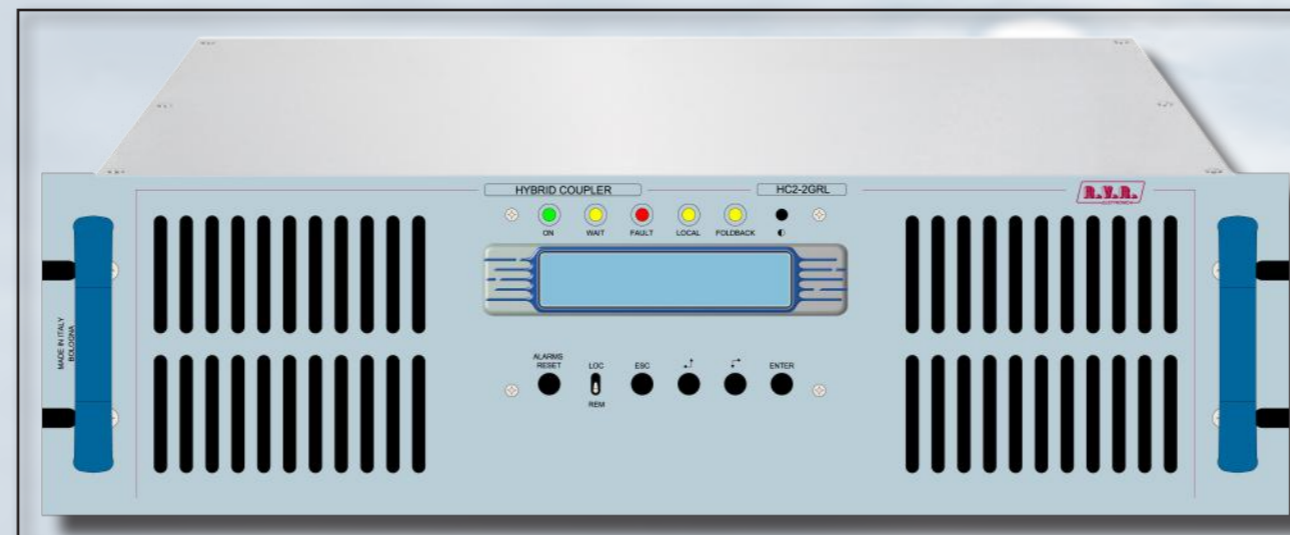




HC2-2GRL

TECHNICAL ANNEX VOLUME 2



R.V.R. Elettronica
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Member of CISQ Federation



CERTIFIED MANAGEMENT SYSTEM
ISO 9001



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Manufactured by R.V.R. ELETTRONICA Italy



Appendix A Piani di montaggio, schemi elettrici, liste componenti / *Component layouts, schematics, bills of material*

Questa parte del manuale contiene i dettagli tecnici riguardanti la costruzione delle singole schede componenti il HC2-2GRL. L'appendice è composta dalle seguenti sezioni:

This part of the manual contains the technical details about the different Cards of the HC2-2GRL. This appendix is composed of the following sections:

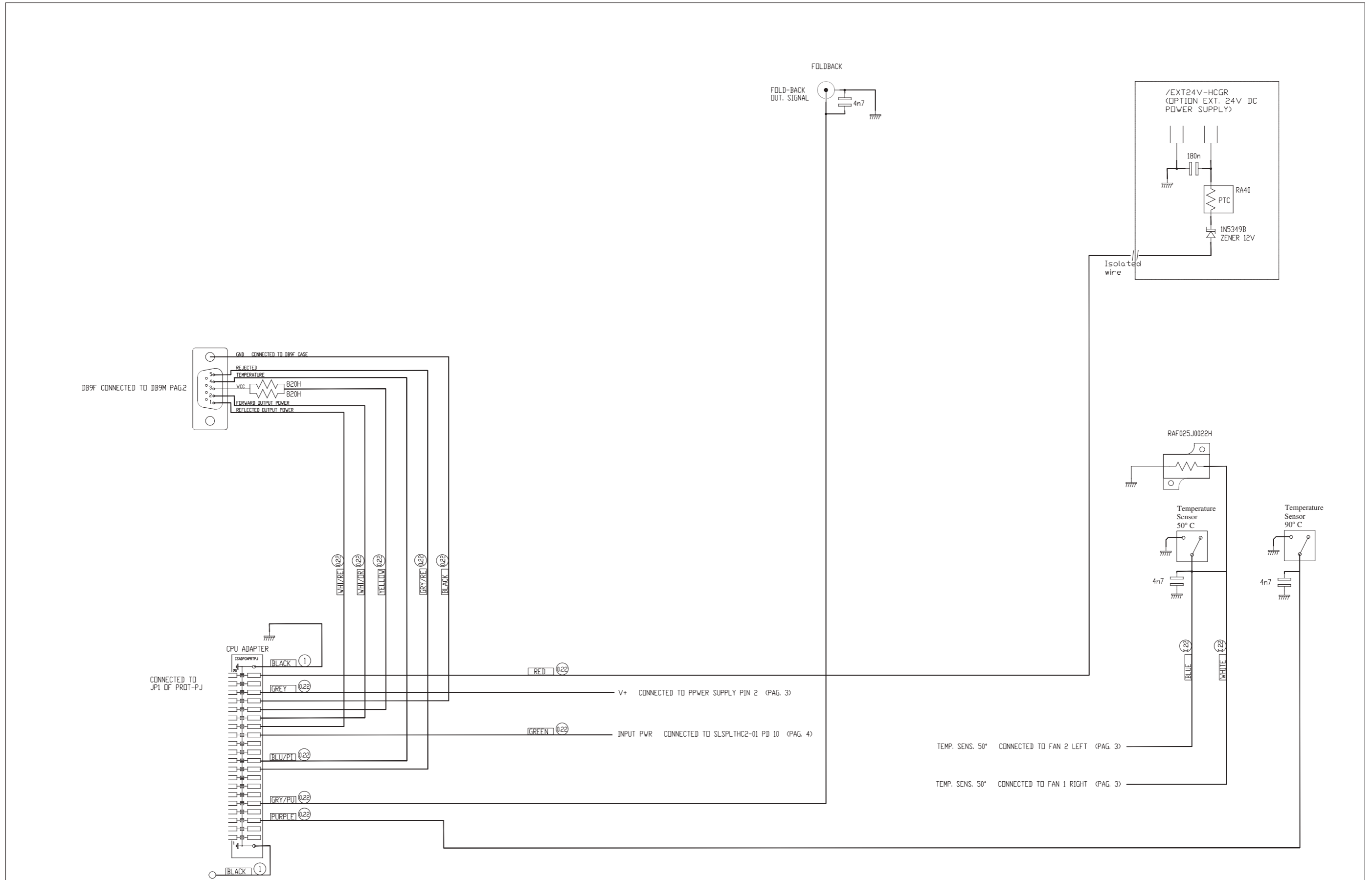
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|------------------------------|----------------|-------|------|
| Wiring Diagram | KKCAB021A | 1.3 | 1 |
| Phase Shifter Card | SLPHSHHC2-01 | 1.0 | 6 |
| Power Splitter Card | SLSPLTHC2-01 | 1.0 | 8 |
| Power Combiner Card | SLCMB1HC2-01 | 1.1 | 11 |
| CPU Card | PROTPJ-HCLCD | 3.1 | 14 |
| CPU Adapter Card | SLADPCNP RTPJ | 2.1 | 21 |
| Power Supply | PSSWEPP10024 | 1.0 | 28 |
| PROT-F Interface Add-On Card | SLIN0411R02V01 | 1.2 | 24 |
| Meter Card | SL042MT1001 | 1.1 | 27 |

| Description | Spare Parts |
|------------------------|--------------|
| Fan | VTL9GL1224J |
| CPU panel & Display | SP-PAN021A |
| Switching power supply | PSSWEPP10024 |
| Power Meter Section | SP-MTR021A |

Document History

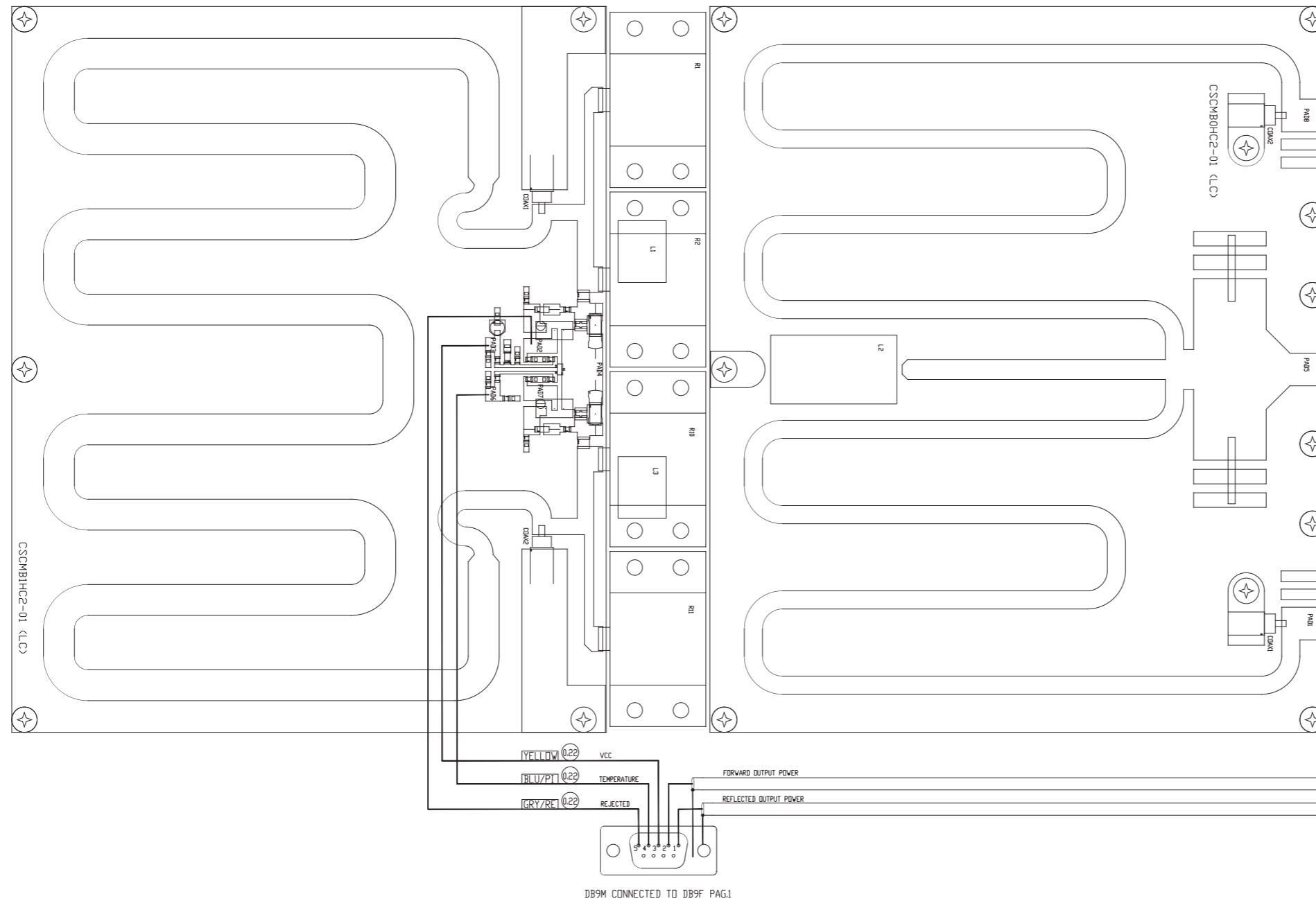
| Date | Version | Reason | Code | Editor |
|------------|---------|---------------|------|------------|
| 29/11/2019 | 1.0 | First Release | / | J.H. Berti |
| | | | | |

KKCAB021A



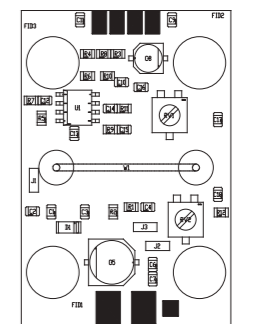
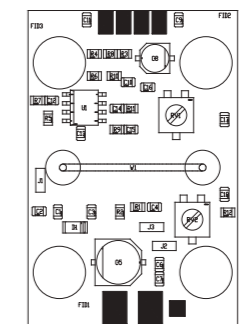
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|--|-----------------------------------|----------------------------|--------------|-----------|---------|
| | PRODUCT NAME : HC2-GRL | PART NAME : WIRING DIAGRAM | | | |
| | DESIGNER : M. UCELLI; G. DE DONNO | DATE 31/07/18 | REVISION 1.3 | SCALE 1:1 | SIZE A3 |
| ARCHIVING : 'RVRT' SERVER, 'RILASCIATI' FOLDER | PROJECT CODE : 021 | DOCUMENT CODE : KKCAB021A | | | |

COMBINER SECTION



FORWARD OUT. POWER MEASURE

REFLECTED OUT. POWER MEASURE



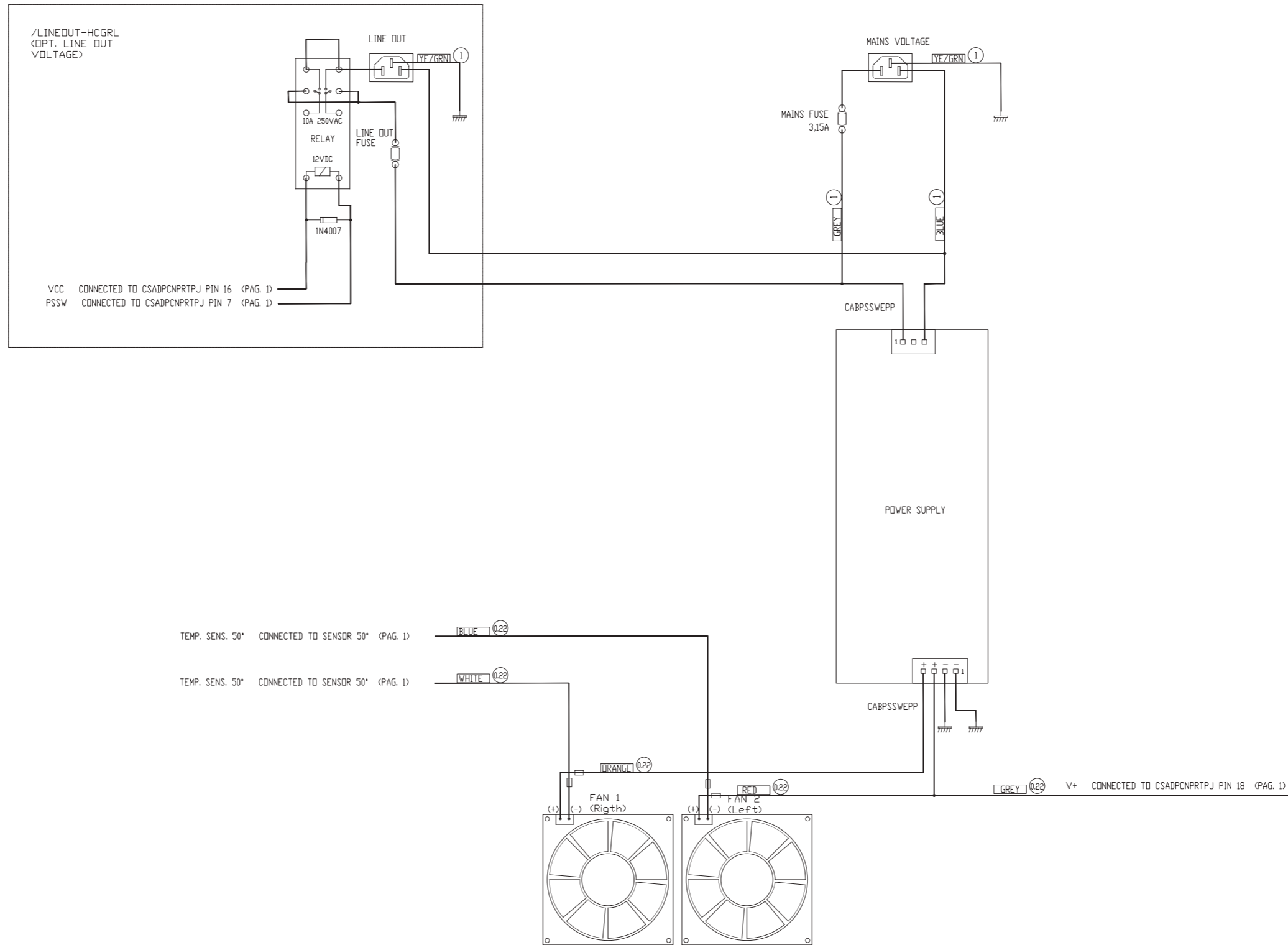
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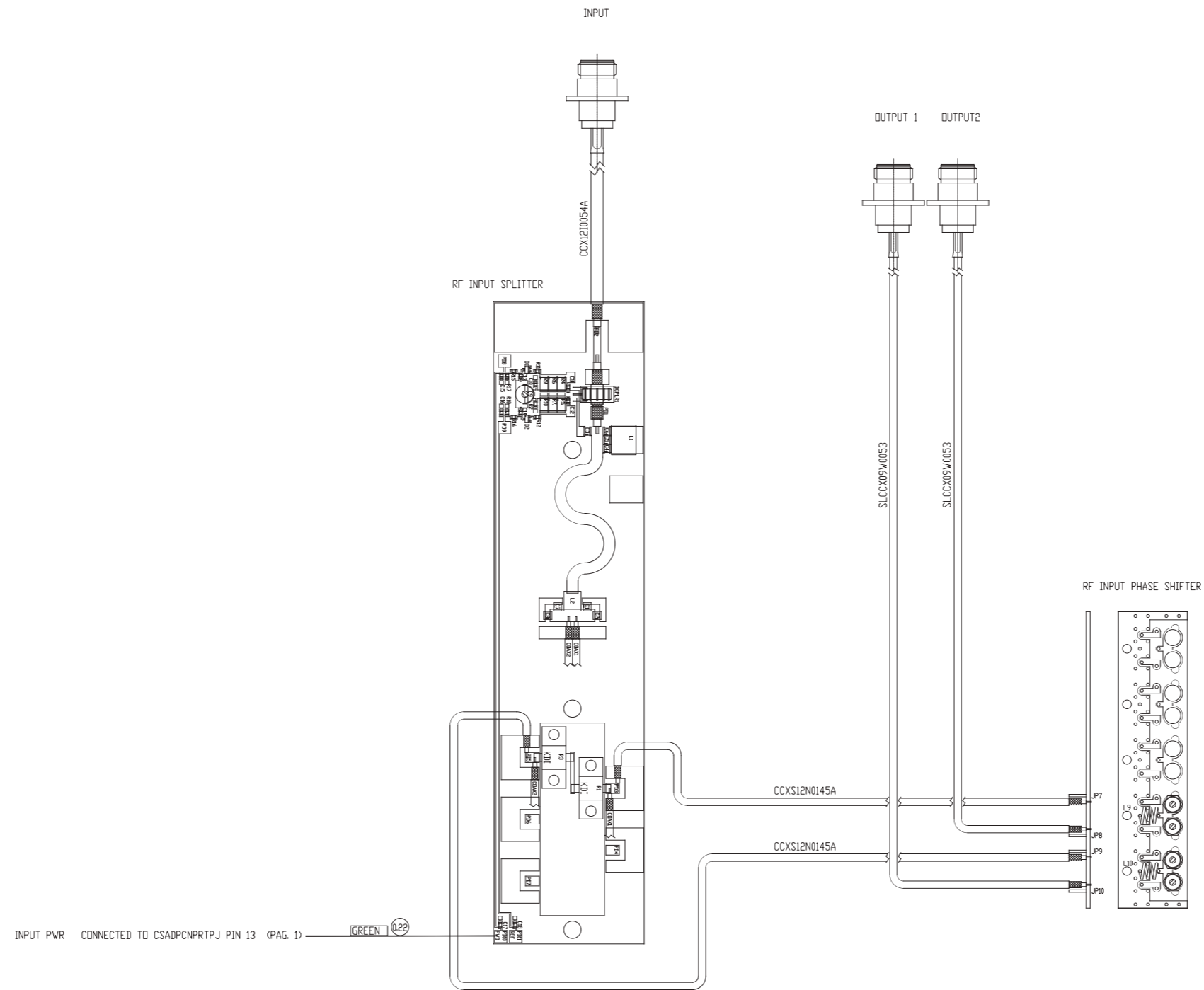


| | |
|---|--|
| PRODUCT NAME : HC2-GRL | PART NAME : WIRING DIAGRAM |
| DESIGNER : M. UCELLI; G. DE DONNO | DATE 31/07/18 REVISION 1.3 SCALE 1:1 SIZE A3 PAGE : 2 DI 5 |
| ARCHIVING : 'RVRUT' SERVER, 'RILASCIATI' FOLDER | PROJECT CODE : 021 DOCUMENT CODE : KKCAB021A |

KKCAB021A

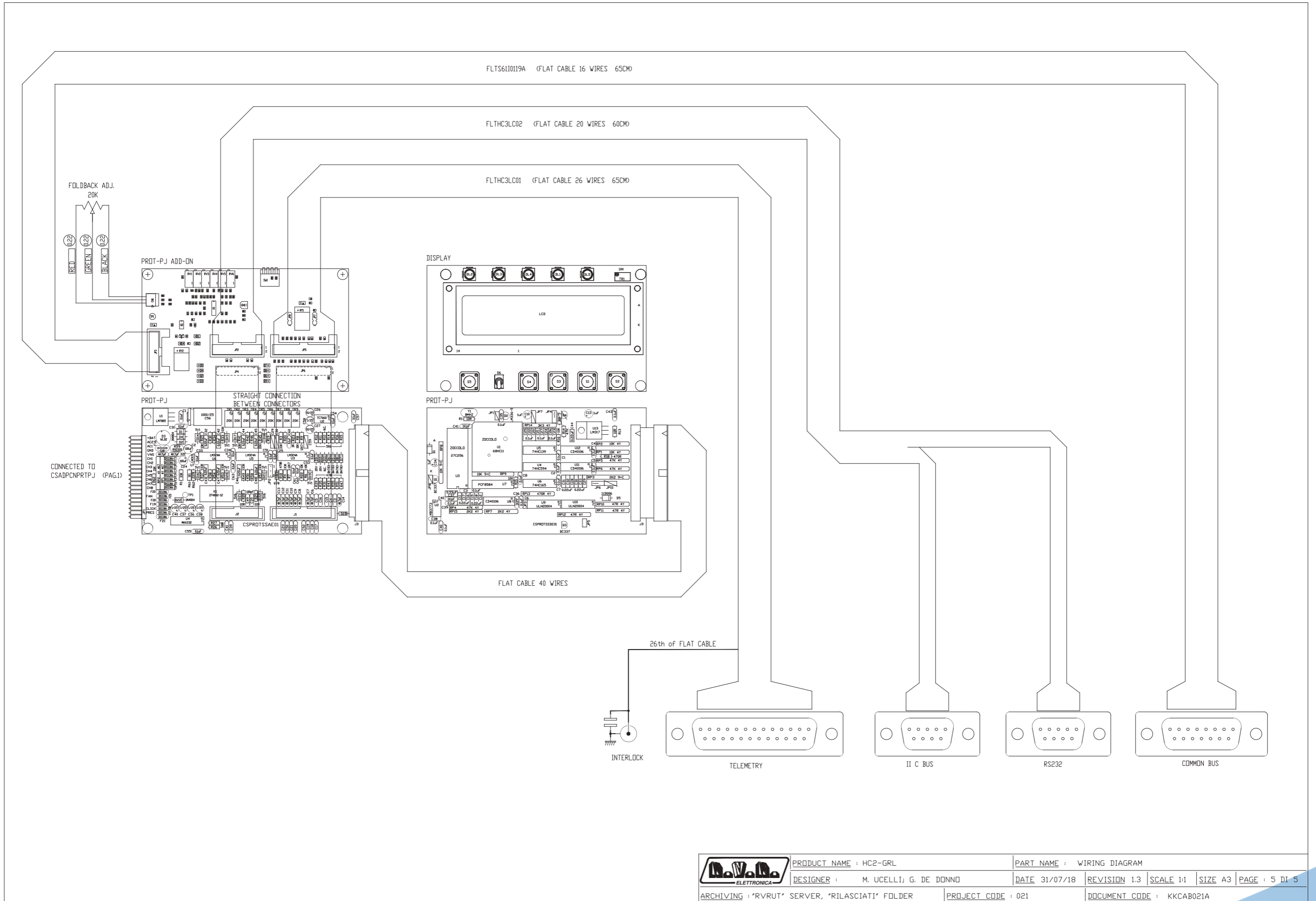


| | | | | | | |
|---|-----------------------------------|----------------------------|---------------------------|-----------|---------|---------------|
| | PRODUCT NAME : HC2-GRL | PART NAME : WIRING DIAGRAM | | | | |
| | DESIGNER : M. UCELLI; G. DE DONNO | DATE 31/07/18 | REVISION 1.3 | SCALE 1:1 | SIZE A3 | PAGE : 3 DI 5 |
| ARCHIVING : 'RVRUT' SERVER, 'RILASCIATI' FOLDER | | PROJECT CODE : 021 | DOCUMENT CODE : KKCAB021A | | | |



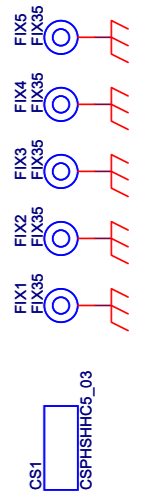
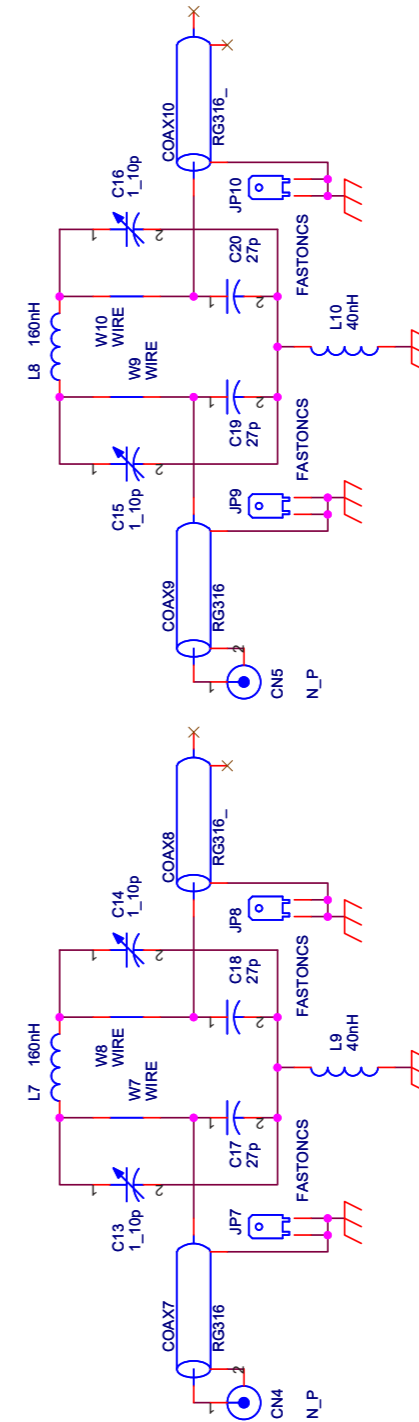
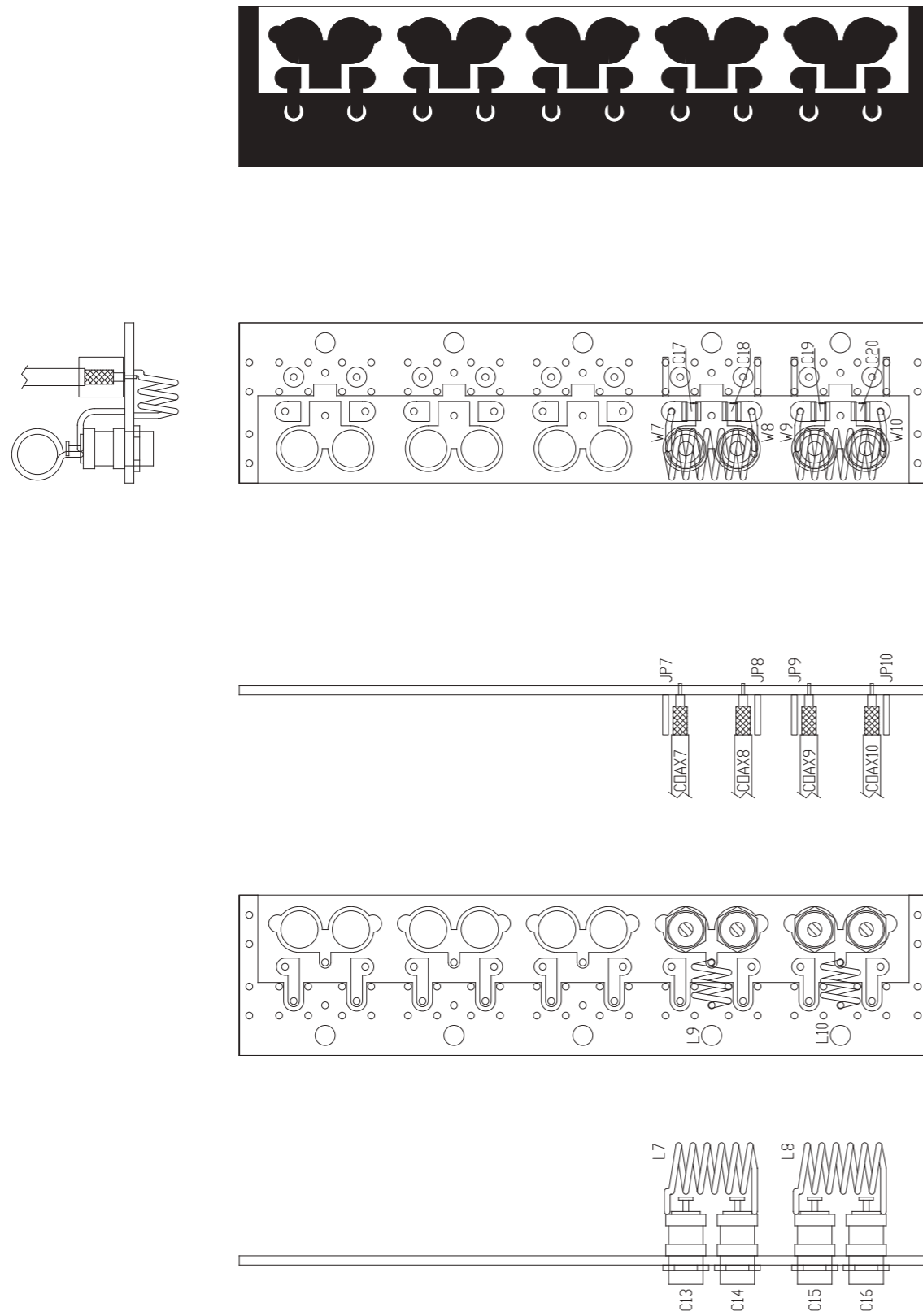
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| | PRODUCT NAME : HC2-GRL | PART NAME : WIRING DIAGRAM | | | |
| | DESIGNER : M. UCELLI; G. DE DONNO | DATE 31/07/18 | REVISION 1.3 | SCALE 1:1 | SIZE A3 |
| ARCHIVING : "RVRUT" SERVER, "RILASCIATI" FOLDER | PROJECT CODE : 021 | DOCUMENT CODE : KKCAB021A | | | |

KKCAB021A



| | | | | | | |
|--|-----------------------------------|----------------------------|---------------------------|-----------|---------|---------------|
| | PRODUCT NAME : HC2-GRL | PART NAME : WIRING DIAGRAM | | | | |
| | DESIGNER : M. UCELLI; G. DE DONNO | DATE 31/07/18 | REVISION 1.3 | SCALE 1:1 | SIZE A3 | PAGE : 5 DI 5 |
| ARCHIVING : 'RVUT' SERVER, 'RILASCIATI' FOLDER | | PROJECT CODE : 021 | DOCUMENT CODE : KKCAB021A | | | |

SLPHSHHC2-01



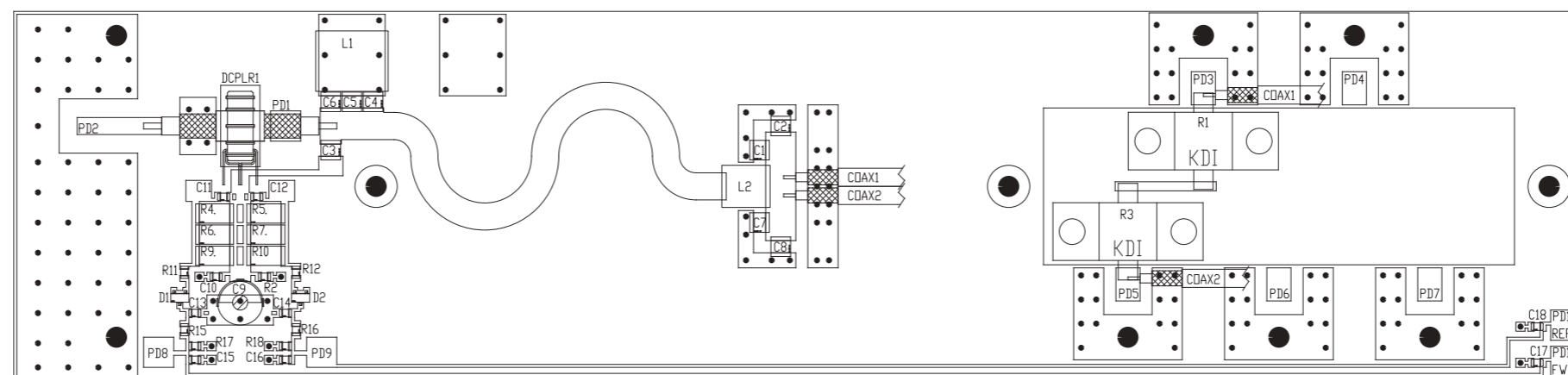
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| Description: Phase Shifter for HC2/LCD | |
| Designer: Ucelli / De Donno | Size: A4 |
| Part No.: SLPHSHHC2-01 | Page: 1 of 1 |
| | Date: 07/06/2013 |
| | Rev. 1.0 |

| | | | | | |
|---|------------------------------|--------------------------------|----------------|-------------|-----------|
| | PRODUCT NAME : HC2/2 | PART NAME : Phase shifter Card | | | |
| | DESIGNER : UCELLI / DE DONNO | DATE : 07/06/13 | REVISION : 1.0 | SCALE : 1:1 | SIZE : A4 |
| ARCHIVING : *RVRUT* SERVER, *RILASCIATI* FOLDER | PROJECT CODE : _019 | DOCUMENT CODE : SLPHSHHC2-01 | | | |

SLPHSHHC2-01

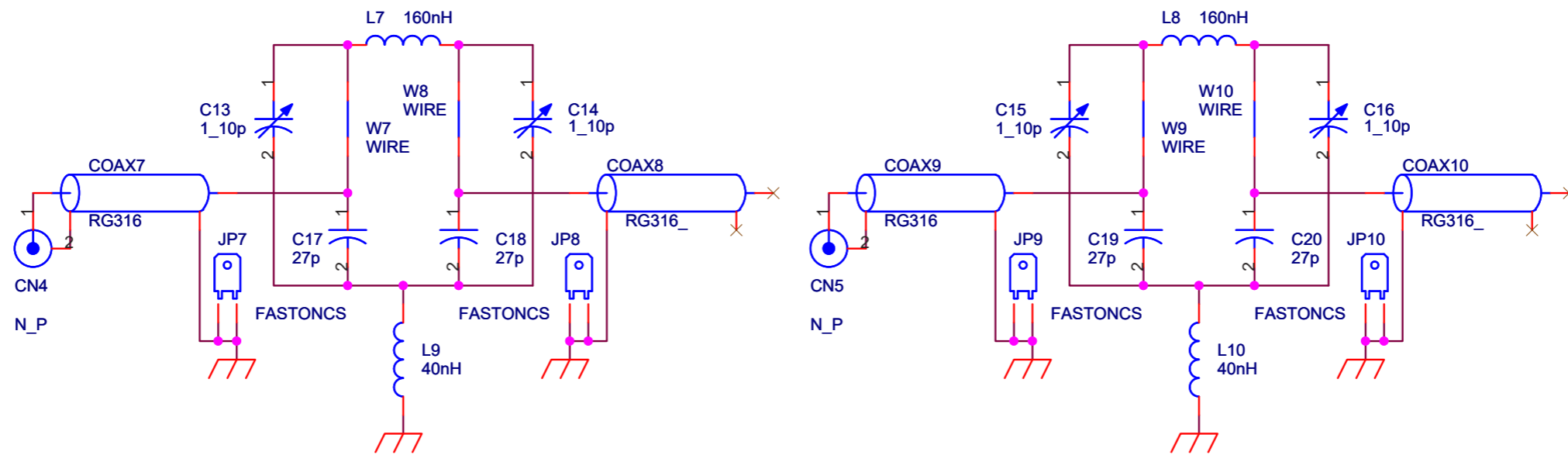
Phase Shifter for HC2/2 LCD
 SLPHSHHC2-01
 Revision: 1.0
 HC2/2
 Ucelli / De Donno
 07/06/2013

| Item | Quantity | Reference | Part | Description |
|------|----------|--------------------------|--------------|---|
| 1 | 2 | CN4,CN5 | N_P | N panel connector for RG316 cable |
| 2 | 2 | COAX7,COAX9 | RG316 | Coax cable |
| 3 | 2 | COAX8,COAX10 | RG316 | Coax cable 50H RG316 (595mm) |
| 4 | 1 | CS1 | CSPHSHHC5_03 | Printed circuit board |
| 5 | 4 | C13,C14,C15,C16 | 1_10p | Air static VAR compensator Tekelec 6mm |
| 6 | 4 | C17,C18,C19,C20 | 27p | SMD capacitor 1212 HQ |
| 7 | 5 | FIX1,FIX2,FIX3,FIX4,FIX5 | FIX35 | Fixing hole 3.5mm |
| 8 | 4 | JP7,JP8,JP9,JP10 | FASTONCS | Printed circuit faston p. 5.08 |
| 9 | 2 | L7,L8 | 160nH | Inductor 6 Coils silver plated copper wire D.1 wound on D.7 length 15 |
| 10 | 2 | L9,L10 | 40nH | Inductor 3 Coils silver plated copper wire D.1 wound on D.5 length 6 |
| 11 | 4 | W7,W8,W9,W10 | WIRE | Solder wire |

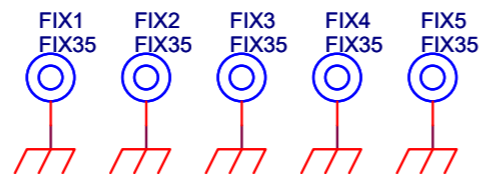


| | | |
|--|----------------------|---|
| | PRODUCT NAME : HC2-4 | PART NAME : SPLITTER CARD |
| | DESIGNER : M. UCELLI | DATE 19/04/04 REVIS. : 1.0 SCALE 1:1 SIZE A3 PAGE :1 DI 1 |
| ARCHIVING : 'RVRUT' SERVER, 'RILASCIATI' FOLDER PROJECT CODE : 017 | | DOCUMENT CODE : SLSPLTHC2-01 |

SLSPLTHC2-01



CS1
CSPHSHHC5_03



| | | |
|---|-----------------|-------------------------|
| Description: Phase Shifter for HC2/2 LCD | | |
| Designer: Ucelli \ De Donno | Size: A4 | Page: 1 of 1 |
| Part No.: SLPHSHHC2-01 | Rev. 1.0 | Date: 07/06/2013 |

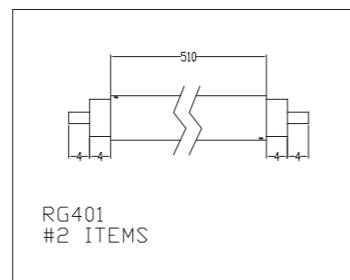
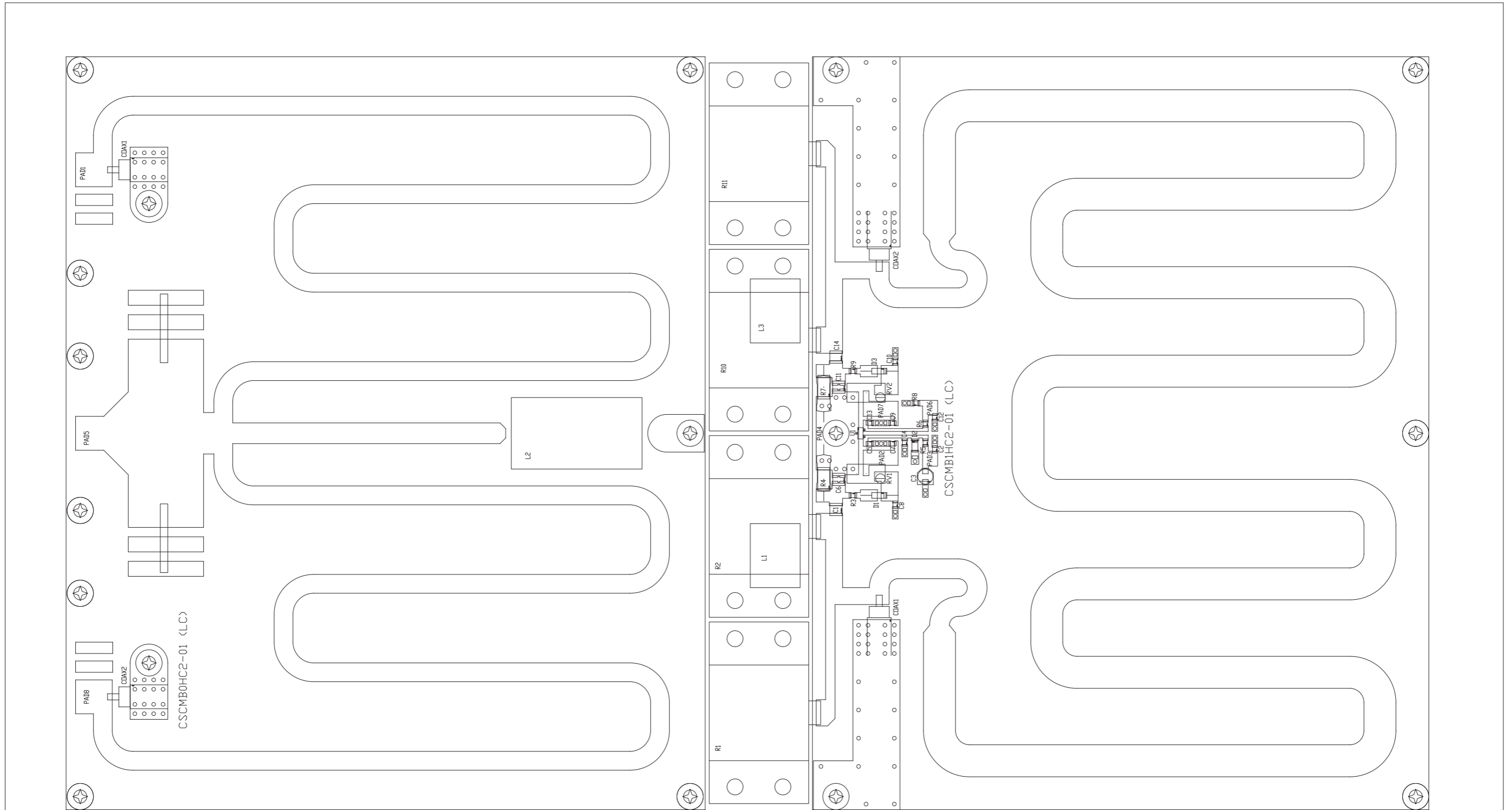


SLSPLTHC2-01

Phase Shifter for HC2/2 LCD
 SLPHSHHC2-01
 Revision: 1.0
 HC2/2
 Ucelli / De Donno
 07/06/2013

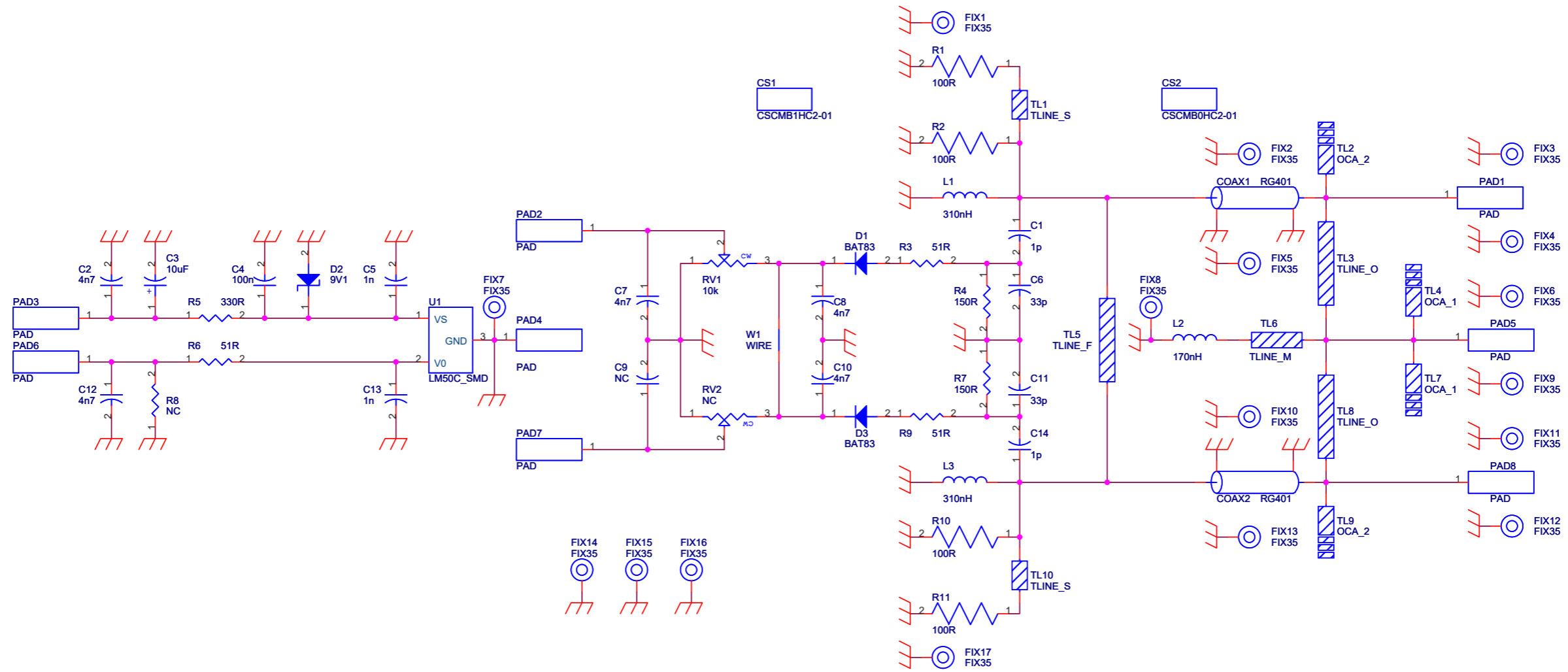
| Item | Quantity | Reference | Part | Description |
|------|----------|--------------------------|--------------|---|
| 1 | 2 | CN4,CN5 | N_P | N panel connector for RG316 cable |
| 2 | 2 | COAX7,COAX9 | RG316 | Coax cable |
| 3 | 2 | COAX8,COAX10 | RG316_ | Coax cable 50H RG316 (595mm) |
| 4 | 1 | CS1 | CSPHSHHC5_03 | Printed circuit board |
| 5 | 4 | C13,C14,C15,C16 | 1_10p | Air static VAR compensator Tekelec 6mm |
| 6 | 4 | C17,C18,C19,C20 | 27p | SMD capacitor 1212 HQ |
| 7 | 5 | FIX1,FIX2,FIX3,FIX4,FIX5 | FIX35 | Fixing hole 3.5mm |
| 8 | 4 | JP7,JP8,JP9,JP10 | FASTONCS | Printed circuit faston p. 5.08 |
| 9 | 2 | L7,L8 | 160nH | Inductor 6 Coils silver plated copper wire D.1 wound on D.7 length 15 |
| 10 | 2 | L9,L10 | 40nH | Inductor 3 Coils silver plated copper wire D.1 wound on D.5 length 6 |
| 11 | 4 | W7,W8,W9,W10 | WIRE | Solder wire |

SLCMB1HC2-01



| | | |
|--|-------------------------|--|
| | PRODUCT NAME : HC2/2-V2 | PART NAME : COMBINER CARD HC2/2-V2 |
| | DESIGNER : M. UCELLI | DATE 27/07/04 REVIS. : 1.0 SCALE 1:1 SIZE A3 PAGE : 1 DI 1 |
| ARCHIVING : 'RVRUT' SERVER, 'RILASCIATI' FOLDER PROJECT CODE : 026 | | DOCUMENT CODE : SLCMB1HC2-01 |

SLCMB1HC2-01



| | | |
|---|------------------|-----------------------|
| Description: HC2-2 Output Combiner | | |
| Designer: Mauro Ucelli | Size: A3 | Page: 1 of 1 |
| Part No.: SLCMB1HC2-01 | Rev.: 1.1 | Date: 22/03/05 |



SLCMB1HC2-01

HC2-2 Output Combiner
 SLCMB1HC2-01
 Revision: 1.1
 HC2/2-V2
 026
 Mauro Ucelli
 22/03/05

| Item | Quantity | Reference | Part | Description |
|------|----------|---|--------------|-----------------------------------|
| 1 | 2 | COAX1,COAX2 | RG401 | Coax cable |
| 2 | 1 | CS1 | CSCMB1HC2-01 | Printed circuit board |
| 3 | 1 | CS2 | CSCMB0HC2-01 | Printed circuit board |
| 4 | 2 | C1,C14 | 1p | SMD capacitor 1212 HQ |
| 5 | 5 | C2,C7,C8,C10,C12 | 4n7 | SMD capacitor 0805 |
| 6 | 1 | C3 | 10uF | SMD electrolytic capacitor d. 5mm |
| 7 | 1 | C4 | 100n | SMD capacitor 0805 |
| 8 | 2 | C13,C5 | 1n | SMD capacitor 0805 |
| 9 | 2 | C6,C11 | 33p | SMD capacitor 1212 HQ |
| 10 | 1 | C9 | NC | SMD capacitor 0805 |
| 11 | 2 | D1,D3 | BAT83 | Glass diode DO35 |
| 12 | 1 | D2 | 9V1 | MINIMELF SMD Zener Diode |
| 13 | 17 | FIX1, FIX2, FIX3, FIX4, FIX5, FIX6, FIX7, FIX8, FIX9, FIX10, FIX11, FIX12, FIX13, FIX14, FIX15, FIX16, FIX17 | FIX35 | Fixing hole 3.5mm |
| 14 | 2 | L1,L3 | 310nH | Cylindrical inductor |
| 15 | 1 | L2 | 170nH | Cylindrical inductor |
| 16 | 8 | PAD1, PAD2, PAD3, PAD4, PAD5, PAD6, PAD7, PAD8 | PAD | |
| 17 | 1 | RV1 | 10k | Trimmer Rg V 3296W |
| 18 | 1 | RV2 | NC | Trimmer Rg V 3296W |
| 19 | 4 | R1,R2,R10,R11 | 100R | KDI resistor 4 fix |
| 20 | 3 | R3,R6,R9 | 51R | SMD resistor 0805 |
| 21 | 2 | R4,R7 | 150R | Resistor 2W |
| 22 | 1 | R5 | 330R | SMD resistor 0805 |
| 23 | 1 | R8 | NC | SMD resistor 0805 |
| 24 | 2 | TL10, TL1 | TLINE_S | Printed circuit strip line |
| 25 | 2 | TL2, TL9 | OCA_2 | Printed circuit strip line |
| 26 | 2 | TL3, TL8 | TLINE_O | Printed circuit strip line |
| 27 | 2 | TL4, TL7 | OCA_1 | Printed circuit strip line |
| 28 | 1 | TL5 | TLINE_F | Printed circuit strip line |
| 29 | 1 | TL6 | TLINE_M | Printed circuit strip line |
| 30 | 1 | U1 | LM50C_SMD | Temperature sensor |
| 31 | 1 | W1 | WIRE | Solder wire |

PROTPJ-HCLCD

ARCHIVING : "RVRUT" SERVER, "RILASCIATI" FOLDER

DESIGNER : GP - Rev: J. Berti

PRODUCT NAME : HCS-10

PART NAME : Analogic Section Component Layout

DATE : 14/03/07

REVISION : 3.1

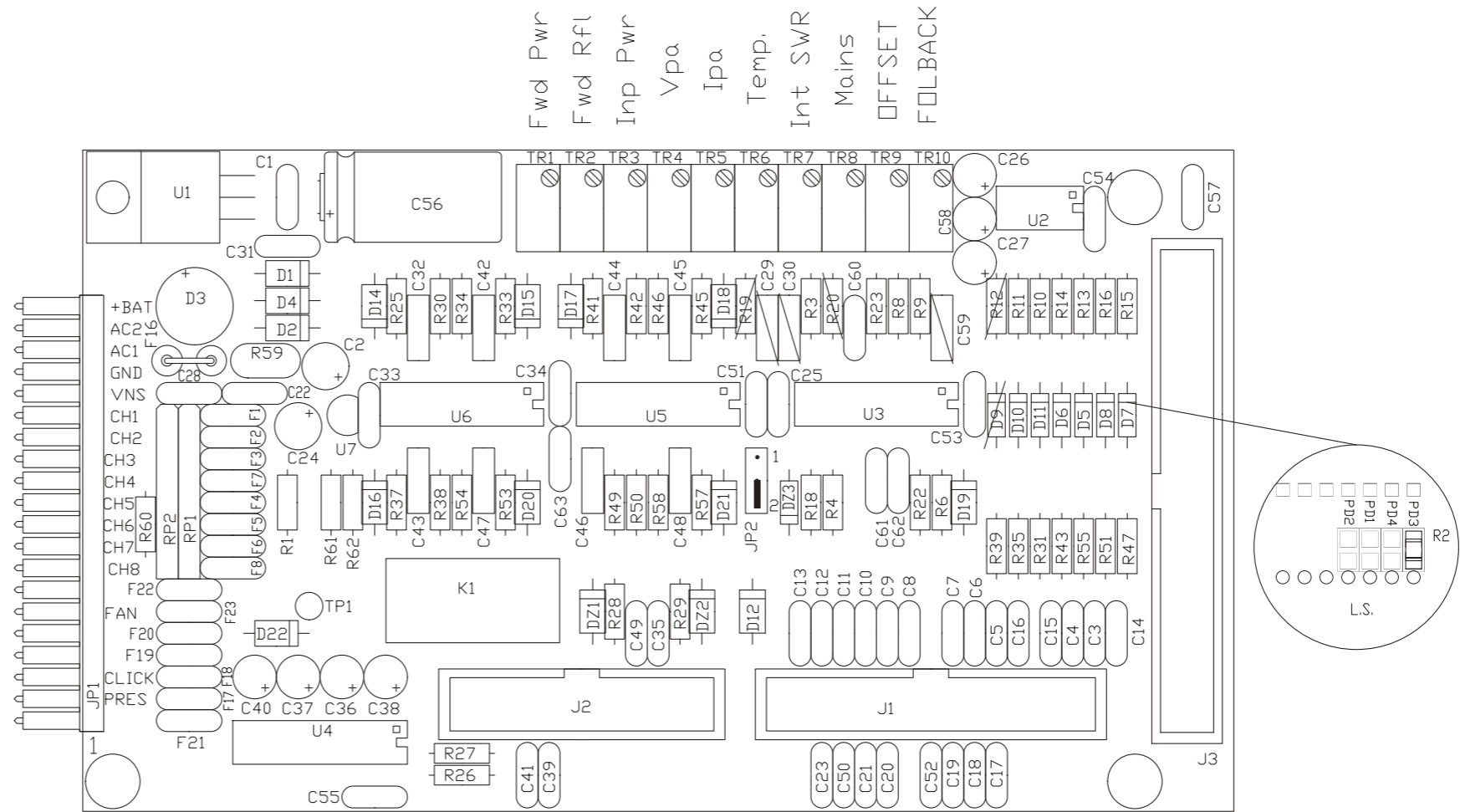
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SIZE : A4

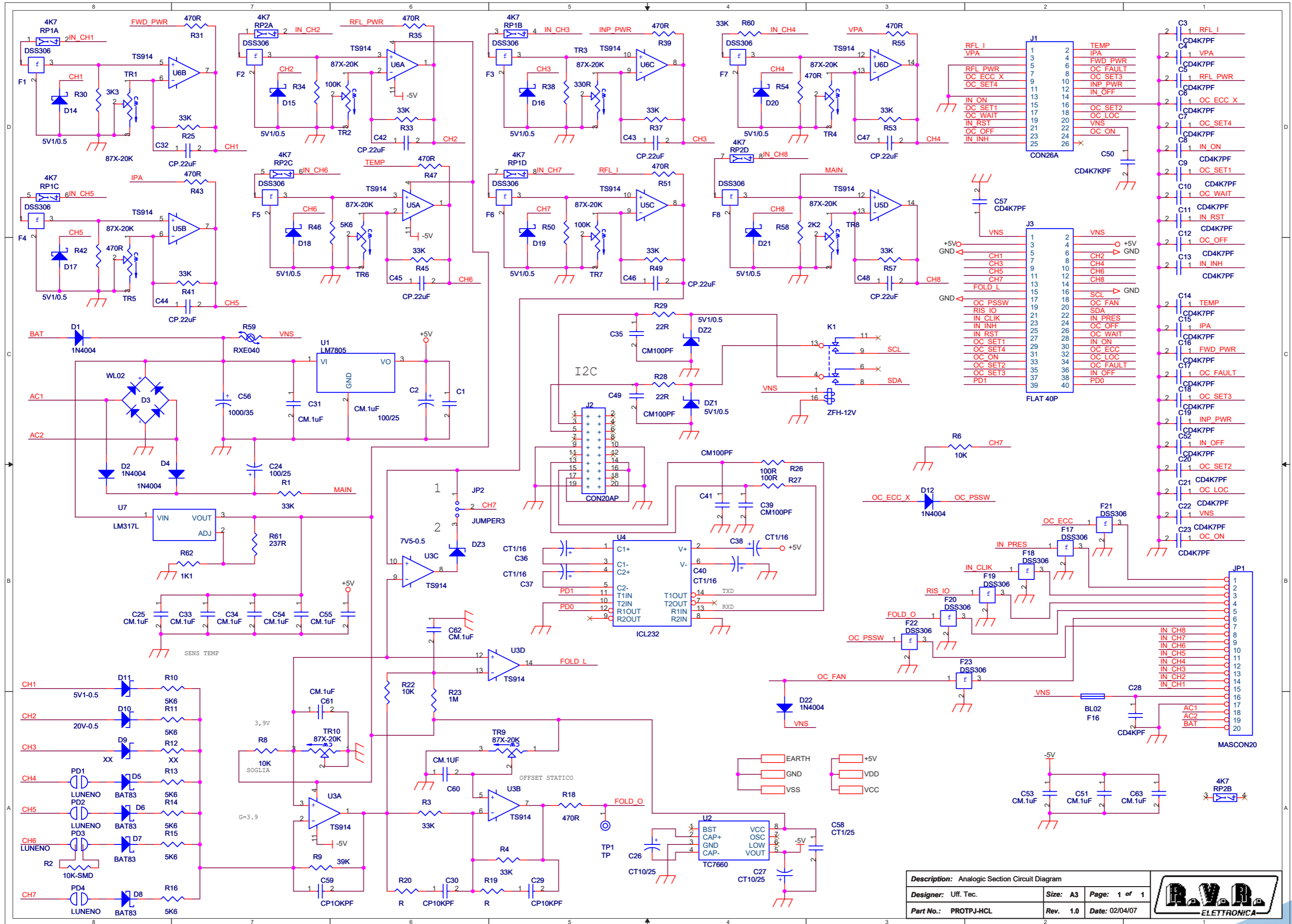
PAGE : 1 DI 1

PROJECT CODE : 014

DOCUMENT CODE : PROTPJ-HCLCD



PROTPJ-HCLCD



| | | |
|--|-----------------|-----------------------|
| Description: Analogic Section Circuit Diagram | | |
| Designer: Uff. Tec. | Size: A3 | Page: 1 of 1 |
| Part No.: PROTPJ-HCL | Rev. 1.0 | Date: 02/04/07 |



PROTPJ-HCLCD

Revised: Thursday, January 08, 2009
Revision:

| Item | Quantity | Reference | Part |
|------|----------|--|----------|
| 1 | 13 | C1, C25, C31, C33, C34, C51, C53, C54, C55, C60, C61, C62, C63 | CM.1uF |
| 2 | 2 | C2, C24 | 100/25 |
| 3 | 23 | C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C52, C57 | CD4K7PF |
| 4 | 2 | C26, C27 | CT10/25 |
| 5 | 1 | C28 | CD4KPF |
| 6 | 2 | C29, C30 | CP10KPF |
| 7 | 8 | C32, C42, C43, C44, C45, C46, C47, C48 | CP.22uF |
| 8 | 4 | C35, C39, C41, C49 | CM100PF |
| 9 | 4 | C36, C37, C38, C40 | CT1/16 |
| 10 | 1 | C50 | CD4K7KPF |
| 11 | 1 | C56 | 1000/35 |
| 12 | 1 | C58 | CT1/25 |
| 13 | 1 | C59 | CP10KPF |
| 14 | 10 | DZ1, DZ2, D14, D15, D16, D17, D18, D19, D20, D21 | 5V1/0.5 |
| 15 | 1 | DZ3 | 7V5-0.5 |
| 16 | 5 | D1, D2, D4, D12, D22 | 1N4004 |
| 17 | 1 | D3 | WL02 |
| 18 | 4 | D5, D6, D7, D8 | BAT83 |
| 19 | 2 | D9, R12 | XX |
| 20 | 1 | D10 | 20V-0.5 |
| 21 | 1 | D11 | 5V1-0.5 |
| 22 | 15 | F1, F2, F3, F4, F5, F6, F7, F8, F17, F18, F19, F20, F21, F22, F23 | DSS306 |
| 23 | 1 | F16 | BL02 |
| 24 | 1 | JP1 | MASCON20 |
| 25 | 1 | JP2 | JUMPER3 |
| 26 | 1 | J1 | CON26A |
| 27 | 1 | J2 | CON20AP |
| 28 | 1 | J3 | FLAT 40P |
| 29 | 1 | K1 | ZFH-12V |
| 30 | 4 | PD1, PD2, PD3, PD4 | LUNENO |
| 31 | 2 | RP1, RP2 | 4K7 |
| 32 | 12 | R1, R3, R4, R25, R33, R37, R41, R45, R49, R53, R57, R60 | 33K |
| 33 | 1 | R2 | 10K-SMD |
| 34 | 3 | R6, R8, R22 | 10K |
| 35 | 1 | R9 | 39K |
| 36 | 7 | R10, R11, R13, R14, R15, R16, R46 | 5K6 |
| 37 | 10 | R18, R31, R35, R39, R42, R43, R47, R51, R54, R55 | 470R |
| 38 | 2 | R19, R20 | R |
| 39 | 1 | R23 | 1M |
| 40 | 2 | R26, R27 | 100R |
| 41 | 2 | R28, R29 | 22R |
| 42 | 1 | R30 | 3K3 |
| 43 | 2 | R34, R50 | 100K |
| 44 | 1 | R38 | 330R |
| 45 | 1 | R58 | 2K2 |
| 46 | 1 | R59 | RXE040 |
| 47 | 1 | R61 | 237R |
| 48 | 1 | R62 | 1K1 |
| 49 | 1 | TP1 | TP |
| 50 | 10 | TR1, TR2, TR3, TR4, TR5, TR6, TR7, TR8, TR9, TR10 | 87X-20K |
| 51 | 1 | U1 | LM7805 |
| 52 | 1 | U2 | TC7660 |
| 53 | 3 | U3, U5, U6 | TS914 |
| 54 | 1 | U4 | ICL232 |
| 55 | 1 | U7 | LM317L |

Revised: Thursday, January 08, 2009
Revision:

| Item | Quantity | Reference | Part |
|------|----------|--|----------|
| 1 | 13 | C1, C25, C31, C33, C34, C51, C53, C54, C55, C60, C61, C62, C63 | CM.1uF |
| 2 | 2 | C2, C24 | 100/25 |
| 3 | 23 | C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C52, C57 | CD4K7PF |
| 4 | 2 | C26, C27 | CT10/25 |
| 5 | 1 | C28 | CD4KPF |
| 6 | 2 | C29, C30 | CP10KPF |
| 7 | 8 | C32, C42, C43, C44, C45, C46, C47, C48 | CP.22uF |
| 8 | 4 | C35, C39, C41, C49 | CM100PF |
| 9 | 4 | C36, C37, C38, C40 | CT1/16 |
| 10 | 1 | C50 | CD4K7KPF |
| 11 | 1 | C56 | 1000/35 |
| 12 | 1 | C58 | CT1/25 |
| 13 | 1 | C59 | CP10KPF |
| 14 | 10 | DZ1, DZ2, D14, D15, D16, D17, D18, D19, D20, D21 | 5V1/0.5 |
| 15 | 1 | DZ3 | 7V5-0.5 |
| 16 | 5 | D1, D2, D4, D12, D22 | 1N4004 |
| 17 | 1 | D3 | WL02 |
| 18 | 4 | D5, D6, D7, D8 | BAT83 |
| 19 | 2 | D9, R12 | XX |
| 20 | 1 | D10 | 20V-0.5 |
| 21 | 1 | D11 | 5V1-0.5 |
| 22 | 15 | F1, F2, F3, F4, F5, F6, F7, F8, F17, F18, F19, F20, F21, F22, F23 | DSS306 |
| 23 | 1 | F16 | BL02 |
| 24 | 1 | JP1 | MASCON20 |
| 25 | 1 | JP2 | JUMPER3 |
| 26 | 1 | J1 | CON26A |
| 27 | 1 | J2 | CON20AP |
| 28 | 1 | J3 | FLAT 40P |
| 29 | 1 | K1 | ZFH-12V |
| 30 | 4 | PD1, PD2, PD3, PD4 | LUNENO |
| 31 | 2 | RP1, RP2 | 4K7 |
| 32 | 12 | R1, R3, R4, R25, R33, R37, R41, R45, R49, R53, R57, R60 | 33K |
| 33 | 1 | R2 | 10K-SMD |
| 34 | 3 | R6, R8, R22 | 10K |
| 35 | 1 | R9 | 39K |
| 36 | 7 | R10, R11, R13, R14, R15, R16, R46 | 5K6 |
| 37 | 10 | R18, R31, R35, R39, R42, R43, R47, R51, R54, R55 | 470R |
| 38 | 2 | R19, R20 | R |
| 39 | 1 | R23 | 1M |
| 40 | 2 | R26, R27 | 100R |
| 41 | 2 | R28, R29 | 22R |
| 42 | 1 | R30 | 3K3 |
| 43 | 2 | R34, R50 | 100K |
| 44 | 1 | R38 | 330R |
| 45 | 1 | R58 | 2K2 |
| 46 | 1 | R59 | RXE040 |
| 47 | 1 | R61 | 237R |
| 48 | 1 | R62 | 1K1 |
| 49 | 1 | TP1 | TP |
| 50 | 10 | TR1, TR2, TR3, TR4, TR5, TR6, TR7, TR8, TR9, TR10 | 87X-20K |
| 51 | 1 | U1 | LM7805 |
| 52 | 1 | U2 | TC7660 |
| 53 | 3 | U3, U5, U6 | TS914 |
| 54 | 1 | U4 | ICL232 |
| 55 | 1 | U7 | LM317L |

PROTPJ-HCLCD

ARCHIVING : "RV/RUT" SERVER, "RILASCIATI" FOLDER

PRODUCT NAME : HCS-10

DESIGNER : GP - Rev: J. Berti

PART NAME : LCD Alarms Card Layout

DATE : 30/10/08

REVISION : 1.1

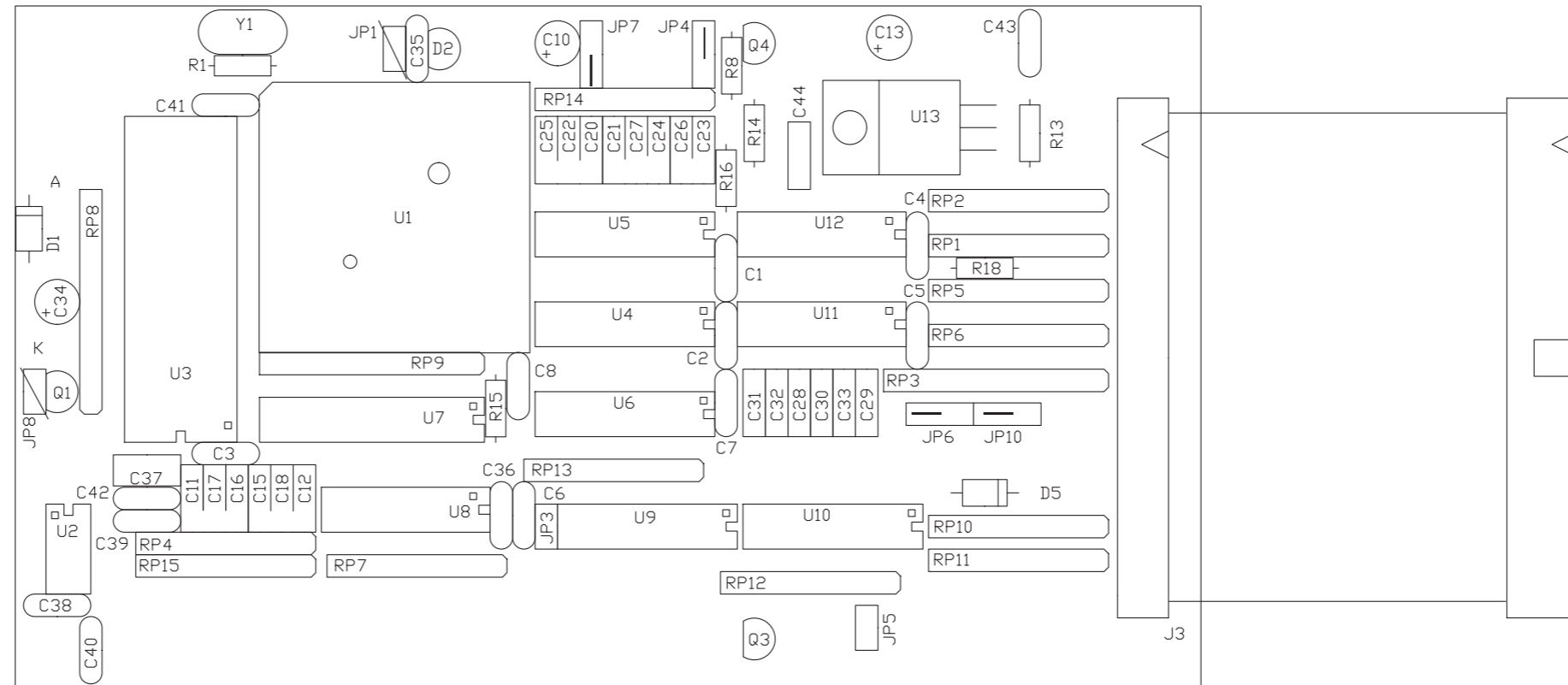
SCALE : 1:1

SIZE : A4

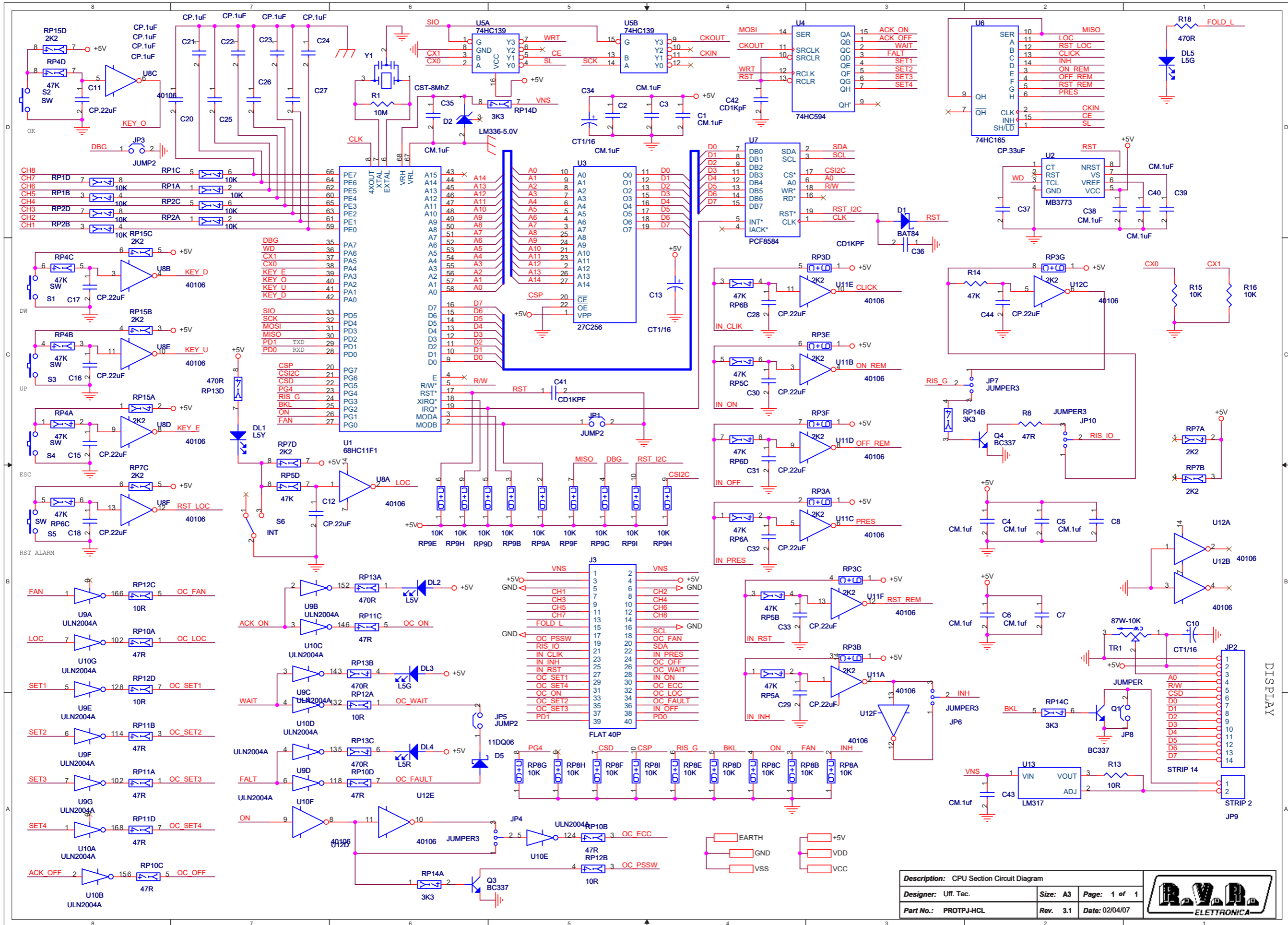
PAGE : 1 DI 1

PROJECT CODE : 014

DOCUMENT CODE : PROTPJ-HCLCD



PROTPJ-HCLCD



PROTPJ-HCLCD

Revised: Thursday, January 08, 2009
Revision:

| Item | Quantity | Reference | Part |
|------|----------|---|------------|
| 1 | 13 | C1, C2, C3, C4, C5, C6, C7, C8, C35, C38, C39, C40, C43 | CM.1uf |
| 2 | 3 | C10, C13, C34 | CT1/16 |
| 3 | 13 | C11, C12, C15, C16, C17, C18, C28, C29, C30, C31, C32, C33, C44 | CP.22uF |
| 4 | 8 | C20, C21, C22, C23, C24, C25, C26, C27 | CP.1uF |
| 5 | 3 | C36, C41, C42 | CD1KpF |
| 6 | 1 | C37 | CP.33uF |
| 7 | 1 | DL1 | L5Y |
| 8 | 1 | DL2 | L5V |
| 9 | 2 | DL3, DL5 | L5G |
| 10 | 1 | DL4 | L5R |
| 11 | 1 | D1 | BAT84 |
| 12 | 1 | D2 | LM336-5.0V |
| 13 | 1 | D5 | 11DQ06 |
| 14 | 3 | JP1, JP3, JP5 | JUMP2 |
| 15 | 1 | JP2 | STRIP 14 |
| 16 | 4 | JP4, JP6, JP7, JP10 | JUMPER3 |
| 17 | 1 | JP8 | JUMPER |
| 18 | 1 | JP9 | STRIP 2 |
| 19 | 1 | J3 | FLAT 40P |
| 20 | 3 | Q1, Q3, Q4 | BC337 |
| 21 | 6 | RP1, RP2, RP8, RP9, R15, R16 | 10K |
| 22 | 3 | RP3, RP7, RP15 | 2K2 |
| 23 | 4 | RP4, RP5, RP6, R14 | 47K |
| 24 | 3 | R8, RP10, RP11 | 47R |
| 25 | 2 | RP12, R13 | 10R |
| 26 | 2 | RP13, R18 | 470R |
| 27 | 1 | RP14 | 3K3 |
| 28 | 1 | R1 | 10M |
| 29 | 5 | S1, S2, S3, S4, S5 | SW |
| 30 | 1 | S6 | INT |
| 31 | 1 | TR1 | 87W-10K |
| 32 | 1 | U1 | 68HC11F1 |
| 33 | 1 | U2 | MB3773 |
| 34 | 1 | U3 | 27C256 |
| 35 | 1 | U4 | 74HC594 |
| 36 | 1 | U5 | 74HC139 |
| 37 | 1 | U6 | 74HC165 |
| 38 | 1 | U7 | PCF8584 |
| 39 | 3 | U8, U11, U12 | 40106 |
| 40 | 2 | U9, U10 | ULN2004A |
| 41 | 1 | U13 | LM317 |
| 42 | 1 | Y1 | CST-8MhZ |

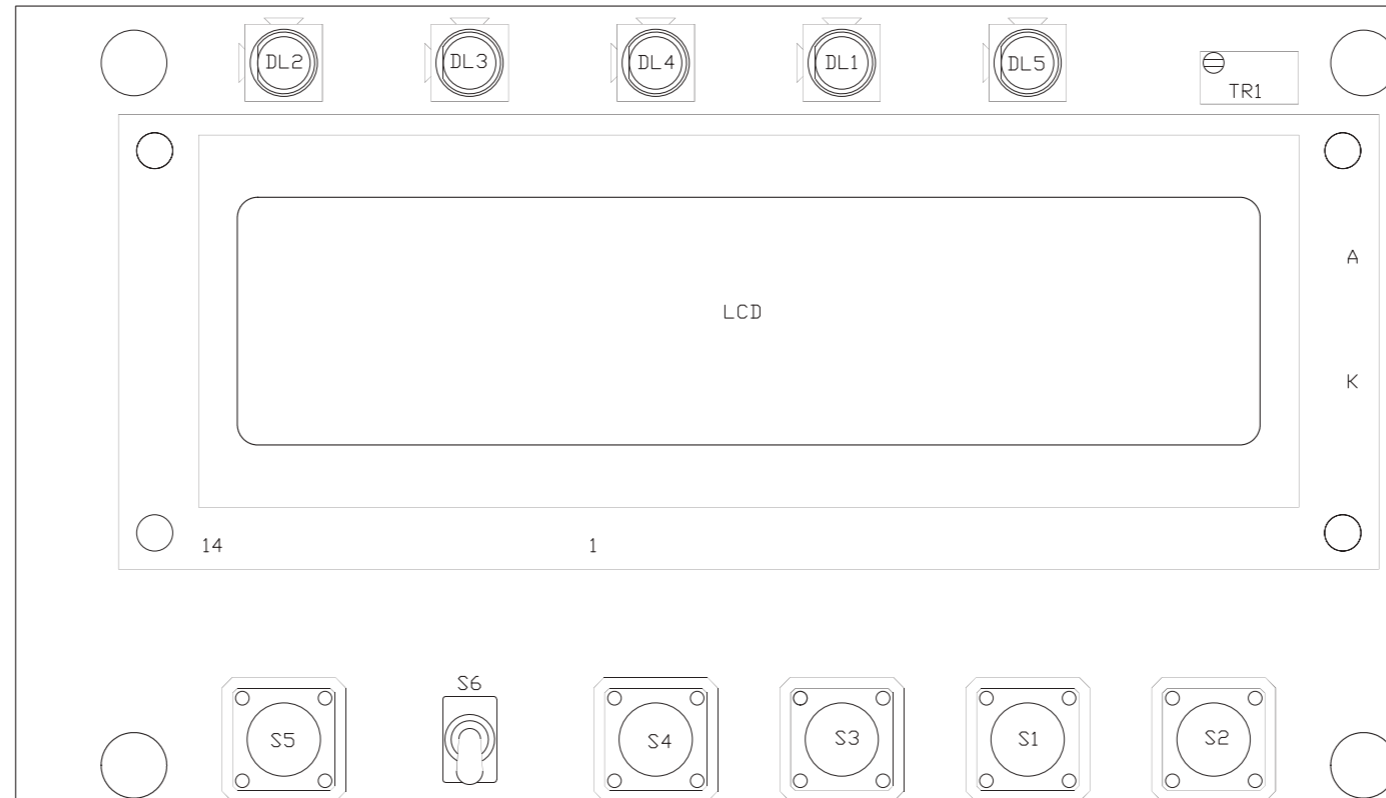
PROTPJ-HCLCD



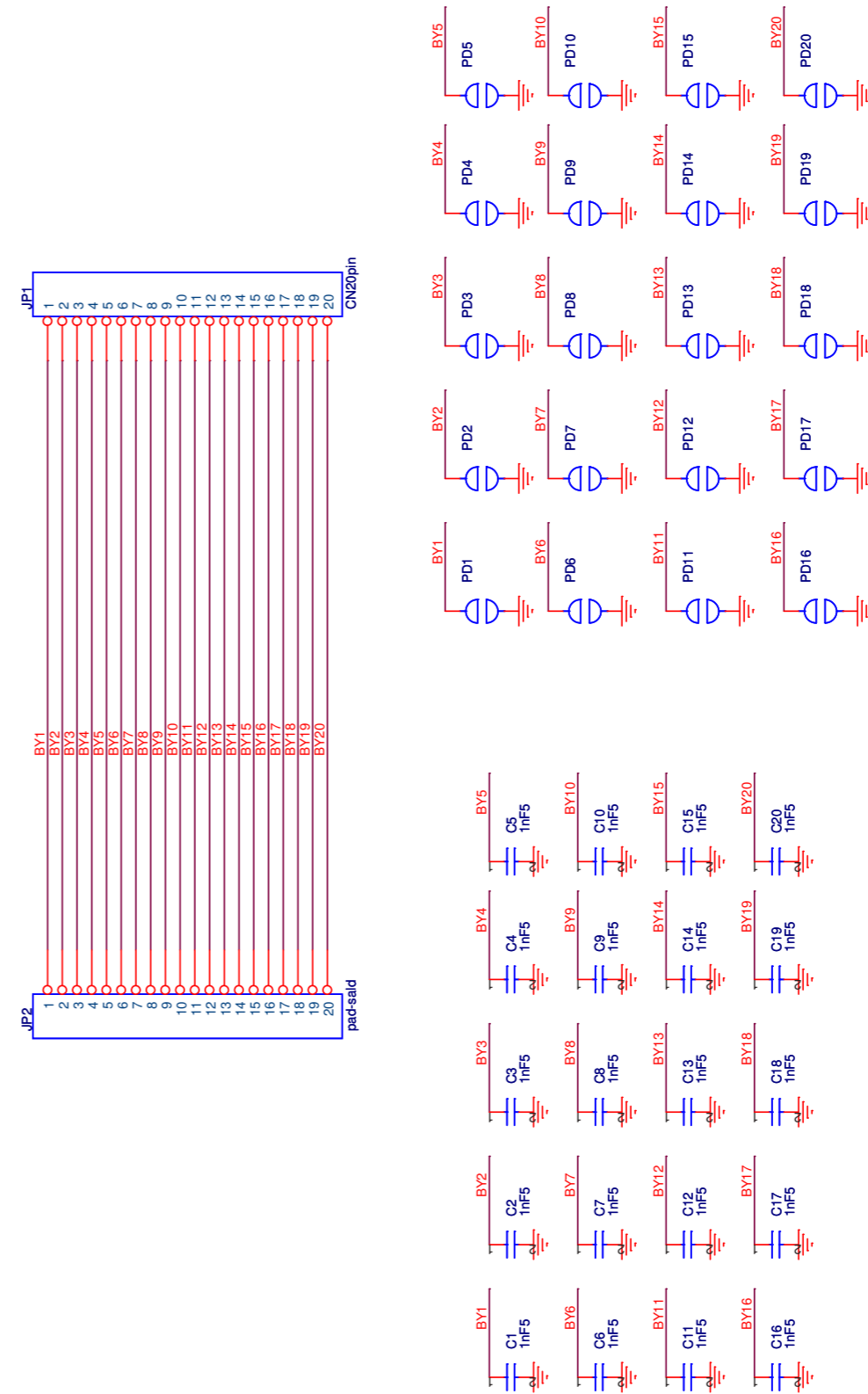
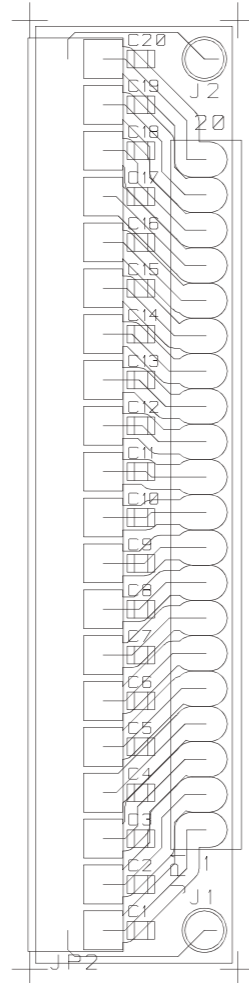
ARCHIVING : 'RVPUT' SERVER, 'RILASCIATI' FOLDER | PROJECT CODE : 014 | DOCUMENT CODE : PROTPJ-HCLCD

PRODUCT NAME : HCS-10 | PART NAME : CPU Display Section Component Layout

DESIGNER : GP - Rev.: J. Berti | DATE : 11/02/04 | REVISION : 2.0 | SCALE : 1:1 | SIZE : A4 | PAGE : 1 DI 1



SLADPCNPRTPJ



CS1 CSADPCNPRTPJ



| | | |
|-------------------------------|----------|------------------|
| Description: CPU Adapter card | Size: A4 | Page: 1 of 1 |
| Designer: UT | Rev: 2.1 | Date: 11/03/2005 |
| Part No.: SLADPCNPRTPJ | | |

| | | | | | | |
|---|------------------------|------------------------------|----------------|-------------|-----------|---------------|
| | PRODUCT NAME : PJ / HC | PART NAME : CPU Adapter card | | | | |
| | DESIGNER : UT | DATE : 11/03/05 | REVISION : 2.1 | SCALE : 1:1 | SIZE : A4 | PAGE : 1 DI 1 |
| ARCHIVING : *RVRUT* SERVER, *RILASCIATI* FOLDER | PROJECT CODE : <> | DOCUMENT CODE : SLADPCNPRTPJ | | | | |

SLADPCNPRTPJ

CPU Adapter card Revised: Friday, March 11, 2005
 SLADPCNPRTPJ Revision: 2.1
 UT

| Item | Quantity | Reference | Part | Description |
|------|----------|---|--------------|--|
| 1 | 1 | CS1 | CSADPCNPRTPJ | Printed circuit board |
| 2 | 20 | C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20 | 1nF5 | Ceramic capacitor 0805 X7R |
| 3 | 1 | JP1 | CN20pin | stripped female connector 20pin turned |
| 4 | 1 | JP2 | pad-sald | Solder pad |
| 5 | 1 | J1 | CON1 | Solder pad |
| 6 | 20 | PD1, PD2, PD3, PD4, PD5, PD6, PD7, PD8, PD9, PD10, PD11, PD12, PD13, PD14, PD15, PD16, PD17, PD18, PD19, PD20 | | Solder pad |



100W Single Output with PFC Function

EPP-100 series



- Features :
 - 4"x2" Compact size
 - Universal AC input / Full range
 - Built-in active PFC function
 - High efficiency up to 92.5%
 - Protections: Short circuit / Overload / Over voltage/Over temperature
 - 75W free air convection, 100W with 20CFM forced air
 - LED indicator for power on
 - No load power consumption<0.5W
 - Built-in 12V/0.3A auxiliary output
 - 3 years warranty



SPECIFICATION

| MODEL | EPP-100-12 | EPP-100-15 | EPP-100-24 | EPP-100-27 | EPP-100-48 | |
|-----------------------|------------------------------|---|----------------------------------|-----------------------------|----------------|---------------|
| OUTPUT | DC VOLTAGE | 12V | 15V | 24V | 27V | 48V |
| | RATED CURRENT (convection) | 6.3A | 5A | 3.2A | 2.8A | 1.6A |
| | RATED CURRENT (20CFM FAN) | 8.5A | 6.67A | 4.2A | 3.71A | 2.1A |
| | CURRENT RANGE (convection) | 0 ~ 6.3A | 0 ~ 5A | 0 ~ 3.2A | 0 ~ 2.8A | 0 ~ 1.6A |
| | CURRENT RANGE (20CFM FAN) | 0 ~ 8.5A | 0 ~ 6.67A | 0 ~ 4.2A | 0 ~ 3.71A | 0 ~ 2.1A |
| | RATED POWER (convection) | 75.6W | 75W | 76.8W | 75.6W | 76.8W |
| | RATED POWER (20CFM FAN) | 102W | 100.05W | 100.8W | 100.17W | 100.8W |
| | RIPPLE & NOISE (max.) Note.2 | 120mVp-p | 150mVp-p | 240mVp-p | 240mVp-p | 300mVp-p |
| | VOLTAGE ADJ. RANGE | 11.76 ~ 12.6V | 14.7 ~ 15.75V | 23.52 ~ 25.2V | 26.46 ~ 28.35V | 47.04 ~ 50.4V |
| | VOLTAGE TOLERANCE Note.3 | ±2.0% | ±2.0% | ±1.0% | ±1.0% | ±1.0% |
| LINE REGULATION | ±0.5% | ±0.5% | ±0.5% | ±0.5% | ±0.5% | |
| LOAD REGULATION | ±1.0% | ±1.0% | ±1.0% | ±1.0% | ±1.0% | |
| SETUP, RISE TIME | 1000ms, 30ms/230VAC | | 2000ms, 30ms/115VAC 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.) | PF>0.95/230VAC | | PF>0.98/115VAC at full load | | |
| | EFFICIENCY (Typ.) | 91% | 91% | 92% | 92.5% | 92.5% |
| | AC CURRENT (Typ.) | 1.4A/115VAC | | 0.7A/230VAC | | |
| | INRUSH CURRENT (Typ.) | COLD START 70A/230VAC | | | | |
| | LEAKAGE CURRENT | <2mA/240VAC | | | | |
| PROTECTION | OVER LOAD | 105 ~ 145% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed | | | | |
| | OVER VOLTAGE | 13.2 ~ 15.6V | 16.83 ~ 19.5V | 27.7 ~ 31.5V | 30.2 ~ 34.05V | 51.3 ~ 62.7V |
| | OVER TEMPERATURE | 110°C ± 10°C (RTH2), 110°C ± 5°C (TSW2) Protection type : Shut down o/p voltage, re-power on to recover | | | | |
| FUNCTION | AUXILIARY POWER(AUX) | 12V@0.3A for driving a fan, tolerance ± 10% at main output 100% load | | | | |
| | WORKING TEMP. | -30 ~ +70°C (Refer to "Derating Curve") | | | | |
| ENVIRONMENT | WORKING HUMIDITY | 20 ~ 90% RH non-condensing | | | | |
| | STORAGE TEMP., HUMIDITY | -40 ~ +85°C, 10 ~ 95% RH | | | | |
| | TEMP. COEFFICIENT | ±0.03%/°C (0 ~ 45°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 / 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, heavy industry level, criteria A | | | | |
| | MTBF | 249.6Khrs min. MIL-HDBK-217F (25°C) | | | | |
| NOTE | DIMENSION | 101.6*50.8*29mm (L*W*H) | | | | |
| | PACKING | 0.2Kg; 72pcs/15.4Kg/0.82CUFT | | | | |

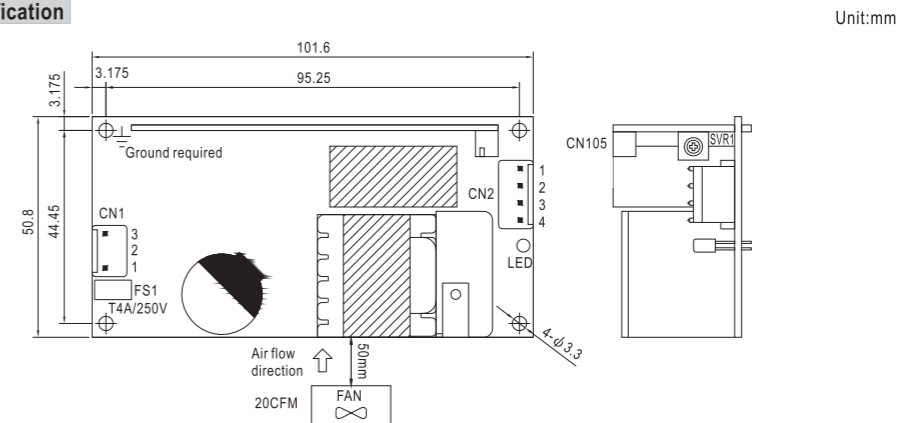
File Name:EPP-100-SPEC 2012-09-10



100W Single Output with PFC Function

EPP-100 series

■ Mechanical Specification



AC Input Connector (CN1) : JST B3P-VH or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|-----------------------|--------------------------------|
| 1 | AC/L | JST VHR or equivalent | JST SVH-21T-P1.1 or equivalent |
| 2 | No Pin | | |
| 3 | AC/N | | |

DC Output Connector (CN2) : JST B4P-VH or equivalent

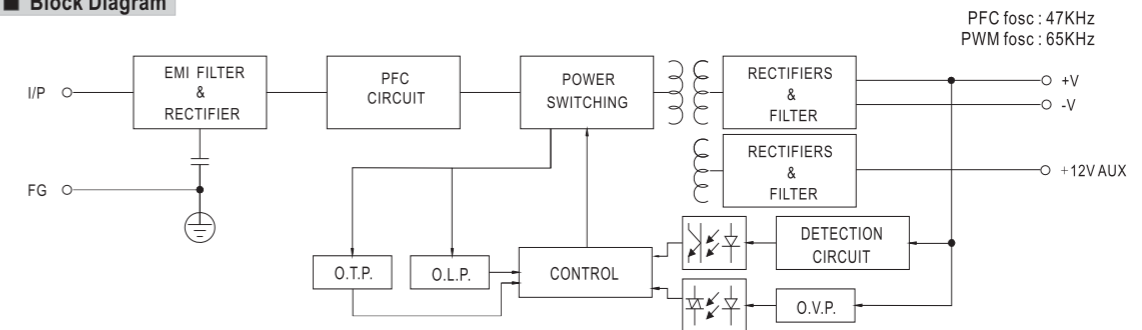
| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|-----------------------|--------------------------------|
| 1,2 | DC COM | JST VHR or equivalent | JST SVH-21T-P1.1 or equivalent |
| 3,4 | +V | | |

FAN Connector(CN105) : JST B2B-PH-K-S or equivalent

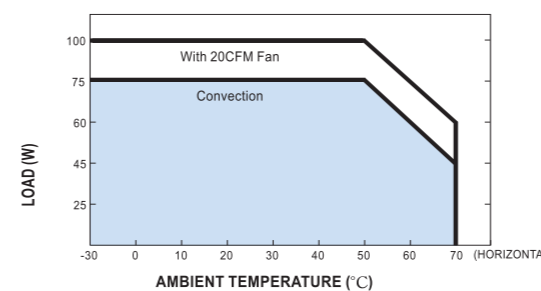
| Pin No. | Assignment | Mating Housing | Terminal |
|---------|------------|-------------------------|----------------------------------|
| 1 | +12V | JST PHR-2 or equivalent | JST SPH-002T-P0.5S or equivalent |
| 2 | DC COM | | |

⊕ : Grounding required

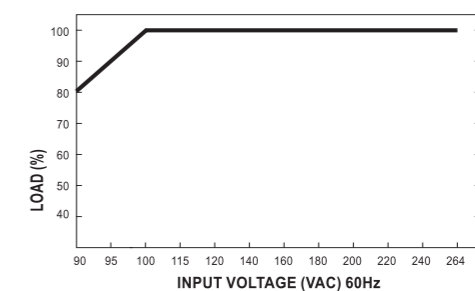
■ Block Diagram



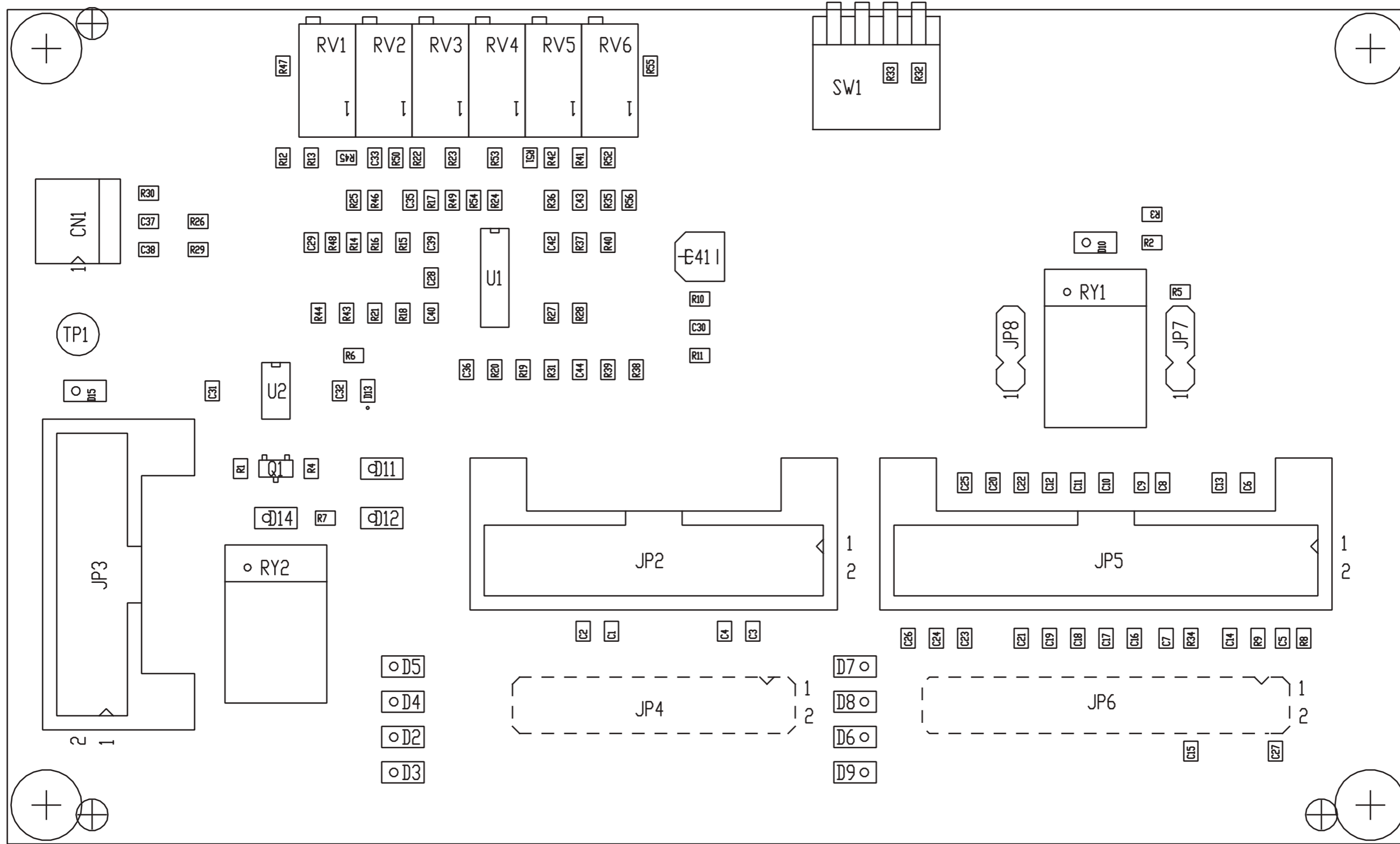
■ Output Derating



■ Output Derating VS Input Voltage

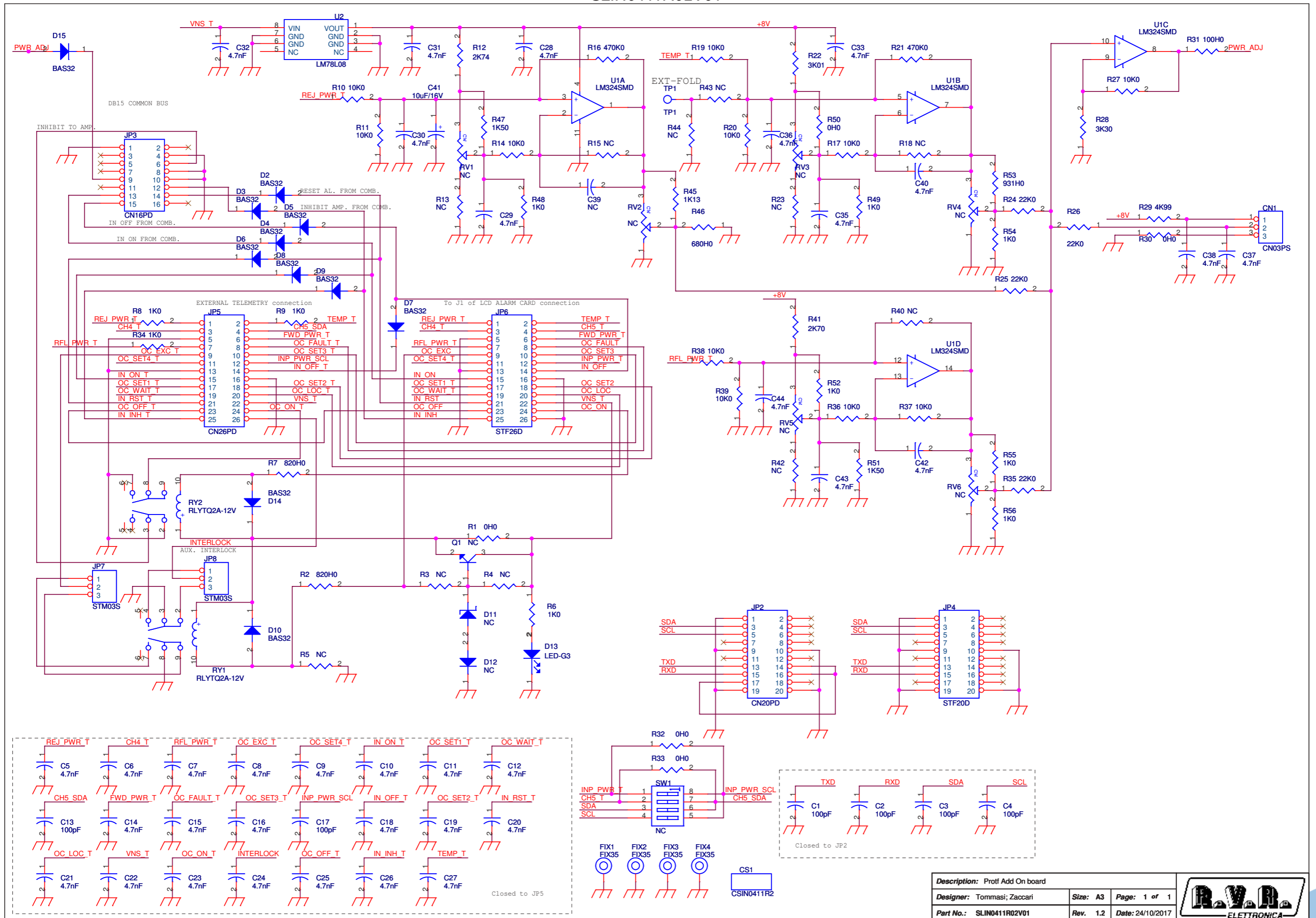


File Name:EPP-100-SPEC 2012-09-10



| | |
|---|-------------------------------------|
| PRODUCT NAME : HC2-5GRL | PART NAME : INTERFACE PROT-F ADD-ON |
| DESIGNER : A. Tommasi | DATE : 23/03/15 |
| ARCHIVING : "RVRUT" SERVER, "RILASCIATI" FOLDER | REVISION : 1.0 |
| | SCALE : 2:1 |
| | SIZE : A4 |
| | PAGE : 1 |
| | DI : 1 |
| | DOCUMENT CODE : SLIN0411R02V01 |
| | PROJECT CODE : 021 |

SLIN0411R02V01



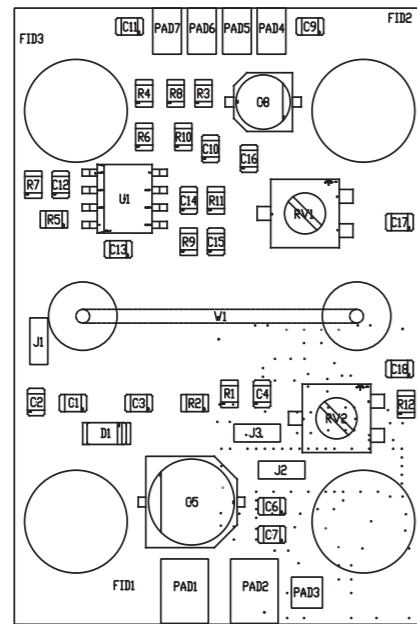
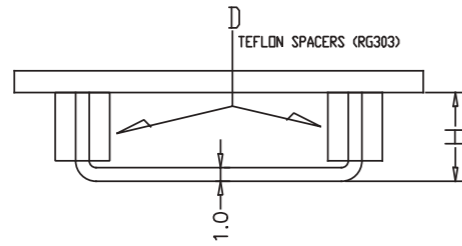
SLIN0411R02V01

Protf Add On board Revised: 24/10/2017
 SLIN0411R02V01 Revision: 1.2
 Tommasi; Zaccari

| Item | Quantity | Reference | Part | Description |
|------|----------|--|-------------|-----------------------------------|
| 1 | 1 | CN1 | CN03PS | 3 poles Mascon connector |
| 2 | 1 | CS1 | CSIN0411R2 | Printed circuit board |
| 3 | 6 | C1, C2, C3, C4, C13, C17 | 100pF | SMD capacitor 0805 |
| 4 | 35 | C5, C6, C7, C8, C9, C10, C11, C12, C14, C15, C16, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C35, C36, C37, C38, C40, C42, C43, C44 | 4.7nF | SMD capacitor 0805 |
| 5 | 1 | C39 | NC | SMD capacitor 0805 |
| 6 | 1 | C41 | 10uF/16V | SMD electrolytic capacitor d. 4mm |
| 7 | 11 | D2, D3, D4, D5, D6, D7, D8, D9, D10, D14, D15 | BAS32 | MINIMELF SMD Diode |
| 8 | 1 | D11 | NC | MINIMELF SMD Zener Diode |
| 9 | 1 | D12 | NC | MINIMELF SMD Diode |
| 10 | 1 | D13 | LED-G3 | LED SMD 0805 |
| 11 | 4 | FIX1, FIX2, FIX3, FIX4 | FIX35 | fixing hole 3.5mm |
| 12 | 1 | JP2 | CN20PD | 20 poles connectors Flat pc |
| 13 | 1 | JP3 | CN16PD | 16 poles connectors Flat pc |
| 14 | 1 | JP4 | STF20D | Female strip 10+10 pin |
| 15 | 1 | JP5 | CN26PD | 26 poles connector Flat pc |
| 16 | 1 | JP6 | STF26D | Female strip 13+13 pin |
| 17 | 2 | JP7, JP8 | STM03S | Male strip 3 pin |
| 18 | 1 | Q1 | NC | Trans. NPN SOT23 |
| 19 | 6 | RV1, RV2, RV3, RV4, RV5, RV6 | NC | Trimmer Rg H 3296X |
| 20 | 2 | RY1, RY2 | RLYTQ2A-12V | Relay TQ2 |
| 21 | 5 | R1, R30, R32, R33, R50 | 0H0 | SMD resistor 0805 |
| 22 | 2 | R2, R7 | 820H0 | SMD resistor 0805 |
| 23 | 11 | R3, R4, R5, R13, R15, R18, R23, R40, R42, R43, R44 | NC | SMD resistor 0805 |
| 24 | 10 | R6, R8, R9, R34, R48, R49, R52, R54, R55, R56 | 1K0 | SMD resistor 0805 |
| 25 | 11 | R10, R11, R14, R17, R19, R20, R27, R36, R37, R38, R39 | 10K0 | SMD resistor 0805 |
| 26 | 1 | R12 | 2K74 | SMD resistor 0805 |
| 27 | 2 | R16, R21 | 470K0 | SMD resistor 0805 |
| 28 | 1 | R22 | 3K01 | SMD resistor 0805 |
| 29 | 4 | R24, R25, R26, R35 | 22K0 | SMD resistor 0805 |
| 30 | 1 | R28 | 3K30 | SMD resistor 0805 |
| 31 | 1 | R29 | 4K99 | SMD resistor 0805 |
| 32 | 1 | R31 | 100H0 | SMD resistor 0805 |
| 33 | 1 | R41 | 2K70 | SMD resistor 0805 |
| 34 | 1 | R45 | 1K13 | SMD resistor 0805 |
| 35 | 1 | R46 | 680H0 | SMD resistor 0805 |
| 36 | 2 | R47, R51 | 1K50 | SMD resistor 0805 |
| 37 | 1 | R53 | 931H0 | SMD resistor 0805 |
| 38 | 1 | SW1 | NC | Dip switch 4 way |
| 39 | 1 | TP1 | TP1 | Test point |
| 40 | 1 | U1 | LM324SMD | Quad Op. SMD SO14 |
| 41 | 1 | U2 | LM78L08 | SMD stabilizer SO8 |

SL042MT1001

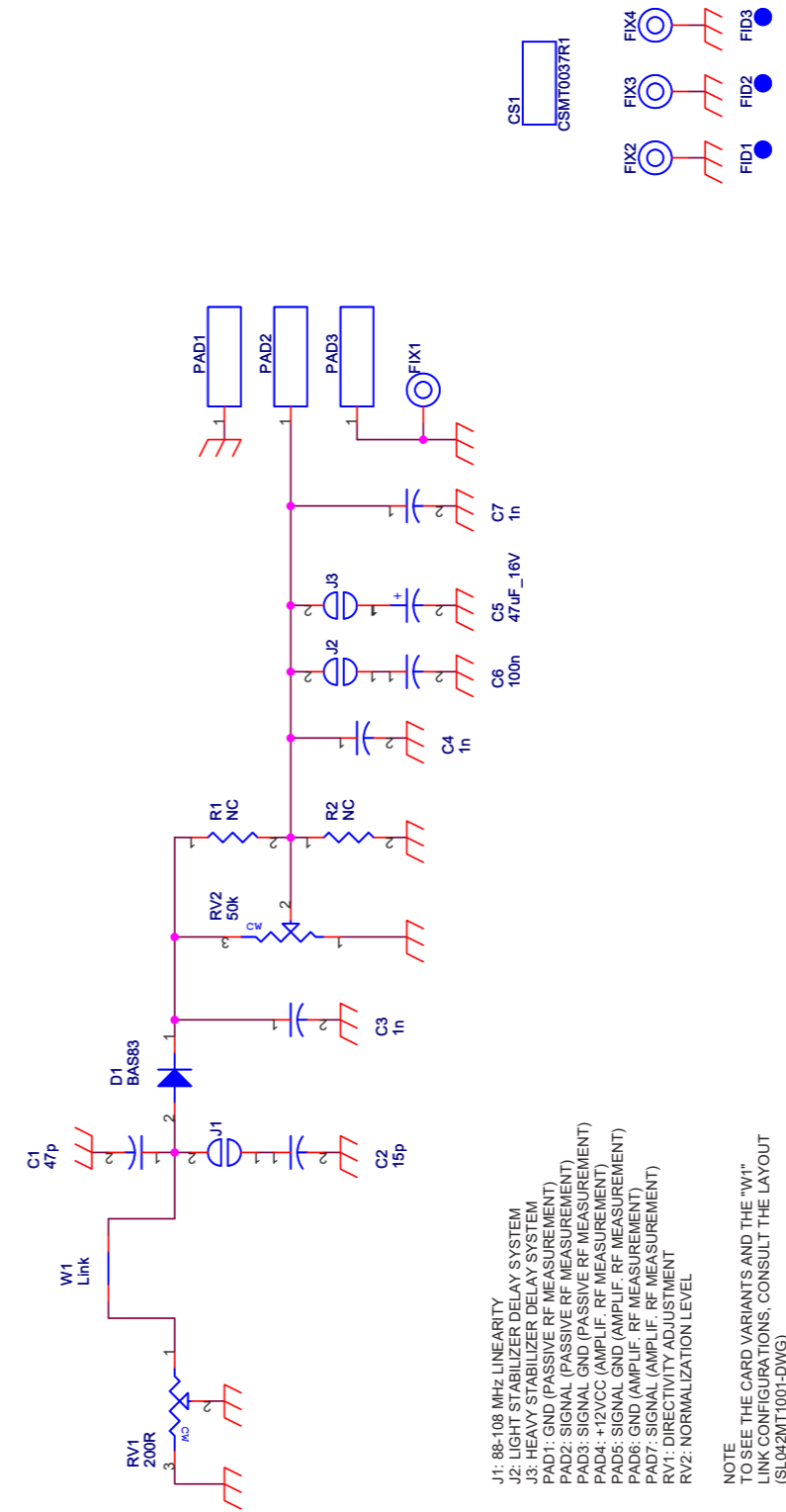
W1 LINK CONFIGURATION



- J1: 88-108 MHz LINEARITY
- J2: LIGHT STABILIZER DELAY SYSTEM
- J3: HEAVY STABILIZER DELAY SYSTEM
- PAD1: GND (PASSIVE RF MEASUREMENT)
- PAD2: SIGNAL (PASSIVE RF MEASUREMENT)
- PAD3: SIGNAL GND (PASSIVE RF MEASUREMENT)
- PAD4: +12VCC (AMPLIF. RF MEASUREMENT)
- PAD5: SIGNAL GND (AMPLIF. RF MEASUREMENT)
- PAD6: GND (AMPLIF. RF MEASUREMENT)
- PAD7: SIGNAL (AMPLIF. RF MEASUREMENT)
- RV1: DIRECTIVITY ADJUSTMENT
- RV2: NORMALIZATION LEVEL

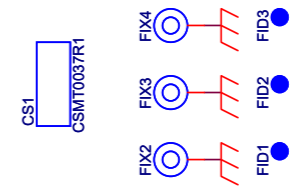
CONFIGURATIONS DETAIL

| CARD CODE | H link W1 (mm) | W1 code AS400 | D spacers W1 | Jumper J1 | Jumper J2 | Jumper J3 |
|-------------|----------------|---------------|--------------|-----------|-----------|-----------|
| SL042MT1001 | | none | | | | |
| SL042MT1101 | 5.3 | B0B10020001A | | X | | |
| SL042MT1201 | 4 | B0B10020002A | | X | | |
| SL042MT1301 | 7.6 | B0B10020003A | | X | | |
| SL042MT1401 | 8.5 | B0B10020004A | X | X | | X |
| SL042MT1501 | 4.5 | B0B10020005A | | X | | |
| SL042MT1601 | 5.5 | B0B10020006A | X | X | | X |



J1: 88-108 MHz LINEARITY
 J2: LIGHT STABILIZER DELAY SYSTEM
 J3: HEAVY STABILIZER DELAY SYSTEM
 PAD1: GND (PASSIVE RF MEASUREMENT)
 PAD2: SIGNAL (PASSIVE RF MEASUREMENT)
 PAD3: SIGNAL GND (PASSIVE RF MEASUREMENT)
 PAD4: +12VCC (AMPLIF. RF MEASUREMENT)
 PAD5: SIGNAL GND (AMPLIF. RF MEASUREMENT)
 PAD6: GND (AMPLIF. RF MEASUREMENT)
 PAD7: SIGNAL (AMPLIF. RF MEASUREMENT)
 RV1: DIRECTIVITY ADJUSTMENT
 RV2: NORMALIZATION LEVEL

NOTE
 TO SEE THE CARD VARIANTS AND THE "W1"
 LINK CONFIGURATIONS, CONSULT THE LAYOUT
 (SL042MT1001-DWG)



R.V.R. ELETTRONICA

Description: Generic RF PWR Measurement
 Designer: Mauro Ucelli
 Part No.: SL042MT1001

Page: 1 of 1
 Size: A4
 Rev: 1.1
 Date: 17/04/2006

| | | |
|---|----------------------|-----------------------------|
| | PRODUCT NAME : HC2/2 | PART NAME : POWER METER |
| DESIGNER : M. UCELLI | DATE : 27/09/11 | REVISION : 1.0 |
| ARCHIVING : 'RVRUT' SERVER, 'RILASCIATI' FOLDER | PROJECT CODE : 042 | DOCUMENT CODE : SL042MT1001 |
| | SCALE : 2:1 | SIZE : A4 |
| | PAGE : 1 | DI 1 |

SL042MT1001

RF Power measure board
 SL042MT1001
 Revision: 1.1
 Generic RF PWR Measurement
 042
 Mauro Ucelli
 17/04/2008

| Item | Quantity | Reference | Part | Description |
|------|----------|---------------------|------------|--------------------------|
| 1 | 1 | CS1 | CSMT0037R1 | Printed Circuit Board |
| 2 | 1 | C1 | 47p | SMD 0805 COG Capacitor |
| 3 | 1 | C2 | 15p | SMD 0805 COG Capacitor |
| 4 | 3 | C3,C4,C7 | 1n | SMD 0805 Capacitor |
| 5 | 1 | C5 | 47uF 16V | Elect. SMD d. 6.3mm Cap. |
| 6 | 1 | C6 | 100n | SMD 0805 Capacitor |
| 7 | 1 | D1 | BAS83 | MINIMELF SMD Diode |
| 8 | 3 | FID1,FID2,FID3 | FID | |
| 9 | 4 | FIX1,FIX2,FIX3,FIX4 | FIX35 | Fixing Hole 3.5mm |
| 10 | 3 | J1,J2,J3 | JSMD | SMD Pad to solder |
| 11 | 3 | PAD1,PAD2,PAD3 | PAD | |
| 12 | 1 | RV1 | 200R | Trimmer SMD |
| 13 | 1 | RV2 | 50k | Trimmer SMD |
| 14 | 2 | R1,R2 | NC | SMD 0805 Res. |
| 15 | 1 | W1 | Link | Wire to solder |