Test Project

Module 1.1 – LED Luminaire Manufacturing, Application Integration and Quality Verification

Optoelectronic Technology

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WSC2026_TP60 _en

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Accompanying electronic form file

M1.1_Measurements_Form_XX.docx

This form is used to enter the measurement results for Table 1.1-3 electronically. XX must be replaced with the two-digit workstation number allocated to the Competitor by drawing lots.

In this document and the accompanying form, XX represents the two-digit workstation number allocated to the Competitor by drawing lots. All required forms must be completed, saved and submitted electronically before the competition time for this module ends. No printing or separate submission of a handwritten measurement report is required.

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Introduction

Professional project context

A client is preparing an interactive optoelectronic exhibition booth for an international skills and technology showcase. The booth will include a compact product display area where visitors can experience LED lighting, sensor-based control, touch dimming and real-time monitoring of electrical parameters. The client requires a lighting system that is suitable for public demonstration, remains reliable during repeated operation, has a neat layout, is easy to maintain and is ready for handover inspection.

Occupational context

The Competitor will act as the assigned optoelectronic technician responsible for preparing the lighting system for this booth. The work begins with manufacturing two LED spotlight luminaires by assembling the supplied components, followed by integrating both completed luminaires into the booth lighting control circuits. The completed system must use the L1 touch-dimming lighting circuit and the L2 PIR-sensing lighting circuit to meet the needs of staff carrying out set-up, inspection and demonstration preparation, as well as providing an interactive experience for visitors. Both control circuits must operate correctly independently and must also be capable of being enabled simultaneously. After commissioning, the Competitor must verify the lighting output and electrical operating data, and complete the electronic measurement records for handover to the client.

Description of project and tasks

Competition time: 210 minutes.

- Task 1.1.1 LED spotlight luminaire assembly and preliminary testing
- Task 1.1.2 Lighting application system installation
- Task 1.1.3 Functional commissioning of lighting scenarios
- Task 1.1.4 Lighting and electrical performance verification

The client requires a fully functioning LED spotlight application system for the booth display area. The system must include two fully assembled LED spotlight luminaires integrated into the system, two installed and commissioned lighting control circuits, safe electrical protection and metering devices, clearly arranged wiring and labelling, and genuine, complete lighting and electrical performance data. The two control circuits provide L1 touch-dimming control and L2 PIR-sensing control respectively, and must meet the client's inspection and handover requirements.

Drawings and materials information

The following drawings, materials lists and record forms form part of the requirements for this project. During the work, the Competitor must interpret and apply this information to identify the components, installation positions, indicated connections, control functions and measurement requirements, and use it to complete assembly, installation, commissioning and client handover.

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Index of drawings, materials lists and record forms

- **Figure 1.1-1** LED spotlight components
- **Table 1.1-1** Main materials list for two LED spotlights
- **Figure 1.1-2** Lighting product installation positions
- **Figure 1.1-3** Lighting product connection diagram
- **Table 1.1-2** Lighting application system materials list
- **Table 1.1-4** Internal wiring conductor and ferrule colours
- **Figure 1.1-5** Physical positions of the two-gang two-way switches
- **Figure 1.1-4** Illuminance measurement points and locations
- **Table 1.1-3** Illuminance and electrical parameter record form



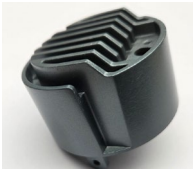
Figure 1.1-1 LED spotlight components

The quantities in **Table 1.1-1** are the total quantities required to manufacture two luminaires. Both luminaires must be assembled, functionally tested and installed in the final lighting application system.

The LED drivers listed in the two materials lists are the same items of equipment. Only two drivers are provided in total, for DR1 and DR2 respectively; they are not supplied twice.

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Main materials list for two LED spotlights

NO.	NAME	REFERENCE IMAGE	TOTAL QUANTITY
1	Outer cover		2
2	Inner cover		2
3	Heat sink		2
4	Anti-glare cup		2
5	Rotating cup		2
6	Lens		2
7	Lens holder		2
8	COB LED module		2
9	Large cross-head screw		4

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NO.	NAME	REFERENCE IMAGE	TOTAL QUANTITY
10	Small cross-head screw		4
11	Cable-retaining block		2
12	Power lead		2
13	LED driver		2

Note: The reference images are provided to identify the components; the quantities specified in this table apply.

Table 1.1-1 Main materials list for two LED spotlights (total quantities)

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Installation positions and mounting surfaces

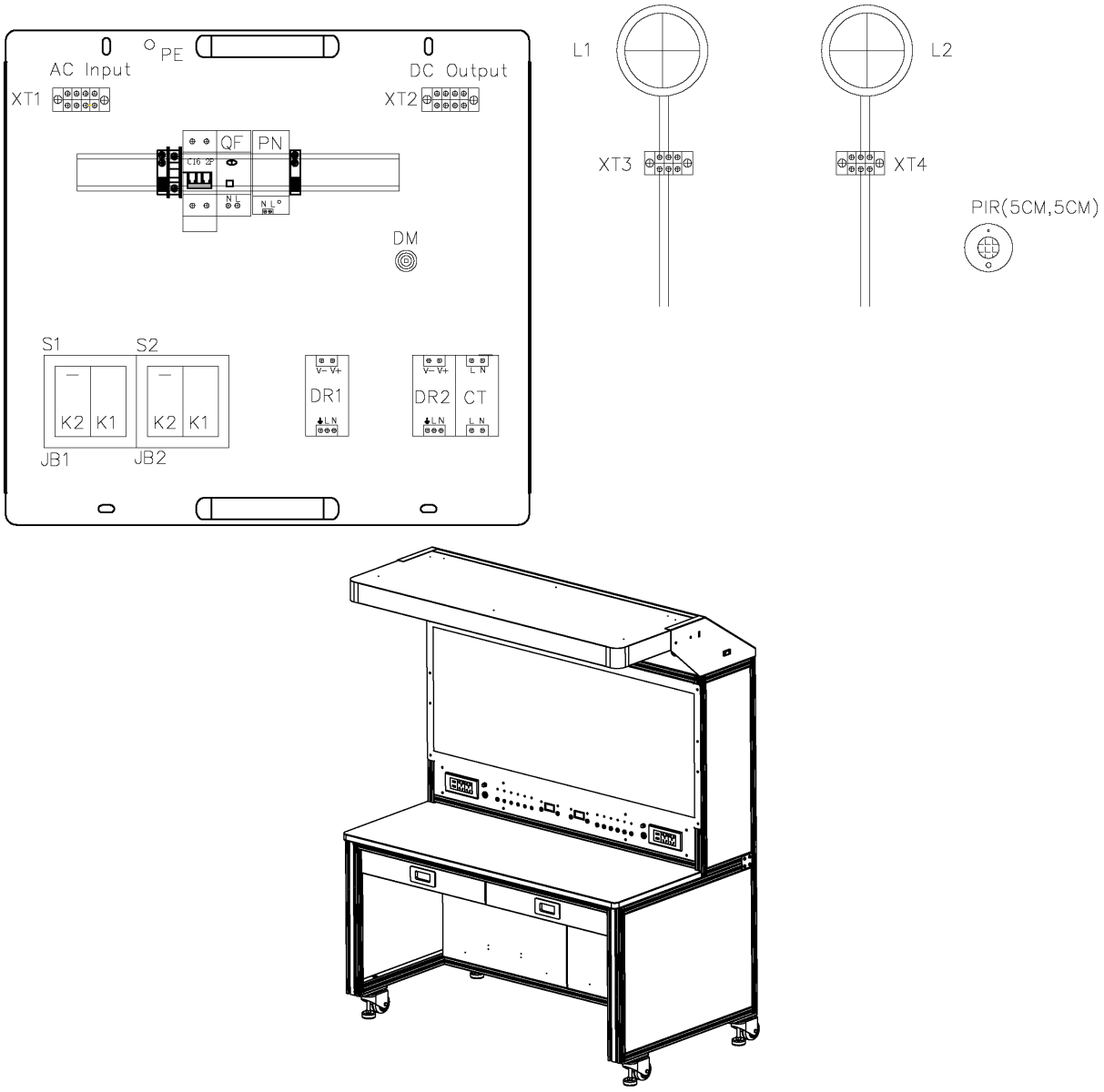


Figure 1.1-2 *Lighting product installation positions*

Install L1, L2 and the PIR in the designated installation area at the top of the workbench. Position the PIR in accordance with the (5 cm, 5 cm) annotation in the drawing and the pre-printed scale at the top of the workbench. Install the switch panels, touch-dimming module and remaining electrical control components on the designated vertical perforated mounting panel.

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Lighting product connection diagram

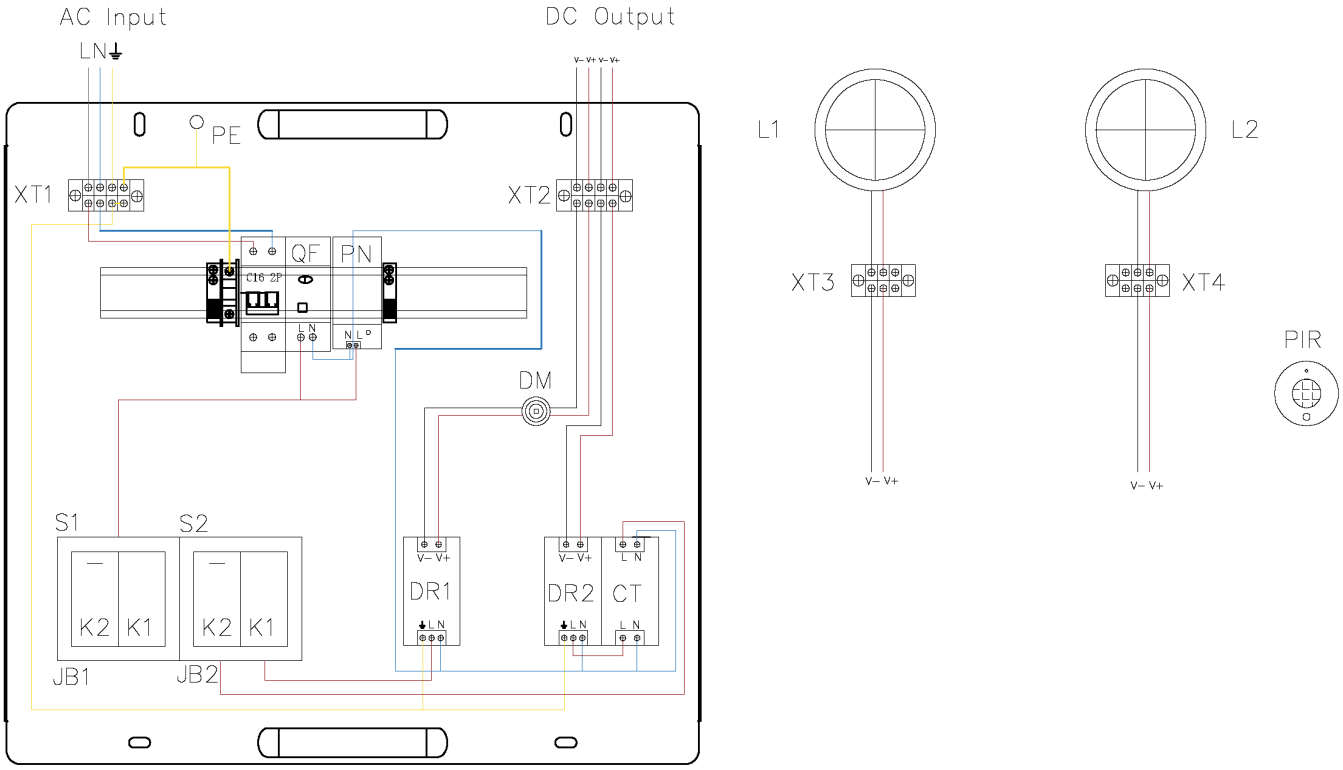


Figure 1.1-3 *Lighting product connection diagram (two-way switching connections to be designed by the Competitor)*

This drawing shows the supplied components and the indicated connections. The Competitor must design and wire the two-way switch connections that are not detailed in the drawing, in accordance with the control circuit state tables in Task **Section Task 1.1.3**. Connections omitted from the drawing must not be interpreted as connections that are not required.

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No.	Name	Specification	Symbol	Unit	Qty
1	PIR sensor module - sensing switch	Wireless sensing switch	PIR	Each	1
2	PIR sensor module - switching actuator	AC 100–240 V	CT	Each	1
3	Lighting luminaire	9 W; luminaire assembled in this module	L1, L2	Set	2
4	LED driver	Input AC 220 V; output DC 12 V Already included in **Table 1.1-1**	DR1, DR2	Each	2
5	Touch switch module	DC 5–30 V	DM	Each	1
6	Switch panel	Two-gang two-way switch	S1, S2	Each	2
7	Mounting box	Type 86	JB1, JB2	Each	2
8	Smart digital power meter	AC 220 V, 35 mm DIN-rail mounting	PN	Each	1
9	Residual current operated circuit-breaker with integral overcurrent protection (RCBO)	C16 / 2P	QF	Each	1
10	Terminal block	TB-1503	XT	Each	2
11	Terminal block	TB-1504	XT	Each	2
12	DIN rail	35 mm DIN rail		Each	1
13	Self-adhesive labels	White		Sheet	1
14	Self-tapping screw	4 × 12 mm		Each	20
15	Self-tapping screw	3 × 12 mm		Each	20
16	Jumper bar	TB-1502, blue		Each	2
17	Jumper bar	TB-1503, blue		Each	2
18	Marker pen	Black		Each	1

Table 1.1-2 Lighting application system materials list

Lighting application system materials list (continued)

No.	Name	Specification	Symbol	Unit	Qty
19	Adjustable mounting base	White		Each	50
20	Magnetic mounting base with hole	Type with hole		Each	10
21	Countersunk screw	4 × 8 mm		Each	10
22	Countersunk screw	4 × 20 mm		Each	4
23	Luminaire suspension bracket	Iron bracket		Each	2
24	Ring magnet	D25 / diameter 25 mm		Each	8
25	Power cable	RVV 3 × 1.0 mm²		Metre	4
26	Three-pin plug	AC 250 V / 10 A		Each	1
27	Power wire	RV 0.5 mm², red		Metre	10
28	Power wire	RV 0.5 mm², black		Metre	10
29	Power wire	RV 0.5 mm², blue		Metre	10
30	3M double-sided adhesive tape	Width: 18 mm		Roll	1
31	Wire-end ferrules	Wire-end ferrules		Each	Several
32	Earthing conductor	RV 1.0 mm², green/yellow		Metre	2
33	Earth terminal block	USLKG2.5/green-yellow		Each	1
34	Terminal block end plate	D-UK2.5BG/grey		Each	1
35	Terminal block end clamp	E-UK/grey		Each	2

***Table 1.1-2** Lighting application system materials list (continued)*

L1 and L2 in this table are the two luminaires manufactured in this module. DR1 and DR2 are the same two drivers listed in **Table 1.1-1**.

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Instructions to the Competitor

Project brief from the client

The client is preparing an interactive LED lighting booth for a public technology showcase. The booth will demonstrate how two low-power LED spotlights are assembled and integrated into safe control circuits. The system can be operated by event staff for demonstrations, triggered by visitor movement, dimmed through touch control, and verified by measuring illuminance and electrical parameters.

The client has supplied drawings, components, materials, tools, equipment, product manuals and an electronic measurement record form. Your responsibility is to deliver a complete, fully functioning system that is ready for inspection and handover. The client will assess not only whether the luminaires light up, but also whether the system is correctly assembled, safely wired, neatly installed, commissioned with clear control logic, stable in operation and accurately documented.

You must complete the work in accordance with the stages and specified conditions below. Where the drawings and task requirements allow flexibility, you may plan your own detailed workflow, wiring routes, cable-handling methods and installation layout. However, the final work must comply with the supplied drawings, safety rules, client requirements and marking criteria.

This work comprises the following stages:

1. Manufacture and functionally test two LED spotlight luminaires using the supplied components.
2. Install both completed spotlights in the supplied lighting application system and integrate them into the booth lighting control circuits.
3. In accordance with the supplied drawings, complete the connections for the AC 220 V supply circuit, protective devices, digital electrical parameter meter, terminal blocks, switch panels, controllers, LED drivers, PIR sensor module, touch-dimming module and luminaires. The Competitor must design the two-way switching connections that are not detailed in the drawing, in accordance with the client requirements and the control circuit state tables.
4. Commission the system so that the L1 touch-dimming lighting circuit and the L2 PIR-sensing lighting circuit both perform the specified functions, operate correctly independently, and can remain enabled simultaneously with stable operation.
5. Set the PIR time delay to 30 seconds, and configure and verify the touch-dimming level for the required lighting scenario.
6. Within the specified limits, adjust the horizontal luminaire positions, the touch-dimming level and the driver output settings permitted by the product manuals so that both points A and B meet the illuminance requirements under the same final system configuration. Subject to meeting these requirements, minimise the total system power consumption.
7. Measure and electronically record illuminance, voltage, current and power for client handover and assessment.

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Technical requirements and conventions

Conductor specifications and colour identification

The AC input cable and the internal control wiring use different conductor colours. Apply the colour requirements separately to their respective applications. The requirement for a brown line conductor in the AC input cable must not be applied to the red conductors supplied for internal wiring.

AC input cable

The supplied three-core AC input cable is RVV 3 × 1.0 mm². BN, BU and GNYE in **Figure 1.1-3** indicate the following conductor colours respectively.

Application	Conductor colour	Drawing code
L (line)	Brown	BN
N (neutral)	Blue	BU
PE (protective earth)	Green/yellow	GNYE

Internal control wiring

No.	Circuit / application	Specification	Conductor colour (drawing code)	Ferrule colour
1	DC: V+	RV 0.5 mm²	Red (RD)	Red
2	DC: V–	RV 0.5 mm²	Black (BK)	Blue
3	AC: L	RV 0.5 mm²	Red (RD)	Red
4	AC: N	RV 0.5 mm²	Blue (BU)	Blue / black
5	AC: PE	RV 1.0 mm²	Green/yellow (GNYE)	Yellow / black

Table 1.1-4 Internal wiring conductor and ferrule colours

This table specifies the requirements for using the materials supplied for this task. Final electrical terminations must use the supplied terminals and wire-end ferrules, and conductor polarity and function must remain clearly identified.

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1.1.1 LED spotlight luminaire assembly and preliminary testing

Client requirement

The client requires the soldering and assembly of two LED spotlight luminaires. The main tasks include soldering the LED light sources, assembling the luminaire structures, providing thermal management and insulation protection, making power-supply connections and carrying out power-on tests, so that both luminaires light up and operate steadily when energised. All operations must strictly follow the workmanship specifications and safety requirements. Both completed luminaires will subsequently be used for installation and integration into the booth lighting system.

Work instructions

1. Before assembly, check the supplied components against **Figure 1.1-1** and **Table 1.1-1**. Confirm that all components required for two complete luminaires are available at the workstation.
2. Before soldering and assembly, prepare the COB LED modules, heat sinks, optical components, housing components, drivers, power leads, screws and cable-retaining blocks.
3. Solder the COB LED modules in accordance with the product construction and polarity requirements. The solder joints must have adequate mechanical strength and provide reliable electrical connections.
4. Apply thermal interface material between the COB LED module and the heat sink. Apply the material to the correct contact area without omission. Avoid contaminating optical surfaces or electrical connection points.
5. Install the lens holder, lens, anti-glare cup, rotating cup, inner cover, outer cover, heat sink and associated structural components in the correct sequence and orientation.
6. Secure the power leads and internal wires to protect the conductor cores from tension, sharp edges, crushing and accidental loosening.
7. Connect the LED driver in accordance with the product requirements, and carry out a controlled power-on test in compliance with the first-energisation safety procedure in Section Task 1.1.2.
8. Complete the second luminaire to the same requirements. Both luminaires must be functionally tested and retained for subsequent installation and assessment.

Technical and quality requirements

- Each completed luminaire must energise normally and emit steady light.
- The visible light spot must appear uniform on visual inspection and be consistent with the supplied optical assembly.
- All optical components must be installed in the correct sequence and orientation.
- All structural components must be present, correctly assembled and securely fitted. No required components may be missing.
- Soldering and terminations must meet electrical safety and workmanship requirements. There must be no exposed uninsulated copper conductors, stray wire strands, defective solder joints or unsafe connections.
- Thermal interface material must be correctly applied to support heat dissipation. The luminaires must not exhibit abnormal heating or unstable operation during functional testing.
- Power leads and internal conductor cores must be protected against tension and mechanical damage.

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1.1.2 Lighting application system installation

Client requirement

The client requires both completed LED spotlights to be installed in the booth lighting control system. The system must be suitable for demonstration to visitors; therefore, the installation must be safe, neat, clearly wired and easy to inspect. The system must include electrical protection, metering, switching control, touch dimming, PIR-sensing control, driver connections and the two LED spotlight loads, and must be ready for subsequent functional commissioning and client handover.

Installation positions and design scope

Before this module begins, the sponsor's technicians will pre-install an unpopulated, earthed vertical perforated mounting panel in the designated position. Install L1, L2 and the PIR on the designated mounting surface at the top of the workbench. Install the switch panels, touch-dimming module and remaining electrical control components on the vertical perforated mounting panel.

Install the PIR at the position indicated in **Figure 1.1-2**, using the pre-printed scale at the top of the workbench. The luminaire mounting height is fixed by the workbench and luminaire bracket structures and must not be changed. Horizontal positions may be selected or adjusted within the designated installation area and the limits permitted by the brackets to meet the illuminance requirements.

The Competitor must design the two-way switch connections that are not detailed in **Figure 1.1-3**. The design must satisfy the control circuit state tables in Section Task 1.1.3 and the client's functional requirements. The components, connections and safety requirements specified in the drawings must still be followed.

Work instructions and wiring requirements

1. In accordance with the installation layout requirements in **Figure 1.1-2**, install the residual current operated circuit-breaker with integral overcurrent protection (RCBO), digital electrical parameter meter, terminal blocks, switch panels, mounting boxes, PIR sensor module, switching actuator CT, touch-dimming module DM, two LED drivers and both completed LED spotlights.
2. Plan the wiring routes before making electrical connections. The routes must ensure safe separation between the AC 220 V circuits and the low-voltage DC circuits. The Competitor may arrange the wiring and fixing methods according to the cable characteristics and available installation space, but must not cause damage, excessive bending or unnecessary mechanical stress to the wires. The final wiring must be neat and secure.
3. Prepare wire ends and terminals neatly. In accordance with **Figure 1.1-3**, the conductor specifications and **Table 1.1-4**, use the supplied terminals, wire-end ferrules, insulation materials, mounting bases and other appropriate materials to complete the terminations, insulation, fixing and labelling. Keep conductor polarity and function clearly identified.
4. The AC 220 V supply circuit must pass through the specified protective and metering devices before supplying the control and driver circuits. Complete the protective earthing connections in accordance with the supplied drawing.
5. Connect the LED driver inputs only to the correct AC supply side. Connect the LED driver outputs only to the specified DC luminaire or load side. Connecting a driver's DC output to AC 220 V is strictly prohibited.
6. Connect switching actuator CT in accordance with its AC input and AC output functions. Do not connect its AC output directly to DC luminaires or the touch-dimming module in a manner that could damage the LED light sources or control devices.
7. Identify and confirm the positive and negative polarity of the driver output terminals before connecting the LED luminaires.
8. Complete the insulation protection for all exposed conductors before energising.

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9. Before the first power-on test, complete your own visual inspection and electrical safety self-check, then request safety confirmation and authorisation in accordance with the first-energisation safety procedure below.

Safety confirmation before first Power-on

The Competitor must first complete their own visual inspection and electrical safety self-check. Before energising the AC 220 V system for the first time, the Competitor must raise their hand to request the prescribed visual safety check by the Expert on duty / sponsor's technical support personnel. The system may be energised only after authorisation has been granted and recorded.

The safety check is solely for identifying safety hazards. It does not constitute technical guidance or confirm that the Competitor's circuit functions correctly. The first power-on test must not be carried out without authorisation.

Adjust the LED driver outputs in accordance with the supplied product manuals.

1.1.3 Functional commissioning of lighting scenarios

Client requirement

The booth must support two practical lighting control functions. During set-up, inspection and event maintenance, staff need to be able to switch L1 on and off and adjust its brightness, providing lighting conditions in the display area that are suitable for inspection and demonstration preparation. During public demonstrations, the booth must demonstrate intelligent lighting control applications to visitors through the PIR-sensing response of L2 and the touch-dimming control of L1.

The two control circuits control L1 and L2 respectively; they are not mutually exclusive operating modes. Both circuits must operate correctly independently and must be capable of remaining enabled simultaneously with stable operation.

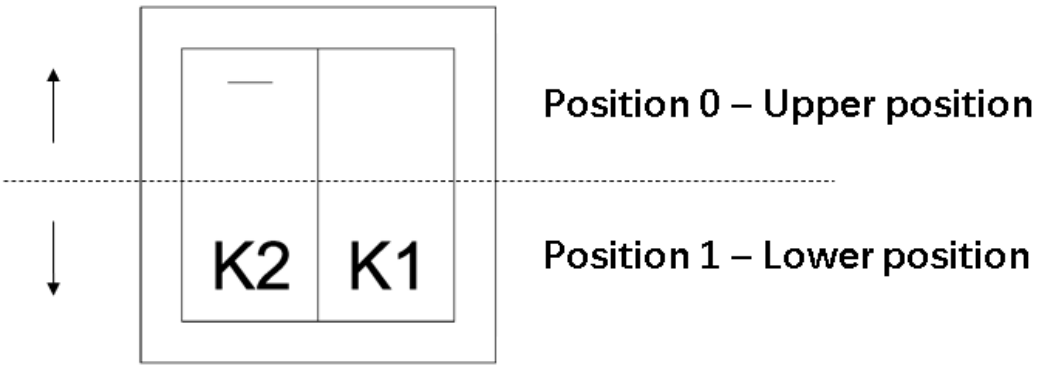


Figure 1.1-5 Physical positions of the two-gang two-way switches

The physical positions of both switch panels, S1 and S2, are defined in **Figure 1.1-5**: 0 indicates the upper position and 1 indicates the lower position; K1 is the right-hand rocker and K2 is the left-hand rocker. 0 and 1 indicate switch positions only; they do not directly indicate whether a luminaire is off or lit.

The enabled state of each circuit depends on the combination of positions of the corresponding rockers on S1 and S2. Once a circuit is enabled, the actual state of its luminaire remains controlled by DM or PIR/CT.

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The two control circuits and their state tables

Control circuit 1: L1 touch-dimming lighting circuit

S1-K1 and S2-K1 enable or disable the L1 control circuit in accordance with the table below. When the circuit is enabled, the DR1 supply circuit is energised, DM is operational and controls the switching on, switching off and dimming of L1.

S1-K1	S2-K1	L1 control circuit enabled
0	0	No
1	0	Yes
0	1	Yes
1	1	No

Control circuit 2: L2 PIR-sensing lighting circuit

S1-K2 and S2-K2 enable or disable the PIR/DR2 control circuit in accordance with the table below. When the circuit is enabled, the PIR-sensing control function and actuator CT must respond normally, and L2 operates according to the control states of the PIR and CT. The PIR time delay must be set to 30 seconds.

S1-K2	S2-K2	PIR/DR2 control circuit enabled
0	0	No
1	0	Yes
0	1	Yes
1	1	No

Commissioning requirements and state to be retained

1. After installation, both lighting control functions must be successfully demonstrable. Verify all switch-position combinations for each circuit and confirm that the actual enabled states match the corresponding state tables.
2. Operating the switches, using touch control or triggering the sensors for either circuit must not cause abnormal flickering, loss of control, tripping of protective devices or unsafe operation. Both circuits must operate correctly independently and must be capable of remaining enabled simultaneously with stable operation.
3. L1 and L2 must emit light normally whenever their respective control conditions require them to be lit, with no visible flicker.
4. The PIR sensor must produce the expected response in accordance with the set 30-second time delay. L2 must operate normally according to the control states of the PIR and actuator CT.
5. The touch-dimming module must respond correctly to operations that switch L1 on, switch L1 off or dim L1, and must maintain the selected dimming level.
6. During normal demonstration, the system must not exhibit unintended triggering, failure to respond, abnormal delays, abnormal heating or abnormal noise.

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After commissioning, both the L1 and L2 control circuits must remain enabled for set-up, inspection and demonstration preparation. L1 remains controlled by the touch-dimming module. L2 must continue to respond normally in accordance with PIR sensing and the 30-second time-delay logic; it is not required to remain continuously lit. The system in its final retained state must clearly demonstrate the functions of both circuits and be available for inspection by the client and the Experts.

1.1.4 Lighting and electrical performance verification

Client requirement

Before handover, the client requires actual measurement data to demonstrate that the lighting scenario operates as intended. The Competitor must verify the illuminance at the specified display/interaction points and record the electrical operating data shown on the digital electrical parameter meter. These records will serve as the handover data for the completed booth lighting system.

Set and verify the touch-dimming level in accordance with the lighting scenario requirements. The client also requires management of the total system power consumption: minimise total system power consumption while ensuring that both points A and B meet the specified illuminance requirements. The illuminance results and electrical operating data must reflect the same final system configuration, enabling the client to inspect the delivered lighting performance and energy consumption.

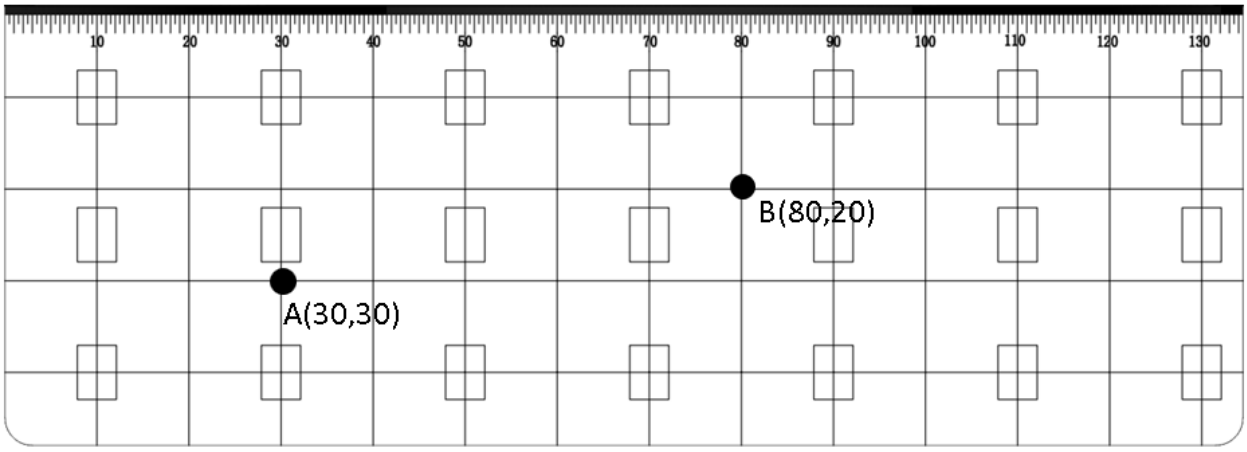


Figure 1.1-4 *Illuminance measurement points and locations (coordinate unit: cm)*

Point A is at coordinates (30, 30), and point B is at coordinates (80, 20). The measurement points are defined by the supplied drawing and the workbench markings and must not be changed.

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Measurement conditions and illuminance targets

Measurement item	Requirement
Illuminance at point A	Target 500 lx; permitted range 475–525 lx
Illuminance at point B	Target 500 lx; permitted range 475–525 lx
Luminaire state	Both L1 and L2 must be switched on and lit during measurement
Blackout conditions	Workstation blackout curtains fully closed
Measuring instrument and sensor-head orientation	Use the supplied wireless illuminance meter. Place the sensor head on the workbench surface with the light-sensitive surface facing upwards and horizontal. Align the centre of the light-sensitive surface with the measurement point.

Permitted adjustments

Only the horizontal luminaire positions within the specified limits, the touch-dimming level and the LED driver output settings permitted by the product manuals may be adjusted. The luminaire mounting height must remain unchanged. After adjustment, both points A and B must fall within the permitted illuminance range under the same final system configuration.

Illuminance measurement procedure

1. Close the workstation blackout curtains, enable both control circuits, and ensure that both L1 and L2 are lit.
2. Measure point A and then point B in accordance with **Figure 1.1-4** and the specified sensor-head orientation. Wait for each reading to stabilise and record the actual value at the resolution displayed by the meter.
3. Confirm that the illuminance at both points is 475–525 lx under the same configuration. Do not change the luminaire positions, touch-dimming settings or driver settings while measuring the two points or subsequently recording the electrical parameters.
4. If L2 goes out because the PIR time delay has elapsed, trigger the PIR again. Continue only after both luminaires have returned to their original measurement state and the readings have stabilised. Do not change the 30-second time delay or bypass the sensing control to keep L2 lit.
5. Clearly enter the illuminance value for each measurement point in the corresponding field of the electronic record form in **Table 1.1-3**, together with the correct unit. Measurement data must not be estimated.

Electrical parameter recording procedure

1. Maintain the same final system configuration used for the illuminance measurements at points A and B. Read the digital electrical parameter meter while both L1 and L2 are lit and the system is operating normally. If L2 goes out because the PIR time delay has elapsed, trigger the PIR again and restore the original measurement state in accordance with the illuminance measurement procedure above before taking the readings.
2. Record the voltage, current and power values displayed by the digital electrical parameter meter. Do not obtain a separate, lower power reading by changing the luminaire positions, touch-dimming settings or driver settings.
3. Enter each value in the correct field of the electronic record form in **Table 1.1-3**.
4. Enter the correct unit for each parameter. Avoid omissions, misreading the values or recording values in the wrong parameter fields.

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Measurement record requirements

The record form must be complete, clear and legible. Enter both a value and a unit for every required parameter.

Recorded data must be based on actual measurements of the completed system and must not be estimated. If electronic entries need to be amended, the corrected final values, units and their corresponding fields must remain clear and legible.

Missing values, missing units, illegible figures or values entered under the wrong parameter may affect the relevant assessment results.

The Competitor is responsible for completing, saving and submitting the electronic form under the filename and at the location specified below before the competition time for this module ends, and for retaining the final system settings that correspond to the record.

Parameter	Illuminance (point A)	Illuminance (point B)	Voltage	Current	Power
Value	/	/	/	/	/
Unit	/	/	/	/	/

Table 1.1-3 Illuminance and electrical parameter record form (reference only)

Electronic form saving requirements

Filename: M1.1_Measurements_Form_XX.docx

Save location: the Module1_1 folder on the current user's desktop on the competition computer. Replace XX with the two-digit workstation number allocated by drawing lots. For example, workstation 03 uses M1.1 Measurements Form 03.docx.

Use the separate accompanying Word electronic measurement record form to complete and save **Table 1.1-3**. It is recommended to save the file as a pdf instead of docx. No printing or separate submission of a handwritten report is required. Missing values or units, entries in incorrect fields, or a missing or unreadable file may affect the relevant assessment results.

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Required deliverables for Module 1.1

The client will inspect completion of this project on the basis of the completed luminaires, the lighting application system, the two control functions and the electronic measurement records. The Competitor must ensure that the following deliverables are complete and available for verification, and must retain the system settings that correspond to the final measurement records so that the booth lighting system is ready for handover inspection.

Deliverable	Required state for assessment
Two assembled LED spotlights	L1 and L2 are both assembled, functionally tested, structurally complete and installed in the final system.
Lighting application system	Both luminaires are integrated, and the protection, metering, drivers, switches, PIR, CT, DM, terminations and wiring are complete.
Two lighting control functions	The L1 touch-dimming circuit and the L2 PIR-sensing circuit satisfy their respective state tables and functional requirements. Both remain enabled and operate correctly independently and simultaneously.
PIR and dimming settings	The PIR time delay is 30 seconds. The selected touch-dimming level and driver output settings have been verified and retained.
Illuminance and electrical records	Values and units have been entered electronically in **Table 1.1-3**, saved as M1.1 Measurements Form XX.docx in the Module1_1 folder on the desktop.
Final installation state	The installation is safe, neat and labelled as required, with no exposed uninsulated conductors, abnormal operation or visible damage, and is retained for assessment by the Experts.

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Other

General safety, defect and damage rules

The Competitor must comply with all competition safety requirements and electrical safety procedures throughout the work.

Wiring, making plug connections, dismantling, and modifying wires or components while energised are prohibited.

The first power-on test may be carried out only after the Competitor has completed the safety self-check, all exposed conductors have been insulated, and the hand-raising request, visual safety check, authorisation and recording for first energisation of the AC 220 V system have been completed in accordance with Section Task 1.1.2.

If a supplied component is suspected of having a pre-existing quality defect, raise your hand and notify the Expert on duty within 30 minutes of the start of the competition. Replacement is permitted only after verification and approval by the sponsor's technicians. Items damaged as a result of incorrect operation, incorrect wiring, short circuits, reversed polarity, unsafe handling or any other cause attributable to the Competitor will not be replaced.

End condition for assessment

The Competitor is responsible for saving and presenting all required records and completed work before the competition time for this module ends. At the end of M1.1, the Competitor must stop work immediately as instructed and leave the completed luminaires, installed lighting system, commissioned functions, final system settings and completed electronic measurement records ready for assessment by the Experts. Unless otherwise instructed by the Experts, the installation must remain in its final assessment state. Any subsequent operations must follow the Experts' instructions.

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