

KILOVOLT BUS IN. ISOLATED SIGNAL OUT. CONTROL-LOOP FAST.

Knick transducers read current, voltage and temperature at bus potential and hand the controller an isolated 4 to 20 mA or 10 V signal.

3,600 V
working voltage, continuous isolation on the P41000, P42000 and P43000

110 µs
T90 rise time on the shunt and voltage transducers, 5 kHz cutoff

1 A to 20 kA
shunts in class 0.1, 0.2 and 0.5

A DC bus has no zero crossing, so the current and voltage transformers that isolate an AC measurement do not work on it. The reading has to be taken **at bus potential and carried across an isolation barrier** before a controller, a relay or a meter can use it.

01 THE PROBLEM: MILLIVOLTS ON KILOVOLTS

A shunt gives a few tens of millivolts. On a DC bus that small signal sits on top of the full bus voltage.

- **A divider is not isolation.** A resistive divider in front of a low-voltage input is not an isolated measurement.
- **A slow reading misses the event.** A control or protection loop needs the number while the swell or the fault is happening.
- **The bus voltage swamps the signal.** The kilovolts the shunt sits on must not reach the millivolts being measured.

02 WHY KNICK: BUILT FOR THE BUSBAR

Made in Berlin since 1945. The same parts have sat on 3,000 V DC traction busbars and 20 kA furnace shunts for decades.

- **Isolation rated for the bus.** 3,600 V working voltage, and 4,800 V DC on the P45000 and P52000.
- **Tested well above it.** 10 or 15 kV AC type test on the high-voltage families.
- **Control-loop speed.** A T90 rise time of about 110 microseconds on the shunt and voltage transducers.
- **The bus stays out of the signal.** Common-mode rejection above 150 dB on the shunt transducer.
- **One supply on the same rail.** A 22 to 230 V AC/DC supply across the families.

Dynamic Measurement & Control Solutions, LLC represents Knick Interface in Northern California and Northern Nevada. Knick Interface LLC in California supports sales and service for North America.

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Product line-up on reverse →

03 WHERE IT FITS ON A DC POWER SYSTEM

800 VDC DATA CENTER BUS
Power, energy and direction read independently of the converter.

BATTERY TEST BENCHES
Bipolar current on a cycler or pack bench, over years of cycles.

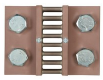
TRACTION POWER
Rated for DC railway systems to 3,000 V DC.

ELECTROLYZERS AND FUEL CELLS
Stack voltage read at stack potential.

DC SWITCHGEAR AND BREAKERS
A current reading in microseconds for a high-speed DC breaker.

BUSBAR JOINTS
A Pt100 at bus potential reads the hot spot before it becomes a fault.

04 PRODUCT LINE-UP

	SERIES AND ROLE	INPUT	ISOLATION	PERFORMANCE	ALSO
	**P41000** Current from a shunt at bus potential	50 mV to 100 V shunt signal	3,600 V working	Gain error under 0.1 percent	TRMS version for AC
	**P42000** Bus voltage, measured directly	100 V to 3,600 V, 16 ranges	3,600 V working	Gain error under 0.3 percent	TRMS version for AC
	**P45000** Voltage for safety-rated systems	To 3,000 V	4,800 V reinforced	10 kHz cutoff, built for SIL 2 systems	-40 to 85 °C
	**P44000** Temperature at bus potential	Pt100	2,000 V or 6,600 V	Plus or minus 0.5 K	Joint and winding temperature
	**Shunts** The current sensor in the bus	1 A to 20 kA	On the bus	Class 0.1, 0.2 and 0.5	TRMS versions for AC

Every figure is Knick's published rating. Outputs are 4 to 20 mA, 0 to 20 mA or 10 V. Ask us for the datasheet and the certificate for the part you are specifying.

05 FIT IT ONCE. TRUST THE NUMBER.

Knick's electronics are vacuum encapsulated and mechanically stable for ships, rail vehicles and land craft. **Knick reports an isolation MTBF of 2,165 years from field data.**

- **Calibrated, switchable ranges.** Sixteen on the P42000, with customer-specific ranges on request.
- **UL 347 above 1,500 V.** Knick's UL certificate for the P41000 and P42000 series covers motor controller accessories over 1,500 volts.
- **Fast transients withstood.** To 20 kV on the P41000 and P42000.
- **Challenge us.** A measuring point that matches none of these rows is a normal request. Send it and we will work it with Knick's application engineers.

DYNAMIC Measurement & Control Solutions, LLC

NEXT STEP: SEND US THE MEASURING POINT

The position on the bus, the bus voltage and its swing, the current range, what the signal reports to and the speed you need. We come back with the parts, the range settings and a wiring sketch.

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