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Ref: https://project-hl-lhc-industry.web.cern.ch/content/project-schedule

The LHC will be upgraded to collect ten times more data than the initial design.

Phase-2 upgrade of the CMS experiment, the High Granularity Calorimeter (HGCAL) is developing.

| EXCAVATION | BUILDINGS |
|------------|-----------|
| | |
| | |



CMS high granularity End-cap Calorimeter

The electromagnetic calorimeter and the hadronic calorimeter will be replaced to meet the requirements of HGCAL at the HL-LHC.





Hex module



Hex board : Full & Partial

Hexagonal LD Sensor with Dicing line (MGS) provide sensors' structures for the following partial shapes.

Two Halves : Top & Bottom

Two Semis : Left & Right

One Five and One Three

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The V3-LD-Partial-HalfBottom is designed for MGS LD Sensor's Half Bottom

Main components: 2 × V3-HGCROCs 2 × LDOs 1 × DF12 connectors

Main Parts: Board connector Power module RTD Full - HGCROC Half - HGCROC





Main Signals: Readout signal: DAQ TRIG Fast control signal: FCMD CLK320 Inter-Integrated Circuit: $I^2C - SDA$ $I^2C - SCL$ HGCROC control and status: Probe-DC Reset Error RTD signal: RTD **RTD REF** LDO control and status: Power en Power good Vmon lvs ECON power: P1V2D GND

P1V2D

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Board connector signals





Main Parts:

Asic: SGC7000 CRN01 LDO External power supply: P1V5 **GND** LDO Block output: P1V2D P1V2A HV Connector: SM02B-BHSS-1-TB HV power supply for sensor: 4 HV PADs



Power module

Main Parts: Asic: HGCROC-v3 (By omega) Channel connected: 64 channels connected to sensor cells with trigger 3 channels connected to sensor cells without trigger 4 channels connected to sensor cells with two pad pins Decoupling structure









Main Parts: Asic: HGCROC-v3 (By omega) Channel connected: 30 channels connected to sensor cells with trigger 3 channels connected to sensor cells without trigger 3 channels connected to to sensor cells with two pad pins Decoupling structure







Summary and future plan

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The End

