

PLC Lite™ Reference Design for Industrial Applications

Revision Notes:

V2 - Release 1 "A"
1. First Release (R1)

- V2- Release 2 "B"
1. Updated part C12
2. Added R5 & C11 to TXRX line
3. Added PI filter to 12V input (L1,C7,C6)
4. Added PI filter to 5V PTH output (L2,C8,C9)
5. Added R6 to TRDRVEn
6. Added J10 for 2nd AFE rev

V2- Release 3 "C"

1. Added J11/J12 to select USB or ISO for SCIB ISO for SCIB
2. Added J13/J14/J15/J16 to select McBSP-B or SPI-A
3. Removed TX/RX - slave from GPIO-29/28
4. LED Circuit
Added LEDs Circuit LD3-8
Added U5
Added R7,8,10,11,12,17
Added C10
Connected GP ?,?,?,?,?,?
5. Removed Bright LED Circuit
6. Changed TB1 Part
7. removed J5, J7, J9, C12
8. updated components C11, C9, C5, and C6

V3- Release 1 "D"

1. Moved TXDRVN to GP12
2. Moved GP33 to PG30, GP31 to GP28
3. Added I2C nets GP33/32, I2C EEPROMS, and discretes
4. Added ZeroCross Circuit and connected to GP05
5. Added T2 Xfmr
6. Changed C13 Value
7. Added L3/L4
8. Added Boot Options GP84/85

V3- Release 2 "D-2"

1. Added R28, R28
2. Added U8, C15, D2
3. Moved R27, D1
4. Changed R26, R27 Value
5. Added J5,J7
6. Changed J2, J6
7. Added R31,R32

V3- Release 3 "D-3"

1. Modified Zero Cross ckt
2. changed T1
3. Added PU to GPIOs 1,3,4
4. Changed J2 to DB9
5. Modified J6 pinout
6. Added J10 and J17

V3- Release 3 "D-4"

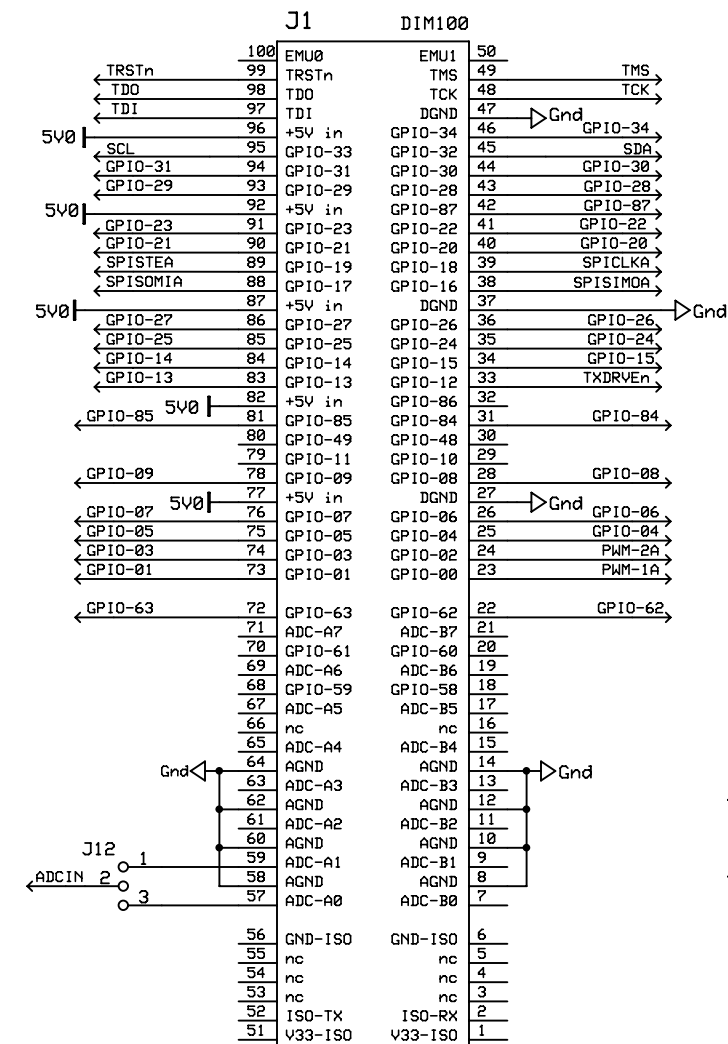
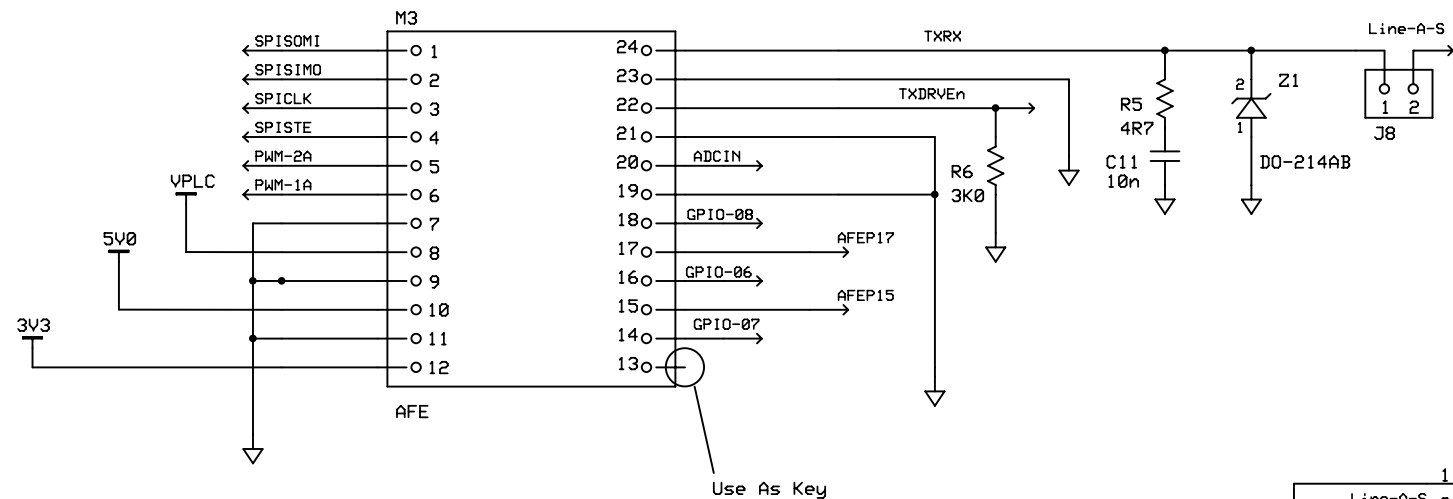
1. Added L5
2. No Populate for L3, L4
3. Changed 12V0 to VPLC

V3- Release 3 "D-5"

1. changed connections to M2

V3- Release 6 "F-0"

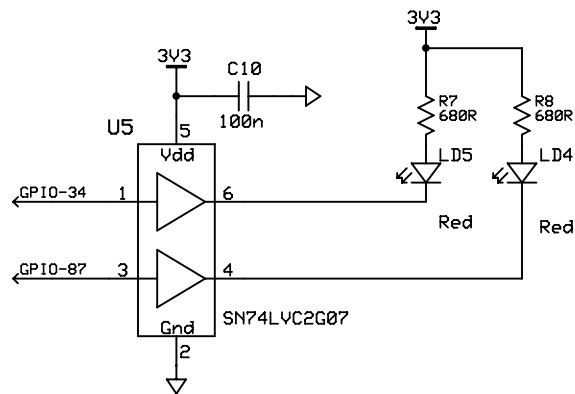
- Added J18-25
- Added C16
- Added L6
- Changed L3, L4
- Changed U5
- Changed J6, J12
- Changed T1
- Removed R12,11,12,17
- Removed D3,6,7,8
- Removed J4, J11
- Added CAN Bus GP30,31 to J6
- Updated Jumper Information



F28xxx - controlCARD

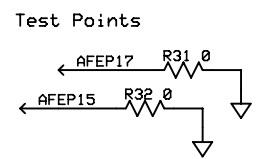
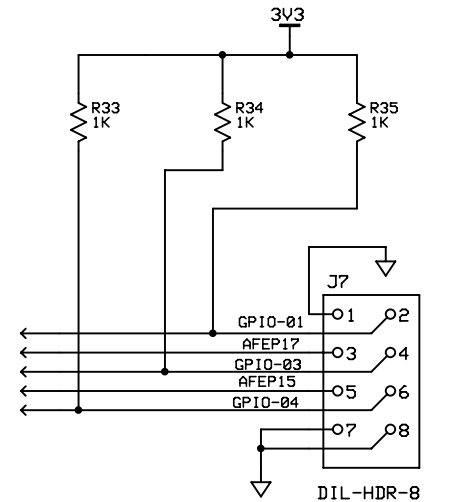
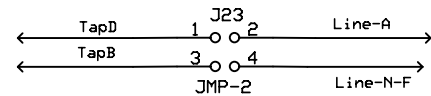
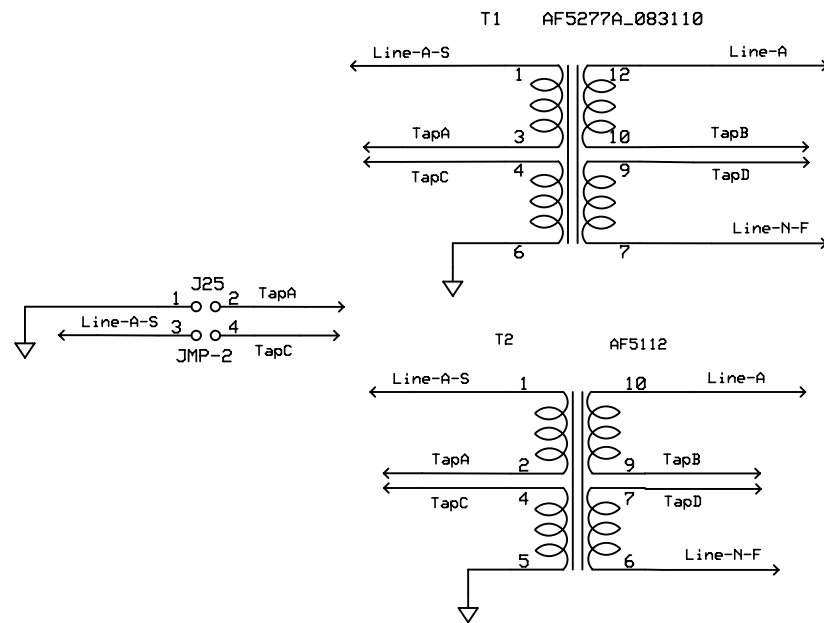
28335 Boot Options

- J3 1-2 : SPI-A Boot
- J3 2-3 : SCI-A Boot



Transformer Configurations

- T1(1:4) : J23 1-3, J25 2-4
- T1(1:2) : J23 3-4, J25 2-4
- T2 (1.5:1): J23 1-3, J25 2-4

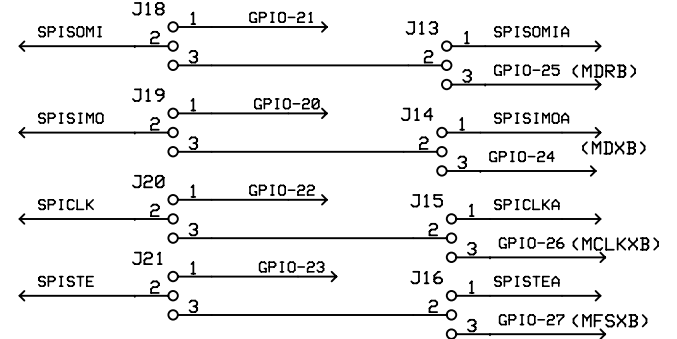
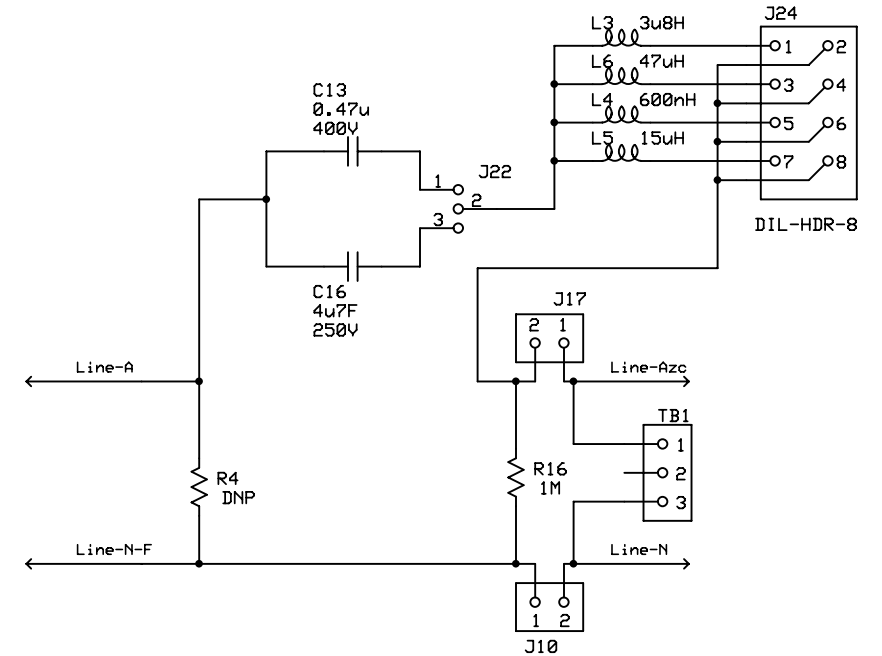


Device Configurations

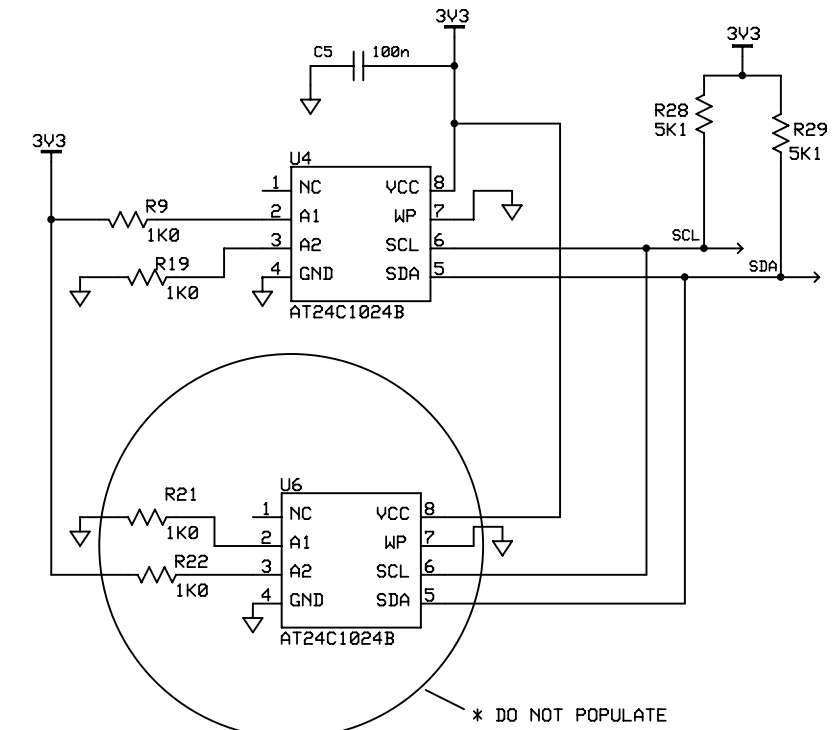
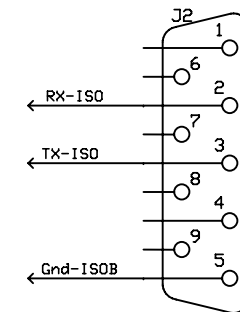
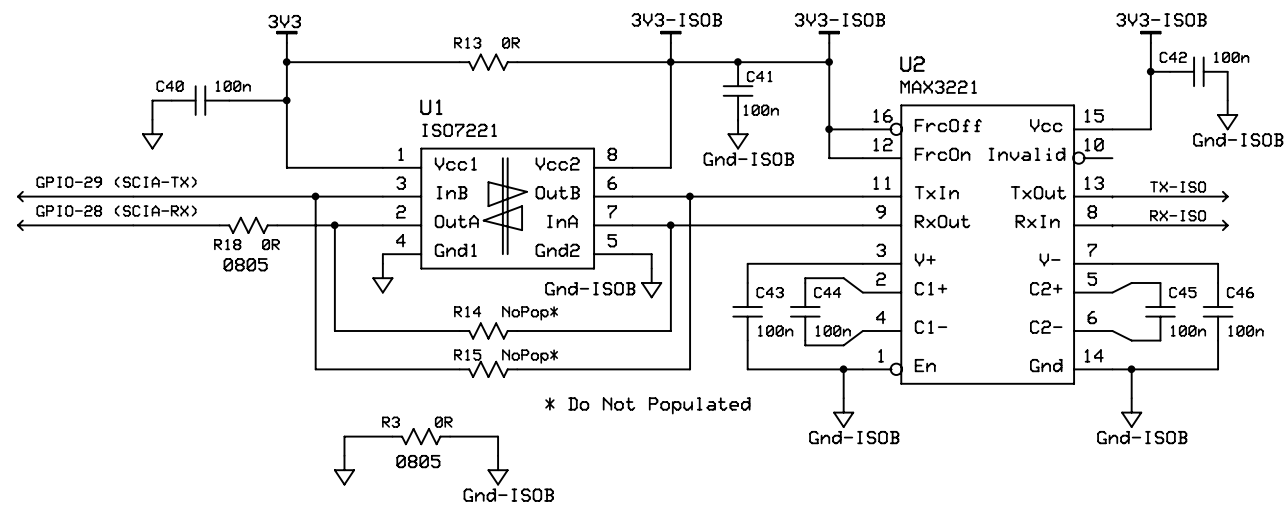
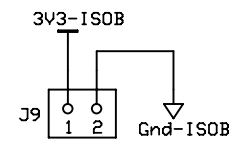
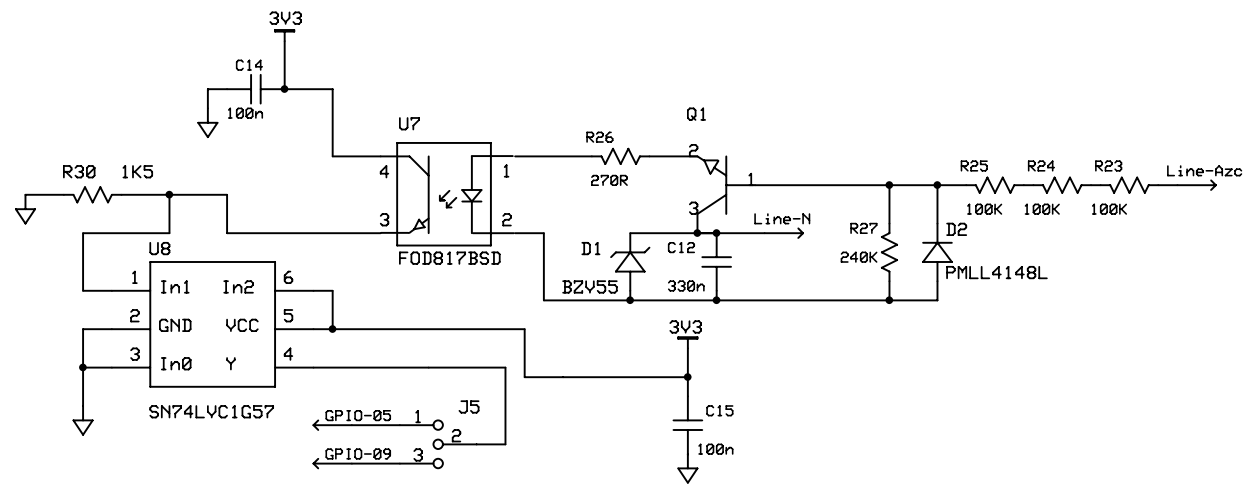
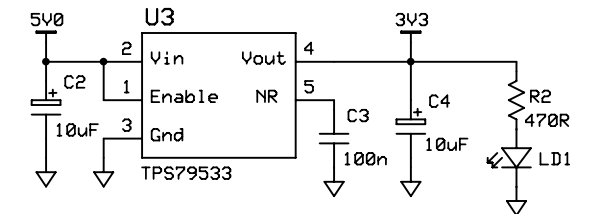
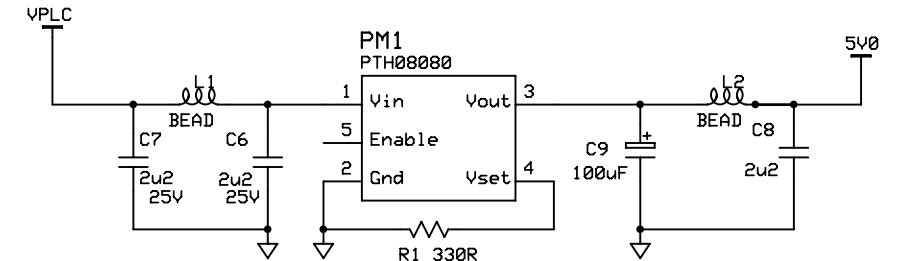
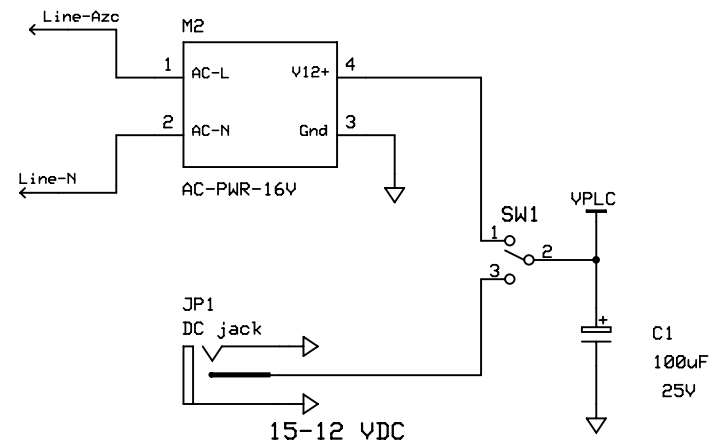
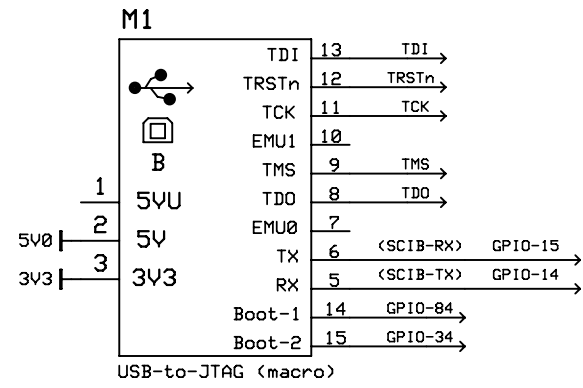
- 28335: J18 2-3; J13 2-3; J19 2-3; J14 2-3; J20 2-3; J15 2-3; J21 2-3; J16 2-3
- 2803x: J18 2-3; J13 1-2; J19 2-3; J14 1-2; J20 2-3; J15 1-2; J21 2-3; J16 1-2
- 2806x: J18 1-2; J13 Don't Care; J19 1-2; J14 Don't Care; J20 1-2; J15 Don't Care; J21 1-2; J16 Don't Care

Operational Band Configurations

- Cenelec A: J24 7-8, J22 1-2
- Cenelec B/C: J24 1-2, J22 1-2
- FCC Band: J24 5-6, J22 1-2
- Less Than 20Khz: J24 3-4, J22 2-3

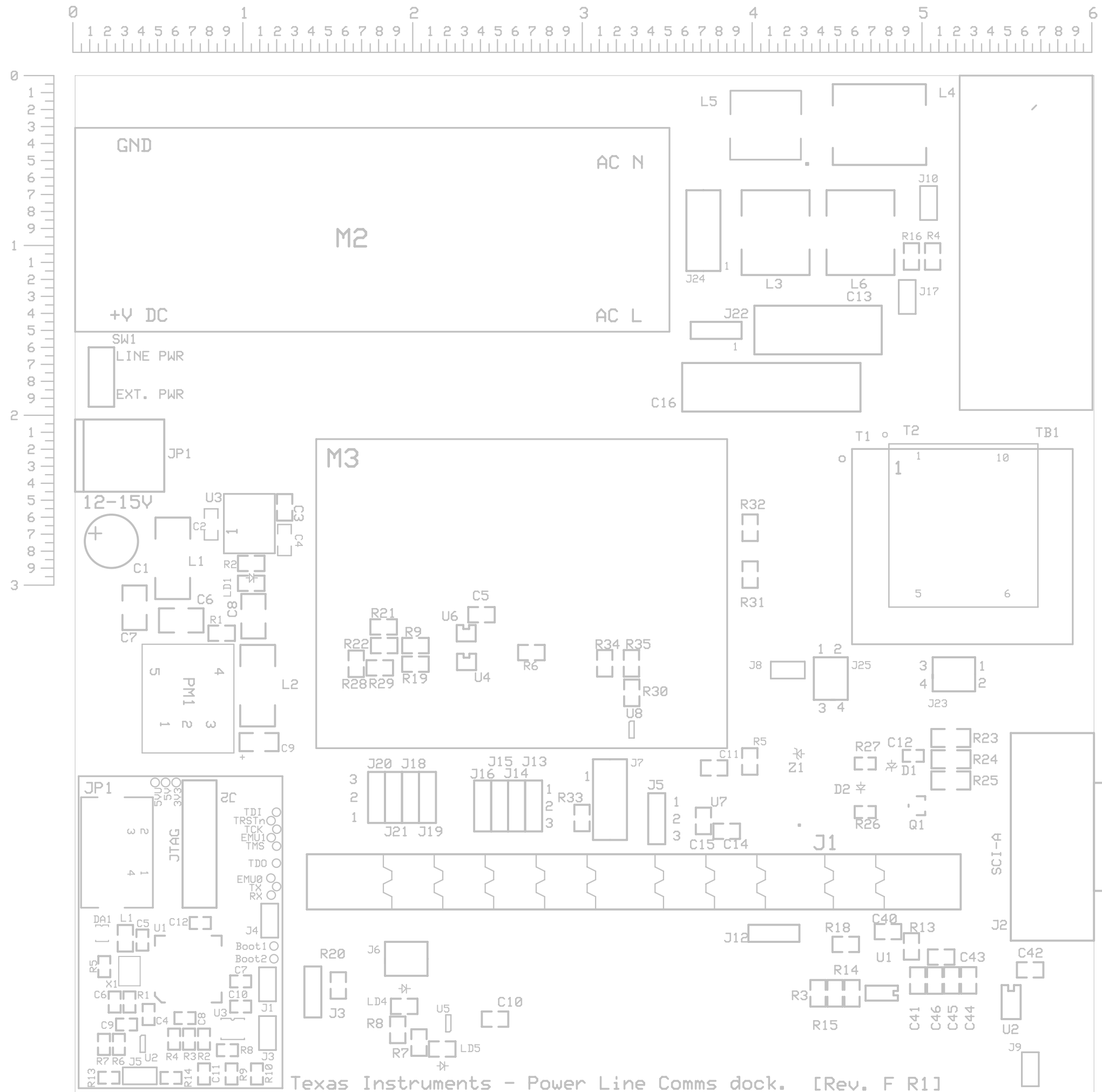


PLC Lite™ Reference Design for Industrial Applications



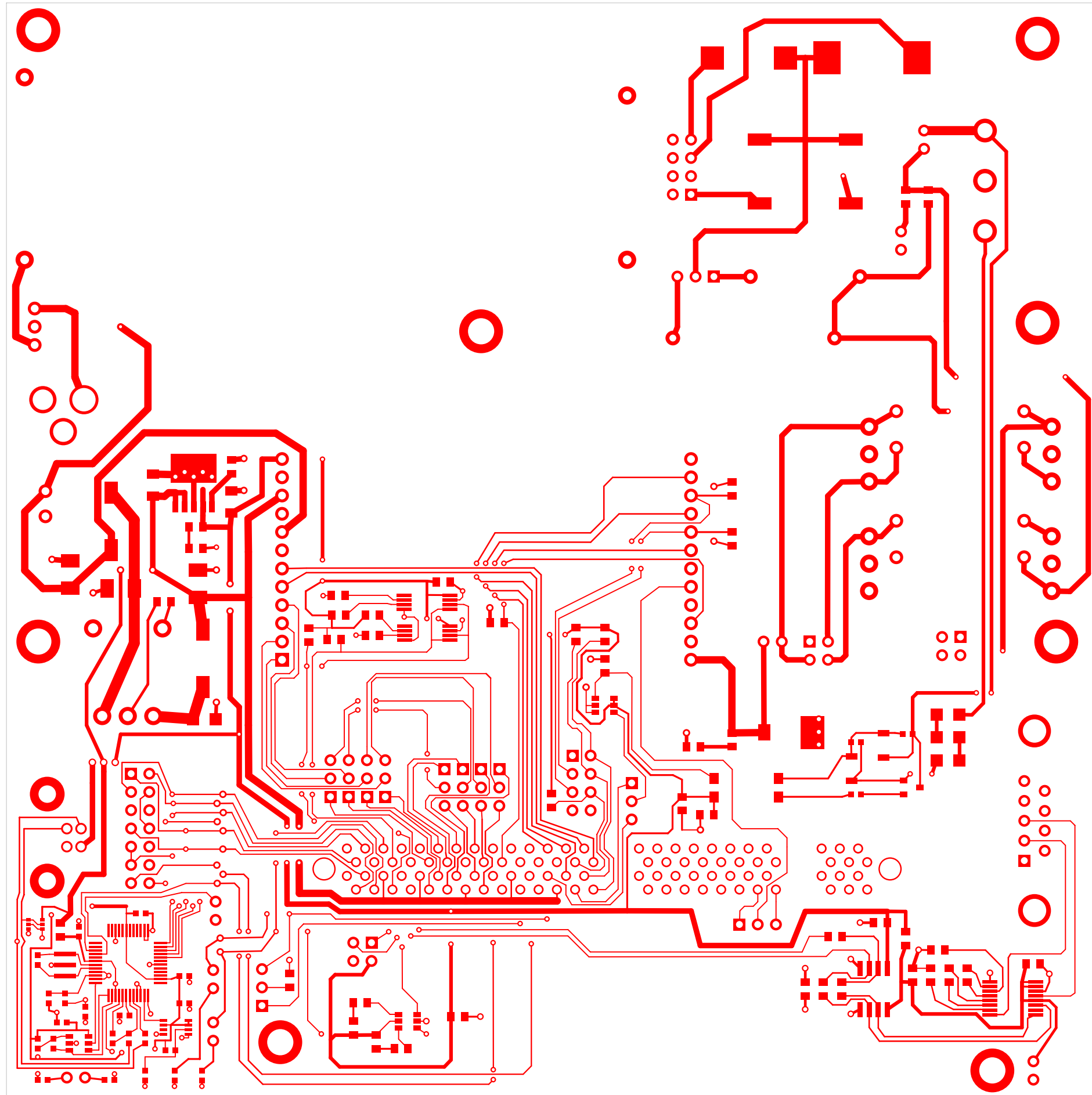
PLC Lite™ Reference Design for Industrial Applications

Texas Instruments		
PLC-Docking-Station		
C2000 - MSW	[V3-R6] 11/19/2010	Page 3-of-3

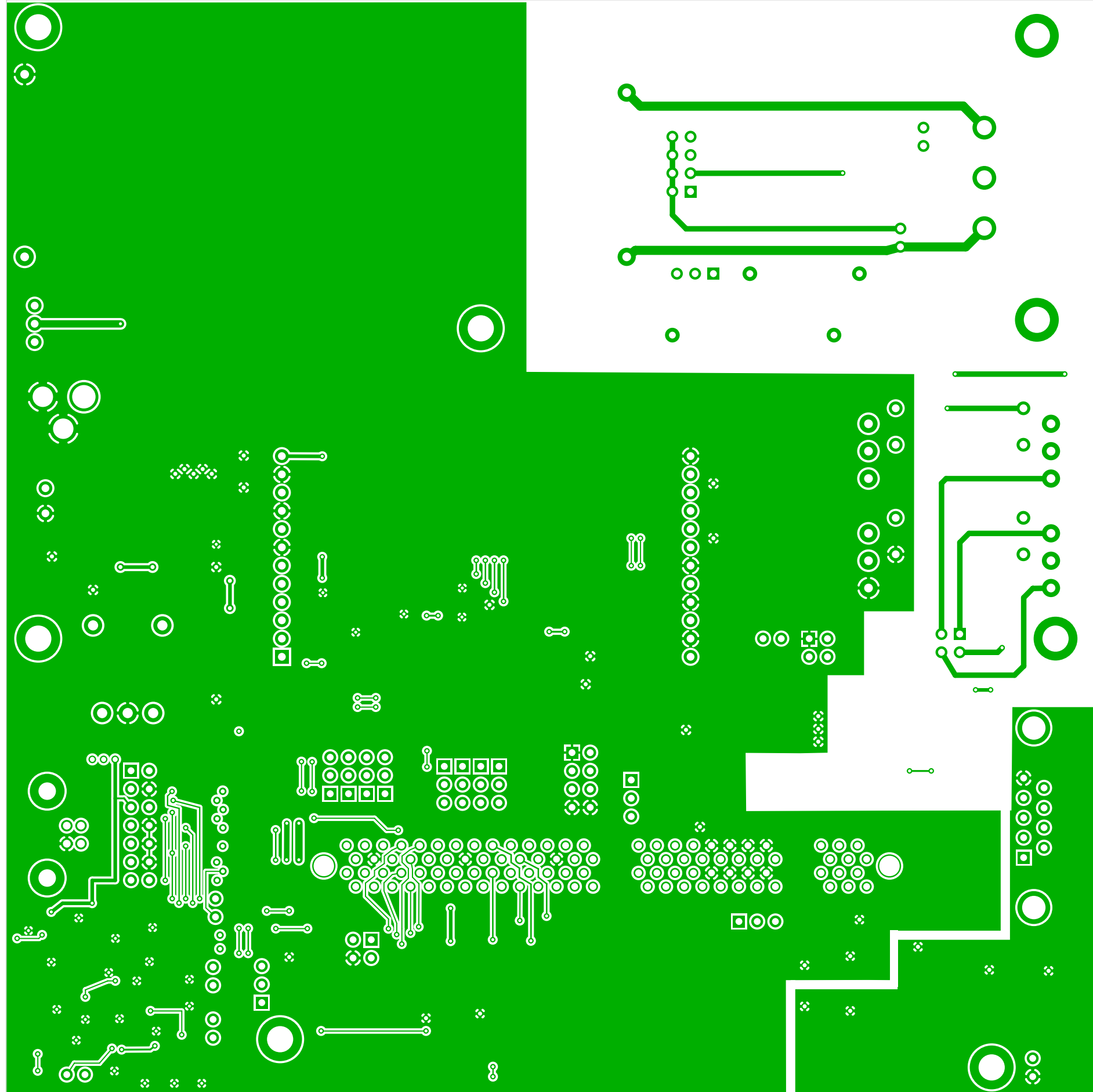


Texas Instruments - Power Line Comms dock. [Rev. F R1]

PLC Lite™ Reference Design for Industrial Applications



PLC Lite™ Reference Design for Industrial Applications



PLC Lite™ Reference Design for Industrial Applications

Notes/Revision Information

V2.01 - Initial Release

V2.02 - 10/06/2010

- p5
- added U19
- p6.
- replaced U18 with U20

V2.04- 10/11/2010

- p2
- moved DAC to J3-11
- p5
- added TP8

V2.05- 10/15/2010

- p3
- moved TP4
- p5
- removed C68,C74,C71
- added C87,C88,C89

V2.06- 10/18/2010

- p2
- added D1
- added R79

V2.07- 10/19/2010

- (BOM UPDATE)
- Changed footprint on C38
- Changed footprint on L1
- Changed footprint on L3

V2.08- 12/21/2010

- P4
- Added R80,81
- P5
- Changed C65,67,69,
70,72,73
- Changed C66,76,87,88,89

V2.09- 1/5/2011

- P5
- Added C74

V2.10- 1/6/2011

- P5
- Added Heat Sink P1
- Changed C81,82,83 to DNP (BOM CHANGE)
- Changed C84 to 100nF (BOM CHANGE)
- Changed U19 (BOM CHANGE)

01 - Title / Notes


02 - CONNECTORS

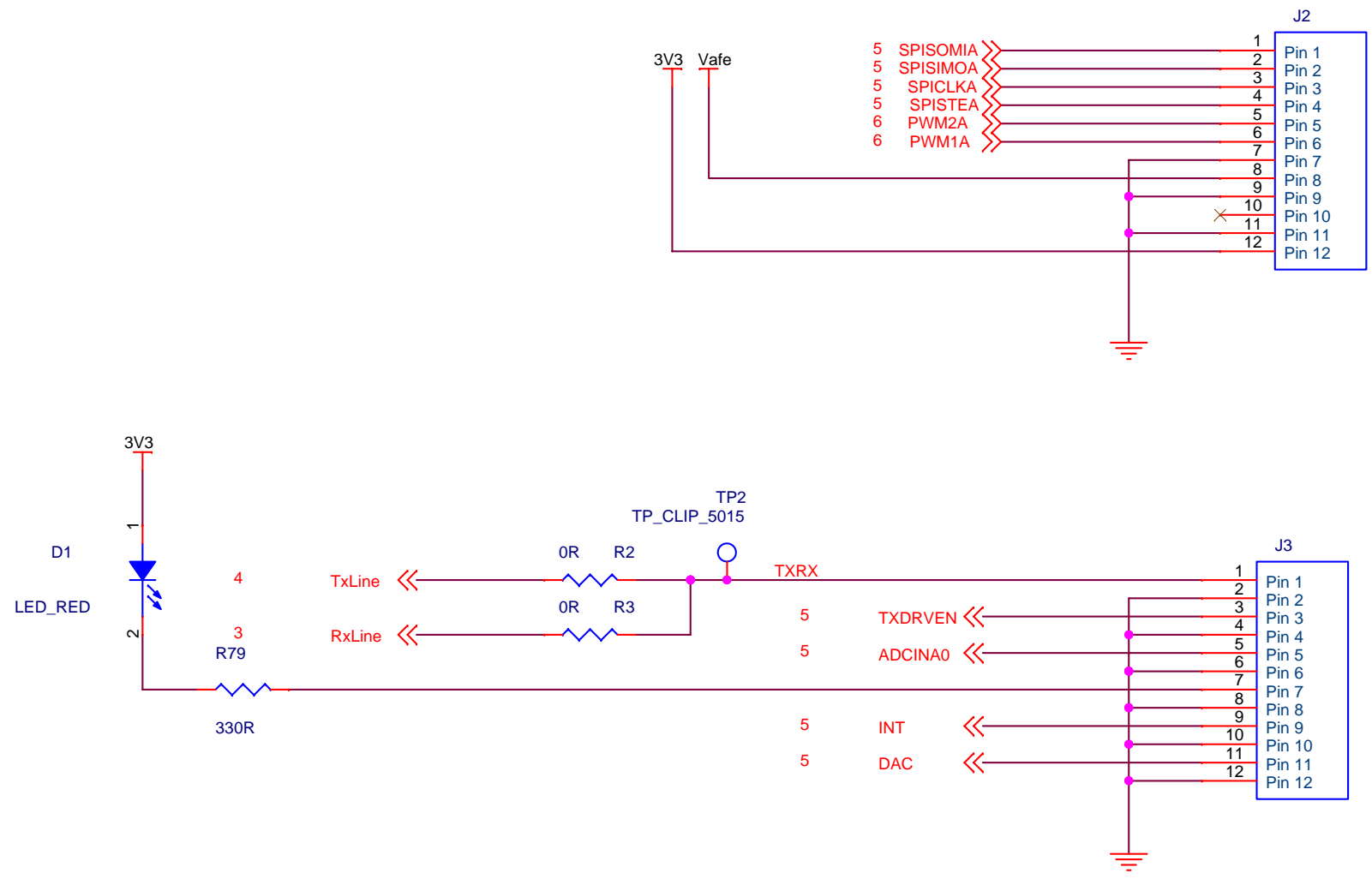
03 - AFE 1

04 - AFE 2


05 - AFE031

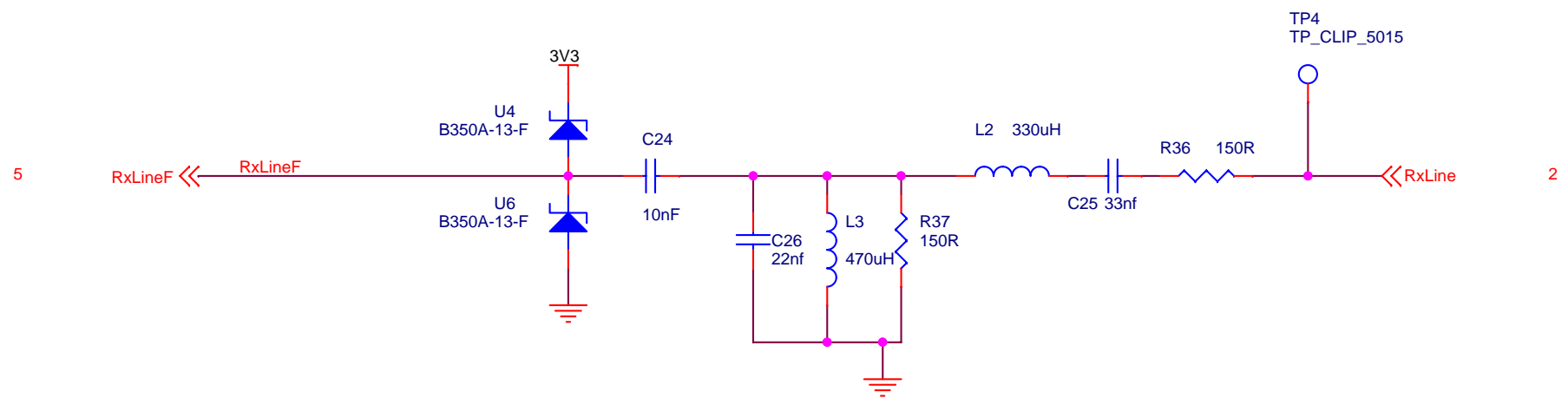
PLC Lite™ Reference Design for Industrial Applications

Title: TI PLC AFE031 MODULE V2			
Page Contents: Title Page			
Size: B	<Doc>	Revision: 0.10	
Date: Thursday, January 06, 2011	Sheet 1 of		6




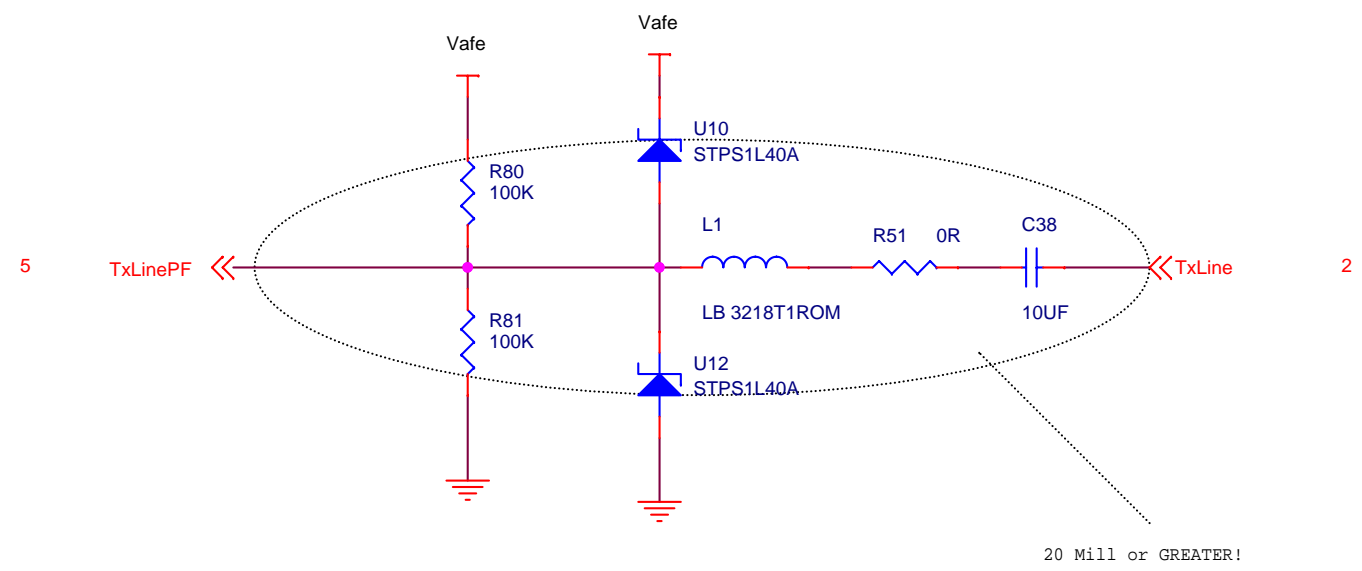
PLC Lite™ Reference Design for Industrial Applications

Title: TI PLC AFE031 MODULE V2			
Page Contents: Connectors			
Size: B	<Doc>	Revision: 0.10	
Date: Thursday, January 06, 2011	Sheet 2 of 6		



PLC Lite™ Reference Design for Industrial Applications

Title: TI PLC AFE031 MODULE V2		 TEXAS INSTRUMENTS	
Page Contents: AFE1 (Passive RX Filter)		Revision: 0.10	
Size: B	<Doc>	Date: Thursday, January 06, 2011	
Sheet 3 of 6		Revision: 0.10	



PLC Lite™ Reference Design for Industrial Applications



Title: TI PLC AFE031 MODULE V2

Page Contents: AFE2 (Passive TX filter)

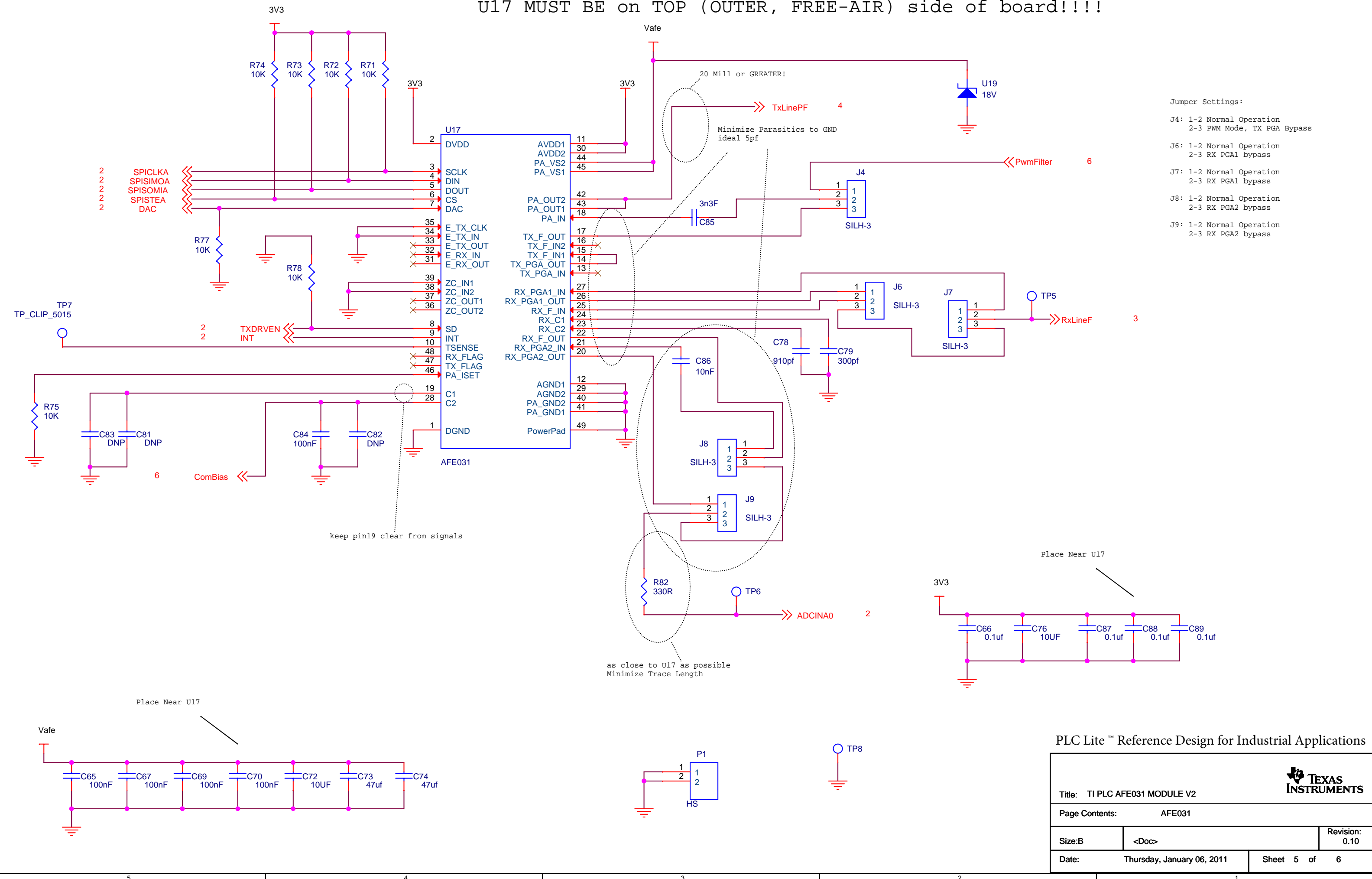
Size: B <Doc>

Revision: 0.10

Date: Thursday, January 06, 2011

Sheet 4 of 6

U17 MUST BE on TOP (OUTER, FREE-AIR) side of board!!!!



- Jumper Settings:
- J4: 1-2 Normal Operation
2-3 PWM Mode, TX PGA Bypass
 - J6: 1-2 Normal Operation
2-3 RX PGA1 bypass
 - J7: 1-2 Normal Operation
2-3 RX PGA1 bypass
 - J8: 1-2 Normal Operation
2-3 RX PGA2 bypass
 - J9: 1-2 Normal Operation
2-3 RX PGA2 bypass

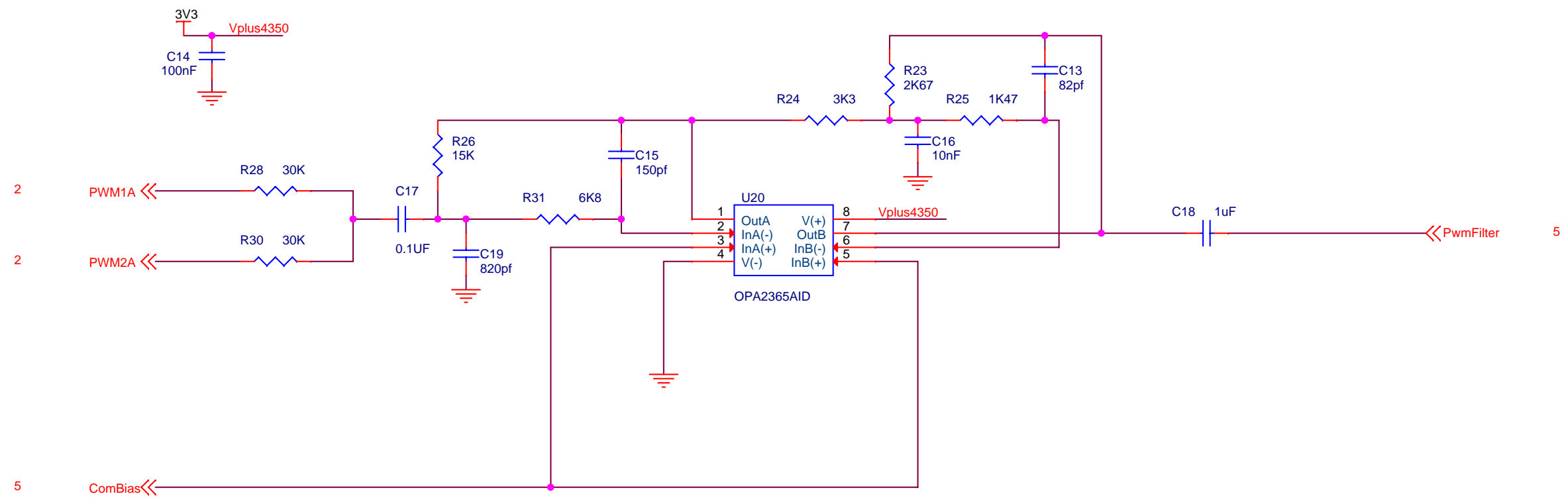
Place Near U17

as close to U17 as possible
Minimize Trace Length


Place Near U17

PLC Lite™ Reference Design for Industrial Applications

Title: TI PLC AFE031 MODULE V2			
Page Contents: AFE031			
Size: B	<Doc>	Revision: 0.10	
Date: Thursday, January 06, 2011	Sheet 5 of 6		



PLC Lite™ Reference Design for Industrial Applications

Title: TI PLC AFE031 MODULE V2			
Page Contents: PWM Filter			
Size: B	<Doc>	Revision: 0.10	
Date: Thursday, January 06, 2011	Sheet 6 of 6		

IMPORTANT NOTICE FOR TI REFERENCE DESIGNS

Texas Instruments Incorporated ("TI") reference designs are solely intended to assist designers ("Buyers") who are developing systems that incorporate TI semiconductor products (also referred to herein as "components"). Buyer understands and agrees that Buyer remains responsible for using its independent analysis, evaluation and judgment in designing Buyer's systems and products.

TI reference designs have been created using standard laboratory conditions and engineering practices. **TI has not conducted any testing other than that specifically described in the published documentation for a particular reference design.** TI may make corrections, enhancements, improvements and other changes to its reference designs.

Buyers are authorized to use TI reference designs with the TI component(s) identified in each particular reference design and to modify the reference design in the development of their end products. HOWEVER, NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE TO ANY OTHER TI INTELLECTUAL PROPERTY RIGHT, AND NO LICENSE TO ANY THIRD PARTY TECHNOLOGY OR INTELLECTUAL PROPERTY RIGHT, IS GRANTED HEREIN, including but not limited to any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services, or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

TI REFERENCE DESIGNS ARE PROVIDED "AS IS". TI MAKES NO WARRANTIES OR REPRESENTATIONS WITH REGARD TO THE REFERENCE DESIGNS OR USE OF THE REFERENCE DESIGNS, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ACCURACY OR COMPLETENESS. TI DISCLAIMS ANY WARRANTY OF TITLE AND ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUIET ENJOYMENT, QUIET POSSESSION, AND NON-INFRINGEMENT OF ANY THIRD PARTY INTELLECTUAL PROPERTY RIGHTS WITH REGARD TO TI REFERENCE DESIGNS OR USE THEREOF. TI SHALL NOT BE LIABLE FOR AND SHALL NOT DEFEND OR INDEMNIFY BUYERS AGAINST ANY THIRD PARTY INFRINGEMENT CLAIM THAT RELATES TO OR IS BASED ON A COMBINATION OF COMPONENTS PROVIDED IN A TI REFERENCE DESIGN. IN NO EVENT SHALL TI BE LIABLE FOR ANY ACTUAL, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR INDIRECT DAMAGES, HOWEVER CAUSED, ON ANY THEORY OF LIABILITY AND WHETHER OR NOT TI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, ARISING IN ANY WAY OUT OF TI REFERENCE DESIGNS OR BUYER'S USE OF TI REFERENCE DESIGNS.

TI reserves the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques for TI components are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

Reproduction of significant portions of TI information in TI data books, data sheets or reference designs is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards that anticipate dangerous failures, monitor failures and their consequences, lessen the likelihood of dangerous failures and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in Buyer's safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed an agreement specifically governing such use.

Only those TI components that TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components that have **not** been so designated is solely at Buyer's risk, and Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.