

PLANet system

Public Lighting Active Network








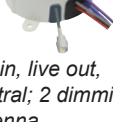
System equipment

The PLANet system consists of a range of hardware, for use as luminaire components and also for the system infrastructure (overleaf).

Luminaire components

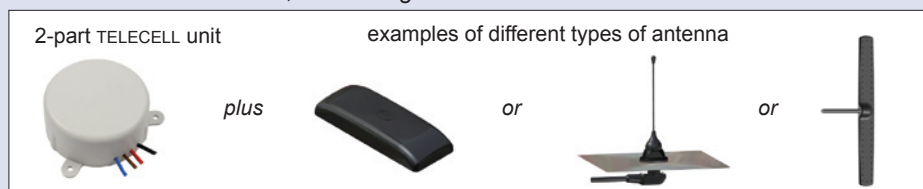
TELECELL Units

TELECELL devices contain a radio control processor, lighting control and monitoring circuitry, together with an electricity meter chip. Each TELECELL unit is directly powered off the mains supply it is controlling, either from the NEMA socket or from the mains in the luminaire. There is a range of TELECELL units for on/off switching and a range that also performs dimming; in addition there are case variants to suit different types of luminaire:

	External TELECELL units		Internal TELECELL units	
	NEMA	conduit	mini	2-part
On/off switching				
wiring		live in, live out, neutral	live in, live out, neutral	live in, live out, neutral; antenna
On/off switching and dimming				
wiring	(see below)	live in, live out, neutral; 2 dimming	live in, live out, neutral; 2 dimming	live in, live out, neutral; 2 dimming; antenna
Temperature	-20°C to +60°C		-20°C to +75°C	
Environmental	IP66	IP56 (when fitted)		IP41
Dimensions	128 x 89 x 89mm		128 x 82 x 82mm	37 x 82 x 82mm
Colour	Grey, black			Grey
Voltage	207 to 253V, 50Hz (single phase, A.C.)			
Switching	Relay, 500W, 5A capacity (resistive load)			
Dimming	0-10V, DALI			
Radio, protocol	EN 300 220 868MHz licence exempt, Ultra Narrowband			

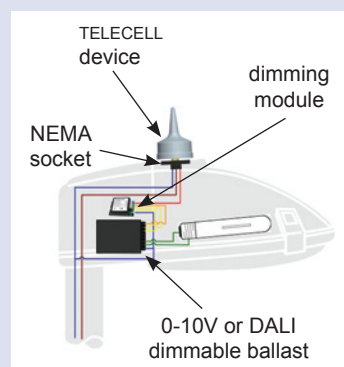
2-Part TELECELL Unit Antenna

The 2-part TELECELL unit has an extra lead for connection to a separate antenna. Different types of antenna can be used to suit a variety of fixtures such as heritage and architectural lanterns, or road signs and bollards:



Dimming (NEMA)

As well as the range of integral dimming TELECELL units shown in the table above, it is also possible to achieve dimming with a NEMA luminaire: in this case an internal dimming module is used. The module is the interface between NEMA TELECELL unit and electronic dimmable ballast; it uses short range, bi-directional communications over the mains wiring in the luminaire to receive the dimming control instruction from the TELECELL unit, which it then applies to the ballast. As with the integral dimming TELECELL units, there are 0-10V and DALI versions of the module. The module is 87 x 51 x 26mm.



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System infrastructure

Base Station

A base station consists of a radio box, a power supply, a light meter and an antenna, assembled together on a bracket. The base station is installed either at the top of a column or alternatively on a building rooftop. It provides radio coverage over several kilometers radius: 2-3 km in urban environments and 5-8 km across rural terrain. A base station can connect up to 10,000 TELECELL units.

The radio box contains the ultra narrowband radio, a host processor, a UPS battery, ADSL modem and a 3G wireless modem for connectivity back to the central system server. If 3G service is not available, ADSL on a phone line or ethernet are alternatives. The light meter is used to measure ambient light at dawn and dusk; the light level readings are used when the lamps are programmed to switch according to measured light levels.



Installation is quick: the base station is supplied as a single unit with its various components assembled onto a bracket ready for mounting at the top of a column. Mains power is required from the column: this can potentially come from a NEMA socket power tap accessory. Other accessories include a GPS receiver used as an additional timing reference.

	radio box	power supply	light meter	antenna	bracket	base station assembly
						
Temperature	-20°C to +60°C	-30°C to +70°C	-20°C to +60°C			
Environmental	IP66	IP67	IP66			
Dimensions	300 x 200 x 120mm	37 x 62 x 170mm	67 x 34 x 34mm	1000 x 20 x 20mm	350 x 200 x 130mm	
Weight	5.0kg	0.9kg	0.2kg	1.1kg	1.0kg	
Range	2-3 km urban, 5-8 km rural					
Connectivity	3G, ADSL, ethernet					
Radio, protocol	EN 300 220 868MHz licence exempt, Ultra Narrowband					

Central System

The central system server can be situated in the customer's server room or hosted by Telensa. It manages connections with TELECELL units via base stations, administers the system database and is a web server that hosts the user interface.

A range of central system hardware can be provided dependent on the scale of the PLANet system deployment. For a small initial trial a tower or rack mount PC with mirrored disks is adequate. For a large scale deployment a more resilient server configuration can be adopted, for example using dual servers in separate locations with separate network (or internet) connections. The base stations can be configured to connect to two servers.

	standard	advanced (dual)
		
Operating system	Linux - Fedora core 10	
Database	Firebird	
Web server	Apache, PHP, JavaScript	
Machine	HP Proliant DL 120 G5 or similar	

Hosted Central System

Telensa offers its system as a complete solution which customers can manage and operate on a day-to-day basis themselves.

Alternatively, Telensa can host the central system and oversee the day-to-day running and management of the system. The servers are housed in a dedicated hosting environment and Telensa provides a professionally managed service, according to service level requirements.



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