ISSUE: September 2026

1-W Isolated DC-DC Converters Are Medical Grade Yet Compact

Bel Fuse's PTM1-S series is a family of 1-W isolated dc-dc converters engineered to meet the growing demand for medically certified, high-isolation power in compact form factors. Housed in an encapsulated SIP-7 package, the series is built for medical instrumentation, harsh-environment equipment, and industrial control systems that require both dual medical and ITE safety certification in a single part.

"The PTM1-S series proves that high isolation and medical-grade safety don't have to come at the cost of size," said Zoe Bauer, product manager at Bel. "It's a compact, dual-certified solution built for engineers who need both." See the figure.

With a 1:1 input-to-output voltage ratio, the initial lineup spans 5-, 12-, 15-, and 24-Vdc input options with 5- and 12-Vdc single outputs. These options cover the input rails most common in medical and industrial control platforms (see the table).

The PTM1-S series offers 6000-Vdc isolation and reinforced insulation rated for 300 Vac, protecting against surges and cross-circuit faults in applications where isolation integrity is critical. The series is dual certified to UL/IEC 62368 for information technology equipment and EN 60601 and 2xMOOP for medical use, giving engineers the flexibility to qualify a single part number across both medical and industrial designations rather than stocking separate solutions for each.

The converters are rated for continuous operation across an extended -40°C to +100°C temperature range, making them well suited to harsh outdoor and industrial environments as well as controlled clinical settings.

For more information, see the PTM1-S series page.

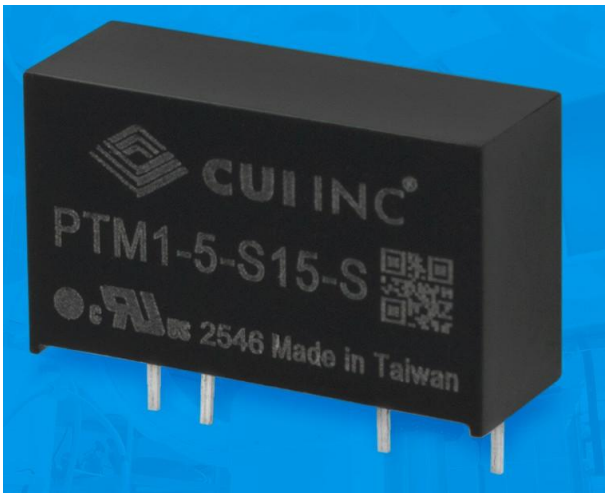

Figure. Housed in an encapsulated, board-mount package measuring 19.7 x 7.1 x 11.5 mm,, this series is EN 60601-1 certified and carries an extended temperature range of -40°C ~ +100°C with reinforced insulation, making it a reliable option for medical instrumentation, low power consumer electronics, and industrial equipment that requires high isolation voltage.

© 2026 How2Power. All rights reserved.

Table. Input and output voltage options and other specs for PTM1-S series dc-dc converters.

MODEL	input voltage[1] typ (Vdc)	input voltage[1] range (Vdc)	output voltage (Vdc)	output current max (mA)	output power max (W)	ripple and noise[2] max (mVp-p)	efficiency[3] typ (%)
PTM1-5-S3-S	5	4.5~5.5	3.3	303	1	100	76.5
PTM1-5-S5-S	5	4.5~5.5	5	200	1	100	76.5
PTM1-5-S12-S	5	4.5~5.5	12	84	1	100	81.5
PTM1-5-S15-S	5	4.5~5.5	15	67	1	100	81.5
PTM1-5-D5-S	5	4.5~5.5	±5	±100	1	100	77.0
PTM1-5-D12-S	5	4.5~5.5	±12	±42	1	100	78.0
PTM1-5-D15-S	5	4.5~5.5	±15	±34	1	100	83.0
PTM1-12-S3-S	12	10.8~13.2	3.3	303	1	100	76.5
PTM1-12-S5-S	12	10.8~13.2	5	200	1	100	79.5
PTM1-12-S12-S	12	10.8~13.2	12	84	1	100	82.0
PTM1-12-S15-S	12	10.8~13.2	15	67	1	100	84.0
PTM1-12-D5-S	12	10.8~13.2	±5	±100	1	100	78.0
PTM1-12-D12-S	12	10.8~13.2	±12	±42	1	100	80.0
PTM1-12-D15-S	12	10.8~13.2	±15	±34	1	100	82.0
PTM1-15-S5-S	15	13.5~16.5	5	200	1	100	81.0
PTM1-24-S3-S	24	21.6~26.4	3.3	303	1	100	75.0
PTM1-24-S5-S	24	21.6~26.4	5	200	1	100	78.0
PTM1-24-S12-S	24	21.6~26.4	12	84	1	100	80.0
PTM1-24-S15-S	24	21.6~26.4	15	67	1	100	81.0
PTM1-24-D5-S	24	21.6~26.4	±5	±100	1	100	77.0
PTM1-24-D12-S	24	21.6~26.4	±12	±42	1	100	80.0
PTM1-24-D15-S	24	21.6~26.4	±15	±34	1	100	80.0

Note:
1. ±10%
2. Measured at 20 MHz bandwidth, nominal input voltage.
3. The efficiency is test by nominal input and max full load at 25°C.
4. All specifications are measured at Ta=25°C, nominal input voltage and full output load unless otherwise specified.

© 2026 How2Power. All rights reserved.