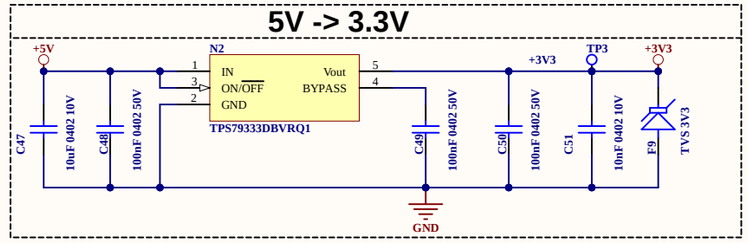
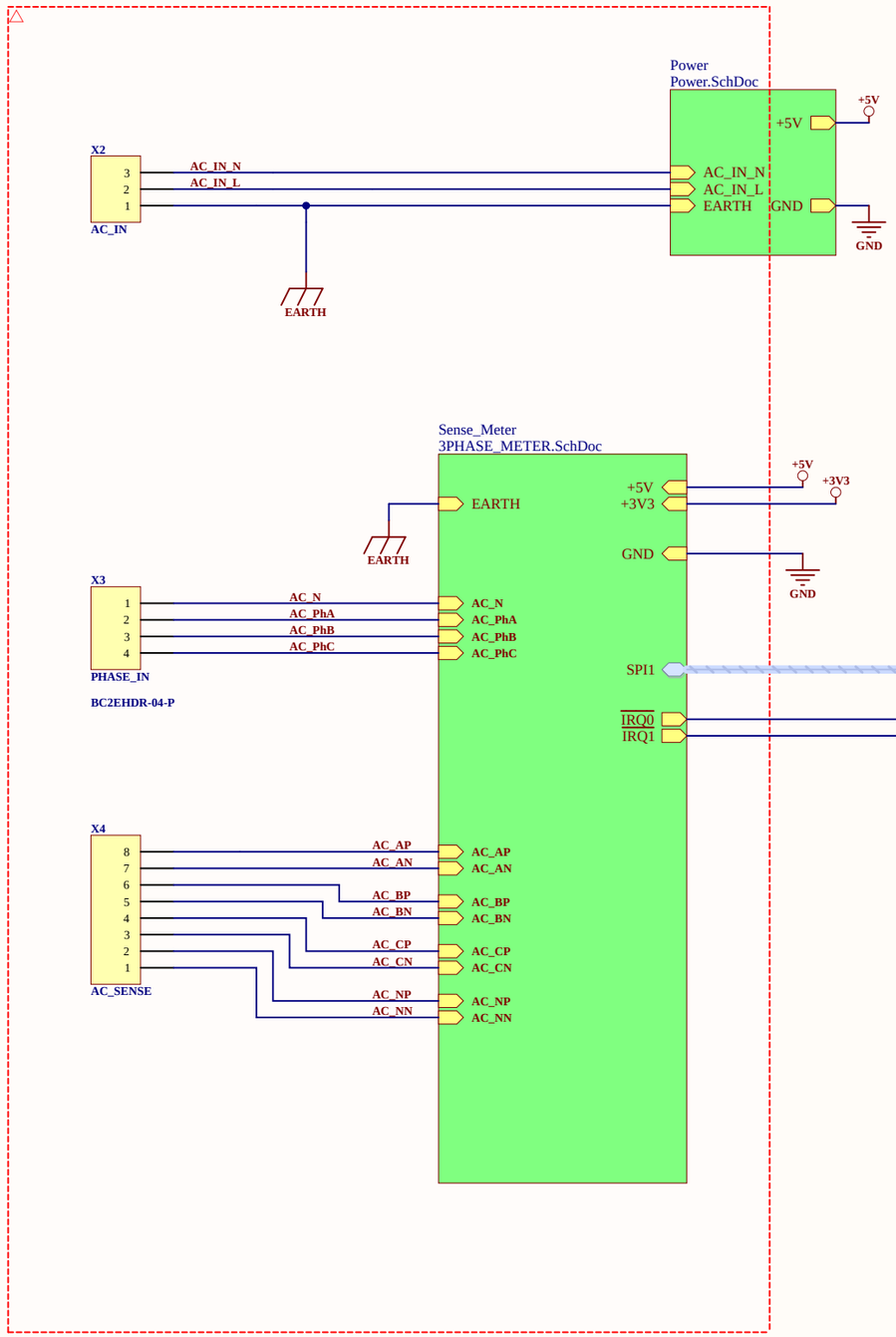




DAEMON-LEC-1

RBZ EMBEDDED LOGICS

AS7140X

Centrador_1

Centrador_2

Centrador_3

Etiq 1
Etiqueta Peligro Alto Voltaje
Serigrafia PCB

Etiq 2
Etiqueta ESD
Serigrafia PCB

Etiq 3
Etiqueta WEE
Serigrafia PCB

Etiq 4
Etiqueta REACH
Serigrafia PCB

Etiq 5
Etiqueta ROHS
Serigrafia PCB

E2 SPACER M3X18
E4 SPACER M3X18
E6 SPACER M3X18
E8 SPACER M3X18

E1 SCREW NYLON M3
E3 SCREW NYLON M3
E5 SCREW NYLON M3
E7 SCREW NYLON M3

Tarjeta: DAEMON-LEC-5G-DOWN			RBZ Robot Design S.L. C/Casas de Miravete 24A 4º L2, 28031 Madrid (Spain)
Esquema: MAIN-DOWN			
Codigo: AS7140X			
Formato: A3	Revision: Rev.0	Pagina 1 de 3	
Dibujado: D.Lara	Fecha: 21/03/2024	MAIN-DOWN.SchDoc	

Using a Current Transformer as the Current Sensor

Figure 3 shows how a current transformer can be used as a current sensor in one phase of a 3-phase, 4-wire distribution system (Phase A). The other two phases and the neutral current require similar connections.

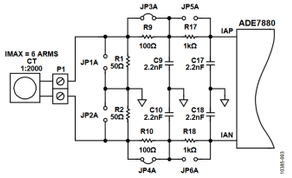


Figure 3. Example of a Current Transformer Connection

The R1 and R2 burden resistors must be defined as functions of the current transformer ratio and the maximum current of the system, using the following formula:

$$R1 = R2 = 1/2 \times 0.5/\sqrt{2} \times N/I_{IS}$$

where:
$0.5/\sqrt{2}$ is the rms value of the full-scale voltage accepted at the ADC input.
N is the input-to-output ratio of the current transformer. Figure 3 shows an example for N = 2000.
I_{IS} is the maximum rms current to be measured.

The JP1A and JP2A jumpers should be opened if R1 and R2 are used. The antialiasing filters should be enabled by opening the J5A and J6A jumpers (see Figure 3).

APPLICABLE TO: R3, R4, R10, R11, R21, R22, R30, R31.

R=0.033ohm
R=1/(4√2) * N/I -> 0.033*4*√2 = N/I = 0.1866

N=30 Ifs≈160A
N=50 Ifs≈267A
N=100 Ifs≈535A

- Input current: 5A rms -> 7.07 A peak
- Differential pair inputs IAP-IAN, IBP-IBN, ICP-ICN allow MAX ± 0,5 V input, 250mV on each line.

***R= 250mV/7.07A= 35.3mR -> 33mR**
*** Power R = 250mV*7.07A= 1.8W**

GND conections to NC pins: Datasheet figure 114

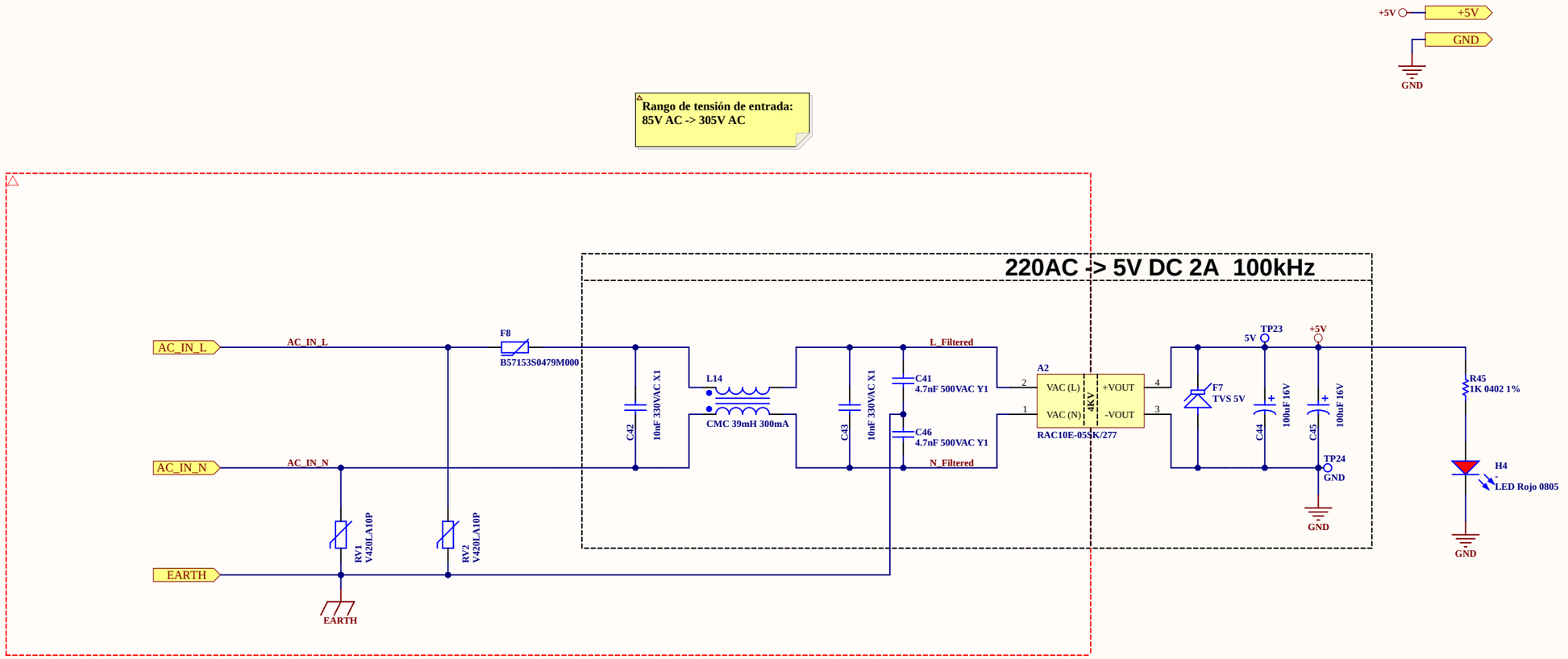
5V DC -> 5V_ISOL DC

5V_ISOL DC -> 3.3V_ISOL DC

Tarjeta:	DAEMON-LEC-5G-DOWN
Esquema:	3PHASE_METER
Codigo:	AS7140X
Formato:	A3
Revision:	Rev.0
Pagina	2 de 3
Dibujado:	D.lara
Fecha:	21/03/2024

RBZ Robot Design S.L.
C/Casas de Miravete
24A 4º L2, 28031
Madrid (Spain)
Embedded Logics

3PHASE_METER.SchDoc



Tarjeta:	DAEMON-LEC-5G-DOWN	RBZ Robot Design S.L. C/Casas de Miravete 24A 4º L2, 28031 Madrid (Spain)	Embedded Logics
Esquema:	Power		
Codigo:	AS7140X		
Formato: A3	Revision: Rev.0	Pagina 3 de 3	
Dibujado: D.lara	Fecha: 21/03/2024	Power.SchDoc	