New MPGD Connector
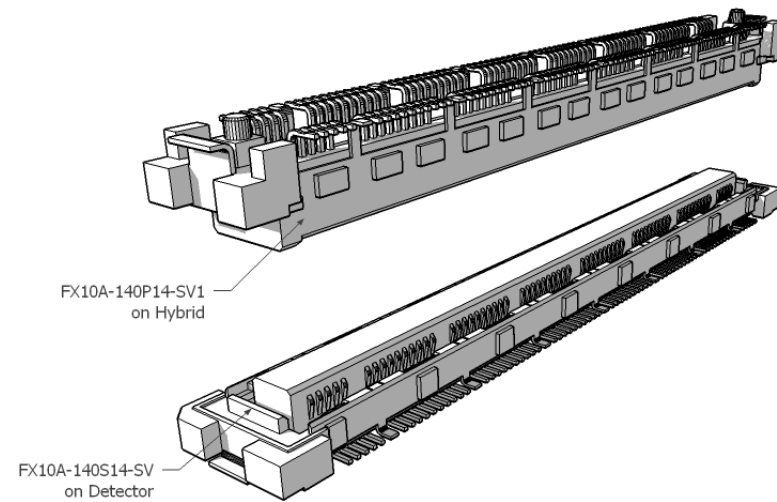
Hans Muller CERN
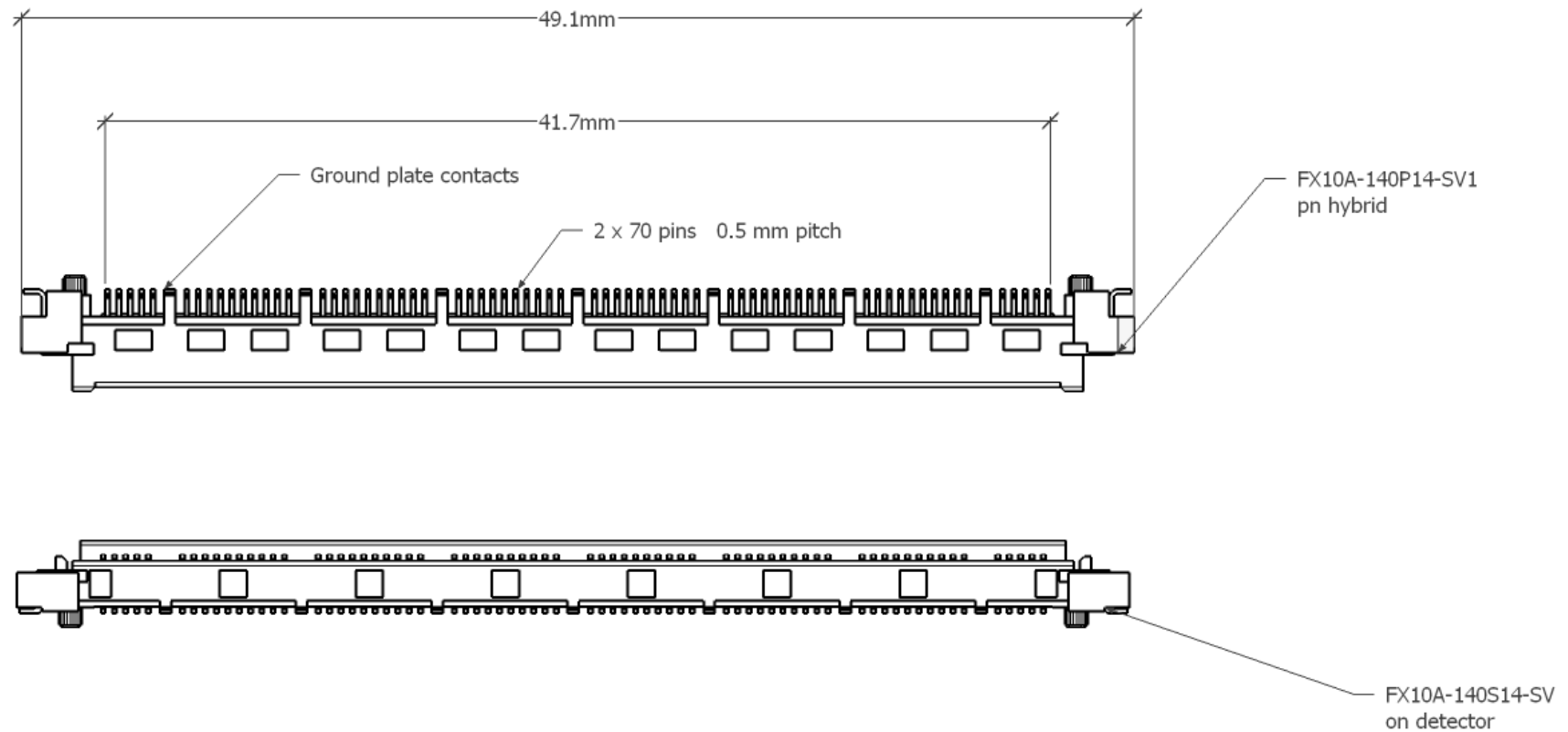

FX10A-140P14-SV1
on Hybrid

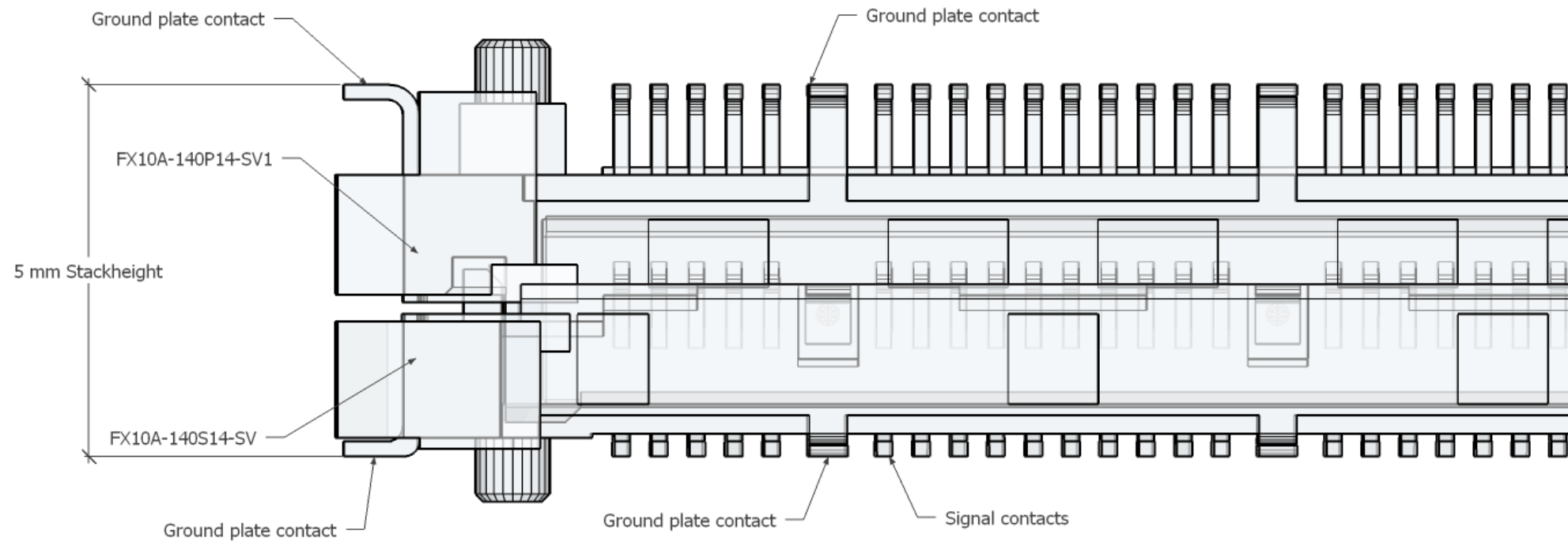FX10A-140S14-SV
on Detector

Motivation for new connector

- Pansonic 130 pin connectors not produced any more
- Panasonic 130 pin only available in large Qty
- Pansonic 130 pin has only 2 GND pins

- HRS 140 pin very similar, in production
- HRS 140 pin available in single Qty
- HRS 140 pin has GND pins every 10 position
- HRS 140 pin allows for new functionality: 12 spare pins

Lateral dimensions FX10A-140S
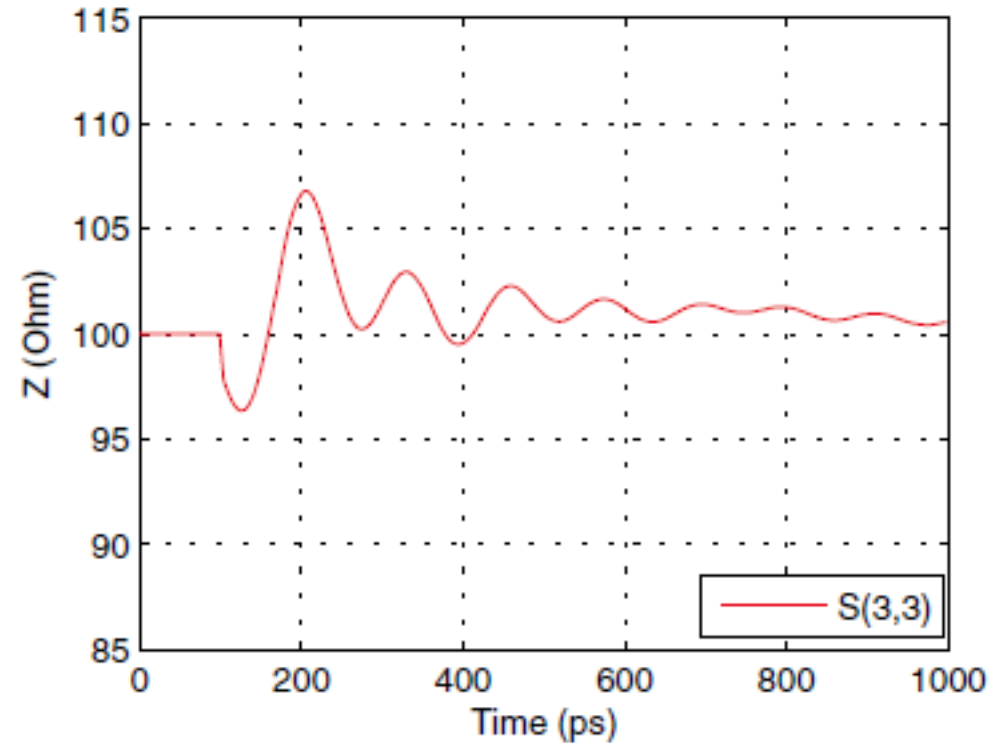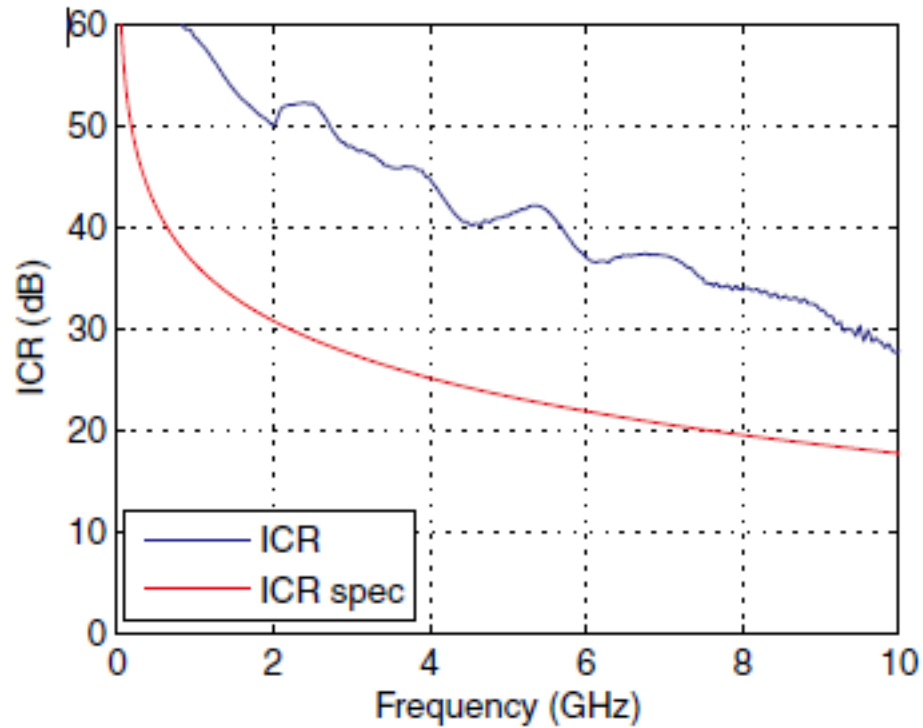
Fits on 50 mm wide hybrids

Height dimensions

Ground plate contact

Ground plate contact

FX10A-140P14-SV1

5 mm Stackheight

FX10A-140S14-SV

Ground plate contact

Ground plate contact

Signal contacts

HRS Manufacturer Specs
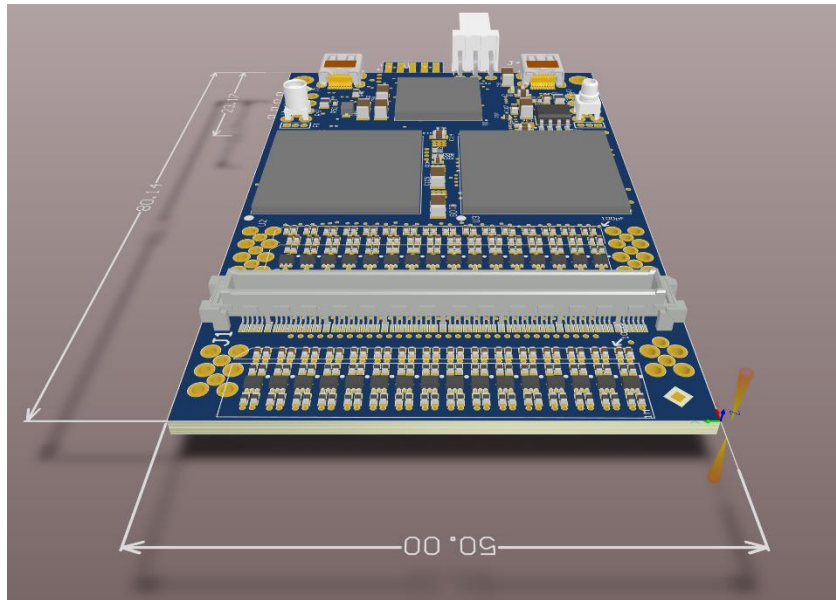## http://www.hirose-connectors.com

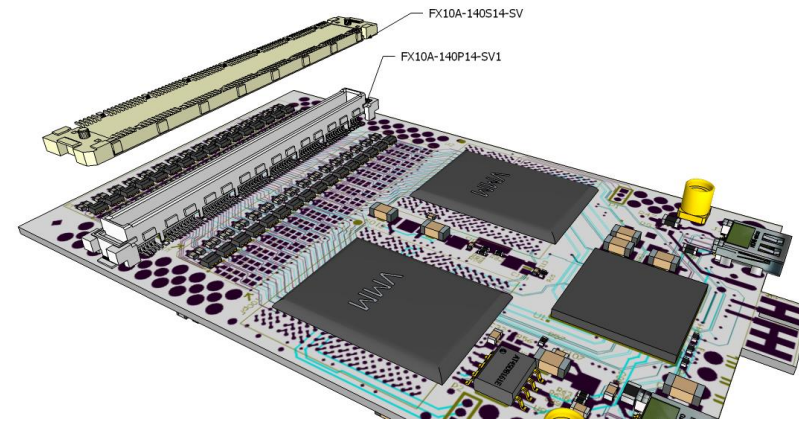**FX10 series**   **0.5mm pitch**

ICR Insertion Loss Ratio meets IEEE 802.3ap for 15+ Gbps
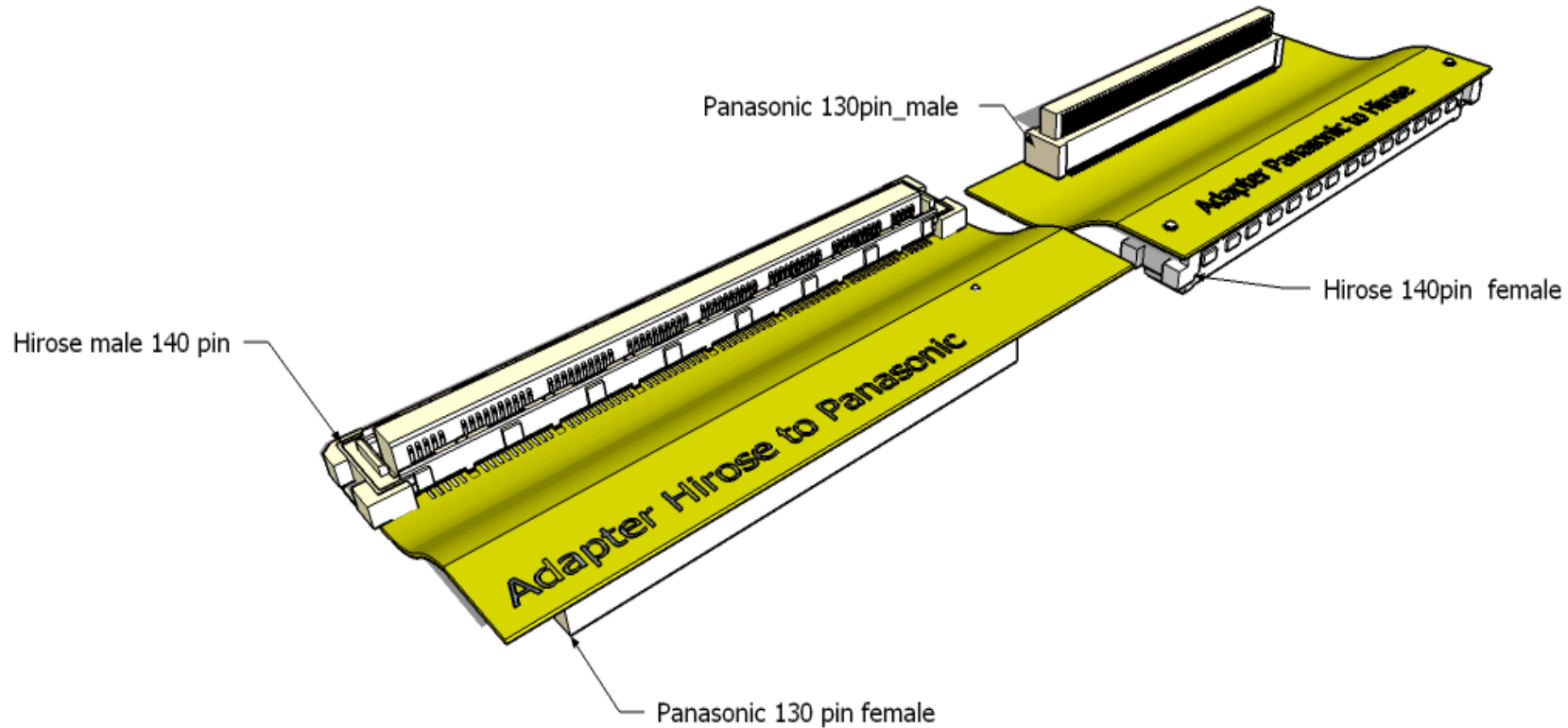
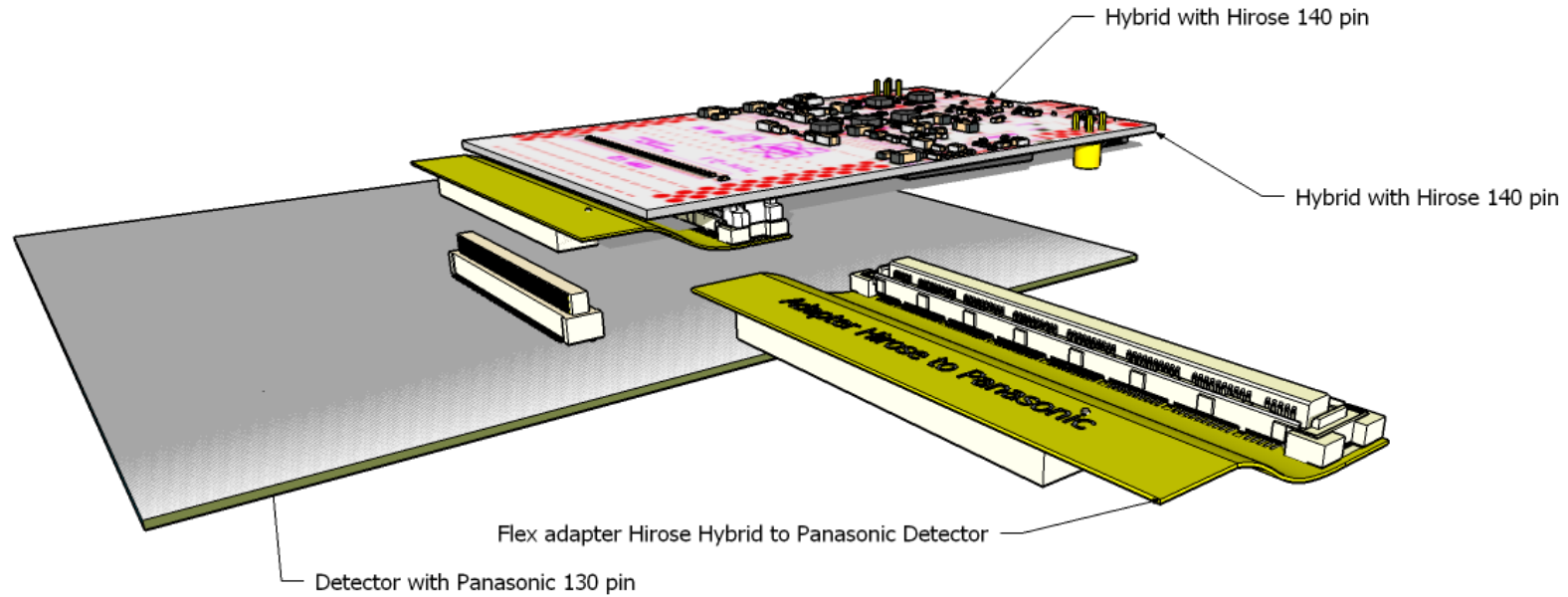# New Hirose connector as from VMM-128 v3

Altium design A.Rusu

Rui will start new connector on MPGD's when adapters for transition period become available

Adapters for transition time

Panasonic 130pin_male

Adapter Panasonic to Hirose

Hirose 140pin female

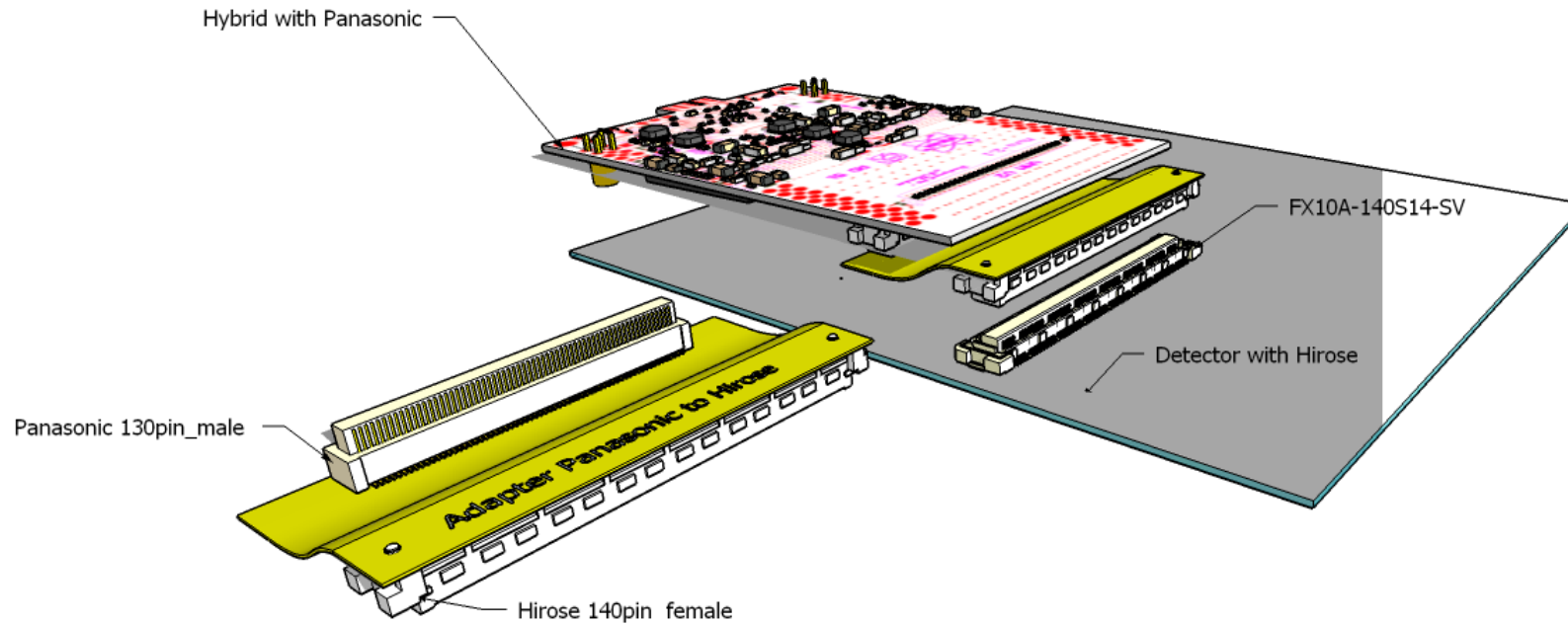Hirose male 140 pin

Adapter Hirose to Panasonic

Panasonic 130 pin female

Flex PCBs to be designed (A.Rusu) for both versions

New Hybrid with HRS plugged on detector with old Panasonic connector

Hybrid with Hirose 140 pin

Hybrid with Hirose 140 pin

Adapter Hirose to Panasonic

Flex adapter Hirose Hybrid to Panasonic Detector

Detector with Panasonic 130 pin

Old Hybrid with Panasonic plugged on detector with new Hirose connector

Hybrid with Panasonic

FX10A-140S14-SV

Detector with Hirose

Panasonic 130pin_male

Adapter Panasonic to Hirose

Hirose 140pin female

New functionalities
a.) geographic address position
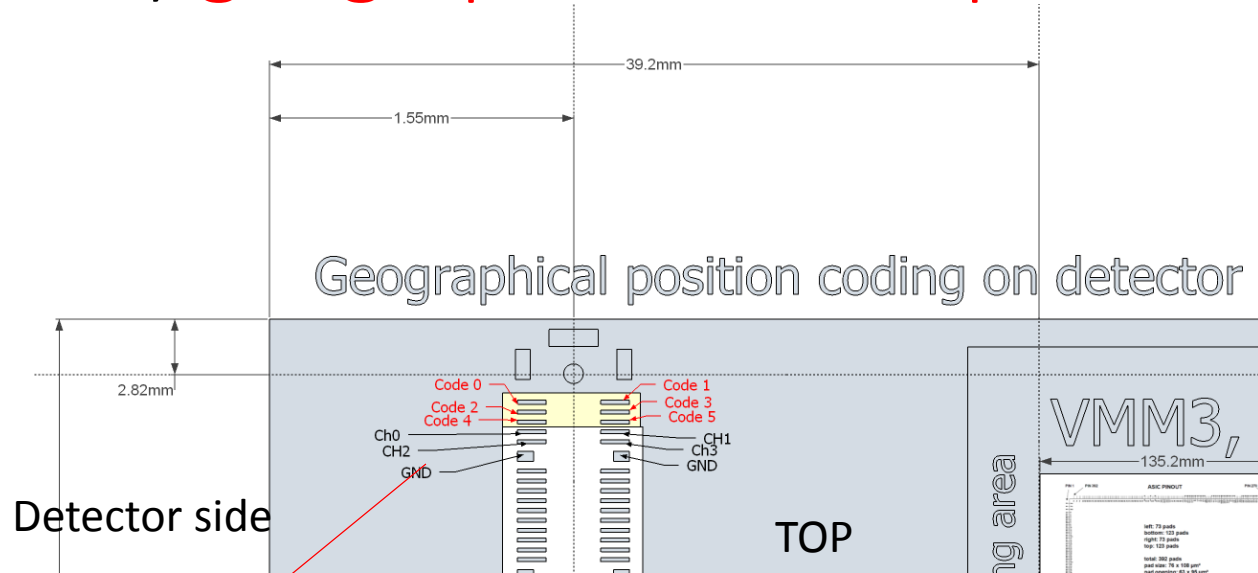
Geographical position coding on detector

39.2mm

1.55mm

2.82mm

Code 0
Code 2
Code 4
Code 1
Code 3
Code 5

Ch0
CH2
GND
CH1
Ch3
GND

VMM3,
135.2mm

TOP

Detector side

6 code pins on right side viewed from top

Readout via
slow controls SRS

VMM hybrid

+2V5

10k pullups

FPGA

6

Position coding by GND / No GND

Detector Frame   Example Position = 10 0001
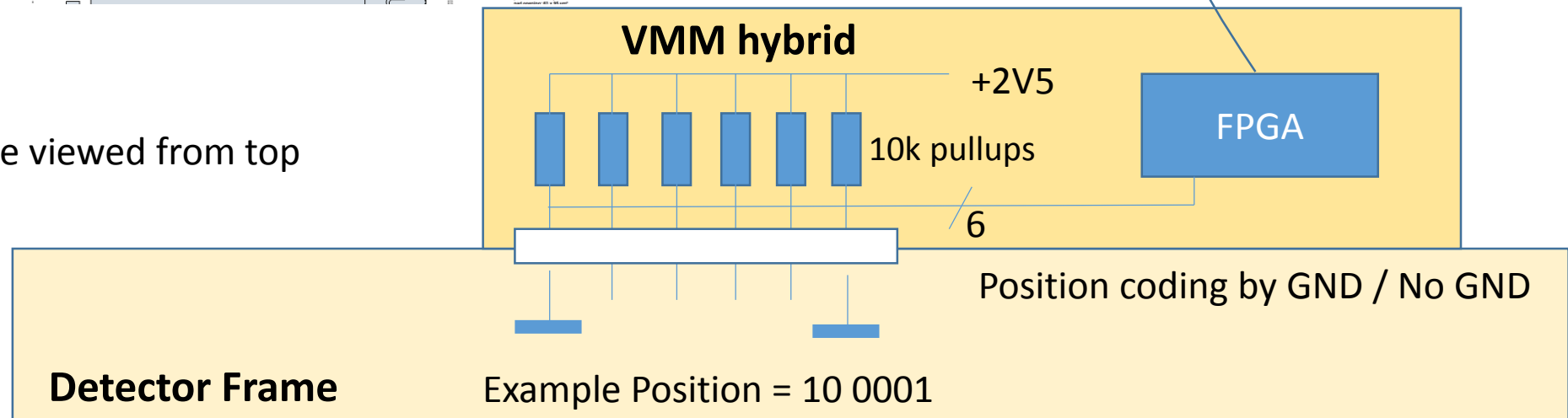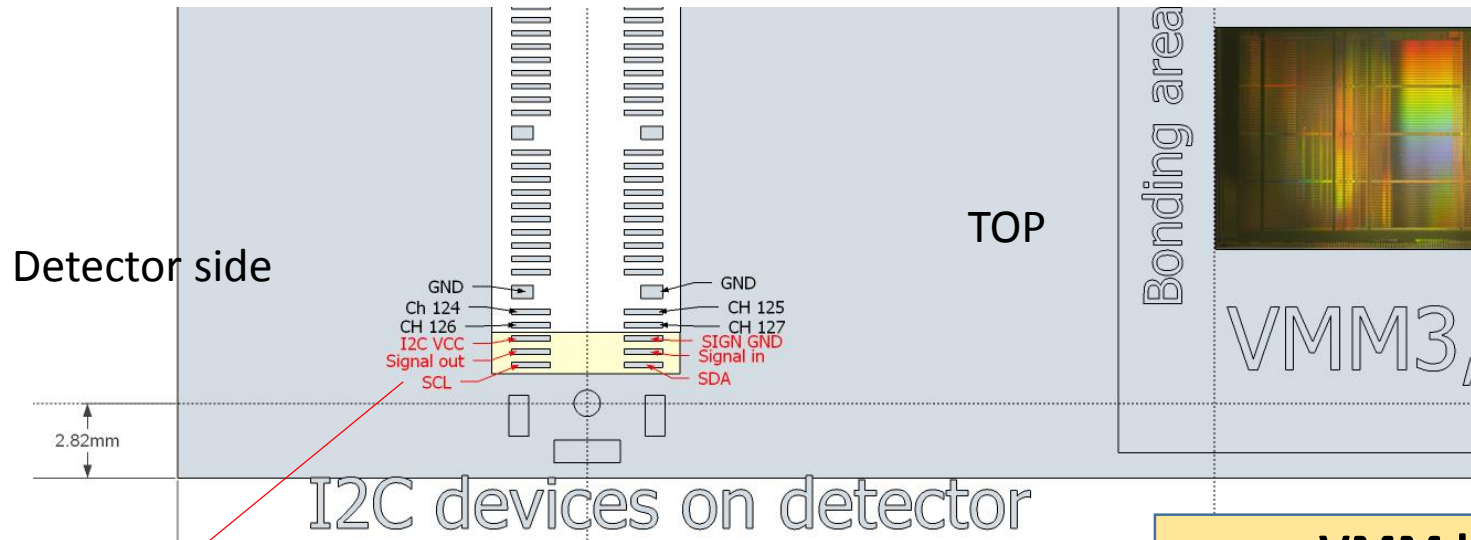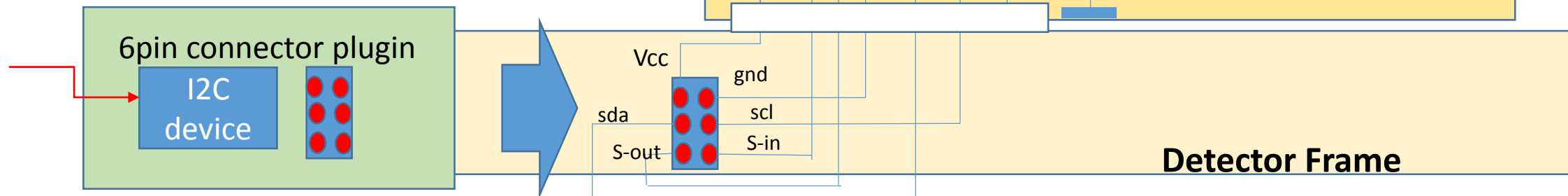
New functionalities
b.) optional I2C devices on detector

Will allow to place and
use intelligent sensors on the detector

I2C device control and readout
 via
slow controls SRS

Detector side

TOP

Bonding area

VMM3,

I2C devices on detector

6 x I2C support pins on left side, viewed from top

VMM hybrid   +2V5

FPGA

6pin connector plugin

I2C device

Vcc   gnd

sda   scl

S-out   S-in

Detector Frame

Examples   I2C chips for potential use on detectors

- ROHM color sensor **BH1745NUC**

- Sensirion **SHT25** Humidity and Temperature sensor

- Analog Devices **ADT7301ARTZ-500RL7 temperature sensor**

- Vishay Proximity and ambient light detector **VCNL4010**

- Texas Instruments LED driver (up to 11 in series) with ambient sensing **LM3530**

- MAX ambient light sensor 0.025 Lux to 104,448 Lux   **MAX44007**