Schematic diagram — power supply and channel section

Power input section:
- P1 — DC-005A-20A
- L1 — MPZ1608S102ATA00
- +12V
- C8 10uF
- R32 499
- D11 RED 200mcd
- U5E LM324DT
- C11 100nF
- GND

+5V regulators:
- U4 — L78M05ABDT-TR (IN / OUT / GND)
- +5V
- C9 10uF
- C10 10uF
- U6 — L78M05ABDT-TR (IN / OUT / GND)
- C12 10uF
- C13 10uF
- GND

P2 — 292303-1:
- 1 VBUS
- 2 D-
- 3 D+
- 4 GND
- 5 SHLD1
- 6 SHLD2

Channel 1:
- P3 — PJ-3900-04
- SCH1_1 frm-voltrod_channel.SchDoc
  - AC / DC_EXT / AC_PASSTHROUGH
- TP1 BANANA 4MM RED
- TP2 BANANA 4MM BLACK
- GND

Channel 2:
- P4 — PJ-3900-04
- SCH1_2 frm-voltrod_channel.SchDoc
  - AC / DC_EXT / AC_PASSTHROUGH
- TP3 BANANA 4MM RED
- TP4 BANANA 4MM BLACK
- P5 — PJ-3900-04
- GND

Miscellaneous:
- GR1 123ABC FermiumLABS logo
- FD1 IPC-7351A FIDUCIAL
- FD2 IPC-7351A FIDUCIAL
- FD3 IPC-7351A FIDUCIAL

AC

SCH2
frm-voltrod_AFE.SchDoc

AC   DC

DC_EXT   DC_EXT
AC_PASSTHROUGH   AC_PASSTHROUGH

+5V

SCH3_1
frm-voltrod_4LED.SchDoc

VTOP
VIN
VBOTTOM

SCH3_2
frm-voltrod_4LED.SchDoc

VTOP
VIN
VBOTTOM

SCH3_3
frm-voltrod_4LED.SchDoc

VTOP
VIN
VBOTTOM

SCH3_4
frm-voltrod_4LED.SchDoc

VTOP
VIN
VBOTTOM

SCH3_5
frm-voltrod_4LED.SchDoc

VTOP
VIN
VBOTTOM

GND

+12V

U1E

VDD+

VDD-

LM324DT

GND

C1
100nF

VIN

VTOP

R1
1K

R3
1K

R5
1K

R7
1K

VBOTTOM

U1C
13
12
14
LM324DT

U1A
2
3
1
LM324DT

U1B
6
5
7
LM324DT

U1D
9
10
8
LM324DT

D1
RED 200mcd
R2
499
GND

D2
RED 200mcd
R4
499
GND

D3
RED 200mcd
R6
499
GND

D4
RED 200mcd
R8
499
GND

+12V
U2E
4
VDD-
VDD-
LM324DT
C2
100nF
GND

+12V
U3E
4
VDD-
VDD-
LM324DT
C3
100nF
GND

AC TO DC CONVERTER

SUBTRACTOR
Vo=SIGNAL-5V

BUFFER

AC

R16
1K

D7
3.3V
GND

C6
1nF
GND

C4
10uF

R19
10K
+5V

U2A
2
3
1
LM324DT

R10
10K

+5V
R13
0
R17
0
R25
0
R28
0
+5V

R21
10K LIN

+5V R11
1K

R12
100K

U2B
6
5
7
LM324DT

R9
100K
D5
1N4148W-TP

R20
100K
+5V

U2C
13
12
14
LM324DT

D6
1N4148W-TP

C5
10uF
+5V

R18
100K

+5V R14
10K

R15
10K

U3A
2
3
1
LM324DT

R24
10K

R26
10K
GND

R22
1K

R23
1K

U3C
13
12
14
LM324DT
DC

R30
100K

U3D
9
10
8
LM324DT

R27
10K

C7
10uF
AC_PASSTHROUGH

+12V
R29
1K

U3B
6
5
7
LM324DT
+5V

D9
1N4148W-TP

D10
1N4148W-TP

U2D
9
10
8
LM324DT

R31
1K
D8
5V
GND
DC_EXT

INPUT

INV AMP
G=-1

POT

NINV AMP
G=101

INV AMP
G=0.1

VOLTAGE CLAMP

BUFFER