

BEC 2018 Vs BEC 2021 - Summary of Major Amendments

Note:

1. The following summary table includes the major amendments, with requirements tightened in general for enhanced energy efficiency. Please refer to BEC 2021 for the detailed requirements.
2. This serves the purpose of ease of reference only. The Code should take preference over any discrepancy if identified.

Section 5 Lighting Installation	<u>BEC 2018</u>	<u>BEC 2021</u>
1) Max allowable lighting power density (LPD), Table 5.4		
<u>Type of space</u>	<u>LPD (W/m²)</u>	
Activity Room / Children play area / Music Room / Recreational Facilities Room	Not specified	9.5
Babycare Room / Breastfeeding Room / Lactation Room	Not specified	9.7
Canteen	11	9.5
Car Park	5	4.0
Classroom / Training Room	12	9.1
Computer Room / Data Centre	15	12.5
Conference / Seminar Room	14	12.8
Corridor	8	7.0
Dormitory	8	6.2
Entrance Lobby	13	11.5
Guest room in Hotel or Guesthouse	13	11.5
Gymnasium / Exercise Room	11	9.5
Kitchen	13	11.5
Laboratory	15	13.5
Lift Lobby	10	9.2
Medical Examination Room	Not specified	15.0
Office, enclosed (with internal floor area at or below 15m ²)	12	9.5
Office, with internal floor area above 15m ² and of or below 200m ²	10	8.9
Office, with internal floor area above 200m ²	9	7.8
Pantry	12	10.2
Pharmacy Area	Not specified	17.0
Plant Room / Machine Room / Switch Room (with internal floor area at or below 15m ²)	10	9.5
Plant Room / Machine Room / Switch Room (with internal floor area above 15m ²)		8.8
Public Circulation Area	13	11.5
Report Room (Police Station)	Not specified	8.9
Restaurant	17	13.6
Retail	16	13.4
School hall	14	12.5
Security Room / Guard Room	Not specified	9.0
Spa Room / Massage Room	Not specified	13.0
Server Room / Hub Room	10	8.9
Staircase	7	6.0
Storeroom / Cleaner	9	7.9
Toilet / Washroom / Shower Room	11	9.7
Workshop	13	11.5

2) Automatic Lighting Control, Table 5.4		
<u>Type of space</u>		
Activity Room / Children play area / Music Room / Recreational Facilities Room	Not specified	Yes
Babycare Room / Breastfeeding Room / Lactation Room	Not specified	Yes
Exhibition Hall / Gallery	No	Yes
Library – Reading Area or Audio Visual Centre	No	Yes
Library – Stack Area	No	Yes
Medical Examination Room	Not specified	No
Pharmacy Area		No
Report Room (Police Station)		No
Security Room / Guard Room		No
Spa Room / Massage Room		No
3) Reduction of activation time of occupant sensor for carpark	(Clause 5.6.1.5) within 15 minutes	(Clause 5.6.1.5) add (10 minutes for carpark)

Section 6 Air-conditioning Installation	<u>BEC 2018</u>	<u>BEC 2021</u>	
1) Pumping System Variable Flow			
System flow reduction of water side pumping system designed for variable flow	(Clause 6.8.1) Should be capable of reducing system flow to 50% or less	Specified to be capable of reducing system flow to 25% or less	
Exception on system flow reduction	(Clause 6.8.1(c)) The system incorporates supply water temperature reset control	Deleted this exception	
Requirement to incorporate controls and devices on chilled water pump	(Clause 6.8.2) Specified at motor output power exceeding 3.7kW	Specified at motor output power exceeding 2.2kW	
2) Off-hour control of Guest Rooms in Hotels, Guest House and Hostel	(Clause 6.10.4.3) Specifies automatic equipment shutdown and setback control	Elaborated technical requirements on automatic equipment shutdown and setback control	
3) Room air conditioner under the scope of the Mandatory Energy Efficiency Labelling Scheme	fulfill the requirements of Energy Efficiency Grade 1 or Grade 2	fulfill the requirements of Energy Efficiency Grade 1 or Grade 2 specified in the Code of Practice on Energy Labelling of Products 2020	
4) Minimum COP for Unitary Air-conditioner, Table 6.12a (Part 1)			
<u>Equipment type / Capacity (kW)</u>			
<u>Air-cooled - Minimum COP at cooling mode (free air flow)</u>	7.5 kW & below	2.6 for split type 2.3 for non-split type	2.7 for split type 2.5 for non-split type
	Above 7.5 kW & below 40 kW	2.5	2.65
	40 to 200 kW		
<u>Air-cooled – Minimum COP at heating mode (free air flow)</u>	7.5 kW & below	2.7	2.8

5) Minimum COP for VRF System Table 6.12a (Part 2)				
(Divided into "Single unit of side-discharge fan (s)" & "Modular unit of top-discharge fan (s)")				
<u>Equipment type / Capacity (kW)</u>				
<u>Air-cooled VRF - Minimum COP at cooling mode</u>	Single unit of side-discharge fan (s)	20kW or below	3.6	3.6
		Above 20 kW	3.6	3.6
	Modular unit of top-discharge fan (s)	20 kW or below	3.6	3.9
		Above 20 kW to 40 kW	3.6	3.9
		Above 40 kW to 80 kW	3.45 (Above 40kW to 200kW)	3.7
		Above 80kW to 200 kW	3.45 (Above 40kW to 200kW)	3.5
		Above 200 kW	3.3	3.4
<u>Air-cooled VRF - Minimum COP at heating mode</u>	Single unit with side-discharge fan (s)	20 kW or below	4.0	4.0
		Above 20 kW	3.8	3.8
	Modular unit with top-discharge fan (s)	20 kW or below	4.0	4.3
		Above 20 kW to 40 kW	3.8	4.1
		Above 40 kW to 80 kW	3.8 (Above 40kW to 200kW)	4.0
		Above 80 kW to 200 kW	3.8 (Above 40kW to 200kW)	3.8
		Above 200 kW	3.6	3.7
<u>Water-cooled VRF - Minimum COP at cooling mode (free air flow)</u>			4.5 (All Ratings)	4.6 (All Ratings)
<u>Water-cooled VRF - Minimum COP at heating mode (free air flow)</u>			4.8 (All Ratings)	4.9 (All Ratings)

6) Min allowable (COP) of Chiller, Table 6.12b				
<u>Equipment type / Capacity (kW)</u>				
Air-cooled Chiller	Scroll	< 400 kW	2.8	2.9
		≥ 400 kW	2.9	3.0
	Screw	< 500 kW	3.0	3.1
	VSD Screw	< 500 kW	3 (3.8 at 75% load)	3.1 (3.9 at 75% load)
		≥ 500 kW	3.9 at 75% load	4 at 75% load
Water-cooled	Reciprocating / Scroll	< 500 kW	4.2	4.3
	VSD Screw	< 500 kW	4.7	4.8
		500 to 1000 kW	4.9 (6.7 at 75% load)	5.0 (6.8 at 75% load)
		> 1000 kW	7.0 at 75% load	7.2 at 75% load
	Centrifugal	Above 3000 kW	5.8	5.9
	VSD Centrifugal	Below 1000 kW	5.3 (7.0 at 75% load)	5.4 (7.2 at 75% load)
		1000 to 3000 kW	5.6 (7.5 at 75% load)	5.7 (7.7 at 75% load)
> 3000 kW		5.8 (7.6 at 75% load)	5.9 (7.8 at 75% load)	
7) Minimum COP for Heat Pump, Table 6.12c	Air-to-water (> 500 kW)	3.1	3.2	
8) Energy Metering				
Method to measure cooling/heating power (kW) of chiller, heat pump		(Clause 6.13.1) Not specified	(Clause 6.13.1) by measuring water temperature and flow for chiller and heat pump	
Method to measure cooling/heating power (kW) of chilled/heated water plant		(Clause 6.13.2) Not specified	(Clause 6.13.2) by measuring water temperature and flow	
Inclusion of equipment in determining a chilled / heated water plant power & energy input		(Clause 6.13.4) Exclusion of inputs to chilled/heated water pumps	(Clause 6.13.4) Inclusion of the inputs of chilled/heated water pumps	
9) Chilled Water Temperature Reset		Not Specified	New requirement in clause 6.15.1	

Section 7 Electrical Installation	<u>BEC 2018</u>	<u>BEC 2021</u>
1) Application on Single-speed three-phase totally enclosed motor equipped with variable speed drive	Not Specified	Specified in Table 7.5.1.
2) Metering devices for circuits of CBSIs to include all charging facilities for electric vehicles	Not Specified	Specified to include all charging facilities for electric vehicles in Clause 7.7.3.1

Section 8 Lift and Escalator Installation	<u>BEC 2018</u>	<u>BEC 2021</u>
1) Reduction of max allowable electrical power for traction lift reduced by 10% for lift < 4m/s and 5% for lift \geq 4m/s to < 9m/s	Specified in Table 8.4.1a and Table 8.4.1b	Revised Table 8.4.1a and Table 8.4.1b
2) Minor amendment on the correction factor in the equation of max allowable electrical power for escalator & passenger conveyer	Equation in Table 8.4.3 & 8.4.4	Revised at the equation in Table 8.4.3 & 8.4.4
3) Max allowable lift decoration load reduced by 10%	Equation in Table 8.5.2	Equation fine-tuned (Table 8.5.2)
4) Regenerative braking for lift installation	Specified in clause 8.5.5 for rated speed \geq 2.5m/s and rated load \geq 1000 kg.	Revised at clause 8.5.5 for rated speed \geq 2.0m/s and rated load \geq 900 kg.

Section 9 Performance-based Approach	<u>BEC 2018</u>	<u>BEC 2021</u>
1) Energy efficiency performance of trade-off percentage	Specified in clause 9.4.2 and 9.4.3 as 15% & 20% respectively for specific requirements	Revised at clause 9.4.2 and clause 9.4.3 deleted as not exceed 25% lower than prescriptive requirement
2) Ownership of the installations for trade-off in design energy	Specified in Clause 9.5.4	Revised at Clause 9.5.4