Anemometer1 : Hall effect or ILS

anemo1 P101
2
1
GND

Wind1

F1 Anemometers
Wind1
Wind2

Speed1
Speed2

Speed1
Speed2

Anemometer2 : Hall effect or ILS

anemo2 P102
2
1
GND

Wind2

F1_anemometers.sch

Winevane : potentiometer

vane P103
3
2
1

vane_v+
vane_v−
vane_sig

F2 windvane
vane_v+
vane_v−
vane_sig

Udir

Udir

F2_windvane.sch

alternative power supply to test or use this board alone

+5V

PWR_FLAG

+5V

GND

5VDC P114
2
1

+ C101 C102
CP   C

gnd

PWR_FLAG

GND

Ubat   1
gnd   2
Uac_hi 3
Uac_lo 4

P115
POWER_SOURCE

To feed power supply from voltage sensor.
The power supply block is on the digital board.

9V transformer : AC voltage

AC_in P104
2
1

UAC_hi
UAC_lo

F3 Voltage sensors
UAC_hi
UAC_lo

Uac

Uad

Ubat
gnd

DC_in P105
2
1

Ubat

Ubat

UDC

Udc

F3_Voltage_sensors.sch

Arduino style but with Atmega 1284P

GND
+5V

current1 P106
4
3
2
1

F4 Current sensors

I1_hi
I1_lo

I1

P112
1 Reserved
2 IOREF
3 RESET
4 3.3V
5 5V
6 GND
7 GND
8 Vin

Power

+5V
5V

GND

P116
1 SCL
2 SDA
3 AREF
4 GND
5 SCK
6 MISO
7 OC2A/MOSI/PWM
8 OC1B/SS/PWM
9 OC1A/PWM
10 CLKO/ICP1

GND

PWM

current2 P107
4
3
2
1

I2_hi
I2_lo

I2

P113
Udir   1 ADC0
Utemp 2 ADC1
Uac   3 ADC2
Udc   4 ADC3
I1   5 ADC4
I2   6 ADC5
I3   7
I4   8

Analog

P117
RPM   1 AIN1
2 OC0A/AIN0
3 OC0B/T1
4 XCK/T0
Speed2 5 INT1/OC2B
Speed1 6 INT0
7 TXD
8 RXD

PWM

The 4 current sensor are design
to are HTFS 200 or Hass 50−s

current3 P108
4
3
2
1

I3_hi
I3_lo

I3

current4 P109
4
3
2
1

I4_hi
I4_lo

I4

GND

F4_Current_sensors.sch

P118
1
2
3
4
5
6
7
8

Communication

Temperature sensor

temp P110
2
1

temp_hi
temp_lo

F5 Temperature
temp_hi
temp_lo

Utemp

Utemp

F5_temperature.sch

h1 P119
h2 P120
h3 P121
h4 P122

RPM
Sensor

RPM P111
2
1

+5V

10k
R101

GND

RPM

AGPLv3
LONGUET Gilles
ALEEA
Sheet: /
File: shield.sch
Title: Windlogger Shield main frame
Size: A4   Date: 2016−10−16   Rev: A
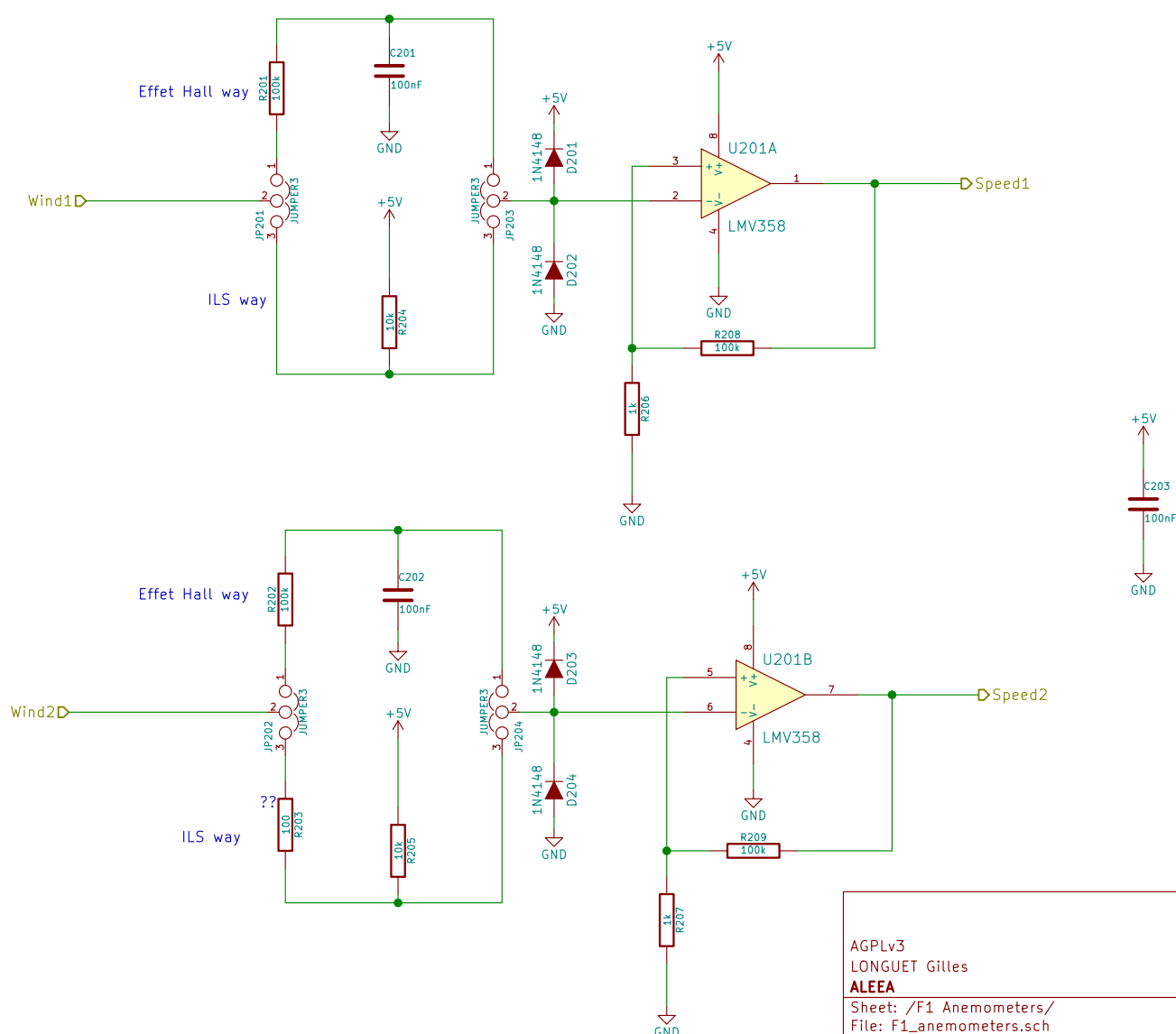KiCad E.D.A. kicad 4.0.2+dfsg1−2bpo8+1−stable   Id: 1/6

On this card it's possible to plug 2 anemometers.
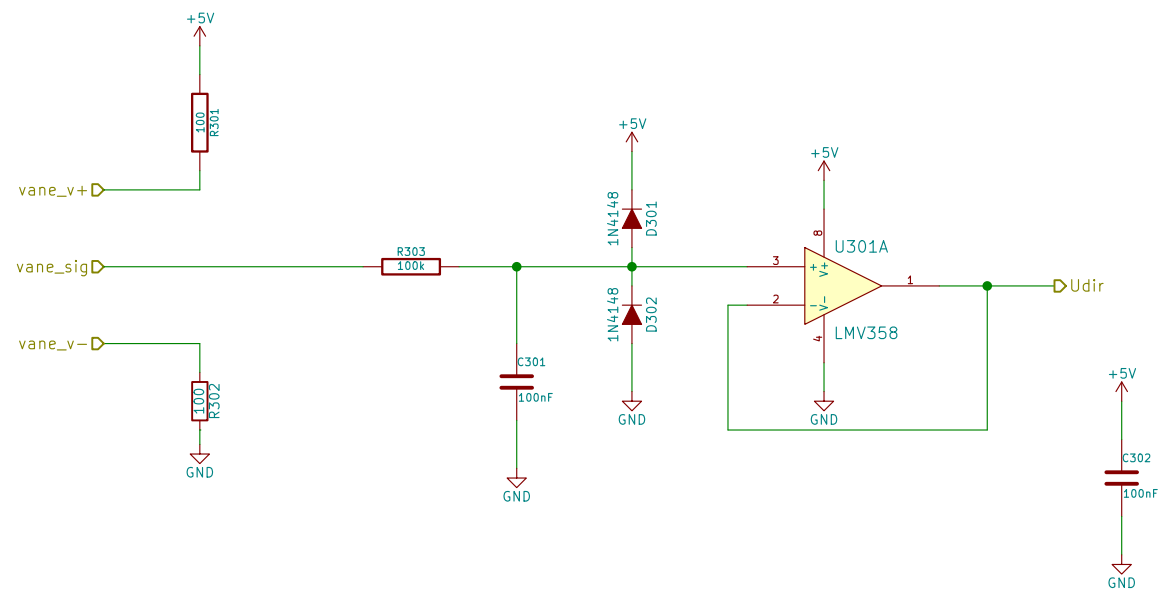For each, with 2 jumpers, select the good way : hall effect anemometer or ILS/open colector anemometers.

Effet Hall way

R201 100k

C201 100nF

GND

Wind1

JUMPER3 JP201

1
2
3

ILS way

+5V

R204 10k

JUMPER3 JP203

1
2
3

+5V

1N4148 D201

1N4148 D202

GND

+5V

8

U201A

3 +
2 −

+5V
V+

1

LMV358

4

GND

R208 100k

R206 1k

GND

Speed1

+5V

C203 100nF

GND

Effet Hall way

R202 100k

C202 100nF

GND

Wind2

JUMPER3 JP202

1
2
3

??

R203 100

ILS way

+5V

R205 10k

JUMPER3 JP204

1
2
3

+5V

1N4148 D203

1N4148 D204

GND

+5V

8

U201B

5 +
6 −

+5V
V+

7

LMV358

4

GND

R209 100k

R207 1k

GND

Speed2

AGPLv3
LONGUET Gilles
ALEEA
Sheet: /F1 Anemometers/
File: F1_anemometers.sch

Title: Anemometer function

Size: A4	Date: 2016−10−16	Rev: A
KiCad E.D.A. kicad 4.0.2+dfsg1−2bpo8+1−stable		Id: 2/6

Convert the resistor valur from the windvane sensor in voltage. It will be convert in degree by the microcontroler.

+5V

R301
100

vane_v+

vane_sig

R303
100k

+5V

1N4148
D301

1N4148
D302

GND

C301
100nF

GND

vane_v−

R302
100

GND

+5V

8
U301A
3 + V+
2 − 1
4
LMV358

GND

1 Udir

+5V

C302
100nF

GND

The two 100 Ohms resistors are the blink band from the windvane. With these we can't have short circuit between supply in the blink band.

Title: Windvane function

| Size: A4 | Date: 2016−10−16 | **Rev: A** |
| KiCad E.D.A. kicad 4.0.2+dfsg1−2bpo8+1−stable | | Id: 3/6 |

The AC wattmeter come from the work of OpenEnergyMonitor
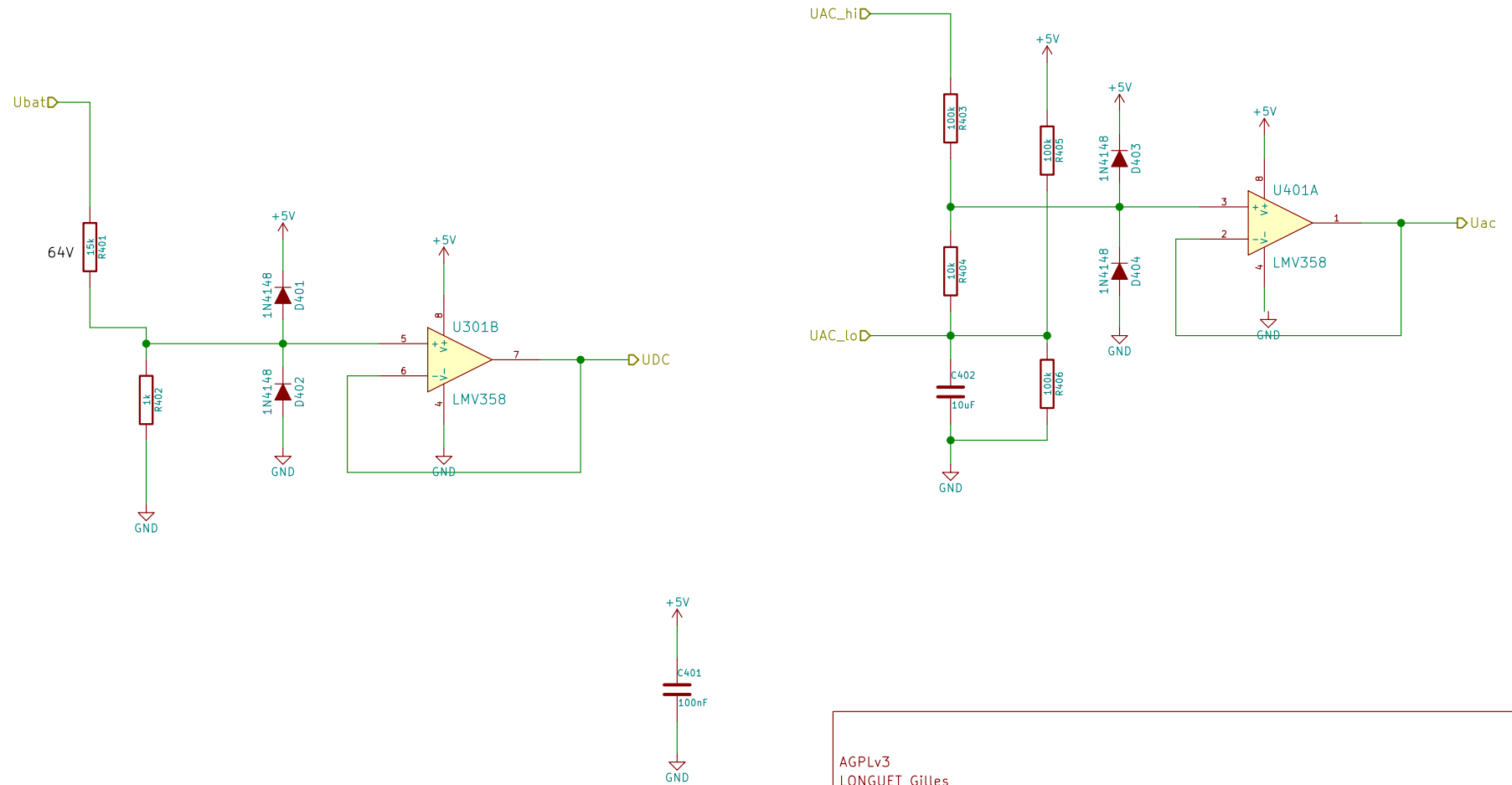
Ubat

64V

R401 15k

R402 1k

GND

D401 1N4148

+5V

D402 1N4148

GND

U301B

5 +
6 −

8
4

7

LMV358

GND

UDC

UAC_hi

R403 100k

+5V

R405 100k

D403 1N4148

+5V

U401A

3 +
2 −

8
4

1

LMV358

+5V

Uac

R404 10k

D404 1N4148

GND

UAC_lo

C402 10uF

R406 100k

GND

GND

GND

+5V

C401 100nF

GND

Title: AC/DC voltage   conversion

Size: A4   Date: 2016−10−16   **Rev: A**

Id: 4/6

Use the jumper to select the maximum current : 16 or 32 A

I1_hi — JP501 JUMPER3 (0-16A R501 180 / 0-32A R503 90.9) — R505 100k — D501 1N4148 / D502 1N4148 — U401B LMV358 — I1
I1_lo — C501 10uF — R506 100k — GND

I3_hi — JP504 JUMPER3 (0-16A R510 180 / 0-32A R512 90.9) — R515 100k — D507 1N4148 / D508 1N4148 — U502A LMV358 — I1
I3_lo — C504 10uF — R516 100k — GND

I2_hi — JP502 JUMPER3 (0-16A R502 180 / 0-32A R504 90.9) — R507 100k — D503 1N4148 / D504 1N4148 — U501A LMV358 — I1
I2_lo — C502 10uF — R508 100k — GND

I4_hi — JP503 JUMPER3 (0-16A R509 180 / 0-32A R511 90.9) — R513 100k — D505 1N4148 / D506 1N4148 — U501B LMV358 — I1
I4_lo — C503 10uF — R514 100k — GND

AGPLv3
LONGUET Gilles
ALEEA
Sheet: /F4_Current_sensors/
File: F4_Current_sensors.sch
Title: AC/DC current conversion
Size: A4   Date: 2016-10-16   Rev: A
KiCad E.D.A.   kicad 4.0.2+dfsg1-2bpo8+1-stable   Id: 5/6

Convert the ntc resitor in voltage

+5V

R601 10k

temp_hi

NTCLE100E3222JB0

2.2k NTC601

temp_lo

R602 10k

GND

U502B
LMV358
5 +
6 –
7
8 V+
4 V–
+5V
GND

R603 10k

R604 10k

R605 10k

U601A
LMV358
3 +
2 –
1
8 V+
4 V–
+5V
GND

R606 10k

Utemp

+5V

C601
100nF

GND
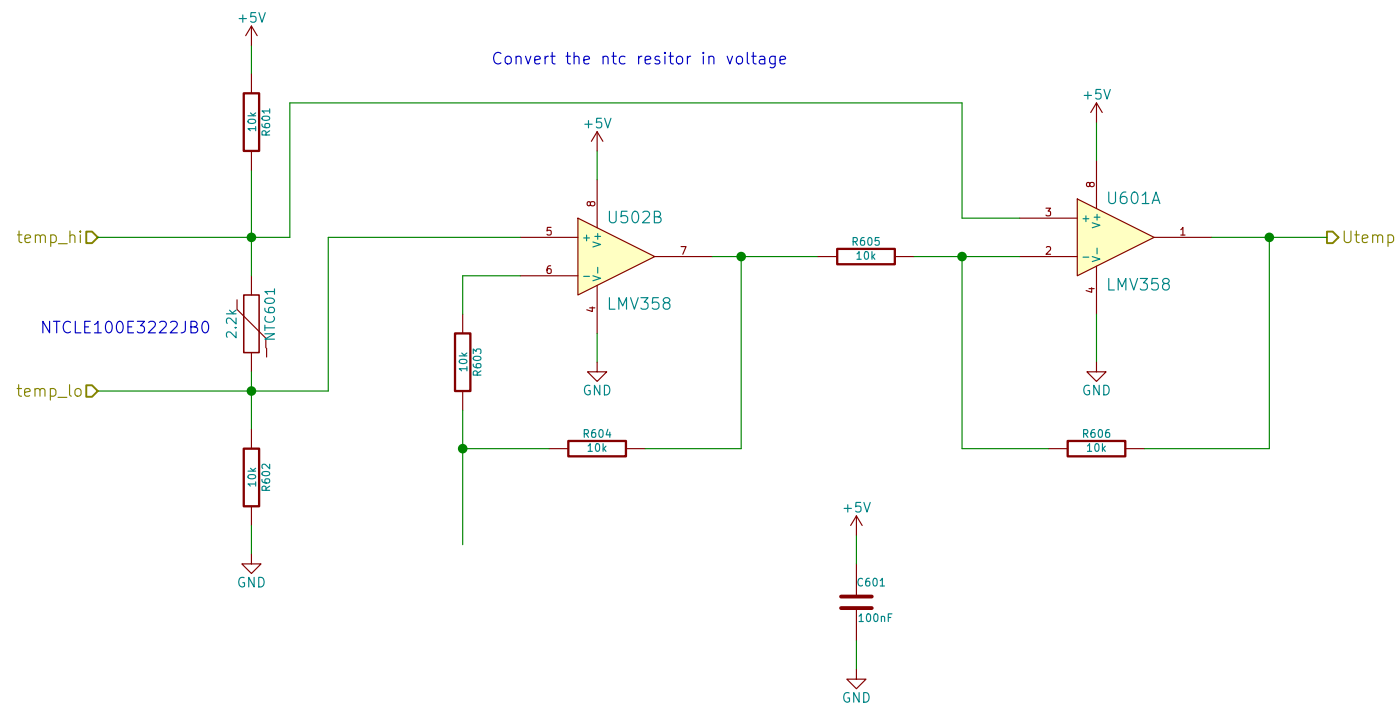
I will change it by a pt1000 resistor or a ds1820 one wire sensor.

AGPLv3
LONGUET Gilles
ALEEA
Sheet: /F5 Temperature/
File: F5_temperature.sch
Title: Temperature conversion
Size: A4 | Date: 2016-10-16 | Rev: A
KiCad E.D.A. kicad 4.0.2+dfsg1-2bpo8+1-stable | Id: 6/6