

TELECOMPONENTS
BROADCASTING & TELECOMMUNICATIONS EQUIPMENT

TELECOMPONENTS

DSTL FM Transmitters series

30 -50 - 100 -500 - 1000 Watt



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Document structure

This document contains all the technical information relating to the transmitters of Series DS.

In the first part we have all the technical specifications, followed by directions for the first installation of the transmitter.

In the middle there is the explanation of the menu and functions of the transmitter, such as color display touch screen.

There are explanatory photos of the various components of the transmitter.

Finally, follow the wiring diagrams and layouts.

Scope of the document

Purpose of this document is to provide a comprehensive description of the functionalities of the **DS TRANSMITTER** and to provide operating information on the software elements of the system.

DS TRANSMITTER User Manual provides software setup information.

Introduction

The transmitter DS is designed with all the latest technologies, such as high efficiency using the latest generation LDMOS transistor and alimentattori high yield. We used a modern interface and performance using a color display with touch screen, with easy management software and easy to use. Each transmitter DS is equipped with a LAN interface with the possibility of remote control completely lil transmitter operation.

The transmitter DS is equipped with all audio inputs including Audio IP, for a complete audio interface.

Features

- ❑ State of the art performance
- ❑ LCD color display with touch screen for easy setting and reading parameters
- ❑ Extremely low distortion: **THD, IMD & TIM** (Transient Intermodulation Distortion) specified
- ❑ Highest stereo performance: **typ. 60 dB**
- ❑ L,/R, RDS / SCA, AUX, MPX, AES-EBU XLR & Optical, Audio IP
- ❑ Audio change over built-in
- ❑ Six Memory (frequency, sensitivity, power, etc.) which can be stored different setting. Ready for N+1 system
- ❑ Completely broadband
- ❑ Remote control for telemetry LAN, RS485
- ❑ RF amplifiers using the latest generation of semiconductors **RF Power LDMOS**
- ❑ **Automatic Power Control (APC)** maintaining stable pre-set RF power 1.5:1 VSWR. Higher VSWR value causes power reduction
- ❑ Nominal RF output level 30/50/100/500/1000W. Continuously adjustable power output
- ❑ Built-in RF harmonics filter and true wattmeter
- ❑ High spectral purity
- ❑ CCIR & FCC compliant

Technical Specifications

GENERAL

Power Output: 50W (typ. 55W), 100W (typ. 110W), 500W (typ. 550W), 1000W (typ. 1100W), adjustable from front panel.

RF Output Impedance: 50 ohm.

RF Output Connector: "N"(50-100W), "7/16"(500-1000W) type.

Monitor RF: BNC connector.

VSWR: 10:1 (50-100W), 65:1 (500-1000W).

Frequency Range: 87.5 ÷ 108.00 MHz, only for analog on request
66 ÷ 74 MHz (OIRT), 76 ÷ 90 MHz (JPN) Programmable in 10 kHz steps.

Frequency Stability: ±1 ppm from -5 to 45°C.

External Reference: 10 MHz BNC connector back panel.

Type of Modulation: analog synthesis, Digital full digital synthesis.

Off Lock Attenuation: ≥ -80 dBc.

Modulation Capability: ±150 KHz.

Limiter built in

Power Good Detector: adjustable from 20÷90% of the power.

Audio Presence Detector: adjustable time from front panel.

External AGC: Automatic, with fine ADJ from front panel.

Modulation Mode: Mono, Stereo, Multiplex, SCA, RDS, Aux.

Preemphasis: Flat/50/75µs selectable from front panel.

Asynchronous AM S/N Ratio: -70 dB.

Synchronous AM S/N Ratio: -65 dB .

RF Harmonics: Exceeds EBU/CCIR/FCC requirements.

RF Spurious: Exceeds EBU/CCIR/FCC requirements.

MONAURAL OPERATION

Audio Input Impedance: 600 ohm - ≥10 Kohm balanced.

Audio Input Level: DP series -12 to +12 dBm, DS series -6 to +12 dBm

Input Connector: XLR female.

Audio Frequency Response: ±0.1 dB, 30 Hz to 15 KHz.

Total HarmonicDistortion + Noise: 0.01% @ 400 Hz.

Intermodulation Distortion: 0.01%, 1 KHz/1.3 KHz, 1:1 ratio.

Transient Intermodulation Distortion: 0.01% 2.96KHz square wave and 14 KHz sine wave.

Distortion: 0.01% 2.96KHz square wave and 14 KHz sine wave.

FM S/N Ratio: -85 dB rms detector, -80 dB below ±75 KHz deviation.

STEREO OPERATION

Audio Input Impedance: 600 ohm - ≥10 Kohm balanced.

Audio Input Level: DP series -12 to +12 dBm, DS series -6 to +12 dBm

Input Connector: XLR female.

Audio Frequency Response: ±0.1 dB, 30 Hz to 15 KHz.

Total HarmonicDistortion + Noise: 0.01% @ 400 Hz.

Intermodulation Distortion: 0.01%, 1 KHz/1.3 KHz, 1:1 ratio.

Transient Intermodulation Distortion: 0,01% 2.96KHz square wave and 14 KHz sine wave.

FM S/N Ratio: -85 dB rms detector, -80 dB below ±75 KHz deviation.

Stereo Separation: digital 20 Hz ÷ 15 KHz ≥ -60dB, analog -45 dB@30Hz
≥ -60dB@ Freq ≥ 100 Hz

Crosstalk attenuation: digital Main to Sub -70 dB 30 Hz to 15 KHz,
analog ≥ 45 dB@15kHz.

38 KHz Suppression: ≥ -85 dB.

Pilot Frequency: 19 KHz ± 1 Hz

Output Pilot: DP series 1 Vpp. BNC female, analog 2Vpp adjustable from front panel

SIGNAL PROCESSING SECTION (only for Digital)

FM Carrier Generation: NCO-based synthesis

FM Modulation: Fully digital

Stereo Coder: Fully digital, integrated

Input Audio Limiter: Proprietary integrated Soft Limiter

Digital Signal Processing: Real-time internal 24-bit digital processing

RDS Generator: Fully integrated

Monitoring Output Signals: Fully digitally generated

MULTIPLEX OPERATION

Composite Input Impedance: 2 Kohm unbalanced.

Composite Input Level: DP series -12 to +12 dBm, DS series -6 to +18 dBm

Input Connector: BNC female.

Composite Amplitude Response: ±0.1 dB, 30 Hz to 100 KHz.

Total Harmonic Distortion + Noise: 0.01% @ 400 Hz.

Intermodulation Distortion: 0.01%, 1 KHz/1.3 KHz, 1:1 ratio.

Transient Intermodulation Distortion: 0.01% 2.96KHz square wave and 14 KHz sine wave.

FM S/N Ratio: -85 dB rms detector, -80 dB below ±75 KHz deviation

AES/EBU OPERATION (optional Analog)

Input Connector: XLR female, optical TOS-LINK.

Data Format: S/PDF, AES/EBU, IEC958, EIAJCP340/1201.

D/A Converter: 24 bit.

Sampling Frequency: from 32 to 96 KHz.

AUDIO IP (optional)

Lan: Audio IP and Web interface to control and configure

Transport protocol: RTP over UDP;

Protocols: RFE Codec: Alaw,OGG VORBIS, MP3, AAC

SHOUTCAST/ICECAST Codec: TX MP3, RX AAC, AAC+, MP3, OGG(icecast 2.x)

SCA, RDS, AUX OPERATION

Input Impedance: ≥ 2 Kohm.

Input Level: -6 to +12 dBm.

Frequency Response: ±0.1 dB, 50 KHz to 100 KHz.

Input Connector: BNC female.

AUXILIARY CONNECTIONS

RS485: DB9 connector back panel.

CAN BUS (optional): DB9 connector back pane

Telemetry Interface: connector DB25 back panel.

LAN: RJ45 connector back panel

MPX OUT: connector BNC back panel.

OPTIONS

RDS/RBDS Programmable Coder via PC.

OIRT or JPN version.

SNMP

Audio Over IP

AES/EBU (only analog)

ELECTRICAL

AC Input Power: 90÷260 VAC 50/60 HZ single phase.

AC Apparent Power Consumption: 100VA @ 50W, 200VA @ 100W,
750VA @ 500W, 1400VA @ 1000W.

cos Φ > 0.98.

Cooling: Forced air.

Acoustic noise: < -56 dBa @ 1 meter.

ENVIRONMENTAL

Operating temperature: -5°C to +50°C.

Max Operating Altitude: 2000 mt.

Relative Humidity Range: 0 to 90%.

PHYSICAL DIMENSION

Mounting: Standard 19" chassis 2 U rack.

Size: W x 483 mm. D x 470 mm. H x 88 mm.

Weight: ~ 6,0 Kg. (50-100w), 15Kg. (500-1000W)

Software update

Core micro : Via Web

Installation and Use

Front panel



The front panel has five LEDs that indicate the status of the transmitter, and are:

- ON LED green/yellow
- LOCK LED green
- REMOTE LED yellow
- INTERLOCK LED yellow
- FAULT LED red

There are also four keys for the functions of:

- ON
- REMOTE
- RESET
- BACK

These LEDs and its buttons, integrate the capabilities of the LCD, to understand the status of the transmitter more clearly without access to the navigation menu.

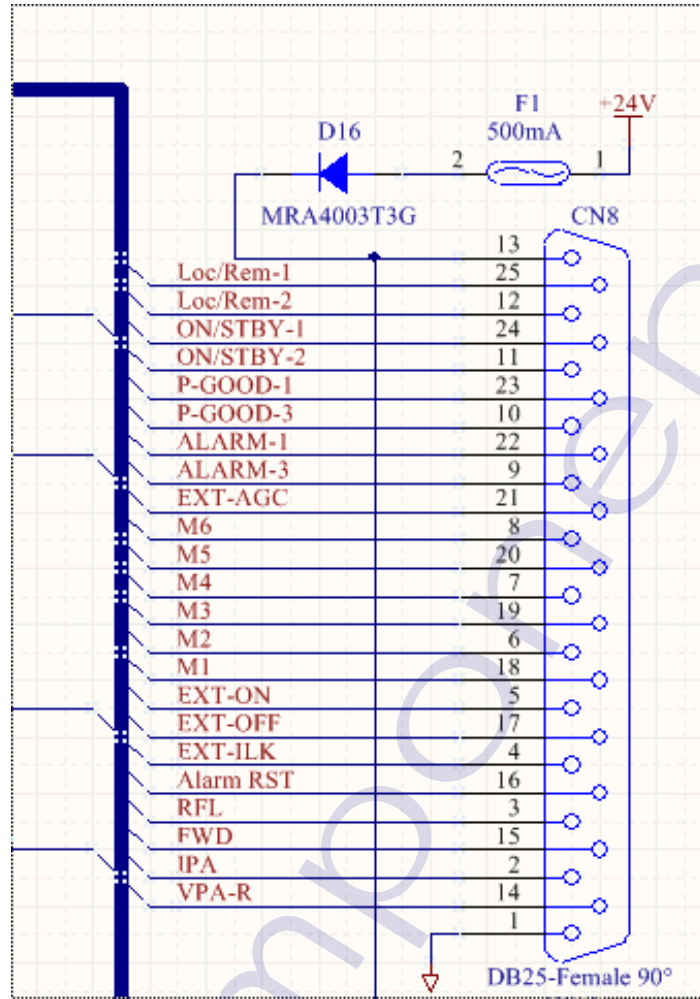
Rear panel



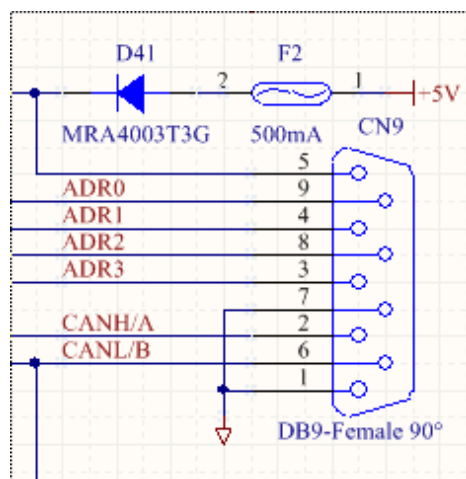
On the rear panel connectors are located as follows:

- Input Mains with power switch
- RF out N or 7/16 connector
- L/R audio input XLR connector
- MPX audio input BNC connector
- MPX audio output BNC connector
- AUX input BNC connector
- SCA/RDS input BNC connector
- 19kHz in/out BNC connector
- AES/EBU input XLR/TOS-LINK connector (optional for DS Series)
- AUDIO IP input RJ45 connector
- 10MHz input SMA connector (optional only for DP Series)
- 1 PPS input SMA connector (optional only for DP Series)
- GSM Antenna SMA connector (optional)
- RDS/RS232 DB9 connector (optional)
- TLC/TLS DB9 connector
- RS485 DB9 connector
- LAN RJ45 connector

DB25 (TLC/TLS) Rear connector



DB9 Rear connector



DB25 PinOut

1. GND
2. OUTPUT- Analog IPA
3. OUTPUT- Analog Reflected Power
4. INPUT- optoinsulated -External interlock (settable N.O. o N.C.)
5. INPUT- optoinsulated -Exciter ON (remote control)
6. INPUT- optoinsulated - memory M2
7. INPUT- optoinsulated - memory M4
8. INPUT- optoinsulated - memory M6
9. OUTPUT- Pin 2 rele contact – General alarm
10. OUTPUT- Pin 2 rele contact – Power & Audio good
11. OUTPUT- Pin 2 rele contact - ON/Stand-by
12. OUTPUT- Pin 2 rele contact - Local/Remote
13. OUTPUT +24VDC max 500mA
14. OUTPUT- Analog VPA
15. OUTPUT -Analog Forward Power
16. INPUT- optoinsulated – Alarm reset
17. INPUT- optoinsulated -Exciter OFF (remote control)
18. INPUT- optoinsulated - memory M1
19. INPUT- optoinsulated - memory M3
20. INPUT- optoinsulated - memory M5
21. INPUT- Analogico-External AGC (external directional coupler)
22. OUTPUT- Pin 1 rele contact – General Alarm
23. OUTPUT- Pin 1 rele contact – Power & Audio good
24. OUTPUT- Pin 1 rele contact - ON/Stand-by
25. OUTPUT- Pin 1 rele contact - Local/Remote

The functioning of the relays can be set from the front panel in normal open or normal closed.

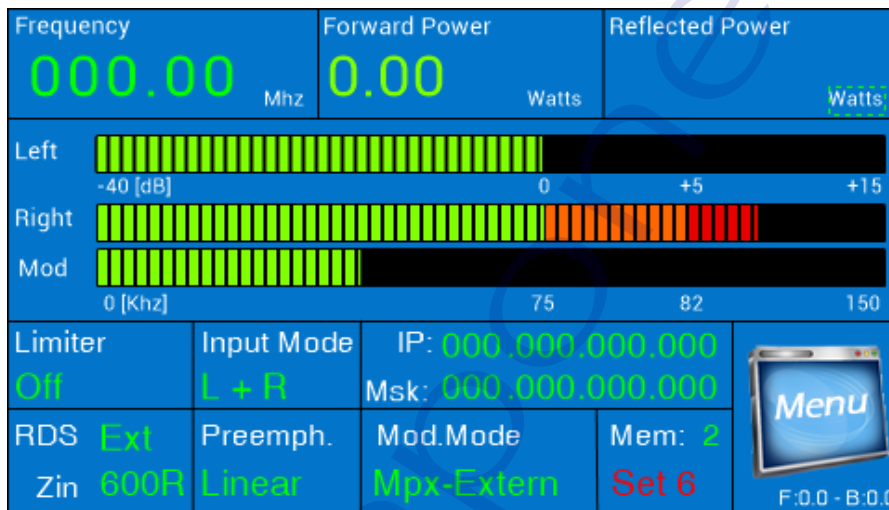
DB9 PinOut

1. GND
2. 485 (optional Canbus)
3. INPUT- optoinsulated -Address 3
4. INPUT- optoinsulated - Address 1
5. OUTPUT +5VDC
6. 485 (optional Canbus)
7. GND
8. INPUT- optoinsulated - Address 2
9. INPUT- optoinsulated - Address 0

Quick start

At first power to make sure that the transmitter is connected to the antenna or a dummy load, adequate power, connect the mains plug and turn on the transmitter. **If you want to turn on the transmitter with the lowest possible power, when the power to keep pressed the BACK ← button simultaneously to the power on button.**

Power-on transmitter display will show the following figure:



The display will show all the necessary information about the setting of the transmitter, such as:

- Frequency
- Forward Power
- Reflected Power
- L/R Modulation
- Deviation Modulation
- Limiter
- Input Mode
- RDS
- Input Impedance
- Preemphasis
- Modulation Mode
- Memory
- IP
- Mask
- Menu

Menu

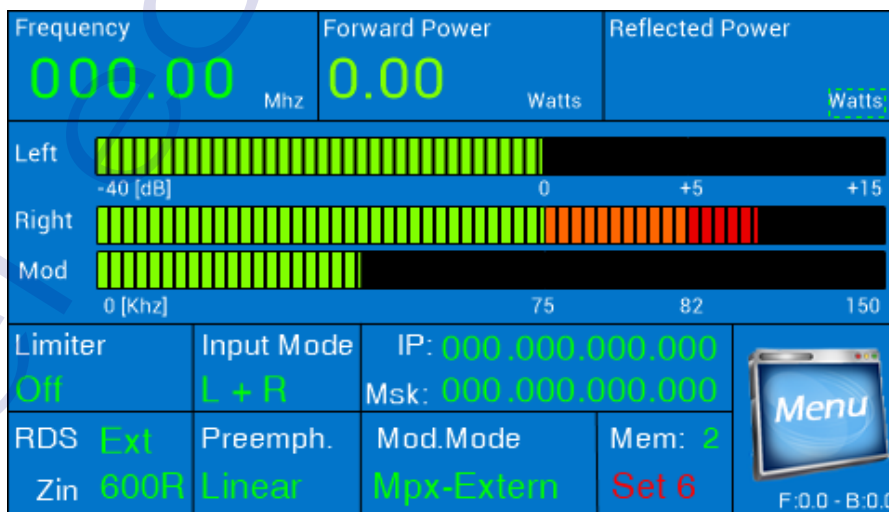
Display and programming of the transmitter is through the LDC display touch screen. From the first screen at power, as previously explained, can be accessed through the menu button to the submenu of the Audio, Frequency, Power, Setting, Memories and Alarm.

Touching a symbol on the display is accessed directly from the menu chosen and you can implement all the changes you want. Each menu is simple and intuitive without the need for any manual so that all changes following what appears on the display. Following are the main screens that allows the display.

That related to memories need an explanation, the transmitter can store six different settings in six memories, these can be called either remotely or locally; This is used in systems n + 1 in the case of transmitters reserve. The storing of data, frequency, power, etc. are possible with the transmitter on the air, without interrupting transmission. When storing the display shows "SETTING MEMORIES", at the end the display will show all the data chosen.

In the settings menu you will find all the possible configurations of the date and time, external interlock, LAN configuration, setting a general machine and all measures concerning the voltages and currents in the transmitter.

MAIN PAGE



MENU



POWER SETTING



POWER OUTPUT is ADJUSTABLE STEPS 0.1W

FREQUENCY SETTING

Set Frequency
On Air

101.00 Mhz

91.50 Mhz

Insert a Frequency and press Enter to Save

1	2	3
4	5	6
7	8	9
Enter	Canc	0

On Air

101.51 Mhz

102.1

Set a Frequency and press Enter to Save

Are you sure?

Yes No

1	2	3
6	9	0
Enter	Canc	0

AUDIO SETTING

Audio Settings

RDS	<input type="radio"/> On/Off	<input type="radio"/> Interno	<input checked="" type="radio"/> Esterno -3 dBu
Preemphasis	<input checked="" type="radio"/> 50 uSec	<input type="radio"/> 75 uSec	<input type="radio"/> Linear
Input Mode	<input type="radio"/> Aes/Ebu -3 dBFS	<input type="radio"/> L & R -3 & -3 dBu	<input checked="" type="radio"/> Mpx Ext -3 dBu
Mod. Mode	<input type="radio"/> Mono [Left]	<input checked="" type="radio"/> Stereo	<input type="radio"/> Mpx Ext
Limiter	<input type="radio"/> On/Off	Setup Input Level	

SETUP INPUT LEVEL

Setup Input Level [dBu]

Aux [-6.0, +12.0]	+0.00		Change
Sca/Rds [-6.0, +12.0]	+0.00		Change
Mpx Ext [-6.0, +18.0]	+0.00		Change
Left [-6.0, +12.0]	+0.00		Change
Right [-6.0, +12.0]	+0.00		Change

AUDIO LEVEL SETTING

Settings

Value: + 11 dB

New Value: + 8 dB

Insert a Value and press Enter to Save

+/- . Enter Canc 0

1 2 3

4 5 6

7 8 9

RESERVE AUDIO SETTING

Reserve audio source

Digital Ele Opt IP

Analog Left Right L&R

Mpx Ext Off

CHANGE OVER AUDIO SETTING

Input/Output Configuration			
PwrChkPin	<input type="radio"/>	N. Open	Value(% Pwr Set): 000 <input type="button" value="Set"/>
Audio Mute	<input type="radio"/>	000 s <input type="button" value="Set"/>	Audio Presence 000 s <input type="button" value="Set"/>
Interlock IN	<input type="radio"/>	N. Open	
AGC Int/Ext	<input type="radio"/>	Internal	AGC Gain Value: 000 <input type="button" value="Set"/>

TO ACTIVATE THE CHANGE OVER AUDIO SELECT AUDIO BACKUP, SET THE TIME FOR ACTION "AUDIO MUTE"
THIS IS THE TIME NEEDED FOR SWITCHING BETWEEN AUDIO MAIN AND AUDIO RESERVE.

SET "AUDIO PRESENCE" TIME FOR RETURN FROM AUDIO RESERVE, A MAIN AUDIO.

TO ACTIVATE THE CHANGE OVER AUDIO MUST ACTIVATE THE SCREEN "RESERVE AUDIO SETTING".

MENU MEMORY SETTING



MEMORY SETTING

Memories 1/3

1

Freq: 102.50Mhz	FWD: 1000 W
Out/Mode: MPX Ext	Lim: Off
In/Mode: MPX Ext	Pre: Linear
Mono: Right	RDS: Off
Left Lev: 10 dBu	RDS Typ: External
AUX Lev: 0 dBu	Right Lev: 10 dBu
Sca/Rds Lev: -2 dBu	Aes/Ebu Lev: -3 dBfs
	MpxExt Lev: 0 dBu

Active Set Pag+

LOG EVENT

#	Date/Time	Last 300 Events	30/30
300	25/25/20 - 25:25	Over RF Temperature	
300	25/25/20 - 25:25	Over RF Temperature	>
300	25/25/20 - 25:25	Over RF Temperature	
300	25/25/20 - 25:25	Over RF Temperature	>>
300	25/25/20 - 25:25	Over RF Temperature	
300	25/25/20 - 25:25	Over RF Temperature	
300	25/25/20 - 25:25	Over RF Temperature	<<
300	25/25/20 - 25:25	Over RF Temperature	
300	25/25/20 - 25:25	Over RF Temperature	<

DB25 SETTING

Input/Output Configuration

PwrChkPin	<input type="radio"/> N. Open	Value(% Pwr Set):	000	Set	
Audio Mute	000s	Set	Audio Presence	000s	Set
Interlock IN	<input type="radio"/> N. Open				
AGC Int/Ext	<input type="radio"/> Internal	AGC Gain Value:	000	Set	

POWER REDUCTION SETTING

Power Reduction Setting

Start Reduction at: 18

End Reduction at: 07

Reduce at: 50 % of Power Setted

Save

TIME SETTING

Time - Date Setting

29/10/2013 - 11:10.28

Time:
11:10.58

Date:
29/10/2013

Select a value and modify

1	2	3
4	5	6
7	8	9
Enter	Canc	0

GENERAL SETTING AND MEASURE

Vpa: 48.34 V 3v3: 3.000 V 12/11/2015 - 13:44.23
Ipa 1: 26.5 A 5v0: 4.998 V Temperature RF: 58 °C
Ipa 2: 26.5 A Serv: 12.325 V Temperature Amb: 35 °C
Ipa 3: 26.5 A

Lan Time DB25 Addr 192 Audio C.O.

19kHz Amp -0.00 Power Red. Set FSK ABC123 AES/EBU Options

19kHz Out FSK En GMT En

LAN CONFIGURATION

Readings 25/11/2013 - 12:25.05
Ipa: 4.234 A 3v3: 3.000 V Temperature RF: 01 °C
Vpa: 3.000 V Serv: 12.325 V Temperature Amb: 01 °C

SetLan Addr (192) Mpx Delay

Lan configuration
IP : 000.000.000.000
Mask: 000.000.000.000
Gtw: 000.000.000.000
DNS: 000.000.000.000

FIRMWARE UPLOAD Via WEB

Firmware upload...

Wait to load a new firmware
The Tx will be restart....

TX WEB CONTROL

RfEvolution

MAIN READINGS LEVEL SETTING SYSTEM

TX ON

MAIN

RELOAD

Frequency

102.02 Freq in KHz Set

Forward Power

101.3 102 Set

Reflected Power

0.35

Limiter

ON

RDS

OFF

Preemphasis

Linear

Active Memory

Active 1

Input Mode

L & R

Modulation Mode [MONO]

Left

Left:

[Slider]

Right:

[Slider]

Mpx:

[Slider]

READINGS

IPA: 0.042 A

VPA: 48.60 V

3v3: 3.298 V

5v0: 5.011 V

24V: 24.13 V

°C RF: 48

°C Case: 30

AUDIO LEVEL SETTING

Aux:

[Slider]

0 dBu dBu Set

Sca/Rds ext:

[Slider]

0 dBu dBu Set

Mpx ext:

[Slider]

+10.2 dBu dBu Set

Left:

[Slider]

+10.2 dBu dBu Set

Right:

[Slider]

+3.5 dBu dBu Set

AES/EBU:

[Slider]

+12 dBfs dBfs Set

SYSTEM INFORMATION

Tx Type: 100 Watt

Firmware: 2.520

Boot: 1.010

IP Address: 192.168.178.61

Mask: 192.168.178.255

Gateway : 255.255.255.0

DNS: 8.8.8.8

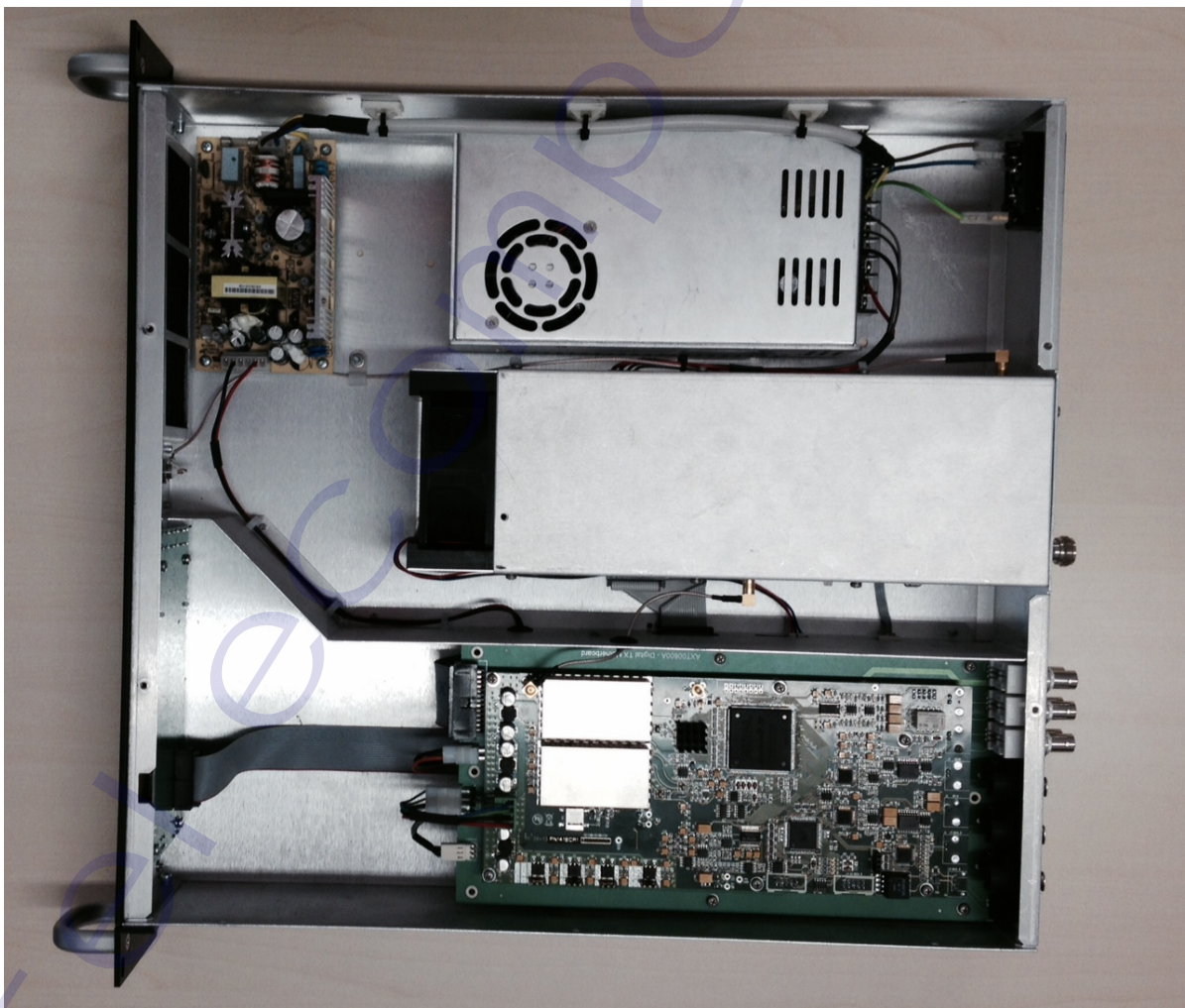
INTERNAL VIEW DIGITAL TRANSMITTER



INTERNAL VIEW ANALOG TRANSMITTER (DS series)



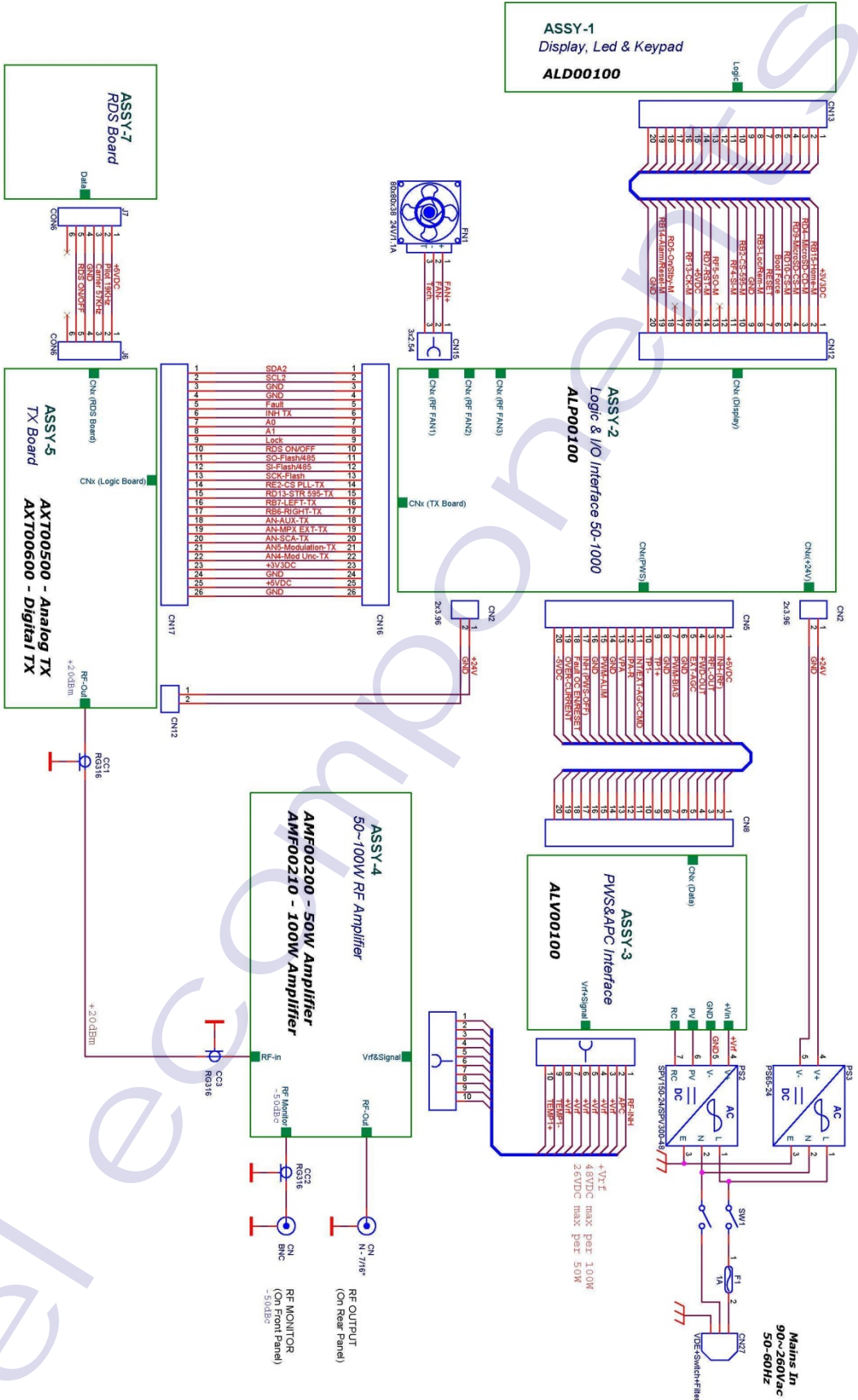
INTERNAL VIEW DIGITAL TRANSMITTER (DP series)



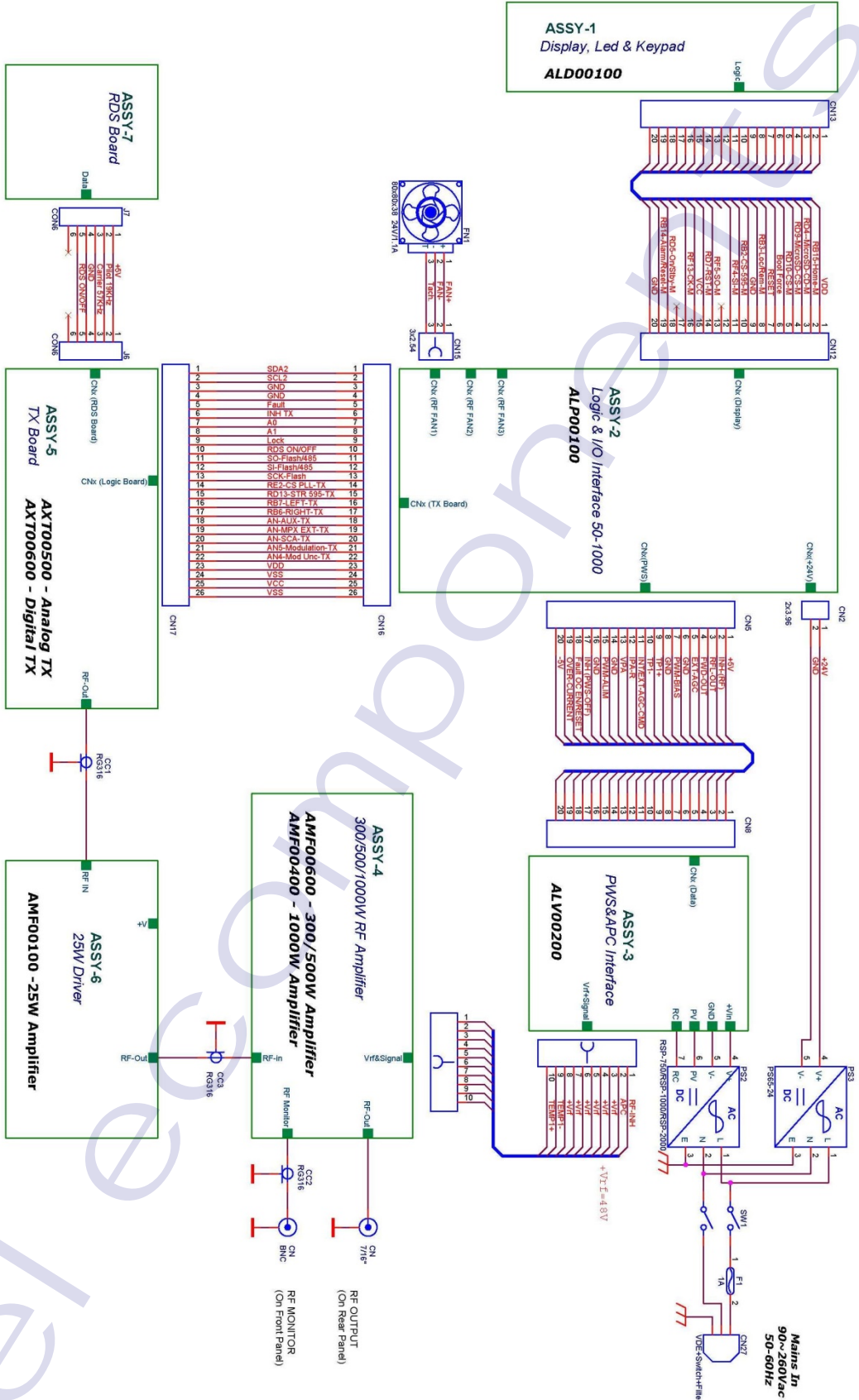
***Schematic Diagrams,
Bill of Materials and
Physical Layout***

tel ecompo nents

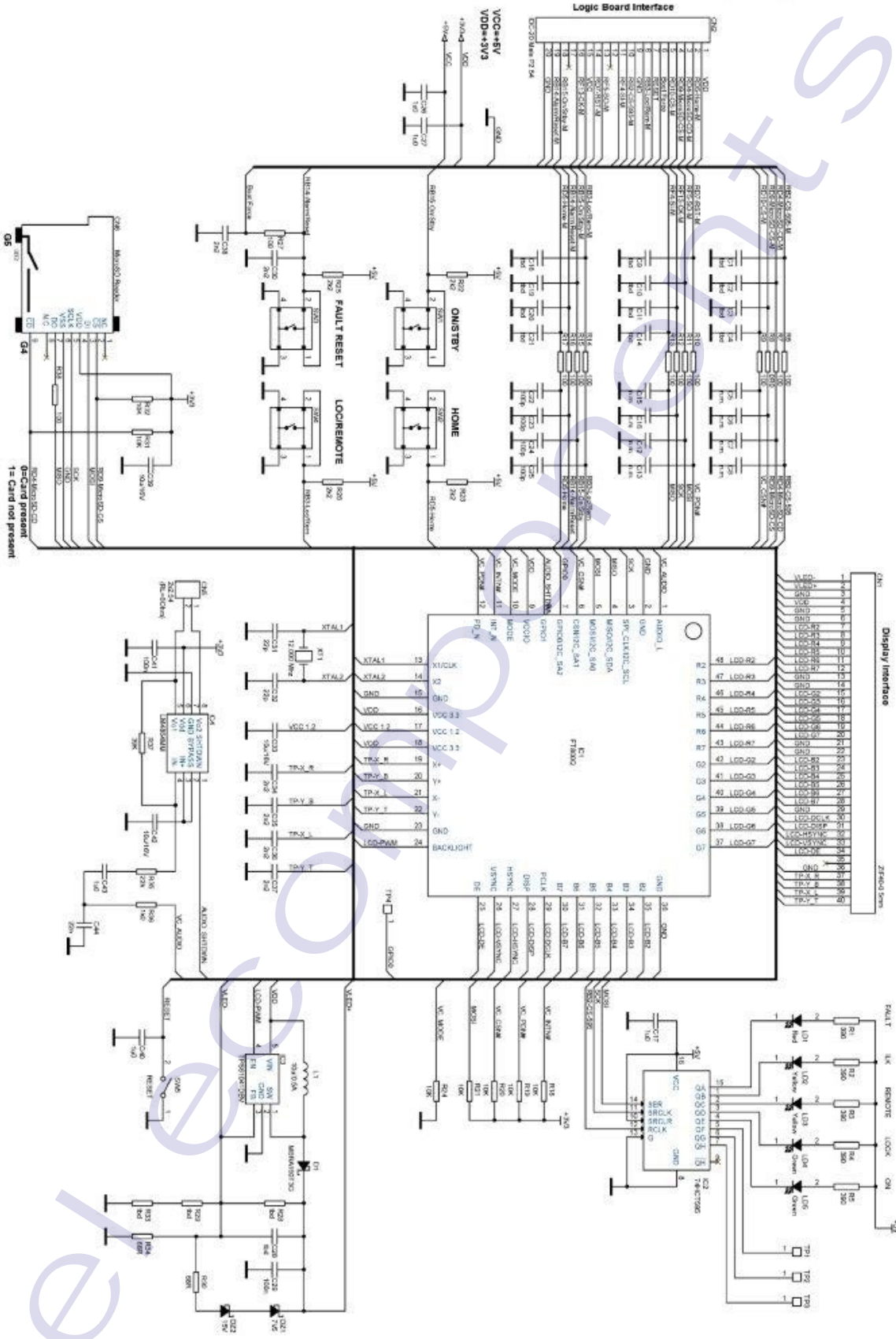
SCHEMATIC 30-50-100W



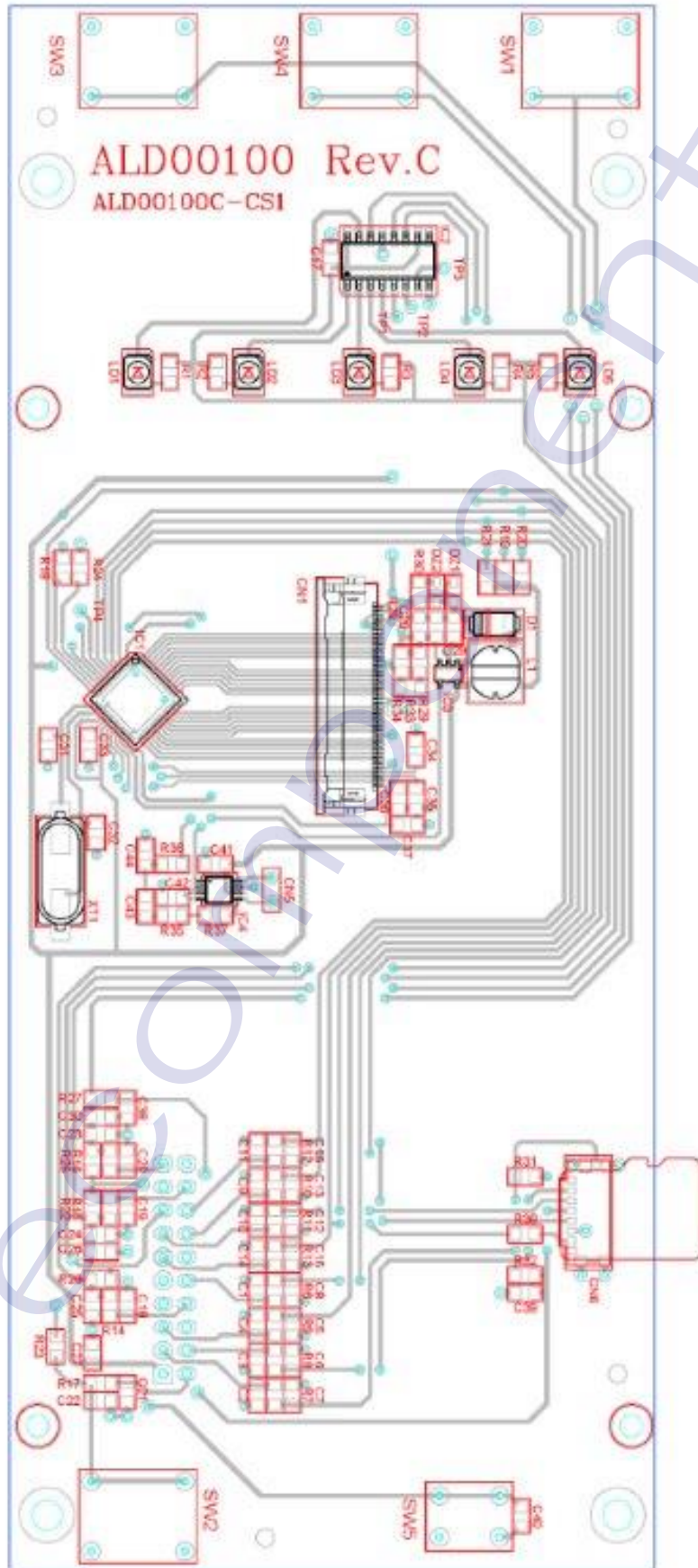
SCHEMATIC 300-500-1000W



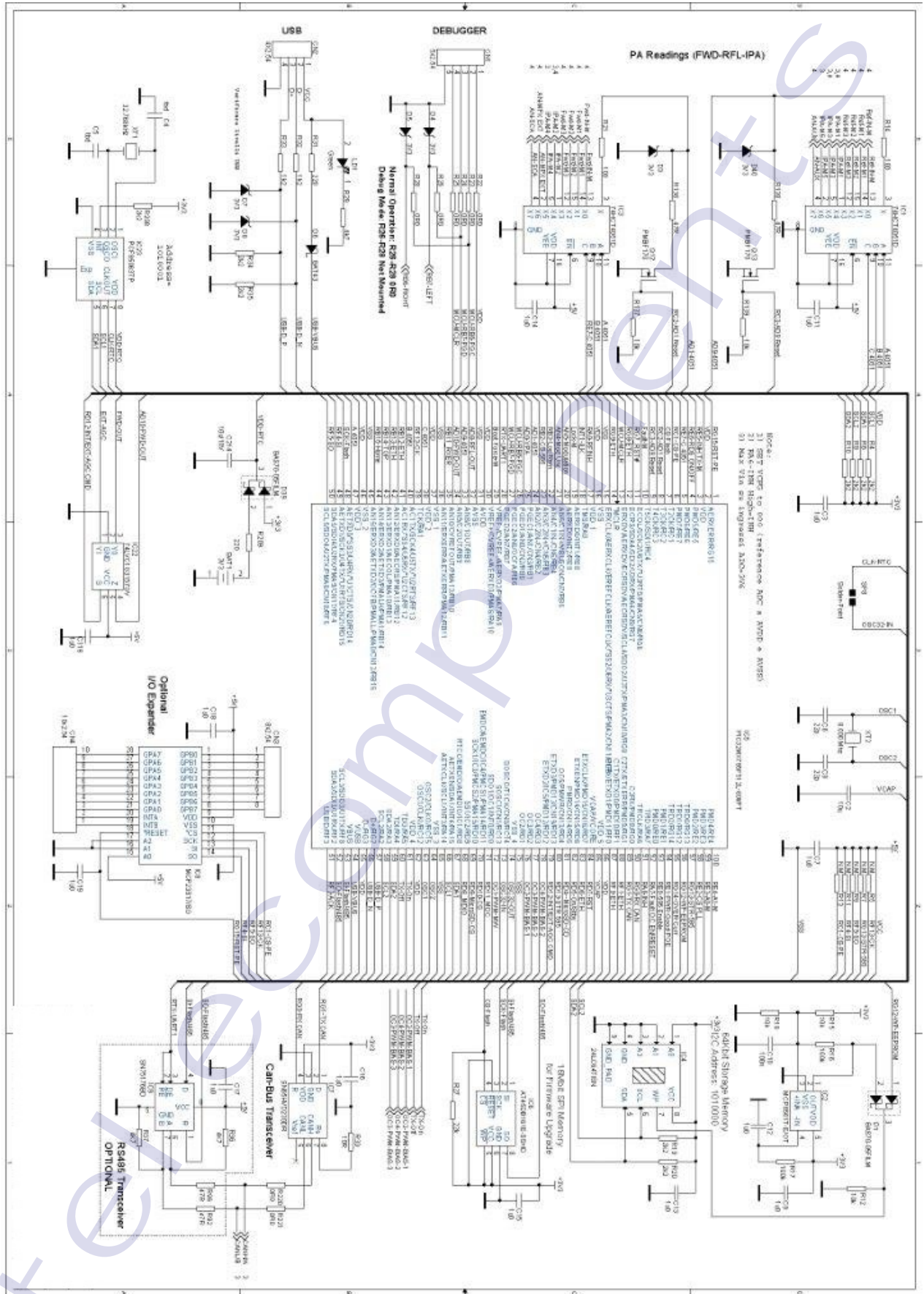
DISPLAY & KEYBOARD



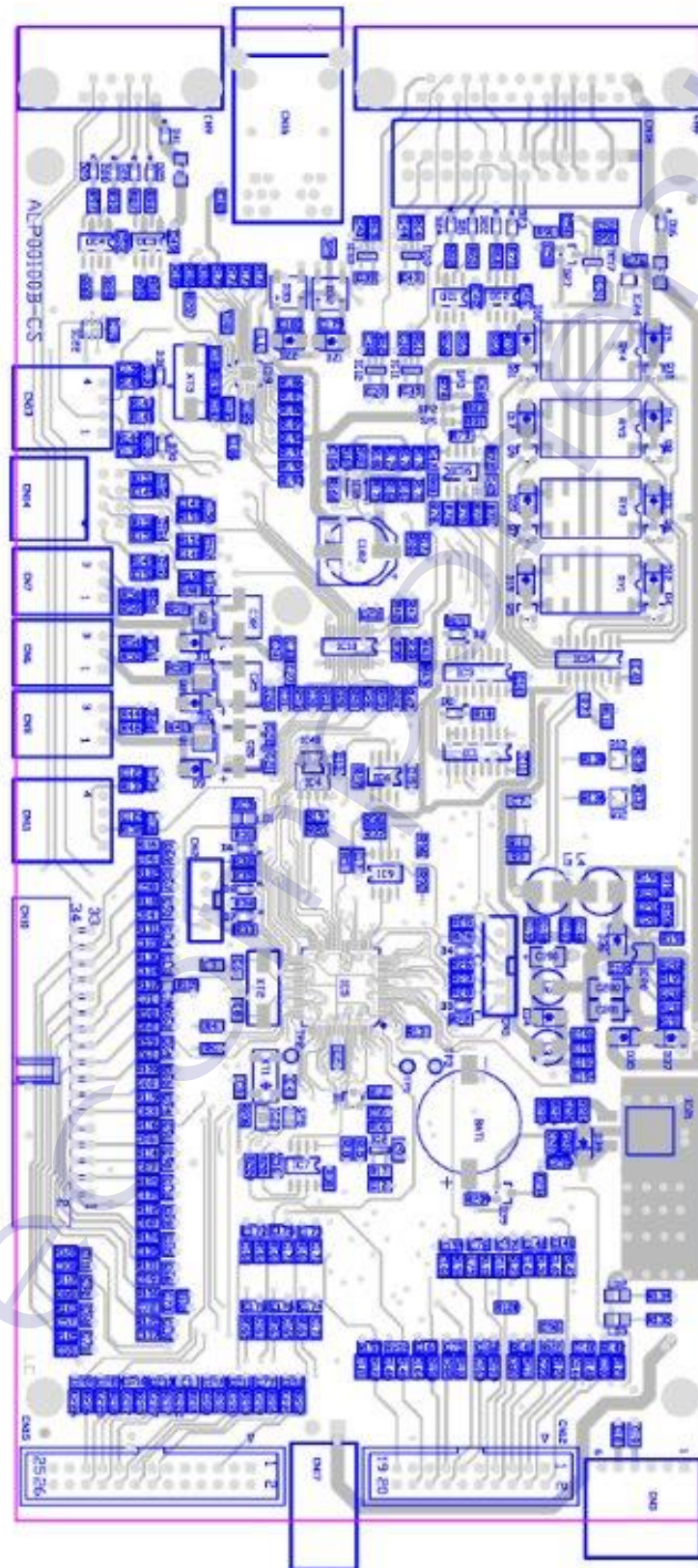
DISPLAY & KEYBOARD



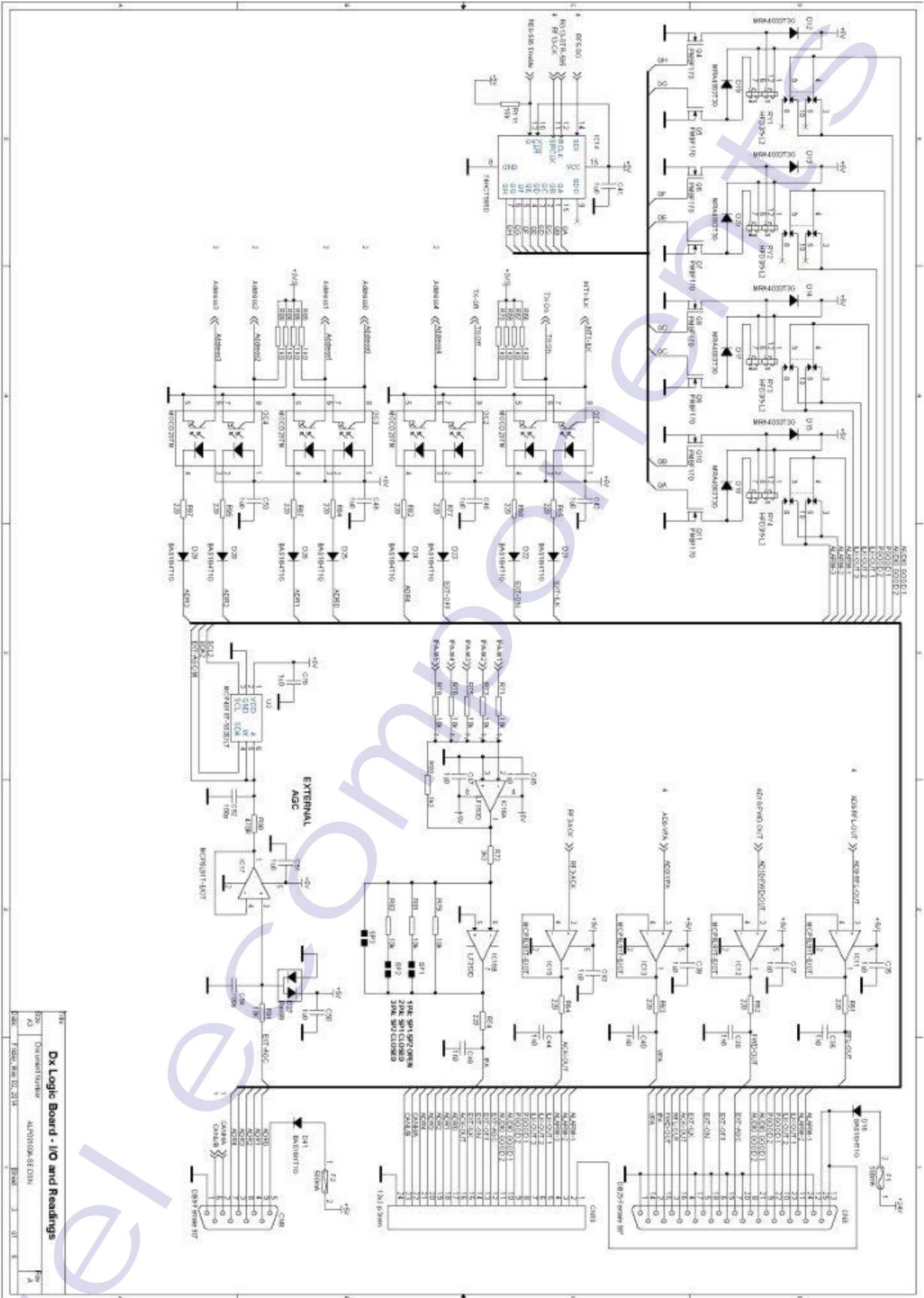
LOGIC & INTERCONNECTION



LOGIC & INTERCONNECTION



I/O BOARD



Dx Logic Board - I/O and Readings

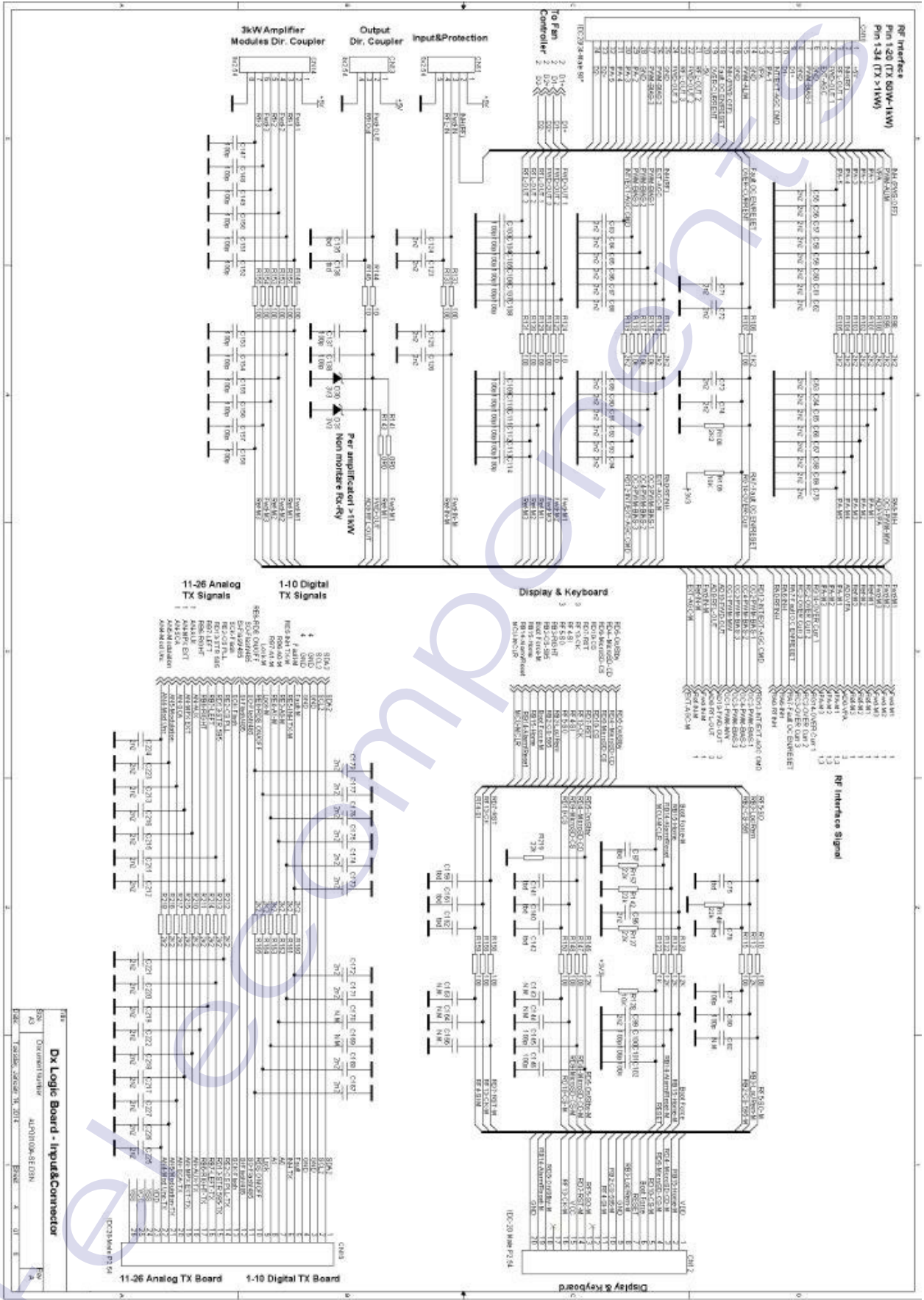
DATE: 7-20-88, REV: 02, 2/18

DESIGNER: ALPHONSO, SECTION: BOARD

FIG. NO. 3

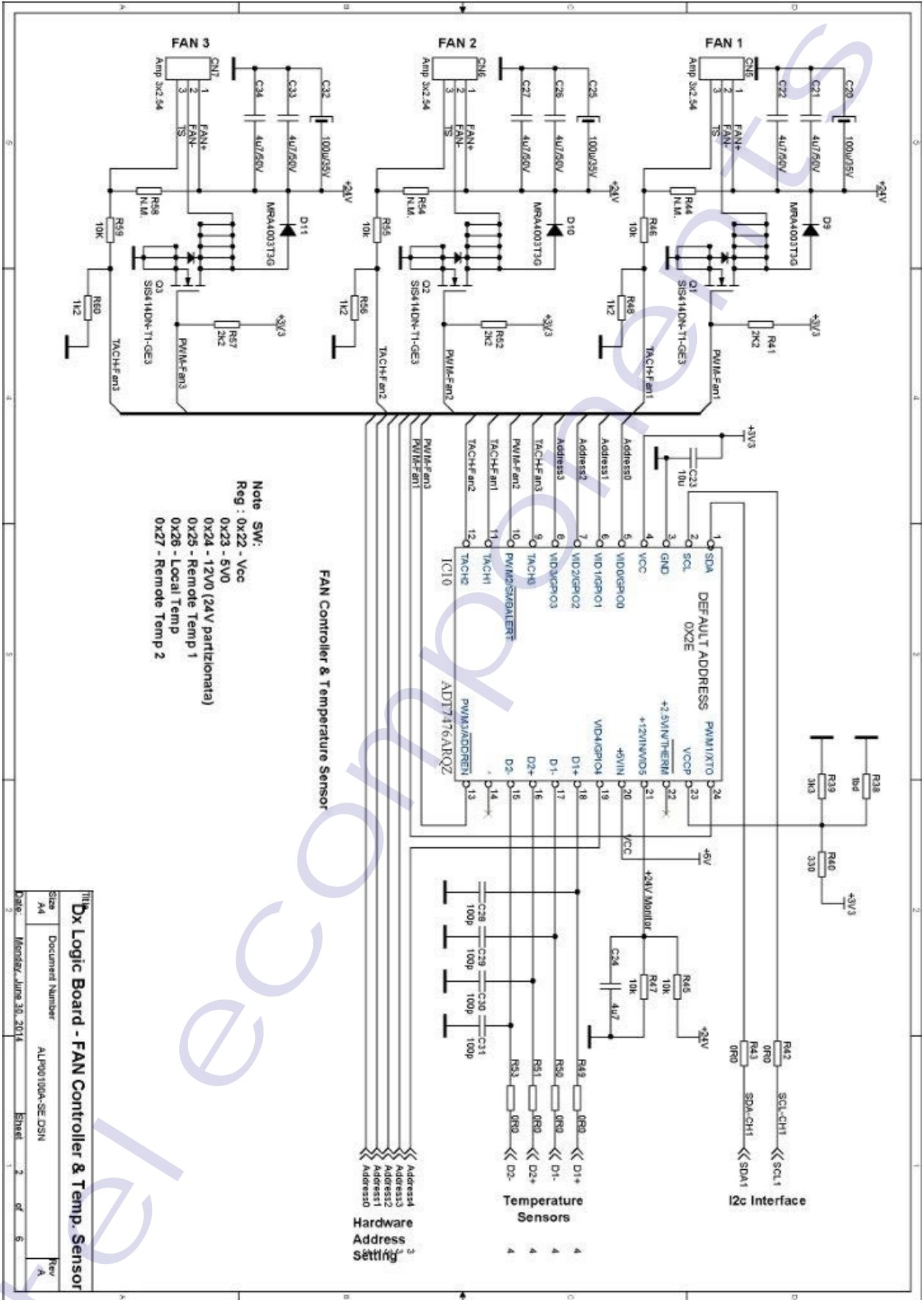
REV. A

DX LOGIC & INPUT/ CONNECTION

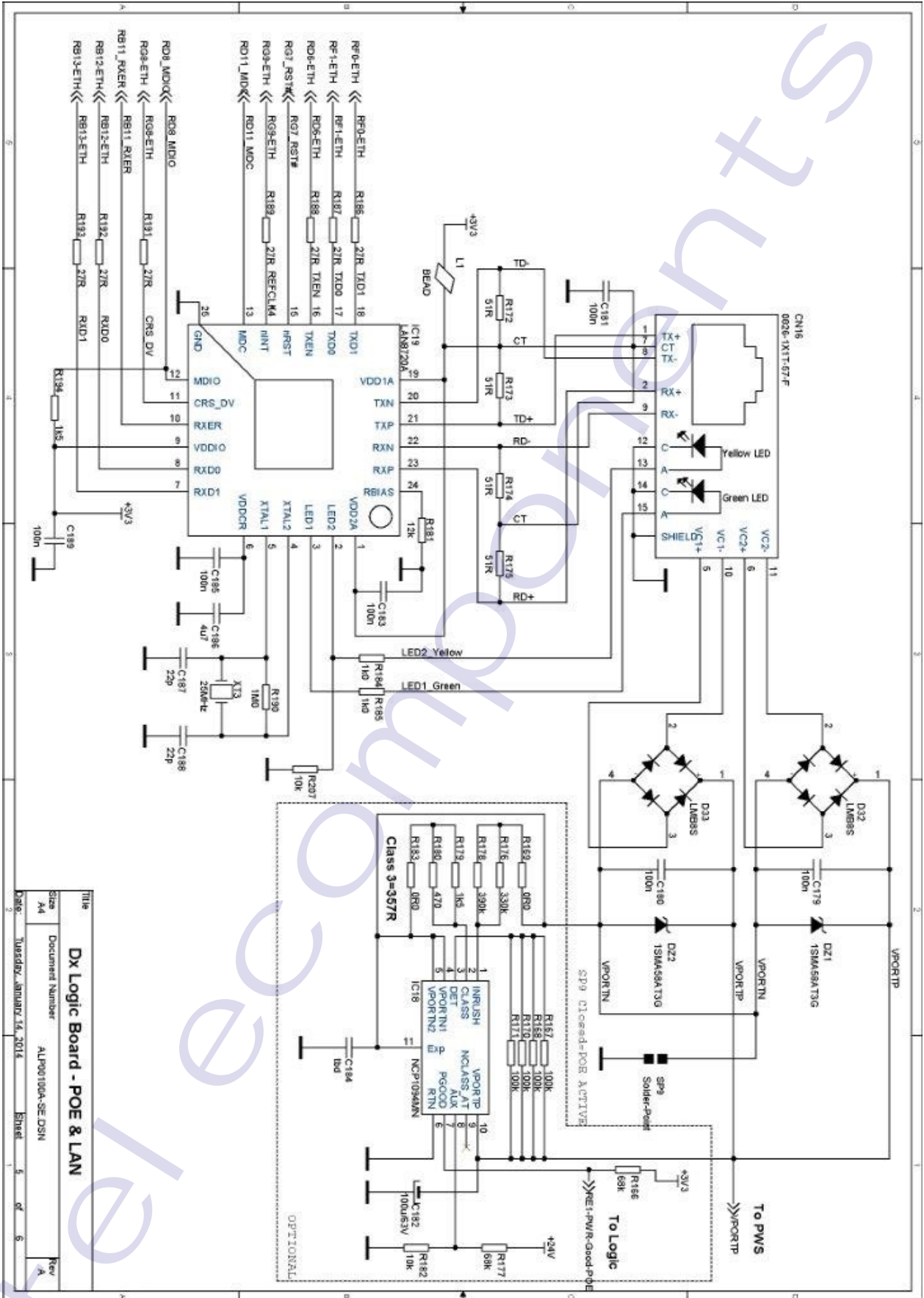


11-26 Analog TX Board
1-10 Digital TX Board
Display & Keyboard

FAN CONTROLLER

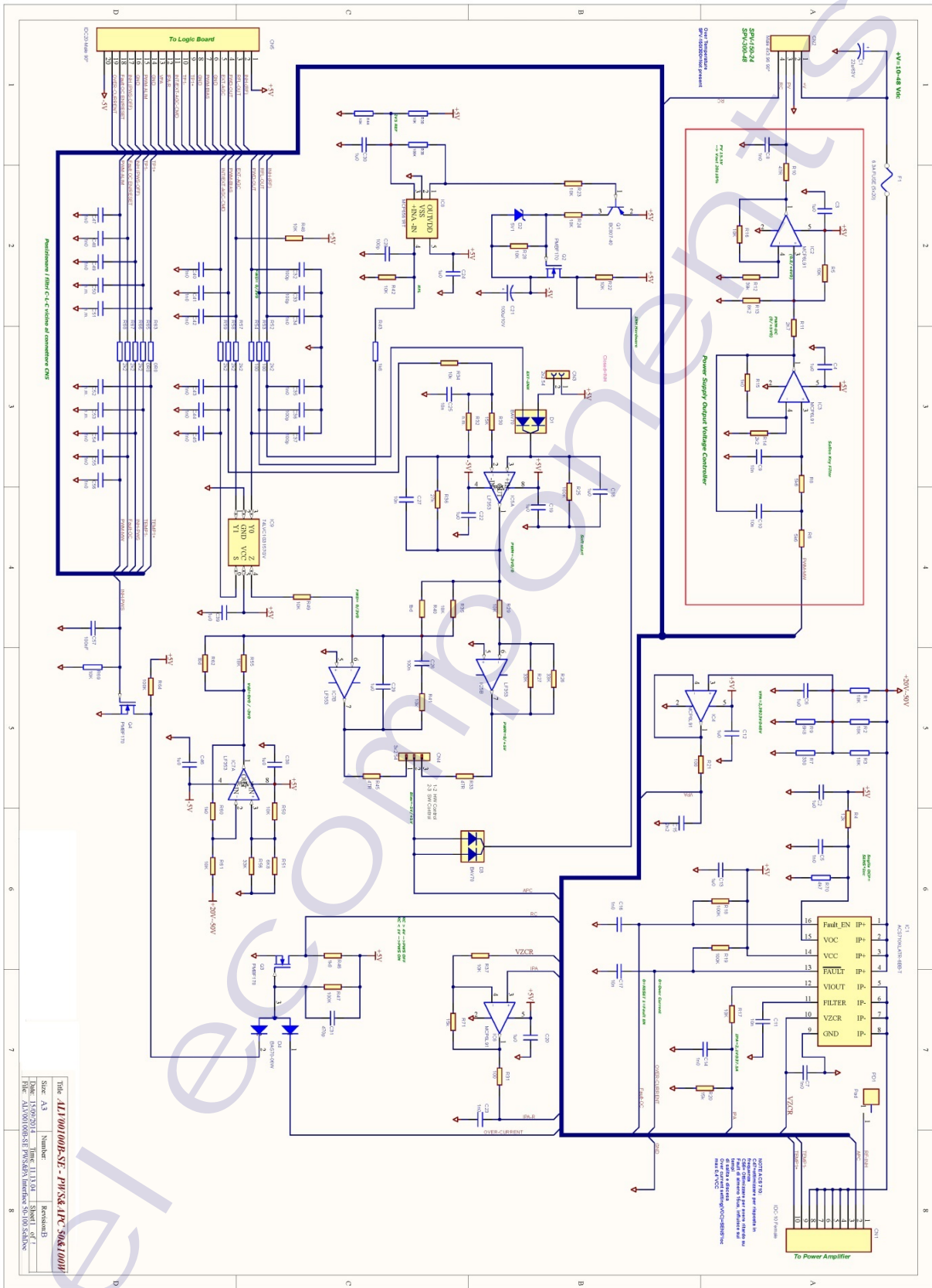


DX LOGIC BOARD – POE & LAN

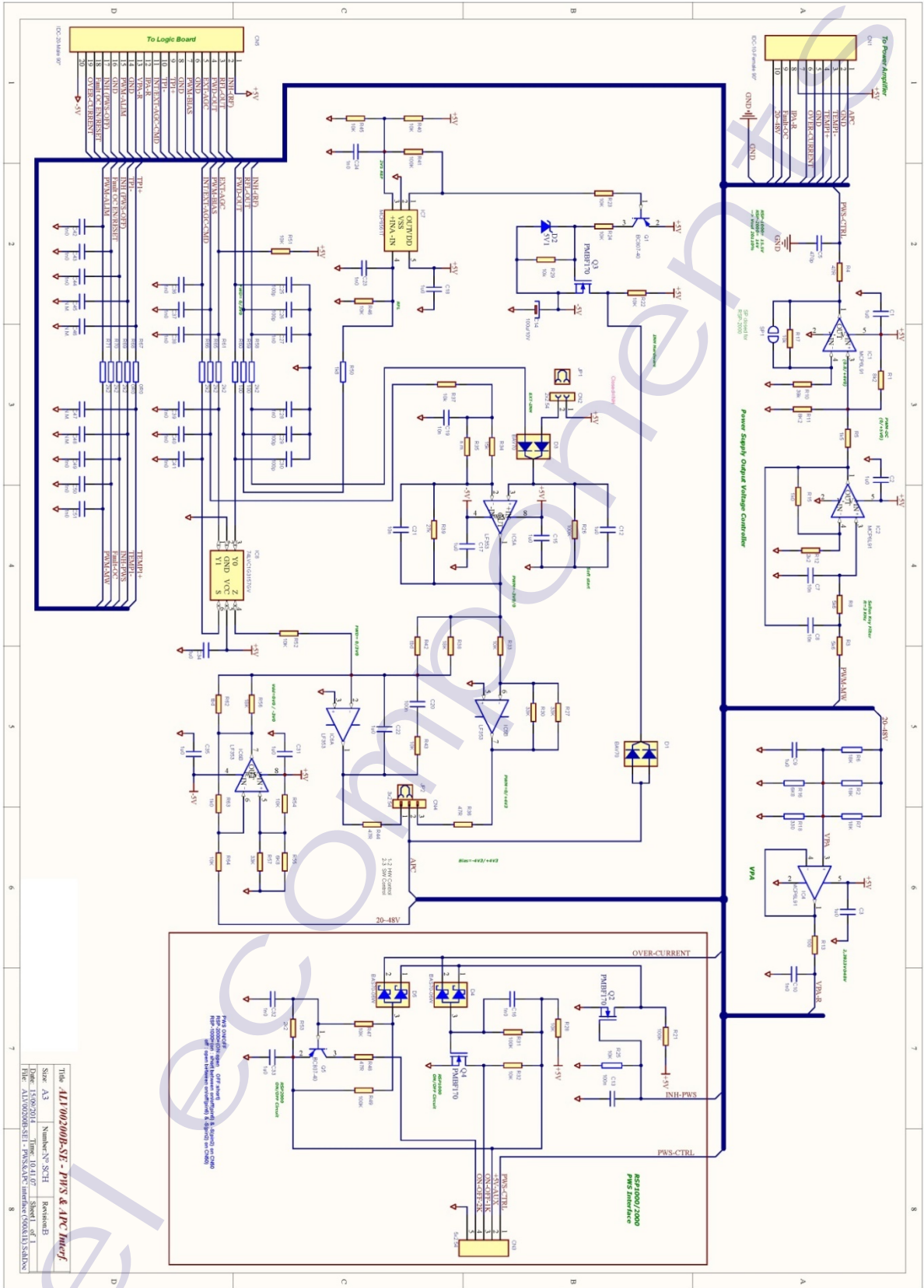


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Size	Document Number	ALP001004-SE DSN	
A4	Rev	A	
Date	Tuesday, January 14, 2014	Sheet	5 of 6

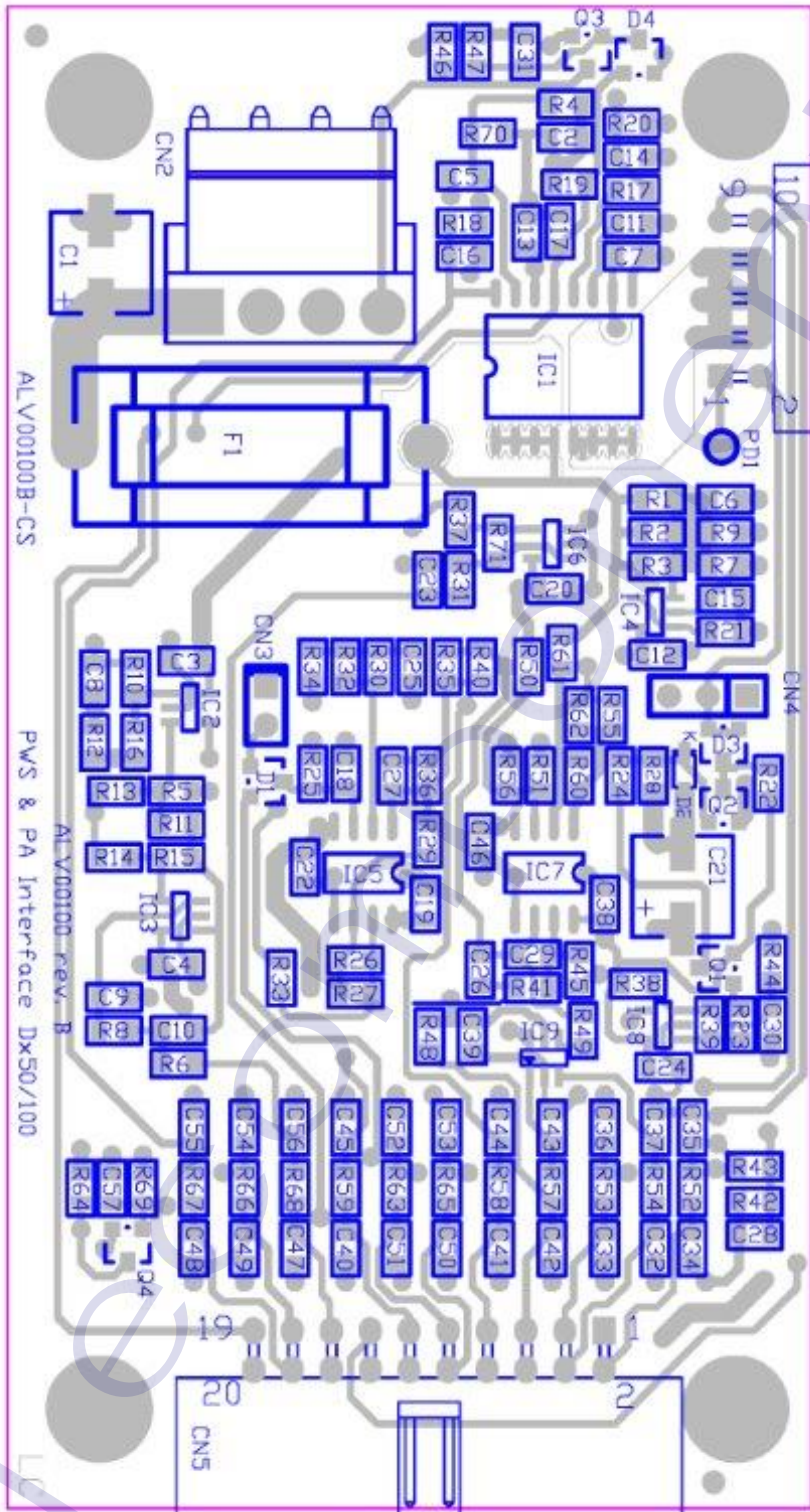
PWS & APC 50-100



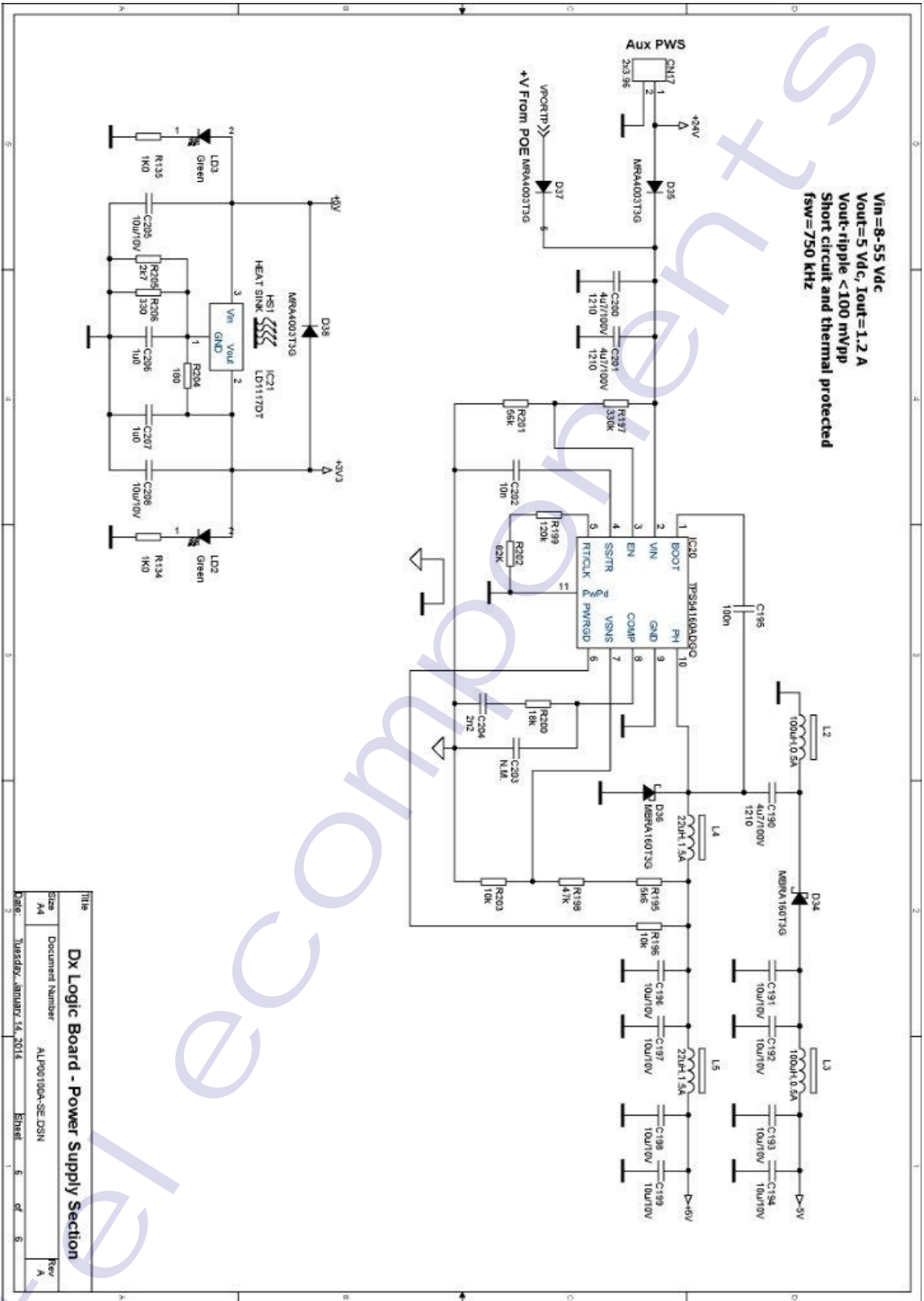
PWS & APC 500-1000W



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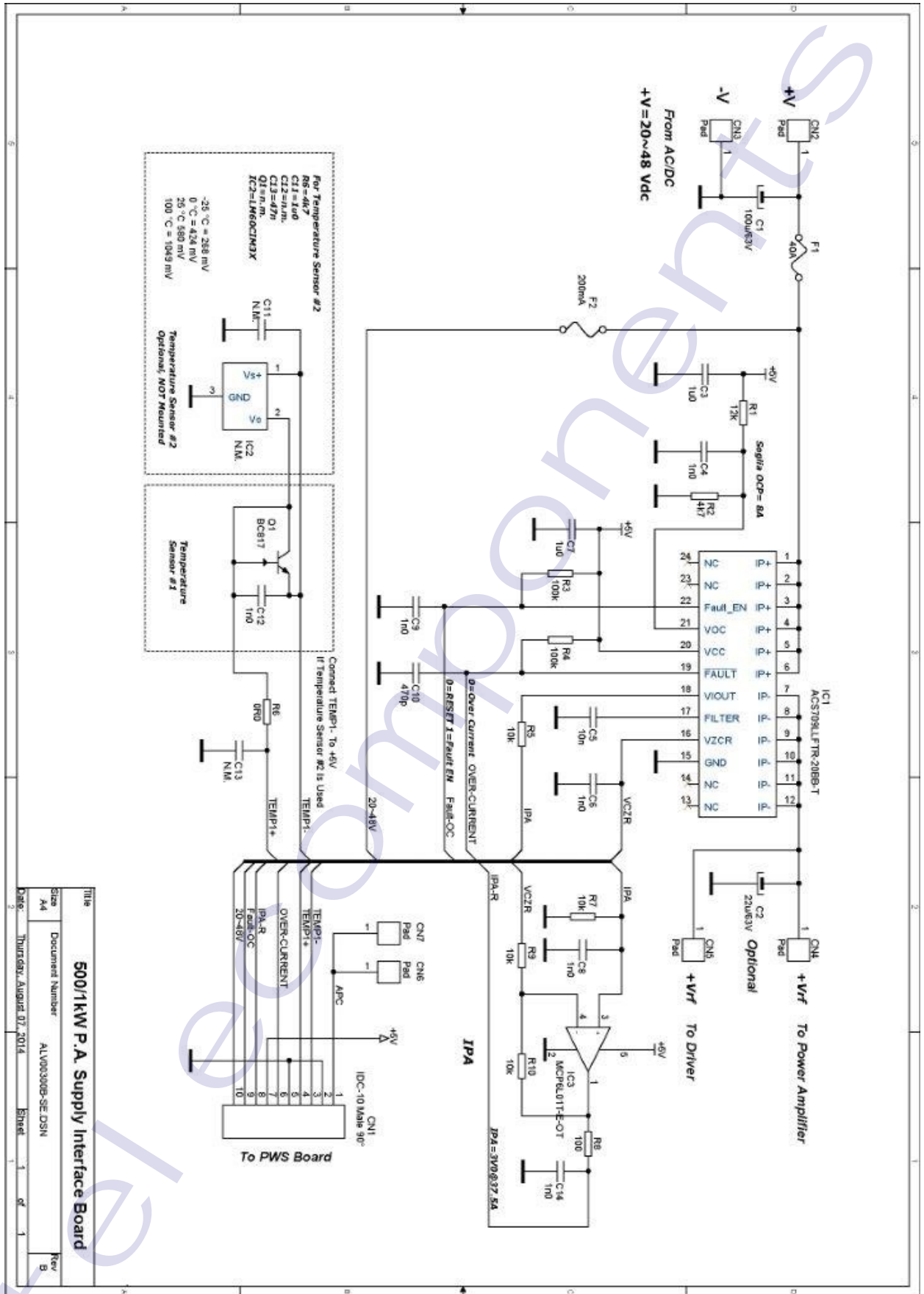


DC-DC CONVERTER



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A4	Date:	Tuesday, January 14, 2014	Sheet 5 of 5
Rev		A	

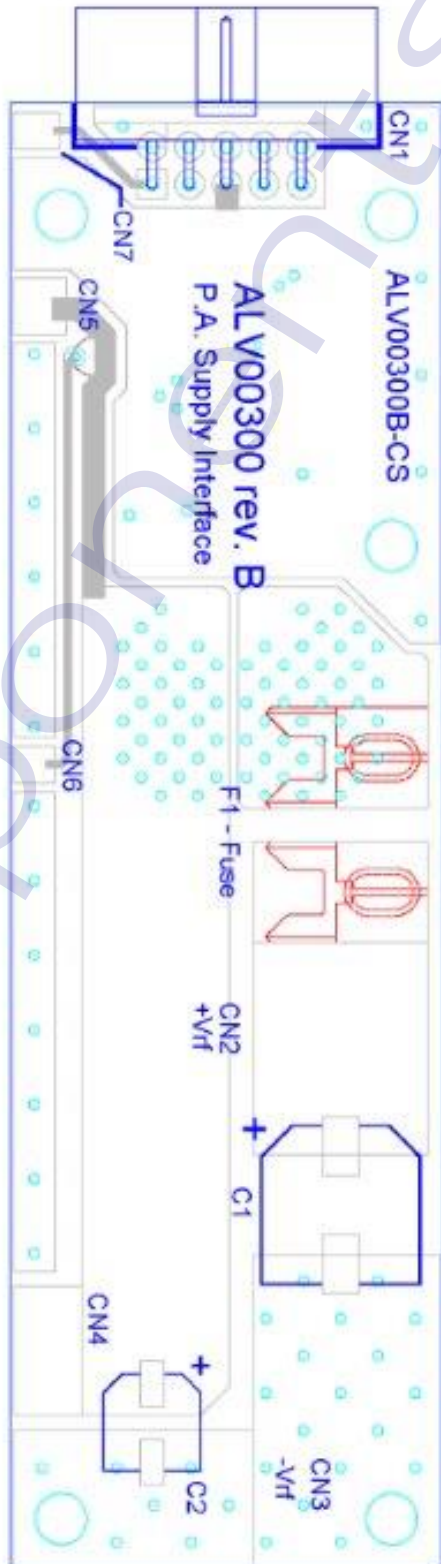
CURRENT SENSOR



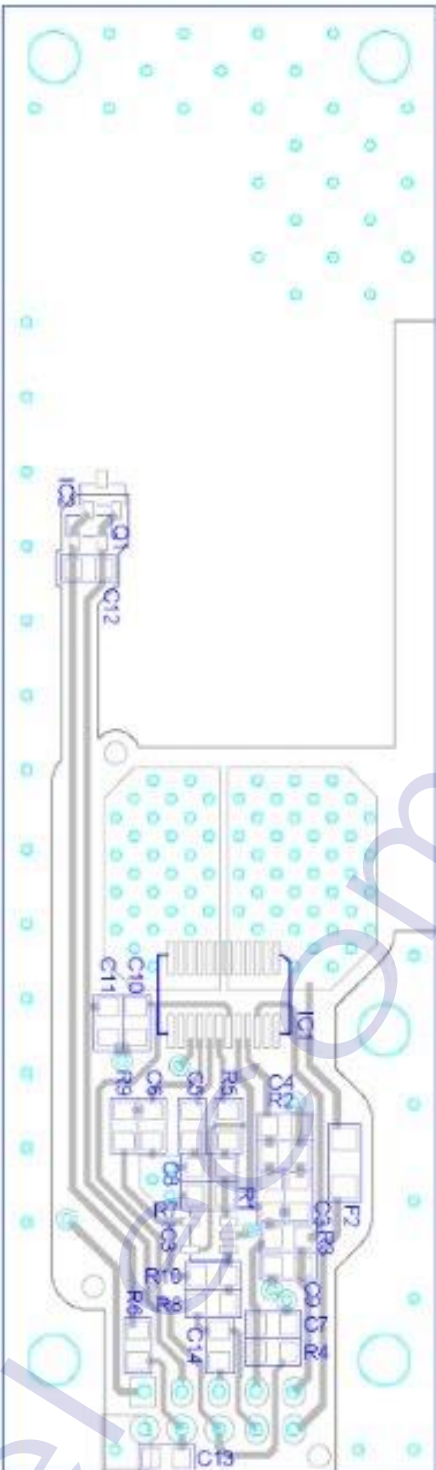
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Size	Document Number	Rev	Date
A4	ALV00300B-SE-DSN	B	Thursday, August 07, 2014
		Sheet	of
		1	1

DC-DC CONVERTER

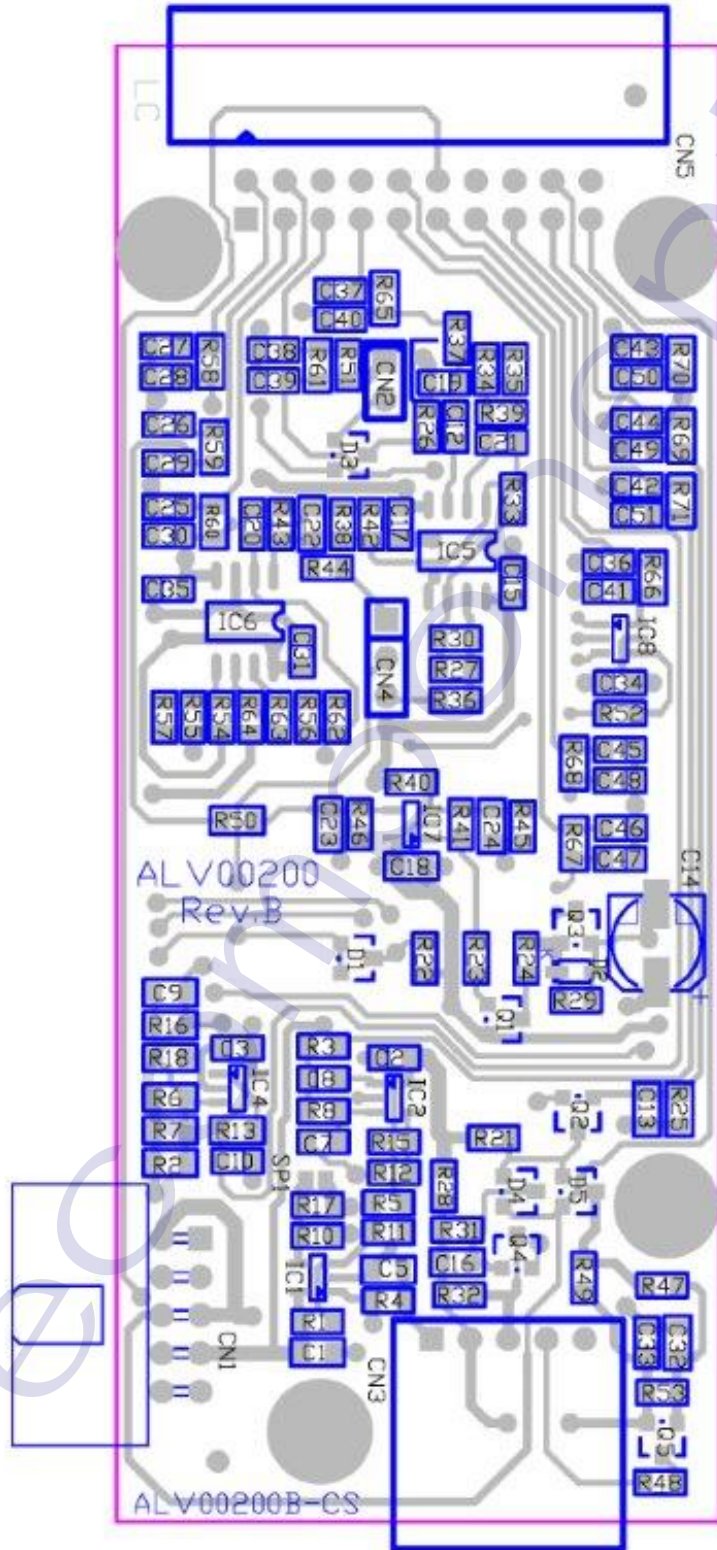
Top Layout



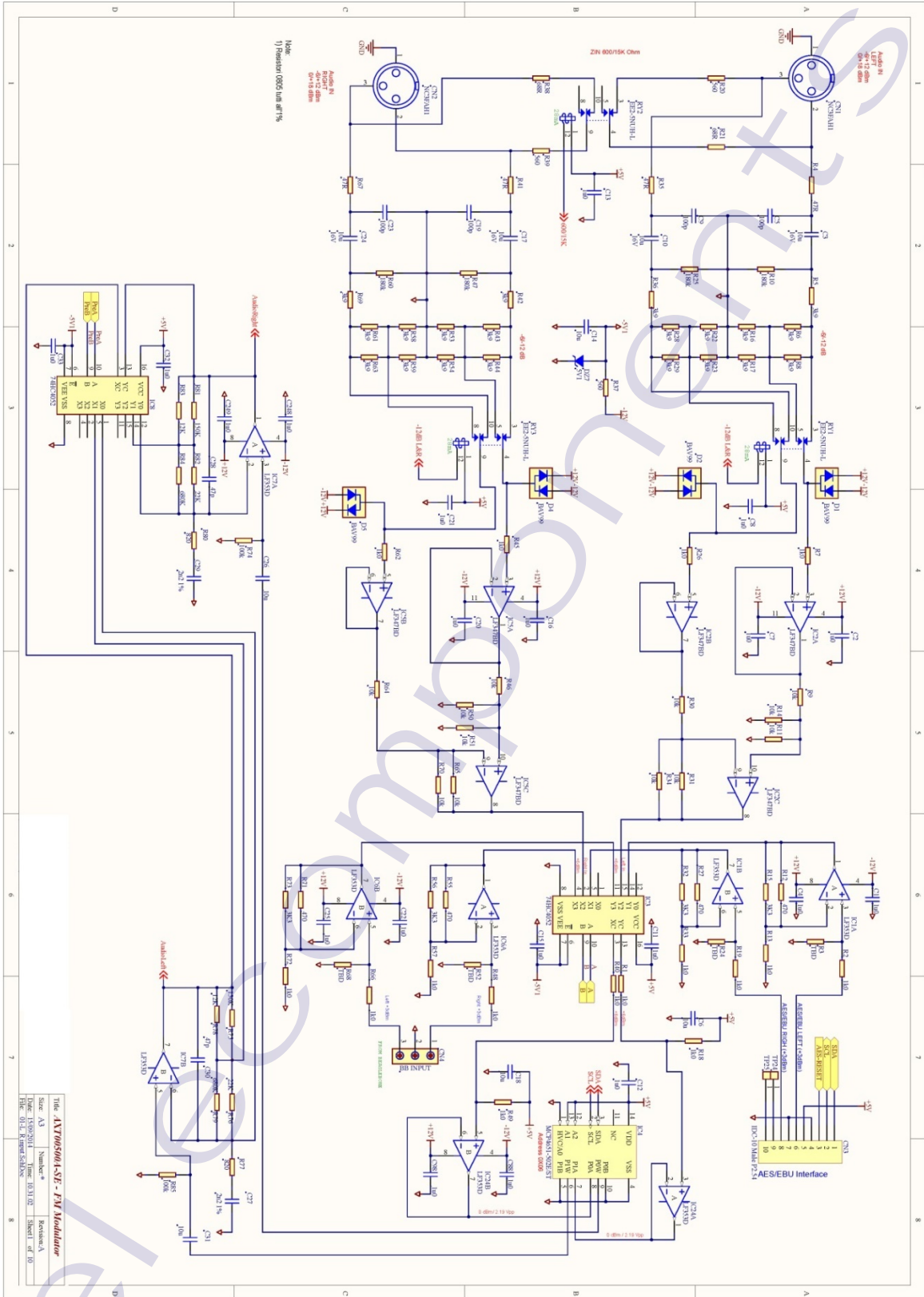
Bottom Layout



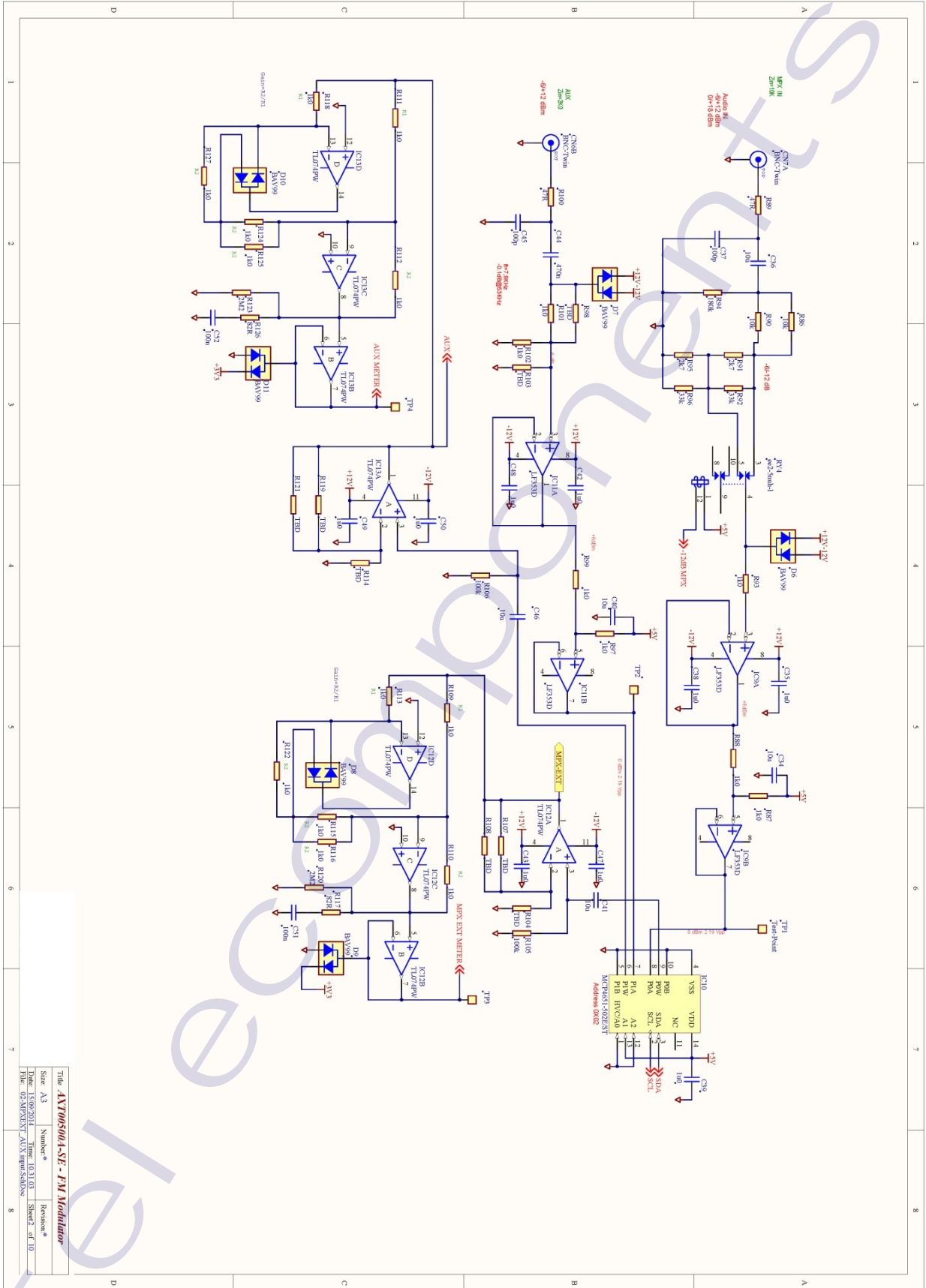
CURRENT SENSOR



L & R INPUT

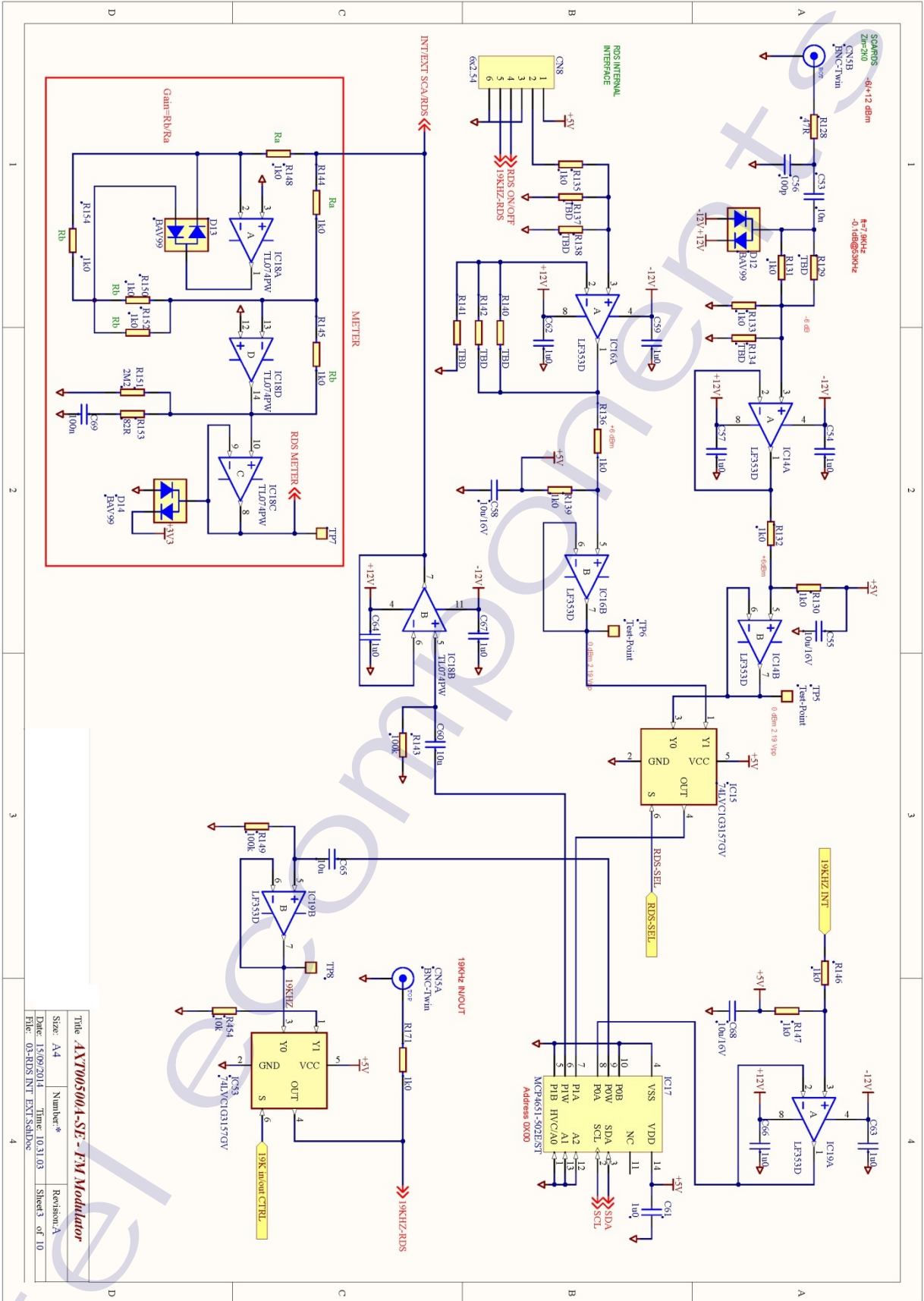


MPX - AUX INPUT



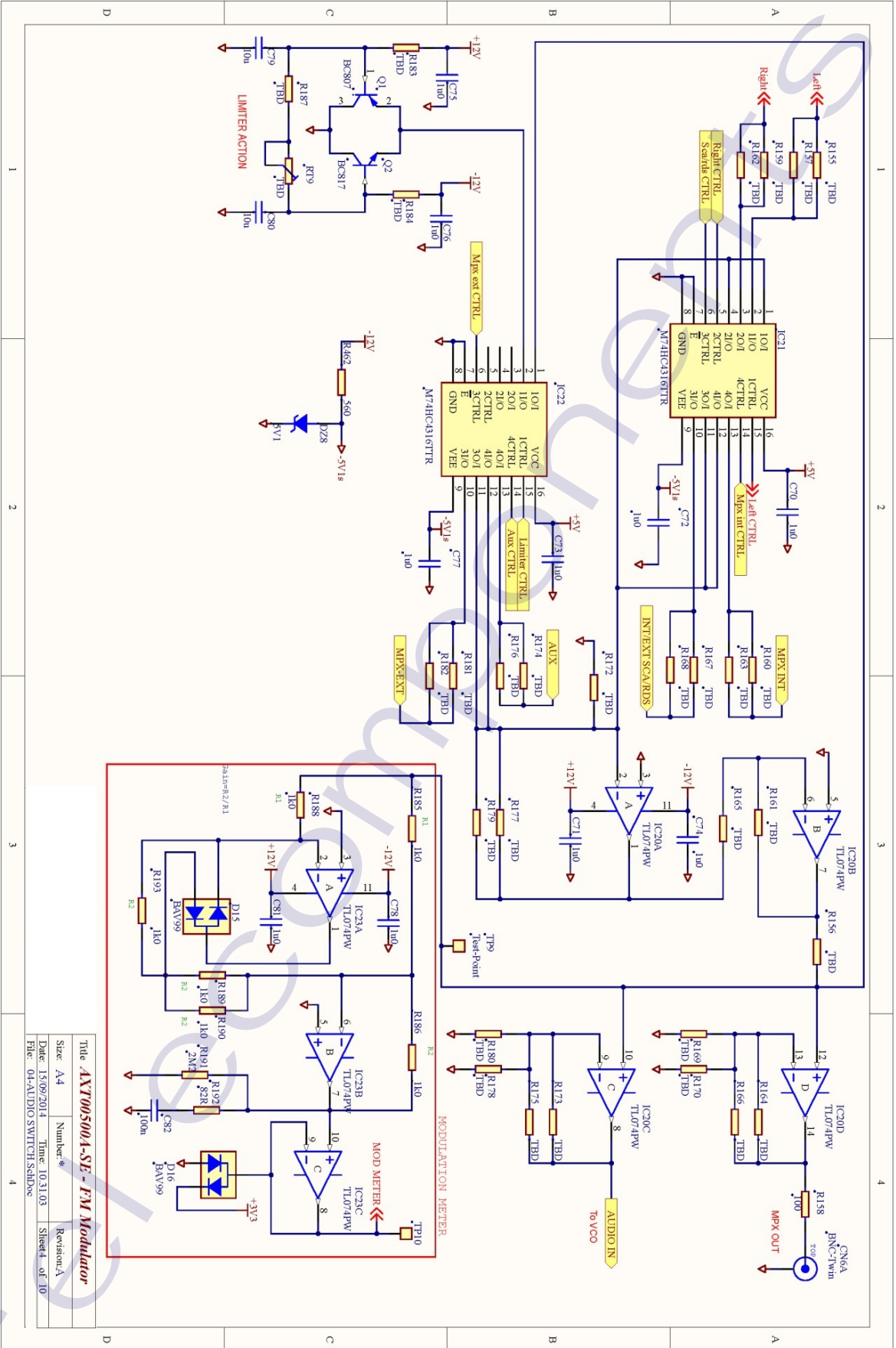
Title: AX7005001-A-SE - FM Modulator			
Size: A3	Number: 1	Revision: 1	
Date: 15/09/2011	Time: 10:31:15	Sheet: 2 of 10	
File: 15/09/2011 AX7005001-A-SE.DWG			

RDS/SCA IN

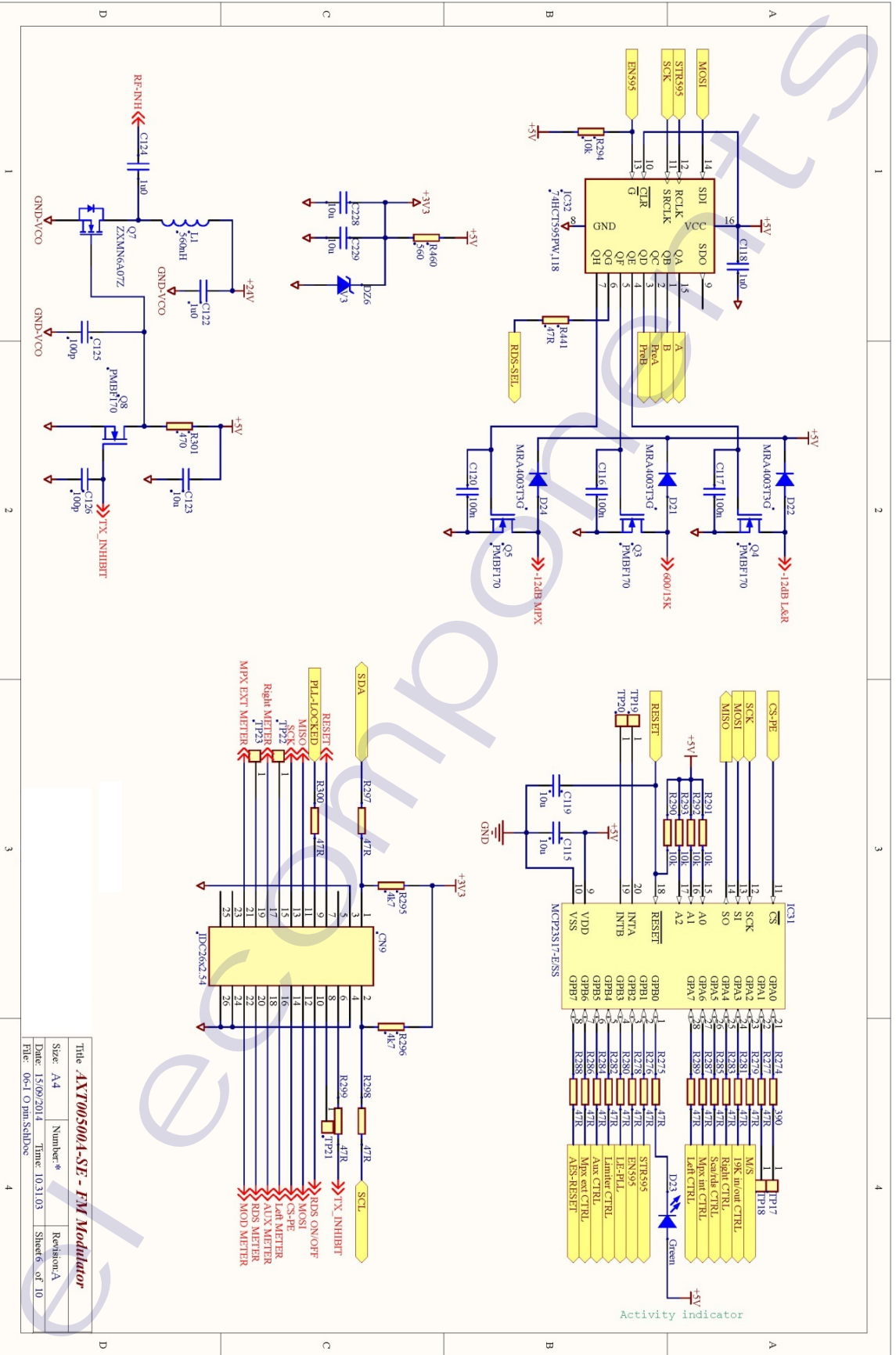


Title: AY7005004-SE - FM Modulator	
Size: A4	Number: *
Date: 15/09/2014	Time: 10:31:03
File: 03-RDS INT EXT.SchDoc	Sheet: 3 of 10
Revision: A	

AUDIO CONTROL

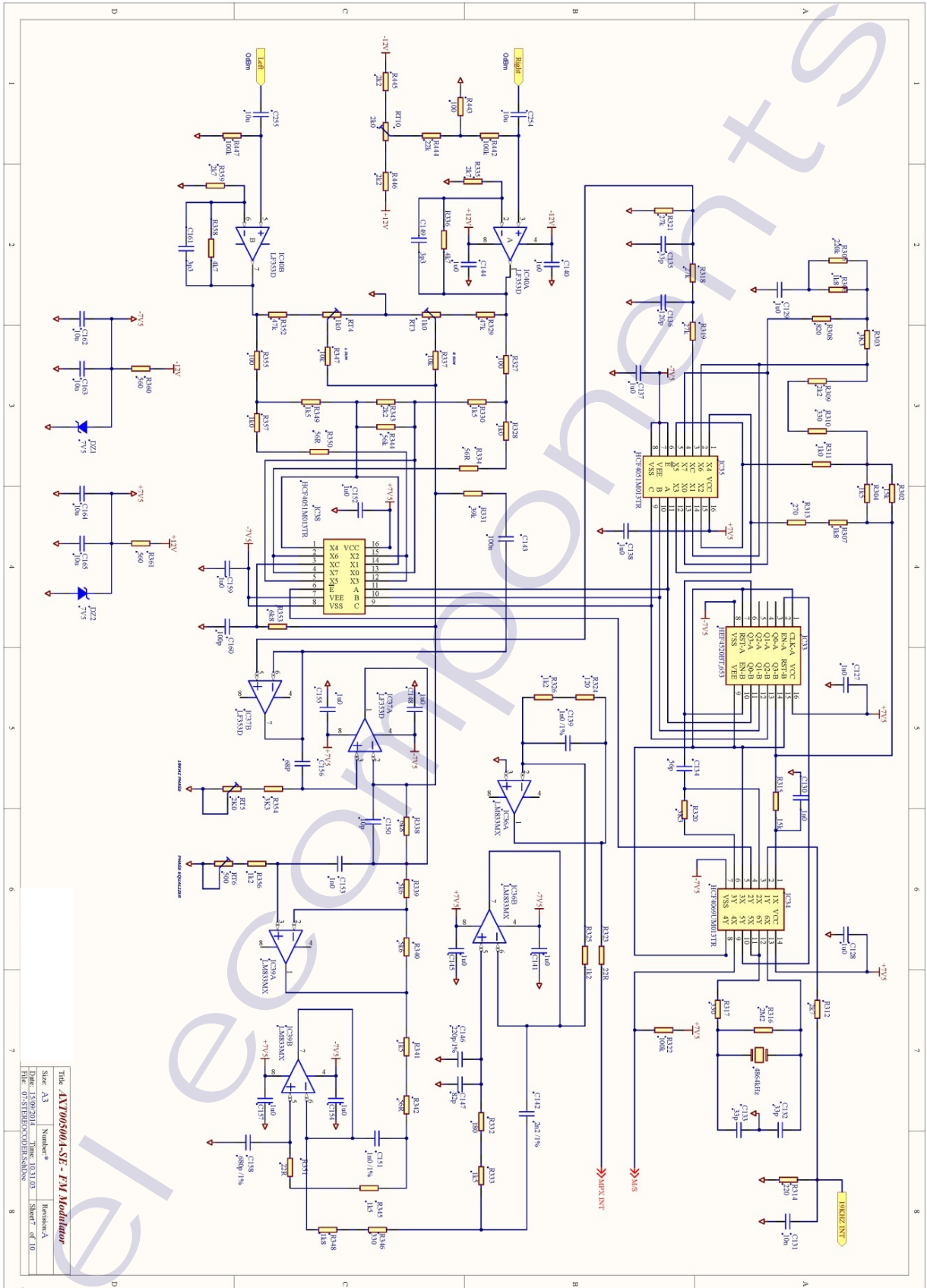


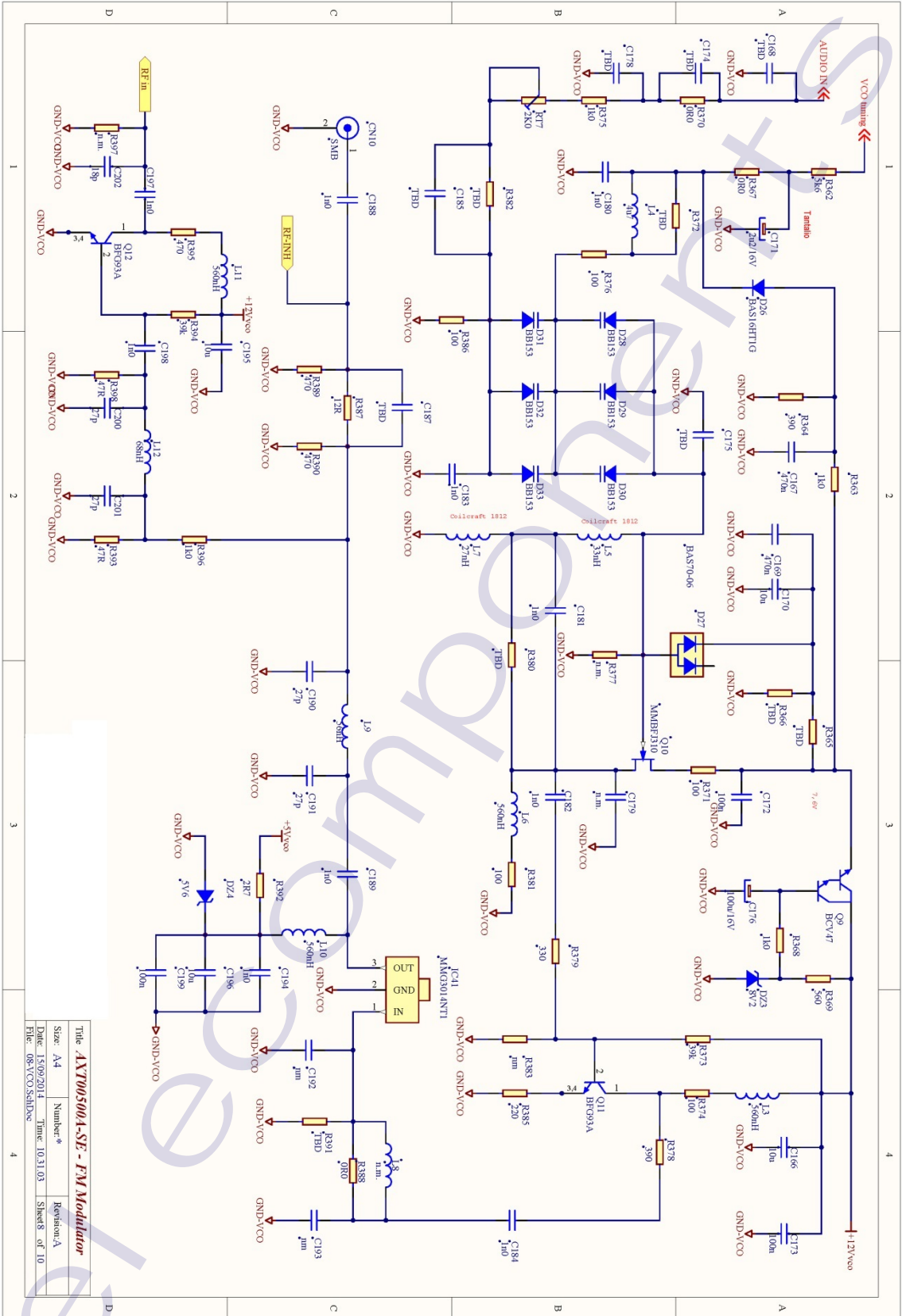
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Size: A4	Number: *
Date: 15/09/2014	Time: 10.31.03
File: 04-AUDIO SWITCH.SchDoc	Revision: A
	Sheet 4 of 10



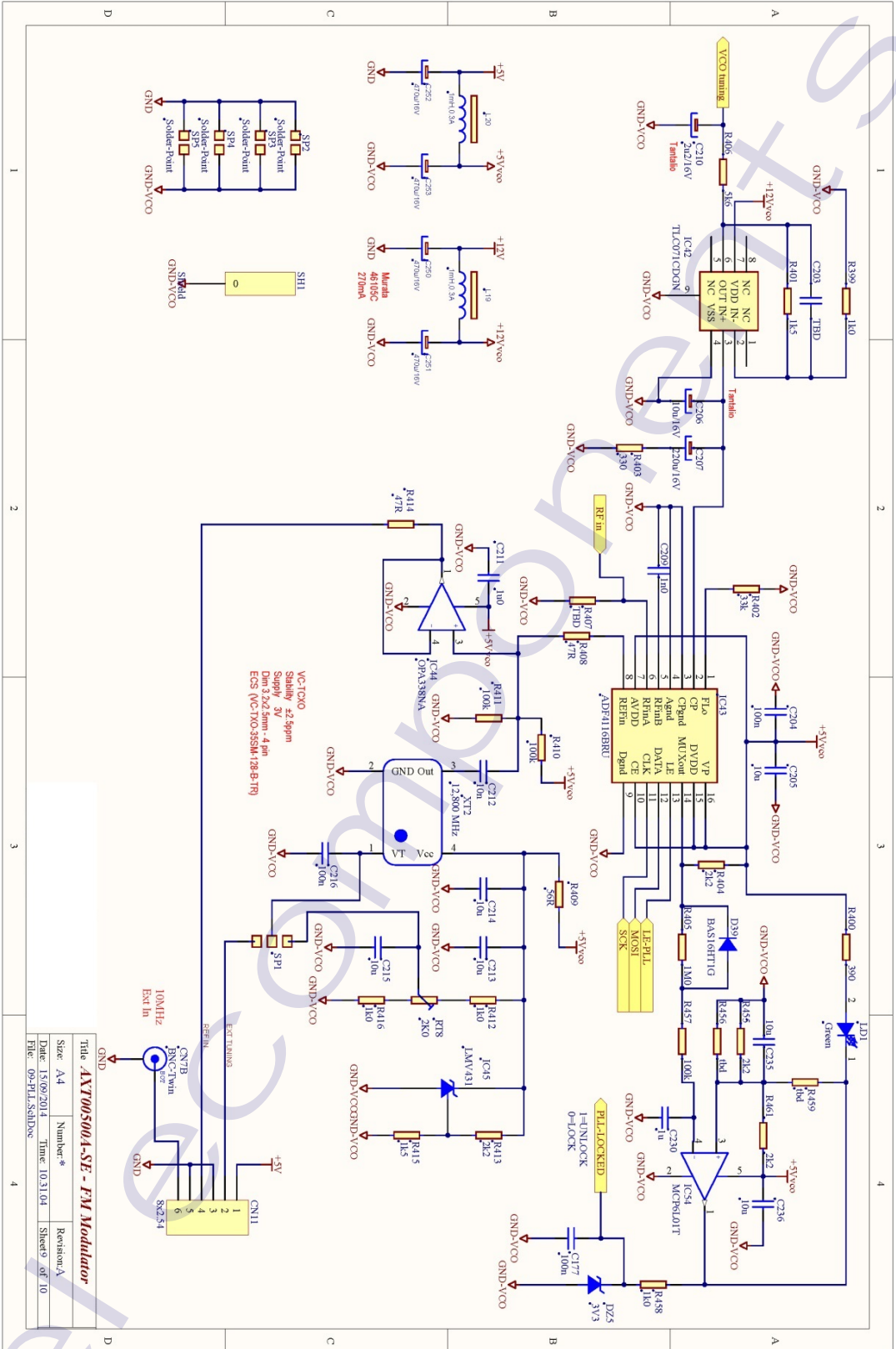
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Size: A4	Number: *	Revision: A	
Date: 15/09/2014	Time: 10.31.03	Sheet 6 of 10	
File: 06-I_O pin_SchDoc			

STEREO CODER



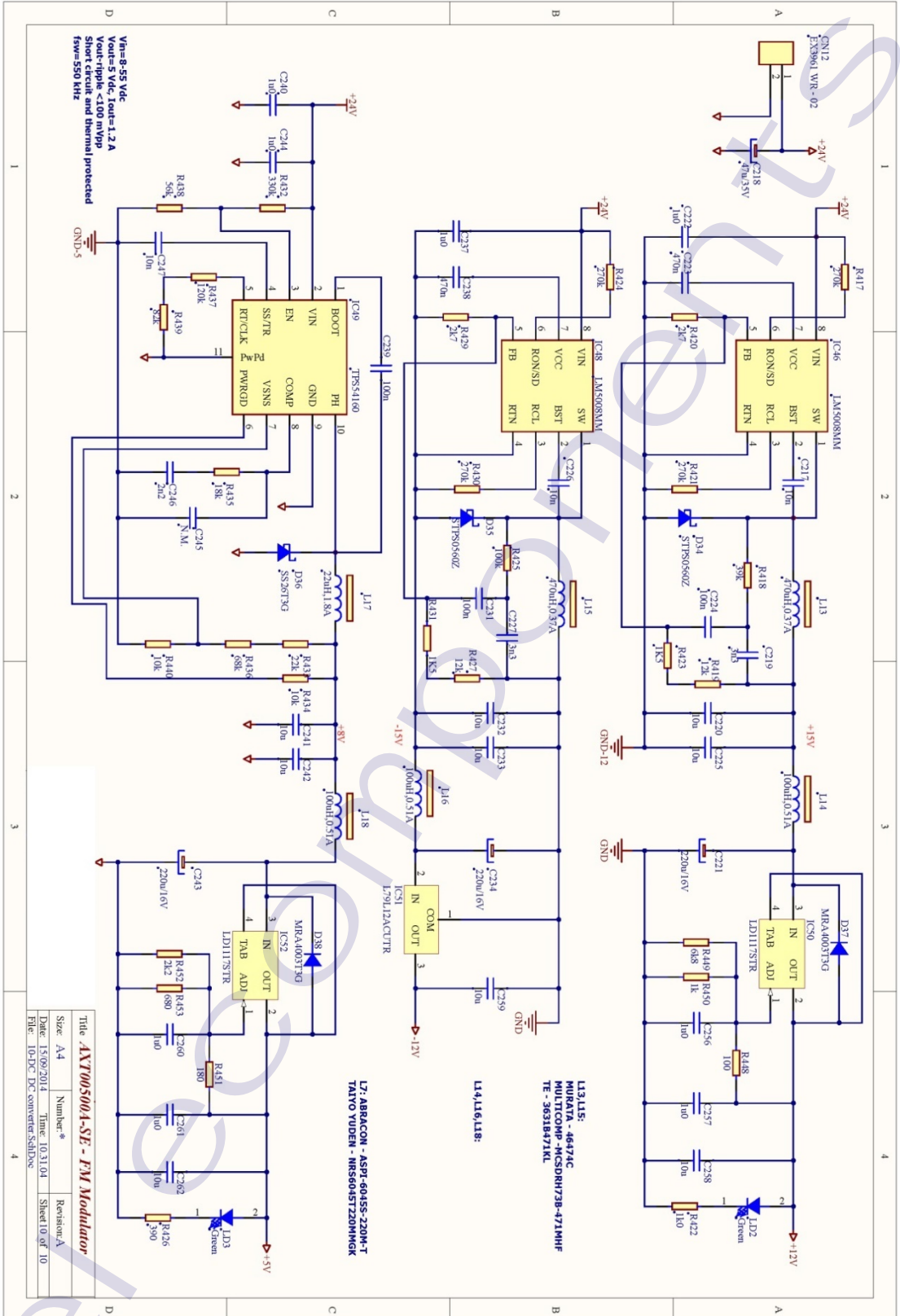


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Size: A4	Number: *	Revision: A	
Date: 15/09/2014	Time: 10:31:03	Sheet: 8 of 10	
File: 08-VCO.SchDoc			

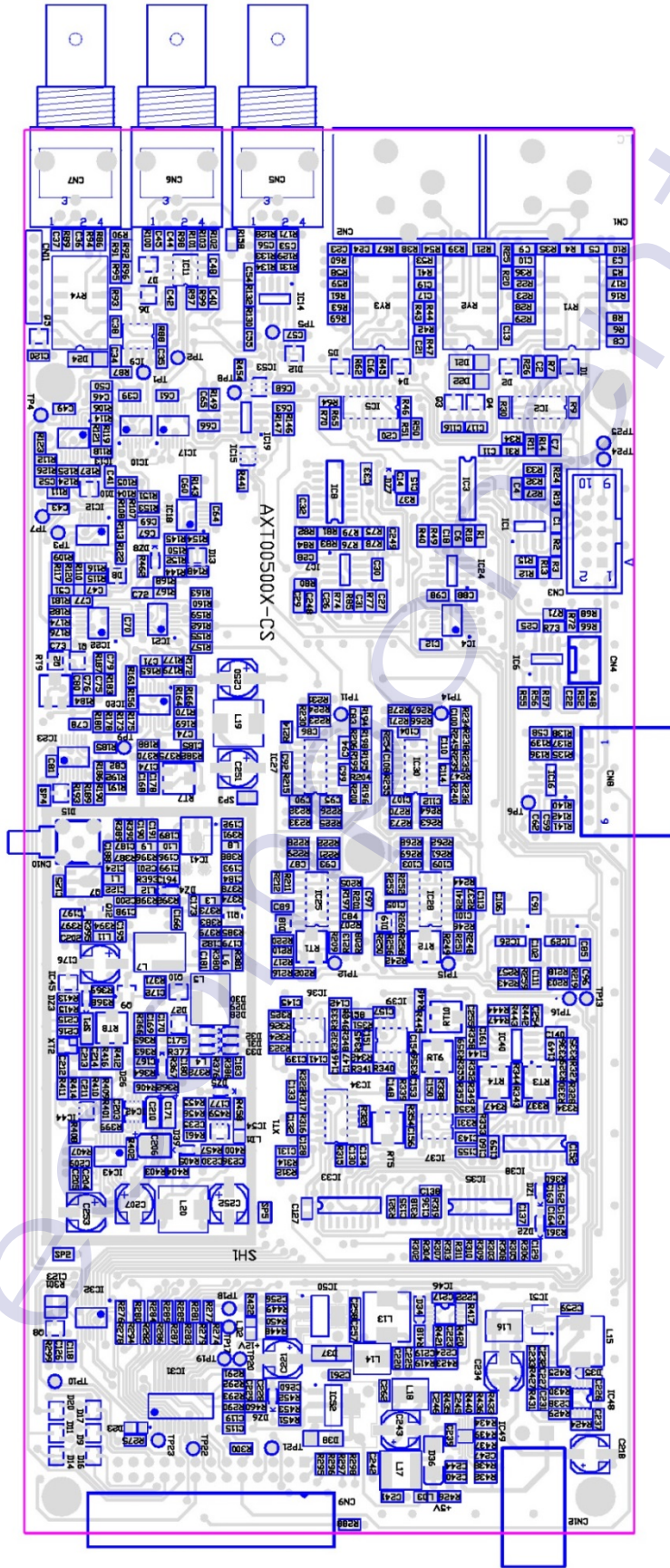


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Size: A4	Number:*	Revision: A	
Date: 15/09/2014	Time: 10:31:04	Sheet: 9	of 10
File: 09-PLL.SCHDoc			

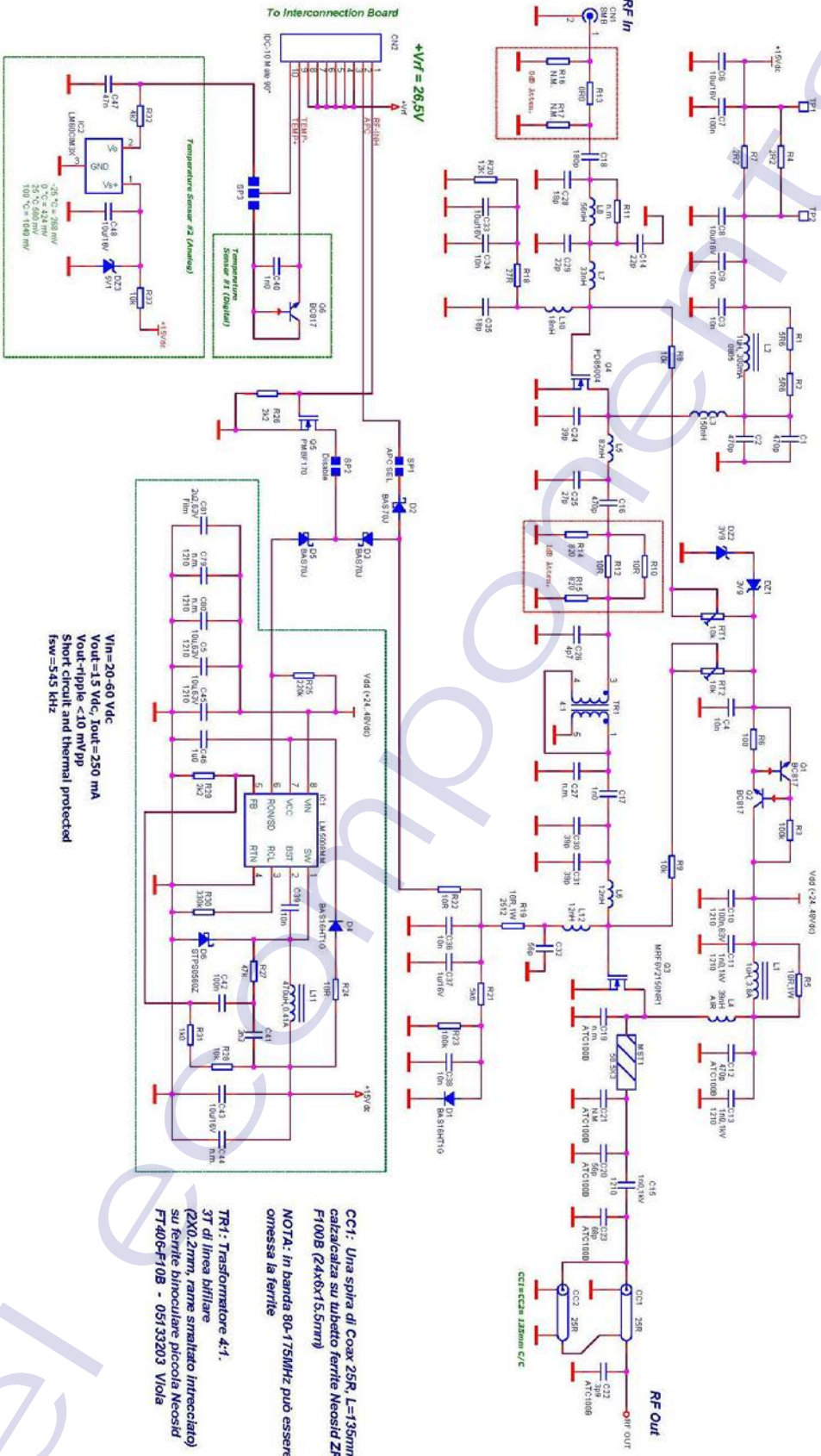
DC-DC CONVERTER



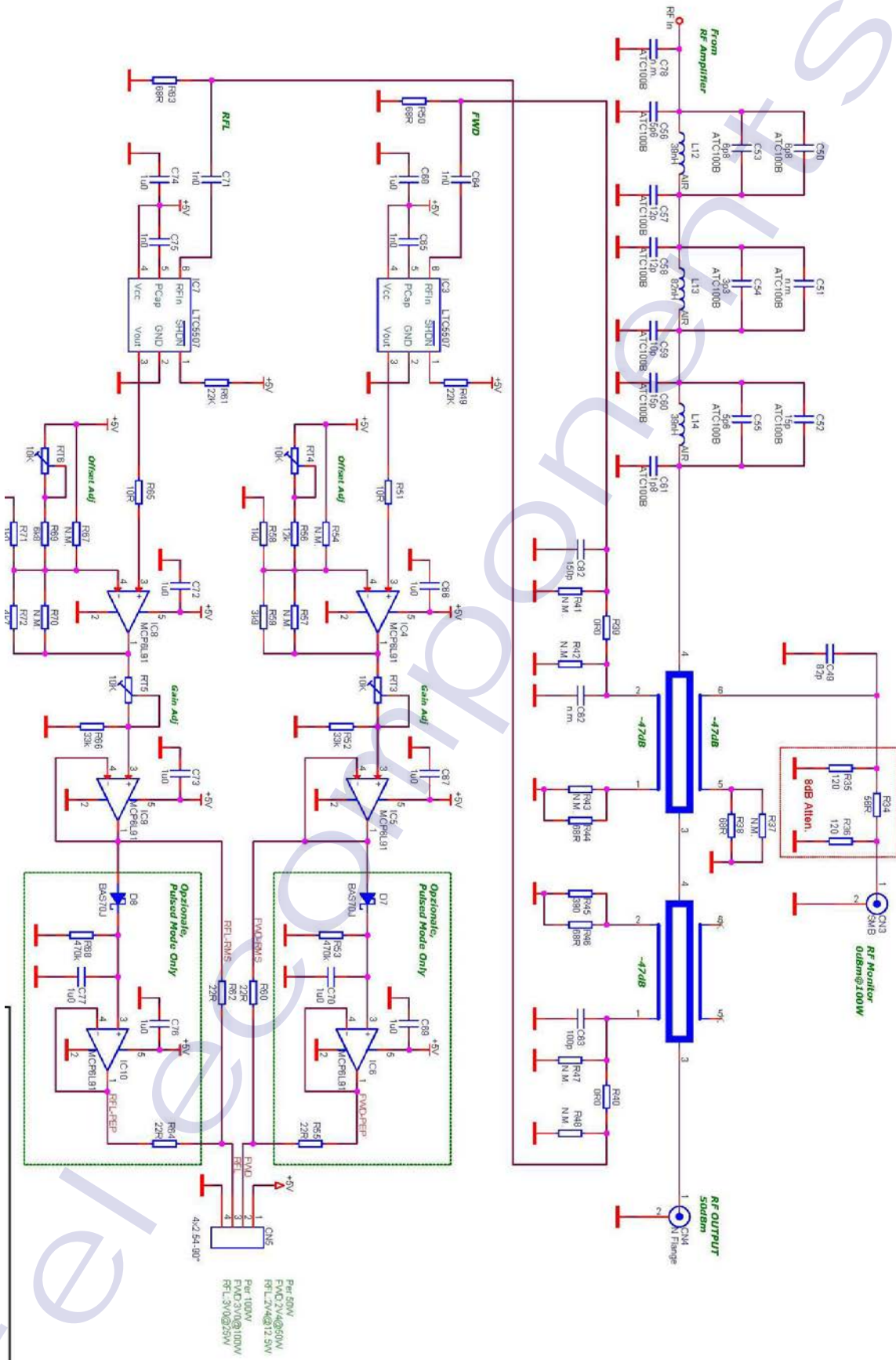
FM MODULATOR

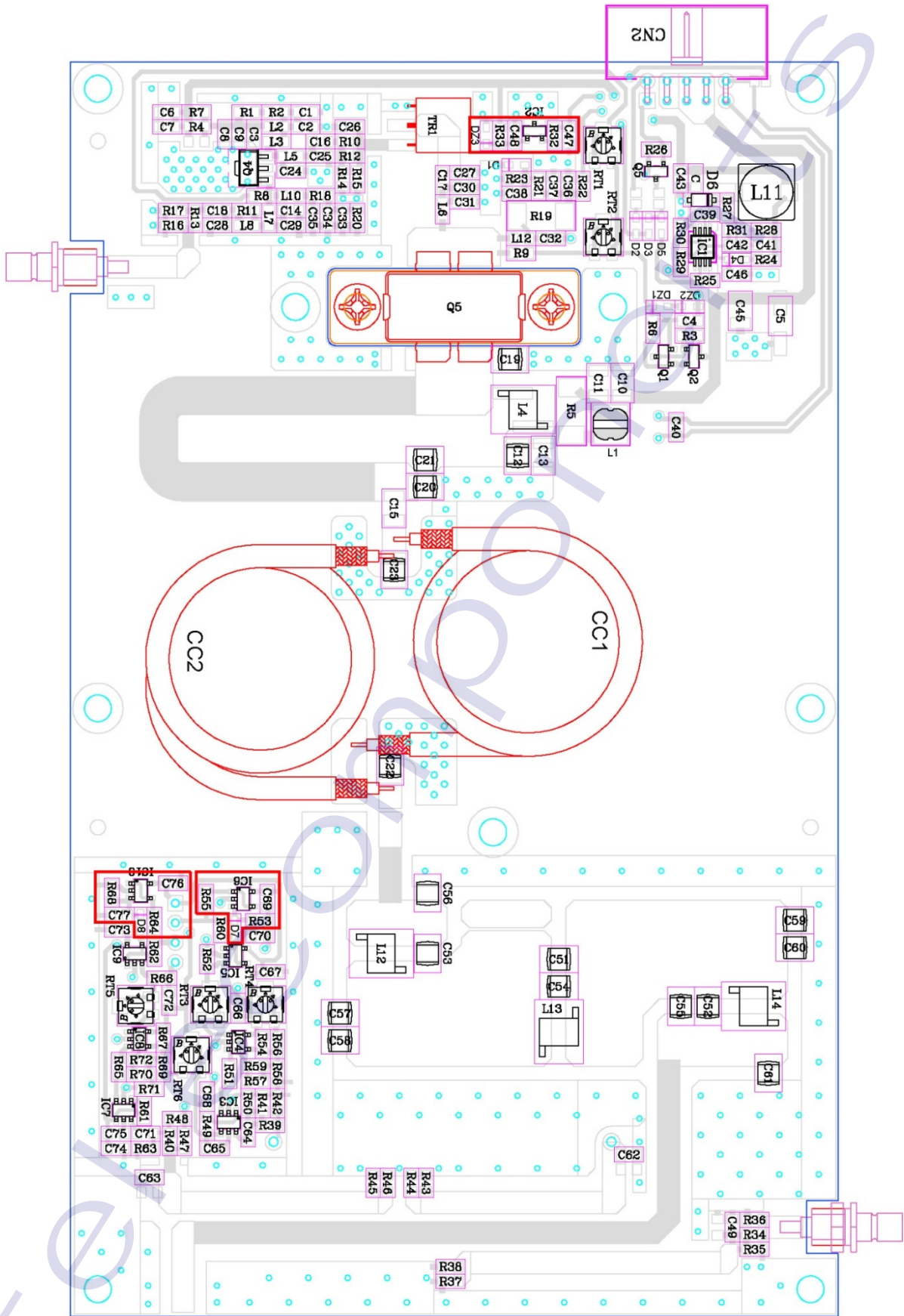


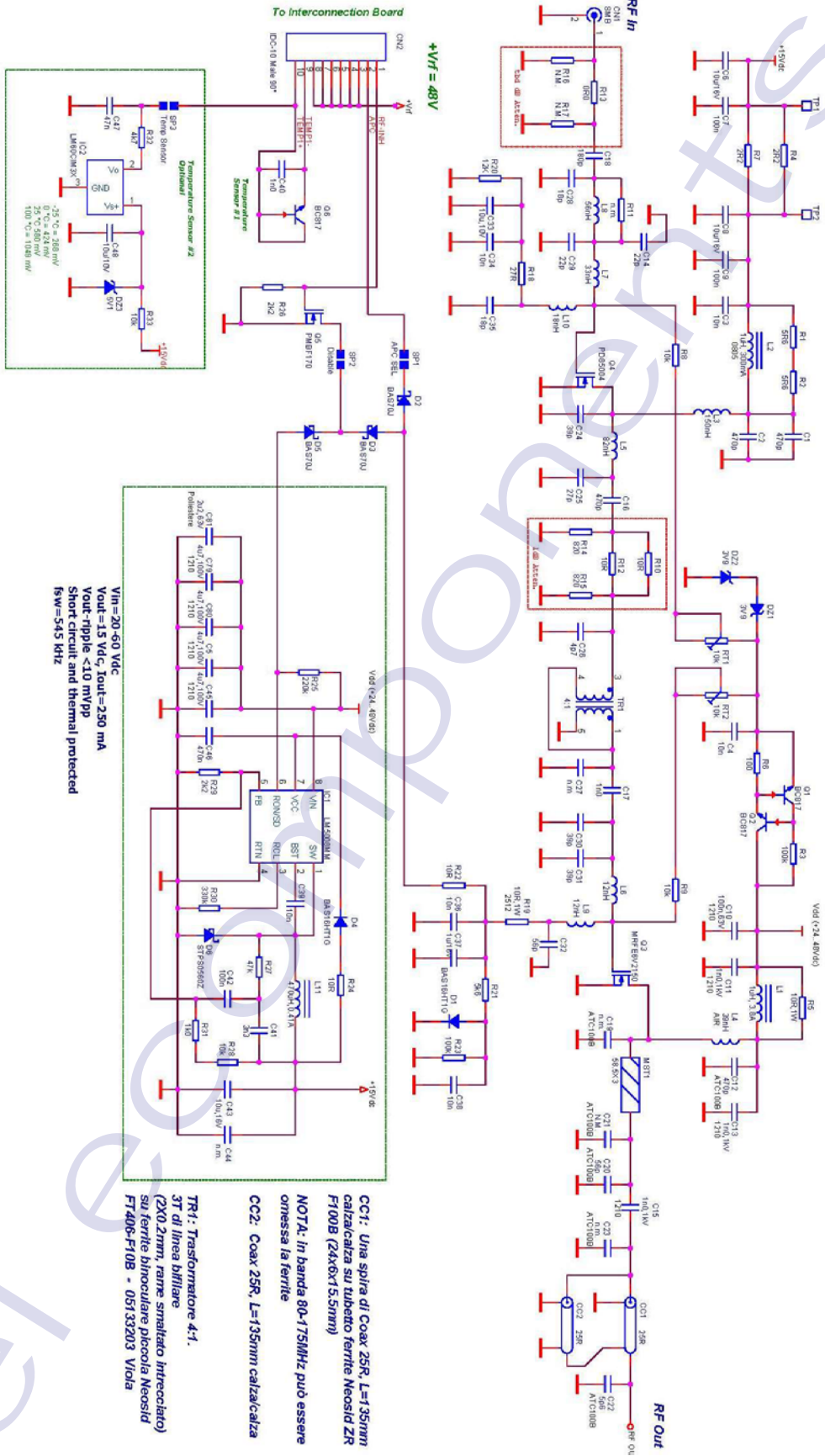
RF 30/ 50W



DIRECTIONAL COUPLER 30/ 50W





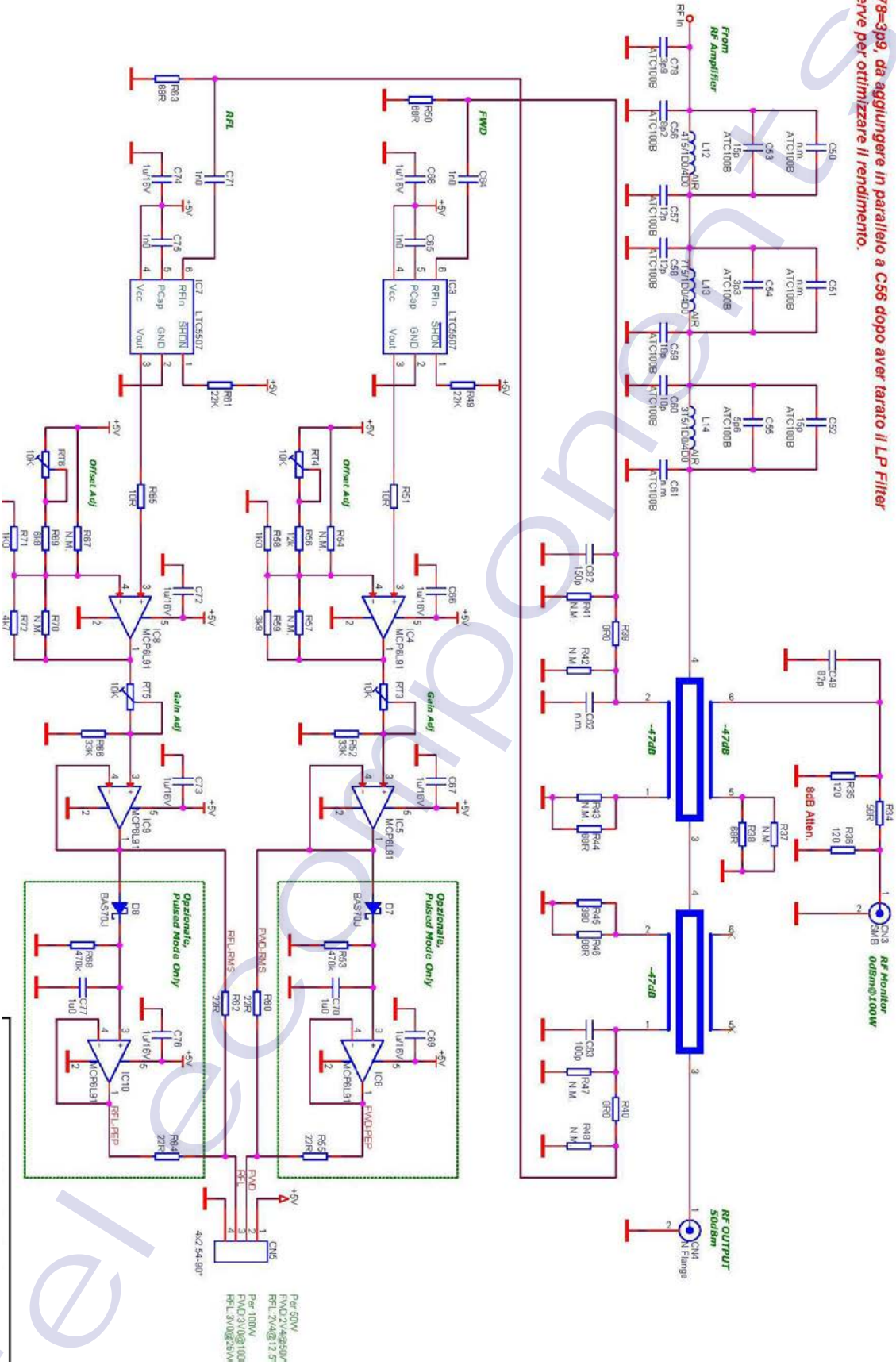


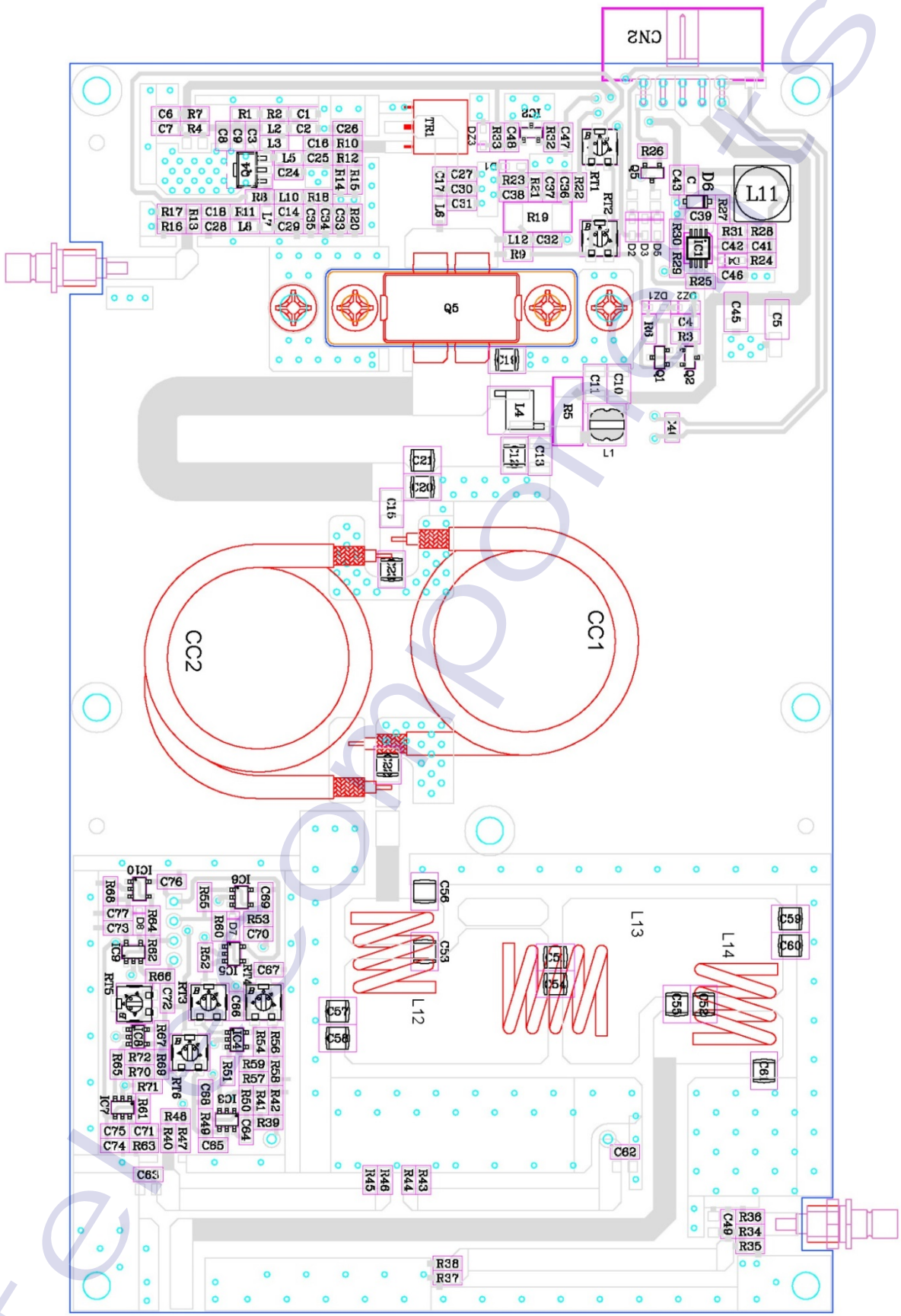
Vin = 20-60 VdC
Vout = 15 VdC, Iout = 250 mA
Vout-ripple < 10 mV/pp
Short-circuit and thermal protected
fsw = 545 KHz

CC1: Una spirale di Coax 25R, L=135mm calza/calza su tubetto ferrite Neosid ZR F100B (24x6x15,5mm)
NOTA: In banda 80-175MHz può essere omessa la ferrite
CC2: Coax 25R, L=135mm calza/calza
TR1: Trasformatore 4:1.
3T di linea bifilare
(2X0,2mm, rame smaltato intrecciato) su ferrite binoculare piccola Neosid FT406-F10B - 05133203 Viola

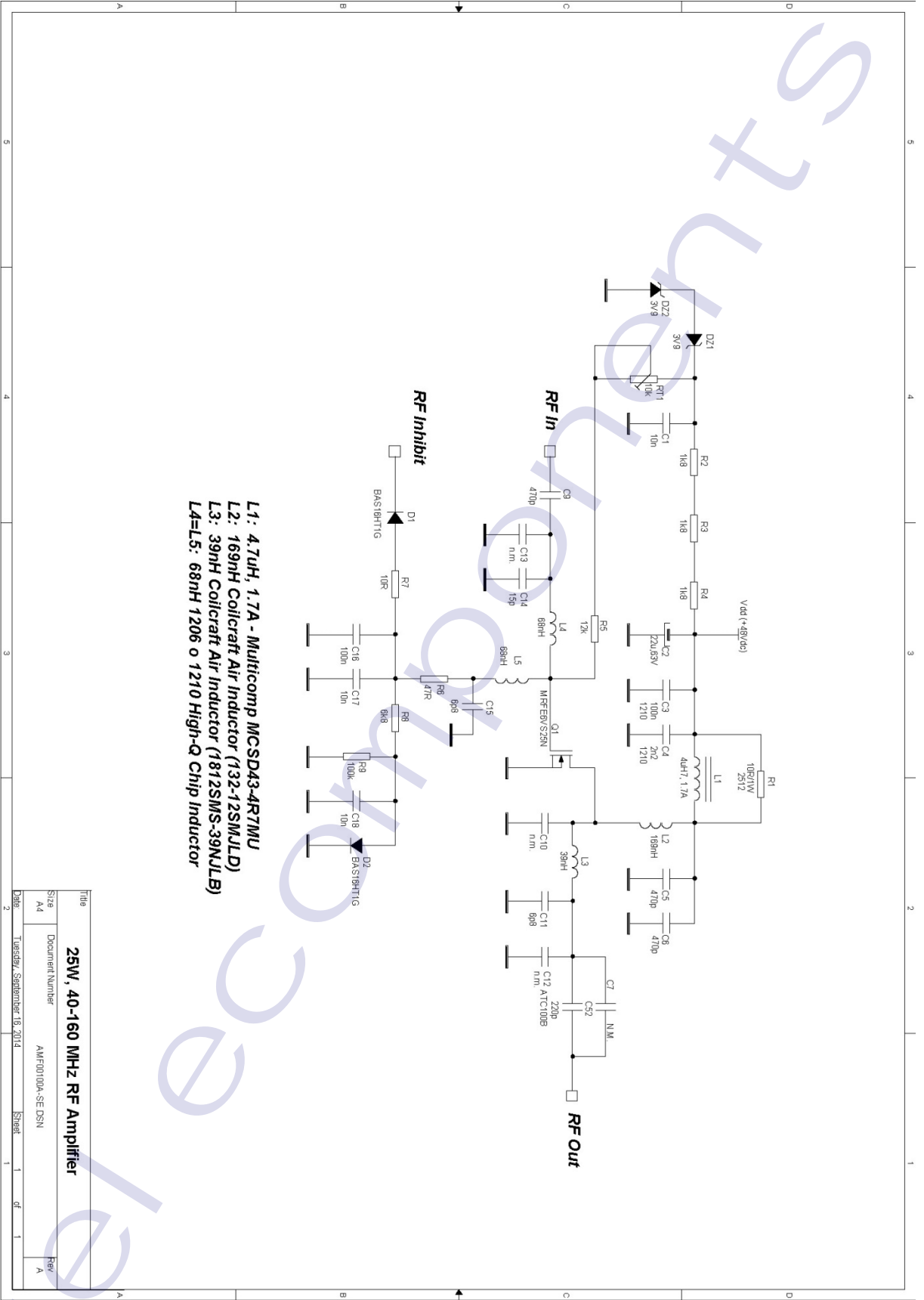
DIRECTIONAL COUPLER RF 100W

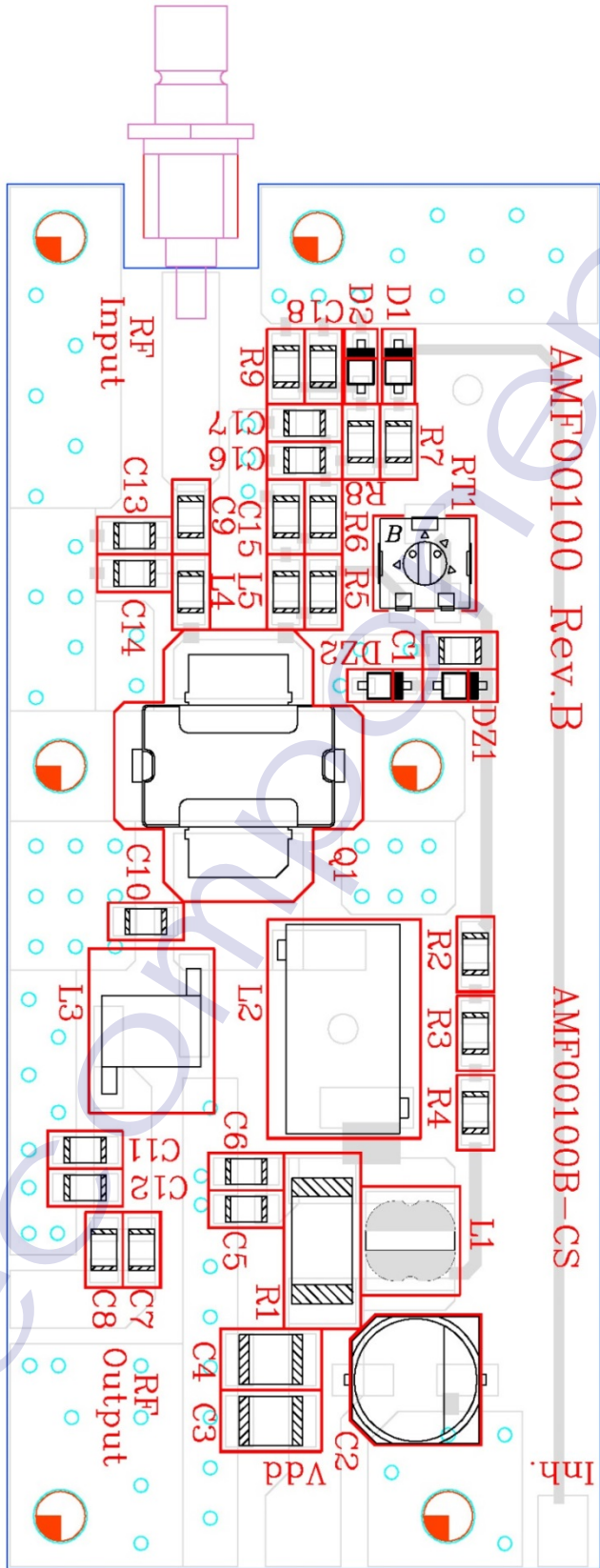
**C78=3p9, da aggiungere in parallelo a C56 dopo aver tarato il LP Filter.
Serve per ottimizzare il rendimento.**



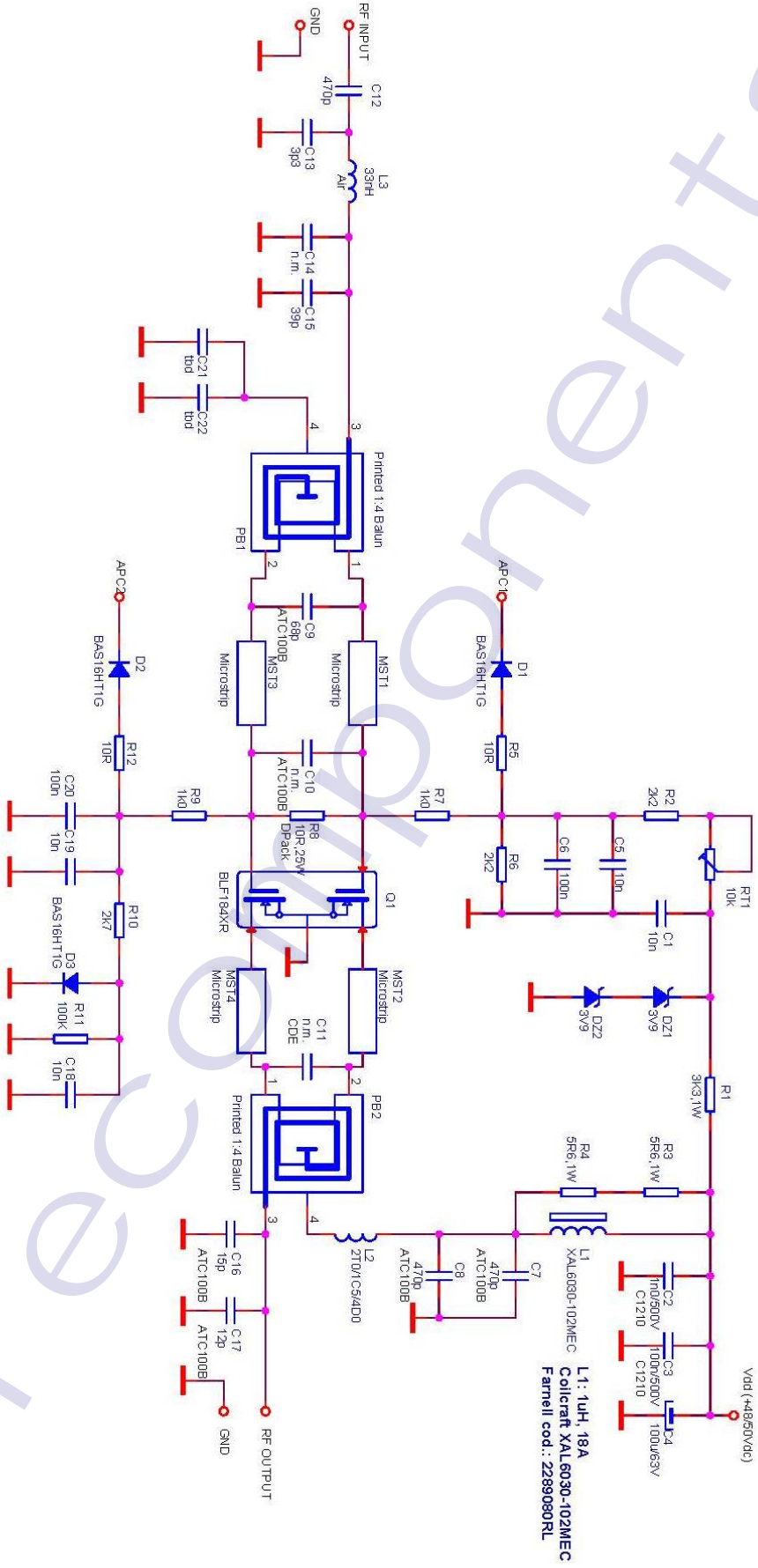


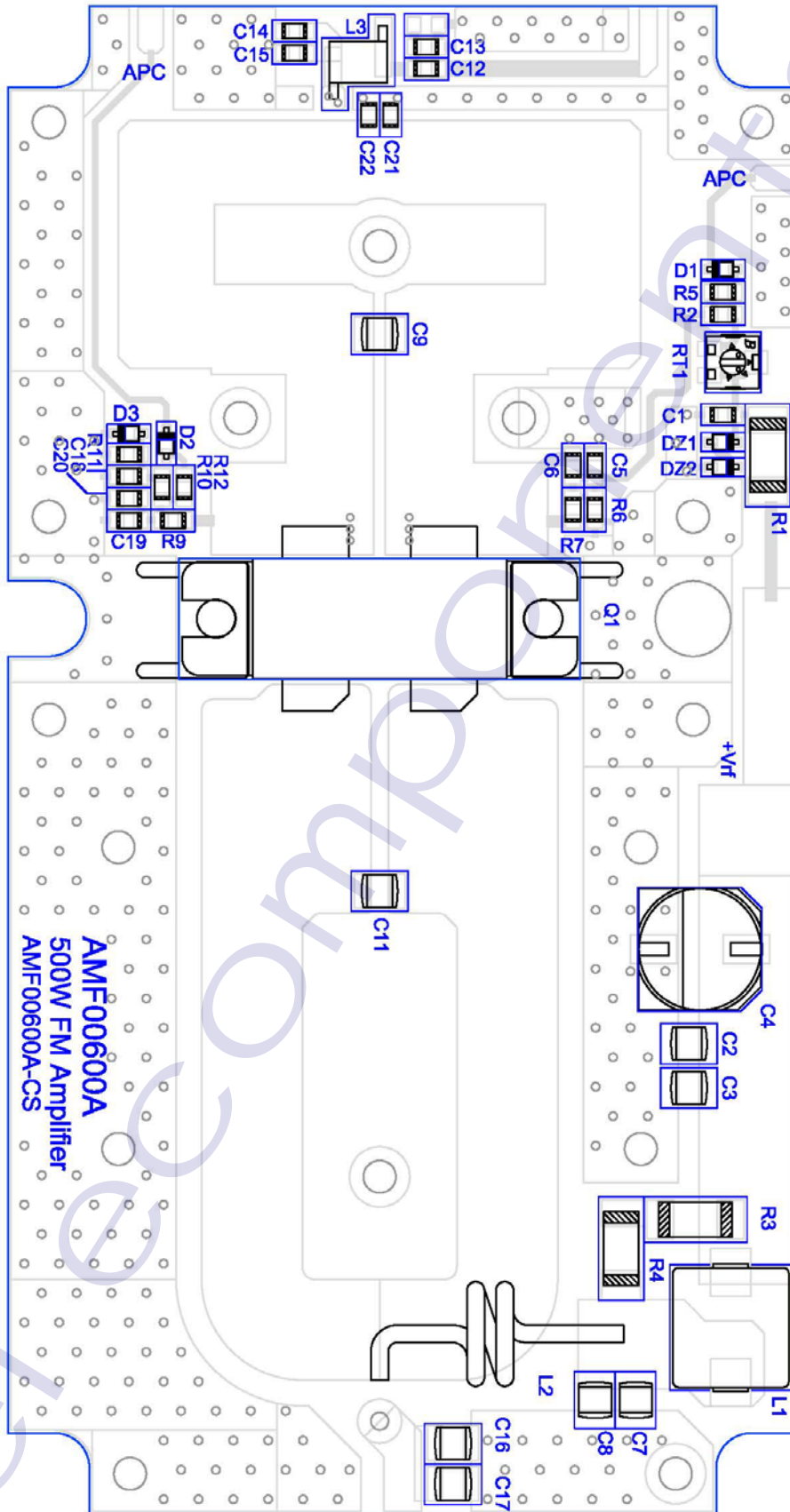
RF DRIVER 25W

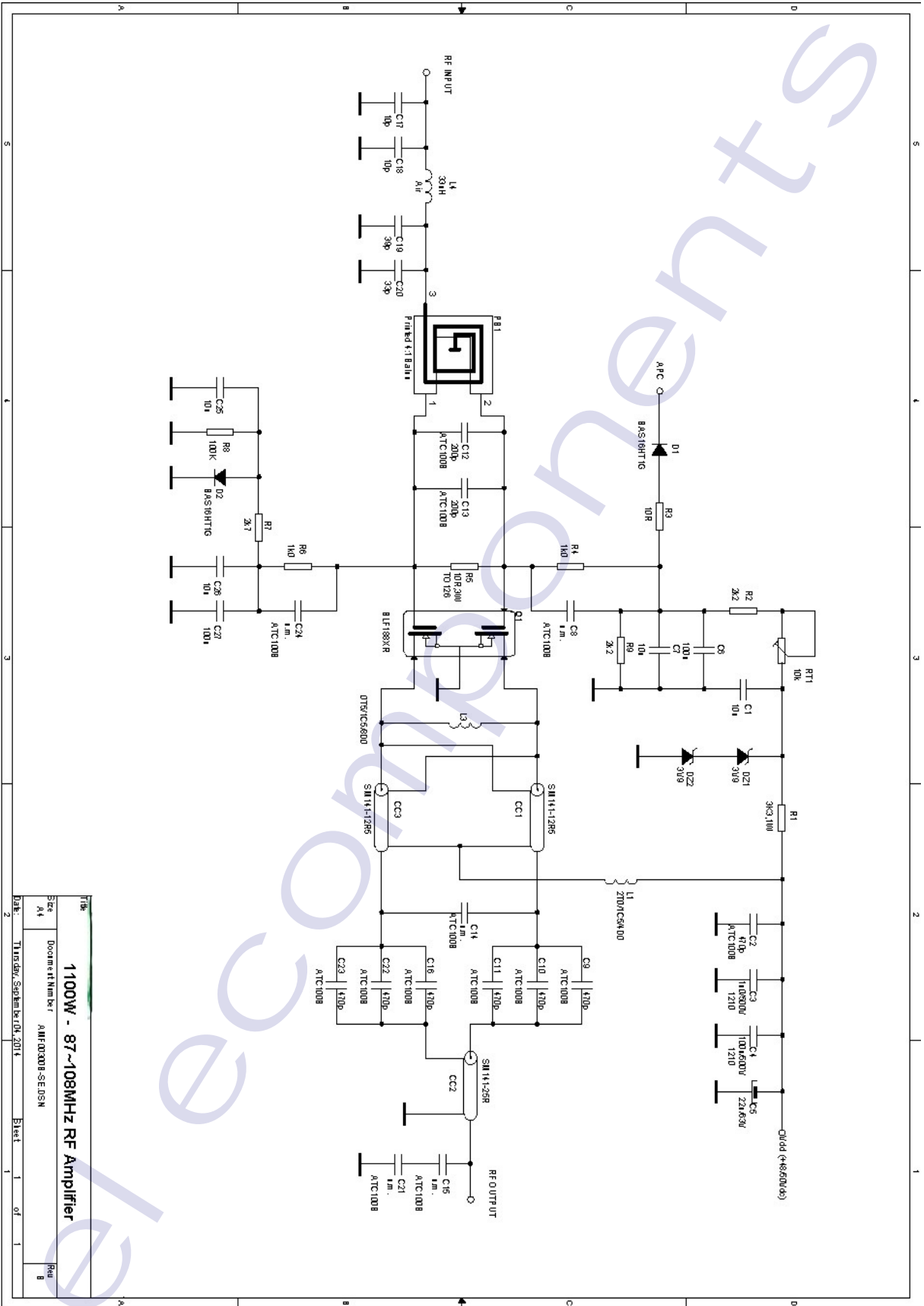




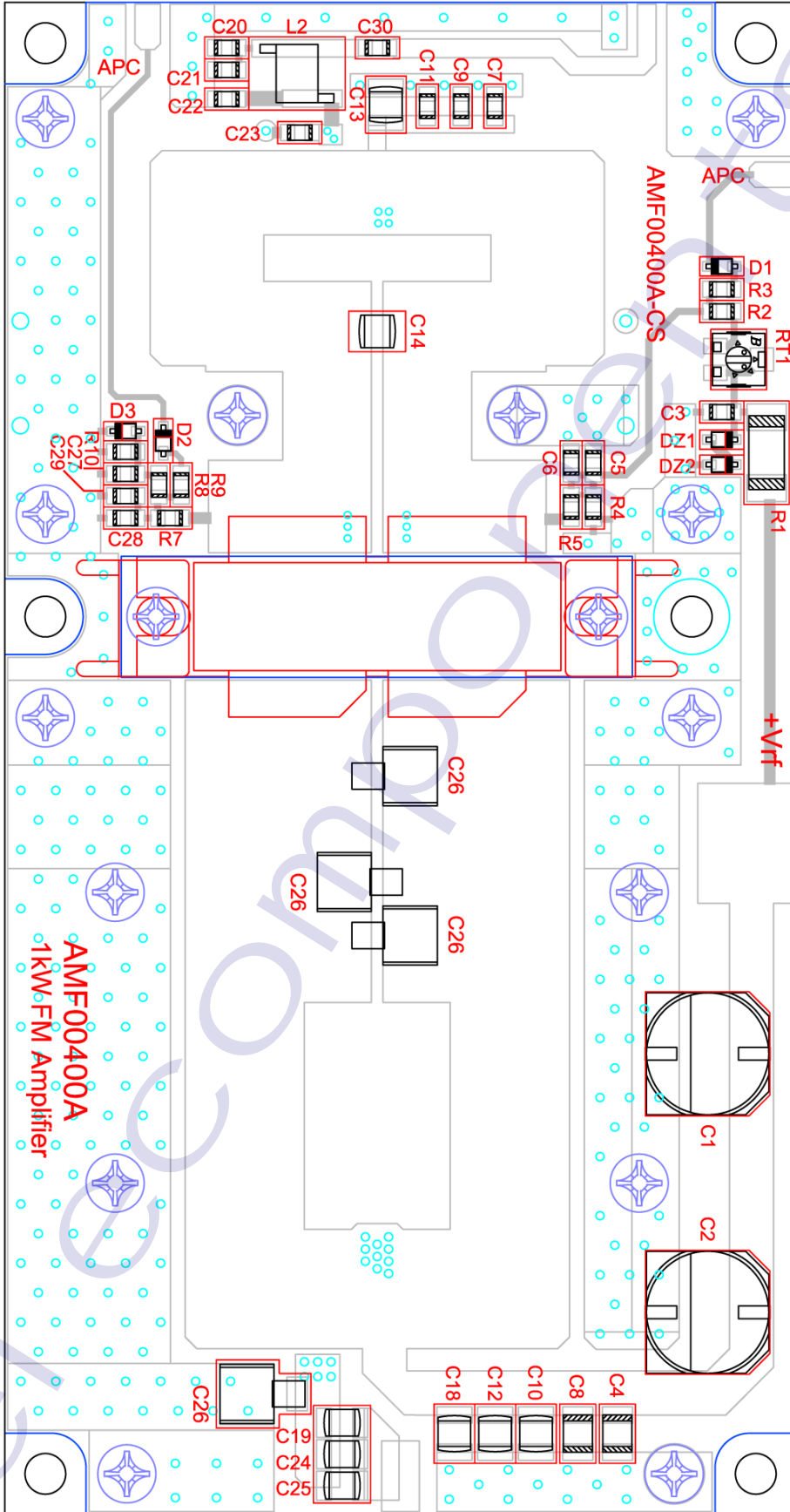
RF 500W



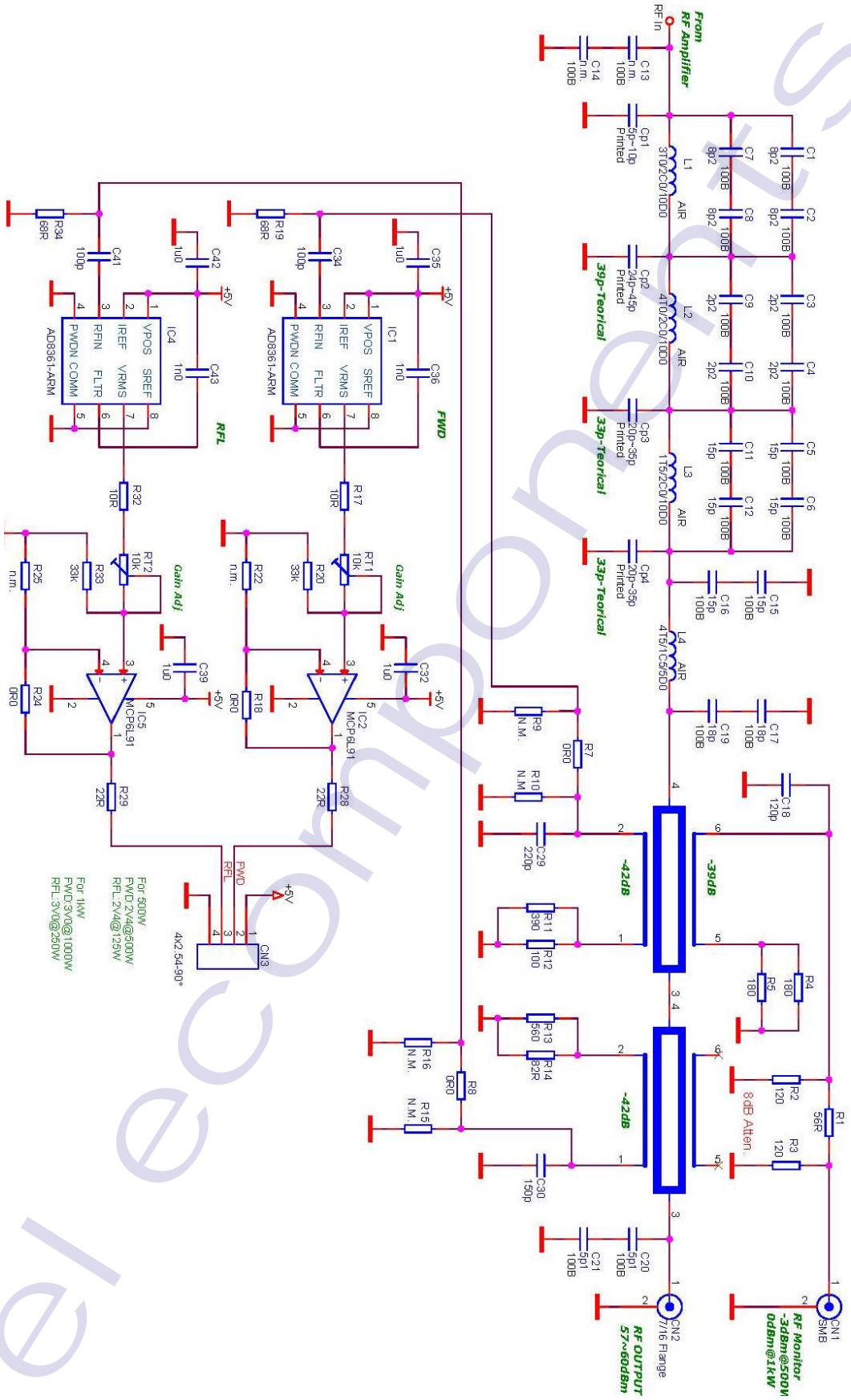




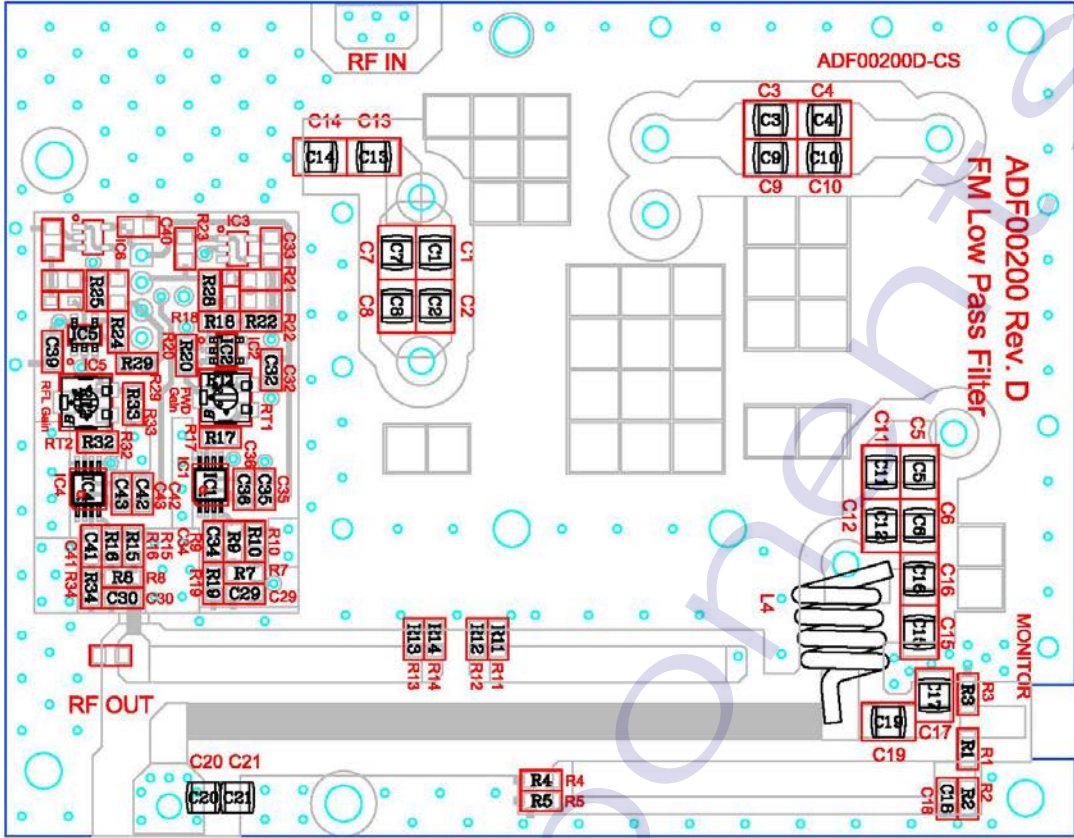
TTB	100W - 87~108MHz RF Amplifier
Size	A4
Document Number	AMF03008-SEUSN
Date	Thursday, September 20, 2011
Page	2
Sheet	1 of 1
Rev	B



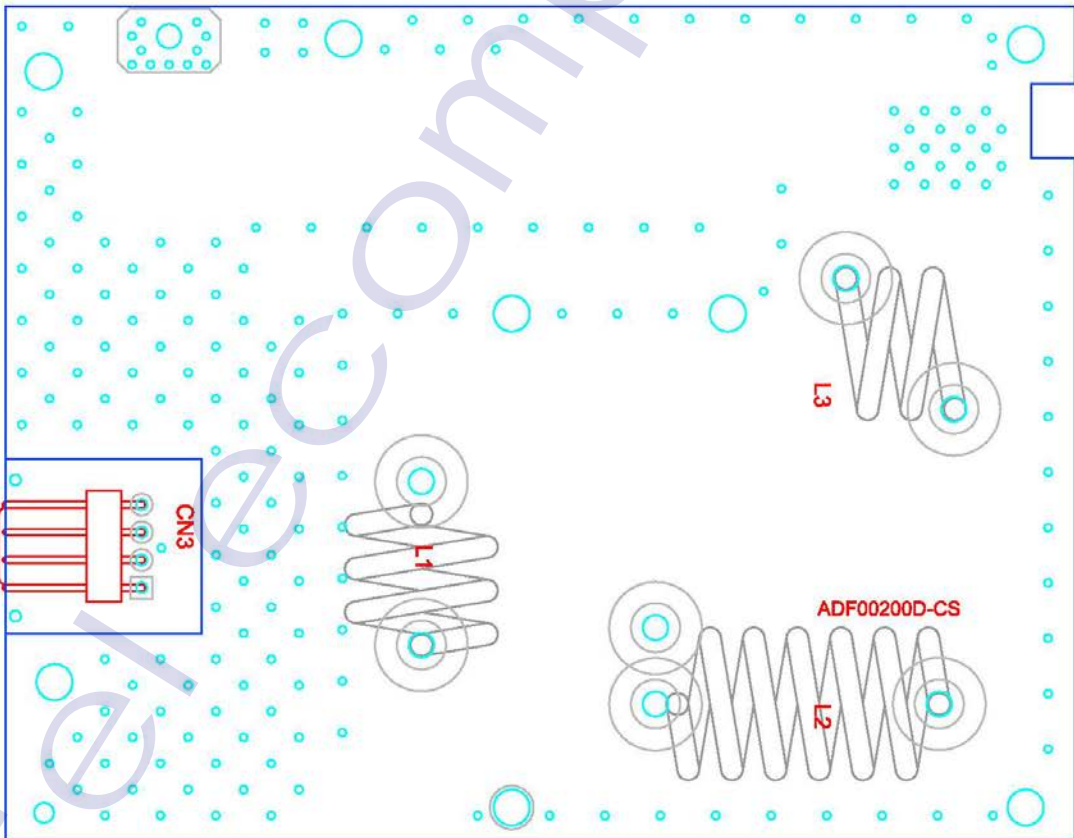
OUTPUT FILTER



OUTPUT FILTER

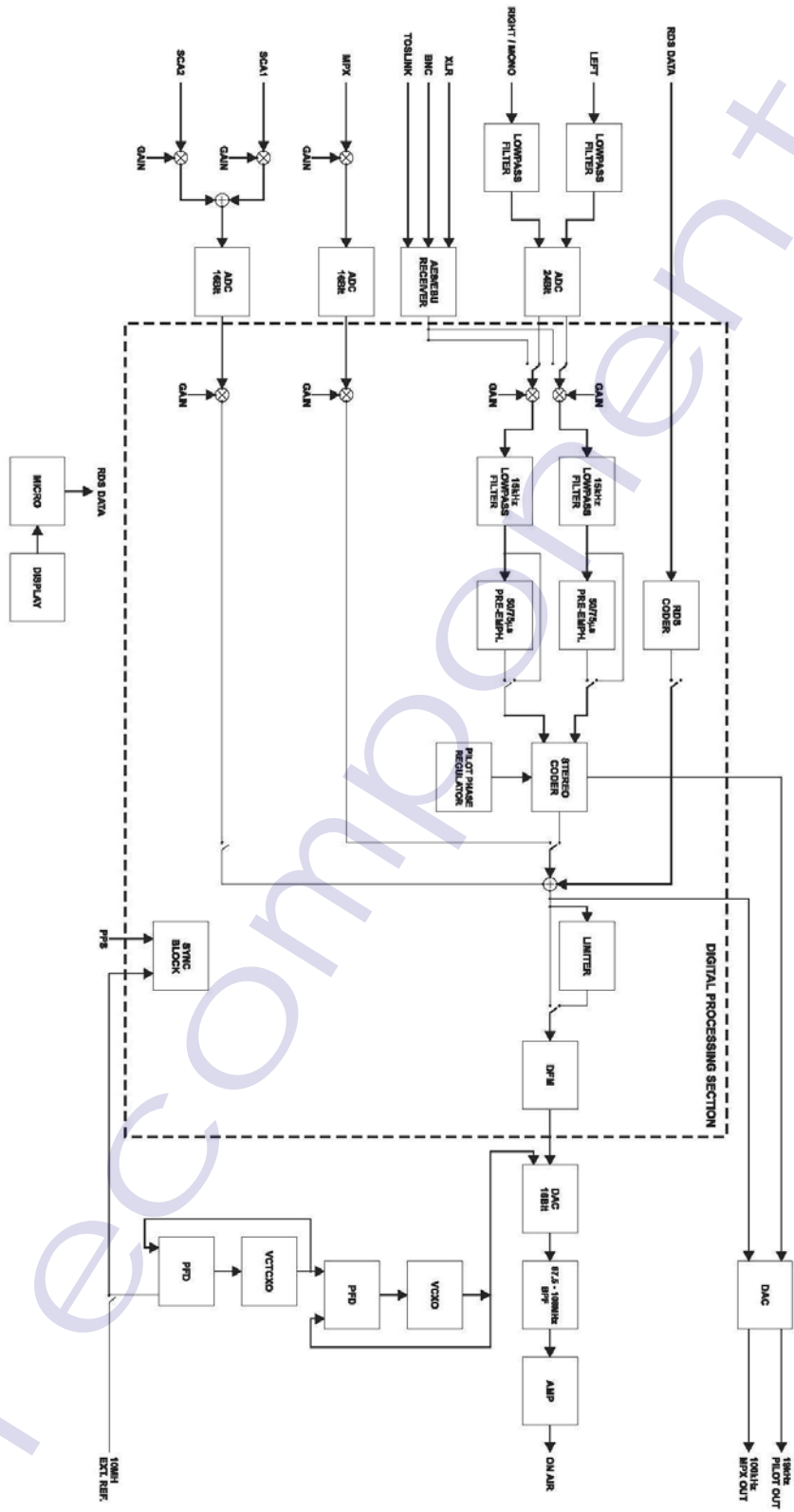


Top

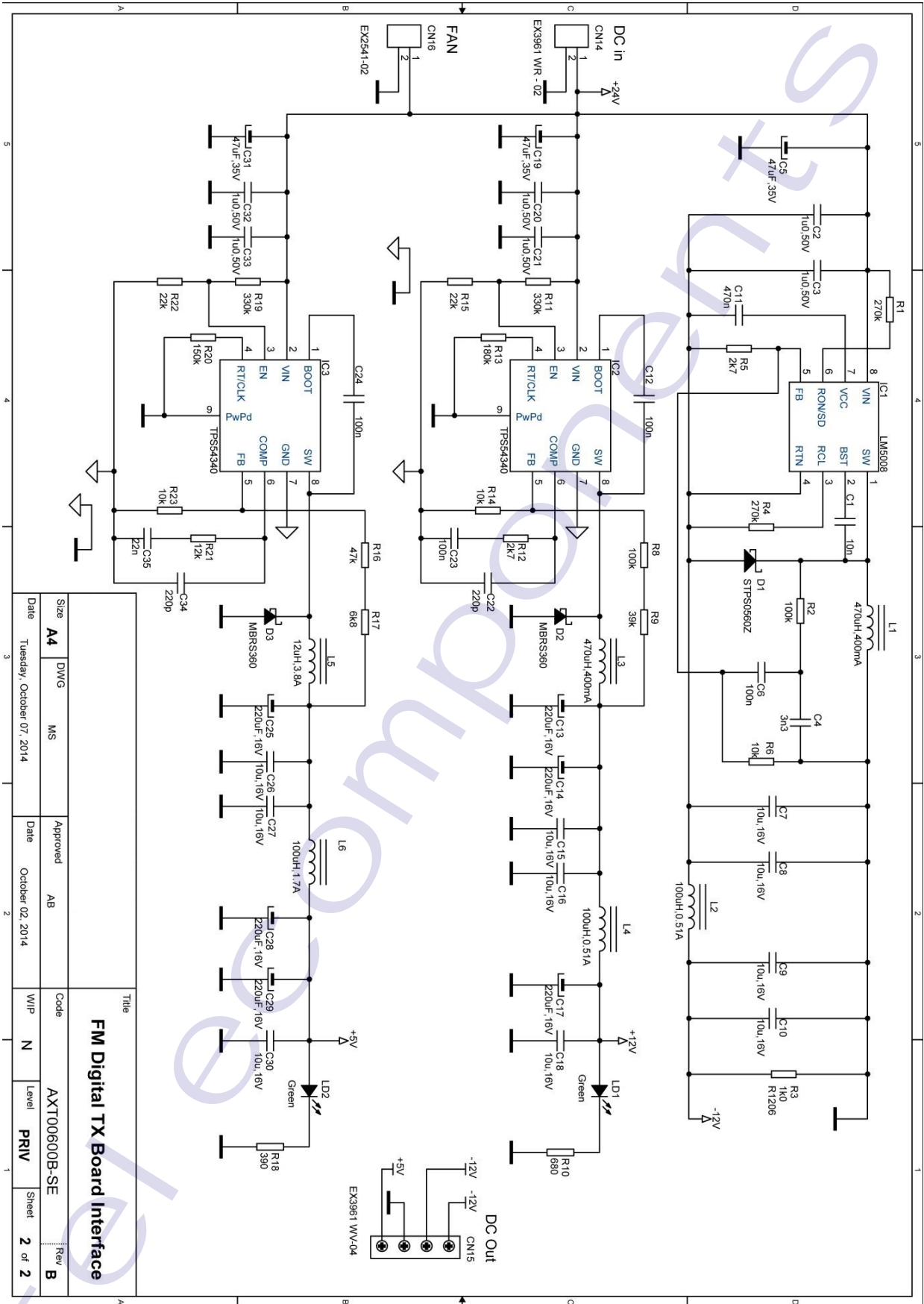


Bottom

BLOCK DIAGRAM DIGITAL BOARD

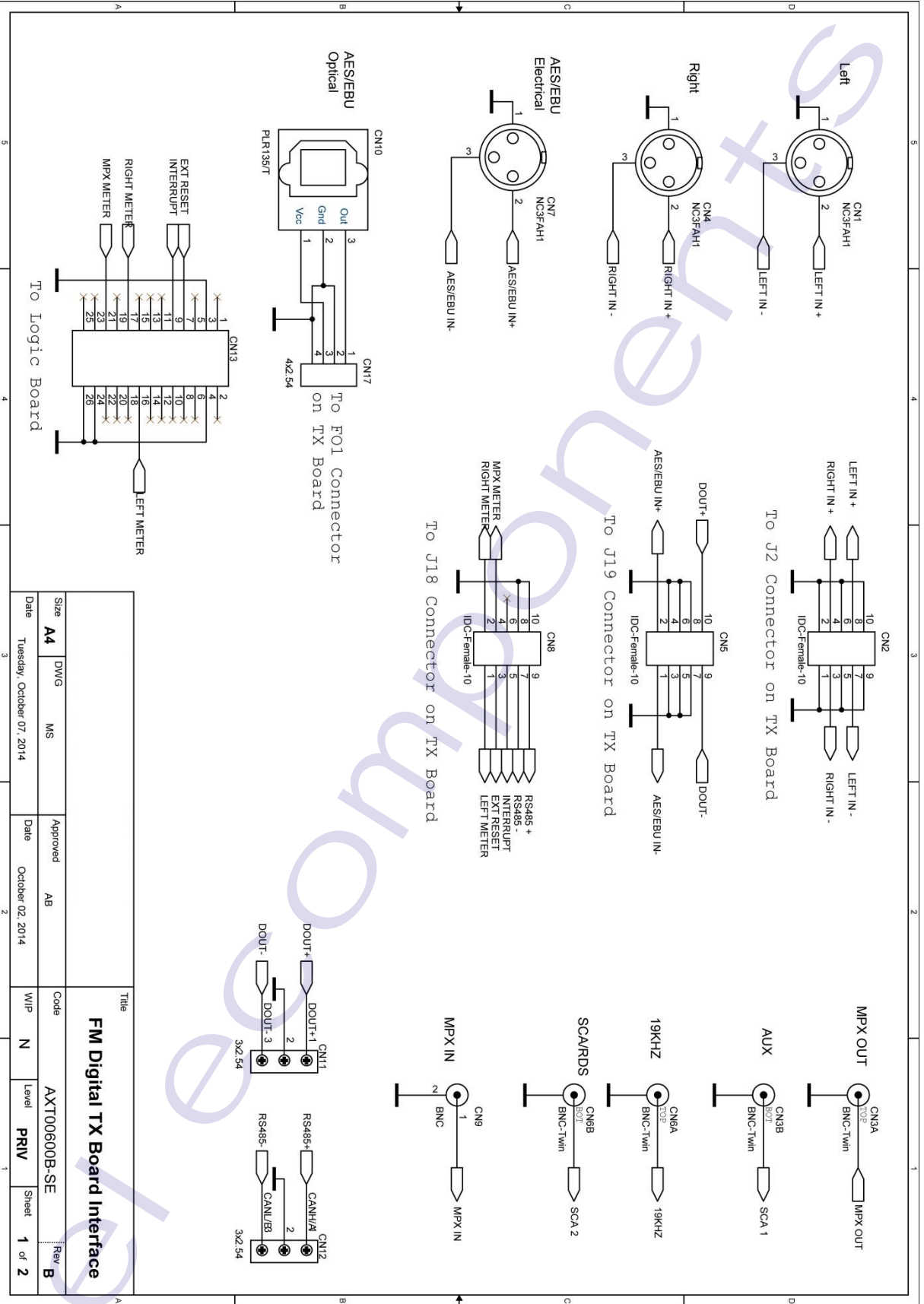


INTERFACE BOARD AND PWS



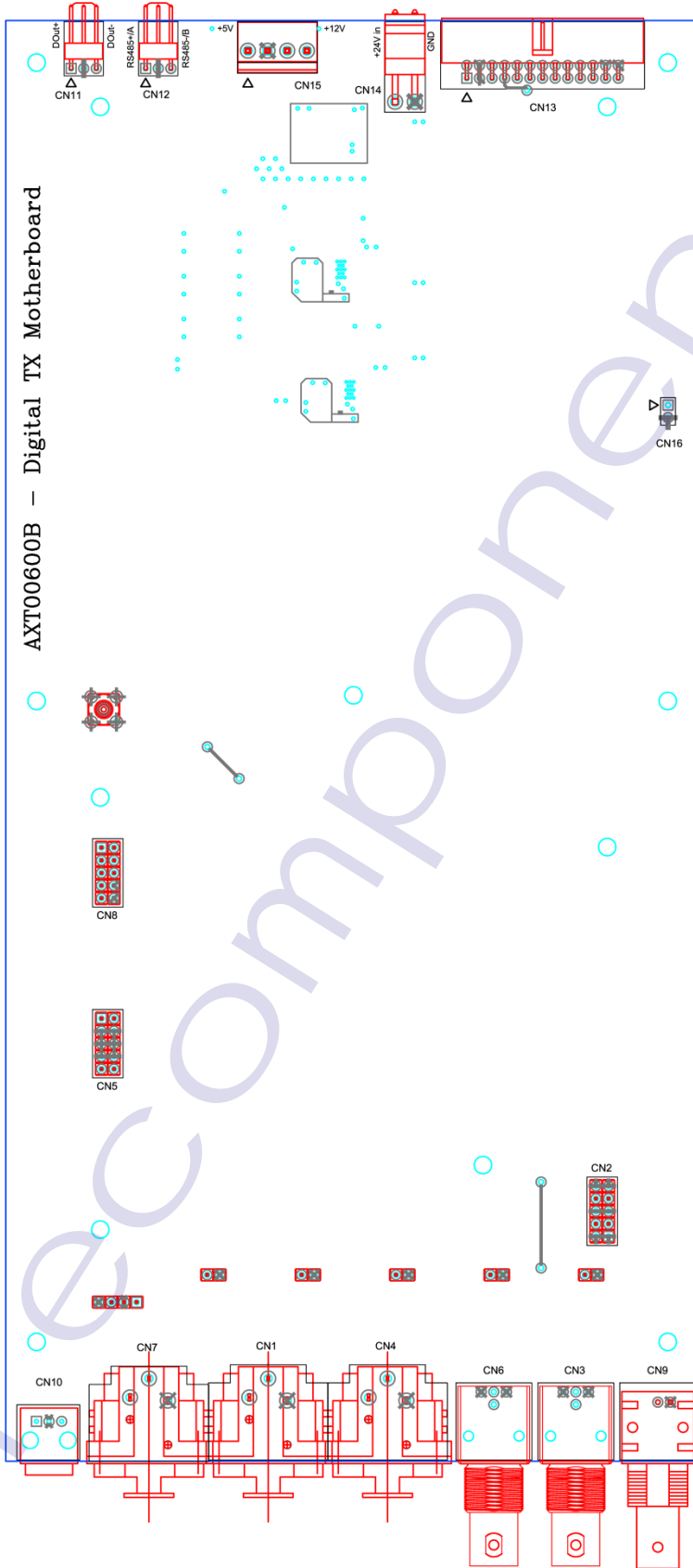
Size A4		DWG MS		Approved AB		Code		W/P N		Level PRIV		Sheet 2 of 2	
Date Tuesday, October 07, 2014		Date October 02, 2014		Date		Date		Date		Date		Date	
Title													
FM Digital TX Board Interface													
Code AXT00600B-SE													
Rev B													

INTERFACE BOARD AND PWS

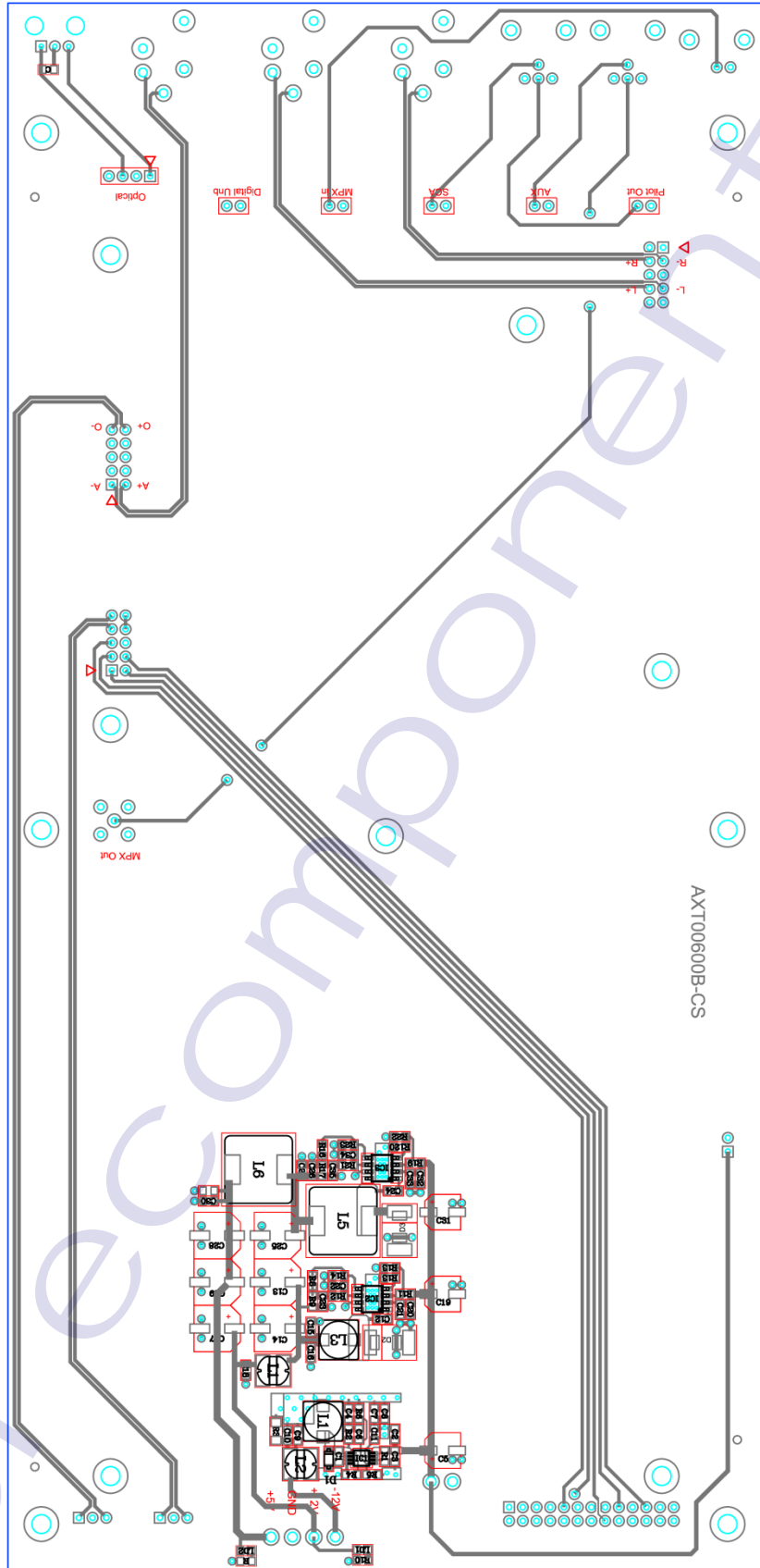


Size A4		DWG	MS	Approved	AB	Code	WIP	N	Level	AXT00600B-SE	Rev	B
Date	Tuesday, October 07, 2014			Date	October 02, 2014						Sheet	1 of 2
FM Digital TX Board Interface												

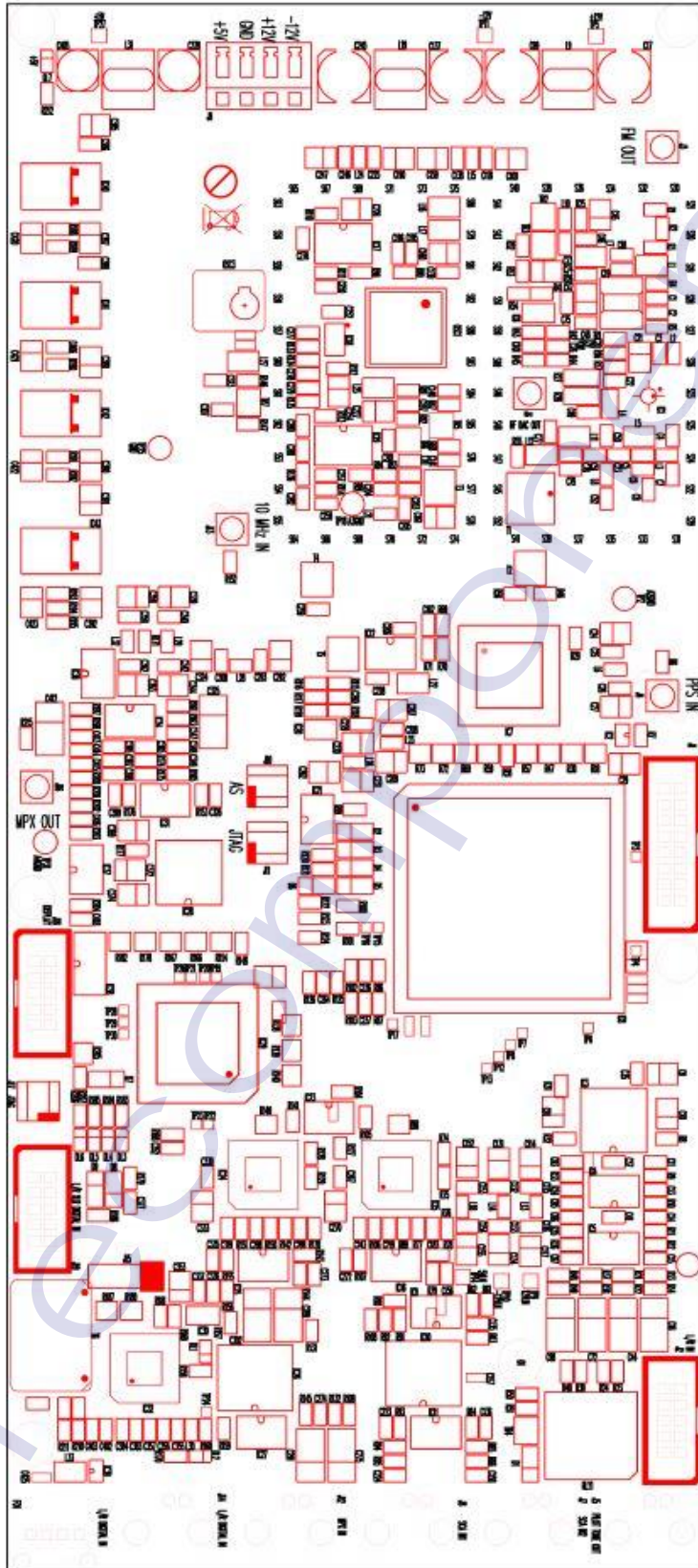
INTERFACE BOARD AND PWS TOP WIEW



INTERFACE BOARD AND PWS BOTTOM WIEV

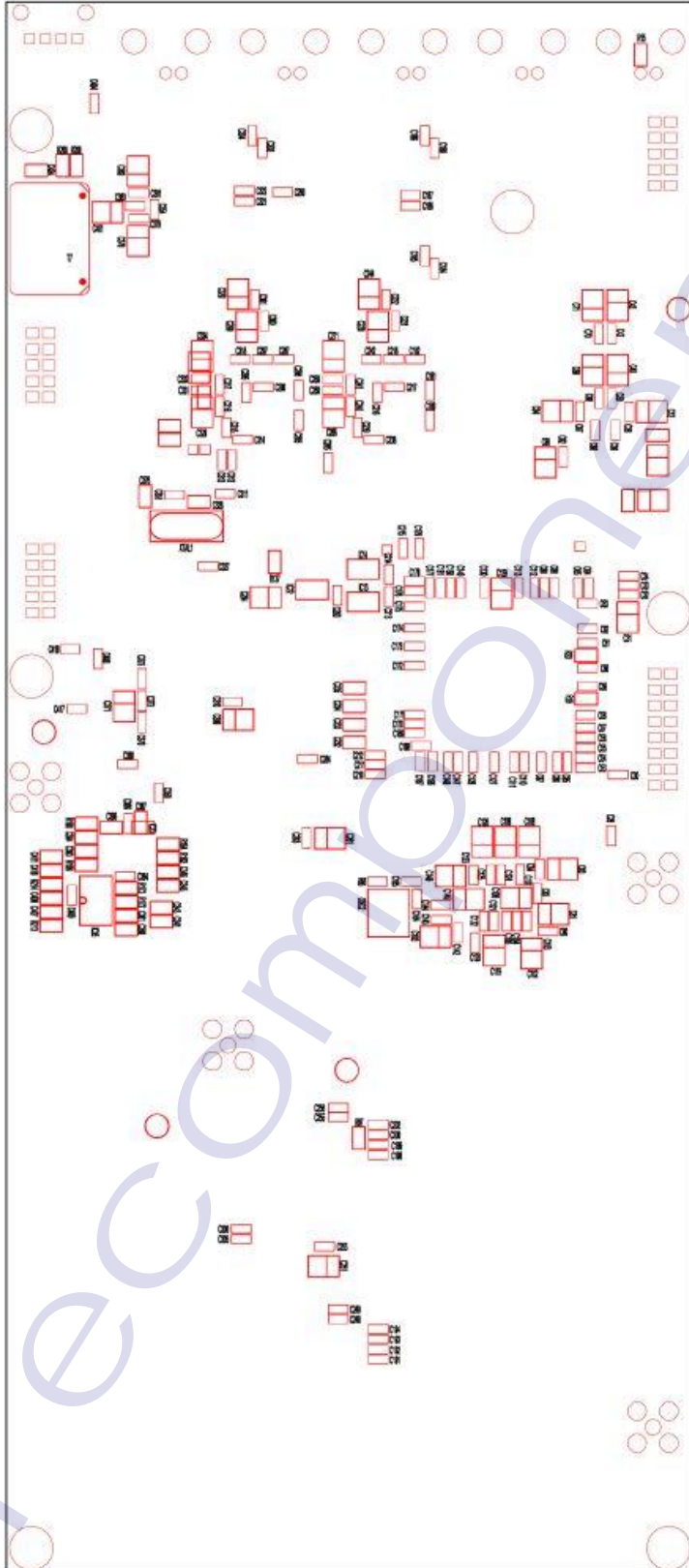


DIGITAL FM MODULATOR TOP WIEV



PN1416CR1 – Top Components Layout

DIGITAL FM MODULATOR BOTTOM VIEW



PN1416CR1 - Bottom Components Layout

POWER SUPPLY FOR 1Kw



2000W Single Output Power Supply

RSP-2000 series



Features :

- Universal AC input / Full range
- Built-in 5V/0.3A, 12V/0.8A auxiliary power
- Built-in active PFC function, PF>0.97
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Forced air cooling by built-in DC fan with fan speed control
- Output voltage can be trimmed between 40~115% of the rated output voltage
- High Power density 21.4W/inch³
- 1U low profile 41mm
- Active current sharing up to 8000W(3+1)
- Built-in remote ON-OFF control
- Built-in remote sense function
- DC OK signal, OTP alarm signal
- 3 years warranty



SPECIFICATION

MODEL	RSP-2000-12	RSP-2000-24	RSP-2000-48		
OUTPUT	DC VOLTAGE	12V	24V	48V	
	RATED CURRENT	100A	80A	42A	
	CURRENT RANGE	0 ~ 100A	0 ~ 80A	0 ~ 42A	
	RATED POWER	1200W	1920W	2016W	
	RIPPLE & NOISE (max.) Note.2	150mVp-p	200mVp-p	300mVp-p	
	VOLTAGE ADJ. RANGE	10.5 ~ 14V	21 ~ 28V	42 ~ 56V	
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	
	LINE REGULATION	±1.0%	±0.5%	±0.5%	
	LOAD REGULATION	±1.0%	±0.5%	±0.5%	
	SETUP, RISE TIME	1500ms, 60ms/230VAC at full load			
HOLD UP TIME (Typ.)	16ms/230VAC at 75% load	10ms/230VAC at full load			
INPUT	VOLTAGE RANGE Note.5	90 ~ 264VAC	127 ~ 370VDC		
	FREQUENCY RANGE	47 ~ 63Hz			
	POWER FACTOR (Typ.)	0.97/230VAC at full load			
	EFFICIENCY (Typ.)	87%	90.5%	92%	
	AC CURRENT (Typ.) Note.5	13A/115VAC	7A/230VAC	16A/115VAC	10A/230VAC
	INRUSH CURRENT (Typ.)	COLD START 50A			
LEAKAGE CURRENT	<2mA / 240VAC				
PROTECTION	OVERLOAD	105 ~ 125% rated output power Protection type : Constant current limiting, unit will shut down o/p voltage after 5 sec. re-power on to recover			
	OVER VOLTAGE	14.7 ~ 17.5V	29.5 ~ 35V	57.6 ~ 67.2V	
	OVER TEMPERATURE	80°C±5°C (TSW1) detect on heatsink of power bridge 75°C±5°C (TSW2) detect on heatsink of o/p diode Protection type : Shut down o/p voltage, recovers automatically after temperature goes down			
FUNCTION	AUXILIARY POWER	5V @ 0.3A, 12V @ 0.8A			
	REMOTE ON/OFF CONTROL	By electrical signal or dry contact Power ON:open Power OFF:short, refer to function manual			
	REMOTE SENSE	Compensate voltage drop on the load wiring up to 0.5V, refer to function manual			
	DC OK SIGNAL	The isolated TTL signal out, refer to function manual			
OUTPUT VOLTAGE TRIM	Adjustment of output voltage, possible between 40 ~ 115% of rated output, refer to function manual				
ENVIRONMENT	WORKING TEMP.	-35 ~ +70°C (Refer to "Derating Curve")			
	WORKING HUMIDITY	20 ~ 90% RH non-condensing			
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH			
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)			
VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes				
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved			
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC			
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH			
	EMC EMISSION	Compliance to EN55022 (CISPR22) Conduction Class B, Radiation Class A; EN61000-3-2,-3			
EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN61000-6-2 (EN50082-2), heavy industry level, criteria A				
OTHERS	MTBF	46.3Khrs min. MIL-HDBK-217F (25°C)			
	DIMENSION	295*127*41mm (L*W*H)			
	PACKING	1.95Kg; 6pcs/12.7Kg/1.15CUFT			
NOTE	<ol style="list-style-type: none"> 1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. 5. Derating may be needed under low input voltages. Please check the derating curve for more details. 6. Under parallel operation ripple of the output voltage may be higher than the SPEC at light load condition. It will go back to normal ripple level once the output load is more than 5%. 				

File Name:RSP-2000-SPEC 2012-06-04

POWER SUPPLY FOR 500W



1000W Single Output Power Supply

RSP-1000 series



- Features :
 - Universal AC input / Full range
 - AC input active surge current limiting
 - Built-in 5V/0.5A auxiliary power
 - Built-in active PFC function, PF>0.95
 - Protections: Short circuit / Overload / Over voltage / Over temperature
 - Output voltage can be trimmed between 40 ~ 110% of the rated output voltage
 - Forced air cooling by built-in DC fan
 - High power density 10.7w/inch³
 - 1U low profile 41mm
 - Active current sharing up to 4000W(3+1) (Note.8)
 - DC OK Signal
 - Built-in remote ON-OFF control
 - Built-in remote sense function
 - 3 years warranty



SPECIFICATION

MODEL	RSP-1000-12	RSP-1000-15	RSP-1000-24	RSP-1000-27	RSP-1000-48	
OUTPUT	DC VOLTAGE	12V	15V	24V	27V	48V
	RATED CURRENT	60A	50A	40A	37A	21A
	CURRENT RANGE	0 ~ 60A	0 ~ 50A	0 ~ 40A	0 ~ 37A	0 ~ 21A
	RATED POWER	720W	750W	960W	999W	1008W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	10 ~ 13.5V	13.5 ~ 16.5V	20 ~ 26.4V	24 ~ 30V	43 ~ 55V
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	300ms, 50ms at full load				
HOLD UP TIME (Typ.)	16ms/230VAC	16ms/115VAC at full load				
INPUT	VOLTAGE RANGE Note.5	90 ~ 264VAC	127 ~ 370VDC			
	FREQUENCY RANGE	47 ~ 63Hz				
	POWER FACTOR (Typ.)	0.95/230VAC	0.98/115VAC at full load			88%
	EFFICIENCY (Typ.)	83%	85%	88%	88%	90%
	AC CURRENT (Typ.)	12A/115VAC	6A/230VAC			
	INRUSH CURRENT (Typ.)	25A/115VAC	40A/230VAC			
LEAKAGE CURRENT	<2.0mA / 240VAC					
PROTECTION	OVERLOAD	105 ~ 125% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed				
	OVER VOLTAGE	13.8 ~ 16.8V	17 ~ 20.5V	27.6 ~ 32.4V	31 ~ 36.5V	56.6 ~ 66.2V
	OVER TEMPERATURE	85°C ±5°C (TSW2) detect on heatsink of O/P diode, 75°C ±5°C (TSW1) detect on heatsink of power transistor Protection type : Shut down o/p voltage, recovers automatically after temperature goes down				
FUNCTION	AUXILIARY POWER(AUX)	5V @ 0.5A (+5%, -8%)				
	REMOTE ON/OFF CONTROL Note.6	Power on : short between on/off(pin6) & -S(pin2) on CN50 Power off : open between on/off(pin6) & -S(pin2) on CN50				
	DC OK SIGNAL	The TTL signal out, PSU turn on = 0 ~ 1V ; PSU turn off = 3.3 ~ 5.6V				
	OUTPUT VOLTAGE TRIM Note.6	Adjustment of output voltage is possible between 40 ~ 110% of rated output				
CURRENT SHARING(CS)Note.7	Please refer to function manual					
ENVIRONMENT	WORKING TEMP.	-20 ~ +60°C (Refer to "Derating Curve")				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.02%/°C (0 ~ 50°C)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes				
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved				
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC	I/P-FG:2KVAC	O/P-FG:0.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH				
	EMC EMISSION	Compliance to EN55022 (CISPR22), EN61000-3-2,-3				
EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN61000-6-2, EN61204-3, heavy industry level, criteria A					
OTHERS	MTBF	116.75K hrs min. MIL-HDBK-217F (25°C)				
	DIMENSION	295*127*41mm (L*W*H)				
	PACKING	1.95Kg; 6pcs/12.7Kg/1.15CUFT				
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com) 5. Derating may be needed under low input voltages. Please check the derating curve for more details. 6. The power supply unit will have no output if the shorting connector is not assembled. It contains two shorting wires: one is from on/off(pin6) to -s(pin2) and the other is from Vcc(pin8) to Vca(pin10). Please refer to function manual for details. 7. In parallel connection, maybe only one unit operate if the total output load is less than 5% of rated load condition. 8. Please consult MEAN WELL for applications of more units connecting in parallel.					



■ Features :

- Universal AC input / Full range
- AC input active surge current limiting
- High efficiency up to 92%
- Built-in 12V/0.1A auxiliary power
- Built-in active PFC function, PF>0.97
- Protections: Short circuit / Overload / Over voltage / Over temperature / Fan alarm
- Output voltage can be trimmed between 40 ~ 110% by 2 ~ 5.5VDC external control signal
- Output current can be trimmed between 40 ~ 110% by 2 ~ 5.5VDC external control signal
- Forced air cooling by built-in DC with fan speed control function
- High power density 9.44w/inch³
- 1U low profile 41mm
- DC OK Signal
- Built-in remote ON-OFF control
- Built-in remote sense function
- 3 years warranty



SPECIFICATION

MODEL	RSP-750-5	RSP-750-12	RSP-750-15	RSP-750-24	RSP-750-27	RSP-750-48	
OUTPUT	DC VOLTAGE	5V	12V	15V	24V	27V	48V
	RATED CURRENT	100A	62.5A	50A	31.3A	27.8A	15.7A
	CURRENT RANGE	0 ~ 100A	0 ~ 62.5A	0 ~ 50A	0 ~ 31.3A	0 ~ 27.8A	0 ~ 15.7A
	RATED POWER	500W	750W	750W	751.2W	750.6W	753.6W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	4.75 ~ 5.5V	10 ~ 13.5V	13.5 ~ 16.5V	20 ~ 26.4V	24 ~ 30V	43 ~ 55V
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±2.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	1000ms, 50ms at full load					
HOLD UP TIME (Typ.)	16ms/230VAC 16ms/115VAC at full load						
INPUT	VOLTAGE RANGE Note.5	90 ~ 264VAC 127 ~ 370VDC					
	FREQUENCY RANGE	47 ~ 63Hz					
	POWER FACTOR (Typ.)	0.97/230VAC 0.98/115VAC at full load					
	EFFICIENCY (Typ.)	82%	87%	89%	90.5%	90.5%	92%
	AC CURRENT (Typ.)	5V : 5.6A/115VAC 2.8A/230VAC		12V~48V : 8.2A/115VAC 3.9A/230VAC			
	INRUSH CURRENT (Typ.)	25A/115VAC 40A/230VAC					
	LEAKAGE CURRENT	<2.0mA / 240VAC					
PROTECTION	OVERLOAD	105 ~ 125% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed					
	OVER VOLTAGE	5.75 ~ 6.75V	13.8 ~ 16.8V	17 ~ 20.5V	27.6 ~ 32.4V	31 ~ 36.5V	56.6 ~ 66.2V
	OVER TEMPERATURE	85°C ±5°C (TSW2) detect on heatsink of O/P diode; 80°C ±5°C (TSW1) detect on heatsink of power transistor Protection type : Shut down o/p voltage, recovers automatically after temperature goes down					
FUNCTION	AUXILIARY POWER(AUX)	12V @ 0.1A; tolerance : ±10%					
	REMOTE ON/OFF CONTROL Note.6	Power on : short between on/off(pin13) & 12V-AUX(pin14) on CN50 Power off : open between on/off(pin13) & 12-AUX(pin14) on CN50					
	DC OK SIGNAL	The TTL signal out, PSU turn on = 0 ~ 1V ; PSU turn off = 3.3 ~ 5.6V					
	OUTPUT VOLTAGE TRIM Note.6	Adjustment of output voltage is possible between 40 ~ 110% by 2 ~ 5.5VDC external control signal					
ENVIRONMENT	OUTPUT CURRENT TRIM	Adjustment of output current is between 40 ~ 110% by 2 ~ 5.5VDC external control signal					
	WORKING TEMP.	-30 ~ +70°C (Refer to "Derating Curve")					
	WORKING HUMIDITY	20 ~ 90% RH non-condensing					
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH					
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)					
SAFETY & EMC (Note 4)	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes					
	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved					
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC					
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH					
OTHERS	EMC EMISSION	Compliance to EN55022 (CISPR22), EN61000-3-2,-3					
	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, EN61000-6-2, EN61204-3, heavy industry level, criteria A					
	MTBF	120.8K hrs min. MIL-HDBK-217F (25°C)					
NOTE	DIMENSION	250*127*41mm (L*W*H)					
	PACKING	1.64Kg; 6pcs/10.8Kg/1.1CUFT					
<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com)</p> <p>5. Derating may be needed under low input voltages. Please check the derating curve for more details.</p> <p>6. The power supply unit will have no output if the shorting connector is not assembled. It contains three shorting wires: one is from on/off(pin13) to 12V-AUX(pin14), two is from PC(pin7) to PO(pin8) and the other is from PV(pin5) to PS(pin6). Please refer to function manual for details.</p> <p>7. Please consult MEAN WELL for applications of more units connecting in parallel.</p>							

POWER SUPPLY FOR 100W



300W Single Output with PFC Function

SPV-300 series



■ Features :

- Universal AC input / Full range
- Built-in active PFC function, PF>0.95
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Forced air cooling by built-in DC Fan
- Output voltage programmable from 20~110% by 1~5.5VDC external control signal
- Built-in remote ON-OFF control
- Built-in fan speed control
- Fixed switching frequency at 100KHz
- 3 years warranty



SPECIFICATION

MODEL	SPV-300-12	SPV-300-24	SPV-300-48	
OUTPUT	DC VOLTAGE	12V	24V	48V
	RATED CURRENT	25A	12.5A	6.25A
	CURRENT RANGE	0 ~ 25A	0 ~ 12.5A	0 ~ 6.25A
	RATED POWER	300W	300W	300W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	240mVp-p
	VOLTAGE ADJ. RANGE	10.8 ~ 13.2V	20 ~ 26.4V	41 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.3%	±0.2%	±0.2%
	LOAD REGULATION	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	800ms, 50ms/230VAC 2500ms, 50ms/115VAC at full load		
HOLD UP TIME (Typ.)	16ms/230VAC 16ms/115VAC at full load			
INPUT	VOLTAGE RANGE Note.5	88 ~ 264VAC	124 ~ 370VDC	
	FREQUENCY RANGE	47 ~ 63Hz		
	POWER FACTOR (Typ.)	PF>0.95/230VAC PF>0.98/115VAC at full load		
	EFFICIENCY (Typ.)	83.5%	85%	86.5%
	AC CURRENT (Typ.)	5A/115VAC 2.5A/230VAC		
	INRUSH CURRENT (Typ.)	20A/115VAC 40A/230VAC		
LEAKAGE CURRENT	<1mA / 240VAC			
PROTECTION	OVERLOAD	105 ~ 135% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed		
	OVER VOLTAGE	13.8 ~ 16.2V	27.6 ~ 32.4V	57.6 ~ 67.2V
	OVER TEMPERATURE	80°C ±5°C (TSW1 : detect on heatsink of power transistor) Protection type : Shut down o/p voltage, recovers automatically after temperature goes down		
FUNCTION	REMOTE CONTROL	4 ~ 10VDC power off, <0 ~ 0.8VDC power on		
	OUTPUT VOLTAGE TRIM	2.4 ~ 13.2V	4.8 ~ 26.4V	9.6 ~ 52.8V
ENVIRONMENT	WORKING TEMP.	-20 ~ +65°C (Refer to "Derating Curve")		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)		
SAFETY EMC (Note 4)	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes		
	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH		
	EMC EMISSION	Compliance to EN55022 (CISPR22) Class B, EN61000-3-2,-3		
OTHERS	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, light industry level, criteria A		
	MTBF	207K hrs min. MIL-HDBK-217F (25°C)		
	DIMENSION	215*115*50mm (L*W*H)		
	PACKING	1.1Kg; 12pcs/14Kg/0.92CUFT		
NOTE	<p>1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.</p> <p>2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.</p> <p>3. Tolerance : includes set up tolerance, line regulation and load regulation.</p> <p>4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com)</p> <p>5. Derating may be needed under low input voltages. Please check the derating curve for more details.</p>			



150W Single Output with PFC Function

SPV-150 series



- Features :
- Universal AC input / Full range
 - Built-in active PFC function, PF>0.94
 - Protections: Short circuit / Overload / Over voltage / Over temperature
 - Cooling by free air convection
 - Output voltage programmable from 20~110% by 1~5.5VDC external control signal
 - Built-in remote ON-OFF control
 - Fixed switching frequency at 100KHz
 - 3 years warranty



SPECIFICATION

MODEL	SPV-150-12	SPV-150-24	SPV-150-48	
OUTPUT	DC VOLTAGE	12V	24V	48V
	RATED CURRENT	12.5A	6.25A	3.125A
	CURRENT RANGE	0 ~ 12.5A	0 ~ 6.25A	0 ~ 3.125A
	RATED POWER	150W	150W	150W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	240mVp-p
	VOLTAGE ADJ. RANGE	10.8 ~ 13.2V	20 ~ 26.4V	41 ~ 52.8V
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.3%	±0.2%	±0.2%
	LOAD REGULATION	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	800ms, 50ms/230VAC	2500ms, 50ms/115VAC at full load	
HOLD UP TIME (Typ.)	16ms/230VAC	16ms/115VAC at full load		
INPUT	VOLTAGE RANGE Note.5	88 ~ 264VAC	124 ~ 370VDC	
	FREQUENCY RANGE	47 ~ 63Hz		
	POWER FACTOR (Typ.)	PF>0.94/230VAC	PF>0.98/115VAC at full load	
	EFFICIENCY (Typ.)	82%	83%	83%
	AC CURRENT (Typ.)	2.5A/115VAC	1.25A/230VAC	
	INRUSH CURRENT (Typ.)	20A/115VAC	40A/230VAC	
LEAKAGE CURRENT	<1mA / 240VAC			
PROTECTION	OVERLOAD	105 ~ 150% rated output power Protection type : Constant current limiting, recovers automatically after fault condition is removed		
	OVER VOLTAGE	13.8 ~ 16.2V	27.6 ~ 32.4V	57.6 ~ 67.2V
	OVER TEMPERATURE	80°C ±5°C (TSW1 : detect on heatsink of power transistor) Protection type : Shut down o/p voltage, recovers automatically after temperature goes down		
FUNCTION	REMOTE CONTROL	4 ~ 10VDC power off, <0 ~ 0.8VDC power on		
	OUTPUT VOLTAGE TRIM	2.4 ~ 13.2V	4.8 ~ 26.4V	9.6 ~ 52.8V
ENVIRONMENT	WORKING TEMP.	-20 ~ +65°C (Refer to "Derating Curve")		
	WORKING HUMIDITY	20 ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH		
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 50°C)		
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes		
SAFETY EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC		
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH		
	EMC EMISSION	Compliance to EN55022 (CISPR22) Class B, EN61000-3-2,-3		
OTHERS	EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, light industry level, criteria A		
	MTBF	207K hrs min. MIL-HDBK-217F (25°C)		
	DIMENSION	215*115*50mm (L*W*H)		
	PACKING	1.1Kg; 12pcs/14Kg/0.92CUFT		
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com) 5. Derating may be needed under low input voltages. Please check the derating curve for more details.			



65W Single Output Switching Power Supply

PS-65 series



- Features :
 - Universal AC input/Full range
 - Low leakage current<0.75mA
 - Protections: Short circuit / Overload / Over voltage
 - Cooling by free air convection
 - 100% full load burn-in test
 - Fixed switching frequency at 65KHz
 - 2 years warranty



SPECIFICATION

MODEL	PS-65-3.3	PS-65-5	PS-65-7.5	PS-65-12	PS-65-13.5	PS-65-15	PS-65-24	PS-65-27	PS-65-48		
OUTPUT	DC VOLTAGE	3.3V	5V	7.5V	12V	13.5V	15V	24V	27V	48V	
	RATED CURRENT	12A	12A	8A	5.2A	4.7A	4.2A	2.7A	2.4A	1.35A	
	CURRENT RANGE	0 ~ 15.2A	0 ~ 13.8A	0 ~ 9.6A	0 ~ 6A	0 ~ 5.4A	0 ~ 4.8A	0 ~ 3A	0 ~ 2.7A	0 ~ 1.5A	
	RATED POWER	39.6W	60W	60W	62.4W	63.45W	63W	64.8W	64.8W	64.8W	
	OUTPUT POWER (max.)	Rated output power for convection; 72W (+3.3V : 50W; +5V:69W) with 18 CFM min. Forced air									
	RIPPLE & NOISE (max.) Note.2	80mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	100mVp-p	
	VOLTAGE ADJ. RANGE	3.14 ~ 3.63V	4.75 ~ 5.5V	7.13 ~ 8.25V	11.4 ~ 13.2V	12.8 ~ 14.9V	14.25 ~ 16.5V	22.8 ~ 26.4V	25.65 ~ 29.7V	45.6 ~ 52.8V	
	VOLTAGE TOLERANCE Note.3	±3.0%	±3.0%	±3.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	
	LOAD REGULATION	±3.0%	±3.0%	±3.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	±2.0%	
SETUP, RISE TIME	800ms, 20ms at full load										
HOLD UP TIME (Typ.)	60ms at full load										
INPUT	VOLTAGE RANGE	90 ~ 264VAC		127 ~ 370VDC							
	FREQUENCY RANGE	47 ~ 440Hz									
	EFFICIENCY (Typ.)	69%	76%	79%	79%	79%	79%	80%	80%	80%	
	AC CURRENT (Typ.)	1.2A/115VAC		0.72A/230VAC							
	INRUSH CURRENT (Typ.)	COLD START 20A/115VAC		40A/230VAC							
LEAKAGE CURRENT	<0.75mA / 240VAC										
PROTECTION	OVERLOAD	73 ~ 105W(3.3V : 51 ~ 75W)(5V : 70 ~ 105W) rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed.									
	OVER VOLTAGE	3.8 ~ 4.46V 5.75 ~ 6.75V 8.63 ~ 10.1V 13.8 ~ 16.2V 15.5 ~ 18.2V 17.25 ~ 20.25V 27.6 ~ 32.4V 31 ~ 36.45V 55.2 ~ 64.8V Protection type : Hiccup mode, recovers automatically after fault condition is removed.									
ENVIRONMENT	WORKING TEMP.	-10 ~ +60°C (Refer to "Derating Curve")									
	WORKING HUMIDITY	20 ~ 90% RH non-condensing									
	STORAGE TEMP., HUMIDITY	-20 ~ +85°C, 10 ~ 95% RH									
	TEMP. COEFFICIENT	±0.04%/°C (0 ~ 50°C)									
VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes										
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved									
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:2KVAC O/P-FG:0.5KVAC									
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH									
	EMC EMISSION	Compliance to EN55022 (CISPR22) Class B, EN61000-3-2,-3									
EMC IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11, EN55024, light industry level, criteria A										
OTHERS	MTBF	300.7K hrs min. MIL-HDBK-217F (25°C)									
	DIMENSION	127*76*42mm (L*W*H)									
	PACKING	0.21Kg; 54pcs/14.2Kg/1.35CUFT									
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com) 5. Mounting holes M1 and M2 should be grounded for EMI purposes. 6. Heat Sink HS1, HS2 can not be shorted.										