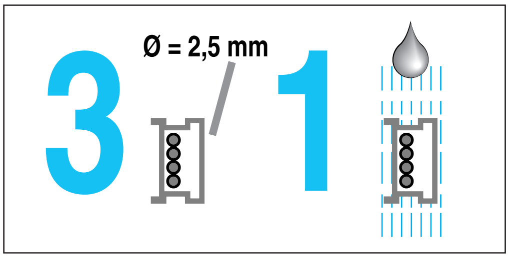
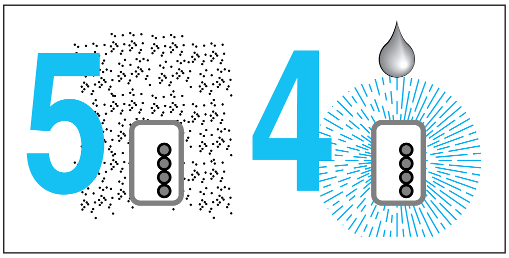
Lighting distribution

Busbar trunking degrees of protection

Selection

Selection of busbar trunking according to the degree of protection

The site does not require a degree of protection greater than IP 31	The site requires a degree of protection less than or equal to IP 54
	
Select Canalis KLE, KBA or KBB	**Select Canalis KBA or KBB**

The type of busbar trunking may be determined by the type of luminaires used (weight/fixing distance).
See the following page to determine the fixing distances.

Degree of protection

The IP code is made up of 2 characteristic numbers (eg. IP 54). A letter can be added when the actual protection of personnel against touching dangerous elements is greater than that indicated by the first number (eg.: IP 20C).

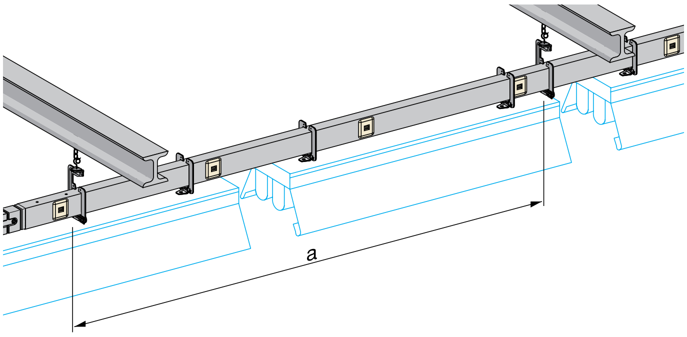
Any characteristic number not specified is replaced by an “X” (eg. : IP XXB).

1st characteristic number		2nd characteristic number	Additional letter
Protection of equipment against penetration by a foreign body :	Protection of personnel against touching a dangerous element with :	Protection of equipment against water penetration with harmful effects:	Protection of personnel against touching dangerous elements with :
0 (not protected)	(not protected)	0 (not protected)	A back of hand
1 ≥ 50 mm diameter	Finger	1 vertical dripping water	B finger
2 ≥ 12.5 mm diameter	Ø 2.5 mm tool	2 water dripping at 15° incline	C Ø 2.5 mm tool
3 ≥ 2.5 mm diameter	Ø 1 mm wire	3 rain	D Ø 1 mm wire
4 ≥ 1.0 mm diameter	Ø 1 mm wire	4 water spray	
5 protected against dust	Ø 1 mm wire	5 water jet	
6 dustproof	Ø 1 mm wire	6 pressurised water spray	
		7 temporary immersion	
		8 prolonged immersion	

Lighting distribution

Determining the busbar trunking depending on the type and number of luminaires

Selection



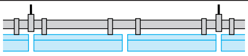
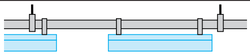
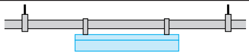
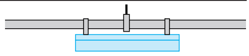
a = fixing distance

The fixing distance is related to the number and weight of the luminaires as well as to the structure of the building. The table below gives the maximum permissible load (kg) spread between two fixing points, for a deflection of 1/500e. In the case of a concentrated load between two fixing points, (fluorescent lamps), apply a coefficient of 0.6 to these values.

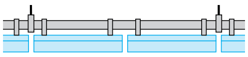
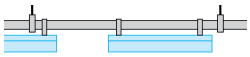
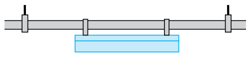
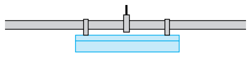
Type		Fixing distance in m								
		2	2.5	3	3.5	4	4.5	5	5.5	6
		Maximum load in kg								
KLE	EA	17	12	9	—	—	—	—	—	—
KBA	EA	34	22	15	No load		—	—	—	—
	EL	29	19	13	No load		—	—	—	—
KBB	1 circuit	73	60	48	35	27	21	17	No load	
	2 circuits	62	51	41	30	23	18	15	No load	

The tables below show the possible fixing distances in m for a permissible deflection of 1/350e, depending on the type of luminaires used and their positioning (busbar trunking installed on site).

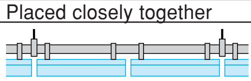
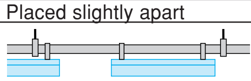
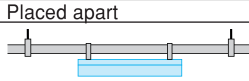
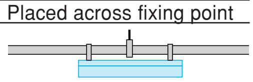
Fluorescent type luminaires without protection grille

Luminaire		Placed closely together			Placed slightly apart			Placed apart			Placed across fixing point	
Power	Unit weight											
W	kg	Possible spacing in m										
		KLE	**KBA**	**KBB**	**KLE**	**KBA**	**KBB**	**KLE**	**KBA**	**KBB**	**KBA**	**KBB**
1 x 36	4.20	3.00	3.00	5.00	3.00	3.00	5.00	3.00	3.00	5.00	4.00	6.00
1 x 58	5.30	2.90	3.00	5.00	3.00	3.00	5.00	3.00	3.00	5.00	4.00	6.00
2 x 36	4.90	3.00	3.00	5.00	3.00	3.00	5.00	3.00	3.00	5.00	4.00	6.00
2 x 58	6.30	2.80	3.00	5.00	3.00	3.00	5.00	3.00	3.00	5.00	4.00	6.00

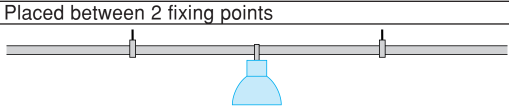
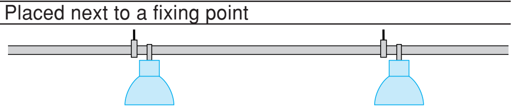
Fluorescent type luminaires with protection grille

Luminaire		Placed closely together			Placed slightly apart			Placed apart			Placed across fixing point	
Power	Unit weight											
W	kg	Possible spacing in m										
		KLE	**KBA**	**KBB**	**KLE**	**KBA**	**KBB**	**KLE**	**KBA**	**KBB**	**KBA**	**KBB**
1 x 36	5.20	3.00	3.00	5.00	3.00	3.00	5.00	3.00	3.00	5.00	4.00	6.00
1 x 58	6.50	2.80	3.00	5.00	3.00	3.00	4.80	3.00	3.00	5.00	4.00	6.00
2 x 36	5.90	2.90	3.00	5.00	3.00	3.00	4.90	3.00	3.00	5.00	4.00	6.00
2 x 58	7.50	2.60	3.00	4.80	3.00	3.00	4.50	3.00	3.00	5.00	4.00	6.00

Dustproof fluorescent type luminaires

Luminaire		Placed closely together		Placed slightly apart		Placed apart		Placed across fixing point	
Power	Unit weight								
W	kg	Possible spacing in m							
		KBA	**KBB**	**KBA**	**KBB**	**KBA**	**KBB**	**KBA**	**KBB**
1 x 36	3.30	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00
1 x 58	4.20	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00
2 x 36	5.20	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00
2 x 58	5.90	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00

Discharge luminaires

Luminaire		Placed between 2 fixing points		Placed next to a fixing point	
Power	Unit weight				
W	kg	Possible spacing in m			
		KBA	**KBB**	**KBA**	**KBB**
250	6.00	3.00	5.00	4.00	6.00
	8.50	3.00	5.00	4.00	6.00
	10.00	3.00	5.00	4.00	6.00
400	6.50	3.00	5.00	4.00	6.00
	9.00	3.00	5.00	4.00	6.00
	11.00	3.00	5.00	4.00	6.00

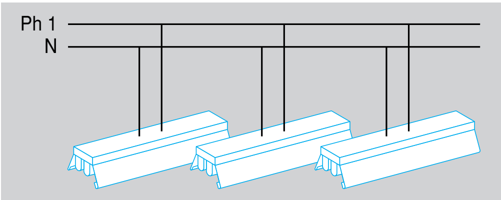
Lighting distribution

Determining the nominal current

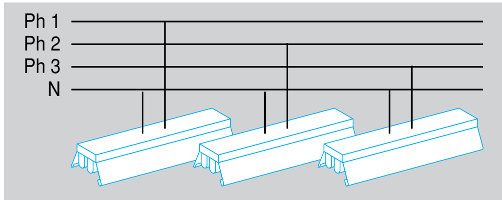
Selection

The tables below show the **nominal current** as a function of the type and number of luminaires installed on **a single phase line** (Ph + N) supplied with 230 V a.c.
For a 3-phase + N line, (a.c. supply, 400 V between phases), with equivalent phase current, the number of luminaires is 3 times greater.

Ph + N distribution



3 Ph + N balanced distribution



Proceed as follows :
- Identify the type of luminaire used (eg. : 2 x 58 W compensated fluorescent)
- On the corresponding line, select the number (or closest above) of luminaires installed (eg., 26 for 23 luminaires).
- Read, at the bottom of the table, the corresponding nominal current (eg. 20 A).

Fluorescent tube luminaires

Type	Power W	Number of luminaires on the line: Single phase line						3-phase + N line					
Compensated ballast	1 x 36	33	53	66	–	–	–	99	–	–	–	–	–
	1 x 58	25	40	50	62	–	–	75	80	–	–	–	–
	2 x 36	21	33	42	52	67	–	63	99	–	–	–	–
	2 x 58	13	20	26	32	41	52	39	60	78	96	–	–
Non compensated ballast	1 x 36	22	35	44	55	–	–	66	105	–	–	–	–
	1 x 58	14	22	28	35	45	–	42	66	84	–	–	–
	2 x 36	11	17	22	27	35	44	33	51	66	81	–	–
	2 x 58	7	11	14	17	22	28	21	33	42	51	66	84
Nominal current (A)		**10**	**16**	**20**	**25**	**32**	**40**	**10**	**16**	**20**	**25**	**32**	**40**

Fluorescent lamp luminaires

Type	Power W	Number of luminaires on the line: Single phase line					3-phase + N line				
Compensated ballast	250	7	11	14	17	22	21	33	42	51	66
	400	4	6	8	10	13	12	18	24	30	39
Non compensated ballast	250	4	7	9	11	14	12	21	27	33	42
	400	3	4	6	7	9	9	12	18	21	27
Nominal current (A)		**10**	**16**	**20**	**25**(1)	**32**	**10**	**16**	**20**	**25**(1)	**32**

Luminaires for high pressure sodium vapour lamp

Type	Power W	Number of luminaires on the line: Single phase line					3-phase + N line				
Compensated ballast	150	11	17	22	27	35	33	51	66	81	105
	250	7	11	14	17	22	21	33	42	51	66
	400	4	7	9	11	14	12	21	27	33	42
Non compensated ballast	150	5	8	11	13	17	15	24	33	39	51
	250	3	5	6	8	10	9	15	18	24	30
	400	2	3	4	5	6	3	9	12	15	18
Nominal current (A)		**10**	**16**	**20**	**25**(1)	**32**	**10**	**16**	**20**	**25**(1)	**32**

Then refer to :
- Page 6, to determine the type of busbar trunking and the cross-section of the wire to use depending on the type of protection installed (circuit breaker or fuses).
- Page 8, to verify the voltage drop in the busbar trunking and the power supply cable.

(1) For this type of luminaire, from 25 A, select a KBA or KBB 40 A rated busbar trunking, so as to allow for overload while the lamps are on.

Protection against overloads by precalculating cables + Canalis

Selection

Aim of this section

The following tables enable determination of :
- The nominal current or overload protection adjustment
- The Canalis nominal thermal current
- The minimum thermal cable cross-section

These three characteristics are defined for the following installation conditions :
- Ambient temperature 30 °C
- Cables placed in cable routing or on panels. Lay out as a single horizontal layer or in groups of 2 or 3 cores.

Tap-off outputs from Canalis must have an overload protection device, except in the following case.

Possibility of dispensing with or remotely locating protection
It can, in certain cases, be advantageous not to use or to locate remotely the protection as described in NFC 15-100. This is summarized below and taken from the UTE C 15-107 guide.

Powering devices which are not susceptible to overloads

Eg. : luminaires, convectors, etc

Omission of devices for protection against overload
Busbar trunking C_3 (connecting equipment) does not need to be protected against overloads or short-circuits (BS7671) as the equipment :
- is not susceptible to overload currents,
- does not have tap-off outlets or power sockets,
- is less than or equal to 3 metres,
- is designed to reduce to a minimum the risk of short-circuits,
- is not located close to any flammable material.

Powering devices which have overload protection

Remote location protection
The device P_2 which protects busbar trunking C_3 against overloads, is not located at the point of origin (BS7671) as the busbar trunking C_3 :
- does not have tap-off outlets or power sockets,
- is less than or equal to 3 metres,
- is designed to reduce to a minimum the risk of short-circuits,
- is not located close to any flammable material.

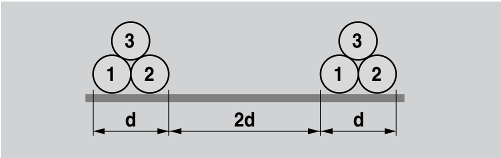
Protection against overloads by precalculating cables + Canalis

Selection

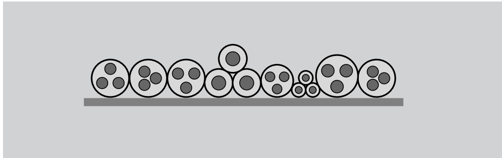
The tables below enable the following to be selected, according to the type of overload protection used (circuit-breakers or fuses) :

- The type of busbar trunking to use
- The cross-section of the power supply cable as a function of the type and method of laying used, for all polarities

Spaced on cable routing



Touching on cable routing



Protection provided by Merlin Gerin type C60 modular circuit-breaker (C curve)

Nominal current Circuit-breaker rating	Type of busbar trunking	PRC cable			PVC cable			
		Spaced apart	Touching (number of cables)		Spaced apart	Touching (number of cables)		
			2 to 5	6 and +		2	3	4 and +
A		mm²	mm²	mm²	mm²	mm²	mm²	mm²
10	KLE-16, KBA-25,KBB-25	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16	KLE-16, KBA-25,KBB-25	1.5	1.5	1.5	1.5	2.5	2.5	2.5
20	KBA-25, KBB-25	1.5	2.5	2.5	2.5	2.5	4	4
25	KBA-25, KBB-25	2.5	4 2.5 (1)	4 2.5 (1)	2.5	4	4	6
32	KBA-40, KBB-40	4 2.5 (1)	6 4 (1)	6 4 (1)	4	6	6	10
40	KBA-40, KBB-40	4	6	10 6 (1)	6	10	10	10

Protection provided by g1 type fuses

Nominal current	Type of busbar trunking	PRC cable			PVC cable			
		Spaced apart	Touching (number of cables)		Spaced apart	Touching (number of cables)		
			2 to 5	6 and +		2	3	4 and +
A		mm²	mm²	mm²	mm²	mm²	mm²	mm²
10	KLE-16, KBA-25, KBB-25	1.5	1.5	1.5	1.5	1.5	1.5	2.5
16	KLE-16, KBA-25, KBB-25	1.5	2.5 1.5 (1)	2.5	2.5	2.5	2.5	4
20	KBA-25, KBB-25	2.5 1.5 (1)	2.5	2.5	2.5	4	4	6
25	KBA-25, KBB-25	2.5	4	6 4 (1)	4	6	6	6
32	KBA-40, KBB-40	4 2.5 (1)	6 4 (1)	6	6	6	10	10

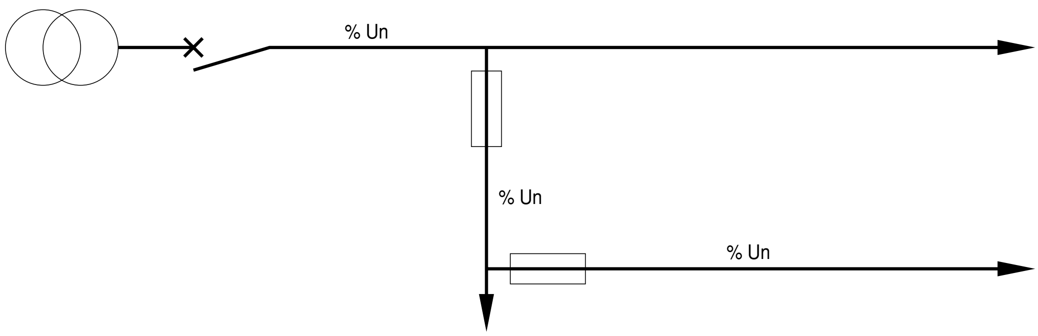
(1) Permissible cable cross-sections in single phase distribution.

Verifying the voltage drop

Selection

Recommended evaluation

- Attribute a voltage drop expressed as a % of the nominal voltage (Un), bearing in mind that the voltage drop between the origin and any point of use must not exceed that shown on the table below.
  (BS7671)



Installations powered directly by a low voltage outlet from a low voltage public distribution network.	4 % volt drop

- Convert to volts the percentage of the nominal voltage (Un) attributed to each circuit.

- Using the tables, check that the busbar trunking and/or cables selected from the previous pages are compatible with the calculated voltage drops.
  If not, increase the cross-section of the cables.

Notes
- In a mixed circuit, the most economical choice consists of increasing the cable cross-section and avoiding use of prefabricated trunking for higher nominal current (Inc).
- For certain loads, it may be necessary to take into account a transient voltage drop.

Lighting distribution

Verifying the voltage drop

Selection

Voltage drop in the power supply cable (copper cable)

The table below gives the single phase voltage drop, at the end of the power cable on a canalis run. The 3-phase voltage drop is obtained by multiplying the single phase voltage drop, read from the table, by a coefficient of 0.866.
The nominal current (Ib) and the length are selected by the exact or next highest value.

Cable cross-section	Nominal current	Length of line m															
mm²	**A**	6	8	10	12	15	20	25	30	35	40	45	50	60	70	80	100
1 x 1.5	**10**	1.4	1.9	2.4	2.9	3.6	4.8	6	7.2	8.4	9.6	11	12	14	17	19	24
	16	2.3	3.1	3.9	4.6	5.8	7.7	9.6	12	13	15	17	19	23	27	31	39
	20	2.9	3.9	4.8	5.7	7.2	9.6	12	14	17	19	22	24	29	34	39	48
1 x 2.5	**10**	0.9	1.2	1.4	1.7	2.2	2.9	3.6	4.3	5.1	5.8	6.5	7.2	8.7	10	12	14
	16	1.4	1.9	2.3	2.8	3.5	4.6	5.8	7	8.1	9.3	10	12	14	16	19	23
	20	1.7	2.3	2.9	3.5	4.3	5.8	7.2	8.7	10	12	13	14	17	20	23	29
	25	2.2	2.9	3.6	4.3	5.4	7.2	9.1	11	13	14	16	18	22	25	29	36
1 x 4	**16**	0.9	1.2	1.5	1.7	2.2	2.9	3.6	4.4	5.1	5.8	6.5	7.3	8.7	10	12	15
	20	1.1	1.5	1.8	2.2	2.7	3.6	4.5	5.5	6.4	7.3	8.2	9.1	11	13	15	18
	25	1.4	1.8	2.3	2.7	3.4	4.5	5.7	6.8	8	9.1	10	11	14	16	18	23
	32	1.7	2.3	2.9	3.5	4.4	5.8	7.3	8.7	10	12	13	15	17	20	23	29
	40	2.2	2.9	3.6	4.4	5.5	7.3	9.1	11	13	15	16	18	22	25	29	36
1 x 6	**16**	0.6	0.8	1	1.2	1.5	2	2.4	2.9	3.4	3.9	4.4	4.9	5.9	6.8	7.8	9.8
	20	0.7	1	1.2	1.5	1.8	2.4	3	3.7	4.3	4.9	5.5	6.1	7.3	8.5	9.8	12
	25	0.9	1.2	1.5	1.8	2.3	3	3.8	4.6	5.3	6.1	6.9	7.6	9.1	11	12	15
	32	1.2	1.6	2	2.3	2.9	3.9	4.9	5.9	6.8	7.8	8.8	9.8	12	14	16	20
	40	1.5	2	2.4	2.9	3.7	4.9	6.1	7.3	8.5	9.8	11	12	15	17	20	24
1 x 10	**20**	0.4	0.6	0.7	0.9	1.1	1.5	1.8	2.2	2.6	3	3.3	3.7	4.4	5.2	5.9	7.4
	25	0.6	0.7	0.9	1.1	1.4	1.8	2.3	2.8	3.2	3.7	4.2	4.6	5.5	6.5	7.4	9.2
	32	0.7	0.9	1.2	1.4	1.8	2.4	3	3.5	4.1	4.7	5.3	5.9	7.1	8.3	9.5	12
	40	0.9	1.2	1.5	1.8	2.2	3	3.7	4.4	5.2	5.9	6.7	7.4	8.9	10	12	15

Voltage drop in Canalis busbar trunking

The table below gives the single phase voltage drop, on a Canalis run (electrical power uniformly distributed). The 3-phase voltage drop is obtained by multiplying the single phase voltage drop, read from the table, by a coefficient of 0.866.
The nominal current (Ib) and the length are selected by the exact or next highest value.

Type of Canalis	Nominal current	Length of line m															
	A	6	8	10	12	15	20	25	30	35	40	45	50	60	70	80	100
KLE-16	**10**	0.4	0.6	0.7	0.8	1.1	1.4	1.8	2.1	2.5	2.8	3.2	3.5	4.2	4.9	5.6	7
	16	0.7	0.9	1.1	1.3	1.7	2.2	2.8	3.4	3.9	4.5	5.1	5.6	6.7	7.9	9	11
KBA-25	**10**	0.4	0.5	0.7	0.8	1	1.3	1.6	2	2.3	2.6	2.9	3.3	3.9	4.6	5.2	6.5
KBB-25	**16**	0.6	0.8	1	1.3	1.6	2.1	2.6	3.1	3.7	4.2	4.7	5.2	6.3	7.3	8.4	10
	20	0.8	1	1.3	1.6	2	2.6	3.3	3.9	4.6	5.2	5.9	6.5	7.8	9.1	10	13
	25	1	1.3	1.6	2	2.5	3.3	4.1	4.9	5.7	6.5	7.4	8.2	9.8	11	13	16
KBA-40	**16**	0.3	0.4	0.5	0.6	0.8	1	1.3	1.5	1.8	2	2.3	2.5	3	3.5	4	5
KBB-40	**20**	0.4	0.5	0.6	0.8	0.9	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.8	4.4	5	6.3
	25	0.5	0.6	0.8	0.9	1.2	1.6	2	2.4	2.8	3.1	3.5	3.9	4.7	5.5	6.3	7.9
	32	0.6	0.8	1	1.2	1.5	2	2.5	3	3.5	4	4.5	5	6	7.1	8.1	10
	40	0.8	1	1.3	1.5	1.9	2.5	3.1	3.8	4.4	5	5.7	6.3	7.6	8.8	10	13

Conversion of voltage drops

Opera-tional voltage	Voltage drop for a given %															
V	0.3	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	6	7	8	9	10
230	0.7	1.2	2.3	3.5	4.6	5.8	6.9	8.1	9.2	10	12	14	16	18	21	23
400	1.2	2	4	6	8	10	12	14	16	18	20	24	28	32	36	40

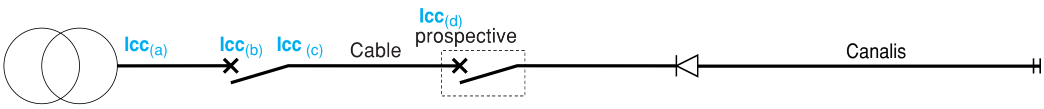
Short-circuit withstand

Selection

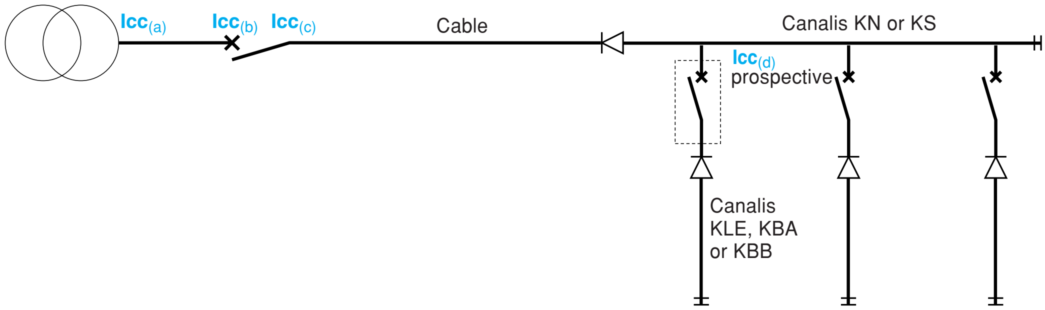
Determining the prospective short-circuit current at the origin of the Canalis

Two situations may be encountered :

1 - The lighting busbar trunking is powered from a secondary distribution board



2 - The lighting busbar trunking is powered from another Canalis busbar trunking



$Icc_{(a)}$: Short-circuit rms current to transformer terminals.

Values of $Icc_{(a)}$ rms to transformer terminals (U = 400 V).

Power (kVA)	50	100	160	200	250	315	400	500	630	800	1000	1250	1600
$Icc_{(a)}$ (kA)	1.8	3.6	5.7	7.2	8.9	11.2	14.2	17.6	22.1	24.8	27.8	31.5	36.7

$Icc_{(b)}$: Down stream short-circuit current, less than $Icc_{(a)}$, limited by the impedance of the cable.
$Icc_{(c)}$: Short-circuit current to the circuit breaker terminal, less than $Icc_{(b)}$, limited by the circuit breaker.
$Icc_{(d)}$: Prospective short-circuit current limited by the impedance of the cable (case 1), or of the cable + Canalis (case 2).

The evaluation of short-circuit currents is not required for circuits protected by H.P.C. fuses (breaking power always greater than or equal to 50 kA).

Canalis and protection coordination

The table below shows the type of circuit breaker or fuse to use for a given busbar trunking.

Type of busbar trunking	Protection via circuit breaker $Icc_{(d)}$ (prospective Icc) 10 kA	15 kA	36 kA	Protection via fuses Prospective Icc (kA) 50 kA
KLE-16	C60X16	C60H16	NC100C16	16 A g1
KBA-25, KBB-25	C60X25	C60H25	NC100C25	20 A g1
KBA-40, KBB-40	C60X40	C60H40	NC100C40	32 A g1

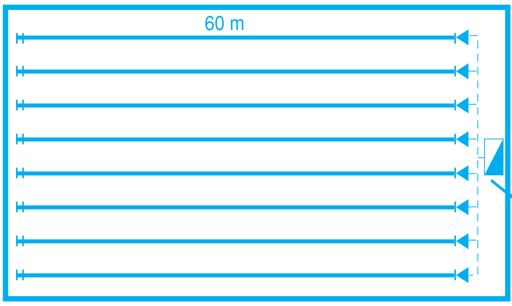
Characteristics of Canalis busbar trunking

Type of busbar trunking	Resistance to short-circuit currents Permissible rated peak current (kA)	Permissible thermal constraint (A^2s)
KLE-16	4.4	$19.5. 10^4$
KBA-25	4.4	$19.5. 10^4$
KBA-40	9.6	$90. 10^4$
KBB-25	4.4	$19.5. 10^4$
KBB-40	9.6	$90. 10^4$

Lighting distribution

Study guide

Study example



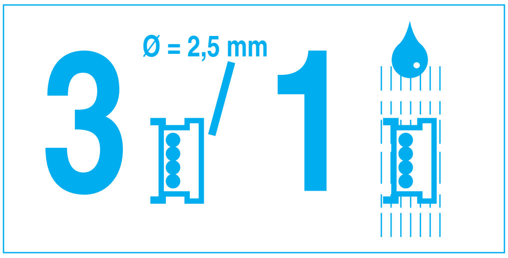
Lighting distribution board

Example : 1 building with a surface area of 2600 m^2 requires material with IP 54 degree of protection.
Eight 60m runs with, for each one, 20 dust and damp proof industrial reflectors 2 x 58 W compensated are required for lighting.

- Possible mounting distance : 4.5 m

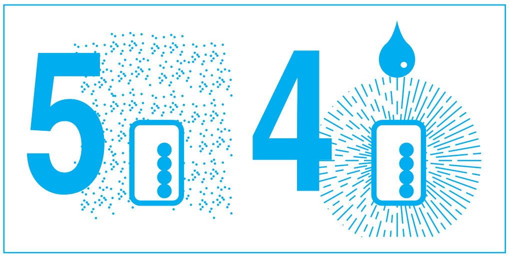
Selecting busbar trunking according to the degree of protection

The site does not require a degree of protection greater than IP 31



Select Canalis KLE, KBA or KBB

The site requires a degree of protection less than or equal to IP 54



Select Canalis KBA or KBB

Selecting busbar trunking according to the type and number of luminaires

Dust and damp proof industrial reflector luminaires (table page 3)

Luminaire		Closely spaced		Spaced slightly apart		Spaced apart		Placed across fixing point	
Power W	Unit weight kg								
		KBA	**KBB**	**KBA**	**KBB**	**KBA**	**KBB**	**KBA**	**KBB**
1 x 36	3.30	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00
1 x 58	4.20	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00
2 x 36	5.20	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00
2 x 58	5.90	3.00	5.00	3.00	5.00	3.00	5.00	4.00	6.00

The solution is achieved using KBB

Determining the nominal current

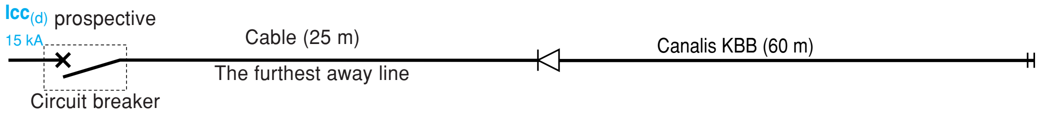
Fluorescent tube(s) industrial reflectors (table page 4)

Type	Power W	Number of luminaires making up the line											
		Single phase line						3-phase + N line					
Compensated ballasts	1 x 36	33	53	66	–	–	–	99	–	–	–	–	–
	1 x 58	25	40	50	62	–	–	75	80	–	–	–	–
	2 x 36	21	33	42	52	67	–	63	99	–	–	–	–
	2 x 58	13	20	26	32	41	52	39	60	78	96	–	–
Non compensated ballasts	1 x 36	22	35	44	55	71	88	66	105	–	–	–	–
	1 x 58	14	22	28	35	45	56	42	66	84	–	–	–
	2 x 36	11	17	22	27	35	44	33	51	66	81	–	–
	2 x 58	7	11	14	17	22	28	21	33	42	51	66	84
Nominal current (A)		**10**	**16**	**20**	**25**	**32**	**40**	**10**	**16**	**20**	**25**	**32**	**40**

Study example

Protection against overloads (on the line furthest away)

Fluorescent tube (s) industrial reflectors



Protection provided by Merlin Gerin type C60 modular circuit breaker (curve C) (table page 6)

Nominal current Circuit breaker rating	Type of busbar trunking	PRC cable Spaced apart	Touching (number of cables) 2 to 5	6 and +	PVC cable Spaced apart	Touching (number of cables) 2	3	4 et +
A		mm²	mm²	mm²	mm²	mm²	mm²	mm²
10	KLE-16, KBA-25,KBB-25	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16	KLE-16, KBA-25,KBB-25	1.5	1.5	1.5	1.5	2.5	2.5	2.5
20	KBA-25, KBB-25	1.5	2.5	2.5	2.5	2.5	4	4

Selection : C60 type circuit breaker, curve C, 16 A rating, 3 x 1.5 mm² cable. Canalis KBB25 A : KBB-25EA203

Verifying the voltage drop

In the power supply cable (table page 8)

Cable c.s.a mm²	Nominal current A	Length of line m: 6	8	10	12	15	20	25	30	35	40	45	50	60	70	80	100
1 x 1.5	**10**	1.4	1.9	2.4	2.9	3.6	4.8	6	7.2	8.4	9.6	11	12	14	17	19	24
	16	2.3	3.1	3.9	4.6	5.8	7.7	9.6	12	13	15	17	19	23	27	31	39
	20	2.9	3.9	4.8	5.7	7.2	9.6	12	14	17	19	22	24	29	34	39	48
1 x 2.5	**10**	0.9	1.2	1.4	1.7	2.2	2.9	3.6	4.3	5.1	5.8	6.5	7.2	8.7	10	12	14
	16	1.4	1.9	2.3	2.8	3.5	4.6	5.8	7	8.1	9.3	10	12	14	16	19	23
	20	1.7	2.3	2.9	3.5	4.3	5.8	7.2	8.7	10	12	13	14	17	20	23	29
	25	2.2	2.9	3.6	4.3	5.4	7.2	9.1	11	13	14	16	18	22	25	29	36

In the Canalis busbar trunking (table page 8)

Type of Canalis	Nominal current A	Length of line m: 6	8	10	12	15	20	25	30	35	40	45	50	60	70	80	100
KLE-16	**10**	0.4	0.6	0.7	0.8	1.1	1.4	1.8	2.1	2.5	2.8	3.2	3.5	4.2	4.9	5.6	7
	16	0.7	0.9	1.1	1.3	1.7	2.2	2.8	3.4	3.9	4.5	5.1	5.6	6.7	7.9	9	11
KBA-25	**10**	0.4	0.5	0.7	0.8	1	1.3	1.6	2	2.3	2.6	2.9	3.3	3.9	4.6	5.2	6.5
KBB-25	**16**	0.6	0.8	1	1.3	1.6	2.1	2.6	3.1	3.7	4.2	4.7	5.2	6.3	7.3	8.4	10
	20	0.8	1	1.3	1.6	2	2.6	3.3	3.9	4.6	5.2	5.9	6.5	7.8	9.1	10	13
	25	1	1.3	1.6	2	2.5	3.3	4.1	4.9	5.7	6.5	7.4	8.2	9.8	11	13	16

Opera-tional voltage	Voltage drop for a given % : 0.3	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5 %	6	7 %	8	9	10
230 V	0.7 V	1.2 V	2.3 V	3.5 V	4.6 V	5.8 V	6.9 V	8.1 V	9.2 V	10 V	12 V	14 V	16 V	18 V	21 V	23 V

The voltage drop in the power supply cable (3 x 1.5 mm²) is 9.6 V.
The voltage drop in the Canalis busbar trunking is 6.3 V.
That is, a total voltage drop of 15.9 V corresponding to a value of 7% (6% permitted maximum).
Solution : select a 2.5 mm² cable to supply the Canalis. In this case (3 x 2.5 mm²), the voltage drop in the cable is now only 5.8 V, that is, a total of 12.1 V for the line, corresponding to an acceptable value of 5%.

Canalis and protection coordination

The table below enables the type of circuit breaker or fuse to use for a given busbar trunking to be determined.

Type of busbar trunking	Protection via circuit breaker Icc (d) (prospective Icc) 10 kA	15 kA	20 kA	25 kA	50 kA	Protection via fuses Prospective Icc (kA) 50 kA
KLE-16	C60N16	C60H16	C60L16	C60L16	—	16 A g1
KBA-25, KBB-25	C60N25	C60H25	C60L25	C60L25	NC100LH25	20 A g1
KBA-40, KBB-40	C60N40	C60H40	C60L40	C60L40	NC100LH40	32 A g1

Select a C60H25 type circuit breaker