIDA PHOTO TUBE SPLY (P2-1)

+500 VDC O +300 VDC : PUENTES W3 A W8 EN POS "A",Y AJUSTAR CON R20
SALIDA NEGATIVA VARIABLE : PUENTES W3 A W10 EN POS "B"

NOTE.- BE SURE THAT THE VALUE OF THE PHOTO TUBE SPLY OUTPUT IN P2-1
IS THE REQUIRED BEFORE CONECTING THE SYSTEM INTERFACE

NOTA.- ASEGURESE DE QUE EL VALOR DE LA SALIDA PHOTO TUBE SPLY EN P2-1
ES EL REQUERIDO ANTES DE HACER LA INTERCONEXION DEL SISTEMA

REV	DESCRIPTION	ISSUED BY	DATE
M	NC 13/098	M.González	13/03/13
L	NC 09/360	F. Díaz	30/11/09
K	NC 08/102	F. Díaz	23/04/08

	NAME	DATE
DRAWING	F. Díaz	14/02/06
REVISED	A. Díaz	14/02/06

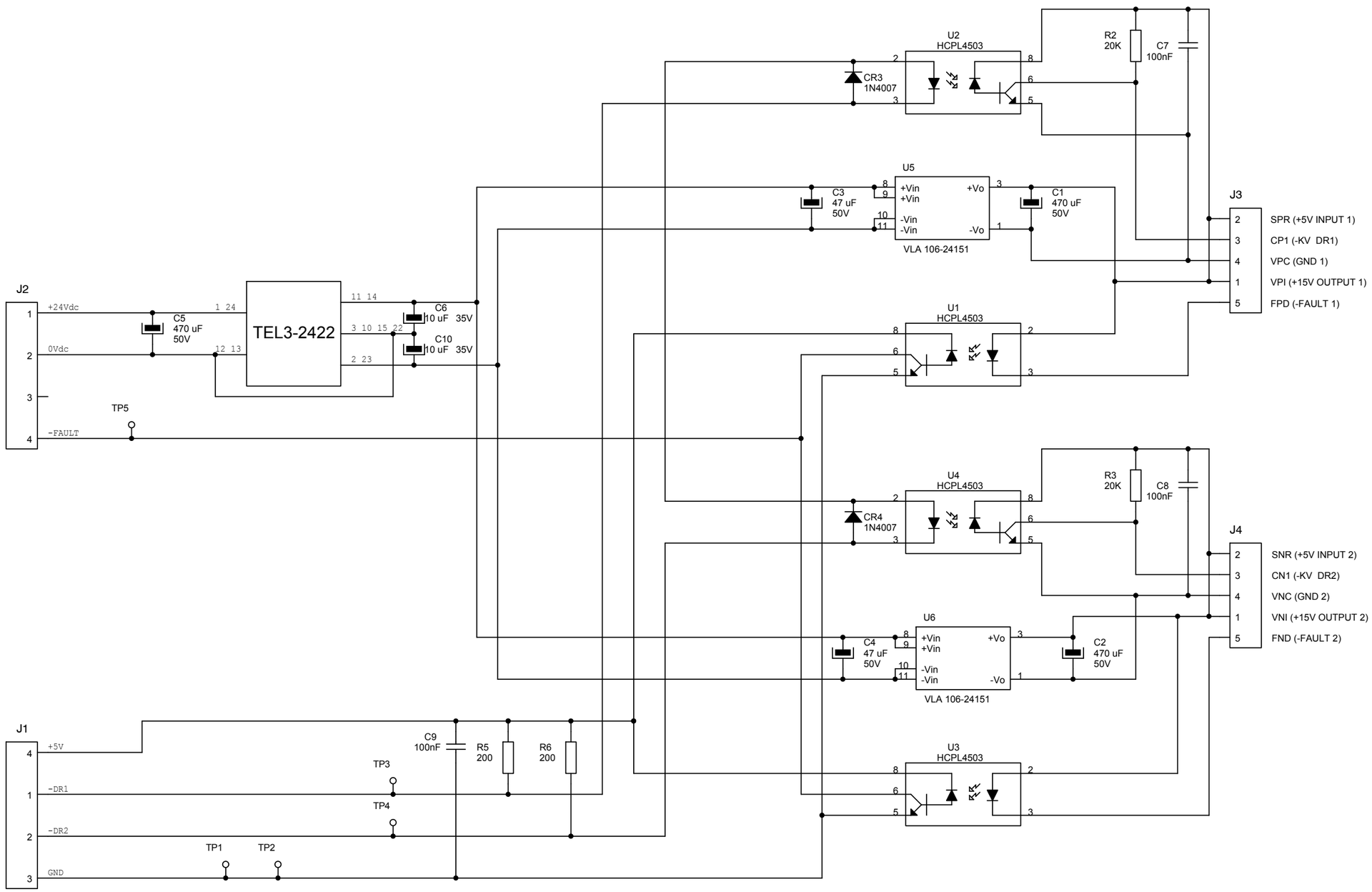
SHEET / OF: 2/2

SEDECAL

A3009-09/10/11/12/15

M L K Jb1 I b2 I b1 ← REV

INTERFACE CONTROL



C.I. 90132-06

REV	DESCRIPTION	ISSUED BY	DATE
B	NC 13/001	F. Díaz	04/01/13

	NAME	DATE
DRAWING	F. Díaz	20/06/11
REVISED	A. Díaz	20/06/11

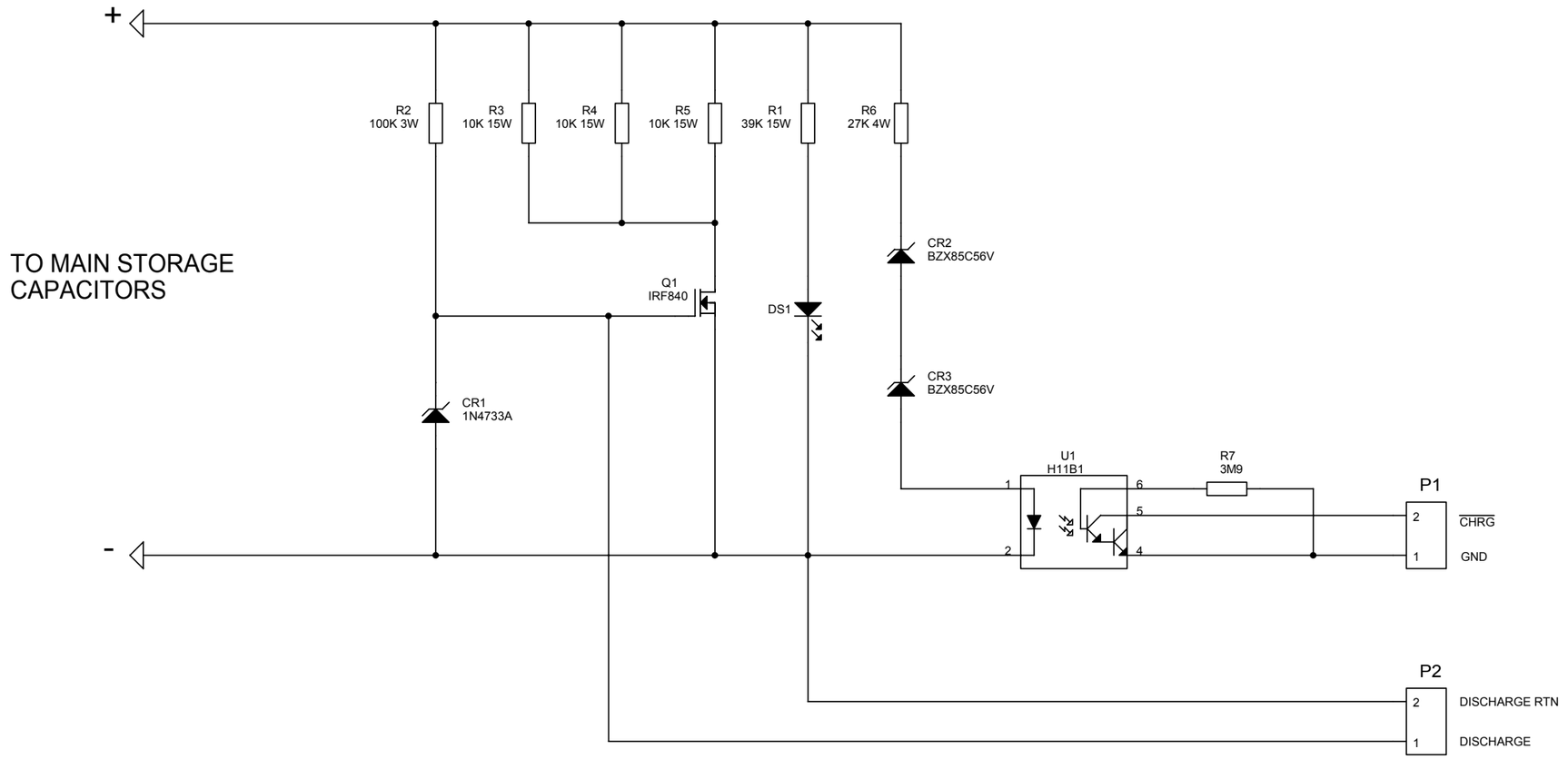
SHEET / OF: 1/1

A3063-06

REV: B A

SEDECAL

IPM DRIVER

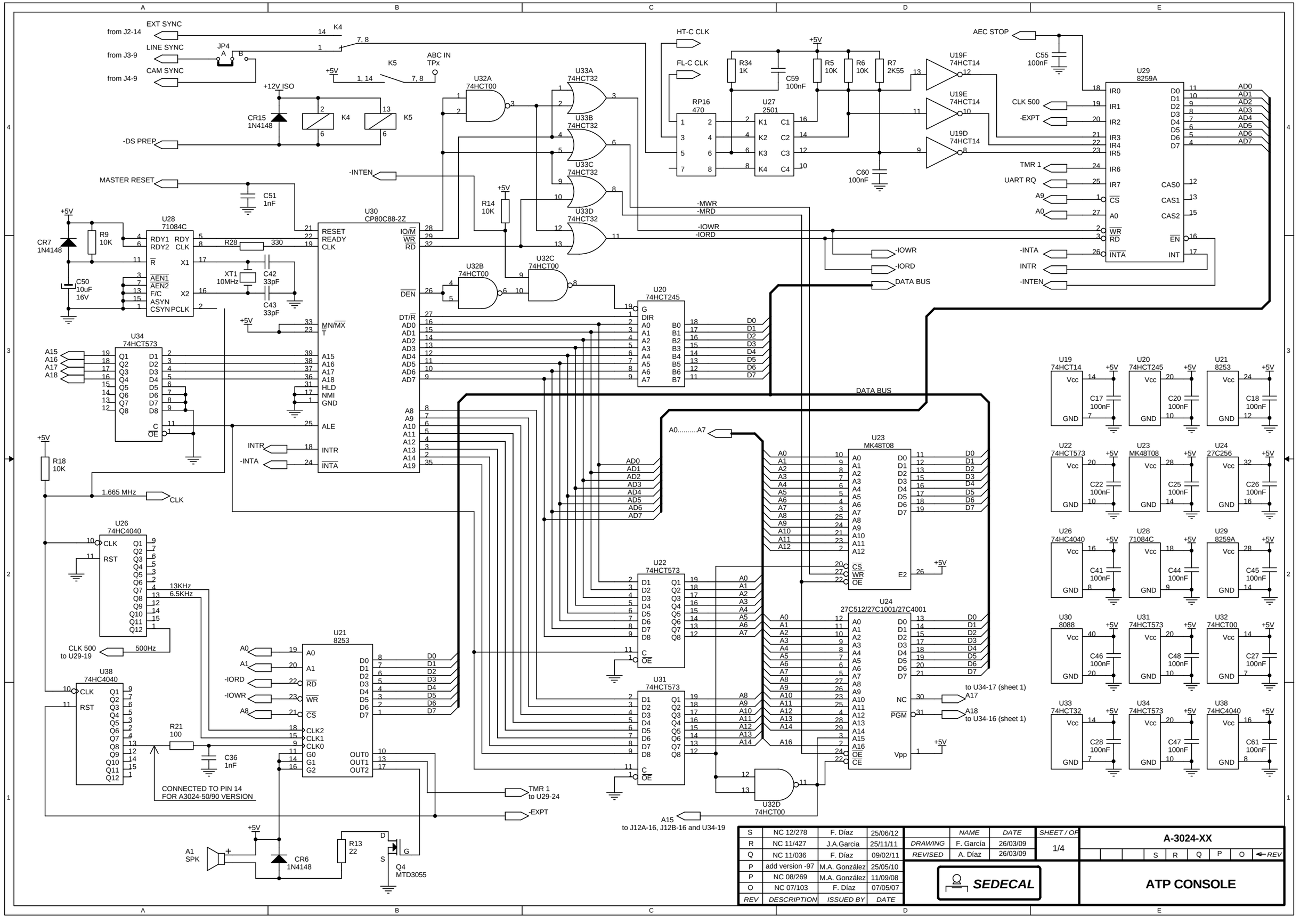


REV	DESCRIPTION	ISSUED BY	DATE
E	CN 98/114	F.GARCIA	10/10/98
D	CN 98/057	F.GARCIA	29/04/98
C	CN 96/033	F.GARCIA	06/03/96
B	CN 95/080	F.GARCIA	10/05/95
A	CN 95/74	F.GARCIA	25/04/95

CHARGE/DISCHARGE MONITOR

SEDECAL S.A.

ENG	F. GARCIA
CHK	A. DIAZ
REV	CN99/80 (22/07/99)
DWG	**3212-01** REV. F
	REV.
	REV.
DATE	11/01/95



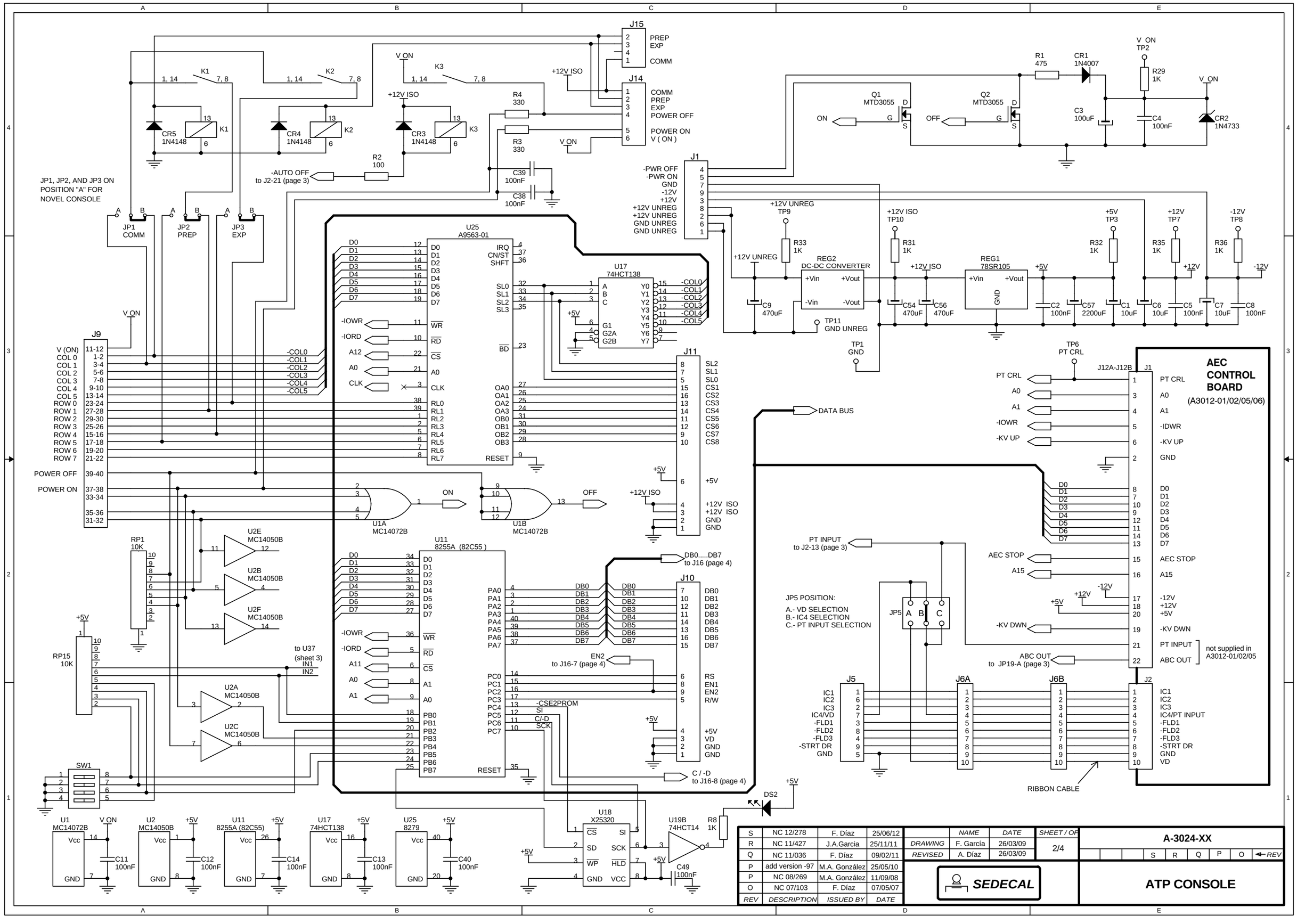
S	NC 12/278	F. Díaz	25/06/12			NAME	DATE	SHEET / OF
R	NC 11/427	J.A.Garcia	25/11/11		DRAWING	F. García	26/03/09	1/4
Q	NC 11/036	F. Díaz	09/02/11		REVISED	A. Díaz	26/03/09	
P	add version -97	M.A. González	25/05/10					
P	NC 08/269	M.A. González	11/09/08					
O	NC 07/103	F. Díaz	07/05/07					
REV	DESCRIPTION	ISSUED BY	DATE					

SEDECAL

A-3024-XX

S R Q P O ← REV

ATP CONSOLE



S	NC 12/278	F. Díaz	25/06/12		*NAME*	*DATE*	*SHEET / OF*
R	NC 11/427	J.A.Garcia	25/11/11	*DRAWING*	F. García	26/03/09	2/4
Q	NC 11/036	F. Díaz	09/02/11	*REVISED*	A. Díaz	26/03/09	
P	add version -97	M.A. González	25/05/10				
P	NC 08/269	M.A. González	11/09/08				
O	NC 07/103	F. Díaz	07/05/07				
REV	*DESCRIPTION*	*ISSUED BY*	*DATE*				

A-3024-XX								
			S	R	Q	P	O	◄ REV

NOTE.- ALL DIODES 1N4148 UNLESS SPECIFIED

JUMPER	NORMAL	MOBILE
JP14	set	removed
JP15	removed	set
JP16	removed	set
JP17	removed	set
JP18	removed	set

note: only for -97 version.

REV	DESCRIPTION	ISSUED BY	DATE
S	NC 12/278	F. Díaz	25/06/12
R	NC 11/427	J.A.Garcia	25/11/11
Q	NC 11/036	F. Díaz	09/02/11
P	add version -97	M.A. González	25/05/10
P	NC 08/269	M.A. González	11/09/08
O	NC 07/103	F. Díaz	07/05/07

	NAME	DATE
DRAWING	F. García	26/03/09
REVISED	A. Díaz	26/03/09

SHEET / OF: 3/4

SEDECAL

A-3024-XX

S R Q P O ◄REV

ATP CONSOLE

SERIAL COMMUNICATION REQUIRES THE
COMPONENTS SHOWN IN THIS BOX

version -26: RS422 communication, JP7-JP8-JP9-JP10-JP11-JP21-JP22 "B" position

version -27: RS485 communication, JP7-JP8-JP21-JP22 "A" position; JP9, JP10, JP11 "B" position.

+5V
R15
4K7
JP22
485 A B 422
JP21
485 A B 422
+5V C34 100nF
U10
MAX489
14 Vcc
1 NC
2 R
3 REB
4 DE
5 D
6 GND
7
NC 13
A 12
B 11
Z 10
Y 9
NC 8
RS485
JP8
A B
RS485
JP7
A B
R16
75
(PAGE 3, J2-25)
-ACT EXP
+5V
J8
+5V
-ACT EXP
RXD-
TXD-
note: only for -97 version.
J8-5 page 4/4 E-3
U15-20 page 3/4 B-2
J8-9 page 4/4 E-3
RXD+ (RXD)
TXD+ (TXD)
GND
RS232/422
JP10
232 A B 422
RS232/422
JP9
232 A B 422
DATA BUS
RS232/422
JP11
232 A B 422
+5V C35 100nF
U16
SCC2681
40 Vcc
D0 25 DO
D1 16 D1
D2 24 D2
D3 17 D3
D4 23 D4
D5 18 D5
D6 22 D6
D7 19 D7
DP7 15
DP6 26
DP5 14
DP4 27
DP3 13
DP2 28
DP1 12
DP0 29
-IOWR 8 WR
-IORD 9 RD
A10 35 CS
A0 1 RS1
A1 3 RS2
A2 5 RS3
A3 6 RS4
31 RXDA
10 RXDB
32 X1
33 X2
20 GND
TXDA 30
TXDB 11
IP6 37
IP5 38
IP4 39
IP3 2
IP2 36
IP1 4
IP0 7
IRQ 21
D0 34
SW4
XT2
3.6864MHz
C37
33pF
C62
33pF
UART RQ
(PAGE 1, U29-25)
U19A
74HCT14
+5V
RP8
10K
+5V
C31
10uF
16V
C33
10uF
16V
C32
10uF
16V
C30
10uF
16V
U9
MAX232
V+ 2
C1+ 1
C1- 3
C2+ 4
C2- 5
V- 6
Vcc 16
GND 15
C29
10uF
16V
+5V
J7
DTR
-ACT EXP
TXD
RXD
GND
SET JP12 FOR
FLUOROSCAN
+12V UNREG
JP12
CR24
1.5KE15CA
CR23
1.5KE15CA
CR22
1.5KE15CA
CR21
1.5KE15CA
J16
FGND
GND
VDD
VEE
-WR
-RD
-CE
C/ -D
FS
-RESET
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
RV
-DWR
(PAGE 3, U15-3)
-DRD
(PAGE 3, U6-15)
EN2
(PAGE 2, J10-9)
C/ -D
(PAGE 2, U11-11)
FS
(PAGE 3, U15-2)
DB0.....DB7
(PAGE 2, J10)
TP12
GND
R38
10K
Q7
2N4401
R39
1K
R37
1K
-12V
R30
10K
C58
1nF
KEYBOARD
J2
J4
J3
INTEGRATED
FLUORO CPU
BOARD
ATP
CONSOLE
BOARD
J9
J4
J10
J11
DISPLAY
BOARD
+12V ISO
Q5
2N4403
CR14
1N4148
R22
1K
R23
100K
R24
1K
MASTER RESET
(PAGE 3, U6-35)
and
(PAGE 1, U30-21)
C53
100uF
CR10
BZX55C
6V2
C16
1uF
R27
6K81
Q6
2N4401
CR11
1N4148
R25
825
R26
681

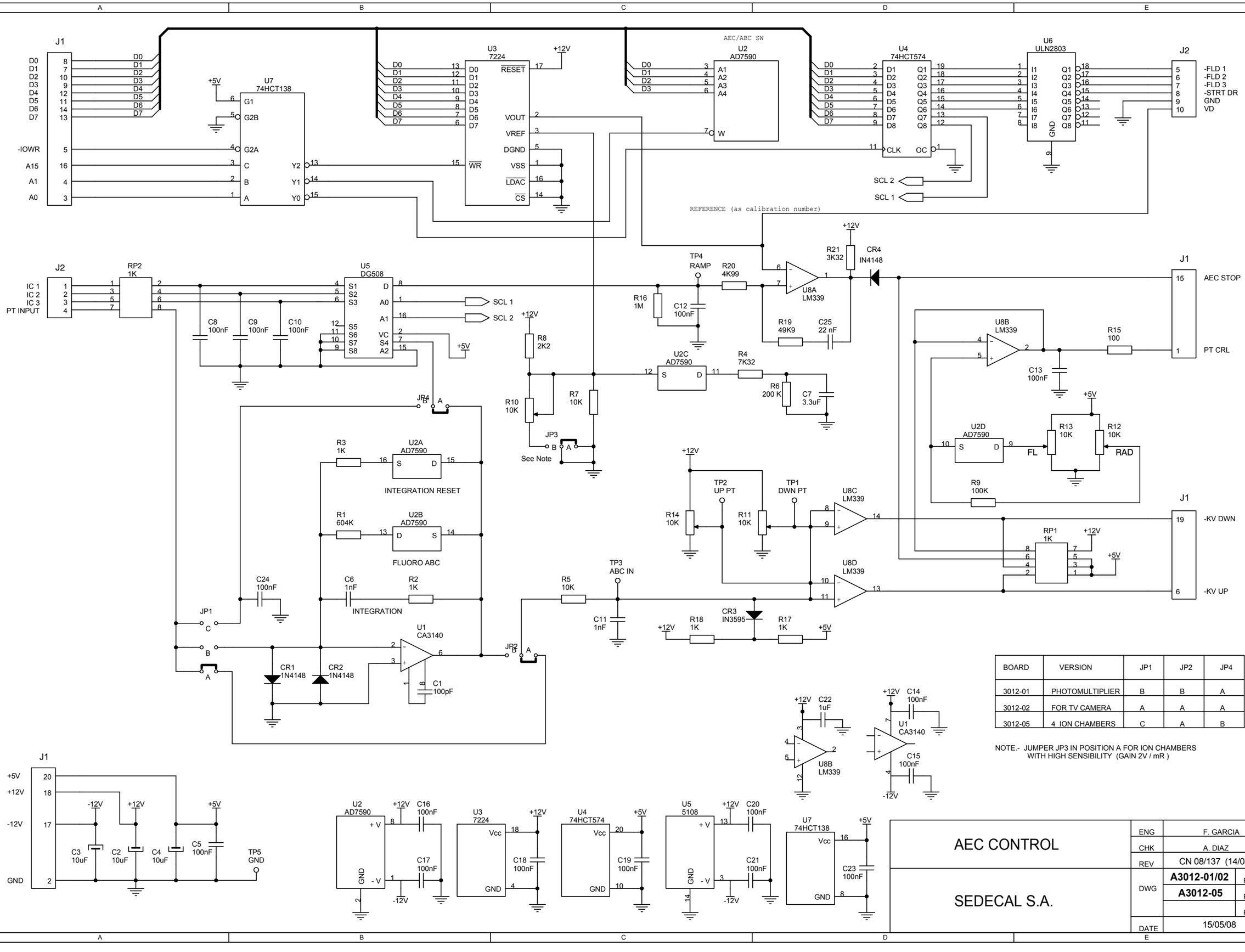
S	NC 12/278	F. Díaz	25/06/12		NAME	DATE	SHEET / OF
R	NC 11/427	J.A.Garcia	25/11/11	DRAWING	F. García	26/03/09	4/4
Q	NC 11/036	F. Díaz	09/02/11	REVISED	A. Díaz	26/03/09	
P	add version -97	M.A. González	25/05/10				
P	NC 08/269	M.A. González	11/09/08				
O	NC 07/103	F. Díaz	07/05/07				
REV	DESCRIPTION	ISSUED BY	DATE				

SEDECAL

A-3024-XX

S R Q P O ← REV

ATP CONSOLE



BOARD	VERSION	JP1	JP2	JP4
3012-01	PHOTOMULTIPLIER	B	B	A
3012-02	FOR TV CAMERA	A	A	A
3012-05	4 ION CHAMBERS	C	A	B

NOTE.- JUMPER JP3 IN POSITION A FOR ION CHAMBERS WITH HIGH SENSIBILITY (GAIN 2V / mR)

AEC CONTROL	ENG	F. GARCIA
	CHK	A. DIAZ
	REV	CN 08/137 (14/05/08)
SEDECAL S.A.	DWG	A3012-01/02 REV. L
		A3012-05 REV. E
		REV.
	DATE	15/05/08

NOTE.- ALL DIODES 1N4148 UNLESS SPECIFIED

R5, R6, R7 and R8 are 82 ohm, 2w
R24, R25, R26 and R27 are 47 ohm, 2w

NOTE.- ALL LED's HLMP-0400 UNLESS SPECIFIED

REV	DESCRIPTION	ISSUED BY	DATE
A	NC: 12/210	J.A.Garcia	25/05/12

	NAME	DATE
DRAWING	F.GARCIA	05/05/99
REVISED	A.DIAZ	12/12/99

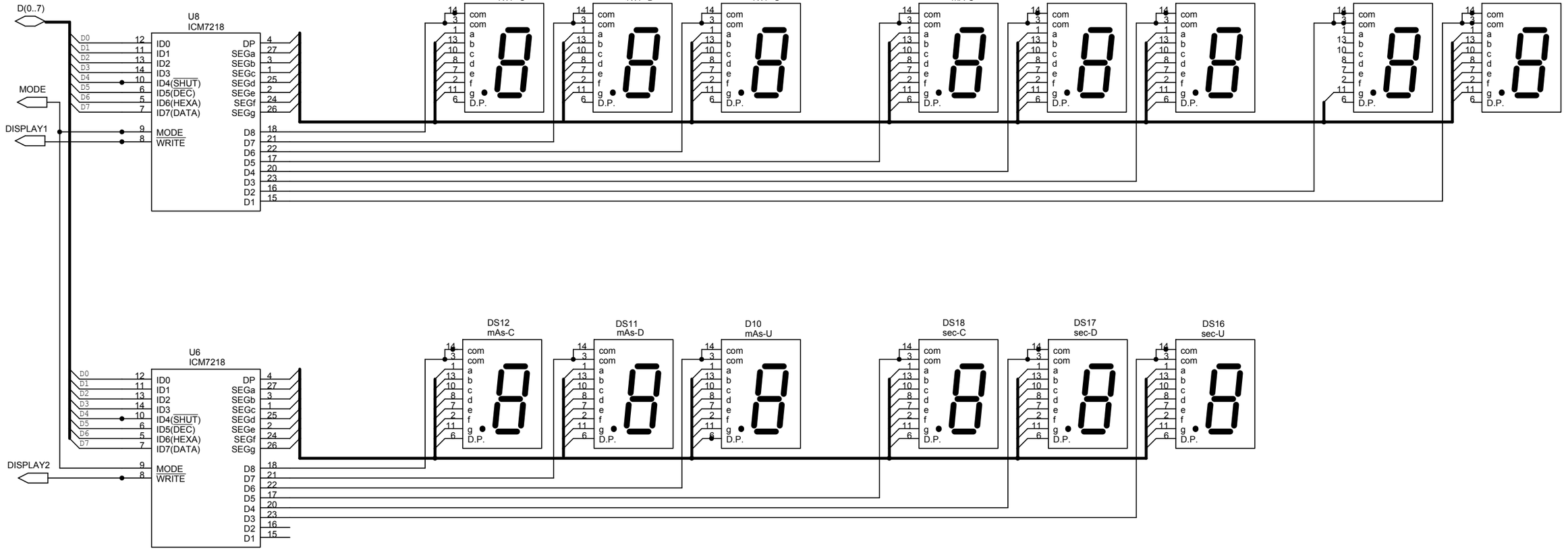
SHEET / OF: 1/3

A3129-21

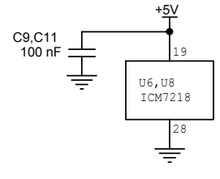
A REV

SEDECAL

RAD DISPLAY



NOTE.- SEVEN SEGMENT DISPLAYS TYPE HDSP3600



REV	DESCRIPTION	ISSUED BY	DATE
A	NC: 12/210	J.A.Garcia	25/05/12

	NAME	DATE
DRAWING	F.GARCIA	05/05/99
REVISED	A.DIAZ	12/12/99

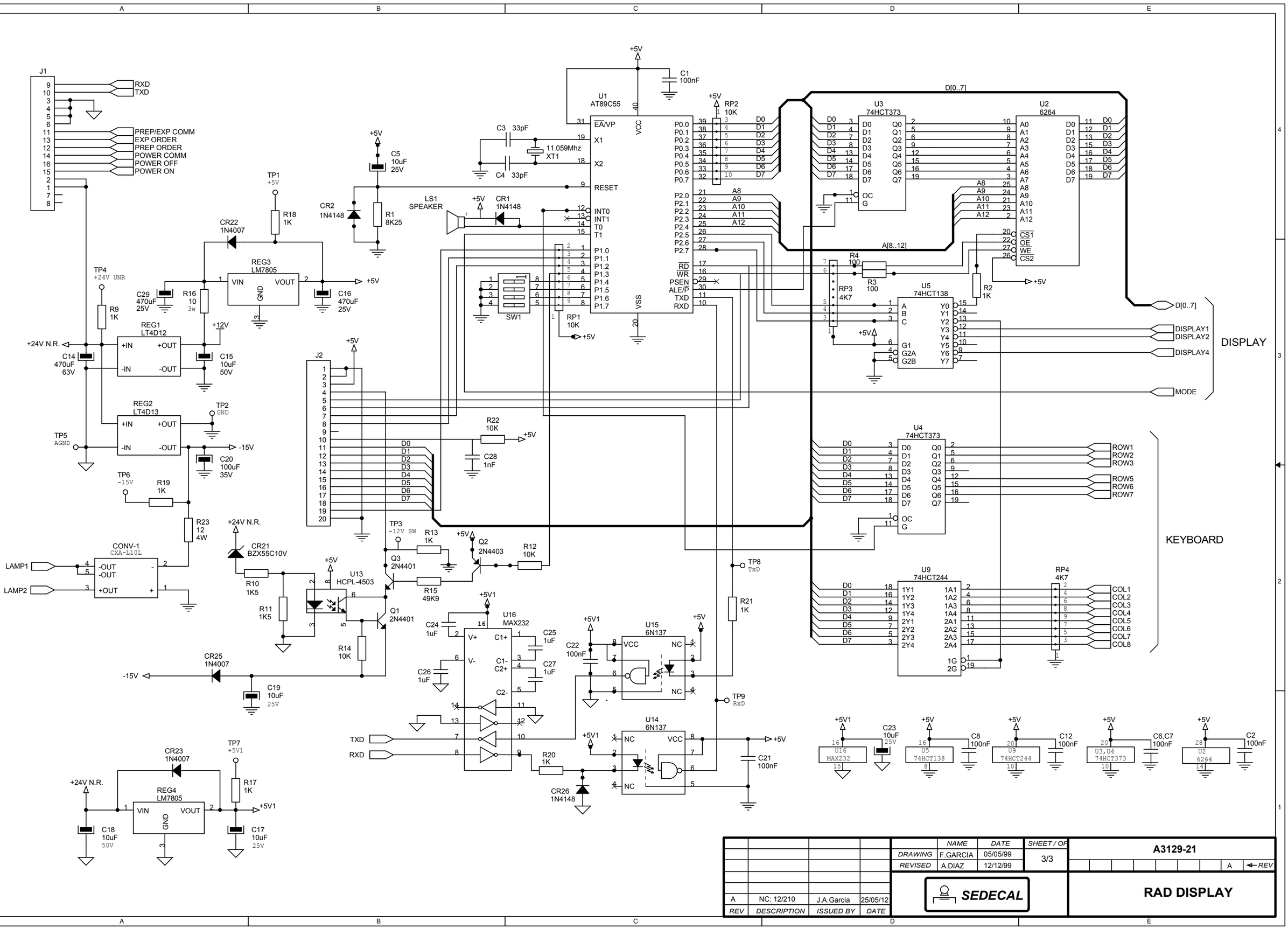
SHEET / OF: 2/3

SEDECAL

A3129-21

REV: A

RAD DISPLAY



REV	DESCRIPTION	ISSUED BY	DATE
A	NC: 12/210	J.A.Garcia	25/05/12

	NAME	DATE	SHEET / OF
DRAWING	F.GARCIA	05/05/99	3/3
REVISED	A.DIAZ	12/12/99	

SEDECAL

A3129-21

A ← REV

RAD DISPLAY