

**For generation and distribution of redundant 29 volt bus lines to Galileo spacecraft propulsion equipments a Propulsion Power Distribution (PPD) module is available. The module provides two independent 29 volt supply lines and four 50 volt Latching Current Limiters (LCL), each one followed by a series switch.**

From a regulated 50 volt bus two independent DC/DC converters generate redundant regulated 29 volt busses compatible with spacecraft equipments designed for 28 volt bus applications.

For other applications e.g. local heaters, the module provides four LCLs, each one followed by a separate series switch to ensure no permanent failure mode.

Each switch function can be commanded on/off via a dual command & monitoring bus, distributed by a backplane interface. Each switch provides telemetry of switch status and load current.

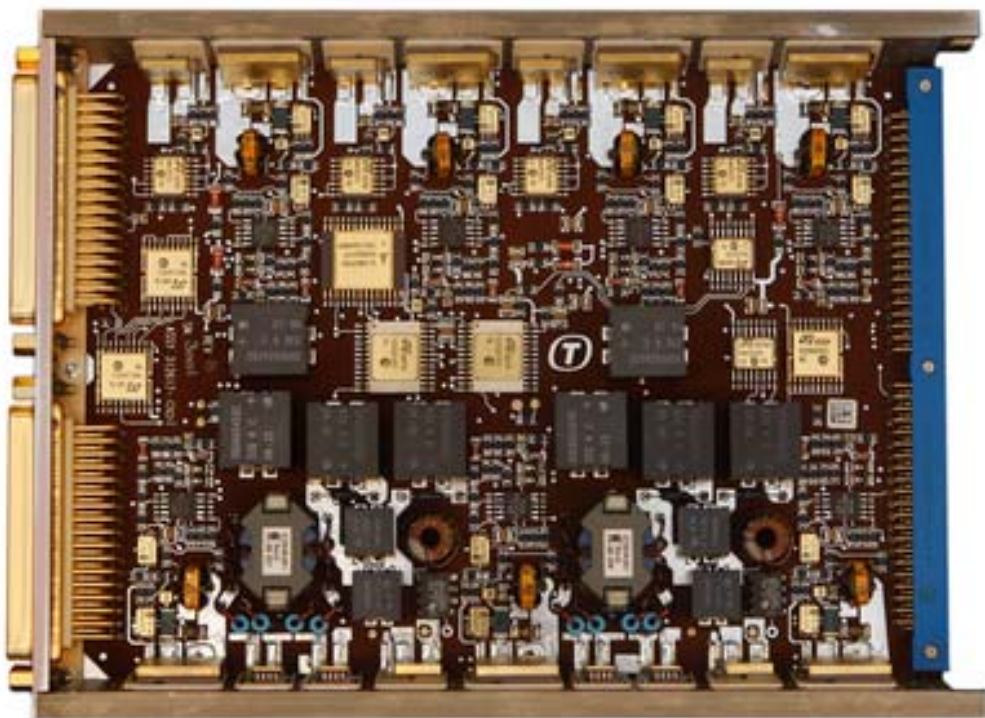
In case of overload or short circuit, the output current is instantly limited to protect the upstream main power bus. When exceeding a predefined delay the LCL will automatically switch off.

The voltage drop for each switch function is compatible with requirements for a regulated 28 or 50 volt bus.

Each LCL on the module is fully self-contained with proven no failure propagation in-between, thus eliminating the need for "A and B sides" in the distribution function. The module forms an autonomy function deriving its internal supply voltages directly from the power bus.

References:

- One module onboard each of the four Galileo IOV spacecrafts. The first two spacecrafts were launched in October 2011



*Propulsion Power Distribution Module*

## Specifications:

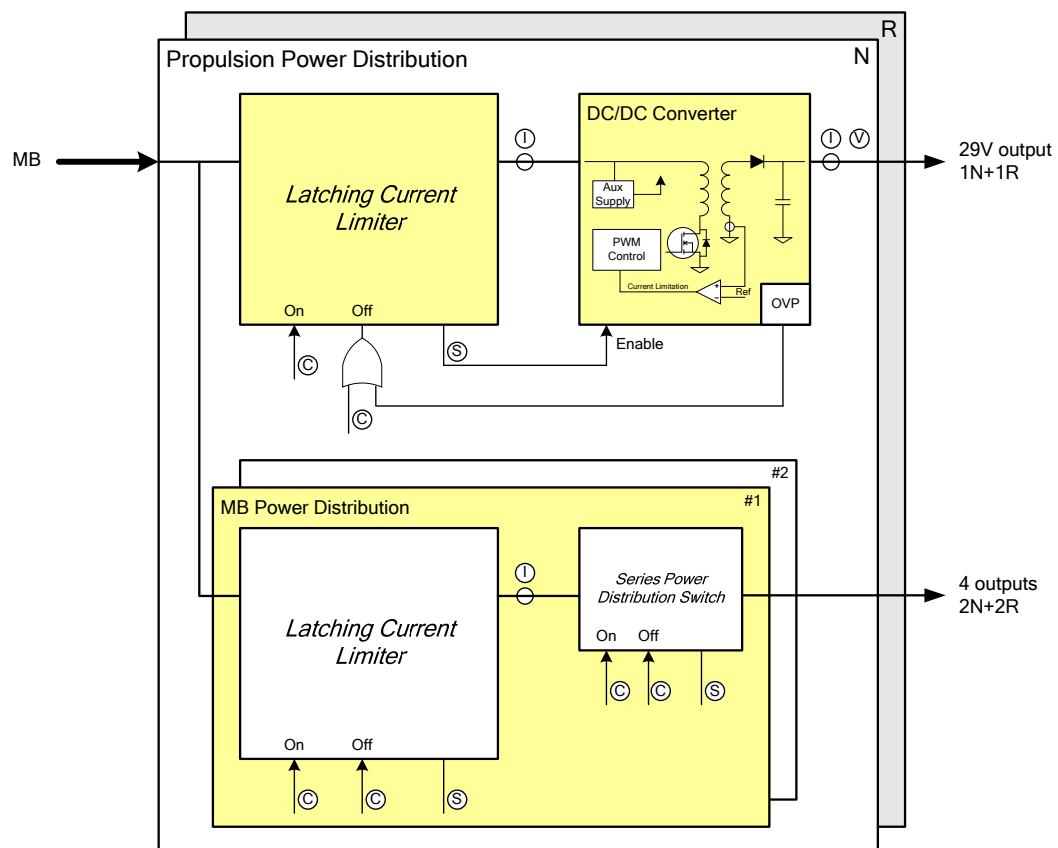
Dimensions (L x W x H)	193 x 150 x 24 [mm]
Mass	528 gram
Bus voltage	50 volt

## 29V Redundant Bus

Output voltage	29 +/-1.1 volt
Power capability	2 x 75 watt
Efficiency at full power	92.9%
Load transient @ 50% load step	< 0.5V

## 50V Bus Distribution

Number of LCL Blocks	4
LCL load current class	1.0 Ampere
LCL trip off & current limitation level	+5 % to +15 %
Switch trip off delay	11 +/-1 ms
Switch current regulation response	< 500 ns
Series Switches	4
Idle consumption, all switches off	< 0.75 watt
Load current TM inaccuracy	< 5 %



Propulsion Power Distribution Module Functional Schematic