



## Technical Note

### FPU Harness and connector derating analysis

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#### Distribution

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**Purpose:** To justify the selection and use of the wiring types and connectors contained within the SPIRE FPU and JFET Units (SPIRE F1-F28 harnesses) in terms of voltage and current derating.

#### Background

The following connector types are used in the FPU

Nanonics  
MDM

The maximum current delivered to any subsystem is 400mA (SMEC Launch Latch), but this is shared between two contacts giving a nominal current on the conductor of 200mA.

The maximum voltage potential difference between adjacent conductors/connector contacts is 15V.

For conductors carrying more than 0.1mA, 30 AWG Copper conductors are used.

For conductors carrying less than 0.1mA, 38 AWG Stainless Steel conductors are used.

#### Conclusion

In all cases, the current carrying capability of the conductors meets and/or exceeds the Astrium designed cryogenic portion of the Herschel/SPIRE cryoharness. Therefore, by analogy; providing that this harness meets the ESA de-rating requirements, then the SPIRE cryogenic harnesses meet the ESA derating requirements.

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