

# Electrical installation

## 1. Final task assignement

The task consists in the completion of 3 modules.

✓ **Module 1: Installation and wiring of different elements.**

Using a layout plan, contestants will trace and install the equipment and the electrical panel.

✓ **Module 2: Wiring of the equipment.**

With the help of the functional analysis (page 5), after analyzing the client's request, contestants will wire the equipment.

✓ **Module 3: Commissioning of the installation and testing.**

The contestant will be able to test his installation before declaring it finished to the jury.

## 2. Allocated time: 6h00

6 hours of competition.

Module 1: 2 hours 30 minutes.

Module 2: 2 hours 45 minutes.

Module 3: 45 minutes.

## 3. Requirements

- ✓ Contestants must respect the safety rules and wear PPE according to the task being performed: safety glasses, ear protection, safety clothes, safety shoes, and protective gloves.
- ✓ Contestants must follow the installation instructions.
- ✓ They will tidy up and clean their workstation.
- ✓ They will follow the starting procedure.
- ✓ Any contestant caught cheating, talking to someone from the public or using a communication device will suffer a penalty of 5 points for the first transgression. A second transgression will lead to an exclusion from the contest.

#### 4. Procedure

**Day - 1 (March 23<sup>rd</sup>):** On the day before the competition, contestants will be welcomed by members of the jury. A briefing about the organization of the competition and the safety rules will be arranged. Contestants will draw lots to be assigned to a work station.

**Day 1 (March 24<sup>th</sup>):** Contestants will have 2 hours and 30 minutes to complete module 1.

**Day 2 (March 25<sup>th</sup>):** Contestants will have 3 hours and 30 minutes to complete modules 2 and 3.

#### 5. Evaluation criteria

N°	Items to be evaluated	O/S	Scoring scale
<b>Module 1</b>			<b>39</b>
<b>01</b>	Respect of the positioning of the 3 electrical outlets (see dimension on the provided plans) Tolerances: +/- 5mm for dimensions > 500 mm +/- 2mm for dimensions < 500 mm <i>Respect de l'emplacement des 3 prises de courant (voir dimension sur les plans fournis)</i> <i>Tolérances : +/- 5mm pour les cotes &gt; 500 mm +/- 2mm pour les cotes &lt; 500 mm.</i>	O	1,5
<b>02</b>	Quality of the positioning of the 3 electrical outlets (level and solidity) <i>Qualité du positionnement des 3 prises (niveau et solidité)</i>	O	1,5
<b>03</b>	Quality of the wiring of the 3 electrical outlets <i>Qualité du raccordement des 3 prises</i>	S	3,5
<b>04</b>	Respect of the positioning of the 3 push buttons (see dimension on the provided plans) Tolerances: +/- 5mm for dimensions > 500 mm +/- 2mm for dimensions < 500 mm <i>Respect de l'emplacement des 3 boutons poussoir (voir dimension sur les plans fournis)</i> <i>Tolérances : +/- 5mm pour les cotes &gt; 500 mm +/- 2mm pour les cotes &lt; 500 mm.</i>	O	1,5
<b>05</b>	Quality of the positioning of the 3 push buttons (level and solidity) <i>Qualité du positionnement des 3 boutons poussoir (niveau et solidité)</i>	O	1,5
<b>06</b>	Quality of the wiring of the 3 push buttons <i>Qualité de raccordement des 3 boutons poussoir</i>	S	3,5

07	<p>Respect of the positioning of the 3 modular light (see dimension on the provided plans)            Tolerances: +/- 5mm for dimensions &gt; 500 mm            +/- 2mm for dimensions &lt; 500 mm  <i>Respect de l'emplacement des 3 voyants (voir dimension sur les plans fournis)</i>  <i>Tolérances : +/- 5mm pour les cotes &gt; 500 mm +/- 2mm pour les cotes &lt; 500 mm.</i></p>	O	1,5
08	<p>Quality of the positioning of the 3 modular light (level and solidity)  <i>Qualité du positionnement des 3 voyants (niveau et solidité)</i></p>	O	1,5
09	<p>Quality of the wiring of the 3 modular light  <i>Qualité de raccordement des 3 voyants</i></p>	S	3,5
10	<p>Respect of the positioning of the bathroom's light (see dimension on the provided plans)            Tolerances: +/- 5mm for dimensions &gt; 500 mm            +/- 2mm for dimensions &lt; 500 mm  <i>Respect de l'emplacement de la lampe de la salle d'eau (voir dimension sur les plans fournis)</i>  <i>Tolérances : +/- 5mm pour les cotes &gt; 500 mm +/- 2mm pour les cotes &lt; 500 mm.</i></p>	O	1,5
11	<p>Quality of the positioning of the bathroom's light (solidity)  <i>Qualité du positionnement de la lampe de la salle d'eau (solidité)</i></p>	O	1,5
12	<p>Quality of the wiring of the bathroom's light  <i>Qualité du raccordement de la lampe de la salle d'eau</i></p>	S	3,5
13	<p>Respect of the positioning of the 2 ceiling's light bulb (see dimension on the provided plans)            Tolerances: +/- 5mm for dimensions &gt; 500 mm            +/- 2mm for dimensions &lt; 500 mm  <i>Respect de l'emplacement des 2 lampes du plafond (voir dimension sur les plans fournis)</i>  <i>Tolérances : +/- 5mm pour les cotes &gt; 500 mm +/- 2mm pour les cotes &lt; 500 mm.</i></p>	O	1,5
14	<p>Quality of the positioning of the 2 ceiling's light bulb (solidity)  <i>Qualité du positionnement des 2 lampes du plafond (solidité)</i></p>	O	1,5
15	<p>Quality of the wiring of the 2 ceiling's light bulb  <i>Qualité du raccordement des 2 lampes du plafond</i></p>	S	3,5
16	<p>Respect of the positioning of the extractor (see dimension on the provided plans)            Tolerances: +/- 5mm for dimensions &gt; 500 mm            +/- 2mm for dimensions &lt; 500 mm  <i>Respect de l'emplacement de l'extracteur (voir dimension sur les plans fournis)</i>  <i>Tolérances : +/- 5mm pour les cotes &gt; 500 mm +/- 2mm pour les cotes &lt; 500 mm.</i></p>	O	1,5

17	Quality of the positioning of the extractor (solidity) <i>Qualité du positionnement de l'extracteur (solidité)</i>	O	1,5
18	Quality of the wiring of the extractor <i>Qualité du raccordement de l'extracteur</i>	S	3,5
<b>Module 2</b>			<b>26</b>
19	Respect of the positioning of the distribution board (see plan) Tolerances: +/- 5mm for dimensions > 500 mm +/- 2mm for dimensions < 500 mm <i>Respect de l'emplacement du tableau de distribution (voir plan)</i> <i>Tolérances : +/- 5mm pour les cotes &gt; 500 mm +/- 2mm pour les cotes &lt; 500 mm.</i>	O	2
20	Quality of the positioning of the distribution board (level and solidity) <i>Qualité du positionnement du tableau (niveau et solidité)</i>	O	2
21	Respect of the positioning of the protection modules in the distribution board (see plan) <i>Respect de l'emplacement des modules de protection dans le tableau (voir plan)</i>	O	4
22	Labeling of the protection elements in the distribution board (see plan) <i>Repérage des éléments de protection du tableau (voir plan)</i>	O	2
23	Respect of the positioning of the remote and time switch (see plan) <i>Respect de l'emplacement télérupteur et de l'horloge (voir plan)</i>	O	4
24	Quality of the wiring of the protection equipment <i>Qualité du câblage des appareils de protection</i>	S	6
25	Quality of the wiring of the remote and time switch <i>Qualité des câblages du télérupteur et de l'horloge</i>	S	6
<b>Module 3</b>			<b>26</b>
26	Proper functioning of the electrical outlet circuit, presence live wire, neutral wire and ground wire with tester <i>Fonctionnement correct du circuit prises, présence conducteurs L, N, PE via testeur</i>	O	4
27	Proper functioning - Lights bath room <i>Fonctionnement correct - éclairage salle d'eau</i>	O	4
28	Proper functioning - Lights bed room <i>Fonctionnement correct - éclairage chambre</i>	O	6
29	Proper functioning - Radiator and extractor fan <i>Fonctionnement correct - radiateur et extracteur</i>	O	6
30	Proper functioning - Heat water <i>Fonctionnement correct - ballon d'eau chaude</i>	O	6
<b>Evaluation on the 3 modules</b> <i>Notation sur les 3 modules</i>			<b>9</b>
31	Organization and method <i>Organisation et méthode</i>	S	3

32	Cleanliness of the work station <i>Propreté du poste de travail</i>	S	3
33	Respect of the safety rules <i>Respect des règles de sécurité</i>	S	3
<b>TOTAL POINTS</b>			<b>100</b>

## Functional analysis

The diagrams and plans will be provided the day before the 1st module when the candidates will be present and will draw their workspace.

The work will be carried out on two panels of 2000x1200mm each, see layout plan.

### **Setting in situation:**

A retired couple wishes to rehabilitate a garage to transform it into a bedroom.

This garage is located more than 30m from the house, so several equipment are to be implemented:

- Lighting
- Electrical outlets
- An electric wait for the room's radiator
- An electric wait for the bathroom's radiator
- An electrical wait for the hot water tank in the bathroom
- An electric wait for the VMC in the bathroom

### **Functional analysis:**

- **For the lighting:**

BP1 and BP2 are push buttons that control E1, the bedroom lamp, controlled with a remote switch T1.

SA1 is a simple switch that controls E2, the ceiling lamp of the bathroom.

The E3 luminaire has an integrated single switch, so it will be connected directly.

The wiring should be implemented in the junction box BD1.

The wiring will have a section of 1.5mm<sup>2</sup>.

- **For the sockets:**

The sockets will be wired directly and should not cross BD1, so bridged between them.

The USB socket will be supplied with the PC circuit in 2.5mm<sup>2</sup>.

The cabling will have a section of 2.5mm<sup>2</sup>.

- **For the electric waits**

The electric wait for the hot water tank will be in the bathroom.

An H1 clock will ensure its control during two time slots, from 12:00 to 14:00 and 22:00 to 00:00.

This tank will be simulated by a green light.

The wiring will have a section of 2.5mm<sup>2</sup>.

The electric wait of the extractor will be in the bathroom.

The wiring will have a section of 1.5mm<sup>2</sup>.

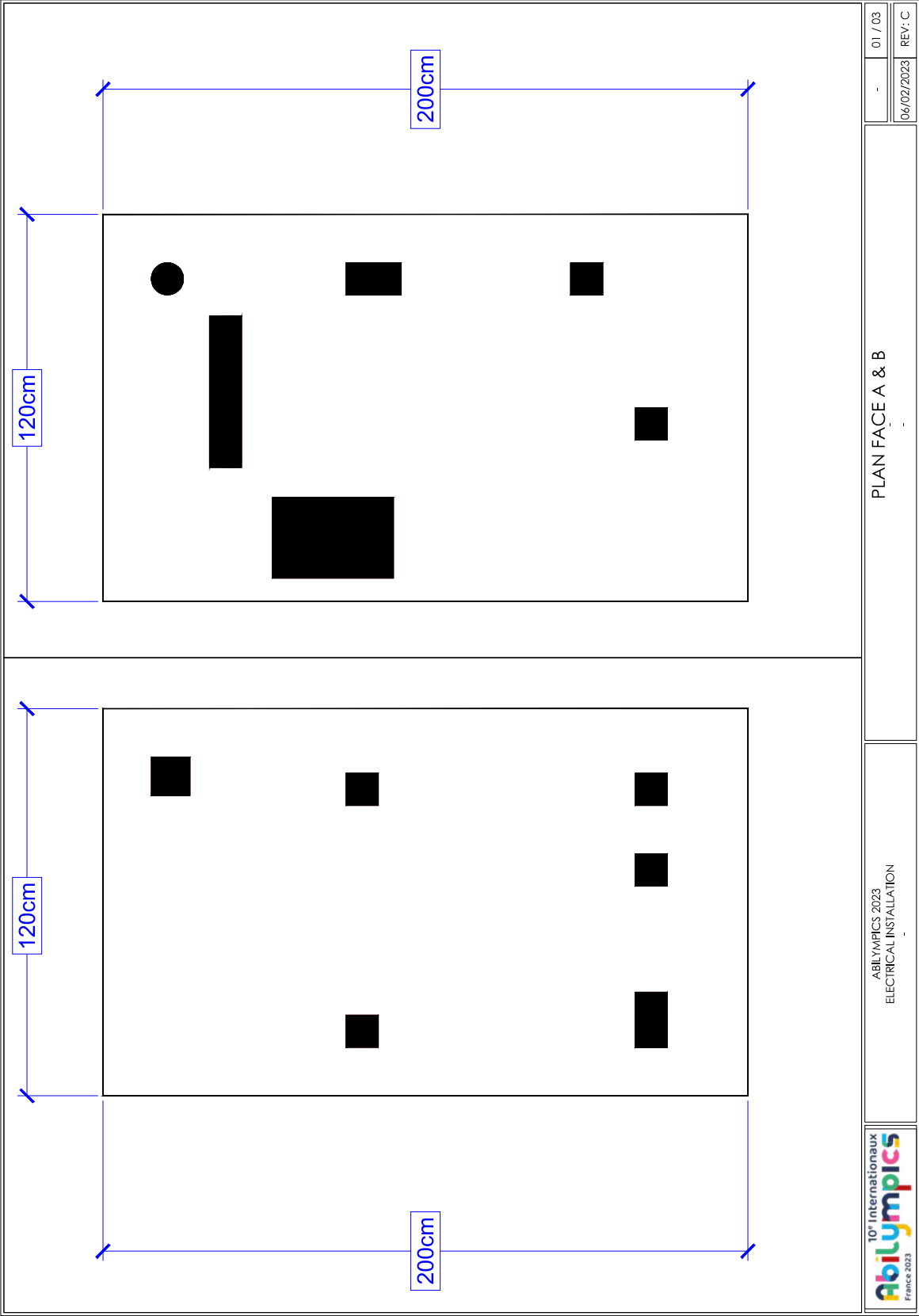
The electric wait of the radiators will be in the room and the water room.

This tank will be simulated by a red light.

The wiring will have a section of 1.5mm<sup>2</sup>.

**Cable routing and sheathing:**

For all the devices, panel 1 and 2 the routing will be in 20mm ICTA.



Good luck to all for this wonderful adventure!