

Industrial Rapid Control Prototyping for Power Electronics

SmartRCP provides a cutting-edge tailor made technological stable and robust platform to explore and validate converter control techniques



Key features



PWM **modulation features are fully controlled** as they are defined in C or VHDL



The code validated by RCP can be **exported directly** into the real Control Unit



Remote Controlling capabilities



Embedded **oscilloscope** & **datalogger** and advanced post-processing tools



Detailed **documentation** and **application examples** provided



Engineering & Consulting services available



Suitable for **distributed** control techniques

Detailed connectivity

Analog and Digital Front End:

- 32 · Digital inputs 0-24V (Isolated – sampled at 10kHz)
- 32 · Digital outputs 0-24V (Isolated – updated at 10kHz)
- 36 · PWM output channels (0-5V – RS422 – Differential - Isolated – sampled at 4ns)
- 12 · Fast analog input channels (0-5V - 12bits - 3Ms/s)
- 12 · Slow input analog channels (0-5V - 12bits - 500ks/s)
- 16 · Analog output channels (0-5V - 16bits – 500ks/s)

High-speed serial connectivity:

- 1 · Ethernet (1GB - RJ45)
- 4 · USB 2.0
- 2 · ETH RJ45 to parallel converters or distributed controlling

Industrial connectivity:

- 2 · UART (USB converted)
- 2 · RS485 (Full/Half duplex)
- 1 · MicroSD card

Additional features:

- 1 · Programming and debugging microUSB
- 1 · Reset button

Power requirements:

- 24V – 60W max

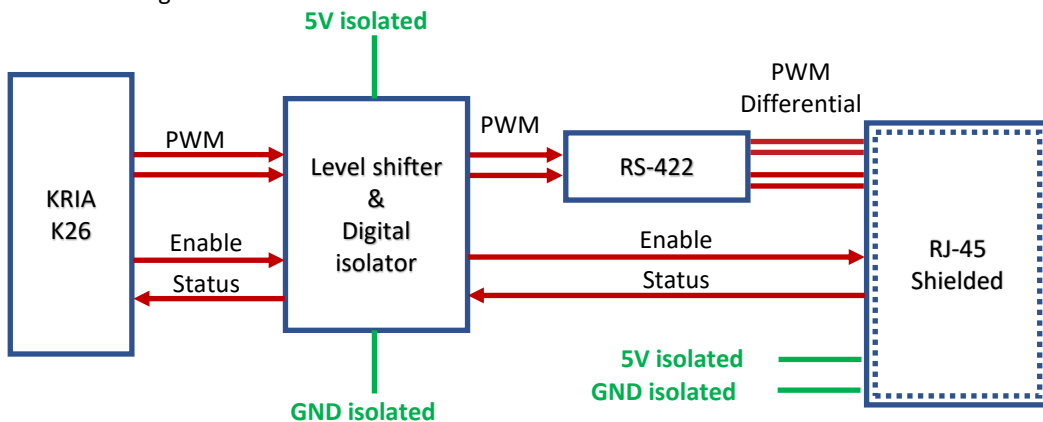
PWM channels chain details

PWM channels are fully electrically isolated.

To reduce noise susceptibility, a differential RS-422 protocol is used: all connectors are shielded.

Additional enable and status/error signals are provided to interface driving circuitry.

PWM channels design:

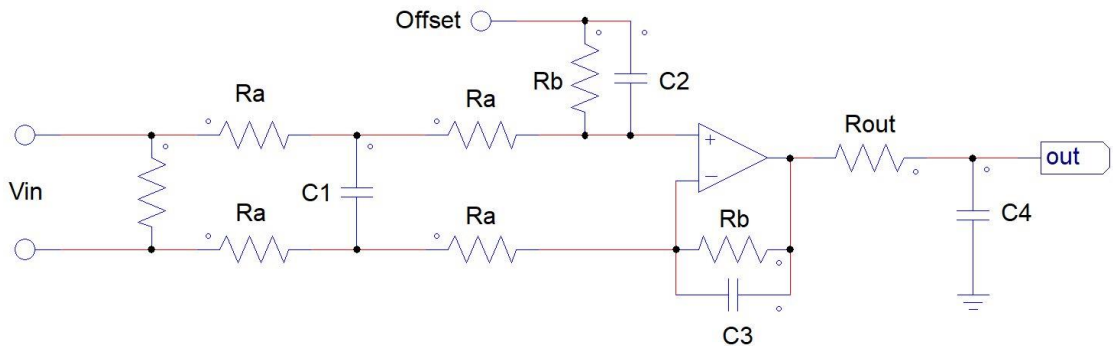


Analog input chain details

All input analog channels share analog chain topology and input span of 0-5V.

Antialiasing filters are tuned at 1,5MHz for fast channels and 200kHz for slow channels.

Analog front end provides a differential input with selectable input impedance, low input current and high bandwidth.

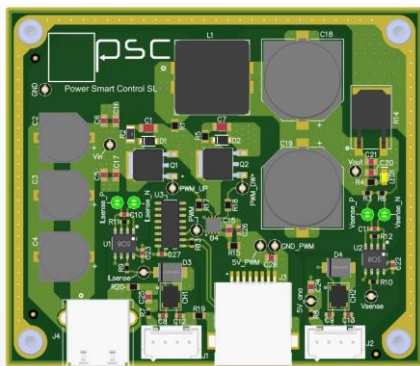


Included in SmartRCP

- SmartRCP device
- HW drivers for all board peripherals fully compiled as an IP core
- Full example project to test SmartRCP capabilities
- Test mode program
- User Manual
- Universal power adapter

Additional accessories

- Embedded waveform viewer **Now included!**
- Synchronous Buck Converter Demo Board **Now included!**
- Seamless Connection with a 20kW Rapid Power Prototyping – Coming soon
- Collection of IP cores ready to use – Under development



Synchronous Buck Converter Demo Board



RPP: Rapid Power Prototyping system by PSC → Coming soon



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KRIA K26, the brain of the system

Unlimited access to all **FPGA resources**

6 high-end ARM microprocessors available:

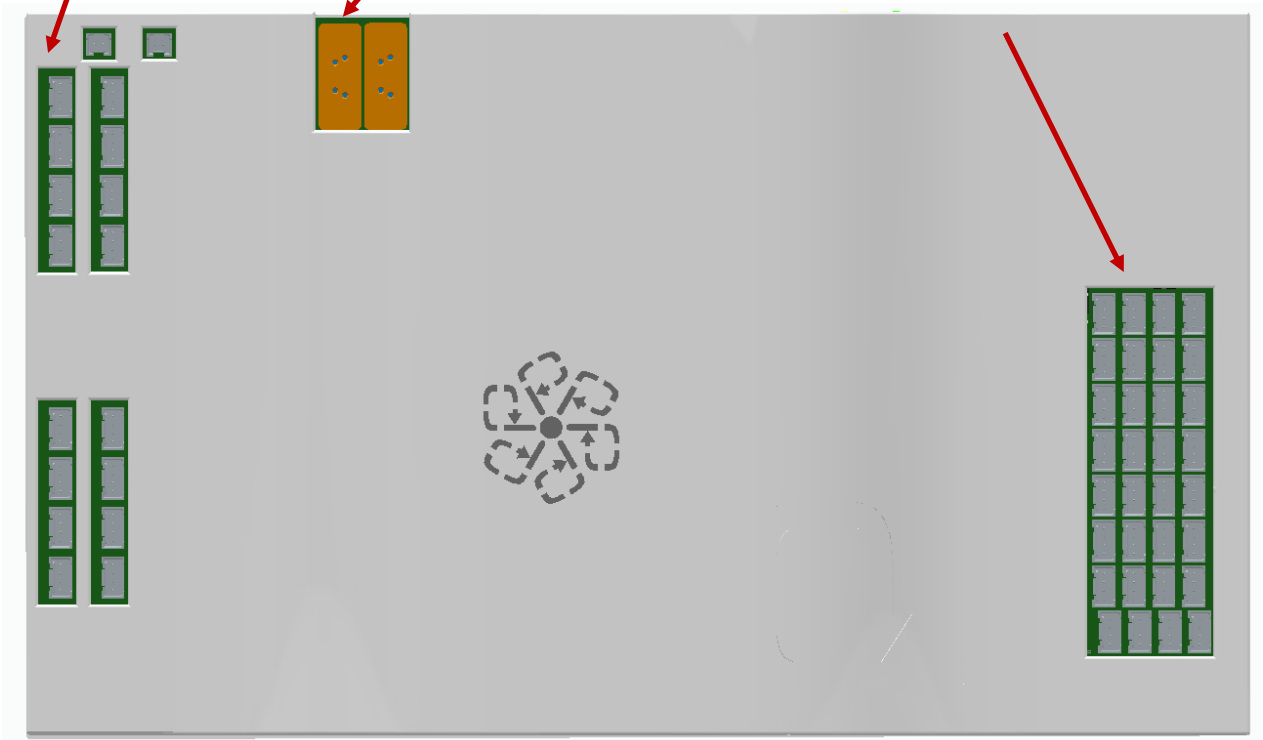
- Quad-core Arm® Cortex®-A53 MPCore™ up to 1.5GHz
- Dual-core Arm Cortex-R5F MPCore up to 600MHz
- 4GB of DDR4 RAM

Unbeatable connectivity

Digital Input & Output channels

RS485

Analog inputs - 3Ms/s
Analog inputs - 500ks/s



36 Isolated differential PWM channels

