



Power Supply for the PANDA magnet

Preliminary design report



Vasichev Sergei, BINP
Kremnev Artem, BINP



- ❑ Conception of the PANDA magnet PS
- ❑ Power supply VCH1300
- ❑ Conception of the control electronics
 - ❑ Control and interface master board (CIBm)
 - ❑ Control and interface slave board (CIBs)



Panda PS

Parameter	Value
Input line	400V 3-phase AC line
Nominal output current, A	5100
Nominal output voltage, V	12
Output current stabilization, % (from nominal)	< 0,01
Control Interface	USI

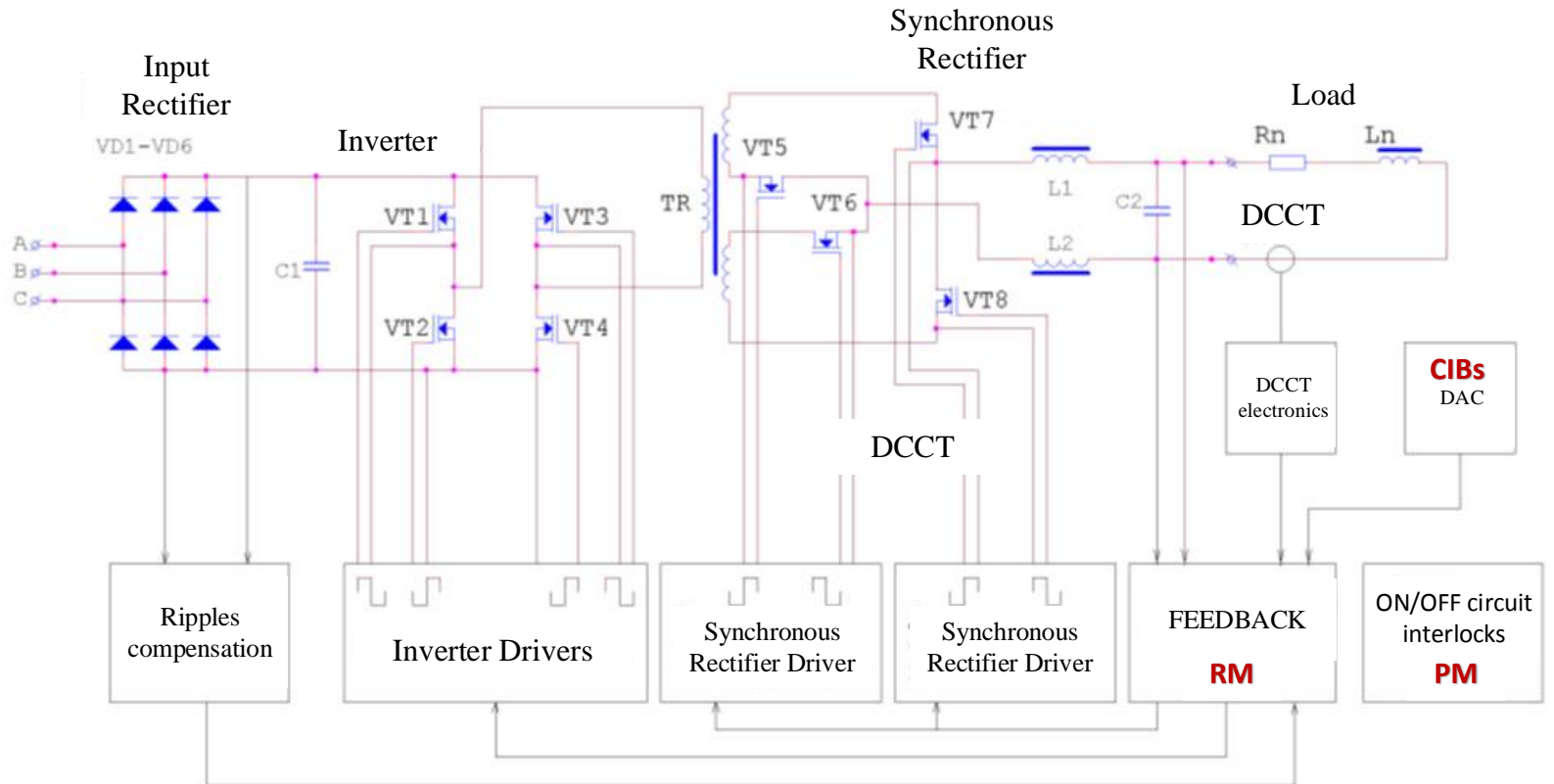


VCH-1300





Circuit design of VCH1300



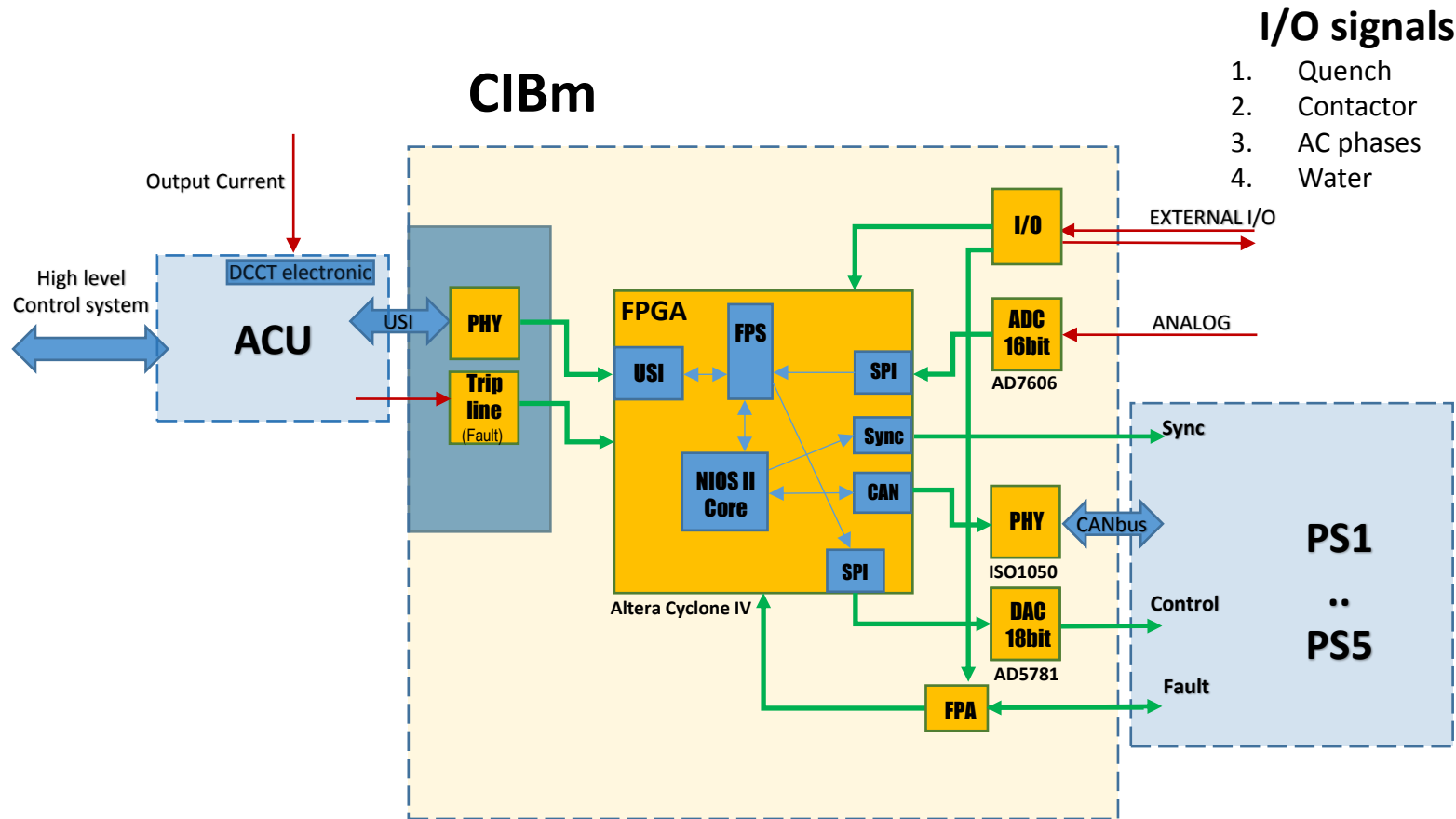
Control electronic modules:

1. CIBs – Control and interface slave board
2. RM – Regulator module
3. PM – Protection module



VCH-1300

Parameter	Value
Nominal output power, kW	15.6
Nominal output current, A	1300
Nominal output voltage, V	12
8 hours run Stability, % (from nominal)	< 0.01
Output ripples in voltage: 0-300Hz, mV - rms	< 10
Output ripples in voltage: 0-40kHz, mV - rms	< 100
Control Interface	CANbus
Form factor	19" x 4U



CIBm – Control and Interface master board

ACU – Adaptive Control Unit

FPGA – Field Programmable Gate Array

SYNC – interleaving switching frequency synchronization

PHY – interface physical level

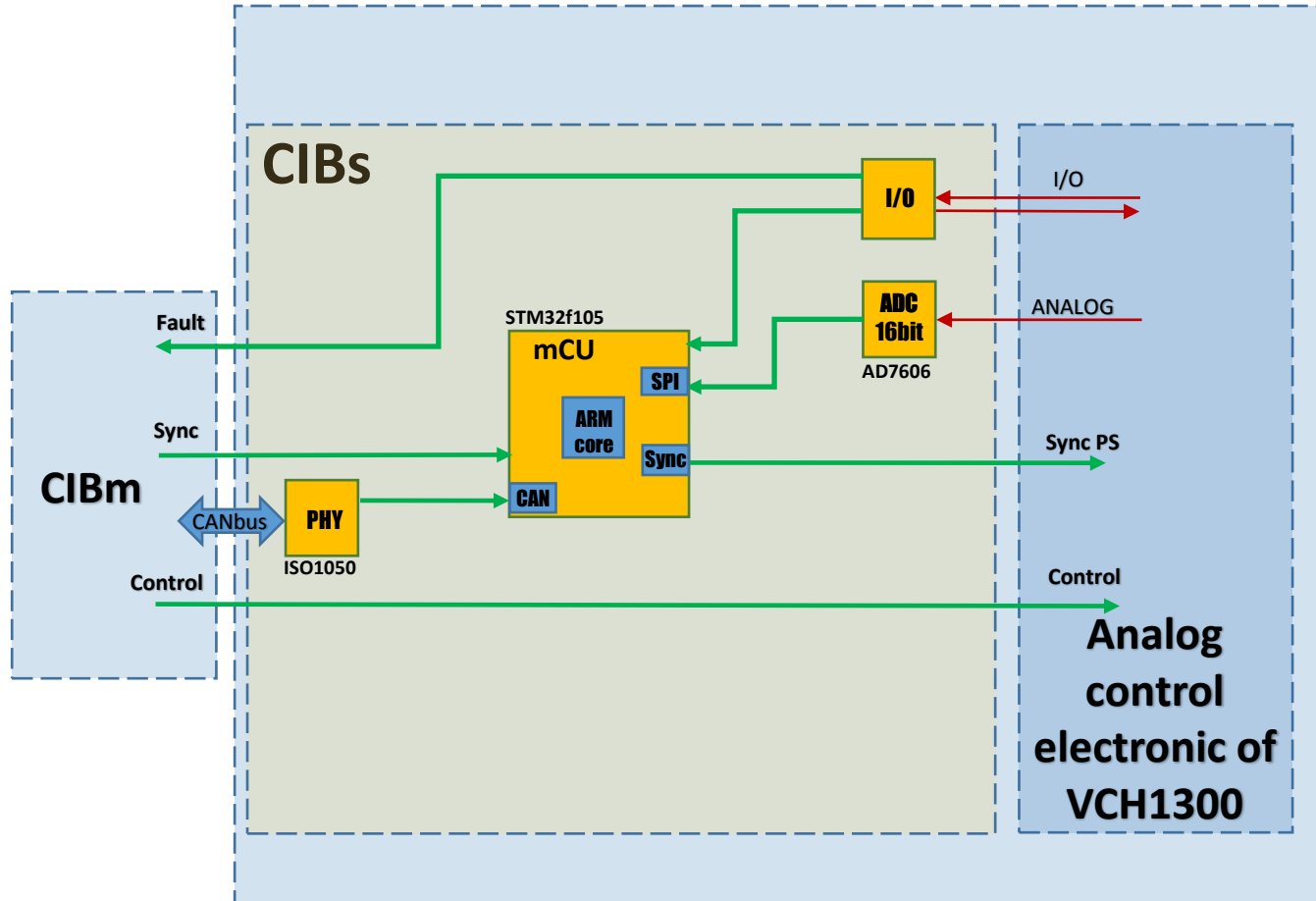
SPI – serial peripheral interface

FSP – FIFO Starting Point (Data buffer)

FPA – Fast power abort



VCH1300



I/O signals:

1. ON/OFF
2. Reset
3. Inverter status
4. Phase ok
5. OverPower
6. OverHeat
7. OverCurrent
8. Loads Fault
9. OverVoltage

CIBm – Control and Interface master board

CIBs – Control and Interface slave board

SYNC – interleaving switching frequency synchronization

PHY – interface physical level

SPI – serial peripheral interface

mCU – microcontroller unit



Thank you for attention!