

The logo for Flex, consisting of the word "flex" in a lowercase, sans-serif font with a registered trademark symbol (®) to its upper right. The background of the entire page is a dark blue field with glowing, wavy lines and scattered light points, creating a sense of motion and technology.

flex[®]

Flex Power Modules Telecom Solutions

DC/DC Power Supplies for Telecom Applications

Our DC/DC portfolio for Telecom

Flex Power Modules' telecom solutions cover traditional applications such as routers, switches, servers, base station equipment, optical networks, session border controllers, gateways and other networking devices.

Additionally, we offer many products for Radio Frequency Power Amplifier (RFPA) and Microwave applications. They are particularly designed for the 5G rollout which is accelerating the world over.

Our telecom solutions offer:

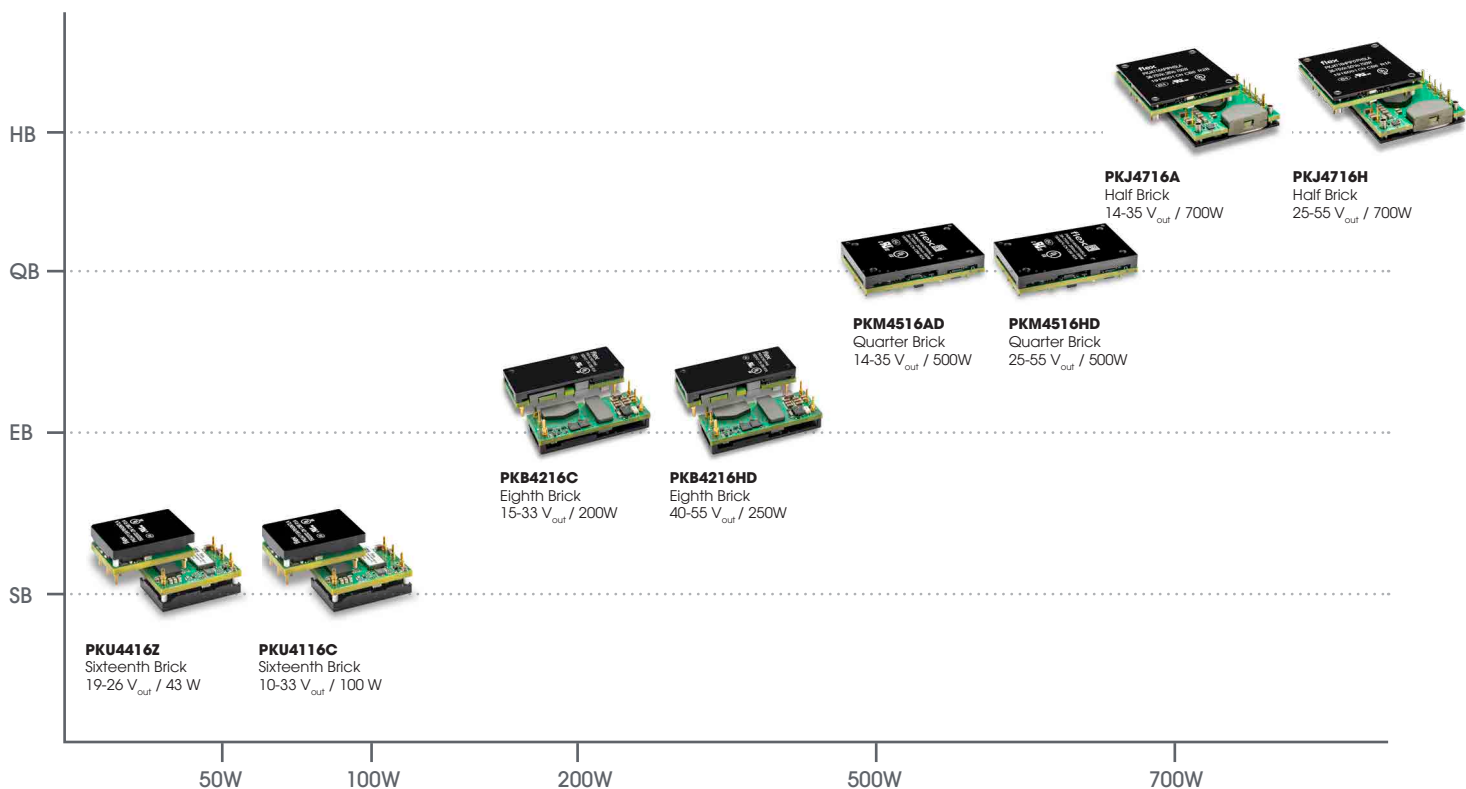
- » High efficiency
- » High reliability
- » High power density
- » Typical input ranges of 36-75 V

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RFPA products

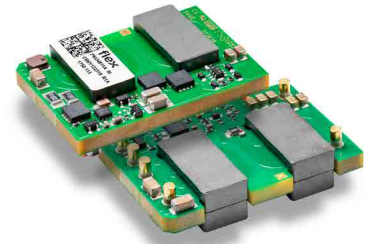
Product portfolio for Radio Frequency Power Applications (RFPA), Microwave and Small Cell Applications, from smallest form factor of a 1/16 brick up to the 1/2 brick size.



PKU-A (60-72 W) / sixteenth brick

Key Features:

- » High efficiency
- » Excellent thermal performance
- » Price competitive solution
- » Isolation voltage up to 2250 V
- » MTBF figures up to 17.5 Mhrs



Dimensions: 33 x 22.9 x 8.2 mm (1.3 x 0.9 x 0.32 in)

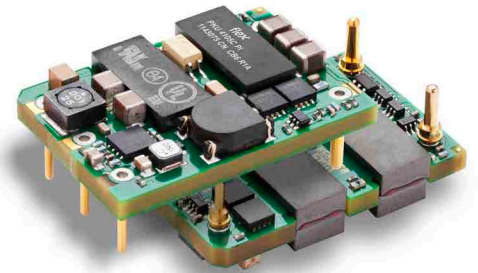
PKU-A

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKU4717YA	36-60	4.5	4.5-5.5	15.8	72	94
PKU4611A	36-60	5	5-6	12	60	94
PKU4716VA	36-60	6	6-7	10	60	94
PKU4713A	36-65	12	N/A	5.8	70	95

PKU-C (43-100 W) / sixteenth brick

Key Features:

- » Open frame
- » High efficient power module
- » Isolation voltage 1500 V
- » N+1 parallelability
- » MTBF figures up to 5.2 Mhrs



Dimensions: 33 x 22.9 x 9.6 mm (1.3 x 0.9 x 0.38 in)

PKU-C

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKU4416Z	28-60	24	19.2-26.4	1.8	43	91.7
PKU4116C	36-75	30	10-33	3.3	100	92.9

PKB-C / PKB-D (200-250 W) / eighth brick

Key Features:

- » High efficiency and power density module
- » Wide trim range
- » Few components – very space efficient
- » Isolation voltage up to 2250 V
- » MTBF figures up to 10 Mhrs



Dimensions: 58.4 x 22.7 x 8.5 mm (2.3 x 0.9 x 0.34 in)

PKB-D

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKB4216C	36-75	30	15-33	6.7	200	95
PKB4216HD	36-60	48/50	40-55	5	250	94.5

PKM-D (504 W) / quarter brick

Key Features:

- » Fully regulated DC/DC converter
- » Excellent thermal performance
- » Excellent power density
- » Isolation voltage 2250 V
- » MTBF figures up to 8 Mhrs



Dimensions: 57.9 x 36.8 x 12.7 mm (2.28 x 1.45 x 0.5 in)

PKM-D

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKM4516AD	36-75	28/30	14-35	18	504	96.2
PKM4516HD	36-75	48/50	25-55	10	500	96.2

PKJ (700 W) / half brick

Key Features:

- » Excellent thermal performance
- » Single stage converter
- » Smart design with enhanced reliability
- » Isolation voltage 1500 V
- » MTBF figures up to 7.5 Mhrs



Dimensions: 61 x 57.9 x 12.7 mm (2.4 x 2.3 x 0.5 in)

PKJ

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKJ4716AD	36-75	28/30	14-35	25	700	96.2
PKJ4716HD	36-75	48/50	25-55	14	700	96.3

SAM (800 W) / solder bump

Remote Radio Unit application optimized RFPAs solutions

Key Features:

- » Excellent thermal performance
- » 35V and 55V module pin compatible
- » Cost competitive design
- » Low profile <7mm
- » 1500 Vdc input to output isolation



SAM

Dimensions: 72 x 40 x 6.9 mm (2.84 x 1.56 x 0.27 in)

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
BMR680 01	36-60	35	17-35	23	800	97.1
BMR680 xx	36-60	55	44-55	15	800	TBD

Latest Telecom Products

Latest digital and analog DC/DC converters designed for telecom applications modules. All products listed below are suitable for the Core & Edge part of Telecom Networks, which include applications such as routers, switches, servers, optical networks, session border controllers & gateways.

Isolated DC/DC converters - digital

BMR 480 (800 W) / quarter brick

The BMR 480 targets telecom applications with a V_{in} range 36-60 V.

Key Features:

- » Excellent thermal performance
- » Droop load sharing capability
- » Over voltage protection
- » Output short-circuit protection
- » Isolation voltage 1500 V
- » MTBF up to 6 Mhrs



BMR 480

Dimensions: 58.4 x 36.8 x 14.48 mm (2.3 x 1.45 x 0.57 in)

Series name	V_{in} (V)	V_{out} (V)	V_{out} range (V)	I_{out} (A)	Power (W)	Efficiency (%)
BMR4800113/034	36-60	12	8-13.2	69	800	96.7

BMR 520 (300-900 W) / vertical mount

The BMR 520 targets telecom and datacom applications which have reduced board space.

Key Features:

- » Innovative vertical design
- » BMR 520 consists of 1-3 vertical blade units and 1 controller assembly
- » 3 blade units equal app. 1/4 brick footprint
- » Phase-shifting full bridge technology
- » Each blade has heatsinks on both sides to increase cooling
- » Isolation voltage 1500V



BMR 520

Dimensions: Blade: 40 x 17 x 20 mm (1.57 x 0.67 x 0.8 in) | Controller: 17 x 17 x 11.6 mm (0.67 x 0.67 x 0.47 in)

Series name	V_{in} (V)	V_{out} (V)	V_{out} range (V)	I_{out} (A)	Power (W)	Efficiency (%)
BMR520	36-75	12	N/A	25	300	95

BMR 458 (600 W) / quarter brick

Key Features:

- » High efficiency > 96.4 %
- » Available as open frame and baseplate versions
- » Isolation voltage 2250 V
- » Active current sharing available
- » Droop load sharing available



BMR 458

Dimensions: 57.89 x 36.8 x 11.2 mm (2.28 x 1.45 x 0.45 in)

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
BMR4580002/003	36-75	12	8-13.2	50	600	96.4
BMR4580032/003*	36-75	12	8-13.2	50	600	96.4
BMR4580002/014	36-75	12.45	8-13.2	50	600	96.4
BMR4580032/014*	36-75	12.45	8-13.2	50	600	96.4

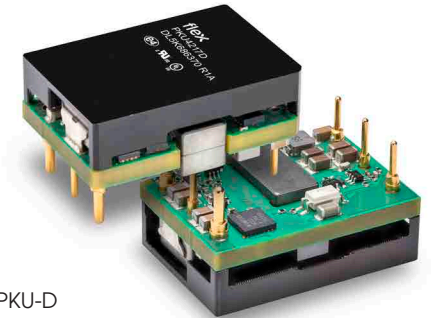
* Alternative digital pinout, deviation from length dimension

Isolated DC/DC converters - analog

PKU-D (110-260 W) / sixteenth brick

Key Features:

- » High efficiency up to 95%
- » Isolation voltage 2250 V
- » Pre-bias start up
- » Optional baseplate and SMD versions
- » MTBF figures up to 12.9 Mhrs



PKU-D

Dimensions: 33 x 22.9 x 11.3 mm (1.3 x 0.9 x 0.44 in)

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKU4110D	36-75	3.3	2.6-3.6	30.3	110	93.7
PKU4111D	36-75	5	4-5.5	27	150	93.6
PKU4217D	36-60	10.4	N/A	10	260	96.1
PKU4213D	36-75	12	9.6-13.2	17	204	95
PKU4113D	36-75	12	9.6-13.2	10	120	94.5

PKB-D (200-450W) / eighth brick

Key Features:

- » Efficiency up to 96%
- » Isolation up to 2250 V
- » Optional baseplate
- » Optional SMD version
- » MTBF up to 8.9 Mhrs



Dimensions: 33.02 x 22.86 x 9.4 mm (1.3 x 0.9 x 0.37 in)

PKB-D

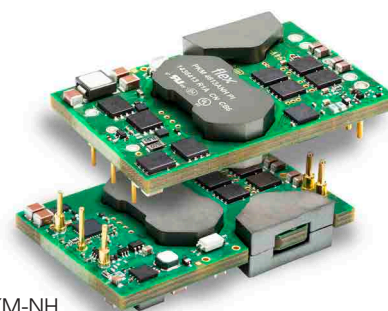
Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKB4110D	36-75	3.3	2.6-3.6	62	205	95.4
PKB4210DA	36-75	3.3	2.6-3.6	62	205	95.4
PKB4111D	36-75	5	4-5.5	52	260	95.5
PKB4211D	36-75	5	4-5.5	42	200	95.3
PKB4211DA	36-75	5	4-5.5	52	260	95.5
PKB4217ND	36-75	10	N/A	25	250	95.7
PKB4213D	36-75	12	N/A	22	264	95.4
PKB4313D	36-75	12	N/A	25	300	96.2
PKB4313DA	36-75	12	N/A	32	390	95.6
PKB4413DA*	36-75	12	N/A	34	408	96.2
PKB4413D*	36-75	12	N/A	37.5	450	96.2

* Hybrid regulated ratio (HRR)

PKM-NH (600 W) / quarter brick

Key Features:

- » High efficiency up to 96.2 %
- » Isolation voltage 2250 V
- » Fully regulated output voltage
- » Optional baseplate
- » MTBF figures up to 3.34 Mhrs



Dimensions: 57.9 x 36.8 x 11.4 mm (2.28 x 1.45 x 0.45 in)

PKM-NH

Series name	V _{in} (V)	V _{out} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PKM4613ANH	36-75	11.6	N/A	50	580	96
PKM4613NH	36-75	12	N/A	50	600	96.2

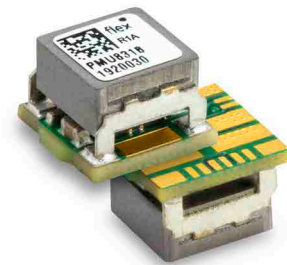
Non-Isolated Point of Load - analog

PMU8000

The PMU8000 series is our ultra-miniature Point of Load converter.

Key Features:

- » Exceptionally small package size and low weight (0.92 g)
- » Loop Optimization feature
- » Configurable soft start and tracking feature
- » Bottom side mounting
- » MTBF figures up to 172 Mhrs



PMU8000

Dimensions: 7.5 x 7.5 x 5.4 mm (0.29 x 0.29 x 0.21 in)

Series name	V _{in} range (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
PMU8218	4.5-17	0.6-5.5	4	22	93.1
PMU8318	4.5-17	0.6-5.5	6	33	92.7
PMU8418	4.5-17	0.6-5.5	8	44	91.9

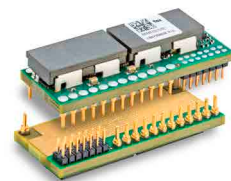
Non-Isolated Point of Load - digital



BMR4690000



BMR4696001



BMR 467



BMR 466



BMR 465



BMR 464



BMR 463



BMR 462



BMR 461

Series name	V _{in} (V)	V _{out} range (V)	I _{out} (A)	Power (W)	Efficiency (%)
BMR461	4.5-14	0.6-5.0	6/12/15/18	60	Up to 96
BMR462	4.5-14	0.6-5.0	12	60	97.1
BMR463	4.5-14	0.6-3.3	20/25	66/83	97.1
BMR464	4.5-14	0.6-3.3	40/50	132/165	97.2
BMR466	4.5-14	0.6-1.8	60	108	93.6
BMR465	7.5-14	0.6-1.8	90	162	94.3
BMR467	7.5-14	0.6-1.8	120	216	93.2
BMR4696001*	7.5-14	0.6-5.0	2 x 25A	100	94.3
BMR4690000**	7.5-14	0.6-5.0	2 x 40A	200	92.6

* Configurable as single 50A output
 ** Configurable as single 80A output

Software

We have developed the Flex Power Designer Tool, which is a software that helps our customers to optimize, sketch and simulate power systems. The Flex Power Designer provides an overview of the whole power system enabling you to define relationships across rails, phase spreading, sequencing and fault spreading.

The software is free of charge and available on our homepage under www.flexpowerdesigner.com

Some of the key features of the Flex Power Designer are:

- » System configuration and efficiency on the entire power system
- » Configuration and simulation of the control loop, transient response and power dissipation
- » Easy configuration and monitoring of your digital power modules

Contact information

For more information, please visit flexpowermodules.com or mail us to pm.info@flex.com.



Flex Power Modules, a division of Flex (NASDAQ: FLEX), designs and manufactures scalable power supply solutions that improve the operational efficiencies of advanced data center, IT information and communication networks. Flex Power Modules' products provide a complete on-board system solution for cloud, storage and server applications and address customer challenges while delivering superior quality, cost and performance scale.

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