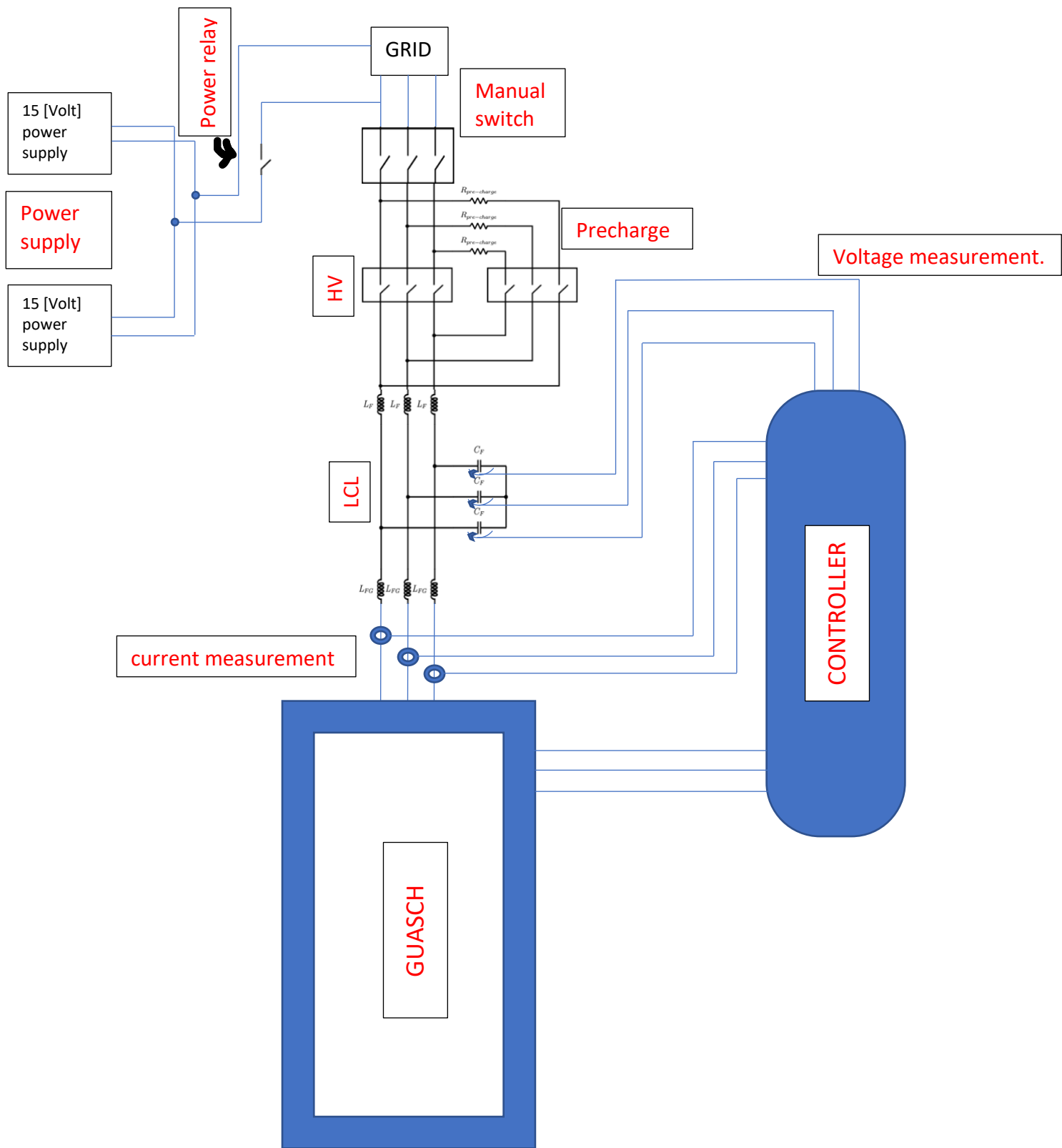


Detailed circuit + draft layout with approximate dimensions

1.5.2022



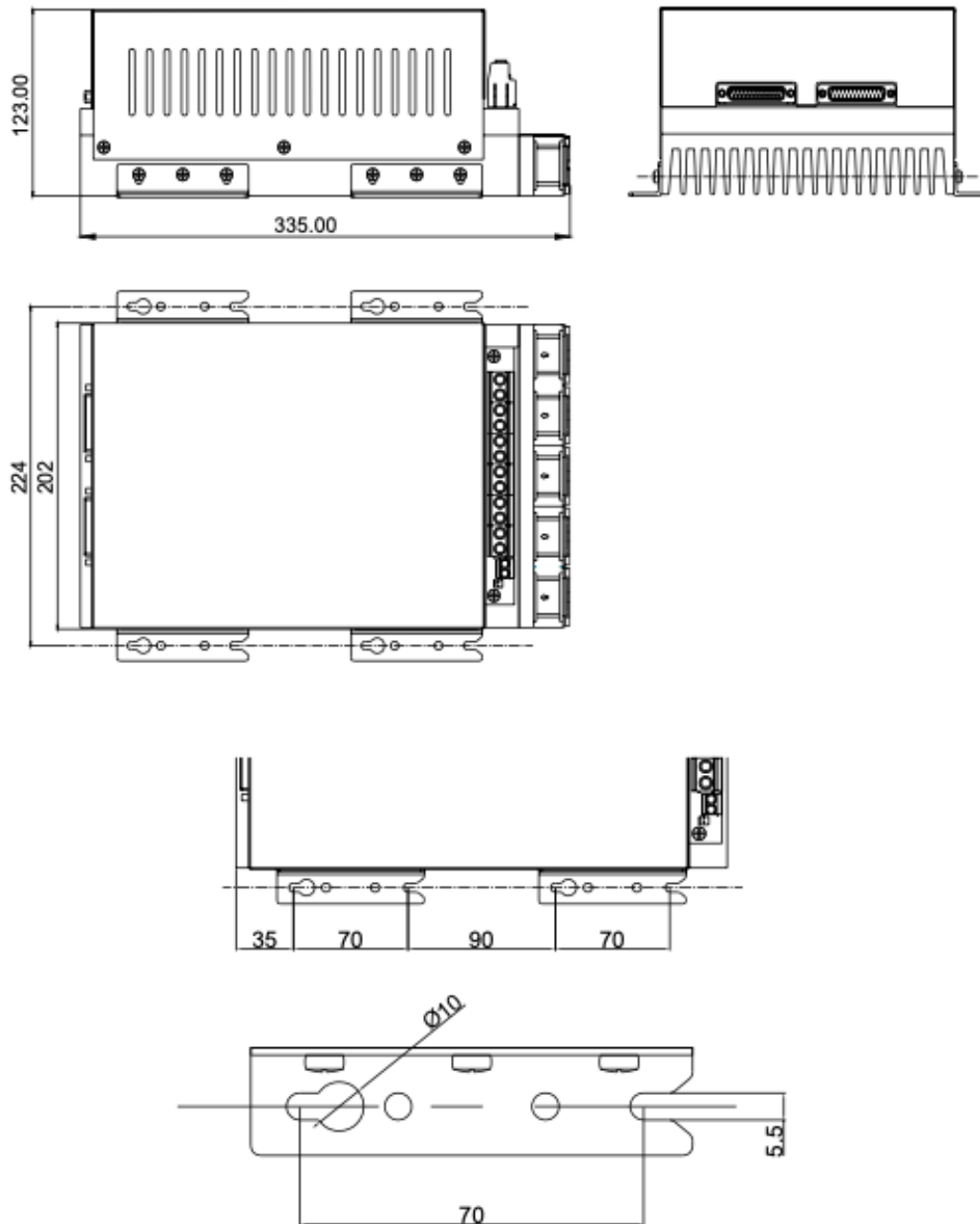
List of components

Some of the components are not final and we haven't decided on them, so we took models (most of them meets the requirements) for dimensions reference.

- **Guasch:**

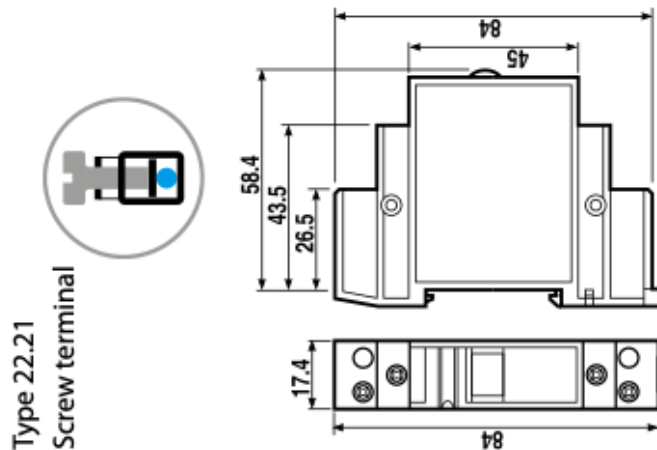
we have the Guasch MTL-CBI0060F12IXHF (inverter). The real dimensions are:

MECHANICAL DIMENSIONS (All dimensions in mm.)



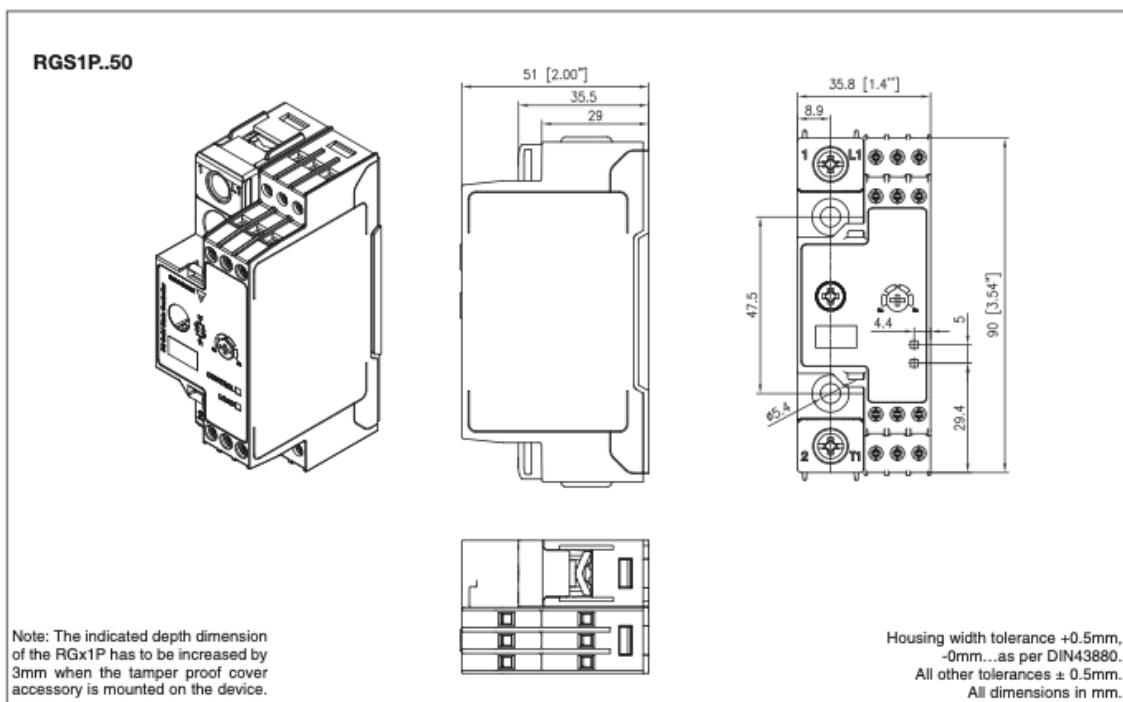
- **HV and Pre-charge:**

- **HV:** the HV we draw or used in the model is using these relay dimensions:
<https://www.farnell.com/datasheets/2626616.pdf>



- **Pre-charge:** we haven't discussed the final model and HV+Precharge circuit with you, so the dimensions according to this (random – doesn't meet our requirements) soft-start relay:
https://www.gavazzionline.com/pdf/SSR_RGs1P_K.pdf

Dimensions



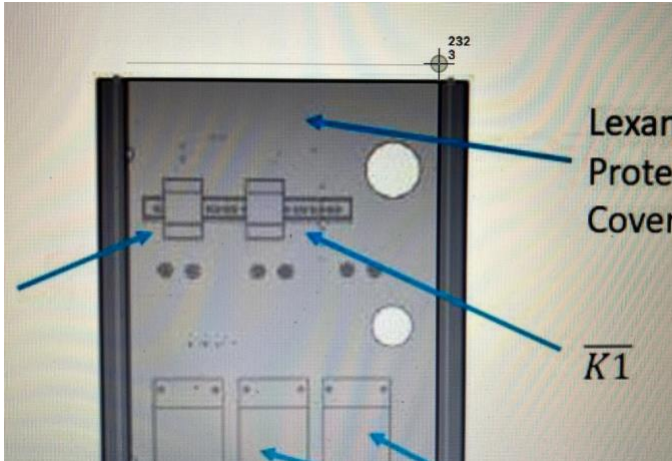
- **LCL filter:**

using the thesis you sent us, we measured the plate's and the capacitor (or -) dimensions and we calculated an approximate dimension.

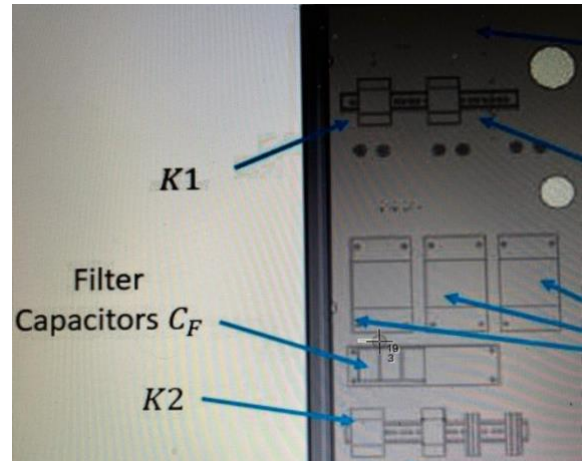
- **C:**

by measuring component width divided by plate width the multiplied by the real size of get the component size.

Plate width (=232)



component width (=19)



we get:

- **Width:**

$$\frac{\text{Component}}{\text{Plate}} * \text{RealSize} = \frac{19}{232} * 52[\text{cm}] = 4.258[\text{cm}]$$

Using the same way:

- **Height:**

$$\frac{31}{571} * 110 [\text{cm}] = 5.971[\text{cm}]$$

- **L:**

we get:

- **Width:**

$$\frac{52}{236} * 52[\text{cm}] = 11.457 [\text{cm}]$$

Using the same way:

- **Height:**

$$\frac{45}{571} * 110 [\text{cm}] = 8.669[\text{cm}]$$

- **Connection terminals for sensors:**

we haven't chosen a terminal yet, although we found model that might be fit (meets the required current (20[A]) , voltage rating(750V_{DC}/230V_{AC}) and 3 poles – but we have to discuss it with you), so we used it for dimensions reference.

this is the data sheet:

<https://www.farnell.com/datasheets/2222574.pdf>

Dimensions	
Product Net Height:	100.1 mm
Product Net Length:	78.4 mm
Product Net Depth:	78.4 mm
Product Net Weight:	24.4 g
Product Net Width:	5.2 mm

- **Auxiliary power supply:**

we use a $\pm 15V$ auxiliary power supply to provide auxiliary voltage to the LV part of the circuit.

although it's not part of our design, we did pick a model that meets our requirements.

<https://www.farnell.com/datasheets/2724928.pdf>

Its dimensions are 22.5*90*100mm (W*H*D)

- Single phase relay: we connect the power supply through a single phase relay.

- **Rotary switch:**

We use the rotary switch as a first connector to the grid and we use it as a manual security switch in case of an error so we can disconnect manually from the grid.

Here are some examples: <http://www.langirele.com/pdf/rotary-switch-lw30.pdf>

Typical dimension (W*H*D): 50*50*80mm

LW30 Rotary Switch



- **Power relay – single phase relay for power supply:**

we choose this model as relay for connecting the grid with the 15[V] power supply:

<https://www.farnell.com/datasheets/2340607.pdf>

- **DC connection to Guasch:**

we aren't sure what kind of connections were looking for here, we saw so many options (different kind of connections) but we didn't find anything that meets our requirements (the highest V_{DC} rated we found is 24V_{DC}).

- **AC connection:**

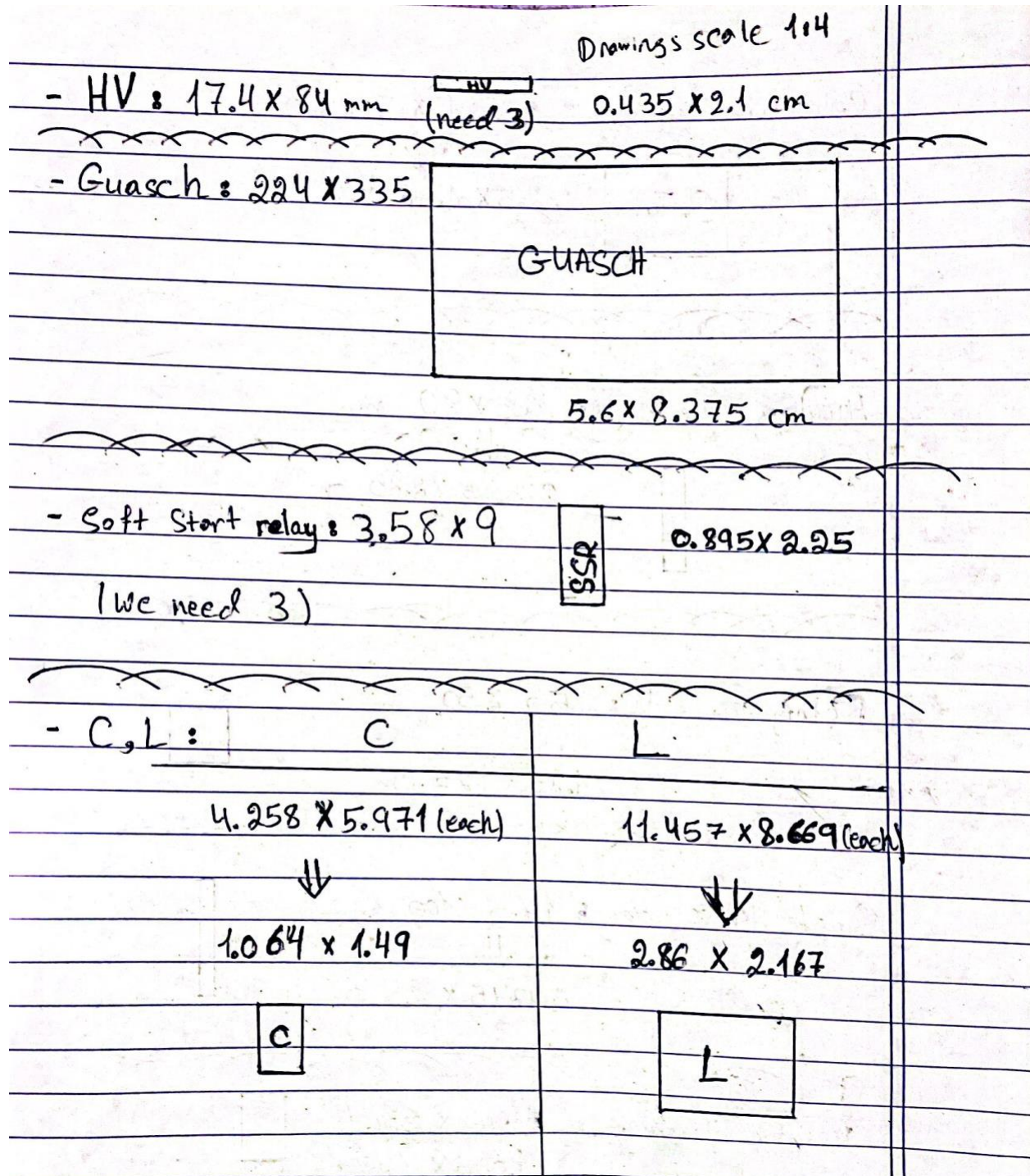
we aren't sure if we should pick female/male cable gender.

we thought about the 3-phase AC male connection as the obvious choice, but we read in internet and we tried to find answers, the main thing that we noticed through the answers seeking was that especially when dealing with high voltage/current system that female connector is safer compared to the male connector.

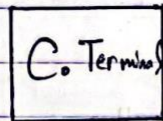
Layout

we didn't draw the layout draft on computer, we did by hand with taking 1:4 scale of the real size so we could try more than a placement and find the best and most efficient one.


We drew here blocks according to the 1:4 sizes.




Connection Terminals 10.01×7.84 mm

 C. Terminals 2.5×1.96 cm


Auxiliary power supply: 22.5×90 mm

 0.5625×2.25 cm


Rotary switch: 50×50 mm

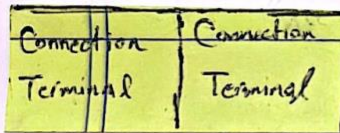
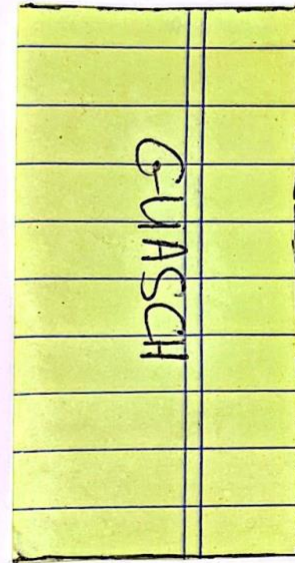
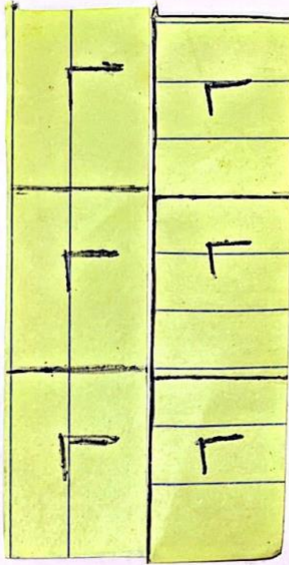
 1.25×1.25 cm

Single Phase Relay: 17.5×100 mm

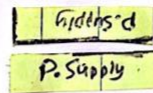
 0.4375×2.5 cm

Resistor (Precharge): 40.6×6.1

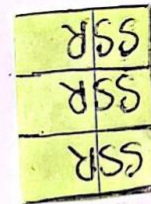
 1.015×1.525



Connection terminals



Power supply



Soft-start relay



Power supply relay



Circuit breaker



Manual switch



We marked with the number "1" the same corner, looking at it from top and from bottom.

