

## LUX Lighting trunking range

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### SYSTEM RANGE

Lighting trunking up to **63A** rated current on a **415V<sub>max</sub>** 3-phase supply in a **4-pole** configuration and up to **40A** rated current on a **415V<sub>max</sub>** 3-phase supply in a **6-pole** configuration

Single-pole tap-off units rated **6A** fused, **10A** and **16A** unfused, at 240V<sub>max</sub> 1-phase (SP&N). Options: ready-wired with 800mm of cable to a designated phase (non-phase selectable) or without cable to allow wiring to any chosen phase (phase-selectable).

These current ratings apply to lighting loads only – equivalent to the utilisation categories applied to controlgear: AC-5a – discharge lamp control and AC-5b incandescent lamp control.

**Any other type of load may damage the trunking system.**

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## LUX Lighting trunking range

### System components and list numbers

Component	Description	Example of list number
<b>Straight lengths</b>	25A and 40A 4-pole and 6-pole in 1 metre and 3 metre lengths. 63A 4-pole in 1 metre and 3 metre lengths.	Example: <b>LUX3425</b> 3 = 3 metre length 4 = 4-pole 25 = 25A rating
<b>Feed units</b>	End feeds 4-pole and 6-pole 25A and 40A and 4-pole 63A - Polarity of connections N, L1, L2, L3, E - left to right. Reverse end feeds 4-pole and 6-pole 25A and 40A and 4-pole 63A - Polarity of connections E, L3, L2, L1, N - left to right. Centre feeds 4-pole and 6-pole 25A and 40A and 4-pole 63A - consists of one EF and one REF on mounting plate.	<b>Example: LUX463REF</b> 4 = 4-pole 63 = 63A R = reverse EF = end feed
<b>Flexible joints</b>	Flexible link with fitted end feed and reverse end feed; 4-pole 25A and 40A and 6-pole 40A (to fit 25A & 40A) - allows change of direction of the trunking run by up to 180 degrees.	Example: <b>LUX640FJ</b> 6 = 6-pole 40 = 40A FJ = flexible joint
<b>Joint support clamp</b>	Clamp fixes across a joint to prevent strain on the connection. - recommended for trunking runs that are not rigidly fixed e.g. suspended systems.	<b>LUXJCL</b> = joint clamp
<b>End covers</b>	Cover to seal open end of run – including insulating the conductors; common for all ratings	<b>LUXEC</b> EC = end cover
<b>Universal fixing bracket</b>	Trunking fixing bracket for surface mounting or overhead suspension; common for all ratings	<b>LUXUFB</b>
<b>Tapping outlet seal</b>	Seal for unused tap-off outlet to achieve degree of protection IP55; common for all ratings	<b>LUXOS</b>
<b>Joint cover</b>	Sleeve to cover a joint in the run to achieve degree of protection IP55; common for all ratings - must be fitted during installation - cannot be retrofitted – can be used with the joint clamp LUXJCL – see above.	<b>LUXJC</b>
<b>Tap-off units</b>	4-pole 6A SP&N fused: not wired - allowing choice of phase when wiring.	Example: <b>LUXT6F</b> T = tap-off unit 6 = 6 A F = fused
	4-pole 6A SP&N fused; ready wired with 800mm cable to L1, L2 or L3 phase and neutral.	Example: <b>LUXT6FCR</b> T = tap-off unit 6 = 6 A F = fused C = cable wired R = L1 (Red) phase

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### System components and list numbers (cont')

Component	Description	Example of list number
Tap-off units (Cont'd.)	6-pole 10A SP&N unfused; ready wired with 800mm cable to L1, L2 or L3 phase and neutral – or across L4 and L5 only (to tap off a separate 1-phase supply).	Example: <b>LUXT10CR</b> T = tap-off unit 10 = 10A C = cable wired R = L1 (Red) phase
	6-pole, 6A SP&N fused, phase selectable to any one of 5 poles and neutral.	<b>LUXT6F5P</b> T = tap-off unit 6 = 6 A F = fused 5P = 1/5 connectable poles
	6-pole, 16A SP&N unfused, phase selectable to any one of 5 poles and neutral.	<b>LUXT165P</b> T = tap-off unit 16 = 16 A 5P = 1/5 connectable poles

## ASSEMBLY AND MOUNTING

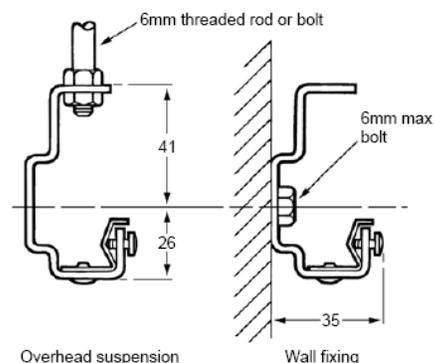
The trunking must be installed following the instructions given below – using the universal fixing brackets (UFB) as shown.

The trunking should be mounted with the long face vertical for maximum rigidity, particularly where the trunking is used to support the luminaires.

The completed run of trunking should be straight both horizontally and vertically to avoid stress on the joints.

In the case of a very long run (>30m) flexible joints should be inserted at not more than 30m intervals.

The end of the trunking run must be sealed using an end cover LUXEC.



Flexible joint

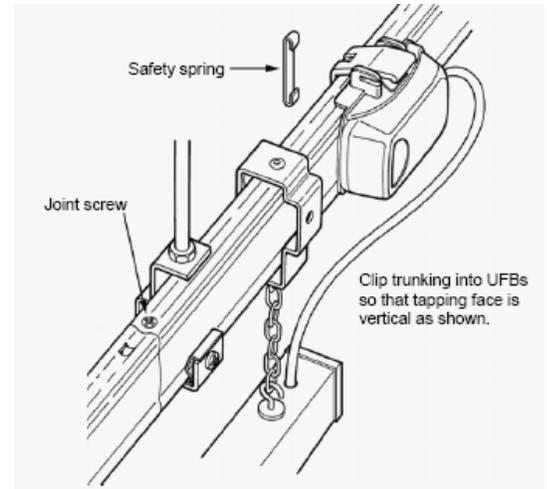
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## LUX Lighting trunking range

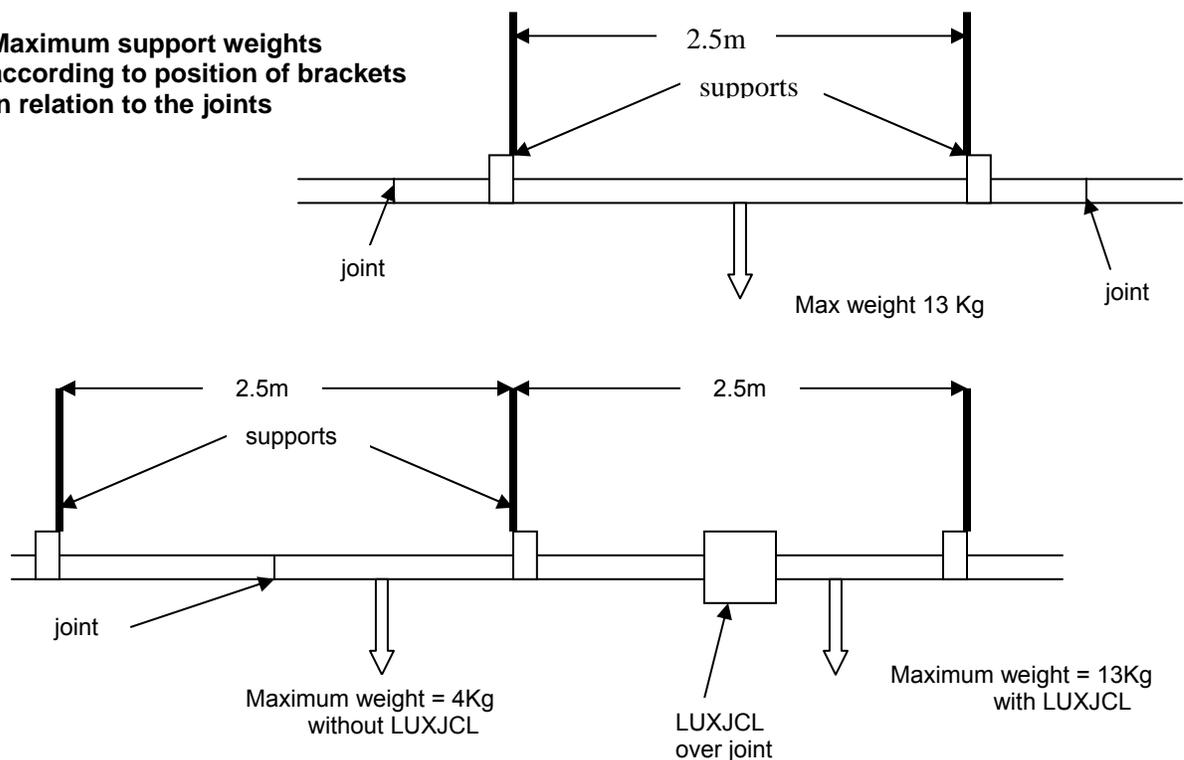
### ASSEMBLY AND MOUNTING [cont'd.]

#### FIXING INSTRUCTIONS

1. Fix brackets in position using a minimum of one bracket per 3 metre length. When the trunking is used to support lighting fittings a minimum of 2 brackets per 3 metre length should be used - evenly spaced.
2. Clip the trunking into the brackets so that the trunking is vertical.
3. **Note** - Each length of the system plugs into the adjacent length with a push fitting electrical and mechanical joint. Ensure the joint is pushed fully home leaving no gap. Lubrication and a slight twist during closing may assist engagement. Secure adjacent lengths by tightening the joint screws.
4. When trunking is perfectly aligned and finally positioned taking into account any wall deviations, tighten the screws to the brackets.
5. **Lamp support** - a hanging point is provided by inverting a bracket as shown.



#### Maximum support weights according to position of brackets in relation to the joints



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## LUX Lighting trunking range

### TAP-OFF UNITS - WIRING AND FITTING

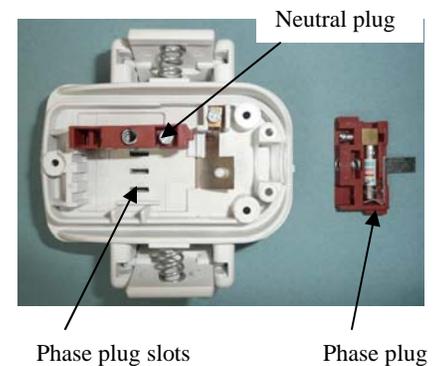
A tap-off unit **pre-wired** with a length of cable must be wired to the luminaire before fitting to the trunking.

A **non-wired** tap-off unit must be wired with a 3-core sheathed cable rated to suit the nominal current rating (6A, 10A or 16A), according to the Wiring Regulations and relating to the ambient temperature in service. **Connections** are made to neutral and earth and to the required phase. The phase connector in the tap-off unit can be moved to the appropriate pole position (L1, L2 or L3 and L4 or L5 in the case of the 6-pole unit.). The cable must be wired to the luminaire before fitting to the trunking.

For **wiring and replacement of the fuse** (where applicable) the cover of the tap-off unit is removed by undoing the 3 screws accessible from the underside. FUSE type 6.3A 250V 5x20mm to BS4265/IEC127.

On any given run of trunking the tap-off units should be wired or selected to **balance the total load** across the 3-phases of the supply. In the case of ready-wired tap-off units the phase connected is colour-coded on the unit.

Every unused tap-off outlet along the run should be sealed with an **outlet seal LUXOS** to prevent the ingress of dust or moisture.



### Circuit diagrams

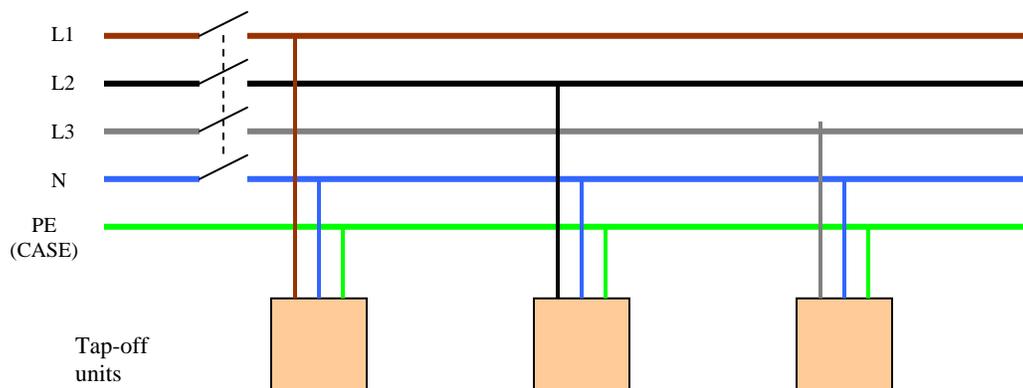


Figure 1. 4-pole trunking on a TP&N supply. Tap-off units evenly distributed across the phases to minimise the current in the neutral. Supplied through a 3-phase and neutral linked switch.

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Circuit diagrams (cont'd)

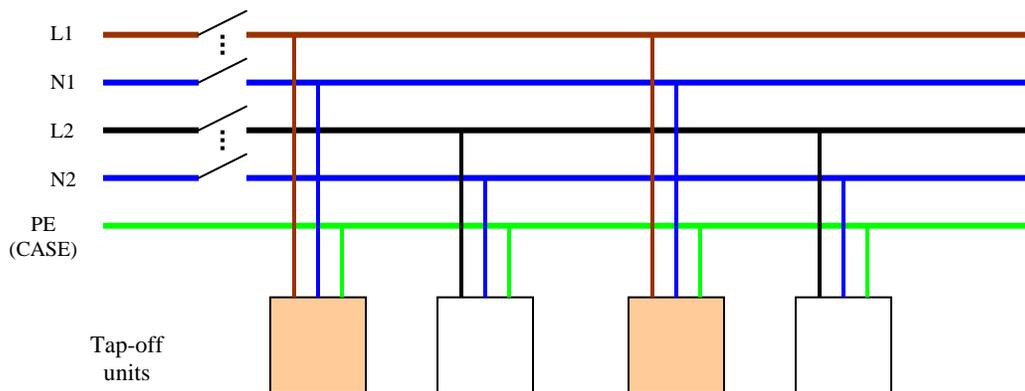


Figure 2. 4-pole trunking on two separate SP&N supplies. Allows switching of selected luminaires in two groups. Example: lighting level 50% or 100% according to the ambient light conditions.

Technical data

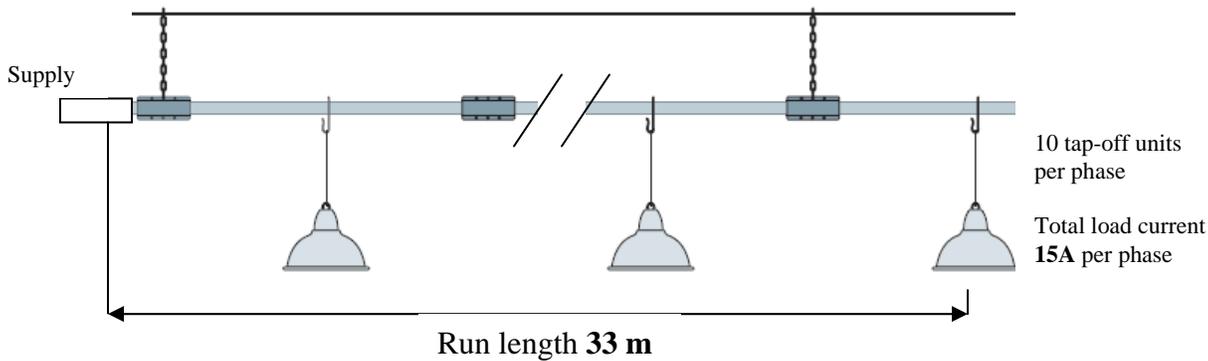
Characteristic	25A	40A	63A
Standards	BSEN60439-2, EN60439-2, IEC60439-2		
Rated current	25A	40A	63A
- This is the maximum current per pole i.e. the sum of currents taken by all the luminaires connected to any one pole of the supply. With a 3-phase supply to the trunking the current must be substantially equal in each phase.			
Rated insulation voltage (U <sub>i</sub> )	690 V a.c.	690 V a.c.	690 V a.c.
- This is a.c. voltage that the trunking system is designed for and provides a safety factor over the rated operational voltage.			
Rated operational voltage (U <sub>e</sub> )	415 V a.c.	415 V a.c.	415 V a.c.
- This is the maximum 3-phase voltage that trunking system is designed to operate at in service.			
Rated frequency	50Hz	50Hz	50Hz
Resistance [mΩ/m]	5.74	2.96	2.18
- This is the resistance of the conductor of each pole and is used in the calculation of earth-loop impedance and voltage drop.			
Impedance [mΩ/m]	7.56	3.9	2.87
- This is the impedance [Z] of the conductor of each pole and is used in the calculation of earth-loop impedance and voltage drop.			
Voltage drop [V/A/100m]	6.27	3.23	2.38
- This figure allows an estimate to be made of the voltage drop along a run. This is the phase to phase voltage drop per ampere of load, along a 100m run loaded with tap-off units evenly distributed along the run. A power-factor of 0.9 is assumed. <b>See example of application below.</b> Note that it is advisable to check the actual voltage drop on the completed installation.			

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Technical data [cont'd.]

**Voltage drop** – Example: 40A trunking run



LUX 40A volt-drop = 3.23 V/A /100m

Therefore total volt-drop along this run =  $3.23 \times 15 \times 33/100 = 16$  Volts

Supply voltage is 415V 3-ph therefore percentage volt-drop =  $100 \times 16/415 = 3.85\%$

Note that the volt-drop figure for the trunking has to be added to the volt-drop of the circuit from the supply source to the trunking feeder, to obtain the overall volt-drop according to the Wiring Regulations.

Characteristic	25A	40A	63A
Overload current protection	25A fuses or circuit-breaker	40A fuses or circuit-breaker	63A fuses or circuit-breaker
Fault current [S/C] protection - Max $i^2t$ - Max pk current [kA]	$1 \times 10^6$	$0.94 \times 10^6$	$1.39 \times 10^6$
	$3.9 \times 10^3$	$4.2 \times 10^3$	$5.1 \times 10^3$
The above figures show the thermal withstand [ $i^2t$ ] and the peak current withstand to which the trunking has been tested. This determines the fault current levels for the protective devices below: -			
S/C protection - Fuses	25A FUSE to 50kA	40A FUSE to 20kA	63A FUSE to 15kA
S/C protection - CB	25A MCB to 10kA	40A MCB to 10kA	63A MCB to 10kA
Case c.s.a. copper equivalent [mm <sup>2</sup> ]	25	25	25
-The aluminium case is used as PE conductor and has equivalent conductivity to a 25 mm <sup>2</sup> Cu cable			
Degree of protection to BSEN60529	IP41 as standard		
	IP55 with joint covers [LUXJC] installed and all unused tap-off outlets fitted with seals [LUXOS].		
- IP41 code indicates protection against solid objects $\geq 1$ mm diameter and vertically dripping water and protection against access to hazardous parts even with a 1mm diameter wire.			
- IP55 code indicates protection against dust and jetting water (not high pressure jets).			

## LUX Lighting trunking range

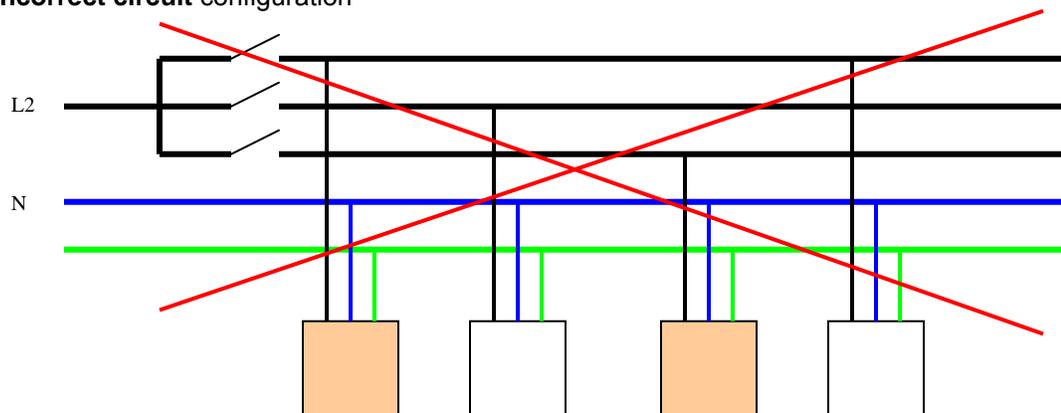
### Technical data [cont'd.]

Characteristic	25A	40A	63A
Weight per m. 4-pole [Kg]	1.85	1.95	2.3
Weight per m. 6-pole [Kg]	1.95	2.10	-
Cable capacity [mm <sup>2</sup> ]			
- Feeder	4.0	10	16
- Tap-off unit	2.5	2.5	2.5
Tap-off spacing [m]	1 [0.5 on request min. qty. applies]	1 [0.5 on request min. qty. applies]	1 [0.5 on request min. qty. applies]

### Neutral current

The neutral conductor within the busbar trunking is of the same capacity as the phase conductors (100% neutral). Particular care needs to be taken to ensure that the neutral current is not excessive. Conditions under which this can arise include the following: -

- **Unbalanced load** – the connections to luminaires on a 3-phase system must be alternated across the phases along the run to balance the load.
- **Harmonic currents** – Luminaires with electronic control gear generate harmonics in the supply current. Certain harmonic currents accumulate in the neutral of the supply, even when the load is balanced across the phases. Usually this is not a problem with a 100% neutral but in the case of total loads near to the full rating of the trunking this should be checked. Either consult the manufacturer of the luminaires or measure the true RMS neutral current on the installation. If the current is excessive the solution is to split the luminaires over two or more circuits.
- **Incorrect circuit configuration** -



In this single-phase circuit the neutral carries the sum of all three line currents and will most probably be excessive and damage the trunking. The solution is to use a separate neutral for each circuit using 6-pole trunking.

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