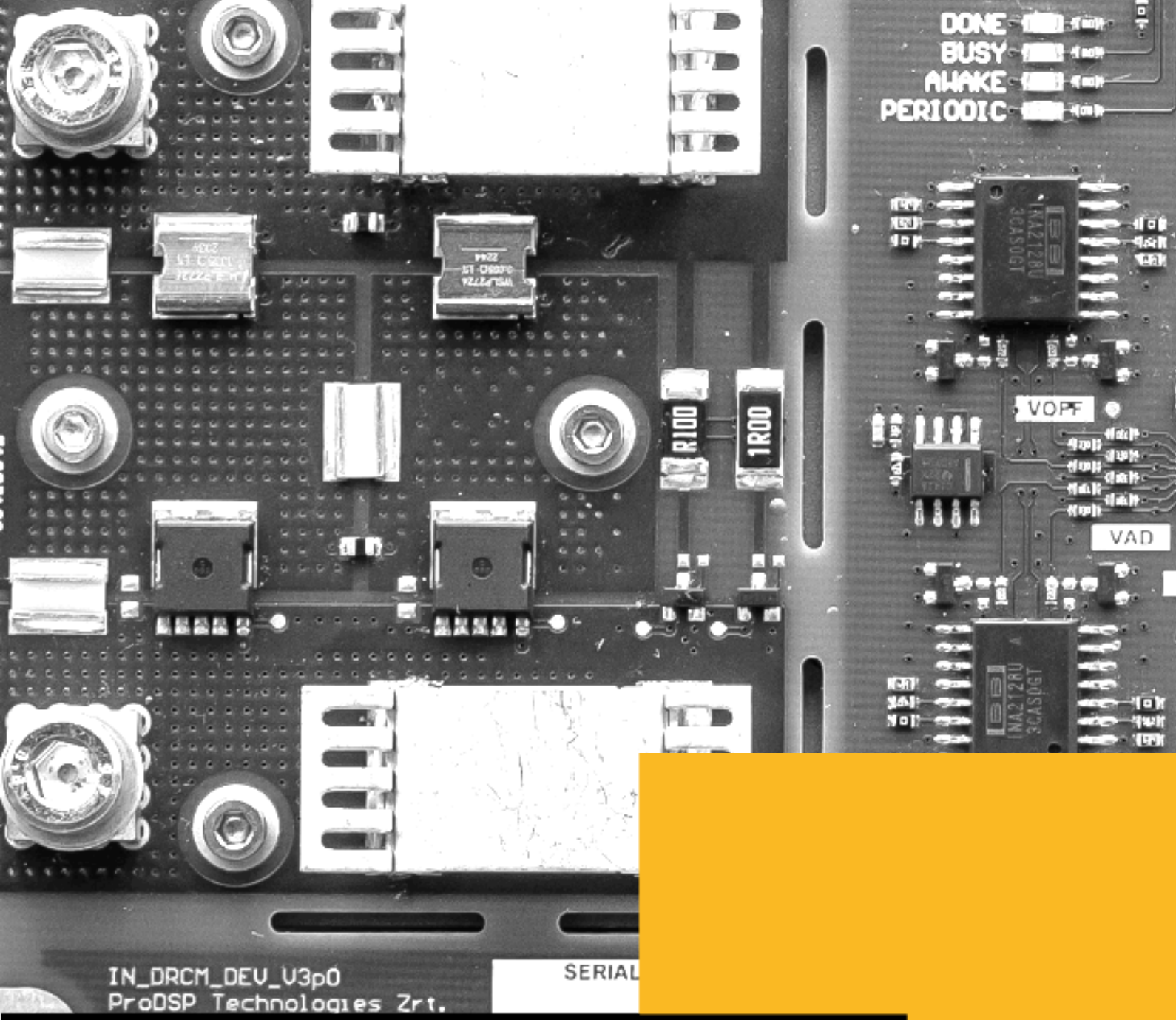


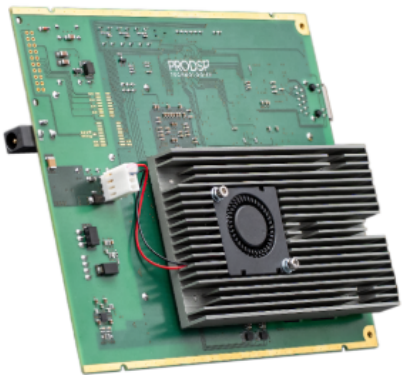
Dynamic Range Current Measurement Board

13.10.2025 v1.4

PRODSP TECHNOLOGIES

Features and Benefits

- **Ultimate current measurement solution:** This device can replace a number of different solutions.
- **Designed to measure inrush currents:** Between sleep and nominal consumption.
- **Large dynamic range:** More than 120dB. The device is capable of measuring small sleep currents (~10uA) and large inrush currents (~100A) with the same accuracy.
- **Versatility:** Low and high side current measurements are both available up to 600V.
- **Accuracy:** A maximum of 0.15% full scale relative error in all ranges.
- **Standard mounting:** Connecting the DRMC device into a current loop is made easy with quick release Würth RedCube blocks.
- **Easy integration:** Data can be downloaded from the card with a standard TCP client.
- **Extremely fast auto ranging:** Switching between the four shunt based ranges are seamless.
- **No missed readings:** The transmission from one range to the other does not affect the reading thanks to our own FPGA based shunt switching and computing processes.
- **High sample rate:** The device outputs 500kS a second with 32 bit wide FRAC readings.
- **Rack solution available:** For applications where more channels are required.



Applications

- Power on Measurements
- Transient Measurements
- Sensorics
- Device or Components Characterization
- Automotive Development and Testing

Description

DRCM combines the positive properties of shunt and Hall effect technologies. The DRMC platform is an ideal choice for engineers and researchers seeking a reliable tool for their applications. Its advanced features, robust design, and ease of use make it a valuable asset in any laboratory or testing environment. Two different variants available for high degree of flexibility. The device **can be**

used standalone (ADAP) or **mounted into an ProDSP SMP**. For further details of the SMP platform see the relevant datasheet.

Technical Data

Electrical specification

Parameter	Test condition	Symbol	Min	Typ	Max	Unit
Input voltage Card supply	DRCM - ADAP	V_{IN}	12	12	15	V_{DC}
	DRCM - SMP		24	24	26	V_{DC}
Measurement relative error	Any range	ERR_{REL}	-	0.12	0.15	%FS
Continuous current	Fully assembled unit	I_{Cont}	-0.015	-	100	A
Peak current - measurable		I_{Peak}	-	-	125	A
Isolation	Posts to Earth (PE)	-	-	0.6	-	kV
Voltage across terminals	Device powered on	-	-	0.15	0.5	V
	Device powered off*	-	-	-	36	V
Ethernet bandwidth	-	-	-	100	-	Mbit
Data Rate	-	-	-	500	-	kS/s
Range switch time	0 to 50A load	t_{sw}	-	-	250	ns

*When the device is powered off, no more than 36V should be applied between the inputs. Deviating from this may damage the device.

Output data format

The device hosts two TCP servers. Connecting to these ports grants access to the data stream and the configuration interface.

IP address: **192.168.1.22**
Data port: **15201**
Config port: **15200**

Data frame: **138 bytes**

Start [1 byte] | Counter [4 bytes] | Flags [2 bytes] | Data (32 data point) [128 bytes] | Stop [1 byte]

Each Ethernet TCP frame consists of 15 Data frames. The capture program should receive 2040 bytes of data together.The *Counter* field should be used to check for dropped frames.

Card Pinout - ADAP

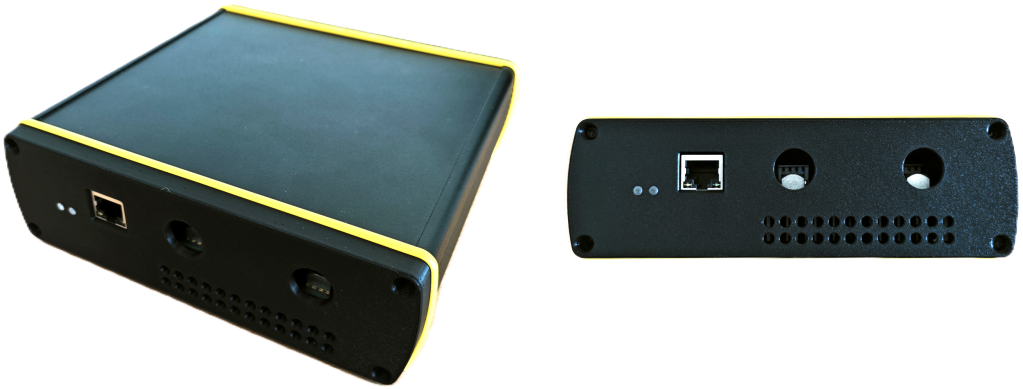
Conn. No.	Channel
1	*Ethernet (RJ45) port*
2	*Positive current input (I_DC)*
3	*Negative current input (COM)*
4	*DC Power input*

LED1	*Indicates that the board is powered on*
LED2	*Indicates active communication to the board*

Versions

Standalone version: DRCM - ADAP

The DRCM is available as an enclosed **standalone version (ADAP)**. Ideal for applications where a single channel has to be measured.



Standalone ADAP version of DRCM

SMP version: DRCM - SMP

The DRCM is offered as a card for the **SMP platform, enabling multi-channel measurements.** The platform supports **high current multiplexing.**

SMP (Signal Multiplexing Platform) is a rack mountable highly configurable multiplexing platform developed by PRODSP.

See further details about the platform here:
https://prodsp.hu/en/products/laboratory-test-systems/76-smp

Features of SMP:

- Ensures complete compatibility with most production line test systems
- 15 slots are available to be configured with different cards
- Special care is being taken to ensure optimal instrument and signal routing
- Universal connectors and Modbus over TCP control
- Quick card swap capabilities: In case of failure, the cards can be easily replaced

Custom form factors

Custom form factors are available upon request to meet special requirements.