

What is IPM?

IPM is a revolutionary driver technology for the GDS Drive Hub system, developed to overcome the challenges of multiple constant-current LED light fittings on one cable, allowing perfectly synchronised control.

The IPM Drive Card can provide power (up to 10A @ 40-56V DC) and data to multiple LED fixtures using 2-core legacy mains cabling, operating with up to 6 control channels and 7 configurable personalities. A perfect replacement for tungsten dimmers & lamps.

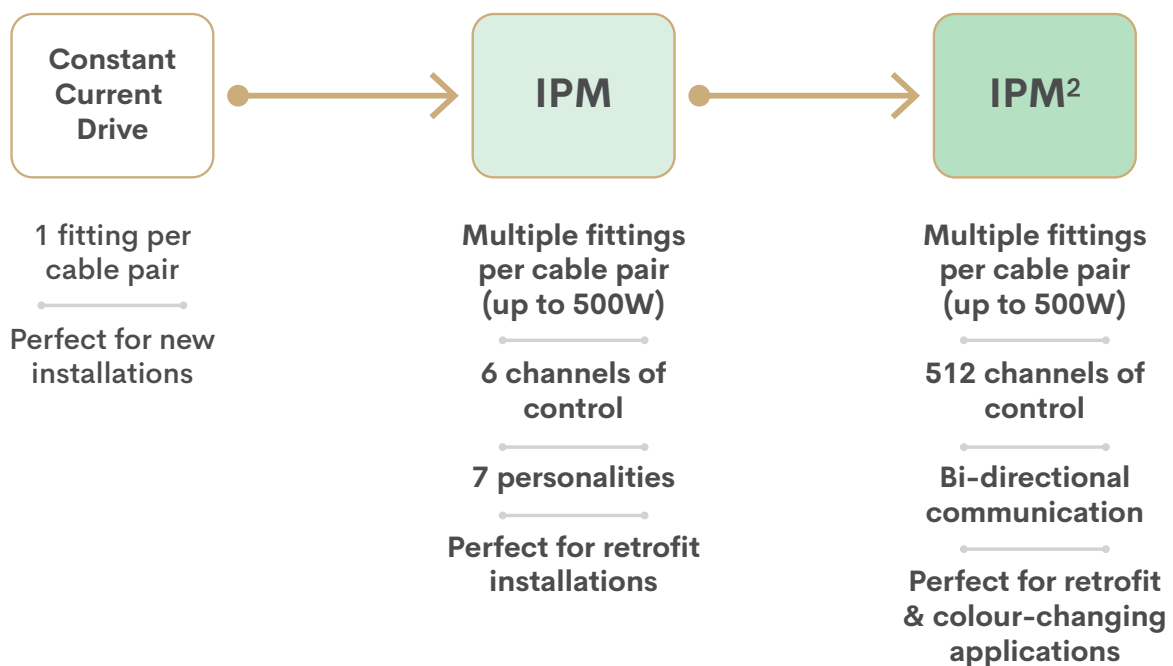
What is IPM²?

IPM² builds on the original IPM protocol, overcoming some of it's limitations.

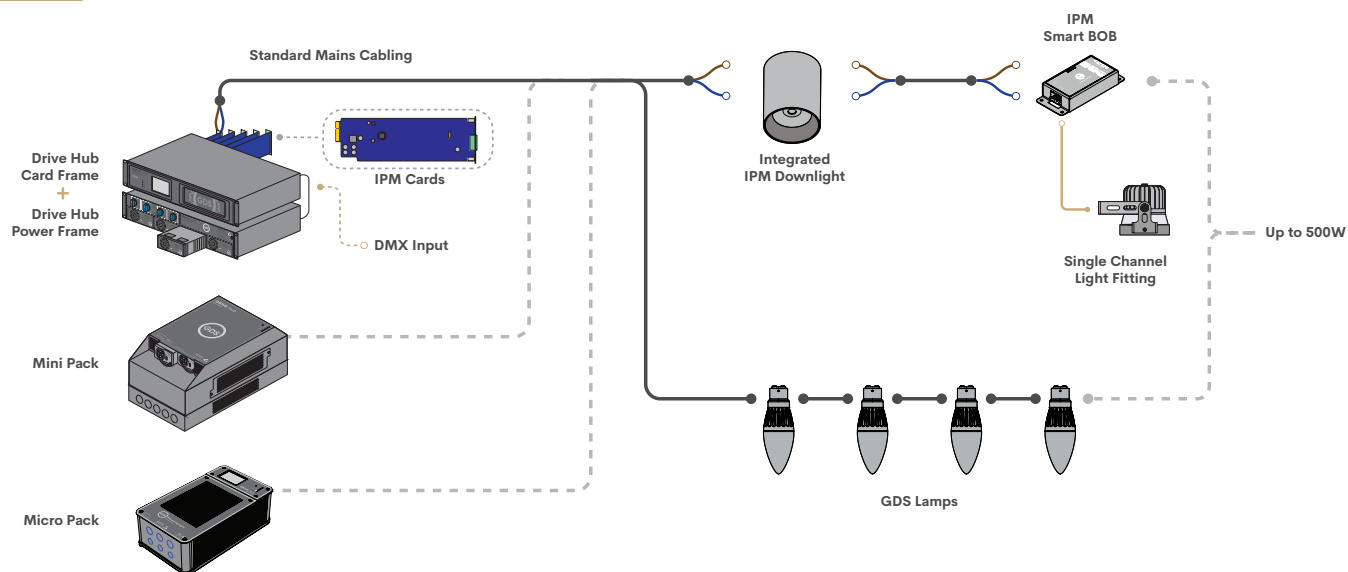
The IPM² Drive Card can also provide power (up to 10A @ 40-56V DC) and data to multiple LED fixtures using 2-core legacy mains cabling, but additionally it can provide up to 512 channels of DMX dimming data along with bi-directional communication for sensor feedback and remote configuration.

Development History:

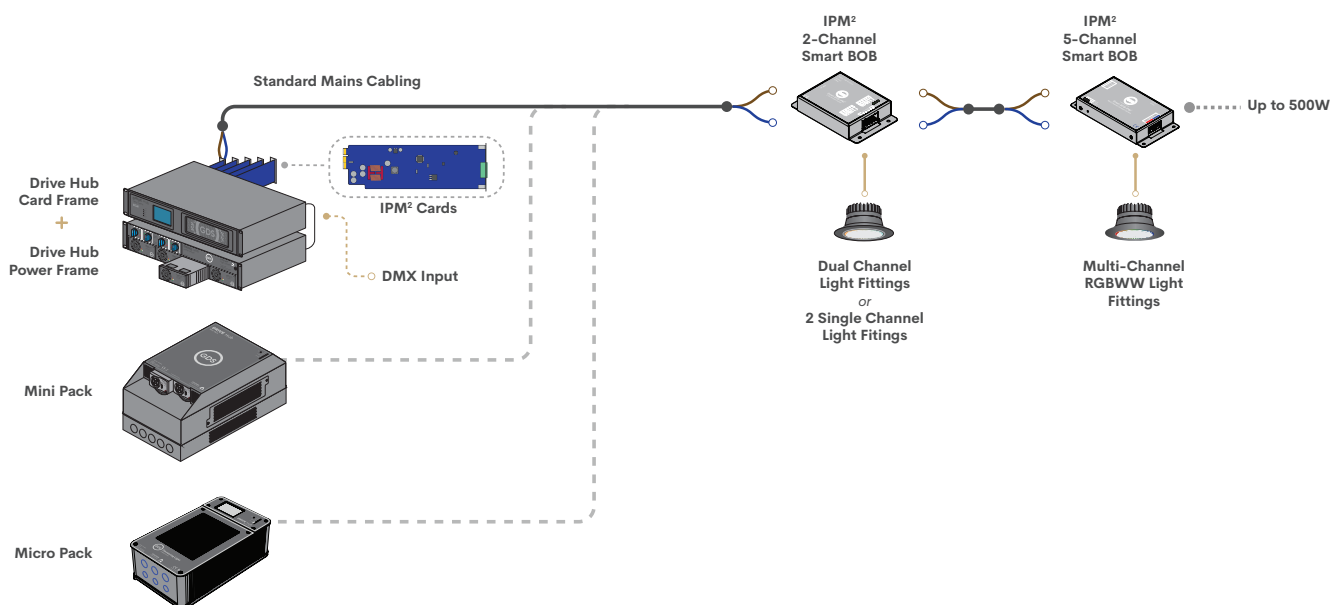
- Drive Hub developed to revolutionise the way we drive LED lighting.
- IPM Drive Card and Smart BOB developed.
- IPM² Drive Card and multi-channel Smart BOBs developed, improving on IPM by adding bi-directional communication and multiple channel control.
- IPM & GDS Lamp upgrades - Up to 6 channels of control and 7 configurable personalities.



Drive Hub & IPM Application Example



Drive Hub & IPM² Application Example



IPM Drive Card

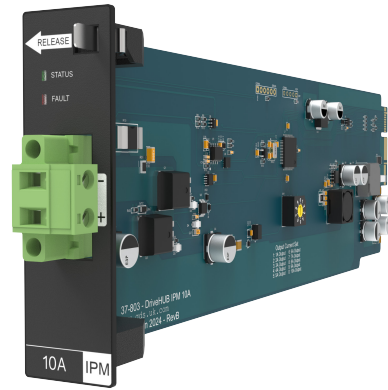
The IPM Drive Card encodes the control signal onto the DC power feed.

The IPM Drive Cards function with the Drive Hub:

Card Frame (up to 12 cards/100A total)

Mini Pack (up to 6 cards/60A total)

Micro Pack (up to 2 cards/12.5A total).



IPM Smart BOB

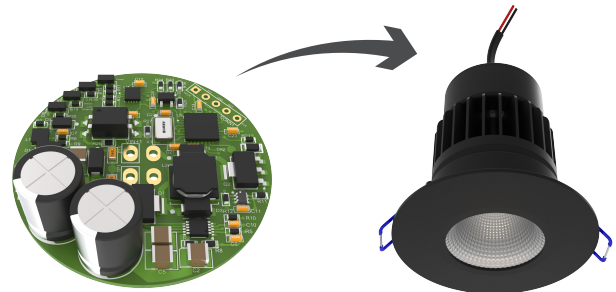
The single channel IPM Smart BOB is designed for installations using single colour fixtures with up to 1.2A per channel (Max. 48W @ nominal 40V).

Users can set the personality, curve, group and dimming parameters for each BOB using the Drive Hub user interface. IPM BOBs with different drive currents can be connected to the same circuit, allowing different types of light fittings to be controlled with the same Drive Card.



Integrated IPM Smart BOBs

Smart BOBs can be integrated into various GDS light fittings, allowing for seamless and speedy installation when required



GDS Lamps

The GDS Lamps contain an integrated IPM receiver, bringing the entire feature-set of IPM in to a standard lamp form-factor.



IPM² Drive Card

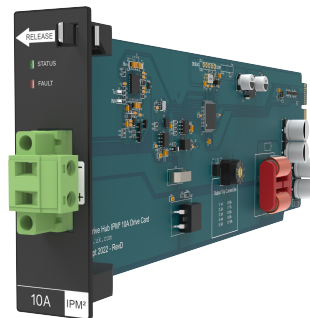
The IPM² Drive Card encodes the control signal onto the DC power feed.

The IPM² Drive Cards function with the Drive Hub:

Card Frame (up to 12 cards/100A total)

Mini Pack (up to 6 cards/60A total)

Micro Pack (up to 2 cards/12.5A total).



IPM² Smart BOB - 2 Channel

The 2 channel IPM² Smart BOB is designed for installations using tuneable white light LED fixtures, or for two single colour fixtures with up to 1.2A per channel (Max. 48W @ nominal 40V).

Users can daisy-chain together different types of IPM² Smart BOBs for a flexible installation, with only the first Smart BOB in the chain requiring a direct connection to the IPM² Drive Card.



IPM² Smart BOB - 5 Channel

5 channel IPM² Smart BOBs are useful for many different types of colour-changing fixtures, or as a central hub to connect up to 5 single channel fixtures to an IPM² Drive Card, with up to 1.2A per channel.

A high output version is also available, specifically for our flagship colour-changing Sirius 120 fixture.

Just like the 2 Channel IPM² Smart BOB, these can be daisy-chained together in any combination.



Frequently Asked Questions - IPM²

What is the maximum cable run?

This depends on three factors – the cable CSA, cable length and total power of the circuit. See page 4 for some examples. If your requirement is outside of these parameters, please contact GDS and we will be able to assist in creating a solution.

How many lights can run on a single IPM² card?

The only limit is that each card can supply 10A in total, up to 56V. This power can be divided between any number of light fittings.

Can I use legacy cable with more than 2 cores?

Yes, but only two of the cores need to be used for the IPM² system.

Does IPM² work with track fittings?

IPM² works with compliant track fittings. Due to the common neutral wire you can only use one circuit on a 3 circuit track, but the fixtures can still be individually addressed.

Does IPM² work with third party equipment?

Yes. Third party light fixtures should be specified without a driver, because the Smart BOB would connect to the LED output channels directly. Our Drive Hub system is compatible with any DMX controller.

Where can I learn more about Drive Hub?

Please refer to our Drive Hub Application Note, or visit our website.

Cable Length Examples

The following table shows some examples of cable runs for both IPM and IPM², using cable CSA and cable length to calculate the maximum power for a given scenario, taking voltage drop into consideration. As there are many variables affecting cable length, please take this as an example only and contact GDS if you require any further clarification regarding your specific scenario.

Cable CSA (mm ²)	Example Cable Length (m)	Max LED Power (W)
1.5	20	485
	50	440
	80	276
	100	220
	120	185
	150	145

Cable CSA (mm ²)	Example Cable Length (m)	Max LED Power (W)
2.5	20	500
	50	460
	80	425
	100	365
	120	310
	150	250

Cable CSA (mm ²)	Example Cable Length (m)	Max LED Power (W)
4	20	500
	50	500
	80	460
	100	440
	120	430
	150	390

**The values shown here are taking into consideration the power losses incurred on the specified length of cable. Where possible, cables should be kept as short as possible to avoid these losses. Values are calculated based on a nominal LED forward voltage of 40V and a Card Frame output of 56V*