Part 1 - Electrical Installation Summary

(* Please delete, if not applicable) Page ___of ___

Name of Building / Unit / Common Area * _____

_____

Address of Building / Unit / Common Area * _____

_____

Date of Declaration by Registered Energy Assessor in Form EE2 / EE3 / EE4 * _____

Documents submitted (Please tick where applicable)	No. of sheets
☐ Form EE-EL Part 1 : Electrical Installation Summary	
☐ Form EE-EL Part 2 : Power Distribution Loss Worksheet	
☐ Form EE-EL Part 3 : Motor Worksheet	
☐ Form EE-EL Part 4 : Power Quality Worksheet	
☐ Form EE-EL Part 5 : Metering & Monitoring Facilities Worksheet	
☐ Form EE-EL Part 6 : Declaration	
☐ Schematic drawings showing the electrical installation governed by the BEC	
☐ A drawing list indicating the title and reference number of each drawing	
☐ Manufacturer-issued technical documents indicating the rating and efficiency of each motor in Part 3 of this Form	
☐ Technical document list summarising the titles of all manufacturer-issued technical documents for electrical motors and corresponding model numbers / descriptions of the motors	
☐ Others (Please give details) _____	

Part 1 - Electrical Installation Summary

(* Please delete, if not applicable) Page ___of ___

Remarks (applicable to Parts 1 to 5) :-

1) Ref. Nos. of all circuits and equipment, including transformers, switchboards, distribution boards, motor control centres, motors, cables etc. in this Form should be consistent with the Ref. Nos. shown in drawings.
2) Schematic drawings should :
   - show power distribution circuits of all the main, sub-main, feeder and final circuits, including -
     - distribution transformers, meters of electricity supplier, main incoming circuit breakers, switchboards, distribution boards, and motor control centres,
     - connection points for power quality correction devices, and if applicable the correction devices, and
     - metering & monitoring facilities;
   - indicate all newly installed / retrofitted electrical installation governed by the BEC, including motors or their serving equipment (such as AHU, pump etc.), with reference nos. tallying with Equipment/Motor Reference Nos. in Part 3 of this Form; and
   - indicate the electrical installation not governed by the BEC, if shown on the drawing, with an appropriate symbol, marking or colouring different from the ones governed.
   - Indicate all cable identification (cable ref. no.)
3) All documents including this Form are for demonstration of compliance with the BEC for the electrical installation, and should cover all the relevant items governed by the BEC in respect of the electrical installation.
4) Should space provided in this Form be inadequate, please provide details with clear cross-referencing on separate sheets and attach to this Form.
5) Descriptions and numbering of each installation, system, equipment, building block, floor, room, space etc. in each of Forms EE-LG, EE-AC, EE-EL, EE-LE & EE-PB, should such appear in more than one type of Form, should be identical.
6) Any incomplete or erroneous information in this Form may render this Form being regarded invalid.

Part 2 - Power Distribution Loss Worksheet

(Please tick where applicable) Page ___of ___

(A) Distribution Transformer (BEC Clause 7.4.1)

Any installation of distribution transformer involved ?

(Please tick where applicable)

☐ Yes, and distribution transformer(s) is/are provided by the electricity supplier

☐ Yes, and the efficiency of each of the distribution transformers not provided by the electricity supplier complies with the minimum transformer efficiency requirement specified in BEC Table 7.4.1

☐ No installation of distribution transformer involved

(B) Main Circuit (BEC Clause 7.4.2)

Any installation of main circuit(s) (connecting the distribution transformer and the main incoming circuit breaker of the LV switchboard) involved ?

(Please choose applicable condition below)

☐ No installation of main circuit involved (If no, please proceed direct to (C))

☐ Yes, and the main circuit(s) is/are provided by the electricity supplier

☐ Yes, and for main circuit(s) not provided by the electricity supplier -

- the maximum copper loss of the circuit(s) does/do not exceed 0.5% of the total active power transmitted along the circuit conductors at designed circuit current (BEC Clause 7.4.2.1), and
- the neutral conductor(s) has/have an effective current-carrying capacity rating not less than that for the phase conductors (BEC Clause 7.4.2.3)

☐ Schematic drawings and schedule of calculations are submitted in this submission

☐ Yes, and for main circuit(s) not provided by the electricity supplier -

- the corresponding transformer room and main switch room are located directly beside, directly above or directly below each other (BEC Clause 7.4.2.2), and
- the neutral conductor(s) has/have an effective current-carrying capacity rating not less than that for the phase conductors (BEC Clause 7.4.2.3)

Part 2 - Power Distribution Loss Worksheet

(Please tick where applicable) Page ___of ___

(C) Feeder Circuit (BEC Clause 7.4.3)

Any installation of feeder circuit involved ?

(Please tick where applicable)

☐ Yes, and the maximum copper loss in each of the feeder circuits, single or three-phase, does not exceed 2.5% of the total active power transmitted along the circuit conductors at designed circuit current (BEC Clause 7.4.3)

☐ Schematic drawings and schedule of calculations are submitted in this submission

☐ No installation of feeder circuit involved

(D) Sub-main Circuit (BEC Clause 7.4.4)

1) Any installation of sub-main circuit not exceeding 100m length in non-residential building involved ?

(Please tick where applicable)

☐ Yes, and the maximum copper loss in each of the sub-main circuits, single or three-phase, does not exceed 1.5% of the total active power transmitted along the circuit conductors at designed circuit current (BEC Clause 7.4.4.1)

☐ Schematic drawings and schedule of calculations are submitted in this submission

☐ No installation of sub-main circuit not exceeding 100m length in non-residential building involved

2) Any installation of sub-main circuit exceeding 100m length in non-residential building involved ?

(Please tick where applicable)

☐ Yes, and –

- the maximum copper loss in each of the sub-main circuits, single or three-phase, does not exceed 2.5% of the total active power transmitted along the circuit conductors at designed circuit current, and
- the sum of the copper loss of the sub-main circuit and the copper loss of any of its final circuit over 32A (based on circuit protective device rating) does not exceed 2.5% (BEC Clause 7.4.4.2)

☐ Schematic drawings and schedule of calculations are submitted in this submission

☐ No installation of sub-main circuit exceeding 100m length in non-residential building involved

3) Any installation of sub-main circuit in residential building involved ?

(Please tick where applicable)

☐ Yes, and the maximum copper loss in each of the sub-main circuits, single or three-phase, does not exceed 2.5% of the total active power transmitted along the circuit conductors at designed circuit current (BEC Clause 7.4.4.3)

☐ Schematic drawings and schedule of calculations are submitted in this submission

☐ No installation of sub-main circuit in residential building involved

Part 2 - Power Distribution Loss Worksheet

(Please tick where applicable) Page ___of ___

(E) Final Circuit (BEC Clause 7.4.5)

Any installation of final circuit over 32A (based on circuit protective device rating) involved ?

(Please tick where applicable)

- ☐ Yes, the maximum copper loss in each of the final circuits, single or three-phase, does not exceed 1% of the total active power transmitted along the circuit conductors at designed circuit current (BEC Clause 7.4.5)
- ☐ Schedule of calculations are submitted in this submission
- ☐ No installation of final circuit over 32A (based on circuit protective device rating) involved

Part 3 - Motor Worksheet

(Please tick where applicable) Page ____ of ____

Any installation of three-phase single-speed totally enclosed induction motor involved (BEC Clause 7.5.1) ?

☐ Yes (if yes, please provide information in table below)

☐ No installation of three-phase single-speed totally enclosed induction motor involved (If no, please proceed direct to Part 4)

Equipment / Motor Reference No.	Installed motor			Comparison with min. allowed rated motor efficiency (%) at full load in BEC Table 7.5.1 (please tick the applicable condition below*)	Percentage of output power of installed motor to anticipated system load (BEC Clause 7.5.2) (please tick the applicable condition below*)
	Rated output power (kW)	2 or 4 poles	Rated efficiency (%) at full load		
(Please insert additional row if necessary)					
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
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				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
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				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
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				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)
				☐ (a) ☐ (b) ☐ (c)	☐ (d) ☐ (e) ☐ (f) ☐ (g)

* Remarks (applicable to Part 3) :-

Condition (a) – Motor rated efficiency is not lower than the min. allowed efficiency specified in BEC Table 7.5.1

Condition (b) – Motor is not governed by BEC Table 7.5.1, given it being integrated into a machine such that it cannot be tested separately (BEC Clause 7.5.1)

Condition (c) – Motor is not governed by BEC Table 7.5.1, given it being specifically designed to operate at ambient air temperature exceeding $40^{0}C$ (BEC Clause 7.5.1)

Condition (d) – Motor output power does not exceed 125% of the anticipated system load (BEC Clause 7.5.2(a))

Condition (e) – The calculated 125% of system load does not fall in the rating of a standard rated motor and as such a next higher rating standard motor is adopted, resulting in the motor output power exceeding 125% of the anticipated system load (BEC Clause 7.5.2(a))

Condition (f) – Motor of IEC Design H, NEMA Design C or D, or of a higher standard is adopted to cope with a high starting torque. (Load calculation indicating torque profile should be submitted and attached in this Form, for substantiation as specified in BEC Clause 7.5.2(b))

Condition (g) – Motor output power not exceeding 5kW (BEC Clause 7.5.2(a))

Part 4 - Power Quality Worksheet

(Please tick where applicable) Page ____ of ____

Any installation of three-phase circuit connecting to the meter of the electricity supplier, or any installation of circuit at or above 400A (based on circuit protective device rating), single or three-phase involved ?

(Please tick where applicable)

☐ Yes (If yes, please provide information in (A) to (C) below)

☐ No installation of three-phase circuit connecting to the meter of the electricity supplier, or of circuit at or above 400A involved (If no, please proceed direct to Part 5)

(A) Total Power factor (TPF) (BEC Clause 7.6.1)

(Please tick where applicable)

☐ For each of the circuits above either a power factor correction device is installed such that the total power factor in each circuit is not less than 0.85 at designed circuit current, or a connection point constituting a spare way (reserved solely for supplying power to the correction device) is provided (BEC Clause 7.6.1.3)

(B) Total Harmonic Distortion (THD) (BEC Clause 7.6.2)

(Please tick where applicable)

☐ For each of the above circuits either a harmonic current correction device is installed such that the total harmonic distortion of current in each circuit complies with BEC Table 7.6.2 at designed circuit current, or a connection point constituting a spare way (reserved solely for supplying power to the correction device) is provided (BEC Clause 7.6.2.3)

☐ Correction device installed. Testing and commissioning record on harmonics content measurement is attached.

(C) Balancing of Single-phase Loads (BEC Clause 7.6.3)

Any installation of three-phase four-wire circuit at or above 400A (based on circuit protective device rating) with single-phase loads involved ?

(Please tick where applicable)

☐ Yes, and the maximum current unbalance of each circuit at designed circuit current does not exceed 10% (BEC Clause 7.6.3)

☐ No installation of three-phase four-wire circuit at or above 400A with single-phase loads involved

Part 5 - Metering and Monitoring Worksheet (Please tick where applicable) Page ____ of ____

(A) Main Circuit (BEC Clause 7.7.1)

Any installation of main incoming circuit at or above 400A (based on circuit protective device rating) involved ?

(Please tick where applicable)

☐ Yes, and metering devices are provided for each circuit, for measuring voltages (phase-to-phase and phase-to-neutral), currents (three-phrase and neutral), total power factor, total energy consumption (kWh), maximum demand (kVA) and total harmonic distortion (BEC Clause 7.7.1)

☐ Schematic drawings showing all relevant metering device locations and technical documents (such as catalogue) are submitted

☐ No installation of main incoming circuit at or above 400A involved

(B) Feeder and Sub-main Circuit exceeding 200A but below 400A (BEC Clause 7.7.2.1)

Any installation of feeder circuit and/or sub-main circuit, exceeding 200A but below 400A (based on circuit protective device rating), involved ?

(Please tick where applicable)

☐ Yes, and metering devices are provided for each circuit, for measuring currents (three-phrase and neutral) and total energy consumption (kWh) (BEC Clause 7.7.2.1)

☐ Schematic drawings showing all relevant metering device locations and technical documents (such as catalogue) are submitted

☐ No installation of feeder and/or sub-main exceeding 200A but below 400A involved

(C) Feeder and Sub-main Circuit at or above 400A (BEC Clause 7.7.2.2)

Any installation of feeder circuit and/or sub-main circuit, at or above 400A (based on circuit protective device rating), involved ?

(Please tick where applicable)

☐ Yes, and metering devices are provided for each circuit, for measuring voltages (phase-to-phase and phase-to-neutral), currents (three-phrase and neutral), total power factor, total energy consumption (kWh), maximum demand (kVA) and total harmonic distortion (BEC Clause 7.7.2.2)

☐ Schematic drawings showing all relevant metering device locations and technical documents (such as catalogue) are submitted

☐ No installation of feeder and/or sub-main at or above 400A involved

Part 5 - Metering and Monitoring Worksheet (Please tick where applicable) Page ____ of ____

(D) Circuits for Central Building Services Installations (BEC Clause 7.7.3)

Metering devices are provided for each feeder/sub-main circuit serving the -

☐ entire chilled water plant;

☐ entire heat pump/heated water plant;

☐ all lifts (grouped under the same lift bank);

☐ all escalators; and

☐ all passenger conveyors

☐ The metering devices are able to measure the parameters in compliance with BEC Clause 7.7.2.

☐ Schematic drawings showing all relevant metering device locations and technical documents (such as catalogue) are submitted

Part 6 – Declaration

I, Registered Energy Assessor, hereby declare that all the information contained in this form and in the substantiation materials attached have been thoroughly examined and well prepared to demonstrate the compliance with the Building Energy Code.

I understand that any missing information, inconsistency and incorrectness on the submitted materials / information may result in jeopardizing the approval process and having the entire submission been rejected.

Name of the REA:		Registration No.:	
Signature of the REA		Date:	DD / MM / YYYY