



**DISTRIBUTION COMMISSIONING TEST SHEET – STEEL POLE STREETLIGHTS
HPC-4DL-07-0031-2014**



This commissioning test sheet covers the checking, testing and commissioning of all replacements or new installations of steel pole streetlights to ensure that the cables have been installed correctly and that the steel pole does not become energised.

NOTE: Tests must be carried out after the installation, alteration or repair and before putting back to service.
SAFETY: Before commencement of work a hazard risk assessment shall be carried out in accordance with the OSH-3.6-1-01- Hazard and Risk Management Procedure (using a suitable risk management tool e.g. JRA or Take 5).

| | | | | | |
|-------------------------------|--|--------------------|------------------------------------|------------------------|--|
| DATE: | | Project No. | | Name of Officer | |
| Location of Equipment: | | | Streetlights supplied from: | | |

1. LOCATION OF THE STREETLIGHTS (lot number and road name)

| | |
|----|----|
| A: | F: |
| B: | G: |
| C: | H: |
| D: | I: |
| E: | J: |

2. VISUAL INSTALLATION AND SAFETY CHECKS

Ensure no person makes contact with the steel pole streetlight or temporary independent earth stake while the testing procedures are being undertaken.

| | DESCRIPTION | A | B | C | D | E | F | G | H | I | J |
|---|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | Install a temporary independent earth stake more than 2 meters from steel pole streetlight; <ul style="list-style-type: none"> • ensuring no underground services are within the vicinity of the stake, • to a minimum depth of 300 mm up to a maximum of 600 mm. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | As a safety touch test, prior to opening the streetlight panel, test between the steel pole streetlight and the temporary independent earth stake. Further work is to cease if a voltage greater than 6 V is measured, the source of voltage should be investigated. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | LV cable has been tested using commissioning test sheet HPC-4DL-07-0016-2014 | <input type="checkbox"/> | | | | | | | | | |



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| | | | | | | | | | | | |
|---|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 4 | Ensure that the point of supply has been isolated and tagged. | <input type="checkbox"/> | | | | | | | | | |
| 5 | Check that the installation complies with the distribution construction standards, applicable design drawings and there is no sign of damage. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | Open cut-out. Check that all the cables are correctly installed, terminated in the correct position and that there is no sign of damage. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 | Test between the following for 0 Volts: 1) Line active and line neutral, 2) Line active and temporary independent earth stake, and 3) Line neutral and temporary independent earth stake Testing is to cease if a voltage greater than 6 V is measured, the source of voltage should be investigated. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3. INSULATION RESISTANCE TEST (Class I only)

| DESCRIPTION | | A | B | C | D | E | F | G | H | I | J |
|--|--|------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | Remove M.E.N. link between the Neutral terminal and the Earth terminal, as well as the pole earth bond between Earth terminal and Steel Pole Streetlight in cut-out. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | Luminaire Cable tests Test using 500 V insulation resistance tester. Each test to be for 1 minute (results >1 MΩ = OK) | Active and Earth | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Neutral and Earth | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Active and Steel Pole Streetlight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Neutral and Steel Pole Streetlight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | Earth and Steel Pole Streetlight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | Using a 500 V insulation resistance tester, test for 1 minute between temporary independent earth stake to Steel Pole Streetlight (Ω) | | | | | | | | | | |
| Values close to 0 Ω are acceptable (this does not apply to insulated steel poles). | | | | | | | | | | | |
| 4 | Reconnect the M.E.N. between the Neutral terminal and the Earth terminal, as well as the pole earth bond between Earth terminal and Steel Pole Streetlight in cut-out. (Refer DCS R26/3) | | | | | | | | | | |



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4. INSULATION RESISTANCE TEST (Class II only)

| DESCRIPTION | | A | B | C | D | E | F | G | H | I | J |
|--|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | Luminaire Cable tests Test using 500 V insulation resistance tester. Each test to be for 1 minute (results >1 MΩ = OK) | | | | | | | | | | |
| | Active and Steel Pole Streetlight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Neutral and Steel Pole Streetlight | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 | Using a 500 V insulation resistance tester, test for 1 minute between temporary independent earth stake to Steel Pole Streetlight (Ω) | | | | | | | | | | |
| Values close to 0 Ω are acceptable (this does not apply to insulated steel poles). | | | | | | | | | | | |

5. HANDOVER OF RESPONSIBILITY FOR THE COMPLETION OF SECTIONS 1 TO 4

I hereby certify that sections 1 to 4 have been completed with satisfactory results and transfer responsibility to the commissioning officer.

Testing Officer/CPM: _____ Pay Number: _____

Signature: _____ Date: DD/MM/YY Time: HH:MM

The commissioning officer must sign this document before energisation.

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6. POLARITY TEST (USING NETWORK ANALYSER)

| DESCRIPTION | | A | B | C | D | E | F | G | H | I | J |
|--|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1 | Remove fuse from BILL cut-out. | | | | | | | | | | |
| 2 | Ensure all streetlights are safe to energise and that each streetlight is safe for other workers and members of the public. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3 | Energise the streetlight cable at the source of supply. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4 | Connect network analyser earth lead to temporary independent earth stake. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5 | Connect the analyser neutral probe to the steel pole. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | Check that the analyser does not display 'Wiring Error Do Not Proceed' (red light). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | A wiring error indicates the supply neutral has been wired to active, and the pole is live (due to the pole MEN link for Class I). Cease test, de-energise supply and investigate (including isolation of streetlight circuits if required). | | | | | | | | | | |
| 7 | Connect network analyser neutral lead to incoming supply neutral. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8 | Connect the analyser active probe to the cut-out supply-side active terminal. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9 | Push 'test' button, record: | | | | | | | | | | |
| | Record phase voltage. (Circle correct phase) | red / white / blue | | | | | | | | | |
| | Line active to line neutral (V_{L-N}) | 226 V to 254 V | | | | | | | | | |
| | Line active to independent earth (V_{L-E}) | 226 V to 254 V | | | | | | | | | |
| | Prospective Short Circuit current (PSC_{L-N}) | > 100 A | | | | | | | | | |
| | Earth Fault Loop Impedance (Z_{L-E}) | < 2000 Ω | | | | | | | | | |
| | Line Neutral Impedance (Z_N) | < 0.8 Ω | | | | | | | | | |
| Testing is to cease if line neutral impedance exceeds 0.8 Ω , investigate neutral connections back to transformer | | | | | | | | | | | |
| 10 | Energise the streetlight (re-insert the fuse in the cut-out) and confirm the operation of the streetlight lamp. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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| 11 | <p>Class I ONLY – <i>This next step is only for Class I cut-outs and needs to be timed with the PE Cell delay, this check is done while the lamp is on.</i></p> <p>Connect the neutral probe of the network analyser to the steel pole streetlight. The earth probe of the analyser should still be connected to the temporary independent earth stake. Check the analyser does not indicate 'wiring error'.</p> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | <p>If the analyser indicates 'wiring error', there is a fault beyond the PE cell (e.g. the driver). Cease testing, de-energise and investigate. It may be necessary to remove and re-insert the fuse to conduct this wiring check, to time it correctly before the PE cell switches the lamp off.</p> | | | | | | | | | | |
| 12 | Ensure everything is secure and safe from third party access. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13 | Remove temporary independent earth stake. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

NOTE: - Step 11 above checks the insulation of the wiring between the PE Cell and the Lamp/LED, this can only be tested with the PE Cell energised and Lamp/LED on! The table below provides the delay times for the various PE Cell's in use.

| PE cell | ON Delay | OFF Delay |
|---------------------------------------|----------|-----------|
| Hendon HSC-PE2 (D2 2-pin socket) | 30 s | 25 s |
| NEMA (3/5/7-pin socket) | 2~5 s | 2~5 s |
| Hard-wired to Lightsense U-series LED | 0~20 s | 40 s |



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7. OPERATIONAL HANDOVER

The commissioning officer must ensure that all checks are completed and the test results comply with the minimum standards.

I hereby certify that all sections have been completed with satisfactory results and transfer responsibility to the network operating authority. This equipment has been **SAFELY** energised.

Commissioning Officer: _____ Pay Number: _____

Signature: _____ Date: DD/MM/YY Time: HH:MM

1. Ensure the work area is left tidy with no hazards to the public.
2. Hand over responsibility to the operating authority.
3. Return this sheet to the project/working file as a record of commissioning and as a document required for the Handover Certificate.